

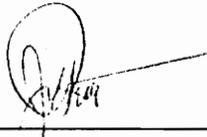
POLICY, VALUES & INCOMMENSURABILITY:  
*THE NORTHERN ROCKY MOUNTAIN  
WOLF RECOVERY PROJECT*

by  
Matthew T. Rea

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APPROVED:



Joseph C. Pitt, Chairman

  
Mark V. Barrow  
Richard M. Burian

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(ABSTRACT)

In this thesis I explore the following question: When a government agency is charged with implementing policies formulated in the light of scientific principles, why do the justifications for implementation differ from justifications for the legislation? The predator reintroduction being carried out under the Northern Rocky Mountain Wolf Recovery Plan, now 19 years old, has recently catalyzed a national controversy about the value of wildlife. My goal is to examine the reasons why the ecological values that infuse government policy play little part in governmental justifications for policy implementation.

## **ACKNOWLEDGMENTS**

I would like to thank Blind Lemon Jefferson, Muddy Waters, Howling Wolf, Jimi Hendrix and Stevie Ray Vaughn for sonic support. Bearing in mind that I might one day want a PhD, however, I will thank instead Richard Burian, Mark Barrow, and especially Joe Pitt for threatening to feed me to his dogs.

More importantly, without Carolyn Furrow's invaluable assistance I might still be looking for toner.

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## §1 Background

In January of 1995, the United States Fish and Wildlife Service moved several grey wolves from Canada to Yellowstone National Park. This action terminated an extended planning phase--the original plan was drafted in 1978. It is not surprising that the logistics of the project are somewhat involved; many of the problems of predator reintroduction are immediately and viscerally apparent: the government wants to put *wolves* in a tourist area surrounded by cattle ranches!

Predator reintroduction signifies an attempt by the Fish and Wildlife Service (FWS) to repair the highest levels of the biotic pyramid that have been disturbed--according to one view--by humans. Wolves are said to belong to the Yellowstone ecosystem, and humans wiped them out. Restoring the ecosystem to its original state addresses our recent concern for ecological balance and understanding of the way ecosystems hang together. The ecological justification is the justification of record; there are, however, other reasons as well.

The Fish and Wildlife Service (FWS) is a direct descendant of the federal agency that poisoned wolves and other predators to the brink of extinction around the turn of the century. Reintroduction could be seen to serve as a sort of penance by restoring the balance. Public interest groups representing environmentalist concerns similarly pressure the FWS to save, protect, and promote that group's favorite animal.<sup>1</sup>

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<sup>1</sup>Many supporters of reintroduction are uninterested in the biological aspects of ecology. They simply like a particular predator. Ecology serves them as a position of scientific authority from which to argue.

Whatever the personal and political motives that support predator reintroduction, the FWS ostensibly must "devis[e and eventually implement] ecologically sound plans for the maintenance, enhancement, and recovery" of various species and subspecies in order to "restore. . . [an] Endangered or Threatened species as a viable self-sustaining member of its ecosystem."<sup>2</sup> This mandate is interesting in its own right as an indication of an incredible change in governmental policy with regard to the place and role of humans in the ecosphere--in short, the value of nature.

Theoretically, recovery plans must be ecologically sound and meet ecological objectives. One might assume that the *implementation* of ecological objectives might rely upon ecological *justifications*. This is certainly the case with regard to the legislation that provides guidelines for species classification, protection, and reintroduction. The teams which produced the plans were "instructed to produce a purely biologically based plan and to disregard possible political or social considerations" and warned that "[a]dministrators involved with plan implementation will have to weigh social and political consideration at the appropriate time."<sup>3</sup> However, as we shall see, the implementation of plans to achieve ecological objectives did not depend on ecological justifications in the case of the *Northern Rocky Mountain Wolf Recovery Project*.

The appropriate time to weigh social and political questions appears to have been the public involvement phase of implementation, when the FWS called for public

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<sup>2</sup>FISH AND WILDLIFE SERVICE, RECOVERY PLAN FOR THE EASTERN TIMBER WOLF (1978), preface.

<sup>3</sup>*Id.*

participation and initiated a dialogue with interested parties. At this point in the proceedings, it became clear that the values espoused at the legislative level did not speak to the concerns of those who would be affected by the reintroduction of wolves to Yellowstone National Park. As a consequence, the language of the dialogue at the implementation level bears little resemblance to the grand rhetoric of the Endangered Species Act. This difference is not merely one of language, but one of values. The actions taken by the administrators within the FWS often appeared un-ecological. For example, Northern Rocky Mountain Wolf Recovery plan (hereinafter *Recovery Plan*) wolves transplanted from Canada were downgraded from "endangered" to "threatened;" which allowed both the affected parties and the FWS more latitude in problem-solving.<sup>4</sup> This change was made specifically in order to make administration easier.

At some level, certainly, when science meets society--and especially segments of society with competing interests--the ensuing dialogue shifts away from scientific principles and towards logistical (or social) considerations. *This justificatory shift, when it occurs, is an important component of how science is applied to and in society.* This consideration frames the main question which I confront in this thesis: using the implementation of the *Recovery Plan* as a model, how and why do policy justifications for plan production and legislation differ from economic justifications for implementation?

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<sup>4</sup>It seems worth noting that wolves in Minnesota (the only one of the contiguous 48 states that has a significant wolf population today) have never been listed as endangered, and are also considered to be 'threatened.'

The difference between the justifications for implementation and motives based on scientific theory reveal a pervasive systemic incommensurability between the values that underlie an instrumental rationality (the traditional milieu of political justification) and the values inculcated in ecological thinking.

## §2 Incommensurability

The concept of incommensurability is the subject of a large body of literature, primarily based on Thomas S. Kuhn's philosophy of science, and his conception of scientific revolutions introduced in 1962.<sup>5</sup> Kuhn's theory was an attempt to divorce the idea of progress from a mere chronological succession of theories, especially in cases where science had undergone what Kuhn called a "revolution." First, Kuhn argued that a change in our understanding of phenomena can entail a profound change in the problem set of a particular science, or, alternately put, a change in the scientific problems faced by members of a particular scientific community. Secondly, procedures and concepts retained from a previous tradition of normal science were modified in such a way that a "change in concept use" occurred which was alleged to be analogous to meaning change.<sup>6</sup> A third aspect of incommensurability was that practitioners of science on either side of a revolutionary divide practiced "in different worlds."<sup>7</sup>

One analysis of Kuhn's ideas stands out as particularly helpful. Paul Hoyningen-

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<sup>5</sup>Kuhn, Thomas S. The Structure of Scientific Revolutions (Chicago, Illinois: The University of Chicago Press) 1962.

<sup>6</sup>Hoyningen-Heune, Paul. Reconstructing Scientific Revolutions: Thomas S. Kuhn's Philosophy of Science (Chicago, Illinois: University of Chicago Press) 1993, p. 209.

<sup>7</sup>Id., pp. 211-12.

Heune draws a distinction between two conceptions of incommensurability in his Reconstructing Scientific Revolutions: Thomas S. Kuhn's Philosophy of Science: the "world-view" model and the "local" model.<sup>8</sup>

Kuhn has been widely considered to be claiming that "*all* of the concepts employed in both theories change meaning in the transition to a new theory."<sup>9</sup> This is known as the "world-view" model of incommensurability. If all of the terms in successive scientific theories change their meanings with regard to each other, then the theories involved cannot be compared under any circumstances.

Hoyningen-Heune points out that Kuhn's subsequent narrowing of the concept of incommensurability reflects a simpler thesis: one entirely constituted by local meaning change involving only some of the terms or concepts involved.<sup>10</sup> Local incommensurability for Kuhn, then, can mean competing conceptions of scientific problems within a paradigm for which there is, nevertheless, no "language into which at least the empirical consequences of both can be translated without loss or change."<sup>11</sup> An example of this kind of incommensurability is explored below.

If this local conception of the relationships between successive theories is right, then successive theories can be compared. Incomparable theories would require entirely

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<sup>8</sup>Id.

<sup>9</sup>Id., p. 213.

<sup>10</sup>Id., pp. 212-13.

<sup>11</sup>Kuhn (Op. cit.), p. 266 *in* Hoyningen-Heune (Op. cit.) p. 213.

separate descriptions; comparable theories share some background assumptions. It follows, however, that proponents of different theories who discuss the same problem or object domain cannot be sure the identical terms they employ refer to the same things or concepts.<sup>12</sup>

### §2.1 Incommensurability and Predator Reintroduction

Although ideas about incommensurability were generated by the examination of successive scientific theories, the concept is applicable to other types of controversy as well. While the history of predator reintroduction contains successive theories about the role of predators in ecosystems that may be identified as incommensurable, current debates about the role of predators (which are not strictly scientific controversies) reveal opposing positions that share the same object domain, yet analyze the same situation through different sets of values. These positions, or perhaps the values that underpin them, may be called incommensurable.

In this sense, two competing positions are incommensurable if concerns that are relevant to one position are not expressible within the context of the other position. The reason why the FWS' justifications for reintroducing predators differs from the ostensible justifications contained within their mandate from Congress is that the ecological reasons, or values, espoused by the ESA have different meanings when espoused in a political context dominated by benefit-cost (BC) analysis.

There is an interesting parallel between the history of the United States

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<sup>12</sup>See W.V. Quine, Word and Object (Cambridge, Massachusetts: MIT Press) 1960, Chapter 2.

Government's relationship with the wolf and current controversies about wolf reintroduction. The last 70 years have seen a radical 180 degree change in (governmental) attitudes toward the wolf, and the opposite poles encompass both sides of the current controversy. This does not mean that there are two monolithic positions facing each other across an unbridgeable gulf; far from it, as the history of the issue will show. A history of governmental control since 1914 will not merely connect current debates to the past; it will add complexity to the account.

In this thesis I attempt three things. First, I contextualize the current debate by providing a short history of governmental wildlife management, showing how values humans hold, even while being part of nature, both color our understanding of nature and change over time. Secondly, through this contextualization I explain the gap between FWS theory and practice as a problem of incommensurability between sets of values. Finally, I explain the source of the incommensurability between some of the rationales for reintroduction and an instrumental rationality.

The remainder of this chapter will be devoted to a rough taxonomy of environmental values, a taxonomy that will facilitate this discussion. The concepts of value and values are notoriously difficult to define with any accuracy. Yet an attempt must be made here to outline some of the values that infuse positions taken with regard to the *Recovery Plan*.

### §3 A Taxonomy of Environmental Values

A comprehensive definition of values would consume this entire project.

Similarly, any attempt to provide a complete classification of types of environmental values would fail. Values are not a static collection of beliefs held by an individual, but determinations of relative importance given a number of competing factors best conceived of as a dynamic matrix. This matrix depends upon a large number of variables. The relative weight assigned to a particular value can change, not only with regard to different issues, but with regard to different "levels" of debate about the same issue.

An abstract debate about values has little practical relevance. The values that place parties in opposition over one issue might not conflict at all in an abstract arena. Expressions of abstract values, in the form of policies or actions, have implications that can spur opposition from quarters--and based on values--that an abstract examination of the first standpoint cannot predict.

Certainly it is easy to support a statement like "Preserving parts of our natural environment is good." The political world abounds with such vague statements of policy. The implementation of policies that support general value statements, however, is something else again. Specific policies are not evaluated in a vacuum. A policy value in action, with tangible implications (read detrimental effects for somebody,) causes positions on issues--or a rank ordering of values--to crystallize.

One advantage of a case study is that it provides a specific issue around which values are professed, appealed to, and realigned. The *Recovery Plan* reduces valuers to proponents and opponents, an alignment that lends direction to a discussion of competing values. In this section I examine some of the rationales on both sides of this issue, and

offer an initial classification to foster discussion.

### §3.1 The Problem of Intrinsic Value

One important distinction must be made before any coherent discussion of values may be attempted. There is a difference between the intrinsic value of nature, and values humans hold regarding nature. Environmental rhetoric often contains statements to the effect that a particular person speaks on behalf of nature, as if nature had appointed a spokesman. Less obtrusively, some environmentalists speak glibly about the intrinsic value of nature. In neither case is it clear that the self-appointed Loraxian spokesperson is speaking for anyone but themselves. Nature *qua* nature **has no** intrinsic value, and if nature has no intrinsic, objective value, then only human, subjective values can be considered.

It is important to understand the difference between claims about the intrinsic value of nature and value claims about nature, since one's position on the existence of nature's intrinsic value largely determines the way in which environmental issues will be approached. The field of environmental ethics has recently become concerned with the following question:<sup>13</sup> Does nature have value independent of human perception, and if so how can it be identified?

Proponents of an 'objectivist' view of nature argue that the true value of nature cannot be captured by the sum of the ways humans value nature. Nature objectivists

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<sup>13</sup>See generally the most recent Royal Institute of Philosophy Supplement (36); Robin Attfield and Andrew Belsey (eds). Philosophy and the Natural Environment (Cambridge, England: University Press) 1994. Frederick Ferre's conclusion to the volume notes that "In our papers it has been presented as a choice between *either* 'subjectivism' *or* 'objectivism' with regard to loci of fundamental (vs. derivative) value." Attfield, et al (op. cit.), p. 230.

attempt to undermine logically what they consider to be anthropocentrism's faulty underpinnings. Holmes Rolston III concludes:

From this more objective viewpoint, there is something subjective, something philosophically naive, and even something hazardous in a time of ecological crisis, about living in a reference frame where one species takes itself as absolute and values everything else in nature relative to its potential to produce value for itself.<sup>14</sup>

Proponents of this view refer to it variously as one of "intrinsic" or "human-independent" value, and cite the extension of ethics to the natural world as a logical step in the evolving process of respecting the rights of other beings. Rolston's stand is the most extreme form of an argument designed to ascribe intrinsic value to nature. It remains unclear how humans can assess human-independent value. The most vehement proponents of nature's objective value cannot escape an anthropomorphic conception of nature: "I do, and you should, value nature for its own sake" does not constitute an objective standard; it is merely the expression of a subjective point of view.

Other moral philosophers have claimed that "there is no inconsistency between a subjectivist meta-ethics and the non-anthropocentric normative claims in question."<sup>15</sup> Robert Elliot and others have argued that humans can subjectively identify the 'intrinsic' value of nature even in cases where no humans are affected in any way,<sup>16</sup> because they

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<sup>14</sup> Holmes Rolston III, *Value in Nature and the Nature of Value in Attfield, et al (op. cit.)*, p. 13, 30. President of the International Society for Environmental Ethics, Rolston's argument hinges on his assertion that animals themselves have values, as well as do species and ecosystems. Few of his colleagues support him in these additional claims. It is interesting to note that he opposes the 'subjectivist' position--that only valuers (humans) can ascribe value--in part because it is 'hazardous.'

<sup>15</sup>Robert Elliot, *Ecology and the Ethics of Environmental Restoration in Attfield, et al (op. cit.)*, 31, p. 32.

<sup>16</sup>*Id.*, p. 33. "A consideration of [extinct animals'] properties, including their property of exhibiting biological organization and complexity, inclines me to value them, to attribute to them intrinsic value."

can imagine a state of nature in which there is no human presence:

So, I contemplate a future state in which there is no human life, indeed no sentient life and so no conscious states whatsoever, but in which there is still considerable biotic diversity. Now I think that such a future state possesses intrinsic value, *which is, on the subjectivist view, just to say that I have a certain type of positive attitude towards it.* And even after I am dead it will still be the case that at this time I have that attitude.<sup>17</sup>

Elliot attempts to extrapolate his subjective positive attitude through time and space to prove that one can subjectively identify objective value. He fails. Despite the fact that he imagines a world without humans, his basis for imputing value remains "I like it!"

Rolston and Elliot represent two attempts to identify in nature a foundation of some sort of non-anthropocentric axiology, in contrast to the more traditional approach. The application of traditional ethical theory reduces all decisions about non-humans to a "standard utilitarian calculus, [where] environmental ethics is thus reduced more or less to cost-benefit analyses and public policy considerations."<sup>18</sup> This is considered inadequate by the likes of Rolston and Elliot because many of the values held by humans do not easily accommodate to cost-benefit analyses. Despite the fact that neither Rolston or Elliot manage to persuade, it does seem clear that "I value nature for its own sake" is not the same thing as "I value nature for what it can do for me."

This debate is not simply a philosophical squabble over proper foundations for

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<sup>17</sup>Id., emphasis added.

<sup>18</sup>J. Baird Callicot, *Non-Anthropocentric Value Theory and Environmental Ethics* 21/4 AMERICAN PHILOSOPHICAL QUARTERLY 299, October 1984, p. 299. "Something is intrinsically valuable and owed moral consideration if interests, construed in the broadest possible sense, may be intelligibly assigned it." Callicot argues that an inclusive non-anthropocentric axiology can be based on ethical 'conativism,' which denies that beings (up to and including plants) need consciousness to have interests. Hence, all beings have moral standing.

ethics; it has immediate implications for environmentalism. Objective and subjective attempts to find human-independent values in nature highlight differing underpinnings to the same conclusion; that intrinsic values exist, and that the ways in which the value of nature is determined are central to one's position with regard to nature. Yet the debate described above merely contests the position of nature's (extant) intrinsic value. For many observers of nature who do not happen to be environmental philosophers, the question is whether intrinsic value exists at all.

This thesis deals with human arguments for and against predator reintroduction and the accompanying rationales for each argument. Persons who are convinced that nature has intrinsic value value nature's right to exist for its own sake, and are convinced that strictly utilitarian analyses of environmental values are inadequate--since their values are hard to defend using utilitarian criteria. This inability to translate some environmental concerns is an indication of the incommensurability between ecological thinking and an instrumental rationality highlighted by BC analysis.

However, the claim that nature possesses objective intrinsic value (regardless of how it is identified) reveals an attitude, or subjective (non-intrinsic) value, of those people that hold this view. The values discussed in this thesis, therefore, are **human** values from start to finish.

### §3.2 The Value of Nature: Transformative Values

If utilitarian analyses are inadequate to convey the complexity of environmental ideas, then either non-utilitarian values must exist, (and this dichotomy itself can prove

problematic,)<sup>19</sup> or instrumental analyses do not adequately encompass some utilitarian values of a higher order.<sup>20</sup> A discussion of environmental values requires a framework that can accommodate all levels of value.

To this end, Bryan G. Norton has introduced a set of categories for better classifying preservationist thought. These categories are (1) "demand values," and (2) "transformative values."

(1) Demand values, of which there are two types, satisfy felt preferences. (a) "Merely felt preferences" are those desires which can be sated by a particular experience, or unreflective desires and impulses. The desire to eat ice cream rather than artichokes would constitute a merely felt preference. (b) "Considered felt preferences" are hypothetical, and "are desires or needs an individual *would have* if certain very stringent, perhaps even practically impossible, conditions were fulfilled."<sup>21</sup> Considered preferences are those preferences a rational individual might be expected to have after some sort of measured introspection. The decision, upon reflection, to choose vegetables rather than ice cream as part of a healthy diet would constitute a considered felt preference. The difference between types of felt preferences is stark. Merely felt

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<sup>19</sup>Bryan G. Norton argues in *Why Preserve Natural Variety?* (Princeton, New Jersey: Princeton University Press 1987), pp. 5-8 that a differentiation between instrumental (or utilitarian) theories and non-instrumental theories is difficult to maintain. The non-utilitarian theories are often labeled "'deontological' theories, characterized by their emphasis on the relations between value, obligations, and individual rights. . . [These are] not useful when obligations transcend species boundaries."

<sup>20</sup>My thanks to Dr. Richard Burian for pointing out the blindingly obvious.

<sup>21</sup>Norton (*op. cit.*), see generally pp. 8-22. "References to considered preferences remain valuable in spite of their hypothetical nature because one can show that a particular felt preference should be rejected, upon consideration, in favor of another [considered] preference if one can show that it is inconsistent with what appears to be the most rationally defensible theory of ideal regarding that preference." *Id.*, p. 9. The 'stringent' conditions for a hypothetical individual would include assumptions of qualities such as knowledge, wisdom, and will-power. Hence the moniker 'practically impossible:' this case study deals in part with politicians.

preferences are those which an individual actually has. Considered felt preferences are those which an observer--after identifying the important factors that would drive introspection--can say that an individual should have had. These preferences are not necessarily values in and of themselves. They are, however, satisfied by demand values.

Norton's account of demand values does allow for some putative measure of objectivity in assessing value. Yet demand values are constituted by situations, experiences or states of affairs that satisfy a particular observer, real or hypothetical. Norton takes a further step towards some type of objectivity (again, with regard to human values) by positing the existence of what he calls (2) transformative value. (2) "Transformative value" as opposed to demand value, "provides an occasion for examining or altering a felt preference rather than simply satisfying it."<sup>22</sup> Attributes of transformative value "presuppose [logically] that some values are preferable to others."<sup>23</sup> Therefore, the transformative value of a single activity can be seen as positive or negative depending upon one's viewpoint. Hunting might be seen as having a positive transformative value by one individual, because it fosters a love of the outdoors (increasing the demand value of outdoor recreation), and having a negative transformative value by another individual for fostering a desire to kill (increasing the demand value of eliminating the local wildlife.) This category provides an interesting way to assess the kinds of value in nature that some preservationists feel get left out of

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<sup>22</sup>Id.

<sup>23</sup>Id., p. 11.

instrumental models of rational decisionmaking.

Norton posits these types of preservationist values in order to avoid trying to characterize values as either utilitarian (anthropocentric) or non-utilitarian (non-anthropocentric). Norton identifies three standpoints from which to support preservation. Strong anthropocentrism deals with demand values of humans, e.g., the simple desire to go camping. Weak anthropocentrism deals with transformative values of humans, e.g., the transcendental idea that contact with nature improves the human species. Nonanthropocentrism (to the extent that the title is warranted) deals with human concern for the demand values of non-humans, e.g., the idea that animals--or even, in some cases, species or ecosystems, have a right to survival.<sup>24</sup> All of these values, however, are human values. Objectivity is not achieved; some subjective values are held to be better than others.

### §3.3 Human Values in Nature

The value one has *vis a vis* nature *simpliciter* defines a person's position towards nature, but does not necessarily define a person's position on a particular issue. Approval and disapproval of the plan to reintroduce wolves into Yellowstone National Park is not simply a function of whether one feels that wolves have intrinsic value. With regard to environmental issues, however, some generalizations can be made.

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<sup>24</sup>Norton attempts to sidestep the issue of whether nonhumans hold transformative values in nature, a position taken by Holmes Rolston III (*op. cit.*) and others; an approach which is "not popular for good reason. To defend it one would have to defend the view that natural objects and species are conscious because value transformations take place only within consciousness." It is much more compelling to refer to intrinsic value as a value humans attribute to animals in the form of concern for their welfare and existence, than as value which confers rights upon animals. The word intrinsic remains problematic but is inextricably linked with much of the literature regarding human concern for species existence.

In the most general sense, many values that tend to get lumped together under the rubric of environmental values are transformative values, or values that attempt to impute "intrinsic"<sup>25</sup> value to nature. These values often place a premium on the future existence of species, ecosystems and wilderness, and do not depend upon identifying a particular observer (with merely felt preferences) or even a hypothetical observer (with considered felt preferences.) As such, they are not temporally focused. Environmentalists argue that nature has transformative value for humans, therefore many justifications for reintroduction of wolves, for example, exist.

The values that are threatened by environmental concerns, on the other hand, tend to be demand values. These values do tend to be temporally focused, and involve a specific, well-defined harm; to property, profit, asset and peace of mind. Opposition to environmental projects is generally reactive. When the application of a general principle directly affects demand values, it gains opponents. In the resulting debate over the efficacy or wisdom of something like wolf reintroduction, opponents stack harm to specific individuals' demand values against vague environmental transformative values--often to great effect.<sup>26</sup> Transformative values are not completely expressible within the instrumental framework that surrounds public debate about ecological issues.

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<sup>25</sup>The word 'intrinsic' will hereinafter denote human concern for nature; or the idea that nature has some sort of 'rights.' Philosophically, 'rights' are another loaded term that cannot be fully discussed within the scope of this essay, but a simple conception of rights wherein man's existence within nature entails some sort of obligations or responsibility for nature will have to do.

<sup>26</sup>This characterization best describes the debate over reintroduction, but is intended as shorthand and describes the reason why justifications change between promulgation and implementation--not as a clear-cut bifurcation. (E.g., I have demand values that are satisfied by wolf reintroduction, and some states' rights advocates have transformative values that are threatened by federal programs; even though none of us are directly affected.)

People who support the *Recovery Plan* often do so for reasons that transcend a framework of instrumental rationality. Quite often the values that escape instrumental quantification are transformative values, regardless of whether they are classed as non-utilitarian values or higher order utilitarian values. People who oppose the *Recovery Plan* tend to do so for specific reasons that are easily expressible within a framework of instrumental rationality, because the demand values involved often concern business and money. Opponents are perfectly happy to argue with any particular environmental tenet that would seem to support predator reintroduction, but in the end the reason they do so is because they are personally affected.<sup>27</sup> Because opposition is reactive, it makes sense to deal with the more varied environmental values (that support the *Recovery Plan*) first.

### §3.4 Environmental Values: Support for Predator Reintroduction

Both 'environmental' and 'ecological' are hard to define. 'Environmental' connotes in some vague way 'for the environment.' The strict definition of 'ecology' is "the branch of biology dealing with the relations between organisms and their environment."<sup>28</sup> Yet the term 'ecological' carries with it connotations of normative prescriptions, and therefore the term has come to be applied to a particular side of

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<sup>27</sup>T. R. Mader, of the intellectually suspect "Common Man Institute," argues vehemently (based on eyewitness testimony since 1837) that wolves never inhabited the area now bounded by Yellowstone National Park. . . in other words, the Fish and Wildlife Service's efforts at reintroduction are scientifically misguided due to an error in the biological determination of the historic range of the wolf. Unnatural Wolf Transplant in Yellowstone National Park (Gillette, Wyoming: Common Man Institute) 1990. A glance at the other publications available from the Common Man Institute indicates that this ostensible biological error is **not** the only reason that Mader opposes reintroduction.

<sup>28</sup>Webster's Encyclopedic Unabridged Dictionary of the English Language (New York, New York: Gramercy Books) 1994, p. 452.

environmental debates. Furthermore, various self-appointed ecological philosophers appropriate the word 'ecology' to mean something else again.<sup>29</sup>

Leaving considerations of the normative nature of ecology aside, there are a great many reasons to support the return of predators to their original habitat. Sometimes one rationale may constitute sufficient condition for an individual to support ecological goals, but more often this group of justifications works together. It is difficult to delineate the various positions; but for the sake of convenience, they can be broken down into ethical, aesthetic, and biological reasons.<sup>30</sup>

### §3.4.1 Ethical Considerations

Ecology, generally, draws support from segments of the population that support animal rights. Animal rights supporters deplore the notion that animals exist solely for human use, and wish to assert that animals have feelings and the capacity to feel pain; that pain matters. Historians such as Thomas Dunlap and Lisa Mighetto argue that extending the concepts of ethics to predators marks the final step in the evolution of the treatment of animals that began with the protection of birds and domesticated animals around the turn of the century.<sup>31</sup>

One who advocates rights for animals feels that animals possess some kind of

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<sup>29</sup>See, for example, **Bill Devall and George Sessions**, Deep Ecology: Living as if Nature Mattered (Salt Lake City, Utah: Peregrine Smith Books) 1985.

<sup>30</sup>I will use the word 'biological' to denote conclusions drawn from what I have defined as 'ecology.' This is in no way designed to suggest that the science of ecology is straightforward and non-problematic; merely that the results of ecological studies within the discipline indicate something. Quite often, it is not the science that is problematic.

<sup>31</sup>**Thomas Dunlap**, Saving America's Wildlife (Princeton, New Jersey: Princeton University Press) 1988. **Lisa Mighetto**, Wild Animals and American Environmental Ethics (Tucson, Arizona: The University of Arizona Press) 1991.

intrinsic value; which is to say a value that some persons see in granting moral standing to animals.<sup>32</sup> While this standpoint can be rather un-biological in a classical sense,<sup>33</sup> it fully supports ecological plans that aim to restore parts of the ecosystem.<sup>34</sup> The eradication of wolves from their natural habitat, or from anywhere else, on this view, is simply wrong.

The animal rights movement is an important part of 'environmentalism.' Hard-core rights' advocates suggest refraining from affecting wildlife at all; an unrealistic ideal at best. More centered arguments involving the rights of animals often contribute to the rhetoric of advocacy groups that support a particular animal.<sup>35</sup> A number of organizations act as advocates for the wolf in all situations.

Ethical support for the rights of animals does not necessarily indicate human-independent value being ascribed to a species or individual, but it generally involves a conception of intrinsic value. Ethical support for predator reintroduction, however, is

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<sup>32</sup>This does not necessarily depend upon animals having rights. See, for example, **Tom Regan**, The Nature and Possibility of an Environmental Ethic 3 ENVIRONMENTAL ETHICS 19, 19 (at note 1). "By the expression *moral standing* I mean the following: *X* has moral standing if and only if *X* is a being such that we morally ought to determine how *X* will be affected in the course of determining whether we ought to perform a given act or adopt a given policy. In the present essay the question of whether beings have moral standing have rights can be regarded as an open question. . ."

<sup>33</sup>**Mary Midgley** "distinguish[es] social concern, directed to conscious beings, from the wider, ecological kind, directed to all living things and perhaps too to the lifeless world which they inhabit," in Animals and Why They Matter (Athens, Georgia: The University of Georgia Press) 1983, p. 144.

<sup>34</sup>This is not to say that ethical considerations cannot come into conflict with other ecological plans. In a recent conference on Environmentalism and the Politics of Nature **Reid Helford** demonstrated the way in which proponents of restoration ecology (of floral ecosystems) face opposition from animal rights advocates when their measures include culling deer in Re-discovering the Pre-settlement Landscape: Making the Oak Savanna 'Real' (1995 Virginia Tech Science Policy Discussion Group) Saturday April 8 1995.

<sup>35</sup>E.g., the *International Wolf Center* and *Wolf Haven*. Both of these organizations support the wolf in as many capacities as possible, including education, legal advocacy in the form of amicus curiae briefs, and captive programs. While captive programs edge towards biology, their chief purpose in this case is to show off wolves, not prepare them for reentry into a less regulated ecosystem.

often inextricably tied up with aesthetic values, which can constitute a conflation of intrinsic and social (or human-based) considerations.<sup>36</sup>

### §3.4.2 Aesthetic Considerations

Man is only fully alive when he is aware of his existence, and being deeply aware of one's existence is to be religious. A wolf is fully aware within the limits of its own being, no less than we are in relation to our own limits, and thus the wolf's existence, and that of any sentient being, should hold no less religious significance than life to man himself.<sup>37</sup>

One of the great ironies of wolf reintroduction is that the wolf's special connection with nature, once deadly in implication, has become a source of potential public support. At one time the wolf was hated and feared because of its position as a symbol of the wilderness.<sup>38</sup> Today, among supporters of reintroduction, the wolf "fills our mythology, our folklore, our lingo, our art, our fantasy--and as such he is aesthetically important for man, in addition to being a handsome creature in his own right."<sup>39</sup>

If, as some have argued,<sup>40</sup> human contact with nature improves humans, then

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<sup>36</sup>A Wolf Haven International Magazine--and product advertisement--repeatedly speaks of wolves' right to a wilderness home, but much of the argument depends upon promoting the beauty, kindness, and gentleness of the wolves. "Lucan's gentle nature--the wisdom and warmth reflected in his eyes enriched the lives of many--human and wolf. For his very presence has done more to teach people what a wolf truly is and to instill in them respect than all our words can ever do." 12/1 WOLFTRACKS (Winter 1995), p. 28.

<sup>37</sup>Michael W Fox, The Soul of the Wolf (Boston, Massachusetts: Little, Brown and Company) 1980, p. 2.

<sup>38</sup>Mighetto (op. cit.), pp. 75-93.

<sup>39</sup>Nancy Shestak speaking at a workshop entitled; Reintroduction of Wolves Into the Wild in Erich Klinghammer (ed), The Behavior and Ecology of Wolves: Proceedings of the Symposium on the Behavior and Ecology of Wolves held on 22-23 May 1975 at the Annual Meeting of the Animal Behavior Society in Wilmington, N.C. (New York, New York: Garland STPM Press) 1979 420, p. 423.

<sup>40</sup>Norton (op. cit.) argues that one justification for protecting biodiversity is that nature plays a 'transformative' function for man. Norton also examines the biological bases for species and ecosystem preservation, and the values that underpin these arguments.

our symbols of nature (and wilderness particularly) become ennobling, rather than adversarial. Ironically, then, many of the qualities that nearly led to the wolf's extinction are now prized. It is easy to see that aesthetic concerns support wolves, or bears, more readily than the Furbish Lousewart. As ideas about nature have changed, predators have come into fashion. Wolves populate commercials for recreational vehicles, nature shows, and beer. As nature has become a home and not an opponent, wolves are portrayed less as slaving beasts and more as noble exemplars of nature.<sup>41</sup>

### §3.4.3 Biological(?) Considerations

Science has played a large role in the historical shift in human perceptions of the value of nature. It has been widely noted that acceptance of Darwin's theses in *Origin of Species* and *The Descent of Man* brought humans closer to nature than many wanted to be.<sup>42</sup>

Darwin was a necessary precursor to the ecological century for a number of reasons. One often overlooked facet of his work was that it stressed the observation of biological systems over time, an approach that would eventually be adopted by ecologists. Thomas Dunlap has chronicled the rise of animal ecology from Darwinian analysis and governmental game management through the environmental advances made

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<sup>41</sup>Mark Sagoff has studied this 'nonstandard' formulation of aesthetics and the way in which objects exemplify metaphorical qualities; while helping to shape the understanding of the quality they exemplify in On Preserving the Natural Environment 81 YALE LAW JOURNAL 205 1980.

<sup>42</sup>James Rachels has taken this argument so far as to argue that the discovery of evolution instills in humans a moral duty to extend ethics to all beings in nature in Created from Animals: The Moral Implications of Darwinism (New York, New York: Oxford University Press) 1990.

as science (and many other factors) swayed public opinion toward nature.<sup>43</sup>

This section is devoted to delineating values, however, and the scientific ideas that support predator reintroduction revolve around two main themes; the importance of biodiversity (including species protection) and the importance of ecosystem integrity. Biodiversity is important for at least two general reasons. First, biodiversity supports ecosystem integrity. Secondly, biodiversity is a vast and largely untapped source of potential human benefits. Ecosystem integrity promotes ecosystem stability. Management goals that tried to reshape nature in ways that benefitted man (as opposed to ecosystem stability) have often failed.<sup>44</sup>

Biological goals (or values) deal with understanding living systems and prescribe attempts to minimize disruptive effects. For this reason, ecological goals are implicitly normative.<sup>45</sup> Ecological thinking tends to exemplify pre-human conditions because the sturdiest ecosystems are those that are least affected by the rapid changes humans can make, and ecologists prize stability. In addition, ecology is implicitly normative because it is difficult to separate biologically-based proscriptions from "the larger penumbra of 'ecological thought,' which is meant to include the literary, economic, and philosophical

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<sup>43</sup>Dunlap (op. cit.)

<sup>44</sup>Two famous examples of mismanagement, on macro- and micro-scale, are the dust bowl and the overrunning of the Kaibab Forest by deer. Both are dealt with by Donald Worster in *Nature's Economy: The Roots of Ecology* (San Francisco, California: Sierra Club Books) 1977, pp. 221-53 and 270-1.

<sup>45</sup>The very fact that ecology studies biological systems necessitates a desire on the part of biologists to protect their subject matter. L. David Mech, the de facto dean of governmental wolf biology notes: "I have two principle motives for interest in reintroduction to wolves in the wild. The first is professional. I am a U.S. Fish and Wildlife Service biologist involved in setting up areas in the former range of the eastern timber wolf for tentative consideration. . .My second reason for interest in wolf transplants is ethical." From *Reintroduction of Wolves Into the Wild* (conference) in Klinghammer (op. cit.) 420, p. 422. This exemplifies both the difficulty in extricating 'biological' from 'non-biological' goals and the way in which biologists are implicitly advocates.

connections ecology has made."<sup>46</sup>

Very little attempt will be made in this essay to separate biological and non-biological factors, except insofar as the structure of government-funded ecological plans retains this distinction. The distinction that is made has important ramifications for the way that values espoused at different stages of ecological policy implementation differ.

### §3.5 Reactive Values: Opposition to Predator Reintroduction

I have noted above that, in a general sense, opposition to ideas such as predator reintroduction spring from specific conflicts between policies and particular interests. For that reason, it seems fair to characterize opposition to the *Recovery Plan* as reactive.

The *Recovery Plan* has its roots in general ecological values expressed by federal legislation, and is the result of trying to implement those principles on a local level. Opposition to the recovery plan has roots in local objections to policy implementation. Once affected parties regard themselves as unjustly harmed--usually economically--they question the ecological values that drive federal policy.

This is not to imply that objections to ecological values are specious arguments designed to mask brute economic interest. It is not even clear that opponents to the *Recovery Plan* object to the ecological values the plan seeks to preserve. What they object to is the way that implementation appears to favor abstract (or transformative) values over concrete, tangible demand values.

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<sup>46</sup>Worster (op. cit.), p. ix. "Unconventional as it may at first seem, this approach works especially well with the history of ecology. While it may be more nearly true to say of mathematics or thermodynamics that they take their course apart from prevailing intellectual fashions or economic forces, it would be a false assumption to make about the study of ecology." To reformulate this point, it seems apparent that more people would contest observations about gravity if it affected the value of their pork-belly shares.

This short discussion of values in nature is certainly not intended to be exhaustive. Values propounded in a general way probably fail to enumerate any particular position. This section is intended to set the stage for an historical examination of the systemic value clash associated with predator reintroduction.

#### §4 History and Levels of Value

Predator reintroduction provides a wonderful opportunity to study the role of values in the reception of science; and specifically, the implementation of generally popular abstract policies that are decidedly unpopular among those whose interests are threatened. Such a study must be contextual. The attempted implementation of the ecological values inculcated in the Endangered Species Act of 1973 makes little sense without an understanding of how radical the Act was. And this understanding can only be achieved in the light of older governmental policies toward predatory wildlife.

The study of the enforcement of values is the study of policy. Environmental Policy is a relatively new field, but one which is particularly helpful in an examination of values and science. Much of the literature in the field contains considerations that might not be improperly labeled as STS.<sup>47</sup> While this study of the *Northern Rocky Mountain Wolf Recovery Plan* is historical, philosophical, legal, political, and biological, it is primarily a study of values, and demonstrates the insignificance of scientific

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<sup>47</sup>It would appear that policy-makers pay more attention to the philosophy of science and its implications than many scientists: Aaron Wildavsky draws much of his discussion of fact and value in *Speaking Truth to Power: The Art and Craft of Policy Analysis* (Boston, Massachusetts: Little, Brown and Company 1979) from Popper and Feyerabend; The Natural Resources Journal devotes volumes to environmental policy and discusses science, meaning, and value, 11 NAT. REC. J.; and Steven Yaffee devotes a chapter in his *Prohibitive Policy* (op. cit.) to "Negotiating Scientific Decisions." Policy literature, interestingly, takes many of the assertions of STS for granted, although they do not identify them as such. This is not perhaps surprising in a discipline that attempts to track science as one value among many through politics.

authority where transformative values clash with the demand values.

Recent congressional threats to the Endangered Species Act of 1973 (and other environmental legislation generally) have prompted speculation that the ecological mind-set of the 1970's, expressed in the regulatory excesses of the 1980's, has failed when applied to the real world.<sup>48</sup> Yet public support for the environment is higher than it was in the 1970's. How can this be?

In this thesis I contend that an historical examination of the United States Government's policy towards wolves reveals a fundamental incommensurability between environmental values and the values of policy justification. Using the implementation of the *Northern Rocky Mountain Wolf Recovery Plan* as a model, I argue that the basic source of friction between the two sides of the debate is not simply a clash between values, but a clash between levels of value that are incommensurable.

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<sup>48</sup>Yellowstone wolves likely to give ecosystem jolt [news item], Fort Lauderdale Sun-Sentinel, Sunday, February 5, 1995, G-7.

Chapter 2  
Predator Control & Management:  
Killing Wolves

§1 Wolves

The grey wolf, or *Canis lupus*, is a wild carnivorous canid, a member of the dog family. Wolf expert L. David Mech calculates that males generally weigh between 95 and 100 pounds (although specimens of up to 175 pounds have been examined), and that females range from 80 to 100 pounds.<sup>49</sup> Both genders range between 4.5 and 6.5 feet in length, and stand between 26 and 32 inches tall at the shoulder.<sup>50</sup>

The wolf assumed its present form 1 to 2 million years ago and once inhabited all of North America, excepting tropical rainforests and arid deserts.<sup>51</sup> Biologists identify 32 subspecies worldwide, although disputes about taxonomy continue.<sup>52</sup>

Wolves are social creatures, hunting in packs and displaying evidence of an elaborate system of power relationships. Pack size will vary with game type and abundance, as well as the size of the pack's home range. Estimates indicate that a pack's

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<sup>49</sup>L. David Mech, *The Wolf: The Ecology and Behavior of an Endangered Species* (Garden City, New York: The Natural History Press) 1970, pp. 11-12. Mech has written so extensively about the wolf, both academically and educationally, it is difficult not to rely on him extensively. (It is important to note that his expertise does not make him impartial with regard to biological matters; he describes the wolf's interaction with man in a section entitled "Persecution and Exploitation by Man.") Mech points out that some wolves can eat 20 pounds of meat in less than two hours. A 175 pound wolf probably indicates a post-meal weight. *Id.*, pp. 11-12, 181-85.

<sup>50</sup>*Id.*, pp. 11-12.

<sup>51</sup>*Id.*, pp. 20-21, 31.

<sup>52</sup>Subspecies interbreed if not geographically separated, an important point when debating the efficacy of federal regulations which gave preference to 'historic' subspecies (another problem in its own right.) The northern rocky mountain wolf is known as *Canis lupus irremotus* (*C.l.irremotus*.) one of 24 subspecies identified in North America by Hall and Kelson in 1959. *Id.*, pp. 30-31, and Appendix A. [Cf. n. 17.]

home range (an ambiguous concept) will vary between 300 and 1200 square miles.<sup>53</sup>

Pack hunting allows the grey wolf to feed on animals larger than itself, a practice at which it is clearly adept. Mech defines the 'ecological niche' of the wolf as that of "'*the*' northern predator upon large mammals" in North America.<sup>54</sup>

Where larger prey is abundant, the wolf's diet will consist mainly of weak or young ungulates, although if two prey species are present the wolf will concentrate on the smaller or easier to catch.<sup>55</sup> As a result, wolves will eat domestic animals such as cattle, sheep, reindeer, horses, swine, dogs and cats.<sup>56</sup> Wolves' choice of prey, both primary and secondary, puts them directly in conflict with many of the interests of human beings.

## §2 The Symbolic Wolf

Competition alone does not explain humans' historical hatred and fear of wolves. The biological picture of the wolf above does not adequately describe the fearsome creature that European settlers knew. To settlers of the New World, the wolf was a "dark, green eyed demon whose cry sent chills through the American imagination--the symbol of a fierce and powerful nature that defied human rule."<sup>57</sup> European settlers of

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<sup>53</sup>*Id.*, pp. 163-65.

<sup>54</sup>*Id.*, p. 36.

<sup>55</sup>*Id.*, pp. 173-75. Some evidence seems to suggest that wolves can subsist on very small mammals (tundra mice) if necessary. Farley Mowat, *Never Cry Wolf* (New York, New York: Bantam Books) 1963; 1993, pp. 67-74. Mowat's book, while in part fiction, is based on 18 months the author spent studying wolves for the Canadian Government. Mowat contends that the book is accurate with regard to the wolves' behavior.

<sup>56</sup>Mech (*Op. cit.*), p. 173.

<sup>57</sup>Worster (*Op. cit.*), p. 258. Settlers on the Atlantic coast fled the eastern timber wolf, or *C. l. lycaon*.

North America faced many predators, but wolves "evoked the greatest outrage."<sup>58</sup>

## §2.1 Early Eradication

Writers chronicling destructive attitudes toward nature in the western tradition invariably invoke religious ideas about the earth being created for humans to use.<sup>59</sup> While much has been made of the Christian standpoint with regard to the earth, the idea of nature as conquerable is one that transcends theological beliefs.<sup>60</sup>

The wolf has a legendary role as an adversary. The Bible claims that false prophets are wolves in sheep's clothing, Little Red Riding Hood barely outwits a devious, talking wolf who has apparently decided that the little girl can really move, and the wolf never quite embodies the side of the righteous in Aesop's Fables.<sup>61</sup> The idea of the werewolf, present since classic times, is nearly universal.<sup>62</sup> It seems unnecessary

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<sup>58</sup>Mighetto (Op. cit.), p. 79.

<sup>59</sup>"And God said, let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that doth creepeth upon the earth." Genesis 1:26.

<sup>60</sup>Mary Midgley argues that "a seventeenth-century scientist's fantasy was to be a sexual victor over a prostrate Mother Nature," and that modern technology operates with a similar goal in mind in *Science as Salvation: A Modern Myth and its Meaning* (London, England: Routledge) 1992, dustjacket. While this claim seems a bit attenuated, it is certainly true that game managers--the subject of much of the history of predator control--felt that nature was their laboratory to shape as they would.

<sup>61</sup>Stanley Paul Young discusses the role of the wolf in legend in *The Last of the Loners* (London, England: The MacMillan Company) 1970, pp. 16-39. "The wolf is mentioned sometimes at length, sometimes, briefly, by not less than three score of the early classic Greek and Roman writers, such as Aristotle, Aristophanes, Euripides, Homer, Levy and Plutarch. These Grecian and Roman writers weave their narratives of the wolf more or less about its gruesome, ferocious or evil nature, revolving around early mythology." (Id.), p. 21.

<sup>62</sup>Barry Holstun Lopez, *Of Wolves and Men* (New York: Charles Scribner's Sons) 1978, pp. 225-49. Medieval Christianity, in particular, was instrumental in recovering and restoring various werewolf myths as adversaries that only the church could combat: The excessive persecution of werewolves--where a witch might be hung, a werewolf was more often burned alive--had a formal basis. The supposition was, first, that sorcerers went about disguised as wolves because the wolf was the animal most hateful to good men; Church doctrine proclaimed that no sorcerer could harm men unless he were in contractual league with the Devil; the wolf, as the Devil's dog, became the form to do his work in. This symbolic logic was formalized in one of the most odious documents in all human history, the *Malleus Maleficarum*, published in 1487. *Ibid.*, p. 239. Wolves were simply the worst possible animal.

to add that these skin-changers were generally considered to be bad.<sup>63</sup>

Whatever the mythic source of friction between humans and wolves, North American colonists jumped off of the boat and into the fray. Observers sent missives to Europe that North America was like the garden of Eden, but the wolf was not a welcome addition to the utopic fauna. Colonial government was quick to promote natural improvement by offering bounties for wolves, a practice that began in the 1630's in Virginia.<sup>64</sup>

Colonists turned their ingenuity to eradicating the wolf:

Early colonists used pits and deadfalls. They organized 'circle drives,' herding game and predators to a central location to be killed. They put out set guns and poisoned meat, buried fishhooks in balls of fat, and made leg and head snares. In the early nineteenth century their descendants [would] add strychnine and steel leg-hold traps.<sup>65</sup>

This type of "improvement" worked splendidly. Wolves were rare in the east by 1850.

The death of the wolf was a "sign of civilization and progress."<sup>66</sup>

Direct extermination is certainly not the only way to reduce a canid population.

The *Northern Rocky Mountain Wolf Recovery Plan* explains the canid decline as follows:

According to Young and Goldman (1944) and Mech (1970), the population decline of the *eastern* timber wolf was a result of (1) Intensive human settlement, (2) direct conflict with domestic livestock, (3) a lack of understanding of wolves, (4) fears and suspicions concerning wolves,

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<sup>63</sup>American Indian cultures are a notable exception to this rule.

<sup>64</sup>*Id.*

<sup>65</sup>*Id.*

<sup>66</sup>*Id.*, p. 6.

and (5) the extreme control programs designed to eradicate it. These factors caused the decline in all wolf populations within the United States, including those in the Northern Rocky Mountains. **Threatened Wildlife of the United States** (U.S. FISH AND WILDLIFE SERVICE 1973) lists land development, loss of habitat, poisoning, trapping, and hunting as reasons for decline of the Northern Rocky Mountain wolf.<sup>67</sup>

Wolves compete with humans for space; as human population expands, wolf population shrinks. No coherent records exist to aid in an examination of the relative weight of different factors reducing the wolf population in eastern North America. In the west, however, extreme control programs are widely considered sufficient explanation for the extirpation of wolves by about 1930. Control programs are directly driven by the other causes identified by the recovery team in the *Plan*.

## §2.2 In Wildness is the Preservation of the [Wolf?]

One might imagine that as a young America began to edge toward fulfill it's "manifest destiny," and as the first few voices were raised in protest against the vanishing wilderness, the wolf would cease to inspire the same terror it had commanded as a symbol of nature as adversary. This was not the case. The wolf remained a villain who continued to have no place in the Garden of Eden--even as contact with wilderness became an essential part of the civilized approach to nature.

Writers like George Catlin and Henry David Thoreau identified with nature and saw wildness as a virtue, but wildness remained a flexible concept that could exclude

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<sup>67</sup>U.S. FISH & WILDLIFE SERVICE 1987. **Northern Rocky Mountain Wolf Recovery Plan**. U.S. Fish and Wildlife Service, Denver, Colorado. 119pp., p. 3. [Emphasis added.]

parts of nature that did **not** enrich human existence.<sup>68</sup> Inevitably, nature's new pedestal would enrich the wolf by association. Yet a new problem, one of anthropomorphic assessment, would impede the transition of the wolf's image from the epitome of evil nature to a valued member of the biosphere.

The glamorization of nature that took place around the turn of this century led to a wealth of fiction about nature in a style that identified human traits in the animal world and made heroes of animal protagonists. Personifying animals led to their being viewed as moral beings. Wolves might be grand old outlaws,<sup>69</sup> according to one author, but ideas about justice in the human world dictated that humans would see the wolves' struggle for existence as one of brutal thuggery. Even as wolves were "appreciated. . . as a symbol of the wild, most Americans had no sympathy for the actual animal."<sup>70</sup>

In most cases, then, turn of the century popular sentiment placed a premium on nice, peaceful animals of sober industry and thrift; and the nasty, evil predatory animals were not only of low moral character, but reduced the population of the 'good' animals. This kind of thinking is alive and well today. Ranchers and related hunting interests

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<sup>68</sup>Henry David Thoreau, considered by many to be *the* first environmentalist, claimed that "[n]ot yet subdued to man, [wildness] refreshes him." *From The Value of Wildness*, in Roderick Frazier Nash (ed.), American Environmentalism: Readings in conservation History (New York, New York: McGraw-Hill Book company) 1990, p. 36, 39. Thoreau's wilderness consisted mostly of ponds and woods from which he could not see town. George Catlin pled for preservation of the wilderness, and is credited with originating the national park idea. (Id.), p. 31.

<sup>69</sup>Ernest Thompson Seton, one of the leading "nature fakers" of the turn of the century, regaled readers with an anthropomorphic vision of nature. His account of the death of Lobo, King of the Currumpaw is a classic piece of popular nature-writing, and has the biological truth-value of the movie *Bambi*. Lobo is reprinted in Robert Busch [ed.], Wolf Songs: The Classic Collection of Writing About Wolves (San Francisco: Sierra Club Books) 1994, pp. 121-27.

<sup>70</sup>Mighetto (Op. cit.), pp. 75-79, provides a number of widely publicized accounts of the 'bloodthirstiness' of wolves, bears, and assorted predators. It might be noted that they were also 'oxygen-happy' and 'food-hungry.'

continue to view wolves as vicious killers.<sup>71</sup>

The conception of the wolf as the personification of evil **did** give way in the face of more positive conceptions of nature around the turn of the twentieth century.<sup>72</sup> But the wolf was still considered one of the **bad** animals. This attitude helps explain the origin and perpetuation of the predator control programs early in this century, and why, in 1907, the U.S. Government declared war on the wolf.

### §3 Wildlife Discouragement: Governmental Predator Control

As the West was settled, bounties on wolves spread to every territory. The killing of wolves often accompanied, and was supported by, other activities. Take, for example, the headlong destruction of the buffalo, a notable event in western North American history. This practice contributed to the extermination of the wolf by providing professional wolfers with thousands of skinned buffalo carcasses. Strychnine sulfate was applied to every carcass in sight, "in hopes of killing one more wolf."<sup>73</sup> Predator control was so well established as a necessity that it became a governmental function.

#### §3.1 Organizational Structure

The Bureau of Biological Survey, the primary governmental organization

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<sup>71</sup>Jack Atcheson of the Skyline Sportsmen's Club in Butte, Montana (which opposes reintroduction) claims that "we don't care if there are wolves put in Yellowstone, but we want them managed [shot] as soon as they leave the park. . .Wolves are calculated killers [!] who are going to make a hell of an impact on wildlife, and that's not what we need," in **67(5/6) NATIONAL PARKS 24** (May/June 1993), p. 27.

<sup>72</sup>See, for example, **Mighetto (Op. cit.)**, pp. 75-93.

<sup>73</sup>See, for example, **Dunlap (Op. cit.)**, pp. 5-14.

associated with predator control, was created within the Department of Agriculture in 1907.<sup>74</sup> It operated as the "natural history agency of the American Government."<sup>75</sup> As an arm of the Department of Agriculture, the Bureau had a very specific constituency from the beginning. As early as 1890:

[C]omplaints from all over the country, but overwhelmingly from the West, began to pile up about the depredations of wolves, coyotes, and other predatory animals upon stock, and of the damage to forage crops, orchard trees, truck gardens, etc., caused by various rodents.<sup>76</sup>

As a result, the Bureau would eventually engage in "warfare against predatory and noxious animals."<sup>77</sup> The Bureau's original precursor had been founded with the understanding that the government should take a hand in discerning the relationships between birds and agriculture. The BBS retained that core relationship (between **all** wildlife and agriculture) as its prime directive.

While agricultural considerations were not quite the moral considerations that separated good animals from bad for some nature-worshippers, it is important to note that the federal government's first attempt to grapple with predation operated under

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<sup>74</sup>The Bureau, interestingly was formed around the remains of the Division of Economic Ornithology and Mammology, which had become the Division of Biological Survey in 1896. The BBS has a long and illustrious history of changing names and authorizations. "The Bureau" will be used to denote the agency when the specific name or time period is not important.

<sup>75</sup>Jenks Cameron, The Bureau of Biological Survey: Its History, Activities and Organization (Baltimore, Maryland: The Johns Hopkins Press) 1929, p. 1. Cameron's account is as instructive for the things it **doesn't** mention as the things that it does. Interesting precursors to 'ecological' thinking include the conviction that early settlers 'accidentally' took actions that were detrimental to agriculture by wrongly identifying some species as pests, that actually "were as a matter of fact menaces to agricultural menaces rather than such menaces themselves." (*Id.*), p. 5.

<sup>76</sup>*Id.*, p. 43.

<sup>77</sup>*Id.*, p. 42 "As used herein, the expressions 'predatory animals' and 'noxious animals' refer respectively to animals that prey upon domestic stock and wild game, and to animals that consume crops and stocks of foodstuffs." One gets the impression that Cameron feels that agriculture is the highest form of human achievement.

assumptions that valued subjective utility. Government bureaucrats did not need to view wolves as vicious; it was enough that they were not good for agriculture. Ergo, wolves were bad.

Most states had bounties on wolves, and various control programs, but the federal government began to be pressured to do its part to control predatory pests. The Forest Service began hiring trappers to kill national forest wolves (in areas where forests were used for grazing) in 1905.<sup>78</sup> Once the Biological Survey achieved Bureau status in 1907, the Forest Service requested that the Bureau undertake a "thorough investigation of the problem of the wolf."<sup>79</sup> In 1907, the Bureau produced "Wolves in Relation to Stock, Game, and the National Forest Reserves," by Vernon Bailey.<sup>80</sup>

This report (jointly prepared with the Section of Geographic Distribution, responsible for computing the **economics** of predator eradication) recommended:

. . .the most approved methods for destroying wolves and coyotes. All the well-known systems, including shooting and trapping, were touched upon, but special emphasis was given poisoning, den-hunting during the spring breeding period, and wire-fencing. The great value of the comparatively simple method of den-locating, with subsequent destruction of the litters, was strongly recommended and was gone into in considerable detail.<sup>81</sup>

As ranchers and stockmen responded to these suggestions, they made a "record kill of

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<sup>78</sup>Dunlap (Op. cit.), p. 38. The Forest Service felt pressured into doing so because it charged fees for public grazing.

<sup>79</sup>Cameron (Op. cit.), p. 45.

<sup>80</sup>From [Forest Service Bulletin 72], January, 1907; in Cameron (Op. cit.), pp. 45-58. This document was known as the "Bailey Report."

<sup>81</sup>Id., p. 45.

predatory animals. . .in 1907. Over one thousand eight hundred wolves and twenty-three thousand coyotes were accounted for on National Forest Lands alone. The estimated resulting saving in stock was \$2,000,000."<sup>82</sup>

For several years the Bureau acted in an advisory or investigative capacity, conducting field studies of wolf and coyote populations and publishing bulletins on methods of their control. In 1915, the Bureau received a \$125,000 appropriation to become a direct participant in predator control. Appropriations rose "[i]n response to the need for meat during World War I. . .and the government found itself saddled with an obligation that continues to this day."<sup>83</sup>

The predator control program was eventually transferred to the Division of Predator and Rodent Control (PARC). PARC made every attempt to shift costs to ranchers, yet still accounted for a quarter of the Bureau's budget by the mid-1920's.<sup>84</sup> PARC was later transferred to the Division of Wildlife Services in the Department of the Interior, and combined with other activities in the Bureau of Sport Fisheries and Wildlife (BSFW). By 1971, the combined program cost "about \$8 million a year."<sup>85</sup> The

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<sup>82</sup>*Ibid.*, 46. Cameron does not explain the formula for determining the 'saving in stock.' One common method, expressed elsewhere, was to add up the dead wolves' potential meals for a year in tons and then divide by cattle. Dead wolves presumably had exclusively expensive tastes.

Vernon Bailey (author of the Bailey Report) claimed in 1907 that "each wolf and mountain lion cost ranchers \$1,000 a year, bears \$500 apiece, and coyotes and bobcats \$50 per animal." *Dunlap (Op. cit.)*, p. 52.

<sup>83</sup>ADVISORY COMMITTEE ON PREDATOR CONTROL *Predator Control--1971: Report to the Council on Environmental Quality and The Department of the Interior, 1971*, p. 1. [Hereinafter referred to as *Predator Control--1971*.]

<sup>84</sup>*Dunlap (Op. cit.)*, p. 39. Dunlap argues that this attempt to shift costs resulted in increased control by the ranchers over PARC; noting that "he who pays the piper calls the tune."

<sup>85</sup>*Predator Control--1971 (Op. cit.)*, p. 1.

program survived largely because of the pesky coyote, who refused to see the wisdom of management techniques. Wolves were gone from most of the contiguous 48 states (excepting Minnesota and Michigan) by 1930.

### §3.2 Predator Control and Early Discontent

As the agencies spent less time investigating and more time choking gophers, a number of indications of ill-feeling began to be evident, both inside and outside the Bureau.<sup>86</sup> At the 1924 meeting of the American Society of Mammalogists, several "critics maintained that the Survey was not controlling predators but exterminating them."<sup>87</sup> Some biologists felt that the Bureau was pursuing control beyond the point where additional reduction was worth the benefit, while others began to question the economic assumptions on which control decisions were based. The 1928 PARC conference in Ogden Utah discussed "What Should be Our Uniform Method of Computing Damage from Predatory Animals and Rodents and What is the Best Method of Computing in Dollars and Cents the Savings of Control?"<sup>88</sup>

Discontent similarly was expressed in related controversies. In January 1927, a horde of mice spread out over Kern County, California, actually impeding traffic. One contingent of biologists claimed that the Bureau, with the help of farmers in the area, had

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<sup>86</sup>Dunlap (Op. cit.), p. 40. 'Gopher chokers' was apparently a term that originated within the Bureau itself. Opposition and support for predator control often warred within a single individual working in the service.

<sup>87</sup>Id., p. 50.

<sup>88</sup>Id. One panel participant "stated bluntly that '[a]ny estimates of damages done or savings effected can only be the wildest guess work."

killed off all of the animals that ate mice. The Survey biologists claimed that the long grass in a nearby lake bed, which provided both shelter and sustenance, was responsible for the booming rodent population. Thomas Dunlap notes:

That two scientists could come to opposite conclusions from the same evidence suggests that something was awry. It was. The debate was not about science at all. Each side presented a picture of how humans were related to nature and how nature worked--a picture based on what the culture provided.<sup>89</sup>

By 1930, some mammologists were signing a petition demanding that predator control be curtailed.<sup>90</sup> While this petition and accompanying legislative attempts to halt extermination carried very little weight, predator control was losing support among scientists interested in game management. However committed, this select group did not influence public opinion.

Given the widespread support eradication received from farmers and ranchers, it is not perhaps surprising that the depression resulted in the passage of the Animal Damage Control Act, which reaffirmed the government's dedication to predator control by reauthorizing PARC and giving it a statutory authority that remained its legal charter into the 1970's.<sup>91</sup>

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<sup>89</sup>*Id.*, p. 53.

<sup>90</sup>One Brazier Howell wrote a petition calling for an end to the predator control program within the BBS. It is interesting to note that many of the scientists complained that valuable study material was being lost, and that predator control was *economically* unsound. Also; wolves and mountain lions were **not** mentioned as valuable. *Id.*, pp. 50-56.

<sup>91</sup>*Id.*, p. 59. The 1973 Endangered Species Act created some conflicts with the Animal Damage Control Act.

#### §4 Management Failure: The Kaibab

Scientific opposition to predator control did not simply crystallize around the issue of extermination. A number of concurrent crises in progressive game conservation were beginning to cast doubt on the proper role of humans as managers. The most famous is probably the expansion and subsequent starvation of the Kaibab deer herd, which occurred in the Kaibab Forest area designated as the Grand Canyon National Game Preserve.

Located on a northern Arizona plateau, the Kaibab Forest area was set aside by Congress as a wildlife refuge for large game in 1906. The Kaibab was no refuge for predators, however, who were eliminated "as fast as possible."<sup>92</sup> In 25 years, government managers killed 4,889 coyotes, 781 mountain lions, and 20 wolves.<sup>93</sup> The deer population rocketed skyward starting in 1906, beginning at 4,000 and topping out at nearly 100,000 in 1924.<sup>94</sup> While this development might seem to be a "stunning triumph for Progressive game conservation," problems soon cropped up.<sup>95</sup> Young trees died, favored browse species and shrubs disappeared, and noxious plants spread. The range deteriorated, and the animals began to starve.<sup>96</sup>

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<sup>92</sup>Worster (Op. cit.), p. 271.

<sup>93</sup>Id.

<sup>94</sup>Id. This estimate could be somewhat high; various other sources compute that the herd consisted of **between 30,000 and 100,000**. See **Alston Chase, Playing God in Yellowstone: The Destruction of America's First National Park** (San Diego, California: Harcourt Brace & Company) 1987, p. 24.

<sup>95</sup>Worster (Op. cit.), p. 270.

<sup>96</sup>Chase (Op. cit.), p. 24.

In 1924, the herd crashed. Roughly 60 percent of the herd died of starvation, and the remainder went into a "continuous, slow decline."<sup>97</sup> Managers realized that a reduction in deer was necessary by 1923, but "resistance from hunters and preservationists prevented quick intervention to reduce the herd. Instead, Mother Nature took matters into her own hands."<sup>98</sup> The managers of the Kaibab pursued a course that seemed to maximize the value of the refuge. Bad animals were killed (or discouraged in Bureau of Biological Survey terms.) Good animals were encouraged. The plan worked. The plan also had ramifications that the managers of the Kaibab had never imagined. Once they identified how to solve the problem, they were prevented from rectifying it by hunters (who resented a reduction of the entertainment value of the forest) and preservationists (who felt that further human intervention would reduce the wilderness value of the reserve.)

If not as an object lesson to all game managers, the crash of the Kaibab deer was influential. Aldo Leopold, the spiritual mentor of the modern ecological movement, visited the Kaibab in the 1930's, and the experience cemented a belief about predator eradication that had been germinating for some time. Leopold had identified a number of such irruptions in 30 out of 47 states that had deer, and according to Alston Chase, concluded that predators were "at the apex of the biotic pyramid. . .[and] were not the 'Nazi's of the forest;' rather they were the indispensable cornerstone for game

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<sup>97</sup>Id., p. 25.

<sup>98</sup>Id., p. 24.

management."<sup>99</sup>

Leopold argued that without predation, ungulates were prone to an irruptive sequence like the one the Kaibab deer experienced:

First, limited hunting and elimination of predators caused prey to multiply. Second, a 'deer line' (signs of increased use) appeared on palatable browse, as the herd continued to grow. . . Third, as numbers continued to grow, a deer line appeared on unpalatable browse as fawns died of starvation in severe winters and the herd peaked. Fourth came the crash: many adults died as the herd was attacked by disease, palatable browse continued to disappear, and the unpalatable plant species spread.<sup>100</sup>

Leopold might have been convinced that deer populations needed to be culled by natural means in 1944, when he wrote "Thinking Like a Mountain," but other game managers were not so quick on the uptake.

While biologists wrestled with issues of predator control and the accompanying problem of deer control, government policy remained the same. While the bounties that had removed predators from much of the West were no longer much of an issue with regard to wolves, government land management policies continued to directly affect government land and whatever predators still inhabited it. We shall see that as ideas about the role of predators in ecosystems began to change, ideas about the role of National Parks in preserving ecosystems began to change. Nowhere was this process more evident than in Yellowstone National Park.

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<sup>99</sup>Id.

<sup>100</sup>Id., p. 26.

## §5 Yellowstone National Park, 1872-1926

On March 1, 1872, President Grant signed into law a bill that created Yellowstone National Park. The act provided that:

[T]he area 'is hereby reserved and withdrawn from settlement, occupance, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring-ground for the benefit and enjoyment of the people; and all persons who shall locate or settle upon or occupy the same, or any part thereof, except as hereinafter provided, shall be considered trespassers and removed therefrom.<sup>101</sup>

In 1877, Secretary of the Interior Carl Schurz "published rules prohibiting hunting, trapping, or fishing in the park, except for recreation or to supply food for visitors or actual residents".<sup>102</sup>

Alongside the inevitable difficulties of administration involved in creating new governmental responsibilities, the Yellowstone Act was "not well drawn for the protection of wildlife, a problem that had been pointed out in the Senate debates."<sup>103</sup> It was left to the Secretary of the Interior to protect fish and game with regulations. When the Secretary, alarmed by the decimation of some animals, **did** prohibit the killing of game in 1880, he had no way to enforce the edict. In 1883, troops were sent to help guard the park from poachers.<sup>104</sup> They remained until the National Parks Service Act created the National Park Service in 1916, and they were instrumental in early gains in

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<sup>101</sup>In John Ise, Our National Park Policy: A Critical History (New York, New York: Arno Press) 1979, p. 18.

<sup>102</sup>*Id.*, p. 19.

<sup>103</sup>*Id.* Some proponents of the bill wished to keep guns out of Yellowstone entirely, to prevent hunting accidents.

<sup>104</sup>*Id.*, p. 25.

ungulate populations. The army fed the herd animals, for example, during the winter.

In 1894, the "Act to Protect the Birds and Animals in Yellowstone National Park" created a link between the park and the federal court district of Wyoming, and prohibited "all hunting or killing, except when necessary to protect human life or protect from injury."<sup>105</sup> This Act, coupled with severe fines and the construction of a prison, also created a commissioner to enforce the new regulations. Yellowstone had a manager.

### §5.1 Early Management of Yellowstone

Free-lance wolfers were poisoning ungulate carcasses in the park "at least as early as 1877."<sup>106</sup> Poisoning accompanied the hunting of large ungulates, and the Lacey Act had yet to put teeth in wildlife regulations at Yellowstone. The first park Superintendent, Philetus W. Norris, estimated that "as many as 7,000 [moose were killed] in spring 1875 alone."<sup>107</sup>

Soldiers stationed in Yellowstone began to notice an increase in the wolf population in 1912.<sup>108</sup> Wolves became an active concern for the governors of Yellowstone, who were noticing declines in the population of many of the species in the

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<sup>105</sup>*Id.*, p. 46. This legislation was known as the Lacey Act.

<sup>106</sup>John Weaver, The Wolves of Yellowstone (U.S. Department of the Interior, National Park Service: Natural Resources Report Number 14) 1978, p. 7.

<sup>107</sup>Chase (*Op. cit.*), p. 16.

<sup>108</sup>Weaver (*Op. cit.*), p. 7.

park--of all the ungulates, the elk alone seemed to prosper.<sup>109</sup> Yellowstone had become a sanctuary for elk, which had been approaching extinction in most states.<sup>110</sup>

Convinced that predators were responsible for herd decline, Yellowstone's administration began implementing the wolf control practices called for in the Bailey Report. The table on the following page is adapted from John Weaver's "The Wolves of Yellowstone," a publication of the National Park Service.<sup>111</sup>

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<sup>109</sup>**Alston Chase** argues that the Yellowstone plateau, often touted even today as a representative primitive ecosystem (minus the wolf until January, 1995), was sparsely populated by large herd animals **prior to the extension of protection to animals within the park's boundaries**. Chase relies on early reports of scouts and travelers who saw few tracks and had problems locating something to eat. *Op. cit.*, pp. 14-17.

<sup>110</sup>*Id.*, p. 16.

<sup>111</sup>**Weaver (Id.)**, p. 11. Footnotes in the chart (nn. 112-15) are Weaver's.

**Table 3. Wolf mortality in Yellowstone, 1914-26.**  
Totals<sup>112</sup>

Year Rept.	Adults	Pups	Monthly Repts.	Annual
1914	7	-	7	-
1915	3	4	7	"several"
1916	2	8	10	12
1917	2	-	2	-
1918	21	14 <sup>113</sup>	35	36
1919	2	-	2	6
1920	6	20+ <sup>114</sup>	26+	28
1921	3	11	14	-
1922	9	16	25	24 <sup>115</sup>
1923	1	5	6	8
1924	-	-	-	-
1925	-	-	-	-
1926	-	2	2	-
<b>Total</b>	<b>56</b>	<b>80</b>	<b>136</b>	<b>14</b>

Although the numbers are not staggering, they suggest that the wolf had largely been exterminated in Yellowstone by the late 1920's. The NPS has recorded a number of sightings since 1927, with a leap in 'probable' sightings between 1967 and 1977.<sup>116</sup>

## §5.2 Predator Control's Legacy

Early predator control programs had a simple task: protect the public (e.g.,

<sup>112</sup>Monthly reports were more detailed and were considered to be the best source.

<sup>113</sup>Report did not distinguish between adults and pups. Nineteen wolves were killed in April and I have assumed that, as for the same month in other years, most of these were pups.

<sup>114</sup>One den with unreported number of pups was closed up.

<sup>115</sup>Combined for 1921 and 1922.

<sup>116</sup>Alston Chase claims that the National Park Service has both encouraged sightings through permissive classification and actually brought wolves back into the park in order to legitimize past reports of resident canids and avoid reintroduction measures from being forced upon it, (*Id.*), pp. 119-41. Quoting an anonymous Park Service officer; "Before any wolves were brought in we were put to work revising the record, concocting evidence that wolves had been there all along, so that when they were [secretly] reintroduced the Service would be ready with an account of how the animals were part of a remnant population." (*Id.*), p. 141.

ranchers and stockmen) from the depredations of wolves and other predators. Scientific agriculture would reduce the variables that adversely affected the valuable parts of nature. The role that the government took on was consistent with what constituents thought that the federal government should play: it would aid citizens by providing expertise that could solve problems of depredation.

Support for predator control might not have been universal, but the important players seemed in accord. The government experts agreed with, and aided, the farmers; the citizens who were directly involved with the problem. Although some biologists were opposed to eradication, they were certainly not in the majority. Public opinion regarding wildlife was for the most part irrelevant, and no real public debate ensued. Besides, the wolves were gone. To be sure, some puzzling aspects of land management might have remained, but the BBS and other agencies were working on the problem.

Forty years later, biologists opposing the inclusion of predators in a given ecosystem were rare. Ranchers and stockmen used to calling the tune for the government piper found that their concerns now represented a small (if powerful) minority, and were faced with considerations about the concerns of future generations and the importance of unsullied nature. Congress, with a little ecological tutoring (and a lot of public pressure) had become enamored of the **transformative** value of nature.

What had happened? Chapter 3 will examine the growth of the environmental movement and its effect on government policy. These developments demonstrate that a drastic change in conceptions of the value of nature had occurred by 1970. This new

position of humankind with regard to nature was perhaps best expressed by the Endangered Species Act of 1973.

Chapter 3  
Ecological Values Legislated:  
The Endangered Species Act of 1973

Public policy discussion, formation, and implementation must rely on the best scientific data; but data, viewed in isolation, imply no goals and objectives. So every policy recommendation includes, explicitly or implicitly, a value premise or premises.<sup>117</sup>

The previous chapter discussed the ways in which wolves were treated by the government and some of the early stirrings of biologists' professional discontent with predator control. While predator control served as a focal point for biological debate about the role of predators and the definition of a healthy 'ecosystem,' it also served (to some extent indirectly) as a focal point for public debate.

This chapter will examine the role that predator introduction had in catalyzing public opinion about the deliberate extinction of species. More importantly it will examine congressional concern for preserving species; which found its ultimate expression in the Endangered Species Act of 1973, an act that would eventually mandate the reintroduction of wolves to Yellowstone National Park. More specific discussion of the biological (or ecological) ideas about the proper role of predators will be reserved until chapter four, which discusses the *Recovery Plan* itself.

**§1** Predator Control and the Public

While ideas about ecology have changed drastically in the last 80 years, an examination of changing biological principles does not explain the eventual backlash

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<sup>117</sup>Norton (*Op. cit.*), at p. 6.

against predator control. Early public distress about the eradication of large predators, while it did exist, was not widespread. The 'new environmentalism' of the 1960's, however, was firmly grounded in some of the indirect results of controlling predators.

### §1.1 Early Opposition

While the extermination of wolves in Yellowstone served the purposes of the managers of the park, Yellowstone's status as a public park lent force to early dissent about predator eradication from environmental and game organizations (once they became aware of the practice.) Alston Chase contends that the National Park Service's rhetoric of preservation hid the brute fact of species eradication from interested parties.<sup>118</sup>

At the same time as Park Service spokesmen wrote that the park would "be maintained in absolutely unimpaired form for the use of future generations," the managers of the park were exterminating species.<sup>119</sup> At a superintendents' meeting on predator control in 1932, Yellowstone Superintendent Toll noted:

We have always assumed that the elk and deer and the antelope were the type of animals that the park was for. We have had the support of the game associations only on the basis that the parks would act as reservoirs for the game and the increase would overflow and form legitimate hunting. If we change that policy and say there is to be no killing, coyotes will increase to balance the increase of deer and elk, there will be no hunting and we would have no support whatsoever from the sportsmen's associations of the adjoining states. To me a herd of antelope and deer is more valuable than a herd of coyotes.<sup>120</sup>

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<sup>118</sup>Chase (*Op. cit.*), pp. 123-126.

<sup>119</sup>*Id.*, p. 125.

<sup>120</sup>From the Minutes of the 12th Superintendents' Conference on Predator Control, 1932 *in* Chase (*Op. cit.*), p. 124.

Chase argues that this policy (of eradication in the parks) ignited a "barrage of protests from environmental groups condemning NPS predator-control policy" when it became public in 1928.<sup>121</sup>

Groups opposed to predator control would notify the Secretary of the Interior. While some of the groups which corresponded with the Secretary of the Interior were composed primarily of biological professionals, like the New York Zoological Society, some were more correctly called conservationist. The Boone and Crockett Club, for example, was a group of "enthusiastic big-game hunter[s, who] had traveled extensively in the West."<sup>122</sup> Founded by Theodore Roosevelt, the group was composed of politically powerful individuals interested in preserving big-game hunting. Nevertheless, the Club wrote to the director of the park that it was "strongly opposed to the extermination of any single species of our American wild life."<sup>123</sup>

While the Boone and Crockett Club was not big, it wielded a good deal of political clout. Its opposition to predator eradication (if not control) is instructive; it illustrates the visceral power commanded by the idea of extinction.

The wolf was gone from Yellowstone by the time the extent of the predator control legacy became evident to the public. The combination of public pressure and the public status of the Park brought systematic eradication in the Park to an end by about

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<sup>121</sup>Id., p. 125.

<sup>122</sup>Trefethen, James B. *An American Crusade for Wildlife* (New York, New York: Winchester Press) 1975, p. 81. Trefethen's book was intended as a history of the Boone and Crockett Club but was revised to become a more general work of history.

<sup>123</sup>Chase (Op. cit.), p. 25.

1934.<sup>124</sup> But control programs outside the parks, and especially poisoning programs, remained to protect woolgrowers and other ranchers from coyotes, and grain growers from various rodents. None of these animals ever really disappeared, but the continued use of poison would ignite a storm of protest over poisoning--related to species extinction.

## §1.2 Sodium Flouroacetate

Dunlap and others have identified the fight over sodium flouroacetate, or Compound 1080, as "the primary villain" that brought the general public into opposition of the policy of predator control carried out by PARC.<sup>125</sup> Ten-Eighty, introduced after World War II, became the mainstay of the PARC program. The Survey had never ceased to search for less kind and gentle ways to poison coyotes, who refused to follow their cousins, the wolves, into obscurity.<sup>126</sup>

Early tests indicated that ten-eighty was more toxic to rodents and canids than to other forms of life, a marked improvement over previous substances used for poison such as thallium sulfate. Even so, the new product was sufficiently dangerous that the Bureau would only use it in the less populated areas west of the 100th meridian.

PARC's poisoning program had always faced some amount of opposition from

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<sup>124</sup>Chase (*Op. cit.*), p. 126. But see Donald Worster: "This idea must have been persuasive, for by 1936 all killing of predators in the National Parks came to an end. That decision was vigorously opposed by the BBS, whose field men began to make secret raids into parklands to get their varmints anyway." [!] Worster (*Op. cit.*), p. 277. Worster offers no support for this contention.

<sup>125</sup>Dunlap (*Op. cit.*), pp. 108-123.

<sup>126</sup>PARC at one point invented a "coyote getter," which fired sodium cyanide into coyotes mouths when they picked up a piece of bait. *Id.*

various groups, both scientific and environmental, yet:

[U]nless poisoning's opponents could find an issue that would rouse the general public, they could do little, and there did not seem to be such an issue at hand. The argument that the program was disrupting ecosystems was the strongest, but few scientists were willing to say, on the evidence available, that the PARC program, as it was being conducted, was so harmful that it had to be stopped. Ten-Eighty's opponents found their issue in endangered-species protection.<sup>127</sup>

By the early 1960's, opposition to poisoning had become aligned with the idea of species protection, and species protection was a hot issue.

## §2 Endangered Species and the New Environmentalism

The many factors that led to the explosion of environmental or ecological consciousness in the 1960's have probably never been adequately classified, but concern for endangered species was certainly a contributing factor. Predator control was quite obviously a policy in opposition to species protection. The policy directly exterminated some species, and indirectly affected non-target species.<sup>128</sup> Other causes of extinction involved issues such as land development or economic growth.<sup>129</sup> Spatial constraints dictate against a detailed examination of the sources and expressions of public concern

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<sup>127</sup>Id., p 119.

<sup>128</sup>E.g., the well-publicized contention that DDT caused Bald Eagle eggs to thin. People took the threat to our national symbol very seriously.

<sup>129</sup>Obviously even a cursory discussion of contributing factors to the environmental revolution is beyond the scope of this paper, but some are worth mentioning, if only in a footnote. Observers have identified ecological principles, post-atomic age concern for fallout, poisoning (including both Ten-Eighty and Rachel Carson's DDT), garbage, air and water quality, a broader and deeper unrest in American society--driven in part by the Vietnam Conflict--and concerns about overpopulation as contributing factors. I might add that my own personal favorite is discussed by Trefethen (*Op. cit.*), pp. 281-82. Trefethen argues that Walt Disney's nature movies "gave the American public a new insight into the characteristics of wild animals they never had before." Trefethen, writing on behalf of the Boone and Crockett Club, is impelled to point out that Disney (and other Greenwich Village writers[?!]) cast the 'sport hunter' as the villain (quite unjustifiably) in these epics.

for the environment, but a few general points may be made.

What concerned many observers in the 1960's was not so much the extinction of a particular species, but the increased rate of decline. Examples of this concern have permeated discussions of the value of species for the last 30 years. One typical example:

Well over ninety percent of the species which have lived on earth are extinct. This is as one might expect: extinction is an inevitable part of natural history. . . What concerns us today is not extinction in itself but the astonishing increase in the rate of extinction and the knowledge that our technological society is largely responsible for it. . . More than half of the known extinction over the last 2000 years occurred during the last 60 years.<sup>130</sup>

As discussed in Chapter 1, the relatively rapid recent decline of species has significant economic, aesthetic, and ethical consequences.<sup>131</sup>

None of the consequences of single species extinction fully captured the urgent spirit that considerations of ecosystem stability brought to the debate:

Recognizing that biologists cannot predict the level of species diversity necessary to secure against future changes in climate or environment, one commentator has likened the loss of species to the loss of structural rivets on an airplane--a dozen or so might never be missed, but the loss of the thirteenth might spell disaster.<sup>132</sup>

These considerations, and many others, led the United States Congress to embark on "a course of concerted action to remedy the species decline and extinction problem" in

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<sup>130</sup>Mark Sagoff, On the Preservation of Species (7 COLUMBIA JOURNAL OF ENVIRONMENTAL LAW 33) 1980, pp. 36-37. Sagoff is interested in establishing a factual foundation for the concerns which motivated the passage of the E.S.A.

<sup>131</sup>For a discussion of the economic implications of wildlife loss with regard to recreational value, see Keith Saxe, Regulated Taking of Threatened Species Under the Endangered Species Act (39 HASTINGS LAW JOURNAL 399) 1988, pp. 406-08.

<sup>132</sup>*Id.*, p. 408. This is Paul and Anne Ehrlich's metaphor.

1966.<sup>133</sup>

### §3 Congress and Endangered Species: 1966-1973

As the actions of the BBS suggest, a federal role in wildlife management is nothing new. Although the 'state ownership doctrine' at one time dictated that states retained public trust ownership of wildlife, the enactment of a number of laws "developed [the federal role] early in the twentieth century and grew dramatically in comprehensiveness and control."<sup>134</sup> The 1960's, however, saw the first direct legislation concerning endangered species as an abstract class of entities.

#### §3.1 Congressional Action: 1966

Government programs have thus far been presented in a rather monolithic, anti-ecological light, but some members of the BBS's immediate successor, the Bureau of Sport, Fisheries, and Wildlife (BFSW) shared many ecological concerns with opponents of some of their policies. Many of the most famous friends of the wolf were government biologists at one time, although some of them left the Bureau in disgust.<sup>135</sup> While the Bureau had been an enemy to many concerned with species preservation, some segments of the Bureau began to respond to preservationists' concerns.

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<sup>133</sup>Id.

<sup>134</sup>Yaffee (Op. cit.), pp. 32-33. The 1900 Lacey Act regulated wildlife killed in violation of state law under the auspices of the commerce clause. Similar application of general powers was extended in the Migratory Bird Treaty Act (1918), the Migratory Bird Conservation Act (1929), and the Fish and Wildlife Coordination Act (1934.) These acts gave the federal government greater power off of federal land, avoiding the kinds of geographical limitations imposed upon the Forest Service, or the limitations placed on the BBS in its role as a cooperative agency.

<sup>135</sup>Noted wolf researchers Adolph Murie, Stanley Young, and L. David Mech were all employed by the government. Many of the most fervent proponents of the *Recovery Plan* are currently employees of the FWS.

In 1964 the Department of the Interior charged the BSWF with establishing a nine-biologist Committee on Rare and Endangered Wildlife Species (CREWS), a committee that would eventually become the Office of Endangered Species (OES). In August of that year they published a preliminary copy of the first federal list of rare and endangered species, known as the "Redbook."<sup>136</sup> Redbook species were picked without regard to non-biological factors.

Attempts at explicitly balancing other considerations (such as utility or disutility to humans) were not seen as necessary because listing a species in the Redbook did not provide formal federal protection and hence would not economically harm anyone.<sup>137</sup>

BSFW officials involved with classifying species recognized that in the political climate surrounding environmental quality, endangered species had headline value; the endangered species issue was "in many ways a symbol of the concern for environmental quality."<sup>138</sup> Perhaps for this reason, BSWF's scientists and wildlife managers from CREWS provided "the primary impetus for the 1966 legislation."<sup>139</sup>

The 1966 Endangered Species Preservation Act was "the first United States law exclusively concerned with the welfare of all endangered species."<sup>140</sup> In §1 of the Act,

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<sup>136</sup>Yaffee (Op. cit.), pp. 34-45.

<sup>137</sup>Id., p. 35. Cf. this observation with Yaffee's sixth chapter, involving the political choices that shape more recent listing and delisting of endangered species; "Negotiating Scientific Decisions", pp. 86-103.

<sup>138</sup>Id., p. 38.

<sup>139</sup>Id., p. 39.

<sup>140</sup>William D. Palmer, Endangered Species Protection: A History of Congressional Action (4 ENVIRONMENTAL AFFAIRS 255) 1975, p. 258.

## Congress

[P]rovid[ed] a program for the conservation, protection, restoration, and propagation of selected species of native fish and wildlife, including migratory birds, that are threatened with extinction, and to consolidate, restate, and modify the present authorities relating to the administration by the Secretary of the Interior of the National Wildlife Refuge System.<sup>141</sup>

The Act additionally gave the Secretary of the Interior more power "to use his existing authority to purchase and manage land for a new purpose--protecting native wildlife threatened with extinction."<sup>142</sup> Formal procedures were vague, and the Secretary had no authority to act on private land. Legislators largely viewed the bill as a "no-lose" situation, and the Bill passed with little debate and by overwhelming majorities in both houses.<sup>143</sup> The grey wolf was listed as endangered under the 1966 Act.

### §3.2 Congressional Action: 1969

Now that the BSWF was charged with protecting endangered species, it was concerned with being able to perform under its new mandate. The Endangered Species Conservation Act of 1969 strengthened the 1966 Act, at the urging of the BSWF. The 1969 Act gave the Secretary of the Interior authority to control the passage of species threatened with extinction in and out of the country, and expanded the definition of

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<sup>141</sup>*In Palmer (Op. cit.)*, pp. 258-59. Palmer notes that the legislative history of this bill made it clear that only vertebrates would be considered for listing.

<sup>142</sup>*Dunlap (Op. cit.)*, p. 144.

<sup>143</sup>*Yaffee (Op. cit.)*, p. 41. "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 the refuges would be located or who would be hurt by the restrictions."

wildlife to include crustacea and mollusks.<sup>144</sup> The new import and export regulations involved jobs, and so congressional hearings were attended by industries that felt they were affected. However:

In 1969 environmental enthusiasm was high enough to overwhelm the objections of the furriers, trophy hunters, and other opponents, particularly since they could do little more than point to possible problems that might arise if the bill passed. This was not very persuasive, and Congress passed the Endangered Species Conservation Act of 1969 almost unanimously.<sup>145</sup>

It is important to note that in neither of these cases was Congress given a chance to weigh the general value of preserving species against some sort of **specific harm**.<sup>146</sup> Legislators, riding a wave of environmental enthusiasm, saw a chance to enthusiastically support the environment without stepping on too many toes.

Despite the fact that the 1966 and 1969 Acts constituted substantial progress on the endangered species issue, from a policy standpoint they left something to be desired in terms of providing mechanisms to attain their stated goals:

While the 1966 and 1969 acts laid important foundations for the federal protection effort, the resulting statutory scheme had several critical deficiencies. The statutes failed to adequately provide for the acquisition of habitat lands. Furthermore, only certain federal agencies were included in the statutory scheme, and their conservation mandates were made contingent upon considerations of practicability and compatibility with their primary missions. Finally, the statutes failed to prohibit expressly

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<sup>144</sup>Dunlap (Op. cit.), p. 146.

<sup>145</sup>Id.

<sup>146</sup>Although; the presence of industry in the 1969 hearings allowed for a 'balancing of interests.' Some concessions were made to industry, such as a provision that an interested party could require the Secretary of the Interior to review the status of a species. Yaffee (Op. cit.), pp. 46-47.

the taking of imperilled domestic wildlife. By 1973, both Congress and President Nixon had recognized that the existing law[s were inadequate.]<sup>147</sup>

For this reason, and in part because the environmental movement was peaking in this country, in 1973 Congress passed what would become known as the flagship--or the pit bull--of the environmental movement: the Endangered Species Act, or ESA.

#### §4 The Endangered Species Act of 1973: Explicit Values

The Endangered Species Act of 1973 was "a comprehensive and prohibitive policy that went far beyond the earlier endangered species programs."<sup>148</sup> Despite the fact that the 1969 Act had involved the participation of some affected industries, Congress took a position characterized by one policy analyst as "biology over dollars:"

The decision to list the wolf as endangered under the Endangered Species Act ("ESA") was a decision that the predator control programs had been successful and the species was in danger of extinction throughout all or a significant portion of its range. In enacting the ESA, Congress adopted a biological perspective that sought to protect not only plants and animals but also 'the ecosystems upon which endangered species and threatened species depend.' (16 U.S.C. § 1531(b).) Furthermore, it specifically sought to minimize the role played by economics.<sup>149</sup>

In fact, in 1978 the Supreme Court recognized Congress' intent as protection of

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<sup>147</sup>Saxe (*Op. cit.*), p. 409.

<sup>148</sup>Yaffee (*Op. cit.*), p. 47. "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."

<sup>149</sup>Dale D. Goble, *Of Wolves and Welfare Ranching* (16 HARVARD ENVIRONMENTAL LAW REVIEW 101) 1992, pp. 106-07. "For example, the decision to list a species such as the wolf is to be based "solely upon biological criteria"--"economic considerations have no relevance to determinations regarding the status of species." (H.R. REP. NO. 567, 97th Cong; see also 16 U.S.C. § 1533(b)(1)(a).) [Selected relevant provisions of the ESA are appended to this chapter, taken from West Publishing Co., *Selected Environmental Law Statutes: 1991-92 Educational Edition* (St. Paul, Minnesota) 1991, pp. 149-83. Footnotes in the index reflect the legislative history of various emendations since 1973.]

endangered species "whatever the cost."<sup>150</sup>

The findings of Congress that led off the act were stated as follows:

**§ 1531. Congressional findings and declaration of purposes and policy [ESA §2]**

**(a) Findings**

The Congress finds and declares that--

- (1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;
- (2) other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction;
- (3) **these species of fish, wildlife, and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people.**<sup>151</sup>

Congress cast 'untempered economic growth and development' as the **culprit**. The Act states why species are valuable, and any economic dimensions are purely auxiliary. This is an amazing change from the types of concerns which motivated early BBS actions, when nature was assessed in the light of agricultural efficacy.

The ESA also provided guidelines for listing endangered and threatened species (which similarly did not depend upon the influence of economics:)

**§ 1533. Determination of endangered species and threatened species [ESA § 4]**

**(a) Generally**

- (1) The secretary shall by regulation promulgated in accordance with subsection (b) of this section determine whether any species is an

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<sup>150</sup>Tennessee Valley Authority v. Hill, 437 U.S. 153, 184 (1978) in *Goble (Op. cit.)*, p. 107. "One would be hard pressed to find a statutory provision whose terms were any plainer than those in Section 7 of the Endangered Species Act. Its very words affirmatively command all federal agencies to 'ensure that actions *authorized, funded, or carried out* by them do not *jeopardize* the continued existence of an endangered species or *result* in the destruction of [sic?] modification of habitat of such species. . .'" 16 U.S.C. § 1536. [Emphasis in original.] This language admits of no exception." T.V.A v. Hill in *Norton (Op. cit.)* at pp. 4-5.

<sup>151</sup>16 U.S.C. § 1531(a)(1), (2), and (3). [Emphasis added.] As this is the version in force during the writing of the *Recovery Plan*, it is slightly different from the original. Plants, for example, were not protected until the 1982 reauthorization.

endangered species or a threatened species because of any of the following factors:

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

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy of existing regulatory mechanisms; or

(E) other natural or manmade factors affecting its continued existence.<sup>152</sup>

The Secretary was ordered to make determinations on the basis of the best scientific and commercial data available.<sup>153</sup>

Listing a species under the ESA ostensibly has three effects. First, all persons (which is to say, all individuals, businesses, and government entities) will refrain from any conduct that will result in a "taking" of the listed species. In this context "the term 'take' means to harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."<sup>154</sup>

Second, "Each Federal agency shall [ensure that any agency action] is not likely to jeopardize the continued existence of any endangered species or threatened species or [modify] its habitat."<sup>155</sup> Both of these effects address a duty to refrain from injurious conduct toward an endangered species.

The third benefit of being listed as an endangered species under the ESA is that

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<sup>152</sup>Id., § 1533(a)(1).

<sup>153</sup>Id., § 1533(b)(1)(A).

<sup>154</sup>Id., § 1532(20).

<sup>155</sup>Id., § 1536(a)(2).

"federal agencies are under an affirmative obligation to take action to increase the population of a species."<sup>156</sup> The 1973 Act lent force to the grey wolf's endangered listing (under the Endangered Species Conservation Act of 1966); and amounted to an order to the Secretary of the Interior (in the form of the FWS) to increase the *Canis lupus* population. The stage was set, therefore, for the immediate promulgation of a Recovery Plan to restore the wolf to its historic range.

## §5 The ESA and the Wolf: FWS Foot-dragging, 1973-78

Although the FWS in its various incarnations had enthusiastically supported the ESA, and enjoyed the power the Act conferred upon the Service, it did not immediately begin zealously to recover species. Despite the fact that Congress had clearly delineated the value of wildlife, institutional roadblocks impeded even the formation of a recovery plan for the wolf. These institutional roadblocks were not structural; rather, they were historical. Never mind rampant public support for protecting and recovering endangered species; recovering wolves would jeopardize older, institutionalized roles--responding to the demand values of a small and powerful segment of its constituency.

### §5.1 Old Dogs and New Tricks

§ 1533 of the ESA provided that once a species has been listed as endangered or threatened:

#### **(f) Recovery plans**

(1) The Secretary shall develop and implement plans (hereinafter referred to as "recovery plans") for the conservation and survival of endangered

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<sup>156</sup>Goble (Op. cit.)

species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species.<sup>157</sup>

This language is not ambiguous. The Secretary must recover species through every tool at his disposal unless his action would not help the species. For example, the grey wolf population in northern Minnesota was classified as a separate species under the Act in 1978, and down-listed from endangered to threatened by the FWS in 1978. This action was taken in order to allay public fears that were working against recovery by fostering adverse public attitudes. In other words, their protection was reduced for their own good.<sup>158</sup>

Astonishingly, this type of rationalization was used by the Service to "issue a regulation that authorized federal and state wildlife managers to 'take a gray wolf without a permit' [in Minnesota] if done in a humane manner."<sup>159</sup> This authorization actually allowed the FWS to continue federal predator control, at least in Minnesota.

While several groups challenged these and similar FWS actions, these actions have been upheld in several courts. Despite the fact that this type of regulated taking has been found to fall within the auspices of the Act (again, to help protect the species),

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<sup>157</sup>16 U.S.C. § 1533(f).

<sup>158</sup>Saxe (Op. cit.), pp. 412-13. This action was taken because the Service concluded that the legal protection afforded wolves had become "counterproductive:"

In Minnesota, wolves are totally protected under the Act, but this total protection may actually be working against the species. By prohibiting the killing of wolves, even those that may be attacking livestock and pets, current regulations may be creating an adverse public attitude toward the whole species.

(43 Fed. Reg. 9607, 9612 (1978)(codified as amended at 50 C.F.R. § 17.11(h)(1986)) in Saxe (Op. cit.)

<sup>159</sup>43 Fed. Reg. 9615.

courts have been at pains to point out that the FWS also has an affirmative duty to increase protected species' populations.<sup>160</sup>

## §5.2 Towards Specific Application

In 1992 Dale Goble called the ESA a reflection of "Biology Over Dollars: Congress's Choice," and characterized the resulting actions of the FWS a choice of "Dollars Over Biology."<sup>161</sup> Other observers of the ESA's gap between theory and practice have bemoaned the reduction of biological principles to the international language of economics. While pressure groups and historical inertia still managed to hold up the reintroduction of the grey wolf to Yellowstone, this bifurcation looked more persuasive.

Today, the wolves have been reintroduced. Does this mean that the FWS has converted, and chosen biology over dollars? An examination of implementation of the plan will reveal that the struggle between biology and dollars is shorthand for a different kind of struggle altogether: the clash between long-term transformative values and short-term demand values.

The FWS is trying to follow the *Recovery Plan*, first composed in 1978, revised until 1987, and implemented in 1995. When it justifies the plan, it speaks not only of

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<sup>160</sup>Henry R. Bader, *Wolf Conservation: The Importance of Following Endangered Species Recovery Plans* (13 HARVARD ENVIRONMENTAL LAW REVIEW 517 (1989), p. 520 (n. 15): "See also *Sierra Club v. Clark*, 577 F. Supp. 783, 789 (D. Minn. 1984) ("[f]rom both a plain reading of the Act and research into its legislative history, this court concludes that the Secretary clearly has an affirmative duty to bring the wolf population to a point where the protections of the Act are no longer needed"); *Defenders of Wildlife v. Andrus*, 428 F. Supp. 167, 170 (D.D.C. 1977) ("[u]nder the Endangered Species Act, the agency has an affirmative duty to increase the population of protected species")."

<sup>161</sup>Goble (Op. cit.), pp. 113-125.

restored ecosystems, but tourist value. The next chapter will examine the *Northern Rocky Mountain Wolf Recovery Plan*, and the way in which the FWS justifies the implementation of ecological principles in monetary terms.

## Appendix to Chapter 3: Selections From The Endangered Species Act of 1973

### § 1531. Congressional findings and declaration of purposes and policy [ESA §2]

#### (a) Findings

The Congress finds and declares that--

(1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;

(2) other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction;

(3) these species of fish, wildlife, and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people;

(4) the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction, pursuant to [various international agreements]; and

(5) encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nations's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

#### (b) Purposes

The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.

#### (c) Policy

(1) It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this chapter.

(2) It is further declared to be the policy of Congress that Federal agencies shall cooperate with State and local agencies to resolve water resource issues with conservation of endangered species.

### § 1533. Determination of endangered species and threatened species [ESA § 4]

#### (a) Generally

(1) The Secretary shall by regulation promulgated in accordance with subsection (b) of this section determine whether any species is an endangered species or a threatened species because of any of the following factors:

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

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy or manmade factors affecting its continued existence.

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#### (f) Recovery plans

(1) The Secretary shall develop and implement plans (hereinafter in this subsection referred to as "recovery plans") for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable--

(A) give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans, particularly those species that are, or may be, in conflict with construction or other development projects or other forms of economic activity;

(B) incorporate in each plan--

(i) a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species;

(ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and

(iii) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

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(4) The secretary shall, prior to

final approval of a new or revised recovery plan, provide public notice and an opportunity for public review and comment on such plan. The Secretary shall consider all information presented during the public comment period prior to approval of the plan.

(5) Each Federal agency shall, prior to implementation of a new or revised recovery plan, consider all information presented during the public comment period under paragraph (4).

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#### (h) Agency guidelines; publication in Federal Register; scope; proposals and amendments: notice and opportunity for comments

The Secretary shall establish, and publish in the Federal Register, agency guidelines to insure that the purposes of this section are achieved efficiently and effectively. Such guidelines shall include, but are not limited to--

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(4) a system for developing and implementing, on a priority basis, recovery plans under subsection (f) of this section.

**Endangered Act § 6, 16 U.S.C.A. § 1531**, emphasis added. (Pub.L. 93-205, §2, Dec. 28, 1973, 87 Stat. 884; Pub.L. 96-159, §1, Dec. 28, 1979, 93 Stat. 1225; Pub.L. 97-304, §9(a), Oct. 13, 1982, 96 Stat. 1426; Pub.L. 100-478, Title I, § 1013(a), Oct. 7, 1988, 102 Stat. 2315.)

**Endangered Species Act §7, 16 U.S.C.A. § 1533**, (Pub.L. 93-205, § 4, Dec. 28, 1973, 87 Stat. 886; Pub.L. 94-359, § 1, July 12, 1976, 90 Stat. 911; Pub.L. 95-632, §§ 11, 13, Nov. 10, 1978, 92 Stat. 3764, 3766; Pub.L. 96-159, § 3, Dec. 28, 1979, 93 Stat. 1225; Pub.L. 97-304, § 2(a), Oct. 13, 1982, 96 Stat. 1411; Pub.L. 100-478, Title I, I 1002-1004, Oct. 7, 1988, 102 Stat. 2306.)

Chapter 4  
Formulation and Implementation of the  
Northern Rocky Mountain Wolf Recovery Project

The *Northern Rocky Mountain Wolf Recovery Plan* was signed on August 3, 1987. In September of that year Frank Dunkle, the Director of the United States Fish and Wildlife Service, told a group of timber-industry officials that "the only wolves that I will bring to Wyoming or that I will sponsor to Wyoming. . .are on this tie."<sup>162</sup>

Dunkle is perhaps an extreme case, but his statement and its context represent perfectly the FWS' position with regard to the ESA. Congress could make grand pronouncements about the environment all it wanted;<sup>163</sup> it was the FWS that had to justify wolf restoration to the timber industry, the ranchers, the stockmen, and the woolgrower's associations.

§1 FWS and the *Recovery Plan* to 1987

The Northern Rocky Mountain Wolf Recovery Team defined itself as:

A group of individuals appointed by the Regional Director, Fish and Wildlife Service, Region 6 and assigned the task of preparing a **biologically sound plan** for establishing and achieving recovery goals for the wolf. The main objectives of the recovery team are: (1) to develop strategies for meeting recovery plan goals established pursuant to the Endangered Species Act, (2) [to] develop and evaluate criteria to identify areas in which wolf populations can be recovered, (3) [to] develop a plan

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<sup>162</sup>Quoted from an article by Andrew Melyncovych, *Wildlife Director Rolls Over for Sheep*, Caspar Star-Tribune, Nov. 23, 1987, p. 15, col. 4 in Bader (Op.cit.), p. 518 (n. 10). Bader's brief, written in 1989, argued that Dunkle's "unilateral decision to reverse the Recovery Plan without explanation would have violated the spirit and the letter of the ESA." *Id.*, p. 532. Dunkle, fashion sense notwithstanding, is no longer the director.

<sup>163</sup>For example, in 1982 Congress reacted to the Interior Department's use of cost-benefit analyses in the listing process by stressing that listing decisions were to be based "solely upon biological criteria." H.R. REP. NO 567, 97th Cong., 2d Sess. 19 (1982) in Goble (Op. cit.), p. 113.

which, when implemented, will allow for recovery of the wolf within recovery areas, and (4) [to] develop wolf management guidelines based upon the "zone management" concept.<sup>164</sup>

The Recovery Team attempted to put together a biological plan that would restore the endangered wolf--at least in a few specific areas.

Chapter 2 illustrated early governmental response to demand values that were in opposition to various predators' existence. Chapter 3 put the ESA in context, as an astonishing legislative shift to transformative values. This chapter will examine both the process of plan formulation and the plan itself. An examination of the implementation of the plan will reveal the ways in which transformative policy values resist application.

### §1.1 The Recovery Plan Process

One difficulty in assessing the actions of the Northern Rocky Mountain Wolf Recovery Team is that the recovery plan process has undergone a number of changes since the *Plan* was put in motion. The Team produced an "in-house draft" of a plan as early as 1976, yet a draft was not sent out for criticism until 1978.<sup>165</sup> The Team was composed of representatives of the FWS, the Forest Service, the NPS, the Bureau of Land Management, the Montana and Idaho wildlife commissions, and a wolf

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<sup>164</sup>*Recovery Plan (Op. cit.)*, p. 57. [Emphasis added.] The zone management concept involved "[a] management concept by which management priority and concern is de-emphasized beyond a central core area." *Id.*, p. 59. Zone I would give strong emphasis to recovery, Zone II would be a buffer zone, and Zone III would contain established human activities such as domestic livestock. "Maintenance and improvement of habitat for wolves are not management considerations in Zone III." *Id.*

<sup>165</sup>*Dunlap (Op. cit.)*, p. 170.

biologist.<sup>166</sup>

The original plan was "pessimistic about the chances of a successful reintroduction. There were few places where wolves could be reintroduced--and it did not identify them."<sup>167</sup> The team planned to determine the feasibility of reintroduction by 1985, and reintroduce wolves in 1987.<sup>168</sup>

The 1978 and 1979 ESA amendments placed a greater emphasis on recovery plans.<sup>169</sup> In response the FWS promulgated Recovery Planning Guidelines which "were designed to impose a standard system to improve efficiency in tracking recovery tasks, and to reflect the increased utilization of recovery plans in the budget review process."<sup>170</sup>

The guidelines mandated that:

The primary objective of recovery plans must be delisting from the endangered and threatened species list. Each plan must contain an Implementation Schedule which specifically identifies organization or agency task assignments, priorities, and funding necessary to achieve the declared objectives. When possible, all objectives should be stated in quantifiable terms.<sup>171</sup>

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<sup>166</sup>Recovery team members listed on the 1987 *Recovery Plan* represented the same organizations, and included John Faulkner (Stockman), Dennis Flath (Montana DFWP), Bob Gale (U.S. Forest Service), Dan Hinckley (Bureau of Land Management), Cliff Martincka (NPS), John Varley (NPS), Bart O'Gara, Team Leader (FWS), Robert Ream (University of Montana), Micke Schlegel (Idaho DFG), Robert Turner (National Audobon Society), and John Weaver (U.S. Forest Service). *Recovery Plan (Op. cit.)*, p. i.

<sup>167</sup>*Id.*

<sup>168</sup>*Id.*, pp. 170-71.

<sup>169</sup>*Bader (Op. cit.)*, p. 520.

<sup>170</sup>*Id.*, p. 521.

<sup>171</sup>*Id.*

The guidelines' stated preference for quantifiability dictated that the implementation schedule became the most important section of any recovery plan. "[A]ll . . . funding requests will be examined against the recovery plan's Implementation Schedule."<sup>172</sup>

Recovery team drafts were transmitted to the regional director, who circulated the draft to "the Office of Endangered Species [the OES], other affected federal and state agencies, private conservation groups, and industry."<sup>173</sup> A 1988 emendation of the ESA which required public notice and comment did not apply to the 1987 plan, but a similar process was undertaken in any case.<sup>174</sup>

A description of this review process is essential to understanding the "biological" nature of the resulting plan. The Draft *Recovery Plan* was completed in 1982 and distributed "for comment to a variety of state and federal agencies, environmental groups, wolf ecology experts, and industry organizations,"<sup>175</sup> forwarded to the Denver regional director, and signed on August 3, 1987.

## §2 *The Northern Rocky Mountain Wolf Recovery Plan*

The executive summary of the *Recovery Plan* claimed the *Plan* represented:

[A] "road map" to recovery of the gray wolf in the Rocky Mountains. The primary goal of the plan is to remove the Northern Rocky Mountain wolf from the endangered and threatened species list by securing and maintaining a minimum of 10 breeding pairs of wolves in each of the

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<sup>172</sup>OFFICE OF ENDANGERED SPECIES, U.S. FISH AND WILDLIFE SERVICE, *Recovery Planning Guidelines 2* (1985) in Bader (Op. cit.)

<sup>173</sup>*Id.*

<sup>174</sup>*Id.*

<sup>175</sup>*Id.*, p. 523.

three recovery areas for a minimum of three successive years.<sup>176</sup>

The *Plan* identified three areas for recovery: northwest Montana, central Idaho, and the greater Yellowstone area.<sup>177</sup> While the first two areas would rely upon natural recolonization, the *Plan* suggested a reintroduction strategy for Yellowstone National Park:

Due to its geographic isolation from areas with established wolf populations, recovery in the Yellowstone area will likely involve the reintroduction of wolves into Yellowstone National Park. However, before any reintroduction effort is initiated, the appropriate National Environmental Policy Act [NEPA] documents will be prepared with full public involvement.<sup>178</sup>

In all three areas, control plans would be developed for resolving wolf depredation problems. The goal of the control programs would be to "reduce and prevent livestock losses to wolves while removing the minimum number of wolves necessary to resolve the conflict yet still progress towards recovery."<sup>179</sup>

Appropriate control measures would be determined by the particular "Zone" in which a wolf (or manager) found themselves.<sup>180</sup> Management zones were to be "establish[ed]. . .to provide for wolf recovery and minimize wolf-human conflicts."<sup>181</sup>

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<sup>176</sup>*Recovery Plan (Op. cit.)*, p. v.

<sup>177</sup>*Id.*

<sup>178</sup>*Id.*

<sup>179</sup>*Id.*

<sup>180</sup>See note 164.

<sup>181</sup>*Id.*, p. 31.

Management Zone I was the precise area it was hoped that the wolves would reacquire, Zone II was a buffer zone, and Zone III would "contain established human activities such as domestic livestock use or other human activities or developments in sufficient degree to render wolf presence undesirable."<sup>182</sup>

Basic to this [management zone] segment are the protection of wolves and their habitat along with minimization of wolf-human conflicts. Every attempt should be made to eliminate situations/practices in wolf habitat that may encourage depredations and/or create **problem[!]** wolves.<sup>183</sup>

Wolves that ate livestock were to be controlled; as "[the] *Plan* is to fully recognize the interests of the public and the western livestock industry."<sup>184</sup>

Recovery plans are designed to coordinate efforts; they are not decision-making documents. They do, however, define the goals that will allow the delisting of endangered species. The *Recovery Plan* explained the conditions under which the OES could delist the Northern Rocky Mountain wolf, or *C.l.irremotus*: 10 breeding pairs in each of three areas for each of three years. But it did more than that.

Legal and policy analysts have blamed the FWS for an inability to escape the pervasive rational economic paradigm:

The authors of the *Wolf Recovery Plan* use an odd combination of language. Mixed in with descriptive statements on population biology and habitat ecology are prescriptive statements of moral censure. The language suggests a persistence of mythology, a continuance of "wolf" as moral category in what was to be a strictly biological document. Yet

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<sup>182</sup>Id.

<sup>183</sup>Id. [Emphasis added.]

<sup>184</sup>Id., p. 33.

closer examination reveals that the morality is only a veneer. Wolves are no longer "bad" for intrinsic reasons, they are "bad" because they may pose a risk to the economic interests of beef and wool producers.<sup>185</sup>

These observations are actually consistent with developments in the wolf's moral category in the early part of the century, when the BBS determined biological worthiness in direct relation to useful agriculture. One major difference is that in 1915 the government was giving the BBS money to kill wolves; in 1987 it was ordering the BBS's successor, the FWS, to save all endangered species whatever the cost.<sup>186</sup> From a policy standpoint, things could not have changed more; had things within the BBS's direct descendant remained the same?

All generalizations break down near the borders, but a boundary between biology and economics--even economics masquerading as morality--is a particularly troubling one. Ecological principles are never cut and dried. For example, this discussion takes the actual determination of endangered or threatened status as read, but Steven Yaffee has made a convincing case for the fact that listing decisions are largely political.<sup>187</sup> Similarly, disputes among biologists regarding putatively scientific debates (like the Kern County mouse invasion discussed in Chapter 2) often involve undisputed facts but wildly differing interpretations, because they involve what is good and bad for the environment.

When Dunlap, Goble, and Bader were writing about the *Recovery Plan*, it had yet

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<sup>185</sup>Goble (Op. cit.), p. 112.

<sup>186</sup>See note 149.

<sup>187</sup>Yaffee (Op. cit.) pp. 86-103.

to be implemented. It is my contention that the FWS's rhetoric of implementation discloses something more than a simple choice between 'biology and dollars.' Despite the fact that the *Plan* is being implemented, some of the transformative values that underpin its sources of authority do not translate well when the *Plan* is being justified against the demand values of affected parties. Hence these transformative values--specifically mandated by Congress as the values protected by the ESA--are merely paid lip service when the FWS justifies the implementation of the *Plan*.

### §3 Opposition and a 'Non-essential Experimental Population'

Despite the fact that the *Plan* was signed, it took over seven years for Congress to approve it. Strangely, much of the inability of supporters to begin reintroduction depended on the **cost** of reintroduction, a factor that Congress had indicated was no object. A short survey of the various hoops that planners had to jump through to implement Congress' mandate follows.

Action to reintroduce wolves depended upon an EIS, or Environmental Impact Statement. Funding to complete the EIS depended upon Congress, and key members from the affected areas managed to tie up implementation in both houses. Idaho Senator James McClure, a member of the Senate Appropriations Committee, managed to delay action for two years by "stripping the EIS designation from the study, and hence legal NEPA function, but allowing \$200,000 for 'a study of the situation.'"<sup>188</sup>

The only way that the FWS could get the *Recovery Plan* passed by Congress was

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<sup>188</sup>The Wolf Fund, Project Chronology [Wolf Fund Materials: available on request.]

to downgrade the wolves from endangered to threatened, in order to facilitate management objectives outlined in the plan. The FWS achieved this by recommending the creation of an 'experimental non-essential population.'<sup>189</sup> This option allowed wolves that killed livestock to be removed or killed. In other words, the wolves were listed as experimental for political and social reasons, in contrast to the stated intent of the ESA to identify endangered and threatened species and then recover them in their historic ranges.<sup>190</sup>

The actual EIS process allows for public comment--an attempt to include non-biological factors as factors to be evaluated.<sup>191</sup> Predictably, opposition to the plan involved the same forces that had driven the government eradication efforts in the early 1900's, despite the efforts made on the FWS's part to accommodate their interests. With regard to the proposed Yellowstone reintroduction, private organizations like the Wyoming Farm Bureau Federation, the Abundant Wildlife Society, and the No-Wolf Option Committee tried to thwart the FWS at every turn.

These organizations were uniformly opposed to the economic implications, or costs, of the plan. Carolyn Paseneaux of the Wyoming Woolgrowers Association noted

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<sup>189</sup>This suggestion was eventually established, codified at 50 C.F.R. § 17, **Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Gray Wolf in Yellowstone National Park in Wyoming, Idaho, and Montana** (*in* 59 Fed. Reg. 60252 (Tuesday, November 22, 1994)). The establishment was proposed in August of 1994; *see* 59 Fed. Reg. 42108 (1994). [Hereinafter **Establishment**.]

<sup>190</sup>The Wolf Fund, non-profit support group for reintroduction, notes that "Proponents believe[d] that allowing flexibility and participation in the wolf recovery process would help dissipate the regional anger toward wolves. One of the greatest threats wolves face is the animosity and rage of opponents and the subsequent illegal killings that express that rage." *In* WOLF, (Winter 1994), p. 15. [Wolf Fund materials: available on request.]

<sup>191</sup>See p. 68.

that "Ranching does not have a very big [profit] margin, so any [potential] amount of depredation is very problematic. . . Our position is, no wolves."<sup>192</sup> The motivations of opponents to the plan did not necessarily limit their complaints to political protest against what they perceived to be government-supported competition: the No-Wolf Option Committee, devoted entirely to the prevention of Yellowstone wolf restoration, issued a press release listing twelve reasons to support their position, many of which questioned the biological determinations of the *Plan*.<sup>193</sup>

In the face of this kind of opposition, the FWS found itself unable to counter arguments about economic loss convincingly by focusing on the ecological goals that the ESA sought to establish. Either it is difficult to explain to the woolgrowers the importance of biodiversity and ecosystem preservation in the face of lost profits, or such an argument does not persuade. Consequently, the FWS countered opposition with economic arguments about the importance of species restoration.

#### §4 FWS Justification: The FEIS and Implementation

Completed in 1994, the EIS statement for the restoration of wolves to

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<sup>192</sup>In 76(5) SIERRA 32, Perspectives: Still a Long Way From Home (September/October 1991), p. 33. [Edited by Reed McManus.]

<sup>193</sup>The press release, outlined in a Wolf Fund memorandum responding to the release, argued that the grey wolf is not endangered, as well as bemoaning the potential loss of hunting rights and cost to the taxpayer. WOLF FUND, Memorandum [Wolf Fund materials: available on request.] Many opponents of restoration feel that reintroduction and the attendant behaviors that the wolves' presence will force on them is the result of faulty science and wolf worship. Peter Steinhart recounts a conversation with outfitter Frank Rigler, during which Rigler complains "I've got a *Weekly Reader* here with a story about a government scientist. That's how they've educated my children. They've changed the image of the wolf--all at government expense. . . Bullshit! These scientists--paid for by my tax dollar!--they're just reading each other's work. They're not doing science, it isn't Science they're dealing with. They're simply promoting an image of the wolf. Guys like Mech, guys like Bangs--guys like that, they'll build an empire around wolves!" Peter Steinhart, A Company of Wolves (New York: Alfred A Knopf) 1995, p. 259.

Yellowstone examined 5 possible options for wolf recovery.<sup>194</sup> The first was the reintroduction of an experimental population, the proposal of the FWS in response to the ESA. The second was natural recovery, whereby no moves to augment recovery would be made. The third, or "No Wolf" option would be accomplished by "All wolves killed."<sup>195</sup> The fourth involved modification of state and federal laws (including the ESA) so that state wolf management committees could reintroduce wolves (and citizens could kill wolves for harassing domestic animals.) The fifth option considered was the reintroduction of nonexperimental wolves, or wolves that retained full endangered status.

Table S-2 of the final EIS (FEIS) Summary examined the following factors under each potential option: control of livestock losses, compensation for losses, control of big game predation, management of wolves, land-use restrictions for wolves, where wolves would be recovered (Yellowstone, in all cases), date of wolf recovery, wolf management cost until recovery, and any additional legislation needed to implement a particular option.<sup>196</sup>

The FEIS abstract makes the following assertions:

The Yellowstone area is about 25,000 miles square and 76% federal land. This area has over 95,000 ungulates and a hunter harvest of 14, 314 ungulates, is grazed by about 412,000 livestock, has a \$4.2 billion local economy, and receives about 14,500,000 recreational visits annually. . . A recovered wolf population in the Yellowstone area would kill about 19

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<sup>194</sup>U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, **The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho** (Summary, Final Environmental Impact Statement) (May 1994), p xx.

<sup>195</sup>**Id.** It is difficult to state if this entry in the options list is ironic. It certainly runs directly counter to the ESA.

<sup>196</sup>**Id.**

cattle (1-32), 68 sheep (17-110), and up to 1,200 ungulates a year. A recovered wolf population would not effect hunter harvest of male ungulates but may reduce hunter harvests of female elk deer, and moose for some herds. . . Visitor use would increase (+5% for out of area residents and +10% for local residents). At recovery, losses are estimated to be \$187,000-\$465,000 in hunter benefits, \$207,000-\$414,000 in potential reduced hunter expenditures, and \$1,888-\$30,470 in livestock losses. Increased visitor expenditures in the recovery area are estimated at \$23,000,000 and *the existence value of wolves is estimated at \$8,300,000 a year.*<sup>197</sup>

The Congress found that species "are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."<sup>198</sup> The Fish and Wildlife Service found that one species had an "existence value" of \$8,300,000 a year--a value that appears to outweigh losses in the form of hunter benefits, reduced hunter expenditure, and livestock losses. Thus does the FEIS summary justify the *Northern Rocky Mountain Wolf Recovery Plan*.

The establishment of the experimental non-essentia' population was codified on November 22, 1994.<sup>199</sup> On December 21 and 22, 1994 a federal judge denied an injunction by the American Farm Bureau Federation and the Mountain States Legal Foundation, which challenged the transplantation of Canadian grey wolves in the Northern Rockies, and suggested that the FWS failed to look into the chances that wolves

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<sup>197</sup>U.S. DEPARTMENT OF THE INTERIOR, U.S. FISH AND WILDLIFE SERVICE, **The Reintroduction of Gray wolves to Yellowstone National Park and Central Idaho, Final Environmental Impact Statement** (1994), abstract. [Emphasis added.]

<sup>198</sup>16 U.S.C. § 1531(a)(3) (Op. cit.) See pp. 56-59, n. 151.

<sup>199</sup>Establishment (Op. cit.)

would interbreed with coyotes.<sup>200</sup>

Finally, on January 12, 1995--almost 20 years since the first draft of the *Northern Rocky Mountain Wolf Recovery Plan* was completed, the media was pleased to report that "eight wolves were placed in on-acre pens in Wyoming's Yellowstone National Park. Officials said Saturday [January 14] they were doing well."<sup>201</sup>

## §5 A Triumph for Biology?

Does recovery under the ESA mean success? When the FWS justifies wolf recovery, it talks of lost revenues, added revenues, and costs of implementation. It refers to private organizations that will 'probably' recompense ranchers for losses.<sup>202</sup> In short, it deals with economic concerns that are best characterized as demand values under Norton's classification discussed in Chapter 1.

The ESA, on the other hand, appears to give primacy to the transformative value of wildlife. There is a rather large gulf between the stated objectives of the ESA and justifications given to defend implementing the *Recovery Plan*. What does this mean?

If some observers characterized the FWS's non-implementation of the *Plan* as dollars over biology, how would they characterize the success of the plan; a success bounded by economic rhetoric and a decision that wolves will be reintroduced--because

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<sup>200</sup>Farm Bureau Suit Stalls Wolf Reintroduction into Yellowstone [news item] (23(25) *ECOLOGY USA* 243) December 12, 1994; Wolf Reintroduction Could Begin this Week [news item] (24(1) *ECOLOGY USA* 2) January 9, 1994.

<sup>201</sup>4 young gray wolves released into Idaho wilderness [news item] *Roanoke Times & World News*, Sunday, Jan. 15, 1995, p. A6.

<sup>202</sup>*FEIS Summary* (Op. cit.)

their existence is worth over \$8 million year? It would seem difficult to characterize the *Plan* as dollars over biology. It is my contention that the rhetoric of the plan reveals something else.

Transformative values, which do not reduce economically, or chronologically, into discrete intervals, do not easily translate into demand values. This is not to say that transformative values are excluded from the political process; or even from the application of such values. Tourists interested in an experience with wolves in nature are symbolic of the transformative value of nature; but transformative value cannot be assessed politically without computing added revenue for wilderness regions.

But the real value of wolves, from an ecological standpoint, is largely absent from the dialog between the FWS and its opponents in the reintroduction debate. Transformative values, whatever their appeal on a systemic level, have little influence in their own application. Values underlie ecology. Values underpin individual conceptions of the value of nature. But only certain values have power that obtains during policy implementation.

## Chapter 5 Transformative Values and Incommensurability

Donald Barry, a vice president of the World Wildlife Fund, has called the ESA "the pit bull of environmental laws. It is short, compact, and has a hell of a set of teeth. Because of its teeth, the act can force people to make the kind of tough political decisions they wouldn't normally make."<sup>203</sup> When the government agencies charged with implementing environmental policies "get down to brass tacks," however, it is not at all clear that tough political choices are made. Taking the *Northern Rocky Mountain Wolf Recovery Plan* as an example, there appears to be a local incommensurability between the values that support predator reintroduction and the values held by the project's opponents. In its attempt to translate the advantages of predator reintroduction into a common language, so to speak, the FWS ignores (or at least downplays) some of the best reasons for reintroducing wolves because they do not translate from one axiology to another.

Policy analysts conclude:

After more than two decades of experience with implementing the ESA, it seems apparent that Congress and the Department of the Interior, despite some notable achievements, have been loath to commit the resources and political will essential to realizing the most important purposes of the ESA.<sup>204</sup>

There is a gap between the values which infuse the goals of the ESA and the

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<sup>203</sup>Quoted in *New York Times*, May 26, 1992 in Walter A. Rosenbaum, *Environmental Politics and Policy* (Third Edition) (Washington D.C.: CQ Press) 1995, p. 334.

<sup>204</sup>*Id.*

implementation of policies formulated under its rubric.

## §1 The Trouble with Transformative Values

What are the values that cannot be translated into an instrumental rationality? A common answer to this question has been that animals, species, and ecosystems are entitled to existence, or have intrinsic value. If, as I argued in Chapter 1, no philosophical basis can be established from which to identify that group of concerns that often claim to represent the "intrinsic" value of nature, then this kind of classification is of little use. Returning to Bryan Norton's conception of values described in Chapter 1, one conception of types values that can identify human values that seldom obtain under an instrumental rationality is the distinction between demand and transformative values.

Transformative values serve a telling purpose for Norton. He is interested in asserting that only **human** values can be considered in policy formation, even if they are human values about the autonomy or ethical treatment, or so-called intrinsic rights of animals.<sup>205</sup> Making these concerns human concerns is a step towards quantifying amorphous values, and is helpful in a discussion of the types of values that environmental supporters hold, but do not show how the continued existence of nature can benefit humankind. Preservationists like Norton are stymied in attempting to identify human values that support ecosystem preservation among the demand values, the "the shifting, contingent preferences humans express for material goods and services."<sup>206</sup>

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<sup>205</sup>See pp. 12-15.

<sup>206</sup>Norton (Op. cit.), p. 188.

To solve this problem; Norton attacks benefit-cost (BC) analysis. Economic models, such as the one that purports to justify the restoration of wolves to Yellowstone, operate on a 'preference-satisfaction' model, "which prides itself on avoiding normative issues in policy analysis, [by] treat[ing] all felt preferences as having equal claim to value."<sup>207</sup> However, transformative values "cannot be expressed on the unitary scale of values advocated by BC analysts:

First, the preferences that constitute the unitary scale of values must be taken as given for the sake of the analysis. They must be fixed at a specified point in time, in order to be aggregated. Second, transformative values cannot be given expression in a market system because of its purely descriptive approach to values.<sup>208</sup>

Norton attempts to differentiate between worthy and unworthy preferences by:

[R]efus[ing] to accept the view that all felt preferences are on par. Some can survive a rigorous process of examination and emerge as considered preferences; some cannot. In this way species preservationists can give importance to some demand values while criticizing and rejecting others as less worthy of concern.<sup>209</sup>

In short, some human values are better than others, and preservationists know which ones. But the better values, the transformative values, are incommensurable within the framework of analysis utilized by many policy makers. Felt preferences might not be on par, but those preferences reducible to dollar amounts seem to hold an advantage. This simple fact explains why there is a pervasive systemic incommensurability between

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<sup>207</sup>Id., p. 226.

<sup>208</sup>Id.

<sup>209</sup>Id.

the values that underlie an instrumental rationality (the traditional milieu of political justification) and many of the values inculcated in ecological thinking.

## §2 Transformative Values and Political Realism

Norton describes transformative values as the perfect platform from which preservationists, and ecologists generally, should argue. Yet a reiteration of the difficulties facing the *Recovery Plan* illustrates that the milieu within which transformative values are pursued is one dominated by demand values. Policy analysts concerned about the environment hope to differentiate between values that are held and values that should be held. But many of the ecological values that support ecosystem preservation, which is to say the good values, cannot be expressed satisfactorily under the current framework of political dispute resolution within the FWS.

It is possible that transformative values cannot compete under the current framework. If the *Recovery Plan's* history shows nothing else, it should show that the noblest ecological intentions--even those with broad popular support, like saving species--wither in the face of the current political process. The ostensible findings of Congress that lead off the ESA are transformative values.<sup>210</sup> As discussed in Chapter 3, there is no way that Congress could have made its point more clearly. But the types of transformative values that infuse the ESA cannot hold a candle to property rights as far as political effectiveness is concerned.

When the Bureau of Biological Survey was responding to the felt preferences of

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<sup>210</sup>See p. 58.

ranchers for dead wolves, scientists who began to worry about a lack of study subjects and the degradation of ecosystems had no political clout. Vague worries about a dearth in the seemingly inexhaustible supply of varmints was not taken seriously by bureaucrats involved in giving the people what they wanted. Chapter 2 demonstrates that killing varmints made sense, both to the people who looked to the government for help, and the government, which desired to look helpful.

In the 1960's, scientific and public concern about the environment led to a recognition by Congress that wildlife had more than economic value; wildlife had aesthetic, ecological, educational, historical, recreational, and scientific value as well. As discussed in Chapter 3, provisions were made to preserve all possible forms of wildlife. Long signaled as a tremendous turning point in this country's attitude towards nature, events since 1973, and notably efforts to actually carry out the ESA mandate, tell a different story. If attitudes have changed, the changes have been more superficial than real.

Wolves, said Congress, have transformative value. To prove it, said the FWS, look how many tourists will spend money for the chance to see a few! Chapter 4 shows how Congress' specific notice of the transformative value of species is not enough to preserve species. Reintroduction had better make sound financial sense. BC analysis must support the biological strategies for returning ecosystems to their 'original' state.

### §3 Conclusion

Transformative values that are quantified, sized up, assessed quarterly and

reported in terms of tourist value are no longer transformative values. They are demand values. On one level, the January 1995 reintroduction of *Canis lupus* to Yellowstone National Park is a triumph for the letter of the ESA. The hoops that planners have to jump through to implement the letter of the ESA, however, are an affront to the spirit of the ESA. This is a troubling prospect, and a thorny one for anyone who supports "environmental" values. A Congressional policy statement that seems like an environmental triumph is **not** a triumph if its promise (and premise) are empty. From an ecological point of view, all species are valuable. Wolves are popular. How can the ESA hope to save species that don't have an \$8,000,000.00 existence value per year?

Were one to believe the claims of environmental economists, there are no values that cannot be expressed in dollars. In fact, cost-effectiveness can be an important tool for crafting policy that protects species and ecosystems.<sup>211</sup> But it remains to be seen how BC analysis can accommodate the long-term qualitative concerns discussed in Chapter 1. If BC cannot take into account all factors, such as human concern for the intrinsic value of nature, it cannot hope to maximize utility. It cannot identify the "last rivet."<sup>212</sup>

Some observers of the difficulties inherent in environmental policy characterize the pervasiveness of economics as an enemy of ecological thinking. This is partly true;

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<sup>211</sup>See, for example, **Michael A. Taylor**, *A Cost-effectiveness Analysis of Alternative Regulatory Approaches Under the Endangered Species Act of 1973* (1993)(unpublished M. Environmental Economics, Virginia Tech (Blacksburg, VA)). Taylor argues that an ecosystem approach to species preservation is more cost-effective than a species-by-species approach, and hence should be implemented. Many preservationists believe in this approach, but few would cite 'cost-effectiveness' as the deciding factor.

<sup>212</sup>See p. 52.

some aspects of ecological thinking do not lend themselves to profit margins and BC analysis. But it does not appear that simply positing transformative values will solve environmental problems. Norton and others urge that broader solutions be sought, that the apparent stalemate faced by environmental managers in the face of vanishing species and a disgruntled public must be avoided before the fact, that habitat management and early concern for the ecosystem will reduce the number of species that we must save.<sup>213</sup> Environmentalists concerned about wolves, however, face subspecies that are nearly extinct now, and have current interests in sound ecosystems. They cannot blame economics and then start again.

If transformative values cannot compete within a system of instrumental rationality, then it seems possible that the framework needs to be changed. The question that frames this thesis is: Why do the justifications for implementation differ from the justifications for legislation? The answer is, that transformative values, which are long term and often hard to grasp, and demand values, which seem to give unequal influence to some individuals--especially those who own property--are incommensurable. This fact causes a great deal of frustration in the environmental policy arena. Ecologists wish ranchers would quit complaining about the loss of a few sheep, and ranchers wish ecologists would quit babbling about ecosystem balance. As of yet, no equal footing has been found.

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<sup>213</sup>Norton (Op. cit.), pp. 258-71.

## Bibliography

### Primary Sources

**50 C.F.R. § 17, Reclassification of the Gray Wolf in the United States and Mexico, with Determination of Critical Habitat in Michigan and Minnesota** (*in* 43 Fed. Reg. 9607 (Thursday, March 9, 1978)).

**50 C.F.R. § 17, Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Gray Wolf in Yellowstone National Park in Wyoming, Idaho, and Montana** (*in* 59 Fed. Reg. 60252 (Tuesday, November 22, 1994)).

59 Fed. Reg. 42108 (1994) (to be codified at **50 C.F.R. § 17**), **Endangered and Threatened Wildlife and Plants; Proposed Establishment of a Nonessential Experimental Population of Gray Wolf in Yellowstone National Park in Wyoming, Idaho, and Montana** Proposed Rule (Proposed August 16, 1994).

**A COMPILATION OF FEDERAL LAWS RELATING TO CONSERVATION AND DEVELOPMENT OF OUR NATION'S FISH AND WILDLIFE RESOURCES, ENVIRONMENTAL QUALITY, AND OCEANOGRAPHY** *Printed for the use of the Committee on Merchant Marine and Fisheries*, January, 1977. [Serial No. 95-B].

**A LEGISLATIVE HISTORY OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED IN 1976, 1977, 1978, 1979, AND 1980, TOGETHER WITH A SECTION-BY-SECTION INDEX** *Prepared by the Congressional Research Service of the Library of Congress for the Committee on Environment and Public Works U.S. Senate*, February, 1982. [Serial No. 97-6].

**ADVISORY COMMITTEE ON PREDATOR CONTROL Predator Control--1971: Report to The Council on Environmental Quality and The Department of the Interior, 1972.**

**ANIMAL DAMAGE CONTROL PROGRAM POLICY CHANGES OVERSIGHT**, *Hearings before the Committee on Environment and Public Works United States Senate*, 96th Cong., 2nd Sess. (1980). [Serial No. 96-H52].

**DEFENDERS OF WILDLIFE v. LUJAN** 792 F.SUPP. 834 (1992) United States District Court, District of Columbia.

**ENDANGERED SPECIES ACT AMENDMENTS OF 1993**, *Hearing before the Committee on Environment and Public Works United States Senate*, 103d Cong., 2nd Sess. (1994). [Serial No. 103-768, Pt. 1].

**FUND FOR ANIMALS v. ANDRUS** 11 ENVIRONMENTAL REPORTER 2189 (1978)  
United States District Court, District of Minnesota.

*Greater Yellowstone Ecosystem: Oversight Hearing before the Subcommittee on Public Lands and the Subcommittee on National Parks and Recreation of the Committee on Interior and Insular Affairs*, 99th Cong., 1st Sess. (1985). [Serial No. 99-18].

NATIONAL PARK SERVICE 1978. **The Wolves of Yellowstone** (Natural Resources Report Number 14).

U.S. DEPARTMENT OF THE INTERIOR, U.S. FISH AND WILDLIFE SERVICE 1989.  
**Endangered Species Listing Handbook.**

U.S. DEPARTMENT OF THE INTERIOR, U.S. FISH AND WILDLIFE SERVICE 1987.  
**Northern Rocky Mountain Wolf Recovery Plan.** U.S. Fish and Wildlife Service, Denver, Colorado. 119 pp.

U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, **Recovery Plan for the Eastern Timber Wolf, 1978.**

U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE, **Rehabilitation of Western Wildlife Habitat: A Review, 1978.**

### Secondary Sources

**Andrews, Richard N. L. and Mary Jo Waits (eds).** Environmental Values in Public Decisions: A Research Bibliography (Vance Bibliographies Pub. Admin. Series: Bibliography #P 41).

**Attfield, Robin and Andrew Belsey (eds).** Philosophy and the Natural Environment [Royal Institute of Philosophy Supplement 36] (Cambridge, England: University Press) 1994.

**Bader, Harry R.** Wolf Conservation: The Importance of following Endangered Species Recovery Plans (13 HARVARD ENVIRONMENTAL LAW REVIEW 517) 1989.

- Bean, Michael J., Sarah G. Fitzgerald and Michael A. O'Connell.** Reconciling Conflicts Under the Endangered Species Act: The Habitat Conservation Planning Experience (Washington, D.C.: World Wildlife Fund) 1991.
- Bennett, Jane, and William Chaloupka (eds).** In the Nature of Things: Language, Politics, and the Environment (Minneapolis, Minnesota: University of Minnesota Press) 1993.
- Brandt, Ellen.** How Much is a Gray Wolf Worth? (31(4) NATIONAL WILDLIFE 4) 1993.
- Burbank, James C.** Vanishing Lobo: The Mexican Wolf and the Southwest (Boulder, Colorado: Johnson Books) 1990.
- Busch, Robert (ed).** Wolf Songs: The Classic Collection of Writings About Wolves (San Francisco, California: Sierra Club Books) 1994.
- Cadieux, Charles L.** Wildlife Extinction (Washington, D.C.: Stone Wall Press, Inc.) 1991.
- Cain, Stanley A.** Predator and Pest Control in COUNCIL ON ENVIRONMENTAL QUALITY, (Brokaw, Howard P. (ed)). Wildlife and America: Contributions to an Understanding of American Wildlife and its Conservation (Cosponsored by the U.S. Fish and Wildlife Service, the Forest Service, and the National Oceanic and Atmospheric Administration) 1978 at p. 379.
- Callicott, J. Baird.** Non-Anthropocentric Value Theory and Environmental Ethics (21/4 AMERICAN PHILOSOPHICAL QUARTERLY 299) 1984.
- Cameron, Jenks.** The Bureau of Biological Survey: Its History, Activities and Organization (New York, New York: Arno Press) 1974.
- Chadwick, Douglas H.** Dead or Alive: The Endangered Species Act (187(3) NATIONAL GEOGRAPHIC 22) 1994.
- Chase, Alston.** Playing God in Yellowstone: The Destruction of America's First National Park (New York, New York: Harcourt Brace & Company) 1987.
- Chisholm, Anne.** Philosophers of the Earth: Conversations with Ecologists (New York, New York: E.P. Dutton & Co., Inc.) 1972.

- Cowell, C. Mark.** Ecological Restoration and Environmental Ethics (15 ENVIRONMENTAL ETHICS 19) 1983.
- Devall, Bill and George Sessions.** Deep Ecology: Living as if Nature Mattered Salt Lake City, Utah: Peregrine Smith Books) 1985.
- Dunlap, Thomas R.** Saving America's Wildlife (Princeton, New Jersey: Princeton University Press) 1988.
- Dunstone, N. and M.L. Gorman (eds).** Mammals as Predators: The Proceedings of a Symposium held by The Zoological Society of London and the Mammal Society: London, 22nd and 23rd November 1991 (Oxford, England: Clarendon Press) 1993.
- Easterbrook, Gregg.** Muddying the Waters: Environment: Will the Republicans go too far in rolling back Regulation? [news item] Newsweek, February 27, 1995 at 78.
- Egler, Frank E.** The Way of Science: A Philosophy of Ecology for the Layman (New York: Hafner Publishing Company) 1970.
- Elliot, Robert.** Ecology and the Ethics of Environmental Restoration in Atfield, Robin and Andrew Belsey (eds). Philosophy and the Natural Environment (Cambridge, England: University Press) 1994.
- Farm Bureau Suit Stalls Wolf Reintroduction Into Yellowstone [news item] (23(25) ECOLOGY USA 243) December 12, 1994.
- Findley, Roger W. and Daniel A. Farber.** Environmental Law in a Nutshell [2d] (St. Paul, Minnesota: West Publishing Company) 1988.
- Frank, Harry (ed).** Man and Wolf: Advances, Issues and Problems in Captive Wolf Research (Boston, Massachusetts: Dr W. Junk Publishers) 1987.
- Fox, Michael W.** Behaviour of Wolves, Dogs and Related Canids (New York, New York: Harper & Row, Publishers) 1971.
- Fox, Michael W.** The Soul of the Wolf (Boston, Massachusetts: Little, Brown and Company) 1980.

FWS Formally Proposes Wolf Reintroduction to Yellowstone [news item] (23(17) ECOLOGY USA 162) August 22, 1994.

**Gasaway, William C., Robert O.I Stephenson, James L. Davis, Peter E.K. Shepherd, and Oliver E Burris.** Wildlife Monographs: Interrelationships of Wolves, Prey, and Man in Interior Alaska (Roy L. Kirkpatrick (ed)) ALASKA DEPARTMENT OF FISH AND GAME 1983.

**Gobel, Dale D.** Of Wolves and Welfare Ranching (16 HARVARD ENVIRONMENTAL LAW REVIEW 101) 1992.

**Grumbine, Edward R.** Ghost Bears: Exploring the Biodiversity Crisis (Washington, D.C.: Island Press) 1992.

**Harrington, Fred H. and Paul C. Paquet (eds).** Wolves of the World: Perspectives of Behavior, Ecology, and Conservation (Park Ridge, New Jersey: Noyes Publications) 1982.

**Houston, Douglas B.** The Northern Yellowstone Elk: Ecology and Management (New York, New York: Macmillan Publishing Co., Inc.) 1982.

**Ise, John.** Our National Park Policy: A Critical History (New York, New York: Arno Press) 1979.

**Kellert, Stephen R. and Joyce K. Berry.** Activities of the American Public Relating to Animals: Phase two results of a U.S. Fish and Wildlife Service funded study of 'American attitudes, knowledge and behaviors toward wildlife and natural habitats.' Grant #14-16-0009-77-056. Presented to the U.S. Fish and Wildlife Service, April 1980 (U.S. Government Printing Office) 1980.

**Kellert, Stephen R. and Joyce K. Berry.** Knowledge, Affection and Basic Attitudes Toward Animals in American Society: Phase Three [supra] (U.S. Government Printing Office) 1980.

**Klinghammer, Erich (ed).** The Behavior and Ecology of Wolves: Proceedings of the Symposium on the Behavior and Ecology of Wolves held on 23-24 May 1975 at the Annual Meeting of the Animal Behavior Society in Wilmington, N.C. (New York, New York: Garland STPM Press) 1979.

**Lopez, Barry Holstun.** Of Wolves and Men (New York, New York: Charles Scribner's Sons) 1978.

- Mech, L. David.** The Wolf: The Ecology and Behavior of an Endangered Species (Garden City, New York: The Natural History Press) 1970.
- McCloskey, H. J.** Ecological Ethics and Politics (Totowa, New Jersey: Rowman and Littlefield) 1983.
- McIntyre, Rick.** A Society of Wolves: National Parks and the Battle Over the Wolf (Stillwater, Minnesota: Voyageur Press) 1993.
- McIntyre, Rick.** War Against the Wolf: America's Campaign to Exterminate The Wolf (Stillwater, Minnesota: Voyageur Press) 1993.
- Midgley, Mary.** Animals and Why They Matter (Athens, Georgia: The University of Georgia Press) 1983.
- Midgley, Mary.** Science as Salvation: A Modern Myth and its Meaning (New York, New York: Routledge) 1992.
- Mighetto, Lisa.** Wild Animals and American Environmental Ethics (Tucson, Arizona: The University of Arizona Press) 1991.
- Mowat, Farley.** Never Cry Wolf (New York, New York: Bantam Books) 1963, 1993.
- Neher, Philip A.** Natural Resource Economics: Conservation and Exploitation (Cambridge, England: Cambridge University Press) 1990.
- Norton, Bryan G.** Why Preserve Natural Variety? (Princeton, New Jersey: Princeton University Press) 1987.
- Palmer, William D.** Endangered Species Protection: A History of Congressional Action (4 ENVIRONMENTAL AFFAIRS 255) 1975.
- PACIFIC NORTHWEST RIVER BASINS COMMISSION, URBAN & RURAL LANDS COMMITTEE,  
**Ecology and the Economy, 1973.**
- Peek, J.M. et al. 1991.** Restoration of Wolves in North America (Wildlife Society Technical Review 91-1 21pp).

- Pimlott, Douglas H. (ed).** Wolves: Proceedings of the First Working Meeting of Wolf Specialists and of the First International Conference on Conservation of the Wolf (Morges, Switzerland: International Union for Conservation of Nature and Natural Resources) 1975.
- Real, Leslie A. and James H. Brown (eds).** Foundations of Ecology: Classic Papers with Commentaries (Chicago, Illinois: University of Chicago Press) 1991.
- Ream, Robert R., Michael W. Fairchild, Diane K. Boyd and Daniel H. Pletscher.** Population Dynamics and Home Range Changes in a Colonizing Wolf Population in Keiter, Robert B. and Mark S. Boyce (eds). The Greater Yellowstone Ecosystem: Redefining America's Wilderness Heritage (Yale University Press) 1991 [Chapter 22 Offprint sent by Dr. Pletcher, Professor and Director of Montana's Wildlife Biology Program].
- Regan, Tom.** The Nature and Possibility of an Environmental Ethic (3 ENVIRONMENTAL ETHICS 19) 1981.
- Regenstein, Lewis.** The Politics of Extinction: The Shocking Story of the World's Endangered Wildlife (New York, New York: MacMillan Publishing Co., Inc.) 1975.
- Reintroduction Plan Endangers Wolves** [news item] (65(9/10) NATIONAL PARKS 12) 1991.
- Rieser, Alison.** Ecological Preservation as a Public Property Right: An Emerging Doctrine in Search of a Theory (15 HARVARD ENVIRONMENTAL LAW REVIEW 393) 1991.
- Rolston, Holmes, III.** Can and Ought We to Follow Nature? (1 ENVIRONMENTAL ETHICS 7) 1979.
- Rolston, Holmes III.** Value in Nature and the Nature of Value in Attfield, Robin and Andrew Belsey (eds). Philosophy and the Natural Environment (Cambridge, England: University Press) 1994.
- Rouber, Paul.** Still a Long Way From Home [news item] (76(5) SIERRA 32) 1991.
- Sagoff, Mark.** On the Preservation of Species (7 COLUMBIA JOURNAL OF ENVIRONMENTAL LAW 33) 1980.

- Saxe, Keith.** Regulated Taking of Threatened Species Under the Endangered Species Act (39 HASTINGS LAW JOURNAL 399) 1988.
- Schmidt, Robert Howard.** Contributions to Canid Management in North America (Ann Arbor, Michigan: University Microfilms International) 1986.
- Schoenbaum, Thomas J. and Ronald H. Rosenberg (eds).** Environmental Policy Law: Problems, Cases and Readings [2d] (Westbury, New York: The Foundation Press, Inc.) 1991.
- Sigler, William F.** Wildlife Law Enforcement (Dubuque, Iowa: Wm. C. Brown Company Publishers) 1956.
- Steinhart, Peter.** The Company of Wolves (New York, New York: Alfred A. Knopf) 1995.
- Taylor, Michael A.** Cost-Effectiveness Analysis of Alternative Regulatory Approaches Under the Endangered Species Act of 1973 (1993) (unpublished Masters Thesis Environmental Economics, Virginia Tech (Blacksburg, VA)).
- Thiel, Richard P.** The Timber Wolf in Wisconsin: The Death and Life of a Majestic Predator (Madison, Wisconsin: The University of Wisconsin Press) 1993.
- Trefethen, James B.** An American Crusade for Wildlife (New York, New York: Winchester Press and the Boone and Crockett Club) 1975.
- UNITED STATES DEPARTMENT OF AGRICULTURE, **Wildland Planning Glossary, 1977.**
- Utton, Albert E. and Daniel H. Henning.** Environmental Policy: Concepts and International Implications (New York, New York: Praeger Publishers) 1973.
- WEST'S PUBLISHING COMPANY, **Selected Environmental Law Statutes** [1991-92 Educational Edition] (St. Paul, Minnesota: West Publishing Co.) 1991.
- Wildavsky, Aaron.** Speaking Truth to Power: The Art and Craft of Policy Analysis (Boston, Massachusetts: Little, Brown and Company) 1979.
- Wilkinson, Todd.** Bringing Back the Pack [news item] (67(5/6) NATIONAL PARKS 24) 1993.

Wolf Plans Finalized; Suits Threatened [news item] (23(24) ECOLOGY USA 232)  
November 28, 1994.

Wolf Reintroduction Could Begin This Week [news item] (24(1) ECOLOGY USA 2)  
January 9, 1995.

Wolves in Yellowstone? [news item] (58(4) THE SCIENCE TEACHER 6) 1991.

**Wratten, Stephen D. and Gary L. A. Fry.** Field and Laboratory Exercises in Ecology  
(London, England: Edward Arnold) 1980.

**Wright, Will.** Wild Knowledge: Science, Language, and Social Life in a Fragile Environment (Minneapolis, Minnesota: University of Minnesota Press) 1992.

**Worster, Donald.** Nature's Economy: The Roots of Ecology (San Francisco, California: Sierra Club Books) 1977.

**Worthington, E. Barton.** The Ecological Century: A Personal Appraisal (Oxford, England: Clarendon Press) 1983.

**Yaffee, Steven Lewis.** Prohibitive Policy: Implementing the Federal Endangered Species Act (Cambridge, Massachusetts: MIT Press) 1982.

Yellowstone wolves likely to give ecosystem jolt, Fort Lauderdale Sun-Sentinel, Sunday February 5, 1995, at G-7.

**Young, Stanley Paul.** The Last of the Loners (London, England: The MacMillan Company) 1970.

## CURRICULUM VITAE

MATTHEW T. REA

Center for the Study of Science in Society

Center for Interdisciplinary Studies

Virginia Polytechnic Institute and State University

Blacksburg, Virginia 24061-0247

Office Phone: (540) 231-7687 Fax: (540) 321-7013

Internet: STS@VTVM1.cc.vt.edu

### EDUCATION

M.S., Science and Technology Studies, December 1995

Virginia Polytechnic Institute and State University

Blacksburg, Virginia

J.D., Law, May 1993

Marshall-Wythe School of Law

College of William and Mary

Williamsburg, Virginia

B.A., History, May 1990

Virginia Polytechnic Institute and State University

Blacksburg, Virginia

### EMPLOYMENT

Teaching Assistant, Virginia Polytechnic Institute and State University, 1993-1995

### OTHER

Phi Beta Kappa, Phi Alpha Theta