

ENDANGERED SPECIES ACT UNDER FIRE:
CONTROVERSIES, SCIENCE, VALUES & THE LAW

by

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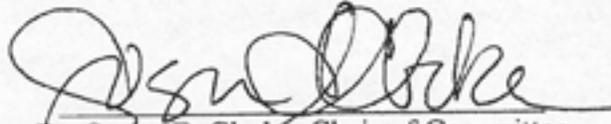
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has been approved for the Department of Political Science



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Endangered Species Act Under Fire: Controversies, Science, Values & the Law
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ABSTRACT

My central purpose was to explore whether Congress intended to protect ecosystems and err on the side of species protection in the Endangered Species Act (ESA) and whether the Act's legislative history transcends a simple economy versus environment dialectic. I examined the ESA's legislative history from its passage in 1973 through key amendments in 1978, 1982, and 1988 by analyzing the values actors invoked, their rhetorical strategies, and their use of ecosystem and precautionary themes.

I identified actors' expressed values and preferred outcomes within congressional hearings and floor debate. I assessed their value usage using cross-tabulations and log likelihood ratios. The use of ecosystem protection and the precautionary approach was reviewed via content analysis. I analyzed these themes within conflict areas such as the Tellico Dam controversy in 1978 and wolf reintroduction in 1988. I considered general expressions regarding ecosystem protection and erring on the side of biodiversity protection given scientific uncertainty.

I found that ecological values and ecosystem protection arguments were invoked consistently throughout the legislative history. Actors expressing ecological values were likely to support strengthening species wildlife protection. Utilitarian and moralistic arguments were also used by actors promoting a stronger ESA, thereby undermining an economics versus environment dichotomy.

Results from the precautionary principle analysis were mixed. Although the precautionary principle was never explicitly promoted in the legislative history, a variety of actors advocated protecting species in the face of uncertainty. This stance was challenged by other participants, and the legislative outcomes remained equivocal.

The findings of this congressional analysis were compared with the ESA's implementation via case studies on the northern spotted owl (*Strix occidentalis caurina*) and the black-tailed prairie dog (*Cynomys ludovicianus*). These cases indicated that the ESA is not being administered using an ecosystem or precautionary approach. Despite opportunities for ecosystem-wide protection measures and early intervention before crisis, these opportunities were foregone. This is likely due to agency desires to avoid bold action.

Specific suggestions are offered to improve policy by integrating ecosystem and precautionary protection into current conflicts surrounding species listings, reintroduction/translocation, critical habitat designation, recovery plans, consultation, habitat conservation plans, and prohibitions on take.

Dedicated to:

The passenger pigeon,
once darkening the skies with its numbers,
the pigeon flies no longer...

...and to the prairie dog,
that you not follow the same path.

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CHAPTER I

INTRODUCTION

I assess the Endangered Species Act's (ESA's) legislative history in light of two broadly accepted concepts in environmental policy: ecosystem management and the precautionary principle. Both concepts have been considered relative to endangered species policy in the U.S., but we lack a clear picture of how these concepts have been discussed throughout the ESA's 28-year history. We therefore cannot yet make assertions about the intent of Congress to include or exclude these concepts from endangered species protection. Nor do we have a clear picture of which values have been most prominent in ESA discourse or the strategies actors have employed in promoting certain values over others.

The current political turmoil enveloping the ESA contrasts with its near-unanimous passage in 1973. Proponents and opponents of endangered species protection alike make the case for overhauling endangered species policy in the United States. Proponents of endangered species conservation claim the Act does not go far enough and is not adequately implemented to prevent species extinction and aid species recovery (e.g., Rohlf 1991; Houck 1993; Bechtold 1999). Opponents of increased endangered species protection argue that the Act is draconian, repressive, and a threat to the U.S. economy (e.g., Mann and Plummer 1992; 1995; Sugg 1994). This heated political debate is not restricted to the extreme margins of political discourse. The popular print, radio, and television media often depicts the ESA as

highly controversial. The controversy is manifest in the halls of Congress and routinely reaches the Oval Office and the U.S. Supreme Court.

The ESA debate is part of a broader conflict regarding the economic costs of protecting the environment in the U.S. Due to its potential for outcomes that protect endangered species with no regard to impacts on industry, the ESA has been in the crossfire of a clash between conservationists promoting enhanced environmental protection and industry interests seeking reduced interference with economic growth (e.g., Meltz 1994; Mann and Plummer 1995; Innes et al. 1998).

The simple depiction of economics pitted against environmental protection fails to clarify which specific values political actors marshal to promote or hinder species protection. Scholars have identified a broad spectrum of values held and used by people, including Lasswell and McDougal's (1992) power, enlightenment, wealth, well-being, skill, affection, respect, and rectitude; Kellert's (1993; 1996) aesthetic, dominionistic, ecologicistic, humanistic, moralistic, naturalistic, negativistic, scientific, and utilitarian values¹; and a variety of other value classifications (e.g., Rokeach 1979a). These value classifications can be used to describe specific values clashing and converging in the ESA debate. In turn, analyzing clashing values within the ESA debate may shed light on broader biodiversity conflicts and environmental protection issues and can enable our understanding of endangered species policy to transcend a simplistic economics versus environment dialectic.

¹In *The Value of Life*, Kellert (1996) also included the symbolic value, which I have merged with aesthetic, and he combined ecologicistic and scientific values. I find it useful to keep those two values separate, given pleas for sound science sometimes coming from ESA actors who do not make ecologicistic arguments.

Other laws in the U.S. impact endangered species policy. These include federal statutes such as the National Environmental Policy Act,² National Forest Management Act (NFMA),³ and Federal Land Policy and Management Act.⁴ Indeed, Ruhl (1995) noted that 35 federal laws include measures for, or are compatible with, biodiversity protection. NFMA, for example, explicitly provides that U.S. Forest Service (USFS) plans consider “the diversity of plant and animal communities”⁵ and its regulations currently contain a standard of “ecological sustainability” that includes consideration of ecosystem diversity and species diversity.⁶ State laws relevant to endangered species policy are state endangered species acts, but these laws generally lack substantive protections for state listed species (Goble et al. 1999). Many local laws also factor in biodiversity policy (Tarlock 1993).

Although these laws may impact endangered species policy in the U.S., the ESA stands as the most powerful statute in the country for addressing the threat of extinction. Under its Section 7, the ESA provides the federal government with the power to prohibit activities on public land or by government agencies that will jeopardize a species listed under the Act.⁷ Through Section 9, the ESA equips the federal government with the authority to punish any individual who takes a member

²42 U.S.C.A. §§ 4321-61.

³16 U.S.C.A. §§ 1600-14.

⁴43 U.S.C.A. §§ 1701-84.

⁵16 U.S.C.A. § 1604(g)(3)(B).

⁶36 C.F.R. § 219.20 (2001).

⁷16 U.S.C.A. § 1536(a)(2); Section 7(a)(2).

of a listed species on private or public lands.⁸ Via Section 11, the ESA extends the power to enforce the Act to every citizen in the U.S.⁹

Although the statute includes powerful tools to enforce species protection, it also accommodates economic activity by allowing the incidental take of listed species by public and private actors, so long as those actors develop conservation plans to limit the extent to which endangered species are affected.¹⁰ In addition, it provides a one-year exemption for those who will suffer economic hardship from species protection¹¹ and for Alaskan natives.¹² Other exemptions added throughout the ESA's existence are exclusions for antiques,¹³ whale products used in scrimshaw,¹⁴ and members of a listed species that are reintroduced under the designation of experimental and "not essential to the continued existence of a species."¹⁵ Federal agencies may also apply for an exemption through the Endangered Species Committee, a provision added in 1978.¹⁶

Despite these accommodations for some economic activities, the ESA continues to be at the center of the conflict between economic growth and

⁸16 U.S.C.A. § 1538(a); Section 9(a).

⁹16 U.S.C.A. § 1540(g); Section 11(g).

¹⁰16 U.S.C.A. § 1536(o) (Section 7(o)) for federal actors, and 16 U.S.C.A. § 1539(a) (Section 10(a)) for private actors.

¹¹16 U.S.C.A. § 1539(b); Section 10(b).

¹²16 U.S.C.A. § 1539(e); Section 10(e).

¹³16 U.S.C.A. § 1539(h); Section 10(h).

¹⁴16 U.S.C.A. § 1539(f); Section 10(f).

¹⁵16 U.S.C.A. § 1539(j); Section 10(j).

¹⁶16 U.S.C.A. § 1536(e)(1)-(n).

environmental protection. Further, effective defense of the law is hampered by the perception that it is not working. Commentators arguing for a weaker or stronger ESA collectively acknowledge that species continue to go extinct in the U.S. and that listed species generally fail to recover (Rohlf 1991; Mann and Plummer 1995; Rothbard 1998). Others respond that the relatively short life-span of the ESA is not sufficient for assessing the response of the law to a long-term problem and that the Act's effectiveness in preventing extinction is a more appropriate evaluative standard than the number of species declared to be recovered (Bean 1992; Cheney 1995; Rachlinksi 1997). Moreover, some defenders of the ESA maintain that some species should never be delisted or considered recovered, as that would remove much-needed protection from enduring threats (Doremus and Pagel 2001).

Those arguing for a stronger or weaker ESA explain the lack of species recovery differently. Commentators promoting a weaker ESA assert that the law presently encourages landowners to “shoot, shovel, and shut up” to avoid its harsh prohibitions and penalties (Mann and Plummer 1992; Kunich 1994; Spitzberg 1994; Sagoff 1997). For instance, Spitzberg (1994) cited Riverside County, CA farmers who purposefully plowed their fields to avoid inhabitation by the protected Stephens kangaroo rat (*Dipodomys stephensi*) and shrimpers who slashed sea turtles' (*Lepidochelys kempii*) throats because of a requirement for the use of turtle excluder devices on shrimping nets. Mann and Plummer (1992) described the destruction of one of three known populations of the endangered San Diego mesa mint (*Pogogyne abramsii*) by a developer seeking to avoid ESA prohibitions.

Those arguing for a stronger ESA suggest that the lack of species recovery and continued extinctions are the consequence of inadequate funding, political roadblocks to protective actions, listing delays, and a single-species approach to endangered species protection (e.g., Houck 1993; Vaughan 1995; Bechtold 1999). For example, listing of the bull trout (Salvelinus confluentus) required six years of pressure and litigation by conservationists (Bechtold 1999). Vaughan (1995) recounted a similar tale with the Alabama sturgeon (Scaphirhynchus suttkusi). Many have also noted that species have gone extinct while awaiting listing under the ESA (Salzman 1990; Kunich 1994; McMillan and Wilcove 1994; Vaughan 1995; Mandel 1996; Brown 1997; Bechtold 1999; Whritenour Ando 1999).

These inadequate protective actions often derive from implementation problems rather than the statute itself. Indeed, characterization of the ESA as a “pit bull”¹⁷ among environmental statutes stems both from its statutory language and the way it has been interpreted by the courts, not from its administration (Houck 1993). In the 1978 landmark decision by the U.S. Supreme Court in Tennessee Valley Authority v. Hiram Hill (437 US 153 (1978)), Chief Justice Burger delivered the majority’s opinion, declaring that “the plain language of the Act, buttressed by its legislative history, shows clearly that Congress viewed the value of endangered species as ‘incalculable.’” The majority found that, given this incalculable worth of endangered species, it would be difficult and inappropriate for the court to weigh the economic costs of protection against the value of protecting a species.¹⁸

¹⁷Donald Barry of the World Wildlife Fund, cited in Houck (1993).

¹⁸See TVA v. Hill, p. 187.

Consequently, the Supreme Court enjoined the completion of the Tellico Dam, as it would destroy the endangered snail darter's (Percina tanasi) critical habitat.

TVA v. Hill demonstrates that legislative history factors in court decisions on endangered species cases in the U.S. The case also shows that litigation was important in early ESA enforcement. Litigation by citizens continues to be an integral part of the law's enforcement (Doremus 1999a). It hinges on the court's interpretation of statutory language, which is informed by the court's reading of congressional intent in the legislative history of a law.

Congressional intent therefore factors significantly in the administration and jurisprudence regarding the ESA. I do not examine Congress itself, but I focus on congressional intent to consider how the deliberations and conclusions of that body could be brought to bear on present controversies surrounding the ESA. In addition, congressional intent provides a basis for evaluating how closely the administration of the Act coincides with its legislative history. Finally, I consider how elements of congressional intent enlighten litigious strategies for reform.

The TVA decision also spotlights the role of ecosystem issues in the ESA. One piece of evidence that the court pulled from the legislative history in deducing that Congress considered species to possess "incalculable" values was that Congress was concerned about species extinction, in part, because of the "unforeseeable place such creatures may have in the chain of life on this planet."¹⁹ In short, given the possibility of species extinction causing ecosystem collapse and the likelihood that

¹⁹See TVA v. Hill, pp. 178-179.

humans may not know about such consequences before they occur, the value of species is incalculable and no costs should be spared in preventing their extinction.

Indeed, an explicit purpose of the ESA is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species.”²⁰ Interestingly, many commentators have criticized the ESA for protecting individual species rather than the larger ecosystems of which individual species are a part (e.g., Rohlf 1991; Doremus 1991; Kunich 1994; Spitzberg 1994; Drozdowski 1995), despite the law’s explicit commitment to protecting ecosystems.

An additional lesson from TVA is the issue of scientific uncertainty and the precautionary principle. Given the “unforeseeable” role of species in ecosystems, the court held that Congress regarded species as invaluable. This posture aligns with the precautionary principle, which holds that when an environmental harm is suspected, but uncertain, policy should err on the side of environmental protection.

The question of whether the precautionary principle applies to the ESA is manifest in contemporary criticisms of the ESA. For instance, Kunich (1994) criticized the ESA as being a “deathbed approach” to preventing extinction, rather than protecting species while they can still fulfill their ecological functions. Additional critiques surround ESA enforcement, with many noting that species have gone extinct because of ESA listing delays (Salzman 1990; Kunich 1994; McMillan and Wilcove 1994; Vaughan 1995; Mandel 1996; Brown 1997; Bechtold 1999; Whritenour Ando 1999).

²⁰16 U.S.C.A. 1531(b); ESA Section 2(b).

As a remedy to endangered species policy problems, participants in ESA debate frequently prescribe ecosystem management and the application of science in a consistent way. Both conservationists and industry currently advocate the ecosystem approach (Spitzberg 1994; Stanley 1995; Houck 1997). The “fuzziness” of the term “ecosystem management” may explain why diverse interests promote the concept (Ruhl 1995; Stanley 1995; Houck 1997). A focus on the values actors invoke provides one gauge of the importance of the ecosystem protection theme in the U.S. as an ecological goal equates to support for ecosystem protection.

Second, the appropriate application of science to endangered species policy is the subject of debate, with some commentators arguing for a standard of sufficient information prior to species listings and protective actions (e.g., Bogert 1994) in contrast to the Act itself, which relies on a best available science standard.²¹ A problem in endangered species policy has been frequent scientific uncertainty surrounding the status of a species and the efficacy of recovery measures (Schemske et al. 1994; Tear et al. 1995; Doremus 1997; Foin et al. 1998). Application of the precautionary principle to endangered species policy resolves such scientific uncertainty in favor of species protection. When a threat is likely (e.g., extinction or imperilment) but not fully known, environmental protection (e.g., species listing and/or subsequent protective actions) would be granted. Indeed, the best available science standard codified in the ESA may be evidence that Congress voted for a precautionary approach to species protection.

²¹Listing decisions are to be made and consultation conducted on the basis of the “best scientific and commercial data available” 16 U.S.C.A. 1533(b)(1)(A); ESA Section 4(b)(1)(A); 16 U.S.C.A. 1536(a)(2); ESA Section 7(a)(2).

There are several ways to relate the precautionary principle to a valuational analysis. Common use of this principle seems most closely related to an ethical concern for future generations of humans or to a utilitarian concern for the welfare of the present generation of humans. Although one might plausibly argue that the precautionary principle can provide justification both for economic growth and species protection, the difference between the two is the reversibility of the consequences of an action. While economic activities restricted at one point may later be permitted, the extinction of a species cannot be subsequently reversed.

Unlike the ecosystem protection theme, there is no proxy value for the precautionary principle. For example, the precautionary principle may support erring on the side of species protection due to the aesthetic value of a species, its utilitarian value for local economies, or for the role it plays in maintaining ecological processes. The ecological value, as indicated above, was combined with the precautionary principle in generating the finding that the value of species is incalculable. The precautionary principle does not distill into one discrete value. Rather, its application by congressional actors merits a more in-depth content analysis.

In this dissertation, I investigate the use of values and the themes of ecosystem protection and the precautionary principle in the ESA's history as a basis for analyzing present controversies surrounding the Act.

My first step is to disaggregate the debate into specific areas of contention (Chapter II). I term these conflict areas "ESA battlegrounds." The battlegrounds are listings, critical habitat designation, consultation, reintroduction, habitat conservation

planning, recovery, and prohibitions on take. I indicate how each battleground relates to 1) a clash of values; 2) ecosystem protection; and 3) the precautionary principle.

Next, I provide the theoretical framework that guides my study (Chapter III). I begin with the policy sciences framework developed by Harold Lasswell (Lasswell 1956; 1970; 1971; Lasswell and Kaplan 1950; Lasswell and McDougal 1992). I use Lasswell's problem orientation portion as a specific area of focus and indicate convergence between problem orientation and problem definition literatures. Both approaches emphasize the importance of actors' values and perceptions of valuational issues on policy matters. Proceeding from this theoretical background, I illustrate my valuational approach to endangered species policy. I consider literature on values and indicate that the simple dichotomy of economic growth versus environmental protection disintegrates under close scrutiny. I relate this discussion to current calls for precautionary, ecosystem level approaches to endangered species policy. I also argue against the assertion that the precautionary principle may be interpreted to justify economic growth over endangered species protection to avoid harm to economic health. Rather, the irreversibility of extinction mandates protection on the side of species protection.

Turning to my methodological approach, I detail how my research design addresses the roles of values, ecosystem protection, and the precautionary principle in ESA debate (Chapter IV). The debate I analyze is restricted to the legislative history from the Act's passage in 1973 and in three subsequent sets of amendments in 1978, 1982, and 1988. I use two methods to conduct this examination: content analysis and case studies. In the content analysis, I proceed in two ways. First, I develop a values

coding system. Second, I conduct a qualitative content analysis of the Act's legislative history for the use of ecosystem protection and precautionary themes. I indicate how I chose my case studies and the materials I employed to ascertain the roles of values and the two themes in the cases of the northern spotted owl and the black-tailed prairie dog.

Valuational coding indicated widespread and consistent support for ecosystem protection and a steady, but always implicit, conflict over the precautionary principle (Chapter V). While the ecological value was frequently invoked throughout the Act's history, there was also a utilitarian battle over how self-interest should be defined. Economic values were by far the most frequently invoked, but utilitarian and moral arguments relating to the precautionary principle provided an important counterpoint.

I next review results from the search for the ecosystem protection theme. I found strong support and wide usage of this theme throughout the Act's history (Chapter VI). Alternatively, the results from content analysis with respect to the precautionary theme indicated a lack of consensus on whether or not policy-makers should err on the side of species protection in the event of substantial scientific uncertainty (Chapter VII).

I then discuss the implications of my quantitative and qualitative examination of the ESA's legislative history (Chapter VIII). After presenting my results, I revisit the ESA battlegrounds and assess the value of my theoretical approach. I discuss each battleground in terms of the valuational conflicts demonstrated in the content analyses and case studies. The strong support for the ecosystem protection theme indicates that the incorporation of this theme into the specific battlegrounds would likely be a

stronger legal interpretation of the Act than would adoption of the precautionary approach. In this chapter, I also gauge alternative approaches to examining the ESA's legislative history that I did not adopt. These alternatives include the role of political party, rollcall votes, interest group politics, and geography in describing and analyzing the Act's legislative history. They are useful but omit important information. I close with an evaluation of the "neglected battlegrounds" of funding, litigation, and federalist issues that are important to consider in understanding the law's implementation.

Next, I evaluate the law's implementation (Chapter IX). I selected the northern spotted owl and black-tailed prairie dog as case studies. Both cases provided the U.S. Fish and Wildlife Service (FWS)²² with ecosystem-level protection and precautionary opportunities. The cases were also marked by heated political controversy. Despite seeming consensus on the need to protect ecosystems, FWS did not embrace opportunities for ecosystemic protection, nor did the agency implement the ESA in a precautionary way. I suggest that the two themes become subsumed by economic conflict (both real and perceived) when the Act is implemented, and that the goal of species protection can quickly be replaced by the agency's goal of avoiding controversy. However, the case studies reveal that even the highly regarded ecosystem theme might encounter implementation obstacles when it threatens economic interests. The precautionary principle's integration into ESA policy is likely to be limited to those elements of precaution already present within the statute,

²²There are two agencies that administer the ESA, the FWS and the National Marine Fisheries Service. My focus is on FWS, as this agency has purview over the vast majority of listed species.

especially given continued disagreement over applying a precautionary approach to the Act.

In conclusion, I indicate how my research contributes to the study of endangered species policy in the U.S. (Chapter X). My findings included: 1) ecosystem protection has been a consistent theme in the legislative history I examined; 2) the legislative history did not resolve the issue of what actions are needed in the face of scientific uncertainty; 3) revisiting the ESA battlegrounds provided a method for considering current controversies by examining the congressional intent behind the Act; 4) the valuational analysis illustrated how the ESA conflict goes beyond a simple economy versus environment dialectic; 5) the qualitative analysis provided a means for examining the Act's congressional intent; and 6) the case studies illustrated the FWS's inability or unwillingness to implement the ESA in a precautionary and ecosystemic management way, and I consider how institutional and political factors contribute to agency behavior.

It is my hope that this research will encourage a re-examination of biodiversity policy in the U.S. While the ESA is clearly a strong statute, its implementation has been dysfunctional and its controversies many. By scrutinizing the congressional intent and history of the Act and moving beyond the economy versus environment dialectic, I hope to contribute to improving U.S. policies toward imperiled species and ecosystems.

CHAPTER II

LITERATURE SURVEY

Despite widespread support for the ESA at its passage,¹ this law is now deeply embroiled in controversy. Calls for reform come from conservationists and private property rights advocates alike. The ESA was described by Supreme Court Justice Antonin Scalia as capable of imposing “unfairness to the point of financial ruin...upon the simplest farmer who finds his land conscripted to national zoological use.”² Other characterizations of this law include that it is the “pit bull of environmental laws” and a “sword aimed at the jobs, families and communities of entire regions.”³ Alternatively, Houck (1993: 279) argued that the “ESA has accommodated the overwhelming majority of human activity without impediment.”

Almost all discussions surrounding the ESA quickly lead to prescriptions for reform. First, advocates for increased protection of endangered species argue that the

¹The ESA passed unanimously in the Senate on July 24, 1973. The conference report was agreed to in the Senate on December 19, 1973 without a recorded vote. The House bill, HR 37, was opposed by 12 members of the House when it was passed on September 18, 1973. The final vote on the conference report for the ESA encountered only 4 dissenting votes in the House (although 73 legislators did not vote). See Congressional Record, 1973, pp. 25662 - 42916. That is not to say, however, that there were no debates leading up to the ESA’s passage. Salzman (1990), for instance, notes two discussions – one on the federal/state relationship under the proposed law and another on the trade in endangered species internationally.

²This Scalia quote is excerpted from his dissenting opinion in Babbitt v. Sweet Home Communities for a Greater Oregon (515 US 687 (1995)) as cited in Sheldon (1998).

³Houck (1993) cited both of these quotations. The first is a quote by Donald Barry of the World Wildlife Fund, and the second statement from a speech by President George Bush in 1992, in reference to the northern spotted owl controversy.

ESA itself needs to be substantively modified. They argue that the current terms of the Act are insufficient and are failing in its mission to prevent species from going extinct in the U.S. (Rohlf 1989; Doremus 1991; Cole 1992; Smith et al. 1993a; Kunich 1994; Drozdowski 1995). A second group of endangered species advocates argues that the present Act is adequate, it only requires more energetic enforcement and increased funding (O'Connell 1992; Bean 1992; Miller et al. 1994).

The calls for reform from those seeking to weaken endangered species protection⁴ primarily consist of arguments that the ESA itself needs to be substantively modified or repealed to accommodate economic interests and balance human utilitarian concerns with species protection (Mann and Plummer 1992; 1995; Pombo 1998; Simmons 1999). In their view, this balance will increase societal acceptance of endangered species protection and therefore lead to a more effective program.

The purpose of this dissertation is to examine how and whether ecosystem management, an implicit precautionary principle, and diverse values factored within the ESA's legislative history. To make my study more salient for present ESA debates, I delineate "key ESA battlegrounds" that currently hinder its implementation. A proviso at the outset is that most scholars writing on the ESA would put conflicts with economic growth, private property rights, states rights, agency funding, and

⁴I am purposefully simplistic about who is an opponent species protection. Some authors might argue that, by making the ESA more flexible, they will foster more support for ESA implementation and therefore assist endangered species in the long run (e.g., Mann and Plummer 1995). Alternatively, they might argue that they want to avoid unnecessary species listings so that resources could be allocated toward those species in most dire need of assistance. Motivations for pushing for various ESA reforms may be very complex, with some political actors agreeing to attenuations of ESA prohibitions in order to "save the Act."

citizen standing issues toward the top of their list of controversies. Instead of focusing on these broader issues, I have chosen to highlight where they play important roles in specific battlegrounds.

Overview of the ESA

Before enumerating key ESA battlegrounds, a brief overview of the ESA itself is in order. The ESA's purpose is to prevent species extinction and promote recovery by providing imperiled plants and animals with protection from the threats that caused their imperiled status. A further stated purpose is to protect the ecosystems in which imperiled species are found.⁵ The law offers broad coverage, with native and foreign species, plant, vertebrate, and invertebrate species, subspecies, and distinct population segments of vertebrate species eligible for protection, with the exception of insect "pests."⁶

Species must be listed under the ESA to qualify for the Act's protections. Species determined to be in danger of extinction qualify as endangered, and species determined to be likely to become endangered in the foreseeable future qualify as threatened, under Section 4(a). This listing determination is to be made "solely on the basis of the best scientific and commercial data available."⁷ If a species faces one of the following threats, it qualifies for listing: habitat loss, overexploitation, disease or

⁵16 U.S.C.A. § 1531(b); Section 2(b).

⁶Defined as those "species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man." 16 U.S.C.A. 1532(6); Section 3(6).

⁷16 U.S.C.A. § 1533(b)(1)(a); Section 4(b)(1)(a).

predation, inadequacy of existing conservation mechanisms, and other natural or human factors.⁸ By regulation, protections provided to endangered species have generally been extended to threatened terrestrial species, as well. Threatened marine species have been regulated on a case-by-case basis.⁹

The agencies responsible for making this listing determination and implementing the ESA are the FWS, within the Department of Interior, and the National Marine Fisheries Service (NMFS), within the Department of Commerce. FWS has jurisdiction over all species except marine species, which are under the purview of NMFS. Within ninety days of receipt of a petition, FWS or NMFS must decide whether the petition contains information sufficient to require a status review.¹⁰ If answered in the affirmative, a review of the species' status commences and is scheduled to conclude within 12 months of receipt of the petition. At the 12-month stage, FWS or NMFS must decide whether the species warrants or does not warrant listing, or whether it warrants listing but is precluded due to other pending listing proposals.¹¹ If the species is determined to warrant listing, a notice must be promptly published and finalized within one year of its publication.¹² Emergency listing determinations temporarily suspending the normal listing procedure may be made in the event of "a significant risk to the well-being of any species of fish and

⁸16 U.S.C.A. § 1533(a)(1)(A-E); Section 4(a)(1)(A-E).

⁹See 50 C.F.R. § 17.40-17.48 (1998); Meltz 1994.

¹⁰16 U.S.C.A. § 1533(b)(3)(A); Section 4(b)(3)(A).

¹¹16 U.S.C.A. § 1533(b)(3)(B); Section 4(b)(3)(B).

¹²16 U.S.C.A. § 1533(b)(6)(A); Section 4(b)(6)(A).

wildlife or plants.”¹³ The same timeline is provided for critical habitat (habitat deemed essential to species survival and/or recovery) designation, but exceptions are allowed to prevent listing delay.¹⁴

After listing, key protective components of the ESA include protection from jeopardy by federal agency action, prohibition on take of listed species, and recovery plan development. First, Section 7 requires that federal agencies, and non-federal actors requiring federal permits, ensure that their actions do not jeopardize listed species or adversely modify their critical habitat. Action agencies must consult with FWS or NMFS when there exists the possibility of jeopardy.¹⁵ This consultation may be informal or formal. If the latter, FWS or NMFS must produce a biological opinion determining whether the proposed action will result in jeopardy and if so, whether mitigations are available that will avoid jeopardy.¹⁶ Second, Section 9 of the ESA prohibits take of listed species.¹⁷ Take is defined very broadly: “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”¹⁸ Harm has been defined to include habitat modification. The definition of harm has gone through several iterations, with the most recent regulation defining harm as “significant habitat modification or degradation where it actually

¹³16 U.S.C.A. § 1533(b)(7); Section 4(b)(7).

¹⁴16 U.S.C.A. § 1533(b)(6)(C); Section 4(b)(6)(C).

¹⁵16 U.S.C.A. § 1536(a)(2); Section 7(a)(2).

¹⁶16 U.S.C.A. § 1536(b)(3)(A); Section 7(b)(3)(A).

¹⁷16 U.S.C.A. § 1538(a); Section 9(a).

¹⁸16 U.S.C.A. § 1532(18); Section 3(18).

kills or injures wildlife.”¹⁹ Third, recovery plans are mandated under Section 4(f), and are to provide “for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he [the Secretary of Interior or Commerce] finds that such a plan will not promote the conservation of the species.” Conservation, along with “conserve” and “conserving,” is defined broadly as:

...to use and the 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 this Act 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.²⁰

Exemptions from the take prohibition are found in provisions for incidental take on private land by private parties when those parties have developed conservation plans specifying how they will minimize take,²¹ and on federal land or by federal actors, who also must specify how they will minimize take.²² Reduced take prohibitions for reintroduced populations are also available if those populations are designated as experimental, non-essential.²³ Threatened species do not automatically enjoy the full protections of the ESA; the Secretary promulgates rules under Section

¹⁹See 50 C.F.R. § 17.3 (1994).

²⁰16 U.S.C.A. § 1532(3); Section 3(3).

²¹16 U.S.C.A. § 1539(a); Section 10(a).

²²16 U.S.C.A. § 1536(o); Section 7(o).

4(d) that specify whether a threatened species is to enjoy full protection from take or whether take of a threatened species is allowed in certain circumstances. There is also a mechanism for exemption from the jeopardy prohibition in the event of an irresolvable conflict between a proposed action and the mandates of Section 7.²⁴ This seldom-used exemption process involves exhaustion of good faith consultation, reasonable and prudent alternatives to the proposed action, and a review process to discern whether a project qualifies for exemption consideration.

Finally, enforcement provisions of the ESA are found at Section 11. Civil and criminal penalties for ESA violations are quite harsh, with a civil penalty of up to \$25,000 per violation, and a criminal penalty of up to \$50,000, one-year imprisonment, or both.²⁵ There is a wide provision for citizen lawsuits, stating that “any person may commence a civil suit on his own behalf...to enjoin any person, including the United States and any other governmental instrumentality or agency (to the extent permitted by the eleventh amendment to the Constitution), who is alleged to be in violation of any provision of this Act or regulation issued under the authority thereof...”²⁶ Citizens may petition for the listing or delisting of a species and the designation of critical habitat, with explicit time lines mandated for agencies to respond to these citizen initiatives.²⁷ Citizens may even bring litigation against those

²³16 U.S.C.A. § 1539(j); Section 10(j).

²⁴16 U.S.C.A. § 1536(h); Section 7(h).

²⁵16 U.S.C.A. § 1540(a), (b); Section 11(a), (b).

²⁶16 U.S.C.A. § 1540(g); Section 11(g), emphasis added.

²⁷16 U.S.C.A. § 1533(b)(3); Section 4(b)(3).

agencies imbued with ESA enforcement for failing to enforce the act. Attorneys' fees may be awarded to citizen litigants.²⁸

Key ESA battlegrounds

The issues in the statute and implementation of the ESA that I consider as most important involve listing, reintroduction/translocation, jeopardy, habitat conservation plans, critical habitat, recovery plans, and prohibitions on take of endangered species. I review each and highlight where ecosystem management and the precautionary principle factor in these specific areas.

Listing decisions

One of the most important criticisms of the implementing agencies made by ESA proponents is the substantial delay of listing decisions. The issue of listing delays is of particular importance as species have gone extinct while awaiting ESA protection (Salzman 1990; Kunich 1994; McMillan and Wilcove 1994; Vaughan 1995; Mandel 1996; Brown 1997; Bechtold 1999; Whritenour Ando 1999), and without being formally listed, species are not provided with ESA protections.²⁹

²⁸16 U.S.C.A. § 1540(g)(4); Section 11(g)(4).

²⁹As Rohlf put it, instead of being a pit bull, "the ESA is as meek as a kitten unless an imperiled creature appears on the statute's lists of threatened and endangered species" (1994: 619). However, one could argue that unlisted species enjoy protections in two ways: 1) listed species can act as umbrella species, when their habitat requirements are such that unlisted species can enjoy collateral benefits from the protection of a listed species. The grizzly bear (*Ursos arctos*) comes to mind as a paragon umbrella species, given its requirement for millions of protected acres; 2) habitat conservation

Estimates range from 80-300 species having gone extinct while awaiting ESA protection (Salzman 1990). GAO confirmed that, through 1991, FWS was late in 74% of its 90-day findings and 67% of its 12-month findings (GAO 1992).

Alternatively, ESA opponents have argued that species listings encourage non-cooperation by private landowners, which may result in increased species imperilment. These authors also often portray species listings as being premature or lacking sufficient biological basis (Mann and Plummer 1992; 1995). The lack of scientific consensus on the very definition of a species (Wetzer 1993; Hill 1993; Mandel 1996) complicates the picture. In the face of scientific uncertainty, courts tend to defer to agency discretion.

Ecosystem arguments play a role in listing debates. For example, an ecological perspective entails the view that all native organisms deserve protection from extinction, as all are embedded in ecosystems that may be disrupted if a species goes extinct.³⁰ Another potential ecological argument is that some species are more important than others, given their status as a keystone species or ecosystem engineer (Noss 1991; Kunich 1994; Miller 1998/1999). FWS and NMFS have stated their commitment to an ecosystem approach to endangered species policy (GAO 1994a; FWS 1997). Some reauthorization bills in the 1990s recognized the importance of

plans require conservation measures for unlisted species, which theoretically provide them with protections as if they were actually listed. Notwithstanding these arguments, a critically imperiled species which is not listed, or whose listing is much delayed, will suffer from its unlisted status. Examples include the Alabama sturgeon (Scaphirhynchus suttkusi) (Vaughan 1995) and the bull trout (Salvelinus confluentus) (Bechtold 1999).

³⁰Perhaps the most famous treatment on this issue is Aldo Leopold's concept of a "land ethic," abbreviated here as the idea that "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (Leopold 1966: 262).

protecting keystone and indicator species to protect ecosystems.³¹ In fact, in 1994 Laura Spitzberg (232) indicated that “[i]t will be surprising if the Act is not amended to include an ecosystem-based approach to preservation.” The primary way the ESA could do this, in Spitzberg’s estimation, is to focus listing priorities on keystone and indicator species whose protection would safeguard ecosystems. Spitzberg noted that this modification could be made through an administrative or legislative change.

The precautionary principle has also featured regularly in listing debates. As noted above, proponents and opponents of species use appeals to science to justify either delay or prompt listings. In addition, scientific disagreement may surround whether to designate a species as threatened or endangered, whether to protect a full species, a subspecies, or a distinct population segment, and the listing priority number a petitioned species should receive.

The assignment of listing priorities is determined by the listing priority guidance FWS and NMFS use to rank listing petitions. If a species that merits listing is assigned a low priority number,³² FWS or NMFS may determine that it warrants listing but is precluded by higher priority species. Indeed, there has been an increasing trend by FWS to designate a petitioned species as warranted for listing as threatened or endangered, but precluded by the need to list higher priority species (Houck 1993; Spitzberg 1994). Such a “warranted, but precluded” designation results

³¹Spitzberg (1994) indicated that Sens. John Chafee (R-RI) and Max Baucus (D-MT) introduced S. 921 on May 6, 1993. This bill emphasized ecosystem conservation rather than conservation of individual species. In addition, H.R. 2043, introduced by Rep. Gerry Studds (D-MA), prioritized species whose protection would benefit other species in the same ecosystem.

³²A “lower” listing priority number would actually be a higher numerically. The ranks range from 1-12, with species ranked 1 being the highest priority, and species ranked 12 being the lowest. See Appendix D.

in the petitioned species being considered a candidate species. Through 1991, GAO reported 114 species determined by FWS and NMFS to be warranted but precluded by higher priority actions. Of these species, almost half (56) had been determined warranted but precluded at least eight years prior (GAO 1992). Indeed, Houck (1993: 286) described the warranted but precluded category as a “black hole for unlisted endangered species.”

The number of species identified as candidates considerably exceeds the number of listed species. In February 1996, the list of candidate species stood at 3,600, while listed species numbered approximately 1,000. The FWS eliminated the majority of the species on the candidate list at that time (Lieben 1997). A related controversy is the recent development of candidate conservation agreements, which are generally developed to avert species listings (FWS 1997). Debate centers over whether these agreements provide adequate, enforceable mechanisms for species protection and consequently whether they provide a sound basis for not listing a species.

Scientific debate also surrounds whether to delist or downlist a species. Some commentators have rated the ESA based on its number of “success stories” or delistings (e.g., Mann and Plummer 1995; Rothbard 1998). Others argue that such an assessment standard is inaccurate, as it does not consider protections afforded to species still listed under the ESA (Bean 1992, Rachlinski 1998; Doremus and Pagel 2001). Doremus and Pagel (2001) even argued that most listed species should remain listed forever. In their estimation, delisted species, although possibly having more robust population sizes than when listed, will continue to suffer from the threats that

caused their initial imperilment unless adequate non-ESA protections are enacted for delisted species. Cheney (1995) similarly argued that the time frame in which the ESA has operated is inadequate to assess the law's efficacy.

Consultation

The ESA's Section 7 requires that federal agencies not jeopardize a listed species. This section has been the most contentious scene of battle in ESA controversies since the 1978 TVA v. Hill decision. In that case, the Supreme Court affirmed the injunction of the Tellico dam, a hundred-million dollar dam that was 90% complete, because its completion would jeopardize the snail darter, a three-inch long species of perch, in its critical habitat on the Little Tennessee River. This episode encouraged the congressional overhaul of Section 7 in 1978, with the provision for an exemption mechanism.

The mechanism set up to decide on exemptions is the Endangered Species Committee. This high-level interagency panel can meet to decide whether to exempt projects from the ESA that, after good faith attempts at consultation, had resulted in irresolvable conflicts between FWS/NMFS and an action agency. The Endangered Species Committee has therefore been nicknamed the "God Squad" because of its onerous responsibility of determining which species to knowingly jeopardize. This exemption has been little used, possibly due to the unobtrusive way in which consultation has been conducted.

There is no question that FWS and NMFS frequently employ Section 7. However, analysis of Section 7 enforcement indicates that this facet of the ESA, as implemented, has not significantly impeded management activities. A GAO report released in 1992 examined Section 7 implementation for 1987-1991, finding that few projects were prohibited via this section. Of all consultations conducted over the five-year period, 89% (16,161 cases) were resolved informally. Of the 10% (2,050 cases) that involved formal consultation, 90% (1,869 cases) resulted in biological opinions finding that the proposed project would not jeopardize the listed species. Of the remaining 10% (181 cases) of biological opinions that find jeopardy to a listed species, 90% were allowed to proceed with reasonable and prudent measures attached. Thus, from the original 18,211 cases, only 23 biological opinions, or 0.001%, resulted in outcomes not allowing a project to proceed (GAO 1992).

Oliver Houck (1993) reported similar findings from a World Wildlife Fund study conducted for the same time period. In addition, Houck reviewed 99 FWS biological opinions that found jeopardy in 1992. In almost all of the opinions, reasonable and prudent measures were offered by the FWS to allow the project to proceed.

Another analysis, by Jason Salzman (1990), focused on the 10,504 informal and 421 formal consultations conducted by FWS in 1986. Of these, FWS found that agency actions jeopardized species in only 0.7% of all consultations. Only two projects out of these 11,000 consultations were prohibited. This project stoppage rate amounts to 0.018%. Finally, Woods (1999) noted that the ESA resulted in withdrawal

of only 22 out of 201,000 projects reviewed from 1990-1996. Section 7, which is supposed to be the hammer of the ESA, seems to be frequently, but lightly applied.³³

The ultimate decision on whether to proceed with a project where jeopardy has been found is under the purview of the agency whose activities are being analyzed. The actual formal consultation document issued by FWS or NMFS, the biological opinion, is an advisory document. However, action agencies make themselves vulnerable to citizen lawsuits when they ignore biological opinions finding jeopardy (Salzman 1990). When the action agency is a federal land manager, the Section 7 issue becomes especially interesting. Public lands comprise over 30% of the United States, the majority of which are under the administration of the USFS and U.S. Bureau of Land Management (BLM). The ESA's Section 7 would seem to hold special promise for the recovery and protection of listed species on these public lands.

However, USFS and BLM both manage their lands under the doctrine of "multiple-use," which requires that public lands serve a variety of uses, from extractive to protective. These land managing agencies have been criticized as being beholden to extractive interests. For example, accounts of the northern spotted owl controversy in the Pacific Northwest illustrated the chronic intransigence of the USFS

³³There are several possible reasons for this "light" application of consultation, ranging from political interference to lack of FWS resources. James Salzman (1990: 331) discussed an EPA-funded review of consultations on EPA pesticide registration, finding that,

They studied thirty-six cases where the pesticide use was such that its anticipated effect on listed species should have triggered a consultation. They found twelve [cases] in clear violation of the Act. In six, registration was completed before the consultation; five did not include the steps that the Office of Endangered Species found in consultation to be necessary conditions of registration, nor any other similar precautions; and in one, registration was completed without a consultation being initiated... The general problem is not confined to the EPA. The Service does not appear to have range maps, let alone recovery plans, for listed species in many cases, thus making consultation rather difficult.

and the BLM in protecting sufficient old-growth forest for the owl's needs (Bonnett and Zimmerman 1991; Grumbine 1992; Flournoy 1993; Yaffee 1994a; 1994b). The northern spotted owl controversy of the early 1990s also demonstrated how local antagonism could result from endangered species protection on public land. The conflict around the owl stemmed from the logging community's perception that owl protection would threaten local economies (Bonnett and Zimmerman 1991; Flournoy 1993; Yaffee 1994a; 1994b).

The perceived threat to local economies has inspired use of appropriations riders to circumvent Section 7 prohibitions. The potential impact of these riders on the democratic process and public participation in endangered species policy bears consideration. There have been two particularly notable instances where riders have been used to circumvent Section 7. First, in the case of the Tellico Dam, after the Supreme Court ruled that the protection of the snail darter trumped the continued construction of Tellico and following refusal of Endangered Species Committee to exempt the dam and allow dam closure, the Tennessee congressional delegation obtained congressional approval for dam closure via an appropriations rider heard for a mere 42 seconds on the floor (Plater 1982; Tilt 1989).³⁴ Second, in the case of the

³⁴The chronology of the snail darter issue makes the 42-second rider especially disconcerting. As early as 1971, the Environmental Defense Fund litigated over the Tellico Dam, under the National Environmental Policy Act. The project was enjoined, but eventually proceeded under appeal. In 1973, the snail darter was discovered in the Little Tennessee River and in 1975 the snail darter was listed as endangered. In 1976, its critical habitat was designated between miles 0.5 and 17 of the Little Tennessee River. Also in 1976, the ESA lawsuit *TVA v. Hill* was filed, and the Court of Appeals enjoined Tellico. The Supreme Court upheld that injunction in its decision on June 15, 1978. The culmination of a 7-year struggle over the fate of the Tellico Dam and the snail darter was thus decided via this appropriations rider. Chronology for Tellico issue found in: Hearings before the House Subcommittee on Fisheries and Wildlife Conservation and the Environment. June 28, 1978. Serial No. 95-40. Pp. 764 – 768. Written testimony of David Freeman, Chairman of Tennessee Valley Authority. Moreover, Rep. John Duncan, who was responsible for the amendment, waived the clerk's reading of

northern spotted owl, a rider called Section 318 was attached to a Senate general appropriations bill. This nondescript rider briskly passed through both houses and overrode a court injunction that had stopped the logging of old-growth forests on USFS land in the Pacific Northwest on behalf of the northern spotted owl (Grumbine 1992).³⁵ Section 318 was one of several riders used by the Pacific Northwest delegation to avoid logging prohibitions that threatened the owl (Foley 1992).

Even on those lands that prioritize endangered species protection, National Wildlife Refuges, recovery of listed species has been hampered by inadequate funding. These funding inadequacies have been significant, as 14 of 15 locations GAO visited reported funding constraints limiting recovery activities. FWS reported that Refuge funding is less than half of what is required for the system to fully achieve its objectives (cited in GAO 1994c).

Moreover, a minority of listed species habitat exists on National Wildlife Refuges. GAO (1994c) reported that only 24% of listed species occur and/or have habitat on these lands. One explanation for this small percentage is the arbitrary way in which the ESA's land acquisition provision has been implemented. For instance, Mann and Plummer (1992) criticized FWS acquisition of 6,200 acres at a cost of \$2.6 million for the dusky seaside sparrow (*Ammodramus maritime nigrescens*), now an extinct species, despite that species' low ranking in various agency prioritization schemes. However, despite flaws in land acquisition, GAO found that those listed

the measure before the word Tellico was uttered. House members were apparently ignorant of what they were voting for (Foley 1992).

³⁵As Grumbine put it, "Just as the Endangered Species Act and the diversity provisions of NFMA [National Forest Management Act] were being forced upon the Forest Service by the courts,

species occurring on Refuges are more likely to be improving or stable in status compared with those not found on refuges (GAO 1994b).

The consultation issue touches on ecosystem management and the precautionary principle. In terms of the former, the public lands dimension of the issue triggers the possibility of using federal lands as a flagship for species recovery under an ecosystem management approach. Evidence suggests that federal land managers have begun to speak in these terms (GAO 1994a; Grumbine 1997). What is up for debate is the extent to which this discourse has resulted in effective species and ecosystem protection.

The precautionary principle directly bears on consultation, as scientific uncertainty regarding the impacts of a risky federal action on a species would result in more jeopardy decisions, more formal consultations, and possibly more enjoined projects. Alternatively, rejection of the precautionary principle would result in fewer jeopardy decisions and permission for projects to proceed in the absence of scientific certainty demonstrating negative impacts on listed species.

Species reintroduction and translocation

The reintroduction and translocation of species is becoming increasingly important in endangered species recovery. This is due, in part, to listing delays, as cited above. One review of the status of ESA listed species revealed that the median population sizes and numbers of plant and animal populations at time of listing is so

Hatfield and Adams [the sponsors of Section 318] performed a sleight of hand that made a mockery of

low as to “suggest a high risk of extinction and a low probability of recovery” (Wilcove et al. 1993: 92). These authors indicated that the sizes and numbers of vertebrate populations at time of listing are low enough to recommend establishing captive populations to avoid total extinction. The median population size of plants at time of listing is a mere 119.5 individuals. The biologists writing that review concluded that FWS and NMFS “are simply not protecting imperiled taxa soon enough” (Wilcove et al. 1993: 92).

With postponed listing actions, the strategy of reintroducing species is gaining prominence in recovery plans. In fact, Tear et al. (1993) reported that 70% of recovery plans include translocation, and 64% include reintroduction. They confirmed this finding in a more recent review of recovery plans, noting a frequent reliance on reintroduction. This indicates species are critically imperiled when listed, mandating increased reliance on high-cost conservation strategies that are less likely to succeed (Tear et al. 1995).

Unfortunately, analyses of endangered species reintroduction projects found that they generally fail (Griffith et al. 1989; Reading et al. 1991; Reading 1993). Reading (1993) attributed this to a lack of values analysis and organizational strategies for species reintroduction. Reading et al. (1991) cited the need to integrate biological, organizational, power/authority, and socioeconomic considerations into the design of reintroduction projects. The values of local people may clash with the goals of a reintroduction program (Reading 1993; Doremus 1999b). Barker (1993) noted intense local opposition to wolf recovery in Yellowstone and Reading (1993)

both the law and the democratic process” (1992: 147).

found significant local antagonism to black-footed ferret reintroduction in Montana. Clark (1997) also stated that the complex human and public policy features, if ignored, may lead to reintroduction failure.

Under 1982 Amendments as codified in ESA Section 10(j), reintroduced populations can be defined as experimental, non-essential populations that do not receive the full protections of the Act.³⁶ Doremus (1999b) discussed how FWS has relied on the non-essential designation to make reintroductions more politically palatable to property rights advocates and local communities. This designation allows reintroduced animals to be controlled in some instances – through direct take or translocation – with potentially negative biological implications for recovery. These control measures can prevent the natural movement of reintroduced animals,³⁷ drive up costs of recovery, pose possible biological and ecosystem problems to reintroduced species and their ecosystems, and send a message that existing human land uses are more important than reintroduced species. Alternatively, another set of authors recommended changing broader public attitudes, which are currently protectionist, to being more tolerant of wolf control given human/wolf conflicts (Mladenoff et al. 1997). Debate over the control of reintroduced species involves scientific dimensions given frequent reliance on biological impacts (or the lack thereof) arguments by both sides.

³⁶Experimental populations receive the following treatment: Section 7 requires the acting agency to confer with FWS on the species, which is informal and has a lower threshold for fulfillment. In addition, incidental take and direct take of experimental population individuals may be allowed (Doremus 1999b).

³⁷Mladenoff et al.'s (1997:30) observation that, "even low levels of immigration can be critical to population viability under less than ideal conditions," suggests that biological harm may be caused by containing reintroduced populations.

Another important scientific issue is the extent to which confining and manipulating endangered species in a captive breeding context impacts those individuals and species biologically (Miller et al. 1996). Unknown consequences of captivity and technical tools, such as monitoring devices, translocation, and containing reintroduced animals in particular areas, may degrade the “wildness” of reintroduced animals (Doremus 1999b). Moreover, expected survival rates of individual animals in reintroduction and translocation efforts may be under 50% for some species.³⁸ A recent report on grizzly bears (*Ursos arctos*) indicated that relocation harms the survival rates of translocated bears (Blanchard 1995). Homing behavior and large movements of animals from the release site have also been problems in carnivore relocation efforts (Miller et al. 1998/99). These issues underscore concerns over increasingly relying on relocation and reintroduction as conservation strategies. Scientific uncertainty in species reintroduction is always an issue as, “[w]ild animals in wild settings have a way of upsetting the best laid plans.”³⁹

There may be an increasing tendency by FWS/Interior to give local communities near reintroduction areas an inordinate voice in endangered species policy decisions (Doremus 1999b). An example is an Interior proposal for a Citizen Management Committee that would exclusively comprise members of local communities in Idaho and would make binding policy decisions on human/grizzly

³⁸See Truett et al. 2001, who cited studies on translocating prairie dogs where survival rates were 0-40%. Coffeen and Pederson 1993 described translocations of prairie dogs where no prairie dogs survived.

³⁹The citation is from Reading et al. (1991: 1) who quoted Booth (1988).

bear conflicts. Despite strong national public support for grizzly bear conservation, decisions could be made that counter the species' interests and the broader American public would have little recourse (Doremus 1999b). On the other hand, the Citizen Management Committee seems to be in line with public policy calls for participatory decisionmaking (Fischer 1993; Laird 1993).

Ecosystem concerns arise in the reintroduction/translocation issue, given the potential for captive breeding and other ex situ methods to pull time and finances away from in situ efforts to protect species where they naturally exist. This tension has been a part of ESA debates since at least the Tellico controversy, wherein Dam opponents argued for protection of snail darters through protection of its habitat in the Little Tennessee River, while Dam promoters argued for translocation of snail darters to the Hiwasee River to accommodate both fish and dam. The reintroduction issue, from an ecological perspective, includes recognition that part of the value of species is their ecological functions within natural systems.

The precautionary principle also factors in reintroduction. The application of a precautionary approach would mandate earlier listing to avoid the need for widespread use of reintroduction, especially given the difficulty of successful reintroduction. In addition, rather than using translocation and reintroduction programs to minimize conflict with human land uses, a precautionary approach would suggest that these tools be used and designed to prevent species extinction and facilitate species recovery.

Habitat conservation plans

Private parties must develop Habitat Conservation Plans (HCPs) to qualify for an incidental take permit of a listed species.⁴⁰ Although a product of the 1982 hearings, the provision for HCPs was little-used until the mid-1990s. Bill Clinton's Secretary of Interior Bruce Babbitt dramatically stepped up use of HCPs starting in 1994. Since then, HCPs have exploded in number and scope. As of June 30, 1997, 225 HCPs have been finalized by FWS, with 200 more in development. Dozens of these HCPs cover more than 100,000 acres and some more than 500,000 acres. The largest is the Washington State HCP, encompassing 1.6 million acres (Sheldon 1998).

Scientific uncertainty plays an important role in the debate over HCPs. Scientists have criticized present HCPs, which can have a duration of 50 years or more, for overlooking the realities of biological uncertainty and ecosystemic flux (Noss et al. 1997; Sheldon 1998). Environmentalists have also criticized HCPs for their lack of adequate scientific information and scientific review and their inclination for basing mitigation on landowner practicality, rather than species requirements (Jester 1998; Hood et al. 1998; Sheldon 1998).

The main tension in habitat conservation planning lies between a desire to provide landowners with certainty and predictability about their responsibilities to listed species and the lack of biological information available for most species (Thornton 1991; Fisher 1996; Derry 1998; Sheldon 1998). Remedying this tension in

⁴⁰16 U.S.C.A. § 1539(a)(2); Section 10(a)(2).

favor of landowner predictability may contravene congressional intent⁴¹ and, on that and other bases, promises to be an increasing target of future litigation.

HCPs are the main provision within the ESA for addressing species protection on private land. Species conservation on private land is particularly important (Meltz 1994). Studies have documented that 75% of listed species find the majority of their habitat on non-federal lands (Natural Heritage Data Center Network 1993), while over 90% of listed species depend on nonfederal lands for a portion of their habitat (GAO 1994b). Private landowners may feel threatened by potential land use restrictions stemming from endangered species protection (Reading 1993) or the implicit criticism of rural land uses that have resulted in species extirpations and the consequent need for reintroduction (Doremus 1999b). Conservationists increasingly note the need for endangered species policy to include incentives for landowners to conserve species on their lands (e.g., Bean 1992; Noss et al. 1997; Wilcove 2000).

Using HCPs touches on ecosystem management and the precautionary principle. HCPs, properly designed, have been advocated as an ecosystem management tool (Noss et al. 1997) and are certainly one of the most promising ways to address species conservation on private lands. In addition, the precautionary principle bears directly on resolving the tension between scientific uncertainty and private property advocates' desire for certainty. Under a precautionary approach,

⁴¹For instance, Congress built in requirements to modify HCPs in the event of “unforeseen circumstances”, to provide significant and effective mitigations for destruction of habitat and potential harm of listed species, to enhance species survival and habitat, and to prevent the reduction of the likelihood of survival and recovery of listed species in the wild (Sheldon 1998, ESA Section 10 (a)). Conversely, FWS policy has been to raise the threshold for HCP modification to “extraordinary circumstances”, in the language of its “No Surprises Policy.” In addition, the agency has largely skimmed on mitigation requirements, has not pushed for enhancement of species survival through

HCPs might, for instance, entail an adaptive management component that provides increasingly effective responses as more scientific questions are answered during the course of an HCP's term (Noss et al. 1997). The cumulative impact of multiple incidental take permits would also be addressed under a precautionary regime.

Critical habitat designation

One of the most enduring controversies of the ESA is designation of a species' critical habitat. The landmark Supreme Court decision in TVA v. Hill traces directly to the issue of critical habitat, as the Tellico Dam project was enjoined due to the adverse modification it would cause to the snail darter's critical habitat in the Little Tennessee River.⁴² The ensuing controversy, rooted in the "fear of halting federal projects in order to protect obscure organisms with strange names" led Congress to re-examine the issue of critical habitat and Section 7, which provides the major mechanism for protecting critical habitat (Salzman 1990: 317).⁴³

The issue of critical habitat designation continues to come under fire, with FWS denying its usefulness and refusing to designate, and environmentalists

HCPs, and grants 10 (a) incidental take permits even where such action reduces the potential for species recovery, as long as it does not reduce potential for that species' survival (Sheldon 1998).

⁴²See TVA v. Hill 437 US 153 (1978); Salzman 1990.

⁴³Section 9 also provides a critical habitat hook, given its prohibition on harm, that includes destruction of habitat essential to a species. If a habitat is designated critical, there is greater likelihood that a court reviewing the situation will find a violation of Section 9 (Yagerman 1990). This was the case in both the Palila cases, which found that grazing of non-native ungulates on critical habitat of a Hawaiian bird called the Palila (Loxioides bailleui) constituted a Section 9 violation. See Palila v. Hawaii Department of Land and Natural Resources (Palila I) at 639 F.2d 495 (9th Cir. 1981) and Palila v. Hawaii Department of Land and Natural Resources (Palila II) at 631 F. Supp 787 (D. Haw. 1985).

increasingly litigating for designations. Despite the statutory requirement to promulgate critical habitat, as of 1994 only 13.2% of listed species had critical habitat designations (Rachlinski 1997; McDonald 1998). Moreover, commentators have remarked that the legislative history on critical habitat unequivocally affirms the congressional view that critical habitat designation is essential to species recovery and that only rarely should critical habitat not be designated (Salzman 1990; Yagerman 1990; McDonald 1998). Critical habitat designation has twice been revised in the ESA, first in 1978 and again in 1982. In 1978, the process for designation was modified to incorporate an economic analysis when evaluating whether to designate. In addition, the scope of the designation was narrowed to include only habitat “essential to the conservation of the species.”⁴⁴

However, Congress also demonstrated its belief that critical habitat is essential to ESA success in 1978 by linking species listings and their critical habitat designation. It provided a two-year deadline for critical habitat designation that, if not met, required withdrawal of the listing proposal. The coupling of the two functions was meant to speed up the critical habitat designation process (McDonald 1998). That linkage, however, backfired, as FWS found itself unable to complete economic analyses of habitat designation in time. As a result, of 2000 species proposed for listing in November 1978, only 5% had been listed and less than 1% had designated critical habitat, by the time Reagan took office. Listings consequently faltered under

This additional use of critical habitat is important, given its application to private parties, while Section 7 applies only to federal lands or to activities under federal purview.

⁴⁴See 16 U.S.C.A. § 1532(5)(A)(i); ESA Section 3(5)(A)(i); Salzman 1990; Yagerman 1990; McDonald 1998.

Ronald Reagan's Interior Secretary James Watt (Salzman 1990). In response to this dysfunction, the 1982 amendments de-linked the critical habitat and listing processes, underscoring that economic analysis applied only to the former and not the latter. Listings could then be finalized without critical habitat designations (Salzman 1990; Yagerman 1990).

FWS policy has been that critical habitat designations do not provide additional protections for listed species, and that this time-consuming, expensive process is therefore a misallocation of resources better spent on effective measures for endangered species protection.⁴⁵ However, FWS regulations have removed the additional protective measures previously provided by critical habitat by effectively replacing the Section 7 recovery function with a lower standard of merely avoiding threats to a listed species' survival.

Section 7, under which critical habitat largely operates, involves two issues: whether an agency's actions result in jeopardy to a listed species and whether an agency's action results in destruction or adverse modification of the critical habitat of a listed species. FWS regulations define jeopardy and adverse modification as posing a threat to both the survival and recovery of a listed species. Because any action that "only" threatens the recovery of the species would not threaten the survival standard, the regulations have limited Section 7 protections to those projects affecting the likelihood of survival, not those diminishing the possibility of recovery. Critical habitat, which was aimed at providing protection for those areas occupied by a species as well as areas needed for a species' recovery, is therefore rendered

meaningless under these regulations. Consequently, the FWS now takes the self-fulfilled posture that critical habitat does not provide additional value to species protection (Salzman 1990; Yagerman 1990; McDonald 1998).⁴⁶ The Fifth Circuit recently struck down the FWS regulations that remove the recovery function of critical habitat.⁴⁷

In line with this policy, FWS regularly finds that critical habitat designation is not prudent, usually due to the possibility of vandalism and illegal collection. Although concerns regarding illegal take within critical habitat have merit in some cases, the extent to which they are used to deny critical habitat designation seems to suggest a policy not to designate (Salzman 1990; Yagerman 1990; McDonald 1998).⁴⁸ For example, from 1980 to 1988, FWS refused to designate critical habitat in 320 cases, citing the “not prudent” rationale in 317 of these cases (Salzman 1990; McDonald 1998).

The procedural implications of FWS effectively repealing the critical habitat provision of the ESA, despite clear congressional emphasis on its importance, are important to consider. One author wrote that FWS regulations defining the significance of critical habitat arguably constitute a “back room economic exclusion”

⁴⁵McDonald (1998) noted FWS’s estimation that it can list ten species for every one critical habitat designation made (the latter is estimated to cost \$1 million per species).

⁴⁶McDonald (1988) argued that, by making words (i.e., “the recovery”) redundant in a statute, FWS has violated a basic canon of construction. Interestingly, Justice Antonin Scalia used this as the basis for finding standing for economic interests under the ESA in the 1997 Bennett v. Spear decision at 520 US 154. It will be telling to see if Scalia is consistent here should the issue of FWS’ regulations on critical habitat designation come before the Supreme Court.

⁴⁷Sierra Club v. U.S. Fish and Wildlife Service, 245 F.3d 434 (5th Cir., Mar. 15, 2001).

⁴⁸Quipped Salzman (1990: 339), “One might just as well refuse to put up ‘No Parking’ signs for fear they will be stolen.”

by eliminating the utility of designation and thereby accommodating economic interests (McDonald 1998).

As a consequence of FWS policy denying the utility of critical habitat designation, critical habitat cases are now regularly brought before the judiciary. In 1997, the US Court of Appeals for the Ninth Circuit ruled against FWS for its failure to designate critical habitat for the California gnatcatcher (*Polioptila californica*), a decision that constituted the first appellate court-ordered critical habitat designation.⁴⁹ McDonald (1998) commented that this ruling requires FWS to make a stronger case for failing to designate in the future. In addition, the author remarked that the now frequently used tool of HCPs will be subject to Section 7 protections of critical habitat, given that they are reviewed by a federal agency, FWS. If HCPs are construed in this way, they must meet a recovery standard and not a lower survival standard.

Ecosystem management intersects with the critical habitat issue given the potential to protect whole ecosystems by designating the critical habitat of an umbrella species, such as the grizzly bear. Early in the history of the ESA, FWS advocated designating 13 million acres for grizzly bear habitat.⁵⁰ Such a designation would at least potentially provide a basis for implementing ecosystem-level planning. Since protection of critical habitat is largely enforceable through the Section 7

⁴⁹Natural Resources Defense Council v. Department of the Interior (NRDC II). 113 F.3d 1121 (1997).

⁵⁰See testimony of FWS official Keith Schreiner at Hearing 95-H33. See Appendix B for list of hearings.

prohibition on adverse modification of critical habitat, designation provides a potential basis for federal land ecosystem recovery efforts.

The precautionary principle within critical habitat debates could address the imprudency question – whether the risk to a species would be higher or lower in the face of critical habitat designation. However, the statute’s requirement that critical habitat be determinable may clash with a precautionary approach’s criticism of allowing scientific uncertainty (e.g., uncertainties about habitat needs) to stall protective actions. More generally, Bonnett and Zimmermann (1990) argued that erring on the side of species protection in the area of critical habitat would mandate designation unless a species is listed for reasons other than habitat loss.

Recovery plans

The development of recovery plans for listed species is required by Section 4(f) of the ESA. This requirement was a product of the 1978 amendments. These plans entail conservation strategies aimed at improving the biological status of listed species such that those species no longer require ESA protection. FWS considers recovery plans as providing guidance only, and it is unclear whether these plans can directly regulate private land activities without the owner’s consent (Meltz 1994). Moreover, reviews of these plans have found them glaringly deficient for species recovery (Tear et al. 1993; 1995; Foin et al. 1998). The urgency of recovery plans is underscored by Foin et al.’s (1998) finding that 63% of species with recovery plans

required some form of management – whether habitat restoration or active management.

One form of active management is reintroduction. Recovery plans that include species reintroduction are undermined considerably when not implemented (Bader 1989). After all, species cannot reintroduce themselves.

Plans frequently include active strategies to achieve recovery. For example, Foin et al. (1998) found that 55 of 65 island species reviewed face exotic species as a primary or contributing cause of imperilment. The majority of exotic species situations mandate active management strategies. To improve recovery plans, Foin et al. (1998) therefore suggested that: 1) recovery plans be required to include an appropriate management strategy – whether habitat preservation, restoration, or active management; and 2) adaptive management be the norm, where recovery plans are revised according to new information. Multiple authors have warned that administrators must act promptly on available information given the general paucity of biological information on imperiled species (Tear et al. 1995; Foin et al. 1998). The cost of delay in recovery planning is clear: “[c]ontinuing inaction means continuing decline” (Foin et al. 1998: 184).

Other warnings sounded by Tear et al. (1995: 194) were that “recovery plans all too often manage toward extinction rather than away from it.” They noted the extremely long lag time between species listings and the development of recovery plans. In 1988, the General Accounting Office reported an average gap of 6.4 years between species listings and recovery plan development (GAO 1988). In a more recent review of all 314 recovery plans published through August 1991, Tear et al.

(1995) reported an average lag time of 11.3 years for animals and 4.1 years for plants. These authors suggested a three-year time limit between species listing and recovery plan development.

In addition to the delay of recovery plans, the content of those plans has been criticized in two ways. First, there is a lack of quality information within the plans.

According to Tear et al. (1995: 185),

In some cases, the information available was often based on guesses rather than actual data. For example, even though the current population was estimated for 44% of all species in original plans, nearly half (45%) of these were guesses or best estimates and were not derived from a census or sample surveys. In other cases, detailed information was simply not given.

Although these researchers recognized the problem of a general lack of data on listed species, they urged more rigorous species inventory to provide the basis for establishing specific standards for recovery. In addition, scientific review by outside scientists and adaptive management strategies for recovery planning has been advocated (Miller et al. 1994; Foin et al. 1998).

Second, recovery plan goals have been criticized for being set too low. Again, Tear et al. (1995) estimated that the recovery goals for 60-73% of vertebrate species recovery plans,⁵¹ even if achieved, would leave the species in a state of imperilment. To explain this, the authors discussed the relevance of social and economic factors in

⁵¹The range is due to differing biological standards taken from Mace and Lande (1991). Mace and Lande defined the following levels of imperilment:

- Critical: 250 or fewer individuals within two or fewer populations;
- Endangered: Less than 2500 individuals within five or fewer populations;
- Vulnerable: Less than 10,000 individuals within five or fewer populations.

The 60% figure was concluded based on defining endangered as 2500 individuals within five or fewer populations, while the 73% figure was based on defining endangered as 10,000 individuals within five or fewer populations (Tear et al. 1995).

species recovery plans. They prescribed biological standards as the basis for establishing recovery goals. Still, social and other factors should be identified. They noted an extreme lack of attention to public attitudes within current recovery planning, citing that 98% of species with recovery plans lacked a public attitude assessment (Tear et al. 1995). The need to gauge public attitudes to improve efficacy of conservation efforts aligns with Reading's (1993) findings on the need to develop holistic approaches to species reintroduction that consider biological, organizational, and valuational components and Tilt's (1989) recommendation to develop political strategies and listen to local stakeholders to ensure recovery success. The emphasis on establishing effective organizational structure to ensure good planning and implementation was also set forth by Miller et al. (1994).

Debate exists over whether to engage in a strategy of "triage," where resources are allocated toward recovery of those species most likely to benefit. Rather than the current arbitrary overrepresentation of high-profile species in recovery planning (Tear et al. (1995)), the selection of species targeted for conservation would be biologically based (Foin et al. 1998). Alternatively, multiple species recovery plans might be developed to approximate ecosystem-wide recovery (Tear et al. 1995). Other scientists suggest prioritizing focal species as a means of providing benefits to other species and whole ecosystems. For instance, protecting keystone species, which play inordinately important ecological roles within their ecosystems, or umbrella species, that require large areas, enable single-species approaches to serve wider ecosystem protection goals (Miller et al. 1998/99).

The question of triage intersects with findings of varying support among the public for different categories of species. For instance, Murphy (1992) discussed the lack of popular support for invertebrate species and the public's preference for more charismatic species such as pandas and whales. Kellert (1985) supports this observation by documenting 89% popular support for protecting bald eagles (Haliaeetus leucocephalus) versus 34% popular support for protecting spiders. Some authors have even suggested that more popular wildlife species be given preferential treatment (Czech and Krausman 1998; Czech et al. 1998; Polasky 1994) to allow endangered species resource allocations to correspond more closely to the public's priorities. This is a very different approach from a biologically based priority system.

Alternatively, ESA opponents often characterize listed species as obscure and insignificant and would require evaluation based on whether the species possesses any value to humans (Mann and Plumber 1995). The demotion of these "insignificant" species to second- (or lower) class standards has been questioned by commentators who suggest that human taxonomic biases usually conflict with the ecological and biological significance of the "little things that run the world" – invertebrate species (Wilson 1987: 344). Moreover, seemingly obscure species are often promoted as having high potential to benefit humans in the future.⁵²

Antagonism toward species recovery in some localities is hard to dismiss, and its dismissal may doom recovery efforts (Reading et al. 1991; Doremus 1999b).

However, there are also cases where local antagonism to protective actions is

⁵²Yagerman (1990: 820) quoted a Council on Environmental Quality report that commented on human preferences toward charismatic species, "Yet saving a mold, sponge, or beetle may ultimately be of greater consequence for humankind."

confronted by significant support for protection within those same communities. For example, Coggins (1991) noted local support to save bald eagle cottonwood perches slated for destruction by a mall development project in Kansas.⁵³ Similarly, black-tailed prairie dog colonies are tremendously popular in urban areas of Colorado.⁵⁴

Ecosystem management and the precautionary principle inform recovery planning in several ways. First, recovery planning provides an opportunity for ecosystem recovery if the needs of natural communities and multiple listed species are considered comprehensively. In fact, recent conservation planning research indicates the potential to use regional HCPs to contribute to ecosystem-level recovery planning (Noss et al. 1997). The triage question may be answered by concentrating recovery efforts on species whose protection may provide collateral benefits across a broad landscape to other imperiled species. Second, a precautionary approach to recovery planning would address the neutralization of threats that have caused or are suspected of causing species' imperilment. In addition, recovery goals would provide a margin of safety in the face of uncertain effects to species. Under the precautionary principle, goals within recovery plans would be set high enough to ensure recovery if obtained.

⁵³Coggins commented, "The police brought coffee and doughnuts to the diehards who perched in the tree while the chainsaws waited patiently. The protestors were arrested—very, very gently—and undoubtedly will receive little punishment for their forlorn, peaceful vigil" (Coggins 1991: 70).

⁵⁴There has been increased awareness and support for black-tailed prairie dog colony protection in urban areas in Colorado. The black-tailed prairie dog was designated as a candidate threatened species in February 2000 (USFWS 2000).

Prohibitions on takings

The ESA's provision against taking endangered species has long been the subject of controversy, largely because of its potential importance in protecting species from habitat destruction on private lands. Section 9 is generally not applied to public lands, as activities impacting listed species on public lands fall under Section 7. After Section 7 requirements have been met, Section 9 prohibitions do not apply (Meltz 1994).

Under Section 9, taking endangered species is prohibited.⁵⁵ Take is very broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."⁵⁶ Exceptions from prohibitions on take apply to certain captive members of an endangered species;⁵⁷ activities related to scientific research or efforts to propagate or enhance an endangered species' chance of survival;⁵⁸ and private activities that will incidentally take a listed species and provide a conservation plan.⁵⁹ In addition, a one-year economic hardship exemption⁶⁰ and exemption for Alaska native peoples⁶¹ are included in the statute.

⁵⁵16 U.S.C.A. § 1538(a).

⁵⁶16 U.S.C.A. § 1532(18).

⁵⁷16 U.S.C.A. § 1538(b).

⁵⁸16 U.S.C.A. § 1539 (a)(1)(A).

⁵⁹16 U.S.C.A. § 1539 (a)(1)(B).

⁶⁰16 U.S.C.A. § 1539(b).

A particularly contentious term within the definition of take is harm. Harm is currently defined by regulation as,

an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.⁶²

The Supreme Court affirmed this regulation when it was challenged by the timber industry in Babbitt v. Sweet Home Chapter of Communities for a Great Oregon (115 U.S. 2407 (1995)). FWS applied the definition of harm in its restriction of timber harvesting in areas with red-cockaded woodpeckers (Picoides borealis) and northern spotted owls (Strix occidentalis caurina). The timber industry challenged FWS on the basis that such restrictions violated private property rights.

In fact, earlier harm regulations had been broader and therefore had a stronger likelihood of restricting private land uses.⁶³ The regulation involved in the Palila I Ninth Circuit decision, in which the court found that grazing of non-native ungulates on critical habitat of the Palila (Loxioides bailleui), a Hawaiian bird, constituted a violation of the harm regulation. That regulation read,

[a]n act or omission which actually injures or kills wildlife, including acts which annoy it to such an extent as to significantly disrupt essential behavior patterns, which include, but are not limited to, breeding, feeding or sheltering; significant environmental modification or degradation which has such effects is included within the meaning of ‘harm.’

⁶¹The exemption also applies to non-native residents of Alaskan native village who take listed species for subsistence purposes. 16 U.S.C.A. § 1539(e).

⁶²50 C.F.R. 17.3(c) (1998).

⁶³See 50 C.F.R. § 17.3 (1975), Palila v. Hawaii Department of Land and Natural Resources (Palila I) at 639 F.2d 495 (9th Cir. 1981). See also Cheever (1991), Meltz (1994), and Rockwell (1996).

This definition contrasts with the harm regulation under Sweet Home, which did not provide a general prohibition on significant environmental modification or degradation. Nonetheless, the Sweet Home decision inspired a debate over whether applying habitat protections on private lands would provoke constitutional challenges related to the uncompensated take of private property (Batt 1995; Cheney 1995; Moore 1995; Kosakowski 1996; Rockwell 1996). Indeed, Justice Antonin Scalia dissented from the Court's majority opinion, arguing that the decision would result in inappropriate takings of private property (Rockwell 1996; Cheney 1995; Sagoff 1997).

The Interior Secretary's response to the decision, however, represented an administrative turn away from restricting private land use. Rather than employing the harm regulation, former Secretary Bruce Babbitt strengthened an administrative commitment to non-coercive ESA implementation tools that were user-friendly for landowners as a direct response to Sweet Home (Sagoff 1997). Babbitt strived (1994: 355), in his words, to "strike a balance between species protection and minimizing the regulatory burden on private landowners." This stance was ostensibly an administrative response to legislative attempts to add a provision to the ESA that would compensate landowners experiencing Act-related land use restrictions (e.g., the proposed "Just Compensation Act," discussed in Babbitt 1994).

Litigation claiming that ESA Section 9 protections constitute a violation of the Fifth Amendment of the Constitution⁶⁴ faces several obstacles. First, jurisprudence on private property takings claims has followed a rule that mere diminution in the value

of land does not constitute a taking. Rather, elimination of all economic use of land is the threshold (Meltz 1994; Shaheen 1994; Mason 1999). Second, private lands whose use has been restricted are considered as one unit, referred to as the “parcel as a whole” concept. If the economic value of one portion of a landowners’ land is eliminated, but other portions have not been economically devalued, there has been a diminution in the overall value of the land, rather than an elimination of its economic value (Meltz 1994; Shaheen 1994). Third, the government is entitled to taking without compensation through use of a “nuisance” exception (Shaheen 1994; Sagoff 1997). On this third issue there is debate. For instance, Shaheen (1994) argued that it is unlikely that private degradation of endangered species habitat would qualify as a public nuisance, while Houck (1995) and Bean (1992) maintained the opposite.

The takings debate is important in ESA policy as it illuminates the issue of whether protection of endangered species from habitat degradation on private lands is a benefit provided by (restricted) private landowners to the public (Shaheen 1994; Rockwell 1996; Mason 1999), or whether private landowners are being restricted from doing harm to the public by imperiling species (Bean 1992; Houck 1995). The takings debate provides a microcosm of the clash between species protection and economic development (Chapter III).

The impact of Section 9 habitat protections on private land is unclear. While private lands are important to listed species (GAO 1994b; Meltz 1994), FWS has seldom enforced Section 9 in a way that has delayed or stopped private actions (GAO 1994b). When private landowners risk harming listed species through habitat

⁶⁴The Fifth Amendment provides “private property shall not be taken for public use, without

destruction, they can apply for an incidental take permit that would allow the activities to proceed, though possibly in modified form (Houck 1995; Cheney 1995). However, the need for private parties to formulate HCPs to qualify for incidental take permits has delayed projects on private lands. In addition, HCPs are prepared at landowner expense, which may especially impact small landowners (Mann and Plummer 1992; 1995; Meltz 1994; Mason 1999; see above section on HCPs).

There is strong potential for Section 9 to significantly impact private land use, given imperiled species' use of private lands. A 1994 GAO report found that, of the species listed through May 1993, over 90% had some habitat on nonfederal lands. Moreover, 73% of the listed species had over 60% of their habitat on nonfederal lands, and 37% of the species were entirely dependent on nonfederally-owned habitat. The report includes ownership by state and local government entities. The percentage of species using private lands is 78% (609 out of 781 species) (GAO 1994b).

However, it does not appear that FWS implementation of Section 9 heavily impacts private land uses. GAO (1994b) reported that only 126 takings violations were adjudicated between 1988 and 1993. In only four cases was injunctive relief obtained to delay or stop activities on nonfederal lands. The defendant in one of the four cases was the Hawaii Department of Land and Natural Resources. Therefore, in the years 1988-1993, the actions of only three private parties on private lands were delayed or enjoined via Section 9 prohibitions. From the GAO report, Sagoff (1997) surmised that only one landowner nationwide per year was convicted of destroying a species' habitat. Houck (1995) attributed the low level of Section 9 prosecutions to

just compensation" (U.S. Const. Amend. V).

the ESA's flexibility, given its provision for incidental take permits, under-enforcement by administrators in the 1980s, and former Interior Secretary Bruce Babbitt's commitment to avoiding conflicts between the ESA and economic development.

Nonetheless, antagonism toward Section 9 prohibitions is not academic. Private parties have destroyed habitat and killed listed species to avoid restrictions on their land, while others have stressed the potential for such actions to occur (Mann and Plummer 1992; Kunich 1994; Spitzberg 1994; Sagoff 1997). Moreover, multiple parties have tried to obtain compensation based on Section 9 enforcement (GAO 1994b).

Indeed, some private landowners' fear that their land may be conscripted for endangered species protected is not baseless given the importance of nonfederal lands to endangered species conservation (GAO 1994b). Some argue that so many listed species on private lands affirms the need for governmental partnerships with private landowners using voluntary incentives rather than government coercion (Mann and Plummer 1992; 1995; Innes et al. 1998; Brown and Shogren 1998). Others urge stronger enforcement of Section 9 to attain full protection and recovery of imperiled species (Cheever 1991).

In sum, the seven key battlegrounds identified within ESA debates may be informed by considering the two themes of ecosystem management and the precautionary principle. The literature on these two themes is burgeoning and the

following review addresses the elements of those literatures most relevant to endangered species policy.

The Ecosystem Approach

The concept of ecosystem management was adopted by federal land managers and is advocated by divergent interests (GAO 1994a). Although scientists and managers did not advocate an ecosystem management approach until the late 1980s (Grumbine 1994; GAO 1994a), the concept can be traced to the 1930s. Grumbine (1994) described the Ecological Society of America's 1932 promotion of a national sanctuary system to protect representatives of ecosystems and provide a core/buffer zone approach embodied in contemporary proposals. In 1950, the Society attempted to implement these concepts, but was unsuccessful. Two decades later, in 1970, Lynton Caldwell proposed adopting ecosystem protection in public land policy. Later in the 1970s, grizzly bear biologists Frank and John Craighead found that Yellowstone National Park was insufficient for the Park's grizzly bear population, and advocated defining ecosystems in terms of the needs of the region's largest carnivores (Grumbine 1994). In 1993, the Clinton Administration established the Interagency Ecosystem Management Task Force and charged them with establishing goals for federal agencies, facilitating interagency cooperation, and learning from large ecosystem management projects (GAO 1994a).

Ecosystem management has been defined in several ways. R. Edward Grumbine's (1994: 31) often-cited review includes the following definition,

Ecosystem management integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term.

Under this and most definitions of ecosystem management, the approach involves considering ecological processes along with human activities to the extent that these activities do not conflict with ecological functioning. In his survey, Grumbine (1994) identified the following themes: connecting genes, species, populations, ecosystems, and landscapes; managing across political jurisdictions by defining ecosystem boundaries; managing for ecological integrity; data collection and monitoring; adaptive management; organizational change, ranging from interagency cooperation to changes in institutional norms; embedding humans in nature; and the important role of human values (1994).

Safeguarding ecological integrity is an overriding goal of the ecosystem approach (Grumbine 1994; GAO 1994a). Within this theme are the five goals of maintaining viable populations of the species within a natural community, protecting representatives of all native ecosystem types, maintaining ecological and evolutionary processes, managing over time frames sufficient to safeguard species and ecosystem evolutionary potentials, and accommodating human use (Grumbine 1994).

Grumbine (1994) called for reframing environmental values from an economic and anthropocentric orientation to a biocentric or ecocentric perspective. He further advocated recognizing nonhuman beings as actors alongside scientists, policymakers, managers, and citizens (Grumbine 1994). However, the actual pace of ecosystem management that Grumbine recommended is incremental.

The GAO (1994a) released a report on the heels of Grumbine's survey that declared ecosystem management a promising approach and prescribed measures to facilitate its implementation. The GAO reaffirmed defining ecosystem management as involving both ecological integrity and sustainable human use. The report indicated that federal agencies were beginning to implement ecosystem management, but that several challenges continue to hinder the full adoption of this approach. A scientific obstacle was a deficiency of ecological and socioeconomic data. Organizational hindrances were barriers to interagency coordination and disparate agency missions. Jurisdictional complexities involved coordinating activities across a matrix of diverse private/public land ownership. In the GAO's (1994a) view, cooperation of nonfederal parties requires a voluntary and incentive-based approach. The GAO (1994a) report further recommended the following measures: 1) clarifying goals within ecosystem management; 2) defining a minimum level of ecosystem functioning; 3) delineating ecosystem boundaries; 4) understanding the ecology of natural systems; and 5) and adaptive management.

These recommendations merit elaboration. First, clarifying of ecosystem management goals is important, given wide variation in perceptions of the concept. Second, defining ecosystem functioning would help the federal government to fulfill existing legal mandates on endangered species, air and water protection, and provide prescriptions for improving the capacity of those legal mandates to protect ecosystem functioning. Third, delineating ecosystem boundaries across the nation would facilitate budgeting and management for ecosystems that cross political boundaries. Fourth, ecological understanding of natural systems was prescribed to manage system

integrity and function. Finally, adaptive management was recommended due to the dynamic nature of ecosystems and the state of ecological knowledge. The GAO (1994a) described adaptive management as ongoing monitoring, researching, and evaluation of ecological conditions alongside a commitment to modifying management actions on the basis of this new information. GAO prescribed pilot projects to avoid conflict, similar to Brunner and Clark's (1997) inclusion of experimentation within an adaptive management framework.

FWS in particular has stated its commitment to ecosystem management. The 1994 GAO report described the agency's plan of enhancing biodiversity management to provide for ecosystem-oriented planning and an ecosystem approach to endangered species conservation. The latter stemmed from a 1992 FWS decision to employ an ecosystem, rather than single-species, approach to protecting imperiled flora and fauna (GAO 1994a). Grumbine (1997) also described FWS as moving toward an adaptive organizational structure with calls within the agency for decentralized planning and more partnership projects.

Recent assessments of ecosystem management contain elements of optimism and pessimism. For example, Spitzberg (1994) identified obstacles to ecosystem protection similar to those in GAO (1994a), but argued that ecosystem level protection is likely to be enacted under an amended ESA. In addition, Yaffee et al. (1996) assessed 600 cooperative ecosystem management projects. After a statistical review of the elements of these endeavors, the authors concluded that, "it is hard not to be optimistic about the future of ecosystem-based approaches to land management" (Yaffee et al. 1996: 39). The widespread participation and enthusiasm in these

projects, involving the private and public sectors, has enjoyed success despite problems such as scientific and organizational complexities. Overall, the progress that Yaffee et al. (1996) described is procedural, with the four most frequently cited outcomes described as improved communication and cooperation, management plan development, decision-making structure design, and changes in land management approaches. On the ground changes, including ongoing restoration activities and restoration results, were the five and sixth most frequently cited results. The authors commented on this process-orientation at the close of their assessment (Yaffee et al. 1996: 44),

[E]cosystem management is not management toward any end. Rather, it seeks to protect and restore the ecological integrity of landscapes while building sustainable economics and effective organizational and decision-making structures. Ecosystem management projects need to maintain a process orientation while keeping these overall goals in sight.

The need to preserve the substantive, outcomes-focused element of ecosystem management is corroborated by Grumbine's (1997) update on his earlier review. Grumbine (1997: 41) was optimistic about the future of ecosystem management, declaring that it appears set to "carry the day on U.S. public lands." From Grumbine's (1997: 47) perspective, "[t]here are now too many managers committed to EM [ecosystem management] to allow a hostile Congress, administration, or wise-use movement to easily derail them." However, he cautioned about whether these new policies could be successfully implemented on the ground. Some of the difficulties facing ecosystem management are that it is seen as simply a buzzword, there is contention over its definition, the radical nature of the shift in thinking from resource

extraction to ecosystem protection, the difficulty of the contextual thinking necessitated by the concept, and the incompleteness of most definitions of the concept.

Grumbine (1997) reiterated his prior ten themes of ecosystem management, but underscored the need for interdisciplinary, interagency, and adaptive thinking and management. Although Grumbine began his article concerned about on-the-ground results of ecosystem management, the jist of his writing is procedural and the emphasis is on adaptive management. He described an adaptive agency as facilitating information sharing, building bridges, and encouraging learning. Grumbine suggested informal, personal interactions between agency personnel, shared decision-making, broader job descriptions, and modified agency incentives to motivate such dynamics.

There is also a pessimistic side to evaluations of ecosystem management in U.S. endangered species policy. For example, Oliver Houck (1997) warned that ecosystem management could be used as a disguise for continued unsustainable extractive policies. Without precise legal standards, Houck cautioned, ecosystem management may merely provide cover for the status quo, because without enforceable standards agencies cannot resist economic and political pressures from industry. However, using objective and specific standards, such as the protection of indicator, keystone, and umbrella species, Houck argued that ecosystem management could protect biodiversity. Ecosystem management proposals must contain this bottom line of protection for specific species. In other words, ecosystem management can enhance, but is not a substitute for, endangered species protection. Houck (1997)

also noted that conservation planning tools such as HCPs yield potential for ecosystem management planning under current law.

Thomas Stanley, Jr. (1995) provided another skeptical treatment of ecosystem management. He criticized federal land managers' definition of the ecosystem approach as anthropocentric and simply multiple-use with ecological and social considerations. He warned of the false allure of technological fixes and the impossible promise of having our cake and eating it too. Alternatively, in Stanley's estimation, ecosystem management must include nothing short of a paradigm shift from anthropocentric human use of resources to a biocentric perspective that prioritizes ecological integrity and limits human use. Stanley's focus on values intersects with other treatments, such as Grumbine's (1997) emphasis on the need for agency managers to explicitly accept the importance of human values. That author also contrasted American support for ecosystem protection with their continued intense consumption. In his earlier work, Grumbine (1994: 32) noted Tim Clark's view that ecosystem management debates are really "a complex, competitive, conflictual social process about whose values will dominate, it is not about science."⁶⁵

In later work, Ron Brunner and Tim Clark (1997) discussed this valuational component of the ecosystem approach in terms of the call for clearer ecosystem management goals. They criticized that prescription, arguing that ecological integrity goals, as described by Grumbine, should only be used as heuristic guides for activities. According to these authors, more emphasis should be placed on clarifying

⁶⁵Grumbine cited a personal communication with Tim Clark for this quotation.

the common interest between divergent stakeholders with disparate values. They argued further that ecosystem management might be delayed by demands for clearer goals and deficient scientific data. The complexity and dynamism of ecosystems are the primary reason cited by Brunner and Clark for promptly engaging ecosystem management endeavors rather than awaiting additional scientific information. Their concern was excessive delay, and their solution was an “evolutionary” ecosystem approach that entails an adaptive management approach based on prototyping. According to Brunner and Clark (1997), these innovative prototypes should be field-tested and assessed, and the barriers to their implementation should be identified and addressed.

Although adaptive management is regularly touted under the ecosystem approach, it contains a danger that should be acknowledged: excessive agency discretion. For example, Yaffee (1994a: 147) indicated that adaptive management may appeal to federal agencies because of its offer of greater discretion in on-the-ground implementation. The Interior Department has recently stated its commitment to adaptive management, particularly in the context of HCPs (USFWS 1997; Ruhl 1998). In addition, Ruhl (1995) advocated an entirely adaptive approach, in which present environmental laws are terminated in favor of a body of law that develops as a complex, adaptive system similar to the ecosystems it is aimed at protecting. The principle obstacle to the implementation of such a plan, as Ruhl (1995: 1002) pointed out, is the “complete lack of trust” in modern environmental law. Yaffee (1994a) similarly indicated the lack of trust interest groups have in agencies. Both are correct about that lack of trust, and adaptive models run the risk of a tremendous increase in

agency discretion. This situation would likely concern both environmental and development interests. Therefore, measures should be integrated into adaptive management strategies to ensure accountability on the part of administrators. One provision might be to bind an agency to abide by scientific recommendations from specialized task forces.

Several authors noted the potential of HCPs and Natural Communities Conservation Plans to provide ecosystem protection and indicated that ESA prohibitions motivate the private sector to participate in these planning processes (Houck 1997; Noss et al. 1997). Noss et al. (1997) echoed Houck's (1995) preference for an ecological bottom line in their advocacy of plans with scientific integrity. High quality conservation plans should protect target species, including species limited by area, dispersal, natural processes, and resources, and keystone species, narrow endemics, and special cases (e.g., distinct population segments and species with broad public appeal). Noss et al. (1997) advocated fine (species protection) and coarse (natural community protection) filters in biodiversity conservation, an approach developed by The Nature Conservancy (Noss and Cooperrider 1994). The coarse filter strategy – ecosystem level protection⁶⁶ – may offer hope for those species about which little is known (Hunter 1991).

Through the twin approach of applying coarse and fine filters, ecosystem management can complement species protection (Scott et al. 1987; Hunter 1991;

⁶⁶The Nature Conservancy's original concept was a coarse filter that protected natural communities and therefore the majority of species, alongside a fine filter to protect species that would not be adequately safeguarded under coarse filter protections (Hunter 1991; Noss et al. 1997). However, Hunter (1991) argued that the coarse filter should be equated with ecosystem-based protection that includes safeguards for both natural communities and the physical environments in which they are found.

Noss et al. 1997). As indicated above, while divergent interests may be advocating ecosystem management, the implications for biodiversity protection hinge on whether actors argue for its replacement of, or complement to, species protection. The need to apply these two filters jointly is made apparent in the case of single species with inordinate importance to ecosystem functioning. For example, Brown (1997) noted the significant impact that loss of large mammals may have on an ecosystem, and other authors have discussed the role of keystone species (Noss 1991; Power et al. 1996; Kotliar et al. 1999; Miller et al. 1998/1999) and how their the imperilment may lead to ecological collapse.

Cost-effectiveness arguments are also used to advocate ecosystem-level protection (Scott et al. 1987; Brown 1997). For instance, one set of researchers maintained that management costs per species increases as one moves down the biodiversity hierarchy, from landscapes to ecosystems to communities to species (Scott et al. 1987). These same authors noted the difficulty of saving species from extinction once they have reached the imperiled status necessary to merit ESA protection. Arguing that preventing imperilment is cheaper than recovering endangered species and that maximizing benefits to one endangered species may imperil another, Scott et al. (1987) advocated maintaining viable populations of species while they are still common. By prioritizing areas high in richness of rare species not found in areas of heavy human disturbance, their prediction was that,

preservation of the areas of high species-richness for rare species, found in a few undisturbed habitat types, would have the greatest effect on the preservation of biological diversity in the 21st century (Scott et al. 1987: 785).

In some treatments of the ESA's legislative history, the ecosystem conservation purpose of the act is treated as anomalous. For example, although Jacqueline Lesley Brown (1997) noted that Congress recognized the interdependence of species as a rationale for their protection, she then argued that Congress did not intend for obscure species to challenge multi-billion-dollar developments, citing House and Senate Reports and a Senate floor remark.⁶⁷ Rather, Congress was biased toward charismatic animals with broad popular appeal. Brown cited Mann and Plummer's (1995) depiction of the ESA's passage as an unknowing Congress promulgating a powerful law that was tailored for maximum strength through the secret workings of House Committee counsel Frank Potter, Jr. and Lee Talbot of the Council of Environmental Quality. This explains, in Brown's estimation, why the ESA was broadly supported at its passage, but quickly become controversial and under fire.

In addition, a frequent contention in Congress during the 1978 TVA tumult was that the ESA wasn't intended to protect obscure species. Such arguments indicate a failure to consider the value of species in terms of the ecological function they serve – whether they are obscure or well-known, large or small, furry or scaled. Perhaps this myopia among Congressional speakers during the Tellico controversy has colored how contemporary scholars characterize the legislative history as a whole.

There is a disjunct between current acceptance of the ecosystem management approach among scientists and federal agencies and the ESA's emphasis on

⁶⁷Brown blended species inter-connection with habitat homogenization and utilitarian reasons to protect species. The evidence for explicit allusion to species interconnection is based on H.R. Rep.

protecting single species. A variety of scholars have criticized the ESA as a myopic, single-species act (e.g., Rohlf 1991; Doremus 1991; Kunich 1994; Spitzberg 1994; Drodzdowski 1995) motivated by a Congressional desire to exclusively protect charismatic species (Nagle 1998). Kunich (1994), in particular, criticized the ESA's protection of individual imperiled species as being too late to protect ecosystems, given that 1) species are only protected after their ecological role is severely diminished due to their lower numbers; and 2) species are generally listed only after their habitat has been greatly harmed. Congress is often charged inadequately understanding ecology when the ESA was initially passed, given the "newness" of the concept.⁶⁸ Indeed, Spitzberg (1994) even argued that Congress might not have understood that habitat loss from human economic activities was the primary threat to many species.

Other authors, however, noted that ecosystem protection and ecological concepts were present even in the earliest ESA legislative history. Sagoff (1997), for instance, indicated that concerns about the "balance of nature" were on the minds of legislators at the ESA's passage. Sagoff criticized the ecological concepts employed in this legislative history as outdated, due to their predication on the notion of ecosystem equilibrium, citing a 1975 review of the scientific literature that refuted the notion of ecosystem equilibrium. The disequilibrium view has since gained ascendancy. Despite Sagoff's critique of ecological concepts in the ESA, he provided

No. 93-412 (1973); S. Rep. No. 93-307 (1973), 119 Cong. Rec. 25,668 (1973) (Statement of Sen. Tunney).

⁶⁸Ecology was not "new" at the time of the ESA's initial passage. However, authors such as Spitzberg (1994) have described the mid-1960s as the point when the term began to gain familiarity with non-scientists.

multiple examples of the use of ecosystem thoughts in the 1973 ESA debates. While ecosystems may have been on Congress' mind in 1973, legislators may have assumed that protecting individual species would protect whole ecosystems (Kunich 1994).

The Precautionary Principle

The precautionary principle is increasingly being adopted as a formal prescription for environmental management in response to scientific uncertainty. The principle involves taking protective actions after potentially dangerous effects from a product or process are identified, without waiting for complete scientific information (Cole et al. 1999; Hagenah 1999; Johnston et al. 1999; EC 2000; Foster et al. 2000).

The precautionary principle is a fairly new concept, traced to the 1970s (Shipworth and Kenley 1996; Foster et al. 2000). However, it has already been adopted in international environmental law. It is codified in the Treaty on European Union (1992) as the basis for European environmental law (Foster et al. 2000) and is now considered the "central plank of [European] Community policy" (EC 2000:13). The principle was first recognized in the United Nations' World Charter for Nature, adopted in 1982. Since then it has been incorporated into the 1987 Ministerial Declaration of the Second International Conference on the Protection of the North Sea, the 1992 Rio Declaration, the UN Conventions on Climate Change and Biological Diversity, the 2000 Conference of the Parties to the Convention on Biological Diversity, and other international agreements (Hagenah 1999; Johnston et al. 1999; EC 2000). The EC casts the principle as a "full-fledged and general

principle of international law” (2000:11), a characterization supported by other commentators (Johnston et al. 1999; Shipworth and Kenley 1996; Foster et al. 2000).

There is, however, a contrast between promulgation of the precautionary principle in international environmental law and resistance to the approach in international trade agreements (Waincymer 1998; French 1999; Foster et al. 2000). For instance, French (1999) described this conflict in the context of the EC’s beef hormone ban, which the World Trade Organization ruled illegal, rejecting the claim that the import restriction was justified on the basis of precaution. The World Trade Organization may rule similarly on the EC’s legislation requiring that all products containing genetically modified organisms disclose that information on their labels.

In response to World Trade Organization concerns that the precautionary principle was being used as a guise for trade protectionism, the EC (2000) issued a report that outlined proper application of the principle. The EC stipulated that measures based on the precautionary principle should be: 1) proportional to the selected level of protection; 2) applied in a non-discriminatory way; 3) consistent with previously adopted measures; 4) based on analysis of the potential costs and benefits of action and inaction; 5) reviewable, in light of additional scientific information; and 6) capable of assigning responsibility for collecting and producing needed scientific evidence. The EC (2000: 11) defended its policy, arguing,

...each member of the WTO has the independent right to determine the level of environmental or health protection they consider appropriate. Consequently a member may apply measures, including measures based on the precautionary principle, which lead to a higher level of protection than that provided for in the relevant international standard or recommendations.

Notwithstanding this argument, the World Trade Organization refuses to recognize the precautionary approach. Non-governmental organizations have pushed for the World Trade Organization to formally recognize the principle and have been supported by the EC but not the U.S. In fact, the US has generally been the EC's chief adversary in these trade conflicts, opposing both the ban on hormone-treated beef and that on genetically modified organisms (French 1999).

The US has generally declined to incorporate the principle into domestic laws as well as international trade relations, although US courts have approved regulatory actions based on “less than a preponderance, but more than a scintilla” of scientific evidence.⁶⁹ U.S. reluctance to adopt the precautionary principle in domestic law contrasts with promulgation of the principle by 40 other countries (Rogers et al. 1997). In particular, the precautionary approach is considered a leading principle in German and Australian environmental law (Rogers et al. 1997; Hagenah 1999).

One problem with the principle is the tremendous variation in its definition and usage. Foster et al. (2000) reported 14 different usages of the principle, from the World Charter to the Rio Declaration to the Treaty on European Union. Shipworth and Kenley (1999: 121) also characterized it as “poorly defined” and “difficult to operationalize.”⁷⁰ The precautionary principle has been discussed in the context of human health (Cole et al. 1999; Bukowski and Jeffrey 2000; Jansen and Letschert 2000; Julvez et al. 2000; McGinn 2000). Human health can be linked to

⁶⁹Foster et al. 2000 cited *Cellular Telephone Company v. Town of Oyster Bay*, 166 F.3d 490, 494 (2d Cir. 1999).

⁷⁰Shipworth and Kenley (1999) attempted to operationalize the principle by incorporating it into an environmental fitness landscape model.

environmental protection (Cole et al. 1999), thus expanding usage of the precautionary principle from its largely anthropocentric beginnings. Indeed, the EC has applied the principle broadly, stipulating its use when there is a potential threat to environment, human, animal, or plant health (EC 2000). The principle has been increasingly adopted in research on marine ecosystems (Minns 1997; Lauck et al. 1998; Santillo et al. 1998; Johnston et al. 1999; Haedrich and Hamilton 2000; Thompson et al. 2000), controlling non-native species (Hager and McCoy 1998,) and climate change (Johnston et al. 1999).

The precautionary principle has not yet been assimilated into terrestrial research to the extent seen in marine studies.⁷¹ This may be due to a condition of extreme uncertainty in marine environments (Conservation Biology 2000), including such issues as population counts of fish (Lauck et al. 1998) and the often-shifting distribution of cetaceans (Forney 2000). However, the same condition of uncertainty is seen in terrestrial studies (Chapter VI), so there is no logical basis for not extending the principle to terrestrial research.

Even within marine ecosystem management there is concern that although many countries have adopted the precautionary principle, traditional management approaches that place the burden of proof on those seeking protective actions are still being employed (Thompson et al. 2000). These traditional approaches require demonstrating harm prior to environmental protection:

⁷¹A special section in the October 2000 issue of *Conservation Biology* provided an attempt to “introduce some of these new methods [analyzing uncertainty] to conservation biologists working with terrestrial systems” (*Conservation Biology* (editor) 2000: 1240). These methods for analyzing uncertainty dovetail with prescriptions for the precautionary approach.

there has generally been a presumption in favor of new developments unless significant harmful effects on other economic or environmental interests can be demonstrated (Thompson et al. 2000: 254).

This current tendency in marine ecosystems management is in direct contrast to the precautionary principle's shift of the burden of proof from those seeking environmental protection to those trying to obtain permission for a product or process that may cause environmental harm (Minns 1997; Johnston et al. 1999; Shipworth and Kenley 1999; Conservation Biology 2000; EC 2000).

The question of who shoulders the burden of proof is not esoteric, as it could well decide whether a species goes extinct. As Thompson et al. (2000) demonstrated in the case of endangered bottlenose dolphins (Tursiops truncatus), if empirical evidence of harm is required before promulgating environmental protection, the species would face a much greater risk of extinction. In their estimation, the question was not whether to utilize the precautionary principle, it was to what extent precaution should be employed. They devised the following formula: where there is a high level of risk to a species (the probability of extinction is greater than 75% over 250 years), high precaution is recommended, with immediate steps mandated to reduce human actions likely to threaten the population (despite a lack of inconclusive evidence of decline). Where there is a lower level of risk to a species (the probability of extinction is greater than 20% over 250 years), moderate precaution is recommended, with immediate steps prescribed to minimize effects of human actions likely to threaten species. Where there is the lowest risk to a species (risk of extinction placed at less than 20% over 250 years), the traditional approach is recommended, with monitoring to determine if the population is declining before

taking protective action. However, these authors also underscored the importance of case-by-case analysis that emphasizes the importance of the magnitude of the threats faced by species, not simply population numbers.

In addition, by shifting the burden of proof, resource users may be motivated to compile better data. For instance, a fishing industry facing lower fishing limits because of uncertainty about fish population levels will be inspired to help scientists improve data quality (Conservation Biology 2000).

Under the precautionary principle, scientific knowledge and areas of uncertainty should be disclosed. According to the EC (2000: 17),

The implementation of an approach based on the precautionary principle should start with a scientific evaluation, as complete as possible, and where possible, identifying at each stage the degree of scientific uncertainty.

The disclosure of scientific uncertainty and incorporation of uncertainty into scientific findings is advocated in several other treatments of the precautionary approach (Rogers et al. 1997; Johnston et al. 1999; Conservation Biology 2000; Slooten et al. 2000).⁷²

There are political dangers to acknowledging uncertainty, however. For example, in the ocean fisheries context, Lauck et al. (1998: S74) wrote, “[a]ny admission of uncertainty only encourages the fishing industry to demand quotas at the upper limit of the confidence interval, on the grounds that science has not ‘proved’ that lower quotas are necessary.” These political dangers are also acknowledged in

⁷²The basis of scientific information employed in the precautionary principle is analogous to the best available information standard in the ESA. Wrote the EC (2000: 22, emphasis added), “every

the introduction to a special section on scientific uncertainty in Conservation Biology (Conservation Biology 2000). The use of the precautionary principle in a context not yet accepted such as U.S. endangered species management carries some risk and requires its proponent to be explicit about the concept and its requirements.

Like ecosystem protection, the precautionary principle converges with adaptive management. The EC (2000: 21) stipulates that “[m]easures based on the precautionary principle shall be reexamined and if necessary modified depending on the results of the scientific research and the follow up of their impact.” The EC (2000) characterizes precautionary actions as provisional measures required until the necessary scientific knowledge is developed or compiled. The provisional nature of precautionary measures may further acceptance of the principle by its critics (Foster et al. 2000). Thus, the adaptive management component in ecosystem management could blend with that of a precautionary approach.

Another point of commonality between ecosystem management and the precautionary principle is concern for future generations (Johnston et al. 1999; EC 2000). In addition, broadening the scale of analysis (i.e., an ecosystem rather than a species) increases the extent of scientific uncertainty (Johnston et al. 1999), thereby increasing the need for applying the precautionary principle.

The human use component in ecosystem management is also shared by some precautionary approach applications. For example, the principle has been used to stipulate appropriate levels of fishery exploitation, habitat protection, and habitat modification to ensure fishery vitality and economic productivity over several

decision must be preceded by an examination of all the available scientific data and, if possible, a risk

generations (Minns 1997; Lauck et al. 1998; Haedrich and Hamilton 2000). In the case of the collapse of the Newfoundland cod fishery, Haedrich and Hamilton (2000) argued that the acceptability of the precautionary principle depends on actors' time horizons. If actors are primarily seeking short-term economic productivity, the precautionary principle will be rejected. If actors extend their time horizons 20, 40, or more years into the future, the precautionary principle results in the most productive fisheries and highest economic value. Consequently, the level to which actors and policies discount the future will inform whether sustainable development and the precautionary principle will be adopted. Lauck et al. (1998) advocated protecting marine reserves from anthropogenic disturbances (including fishing) to ensure the sustainable economic value of fisheries in surrounding areas. The marine reserve idea is similar to the idea of nature reserves in terrestrial ecosystem management approaches (Noss and Cooperrider 1994; Christensen et al. 1996).

In short, the precautionary principle demands that we “stay on the safe side” (Hagenah 1999: 14) and that we “err on the side of overprotection (risking unnecessary economic losses) than underprotection (risking the extinction of a species)” (Conservation Biology 2000: 1241). The logic is simple: embrace uncertainty, disclose it, and try to prevent it from being used as a basis for thwarting environmental protection. As has been demonstrated in the review of key ESA battlegrounds, endangered species policy is perforated with scientific questions, debates, and knowledge gaps. The precautionary principle may offer a conscious strategy for addressing species protection in an age of uncertainty.

evaluation that is as objective and comprehensive as possible.”

CHAPTER III

THEORETICAL FRAMEWORK

My purpose is to analyze values and ecosystem and precautionary themes in the ESA's legislative history. My theoretical approach is that actors' definitions of a problem within institutional contexts are an important way to describe policy problems, evaluate policy implementation, and prescribe potential reforms. I focus on the goals or values that actors promote, the way actors' definitions of a problem privilege certain solutions and values, and the venue where actors assert these problem definitions. My theoretical approach builds on criticisms of positivism in social science and I seek to apply this post-positivist approach in a rigorous way.

Much research has been done regarding democratizing science within public policy. Scholars have extensively critiqued positivism, defined as the concept of scientifically neutral inquiry that objectively tests hypothesis through empirical analysis, usually emphasizing the instrumental rationality of political actors (Healy 1986). A landmark work on the problems of positivist assumptions within the physical sciences is Thomas Kuhn's (1962) The Structure of Scientific Revolutions. In this book, Kuhn argued that better theories do not always win the day in scientific discourse. Rather, there is prejudice toward existing theories or dominant paradigms. In Kuhn's view, a crisis and a scientific revolution are required to overturn dominant paradigms, despite the scientific pretense of letting the facts speak for themselves. Scientists themselves cannot obtain neutrality and detachment given these blinders.

More recent work highlighted the need to adopt a new, post-positivist approach by allowing policy analysts to admit their own non-neutral standpoints and engage in self-aware policy analysis that does not seek to emulate the physical sciences (Torgerson 1985; 1986). Post-positivism generally, and problem definition in particular, is primarily based on the notion that problems are socially constructed (Dery 1984: xi, cited in Rochefort and Cobb 1993: 56; See also Hogwood and Gunn 1984; Hilgartner and Bosk 1988; Yanov 1995). A primary method of social construction involves language and rhetorical tools. Policymaking is viewed as “a struggle over alternative realities” where “language is the medium that reflects, advances, and interprets these alternatives” (Rochefort and Cobb 1994: 9). There is a consequent emphasis on values and science within post-positivism that can be applied to ESA policy through text-analysis.

Lasswellian problem orientation

The notion that policy problems are socially constructed corresponds with the values emphasis in Harold Lasswell’s policy sciences framework. The policy sciences depicts participants as attempting to maximize a subset of values by using institutions and consequently affecting resources. Lasswell and McDougal (1992: 18) characterize the model as follows:

Participants → seeking to maximize values → utilize institutions → affecting resources
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The heart of the Lasswellian model, the maximization postulate, entails the view that individuals are

...predisposed to complete acts in ways that are perceived to leave the actor better off than if he had completed them differently. The postulate draws attention to the actor's own perception of the alternative act completions open to him in a given situation (Lasswell 1971: 16).

Acting from this maximization postulate, participants in Lasswell's framework employ various problem orientations. An actor's problem orientation comprises 1) the goals actors promote; 2) the trends they identify; 3) the conditions they depict as causing the problem/issue; 4) the actors' projections or predictions; and 5) the alternatives or solutions promoted.

Although at first glance this maximization postulate and the social process model may seem similar to an interest-maximizing or rational choice perspective, there are several important differences between the two. First, the Lasswellian model is interactive. The capacity for outcomes and altered resources to impact institutions and consequent political behavior corresponds with contemporary institutionalist perspectives (Katzmann 1986; Bendor & Hammond 1992; Hecllo 1994). In addition, institutions can shape the very motivations or values of actors, and those actors' interests should not be assumed at the outset, or depicted as "given", but should be problematized (Tannenwald and Price 1996).

Second, unlike economic models, the Lasswellian approach envisions a range of values that participants seek to maximize to varying degrees. These values are power, enlightenment, wealth, well-being, skill, affection, respect and rectitude. Each of these can function as a base value, which is a means to an end, or a scope

value, which is an end in itself (Lasswell and McDougal 1992). For example, in the ESA context, actors may make an argument about needing to protect species because of their potential economic value in bioengineering, and they may make that argument in a scientific way. One could describe the scope value as wealth, and the base value as enlightenment.

A third difference between the Lasswellian social process framework and interest maximization is that actors within the latter are depicted as capable of comprehensive rationality, while the former recognizes them as having limited cognitive abilities. Consequently, combined with constraints imposed by institutions,¹ outcomes in the Lasswellian model are seldom a choice between option A and option B, but are more often a blend, whereby policy actors achieve “more or less” of their desired outcomes. Actors engage in satisficing behavior and are risk-averse. They are usually satisfied with outcomes approximating, but falling short of, total success and may be oriented toward avoiding loss rather than obtaining gain. Some expectations actors hold may be mistaken (Lasswell 1971). There is a presumption of “bounded rationality” (Simon 1985) where political actors are not omniscient and maximize choices only to the extent permitted by institutional and cognitive factors. This creates the potential for unintended consequences.

A complicated view of human nature includes the potential for multiple identities. The “self” on whose behalf an individual takes action may be one’s own self, or oneself as part of a collective (Lasswell 1956). This difference enables the

¹Wrote Lasswell and McDougal (1992: 369), “many policy outcomes are not genuine choices; the constraints are too severe.”

policy scientist to contrast special interest motivations with common interest motivations.

Finally, the Lasswellian model involves constructing a preliminary map, which is a matrix of social processes and decision processes. The decision process consists of a series of stages in policy-making: intelligence, promotion, prescription, invocation, application, termination, and appraisal. The intelligence phase involves accumulating, processing, and distributing information to participants in the process. Promotion includes advocating certain value outcomes using intelligence data. Prescription entails codifying norms, divergence from which can be punished. Invocation is defined as implementing the prescription, usually by police and lower courts. Application involves administering the prescription and its further specification by appellate courts. Termination entails repealing the prescription, and appraisal involves reviewing the prescription. These multiple phases often operate non-linearly and with feedback loops (Lasswell 1971; Lasswell and McDougal 1992). I replace the base value component of Lasswell's social process model with scope values, as my reading of legislative history provides a means of identifying the values actors stated that they were trying to maximize. My analysis will not provide a clear picture of actors' base values.

The preliminary map helps the analyst clarify which areas in the social and decision processes are most relevant in assessing a policy problem. I constructed a preliminary map for the ESA based on the literature reviewed in Chapter II. The map indicated a void in the area regarding which values and strategies are employed in various decision processes (Table 3-1). Although there have been detailed analyses of

the rhetoric surrounding the ESA (Mihata 1995; Woods 1999), that research has not addressed the values and strategies articulated by actors in congressional debate. This is surprising given the potential contribution such an examination can make toward ascertaining the congressional intent behind a controversial law.

Table 3-1. Preliminary map of Endangered Species Act controversies (based on Lasswell (1971) and Lasswell and McDougal (1992)).

Social Process	Decision Process						
	Intelligence	Promotion	Prescription	Invocation	Application	Termination	Appraisal
Participants	Environmental groups; industry groups; bill authors (legislators); FWS; NMFS; scientists.	Key legislators; environmental groups; scientists; industry; states.	Congressional committees; floor managers; legislators with amendments.	FWS law enforcement (including biological opinions); plant inspectors; federal district courts; citizen litigation.	Federal Court of Appeals and US Supreme Court Justices; US Department of Justice, parties to cases.	Regulatory repeal (e.g. critical habitat section). Suspended listings (Reagan, Clinton). Legislative: riders, under-funding. Industry seeks repeal of the Act.	Congressional oversight; environmentalists, industry, state and local governments; courts; scientists.
Perspectives	Information gathered on: extinction rates, lack of delistings, economic costs of implementation.	Different values clashing. Common interest of species protection? Or property rights, economic growth, states rights?	1973 ESA: perspective that species protection is common interest; subsequently clashing views; criticism of ESA too harsh.	Industry and administrators: excessive litigation a threat to economy and agency autonomy vs. Citizens as primary ESA enforcers. FWS conflict-averse.	Disagreement on validity of Supreme Court decisions in <u>Sweet Home</u> , <u>TVA</u> , other opinions. FWS as conflict-averse.	ESA should be repealed or amended to protect economy vs. FWS passive-aggressive stance needs to be abandoned to protect species (ESA needs strengthening amendments).	ESA is too tough vs. too weak; ESA too narrowly focuses on single species; ESA needs incentives for private landowners.
Situations	Academic analysis, nongovernmental research, GAO reports.	Administrative, congressional, judicial, media, environmentalist and industry public relations campaigns. States	Congressional committees and floor debate.	Federal district court; customs inspection; Section 9 enforcement by FWS/NMFS; consultation.	Federal Court of Appeals and Supreme Court.	Administrative agencies, Congress.	Congressional committee context; media venue; academia. White papers by environmentalists, industry, scientists.

		rights promotion in West.					
Scope values	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry
Strategies	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Varied: subject of inquiry	Regulatory changes to ESA	Varied: subject of inquiry
Outcomes	1973: Description of extinction crisis. Amendments: ESA as too harsh vs. continued extinction. Federal control over endangered species. Little impact on economy despite rhetoric.	Repeated cycles of promotion, escalating controversy.	1973 ESA. Consequent amendments, strengthen and weaken ESA.	Light enforcement of Sections 7 and 9. Injunctions on projects via citizen suits. Biological Opinions.	Varied jurisprudence, both strengthening and weakening ESA.	Response to administrative policies: increased litigation. Act non-reauthorized since 1988.	ESA amendments; Congressional underfunding of ESA. White papers, published reviews, GAO reports.
Effects	Continued extinction increases perceived urgency for strong ESA. Ongoing intelligence by environmentalists, industry, FWS, GAO, Congress on ESA conflict. Less state autonomy. Perceived impact on economy and property rights.	Environmentalists, Industry push private incentives. Legislators, states, industry push for repeal/weak ESA.	Subsequent amendments increase administrative autonomy, e.g. habitat conservation planning.	Criticisms of FWS enforcement of ESA affirm need for citizen litigation vs. excessive litigation requires ESA amendment. Biological opinions prohibit few projects.	Jurisprudential impacts on ESA (<u>Sweet Home</u>); standing for economic interests (<u>Bennett v. Spear</u>). FWS avoids controversial species.	Continued dysfunction: Congress has not reauthorized Act since 1988; citizen enforcement of ESA.	Discontinuous policy resulting from repeated amendments and chronic underfunding. Many harsh appraisals and good appraisals.

The Lasswellian model therefore provides a central focus on values through its maximization postulate and supplies a basis for analyzing those values in the congressional context with its consideration of actors' situations. In addition, preliminary mapping illustrates the lack of relevant inquiry into the values and strategies in play during the legislative history of the ESA. More recent work on problem definition elaborates on Lasswell's model.

Problem definition

Problem definition rejects the positivist presumption that objectively knowable problems exist and embraces the post-positivist assertion that language helps to define reality. According to Hogwood and Gunn (1984: 109),

...few, if any, problems are capable of a completely verifiable or unarguable definition; they are not 'out there' somewhere waiting to be discovered and delineated, indeed they may not be objectively knowable at all. We each create our own 'reality' and this is nowhere more true than in the way we identify problems or issues, and interpret and relate them to our mental map of some larger situation.

Building on this work, Rochefort and Cobb (1994) identified the following features as part of a problem description: 1) causation of the problem; 2) nature of the problem (its severity, novelty, who it impacts, whether it hits close to home, whether it's a crisis); 3) the target populations – who will be assisted and/or coerced to resolve the problem; 4) differing attitudes among political actors regarding ends justifying means or means themselves as problematic; and 5) the characteristics of the solution – whether one is available, acceptable, and affordable.

Political actors use these problem definitions to explain, describe, recommend, and persuade others about an issue (Rochefort and Cobb 1994). Problem definitions are not static, and political actors try to change other actors' definitions of problems to obtain their preferred solution (Weiss 1989; Rochefort and Cobb 1994). Sources for definitions include cultural values, actions by interest groups, scientific knowledge, and professional views on issues. Following E.E. Schattsneider's work, Rochefort and Cobb (1994) assert that problems may be technically defined to restrict participation or in more broadly defined to encourage participation. Actors employ these tactics to broaden the political conflict (if one is in a weak position) or to narrow it (if one is in a dominant position). This question of narrow, technical participation versus wider involvement raises the issue of the appropriate role of science in policy-making, a question raised throughout the problem definition and post-positivist literature.

When making policy arguments, one might argue that: 1) certain values should be prioritized above others (value hierarchies) (Livingston 1992; Akerlof and Yellen 1994); 2) the cause is X, Y, or Z, and therefore X, Y, or Z must be addressed (causal theories) (Fearon 1991; Stone 1997) and these causal theory construct certain social groups as targets for reform (Schneider and Ingram 1993); 3) one's data demonstrates irrefutably that one's solution is preferred (science/technology bias) (Ozawa 1989; Fischer 1993; Laird 1993; Woods 1999; Rampton and Stauber 2001); and 4) one's definition of the problem is authoritative (frames).

The third and fourth rhetorical tactics bear elaboration. Byrne (1987) described the "scientifically" portrayed approach of cost-benefit analysis as favoring

technological solutions over democratic participation, given that these analyses are largely under the purview of experts (primarily economists) and may be problematic because of that exclusionary tendency. In addition, technical bias is significant in the ESA context given the difficulty in quantifying non-tangible values such as aesthetic and ecological values (e.g., Norton 1987; Kellert 1996; Gatto and de Leo 2000).

Indeed, post-positivist research often segues to prescriptions about the appropriate roles for science in policymaking. This is understandable, given the critique of science-as-usual that post-positivism represents and its egalitarian rejection of a superhuman scientist who transcends human values to engage in objective, detached analysis. For instance, Rochefort and Cobb (1993: 69) suggested that the “growing reliance on specialized experts, even on questions whose broad value implications outweigh their technical nature, unnecessarily restricts participation in the identification of problems and their solutions.” They prescribed problem definition analysis to further democratic policy-making (See also Fischer 1993; Laird 1993).

Similarly, the policy sciences framework established by Lasswell is distinguished from technocratic models² in its integration of diverse types of knowledge across scholarly disciplines:

The policy sciences include the social and psychological sciences; in general, all the sciences that provide facts and principles of direct importance for the making of important decisions in government, business and cultural life (Lasswell 1943: 2).

²The “policy sciences” label, however, can be confusing. One writer on the ESA, for instance, thoughtfully applies social construction concepts to the ESA, but rejects “policy sciences” as too technocratic (Czech 1997). Conversely, as indicated in this chapter, the Lasswellian policy sciences framework is interdisciplinary and focuses on the role of values (i.e., the maximization postulation) in political behavior and outcomes.

Lasswell cited the need to include law, psychology, sociology, economics, political science, and any other relevant discipline in the strive toward integrated knowledge. In conjoining diverse types of knowledge, the hierarchy placing “hard” sciences above “soft” sciences is dissolved. The need for more interdisciplinary approaches, deriving from a plurality of sources that consider a range of human values, is affirmed.

Problem definition literature intersects with rhetorical analysis of frames (Rein and Schön 1993; Hajer 1995; Nelson et al. 1997; Betsill 1999) and metaphors (McGaw 1991; Champlin and Olson 1994), which are used to define a problem and therefore intuit a solution. Frames are defined by Rein and Schon (1993: 146) as “a way of selecting, organizing, interpreting, and making sense of a complex reality to provide guideposts for knowing, analyzing, persuading and acting.” The concept of frames corresponds with the human behavior of categorizing data with which we are confronted, as discussed in the policy sciences literature. Edelman (1993) characterized this categorizing behavior as fundamental to expression and ideology, arguing that the way in which ideas are packaged and the construction of categories and use of metaphors impacts political success.

The problem definition approach provides a theoretical foundation for focusing on values and considering the potential roles for ecosystem management and the precautionary principle in U.S. endangered species policy (Table 3-2).

Table 3-2. Problem orientation schema (Lasswell 1971; Lasswell and McDougal 1992).

Goals	Which goals or values does the speaker/writer prioritize?
Trends	Which indicators or dimensions of endangered species policy does the speaker/writer focus upon? How does the actor describe the nature of the problem?
Conditions	What does the speaker/writer depict as the cause of the problem? Who or what is credited? Who or what is blamed?
Projections	What does the speaker/writer predict will happen if endangered species policy is or is not changed?
Alternatives	Which solution does the speaker/writer prefer?

This theoretical basis will provide the foundation for my model as it establishes a basis for the importance of what actors say. Most importantly, the valuational component enables me to discern how frequently values relating to ecosystem management and precautionary principle are invoked. This can be compared with alternatives actors promote.

Values

I focus on values within ESA discourse given the central role values play in the Lasswellian framework and problem definition literature and because the ESA controversy is frequently described as a clash of values. Values are defined in a variety of ways. These definitions include values as objects, attitudes, motivations,

measurable quantities, and other phenomena (Connor and Becker 1979; Reading 1993). A prominent definition describes values as “core conceptions of the desirable within every individual and society” (Rokeach 1979c: 2). Values function as standards to guide action and also “judgment, choice, attitude, evaluation, argument, exhortation, rationalization, and...attribution of causality” (Rokeach 1979c: 2). Values are not just expressed preferences but provide the criteria for preference formation (Williams 1979). When applied to specific contexts, these preference criteria inform attitude formation, and consequent behavior is an expression of both values and attitudes (Connor and Becker 1979).

The powerful roles attributed to values converge with the Lasswellian maximization postulate and problem orientation schema and diverge from a rational choice perspective. Lasswell’s maximization postulate embraces a wide range of values – power, enlightenment, wealth, well-being, skill, affection, respect and rectitude – that actors seek to prioritize, while a rational choice perspective generally embodies a narrow set of values, usually economic or power-seeking.

The values within Lasswell’s spectrum can serve as goals, described as “scope” values, and means or resources for obtaining those goals, or “base” values. Rokeach (1979a) similarly characterized “terminal” and “instrumental” values that respectively relate to Lasswell’s scope and base values. However, Rokeach described two different sets of values that perform terminal and instrumental functions. His terminal values include wisdom, freedom, self-respect, a sense of accomplishment, a world at peace, equality, a world of beauty, inner harmony, family security, social recognition, happiness, an exciting life, a comfortable life, true friendship, mature

love, national security, pleasure and salvation. Rokeach's instrumental values include intellectual, capable, honest, responsible, imaginative, independent, broadminded, logical, ambitious, helpful, courageous, self-controlled, loving, forgiving, cheerful, polite, clean, and obedient. Kellert (1993; 1996) delineated a spectrum of values specific to people's orientation to wildlife: aesthetic, dominionistic, ecologicistic, humanistic, moralistic, naturalistic, negativistic, scientific, and utilitarian. Kellert's values function as scope or terminal values.

At different points, the three value spectrums overlap and diverge. For example, there are no values within Rokeach's system that clearly equate to Kellert's ecologicistic, naturalistic, and negativistic values. Nor are there Lasswellian values analogous to Kellert's aesthetic, ecologicistic, naturalist, and negativistic values. Lasswell's range of values is most generalizable with his use of broad categories that can consume multiple values described by Kellert and Rokeach. Rokeach's system centers on anthropocentric human values, and Kellert focuses on values individuals espouse toward wildlife.

Kellert's focus makes his value spectrum more salient in the present study than Rokeach's or Lasswell's. Other authors have also discussed values toward wildlife and endangered species.

First, utilitarian values include foods, medicines, clothing, and other products that derive from animals and plants (Kunich 1994; Spitzberg 1994; Dobson 1996; Kellert 1996; Abramovitz 1997; Costanza et al. 1997; Pimentel et al. 1997). On a global scale, 25 to 40% of pharmaceutical products derive from wild plants and animals (Kellert 1996). Moreover, 70% of pharmaceutical products are modeled on a

native species, despite only 0.1% of plant species having been examined for their medicinal value. Of the top ten prescription drugs in the United States, nine are based on natural plants. The market value for drugs from tropical and temperate rainforest plants in the US alone is placed at \$200 million dollars per year (Dobson 1996).

As wild habitat is destroyed, the ability to wildcraft valuable medicines is impeded (Dobson 1996). Habitat destruction may even cause valuable drugs to be lost forever. An often-cited example is that of the rosy periwinkle (*Catharanthus roseus*) which is used to treat blood-related cancers (Kellert 1996). Logging in Madagascar almost extirpated this plant. In the U.S. northwest old-growth forest, the Pacific yew tree (*Taxus brevifolia*) has long been regarded as a “trash” tree by the timber industry. However, this species possesses potential value in curing ovarian cancer (Plummer 1992; Spitzberg 1994; Brown and Shogren 1998).

In addition, wild species are beneficial for agriculture. Wheat, rice, and corn were wild grasses before they were domesticated for human use (Ehrlich and Wilson 1991). They are now staple crops for human consumption globally. Some wild plant species may be instrumental in thwarting blight in agricultural crops (Kellert 1996). Conversely, the extinction of wild flora and the simplification of natural systems to monocultures can increase susceptibility of crops to disease, pests, fires, and pollution (Abramovitz 1997).

More broadly, the value of land undergoing intensive extraction may be lower than sustainably harvested land. For example, the value of rainforest harvested for fruit and rubber is placed at \$6330 per acre over a 20-year cycle versus \$310 for logging that same acre over a 20-year cycle (Dobson 1996). Coastal wetlands can also

be sustainably used, with economic yields of \$1,000-10,000 per hectare per year in perpetuity versus their 5-10 year use for intensive aquaculture at \$11,600 per hectare annually (Abramovitz 1997).

Second, the ecological value of species intersects with utilitarian values given that the extinction of one species may trigger the extinction of multiple species within an ecosystem. Such effects may cause “significant gaps in the human food chain, possibly leading to mass starvation” (Spitzberg 1994: 197). More generally, the ecological value of flora and fauna is recognized in the literature on the value of ecosystem services to human welfare (Ehrlich and Wilson 1991; Kunich 1994; Spitzberg 1994; Pimentel 1997). Ecosystem services include maintenance of the atmosphere’s gaseous composition. The Amazon rainforest, in particular, regulates these gases and the climate by recycling rainfall. As forests shrink, a subsequent drying of the climate harms agricultural production. In other regions, modifications of climate occur when semi-arid regions are desertified (Ehrlich and Wilson 1991).

Other benefits provided by healthy natural systems and their components include maintaining and generating soils; nourishing agricultural plants and trees by microorganisms; decomposing organic matter; waste disposal; nitrogen fixation and nutrient cycling; bioremediation of chemicals; biocontrol of species that attack crops, forests and domesticated animals; pollination by birds, bees, butterflies, bats and others; perennial cereal grains; and biotechnology (Ehrlich and Wilson 1991; Pimentel et al. 1997).

Benefits provided from biodiversity and ecosystem services in the US are estimated at \$300 billion annually (Pimentel et al. 1997) and global ecosystem

services are valued at \$33 trillion annually (Costanza et al. 1997). Moreover, most of these services are so intricate and are provided on such a massive scale that it is not feasible to replicate them, even where scientists possess the knowledge to do so (Ehrlich and Wilson 1991). The tremendous value of ecosystem services will decline if the erosion of biodiversity continues (Ehrlich and Wilson 1991). Further, there may be a global explosion of pests and pathogens, as they are released by degraded natural controls (Morris and Heidinga 1997). The environmental and economic costs of exotic species in the U.S. is estimated at \$137 billion per year (Pimentel et al. 2000), a figure that does not include ecological degradation caused by livestock ranching.³

Some scientists have discouraged the use of economics to justify the protection of biodiversity (Leakey and Lewin 1995; Bulte and Kooten 2000; Gatto and de Leo 2000). They have insisted that these values are immeasurable and consequently intangibles (Gatto and de Leo 2000) and that global ecosystems provide infinite value because without them humans could not survive (Bulte and Kooten 2000). Moreover, decisions made about economic production are not whether to eliminate all of the earth's ecosystems. Rather, they are incremental decisions about whether to convert an acre of land or an additional ton of fish. In these incremental decisions, it may be economically more profitable to exploit than to conserve (Bulte and van Kooten 2000). The solution prescribed by these authors is the adoption of a "safe minimum standard" approach, to which I will return.

Third, the aesthetic and symbolic values of plants and wildlife also provide a rationale for protecting species (Kunich 1994; Spitzberg 1994; Kellert 1996). The

³Ecological degradation caused by non-native livestock is discussed in Fleischner (1994),

beauty of unspoiled vistas, rugged terrain, wildflowers, migrating birds, open spaces, charismatic megafauna, and other aspects of nature resonate with, and inform, human aesthetics. In fact, there is a consistent preference among humans for natural patterns and designs, and we generally favor the aesthetics of natural scenery to developed areas (Kellert and Wilson 1993; Kellert 1996).

Symbolic values of wildlife are manifest in human language and cognition. As indicated in the Lasswellian framework, humans categorize information to understand it. Natural differentiations enable people to categorize disparate information and construct metaphors, thereby enhancing human cognition. Diversity in nature provides a greater range of categories that is especially pertinent for early childhood development (Kellert 1996; Bekoff 1998b). The importance of this dynamic is underscored by the finding that upwards of 90% of characters in preschool books on counting and language are animals or natural objects (Kellert 1996). In addition, animals and nature are ubiquitous in fairy tales and stories. These represent cultural resources that inform social codes of conduct. Continued destructiveness toward nature may consequently impact human cognition and social relations (Kellert 1996).

If this case seems overstated, one might consider the brevity of human experience with industrialization. Some 99% of human history took place in hunter-gatherer lifestyles where experience with nature was direct and inescapable (Kellert and Wilson 1993). In E.O. Wilson's words, "The more we know of other forms of life, the more we enjoy and respect ourselves. Humanity is exalted not because we are so far above other living creatures, but because knowing them well elevates the very

concept of life” (1984: 115). More tangibly, aesthetic and symbolic values toward wildlife segue into their naturalistic value, as our enjoyment of the beauty and meaning of nature inspires us to experience it directly.

Fourth, the naturalistic value of wildlife involves people’s benefit from experiencing nature and wildlife. This can take the form of a variety of activities including bird- and wildlife-watching, fishing, hunting, eco-tourism, and hiking. These activities are very popular (Ehrlich and Wilson 1991; Dobson 1996; Kellert 1996; USFWS 1997a). Non-tangible benefits deriving from the naturalistic value of the wild include decreased stress levels, physical exercise, and the intellectual value of direct experience with nature (Kellert 1996).

The economic value of wildlife-related recreation is significant, particularly on a global scale (Dobson 1996; Kellert 1996). Nature-related tourism may comprise 10% of the world’s \$300 billion annual tourism market, which is growing at 10-20% annually (Kellert 1996). About five million Americans go abroad for nature-related tourism every year. In Amboseli National Park in Kenya, visitation raises \$40/hectare annually, contrasted with \$0.80/hectare if that land was used for agricultural purposes. Each lion in Amboseli raises an estimated \$20,000 per year and the elephant herds garner approximately \$610,000 annually (Dobson 1996).

Closer to home, FWS has conducted surveys of wildlife-related recreation demonstrating extensive outdoor recreation in the U.S. The agency determined in its most recent report in 1996 that seventy-seven million adult Americans, or 40% of the adult population, spent \$100 billion in the course of wildlife-related recreation. Their

expenditures supported hundreds of thousands of jobs (USFWS 1997a). American national parks host 300 million visitors annually (Kellert 1996).

However, eco-tourism and wildlife-related recreation are not without problems, as human visitation to protected areas impacts those lands and their wildlife (Dobson 1996; Kellert 1996). State wildlife agencies are primarily funded through fishing and hunting licenses and are therefore oriented toward managing wildlife for these activities. The result is wildlife “production” maximizing game populations. For example, state wildlife agencies throughout the U.S. stock non-native fish for anglers, despite alien species factoring in the imperilment of 53% of threatened and endangered fish species (Wilcove et al. 1998). Still, the evidence does indicate that wildlife-related recreation provides direct economic benefit to visited areas. In addition, Kellert (1996) found that bird-watchers, in particular, consistently expressed preferences for protecting wildlife and their habitat even if it meant individual economic sacrifice.

Fifth, ethical and moral values are a basis for endangered species protection (Kunich 1994; Spitzberg 1994; Kellert 1996; Sagoff 1997; Nagle 1998). The inherent value of species and duty of existing humans to future generations of humans are ethical reasons to protect species from extinction (Spitzberg 1994). These ethics intersect with religious or spiritual reasons for preventing extinction (Sagoff 1997; Nagle 1998). In one author’s perspective, “It would simply be immoral to destroy the remnants of a billion-year-old evolutionary history in order to produce a few more consumer baubles that add nothing real to human well-being” (Sagoff 1997: 986). The kinship of all life – given similar cell structure, genetic makeup, and human

existence as a byproduct of terrestrial evolution – is also a basis for prescribing strong ethical duties toward nature (Kellert and Wilson 1993; Leakey and Lewin 1995; Kellert 1996). Moralistic values toward wildlife therefore intersect with ecologicistic values, as the web of life finds humans as a part of nature, just as the moralistic view on wild animals as kin derives from our common ancestry and human evolution within nature.

The most widely applied religious argument for species protection is the story of Noah's ark. In the Christian book of Genesis, God regretted creating humans because they had become evil and decided to remove them from the face of the earth. However, God decided to spare Noah and his family and instructed him to build an ark. God directed Noah to bring onto the ark

...two of all living creatures, male and female, to keep them alive with you. Two of every kind of bird, of every kind of animal and every kind of creature that moves along the ground will come to you to be kept alive (Nagle 1998: 1217).

Noah did what he was told. Under this parable, human dominion over nature requires human stewardship as “God is the owner of creation who has asked us to serve as a trustee responsible for managing the earth on God's behalf” (Nagle 1998: 1227). This corresponds with scientists who have argued that humans have an obligation to protect nature given the position of Homo sapiens as the dominant species on the earth (Ehrlich and Wilson 1991).

Sixth, flora and fauna possess scientific value. Scientific research on the natural processes and the behavior of individual species provides knowledge to humans on anatomy, biology, psychology, genetics, and other scientific disciplines

(Wilson 1987; Kellert 1996; Bekoff 1998a). Scientific findings serve both educational and applied functions. Recently, scientists have advocated a “conservation medicine” approach in conservation biology that examines the ways in which human, animal, and ecosystem health inter-relate (Meffe 1999; Spear 2000; Norris 2001). For example, recent studies demonstrate that habitat destruction and encroachment of humans and domesticated animals can spread pathogens injurious to wildlife species and humans. Examples include deforestation causing malaria epidemics in South America, decreased biodiversity facilitating the transmission of Lyme disease to humans in the northeastern United States, climate change driving the expansion of encephalitis, malaria, and other diseases into new regions, tourists spreading measles to mountain and lowland gorillas (*Gorilla* spp.), and marine pollution contributing to immune system suppression in sea turtles (Norris 2001). Scientific knowledge gained from biodiversity studies therefore provides a basis for improving human and animal health.

Seventh, negativistic and dominionistic values toward wildlife factor in people’s lives. Humans may be fearful and averse to certain species of wildlife. This often derives from instinctual inclinations to avoid large predators and poisonous wildlife that posed a significant threat to humans during the hunter-gatherer portion of our existence on earth. However, the lingering distaste for these species of wildlife may translate into control programs that imperil species long after we have minimized the threat those species pose to human survival. In addition, the dominionistic value also derives from human survival instincts as competition in nature honed human skills and prowess and our consequent ability to survive in harsh environments

(Kellert 1996). Yet a Judeo-Christian concept of dominion over nature can provide the basis for destroying nature. Consider the following excerpts from Genesis (Nagle 1998: 1124, fn. 195),

Then God said... 'let [man] have dominion over the fish of the sea, over the birds of the air, and over the cattle, over all the earth and over every creeping thing that creeps on the earth' (1:26);

...fill the earth and subdue it; have dominion over the fish of the sea, over the birds of the air, and over every living thing that moves on the earth (1:28).

As these quotes indicate, theologically-based dominionistic values can correspond with and legitimate environmental destruction. However, as indicated above, the parable of “Noah’s Ark” may counter this dominionistic attitude toward wildlife by interpreting dominion as creating human stewardship duty toward the earth.

Regardless, the dominionistic and negativistic values toward wildlife easily align with prescriptions for wildlife control and habitat destruction. They are particularly potent given the capacity of modern technology to enact such destruction (Kellert 1996).

Finally, humans hold humanistic values toward wildlife (Kellert 1996).

Humans feel bonds of affection and love toward companion and wild animals, plants, and natural areas. This corresponds with notions of “biophilia” – or intrinsic emotional affiliation of humans to non-human beings (Kellert and Wilson 1993).

While biophilia derives from and is manifest in the multiple values toward wildlife described above (Kellert 1996), its expression is particularly apparent in humanistic expressions toward wildlife. Moreover, bonding with non-humans is offered by scientists as a way to more deeply examine and understand non-human perspectives and in fact to do better science (e.g., Bekoff 1998a; 2000). In addition, moralistic and

humanistic values can be translated into arguments against speciesism, defined as basing decisions on how to treat non-humans on taxonomic discrimination, rather than on the species' characteristics and consequent needs. Resisting speciesism entails making moral decisions about how to treat non-humans based on their unique traits (Bekoff 1998c). In the endangered species context, a commitment to non-speciesism would be based on circumscribing human behavior deleterious to the persistence of imperiled species.

As should be apparent, not all of the values in Kellert's spectrum promote wildlife protection. Negativistic and dominionistic values toward wildlife are likely to coincide with prescriptions for wildlife control. Alternatively, moralistic and ecologicistic values toward wildlife are likely to align with more wildlife protection. The utilitarian value is complex, as actors may invoke utilitarian values to promote unfettered economic production or the protection of wildlife for the benefits they provide to humans. This various interpretation of utilitarian values, and the broad range of values, which respectively challenge and support species protection, provokes the question of defining the common interest in the present study. Values are clashing in the endangered species debate and the question remains as to which one(s) should prevail.

Not all values are equal in political life. There are values that may function as rhetorical currency (Williams 1979). If they are breached or upheld, praise, blame, honor, or disrepute is the result. In this way, values function as "weapons in social struggles" (Williams 1979: 26). These "weapons" can be codified into generalized values and symbols that third parties not involved in a given dispute may consider as

legitimizing one side or the other. When disputes are resolved without repudiation of certain values, those values may become axiomatic to the broad public (Williams 1979).

These axiomatic values, manifested through the use of social symbols, are acknowledged within the Lasswellian framework (Lasswell 1971). Brunner (1993: 22) wrote that symbols “are probably the most significant factors and instruments shaping social process” but are overlooked by most policy analysts. Actors invoke symbols to explain and justify certain power arrangements and policies and symbols are part of political myths that embody “fundamental assumptions” about political issues (Lasswell and Kaplan 1950: 117). The use of symbols and myths is not inherently objectionable. To the contrary, unifying myths are the foundation of civilizations. An example of a symbol is invocation of “the People” in American political discourse, which appeals to a broad consensus on basic assumptions in the populace (Brunner 1994). These appeals are effective if they resonate with assumptions taken as a matter of faith within that populace.

Viewed from another angle, Ball-Rokeach and Tallman (1979: 82) argued that the efficacy of social movements in mobilizing an apathetic public is determined, in part, by their ability to create a “morality play” which impacts the popular conscience. This morality play prioritizes some values among others, and confronts those whose values and interests that conflict with those of the social movement. In the present study, the efficacy of the environmental and private property rights movements within Congress can be partially ascertained by assessing which values are invoked in Congress, by whom, and in what issue areas. More broadly,

institutions within a society embody different values and compete for influence over individuals' value systems. Values analysis therefore facilitates insight into interactions between societal institutions and between individuals and institutions (Rokeach 1979b). Lasswell (1970: 10) similarly described a close relationship between values and institutions with his definition of institutions as "patterns relatively specialized to the shaping and sharing of a category of values."

Empirical work indicates that the values actors prioritize differ according to social and demographic factors. For instance, Rokeach (1979a) found significant differences in American individuals' value hierarchies according to gender, race, and age. In his work, education and income did not significantly impact the values individuals held. More recent empirical study on American values toward wildlife by Kellert (1996) indicated variations in values across age, gender, ethnicity, education, and rural/urban lines. As children mature, they tend to favor naturalistic, moralistic, and ecogistic values above negativistic, dominionistic, and utilitarian ones. Women tend to prioritize humanistic, moralistic, and negativistic values toward wildlife, while men emphasize utilitarian and dominionistic ones. Regarding ethnicity, African-Americans tend to emphasize utilitarian and negativistic values toward wildlife more than European-Americans. Kellert found that education is the most important force factoring in individual perceptions of nature and biodiversity. With increased education, utilitarian, dominionistic, and negativistic values tend to be systematically de-emphasized, while ecogistic, moralistic, and scientific values became of greater concern. Finally, urban/rural differences in values were important, with rural Americans prioritizing the utilitarian value more than urban Americans,

and urban Americans prioritizing the moralistic values more than rural Americans. Regarding wildlife, livestock producers had the strongest utilitarian value and weakest moralistic one.

In addition, Kellert (1996) found that there have been significant changes across time in how Americans value wildlife. The utilitarian value has steadily declined in rank among Americans from 1900-1976, with the exception of the two World Wars. Alternatively, the ecologicistic value has increased in importance among Americans especially since 1960. However, it is still uncommon in most Americans, particularly when compared with their usage of the utilitarian value. Kellert's longitudinal study of value change ends in 1976. The present study therefore provides a picture of American values, albeit in a narrower congressional context, where Kellert's study left off.

Clashing Values

Opposing sides in political debates may hold the same values but rank them differently (Ball-Rokeach and Tallman 1979). Variant value rankings do not always peacefully coexist. Mann and Plummer (1992; 1995), for instance, argued that although there are utilitarian and moral reasons to protect species from extinction, the economic costs of such protection might be burdensome. In particular, the conflict between private landowners and land-use restrictions resulting from the ESA needs to be addressed, and choices need to be made about which species will be protected (Mann and Plummer 1992; 1995; Mason 1999).

More broadly, Sagoff (1997) explored in depth the conflict between ecosystem protection and neoclassical economics. It is worth examining Sagoff's relativist position regarding the merits of ecosystem protection versus economic growth. If ecosystem protection is merely another "religion," as Sagoff indicated, perhaps it no more deserves to be prioritized in public policy than economic growth. If this is the case, the precautionary principle, as presented in this dissertation, may be as equally suited for preventing harm to the U.S. economy as it is for preventing harm to endangered species.

In Sagoff's estimation, the perspectives of ecology and private property advocacy alike are religions, both of which are founded on the notion of interconnection. While the former perspective holds that everything in nature is interconnected, the latter maintains that the destruction of private property rights is connected to a broader loss in individual freedoms. He discounted the private property rights view by indicating that the Supreme Court has not had difficulty in distinguishing property rights from civil and political freedoms. In addition, the neoclassical assumption that the increased production consumer goods will increase human welfare is based on "faith," not evidence, and therefore amounts to theology. To support this point, he noted studies indicating that rising prosperity in the U.S. since the 1950s has been accompanied by a decreasing level of people's satisfaction with their lives.

Regarding the ecological view, Sagoff criticized the concept that everything is interconnected and extinction must therefore be avoided. The concept that everything is interconnected, which Sagoff recognized was employed in the earliest ESA

legislative history, materialized in arguments to prevent extinction to avoid the disruption of ecosystem services and other utilitarian values provided by species. He argued that the discipline of ecology should abandon its struggle to find meaning and order in ecosystems as none exists. Rather, scientific developments from the 1970s have indicated that chaos and disequilibrium, where nature responds to “an unceasing barrage of perturbations” (Worster 1990, cited in Sagoff 1997: 893), are more the rule in natural ecosystems than order and equilibrium. Sagoff noted the Ecological Society of America’s warning that anthropogenic perturbations are different than natural ones, as human actions may exceed natural limits, but he discounted the ecological view that human impacts on nature are de facto negative.⁴

Although ecologists have abandoned the idea of order in nature and equilibria in ecosystems, Sagoff argued, they have not given up the view that ecosystems are inherently good, and humans should leave nature alone. Sagoff did not dismiss ecosystem protection, rather he maintained that it should be advocated on the basis of moral, aesthetic, and spiritual concerns. He argued that there is little rigor in ecosystem services/utilitarian rationales for species protection. In Sagoff’s view, ecological collapse has not resulted from species extinction and “[t]he wholesale alteration of nature, in general, seems to have gone well for human beings” (1997: 931). In short, ecology is a normative science that has failed to provide objective, compelling utilitarian arguments for species preservation. Impediments within the discipline include, for instance, lack of consensus on classifying ecosystems and the

⁴Sagoff (1997: 930) wrote, “Unless one assumes beforehand that mankind is essential sinful – because of Adam’s fall, for example – there would be no reason...to distinguish anthropogenic forces from others that constantly alter the flora and fauna in any environment.”

inability of ecologists to determine natural baseline conditions for an ecosystem and a consequent failure to provide objective standards for what constitutes a “healthy” ecosystem.

Moreover, although species have gone extinct in the U.S., Sagoff argued that there has been no accompanying decrease in ecosystem services provided to humans. The reason for this lack of impact on human utilitarian welfare is that species are redundant, “for any species that is lost, tens, hundreds, or thousands of others are ready, willing, and able to perform the same functions and services valuable to human beings” (1997: 904). A specific example cited by Sagoff is that of three pocket gophers that have gone extinct. He asked, “Has any ecosystem service diminished owing to the loss of these pocket gophers? Or have other species, including many other kinds of gophers, simply taken their place?” (1997: 904). Although pocket gophers have been described as performing keystone roles in their ecosystems (Sherrod 1999; Sherrod and Seastedt 2001), Sagoff maintained that even the extinction of keystone species would likely not impact human welfare. The very notion of a keystone, argued Sagoff, depends on the assumption that, like a keystone used to sustain an arch in building design, ecologists presume that a keystone species sustains the order in an ecosystem. However, because there is no order to ecosystems, the idea of a keystone assumes a purpose that, Sagoff maintained, cannot be assumed.

To buttress his species redundancy argument, Sagoff cited Colin Tudge, a science writer who has argued that humans will be largely unaffected by species extinction and that cultivated systems outproduce wild systems. Tudge claimed that humans could survive if 99.9% of the earth’s species went extinct, so long as the

remaining 0.1% were the species that humans need. Sagoff pointed out that only about twenty species (“not one of which is endangered”) provide 90% of the world’s food.

Sagoff’s analysis falters in two ways. First, a recent refinement of the keystone-species concept involved the addition of uniqueness and irreplaceability as a characteristic of a keystone species (Kotliar 2000). This builds on the former requirements set forth of a keystone species having 1) large effects on community structure; and 2) these effects being disproportionately large relative to the keystone species’ abundance (Power et al. 1996; Kotliar et al. 1999). Sagoff’s assumption that keystone species can be replaced by other species is therefore incorrect.

Second, human dependency on only a few species for the bulk of their food creates vulnerability to agricultural blight (Spitzberg 1994; Abramovitz 1997). This is an especially acute danger given the release of pests and pathogens impacting human and ecosystem health as natural controls are compromised (Morris and Heidinga 1997; Spear 2000; Norris 2001). In addition, the redundancy of species in ecosystems is not a valid rationale for continued extinctions. Rather, it is unknown at what point we have so compromised ecosystems through species extinctions that we will not be able to repair the harm. Pimm (1992: 381) termed this the “humpty-dumpty effect,” described as, “even with all the pieces, we cannot put the community back together again.” The humpty-dumpty effect may be triggered by ecological degradation even without species extinctions, as “all the pieces” are presumably still present.

Anne and Paul Ehrlich analogized the loss of species to rivets being removed from an airplane. While one rivet in isolation may seem unimportant, at some point

rivet removal will cause the plane to malfunction (i.e., fall apart). In this metaphor, rivets are species and the airplane is an ecosystem. Although there is a lack of certainty about the threshold at which species loss will cause ecological collapse, with the continued trajectory of species loss, it is suspected that at some point collapse will occur (cited in Leakey and Lewin 1995).

An outgrowth of the lack of certainty about thresholds below which ecological integrity is compromised is a prescription for precaution by scientists. For example, the “safe minimum standard” approach, which corresponds to the precautionary principle, requires that “where irreversibilities exist (loss of a species), the irreversibility should be avoided unless the social cost of doing so is prohibitively high” (Bulte and van Kooten 2000: 118; See also Bishop 1978). Although the standard is described as based on ethical duties to future generations (Bulte and van Kooten 2000), a concept with which Sagoff did not disagree (1997), it seems that ecosystem services arguments provide ecological and utilitarian bases for subscribing to the standard as well. This clarification is not unimportant, as demonstrating that the safe minimum standard appeals to both self-interested and other-regarding actors affirms the propriety of describing this standard as a part of the common interest. Put differently, for utilitarian and non-utilitarian reasons, the concept of irreversible harms to species and ecosystems requires precaution on the side of species protection.

The gravity of irreversible harms is supported by the Lasswellian acknowledgement of limited human cognition. In the context of species extinction, human limitations include our difficulty in perceiving long time frames (e.g., of centuries or more), and the failure of our market systems to assess the utilitarian value

of species. Regarding time frames, the predominantly short-term human perspective hinders our ability to assess environmental destruction. While the present generation of humans operates at an immediate time scale, the process of evolution operates at a geological time scale (Gould 1993; Cheney 1995; Leakey and Lewin 1995). Adopting a broader timeframe, Kaufman (1996: 514) commented on exponentially rising extinction rates, concluding that “[o]n a geological time scale...the wheel is spinning at a blurring rate, and the disappearance of species amounts to a virtually instantaneous mass extinction.” Historically, mass extinctions unfolded over the course of a few million years.⁵ For perspective, we should consider that the human species has only existed for 150,000 years (Leakey and Lewin 1995). Given the time frame over which mass extinctions unfold, these extinction episodes would likely escape human detection. It is therefore difficult, if not impossible, to fully consider the utilitarian impacts of species extinction within a human time scale.

In addition, humans are hindered in our ability to assess the utilitarian values of species, given that the subtleties of ecosystem services may not register in market systems. Kunich (1994: 524) commented that,

The species that have less obvious benefits to humans...may not be so fortunate. In some cases, for example, it is not even known which species of insects pollinate which useful plants, or which species are depended on by birds, fish, and other creatures for their sustenance, so humans may destroy or allow the destruction of these insects without realizing the consequences.

For example, a lack of pollination could usher in crop failure, and crop failure can result in mass starvation. Although the U.S. is generally not perceived to be

⁵An exception to this would be mass extinctions caused by asteroid impacts with the earth, which would occur within years or centuries (Leakey and Lewin 1995).

vulnerable to the threat of starvation, fully one-third of U.S. crop production is from plants pollinated by insects and is therefore vulnerable when harms to these beneficial insects occur (Abramovitz 1997). Thwarted pollination would have direct impacts on utilitarian values and stem from anthropogenic threats to ecosystems.

The level of human scientific certainty may fluctuate, with species valuations conducted at certain phases of human knowledge being grossly inaccurate at later phases of human knowledge. If human extraction is allowed to extinguish life forms, we may void opportunities for human advancement before we are even aware they exist. These voided opportunities represent irreversible choices. Citing the examples of the rosy periwinkle and Pacific yew tree, Laura Spitzberg wrote (1994: 233),

Why choose to be economically stable if a species with the only cure for a world plague dies? The problem here is that there is a knowledge gap. By the time certain knowledge is found, it may be too late. Therefore, is it not better to take some precautions now, even at the present stage of relative ignorance?

Further, given the ecologically important roles that invertebrates play in ecosystems, their endangerment is more likely to imperil ecosystems and is more likely to go unnoticed than the imperilment of charismatic megafauna (Wilson 1987; Kunich 1994).⁶

Indeed, while Sagoff used the lack of scientific understanding to describe ecology as simply a “religion,” he failed to consider that the lack of scientific understanding provides a sound basis to err on the side of species protection. While U.S. society has a rich and complex set of laws and regulations aimed at ensuring its

⁶Stated Wilson (1987: 345), “The truth is we need invertebrates but they don’t need us...if invertebrates were to disappear, I doubt that the human species could last more than a few months.”

citizens basic human needs are met,⁷ the ESA stands alone as potentially effective insurance against species extinction. To err on the side of species protection is to increase the effectiveness of that insurance particularly when both the value and status of what one is protecting is often shrouded by scientific uncertainty.

Another counter to Sagoff's relativism between the value of economic production and ecological protection is that endangered species indicate the health of human communities (Houck 1995). Endangered species are "indicators of something larger; the health of the earth. Threats to the earth are threats to ourselves..." (Houck 1995: 299). Just as effects on animals are used to generate standards for water and air quality under the Clean Water and Clean Air Acts, the imperilment of native species should be considered the basis for generating standards for ecosystem protection. Keystone species in particular may be able to signal the health of an ecosystem. Indeed, Oliver Houck described the ESA as a surrogate for protecting ecosystems, considering its mandate to subsume the air and water quality protection provided by the Clean Water and Clean Air Acts. He therefore described the ESA as an "Earth Pollution Act" (Houck 1995: 328), the rigorous enforcement of which directly benefits human welfare.⁸

Further, just as pollution laws trump private property rights, so should the ESA. In Houck's (1995: 302) perspective, "[n]o one, no matter what one owns, has the right to go too far." Private property rights aside, "no one owns the right to extinguish a form of life on earth" (Houck 1995: 332).

⁷I am not here saying that Americans' basic human needs are all adequately met.

⁸Houck (1995: 322) stated "Restrictions on development to protect these [endangered] species are as necessary as restrictions to maintain oxygen levels for air and water quality..."

Not only does this extinguishment of life forms degrade human quality of life, it poses direct dangers to human welfare (Houck 1995). For instance, destroying mangrove and coastal wetlands diminishes the ability of those habitats to buffer coasts from erosion and storms (Abramovitz 1997). In addition, livestock overgrazing in the Southwest has resulted in increased desertification of arid grasslands and invasion of shrubs (Walker et al. 1981; Brown and Archer 1987; Bahre 1995; McPherson 1995; Weltzin et al. 1997). This is part of a much greater desertification problem. According to Johannes Rau, the President of the Federal Republic of Germany, in his opening speech at the 4th Conference of the Parties of the United Nations Convention to Combat Desertification (UNCCD),

- A quarter of the earth's surface is threatened by desertification, an area of over 3.6 billion hectares;
- Since 1990 6 million hectares of productive land are being lost every year due to land degradation;
- The world's drinking water supplies have fallen by almost two-thirds since 1950. Every year twelve million people die as a result of water shortages or contaminated drinking water;
- Desertification threatens the livelihoods of one billion people and has already made 135 million people homeless;
- Desertification generates every year income losses totalling US \$ 42 billion; and
- Desertification makes for poverty and poverty makes for further desertification.⁹

These forms of habitat degradation can therefore dramatically decrease the physical safety and economic productivity of humans, both utilitarian concerns.

⁹These are direct quotations from <http://www.dse.de/aktuell/cop4news.htm>, visited 7 January 2002, linked to the UNCCD website.

In the end, on the basis of exclusively utilitarian concerns regarding human survival and quality of life, precaution on the side of species protection is a reasonable prescription. However, preoccupation with these tangible concerns omits intangible values from analysis (Norton 1987; Kellert 1996; Gatto and de Leo 2000). On the other hand, it is useful to demonstrate that even on the basis of economic utilitarian concerns, the concepts of irreversibility and hindered human cognition indicate why precautions should err on the side of species protection. When other values are brought in – including moralistic, aesthetic, symbolic, and naturalistic ones – the case for erring on the side of species protection is strengthened.

The policy sciences perspective entails scrutinizing whether a policy outcome will promote the common interest or special interests. Interests are special when they are contrary to shared interests and are common when they are shared. Common interests are exclusive when salient events are more important to subsections of the population and are inclusive when they are important to the population as a whole (Lasswell and McDougal 1992). By scrutinizing the values embodied in institutions, a policy scientist can appraise whether that institution contributes to human dignity and therefore represents the common interest (Lasswell 1956; 1971). The obligation of the policy scientist is to prioritize the realization of human dignity for the many versus the few. For Lasswell, the key was honoring human dignity on the widest scale possible, for example, by broadly sharing power, wealth, and skill.

Uncovering the common interest in the ESA context is complicated, however, given Lasswell's focus on human dignity. The dignity of species other than human beings is a significant part of ESA discourse. To dismiss such concerns is to define

the common interest in an exclusive way. Given the extensive research that supports endangered species protection based on a plurality of anthropogenic and non-anthropogenic values and given the ESA's explicit purpose (in the law's Section 2) of protecting species from extinction due to a range of values those species possess, I expanded Lasswell's guideline for defining the common interest to include the dignity of species other than human beings.

For the present study, the key question regarding the common interest is whether it is defined to ensure unfettered economic production or to ensure environmental integrity. If both are equally valid common interests, does the precautionary principle provide a valid decision-making standard or can its "better safe than sorry" precept apply equally to safeguarding economic growth and the environment? I argued above that the precautionary principle could not reasonably be interpreted on utilitarian or non-utilitarian grounds to safeguard economic production when species are threatened with extinction. The only values in Kellert's systems that would be excluded from such an assessment are dominionistic and negativistic ones. These are the values most likely to intuit wildlife control and they are closely tied to exclusionary world-views denying dignity to species other than human beings and possibly to future generations of human beings. They therefore conflict with my stipulation that the common interest honors the dignity of humans, non-humans, and future generations of humans.

The common interest in the endangered species arena requires that species be safeguarded from extinction. Indeed, diverse actors in the debate generally share that goal. Contention flows from the costs that accrue from such protection. The concept

of irreversibility requires that precaution be on the side of species conservation, rather than economic vitality. Although foreclosed economic opportunities may flourish at a future date, the same is not true for foreclosed opportunities to prevent species extinction. The damage incurred when a species goes extinct is irreversible and the ramifications – economic, ecological, aesthetic, and moral – may be many. Consequently, I define the common interest regarding the ESA as preventing extinction in an effective way that will curtail economic activities when necessary.

Congressional intent

Looking through the lens of problem orientation and focusing on the values actors invoke and the themes of ecosystem protection and the precautionary principle, I analyzed the ESA's legislative history in 1973, 1978, 1982, and 1988 to ascertain the congressional intent behind the law. Congressional intent can be brought to bear in assessing FWS implementation of the Act and suggesting administrative and litigious ways to address continued controversies within the key ESA battlegrounds.

However, the value of using legislative history to discern congressional intent is the subject of disagreement in the U.S. Supreme Court. One case illustrating the debate is Chicago v. Environmental Defense Fund (511 U.S. 328 (1994)). Justice Antonin Scalia authored the majority opinion, holding that the ash resulting from incinerating household trash constituted hazardous waste governed by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6921 et seq.). Scalia criticized the use of a Senate Committee Report by the City of Chicago, refusing to attach

significance to it in deciding for the court. In the dissenting opinion, Justice John Paul Stevens asserted that Scalia's opinion indicated "a misunderstanding of, or a lack of respect for, the function of legislative committees." Stevens described the purpose of a committee report as providing to congresspeople not on the committee "a summary of the provisions of the bill and the reasons for the committee's recommendation that the bill should become law." According to Stevens, although the report lacks the force of law, congresspeople can assume the committee report's description of the text of a bill summarizes the proposed legislation (Chicago v. Environmental Defense Fund, fn 7).

The disagreement between Scalia and Stevens over the importance of legislative histories continues to the present. For instance, in Alexander v. Sandoval (Docket No. 99-1908 (2001)), Scalia relied on a strict interpretation of the Title VI of the Civil Rights Act of 1964 statute (42 U.S.C. § 2000d et seq.) to deliver the majority's opinion that private individuals may not sue to enforce disparate-impact regulations promulgated under Title VI of this Act. In that case, Stevens dissented, employing citations from floor debate and committee hearings leading up to the Act and its amendments to argue that private individuals should have standing to sue under that Act.

Scalia's insistence on strict statutory interpretation is especially important to consider in this dissertation, given his criticism about attaching significance to the "broad purpose" of laws when they lack implementing provisions. He articulated this critique in the dissenting opinion to Sweet Home. He took issue with the majority opinion's argument that "the broad purpose of the ESA supports the Secretary's

decision to extend protection against activities that cause the precise harms Congress enacted the statute to avoid” (515 US 687, 698). Scalia argued, “I thought we had renounced the vice of “‘simplistically assuming that whatever furthers the statute’s primary objective must be the law’” (515 US 687, 725, excerpt is from Rodriguez v. United States, 480 US 522, 526). In Scalia’s estimation, the view that “[t]he Act must do everything necessary to achieve its broad purpose’ is the slogan of the enthusiast, not the analytical tool of the arbiter” (515 US 687, 725, excerpt is from TVA v. Hill 437 US 153, 184-5).

The regulation at issue in Sweet Home was the definition of harm, defined by regulation as including habitat modification resulting in actual injury or death to a listed species (Chapter II). Scalia therefore dismissed as “the slogan of the enthusiast” the majority’s opinion that this regulation was justified (in part) because habitat modification is a primary cause of species extinction and the ESA’s purpose is to prevent species extinction. Undoubtedly, he would similarly discount the view examined in this dissertation that, given the ESA’s stated purpose of protecting ecosystems, the law should be implemented in a way that maximizes ecosystem protection.

The focus of this dissertation is on congressional intent and the broad purpose of the ESA. It is therefore an analysis, in part, of the problem of disregarding legislative history when in interpreting statutes. That challenge doubly requires a rigorous evaluation of the legislative history, using both quantitative and qualitative methods. I review my methods in the next chapter.

Observational standpoint

In keeping with Lasswell and post-positivism (e.g., Torgerson 1985; 1986), I will discuss my observational standpoint and engage in self-aware analysis by disclosing the motivation for my inquiry and my conception of the common interest. First, I am inclined to prescribe ESA reform and changes in ESA implementation given my perception that the extinction crisis, in this country and abroad, is not abating but rather is growing worse. It is clear that the ESA is integral to stemming this crisis within the U.S., and it is also clear that ESA implementation is rife with problems (Chapter II).

My foundation for believing that there is an extinction crisis includes E.O. Wilson's (1992) frequently cited estimate of an extinction rate that is 1,000 to 10,000 times the normal background rate, which is corroborated by other authors. For instance, Pimm et al. (1995) placed current extinction rates at 100 to 1000 times pre-human levels, with the potential for those rates to be multiplied by a factor of 10. Chapin et al. (1998) cited this estimate as well. In absolute terms, Scott et al. (1987) suggested an extinction rate of 1,000 – 5, 000 species per year. Kellert (1996) indicated sources suggesting that 15,000-30,000 extinctions may be occurring annually. In North America alone, known extinctions have risen from six between 1100 to 1600, to twenty from 1600 to 1850, to 500 from 1850 to the present (Kellert 1996). Ehrlich and Wilson (1991) estimated that there are at least 4,000 species rendered extinct annually due to tropical deforestation alone. Although it is difficult to verify extinctions, more than 1,000 species are known to have gone extinct over the

past 400 years (Smith et al. 1993b; Morris and Heidinga 1997). The current extinction rate is the highest it has been in sixty-five million years (Leakey and Lewin 1995; Brown 1997), and there is a growing international scientific consensus on biological catastrophe resulting from lost biodiversity (Ehrlich and Ehrlich 1996).¹⁰

The ESA may not be sufficient to fully address the biodiversity crisis, even within U.S. borders, but it is one of the strongest tools available for the task (O'Connell 1992). Due to the present extinction crisis being caused by humans¹¹ and given my conviction that humans must bear the responsibility for human actions, I am actively engaged in trying to prevent wildlife from disappearing in my region in the Great Plains and the American Southwest. I am also involved in wildlife protection work aimed at shifting the paradigm from attitudes supporting the exploitation of wild lands and wild animals to that of peaceful coexistence with the natural world. My primary values are moralistic and ecologicistic.

Second, I have chosen the Lasswellian framework and a focus on values given my belief that there are valid critiques of positivism put forward by post-positivists, but that post-positivist inquiry should still strive to attain the level of empirical rigor to which positivist practitioners aspire. I have provided a description above of the

¹⁰In an appendix to their book, Ehrlich and Ehrlich attached the "World Scientists' Warning to Humanity", which includes among its concerns the loss of species. In the Warning, signatories agreed that species extinction may reach one-third of existing species by 2100. The signatories include over 1,670 scientists (as of 1996), including the majority of living Nobel laureates.

¹¹In Brown's words, "Ever since Homo Sapiens grasped planet Earth with their opposable thumbs, they have exerted a force on the biosphere far beyond that of other species" (1997). Other sources indicating human causation of the current extinction crisis are Ehrlich and Wilson (1991), Wilson (1992), Kellert and Wilson (1993), Kellert (1996), Ehrlich and Ehrlich (1996), Wilcove et al. (1998).

value that can be provided by a post-positivist approach, and I will indicate in Chapter IV ways the rigor of post-positivist empirical work might be improved.

Third, my focus on values derives from my perspective that the resolution of environmental policy gridlock requires that we scrutinize the assumption that environmental protection always comes at the expense of economic vitality. I believe we need to re-examine this characterization, as there are important ways in which the two can be mutually supportive, rather than competitive (Ehrlich and Ehrlich 1996). As presented above, significant medicinal and agricultural advances accrue from protected natural areas (Noss and Cooperrider 1994; Dobson 1996), as do tremendous economic benefits from biodiversity and ecosystem services (Pimentel et al. 1997). These measures, of course, do not consider non-tangible values toward wildlife and the wild (Norton 1987; Kellert 1996), which are inestimable, but which impact human lives. I also believe that economic growth does not always mean an increased human quality of life,¹² even in terms of more orthodox measures of basic human needs.

In sum, this dissertation is based on a post-positivist approach that places a central focus on what people say and how they say it. Actors may invoke multiple values (some of which contradict each other) and they may invoke alternatives contrary to the values they purport to seek. It is my hope and expectation that a focus on actor's words will provide illumination across the history of the ESA on the

¹²See discussion under "Clashing Values." In addition, an example I would cite is an issue currently being played out in the Denver media, where the economic boom in urban Colorado has meant remarkably low unemployment rates and increasing wages. However, the working poor are experiencing a pernicious side-effect from this economic growth, in that rising rents are increasingly cost-prohibitive to them (Peter Chronis, "Boom Boosts 'Fringe'; Transients Among Many Landing Jobs", *Denver Post*, p. A-01, March 1, 1999). Consequently, working poor families whose "bread-winners" may have two jobs are unable to hold their apartments and homes and seek refuge in homeless shelters, and more Colorado children are living in poverty than ever before (Carol Kreck, "More Kids are Living in Poverty", *Denver Post*, p. B-01, August 13, 2000).

potential for a precautionary, ecosystem-oriented approach to U.S. endangered species policy. That is my goal, due to my observational standpoint that there is a biodiversity crisis that we humans must thoughtfully and effectively address.

Conclusion

In sum, the Lasswellian framework, combined with more recent work on problem definition and values toward wildlife, provides a useful theoretical perspective through which to discern the congressional intent behind the ESA. Specifically, my examination of the values invoked in ESA debate, and the use of the ecosystem and precautionary themes, aim to fill in a gap in the literature on this law.

There is clearly a clash of values in debates surrounding the ESA, yet there is an insufficient picture of just what values are clashing, whether they have clashed at different intensities at different times in the act's history, and whether they must necessarily clash in the future. Filling in this picture about values is important, as indicated in the preliminary map in this chapter, to develop a historically- and valuationally-based background on the ESA.

Previous work has tended to review highlights within the ESA's past in a summary-type format in order to move forward to a particular issue about the Act upon which the researcher will direct his/her focus. Those studies contribute to learning about certain ESA issues but fail to provide a systematic description of what has taken place in the history of the ESA. To build upon the significant amount of scholarly attention that has been directed toward prescribing ESA reforms, after

describing how elements of ecosystem management and the precautionary approach have been employed in the act's legislative history, my analysis largely centers on the seven ESA battlegrounds I detailed in Chapter II. It is within these battlegrounds that controversy endures, and it is my purpose to provide thoughtful, specific suggestions in these particular issue areas to get on with the business of protecting species in the US.

CHAPTER IV

METHODOLOGY

I employ quantitative text-coding, qualitative content analysis, and case studies in this dissertation. There are several reasons for using multiple methodologies. First, values analysis and the Lasswellian framework require multiple approaches to ascertain the context in which values are invoked and given the interdisciplinary nature of the policy sciences (Lasswell 1970; Rokeach 1979b). In addition, the employment of multiple methodologies provides a basis for methodological triangulation, where the findings of one method are cross-checked with another method (Campbell and Fiske 1959; Stake 1995).

Another priority in my research design is that it be as transparent as possible. According to King et al. 1994 (23, emphasis in the original), “Our first and most important guideline for improving data quality is: record and report the process by which the data are generated.” In their view, the procedures for both data generation and analysis need to be public. An important danger accruing from a lack of transparency in data collection is the door it leaves open for the charge of engineering the evidence to reach findings preferable to one’s ideological bent (Wickham-Crowley n.d.). Given the controversial nature of ESA political discourse, I make every effort to conduct a rigorous study.

Despite my efforts an increased rigor, I do not presume that the resulting study is value-free. As Robert Stake (1995: 95) put it,

Phenomena need accurate description, but even observational interpretation of those phenomena will be shaped by the mood, the experience, the intention of the researcher...Research is not helped by making it appear value free. It is better to give the reader a good look at the researcher.

To respond to this acknowledgment that research is not value free, I describe my methods in detail in this chapter. I made my orientation transparent in my previously described observational standpoint (Chapter III).

Congressional text coding

My theoretical foundation focuses on values actors invoke and outcomes they seek, based on the Lasswellian policy sciences, contemporary research on problem definition and rhetoric, and literature on the values of wildlife. I developed my coding scheme after reviewing related work on text analysis (Appendix A). My priority in methodological design is to develop a transparent method, using transparent data collection, to conduct post-positivist analysis in a rigorous way.

A recent work useful in developing my coding method is Mihata (1995), which applied a problem definition approach to New York Times texts regarding endangered species policy. Mihata's approach involved a transparent data collection method: all opinion pieces within the Times for selected periods from 1970-1995, coded according to a problem orientation schematic attached as an appendix to his thesis. Mihata also coded the author's position that roughly translates to my coding of the author's preferred solution.

My divergence from Mihata's approach includes that he treated a problem definition as one unit, while I disaggregate mine into goals, trends, conditions, projections, and alternatives, based on Lasswell and problem definition literature. In addition, he paid attention to science only as one of his argument categories rather than considering the scientific value and arguments related to science that materialized in the precautionary principle. Given theoretical differences between Mihata's work and my own, it makes sense that the data Mihata coded differs from the proposed study (King et al. 1994). However, my method builds on Mihata's methodological approach.

Data Set. I code the Congressional documents comprising the legislative history of the 1973 ESA and amendments in 1978, 1982, and 1988. The legislative history comprises the committee hearings, sessions of Congressional debate, and conference reports referenced in the Congressional Information Service Legislative Histories (Appendix B).

The official legislative history of the ESA, however, only goes through the last set of amendments to the ESA in 1988, and the Act has not been reauthorized since 1992.¹ I therefore chose two case studies from the 1990s to the present. This makes my study current and specifically addresses the roles of ecosystem management and the precautionary principle in the implementation of the Act.

Data Coding. The theoretical framework outlined in Chapter III provides the basis for the data coding. My coding template has three parts: problem orientation, speaker identity, and venue. Problem orientation focuses on a speaker's values and

¹The 1988 amendments reauthorized the ESA until 1992.

preferred alternatives. My research preserves the variety of values and motivations for political action that Lasswell provides but replaces the values he identifies with Kellert's system of values toward wildlife, as reviewed in Chapter III.

I code the alternatives promoted by speakers in terms of increased or decreased wildlife protection and specific recommendations on ESA reauthorization. Speaker identity includes political party, where applicable, and the specific roles of legislators (e.g., subcommittee member), as well as administrators, scientists, and nongovernmental actors. Policy venue delineates whether the testimony occurred in a hearing or on the floor, and whether it was oral or written.

Table 4-1. Scheme for coding participants in the ESA's legislative history, 1973-1988. Adapted from Lasswell (1971) and Lasswell and McDougal (1992).

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| <ol style="list-style-type: none"> 1. Problem Orientation. <ol style="list-style-type: none"> a. Goals [values promoted] b. Trends [identified patterns in issue area] c. Conditions [causation theories] d. Projections [predictions if status quo remains] e. Alternatives [outcomes sought] 2. Identification of political actor <ol style="list-style-type: none"> a. Political party [Republican, Democrat, third party] b. Political role 3. Venue <ol style="list-style-type: none"> a. House of Representatives vs. Senate b. Committee/Floor/Report c. Type of testimony: written or oral |
|--|

I code speakers in three sections (Table 4-1). The first section of the coding addresses a speaker's problem orientation, the delineation of which follows from Table 3-2. Under the first subsection, I code goals or values. These are coded

according to the spectrum of values toward wildlife developed by Stephen Kellert (1993; 1996), which includes the following:

1. aesthetic/symbolic
2. dominionistic
3. ecologicistic
4. humanistic
5. moralistic
6. naturalistic
7. negativistic
8. scientific
9. utilitarian

After preliminary review, I divided utilitarian values according to whether the speaker's emphasis was limiting species protection to avoid economic constraints or whether a speaker advocated the protection of species for utilitarian benefits (e.g., value of species diversity to agriculture and medicine). These are both examples of utilitarian value invocation, but with very different emphases, they should be distinguished accordingly. The economic harms orientation I termed "economic" and the species protection-oriented utilitarian perspective I termed "utilitarian/protective."

The next important subsection of a problem orientation is the preferred alternative sought by an actor. This is coded according to whether the actor sought increased or decreased wildlife protection, and/or whether the speaker supported reauthorization with or without weakening or strengthening amendments. The spectrum is depicted as follows:

| (-)
Less wildlife
protection

| (R-)
Reauthorize
with weakening
amendments

| (R)
Reauthorize

| (R+/+)
Reauthorize with
strengthening
amendments/increase
wildlife protection

Although imperfect for its simplification of actors' preferred alternatives, this spectrum provides a simple coding scheme that serves as the basis for correlations between values invoked and alternatives sought.

One of the most difficult choices is coding whether an actor advocated a weaker (R-) or stronger (R+) ESA. I make this evaluation by taking the primary bill, on which hearings were conducted or being discussed on the floor, as a baseline. The general guidelines are: 1) shorter reauthorization periods are equated with a weaker ESA and longer reauthorization periods with a stronger ESA; 2) emphases on balancing economic growth and species protection and/or reducing economic impacts are equated with a weaker ESA; and 3) attempts to expand ESA protections – to plants, candidate species, etc. – are associated with a stronger ESA.

In addition, since I am coding the preferred strength or weakness of a federal ESA, attempts to limit federal power in favor of state autonomy over species are considered to be advocacy of a weaker Act. However, attempts to increase or stabilize funding for state cooperative programs under the federal ESA are considered as advocacy of a stronger ESA. The state/federal ESA relationship certainly merits more elaborate treatment than I can provide, and I suggest a more extensive treatment be pursued in future research.

The focus in my text-coding scheme is on values actors invoked and outcomes they promoted. However, the subsections under problem orientation on conditions, trends, and projections are also recorded to preserve adequately actors' problem orientations. They will not be employed in the current study. The guidelines by which I code these facets of problem orientation are as follows:

Trend:

- a. What patterns were identified?
- b. Particular focus on: role of public.
- c. Particular focus on: role of science. Was sufficient or insufficient data identified? Adequate or inadequate studies? Extinction rates?

Condition:

- a. Particular focus on: cause of species imperilment or statutory/regulatory credit or blame for ESA success/failure.
- b. Blame on administering agency? Identifiable social group (e.g., environmentalists or industry)?

Projection:

- a. What will happen if bill is or is not passed?
- b. What will happen if cause/condition is not addressed?
- c. Will the ESA stop extinction?

The second section of the coding involves speaker identity. The identity of a political actor is underscored in the theoretical approach of this dissertation given Lasswell's focus on participants with their perspectives. The purpose of this part of the coding schema is to fill out the descriptive context of ESA history by making possible generalizations about the values associated with Republicans versus Democrats (or noting the inability to make such generalizations), and the extent to which different parties invoke different values over the course of ESA history. The source for congressional actors' political party was the federal Congressional Biographies (<http://bioguide.congress.gov/biosearch/biosearch.asp>).

Identifying the political role of an actor (particularly when considered alongside "venue," in the next part of the coding scheme) enables me to potentially make observations on the influence of an actor's situation, or institutional context, on the values and policies promoted. A variety of actors appear in the course of the congressional ESA context: congresspeople (including members of relevant

committees and subcommittees) laypeople, industry spokespeople, environmental spokespeople, administrators, scientists, and others.

The third section of my coding addresses venue. The logic is that delineating whether the problem definition was asserted on the House or Senate floor or within a subcommittee might unearth patterns of differential uses of values across varying venues. Another measure of venue is the type of testimony that a speaker provides – whether it was oral or written. I do not analyze the significance of the oral versus written variable but reserve it for future research.

The hearings alone total approximately 8,500 pages. Floor debate yields substantial additional text. Given the volume of material involved, I made choices about which information to “throw away” and what to keep. First, in my attempt to preserve the flow of the ESA’s legislative history, and to cross-check my coding against what the actor stated, I wrote summaries of each participant’s testimony or questioning. This is done with the view that a full context should be sketched (the forest) alongside a coding of each participant’s contribution to that context (the trees). The idea is that reviewers of my method can pick, at random, a piece of congressional debate and decide whether my summary and coding for a speaker are supported by the text. I make every effort not to: 1) read between the lines; and/or 2) make a judgment on the validity or sincerity of what was said. I simply read the text, provide a brief summary of the main substantive points, and code for problem orientation based on what was explicitly stated.

Second, I chose to assign one code per actor per day in committee while providing for multiple codes per actor per day on the floor. I provide multiple codes

for actors in floor debate because: 1) meshing all of an actor's statements throughout the course of the day muddled the dynamics of the debate; and 2) an actor may emphasize different values and different solutions, for example, in response to different issues. I want to keep clear what values were being invoked alongside certain solutions.

Alternatively, committee members in hearings often (although clearly not always) engaged in questioning witnesses without explicitly expressing their values. This choice of enabling floor debate actors to have multiple codes while committee speakers were likely only to have single codes likely weights the results in favor of those participating in floor debates. This is justified as committee members generally participated to a greater degree in floor debate. In fact, it is usually the committee members who qualify for multiple codes, given that they are most likely to respond to substantive amendments not considered in committee. The lesser degree of coding for committee members in committee is balanced out by a potentially greater degree of coding for committee members on the floor. This is an imperfect scheme but seemed reasonable.

Additional choices included, if a witness provided written testimony or inserts along with their oral presentation, consideration of that written material factors into one overall coding per participant per day. A committee member coding includes their questioning and input in the hearing over the course of the day. If a panel of witnesses contained a lead witness, and that witness's testimony was furthered by other panel participants, with no conflicting problem orientation between the speakers, the lead witness is given a code, and subsequent panelists are not. Where

the correspondence was not lengthy or where the information presented in written or oral testimony was simply background information not apparently directed to a certain solution or value, I do not provide a code. In addition, I do not code correspondence from federal government agencies to the committee or between each other. Instead, a synopsis of the correspondence is summarized and is to be incorporated in considering the institutional context - e.g., what the Nixon administration was promoting or conflicts between federal agencies. Usually, the correspondence was fragmented and answered specific questions, rather than providing a full problem orientation.

Method of analysis. My statistical analysis centers on ascertaining patterns of value use in the ESA's legislative history. In particular, I aim to discern which values were clashing and when. I use SPSS® for XWindows Version 6.1, a statistical data analysis software, to analyze cross-tabulations. I determine the significance of the statistical results using the log likelihood ratio. Where log likelihood ratios were <0.05 , I considered relationships to be significant. I present my findings on statistical significance in figures in Chapter V and include tables that report the raw frequencies of values used according to participant identity across the legislative years.

Within my coded dataset, I examine the extent to which ecologicistic and other other values were invoked across the legislative history of the ESA. I assess possible correlations between the values actors invoked and their preferred alternatives. Specifically, I assume values such as ecologicistic, utilitarian/protective, and moralistic ones were congruous with advocacy of increased wildlife protection and/or a stronger ESA. Alternatively, dominionistic, negativistic, and economic values would likely be

joined with advocacy of decreased wildlife protection and/or a weaker ESA. This assumption is based on preliminary review of committee hearings and floor debate and my description of the range of values toward wildlife in Chapter III.

The extent to which actors simultaneously invoked values embracing wildlife and species protection and advocated stronger species protection indicates congruence between values invoked and alternatives preferred. Given my focus on congressional intent, such congruence would affirm the value of discerning congressional intent as a guide to interpreting the ESA's statutory language.

I used four questions to focus my quantitative examination:

1. Which values were most frequently invoked at the passage of the ESA?
2. Have the values most frequently invoked changed over the course of ESA history?
3. Are different values invoked at different frequencies in different venues?
4. Is there congruence between the values actors invoke and the outcomes they promote?

I focus on the valuational patterns across the history of the ESA. In particular, my research explores whether 1) there was a change over the course of time in which values were invoked (questions 1 and 2); 2) the extent to which actors mean what they say, assessed through determination of the congruence between values invoked and outcomes promoted (question 3); and 3) venue influences which values actors promote (question 4).

I also assess correlations between the values themselves to ascertain which values tended to be paired with each other. I use the Jaccard correlation test on Systat®. Jaccard's dichotomy coefficient indicates the proportion of times two values are expressed, given that one is expressed. The coefficient ranges from 0 to 1, where

0 indicates that the two values are never expressed together and a 1 indicates that they are always expressed together (Wilkinson 1997).

Inter-coder reliability. To test the reliability of my coding, I conducted a computerized keyword search for the ecologicistic value on the 1988 floor debate. This piece of the ESA's legislative history was the only portion available electronically. The results of that test indicate a reliability rating of over 90%. However, I qualify this high rate of reliability with the proviso that it was a test of a very limited portion of the legislative history (Appendix A).

Content analysis

Regarding the ESA, values invoked and outcomes preferred should not be considered in isolation but rather as parts of and alongside the broader themes of ecosystem protection and the precautionary principle. The coding schema I follow discards much of the rich information that comprises ESA discourse. I therefore conduct a qualitative description and analysis of the ecosystem protection and precautionary principle themes within ESA debate.

This is particularly necessary for the precautionary principle as there is no clear proxy value for testing the presence of this principle. Perhaps a combination of the utilitarian/protective value and a concern for future generations would be the closest one could come, but this would still be an uncomfortable fit. I therefore address the precautionary principle within ESA debates by qualitatively reviewing debates across the legislative history that involved scientific uncertainty and the

question of whether to afford the species protection. For the ecosystem protection theme, the ecological value is a reasonable proxy, but my focus on congressional intent requires that I evaluate how that value was used, how frequently, and by whom.

My analysis centers on how legislative history participants used ecosystem and precautionary arguments in relation to the key ESA battlegrounds. I then consider how those ecosystem or precautionary arguments factored in committee reports and the consequent legislative outcome. In addition, where actors made general arguments endorsing or opposing ecosystem or precautionary protection, I note those instances.

Case studies

Policy does not end with a law's passage. As indicated in the preliminary map (Chapter III), other stages of the Lasswellian framework are important parts of political action around the ESA. In particular, analyzing the application and invocation of the law provides insight into how adequately the ESA is implemented. Further, my quantitative and content analysis approaches provide a basis for describing an aggregation of instances, while a case study approach enables me to dissect select instances (Stake 1995).

To examine how the FWS is implementing the ESA, I analyze two endangered species cases in detail: the northern spotted owl and the black-tailed prairie dog. I selected these controversial cases because they reached their political peaks in the post-legislative history era (in the late 1980s to present) and provide a chance to examine the role of administration in endangered species policy.

Specifically, opportunities for ecosystem and precautionary protection exist in both and provide a useful testing ground to assess FWS implementation.

Materials for case studies are vast. I consider FWS decisions regarding the owl, the black-tailed prairie dog, and species associated with prairie dogs and related judicial opinions. In each case, I analyze the roles of ecosystem protection and the precautionary principle, and the extent to which FWS employed them. I rely primarily on FWS decision documents, court opinions, GAO reports on those documents, and supplementary biological data.

I rely primarily on government documents – i.e., FWS’s own – to present a body of uncontested description (Stake 1995). However, I then bring other perspectives to bear on agency performance by bringing in government oversight (the GAO and courts) and scientists to evaluate the accuracy of FWS data (Denzin 1984; Stake 1995) and the appropriateness of their decisions.

My basis for case selection consisted of whether the case 1) was well-publicized; 2) highlighted one or more of the key ESA battlegrounds; 3) commanded substantial administrative and judicial attention; and 4) contained features making it most relevant for ecosystem management and the precautionary principle. In addition, the cases filled chronological gaps in the ESA’s history. The spotted owl controversy reached the public eye in the late 1980s and early 1990s, while the black-tailed prairie dog controversy has been most publicized in the late 1990s to the present.

The questions focusing the examination in my case studies were,

1. Which key ESA battlegrounds factored in the two cases, and how did the FWS use or non-use of ecosystem and precautionary themes relate those battlegrounds?
2. Which values did FWS policy prioritize?

3. What factors may shape FWS implementation of the ESA?

My case studies broaden my analysis from the longitudinal focus of the values coding and the in-depth focus of the content analysis to an overall picture of the role of values, the ecosystem and precautionary themes, and the implementation of the ESA.

After conducting my case studies, I return to the preliminary map to consider some of the gaps in our knowledge of the social and decision processes in the ESA that I detected in the literature. Based on this analysis, I revisit the ESA battlegrounds and comment on how values and the ecosystem and precautionary themes could be brought to bear on those controversies.

Conclusions

I apply the post-positivist foundation detailed in Chapter III to the endangered species context through the use of qualitative and quantitative methodologies. With the valuational coding, I sketch patterns of value usage across the ESA's legislative history (Chapter V). Through the content analysis, I describe and analyze how, where, and by whom the ecosystem and precautionary themes were used (Chapters VI and VII). I then apply the results of the quantitative and qualitative study of the legislative history to the Act's key battlegrounds and consider alternative approaches and factors impacting the ESA (Chapter VIII). Via the case studies, I examine contemporary contexts where FWS had the opportunity to implement ecosystem protection and the

precautionary principle (Chapter IX). I end with conclusions about the ESA
backgrounds and implementation of the ESA (Chapter X).

CHAPTER V

VALUATIONAL CODING

In this chapter, I summarize the results for the quantitative analysis outlined in Chapter IV, including the values most frequently invoked at the ESA's passage and in subsequent legislative years. In addition, I describe the importance of different venues and legislative years in the coding results.

Values most frequently invoked at the passage of the ESA

In 1973, 195 cases were coded, with the ecologicistic value being most often invoked (24.6% of cases) (Table 5-1). However, the economic value was a close second (24.1% of cases). The third value most frequently invoked was the utilitarian/protective (20.0% of cases), followed by the moralistic (17.4% of cases), and scientific (10.8% of cases). Aesthetic, dominionistic, negativistic, naturalistic, and humanistic values were much less frequently invoked in 1973 and subsequent years and were dropped from analysis.

Table 5-1. The use of different values by various types of speakers during the 1973 legislative history of the ESA.

Speaker Category	Value					
	Economic	Ecologistic	Utilitarian/ protective	Moralistic	Scientific	Total
Democratic congressperson	10	15	10	11	4	50
Republican congressperson	5	6	8	5	2	26
Administrator		8	10	4	4	26
Subcommittee counsel		1				1
Environmental organization		14	9	11	4	38
Scientist		3	1	2	3	9
Industry representative	20			1		21
Wildlife management organization					3	3
State	8	1			1	10
Citizen	4					4
Recreational organization			1			1
Total	47	48	39	34	21	189

The ecologistic value's frequent usage at the ESA's initial passage contrasts dramatically with a common perception that Congress was myopically focused on single-species conservation (e.g., Kunich 1994; Drozdowski 1995), rather than ecosystem protection. These results demonstrate that the ecologistic value was very much on the mind of congressional participants in early ESA debate.

Moreover, the speakers primarily using the ecologistic value were congresspeople and federal administrators (Table 5-1). In fact, members of Congress and administrators accounted 60.4% of the cases where the ecologistic value was invoked in 1973. Environmental group representatives also invoked this value often. Use of the ecologistic value was not restricted to one political party, with Democratic

and Republican legislators alike using the value (Table 5-1). This difference in usage across political party was not significant ($X^2=2.04$, $df=1$, $p=0.15$).

Administrators, elected officials, and environmentalists were also united in their invocation of the utilitarian/protective value (Table 5-1). Legislators and administrators comprised 71.8% of the cases where this value was used. It was employed by Democratic congresspeople slightly more than their Republican counterparts, but this difference was not statistically significant ($X^2=0.11$, $df=1$, $p=0.74$).

Usage of the moralistic and scientific values followed the same pattern, being invoked primarily by congresspeople, administrators, and environmental representatives. Congresspeople and administrators accounted for 58.8% of the instances where the moralistic value was used and 47.6% of the cases where the scientific value was employed (Table 5-1). There was no significant difference in the use of the moralistic value by Democratic versus Republic legislators ($X^2=1.17$; $df=1$; $p=0.28$). A significance test could not be run on the use of the scientific value due to its infrequent usage. Environmental representatives accounted for 32.4% of the cases where the moralistic value was employed, and 19.0% of the cases for the scientific value.

Alternatively, the economic value was often employed by non-federal actors in 1973 and was not used by administrators (Table 5-1). Congresspeople used this value in 31.9% of instances, but industry spokespeople accounted for the lion's share, 42.6%, of the cases where this value was invoked. There was no significant difference in the economic value's use across party lines ($X^2=0.86$, $df=1$, $p=0.35$).

In addition, there was no significant difference between legislators' use of the economic value versus the ecologicistic ($X^2=0.50$, $df=1$, $p=0.48$), utilitarian/protective ($X^2=0.14$, $df=1$, $p=0.71$), moralistic ($X^2=0.01$, $df=1$, $p=0.91$), and scientific values ($X^2=2.04$, $df=1$, $p=0.15$).

The comparative role of industry and environmental groups in the 1973 hearings is interesting (Table 5-1). The finding that industry spokespeople accounted for the largest portion of the economic value's usage conflicts with descriptions of industry being caught unaware by the ESA's passage (Souder 1993). As would be expected, the different usage of the economic value between industry and environmental representatives was statistically significant ($X^2=17.26$; $df=1$; $p<0.01$).

When one contrasts industry participation in the 1973 legislative history with that of environmental groups, the two groups seem to have participated unequally. Industry representatives represent 11.1% of the cases in Table 5-1, while environmental organizations represented 20.1%. However, this difference was not statistically significant ($X^2=2.51$; $df=1$; $p=0.11$).

In sum, at the ESA's initial passage, legislators invoked ecologicistic, utilitarian/protective, and moralistic values more often than economic ones. Administrators did not invoke the economic value at all. The coding results for 1973 also indicate that environmentalists and industry were important participants in the debate since the beginning of the Act's passage. These two groups were the primary non-federal actors that consistently factored in the codings, doing so to a much greater degree than scientists or state officials. Finally, the lack of significant differences between Republican and Democratic use of the economic, ecologicistic,

utilitarian/protective, or moralistic values undermines the utility of a party approach for understanding the ESA's legislative history.

1978 Amendments

The first major set of amendments to the ESA occurred in 1978. As we will see, that year represents the high watermark in Congress for invocation of the economic value across the legislative history analyzed. Congresspeople were the heaviest users of the economic value, accounting for 52.2% of instances where this value was employed (Table 5-2). There was no significant difference in Democratic versus Republican invocation of this value ($X^2=0.11$, $df=1$, $p=0.74$). Further, congresspeople appeared more likely to invoke the economic value than other values in 1978. The number of instances where congresspeople used the economic value contrasts significantly with their use of the ecologicistic ($X^2=14.56$, $df=1$, $p<0.01$), utilitarian/protective ($X^2=25.64$, $df=1$, $p<0.01$), moralistic ($X^2=27.18$, $df=1$, $p<0.01$), and scientific values ($X^2=42.49$, $df=1$, $p<0.01$). These findings represent a sea change in congressional political rhetoric from 1973.

Table 5-2. The use of different values by various types of speakers during the 1978 legislative history of the ESA.

Speaker Category	Value					
	Economic	Ecologistic	Utilitarian/protective	Moralistic	Scientistic	Total
Democratic congressperson	34	15	9	7	3	68
Republican congressperson	38	7	3	4	1	53
Administrator	3	5	5	2	4	19
Environmental organization	1	24	28	10	4	67
Scientist	3	3	4		13	23
Industry representative	47	3	2		1	53
Recreation organization	1					1
State and local government	9		1	6	1	17
Zoological organization	1	1				2
Citizen			6	2	1	9
Other	1		1			2
Total	138	58	59	31	28	314

Industry representatives most frequently invoked the economic value, comprising 34.1% of its overall usage (Table 5-2). Despite industry's high visibility in the coding results for the economic value, industry was still less represented in the overall coding than were environmental representatives in 1978 (Table 5-2). However, as in 1973, the difference was not statistically significant ($X^2=0.82$; $df=1$; $p=0.37$).

The frequent use of the ecologistic and utilitarian/protective values was, in part, due to the relatively heavier participation in the legislative history by Democratic congresspeople and environmental group representatives (Table 5-2). The utilitarian/protective value was less frequently used than the economic value (Table

5-2). It was employed predominantly by environmentalists and congresspeople. Environmental representatives most frequently used this value, representing 47.5% of the cases where this value was employed. Congresspeople also invoked this value, constituting 20.3% of the cases. The Democratic use of this value constituted 75% of its overall usage by legislators. Whether there was a statistically significant difference across party lines could not be tested due to the low frequencies within the speaker categories.

The ecologicistic value was only invoked one less time than the utilitarian/protective value in 1978, again chiefly by congresspeople and environmentalists. Environmental representatives were the most frequent articulators of the ecologicistic value, representing 41.4% of instances where this value was invoked. However, Congresspeople also frequently invoked this value, comprising 40% of all instances. As in the case of the utilitarian/protective value, Democratic congresspeople more often used ecologicistic arguments. Of the instances where this value was used, Democrats comprised 68.2% of that total. However, this difference was not significantly different from Republican usage ($X^2=1.51$, $df=1$, $p=0.22$).

The moralistic value was primarily invoked by congresspeople and environmental representatives (Table 5-2). A significance test could not be run on the difference in moralistic value usage across party lines because of the value's infrequent use. The second most frequent users of the moralistic value were environmental representatives, who accounted for 32.3% of the instances where this value was used.

Finally, the scientific value was primarily invoked by scientists, who constituted 46.4% of this value's usage (Table 5-2). As in 1973, the scientific value continued to be less frequently invoked than the other values.

In sum, coding for 1978 affirms the perception that Tellico was the high watermark for economic criticisms of the ESA (Chapter II). In addition, it provides new dimensions to our description of that legislative year. First, the participants in ESA debate changed considerably from 1973. At the Act's initial passage, administrators were an important part of the debate and industry was not (Table 5-1). In 1978, administrators only marginally factored in coding results, while industry was a major voice articulating the economic value (Table 5-2). Environmental groups continued to play a visible role in Congress, as they had in 1973 (Tables 5-1 and 5-2). Second, congresspeople shifted from their 1973 use of ecologicistic and utilitarian/protective values to the economic value. However, legislators did not abandon the ecologicistic and utilitarian/protective values, as they continued to constitute, alongside environmental representatives, a large proportion of instances where those values were invoked (Table 5-2). Third, as in 1973, there was not a statistically significant difference in value usage across party lines.

1982 Amendments

The picture again shifted in 1982. Although the economic value continued to be the most frequently invoked value overall, the difference in frequency compared to the ecologicistic and utilitarian/protective values was much narrower than in 1978

(Tables 5-2 and Table 5-3). Congresspeople, in particular, invoked the economic value much less often than they had in 1978. Unlike 1978, there was not a significant difference between legislators' invocation of economic values versus the ecologicistic ($X^2=0.37$, $df=1$, $p=0.55$), utilitarian/protective ($X^2=0.02$, $df=1$, $p=0.89$), and moralistic values ($X^2=0.20$, $df=1$, $p=0.66$). A statistical significance test could not be run on the difference between invocation of the economic versus the scientific value due to the infrequency with which the latter was invoked.

Table 5-3. The use of different values by various types of speakers during the 1982 legislative history of the ESA.

Speaker Category	Value					
	Economic	Ecologicistic	Utilitarian/protective	Moralistic	Scientific	Total
Democratic congressperson	7	2	6	3		18
Republican congressperson	6	7	8	7	1	29
Administrator	3			2	1	6
Environmental organization	1	13	14	7	7	42
Scientist		7	8	8	3	26
Industry representative	33	2	3		4	42
Wildlife management organization					2	2
Recreation organization	2				1	3
State and local government	2	2			3	7
Zoological organization					2	2
Citizen		1	2	3		6
Total	54	34	41	30	24	183

The economic value was most frequently invoked by industry representatives, constituting 61.1% of the instances where this value was used (Table 5-3).

Congresspeople represented 24.1% of the cases employing this value. There was no significant difference in usage of the economic value across political party ($X^2=0.04$, $df=1$, $p=0.84$).

For the first time in the ESA legislative history that I analyzed, industry representation equaled that of environmental groups overall. Industry representatives and environmental groups each constituted 42 cases. Perhaps the 1978 experience with Tellico had convinced industry to maintain a steady focus on ESA politics.

The second most frequently invoked value was the utilitarian/protective (Table 5-3). Congresspeople and environmentalists equally invoked this value, each constituting 34.1% of the total use of the utilitarian/protective value. Among members of Congress, there was not a statistically significant difference in usage across political party ($X^2=0.14$, $df=1$, $p=0.71$). The other major group employing the utilitarian/protective value was scientists, who represented 19.5% of cases where this value was used.

The ecologicistic value was the third most frequently employed, found in 34 cases (Table 5-3). Environmentalists were the most frequent users of this value, constituting 38.2% of instances. Congresspeople were not far behind, at 26.5%, and scientists constituted 20.6% of cases where this value was used. Republicans were more likely to use this value, representing 77.8% of the cases where members of Congress used the ecologicistic value. A significance test on the differential use of Republicans versus Democrats could not be run due to the low frequency of the value's invocation.

The moralistic value was invoked primarily by scientists, environmentalists, and congresspeople (Table 5-3). Congresspeople accounted for 33.3% of cases. Republicans (70%) used the moralistic value more often than Democrats, but a significance test could not be run on the difference in moralistic value usage across party lines because of the value's infrequent use. Scientists used this value in 26.7% and environmentalists in 23.3% of cases.

Finally, the scientific value was used most often by environmental and industry representatives, who respectively represented 29.2% and 16.7% of cases coded for this value (Table 5-3). Scientists and state representatives were not far behind, each constituting 12.5% of cases.

In sum, there were significant changes in 1982 from what had occurred in 1973 and 1982, but there was also some continuity. First, unlike 1978, legislators invoked the ecologicistic, utilitarian/protective, and moralistic values to a similar degree as economic values (Tables 5-2 and 5-3). Second, there continued to be no statistical significance in variation of value usage across party lines. Third, the economic value continued to be the most frequently used by industry, and industry participation in the ESA debate – for the first time in the legislative history I analyzed – equaled that of environmentalists. Fourth, as in 1978, administrators continued their low profile (at least in the codings). Fifth, for the first time, scientists were visible in the codings, with their frequent use of moralistic and scientific values. Interestingly, environmentalists and industry also began to use the scientific value more frequently in 1982, particularly in terms of the proportion of overall usage.

1988 Amendments

This year seemed a repeat of what occurred a decade earlier. The economic value was invoked to a greater degree than any other value (Table 5-4) (Difference between economic and 1) ecologicistic: $X^2=16.83$, $df=1$, $p<0.01$; 2) utilitarian/protective: $X^2=16.19$, $df=1$, $p<0.01$; 3) moralistic: $X^2=10.34$, $df=1$, $p<0.01$; and 4) scientific: $X^2=35.44$, $df=1$, $p<0.01$). The moralistic value was the second most frequently invoked, followed by the utilitarian/protective, and ecologicistic values. The scientific value declined to its lowest percentage (7.9%) of total cases across the history of the ESA (Tables 5-1 to 5-4).

Table 5-4. The use of different values by various types of speakers during the 1988 legislative history of the ESA.

Speaker Category	Value					
	Economic	Ecologicistic	Utilitarian/protective	Moralistic	Scientific	Total
Democratic congressperson	35	11	21	21	5	93
Republican congressperson	32	6	8	12	5	63
Administrator	2	5				7
Environmental organization	1	12	6	7	5	31
Scientist		2	1	2		5
Industry representative	31	2	1	2		36
Recreation organization	1		1		2	4
State and local government	7	2	3	6		18
Zoological organization					4	4
Citizen				2		2
Other	1	1	1	1		4
Total	110	41	42	53	21	267

The primary group employing the economic value was members of Congress, who constituted 60.9% of cases where this value was employed (Table 5-4). Congresspeople invoked the economic value to a greater degree than they had in 1982 (Tables 5-3 and 5-4). Their use of the economic value was significantly more frequent than their use of the ecologicistic ($X^2=16.72$, $df=1$, $p<0.01$), utilitarian/protective ($X^2=7.89$, $df=1$, $p<0.01$), moralistic ($X^2=5.99$, $df=1$, $p<0.05$), and scientific values ($X^2=25.67$, $df=1$, $p<0.01$).

There was not a statistically significant difference across party lines regarding invocation of the economic value ($X^2=0.07$, $df=1$, $p=0.80$). The other primary users of this value were industry representatives, who constituted another 28.2% of cases.

Industry representatives (13.5% of cases) were significantly more represented in the overall coding than environmentalists (11.6% of cases) ($X^2=52.45$; $df=1$; $p<0.01$).

In 1988, the moralistic value was the second most frequently invoked of all values (Table 5-4). Legislators frequently used this value, comprising 62.3% of instances where this value was used. There was not a statistically significant difference across political party in usage of this value ($X^2=1.26$; $df=1$; $p=0.26$). Environmentalists and state/local government officials were the other frequent users of this value, with the former representing 13.2% and the latter comprising 11.3% of the instances where this value was used.

The utilitarian/protective value was the third most frequently invoked value in 1988, primarily by legislators and environmentalists (Table 5-4). Legislators constituted 69.0% of the instances where this value was employed. There was not a

statistically significant difference in use of the value across party lines ($X^2=3.10$, $df=1$, $p=0.08$). Congressional use of this value was substantially higher than environmental use, with the latter group accounting for 14.3% of its total usage.

Ecologistic value usage was slightly lower than the utilitarian/protective value (Table 5-4). Again, primarily legislators and environmentalists used this value. Legislators comprised 41.5% of the instances where this value was used, and Democrats comprised 64.7% of cases. However, the different ecologistic value invocation was not statistically significant across party lines ($X^2=0.76$, $df=1$, $p=0.39$). Environmentalists promoted this value in 29.3% of the cases where it was used.

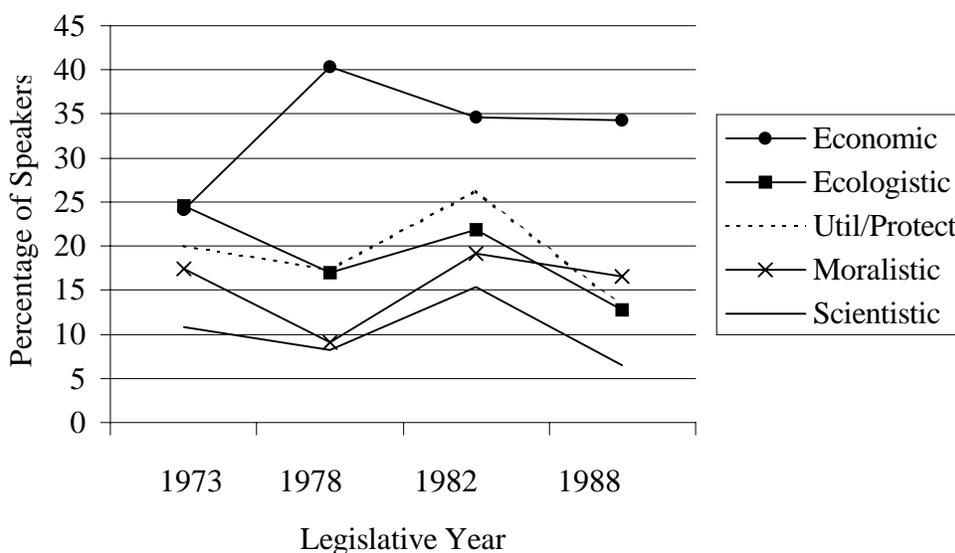
As in 1973-1982, the scientific value was not frequently invoked, compared to the other leading values (Table 5-4). Interestingly, the use of this value was the same among Republican legislators, Democrats, and environmentalists.

In sum, in 1988, there was both discontinuity and continuity with the earlier legislative periods. First, there was a seeming repeat of the 1978 heavy use of the economic value. As in 1978 (but unlike in 1973 and 1982), legislators used economic values to a significantly greater degree than ecologistic, utilitarian/protective, or moral. Second, as in all prior years, there was not a statistically significant difference in value usage across party lines. Third, the moralistic value was frequently invoked in 1988, which was surprising because this value had consistently been less frequently used than the economic, ecologistic, and utilitarian/protective values in previous years.

Longitudinal patterns from 1973-1988

After 1973, the value most frequently invoked across all years was the economic (Figure 5-1). From 1973-1988, a total of 1,014 cases were coded, and the economic value was invoked in 349 (34.2%) of those cases. The second most frequently invoked values overall were the utilitarian/protective (n=181; 17.9%) and ecologicistic (n=181; 17.9%) values. Moralistic (n=148; 14.6%) and scientific (n=94; 9.3%) values were the fourth and fifth most frequently cited. The invocation of each value across legislative years varied significantly: Economic: $X^2=14.96$, $df=3$, $p<0.01$; Ecologicistic: $X^2=13.48$, $df=3$, $p<0.01$; Utilitarian/protective: $X^2=12.87$, $df=3$, $p<0.01$; Moralistic: $X^2=14.10$, $df=3$, $p<0.01$; Scientific: $X^2=10.02$, $df=3$, $p<0.05$.

Figure 5.1. Invocation of different values across the ESA's 1973-1988 Legislative History. Using the log likelihood ratio test, speakers' use of all five values varied significantly across legislative years at $p<0.01$ or 0.05.



Different values peaked in usage in various years. The ecologicistic value climaxed in usage at the Act's initial passage in 1973, when it comprised 24.6% (n=48) of all cases. Although the ecologicistic value was most frequently used in 1973, economic values were subsequently used most often. The economic value dominated in 1978, representing 40.4% of cases (n=138). The highpoint for the utilitarian/protective value was 1982, when it comprised 26.3% of all cases (n=41). The moralistic value was the second most frequently invoked value in 1988 (n=53), but it comprised the highest percentage of cases in 1982 (n=30; 19.2% of all cases) (Figure 5-1).

From year to year, the ranking of ecological and utilitarian/protective values differed (Figure 5-1), but the frequency of these values' usage in the entire legislative history analyzed was the same (each n=181; 17.9%). After 1973, these two values were the second and third most frequently invoked, with the exception of 1988 (Figure 5-1).

Strong use of the economic value in 1978 is not surprising, given that it coincides with the Tellico Dam controversy (Chapter II). As we will see in Chapters VI and VII, Congresspeople, especially the southeastern delegation in the House and Senate, primarily employed economic arguments to promote amendments to the ESA. Similarly, by 1988, Congresspeople and industry interests more freely criticized the ESA than was the case in 1973 or 1982 and more often employed economic arguments as the basis for their criticisms.

There was also significant variation in the use of scientific and moralistic values across legislative years (Figure 5-1). Both values were used in a significantly

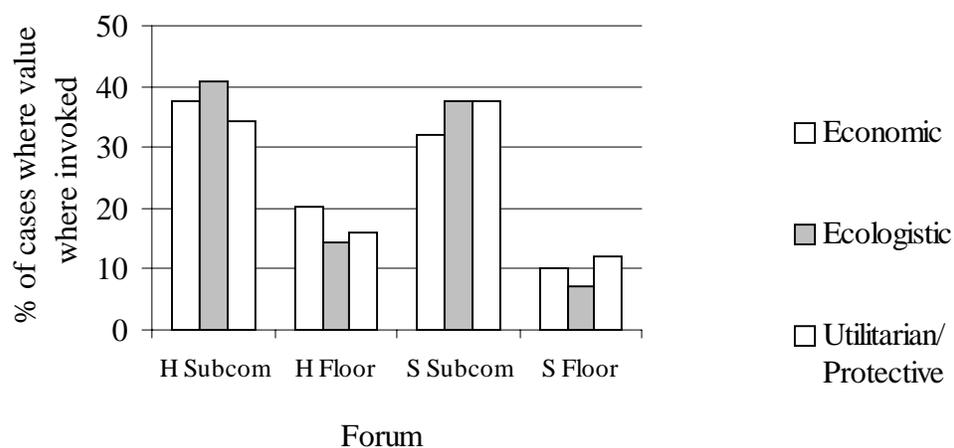
higher percentage of cases in 1982, a low conflict year, than in other years. A low-point in the use of both was in 1978. This was, again, likely influenced by the Tellico dam conflict where economic arguments dominated debate. Interestingly, the moralistic value experienced highpoints in usage at the ESA's original passage and in 1988, and it consistently outpaced the scientific value.

Indeed, marginal use of the scientific value, at least when compared with other main values (except those dropped from analysis) is surprising. Claims about the scientific value of species, and the need to increase the scientific rigor of the species protection program, appear to be important arguments in the literature reviewed in Chapter II. This indicates divergence between the literature on the ESA and the Act's legislative history.

Differences in invocation of values across venues

Venues for the legislative history of the ESA are the House and Senate subcommittees and the House and Senate floors. The primary venues for the three most frequently invoked values were the House and Senate subcommittees (Figure 5-2).

Figure 5.2. Variation in use of economic, ecologicistic, and utilitarian/protective values across forum in the ESA's 1973-1988 legislative history. H=House of Representatives, S=Senate, and Subcom=Subcommittee.



First, the economic value was invoked significantly more often in the House subcommittee ($n=131$) than on the House Floor ($n=71$) ($X^2=9.15$, $df=1$, $p<0.01$) and Senate Floor ($n=35$) ($X^2=30.96$, $df=1$, $p<0.01$). It was used significantly more often in the Senate subcommittee ($n=112$) than on the House Floor ($X^2=4.66$, $df=1$, $p<0.05$) and Senate Floor ($X^2=22.01$, $df=1$, $p<0.01$). Finally, this value was invoked to a significantly greater degree on the House Floor versus the Senate Floor ($X^2=6.33$, $df=1$, $p<0.05$). There was no significant difference between the value's use in the two subcommittees ($X^2=0.74$, $df=1$, $p=0.39$).

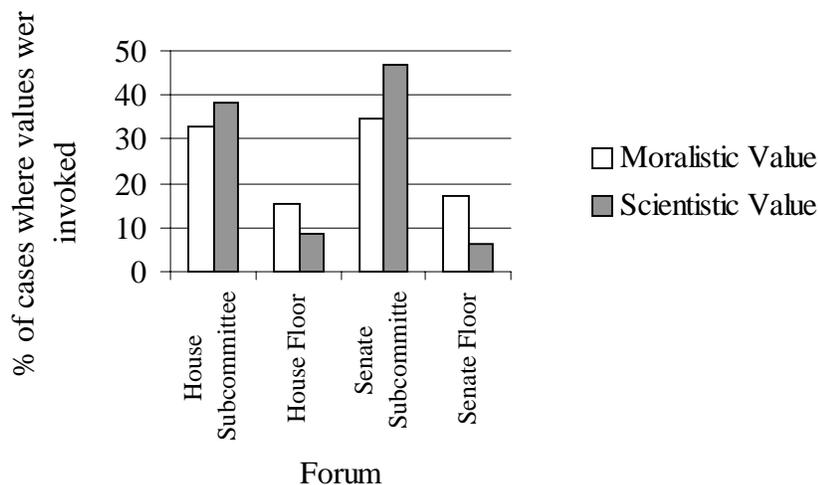
A similar pattern held for the ecologicistic value (Figure 5-2). This value was more frequently invoked in the House subcommittee ($n=74$) than on the House ($n=26$) ($X^2=12.39$, $df=1$, $p<0.01$) or Senate Floors ($n=13$) ($X^2=25.38$, $df=1$, $p<0.01$). It was employed significantly more often in the Senate subcommittee ($n=68$) versus the House ($n=26$) ($X^2=9.98$, $df=1$, $p<0.01$) or Senate Floors ($n=13$) ($X^2=21.88$, $df=1$,

$p < 0.01$). There were no significant differences in its invocation on the House versus the Senate Floor ($X^2 = 2.24$, $df = 1$, $p = 0.13$) or in the House versus the Senate subcommittees ($X^2 = 0.13$, $df = 1$, $p = 0.72$).

Likewise, the primary venues for the utilitarian/protective value were the House ($n = 62$) and Senate ($n = 68$) subcommittees. The value was invoked to a significantly greater degree in the House subcommittee than on the House ($n = 29$) ($X^2 = 6.23$, $df = 1$, $p < 0.05$) or Senate Floors ($n = 22$) ($X^2 = 10.23$, $df = 1$, $p < 0.01$). It was used more frequently in the Senate subcommittee than on the House ($X^2 = 8.24$, $df = 1$, $p < 0.01$) or Senate Floors ($X^2 = 12.77$, $df = 1$, $p < 0.01$). There was no statistically significant difference in its invocation on the House versus the Senate Floor ($X^2 = 0.48$, $df = 1$, $p = 0.49$) or in the House versus the Senate subcommittees ($X^2 = 0.14$, $df = 1$, $p = 0.71$).

The moralistic and scientific values were also most frequently invoked in the subcommittees (Figure 5-3). In the House subcommittee ($n = 49$), the moralistic value was employed to a significantly greater degree than on the House ($n = 23$) ($X^2 = 4.88$, $df = 1$, $p < 0.05$) or Senate Floors ($n = 25$) ($X^2 = 4.02$, $df = 1$, $p < 0.05$). The value was invoked to a significantly greater degree in the Senate subcommittee ($n = 51$) than on the House ($X^2 = 5.53$, $df = 1$, $p < 0.05$) or Senate Floors ($X^2 = 4.61$, $df = 1$, $p < 0.05$). There were no significant differences in the moralistic value's use on the House versus the Senate Floor ($X^2 = 0.04$, $df = 1$, $p = 0.84$) or in the House versus the Senate subcommittees ($X^2 = 0.02$, $df = 1$, $p = 0.89$).

Figure 5.3. Variation in use of moralistic and scientific values according to forum in the ESA's 1973-1988 legislative history.



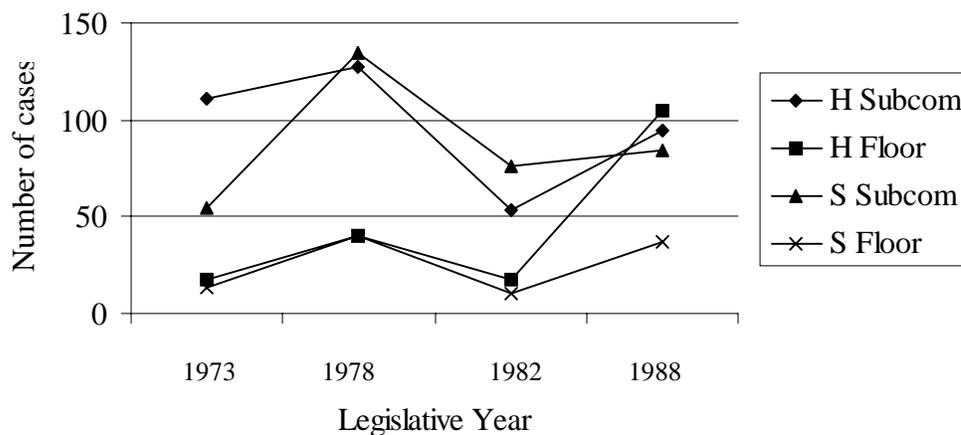
An identical pattern held for the scientific value (Figure 5-3). In the House subcommittee (n=36), the scientific value was employed to a significantly greater degree than on the House (n=8) ($X^2=10.21$, $df=1$, $p<0.01$) or Senate Floors (n=6) ($X^2=12.82$, $df=1$, $p<0.01$). The value was invoked to a significantly greater degree in the Senate subcommittee (n=44) than on the House ($X^2=14.72$, $df=1$, $p<0.01$) or Senate Floors ($X^2=17.81$, $df=1$, $p<0.01$). There were no significant differences in the moralistic value's use on the House versus the Senate Floor ($X^2=0.14$, $df=1$, $p=0.71$) or in the House versus the Senate subcommittees ($X^2=0.40$, $df=1$, $p=0.53$).

Therefore, the general pattern for all five values was that the primary venues were both subcommittees, with no significant variation between subcommittees or floors across houses. This pattern may point to the importance of the institutional context – e.g., committee hearing versus floor debate – as being a more important factor in valuational usage patterns than is the House or Senate setting. In turn, the

array of non-legislator participants within House or subcommittee hearings may explain why the subcommittees were the primary venues for leading values, as these non-legislators used the five leading values substantially (Tables 5-1 to 5-4).

The relative importance of venues shifted over the four periods of the legislative history (Figure 5-4). In 1973, the House subcommittee was the primary venue. There were significantly more cases coded for this venue ($n=111$) than on the House Floor ($n=17$) ($X^2=41.84$, $df=1$, $p<0.01$), in Senate Subcommittee ($n=54$) ($X^2=10.21$, $df=1$, $p<0.01$), or on the Senate Floor ($n=13$) ($X^2=48.87$, $df=1$, $p<0.01$).

Figure 5.4. Number of cases coded across different venues in the ESA's legislative history from 1973-1988. H=House of Representatives, S=Senate, and Subcom=Subcommittee.



In 1978, the House and Senate subcommittees were the primary venues. There was no significant difference between the two ($X^2=0.12$, $df=1$, $p=0.73$). There were significantly more cases coded for the House subcommittee ($n=127$) than on the House or Senate Floors ($n=40$ in each) ($X^2=24.71$, $df=1$, $p<0.01$). Similarly, there

were significantly more cases coded for the Senate subcommittee (n=135) than on the House and Senate Floors (n=40 in each) ($X^2=28.35$, $df=1$, $p<0.01$).

In 1982, both subcommittees were again the primary venues. There was no significant difference in the number of cases coded for each ($X^2=2.070$, $df=1$, $p=0.151$). There were significantly more cases coded for the House subcommittee (n=53) than on the House (n=17) ($X^2=10.07$, $df=1$, $p<0.01$) or Senate Floors (n=10) ($X^2=17.23$, $df=1$, $p<0.01$). Similarly, there were significantly more cases coded for the Senate subcommittee (n=76) than on the House (n=17) ($X^2=21.42$, $df=1$, $p<0.01$) and Senate Floors (n=10) ($X^2=31.41$, $df=1$, $p<0.01$).

Alternatively, in 1988, the House and Senate Subcommittees and the House Floor were all important venues. There was no significant difference in number of cases coded across the House (n=95) and Senate Subcommittees (n=84) ($X^2=0.34$, $df=1$, $p=0.56$), the House subcommittee and the House Floor (n=105) ($X^2=0.25$, $df=1$, $p=0.62$), and the House Floor versus the Senate Subcommittee ($X^2=1.17$, $df=1$, $p=0.28$). All three venues had a significantly greater number of cases coded than on the Senate Floor (n=37) (House subcommittee and Senate Floor: $X^2=13.53$, $df=1$, $p<0.01$; the Senate subcommittee and Senate Floor: $X^2=9.56$, $df=1$, $p<0.01$; and the House and Senate Floors: $X^2=17.50$, $df=1$, $p<0.01$).

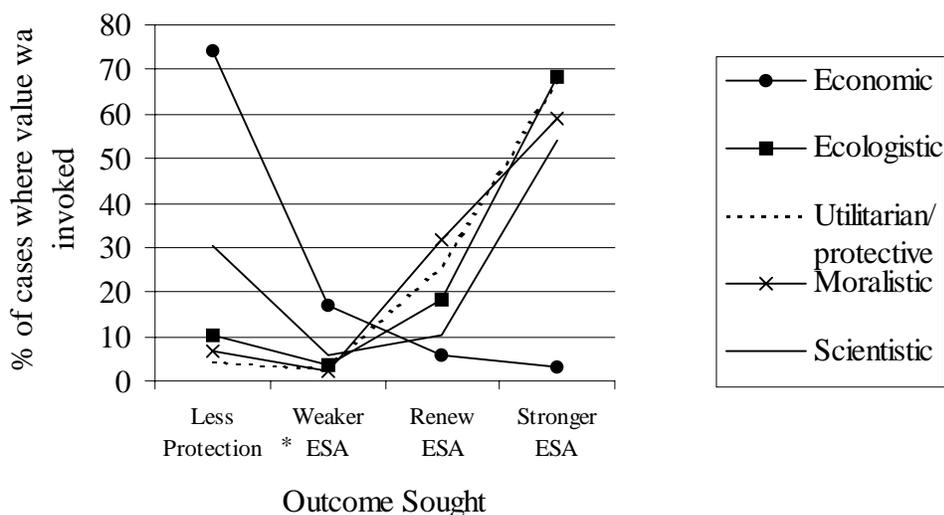
The coincidence of high frequency of invoking the moralistic value in 1988 (Figure 5-1) and the lesser importance of the Senate Floor versus the other venues is interesting. It contrasts with Figure 5-3's depiction of the Senate Floor as an important venue for invocation of moralistic values.

In addition, the dominance of subcommittees in the coding across all legislative years helps explain the previous finding that the five leading values were most frequently invoked in the two subcommittees.

Level of congruence between the values invoked and outcomes promoted

There was general congruity between the values actors promoted and the outcomes they endorsed (Figure 5-5). Those making economic arguments requested a weaker ESA and especially decreased wildlife protection significantly more often than they advocated renewing or strengthening the ESA ($X^2=500.25$, $df=3$, $p<0.01$). Those averring utilitarian/protective and ecologicistic values endorsed increased wildlife protection and especially a stronger ESA significantly more often than they expressed a desire for less wildlife protection and a weaker ESA (Utilitarian/protective: $X^2=155.70$, $df=3$, $p<0.01$; Ecologicistic: $X^2=105.47$, $df=3$, $p<0.01$). Moralistic values were also significantly associated with renewal of the ESA, and a stronger ESA as opposed to less wildlife protection and a weaker ESA ($X^2=45.528$, $df=3$, $p<0.01$). Interestingly, people using the scientific value were significantly more likely to advocate both less protection and strengthening the ESA than a weaker Act or renewing the ESA ($X^2=8.39$, $df=3$, $p<0.05$).

Figure 5.5. Comparison of values invoked and outcomes sought by congressional participants in the ESA's 1973-1988 legislative history. Variation was significant at $p < 0.01$ using the log likelihood ratio test.



*Those advocating less protection differed from those advocating a weakened ESA in that the former did not specifically discuss the Act.

This finding indicates that, broadly speaking, the values that actors in ESA debates advocate align with the outcomes they seek. Although seemingly intuitive, this is an important outcome, given its potential challenge to the perception by many that legislative history can be dismissed as mere rhetoric (see discussion on congressional intent in Chapter III). Because legislators' words (i.e., values invoked) coincided with their deeds (i.e., outcomes sought), legislative history should be more highly regarded as a guide to congressional intent. In this study, there was strong correlation between words and deeds, underscoring the importance of the ESA's legislative history as a guide to the Act's interpretation.

Correlation levels between values are low, but enable analysis of which values are more likely to be used simultaneously (Table 5-5). When multiple values were invoked, the use of ecologicistic, utilitarian/protective, and moralistic values alongside each other was more likely than their use with the economic value (Table 5-5). The scientific value was less often employed with the economic value than with ecologicistic, utilitarian/ protective, and moralistic values.

Table 5-5. Correlations between usage of different values. Numbers represent results of Jaccard correlation test of binary variables to determine the proportion of pairs with both values present given that at least one occurs (Wilkinson 1997). Scale varies from 0 – 1.00, where a 0 indicates absolutely no correlation and a 1.00 indicates perfect correlation.

Value	Value			
	Economic	Ecologicistic	Utilitarian/Protective	Moralistic
Ecologicistic	0.03			
Utilitarian/Protective	0.03	0.27		
Moralistic	0.02	0.18	0.21	
Scientistic	0.02	0.11	0.12	0.07

This chapter's quantitative assessment demonstrated a clear clash of values. The economic value's dominance in the ESA's history indicated that there has consistently been unease with the real or perceived limitations on economic growth that the ESA represents. This conflict did not simply reduce to the economics versus environment dialectic described earlier, however, as economic values clashed with a variety of other values, including utilitarian/protective, ecologicistic, and moralistic ones.

The dominance of the economic value does not provide a clear guide for interpreting the ESA, other than to minimize economic harm. The ecologicistic value,

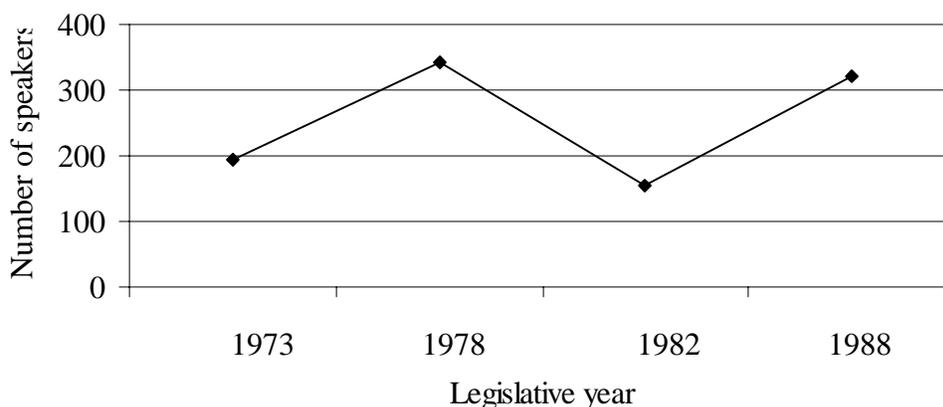
on the other hand, does provide substantive guidance (i.e., utilize the ESA to protect ecosystems, rather than merely species). In addition, the utilitarian/protective value informs interpretation, warning against the dismissal of a species' value, as all species may possess present or future benefits for humans.

Indeed, the frequent use of utilitarian/protective and moralistic values underscores the importance of questioning an economics versus environment dichotomy. Those who espouse utilitarian/protective values may simply be thinking over a longer timeframe or may be more concerned about causing irreparable harm to the future well-being of humans. Similarly, moralistic arguments can take the form of concern for future generations, which may be the basis for inter-generational financial planning. In addition, I presented in Chapter III reasons for considering ecosystem health relevant to economic vitality. Among the reasons are values of ecosystem services in monetary terms and contributions of biodiversity in terms of agricultural, medicinal, recreational, and other benefits.

Number of speakers across legislative year

The number of participants varied significantly per legislative year (Figure 5-6). The years 1978 and 1988 were clearly high points in ESA debates in terms of the number of people involved. They were also the most conflictual years, which fits with E.E. Schattschneider's (1960) description of widened participation correlating with high levels of conflict.

Figure 5.6. Number of speakers for each legislative year across the ESA's legislative history. The difference in number of speakers across years was significant ($X^2 = 3042.00$, $df=9$, $p<0.01$).



The dominant position, in absolute and relative terms, of 1978 and 1988, in contrast to 1973 and 1982, may partly explain why the economic value was so much more frequently invoked overall ($n=349$) compared to ecologicistic and utilitarian/protective values ($n=181$, each). When one considers just the years 1973 and 1982, the economic value was less dominant (Figure 5-1). There seems to be a pendulum effect in ESA discourse. The initial passage was relatively peaceful, perhaps due to economic interests being caught unaware of the effect the ESA might have on economic growth (e.g., Souder 1993). The pendulum swung in the opposite direction in 1978, when economic interests were vigorously mobilized against the Act. In 1982, the rancor of 1978 dissipated to a degree. Back swung the pendulum in 1988, when many congresspeople and economic interests were again heatedly opposed to the real or perceived economic impacts of the Act.

Conclusion

This quantitative assessment of value usage across the ESA's history yielded several important findings. First, the ecologicistic value was the most frequently invoked value at the ESA's initial passage, and was one of the most frequently invoked values thereafter (Figure 5-1; Tables 5-1 to 5-4). This result conflicts with the literature on the ESA, which characterizes the initial ESA, and the Congress that passed it, as narrowly focused on single-species concerns (e.g., Kunich 1994; Vaughan 1994; Drozdowski 1995).

Second, economic values were consistently and frequently invoked in the ESA's legislative history, and this was the value category most often used. This suggests consistent concern for the real or perceived limits on economic activity the ESA may pose. However, the level of concern seems to have waxed and waned, alongside the contentiousness of the legislative period. It seems that this economic concern has fueled ESA conflict. This is not surprising and fits with the literature (Chapter II).

Third, the multiple values of economic, ecologicistic, utilitarian/protective, and moralistic were all an important part of the ESA debate. The finding of this multitude of values at play undermines a simple economy versus environment dichotomy, given the utilitarian/protective, moralistic, and ecologicistic values' potential bearing on economic vitality.

Fourth, the significance of political party was unclear across the legislative history. Although Democratic legislators tended to use ecologicistic, moralistic, and

utilitarian/protective values more than Republican legislators, this difference was never statistically significant. However, sample sizes were often quite small, reducing sensitivity to statistical tests.

Fifth, after 1973, administrators generally did not factor in the codings. This was a surprising finding, as the importance of agency discretion in all ESA battlegrounds suggests that administrators are a key part of the ESA debate. However, the importance of agency discretion may be more a product of the post-legislative history of the ESA (Chapter II).

Sixth, non-governmental organizations participated unequally but were an important part of the coding results (Tables 5-1 to 5-4). The major non-federal groups consistently participating across the legislative history were industry and environmental organizations. Although environmental organizations were more frequently represented than industry in the codings in 1973, by 1988, the reverse was true. Participation by industry consistently increased across the legislative history.

Seventh, scientists and the scientific value featured much less in the coding than was expected (Tables 5-1 to 5-4; Chapter II). The scientific value consistently placed fifth among the five values. Scientists themselves did not appear in the codings to a substantial degree in the years 1973 and 1988.

Eighth, the primary venues for the five most frequently invoked values in the ESA's legislative history were the Senate and House subcommittees. This is very important for understanding the congressional intent behind the ESA, as the subcommittees with jurisdiction over the law play an important part – via amendment

development and committee report authorship – in explaining to the rest of Congress the intent behind legislative changes.

Ninth, there has been an ebb and flow of conflict surrounding the ESA. There was low conflict and a small number of speakers in 1973 and 1982, contrasted with high conflict and many speakers in the 1978 and 1988 discourse.

Finally, there was strong congruence between the values invoked and the outcomes preferred. While economic values were strongly associated with promotion of decreased wildlife protection and a weaker ESA, ecologicistic, utilitarian/protective, and moralistic values were associated with increased wildlife protection and a stronger ESA. This suggests the propriety of relying on legislative history to inform interpretations of congressional intent.

Overall, the findings are valuable for showing in more detail the values that factored in the ESA's legislative history. They are also valuable for provoking questions. For instance, how did actors relate different values? While the ecologicistic value was frequently cited, how was it employed? Why is there a divergence between the frequency with which the ecologicistic value was invoked, and the lack of statutory mechanisms for ecosystem protection under the Act? How did subcommittee leadership factor in value usage? In addition, although the scientific value and scientists seemed underrepresented in the quantitative results, how did they feature in subcommittee and on the floor? For instance, which scientists testified, what did they say, and were their remarks subsequently referenced by other actors? Was the scientific value used to advocate inaction or action in the face of scientific uncertainty? Perhaps most importantly, how did these values translate to legislative

outcomes? A qualitative analysis of the content of the ESA's legislative history involves consideration of these questions, reviewed in the next two chapters.

CHAPTER SIX

ECOSYSTEM PROTECTION

The valuational coding provided a basis for discussing which values were invoked in the ESA's legislative history and how frequently they are invoked. However, a more in-depth textual analysis indicated how actors employed the ecologicistic value and which key ESA battlegrounds were most closely associated with ecosystem arguments.

As the last chapter demonstrated, a quantitative assessment of the ESA indicated that ecosystems – in the form of the ecologicistic value – were very much on the mind of congressional participants in the Act's legislative history. In fact, that coding showed that the ecologicistic value was more frequently invoked than any other value when the ESA was initially passed. Subsequently, it generally vied for second place with the utilitarian/protective value.

While several commentators maintain that the ESA is a single species act (Rohlf 1991; Doremus 1991; Kunich 1994; Drozdowski 1995), the legislative history of which "...fails to reveal a congressional intent to preserve ecosystems as a whole" Drozdowski (1995: 564), my examination of the ESA's legislative history illustrated that ecosystem protection was very much on the minds of legislators when the ESA passed in 1973. In fact, ecologicistic values and ecosystem protection arguments pervaded the hearings and floor debate leading to the Act's passage and subsequent amendments.

In this chapter, I review how and in what key battlegrounds ecosystemic arguments were used. Sometimes actors expressed their ecologicistic perspective generally, while at other times they brought that viewpoint to bear more specifically on some facets of the Act. I consider both.

As a caveat, ecosystems and precaution were not the only matters congressional actors discussed in the legislative history of the ESA. Nor were these the most important issues for all actors. In some instances, the appropriateness of these concepts was directly questioned. However, the statute is largely (although not always) silent on how ecosystem protection and precaution should be implemented into the endangered species program. The following evidence provides a firm basis for suggesting ways in which the Act could be administered through the employment of these two principles within the key ESA battlegrounds.

1973 ESA

In the early 1970s, there was a growing sentiment in Congress that protection for imperiled species needed to be increased. The Nixon administration agreed. The environmental movement was growing momentum in the U.S. and was an active part of discourse on endangered species. In 1972, joint hearings were held on predator and rodent control and endangered species protection. Legislators, administrators, and non-governmental participants in committee hearings often linked the two issues by pointing two species such as the gray wolf that faced extinction in the lower 48 states due to relentless government eradication programs. More generally, most parties

seemed to agree that endangered species protection from legislation passed in the 1960s¹ was not adequately responding to the extinction crisis.

Ecosystem arguments were articulated within the hearings, floor debate, and committee reports leading to the 1973 Act. As indicated in Chapter V, these arguments were primarily made by legislators from both parties, administrators, and environmental representatives. As the qualitative content-analysis demonstrates, ecosystem hearings were an important part of the conception of the ESA in the hearings, on the floor, and in committee reports.

Which key ESA battlegrounds involved ecosystem arguments?

Evaluating which battlegrounds were involved in this earliest set of hearings and floor debate is complicated by the fact that actors were not speaking about sections of the Act, given that the ESA of 1973 did not yet exist. Nevertheless, the 1973 hearings involved ecosystem arguments that seem to relate most closely to the battlegrounds of species takings and consultation. In addition, there is ample evidence of more general use of the ecosystem concept as a basis for the ESA.

The two battlegrounds of taking and consultation were an implicit part of the debate on predator control leading up to the 1973 act. The earliest hearings leading to the Act were joint hearings on predator control and endangered species. The predator control component of the hearings was a response to Richard Nixon's Executive

¹There were two prior endangered species laws: the Endangered Species Preservation Act of 1966 (80 Stat. 926) and the Endangered Species Conservation Act of 1969 (83 Stat. 275). Both were repealed by the 1973 ESA.

Order 11643 in 1972 that banned the use of poisons that cause secondary poisoning on federal lands or under federal programs.² Participants focused on the ecological impacts pervading the food chain, which relates to the issue of takings. The spotlight on the federal agency role in these poisonings bears on the issue of jeopardy and consultation.

Takings. This ban was justified on the basis of the environmental harm resulting from the secondary poisoning effects of these poisons. In addition, the Environmental Protection Agency (EPA) order implementing Nixon's ban on poisons echoed these secondary poisoning and food chain contamination concerns.³ The concern over secondary poisoning is a concern over the diffusion of toxicants throughout the food chain, which is an ecological matter. Taking these ecological arguments a step further, the Interior Department, in its environmental impact statement on the proposed Animal Damage Control Act of 1972, wrote:

More selective methods of killing will contribute to the development and maintenance of natural ecological predator-prey relationships. Predators help to control damaging rodent populations and stabilize plant-animal relationships in rangeland ecosystems. Widespread control efforts that depress predator populations disrupt these relationships and may reduce the long-term benefits that man receives from related wildlife and wildland resources (Hearing 92-22⁴: 518).

This statement goes beyond the concern over secondary poisoning to the ecosystem disruption that may result from impacts on the size of the predator and prey

²A secondary poisoning effect occurs when a toxicant remains in the tissue of the poisoned animal and can consequently poison scavengers ingesting the poisoned carcass. The Executive Order was reproduced in Hearing 92-22: 58 – 59.

³The Federal Register notice detailing the EPA's suspension of Sodium Fluoroacetate (Compound 1080), strychnine, and sodium cyanide are reproduced in Hearing 92-22: 59 – 63.

⁴Full citations for all hearings are provided at Appendix B.

populations, which is an additional ecological consideration. The environmental impact statement is an important early recognition of the connection between individual species' population sizes and consequent ecological conditions.

More evidence of the ecological context in which predator control and the ESA was imbedded is seen at the outset of the joint hearing on predator control and endangered species, where subcommittee chairman Rep. John Dingell (D-MI) quoted Richard Nixon's message,

...persistent poisons have been applied to range and forest lands without adequate knowledge of their effects on the ecology or their utility in preventing losses to livestock. The large-scale use of poisons for control of predators and field rodents has resulted in unintended losses of other animals and in other harmful effects on natural ecosystems (Hearing 92-22: 1).

Dingell's and Nixon's concern was over the ecological impacts of poisoning, rather than the issue of predator and rodent reduction. These concerns were elaborated upon by Russell Train of the Council on Environmental Quality (CEQ), who spoke of the role ecologists describe for coyotes in ecosystems. Train discussed the dynamic of coyote limitation of prey populations, which insures that overgrazing by prey species, and consequent ecological disruption, does not occur. The extent to which this statement is scientifically valid is not as important as the fact that Train invoked a predator's role in the ecosystem as the justification for protecting predators by restricting predacides.⁵ Joining in this argument was environmentalist Charles Callison of the National Audubon Society, who objected to the trend of massive

⁵The scientific issue here is whether predators limit prey populations or whether prey abundance limits predator abundance. At least one recent article indicates that coyotes can regulate small mammal diversity and richness (Henke and Bryant 1999). The direction this relationship runs often depends on the prey and predator species being discussed.

poisoning of rodents and predators, declaring that the "...widespread use of highly toxic poisons in the open environment is an ecological disaster" (Hearing 92-22: 306).

On the other hand, not all actors arguing for ecologicistic concerns agreed with the need for a predator poisoning restriction. Rep. Barry Goldwater (Rep-AZ), for instance, simultaneously argued for the protection of species for ecologicistic and moral reasons, yet vehemently opposed the restriction on predacides due to their impact on ranching (Hearing 92-22: 485 – 492). Similarly, ranching industry representatives argued that the predator poison ban would negatively impact wild ungulate populations.⁶

The wildlife poison ban arguments were directly employed as justification for another bill, the proposed Predator Control Act of 1972, which never passed. However, many of the actors testifying spoke to both predator control and endangered species and it was difficult at points in the hearings ascertaining to which bill the actor is speaking.

In addition, the issue of predator and rodent control was directly related to specific species identified in the nascent ESA debate. One of the charter members on the ESA list was the black-footed ferret (Mustela nigripes), whose imperilment was recognized in the 1960s. In fact, the 1964 Leopold Report on predator and rodent control, which was continually cited in Hearing 92-22, noted that "[t]he black-footed ferret in the Northern Great Plains is nearing extinction, and the primary cause is

⁶See, for example, the testimony of Marcus Palmer of the Utah Wool Growers Association, at Hearing 92-22: 347. I did not code this type of argument as an ecologicistic one, as I preferred to err on the side of conservatism regarding what I labeled ecologicistic, given the central questions of this dissertation (see Chapter IV).

almost certainly poisoning campaigns among the prairie dogs which are the main prey of the ferret” (Hearing 92-22: 502). Sen. Alan Cranston (D-CA) criticized the Bureau of Sport Fisheries and Wildlife’s poisoning campaigns regarding prairie dogs, “The black-footed ferret, for example, is nearing extinction because of the official poisoning campaigns against prairie dogs, with whom the black-footed ferret lives” (Hearing 92-22: 481). Interior Department representative W.W. Lyons viewed ferret imperilment similarly (Hearing 93-5: 186 – 194) as did an anonymous author in Hearing 92-81 (272). A predecessor of the Cain Report, the Leopold Report also concluded that the black-footed ferret’s endangered status was the result of prairie dog poisoning (Hearing 92-22: 495 – 506).

Conversely, Sen. James McClure (R-ID) lamented the inclusion of rodenticides in Nixon’s order, arguing that there was no other way to control rodents beside poisons (Hearing 92-22: 492 – 493). A representative from the Oklahoma Department of Agriculture took a similar position, castigating prairie dogs as damaging to agriculture and transmitters of plague (Hearing 92-22: 584). Other actors advocated protecting rodents by restricting rodenticides.⁷

A 1972 environmental assessment of the proposed Endangered Species Conservation Act of 1972, a variant of which would become the Endangered Species Act of 1973, noted that the destruction of the prairie dog dooms the black-footed ferret, and suggests that this is an example of how “[d]estruction of a species in the short run could very well affect or destroy other species in the long run ultimately damaging or eliminating an entire ecosystem” (Hearing 93-5: 192). Other species

recognized in the hearings in 1972/73 as endangered were the grizzly bear (Ursos arctos horribilis), grey wolf (Canis lupus), red wolf (Canis rufus), California condor (Gymnogyps californianus), and Utah prairie dog (Cynomys parvidens), all of whom had been either the direct or indirect targets of predator and rodent control programs.

One could argue that the argument on banning toxicants was based more out of concern for the impacts on ecosystems than on the impacts on the predators and rodents who were the intended targets of the poisons. However, this was not always true given, for example, the recognition that red and grey wolves were both imperiled and had both been the direct targets of control efforts (Hearing 92-22: 69). However, an important lesson may be that, while the legislators recognized the importance of ecosystem protection, the debate about how to address the issue centered on whether they would protect individual species (predators) from a particular threat (poisoning). This mirrors the structure of the ESA, which aims to protect whole ecosystems (Section 2) by protecting single species, subspecies, and distinct population segments (Section 4).

The concern about taking of individual species was also a part of floor debate. In at least two instances, Senators linked the earlier hearing debates over predator and rodent control to ecosystem concerns. For example, Sen. Gaylord Nelson (D-WI) attempted to amend the legislation to curtail the use of chemical toxicants, arguing that these poisons infiltrate the food web, thus causing ecological degradation (1973 Floor: 25691 – 25692). Nelson specifically discussed the imperilment of species caused by rodent control programs. In addition, Sen. Pete Domenici (R-NM) brought

⁷See written testimony of Nathaniel Reed of the Interior Department at Hearing 92-22: 87 –

up the example of the loss of prairie dogs as the principle reason behind the black-footed ferret's imperilment (1973 Floor: 25693).

Concern for taking of habitat was also very much in evidence in the hearings leading up to the original Act. In fact, if one were to use habitat protection arguments as a proxy for ecosystem management endorsement, evidence that the health of ecosystems was on the mind of Congress in passing the original ESA would increase substantially. Recognition of habitat destruction as a leading factor in species imperilment, and consequent recommendations for habitat protection, pervade all four initial ESA hearings (Hearings 92-22; 92-81; 93-5; and 93-67) and floor debate.

Consultation. These earliest debates on rodent and predator control largely centered on federal lands and federal programs, given the scope of Nixon's executive order. The importance of protecting wildlife on federal lands was therefore underscored early on in debates leading to the ESA. Representatives of the cattle and sheep industries were present in these hearings, protesting the restriction of predator control in general, and on federal lands specifically. The National Wool Growers Association, in particular, advocated delegating authority over federal lands to the states (Hearing 92-22: 85-86), presumably so that predator control could continue on those federal lands.

The bill proposed in response to Nixon's order and the EPA suspension of registration on several chemical toxicants would have repealed the Animal Damage Control Act of 1931. The 1931 Act provided for the "eradication, suppression or

bringing under control” of a variety of native wildlife perceived to be causing harm to agriculture, silviculture, or other wildlife (7 U.S.C. § 426-426c).

The impact that this legislative mandate was having on predators and ecosystems was a focus of debate. The Bureau of Sport Fisheries and Wildlife within the Department of Interior was the agency then imbued with enforcing the Animal Damage Control Act.⁸ In the first house hearing on predator control and the ESA, Rep. Philip Ruppe (R-MI) asked Interior Secretary Nathaniel Reed if he could provide information to the committee on where predator control by the Bureau was affecting “the biological balance” in different states (Hearing 92-22: 69).

In correspondence to the committee, Reed himself described the legislation that would replace the 1931 Act as responsive “to the judgment that direct Federal participation in predator control activity should be curtailed...” Quoting Nixon, Reed wrote that this would affirm the view that ““Americans today set high value on the preservation of wildlife”” (Hearing 92-22: 7). Reed argued here that the federal government should not be involved in activities that imperil species, which embodies the current Section 7 of the ESA. Further, this step should be taken, in Reed’s and Nixon’s views, because of American support for wildlife preservation. The ecological damage done by predator control was therefore of particular importance on public lands, and the administration promoted reform on this issue by restricting federal involvement. The justification for this was American support for wildlife protection.

⁸Currently, “Wildlife Services”, a division within the U.S. Department of Agriculture’s Animal Plant Health Inspective Service, implements the Animal Damage Control Act of 1931.

General ecosystem protection arguments. The discussion over predator and rodent control and endangered species⁹ soon gave way to a discussion exclusively focused on what steps should be taken to protect imperiled species. There was a broad recognition that the 1966¹⁰ and 1969¹¹ endangered species acts were not adequately protecting endangered species, and many bills were developed to address these inadequacies. The Nixon administration and House subcommittee on Fisheries and Wildlife Conservation (hereinafter House subcommittee¹²) agreed that the Endangered Species Conservation Act of 1969 was failing to prevent species from going extinct, even within the United States.

Early discussions on the need to redress the extinction problem included appeals to ecologicistic values and to ecosystem knowledge as the justification and means for species protection. On the administrative side, Nathaniel Reed, the Assistant Secretary of Interior and liaison to the subcommittee, commented on humans and their technology having the capacity to disrupt natural ecosystems at an increasing rate, thus causing species extinctions. These extinctions “resulted in ecological instability” and disruption of the “ponderous forces and rhythms of nature” (Hearing 93-5: 202).

⁹There was tremendous rancher opposition to the proposed Predator Control Act of 1972, which would have repealed the 1931 Animal Damage Control Act and would have transferred predator control from the federal government to the states. At Hearing 92-22, several legislators, including subcommittee member Robert Leggett (Dem-CA), vehemently opposed any decreased predator control out of concern for the livestock industry. Many representatives from the sheep and cattle industry testified that any change in predator control policy would devastate the industry. These factors were undoubtedly part of the reason the legislation was unsuccessful.

¹⁰Endangered Species Protection Act of 1966. 80 Stat. 926 (1966). Repealed 1973.

¹¹Endangered Species Conservation Act of 1969. 83 Stat. 275 (1969). Repealed 1973.

Reed invoked ecological reasons to protect species throughout multiple hearings leading up to the ESA (Hearings 93-5 and 92-81), as did subsequent Interior Department spokespeople,¹³ which corresponds with the valuational codings in Chapter V. Discussing remedies to the endangered species problem, Dr. Robert White (Hearing 92-22: 192) of the National Oceanic and Atmospheric Administration within the Department of Commerce remarked that his agency was involved in “a new marine ecosystem analysis program” aimed at gathering “ecological baseline data.”

Legislators invoked similar arguments, with Sen. Alan Cranston (D-CA) perhaps the most explicit example. Cranston, in promoting his bill to protect imperiled species, lamented the “unfortunate marriage of man’s technological know-how to his ecological myopia” (Hearing 92-22: 480). In his estimation, humans had upset the balance of evolution, as species were disappearing before new ones evolved. The gravity of the situation could be realized through the ecosystem concept, according to Cranston. He stated:

...it is essential to grasp the full meaning of the concept of the ecosystem: the environmental system of which all living things are subsidiary, interdependent parts. The perpetuation of life on earth, according to Barry Commoner, is based on the ‘reciprocal interdependence of life processes on another; the mutual interconnected development of the earth’s life system and the nonliving constituents of the environment; the repeated transformations of the materials of life in great cycles, driven by the energy of the sun’ (Hearing 92-22: 481).

¹²The House subcommittee went through a name change in the course of the legislative history, to: Subcommittee on Fisheries and Wildlife and the Environment.

¹³See, for example, the testimony of Curtis Bohlen, Deputy Assistant Secretary of the Interior for Fish and Wildlife and Parks (Hearing 92-81: 76).

Alan Cranston's argument is explicitly ecosystemic, and he asserted it as early as April 11, 1972 in front of the House Subcommittee and August 4, 1972 in front of the Senate Subcommittee¹⁴ (Hearing 92-22: 479 – 485; Hearing 92-81: 117-118). Senator Mark Hatfield (R-OR) commented that “[e]xtinctions also introduce unknown consequences in the functioning of ecosystems” (Hearing 92-81: 65). Less explicit arguments from all types of congressional actors often referred to the “balance of nature”¹⁵ or “chain of life” which roughly translates into concern over ecosystems and natural processes.

As the codings also indicated, environmentalists within the hearings also promoted an ecological perspective as the basis for species protection. Christine Stevens, of the Society for Animal Protective Legislation, argued in front of the House subcommittee about the need to protect endangered species so that they can actively fulfill “their ecological niches” (Hearing 93-5: 256). She argued similarly in front of the Senate subcommittee, stating that imperiled animals “...can no longer play an important part in the ecosystem, and I believe that is the intention of this legislation, to do just that, to keep them as they have been, really playing a role” (Hearing 92-81: 225). John Grandy of the National Parks and Conservation Association also expressed concern about species not being able to maintain their role in their natural ecosystem due to depressed population numbers (Hearing 93-5: 286),

¹⁴The Senate subcommittees referenced throughout this dissertation are: Subcommittee on the Environment; Subcommittee on Environment; Subcommittee on Resource Protection; Subcommittee on Environmental Pollution; Subcommittee on Environmental Protection. They will all be referenced as the Senate Subcommittee.

¹⁵Rep. Frank Annunzio (D-IL) noted the need for species protection to preserve the balance of nature (Hearing 93-5: 275), as did Rep. Robert Roe (D-NJ) (Hearing 93-5: 280). Sen. Harrison

as did Lewis Regenstein of the Fund for Animals (Hearing 92-81: 178), Steve Seater of Defenders of Wildlife (Hearing 93-67: 123), and Bernard Fensterwald of the Committee for Humane Legislation (Hearing 93-67: 146).

Howard Irwin of the New York Botanical Garden argued specifically for plant protection on these same grounds: “Species endangerment is one result of indiscriminate collection of wild plants. More serious is the ecological imbalance that follows the sudden and traumatic removal of elements of the ecosystem” (Hearing 93-5: 268). Geneticist G. Ledyard Stebbins likewise prioritized plant protection on this ecological basis (Hearing 92-81: 252 – 253). Tom Garrett of Friends of the Earth argued more narrowly, in terms of the reduction of certain flora species causing declines in certain fauna.¹⁶ These arguments are based on concern about the decreased population numbers of particular species due to impacts on ecosystems.

However, as in predator control debates, ecosystem arguments within endangered species discussions did not always accompany advocacy of increased species protection. For example, Dr. Ralph MacMullan of the International Association of Game, Fish and Conservation Commissioners recognized the importance of protecting species for ecosystem reasons, but simultaneously argued for a federally weaker ESA (Hearing 92-81: 158 - 168). Louis Clapper of the National Wildlife Federation followed suit (Hearing 92-81: 243 – 245).

Williams (D-NJ) mentioned the “balance of nature” within an explicit argument promoting an ecosystem perspective (Hearing 93-67: 115).

¹⁶In front of the House subcommittee, Garrett provided the example of the decline in saguaro cactus (*Carnegie gigantea*) in the southwest U.S. causing the imperilment of the elf owl (*Micrathene whitneyi*) (Hearing 93-5: 299). He used the same example in front of the Senate (Hearing 92-81: 234 and Hearing 93-67: 104).

On the House and Senate floor, ecosystem arguments were articulated from start to finish. First, Senate bill manager John Tunney's (D-CA) opening statement on the first day of floor debate (July 24, 1973) included the remark that, "[e]ach species provides a service to its environment; each species is a part of an immensely complicated ecological organization, the stability of which rests on the health of its components" (1973 Floor: 25668). Tunney reiterated the ecologic value of species in his opening remarks to the final day of debate (December 19, 1973). By providing protection to species listed as endangered, Congress would ensure that those species would continue to play their roles in the ecosystem (Floor Debate: 42534).

Other legislators followed Tunney's lead. Also speaking on the first day of debate, Sen. Harrison Williams (D-NJ) argued that species should be protected for a broad range of values, including their integral role in sustaining the "balance of nature" (1973 Floor: 25675). Within the House, Rep. Charles Price (D-IL) similarly claimed that the main thrust of the bill is "[t]o protect man from himself" given that "[m]an has disturbed the balance of nature" (1973 Floor: 30165). As it had been in the committee hearings, the balance of nature theme was articulated by several legislators. In fact, the word "balance," at it was used in the 1973 legislative history, consistently represented some notion of natural processes and systems.¹⁷

Floor debate revived several issues that emerged in committee hearings, some of which reinforced the need to regard species protection in a broader ecosystem

¹⁷In addition to Sen. Williams and Rep. Price, Reps. Michael Harrington (D-MA) and Frank Annunzio (D-IL) also articulated this theme (1973 Floor: 30166). Rep. Don Clausen (R-CA) speaks of the "world's ecological balance" being threatened and Rep. Benjamin Gilman (R-NY) notes the "delicate balance between wildlife and its habitat" (1973 Floor: 30167). By 1978, the word "balance" was used quite differently, generally alongside prescriptions aimed at relaxing some of the ESA's prohibitions to reduce its perceived economic impact.

context. As mentioned earlier, Sens. Gaylord Nelson (D-WI) and Pete Domenici (R-NM) continued to discuss the negative impacts of chemical toxicants on ecosystem health and non-target species (1973 Floor: 25691 – 25692, 25693). In addition, Rep. James Grover (R-NY) echoed the sentiments of non-governmental actors in the hearings who had argued for the protection of species so that they could fulfill their ecosystem roles (1973 Floor: 30165).

The last word in the House similarly affirmed a commitment to ecosystem protection. Rep. John Dingell (D-MI), considered to be the ESA's principal architect, stated at the close of the debate on December 20, 1973, "[t]he purposes of the bill include the conservation of the species and of the ecosystems on which they depend" (1973 Floor: 42913). This represents an affirmation of the purpose of the Act set forth in Section 2(b). That Dingell was uttering words the implications of which he did not understand is an extremely unlikely scenario, as he chaired both House subcommittee hearings leading to the Act (Hearings 92-22 and 93-5).

How did ecosystem arguments factor in the legislative outcome?

The final conference report for the 1973 ESA is fairly silent about ecosystem protection (Report 93-740). In fact, neither Section 2, outlining the purposes of the Act, nor Section 7, which affirms duties of federal agencies, is discussed in the conference report. Ecosystems are mentioned in an explanation of the Section 3 definition of "conserve, conserving, and conservation", which provides for the taking of listed species in the unlikely scenario that those species exceed the carrying

capacity of their native ecosystem (Report 93-740; 23). Ecosystems are not mentioned in the context of Section 2's stated purpose of the Act. However, the absence of verbiage within the report on Section 2 may simply be due to the absence of controversy regarding this section and its consequent neglect by the committee.

The previous Senate report on the same bill (S 1983) included ecosystem protection language in substantively the same form. Language within the earlier Senate report expressed the Act's purpose, in part, as to: "provide an effective means to conserve, protect, and restore the ecosystems upon which endangered and threatened species of wildlife depend" (Senate report 93-307). This can be compared with the final language of: "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved..." (Conference report 93-740). This text indicates that the ESA's purpose was not an unthoughtful, hasty addition and, if one hadn't read the statute, it would seem that ecosystems, not species, are the focus of protection.

In its background section, the Senate report also indicated a strong commitment to ecosystem protection. The report stated that, "[c]onsideration of this need to protect endangered species goes beyond the aesthetic. In hearings before the Subcommittee on the Environment it was shown that many of these animals perform vital biological services to maintain a 'balance of nature' within their environments" (Senate report 93-307: 2).

Additional evidence that the ecosystem protection language was not an oversight is in a July 1973 House report (House Report 93-412). The committee is clear within this report about the need to protect species because of their

interrelationships with other flora and fauna. In the committee's estimation, "the ecologists' shorthand phrase 'everything is connected to everything else' is nothing more than cold, hard fact" (House Report 93-412: 6). In addition, the ecosystem protection purpose of the Act was affirmed (House Report 93-412: 6, 10).

As the hearings and floor debate indicate, the phrasing of this expressed purpose now makes sense, when one considers the importance of species in the context of their role within ecosystems. It may be that the Congress did not understand the extent of the ecosystem protection task, and consequently passed a statute that is deficient in achieving that purpose, but this characterization does not answer the question of whether ecosystem protection was intended by the 1973 Act. As has been demonstrated, there is a substantial basis for arguing that the protection of ecosystems was precisely what the ESA was intended to accomplish. This was a general theme in the hearings, floor debate, and committee reports and was a specific theme within debates bearing on Sections 7 and 9 of the Act.

The codification of Sections 7 and 9 does not include ecosystem protection language, but it indicated that Congress sided with strong prohibitions on take and restrictions on federal involvement in species imperilment. First, the restriction on take was very broad, prohibiting the take of any such species within the United States or the territorial sea of the United States, or on the high seas (Conference Report 93-740: 12). Likewise take was defined broadly, as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." (Conference Report 93-740: 4). Further, this breadth was intentional. An earlier

House Report indicated that taking was defined “in the broadest possible terms” (93-412: 15).

Second, Section 7 was written with the purpose of circumscribing federal involvement in ecological degradation. The final language on Section 7 was one paragraph, reading:

The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical (Conference Report 93-740: 10).

There was, then, an affirmative duty on the part of federal agencies to conserve species, as well as a prohibition on jeopardizing or destroying the habitat of listed species. The final conference report does not discuss this language in detail. The earlier House Report, however, provides an example of Congressional expectations in the form of grizzly bears in Yellowstone National Park. Under Section 7, according to the committee, the Park Service would be required to supply the grizzly bears with elk carcasses, USFS should curtail the destruction of forest habitats on its lands around the park, and hunting should be prevented until there were sufficient numbers of grizzly bears (House 93-412: 14). Section 7’s final language coincided with the earlier debates on predator control in that Congress did not want federal agencies to be involved in species imperilment.

In sum, there was a strong showing in 1973 for ecosystem arguments. The predator control issue caused ecosystem arguments to factor early on as justification for strong prohibitions on taking and strict limitations on federal involvement in ecologically destructive activities. There were also more general examples of a variety of legislators, administrators, and nongovernmental actors advocating the ESA for the purpose of protecting ecosystems. Given the high profile of some of the legislators invoking ecological arguments, including bill managers, this content-analysis indicates quite clearly that ecosystem protection was a substantial part of the 1973 legislative history. However, there were several examples where actors simultaneously invoked ecological arguments and pushed for more circumscribed wildlife protections. This finding harkens back to concerns discussed in Chapter II that, while advocacy of ecosystem protection may be widespread, not all actors agree on how that will translate in implementation.

1978 AMENDMENTS

The unanimous support for the ESA dissolved by 1978. The major controversy responsible was the Tellico Dam conflict in Tennessee and the spectre of an obscure three-inch species of perch trumping a \$100-million dam. In retaliation to the Supreme Court's TVA v. Hill ruling, the southeastern delegation spearheaded an effort to sap the ESA's strength. However, that effort was not completely successful, as a coalition of legislators and environmentalists rallied to prevent significant

weakening of the Act. In addition, the Carter Administration defended the Act. Alternatively, industry spokespeople started to turn their attention to restraining the “pit bull” that the ESA was depicted as being.

Despite this tumultuous context, advocacy of ecosystem protection had not faded by the 1978 amendments. The primary theme in the 1978 hearings was whether to reduce or preserve the ESA’s reach in the wake of the Tellico dam. As indicated by the valuational codings, economic values were by far the most often-invoked values in the legislative history of 1978. Although the ecologicistic and utilitarian/protective values were dramatically outpaced by the economic value (Chapter V), these values continued to be regularly employed, particularly as challenges to the new perception among some actors that some species were “insignificant.”

The significance of particular species was a central component of the debate, and related to two key ESA battlegrounds: species listing and consultation. In addition, ecosystem arguments also feature in species reintroduction and more general discussion. A multitude of actors grappled with this issue, including FWS, legislative and non-governmental actors who supported a strong ESA, and legislative and non-governmental actors who supported a weak ESA. As in 1973, ecosystemic issues continue to pervade the 1978 legislative history.

Which key ESA battlegrounds involved ecosystem arguments?

A central theme in the contentious 1978 hearings and floor debate was whether some species were insignificant and therefore not eligible for the ESA’s

protections. This related to the ESA battleground of listing, given that the “insignificance” of a species was a component of discussions on FWS listing priorities. In addition, there was concern over the potential of obscure species to impede federal projects, thus relating to Section 7 issues. Ecosystem arguments were also a part of reintroduction/translocation and more general discussion.

Listing. There were two listing controversies: whether some species merited protection at all and whether some species should be prioritized above others. First, the 1978 Tellico controversy caused some to question whether the snail darter deserved any protection at all. Among the more colorful comments were those of Steve Gallizoli of the Arizona Department of Fish and Game, “[w]e believe the 1973 Act is overly idealistic in extending coverage to all members of the animal kingdom, including literally millions of invertebrates, many of which we regularly slap and step on without a thought” (Hearing 95-H33: 486) and Rep. John Duncan’s (R-TN) remark toward the snail darter, “[y]ou cannot eat it. It is not much to look at. It is a slimy color” (Hearing 95-39: 54). According to these speakers, the solution was generally to assess species on the basis of their tangible value to humans.

In response to the suggestion that some species might not merit listing because of their perceived insignificance, a multitude of actors argued that all species should be protected if imperiled, as they play important roles in ecosystems. For example, Elizabeth Kaplan of Friends of the Earth stated,

Why should we care about a 2-inch fish, or a homely snail, or obscure clam? It is difficult to comprehend their value until we ask how do they affect the intricate web of life of the area? What animals depend on them for food? What happens if there are no snails to eat algae in the area? Obscure creatures play vital roles in ecosystems... (Hearing 95-39: 31).

House subcommittee member David Bonior (D-MI) responded to Kaplan's testimony by noting that she demonstrated "keen sensitivity to our ecosystem" (Hearing 95-39: 32), thereby indicating that Kaplan's ecological argument did not go unnoticed by the subcommittee. Lewis Regenstein of the Fund for Animals also argued that obscure species play important roles in ecosystems and should therefore be fully protected (Hearing 95-39: 552). The media picked up on this argument, as evidenced in the testimony of Christine Stevens, representing the Society for Animal Protective Legislation. Her written statement included an excerpt from a Christian Science Monitor editorial that stated:

The problem, of course, is whether any group of human beings can realistically determine the intrinsic and ecological value of a form of animal life. And who can say what impact its disappearance would have on the balance of nature? The interdependence of species at best is difficult to determine... (Hearing 95-39: 299).

Notably, Rep. William Lehman (D-FL) employed this same excerpt (Hearing 95-39: 397). This quote from the Monitor is worth mention, given concern about media caricatures representing the conflict as an insignificant, valueless, heretofore-unheard-of species of perch versus a hundred-million-dollar public works project.¹⁸

The existence of these caricatures is clear from the committee hearings.¹⁹

¹⁸Congressional participants who criticized the media's portrayal of the issue include Sara Cook, who described media coverage of the snail darter issue as "trivial, flashy, and novel" (Hearing 95-40: 678) and Dr. William Russell of the Little Tennessee River Alliance who indicated that, in media coverage on Tellico, "The fish is usually shown alongside a paper clip, a nickel, or a similar object, to show how tiny it is... The dam proponents are never pictured next to a basking shark, to show how small they really are, compared to some of their fellow vertebrates. That does not mean that they are insignificant or unimportant. As a biologist, I have great respect for all forms of life, including large sharks, small dam proponents, and tiny snail darters" (Hearing 95-40: 656). Discussing ecosystems more directly, Dr. David Etnier, the biologist who discovered the snail darter, asserted: "Endangered species are far more than the often insignificant little beasts to which they have been

Highly visible legislators also objected to the idea that one could safely “write off” some species. An important exchange on this issue was between Senate subcommittee chair John Culver (D-IA) and a scientist who promoted limiting the ESA’s reach, C.W. Hart of the National Museum of Natural History within the Smithsonian institution. Hart testified that FWS should not be protecting all species and could safely disregard invertebrate protection (Hearing 95-H33: 38, 91 – 96). In response to Hart’s testimony, Culver vigorously questioned Hart on the proposition that any species could be safely disregarded. Part of their exchange is worth quoting at length, for it demonstrates Culver’s interest in species’ relationship to their ecosystems, and the condition of scientific uncertainty suggesting that obscure species not be sacrificed:

Senator Culver: Isn’t there a general acceptance, though, that this remarkable creation we have is in one way or another, even if we don’t understand all of it, all part of a critical web of life?

Mr. Hart: I think certainly it is.

Senator Culver: Who plays God the second time around?

Mr. Hart: That is a very good question, and one I am not able to answer, but I think it should be addressed and should be thought about without going to the efforts to protect everything. I don’t think it is feasible to protect everything. The act, as it is written, has no end. It is open ended...

Senator Culver: Given the scientific complexity and number of elements that would have to be factored in such an intellectual

reduced by the media—they are our only reliable key to identifying disappearing habitats and ecosystems” (Hearing 95-40: 639).

¹⁹For instance, the controversy in Alabama over the proposed listing of two imperiled fish, the Cahaba shiner (*Notropis cahabae*) and the goldline darter (*Percina aurolineata*) prompted the Birmingham News to run an editorial on the need to substantiate that species have economic value prior to listing them (Hearing 95-39: 530 – 531). Another direct example is an article from the Sunday Times that depicts the caricature between fish and dam (Hearing 95-40: 1225).

undertaking it seems to me that such a decision would just defy the imagination.

Mr. Hart: Yes. (Hearing 95-H33: 39).

That this exchange was noticed is apparent in hearings held the very next day, where Sen. Kaneaster Hodges (D-AR), the acting subcommittee chairman questioned Kenneth Balcomb of the Colorado River Water Conservation District, an ESA critic. Balcomb stated that he would be willing to allow species to go extinct, citing Hart's testimony from the previous day in his defense. Hodges responded that he is uncomfortable with that response given the scientific uncertainty surrounding the understanding of what impact those individual extinctions will have on the "chain of life" (Hearing 95-H60: 227).

A second listing issue involved whether the protection of some imperiled species should be a higher priority than that of others. The debate quickly took on ecosystemic themes, with FWS, legislators, and environmentalists opposing discrimination against certain species based on taxonomic consideration, given the importance of species to their ecosystems. Some industry representatives advocated that ecological importance be used as the basis for granting higher priority for some species.

Testifying for FWS, Keith Schreiner maintained that the agency should not distinguish between vertebrates, invertebrates, and plants because the purpose of the Act is to preserve the ecosystems inhabited by endangered and threatened species, and ecosystems are composed of vertebrates, invertebrates and plants (Hearing 95-H33: 529). That Schreiner uttered this statement was especially significant, given his central role of FWS liaison to congressional subcommittees. Nor was this an errant

remark – it was part of a written statement by Schreiner on the “Federal View of ‘Realistic’ Endangered Species Administration and Management” published in the July 1977 hearings.

The following year, in April 1978, Schreiner’s superior, FWS Director Lynn Greenwalt (Hearing 95-H60: 16 – 17), affirmed the ecosystem protection approach, stating that, “if we are to preserve species such as the peregrine falcon, the bald eagle and the grizzly bear, we must also preserve the network of life upon which they depend.” Greenwalt states that, despite the need for listing priority guidance, FWS is committed to the protection of all species, regardless of charisma. He stated that the adoption of this position by the agency is out of regard for the complex interdependent relations in which species are imbedded (Hearing 95-H60: 16 – 17).

Greenwalt also averred this commitment to ecosystem protection in the course of questioning from Subcommittee chairman Sen. John Culver (D-IA). Culver asked what Greenwalt thought of proposals to limit which types of species would be provided under the Act. Greenwalt responded that this suggestion did not make any biological sense, given the interdependency of all species, and the ESA’s recognition that ecosystems need to be protected in order to protect species (Hearing 95-H33: 34).

Senate subcommittee chairperson John Chafee (R-RI) and Interior Department representative Ron Lambertson explored the FWS listing priority system. Upon questioning, Lambertson described the priority system as based on the degree of threat and whether the subject of listing is a taxonomic class, full species, or subspecies, with priority given to class and full species. Chafee asked whether species such as the California condor and grizzly bear receive higher priority under the

system than a snail darter. Lambertson said yes, and Chafee asked whether the foundation of an ecosystem – lower life forms – are more important. Lambertson responded that lower life forms are important, but that FWS has to make choices (Hearing 97-H34: 20).

When Patrick Parenteau of the National Wildlife Federation emphasized in his testimony the need to protect obscure species, Chafee interrupted him to express his agreement (Hearing 97-H34: 52). In Senate questioning of a high-profile scientific panel, Mitchell asked what the scientists thought of the FWS priority system. The scientists disagreed with the system's bias toward charismatic species (Hearing 97-H34: 301). In House hearings, environmental representatives (Hearing 97-32: 135 – 146; 180; 672 – 676; 677 – 678) and a state of Missouri representative (Hearing 97-32: 670) concurred. Mitchell himself articulated the need to protect both obscure and well-known species (Hearing 97-H46: 2 – 3).

On the floor, legislators again emphasized the value of protecting unknown species. Rep. Thomas Evans (R-DE) cited Dr. Raven's estimate that 1 million out of the existing 5-10 million species will go extinct in the next 30 years. This extinction crisis represented the burning of books not read, and had drastic implications for human welfare (1982 Floor: 12959-60). Chafee made similar arguments (1982 Floor: 26187-88). Rep. Roy Dyson (D-MD) likewise advocated protecting species for the "unknown riches" they present for humans (1982 Floor: 12962). As he had during hearings, Mitchell asserted that unknown species may have value to humans and cited a potential extinction of 20% of species by the year 2000 (1982 Floor: 13183).

Environmental representatives in general emphasized that the scientific uncertainty surrounding the value of obscure species mandated their protection (Hearing 97-H34: 249 – 254). In addition, a scientific panel unanimously testified in support of obscure species protection. Ecologist Dr. Edward O. Wilson testified that 3-10 million species exist on the earth, yet only a fraction has been described (Hearing 97-H34: 288 – 290). Dr. Thomas Eisner, a chemist, emphasized the need to prevent the extinction of these unknown species before they were even known (Hearing 97-H34: 295 – 297). Similarly, botanist Dr. Peter Raven's use of Aldo Leopold's "intelligent tinkering" quote underscores the importance of protecting cogs and wheels precisely because we do not yet know what function they serve (Hearing 97-H34: 290 – 295). Conversely, Dr. Stephen Kellert's research indicated a strong bias among the public toward more charismatic species. However, Kellert also found that the public would support sacrificing a hypothetical fish's survival only if a water project met critical human needs. He further noted some public support for spider protection and found that the public's knowledge of wildlife is limited (Hearing 97-H34: 371 – 409).

Two members of the scientific panel that appeared before the Senate – Drs. Peter Raven and Thomas Eisner – also appeared before the House subcommittee. In front of the House, Raven again advocated the protection of all species, including obscure ones. In addition, he promoted the designation of critical habitat as a cost-effective preservation strategy (Hearing 97-32: 119 – 126). Eisner also promoted the protection of obscure species, and lambasted proposals to exclude invertebrates and

plants from protection (Hearing 97-32: 127). After their testimony, Forsythe agreed that lower life forms needed protection (Hearing 97-32: 133).

Some business interests recommended, as they had in 1978, the elimination of protection for lower life forms, for subspecies and populations, and for species imperiled in only a portion of their range. The inspiration for such a recommended can, at least in part, be traced to continued concern over the grey wolf's and grizzly bear's real or perceived impediments to economic activity.²⁰ Indeed, critical habitat for the grizzly bear continued to be contentious, with the Western Regional Council, a consortium of industry interests, complaining that grizzly bear habitat restrictions were impeding mining operations (Hearing 97-H34: 315 – 340).

Some actors suggesting that not all species should be protected by the ESA recommended that species playing important ecological roles be prioritized for protection. For instance, Joseph Ives of the National Rural Electric Cooperative Association argued that snail darters should not receive as much protection as bald eagles. In his view, only species with economic, aesthetic, or ecological benefits should enjoy ESA protection (Hearing 95-40: 707 – 709). In addition, Aubrey Wagner recommended evaluating the worth of a species on the basis of “their role and contribution to the environment” and explicitly advocated consideration of a species' ecological value (in addition to economic and other values) (Hearing 95-H33: 368). Wagner was an individual firmly in the spotlight as spokesperson for Tennessee Valley Authority, the agency that constructed the Tellico Dam. Ironically,

²⁰See written testimony of J. Allen Overton of the American Mining Congress at Hearing 97-H34: 410 – 462 and Jerry Haggard of the same organization at Hearing 97-32: 264 – 269; Hearing 97-H46: 213 – 216.

as described below, dam opponents were simultaneously arguing for protection of the snail darter on the basis of its ecological indicator role.

A third example was Sen. Jake Garn (R-UT), who severely criticized the ESA as inflexible. For corroboration, he included in the hearing record a Washington Star column lambasting the “Cult of the Endangered Species.” Specifically, the column critiqued members of the “cult” for wanting to protect ecologically insignificant species such as the Devil’s Hole pupfish (Cyprinodon diabolis), to the neglect of more common fish that play significant roles in their ecosystems (Hearing 95-H60: 47). Finally, the testimony of Linda Anzalone of the US Chamber of Commerce began with the description of the “interlocking roles played by different species in our ecosystem” as a fundamental concept upon which the ESA is predicated. Anzalone advocated the ESA be amended to include a balancing mechanism to resolve conflicts between development and species. However, she complicated her proposal by suggesting that the aesthetic or ecological value of a species hinders the ability to evaluate that species’ worth to humans. Given this difficulty, she suggested that any decision guideline aimed at attaining balance between economic vitality and species protection be weighted toward species conservation, which aligns with the precautionary principle (Hearing 95-H60: 364 - 369). Anzalone’s argument recognized the ecological role of species and seemed to support their protection on that basis. Even those attempting to weaken the ESA, it would seem, recognized and endorsed its relationship to ecosystem protection.

Consultation. The Tellico controversy inspired legislators and industry spokespeople to promote more “balance” in the powerful act, which related

specifically to FWS's implementation of Section 7. The view that the ESA should be balanced, that is, weakened to accommodate economic activity, was the most prominent theme in these hearings and related to several controversies involving consultation, of which the Tellico dam was the most publicized.

Another conflict involved the Mississippi sandhill crane (Grus canadensis pulla), whose protection under Section 7 of the ESA resulted in a court injunction of the expansion of Interstate Highway 10 into crane habitat. The case was brought by the National Wildlife Federation and provided fodder for detractors of the ESA, who contrasted the value of the highway extension, in terms of human safety, with the dubious utility of this subspecies of sandhill crane. Eventually the conflict between the Federal Highway Administration and the Mississippi Sandhill Crane was resolved through the purchase of 1,900 acres for a national Mississippi Sandhill Crane refuge (Hearings 95-39; 95-40).

Another conflict concerned Indiana bats (Myotis sodalis) imperiled by pending construction of a reservoir. This case went to court and was decided in favor of the Corps of Engineers, the project sponsors, but the reservoir was not completed for economic reasons. These additional Section 7 controversies also factored in the 1978 debates. For instance, Rep. Trent Lott (R-MS) mocked the Mississippi sandhill crane for the lack of beauty Lott perceived in the bird (Hearing 95-39: 60). Charles Lyles of the Gulf States Marine Fisheries Commission employed a Darwinian argument, stating that only the fit survive, and if the Mississippi sandhill crane is not adaptable enough to move from the site slated for the highway, it is biologically appropriate for the bird to perish (Hearing 95-39: 173).

These three cases, involving the snail darter, Mississippi sandhill crane, and Indiana bat, led to the argument that people were utilizing the Act to stop economic development. This was a common refrain in the 1978 hearings.²¹ In particular, multiple legislators maintained that the ESA was not intended to be as strong as the Supreme Court interpreted it to be, and that unscrupulous environmentalists were exploiting its strength to stop development rather than to protect particular species from extinction. For instance, Rep. Tom Bevill (D-AL) argued in front of the House subcommittee that the ESA was being used for purposes for which it was never intended, and that the original Act was aimed at providing balance between economic progress and environmental protection. In regard to FWS and environmentalists, argued Bevill, “These well-meaning people are going to dry this country up” (Hearing 95-39: 180). Others echoed Bevill.²²

Chastising Bevill, Rep. John Dingell (D-MI) asked if he supported animals going extinct. In a duel between subcommittee member Dingell and chairman Leggett over subcommittee chairpersonship, Robert Leggett sided with Bevill, proclaiming that massive abuse of the ESA was occurring, with FWS failing to advise federal agencies on what species protection measures are necessitated by the Act (Hearing

²¹A particularly strident example of this came from James Swift of the Waterways Journal Weekly, who criticized environmentalists for abusing the ESA to stop development and also claimed that FWS was complicit in environmental obstructionism. Swift advocated investigation of FWS to determine their involvement in this scheme to stop development and requested that no funding be provided for ESA implementation until a balanced program was set up “which would protect the American people from abuse by those persons who are more concerned about nature than their own species, homo sapiens” (Hearing 95-H60: 397 – 400).

²²See, for example, Rep. Dan Marriot (R-UT) claimed that advocates of the woundfin minnow (Plagopterus argentissimus) were seeking its protection out of ulterior motives not related to preventing the woundfin’s extinction. Subcommittee member James Oberstar’s (D-MN) agreed with Marriot on this point (Hearing 95-39: 462 – 477). Rep. Ted Risenhoover (D-OK) made a similar charge (Hearing 95-40: 718 – 720).

95-39: 180 - 185). Rep. Walter Flowers (D-AL) also argued that the ESA was not being implemented for what it was intended. He asserted that he might have supported protection of more obscure species, but the ESA was never meant to impede “reasonable progress,” and central Alabama needs economic growth (Hearing 95-39: 182).

Although not in Congress at the time, Rep. Ted Risenhoover (D-OK) was certain that when the ESA was passed, it was meant to protect charismatic species such as the bald eagle, grizzly bear, whooping crane (Grus americana), and “other well-known, beloved species” (Hearing 95-40: 719). He declared that it won’t even protect charismatic species, however, if it’s too burdensome (e.g., if obscure species are protected). Nongovernmental actors also alleged that the ESA was not intended to be as inflexible as it was interpreted to be in the Tellico situation and that it was not aimed at protecting obscure species.²³

In response to the perceived need for balance, Senate Subcommittee Chairman Culver’s priority was determining how to re-design Section 7 to provide a thoughtful conflict resolution mechanism. Culver was an important part of the eventual solution of the Endangered Species Committee or “God Squad”, the Cabinet-level committee process designed to arbitrate exemptions when there are irresolvable conflicts between federal agency actions and a listed species. The God Squad solution was structured to be a complex, fairly taxing exemption process. That even the potential extinction of obscure species such as the snail darter would merit this high level of

²³See, for example, the testimony of J. D. Brown of the American Public Power Association. (Hearing 95-40: 799 – 804) and Chris Farrand of the US Chamber of Commerce (Hearing 95-H33: 324 – 330).

attention and resource commitment is a striking outcome, particularly given that the 1978 hearings are considered the high watermark for the ESA in Congress. Given the discourse within the hearings, it seems that part of the reason that the God Squad solution was adopted was out of concern for the loss of obscure species that were playing unknown, but perhaps integral, roles within their native ecosystems.

Reintroduction/translocation. Ecosystem protection also came up in the context of species reintroduction. For example, FWS Director Lynn Greenwalt included in the hearing record the agency's April 11, 1978 Federal Register notice on captive wildlife. The notice directly quotes the ecosystem protection purpose of the ESA and translates this purpose with regard to captive wildlife populations, stating that,

The Service considers the purpose of the Act to be best served by conserving species in the wild along with their ecosystems. Populations of species in captivity are, in large degree, removed from their natural ecosystems and have a role in survival of the species only to the extent that they maintain genetic integrity and offer the potential of restocking natural ecosystems where the species has been depleted or no longer occurs (Hearing 95-H60: 21 – 30, emphasis in the original).

Here, captive breeding of endangered wildlife is only considered legitimate in the context of potential reintroduction, and reintroduction is cast in terms of ecosystem restoration.

Reintroduction and translocation arose in the TVA context specifically. Dr. David Etnier, the ichthyologist who discovered the snail darter and was consequently a central figure in the Tellico controversy, argued that snail darter transplantation from the Little Tennessee River to the Hiwasee River did not satisfy the ESA due to

its failure to protect the ecosystem upon which endangered species depend (Hearing 95-40: 639 - 640).

General ecosystem protection arguments. In the first and second days of hearings on March 22, 1977 and October 26, 1977, Rep. Robert Leggett (D-CA), the chairman of the House Subcommittee opened up that hearing by citing the ESA's purpose of protecting ecosystems (Hearing 95-18: 87, 371). A letter from Secretary of Interior Cecil Andrus likewise prioritized ecosystem protection. While Leggett seemed to be quoting from Section 2 of the Act, Andrus elaborated on the need for ecosystem protection, stating:

The goal of the endangered species program is to maintain a healthy diversity of species and to preserve in their natural ecosystems species of animals and plants that are endangered with extinction or threatened with endangerment. Wherever possible, the program seeks to restore such species to the point at which it is once again a viable component of the ecosystem (Hearing 95-18: 90).

Not only is there a commitment to ecosystem protection in this statement, there is also a commitment to ecosystem restoration. In oral testimony, FWS Director Lynn Greenwalt affirmed to the agency's commitment to these principles (Hearing 95-18: 93). In subcommittee questioning of Greenwalt, chairman Leggett and member Thomas Evans (R-DE) mentioned concern for ecosystems specifically.²⁴ Dr. Thomas Lovejoy also advocated protecting all species to ensure the continued functioning of ecosystems and to accomplish ecosystem restoration (Hearing 95-40: 1211).

By 1978, Greenwalt's statements prioritizing ecosystem protection are even clearer:

²⁴Leggett states: "Animals are not partisan, neither plants. Neither is our ecosystem" (Hearing 95-18: 100), while Evans says: "I am very concerned about our delicate balance of nature and the ecosystem" (Hearing 95-18: 100 - 101).

The goal of the Act is to protect the grizzly and the bald eagle, as well as the snail darter and the El Segundo blue butterfly. It includes protection of plants as well as animals because the world's intricate ecological balance depends upon them both...we protect species for their own value and also for their value in what has been called the 'web of life' (Hearing 95-39: 5).

Greenwalt's phrasing of protecting grizzly bears and bald eagle, as well as snail darters and butterflies, was an aimed response to the Tellico snail darter controversy, and his defense of the injunction of the dam was that all species are important, because they all fit together ecologically.

NGO defense of the ecosystemic nature of the ESA was vigorous. For example, in an elaborate statement on the importance of protecting obscure species for utilitarian, moralistic, ecologicistic, and other reasons in oral and written form before the House and Senate subcommittees, Michael Berger of the National Wildlife Federation quoted Aldo Leopold's famous statement: "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise" (Hearing 95-39: 304; Hearing 95-H60: 200). This is an ecosystem protection argument, here marshaled to justify full implementation of the ESA to all species, regardless of their perceived value to humans.

Another Leopold quote, "To keep every cog and wheel is the first precaution of intelligent tinkering" (1966: 190), was also employed as justification for obscure species protection by several congressional actors. It reinforced the view that, by protecting those species, ecosystem protection will be accomplished. Insisting on the need to protect ecosystems by protecting species, Dr. Thomas Lovejoy (Hearing 95-H33: 537) of the World Wildlife Fund utilized a similar metaphor, letting species go extinct is like "throwing out a bolt fallen from an automobile because the vehicle still

seems to be running properly.” He lamented the loss of scientific knowledge resulting from such action, “[s]hould we throw away the owner’s manual to our car before we even know the names of all the parts?” (Hearing 95-H33: 537). Both of these metaphors reflect the assumption that species extinction damages whole ecosystems and, consequently, by protecting the species within an ecosystem, ecosystem protection will be achieved. Whether this assumption is valid is not as relevant as the fact that ecosystem protection was a priority, perhaps the highest priority, in these metaphors.

Also drawing from Leopold, Dr. Michael Zagata of the National Audubon Society directly employed the Section 2 ecosystem protection purpose of the ESA when he stated “it is to mankind’s benefit to save representative ecosystems because the communities within them may contain a plant or animal of unknown value” (Hearing 95-39: 318; Hearing 95-H60: 187). Zagata’s statement, included in both House and Senate hearings, is a direct and semantically accurate representation of what Section 2 would mean if it had been coupled with implementing provisions. His argument about ecosystem protection is conjoined with advocacy of a very strong act, exemptions to which should not be provided within the statute. Similarly, before the Senate subcommittee, Robert Jenkins of The Nature Conservancy argued that the endangered species program required the protection of representative ecosystems. His suggestion was to “protect the widest possible variety of the ecosystem types including widely distributed and typical ecosystem types as well as peculiar types that may support these particular rare and endangered species” (Hearing 95-H33: 142 – 143). The Nature Conservancy repeatedly argued this point in front of committees,

asserting that the protection of representative ecosystems was by far the most cost-effective way to protect biodiversity (Hearing 95-H33: 516 - 519).

Another example was Michael Bean, of the Environmental Defense Fund, who testified to the Senate subcommittee that the ESA was originally passed for two reasons: first, Congress recognized the benefit to humankind of all species, including obscure ones, and second, all species should be protected because all species are ecologically intertwined (Hearing 95-H60: 73 – 75). In addition, David Etnier's previously cited testimony that transplantation of the snail darter was incongruous with the ecosystem protection purpose of the ESA was in the same vein.

These statements were articulated in at least four of the six 1978 hearings. No members of either the House or Senate subcommittees corrected the NGO representatives on their interpretation of the statute. In fact, in response to Jenkins's statement, Sen. James McClure (R-ID), a legislator very much in favor of restricting the reach of the endangered species policy, stated that he shared Jenkins' support for the goal of the ESA (Hearing 95-H33: 143). None of the legislators ever said that Zagata, Jenkins, Bean, and Etnier were mistaken or that the Act was not meant to protect ecosystems. Of course, that does not mean the subcommittee agreed with these interpretations of the ESA, but the appearance of these ecosystem protection statements within the legislative history erodes the validity of characterizing Section 2's ecosystem protection language as an obscure, hidden facet of the ESA of which legislators are or were unaware. In fact, legislative proposals to change the purpose

(Section 2) of the Act begin to emerge in 1978, but the purpose of the Act has never been altered.²⁵

Perhaps the dominant justification for protecting snail darters and other obscure species was the role such species play in indicating the health of ecosystems. Dingell made this “canary in a coal mine” case in written testimony to the House subcommittee, stating,

...species deemed by some as ‘insignificant’ have a very direct importance as warning signals to humans—ecological barometers which relay the potential demise of entire ecosystems—like the canaries that coalminers carried into the mines to give advance warning of poisoned air for humans (Hearing 95-39: 107).

Although the canary in a coalmine metaphor was usually employed for utilitarian values concerning the well-being of humans, Dingell married ecologicistic and utilitarian values in this statement. Rep. James Jeffords (R-VT) also noted the ecological indicator role, arguing for the protection of “so-called obscure species” given their role as “indicators of the existence of ecologically unique systems” (Hearing 95-39: 252). Rep. Richard Ottinger (D-NY) argued similarly (Hearing 95-39: 261 - 265).

Environmentalists also employed the ecological indicator role as a rationale for protecting obscure species (Hearing 95-39: 318). Although Zygmunt Plater, representing Friends of the Earth and the lead counsel in TVA v. Hill, did not specifically mention ecosystems, his description of the snail darter’s importance in

²⁵In the Senate, Hugh Scott (R-PA) introduced an amendment to Section 2(b) which would have added a proviso that the purpose of the ESA be “consistent with the welfare and national goals of the people of the United States” (1978 Floor: 21353). There was extremely limited debate on this amendment, consisting of a brief rejoinder by Sen. John Culver, and the refusal of Scott to yield to fellow Republican and member of the Pennsylvania delegation, Sen. Henry Heinz (R-PA). The amendment was soundly rejected by a margin of 86 – 10 (1978 Floor: 21355).

terms of its canary-in-a-coal-mine function is similar to more explicit advocacy for the protection of indicator species to obtain ecosystem protection (Hearing 95-39: 291 - 292). Moreover, President Jimmy Carter is quoted throughout the hearing for making an implicit canary-in-a-coalmine argument.²⁶ Although Carter doesn't specifically mention ecosystems, his recognition of the role of species vitality as a bellwether of environmental quality was likely influential within Congress. Carter's words may have strengthened the claims of those arguing for the protection of species given their role of ecological indicators.

The value of ecosystem services is a different argument that also featured in these hearings. For instance, Dr. Michael Zagata of the National Audubon Society mentioned the importance of wetlands in purifying water, recharging the water table, and mitigating flooding (Hearing 95-39: 318 - 319). The service of insect control was noted by Lewis Regenstein of the Fund for Animals who attributed human starvation in India to the exploitation of lizards and snakes for the fashion industry and consequent devastation of crops by insects (Hearing 95-39: 560). Dr. Wayne King of the New York Zoological Society similarly remarked on the ecological service provided by pollinators, and the waterflow control, prevention of soil erosion and siltation provided by healthy forests (Hearing 95-40: 807 – 811).

The 1978 hearings also included acknowledgement of the human role within ecosystems. Rep. William Whitehurst (R-VA) states that Congress should try to protect species from extinction, “[w]e owe at least that much, not only to the wildlife

²⁶Carter's statement was: “Our fish, wildlife and plant resources act as an indicator of the health of our environment... When they have trouble surviving, we should seriously examine the quality of our environment” (Hearing 95-H33: 522).

with which we share our fragile ecosystem, but to ourselves and the generations to come” (Hearing 95-39: 399). Humans here are sharing the ecosystem with wildlife, which connotes a standard of good citizenship required of humans. Further, the necessity of ecosystem protection follows the logic of protecting ecosystems to ensure the well-being of humans and to conserve the earth’s resources for the benefit of future generations of humans. If ecosystems are not protected, utilitarian and moralistic values will be precluded. The conjunction of utilitarian (present human welfare), moralistic (duties to future generations), and ecologicistic values appeared repeatedly in the hearings.²⁷

The emphasis on ecosystem protection in the hearings carried over to floor debate, which was extensive in both the Senate and House. Senators and representatives endorsed the view that all species are significant. Deliberation surrounding the God Squad was based on the argument that, because of the gravity of the extinction of any species, a Cabinet-level exemption process with a multi-layered set of requirements was required if the jeopardy to a species could not be avoided. The perceived seriousness of a single extinction, in part, related to the role species play within ecosystems.

Sen. John Culver (D-IA), the floor manager of the reauthorizing legislation and the subcommittee chairman who presided over hearings, opened up the floor debate by describing the accelerating extinction rate in the following terms: “The chilling tragedy of this massive loss of species from our ecosystems and biosphere...”

²⁷See testimony of Rep. James Jeffords (R-VT) (Hearing 95-39: 249 – 253), Rep. Richard Ottinger (D-NY) (Hearing 95-39: 261 - 265), Christine Stevens of the Society for Animal Protective Legislation (Hearing 95-39: 297 - 300), Michael Berger of the National Wildlife Federation (Hearing 95-39: 303 – 309), Dr. Michael Zagata, National Audubon Society (Hearing 95-39: 316 – 321).

(1978 Floor: 21131). Culver later promoted the protection of all species for a variety of reasons, arguably most important of which, for Culver, was the participation of species in a “seamless web of interdependency” (1978 Floor: 21287).

Other senators also underscored the importance of protecting species because of their value within ecosystems. Sen. John Chafee (R-RI) articulated the purpose of the Act as two-fold, including ecosystem protection and the conservation of endangered species. He argued that species such as the peregrine falcon (Falco peregrinus anatum), bald eagle, and grizzly bear could not be protected unless one safeguarded “the network of life upon which they depend” (1978 Floor: 21147). Sen. Patrick Leahy (D-VT) likewise argued against belittling the snail darter on the grounds that any tinkering with the web of life causes an impact to ecosystems upon which humans depend (1978 Floor: 21286). Sen. Lowell Weicker (R-CT) claimed that no single species is unimportant, given the role all species play in an “intricate, interdependent web” (1978 Floor: 21346).

In the House, Rep. William Lehman (D-FL) argued that it is impossible to predict the consequences of the extinction of any one species given that all species are interdependent. The result of extinction may be significant for the “balance of nature” and for humans (1978 Floor: 38134). Rep. Lindy Boggs (D-LA) introduced her amendment, relating to the exemption of antique articles from the ESA, with the proviso that it would not weaken the ESA, and that the ESA is a good law, given the importance of protecting the ecosystems on which wildlife depends (1978 Floor: 38147). Rep. Theodore Weiss (D-NY) lamented the amendments to the committee bill, given the urgency of protecting the ecosystem and ecological balance. He

described grizzly bears, humans, and all other species as being a part of the “chain of evolution” and being inextricably linked to each other (1978 Floor: 38158).

How did ecosystem arguments factor in the legislative outcome?

In the House Report issued in September 1978, the primary purpose of the ESA was avowed, as was the view that species extirpated from their native ecosystems should be restored to the point of being viable components of those ecosystems once again (House Report 95-1625: 5). In addition, regarding economic evaluation of critical habitat for invertebrates, the report also endorses the ecosystem protection goal of the statute (House Report 95-1625: 16). The codification of the God Squad and other legislative outcomes in 1978 are discussed in Chapter VII in the context of the precautionary principle.

In sum, the 1978 Tellico controversy forced ecologicistic debates, given the repeated theme that some species were insignificant and therefore should not be listed and/or provided with Section 7 protections. The valuational codings demonstrated that the economic value far outpaced any other values. However, the content-analysis indicated that the use of economic arguments triggered the use of ecologicistic arguments. These ecologicistic arguments were sometimes merged with moralistic and utilitarian/protective rationales for protecting species, which provided a potent counter to Tellico supporters and ESA detractors.

Indeed, defenders of the Act and opponents of the dam found a powerful argument in ecosystem protection. They argued that snail darters and other obscure species should be protected for the important role they play in ecosystems and as indicators of the health of ecosystems. Metaphors included the complexity of the web of life and the endangered species as canaries in coal mines. Aldo Leopold's cautioning about the need to save all the pieces, i.e., protect all the species, was employed in defense of the ESA.

FWS also criticized the perspective that some species are more important than others. The agency argued that all species are important, due to their roles in ecosystems. As a result, the agency would not discriminate based on taxonomy. However, some business interests arguing that some species were insignificant, argued that the ecological importance of a species should factor in determining whether it is worthy of protection.

Other industry voices and legislators advocated a more general approach – provide more balance in the ESA. The Congressional response was the Endangered Species Committee. As I discuss in Chapter VII, however, the God Squad solution contained elements of precaution. It is significant that it was carefully designed to be a cumbersome exemption process. The primary explanation for its taxing nature, drawing from hearings and floor debates, was that the extinction of any species is a serious matter, worthy of the highest level of attention. That was so even if the species was perceived to be “insignificant.” Why? Because even insignificant species can play significant roles in ecosystems, and the ESA's purpose is to protect ecosystems.

1982 AMENDMENTS

The 1982 amendments were relatively low-conflict. However, there was a shift away from administrative defense of the ESA with the newly instated Reagan Administration, which sought a reauthorization period of only one year (Hearing 97-32). Senate subcommittee chairman John Chafee (R-RI) and member George Mitchell (D-ME) were very clear in their position that they believed the ESA was a sound law, and that the burden was on the administration to justify amendments (Hearing 97-H34). Chafee dismissed the one-year reauthorization as “a waste of time” (Hearing 97-H46: 6). He set the tone for the hearings by referring to a speech made by James Buckley, Reagan’s Undersecretary of State, which was precautionary in nature. Buckley compared species extinction to burning books that are not yet read, books that may be valuable for scientific, utilitarian, and ecological reasons (Hearing 97-H34: 303 - 307). Chafee included these remarks in the hearing record and other speakers referenced it.²⁸

The overall theme in the hearings was that ecosystem concerns should provide the foundation for endangered species policy decisions, and this related to the listing battleground. This was asserted by high-profile scientists and corroborated by highly visible legislators, state wildlife agencies, and non-governmental actors. The committee reports contained strong language against discrimination based on

²⁸See testimony of Curtis Bohlen of the World Wildlife Fund (and previously Deputy Assistant Secretary of the Interior for Fish and Wildlife and Parks) at Hearing 97-32: 85 – 90.

taxonomy, which can be traced to the ecologicistic emphasis in hearings and on the floor.

Which key ESA battlegrounds involved ecosystem arguments?

The primary ESA battleground relating to ecosystems in 1982 was the listing issue. In question was the listing priority guidance FWS had adopted, which discriminated against so-called “lower life forms” such as plants and invertebrates. Environmentalists, state officials, scientists, and legislators opposed this guidance on the grounds that invertebrates are worthy of protection in part because of the role they play in ecosystems.

First, environmental organizations unanimously criticized FWS listing priority guidance that discriminated against plant and invertebrate protection. For instance, Dr. Edward Creutz of the Bishop Museum in Hawaii criticized the guidance on the grounds that invertebrates play fundamental roles in ecosystems (Hearing 97-H34: 463 - 472). Patrick Parenteau of the National Wildlife Federation and Harold Grimmett of the Natural Areas Association made a similar case, though their perspective was that both plants and invertebrates play important ecosystem roles (Hearing 97-32: 384; 677 – 678). Parenteau insisted that “[t]he health of our ecosystem is dependent upon maintenance of the complex ecological relationships that exist among *all* species” (Hearing 97-H34: 191, emphasis in the original).

In addition, Dr. Faith Thompson Campbell argued similarly in her written testimony for a broad coalition of environmental organizations. She noted the

ecological services provided by plants and their integral roles in ecosystems (Hearing 97-46: 30 – 32, 100 – 108). She cited a high-profile botanist's (Dr. Peter Raven's) projection of the extinction of one plant causing the extinction of two-dozen species of insects, other animals, and plants (Hearing 97-H34: 558; Hearing 97-32: 135 - 136). Other conservation organization spokespeople criticized FWS's pro-vertebrate bias without making reference to ecosystems or ecological roles of species.²⁹

Second, state actors objected to discrimination toward vertebrate species protection. William Huey of the International Association of Fish and Game Agencies described the states as “manag[ing] on a total ecological basis” (Hearing 97-32: 37) and agreed with the need to protect invertebrate species as part of an ecosystem approach (Hearing 97-H34: 50). Fred Lafser, Director of the Missouri Department of Natural Resources, made a similar case, stating that Missouri has engaged in ecosystem protection through their parks program, and that lower life forms should not be precluded from protection, given their ecological importance (Hearing 97-32: 670). However, Lonnie Williamson of the Wildlife Management Institute, an organization generally supportive of state autonomy over wildlife, questioned whether critical habitat, which is highly controversial, should be designated for invertebrates (Hearing 97-H34: 181 – 182).

Third, several scientists discussed the need to protect all species regardless of taxonomy. Chemist Thomas Eisner provided the example of disappearing millipedes in Florida, a situation that poses a danger to the entire ecosystem, given the integral

²⁹For instance, William Blair of The Nature Conservancy referred to the bias toward vertebrates as “bad biology” (Hearing 97-32: 180). Dr. Linda McMahan and David Mack of TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce) also opposed the taxonomic discrimination (Hearing 97-32: 672 – 676).

role millipedes play in soil creation in sandy soils (Hearing 97-H34: 300). Sen. George Mitchell (D-ME) then asked both Eisner and Peter Raven, a botanist, about the FWS listing priority guidance. Both Eisner and Raven rejected that guidance, and Raven emphasized plant protection, as all animals – even grizzly bears and bald eagles – directly or indirectly depend on plants for food production within ecosystems (Hearing 97-H34: 301).

Raven and Eisner also testified in front of the House subcommittee. Raven made the same argument in the House that he had in the Senate, we must protect all species for the role they play in ecosystems, as well as for utilitarian and moralistic reasons. We should especially protect plants, given their foundational role in sustaining animal life (Hearing 97-32: 119 – 126). Eisner did not directly speak to ecosystem protection, but he was emphatic about the need to protect plants and invertebrates as well as higher species. He rejected proposals for the exclusion of plants and invertebrates from the ESA as symptomatic of “biological illiteracy” or the lack of understanding of the imperative of protecting biological diversity. He was especially strident about attempts by economic interests to weaken the Act,

...the complaints of industry about the operation of this act seem really quite trifling when viewed in light of the enormous public interests the act intends to serve. As I have tried to demonstrate in this testimony, what this act is really trying to do is preserve an enormously valuable endowment for ourselves and for future generations. You can answer the complaints of industry about permit delays and added costs by making it easier to squander and destroy that endowment, or you can reaffirm the principle this act now proclaims that the endowment will not be diminished except in the most extraordinary circumstances. If you do the latter, your grandchildren will thank you for it (Hearing 97-H34: 129).

Assessed as a whole, Eisner testified to the ecologicistic, moralistic, and utilitarian values of species, as had Raven. The valuational codings presented in Chapter V don't indicate the way speakers wove different values together to make their case. While economic arguments were the most frequently articulated in 1982, it may be that the use of multiple values in tandem greatly influenced Congress. Certainly, these scientists made an impression, as their testimony was repeatedly cited by hearing participants in both houses.³⁰

Although less visible, other scientists and academics asserted that all species merited protection given their ecological roles. Written testimony provided by Bryan Norton of the University of Maryland recognized the importance of ecosystem protection and discussed the issue in some detail. Norton described the natural succession of flora and fauna within ecosystems, redundancy and other dynamics within natural systems that provide a buffer against a range of natural disturbances. He further noted the ecological services that ecosystems provide. Primarily on this basis, he argued that all species have value (Hearing 97-32: 147 – 149). Representing a scientific organization, Earle Cummings of the Natural Resources Biologists Association urged against discrimination against taxa, given all species' participation within ecosystems (Hearing 97-32: 671).

Finally, legislators heeded the scientists, and themselves asserted the importance of protecting all species, regardless of taxonomy. For example, at the

³⁰Michael Bean of the Environmental Defense Fund referenced the scientists' testimony before the House (Hearing 97-32: 155 – 156), as did Christine Stevens of the Society for Animal Protective Legislation before the Senate. Stevens remark was: "I am not a scientist. My word as to the potential value of these species means nothing. But you have heard these scientists. We can't let these things just erode and slip away" (Hearing 97-H46: 36).

close of his questioning of the scientists, Mitchell remarked that their testimony was among the most interesting, compelling, and persuasive testimony he has heard, and he regretted that President Reagan and Interior Secretary James Watt were not able to hear it (Hearing 97-H34: 301). Similarly, House subcommittee member Thomas Evans (R-DE) commented during questioning that the scientists' testimony was the most interesting and enlightening he has heard, and he wished that the media and other subcommittee members could have heard it. Rep. Edwin Forsythe (R-NJ) commented likewise (Hearing 97-32: 132 – 133). Although there were other points during the hearings when other speakers' testimony was complimented, the extent of praise bestowed upon this set of scientists was anomalous.

Forsythe referred to the scientists' testimony in hearings the following month while questioning Michael Bean of the Environmental Defense Fund and William Blair of the Nature Conservancy (TNC) (Hearing 97-32: 226 – 228). His line of questioning was based on the scientists' testimony as to whether bias toward protecting vertebrate species is defensible. Bean replied that the only priority system FWS had was to list only those species that do not affront economic interests. Blair responded that there was no scientific basis for prioritizing higher forms of life. He said that as an organization TNC is identifying imperiled species and protecting the habitat and ecosystems in which those species are located. Blair did state that some priorities need to be set, but his protection scheme was based on an ecosystem approach.

Defending the FWS guidance was the agency's Deputy Director Dr. Eugene Hester, who responded to the complaints in his extensive written testimony at the

House hearings. He acknowledged that biologically and ecologically it does not make sense to deny protection to lower life forms. However, in his view, an emphasis on conspicuous vertebrates could be justified given the stronger public support for those animals. In addition, large vertebrate protection would provide an umbrella effect by protecting smaller organisms. In other words, because large vertebrates generally require larger land areas than imperiled plants and invertebrates, the protection of these large animals would result in larger areas protected, which would presumably provide collateral benefits for the plants and invertebrates who occupied them.

According to Hester, FWS was still considering a listing priority guidance that would prioritize higher life forms of mammals and birds, even though it might be biologically indefensible. Hester admitted that “[t]here is danger of such an approach leading to a ‘zoo’ syndrome, in which attractive species are maintained through intensive management, while ecosystem vitality is largely ignored” (Hearing 97-32: 553). He provided a specific example, contrasting the loss of peregrine falcons to the loss of the American chestnut (*Castanea dentata*) and concluded that the virtual extirpation of the chestnut tree – a “lower life form” – would be much more ecologically devastating. Hester’s testimony was therefore mixed, in that he questioned his agency’s adoption of a listing priority guidance that favored vertebrates to some degree.

In response to FWS testimony, Sen. John Chafee (R-RI) questioned agency spokesperson Ron Lambertson on discrimination toward vertebrates in the listing priority guidance. He asked whether that conflicted with biologists’ description of lower life forms as the foundations for ecosystems. Lambertson agreed, but said that

some system for ranking species is necessary. Chafee was not critical of Lambertson's choice (Hearing 97-H34: 20). However, he ended his questioning of FWS and NMFS by stating that the committee considered all species throughout the chain of life and the ecosystem as worthy of protection, not just more visible species such as the grizzly bear (Hearing 97-H34: 28).

General ecosystem protection arguments. There was general support for the ESA in terms of its ecosystem protection purpose. In addition, as the valuational codings indicated, 1982 was the first year where scientists were visible in ESA debates. Among other arguments, environmentalists and scientists employed the metaphors of the canary-in-a-coalmine and Aldo Leopold's intelligent tinkering to advocate a strong ESA. High-profile legislators continued to affirm the ecosystemic grounds for the Act, often referencing the scientists' arguments. Another significant dynamic was that ESA detractors themselves used ecosystem arguments.

First, the scientists whose testimony related to the listing priority guidance argued, in general, for a strong ESA. A common theme in their testimony was the ecological importance of single species, and the interrelationships between them. Of Drs. E.O Wilson, Peter Raven, Thomas Eisner, and Stephen Kellert, three of the four promoted the ecologic value of species. Dr. Peter Raven of the Missouri Botanical Garden was most emphatic, citing Aldo Leopold's rule of intelligent tinkering,

Plants, animals, and microorganisms working together in complex interrelationships that are still very poorly understood make up the biosphere, the worldwide web of life of which we human beings are a part. As we progressively modify this biosphere to cultivate our crops, grow our animals, and produce products of direct economic interest to us, we simplify the relationships and increase the instability of the system as a whole. As our actions promote the extinction of organisms worldwide, we lose the 'cogs and wheels' of which Aldo Leopold

spoke—the elements which, like the evening primroses, might have proved later to have been of the greatest interest and importance to our descendants (Hearing 97-H34: 292).

Leopold's "cogs and wheels" metaphor, of course, was also cited in the 1978 hearings and epitomizes an ecosystem approach, rather than a myopic species-by-species protection program. Raven provided a perspective that plant protection is no less important than the protection of charismatic megafauna. Indeed, he argued that it may be more important to protect plants, given that all animal life depends on plants.³¹ Raven's argument was habitat-based and ecological, and his goal was a stronger Act where plants are not discriminated against.

Although less explicit about the need for ecosystem protection, Dr. E.O. Wilson of Harvard University referred to all species, even obscure ones, as "like a magic well: The more you draw from it, the more there is to draw" (Hearing 97-H34: 288). Among the value to be drawn from a species is ecological knowledge, important for understanding how species interact with their ecosystems, and how they evolve within those ecosystems. Similarly, Thomas Eisner's example of millipede soil-creation in Florida illuminated the ecological value of obscure species and the consequent need for their protection.

Legislators referenced the scientists' testimony in floor debate. For example, subcommittee chairman John Breaux mentioned that testimony and specifically employed the metaphor from Aldo Leopold that Raven had espoused. Breaux acknowledged an accelerating extinction rate, alongside the loss of "cogs and wheels' of the biological mechanism that sustains life on Earth" (1982 Floor: 12957).

“Cogs and wheels” have little meaning apart from the mechanism of which they are a part. Similarly, species have little meaning apart from the ecosystems in which they participate. The metaphor is a powerful one, and suggests that a primary rationale for species protection is ecosystem protection. Rep. Thomas Evans (R-DE) also cited Dr. Peter Raven’s testimony that, of the 5-10 million species estimated on Earth, 1 million would become extinct within the next 30 years, and noted a human lack of understanding of the interdependency between various species in the context of increasing species protection (1982 Floor: 12959), thereby invoking urgency on this issue.

Other examples of legislator advocacy of the general ecosystem protection purpose of the ESA include subcommittee chair John Chafee’s (R-RI), recognition of the ecologicistic value of species and repeated reference to a speech made by James Buckley, Reagan’s Undersecretary of State. In that speech, Buckley advocated species protection for ecologicistic, scientific, and moralistic reasons (Hearing 97-H34: 303 - 307). Curtis Bohlen, formerly of Interior, also referred to Buckley’s speech in his testimony for the World Wildlife Fund. He specifically advocated a focus on “ecosystems conservation” and noted the ecological services provided to humans by watersheds (Hearing 97-32: 85 –90).

In addition, Rep. James Oberstar (D-MN) justified vigilant species protection for utilitarian values, and, of equal importance, for their ecological value. Oberstar argued that the interdependence of species meant that any species’ extinction will diminish the broader ecological balance (1982 Floor: 12959). Rep. Dave Emery (R-

³¹The argument Raven makes is that herbivorous species rely directly on plants, while

ME) claimed that the ESA “is designed to preserve ecological communities and preserve diversity...” (1982 Floor: 12960). Rep. Claudine Schneider (R-RI) noted that the accelerating extinction rate “strains the health of our ecosystems” (1982 Floor: 12960). Sen. Charles Percy (R-IL) made a similar argument, on the basis of the need to protect the “delicate balance of nature,” which is threatened by species extinctions (1982 Floor 13184). Rep. Norman Lent (R-NY) predicted that the 1982 amendments would further efforts to protect “important interrelationships among the various life forms on our planet...” (1982 Floor: 26189). In addition to prioritizing species protection on ecologic grounds, Lent’s understanding was that the reauthorized ESA would protect ecosystems.

As indicated above and evidenced in the valuational codings for 1982, environmentalists strongly advocated the protection of species for ecologic reasons. In addition, the canary-in-a-coalmine metaphor that emerged from the Tellico debate in 1978 re-emerged in the 1982 hearings. For example, Ron Guenther of the Redwood Chapter of the Sierra Club made this argument in correspondence to the committee, which advocated protection of species for their role in ecosystems, as well as other reasons (Hearing 97-H34: 603). Also, an item in the Los Angeles Times underscored the need for a strong ESA, and based its position on the need for ecosystem protection,

As long as people build dams or fell trees, they are going to break strands in the web of nature. No federal law can stop that. But it can ask developers and commercial interests to look carefully for such strands before they act...Congress must continue to require that basic exercise of caution. It can do so by extending the Endangered Species Act without change... (Hearing 97-H46: 134).

predators rely on plants indirectly, as food for their prey.

While it is not clear in what form this text appeared – whether editorial, column, or letter to the editor – it was in a major newspaper, and it contains a vivid metaphor representing the ESA as a defender of ecosystems more than of species.

The 1982 amendments saw significantly less floor debate than had occurred in 1978 or would occur in 1988. I coded 80 speakers in 1978 and 142 in 1988. In contrast, I only coded 27 speakers in 1982. Of those 27, only two speakers were not members of the committees and subcommittees with jurisdiction over the ESA. This underscores the importance of the hearings, as the problems perceived with the Act were largely resolved within committee hearings, and the work of the subcommittees was passed intact on the floor. There were no heated debates, and only two minor amendments were proposed and agreed to without discussion or recorded vote.³²

Although there were ESA detractors, even these critics re-affirmed the need to protect ecosystems. For example, Roland Fischer, who submitted comments from the Colorado River Water Conservation District, was a vocal critic of the ESA for the threat he perceived that it presented to western water development. Yet, Fischer stated, “The District appreciates the importance of preserving diversity in our ecosystem, and the vital role which the ESA plays toward that goal” (Hearing 97-32: 667). It may be that Fischer was simply repeating a platitude and/or was using this line as a pretext for a desire to seriously undermine the Act. He also may have

³²The amendments were both proposed by Sen. Steve Symms (R-ID). The first amendment exempted non-commercial trans-shipments of game trophies that accidentally were shipped through the U.S. The second amendment specified that where a state agency disagrees with a proposed regulation pertaining to a resident species, the Secretary must provide written justification for his/her decision not to heed the state’s advice (1982 Floor: 13181 – 13182).

sincerely supported the ecosystem protection goal. Regardless, as with so many other hearing participants, Fischer pointed out to the House the association between the ESA and ecosystem protection. Another ESA critic was Jerry Haggard of the American Mining Congress, yet he stated that his organization supported the objective of conserving imperiled ecosystems as contained in the Act (Hearing 97-H46: 213).

A striking anomaly in the history of the ESA was that only one organization in the entire legislative history questioned the connection between species and ecosystem protection. That group was the Western States Water Council, who testified in the 1982 hearings. In arguing for statutory amendments to increase the Act's flexibility, the Council stated: "The act presupposes that there is a significant correlation between the protection of natural ecosystems and the conservation of endangered species. Such a correlation is unproven" (Hearing 97-H34: 270; Hearing 97-H46: 485; Hearing 97-32: 664). Interestingly, while the Council might have disagreed with the presumption, it still characterized the ESA as having the central purpose of protecting ecosystems.

How did ecosystem arguments factor in the legislative outcome?

The primary substantive ecosystem issue within the hearings, listing priority guidance, was addressed in committee reports. The conference committee reflected the view that taxonomic discrimination was inappropriate. In regard to listing priority guidance, the committee stated, "[d]istinctions based on whether the species is a

higher or lower life form are not to be considered” (Report 97-835 in 1982 Floor: 24154).

It has been argued elsewhere that the ESA’s commitment to protect all species cannot be justified by utilitarian logic, given the presumption of human knowledge that certain species do not provide substantial benefits to humans (e.g., Wetzler 1993). That author goes on to argue that a commitment to the protection of all species must be based on moralistic values. I suggest that participants within the hearings made quite clear that interdependencies between species within ecosystems precluded human valuation of those species, therefore requiring protection of all species to keep ecosystems intact. This ecologicistic valuation of species may be tied to moralistic values, but it also often occurred in conjunction with utilitarian values.

Ecosystem protection arguments also figure in the conference committee’s explanation of the final habitat conservation planning language. In one of the clearest statements of Congressional intent to protect ecosystems through the ESA, the committee report asserted,

In enacting the Endangered Species Act, Congress recognized that individual species should not be viewed in isolation, but must be viewed in terms of their relationship to the ecosystem of which they form a constituent element. Although the regulatory mechanisms of the Act focus on species that are formally listed as endangered or threatened, the purposes and policies of the Act are far broader than simply providing for the conservation of individual species or individual members of listed species (Report 97-835 in 1982 Floor: 24156).

The report instructed that the conservation plan must implement these broader purposes and provide for the conservation of listed and unlisted species alike within those plans. Further, in considering whether to issue a long-term incidental take

permit, the Secretary should consider the conservation plan's contribution to enhancing the habitat of listed species or increasing the "long-term survivability of the species or its ecosystem" (Report 97-835 in 1982 Floor: 24157). It seems that this ecosystem protection language developed during conferencing, as earlier committee reports did not contain ecosystem protection language regarding listing and HCPs (Report 97-567; Report 97-418).

In sum, ecosystem protection arguments continued to factor in 1982, as they had in earlier legislative periods. The primary issue was listing and the proposal for a listing priority guidance that would discriminate against "lower" species was energetically critiqued. In response to the guidance, a repeated refrain prominently promoted by scientists, and repeated by others, was the need to protect all species to safeguard ecosystems. Where choices had to be made, the protection of the most ecologically important species should be prioritized. The outcome of this debate was that discrimination against lower life forms was prohibited by Congress. Congress upheld the view that no species could be safely discounted. The ecosystem protection perspective was therefore affirmed.

This perspective was also supported in the committee report language surrounding HCPs. These plans, in Congress' estimation, should be written in such a way as to maximize ecosystem protection. Congress instructed FWS to consider whether incidental take permits proposed under these HCPs would increase the ability of the species or its ecosystem to survive.

1988 AMENDMENTS

In 1985, for the first time in ESA history, the Act was not reauthorized. The Reagan Administration continued to criticize the ESA and a burgeoning states and property rights movement aligned with the administration's stance. As a response to the 1985 experience, Congressional actors in the 1988 hearings and floor debate urged the expeditious passage of reauthorizing legislation that year. Reauthorization was still a battle, however, and the legislative history for this set of amendments appears even more contentious than arguments made during *Tellico*.

The Senate subcommittee continued to defend the ESA in 1988. By 1987, Sen. George Mitchell (D-ME) was subcommittee chair, and he did not disguise his contempt for what he perceived to be the Reagan administration's under-implementation of the Act (See especially Hearing 100-96). He regarded the ESA as a good law that was suffering from a lack of funds and a lack of enforcement (Hearing 100-96: 1 – 3). In the earlier set of hearings, in 1985, Sen. John Chafee (R-RI), a vigorous ESA proponent, had presided. In the House, Rep. Claudine Schneider (R-RI) expressed general concern at the government inaction and delay that was resulting in species extinction (Hearing 99-10: 2 – 3).

Two sets of hearings lead to the 1988 amendments, the first set was held in 1985 and the second in 1987. In both sets of hearings, there were general discussions about the need to protect species for ecosystem reasons. Several key battlegrounds, including taking, consultation, and recovery planning were embroiled in controversy in this set of amendments.

In these hearings and on the floor, actors frequently denigrated species and used such derogations to argue for a drastic limitation on the ESA's protections. These arguments, however, did not carry the day, and the 1988 amendments are perhaps the clearest case of strengthening amendments for the ESA. In addition, the length of reauthorization – five years – was the longest ever in the history of the Act.

Which key ESA battlegrounds involved ecosystem arguments?

Conflicts in the 1988 amendments included the Minnesota wolf court case, which related to takings; wolf reintroduction and sea otter translocation, which related to reintroduction; and water use conflicts, which involved consultation. All of these issues involved deliberation, conscious or otherwise, on the components of an ecosystem approach.

Takings. A controversial issue in the early hearings was an eighth circuit court decision, Sierra Club v. William Clark (No. 84-5042-MN), where the court held that the Secretary of Interior could not permit sport trapping of the grey wolf in Minnesota without first establishing that population of a listed species cannot be limited in any way other than direct take. Opposing this decision, Ron Marcoux of the Montana state wildlife agency argued for more state control over regulating take of listed species. His principal concern was the application of the court's logic to the case of the grizzly bear. Interestingly, he described grizzly bear ranges in terms of grizzly bear ecosystems, inhabited by elk (Cervus elaphus), mule deer (Odocoileus hemionus), and bighorn sheep (Ovis canadensis) (Hearing 99-10: 57). Grizzly bears

have been suggested as an umbrella species, the protection of which may result in ecosystem-level protection (Miller et al. 1998/99), so Marcoux's example is instructive. Marcoux was also troubled by what he saw as the loss of the ESA's focus on habitat protection, an ecosystem concern.

The Minnesota wolf court decision continued to cause concern in later hearings, with legislators emphasizing the need to control dangerous predators such as wolves and grizzly bears, and both western legislators and state agencies advocating more state authority over regulating the take of these species.³³ As noted below, wolf recovery explicitly involved an ecosystem discussion. In the case of grizzly bears, the role that this large predator plays in the ecosystem was not directly discussed. However, it is striking that when grizzly bears were discussed, speakers often made reference to the ecosystems in which grizzly bears live, such as the Yellowstone ecosystem, the Cabinet-Yaak ecosystem, and others.³⁴ Perhaps this is due to the recognition that such a large creature will have substantial interactions with elements of their environment, and their habitat needs are significantly more extensive than many other animals.

Another explanation for embedding references to grizzly bears in ecosystem terms is that the Minnesota wolf decision addressed the exception included in the definition of "conserve" within the ESA, which provides for the take of listed species

³³Legislators and state wildlife agency representatives from Idaho, Wyoming, and Montana were especially vocal, as Yellowstone National Park policies involved all three states on both grizzly bears and potential wolf reintroduction. See testimony of assorted actors at House Hearing 100-8: 4-11, 17 – 24, 25 – 26, 28 – 32, 59 – 60, 307 – 312 and Senate Hearing 100-96: 8 – 9, 11 – 12, 19 – 21, 188 – 191.

³⁴See testimony of John Fitzgerald of the Defenders of Wildlife (Hearing 100-8: 215 – 256) and amicus brief of the International Association of Fish and Wildlife Agencies (Hearing 100-8: 527).

in the unlikely event that populations of the species in question exceed the carrying capacity of the ecosystem.³⁵ This case automatically brought ecosystem questions to the fore, as the question centered around this definition of conserve, with the court ruling that sport trapping of wolves by the public in Minnesota fell outside permissible conduct under the ESA.

Concerned about ecosystem impacts, John Fitzgerald of the National Wildlife Federation supported these prohibitions on wolf and grizzly take, except in the event that populations of those species exceeded the capacity of the ecosystems they inhabit. Fitzgerald did not oppose all take of threatened species, but he did mandate that the data first demonstrate that the targeted species had exceeded carrying capacity (Hearing 99-10: 200 – 201; Hearing 99-70; 423), thereby conjoining an ecosystem and precautionary approach.

On the floor, the Minnesota wolf case either slipped from Congress's attention or was transformed to the Yellowstone National Park conflict, as the Idaho/Wyoming/Montana contingent tried their best to limit wolf reintroduction into Yellowstone and alter the wolf recovery plan.

Reintroduction/translocation. There were two highly controversial cases of reintroduction and translocation in these hearings. The first involved wolf reintroduction into Yellowstone, while the second entailed translocation of sea otters

³⁵The statutory definition reads: "The terms 'conserve,' 'conserving,' and 'conservation' mean to use and the 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 this Act 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 trans-plantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking" (16 U.S.C.A. § 1532 (3)).

to an island off California. In the case of wolves, FWS seemed to consider the wolf reintroduction in an ecosystem context. In their written statements, both Frank Dunkle of FWS and Dr. William Evans of NMFS spoke in ecosystemic terms. Dunkle described a critical element of the endangered species program as “Restoring endangered and threatened species to the point that they are again secure members of their ecosystems” and could therefore be delisted (Hearing 100-8: 123). Evans used identical language (Hearing 100-8: 171).

In questioning by the House subcommittee, Dunkle again provided this perspective, stating that the grey wolf “was a real and accepted part” of the ecosystem in the Idaho-Wyoming-Montana region (Hearing 100-8: 46). This geographic region is heavily livestock-oriented and also contains a high percentage of public land. The western congressional delegation and state wildlife agencies expressed serious concern over possible predation on livestock by grizzly bears and wolves, including predation of livestock by endangered species on public land grazing allotments.

Criticisms were quick in coming. Several legislators from western states criticized the Rocky Mountain wolf recovery plan (Hearing 100-8). Specifically, legislators such as Larry Craig (R-ID) and Robert Marlenee (R-MT) objected to the proposed reintroduction of wolves into Yellowstone National Park. In addition, western concern about another large predator, the grizzly bear, appeared in the form of Craig raising the issue of constraints on logging imposed to protect grizzly bear habitat (Hearing 100-8: 17 – 24).

Other legislators joined in the debate. For example, in a discussion about a Texas water project, Rep. Charles Stenholm (D-TX) advocated a cost-benefit analysis

to discern the value of the Concho River water snake (Nerodia paucimaculata (=harteri)), the endangered species involved, compared with the value of providing drinking water to people in west Texas (Hearing 100-8).

In response to this testimony, subcommittee member Robert Lindsay Thomas (D-GA) responded that he wanted wolves and grizzly bears in the western US. Thomas remarked that these predators are part of the ecosystem and the ecological role played by the wolf, in culling animals and controlling smaller predators that are “out of balance,” is vital. He then stated that his own constituents probably do not support wildlife protection as much as he does, but that the biologists and species experts need to make decisions on endangered species, rather than letting economics or politics decide. Likely in response to Stenholm’s proposal, Thomas also remarked that he does not want species protection to be based on an evaluation of the economic worth of a species, as the species will likely lose under that calculus (Hearing 100-8: 36).

The issue of wolf recovery on public lands – in this case, the nation’s oldest park – intersects with advocacy of ecosystem management by federal land managers today (See, e.g. Grumbine 1994; 1997). Within the 1988 hearings, the BLM and USFS portrayed their agencies as actively involved in endangered species protection and candidate species monitoring (See testimony of David O’Neal of BLM and George Leonard of USFS at Hearing 100-8: 41 – 42). Ecosystem management was quietly hit upon when both federal land managers discussed a report called “Mammalian richness, colonization, and extinction in Western North American National Parks.” That report indicated the problem of park lands being isolated as

“island ecosystems” in a landscape of economic activities hostile to some wildlife (Hearing 100-8: 192). Conversely, a USFS spokesperson noted that Forest Service lands tended to be in blocks large enough to safeguard biodiversity and that the USFS had preserved the full diversity of mammals that had not fared well on park lands (Hearing 100-8: 188-189, 192-193). A BLM representative also mentioned the report (Hearing 100-8: 183).

Wolf reintroduction continued to cause controversy in floor debates. Rep. Ron Marlenee (R-MT) led the charge. Motivated by his opposition to wolf reintroduction into Yellowstone, Marlenee introduced an amendment to delist the grey wolf. In his estimation, such an amendment would allow state wildlife agencies to manage wolves “without interference by the Federal Government, without interference by the courts, and without interference from litigious environmental groups” (1988 Floor: 35046).

Marlenee was angered that Congress refused to address this conflict and allowed environmental groups to limit state wildlife agency authority over the wolf. In his estimation, states had the expertise and ability to manage wolf, and should be allowed to do so, according to the legislator. Marlenee’s disenchantment with environmentalists and the federal government was vituperative,³⁶ and his contempt for wolves was even more potent.³⁷

³⁶In Marlenee’s words, “Mr. Chairman, this Congress must have the guts to stop groups like the Defenders of Wildlife [sic] and the Sierra Club from preventing reasonable wildlife management by the State agencies which are at the local level and understand what kind of management is needed and when. We must have the common sense to stop Federal bureaucrats in Denver or Washington, DC from second guessing State decisions on wildlife management” (1988 Floor: 35047).

³⁷In discussing what he considered to be vicious predation by wolves on wild animals and livestock, Marlenee produced a photo and described that “This is a picture of a live animal that has been partially eaten in the udder and the back hindquarter section. I would hope that all of my colleagues would realize that the wolf is in fact a very vicious killing machine and needs to be controlled” (1988 Floor: 35047).

Legislators from Minnesota, the only state in the lower 48 with a flourishing wolf population, defended wolf reintroduction and opposed Marlenee's amendment. Rep. Douglas Owens (D-MN) stated that wolves are having minimal impact in Minnesota, and that wolf reintroduction into Yellowstone was necessary to restore the ecosystem. He noted that FWS was backing away from reintroduction due to political pressure, but that such measures were an important part of the recovery plan (1988 Floor: 35048). Similarly, House Public Lands Committee chair Bruce Vento (D-MN) opposed the delisting proposal, and emphasized that it would interfere with the FWS recovery plan. After assurances from Vento that the Public Lands committee would address the wolf issue, Marlenee withdrew his request for statutory delisting (1988 Floor: 35042 – 35049). Marlenee was not mollified, though.³⁸

In the Senate, several legislators agreed with Marlenee's basic critique. Steve Symms (R-ID) characterized wolf reintroduction into Yellowstone as government waste (1988 Floor: 18581-83), while Max Baucus (D-MT) wanted a commitment from Senate subcommittee chair Mitchell to work with him on resolving conflicts between ESA and Montana people living within ranges of grizzly bears and wolves (1988 Floor: 18584). Other western legislators agreed (1988 Floor: 19277 –78).

Likely prompted by the inclusion of reintroduction within the wolf recovery plan, James McClure (R-ID) introduced an amendment to require the economic analysis of recovery plans. In his view, humans (especially rural Idahoans) were being placed below endangered plants and animals under current endangered species policy, and this needed to change (1988 Floor: 19270-72).

³⁸Marlenee concluded that he would not support the ESA or laws like it on the basis of

Chafee and Mitchell promptly opposed McClure's measure. Chafee argued that economic analysis of recovery plans would bog them down. He emphasized that biological decisions must be biological, as economics causes delay and chaos (1988 Floor: 19272). Mitchell was also concerned about the delay such economic analysis would pose, and he stated that the three most important provisions of ESA were listing, recovery, and jeopardy. In Mitchell's estimation, each of these decisions must be solely biological.³⁹ McClure consequently withdrew his amendment (1988 Floor: 19275).

As a final note on the wolf issue, it is important to acknowledge remarks made by Mitchell at one point in the floor debate. Mitchell emphasized that the ESA can be a flexible law. For instance, grizzly bear hunting in Montana is consistent with the ESA's goals, as is the taking of experimental populations of wolves to avoid public opposition (1988 Floor: 18565 – 68). Such arguments, from such a key figure in the 1988 amendments, suggests a number of conclusions: 1) ESA reauthorization was so desperately sought that the Act's defenders were willing to accept lessened protection; and 2) the ESA was encountering increasing opposition, so its defenders felt compelled to cast the ESA as a flexible statute. The statutory language, the Minnesota court case, and testimony in hearings all pointed to the requirement that take of listed species should only be allowed if the ecosystem was being taxed by

abridged private property rights, particularly those of ranchers (1988 Floor: 25483 – 25484).

³⁹Mitchell stated that, "[i]t is especially critical to the scientific credibility of the endangered species program that decisions about when to delist a species as recovered be based on the biological status of the species, not on how much it will cost to restore its numbers or whose economic interests it may affect. The only consequence of asking the U.S. Fish and Wildlife Service, an agency entrusted with the task of determining the status of species because of its unique biological expertise, to consider economic impacts in the

these animals. Therefore, Mitchell's remark cannot reasonably be interpreted as ecosystem protection.

The second case involved translocation of sea otters (*Enhydra lutris*). California sea otters were squarely at the center of controversy in the 1988 hearings. Steve Rebuck, a representative of Save Our Shellfish, a fishing advocacy group, criticized sea otters on the grounds that they devastated shellfisheries. He objected to sea otter predation on invertebrates, as he believed that such action undermined human economic use of these fisheries. His written testimony indicated that sea otter had negative ecosystem impacts. Sea otters are now frequently described as keystone species for their predation on sea urchins, which facilitates kelp forest growth by removing heavy grazing pressure from urchins (Booth 1988; Mills et al. 1993;⁴⁰ Power et al. 1996). However, Rebuck included an article focusing on the keystone role played by sea urchins in reef ecology (Hearing 99-10: 85 – 91), which is an ecosystemic argument. Bruce Steele, the author of the sea urchin article that Rebuck employed, and representing the same organization similarly critiqued the sea otter translocation, stating: "You are encouraging growth at the top end of the food chain without considering the effects on the ecosystem" (Hearing 99-70: 243).

Other actors embedded the sea otter issue within ecosystem considerations. Robert Gilmore of FWS, for instance, insisted on the need to analyze the impact of sea otters on the ecosystem into which they are reintroduced (Hearing 99-10: 142). Additionally, John Fitzgerald of the National Wildlife Federation Fitzgerald warned

preparation of recovery plans will be to postpone needed action to recover them" (1988 Floor: 19272).

against reintroduction programs involving containment of reintroduced populations, citing sea otters, wolves, and grizzly bears, on the grounds that an overly restrictive containment strategy contradicts the ESA's purpose of recovering species within ecosystems. Likely assuming that the sea otter containment strategy would prevail, Fitzgerald recommended that the committee include in its report that the sea otter containment strategy would not set a precedent for other reintroduced populations (Hearing 99-10: 204; Hearing 99-70: 427).

Recovery planning. Related to these translocation and reintroduction endeavors, the trend of disproportionate funds being spent on recovery planning for well-publicized species was recognized within the hearings and was a source of concern to diverse actors.⁴¹ A conservationist, Scott Feierabend of the National Wildlife Federation, addressed this issue in his testimony, citing that 56% of funding was going toward only 4% of the species. Feierabend opposed such inequality, arguing that there should not be taxonomic discrimination in recovery plan development. As evidence of congressional intent, he cited the 1982 conference report that indicates taxonomic discrimination is not allowed for listings. Although the conference report language was made in the context of listing decisions, Feierabend carried that logic over to protection for species once listed. He remarked, "The Congress never intended to weigh the taxonomic stature of one species against another, but did want all species to be viewed as equals and as integral components of

⁴⁰It should be pointed out that Mills et al. 1993 criticized the keystone species concept for its simplification of dynamic and complex natural processes.

⁴¹In addition to conservationists, Rep. William Hughes (D-NJ) brought this issue up in questioning Frank Dunkle (Hearing 100-8: 52), and the State of Montana also criticized these spending patterns in Senate Hearing 100-96: 188 – 190).

functional ecosystems” (Hearing 100-8: 271). The disproportionate spending patterns flew in the face of such intent and made no sense scientifically or ecologically, according to Feierabend (Hearing 100-8: 272).

Floor debate in 1988 indicated that some legislators were getting serious about recovery plans. Mitchell, for instance, emphasized the need to avoid the taxonomic bias in recovery plans being committed by the administration (1988 Floor: 185675 – 68). This was due to Mitchell’s concern for obscure species, a concern he traced to the 1982 amendments (1988 Floor: 18565 – 66).

Consultation. As they had in 1978 and 1982, water developers again returned to Congress to complain about the impacts of the ESA on water use. Several of these hearing participants advocated the use of “non-flow alternatives” by FWS in consulting on water development projects. These alternatives involved methods such as hatcheries, fish stocking, and fish ladders (to expedite travel of fish around dammed areas) instead of regulating stream flow as a response to the needs of endangered fishes.⁴² In response to this suggestion by water developers and to the perception that FWS was not adequately protecting endangered fish from water development, Dr. Robert Davison of the National Wildlife Federation objected on the grounds that such methods were entirely inconsistent with the ESA’s purpose of protecting ecosystems (Hearing 99-10: 74; Hearing 99-70: 168). The Environmental Defense Fund, along with a coalition of other national environmental organizations, objected on the same basis (Hearing 99-10: 212). James Martin of the Environmental Defense Fund introduced the groups he represented in testimony a month later as

interested in the “unique and fragile ecosystems of the Upper Colorado River” and underscored that any resolution to the conflict between endangered fish and water development in that region coincide with the ESA’s purpose of protecting ecosystems (Hearing 99-70: 15, 127).

Seeming to agree with the conservationist critique of non-flow alternatives, Senate subcommittee chairman John Chafee (R-RI) strongly pushed the point that hatcheries will not protect ecosystems, and the ESA aims to protect ecosystems. Chafee asked Gregory Hobbs of the Colorado Water Congress: “Isn’t reliance on hatcheries and other artificial devices inconsistent with the goal of the Act to preserve the ecosystems?” (Hearing 99-70: 25). In subsequent questioning of FWS representative Galen Buterbaugh, Chafee sought clarification on this point from the administrative agency, stating, “The purposes of the act, however, Mr. Buterbaugh, as you outlined them, and I understood them from you, are to preserve the ecosystem.” Buterbaugh agreed (Hearing 99-70: 25). In subsequent written testimony supplied by FWS, when considering the question posed by John Chafee on whether non-flow alternatives alone could provide for ecosystem protection, the agency seemed to deliberately not answer the question (Hearing 99-70: 274).

The agency’s formula in an upper Colorado River consultation was called the “Windy Gap” approach, whereby water project sponsors could provide monetary mitigation in exchange for the changing a jeopardy finding to a no-jeopardy finding. The FWS had determined that reduction of instream flow in the habitat of endangered upper Colorado River fish would result in jeopardy to the fish, but that water project

⁴²See, for example, the testimony of Tom Pitts of the Colorado Water Congress (Hearing 99-

sponsor's funding of conservation efforts, including non-flow alternatives, would suffice to offset the damage. This policy was quite contentious and was subsequently dropped by FWS. The water use conflicts were translated into attempts at statutory delisting on the Senate and House floors (see Chapter VII).

Listing. FWS declared in hearings that the agency would make general administration of the ESA more efficient, in part, through an increased emphasis “on the assessment and listing of species on an ecosystem-wide basis.” This policy, according to FWS, would “have the additional important benefit of contributing to sound management of important areas as ecological units, rather than for the benefit of only certain species” (Hearing 99-70: 286). The agency does not provide any additional information on how it specifically proposes to implement this policy, but this statement constituted the first pledge by FWS that its listing program would be guided by an ecosystem perspective.

General ecosystem protection arguments. Broader treatments of the ecologic value of species included House subcommittee chairman John Breaux's (D-LA) introduction of the first session of the 1985 hearings by describing the ESA as initially motivated by the disappearance of visible species such as the bald eagle, only to find subsequently that species are important for utilitarian and ecologic reasons. Perhaps harkening back to the testimony of scientists three years earlier (the first hearing was held in 1985), Breaux noted that scientists are concerned about the loss of biodiversity as “the first rule of intelligent tinkering is to save all the pieces” (Hearing 99-10: 1).

With much praise, Breaux then introduced David Attenborough, host of “The Living Planet”, a nature show, and representative of the World Wildlife Fund. Attenborough testified at length on the need to vigorously protect species. He provided a detailed utilitarian basis for such protection and articulated the connection between utilitarian and ecologicistic concerns in the following way,

It is not only single species that are important to the continued welfare of mankind. Animals and plants live in complex, interdependent communities that function as units; and these too are essential for the well-being of life on Earth (Hearing 99-10: 7).

Attenborough described the invaluable ecological services provided by tropical rainforests in their regulation of rainfall and production of oxygen. More generally, he noted the ecological services of soil creation and fertilization, water filtration, erosion, drought, and flood control. He then argued that the famine in Ethiopia was a direct result of destruction of vegetation, and cautioned, “We mismanage our landscapes at our own peril. We simply cannot do without the ecosystem services provided by life on Earth” (Hearing 99-10: 8). In this context, Attenborough maintained that by protecting indicator species such as the Florida manatee (Trichechus manatus), one could safeguard whole ecosystems.

This celebrity testimony seemed to make an impression on the subcommittee. Attenborough’s speech was applauded by members of the committee, with Breaux commenting that “Not only are you a world-renowned cinematographer, you are also a hell of a writer” (Hearing 99-10: 10). Reps. Norman Lent and Douglas Bosco subsequently praised Attenborough’s testimony, as well (Hearing 99-10: 11 – 13).

The second set of hearings leading to the 1988 Amendments was similarly marked by ecosystem concern. In the House, subcommittee chairpersonship had

passed from John Breaux to Rep. Gerry Studds (D-MA). Studds explicitly embraced environmentalism, and Sen. George Mitchell (D-ME), chairman of the Senate subcommittee, also made clear his commitment to a strong ESA.⁴³ In his opening to the 1987 House hearing, Studds underscored the ecologicistic and utilitarian value of all species, including obscure ones. He quoted John Muir, “[w]henever we try to pick up anything by itself, we find it attached to everything in the universe.” Studds noted the failed attempt in the last Congress to pass a reauthorization bill and cautioned against any compromising of the integrity of the ESA (Hearing 100-8: 1-2).

There were numerous references to the metaphors that had been previously used in endangered species debates. Former subcommittee chair Breaux cited Aldo Leopold’s adage of needing to save all the pieces to engage in intelligent tinkering (1988 Floor: 20988 – 20992). In the context of sea turtle protection, Rep. Arthur Ravenel (R-SC) stressed John Muir’s admonition that “[e]verything in nature is connected” (1988 Floor: 36107).

Chafee cited the same quote in his recommendation that charismatic and obscure species alike must enjoy ESA protection (1988 Floor: 18570-71). Ravenel followed suit, discussing intelligent tinkering in the context of needing to require turtle excluder devices to protect sea turtles (1988 Floor: 25482 – 25483), as did Rep. James Scheuer (D-NY) (1988 Floor: 36109-110). Others cited the web of life, and cautioned that species hold keys to puzzles not yet solved (1988 Floor: 35038 –

⁴³See, for example, Studds’s comment to Rep. Joseph DioGuardi (R-NY): “I thought that I was one of the few remaining members of the endangered species of genuine conservationists around this city” (Hearing 100-8: 66 –67). In 1991, Mitchell published a book called World on Fire: Saving an Endangered Earth (New York: Scribner), which discusses the greenhouse effect and the need for increased environmental protection. Both Studds and Mitchell vocally called for a strong ESA in both hearings and floor debate.

35039). Sen. Patrick Leahy (D-VT) added: “Our lives are inextricably linked to the lives of the plants and animals about us, including the most majestic ones and the most humble ones” (1988 Floor: 19269). All of these statements were clearly based in ecosystem thinking.

How did ecosystem arguments factor in the legislative outcome?

An important provision in the final conference report relating to ecosystems involved recovery plans. According to the report, and the amendment’s final language, recovery plan prioritization was not to be based on taxonomic discrimination. Rather, priority would be given to those species that would benefit most from such a plan, “without regard to taxonomic classification” (Conference Report 100-928 in 1988 Floor: 24248). Further, like listing decisions, recovery plan design was to be based solely on biological factors (Conference Report 100-928 in 1988 Floor: 24290). This language was appropriate, in light of hearings and floor debate that underscored the importance of saving all the pieces, understanding that everything is connected, and the attempts to minimize the impact of wolf recovery. More directly, it derived from opposition in earlier hearings and on the floor to taxonomic bias in recovery planning.

In sum, the legislative history of 1988 was extremely contentious, and the conflict involved species taking, reintroduction, and consultation. ESA critics opposed the court decision involving wolves in Minnesota, but still underscored the

ecosystem dynamics surrounding large predators. The Minnesota wolf issue died away, but controversy over the ESA did not. Additional conflicts surrounded the grey wolf, proposed for reintroduction to Yellowstone, and sea otters, proposed for translocation as a hedge against extinction. Finally, water use conflicts inspired water developers to criticize FWS consultation.

All of these issues underscored the relevance of ecosystem concerns to a species protection program. For wolves proposed for reintroduction to Yellowstone, the project was described by FWS in terms of ecosystem restoration. In response to western legislators' opposition to the reintroduction, other legislators supported the effort on ecosystem grounds. Federal land managers also joined in, affirming their commitment to managing these lands in an ecosystemic way.

In the sea otter translocation case, the ecosystem issue was more clouded. Simultaneously, opponents and proponents of sea otters argued for and against translocation and containment of the otters on ecosystem grounds. The result was a strategy of containment (Chapter VII).

Water use conflicts centered on the FWS policy of allowing water development to proceed with mitigations, namely monetary payments. The critique of this policy, from both environmentalists and subcommittee members, was based in ecosystem concerns. Chafee's questioning of FWS indicated that he regarded the ESA's central purpose as protection of ecosystems. He therefore rebuked FWS policies that conflicted with this purpose. The agency, for its part, declared that listings would be made in light of ecosystem concerns. How this would be implemented was not specified.

More general statements about the ESA by legislators and non-legislators alike indicated that ecosystem arguments continued to be a prominent part of ESA debate, 15 years after its passage. Adages such as “everything in nature is connected,” continued to be employed by legislators and non-legislators alike, and were seen by legislative history participants as a central part of the ESA’s importance.

The legislative result was expansion of the recovery plan requirement under the ESA. Under the amendments, public review of recovery plans was required. In addition, FWS and NMFS were prohibited from discriminating against species on the basis of taxonomy. The recovery plan amendment seemed to arise out of the extensive wolf reintroduction debate and was likely a response to the western delegation’s denunciations of wolf reintroduction into Yellowstone.

However, as was the case in the earliest ESA hearings, there was ambivalence in the implications of ecosystem protection. One example was in the case of the sea otter, where opposing groups simultaneously argued for and against sea otter translocation on ecosystem grounds. As in 1973, it indicates that, while the ecosystem protection goal may be widely shared, the conflict is in its implementation.

Conclusion

There is ample textual evidence that ecologicistic arguments, and consequently, ecosystem protection, were an important part of the 1973 ESA. This has been demonstrated qualitatively and quantitatively. In 1973, the floor manager in the Senate (John Tunney) and the principal architect of the Act in the House (John

Dingell) both made it explicitly clear that ecosystems needed to be protected and that species protection was urgent, given the need to ensure that species continued functioning within their ecosystems, and consequently insure the continued functioning of the ecosystem. The the ecosystem perspective endured in subsequent legislative periods.

By 1978, legislators began to claim that the strength of the ESA and its far-reaching qualities were not what they intended. Many expressed surprise at the strength and reach of the ESA. Along with the claim of surprise at the Act's strength was an assertion that charismatic species deemed "significant" to humans were all that the ESA was meant to protect. For some legislators, the snail darter-multimillion-dollar-dam caricature provided an opportunity to backtrack on the national commitment to endangered species. For others, the snail darter was no less important than a bald eagle or grizzly bear. As I have demonstrated above, this latter argument was predicated on a commitment to protect ecosystems. Although the birth of the God Squad created an exemption process that had not previously existed, it was structured to err on the side of protecting species (Chapter VII), even when such species were obscure. One of the leading justifications for protecting those obscures species was the ecologicistic perspective.

A commitment to ecosystem protection was confirmed by congressional participants in the 1982 and 1988 hearings, despite, and sometimes because of, growing conflict over the Act. In particular, FWS listing and recovery planning priority systems have both been rebuked by Congress for their discrimination against

species on a taxonomic basis. Ecologicistic arguments and deliberation over the project of ecosystem protection have endured throughout the legislative history of the ESA.

In fact, the use of ecologicistic arguments has been more frequent than was expected at the outset of this research project. Utilitarian arguments for the weakening and strengthening of the ESA have been a central part of the debate, but this should come as no surprise. What is a surprise is that ecologicistic values were as much a part of the debate, from the very beginning, as the utilitarian/protective value. This is a surprise given the literature criticizing the myopia of Congress in passing a single-species protection act (Chapter II). Moreover, ecologicistic values were linked with promotion of increased wildlife protection or a stronger ESA. Finally, although the use of ecologicistic arguments has varied over legislative periods, it has been a significant element of the discourse throughout.

These results provide a reasonable basis for describing the ESA as a statute based, in part, on ecosystem protection arguments. In an ecological perspective, arguments such that the ESA was initially intended only to protect bald eagles and a few select others, unravel, as all species are interconnected in ecological relationships that form ecosystems. Consequently, no species is insignificant.

With this basis, I bring ecosystem protection arguments to bear on the key ESA battlegrounds in Chapter VIII. In that chapter, I illustrated how the ecosystem perspective could inform, and potentially resolve, controversies such as listing, consultation, critical habitat, reintroduction, recovery, and habitat conservation plans. I then examined case studies in Chapter IX to evaluate FWS implementation of the

Act. In the next chapter, I examined the elements of the precautionary approach within the ESA's legislative history.

CHAPTER VII

THE PRECAUTIONARY PRINCIPLE

The precautionary principle was not explicitly invoked within the legislative history of the ESA. However, all of the elements of the precautionary approach were regularly employed throughout that history. One could argue, in fact, that the ESA is a fundamentally precautionary statute, given the basis for species protection in ecologic and utilitarian arguments. These arguments involve concern over the risk to humans presented by species extinction, alongside our scientific uncertainty about the ecological consequences of those extinctions. Bonnett and Zimmermann (1991: 139) state that for the ESA “Congress apparently believed that the risk of scientific uncertainty should be shifted toward preservation.” Indeed, specific references to elements of the precautionary approach abound throughout the law’s legislative history, and provide the basis for discussing how the precautionary approach fits within endangered species policy.

In this chapter, I review the precautionary principle as it applies to the key ESA battlegrounds. I also include examples where congressional participants grappled with the condition of human ignorance, lack of scientific certainty, presence of potential or probable threats, and need to act to prevent species extinction.

Unlike the ecosystem management issue, the lack of a clear method of measuring actors’ invocation of the precautionary principle made qualitative analysis

appropriate. I therefore did not conduct quantitative analysis for the precautionary approach.

1973 ACT

The 1973 ESA resulted from a sense in Congress that prior endangered species laws were insufficient to meet the challenge of preventing extinction. One fundamental improvement over the 1969 act was the 1973 law's extension of protection to threatened species. The ESA is a law whose purpose is to prevent extinction. Threatened species, theoretically, do not yet face extinction. The logic behind their protection is precautionary, as it entails early intervention upon recognition that a significant threat to a species' future exists. Actors at this time recognized the importance of acting earlier to prevent extinction. However, many of the issues in which precautionary elements were raised entailed tensions over whether to follow such precautions. The law that resulted was highly precautionary, yet its passage through the hearings and the floor was not effortless. Among the contentious issues were: widening the protection of species (relating to listing) and predator/rodent control (relating to taking). A prominent argument that seemed to go uncontested, however, was that human survival is inextricably linked with prevention of species extinction. The language in committee reports is strong, detailing a vigilant species protection program, rigorous standards for state participation, and earlier protection for more species.

Which key ESA battlegrounds involved precautionary arguments?

The battlegrounds involved in the earliest ESA hearings that related to the precautionary principle included listings and takings. In addition, there were general comments on the precautionary approach.

Listing. Warnings about the cost of extinction were compatible with moves to extend the previous endangered species laws' reach. The addition of a threatened category, the protection of species when they were imperiled in a portion of their range, and extension to subspecies, population segments, and look alike species, were all precautionary elements of the 1973 Act. While the likelihood that species endangered throughout their range will go extinct if nothing is done approaches a certainty, the potential for threatened species or those imperiled in a portion of their range to face endangerment in the foreseeable future is necessarily less certain. Extinction for those not yet endangered is further down the road. In addition to the prescription of earlier protection against extinction, expanding the organisms eligible for coverage is an enlargement of the safety net against extinction.

From the earliest hearings, support for the threatened category was widespread, with administrators, legislators, and non-governmental representatives alike advocating the inclusion of threatened status to protect species before they reach critical imperilment (See, e.g. Hearings 92-81 (1972), 92-22 (1972), and 93-5 (1973)). In Interior Department representative Nathaniel Reed's words, "It is particularly true in the case of endangered species that 'an ounce of prevention is worth a pound of cure'" (Hearing 92-22: 104). According to another Interior

representative, Rogers Morton, “We are convinced that it is far more sound to take the steps necessary to keep a species or subspecies from becoming endangered than to attempt to save it after it has reached that critical point” (Hearing 93-5: 186).

Similarly, Rep. Ben Blackburn (R-GA) advocated the threatened designation on the basis that a “‘stitch in time saves nine.’ Moving to aid a species which obviously is heading down hill should give better assurances of a speedier recovery with less expenditure of resources than the present situation which requires waiting until the crisis stage is reached” (Hearing 92-22: 285).

The protection of species that were imperiled in a portion of their range was also seen, in part, as a way to protect species earlier and therefore take a more proactive approach to neutralizing extinction.¹ Listing extinct species was also advocated as a precautionary measure in the event they were rediscovered (Hearing 93-5: 384 – 385).

Early on, environmental representatives foresaw that taxonomic disputes might hinder endangered species protection. For instance, John Grandy of the National Parks and Conservation Association urged a broad definition of species so that taxonomic debates would not prevent species protection (Hearing 92-22: 448 – 453) and Steve Seater of the Defenders of Wildlife argued specifically for the inclusion of isolated populations under the bill (Hearing 93-67: 123 – 125).

There was also support for the look alike provision, which was proposed to protect species that were difficult to distinguish in appearance from listed species, to

¹See, e.g., Christine Stevens of the Society for Animal Protective Legislation, at Hearing 92-81: 226 – 236; Dr. Ralph MacMullen on the International Association of Game Agencies at Hearing 92-22: 315 – 329; and Robert Schoning, NMFS Director, at Hearing 93-67: 77 – 78.

prevent accidental take. Both the American Forestry Association (Hearing 93-5: 381 – 382) and Sen. Harrison Williams, D-NJ (Hearing 93-67: 113 – 117) supported this measure.

These precautionary elements were not accepted without conflict. For example, Senator Ted Stevens (R-AK) (Hearing 93-67: 58 – 59), acting Senate subcommittee chairperson, went so far as to say that the proposed ESA was unconstitutional without narrowing the life forms eligible for protection and defining “foreseeable future” in reference to a threatened species. Alaska governor William Egan also objected to the foreseeable future language, maintaining that it required clairvoyance of administrators (Hearing 93-67: 149 – 150).

The protection of subspecies and distinct population segments was a point of contention, as some argued that subspecies designation is subjective taxonomy.² Others argued that subspecies protection was more legitimate than full species protection.³ In addition, the protection of look-alike species was a source of some dispute, with the fur industry objecting to that category, claiming that the legislation in general was being promoted by anti-fur activists (Hearing 93-5: 369 – 372). An Alaska hunting organization also objected to the look-alike category out of fear that it would limit bear hunting opportunities (Hearing 93-5: 375 – 377). Senator Ted Stevens was also concerned about limiting hunting opportunities by anti-hunting

²Seymour Levy argued such at Hearing 92-81: 253 – 262, as did Frederick Dean, professor at University of AK at Hearing 93-5: 379. James Brooks of the Alaska Fish and Game Department also opposed subspecies protection (Hearing 93-5: 380 – 381).

³This argument was made only once, and seemed to be in response to Alaska’s concern over the protection of grey wolves and bald eagles, both of which are full species and faced imperilment in the lower 48 states, but not in Alaska. The argument was made by Richard Janson of Chugach Natives, Inc. at Hearing 93-67: 151.

groups that the proposed ESA would make possible (Hearing 93-67: 60). The Alaska Fish and Game Department similarly opposed the lookalike category (Hearing 93-5: 380 – 381).

On the House and Senate floor, discussion on the need to protect threatened species as well as endangered ones, and to protect species that are imperiled in portions of their range continued. The floor debates feature unanimity on these points.⁴ The presumption that earlier protection of species would result in more effective protection of species was an explicit part of these claims.⁵ The lookalike provision was again questioned when Rep. Robert Bergland (D-MN) clarified with Rep. Dingell on whether coyotes would be protected as look-alikes to wolves. Dingell assured Bergland that coyotes would not be protected, as they could be distinguished from wolves (1973 Floor: pp. 42911 – 42912).

Taking. Nixon's executive order banning predacides and rodenticides on federal lands was discussed in Chapter VI in the ecosystem context, but it also involved precautionary components. For instance, Sen. Frank Moss (D-UT) stated, "[t]hough accurate scientific information is very difficult to obtain on these matters, it is clear that we must lean emphatically toward preservation as opposed to extermination" (Hearing 92-81: 237). However, other speakers did not characterize the effects of secondary poisoning on nontarget species and the environment as

⁴Those speakers on the floor who explicitly mentioned this issues included Sen. Harrison Williams (D-NJ), 1973 Floor at pp. 25675 – 25676; Rep. John Dingell (D-MI) at 1973 Floor: pp. 30162 – 30164; Rep. Charles Price (D-IL) at 1973 Floor: 30165; Rep. Mario Biaggi (D-NY) at 1973 Floor: 30166.

⁵For example, Rep. Don H. Clausen advocated preventing extinction by protecting species before they are endangered, rather than waiting until the crisis point (1973 Floor: 30167), as did Rep. Benjamin Gilman (R-NY) (1973 Floor: 30167).

uncertain. In particular, the administration employed a report prepared by a team of scientists on the issue, which included Dr. Aldo Leopold and led by Dr. Stanley Cain, to justify their position of opposing predacides and rodenticides.⁶ The Cain Report was also used by legislators to bolster their attempts to restrict the use of these poisons,⁷ and proposed animal damage control legislation was described by an environmental representative as an outgrowth of the Report.⁸

Further, as befits the precautionary principle, administrators advocated placing the factual burden for accepting the risk of environmental threat on those seeking to control wildlife. Stated Nathaniel Reed of the Interior Department, “Even if the control of large numbers of coyotes and other predatory animals is necessary to our way of life and the preservation of our environment, which I seriously doubt, we should have proof that this is so before embarking on an operational control program” (Hearing 92-22: 52). The Nixon administration also pointed to an incident where twenty eagles were poisoned by the secondary effects of a predacide as direct evidence of the dangers of continued pesticide use.⁹

The livestock industry responded by requesting a delay in predacide restrictions, urging that research on alternative control methods be conducted prior to

⁶See Nathaniel Reed of the Interior Department, Hearing 92-22 at 47 – 53; Council on Environmental Quality Chairman Russell Train, Hearing 92-22 at 242 – 291; USFS Associate Deputy Chief John Deinema, Hearing 92-22 at 301 – 306; and David Dominick of the EPA at Hearing 92-22: 462 – 479.

⁷See testimony of Rep. Morris Udall (D-AZ) at Hearing 92-22: 440.

⁸See testimony of Robert Hughes of the Sierra Club at Hearing 92-22: 573 – 576.

⁹See insert of Nathaniel Reed of the Interior Department, Hearing 92-22 at 59 – 63 and of CEQ Chairman Russell Train, Hearing 92-22 at 269 – 270.

action on predacides.¹⁰ Some livestock representatives specifically criticized the Cain Report as biased toward the ecological perspective and against that of agricultural interests¹¹ and as unscientific.¹² In addition, although the administration's bill contained a provision for a three-year phase-out of federal involvement in predator control, a longer phase-out period was advocated by industry representatives and legislators throughout Hearing 92-22. Rep. O.C. Fisher (D-TX) opposed the predacide restriction outright because of the need for ranchers to protect themselves from "criminals." Fisher stated, "[t]hese government policies against the right of farmers and ranchers to protect their animals is [sic], in effect, like a government prohibiting policemen in a town from having firearms which they are accustomed to using to protect local people against armed criminals" (Hearing 92-22: 329). The administration itself made a similar analogy, with Nathaniel Reed likening wild predators who kill turkey and sheep to "the man who decides to kill in the city," and who must be selectively controlled (Hearing 92-22: 54).

Agricultural representatives also argued that native predators posed a danger to game populations, with one spokesperson asserting that livestock ranchers would survive the ban on predator poisons, but game populations would not.¹³ Minnesota state representatives and the National Wildlife Federation supported this position to a

¹⁰See, e.g. written testimony of the National Wool Growers Association, Hearing 92-22: 85 – 86.

¹¹See testimony of Allan Wiley of the California Woolgrowers Association at Hearing 92-22: 338 – 340.

¹²See testimony of John Beck of the Bio-Serv Corporation at Hearing 92-22: 584 – 589.

¹³See testimony of Bernard Harkness of the Montana Farm Bureau Federation at Hearing 92-22: 401 – 403.

degree (Hearing 92-22: 453 – 459; Hearing 93-5: 320 – 333), as did Read Willard, a citizen correspondent, who advocated a bounty on coyotes (Hearing 92-22: 581). At least one legislator, Sen. Alan Cranston (D-CA), disagreed. Cranston argued that “[p]redators are the best wildlife managers” (Hearing 92-22: 483). The livestock industry’s primary argument was that additional restrictions on predator control represented by the ban on poisons on federal lands would cause enormous economic hardship to the industry, and would force some producers out of business.¹⁴

The administration also indicated the limits of its stance against wildlife control when it took a stance against the protection of kangaroos in Australia. Multiple environmental representatives and subcommittee counsel Ned Everett criticized the administration’s lack of action on the issue (See Hearing 92-22). Administrator Nathaniel Reed submitted written testimony denouncing American environmental opposition to kangaroo control as over-reaction. Admitting a lack of information, the administration still opposed protection for three species of kangaroos. Their finding was that “Although we have not completed our review of the status of these animals, our scientists, at this point, do not believe they [kangaroos] are ‘threatened with worldwide extinction.’ We wish to stress that this is a tentative, preliminary opinion and is subject to change if additional data are received which indicate otherwise” (Hearing 92-22: 109). The testimony cited excerpts from an Australian committee’s review of the issue, one of the conclusions of which was: “the question of conservation or preservation should be determined in favour of conservation” (Hearing 92-22: 111).

¹⁴See oral testimony of livestock producers at Hearing 92-22: 332 – 352.

On the floor, Sen. Gaylord Nelson (D-WI) resuscitated the discussion on chemical toxicants by offering an amendment to regulate the use of toxicants on habitat for endangered species (primarily National Wildlife Refuges). The proposed amendment provided that the Interior Secretary must make a finding that the use of a chemical toxin will protect endangered species; otherwise it can't be used. The burden of proof would therefore be placed squarely on those seeking the use of the toxin, rather than those seeking to prevent its use. However, Nelson withdrew his amendment after Tunney stated that the amendment should have been considered during hearings (1973 Floor: 25691 – 25692). Sen. Pete Domenici (D-NM) also referred to the toxicants debate by discussing prairie dog poisoning as having caused the imperilment of the black-footed ferret, and by citing the infamous case of eagle killings in Wyoming, to which the administration had referred during hearings (1973 Floor: 25693). Such concerns were not directly incorporated into the bill.

General precautionary arguments. Early on in debates, concern about ecosystems often segued into arguments based on a precautionary approach. An explicit example was Dr. Raymond Fosberg, representing both The Nature Conservancy and the Smithsonian Institution. Fosberg makes clear the elements of the precautionary principle in the extinction crisis: 1) there is scientific uncertainty, given ecological complexity; 2) there is a threat posed by the loss of a single species; 3) action must be taken in the face of scientific uncertainty to mitigate this threat (Table 7-1). Fosberg's was a prescription for precaution. Similarly, Robert Hughes of the Sierra Club explicitly rejected the argument that species protection must wait until there is more data upon which to make a decision (Table 7-1).

Table 7-1. General precautionary arguments in the ESA's 1973 legislative history.

Speaker	Organization	Quote	Citation
Raymond Fosberg	The Nature Conservancy and Smithsonian Institution	From an ecological viewpoint, possibly even more important in the long run than practical utility, it is essential to preserve the diversity in the ecosystems in which we live. This is what protects a system against deterioration and maintains its stability. This internal functioning of checks, and balances in our environment is vital to our well-being though we are only beginning to understand it and the roles of living things in it. It is infinitely complex and difficult to grasp. We do not fully understand the role of any species in the working of nature. Therefore, we cannot afford to let any of them be lost.	HRG 92-81: 146
Sen. Harrison Williams	D-NJ	Perhaps our wisdom is not yet extensive enough to grasp the full meaning of forever removing various forms of life from our environment. Every living thing has its own unique role in a given ecosystem. Whenever that delicate balance of nature is disturbed, for whatever reason and in whatever way, the entire fragile system begins to disintegrate.	HRG 93-67: 115
Robert Hughes	Sierra Club	The Sierra Club strongly believes that inability to obtain sufficient data on which to make a determination should be regarded as evidence of endangerment and that the concerned species or subspecies should be immediately placed on the list. To await the evidence which may be years away could lead to a tragic loss of the species or subspecies. It is far better in these instances to over-protect than to under-protect.	HRG 92-81: 221
Tom Garrett	Friends of the Earth	The precipitous decline of our fellow living creatures throughout the planet mirrors our own chance of avoiding a prodigious calamity. If we cannot contain the proliferation of our own kind, if we will not restrain our nihilistic and randomly destructive technology, the animals which we are here striving to save will not survive, and our own 'harvest' will surely be at hand.	HRG 93-67: 106

Hughes therefore recommended that, when the Interior Secretary received a request to include a species, but lacked sufficient evidence to decide whether or not to list, the law should mandate listing (Hearing 92-81: 221). Legislators and other environmental NGO representatives echoed Hughes's position,¹⁵ including Sen. Harrison Williams of (D-NJ) (Table 1). A representative for the highly respected scientific institution, the Smithsonian, again advocated an endangered species policy predicated on foresight, advocating the protection of species "well in advance of the time when only desperation measures will save or restore a given species or subspecies" (Hearing 93-5: 197-98).

Fosberg's and Hughes' argument was sometimes cast in a similar fashion by those emphasizing the utilitarian value, wherein endangered species protection was offered as a precautionary measure aimed at mitigating the risk to humans posed by accelerated extinction. This perspective was explicitly portrayed by Tom Garrett of Friends of the Earth (Table 1). Although the direct impact on human well-being of a particular species was usually not apparent, arguments such as Garrett's were based on the presumption of risk despite scientific uncertainty, and the consequent need to address that risk. As indicated by the frequency of the protective/utilitarian value in the valuations, Garrett's concern about human survival was shared by many other actors.

¹⁵See testimony of Sen. Harrison Williams (D-NJ) at Hearing 93-67: 113 – 117; Christine Stevens of the Society for Animal Protective Legislation at Hearing 92-81: 226 – 236; Tom Garrett of Friends of the Earth and Defenders of Wildlife at Hearing 92-81: 233 – 236, Hearing 92-22: 239, Hearing 93-67: 79 – 82, Hearing 93-5: 298 – 306; Marian Newman of the Fund for Animals at Hearing 92-22: 408 – 425; and Bernard Fensterwald of the Committee for Humane Legislation at Hearing 93-67: 119 – 120.

As in the hearings, the intersection between scientific uncertainty and human survival resurfaced in the House and Senate. Legislators continued to invoke the utilitarian value of species in this human survival frame. For example, House bill manager Leonor Sullivan asserted, “When we threaten endangered species, we tinker with our own futures. We run risks whose magnitude we understand dimly, if at all” (1973 Floor: 30162). This argument also involved the scientific value, with Rep. John Dingell (D-MI) advocating species protection on the rationale that “they may hold answers to questions which we have not yet learned to ask” (1973 Floor: 30163). In this perspective, despite uncertainty about the costs of extinction to human futures, extinction should be prevented.

How did precautionary arguments factor in the legislative outcome?

The several committee reports leading up to the 1973 Act tell a similar story: the previous endangered species laws do not provide adequate protections, and more groups of organisms require earlier protection to address the extinction crisis. The state/federal conflict is acknowledged within these reports, but all follow the same formula of providing a strict set of requirements that states must meet to be eligible for cooperative programs and federal funding.

First, the precautionary elements discussed in listing debates were contained in the September 1972 Senate Report. The protection of a new category of threatened species was contained in this earliest committee report. The Senate committee described the threatened category as providing the Interior Secretary with the ability

“to forecast population trends by putting a protective umbrella over these animals while long-range action is begun” (Senate Report 92-1136: 3). This earlier protective action, it was hoped, would “prevent diminution of presently healthy species to the level of the one presently threatened with extinction” (Senate Report 92-1136: 6). In addition, the report underscored the need to protect species, subspecies and organisms imperiled in a portion of their range (Senate Report 92-1136).

Part of this widened protection was strict limitations on take. Senate Report 92-1136 was rife with warnings about potentially excessive permissiveness by federal agencies, states, or scientists, in ways inconsistent with the purposes of the act. Scientific research which itself involved the take of imperiled species was thoughtfully discussed. The committee wrote:

Even where scientific studies might be justified on the ground that knowledge gained thereby would contribute to the Secretary’s capacity to manage and protect species presently threatened with extinction, such inquiry must be limited under the provisions of this act. Unfortunately, this stringent limitation on scientific inquiry is necessary in light of the unfortunate abuses of exemptions for scientific study perpetrated under present law. It is the opinion of the Committee that until we have acquired greater knowledge of living systems or it can be shown the Congress that conservation methods have failed, the use of present methods is preferable to diminishing species for the development of possibly more effective conservation practices (Senate Report 92-1136: 12).

Precautionary logic was guiding the committee here, as it is demanding protection *until* more knowledge indicates that scientific take will benefit the species.

The next report also prescribed protection for species, subspecies, and organisms threatened in a portion of their range; established the new threatened category; and added a provision for the protection of look alike species. This report was no less strident on the urgency of the extinction crisis and the incalculable value

of species (House Report 93-412). Correspondence from Interior Secretary Rogers Morton and Assistant Secretary Douglas Wheeler within this report indicated that the administration continued its stance of advocating earlier protection to prevent threatened species from reaching critical imperilment (House Report 93-412: 21, 23). Correspondence from the Smithsonian underscored awareness among the public of the need to treat flora and fauna “with care, respect, and foresight” (House Report 93-412: 29). As it had in the hearings, the Smithsonian advocated a forward-looking perspective and spoke in shades of precaution.

Second, the earliest committee report contained a framework for state and federal cooperation (Senate Report 92-1136: 8 – 10). This report established what it considered to be “strict criteria” for states to be eligible for cooperative programs, and warned it was not the committee’s intent to enable State abuse of the prohibitions on take, for example. Similar language requiring that states first meet federal requirements to qualify were carried over into subsequent committee reports (Senate Report 93-307; House Report 93-740). Thus, despite the Alaska delegation’s best attempts, federal authority over endangered species would be the law.

In sum, the 1973 legislative history indicated several legislators and nongovernmental actors promoted species protection in the face of scientific uncertainty, implicitly embracing the precautionary principle. The threatened designation, extension of protection to a wide variety of life forms, and protection of look alike species were all based in precautionary arguments. Although there was some conflict over such extensive measures to protect species, they were codified in the 1973 ESA. In addition, the choice of a strong federal program, with states eligible

for autonomous programs only if those programs were more protective than the federal one, was a precautionary result.

Further, the issue of predator and rodent control involved precautionary elements. Administrators, legislators, and environmentalists advocated restricting chemical toxicants and proposed putting the burden of proof on those seeking to use poisons on predators and rodents. Alternatively, ranching representatives preferred to wait until more research had been done on the issue before restricting the toxicants. This was consequently a clear struggle over the precautionary issue of who assumes the burden of proof and whether to implement or delay restrictions on activities causing environmental harm. The strong protections against take of listed species were, at least in part, an expression of the types of precautionary measures debate in animal damage control discussions.

The clearest expressions of precaution were more general statements on the need to protect species to protect human welfare. Several participants argued that species are imbedded in complex ecosystems, the health of which affects humans. Better to protect all species than to risk ecosystem and human health.

1978 AMENDMENTS

By 1978, it was apparent that Congress was poised to substantively modify the ESA. The administration, however, took the posture that, despite the Tellico controversy, the Act was working. Tellico inspired an extensive debate wherein legislators and non-legislators contemplated which species to protect, which species

to prioritize, and whether the endangered species program needed “balance.” The hearings were extensive and often contentious. Floor debate was also riddled with conflict as the Act’s defenders were at times divided on whether to provide a formal exemption procedure, but were united on fighting ad hoc exemptions. On the floor, some of those exemptions made it through. However, the conference committee reversed them and affirmed the Endangered Species Committee (the “God Squad”) as the ESA’s pressure valve.

Which key ESA battlegrounds involved precautionary arguments?

The most important issue in the 1978 hearings was the Tellico controversy. The debate centered on the significance of particular species, which related to listing and consultation. In addition, there was extensive conflict over translocation and critical habitat designation, and both issues involved precautionary concerns.

Listing. Inspired by Tellico, ESA detractors and dam supporters advocated protecting only “significant” species, usually defined as well-known and charismatic species such as the bald eagle and grizzly bear. Sen. Howard Baker (R-TN) encouraged the evaluation of whether particular species were significant and therefore worthy of ESA protection (Hearing 95-H33: 4 – 5). Others were more blunt, arguing that insignificant species should not be protected, as extinction was part of evolution,¹⁶ some species are just “worthless,”¹⁷ and the woundfin (a type of

¹⁶This is according to William Towell of the American Forestry Association (Hearing 95-H33: 747); Dan Budd of the Upper Colorado River Commission (Hearing 95-H60: 48 – 50); Ival Goslin of the same commission (Hearing 95-H60: 149 – 169); and Charles Lyles of the Gulf States Marine Fisheries Commission (Hearing 95-39: 172 – 175).

minnow), for its part, is a “useless rascal.”¹⁸ Alternatively, dam opponents and ESA supporters emphasized that all species are significant.

Related to the view that Congress should be more selective about which organisms would be protected was a continuation from 1973 on which taxonomic levels should qualify under the ESA.¹⁹ Industries representatives questioned whether to protect species imperiled in only a portion of their range.²⁰ Another industry perspective was that only full species should be protected (Hearing 95-H33: 793 – 795). However, according to Rep. Tom Bevill (D-AL), even the protection of full species presented an impossible task. In his estimation, the scientific reality was that the difference between species is “frequently slight and recognizable only to persons specifically trained in a given field” (Hearing 95-18: 25).

Bevill testified that, although scientists have identified well over two million species,²¹ existing species could number fifty million, and 10,000 new species are discovered annually. He also remarked that, of the 600 freshwater fish in US, darter

¹⁷Sen. Jake Garn’s (R-UT) statement was that: “I do not believe that any animal, no matter how worthless, ought to be allowed to halt any project, no matter how valuable” (Hearing 95-H60: 45)

¹⁸Ival Goslin of the Upper Colorado River Commission described the woundfin minnow in these terms (Hearing 95-H60: 149). Minnows continued to take a verbal beating in the testimony of Rep. John Buchanan (R-AL), who disparaged protection of “mutations of minnow-like fish which may or may not be endangered species” (Hearing 95-39: 192).

¹⁹New Mexico state legislator Frank Bond differentiated between subspecies that are quite distinct from each other (“semi-species”), versus those that aren’t very distinct (Hearing 95-18: 49 – 54).

²⁰William Haselton and John Thompson of the National Forest Products Association asserted that species should only be protected when imperiled throughout their range (Hearing 95-40: 723 – 728; Hearing 95-H33: 310 – 313). Jerry Haggard of the American Mining Congress likewise expressed concern that species were being protected despite still being abundant in some parts of their range (Hearing 95-H33: 549 – 552). Haggard’s was an implicit argument against grizzly bear protection (Hearing 95-H33: 567).

species number 116. Bevill was concerned that there are thousands of species in river substrate, soil, forest floor and the limited ranges of many species could mean “every river, every hillside, and every field could harbor an undescribed and perhaps unique species” (Hearing 95-18: 26; Hearing 95-39: 178 – 180). He cited Interior Department reports that there could be 200,000 species and three to five times that number in subspecies and populations that need listing across the globe. According to Bevill, economic vitality was consequently in danger, and the ESA’s impact required limitations. Other participants echoed Bevill’s sentiments.²² Cornell Zoology Professor Edward Raney gave some credence to Bevill’s argument by protesting that even the food of snail darters—insects and worms—could be listed under ESA (Hearing 95-18: 147 – 176).

Alternatively, FWS biologist James Williams opposed modifications in the agency’s listing procedure and criticized Raney’s opinion. Rep. James McClure (R-ID) then questioned Williams on Raney’s assertion that people can use listed species to fight development. Raney interjected that the snail darter’s listing and critical habitat designation was based on incompetent scientific information and that people could indeed exploit the ESA to thwart development. Williams argued vehemently against Raney’s depiction of the snail darter listing information, stating that the snail darter’s listing was based on solid science, and that no information was received

²¹A recent estimate of the number of described species is 1.4 million (Leakey and Lewin 1995).

²²See testimony of Tellico Plains, TN, Mayor Charles Hall at Hearing 95-H33: 252 – 262; TVA General Manager Lynn Seeber at Hearing 95-H33: 268 – 300; and Lon MacFarland of the Upper Duck River Development Association at Hearing 95-H33: 852 – 855.

during the listing process to indicate that the snail darter did not qualify as endangered (Hearing 95-18: 143 – 146).

Those with the perspective that all species are significant frequently asserted that human ignorance precluded the feasibility of accurate species valuation. I described above how C.W. Hart of the National Museum of Natural History, like Raney, advocated precluding invertebrates and lower taxa from protection, and was challenged by Sen. John Culver (D-IA) on the basis that seemingly insignificant species may play important, albeit unknown, ecosystem roles (Hearing 95-H60: 39). Scientific uncertainty surrounding the evaluation of the worth of a species was also underscored by Michael Zagata of the National Audubon Society (Hearing 95-H60: 182 – 195), Thomas Lovejoy of the World Wildlife Fund (Hearing 95-H60: 404 – 405), Christine Stevens of the Society for Animal Protective Legislation (Hearing 95-39: 299 – 300), and Rep. William Lehman (D-FL) (Hearing 95-39: 397).

In addition, proponents of protection for obscure species used utilitarian and ecosystem arguments to defend their position. As they had in 1973, these arguments continued to involve the precautionary approach. Rep. Richard Ottinger (D-NY) maintained that, in passing the ESA, “it required us to pause and weigh the consequences of our acts for the biological chain of which we are a part, for fear that our failure to do so would render us an endangered species” (Hearing 95-39: 261). Lewis Regenstein of the Fund for Animals argued that animals play roles in ecosystems that humans do not understand and this mandates the protection of all species (Hearing 95-39: 560 – 561), as did Dr. Constance Taylor of the Oklahoma

Sierra Club.²³ In this perspective, human ignorance provides a reason to protect all species and not provide for statutory exemptions from the ESA. Further, Taylor recommended that taxa about which status is unknown be afforded protection (Hearing 95-39: 522 - 527). Deborah LaBelle of Friends of the Earth also advocated protecting plants with unknown status and then conducting status reviews that may result in their delisting (Hearing 95-H33: 796).

There were also debates over which species should be higher-priority candidates for protection. This related to the precautionary principle given the uncertainty surrounding the most effective way to prioritize listing actions while avoiding extinction. In an exchange between House subcommittee chairperson Robert Leggett (D-CA) and FWS Director Lynn Greenwalt, the FWS Director described the problem created by a listing backlog. That backlog consisted of 28,000 plants and 200-300 animals. A total of 230 species had been listed since the ESA's passage. The species prioritization debate included, for the first time, consideration of a "triage" approach, which categorized some species as beyond recovery. The conclusion by FWS and others that some species could not be saved from extinction diverged from a precautionary approach, which would emphasize protecting species before they were

²³Taylor included an article written by her and her husband which reads, in part, "All of the kinds of life in a given area live as part of an interacting system called an ecosystem or biotic community. The smallest, seemingly most insignificant species in these systems have an influence on all other forms of life in the system and is in turn influenced by all other species" (Hearing 95-39: 520).

beyond recovery. The triage mentality was the result of the new FWS perception that stemming extinction was an impossible task.²⁴

Business interests either picked up on the triage argument from FWS, or decided on their own that preventing extinction was impossible. There was disagreement about how to design the triage strategy. Chris Farrand of the US Chamber of Commerce, for example, argued for a design where Congress would decide which species were “significant.” However, despite advocating an approach where species deemed “significant” would be protected, where there was uncertainty on that question Farrand recommended giving the benefit of the doubt to the species.²⁵ Alternatively, a state representative argued that, as the public was primarily concerned with vertebrate species, invertebrates should not be protected. The lack of knowledge about invertebrates was set forward as an additional reason for denying these species protection.²⁶ In contrast, FWS recommended against discrimination based on taxonomy and the popularity of the species²⁷ and others responded to the

²⁴This new FWS mindset was expressed in a speech by Keith Schreiner entitled “Federal View of ‘Realistic’ Endangered Species Administration and Management” (Hearing 95-H33: 528 – 534). Schreiner was FWS Associate Director.

²⁵At Hearing 95-H33: 329, Farrand stated “Since it is difficult, if not impossible, to quantify the benefits and values of a given species or a given habitat, any balancing mechanism should be weighted toward the maintenance of the species.” US Chamber of Commerce representative Linda Anzalone repeated this position in written testimony at Hearing 95-H60: 368).

²⁶ This statement was from Steve Gallizioli of the Arizona Game and Fish Department, who asserted: “We believe the 1973 Act is overly idealistic in extending coverage to all members of the animal kingdom, including literally millions of invertebrates, many of which we regularly slap and step on without a thought. Many of these forms are still being classified and we know virtually nothing about the population status, distribution or biotic requirements of most” (Hearing 95-H33: 486).

²⁷An FWS statement against discrimination on the basis of taxonomy was the “Federal View of ‘Realistic’ Endangered Species Administration and Management” by Keith Schreiner, Associate Director, FWS. Located at Hearing 95-H33: 528 – 534. An FWS statement against discriminating based on popularity of the species is from Lynn Greenwalt, FWS Director, at Hearing 95-39: 5.

challenges of preventing extinction of all species by advocating forward steps such as imperiled species databases and increased funding.²⁸

A variety of hearing participants criticized the scientific quality of FWS decisions.²⁹ As a remedy, some participants specifically argued for more science prior to species protective action. This is at odds with the precautionary approach and the ESA's language calling for a best available science standard. Those advocating this perspective were state agencies, hunting groups, and industry representatives.³⁰

In response to a state wildlife agency panel where FWS decisions were extensively critiqued, Sen. Malcolm Wallop (R-WY) asked what steps could be taken to persuade FWS not to rely on emotional appeals rather than hard data (Hearing 95-H33: 349). Sylvia Taylor, of the Michigan Department of Natural Resources, remarked that wildlife protectionists might likewise make claims that state wildlife agencies were relying on biased data (Hearing 95-H33: 350). When FWS

²⁸The lack of information on species was recognized as a problem by William Chandler of The Nature Conservancy (TNC). TNC established its state heritage programs during this time period in order to address this knowledge gap (Hearing 95-H33: 516 – 519, 576 – 583). National Audubon Society representative Michael Zagata recommended increased funding in order to improve the quality of listing and other decisions (Hearing 95-H60: 78 – 79) as did Rep. James Jeffords (R-VT) (Hearing 95-39: 249 – 253).

²⁹Bill manager John Culver asserted that FWS was making political judgments on listing and critical habitat to avoid political backlash (1978 Floor: 21337 – 21338). Rep. Robin Beard (R-TN) also noted that FWS was declining to list some species because of political pressure (1978 Floor: 38125). Jake Garn questioned the scientific basis for listings (1978 Floor: 21581 – 21582) as did Rep. John Buchanan (R-AL) (1978 Floor: 38127 – 38128). Sen. Malcolm Wallop (R-WY) maintained that the American alligator was listed for emotional, not biological reasons (1978 Floor: 21135–21137).

³⁰Tommy Hines of the Florida Game and Fresh Water Fish Commission complained about FWS delay in downlisting the American alligator (*Alligator mississippiensis*). Hines's concern was "...bureaucratic inaction and excessive response to some of the more emotional and poorly informed segments of the conservation community by the Endangered Species Office" (Hearing 95-H33: 345). Other southeastern state wildlife agency representatives argued along similar lines regarding the alligator.³⁰ The Oregon State Forestry Department requested a more precise definition of the criteria for endangered and threatened designations, as well as for critical habitat, given "excessive and somewhat capricious" decisions (Hearing 95-H33: 743).

representative Keith Schreiner was subsequently questioned on the issue by Wallop, Schreiner maintained that FWS listings are based on sound scientific data, often on the states' own data (Hearing 95-H33: 383).

Also arguing for more scientific information prior to listings were hunting and industry representatives. For instance, Safari Club International stated that FWS listings were based on insufficient information (Hearing 95-H33: 559 – 562) and was concerned that listings were based on “hysterical emotion” rather than the best available science (Hearing 95-H60: 278). A leather tanning representative opposed kangaroo and sea turtle listings for the same reason (Hearing 95-H60: 234 – 247)). A captive-wildlife breeding group also castigated CITES listing decisions as the work of “a group of nature lovers who are totally unfamiliar with the status of any species under propagation in America” (Hearing 95-H33: 808). Pointing to the existence of conflicting datasets, Charles Lyles, a fishing industry representative, maintained that NMFS and FWS were competing over “who will be the shining knight” of sea turtles, a situation that was insuring that “fact and reason have little chance of survival” (Hearing 95-39: 173). The Pacific Legal Foundation asserted that FWS was employing questionable science (Hearing 95-40: 849 – 854). Finally, a water development agency criticized FWS listing decisions for their lack scientific basis (Hearing 93-40: 682 – 689).

Consultation. Perhaps the most frequent refrain in 1978 was that the ESA needed more balance, primarily in terms of FWS implementation of Section 7. This argument often segued to species prioritization debates, which resulted in the proposal for an Endangered Species Committee. The committee would decide on

whether to exempt projects despite the possibility that species would go extinct as a result. This inspired Senate subcommittee chairperson Kaneaster Hodges (D-AR) to press forward on the issue of whether to err on the side of species protection. In questioning a witness on the worth of a species, Hodges stated,

...the concern is that I am not certain that we have sufficient knowledge to allow any species, known or unknown, to become extinct, because we don't understand the chain of life sufficiently, we don't understand the effect on it sufficiently. And if there is to be error, I am absolutely convinced the error should be on the side of preservation instead of on the side of continual exploitation...the genius of the law of the Endangered Species Act is that it does come down heavily on the side of an absolute decision, that it is better to err on the side of preservation than it is to err on the side of an action that is irrevocable and irretrievable (Hearing 95-H60: 227).

Also explicitly arguing for the need to err on the side of the species was administrator Charles Warren, Council on Environmental Quality Chairman³¹ and Environmental Defense Fund representative Michael Bean.³²

Thus, the Endangered Species Committee concept seemed to arouse, and was aroused by, the realization that it is difficult to determine when it is appropriate and acceptable to allow risks to species that may jeopardize the species' survival. Further, a cost-benefit logic for the God Squad seemed to flow from subcommittee hearings, where members put tremendous emphasis on cost-benefit evaluations of the Tellico Dam to guide decision-making. The burden-shifting component of the precautionary principle arose in this context, with Zygmunt Plater advocating that the burden for such analysis be placed on the shoulders of agencies "that seek to convince Congress

³¹Warren (Hearing 95-39: 495) was clear about this commitment, stating "If we err, let's err on the side of preserving species, because there is so much that is not known about their value, not only to human beings, but to the entire world community."

of the need to render a species extinct” (Hearing 95-H33: 869). As it was, Congress was requiring the GAO to conduct this analysis. GAO’s analysis fell short in the eyes of the subcommittee members, and the results of the cost-benefit analysis were therefore in question.³³ Tellico proponents emphasized an earlier analysis that had found a cost-benefit ratio of 1:7 (Hearing 95-40: 769), but both subcommittees pushed for a more updated analysis.

On the floor, the main precautionary issue in the God Squad debate was whether policy-makers could accurately ascertain whether a species could be exempted from protections without significant impacts on humans and ecosystems. Sen. John Culver, floor manager, discussed the extinction crisis in terms of the loss of unknown species and used this as a basis for promoting the Culver-Baker amendments, which would establish the God Squad exemption procedure. Culver remarked that,

The chilling tragedy of this massive loss of species from our ecosystems and biosphere will never be fully understood, because among the species irreversibly lost are some whose existence we never realized, and whose contribution to science and mankind will never be known (1978 Floor: 21131).

This lack of scientific knowledge, according to Culver, meant that there should not be a blanket exemption for projects because one never knows when a project will involve an endangered species, and one never knows if an obscure species holds

³²Bean emphasized the need to err on the side of the species to insure human benefits (Hearing 95-39: 555 – 556).

³³For examples of Senate and House subcommittee berating of the GAO over this issue, see Hearing 95-H33: 193 – 195 and Hearing 95-39: 238.

future benefits for humans. Others agreed with this logic.³⁴ Given the difficulty of these choices, Culver set forward the God Squad's design. It would comprise the heads of six federal agencies and the Governor of the state in which there is a conflict. For an exemption to be granted, the following three criteria must be met: 1) there is no reasonable or prudent alternative; 2) the action is of national or regional significance; and 3) the benefits of the project outweigh benefits of alternatives which would protect the species (1978 Floor: 21131-21135). The design of the God Squad was aimed at providing providing members with insulation from lobbying and politics. In addition, God Squad members were considered to have expertise to make the decision.³⁵

Despite the God Squad's seemingly precautionary design, some ESA supporters did not accept it as an appropriate solution. For instance, Sen. Gaylord Nelson (D-WI) opposed the amendments on the basis that all species are significant and the God Squad members lacked the knowledge to decide which species would not survive. He maintained that the Tellico controversy was a lone exception and that the dam should never have been built. He therefore recommended amending the Culver-Baker amendments to minimize their impact on the ESA. He also invoked the human survival purpose of the ESA, which he described as vital in "curbing man's recklessness against the natural world of which man himself is a part" (1978 Floor:

³⁴Rep. John Dingell (D-MI) pointed out that the political problem was the perception that "obscure" species are put before humans (1978 Floor: 38126). In reality, in Dingell's estimation, the ESA puts long-term interest of humans foremost, as obscure species may hold unknown benefits.

³⁵According to Senate bill manager John Culver (D-IA) (1978 Floor: 21335), "They are also better equipped by background, training, and expertise to make informed, scientific, knowledgeable judgments, not to be buffeted by the political winds of the moment but to be sober in the implementation of this act."

21142). In the original ESA, according to Nelson, “we finally recognized that we do not have the wisdom to decide what species shall live and what species shall die” (1978 Floor: 21142). Conversely, this logic would be replaced by the God Squad, a measure that he described as being based on “emotional upset” (1978 Floor: 21342) rather than fact. All species were important, according to Nelson, and no group of people should decide which species would survive. In response, Sen. Howard Baker (R-TN) maintained that the amendments were not rooted in emotions running high over Tellico. Rather, they represented an unemotional, dispassionate way to deal with those cases where the ESA does not work (1978 Floor: 21342).

Other legislators also asserted that all species should be protected. Examples were Senators John Chafee (R-RI) (1978 Floor: 21332 – 21333) and Lowell Weicker (R-CT). According to Weicker, the lack of scientific knowledge and ecological interconnections precluded judgment by the God Squad on which species to save (1978 Floor: 21346). Rep. John Murphy (D-NY), who was the full committee chairperson, cited the lack of scientific knowledge, and the consequent inability to know the potential values of species lost due to extinction (1978 Floor: 38132 – 38133).

Stepping further back from the precautionary principle, the Endangered Species Committee was opposed by ESA opponents. For instance, Sen. John Stennis (D-MS) objected to the committee’s composition, declaring that the EPA administrator and Council on Environmental Quality chairman are professional environmentalists, as is the Interior Secretary. Between these three officials, with the requirement for a 5 out of 7 committee vote, there would be a permanent veto on

exemptions (1978 Floor: 21145 – 21147). Stennis also denounced the Furbish lousewort (*Pedicularis furbishiae*) as a “useless plant” (1978 Floor: 21146). In response, Nelson included an article indicating that humans lacked the scientific knowledge to assess the lousewort’s value (1978 Floor: 21337 – 21346).

Similar sentiments opposing endangered species protection came from several legislators. Sen. Jake Garn (R-UT) considered some species more important than others. He therefore advocated that more effort be placed on saving “higher” species. He cited hearing testimony that there is redundancy at lower levels of life, which justifies focusing protection efforts on higher forms, such as the bald eagle (1978 Floor: 21330 – 21331). In addition, Sen. Hugh Scott (R-PA) and others (e.g. 1978 Floor: 38157) argued that extinction is a natural process and therefore should not be mourned or prevented. Humans could elect to decide which species to save, but not try to save them all (1978 Floor: 21138-21142). Scott deemed the snail darter insignificant, given that 130 darter species exist. Scott then introduced an amendment limiting the definition of “threatened species” as those of substantial benefit to humans and an amendment to Section 2, the purpose of the Act, to include human welfare among the goals (1978 Floor: 21353 – 21357).

Subcommittee members disagreed, citing the need for caution in the face of uncertainty. Culver opposed Scott’s amendments and Wallop did likewise, on the basis that it would require a person making that decision to “step into the shoes of God” (1978 Floor: 21356). Culver also argued that extinction was natural, but the rate of extinction was not (1978 Floor: 21131-21135). Scott closed by saying:

“People are more important than fish. That is what I am asking you to vote for” (1978 Floor: 21356). Both of Scott’s amendments were overwhelmingly rejected.³⁶

Scott continued in his opposition to the God Squad amendments by attempting to reduce the standard for exemption approval to a simple majority. He introduced an amendment to define a quorum of the God Squad as five out of the seven members and then attempted to require a majority vote instead of five out of seven. However, Culver opposed this amendment. Culver again cited scientific uncertainty and the lack of knowledge of potential value of species (1978 Floor: 21579 – 21581).

Not wanting to wait for a God Squad exemption, the southeastern delegation attempted to exempt Tellico from the Act. Rep. John Duncan’s (R-TN) amendment exempting Tellico was accepted on the floor.³⁷ When an attempt was made to exempt the Grayrocks Dam in Wyoming, Rep. Gerry Studds (D-MA) objected that the House lacked the expertise to exempt particular projects from the ESA (1978 Floor: 38146 – 38147). The House voted to exempt Grayrocks Dam anyway (1978 Floor: 38147).

Translocation. Another important dynamic in these hearings was the promotion of translocation as a conflict resolution tool. The dialogue included uncertainty on whether snail darter translocation was working and whether, given this uncertainty, closure of Tellico dam would be premature. Dam proponents argued that the snail darter could be successfully transplanted from the Little Tennessee River

³⁶Scott’s amendment to Section 2 of the ESA was rejected 10-86 (1978 Floor: 21355). His amendment to require threatened species to be of substantial benefit to humans was rejected 2-87 (1978 Floor: 21357).

³⁷Duncan’s amendment to exempt Tellico passed by 231 to 157 (1978 Floor: 38151).

into the nearby Hiwassee River.³⁸ Alternatively, some administrators, scientists, and conservationists questioned whether the translocation project had worked.³⁹

At least one industry representative acknowledged that the translocation was not the optimal formula for snail darter protection. In a very candid (although implicit) assessment of the precautionary approach, the Southeastern Legal Foundation considered, but rejected that approach, stating,

The middle ground involves compromises, calculated risks and an acknowledgment that, despite our ignorance of the unknown consequences of our actions, nonetheless what we do is for Man's benefit as he can best perceive the situation. Such a course would acknowledge that transplantation of a species in a given case, while not the course most likely to protect that species, is justified in view of the other interests involved (Hearing 95-H60: 386).

In terms of erring on the side of species protection by not engaging in translocation efforts with dubious efficacy, this can be considered a rejection of the precautionary approach. Another industry voice consciously rejecting the precautionary approach was Samuel Tucker of the Florida Power and Light Company. Tucker maintained that

³⁸TVA General Manager Lynn Seeber described the transplanted populations as thriving, and maintained that the Little Tennessee River was no longer suitable habitat for the snail darter, as it had other dams on it (Hearing 95-H33: 263 – 266). Rep. John Duncan (R-TN) (Hearing 95-39: 52 – 59) and Rep. Tom Bevill (D-AL) (Hearing 95-39: 178 – 180) argued similarly.

³⁹Ichthyologist David Etnier, who discovered the snail darter, questioned the program in July 1977 (Hearing 95-H33: 215 – 216) and in February 1978 (Hearing 95-40: 639 – 640). FWS representative Robert Herbst stated at a May 1978 hearing that it was still too early to evaluate the program's success (Hearing 95-39: 165). FWS subsequently provided population counts that indicated the translocation was unsuccessful (Hearing 95-40: 1198). Anne Wickham of Friends of the Earth characterized snail darter transplantation by TVA as missing the point of Section 7, which is to protect species in their native habitat. In Wickham's estimation, the Hiwassee lacked habitat features of Little Tennessee and was heavily polluted (Hearing 95-H33: 519 – 523). Michael Zagata of the National Audubon Society also criticized the transplantation program for its failure to protect habitat (Hearing 95-39: 316 – 321). Zygmunt Plater, lead counsel in *TVA v. Hill*, argued that TVA was fabricating population counts for the Hiwassee River, and that 5 – 15 years was required before a dependable assessment of the Hiwassee translocation could be made (Hearing 95-39: 289 – 290).

always erring on the side of species protection presented too high of a risk to society (Hearing 95-40: 825 – 827).

On the floor, some participants continued to advocate translocation to resolve endangered species conflicts with economic development. For the Tellico situation, Rep. Edwin Forsythe (R-NJ) suggested that snail darter translocation might resolve the conflict (1978 Floor: 38149 – 38150). Others asserted that the translocation of snail darters to the Hiwassee River was already a success.⁴⁰ Likewise, Sen. Edmund Muskie (D-ME) suggested that furbish louseworts be transplanted (1978 Floor: 21601). These actors did not discuss the role of scientific uncertainty in advocating their solution and therefore did not address the precautionary issue on translocation raised at the hearings.

Critical habitat designation. The Tellico controversy also involved the issue of critical habitat designation, and critical habitat began to draw the attention of some vocal legislators. The critical habitat issue involved criticisms of FWS for proposing and designating critical habitat with insufficient data and therefore related to the precautionary principle.

FWS designation of almost 17 miles of the Little Tennessee River as critical snail darter habitat⁴¹ factored in the injunction of the dam.⁴² House subcommittee chairperson Robert Leggett (D-CA) recognized this, and described critical habitat designation as “where the rubber meets the road” (Hearing 95-39: 295). He

⁴⁰See Rep. Marilyn Lloyd. (D-TN) (1978 Floor: 38148 – 38149); Rep. James Quillen (R-TN) (1978 Floor: 38149); and Rep. Robert Duncan (R-OR) (1978 Floor: 38148)

⁴¹FWS designated miles 0.5 to 17 of the river as critical habitat (41 Fed. Reg. 13,926-28 (1976)).

consequently supported separating listing and critical habitat designation processes. Another water project/endangered species conflict, over the woundfin in the Upper Colorado River, featured a proposed critical habitat designation that was controversial (Hearing 95-39: 404 – 424; 462 – 477). Industry actors recognized the potential power of critical habitat designations as well and consequently recommended less extensive designations (Hearing 95-40: 723 – 728). President Carter himself issued an executive order calling for the identification of critical habitat areas by federal land managers to protect them earlier⁴³ and presumably to avoid impasses like Tellico.

Early in the hearings, concern was expressed over the proposed designation of grizzly bear critical habitat in the Northern Rockies.⁴⁴ For example, Sen. James McClure (R-ID) and fellow subcommittee member Malcolm Wallop (R-WY) believed that Yellowstone alone should be designated grizzly critical habitat, but Interior Department representative Keith Schreiner maintained that Yellowstone was too small, and that 13 million acres were required. Schreiner pointed to the potential problem of scientific disagreement, and demonstrated FWS recognition of this difficulty early on in ESA policy (Hearing 95-H33: 382).

However, in the grizzly bear case, there was no clear scientifically-based alternative to the 13 million acre designation, so conflicting science did not seem to

⁴²See TVA v. Hill at 437 U.S. 153 (1978).

⁴³Several administrators cited the environmental message from President Carter, made on May 23, 1977, which urged federal agencies to “identify all habitat under Federal jurisdiction or control that is critical to the survival and recovery of these species. The purpose of this program is to avoid the possibility that such habitats will be identified too late to affect Federal project planning” (Hearing 95-H60: 17).

⁴⁴See Sen. James McClure (R-ID) (Hearing 95-H33: 31); Earl Thomas, Director of the Wyoming Fish and Game Department (Hearing 95-H33: 302 – 304); Lloyd Oldenburg of the Idaho Fish and Game Department (Hearing 95-H33: 336 – 339).

be the issue. Rather, the perceived vastness of this designation was intuited by detractors as excessive. Moreover, the FWS proposal was criticized even by federal land managers.⁴⁵ The logging industry opposed the critical habitat designation for its limitation on timber operations (Hearing 95-H33: 793 – 795). Wallop later engaged environmental witnesses on the issue, who maintained that the 13 million acres represented only 2% of the grizzly bear’s historic range and was not, therefore, much to ask (Hearing 95-H33: 545).

The grizzly bear critical habitat controversy came to a head in the hearings with an exchange between Wallop and Schreiner. Wallop argued that grizzly bear critical habitat designation was a major federal action requiring a full environmental impact statement (EIS), while Schreiner disagreed (Hearing 95-H33: 381). There were numerous industry representatives who argued for EIS preparation prior to species protection actions more generally.⁴⁶ The argument for an EIS would likely result in a delayed critical habitat finalization, which is why FWS opposed it (Hearing 95-40: 877 – 879). FWS officials acknowledged the urgency of the extinction crisis⁴⁷

⁴⁵US Forest Service Chief John McGuire disagreed with the proposal, but did not provide specific criticisms (Hearing 95-H33: 383).

⁴⁶See written testimony of Southern Forest Products Association, where such a requirement is suggested, at Hearing 95-H33: 836 – 841; Lon MacFarland of the Upper Duck River Development Association at Hearing 95-H33: 852 – 855; Kenneth Balcomb of the Colorado River Water Conservation District at Hearing 95-H60: 228; Donald Simpson of the Pacific Legal Foundation at Hearing 95-H60: 248 – 252 and Hearing 95-40: 856; and the National Cattlemen’s Association at Hearing 95-39: 48 – 49.

⁴⁷In budget hearings, FWS Director Lynn Greenwalt (Hearing 95-H42: 452) asserted: “I know how this committee and particularly the present acting chairman [Malcolm Wallop] feels about fish and wildlife and their value to the Nation and I think it is important that we all work now to achieve these ends because I have a fundamental apprehension that there isn’t much time left in which to address these matters. It is pretty urgent, because in my judgment they are urgent matters.”

and the peril posed by delay.⁴⁸ FWS therefore took a precautionary stance on the issue. The agency clearly understood that delay meant continued threats to imperiled species. Environmental representatives underscored the urgent time frame,⁴⁹ as did Reps. John Dingell (D-MI)⁵⁰ and William Whitehurst (R-VA).⁵¹

Despite its extensive treatment in hearings, grizzly bear critical habitat continued to be a controversial issue on the Senate Floor. Wallop and McClure argued against precaution in their stance that the bear's habitat should be limited, and an EIS should be prepared prior to designation (1978 Floor: 21135–21137; 21574 – 21575). McClure offered an amendment that would require that critical habitat designation be considered a major federal action for which an EIS must be prepared (1978 Floor: 21339). That amendment was not accepted by the President of the Senate, and McClure then introduced an amendment on critical habitat. His amendment addressed the size of critical habitat and its consequent potential to cause economic impacts. To promote his amendment, he criticized proposed grizzly bear critical habitat for going beyond the borders of Yellowstone National Park. Under McClure's approach, the standard critical habitat designation would not include a

⁴⁸FWS Director Lynn Greenwalt (Hearing 95-39: 10) stated, "Mr. Chairman, environmental change is taking place so rapidly that further delay in protection of endangered species and their habitat pushes them inevitably closer to the brink of extinction, making recovery more difficult and costly."

⁴⁹Stated Tom Garrett of Defenders of Wildlife (Hearing 95-39: 29): "In the next ten years, I estimate conservatively and even sanguinely, that at least one hundred animal species will become extinct. The US Government, either through direct action or by its failure to take action open to it, will probably bear responsibility for up to half of these extinctions. If we are going to act we must do so soon. The species are running out of time with terrifying rapidity."

⁵⁰See Dingell's written statement at Hearing 95-39: 106 – 107.

⁵¹See Whitehurst's written statement at Hearing 95-39: 399.

species' entire range. Wallop agreed to the amendment, and it was accepted (1978 Floor: 21355 – 21356).

McClure continued in his attempt to limit the impact of critical habitat designation by introducing amendments requiring payment of claims resulting from critical habitat designation and EIS preparation before designation, explicitly referencing the impact of grizzly bears on ranchers. Wallop opposed the amendments, and McClure withdrew them (1978 Floor: 21583 – 21585; 21588 – 21590).

As part of a broader attempt to overhaul the ESA, Garn provided extensive amendments to the ESA. Among those was a proposal to designate critical habitat at the same time that listings were made. In Garn's view, critical habitat should be less than the entire range of a species, but its designation is imperative, "It may well be the case, Mr. President, that the designation of critical habitat is more important than the designation of an endangered species itself." (p. 21575). In addition, he suggested replacing best available data with sound data, as best available might not be very good. Garn's amendment requiring designation of critical habitat at the time of listing was accepted (1978 Floor: 21576).

How did precautionary arguments factor in the legislative outcome?

Some aspects of the committee reports related to the precautionary principle. These include treatments of the God squad, critical habitat, and recovery plans. There were elements of precaution, and lack of precaution in each. The God Squad provided a new exemption from the Act, but arguably did so in a precautionary way, by

building a rigorous process that provided for erring on the side of species protection. Critical habitat was required for the first time, but the area eligible for designation was deliberately drawn in a narrow way. Recovery plans were provided for, and fits with a precautionary approach.

First, the deliberate refusal to not provide exemptions for specific projects, including Tellico, coincides with a precautionary approach. The conference report (95-1804) was dominated by a description of the structure and rationale for the God Squad. One component of the report was eliminating the exemptions that the House granted – to Tellico and to a Wyoming dam project. The committee provided that those two projects go through the exemption process of the God Squad, albeit in a facilitated way. This was done to abide by an “orderly” exemption process and not engage in ad hoc exemptions (Conference Report 95-1804: 24 – 25). The structure of the God Squad was developed with some degree of precaution in mind. It would be hard to argue, however, that its existence promoted precaution, as it increased the ability to obtain an exemption from the prohibitions of the act.

Second, the issue of critical habitat designation was addressed. Provisions were inserted requiring the designation of critical habitat, a requirement that did not previously exist. In particular, the reports stated that not designating critical habitat would be rare (House report 95-1625; Conference report 95-1804: 27). However, the reports made equally clear that the entire range of a species would not be designated and explicitly expressed concern for the extensiveness of proposed grizzly bear critical habitat (Senate report 95-874: 10). Congressional treatment of critical habitat therefore contained elements of precaution, by upgrading the requirement for

designation, but also a contrary element of seeking to curtail the extensive designations that FWS had been proposing and contemplating.

Third, the provision for recovery plans was contained in the conference report. Although the provision for recovery plans had been included in the original act, they had not been required. The conference committee made clear that they sought to change this provision to a requirement, and lamented that plans had been such a low priority in ESA implementation (Conference Report 95-1804). Recovery plan requirement is aligned with a precautionary approach.

In sum, the Tellico controversy inspired debates that related to listing, consultation, critical habitat, and translocation issues. The legislative outcome was a mixture of precaution and non-precaution. While the God Squad was carefully designed to be a rigorous exemption process, it was still an exemption process that allowed for the possible, conscious, jeopardy of a listed species. In addition, although critical habitat designation would be required as a result of the amendments, FWS was restricted repeating the extensive critical habitat proposals it had made for species such as the grizzly bear. Further, while subspecies, species, and distinct populations would still be eligible for listing, FWS made clear that it was embarking on a triage approach. While the agency's listings were not to be based on species popularity, FWS was prepared to consider some endangered species cases as beyond hope.

The Tellico controversy entailed concerns that directly related to precaution. The conflict over sound science and best available science was a visible part of the

debates. The amendments did not address this issue, thereby permitting the best available science standard codified in the Act to continue. In addition, the conflict over the significance of a species hinged on the certainty with which one could discern the consequences of species extinction. Given the careful design of the God Squad, those arguing that humans could not reasonably estimate the consequences of extinction of obscure species, and that those species must therefore be protected, appear to have partially succeeded in 1978. The prescription for translocation to resolve the Tellico controversy was resisted on precautionary grounds. The translocation debate converges with recovery planning. Although recovery planning was not a visible part of the 1978 debate, the amendments required recovery plans for the first time. This was likely the result of the translocation debate's illumination of the uncertainty with which one could determine a species to be recovered.

1982 AMENDMENTS

In this year, there were a multitude of arguments about precaution in endangered species policy. Proponents of precaution clashed with opponents of precaution within hearings. However, by the time the legislation reached the House and Senate floors, the contentious issues had been largely resolved and there was very little confrontation.

Which key ESA battlegrounds involved precautionary arguments?

A significant issue in the 1982 hearings was the bobcat (Lynx rufus) court decision, where a federal court enjoined bobcat export until a reliable population estimate of bobcats had been ascertained (Hearing 97-H46). This related to the species taking battleground. While this issue sometimes dominated debate in the hearings, other issues pertinent to the precautionary principle arose, including revisitation of the issue of the significance of species, which related to listing concerns; criticisms of consultation processes; and critical habitat.

Taking. The case of bobcat protection demonstrated a Congressional decision to contravene the precautionary principle. The court called for more information – a reliable population estimate – prior to the removal of bobcat protection, and Congress responded by overturning the court’s decision. Congress was concerned about broad listing actions under the Convention on International Trade in Endangered Species (CITES). The bobcat had been protected by a mass listing of all spotted cats. In addition, all parrot-like birds had been listed because of dangers posed by the pet trade. This was considered an illegitimate action by House subcommittee chairman John Breaux, who argued that more biological information on individual parrot species was required, rather than broad listing actions (Hearing 97-5: 347 – 348). Ron Lambertson, of the Department of Interior, took the same position (Hearing 97-5: 349 – 357).

The CITES listing of the bobcat was a concern to many participants, and particularly to state representatives. Along with the rest of the spotted cats, the bobcat

was listed on CITES Appendix II, which requires a finding of “no detriment” if trade is to be permitted. Defenders of Wildlife consequently sued the International Convention Advisory Commission because of the lack of data involved in their no detriment finding. A federal court agreed with Defenders and enjoined the export of bobcats and their pelts until a reliable population estimate could be obtained (Defenders of Wildlife v. The Endangered Species Scientific Authority (No. 79-2512 D.C. Cir., February 3, 1981)). This decision set the stage for virulent disagreement.

Opposing bobcat protection were affiliates of the fur industry and state officials, who disagreed with the need for population estimates to demonstrate no detriment to a species.⁵² In particular, Wyoming Game and Fish representative and bobcat researcher, Dr. Douglas Crowe, justified state authority over bobcats on the basis that states would not allow the taking of a species where “there is any shadow of a doubt” of a detrimental impact on the species. He further averred that states could assess the bobcat’s status through collecting hunter harvest data rather than obtaining the population estimate ordered by the court (Hearing 97-32: 12 – 13). Others also urged subcommittee members to legislatively overturn the bobcat decision.⁵³ House subcommittee chairperson Breaux was especially concerned at what he perceived to

⁵²See fur industry representative Stephen Boynton (Hearing 97-H34: 33 – 36; Hearing 97-32: 43 – 51); Gary Kugler of the American Fur Industry (Hearing 97-H46: 442); William Huey of the International Association of Fish and Wildlife Agencies (Hearing 97-H34: 42 – 45; Hearing 97-32: 3 – 11). In addition, a pet industry representative criticized protection of the bobcat, which he attributed to “letterwriting contests”, political pressure on FWS, and unreliable data involved in listing process (Hearing 97-H34: 31 – 33).

⁵³See testimony of James Glass of the Wildlife Legislative Fund of America at Hearing 97-H34: 45 – 48; Randy Bowman of the same organization at Hearing 97-32: 51 – 55; Lonnie Williamson of the Wildlife Management Institute at Hearing 97-H34: 48 – 51; Hearing 97-32: 18 – 21; John Newsom of the Louisiana Department of Wildlife and Fisheries at Hearing 97-32: 13 – 18; Don Hoyt of the National Trappers Association at Hearing 97-32: 51.

be the lack of a scientific basis in CITES decisions and did not want the U.S. to go along with what he considered to be spurious actions.⁵⁴

The opponents of bobcat protection very clearly advocated a non-precautionary approach by advocating the termination of protection despite scientific uncertainty regarding the bobcat's status. Alternatively, arguing along precautionary lines, the Department of State, conservationists, and animal protection representatives urged the House and Senate subcommittees not to overturn the bobcat decision. The primary argument of those supporting the bobcat decision was that a lack of precaution by the U.S. would weaken its position as an international leader in conservation.⁵⁵

In fact, Dr. Grandy of the Humane Society of the U.S. depicted the issue in precautionary terms by describing the clear intent of CITES as “the benefit of any doubt concerning the effects of trade must be given to species protection and not to continued exploitation” (Hearing 97-32: 58). The conservationists were arguing for more information prior to any diminution in bobcat protection, in contrast to their usual suggestion of using the best available information for species protective action. This employment of different standards for listing and delisting actions was described by Grandy as the very essence of erring of the side of species protection (Hearing 97-32: 76). Alternatively, those advocating less species protection in the bobcat case

⁵⁴In a frustrated moment, Breaux exclaimed, “How improper does a foreign government’s recommendation have to be before we say that is enough, we are not going to accept that?...What standards are we going to use to say we are not going to accept that because you do not have any proof? What has to occur?” (Hearing 97-32: 487).

⁵⁵Department of State representative David Colson (Hearing 97-32: 478 – 482; Hearing 97-H46: 18 – 19); Dr. John Grandy, of the Humane Society of the US (Hearing 97-H34: 502 – 515); Christine Stevens of the Society for Animal Protective Legislation (Hearing 97-H34: 55 – 57).

were arguing for best available information, rather than the heightened standard of sound, sufficient science that ESA detractors had insisted on in 1978.

Breaking from other conservation groups was the National Wildlife Federation, which promoted consistent standards for delisting and listing decisions – the best available information standard. NWF consequently advocated removing protection for bobcats, given the lack of scientific data to support the animal’s protection. The group characterized the court’s requirement of a reliable population estimate as unreasonable (Hearing 97-32: 373 – 462).

House subcommittee member Edwin Forsythe (R-NJ) picked up on the precautionary argument with another environmental representative, Curtis Bohlen of the World Wildlife Fund. Forsythe asked whether every species could be listed under the possibility of being threatened in the future. Bohlen responded that the bobcat was especially vulnerable due to the trade prohibition on other spotted cats and recommended an Appendix III listing to allow bobcat trade with monitoring (Hearing 97-32: 116 – 117). This answer from Bohlen underscores a key part of the precautionary principle – it is a direct response to a probable risk, which helps circumscribes the principle’s possible overuse.

The bobcat issue again took front seat when debate hit the House floor. House Subcommittee chair John Breaux (D-LA) described the amendment to overturn the bobcat decision as necessary because state agencies are “being saddled with biologically meaningless requirements regarding the preparation of population estimates before nonendangered, legally taken animals could be exported.” The amendment would require the Secretary of Interior to make no detriment

determinations based on “the best available biological information derived from ‘professionally accepted’ wildlife management practices” (1982 Floor: 12958). House Subcommittee member Rep. Claudine Schneider (R-RI) described the solution similarly (1982 Floor: 12960-61). Thus, Subcommittee members embraced advocated the non-precautionary response to the bobcat controversy as they promoted removing bobcat protection in the face of scientific uncertainty.

Listing. As in 1978, FWS listing decisions were again criticized in 1982. A prototypical example of this dynamic was the case of the Illinois mud turtle (*Kinosternon flavescens* subsp.). A panel of scientists picked by National Academy of Sciences and convened by FWS recommended not listing the turtle (Hearing 97-H34: 29 – 30). Patrick Parenteau of the National Wildlife Federation claimed that the industry had spent \$500,000 on scientific studies to prove the turtle did not require listing. Sen. Mitchell challenged Parenteau on this point, saying that the issue was not how much industry spent on studies, but whether there was scientific disagreement. Parenteau responded that it is difficult to obtain agreement from scientists on whether a species is endangered or whether habitat is critical and argued that there was sufficient data to justify listing (Hearing 97-H34: 65-66). Other environmentalists agreed with Parenteau,⁵⁶ while industry representatives argued the reverse (Hearing 97-H34: 67 – 70; 516 – 528).

Although not discussing the Illinois mud turtle, House subcommittee member Edwin Forsythe (R-NJ) engaged the central tension in that case, the distinction between best available information and adequate information (Hearing 97-32: 185 –

186). Similarly, in response to an environmentalist suggestion of the need to eliminate the Secretary of Interior's discretion not to list a species by mandating listing when there is sufficient information, Chafee indicated that there may be problems in determining what sufficient or substantial information means (Hearing 97-H46: 212). There was no clear resolution to the tension that the subcommittee members raised.

A more common critique by industry on listing decisions was voiced by a pet industry spokesperson who maintained that, "Letter writing contests, ex parte communications, political pressures, and reliance upon data, not subjected to the burden of proof and cross-examination of a formal evidentiary hearing produce questionable results" (Hearing 97-32: 98). An agricultural spokesperson also argued for more information prior to species listings (Hearing 97-32: 168 – 174), while another participant cast his similar stance as preferring to preserve the integrity of the listing process, rather than rushing listings through (Hearing 97-H46: 21 – 23). The lack of listings under the new Reagan administration was an extreme cause for concern among environmentalists and the Senate subcommittee (Hearing 97-H34; 97-H46).

Chafee repeatedly addressed the issue of what to favor – species or development – in the event of doubt. Stephen Boynton, a fur industry representative, emphasized the need for FWS listings to be based on sound scientific data, stating that it is not proper to err on the side of the species. Chafee disagreed, stating, "Wait a minute. We are dealing with the Endangered Species Act. Yes; I think we should err on the side of the species" (Hearing 97-H34: 37). In an exchange with other business

⁵⁶See testimony of Kenneth Berlin of the National Audubon Society at Hearing 97-H34: 280 –

representatives, Chafee again explicitly articulated his commitment to err on the side of species protection, even if it meant delaying economic development. He stated that “The problem, as I see it, is that when you are dealing with a thing called an endangered species, you have got to err on the side of preserving it or attempting to do so, and you cannot move as rapidly as ARCO [a mining company] would like you to believe” (Hearing 97-H34: 276).

Among those concerned about delays in listing decisions was Craig Bell, a water developer, who maintained that such delays in listing and critical habitat had adverse economic impacts. Bell claimed that the delays could be traced to political interference with FWS and recommended action on the basis of existing information (Hearing 97-H34: 269 – 271; 309 – 314). This testimony was anomalous, as most industry representatives advocated delaying listing to obtain sufficient information, while environmental representatives advocated prompt listing based on available information.

In terms of the lack of listings, Mitchell placed the blame squarely on the administration. When discussing the administration’s listing priority system, the senator quipped: “I guess when you don’t list anything, it doesn’t make any difference what your priority is...” (Hearing 97-H34: 300). The lack of ESA implementation and delayed listings by the administration was a more general concern among environmentalists and citizens throughout Hearings 97-H34 and 97-32. An industry spokesperson also advocated prompt listing and delisting processes (Hearing 97-H46: 293 – 316).

To redress these problems, environmentalists advocated a more aggressive species review program and increased ESA funding. The Nature Conservancy argued that compiling adequate information would lead to fewer conflicts between species and development. William Blair of TNC predicted that with more funding for status reviews the truly rare species could be ascertained and other areas cleared for development (Hearing 97-32: 178). Environmental representatives also noted the need for adequate ESA funding to insure that necessary scientific studies were conducted (Hearing 97-H34: 51 – 55; Hearing 97-32: 225; Hearing 97-32: 373). Chafee engaged Parenteau on such a claim, asserting that, even with more funding, it might be difficult to reach a conclusive scientific finding. Parenteau agreed, and stated that matters sometimes come down to a judgment call and that he supports the expertise of FWS (Hearing 97-H34: 59). Chafee did not shy away from action in the face of such disagreements, rather he urged erring on the side of species protection (Hearing 97-H34: 276).

Consultation. Other criticisms were voiced about FWS decisions regarding consultation. FWS officials disclosed that 1.5% of all informal and formal consultations resulted in jeopardy. Although some regarded the low rate of jeopardy findings as a sign of success, Sen. Mitchell took it as a sign that Section 7 was not being rigorously implemented.⁵⁷ Another concern regarding Section 7 was the question of what action FWS should take in the face of scientific uncertainty. Patrick

⁵⁷In hearings, Sen. Chafee, FWS Director Robert Jantzen, FWS Associate Director Ron Lambertson, and the National Audubon Society characterized the low rate of jeopardy findings as evidence of the ESA's success (Hearings 97-H34 and 97-32). On the House floor, subcommittee member Edwin Forsythe marshaled the low number of jeopardy decisions that had been reached over the past three years as evidence that consultation was working (1982 Floor: 12958-59).

Parenteau of the National Wildlife Federation recommended the invocation of Section 7d, to proceed with a proposed action without making irreversible commitments so as to enable the adoption of alternatives if consultation resulted in a jeopardy finding (Hearing 97-H34: 51 – 55). In contrast, industry representatives criticized FWS and NMFS as overly precautionary and burdensome to economic activities. One example was a National Oceans Industry representative, who strongly criticized NMFS decisions. The representative suggested that reasonable evidence be required prior to protective actions, as the interruption of oil and gas exploration efforts in Alaska was spuriously based on the fear of disrupting bowhead whales (Balaena mysticetus). In his view,

...under the Endangered Species Act, the way it has been enforced, imaginary and possible doubts as to the safety of a species have been used to prevent otherwise legitimate operations and to cause considerable monetary damage (Hearing 97-32: 350).

He suggested that the Act be amended “to make its application reasonably predictable and clearly based on rational processes and factual data” (Hearing 97-32: 352). House subcommittee chairperson John Breaux apparently agreed, accusing NMFS of making decisions based on little or no data (Hearing 97-32: 465). Breaux was likely holding NMFS to an adequate science standard, rather than the best available science standard mandated by the Act.

Also embracing an adequate science standard were water developers and utility companies, who complained about the scientific content of biological opinions produced in the course of consultation, which they considered to be of questionable validity (Hearing 97-H34: 269 – 271; Hearing 97-32: 652). Multiple water developers argued that FWS was using the consultation process to allocate water for endangered

fish (Hearing 97-H34: 269 – 271; Hearing 97-H34: 271 – 273). They also criticized the delay of projects because of consultation. One industry representative blamed the infinite data-gathering as both unfruitful and the cause of delay:

We have found that very often the international data gathering process serves very little biological ends, but instead, winds up simply in project delay. Very often we find that the biologists have no end in sight for the gathering of data but very often gather data just for the gathering of data itself (Hearing 97-H46: 192).

This is a very different position than the stance taken by some business interests on the need for more scientific information prior to listing. Alternatively, an environmental representative wanted consultation to be extended when there is insufficient information. According to this participant, if consultation was not extended, the applicant or action agency would have no incentive not to commit irretrievable, irreversible investments and alternative options are therefore foreclosed (Hearing 97-H46: 196 – 198).

Critical habitat. Environmentalists continued to promote the designation of critical habitat for endangered species, but requested that it be separated from listing processes. As economic analysis was required for critical habitat designation, those analyses were holding up listings. Economic interests also advocated critical habitat in some instances. The critical habitat issue relates to the precautionary principle in several ways: first, the separation of listing and critical habitat may be considered both precautionary and non-precautionary, as it will expedite listing but may compromise habitat protection. The advocacy of critical habitat by economic interests indicates that a precautionary approach can accommodate development, to some

degree, as proceeding with best available information may provide for some areas to be cleared for economic development.

Among the environmentalists advocating the separation of listing and critical habitat was Michael Bean of the Environmental Defense Fund (Hearings 97-H34: 283; 97-32: 155 – 168; 97-H46: 210-213). William Blair of The Nature Conservancy recommended that critical habitat be an option, not a mandate, but that critical habitat not involve economic considerations (Hearing 97-32: 174 – 180; Hearing 97-H46: 25 – 26). Blair was also concerned that critical habitat determination would delay listings and supported proposed language requiring critical habitat designations to be “prudent and determinable” (Hearing 97-H46: 93 – 99).

This argument intersects somewhat with the promotion of critical habitat by industry representatives. Rodger Pearson of the South Dakota Department of Agriculture appeared before the House subcommittee and described the tremendous economic damage caused by prairie dog colonies. Pearson advocated critical habitat designation to alleviate economic concerns by determining what areas were protected for the ferret (Chapter VI). Prairie dog control would consequently be permitted on colonies outside the ferret protection areas, in Pearson’s estimation.

Another industry advocate for critical habitat designation was Gary Kugler, of the American Fur Industry. Kugler opposed the proposed language that critical habitat be “determinable,” as it may hinder habitat designation. Such designation was imperative, according to Kugler, as habitat destruction is a primary cause of imperilment (Hearing 97-H46: 440 – 446). Pearson and Kugler were not alone among

economic representatives in advocating critical habitat designation to promote certainty for economic interests.⁵⁸

On the floor, Breaux noted the need to address the critical habitat/listing issue. His solution was to stipulate that critical habitat designations be required to meet the “prudent and determinable” test, as well as involving economic considerations. In contrast, listings would be solely based on biological considerations (1982 Floor: 12957). The urgency of the listing situation was underscored by other legislators,⁵⁹ including Rep. Norman Lent (R-NY), who declared that, “No longer will bureaucratic footdragging keep a threatened or endangered species off the list” (1982 Floor: 26188). Similarly, Rep. David Bowen (D-MS) indicted the current Department of Interior as purposefully seeking to delay listing actions (1982 Floor: 12961).

Bowen expressed his support for critical habitat designation and the propriety of economic considerations in such decisions. As disparate groups had argued in the hearings, Bowen maintained that critical habitat designation benefited environmentalists and developers alike,

Designation of critical habitat furthers both the concerns of development groups (who thus are better able to evaluate the risk of a proposed project) and environmentalists (who thus know better where to focus their efforts at protection and recovery) (1982 Floor: 12961).

In the Senate, Steve Symms (R-ID) insisted that critical habitat should be narrowly designated as “those essential ecological elements necessary to a species’ survival” (1982 Floor: 13183).

⁵⁸House subcommittee chairperson John Breaux noted that prior to the 1978 amendments, business interests were concerned when critical habitats were not designated, as that led to uncertainty about what areas would be restricted in the future (Hearing 97-32: 184).

How did precautionary arguments factor in the legislative outcome?

The committee reports were a mix of precautionary and less cautionary measures. The bobcat decision was overturned and critical habitat was distanced from listing. The following findings were drawn from the final conference report, but earlier reports contained much of the same language (Senate Report 97-418; House 97-567).

On the issue of takings, critiques of the bobcat decision ultimately carried the day. The final conference report provided for the Interior Secretary to decide “no detriment” based on the “best available biological information derived from professionally accepted wildlife management practices.” The Secretary of Interior and states would not be required to make population estimates (Conference Report 97-835 in 1982 Floor: 24151). In this decision, Congress rejected the double standard that environmental representatives had advocated in hearings. While the environmentalists wanted increased rigor in delisting procedures so as to err on the side of species protection, the committee concluded that the best available information standard applied to protective and non-protective actions.

To avoid listing delay, listings could be unaccompanied by critical habitat designation if such habitat was not “prudent and determinable” at the time of listing. This raised the bar on the information required for habitat designation and provided increased agency discretion over critical habitat, with the goal of insuring that listing

⁵⁹Another example of a legislator characterizing the listing situation as urgent is Rep. Roy

was not delayed. This poses an interesting tension for the precautionary principle. Surely, precaution would require an effective shield for imperiled species, such as habitat protection. However, precaution would also require early listing, which should not be delayed due to the intricacies of critical habitat determination (Conference Report 97-835).

Finally, the committee upgraded the statutory language on listing to preclude economic considerations from entering into listing decisions. The final language required that Secretary of Interior determine listing decisions “solely on the basis of the best scientific and commercial data available.” Insertion of the word “solely” was purposeful, aimed at preventing or redressing the politicization of the listing process (Conference Report 97-835 in 1982 Floor: 24148).

The conference report was firm that there was to be no discrimination against lower life forms in establishing listing priorities. Rather, listing priority guidance was to be “scientifically based.” Further, recovery plans were to be prioritized for species most likely to benefit from those plans and who were in conflict with economic activities. Both of these measures may be traced to criticisms by a variety of actors, including the very visible scientific panels, that FWS was discriminating against obscure species and that such discrimination was scientifically indefensible (Conference Report 97-835).

In sum, the 1982 debates highlighted the importance of the best available science versus sound science standards. This arose in the bobcat issue, FWS listing

decisions, and consultations. The result was mixed. In the bobcat issue, while actors in 1978 advocating less protection for endangered species had advocated sufficient, or sound science thresholds for protective actions, actors in 1982 advocating less protection promoted the use of the lower best available science standard. The difference was that the bobcat issue involved the question of what scientific data is necessitated before take of species is allowed. While industry and state representatives wanted a lowered bar on science before take was allowed (best available science), environmentalists wanted a heightened one (sound science). The amendments sided with non-precaution, in lessening the data requirements prior to revoking protections.

The sound versus best available science tension was also highlighted in discussions on FWS listing decisions. Subcommittee Chairman Chafee's response was that policy should err on the side of species protection, and the best available science standard in the ESA was unchanged.

Contentious consultations also highlighted this tension. While there was a mixed response to the extremely low number of jeopardy findings by FWS, both FWS and NMFS were criticized by industry for requiring mitigations on projects whose impacts on endangered species were uncertain.

1988 AMENDMENTS

Congressional concern at administrative delay and inaction set the tone for the 1988 amendments. ESA opponents and proponents struggled with the issue of how

much science is needed before protection is conferred to a species. This was a common theme in multiple battlegrounds including consultation, listing, takings, and translocation.

Which key ESA battlegrounds involved precautionary arguments?

Participants in hearings and floor debates explored a variety of matters in 1988. Important issues included water use conflicts, relating to consultation; sea otter translocation; raptor exemptions from the act, incidental take issues, and turtle excluder devices (TEDs), which all related to taking; and the protection of candidate species and statutory delisting, which is connected to listing. These matters touched on the precautionary issue of what action to take in the face of scientific uncertainty. A particularly clear example of this was the debate over the NMFS proposed requirement for TEDs.

Consultation. The main water use conflict in these hearings was between water developers and endangered fish in the Colorado and Green Rivers. A secondary conflict was the fate of the endangered Concho River water snake. Both issues entailed disagreement over what protections FWS should require when there were uncertain impacts by economic development on species survival.

In the first case, one of the most contentious issues was whether the protection of endangered fish required FWS to regulate minimum stream flow requirements. Water developers criticized the agency when it mandated stream flows (Hearing 99-10: 60 – 65), while environmentalists criticized the agency when they did not (Hearing 99-10: 65 – 75). Water developers promoted non-stream alternatives, such

as fish ladders and hatching fish for reintroduction (Hearing 99-10: 60 – 65; 288 – 290). Colorado state senator Ted Strickland opposed any reduction in water rights under state law (Hearing 99-10: 294 – 298). Some of the groups denied that water depletion could be correlated to the decline of native fish and bird species (Hearing 99-10: 183; Hearing 99-70: 97 – 119; Hearing 100-96: 42 – 44).

One water development spokesperson explicitly opposed the precautionary approach by criticizing FWS for its policy of erring on the side of species. Where there was scientific uncertainty, according to this perspective, FWS was placing the burden of proof on project sponsors by requiring mitigation fees.⁶⁰ Another group, the Western States Water Council, also questioned the scientific basis for FWS decisions and suggested creating a mechanism for resolving scientific disputes when disagreement between experts exists or when FWS biological opinions lack scientific evidence (Hearing 99-10: 265 – 273).

The National Water Resources Association offered a similar recommendation after indicting FWS implementation of the ESA. This group recommended that the agency provide detailed decision documents, including all data and analyses pertaining to listings, critical habitat designation, and jeopardy opinions, to expose the decisions to public scrutiny (Hearing 99-10: 288 – 290). Other industry spokespeople advocated a scientific review process when disagreement among experts existed in listing and jeopardy decisions (Hearing 99-10: 52 – 56). They argued that in the case

⁶⁰According to William McDonald of the Colorado Water Conservation Board and Western States Water Council, "...in the face of uncertainty about a sound scientific basis, the burden of that uncertainty has been placed entirely upon the applicant. In other words, the [Fish and Wildlife] Service has been taking the position that if it doesn't know, it will simply assume without any facts whatsoever that jeopardy will result, and they have proceeded accordingly" (Hearing 99-70: 12).

of insufficient data during consultations, there should be a requirement to generate data within a certain time period (Hearing 99-70: 170 – 180).

On the other side, the environmentalist critique of FWS's "Windy Gap" approach indicated strong allegiance to the precautionary approach, where FWS permitted mitigations and monetary compensation by water developers rather than mandating stream flow minimums. The National Wildlife Federation criticized the program, arguing that reduction in water flows by dams and other developments were causing fish and bird imperilment, yet no western water project had even been stopped by ESA. Under Windy Gap, FWS was not issuing jeopardy opinions and not trying to prevent further water depletions. According to NWF, FWS was allowing further water developments without sufficient data on the impacts of these developments to fish species. In short, "...FWS is trying so hard not to stand in the way of water development that in the process they are failing to provide the protection requiring by the ESA" (Hearing 99-10: 73; Hearing 99-70: 17 – 18).

A variety of national environmental groups concurred, describing the FWS approach as erring on the side of water development and against species protection when scientific uncertainty existed. They considered such a trend risky and inconsistent with the ESA's goal of preventing extinction and argued that FWS should make decisions based on scientific information available and risks faced by species (Hearing 99-10: 209 – 250; Hearing 99-70: 15 – 16). An employee of the Colorado Division of Wildlife sided with this perspective, asserting that sufficient scientific knowledge exists to deduce that water developments are imperiling fish (Hearing 99-70: 385 – 388).

When NWF spokesperson Dr. Robert Davidson presented his group's perspective to the House subcommittee, subcommittee chairperson John Breaux argued that, if an accurate depiction, FWS was contravening the ESA by acting in a non-precautionary way:

Mr. Breaux: Maybe somebody ought to challenge that. I am not encouraging litigation, but you are saying the Fish and Wildlife Service is saying the law allows them to issue a no-jeopardy opinion based on whatever evidence they have—maybe a little bit, a whole lot, or a medium amount—but I am sure they are not issuing a no-jeopardy opinion and saying, 'We don't' know a lot about it, but we don't think there is jeopardy.'

Mr. Davison: Well, I would be happy to provide the biological opinions. I think that is what they are saying.

Mr. Breaux: Well, if they are saying that, they are legally incorrect, and if they are legally incorrect, somebody ought to call them on it. Perhaps Congress ought to call them on it. Perhaps we in Congress ought to call them on it. We have the statute that says a no-jeopardy opinion cannot be made just by flipping a nickel and saying, 'No jeopardy,' or 'jeopardy.' It has to be backed up by the best available data, and whether it is backed up by adequate information and evidence is a question that generally is the subject of litigation because it is a subjective ruling on the part of somebody in the Department (Hearing 99-10: 80 - 81).

This indicates that at least Breaux thought the lack of precaution in FWS no-jeopardy findings contravened the ESA. Further, Davison indicated that FWS policy had not always been non-precautionary and that the shift away from a precautionary approach could be traced to the Reagan administration. According to Davison,

Prior to 1981 the FWS judged that because of the cumulative adverse effects of water development no further depletions from the upper basin should occur until data demonstrated that such water losses would not be harmful. Since 1981 the FWS has judged that although the cumulative effects of water developments are adverse, every water-depletive project should be allowed to proceed while data are gathered on the impacts to the fishes (Hearing 99-70: 158, emphasis in original).

In the agency's defense, FWS Regional Director Galen Buterbaugh maintained that the approach Davison was critiquing had been terminated, but that the lack of data available for biological opinions hindered their ability to provide reasonable and prudent alternatives to proposed projects (Hearing 99-70; 60 – 69).

The second significant water use conflict involved the Concho River water snake. In the later set of hearings, this was both contentious and centered around the question of what to do in the face of inadequate information. FWS initially found that the project jeopardized the water snake, then later agreed to allow the project to proceed. Senate subcommittee member John Chafee criticized Dunkle on this issue, indicating that he was disturbed that FWS was searching for ways to accommodate water projects such as Stacy dam. Chafee stated, "The name of your agency is the Fish and Wildlife Agency; it is not the Dam Construction Agency" (Hearing 100-96: 17). Chafee then asked Bean about the same issue. Bean agreed that FWS was accommodating development excessively and thereby risking the Concho River water snake's future. As Bean put it:

I regard the solution in Stacy Dam as a roll of the dice. The Fish and Wildlife Service has bet the future of the Concho water snake upon some untested, untried, experimental and widely criticized techniques that may or may not spare that species from jeopardy. Whether it will or will not work will not be known for many years, by which time the dam will have been completed and the construction will have occurred (Hearing 100-96: 18).

According to Bean, there were other, less risky alternatives that had been rejected because they were more costly for the developer. In an earlier hearing, Rep. Charles Stenholm (R-TX) had argued that not completing the dam increased the snake's

chance of survival by a mere 5-10%. Moreover, the Concho River water snake issue was akin to that of the snail darter, as the needs of the snake were overriding people's need for water. Stenholm then went on to argue that extinction is natural and can't be stopped (Hearing 100-8: 12 – 16).

The Concho River water snake situation echoed the tension over the Windy Gap approach in the Upper Colorado River. The issue was the same, FWS initial jeopardy findings becoming transmuted into no jeopardy findings with mitigations. This was a cause for concern for environmentalists, as the mitigations erred on the side of the project proceeding in the face of scientific uncertainty, rather than the reverse, as the precautionary principle would stipulate.

Translocation. The most visible reintroduction/translocation case in the 1988 amendments was that of the California sea otter. Sea otter supporters advocated establishing a second population of otters off the coast of California to hedge against extinction, lest the entire population be struck by an oil spill. Sea otter opponents, of which there were several, contested this strategy, arguing that otters depleted shellfisheries and would impede oil and gas development. The former group was mainly Friends of the Sea Otter who indicated that there were fewer sea otters existing than were present at the time of listing. The Friends group also described oil spill incidents that could have decimated sea otters and almost occurred. They underscored the urgency of a translocation strategy (Hearing 99-10: 112 – 141; Hearing 99-70: 245 – 247).

Shellfishing interests and oil and gas organizations opposed the translocation plan. Steven Rebeck of "Save our Shellfish," which comprised shellfishers and other

fishing interests, argued that the California sea otters were not imperiled. Further, the proposed translocation site, San Nicolas Island, had rich shellfisheries that would be depleted by the otters. (Hearing 99-10: 85 – 106; Hearing 99-70: 347 – 358). Rebeck accused FWS of not using the best scientific information in choosing the reintroduction site.⁶¹ Kit Armstrong of the Western Oil and Gas Association also questioned the propriety of translocation, given the potentially significant impacts to oil and gas companies. Armstrong deemed the EIS that FWS had prepared on the project inadequate (Hearing 99-10: 106 – 112; Hearing 99-70: 243 – 245).

FWS pledged early on that translocated sea otters would be designated experimental to minimize economic impacts (Hearing 99-70: 219 – 221). Indeed, FWS adopted the policy that most experimental designations would be non-essential. The agency provided the following information to the Senate subcommittee: “As a matter of policy, the FWS agrees that the vast majority of experimental populations will be ‘nonessential.’ As stated in the preamble to the Section 10(j) regulations, ‘[a]n ‘essential’ experimental population will be a special case, not the general rule.’ (49 FR 33885, 33888—August 27, 1984)” (Hearing 99-70: 283).

The conflict was a straightforward disagreement over the application of the precautionary principle. Friends of the Sea Otter clearly wanted precautionary measures to be taken (i.e., translocation to San Nicolas Island) to avert extinction. Conversely, shellfishing and oil and gas interests wanted better information before translocation, including consideration of alternative sites with less economic conflict

⁶¹Rebeck claimed that, “The FWS research staff has repeatedly overlooked research contrary to its own beliefs. FWS biologists have not utilized the best scientific information in choosing San Nicolas Island as its preferred translocation site” (Hearing 99-10: 88).

(Hearing 99-10). In addition, the FWS stance that most reintroduced populations would be designated non-essential was not a precautionary posture.

By the time the issue reached the floor, a formula for sea otter translocation was promulgated without opposition. The sea otter translocation agreement contained some precautionary elements. Otter translocation was accepted as a hedge against the species' extinction from an oil spill, but the translocation was designed to accommodate economic interest as much as to serve the sea otters.

The House subcommittee and committee members promoted sea otter translocation on the floor as necessary to protect sea otters from extinction caused by oil spills.⁶² Former House subcommittee chair John Breaux discussed the sea otter translocation provision at length. He stated that the bill's provision for translocation included assurances to economic interests about limitations on economic restrictions. Zonal management was to be established. The formula permitted the full protection under the ESA and MMPA for the parent population of the translocated, while members of the translocated population and individuals crossing into the management zone (the "otter-free zones") would have lessened ESA protection.

According to Breaux, the plan represented a balance between the need to reintroduce sea otters to bring about recovery and the need to provide certainty to economic interests on the extent of restrictions they would face. This "balance" was struck despite Breaux's recognition of the scientific uncertainty surrounding the

⁶²For example, see testimony of committee chair Walter B. Jones (D-NC) at 1988 Floor: 20992 – 20993, and committee member Norman Lent (D-NY) at 1988 Floor: 20993.

translocation effort (1988 Floor: 20988 – 20992). The measure was adopted without contention.

Takings. Another contentious issue in the 1988 hearings was an exemption for the sale of raptors, which dated back to 1978. Participants in peregrine falcon reintroduction efforts and captive wildlife breeders testified in support of continuing the exemption, while environmentalists criticized the raptor exemption for its potential threat to birds in the wild. Of the former, the Peregrine Fund noted the success of peregrine falcon reintroduction and credited the raptor exemption with helping because it facilitated private breeder participation in falcon recovery (Hearing 99-10: 154– 159; Hearing 99-70: 227 – 230). Another proponent of the raptor exemption, Frank Bond of the North American Falconers Association, argued that because of delay in the FWS regulation, the raptor exemption had only been in effect for a year. It was therefore too soon to determine whether it was having adverse impacts on raptors in the wild (Hearing 99-10: 159 – 168). In addition, Dr. Patrick Redig of the University of Minnesota urged the subcommittee to continue the exemption, given the lack of measurable impact it had on falcons in the wild (Hearing 99-70: 437 – 440).

Alternatively, James Leape of the National Audubon Society wanted the raptor exemption eliminated. He maintained that if the US continued to allow selling captive bred peregrine falcons, increased numbers of peregrines would be taken from the wild and sold on the black market. In his view, the exemption for captive bred falcons provided a front for illegally taken falcons to be sold (Hearing 99-10: 149 – 154; Hearing 99-70: 234 – 235). The Hawk Mountain Sanctuary Association sided

with Leape, in their precautionary stance that there was no evidence that the raptor exemption was benefiting wild populations by reducing pressure on them (Hearing 99-10: 308 – 310).

The raptor exemption conflict was not straightforward in terms of the precautionary principle. Certainly, those who promoted continuing the exemption framed their argument in terms of facilitating captive breeding to reintroduce raptors – especially peregrine falcons – into the wild. In their view, a dissuasion of private breeders from participating in the reintroduction effort through elimination of the raptor exemption would present a risk to raptors. Alternatively, those arguing against the exemption saw a greater risk in the potential theft of wild raptors if the exemption remained.

A second issue relating to taking was advocacy by several industry spokespeople to widen the provision for incidental take. The American Petroleum Institute complained that habitat conservation plans imposed more burdensome standards for the private sector to obtain incidental take permits than for federal agencies. In its view, HCPs involved higher standards of protection, given the mandated inclusion of candidate and proposed as well as listed species. The Institute therefore suggested providing site-specific incidental take permits to developers and advocated providing more discretion to the Secretary of Interior to determine the geographical size and duration of a project. Further, they recommended that Congress obligate the Secretary to follow 10(j) to provide greater certainty for landowners, presumably with the aim that reintroduced species would not be protected from take (Hearing 99-10: 176 – 178; Hearing 99-70: 26 – 28).

Some congressional participants suggested that incidental take could sometimes benefit species. For example, NMFS Director William Gordon argued that providing for incidental take of sea turtles by fishermen would enable the agency to compile value information on this threat (Hearing 99-10: 21 – 29). This was effectively an argument that permitting take could allow an assessment of the threat posed by that take. An oil company argued similarly. The company was angered over the impediment of its activities in the Arctic, which were obstructed by NMFS on behalf of bowhead whale protection. A spokesperson for the Sohio Alaska Petroleum Company argued that the presence of bowhead whales in the Arctic was preventing oil and gas exploration, costing millions of dollars, and resulting in delays. Yet, according to the company, oil and gas was not imperiling bowheads, so NMFS should allow oil and gas exploration to proceed based on available information. In their view,

It must be realized that we will never have complete knowledge in this or any other area. The research questions that can be approached have been carried out, and it is apparent that there are no significant short-term impacts on bowheads from offshore petroleum operations. The major questions that remain – those dealing with long-term effects – can never be answered in the abstract...The only way to answer on the major outstanding questions is to drill the offshore areas and monitor for effects. If effects are detected, mitigative measures can be implemented (Hearing 99-10: 264; Hearing 99-70: 469).

Their argument was that NMFS should allow the risk (oil and gas exploration) to proceed so its impacts on bowheads could be studied. The oil company clearly diverged from NMFS's precautionary approach, as did the other actors seeking increased incidental take.

The Wildlife Legislative Fund of America also maintained that take of a protected species could sometimes benefit that species. Expressing concern about judicial limitation of agency discretion on regulating take of endangered species, the organization averred that take could benefit species. Their logic was,

Biologists maintain that limited harvest of these species can be a beneficial management tool. It can provide biologists with scientific data useful in planning other management programs, can help to build good landowner relations with conservationists and can help to keep certain species from becoming habituated to man, thus reducing chances for conflicts with humans (Hearing 99-10: 277; Hearing 99-70: 475).

One could alternatively interpret this view as conflicting with the precautionary principle, by advocating take of a species for largely political reasons, despite that species' imperilment.

A third issue relating to taking was the dominant issue in 1988, that of turtle excluder devices. NMFS had proposed a regulation for mandatory use of the turtle excluder or trawling efficiency devices (TEDs) by the shrimping industry in the south Atlantic and Gulf states.⁶³ TED research had been mentioned by NMFS at earlier hearings in 1978 (Hearing 95-39: 22 – 25) and in 1981 (Hearing 97-H34: 102 – 117).

⁶³The NMFS originally tried to market the TED as a device to make shrimp trawling more efficient by excluding by-catch. Robert Roe of NMFS testified in 1985, "NMFS is continuing its efforts to promote voluntary use of the TED. Because of its ancillary benefits to shrimp trawling operations, we believe that shrimp fishermen will adopt use of the device voluntarily thereby reducing the incidental take and mortality of sea turtles" (Hearing 99-10: 27; 99-70: 301). Voluntary use did not catch on, and estimates in 1987 put voluntary use of TEDs at less than 1% of the U.S. shrimping fleet (See Testimony of James Douglas of NMFS who estimated that 300-400 of approximately 17,200 shrimp trawlers in the U.S. had been outfitted with TEDs, Hearing 100-8: 343).

Conservation and animal protection groups expressed their dismay about the delay of sea turtle listings as early as 1978.⁶⁴

In 1988, the TED debate centered on whether NMFS had an adequate scientific basis for its proposed regulation. Representatives of the shrimping industry and legislators from shrimping states refuted NMFS claims that shrimping posed a significant threat to sea turtles, that TEDs were effective, and that TEDs did not significantly harm shrimpers economically. Conservation organizations aligned with NMFS, arguing that the agency had extensive scientific data to support the regulation.⁶⁵

The pattern was that those supporting the TED argued that it was fully supported by science, while those opposing the device refuted its scientific basis. In one hearing alone, nine out of eleven actors involved in the TED debate employed such arguments.⁶⁶ This tactic carried over to floor debate. It is interesting that nowhere did NMFS or the conservationists challenge the shrimping industry's logic that, where there is uncertainty surrounding the impacts of shrimping on sea turtles, sea turtle protection should be withheld. These actors, deliberately or unconsciously,

⁶⁴See testimony of Christine Stevens of Society for Animal Protective Legislation at Hearing 95-H60: 218 – 220; Hearing 95-39: 32 – 44; and Tom Garrett of Defenders of Wildlife at Hearing 95-39: 29.

⁶⁵House Hearing 100-8 is the highpoint of the TED debate in hearings. This debate did not reach the Senate subcommittee.

⁶⁶In House Hearing 100-8, nine of 11 actors who provided oral testimony argued for or against the TED on the basis of sufficient or insufficient data (Pro-TED: Evans, Douglas, Weber, Allen. Anti-TED: Tauzin, Ortiz, Rayburn, Crosby, Grunert. Those not making these arguments, but still discussing the TED, were Thomas and Rose). Written testimony included submissions from several conservation groups who advocated the TED regulation without addressing the adequacy of its scientific basis.

seemed to prefer pitting scientific argument against scientific argument, rather than meeting the challenge of what to do in the face of scientific uncertainty.⁶⁷

On the floor, polarized debate continued on the TED requirement, with legislators alternately representing that science justified TED or that a lack of science justified delay.⁶⁸ Arguing against TED delay, Rep. Robert Lindsay Thomas, (D-GA) employed strongly precautionary logic that also emphasized an ecologic perspective,

Do they [sea turtles] serve as a major predator to the jellyfish that harass humans and clog shrimp nets? Are they a key element in the food chain of other living creatures? We do not know. But we do know that when they are gone, we will not be able to bring them back. Many shrimpers understand that. They know that when we tinker with the interdependent nature of the ocean ecosystem, we can devastate their catches (1988 Floor: 36102).

Thomas's statement is an explicit testimony to human ignorance as a basis for protective action.

There were other moments of self-awareness in floor debate, including TED delay proponent Rep. Kika de la Garza's statement (D-TX) (1988 Floor: 36106) that "I say everybody is entitled to have his own figures, every researcher is entitled to

⁶⁷Conservationists and NMFS may have simply assumed that science was on their side, as they both cite extensive research conducted on the question of TEDs, sea turtles, and shrimping (See especially, Michael Weber of the Center for Environmental Education, Hearing 100-8: 81 – 82, 373 – 401, 459 – 460, 547 – 659, 675 – 715). Conversely, opponents of TEDs did not set forth new research, rather they questioned the research provided by NMFS and independent scientists. The argument was fundamentally about sufficient versus insufficient data. Notably, Senate subcommittee member Max Baucus (D-MT) explicitly mentioned this type of disagreement in an exchange with FWS over grizzly bears in Montana. He stated, "The trouble here is you get people on both sides of the issue saying there is insufficient data. You have the Defenders of Wildlife who feel there is insufficient data. You get people in the timber industry out there who deal with the bear who feel there is insufficient data. Nobody trusts the data. At some point we are going to have to have trustworthy data so we know what we are doing here" (Hearing 99-70: 24)

⁶⁸See 1988 Floor: 35030; 35032; 35036 – 35038; 36087; 36088; 36094 – 100; 36104; 36109-110; 36112-113.

write his own paper. That is the study. Put them off to the side.” In addition, Rep. George Brown (D-CA) was aware of the push and pull of arguments about the state of scientific knowledge. He pointed out that, thirty years previous, there had been an extensive debate about the impacts of leaded gasoline on human health. In his view,

You can always argue that we do not have enough research, and you are right. We do not have enough research. You can always argue that there is an adverse economic impact, and you are right. There is an adverse economic impact. What you have to do is to have rational people balance these factors and come to a conclusion that represents the best for public welfare (1988 Floor: 36111).

While a step forward, in terms of reflectiveness, this approach is still wanting, as the term “balance” has been slippery in ESA debates. Brown clearly wanted the TED requirement to be promptly adopted, but he did not explain his concept of “public welfare,” which translates to the Lasswellian “common interest” concept. A more useful discussion might have been whether the common interest is served or undermined by adopting a precautionary approach that errs on the side of species protection. It is not clear, for instance, whether simply because a measure is “balanced,” defined as a compromise measure, that measure will be in the public interest.⁶⁹

Without explicit discussion of the precautionary approach and the possibility of integrating it in a consistent way to endangered species policy, there was little escape from this impasse. The ultimate resolution was that in exchange for a National

⁶⁹In fact, Brown discussed at some length how the compromise measure proposed on TEDs was necessarily balanced as it had been agreed to by Walter Jones. In Brown’s view, Jones was not a radical environmentalist. Furthermore, the TED requirement had come from the Reagan administration, so it was necessarily a balanced one. Brown asked whether his fellow legislators would rather see an imbalanced measure come from radical individuals such as himself (1988 Floor: 36111). Although an interesting and probably honest representation, Brown’s arguments do not provide much forward movement in terms of defining the common interest.

Academy of Sciences study on sea turtle conservation needs, TED proponents agreed to a delay in the TED requirements (1988 Floor: 25478 – 2547900). Committee chair Walter Jones described this as a fair compromise on the sea turtle/shrimping conflict and others agreed (1988 Floor: 25477 – 25478; 18576-78).

Listing. Concern about candidate species was first raised by environmental representatives in the 1982 hearings.⁷⁰ Concern had transformed to panic by the 1988 hearings, as candidate species had gone extinct while awaiting listing.⁷¹ The list of candidates stood at 3,000 species,⁷² compared with a total of 969 listed species, of which only 399 were native to the U.S. (USFWS Box Score 1987). Conservationists set forth a prescription for precaution that entailed close monitoring of candidate species to detect declines. Where declines were found, they suggested use of the emergency listing procedure.

Swift action on behalf of candidate species, like the protection of threatened species, provides a strong foundation for a precautionary approach in the ESA. Candidate species are not yet listed and threatened species are not yet endangered, but both merit protection to avoid the risk of their extinction. Further, John Fitzgerald of Defenders of Wildlife offered a multiple-species approach to the backlog of candidate species that was an early version of contemporary proposals. He suggested an emphasis on “Group listings, by ecotype or state” as a more cost-effective way to

⁷⁰See Dr. Faith Thompson Campbell (Hearing 97-H46: 32) and others (Hearing 97-32: 373 – 462).

⁷¹See testimony of Michael Bean of the Environmental Defense Fund (Hearing 100-8: 53 – 55; 100 –96: 12 – 14); John Fitzgerald of the Defenders of Wildlife (Hearing 100-8: 55 –57); Scott Feierabend of the National Wildlife Federation (Hearing 100-8: 68); Natural Resources Defense Council and consortium of environmental groups at Hearing 99-10: 254 – 256.

address the backlog (Hearing 100-8: 220). In general, the cost-effective nature of earlier protective actions was repeatedly suggested by conservationists.

Monitoring candidate species to assure they did not go extinct awaiting listing was never contentious. On the floor, several legislators mentioned the need for this measure.⁷³ House subcommittee chairman John Breaux (D-LA) and others stated that the provision was a response to testimony in hearings that multiple species had become extinct while awaiting listing (1988 Floor: 20988 – 20992; 35032). Rep. Silvio Conte (R-MA) noted that 5,000 species under consideration for listing was a cause for concern, and increased vigilance over listed and unlisted species was needed (1988 Floor: 35031 – 35032). Sen. Al Gore Jr. (D-TN) and Mitchell (1988 Floor: 23927) believed that candidate monitoring, in conjunction with emergency listing to protect candidates, should help ensure timely protection of species that need it. According to Gore,

The monitoring of candidate species has been a matter of concern for many years. This legislation establishes a system to increase monitoring of species awaiting listing as either listed or endangered. This should help prevent the decline or loss of species by encouraging timely steps for protection. If necessary, existing procedures for emergency listing also may be used to prevent a significant risk to an endangered species (1988 Floor: 18584-85).

However, House subcommittee member Don Bonker (D-WA) didn't think that problem was quite solved, as candidates "receive no protection at all during the lengthy and bureaucratic determination process." He then asserted, "While this concern has not been directly addressed by the bill before us, I feel that this issue

⁷²This figure is according to FWS Director Frank Dunkle (Hearing 100-8: 122).

⁷³See Walter B. Jones (D-NC) at 1988 Floor: 35029 - 35030. Also see 1988 Floor: 36087 – 36088.

merits some attention in the near future” (1988 Floor: 36118). This testimony indicates that the candidate monitoring and emergency listing provisions were based on the perspective that earlier intervention was required to avoid extinctions.

Bonker’s testimony demonstrates that some legislators were willing to go further, and protect species while they were candidates. Candidate protection was promulgated as a formula for earlier intervention in a species’ decline and was a precautionary move.

Listings. Extensive criticism of FWS listing decisions within the hearings was succeeded by moves on the floor to statutorily delist certain species. The targets of these delisting attempts were the leopard darter (*Percina pantherina*) and grey wolf, while moves to preclude listing the Concho River Water snake were also attempted. These maneuvers were met with resolute opposition by a suite of legislators arguing that those were technical decisions which should be made by FWS and that the ESA must not be destroyed by local interests. Despite vociferous critiques of FWS decisions being based on insufficient information, the legislators opposing statutory listing decisions were siding with agency discretion, even when their critics argued that FWS erred on the side of species protection. The tumult behind the delisting issue can be traced to an implicit struggle over the precautionary principle. Statutory listing decisions were opposed by those arguing that Congress lacked the expertise to make these decisions.

First, attempts were made to statutorily delist the leopard darter. Wes Watkins (D-OK) (1988 Floor: 35041) argued that, “I know for a fact that the leopard darter is not threatened.” He believed the listing was based on erroneous scientific information and arose out of the efforts of opponents to the Lukfata Dam, which would imperil

the darter. He criticized FWS as unresponsive and his amendment was aimed at sending a message to the agency that they must act on delisting proposals (1988 Floor: 36088 – 36091, 36093).

Rep. Don Young (R-AK) was sympathetic and agreed with Watkins that the leopard darter had been listed without scientific research. He supported sending FWS a message about the impropriety of their listing and delisting decisions. Research should predate not postdate listing: “They should do the research and then put it on the endangered species list, not put it on the endangered species list and then do the research” (1988 Floor: 36091 - 36092). In the Senate, James McClure (R-ID) echoed Young’s stance. McClure stated,

I believe we should do a better job of investigating whether or not an animal or bird or plant is actually in immediate danger of extinction before we proceed with listing. The argument that any delay in listing will necessarily mean the disappearance of the species forever is pure rhetoric. Just look at the thousands of plants and animals already on the list and it does not take long to realize that the biggest delay of all is probably caused by the rush to list after a cursory and sometimes biased and subjective examination of whether or not a problem actually exists (1988 Floor: 18581).

These legislators thereby advocated a non-precautionary approach. They argued for more scientific research prior to listing, a prescription for delay. McClure’s argument directly addresses the issue of delay by denouncing those who favor expeditious listing as engaging in “pure rhetoric.” His perspective discounts the testimony in hearings and on the floor that delays in listing were causing the extinction of candidate species.

Second, the water use conflicts that appeared throughout the hearings were followed by an attempt to expedite the Stacy Dam water project by precluding the

listing of the Concho River water snake. Rep. Charles Stenholm (D-TX) proposed this measure and continued the criticizing the FWS as he had voiced in hearings. He noted the “needless and oppressive requirements placed upon it by the Fish and Wildlife Department” (1988 Floor: 35039). Stenholm compared the water snake issue to that of Tellico,⁷⁴ and proposed an amendment to preclude the snake from listing. However, when he received a pledge from committee chairman Walter Jones that Jones would encourage FWS to be flexible regarding the Stacy Dam, he withdrew the amendment (1988 Floor: 35046).

Third, Rep. Ron Marlenee (R-MT) attempted to have the grey wolf delisted. This was in response to his strong disagreement of the wolf recovery plan and reintroduction into Yellowstone (see Chapter V). Marlenee withdrew the amendment upon promises by House Public Lands subcommittee chair Rep. Bruce Vento (D-MN), that they would examine the grey wolf reintroduction issue (1988 Floor: 35042 – 35049).

Many legislators opposed statutory listing decisions, arguing that FWS should determine which species were imperiled. Although this group of legislators did not argue about whether it is appropriate to err on the side of species protection, they advocated agency discretion. This discretion would enable FWS to protect species in the face of scientific uncertainty by providing the agency with the autonomy to arbitrate scientific disputes.

⁷⁴Stenholm quipped, “Some of you may be acquainted with the Concho snake episode. If not, simply substitute the snake with the snail darter and Tellico Dam. Remember that Federal fiasco of 10 years ago? We still haven’t lived that down” (p. 35039).

Leading the pack was House subcommittee chair Gerry Studds (D-MA), perhaps the most vocal opponent of such moves (1988 Floor: 35030). Studds (1988 Floor: 36092) argued that delisting decisions should be left to the experts and, in reference to Congress,

there are few bodies on the face of the Earth less competent to make that judgment [on delisting the leopard darter] than this one. We are not comprised for the most part of scientists who have spent a good many years studying this creature or any other creature.

Likewise, House subcommittee member Thomas Carper (D-DE) argued for a technical system where technical people make listing decisions (1988 Floor: 35035). Other legislators expressed concern over the precedent set “by having Congress step forward and reverse or manipulate that process the biological scientists and experts have determined as to which species should be on the endangered species list” (1988 Floor: 35035).⁷⁵

Part of the concern was that local interests were determining the fate of species and thus weakening a national law. Rep. Theodore Weiss (D-NY) (1988 Floor: 36087) cautioned that “We need to preserve and improve the effectiveness of the Endangered Species Act, rather than picking it apart with exceptions for local interests.” This is distinct from a simple scientific expertise issue, as he was concerned about the potential for Congress to engage in ad hoc exemptions from the

⁷⁵Rep. Claudine Schneider’s (R-RI) perspective was that listing and delisting decisions are technical, and therefore beyond abilities of Congress. Rather they “should be entrusted to those with proven expertise in biology and wildlife conservation” (1988 Floor: 36092). Jones felt similarly, stating that “Those types of technical scientific decisions should be left to the fish and wildlife experts in the US Fish and Wildlife Service and National Marine Fisheries Service,” and “If objective scientific data supports such a petition, the Fish and Wildlife Service can and will delist the species” (1988 Floor: 36091).

ESA. Weiss and others opposing Congressional delistings and preclusion from listings abided by the perspective that decisions to allow species to go extinct should not be taken lightly. Weiss' apprehension was over the risk statutory delistings posed to the strength of the Act. The concern in 1978 had been that policy-makers should avoid jeopardizing any species, as their extinction entails unknown but potentially grave consequences for humans. Both perspectives embrace a precautionary approach by advocating vigorous protection in the face of uncertain consequences.

How did precautionary arguments factor in the legislative outcome?

Elements of the committee reports relating to the precautionary principle involved candidate species (listing) and TEDs (taking). First, the conference report and final language of the amendment provided a monitoring program for candidate species. In addition, prompt use of the emergency listing procedure was mandated when declines in the status of candidate species were detected. Monitoring of recovered species was also required, but assigned a low priority (Conference Report 100-928 in 1988 Floor: 24284).

Secondly, TED use was delayed until May 1, 1989 in offshore areas, and May 1, 1990 in inshore areas. A National Academy of Sciences study was prescribed, with a focus on enhancing the scientific basis for sea turtle conservation and identifying the most significant threats to sea turtles (Conference Report 100-928: 24285).

In sum, the 1988 amendments constituted one step forward and one step back for the precautionary principle. Expanding the scope of consideration to candidate

species was a precautionary move, particularly when coupled with the emergency listing requirement. Conversely, the TED was a compromise measure with unclear implications.

The sound science versus best available science tension continued. In Windy Gap and Concho River water snake consultations, environmentalists and legislators criticized the non-precautionary nature of the FWS policy, while water developers criticized the mitigations as baseless, rather than being founded on sound science. FWS terminated the Windy Gap policy, but the no-jeopardy finding in the snake issue was not redressed.

Takings issues, including exemptions from the ESA for the sale of captive-bred raptors and TEDs to reduce sea turtle take by shrimpers, included precautionary issues. For the raptor exemption, which was approved, the implications for the precautionary principle were mixed, as the exemption might facilitate reintroduction (a precautionary outcome) and/or pose a threat to wild raptors (a non-precautionary outcome). The TED debate more directly addressed the continued problem of ascertaining the point at which there is sufficient information to justify protective actions. This tension was increasingly recognized by congressional participants but was ultimately not resolved. The outcome was a compromise measure providing for more studies on how to conserve sea turtles, alongside continued delay of the TED requirements.

The rejection of attempts at statutory delisting which resulted from the wolf and water use controversies was a clear victory for the precautionary principle. Legislators resisted those actions, seemingly on the basis that Congress lacked the

expertise to make such decisions, and that the administrative processes in place rigorously evaluated whether a species merited protection.

Conclusion

There is ample evidence that the precautionary principle's elements can be found throughout the history of the ESA. It is also apparent that there are those who support precaution, and those who oppose it. At present, this debate is mostly implicit. For almost three decades, many legislators, administrators, and non-governmental actors have claimed that science is on their side. Armed with this perspective, those advocating a certain action have generally argued that sufficient data exists to support that action. Those opposing a certain action have generally argued that insufficient data exists to support an action.

The design of the 1973 statute was essentially precautionary, with its protection for species not yet endangered but at risk of becoming so in the future. Similarly, its requirement that states meet a list of rigorous obligations before acquiring autonomy over listed species was precautionary. Although the statute came under fire in 1978, Congress acknowledged the importance of obscure species alongside more charismatic ones. It designed an exemption process that, arguably, was probably the best Congress could do in terms of precaution if it were to promulgate an exemption procedure at all. In 1982, the bobcat issue was perhaps the clearest example of a precautionary choice, and Congress did not resolve that issue on the side of bobcats (or other species). Instead, Congress effectively stated that it

would not demand more data to justify delisting than required to justify listing. However, Congress again affirmed the importance of obscure species by prohibiting taxonomic discrimination in listing prioritization. In 1988, Congress again contravened the precautionary principle by delaying protective action for sea turtles and the accumulation of “additional information” on sea turtle conservation. In that same year, Congress provided for monitoring and emergency listing of candidate species, a precautionary move.

Possibly the most important aspect of endangered species policy regarding the precautionary approach was that, by 1978, the honeymoon was over for FWS. After Tellico, the agency increasingly came under fire. Through to the most recent legislative period, FWS has been regularly criticized for listing decisions (as alternately premature and delayed), delayed delistings, jeopardy findings, and critical habitat designation. Most of these criticisms censure FWS for either using insufficient data or requiring more data than that currently available to justify or delay protective actions. In short, FWS is simultaneously criticized for erring on and against the side of species protection.

In addition, while the majority of participants left implicit the question of what to do when there is scientific uncertainty, there have been important exceptions from the beginning. In the first Senate hearing on the 1973 Act, Dr. Raymond Fosberg and other environmental representatives presented legislators with a strongly precautionary perspective. Legislators did not have to be told, however, that extending protection to threatened species, who were not yet facing extinction, was perhaps the most important facet in the design of a new, better approach to species

protection. In later amendments, highly visible legislators, such as John Chafee, explicitly argued that endangered species actions must err on the side of species protection. In 1988, the TED conflict highlighted the centrality of the question of precaution, but Congress failed to provide resolution on what to do in the face of scientific uncertainty.

There is, then, a reasonable basis for suggesting that endangered species policy could be improved if we were to more explicitly and rigorously discuss how the precautionary principle fits with this issue area. The principle is not a marginal idea, being foisted upon the mainstream by radical environmental sects. Rather, it is an internationally accepted paradigm in environmental law (Johnston et al. 1999; Shipworth and Kenley 1996; EC 2000; Foster et al. 2000) and the U.S. would do well to respond to the precautionary charge. Explicit dialogue on whether a precautionary approach should be applied to the ESA would enable opposing sides to make their cases in a more direct way. This would be an improvement over the ESA's history of species opponents and proponents simultaneously arguing that science is on their side.

CHAPTER VIII

DISCUSSION OF THE ESA'S LEGISLATIVE HISTORY

In the previous three chapters, I presented the results from quantitative valuational coding and qualitative content analysis of the ESA's legislative history as it relates to ecosystem protection and the precautionary principle. In this chapter, I discuss those results. I first revisit the theoretical framework outlined in Chapter III, focusing on which values are clashing in the ESA and how that clash of values informs the use of the ecosystem and precautionary themes in ESA policy. I then consider how alternative approaches would have been deficient in answering the questions posed in this dissertation. Next, I synthesize my findings by relating the legislative history to each of the ESA's key battlegrounds as a basis for prescribing improvements in the Act's implementation. After recommending specific improvements in these battlegrounds, I turn to those facets of ESA discourse and implementation that I neglected in my study. These "neglected battlegrounds" are ESA underfunding, state and federal tensions, and litigation. I consider how these problem areas complicate prescriptions for increasing the ESA's efficacy in preventing extinction.

Clashing values in the ESA

In this section, I revisit the theoretical framework outlined in Chapter III, based on the findings from the previous three chapters. These chapters demonstrated

that at least five values clash in ESA discourse, and that those values relate to ecosystem protection and precautionary themes.

In Chapter III, I outlined a problem orientation approach, based on a synthesis of the policy sciences problem orientation, contemporary problem definition literature, and research on people's values. The aim of my research was to isolate the goals or values advocated by actors, alongside the outcomes they promoted. Isolating the values actors use is especially important, given Lasswell's maximization postulate that focuses on a diverse range of values utilized as a means and/or sought as an outcome.

I found that the principal values clashing in ESA discourse were economic, ecologicistic, utilitarian/protective, moralistic, and scientific. There was frequent use of ecologicistic and utilitarian/protective arguments in 1973 and subsequent amendments. The consistent importance of the economic value indicated that economic concerns have long been a part of ESA debate. In 1988, the moralistic value was second only to the economic value in terms of frequency. Scientific values were less frequently articulated, but still a consistent part of the discourse. In addition, articulation of these values provides a guide to congressional intent given the close alignment between words (values) and deeds (outcomes promoted) (Chapter V).

As the qualitative analysis illuminated, these values were invoked in the course of discussions on ecosystem and precautionary concerns. While the ecosystem theme was analogous to the use of the ecologicistic value, the qualitative analysis indicated that ecosystem arguments sometimes involved moralistic concerns about future generations and utilitarian concerns about human survival. The ecosystem and

precaution themes therefore had an intersection in that the same values – ecologicistic, moralistic, and utilitarian/protection – were sometimes employed in both. The quantitative analysis also demonstrated this point (Table 5-5).

The metaphor that best summed up the linkage between these three values and the precautionary and ecosystem themes was Aldo Leopold's (1966: 190) quote that "To keep every cog and wheel is the first precaution of intelligent tinkering." In other words, due to human uncertainty about the value of different species (i.e., cogs and wheels), and the way they interrelate (i.e., the machine of which the cogs and wheels are a part), we should be cautious to not lose species to extinction. Various speakers argued such out of a moral duty to future generations and out of concern that human impacts on ecosystems and human-caused extinctions would pose a threat to human welfare and survival.

Indeed, actors used utilitarian arguments to justify strengthening or weakening species protection. This dual use of utilitarian arguments indicates the problems in a simple economy versus environment dichotomy. I began this study dissatisfied with the simplicity of this dichotomy, and the valuational coding provided a basis for replacing it with a more refined picture of the clash of values in ESA discourse.

A range of actors employed a variety of values to sometimes seek the same end, the betterment of human welfare. The variation may be in the time frame within which each actor was operating. My study does not provide a basis for analyzing actors' time frames. However, as discussed in Chapter III, it is reasonable to suspect that variation in values and outcomes sought by actors interested in utilitarian

concerns is explained by their different time frames and apprehensions (or lack thereof) about irreparable harm.

The valuational coding and qualitative analysis also provide a basis for revisiting the preliminary map I outlined in Chapter III, which was a matrix of Lasswell's decision and social processes. I focus on those parts of the map that were the focus of this study: the values and strategies adopted by actors in different decision processes (Table 3-1).

1973 Legislative History

First, the legislative history of 1973 can be seen as the termination and appraisal stages for earlier endangered species legislation in 1966 and 1969, as well as the intelligence, promotion, and prescription phases of the 1973 Act. Actors argued that the earlier legislation was deficient in meeting the escalating extinction crisis. The need to meet this crisis with a far-reaching and effective law was based on ecologicistic, protective/utilitarian, and moralistic arguments. Because the 1973 Act did not yet exist, the invocation and application phases are moot. The primary participants in 1973 were those actors promoting the repeal of earlier endangered species legislation and its replacement with a strong ESA. Consequently, the scope values and strategies for this year reflect these active proponents of the ESA more than those actors seeking to limit the proposed legislation's reach (Table 8-1).

Table 8-1. Scope values and strategies used by actors in ESA discourse across different decision processes in 1973.

Decision Process	Social Process	
	Scope values	Strategy
Intelligence	Key legislators and proponents sought scientific, ecological, and utilitarian/protective values.	Actors collected examples of charismatic species in need of protection and developed an intelligence basis for arguing that there is an extinction crisis.
Promotion	Key legislators and proponents of the ESA sought scientific, ecologicistic, utilitarian/protective, and moralistic values. Proponents of industry and states rights tried to limit the reach of the legislation, seeking economic values.	Actors emphasized inadequacy of earlier acts and affirmed the need to view species as part of the web of life, thereby employing ecologicistic metaphors.
Prescription	The ESA was an expression of aesthetic, ecologicistic, scientific, and naturalistic values, as stated in its purpose. The economic, utilitarian/protective and moralistic values were not part of the prescription.	The ESA was seen by legislators as a way to safeguard ecosystems by limiting the impact of economic growth to protect the “cogs and wheels” that comprise ecosystems. Elements of the ESA (e.g., the threatened category) were precautionary.
Invocation	N/A	N/A
Application	N/A	N/A
Termination	Key legislators and proponents of the ESA promoted the repeal of earlier legislation, seeking scientific, ecologicistic, utilitarian/protective, and moralistic values.	ESA proponents sought the repeal of earlier legislation by replacing prior acts with a strong ESA.
Appraisal	Key legislators and proponents of the ESA, in reviewing prior legislation, were seeking to promote scientific, ecologicistic, utilitarian/protective, and moralistic values.	Actors portrayed earlier legislation as inadequate to the escalating crisis of species extinction.

1978 Legislative History

Next, in 1978, the central focus was on detractors of the ESA, who promoted weakening the law. Defenders of the Act marshaled ecologicistic, utilitarian/protective, and moralistic arguments. Given that the Tellico controversy shaped the 1978 legislative history, I outlined the perspectives of the ESA detractors and supporters in a dichotomous way. However, these actors employed a variety of scope values in each stage (Table 8-2).

Table 8-2. Scope values and strategies used by actors in ESA discourse across different decision processes in 1978.

Decision Process	Social Process	
	Scope values	Strategy
Intelligence	Industry and legislators promoted the economic value. Environmentalists and legislators promoted ecological, utilitarian/protective, and moralistic values.	Actors developed an information basis for arguing variously that the ESA was or was not a threat to economic growth.
Promotion	Industry and legislators argued for economic values. Environmentalists and legislators argued for ecological, utilitarian/protective, and moralistic values.	ESA detractors characterized the law as a threat to the U.S. economy and argued against protection of obscure species. ESA defenders characterized the law as compatible with economic growth and necessary for human survival, all species need protection.
Prescription	The 1978 amendments accommodated the economic value by providing the Endangered Species Committee, but limited the exemption process for ecological and utilitarian/protective reasons.	By providing an exemption process, a release valve would help to resolve intractable conflicts. However, because of the value of all species and ecosystem relations, the exemption process must be carefully designed and cautiously executed, in Congress' view. The God Squad can be viewed as both precautionary and non-precautionary.
Invocation	Aggressive implementation by FWS aligned with ecologicistic, utilitarian/protective, and moralistic values to protect species.	In FWS view, ESA must be energetically administered given the mandate of 1973.
Application	Supreme Court <u>TVA v. Hill</u> decision was a blow to economic value, bolstered ecologicistic and utilitarian/protective values.	Supreme Court interpreted ESA and 1973 legislative history as providing categorical protection to endangered species.
Termination	Exemption process added promoted economic values, but was limited out of deference to ecological values.	Replace the categorical prohibition on jeopardy by federal agencies with exemption process.
Appraisal	ESA detractors used economic basis for appraising the law, while ESA proponents invoked ecologicistic, moralistic, and utilitarian/protective values to justify the ESA's strength.	ESA detractors characterized ESA as not working, limiting economic growth, and diverging from congressional intent of 1973. ESA proponents characterized ESA as working well, not limiting economic growth, and necessary to counter extinction.

1982 Legislative History

By 1982, the conflict over the ESA had significantly abated. However, despite the relatively low conflict, the tensions that existed in 1978 re-appeared in muted form. Industry and legislators again aligned against other legislators and environmentalists, with the former arguing for limitations on the ESA's reach, and the latter defensively arguing for not changing the ESA. A new pattern, of actors arguing to limit the ESA on the basis of economic and scientific values clashed with the trio of ecological, utilitarian/protective, and moralistic values. Scientists' use of ecologicistic, utilitarian/protective, and moralistic arguments in a human survival frame also factored, especially in the appraisal and promotion phases (Table 8-3).

Table 8-3. Scope values and strategies used by actors in ESA discourse across different decision processes in 1982.

Decision Process	Social Process	
	Scope values	Strategy
Intelligence	Bobcat decision opponents and water developers sought economic values. Their adversaries promoted ecological values.	Compile information to illustrate unfairness of ESA to industry; compile information to show ESA is flexible.
Promotion	Industry, legislators promote economic and scientific values in ESA implementation. Environmentalists, legislators, and scientists argue ecological, utilitarian/protective, and moralistic values in rigorously implementing ESA.	Industry and states argue for a best available science standard prior to removal of protection (e.g. for bobcat) while environmentalists argue for sound science standard.
Prescription	The 1982 amendments accommodated the economic value, in reversing the bobcat issue and providing for experimental reintroductions, and the scientific value, by requiring listing only involve biological considerations.	Use a best available science standard to decide whether to remove protection, lesson restrictions on reintroduced animals. Listing should only be biologically determined. The bobcat decision was a non-precautionary move by Congress.
Invocation	FWS under-implementation of ESA promotes economic value.	Administrators use a passive strategy to avoid significant impacts of the ESA.
Application	Bobcat decision prioritized scientific value.	Court decided that more information (sound science) is needed when removing species protection.
Termination	Response to bobcat decision prioritized economic value.	Repeal CITES policy of listing species on best available information standard.
Appraisal	ESA detractors argue for more scientific and economic values. ESA defenders promote the Act as necessary for ecological, utilitarian/protective, and moralistic values.	Industry and legislators focus on the law's disruption of economic growth. ESA proponents emphasize the law as necessary for human survival.

1988 Legislative History

Finally, in 1988, conflict again erupted, primarily over wolf reintroduction and the proposed requirement of TEDs on shrimp boats. A new development in 1988 was the frequent use of the moralistic value. A principal concern was over the extinction of candidate species and the need to actively manage other species (e.g.,

wolves and sea otters). As was the case in 1978, the central tension was between the alliance of industry and legislators trying to limit the reach of the Act and environmentalists and legislators trying to preserve the ESA. However, the sea otter conflict revealed that economic and ecologic values could be merged, thereby indicating that the conflict over ecosystem management is not a disagreement over the principle, but over its implementation. The sea turtle controversy revealed a convergence between economic and scientific values on the side of those opposing TEDs, and the use of ecologic and scientific values by those supporting TEDs (Table 8-4). The TED conflict, more than any other controversy, pointed to the need for an explicit discussion on whether the precautionary principle should be applied to the ESA.

Table 8-4. Scope values and strategies used by actors in ESA discourse across different decision processes in 1988.

Decision Process	Social Process	
	Scope values	Strategy
Intelligence	ESA detractors sought economic values; ESA defenders promoted ecologicistic, utilitarian/protective, and moralistic values.	Detractors developed information base for showing, through water use conflicts, sea otter and wolf reintroduction, that ESA is limiting economic growth. ESA defenders developed information base for advocating strong Act.
Promotion	ESA detractors promoted economic values, especially in shrimping ranching industry. Environmentalists and legislators emphasize moralistic values to resist change of ESA more than in previous years. Promotion of scientific value by both sides in TED debate.	ESA detractors unsuccessfully try to statutorily delist species. ESA supporters argue that delisting is a technical task not suited for Congress. TED opponents and proponents both argue that science is on their side.
Prescription	The language on recovery planning accommodated the ecologicistic, utilitarian/protective, and moralistic values of protecting all species. The delay on TEDs accommodated the economic value.	Protect candidate species to ensure that no more extinctions of unlisted species occur (precautionary). Don't discriminate between species based on taxonomy. Delay TED requirements (non-precautionary), but require sea turtle conservation study as a compromise.
Invocation	FWS implementation of wolf recovery plan draws criticism, based on economic value. ESA proponents defend the need for this recovery plan and sea otter translocation, based on ecologicistic arguments.	Restore the wolf to effect ecosystem restoration, use public lands for the recovery effort.
Application	Wolf discourse involved economic values clashing with ecologicistic ones.	Congress was initially concerned about the Minnesota wolf decision, but wolf discourse subsequently centered on implementation of the grey wolf's recovery plan.
Termination	N/A	N/A
Appraisal	ESA detractors appraise the law on the basis of its limitation of economic value, while the Act's supporters appraise it on the basis of their moralistic concerns over the continued extinction of candidate species and the need for active management of other animals.	ESA detractors evaluate the ESA, and FWS, as needing reform for economic reasons. ESA supporters evaluate the law as deficient in protecting candidate species, in need of longer reauthorization period.

The previous three chapters have therefore demonstrated a clash of multiple values. It is not simply economics versus the environment in the ESA. To reduce the conflict to economic growth versus environmental protection is to ignore the multiple values that actors use in complex ways to promote their preferred outcomes. For instance, the economic value sometimes aligns with scientific and ecologicistic values. These latter two values also sometimes align against the economic value.

Given their frequency, at least five values – economic, ecologicistic, utilitarian/protective, moralistic, and scientific – have been a prominent part of ESA debate. Often the triumvirate of ecologicistic, utilitarian/protective, and moralistic values were used together, in an ecosystemic, precautionary frame, to challenge those promoting the economic goal of reducing the ESA's strength. This trio of values has, in fact, been a winning combination as the ESA's proponents have fended off most of the attacks at the core of the Act: the need to protect all species, including obscure ones, to effect ecosystem protection.

Alternative approaches

The results from my study provide insight on alternative approaches to examining ESA conflict. These alternative approaches include explanations based on political party, legislative voting patterns, interest group politics, and geography. First, conflict regarding the ESA cannot be explained by political party. Chapter V demonstrated that there was generally a negligible difference between the values

promoted by actors of different political parties. This was true for the use of all five leading values.

Second, although rollcall votes have some merit in providing a picture of ESA debates, they are deficient in that the votes are primarily oriented toward outcomes, not processes. They do not demonstrate how arguments and values are used against and with each other, and how those patterns can inform a program of reform. In 1973, the ESA passed unanimously in the Senate and was opposed by only 12 members in the House.¹ This near unanimity disguises the valuational patterns and conflicts over ecosystem and precautionary themes in predator control, which taxa to protect, and states' rights. The same can be said for 1982, where there was no rollcall vote. After a minimal floor debate in the House and Senate, the conference report was accepted.²

In 1978, while the rollcall pattern was more complex than in 1973 and 1982, it still does not hint at the level of discord surrounding this set of amendments, nor does it explain the resulting outcome. In the House, 384 legislators voted for and 12 legislators voted against the amendments,³ which principally consisted of the addition of the Endangered Species Committee as an exemption process. In the Senate, 94 legislators voted for and only 3 legislators voted against the amendments.⁴ However, specific amendments to the 1978 legislations demonstrated a higher level of conflict. For instance, Rep. Duncan's amendment to exempt Tellico from the ESA passed on

¹Congressional Record, 1973, pp. 25662 - 42916.

²Congressional Record, 1982, pp. 26189.

³Congressional Record, 1978, pp. 38160.

⁴Congressional Record, 1978, pp. 21603.

the House floor, by a vote of 231 to 157.⁵ The exemption was reversed by the conference committee. In contrast, an attempt in the Senate to limit the ESA's reach by amending its purpose to be "consistent with the welfare and national goals of the people of the United States" was met with overwhelming defeat, by a vote of 10 to 86.⁶

Drawing from the rollcall votes that the 1978 conflict was articulated on the floor and resolved in conference committee still does not tell the heart of the story. It reveals that, while exemptions were passed in the House, they were resisted in the Senate. However, the resulting conference did not amount to a drastic weakening of the Act. Rather, a careful exemption process was added that was based fundamentally on the recognition that all species are significant and the decision to imperil those species is a serious matter worthy of exhaustive administrative remedy. Without examining the hearings, floor debate, and committee reports in 1978 and exploring how arguments were used against each other in this discourse, there would be little basis for understanding the design of the Endangered Species Committee or how it relates to ecosystem and precautionary themes.

In the 1988 legislative history, the reauthorization bill was passed in the House without a rollcall vote in 1985,⁷ but was not passed in the Senate. When floor debate resumed in 1987 and 1988, there were several rollcall votes. First, Rep. Wes Watkins (D-OK) proposed an amendment to statutorily delist the leopard darter. This

⁵Congressional Record, 1978, pp. 38150-51.

⁶Congressional Record, 1978, pp. 21355.

⁷Congressional Record, 1985, p. 20993.

was defeated on December 17, 1987 by a margin of 136 to 273.⁸ The second vote was on the amendment proposed by Rep. Solomon Ortiz (D-TX) to delay for two years the implementation of the TED requirement on shrimp boats. This amendment was defeated 147 to 270.⁹ A third rollcall vote was on an amendment proposed by Rep. Stanford Parris (R-VA) requiring that the taking of plants must be intentional and knowing to be a violation of the Act. The amendment was rejected 151 to 266.¹⁰ Subsequently, the reauthorization bill was passed almost unanimously in the House, with 399 representatives voting for the bill and 16 voting against it in December 1987 and nearly unanimously in the Senate in July 1988, by a margin of 93 to 2.¹¹ The conference report was accepted in both houses without a rollcall vote.¹²

The recorded votes in 1988 therefore demonstrated that there was high level of conflict, with relatively frequent voting and a multitude of legislators voting for and against proposed amendments. The substance was in the conference report, however, as the previous conflict on the floor dissipated by the time the report was introduced and subsequent votes were nearly unanimous. Examination of the floor debate and committee reports were therefore imperative for understanding the dimensions of the conflicts and how they were resolved. For example, although the

⁸Congressional Record, 1988, pp. 36093-94.

⁹Congressional Record, 1988, pp. 36113-14.

¹⁰Congressional Record, 1988, pp. 36117-18.

¹¹Congressional Record, 1988, pp. 36119 (House), 19280 (Senate).

¹²Congressional Record, 1988, pp. 23931 (House), 25487 (Senate).

Ortiz amendment was rejected on the floor, delayed requirement of the TED was a part of the conference committee report (Report 100-928 in 1988 Floor: 24285).

Third, interest group politics are an important part of ESA discourse. Chapters V-VII demonstrated that environmental and industry representatives prominently participated in the initial passage of the Act and its subsequent amendments. The quantitative analysis indicated that in 1973-1982, there was no significant difference in participation by environmentalists versus industry. In 1988, there was significantly more participation by industry. These findings conflict with the literature, which suggests that industry was caught unaware by the passage of the ESA (e.g., Souder 1993).

There were clear alliances between the arguments employed by these non-governmental participants and legislators, in terms of values expressed and specific arguments about ecosystem protection and the precautionary principle. Indeed, numerous instances indicate the alignment between arguments invoked by non-governmental and governmental actors on these two themes. In terms of ecosystem protection, in 1973 the interconnection of species within ecosystems was articulated by prominent legislators and corroborated by environmental and animal protection organizations. In 1978, these same sets of actors were united in ecosystem arguments in opposition to the perspective that some species were insignificant and therefore did not merit protection. The environmental groups and prominent legislators also opposed the FWS listing priority guidance in 1982 and the agency's Windy Gap policy in 1988 on the same ecosystem protection basis.

Regarding the precautionary principle, in 1973 environmentalists and legislators both voiced concern for imperiled species based on the perceived threat of extinction to human survival, despite scientific uncertainty. In 1978, the same argument was employed by these actors in opposition to the industry/legislator perspective that obscure species did not deserve ESA protection. However, in 1982, environmentalists were not noticeably supported by legislators in their attempt to further the precautionary principle by arguing that reliable population estimates should be required prior to permitting the take of bobcats. Still, in that same year, scientists' arguments on the importance of protecting all species, given their ecological relationships and implications for human survival, seemed to resonate with highly visible legislators. In 1988, the TED debate also featured a united front between some legislators and environmental advocates arguing in a precautionary way that there was adequate evidence to justify the TED regulations versus industry and legislators who allied to argue that there was inadequate evidence to justify these regulations.

In addition, environmentalists and industry representatives allied with non-legislative and non-federal actors in Congress. In 1972/73, environmentalists and administrators were allied in their criticisms of predator and rodent control. Both groups also advocated for a threatened category as a precautionary measure. In 1978, environmentalists and administrators were again united in their belief that the Act was working, despite the Tellico controversy. In 1982, environmentalists and scientists espoused similar arguments regarding the listing priority guidance. In 1988, sea otter

translocation was advocated by both environmentalists and administrators as a precautionary measure to prevent the otter's extinction.

Industry allied with water development agencies, states, and local governments in their criticism of the ESA. In the Tellico controversy in 1978, TVA (a federal agency), industry supporters of the Dam, and local governments allied to push for dam closure and to remove protection for "insignificant" species. In 1982, industry and western state representatives were united in their opposition to the bobcat court decision and their critiques were translated into amendments in that year. In 1988, industry and water development agencies were again allied in their complaints about the ESA's impact on water development and, consequently, economic growth.

This pattern of non-governmental spokespeople employing arguments similar to key legislators, and vice versa, and alliances between industry, environmentalists and non-legislative government actors are important parts of the ESA's rich legislative history. However, the central purpose of this dissertation is examining the ESA discourse as it relates to congressional intent. Although Congress is undoubtedly informed by non-governmental actors, and their participation in discourse may be an important part of the context for understanding congressional intent, the issue of congressional intent ultimately rests with what legislators say and do in floor debate, hearings, and committee reports.

Fourth, geography has featured in ESA conflict throughout the Act's legislative history. Some general patterns arise, although each one has its exceptions, as shown in Chapters VI and VII. In 1973, western legislators were critical of

attempts to restrict predator and rodent control. In 1978, congresspeople from the southeast were fairly united in their vocal opposition to the injunction of Tellico because of TVA v. Hill and western legislators objected to extensive proposed habitat for grizzly bears. In 1988, the southeastern delegation was critical of the TED regulation. In that same year, the western delegation was concerned about wolf reintroduction into Yellowstone and ESA limitations on water projects. Alternatively, throughout the ESA's history, legislators from the northeast and midwest of both political parties have consistently defended the Act from weakening amendments.

In sum, four alternative approaches – political party, rollcall voting patterns, interest group politics, and geography – provide additional insights on the problem orientation approach. None of these approaches on its own could have contributed to our understanding of the congressional intent within the ESA discourse values and on the ecosystem and protection themes to the degree of the problem orientation approach.

Key battlegrounds

In this section, I revisit the ESA battlegrounds identified in Chapter II, review the legislative history for each, and comment on potential ways that ecosystem and precautionary approaches could benefit endangered species policy. Without changing a word in the statute, I suggest that FWS could effectively prevent species extinction and protect biodiversity by implementing some reforms.

I emphasize administrative changes given the lack of congressional action on the ESA. The statute has not been reauthorized since 1988, and that authorization expired in 1992. Since then, despite much congressional interest in the Act, it has not been touched. To be pragmatic about ESA improvements, one should focus on administrative strategies for changing the act, including revising regulations that have effectively repealed sections of the act (e.g., agency denial of critical habitat's recovery function).

Listings

Listing has been the source of much debate from initial passage of the Act through to the 1988 amendments. Concerns include which life forms should be eligible for listing; which species should be prioritized for listing; the quality of agency listing decisions, and protection of candidate species.

The question of which taxa should be eligible for listing under the ESA has been a part of the discourse since initial passage of the Act. In 1973, the decision to extend protection to a wide pool of life forms, including threatened species, full species, subspecies, distinct population segments, and look-alike species was based in precautionary logic. Congress thought it better to protect species (or subspecies or populations) sooner rather than later, to increase the ESA's efficacy in preventing extinction.

By 1978, the Tellico controversy caused many participants to question whether all species should be eligible for listing. The congressional response was that

no species were insignificant because of their role in ecosystems and that the value of these species could not be ascertained due to a lack of scientific knowledge. If any species was to be knowingly jeopardized, a Cabinet-level committee was to be convened to consider the issue in detail. In 1982, industry representatives continued their attempt to limit the extent of the ESA by restricting which life forms would be eligible. Throughout the legislative history, Congress retained the initial ESA's commitment to protecting a wide array of life forms, via both the threatened and endangered designations. In 1988, FWS testified that it would make listings on an "ecosystem-wide" basis, therefore allowing the agency to protect species on an ecosystem scale. The agency did not expand on this issue.

A second question was whether the listing of some species should be a higher priority than others. This was largely a consideration of various listing priority schemes by FWS. In 1978, the agency maintained that listing priorities should not be based on taxonomic considerations, because of ecosystem and precautionary reasons. FWS preferred a listing priority scheme that prioritized protecting species who needed it first. This year marked the beginning of FWS's belief that the insurmountable task of species protection required a triage approach. By 1982, however, with the shift from the Carter to the Reagan Administration, FWS reversed itself by advocating a listing priority scheme that favored charismatic vertebrates, claiming that such a policy provided umbrella protections for plants and invertebrates. A wide variety of congressional participants criticized this scheme on the basis that it contravened ecosystem and precautionary protection. Congress forbade the practice by prohibiting the discrimination against species listings based on taxonomy.

A third question concerned the quality of agency listing decisions. From 1978 through 1988, the scientific quality of FWS listing decisions was questioned by industry representatives who argued for a sufficient science standard that would mandate more data prior to listing. Congress did not heed this request, instead electing to preserve the best available science standard in the Act. In 1988, criticisms of FWS listing decisions reached their peak, with legislators attempting to statutorily delist species. For precautionary reasons, Congress rejected those proposals, preferring to keep listing and delisting decisions firmly under the purview of the administrative agencies.

A fourth question was how to respond to species going extinct prior to listing. This issue arose briefly in 1982 and was deliberated upon in 1988. Precautionary logic guided the decision to institute a monitoring system for candidate species and provide for their emergency listing in the event of decline. Seeming to harken back to the earliest ESA debates concluding that, “a stitch in time saves nine,” new oversight established for candidate species was seen by Congress as a way to further the ESA’s effectiveness in preventing extinction.

The legislative history therefore demonstrates that Congress has emphasized since at least 1978 the need to protect all species, whether obscure or charismatic, and has disapproved taxonomic discrimination in listing decisions. The discourse reveals that these legislative actions have been based on ecosystemic and precautionary concerns. These results lead to suggestions for streamlining the listing process. First, applying the ecosystem approach to listing would require prioritizing species whose protection affords the most protection to the greatest part of the ecosystem. An

ecosystem approach to listing would include prioritizing keystone, indicator, umbrella, and other focal species (Noss et al. 1997; Miller et al. 1998/1999). Protecting focal species would safeguard the natural communities those species inhabit (or formerly inhabited) and would provide the most ecological protection given FWS's triage policy. Multiple-species listing packages may be another tool to streamline listing, increase the number of species protected, and accomplish listing in a cost-effective way. If species listed together face common threats, an ecosystem recovery planning process will be achievable. FWS itself has promoted the multi-species listing approach in publications (59 Fed. Reg. 34274; July 1, 1994; USFWS 1997b) and congressional hearings, and this initiative should be encouraged.

Second, the precautionary approach to listing would entail listing species earlier. The 1973 commitment to protecting threatened species and the 1988 commitment to closely watching candidate species to ensure they don't go extinct affirm the need for earlier protection. The FWS practice of placing species on a candidate list, where they may go extinct, would be circumscribed under a precautionary approach. FWS's "passive-aggressive" response to citizen petitions by delaying them and forcing litigation should be abandoned in favor of a cooperative approach, where petitioners actively participate in the status review process by providing full information in exchange for FWS abidance by the statute's deadlines. Litigation occurring at pre-listing stages does not benefit petitioners, FWS, or the species.

Third, the candidate conservation agreement concept, conceived under former Interior Secretary Babbitt, has the potential to facilitate species protection, but those

agreements must provide adequate, enforceable standards that ensure that the species does not continue to decline or go extinct. Speculative, unenforceable agreements are generally incapable of adequately addressing the risks facing candidate species. There is a reasonable basis for this suggestion in the 1988 amendments, with their emphasis on the need to take preventative measures to ensure that candidate species don't "fall through the cracks" via administrative failure to protect them in time.

Critical habitat designation

The legislative history on critical habitat has been largely debated in the context of arguments for and against precaution. It has been embroiled in controversy since the Tellico controversy of 1978. Indeed, the Tellico Dam's impact on the critical habitat of the snail darter was the root of the conflict. Critical habitat for the snail darter and proposed critical habitat for the grizzly bear caused vociferous criticisms of FWS decisions as being without adequate science. ESA critics therefore adopted the view early on that there needed to be a sufficient scientific basis for critical habitat, rather than a best available science standard. Congress responded to criticisms of critical habitat by restricting designations to those parts of a species' range essential to its survival and recovery, requiring consideration of economic impacts, and stipulating that the designation be prudent and determinable.

Therefore, although designating critical habitat must be made on the basis of the best available science (16 U.S.C. §1533 (b)(2)), Congressional changes to the statutory language provide wide discretion for FWS to designate critical habitat. As

discussed in Chapter II, FWS policy currently is to not designate critical habitat on the basis that it adds no protection beyond that provided by the jeopardy standard.

However, the legislative history revealed that, in 1982 several industry representatives and legislators supported critical habitat designation for the certainty it provided to economic interests. Once critical habitat was designated, business interests would have more insurance that their activities in non-critical areas would not be enjoined. As Rep. David Bowen (D-MS) stated, the critical habitat feature of the ESA could therefore serve both industry and environmental perspectives.

Due to the continued controversy over critical habitat, FWS effectively repealed the critical habitat designation administratively. Because it was administratively repealed, it can be administratively reinstated. The original role for critical habitat, as an aid in species recovery, should be regulated back into existence. For one, critical habitat is the law. Secondly, the seeming restrictions, namely prudence, determinability, and economic analysis, could still be employed to promote ecosystem protection and precaution.

The critical habitat concept fundamentally ties together a species with its habitat. Clear recognition in 1973 and throughout the subsequent amendments that habitat destruction presents a significant threat to species and plays a major role in the biodiversity crisis globally suggests the need to move beyond FWS's current policy of having to be coerced into critical habitat designation. Critical habitat designation should consider the species' needs and threats in the context of its ecosystem. Generally, threats to an ecosystem will imperil the species within it. Critical habitat designation should therefore be conceptualized through the lens of ecosystem-wide

protection, as the continued erosion of an imperiled species' ecosystem will likely hinder recovery efforts. Critical habitat for focal species would provide the widest collateral benefits for additional species, and should be prioritized.

While critical habitat designation is controversial, it doesn't need to be. It is enforced through Section 7, and therefore requires federal agency involvement to be triggered. In addition, the designation itself does not impose prohibitions. Instead, the adverse modification standard does. In 1978, FWS correctly asserted such in the context of grizzly bears. Instead of investing time in explaining why a particular designation would be "imprudent," FWS should focus on explaining to the public, especially local publics, that this designation largely does not apply to private parties. Further, the agency should focus on defining the habitat needs of petitioned species to be able to generate critical habitat proposals.

The current agency stance of rejecting critical habitat designation on the basis that it's not "prudent" requires a new reading of the word "prudent," using the filters of the ecosystem and precautionary themes. Safeguarding habitat is the basis for ecosystem-level protection. Precaution would suggest that aggressively protecting an imperiled species' habitat is generally the most prudent method of species protection.

It must also be recognized that FWS is somewhat limited on the critical habitat issue, because of statutory language requiring that this habitat be "determinable" and include economic consideration. On the former point, of determinability, I suggest that FWS reach out to more conservation biologists and other experts to help generate and compile these data to reduce delay, allocate resources more widely, and increase effective habitat protection.

On the latter point, I suggest including both short-term and long-term economic considerations. For example, could stopping a particular development actually save taxpayers money on infrastructure development? It's not clear that development always pays its way and these societal costs, as well as costs accruing from the loss of ecological services and to future generations, should be factored into economic analyses on whether or not to designate critical habitat (See Chapter II discussion on clashing values). These suggestions link to the legislative history's recurring theme of the linkage between ecologicistic and utilitarian/protective arguments.

Habitat conservation plans

HCPs have not been a significant feature of the ESA's legislative history. The exception was the 1982 amendment history where the first HCP, the San Bruno Mountain Plan, was lauded by Congress as a region-wide effort that would enhance the survival of the species it protected. Congress did not articulate how the tension between landowner certainty and the scientific uncertainty surrounding imperiled species would be resolved in habitat conservation planning. As a result, FWS has wide discretion in this field. However, in one of the clearest demonstrations of congressional intent to protect ecosystems, the 1982 conference report indicated that HCPs could serve this ecosystem protection goal. Conservation planning and incidental take permitting should therefore effect ecosystem- and species-level protection.

Regional plans are an efficient approach to private land species protection. However, the ecosystem advantages of these broader plans must be predicated upon a precautionary approach within the HCP's design. The lengthy term of some HCPs should either be reconsidered or be combined with adaptive management strategies that allow new threats to be addressed as new science and information make those threats apparent. This adaptive management approach should include provisions that bind FWS to making changes in the HCP in light of new findings. Further, a strong reading of the harm prohibition has also been recommended by Cheever (1991) as a potential way to increase the ecosystem-protection capacity of HCPs.

As I stated at the outset of this dissertation, private property advocates have been extremely critical of the ESA for its perceived "taking" of private property. HCPs can be considered to be a response to those criticisms and, in fact, the San Bruno Mountain plan discussed in Congress in 1982 was based on concerns about applying the ESA on private property. Requests for broader exemptions outside of the habitat conservation planning and incidental take permitting processes would be squarely at odds with the ESA's mandate of preventing species extinction. I agree with Cheever (1991) that Section 9 is timidly applied, especially on private land, and that has to change. The law should be applied consistently.

As reviewed in Chapter II, private property owners generally have been unsuccessful in seeking compensation from ESA restrictions on land use. This may be because FWS has not zealously enforced Section 9 against private parties, and it may also be a result of the ESA's provision for incidental take of listed species. Private parties should therefore engage in habitat conservation planning. Private

property rights advocates, however, might claim that HCPs entail an unbearable marshalling of resources that are unaffordable to small landowners. This may be a valid criticism, given the pattern of small area HCPs. Small area and low-impact HCPs generally do not serve conservation goals. There should be a consequent movement by both conservationists and economic interests for regional HCPs that provide economies of scale favored by landowners and a broader, landscape approach which favors landowners, conservationists, and ecosystems (Noss et al. 1997).

Consultation

Federal agency actions and consultation have long been a part of ESA controversies. At the passage of the ESA, administrators, legislators, and environmentalists agreed that federal agencies should not be involved in rodent and predator control programs. The objection was based on ecosystemic and precautionary concerns. In 1978, FWS consultation came under fire as a result of the Tellico impasse, and in conflicts involving the Mississippi sandhill crane and Indiana bat. FWS was considered by some to be in league with environmentalists trying to stop economic development. The congressional response of adding the God Squad in the event of intractable disputes between FWS and federal agencies still kept the focus on the consultation process as the stage at which disputes between species and projects were to be resolved. In addition, the God Squad itself meant that even consultation on obscure species was, according to Congress, to be taken seriously.

After 1978, water use conflicts continued to factor in criticisms of FWS consultation. Water developers questioned the scientific basis of FWS mitigation measures on the basis that they were overly cautious. Environmentalists and legislators criticized FWS Windy Gap policies in 1988 as contrary to ecosystem and precautionary concerns. The water use issues provided a clear example of environmentalists arguing for precaution and water developers arguing against it. Congress did not address the issue directly, thereby leaving consultation squarely under administrative discretion.

As indicated in Chapter II, the result has been a light application of Section 7. Yet, since 1982, FWS has been critiqued simultaneously for too lightly and too heavily applying Section 7. I suggest that FWS might escape this gauntlet by adopting an explicitly precautionary approach.

The Section 7 provision for preventing species jeopardy, although considered to be the hammer of the ESA, has resulted in few substantial modifications of federal projects. A precautionary approach would require applying the jeopardy standard to more effectively protect species. The FWS regulation that jeopardy can only be found if both the survival and recovery of a species is likely to be jeopardized is an extreme reduction of the scope of Section 7. FWS should adopt a new regulation that protects a species from jeopardy when its survival or recovery is impeded. This would be precautionary.

This approach could be politically feasible if FWS underscores that Section 7 primarily applies to federal land and federal agency actions. Section 7 provides a potential release from the current (and historic) private property advocate critique of

the ESA. A strict jeopardy standard that prevents or significantly modifies actions that threaten a species recovery will increase the ability to utilize public lands for species recovery. The one-third of the U.S. under federal management hosts imperiled species that require enhanced protection for recovery. Private property advocates too often blend the affront to public lands users (primarily logging, grazing, and mining industries) with ESA limitations on private lands. It seems reasonable to suggest that it would be a rare case where an individual could demonstrate a takings requiring compensation via the Fifth Amendment in the event that their use of public land is circumscribed. The private property critique cannot be fairly applied to public lands given the national ownership of those lands.

Private property issues should be primarily restricted to the HCP system and prohibitions on take. This may be a naïve suggestion, particularly under administrations more oriented toward private property than endangered species protection. However, as demonstrated in this dissertation, administrators do not shape endangered species policy alone. Rather, their autonomy can be limited through legislation, litigation, and perhaps publicity, to assure endangered species protection.

FWS has already committed itself to protecting ecosystems through interagency cooperation. However, the agency casts ecosystem protection as developing “cooperative approaches to threatened and endangered species conservation that restore, reconstruct, or rehabilitate the structure, distribution, connectivity and function upon which those listed species depend” (59 Fed. Reg. 34274; July 1, 1994). The agency needs to spell out in more detail how the

consultation process can effect ecosystem-level protection, particularly on public lands.

Reintroduction/translocation

Reintroductions and translocations have been part of ESA discourse in Congress since 1978. In that year, FWS discussed reintroducing species in terms of ecosystem restoration. However, in that same year, proponents of the Tellico Dam supported translocating snail darters from the Little Tennessee to the Hiwassee River to avoid ESA restrictions. That translocation was criticized on precautionary and ecosystem grounds, with opponents stating that it was too early to determine the success of translocation and that translocation separated the snail darter from its habitat, thereby violating the ESA's ecosystem protection purpose.

In 1982, Congress provided increased statutory exemption for reintroduced populations under a new Section 10(j) of the Act. This can be seen as both a precautionary move, which facilitated species reintroduction, and a non-precautionary move, which reduced protections on reintroduced individuals.

In 1988, there was intense controversy over wolf reintroduction into Yellowstone and sea otter translocation off the coast of California. Both conflicts involved recognizing the role of ecosystem concerns in reintroducing and translocating species. Regarding the wolf controversy, reintroduction proponents employed ecosystem arguments. In addition, the wolf conflict indicated the importance of federal lands as a site for reintroduction and consequent ecosystem restoration. However, in the sea otter conflict, both proponents and opponents of the

translocation employed ecosystem arguments to support their preferred outcome. The sea otter conflict therefore revealed the importance of how ecosystem protection is implemented, rather than just its presence as a stated policy objective.

Reintroduction and translocation is an increasing component of ESA implementation (Chapter II). A principal reason for this is the delayed nature of listings, causing species populations to dwindle by the time of listing, thereby necessitating more active management strategies. This trend conflicts with the precautionary design of the 1973 ESA that offered earlier protection aimed at more effective protection from extinction. Better implementation of the ESA through timely protective actions would reduce the need for reintroduction and translocation.

However, reintroduction and translocation of species is clearly needed in some cases. I discuss the black-footed ferret in Chapter IX as a prime example of the necessity of an effective reintroduction program because the species went extinct in the wild. In addition, translocating sea otters appeared imperative from the 1988 hearings as a hedge against the loss of the sea otter population to a catastrophic event such as an oil spill.

The 1988 legislative history involved heated debate over reintroduction of the grey wolf. Attempts to circumvent wolf reintroduction into Yellowstone by delisting the wolf were unsuccessful, largely due to the perspective that recovery plans should be honored and based on strictly biological considerations. However, the Yellowstone wolf debate also demonstrated that even when reintroduction and recovery takes place on public lands, local antagonism could be profound. This corroborates the literature review on reintroduction (Chapter II).

The legislative history informs the current conflict over reintroduction and translocation in several ways. First, the experimental population provision promulgated in 1982 intersects nicely with a precautionary approach if FWS conceives of “experimental” in terms of an adaptive management strategy. Under this approach small-scale experiments are designed to provide feedback that enable manager appraisal and improvement of reintroduction design to maximize the chances of success.

Second, and more importantly, prompt species listings under an ecosystem-precautionary approach should ameliorate the need for reintroductions. Given a lack of reintroduction success, the costliness of the method, and its potential impact on the “wildness” of captive individuals, every attempt should be made to prevent the need for this technique. The first attempt would be early listing. In particular, early listing of focal species provides collateral benefits to other imperiled species sharing the same habitat and may preclude the need for some reintroductions.

Finally, beginning with Tellico, translocation has often been employed to accommodate development projects. Use of this tactic endures today.¹³ This has no justification under the law. Rather, significant support for ecosystem protection in the legislative history mandates policy that does not divorce species from their habitat needs. Recognizing this requires that imperiled species be protected where they

¹³See the “Habitat conservation plan for Utah prairie dogs in Iron County, Utah.” Authored by the Iron County Commission and Utah Division of Wildlife Resources. Dated June 26, 1998. Under this HCP, translocation of Utah prairie dogs from private to public land is the conservation strategy. Although this has been the strategy for several years, none of the public land colonies is flourishing, and there has been a net loss in prairie dogs and their habitat. The HCP was clearly aimed at safeguarding private property in its emphasis on translocation. The Utah prairie dog recovery plan has a similar emphasis (UDWR and FWS 1991).

currently exist to the maximum extent possible. This approach would also accommodate the precautionary principle.

Recovery

Recovery planning has not been very controversial in the legislative history of the ESA except for the case of the grey wolf in 1988. In that case, there was heated opposition from the Northern Rockies delegation in Congress to the reintroduction component of wolf recovery. Congress responded by increasing public review and participation in plan development and requiring that recovery plans be based solely on biological factors. Another source of concern in that year, based on ecosystem concerns, was that disproportionate funds were being spent on recovery planning on charismatic vertebrates. Congress responded by requiring that the agencies not discriminate according to taxonomy.

Despite not being prominent in the legislative history, recovery plans have been a component of two sets of amendments. In 1978, Congress required recovery plans, and in 1988, Congress required that these plans be based solely on biological factors. On the foundation of these measures, combined with an ecosystem and precautionary approach, I suggest that recovery planning move to the forefront of a more integrated approach to endangered species policy, as recommended by Cheever (1996). This aligns with current increased administrative emphasis on the need to recover species and enable their delisting (FWS 1997b).

First, recovery plans should include standards predicated on precaution. Specifically, the goals included in these plans should be upgraded. The pattern of recovery goals still leaving a species in a state of imperilment should be recognized by FWS and replaced with a new approach providing species security rather than continued imperilment. The precautionary approach would also warn against premature delistings and follow the lead of the 1988 amendments requiring to monitor species after they have been determined as recovered.

Second, ecosystem recovery should be the goal and might be accomplished through multiple species planning processes and prioritized recovery for focal species. FWS has itself verbally committed to such a policy (59 Fed. Reg. 34272, July 1, 1994; FWS 1997b), and it should be implemented. The 1988 amendments provided that recovery plans be based solely on biological considerations. An ecosystem focus aligns with that mandate.

As Cheever (1996) pointed out, we should no longer view the ESA as a prohibitive statute but should recognize the need for those prohibitions within a recovery-oriented approach. Recovery should be the lens through which the entire Act is viewed. Recovery planning will then take on a central role, as protections on federal lands or from federal agencies (Section 7) are combined with protection from take or further habitat decline (Section 9 and critical habitat) and protective habitat conservation plans (Section 10a). This combined approach would maximize the chances for ecosystem recovery. I add habitat acquisition as a tool especially useful for protecting hotspots of high biodiversity.

In addition to an increased administrative focus on recovery and consequent delisting, FWS has also committed to an ecosystem approach to species recovery (FWS 1997) that would involve multiple-species recovery packages entailing multi-agency cooperation (59 Fed. Reg. 34274; July 1, 1994). While FWS has developed multiple species recovery plans since at least 1989, recovery planning on the ecosystem level, covering protection for a variety of life forms, has only dated back to 1996.¹⁴ It is premature to evaluate the efficacy of these efforts. FWS's increasing adoption of ecosystem-level recovery planning, alongside the substantial funds (relative to other ESA programs) being allocated for recovery plans, is cause for optimism. However, whether this translates into ecosystem protection remains to be seen.

Prohibition on takings

Debate on takings has been part of the ESA discourse since 1973. Hearings leading to the initial passage of the Act were joint hearings on predator control and endangered species. The predator control issue, which converged with ESA debate, centered on the issue of ecological degradation accruing from the take of various predator species. Congressional participants objected to federal involvement in

¹⁴Recovery plans are viewable at <http://endangered.fws.gov/recovery/recplans/index.htm>, visited 18 November 2001. Using the definition of an ecosystem plan as covering a variety of life forms (i.e., plants, invertebrates, and vertebrates) in one geographic area, the first such plan was the "San Marcos & Comal Springs & Associated Aquatic Ecosystems (Revised) Recovery Plan," promulgated on 14 February 1996. This plan covered fishes (Fountain darter (*Etheostoma fonticola*), San Marcos gambusia (*Gambusia georgei*), amphibians (San Marcos salamander (*Eurycea nana*) and Texas blind salamander (*Typhlomolge rathbuni*)), and a plant (Texas wild rice (*Zizania texana*)). More ambitious ecosystem planning efforts have taken place in 1998-present.

predator and rodent control and advocated restricting chemical toxicants due to the harms they posed to target and non-target species. However, the Animal Damage Control Act of 1931 was not altered, and the debate on predator and rodent control was replaced by the more general debate on take of any imperiled species. The result of this debate was a broad prohibition on take of imperiled species based on ecosystem and precautionary concerns.

The issue of take also arose in 1982 with the bobcat controversy. Congress disagreed with a federal court's precautionary requirement to obtain a reliable population estimate before allowing bobcat export. The issue spotlighted how the best available information standard did not always serve the precautionary viewpoint. In considering the lifting of restrictions on take of bobcats, the higher standard of sufficient or sound science was endorsed by bobcat protection advocates. The sufficient/sound science standard had long been advocated by ESA detractors as necessary before protections are provided to species.

Such was certainly the case in 1988, with extensive debate over TEDs. Despite numerous scientific studies by NMFS supporting the TED regulation, shrimpers and their advocates in Congress continually disputed the scientific basis for the regulation. Their tactic was to call for more studies prior to TED requirements. Alternatively, TED advocates insisted that there was sufficient scientific evidence to justify the regulation. The crucial question of whether to deny or afford species protection in the event of scientific uncertainty was never directly answered.

Congressional participants regularly related the take of species to ecosystem and precautionary themes. While the evidence has been mixed on the congressional

intent to interpret Section 9 in a precautionary way, there is a strong basis for recommending that it be interpreted in a manner that promotes ecosystem protection. In addition, Congress defined take as broadly as possible in 1973, a definition that has not been narrowed despite the opportunity in 1982 and 1988 after the Palila cases. In both Palila cases and in Sweet Home, courts sustained the definition of harm to include habitat modification.

One recommendation for translating this intent into policy is the vigorous enforcement of take prohibitions for focal species. Specifically, defining harm to include restrictions on habitat modification provides a tool for protecting the habitat of large vertebrates, indicator, and keystone species, thereby affording collateral protection for imperiled species within the larger protected habitat. This could provide ecosystem-level protections through enforcement of Section 9 protections.

Neglected battlegrounds

There are obstacles to adopting the recommendations I have prescribed. These obstacles can be grouped in three categories: ESA underfunding, state and federal tensions, and litigation. I consider how these concerns hinder effective implementation of the ESA and which prescriptions would fare best given these constraints.

Underfunding of the ESA

One of the most important dynamics across the history of the ESA is funding patterns. This has been a long-term problem. As early as 1976, FWS Director Lynn Greenwalt commented that the agency had funding sufficient for only accomplishing 25% of what needed to be done to fully enforce the Act (Tobin 1990). From 1975, Congressional appropriations for the ESA have trailed the amount authorized in the statute. This partly results from presidential budget requests that are substantially lower than the amount authorized in the ESA. Indeed, throughout the 1980s, the funding appropriated by Congress has been consistently greater than that requested by the executive (Tobin 1990). A 1988 GAO report described a stationary funding pattern for the ESA despite an increasing workload. Campbell (1991) illustrated funding deficiencies for the ESA, pointing out that endangered species funding comprises only 4% of the FWS budget. Tobin (1990) provided a compelling explanation for this lack of funding, arguing that endangered species are not a high-powered clientele that assures agency financing.

Currently, the ESA's underfunding is manifested most clearly in the listing budget. While the proposed budget would provide \$8 million for listing actions, conservation biologists (including some inside the FWS) suggest that \$120 million is needed for listing (Schrope 2001; Bock and Human 2002). The result of this underfunding is that FWS cannot fully implement the Act's listing provision – the entranceway through which a species must pass before provided with ESA protection. For instance, FWS routinely announces warranted but precluded determinations for

petitioned species (e.g., 63 Fed. Reg. 31400-6 (Lesser prairie chicken (Tympanuchus pallidicinctus)); 65 Fed. Reg. 5476-5488 (Black-tailed prairie dog (Cynomys ludovicianus)); 66 Fed. Reg. 38611-38626 (Western yellow-billed cuckoo (Coccyzus americanus)); 66 Fed. Reg. 22984-94 (Western sage grouse (Centrocercus urophasianus phaios)). In the agency's most recent review of candidate species, it considered 37 to be warranted but precluded (66 Fed. Reg. 54807-32). This is an explicit admission that FWS cannot perform all its functions, i.e., certain actions are precluded by others. Indeed, a 1993 GAO report concluded that one factor in delayed listing was a lack of adequate staffing (GAO 1993) which is a consequence of inadequate funding.

However, different facets of the ESA are funded in various ways and these have changed over the ESA's history (Table 8-5 and Table 8-6). Although the budget's elements were not consistently categorized in these two periods, a striking difference is that funding for recovery planning has increased substantially, while funding for listing has not. This reflects a greater current emphasis on recovering species with the goal of delisting (FWS 1997b).

Table 8-5. FWS Endangered Species Program Appropriations, 1985-1987 (Source: GAO 1988).

	FY1985 Enacted	FY1986 Enacted	FY1987 Enacted
Listing	3,191,000	3,071,000	3,567,000
Consultation	2,845,000	2,625,000	3,115,000
Law enforcement	5,815,000	7,381,000	6,090,000
Recovery	5,884,000	6,031,000	6,391,000
Research	4,404,000	4,544,000	4,759,000
State grants	3,920,000	4,204,000	4,300,000
Permits	718,000	815,000	842,000
Total	26,777,000	28,671,000	29,064,000

Table 8-6. FWS Endangered Species Program Appropriations, 1999-2001 (Source: Corn 2001).

	FY1999 Enacted	FY2000 Enacted	FY2001 Enacted
Candidate Cons.	6,753,000	7,388,000	7,144,000
Listing	5,756,000	6,208,000	6,355,000
Consultation	27,231,000	32,342,000	43,496,000
Recovery	66,077,000	57,363,000	60,954,000
Landowner Incentive	5,000,000	4,981,000	4,981,000
Subtotal	110,817,000	108,282,000	122,930,000
Coop. End. Species Conservation Fund	14,000,000	23,000,000	26,925,000
Total	124,817,000	131,282,000	149,855,000

Given the greater funding presently being allocated toward recovery planning, proposals for ecosystem protection would be met with a warmer reception by FWS and Congress if they are based on the recovery process and provide a clear standard for delisting. In particular, if focal species could be recovered and delisted, ecosystem protection could be attained.

In addition, the landowner incentive and cooperative endangered species conservation funding (Table 8-6) are related to HCP funding. I have discussed above how the HCP process can work to protect ecosystems. Given the greater resources being allocated toward HCPs, ecosystem-protection initiatives utilizing this process stand a greater likelihood of adoption than recommendations in other battlegrounds.

State and federal tensions

Since the initial hearings in 1972/73, the ESA's federal intrusion into the traditionally state-dominated arena of wildlife law has been a point of contention between those endorsing federal control and those supportive of state autonomy over

wildlife. The antagonism against encroachment on state autonomy was demonstrated by the Alaska delegation in 1973, again by state officials and western legislators in 1982 over the bobcat issue, and in 1988 over wolf reintroduction into Yellowstone. Most notable was Ron Marlenee's proposed amendment to imbue states with exclusive authority over wolves.

Outside of Congress, scholars have commented on federalist tensions over the ESA, citing the wolf controversy as an example (Keiter and Holscher 1990). A central problem illustrated by the wolf case is that while state wildlife agencies may have more resources – in the form of funding and staff – than FWS, some endangered species controversies cross state borders. An additional problem is that western states contain the majority of federal lands in the U.S. Those federal lands have long been discussed (since the predator control debates of 1972/73) as the areas where the federal government has the clearest duty to protect and recover imperiled species. Categorical state autonomy over wildlife means more state control over federal lands.

There is evidence that state and local autonomy over endangered species is increasing. One example is significant state and local government involvement in HCPs. Tarlock (1993) discussed the case of the Balcones Canyonlands HCP for the Hill Country near Austin, Texas. The HCP was developed because of conflict between development of the Hill Country and the endangered status of the black-capped vireo (Vireo atricapillus) and golden-cheeked warbler (Dendroica chrysoparia). The resulting plan employed a biological and socioeconomic basis for designating reserve areas. According to Tarlock (1993: 610), “[r]eserves in Hill Country were limited to the minimum scientifically defensible area. Such reserves

require especially active management” (1993: 610). Put differently, the state- and locally-orchestrated plan weighed socioeconomic concerns more heavily thereby minimizing the area provided to endangered species (Tarlock 1993).

Examples of state involvement in regional planning efforts include the Orange County Central/Coastal Natural Communities Conservation Plan and the Brevard County, Florida HCP. The California plan was developed in response to the imperilment of the coastal sage scrub ecosystem of which the listed coastal California gnatcatcher (*Polioptila californica californica*) is a member. In all, the plan covers 37 species (Noss et al. 1997). Researchers commented that, while the long-term goal of this plan is a net gain in habitat value for the species, it is difficult to evaluate the plan’s contribution to species recovery (Noss et al. 1997). Others describe the California effort as potentially effective in enacting ecosystem-level protection for the coastal sage scrub (e.g., Welner 1995). The Florida plan was a response to listing the Florida scrub jay (*Aphelocoma coerulescens*), a member of the natural scrub community, whose habitat was vulnerable to rapid urbanization along the central east coast of the state. Regarding this plan, Noss et al. (1997: 149) concluded, “[a]t this writing the Brevard Scrub HCP remains a thorough, scientifically well-developed approach to regional conservation and development that occupies shelf space in the county natural resources division.” However, these authors note that the plan’s analysis and reserve design may serve as the foundation for future acquisition efforts to protect this natural community.

Another example of state involvement in endangered species policy is state-level endangered species legislation. However, a recent review of those acts revealed

severe inadequacies. These include a lack of 1) coverage for all plants and animals; 2) protection for distinct population segments; 3) critical habitat designation; and 4) habitat protection on public and private lands. This review also concluded that states would assume a greater role in ESA implementation in coming years, specifically within the HCP process (Goble et al. 1999).

Current Interior Secretary Gale Norton is sympathetic to states' rights arguments and promotes cooperation with private landowners, rather than the more punitive aspects of the ESA. In congressional testimony in 1998 regarding the National Environmental Policy Act, Norton stated, "[t]he states, where government is closer to the people, are the proper entities to implement environmental laws and policies." She therefore recommended that, "...Congress start the devolution of authority in the environmental area back to the states..."¹⁵ Norton's focus has been on cooperation in endangered species issues. Speaking directly to the ESA, Norton stated at her confirmation hearing, "President-elect Bush has proposals to build conservation partnerships, to help states, local communities, and private landowners to conserve wildlife habitat, watersheds, and open space. I'm excited by the chance to work together on these proposals."¹⁶

Due to her support for states' rights and advocacy of increased protection for private property owners from ESA restrictions, over 200 environmental organizations

¹⁵Gale Norton's testimony was before the House Committee on Resources, on the issue of "Problems and Issues with the National Environmental Policy Act of 1969." 18 March 1998.

¹⁶Secretary Norton's speech was viewed via the DOI webpage at <http://www.doi.gov/secretary/nortonop.htm>, visited 19 November 2001.

opposed her nomination as Interior Secretary.¹⁷ However, her nomination was confirmed. The large chasm between environmental organizations advocating more vigorous enforcement of the ESA and an Interior Secretary interested in delegating more authority to the states and prioritizing cooperative rather than punitive measures in the ESA ensures that the extensive litigation over the Act will continue. However, the administration's current focus on habitat conservation planning can further ecosystem protection if implemented along the lines I have discussed in this chapter.

Litigation by private parties

Over the past decade, environmental organizations have outpaced FWS and NMFS in initiating species protection. These organizations have petitioned for listing, critical habitat designation, reintroduction, and have challenged consultations and HCPs seen as detrimental to species survival or recovery. In addition, the 1997 Supreme Court decision of Bennett v. Spear provided economic interests with standing under some sections of the ESA, thus enabling more litigation on the ESA.¹⁸ Recent estimates are that there are 79 pending lawsuits regarding 420 species and 88 additional notices of intent to sue.¹⁹

Citizen litigation is, in fact, directing FWS policy. In her announcement to suspend listings for the fiscal year 2001, former FWS Director Jamie Rappaport Clark

¹⁷This is according to an Endangered Species Coalition press release, "Over 200 Groups Join To Oppose Nomination of Gale Norton As Secretary of Interior." 12 January 2001.

¹⁸See Wohlberg 2001a.

¹⁹See Wohlberg 2001b.

commented, “[w]e have reached the point where the staff time and funding needed to list species have been consumed by the requirement to do court ordered critical habitat designations stemming from a flood of lawsuits.”²⁰ Doremus (1999a) also noted the important role of citizen litigation in ESA enforcement.

The frustration at extensive ESA litigation is not a recent trend, as there has been a long history of contention over litigation in the Act’s legislative history. For example, in 1978 hearings, a ranching and water development representative indicted public participation in characterizations of endangered species policy as driven by emotion. He specifically criticized the ability of citizens to litigate,

We are living, quite obviously, in an irrational age, and our politics are all too often dictated by emotional caprice and naïve sentimentality. The public is encouraged to voice its opinion regardless of what their level of knowledge and experience is, leaving a bonanza for the legal defense counsels, and a nightmare for the overworked courts. And it all leads to the producing of a much more inflated economy (Hearing 95-H60: 50).

A water development agency was also concerned about public participation in ESA policy, maintaining that the Secretary of Interior “leans back and allows the citizen interest groups to enforce the act for him” (Hearing 95-H60: 223 – 224). Legislators pointed to problems posed by citizen lawsuits²¹ as did other business interests.²² The American Mining Congress felt so strongly about the negative

²⁰According to an AmeriScan article entitled “No Endangered Species Act Listings for FY 2001.” 24 November 2000.

²¹This was a common criticism by legislators seeking to amend the act. An example is Rep. Wes Watkins at Hearing 95-39: 109 – 110, who was concerned that the listed leopard darter was impeding construction of a dam on the Glover River in Oklahoma. Watkins criticized citizen lawsuits specifically.

²²See testimony of Dr. John Moeller, who represented a Birmingham, Alabama business task force, at Hearing 95-39: 223.

impacts of public participation that they advocated eliminating the citizen-suit provision but simultaneously forewarned a backlash from the “public” if the ESA was not amended (Hearing 95-H60: 344 – 362). Others predicted a similar public backlash if the law was not changed.²³ However, House subcommittee chairperson Robert Leggett (D-CA) was not sympathetic to proposals to eliminate citizen litigation (Hearing 95-39: 231).

In the 1982 discourse, the Reagan administration raised the issue of limiting citizen lawsuits. However, the suggestion was not engaged by the subcommittee (Hearing 97-H34). The citizen suit provision (ESA Section 11(g)) has not been altered despite contention over the issue and despite multiple sets of amendments.

The most recent attempt to eliminate the citizen-suit provision of the ESA was initiated by the current Bush administration. Although Congress rejected the proposal, the administration has continued to press the issue. In response to a Senate bill on Interior Appropriations, the administration stated in July 2001,

While we appreciate the funding that the Senate has included for the Endangered Species Act listing program, we are concerned that the bill language would perpetuate a listing program that is driven by court decisions rather than by the need to protect species. The Senate is encouraged to include the language proposed in the President's budget to address this issue.²⁴

As stated earlier, environmentalists are extremely concerned about the Bush administration's policies on endangered species. Consequently, continued, and perhaps escalated, litigation over listed and unlisted species will likely be a part of the

²³See written testimony of the Southeastern Legal Foundation at Hearing 95-H60: 383 – 389 and the Pacific Legal Foundation at Hearing 95-40: 854.

²⁴See <http://www.whitehouse.gov/omb/legislative/sap/107-1/HR2217-s.html>, visited 19 November 2001.

ESA's implementation in the years to come. Given the continued problems in ESA implementation, which I discuss in the next chapter, litigation by environmental groups on behalf of imperiled species is not likely to decline in the near future. Indeed, litigation would likely provide the means to obtain many of the reforms I have suggested in this chapter.

Conclusions

The variety of values employed in ESA discourse, the strong evidence for ecosystem protection in the legislative history, and the lack of resolution on the precautionary principle, all provide a basis for revisiting the key ESA battlegrounds. I proposed administrative reforms proposed to resolve important dysfunctions in these battlegrounds that continue to hinder the achievement of the ESA's goal of preventing extinction. I discussed how additional battlegrounds – of inadequate funding, federalist tensions, and litigation – impact the feasibility of those reforms. In the next chapter, I illustrate both the need for, and difficulty of, administrative reform in two case studies: the northern spotted owl and the black-tailed prairie dog.

CHAPTER IX

FWS IMPLEMENTATION OF THE ESA

In this chapter, I conduct case studies to examine how FWS implements the ESA. As the previous four chapters have indicated, there is a strong basis for interpreting the ESA to promote ecosystem protection. Alternatively, the legislative history on the precautionary principle is ambivalent and indicates that, while scientific issues are important to the ESA, there is no consensus on whether protection should be conferred to or withheld from a species in the event of scientific uncertainty.

The legislative history, however, is moot depending on the distance between the “cup of regulatory authority” and the “lip of enforcement” (Sagoff 1997: 860). Nor is there necessarily a close connection between stated agency policies and policy implementation. For instance, FWS has endorsed ecosystem protection and has implicitly endorsed the precautionary principle. An example is in a recent FWS publication entitled, “The Road to Recovery.”¹ It is dedicated to Mollie Beattie, former FWS Director, who passed away in 1996. The dedication reads,

Mollie challenged the Service to adopt an ecosystem approach to fulfill its conservation mission. She worked tirelessly to make the Endangered Species Act work better, because she believed that Aldo Leopold was correct: ‘The first rule of intelligent tinkering is to save all the parts.’

As we have seen, that same metaphor was used in the ESA’s legislative history as the basis for ecosystem protection. This commitment to ecosystem-level policy was also

articulated in 1994 by Former Interior Secretary Bruce Babbitt's in his "Policy for the Ecosystem Approach to the Endangered Species Act."²

In addition, that same brochure quotes Beattie as stating, "[o]ur fate and that of our economy are linked to natural systems. We cannot eliminate species and expect our own to survive," which echoes arguments made throughout the ESA's legislative history that precaution is needed, given the ecological interconnection between species survival and human welfare.

In the last chapter, I addressed neglected battlegrounds, all of which translate to a considerable role for FWS and the courts in implementing the ESA. Examining the invocation of this law by FWS and the law's application by the courts is imperative to evaluating obstacles to policy success. In this chapter, I review the cases of the northern spotted owl and black-tailed prairie dog. In both cases, FWS had the opportunity to implement the ESA in a precautionary, ecosystemic way, but resisted doing so. Litigation was centrally involved in both cases.

I first provide background on the case, and then explore which key ESA battlegrounds factored in the two cases, how the FWS use or non-use of ecosystem and precautionary themes relates to those battlegrounds, and which values FWS policy prioritized. I close with an analysis of FWS implementation in the two cases, focusing on the factors responsible for agency actions.

¹The publication was accessed through the FWS website, http://endangered.fws.gov/recovery/rec_pubs.htm, visited on 18 November 2001.

²59 Fed. Reg. 34274; July 1, 1994.

Case Studies

I chose to examine the northern spotted owl (owl) in the Pacific Northwest and the black-tailed prairie dog (BTPD or prairie dog) in the Great Plains to gauge the extent to which FWS has incorporated ecosystem and precautionary themes into management. Both species are considered important focal species by scientists and FWS. Miller et al. (1998/99) emphasized the usefulness of the focal species concept in biodiversity protection. The owl is listed as a threatened species and at least sixty imperiled species are associated with Pacific Northwest old-growth forest. One member of the prairie dog ecosystem is listed as endangered and three others are or have been candidates for listing. FWS has therefore been presented with an opportunity for ecosystem conservation in each case. There is also a public lands component to each case that theoretically enhances the FWS's ability to engage in ecosystem recovery. However, traditional extractive industries, logging in the case of the owl, and grazing in the case of the prairie dog, have opposed species protection in both cases.

The northern spotted owl & old-growth forests

The case of the owl has been marked by extreme controversy, uncertainty, and ecosystem level dimensions, making it appropriate for analysis. The controversy stemmed from the perception that owl protection meant significant economic loss. Uncertainty was caused by a lack of information on owl habitat needs and a lack of knowledge on old-growth forest remaining. The ecosystem dimension of the issue

was the owl's status as an indicator of intact old-growth forest. Key ESA decision points entailed listing, critical habitat, and consultation. In addition, the federal lands component was a significant feature of the case.

In the background and listing section, I relied on the final listing rule for the owl.³ In the critical habitat section, I relied on the owl's final critical habitat rule.⁴ All information, unless otherwise footnoted, is from these documents. For the third battleground, consultation, I brought in a range of materials, as no single FWS document provided sufficient context. For the federal lands component, I relied on the Final Listing Rule.

Background. The northern spotted owl is a round-headed bird with dark brown plumage, dark eyes, and white mottling on its breast and abdomen. It weighs between 20 and 26 ounces (567-737.1g) and its height is between 16 and 19 inches (40.64-48.26cm). The owl is nocturnal, monogamous, secretive, and territorial. It is relatively long-lived, with estimates of a lifespan ranging from 10 – 17.25 years.

The current range of the subspecies is from southwestern British Columbia through western Washington, western Oregon, and the coast range area of northwestern California south to San Francisco Bay. Owl habitat is primarily old-growth forest, including old-growth Douglas fir (*Psuedotsuga menziesii*), western

³“Determination of threatened status for the northern spotted owl.” 55 Fed. Reg. 26114, (June 26, 1990), hereinafter Final Listing Rule.

⁴“Determination of critical habitat for the northern spotted owl.” 57 Fed. Reg. 1796, 1827 (January 15, 1992), hereinafter Final Critical Habitat Rule.

hemlock (*Tsuga heterophylla*), mixed conifer forests in the Pacific Northwest, and coastal redwoods (*Sequoia sempervirens*).

Components of suitable owl habitat include moderate to high canopy closure (60-80%); a multi-species, multi-layer canopy, primarily comprising large overstory trees (i.e., over 30 inches in diameter at breast height); a significant number of trees with large cavities, broken-tops, infections from disease, and other deformities; many large snags; woody debris and fallen trees; and open space below the canopy for owls to fly.

In addition, owls require stands of sufficient size and appropriate elevation. Home ranges for spotted owls vary, generally being larger in the north, and as habitat quality declines. In the Olympic Peninsula, median range for an owl pair was estimated at 9,930 acres, contrasted with 6,308 acres in the Washington Cascades, 2,955 acres in the Oregon Cascades, 4,766 acres in the Oregon Coast Range, and 3,340 acres in the Klamath Province. Home range size varies tremendously, from 1,035-30,961 acres. Owls require that significant portions of these home ranges are old-growth forest.

The bird needs older forest habitat for breeding, nesting, and foraging. Tree cavities, broken treetops, and abandoned raptor nests are required for nesting (Bonnett and Zimmermann 1991). Owls require the multi-storied canopy to evade harsh weather and predators, such as the great horned owl (*Bubo virginianus*) and northern goshawk (*Accipiter gentilis*). Snags and decaying forest litter provide homes

for small, nocturnal rodent prey⁵ (Final Listing Rule; Bonnett and Zimmermann 1991; Foley 1992; Yaffee 1994b). Nest and major roost sites are almost always in the oldest portion of a forest stand.

Juvenile survival is low. Approximately 60% of juveniles live until they can disperse from nesting areas and only 18% survive for one year (Final Listing Rule). Although exact estimates are difficult to obtain, the known population in 1990 was 2,000 pairs, with estimates of 3,000-4,000 pairs rangewide (Final Listing Rule). Revised population estimates in 1991 suggested 3,500 pairs (Yaffee 1994b).

The main threats to owls are habitat loss and fragmentation, with starvation, predation, and vulnerability to natural catastrophe resulting from the lack of suitable habitat (Final Listing Rule). Approximately 10% of owl habitat remains from presettlement times (Blumm 1991; Foley 1992; Yaffee 1994b).⁶ However, there have been both profound scientific resources directed toward the owl in the late 1980s and early 1990s and extensive scientific debate about the owl's life historic characteristics. For example, the Final Listing Rule cited 46 studies (a small number of which were communications with scientists) between 1988 and 1990 (when the

⁵Owls may occasionally prey on insects, birds, and reptiles. However, an estimated 90% of their diet is small mammals (Bonnett and Zimmermann 1991). The Final Listing Rule also indicated that small mammals such as red tree voles (*Arborimus longicaudus*), flying squirrels (*Glaucomys sabrinus*), and dusky-footed woodrats (*Neotoma fuscipes*) make up the bulk of the owl's diet. One intriguing dynamic is that owl diet consists of small mammals, such as mice and squirrels, who dig up and eat mycorrhizal fungi. Mycorrhizal fungi infect the roots of Douglas firs. Without the fungi, those trees die within a few years. Flourishing owl populations therefore suggest an ample prey base, which in turn indicates that there are plentiful fungi sustaining these small mammals and facilitating the longevity of Douglas firs. In this way, owls provide a barometer for the health of old-growth forests (Blumm 1991). Alternatively, owl predation of rodents may help maintain old-growth by enabling fungi to flourish. In this way, owls may play a keystone role in old-growth forests.

⁶Yaffee qualified this estimate, indicating that the extent of presettlement owl habitat is unknown. However, he stated that an approximation of a remaining 10% is likely accurate (Yaffee 1994b: 49).

rule was published). Despite this research attention, the bulk of the Final Listing Rule was spent on addressing public comments, most of which involved the scientific basis for the FWS decision to list.

ESA listing. The potential need to list owls was recognized as early as 1973 (Blumm 1991; Foley 1992). The owl was listed on July 23, 1990 (Final Listing Rule). It was not until January 1987 that an environmental group called GreenWorld attempted to obtain listing for the owl as endangered. The GreenWorld petition was followed by a second petition in August 1987 from the Sierra Club and a consortium of local and national environmental groups. The latter petition requested listing the owl as endangered in portions of its range in Oregon and Washington and threatened within the rest of its range (Final Listing Rule; GAO 1989; Bonnett and Zimmermann 1991; Foley 1992). FWS denied the petitions in December 1987, citing insufficient data (Final Listing Rule; Flournoy 1993).

A coalition of environmental groups then sued FWS in Northern Spotted Owl v. Hodel in May 1988. In November, the court agreed with the environmentalists that FWS had acted arbitrarily and ordered FWS to produce evidence justifying its decision not to list (716 F. Supp. 479; Final Listing Rule; Blumm 1991; Foley 1992).

The judge on the case was trenchant, stating,

...the Service disregarded all the expert opinion on population viability, including that of its own expert, that the owl is facing extinction, and instead merely asserted its own expertise in support of its conclusion (cited in Flournoy 1993: 294).

Subsequently, FWS issued a proposal to list the owl in June of 1989 and listing was finalized in July 1990. The agency found that the primary threat to the owl was

habitat destruction and loss. Other threats flowed from this main one, as habitat loss and degradation caused isolation of owl populations, making local populations more vulnerable to extirpation; decreased reproductive success and survival rates as remaining old-growth acreage was crowded with owls seeking refuge from logged areas; increased predation from great horned owls as tree cover was lost; and exacerbated competition from the barred owl (Strix varia), which fared better in younger forests than the northern spotted owl did.

The owl's listing was probably inspired by both the sting of the Northern Spotted Owl court decision and a damaging GAO report. House subcommittee chair Gerry Studds (D-MA) requested that GAO investigate the FWS decision not to list. In February 1989, GAO concluded that: 1) the spotted owl study team did not have sufficient time to conduct analysis; 2) FWS management changed the substance of the scientific evidence prepared by its study team; and 3) non-biological considerations entered into the FWS decision (GAO 1989). Each of these conclusions merits elaboration.

First, GAO found that, because FWS delayed its decision on whether a status review was warranted for six months, the time for review was reduced to three months.⁷ Study team members reported to GAO that they were unable to obtain significant information in that time frame. One of the missing elements was pertinent data on the efficacy of USFS protection efforts.

⁷When a petition is received, a 90-day finding is required (16 U.S.C.A. § 1533(b)(3)(A)). If there is a positive 90-day finding, FWS commences a status review to determine whether listing is warranted. A decision on whether or not to list is required 12 months after the receipt of the petition (16 U.S.C.A. § 1533(b)(3)(B)). From the 90-day point, FWS delayed for six months, thereby reducing the time available within the 12-month frame to three months.

GAO's second finding was that FWS management substantively altered the status review. FWS eliminated the conclusion by one of its experts that the owl was endangered. The agency also made important revisions to those elements of the review that indicated a need for listing. Prior to management review of the report, the study team solicited agency and external peer review, and their work passed scientific muster. Upon GAO questioning of the three study team members, two believed that the owl was probably endangered. The third member had not agreed during the course of the status review but reached the same conclusion subsequently.

After FWS headquarters received the report, however, they asked the agency's Regional Director for help in revising it to preclude the need for listing. A team member characterized it as a request to "sanitize the report" and incorporate more information from industry (GAO 1989: 10). Sections on strategies to protect the owl were deleted, and the report was extensively revised to support the decision that listing was not warranted. Moreover, unlike the original report, these revisions were not peer-reviewed and changes were not discussed with the study team leader. In the GAO's estimation (1989: 11),

In the end, the unique steps taken by the study team to ensure the scientific integrity of its report by peer review were compromised by questionable changes requested by FWS headquarters officials.

This assertion points to a problem in endangered species policy, namely the potential for conflict between agency biologists and managers. In the owl report, it seems that the study team vigorously attempted to ensure a product with high scientific integrity. Despite their best attempts, the managers who ultimately held authority over the issue compromised the scientific integrity of that report.

The third finding by the GAO was that FWS had allowed non-biological considerations to enter into its decision not to list the owl. The regional staff indicated that they were convinced high-level FWS personnel would not accept a decision to list. Then-FWS Director Frank Dunkle denied this charge and it could not be documented. However, the agency's Region 1 manager told GAO that he believed he couldn't recommend listing for non-biological reasons. He was the authority ultimately responsible for signing the decision. On this basis, GAO concluded that non-biological considerations had entered the not warranted decision, thereby contravening ESA Section 4.⁸

After FWS rejection of the listing petition in 1987, the agency negotiated with USFS, BLM, and NPS to provide alternative protection to the owl. This arrangement resulted in the creation of the Interagency Scientific Committee in October 1989. It was nicknamed the Thomas Committee after Dr. Jack Ward Thomas, an authority on owls who chaired the committee (Final Listing Rule; Bonnett and Zimmermann 1991; Yaffee 1994a). The committee's task was to create an owl conservation strategy.

The Thomas Committee issued its report in May 1990, recommending the protection of larger blocks of protected old-growth forest, rather than the islands of habitat created in earlier set-asides. These larger blocks were called habitat conservation areas (HCAs), measured approximately 50,000 – 60,000 acres large, and were designed to protect at least twenty owl pairs each. The maximum distance between the areas was to be 12 miles to permit migration between areas. Timber

⁸This section reads, "The Secretary shall make [listing] determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available..." (16 U.S.C.A. § 1533(b)(1)(a)).

harvest limits were recommended between the areas as well (Blumm 1991; Bonnett and Zimmermann 1991). In total, the report called for protection of 8.4 million acres of forest (Yaffee 1994a).

The Bush administration did not implement the recommendations of the Thomas Report. Rather, their response was to unveil a “Five-Point Plan to Preserve Owl and Protect Jobs” in which, among other strategies, the administration opted not to follow the Thomas Report’s advice. The plan declared that Bush would appeal to the God Squad should federal timber sales in owl habitat receive jeopardy findings (Yaffee 1994a). Bush’s Secretary of Interior, Manuel Lujan, Jr. expressed contempt for the ESA.⁹ Bush himself alternated between flippant and hostile to the ESA (Flournoy 1993).

Specifically, Bush remarked that, “All across the country we have a spotted owl problem. And yes, we want to see that little furry-feathery guy protected and all of that” (Flournoy 1993: 309). In a visit to Oregon, Bush was more virulent:

The Endangered Species Act was intended as a shield for species against the effects of major construction projects like highways and dams, not a sword aimed at the jobs, families and communities of entire regions like the Northwest...It’s time to put people ahead of owls (cited in Houck 1993: 278).

Under these circumstances, uncoerced enforcement of the ESA seemed unlikely.

Indeed, the Final Listing Rule for the owl indicated that FWS was in a tough position. On the one hand, the Bush administration had made clear its intent to limit the impact of the ESA on the timber industry. On the other hand, environmentalists

⁹Yaffee noted Lujan’s quip about the Mount Graham red squirrel in Arizona, “Nobody’s told me the difference between a red squirrel, a black one, or brown one. Do we have to save every subspecies? Do we have to save [an endangered species] in every locality where it exists?” (1994a: 128).

were suing the agency for its failure to properly implement the ESA. The bulk of the Final Listing Rule was a response to extensive public comment from scientists and supporters and opponents of listing. Some 71.9% of the Rule was consumed with addressing issues raised in the comment periods and public hearings.¹⁰ By comparison, in the case of the Canada lynx (Lynx canadensis), itself a controversial species, only 25.7% of the final listing rule involved addressing public comments.¹¹

The public comment period totaled 6.5 months, in which time FWS received 23,255 comments on the listing proposal. Of these comments, 15.8% supported listing, while 80.5% opposed it. The remainder had no opinion. Local governments and the timber industry opposed listing, as did USFS. The Washington and California state wildlife agencies did not take a position on listing, and neither did the BLM. The National Park Service and Oregon Department of Fish and Wildlife supported listing.

The majority of the issues raised by the public involved scientific disputes over the amount of suitable habitat left for owls, the historical extent of old-growth forest, the dependency or association between owls and old-growth forests as nesting and foraging habitat, the amount of area required by owl pairs, owl survival and reproduction rates, the effects of competition from barred owls, predation from great horned owls, and whether the northern spotted owl was a valid subspecies. Economic issues were raised, but usually only briefly. Clearly local communities and the timber industry were concerned about the owl's listing, given the restrictions it would trigger

¹⁰In a standard word processing document, the Final Listing Rule was 153 pages. Of those, 110, or 71.9% addressed public comments.

¹¹In the Federal Register (65 Fed. Reg. 16052 (March 24, 2000)), the lynx listing rule was 35 pages. Approximately 9 pages out of the 35 pages of text, or 25.7%, addressed public comments.

on old-growth timber harvesting. Nevertheless, the dominant value articulated in the Final Listing Rule was the scientific one. This is explained by the mandate that ESA listings be based on solely biological factors. This standard was repeatedly articulated by FWS in defense of the listing rule.

Where public comments diverged from scientific issues, FWS responded by invoking the procedural requirements of the ESA. For instance, one comment received was that the owl “will become another snail darter,” as those seeking ESA protection for the subspecies are more interested in stopping logging than protecting the owl. In reply, FWS stated, “[w]hen the Service receives a petition requesting that a species be listed, the information must be objectively evaluated on the basis of biology regardless of the petitioner's motivation for submitting the petition” (55 Fed. Reg. 26121). As we saw in the ESA’s legislative history, in the Tellico controversy and in subsequent years of debate, environmental groups have been criticized for “ulterior motives” of hindering economic activities in seeking ESA protection for imperiled species (Chapters VI and VII). The agency dealt with this issue by appealing to the required procedures of the ESA, rather than the substantive claims in the public comment.

Other listing issues in the Final Listing Rule were that some members of the public wanted the owl listed as a “warranted, but precluded” species. One commenter wanted a 20-40 year study conducted on the owl before listing it. Both comments were aimed at delaying the owl listing, and FWS stated that there was no basis for delaying the listing.

Another listing issue involved population counts. In response to public criticisms that FWS does not have an adequate population count and therefore should delay owl listing, the agency repeatedly stated that the owl's population numbers were not the most important consideration in making the determination. Rather, the continued trend of decline in owl habitat and population numbers, and the overlap between owl habitat and proposed timber sales, was the basis for the listing decision. In short, according to the agency, "[a] species can be widespread, but could be "threatened" if the population was thought likely to become in danger of extinction in the foreseeable future due to, for example, drastic loss of habitat" (55 Fed. Reg. 26135). In the case of the owl, FWS found that the subspecies faced this situation and merited listing.

Fears about listing came from all sides. Opponents of owl listing claimed that it would usher in the extinction of the owl as companies increased their old-growth harvest to avoid restrictions on timber production after the owl was listed. FWS replied that litigation over the owl issue had reduced old-growth harvest on federal lands and that few owls remained on private land. Proponents of owl protection were concerned that owls were being killed by opponents of listing and that the owls needed immediate protection. Although averring that there had been several instances of malicious take of spotted owls, FWS stated simply that, once listed, the owl would be protected against take under Section 9.

Indeed, Section 9 prohibitions on owl take arose in multiple instances in the final listing rule. FWS provided an interesting response in the Final Listing Rule to a comment involving the Section 9 prohibition on take of listed species. A commenter

suggested that owls be protected on public land, but not private land. In reply, the agency stated, “[u]nder Section 9 of the Act the prohibition against ‘take’ of listed species is not based on land ownership” (55 Fed. Reg. 26122). FWS’s response in the Final Listing Rule contrasted with their position in the Final Critical Habitat Rule, where the agency squarely placed the focus on federal lands (omitting both private and state lands from the final critical habitat designation). Moreover, the FWS response that Section 9 would be equally applied across ownership classes conflicts with the review of the literature, which indicated that Section 9 is a seldom-enforced provision and that private landowners are rarely prosecuted under it (Chapter II).

Overall, FWS appealed in the Final Listing Rule to the procedural requirements of the ESA and to the scientific value. The primary assertion in the rule was that FWS had no choice but to list the owl, given the ESA’s requirement that the decision be based on the best available science. For the owl, the best available science supported listing, based on the threat posed to owl habitat by logging activities. The agency consistently emphasized the owl’s preference for old-growth forest habitat (i.e., greater than 200 years old). The exception was that coastal redwoods might attain old-growth characteristics in as few as 40-60 years due to faster growing conditions. However, the agency added, only 7% of the owl’s range was coastal redwood. The central problem defined by FWS was that more than 95% of timber harvested throughout the owl’s range was clearcut, a silvicultural method that eliminated the logged area’s value for spotted owls. Further, the timber was harvested on 60-90 year cycles, which meant that, just as the forests attained the age where they could begin to provide habitat to owls, they were harvested. FWS therefore estimated

that, without protective action, spotted owl habitat could disappear in 20-30 years in some areas, and within 10 years in others.

Moreover, the agency concluded that even if timber harvesting ceased on all existing spotted owl habitat, the owl would continue to decline. This was due to “rescue” and “packing” effects, as, respectively, non-resident, immigrant birds were counted in population surveys, and birds from adjacent territories that were logged fled to unlogged areas. The inclusion of these individuals in population surveys created, in the agency’s estimation, inflated bird counts that were out of proportion with the carrying capacity of remaining habitat. Studies indicated that excessive owl population density resulted in increased resource competition, which negatively impacted survival and reproductive rates. As a result, FWS predicted that the total owl population would decline as the birds came into proportion with the habitat available.

While FWS relied on the best available science to justify protection in the Final Listing Rule, the agency took a different posture in the Final Critical Habitat Rule and in consultation processes. In those battlegrounds, the agency openly embraced ESA protections designed to minimize their impact on economic activities. FWS found that critical habitat was not determinable at the time of the final listing of the owl, thereby setting the stage for the next round of controversy.

Critical habitat. After FWS deemed owl critical habitat not determinable in the Final Listing Rule, environmental organizations responded in August 1990 by suing the Service to compel them to designate critical habitat. In February 1991, a federal district court ruled that critical habitat for the owl must be proposed

promptly.¹² FWS published the proposed rule May 6, 1991 and a revised proposed rule on August 13, 1991. The final critical habitat rule was published on January 15, 1992 and became effective on February 14, 1992.

The Final Critical Habitat Rule indicated that 1) FWS recognized the ecosystem protection potential in owl habitat designation and a wide array of values furthered by habitat protection; 2) critical habitat was uniquely suited to obtain ecosystem level recovery; and 3) the agency declined to fully meet the ecosystem protection opportunity with protective action. Rather, FWS decided, in the end, to reduce critical habitat acreage out of concern for impacts on the timber industry.

First, FWS acknowledged that ecosystem protection and a wide range of benefits would accrue from owl habitat designation in the Final Critical Habitat Rule.¹³ These benefits included protection of scenic quality, biodiversity, aquatic and water quality, soil protection, the intrinsic value of protecting the owl and its ecosystem, the medicinal value of the Pacific yew in fighting cancer, and recreation values. However, the agency characterized these values as nearly impossible to quantify, stating,

The lack of market prices makes it difficult to value them in dollar terms, as compared to timber harvest and other commercial activities. No comprehensive dollar estimate of the benefits of designating critical habitat is feasible with available data (57 Fed. Reg. 1819).

¹²Northern Spotted Owl v. Lujan 758 F.Supp. 621 (W.D. Wash.).

¹³In addition to the benefits of critical habitat designation, FWS noted that there were a variety of forest uses that would not be impacted by the designation. These included livestock grazing, scenic tours, cavern exploration and other site-specific activities. In addition, uses such as hiking, camping, fishing, hunting, cross-country skiing, off-road vehicle recreation, mushroom and plant collecting, Christmas tree cutting, and rock collecting were not expected to be impacted by the designation.

Nevertheless, FWS included what monetary calculations it could. For instance, the agency noted the economic importance of the salmon (Oncorhynchus spp.) industry in the region. Salmon industry losses from continued logging around fisheries was estimated at \$1.7 million on the Siuslaw National Forest. In addition, the public's willingness to pay for owl survival and old-growth forest protection was estimated by one study at \$37 per household in Oregon, \$21 in California, and \$15 for the rest of the U.S. This adds up to \$1.5 billion per year (1987 dollars). Another study found that 81% of the public favored old-growth and owl protection nationally and were willing to pay higher taxes and timber product prices on the order of \$117-190 per household per year. In another study, both nonusers and users of increasing salmon and steelhead runs valued those protected fisheries at \$27 and \$59 per respondent per year.

The Final Critical Habitat Rule included repeated acknowledgement of the ecologic value in owl protection and cited the ecosystem protection purpose of the ESA. FWS contended that unsustainable harvest rates were having a negative impact on "the ability of the ecosystem to withstand continuing rapid change for all species" (57 Fed. Reg. 1800). A scientific panel convened in May 1991 by the House Agriculture and Merchant Marine and Fisheries Committees agreed that "continued high timber harvest rates are inconsistent with ecosystem protection and both cannot be accomplished" (57 Fed. Reg. 1803)

FWS described the owl's habitat as representing a "unique ecosystem of diverse plant and animal species" (57 Fed. Reg. 1819). The agency characterized the Pacific Northwest as boasting one of the highest numbers of bird species, the most

bird families, and the second highest number of mammalian species in the U.S., along with many endemic amphibians. Old-growth birds included neotropical migrants, many of which are in decline. Other species that would enjoy collateral protection from owl protection include stocks of anadromous fish that were presently being considered for listing. FWS cited at least 106 salmon and steelhead populations extirpated on the West Coast, which was in part attributed to logging and road building activities. In sum, habitat in this region was described as containing several hundred vertebrate species, the abundance of which relied on the integrity of older forests.

The protection of owl habitat, according to the agency, might prevent the need to list other species dependent on the same habitat, including the marbled murrelet (*Brachyramphus marmoratus*) and salmon stocks, thereby providing increased efficiency in ESA implementation and economic savings, particularly given the salmon's economic importance in the region. Through habitat protection for the owl, the need for future listings of these terrestrial and aquatic species might be reduced. In all, FWS estimated that 60 listed, proposed, and candidate species had been observed in the areas to be designated as critical habitat. According to FWS, "the conservation of the owl promotes the ecosystem level conservation needed to protect other plant and animal species and is a benefit to society" (57 Fed. Reg. 1819).

In addition to providing collateral benefits for other old-growth species, owl habitat protection would safeguard ecosystem integrity by protecting functions such as hydrology, bank stability, nutrient cycling, reduced sedimentation, predator/prey cycles, fisheries restoration (e.g., salmon), and local microclimates are all

interdependent. All of these functions, according to FWS, “can benefit from conservation approaches that focus on unity of the ecosystem as opposed to a piecemeal approach that does not take into account the interrelationships of all processes” (57 Fed. Reg. 1827-1828).

Second, FWS described a variety of ways in which critical habitat protection furthered owl and ecosystem conservation and recovery. Critical habitat could help focus conservation actions by identifying those areas – both occupied and not occupied by owls – that contained essential owl habitat features or the potential to attain those features. It could also reduce the short-term risks to owls until a long-term conservation plan can be implemented. Critical habitat designation provided a method for regulatory protection through Section 7 for the HCA system proposed by the Thomas Committee, protection of key areas outside HCAs, linkages between habitat blocks, and protection of areas in need of special management. The value of critical habitat designation was also indicated by FWS’s estimation that 70% of the total reduction in timber sales could be attributed to the listing decision and consequent application of the jeopardy and take prohibitions, while 30% would be due to the application of the adverse modification prohibition. Perhaps the most important benefit in providing owls with critical habitat was that such designation would help recover owls and their ecosystem.

In regard to owls and the potential for recovery, FWS stated, “critical habitat serves to preserve options for a species’ eventual recovery” and “may shorten the time need to achieve recovery” (57 Fed. Reg. 1796). The agency noted 50 CFR § 402.02, the regulation that defines adverse modification of critical habitat as a direct

or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. FWS maintained that there was an integral relationship between survival and recovery, that they might be viewed as positions on a spectrum. Although FWS did not include such a spectrum in the rule, it described the following,



In FWS's estimation, the "closer one is to recovery, the greater the certainty in the species continued survival. The terms 'survival and recovery' are, thus, related by the degree of certainty that the species will persist over a given period of time" (57 Fed. Reg. 1822). The agency stated that survival is related to viability and the factors that determine a species' viability are population size and distribution, stochasticity, expected duration, and reproductive success. Consequently, "[a] species may be considered recovered when there is a high degree of certainty for the species' continued viability" (57 Fed. Reg. 1822).

Indeed, FWS maintained, the ESA's definition of critical habitat indicated that this facet of the law had a clear basis in the recovery goal. Critical habitat was aimed at contributing to a species' conservation, which, under the terms of the Act, equates to recovering the species.¹⁴ The prohibitions in Section 7 against adverse modification of critical habitat include activities that would impede survival and recovery of the

¹⁴The reference here is to the definition of "conservation" in 16 U.S.C.A. § 1532(3), which reads: "...to use and the 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 this Act are no longer necessary..." In other words, the ultimate goal of conservation under the ESA is recovery.

listed species, thereby helping to ensure that federal management actions align with the guidance of a species' recovery plan. The agency stated,

As a result of the link between critical habitat and recovery, the prohibition against destruction or adverse modification of the critical habitat should provide for the protection of the critical habitat's ability to contribute fully to a species' recovery. Thus, the adverse modification standard may be reached closer to the recovery end of the survival continuum, whereas, the jeopardy standard traditionally has been applied nearer to the extinction end of the continuum (57 Fed. Reg. 1822).

Moreover, given the wide-ranging nature of the owl, "loss of a single unit may not jeopardize the continued existence of the species, but may significantly reduce the ability of critical habitat to contribute to recovery." FWS described the adverse modification standard as a section 7 consideration "above and beyond section 7 review necessary to evaluate jeopardy and incidental take" (57 Fed. Reg. 1823). This is particularly so given that critical habitat protections were triggered in areas unoccupied by owls but containing essential habitat, while jeopardy restrictions on agency actions only applied in occupied areas.

As the agency itself described, the umbrella function of the owl could provide ecosystem protection through enforcement of the Section 7(a)(2) prohibition on adverse modification of critical habitat and via the affirmative duty in Section 7(a)(1) for federal to produce biologically adequate, long-term conservation plans contributing to the conservation of spotted owls and other species. Critical habitat for the owl could therefore amount to ecosystem-level recovery:

Critical habitat designation may contribute to regional biodiversity by protecting natural ecosystems of sufficient size and quality to support native species, as well as protecting listed, proposed, and candidate species. Critical habitat may also help in retaining ecosystem values through a combination of preservation, conservation, and compatible

management of forest habitat with emphasis given to older forest values and characteristics (57 Fed. Reg. 1828).

FWS's convergence of critical habitat and the recovery goal in the owl case contrasts dramatically with the literature review and current FWS policy that critical habitat does not provide added protection beyond the jeopardy standard in Section 7 (Chapter II).

Despite the potential for critical habitat to accomplish ecosystem-level protection and for a wide range of uses to continue on critical habitat areas, FWS reduced the amount of acreage included in the final designation by 4.8 million acres (Table 1). This was due to the agency's concern over impacts to the timber industry from owl protection.

Table 9-1. Summary of Acre Reductions Between Original May 6 Proposal, August 13 Revised Proposal, and Final Critical Habitat Designation for the Northern Spotted Owl (Source: 57 Fed. Reg. 1809).

	May to August	August to December	Total reduction
Forest Service	-12,000	-778,000	-790,000
BLM	-146,000	-86,000	-232,000
State	-30,000	-582,000	-612,000
Tribal	-74,000		-74,000
Military	-19,000	-4,000	-23,000
Private	-3,020,000		-3,020,000
Total	-3,301,000	-1,450,000	-4,751,000

Although the bulk of the reduction involved the omission of private lands from the final rule, there were also substantial decreases in federal and state lands designated. The critical habitat deleted from the USFS and BLM land ownership categories was presumably the acreage on which already-approved timber sales amounting to four to six billion board feet (BBF) were located. The choice to exempt these sales decreased the ability to recover owls on federal lands, despite their importance for owl protection.

In addition, the vast majority of the state lands were a part of the August 13 proposal because they have “particularly high value” for owl conservation, given their role as essential “stepping stones” connecting blocks of critical habitat (57 Fed. Reg. 1829). Indeed, a lack of connectivity between habitat areas was cited as a problem in most areas throughout the owl’s range. FWS continued to endorse the Thomas Committee’s plan for a network of HCAs, which was based on managing large, well-distributed blocks of owl habitat connected to each other. Yet, the agency excluded state lands after deducing that their benefits to owl conservation were outweighed by the need to reduce economic impacts to the timber industry. In explaining its choices, the agency admitted, “[t]he exclusions may reduce the biological buffer in some areas” (57 Fed. Reg. 1808).

Final critical habitat acreage still amounted to a large amount of acreage. Final designation comprised 6.9 million acres in 190 units (Table 2), of which 47% was in Oregon, 32% in Washington, and 20% in California. This represents approximately 84% of the acres included in the August proposal and 62% of those identified in the May 6 proposal. USFS lands made up 82% of the final acreage.

Table 9-2. Approximate Acreage of Final Critical Habitat Units (CHUs) for the Northern Spotted Owl (Rounded to the Nearest Thousand Acres). (Source: 57 Fed. Reg. 1809).

	California	Oregon	Washington	Total
USFS	1,301,000	2,211,000	2,163,000	5,675,000
BLM	108,000	1,046,000		1,154,000
Military	0	0	58,000	58,000
Total	1,409,000	3,257,000	2,221,000	6,887,000
No. of CHUs	61	76	53	190

In the economic analysis of the impact of critical habitat designation, the consequences from the designation itself was distinguished from the economic impact

of listing and of the Thomas Committee plan. FWS predicted significant economic consequences at the regional and local levels. Revenues to states and counties from federal timber sales were expected to decline by \$18 million with the designation. The net loss to the federal treasury was estimated at \$44 million, although FWS indicated this might be an overestimation, given a GAO (1991) report that federal government costs exceeded revenues from Pacific Northwest timber sales. Other impacts on the local and regional levels included social costs from timber industry decline and declines in state and county tax revenue with decreased property values.

Although acreage had already been reduced from the May proposal, the agency concluded that impacts on the timber industry in the Pacific Northwest could still be severe and that additional acreage should therefore be excluded. In the Final Critical Habitat Rule, an additional 865,000 acres were omitted on the grounds that the benefits of their inclusion were outweighed by the costs. All approved projects were excluded from the critical habitat areas and all state lands were omitted. In addition, the areas added to HCAs to facilitate legal descriptions were excluded, as were additional areas within specific counties. FWS justified its actions on the basis that the best remaining owl habitat was on federal lands in the owl's range. However, substantial acreages on federal land were not a part of the final rule. With the exclusions of acreage, the final designation was expected to increase by 65 million board feet the annual timber volume, result in 1,038 more jobs than the August 13 proposed rule, and reduce the loss of payments to states and counties by \$1.8 million per year.

FWS found that the economic impacts due to owl protection would be significant and widely spread, but were difficult to distinguish from the downward decline in which the industry was already enveloped. The agency described the volatile boom-bust history of the industry and emphasized that the need for increased efficiency, as dictated by the market, had already meant the loss of jobs due to mechanization and computerization. In the agency's words:

The substitution of capital for labor is a basic economic technique for minimizing production costs. The resulting higher labor productivity means that fewer jobs would be in place in the future than were lost when critical habitat was initially designated. As these economic conditions evolve, the timber industry will play a lesser role in the regional economy of the Northwest (57 Fed. Reg. 1821).

FWS was criticized for taking this position in public comment and agreed that the reduction in job loss due to owl protection would add to (and not replace) job losses accruing from technological factors.

However, the decline of the timber industry was difficult to deny. Industry employment declined from 165,000 in 1977 to 125,000 in 1982. In that same period harvest dropped from 16 billion board feet to 11 billion board feet. In the Pacific Northwest, timber employment declined by 40,000 workers between 1979-85, a decline that continued after 1985 and which predated owl protection. In contrast, FWS estimated that providing critical habitat for the owl would potentially reduce harvest volume by 102 million board feet.

In addition to technological innovations that substituted capital for labor, reduction in timber supply from federal lands, and increased export of unprocessed logs were also causing problems in timber employment. The timber inventory was being depleted faster than it was replaced through reforestation and harvest cycles.

Projected harvest was subsequently expected to decline. These declining timber stocks had not been adequately integrated into USFS planning, as FWS indicated that potential harvest from federal lands was overestimated by as much as 20% in some forest plans. FWS asserted that past harvesting trends suggested that owl habitat would disappear in 10-30 years. The export of unprocessed logs was decreasing the availability of secondary processing jobs. With increased restrictions on log exports, FWS predicted a net increase of 6,660 jobs.

FWS described these log export restrictions as one of a number of mitigating factors that would lessen the economic impact of owl habitat protection. These included increased timber harvest on private lands in response to higher timber values and the 4-6 billion board feet on federal land still slated for harvest. While the increased timber harvest on private land and the grand-fathered 4-6 billion board feet on federal land was a short-term mitigation, the restrictions on export of unprocessed logs might have a favorable, long-term impact on the regional timber industry.

In sum, FWS itself characterized the economic problems of the timber industry as largely due to market forces and unsustainable harvesting rates. The agency indicated that critical habitat would cause only 30% of the decrease in jobs as compared with other ESA impacts¹⁵ and paled in comparison with other owl protection measures.¹⁶ FWS described numerous mitigating factors that would lesson

¹⁵FWS estimated 4,731 jobs lost because of the ESA, with 1,420 of those (including direct and indirect employment in the timber industry) attributed to critical habitat.

¹⁶FWS asserted that designation would impact less than one half of 1% of timber industry employment in the region, while total spotted owl protection would affect about 21% of regional timber employment.

the economic impact of owl protection. Yet the final rule substantially decreased the habitat designated for the owl.

This reduction was promulgated despite the agency's position in the Final Listing Rule that owls would continue to decline even if all destruction of their habitat ceased. In that earlier document, FWS predicted continued owl decline given owl population densities' inflation from rescue and packing effects. These population densities were not sustainable, but were expected to decline as population comes into proportion with carrying capacity of the habitat.

As had been the case in the Final Listing Rule, whichever way the agency decided, it met criticism from the public. FWS conducted four public hearings and received 5,800 comments in its 60-day public comment period. The comments included in the final rule were brief, with critiques from both owl and timber proponents on the exclusion of private lands, the designation of too much habitat, the exclusion of tribal lands, and the inclusion of Oregon and California BLM lands. Some criticized the Thomas Committee plan and the designation's basis in the HCA system, as that system was not perceived by the commenters as based on the best available science. Rather, the Thomas Committee "merely used their personal judgment when developing the plan" (57 Fed. Reg. 1830). In addition, some criticized the agency separating the economic impacts of critical habitat designation from listing and other impacts.

Consultation. After listing, FWS still allowed some old-growth timber sales to go through, finding no jeopardy to the owl. According to one commentator, environmentalists had difficulty challenging the agency on this matter given the

considerable scientific uncertainty on the impact of forest fragmentation on owls. The environmentalists' attempt to obtain critical habitat designation for the owl, which federal agencies could therefore not adversely affect, was in part motivated by the desire to reduce this uncertainty (Blumm 1991).

When BLM consulted with FWS on its proposed timber sale program in 1991, however, FWS held up 52 sales on the basis of jeopardy. Of these, BLM submitted 44 to the Endangered Species Committee (God Squad). Lujan qualified the sales as having met the prerequisites for a hearing before the committee, and the process began. In May 1992, the committee granted an exemption to 13 sales (Weston 1993). Reportedly, during the process, the George H.W. Bush administration lobbied God Squad members to accede to the exemptions (Weston 1993; Yaffee 1994b), which contravened the ESA.¹⁷ Environmental groups contested the exemptions in Portland Audubon Society v. Oregon Lands Coalition, and the 9th Circuit found that ex parte communication between President George H.W. Bush and members of the God Squad violated the Administrative Procedures Act. The Section 7 exemptions were therefore overturned.¹⁸

With the shift to the Clinton administration, the tone surrounding the owl conflict also changed. As promised during the presidential campaign, Clinton and his team immediately went to work on the owl issue and devised the Clinton Plan, which was to be based on adaptive management. Although the resulting forest plan was a

¹⁷Weston (1993: 812) wrote, "The ESC's [Endangered Species Committee's] ruling in the BLM application seems to be a result of its desire to avoid confrontation with either the Secretary of the Interior or the courts. The ESC chose to submit to the desires of the Secretary, who is motivated by socio-economic and not ecological concerns, rather than to exercise the powers granted it by the ESA to protect the spotted owl."

disappointment to environmental groups, a working relationship between environmentalists and the Clinton administration was forged (Stanford Environmental Law Society 2001). The owl controversy again resurfaced with litigation by the timber industry in Sweet Home. The outcome of that case was that the Interior Secretary's authority in prohibiting habitat modification under Section 9 was upheld, but the Clinton administration shied from using this "stick" in favor of actions less antagonistic to industry.¹⁹

Federal lands. As the Final Listing Rule and Final Critical Habitat Rule demonstrate, the spotted owl controversy largely transpired on public land. This was especially true during the pre-listing days, during which laws such as NFMA had a greater impact on owl protection than the ESA. In the Final Listing Rule, FWS estimated that 90% of known pairs were on federal lands, 79% of which was on USFS land, 14% on BLM land, and the remainder on National Park Service Land.

FWS was critical of USFS and BLM timber policies. Regarding the USFS, FWS stated that "[a]pparently the Forest Service will continue its policy of converting old growth to younger stands, with subsequent losses to the spotted owl" (55 Fed. Reg. 26165). In addition, FWS critiqued the lack of multiple-use on Forest Service lands, stating that although USFS lands are managed for multiple-use, 63% of these lands within the range of the owl are open for timber harvest. The agency criticized two forest plans in particular – the Siuslaw and Siskiyou Forests in Oregon and Washington – describing them as clearly indicating that timber production "will

¹⁸See 988 F.2d 121 (9th Circ. 1993). See also Stanford Environmental Law Society 2001.

¹⁹See discussion of Sweet Home in more detail in Chapter II.

remain the primary mission of the Forest Service” and will continue to be the major impact on remaining owl habitat (55 Fed. Reg. 26188). FWS criticized USFS plans for overestimating the amount of timber available for harvest (Final Listing Rule).

BLM timber policy was also indicted by FWS, which predicted that all owl habitat on non-protected BLM lands (except for one district) would be eliminated in 26 years. Moreover, 75% of the known owl pairs on BLM land occupied habitat subject to timber harvest. In one district (Eugene District), all remaining old growth would be eliminated in 12 years, in another (Salem District), it would run out in 14 years, and in a third (Coos Bay District), all old-growth would be eliminated in 17 years. In short, FWS concluded that, for the BLM, “[t]he primary management emphasis has been, and continues to be, timber production” (55 Fed. Reg. 26189).

FWS’s evaluation of the Spotted Owl Habitat Area system employed by federal land managers for owl protection was also highly critical. The approach consisted of protecting certain areas for owl pairs and permitting logging to continue outside these protected areas. The Thomas Committee described the system as “fatally flawed” and failing to provide long-term protection for the owl (55 Fed. Reg. 26159). One problem with the system was that areas outside the Spotted Owl Habitat Areas were being clearcut, which foreclosed future options for owl management and exacerbating the situation of owl habitat fragmentation. The system created a scattered array of protected areas, thereby making local populations more vulnerable to natural disasters such as fire and wind-throw. In addition, as surrounding areas were logged, high owl occupancy rates within the habitat areas due to rescue and packing effects, could lead to decreased reproduction and survival rates. Perhaps most

importantly, a significant portion of the habitat areas did not include a sufficient acreage of suitable harvest. As a result, in the best year between 1980-89, only 48% of the habitat areas held reproductive owl pairs.

FWS was concerned that options for managing larger areas for owls would be lost as areas adjacent to the habitat areas continued to be logged, particularly given that 60% of all 1989 and 1990 timber sales were in the vicinity of known spotted owls. The Thomas Committee had responded by proposing to replace the habitat area system with the Habitat Conservation Area approach, but FWS proceeded with the listing, stating that the Thomas plan was not a valid reason to delay listing (as it had not been implemented and tested). However, the agency stated that it would evaluate whether the Thomas plan should be included in a critical habitat proposal.

Protected federal lands, for their part, could not sustain sufficient owl numbers. FWS estimated 2.7 million acres of owl habitat on reserved lands (e.g., National Parks, Wilderness Areas, Research Natural Areas). However, a large portion of this habitat was poor quality, as it included poor timber sites, more open canopies, and areas too high in elevation to support owls. In addition, these reserved lands were isolated from each other. The result was that owl habitat on National Parks, Wilderness, and other areas reserved from timber harvest hosted lower owl population densities and reproductive rates. In short, more protected habitat on currently unreserved areas was needed to adequately protect the owl.

The fragmentation of owl habitat was a primary concern in the listing decision. This problem was exacerbated by the checkerboard pattern of private lands interspersed with federal lands. While the private lands tended to be logged or young

forest, the federal lands might contain remaining suitable owl habitat. The result was that checkerboarded land ownership created fragmented owl habitat.

Values promoted by FWS. In the end, the owl was listed and provided with critical habitat. However, at every turn, litigation forced FWS into action. The picture of agency behavior is complicated when one compares the Final Listing Rule to the Final Critical Habitat Rule. In the former, scientific, ecologicistic, utilitarian, and other values were used to justify listing, while in the latter, economic concerns guided agency policy.

In both the Final Listing Rule and Final Critical Habitat Rule, FWS indicated a range of values that justified owl listing and protection of its habitat. The agency underscored the ecologicistic value of old-growth forests, which would be protected through owl listing and habitat protection. In the Final Listing Rule (55 Fed. Reg. 26161), FWS linked ecologicistic and human use values,

Non-harvest of commercially-suitable trees does not equate with non-use of old-growth forest in a multiple-use strategy. Old-growth forest is a dynamic ecosystem with a complex flow of energy through countless organisms. It serves a number of crucial human uses, such as watershed protection, and is used extensively for hunting, fishing, and many non-consumptive types of outdoor recreation. Old growth is not "deteriorating" -- it constantly renews itself through the replacement of old trees by young ones.

In addition, in both rules FWS pointed to the ecosystem services provided by old-growth forests. The agency cited the function of old-growth in capturing and storing carbon from the atmosphere, which they do to a greater degree than younger forests. Moreover, burning wood harvested from old-growth forests releases carbon dioxide

into the atmosphere (Final Listing Rule). To curb global warming, humans are therefore doubly served by keeping old-growth forest intact.

The articulation of ecologicistic values was accompanied by the agency's explicit recognition that the ESA's purpose was to safeguard ecosystems. FWS cited the ecosystem protection purpose of the Act in response to several comments. First, in reply to a comment that the old-growth forest should be listed, not the owl, the agency stated that, although a purpose of the Act is to protect ecosystems, FWS does not have authority to list an ecosystem. According to FWS, listing the northern spotted owl would benefit a number of other species.

Another public comment eliciting FWS recognition of the ecosystem protection purpose of the Act was the suggestion that owls should be captively bred and relocated to areas with lower timber values. The agency replied that such a program would violate the ESA's ecosystem protection purpose, as "[i]t would not be in keeping with the intent of the Act to substitute a captive propagation program for maintaining the owl in its native habitat" (55 Fed. Reg. 26174).

This perspective provides an interesting revisitation of the reintroduction/translocation battleground. From Tellico to the present, congressional participants have advocated translocation programs and have argued for modifying reintroduction projects to accommodate economic activity. Other speakers have opposed using translocation and re-designing reintroduction projects to accommodate industry on ecosystemic grounds. In the spotted owl case, at least in the Final Listing Rule, FWS squarely sided with the latter group.

In addition, the FWS refused to “wait and see,” as the timber industry continually suggested, whether owls and logging could be compatible. This stance aligned with the precautionary principle’s mandate to act when there is a risk, even if there is scientific uncertainty. FWS’s position in the final listing rule is that the owl could not afford to wait any longer and that the best available science supports owl listing. FWS criticized adaptive management prescriptions for testing silvicultural techniques on owl habitat as too risky and would provide BLM and the USFS too much flexibility in owl protection given that enforceable protections for owls were promptly required.

However, textual analysis does not tell the whole owl story. There was divergence between the values articulated in the Final Listing Rule and Final Critical Habitat Rule and the actions FWS took to protect the owl. While FWS articulated the scientific and ecologicistic values more strongly than other values in the Final Listing Rule, FWS resisted listing action and had to be litigated. In total, three and a half years elapsed between filing the petition to list the owl (January 1987) and the effective date for finalized listing (July 1990). In contrast, the ESA provides for listing to be completed in two years.²⁰ In the coding scheme adopted in this dissertation, delay of protective action is considered to be in opposition with species protection and a strong ESA. Consequently, although articulating ecosystem and precautionary themes in the listing rule, FWS acted to weaken ESA protection.

Similarly, while FWS clearly articulated the ecologicistic value in the Final Critical Habitat Rule, that rule also significantly reduced the area designated as

²⁰See 16 U.S.C.A. § 1533(b).

critical habitat. This reduction was the explicit result of FWS's desire to lessen potential economic consequences on the timber industry and therefore indicates that economic values were the primary motivation behind FWS action. Administrative attempts to exempt BLM timber sales and contribution of federal land management to the owl's threatened status also indicate administrative prioritization of the economic value.

Analysis of FWS actions. As FWS recognized, owls are an important indicator of old-growth forest health, yet the agency was forced to act to protect this ecosystem, causing delayed protection. FWS and other federal agencies possessed the knowledge in the late 1980s and early 1990s to shift the owl discussion to an ecosystemic frame. This would have reduced the political burden on the owl, as a single-species focus can preclude recognition of the broader benefits of protecting indicator species (Flournoy 1993). Some participants in the owl debate talked about the need for a "real old growth preservation plan," to address species beside the owl, as elements of the owl's habitat needs did not mirror those of some of the other wildlife in that ecosystem (Yaffee 1994a: 48 – 49). Protecting the forest's main indicator species would have been a start, but FWS failed to seize this opportunity. Moreover, continual delays in listing and critical habitat designation indicate FWS's reluctance to adopt a precautionary approach in owl protection.

The owl case indicates an FWS that both recognized and shied from ecosystem and precautionary protection of old-growth forests. It further shows that FWS decision-making does not operate in a vacuum, but is pushed and pulled by FWS's superiors, fellow federal agencies, court decisions, environmental and industry

groups, and the public. In short, values alone do not explain administrative actions. Rather, institutional issues must be brought in – the context, or situation, of the participants. Dysfunction in the owl case is likely the product of a clash of societal values, in conjunction with fragmented decision-making in the U.S., conflicting requirements in a network of federal environmental laws, and strategic political behavior (Yaffee 1994b).

Although one might expect that it would be easier to protect and recover imperiled species on public land as contrasted with private land, owl protection met with significant political obstacles. Explanations jibe with a political “agency capture” model. One commentator on the owl issue depicts USFS as an agency with allegiance to logging companies and timber-dependent local economies (Blumm 1991). Several other authors similarly describe the agency missions of USFS and BLM as extraction-oriented (Bonnett and Zimmermann 1991; Yaffee 1994). Environmentalists successfully employed USFS’ own data in court against them, suggesting that USFS was not abiding by its own findings (Blumm 1991). FWS’s own criticisms of federal land management policy indicated that USFS and BLM often served to further imperil the owl, rather than providing the subspecies with adequate protection.

In addition to agency capture, species recovery on federal lands was hampered the conflicting mandates of multiple environmental laws that apply to these lands. As Yaffee (1994b) points out, the ESA entered into the owl issue late in the controversy. The owl controversy dated back to the 1970s, yet the owl wasn’t even petitioned for listing until 1987. The other statutes at issue – NFMA, National Environmental Policy

Act, and Federal Land Policy Management Act – enabled federal land managers to justify and delay actions because of their multiple-use provisions and lengthy planning processes. Moreover, continued conflicting messages in the form of congressionally mandated logging and political pressure by the George H.W. Bush administration further impeded federal land managers (Foley 1992; Flournoy 1993; Stanford Environmental Law Society 2001).

In the face of this pressure, FWS was a weak and underfunded agency (Chapter VIII) and responded with delay. Indeed, delayed owl protection seemed to be the signature of this case. Scientist Eric Forsman indicated this to be a general pattern of federal agency decision-making regarding owls. He recalled that, when he recommended protective management strategies for the owl, the agencies' response was invariably, "You don't have adequate data. We are not willing to make an important management decision that's going to affect people's lives to a great extent based on this complete lack of data" (cited in Yaffee 1994: 29). This is a common argument by those who wish to obstruct species protective action (Chapter VI), for whatever motive. In the owl case, uncertainty on habitat needs was exploited by those seeking to limit the economic impact of owl protection.

Most fundamentally, public land or not, the owl issue came to be framed by the George H.W. Bush administration, congresspeople, timber industry, and media as a classic dichotomy of economy versus environment or in this case, jobs versus owls. Litigation came from both the environmental and timber communities, but it is likely that owl protective action would have been even further delayed and compromised had the environmental community not litigated for listing, critical habitat, and against

the Section 7 exemptions. With FWS as a weak agency embattled by interests antagonistic to species protection, but imbued with ESA implementation, the role for citizen enforcement of the ESA is crucial.

Although verbalizing a commitment to err on the side of owl protection, the FWS delayed protecting the subspecies, an understandable tactic for a weak agency confronting a controversial decision. FWS actions were likely due to a constellation of factors relating to presidential politics, federal land management policy, its status as a weak federal agency, and its fear of confronting a strong regional industry.

The black-tailed prairie dog and the prairie dog ecosystem

The black-tailed prairie dog ecosystem's encounter with FWS dates back to before the ESA was passed, but endures to the present. There are scientific uncertainties surrounding prairie dogs and some of their associated species. In addition, there is an important ecosystem component to this case. FWS has not as yet availed itself of the opportunity to protect an ecosystem by protecting its keystone species, the black-tailed prairie dog. The agency has been presented with multiple opportunities to offer the prairie dog some degree of protection, but has resisted that protection every time. In this case study, I begin by describing the background of the prairie dog ecosystem by drawing from scientific literature. I next examine FWS documents regarding decisions on providing protection for various members of the prairie dog ecosystem. I then discuss values articulated by the agency and close with a discussion and analysis of FWS behavior in this case.

Background. Significant dynamics in this case date back to 1964, when one species within the prairie dog ecosystem, the black-footed ferret (Mustela nigripes), was provided with federal protection. Another species associated with prairie dogs and their colonies, the swift fox (Vulpes velox), was designated a candidate species in 1995. A third species found within this ecosystem, the mountain plover (Charadrius montanus), was proposed for threatened designation in 1999. A fourth species relying on prairie dogs and their colonies for prey, the ferruginous hawk (Buteo regalis), was petitioned for listing in 1991. The black-tailed prairie dog was petitioned to be a candidate II species in 1994, as a threatened species in 1998, and was designated a candidate species in 2000.

The black-tailed prairie dog is one of five species within the Cynomys genus, which is endemic to North America. The other four species are the gunnison's (C. gunnisoni), mexican (C. mexicanus), utah (C. parvidens), and white-tailed prairie dogs (C. leucurus). The mexican and utah prairie dogs are respectively listed as endangered and threatened under the ESA (50 CFR § 17.11). All prairie dogs are burrowing rodents within the ground squirrel family (Sciuridae). The black-tailed is approximately one foot long (30-40cm), sandy-colored with a black tip on the tail, and weighs from 1-3 pounds (500-1,400gm). Prairie dogs live in colonies, which are aggregations of reproductive units called coteries (consisting of one adult male, with one to several adult females and their young). Black-tailed colonies are densely populated compared to other prairie dog species and the black-tailed is the most wide-ranging of the prairie dog species. Historically the black-tailed's range stretched throughout the Great Plains from southern Saskatchewan to northern Mexico. They

originally inhabited 11 states: Montana, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Colorado, New Mexico, Texas, Oklahoma, and Arizona (Hoogland 1995).

In the early 19th century, prairie dog colonies attracted the attention of European settlers, including Lewis and Clark, who sent live prairie dogs back to Washington, DC for inspection of President Thomas Jefferson (Ambrose 1997). Early documentation of prairie dogs indicated colonization of 40-100 million hectares in the Great Plains (Miller et al. 2000). Some individual colonies were massive, with estimates of one Texas colony alone placed at 25,000 square miles (40,225 sq. km).

The black-tailed prairie dog is considered a keystone species, meaning that it has an inordinate impact on its environment compared with its abundance and its impacts cannot be replaced by other species in the ecosystem (Power et al. 1996; Kotliar 2000). The black-tailed fulfills this keystone function by providing a prey base and creating habitat for associated species (Kotliar et al. 1999; Miller et al. 2000a).²¹ Over 200 species have been sighted on or near prairie dog colonies (Kotliar et al. 1999). Of these, a suite of imperiled species that are closely associated with prairie dogs have been identified, including the black-footed ferret, swift fox, ferruginous hawk, and mountain plover.

To varying degrees, the decline of these species can be traced to the reduction in prairie dog populations and distribution. This reduction can be traced to the prairie

²¹Paul Stapp (1998) denied that there is sufficient evidence to demonstrate BTPD is a keystone species. His arguments were refuted by Kotliar et al. (1999; 2000) and Miller et al. (2000). In addition, recent studies report strong relationships between prairie dogs and other wildlife. For example, Barko et al. (1999) reported greater avian abundance on prairie dog colonies than on uncolonized areas and Manzano-Fischer et al. (1999) urged protecting prairie dogs to mitigate against further decline of many grassland birds.

dog capturing the attention of another set of European settlers: agricultural interests. By the beginning of the 20th century, government agencies had branded prairie dogs an agricultural pest, declaring that prairie dogs robbed cattle of 50-75% of their forage, and a government extirpation campaign commenced (Merriam 1902). By 1938, the BTPD had been extirpated from Arizona (Wuerthner 1997) and has since experienced range reductions in North Dakota, Kansas, Nebraska, Oklahoma, Texas, Canada, and Mexico. By 1960, the original 40-100 million hectares of prairie dogs had been reduced to 600,000 hectares (Marsh 1984). Prairie dog poisoning continues to the present and one federal agency, Wildlife Services, still poisons prairie dogs and dispenses poisons for private use.²²

Other threats to prairie dogs include sylvatic plague, conversion of grassland to crops, shooting, and municipal development. Plague is perhaps the greatest current threat to prairie dogs, as they have no immunity to the disease. Large colonies can therefore be eliminated with the introduction of the plague bacterium. Habitat destruction and poisoning are also considered by FWS to be significant threats, and shooting can have considerable local impacts (USFWS 2000a).

BTPD petitions. The first opportunity for FWS to address black-tailed prairie dogs arose in 1994. In that year, the Biodiversity Legal Foundation (BLF) filed a petition to afford the black-tailed with Candidate II status under the ESA. Although this designation does not afford substantive protections, the BLF suggested that it

²²See Wildlife Services annual operations reports, as well as State of Colorado orders for aluminum phosphide, gas cartridges, and zinc phosphide oats from Wildlife Services' chemical toxicant distribution center, located in Pocatello, Idaho. Wildlife Services' annual reports are on-line at <http://www.aphis.usda.gov>, visited 18 November 2001. See also Roemer and Forrest 1996; Roemer 1997; Forrest and Proctor 1998.

would “red-flag the degree of imperilment and threats to the species and stimulate the allocation of pre-listing funding for the species and its grassland ecosystem” (BLF 1994: 5). If afforded this designation, the species would qualify for a candidate monitoring program that presumably would ensure FWS action on the species should significant declines were detected.

FWS denied the petition. However, in correspondence to BLF communicating the denial, the agency indicated that it regarded the BTPD as a keystone species and recognized that it was impacted by the multiple threats of land management and disease. FWS stated, “This species merits our concern and attention because it plays such an important part in [sic] our prairie ecosystem.”²³ Indeed, the formal finding on the petition indicated FWS recognition that “the ecosystem which this species creates and supports may well be imperiled, either currently or in the foreseeable future” (USFWS 1995a: 8). Prairie dog associated species were discussed in the finding, including those presented in this case study. In addition, the agency recognized that poisoning, plague, habitat destruction and fragmentation all constituted significant threats to BTPD. FWS recognized that multiple threats were even limiting BTPD range on federal lands, a condition that the agency recommended addressing (USFWS 1995a).

FWS responses to the petition made it apparent that the agency recognized that BTPDs faced significant threats and played a keystone role in their ecosystem, and that the prairie dog ecosystem faced imperilment. There was also explicit acknowledgement that FWS should be shifting its attention to ecosystems. Yet,

candidate status was denied. FWS cited a potential backlash from agriculture as part of its justification (USFWS 1995a).

The second opportunity for FWS to address BTPDs came in the summer of 1998. In July and August 1998 FWS was presented with two petitions, the first from the National Wildlife Federation (NWF), and the second from the BLF, Predator Project, and Jon Sharps. Both petitions requested a threatened designation for the BTPD. The NWF petition requested a threatened listing throughout the BTPD's range and emergency listing given the presence of imminent threats. The BLF petition requested a threatened listing in the U.S. portion of the BTPD's range, but did not request emergency listing.

FWS agreed with the petitions that the BTPD faced multiple threats, had been reduced by two orders of magnitude and was biologically imperiled. Nevertheless, the agency declined taking listing action, citing higher priority species. The BTPD was thus "warranted, but precluded" from listing, and was designated a candidate species (USFWS 2000a). The BTPD was assigned a listing priority number of 8, out of a range of 1-12, with 1 being the highest priority (USFWS 2000a; Appendix D). Such a low priority for such an ecologically important species was justified by FWS on the basis that the listing priority guidance does not allow the agency to consider a species' role in its ecosystem.²⁴ However, FWS created the guidance and has the authority to revise it. In fact, ESA oversight on the listing priority guidance is minimal. The statute specifies only that FWS create "a ranking system to assist in the

²³Letter from FWS Deputy Regional Director Terry Terrell to Jasper Carlton, BLF, dated May 26, 1995.

²⁴FWS representatives, personal communication, February 2000 and March 2001.

identification of species that should receive priority review under subsection (a)(1) of the section.”²⁵ Further, there is wide discretion afforded to the FWS by courts on the listing priority assigned to a candidate species. Therefore, FWS could have ranked the BTPD higher, even under a strict reading of its own guidance.

This guidance entails consideration of the magnitude and imminence of the threat to a candidate for listing, along with the candidate’s taxonomic level (Appendix D). Those candidates facing high magnitude, imminent threats and who represent a full species or genus receive a higher priority for listing (represented by a lower listing priority number). Under this guidance, FWS could rank the BTPD as high as 2, as it is a full species and faces multiple threats, some of which (e.g., plague) are imminent and high-magnitude. In addition, the cumulative nature of the multiple threats faced by the BTPD could earn the species a higher priority number.

The legislative history (see Chapter VI) includes specific acknowledgment by legislators that poisoning BTPDs caused negative impacts to the prairie dog ecosystem. A decision by FWS to prioritize species whose protection would provide the greatest collateral ecological protection would therefore be compatible with the ESA’s legislative history on the prairie dog ecosystem. The BTPD would enjoy a higher listing priority under such revised guidance.

Black-footed ferret. The closest associate of the BTPD is the black-footed ferret (ferret). Ferrets have been protected under federal law since 1964 and were included on the initial list of endangered species under the original ESA. Ferrets are a prairie dog obligate species (USFWS 1988), meaning that, “Without prairie dogs

²⁵See 16 U.S.C.A. § 1533(h)(3).

there are no ferrets” (Miller et al. 2000b: 55). Its imperiled status is directly linked to prairie dog eradication on whom the ferret depends for over 90% of its diet and its shelter needs. Ferrets in the wild cannot persist off prairie dog towns. The ferret has been the subject of intensive captive breeding and reintroduction efforts, in an attempt to keep the animal from going extinct (Miller et al. 1996; Miller et al. 2000b).

Although a ferret plan was developed by 1978, in general ferret recovery efforts have not been successful despite recent rhetoric (e.g., Dobson and Lyles 2000). The recovery plan, revised in 1988, calls for establishing at least ten wild, self-sustaining ferret populations of 30 or more breeding adults throughout the species’ original range (USFWS 1988). Thus far, reintroduction to only five sites has occurred, in Wyoming, Montana, South Dakota, Arizona, and Utah. Of those five sites, ferrets are self-sustaining or close to self-sustaining at only the Montana and South Dakota sites (Miller et al. 2000b).

Problems at ferret recovery sites include inadequate protection for prairie dogs (USFWS correspondence to USFS, July 15, 1998). Further, there are not presently enough prairie dog complexes to fulfill the ferret’s minimum recovery plan goals. In fact, there is a modicum of success at only two sites, contrasted with the recovery goal of ten wild, self-sustaining ferret populations throughout the species’ historic range. Moreover, one federal agency, USDA’s Wildlife Services, continues to actively poison the ferret’s habitat and prey base (prairie dogs) and disseminate poisons for private prairie dog control.

Enhancing ferret recovery necessarily entails prairie dog conservation. Ceasing federal and state poisoning programs would be a forward step. Another step

would be designating critical habitat for the ferret. A third step would be to remove additional threats to prairie dogs, such as shooting, that are hindering ferret recovery at reintroduction sites.

One of these suggestions, critical habitat designation for the ferret, is rather aged. FWS reported at the 1978 hearings that it anticipated critical habitat designation for the ferret in southwestern South Dakota (Hearing 95-40: 989 – 990). The legislative history of the ESA indicates that agricultural interests occasionally also recommended such designation to obtain certainty on which prairie dog complexes could legally be poisoned (Chapter VI).

The South Dakota designation was never enacted, nor was any other. However, the area FWS contemplated designating in 1978, the Conata Basin, is located on USFS lands in southwestern South Dakota and now serves as one of the five reintroduction sites. Critical habitat designation, coupled with a recovery-oriented reading of the Section 7 prohibition on adverse modification of such habitat, could serve ferret recovery well.

Prairie dog shooting continues throughout the species' range, including the Montana and Arizona ferret reintroduction sites. FWS has criticized the continued shooting program on BLM and USFS lands as a danger to the program's success.²⁶ At the Aubrey Valley site in Arizona, a biologist participating in the effort expressed his suspicion that prairie dog shooters were actually drawn to the ferret areas because of

²⁶See USFWS correspondence to USFS, dated July 15, 1998. In addition, Mike Lochkhart, FWS's ferret recovery coordinator, has criticized the continued refusal of BLM to address the prairie dog shooting issue.

the certainty that those sites would contain the most prairie dogs.²⁷ As of October 2001, FWS estimated only four to five high priority sites for ferret recovery, in contrast to nine sites that had been previously considered. The limiting factor, according to FWS, is a lack of prairie dog habitat suitable for ferret reintroduction.²⁸

Prairie dog protection under the ESA would directly serve ferret recovery. Ferrets have theoretically enjoyed federal protection for the past 37 years at the cost of multiple millions of dollars. That protection has been inadequate and unsuccessful, as it has not involved fundamental protections for the ferret's lifeline, the prairie dog.²⁹

Swift fox. A second species associated with the prairie dog is the swift fox. Swift foxes are less dependent on prairie dogs than are ferrets, but benefit from the prey base on prairie dog colonies provided by prairie dogs and associated small mammals. These small foxes also benefit from the burrows on prairie dog towns, which provide them a refuge from predation. The association between prairie dogs and swift foxes appears to be strongest in the northern portion of their range, where they are most imperiled (Uresk and Sharps 1986).

The swift fox appears to have varying levels of association with prairie dogs in different parts of its range. For instance, in South Dakota, which has the majority

²⁷Telephone conversation between Arizona Game and Fish biologist Tom Silvia and the author November 22, 1999. The Arizona Game and Fish Department leads the ferret recovery effort in that state.

²⁸Lockhart stated in the Rocky Mountain News, "We have always known habitat would be the limiting factor in our reintroduction program," and "...we didn't realize how bleak it was until about 1998 when we realized it is declining by the year...At that time, we had nine high-priority sites, and there are no more than four or five left today." See Gerhardt 2001.

of prairie dog area across the BTPD's range, researchers have concluded that prairie dogs make up a large portion of prairie dog diet (Hillman and Sharps 1978; Uresk and Sharps 1986; Kotliar et al. 1999).

Wildlife biologist Jon Sharps petitioned for the fox to be listed as endangered in February 1992. FWS found that the fox was warranted but precluded, and assigned it candidate status in 1995 (USFWS 1995b). FWS then removed the fox from candidate list in 2000. The agency cited that the fox was "more abundant and distributed more widely than previously thought" and the species is more flexible in its habitat needs than was represented in the 1995 12-month finding (66 Fed. Reg. 1298). Taken together, FWS stated that these findings support the decision to remove the fox from candidacy status (66 Fed. Reg. 1298).

There is a scientific nuance here that merits elaboration. FWS characterized the fox as abundant and widespread on the basis of county data collected from 1995 – 2000 (USFWS 2000b). The conclusion from their analysis of available data was that the fox occupied 38 – 41% of its historic range. This suggests an error in FWS's logic, as the standard for listing species since 1973 has included protection for species imperiled in a significant portion of their range. Surely 59 – 62% of the swift fox's range, which FWS characterizes as unoccupied, is a significant portion. That is particularly so given FWS's characterization in the Candidate Form that "swift fox populations appear to have been extirpated in North Dakota, are declining in South

²⁹I use the term "prairie dog" here in the sense of the three prairie dog species: the BTPD, white-tailed prairie dog, and gunnison's prairie dog, with whom the ferret's range overlapped historically (USFWS 1988).

Dakota, and are present in low numbers in only a few counties in western Nebraska” (USFWS 2000b: 4).

In FWS’s view, despite the disappearance and continued imperilment of the swift fox in the Northern Plains, candidacy removal is warranted because “populations in a significant portion of the species’ historic range are stable or increasing” (USFWS 2000b: 4). Here, FWS seems to be inverting the ESA’s language. In ESA Section 3 (6), (19), the definitions of both an endangered and threatened species provide for the listing of species imperiled “throughout all or a significant portion of its range.” It therefore seems premature to remove protection from a species who still remains imperiled in the majority of its range, as does the swift fox. It also conflicts with a precautionary approach to species protection.

In addition, there is a resource allocation question raised in this case. Why would FWS allocate resources toward removing the fox from candidate status, when it cited a lack of resources, due to higher priority species, for not listing the species five years prior? What happened to those higher priority species? Had they all been listed? If so, why hadn’t the fox been promoted to the top of the list long ago and had its listing finalized? If not, why did the agency spend resources delisting the fox, resources that presumably could have been allocated toward listing other species with warranted but precluded designations? Such questions are worth asking to ascertain the value of a precautionary, ecosystem approach by the FWS. For instance, the mountain plover (discussed below) is awaiting listing, and has been since 1999. The plover could have benefited from the resources directed toward removal of the fox’s candidate status. The BTPD itself is currently warranted, but precluded, due to higher

priority species. Had the resources allocated toward the removal of the swift fox's candidate status been directed toward BTPD listing, all of the species discussed in this case – an entire ecosystem – would have benefited. These are the considerations an ecosystem, precautionary approach would point toward.

Another curious aspect to the fox case is emphasis by FWS on coyote predation as a limiting factor to the success of fox reintroduction efforts in the Northern Plains (USFWS 2000b). Omitted from the discussion was mention of the possibility that the decline in small mammals (i.e., prairie dogs and small mammals that inhabit prairie dog colonies) across the ecosystem may increase predation on foxes by native predators. Coyotes probably limited foxes historically, just as wolves limited coyotes (Wilkinson 1995). However, the 12-month finding on the fox discussed raptor predation and stated that, “habitat changes that reduce food sources may increase the vulnerability of the swift fox to aerial predators” (USFWS 1995b: 47). There is no apparent reason to suspect the same logic would not apply to coyotes.

One of the problems with scientific research on the dynamics of the prairie dog ecosystem was that it did not begin until after 1960, by which time prairie dogs had been reduced by 98% (Marsh 1984; Miller et al. 2000b). There is consequently a lack of science on the question of whether decreased prairie dog populations might cause increased predation on swift foxes by coyotes. The FWS has not acknowledged this scientific uncertainty, but has adopted the stance that coyote predation, rather than a scarcity of prairie dogs, is a limiting factor on swift foxes. The natural condition of the swift fox's range has been significantly altered, given the reduction of prairie dogs by 99%. A precautionary and ecosystem perspective would entail

considering the impacts of this landscape transformation on the species, such as the swift fox, that occupy this landscape.

Mountain plover. A specialized prairie bird called the mountain plover is associated with prairie dog colonies and is imperiled. The plover was proposed as a threatened species by FWS in February 1999, but the listing has not been finalized as of this writing (64 Fed. Reg. 7587-7601 (February 16, 1999)). The Biodiversity Legal Foundation petitioned for the plover's listing in July 1997 (BLF 1997).

The plover breeds in the Great Plains and winters in California and Mexico. Within their breeding range, plovers depend on prairie dog colonies to forage for insects (primarily beetles, grasshoppers, crickets, and ants) and to establish their ground nests (64 Fed. Reg. 7587-7601 (February 16, 1999); Dinsmore 2000). While there has been a decline of 97% of its winter habitat, the imperilment of the species is primarily attributed to the loss in prairie dogs and native grasslands in its breeding grounds (Dinsmore 2000).

The primary habitat requirements for this prairie bird are flat ground, with a minimum of 30% bare ground. Habitats other than prairie dog colonies may possess these same characteristics, but often act as population sinks.³⁰ For instance, mountain plovers may be attracted to burned areas, but that habitat may attract predators such as swift foxes (Dinsmore 2000). Similarly, plovers are attracted to plowed fields for breeding and nesting, but those areas are also population sinks, given nest destruction and plover displacement upon cultivation (64 Fed. Reg. 7587-7601 (February 16,

³⁰A population sink is an area where death rates exceed birth rates (Dinsmore 2000).

1999); Dinsmore 2000). Because the plover's breeding season lasts from mid-April through July, there is dangerous overlap with spring planting schedules.

Plover decline has been extensive. FWS reports a 63% decline in plovers from 1966 – 1991, with a 2.7% annual rate of decline (64 Fed. Reg. 7587-7601 (February 16, 1999)). Dinsmore (2000) updated those figures to a 66% decline from 1966 – 1993. The current population numbers 8 – 10,000 individuals (64 Fed. Reg. 7587-7601 (February 16, 1999)).

Plover decline should also be placed in the context of grassland bird decline. There are nine endemic grassland birds in the U.S., six of which are declining.³¹ Collectively these species represent the most rapidly declining guild of birds nationwide (Knopf 1996; 64 Fed. Reg. 7587-7601 (February 16, 1999)). The habitat needs of these birds vary from bare ground and short vegetation to mid-grass prairie and shrubs (Knopf 1996).

Plover and prairie dog protection therefore would be mutually beneficial. In addition, a prescription for a grassland mosaic, wherein extensive prairie dog colonies conjoin areas with higher vegetation would address the habitat needs of grassland endemic birds more generally. FWS, however, has delayed protection of the mountain plover, despite the lack of dispute about the species' imperiled status.

Ferruginous hawk. The largest of the Buteo hawks, the ferruginous hawk depends on prairie dogs as prey. In fact, there is a close association between the hawk and prairie dogs, as ground squirrels, jackrabbits (Zepus spp.), and prairie dogs

³¹The other grassland endemics are McCown's longspur (Calcarius mccownii), ferruginous hawk, long-billed curlew (Numenius americanus), lark bunting (Calamospiza melanocorys), chestnut-collared longspur (Calcarius ornatus), Sprague's pipit (Anthus spragueii), Baird's sparrow (Ammodramus bairdii), Cassin's sparrow (Aimophila cassinii) (Knopf 1996).

represent the main prey for ferruginous hawks (Olendorff 1993). Researchers have indicated that ferruginous hawks are abundant in areas with prairie dog acreage (Cully 1991; Knowles and Knowles 1994).

The hawk had been a Category II species since the 1970s, but was petitioned for listing as endangered in 1991 by The Ferruginous Hawk Project, Great Salt Lake Audubon, and HawkWatch International (The Ferruginous Hawk Project 1991). FWS denied the petition despite the fact that Regions 1, 2, and 6 (the lead region for the species) of FWS agreed that the petition merited at least a positive 90-day finding (57 Fed. Reg. 37507-13 (1992)).

In fact, there is current disagreement on the question of ferruginous hawk decline. Some researchers have noted declines (e.g., Woffinden and Murphy 1989). Alternatively, Knopf (1996) described the 1966-1993 population trend for the hawk as increasing 1.64% annually. Part of the explanation for this inconsistency may be significant fluctuations in hawk populations from year to year, which was the primary reason cited by FWS to support its negative 90-day finding. There is, then, a condition of scientific uncertainty in the case of the hawk that precludes judgment on listing. Although the hawk itself may not necessitate ESA listing at this time, protection of BTPDs would probably benefit the hawk by enhancing its prey base.

Despite this scientific uncertainty, Canada developed a recovery plan for the hawk in 1994. That plan emphasized the need to protect prairie dogs and other burrowing mammals associated with the hawk (Canadian Ferruginous Hawk Recovery Plan 1994). Similarly, prairie dog protection in the U.S. portion of the hawk's range would help provide the hawk with a stable prey base.

Other associates. The burrowing owl (*Athene cunicularia*), is also in decline (Knopf 1996) and is associated with prairie dog colonies. These owls depend on prairie dog burrows for nesting and the close-cropped vegetation on prairie dog colonies enhance foraging opportunities for this species (Butts and Lewis 1982; Toombs 1997). Owl decline has been linked to prairie dog decline (Butts and Lewis 1982; Knowles and Knowles 1994). This species has not yet been petitioned for ESA listing, but would also benefit from prairie dog ecosystem protection.

In addition, there are several other species characterized as associated with prairie dog colonies: the golden eagle (*Aquila chrysaetos*), horned lark (*Eremophila alpestris*), deer mouse (*Peromyscus maniculatus*), and the northern grasshopper mouse (*Onychomys leucogaster*). For 117 additional species, life-history characteristics suggest that they may benefit from prairie dogs and their colonies, but there is insufficient data at this time to draw conclusions about their association with prairie dogs (Kotliar et al. 1999).

Protection of the BTPD could therefore serve a broader purpose than single-species protection. If listed, Section 7 and Section 9 provisions could facilitate recovery of the prairie dog and, in turn, the species who are so closely associated with prairie dogs (black-footed ferret, mountain plover, and swift fox). Ecosystem management could flow directly from the protection of a single species.

Commentators have critiqued the keystone concept as a guide in endangered species policy given scientific uncertainty regarding keystones (e.g., Mills et al. 1993), but they have not commented directly on whether to prioritize protection of a clear keystone species whose decline is impacting a suite of other species. Another

researcher has indicated that ESA listing of keystones as a surrogate for an ecosystem approach is not a wise biodiversity policy, as it requires keystones to be imperiled before they are protected. Ecosystem protection will therefore come too late (Doremus 1991). I agree and therefore recommend that a precautionary approach, coupled with consideration of a species' ecological importance, is the optimal combination for biodiversity protection. Indeed, other researchers (e.g., Noss et al. 1997; Miller et al. 1998/1999) emphasize that the protection of focal species such as the BTPD can promote ecosystem level conservation efforts.

Federal lands. The prairie dog issue has unfolded, in part, on federal lands. USFS and BLM both control substantial prairie dog habitat. USFS administers the National Grasslands, which include approximately 3.7 million acres in the Great Plains (USFWS 2000a). BLM administers approximately 9.6 million acres of land within the BTPD's range (Knowles 1995). On the National Grasslands, 1.15% of the land area was reported occupied by prairie dogs,³² while occupied acreage on BLM lands amounted to 0.39%.³³

Not all of the acreage on BLM and USFS lands within the BTPD's range is suitable. However, according to FWS, these low levels of prairie dog occupancy on federal lands were caused, in part, by poisoning and shooting on federal lands. These activities were historically executed or facilitated by the federal land managers themselves. For instance, the prairie dog management plan for the Comanche

³²This calculation is derived from USFWS (2000a), which estimated 3.7 million acres of National Grasslands, 42,460 acres of which was occupied by prairie dogs.

³³This calculation is derived from Knowles (1995), who estimated 9.6 million acres of BLM land within the BTPD's range, 37,535 acres of which was occupied by prairie dogs.

National Grassland in Colorado stated that prairie dog activities "...may conflict with cattle grazing..." and there is a consequent need to "...control their [prairie dogs'] numbers to reduce conflict between the prairie dogs and other users."³⁴

On the nearby Cimarron National Grassland, shooting was encouraged by USFS. The management plan for that grassland stated:

Sport hunting is encouraged as the main source of prairie dog control. To make this program effective, coordination with Colorado Division of Wildlife [sic] must take place. Maps will be provided showing town locations, interpretive signs at some town locations informing the public as to the management of the prairie dogs. Hunting will be particularly encouraged March through May when females are pregnant or lactating. Blinds may be used at larger towns to increase hunter success.³⁵

Often these control measures have been advocated as a means to execute a "good neighbor" policy, where federal land managers sought to buffer prairie dog occupation on federal land from impacting adjacent private lands. The checkerboarded nature of federal land holdings in the Great Plains, made such a policy especially significant. Even the National Park Service (NPS), imbued with providing protection to wildlife and lands under its purview, followed such a policy and poisoned substantial prairie dog acreage on NPS land (USFWS 2000a).

Although managing prairie dogs on federal lands is important for species and ecosystem recovery, private lands comprise nearly all of the prairie dog's habitat in the southern half of its range (USFWS 2000a). FWS will therefore need to address

³⁴See Comanche National Grassland Prairie Dog Management Plan. Exhibit in BLF 1998 petition (BLF et al. 1998).

³⁵See Cimarron National Grassland Prairie Dog Management Plan. Exhibit in BLF 1998 petition (BLF et al. 1998).

management issues on both public and private lands to confront this issue. One proposal by the agency is to provide candidate conservation agreements with assurances that would be applied to private lands on a voluntary basis. As of this writing, such an agreement has not been promulgated for the prairie dog but is expected. The conservation agreements would provide assurances to participating landowners that, once they commit to voluntary measures for prairie dog conservancies, additional resource use restrictions would not be imposed should the species be listed in the future.³⁶

Values promoted by FWS. FWS has declined providing statutory protection for the BTPD, despite being provided with ample opportunity to do so. Since its receipt of the 1994 petition, the agency has recognized that protecting prairie dogs would protect the entire prairie dog ecosystem. Moreover, FWS has been presented with the opportunity to address the prairie dog ecosystem's state of imperilment before it faces extinction.

Although the reduction of prairie dog acreage has been extreme, the petitioners requested a threatened rather than endangered listing. The precautionary role of the threatened category to the 1973 Act suggests that FWS should continue to protect both threatened and endangered species (Chapter VII). A real danger of the listing priority system is that only the most endangered species will be listed,³⁷ and threatened species that are not protected will degenerate to an endangered condition.

³⁶Draft BTPD Candidate Conservation Agreement with Assurances on file with author.

³⁷Some species, such as the lynx (*Lynx canadensis*), are extremely rare at time of listing, face multiple threats, and still receive only a threatened designation by FWS (65 Fed. Reg. 16051-86 (March 24, 2000)).

It is undoubtedly vital to protect species that are close to the brink of extinction, but it is equally important to preserve in the Act the value of the threatened category as a precautionary measure.

However, in its responses to requests for prairie dog protection, the agency has taken the position that ecologicistic values do not provide the basis for listing, rather the scientific value is pre-eminent, as codified in the ESA's best available science standard. In its designation of the BTPD as a warranted but precluded species, the agency has followed a policy of waiting until a species is endangered before conferring protection.

Economic concerns may also factor in FWS resistance to prairie dog protection. These economic values have not been articulated by FWS itself. This is to be expected, given the ESA requirement that such factors not be considered in the listing stage of agency decision-making. While some 90% of the 14,300 comments FWS received from individuals favored listing,³⁸ an array of actors opposed protection. The grazing industry, developers, tribal governments, hunting groups, state wildlife agencies, weed and pest control districts, county commissions, soil conservation districts, state agriculture departments, western governors, and other organizations, agencies, and officials openly indicated antagonism to prairie dog protection and opposition to listing. BTPD listing was seen as a threat to agricultural and development activities.³⁹

³⁸In total, FWS received 14,500 comments. The agency received 14,300 comments from individuals, approximately 90% of whom supported listing (65 Fed. Reg. 5478 (February 4, 2000)).

³⁹See comments received during public comment period leading up to February 4, 2000 decision by FWS to designate the BTPD warranted but precluded.

For example, describing the BTPD as a “rat of the prairies...host to a flea, which in turn carries the germ that may cause the bubonic plague,” the Oglala Sioux Livestock and Landowners Association pledged “to employ all necessary measures to resist and defeat” the prairie dog petition.⁴⁰ Stated a McCone County, Montana commissioner, “Prairie dogs are NOT endangered, nor are they beneficial for any reason that any of the natives of this county can think of. They are the animal version of a noxious weed that, left unchecked, will spread till it encompasses the whole of its area.”⁴¹ Unlike the case of the owl, FWS did not analyze the issue of the economic impact of prairie dogs, despite multiple scientific studies indicating that prairie dogs do not cause significant economic harm to livestock production.⁴²

A vociferous response came from the states within the BTPD’s range. The State of Colorado threatened to sue FWS if the prairie dog was listed.⁴³ The Governor of Wyoming wrote a letter to FWS personally opposing BTPD protection.⁴⁴ Since the petitions were filed, many of the states within the range of the BTPD have participated in an interstate working group the focus of which is a voluntary

⁴⁰Oglala Sioux Livestock and Landowners Association. 1998. “Resolution.” Resolution passed October 30, 1998.

⁴¹Email correspondence from Connie Eissinger, McCone County, Montana commissioner to USFWS, dated November 2, 1999.

⁴²Studies indicating that prairie dogs do not cause significant economic harm to livestock production include Hansen and Gold 1977; Klatt and Hein 1978; O’Meilia et al. 1982; Collins et al. 1984. Other research indicates that prairie dogs may even help protect the economic value of rangeland by limiting shrub encroachment of grasslands (Weltzin et al. 1997).

⁴³Letter from the State of Colorado (Greg Walcher (Department of Natural Resources Director), Ken Salazar (Attorney General), and Don Ament (Commissioner of Agriculture)) to USFWS, dated November 3, 1999. The letter stated, “Under the circumstances, and given the obvious impacts to its citizens, it appears Colorado would have little choice than to move forward with litigation to protect its interests should the pending petition ultimately result in a final rule listing the black-tailed prairie dog as ‘threatened.’”

conservation strategy for preventing the further decline of prairie dogs (Van Pelt 1999). Nine of the eleven states in the species' range have signed on (the exceptions being CO and ND), but some of the signatories (WY and AZ) have failed to pass plans in line with the requirements of the interstate agreement.

Indeed, some of the state plans passed since the BTPD was designated warranted but precluded have been hostile to prairie dog conservation and/or have perpetuated historical factors that have caused prairie dog decline. For instance, the goal in the Wyoming state plan was to prevent prairie dog acreage in that state from falling below 200,000 acres. Measures for restricting shooting and poisoning would only be implemented if BTPD acres fall below 230,000 acres. However, at the time of the plan's development, occupied prairie dog acreage was estimated 329,000. The state's plan would therefore allow the continued decline of BTPDs by approximately 30% before enacting any protections for the species.⁴⁵

For its part, the Arizona plan identified 2.9 million acres in the state as biologically suitable for BTPD restoration.⁴⁶ The plan then applied the standard that only those federal and state lands located two miles from private land will be considered in the base of "suitable acreage." The two-mile buffer consequently reduced the base of "suitable" lands from 2.9 million acres to 202,156 acres. The inclusion of the two-mile buffer therefore reduced the biologically determined

⁴⁴Letter from Wyoming Governor Jim Geringer to USFWS, dated May 21, 1999.

⁴⁵See "Wyoming Black-tailed Prairie Dog Management Plan and Conservation Efforts." Final Draft. June 15, 2001.

⁴⁶The BTPD has been extirpated from the state (USFWS 2000a).

suitable acreage by over 90%.⁴⁷ Even these modest plans were too much for the respective state wildlife commissions to bear, as they were rejected in both states as of the close of 2001.

Analysis of FWS actions. As in the case of the owl, despite articulation of scientific values, and the recognition of the ecologicistic value of prairie dog protection, FWS has resisted protective action. The alignment of economic and political interests against prairie dog protection stands in contrast to some degree of popular support for BTPD protection. As of this writing 3.5 years after the most recent prairie dog listing petitions were filed, despite FWS recognition that the species warrants protection, the BTPD still awaits formal protection.

Scientists involved in ferret recovery efforts have reflected about the causes for the program's ineffectiveness. While the captive-breeding program has been successful (Miller et al. 2000b), there has been a consistent problem in restoring those individuals to the wild. Obstacles include the hostile of local ranching publics to prairie dogs and ferret reintroduction (Reading 1993), and the problematic role of the Wyoming Game and Fish Department (WGF), to whom FWS delegated the lead role in ferret recovery (Reading and Miller 1994).

Several participants demonstrated that WGF's inordinate influence in the recovery process translated into delayed conservation actions, political maneuvering when it came to establishing captive breeding facilities beyond Wyoming's borders, and impediments to restoring ferrets to the wild in sites outside the state (Reading and

⁴⁷See Van Pelt, W.E., A. Averill-Murray, and T.K. Snow. 2001. "Interagency Management Plan for Black-tailed Prairie Dogs in Arizona." Nongame and Endangered Wildlife Program. Arizona Game and Fish Department, Phoenix, Arizona.

Miller 1994; Miller et al. 1996; Clark 1997; Miller et al. 2000b). Indeed, a central criticism has been WGF's decision-making style, characterized by rigid government bureaucracy with a resultant "group think." Group think stifles innovation, adaptability, and a free flow of information (Clark 1997; Miller et al. 2000b). This behavior did not serve ferret recovery. Rather, the ferret situation highlights just how problematic state autonomy can be in the task of recovering species, particularly when they have an historic range of 13 states, as the ferret did (Miller et al. 2000b).

The predator and rodent control issue discussed in Chapters VI and VII was part of ESA discourse early on and prairie dogs were involved in that debate. The livestock industry and the western delegation in Congress resisted federal restrictions on the use of chemical toxicants. Resolution of this controversy therefore entails revisiting the federalist tensions in the ESA (Chapter VIII).

In addition, the warranted but precluded status of the BTPD highlights two dynamics: 1) FWS does not have an adequate listing budget; and 2) FWS's lack of an adequate listing budget provide it with a rationale for avoiding the protection of "hot potato" species. In a sense, this latter issue both increases FWS autonomy to avoid listing of controversial species that a weak federal agency would predictably shy away from, but leaves the agency in a weak, underfunded state.

There are close parallels with ESA discourse and implementation in the U.S. and the political discourse on acid rain in the U.K. in the 1980s and 1990s. Hajer (1995) demonstrated that while the traditional technocratic approach to acid rain was successfully challenged by an eco-modernist discourse based on ecological and precautionary precepts, governmental actions continued to be technocratic and non-

precautionary. This was despite governmental legitimization of the precautionary ecological approach. One explanation for this gap between discursive legitimization of a paradigm and its non-implementation was the failure of those promoting the precautionary ecological response to acid rain to frame their critique in terms of the need for energy conservation. This would have been a broader framing than the technological fix of installing scrubbers on smoke stacks, which was the primary measure advocated by eco-modernists. Another reason for the discourse-implementation gap was the continual affirmation by the government of the need for a sufficient scientific basis prior to environmental protective action and the failure of eco-modernists to question this burden of proof.

Drawing from the U.K. example, a broader framing in U.S. endangered species protection and recovery could be achieved through a questioning of whether environmental protection comes at the expense of economic vitality and whether economic growth translates to human welfare. In addition, the U.K. eco-modernists' failure to fundamentally promote precaution and revisit the issue of scientific certainty is analogous to the continual lack of explicit analysis in the ESA's legislative history on whether to protect species in the face of uncertainty. Perhaps if political actors in the U.S. meet these challenges directly, FWS will begin to implement the ecosystem protection purpose of the ESA and will do so in a precautionary way.

Conclusions

The case studies indicated that FWS has been presented with opportunities to protect whole ecosystems by listing and providing subsequent protection for single species, but has delayed or refused action on such requests. In the northern spotted owl case, FWS was coerced through litigation to list and provide critical habitat for the owl. In addition, the Bush administration compromised the Endangered Species Committee process and its actions were circumscribed by federal courts. In the prairie dog case, FWS has repeatedly refused to provide federal oversight or protection to the BTPD. Moreover, highly imperiled members of the prairie dog ecosystem have had delayed and insufficient protection.

These case studies transpired across the Reagan, Bush, Clinton, and George W. Bush administrations. Yet, these various administrations did not demonstrate significant variation in their responses across cases. In addition, both cases reached their highpoints,⁴⁸ in terms of federal attention, in a time when the need to shift to ecosystem protection was widely recognized. During this same time, the precautionary principle was gaining its foothold in international environmental law. These case studies suggested both FWS resistance to, and the need for, a precautionary, ecosystem approach to implementing the ESA.

The administrative reluctance to implement the Act in a precautionary and ecosystemic way has likely due to several factors (Chapter VIII). FWS is a weak, underfunded agency, beset with litigation, confronting powerful federal agencies and economic interests antagonistic to species protection. In short, the Act's recognition of the cause of the extinction crisis in the U.S. – “economic growth and development

⁴⁸The BTPD case is ongoing, and perhaps is yet to reach its zenith.

untempered by adequate concern and conservation”⁴⁹ – confronts FWS with an extremely difficult task, but does not provide the agency with the tools for rising to this challenge.

The solution undoubtedly lies in substantial increases in funding and the use of administrative initiatives to implement the law in a more effective way. Given the history of a lack of funding (Chapter VIII), congressional undercutting of administrative actions (e.g., in the case of the owl), and agency reluctance to implement the ESA in an effective way, this “solution” appears untenable. The moving force for continued protection in both the owl and prairie dog case was citizen litigation. Citizen lawsuits will continue to be a crucial part of ESA implementation until the systemic issues of funding and agency weakness can be overcome.

⁴⁹16 U.S.C.A. § 1531(a)(1).

CHAPTER X

CONCLUSIONS

The legislative history of the ESA holds important lessons for future endangered species policy in the U.S. First, the history demonstrates that there has been an important theme of protecting ecosystems from 1973 through the amendments in 1978, 1982, and 1988. Second, it indicated that elements of the precautionary principle are manifest in every legislative period, but that there were regular conflicts over the question of what to do in the face of scientific uncertainty. Third, revisiting the ESA battlegrounds provided a way to bring the lessons of the legislative history to bear on current controversies. Fourth, the valuational analysis indicated a variety of values at play in ESA discourse, beyond the environment versus economy dialectic. Fifth, the qualitative analysis demonstrated most clearly the congressional intent behind the ESA. Finally, the case studies showed that FWS has declined ecosystem and precautionary protection when presented with the opportunity to act and that this is likely due to a multitude of factors. I elaborate on each of these findings and close with reflections on lessons of the past.

First, ecosystem protection was a significant theme in the history of the ESA. This is an important finding, as there has been a trend in ESA literature of treating the ESA's Section 2 ecosystem protection purpose as anomalous, perhaps an afterthought. I have shown this was not the case. In fact, the actors frequently invoked the ecologicistic value, and all types of participants in ESA discourse, from 1972/73

onward, promoted visions of protecting whole ecosystems. This indicates that ecosystem protection has been, and remains, an important part of the law. The design of the act is certainly not optimal for ecosystem protection. However, that was likely due to the perception that if one protects the imperiled members of an ecosystem (single species), the ecosystem itself will remain intact. If one “saves all the pieces,” the whole will remain functional. This may be flawed logic, as the complexity of ecosystems underscores that they are more than the sum of their parts. However, the flawed logic does not detract from Congress’ intent. The congressional intent was to safeguard ecosystems.

Second, actors have argued implicitly about the precepts of the precautionary principle since the ESA’s original passage. A point of contention in the debate has long been what to do in the face of scientific uncertainty. Should one err on the side of species protection or on the side of economic growth? Participants in this discourse have argued both sides, and Congress has promulgated measures on both sides. However, there has been minimal explicit deliberation over this question, and consequently inconsistent application of science to policy. Given the slippery slope of scientific uncertainty, and the correlation between delayed protection and further imperilment and even extinction of candidate and listed species, I would advise the integration of the principle into U.S. endangered species policy. Indeed, the “best available science” standard on which listing decisions are ostensibly based aligns with the precautionary principle.

When the ESA was originally passed, it was internationally considered vanguard legislation: the law would protect species before they were on the brink of

extinction, and the protections it offered were wide and burly. The ESA is still described as one of the most powerful biodiversity statutes in the world. The law therefore deserves to be united with a precautionary approach that will help effect the “foresight” the Congress originally intended in 1973.

Third, revisiting the ESA battlegrounds provided new insights on these current controversies derived from the legislative history. The major findings for the key battlegrounds were as follows:

- Listing: protecting a wide variety of life forms (species, subspecies, distinct population segments, threatened and endangered species, and lookalike species) was adopted and affirmed throughout the legislative history for ecosystemic and precautionary reasons. Administrative prioritization schemes were criticized on the basis of their biological and ecological soundness. Listing decisions have also been questioned by industry and legislators on the basis of whether there was sufficient scientific data to support the listing. In response, Congress has refused to replace the “best available science” standard in the Act with a sound science standard. The welfare of unlisted species has also been taken into account by Congress, who, for precautionary reasons, devised the candidate monitoring system to prevent continued extinctions of species awaiting listing.
- Critical Habitat: Congress substantially modified the requirements for critical habitat, building in administrative discretion for considering

economic impacts of designation and requiring such designations be “prudent” and “determinable.” In response, FWS adopted the policy that critical habitat does not provide additional benefits to listed species beyond that available in the jeopardy standard of Section 7. However, the legislative history revealed both that Congress did not repeal the critical habitat provision, despite its being the source of controversy since *Tellico*, and that industry representatives recognized the important role of critical habitat in focusing conservation actions. The broader legislative history also indicated the tie between species and their habitat, thereby underscoring the logic for the critical habitat provision.

- Habitat Conservation Plans: There was not substantial discourse on HCPs in the legislative history. However, the 1982 conference report indicated a clear expression of the need to protect ecosystems through strategic conservation planning. In addition, the legislative history recognized the role of habitat destruction on species imperilment, providing a rationale for developing HCPs that intelligently respond to the need to protect listed species on private land.
- Consultation: FWS has been criticized at least since *Tellico* for the quality of its consultations. This criticism stemmed from the environmental community, who criticize the agency for being non-

precautionary and myopic about ecosystem concerns. Alternatively, industry representatives criticized FWS for being excessively precautionary and thereby unduly restrictive of economic activity. Although Section 7 was substantially modified in 1978 with the addition of the Endangered Species Committee, the rancor of that debate and the extensive provisions for using that committee stemmed from the issue of whether any species could be safely “written off” in favor of economic activity. The result – arrived at, in part, for ecosystemic reasons – was that the fate of all species, from the most charismatic to the most obscure, was a grave decision which should be structured to err on the side of species protection.

- Reintroduction/translocation: Reintroduction and translocation both conflicted and aligned with ecosystem and precautionary arguments in the ESA’s legislative history. In the Tellico controversy, translocation of snail darters to the Hiawassee River was endorsed as a way to avoid ecosystem protection for the snail darter on the Little Tennessee River. Alternatively, the reintroduction of wolves to Yellowstone National Park was advocated to effect wolf and ecosystem recovery. Sea otter translocation was endorsed as a precautionary move to guard against extinction of the species, while it was designed in a way to limit economic impacts. The experimental provision for reintroduction could align with a precautionary approach, but also risks squandering

protection for species so imperiled that they must be artificially restored to their native habitats.

- Recovery: The most contentious recovery issue was implementing the wolf recovery plan, but recovery itself has not been a high-profile issue across the Act's legislative history. Recovery planning was part of two key sets of amendments – in 1978 and 1988. It has been discussed in Congress in ecosystemic terms, with Congress concluding that recovery planning should not be biased toward charismatic vertebrates.
- Prohibitions on takings: Congress committed to a wide, precautionary prohibition on take of listed species at the passage of the ESA. In 1982, that prohibition was lessened to allow incidental take of species by federal agencies who satisfied the terms of Section 7 and by private entities who developed an HCP. There is a strong ecosystemic basis for Section 9 takings prohibition, but Congress has been ambivalent on applying precautionary logic toward takings.

Proceeding from the rich lessons of the legislative history, I provide recommendations for resolving problems in each of these ESA battlegrounds. Regarding listing, I recommend prioritizing the listing of focal species, whose protection would safeguard whole ecosystems; listing species earlier, given the Act's

precautionary design on the listing issue; and using enforceable, adequate candidate conservation agreements where expeditious listing is not possible.

In terms of critical habitat, I recommend FWS repeal regulations that eliminate the recovery function of critical habitat. Instead, I suggest adopting a precautionary and ecosystemic stance toward critical habitat to promote species and ecosystem recovery.

I recommend that HCPs be promulgated on the regional level to effect ecosystem recovery and that their design consider scientific uncertainties. HCPs can be an intelligent response to the private property critique of the ESA, but they should not conflict with the Act's goal of recovering species.

Regarding consultation, I found that empirical analyses repeatedly demonstrate that FWS is not implementing Section 7 in a way that significantly curtails economic activity. I recommend that FWS revise regulations that have reduced the recovery function of the jeopardy standard. In addition, I suggest that the agency employ Section 7 to make public lands a flagship for species recovery, a move that should divert private property critiques of the ESA and provide for ecosystem recovery on public lands.

For reintroduction and translocation, I indicate that, with earlier listings, the need for these methods should be minimized. Reintroduction and translocation should not be used to avoid economic impacts. Where they are vital tools for conservation, reintroduction and translocation should incorporate adaptive management strategies and specialized task forces designed to function free of the "group think" and bureaucratic stagnation seen in the black-footed ferret experience.

The recovery issue requires special attention by FWS, as the overall goal of the ESA is to recover species. I recommend that FWS pursue ecosystem recovery plans, and the agency has indeed committed itself to such a policy. The goals in recovery plans must be biologically defensible, unlike plans in the past where, even if all goals were met, the species would not be recovered (Chapter II).

The last ESA battleground for which I suggested reforms was on take prohibitions. Take was broadly defined by Congress and that broad definition has been repeatedly upheld by the Supreme Court. I suggest that take prohibitions on focal species are one way to implement the ecosystem purpose of the Act, particularly using the harm regulation that addresses habitat modification.

Fourth, the valuational analysis indicate that there are a variety of values at play in ESA discourse, and that conflict is not simply economics versus the environment. Quantitative analysis provides the tools for discerning longitudinal patterns in value invocation. The observation that the ecological value is invoked as frequently as utilitarian reasons to protect species corroborated textual evidence of ecosystem advocacy by participants. Further, the ecologicistic value was invoked frequently across legislative periods and venues, indicating that it has been a consistent theme, as well as an important one.

At least five values – economic, ecologicistic, utilitarian/protective, moralistic, and scientific – have been a prominent part of ESA debate. Ecologicistic, utilitarian/protective, and moralistic values were often used together, in an ecosystemic, precautionary frame, to challenge those promoting the economic goal of reducing the ESA's strength. This combination of values helped guard against efforts

to weaken the ESA. As a result, the Act was and continues to be based on the assumption that all imperiled species – including obscure ones – merit protection to effect ecosystem protection.

A surprising finding was the infrequent use of the scientific value, relative to the other four most frequently used values. ESA controversies usually center on the scientific basis of decision-making (Chapter II). The coding results may be a product of the lack of an explicit discussion on the precautionary principle. If actors directly addressed the principle, they might demonstrate a clearer promotion of the scientific value as a scope value, rather than as a means for seeking other valuational ends. The ecosystem (Chapter VI) and precautionary principle discussions (Chapter VII) provide more insight into the use of science in ESA debate than does the quantitative analysis (Chapter V). The latter should not be interpreted as evidence that scientific discourse is marginal in ESA controversies.

The values employed in the course of debate undermined the accuracy of describing ESA discourse as a straightforward dichotomy of economics versus the environment. Utilitarian-protective arguments often illustrated the economic value of species preservation and the ecologicist arguments sometimes included reference to ecosystem services that are economically valuable (Chapter III). Certainly, economic concerns can conflict with species preservation, which is precisely why the ESA is necessary,¹ but a healthy environment is essential for maintaining a healthy, sustainable economy. The owl case indicated this most clearly, as clearcutting old-growth meant that the timber industry was ushering in its own decline. Even without

¹This is recognized by the ESA (16 U.S.C.A. § 1531(a)(1)).

the northern spotted owl, old-growth was expected to run out in some areas in as little as ten years (Chapter IX).

Fifth, the qualitative approach illustrated the congressional intent behind the ESA. When the 1973 floor debate was opened and closed by bill manager John Tunney within an ecologic frame, it indicated the visible role ecosystem protection arguments played in the original debate. Other prominent legislators, high-profile scientists and celebrities, and NGO representatives, both business and environmental, all promoted the importance of ecosystems as a reason to protect species, and this formed an important part of the ESA's story. The reason behind the ecosystem purpose of the ESA was clear: Congress intended to protect ecosystems and thought this could be accomplished through the protection of single species.

Alternatively, congressional intent on the precautionary principle is mixed. I demonstrated that there were outcomes that both aligned and contravened the principle. However, my analysis revealed that the issue of what action (or inaction) to take in the face of scientific uncertainty has been a consistent problem throughout the ESA's legislative history I examined. As demonstrated in the qualitative review (Chapter VII) and the northern spotted owl case study (Chapter IX), scientific uncertainty will continue to be a point of contention that may hinder enforcing the ESA or cause delays. These delays work against extinction prevention. Therefore an explicit resolution on whether or not the precautionary principle is the guiding decision-making standard in the ESA needs to be addressed by policy-makers.

The qualitative approach made possible examination of the precautionary principle within the discourse. There was no single value that represented the concept

of a precautionary approach adequately, indicating that quantitative methods will be appropriate only in certain contexts. I could have attempted to make the precautionary principle fit into a quantitative approach, but the loss of information would have been costly. Further, such analysis would not indicate congressional intent behind the Act as clearly. The qualitative approach was integral to exposing the contradictory use of science in ESA debate and the need to make the discourse over science and endangered species policy more explicit and deliberative.

Finally, examining the northern spotted owl and black-tailed prairie dog cases indicated that FWS is not regularly integrating ecosystem protection and precaution into ESA implementation. Although the agency has put forward ecosystem management as a priority, in practice FWS does not seem to be living up to this pledge. To the contrary, FWS has been presented with opportunities to protect the owl, an old-growth forest indicator species, and the prairie dog, a keystone species creating the prairie dog ecosystem, but instead the agency has delayed and resisted protection. In so doing, FWS has foregone significant steps at implementing ecosystem protection. In both cases, FWS action has been forced by citizen petitions and litigation. The problems in ESA enforcement were traced both to the particulars of the owl and prairie dog cases and to broader problems, including federalism, underfunding, and litigation.

The case studies provide cause for pessimism and optimism. While systemic underfunding and the political weakness of the FWS make effective enforcement of the law a continual challenge, citizens have played an important role in the ESA's administration and this shows no sign of decreasing. Many of the improvements I've

recommended could be accomplished through litigation and creative citizens' initiatives. Of course, administrative initiative and positive legislative action would help more, are more likely to succeed, and should be regularly encouraged.

Reflecting on the ESA's past I describe many of my findings as surprising. There was divergence from my study's conclusions and the literature's characterization of the ESA as a myopically single-species act, whose promulgators failed to consider the need to protect ecosystems rather than just species. My findings indicate that such a characterization is mistaken, that legislators in 1972/73 through 1988 understand the importance of ecosystem protection. Their downfall was not a lack of interest in ecosystem protection or a lack of comprehending the need to protect ecosystems. Rather, they may have been mistaken in assuming that by protecting species – “saving all the parts” – they could accomplish ecosystem protection.

In addition, I underestimated the rich diversity of the ESA's legislative history and the potential it holds for improving endangered species policy in the future. I did expect that ESA actors were skirting the issue of whether or not to take species protective action in the face of scientific uncertainty. I also presumed that a valuational analysis was appropriate for an issue area in which commentators have described a fundamental clash of values.

I argued in Chapter I that the ESA is a national curiosity – it was supported at the outset and is long-lived, but is now incredibly controversial. Much legislative energy has been directed toward scientific disputes, scientific uncertainty, and what to do in the face of that uncertainty. The lack of explicit dialogue on the precautionary

principle, or shades of it, resulted in inconsistent use of science in endangered species policy.

In addition, the fact that the ESA's purpose prioritized ecosystem protection contrasted with the lack of implementing provisions requires explanation. I have demonstrated that ecosystem protection was on the minds of legislators when the act was passed and this has endured through the most recent legislative history. Only one organization² in the fifteen-year legislative history of the act denied John Muir's wisdom that "Whenever we try to pick up anything by itself, we find it attached to everything in the universe."³

This is cause for hope. Congress, and a vast array of participants in ESA debates, recognized the roots of the biodiversity problem in the U.S. Habitat destruction and the erosion and disintegration of ecosystems are largely to blame for the disappearance of life-forms. Congress and participants in this discourse, in their words and deeds, regularly confronted the characterization of the ESA as a naïve law overly oriented toward warm and fuzzy creatures. Repeatedly, the conclusions reached were that we must save all the parts, and we must recognize just how much we do not know.

There is a flip side to this, however. Congress has recognized the need for precaution and the need to protect ecosystems since 1973. Yet, species have gone extinct, even species awaiting listing. Congress has sometimes chosen not to err on

²The same organization, the Western States Water Council, denied the ecologicist argument three times during the course of the 1982 hearings. This represents 0.29% of the 1014 cases coded.

³This was Rep. Gerry Studds's (D-MA) opening remark to the 1987 House subcommittee hearings (Hearing 100-8: 1-2).

the side of species protection and FWS has sometimes not seized on chances to maximize species protection. Such behaviors will not benefit species, nor are they the basis for an effective endangered species policy more generally. The foundation for a more effective program is foresight.

Foresight requires hindsight. In the late 19th century, the passenger pigeon represented the most abundant bird on earth, numbering over two billion. Yet, only a few short decades later, after habitat destruction and mass shooting by American settlers, the pigeon had vanished from the skies forever. Aldo Leopold (1966: 116) left us with this eulogy:

We grieve because no living man will see again the onrushing phalanx of victorious birds, sweeping a path for spring across the March skies, chasing the defeated winter from all the woods and prairies of Wisconsin...

There will always be pigeons in books and in museums, but these are effigies and images, dead to all hardships and to all delights. Book-pigeons cannot dive out of a cloud to make the deer run for cover, or clap their wings in thunderous applause of mast-laden woods. Book-pigeons cannot breakfast on new-mown wheat in Minnesota, and dine on blueberries in Canada. They know no urge of season; they feel no kiss of sun, no lash of wind and weather. They live forever by not living at all.

Our grandfathers were less well-housed, well-fed, and well-clothed than we are. The strivings by which they bettered their lot are also those which deprived us of pigeons. Perhaps we now grieve because we are not sure, in our hearts, that we have gained by the exchange. The gadgets of industry bring us more comforts than the pigeons did, but do they add as much to the glory of the spring?

Perhaps as the recognition grows that ecosystem protection requires cooperation across national borders, the precautionary principle will permeate U.S. borders and take hold. Perhaps we will be more creative about maximizing protection of ecosystems by prioritizing species protective actions in an intelligent way. These

actions go beyond the ESA – they go to the heart of U.S. biodiversity policy more generally. The U.S. stands at a crossroads of whether endangered species will be protected or compromised, and whether economic activity will be curtailed or permitted, at the benefit or expense of future generations of humans and wildlife alike.

At the same time, our conceptions of “economic vitality” bear closer scrutiny. Will participants in political discourse continue to insist that environmental protection should not limit economic growth? Or will a “healthy economy” be redefined to integrate multiple human values, including consideration of the rights of future generations of humans, the inherent value of the other-than-human world, the irreversibility of species and ecosystem extinctions, and a broader time frame? All of these are options that only become possible once the economy versus environment dichotomy is debunked.

The lessons of the ESA’s rich legislative history should be told: we knew more than we thought we did. The discourse demonstrates initiative as much as intransigence and forethought as much as back-pedaling. I have tried to extract valuable lessons from this history so that we might avoid the mistakes of the past.

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APPENDIX A

ALTERNATIVE METHODS AND INTER-CODER RELIABILITY

Alternative methods of text analysis

There are a multitude of approaches to discourse analysis. In this appendix, I describe alternative methods that I considered, but did not employ in my dissertation. The first method in analyzing discourse is to take the reader through the evidence in a narrative format that highlights symbolic actions and rhetorical patterns (Hajer 1995; Woods 1999). For instance, Woods (1999) reviewed rhetorical dimensions of the ESA by examining texts (primarily academic books) and indicating the language used to describe the biodiversity issue and consequent “struggles” in ESA policy. The focus is deliberately on struggles, given the work’s predication on a “dramatist” approach in rhetorical analysis that focuses on conflict.

For the present study, given my desire to describe the ESA context in a systematic way, I believe what needs to be clearer in text analysis is which texts are eligible for review. It is not evident whether Woods (1999) aimed to analyze the universal set of endangered species rhetoric (which would be impossible) or if he just sampled that rhetoric. If the choice was the latter, it is not clear what his rules for sampling were. In another work on analyzing environmental discourse, Hajer (1995) similarly did not indicate the standards by which texts qualify for his discourse analysis. That is not to say that these works are not without value – to the contrary, Hajer contributed to understanding of the problem definition approach, and Woods provided helpful insights about the social context for the ESA debate.

My research, however, had a different focus that required transparent data collection, and the narrative style employed by previous authors needed modification to provide that transparency. By defining my coding dataset as the comprehensive legislative history of the ESA for 1973, 1978, 1982, and 1988,¹ my primary dataset was both transparent and externally defined. The finite nature of legislative histories made comprehensive examination of that set of texts possible. I chose to adopt a case study approach to gauge legislative, administrative, and judicial interactions given the infinite nature of administrative texts and the obfuscating nature of judicial opinion (e.g. gauging problem definitions, especially discerning clear values statements, might often be guesswork in the latter texts).

Another example of a narrative approach to discourse analysis is Paul and Anne Ehrlich's (1996) book on anti-environmental rhetoric in American politics. This work employed science to respond to "fables" set forward by anti-environmental political actors. The notion of fables was useful for my dissertation, given that both fables and problem definitions are stories that intuit certain solutions and privilege certain values. However, the orientation of the Ehrlichs was almost entirely prescriptive, while my research was based on the view that, prior to prescribing ESA reforms, we need a richer description and analysis of how endangered species policy has unfolded in the U.S. Their approach is to engage in myth-debunking, whereas the present study is oriented toward gauging what "myths" have been most dominant within endangered species policy, and how that has changed (or hasn't changed) across time and space.

¹I omitted one early hearing, as it did not directly address endangered species. See Appendix

A second technique is to analyze keywords within the text being reviewed (e.g. Maestas 1996). Although this can be done in a systematic way, I opted not to use a keyword text-analysis approach for several reasons: 1) it is very difficult to develop a universal set of keywords that will capture how congressional actors have discussed their problem orientations in the endangered species context; 2) the back-and-forth nature of congressional floor debate makes it difficult for keywords to capture situational dynamics, despite attempts to capture the context in which keywords are located by analyzing blocks of text; and 3) keyword analysis is meant to provide a more efficient, systematic approach to analyzing text, but the cost of that is a loss in how the story unfolds, especially within the lengthy script represented by congressional hearings and floor debates.

A third approach is to engage in tropological analysis, where one's analysis focuses on the use of tropes, such as metaphors, within the text being reviewed (Bruner and Oelschlaeger 1994; Killingsworth and Palmer 1995; Kritzer 1996). For the purposes of the present study, this approach is necessary but insufficient for a full analysis. What political actors say can be just as important as how they say it, particularly given the goal in this research of describing the context of the ESA's history to analyze the use of the ecosystem and precautionary principles and values. While the use of rhetorical devices such as metaphors and symbolic language is important, and often appears within the textual examples that I cited, this was not my focus.

A fourth approach is to employ survey methods. In one study, undergraduates watched news footage or visited web sites covering a Ku Klux Klan rally that were alternately framed in terms of free speech and public disorder themes. They were then surveyed and tested to determine whether the framing of the issue impacted their level of tolerance (Nelson et al. 1997). In the present study, a survey method can't capture what members of the 95th Congress were thinking, for instance, nor can I feasibly expose policymakers to disparate frames and gauge how their policies change as a result.

A fifth approach is to present primary texts in a table format to demonstrate the textual basis for one's analysis (Moore 1988; Betsill 1999). When utilized alongside a transparent data collection method, this can be very effective. Moore, for instance, examines the mission statements of the Bureau of Alcohol, Tobacco, and Firearm (ATF) and demonstrates how the mission has shifted from revenue protection to crime control by presenting the actual mission statement of the ATF for every year within the analysis. I find this useful, and include appendices to the dissertation that illustrate how I interpreted the values within the texts being reviewed by providing representative excerpts from those texts (Appendix E).

Coding reliability

To test the consistency of my ecologicistic value coding, I performed a keyword search on the 1988 floor debate. This was the only piece of ESA legislative history that was available electronically. The keywords I used were "balance of nature",

“ecosystem”, “intelligent tinker”, “web of life”, “chain of life”, and “connected.” I did a search for these keywords, and analyzed three lines above and three lines below the line in which the word or term was found. The results were that all of the speakers I had manually coded for ecologicistic values (n=12) were also coded ecologicistic using the electronic method. However, one additional speaker would have been coded ecologicistic if I had used the electronic method (Table A-1). For the ecologicistic value, coding reliability would therefore be 92.3%. This test is flawed, however, given the overall lack of legislative history available electronically.

Table A-1. Results of Inter-coder Reliability Test.

Legislative Year	Speaker	Forum	Party	Ecologicistic: Manual	Ecologicistic: Electronic
1988	Breaux	HF	D		
1988	Young	HF	R		
1988	Jones	HF	D		
1988	Lent	HF	R		
1988	Fields	HF	R		
1988	Jones	HF	D		
1988	Studds	HF	D	X	X
1988	Lent	HF	R		
1988	Anderson	HF	D		
1988	Conte	HF	R		
1988	Hutto	HF	D		
1988	Saiki	HF	R		
1988	Weldon	HF	R		
1988	Schneider	HF	R		X
1988	Bosco	HF	D		
1988	Miller	HF	D		
1988	Bereuter	HF	R		
1988	Carper	HF	D		
1988	Parris	HF	R		
1988	Lowry	HF	D		
1988	Ravenel	HF	R		
1988	Hughes	HF	D	X	X
1988	Lightfoot	HF	R		
1988	de la Garza	HF	D		
1988	Green	HF	R		
1988	Thomas	HF	D	X	X
1988	Stenholm	HF	D		
1988	Watkins	HF	D		
1988	Marlenee	HF	R		

1988	Roberts	HF	R		
1988	Smith	HF	R		
1988	Owens	HF	D	X	X
1988	Vento	HF	D		
1988	Weiss	HF	D	X	X
1988	Gallo	HF	R		
1988	Gilman	HF	R		
1988	Watkins	HF	D		
1988	Upton	HF	R		
1988	Jones	HF	D		
1988	Young	HF	R		
1988	Studds	HF	D		
1988	Schneider	HF	R		
1988	Thomas	HF	D		
1988	Ortiz	HF	D		
1988	Young	HF	R		
1988	Studds	HF	D		
1988	Hutto	HF	D		
1988	deLay	HF	R		
1988	Thomas	HF	D	X	X
1988	Tauzin	HF	D		
1988	Schneider	HF	R		
1988	Fields	HF	R		
1988	Lott	HF	R		
1988	Brooks	HF	D		
1988	Miller	HF	D		
1988	Bonker	HF	D		
1988	Vento	HF	D		
1988	de la Garza	HF	D		
1988	Ravenel	HF	R	X	X
1988	Bustamante	HF	D		
1988	Callahan	HF	D		
1988	Dingell	HF	D		
1988	Morella	HF	R		
1988	Scheuer	HF	D	X	X
1988	Livingston	HF	R		
1988	Brown	HF	D		
1988	Hayes	HF	D		
1988	Traficant	HF	D		
1988	Boggs	HF	D		
1988	Lehman	HF	D		
1988	Conte	HF	R		
1988	Wahlgren	HF	D	X	X
1988	Parris	HF	R		
1988	Packard	HF	R		
1988	Hunter	HF	R		
1988	Jones	HF	D		
1988	Dannemeyer	HF	R		

1988	Studds	HF	D		
1988	Scheuer	HF	D		
1988	Lowery	HF	R		
1988	Young	HF	R		
1988	Bonker	HF	D		
1988	Burdick	SF	D		
1988	Mitchell	SF	D		
1988	Moynihan	SF	D		
1988	Chafee	SF	R	X	X
1988	Stafford	SF	R		
1988	Byrd	SF	D		
1988	Burdick	SF	D		
1988	Evans	SF	R		
1988	Adams	SF	D		
1988	McClure	SF	R		
1988	Heflin	SF	D		
1988	Shelby	SF	R		
1988	Symm	SF	R		
1988	Fowler	SF	D		
1988	Graham	SF	D		
1988	Baucus	SF	D		
1988	Gore	SF	D		
1988	Lautenberg	SF	D		
1988	Kasten	SF	R		
1988	Weicker	SF	R		
1988	Riegle	SF	D		
1988	Leahy	SF	D		
1988	McClure	SF	R		
1988	Chafee	SF	R		
1988	Mitchell	SF	D		
1988	Roth	SF	R		
1988	Specter	SF	R		
1988	Byrd	SF	D		
1988	Durenberger	SF	R		
1988	Simpson	SF	R		
1988	Cranston	SF	D		
1988	Bradley	SF	D		
1988	Bingaman	SF	D		
1988	Jones	HF	D		
1988	Fields	HF	R		
1988	Ortiz	HF	D		
1988	de la Garza	HF	D		
1988	Tauzin	HF	D		
1988	Sweeney	HF	R		
1988	Mitchell	SF	D		
1988	Chafee	SF	R		
1988	Burdick	SF	D		
1988	Heflin	SF	D		

1988	Jones	HF	D		
1988	Studds	HF	D		
1988	Beilenson	HF	D		
1988	Young	HF	R		
1988	Fields	HF	R		
1988	Roberts	HF	R		
1988	Livingston	HF	R		
1988	Ravenel	HF	R	X	X
1988	Marlenee	HF	R		
1988	Thomas	HF	D	X	X
1988	Ortiz	HF	D		
1988	Hutto	HF	D		
1988	MacKay	HF	D		
1988	Dingell	HF	D		
1988	Lowry	HF	D		
1988	Smith	HF	R		
1988	Conte	HF	R		

HF = House Floor, SF = Senate Floor.

Electronic coding of other values, especially dominionistic and humanistic, and even the utilitarian/economic value, would not have been feasible, given the wide variation in how actors expressed such values. Ecologistic values entail a finite set of terms, while there is an infinite way to express some of the other values. This indicates the limits of keyword searching, and the potential merit of systematic value coding of large bodies of text, despite its labor-intensiveness.

APPENDIX B

DOCUMENTS COMPRISING LEGISLATIVE HISTORY OF THE ESA

1973 Hearings

Month & Year	Hearing #	HR/Sen	Library of Congress Number
1972	H561-2/92-14 ²	HR	Y4.M53:92-14 pt. 2
March/April 1972	H561-10/92-22	HR	Y4.M53:92-22
March 1973	H561-10/93-5	HR	Y4.M53:93-5
August 1973	S261-3/92-81	Sen	Y4.C73 ² :92-81
June 1973	S261-36/93-67	Sen	Y4.C73 ² :93-67

1973 Reports

Month & Year	Report #	HR/Sen
September 1972	S263-61/92-1136	Sen
July 1973	H563-9/93-412	HR
December 1973	H563-20/93-740	HR
July 1973	S263-30/93-307	Sen

1973 Floor Debate

Date	Congressional Record Page #	HR/Sen	Action
7/24/73	25662-700	Sen	Passed Senate
9/18/73	30157-75	HR	Passed House
12/19/73	42451, 42528-35	Sen	Sen rept. agree
12/20/73	42910-16	HR	House rept. agree

²I did not code this hearing because it pertained only to game management, and hawks, owls, and eagles. Although cited in the [Congressional Index Service Legislative Histories](#), it seemed marginal. This was my only divergence from the Index Service's delineation of the legislative history.

1978 Hearings

Month & Year	Hearing #	HR/Sen	Library of Congress Number
1978	H561-10/95-18	HR	Y4.M53:95-18
1978	H561-29/95-39	HR	Y4.M53:95-39
1978	H561-30/95-40	HR	Y4.M53:95-40
1978	S321-15/95-H33	Sen	Y4.P96 ¹⁰ :95-H33
1978	S321-21.6/95-H42	Sen	Y4.P96 ¹⁰ :95-H42
1978	S321-42/95-H60	Sen	Y4.P96 ¹⁰ :95-H60

1978 Reports

Month & Year	Report #	HR/Sen
1978	H563-8/95-1026	HR
1978	H563-38/95-1625	HR
1978	H563-40/95-1804	HR
1978	S323-13/95-874	Sen

1978 Floor Debate

Date	Congressional Record Page #	HR/Sen	Action
7/17-19/78	21131-48, 21284-88, 21329-58, 21556-94, 21599-605	Sen	Passed Senate
10/14/78	38123-67	HR	Passed House
10/15/78	N/A	HR/Sen	HR/Sen agree on report

1982 Hearings

Month & Year	Hearing #	HR/Sen	Library of Congress Number
1981	H561-23/97-5	HR	Y4.M53:97-5
1982	H561-18/97-32	HR	Y4.M53:97-32
1981	S321-18/97-H34	Sen	Y4.P96 ¹⁰ :97-H34
1982	S321-30/97-H46	Sen	Y4.P96 ¹⁰ :97-H46

1982 Reports

Month & Year	Report #	HR/Sen	Library of Congress Number
1982	H563-16/97-567	HR	Y1.1/8:97-567/pt.1
1982	H563-27/97-835	HR	Y1.1/8:97-835
1982	S323-2/97-418	Sen	Y1.1/5:97-418

1982 Floor Debate

Date	Congressional Record Page #	HR/Sen	Action
6/8/82	12954-62	HR	Passed House
6/9/82	13176-85	Sen	Passed Senate
9/20/82	24187-89	Sen	Senate agreed to report
9/30/82	26187-89	HR	House agreed to report

1988 Hearings

Month & Year	Hearing #	HR/Sen	Library of Congress Number
1985	86-H561-2/99-10	HR	Y4.M53:99-10
1985	85-S321-19/99-70	Sen	Y4.P96 ¹⁰ :99-70
1987	87-H561-33/100-8	HR	Y4.M53:100-8
1987	87-S321-21/100-96	Sen	Y4.P96 ¹⁰ :100-96
1987	87-S321-23/100-177	Sen	Y4.P96 ¹⁰ :100-177

1988 Reports

Month & Year	Report #	HR/Sen	Library of Congress Number
1985	85-H563-14/99-124	HR	Y1.1/8:99-124
1986	86-S323-1/99-261	Sen	Y1.1/5:99-261
1987	87-H563-21/100-467	HR	Y1.1/8:100-467
1987	87-S323-9/100-240	Sen	Y1.1/5:100-240
1988	88-H563-27/100-928	HR	Y1.1/8:100-928

1988 Floor Debate

Date	Congressional Record Page #	HR/Sen	Action
7/29/85	20988-93	HR	House consider
12/11/87	35029-49	HR	House consider
12/17/87	36087-119	HR	House consider
7/25/88	18564-631	Sen	Senate consider
7/28/88	19268-83	Sen	Senate amends, conference
8/4/88	20502-3	HR	House amends/conference
8/8/88	21009-17	HR	Passed House
9/15/88	23926-31	Sen	Senate agrees to conf report
9/16/88	24284-93	HR	Conf Report submitted HR
9/26/88	25477-87	HR	House agrees to conf report

APPENDIX C

OVERVIEW OF SIGNIFICANT LEGISLATIVE CHANGES TO ESA

1973 Endangered Species Act		1978 Endangered Species Amendments of 1978	1982 Endangered Species Amendments of 1982	1988 Endangered Species Amendments of 1982
Section 2: Purposes	Section 3: Definitions	Sec 3: Critical habitat defined for the first time	Sec 4: Listing to be solely biological	Candidate monitoring provided
Section 4: Listing	Section 5: Land Acquisition	Sec 4: Designate critical habitat at time of listing and require economic analysis	Sec 4: Time lines established for petition processing	Recovery plans are to be solely biological, with no taxonomic bias
Section 6: State/Federal Cooperation	Section 7: Duty of Federal Agencies	Sec 4: 90-day finding on petition deadline established	Sec 4: Critical habitat is to be to the extent prudent and determinable	Sea turtle study by National Academy of Sciences required
Section 8: Int'l Cooperation	Section 9: Take prohibition	Sec 7: God Squad established; consultation process outlined	Sec 6: Increase in federal share of state programs	Delay in Turtle Excluder Device requirement
Section 10: Exemptions	Section 11: Enforcement		Sec 7: Incidental take permitted	
Section 12: Plants			Sec 10: HCPS, incidental take , experimental pops.	
Low conflict		High conflict	Low conflict	High conflict

APPENDIX D

LISTING PRIORITY GUIDANCE

Magnitude of Threat	Immediacy of Threat	Taxonomy	LPN
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Source: FWS (48 FR 43098 (1983)).

APPENDIX E

SAMPLE VALUES CODING

Value	Sample text	Speaker
Utilitarian	“The richest country in the world simply cannot afford to let natural resources disappear one-by-one through lack of attention or because of the imperatives of short-term gain. Once they are gone, we can never get them back.”	Dr. Peter Raven, Hrg 97-32 (1982). Pp. 124 – 125.
Dominionistic	“...for man to be denied the things necessary for his welfare under a man-created legal concept that will not permit the modification of the habitats of lower forms of life or the replacement of those habitats with others of equal value is an act of self-flagellation and absurdity almost beyond comprehension.” [also coded as utilitarian]	Ival Goslin, Hrg 95-39 (1978). Pp. 406-407.
Negativistic	Reference to the concho water snake as “this slimy reptile”.	Rep. Stenholm, 1988 Floor Debate, p. 35039.
Aesthetic	“Who would deny the beauty of the fringed orchids of our bogs and wet prairies, the showy MacFarlane’s four o’clock of Washington State, the Persistant Trillium of the Southeast, or the Antioch Dunes Evening Primrose?”	Dr. Faith Thompson Campell, Hrg 97-32 (1982), p. 140.
Humanistic	“The values that I refer to tend to be neglected, and I guess we tend to be a little reluctant to refer to them because they have more to do with human emotions, with concern for generations not yet born, and with matters relating to the heart and soul of human beings rather than with the accumulation to more ‘things.’” [also coded as moralistic]	Boyd Evison, National Park Superintendent, Hrg 95-H33 (1978). P. 203.
Ecologistic	“We need a large measure of self-consciousness to constantly remind us of the commanding role which we enjoy only at the favor of the web of life that sustains us, that forms the foundation of our total environment.”	Sen. Leahy, 1978 Floor Debate, p. 21286.
Moralistic	“I think everybody in this room would probably agree with the notion that we do not so much inherit the environment from our forebearers as we borrow it for a time from our descendants.” [duty to future generations]	Patrick Parenteau, Hearing 97-32 (1982). P. 373.
Scientistic	“The chilling tragedy of this massive loss of species from our ecosystems and biosphere will never be fully understood, because among the species irreversibly lost are some whose existence we never realized, and whose contribution to science and mankind will never be known.” [also coded as utilitarian]	Sen. John Culver, 1978 Floor debate, p. 22131.
Naturalistic	“By reauthorizing the Endangered Species Act, we will ensure that millions of people will have an opportunity to see majestic whooping cranes alive in their winter refuge in the State of Texas.”	Rep. Jack Fields, 1988 Floor debate, p. 20993.