

MAKING THE LAW MORE ECOCENTRIC: RESPONDING TO LEOPOLD AND CONSERVATION BIOLOGY

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INTRODUCTION

Among presenters in this colloquium, I fill the role of legal practitioner. I was introduced to the biological revolution in order to draft claims on behalf of a distinct set of clients,¹ rather than to develop a well-ordered philosophical or historical foundation for a particular perspective on conservation law or science. My clients asked me to assemble an administrative record resting on conservation biology, draft a Complaint to protect biodiversity,² and negotiate a new state forest management statute to include biological diversity,³ before I even had time to read Donald Worster's *Nature's Economy*.⁴

After interviewing biologists, observing points of resistance among professional land managers, and lobbying for new policies, I have discovered that views on whether forest ecosystems were at one time, or could be again, in balance seem to play a minor role in the positions these actors take on forest management issues. Instead,

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1. In the field of forest management and the conservation of biodiversity, my clients focus on federal and state public lands and seek to reduce the widespread use of those lands for commercial timber harvest and game species production (which both bring significant anthropogenic disturbances to the land) and to increase the dominant use of substantial portions of these lands for the conservation of native biological diversity. The clients referred to include Defenders of Wildlife, Wisconsin Audubon Council, Inc., Sierra Club-John Muir (WI) Chapter, Wisconsin Forest Conservation Task Force, Upper Peninsula Environmental Coalition, and Friends of the Brule River and Forest.

2. See *infra* part II, describing the case history of the first National Forest Land and Resource Management Plans appeals and subsequent litigation based on the "diversity of plant and animal communities" language in 16 U.S.C. § 1604(g)(3)(B) (1994).

3. 1995 Wis. Legis. Serv. 257 (West), effective May 7, 1996, repealing and recreating WIS. STAT. § 28.04 (1989), the statute governing management of Wisconsin's state forests.

4. DONALD WORSTER, *NATURE'S ECONOMY: A HISTORY OF ECOLOGICAL IDEAS* (Donald Worster & Alfred Crosby eds., Cambridge University Press 2d ed. 1994) (1977). This text is one of the most comprehensive and highly regarded histories of ecology.

inherent in forest management debates is a deep-seated conflict in philosophies regarding the place of humans in ecosystems. An individual's views about ecology and the role of humans in ecosystems is a better predictor of one's ideas on appropriate forest management.

To maintain the practical context of the review of forest management issues, and in order to help formulate normative proposals for conservation law, it is important to examine the current context of public land disputes in the National Forest System. Many of the key actors who determine the application of conservation biology to forest management (Forest Supervisors, District Rangers, timber industry lawyers and lobbyists, and state natural resources board members) are just being weaned from the idea that ecology means clearcutting aspen to boost local deer populations. They are just beginning to think about a broad set of biotic and abiotic interdependencies in the lands under their care. Many of these land managers and policy makers are pre-Darwinian and pre-Leopoldian⁵, not to mention having any familiarity with Edward O. Wilson or Steward Pickett.⁶ With all the discussion at conferences and in the academic literature about biodiversity, only one federal agency — the Forest Service — is governed by a statute that recognizes the diversity of plant and animal communities,⁷ and as we will see below, that agency is in the midst of a thorough and troubling revision of its view of diversity after only a dozen or so years of Forest Plan implementation.

Land and species agencies are under increasing pressure, partly because of the failing grades meted out by the assessments coming from conservation biology, and partly by reactionary political forces. Under such pressure, many land managers and policy makers are understandably reluctant to abandon basic tenets from their training and world view, and, paradoxically, are willing to grasp new post-

5. Michael E. Soulé, *The Social Siege of Nature*, in REINVENTING NATURE: RESPONSES TO POSTMODERN DECONSTRUCTION 137, 138 (Michael E. Soulé & Gary Lease eds., 1995).

6. Edward O. Wilson is one of the most prolific and renowned theorists and writers on biological diversity. See, e.g., ROBERT H. MACARTHUR & EDWARD O. WILSON, *THE THEORY OF ISLAND BIOGEOGRAPHY* (1967); EDWARD O. WILSON, *THE DIVERSITY OF LIFE* (1992). Steward T. Pickett has done pioneering work on patch dynamics and minimum dynamic area which are important concepts in modern ecology. See, e.g., S.T.A. Pickett & John N. Thompson, *Patch Dynamics and the Design of Nature Reserves*, 13 *BIOLOGICAL CONSERVATION* 27 (1978).

7. 16 U.S.C. § 1604(g)(3)(B) (1994); 36 C.F.R. §§ 219.26, 219.27(g) (1995).

modern views of nature⁸ that seem to justify traditional decisions and outlooks. They resist the high burdens of Aldo Leopold's Land Ethic⁹, particularly when coupled with the troubling news from conservation biology that shows higher than anticipated costs (in species loss and ecological dysfunction) from past decisions and the need for much more extensive work to restore habitat. Post-modern concepts that validate active human manipulation of nature, that more readily tolerate anthropogenic disturbances, and that place reduced significance on any particular set of community or ecosystem conditions are more comforting and somehow familiar to many land managers. In a sense, these ideas are a throwback to the good old days of Gifford Pinchot's "scientific management" when it was understood that humans were in charge, and whatever served "the greatest good of the greatest number" of humans was the right answer.¹⁰

Perhaps a worthy goal for land management decisions and the law relating to public lands and species is to make them modern before trying to make them post-modern. If we emphasize the synthesis of core principles — for example, that single species approaches are inadequate, that interdependencies (networks) among broad webs of species and abiotic conditions are critical (and largely unaccounted for in current legal requirements), that communities and ecosystems have important meaning on a time scale of centuries, and that anthropogenic disturbances are forcing a pace of change that has very high costs in species loss — then we could try to create a legal framework that would protect these interests. A complementary legal framework that would dovetail with these conceptions of nature would require greater consideration in the law for species and habitats and would reduce presumptions in the law in favor of human desires, i.e. would result in a net change toward a more ecocentric legal framework.

8. Soulé, *supra* note 5, at 154.

9. See MAX OELSCHLAAGER, *THE IDEA OF WILDERNESS* (1991).

10. GIFFORD PINCHOT, *BREAKING NEW GROUND* 261 (Island Press 1987) (1947)(quoting a letter drafted by Pinchot, but sent out over the signature of James Wilson, Secretary of Agriculture). Pinchot's maxim also included the concept that such calculations should be made "in the long run", *id.*, but the scientific tools of his day, as well as our own, make this last condition exceedingly difficult to grasp, and effectively omit it from actual decision making.

The Forest Service's newly proposed planning regulations, termed Ecosystem Management,¹¹ arise at an important time. As the second round of Forest Plans under the National Forest Management Act (NFMA)¹² is just commencing, we are likely to see a significant chapter unfold in the policy and law of protecting biodiversity. While it may be too melodramatic to say we are at a key juncture in determining whether we will embrace a more ecocentric approach, it is fair to say that two distinct paths have been proposed by different schools of thought, both professing to be committed to the protection of biodiversity.

One approach to implementing the "new biology"¹³ is what I call "the post-modernization of Multiple Use." In response to the onslaught of criticism of National Forest Plans since the mid-1980s, often grounded on the insights of conservation biology, Multiple Use has had to be re-fashioned to account for the "new biology" while, at least in many parts of the country, still enabling the timber harvest levels demanded by Congressional budgets. This new face of Multiple Use — Ecosystem Management — relies on mixing ecological concerns with the "needs and desires of people" all within the black box of Multiple Use decision making.¹⁴ Thus, rather than moving toward a clearer picture and public understanding of the biological costs of intensive forest manipulation (e.g., more conservation biology in environmental impact statements), the strategy is to commingle the biological needs of other species with the socio-economic needs and desires of humans, thereby avoiding any separate accounting for the impoverishment of the land. In simple terms, even if species and rare habitats are being threatened and lost at unprecedented rates, if the benefits to human needs and desires are substantial enough, then the net impact of a management plan is deemed positive and can be proclaimed "good for the ecosystem."

11. See Proposed Rule for National Forest System Land and Resource Management Planning, 60 Fed. Reg. 18,886 (1995) (to be codified at 36 C.F.R. pt. 219, subpt. A) (proposed Apr. 4, 1995) [hereinafter Proposed Planning Rule].

12. National Forest Management Act of 1976, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended in 16 U.S.C. §§ 1600-1614 (1994) and in other scattered sections of 16 U.S.C.).

13. As this colloquium demonstrates, there are differences of opinion about what is really new about biology in the last two decades or so. I use the term to refer to conservation biology as it crystallized as a discipline in the early 1980's, as described in CONSERVATION BIOLOGY: THE SCIENCE OF SCARCITY AND DIVERSITY (Michael E. Soulé ed. 1986).

14. See *infra* part III.

A second approach to implementing the “new biology” would be to move biodiversity policy and law toward a more ecocentric approach. Is it possible to achieve a conjoining of the most robust principles of conservation biology and application of the precautionary principle¹⁵ to legal interpretation of forest management duties to compel environmental impact statements (EISs), land management plans, and species recovery plans that markedly stem the rate of species and habitat loss? Without such a synthesis and movement in an ecocentric direction, we may anticipate the continuation of human experimentation with the land — akin to Dr. Moreau’s manipulation of species to find knowledge and designs to his liking.¹⁶

My clients and their brethren are concerned about how much of the tattered pieces of habitat can be restored to the point of sustaining as many species as possible and about finding the most scientifically appropriate and politically and legally feasible ways of doing so. In this endeavor, arguments countering the outdated concepts of the balance of nature or the pristine ideal of wilderness provide moral support and intellectual justification to those who prefer the path of post-modern Multiple Use, and impede implementation of the real meaning of the “new biology” — a more ecocentric, foundational ecology — as the basis for policies and laws that actually protect habitat and its resident biodiversity.

Part I of this paper will introduce the foundational and imperial approaches to ecology, as seen through the writings of Aldo Leopold and Daniel Botkin, and will explain why the modern critique of balance in nature impedes our ability to confront the foundational/imperial tension in ecological outlooks, and hence impedes our progress toward a more ecocentric law and policy. Part II discusses a specific land management dispute regarding the protection of biodiversity in the Wisconsin National Forests. I suggest in Part III that the foundational-imperial dichotomy explains much of the disagreement between the Forest Service and environmental groups

15. For problems of large scale and considerable uncertainty, international environmental law has developed a doctrine which shifts the burden of proof to those proposing a use of a natural resource to show that the use will not be harmful, rather than require those opposed to the use to show that it will be harmful. This “precautionary principle” rejects the assumptions that we can adequately measure harm to the environment, that we can do so in time, and that large scale harms to the environment are indeed reversible at all. See Ellen Hey, *The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution*, 4 GEO. INT’L ENVTL. L. REV. 303 (1992).

16. See Bil Alverson, *The Habitat Island of Dr. Moreau*, WILD EARTH, Summer 1994, at 7.

regarding that agency's efforts to define Ecosystem Management as part of newly proposed Forest Service planning regulations. Finally, Part IV provides recommendations for making the law more ecocentric.

I. THE FOUNDATIONAL AND IMPERIAL APPROACHES TO ECOLOGY, NOT BALANCE, SHOULD BE OUR FOCAL POINT

In both explicit and implicit terms, ecologists have advocated different perspectives on the role of humans in ecosystems. One such perspective is the foundational approach, which is characterized by little faith in human engineering of nature, is troubled by our track record of highly manipulative approaches, and tends to value a wild course of events. A second perspective is the imperial approach, which is characterized by a more utilitarian view of nature, such as existed in the Progressive conservation movement of Gifford Pinchot and Theodore Roosevelt and is more friendly to manipulating and dominating nature.¹⁷ Resolving the tension between these perspectives, rather than focusing on the "straw man" of "balance in nature," should be our chief occupation in learning to manage ecosystems.

Aldo Leopold understood the limitations of the concept of balance of nature but struggled throughout his life to reconcile his imperial and foundational tendencies. Balance, in the sense of a single valid, natural endpoint was not Leopold's goal, nor did he use the notion of stability in the sense of stasis, but more in the sense of a reasonable pace of change that allowed for resistance and adaptation to the stresses of human occupation. He was keenly aware of the importance of the pace of change and the relevance of these changes to the ability of the land to rebound — i.e., its resilience. He also knew that the radical human-induced changes he called "violence" undermined the ability of the land to avoid impoverishment.

Although his early writings used the term "balance" somewhat casually and without explication, his later work clearly demonstrated his grasp of the limitations of the concept. Perhaps his clearest statement on the subject is found in the 1939 talk entitled "The Biotic View of Land," which he delivered to a joint meeting of the Society of American Foresters and the Ecological Society of America.

17. See WORSTER, *supra* note 4, at 415; OELSCHLAEGER, *supra* note 9, at 214.

When the human mind deals with any concept too large to be easily visualized, it substitutes some familiar object which seems to have similar properties. The 'balance of nature' is a mental image for land and life which grew up before and during the transition to ecological thought. It is commonly employed in describing the biota to laymen, but ecologists among each other accept it only with reservations To the lay mind, balance of nature probably conveys an actual image of the familiar weighing scale To the ecological mind, balance of nature has merits and also defects. Its merits are that it conceives of a collective total, that it imputes some utility to all species, and that it implies oscillations when balance is disturbed. Its defects are that there is only one point at which balance occurs, and that balance is normally static.¹⁸

Plainly, Leopold understood that "natural" systems had more than one possible endpoint, and that the stability he spoke of was not a static condition. The stability in systems he valued was an ability to resist the "violence" of human occupation.¹⁹

18. ALDO LEOPOLD, *A Biotic View of Land*, in *THE RIVER OF THE MOTHER OF GOD* 266, 267 (Susan L. Flader & J. Baird Callicott eds., 1991).

19. Leopold was particularly concerned with the increased pace of change to biotic systems brought on by human occupation and the increasing power of human tools. In discussing the food chains and energy flow from the soil upward in a figurative circuit through plants to top carnivores, Leopold commented:

When a change occurs in one part of the circuit, many other parts must adjust themselves to it. Change does not necessarily obstruct the flow of energy; evolution is a long series of self-induced changes, the net result of which has been probably to accelerate the flow; certainly to lengthen the circuit. Evolutionary changes, however, are usually slow and local. Man's invention of tools has enabled him to make changes of unprecedented violence, rapidity and scope Biotas seem to differ in their capacity to sustain violence. . . . The combined evidence of history and ecology seems to support one general deduction: the less violent the man-made changes, the greater the probability of successful readjustment in the pyramid. Violence, in turn, would seem to vary with human population density; a dense population requires a more violent conversion of land Can the violence be reduced? I think it can be, and that most of the present dissensions among conservationists may be regarded as the first gropings toward a nonviolent land use.

Id. at 269-71.

As J. Baird Callicott persuasively shows,²⁰ although Leopold thought of dynamism more on the scale of evolutionary rather than ecological terms, it is nonetheless clear that Leopold was concerned with the pace and degree of change, and the role of human populations in determining the degree of such changes. He was not trying to eliminate change, but rather recognized the "self-induced" change of evolution.²¹ Leopold saw the rate of change as the issue,²² and the health of the land-organism as adversely affected by a rapid rate of change.²³ Indeed, Leopold saw both stability and health of the land-organism in the increasing complexity and changes in species diversity brought on by evolution,²⁴ and Leopold retained even toward the end of his life the humility to understand that nature would remain more complex than we could probably know.²⁵

If we agree that rate of change is important and that the current rate is unacceptable, how does conservation science, and then conservation law, propose to stem this trend? Debate over the significance of the "balance of nature" provides a useful backward glance but does not help us select the path toward restoring a suitable pace of change. To accomplish the slow down of the "train wrecks" we have set in motion, must we refine our manipulative skills (i.e., become more learned and caring imperial ecologists) or view conservation biology as a grand lesson in humility and reform conservation law toward a more deferential, restrained, ecocentric approach (i.e., become more humble, foundational ecologists)? Conservation biology is being cited as the basis for both approaches, and conservation law is being pulled in both directions. Before leaving Leopold for a discussion of modern forest law and policy, we should examine what Leopold has to offer on this subject.

20. See J. BAIRD CALLICOTT, DO DECONSTRUCTIVE ECOLOGY AND SOCIOBIOLOGY UNDERMINE THE LEOPOLD LAND ETHIC? (forthcoming 1996).

21. LEOPOLD, *supra* note 18, at 269.

22. Others also agree that the rate of change is the important issue. See Joseph L. Sax, *Liberating the Public Trust Doctrine from Its Historical Shackles*, 14 U.C. DAVIS L. REV. 185 (1980); DANIEL B. BOTKIN, *DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY* (1990); CALLICOTT, *supra* note 20.

23. "The 'inner workings' of land are not understood, but a causal relation between impairments and degree of change is probable." Aldo Leopold, *Conservation: In Whole or in Part?*, in *THE RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 310, 319.

24. "Stability or health was associated with, and perhaps caused by, this diversity and complexity." *Id.* at 312.

25. "[T]he land mechanism is too complex to be understood, and probably always will be." *Id.* at 315.

The tension between these views of the importance of ecology could be found within Leopold's writings. As Max Oelschlaeger explains, Leopold's thinking contained elements of both imperial and foundational perspectives, but in later years this tension was resolved in favor of the foundational approach.²⁶ Although Leopold's *Game Management*²⁷ was predicated "upon recognition of the dynamic interrelation of the human species and nature,"²⁸ it represented the more anthropocentrically biased ecology of management in his earlier thinking.²⁹ Yet Leopold's transition "away from a progressive, Pinchot-like management philosophy toward a radical, Muirlike preservationist philosophy"³⁰ resulted in the land ethic which "advance[d] [a] biocentric perspective, where foundational knowledge and aesthetic judgment have supervened merely scientific, economic and technical judgment — [that] is an anthropocentric perspective."³¹

Oelschlaeger continues:

The creative tension between Leopold's arcadian [foundational] and imperial selves continued to animate his intellect into the 1940s He now believed that conservation could not "be accomplished by any mere mustering of technologies. Conservation calls for something which the technologies, individually or collectively, now lack." . . . Leopold argued that conservation's purpose was to stabilize the land and maintain species diversity. Simultaneously he recognized that such a notion went beyond the province of positive science. "It seems improbable that science can ever analyze stability and write an exact formula for it. The best we can do, at least at present, is to recognize and cultivate the general conditions which seem to be conducive to it. Stability and diversity are associated. Both are the end-result of evolution to date. To what extent are they interdependent? Can we retain stability in used land without

26. OELSCHLAEGER, *supra* note 9, at 231-32.

27. ALDO LEOPOLD, *GAME MANAGEMENT* (1933).

28. OELSCHLAEGER, *supra* note 9, at 221.

29. *Id.* at 235.

30. *Id.* at 232.

31. *Id.* at 235.

retaining diversity also?" [footnote omitted] This was then as now a supremely important and difficult question.³²

Then, as now, the questions are stability and diversity, not stasis or balance.

The interpretations of the meaning of new biological information has more to do with one's imperial or foundational tendencies (few of us can maintain a creative tension between the two as did Leopold) than it does with any clear implications from the science itself. In this context, Worster sees Daniel Botkin, a major voice for "getting beyond the balance of nature," as principally a proponent of an imperial approach to ecology:

Daniel Botkin was one of the most articulate advocates of a new, chastened set of environmentalist policies. Arguing for a "new ecology for the twenty-first century," he recommended an environmentalism that was more friendly toward manipulating and dominating nature. The world of nature he compared to a symphony hall where several compositions were being played at once, "each with its own pace and rhythm." Humans, he advocated, should put themselves in the position of nature's conductor. "We are forced to choose among these [compositions], which we have barely begun to hear and understand." If there was any order to be heard in nature, it must be our achievement. "Nature in the 21st century," he argued, "will be a nature that we make." Enlightened by the recent trends in ecological theory, humans had arrived at a new view of earth "in which we are a part of a living and changing system whose changes we can accept, use, and control, to make the Earth a comfortable home, for each of us individually and for all of us collectively in our civilizations."³³

32. *Id.* at 231.

33. WORSTER, *supra* note 4, at 415 (quoting in part BOTKIN, *supra* note 22, at 189, 193; remainder unattributed).

I view Worster's assessment as accurate, finding a common thread of what David Ehrenfeld³⁴ has called "the arrogance of humanism" in Botkin's *Discordant Harmonies*.³⁵

Perhaps my adverse reaction to such an imperial approach would be tempered somewhat if Botkin were the conductor rather than the U.S. Forest Service and Congress. Surely it is important, when considering this new strain of imperial ecology, to take account of the track record of the United States government in protecting habitats and species from extirpation, extinction and sharply reduced population levels,³⁶ even when supposedly premised on the best of intentions.³⁷ This record of public land management agencies gives little support to Botkin's contention that our public lands agencies are now ready to conduct the symphony of nature. The record suggests, rather, that we have only the most rudimentary clues about how to use and control forest ecosystems in any manner that is sustainable, for a wide spectrum of the forest's diversity, over the time scale of centuries in which we must now think.

The "comfortable home" metaphor,³⁸ defined by the needs and desires of one species, *Homo sapiens*, is antithetical to Leopold's ecocentrism, and portends more of the anthropocentric style of management of the twentieth century rather than anything that might be called "new biology," or new forest law or policy, for the twenty-first.

34. See DAVID W. EHRENFELD, *THE ARROGANCE OF HUMANISM* (1978).

35. BOTKIN, *supra* note 22, at 120 ("allowing us to mimic nature realistically"), 156 ("[u]nder the new management, our role in conservation is active"), 163 ("[i]n some cases, clearcutting has desirable results; in other cases it does not . . ."), 167 ("the recognition that our engineering must enter into the modification of the environment as a constructive power"), 181 (the confidence that through modern computer models and more support for the "development of the fundamental sciences," "we may find new options to ameliorate the undesirable effects" of human alterations of nature), 190 ("[w]e can change structural aspects of life within the acceptable ranges" and "[w]e can engineer nature at nature's rates and in nature's ways . . .").

36. See REED F. NOSS & ROBERT L. PETERS, *ENDANGERED ECOSYSTEMS: A STATUS REPORT ON AMERICA'S VANISHING HABITAT AND WILDLIFE* (1995).

37. NANCY LANGSTON, *FOREST DREAMS, FOREST NIGHTMARES* 264-95 (1995). I disagree with Langston's perspective that the management of forests of the Blue Mountains in Western Oregon (the "Blues") went awry despite the best intentions of early ecologists in the Forest Service. Their goal was not ecology for the sake of the ecosystem, but narrow tree species needs for the sake of timber management. Like other anthropocentric management goals, this "science" in the early years of management in the forests of the Blues was motivated by maintaining stands of trees, not holistic or ecological concerns.

38. BOTKIN, *supra* note 22, at 189.

II. A CASE STUDY: AN ECOCENTRIC APPROACH TO FOREST MANAGEMENT IN WISCONSIN

My introduction to insular biogeography, patch dynamics and other aspects of conservation biology, and the tumultuous debate about the real meaning of conservation biology began in late 1985. I was asked by the John Muir Chapter (WI) of the Sierra Club and a group of botanists at the University of Wisconsin in Madison (UW) to attend a meeting at the UW Herbarium to talk about the National Forest Plans for the Nicolet and Chequamegon National Forests. Within weeks, these new clients, joined by the Wisconsin Audubon Council, asked me to find possible causes of action in the National Forest Management Act of 1976 (NFMA) and the National Environmental Policy Act (NEPA) that would protect the flora and fauna of these two forests from a broad range of threats resulting from what we viewed as ubiquitous logging, road construction and wildlife openings.

What resulted was the first series of National Forest Plan appeals and federal court suits seeking to compel the Forest Service to apply principles of conservation biology to the analysis and disclosure of environmental effects of various forest management regimes, and to begin a new style of forest management that would protect native biological diversity.

The Wisconsin biodiversity litigation,³⁹ and the scientific and policy campaign underpinning it, have been discussed at length in other writings.⁴⁰ The campaign continues today in the form of negotiating a moratorium on timber sales in large blocks of habitat, preparing for new landscape patterns in Forest Plan revisions, and

39. *Sierra Club v. Marita*, 843 F. Supp. 1526 (E.D. Wis. 1994), *aff'd*, 46 F.3d 606 (7th Cir. 1995) (involving the Nicolet National Forest); *Sierra Club v. Marita*, 845 F. Supp. 1317 (E.D. Wis. 1994), *aff'd*, 46 F.3d 606 (7th Cir. 1995) (involving the Chequamegon National Forest).

40. See, e.g., WILLIAM S. ALVERSON ET AL., *WILD FORESTS: CONSERVATION BIOLOGY AND PUBLIC POLICY* (1994); R. EDWARD GRUMBINE, *GHOST BEARS* (1992); Jon R. Luoma, *In Wisconsin, A Debate Over Ways to Manage National Forest Growth*, N.Y. TIMES, Oct. 18, 1988, at C4; Christine Mlot, *Botanists Sue Forest Service To Preserve Biodiversity*, 257 SCIENCE 1618 (1992); Suzanne Winckler, *Big Thinking*, OUTSIDE, Mar. 1992, at 15; Walter Kuhlmann, *A Biological Attack on Timber Primacy: Suing for Biological Diversity on the Wisconsin National Forests*, FOREST WATCH, July 1990, at 15. Walter Kuhlmann, *Defining the Role of Conservation Biology in the Law of Protecting Ecosystems*, in ENVIRONMENTAL POLICY AND BIODIVERSITY 209 (R. Edward Grumbine ed., 1994) [hereinafter Kuhlmann, *Defining the Role of Conservation Biology*]; Walter Kuhlmann, *Wildlife's Burden*, in BIODIVERSITY AND THE LAW 187 (William J. Snape, III ed., 1996) [hereinafter Kuhlmann, *Wildlife's Burden*].

trying to protect (and expand upon) the small toehold currently in the law for ecosystem protection by commenting and testifying on efforts by the Forest Service to re-write its planning regulations under NFMA and draft its five-year strategic plan under the Forest and Rangeland Renewable Resources Planning Act (RPA).⁴¹

There are hopeful signs in this endeavor, including the agreement of the current Forest Supervisor, Jack Troyer, to defer timber sales in most of the large blocks of habitat we designated over ten years ago until the Forest Plan revision process is complete. The agency also has issued a very progressive Notice of Intent to prepare the Environmental Impact Statement (EIS) for the Forest Plan revision⁴² which includes identification of biological diversity as one of the four major revision topics. The Notice acknowledges that the current Forest Plans "did not take a broad-scale approach to the analysis of biological diversity, nor did they consider landscape patterns."⁴³ The Notice discusses use of a much broader spatial scale for regional analysis of biodiversity and acknowledges the importance of edge effects, the configuration of patches of habitat, the indirect effects on propagation of landscape patterns, the possibility of delayed impacts on some species, and the importance of reducing fragmentation, providing habitat linkages, and restoring old growth forest conditions.⁴⁴ While the actual Plan revisions will be controversial, and the importance of the Notice of Intent will not be known for several years, it clearly marks a major advance in understanding and public acknowledgment of issues which arose as a result of the NEPA process and the litigation of the Plans.

The Wisconsin Forest Plan appeals were not brought to return the Wisconsin forests to some idealized state of wilderness or ecological balance. They were brought to protect remnants of diversity — extirpation-prone species and the habitats upon which they rely — from the unwitting and continual attack arising from the fragmented biogeography of the prevailing forest management regime.

41. Forest and Rangeland Renewable Resources Planning Act of 1974, 16 U.S.C. §§ 1600-1610 (1994); see DEFENDERS OF WILDLIFE & NATURAL RESOURCES DEFENSE COUNCIL, REVISED COMMENTS ON THE PROPOSED RULE FOR NATIONAL FOREST SYSTEM LAND AND RESOURCE MANAGEMENT PLANNING (1995).

42. Notice of Revision of the Land and Resource Management Plan for the Chequamegon and Nicolet National Forests, 61 Fed. Reg. 33,084 (1996) [hereinafter Notice of Revision].

43. *Id.* at 33,088.

44. Notice of Revision, *supra* note 42.

They were brought because the only way to protect remaining rare elements of diversity required restoring a more robust, relatively unfragmented old-growth landscape. They were brought to reverse the vector of change imposed by Pinchot's Forest Service: instead of converting wild, old-growth stands to "scientifically managed" second-growth,⁴⁵ we saw the need to restore the landscape's potential for wild conditions by the re-integration of pieces of second- and third-growth stands.⁴⁶

When the timber industry called us "preservationists," implying, incorrectly, that our goal was some particular static set of conditions, we responded that we wanted to preserve and protect "forest conditions to which native species are adapted and in which they can continue to evolve without substantially accelerated rates of extinction."⁴⁷ We used pre-European settlement conditions⁴⁸ as a major guidepost because that represented the last picture before the pace of change dramatically accelerated, and because it illustrated one set of community conditions that had passed the test of interdependence for centuries as no other assemblage that humans have constructed has done.

The plaintiffs were concerned with the pace of change and re-directing the vector of change toward integration rather than toward fragmentation. In addition to integration, the plaintiffs suggested the forest was much more complex than the simplified models which had

45. See ALVERSON, *supra* note 40, at 186 (quoting Charles F. Wilkinson and H. Michael Anderson, *Land and Resource Planning in the National Forests*, 64 OREGON L. REV. 7, 134 (1985):

Another important element of Pinchot's policy was to convert the wild, old-growth stands to scientifically managed second-growth. Pinchot reported in 1908 that "[f]ull utilization of the productive power of the Forests . . . does not take place until after the land has been cut over in accordance with the rules of scientific forestry. The transformation from a wild to a cultivated forest must be brought about by the ax. Hence the importance of substituting, as fast as practicable, actual use for the mere hoarding of timber." [footnote omitted].

46. One of the key claims in the suit was the argument that the language in 36 C.F.R. § 219.27(g) (1995) which required restoration of diversity "at least as great as that which would be expected in a natural forest" compelled a vector of change in at least certain parts of the forest toward older growth conditions. See Kuhlmann, *Defining the Role of Conservation Biology*, *supra* note 36, at 211-13.

47. ALVERSON, *supra* note 40, at 237.

48. This approach did not assume Native Americans had not manipulated the landscape to a degree, but recognized the orders of magnitude which separated those activities from the wholesale clearing of the Northwoods that followed from European care of the land.

previously driven the agency's analysis. Beyond pace and direction of change, and complexity of interactions, was a new conception of scale — both temporal and spatial. The task of forest management would now have to account for a much wider geographic scope than once thought, and the old customs of local management were no longer sufficient.

This perspective was largely unknown to the Forest Service at large in the mid-1980's. These issues were completely unexamined in the EISs accompanying the Forest Plans for the Wisconsin National Forests (and virtually all the other forests in the National Forest System (System) as well). Hence, the policy purposes of the litigation were to: (a) move the agency beyond thinking of ecology largely in autecological terms of "desirable" game species and related timber practices toward an understanding of the costs of forest fragmentation (e.g., deer herbivory, cowbird nest parasitism, nest predation); (b) begin to instill some sense of the biogeographic principles that would enable persistence of extirpation-prone species and their habitats, so that the location, pattern, and intensity of logging and other anthropogenic disturbances (e.g., roads and wildlife openings) would be laid out on the landscape in a wholly different manner than in the past; and (c) get the agency to think in terms of much longer and larger time and spatial scales than the "prevailing local" perspective that had guided both timber stand management and wildlife concerns in the past.

The approach of the Wisconsin biodiversity activists and their litigation cannot be neatly characterized in a "school" of scientific or environmental philosophy.⁴⁹ It is a hybrid, relying at once upon the calculations of insular biogeography and humility in the face of the wild (hence the anomaly, to some, of our conjunction of "wild forests" and conservation biology).⁵⁰ It treats science not as a mechanistic source of all answers if only we collect enough data and analyze them

49. For example, whereas Donald Worster categorizes Robert MacArthur as a believer in nature-as-machine (See WORSTER, *supra* note 4, at 375), we used MacArthur & Wilson's theory of island biogeography to explain some of the costs of forest fragmentation, on behalf of a deeply ecocentric effort to reconnect patches of northern forest. Also, whereas Worster treats THE ECOLOGY OF NATURAL DISTURBANCE AND PATCH DYNAMICS (S.T.A. Pickett & P.S. White eds., 1985) as the end of an ecosystem perspective in favor of a chaotic quilt made up of "lowly patch[es]," (See WORSTER, *supra* note 4, at 393-4) we used the volume on patch dynamics as one set of observations that leads to the conclusion that some portions of the northern forest should be managed in larger ecological units, relatively untouched by anthropogenic disturbance.

50. See ALVERSON, *supra* note 40.

properly, but rather as merely a more refined form of observation, consistent with a naturalist's humble appreciation of how observation reveals the enormity and mystery of what remains unknown.⁵¹ Conservation biology, for us, is not merely a new and better form of engineering, but a basis for rejecting the engineer's belief "that a constructed mechanism is inherently preferable to a natural one."⁵²

Faced with signs of loss in structure and function in forest ecosystems, such as (1) exploding white-tailed deer populations; (2) isolated white cedar swamps and their rare orchids; and (3) little if any natural regeneration of hemlock or yew, we stacked the predictions from a number of analytical techniques so that the implications of historic fire and windthrow patterns were compared to the predicted consequences of forest fragmentation for increased nest parasitism and predation. Many other pieces of evidence from patch dynamics, population biology, historic vegetation patterns, and other sources of information were compiled to make recommendations about the need for establishing Diversity Maintenance Areas (DMAs) to protect extirpation-prone species and their habitats from significant threats posed by proposed patterns and intensities of active management for timber harvest, road construction, and wildlife openings.

While these specific issues have not been acknowledged in the recent Notice of Intent to prepare an EIS for the Forest Plan revision for the Wisconsin National Forests, the broad framework in which they must be considered has been recognized. The more detailed discussion of these issues in the Scientific Roundtable on Biological Diversity⁵³ has been incorporated by reference as a key issue in the Notice of Intent.⁵⁴

Although the agency's willingness to acknowledge biogeography as a key issue in forest planning (at least in Wisconsin⁵⁵) is a major advance in just 10 years, it remains to be seen whether specific management regimes and land allocations will be significantly altered on the ground. If past agency behavior is any guide, the nature and

51. *Id.* at 251-55.

52. ALDO LEOPOLD, *Engineering and Conservation, in THE RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 249, 249-50.

53. THOMAS R. CROW ET AL., U.S. DEPT' OF AGRICULTURE, REPORT ON THE SCIENTIFIC ROUNDTABLE ON BIOLOGICAL DIVERSITY CONVENED BY THE CHEQUAMEGON AND NICOLET NATIONAL FORESTS (1994).

54. Notice of Revision, *supra* note 42, at 33,089.

55. I am unaware of any other explicit published covenant to address biogeographic principles in other Forest Plan revisions outside of Wisconsin.

extent of efforts to institute new levels of protection and restoration of biological diversity will depend on whether management choices are grounded in an imperial or foundational ecological view. Developments at the national level of the Forest Service address this issue in a manner giving the Wisconsin activists great concern.

III. MULTIPLE USE REACTS TO THE "NEW BIOLOGY":
THE POLITICAL (NOT BIOLOGICAL) CONCLUSION THAT
"PEOPLE ARE PART OF ECOSYSTEMS."

The challenges posed by conservation biology have caused a re-examination of the prevailing concept governing forest management in the United States, namely Multiple Use.⁵⁶ The manner in which the Forest Service intends to respond is a concept called Ecosystem Management.⁵⁷ Ecosystem Management lies at the heart of a complete rewrite of the National Forest planning regulations, now underway, and is the organizing principle behind the latest System-wide strategic plan — the 1995 Draft RPA Report.⁵⁸ The new emphasis on Ecosystem Management, as that term has been defined by the U.S. Forest Service, provides an excellent example of how ecological ideas and the perceived role of humans in ecosystems can have a direct impact on the law (and ultimately on the forests themselves).

The Forest Service has long sought to maximize its discretion in management. This allows it greater freedom to manage as it wishes and provides considerable insulation from the scrutiny of the judiciary. The principal tool of agency discretion is Multiple Use. The genius of Multiple Use is that it lumps together all imaginable concerns and puts them in a black box where there is no specific performance standard, or "hard target," for any particular segment of the agency's management duty.

56. Multiple Use is both a management concept and a legal mandate. See Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. §§ 528-31 (1994); National Forest Management Act of 1976, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended in 16 U.S.C. §§ 1600-1614 and in other scattered sections of 16 U.S.C.).

57. See Proposed Planning Rule, *supra* note 11.

58. Forest and Rangeland Renewable Resources Planning Act of 1974, 16 U.S.C. §§ 1600-1610 (1994). For the 5 year report requirement, see FOREST SERVICE, U.S. DEP'T OF AGRICULTURE, THE FOREST SERVICE PROGRAM FOR FOREST AND RANGELAND RESOURCES: A LONG-TERM STRATEGIC PLAN [DRAFT 1995 RPA PROGRAM] (1995).

In a sense, the job of environmental activists has been to tease apart the pieces of Multiple Use to find some discrete performance standard to which the agency may be held. Activists have sought more prescriptive legislation, but this has generally not been successful. NFMA has generally been construed by the courts in a manner in which Multiple Use discretion overrides any specific language that may be found in the Act.⁵⁹ Thus, in general, the agency has succeeded at keeping the separate components of management decisions out of public and judicial view under the umbrella of Multiple Use.

Regarding the protection of biodiversity, there have been two general thrusts at establishing standards for performance in the protection of species and habitats within forest planning.⁶⁰ In Wisconsin, as described above, an attempt was made to require that a standard of general scientific competence in conservation biology be met, on grounds that this was required by both the diversity language of NFMA, and the requirements for analysis and disclosure of environmental consequences of major federal actions under NEPA. This attempt failed (in the courts, although not yet on the ground⁶¹), as usual, due to the agency's broad discretion to do its business as it sees fit coupled with judicial deference to agency expertise.

A second thrust, initially more successful, was exemplified by the spotted owl litigation based largely on the Minimum Viable Population (MVP) standard of the NFMA planning regulations. It has been

59. *Krichbaum v. Kelley*, 844 F. Supp. 1107 (W.D. Va. 1994), *aff'd*, 61 F.3d 900 (4th Cir. 1994).

60. This discussion is confined to specific forest planning policy and law, in which efforts are being made to define our relationship to ecosystems, rather than the single-species approach of the Endangered Species Act of 1973, 16 U.S.C. §§ 1531-1544 (1994).

61. *Sierra Club v. Marita*, 843 F. Supp. 1526 (E.D. Wis. 1994), *aff'd*, 46 F.3d 606 (7th Cir. 1995) (involving the Nicolet National Forest); *Sierra Club v. Marita*, 845 F. Supp. 1317 (E.D. Wis. 1994), *aff'd*, 46 F.3d 606 (7th Cir. 1995) (involving the Chequamegon National Forest). Since the ruling in the Seventh Circuit, the appellants have successfully negotiated with the Forest Service to defer timber sales in all areas designated by the appellants as Diversity Maintenance Areas in the Chequamegon and most of the Nicolet. In the Nicolet, negotiations have spared the most sensitive and important locations for long term restoration of diversity. In addition, the agency has conducted extensive inventory work, prefatory to a new design phase for reserved areas in the Forest Plan revision process, under the programmatic label "Landscape Analysis and Design" (LAD). Most importantly, the agency has employed two very able ecologists, Linda Parker and John Krause, to conduct the LAD process, and they have discovered many special sites of natural regeneration and other ecological importance, which have also been the basis for timber sale deferrals. On the ground, both in terms of understanding of the ecological content of the forests, and in terms of limiting anthropogenic disturbances in key portions of the forests, the forests and the appellants are in better position now than at the time of the first planning round under NFMA in the early 1980s.

said that since NFMA the only hard targets that the agency has had are timber and affirmative action. The spotted owl cases tried to develop a third — the “minimum viable population” standard of the current wildlife regulations.⁶²

After earlier procedural steps, the Forest Service issued a Proposed Rule in April of 1995 which proposed to abolish the MVP language that had been at the foundation of the spotted owl litigation, as well as to replace the “diversity” language that had been at the heart of the Wisconsin litigation with new Ecosystem Management language.⁶³ Thus, the proposed regulations, if adopted in published form, seek to strike at the underpinnings of both prongs of the species protection litigation under NFMA.⁶⁴

The Proposed Rule suggests removal of the MVP/MIS concept, thus seeking to eliminate the clearest standard for species protection

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62. Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.

36 C.F.R. § 219.19 (1995). Then, in 36 C.F.R. § 219.19(a)(1)-(7) (1995), the MVP goal is met through a program of management indicator species (MIS).

63. When NFMA was adopted, Congress expressly required that its implementing regulations be prepared with the help of a Committee of Scientists. 16 U.S.C. § 1604(h) (1994). A Committee was formed which helped promulgate the current planning regulations with several relatively minor subsequent modifications. In 1991, however, after being buffeted with litigation on almost all of its Forest Plans issued in the 1980s, the agency decided to rewrite its forest planning regulations from the ground up. An Advance Notice of Proposed Rulemaking was issued, which would have sharply curtailed the few protections for diversity now found in the regulations. Kuhlmann, *Defining the Role of Conservation Biology*, *supra* note 40, at 215. The next step in the rule promulgation process appeared in April of 1995, when a Proposed Rule appeared in the Federal Register, Proposed Planning Rule, *supra* note 11, allowing for comment until mid-July, 1995. In these proposed new planning regulations, the concept of Ecosystem Management appeared in full dress in rules which, if finally adopted, would be legally binding.

64. Some have argued that the Proposed Rule was intended to forestall more drastic changes to NFMA that might be made by Congress. Indeed the 104th Congress did show signs of expressly striking down the MVP concept. H.R. 2542, 104th Cong. § 704 (version adopted by the Subcommittee on Resource Conservation, Research, and Forestry, November 8, 1995). But with Congress, the attack was a naked preference for timber volume over species protection not cloaked in purported efforts to manage whole ecosystems as with “Ecosystem Management.”

outside the Endangered Species Act. Additionally, the Proposed Rule would eliminate the definition of "diversity," and the regulatory explanation that one of the agency's goals is to "provide for diversity at least as great as that in a natural forest."⁶⁵ The changes have been proposed without reconvening a peer review process with a qualified committee of scientists.

Most interesting for purposes of the inquiry in this colloquium is the new concept of Ecosystem Management. Guided by this new concept, the agency has taken a series of steps to ensure that there is no separate, identifiable benchmark for its performance in ensuring the protection of structure, function, or composition of ecosystems — i.e., the way that ecosystems are scientifically understood as functioning communities.

A key step toward this end is the omission of key scientific definitions, such as "diversity,"⁶⁶ "ecosystem" and "ecological."⁶⁷ It is more than a little curious that with all the literature on the history of ecological ideas the only agency whose governing law formally requires attention to and protection of biodiversity is unwilling to propose definitions of these key terms. These omissions undermine the interpretation of later substantive sections, as well as seriously diminish the likelihood that line officers and staff will apply the rule in a manner that is consistent with current scientific understanding. While such scientific understanding is not dispositive of ultimate management choices, those choices cannot be made if the scientific elements that are to be factored into those decisions are poorly understood.

More troubling is the combination of these key scientific terms with other management concepts to form new concepts that will suggest a scientific basis, while actually being based on policy goals. By combining scientific ideas with other terms into broader policy concepts, there is the very real danger that the underlying scientific meanings will either be lost or, even worse, modified into having solely policy implications and meanings within the agency. If this happens, the agency truly will have lost its scientific rudder and will

65. Kuhlmann, *Defining the Role of Conservation Biology*, *supra* note 40, at 215.

66. Diversity is a key statutory term. 16 U.S.C. § 1604(g)(3)(B) (1994). One of the principal purposes of regulations is to explicate statutory concepts which are undefined in a statute. "Diversity" is defined in the current rule as "[t]he distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan." 36 C.F.R. § 219.3 (1995).

67. See Proposed Planning Rule, *supra* note 11.

not in the future have staff or line officers that can separately comprehend scientific concepts other than in conjunction with a particular policy framework.

The prime example of this problem is the combination of "ecosystem" with "management" to form the brand new policy idea, Ecosystem Management. Reed Noss and Alan Cooperrider define "ecosystem" as:

ECOSYSTEM. A dynamic complex of plant, animal, fungal, and microorganism communities and their associated nonliving environment interacting as an ecological unit.⁶⁸

Such a simple, scientifically-based definition is essential to scientific credibility and integrity in those other provisions of the regulations that purport to provide for diversity through an ecosystem-based approach. The core of this scientific definition is that an ecosystem is a set of living and nonliving components of an environment that "interact as an ecological unit."

From this root, one might expect that Ecosystem Management would simply be "the management of a dynamic complex of plant animal . . . communities . . . interacting as an ecological unit." But to the Forest Service, Ecosystem Management is something quite different. The agency's proposed definition would provide:

ECOSYSTEM MANAGEMENT. A concept of natural resources management wherein National Forest activities are considered within the context of economic, ecological, and social interactions within a defined area or region over both short- and long-term.⁶⁹

Thus, instead of Ecosystem Management meaning simply the "management of ecosystems" (i.e., a set of living and nonliving elements interacting as an ecological unit), the definition of the Proposed Rule defines Ecosystem Management to be the management of a broader context of "economic, ecological and social interactions."

By omitting the root definition for "ecosystem," the agency seeks to free itself to use the term with an agency-specific policy interpreta-

68. REED F. NOSS & ALAN COOPERRIDER, SAVING NATURE'S LEGACY 391 (1994).

69. Proposed Planning Rule, *supra* note 11, at 18,920.

tion and thus distort, or make irrelevant, the scientific meaning for the term. That is, under the Proposed Rule, a manager may engage in Ecosystem Management and evaluate the overall economic, ecological and, social context as being well-served by a particular management program (and thus tout the result as being “good for the ecosystem”) without ever taking cognizance of, or ever separately examining degradation of, the purely ecological interactions that will determine whether the “ecosystem,” as that term has well-accepted scientific meaning, is thriving or losing ground. In this context — a rule that does not define “diversity” or “ecosystem” — we find the first appearance in federal regulations of the concept that “people are a part of ecosystems.”

Reference to “ecosystems” is not new; in fact, the current NFMA planning regulations adopted in 1979 include the following statement in the list of “principles” to guide regional and forest planning:

*Recognition that the National Forests are ecosystems and their management for goods and services requires an awareness and consideration of the interrelationships among plants, animals, soil, water, air, and other environmental factors within such ecosystems.*⁷⁰

This language was included in the first edition of NFMA regulations in 1979,⁷¹ but the Forest Service sought to have this provision removed in 1982. Strong public opposition forced the agency to leave the ecosystem language in the regulations because “[t]here was a general uneasiness that the National Forests would no longer be considered ecosystems.”⁷²

Notably, in the current law, being aware that forests are ecosystems means that the agency must be aware of the interrelationships among *plants, animals, soil, water, air, and other environmental factors*,⁷³ thus recognizing the distinct importance of environmental factors (apart from social and economic factors) in arriving at ultimate

70. 36 C.F.R. § 219.1(b)(3) (1995) (emphasis added).

71. Announcement of Final Rule for National Forest System Land and Resource Management Planning, 44 Fed. Reg. 53,928 (1979) (to be codified at 36 C.F.R. § 219) (announced Sept. 17, 1979).

72. Announcement of Final Rule for National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026, 43,027 (1982) (to be codified at 36 C.F.R. § 219) (announced Sept. 30, 1982).

73. See 36 C.F.R. § 219.1(b)(3) (1995).

Multiple Use decisions. By now cloaking ecological factors within a broader policy concept of Ecosystem Management, the agency is indirectly seeking to accomplish what it could not do with its 1982 proposal — i.e., eliminate a distinct duty to recognize biological or ecological factors.

Under the current regulation (including the “principle” of § 219.1(b)(3) that forests are ecosystems), *people could be a part of an ecosystem only to the extent that they play a role in interactions as defined by the structure and function within the ecological unit.* In contrast, under the Proposed Rule, people (including expressly their “needs and desires”) are simply declared, *ipse dixit*, to be “part of ecosystems” without any necessary degree or nature of biological interaction.⁷⁴ This new approach gives the full range of human action within a forest equal standing with those structural and functional elements of the “system” which are biologically interactive and interdependent from an ecological and evolutionary perspective.

It is certainly possible for people to be part of ecosystems in the biological sense, if they are part of the biological “community,” but that entails a level of biological interconnectedness that very few people have any more. People are, for the most part, *not* a part of the structure or function of the ecosystems in which they live. It is not enough to qualify as a part of the ecosystem to merely be present, or to merely take a small fraction of one’s needs from the community. One must be part of the structure and function to be a part of the biological “membership,” and that is quite different than saying we need to consider humans’ needs along with, and in some sort of balance with, the needs of the legitimate biological communities that are present in the National Forest System.

By recasting the basic “principle” about how the rules regard ecosystems, the agency proposes to eliminate the scientific meaning of the term, and replace it with a policy (management) meaning. The new policy meaning for ecosystem is the full range of economic, social and biological activities which may take place in a particular area subject to management, without the distinctions which biological science would make between those actions which are introduced by large scale human cultural forces and those which are indigenously

74. “People are part of ecosystems; meeting people’s needs and desires within the capacities of natural systems is a primary role of resource decision making.” Proposed Planning Rule, *supra* note 11, at 18,919.

present by (using the terms scientifically) ecological or evolutionary forces.

The Forest Service's new notion of Ecosystem Management is a manifestation of the imperial ecology which, while increasingly learned about the interdependence of species, puts the comforts ("needs and desires") of one species, *Homo sapiens*, in the community with full membership alongside the needs of other species which are truly struggling for survival, dependent on the ecosystem for virtually all life-sustaining matters. Such efforts constitute a corruption of Leopold's ecocentric notions of community and ecosystem, and lead us to what Oelschlaeger has called "[t]he creation of a prosthetic environment,"⁷⁵ physically constructed for we humans to "accept, use, and control, to make the Earth a comfortable home, for each of us individually and for all of us collectively in our civilizations."⁷⁶

In these proposed Forest Service regulations, I see the legal echo of the imperial ecologist/historian claim that we inhabit "a planet in which the human and the natural can no longer be distinguished"⁷⁷ or the characterization of wilderness as largely a "complex cultural construction."⁷⁸ William Cronon's vision of a better substitute for the dichotomy of wilderness and intensely managed lands suggests a sympathy with the new Forest Service approach:

In particular, we need to discover a common middle ground in which all of these things, from the city to the wilderness, can somehow be encompassed in the word "home." Home, after all, is the place where finally we make our living. It is the place for which we take responsibility, the place we try to sustain so we can pass on what is best in it (and in ourselves) to our children.

The task of making a home in nature is what Wendell Berry has called "the forever unfinished lifework of our species." "The only thing we have to preserve nature with," he writes, "is culture; the only thing we have to preserve wildness with is domesticity." Calling a place home inevita-

75. Max Oelschlaeger, *The Idea of Wilderness as a Deep Ecological Ethic*, in *PLACE OF THE WILD* 131 (David Clark Burks ed., 1994).

76. BOTKIN, *supra* note 22, at 189.

77. William Cronon, *The Trouble with Wilderness; or, Getting Back to the Wrong Nature*, in *UNCOMMON GROUND: TOWARD REINVENTING NATURE* 69, 82 (William Cronon ed., 1995).

78. *Id.* at 81.

bly means that we will *use* the nature we find in it, for there can be no escape from manipulating and working and even killing some parts of nature to make our home. But if we acknowledge the autonomy and otherness of the things and creatures around us — an autonomy our culture has taught us to label with the word “wild” — then we will at least think carefully about the uses to which we put them, and even ask if we should use them at all.⁷⁹

A contrasting ecocentric viewpoint is well stated by David Johns, in his 1994 essay “Wilderness and Human Habitation,” which deals with three new attacks from within the environmental movement.⁸⁰ Johns speaks of a dualism between civilization and wild land, not caused by modern wilderness theorists that insist on keeping humans out of wilderness, but caused in the first instance by civilization and its processes itself, distancing humans from nature.

Civilization sets itself up as separate from and hostile to wild land — that is, land not under human control. But wilderness is not merely a category in a paradigm or mental construct. There is a vast qualitative difference between lands that are exploited by civilization . . . and lands that are not. Wilderness is the term ecocentric or biocentric people give to land that has not been significantly degraded by humans, land that still supports ecological processes and indigenous biodiversity.

. . . .
The term *wilderness* evolved from earlier Celtic words meaning “self-willed land.” Self-willed land is neither tame nor domesticated. It is land free from human colonization. (Colonization is not the mere presence of humans but the conversion of ecosystems to the dominant use by a single species and the resulting decline in diversity, complexity, and evolutionary dynamism.) Large numbers of people and high levels of consumption are invariably founded upon coloniza-

79. *Id.* at 89.

80. See David Johns, *Wilderness and Human Habitation*, in *PLACE OF THE WILD*, *supra* note 75, at 149. The three new attacks are: (a) wilderness exists only from the paradigm of civilization; (b) people belong in nature, not apart from it; and (c) indigenous peoples had a profound impact on nature. *Id.* at 149-53.

tion. To protect landscapes as wilderness is to protect their self-willed character — to protect them from the overarching willfulness of a single species. To protect areas as wilderness is to protect biodiversity and the dominance of ecological processes. Not to protect wilderness in the name of transcending dualism is to leave relatively whole and healthy landscapes vulnerable to destruction.

....

The emergence of civilization (cities, states, great hierarchies, professional armies) marks the adolescence of the human ability to colonize nature: to utterly bury ecosystems under cities and fields, to reach out to other ecosystems for materials, to replace diversity with monoculture, and to consume entire rivers for irrigation.⁸¹

The struggle over new Forest Service regulations is a struggle for the integrity of a definition of biological systems, so that they may be understood on their own terms separate from continued large-scale human manipulation, and so the costs to those systems may be distinctly spelled out to the American public, rather than buried in the appendices of a report that says “ecosystems are thriving” because the scorecard includes human socio-economic values as fungible with the loss of habitat for extirpation-prone species.

The dualism of Johns’ outlook will at least preserve some separate notions of ecosystems so that there is some chance the American public can be made cognizant of its impacts on them. I fear that the work of those who wish to call all of the landscape “home” for humans is a tool in the hands of the Forest Service and other active management/wise use advocates who claim that we are now, finally, wise enough (and important enough) that our needs and desires are just one more factor in calculating the health of the land-organism. It is more accurate to say that this new imperial ecology lacks “any vital proposal for adjusting men and machines to land.”⁸²

The new imperial ecological viewpoint aids the blurring and diminution of distinctions among “natural” and “colonized” systems:

- By diminishing the importance of biological data and elevating the importance of human cultural values.

81. *Id.* at 149-52.

82. Aldo Leopold, *The Conservation Ethic*, in *THE RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 181, 188.

- By equating human presence next to, or invading the edge of, ecosystems, with full “membership” in the ecosystem in the same way that species that fully rely on the ecosystem services of that place are a part of the ecosystem.
- By diminishing the distinction between wild ecological conditions and cultivated conditions in human-dominated landscapes.
- By missing the importance of structure and function, the inter-dependency that allows wild things to live and evolve without tremendous subsidies from other systems that could not interact materially without modern means of transportation.
- By fostering anthropocentrism in all landscapes (and diminishing the need for ecocentrism in some landscapes) through discounting the distinction between ecological and evolutionary conditions and human induced conditions in natural landscapes.
- By validating a pace of change that we impose, provided we are thoughtful enough about it, and involved enough in modifying nature.
- By denigrating human appreciation for an “unworked” landscape as less valid or valuable than human integration into a “worked” landscape.
- By aiding the land management agency view that mixtures of socio-economic and biological considerations are entirely valid, and without cost, provided we are making integrated and serious decisions about the tradeoffs (i.e., wise use).

How might the law be reformed to counter these notions?

IV. MAKING THE LAW MORE ECOCENTRIC

The principle task of conservation lawyers in the latter half of the 1990s remains moving land managers, legislators, and the public toward a basic appreciation of the inter-dependence, or networking, of species. Whether species come and go together across the landscape as a wholly intact community (they do not) or whether they have very close-knit inter-relationships which must be safeguarded if they are to survive the next 100 years (they do), is not currently a question troubling those making decisions affecting their fate. From

both a legal and a public policy perspective — the forums in which species survival is decided — getting the model or “new paradigm” perfected is considerably less important than getting fundamental core notions of ecology widely understood. That is, we need to make the public, elected officials, and agency staff modern before we quarrel over the details of what it means to be post-modern.

Moving toward a more ecological approach in the law means establishing basic recognition for biotic values. To the extent this diminishes human dominion over resources, the shift on the continuum is toward the ecocentric end of the spectrum. Here are five concrete steps to move significantly in this direction:

A. *Using the NEPA process to promote an honest accounting of biological threats and losses.*

We cannot begin to expect management decisions that are more protective of ecological features of the land if those features, and the threats to them posed by anthropogenic disturbances, are not explicitly addressed in the legal documents required to support management decisions. Experience suggests that NEPA can lead to decisions that are more protective of the environment if the process of preparing EISs is taken seriously, and if citizens demand high quality work in that process. To make NEPA meaningful, citizens and their lawyers must view the pre-EIS period as a key part of the legal process, submitting literature and factual evidence regarding species and habitats, and demanding they be addressed in the subsequent EIS. However frustrating and difficult to win, suits complaining about the inadequacies of EISs do have a significant effect on management, on subsequent implementing decisions and on subsequent rounds of environmental analysis.

B. *Maintaining the integrity of scientific terms and evidence.*

Definitions in regulations and statutes must be scientifically legitimate. Sound scientific definitions of terms such as “biological diversity,” “ecosystem,” “community,” and “ecological” cannot be omitted in new statutes and regulations, and must be inserted in revisions to statutes and regulations. Including these concepts educates land managers, legislators and the public; omitting them allows ignorance to persist. Mixing scientific concepts with management notions, thereby making new hybrid, and ultimately temporary,

policy statements, subverts legitimate scientific meaning and progress. The law must not be party to such dishonest language.

C. *Resisting the post-modernization of Multiple Use — the humanizing of all biological systems.*

On the time scale of millennia in North America, humans have played a relatively insignificant role in the adaptation of most species to one another and the processes of natural selection which have led to robust assemblages of species and abiotic conditions. However, throughout most of the United States to varying degrees over the last few hundred years, humans have played a rapidly accelerating role in altering habitats and the prospects for species survival. To place this new role for humans and its associated socio-economic demands on the land, on a par with the biological interdependencies which gave rise to all species represents an unmistakable choice for human domination of the remaining pieces of the natural world. Even if that domination is informed and mitigated by an attention to ecological studies, its ultimate goal will not be the preservation of as many species as practicable, but instead the fulfillment of the needs and desires of one species.

The present legal manifestation of this trend is the re-write of the National Forest planning regulations (and perhaps the statute itself). Instead of meeting the new information provided by conservation biology head on, and providing the American public with an honest assessment of the adverse environmental consequences of the patterns and intensities of logging and road construction proposed in the 1980's round of Forest Plans, the agency would rather re-write the regulations to eliminate the requirement that diversity be "at least as great as that in a natural forest," eliminate the population viability requirement of current regulations and put in their stead the new notion of Ecosystem Management.⁸³

Before we can make progress on moving law in a more ecocentric direction, we must prevent this subtle but ultimately powerful movement of the law of Multiple Use away from ecocentrism and toward a new legitimacy for putting socio-economic needs and desires of humans ahead of other species and habitats. Conservation biology is so potentially threatening to the continuous flows of wood and game species that apparently the only way that the law can cope with

83. See *supra* part III.

this new information is to create a new concept *which will be part of the law* — Ecosystem Management — in which threats to biodiversity have no independent significance. By lumping species loss with the human socio-economic needs in the large melting pot of discretionary management policy, the game is rigged so that we use a human economic yardstick for measuring success. Species and habitat loss cannot fairly compete with timber demand for policy recognition because the very terminology in which species and habitat loss can be expressed — “ecosystems,” “ecological,” and “diversity” have either been omitted from the lexicon or given new management meanings. When populations of a keystone species are plummeting, we can no longer talk about loss of “ecosystem integrity” because the management of ecosystems has as much to do with the gains in local mill jobs and profits as it does with the reduced populations of the species at risk.

We cannot allow the law to rob us of the very scientific terms we need to carry on meaningful debate over the balancing of human needs and ecosystem needs. To maintain the ability to move in an ecocentric direction, we must ensure that the law has language and concepts (e.g. the management of ecosystems) which are not, *ab initio*, defined in such an anthropocentric manner that the application of the law inevitably leads to outcomes that consistently favor short term human needs in preference to long term ecosystem needs.

D. *Making the biotic value of wilderness explicit.*

Although his first call for wilderness in the Gila was grounded in recreation and Pinchot’s notion of the “highest use” for land,⁸⁴ Leopold’s later writing articulated the importance of wilderness as a “land laboratory” providing a “base datum of normality,” with a “large value to land-science,” and that in comparison to this role of wilderness areas, “recreation is not their only or even their principal utility.”⁸⁵ Others (including David Brower, E.O. Wilson, Michael Frome, Reed Noss, and Dave Foreman) have also appreciated this role for wilderness.⁸⁶ The recognition of the biotic value of wilder-

84. See Aldo Leopold, *The Wilderness and Its Place in Forest Recreational Policy*, in *THE RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 78.

85. Aldo Leopold, *Wilderness As A Land Laboratory*, in *THE RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 287, 287-89.

86. See, e.g., ALVERSON, *supra* note 40, at 191; DAVE FOREMAN, *CONFESSIONS OF AN ECO-WARRIOR* (1991).

ness has previously been identified as a major policy and legal outgrowth of the new conservation biology.⁸⁷

The 1964 Wilderness Act does not explicitly recognize the biotic value of wilderness.⁸⁸ The characteristics of wilderness set out in the law have more to do with human perceptions of the landscape (an aesthetic judgment), or our ability to obtain solitude (a spiritual appreciation), and ecological features are only relevant if they have scientific, educational, scenic, or historical value. The principal values for wilderness areas set out in the law are not, according to Leopold, their principal utility. The subordinate role for the biotic value of wilderness should be elevated.

It is important to move forward in both the law of Multiple Use and the law of wilderness, because both must contribute to the protection of biodiversity.⁸⁹

E. *Adopting a precautionary approach — shifting the burden of proof.*

Domestic environmental law should take a page from the treatment of certain strategic global problems such as global warming, ozone depletion and ocean dumping — areas of environmental law in which the problems are readily recognized to be of such great complexity, scale, and gravity that it would be inherently unwise to wait until adverse environmental impacts reached unmanageable proportions. Indeed, certain environmental problems are so little understood that the point of unmanageability cannot be defined. An excellent case can be made that slowing the current extinction rate is such a problem.

In such cases, it may be wise to reverse the burden of proof, throwing out the assumptions of the so-called “assimilative capacity approach,” which assumes that nature is highly resilient to anthropogenic disturbance and pollution, that we have the capability of measuring the extent of our harm to the ecosystem, and that we can do so in time to reverse damaging behavior.⁹⁰ While particular

87. ALVERSON, *supra* note 40, at 191.

88. 16 U.S.C. §§ 1131-1136 (1994).

89. Perhaps the best treatment of how wilderness and managed lands sustain and define one another is found in Curt Meine, *The Utility of Preservation and the Preservation of Utility: Leopold's Fine Line*, in *THE WILDERNESS CONDITION* 131 (Max Oelschlaeger ed., 1992).

90. See Hey, *supra* note 15, at 305.

species have been recovered from the brink of extinction with tremendous subsidies of human time and energy, there is strong evidence that these assumptions are often not valid when applied to communities or ecosystems. Adopting a precautionary approach is a legal form of humility, i.e., requiring that the proponents of anthropogenic change prove that the proposed actions will not harm species and habitats, rather than requiring the defenders of habitats and ecosystems to prove the certainty of extirpation. More precisely, the burden should now be framed in terms of the proposed action's impact on the pace of change: Can the proponent prove that the action will contribute to the slowing of the current extinction spasm, with the presumption that if such cannot be shown, the action will, by default, be presumed to contribute to the present unacceptable pace of change, and therefore the action may not proceed. Management actions would then be selected and approved if they contributed to slowing the pace of change.

For some, reliance on the precautionary approach is a rejection of the predictive capability of science. On the contrary, precaution merely reflects an understanding of how limited our knowledge is, or is likely to be, over the relevant time period in which each of us may affect management decisions. As Leopold told us, "... the land mechanism is too complex to be understood, and probably always will be."⁹¹ Leopold's humility was not a rejection of science, but a wisdom that restraint, not use, was often the better course. Without a precautionary approach, the present burden on wildlife to show definitively its plight, fighting uphill against the presumption of agency expertise, is typically too demanding a circumstance to lead to species or habitat protection.⁹²

CONCLUSION

To respond to conservation biology, we ought not focus the law on the question of balance in ecosystems. Presently, the law is hardly cognizant of ecosystems or plant and animal communities at all, and in those areas of National Forest law where such concepts are recognized, the appropriate focus for reform is not to consider how to overcome an inappropriate protection of balance, but how to avoid far more fundamental damage to core concepts of ecology. The

91. LEOPOLD, *supra* note 23, at 315.

92. Kuhlmann, *Wildlife's Burden*, *supra* note 40, at 197-200.

messages of conservation biology are so threatening to the interests of timber and game production in our public lands that there is a substantial push to delete existing protections for biodiversity rather than confront the consequences of this new science.

As we struggle to modernize thinking to the level of Leopold, we find a new wave of imperial ecology sweeping through the literature and potentially the law. Far more advanced and ecologically informed than Pinchot's "scientific management," the new form of imperial ecology bears similarity to traditional forms of forest management in its primacy of human-defined goals. Unfortunately, while ecological theorists, historians and others often propose revisions to ecological thinking in a good faith attempt to craft responsible stewardship of resources already influenced heavily by human occupation, their concepts of managed nature are readily, and foreseeably, appropriated by managers and legislators eager to maintain business as usual for the dominance of resource extraction.

We must find core principles — the importance of recognizing and protecting the bonds of species interdependence, the need to slow the pace of change dramatically (even if we cannot agree on precisely the appropriate degree), the need to think and plan on much larger temporal and spatial scales, the biotic value of wilderness in meeting the foregoing objectives, and the need to incorporate greater precaution to make the law substantively more protective. At present, the law is not cognizant or protective of even these fundamental notions from modern ecology. In all forms of legal advocacy, fighting for these core principles is a worthy goal of the law.