PROHIBITIVE POLICY AND THE IMPLEMENTATION OF THE ENDANGERED SPECIES ACT

by

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ABSTRACT

Throughout American history there has been an increase in the involvement of the federal government in the regulation of social behavior. Increasingly regulation has taken the form of prohibition: Thou Shalt Not Do; no discharge of pollutants into the navigable waters by 1985. The environmental area is rife with examples of prohibitive policy. The thesis studies the formation and implementation of one of these -- the extremely prohibitive Endangered Species Act -- through case studies and measures of program output.

Critics argue that prohibitive policy is bad because it does not allow for a balancing of the costs and benefits of alternative actions. They assume that implementation decisions are made solely on technical criteria, that outside parties are excluded from decision-making, and that agency discretion is limited.

The thesis argues, however, that these are bad assumptions. Prohibitive policy is not implemented prohibitively. Resource scarcity and huge amounts of technical uncertainty force administrators to exercise discretion. The political context in which implementation takes place provides an opportunity for other interests to enter into decisions. Indeed, the thesis outlines a set of nonstatutory forces that shape implementation at least as much as the original statute. These include resource limitations, conflicting organizational goals, bureaucratic and scientific conservatism, internal advocates, constituent support groups, and legislative and judicial pressures.

If prohibitive policy is not implemented prohibitively, why use it? The thesis argues that there are observable impacts of a prohibitive prescription that are useful to interest groups, agencies, and politicians. For example, prohibitive policies have a definite impact on the initial balance of power in a political negotiation. The analysis further identifies two substantive criteria for determining whether to advocate the use of prohibitive mandates in the future -- in cases of extreme risk, and where the goal is to define or protect a social ethic.

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PREFACE

This thesis tells several stories. On the surface, it examines prohibitive policy -- a kind of policy that prohibits a set of actions without allowing for a balancing of the costs and benefits of alternatives. But it also describes what happens during the implementation of a bill, how bureaucracies behave, and how professionalism and expertise influence the actions of administrative agencies. In addition, it deals with the process of policy formation and the development of regulatory policy.

The thesis is also very much concerned with the endangered species issue. I started out -- and remain -- fairly well persuaded by the preservationists' argument. The statistics on declining diversity and changing world land use patterns are dramatic, promoting a sense of urgency about determining the values that should be assigned to plant and animal populations, and the institutions that should be established to manage them.

Nevertheless, while I find the argument persuasive, I cannot defend it absolutely on the basis of the rational economic paradigm. I was relieved, therefore, to find that my hypothesis was true: There is in fact enormous amounts of uncertainty and latitude involved in these seemingly-technical decisions. Choice and judgment is pervasive. Supposedly the two things that are certain in life are death and taxes. Yet we all know people who don't pay taxes, and we have some latitude over when, how, and where we will die. Indeed, many cultures eliminate death by defining it away: Physical death is not death, but a step into eternal life. Discretion is prevalent in most facets of life, probably more so than we generally realize. Even in seemingly-irreconcilable

conflicts between preservation and development, compromise between social objectives is usually possible if the incentives are large enough to force the parties into negotiation, and if the conflicts are approached creatively and early in the planning process.

The endangered species problem has both technical and institutional dimensions. The institutional question is the toughest: Who can manage animal populations that -- God help them -- do not respect political boundaries? In the United States, we have only rudimentary land use planning. State-level critical areas programs are in an infant stage. National-scale land use management (and ecosystem preservation) is almost nonexistent.

Yet the American institutional question is minor compared with that at the international level. Not only are there few international management institutions that work, but the issue of social conflicts is much more real. It is a lot easier to deny an agency a development project under conditions of affluence, than to deprive a poacher of his ability to feed his family: The ecological issue begs the social question. Until some of the problems of human society are solved, it is unlikely that much headway will be made in preserving ecological diversity. I am not optimistic. Yet if this analysis encourages several readers to think creatively about the problem, then it will have served a useful purpose.

ACKNOWLEDGEMENTS

As with all endeavors, this thesis is a collaborative effort: It draws on the ideas, energy, and support of others. To all of them, I owe an enormous debt. I would especially like to thank my advisor, Larry Susskind, and the other members of my committee, Larry Bacow, Mike O'Hare, and Martha Weinberg, for their advice and criticism, support and compassion. I would also like to express my thanks to Ruth Rowan, Jonathan Bulkley, Philip Yaffee, and Greg Pai for their insightful comments on portions of the manuscript, and to Janet Ensign and Robin Crown for their timely and precise typing.

In addition, I am indebted to numerous staff members of the Department of the Interior, the National Marine Fisheries Service, the Congressional Research Service, the National Wildlife Federation, the Environmental Defense Fund, and the Defenders of Wildlife, all of whom spoke openly and frankly about what really happens throughout implementation. While the thesis is critical of the manner in which the Office of Endangered Species carried out its tasks, the comments are thought to be general to bureaucratic organizations. Indeed, I was continually impressed by the interest and dedication within the Office.

Finally, I would like to express my gratitude and sincerest appreciation to my friends and my family, whose support, encouragement, distraction, and love in large measure made this effort possible. My thanks especially to Daniel Benjamin (who will be 21 in the year 2000) who helped me rediscover the significance of the endangered species issue when the haze of production overwhelmed me. His generation will find the questions of risk and value much more immediate and critical.

CHAPTER 1 -- INTRODUCTION

Throughout the history of the United States, there has been an increase in federal government intervention in the resolution of social problems. From an originally-limited role in everyday life, governmental oversight has proliferated dramatically into areas once thought to be solely the domain of the individual and private organizations. Today, there are regulations that specify the minimum size lot on which an individual can build a house, the labelling on cigarette packages, the safety equipment on automobiles, and the shape of toilet seats in the workplace. From defense to education to food to health care, there has been a growth in the types of problems for which government intervention has been deemed appropriate.

Further, the kind of intervention thought to be appropriate has increasingly taken the form of what Charles Schultze has called "command-and-control techniques of government bureaucracy,"[1] that is, policy that prescribes behavior by prohibiting actions beyond a certain standard. Prohibitive policy is prescriptive in an absolutist, boundary-setting direction: Thou shalt not do; given a set of circumstances, discussion may occur only up to a line, beyond which is forbidden area. Prohibitive policies do not let the regulatees make legal choices about their behavior.

Governmental prohibition has been considered appropriate in some instances for a long time: Murder was generally prohibited, as was the refusal to pay taxes. However, the class of problems for which prohibitive policy is considered an appropriate solution has grown dramatically in recent years. The 1970s have in particular seen prohibitory intervention expand enormously.

Three kinds of prohibitive policy have appeared: The first is the most obvious, since it explicitly prohibits certain actions: Thou shalt not commit murder; habitat that is critical to an endangered species cannot be adversely modified. The second kind is prohibitive in a complementary sense, in that it prohibits some actions by mandating others: All workplace stairs must be a certain width; species are to be considered endangered only on the basis of biological criteria. The third form prohibits a set of actions past a boundary such as a standard: Power plants cannot emit sulfur dioxide at concentrations greater than x parts per million. By outlawing a set of behavior, prohibitive policies appear to disallow any balancing of the benefits of the policy against the costs of compliance. While this analysis focuses on a case of the first kind of prohibitive policy, conclusions drawn out of the study are thought to be generalizable to the other two forms as well.

The environmental area is rife with examples of prohibitive policy. The Federal Water Pollution Control Act Amendments of 1972 established a national goal "that the discharge of pollutants into the navigable waters be eliminated by 1985" and a national policy "that the discharge of toxic pollutants in toxic amounts be prohibited."[2] It mandated the use of "best practicable control technology" by all nonpublic sources by July 1, 1977 and the use of "best available technology" by July 1, 1983.[3] It further prescribed a secondary level of wastewater treatment by July 1, 1977 for all publicly-owned treatment works.[4] The Act did not set up a framework whereby such factors such as cost effectiveness and the characteristics of the specific watershed could be explicitly examined and balanced with the benefits from the prescribed levels of treatment. As a legislative statement, the Act was couched in absolutist, prohibitive terms.

The 1970 Clean Air Act Amendments were similarly prohibitive:[5] Ninety percent reduction of carbon monoxide and hydrocarbons from auto emissions were required to be achieved by 1975; ninety percent reduction of nitrogen oxides by 1976. The 1964 Wilderness Act is similarly constraining, limiting allowed activities in wilderness areas:[6] "There shall be no commercial enterprise and no permanent road ... no temporary road, no use of motor vehicles, motorized equipment or motor boats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area."

The Endangered Species Act of 1973 builds upon this absolutist framework, resulting in a legislative statement that is extremely prohibitive:[7] A procedure is established whereby species of plants and animals are determined to be endangered or threatened with extinction based solely on biological considerations. Habitat is delineated which is considered to be critical to the survival of endangered or threatened species. Individuals are prohibited from importing or exporting listed species, taking listed species within the United States, its territorial seas or the high seas, and possessing, selling, delivering, carrying, transporting, or shipping listed species in interstate or foreign commerce. "Taking" is defined extremely broadly as activities that harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect endangered or threatened species. Further, all federal agencies are required to take "such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence" of listed species and do not destroy critical habitat. As a final club, the Act allows any person to commence a civil suit on his own behalf to enjoin anyone else (person, group, or government agency) alleged to be in violation of the Act.

It also provides for suits to compel the Department of the Interior to carry out provisions of the Act.

As a legislative prescription, the Endangered Species Act (ESA) is extremely stringent: If species are biologically endangered, they must be listed. If they are listed, no one can harm them and agencies must act to protect them. If any individual or organization misbehaves, he can be sued. At legislative face value, there is no room for negotiation or discussion aimed at balancing other social goals with endangered species' objectives, or for the consideration of the costs incurred by mandating preservation of the habitat of a species.

Policy analysts and economists have viewed the expansion of prohibitive policy with some concern. They generally concede that there are instances where market failure requires governmental intervention. Intervention is often assigned to problems where externalities are significant, transactions costs, uncertainty or information costs are high, or where a collective good is involved.[8] The need for government protection of fundamental rights -- the set of which has expanded over time -- is also conceded.[9] These critics argue, however, that given the need for intervention, the type of intervention that is the current norm -- regulation by prohibition -- is inefficient. They argue that society's attempt at influencing behavior would be better served by the carrot of market incentives and the stick of taxes, rather than the club of prohibition.

Prohibitive policy has at its root the assumption that a meaningful standard can be defined. The choice of this discrete point suggests that the cost or benefit function is discontinuous, or at least that it can tell us something about a threshold at which costs or benefits become significant. Thus, a maximum standard of 2 parts per million (ppm) of

sulfur dioxide in the air suggests that air with 1.9 ppm sulfur dioxide causes no damage, while air containing 2.1 ppm is enormously dangerous.[10] The economists argue that damage functions are really continuous, and that the marginal cost of small shifts away from the standard is really not terribly large. This same argument has been used by opponents of the ESA. They argue that since the law mandates absolute preservation of critical habitat, it implies a discontinuous benefit function (species need the current amount of critical habitat; any less is disastrous), whereas the actual benefit function is continuous.[11]

Both the economists and the critics of the ESA are correct in their analyses: The functions are continuous; small shifts away from the standard are not generally of great cost. Based on this analysis, they conclude that prohibitive policy is inefficient and that market-type negotiation should be utilized instead. They argue that a means of balancing the costs of compliance should be included in the policy, and that at best, compliance should only be required when the marginal costs of compliance are less than the marginal benefits received from carrying out the mandate. They look at policy like the ESA and say that what it should be doing is encouraging various interests to negotiate to provide for the consideration of multiple objectives. They lament the use of what they view as an inflexible means of intervention.

Proponents of this view make two implicit assumptions: First, that prohibitive policy is meant to be implemented prohibitively; and second, that prohibitive policy <u>is</u> implemented prohibitively. This thesis maintains that these are bad assumptions -- that, in practice, laws are passed for reasons that may have little to do with their substance, and that implementation does indeed include consideration of costs and social

trade-offs, even if the legislation is prohibitive.

Political actions have symbolic value.[12] Prohibitive policies, for example, can be very effective as statements to placate a constituency. In the case of the ESA, there is evidence that the Congress implicitly thought that they were passing a referendum in favor of endangered species -- an action taken to appease what had grown to be a powerful environmental constituency, with few perceived real costs. Other cases demonstrate the use of legislative statements as political symbols.[13]

Given the environment in which policy is conceived, it is not surprising to find that the second assumption is in error -- that prohibitive policy is in practice not implemented prohibitively. Part of this thesis will demonstrate, for example, that in the endangered species case, the legislative mandate was implemented extremely flexibly and that considerable inter-institutional negotiation took place: The designation of species as endangered occurred slowly and responded to controversy. Regulations were designed that included nonbiological input into presumably-biological decisions. Decisions about how much habitat is critical to the survival of a species were made while considering competing interests for the land and water resources. Indeed, the Fish and Wildlife Service (FWS) estimates that of 4,500 interagency consultations on federal actions that had the potential of impacting an endangered species, only three went to court.[14] Even these three conflicts appear resolvable allowing both economic and preseration interests to prevail.

In other areas of prohibitive environmental policy, it can be seen that their prohibitive mandates were not achieved. Auto emissions standards were relaxed several times. Water quality deadlines were not met. Some extractive uses such as mining are still allowed in wilderness areas.

State stream standards are routinely exceeded -- the realized mode of enforcement is that of negotiation rather than litigation to demand compliance with the letter of the law. Non-absolutist enforcement of absolutist policy appears to be the norm, not the exception.

The reason for this appears to be due to two factors: First, regardless of whether absolute standards are efficient, they rarely exist. The direction that scientific data and analysis takes us does not generally lead to two paths. It is usually not absolutely clear that a species is endangered or not, or that a land area is critical to its survival or not. Uncertainty is rampant throughout these decisions, even when they appear to be based on science: Judgment becomes critical; administrative discretion necessary.

This lack of absolutes makes the second factor -- the context in which judgment takes place -- extremely critical. Administrative agencies (the implementing agents) operate in an environment that is inherently political. In a system that is pluralistic, that is, power is shared with no one consistently dominanting the outcome, negotiation becomes the common mode of interaction. Political negotiation is in essence not very different from marketplace negotiation. Individuals, groups, and organizations compete with each other to marshall resources to influence allocation decisions. The medium of exchange in this market is power -- to influence decisions and to influence others to influence decisions.

Policy is formed and implemented in this political marketplace. This thesis argues that the political market provides for negotiation and trade-offs in the implementation of policy where "economic" negotiation has been explicitly prohibited, that is, in the implementation of prohibitive policy. In this view, the set of forces that influence the political

arena become important in order to understand how negotiation takes place around prohibitive policy. A legislative prescription is only one force in this arena. Indeed, there is evidence to suggest that laws are often a minor force in determining the implemented character of a program.

Rather than a simple model where Ruth tells Bill to fetch a ball and we see how Bill carries out his mission, implementation looks more like the children's game of "telephone". In this game, not only does Ruth tell Bill to fetch the ball, but Bill tells Marty, and Marty tells Denise, who instructs Greg, and on down the line for twenty or thirty children. Needless to say, at the end of the chain, the instructions usually sound quite different than they did at the outset. What happened? Well some of the children didn't understand the message but tried to relay it correctly, some had their own ideas and changed it accordingly, others didn't speak the language or were hard of hearing, and still others were distracted and used their imaginations. Although a frivolous example, the metaphor is actually quite appropriate to viewing the gauntlet a policy runs when entering the implementation arena. Indeed, even if Ruth's original instructions were prohibitive ("Don't eat pickles", for example), it does not necessarily mean that they will be transformed less.

Policies are redefined through implementation because they are carried out by a network of organizations and individuals that have histories that predate enactment, and operating characteristics that may be quite hostile to a new policy. The character of a program is influenced, for example, by which and how many actors participate in implementation, by how these groups interacted formally and informally in the past, and by the context in which the actors function. In the implementation of the ESA, several forces were most significant in shaping the

character of implementation: Limited resources, conflicting organizational goals, and bureaucratic and scientific conservatism were forces that tended to resist change and retard the rate of implementation. They were countered by pressures arising from advocates and interest groups, and from activities in the judicial and legislative branches of government. It is through the dynamic interaction of this set of institutions that policy is implemented. They help to explain why program outputs often differ dramatically from policy prescriptions even if the laws are specified precisely and absolutely.

If prohibitive policy is not implemented prohibitively, why use it? The final chapter speculates on the answer to this question in detail. But there does appear to be good reasons to support prohibitive policies in some cases, depending on the objective in mind: Prohibitive mandates are very effective as political statements, for example. They have a significant influence on the ability of bureaucracies to carry out their missions depending on their desire to comply with the legislative mandate. Prohibitive policy can also be used as a strategic weapon by interest groups. Indeed, one of the least recognized and most important effects of prohibitive policy is its impact on the relative bargaining positions of the parties involved in negotiating implementation.

There are also two substantive circumstances under which prohibitive mandates seem appropriate: if a policy's intent is to define or protect a social ethic; and if a proposed activity is extremely costly or irreversible and the law's framers are risk-averse.

Nevertheless, there are some real costs associated with the use of

prohibitive laws. One such cost, for example, is the potential for backlash, resulting not only in noncompliance, but also in recission of the prohibitive law. This happened to some extent in the case of the ESA. In two controversies, legal battles were initiated against the Act's prohibitive mandates: It won the battles, but, in many ways, lost the war. In March 1976, the Fifth Circuit Court of Appeals stopped construction of a segment of Interstate Highway 10 in Mississippi because it would destroy habitat critical to the survival of the Mississippi sandhill crane. In January 1977, the Sixth Circuit Court of Appeals enjoined construction of the Tellico Project in Tennessee because it would destroy habitat critical to the survival of the snail darter. The Supreme Court supported this latter decision in June 1978. The Interstate 10 project could be modified slightly to accomodate the cranes -- a bird of significant national appeal. The snail darter could survive in its present habitat, however, only if the Tellico Project was altered immensely at a multi-million dollar cost. The media and the Act's opponents seized upon the image of a three-inch fish halting a huge dam to build a national backlash -- one which the ESA did not survive totally intact.

Reauthorization legislation[15] was passed in October 1978 that included an escape valve: In cases of "irreconcilable conflict", a federal project could be exempted from the requirements of the Act after being reviewed by a high-level interagency committee. In addition, proposals of critical habitat would now have to include an economic impact statement. These changes reduced the stringency of the statute's prohibitions. The amendments were supported by the assumption that prohibitive policy is implemented prohibitively -- that there was no room for negotiation or flexibility in the administrative process. For example, the comments of

Congressman Robin L. Beard (TN) typify this perspective:

> "The Endangered Species Act passed the Congress in 1973. It was important legislation which embodied principles we cannot allow to be undermined. The principal objective of this bill was to insure that we would never again unthinkably cause the extinction of unique plant and animal life. That principle must be protected. However, as with so many pieces of legislation which after enactment are exposed to the real test of implementation, certain problems arise. One particular problem which has been brought home to me rather forcefully, is the lack of any flexibility in the current law. There appears to be no leeway whatsoever to allow valuable public projects to go forward if there is a risk that any endangered specie might be adversely affected."[16]

The data and case studies summarized in this thesis suggest that this assumption is not true -- that there is in fact considerable discretion and room for negotiation even in policy that is prohibitively prescribed.

A Note About Structure and Method

The thesis examines prohibitive policy by studying the case of the Endangered Species Act. The second chapter outlines the arguments that environmentalists have made in advocating prohibitive policy to protect endangered species. The third chapter examines the historical development of legislation to protect threatened plants and animals to figure out why the laws were framed prohibitively. The fourth, fifth, and sixth chapters lay out the experience of implementing the 1973 Act: The fourth chapter presents some measures of program output to determine how aggressively the Fish and Wildlife Service has pursued the prohibitive goals of the Act. The fifth chapter documents the necessity to exercise administrative discretion in implementation because of limited resources and a great deal of technical uncertainty. The sixth chapter focuses on the context of implementation to demonstrate that political considerations are weighed and negotiated throughout implementation. The seventh chapter

then looks at nonstatutory forces that shape and control implementation. The final chapter then examines the impact and uses of prohibitive policy.

The analysis focuses on three major elements of the 1973 Act: putting a species on the endangered list ("listing"), designating habitat that is critical to its survival, and consulting with development agencies to resolve conflicts between projects and endangered species. There are of course other important sections of the ESA: cooperative state-federal agreements, control of international and interstate commerce in products from endangered species, and regulation of taking (to name several). These are not analyzed here because they are less illuminating in answering the questions relating to the implementation of prohibitive policy, the use of administrative discretion, and the process of interagency negotiation. All policy seeks to modify someone's behavior. Much federal policy seeks to guide or control private or state actions. The regulation of taking and commerce in endangered species are examples of the use of this power. The listing, critical habitat, and consultation provisions, on the other hand, seek mainly to regulate federal agency behavior. This is interesting because the same sets of incentives promoting compliance and sanctions against noncompliance that work in the regulation of private actions do not work in regulating federal agency activities. It is usually not feasible to throw a program director in jail or fine him for not implementing a program aggressively.

The interagency consultation provisions are of special interest because not only do they regulate federal agency behavior, but they seek to put a constraint on other legislatively-mandated behavior. Few other federal statutes do this as stringently: The National Environmental Policy Act,[17] the Fish and Wildlife Coordination Act,[18] the Administrative

Procedure Act,[19] and the Equal Employment Opportunity Act[20] all do this to some extent; most do it procedurally. But the ESA was interpreted by the courts as having substantive -- not just procedural -- requirements for agency behavior. Hence it should be particularly illuminating in helping to understand how administrative agencies cope with substantive mandates that are injected into their "standard operating procedure".

The analysis uses several forms of data to describe implementation. Statistics were computed to act as measures of output of the program. These include summaries of the number of proposed and final listings, proposed and final critical habitat designations, and unresolved listings and habitat designations. In addition, average durations were calculated to indicate how long it took the Act's administrators to implement the provisions of the legislation. All of these data represent 100 percent samples of administrative actions taken from enactment (December 28, 1973) to the date that the Act was significantly amended (September 30, 1978). Hence almost five years of implementation history is included.

While these statistics indicate the overall character of the program and serve as a basis to support generalized conclusions, five major case studies were undertaken to gather detail and test the hypotheses about the implementation of prohibitive policy. Many other smaller cases were reviewed and are also presented in the form of anecdotes throughout the text. The five case studies were selected to provide the best illustrations of specific kinds of activity, and do not represent a random sample. They were compiled from interviews and published and unpublished documentary evidence: Letters, memos, notes, hearing records, draft rule-makings, and other written materials were reviewed, and are cited in the footnotes. Since many of the interviews focused on intergroup and

interpersonal relationships that are on-going, it was agreed to keep specific quotations confidential. Hence, citations to many of the quotations in the text are not noted. [The author has written records of these interviews in his possession, however, for verification purposes.]

The five case studies are not presented in one location in the text; rather, they are used as supporting evidence to the arguments presented throughout and reappear in various levels of detail accordingly. The five cases are described briefly as follows:

(1) Furbish lousewort: The Furbish lousewort is a rare snapdragon (plant) that lives only in the Saint John River valley in northern Maine. It was discovered by botanist Kate Furbish in the late 1800s, and was thought to be extinct since the 1940s. But it was rediscovered in the impoundment area of the proposed Army Corps of Engineers' Dickey-Lincoln Project -- a $650 million (primarily-) hydroelectric project in 1976. The lousewort case deals with the listing, critical habitat designation, and interagency consultation processes. It illustrates how changing scientific knowledge influences administrative decision-making, how political considerations enter into all three administrative processes, how delay is used strategically to resolve controversy, how a hierarchical administrative process works to mediate conflict, and how general policy is modified in response to specific issues. The Furbish lousewort was added to the endangered species list in April 1978. The FWS determined that a designation of critical habitat was not necessary for the species.

(2) Houston toad: The Houston toad is a secretive amphibian that survives in several counties around Houston, Texas. The toad has long been thought to be endangered and was listed in the 1968 U.S. "Redbook". It was officially designated as endangered in October 1970. The toad

case concerns the process of how critical habitats are designated. It illustrates how technical uncertainty pervades decisions on species that everyone agrees are extremely rare. The case demonstrates that scientific judgment is modified by political considerations in determining what is critical habitat, and that delay is used as a strategic response to controversy. Critical habitat was proposed for the species in May 1977; several areas were designated in January 1978.

(3) Mississippi sandhill crane: The Mississippi sandhill crane is an extremely endangered subspecies of the Florida sandhill crane and nests only in an area in southeastern Mississippi (near Pascagoula). It has been on the endangered list since June 1973. The cases focuses on the critical habitat and interagency consultation processes. It demonstrates how scientists can be extremely conservative in taking action that may deviate slightly from professional norms even in the face of crisis. The case also illustrates how actions of the judiciary influence how implementation proceeds, and how negotiated settlements of species-project controversies are possible if both sides engage in good-faith negotiation: The Department of Transportation had been building a section of Interstate Highway 10 across the area that the cranes inhabit, but was stopped in March 1976 by litigation brought by the National Wildlife Federation. A negotiated settlement was achieved, however. Critical habitat was proposed for the species in September 1975, was modified by controversy, and was finally designated in August 1977.

(4) Sea turtles: Three species of sea turtles (green, loggerhead, Pacific ridley) were involved in controversy that dates back to the early 1970s. Two of the species had been proposed for listing in December 1973, but passage of the 1973 ESA intervened, and the proposals were withdrawn.

The species were finally listed in August 1978. In the interim, a tale of interagency jurisdictional conflict, delay, negotiation, and scientific debate unfolds. The case is the only one in which the species is a commercial resource; it demonstrates that economic interests are considered in implementing seemingly-scientific provisions of the ESA. It illustrates the use of the "threatened" category to allow for exceptions to the blanket prohibition provided by endangered status, and further suggests that personal philosophy heavily influences scientific judgment, leading to conflicting positions on technical decisions.

(5) Snail darter: The snail darter case is the most well-known of the five cases. The discovery of the snail darter in the Little Tennessee River in eastern Tennessee in August 1973, its subsequent listing as endangered in October 1975, and the designation of its critical habitat in April 1976 led to a major conflict with the Tennessee Valley Authority's Tellico Project. The conflict turned into litigation that rose as high as the Supreme Court. Indeed, the conflict was front-page headlines across the nation in mid-1978. The case reiterates almost all of the themes seen in the other cases, and adds a few: It particularly demonstrates the problem of conflicting organizational goals and the use of a hierarchical administrative network to work towards compromise. It further illustrates how the interaction between the judiciary, the Congress, the media, and the administrative agencies heavily determines the nature of implementation, even when the statute is written as prohibitive.

NOTES TO CHAPTER 1

1. Schultze, 1977, p6.

2. P.L. 92-500, October 18, 1972, 86 Stat. 816-904, Sections 101(a)(a), 101(a)(3).

3. Ibid., Sections 301(b)(1)(A), 301(b)(2)(A).

4. Ibid., Section 301(b)(A)(B).

5. P.L. 91-604, December 31, 1970, 84 Stat. 1713.

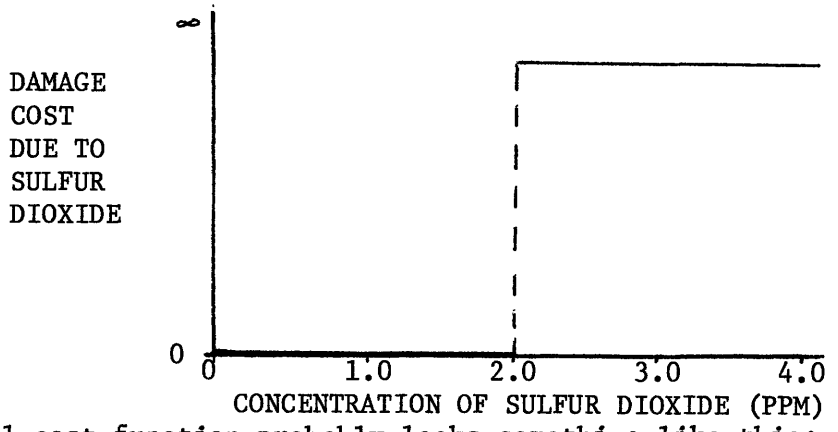
6. P.L. 88-577, September 3, 1964, 78 Stat. 890, Section 4(c).

7. P.L. 93-205, December 28, 1973, 87 Stat. 884.

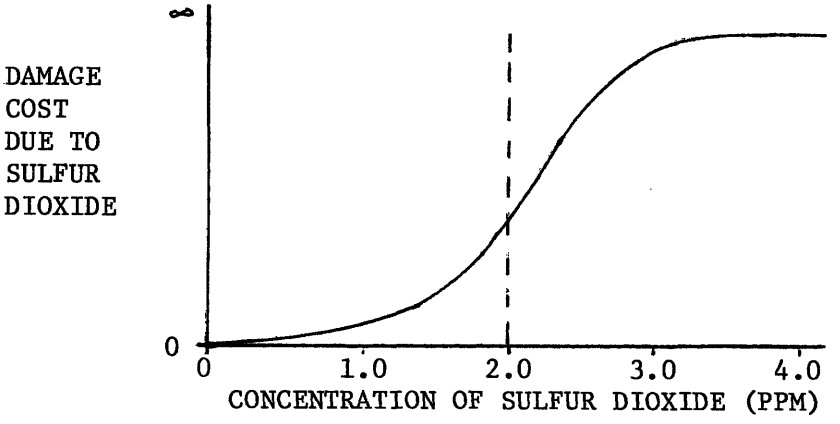
8. Schultze, 1977, p29-43.

9. Okun, 1975.

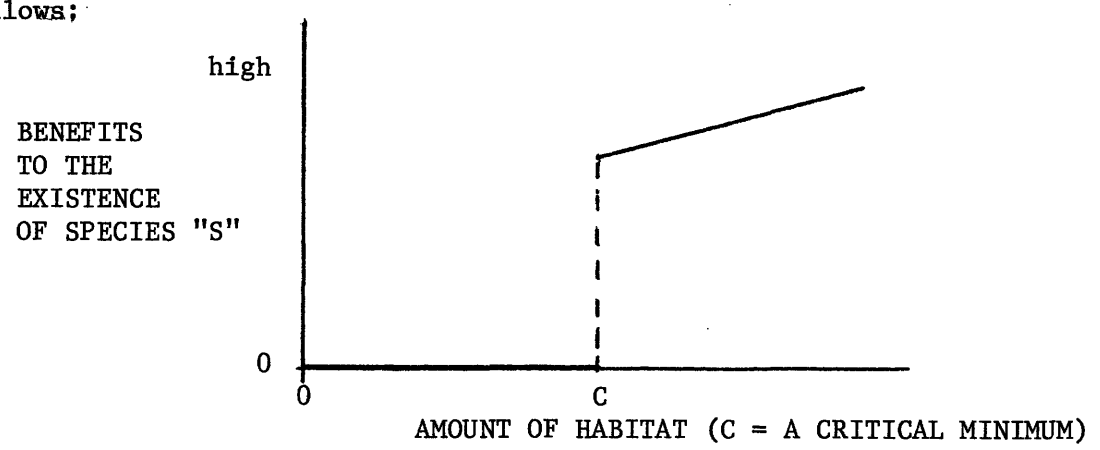
10. A standard of 2.0 parts per million of sulfur dioxide implies a damage cost function as follows:



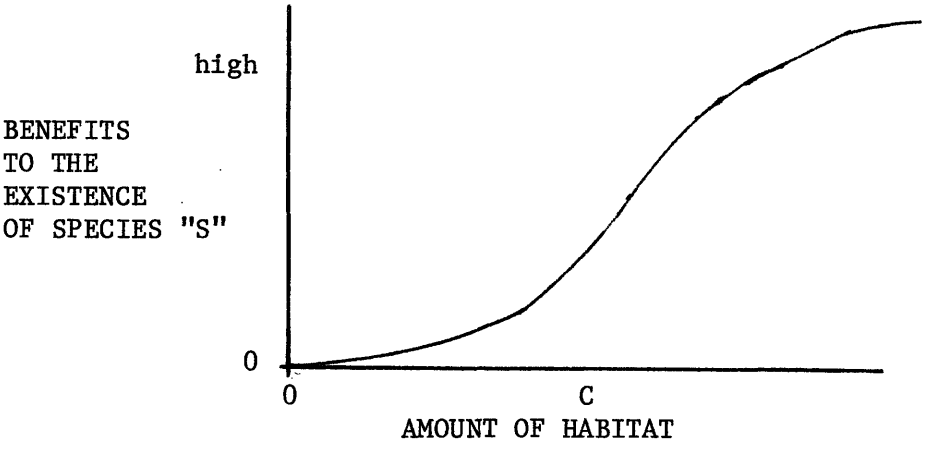
The actual cost function probably looks something like this:



11. The opponents of the ESA suggest that the absolute prohibition on adversely modifying critical habitat implies a benefit function as follows;



The actual benefit function relating amount of habitat to the health of a species probably looks as follows:



12. Edelman, 1964.

13. For example, Jones has suggested that the reason that the 1970 Clear Air Act was such a strong statement was a result of Senator Edmund Muskie's desire to appear more committed to the environment than was President Richard Nixon in light of the upcoming 1972 elections. (Jones, 1975, p191-210)

14. Interstate Highway 10 in southeast Mississippi versus the Mississippi sandhill crane; Meramac Park Lake Dam, Missouri versus the Indiana bat; Tellico Dam versus the snail darter.

15. P.L. 95-632, November 10, 1978, 92 Stat. 3751.

16. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978a, p65.

17. P.L. 91-190, January 1, 1970, 83 Stat. 852.

18. Act of March 10, 1934, 48 Stat. 401, as amended. Current version at 16 U.S.C. 661-667e.

19. 5 U.S.C. 551 (1970). See, e.g., the requirements for holding hearings and publishing notice of proposed and final rulemakings in Section 553.

20. Section 11, P.L. 92-261, March 24, 1972, 86 Stat. 103.

CHAPTER 2 -- THE CASE FOR PRESERVING ENDANGERED SPECIES

Government intervention to preserve endangered species is generally considered appropriate because endangered species are public goods: An individual does not perceive his actions (through hunting, commercial exploitation, or habitat modification) as having an influence on the status of a species; he has no incentive to take action to protect a species since others cannot be excluded from enjoying the benefits of his protective actions. The problem is especially acute in the endangered species case because of its global scale: For example, if the United States unilaterally bans the importation of leopard furs for processing into coats, the furs will be processed in other countries. The American fur industry will be hurt; the leopard will be no better off.

While the need for government intervention is conceded, the use of prohibitive policy is at issue. Those who have pushed for prohibitive endangered species legislation advance three sets of arguments: Plant and animal species currently provide humans with goods and services and are projected to continue to do so; humans depend on diverse networks of species to provide global biotic stability; and humans have a moral responsibility to protect other life forms.

The human-utilization arguments have at their center a particular view about uncertainty and irreversibility. Most people would agree that the extinction of a species is irreversible. Let us assume that we are certain that a project will eliminate a species. The uncertainty lies in how useful the species could be to humans and how important it is in maintaining ecosystem stability. Proponents of absolute species preservation take a risk-averse position in dealing with this uncertainty. They are not willing to pay the opportunity costs of lost potential goods and

services from the destruction of a species, or accept the risks of adverse ecosystem changes that might result from policies that allow extinction. Their opponents counter by arguing that substitutes will be found to provide any product or service that could be provided by the species, and that at the margin, individual species have little effect on ecosystem stability.

The ethical argument is based on a particular set of values and ideology. It is much harder for opponents to argue against. The issue is not what is most efficient, but what is right and wrong. It is not necessarily even a question of what is good for human society, but rather what is appropriate behavior in light of our place in a larger universe. It must be recognized that all arguments have their bases in human-ascribed values of species. There is no alternative. The term "value" is human-defined: Even if I suggest that ecosystem stability is the appropriate measure for judging the "worth" of species, it is my set of (human) values that makes me argue that. To say that a species has purely ecological value is a truism: If it exists, it plays a role in the natural system. If it had no "ecological worth," it would not exist. This chapter outlines these three arguments as a basis for using prohibitive policy to protect endangered species.

Historical Perspective

The fact that species are in danger of extinction and have disappeared in the past does not seem to be in question. Until the 1960s, the number of plant and animal species on earth was estimated at 3 million.[1] This estimate encompassed a set of identified species including approximately 4,100 mammals, 8,700 birds, 6,300 reptiles, 3,000 amphibians, 23,000 fishes, 800,000 insects, and 300,000 green plants and fungi, and thousands of micro-organisms such as bacteria and viruses. The remaining one-and-a-half million species were statistically estimated to exist somewhere on the planet, yet

were not identified. Since the 1960s, taxonomic and statistical advances have increased the estimated number of species to 10 million.

Species diversity over geologic time has had its peaks and declines. The earth is about 6 billion years old. Nuclear-celled organisms appeared about 1.4 billion years ago. Most modern phyla became recognizable about 700 million years ago. From that time on, for about 400 million years, species diversity remained approximately constant until it crashed at the end of the Permian period. Thereafter diversity increased until another crash occurred during the late Cretaceous period (approximately 70 million years ago) in which about a quarter of all families (dinosaurs included) vanished.[2] Since that time, species diversity has increased fairly steadily.

Environmentalists are fond of using mathematically-correct, chronological analogies to place evolutionary history into perspective. One such analogy condenses the history of the planet into a single year. Under this scheme,

> "The conditions suitable for life do not develop until late June. The oldest known fossils are living creatures around mid-October, and life is abundant for both animals and plants (mostly in the seas) by the end of that month. In mid-December, dinosaurs and other reptiles dominate the scene. Mammals, suckling their young, and with hair covering their bodies, appear in large numbers only a little before Christmas. On New Year's Eve, at about five minutes to midnight, man emerges. Of these five minutes of man's existence, recorded history represents about the time the clock takes to strike twelve. The period since 1600 A.D., when man-induced extinction began to increase rapidly, amounts to three seconds, and the quarter century just begun, when the disappearance of species may be on the scale of all the mass extinctions of the past put together, will take one-sixth of a second -- a twinkling of an eye in evolutionary time."[3]

While this analogy is dramatic, it can have the effect of making human activity appear so insignificant that it negates the need to worry about any of our social choices and problems.

The history of extinctions in recent times also lends support to the case for protecting endangered species. "To get some idea of the current

rate of species extinction, consider that in one 3,000-year period of the Pleistocene during which great numbers of organisms perished, North America lost about 50 mammalian species and 40 birds -- or about 3 species per hundred years. By way of contrast, since the arrival of the Puritans at Plymouth Rock in 1620, over 500 species and subspecies of native animals and plants have become extinct."[4] This works out to a loss of about 1.4 species per year. Currently another 236 U.S. species are officially considered to be endangered or threatened with extinction.[5] It is necessary to point out that these data are somewhat misleading since taxonomic and other identification techniques have improved over time. Nevertheless, most scientists would agree that the rate of species extinction has increased significantly paralleling the growth of human population and settlement. The net rate of diversification is clearly negative -- an unprecedented occurrence over geologic time when global climate has been stable.

One can argue that these extinctions are a part of a natural process, similar to the mass extinctions of the Pleistocene. This argument builds on ecological niche theory and suggests that the human species is doing exactly what every species strives for (and ecological succession is fueled by) -- the expansion of its niche, the qualitative and quantitative growth of the species. Clearly, Homo sapiens has broadened its niche dramatically over time. Humans can survive in practically any habitat on the globe (and are moving outward into other niches in the universe). Yet most would agree that the expansion has increased the loss of other species. The primary impact on other species has come through habitat modification,[6] overutilization (through hunting, commercial exploitation, etc.), and introduction of competing exotic species.[7]

The humans-as-purely-natural argument can be countered by two types of

arguments: One maintains that human well-being is tied to the health of the ecological community; the second argues that humans are fundamentally different from other species -- having the capacity to reason and make choices -- and hence have a responsibility to other life forms.

Human Utility -- Present and Future

The first counter-argument -- that species have value because humans need them -- contains the most often stated reasons for protecting endangered species: Species serve humans as food sources, industrial inputs, medicine and drug sources, aesthetic resources, pollution indicators, and as part of a network that provides ecological stability -- guaranteeing human survival through the provision of oxygen, the disposal of wastes, the capture of energy, and the recycling of nutrients.

Obviously, plant and animal species serve humans as food. Yet the range of species utilized on a mass scale is extremely small. There are estimated to be 80,000 edible plant species on the planet. Only about 50 species have ever been cultivated in large scale and a total of 12 now produce ninety percent of the world's food supply. Preserving wild plant species thus opens up a wide range of agricultural possibilities. This is important because species currently used for mass food crops have a very narrow genetic base: The Green Revolution and agricultural industrialization have spawned monocultural planting at an immense scale. While monoculture may appear to be industrially efficient, it has three results: It is less stable in response to catastrophic events such as climatic change or disease; it displaces indigenous species which have evolved in conjunction with the local climate and cycles; and it is dependent on massive inputs of energy and petroleum-derived nutrients.

Indeed, some writers have suggested that the Green Revolution will

prove a long-range disaster. Consider, for example, the following case:

> "A few years ago one of the prized developments of the Green Revolution, a strain of rice known as I.R.-8, was hit by tungro disease in the Philippines. When rice growers switched to another form, I.R.-20, this hybrid soon proved fatally vulnerable to grassy stunt virus and brown hopper insects. So farmers moved on to I.R.-26, a super-hybrid that turned out to be exceptionally resistant to almost all Philippines diseases and insect pests. But it proved too fragile for the islands' strong winds, whereupon plant breeders decided to try an original Taiwan strain that had shown unusual capacity to stand up to winds -- only to find that it had been all but eliminated by Taiwan farmers, who had by then planted virtually all ricelands with I.R.-8."[8]

There are other examples of similar "mistakes" due to monocultural use of nonindigenous species with a narrow genetic base: Coffee crops in Brazil were badly hurt in 1970 by unfavorable weather and leaf rust; a fifth of the U.S. corn crop was destroyed in 1970 by southern corn blight; the Irish potato disaster of the 1840s. Indeed, some scientists foresee disaster for the currently-bred strains of food crops because they believe that they will be unable to cope with future climatic changes, having been bred in what some meteorologists believe to have been the wettest 30-year period during the past thousand years.[9]

Indigenous species have considerable wisdom built into their genetic codes. The evolutionary period of thousands of years makes species much more tolerant of environmental changes than does the breeding period of tens of years underlying Green Revolution crop strains. Modern crops are also dependent upon massive inputs of nutrients, water, and energy for their success. In a future where petroleum will most certainly be a high cost item (politically and economically), the use of food crops which require fewer inputs external to their ecosystem may be desirable. Hence, it can be argued that indigenous species should be preserved because of their potential use directly as food crops or as inputs into the genetic development of alternative food sources.

Medical and drug use of other species is considerable. Medical research utilizes animals in experiments as surrogates for humans. The use of primates and rats is well known. A remarkably large number of other species are utilized because they closely mirror human response to specific drugs and conditions. Armadillos, for example, provide a model for the study of leprosy.[10] Studies of long-flying birds such as the albatross have contributed to an improved understanding of the heart disease, cardiomyopathy. The desert pupfish tolerates extremes of salinity and temperature and may assist researchers studying human kidney disease. Molluscs -- clams, snails, mussels -- rarely get cancer. Mercenene, a substance that has been isolated from the molluscs, has been shown to prevent or delay two types of cancer in mice and has had no adverse effects when tested on human cells.[11] Could molluscs hold the key for a cure for cancer? It's possible.

Drug products from plants and animals are numerous. Snake venoms are used as non-addictive pain killers. The alkaloids, a group of drugs derived from tropical plants, are used in treating cardiac problems, hypertension, and leukemia. Who would have thought that mold on a discarded fruit rind could contain anything useful to humans? Yet the discovery of antibiotics has probably saved more lives than any other pharmaceutical advance. Indeed, it has been estimated that as many as one-half of all prescriptions written in the United States contain a drug of natural origin as their primary active ingredient. The value of plant medicinals is estimated at $3 billion. Yet only 5 percent of all plant species have been screened for pharmacologically-active constituents.[12]

Industrial uses of species are also numerous. As commercial products, gum, rubber, latex, fibers, sponge and oil are good examples. Use of organisms as "workers" provide further examples: Microbes and aquatic insect larvae

are the fundamental elements of secondary wastewater treatment; yeasts that feed on petroleum are being examined as a means of cleaning up oil spills; Manatees (sea cows) are being used in Guyana and Florida to clear out water hyacinths that clog canals and waterways. In a time when many synthesized food additives are turning up carcinogenic, the potential for use of plant extracts for sweeteners, coloring agents, and the like seem vast. Similarly, biological pest control techniques show promise as an alternative to synthetic chemical pesticides such as DDT.[13]

Species also have value as aesthetic resources. There are some 10 million species -- each unique and self-contained. The human species is only one of these 10^7 elements of the biota. Yet we praise beauty at the level of the individual and have complex rituals -- Miss America contests et al -- which celebrate the aesthetic value of individuals. But the aesthetic resource is vast, with 10^7 unique life forms, not just variations on the same theme. Each life form has aesthetic significance owing to the simplicity of its function and complexity of its form. Under the microscope, even the tiniest diatom shows incredible intricacy of structure with radiating lines and variegated coloration. Humans do have rituals that celebrate the beauty of specific nonhuman life forms such as flowers and butterflies, and have dog, cat, horse and goat shows.

The aesthetic argument suggests that in a rational society where paintings of one individual (creation time: a year or so) are preserved and praised, the work of more powerful forces in creating a species (creation time: thousands of years) should at least be accorded the same consideration as that of human-created art.[14] Indeed, it is easier to re-create a close approximation of a piece of art than it is to re-establish a species. Humans simply do not understand the creation process. Even with recombinant DNA

techniques, it is extremely unlikely that we will ever be able to create a whooping crane or a passenger pigeon from the test tube. Poet William Beebe has put the argument in this way:

> "The beauty and genius of a work of art may be reconceived, though its first material expression be destroyed; a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again."[15]

Ecosystem Stability

The idea that the biosphere is composed of an intricate network of interspecific relationships lies at the heart of the remaining arguments for preserving species. This is the "everything is connected to something else" argument. Ecosystems are the fundamental operating units of the biota. They are defined by the networks of organisms -- ecological communities -- that make them up. Most ecologists agree that ecosystems move through very patterned directions as they mature. Odum suggests that among other things, mature ecosystems are typically highly diverse with many species with narrow niches and intricate connective pathways.[16] It is generally agreed that diversity provides stability in that catastrophic events (climatic changes, disease) are more readily absorbed.

The exact relationship between diversity and stability, however, is still in controversy. The most diverse ecosystem on earth, the tropical forest, is very sensitive to human disruption, while the simpler temperate zone forest is quite adaptive. Nevertheless, the general direct relationship between diversity and stability seems to hold. Polluted systems are usually characterized by their low levels of diversity. The fauna below a sewage outfall may drop to only one or two species whereas many more existed before.

There are also classical examples where reducing the numbers of species has reduced the stability of the system: Predator-prey relationships seem

to stabilize population numbers. For example, on the Kaibab Plateau in Arizona, a bounty was placed on cougars, wolves, and coyotes -- all natural predators of deer. In 1907 when the bounty was put in place, the deer population numbered about 4,000. Within ten years, the predator population was almost destroyed and the deer population increased more than tenfold. By 1924 the herd reached 100,000. In the absence of sufficient food, sixty percent of the herd died off in two successive winters. By that time, the food had been so overbrowsed and deer natality had so declined that after the die-off, the system could only support a deer population of about half the original size.[17] Thus, the naturally-evolved system acts to maintain a population at its "optimum" size and protect it from oscillatory growth patterns.

The case of the American alligator also illustrates the "utility" of a species in an ecosystem. Alligators have been hunted persistently. The American alligator is currently on the U.S. endangered species list.[18] What difference does it make if alligators are exterminated?

> "The alligator is a key factor in preserving the entire ecological balance of the Everglades -- a balance on which much of the increasingly urbanized state of Florida depends. The deep pools, or "gator holes," that he digs collect water during dry spells and provide a sanctuary so the birds and animals can live to re-populate the glades after a drought. The large nesting mounds that alligators make are popular sites for nests of herons, egrets, and other birds essential to the life cycle in the glades. As alligators move from their gator holes to nesting mounds they help keep the waterways open, and they preserve a balance of game fish by consuming large numbers of predator fish, such as the gar."[19]

In Africa, the hippopotamus and the crocodile perform roles similar to that of the alligator. In parts of Africa, a campaign was undertaken to eliminate both animals. As a result, the streams became clogged, protein-rich fish declined, and schistosomiasis -- an extremely debilitating disease -- spread among the human population. The hippopotamus and crocodiles had dug

holes which ensured the survival of fish and had eaten plant growth and stirred up silt which kept waterways open. As the water flow was reduced, the streams became shallow and warm, ideal breeding conditions for the snail that serves as a host for the parasitic flatworm that causes schistosomiasis.[20]

A final example is both humorous and dramatic:

> "Malaria at one time infected 90 percent of the population of Borneo. In 1955, the World Health Organization initiated a DDT spraying program that has all but eliminated this dreaded disease. But other things also began to happen. Besides killing mosquitoes, the DDT killed other insects, including flies and cockroaches that inhabited the houses. But these insects were the favorite food of house lizards called geckos, which gorged themselves on dead insects and died from the DDT. These lizards, along with dead DDT-laden cockroaches, were eaten by house cats. As the cats died, the rat population soared. The inhabitants of this island were then threatened by a new disease, sylvatic plague carried by the rats. This threat was averted when cats were parachuted into remote regions by the Royal Air Force in what is known as 'Operation Cat Drop.'
>
> "As if this wasn't enough, the thatched roofs of some of the natives' houses began to fall in. The DDT also killed a number of wasps and other insects that fed on a particular type of caterpillar (the larva of a pyralid moth), which somehow avoided the DDT. With most of their predators eliminated, the caterpillars had a population explosion and proceeded to munch their way through one of their favorite foods, the leaves that made up the thatched roofs."[21]

The point of all these cases is to show -- by example -- that there is a relationship between species diversity and stability of ecosystems. Further, it should demonstrate that we do not fully understand the dynamics of ecosystems. As a result of these two conclusions, the absolutist argument for preserving species maintains that we should not meddle with ecological systems in such a way as to make our actions irreversible, that is, we should not consciously destroy a species.

The ecosystem view also suggests a final way that species can serve humans -- as indicators of ecosystem/community health. As in medical research, sensitive species can become models of human reactions to pollutants by examining them <u>in vivo</u> rather than <u>in vitro</u>. Canaries are the most well-

known example of the use of species as pollution indicators. Their use in mines to warn of noxious gas no doubt saved many human lives. Slugs were used on the Western Front in World War I as early warning detectors of mustard gas.[22] Through the study of the fat of Antarctic sea birds, the persistent qualities of chlorinated hydrocarbon pesticides were discovered, resulting in the reduction of the use of DDT and similar poisons.

Future use of species as indicators of community health seem promising: Some lichen species, for example, are extremely sensitive to traces of heavy metals and sulfur dioxide in the atmosphere. Freshwater snails are extremely sensitive to water pollutants such as municipal wastewater. Their decline in American waterways has been in direct proportion to increases in water pollution. A mussel known as Mytilus is currently being used to monitor pollution in U.S. coastal waters: It has already found a radioactive hot spot off Plymouth, Massachusetts near the Pilgrim Nuclear Generating Plant; identified PCB pollution in neighboring New Bedford harbor; and confirmed that the waters off Southern California still have high concentrations of DDT, more than five years after the pesticide was banned.[23] The argument for preserving species because of their indicator value suggests simply that these creatures -- these fellow inhabitants of the earth -- can tell us something, if we stop to listen.

To counter the ecosystem stability argument, opponents will point to the low marginal value of any one species. It is known that the extermination of all 10^7 species would destroy humans as well. Thus the "value" of all species is in human terms almost infinitely large. Hence the "average value" of a species is very large as well.[24] Given this, it is unlikely that the worth of any project would be equal to the average value of a species. This argument, project-proponents will maintain, is irrelevant because the decision-

making apparatus confronts species one (or a few) at a time, and hence face the marginal value of the species. What is the marginal value of the snail darter? Probably not very much in terms of stability of the ecosystem. Project-proponents thus argue that many projects will provide benefits in excess of the marginal value of a species that will be lost and hence should be carried out.

The problem with all of this is that we have no way of linking marginal and average values since we have no way of knowing when a threshold has been passed where stability is indeed threatened (without crossing it and suffering the consequences). Since with most species this cannot be predicted, we are left with decisions based largely on (human-centered) values where biology and economics do not provide clear answers.

Several writers have proposed weighting schemes to assign priorities to certain species based on such factors as taxonomic importance, ecological/economic importance, etc.[25] While potentially helpful in defining priorities for action to help species, these schemes do not help with the question, should the snail darter be exterminated. The weights are merely numerically-codified values of one set of humans.

Other writers have suggested that the species level is not particularly appropriate for decision-making and that instead the society should be protecting critical ecosystems.[26] They argue that because of the information and uncertainty problems associated with individual species and because what we really care about in protecting species is ecosystem stability, that management should operate on the system level. There is no doubt that there is merit in this argument. Critical and sensitive systems should be mapped, studied and protected. Recent federal legislative attention has been oriented in this direction.[27] The problem with this argument, however, is

that is does little to help us when we confront the snail darter with the Tellico Dam. While systems may be the desirable operating unit, species are the actual ones. The ecosystem approach would tell us that the Little Tennessee River system is moderately unique (at least regionally) and that the Tellico Project would substitute a less-diverse lake biota for the present flat-water river system. We are still left with human valuation of the desirability of implementing such a change. TVA would value it highly positive (in light of project benefits); the Association for the Preservation of the Little Tennessee River would value it highly negative.

The bottom-line on this discussion is a paradigmatic one. It should be fairly clear by now that under the rational economic paradigm, it is impossible to make an absolutist argument for preserving species. The loss of the snail darter simply cannot be measured on the cost side of a benefit-cost evaluation. Nor is it necessarily appropriate to do so.[28]

The Ethical Argument

The last set of arguments about species preservation contends that the paradigm is wrong -- that the homocentric, economic model should yield to an ecocentric, biotic system-based view. This argument maintains that the rational economic paradigm is a product of Western society and has guided some human actions for only several centuries. The argument suggests that cosmologies -- ways of looking at the universe -- are not static, but evolve with the passage of time and the accumulation of wisdom. It further suggests that a merger of environmental mysticism and latter-day rationality could yield a progressive ideology to deal with the future.

At any one point in time, there are a range of social philosophies from which the prevailing set of ethics is drawn. Not only do many of the dominant

social philosophies encourage the preservation and protection of natural objects, but their growth has also been in that direction.[29] Although most early Western conceptions of wild nature were negative ("subdue and civilize"), many Eastern philosophies worshipped and viewed God through natural metaphors. In this image, the earth-oriented culture of the American Indians viewed natural objects as gifts from God to cherish and use with care. The Jains, an Eastern religious sect, were perhaps the extreme proponents of this philosophy in that they viewed all life forms as divine and sacrosanct.

The knowledge spawned by the Enlightenment led to new perspectives on natural objects in Western culture. As a result of the new understanding of the wild natural world, nature was viewed with awe as vast and complex. The eighteenth century concept of the sublime led philosophers to view wilderness with exhilaration, associating God with wild nature. Deism applied the reasoning of the Enlightenment to view nature as a complex and beautiful indicator that God existed. Transcendentalism went further in suggesting that nature was a vector by which men could learn divine revelation and thought.[30]

There has also been a growth in the notion that humans have a moral responsibility towards animals. There is currently a social ethic that says that it is wrong to inflict pain on animals. Indeed, institutions such as the A.S.P.C.A. have developed to act as guardians for the implied (and in many places, express) rights of animals. This has not always been the case. Early Western culture did not generally perceive a moral responsibility for the care of animals. Francis of Assisi was an exception, whose ideas as to human/animal inter-relationships were largely overlooked. Descartes and other Enlightenment writers argued that since animals could not reason, they could not feel. This concept began to change with the writings of Hume and

Bentham, who viewed cruelty to animals as a metaphor for cruelty to humans. These philosophies led towards protection of higher forms of life, that is, those that were more human-like.

The notion of preservation of species also has precedent in religious writings. The Old Testament maintains that animals and plants belong to God and that humans are to act as His stewards on earth. The Noah story is taken as a symbol of the sanctity and uniqueness of every living species. Through all these philosophies, there is an increasing recognition that a reverence for all life forms implies a reverence for human life, thus elevating the human condition.

Based on this set of philosophic writing, preservationists make an ideological argument in terms of the social evolution of rights, ethics, and ecological community consciousness. Rights can be seen as bestowing claims of ownership and control over an organisms' actions and existence. While ethical soil nurtures the definition of rights, ethics go beyond rights in defining a prescriptive theory of operation for dealing with new social situations. In their definition, a basic differentiation is made between what is considered to be social and antisocial conduct. Furthermore, by prescribing a theory for action, ethics reduce the conflict and uncertainty associated with life, in effect building a stable and predictable state in which organisms may operate efficiently.

The definition of rights and ethics is not a static process, but rather is dynamic, evolving as societies and philosophies change. Okun has described the process of granting rights as defining where society is on a continuum between an egalitarian image of society as conceived in a democratic political system and an efficient social system as described by a capitalist market economy.[31] The trend in present-day society has been to move further down

the continuum towards the equality end, granting more rights to more organisms (living and institutional) as we go. Thus, the right to some measure of control over one's life has been granted to American blacks where they were formerly considered as white-owned property. The right to a decent working condition has been extended to workers where they were formerly totally at the mercy of their employers. Similarly, the rights to basic education and equal employment have (in theory at least) been extended to all U.S. citizens. It is important to remember that the definition of rights is at the margin an extremely dynamic process -- one defined by judicial, social, political, and economic factors.[32] Further, rights change as knowledge and understanding increase. Thus, for example, we are currently concerned with the definition of sun rights for solar collectors and air rights for building.

Recent legislation such as the National Environmental Policy Act, the Marine Mammal Protection Act of 1972, and the Endangered Species Act can be viewed as beginning to confer basic rights on nonhuman elements of the natural environment. In these pieces of legislation, rights are usually bestowed via procedural safeguards. For example, the NEPA attempts to make sure that developers at least think about their effect on nonhuman species via an impact statement requirement. But at least one writer has argued that natural objects should be given the substantive right to sue on their own behalf.[33]

The ideological argument maintains that the growth of social philosophy and the evolution of rights imply a need for a new set of social ethics, one that confers value on species regardless of human utility. Ethics should, and do, evolve over time to aid us in coping with new social situations. First, ethics were defined in terms of one individual's relationship to another. Then, as social systems were established, ethics were increasingly defined which related individuals to societies. As the world has "shrunk,"

there has been an increasing emphasis on the ethical relationships between societies.[34] The final set of ethics to be defined deals with the inter-relationships between societies and their global environment. It is argued that their definition is necessary in order to cope with the increasing awareness of interactions at the society-environment interface. As with all ethics, an environmental ethic must prescribe a theory of action that makes our actions less chaotic and uncertain.

Leopold has done pathbreaking work in the definition of a "land ethic."[35] In his view, an ethic is a "limitation on freedom of action in the struggle for existence." He suggests that, through the definition of ethics, individuals and groups evolve modes of mutual coercion and cooperation such that the result is a symbiotic assemblage, that is, an ecological community. The ecological community concept is particularly powerful as a social ethic because it defines our ethical responsibilities towards other species as one of neighbors operating with a shared set of property rights. The neighborhood metaphor is helpful in a prescriptive mode. For example, it is taken for granted in small communities that an individual's responsibilities extend beyond his self-interest. Hence, we have PTA's, beautification leagues, and volunteer fire departments.

Development of an ecological conscience through the land ethic is important -- according to Leopold -- because it is necessary for the future health of the natural community of which humans are one element. Other animals operate via competition and in doing so define a stable state for the community. Humans have historically acted in an instinctually-competitive mode, broadening their niche and destroying other life forms. The argument maintains that because human health is tied to the ecological system's health, it is necessary to turn to less instinctual modes of operation. It

further suggests that by placing humans in an ecological perspective, their status as a "higher" species is reinforced. Humans -- as rational animals capable of planning -- are no doubt unique, in that they create the meta-physical structure in which they survive. Other species are limited by instinct and environmental constraints. By adopting this paradigm, humans accept the responsibility that comes with the ability to manage and control.

Based on their particular attitudes towards risk and their set of values, preservationists argue that prohibitive legislation is not only necessary but appropriate. They argue that the opportunity costs of losing a species in terms of lost current and future utility and the risks of disaster from biotic instability are too large to consciously allow species to go extinct. Further, they maintain that humans have an ethical responsibility for other life forms -- one that does not allow for the balancing of the benefits of human development actions against the costs of the loss of a species.[36]

NOTES TO CHAPTER 2

1. Reisner, 1977a, p2.

2. Ibid., p3.

3. Ibid.

4. Opler, 1976, p1.

5. 4 Endangered Species Technical Bulletin (2):12, February 1979.

6. For example, the Senate Committee on Environment and Public Works has estimated that American wetlands -- extremely productive areas -- are being developed at the rate of 300,000 acres per year. (Washington Post, August 13, 1978)

7. For example, the introduction of domestic goats on the island of St. Helena in the early 1500s has resulted in the steady decline of the island's plant life: Eleven of its 33 endemic flower species are extinct and 18 of the remaining 22 are threatened with extinction. (Reisner, 1977a, p5)

8. Ibid., p9.

9. Ibid.

10. Kirscheimer and Storrs, 1972, p229-242.

11. Imlay, 1977, p9.

12. Reisner, 1977a, p10.

13. 91 Newsweek (22):83, May 29, 1978.

14. Perhaps a marketplace should be established where wealthy humans could acquire the habitat of endangered species and where such acquisitions would have the same kind of investment value as does other art: "Oh yes, I own the only surviving black-footed ferret community. It's appraised at $10 million." Or humans could acquire the habitat and donate it to the Department of the Interior, receiving tax benefits for their philanthropy. There are two problems, however. By preserving the habitat, one tends to decrease the scarcity of the species by allowing it to breed -- hence decreasing its value. Also, it would be hard for an owner to appreciate his collection visually or show it to others. I fear that the result would be the same as it is in "big game hunting" -- that the owner would stuff the last few ferrets and put them in his living room, which does not benefit the species a great deal.

15. Quoted in Imlay, 1977, p14.

16. Odum, 1969, p265.

17. Kormondy, 1969, p95-7.

18. The American alligator has apparently benefitted from the protection provided by listing. Most populations were reclassified from endangered to threatened status in early 1977. (2 Endangered Species Technical Bulletin (2):3, February 1977)

19. Miller, 1975, p81.

20. Ibid., p83.

21. Ibid., p83-4.

22. "Environment", 10 The Futurist (5):288, October 1976.

23. By filtering large amounts of water, these organisms concentrate and store pollutants, sparing chemists the task of evaporating large amounts of water to raise concentrations to levels they can detect. Indeed, a global monitoring network using mussels is in the process of being set up. (92 Newsweek (24):109, December 11, 1978)

24. For example, the "value" of all 10^7 species can be taken to equal the worth of all present and future human endeavour, which is a large number. If we arbitrarily assign the worth of human endeavour to be 10^{30} dollars (probably a conservative estimate), the average value of a species equals 10^{23} dollars.

25. See, e.g., Ramsay, 1976; U.S. Fish and Wildlife Service, "Draft Endangered Species Priority System," FWS/OES 301.3, July 8, 1976.

26. Cairns, 1975.

27. For example, in his May 23, 1977 Environmental Message to Congress, President Carter outlined a National Heritage Trust Program, that would preserve representative sensitive ecosystems (among other things).

28. Wildavsky points out that "(d)isagreements over degrees of environmental protection are not about relative costs and benefits but about the validity of economics itself as a form of interaction -- its basis in exchange, cost, and cash -- as a measure of the way we ought to relate to one another." (Wildavsky, 1979, p202)

29. See, e.g., Passmore, 1974.

30. Nash, 1967.

31. Okun, 1975.

32. Witness, for example, the recent action in Miami, Florida repealing a law that protected homosexuals against discrimination in employment,

housing, and public accomodations -- rights currently held by heterosexuals. (New York Times, June 8, 1977)

33. Stone, 1974.

34. Witness the current presidential attention on the issue of international human rights. (See, e.g., New York Times, April 15, 1977)

35. Leopold, 1949, p201-226.

36. Since they believe that it is unethical to contemplate the conscious extermination of a species, they view the 1978 amendments to the ESA as anaethma: The amendments initiate a balancing process and provide for exemptions from the blanket prohibitions of the original 1973 Act.

CHAPTER 3 -- EVOLVING PROHIBITIVE ENDANGERED SPECIES POLICY

Even though the proponents of prohibitive endangered species policy based their arguments on evaluations of risk and social values, the 1973 ESA was framed as prohibitive largely because of the symbolic nature of the issue, because it was defined by experts as a technical problem, and because it was not clear whose interests would be harmed by passing prohibitive legislation. In addition, comprehensive federal endangered species policy evolved out of developments in other areas of federal wildlife law, and responded to changing values, scientific knowledge, constituent groups, and patterns of intergovernmental relations.

The Evolution of Federal Wildlife Law[1]

Until the early 1900s, wildlife management was handled almost exclusively by state and territorial governments. Federal legislation dealt with wildlife in only a limited way.[2] Wildlife populations had been heavily exploited in the nineteenth century.[3] Sportsmen and scientific groups formed in the late 1800s to push for government intervention to manage depleted animal stocks.[4] Since wildlife was a public good, state agencies were established to manage the resource. Supported primarily by hunters and fishermen, they focused their attention on game animals and fish.

A federal role in wildlife management developed early in the twentieth century and grew dramatically in comprehensiveness and control.[5] The Lacey Act was the first significant piece of federal wildlife legislation. It was passed in 1900 to regulate interstate commerce in wildlife killed in violation of state law. "The impetus for enactment of the Lacey Act ... was the inability of individual states to protect wildlife resources adequately against well organized commercial interests able to harvest excessive quantities of

wildlife and promptly ship them in interstate commerce out of the reach of the state where they were harvested."[6] Other than regulating interstate commerce,[7] the federal role developed in three other areas: the regulation of taking (killing) of wildlife,[8] acquisition and management of wildlife habitat,[9] and requiring federal agencies to consider the impacts of their actions on wildlife.[10]

Legislation to protect endangered species uses all four of these themes to build comprehensive wildlife management policy. Indeed, the endangered species laws were developed out of the experience gained in these four areas of wildlife law with many of their provisions almost identical to those contained in earlier laws. For example, the 1973 ESA regulates taking and commerce, provides land acquisition authority, and requires federal agencies to consider (and reduce) their impacts on wildlife populations. The departure of the 1973 legislation from earlier efforts, however, was in the degree of its prohibition, its comprehensiveness, and broad scope.

Throughout the twentieth century, federal power grew vis-a-vis that of the states, though the appropriate role of each remained a constant source of conflict. State supremacy in the area of wildlife management was upheld until the 1910s. The Supreme Court decided the Abby Dodge case[11] in 1912 on the basis of this doctrine, holding that a federal statute that prohibited the taking of sponges from the Gulf of Mexico or the Straits of Florida by means of diving equipment[12] was unconstitutional if the taking occurred in Florida's territorial waters. The courts based their decisions on the "state ownership doctrine", which held that the states retained public trust ownership of wildlife. But with enactment of laws such as the Lacey Act (1900), the Migratory Bird Treaty Act (1918), the Migratory Bird Conser-

vation Act (1929) and the Fish and Wildlife Coordination Act (1934), the balance of power shifted rapidly to the federal government.

Developing a Technical Definition of the Endangered Species Problem

While the growing federal role in wildlife management in general was important in opening the public agenda to the endangered species issue, growth in scientific knowledge and in a set of interested agency experts was more significant. Scientific knowledge and the role of the expert in government expanded significantly in the post-War years of the 1940s and 1950s. Advances in knowledge led scientists to build larger, more holistic pictures of how the universe functioned. Out of an early preoccupation with describing and classifying organisms (taxonomy) and with theories of population biology that allowed efficient commercial exploitation, the scientific principles of community ecology and ecosystem modelling expanded abilities to conceptualize and analyze the endangered species problem. The definition of the problem changed accordingly from one concerned largely with overutilization (corrected by regulation of taking and commerce in endangered species) to one focused on habitat loss (corrected by refuge acquisition). More recently it has been viewed as an international problem (corrected by intervention through treaties and incentives).

Shifts in the institutional location of federal wildlife expertise helped to generate a broader view of the endangered species issue. Originally, federal management of wildlife was handled by the Departments of Agriculture and Commerce, promoting a production-oriented, commercial attitude towards wildlife. In 1939, however, an executive reorganization brought wildlife management into the Interior Department. This change encouraged the development of a broader view of wildlife, and facilitated

a research program aimed at understanding the endangered species problem.[13]

Research initially focused on species that were known to be in danger and that had vocal constituencies -- symbolic species such as the trumpeter swan, the whooping crane, and the Canada goose. Experiments were conducted that led towards plans to captively-propagate endangered bird species. For example, it was discovered that bird species that reached sexual maturity later in development could only be successfully transplanted from the wild early in their life cycle. Experiments proved that male birds would accept and mate with females that were grounded in a captive environment. Scientists also developed the concept of surrogate research: Rather than experimenting on species that were in a depleted state, they used individuals from related species to test their hypotheses. They could then apply their results to efforts to propagate endangered species in captivity.

Development of this basic method of research resulted in progress for individual species and in an enhanced understanding of the nature of endangerment. Experience with the whooping crane is illustrative: A count on their winter range in 1945 indicated that only 17 individuals of the species survived.[14] The Cooperative Whooping Crane Project (involving U.S. and Canadian wildlife experts) was begun in the same year. Ten years later, the population had not increased significantly. In 1956, a FWS biologist proposed that captive propagation be considered as a way to save the crane; but one faction in the FWS argued that there were too few individuals in the population with which to gamble. In 1957 they proposed that experiments be conducted with surrogates (in this case, the more prevalent sandhill crane). An advisory group was set up in 1958, but the surrogate-propagation proposal did not get off the ground until the change of administration in 1961.

President Kennedy sent out a directive to the executive agencies that

encouraged the presentation of new ideas. The propagation interests in FWS used the memo as a springboard to begin experimentation with surrogates. An overall three-part research method was outlined for the development of endangered species data. For each endangered species this included: (1) biologists in the field studying the species in the wild, (2) specialists (behaviorists, physiologists, nutritionists, etc) studying the species' needs in the laboratory, and (3) a propagation unit whose goal was to preserve a gene pool of seriously threatened species. This research strategy has paid off slowly but steadily for the whooping crane: After six years of surrogate research, eggs were collected from wild whooping crane nests and were hatched successfully at the Patuxent Research Station. The crane population currently stands at 108 birds.[15]

Nascent understanding of the endangered species problem and a developing cadre of interested professionals led to the first administrative statement of the problem. In 1964, a Committee on Rare and Endangered Wildlife Species was established in the Bureau of Sport Fisheries and Wildlife.[16] Nine biologists were assigned to the team. In August 1964, they published a preliminary copy of the "Redbook" -- the first official federal list of rare and endangered species of fish and wildlife.[17] The 1964 list identified 63 vertebrate species considered to be threatened with extinction.

The criteria used to list species were vague but made no attempt to include any nonbiological variables. Attempts at explicitly balancing other considerations (such as utility or disutility to humans) were not seen as necessary because the Committee perceived the problem as bounded only by technical dimensions. After all, listing a species in the Redbook did not provide formal federal protection of any kind. Therefore, since no one would be economically harmed as a result of a species being included,

it was not viewed as necessary to include nontechnical considerations in the listing. The species listed in the 1964 Redbook were selected solely on the basis of informal expert judgment. The Committee pointed out that "criteria to be used in selecting species and subspecies to be included have not yet been clearly defined. For the present," they continued, "the list includes those forms which are generally believed to be endangered or which, in the opinion of the Committee are likely to be in jeopardy in the forseeable future if solutions to problems contributing to their decline are not found."[18]

The introduction to the Redbook reflects the Committee's frustration with the state of knowledge about the status of many species as well as the divergent interests within the BSFW. Yet it highlights their belief in a purely-technical definition of what was to be considered endangered:

> "In some instances, almost diametrically-opposed opinions have been received on the status of a given species and on measures necessary to insure its survival. The proposed solution, including management recommendations, reflect the opinion of the Committee ... made with complete independence of Bureau policy or management or administrative restrictions ... (and evaluated) solely on a biological basis."[19]

"Complete independence" was necessary because of competing programs within the BSFW. For example, the 1964 endangered list included the bighorn sheep -- a game species whose protection would go against the interests of hunters, the BSFW's traditional constituency. It also included the Utah prairie dog -- an animal considered a nuisance by western ranchers. The Bureau's Animal Damage Control unit was (in 1964) funding a prairie dog poisoning program to protect the ranchers' interests. Hence, while there was a growing BSFW interest in the protection of declining species like the Utah prairie dog, other elements of the Bureau were actively engaged in their destruction.

At the same time that the research program was developing in the U.S., an increasing awareness of the endangered species problem was developing in the international scientific community. For example, the International Union for the Conservation of Nature and Natural Resources (IUCN) was formed in Morges, Switzerland in 1948 to serve as a clearing house for endangered species material. In 1962, two international conferences were held which highlighted the global nature of the problem: The 13th world conference of the International Council for Bird Preservation was held in New York City, and focused on an estimated 120 threatened bird species and how to save them.[20] Similarly, the First World Conference on National Parks was held in Seattle. Out of the Conference came a recommendation that for each endangered species, an appropriate area of habitat be established in a national park of wildlife reserve.[21]

Development of basic scientific method, awareness, and understanding, growth of the American endangered species research program, and formation of the BSFW Committee on Rare and Endangered Wildlife Species had several important effects in the American legislative arena: The scientists who had focused their research on endangered species became an important lobbying group that pursued protective legislation. Since they perceived the problem to be a technical issue of acquiring refuge habitat and propagating individual animals, they did not worry about commercial interests that might be affected by protective legislation. This in part reflected their personal values as to the worth of animal or plant species. More important: because the technicians were the first to define the problem, it was their technical prescriptions that were later codified into law. (For example, the first federal list of protected species was taken exclusively from the animals identified in the 1964 Redbook.)

A Growing and Changing Constituency

While technical understanding and professional interest were developing, a broad national constituency was emerging that pressed for the enactment of protective endangered species laws. This constituency reflected changing national perspectives on the value of wildlife. The original view of wildlife as a foe and an item of subsistence broadened to encompass commercial, recreational, scientific, and aesthetic values. Indeed, with the advent of animal anti-cruelty laws, wildlife have increasingly been viewed as having some set of intrinsic rights.

In many ways, these attitudinal changes were the indirect result of post-War affluence and increased accessibility. The access provided by an improved national road system and the financial ability to purchase automobiles brought large numbers of city dwellers into the country. Increases in leisure time and disposable income caused recreational demand to soar.[22] The series of reports published by the U.S. Outdoor Recreation Resources Review Commission in 1962 not only projected a dramatic rise in demand for recreation by the year 2000, but highlighted for the first time the increasing demand for nonconsumptive recreational opportunities.[23] Outdoor recreationists had traditionally been individuals in rural areas who hunted or fished. The new recreationist, however, was someone who wanted to watch birds, hike, or drive for pleasure. New land areas and management ideas were needed to respond to these demands.

Legislative recognition of the national need for outdoor recreation opportunities brought with it opportunities for federal acquisition of habitat to protect threatened fish and wildlife species. The Land and Water Conservation Fund Act (LWCFA)[24] was enacted in 1964 to establish a fund for state and federal acquisition of land, and development of programs for

national recreation needs. Included in the Act, however, was the provision that money in the Fund could be used "for the acquisition of land, waters, or interests in land or waters ... for any national area which may be authorized for the preservation of species of fish and wildlife that are threatened with extinction."[25] With passage of the Act, the Department of the Interior was explicitly given authority to purchase habitat for endangered species preservation that -- for the first time -- was not on a species-by-species basis.

The development of non-traditional attitudes towards wildlife and the outdoors supported the growth of non-game-oriented interests groups. Even though national interest groups such as the National Audubon Society, the National Wildlife Federation, and the Boone and Crockett Club had been active as lobbyists for years, their efforts had been largely concerned with game species (primarily waterfowl). A more broadly-based environmental movement was budding in the early 1960s, however. Publication of Rachel Carson's book on pesticides, Silent Spring, in 1962 and court battles such as the Storm King case in 1965[26] heightened general public awareness of environmental issues, mobilized activist groups, and stimulated development of non-management, preservation-oriented interest groups.

The media also contributed to the changing national perspectives on wildlife. For many urban dwellers, wildlife was something to be feared or at least ignored. Wild animals were viewed as blood-thirsty inhabitants of the woods. The closest one would want to approach an animal was in a zoo or a fur coat. Television, however, broadened the experience of many urban dwellers. From a first-hand view, wild animals were seen as cuddly, warm and down-right human. As a result of its broad appeal, the media seized on wildlife as an issue that would sell well with the public.

Media coverage of the endangered species issue grew rapidly. Emotion-charged statements abounded. In mid-1965, for example, the BSFW published a pamphlet entitled "Survival or Surrender for Endangered Wildlife."[27] The pamphlet bemoaned the loss of the passenger pigeon, and called for research, education, and regulations to protect endangered species. It claimed that "today the future of many kinds of wildlife depends on how brightly burns a spark of concern." The Washington Post in a Sunday issue in late 1965 contained a feature article on "Wildlife: The Vanishing Americans" which began, "While the United States is in the midst of a population explosion (of people), much of our animal population is heading in the other direction -- toward extinction."[28] General public sentiment in favor of endangered species protection grew rapidly. Television shows such as "The Wild Kingdom" helped to "spread the word". School children sent contributions to the Department of the Interior to help preservation activities.

Why was the endangered species issue so popular? For one thing, the image of furry animals drawing their last breath is an extremely poignant one. In the BSFW's words, "The subject has headline value." Further, "this is the kind of story youthful minds can grasp and champion."[29] FWS official Ray Erickson feels that the issue was so popular in part due to the nature of the times: "Protestors were anti-everything in the Sixties. Endangered species was like motherhood -- perhaps even better because motherhood became controversial."

The endangered species issue was in many ways a symbol of the concern for environmental quality.[30] It was an issue that a wide variety of people could identify with and understand. Further, it seemed to be a solveable problem since the experts made it appear as a technical issue. It was never clear that some interests might have to bear significant costs of protection.

The First Step: The 1966 Legislation

The broadening knowledge of the endangered species problem, the growth in public values and political activism, pressures from the administrative experts, and Congressional awareness of a symbolic issue that "no one was against" led to the passage of the first piece of federal legislation that dealt explicitly and somewhat comprehensively with the endangered species problem. Up until the mid-1960s, Americal legislation that dealt with endangered species protection was framed on a species-by-species basis. For example, Congress passed a bill in 1958 that authorized the Secretary of the Interior to develop a research, propagation and management program for the Hawaiian nene goose.[31] A similar program for the whooping crane was described above.

A comprehensive international treaty had been signed in 1940 with the potential of controlling international trade in endangered species, but had little net effect because of inadequate implementation. Provisions of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere[32] were quite far-reaching, directing the signatory nations to examine the possibility of setting aside national wildlife reserves where no motorized transportation or commercial development would be allowed, and to propose or adopt laws and regulations to protect flora and fauna within their national boundaries. International trade in protected species (those listed in an Annex of Species appended to the Convention treaty) was prohibited within a legal export document from the country of origin. Perhaps most remarkable was one of the purposes laid out in the Convention's preamble, "to protect and preserve in their natural habitat representatives of all species and genera ... in sufficient numbers and over areas extensive enough to assure them from becoming extinct ..."[33] Unfortunately, this lofty

purpose was not met by adequate implementing action. Further submerged by the World War, the 1940 Convention had very little net impact on the endangered species problem.

Technically, impetus for the 1966 legislation came from two sources. First, a "housekeeping" bill was necessary to organize administration of the national wildlife refuges. Second, even though authority to promote protection of several species had already been delegated to the Interior Department and that land acquisition for threatened species had been outlined in the LWCFA, the BSFW had no explicit authority to undertake a comprehensive program to conserve endangered animals.[34] The Endangered Species Preservation Act[35] was designed to satisfy both refuge organization and program authorization needs.

The primary force behind the legislation was the BSFW's scientists and wildlife managers. Development of an on-going research program had generated an administrative constituency for preservation actions. Draft legislation on refuge organization had been sent by Interior to the Bureau of the Budget in 1958. A draft bill authorizing a comprehensive conservation program was prepared in 1962. The proposals were later combined and cleared by the Budget Bureau in 1965. Interior Secretary Udall sent the draft legislation to the Congress on June 5, 1965. In a cover letter he pointed out that, "The principal objective of this proposed legislation is to authorize and direct the Secretary of the Interior to initiate and carry out a comprehensive program to conserve, protect, restore, and where necessary to establish wild populations, propagate selected species of native fish and wildlife ... that are found to be threatened with extinction."[36]

The Interior Department proposal was introduced into both houses practically verbatim.[37] (The bills as finally enacted are summarized in

Appendix J.) Both bills were geared to protect native species of fish and wildlife thought to be threatened with extinction. Non-native species were not eligible. Further, the legislative history makes it clear that only vertebrate species were to be considered for endangered species status.

Criteria were defined to guide the Secretary of the Interior in identifying which species were to be considered as endangered. As had been the case in the 1964 Redbook, the criteria only included technical factors. A species was to be designated if "its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of over-exploitation, disease, predation, or because of other factors ..."[38] No attempt was made to consider whether the species was important or valuable to humans.

The bills were largely perceived as "refuge bills" with little or no impact on any other interests. They would let the Interior Department purchase habitat to protect endangered species. Refuge acquisition was by this time a well-established function of the federal government. The bills simply gave Interior the authority to use existing fund-providing laws for endangered species purposes.[39] Appropriations were quite limited -- $5 million annually, with a maximum of $750,000 to be used for any one area. The taking of endangered species was also prohibited, but this provision was extremely limited. Taking was only prohibited on federal lands that were designated for wildlife refuge purposes.

For efficiency reasons, the bills also required federal agencies to consider the impacts of their actions on wildlife populations. It seemed inefficient to have Interior protecting endangered species while other federal agencies disregarded them on their lands.[40] A mandate was thus inserted into the bills that encouraged other agencies to consider wildlife

impacts. But the mandate was far from absolute. The bills required the Secretary of the Interior to utilize other Departmental programs "to the extent practicable" to further the purposes of the policy, and to encourage other agency heads to do the same. The Senate amended its version to add a policy statement that the Secretaries of Interior, Agriculture and Defense "shall seek" to protect endangered species and more importantly to preserve the habitats of these species on lands under their jurisdiction, but only "insofar as is practicable and consistent" with their primary purposes. This amendment was included in the enacted version.

The fourth theme of federal wildlife law, the regulation of commerce in endangered organisms, was not included in the bills introduced in 1965 and 1966. This was important to the bills' passage because it kept all commercial interests out of the debate. Indeed, as could be expected, the bills were remarkably uncontroversial.[41] Testimony at the Senate hearings was totally in support of the concept contained in the proposed legislation. National conservation organizations strongly supported the legislation. The only real debate took place over the constitutional issues of federal appropriation of the states' historic rights to manage resident wildlife species. Both the senators and the conservationists addressed this question. Predictably, both the senators and a portion of the conservation community -- those groups with a game management constituency -- were protective of the states' role. The other set of conservation groups (those with more diverse constituencies) seemed to push for a greater federal role or at least a clear separation of powers.[42]

Both Senate and House bills passed easily by voice vote. Floor debate in both houses was short. Supporters gave speeches which lauded the honor and wisdom of their actions. Amendments were largely of a clarifying

nature and dealt mostly with the National Wildlife Refuge system reorganization. The only really interesting change was deletion of subspecies as candidates for endangered status. Even though both House and Senate bills as introduced extended protection to subspecies, the Senate Committee (and subsequently the conference committee) deleted them for unknown reasons.

The legislators perceived the issue as a "no-lose" situation: They could vote to protect endangered species at little cost. A few refuges might be set up, with hunting restricted on them, but it was not clear where they may be or who if anyone would actually be hurt by the restrictions. Further, the Interior Department had testified that only some 78 species were considered to be endangered. Mammals and birds (and an occasional favorite game fish) were given almost exclusively as examples: The bills were seen as aiding whooping cranes and grizzly bears, black-footed ferrets and prairie chickens.[43] By passing the bills, the Congressmen would also respond to an administration need for legislative authority and direction, and more importantly, would make a symbolic statement that would satisfy an increasingly-vocal set of interest groups, and would look good to the general public.

To oversimplify somewhat: In passing the 1966 ESPA, Congress can be seen as having passed a referendum in favor of endangered species and environmental quality at a time when the tune was beginning to rise in the charts. In passing the 1966 Act and hence in recognizing the issue as a national problem, they also began an incremental process of legislative redefinition that culminated in 1973 with a prescription that mirrored a degree of comprehensiveness and prohibitiveness not imagined in 1966.

Incremental Expansion: The 1969 Legislation

A middle-ground step was taken in 1969 with enactment of the Endangered Species Conservation Act.[44] The 1969 Act amended the 1966 legislation to include the fourth theme of federal wildlife law -- regulation of commerce in endangered species. It did this by prohibiting the importation of endangered species (or portions or products thereof) into the United States, and by extending the Lacey Act's ban on interstate commerce in unlawfully-taken wildlife to include reptiles, amphibians, molluscs and crustaceans. In many ways, in passing the 1969 legislation, the Congress responded to the same forces as before. Both of the bans on interstate and international commerce were symbolic responses to highly emotional issues (overexploitation of the American alligator and the great cats). Further, the technical experts of the BSFW were again a potent force in defining the problem and its solution as a technical issue. The history of the 1969 Act is different than that of the 1966 Act, however, because the presence of commercial interests that would be harmed by the legislation forced the BSFW to include balancing provisions in what could have been an extremely prohibitive Act.

Recognition of the international dimension of the problem was probably the most significant element of the 1969 Act. Pressure for this component came from both the Interior Department and from interest groups who decried the overexploitation by the fur industry that was threatening the larger species of the cat family (leopards, jaguars, etc). The United States was under pressure to set an example. The Secretary-General of the IUCN wrote to Senator Yarborough, indicating that 66 nations were prepared to follow the U.S. example: "I wish to state that the adoption of this Bill is critical from the international standpoint not only for its own worth but also for the reason that if the Bill is enacted other nations will be

prepared to follow the example set by the United States."[45] Both the Interior Department[46] and influential wildlife interest groups[47] picked up quickly on this argument in favor of the legislation.

Extension of Lacey Act protection to reptiles, amphibians, and some invertebrates responded almost entirely to one issue -- heavy poaching on alligator populations in the southeast. In the hearings and Senate and House reports, illegal traffic in alligator hides was repeatedly given as justification for extension of federal protection to these lifeforms.[48] There was never any opposition to this extension, even though it had the potential of causing the official federal endangered species list to swell dramatically.

The symbolic nature of the endangered species issue continued to trigger public support. The animals that would be protected by importation restrictions were enormously symbolic: Polar bears, elephants, leopards, rhinos -- all were large animals that presented emotion-provoking images. Newspaper headlines played to these images: "Are the Days of the Arctic's King Running Out?"[49] The metaphor of war was used: "Africa's Wildlife Under Siege,"[50] "Can Africa's Wildlife Be Saved?"[51] Further, the problem was cast as the result of the very rich selfishly demanding extravagant "fun furs" and wasteful sport. In a story about the killing of polar bears for sport, for example, one Washington Post article was titled, "Precious Meat for Millionaires."[52]

Having witnessed the ease of passage of the 1966 Act (signed into law on October 15, 1966), the BSFW lost no time in drafting legislation that incorporated the importation and interstate commerce prohibitions. Congress was already on record in support of endangered species preservation. The BSFW staff thought that the amendments would be warmly received. They sent

draft legislation to Congressman John Dingell (D-Mich) on February 8, 1967.[53] Shortly thereafter, Dingell introduced a bill[54] that was quite prohibitive. An identical version was introduced into the Senate:[55] The bills not only added the importation and interstate commerce prohibitions, but expanded protection to subspecies as well. Criteria for listing endangered foreign species were the same as those specified in the 1966 Act for native fish and wildlife. The bill allowed the Secretary of the Interior to grant permits to allow importation but only for zoological, educational, and scientific purposes. All-in-all, the Dingell-BSFW bill was quite expansive with a strong potential for significant impact upon commercial interests like the domestic fur industry.

But in House and Senate hearings, there was no opposition to the bills.[56] The House bill was reported practically intact with unanimous committee support in February 1968, and was passed without opposition on August 1, 1968. Senate hearings concluded with Acting Chairman Senator Daniel Brewster (D-Md) stating that he would recommend to the Commerce Committee that the bill be reported favorably.[57] By the end of the summer, it seemed almost inevitable that the Senate bill would also be reported and passed, and that the President would shortly sign it into law. But two things prevented this from happening: the rapidly approaching pre-election adjournment of the 90th Congress, and the twelth-hour (but not too late) involvement of the fur industry.

The BSFW experts had never thought it necessary to involve representatives of commercial interests in legislative discussions because this was a technical matter to correct a technical problem. The fur industry was clearly taken by surprise when the House passed its bill.[58] Industry representatives hurriedly began negotiations with the Department of the

Interior and the Senate Commerce Committee. Herman Ringelheim, representative of the New York Fur Dressers Association described the situation as follows:

> "Our presence at these hearings is prompted by the fact that we were among those sections of the fur industry that were stirred into action late last summer by the news that the House of Representatives had passed H.R. 11618 aimed at protecting animal species threatened with extinction. That bill, we felt, could have done serious harm to our industry.
>
> "I was a member of a delegation from the industry that visited the representatives of the Department of the Interior shortly after we became aware of this proposed legislation, to make our views and our fears known. It is a source of great satisfaction to us to realize that our representatives to the Department were taken very seriously, and that substantial progress has been made in meeting many of the major objections we raised."[59]

The primary argument used by the fur industry was that the problem was international in dimension and that unilateral action by the United States was inappropriate and would result in inequitable damage to American furriers. They proposed many amendments including one which would require as prerequisite to listing a species as endangered, official agreement of nations with 75 percent of the world's supply of the species.[60] Another amendment suggested by the industry would allow the species to be listed only if "such determination shall not be contrary to the public interest in terms of its impact on domestic consumers and businesses."[61]

After much negotiation, the Interior Department backed off its earlier support of the prohibitive wording of the bill passed by the House. It proposed an amendment which would limit species eligible for endangered status to those threatened with <u>worldwide</u> extinction. Hence, declining populations of species were not eligible for protection unless they were threatened in global aggregate. In determining endangered status, the amendment would require the Secretary to consult with interested persons. Further, it provided that the Secretary could permit the importation of endangered

species or products made from them to prevent "undue economic loss or injury." No time limit was set on the permits, leaving it up to the Secretary's discretion.[62] Hence, permits could now be provided for zoological, educational, scientific, propagation, or commercial purposes -- a significant weakening of the prohibition.

The Senate Commerce Committee reported an amended version of the bill on October 10, 1968. The Senate version included Interior's weakening amendments. It also contained a new subsection that provided a 180-day grace period from the time of enactment to the time when the law would take effect. According to some conservationists, this provision would allow importers to stockpile endangered species merchandise and build a case for receiving a hardship permit by entering into contracts for the products. It is problematic, of course, to wonder whether the fur industry would have received the same set of concessions if the Senate Interior or Environment and Public Works Committees had considered the bill. Commercial interests are certainly high on the priority list of the Committee on Commerce. Nevertheless, the bill was reported favorably. Differences between House and Senate versions were considerable. A conference committee would have been necessary, but the 90th Congress adjourned four days later. The bills died a natural death.

Analysts at the time claimed that an endangered species bill would have passed in the 90th Congress had the fur industry not opposed it. Columnist Joshua Lederberg, for example, wrote that the legislation would have been enacted had it not been for the "opposition of such laws (which) came from an irresponsible part of the fur trade, whose natural supplies will soon evaporate if they are not promptly protected."[63] A more recent analysis claimed that, "Suddenly, at the last minute, the American fur industry,

aware that some of its profits might also be endangered by this legislation, managed to kill the bill through pressure on the Senate Commerce Committee."[64]

The conservation interest groups and the administrative experts were surprised at their loss of control of the outcome of the debate. In the waning moments of the 90th Congress, Senator Ralph Yarborough (D-Texas) expressed the conservationists' disappointment and set the stage for the next year:

> "I assure all of those who have worked so hard with me for passage of this legislation that we are only down, and not out. Our fight will go on. When the 91st Congress convenes in January 1969, I again will introduce legislation to protect endangered species. It is my hope that the Congress will respond to this great need."[65]

In January, Congressman John Dingell (and others) introduced a bill that was identical to the strongly-worded, prohibitive bill that had been passed by the House the previous session. But the need for compromise with the fur industry was obvious. The Amalgamated Meat Cutters and Butcher Workmen (AFL-CIO) brokered two meetings at which representatives from the conservation groups, the two Congressional committees, the Interior Department, and the fur and leather industries discussed their demands.[66]

Following the change in administration (from Johnson to Nixon) and feeling the mood of compromise, the Department of the Interior drafted a new bill.[67] The Administration's new version was introduced into the House by powerful Congressman Edward A. Garmatz (D-Md), Chairman of the full House Committee on Merchant Marine and Fisheries. A similar bill was introduced into the Senate by Warren G. Magnuson, Chairman of the full Commerce Committee. The new bills were similar to the bill reported by the Senate Commerce Committee the previous year. Provisions added to respond to the commercial interests were kept, including the requirement that species be threatened with extinction worldwide, the provision allowing import permits

in cases of economic hardship, and the 180-day grace period. The Secretary of the Interior was also required to use "the best scientific data available to him" to make decisions about endangerment.

In contrast with the previous year, testimony at the 1969 House and Senate hearings was split pretty much evenly between conservationists and fur industry groups.[68] It was clear that a consensus was building around the Garmatz bill: Commercial interests recognized the inevitability of the bills' passage; both commercial and environmental interests recognized the need for compromise. The prime source of debate was around the need for international action. Elements of the fur industry again argued against unilateral action by the United States and for weakening amendments:[69]

> "To be blunt, our industry would be seriously handicapped if the United States were unilaterally to declare a species endangered while other countries permitted skins to be taken and processed ... The prospect of my being forbidden to process certain skins which would then simply go to my competitors in Europe or Japan is extremely disturbing. To force us to export jobs in this manner would help neither the species in question nor the United States unemployment rate."[70]

For different reasons, the environmentalists were also concerned with the mandate for international cooperation.[71] To respond to these concerns, a new section was added that required the Secretaries of Interior and State to seek an international ministerial meeting prior to June 30, 1971 in which "included in the business of that meeting shall be the signing of a binding international convention on the conservation of endangered species."[72]

One other significant compromise was included in the bill that was finally signed by the President in early December 1969.[73] To satisfy the conservation groups, a one-year maximum time limit was set for hardship permits. To satisfy the fur industry, a petition process was established that required the Secretary of the Interior to review the status of a species upon petition by an interested party.

In passing the 1969 Act, the Congress expanded the federal program to conserve endangered species one step. It was getting increasingly comprehensive with greater federal involvement. The global nature of the problem was recognized. All four elements of federal wildlife law were included. While many of the same forces that were responsible for enactment of the 1966 law were also critical influences in 1969 (Congressional perception of a symbolic issue; technical pressures and problem definition), a balancing of interests took place in the 1969 law because an aggrieved party was present and able to press for compromise. What had started out to be an extremely prohibitive statement was modified by negotiations that provided an opportunity for the inclusion of non-preservation interests.[74]

Building Comprehensive, Prohibitive Policy: The 1973 Legislation

Legislation was passed in 1973 that replaced the two previous laws with a comprehensive and prohibitive policy that went far beyond the earlier endangered species programs. The 1973 Endangered Species Act (ESA) was one of the last pieces of symbolic environmental legislation passed to satisfy a powerful environmental lobby with ostensibly few associated costs. In contrast to the atmosphere of negotiation that pervaded the history of the 1969 law, the ESA was framed as prohibitive because it was not obvious who it would hurt: Congress defined the law prohibitively because no one told them not to.

Environmentalism grew significantly in the early 1970s. The public increasingly placed pollution control and environmental quality higher in its list of social priorities. For example, while only 35 percent of a nationwide sample considered water pollution to be a serious problem in 1965, 74 percent were concerned by it in 1970. A similar survey regarding the

seriousness of air pollution showed an increase in concern from 28 percent in 1965 to 69 percent in 1970.[75] The first Earth Day was held in the spring of 1970 prompting interest and activity in primary and secondary schools, colleges and communities. At a time when the Viet Nam War continued to drain the national psyche, environmental quality was something everyone could be in favor of -- seemingly at low cost to society.[76]

Environmental interest groups proliferated and matured. Old groups were bolstered by new interest at the local level. Their early preoccupation with conservation (management) shifted towards advocacy of preservation as more and more non-consumptive (generally non-hunting) recreationists joined their memberships. New groups were created in response to local and regional controversies. Their skills at lobbying -- while still adolescent -- were increasingly effective and organized. Politicians could get elected on environmental platforms.

The mood of the times, the swelling and maturing environmental constituency, and an increased belief in federal regulation as appropriate public policy led to numerous legislative victories for the environmentalists in the early 1970s: The National Environmental Policy Act,[77] the Clear Air Act Amendments,[78] the Federal Water Pollution Control Act Amendments,[79] the Federal Environmental Pesticide Control Act,[80] the Marine Mammal Protection Act,[81] the Noise Control Act,[82] and the Coastal Zone Management Act[83] were all fairly expansive elements of federal regulatory policy fought and won by an increasingly effective and entrenched environmental constituency.

Enactment of the Endangered Species Act of 1973 probably represents the peak of this wave. Endangered species was the quintessinal environmental issue. Interest groups were well-organized, and were supported by wins in 1966 and 1969. Key congressmen were allied with the activist groups.[84]

All of these factors enhanced the power of preservationist interests and resulted in a remarkably comprehensive and stringent Act. In contrast to the legislative histories of the 1966 and 1969 laws, bills which evolved into the ESA increased in prohibitiveness and coverage. The final version incorporated almost all of the most restrictive elements of the "seed" bills. The ESA was one of the last pieces of environmental bandwagon legislation -- already set in motion prior to the 1973 Arab oil embargo and resultant "energy crisis".

The substantive impetus for the 1973 Act came primarily from three sources: (1) The 1969 Act had done nothing to regulate the taking of endangered species within the United States (other than on federal property); (2) In addition, earlier legislation had overlooked "almost-endangered" species. Protection was provided only for species "threatened with worldwide extinction." To be eligible for protection, species had to be in global intensive care, not just in the hospital; (3) The United States was still under pressure from the international conservation community to set an example. An international meeting had not been held by the 1971 deadline as required by the 1969 Act.

Some analysts have also seen inadequate implementation of the 1969 mandates by the Interior Department as a source of pressure leading to adoption of the 1973 legislation:

> "The Department of Interior's intransigence in carrying out its duties under the 1969 Endangered Species Act did have at least one beneficial side effect: it helped spur efforts to strengthen and amend the law. Part of the problem in the department's inability or unwillingness to take needed action came from its legal department, the Office of the Solicitor. Their lawyers insisted on a narrow, legal interpretation of the 1969 law, and did their best to prevent the department from taking actions which might conceivably exceed the authorities it had been given."[85]

Bills broadening the provisions of the 1969 Act were introduced in the Congress in 1970 and 1971, but did not really get off the ground until early in 1972.[86] President Nixon's Environmental Message of February 8, 1972 pointed out that "even the most recent act to protect endangered species, which dates only from 1969, simply does not provide the kind of management tools needed to act early enough to save a vanishing species."[87] He proposed legislation that "would make the taking of endangered species a federal offense, and would permit protective measures to be undertaken before a species is so depleted that restoration is impossible." The prohibition on taking and the addition of a threatened category were thus central ideas in the proposed legislation.

The Administration's bill was drafted by staff of the BSFW and the House Subcommittee on Fisheries and Wildlife Conservation and was introduced by Congressman Dingell and 24 co-sponsors into the House on February 8, 1972.[88] Identical legislation was introduced in the Senate by Senator Mark Hatfield on February 18, 1972.[89] These two bills became the base for the legislation that was finally signed almost two years later.

The Dingell-Hatfield bills would repeal both the earlier laws (excluding the portion of the 1966 Act dealing with National Wildlife Refuge system organization) and would substitute a comprehensive program under the aegis of one law. They contained the following key provisions: (1) They extended protection from species "presently threatened with extinction" (endangered) to those that "will likely within the forseeable future become threatened with extinction" (threatened). In addition, they dropped the requirement that species be threatened with <u>worldwide</u> extinction, adding species that may be abundant locally, but are threatened in "a significant portion of their range." The bills also dropped the foreign/native distinction contained in

the earlier laws and added an additional reason for listing a species: "the inadequacy of existing regulatory mechanisms."

(2) The bills gave joint jurisdiction to the Secretaries of the Interior (BSFW) and Commerce (National Oceanic and Atmospheric Administration - National Marine Fisheries Service) as divided in Reorganization Plan #4 of 1970.[90] Commerce was to have control over endangered ocean species.[91]

(3) The taking (pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do the same) of endangered species anywhere in the United States was prohibited regardless of state jurisdiction or whether the species was resident (confined within one state) or migratory. This was to be a major federal excursion into an area long cherished by the states -- control over resident wildlife. Exceptions were provided for native (largely Eskimo) claims and for hardship permits. In addition, to satisfy proponents of state control, the Interior Secretary was given the power to delegate federal authority over the taking of species to state management agencies if they had adequate endangered species programs.

(4) The 1966 requirement that the Interior, Agriculture, and Defense Departments seek to protect endangered species while carrying out other programs was extended to <u>all</u> federal agencies:

> "All other Federal departments and agencies shall ... utilize, <u>where practicable</u>, their authorities in furtherance of the purpose of this Act by carrying out programs for the protection of endangered species and by taking such action as may be necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of endangered species."[92]

(5) Finally, the maximum limits on land acquisition funds were deleted, providing the Secretary of the Interior unlimited authority to purchase habitat for endangered species, pursuant of course to available appropriations.

While the bills provided the opportunity for balancing other legislative mandates, the draft environmental statement (DES) prepared by the BSFW on the Endangered Species Conservation Act of 1972 indicates how strong a statement the bill's drafters felt it to be.[93] For example, in reference to the requirement that federal agencies seek to protect endangered species, the BSFW stated, "this provision of the proposed legislation is the first piece of substantive law which agencies would have to adhere to in carrying out their programs and duties, as it would prevent them from taking action which would jeopardize the continued existence of endangered species.[94] Regarding the state-federal jurisdictional question, the BSFW stated that the bill "would in effect remove listed species from the states' jurisdiction" overlooking the state-delegation clause. Regarding their own multiple-use discretion, the DES stated that "To conserve and protect some endangered species it will be necessary to set aside certain areas and maintain them for the use of the species in question. Generally these areas will not be available for commercial uses such as agriculture.[95] In net effect, the DES expressed the BSFW's desire for the enactment of stringent, prohibitive legislation.

In July 1972, a second, more restrictive Senate bill was introduced that extended protection to plants, to all animals (including unnamed invertebrates such as insects), and to species that were similar-in-appearance to endangered species.[96] It deleted the exemption for Eskimo use of endangered species and deleted permits for taking for zoological or educational purposes. It added a section calling for the convening of an international convention to sign a binding agreement regulating trade in endangered species (the same meeting that was supposed to have been held by mid-1971).

Commercial interests did not testify in either House or Senate hearings.

Indeed, there was very little opposition to the major concepts of the bills because they did not threaten any readily-identifiable interests. Instead, the major disagreements reflected a split in the environmental community. Different camps were developing among the environmental groups. One group, typified by the Wildlife Management Institute, supported a traditional, management-orientation to the endangered species problem. It wanted primary regulatory authority to rest with the states so that federal interference with game animal management would be limited. The other group, including organizations like Defenders of Wildlife, were in favor of a preservationist, prohibitive, federal regulatory presence in the area. Indeed, preservation interests that had not been present at the hearings preceding the 1966 and 1969 laws were very much involved in the 1972 hearings. This included groups such as the Fund for Animals, the Society for Animal Protective Legislation, the National Parks and Conservation Association, and the Committee for the Preservation of the Tule Elk.

The issue of federalism was central to the discussion at the hearing, but for the first time, most groups were agreeing that some federal jurisdiction over resident species was necessary. Representatives of the Interior Department were less apologetic about their increasing role in wildlife management.[97] Even the representatives of the International Association of Game, Fish and Conservation Commissioners (IAGFCC) -- the brotherhood of state wildlife agencies -- felt that some federal control was necessary.[98]

The addition of the threatened category was supported by all groups but for different reasons: Preservation groups supported the pre-endangered classification so that more species could receive protection. Management groups supported the designation so that it would be possible to get around the blanket prohibition provided by the endangered classification.

For example, if a species had one population in danger and another abundant, regulations could be written that would allow the harvest of the abundant population. The alligator was again cited as an example of the need for the legislation. In parts of the United States, the alligator population was clearly depleted; but in other areas, it had made such a comeback that it was considered a nuisance, reportedly eating pet dogs and inhabiting backyard swimming pools.

Beyond the federalism issue, there were two areas of major disagreement in the 1972 hearings: who should have jurisdiction and what to do about plants. Most of the environmental groups were opposed to giving the Commerce Department a hand in the bill's implementation and were in favor of including plants in the proposed legislation. The Administration supported the joint role as an issue of expertise, and felt that the plant problem was not well enough understood to include in this piece of legislation (preferring to defer it until later).

The preservation groups also suggested a number of specific, more stringent provisions -- most of which were included in the final version of the legislation, expanding its coverage and making it more prohibitive. These amendments included expanding protection to all animals and explicitly to isolated populations of species regardless of global status, allowing the states to adopt more restrictive legislation, tightening the federal agency mandate by deleting the "where practicable" language, and adding a citizens' suit provision. Even though the Senate reported a bill[99] in September 1972, there was not enough time left in the 92nd Congress to work out the bugs.[100] Nevertheless, the 1972 proceedings set the agenda for the next legislative session.

In the meantime, two other events helped pave the way for the 1973 Act:

The Marine Mammal Protection Act (MMPA)[101] was signed by the President; and an international meeting was held and a binding Convention signed that regulated international commerce in endangered species.[102] Passage of the MMPA provided another inertial thrust behind the environmentalists and set several precedents since several of the MMPA's provisions were similar to those at issue in the endangered species controversy. For example, the jurisdictional question was settled by sticking with the Commerce-Interior split provided by Reorganization Plan #4 (1970). The MMPA also contained provisions for a "depleted" category which was similar to the threatened category in the endangered species bills.

The signing of the International Convention pressured the U.S. to enact strong domestic legislation both to set an example and to establish implementing procedures and authority. The Convention was the result of an international meeting held in March 1973 -- over a year and a half past the date specified in the 1969 Act. The Convention regulated international commerce in species listed in three appendices: Appendix I species were the most vulnerable (endangered) and would require import and export permits from the importing and exporting countries; Appendix II species were less vulnerable (threatened) and would need only an export permit; Appendix III species included those that were unilaterally identified by a country of origin as threatened and in need of aid.

With the beginning of the 93rd Congress, it was fairly clear that an endangered species act would be passed. The degree of comprehensiveness, federal control, and prohibitiveness still had to be settled. On January 3, 1973, Congressman Dingell (and 70 cosponsors) introduced a bill similar to that reported by the Senate Commerce Committee the previous year. The Dingell bill included the threatened and similarity-of-appearance categories,

split jurisdiction between Commerce and Interior, allowed delegation of authority to the states, provided for permits for scientific, propagation or hardship purposes, and extended protection to all animals (but not plants). It contained the federal agency mandate to protect endangered species wherever practicable. It deleted the exemption for Eskimos, and added a new section requiring the Smithsonian Institution to study the plant problem.

The President's Environmental Message on February 15, 1973 reiterated his concern with the problem. A new Administration bill was transmitted to the Congress on the same day[103] and introduced shortly thereafter.[104] The Administration bill had several provisions that were weaker than those in the Dingell bill (H.R. 37): It would not protect all animals (leaving out invertebrates such as insects), had no provisions for plant protection or study, and would allow permits for zoological or educational purposes as well as scientific and hardship purposes. Two more stringent provisions, however, were important: The Administration bill did not provide for delegation of authority to the states, and contained a new prohibitive mandate for federal agencies.

The preservationists, the BSFW experts, and the House Committee staff had pushed for an absolute mandate for federal agencies.[105] The Administration bill responded to this pressure by deleting the "where practicable" language. The legislation now required agencies to take "such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of endangered species."[106] In House hearings, a small amount of discussion was focused on the agency-mandate provision, but in general it was not controversial. After all, it was not at all clear who would be hurt by the mandate, and seemed counter-

productive and inefficient to allow one hand of government to harm endangered species while another spent money to protect them. Further, the mandate seemed inocuous because it was not tied to any specific area of land.

The agency-action mandate was expanded, however, in the version of the bill reported by the Senate Commerce Committee.[107] In this bill, agencies were required to insure that their actions do not "result in the destruction or modification or any habitat" determined by the Secretary of the Interior "to be a critical habitat" of an endangered species. Hence, a measurable requirement was placed on agencies not to destroy critical habitat.[108]

None of these provisions received much attention in hearings and debate, however. As in the previous year, discussion primarily centered on the federalism issue. The Commerce-Interior jurisdiction issue was raised again, as were suggestions for extending protection to plants and isolated populations. By this time, it was certain that a tough bill was going to be enacted, but it was not clear who would control it and how far it would go.[109]

At each step in the framing of the final legislation, the bills got more comprehensive and more prohibitive. In part this was due to the proponents' strength and persistence; but more important, it was the result of the lack of opposition to a very popular issue. The Senate passed its bill in July by an overwhelming 92-0 roll call vote. It extended protection to all animals, plants, and isolated populations. It contained a mandatory agency-action provision, and the requirement not to modify critical habitat. It also included a citizens' suit provision, yet still contained the state-delegation clause. The House bill was even more prohibitive and was passed in September by an equally overwhelming vote (390-12). It had no provision for the delegation of management authority to the states, and added a new

prohibition that would make it unlawful for U.S. citizens to take endangered species in foreign countries.

It was up to a conference committee to work out the differences between the House and Senate versions of the bill. Compromises were achieved where opposing interests were evident. Prohibitive provisions were included when no one argued against them. The state-delegation issue was resolved by providing a 15-month period in which states could retain control over the management of resident species if they established strong state plans through federal-state cooperative agreements. The jurisdiction issue was settled by not allowing the Commerce Department to unilaterally de-list species. The House-included prohibition on taking in foreign countries was dropped under pressure from the Senate Commerce Committee staff (since this would endanger commercial activities such as safari-hunting).

The Conference Report[110] was submitted on December 19, 1973 and was adopted immediately by voice-vote in the Senate. The conference bill was passed the next day in the House by an overwhelming vote of 355 to 4, and was signed by the President on December 28.

The Endangered Species Act of 1973: In Summary

In spite of the compromises made in the Conference Committee, the Endangered Species Act of 1973[111] was an extremely strong, comprehensive, and prohibitive statement: The Secretary of the Interior was required to establish a list of species, subspecies and/or isolated populations that were considered to be endangered or almost-endangered (threatened). Any animal or plant was eligible (excluding insect pests and bacteria and viruses) from whales and elephants to beetles and snapdragons. The Secretary was authorized to make the list based solely on biological information from the best

scientific and commercial data available. The criteria for endangerment outlined in the Act covered any reason -- natural or manmade -- for the decline of a species. Further, even species that looked like endangered species could be protected to avoid enforcement problems. Additions (or deletions) to this list could be proposed by anyone (who presented substantial evidence); the Secretary was required to respond to these petitions. Furthermore, anyone could file a citizen's suit to try to force the Secretary to act.

Given this list of species, a number of actions were prohibited: It was unlawful to import or export an endangered or threatened species (product or part thereof). It was unlawful to "take" an endangered or threatened species within the United States, its territorial waters or on the high seas. Taking was defined extremely broadly as actions which would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect organisms (or attempting to do the same). A few exemptions were allowed through a permitting procedure, but only for scientific or propagation purposes, for subsistence by Alaskan natives, and for cases of "undue economic hardship" for periods of a maximum of one year.

More significantly, all federal agencies and departments were required to review their own actions (and actions funded or permitted by them) and be certain that they do not jeopardize any listed species or destroy or modify critical habitat. Thus, for example, the Department of Housing and Urban Development would have to review its public housing projects for impact on endangered species; the Army Corps of Engineers would have to review its dredging projects; the Environmental Protection Agency would have to review each application for a wastewater disposal permit to insure that endangered species or their habitats would not be harmed.

Other provisions were important: A program of cooperative state-federal agreements and grants was established. The Smithsonian was directed to review the status of endangered plant species. Land acquisition authority was provided, without maximum acquisition limits. For the first time, authorizations were included to run the program.[112] Implementation authority was provided for the International Convention. Penalties up to $20,000 and one year imprisonment were outlined for violations of the Act.

The Endangered Species Act was the comprehensive end-product of seventy years of incremental federal wildlife law. It was spawned by an extremely symbolic issue that fed public sentiment and support, and was buttressed by an amazingly strong and well-organized set of activist groups and a powerful set of congressional staff and members. It was defined as a technical problem that would not harm any domestic interests, and was framed prohibitively because no one perceived any costs of doing so. The Act was seen as a low-cost, "no-lose" legislative situation. It was framed in a time when strong federal regulation was considered to be appropriate policy and in a context where affluence provided the opportunity to worry about issues of environmental quality.

NOTES TO CHAPTER 3

1. For a more elaborate description, see Bean, 1977, p66-261, 288-319.

2. See, e.g., Act of July 27, 1868, 15 Stat. 240, which prohibited the killing of certain Alaskan fur-bearing animals; Act of February 28, 1887, 24 Stat. 434, which regulated the importation of mackerel into the United States.

3. Udall, 1963.

4. For example, the American Association for the Advancement of Science was formed around the issue of forest reform in 1848; the American Fisheries Society was started in 1870; the American Forestry Association in 1875; the National Rifle Association in 1871; the Boone and Crockett Club in 1887. (National Wildlife Federation, 1977)

5. The federal role in wildlife protection developed on the basis of three federal constitutional powers: the power to regulate interstate and foreign commerce (Article I, Section 8); the power to make rules regarding U.S. property (Article IV, Section 3); and the power to make international treaties for which implementing legislation takes precedence over state regulation (Article VI). (Boyd, 1970)

6. Bean, 1977, p293.

7. The Lacey Act prohibited the interstate transport of any wild animal or bird killed in violation of state law. It was based fairly solidly on the power of the federal government to regulate interstate commerce. It also prohibited the importation of injurious animals and authorized the Secretary of Agriculture to adopt affirmative measures necessary for the "preservation, distribution, introduction and restoration of game birds and other wild birds," subject to the laws of the states and territories (31 Stat. 187, 1900). "Although the Lacey Act was recognized as early as 1910 as an act designed to protect endangered species (Rupert v. U.S., 181 F. 87, (8th Cir, 1910)), it suffers from a major deficiency in that it is dependent upon local and foreign laws for its usefulness." (Palmer, 1975, p258)

   Although the Lacey Act was written as applying to any wild animals or birds, in practice it was applied only to game birds and fur-bearing mammals. (Bean, 1977, p114) The Black Bass Act of 1926 (current version at 16 U.S.C. 851-6(1970)) was passed to extend protection to several species of fish. An amendment in 1935 (Act of June 15, 1935, 49 Stat. 380) extended the prohibition on interstate commerce to wild animals or birds taken contrary to federal or foreign law. A subsequent amendmend in 1949 (Act of May 24, 1949, 63 Stat. 89) illustrates the changing constituency for (and evolving values in) wildlife. It prohibited the importation of "wild animals or birds" under conditions known to be "inhumane or unhealthful." A further amendment in 1969 extended Lacey Act protection to molluscs, crustaceans, amphibians and reptiles (18 U.S.C. 43 (1970)). Hence the history of regulation of commerce in wildlife reveals a widening federal role which expresses the changing

values in wildlife and shifting state-federal power balances.

8. Federal actions to regulate the taking or killing of wildlife did not really get off the ground until almost 1920. Prior to that, several small-scale actions prohibited taking on federal land under authority of the property clause of the Constitution. Hunting, for example, was prohibited in Yellowstone National Park in 1894 (Act of May 7, 1894, 28 Stat. 73). Similarly, the hunting of birds on the newly-created federal wildlife refuges was prohibited in 1906 (Act of June 28, 1906, 34 Stat. 536). The first attempt at exerting major federal regulation over the taking of wildlife came with passage of the Migratory Bird Act of 1913 (Act of March 4, 1913, 37 Stat. 828). The 1913 Act declared all migratory game and insectivorous birds to be within federal custody and prohibited their hunting except under federal regulations. (There was of course no incentive for the states to regulate the taking of migratory animals because of the "Prisoner's Dilemma" or "Tragedy of the Commons" nature of the problem). Although the Agriculture Department claimed that the Commerce Clause gave the federal government the right to such regulation, the Act was declared unconstitutional in federal district court.

   To counteract the adverse decision, a treaty was signed with Great Britain (on behalf of Canada) in 1916 for the protection of migratory birds (Convention for the Protection of Migratory Birds, August 16, 1916, 39 Stat. 1702, T.S. No. 628). The 1918 Migratory Bird Treaty Act was very similar to the 1913 legislation, but was now supported by the treaty-making powers given to the federal government and the supremacy clause in the Constitution. The constitutionality of the Act was upheld in 1920 when the U.S. Supreme Court decided Missouri v. Holland (252 U.S. 416 (1920)). The 1918 Act set the stage for later federal efforts to regulate taking. Even the language used in defining "taking" recurs and is closely mirrored in the endangered species legislation.

9. Federal habitat acquisition activities began in the early 1900s. Pelican Island refuge (Florida) designated in 1903 is generally considered to be the first federal wildlife refuge. Shortly thereafter Congress authorized the President to designate wildlife ranges within the Wichita and Grand Canyon National Forests (Act of January 24, 1905; 33 Stat. 614; Act of June 29, 1906, 34 Stat. 607). In 1908, Congress itself established the National Bison Range in Montana (Act of May 23, 1908, 35 Stat. 267).

   A systematic program of refuge acquisition was begun with the passage of the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715 (1970 & Supp IV 1974)), which established a commission to review and approve Interior Department proposals for refuge purchase or rental. Although the 1929 Act provided that the refuges be operated as "inviolate sanctuaries," amendments in 1949 and 1958 provided for limited hunting if compatible with wildlife interests. Passage of the 1934 Migratory Bird Hunting Stamp Act (which taxed all migratory bird hunters) provided a constant source of revenue for refuge acquisition, but limited acquisition primarily to lands benefitting migratory waterfowl (16 U.S.C. 718 (1970 & Supp IV 1974)). The Federal Aid in Wildlife Restoration

(Pittman-Robertson) Act (16 U.S.C. 669 (1970)) passed in 1937 and the Federal Aid in Fish Restoration (Dingell-Johnson) Act enacted in 1950 provide funds for state habitat acquisition and maintenance projects, but focuses these funds on game animals and fish. For example, the administrative regulations define a substantial (and hence fundable) project as "one which will provide benefits to hunters and fishermen ..." (50 CFR 80.1(g)(1975)).

It was not until 1966 that the National Wildlife Refuge System was established to consolidate the various land units already acquired. (Sections 4 and 5 of the Endangered Species Preservation Act of 1966, 80 Stat. 926, contain the National Wildlife Refuge System Administration Act.) The 1966 Act gave the Secretary of the Interior authority to permit any use (hunting, fishing, recreation, etc.) on the refuges as long as they were compatible with the major purposes for which the areas were established.

The other dominant source of federal wildlife habitat has been on other public lands. Most other federal land systems (National Forests, etc) have multiple-use implementing legislation which encourage the development of wildlife programs. Recent legislation, however, has mandated the development of comprehensive plans for wildlife conservation on public lands under the aegis of the Departments of Interior and Agriculture. The Sikes Act Extension enacted in 1974 (16 U.S.C. 670(g)-670(o)(Supp IV 1974)) directs the Secretaries to "develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game." Indeed, the programs must include "specific habitat improvement projects and related activities and adequate protection for species considered threatened or endangered."

10. The fourth theme appeared latest in the legislative chronology. The requirement that federal agencies consider their impacts on wildlife populations was spawned by an evolving awareness of the magnitude of habitat alteration incurred by federal water projects. Having focused on the problem of habitat loss, it was clear by the 1930s that refuge acquisition was an inadequate solution. Legislation was therefore developed with the goal of injecting wildlife values into the planning of activities taking place outside of the refuges.

    The Fish and Wildlife Coordination Act of 1934 (Act of March 10, 1934, 48 Stat. 401, current version at 16 U.S.C. 661-667e(1970)) was probably the first major law which employed this strategy. The 1934 Act was quite progressive for the time, authorizing investigations to determine the effect of pollutants on wildlife, encouraging a supply-oriented management program for wildlife on the public lands, and advocating state-federal cooperation to develop a national wildlife conservation program. Unfortunately only a couple of the provisions of the Act appeared to be mandatory. They required consultation with the Bureau of Fisheries prior to dam construction to see if measures to aid fish migration were necessary and economically practicable and to determine if the impoundments behind the dams could be used to benefit fisheries or migratory birds.

The administrative response to the mandates of the 1934 Act was minimal at best. Accordingly, Congress expanded the scope of the legislation by passing amendments in 1946 (Act of August 14, 1946, 60 Stat. 1080). The amendments made consultation necessary not only for dam construction projects, but "(w)henever the waters of any stream or other body of water are authorized to be impounded, diverted, or otherwise controlled for any purpose whatever by any department or agency of the United States, or by any public or private agency under federal permit". The object of the consultation was broadened from efforts to aid fish migration to efforts which prevent "loss of and damage to wildlife resources", where wildlife was defined extremely broadly as "birds, fishes, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent". Further, whenever consultation was required, agencies were required to make "adequate provision ... for the conservation, maintenance, and management of wildlife" as long as they were consistent with the primary purposes of a project.

In 1958 Congress passed further amendments to the Coordination Act (Act of August 12, 1958, 72 Stat. 563) which directed that wildlife conservation be given "equal consideration" with other features of water projects (16 U.S.C. 661 (1970)). Further, the amendments moved beyond the goal of reducing damage to wildlife resources to incorporate the goal of wildlife enhancement.

11. 223 U.S. 166.

12. Act of June 20, 1906, 34 Stat. 313.

13. While endangered species research was conducted in the 1940s and 1950s, a formal endangered species research program was not established until 1965, after staff of the BSFW Division of Wildlife Research lobbied for an amendment to the Interior Department appropriations bill. The Amendment provided $350,000 to acquire a permanent location and staff for the research program. The program was housed at the Patuxent Wildlife Research Center in Maryland and provided a permanent home for propagation efforts that had already been started with the whooping crane surrogate experiments. Earlier efforts had been conducted at Monte Vista National Wildlife Refuge in southern Colorado, but the severe climate and isolation from academic resources led to the appropriation request. Senator Karl Mundt (R-S.D.), a former leader of the Izaak Walton League and ranking minority member of the Senate Appropriations Subcommittee on Interior and Related Agencies, was a key supporter of this early effort at Congressional recognition of the endangered species problem. See, e.g., his comments at 111 Congressional Record 9007, April 29, 1965; 111 Congressional Record 10928, May 18, 1965; 111 Congressional Record 12602, June 4, 1965.

14. Allen, 1974, p94.

15. "Death Claims the Great White Bird", Department of the Interior News Release, Fish and Wildlife Service, April 2, 1979.

16. New York Times, July 7, 1964.

17. U.S. Bureau of Sport Fisheries and Wildlife, 1964.

18. Ibid., p i.

19. Ibid.

20. Washington Post, June 19, 1962, reprinted at 108 Congressional Record 11026, June 19, 1962.

21. Hankla, 1967, p2.

22. See, e.g., Clawson and Knetsch, 1966.

23. See, e.g., U.S. Outdoor Recreation Resources Review Commission, 1962, p34, 35, 46.

24. 78 Stat. 897, September 3, 1964.

25. Ibid., Section 6(a)(1)).

26. Scenic Hudson Preservation Conference v. Federal Power Commission, 354 F 2nd 608 (2d Cir 1965) Cert. denied, 384 U.S. 941 (1966).

27. Reprinted at 111 Congressional Record 12602, June 4, 1965.

28. Washington Post, October 3, 1965.

29. U.S. Bureau of Sport Fisheries and Wildlife Circular #223 (1965) as reprinted at 111 Congressional Record 12604, June 4, 1965.

30. The symbolic value of wildlife has been recognized by Congress in several other cases. For example, the Bald Eagle Protection Act was passed in 1940, making it unlawful for any person to take or possess bald eagles, or their parts, eggs, or nests (16 U.S.C. 668-668(d)(1970 & Supp IV 1974)). The Wild Free-Roaming Horses and Burros Act was passed in 1971 to protect wild horses and burros as "living symbols of the historic and pioneer spirit of the West" (16 U.S.C. 1331 (Supp IV 1974)).

31. P.L. 85-891, September 2, 1958; also see 104 Congressional Record 18964, August 21, 1958.

32. October 12, 1940, 56 Stat. 1354, T.S. #981, U.N.T.S. #193.

33. Ibid.

34. Appropriations had apparently been held up over this issue. See, e.g., Senator Magnuson's comments at 112 Congressional Record 19766, August 17, 1966. Also U.S. Congress, Senate, Committee on Commerce, 1966, p3:

> "The Department of the Interior has construed its present authorities as being broad enough to authorize an endangered species

program now without any further legislation. The House Appropriations Committee, however, refused to appropriate funds until the program is reviewed and restated by the legislative committees. Your committee concurs in this view believing that it is best to develop clear legislative authority and guidelines for this new program."

35. P.L. 89-669, October 15, 1966, 80 Stat. 926.

36. Letter from Secretary of the Interior Stewart Udall to Speaker of the House John McCormack, June 5, 1965, reprinted in U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1965, p12-14.

37. H.R. 9424, S. 2217.

38. P.L. 89-669, October 15, 1966, 80 Stat. 926, Section 1(c).

39. These included the Migratory Bird Conservation Act, the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act, and the Land and Water Conservation Fund Act of 1965.

40. The Senate report stated, e.g., that "It would be most unfortunate and a waste of money to carry out an endangered species program designed to conserve and protect the species and their habitat and find that other Federal agencies are not taking similar steps in regard to the species and habitat found on their lands." (U.S. Congress, Senate, Committee on Commerce, 1966, p3)

41. See, e.g., 21 Congressional Quarterly Almanac 779 (1965) reviewing passage of H.R. 9424: "The measure had the backing of all national and international fish and wildlife conservation organizations ... There was little house debate and no objections were expressed on the House floor." Also, 22 Congressional Quarterly Almanac 660 (1966) reviewing enactment of P.L. 89-669: "Designed to protect some 35 types of mammals and 30-40 birds which conservationists believed would become extinct without protection, the bill was enacted by Congress without controversy."

42. Contrast, e.g., the testimony of Willard T. Johns, Wildlife Management Institute with that of Thomas L. Kimball, National Wildlife Federation:

    Johns: "... our only concern is with the clear delineation of responsibilities concerning resident nonmigratory species in keeping with the traditional management of wildlife throughout our Nation over the years, with the State governments being largely responsible in the past for these resident species and the Federal government concentrating largely on migratory species." (U.S. Congress, Senate, Committee on Commerce, 1965, p43)

    Kimball: "For the first time, (the bill) authorizes new and far-reaching efforts for federal acquisition of refuges or other lands specifically for resident, nonmigratory species. There is nothing seriously objectionable in this new approach. Conservationists

generally realize that many State agencies have been unable or unwilling to make any major contributions, either in manpower or money, toward the protection and management of fish and wildlife species of little economic value, particularly nongame species." (U.S. Congress, Senate, Committee on Commerce, 1965, p37)

43. See, e.g., Senator Warren Magnuson's comments at 112 Congressional Record 19766, August 17, 1966.

44, P.L. 91-135, December 5, 1969, 83 Stat. 275.

45. Reprinted at 114 Congressional Record 30021, August 8, 1968.

46. See, e.g., the letter from Deputy Assistant Secretary of the Interior Clarence Pautzke to Congressman Edward Garmatz, October 2, 1967, reprinted in U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1968, p13: "Additional legislation is needed which would authorize the Department of the Interior to cooperate and participate in the worldwide effort to extend protection and assistance to all endangered species."

47. See, e.g., the comments of C.R. Gutermuth, Wildlife Management Institute: "What conservationists need now, in this country and elsewhere, is an example. S. 2984 offers that example; it seeks to have the United States be the first to take the decisive step that wildlife interests throughout the world know is necessary ..." (U.S. Congress, Senate, Committee on Commerce, 1968a, p96)

48. See, e.g., U.S. Congress, Senate, Committee on Commerce, 1968b, p10: "Your committee feels that this section of the bill should prove to be of valuable assistance to the States in reducing present commercial traffic in alligator hides that have been taken contrary to State law." Also see 25 Congressional Quarterly Almanac 309 (1969): "The Committee report noted that the International Union for the Conservation of Nature and Natural Resources had listed 275 mammals and more than 300 birds as endangered species. But it was the problem of the poaching of alligators that brought pressure for the bill."

49. Referring to the polar bear, New York Times Magazine, March 28, 1965.

50. Christian Science Monitor, 1967 feature series.

51. 70 Newsweek (10):70-71, September 4, 1967.

52. Washington Post, March 7, 1965.

53. Memo from J.P. Linduska, Acting Director, BSFW, to Legislative Counsel, Office of the Solicitor, "Legislative Report - S. 2984, 90th Congress", April 11, 1968.

54. H.R. 6138, introduced February 27, 1967; identical legislation was introduced by Congressman Lennon on July 20, 1967 as H.R. 11618.

55. S. 2984, introduced by Senator Yarborough.

56. House hearings were held in October 1967; all testimony was in support of the bill. (U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1968, p3) Senate hearings were held in July 1968. (U.S. Congress, Senate, Committee on Commerce, 1968a) Surprisingly, no one from the fur industry testified. As had been the case in the House hearings, almost all testimony was in support of the bill.

57. U.S. Congress, Senate, Committee on Commerce, 1968a, p112.

58. See, e.g., the comments of James R. Sharp, representing the American Fur Merchants Association: "The fur trade was never consulted when this legislation was first drafted, nor during its consideration in the 90th Congress. We first learned of the legislation, unfortunately, in August of 1968." (U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969a, p104)

59. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969a, p96.

60. Proposed by the Tanners' Council of America. (U.S. Congress, Senate, Committee on Commerce, 1968b, p17)

61. Letter from Shipley, Ackerman & Pickett representing Pet Shop Management magazine, to Senator Warren G. Magnuson, February 26, 1968, p2.

62. U.S. Congress, Senate, Committee on Commerce, 1968b, p20.

63. Washington Post, February 15, 1969.

64. Regenstein, 1975, p138.

65. 114 Congressional Record 30953, October 11, 1968.

66. Meetings were held on January 1, 1969 and February 7, 1969. (U.S. Congress, Senate, Committee on Commerce, 1969a, p127-8)

67. Executive Communication 425, January 17, 1969, reprinted at U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969a, p10-13.

68. See, e.g., U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969a; U.S. Congress, Senate, Committee on Commerce, 1969a.

69. For example, a subset of the industry supported amendments that would require agreement by two-thirds of the countries in which a species was resident as prerequisite to its listing as endangered. Another amendment would have granted authority to name species as endangered to their home range countries only.

70. Comments of Peter J. Clancy, President, Peter Baron & Sons, Inc. (U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969a, p42)

71. See, e.g., U.S. Congress, Senate, Committee on Commerce, 1969a, p129-130.

72. Section 5(b).

73. A clean bill (H.R. 11363) was introduced into the House on May 15, 1969 with 19 sponsors. The bill was amended slightly and was reported and passed in late July. (U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1969b; 115 Congressional Record 20164, July 21, 1969) The Senate Commerce Committee picked up the House-passed bill (introduced on July 22, 1969) and reported it with amendments in November. (U.S. Congress, Senate, Committee on Commerce, 1969b) The Senate passed the bill as reported. The House concurred in the Senate amendments, and the President signed it in early December 1969.

74. For example, changes were made in what was to be considered endangered (the species needed to be threatened worldwide), in allowing import permits when there was economic hardship, and in adding a 180-day grace period before the Act went into effect.

75. Opinion Research Corporation data cited in Davies and Davies, 1975, p82.

76. Indeed, some anti-War activists at the time claimed that the federal government was consciously pushing the environmental issue as a means of taking the public's mind off the War!

77. P.L. 91-190, January 1, 1970, 83 Stat. 852.

78. P.L. 91-604, December 31, 1970, 84 Stat. 1705.

79. P.L. 92-500, October 18, 1972, 86 Stat. 816.

80. P.L. 92-516, October 21, 1972, 86 Stat. 975.

81. P.L. 92-522, October 21, 1972, 86 Stat. 1027.

82. P.L. 92-574, October 27, 1972, 86 Stat. 1234.

83. P.L. 92-583, October 27, 1972, 86 Stat. 1280.

84. For example, John Dingell (D-Mich), Chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, was considered by pro-wildlife groups as their patron.

85. Regenstein, 1975, p144.

86. A bill entitled the Nature Protection Act was introduced in the Senate on May 27, 1970 as S. 3888 and in the House on June 30, 1970 as H.R. 18270. The bills were designed to prohibit the taking of species listed in the Annex to the 1940 International Convention and to prevent states from paying bounties to kill species listed as endangered. The bills were reintroduced in 1971 as S. 249 and H.R. 3844. In addition, in

1971 six bills were introduced which would extend federal protection for threatened species, and a Joint Resolution was introduced calling for an international convention since the 1969 requirement had not been carried out.

87. 8 Weekly Compilation of Presidential Documents 218-224, February 8, 1972.

88. H.R. 13081.

89. S. 3199.

90. 35 Federal Register (194):15627, October 6, 1970.

91. At least one analyst claimed that the White House had insisted on the Commerce Department role over the protests of Interior Secretary Rogers Morton. (Washington Star, February 24, 1972)

92. S. 3199, Section 3(d), emphasis added.

93. U.S. Department of the Interior, 1972.

94. Ibid., p6, emphasis added.

95. Ibid., p11.

96. The similarity-of-appearance provision was included to get around an obvious enforcement problem. For example, if three species of turtles look alike and two are endangered, it is difficult to ban the use of products from the endangered turtles if commercial use of the unthreatened species is allowed. Customs inspectors cannot tell whether the imported materials are actually from the unthreatened species, or whether the importer is trying to illegally import products from the endangered species.

97. See, e.g., the comments of Assistant Secretary of the Interior Nathaniel Reed in U.S. Congress, Senate, Committee on Commerce, 1972a, p68.

98. See, e.g., the comments of Dr. Ralph MacMullen, President, International Association of Game, Fish, and Conservation Commissioners, in U.S. Congress, Senate, Committee on Commerce, 1972a, p163.

99. S. 3818, September 15, 1972; see U.S. Congress, Senate, Committee on Commerce, 1972b.

100. Although the report was favorable, Senator Ted Stevens filed a supplementary report which indicated that there was inadequate time left in the 92nd Congress to work out the problems in the bill. (U.S. Congress, Senate, Committee on Commerce, 1972b, p17) The House did not report a bill in 1972.

101. P.L. 92-522, October 21, 1972, 86 Stat. 1027.

102. Convention on International Trade in Endangered Species of Wild Fauna and Flora, 12 International Legislative Materials 1085, March 3, 1973.

103. Executive Communication #442, February 15, 1973.

104. Congressman Dingell (and 18 cosponsors) introduced the bill into the House as H.R. 4758. It was introduced into the Senate by Commerce Committee Chairman Magnuson on April 16, 1973 (S. 1592). A more prohibitive version, S. 1983, was introduced by Senator Williams in mid-June. For the first time in either house, the Williams bill would extend protection to plants. Indeed, it would even grant endangered status to plants or animals whose status was unknown!

105. It is clear from the hearing record that the committee staff was pushing for a comprehensive, stringent bill. Staff counsel Frank Potter, for example, indicated his own preference for legislation that included plants and required federal agencies to take action regardless of practicability. (U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1973a, p272)

106. Section 3(d), emphasis added.

107. U.S. Congress, Senate, Committee on Commerce, 1973b.

108. It is possible that the critical habitat wording was included to satisfy Senator Marlow Cook, who was seeking a way to stop the Corps of Engineers from building a road through the Pioneer Weapons Hunting Area in Kentucky -- a nesting area for wild turkeys. See his comments at 119 Congressional Record 25689, July 24, 1973.

109. The only opposition to the basic concepts in the bills came in a few letters from safari groups (Safari Club International) and the fur industry (Fur Conservation Institute of America), but it was clear that their political power had diminished markedly from 1969.

110. U.S. Congress, House, Committee of Conference, 1973.

111. P.L. 93-205, December 28, 1973, 87 Stat. 884.

112. Interior: FY 1974, $4 million, FY 1975, $8 million; FY 1976, $10 million. Commerce: FY 1974, $2 million; FY 1975, $1.5 million; FY 1976, $2 million.

CHAPTER 4 -- IMPLEMENTING THE 1973 ACT

When the ESA was passed in 1973, supporters looked forward to rapid and stringent implementation by the Interior Department and other federal agencies: More taxa would be listed, more rapidly, based on technical not political criteria; critical habitats would be designated promptly; agencies would be forced to modify or abandon actions that would damage the habitat of endangered species. When the ESA was amended in 1978, opponents of the Act claimed that the supporters' expectations had been realized and bemoaned the "inflexibility" of the Act.

Both of these groups made a series of assumptions about the ESA that are usually presumed about prohibitive policy: First, that there are binary technical definitions of what is endangered (or critical habitat) and what is not, and that prohibitive policy hence prescribes clear and certain criteria for implementation; second, that prohibitive policy limits agency discretion; third, that prohibitive policy precludes any balancing of costs and benefits; and fourth, that prohibitive policy excludes outside parties from influencing implementation. At bottom, these assumptions translate to an expectation of rapid action.

Implementation, however, brought a somewhat different reality. Even though the criteria for listing species were broadened by the Act, listings were slow to come. The listing process took place in a context characterized by controversy, with environmental groups and newspaper editorials decrying bureaucratic foot-dragging, while commercial and sporting groups lamented arbitrary over-regulation. The listing of species as endangered or threatened, the designation of habitat critical to the survival of a species, and the nature of the consultations on federal projects responded to and was modified by this controversy.

This chapter outlines the procedures established to implement the 1973 Act and documents its sluggish implementation history. Evidence of delay and conservative action suggests that the effect of prohibitive policy may be different than expected, and that its implementation may exhibit many of the same properties as that of policy that is not prohibitively prescribed.

Listing Species and Their Critical Habitats: In Theory[1]

How is the listing process supposed to work? There are two main implementing agents: the Office of Endangered Species (OES), FWS, in the Department of the Interior; and the Office of Marine Mammals and Endangered Species, National Marine Fisheries Service (NMFS), in the Department of Commerce. The exact jurisdictions of these two groups were uncertain until mid-1977, but FWS has clearly been the dominant force. Indeed, of the 661 species on the endangered and threatened list, NMFS has regulatory authority over only 14 of them.

The formal listing process has four steps. (See Appendix A for a flow diagram of the entire listing process and Appendix B for a compilation of actions taken.) It begins with the nomination of a candidate species. This can occur either from in-house or external sources. When outside parties petition FWS or NMFS to review the status of a species, the agencies are required by the Act to examine the petitions and conduct a status review if substantial evidence of the need for a change in status (from unlisted to listed, from listed to unlisted, from endangered to threatened and vice versa) is presented by the petitioner. In fact, while 108 petitions for listing had been submitted by the end of 1977, species on only 18 percent of them had been proposed for listing under the Act by the end of 1978.[2] Even though petitioners have nominated a large number of species for protection, many species that are proposed for listing start out the process from in-house

sources -- implying a great amount of administrative discretion.

In response to a petition, FWS (or NMFS) officials can move in three directions. They can decide that the data submitted with the petition does not support the nomination and reject the proposal. In fact, formal rejections are rare -- only 2 of the 108 petitions were turned down. Instead, a proposed listing can be produced right away (Step 3 of the process), or officials can prepare a Notice of Review -- the optional second step. A Notice is a holding action where information is presumably gathered and reviewed Since it is published in the Federal Register and the governor of the state is notified, it does have the effect of notifying interested parties prior to a formal listing action. Thus it is used in controversial cases to gather information and to move slowly. In addition, according to one staff biologist, the use of a Notice of Review puts less pressure on the agency to list the species at the end of the process. Nevertheless, it is the policy of FWS to use Notices "sparingly."[3,4] By doing so, FWS officials limit outside input prior to the time that a preliminary determination is made in the Proposed Listing process that a species is in jeopardy.

The third step -- Proposed Listing -- is mandatory. FWS (or NMFS) staff determine whether the evidence warrants a change in status. They must propose either unthreatened, threatened, or endangered status. (The difference between threatened and endangered is fairly significant, because the taking of threatened species is allowed by the Act under regulations produced along with the listing, while endangered species are much more completely protected.) In the proposal stage, the staff must solicit data, prepare a status report, notify the appropriate state governor(s), and prepare an environmental assessment that begins a NEPA review process. In the implementation history so far, it has also been the end of the review process. FWS

officials have never prepared an impact statement on a listing action (NMFS staff have prepared one) even though they do indirectly have significant impacts on the environment. For example, listing the snail darter as endangered had the net effect of stopping the Tellico Project -- a project which had required an impact statement because it was a "major federal action that would significantly affect the quality of the human environment." It can be argued that stopping a major action is itself a major action. In any case, by bypassing the NEPA-review process, FWS has limited one source of external review over its listing actions, reflecting its belief in a technical definition of the problem.

In preparing a proposed listing, the proposal "package" is reviewed by at least seven FWS offices (beginning with OES and ending with the Associate Director for Federal Assistance).[5] After approval by all of these offices, a notice of the proposed listing is published in the Federal Register.[6] Then at least 60 days must be provided for public comment (90 days for state governors if no Notice of Review was published) prior to completing the final listing step. During this time, outside parties can request a public hearing on the proposal. FWS or NMFS officials can grant or deny this request. In practice, few public hearings have been held on species listings. In preparation for the final rulemaking, all submitted comments and data must be compiled and analyzed, and a final determination made as to the actual status of the organism. The internal review process is repeated and the final rule published in the Federal Register. This ends the formal process.

Critical habitat designations and reclassifications (change in status of presently-listed species) go through approximately the same procedure. By the end of September 1978, 99 critical habitats had been proposed, although a quarter of these were made in the last three months of the period.

Reclassifications have been fairly rare. "Down-listing" has occurred in the case of only seven species (the American alligator was down-listed twice) although others were proposed. Only one of these was ever taken completely off the list.

The Legacy of Past Action

How has this process worked? To start with, new policy rarely begins its life in a new institutional environment. When the 1973 ESA was passed, there was already an official list of endangered species. A small Office of Endangered Species had been started in 1966 with two staff members. Using the authority in the 1966 and 1969 laws, this office had designated a total of 392 foreign and domestic species as endangered by the end of 1973. This list came largely from two sources: Foreign species had been identified under provisions of the 1940 International Convention; and domestic species had been periodically listed in a series of "Redbooks" begun by the BSFW's Committee on Rare and Endangered Wildlife Species in 1964.[7] (Appendix C outlines the evolution of the endangered species lists to the end of 1973.)

Criteria used to identify species for listing in the Redbooks are quite vague. The Committee recognized this in its 1964 publication: "Criteria to be used in selecting species and subspecies to be included have not yet been clearly defined."[8] In its 1966 list, it stated, "there is no general agreement on what constitutes a 'rare' or 'endangered' form of fish and wildlife."[9] The Committtee resolved this problem by using an expert jury approach in which consensus of a group of experts (or lack of consensus but support of the Committee) represented a yes vote. In general, two group of species were included -- those thought to be currently endangered (in immediate jeopardy) and those thought to be likely to be endangered in the near future. The 1966 Redbook separates these into "endangered" and "rare" classifications which correspond

roughly to the "endangered" and "threatened" categories defined in the 1973 Act.

This informal method of developing the unofficial Redbooks of course makes sense in light of the staff and information problems present in the mid-1960s. However the conjecture of this nine-man committee became a codified legacy shortly after passage of the 1966 Act. This Act contained criteria by which a domestic species could be considered endangered, but these were specified so broadly that any native, vertebrate species threatened with extinction could be included.[10] Sixty-four species were listed under the 1966 Act. All 64 were among the 82 species the Committee had considered to be endangered in the 1966 Redbook. Of the 18 others, a third were oceanic species (whose nativeness was in question), and at least another third were politically controversial, like the grizzly bear, the red wolf, and the American alligator.

This early listing procedure set out two basic themes that will be discussed in detail later:[11] Listing officials appeared to respond to controversy by delaying action; and they consistently acted conservatively throughout the process. The official U.S. list of protected foreign and domestic species always contained fewer species than lists produced by other groups. For example, the 1973 Redbook identified 188 domestic species as threatened with extinction, while the 1973 official list contained only 62 percent of these. In Appendix I of the International Convention (CITES) signed in March, 1973, 420 species were identified as "threatened with extinction." Of these, 368 were foreign. On the official U.S. list, however, only 75 percent of these appeared by the end of 1973. The grandfather of all endangered species lists is that developed by the International Union for the Conservation of Nature and Natural Resources (IUCN) of Morges, Switzerland. The IUCN published a

a "Red Data Book" that predated the American Redbooks by several years. The IUCN's list is lengthier than either the American or the CITES lists. Indeed, the IUCN currently estimates approximately 1000 birds and mammals to be in jeopardy,[12] while the U.S. list contains only half as many.[13]

Post-73 Listings and Habitat Designations

The disparity between the international lists and the official U.S. list can perhaps be explained by the 1969 Act's requirement that species could be listed only if they were "threatened with worldwide extinction." The 1973 Act changed the criterion: It threw out the "worldwide" requirement, and broadened coverage to include isolated populations as well as species and subspecies. It also extended protection to all invertebrates and plants, as well as to species that look like endangered species, and created a "less-than-endangered" category to protect threatened species. About the same time, the staff of the Office of Endangered Species more than doubled in size.[14]

With broader criteria and more staff, it was expected that more species would be added to the U.S. list faster. But this was not the case. Table 4-1 for example, details the history of final listings on the U.S. list from 1967 through 1978. In aggregate, 392 new species were placed on the endangered list prior to enactment with 269 species added from 1974 through 1978. Thus, about the same number of new species were added to the list per year both before and after the criteria and staffing changes.[15] Indeed, if anomalous listings are deleted from the record, the post-73 record is reduced by half.[16] While not many species have made it through the entire process and been added to the protected list, very few proposed listings (only 5) have ever been formally rejected at the final listing stage. Most go on a back burner that may or may not be turned on at a later date.

TABLE 4-1: NUMBER OF FINAL LISTINGS BY YEAR, 1967-1978

Year	Total New Listings*
1967	64
1968	0
1969	0
1970	304
1971	0
1972	3
1973	21
SUBTOTAL	392
1974	3
1975	10
1976	198
1977	21
1978**	37
SUBTOTAL	269
TOTAL	661

* does not include actions which reclassified species already on the list

** through September 30, 1978

The number of critical habitats designated during the tenure of the Act is equally unimpressive. Only 33 final designations of critical habitat were made in the 4-3/4 year period.[17] Of these, most (82%) were designated in the last two years of the period. Indeed, the first final designation did not occur until April, 1976 -- well over two years after enactment. It is true that the concept of critical habitat was undefined until April, 1975. But even so, it took almost a year after the definition was published in the Federal Register before the first final designation was made.

Indeed, it is not clear that any critical habitat designations would have been made had the FWS not been under pressure to do so because of on-going litigation. The first proposed critical habitat designation was for the Mississippi sandhill crane and was published in response to litigation over Interstate 10. The first final designation was made for the snail darter, produced in the midst of the court battle over the Tellico Project.

It would seem necessary to know what habitat is critical in order to determine whether a species is endangered or threatened due to habitat loss -- a determination that should be made at the time of listing the species: Why then did critical habitat designations not accompany most of the final listings since habitat loss is a central threat for most of the listed species? Of 269 new listings, only 19 had critical habitat designated. The other 14 designations were for species that had been listed before enactment of the 1973 Act -- many going back to 1967.

How long does all this take? FWS estimates a total of 255 days expended between the time a petition is received and the time when a final listing is published in the Federal Register.[18] If the Notice of Review step is by-passed, this estimate drops to 195 days. In practice, listing actions took much longer than the FWS' estimate. Rather than the 2/3 or 3/4 of a year

required to list a species estimated by FWS, it actually took about 2 years to put a species on the list.[19]

The designation of critical habitat has also been time-consuming. The 33 designations that made it from proposed to final status took slightly over 300 days on average.[20] If the habitat was proposed and designated sequentially after listing, almost another year would have elapsed before a species received full protection -- a grand total of about three years from petition to habitat designation. In fact, FWS has a stated policy of proposing critical habitat at the same time it proposes additions to the endangered list. Of the 33 designations, 45 percent were made at the time the species were added to the list. However, for the others, almost two years elapsed on average between the date when they were listed and the date when their critical habitat was designated.[21] Indeed, 42 percent of the designations were for species that had been added to the list prior to 1973.

The dusky seaside sparrow is one of these. The range of the sparrow is well know. It is confined to several small salt marshes near Cape Canaveral, Florida. Its population in 1968 was estimated at 1,000 birds.[22] The species was included in the 1964 Redbook and was listed as endangered on the first Federal list in 1967. Yet critical habitat was not designated until August 1977 -- ten years after it had been added to the list, over 3-1/2 years after enactment of the 1973 legislation, and over two years after critical habitat had been formally defined.

Listing of critical habitat for the whooping crane took a similar pattern. The whooping crane was also identified as endangered in the 1964 Redbook and was listed in the 1967 official list. Yet its critical habitat was not designated until May 1978 -- 4-1/2 years after passage of the ESA, three years after the FWS defined the concept of critical habitat, and almost 2-1/2

years after the habitat was proposed for designation as critical.

The establishment of formal procedures to carry out the provisions of the Act has taken a long time as well.[23] "Critical habitat" was not defined until April 1975.[24] Final regulations for interagency consultation were not published until January 1978 -- over four years after enactment. It is true that the proposed regulations underwent a large amount of review prior to final rulemaking. Indeed, the Federal Register publication of the final regulations stated that "(t)hese regulations have been subjected to more critical review by other Federal agencies than any other set of regulations issued by the FWS and the NMFS..."[25] However, guidelines were first issued in April 1976 that formed the foundation for the subsequent regulations. Indeed, the regulations that were finalized 1-1/2 years later differ only in their stringency, and were tightened more in response to intervening events than from the numerous opportunities for agency comment.[26]

All of these delays -- in listing, in critical habitat designations, and in the promulgation of regulations -- were extremely frustrating to many parties involved in the process. The dissatisfaction of interest groups in favor of protecting a species by listing it is easily understood. Federal agencies like the Corps of Engineers were frustrated by the uncertainty associated with project planning without final regulations for interagency consultation. Private developers were also affected by the uncertainty accompanying the delays: Even though private actions are not affected by the Section 7 requirements, most developments require a federal permit of one kind or another. Hence they come under the scrutiny of the Act. Once a critical habitat is proposed, an informal hold goes into effect on these developments. If the proposals are not finalized fairly rapidly, the delays can be quite costly.

The Houston toad case is a good example. In oversight hearings, Donald Simpson of the Pacific Legal Foundation used the toad case to point to the public harassment effect of the delays:

> "A different deficiency in the Endangered Species Act and a different method by which the public may be harassed is illustrated by the Houston Toad case. The inclusion of a shopping mall as part of the Toad's Critical Habitat can, of course, be written off as simply an administrative error. The failure to reach a conclusion as to the Critical Habitat however is seriously injuring property values. A first study on the Critical Habitat was set aside because of error. A second study was inconclusive. A third is now underway. In the meantime, persons owning property are fearful to commit funds to its improvement for fear that they will find themselves in the Tellico-like situation of being unable to get use permits for completed projects. No one is willing to buy the property until the problem is resolved. And so the studies go on while the property owners are helpless. If the third study is inconclusive, can Interior undertake a fourth study and a fifth study and so forth until the property owner is forced to let the property go for taxes? The Endangered Species Act places no limitation on this kind of activity by Interior." [27]

Implementing Prohibitive Policy Nonprohibitively

The relatively large amount of time that it took to complete each of the listings and designations, and the resultant small number of final actions to date have repeatedly led to charges of delay and obstruction against NMFS and FWS. The primary complaint voiced in oversight hearings held in 1975 and 1976 -- that the agencies were dragging their feet in implementing the 1973 Act -- was reiterated in newspaper headlines: "Extinction by Red Tape;"[28] "Botanocrats Are Holding Up Listing of Endangered Plants."[29] Jack Anderson alleged that "today, the endangered animals are in as much peril as they ever have been. The reason is that the act has been entrusted to balking bureaucrats to administer ... Our sources report that the Fish and Wildlife bureaucrats are obstructing the experts who were brought in to protect the disappearing wildlife."[30]

FWS and NMFS officials have always countered the charges by claiming staff and funding limitations. While these constraints were certainly present, they do not explain why the average number of final listings per year did not increase when staff size increased. Nor do they explain the extremely few listings made during the first two years of the post-73 program. (NMFS has an even worse record than FWS. In the 4-3/4 years since enactment, NMFS proposed only six species for listing, and finalized actions on only four of them. Of these, NMFS repeatedly delayed action on three species,[31] and listed the fourth over ten years after it was identified as a rare species in the U.S. Redbook.)

FWS has also argued that it was using a cautious approach to avoid legal challenges. "Sure, we've been going slow, but I'm trying to avoid the hard confrontation until we've got some firm foundations built in law and precedent ...I'd rather avoid confrontation until I'm firmly entrenched and it's harder to blow me out of the water. Then we'll lay it on 'em," said Program Manager Keith Schreiner in mid-1975.[32] To their credit, the average time to go from proposed to final listings does seem to have been decreasing since 1976.[33] But even well-intentioned caution does not explain the few listings and the large amount of time expended for each. Some species proposed even before enactment of the 1973 Act were not listed for several years. Two species of sea turtles, for example, were proposed for addition to the list in December 1973 and not finally listed until 1978, a delay of four and a half years.[34] Plants could not be listed until regulations governing their use were drawn up. It took 3-1/2 years before this happened and another two months before the first plants were listed.

Well-intentioned caution is also a poor explanation of the delay in listing a number of primate species. FWS contracted in 1973 for a status

review on the world's primates. A draft report was completed by the Bird and Mammal Laboratory, Smithsonian Institution in January 1975,[25] and contained evidence to support the listing of 27 species of primates. A report prepared by OES in May 1975 stated that "there are sufficient data to warrant a proposed rulemaking that the (two species of) chimpanzee are 'threatened species' ... the chimpanzee has disappeared from large parts of its original range, and is thought to be declining seriously in some places where populations still survive."[36] Yet neither the chimps or the other primates were listed until October 1976, over a year later.

It is also difficult to understand why the Appendix I species agreed upon by the International Convention in March 1973 were not listed until June 1976. Three of the Appendix I species that were proposed in September 1975 were not listed in 1976 with the rest of the package because the FWS had "inadvertently" forgotten to notify the appropriate state governors since they were resident species. The 1976 rulemaking stated that a final determination would be made following the governors' 90-day comment period.[37] In fact, one of the species was never listed (plain pocketbook mussel), and the other two (Marianas mallard, tan riffle shell pearly mussel) were listed a year or more later. In announcing the final rulemaking on one of these species, the Marianas mallard, the FWS' endangered species technical bulletin made it clear that it was "owing to a procedural oversight (that) the Marianas mallard was not included in this final rulemaking (the 6/76 listing)."[38] No explanation of the additional nine months delay was given. By the time of listing, there were only two to 25 Marianas mallards left in the world.[39]

Staff scarcities and well-intentioned caution are also inadequate in explaining why proposals for critical habitat have not appeared for several species that were listed in the first official endangered list published in

1967. For example, the critically-endangered black-footed ferret was listed in the 1964 Redbook, officially listed in 1967, and was ranked in 1976 as having top priority for designating critical habitat, but the Service has yet to propose areas to protect the species. The Kauai oo is in the same situation: This Hawaiian bird has been listed since 1967, and has a FWS-assigned critical habitat priority index of 80/100 (extremely high). But critical habitat has never been proposed for the species, even though it is the last survivor of a genus that contained four species, and the current population is estimated at a dozen birds.[40]

Why so few final listings and critical habitat designations? Why so long to move from proposed to final rulemakings? Delay (in terms of a long time to get something done) and a lack of aggressive action are not by themselves de facto evidence of anything much. It is generally accepted that "the wheels of government move slowly." In this case, however, delay suggests at minimum that prohibitive policy works no more rapidly than other kinds of policy; hence we can hypothesize that the implementation of prohibitive policy may not be all that different from the implementation of other types of policy.

Indeed, the evidence provided in the next three chapters suggests that most of the assumptions about the effect of prohibitive policy on implementation are wrong: Technical decisions are not clear-cut; an enormous amount of administrative discretion is exercised throughout implementation; costs and benefits of protective actions are implicitly weighed; and external forces heavily influence the outcome of the process.

Actions throughout the implementation of the ESA exhibit an enormous amount of administrative discretion. Discretionary judgment (and policy redefinition) was required because of staff shortages that forced the

development of implicit and explicit priority systems. The opportunity to use discretion -- labelled technical uncertainty or "biological opinion" -- came from the huge amount of technical uncertainty in most of the biological decisions in the process. The expeditious use of administrative discretion turned into multi-party negotiation because of the political context in which implementation takes place. These three themes -- resource scarcity, technical uncertainty, and political context -- recur throughout the history of implementation. They help explain why discretion was used and why negotiation took place in carrying out the seemingly-prohibitive provisions of the 1973 Act.

NOTES TO CHAPTER 4

1. Numerical analyses presented in this chapter are compiled from data representing implementation from the passage of the ESA (December 28, 1973) through September 30, 1978 when the Act was reauthorized and significantly amended. Almost five years of implementation history are thus included in the compilations.

2. In total numbers of species, however, these proposals represented 2,027 species or about 90 percent of all proposed listings for the 1974-1978 period. Nearly all of these species (1,999) were proposed as a result of two petitions -- one for inclusion of all species listed in Appendix I of the International Convention (CITES), and another covering native plants, presented by the Smithsonian Institution. (See the description of these proposals at note 16 below.) Ignoring these as anomalous, 11 percent (28 of 239 net total listings) came from nominations from the petition process. This is a damned-if-you-do, damned-if-you-don't situation: If we take the 90 percent as representative, it means that FWS and NMFS spend all their time reviewing petitioned species and have no time to undertake any systematic review. If the 11 percent figure is right, then it means that almost all listings start internally. In fact, this latter statement is probably closer to the truth and suggests a source of a great amount of administrative discretion.

3. U.S. Congress, Senate, Committee on Commerce, 1976, p28.

4. In fact, even though in gross terms 3,463 species were identified in Notices of Review for the four-year period (a large number), most of these (3,187) were taken from the Smithsonian Report on plants. Indeed, only 64 animal species that were listed in Notices of Review made it to the proposed listing step. (See note 19 below)

5. This internal review procedure is referred to by the FWS staff as the "surname" review.

6. While a significant number of listing proposals (2,246) have been published by the FWS and NMFS, most of these came from the packages involving the Appendix I species or the Smithsonian-identified plants. Indeed, only 239 listings were proposed that were not in the Appendix I or Smithsonian packages, or were not reclassifications of previously-listed species (See Appendix B).

7. See Chapter 3 for a description of the work of this committee.

8. U.S. Bureau of Sport Fisheries and Wildlife, 1964, p i.

9. U.S. Bureau of Sport Fisheries and Wildlife, 1966, p i.

10. The criteria are listed in the table in Appendix J.

11. See Chapter 7.

12. 42 Living Wilderness (142):12, July/September 1978.

13. This is of course true since there is no political or economic costs associated with listing by the IUCN.

14.

	Staff*		
Fiscal Year	Technical	Secretarial	Total
1970	2	2	4
1971	2	2	4
1972	7	2	9
1973	11	5	16
1974	12	7	19
1975	21	10	31
1976	19	8	27
1977	26	13	39

* includes temporary and part-time

Source: U.S. Fish and Wildlife Service, "Staff Assigned to the Office of Endangered Species and Endangered Species Scientific Authority on the Last Day of the Fiscal Year", in Briefing Book, unpublished, undated.

15. 1967-1973 average = 56.0 species per year; 1974-1978 average = 56.6 species per year.

16. Of the 198 species added in 1976, 159 were CITES Appendix I species. Appendix I species were internationally-designated as endangered in 1973. Since the U.S. was a signatory nation, these species should theoretically have been added to the official list automatically. In reality, the Interior Department was pressured by the State Department and by the Fund for Animals (a wildlife interest group) to add these species. In response to this pressure, FWS published a proposal in September 1975 to list all Appendix I species that had not been listed previously. Of these 216 species, most (159) were listed pro forma in mid-1976. (Of the difference, 45 were plant taxa which were not listed because plant regulations had not been published yet; 6 were bird species whose listings were opposed by the International Council for Bird Preservation; 3 were delayed because of a procedural error; 1 was determined not to be a valid species; and 2 were delayed because of contrary evidence.) If we assume that this package of species took very little staff effort (as the evidence indicates), and that they were probably already protected by previous federal action, then the number of new species to be granted federal protection since enactment of the 1973 Act drops to 110, or an average of 23 species per year. (See Appendix D for a numerical description of the historical data.)

17. See Appendix D.

18. The FWS estimates the following "average" time durations in each step of the listing procedure:

Step	Number of Days Required	Cumulative Number of Days
Petition and Notice of Review	44	44
Proposed Listing	120	164
Final Listing	91	255

Source: U.S. Fish and Wildlife Service, "Operation Steps in Normal Listing Procedure Showing 'Average' Time Frames for Each Step", from Briefing Book, unpublished, undated.

19. The actual mean durations have been computed for each step of the listing process. Durations indicate the number of days elapsed between the following events: 1) Petition Step -- receipt of petition by FWS to publication of Proposed Listing in the Federal Register (FR); 2) Review Step -- FR publication of Notice of Review to FR publication of Proposed Listing; 3) Listing Step -- FR publication of Proposed Listing to FR publication of Final Listing; 4) Critical Habitat Designation Step -- FR publication of Proposed Critical Habitat to FR publication of Final Critical Habitat.

Mean durations were computed including values for all species that had completed a step from the enactment of the 1973 ESA (December 28, 1973) through September 30, 1978, when it was amended. Hence the mean duration for the Review Step incorporates many more values than does the Listing Step because many more species completed it.

Data were identified from unpublished FWS lists, Federal Register citations, the official U.S. list of endangered and threatened species (reprinted at 42 Fed Reg (135):36420-31, July 17, 1977, and updates), and the Endangered Species Technical Bulletin. Durations were computed by a calculator subroutine. Mean durations were calculated by summing durations for each step for each species and dividing by the number of species. Mean durations for the Petition Step was calculated by summing the durations of each petition and dividing by the total number of petitions. The results are as follows:

	All Animals & Plants		All Animals**	
Action	Mean Number of Days	Number of Species	Mean Number of Days	Number of Species
Petition*	378 days average for 19 petitions			
Review*	346	1,921	512	64
Listing:				
All	310	277	279	255
All - App I***	374	118	307	96
Critical Habitat	314	33	298	31

* Note that these are equivalent and not additive.

** Deleting plants reduces the effect of the anomalous Smithsonian proposal. See discussion at note 16 above.

*** Deleting CITES Appendix I species eliminates the effect of the anomalous proposed and final listing of several hundred species. See discussion at note 16 above.

Aggregating the data: On average, the Review Steps took slightly over a year and the Listing Step took slightly less than a year. Hence, the average time elapsed for a species to receive protection was about two years.

20. See note 19 above.

21. For these 18, an average of 705 days intervened between the date they were listed as endangered (or the date critical habitat was defined (April 22, 1975) whichever came later) and the date when habitat was finally designated.

22. Curry-Lindahl, 1972, p199.

23. Appendix E outlines the chronology of activities undertaken to implement the Section 7 consultation provisions.

24. 40 Federal Register 17764-5, April 22, 1975.

25. 43 Federal Register (2):870, January 4, 1978.

26. The nature of the intervening events is discussed in Chapter 7. The regulations were more stringent than the guidelines in three ways: 1) Rather than leaving it to the agency's discretion whether it should initiate consultation, the final regulations imposed a mandatory requirement to request consultation if the agency's actions will affect an endangered species. 2) The final regulations also applied the Act to all projects, not just those started after 1973. 3) Further, they contained the requirement that while an agency was in the consultation process, it should not make an irreversible or irretrievable commitment of resources to the project.

27. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p853.

28. New York Times editorial, January 1, 1976.

29. Gainesville Sun, September 21, 1975.

30. Washington Post, March 15, 1975.

31. These were the green, loggerhead, and Pacific ridley sea turtles. See discussion in Chapter 7.

32. 108 Science News (6):94, August 9, 1975.

33. To the Service's credit, the amount of time elapsed between proposals and final designations does seem to have decreased over time. For example, the following table lists the mean durations of the listing and critical habitat steps over time from 1974 to 1978.

	Listings		Critical Habitat Designs	
Year*	Mean Number of Days	Number of Species	Mean Number of Days	Number of Species
1974	273	3	-	0
1975	275	190	404	7
1976	445	64	319	8
1977	226	18	283	17
1978	116	2	187	1

* Species are listed in the year that they were proposed.

The calculation procedure to arrive at these data was discussed in note 19 above.

The reader should note that this data biases the results somewhat because species are counted in the year that they were proposed. Thus, the means for later years have to be small. Species that were proposed and finalized in 1978, for example, can have a maximum duration of about 270 days. The only way around this bias is to redo the results in 1980 or so. Nevertheless, the general trend of declining durations in recent years is probably accurate.

34. The green and loggerhead sea turtles were proposed for listing as endangered under the 1969 Act (38 Federal Register (248):35485, December 28, 1973.) They were finally listed as threatened species (with two green populations as endangered) in July 1978 (43 Federal Register (146):32800, July 28, 1978).

35. U.S. Congress, Senate, Committee on Commerce, 1976, p60.

36. Quoted in Washington Post, February 8, 1976.

37. 41 Federal Register 24062, June 14, 1976.

38. 2 Endangered Species Technical Bulletin (6):4, June 1977.

39. Ibid.

40. Curry-Lindahl, 1972, p314.

CHAPTER 5 -- COPING WITH SCARCE RESOURCES AND TECHNICAL UNCERTAINTY: EXERCISING ADMINISTRATIVE DISCRETION

One of the central assumptions about prohibitive policy is that binary technical decisions can be made: Species are either endangered or not; a federal project will either damage a critical habitat or not. In fact, rather than a binary, yes-no situation, a range of probabilities is more likely: "If the trade is stopped, then the species has a reasonable chance of surviving;" "if the project is undertaken, nesting might be disrupted with a potential reduction in population recruitment." The ability to make binary technical decisions is quite limited because of resource scarcity and large amounts of technical uncertainty. Since staff and information are often limited, administrators are constrained in making optimal decisions. But even with adequate staff, technical uncertainty pervades the decision-making process, limiting the ability of administrators to make decisions on technical grounds alone.

The result is that agency staff exercise a great deal of administrative discretion. They set priorities to overcome the resource scarcity problems, and make technical judgments based only in part on technical data. This counters a second common assumption about prohibitive policy, that it limits agency discretion. In implementing the ESA, discretionary judgments were made about such factors as what species to review in what order, which experts to talk with, what data to believe, what research to undertake, what is the current population status of a species, what will happen to it in the future, what threatens it, what taxonomic unit should it be considered part of, what degree of regulation should be proposed, what external interests should be considered, and what regulatory exceptions should be allowed.

To answer these and similar questions, administrative experts use a mix of science, art and politics to make decisions. Their individual attitudes, values, and professional norms weigh significantly in the process. Administrators welcome prohibitive mandates because they appear to the outside world to define a technical decision-making process, hence limiting external review of administrative actions. In fact, the assumptions about prohibitive policy hide enormous amounts of administrative discretion. As this chapter documents, the need to make administrative judgments about presumably-nondiscretionary decisions comes as a result of limited resources and large amounts of technical uncertainty.

Resource Limitations: 6000 Years of Work

In an often-reprinted interview, Keith Schreiner, Endangered Species Program Manager (and Associate Director of FWS), talks about the enormity of the listing job:

> "The endangered species universe has about 2 million species of plants and animals, give or take 100,000. There are probably four or five times that many subspecies and God knows how many populations. Now there is good evidence to suggest that as many as 10 percent of all animals and plants on earth are endangered right now.
> "The simple facts are these," he says. "It takes us a minimum of 36 professional man days to list a single plant or animal species and I've only got six full time professionals who work at this -- among other things -- for the whole lot of them. It will take us, at this rate, the next 6,000 years just to list all the endangered plants and animals that need protection by the Endangered Species Act, not to mention developing programs for them. So I just can't think in terms of time. We'll never get the job done, so it becomes important that we priorize our list and do the most important ones first."[1]

Staff limitations on listing and critical habitat designation have indeed been great. Even though the entire FWS endangered species program had 198 persons assigned to it at the end of April 1978, only eight professionals were assigned to the listing and habitat designation tasks (in

the Biological Support Branch of the OES).[2] Although more staff members were supposed to have been assigned to the review tasks in mid-1978, most were siphoned off to deal with interagency consultation which had by then become the squeaking wheel of the program. NMFS has never had much staff to deal with endangered species. Only one professional deals with listing in the Washington office. Most of NMFS' endangered species' activities have taken place as field research.

There has not been a large staff to handle interagency consultations either. Consultations are generally handled at the regional level. While 30 endangered species positions were authorized in the regional offices, there were only 18 specialists as of mid-1978 -- an average of 2 to 3 per region. If there were indeed 4,500 consultations in fiscal year 1977 as the FWS estimates, then specialists handled on the average one consultation apiece every working day of the year, which is a lot of work considering that consultation is only a part of their work.

Since there are so few staff members and so many species that may be endangered, the staff has to set priorities to select species for review. Thus, at the outset, there is a tremendous opportunity to pick and choose which species have a chance of getting on the list. Priorities are -- in theory at least -- based on a number of biological factors, giving priority to higher taxa over lower taxa (full species over subspecies), domestic species over foreign species, species that are in greater trouble over those less in jeopardy, and species that can be helped over those for which little can be done. Higher order species are also generally given priority over more primitive ones.[3]

In practice, priorities are also influenced by how loudly petitioners scream (the threat of legal action, for example, is very effective), by

how controversial a listing might be, and by who is on the staff, what their pet interests are, and how loud they are. All of the OES biologists display the professional values that accompany devoting their lifework to the study of plants, reptiles, birds, or mammals. Taxonomists seek to differentiate between small differences in morphological and behavioral characteristics. Hence, they are trained to value fine details that distinguish between groups of organisms. Description of a new group is a powerful professional goal. The biologists value each taxon highly both because they are trained to do so and because they become familiar with them. Each biologist has a specialty though, and sees great value in the organisms that he or she studies. This is no different than the values held by other professionals: Nuclear engineers tend to promote nuclear power (because they understand it and it is their livelihood); anthropologists tend to place a high value on relict populations of primitive societies. Similarly, botanists tend to see significant value in preserving the Furbish lousewort and ichthyologists in protecting the snail darter.

Since each professional tends to value the species he or she studies, there is a tendency for their personal values to influence what species get put on the list. One of the reasons, for example, that there are so many molluscs (snails, clams, crustaceans) on the list is because there was an assertive malacologist on the staff up until mid-1978 (when he was transferred to a research station in Missouri!) Indeed, molluscs accounted for almost a quarter of all non-plant proposed listings over the entire 4-3/4 year period. Since the malacologist was not replaced, it is unlikely that many molluscs will be reviewed in the near future: Which species are reviewed depends in large part on who is in the shop. It is certainly no accident, for example, that of the 14 domestic fish species that have been

added to the list since 1973, eight live in the interior Southeast: The staff icthyologist used to be head of the Alabama Conservancy and is an expert on southeastern fish species. (Only 2 of the 26 domestic species listed prior to 1973 were native to the Southeast.)

Staff priorities also determine which species get help after they are put on the endangered list. These priorities unabashedly include non-biological considerations. To set action priorities, a "priority index" is calculated that combines (i) a degree of threat rating, (ii) a taxonomic factor, and (iii) an ecological/socioeconomic factor. The "degree of threat" rating indicates how much a species is endangered. The taxonomic factor gives weight to higher taxonomic units. The ecological/socio-economic factor is clear evidence that non-technical considerations are routinely injected into the process. This factor "measures" the ecological, commercial or popularity value of a species. A full 10 points are given, for example, to "species of greatest popularity or having economic impacts."[4] This score could appropriately be called a "constituency factor" because it measures whether anyone cares about the species -- either to preserve it or to exploit it. The priority index is calculated by multiplying the degree of threat rating times the sum of the taxonomic and ecologic/socioeconomic factors. Thus the "constituency factor" can have a large influence on the priority index. Using the maximum values of the degree of threat and taxonomic elements, the priority index can vary from 100 out of 100 (top priority) to 60 depending on how popular the species is. Priorities for setting critical habitat use the priority index as a base and are hence determined in large part by nonbiological factors.

Information is scarce too. Schreiner points to this as another reason for delay: "For every species, my botanists have to write all new material.

Contact the experts of the world, find out what is known about everything. Then come out with the best current scientific and commercial information available -- that's what the law requires."[5] To cope with these demands, OES uses an information network that consists primarily of the national and international scientific community (mostly scientists located in universities) and the state fish and game agencies. (Appendix F diagrams this information network within the institutional environment of the listing and critical habitat designation processes.) A secondary source of information comes from interest groups and the FWS' regional offices. Different types of groups are better sources for different types of organisms. The state agencies, for example, are more knowledgeable about bigger animals -- birds and mammals -- because of their historic orientation towards game species. The universities are better at lower orders.

Information is not equally distributed over all types of life forms. More is known about game animals than nongame; more about crop plants than others. The availability of information reflects research priorities that usually relate poorly to endangered species' priorities. They are more closely related to what people are interested in and what they can get paid for doing. In discussing plant listings, for example, the staff botanists reflect their reliance on a sporadic data-gathering process:

> "We just don't have the time to go check out these plants ourselves, in most cases. We also don't have a lot of contract money to pay other people. But we have to know whether a species is endangered throughout all or a significant portion of its range -- that's what the law requires in order to call it endangered -- how many plants there are and data on the critical habitats. So we're telling botanists around the country, 'You go out and do the hunting in your areas.' We have to rely on your free help and commitment.'
>
> "In a region where no one cared enough to volunteer his time, the plants could just become extinct. That's why we have to put pressure on the botanical community."[6]

The information network is very important because it provides documentation of the endangeredness of species, and, in effect, determines which species get listed. The Deputy Director of the FWS, George Milias, described the operations of this network as follows: "We have a vast number of scientists on our own staff at Interior and the way this works is those people know pretty well who are the top men, up to full speed on a particular animal or species or what we may be dealing with at the moment. They know where to go to get the best expertise if we are going on a contract basis, and presumably -- and all of these things are subjective. Who is to say this is the best man in the world or that one is?"[7] Thus, to whom the staff chooses to talk about the status of a species is very important. In practice, professional contacts are neither random nor complete. Old professional ties get reinforced. Staff members call old professors or people they have worked with -- the "old boy network" channels the action.

Resolving Technical Uncertainty: A Mixture of Art and Science

The need to use administrative discretion that is due to scarce staff and limited information is reinforced many-fold by the huge amount of technical uncertainty inherent in decisions involving taxonomy and population biology. It is not necessarily clear how much a species is currently jeopardized or what its future condition will be even when there is a lot of published information about it. Indeed, periodically someone finds a thriving population of a species that had been thought to be extinct for many years.[8]

Many biological dilemmas must be resolved in order to list a species. For example, what constitutes a species? In general, species are defined on the basis of morphological and behavioral characteristics. In theory,

one could develop a chromosome map of a species, but there are different chromosomal characteristics at the individual level. How significant are small changes in external appearance? The snail darter differs from its darter relatives by the presence of a single additional ray on its pectoral fin. What about blue eyes versus brown in humans? Are there really two human species -- Homo blue and Homo brown?

How significant are behavioral differences? As with morphology, there is much variation at the individual level but some species are distinguished by behavioral characteristics. The Houston toad (Bufo houstonensis), for example, is extremely difficult to differentiate from its close relative B. woodhousei on the basis of appearance alone. The leading expert on the species says that "extreme familiarity with both species is necessary to distinguish them. The most reliable differential character is the call."[9] Mating calls are given only in the spring. B. houstonensis' call consists of a 7 to 25 second, high-pitched trill. That of B. woodhousei is a 1 to 5 second feeble trill.

The old standby definition -- species are groups of organisms that interbreed -- does not stand up. The Houston toad interbreeds with two other species; one of the hybrids yields fertile offspring. The Mexican duck interbred itself off the endangered list.

If it is difficult to determine what is a species, what constitutes a subspecies or an isolated population is even more discretionary. "Taxonomy goes beyond science into art," says one of the OES biologists. While there are codes of nomenclature for naming species,[10] there isn't a formal review procedure for registering a species. Generally the "expert's judgment" is relied upon to make a determination about how significant a species is in terms of morphological and historical differences. According to one

of the OES scientists, "the expert's judgment can vary on the same data depending on his philosophy. From a conservation point of view, you want to push organisms to higher levels of classification so that they get more sympathy. Also, the more splitting you make between differences in organism, the more protection you end up with." Thus, ideology can enter into taxonomic decisions with a significant impact on regulatory policy.

Differences in expert judgment about taxonomic status have been present throughout the implementation of the ESA. Texas A&M University scientists disputed the validity of the Houston toad as a unique species in 1974.[11] TVA biologists (and a nationally known Professor Emeritus of Ichthyology from Cornell University) disputed the designation of the snail darter as a species in 1975.[12] Chances are there is at least one "expert" on each side of most issues. Thus, to whom the FWS staff listens becomes very important.

Taxonomic judgments are important because they have influenced the degree of protection accorded to various species. The glacier bear, for example, was included in the CITES Appendix I. It was listed in all four U.S. Redbooks (1964 through 1973). When the Fund for Animals petitioned that it be listed as endangered, FWS determined (based on evidence from the State of Alaska) that the glacier bear was an uncommon color variety of the black bear and consequently did not qualify for listing under the Act.[13]

The Mexican duck is another good example. The duck was first listed as endangered in 1967. But by mid-1978, the FWS had determined that the species (Anas diazi) should be taken off the list, in part because of hybridization:[14] The duck had interbred with the common mallard (Anas platyrhynchos) and produced a hardier duck (Anas diazi platyrhynchos). Since the Interior Department's Solicitor had determined in 1977 that the ESA

did not apply to hybrids, the now-identified Mexican duck-mallard hybrid did not quality for protection. The editors of the Washington Post lamented the change in the duck's status: "In short, most of the Anas diazi will be deregulated because they have played around, and the rest will be deregulated even though they have not."[15] The change in taxonomic status may have a real impact on the duck, since now hunting of both the pure remnant population and the hybrid cross is possible (although it could be regulated under the provisions of the Migratory Bird Treaty Act of 1918).

The gray wolf (Canis lupus) provides another example. There are four subspecies of gray wolves: the eastern timber wolf (Canis lupus lycaon) which lives in Minnesota and Michigan; the gray wolf (Canis lupus monstrabilis) in Texas and New Mexico; the Mexican wolf (Canis lupus baileyi) in Mexico, Arizona, New Mexico and Texas; and the northern Rocky Mountains wolf (Canis lupus irremotus) in Wyoming and Montana. Up until 1978 all four subspecies were listed as endangered. Considerable pressure was placed on the FWS to downlist the eastern timber wolf so that wolves that allegedly preyed on farm livestock in northern Minnesota could be killed. In March 1978, the Service combined all four subspecies' listings as the endangered gray wolf (Canis lupus) with the Minnesota population listed as threatened. The change to threatened status provided the opportunity to take depredating wolves. It can be argued that the combination listing made it easier to downlist the eastern timber wolf because it made it appear not unique.

Taxonomy is not static. Dr. Stephen Edwards, Executive Secretary of the Association of Systematics Collections pointed out in Senate hearings that, "Species names are not fixed. Any species may not be recognized forever. Through time, many students may review groups of species and

synonymize -- a process in systematics biology by which a number of previously recognized species names are referenced under a single name -- or split currently recognized species. Taxonomy is a dynamic process..."[16]

Taxonomic reclassification is a common practice. Grizzly bears (Ursos arctos), for example, have been classified several times since they were first described by Lewis and Clark in 1805. For many years, American scientists debated how many different species were involved in the grizzly-brown bear group and how they related to Old World brown bears. Since the species is distributed widely and exhibits much variation, C.H. Merriam recognized 86 different species and subspecies originally inhabiting North America. Recent work by Robert Rausch of Alaska has led to a classification of all the world's brown bears as one species (Ursus arctos) with only two distinct North American races, the grizzly bear (Ursus arctos horribilis) and the Kodiak bear (Ursus arctos middendorffi). "The dispute is not yet completely settled, for many scientists also recognize the relict Mexican population as Ursus arctos nelsoni. Also, the barren ground grizzly of the Alaskan and Canadian tundra may be distinct."[17] While the dispute may not be settled, it does affect regulation of the species under the ESA. If there are 86 taxa of North American brown bears, chances are that many are endangered, whereas if there are only two taxa, their status is more secure. One can argue that since the Act provides protection for populations and subspecies as well as species, taxonomic distinctions make no difference. But this argument is countered by the priority systems to review species: Populations are not particularly important; species are. Regardless, taxonomic decisions contain enormous discretion and little review, yet affect the degree and type of protection organisms receive. Taxonomic discretion has been used in the implementation of the ESA. In-

deed, it has been used strategically.

Resolving Technical Uncertainty: Population Size and Status

Given that we have a valid taxon (species or whatever), there is another source of technical uncertainty in assessments of the taxon's current and future population status. How is the extent of the current population known? Usually field research is necessary in which samples are used to statistically determine a population size. The rarity of individuals in most potentially-endangered species restricts accurate population estimates in two ways: First, there are generally so few individuals over a large area that statistically-significant samples are hard to achieve and are costly. Second, and more important, is that most declining species will not tolerate sampling. A standard population-estimation technique is the capture-recapture method is which a sample is caught and individuals are marked in some way (ear tags, paint, leg bands, clipped fins), and then released. Some time later, a second sample is taken from the same area. A simple ratio is then established to determine an estimated population size.[18] The problem is that most endangered species are very sensitive to human contact -- that's how most become endangered in the first place. Sampling is destructive because it subjects the population to an unnecessary stress.[19]

Much of the controversy around a species' listing comes from discrepancies in experts' current estimates of the size and range of the species. In the snail darter case, for example, FWS contended that the snail darter existed only in the Little Tennessee River. TVA and Dr. Edward Raney of Cornell University contended that the species survived in the Tennessee River as well.[20] The Furbish lousewort was thought extinct until it was rediscovered in 1976. At that time, the population was estimated at 200

plants -- all in the proposed impoundment area of the Dickey-Lincoln project.[21] In another year, the estimate went up to 350 plants.[22] By the end of 1977, the estimate was up to 880 plants in 21 colonies -- only 40 percent in the reservoir area.[23]

Discrepancies over the population size and range of the Houston toad were also present. In the springs of 1974 and 1975, over 500 man-hours were spent (and 10,000 miles driven) to survey the status of the toad's population. In 1974 a single calling toad was observed in Burleson County, Texas. In 1975 a single chorus of 10-20 calls was observed in the same county, and almost 50 were heard in Bastrop County. From these data and historical records, the population size was estimated at 1,500 individuals.[24] In 1977, one hybrid toad and one adult male were observed in Harris County (where Houston is located). Based on this observation and historical records, Harris County was included as potential range for the toad. Development interests reacted loudly. More studies were conducted in 1978 which concluded that there weren't any Houston toads in Harris County. This conclusion was contested by the author of the original report, a scientist at Texas A&M University. "He viewed the decision to contract with the University of Houston to do the work as 'handing it over to the enemy,'" said one FWS biologist. "Houston toads breed according to weather conditions. This has been a bad year. If the study goes through August, it might miss signs of Houston toad occupation."

Resolving Technical Uncertainty: Predicting the Future

Since the FWS has limited staff and money for fieldwork, it must rely on expert judgments from experts around the world, and these experts differ. Given that a taxon is accepted and the status of its present population is not in question, a third and probably greater source of disagreement and

discretionary judgment arises from a need to predict the future: Can the existing population survive at its present level and rate of growth (decline)? What's causing the problem? What is the threat? Is the species very badly off (endangered) or just badly off (threatened)? Given the situation, what should be done about it?

The common method of predicting the future is through the use of models.[25] But with most endangered species, neither the base data nor the historical data exist, knowledge of its population biology is not adequate, an understanding of its ecological relationships with other plants and animals is sketchy, and an awareness of its tolerance of human-induced environmental changes is even sketchier. The result is that once again "expert judgments" form the basis for decision-making. And these experts differ in their judgments. For example, in reviewing the data describing the progress of the transplanted population of snail darters in the Hiwassee River, TVA biologists forecast success while FWS staff forecast doom.

The sea turtles case provides one of the best examples. An ad-hoc Task Force on the Commercial Exploitation of Marine Turtles was established under the aegis of the IUCN to determine whether commercial mariculture enterprises should be allowed to continue the "farming" of sea turtles. Meetings were held in late 1974, concluding with the recommendation that "the present operations of Mariculture Ltd. (the largest commercial operator) can not be regarded as being in the conservation interests of the Green Turtle."[26] However, this report was accompanied by much controversy generated by other turtle experts. Indeed, it was alleged that membership on the ad hoc task force was limited to anti-mariculture interests. For example, consider the comments of Peter Reichart, World Wildlife Fund mammal expert, in a letter to California State Senator Behr regarding proposed state legislation to ban the importation of sea turtle products into

California:

> "... the communication you will receive from the IUCN regarding this matter is not the majority opinion of the TSG (Turtle Specialists Group), but rather the advice of an ad-hoc committee formed by, and consisting of only those persons in the TSG who are opposed to the activities of Mariculture Ltd. ... In November 1974 the ad-hoc committee met in Florida ... but Dr. Schulz (head, Surinam Turtle Preservation Program) and other 'neutral' or 'pro-mariculture' members were not invited ... Therefore, I urge you not to place any faith in the recommendation of the IUCN, because (unbeknown to them), it will be based on a 'kangaroo court' decision of a highly-biased ad-hoc committee, and not on a cooperative agreement reached by all members of the TSG."[27]

One turtle expert wrote, "I am astonished by the strong bias and by the vindictiveness shown by some of the opponents to turtle ranching and farming, and in this I see a proof of the weakness of their argument."[28]

When the experts disagree, how does a technical decision get made? In practice, the FWS experts make an internal judgment based on their own values and attitudes. One of the key decisions they have to make is how much uncertainty is acceptable. Often this decision is made higher up the line in the surname review procedure. In several cases, the Associate Director implicitly made this decision by sending the package back to the scientists for more information. The amount of uncertainty within different listing actions varies depending on the species. It is conceivable that no information exists about a species because it is rare. A species could fade away while the administrators wait for more and more data prior to making a decision.

So discretionary judgments are made about how much uncertainty is acceptable. Two contrasting examples: The endangered status of the Furbish lousewort was well known (low uncertainty) yet the listing was delayed. A listing of two butterflies is towards the other end of the continuum: After a proposed listing was published, a letter was received from the Department of Agriculture which stated: "... It would appear that no

scientific survey (biometrical survey) has been made for a population index. This appears to be a basic fact in determining endangerment..."[29]

In responding to the letter, FWS stated that:

> "While the Service recognizes that statistically sound population data are a very desirable ingredient in the process of determining whether a species is Threatened or Endangered, it also recognizes that seldom are such data available, particularly for the less studied, frequently obscure forms that become candidates for such determinations. While a biometrically defensible documentation of a critically low or precipitously declining population would, of itself, be considered sufficient reason to determine a species to be Threatened or Endangered, such refined data are not necessarily a prerequisite to such determinations.
> "...the Service cannot support the view that the protection provided for by the Act should be denied a species, which the information available indicates is Endangered or Threatened, while biometrical surveys are conducted to gather additional data."[30]

Due to all this uncertainty and discretion, listings have often appeared quite sporadic. Critics have charged the FWS with arbitrary implementation. Groups have filed suit contesting the validity of listings. Safari Club International, for example, has filed a lawsuit that alleges that several species including the antelope-like lechwe are not endangered and should be delisted.[31] The FWS has published a Notice of Review to reconsider the listing status of 65 foreign species it listed in mid-1976.[32] Further, several of the OES staff privately contend that some of the molluscs that have been listed in the past should never have been put on the list: "The data just isn't there." But an assertive malacologist was.

Given that a species made it to the list, another set of biological questions has to be resolved: With the current status and projected growth (decline) rate, what should be done to help the species? Is research needed? Is artificial propagation in order? Should critical habitat be designated? In practice many of these questions are examined by recovery teams set up by FWS. As of early 1978, 59 teams had been established.[33]

But these teams face a large task in trying to pick a strategy given the sensitive nature of these species, the scarce information that exists about them, and in many cases, theories of population biology and ecology that are inadequate to use as theoretical guideposts. As in the listing and critical habitat area, these experts often have differing opinions as to what should be done. For example, in responding to the FWS-sponsored "recovery plan" for the Houston toad, one expert offered the "opinion that if this recovery plan is put into action, its main effect will be to hasten the trend toward extinction of Bufo houstonensis. I don't know who the Yahoos were that wrote up this plan, but they didn't know anything about aurian ecology."[34]

Clearly one question that the Service has to resolve is whether they should designate critical habitat. Is habitat loss the central problem facing the species? Is there a specific kind of habitat that is limited and critical to preserve the species? What size habitat is necessary? What dimensions of habitat are required by the species? Air? Water? Land? Isolation? The only real statutory guidelines that the FWS has in establishing the bounds of a critical habitat is that it must be based solely on biological factors. FWS recognizes that there is a lot of discretion beyond this criterion: "There may be questions of whether and how much habitat is critical ... or how best to legally delineate this habitat ..."[35] Indeed, in practice it is very difficult to determine what is critical to the existence of a species. 100 acres or 120 acres? All areas with sandy soil and standing pools of water or just those that have evidence of current habitation?

All of the critical habitat proposals are somewhat arbitrary. Over 100,000 acres in nine sites were proposed as critical habitat for the

Houston toad,[36] but only 83,000 acres in two sites were finally designated.[37] Eighteen thousand acres of habitat near Houston thought critical by one set of FWS experts was dropped from the final designation.[38] About 20,000 square miles of habitat in three ecosystems has been proposed as critical for the grizzly bear.[39] Are 18,000 sufficient? Are 25,000 really necessary? Perhaps the grizzly will survive adequately if only two of its currently-inhabited ecosystems are protected.

In the emergency designation of critical habitat for the Mississippi sandhill crane made in June 1975, approximately 100,000 acres were listed as critical to the survival of the species.[40] In the final designation made in August 1977, only about 26,000 acres were listed.[41] FWS explained that the reduction was due to a reassessment of the biological data: "After reviewing this information, it became apparent that much of the land area in the original proposal is of little or no known use to the crane. There are winter feeding areas in farmland to the north of the Critical Habitat zones delineated below, but these sites are scattered over a large area, and their use varies with the crops and other factors." But the Service goes on to warn that, "all Federal agencies should be aware of the presence of the feeding sites and other areas of sporadic, but possibly important use within the overall zone originally proposed... Federal agencies are required by Section 7 of the Endangered Species Act of 1973 to insure that their actions do not jeopardize the continued existence of Endangered species, and this requirement should be considered with respect to any actions within or near the area delineated above."[42] These are somewhat contradictory instructions. On one hand, federal agencies have to make sure that their actions do not adversely modify the crane's critical habitat as designated by the FWS. On the other hand, they have to

watch out that their actions do not interfere with these extra feeding sites. This kind of dual form of habitat designation is difficult for federal agencies to deal with. If they assume that critical habitat is encompassed by what the FWS calls "critical habitat" and go ahead with activities close to the area, they may find themselves in violation of Section 7 of the Act. What finally gets determined as formal critical habitat is fairly arbitrary and presents the administrators with an enormous source of discretion.

Even given that a species is listed and its critical habitat designated, there is a final set of discretionary decisions that are very difficult to make on technical grounds. What actions can coexist with an endangered species? There is the temptation to say all human activities should be banned. But this is inefficient and politically infeasible. The FWS works very hard to counter the inviolate image of critical habitat designations. In almost every case, the Federal Register notice of a proposed designation pointed out that there may be many kinds of actions that can continue in a critical habitat:

> "There has been widespread and erroneous belief that a Critical Habitat designation is something akin to establishment of a wilderness area or wildlife refuge, and automatically closes an area to most human uses. Actually, a Critical Habitat designation applies only to Federal agencies, and essentially is an official notification to these agencies that their responsibilities pursuant to Section 7 of the Act are applicable in a certain area."[43]

Given that some actions can coexist with a species, how do we determine which and how much of each are acceptable? This is the modelling problem discussed above. Under the best of circumstances, it is hard to say for certain that a transmission line crossing a corner of Everglade Kite habitat will affect the species very much. It is extremely difficult to determine what impact the reduction in flow of the Platte River from

820,000 to 760,000 acre-feet per year will have on the whooping crane. Similarly, it is not clear whether a highway crossing the Mississippi sandhill crane's habitat will have significant adverse effects, or whether timber cutting in a 500 square mile area of the grizzly's 20,000 square mile habitat will hurt the species' chance for survival. The clearest situations are those that will totally change a habitat such as that in the case of the Tellico Dam. But there were project proponents who argued that the snail darter would adapt to the change from a river to a lake.

Considering the litany of biological dilemmas that faces the staff, it is not surprising that decisions are difficult to make. At bottom, the staff's decisions represent judgments based only partly on technical information. Due to the discretionary nature of these judgments, there is the opportunity for the staff to weight evidence and priorities based on non-technical considerations. At the extreme, there is the potential for administrators to act capriciously and disruptively in implementing the Act. The head of the Program recognized this potential in Senate hearings on the designation of grizzly bear habitat:

> "Senator, there is no question in my mind, and I suspect there is none in yours, that the Federal government through indiscriminant administration of Section 7 has the potential to adversely impact economic and social development in many areas of the United States. For this reason the service intends to proceed in a responsible manner in carrying out its responsibilities under Section 7."[44]

How does the Service define what is "responsible?" How does it chart a course between preservation and economic development? In practice it is heavily influenced by its institutional context. This context allows political pressures to be transmitted into the technical decision-making process. As the next chapter indicates, the administrators respond to these forces by modifying their "technical decisions." Negotiation often takes place simply because there are not very good grounds for making decisions any other way.

NOTES TO CHAPTER 5

1. 108 Science News (6):92-3, August 9, 1975.

2. The personnel ceilings assigned to the endangered species program as of April 13, 1978 were:

OES-Biological Support	8
OES-Management Operations	6
OES-Administration	6
FWS-Associate Director's Office	2
ESSA (implements 1973 CITES)	3
Research	24
Law Enforcement	62
Refuges	34
Regional and Area Offices	30
Wildlife Permit Office	23
Total	198

(Source: U.S. Fish and Wildlife Service, "Allocation of FWS Personnel Ceilings to Endangered Species Program as of April 13, 1978", in Briefing Book, unpublished)

3. The following data corroborates this last priority: More higher order species have been listed, although more attention has been spent on lower order species since the enactment of the 1973 Act.

	Number of Species		
Type	Listed 1967-1973	Listed 1974-1978	Total Listings
Mammal	164	104	268
Bird	180	53	233
Reptile	25	43	68
Amphibian	6	9	15
Fish	36	16	52
Snails	1	7	8
Clams	0	25	25
Crustaceans	0	1	1
Insects	0	8	8
Plants	0	22	22
Total	412	288	700

4. U.S. Fish and Wildlife Service, "Draft Endangered Species Priority System", FWS/OES 301.3, July 8, 1976, p10.

5. 108 Science News (6):92, August 9, 1975.

6. Ibid., p95.

7. U.S. Congress, Senate, Committee on Commerce, 1976, p24.

8. For example, the Furbish lousewort was first discovered by botanist Kate Furbish in 1880 and was formally described in 1882. It was collected up until 1943 after which its status was listed as "Probably Extinct" (40 Federal Register 27923). In a survey conducted for the Army Corps of Engineers, Dr. Charles Richards of the University of Maine re-discovered colonies of the lousewort in June 1976. (40 Living Wilderness (136):42, January/March 1977)

9. Thomas, Robert A., Final Report, The Endangered Houston Toad (Bufo houstonensis), prepared for FWS contract #14-16-0002-3557, November 22, 1977, p2.

10. See, e.g., "International Code of Zoological Nomenclature", adopted by the XV International Congress of Zoology, published by the International Trust for Zoological Nomenclature, London, 1961.

11. "The individuals at Texas A&M University are not convinced that Bufo houstonensis is a valid species or, if it is, that specimens from all presently accepted localities are true houstonensis." (Memo from Howard W. Campbell, Staff Scientist, to Chief, Office of Endangered Species and International Affairs, "Recommendations for Action for Houston Toad (Bufo houstonensis) Resulting from 17-20 April Visit and Status Review", May 4, 1974)

12. See, e.g., Letter from Lynn Seeber, TVA General Manager to Director, U.S. Fish and Wildlife Service, August 15, 1975.

13. 41 Federal Register 24062, June 14, 1976.

14. 3 Endangered Species Technical Bulletin (8):5, August 1978.

15. Washington Post, August 1, 1978.

16. U.S. Congress, Senate, Committee on Environment and Public Works, 1977b, p142.

17. 2 Endangered Species Technical Bulletin (1):3, December 1976-January 1977.

18. Number Recaptured that are Marked/Total Number Marked in First Sample = Total Number Captured in Second Sample/Population Size

19. Consider, for example, the difficulties encountered by the FWS' contractor in determining the population size of the Houston toad: "Arriving at a satisfactory population estimate of Bufo houstonensis is no simple matter. Indeed, it is the most frustrating facet of our status survey. Two factors are responsible: 1) B. houstonensis is an extremely secretive organism which responds to environmental stimuli which we have been unable to identify; 2) the endangered status of the species prevented a mark-recapture study." (Thomas, op. cit., p4)

20. See Raney's testimony at U.S. Congress, Senate, Committee on Environment and Public Works, 1977b, p144.

21. Richards, Charles, D., Rare and Unusual Plant Species Within the Dickey-Lincoln School Lakes Project Area: Final Report, prepared for the U.S. Army Corps of Engineers, New England Division, Fall 1976, p6. Also, see Washington Post, March 29, 1977.

22. Richards Charles D., Report on Survey of the Saint John River, Maine and Some of its Major Tributaries for Furbish's Lousewort, Pedicularis furbishiae, and Josselyn's Sedge, Carex josselynii, August 18, 1977, unpublished, p10.

23. MacBryde, Bruce, Endangered Plant Listings, unpublished handout, November 2, 1977.

24. Thomas, op. cit., p4-5.

25. Statistical methods of estimating current and future population size and determining allowable harvest under sustained yield conditions are quite complex, involving a range of age-specific measures (such as natality, mortality, fertility, recruitment, etc). The methods and problems of modelling and estimation are described in Watt, 1966; Southwood, 1966; and Odum, 1971, p162-233.

26. International Union for Conservation of Nature and Natural Resources, "Report to the Chairman of the Survival Service Commission by the ad hoc Task Force convened to investigate the commercial exploitation of sea turtles", unpublished, November 23, 1974, p5.

27. Letter from Henri A. Reichart, Surinam World Wildlife Fund game mammal survey to California State Senator Peter H. Behr, late 1974.

28. Letter from Professor L.D. Brongersma, National Museum of Geology and Minerology, The Netherlands, to F. Wayne King, New York Zoological Society, January 30, 1975.

29. 41 Federal Register (83):17737, April 26, 1976.

30. Ibid.

31. Complaint, Safari Club International v. Andrus, Civil Action #J78-0146(c), U.S. District Court, Southern District of Mississippi, Jackson Division, April 14, 1978.

32. 43 Federal Register (76):16527, April 19, 1978.

33. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978a, p126.

34. Letter from Lauren E. Brown, Illinois State University to Ken Dodd, Office of Endangered Species, December 23, 1976.

35. 42 Federal Register (26);7973, February 8, 1977.

36. 42 Federal Register 27009, May 26, 1977.

37. 43 Federal Register (21):4022, January 31, 1978.

38. Memo from James E. Johnson, Endangered Species Biologist, to Regional Director, Region 2, "Field Review of Proposed Houston Toad Critical Habitat," November 25, 1977.

39. 41 Federal Register (215):48757, November 5, 1976.

40. 40 Federal Register (126):27501, June 30, 1975.

41. 42 Federal Register (152):39985, August 8, 1977.

42. 42 Federal Register (152):39986, August 8, 1977.

43. 42 Federal Register (26):7973, February 8, 1977.

44. U.S. Congress, Senate, Committee on Appropriations, 1976, p15.

CHAPTER 6 -- COPING WITH THE INSTITUTIONAL ENVIRONMENT: NEGOTIATING SCIENTIFIC DECISIONS

Since prohibitive policy is presumed to establish technical rules for implementation, a common assumption is that its prohibitive nature limits any balancing of costs and benefits associated with individual actions and excludes outside interests from influencing implementation. In fact, since the administrative process is laced with discretion, it is heavily influenced by the political context in which implementation takes place: Balancing occurs; outside interests participate; and negotiation takes place.

Politically-responsive modifications of decisions took several forms in the implementation of the ESA: Listings and critical habitat designations were delayed; controversial species were given low priority for listing and critical habitat designation; the degree of protection (threatened or endangered) was influenced by which interests would be affected; regulations were drawn to meet the needs of commercial interests; and boundaries of critical habitats were altered. In addition, interagency consultation resulted in compromises that allowed projects to proceed even though they would have an impact on endangered species or their critical habitat. Finally, general policy was altered in response to pressures to resolve specific controversies.

Negotiation was facilitated by a hierarchical administrative network where scientific expertise was concentrated at lower levels, and management and political skills at higher levels. Goals, rewards and agendas varied through this network forming a dynamic system with significant pressures to resolve controversies at the lowest possible internal level. The success of this system at building compromise suggests that even when policies

are prohibitive, the context of implementation provides a vehicle for the balancing of social costs.

Responding to Political Controversy

Most of the FWS biologists concede that the process does indeed include political considerations. For example, Bruce MacBryde, a staff botanist, has stated that:

> "There's no question about it, politics does play a role. I consider myself first and foremost a botanist, and we're all on the side of the organism in the Endangered Species Office. But we have to consider the impact of protection. You take the LaFarge dam project, for example. We not only have to find out if Sullivantia and monkshood and the others -- Bird's eye-primrose and Forbes' saxifrage -- would be destroyed by the dam impoundment area. We have to find out what the cost would be in terms of jobs. Economics. This all goes into our impact assessment report. But, we just give the data on the impact. Someone else must balance these factors -- the dams and the plants."[1]

In listing species and designating critical habitat, this balancing usually occurs at bureaucratic levels above the staff experts. The surname review process and the hierarchical levels of authority [2] tend to provide substantial control over what gets done by the staff. Negotiation occurs when there are conflicting interests at stake -- especially when these interests can mobilize political pressures. The FWS is, after all, a federal agency responsive to the interests of the President and subject to the fiscal whims of Congress -- interests that often conflict with the protection of endangered species. Negotiation takes place to try to avoid these conflicts. No one in the federal bureaucracy wants to be the squeaky wheel. There is a tremendous incentive to resolve things before they bother Congress or the President.

A General Accounting Office study of the endangered species program concluded, for example, that FWS officials delayed listing species because they were potentially controversial and feared the political ramifications

of listing.[3] In fact, there are numerous proposed listings that have never been formally resolved (either rejected or finally listed). For example, as of September 30, 1978, a total of 1,962 proposals were outstanding for an average of 812 days.[4] The proposal of 1,783 plant species en masse tends to exaggerate this data: If all unresolved plant proposals are disregarded, only 156 animal proposals were still unresolved. This would not be a bad record considering that 247 new animal species were listed in the same time period -- but a quarter of these open cases were from 1976 or before, and the average number of days since proposal for these 156 species was 458 days -- considerably longer than the average of 279 days that it took listed species to be resolved.[5]

Case studies and interviews suggest that delaying final listing to avoid political conflict is a reasonable hypothesis to account for some of these unresolved proposals. The Furbish lousewort case is a good example. The package of materials in which 13 plants were added to the endangered list began the surname review process in July 1977 -- that is, the experts were finished with it and had made their biological determination that all 13 were either endangered or threatened. Yet the package was not published in the Federal Register until April 1978 -- ten months later. Ten months is a lot longer than the estimate of nine days that the FWS testified to in oversight hearings.[6] Nor were these 13 species pathbreaking, since other plants had been listed earlier.

The final determination was delayed because the Furbish lousewort was in the package. As of July 1977, the lousewort was known to exist only in an area that would be inundated by the Dickey-Lincoln hydroelectric project. At the time, FWS was already immersed in the Tellico Dam - snail darter controversy. Congressional oversight hearings were being held. The media were having a field day with the image of a three-

inch fish stopping a $110 million dam. Think of the possible headlines with the lousewort conflict: "Parasitic Snapdragon Stops $650 Million Dam;" "200 Plants Defeat President's Energy Independence Plan;" "Dickey-Lincoln Project Crumbles When Rare Plant Takes Root."

The listing of all 13 plant species was delayed almost a year because the Furbish lousewort was a potential embarrassment for the program. The delay had nothing to do with technical aspects of the decision; rather, it occurred so that the agency could find a way around the potential conflict. Material throughout the listing package commented on the controversial nature of the listing, even listing politicians supporting and opposing the Dickey-Lincoln project. One OES information handout went so far as to comment that the "energy value of (the Dickey-Lincoln) dams is debatable."[7]

While all levels of staff were aware of the Dickey-Lincoln problem, the delay came at the highest levels of the FWS. Cover notes by the Associate Director and the Director identify the lousewort problem as the focal point of their attention and concern. Indeed, the Director suggested that the staff be certain to point out that other stands of lousewort had been located, "some of which are not subject to problems with Dickey-Lincoln."[8] The Associate Director pointed out the politically-sensitive nature of the material in the package in a handwritten note: "This needs to be cleared by AS (Assistant Secretary of Interior Herbst) and S (Secretary of Interior Andrus) -- Furbish lousewort in this package."[9]

The lousewort case suggests that the administrative process breaks up into a hierarchically-arranged procedure whereby political considerations are increasingly incorporated at higher levels of the bureaucracy. The more controversial -- the greater the amount of conflicting interests --

the greater the involvement of politically-sensitive management. Keith Schreiner made this point quite clear in responding to Senator Gale McGee (D-Wyo) at a special Senate hearing on the proposed designation of grizzly bear critical habitat:

> "I cannot tell you that the final determinations are based only on biological evidence, because you know as well as I do that other considerations -- political, economic, and the like -- enter into such matters. But it is the Fish and Wildlife Service's job to obtain the best biological data available and recommend certain actions. The final decisions rest with the Secretary, and it is at that level where other considerations can enter into the decisionmaking process."[10]

At that level, an implicit benefit-cost analysis goes on. Negotiation takes place to resolve conflicts. In the lousewort case, the delay gave FWS and the Corps of Engineers time, and freedom from lawsuit, to work out a compromise solution to allow both Dickey-Lincoln and the Furbish lousewort to survive.

Modifying Listing Actions

Negotiation in the listing process can take several forms. Postponing a controversial decision because of competing political demands compromises endangered species objectives. Reviewing "safe" species over controversial ones delays action and is a concession to opposition interests. Changing the status of a listing -- from endangered to threatened, for example -- is another kind of response to political controversy that has occurred. By listing the three sea turtle species as threatened rather than endangered, NMFS and FWS got around the problem of incidental catch by commercial fishers. If the species had been listed as endangered (as petitioned), incidental catch would have been prohibited and serious problems would have arisen for enforcement and commercial fishing. The threatened classification got commercial fishermen out of the blanket prohibition. Further, while making

a concession to the fishing industry, it allowed the agencies to prescribe procedures to follow if a turtle was accidentally caught by the fishermen:

> "any specimen so taken must be handled with due care to prevent injury to live specimens, and must be returned to the water immediately whether it is dead or alive unless it is a sea turtle which is alive and unconscious, in which case before returning it to the water, resuscitation must be attempted by turning the turtle on its back and pumping its plastron by hand or foot."[11]

The use of the threatened classification can be very helpful in resolving competing demands. The gray wolf case discussed above is a good example where a species was protected while other interests were satisfied (in that case, livestock interests). Another example deals with captive populations of species that are endangered in the wild. Zoos, circuses, and breeders were having difficulty transporting and trading animals that were listed as endangered. They claimed that the animals survived in populations that were captive but self-sustaining -- and that they were actually helping to propagate endangered organisms, not depleting their wild populations. FWS responded by listing the captive populations of eleven species as threatened with accompanying permit regulations for transportation, exhibition and interstate sale of individuals of these species.[12]

Even within the threatened classification, the development of regulations provides another avenue for the balancing of disparate interests. Indeed, environmental groups have contended that FWS has been too compromising in its regulations. The listing of the grizzly bear and three species of kangaroos are often given as examples of overreaction to commercial demands. The grizzly bear was listed as threatened in July 1975. In the regulations accompanying the listing,[13] the taking of bears was allowed in four cases: The first three were not terribly controversial -- taking in self-defense, taking to relieve a "demonstrable but non-immediate

threat to human safety," and taking to control "significant depredations to lawfully present livestock." The fourth was different: "... a person may hunt grizzly bears in the Flathead National Forest, the Bob Marshall Wilderness Area, and the Mission Mountains Primitive Area of Montana" as long as no more than 25 bears in all were taken a year and the taking was in accordance with Montana state law. Thus, sport hunting was allowed without a federal permit. To many critics, the hunting for sport of a species that is "likely to become in danger of extinction within the foreseeable future" was a sell-out to commercial interests. "Here you have the Interior Department formally endorsing large-scale hunting of an animal they admit is a threatened species -- it's a mockery," said Lew Regenstein, Vice President of the Fund for Animals. Since hunters must pay $210 in state license fees to go after a grizzly, preservationists argued that only wealthy, big-game hunters would benefit from the provision. "Interior just caved in to the trophy hunting lobby again," commented Regenstein.[14]

A second example of the use of regulation to balance competing interests is the listing of three species of kangaroo. These Australian species were listed in December, 1974. Even though overutilization for commercial and other purposes was one of the reasons for listing them as threatened, the regulations allowed the FWS Director to permit commercial importation into the U.S. if the Australian government developed a "sustained-yield program" for managing the species.[15] Again, critics argued that a species considered to be in jeopardy of extinction should not be exploited for commercial purposes at all.

The U.S. Council on Environmental Quality (CEQ) took strong exception to the regulations produced in both the grizzly bear and the kangaroo cases.[16] In a letter to the Secretary of the Interior, the CEQ pointed

out that the ESA's goal was to provide for the conservation of threatened species where conservation was defined as using methods and procedures necessary to help the species improve its status so that it could be de-listed. Such methods included "regulated taking" only "in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved."[17] The CEQ maintained that the FWS did not prove that the kangaroos or the grizzly bear were extraordinary cases, nor did it prove that population pressures could not be otherwise relieved. Grizzly bears, for example, could be live-trapped and moved to other areas. Kangaroos -- if they were managed so as not to be threatened with potential extinction -- could be taken off the list.

Modifying Critical Habitat Designations

The designation of critical habitat moves the administrative process more clearly into the political arena because for the first time endangered species become spatial: The Mississippi sandhill crane is no longer a rare long-legged bird; it is now a potential limitation on federal agency actions (and private ones that need federal permits) in 39 square miles of southeastern Mississippi. The Houston toad is no longer an unseen mating call in the spring; it is perceived as a potential constraint on the growth of Houston. The snail darter is no longer an obscure three-inch fish; it is a national headline -- David slaying the TVA Goliath. Yet because there is so much discretion involved in picking and choosing habitat that is critical to a species, this process responds as well to the pressures of its institutional environment.

Politically-responsive modifications of critical habitat can occur in more ways than those in the listing process. Delay can certainly occur. Allegations of strategic delay and footdragging in the designation of

critical habitat have been prevalent since FWS first defined what critical habitat meant in April 1975. As of September 30, 1978, there were 65 outstanding proposed designations of critical habitat, compared with 33 final designations. These proposals were unresolved an average of 292 days. This fugure is about the same as the average time it took for the 33 designations to move from a proposed to a final rulemaking (313 days) -- not an indication of significant delay. However, of the 65 outstanding listings, 24 were proposed at the very end of the time period -- July and August 1978. Disregarding these proposals raises the average time for the unresolved designations to 424 days -- considerably more than the average for the 33 final designations. Indeed, of the 65 outstanding proposals, a third had been made prior to the middle of 1977.

The grizzly bear is probably the best example from this group. The grizzly was put on the endangered list in July 1975. Critical habitat was not proposed until November 1976, well over a year later. Over two years have gone by and the designation has never been finalized. Although there is an element of technical uncertainty in this designation, a large amount of research has helped to define the status of the grizzly. Indeed, the areas identified as critical habitat in the proposed designation are almost identical to those listed in the map attached to the news release that proposed the grizzly for listing.[18] In almost two years, very little change had occurred in the areas thought to be habitat for the grizzly: Technical uncertainty appears to be a minor factor.

Controversial cases take longer than most even when there are no important technical issues to be resolved because political pressures must be dealt with. The grizzly listing was extremely controversial because of opposing interests in the form of livestock ranchers (who alleged signifi-

cant depredation) and sport hunters, and because of its generally bad image. Designation of critical habitat for the grizzly would be controversial all by itself. But the range of the animal (and large individual territories) means that the critical habitat designation would be larger than others previously made -- 20,000 square miles were proposed. (The largest critical habitat ever proposed before this one was that for the American crocodile -- about 1000 square miles, and the largest habitat ever designated throughout the tenure of the Act was slightly over 7000 square miles (for the gray wolf).) Thus, the nature of the species and the size of its range made this designation extremely controversial. Explicit evidence of its controversial nature can be seen in the fact that FWS held more public hearings on it than for any other designation. In addition, a Special Hearing was held by the Senate Committee on Appropriations in Wyoming in late 1976 -- the only time legislative review of a proposed designation has occurred.[19] Finally, of the 15 proposals made in 1975 and 1976, the grizzly proposal is the only one still outstanding.

The black-footed ferret case is another example of political intervention in critical habitat designation. The black-footed ferret is a predator of prairie dogs in the prairies of South Dakota. Prairie dogs have been routinely poisoned as nuisances. The ferret died with the prairie dogs and is considered to be one of the most endangered American mammals. It has been listed as endangered since 1967, and was listed in the first U.S. Redbook (1964). In the 1976 list of endangered species priorities, the ferret was ranked extremely high (69/100 -- only 3 other mammals out of a total of 27 were ranked higher). Indeed, the score given for action to determine critical habitat was second highest. But critical habitat has never been proposed for the species. At least part of the

reason is the conflict with grazing interests: If the prairie dogs are killed because of the amount of grass they consume (competing with livestock) and because of the damage their burrows cause to passing livestock, think how critical habitat designation would be perceived. Since much of the grazing land is in federal ownership, all grazing in the designated habitat could be subject to a FWS-induced veto. Livestock interests that have obtained millions of federal dollars to get rid of the prairie dog menace would find it difficult to accept grazing restrictions to protect a rarely-seen, weasel-like animal (the fact that it is their ally in destroying prairie dogs would be worthless to them).

Not only can the designation of critical habitat be delayed in response to political considerations, but the boundaries of the designations can be modified. Since there is so much technical uncertainty, it is hard to know with confidence what is critical and what is not. Hence, boundaries shrink or distort depending on outside pressures. Environmental groups alleged that to be the case with the failure to designate critical habitat for the California condor in an area with phosphate-mining potential. John Grandy of the Defenders of Wildlife stated in oversight hearings that:

> "...the critical habitat excluded nesting and loafing sites for the Condor which conflicted with the proposed phosphate lease. In addition, the proposed boundary of the critical habitat for the Condor is contiguous with the boundary of the phosphate lease for about one and one-half miles, an amazing coincidence. Not surprisingly, the nesting and loafing sites for the Condor which are not included in the designated critical habitat would have led to conflicts with the proposed phosphate lease. Mr. Chairman, this kind of political biology is a sham which threatens the integrity of the entire endangered species program."[20]

The case of the Houston toad is a better example of the modification of critical habitat boundaries in response to controversy and illustrates

how different levels of an agency like FWS have different priorities and interests. Under a FWS contract, Dr. Robert Thomas, a Texas A&M expert, recommended areas in Burleson, Bastrop, and Harris (Houston) counties as critical habitat for the toad. In December 1976, the Washington Office asked the Regional Office to redefine the boundaries of the recommendation: "The Harris County areas proposed for critical habitat pose serious difficulties ... Dr. Thomas' proposal includes a very large area in south Houston where toads have not been reported; this area is apparently heavily developed. We are of the opinion that the Harris County critical habitat submitted by Dr. Thomas is in error and should be redefined ..."[21] Thomas wrote to the Regional Office: "I am sure that the critical habitat proposal posed 'serious difficulties.' I assume that any proposal involving a metropolitan area would. The localities submitted on the referenced map are genuine localities on which Houston toads have been observed during the past two years by competent scientists ... I hope that I don't appear to be a rabid preservationist. I simply want to ensure that species are given a fighting chance."[22]

The Regional Office wrote to the Washington Office reiterating Thomas' remarks. Indeed, their memo questions the Washington Office's motives: "We were rather surprised at the Washington Office comment that proposing exact locations for critical habitat posed 'serious difficulties.' The tone of this statement is that politics may make designating this area as critical habitat difficult. Although this is undoubtedly true, now does not seem the time to raise the problem ... There seems no doubt as to these areas being essential to the survival of the species."[23]

The proposed determination was published five months later and included the Bastrop and Burleson sites, and seven areas within the Harris

County area.[24] All sorts of controversy broke out: Letters were sent to and from the White House. Newspaper articles poked fun at the notion of a toad stopping Houston's growth.[25] Even an NBC News show segment was filmed about the controversy.[26]

A special investigative team comprised entirely of biologists was formed as a strategy to cope with the controversy. The team met in October 1977 and surveyed the sites. They concluded that of the nine areas, seven should be included in the final designation -- Bastrop, Burleson, and five of the Harris County sites: "After careful review, all but two of the proposed critical habitat sites were believed by the team to be presently supporting toad populations and essential for its survival."[27] The team made their recommendation on the basis of suitable habitat, not necessarily habitat that was currently supporting Houston toads. Some of the sites were extremely marginal. For example, "Site 1 is presently undergoing rapid development and its future as toad habitat is already questionable because of the extensive underground drainage recently installed."[28] Nevertheless, since the biologists would not have to deal with the political ramifications of the designation and could bill their decision as technical, they decided to include even the marginal sites.

The FWS Regional Office had a different set of priorities and interests, however. To reduce adverse reaction to the designation, Regional Office managers decided to recommend the designation of only the Bastrop and Burleson sites, with the others marked for further study. The Regional Office's formal recommendations to the Washington Office noted that "(t)he remaining Harris County sites still contain potential Houston toad habitat," but claimed that siting data was inadequate. The memo further stated that, "(i)f the Fish and Wildlife Service finalizes

critical habitat determination in these areas ... but is unable to show that the toads have even used the sites within the last 10 years, it is our belief that the public outcry will be immediate, vociferous, and with some justification."[29]

The Washington Office followed the Regional Office's advice and designated the Burleson and Bastrop sites in January 1978, leaving the Harris County sites for further study.[30] The briefing statement that accompanied the final listing package again pointed out the Service's awareness of the controversial nature of their actions:

> "The proposal was very controversial with regard to certain areas in Harris County, especially because of alleged prohibitions on all development in those areas, a misinterpretation fostered by the press. The Critical Habitat designation should not in the least be controversial in Bastrop and Burleson Counties; these areas are sparsely settled and no federally authorized or funded projects are known which would be involved. The deletion of the two areas in Harris County will relieve much of the controversy and is biologically justified. The retention of the remaining five areas in Harris County as proposed areas may be controversial when viewed by developers as a measure which leaves their status in question and by conservationists who view this action as failure to act in accord with the Act.
>
> "The best way to avoid controversy is to conduct as complete and conscientious a survey as possible in Harris County and to engage a program of public education in the Houston area on the conservation of this species. When the survey is completed (it may require several breeding seasons), the results should be made known as quickly as possible. An effort to insure a proper interpretation of Critical Habitat should be made. In any case, if areas in Harris County are finalized as Critical Habitat in the future, it is likely that controversy will be unavoidable and bitter."[31]

The Harris County sites were surveyed in the Spring of 1978 and no Houston toad calls were heard. It is unlikely that they will be considered further. One of the staff biologists felt this to be "biologically invalid:" "Houston toads breed according to weather conditions. If the study only goes through August (as it did), it might miss signs of Houston Toad occupation. Political pressures will then dictate that the areas be dropped." It is hard to tell if the Harris County sites were deleted

because of political pressures or because they were beyond the definition of critical habitat. It is clear, however, that the official FWS actions differed from staff experts' recommendations and that the controversial nature of the designations was well recognized and considered throughout the incident.

Beyond delay and boundary modification, the Service can respond to political controversy by simply not designating critical habitat. Not all species are benefited by designation: Some are threatened for reasons such as overutilization and are able to thrive over a large area. But by not designating critical habitat, the interagency consultation requirements become much fuzzier: If there is no essential habitat, agencies do not really have to worry about the impact of their actions (nor do they know where to look). In the Furbish lousewort case, FWS concluded that it was not necessary to determine critical habitat because the plant could be transplanted to other areas. By not designating critical habitat, the FWS allowed the Dickey-Lincoln project to move ahead without the threat of lawsuit, even though it would destroy forty percent of the known population of louseworts.

Working Towards Compromise Through Interagency Consultation

Negotiation in response to competing resource demands is most clearly visible in the implementation of the Section 7 interagency consultation requirements. Once species are listed and their critical habitats designated, agencies must review their actions to avoid harming the species or modifying their critical habitats. Section 7 becomes a club to force development agencies and the FWS to work out conflicts between endangered species and projects. In theory, negotiation only occurs when both sides

have something to gain from the resultant compromise. In the case of the ESA consultation requirement, clearly the development agencies have an incentive to bargain: They don't want to get taken to court by a third-party intervenor. FWS also has an incentive: They don't want to inspire a congressional backlash against the program.

According to the FWS, the interagency consultation requirement has worked quite effectively. In preparation for oversight hearings, the FWS estimated that 4,500 consultations had taken place in fiscal year 1977.[32] Only three of these went into judicial proceedings. (Appendix G contains a flow diagram of the consultation process.) In theory, each federal agency must review its actions and determine whether they may affect a listed species or its critical habitat. If so, the agency is required to initiate formal consultation with FWS or NMFS. The Regional Offices are generally the recipients of consultation requests. In addition, if the Service hears of a federal action that they view as potentially adverse to a species, they can request that the appropriate federal agency initiate consultation. In either case, the FWS must conduct a threshold examination within two months after the start of consultation. They can conclude that the action will not affect a species, that it will adversely affect it, or that there is insufficient information on which to base a Biological Opinion. Given the Biological Opinion, it is up to the project-initiating agency to decide whether it should proceed or not. The idea that the FWS' conclusion is based only on biology -- a Biological Opinion -- is fostered repeatedly by the Service. However, as illustrated above, there is a tremendous amount of pressure on both sides of the consultation to come to some compromise conclusion.

In practice, a hierarchical administrative process seeks resolution of

controversial consultations. (Appendix H contains a map of this institutional network.) Most consultations are handled by the Regional Offices. But if the issue cannot be resolved, it is bounced to the next level -- the Washington Office. At OES, the Management Operations Branch tries to resolve project-species conflicts. The taxonomists who list species (and who probably know the most about their needs) are often excluded from participating in the consultations. It is possible that they are perceived within the agency as extremists unlikely to modify their original definition of critical habitat. In any case, if OES cannot resolve the conflict, it is bounced higher into the FWS and the Department of Interior. The highest level is -- de facto -- the Congress, which can resolve a conflict by exempting a project from the Act's requirements (as it did, for example, when it exempted the Alaskan oil pipeline from the requirements of NEPA).

The higher in the hierarchy that the dispute goes, the greater the likelihood that compromise will be achieved. At higher administrative levels, the preservation of endangered species is less important as an operational goal because fewer scientists participate in the decision and other goals take precedent. Values and professional norms vary at different levels of agencies. Higher levels have broader agendas. In addition, the higher the controversy rises in the bureaucracy, the greater the political cost incurred by the administrators and their appointed and elected bosses if resolution is not achieved. Hence, the hierarchical structure results in significant pressures to resolve controversies internally as issues rise in the system.

In practice, this vertical resolution network has an extremely good record of resolving conflicts through negotiation. The FWS finds it

difficult to document the 4,500 figure (their early estimate of the number of interagency consultation in fiscal year 1977). The figure includes brief telephone calls as well as formal consultations. No record was kept of informal consultations prior to January 1978 when final Section 7 regulations were issued. Researchers from Wayne State University Law School were able to document 215 interagency communications up through the end of fiscal year 1977.[33] Of these, two-thirds had been resolved by determining that the project would not adversely affect the species. In many of these cases, resolution was achieved through "research, consultation and considerate weighing of modifications and alternatives:"

> "Amongst the range of projects in which reconciliation of species conflict occurred through project modification were pipelines, airports, channel dredging, nuclear plant thermal discharges, forest management plans, pest control projects, sewage treatment plants, highway construction, coal mines, bombing ranges, and dams.
>
> "The modifications ranged from original design modification, alternate site location, to changes in the specific nature of the project such as lengthening a discharge pipe to avoid a species population, or seasonally modifying flight patterns. Agreed to modifications also include protective measures such as fences, or barriers around populations, increase in safety techniques, and enhancement of species habitat.
>
> "Six additional projects in which there was a potential conflict were abandoned by the construction agency, only one of these being a case which was abandoned because of the presence of an endangered species. This was a project to expand the hours and bag limits for the Bosque Snow Goose in New Mexico. ... All of the other abandonment cases occurred for a variety of financial and administrative reasons. None of which was based strictly on the endangered species conflict."[34]

The remainder of the documented cases (one-third of the 216) were still on-going. The Wayne State group reviewed them and concluded that none was irresolvable: "For nearly all of the projects there is a past example which presents a readily available alternative." The group finished its study by concluding that all of the on-going conflicts could be resolved if there was good-faith interagency communication early on in the process.

There is the possibility that the Wayne State data was biased since

one of the law professors was the counsel for the plaintiffs in the Tellico case. Other good overall data is hard to come by. The Army Corps of Engineers put together a list of 26 projects/permits that had been successfully modified so as to allow the projects to go ahead without harming an endangered species.[35] The modifications were in many cases minor -- disposing of dredge material in a different location, completing construction prior to nesting season, development of strict boating regulations, etc. Others were more costly such as screening intake structures and disposing of dredge materials at more distant locations. In a separate list of 83 on-going cases where project-species conflicts were likely, almost all were expected to be resolved without having to terminate the projects or permits -- four of the permits were expected to be denied. In testimony before the House Committee on Merchant Marine and Fisheries, representatives of both the Defense Department and the Forest Service stated that they could work out conflicts with endangered species, and that no amendments were needed to provide for exemptions to the Act.[36]

While these executive agencies have to follow the administration line (which at that time was in support of the ESA), case material indicates that negotiated compromises are the normal course of interagency action. Consider, for example, the case of the Bachman's warbler which lives in South Carolina's I'on Swamp, 4500 acres of the Francis Marion National Forest. The Forest Service (FS) was planning to clear the swamp and sell the timber. Several individuals in the Charleston area learned of the plan and asked the National Wildlife Federation (NWF) to intervene. NWF brokered a meeting and set-up a three-member arbitration panel, consisting of experts from the FS, FWS, and the Wildlife Society. The panel held hearings, made on-site inspections, and ultimately issued a report recom-

mending areas where timber harvesting should and should not be allowed. According to the NWF's counsel, all parties were satisfied: Timber was to be harvested and the warbler's habitat was protected.[37]

Cases of negotiated reconciliation are numerous: The case of the whooping cranes versus the Grayrocks dam, reservoir, and associated power project was nationally-publicized.[38] In one corner: the whooping crane -- a national symbol of an endangered bird. In the other corner: the $1.6 billion Grayrocks dam, supplying cooling water to a massive coal-fired power plant that would service 2 million electricity consumers in eight states. The plant would reduce the flow in the Platte River and thereby affect an area used by the cranes for mating and resting some 275 miles downstream from the project. The National Wildlife Federation and the State of Nebraska filed suit to stop the project and won a temporary injunction in October 1978. The headlines bemoaned another Tellico situation -- except here the culprit was not an obscure fish, but was a graceful bird that had for years captured the spirit and imagination of the American public.

The conflict at first appeared unresolvable, but was worked out in an out-of-court settlement between NWF, the Missouri Basin Power Project, the Army Corps of Engineers, and the Rural Electrification Administration. The settlement guaranteed a minimum water flow and established a trust fund to buy water rights and additional habitat for the cranes. The consultation procedure had risen to the top of the administrative hierarchy. The Secretary of the Interior released the FWS' Biological Opinion in December 1978: If the project followed the terms of the agreement, there would be no jeopardy to the crane population. In Secretary Herbst's words, "(t)ogether the opinion and the agreement provide a flexible frame-

work for the three Federal agencies to reach accord instead of facing the irresolvable conflict that many anticipated."[39]

The Dickey-Lincoln Dam case illustrates the fact that not only are individual cases negotiated politically, but political considerations also set precedent and change general policy. After a delay of several months, resolution was achieved allowing the Dickey-Lincoln project to move forward even though the project would innundate 40 percent of the known specimens of the Furbish lousewort and jeopardize another 18 percent through construction activities. The key recommendation in the FWS' Biological Opinion was that new colonies of the plant had to be established through transplantation or other means. Other provisions in the agreement were important -- acquisition of the other surviving colonies, acquisition of habitat that could be used by the lousewort, research, etc. -- but the transplant provisions were the most important.

By allowing the Army Corps of Engineers to transplant organisms to new habitat, FWS officials contradicted an earlier policy that mitigation as traditionally conceived was not allowed under the ESA. In mid-1977, Keith Schreiner, Manager of the Endangered Species Program, asked the Interior Department's Solicitor for a legal opinion as to whether mitigation -- acquisition of replacement habitat, transplantation, etc. -- was allowed under the Act. The Solicitor responded that the Act prohibited all adverse modifications of critical habitat.[40] For a while, OES clung to this definition. But the lousewort case changed this. By allowing an agency to protect a species by propagating it away from a project in which original critical habitat would be destroyed, FWS contradicted its position on the Tellico Project. If we can replant louseworts, why not transplant snail darters to another river (like the Hiwassee)? For that matter,

is it "preserving" species to put their genetic information in a "gene bank" for future propagation? The case points to a basic uncertainty that exists about the Act's purpose: Does it protect endangered species or critical ecosystems?

Even in the most extreme (and presumably irreconcilable) cases -- those that went to court -- achieving both project objectives and endangered species preservation has been possible. In the Mississippi sandhill crane case, for example, the U.S. Department of Transportation can satisfy the Act's requirements and finish Interstate 10 in southeast Mississippi by purchasing land around the controversial interchange to preclude its development: DOT will purchase 1840 acres at a total cost of $4 million (although some of this is in highway right-of-way that would have been purchased anyway). In the snail darter case, it now appears that the original goals of economic development can be better served by maintaining the Little Tennessee River as a river, foregoing reservoir development.[41] The snail darter will be preserved along with the river. In all these cases, negotiated settlements are possible if the parties want to and are able to negotiate.

In summary: Delay has been used repeatedly in the implementation of the ESA as a strategic response to political controversy. Implementation has not been aggressive and has certainly softened the prohibitive nature of the statute. Scarce staff and information, and huge amounts of technical uncertainty foster enormous opportunities for the exercise of administrative discretion. Finally, because implementation takes place in a politically-charged environment, the opportunities for discretionary judgment and the need to cope with scarce resources lead to negotiation even though the statutory prescription seems to rule it out.

NOTES TO CHAPTER 6

1. 108 Science News (6):95, August 9, 1975.

2. See diagram in Appendix F.

3. 8 Ecology USA (7):49, April 9, 1979; also see U.S. Congress, Senate, Committee on Environment and Public Works, 1978, p85.

4. The number of outstanding listings were compiled according to the year that they were proposed. The data includes all proposals that were not resolved by September 30, 1978:

Year Proposal Initiated	Numbers of Species Proposed for Listing, But Never Finalized (Listed or Rejected)	
	Animals & Plants	Animals
1974	0	0
1975	53	8
1976	1789	28
1977	58	58
1978	62	62
Total	1962	156

The average number of days that these proposals were outstanding was computed by calculating the number of days between the date that the proposed listing was published in the Federal Register and September 30, 1978. These values were summed for all species and divided by the total number of species. The results are as follows:

Type	Number of Species	Average Number of Days*
Animals	156	458
Plants	1806	843
Total	1962	812

*calculated from date of proposed listing to September 30, 1978

The reader should note an inherent bias in these averages since they include proposals that on average would not be expected to be finalized by September 30, 1978. Thus many of the 1978 proposals bias the averages downward. This does not detract from the point made in the text that there are a large number of proposals that have been outstanding for a long time.

5. See Chapter 4, note 19.

6. U.S. Congress, Senate, Committee on Commerce, 1976, p21.

7. MacBryde, B., "Endangered Plant Listings, Handout", unpublished, November 2, 1977, p8.

8. Memo from Lynn Greenwalt, Director, FWS, to Keith Schreiner, Associate Director for Federal Assistance, FWS, April 12, 1978.

9. Handwritten on top of memo listed in note 8, above.

10. U.S. Congress, Senate, Committee on Appropriations, 1976, p10.

11. 43 Federal Register (146):32811, July 28, 1978.

12. 42 Federal Register (105):78052-7, June 1, 1977.

13. 40 Federal Register 31736, July 28, 1975.

14. New York Times, February 6, 1975.

15. 39 Federal Register (251):44990-2, December 30, 1974.

16. U.S. Congress, Senate, Committee on Commerce, 1976, p112.

17. Section 4(d), 16 U.S.C. 1532.

18. "Grizzly Bear Proposed as 'Threatened Species'", Department of the Interior News Release, Fish and Wildlife Service, January 7, 1975.

19. The Senate Committee on Appropriations held a special hearing on the "proposed critical habitat area for grizzly bears" on November 4, 1976 in Cody, Wyoming. See U.S. Congress, Senate, Committee on Appropriations, 1976.

20. U.S. Congress, Senate, Committee on Commerce, 1976, p107.

21. Memo from Acting Associate Director, FWS, to Regional Director, Region 2, "Houston Toad Critical Habitat", December 7, 1976.

22. Letter from Robert A. Thomas, Texas A&M University, to James Johnson, FWS Regional Office, Region 2, December 16, 1976.

23. Memo from Acting Regional Director, Region 2, to Director, FWS, "Reply to Comments on Proposed Critical Habitat for the Houston Toad", December 20, 1976.

24. 42 Federal Register 27009, May 26, 1977.

25. See, e.g., Houston Post, June 17, 1977; Houston Chronicle, June 22, 1977.

26. NBC "Weekend" show, broadcast on January 7, 1978; transcript reprinted at 124 Congressional Record E478-9, February 8, 1978.

27. Memo from James E. Johnson, Endangered Species Biologist, to Regional Director, Region 2, "Field Review of Proposed Houston Toad Critical Habitat", November 25, 1977, p2.

28. Ibid., p5.

29. Memo from Acting Regional Director, Region 2, to Director, FWS, "Recommendations for Houston Toad Final Critical Habitat Determination", November 25, 1977.

30. 43 Federal Register (21):4022, January 31, 1978.

31. Memo from Director, FWS, to Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior, "Briefing on Final Rulemaking to Determine Critical Habitat of the Houston Toad", January 20, 1978, p2.

32. U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p18.

33. Labelle, 1977, p3.

34. Ibid.

35. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p1125-48.

36. See, e.g., U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978a, p429,482.

37. U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p 83-4; National Wildlife Federation, Conservation News, August 1, 1977, p10-12.

38. For a more complete discussion, see Wondolleck, 1979.

39. "Whooping Cranes and the Grayrocks Dam Can Coexist, Interior Agency Says", Department of the Interior News Release, Fish and Wildlife Service, December 8, 1978.

40. Memo from Associate Solicitor, Conservation and Wildlife, Department of the Interior, to Keith Schreiner, Associate Director for Federal Assistance, "The Applicability of the Concept of Mitigation to Critical Habitat", July 19, 1977.

41. See, e.g., Washington Post, January 24, 1979.

CHAPTER 7 -- NONSTATUTORY FORCES THAT SHAPE IMPLEMENTATION

If a prohibitive statute doesn't in fact control implementation, what does? If the Endangered Species Act is not implemented prohibitively, what accounts for the way it is implemented? Why do some species make it to the list, and others do not? Policies are implemented by a network of organizations and individuals that have histories that predate enactment, and characteristics that are not determined by one piece of legislation. The character of a new program is shaped by which and how many administrative agencies participate in implementation, by how much staff and funds each has, by their past and present goals and operating theories, and by how the agencies interacted formally and informally in the past. In addition, the environment in which these agencies operate influences their behavior significantly: Which groups have supported and opposed them in the past, to whom the agencies report, what ties of allegiance exist between agency personnel and other organizations, what the opinion of the general public is and what issues are currently on the social agenda -- all influence the outcome and character of implementation.

In the implementation of the ESA, several forces stand out as most significant in shaping the behavior of the administrative agencies: Resource constraints, conflicting organizational goals, and bureaucratic and scientific conservatism are internal factors that tended to resist change and slow down implementation. External pressures provided by advocates, constituent groups, and judicial and legislative sources in large measure controlled what products finally came out of the administrative system. Both sets of these factors mold the outcome of statutory prescriptions; they help to explain why policy outcomes often differ dramatically from statutory goals and why prohibitive policy is not implemented prohibitively.

This chapter will first examine the nature of the institutions that have a formal role in implementation. Then it will look at pressures arising from outside the formal system.

INTERNAL FORCES

Resource Constraints

One conclusion of almost all program evaluations is that there were inadequate staff and funds to do the job. Rarely are appropriations up to authorized levels. Rarely is there staff to do everything that should be done. Most program administrators point to the basic lack of resources as their central implementation problem. Both FWS and NMFS bemoaned their lack of staff and money repeatedly.[1] In 1976, FWS estimated that it needed $30 million annually (compared with $7.5 million in appropriations) and a staff three to four times larger than it had to implement the Act at an optimum level.[2] NMFS claimed that it needed funding at least at a doubled rate.[3]

In fact, while they are a good starting point to understand what kind of problems occur in implementation, resource limitations are often oversold as an explanation of implementation failure. By arguing that resources are inadequate to do the mandated job, agencies deflect real criticism: "Personnel ceilings are just too tight." "The agency has higher priorities than this program." "It's OMB's fault What can we do?" The resource scarcity argument is effective since it requires only a demonstration of inadequacy to continue at an increased level; incompetence gets rewarded; aggressive, effective action is penalized.

Funding was a minor problem in the endangered species program. The average FWS request for funds to the Department of Interior over the five year (fiscal year 1974 to fiscal year 1978) period was about $9.5 million.

This corresponded quite closely to the statutory authorization under the ESA. The Department of the Interior's request to the President, the President's request to Congress, and the Congressional appropriation averaged about $7-3/4 million -- 20 percent less than the FWS request. While this was a problem, staffing was a more significant one.

It is not necessarily clear, however, that more staff implement better. The administrative record of the endangered species program did not improve in direct relation to the number of staff added after passage of the 1973 Act. Indeed, often a large staff is counterproductive. With large staffs, more attention must be spent on organizing. There are increasing problems with accountability and with controlling what goes on within the agency. Even with a scientific staff of eight in an agency with a history of organizational loyalty, Keith Schreiner had significant problems maintaining control of the flow of information from the office. At least one of his biologists regularly leaked material to environmental groups and to the media -- information and anecdotes that turned up later in newspaper columns and accusatory letters from Capitol Hill.

In studying the implemention of an Economic Development Administration program in Oakland, California, Pressman and Wildavsky were amazed at the sheer number of "decision points" in the system -- places where delay and potential program failure could occur.[4] In many ways, the staff size argument mirrors their observation. The more staff, the more organizational levels, the greater the number of components involved in implementation -- the greater the opportunity for delay and inadequate implementation. This statement is somewhat counterintuitive and not absolutely true. In the ESA case, however, generally the speed of implementation declined as the number of actors involved in the process increased. This is not to argue that a

lack of resources is not a problem; of course it is. Some staff and funds are necessary but are certainly not sufficient to guarantee effective implementation. Other factors appear more important in explaining the character of implementation.

The Match Between Organizational Goals

The influence of the multiplicity of components comes less from their sheer number than from their disparate goals and histories. When new programs are started, existing sets of individuals or groups are usually tapped and given the responsibility to implement the program. Either a new activity is absorbed into the existing agenda of an established group, or established individuals are reformed into a new group whose agenda includes the new program.[5] Construction of totally new organizations out of totally new individuals is extremely rare.[6] Recruitment of new individuals into established organizations occurs to meet the staffing demands of new program activities but usually the recruits enter at a low level in the structure. In general, new programs are made of old parts.

"You can't teach an old dog new tricks," says the adage. While you probably can teach an old organization new tricks, chances are that it will perform them much the way it has always done things. Individuals and organizations have goals and traditions that hinder new programs. Individuals in bureaucracies strive to achieve rewards that are defined by the disciplines or professions they belong to, or by the organization itself. Organizations develop traditions about how things are done and what is important; these become norms to guide individual behavior. Networks of groups of individuals and organizations form through time and serve to structure inter-group and inter-agency behavior.

When a new program (a non-incremental policy prescription) is born, it

enters an extremely hostile environment.[7] From the first legislative slap on the policy's bottom to its burial some years later, the new program is brought up by guardians who may care very little about the infant program. Or, they may care about it, but don't quite understand it. An organization already has an agenda. Non-incremental programs may simply get placed well down on it. More commonly, they are administratively redefined to fit the priorities and perspectives of the existing institutional network. Furthermore, because new programs may require the interaction of a number of organizations -- many of whom have conflicting goals -- the new program may encounter antagonism based on a history it had nothing to do with. Hence, not only is there a clash of new and old, but there is also a continued clash between old and old.

If there is one conclusion that shines out from the list of institutions involved in implementing the ESA it is the limited number of groups who really care about the preservation of endangered species. Table 7-1 identifies the central goals and traditions of the key organizations that participate in the implementation of the ESA. Of a large set of actors, only two have preservation as a significant organizational goal -- the OES-Biological Support Branch and the preservation-oriented environmental interest groups.

OES - Biologists

The eight members of the Biological Support Branch are scientists first, and bureaucrats second. Seven out of eight have Ph.D.'s. Five out of eight came directly from the academic world to the OES. They include two mammalogist and one of most other specialities -- a herpetologist (reptiles and amphibians), an ornithologist (birds), an ichthyologist (fish), an entomologist (insects), a botanist (plants), and a malacologist (molluscs). In

Table 7-1: The Goals and Operating Theories of the Major Actors Involved in the Implementation of the ESA

Organization	Goals or Operating Theories
OES- Biological Support Branch	preservation, (scientific research)
OES-Management Services, Chief	bureaucratic, (preservation)
Fish and Wildlife Service	bureaucratic, conservation-game management, (preservation)
Department of the Interior	bureaucratic, resource development, conservation
NMFS - Department of Commerce	bureaucratic, commercial and sport fisheries, economic development
Federal Development Agencies: TVA, ACOE, FS, HUD, DOT	bureaucratic, resource development, economic development
Scientific Community	research, financial support, systematics collection, (preservation)
State Fish and Game Agencies	game animal management/production
Interest Groups (continuum typified by:)	
Funds for Animals, Environmental Defense Fund	preservation, anti-development projects, anti-hunting
National Wildlife Federation National Audubon Society	conservation, preservation
Wildlife Management Institute, International Association of Game and Fish Commissioners	conservation, game management
Safari Club International, Pet Stores	hunting, commercial exploitation
Chamber of Commerce, Labor	economic development

contrast to almost everyone else in the formal set of implementing organizations, the biologists are by in large not career bureaucrats. Their allegiance is to scientific research and to the preservation of species within their taxonomic specialities. They interact more often with individuals in the scientific community than they do with bureaucrats within the Federal government. Many also have fairly close ties to environmental interest groups. Disciplinary norms are more important than organizational norms. These experts perceive themselves as species' advocates -- as the guys with the white hats. They do more to publicize the plight of endangered species than any other segment of the formal institutional network. They are generally young and resent the bureaucratization of their scientific decisions.

Nor are their motives entirely pure. Most perceive themselves as environmentalists and are opposed to development projects that, for example, impound rivers. They talk of the snail darter - Tellico Dam conflict: "The snail darter is irreplaceable. I can't set a value on a species. But that's a bad project anyway. It would dam the last free-flowing river in East Tennessee." Sierra Club posters and environmental advocacy literature abound in their offices. On one door, a cartoon is posted depicting a fat TVA bureaucrat resting on an inner tube on a lake with a ferocious open-jawed snail darter rising from the depths to attack in a voluminous but sensitive area.

Biological judgments are weighted by these private values. For example, many of the staff will contend that the malacologist was overzealous in listing species because he was opposed to dam projects. A similar controversy raged around the proposed listing and critical habitat designation for the Cahaba shiner and goldline darter which survive in Alabama's

Cahaba River. The proposals were based largely on the recommendation of the staff ichthyologist, Jim Williams, a former Chairman of the Alabama Conservancy, an environmental interest group. Development interests alleged that Williams was privately opposed to development along the Cahaba River, and let his personal values influence his professional judgment. The Birmingham Area Chamber of Commerce funded two other ichthyologists to survey the range of the species; their data contradict some of the information in the proposal.[8]

OES - Managers

The biologists' interest in advocacy sometimes brings them into conflict with other segments of the OES whose staff are bureaucrats first and environmental advocates second. They are lawyers and wildlife resource managers, lacking the unifying professional norms that the scientists hold. They perceive organizational goals much more clearly than do the biologists. The managers interact primarily with other bureaucrats -- in the FWS hierarchy, in the Regional Offices, and in other federal and state agencies.

As a result of the difference in traditions, norms and goals, there is a noticeable schism between the biologists and the managers. In their downtown Washington office, the biologists sit in a bank of offices on one side of a receptionist, the managers sit on the other. Their territories meet at the xerox machine. The scientists resent the resource management and bureaucratic orientation of the managers. "They slow things up. We make decisions on biological grounds. Politics enter into the decision after the listing packages leave our hands." The managers resent the scientists' lack of allegiance to the organization and distrust their motives. The scientists contend, for example, that they are routinely kept

out of interagency consultation negotiations. For example, Bruce MacBryde, the staff botanist, was not included in most of the discussions held with the ACOE over the Furbish lousewort issue.

The management-scientist schism is seen most clearly in a reorganization plan proposed by Keith Schreiner, the Program Manager, in 1976. He proposed to transfer the biologists into a research section, and to have them give their data to the managers who would take it from there. It is not clear what Schreiner's motives were -- to make the process work more effectively, or to establish more control over the program. Regardless, critics argued that this would insulate the scientists even further from the decision-making process and would work to the detriment of the endangered species.[9]

The FWS Hierarchy

The basic dichotomy between science and management is sharper in the relationship between OES and the rest of FWS. At least everyone in the OES has a common mission in that they comprise an office that only implements the endangered species program. Everyone was ready to pass out champagne to celebrate the Supreme Court decision in favor of the snail darter. Other groups at FWS were not as exuberant, however. The FWS is a fairly old organization. It has been around in some form or another since 1940.[10] It has very good vertical integration, controlling line operations extremely well.[11]

The goals of the FWS are game management and bureaucratic. Its tradition is one of conservation -- utilization of resources "for the greatest good of the greatest number..."[12] The Service's historic constituency are hunters. Through the use of duck stamps and similar programs, hunters have paid for most of the land acquisition programs for refuges;[13] thus, on equity grounds, they are seen as being an appropriate constituency for the

FWS. FWS used to be called the Bureau of Sport Fisheries and Wildlife -- an indication of its game management orientation. Hunting and other uses are allowed on National Wildlife Refuges. Data gathered by a task force of ten environmental groups, for example, indicated that in one year, "787,000 animals were killed on wildlife refuges, 800,000 pounds of pesticides were dumped on the land, 19-million board feet of timber were removed, and 1,437,097 acres were devoted to commercial agriculture."[14]

The notion of preserving things for their own sake is quite different from the traditions of conservation. Use is not central or even necessarily possible. The conservation-preservation split is matched by the split between the scientific and management perspectives. The FWS draws its staff from wildlife management departments in state universities, departments established in large part to provide staff to grow game animals to be hunted by state residents.

The combination of differing perspectives, goals, and traditions -- preservation versus conservation, science versus management, and academic identification versus organizational allegiance -- significantly isolates the endangered species program from the FWS mainstream. The location of the OES six blocks from the huge Interior Department complex is a metaphor for its satellite status within the organization. "We're viewed as not having come up through the ranks, as being starry-eyed idealists," said one OES staffer. "The land management types probably think that the mission of the office is childish. We have to watch our image. For example a botanist in Denver was told not to use her Ph.D. on correspondence. I worry about my image -- wearing rimless glasses is perhaps too academic an image."

The mainline FWS doesn't quite understand the endangered species staff.

Further, they may resent the program because it has been politically-controversial and has occasionally cast the agency in an absurd light. In addition, other program areas in the FWS work towards opposite goals. For example, the Animal Damage Control (ADC) group ("gopher-chokers" according to an OES biologist) poisoned prairie dogs (and killed black-footed ferrets in the process) while at the same time the endangered species program was trying to breed ferrets.[15] Indeed, it appears that occasionally the FWS goes overboard in controlling depredation. For example, a recent court decision enjoined the FWS from trapping the threatened eastern timber wolf except on lands adjacent to and within a quarter mile of privately-owned lands on which significant depredation has occurred.[16] The Fund for Animals had taken FWS to court, claiming that the agency was overdoing its damage control program. Since 1975, the killing of a domestic animal by wolves was confirmed in 17 cases; in the same period, FWS had killed 151 wolves. The court reasoned that, "(o)bviously it did not take 151 wolves to kill 17 cows, so one must conclude that some of these wolves ... were not actively engaged in livestock depredation."[17]

The Regional Offices reflect the traditional orientation of the FWS. Their primary activities focus on wildlife and fisheries management. Endangered species is an extremely small item on their agenda. For example, the New England Regional Office's (Region V) fiscal year 1977 budget was almost $28 million. Less than 2 percent of this budget went to support endangered species work. The regional staffs are by in large career people with strong ties to the state game management agencies. Endangered species expertise is fairly limted. One OES staff member described the relationship between the endangered species staffs in the Washington and Regional Offices as having "built-in tensions." They are directed by different individuals.

OES has Schreiner; the regions have their Regional Directors. The goals set by these leaders may be very different. Hence the staffs may step to different drummers. Indeed, the staff members interviewed in the Region V headquarters were weaker in their defense of the ESA's absolute mandates than were the biologists in the Washington Office: "There is no doubt that if it comes down to a big project versus a little species, the project will win ... We have to try to be reasonable about what information we request ... The Fish and Wildlife Service is a little agency. You have to realize that the endangered species budget in the Regional Office is only $500,000 ... One Corps project is bigger than the entire budget ... Fish and wildlife is not a priority item."

The disparities between organizational goals, norms and traditions becomes important because the FWS hierarchy plays a critical role in implementing the ESA. It is the Director of the FWS, not the Chief of the OES, that has administrative authority to act on behalf of endangered species. Listings, critical habitat designations, and regulations flow from the OES through the FWS. Beyond this formal role, the FWS hierarchy plays an important function in building program constituency through public relations efforts and in dealing with Congress. Several of the OES staffers felt that the agency had let them down in responding to the media attacks pitting the "insignificant" snail darter against the "valuable" Tellico dam. In another example, even though the FWS was publicly against an amendment to the Act in 1978, top management privately agreed to the review committee-approach eventually adopted by Congress. It is of course natural for the commitment to endangered species to weaken as you move up the administrative hierarchy since the actors on the top suffer far more from the effects of political controversy than do lower level staff.

Department of the Interior

Further away from the Office of Endangered Species, the missions and priorities of agencies that play a formal role in the implementation of the ESA are even more distant from the preservation goal. The FWS is a component of the Department of the Interior. The buck stops on the Secretary of the Interior's desk: In especially controversial cases, the Secretary reviews and okays program activities. In the Tellico case, for example, Secretary Andrus was actively involved in seeking resolution of the controversy. The Department of the Interior's mission, however, is natural resource development and exploitation. Its traditional constituencies are mineral developers and livestock grazers, recreationists and farmers of irrigated land. Vast land areas are managed and leased for commercial use. The Bureau of Land Management (BLM), for example, controls over 450 million acres in the public domain -- 62 percent of the total federal land area.[18]

The notion of preserving -- of setting aside chunks of the public domain -- angers the Department of Interior's constituents and is alien to the agency staffers. Environmentalists have claimed for years that agencies like the BLM and the Bureau of Reclamation have worked against environmental goals and are captured by development interests. Indeed, the CEQ complained to the Chairman of the House Subcommittee on Fisheries and Wildlife Conservation and the Environment that "some federal land management agencies, particularly the Bureau of Land Management, have not made a sufficient effort to regulate activities such as off-road vehicles that are detrimental to critical habitat."[19]

Department of Commerce -- National Marine Fisheries Service

Other conflicts between organizational goals appear as additional federal agencies are brought into the picture. NMFS has the largest formal

role in implementation outside of the Interior Department. As co-lead agency with FWS, NMFS presumably would have at least the same commitment to endangered species preservation; but the evidence indicates otherwise. NMFS, located within the Commerce Department, is largely concerned with the development of commercial fisheries. At one time, NMFS was called the Bureau of Commercial Fisheries when it was located in the Interior Department. The Commerce Department is obviously concerned primarily with economic development.

In 1973, there was much controversy over the proposal to designate both Commerce and Interior as lead departments for the ESA. Environmentalists were outraged:

> "Many conservationists do not always trust Commerce, since one of the department's chores is to promote fishing interests. It is widely known, for example, that the department fought the placing of several species of whales on the government protection list.
> "Conservationists and Interior officials also say that giving Commerce joint jurisdiction puts it in the conflicting position of promoting the tuna fishing industry which, government sources claim, is killing between 250,000 and 400,000 porpoises a year. Porpoises are not on the endangered species list."[20]

The Fund for Animals claimed that NMFS had prepared reports showing that one species of dolphin (porpoise) might be reduced 30 to 80 percent by the tuna industry and that another species would probably not survive the additional pressure.[21] FFA claimed that NMFS would not list the species because of pressures from the tuna industry.[22]

While some argued that Commerce should get a role in administering the Act because NMFS had extant scientific expertise in marine fisheries, the Draft Environmental Statement prepared for one of the pre-Act bills indicates a different motive:

> "Joint jurisdiction over enforcement of the proposed legislation will provide a mitigating measure in that the interest of commercial fisheries and other areas within the jurisdiction of the Department

> of Commerce will be represented and protected. Regulation and management of certain species by both Departments will result in consideration for those commercial interests centered around the taking of them."[23]

The director of the office in which the NMFS endangered species program is carried out does not argue about the agency's orientation towards commercial interests: "NMFS is primarily involved with commercial fisheries. The Endangered Species Act and the Fish and Wildlife Coordination Act of 1976 are very difficult for us to implement." In response, NMFS has taken a research orientation to its endangered species program. It tries to work around potential conflicts by finding a technical solution prior to listing species. For example, it contracted to develop an excluder net for shrimp trawlers so that sea turtles were not caught during commercial fishing operations. NMFS believes even more strongly than FWS that species should be managed, not preserved. "We prefer to list species as threatened rather than endangered because it allows for more management of the species."

The conflict between the organizational goals of NMFS and FWS have led to significant delays in implementation. OES staffers are more explicit: "NMFS just sits on its ass and bitches." In NMFS' eyes, however, FWS is overzealous. Indeed, NMFS staff claim that FWS' efforts to oversee all endangered species activities is "empire building" at high levels. "We should have full authority over marine species; they spend 99 percent of their life in the sea. Besides, we have the marine research laboratories and vessels."

The conflict between NMFS and FWS is most clearly seen in the sea turtle case. Two species of marine turtles were proposed for listing by the Department of the Interior on December 26, 1973.[24] In the news release that accompanied the proposal, Interior stated that green turtle

"stocks in the Caribbean, once believed to have numbered at least 50 million, now are estimated at less than 10,000. Reproductive potential may be destroyed in the near future if present harvest levels are maintained."[25] But the enactment of the 1973 ESA rendered the proposal obsolete. The turtles were not listed until July 1978 -- four and a half years later.[26]

The delay came primarily from a jurisdictional conflict between NMFS and FWS which was an outgrowth of the conflict between their organizational goals. NMFS favored exemptions from the taking prohibitions for commercial mariculture and for incidental catch by commercial fishermen; FWS did not.

The Interior Department was petitioned in April 1974 to list the green sea turtle as endangered and the loggerhead and the Pacific Ridley sea turtles as threatened.[27] NMFS and FWS signed a Memorandum of Understanding (MOU) outlining their jurisdictional responsibilities under the Act in August 1974, but left the allocation of responsibilities over marine turtles unresolved.[28] A joint FWS and NMFS proposal to list all three species was published in May 1975.[29] The turtles then became mired in turf claimed by both Commerce and Interior.

After the proposal was published in the Federal Register, NMFS decided to grant the petition of Sea Life Park of Hawaii to hold a public hearing on the proposal, and decided that a draft environmental impact statement (DEIS) should be prepared. Its decisions were unilateral, violating the 1974 MOU that stated that all listing actions would be collaborative. Its motives were unclear, but appear to be a conscious effort to delay the final listing. NMFS had never before prepared a DEIS on a proposed listing. Lynn Greenwalt, Director of the FWS, responded loudly:

> "This letter is written to express my strong opposition to your proposed delay in listing three species of sea turtles as Threatened in order to hold a public hearing requested by Sea Life Park ... and

> because you consider it necessary to prepare an environmental impact statement on the listing.
>
> "We cannot agree with delaying this listing action for the possible benefit of a commercially-oriented organization which already has had ample opportunity to submit its comments in writing ...
>
> "We also oppose any delay for purposes of preparing an environmental impact statement. The existing impact assessment is biologically sound and covers the situation in adequate detail. It was jointly prepared by professionals in both of our organizations and I feel their product clearly supports a negative declaration."[30]

NMFS scheduled the hearing for December 3, 1975. Meanwhile, OES requested the opinion of the Solicitor's Office as to what could be done in case of violation of an MOU. The Assistant Solicitor replied that "(s)ince the Memorandum of Understanding does not provide a procedure to be followed in the case of violations, it must be assumed that any disagreements will be escalated to a higher level within the Executive for resolution."[31] In November, NMFS postponed the hearing until February 25, 1976. In December, it sent a draft of the DEIS to FWS. FWS commented that ninety percent of the draft was copied from materials that had been prepared by them earlier.[32] NMFS' DEIS was made available to the public in February 1976. It stated two things clearly: economic impacts of the proposal were very small ($35,000 direct impact; $85,402 indirect and induced impacts; 8.5 employees displaced); and the species were indeed threatened: "The biological data for these three sea turtles indicate that they should be listed under the provisions of the Endangered Species Act of 1973. Any failure to do so would be contrary to the intent of Congress. Also, lack of action undoubtedly would lead to a continuing decline in numbers of these sea turtles and their eventual extinction."[33]

At the public hearing held in February 1976, the presiding officer stated that final action would come around June 1, 1976.[34] But two more years of delay and interorganizational conflict remained. In the fall of 1976, draft regulations were approved by the FWS that would have given

primary authority for the turtles to NMFS. But the Interior Department vetoed the agreement.[35] At the end of 1976, all three species were added to the CITES Appendix I list.

After much debate and high-level involvement, an MOU was finally agreed upon in July 1977.[36] Jurisdiction over the sea turtles was given to NMFS when they were in the water, and to FWS when they were on land.[37] Even though the jurisdictional question was seemingly settled, important issues over what degree of protection the species should receive remained to be resolved. The central issues were (i) should the species be listed as threatened or endangered, and (ii) should exemptions be provided for mariculture and incidental catch by trawlers. The Environmental Defense Fund petitioned FWS and NMFS in February 1978 to list the species as endangered.[38] Endangered status would preclude any commercial exemptions. Finally, agreement was reached to list the species as threatened with two populations as endangered. Exemptions for commercial mariculture were not allowed; but incidental catch by commercial fishermen was exempted. Thus, four and a half years after the original proposed listing, and over a year and a half after everyone agreed the species were in jeopardy, protection was finally given.

Federal Development Agencies

Delay and negotiation resulting from the juxtaposition of conflicting organizational goals is seen throughout the interaction between FWS and other federal agencies. The federal development agencies have one of the largest roles to play in the implementation of the ESA. Since habitat loss is a prime contributor to endangerment and since these agencies contribute significantly to habitat modification, their actions determine (often in large measure) the fate of many species. Water resource projects

are some of the most extreme sources of habitat change, changing whole ecosystems. Yet these development agencies have very little incentive to worry about endangered species. Their constituencies and Congressional supporters favor the economic development and jobs that come with large-scale federal projects. Congressmen can often stay elected by delivering enough pork barrel dollars to their districts to satisfy their constituents.

By evolving measures of success that focus on getting project dollars, the multi-objective mandates that have often been given to agencies get overlooked and agencies pursue single purposes with a vengeance: TVA becomes a dam-builder and an electric utility; the Army Corps of Engineers becomes a dam-builder; the Forest Service, a lumber company; and the Department of Transportation, a road-builder. Multiple-goals have been established by federal law for these agencies. The Act that established the TVA,[39] the Water Resources Planning Act,[40] the Fish and Wildlife Coordination Act,[41] and the Multiple Use, Sustained Yield Act[42] all lay out potentially non-development objectives. But frankly, items like "enhancement of the quality of the total environment" are hard to measure. Items like wildlife preservation just don't seem to buy very much for the agencies, especially considering their historic elements of constituent support.

The Tellico Dam controversy is a good example of wildlife preservation taking a low priority in the face of conflicting agency mandates. The snail darter was discovered in the Little Tennessee River in mid-1973, several miles upstream from the partially-completed Tellico Project. TVA officials responded by first denying that it was a species, then denying that it only existed in the Little Tennessee.[43] In mid-1975, TVA staff began a transplant program to establish the species in the Hiwassee River. Numerous consultation meetings were held between the staffs of FWS and TVA,

but their content was limited to discussions about the transplantation program. The TVA leadership would not agree to consider alternatives other than transplantation until May 1978 -- after its Board of Directors had changed significantly. In TVA's mind, it was doing "everything humanly possible to conserve the snail darter" by implementing the transplantation program.[44] In case the transplant program did not work, the TVA had financed a study of the darter's life history "so that a record could be left of its existence after the closing of the Tellico Dam ..."[45]

The evidence shows that TVA did pursue the transplantation program with vigor; cooperation with the FWS was sincere. The agency would not consider changing the project, however, because of its traditions as a reservoir-builder and because of a conflict with other legislated mandates: The leaders sincerely felt that the project was responsible and effective in boosting economic development. This objective was supported by the fact that the President continued to request and Congress continued to appropriate money for Tellico construction after passage of the ESA and even after discovery of the snail darter conflict. Over $20 million was appropriated in fiscal year 1976, for example.[46] In light of this overriding goal, the snail darter did not seem very important. Nor did the Act's legal mandate seem entirely clear since the Federal District Court said that TVA had fulfilled the requirements of the law. The point is that evil intentions are not necessarily at the heart of these controversies; rather they result from conflicting organizational goals and notions of what is valuable, what is rational, and what is appropriate.

Even those federal agencies that would be expected to have traditions and goals that stress the preservation of endangered species sometimes turn up with other priorities. The Smithsonian Institution is probably the best

example. Intuitively one would think that this scientific organization would be an undying advocate of endangered species. Yet at the 1978 oversight hearings, Smithsonian officials complained about the implementation of the ESA and wondered if FWS hadn't gone too far in the protection business. The Smithsonian officials -- like most of the scientific community -- were upset about permit requirements for transporting and possessing endangered species or portions thereof: "The question of permits to take, transport, possess and even to engage in acceptable husbandry practices involving endangered species require inordinate amounts of time and effort to procure ... one wonders what the controls on already dead museum specimens actually accomplish."[47] The Smithsonian's concerns were greater than just the procedural issue, however:

> "... many scientists question how far down the phylogenetic scale the concept of endangered species should be taken. Few people question the premise that the protection of many endangered or threatened mammals, birds, reptiles, frogs, fishes, and plants is a justifiable aim. There is, perhaps, justification for the inclusion of some invertebrates. But there appears to be no working philosophy that considers where Federal protection should stop, where one reaches a point of diminishing ecological returns."[48]

On the other hand, there have been a few cases where agencies that have historically worked at ends opposed to the preservation of endangered species sought to protect them in their planning process. The Army Corps of Engineers' work to resolve the Dickey-Lincoln/Furbish lousewort conflict is a good example. The Corps was ahead of the FWS in trying to get guidelines set and work out ways around the conflict. It is certainly true that interagency negotiation is helped immeasurably by the willingness of agencies to cooperate at an early stage in their planning process. Avoiding early polarization also seems helpful.[49] It is not clear whether the Corps' commitment was to endangered species or to simply try to get rid of a

problem as fast as it could. It does not make that much difference to the species, but it does point to the significance of the court's stringent interpretation of Section 7 as an incentive to work out conflicts administratively.

Conflict between organizational goals is heightened by the fact that organizations do not necessarily have just one dominant goal or even a clear set of ranked priorities. The TVA in the past year is a good example. For years, the TVA has been primarily a reservoir and waterways developer and an electric utility. Aubrey "Red" Wagner, Chairman of the Board of Directors, had opposed any modifications to the Tellico Project since controversy broke out in the early 1970s. He adamantly refused to consider any alternative conservation programs for the snail darter other than the transplant program to the Hiwassee River. Yet, all of a sudden, when David Freeman was appointed to the Board, the agency's position began to change. For a while Wagner was saying that Tellico should be finished as a reservoir project while Freeman was suggesting that the area might be more valuable as a river and farmland.[50] Congressman Dingell compared this change in agency attitudes to the conversion of Saint Paul.[51] Yet, while this organizational schizophrenia persisted, it was hard for the FWS to take any action to resolve the snail darter issue.

Non-Federal Groups

A range of organizations outside the federal bureaucracy also have a role in implementation. The State wildlife agencies provide information, petition for changes in species' status and enforce the provisions of the Act. Over two-thirds of the states have some sort of endangered species law or administrative regulation, although most of these simply reiterate

the federal statute. Twenty-two states had signed cooperative agreements with FWS by the end of 1978.[52]

The state agencies, whose historic constituency is hunters and fishermen, are by and large game animal agencies. Their professional traditions are those of conservation and management of wildlife to produce a huntable surplus. Most of their programs are financed principally from hunting and fishing license fees. The orientation towards game animals is pervasive.

The states were not given a larger role in the implementation of the ESA because of the fear of their game animal-bias.[53] Indeed, at the time of the Act's passage, the Congressional Research Service compiled data showing that 34 states still had bounty laws -- laws which either enabled lower jurisdictions to pay hunters for killing specific animals or that established state programs to do the same. Nineteen of the state agencies were themselves empowered to pay bounties ranging from $100 per mountain lion in Arizona to 3¢ per starling in Michigan.[54] Some of these bounty programs ran directly counter to the interest of endangered species. Wolf bounties are the best example: Sixteen states offered or authorized bounties on wolves. Other protected species were affected as well, however. For example, Oklahoma offered bounties for prairie dogs (which affected the black-footed ferrett, as described above).

The attitudes of state agencies towards preservation ranges from mild support to outright hostility. Generally, if species are small, non-game, and not in conflict with other interests, the states support them. The protection of game or predatory animals, or those in conflict with other interests usually finds few proponents at the state level.[55] An extreme view of the states' attitudes is held by many environmental groups. For example, in the 1973 hearings, Tom Garrett of the Friends of the Earth,

stated that in Wyoming, "there is a bitter joke going around in the last few years, that the state game and fish commission would continue to sell hunting licenses to out-of-Staters after the last mule deer were gone from the State."[56]

Nor is the scientific community overwhelmingly preservationist. Their goals of scientific research -- experimentation and collection -- do not necessarily coincide with protection efforts. Overutilization of species for laboratory animals is a significant contributor to many species' decline. For example, 26 primate species were added to the list in 1976 in part due to the threat from biomedical research.[57] An additional species, the squirrel monkey, had been proposed earlier along with the 26, but opposition and data from the biomedical establishment caused the Service to postpone a final determination on the species. No further action was ever taken.

The scientists hate the permitting procedures. As the Smithsonian representative indicated above, it takes time and energy to comply with the government regulations. Further, since the scientists are usually the experts that are called on to make recommendations about the status of species, their "technical judgments" can be affected by other motives. This can work in several ways: Some scientists see the species they study as very special and hence are over-protective. Indeed, addition to the list makes some extra government funds available for research -- a significant incentive since one of most university researchers' central goals is to capture funds to carry on their research. On the other hand, the endangered classification makes it difficult to obtain new research specimens. This limitation can lead to misleading and potentially-harmful effects. For example, the OES malacologist noted that the contractor who was determining the status of the Nashville crayfish felt that it was endangered, but

recommended threatened status so that he would not have to get a permit to collect it. At the extreme, scientific motives can be no better than those of trophy hunters. Horror stories abound at the OES: There is one about a species with only a few surviving individuals; a researcher went to capture and stuff them so as to have them in his collection.

Even environmental groups that advertise themselves as preservationists sometimes have mixed motives. These groups sometimes sponsor trips in search of the great whales or the mountain gorilla who would be much better off without any human contact.[58] In addition, the species may suffer from a backlash effect. The use of the ESA as a lever to stop the Tellico Project is a good example. The groups that brought suit were interested in stopping the project, not really in protecting the snail darter. Their single-minded pursuit of their goal brought changes to the ESA that weakened it somewhat.

In the context of all of these conflicting organizational goals and traditions, it is really quite amazing that preservation stands a chance. There are no traditional incentives that encourage anyone to advocate species preservation, since endangered plants and animals do not vote or buy things. Leadership certainly affects organizational goal-setting. The change in TVA's attitudes is proof. Yet inertia is difficult to overcome. Even in well-integrated and controlled organizations like the Forest Service and FWS, it is very difficult to modify attitudes, norms and traditions that have been instilled for years.[59]

Scientific and Bureaucratic Conservatism

Beyond the conflict between goals, another force significantly colors and molds the character of implementation: Most social institutions are conservative. Conservatism is a philosophy whose central goal is maintenance of the status quo: Change is resisted. In the case of the ESA, conservatism

comes in two forms -- scientific and bureaucratic. It has worked against agressive implementation of the provisions of the Act. This is ironic because preservationists are inherently conservative as well: In preserving endangered species, the apparent status quo is maintained.[60]

Scientists seem to be professionally conservative.[61] Part of this is from a fear of being wrong in the face of professional rewards and norms that punish erroneous judgments. Beyond this, the awareness of options and uncertainty that comes with knowledge leads one to avoid making decisions or firm statements simply because decisions that appear to the layman to be black and white, are really quite gray. The experimental method extends this: In pursuing hypotheses, there are always other experiments or possibilities that "should" be examined. The "hypothesis trees" rarely end in certainty.

Scientists also believe that they have a responsibility to avoid making decisions that appear to be arbitrary, or based on personal values or other non-scientific considerations. To guard against this perception, scientists opt to try to reduce the uncertainty in their decisions. In practice this means more information -- more data, more experiments, more research. In House hearings, for example, Lynn Greewalt, Director of the FWS, commented that, "(b)iologists never know enough to be utterly comfortable with things they are asked to do."[62] The result is that they wait -- for more results and information. "Biologists always want more and more information," commented one NWF biologist.

Scientific conservatism results in delay. In the ESA case, it has resulted in increased jeopardy to a species. Take the Mississippi sandhill crane case. The population of forty birds could easily have been destroyed while the taxonomists worried about scientific procedures. In the 1960s,

there was some question as to the appropriate taxonomic status of the crane. A 1964 BSFW memo described the bird's status as follows:

> "The resident sandhill cranes formerly occupying south Louisiana, Mississippi and Alabama have not fared so well. Whether or not these birds are the same race as those in Florida, they are certainly endangered -- to the point of almost complete extirpation except for the small colony in Mississippi presently estimated at between 10 and 25 pairs. If the Bureau has any desire at all to preserve and restore the remnant colony of resident cranes in Jackson County, Mississippi, consideration should be given to acquisition of land in that area. Without acquisition of sufficient habitat, this Mississippi colony cannot survive."[63]

In spite of this dire estimate, action to protect the population did not come for almost a decade. After enactment of the 1969 Act which broadened federal protection to include subspecies, the Atlanta Regional Office tried to get the Washington Office to buy refuge land to protect the cranes. The problem was that in order to use Land and Water Conservation Fund (LWCF) monies to acquire habitat, the crane had to be on the endangered list. But even though everyone agreed the population was a distinct subspecies, it had not yet been appropriately classified according to taxonomic rules. In response to pressures from the Regional Office, John Aldrich, the staff specialist who was the expert on the cranes, wrote:

> "I would like nothing better than to describe the Mississippi population of sandhill cranes as a distinct subspecies which could then be put on the Secretary's list since there is not doubt that it is endangered. Unfortunately, however, adequate specimen material to make this determination apparently does not exist ... Of course there is a temptation to base a description on only the present living captive birds. This would not be a safe procedure since there is no assurance that these birds will be preserved later in a condition which will demonstrate the diagnostic characteristics, and it is quite doubtful that a diagnosis based on such material would be acceptable by taxonomists."[64]

An "adequate specimen" did not appear for over a year. In November 1971, an adult crane died due to a leg injury. At about the same time, the BSFW's Land Acquisition Advisory Committee corroborated the earlier decision about use of the LWCF: It would hold off acquisition activities until the

crane was placed on the list.

Another seven months went by. The Director of the Regional Office wrote to Washington to express his frustration with the process:

> "We are discouraged about the seemingly endless roadblocks that continue to prevent positive action for saving these birds. While we are going through the artificial mechanics of surmounting each required hurdle, the remaining habitat which is essential to the bird's survival is rapidly disappearing."[65]

Indeed, the Regional Director's memo indicated that the Nature Conservancy, a preservation-oriented environmental group, had indicated an interest in helping to acquire land to preserve the crane's habitat. Since the Conservancy only acquires land as an interim measure, the Regional Director had to pass up the offer since the BSFW could not make a commitment to buy it in the future.

In a note to the files, Gene Ruhr of the Washington Office clung to the need to follow established taxonomic procedure:

> "Dr. Aldrich has long suspected that the Mississippi sandhill and Florida sandhill are actually separate and distinct subspecies. It remained for him to confirm and publish a description of the Mississippi subspecies to make the classification an accomplished fact. This winter he acquired an acceptable specimen of the Mississippi bird from Patuxent's flock, and he has written that description. It has not, however, yet appeared in print. As frustrating as it may be to wait for publication of such taxonomic changes, we find it an essential shield against excessive splitting based upon the opinion of many a "fly-by-night" taxonomist. We accept any description that has withstood the technical and editorial scrutiny received during the scientific publication review process, but we believe the evidence should also withstand the judgment of others after it appears in print."[66]

Aldrich finally published a formal description in August 1972.[67] While this ended the taxonomic question, it still took nine months before the subspecies was added to the endangered list.[68]

The effects of scientific conservatism are aggravated significantly by bureaucratic conservatism. Many analysts have commented that bureaucracies are inherently conservative -- that they act cautiously and attempt to

preserve the status quo. Large organizations try to conserve energy by defining narrow yet consistent rules and relationships. All organisms -- biological and bureaucratic -- seek stability as a goal. To attain it, one wants to increase predictability and decrease the uncertainty associated with everyday activities. Narrow niches and well-ordered relationships and operating procedures do this. Large institutional networks become dependent upon these procedures. It makes sense: Without a "way of doing things," each decision becomes chaotic involving inordinate amounts of energy and time.

Bureaucracies thus attempt to classify actions into what Simon calls programmed decisions.[69] These are routine, repetitive decisions with a high degree of predictability of outcome. Non-programmed decisions constitute the other end of the spectrum, being unique, heuristic, and low certainty situations. Because non-programmed decisions threaten the established order, agencies often shirk the responsibility of dealing with these types of problems and will attempt their resolution by allowing them to filter through traditional mechanisms to handle programmed decisions. From the agency's standpoint, this makes sense as well. It uses proven techniques that have a history of working and that are understood: If you've always bought Lincoln Continentals and have had "good luck with them," it's natural to buy another one even though gas prices and insurance rates have doubled since your last purchase. If you've always built dam projects, you continue to build them even if contrary legislative mandates have been produced.

Keith Schreiner tried very hard to build a network of programmed decision-rules to implement the ESA. In defending the amount of time this took, Schreiner explains, "(s)ure we've been going slow, but I'm trying to avoid the hard confrontation until we've got some firm foundations built

in law and precedent ... I'd rather avoid confrontation until I'm firmly entrenched and it's harder to blow me out of the water."[70] Schreiner's comments show his fear of non-programmed decision-making. "You know, I wouldn't like to lose a species, but I'd hate like hell to lose the whole Engangered Species Act. And I'm worried sick about that right now."[71]

Non-programmed decisions are costly. Administrators lose control. Worse, they require more attention from officials at higher levels of the organization. Bureaucrats are rewarded for running programs quietly and effectively. So we see Schreiner acting slowly and cautiously, making sure listings are well-documented, trying to reduce uncertainty, trying to avoid an attack on the program in which programmed decisions revert to non-programmed status. "... every listing is favored by some people and disfavored by others. Those who do not like what you are doing are highly likely to take you to court. Therefore it is absolutely essential that when you list, delist, reclassify a species or habitat, that you do it according to the letter of the law."[72] What the letter of the law means, however, is open to interpretation. In practice this means that you take the minimum common denominator route, that is, whatever behavior will "satisfice" (in Simon's terms). The critical habitat determination for the Mississippi sandhill crane and the Houston toad, for example, were the minimum areas that could be designated in spite of contrary scientific opinion. The Solicitor's opinion on hybrids — not protected under the ESA -- is another example.[73]

The fear of uncontrolled, non-programmed situations turns into a fear of controversy. Jack Anderson described a telling incident in a 1975 Washington Post article:

> "At a recent staff meeting, Schreiner asked a biologist to name the two categories of endangered species. The man dutifully wrote down

> 'threatened and endangered' -- the common listings. Schreiner quickly corrected him. The two types, he said were 'controversial and non-controversial.' The meaning was clear to those who attended the meeting. Any listing of a species that might cause controversy should be handled very, very slowly."[74]

The desire to avoid controversy has had other effects beyond delay. It has affected listing priorities. For example, one of the OES biologists stated in an interview that, "we say that we will pick the species to be considered first on the basis of highest degree of threat. In fact, we have picked some because they were safe." The desire to avoid controversy has also resulted in a tendency to separate the listing and critical habitat designations of potentially-controversial species. This is quite effective because it insulates the decisions from those who are potentially-aggrieved by them. If you list a species without designating what area is critical to it, no one knows whether he will be affected by the listing. Once a species is on the list, it's hard to argue against a habitat designation because it casts the critic in a bad light. After all, who can be against protecting helpless creatures that must be in need of help since they are on the endangered list.

The basic bureaucratic desire to avoid controversy was exhibited by other actors in the ESA case. For example, in order to get an answer about whether the Tellico Project was economically-justified or not, Congress kept funding studies: The General Accounting Office (GAO) came back and said, yes, it's possible that the project is uneconomical, and should be studied further. The University of Tennessee Architecture Department came back and said yes, there are alternatives to the project, but we don't know which is best. Nobody wanted to state that the reservoir project was good or bad. Both studies avoided cost-benefit analysis. Congressman Leggett was clearly frustrated by this result. In the 1978 oversight hearings, he stated that,

"(The GAO) did a study, but they did not do the number study, either, because apparently the guidance we gave them again was not very clear. So both the university and General Accounting Office spent a lot of money, but we don't have any information at all that would lead people to draw reasonable conclusions as to the pluses and minuses of the various alternatives."[75]

The bureaucratic interest in avoiding controversial situations provides a significant incentive to resolve problems and issues at a low level in the administrative hierarchy. The higher an individual is in the hierarchy, the more time he spends on resolving non-programmed situations.[76] Interestingly, the desire to resolve decisions at low levels -- an outgrowth of bureaucratic conservatism -- is the basic driving force that fosters resolution of project-species conflicts. Since conflicts that are forced into non-programmed decision-making are increasingly uncontrolled and destabilizing, there is a tremendous incentive to work the conflicts out ahead of time.

The conservative desire to avoid controversy also brings with it a desire to avoid accountability. If an agency is not accountable for its actions, it cannot be criticized. The desire to avoid accountability is important because almost all actions anger someone. Hence, almost any decision that an agency makes can become controversial. There are several ways to avoid accountability: Don't make decisions. This is an effective strategy that can be cloaked in excuses about inadequate information, staff, funds, etc. Or, claim no discretion. "We're just doing what the law says." Sabatier and Mazmanian have pointed out what a potent tool clear statutory objectives are to both the proponents and opponents of implementation.[77] The "No discretion" argument is very effective because it

deflects criticism to the other actors.

When scientists are bureaucrats, they can use a third strategy to avoid accountability and challenge: Make the decision on seemingly-technical grounds. The FWS used this strategy repeatedly. Listings, critical habitat designations, and Biological Opinions on agency projects were always identified as solely technical decisions: "Non-biological factors are not considered."[78] By claiming that decisions are entirely technically-based, review becomes very difficult. The courts almost always defer to the "experts' judgment."

The No Discretion and Technical Decision strategies allow agencies to play a special form of Bardach's game of "Not Our Problem."[79] FWS, for example, designates critical habitat and adds something like the following disclaimer:

> "The designation of Critical Habitat does not have any direct impact upon the environment. The designation of Critical Habitat, in and of itself, prevents nothing, stops nothing, discourages nothing, and controls nothing. It simply designates an area that is necessary to the continued existence and possibly to the recovery of an endangered or threatened species. It is a biological designation. Economic and other factors cannot be considered because there is no way of knowing what Federal actions may be contemplated in the area. These activities are only curtailed, modified, or delayed when the activity will materially reduce the value of the Critical Habitat to the endangered or threatened species concerned."[80]

Thus, FWS is not responsible for what might happen as a result of the designation: It's not the agency's problem. In playing this game, the onus of decision-making is placed on another agency. For example, after designating critical habitat for the California condor in an area where phosphate is mined, the FWS stated, "Under Section 7 of the Endangered Species Act of 1973, decisions about possible disruption of the Critical Habitat by mining activities will be the responsibility of the Bureau of Land Management, which issues mining permits."[81]

The influence of bureaucratic conservatism is quite pervasive and was seen throughout the implementation of the ESA. In general, these forces resist change; they cling to the status quo. The effects of conservatism and of conflicts between organizational goals are extremely hard to overcome. In the case of the ESA, an external pressure was usually necessary. Bardach has identified the notion of a "fixer" as a necessary element to achieve effective implementation.[82] While Bardach applied the term to a benevolent high official, other groups can take the responsibility for "fixing" implementation, that is, influencing the bureaucracy to act in accordance with the statutory goals. In this case, the "fixers" were generally either advocates within the system or constituent support groups from outside the formal process.

The Advocates Within

In general, for a species to get put on the protected list, it has to have an advocate either inside the FWS or in an environmental or scientific group. The staff biologists often play this role within the OES. There is little doubt, for example, that the reason that so many southeastern fish species are on the list is because the staff ichthyologist is an expert on the area. The same is true with molluscs: The staff malacologist, Marc Imlay, was extremely vocal and effective in getting numerous species of snails and clams added to the list.

Advocacy inside is dangerous, however, because it favors change. It runs counter to the stabilization goal of organizations. Thus, in many ways, to advocate for a species from the inside forces staffers to examine what they're willing to pay to pursue their interests. One of the staff talked about the OES herpetologist: "Ken Dodd is only temporary, even though he's done an excellent job. He thinks that maybe he has listed too

many herps for his own survival at the agency." It is clear that mainstream staffers are opposed to the advocacy role taken by some of the scientists. An official at the Region V Office commented, for example, that, "some people view themselves as advocates. This polarizes the other agencies and is counterproductive."

The malacologist Imlay is the best example of an internal advocate who seems to have paid a high price. From the enactment of the ESA to April 1978, Marc Imlay was responsible for listing or preparing for listing more species than any of the other seven biologists in OES, including one turtle, 24 mussels, 19 snails, and 12 shrimp and crayfish.[83] He had also proposed 35 more species out of the 400 mollusc species he had estimated were endangered.

Imlay was extremely effective at converting internal advocacy into external pressure. He had close ties to outside environmental groups. He "leaked" information to newswriters. He undertook lobbying activities. For example, without getting FWS clearance, he had a letter sent to Congressman Wilmer Mizell (N.C.) which opposed a water resource project on the New River in North Carolina and Virginia on the grounds that it might endanger several fish and mollusc species.[84] His activities obviously did not earn him much support in an agency like the FWS.

In October 1976, Imlay was told he was to be transferred to a research laboratory in Columbia, Missouri to study the effects of pesticides on fish. Hal O'Connor, a FWS official, claimed that a specialist like Imlay was not needed to list the remaining species, and that his expertise was needed in research. "Imlay said he was being transferred because the Interior Department wants to list species very slowly, so as not to aggravate Congress."[85] The malacologist declined the transfer, beginning a

year and a half of administrative proceedings to try to stay in Washington. Environmental groups protested to the Interior Department: "This is not the time to disrupt an orderly procedure by reassigning or dismissing the key person intimately familiar with the listing process and with the species being proposed."[86] Lew Regenstein of the Fund for Animals was more explicit: "They are persecuting a conscientious biologist ... It's because of politics -- he wants to list more species and now it probably won't get done."[87]

Whatever the truth is about the FWS' motives, it is at least true that Imlay as advocate clashed with Schreiner as program manager. It is also true that Imlay as advocate was very effective at getting species protected under the ESA. And it is true that he was finally transferred in April 1978.

EXTERNAL PRESSURES

Considering that there are such powerful centripetal forces inside the black box of implementation and that the internal advocacy game is a dangerous one, something must account for the fact that species did get listed. In many cases, the reason is that there was an external pressure. Somebody was able to shake the system and get an outcome to fall out. The most consistently effective pressure was that brought by an outside support group. In addition, pressures from the activities of other branches of the federal government also significantly molded implementation of the ESA.

The Uneven Popularity of the Issue

In spite of the bureaucracy's attitude, endangered species preservation is an extremely popular public issue. Indeed, how can anyone be against protecting helpless plants and animals? Just like no one is in favor of

pollution, no one is against protecting endangered species. Endangered species is the quintessinal environmental issue. Everyone supports it. It appeals to young and old, rich and poor. Pictures of endangered species are marvelously popular symbols. We see them on beer cans, throwaway cups from "7-11" convenience stores, television advertisements for automobiles, and on company calendars and the like. (For example, the Norton Company -- a Worcester, Massachusetts abrasives manufacturer -- produced a 1978 calendar with lovely pictures of endangered species printed above calendar months headlined by its divisions, Grinding Wheel Division, Coated Abrasive Division, Plastics and Synthetics Division, etc. The Company's 1979 calendar contains pictures of race cars.)

> "Pardon me sir, should we move a stretch of the Interstate to protect the sandhill cranes?"
> "Certainly."
> "How about an oil refinery, to protect the bald eagle?"
> "Our national symbol. Of course"
> "How about protecting the leopard?"
> "Probably."
> "The grizzly bear?"
> "Hmmm... Maybe."
> "The snail darter?"
> "Well ..."
> "The Cumberland monkeyface pearly mussel and the white warty-back pearly mussel?"
> "Now hold on a minute ..."

It is not entirely clear why animals are so popular. No doubt it relates to primordal ties and attitudes, to our lack of understanding of them, to our awe at the parallels between ourselves and them, and to religious notions of stewardship and equally of domination and guilt. What is clear is that these notions are quite deep and that they affect how we react to specific animals. Throughout culture, there are strong metaphors that influence our views on what are good and bad animals and therefore on the values we assign to the: Wolves are evil. There's Peter and the Wolf, and the story of Little Red Riding Hood. In slang terms, a wolf is a man

who crudely chases after women, or -- according to Webster -- it is a "crafty person" or a "fierce, rapacious, or destructive person."[88] To wolf one's food is to devour it with greed and haste.

Bears, on the other hand, are generally good-natured and clumsy like Yogi, Smokey, Winnie the Pooh, and Teddy. Clammy hands are cold and wet and not very desirable. A snake is a "worthless or treacherous fellow" -- not someone you would want as your friend or business partner. A weasel is a sneaky individual. A bird-brain is not a very bright person. Mustangs, pintos, and impalas are symbols of speed and grace, and they are automobiles as well. While a rabbit is now on the market, the toad has not come out yet.

Generally we assign anthropomorphic characteristics to animals in direct relation to their height in the evolutionary order. In cartoons, for example, mammals usually receive talking-parts, birds occasionally. Fish never talk -- perhaps because they're usually under water. We've been told that frogs turn into princes if you kiss them. (Make sure it's not a toad or you'll get warts.) But this is a metaphor for the triumph of human beauty over animal ugliness. Snakes are almost never given parts. An exception is in the Garden of Eden story, but that wasn't a good role.

Value is implicitly assigned to species based on these social metaphors, their evolutionary closeness, their utility as products, their aesthetic appeal, and the degree of threat they present to humans. Grizzly bears are not as well-liked as black bears, for example. Wolves are feared universally. These attitudes and values can even be seen in the scientific names of species. The grizzly is Ursus arctos horribilis. The gray wolf is Canis lupus monstrabilis. These implicit notions of value are important because they contribute to the formation of support and opposition groups.

Constituent support is one of the most effective initiators of external pressure to force the bureaucracy into action.

Constituency

According to the National Wildlife Federation's 1977 Conservation Directory, there were 103 non-governmental environmental organizations with wildlife and fisheries as a central focus.[89] This count does not include groups like the Sierra Club and the Environmental Defense Fund that are regularly involved in wildlife controversies, nor does it include botanical groups or garden clubs. The actual number of plant and wildlife interest groups is probably at least several times the 103 figure. These include groups such as the American Cetacean Society, the American Society of Ichthyologists and Herpetologists, the Elsa Wild Animal Appeal, the International Atlantic Salmon Foundation, the Ruffled Grouse Society of North America, the Trumpeter Swan Society, and Wild Horse Organized Assistance, Inc. (WHOA, of course).

There is really an enormous network of environmental groups in the U.S. Their interests range from animal rights to endangered species preservation to management for hunting. There are groups that worry about individual species (for example, the Society of Tympanuchus Cupido Pinnatus Ltd. -- the prairie chicken) and organizations that have broader viewpoints (the Wildlife Society). There are large groups (National Wildlife Federation -- 3,500,000 members) and small groups (the Trumpeter Swan Society -- 102 members).

These groups play a similar role as Bardach's fixer: They petition; they provide data; they educate; they lobby; they threaten legal action. Their actions account for many of the listings that were finally made. Marc Imlay, for example, estimates that at least 50 percent of all post-1973

listings resulted from the presence of a visible constituency. Thomas Allen, author of a National Geographic book, Vanishing Wildlife of North America, pointed to the critical role that constituent support groups play. In describing preservation activities for the manatee, a large southeastern sea mammal (also called the sea cow), Allen writes, "(t)he manatees, meanwhile are going off the earth for the same reason that television shows go off the air: no sponsor. Unsponsored species can, of course, hope for the next season. There cannot be a hope for a rerun, though, if a species is canceled for lack of interest ... (L)ike many other imperiled species, the manatee lacks an organized band of supporters to sound the cry -- and plead for the money. Save the Whale! can summon a crusade. Save the manatee! summons a question: What's a manatee?" In Allen's eyes, "Who decides an animal's fate? Letter writers and lobbyists, hunters, tourists, lawmakers, voters."[90]

Environmental groups played the fixer role repeatedly throughout the implementation of the ESA. In the sea turtles case, for example, the Environmental Defense Fund (EDF) lobbied, amassed scientific depositions, and eventually threatened a lawsuit in order to pressure the FWS and NMFS to add the species to the list. Similarly, the National Wildlife Federation (NWF) proposed draft regulations for the implementation of Section 7 and threatened to sue if regulations were not issued. NWF also went to court to stop Interstate 10 construction to protect the Mississippi sandhill crane, and played a similar role in the Grayrocks Dam-whooping cranes controversy. In another case, the Fund for Animals (FFA) and the World Wildlife Fund successfully pushed for the listing of over twenty primate species in 1976.

The FFA's activities on behalf of species listed in Appendix I of the

International Convention are illustrative. The organization petitioned the FWS to list the 175 animals contained in the Appendix.[91] In May 1975, it threatened legal action if the species were not listed within two months.[92] Interior responded in September 1975 by proposing to list as endangered all of the species contained in the Appendix that had not been previously listed.[93] After several months went by without final action by FWS, the FFA again threatened a lawsuit.[94] Most of the species were finally listed in mid-June 1976.[95]

The mere existence of a constituency group does not mean that a species will receive protection. The group has to be able to mobilize resources to place pressure on the system in some way. Many organizations petition the FWS to take action. However, many petitions do not go anywhere.[96] The most effective groups are the largest, the most established, and the wealthiest in terms of scientific and legal resources. Hence we see NWF, EDF and FFA involved in a lot of these controversies. The citizens' suit provision of the Act provides a significant pressure point on the system. Any group with legal resources has the opportunity to effectively threaten the FWS. The implementation experience shows this to be a significant force.

When groups lack the resources to effect political pressure, they sometimes band together into coalitions that in aggregate play the fixer role. For example, a collection of environmental groups banded together to oppose the Tellico Project. Monitor, Inc. is a consortium of wildlife interest groups. Over thirty groups belong to the consortium. The groups meet weekly to plot strategy and to combine ideas. The fairly-successful "Save the Whales" campaign was organized by Monitor. They pick large, symbolic animals to champion. Their 1977/1978 target was the African elephant. The

Interior Department listed the elephant in May 1978.

Coalitions of support groups can be extremely effective as pressures on the system. Indeed, the strength of the 1973 Act was probably due to the strong coalition of environmental groups that had lobbied for its passage. It has been suggested that one of the reasons that the ESA was finally amended in 1978 is that the coalition broke apart. Up through the Spring of 1978, environmentalists were unified and adamant in their opposition to amendments. But in the summer, the unified front fell apart, with major groups like the NWF reluctantly supporting an amendment. For example, in May 1978, the NWF commented that "Sen. Culver introduced his amendment in the belief that it was necessary to forestall attempts by others in Congress to pass legislation of disastrous consequences to the Act. The National Wildlife Federation hopes that Sen. Culver is wrong about the mood of Congress and that the members will reaffirm their commitment to the Endangered Species Act which they passed with overwhelming support in 1973."[97] But two and a half months later, the organization changed its position: "It is only with great reluctance that the National Wildlife Federation is recommending that the subcommittee support an amendment to the Act. Yet, we have concluded that the time has come to offer constructive suggestions to the Congress on how we believe this difficult and perplexing issues can best be solved."[98] Other groups such as the FFA continued to oppose any amendments. Obviously there was a difference of opinion over the probabilities of passage of some kind of amendments and over tactics. Regardless, the example points to the significance of massing resources via coalition in trying to "fix" the outcome of implementation.

Generally when an effective constituent group exists to lobby for a species, designations are speeded up. Several of the OES experts conceded

for example that the package containing the Appendix I species was speeded-up by the threat of lawsuit. It is, of course, impossible to determine whether championed species would ever be listed without the pressure. Beyond speeding-up the process, the influence of the groups may also result in a higher degree of protection for a species than otherwise would have been provided. Or, it may legitimize the role of internal advocates. Basically, if no one knows what's right, you do what the loudest group wants. In many cases in the implementation of the ESA, the environmental groups either out-shouted other interests or were unopposed in their campaigns.

Conflicting Interests

But what happens when there are a significant number of groups shouting back from the other side of the fence? Interests that argue against formal action function as "negative constituency." These groups usually have economic interests at stake, and will be constrained by the listing action. Hunting, livestock interests, furriers, whale oil merchants and others who deal in commercial products made from plants and animals often stand a good deal to lose or at least perceive that they do. These conflicting interests use the bureaucracy's fear of acting in a controversial situation to delay or stop the process.

The pressures of conflicting interests certainly delayed the designation of critical habitat for the eastern timber wolf. Habitat has never been designated for the grizzly in large part because of the existence of groups interested in sport hunting and in controlling alleged depredation of livestock. It was shown above that the sea turtle listing was delayed for a number of years because of mariculture and commercial trawling interests. Environmental groups allege that the action to protect the African elephant

was delayed because of commercial interests in ivory and trophies.

Pressures can be subtle. For example, David Wolff, a Houston developer, was concerned about the critical habitat designation for the Houston toad. He wrote the White House repeatedly. The White House staff responded by pressuring the Interior Department. Ken Dodd, the OES staffer in charge of the toad, received phone calls from Senator Proxmire's office inquiring as to the status of the designation. In Dodd's telephone record, he wrote, "I smell a Wolff here."[99]

The threat of lawsuit is still the strongest weapon. For example, Safari Club International -- a trophy hunting interest group -- filed suit in April 1978 alleging that the FWS had illegally listed several large game animals including the lechwe (an African antelope) and the leopard.[100] The FWS responded by publishing a Notice to review the status of the two species in May 1978.[101]

"Anti-preservation" interests can occasionally use the media to advance their cause, but are usually less effective than are proponents of preservation. This relates back to the popularity of the issue, and the difficulty in casting a petition for delisting, for example, in a positive light. The exception is when a conflict can be portrayed as absurd: Tellico versus the snail darter, Dickey-Lincoln versus the Furbish lousewort. These cases use the juxtaposition of an insignificant and less-popular species versus large development projects. The media applauded when an oil refinery was turned away from the northeast coast of Maine to protect bald eagle nests, but turned to accounts of toad condominiums[102] and the "Tellico Outdoor Movie Theater"[103] when faced with less popular species.

Intermediaries

A third kind of external pressure group has occasionally acted to

influence implementation. These are the intermediaries -- the mediators between support and opposition groups. Intermediaries try to find common ground between positions and help the parties negotiate an acceptable solution. This role is most effective in attempting to break deadlocks in interagency consultation conflicts and is being used in greater frequency. The National Wildlife Federation has played this third-party role in several cases, notably the Forest Service-Bachman's warbler case cited above. NWF can play this role because it has a broad membership that includes both preservationists and hunters. Most of the other environmental groups have too limited a constituency to play the intermediary role, so they have to stick to adversary politics. The type of conflict and the prior polarization of the interests -- among other factors — influences the effectiveness of the third-party contribution. A budding literature on environmental mediation deals with these issues at length.[104]

Other Governmental Influences

There has also been direct and indirect pressures placed on the administrative bureaucracy due to the activities of the judiciary and Congress. Judicial interpretation of the ESA in the Tellico Dam and Interstate 10 cases had a significant impact on implementation. For example, stringent interpretation by the courts resulted in three major changes in the final regulations for interagency consultation:[105] Whereas consultation was discretionary on the part of the development agency in the guidelines and proposed regulations, the final regulations were changed to make consultation mandatory. In addition, the regulations were changed to include projects that had been under construction prior to December 1973. This was in part due to the endangered species cases, and also to precedent set in NEPA-related cases. Finally, the changed regulations mandated a show of

good-faith consultation by not allowing project agencies to make irretrievable commitments of resources while negotiations were on-going.

Considering the time line of implementation (Appendix I), there is possibly a small perceivable influence on overall actions due to the Interstate 10 appellate decision (which produced the first injunction issued under the Act). In the three months preceding the decision, only six actions were taken. In the three months after the decision, 2,026 actions were taken. It is of course difficult to make firm conclusions about what was going on. But it is true that for the five months preceding the court's decision, no listing actions were taken -- the biggest gap in the program's history since the early days of implementation (1974). A possible hypothesis to explain the gap is that the agency was waiting to see how the case would come out.

The concept of critical habitat probably would not have been defined when it was if there had not been the pressure of upcoming judicial proceedings. The Mississippi sandhill crane case was on-going at the time. The FWS had to commit itself to a definition of critical habitat so that it could publish a designation for the crane. It did so in September 1975 in the first proposed critical habitat to be published.[106] The first critical habitat that was finalized was that for the snail darter, made under pressure from the Tellico Dam litigation.[107]

Legislative pressures also influenced the implementation history. There were numerous allegations, for example, that the rate of listings was dependent on when oversight hearings were to be held:

> "This reminds me of a G.I. inspection," drawled Sen. Wendell Ford (D-Ky.) as he conducted a recent hearing to review progress by the Department of Interior's sluggish endangered species program. "It seems whenever an oversight hearing occurs, regulations start popping out of the departments right and left."

> "Such has been the case once more, this time prior to Ford's latest Senate Commerce subcommittee hearing: The endangered species office, during the last two weeks in April, proposed 63 species for listing on the official endangered and threatened species list after, for some of the animals, three-year-long delays...
>
> "Bursts of activity immediately before endangered species oversight hearings are starting to form a recognizable pattern. Before hearings were announced by Rep. Robert L. Leggett (D-Calif.) last fall, only 11 species had been placed on the endangered or threatened lists in more than two years. Between the announcement and the hearing itself, the endangered species office proposed almost 400 species for listing.
>
> "This time, a week before the Senate subcommittee hearing, which was held May 6, that office proposed 32 U.S. snails for inclusion on the endangered or threatened lists, and officially listed two swallowtail butterflies, the gray bat and the Mexican wolf. A week before that, the office proposed inclusion of 27 primate species (under study for more than two years) including the chimpanzee, the squirrel monkey and the stumptail macaque,"[108]

It is difficult to isolate the effect of legislative pressures on the program. The implementation time line does show a general correlation between the existence of oversight hearings and the publication of listing actions, especially in 1975 and 1976. One OES staff member corroborated this, conceding that "maybe we pushed up some of the listings because hearings were going to be held."

It is probably true that the amendment-oriented activity had a retarding effect on the program. Part of this was simply from the diversion of staff from implementation activities to deal with Congressional inquiries. It is also true that the change in rules that resulted from the 1978 Amendments had a delaying effect. For example, FWS was considering deleting all pending proposed critical habitats (over sixty of them) and reproposing them to be sure that they comply with the new rules.[109]

In summary: This chapter has examined the internal characteristics of bureaucracies and the external pressures that influence implementation. Not only is prohibitive policy implemented non-prohibitively, but a host of

variables other than the statute significantly mold and influence the character of implementation. Internal forces such as conflicting organizational goals and bureaucratic and scientific conservatism generally resist change and slow implementation. Pressures are placed on the administrative network to modify the products and rate of implementation. These pressures commonly come from internal advocates, interest groups, and judicial and legislative sources. The dynamic interaction between these external pressures and internal characteristics in large measure determines the outcome of implementation regardless of the fact that it was presumably clearly specified by a prohibitive statute.

NOTES TO CHAPTER 7

1. See, e.g., U.S. Congress, Senate, Committee on Commerce, 1976, p18-19, 29, 38; U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p35.

2. U.S. Congress, Senate, Committee on Commerce, 1976, p18-19.

3. Ibid., p38.

4. Pressman and Wildavsky, 1973, p102-110.

5. For example, the U.S. Atomic Energy Commission was split into the Nuclear Regulatory Commission and the Energy Research and Development Administration to separate development of atomic energy from its regulation. The staffs of the two agencies were drawn almost entirely from the parent agency.

6. The National Aeronautics and Space Administration might have been an example of this. Its effectiveness at completing its early missions may have been due in part to the "newness" of the organization.

7. For a lengthier discussion of this point, see Lipsky, 1978.

8. See accounts at U.S. Congress, Senate, Committee on Environment and Public Works, 1978, p328; U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p882,1183.

9. See, e.g., U.S. Congress, Senate, Committee on Commerce, 1976, p13, 60.

10. Actually its component parts were established in the late 1800s: The Bureau of Fisheries was created in 1871; the Bureau of Biological Survey was established in 1885.

11. In this sense, there are strong parallels with Kaufman's classic study of the U.S. Forest Service. See Kaufman, 1960.

12. See Pinchot's discussion of the conservation concept at "Gifford Pinchot on Naming the Movement, 1907", in Smith, 1971, p19-23.

13. See, e.g., Congressman Dingell's comments at U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1973, p348.

14. 7 Ecology USA (11):86, May 22, 1978.

15. The poisoning was banned by Executive Order 11643, 37 Federal Register 2875, February 9, 1972.

16. 9 Environment Reporter 922, September 15, 1978.

17. Ibid.

18. U.S. Public Land Law Review Commission, 1970, p156-175.

19. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p1152.

20. Washington Star, February 24, 1972.

21. U.S. Congress, Senate, Committee on Commerce, 1976, p98.

22. It is not absolutely clear why Commerce received the joint role in the implementation of the ESA. One reporter claimed that Commerce Secretary Maurice Stans had the White House pressure Interior Secretary Rogers Morton into accepting the Commerce role after learning that Interior had drafted a strong bill. This account claimed that a White House aide told Morton that he could either accept Commerce as a partner in the program or he would lose the White House's support for other pending environmental proposals. (Washington Star, February 24, 1972)

23. U.S. Department of the Interior, 1972, p15.

24. 38 Federal Register (248):35485, December 28, 1973.

25. "Green and Loggerhead Turtles Proposed for Foreign Endangered Species List", Department of the Interior News Release, January 4, 1974.

26. 43 Federal Register (146):32800, July 28, 1978.

27. Letter from F. Wayne King, New York Zoological Society, to Rogers Morton, Secretary of the Interior, April 23, 1974.

28. "Regarding Jurisdictional Responsibilities and Listing Procedures Under the Endangered Species Act of 1973", signed by Lynn Greenwalt, FWS, and Robert Schoning, NMFS, August 24, 1974.

29. 40 Federal Register 21974, May 20, 1975.

30. Letter from Lynn Greenwalt, Director, FWS, to Robert Schoning, Director, NMFS, August 18, 1975.

31. Memo from Ronald E. Lambertson, Assistant Solicitor, to Associate Director for Federal Assistance, FWS, "The Unilateral Actions of the NMFS Concerning the Proposed Listing of Certain Sea Turtles", October 24, 1975.

32. Memo from Chief, Office of Endangered Species, to Associate Director for Federal Assistance, FWS, "NMFS Draft Environmental Impact Statement on Sea Turtle Listing", December 30, 1975.

33. U.S. Department of Commerce, 1976, p82.

34. The statement was made by Paul Kiefer, an attorney for the National Oceanic and Atmospheric Administration, Washington office, as transcribed in "Sea Turtle Hearing Minutes", unpublished, February 25, 1976.

35. Lipske, M., 1977, p228.

36. "Memorandum of Understanding Defining the Roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of the Endangered Species Act of 1973 as to Marine Turtles", signed by Lynn Greenwalt, FWS, and Robert Schoning, NMFS, July 18, 1977.

37. In the 1977 oversight hearings, Senator Culver asked NMFS Deputy Director Gehringer what happens if they found a turtle that flew. Culver proposed that jurisdiction for NASA. (U.S. Congress, Senate, Committee on Environment and Public Works, 1977b, p66)

38. Letter from Michael Bean, EDF, to Juanita Kreps, Secretary of Commerce, and Cecil Andrus, Secretary of the Interior, February 28, 1978; Also see EDF Letter, May/June 1978, p3.

39. Tennessee Valley Authority Act, 16 U.S.C. 831, 48 Stat. 58, May 18, 1933.

40. 42 U.S.C. 1962-1962a-3, 79 Stat. 244, July 22, 1965.

41. 16 U.S.C. 661-667e, 48 Stat. 401, March 10, 1934, as amended.

42. 16 U.S.C. 528-531, 74 Stat. 215, June 12, 1960.

43. Letter from Lynn Seeber, General Manager, TVA to Director, FWS, August 15, 1975.

44. Letter from Lynn Seeber, General Manager, TVA, to Phillip Morgan, Acting Regional Director, FWS, May 13, 1976.

45. Letter from Lynn Seeber, General Manager, TVA, to Nathaniel Reed, Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior, March 12, 1975.

46. Letter from Lynn Seeber, General Manager, TVA, to Director, FWS, August 15, 1975, p9.

47. U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p38.

48. Ibid.

49. This was one of the major differences between the Dickey-Lincoln and Tellico cases; The ACOE's willingness to discuss the Furbish lousewort issue prior to committing itself to a formal position aided the development of a compromise; TVA, on the other hand, started out in a polarized position against any compromise other than transplanting the snail darter to a different river.

50. See, e.g., Washington Post, April 7, 1978.

51. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p865.

52. 4 Endangered Species Technical Bulletin (1):12, January 1979.

53. See, e.g., Assistant Secretary of the Interior Nathaniel Reed's comments at U.S. Congress, Senate, Committee on Commerce, 1972, p72.

54. Ibid., p275-283.

55. States have little incentive to protect endangered species because of the "public goods" nature of the problem: Protective action is costly. Yet if other states do not act in a similar manner, the protection is not effective. Besides, there is little incentive for individual action because the other states cannot be excluded from benefitting from the protective action.

56. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1973, p303.

57. 41 Federal Register (203):45990, October 19, 1976.

58. "Environmentalists are also concerned that the whales may be loved to death. The Mexican Government, citing noise and interference in whale behavior, is threatening to close all lagoons, including San Ignacio, to sightseers. And the human influence on whales has prompted the U.S. Marine Mammal Commission to study whether some of the giant mammals are ignoring their own reproductive activity -- in favor of watching the people who are there watching them." (93 Newsweek (19):41, May 7, 1979)

59. See, e.g., the Forest Service's memo to staff stating that they have to do better at considering wildlife management in their line activities. (Reprinted at U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978a, p433)

60. Preservationists favor protecting the existing set of species regardless of whether some would become extinct on their own. Since the status quo includes current trends, preservationists actually exhibit "reactionary" behavior, not just conservatism.

61. Note that their tendency to be conservative is in terms of making absolute conclusions that might be challenged later on. If they were truly conservative or risk-averse in regarding the substance of their decisions, they would be overprotective towards endangered species.

62. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p872.

63. Memo from J. Findlay, Acting Regional Director, to Director, BSFW, "Florida Sandhill Crane Population Estimate", December 1, 1964.

64. Memo from Dr. John Aldrich, National Museum, Washington, to Regional Director, Atlanta, "Mississippi Sandhill Crane", July 8, 1970.

65. Memo from Acting Regional Director, Atlanta, to Director, BSFW, "Endangered Species - Mississippi Sandhill Crane", June 2, 1970.

66. Ruhr, C.E., "Getting a subspecies on the endangered species list", June 13, 1972, unpublished file note.

67. Aldrich, J., "A New Subspecies of Sandhill Crane for Mississippi," 85 Proceedings, Biological Society of Washington (5):63-70, August 30, 1972.

68. 38 Federal Register 14678, June 4, 1973.

69. Simon, 1960.

70. 108 Science News (6):94, August 9, 1975.

71. Ibid.

72. U.S. Congress, Senate, Committee on Commerce, 1976, p22.

73. 3 Endangered Species Technical Bulletin (8):5, August 1978.

74. Washington Post, March 15, 1975.

75. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978a, p543.

76. In her study of political executives, Weinberg found, for example, that Massachusetts Governor Francis Sargent spent much of his time in crisis-resolution. (Weinberg, 1977)

77. Sabatier and Mazmanian, 1977, p10.

78. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p1061.

79. Bardach, 1977, p159.

80. U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p1155.

81. 1 Endangered Species Technical Bulletin (4):3, October 1976.

82. Bardach, 1977, p268.

83. Washington Post, April 8, 1978.

84. Indeed, he had a legislative assistant in Mizell's office request the letter to start with! (Letter from John Paradiso, Chief, Branch of Biological Support, OES, to Congressman Wilmer Mizell, July 30, 1974)

85. Washington Post, April 8, 1978.

86. Reprinted at 52 Defenders (4):268, August 1977.

87. Washington Post, April 8, 1978.

88. Webster's Seventh New Collegiate Dictionary, 1967 edition, p1027.

89. The NWF Director lists 342 nongovernmental environmental organizations that emphasize various elements of the environment. (NWF, 1977, p v-viii)

90. Allen, 1974, p151, 154.

91. 40 Federal Register (188):44329, September 26, 1975.

92. Washington Post, May 28, 1975.

93. 40 Federal Register (188):44329, September 26, 1975.

94. Christian Science Monitor, July 16, 1976.

95. 41 Federal Register (115):24062, June 14, 1976.

96. See Chapter 4, text accompanying note 2.

97. NWF Conservation Report (15):253, May 19, 1978.

98. NWF Conservation Report (24):348, August 11, 1978.

99. Note to the files from Ken Dodd, March 1, 1978.

100. Complaint, SCI v. Andrus, U.S. District Court, Southern District of Mississippi, Civil Action #J78-0146(c), April 14, 1978.

101. 43 Federal Register (84):18583, May 1, 1978.

102. Houston Chronicle, June 22, 1977.

103. 18 Environment (8):i, October 1976.

104. See, e.g., Cormick and Patton, 1977; Rivkin, 1977.

105. 43 Federal Register (2):871, January 4, 1978.

106. 40 Federal Register (171):40521, September 3, 1975.

107. 40 Federal Register (197):47505, October 9, 1975.

108. 109 Science News (20):308, May 15, 1976.

109. 3 Endangered Species Technical Bulletin (2):7, November 1978.

CHAPTER 8 -- THE IMPACT AND USES OF PROHIBITIVE POLICY

This thesis has examined one case of the use of prohibitive policy -- a kind of government regulation that has been used increasingly in recent years. Prohibitive policies regulate behavior by specifying absolute restrictions. They do not allow regulatees to make choices legally: Thou shalt not commit murder; critical habitat cannot be adversely modified. A second form of prohibitive policy restricts behavior by allowing only one kind of action: Automobiles must have seat belts; federally-funded transit programs must have access for handicapped persons. A third kind of prohibitive policy prohibits action by specifying a boundary such as a standard: Ozone emissions cannot exceed 0.12 parts per million; all municipal sewage treatment plants must provide at least secondary-level treatment.

Both proponents and critics of prohibitive policy make a number of implicit assumptions about the impact of prohibitive mandates on implementation: (1) prohibitive policy defines a decision-making process based solely on technical criteria; (2) these technical criteria serve as a basis for making binary yes-no decisions (a species is or is not endangered; a driver is or is not driving recklessly); (3) since technical criteria exist, agency discretion is limited; (4) the balancing of costs and benefits of individual actions is not permitted; and (5) outside interests are excluded from participating in implementation. Proponents translate these assumptions into an expectation that implementation will proceed rapidly. Critics conclude that prohibitive policy is bad because it is inflexible.

But the experience of implementation indicates that these assumptions are not correct. The ability to make technical decisions is limited by

significant resource constraints and an enormous amount of scientific uncertainty. Since technical decisions cannot be made technically, administrative discretion is evident throughout implementation, providing an opportunity for administrators to include nontechnical considerations in their decisions. The political and bureaucratic context of implementation encourages administrators to include outside interests in decision-making; balancing takes place. Indeed, the nonstatutory forces of conflicting organizational goals and traditions, bureaucratic and scientific conservatism, resource scarcity, and pressures from advocates, interest groups, the judiciary, and the Congress appear to mold the character of implementation more than the statute. It is likely that the outcome will be significantly modified by implementation regardless of how much statute-building takes place initially.[1]

While this analysis has focused on the case of the Endangered Species Act, the findings are corroborated by other cases. For example, the Food and Drug Act's Delaney Clause bans any food additive that is proven to be carcinogenic. Cyclamates (artificial sweeteners), however, were not banned for almost twenty years after evidence of their carcinogenic properties was developed.[2] In a similar case, several recent scientific studies indicated that saccharin may cause cancer in rats at high dosages. Yet the artificial sweetener is still used in food products. The saccharin case exhibits the technical uncertainty problems seen in the implementation of the ESA, and illustrates how balancing of other interests takes place regardless of the prohibitive mandate: The Food and Drug Administration allows companies to use saccharin in their food products as long as they print a warning on the package.

In other areas of prohibitive policy, it can be seen that their

prohibitive mandates were not achieved. Auto emissions standards were relaxed repeatedly.[3] Water quality deadlines were not met. Only 33.1 percent of all publicly-owned treatment plants met the 1977 deadline prescribed in the Federal Water Pollution Control Act.[4] Police rarely stop motorists driving five miles over the speed limit. Not all individuals who break the law are prosecuted. Indeed, some criminal activity is overlooked or encouraged so that police can use the "lawbreakers" as informers. Non-absolute enforcement of prohibitive policy appears to be the norm, not the exception.

If prohibitive policy is not implemented prohibitively, why use it? Should it be used in the future? The answer to these questions depends on who you are and what objective you have in mind. Even though implementation is not absolute, a prohibitive mandate can be valuable as a means of influencing bureaucratic behavior, as a political statement, and as a way to alter the balance of power in the political arena. Indeed, prohibitive policy works in many cases not for the reason assumed by many critics and supporters (that it is absolute and inflexible) but rather due to its strategic impact in influencing the bargaining and negotiation that characterizes implementation.

Prohibitive Policy and Bureaucratic Behavior

Agency officials like or dislike prohibitive mandates depending on their desire to comply. If the policy does not conflict with other agency goals or alienate traditional supporters, agency staff generally welcome prohibitive policy because of its apparent precision. Prohibitive laws prescribe clear objectives and well-defined measures of success and failure: "Critical habitat cannot be adversely modified" is a clearly defined standard for implementation. While previous chapters have shown that the

determination of what is critical habitat is discretionary, once boundaries are drawn, it appears easy to determine whether the habitat will be modified by a project.

The precision of prohibitively-prescribed policy makes it easy for agency staff to implement: It prescribes clear objectives, gives unambiguous direction, and reduces the uncertainty associated with nonprohibitive prescriptions. It is quite possible that agencies will prefer a difficult yet certain directive to an uncertain one. For example, the Army Corps of Engineers wanted final guidelines to use in planning for the Dickey-Lincoln Project, and would probably have preferred tough final guidelines rather than the uncertainty associated with no guidelines. Other studies have indicated the likely supremacy of fear of uncertainty over fear of stringency.[5]

Prohibitive policy is also easy to implement because it limits the range of expertise necessary to take action. Statutes that mandate balancing various interests require a range of talent that often is not present in single-(or dominant-) purpose agencies; or the staff may be present, but balancing requires large expenditures of staff time to deal with the multidisciplinary nature of the analysis. Agency officials do not want to have to deal with this problem. For example, the 1978 Amendments to the ESA require that an economic impact study be prepared for each proposed action. OES staffers bemoaned their new responsibility: "Most of us are not happy to do this...We're not economists, we're biologists."[6]

In addition, prohibitive policy places the agency in a powerful position where there appears to be no discretion. Agency staffers can play the "We're just doing what the statute makes us do" game.[7] The prohibitive statute makes implementation appear to be entirely a technical matter.

Hence, agency officials can cloak discretionary judgments in the guise of technical decision-making. The courts have tended to ratify this stance: For example, in both of the ESA court cases, the FWS was clearly "the expert". The appelate courts would not go beyond the FWS' opinion in examining the merits of TVA's or DOT's case, since the ESA had clearly defined consultation as mandatory and had absolutely restricted adverse modifications of critical habitat.

While prohibitive policy enhances the agency's power by casting decisions as technical, it tends to hide the discretionary decisions that are made throughout implementation. Since the problem appears to have a technical solution, there is really little reason to incorporate huge amounts of public input into the decision. Indeed, formal public participation in the implementation of the ESA focuses primarily on the amassing of data to support or oppose a designation or a listing. Very little is done to ascertain the impact of the designations since balancing of different kinds of impacts is not prescribed. The NEPA-review process -- one way public comment has been incorporated into many federal actions -- has been effectively sidestepped in the implementation of the ESA.[8] Discretionary redefinition, trade-offs, value judgments -- all are made almost exclusively by the Act's administrators without outside consultation or review. With prohibitive policy, it is hard for external parties to identify where discretion occurs; it is even harder to argue that other public inputs should be included in the seemingly-technical decision.

For most other kinds of policy, analysts often define a "good" policy as one that includes all affected interests in decisions made in implementation. Yet it is commonly assumed that outside input should be

excluded from the implementation of prohibitive policy. Indeed, public participation seems inimical to the notion of a prohibitive policy: Interest groups should not influence the FWS' decision whether a species is or is not endangered. But regardless of what "ought" to be, external considerations are in fact included; political negotiation takes place. Hence, if you accept the criterion that a good policy should provide for the participation of all affected interests, then devices such as public hearings, comment periods, formal notifications, and review by external committees should be structured into implementation.

If agency staff do not want to comply with the prohibitive statute, a prohibitive mandate can result in significant organizational costs.[9] For example, the prohibitive mandate may isolate the group implementing the policy (as it did in the case of the OES). Since the statute may call on an office of an agency to act in a way that is counter to traditional modes of agency operation, the office may bear the brunt of other offices' animosity and disdain. Hence there can be real morale costs incurred by the implementing office. With nonprohibitive mandates, the implementing office could translate the offending item into traditionally-acceptable terms, or could just limit its activities. But the absolute nature of prohibitive policy and the concurrent threat of lawsuit opens the agency to public and legislative scrutiny, and controversy. Large amounts of agency resources must be expended to deal with these nonprogrammed situations. The agency can also pay a cost for doing a good job. The media, for example, played the snail darter-Tellico Project conflict as absurd, portraying the FWS as inflexible and eccentric. The OES-biologists probably took this as proof of their good work, boosting their confidence in the "quest". But most of the rest of Interior shuddered about its

public image.

Prohibitive Policy as Political Strategy

By supporting prohibitive policy, legislators and interest groups can affect their own power positions in the political arena. Prohibitive policy, for example, can be very effective as a symbolic statement of support for a goal. Elected officials can use such statements to please voters and constituent groups. Precise statements are more easily understood than lengthy, imprecise formulas for trade-offs and balancing. For example, it is a more powerful statement to say that "no species will consciously be allowed to go extinct" than to say that "we'll do our best to conserve endangered species but other priorities may come up and force us to consider trade-offs and possibly allow or cause some species to go extinct because we need economic development and some species are not important anyway."

The symbolic nature of prohibitive policy is quite valuable to elected officials. Since the media and the public can understand prohibitive mandates easily, politicians can use such statements as a way of attracting news coverage and as a way of demonstrating commitment. For example, one analyst has suggested that the reason that the 1970 Clean Air Act was such a strong statement was a result of Senator Edmund Muskie's desire to appear more committed to improving the quality of the environment than was President Richard Nixon in light of the upcoming 1972 elections.[10]

When dealing with a popular or emotional issue, nonprohibitive statements can sometimes be used to imply weakness or even corruption. For example, one alternative to banning the discharge of pollutants (or defining acceptable effluent standards) is to auction "pollution rights," giving companies the right to pollute up to a certain level. While this scheme

may have the same net effect as a standards approach, it appears morally corrupt: The public does not generally feel that industries should have the right to discharge pollutants. Similarly, the idea that the benefits of a development project can be weighed against the value of a species seems corrupt to many individuals. Thus many groups expressed a sense of moral outrage at the 1978 Amendments to the ESA which included a "God committee" -- a review board that could exempt projects from the obligation to preserve an endangered species provided by the ESA. In contrast to policies that provide an explicit balancing of social objectives, prohibitive policies promote an image of moral commitment and political strength regardless of how they are finally implemented.

Prohibitive policy is also valuable as a political statement because it appears to limit the discretion of "faceless bureaucrats". Often it is politically dangerous to go on record in favor of an agency having the power to pick and choose between social objectives. More commonly, elected officials condemn the caprices of bureaucratic agencies. Senator Hodge's (Ark) comments at the 1978 ESA hearings are representative: "I will tell you as an individual citizen and a Senator, I am not willing to trust any single agency of this government with my final environment."[11] Even though the limitation may be more apparent than real, the image of limiting bureaucratic discretion is a popular one and is generally well-received in a Congressman's home district.

While elected officials can use prohibitive policy to boost their popularity and strength, interest groups can use it to increase their effectiveness in influencing the direction of implementation. Both supporters and opponents can use the precision of a prohibitive mandate to their advantage. Sabatier and Mazmanian have pointed this out in a

recent paper:[12] "Clear objectives also serve as a resource to actors within and external to the implementing institutions who perceive deviations between statutory objectives and policy outcomes." It is easy to see where the actions of the implementing agencies deviate from the prescribed path. In policy that prescribes emission standards, for example, groups can measure the actual emissions and compare them with the statutory prescription. In the case of the ESA, opponents could claim, for example, that certain species that were currently listed were not endangered under the terms of the Act and should be de-listed. Proponents could argue that species that were not listed, should have been. They could also claim that development projects like the Tellico Project would adversely affect critical habitat and/or an endangered species and should be stopped.

In all these cases where an interest group plays a watchdog role, the resources provided by the prohibitiveness of the policy is buttressed by the presence of a legal remedy. In the ESA, the citizens' suit provision clearly made outside comment louder. Both of these elements -- prohibitive prescription and citizens' suit — allow external groups to place pressure on the administrative agency. It is not sufficent just to have the citizens' suit provision because -- as in the case with NEPA -- it is not clear when a substantive duty is required, nor is it easy for the courts to determine that any agency has fulfilled its duty if it is not clearly laid out by the statute.

Besides providing an enhanced ability to measure agency compliance, prohibitive policy can be used by interest groups to boost their power in implementation negotiations. Most laws regulate the behavior of a number of interacting groups and individuals. Who is included in the negotiations and their relative power positions are of critical importance to the outcome.

Statutes define who is in the game and the rules by which they should play. Prohibitive policy has a heavy influence on the inital distribution of power in the arena. In the case of the ESA, it gave the proponents of preservation an extremely strong position from which to start. In Federal project planning, for example, wildlife preservation has always taken a back seat, but the ESA changed that by requiring federal developers to take this interest seriously. In so doing, it started the advocates of preservation in an extremely strong position in the ensuing discussions. While this did not necessarily change the overall result of the discussions, it did affect who was compensated in the process. Commercial interests were protected; species were added to the endangered list. Development was achieved; endangered species were protected.[13]

Groups that advocate prohibitive policy should recognize several of it liabilities, however. Prohibitive statutes can be used irresponsibly by individuals who claim the fixer role, but are really pursuing other goals. Thus, prohibitive policy can be used unduly as a leverage point for external pressures to gain control over implementation. For example, groups could use the ESA to stop the Tellico Project regardless of whether they cared about the goal of endangered species preservation that the ESA was intended to promote. It should be noted that there is a basic asymmetry between the ability of groups to slow down implementation versus their ability to speed it up: Delay is always easier to accomplish. It is possible that prohibitive policies can be structured so as to avoid irresponsible usage. One method is to build penalties for losing (such as loss of a bond) into the citizens' suit provision, but this may act as a barrier to the involvement of legitimate interests. Besides, hurdling a financial barrier may simply demonstrate wealth, not commitment.

Proponents of prohibitive laws should also be cautious of policies that take too large a jump away from status quo producing significant levels of impacts on powerful regulatees. The auto emissions reductions mandated by the Clean Air Act are a good example. The auto industry could claim that it was technically impossible and economically-suicidal to pursue the ninety percent reduction goal and could simply not comply.[14] The administrative recourse -- to sue and fine the companies -- was not politically or economically feasible. Hence the goals were postponed repeatedly. If the threat is not taken seriously because it cannot be carried out, enactment of prohibitive policy incurs an opportunity cost in that other kinds of policy might have been more net effective. Thus, the "believability" of the threat is critical to the effective implementation of prohibitive policy.

The real danger that proponents of prohibitive policy should consider is the potential for backlash that accompanies enactment of a prohibitive mandate. It is very possible that the perception of irresponsible activities, unrealistic goals, and apparent inflexibility may combine to yield pressures for recision of the prohibitive mandate. This, of course, happened to the Eighteenth Amendment of the U.S. Constitution which prohibited the manufacture, sale or tansportation of intoxicating liquors.[15] Similarly, amendments to the ESA were passed which emasculated portions of the law. If a backlash builds, the resultant change in policy may backstep past the place where society might have been had a non-absolute policy been passed in the first place.

The hidden discretion provided by a prohibitive statute alters the strategic position of different groups in different ways. It obviously enhances the power of the technical experts significantly. As a result,

organizations and individuals that are tied into the day-to-day administrative information network are in a good position relative to other interests. Hence traditional agency supporters and groups with a common disciplinary base can use prohibitive mandates to their benefit. Regulated groups whose goals are unpopular can also benefit, because their comments do not appear in public forums. However, hidden discretion can be a significant problem for interests that would "normally" not be included in agency discussions and negotiations. If a group is outside the network, they find it especially difficult to participate in the implementation of prohibitive policy. Such groups should argue strongly for provisions for public participation and/or technical review when the policy is being formed.

Prohibitive Policy as a Means of Regulating Agency Behavior

By changing the power relationships of the actors involved in implementation, prohibitive policy can have a significant impact on federal agency behavior. Indeed the strategic impact of prohibitive policy may be an effective method of regulating agency behavior in extreme cases where traditional forms of regulation will not work. Bardach has identified four major ways to control administrative behavior:[16] prescription, enabling, incentives, and deterrence. To control federal development agencies, the ESA prescribes appropriate behavior, enables agencies to act appropriately by funding FWS' consultations (expert input), and sets up a significant deterrence system by providing the precision of a prohibitive mandate backed by the opportunity for citizens' suit. Without the prohibitive mandate, it is doubtful that agencies would comply with the preservation goal since their support comes from interests that are opposed to preservation.

Theory suggests that in a bargaining situation like implementation, negotiation will take place only if both parties can be made better off.[17] (Economists would say we have to start at a Pareto inferior point.) Prior to the inclusion of the prohibitive mandate in the ESA, development agencies had no incentive to protect endangered species since they could only be made worse off (that is, they had to expend resources to protect something that did not buy them anything with their supporters). By adding the potential costs of extended controversy, the ESA put the development agencies in a position where negotiating (seeking ways to include the preservation objective in their planning) would result in their being better off: It would reduce the possibility for embarrassing controversy, the potential for costly litigation, and the uncertainty about continuing.

Other federal wildlife conservation programs have tried to regulate agency behavior without the prohibitive mandate and have failed. The Fish and Wildlife Coordination Act (FWCA)[18] is the best example. The FWCA was first enacted in 1934 to provide a mandate to water resource development agencies to include fish and wildlife conservation in project planning. It outlined a control system by prescription and enabling. Twice the Act was legislatively reexamined and amended because it had not significantly influenced agency behavior. The 1958 Amendments[19] even boosted consideration of wildlife conservation to equal status with other goals such as regional economic development. But there is considerable evidence that the FWCA has done little to influence the behavior of development agencies. The U.S. General Accounting Office, for example, undertook a study of 11 major development projects and 17 permit requests in 1972-1974. It concluded that,

> "...the policies of the Coordination Act 'had not been effectively carried out,' because the construction and permitting agencies

> had not always consulted with the wildlife agencies when required to do so, because the wildlife agencies had often failed either to evaluate adequately the wildlife effects of proposed developments or to make their evaluations available in sufficient time to influence development decisions, and because the Fish and Wildlife Service and the National Marine Fisheries Service had been unable to resolve jurisdictional disputes stemming from the 1970 executive reorganization."[20]

This conclusion has led to pressures for a third set of amendments to the FWCA. In hearings held in July 1978, for example, Senator John Chaffee (R.I.) complained about the "permissiveness" of the Act.[21] Since the FWCA has probably done as much as it can in the way of prescription and enabling, its supporters might push for prohibitive policy backed by legal recourse as a way to get the agencies to include the conservation mandate in their planning programs. The problem is not predominantly financial because federal money is available for mitigation purposes.[22] Nor is it limited to the federal construction agencies: Interior and Commerce have yet to finalize regulations on the Act's implementation.[23]

Control by traditional incentives will not work in this case either. The conventional wisdom holds that agencies compete for additional programs and funds. Hence, to encourage them to do something, the policy-designer should include incentives that play to their "imperialistic" tendencies. But this is a program that development agencies do not want or understand. It makes life difficult and pays very little compared to the huge sums in capital-intensive development projects. It is difficult to conceive of financial incentives large enough to induce development agencies to pursue an endangered species program at the cost of major modifications to some of their projects.

Traditional forms of deterrence do not work very well for regulating agency behavior either. If you fire someone for doing a bad job, he cannot improve. If you take away a program's funding for bad work, it's not going

to get better. Deterrence works primarily by threat, not by carrying out the threat. As in most deterrence systems, the threat of external action and controversy is probably best left as a threat perhaps ratified by a test case or two. Over time, organizations learn what they can do to satisfy a prohibitive mandate and what they can get away with. For example, after several years of initial reluctance, most agencies now routinely prepare environmental impact statements as mandated by NEPA. Prohibitive policy thus incurs systemic start-up costs paid by the agency and the judiciary. These costs may be a requisite part of the deal, and are likely to diminish over time as institutional learning takes place.

Prohibitive policy has worked as a significant incentive to get agencies to comply. The Mississippi sandhill crane and the snail darter cases prove this. If the ESA had not been interpreted as mandatory and binding on DOT, the Interstate-10 project would have been constructed without the habitat-protection modifications. The same thing was true with the snail darter. Without the prohibitive mandate, the snail darter would have by now become extinct in the Little Tennessee River. A similar pattern of compliance can be seen in the early years of NEPA: Agencies were reluctant to comply until the courts made it clear that the procedural requirement of preparing an impact statement was mandatory.

It is clear that the FWS views the Section 7 mandate as a club to force development agencies into compliance. For example, FWS Director Lynn Greenwalt testified in the 1978 hearings that "a legislative exemption from Section 7 compliance would, at this point in implementation of the act, set an extremely undesirable precedent. It would undermine present and future good-faith consultation efforts. We would anticipate great reluctance by development agencies to enter into meaningful consultation if there

is any possibility of an exemption. Sponsors of projects which have suitable alternatives which would minimize or eliminate adverse impacts might be reluctant to implement even minor modifications if there was a possibility of achieving an exemption."[24]

Prohibitive Policy and the Substance of the Issue

Beyond its use as a means of altering the relative political power of interest groups and agencies, and as a way of regulating agency behavior, prohibitive policy is a useful (and probably necessary) legislative response under two substantive conditions: when there is a social ethic involved, and when the risks of allowing certain activity is too great. Prohibitive policy is inherently inefficient since it does not explicitly allow for balancing the benefits provided by reaching the policy's goal against the cost of complying with it. Even though negotiation takes place in spite of the prohibition, a prohibitive mandate can incur significant costs of compliance in financial terms, in start-up and organizational costs, and in the potential for backlash and irresponsible use. Beyond these, a prohibitive mandate can force an agency into nonprogrammed decision-making, consuming scarce resources. Hence, the substantive basis for using this kind of policy must justify significant resource expenditures.

Laws that define and protect social ethics are an appropriate use of prohibitive policy. Indeed, if you believe that society is making a moral statement, prohibitive statements may be necessary. Ethics are by definition prescriptions of right and wrong behavior. It would not be appropriate, therefore, to set out policy that encourages negotiation between these positions. Some ethical relationships are well-defined and generally accepted in a culture: Enacting prohibitive laws to protect

these relationships is not controversial. Murder, for example, is prohibited by most human societies. Other relationships are not as generally accepted: the right of a woman to an abortion, for example, or the right of a nonhuman species to exist. To advocate the use of prohibitive policy to protect these rights is a question of personal or group values about what is right and wrong. Hence, it is entirely appropriate to push for prohibitive laws to protect endangered species if you feel they have a right to survive.

In pushing for adoption of a prohibitive mandate, however, proponents have to weigh the possibilities of a backlash: It is possible that implicit recognition of a right (especially one held by a minority) may at times be more beneficial to the holder of the right than explicit codification. This is especially true if the institutional network would protect the right on its own. Proponents should also recognize the hidden discretion problem that accompanies prohibitive mandates, and should push for the inclusion of review mechanisms in the statute.

None of this implies that ethics (and hence policy definitions) are static. Okun (1975), for example, has discussed the evolution of ethical relationships as a dynamic process.[25] Ethics are continually reassessed and modified through time. Prohibitive policy that defines and protects ethical relationships can change accordingly. But by arguing that prohibitive mandates are necessary to protect fundamental rights, it is assumed that the rights are too important to be redefined by the administrative bureaucracy: Major shifts from the law require the attention of a broader set of social representatives.

The second circumstance in which prohibitive policy is useful is when the risks of allowing the prohibited activity are too high. If you

are extremely risk averse, and feel that by allowing an activity to take place, there is a possibility of incurring disastrously-high costs, prohibitive policy is an appropriate way to protect yourself. For example, interest groups that advocated a prohibitive law to protect endangered species based their arguments in part on an estimate of risk and uncertainty: "We do not know what might happen in the future if we lose a species (high uncertainty), but there might be high costs." The endangered species issue is tricky, because not many humans will argue that the potential costs of losing one species are terribly high; but the aggregate loss of many species may indeed be costly. If global society could forecast the location and impact of all present and future development, could evaluate its needs in terms of medicinal and other uses of species, and could objectively evaluate the possibility of finding new value in a type of species, then perhaps some preservationists would agree to the conscious extinction of several plant or animal species. But this is of course unlikely: Preservationists apply their aggregate risk estimate to the individual species level because decisions are made at that level.

There are several dimensions to the risk-avoidance argument: (1) how likely is it that the feared event (disaster) will take place (a probability)? (2) how accurate is the estimate of risk (degree of uncertainty)? (3) if the disaster occurs, what is its cost? (4) how reversible is the consequences of the disaster? (5) how certain are the estimates of cost and reversibility? The decision to argue for prohibitive policy due to risk is based on a combination of these factors. For example, an event might have an extremely small probability of occurrence, yet be devastating in its consequences.

Groups have advocated prohibitive policy to avoid risk in a number of recent cases: Moratoria on constructing new nuclear power plants (and arguments to shut down existing facilities); bans on the transshipment of nuclear wastes and liquified natural gas (LNG) through cities and states; moratoria on recombinant-DNA research; bans on ocean dumping of toxic wastes. All of these reflect a certain attitude towards the probability of a certain event occurring, and the acceptability of the resulting situation.

It is possible to build "escape valves" into prohibitive laws that avoid risk. Some of the nuclear moratoria do this: They are worded so that when additional information becomes available (or another event happens), the ban is released. In the nuclear moratorium in California, for example, the ban will be lifted when a solution to the waste storage issue is resolved. The central issue in including an escape valve is who determines when the ban should be lifted. In many cases, advocates of absolute prohibitions argue that the risks and consequences of an event are so great that the broadest sample of society should vote on any recission of a ban. In the case of the ESA, for example, opponents of the 1978 amendments argued that in the event of a truly irreconcilable conflict between a project and a species, Congress should be forced to make a decision; this would provide a significant incentive to resolve conflicts prior to that stage, and would subject the project to the most intense scrutiny. (Also, in a strategic sense, the preservationists feel that Congress would have a hard time voting against endangered species because of their public appear.)

In summary: This thesis has looked at one case of the use of prohibitive policy. It has discovered that prohibitive policy is not implemented prohibitively; rather, it is subject to the influence of a wide range of nonstatutory forces that provide for the balancing of other social interests. Hence, those who criticize prohibitive mandates on the basis of inflexibility should relax somewhat. Yet there are some reasons to advocate prohibitive mandates as opposed to other kinds of policy depending on one's objective. From an agency's standpoint, a prohibitive mandate can be valuable in limiting the range of required expertise, in defining clear objectives, and in reducing external perceptions of the discretionary nature of the process. If the agency does not want to comply with the mandate, framing a law as prohibitive can limit the ability of an agency to redefine the program in terms of its standard operating procedure. Hence, it can cause real morale and organizational costs.

From a politician's standpoint, a prohibitive law can be an extremely effective means of making a political statement: It is clear and easily-understood by constituent supporters. It tends to counter perceptions of weakness or immorality provided in statutes that allow explicit balancing to occur.

From an interest group's standpoint, a prohibitive policy can be useful because it appears to define clear measures of administrative effectiveness: An agency either did or did not stop an activity; it did or did not comply. Prohibitive statutes change the relative bargaining positions of the various actors that participate in implementation negotiations. Hence, the power of some interests is increased relative to others. Since many of the discretionary decisions that are made throughout implementation are hidden by its technical appearance, the interests

that already have "the ear" of the implementing agency are benefitted by the prohibitive statute. Other groups should therefore advocate inclusion of review procedures in the law even though it is framed as prohibitive.

Prohibitive policies also have the ability to regulate agency behavior when other forms of regulation do not work. When there is a mechanism for outside interests to sue for agency noncompliance, a prohibitive mandate acts as a tremendous incentive to comply. It is more effective than policy that provides for explicit balancing because the judiciary can perceive noncompliance more easily. (This is true even though much discretion is hidden by the process: It may be hard to know what is going on day-by-day, but it is easy to enforce once noncompliance is recognized.) Since agencies fear protracted controversy, they will work harder at resolving conflicts between other goals and the prohibitive mandate.

Finally, the analysis suggests two substantive circumstances under which prohibitive policy is especially appropriate: when there is a fundamental right or moral issue involved, and when the proponents of the policy are so fearful of a possible event that they want to avoid the chance of its occurring entirely. Both of these circumstances, of course, involve questions of human values -- in determining what is right and wrong behavior, and what is valuable to protect at what cost. These are in fact the central questions of the endangered species case. To answer them (and hence to decide whether to advocate the use of prohibitive policies) requires an individual assessment of what is moral, and what is valued. Economics and biology only help us slightly in making these choices.

NOTES TO CHAPTER 8

1. This tends to weaken Theodore Lowi's argument that laws should not be passed without clear standards of implementation. Even with the clarity provided by a prohibitive statute, there are many opportunities for administrative redefinition of the statute. (See Lowi, 1969, p297+)

2. Turner, 1970, p6.

3. The 1975 standards were relaxed at least three times. In 1973, EPA Administrator William Ruckelshaus granted a one-year extension. In 1974, Congress passed the Energy Supply and Environmental Coordination Act which postponed the deadline another year. In 1975, EPA Administrator Russell Train granted an additional year's delay. (Reisner, 1977b, p3-4)

4. U.S. Council on Environmental Quality, 1977, p36.

5. See, e.g., Yaffee, 1973, in which local wastewater treatment agencies would have preferred stringent standards that would not change for a long period of time over weaker standards that incrementally changed.

6. Washington Post, March 7, 1979.

7. Schelling points to the importance of "commitment" in a negotiation in that other parties have to respond to the committed party. The committed party essentially sets the agenda or the starting point for bargaining. In the case of the ESA, the prohibitiveness of the statute allowed the FWS to play "committed". Other groups and agencies had to respond to the FWS' position since in almost all cases both sides could be made better off if some bargain was struck. This is fairly obvious with commercial interests like shrimp trawling when they are faced with potential restrictions on their activities. (Schelling, 1960, p37)

8. Indeed, the Pacific Legal Foundation has filed suit against the FWS in an attempt to make the agency prepare environmental impact statements so that outside review is possible. See U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p849-851.

9. Note that the key element here is the desire not to comply. Traditional organizational behavior literature (such as Simon, 1957) suggests that organizations like clear objectives. As pointed out above in the text, clear objectives (such as a prohibitive mandate) are desirable only if the organization wants to comply with the mandate. If it does not, prohibitive mandates can force them to accept programs they would otherwise redefine to a more "acceptable" form.

10. Jones, 1975, p191-210.

11. U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p228.

12. Sabatier and Mazmanian, 1979, p10.

13. In many ways this agrees with the Coase theorem that suggests that in a bargaining situation where both parties can be made better off by negotiating and where there are no transaction costs, the results of the bargain will be the same regardless of who holds the rights in question; but the resulting asset position differs. The ESA assigned control of the bargaining situation to the preservation interests. In bargaining, they were compensated (projects were modified; mitigation took place) while projects continued to be built. (Coase, 1960)

14. The ability to effect mass non-compliance is of course influenced by the degree of organization present in the regulated group. A monopolistic or oligopolistic industry may be able to unite in non-compliance more easily than firms operating under pure competition. On the other hand, the oligopolistic industry may be able to absorb the costs due to the regulations more easily while firms operating at a slim profit margin may scream bankrupcy and get exemptions from the mandate.

15. Ratified January 16, 1919; repealed by the Twenty-first Amendment on December 5, 1933.

16. Bardach, 1977, p110-124.

17. Schelling has examined the process of bargaining and has concluded that to induce negotiation, there has be to "some range of alternative outcomes in which any point is better for both sides than no agreement at all." (Schelling, 1960, p22)

18. 16 U.S.C. 661-667e (1970)

19. P.L. 85-624, August 12, 1958, 72 Stat. 563.

20. U.S. General Accounting Office, "Improved Federal Efforts Needed to Equally Consider Wildlife Conservation with Other Features of Water Resource Development" (1974), cited in Bean, 1977, p207.

21. NWF Conservation Report (23):343, August 4, 1978.

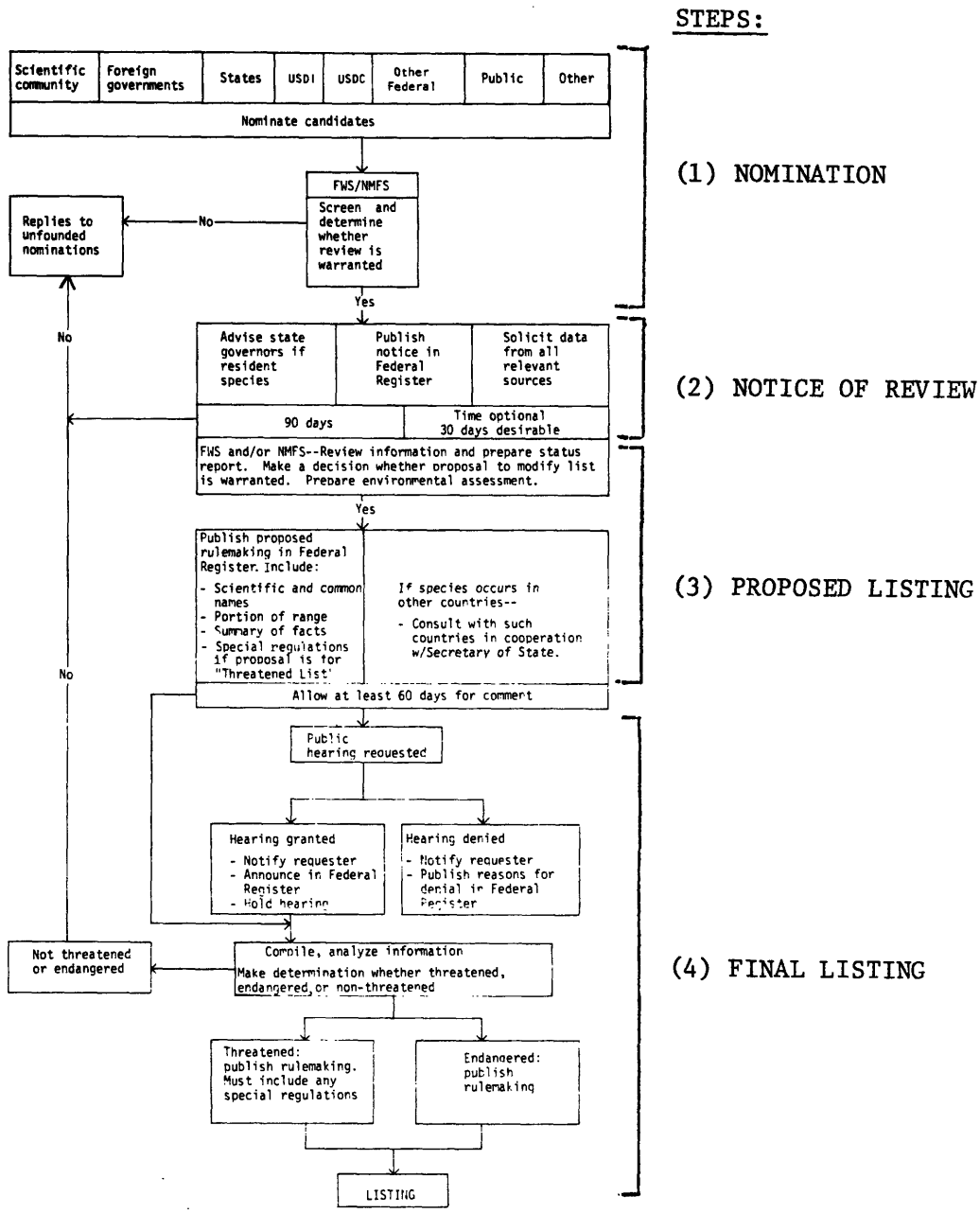
22. For example, the Sikes Act Extension (16 U.S.C. 670(g)-670(o)(Supp IV 1974) authorizes a mitigation program on public lands under control of the Departments of Interior and Agriculture.

23. The President recently directed the Secretaries of Interior and Commerce to draw up regulations by March 1, 1979. (NWF Conservation Report (23):343, August 4, 1978)

24. U.S. Congress, Senate, Committee on Environment and Public Works, 1978a, p19.

25. Okun, 1975.

APPENDIX A -- FLOW DIAGRAM OF LISTING AND CRITICAL HABITAT DESIGNATION PROCEDURES



(Source: MacBryde, B., "Plant Conservation in the United States Fish and Wildlife Service", Extinction is Forever: The Status of Threatened and Endangered Plants of the Americas, The New York Botanical Garden, undated, p64.)

APPENDIX B -- NUMBERS OF SPECIES IN ACTIONS TAKEN PURSUANT TO THE ENDANGERED SPECIES ACT OF 1973

	Notice of Review		Proposed Listing		Final Listing		Proposed Critical Habitat	Final Critical Habitat
Year	Gross	Net*	Gross	Net**	Gross	Net***		
1974	67	65	3	3	3	3	0	0
1975	3271	83	244	24	14	10	7	0
1976	1	1	1859	75	198	39	9	6
1977	57	56	77	76	33	21	50	16
1978	67	2	63	61	40	37	33	11
Total	3463	207	2246	239	288	110	99	33

* Does not include reclassifications or the species listed in the Smithsonian Report (which was taken as a notice of review for 3187 species of plants)

** Does not include reclassifications, Appendix I species, or plants proposed in the Smithsonian Report

*** Does not include reclassifications, Appendix I species, or captive species listings

APPENDIX C -- CUMULATIVE NUMBERS OF SPECIES LISTED BY YEAR, 1964 - 1973

	U.S. Redbooks (domestic species)			C.I.T.E.S.*		Official U.S. List (Final Listings)		
Year	Endangered	Rare	Total	Appendix I (Endangered)	Appendix II (Threatened)	Foreign Species	Domestic Species	Total New Listings
1964	63		63					
1965								
1966	82	47	129					
1967						0	64	64
1968	94	48	142					
1969								
1970						259	109	368
1971								
1972						262	109	371
1973	188		188	420	264	275	117	392

* Convention on International Trade in Endangered Species of Wild Fauna and Flora

APPENDIX D -- NUMBERS OF SPECIES AND CRITICAL HABITATS LISTED BY YEAR, 1967 - 1978

YEAR	FOREIGN SPECIES	DOMESTIC SPECIES	RECLASSI-FICATION	TOTAL[1] ACTIONS	TOTAL ACTIONS / YEARLY AVERAGE[2]	TOTAL NEW[3] LISTINGS	TOTAL NEW LISTINGS / YEARLY AVERAGE[4]	NET TOTAL NEW LISTINGS[5]	NET TOTAL NEW LISTINGS / YEARLY AVERAGE[6]	FINAL CRITICAL HABITAT DESIGNATIONS
1967	0	64	0	64		64				
1968										
1969										
1970	259	45	17	321		304				
1971										
1972	3	0	3	6		3				
1973	13	8	0	21		21				
SUB-TOTAL	275	117	20	412	58.9	392	56.0			
1974	3	0	0	3		3		3		0
1975	2	8	4	14		10		10		0
1976	163	35	0	198		198		39		6
1977	1	20	12*	33		21		21		16
1978**	1	36	3	40		37		37		11
SUB-TOTAL	170	99	19	288	60.6	269	56.6	110	23.2	33
TOTAL	445	216	39	700		661				33

* includes 11 captive populations of already-listed species ** through September 30, 1978

NOTES:

[1]TOTAL ACTIONS = FOREIGN SPECIES + DOMESTIC SPECIES + RECLASSIFICATIONS

[2]YEARLY AVERAGE = TOTAL ACTIONS/NUMBER OF YEARS (7 FOR 64-73; 4.75 FOR 74-78)

[3]TOTAL NEW LISTINGS = FOREIGN SPECIES + DOMESTIC SPECIES

[4]YEARLY AVERAGE = TOTAL NEW LISTINGS/NUMBER OF YEARS IN SUBTOTAL

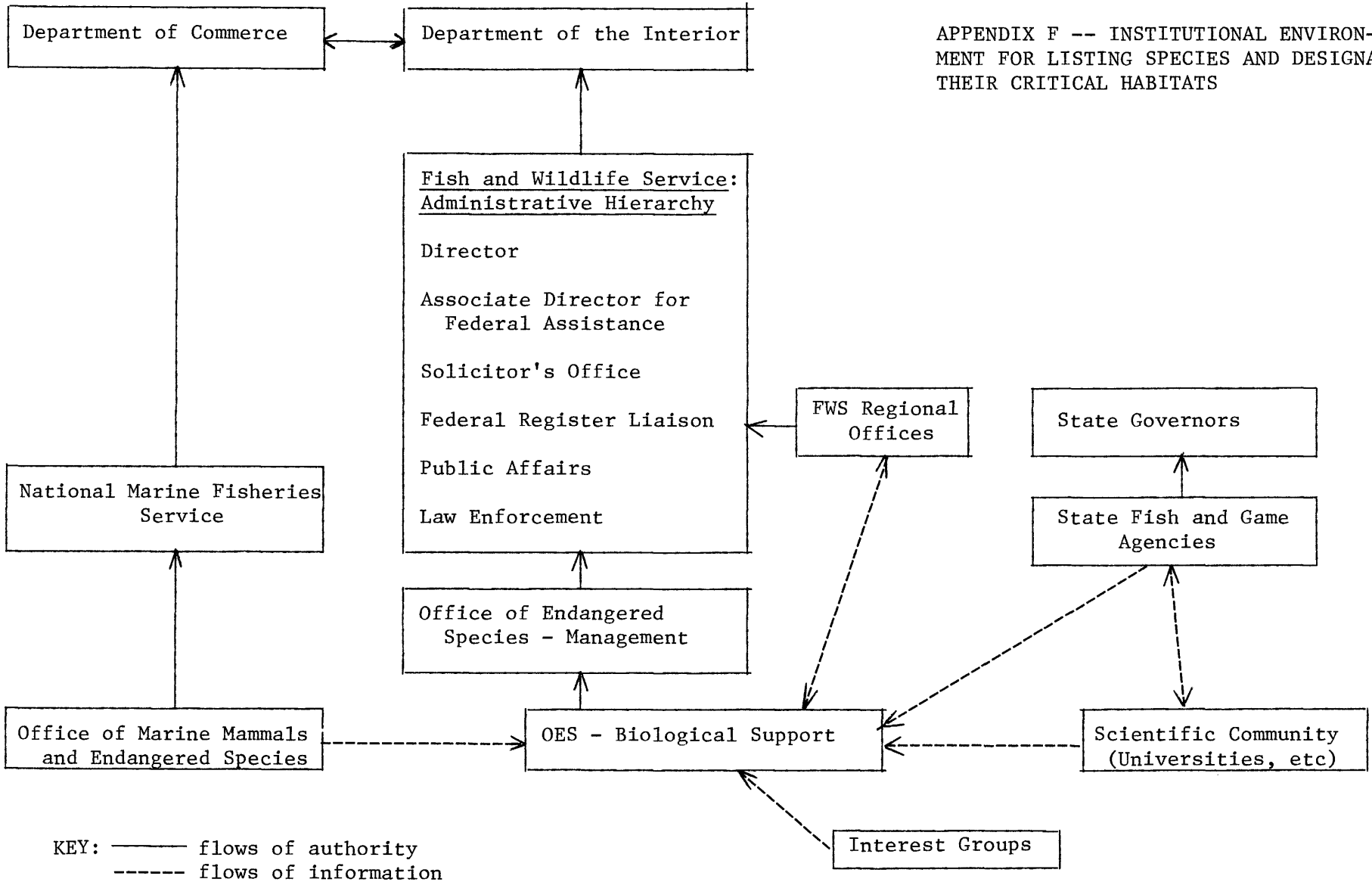
[5]NET TOTAL NEW LISTINGS = FOREIGN SPECIES + DOMESTIC SPECIES - APPENDIX I SPECIES

[6]YEARLY AVERAGE = NET TOTAL NEW LISTINGS/NUMBER OF YEARS IN SUBTOTAL

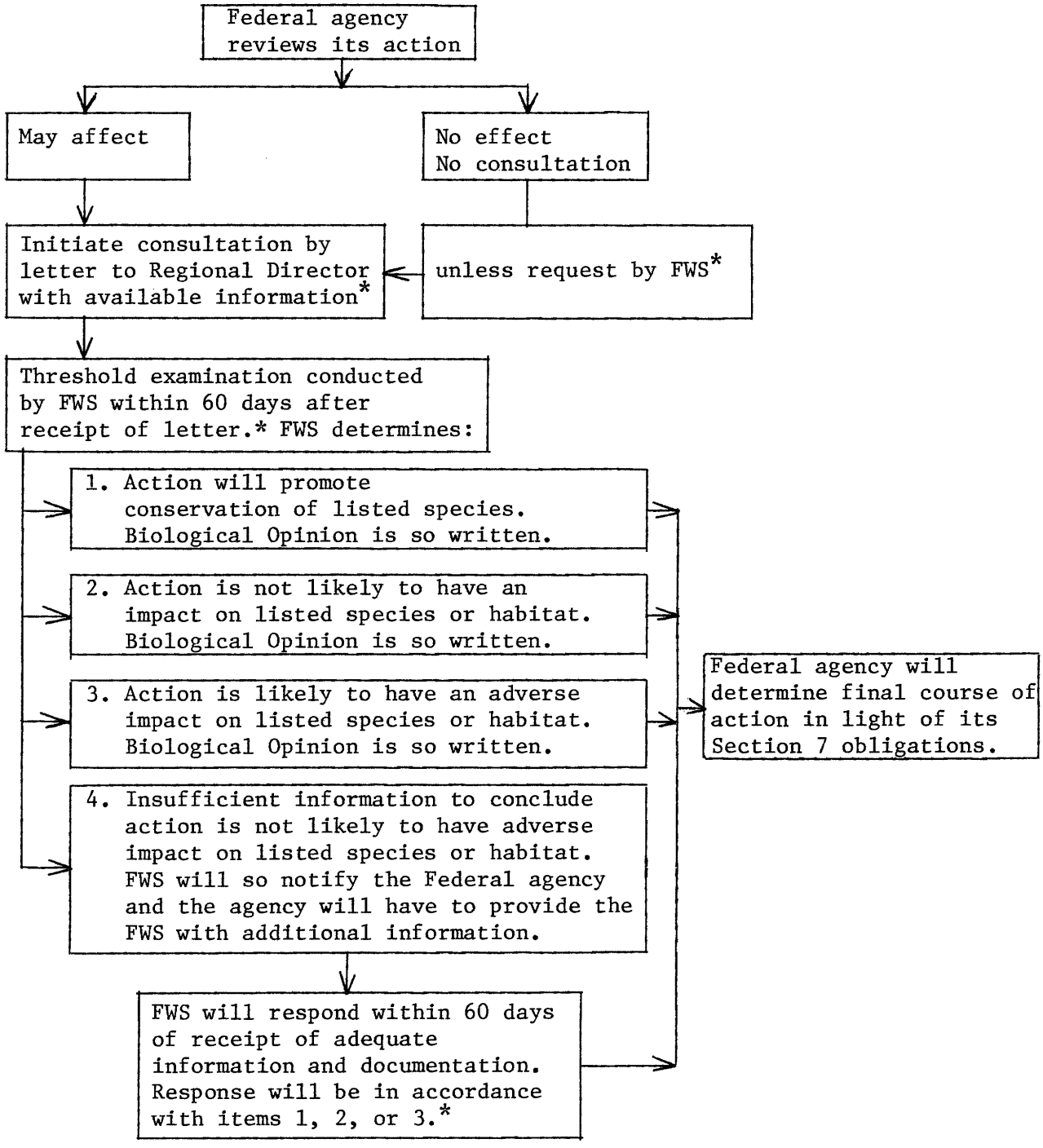
APPENDIX E -- CHRONOLOGY OF ACTIONS TAKEN TO IMPLEMENT THE INTERAGENCY CONSULTATION PROCESS

Date	Action
Dec 28, 1973	Endangered Species Act signed into law
May/June 1974	Regional meetings held to explain the Act to Federal and State agencies
Oct 16, 1974	Internal memorandum from Secretary of the Interior to Interior offices and bureaus emphasized the importance of Section 7, defined Interior responsibilities, and gave lead implementation role to FWS
Dec 3, 1974	Joint letter from Secretaries of Interior and Commerce to all Federal agencies, defining respective roles of the two lead agencies and highlighting agency responsibilities under Section 7
April 22, 1975	Federal Register notice explained concept of Critical Habitat
May 29, 1975	Interagency meeting held in Washington, D.C., chaired by FWS and attended by 42 agencies, further explained Section 7 responsibilities. Federal agencies request that guidelines be developed. Ad hoc interagency committee formed to prepare interim guidelines.
April 1, 1976	First critical habitat designation made (snail darter)
April 22, 1976	Guidelines finished and circulated to all agencies
May 20, 1976	At the request of the Office of Management and Budget (OMB), the guidelines were submitted to federal agencies for a "quality of life" review.
Nov 11, 1976	At OMB's request, the draft proposed regulations -- the revised guidelines -- were submitted for a second "quality of life" review
Jan 26, 1977	Proposed regulations published in the Federal Register
May 15, 1977	At the request of the OMB, FWS convened an interagency meeting to discuss the proposed regulations
Jan 4, 1978	Final Section 7 regulations published in the Federal Register

APPENDIX F -- INSTITUTIONAL ENVIRONMENT FOR LISTING SPECIES AND DESIGNATING THEIR CRITICAL HABITATS



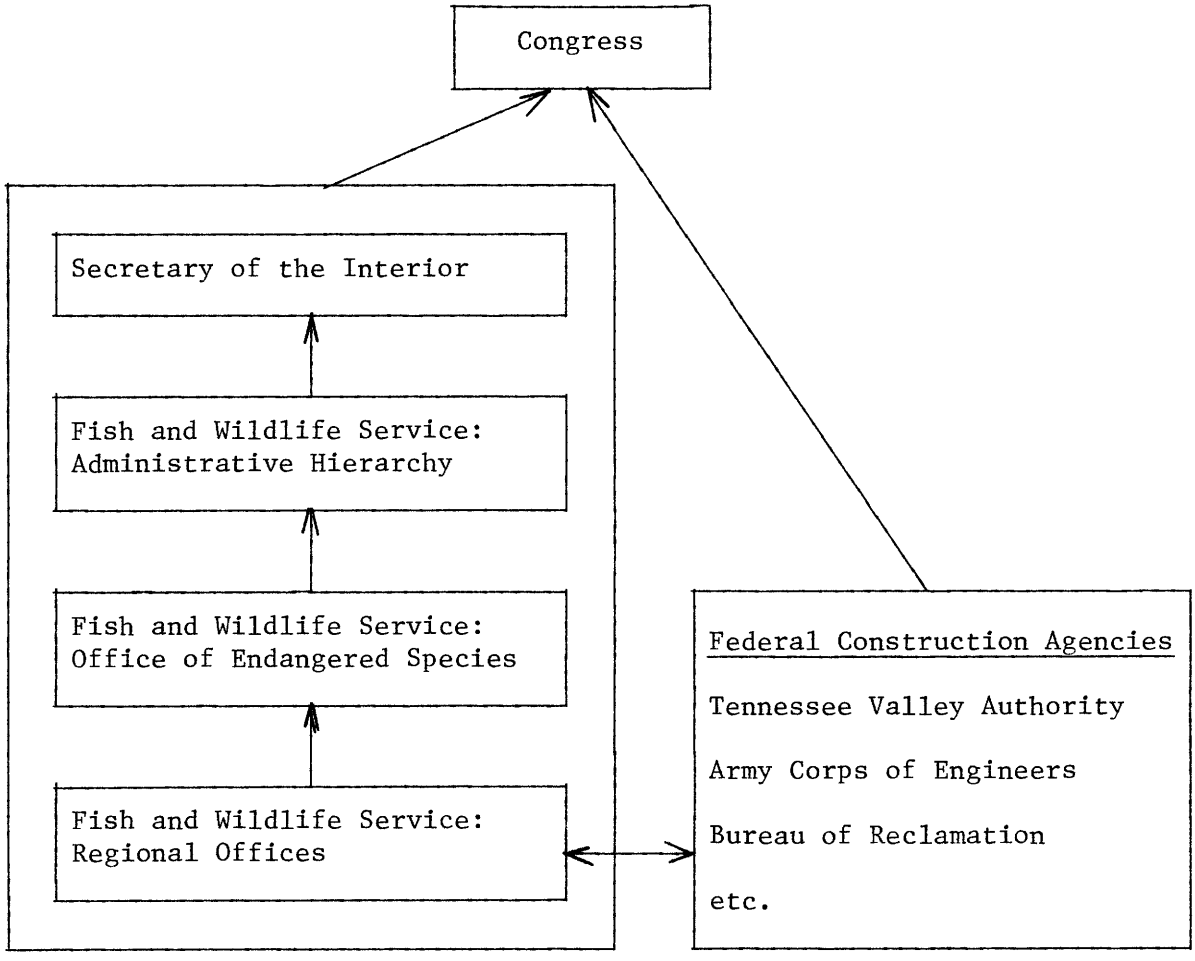
APPENDIX G -- FLOW DIAGRAM OF THE INTERAGENCY CONSULTATION PROCESS



* Points at which there is written communication between the Federal agency and the FWS

(Source: U.S. Congress, House, Committee on Merchant Marine and Fisheries, 1978b, p1167)

APPENDIX H -- HIERARCHICAL PROCEDURE FOR RESOLVING CONFLICTS IN INTERAGENCY CONSULTATION (SECTION 7)



APPENDIX I — IMPLEMENTATION TIME LINE

		Judicial Action	Legislative Action	Total Numbers of Actions (* = 3 actions)+ 3 15 30 45 60 75 90	Total Actions
	January				
	February				
	March				
	April			*	3
1	May				
9	June				
7	July				
4	August				
	September				
	October				
	November				
	December			*	3
	January			*	1
	February				
	March				
	April			*****	16
1	May			*	3
9	June				
7	July			**	5
5	August				
	September			**********	255
	October		HR HEARINGS	***	8
	November				
	December			**	6
	January				
	February				
	March	I-10 STOPPED			
	April			**********	65
1	May		S HEARINGS		
9	June			**********	1961
7	July			*	4
6	August			*	3
	September			*	4
	October			*********	26
	November			*	4
	December			**	5
	January	TELLICO STOPPED		**********	64
	February			***	9
	March			*	2
	April			****	12
1	May			***	9
9	June			******	17
7	July		S HEARINGS	*	2
7	August			******	17
	September			****	13
	October				
	November			*****	14
	December			******	17
	January			**	5
	February		HR HEARINGS	**	5
	March			**	5
1	April		S HEARINGS	**********	43
9	May		HR HEARINGS	***	9
7	June		HR HEARINGS	**	5
8	July			**********	34
	August			**********	34
	September			**	7

+ Total Actions = Number of Proposed Listings + Final Listings + Proposed Critical Habitats + Final Critical Habitats

APPENDIX J -- KEY PROVISIONS OF THE ENDANGERED SPECIES ACTS

	1966 (P.L. 89-669)	1969 (P.L. 91-134)	1973 (P.L. 93-205)
CAUSE	unfortunate consequence of growth and development in the United States		consequence of economic growth and development untempered by adequate concern and conservation
VALUES	educational, historical, recreational, and scientific		aesthetic, ecological, educational, historical, recreational, and scientific
PURPOSES	1) conservation, protection, restoration and propagation of native fish and wildlife that are threatened with extinction 2) consolidation of the National Wildlife Refuge System	1) prevention of importation of endangered species of fish and wildlife into the United States 2) prevention of interstate shipment of reptiles, amphibians and other wildlife taken contrary to state law	1) ecosystem conservation 2) program for conservation of endangered and threatened species 3) establishment of policy that all federal departments shall seek to conserve endangered and threatened species and use their authorities in furtherance of the Act
SPECIES PROTECTED	species native fish and wildlife (including game and nongame migratory birds)	species or subspecies fish or wildlife defined as wild mammal, fish, wild bird, amphibian, reptile, mollusk, or crustacean	species, subspecies, or populations any member of the animal or plant kingdoms, including mammals, fish, birds, amphibians, reptiles, mollusks, crustaceans, arthropods or other invertebrates, and plants
LISTING	endangered = threatened with extinction (1) destruction, drastic modification, or severe curtailment of habitat, (2) overexploitation, (3) disease or predation, (4) other factors	endangered = threatened with worldwide extinction (1) destruction, drastic modification, or severe curtailment, or the threatened destruction, drastic modification, or severe curtailment of its habitat, (2) overutilization for commercial or sporting purposes, 3) the effect of disease or predation, 4) other natural or man-made factors affecting its continued existence. based on best scientific and commercial data The Secretary must review the status of a species based on an interested person's petition if substantial evidence is presented	endangered = in danger of extinction threatened = likely to be endangered in future (1) present or threatened destruction, modification, or curtailment of its habitat or range, (2) overutilization for commercial, sporting, scientific, or educational purposes, (3) disease or predation, (4) inadequacy of existing regulatory mechanisms, (5) other natural or manmade factors affecting its continued existence based on best scientific and commercial data The Secretary must review the status of a species based on an interested person's petition if substantial evidence is presented species can be listed if they are similar in appearance to endangered species emergency listing is provided for a 120-day period

	1966 (P.L. 89-669)	1969 (P.L. 91-134)	1973 (P.L. 93-205)
PROHIBITIONS	No one can take or possess an endangered species within a National Wildlife Refuge System area, except with a permit. The federal government cannot regulate the use of endangered species off of federal property.	Importation of endangered species or subspecies prohibited except with: 1) economic hardship permit (up to 1 year) 2) permits for zoological, educational, and scientific purposes and for propagation in captivity.	Importation, exportation, or taking an endangered or threatened species, subspecies, or population prohibited within the U.S., its territorial seas or high seas. It is unlawful to trade or possess Appendix I species on the International Convention. Exceptions: 1) species currently held in captivity 2) permits for Alaskan native subsistence taking 3) permits for undue economic hardships (maximum of one year) 4) permits for scientific or propagation purposes
DEFINITION OF "TAKE"	to pursue, hunt, shoot, capture, collect, kill, or attempt to do the same		to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to do the same
FINES	not to exceed $500 or 6 months imprisonment	Civil: not to exceed $5,000 per violation Criminal: not to exceed $10,000 or one year imprisonment per violation	Knowingly: not to exceed $10,000/$5,000 Willfully: not to exceed $20,000/$10,000 or 1 year/6 months imprisonment Otherwise: not to exceed $1,000 Half the fine can be given as rewards up to a maximum of $2,500
INTERAGENCY COOPERATION	Interior, Agriculture and Defense shall seek to protect species of native fish and wildlife, including migratory birds, that are threatened with extinction, and insofar as is practicable and consistent with their primary purposes ... shall preserve the habitats of such species on lands under their jurisdiction. The Secretary shall review other programs administered by him and, to the extent practicable, utilize such programs in furtherance ... The Secretary shall also encourage other Federal agencies to utilize, where practicable, their authorities in furtherance ... and shall consult with and assist such agencies.		All other Federal departments and agencies shall utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered and threatened species ... and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence ... or result in the destruction or modification of (critical) habitat.
COOPERATION WITH STATES	The Secretary shall cooperate to the maximum extent practicable including cooperation before land acquisition. The Secretary may enter into agreements for administration and management of an area for endangered species protection.		The Secretary shall cooperate to the maximum extent practicable. The Secretary can enter into cooperative agreements if a State has a plan to conserve all resident endangered species. Federal grants can provide up to 2/3s of the cost of a program (or 75 percent if two states are involved). Delegation of management authority to the state allowed if a program is established within 15 months after enactment.

	1966 (P.L. 89-669)	1969 (P.L. 91-134)	1973 (P.L. 93-205)
INTERNATIONAL COOPERATION		Secretary shall encourage foreign countries to provide protection, and shall encourage agreements with foreign countries.	Secretary shall encourage foreign countries to provide protection, and shall encourage agreements with foreign countries. Secretary can use foreign currencies to assist in development of foreign endangered species program.
INTERNATIONAL CONVENTION		Secretary through the Secretary of State shall seek an international meeting prior to June 30, 1971 including the signing of a binding, international convention.	The President is authorized to designate a Management and Scientific Authority to implement the Convention.
LAND ACQUISITION	Secretary authorized to acquire land using funds from the Migratory Bird Conservation Act, Fish and Wildlife Act of 1965, Fish and Wildlife Coordination Act, and Land and Water Conservation Fund Act of 1965. Annual appropriations up to $5 million with total expenditures not to exceed $15 million. No more than $750,000 can be used on any one area.	uthorization limits for any one area raised o $2,500,000.	Secretary authorized to acquire land using funds from the Migratory Bird Conservation Act, Fish and Wildlife Act of 1965, Fish and Wildlife Coordination Act, and Land and Water Conservation Fund Act of 1965. No maximums set for any one area.
JUDICIAL REVIEW			Any person may commence a civil suit to enjoin any person in violation of the Act or regulations or to compel the Secretary to act to prohibit taking of resident endangered or threatened species. Court costs can be awarded to plaintiffs.
AUTHORIZATIONS			Interior / Commerce FY74 $4 million max. / $2 million max. FY75 $8 million max. / $1.5 million max. FY76 $10 million max. / $2 million max.
OTHER PROVISIONS	Consolidation of National Wildlife Refuge System. Key Deer National Wildlife Refuge authorized.	Lacey Act Amendments, making it unlawful,to interstate ship any amphibian, reptile, mollusk, or crustacean ...	Smithsonian directed to review plant species for status.

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