A CASE STUDY IN THE INTERSECTION OF LAW AND SCIENCE: THE 1999 REPORT OF THE COMMITTEE OF SCIENTISTS

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I. INTRODUCTION

When Congress enacted the National Forest Management Act of 1976[1] ("NFMA"), it adopted a distinctive provision calling for a Committee of Scientists (the "Committee") to advise the Forest Service on the drafting of regulations to implement the Act.[2] The NFMA had several science-based provisions—pioneering efforts in the making of public land law.

Congress directed the formation of the Committee partly because independent scientists would bring a somewhat different perspective to the regulations, and partly because of skepticism regarding the Forest Service's willingness to incorporate science into management in a serious way.[3] The original Committee of Scientists, composed of seven members, plainly had an impact, most notably in the species diversity provisions of the regulations that laid the foundation for the long journey toward protection of the Northern Spotted Owl and the old-growth forests it inhabits.[4]

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1. National Forest Management Act of 1976, Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended at 16 U.S.C. §§ 1600–1614 (1994 & Supp. IV 1998) and in other scattered sections of 16 U.S.C.).

2. *See* 16 U.S.C. § 1604(h)(1).

3. *See, e.g.*, Greg D. Corbin, *The United States Forest Service's Response to Biodiversity Science*, 29 ENVTL. L. 377, 380 (1999).

4. One regulation requires planners to preserve and enhance the diversity of plant and animal communities equal to or above that expected in a natural forest. *See* 36 C.F.R. § 219.27(g) (1999). *See also id.* § 219.19 (addressing fish and wildlife resources). The regulations also emphasize that planners must recognize national forests as ecosystems

After reconvening the original Committee of Scientists to obtain its advice, the Department of Agriculture amended the original regulations in 1982,[5] but extensive efforts in the 1990s to amend them further bore no fruit.[6] Certainly there was widespread agreement that the Forest Service planning system needed to be overhauled. Planning had become too time-consuming and expensive, too unresponsive to public input, and too little used—the plans, once all the effort to formulate them had been expended, mostly take up shelf space.[7]

In December 1997, Agriculture Secretary Dan Glickman appointed a second Committee of Scientists, with wholly new membership. The Committee was given a broad-gauged charge to make recommendations for improvements in the planning process for the national forests. Deputy Secretary Jim Lyons took the lead for the Department of Agriculture. The Committee, on which I served, had thirteen members drawn from a diverse range of academic disciplines including silviculture, ecology, hydrology, fisheries science, sociology, economics, political science, and law.[8] Most of the members had spent a significant part of their careers working on various aspects of national forest policy.

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and consider the interrelationship of environmental factors within those ecosystems. *See id.* § 219.1(b)(3). The original Committee of Scientists' Report also influenced the NFMA regulations in mineral planning, suitability of lands for timber, wildlife inventories, and preservation of wilderness areas. *See* CHARLES F. WILKINSON & H. MICHAEL ANDERSON, LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS 188, 268, 304, 354 (1987). For discussion on the Northern Spotted Owl, see generally *Seattle Audubon Soc'y v. Evans*, 952 F.2d 297 (9th Cir. 1991), *Portland Audubon Soc'y v. Babbitt*, 998 F.2d 705 (9th Cir. 1993), and STEVEN L. YAFFEE, THE WISDOM OF THE SPOTTED OWL: POLICY LESSONS FOR A NEW CENTURY 227 (1994).

5. *See* National Forest System Land and Resource Management Planning, 36 C.F.R. pt. 219 (1999).

6. National Forest System Land and Resource Management Planning, Advance Notice of Proposed Rulemaking, 56 Fed. Reg. 6508 (1991); National Forest System Land and Resource Management Planning, Proposed Rule, 56 Fed. Reg. 42,300 (1991); National Forest System Land and Resource Management Planning, Proposed Rule, 60 Fed. Reg. 18,886 (1995).

7. *See, e.g.*, Corbin, *supra* note 3, at 380; Michael Goodman, *Forest Service Appeals Reform: Searching for Meaningful Review*, 3 N.Y.U. ENVTL. L.J. 117, 117, 119 (1994); Jon A. Souder et al., *Is State Trust Land Timber Management "Better" than Federal Timber Management?: A Best Case Analysis*, 5 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 1, 5–6 (1998); Bob Schaffer, *Finding Ways to Better Manage Forests*, ROCKY MTN. NEWS, May 4, 1998, at 39A; Roberta Ulrich, *Report Raps Forest Service Priorities*, PORTLAND OREGONIAN, Mar. 19, 1992, at E4.

8. Members included Dr. James Agee, Forest Ecology; Dr. Robert Beschta, Forest Hydrology; Dr. Virginia Dale, Landscape Ecology; Dr. Linda Hardesty, Range Ecology and Management; Dr. K. Norman Johnson, Forest Management and Policy; Dr. James Long, Silviculture; Dr. Larry Nielsen, Fisheries and Public Administration; Dr. Barry Noon, Animal Ecology; Dr. Roger Sedjo, Natural Resource Economics and Policy; Dr. Margaret Shannon, Sociology and Organizational Theory; Dr. Ronald Trosper, Forest

The Committee held ten meetings, each lasting two or three days, in different parts of the country. Many presentations were made by Forest Service officials, representatives of other federal agencies and state and tribal governments, various experts, and members of the public. Many Committee members participated in field trips at these regional meetings to gain a greater understanding of local concerns and on-the-ground conditions. The report was prepared during work sessions at several of the meetings and during many conference calls. The final report was presented to Secretary Glickman in March 1999.[9]

During our work we feared that our report might end up gathering dust, as is so often the case with the reports of advisory Committees. But, as of this writing, that has not happened. In October 1999, the Forest Service issued proposed regulations, with a 90-day comment period. These draft regulations are based upon, and consistent with, the Committee's report.[10] The Committee report and proposed regulations, it should be said, were developed independently of the recently announced roadless area policies of Forest Service Chief Dombeck and President Clinton. While the planning and roadless-area initiatives inevitably deal with some of the same fundamental issues, they are not directly linked.[11]

I will address the integration of science and law presented in the Committee's report but, since the Committee was charged with addressing planning in a comprehensive way, I will begin by briefly mentioning some other recommendations in the report so as not to leave the impression that this is a "science only" report. In generalizing about the report, and characterizing it, I will state the obvious, which is that the report stands by itself and that this summary is only my attempt to explain some aspects of it. The report is quite lengthy and readers may want to refer to it to flesh out these observations.

II. PROVISIONS NOT DIRECTLY RELATED TO SCIENCE

The title of the report is "Sustaining the People's Lands," and it reflects the Committee's two overarching themes: that the national forests need to be

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Economics and Native American Studies; Charles F. Wilkinson, Natural Resource Law; and Dr. Julia Wondolleck, Public Participation and Dispute Resolution.

9. *See* THE COMMITTEE OF SCIENTISTS, U.S. DEP'T OF AGRIC., SUSTAINING THE PEOPLE'S LANDS: RECOMMENDATIONS FOR STEWARDSHIP OF THE NATIONAL FORESTS AND GRASSLANDS INTO THE NEXT CENTURY (1999) [hereinafter COMM. OF SCIENTISTS REPORT], *available at* <http://www.fs.fed.us/news/science>.

10. *See* National Forest System Land and Resource Management Planning, 64 Fed. Reg. 54,074 (1999).

11. *See* President's Memorandum for the Secretary of Agriculture on Protection of Forest "Roadless" Areas, PUB. PAPERS (Oct. 13, 1999), *reprinted in* U.S. NEWSWIRE, 1999 WL 22282377; Administration of the Forest Development Transportation System: Temporary Suspension of Road Construction in Roadless Areas, 63 Fed. Reg. 4351 (1998) (stating proposed rule arising out of Chief Dombeck's "Natural Resources For the 21st Century" initiative).

sustainable and that the citizenry needs to have early, broad, and significant involvement in national forest stewardship.[12] Shortly, I will turn to the issue of sustainability, which directly involves the integration of science and law.

The theme "people's lands" has several aspects. The Committee believed that, while the Forest Service has made notable progress in citizen involvement, the agency often still reflects traditional and outmoded ideas about expert management and too often gives short shrift to public participation. The report makes several recommendations addressing how the Forest Service might become a more open, accessible, and welcoming agency, imbued with achieving collaborative decisionmaking with public groups and other government agencies in a creative and flexible way.[13] The report emphasizes that public land stewardship goes beyond reliance on traditional sources of scientific data; local people may be able to offer a great deal of information that can aid scientists.[14]

Beyond increased public participation, the report addresses a number of other aspects of stewardship not directly associated with science. The report emphasizes the trust relationship with Indian tribes and the duty of federal agencies to deal on a government-to-government basis with sovereign tribes.[15] The Committee made many recommendations for a new planning structure, some of which can be best termed as science-based, some best described as aiming at greater efficiency and, as already noted, broader public participation.[16] In the past, forest plans have not been linked to budgets and have often promised high levels of benefits to all user groups; then, when the budget allocations came in low, some programs (whether they be timber sales or stream enhancement efforts) were scaled back. The Committee saw this as a critical issue and recommended that, instead of creating "wish lists" lacking practicality and credibility, the planning process should be based on realistic budget projections, and forest plans should explain how increased or decreased budgets would affect future actions.[17]

So the Committee of Scientists report addresses a range of issues not directly related to science. Indeed, one could say that the first rule of integrating science and law is to acknowledge that there is a great deal more to public lands stewardship than either science or law. But let me turn to how the report does deal with the matter of integrating science into law. If the final Forest Service regulations are based substantially on the report, the document may be useful in interpreting the regulations. Beyond that, the ideas in the report may be useful in the future as setting out one approach toward stewardship of the national forests and other public lands systems.

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12. *See* COMM. OF SCIENTISTS REPORT, *supra* note 9, at xiv.–xxxvii.
13. *See id.* at 63–82, 86–87, 130–36.
14. *See id.* at 65.
15. *See id.* at 56–60.
16. *See id.* at 93–14.
17. *See id.* at 169–72.

III. THE SUBSTANTIVE OBJECTIVE: SUSTAINABILITY

A. The Context for Sustainability

At its meetings, the Committee regularly found itself referring to the actual, on-the-ground circumstances of the national forests. Gradually, the Committee came to realize that the current condition of the land was an important premise for its conclusions. The Committee decided to address the issue explicitly. Lacking a satisfactory, comprehensive inventory of land health in the national forests, a very general assessment was made based on the members' own research and experience.

The Committee concluded that the ecological integrity of the national forests and grasslands generally has declined, especially since World War II and particularly in the West.[18] High-yield logging, including extensive clearcutting, beginning in the 1950s has been a major factor in this decline. Fire suppression and extensive roadbuilding have significantly affected ecological conditions. Range conditions may well have improved overall, but the impact of domestic livestock on riparian and upland areas have been so great that national forest rangelands commonly fall well short of most ecological goals. Water diversions and reservoir construction have had major impacts in some areas. Mining has been an "especially nettlesome cause of pollution."[19] Recreation has taken an increasing toll on the land in recent decades. Perhaps the most sobering indicator of declining ecological integrity in the national forests has been the profoundly troubling decline in biological diversity.

Yet in most areas, the national forests remain less disturbed than the private lands surrounding them. Forest Service lands hold increasingly precious habitat for many animals and plants. The importance of the forests has been heightened by the large decisions we have made with respect to sections seven and nine of the Endangered Species Act:[20] in attempting to achieve recovery for listed species, habitat conservation plans and other implements of policy will be based on the general notion that development of private lands will be limited relatively less, and development of the public lands limited relatively more.[21] Thus the ecological integrity of the national forests has become ever more important because, in the peculiar language of the day, the public lands must "take the hit" in assuring the availability of quality habitat for species protection.

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18. *See id.* at 8–10.

19. *Id.* at 10.

20. Endangered Species Act §§ 7, 9, 16 U.S.C. §§ 1536, 1538 (1994).

21. *See generally* Northwest Forest Plan, 145 CONG. REC. H10173.02 (daily ed. Oct. 18, 1999). *See, e.g.*, Jacqueline Lesley Brown, *Preserving Species: The Endangered Species Act Versus Ecosystem Management Regime, Ecological and Political Considerations, and Recommendations for Reform*, 12 J. ENVTL. L. & LITIG. 151, 223 (1997); Francis C. James, *Lessons Learned From a Study of Habitat Conservation Planning*, 49 BIOSCIENCE 871 (1999); *Babbitt Lists Principles For Congressional Rewrite*, AMER. POLITICAL NETWORK, March 7, 1995, at 208.

The national forests have played a special role in the nation's natural resource policy for more than a century. The public's expectations, if anything, have become even more elevated; while traditional commodity production should continue, we treasure the natural beauty and recreation potential more than ever, and we need the national forests to provide refuge for species in trouble. Yet ecological integrity continues to decline. Within this policy context, the Committee recommended that the regulations begin with a section entitled "Purpose, Goals, and Principles," which attempts to articulate the role of the national forests in contemporary American society.[22] The Committee's recommendations section begins:

> The National Forest System constitutes an extraordinary national legacy created by people of vision and preserved for future generations by diligent and far-sighted public servants and citizens. They are the people's lands, emblems of our democratic traditions.
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> The national forests and grasslands can provide many and diverse benefits to the American people. These include clean air and water, productive soils, biological diversity, goods and services, employment opportunities, community benefits, recreation, and naturalness. They also give us intangible qualities, such as beauty, inspiration, and wonder.
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> To assure the continuation of this array of benefits, sustainability should be the guiding star for stewardship of the national forests and grasslands.[23]

B. The Components of Sustainability: Ecological, Economic, and Social

Sustainability (the Committee preferred that term over "sustainable development") has received considerable attention nationally and internationally in recent years,[24] especially since the Brundtland Commission Report of 1987.[25] The goal of sustainability, according to the general definition of the Brundtland Report, is to "meet[] the needs of the present without compromising the ability of future generations to meet their own needs."[26] Chapter Two of the Committee's report discusses the policy of sustainability, and much of the rest of the report discusses how sustainability might be implemented in specific and practical ways. This reflects the Committee's view that sustainability has importance as a broad social objective, in much the same way that freedom and equality do, but that

22. COMM. OF SCIENTISTS REPORT, *supra* note 9, at 175–81.

23. *See id.* at 175.

24. *See, e.g.*, Luthar Gundling, *Agora: What Obligation Does Our Generation Owe to the Next? An Approach to Global Environmental Responsibility*, 84 AM. J. INT'L. L. 207, 208 (1990).

25. *Our Common Future, Brundtland Report*, U.N. World Commission on Environment and Development, 42d Sess., Agenda Item 82(e), U.N. Doc. A/C.2/42/L.81 (1987).

26. *Id.* at 1. *See also* Gundling, *supra* note 24, at 208.

sustainability also must gather specific, applied meaning by being put to work in actual, on-the-ground situations.

A cornerstone of any sustainability analysis is the question, "What are we trying to sustain?" The accepted formulation is that the objective is to sustain ecological, economic, and social values. The Committee accepted that formulation, which it applied to the situation of the national forests in the above "Purposes" language.[27] Importantly, the social objectives can include intangible values such as beauty and wonder.

The Committee report goes beyond most statements of sustainability in that it gives primacy to one of the three components—ecological sustainability. This "ranking" is not due to a sense that the ecological component is somehow more important than the economic and social components (obviously, economic and social well-being is of great importance to people). Rather, the reasoning is that, in order for social and economic benefits to be sustainable, they must depend upon the integrity of the water, soil, vegetation, and air that healthy ecosystems provide. Put differently, the Committee clearly expects that the national forests will continue to provide economic goods and services, but it also believes that an environmental baseline should first be established to ensure that such economic benefits can be provided over time. Refining the idea of sustainability in this way gives an edge to the doctrine and offers guidance to land managers in a way that a policy like multiple use-sustained yield management cannot.

This primacy of ecological sustainability has been controversial, a flash point in discussions of the Committee's report.[28] In addition to believing that this approach is the right one for the national forests, Committee members several times expressed their hope that the report's formulation of this critical issue would serve the function of placing it on the table for debates over sustainability, not just in the national forests but elsewhere as well.

IV. THE PROCEDURAL ROLE OF SCIENCE IN PUBLIC LANDS STEWARDSHIP

A. Ecological Diversity

Because of the primacy of ecological sustainability, the Committee dedicated a significant part of its report to explaining how the concept might be

27. *See supra* text accompanying note 23.

28. *See* COMM. OF SCIENTISTS REPORT, *supra* note 9, at 183 (noting separate view of one Committee member). *See also* Corbin, *supra* note 3, at 413; Dan Quinn, *The U.S. Forest Service at a Crossroads*, RESOURCES, Fall 1999, at 12.

integrated into national forest stewardship.[29] The report includes draft regulatory language that sets out one way in which this might be done.[30]

Ecological sustainability has three broad elements. The first element, composition, refers to the biodiversity of an ecosystem. The second element, structure, addresses the physical attributes of the landscape—including landforms, waters, soils, and air. The structural diversity of a stream might be analyzed, for example, in terms of its gradient, riffles, waterfalls, pools, amount of shading, sediment load, and biomass of woody debris. The third element of ecological sustainability is processes. These processes include many natural events that have long been considered destructive but that now are recognized as essential to the maintenance of ecological diversity. Examples of such disturbances are fire, flooding, windthrow, landslides, and disease outbreaks.

The ecologists on the Committee emphasized that we currently have an imperfect understanding of many aspects of ecological sustainability. As a result, the Committee took what amounts to a two-level approach.[31] First, planning should include large-landscape scientific assessments of the characteristic composition, structure, and processes of the ecosystems. Second, while stewardship should include an assessment of the ecological integrity[32] of the whole ecosystem, the focus should be most specifically on biological diversity.

Given the state of the current knowledge, the Committee believed that assessing all aspects of ecological sustainability is sufficiently difficult that, although the assessments need to be done and clear progress needs to be made, fully achieving such a goal at this time is beyond scientific reach. More is known, however, about biological diversity. Even here, however, knowledge and the ability to measure are uneven. Biological diversity exists on three levels—ecosystem, species, and genetic—and most is known about species diversity. Indeed, the current Forest Service regulations contain strict requirements concerning species diversity and the agency has already developed approaches toward developing management practices, including habitat protection, consistent with maintaining species diversity.[33] This approach of using species diversity as a

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29. For a discussion of ecological sustainability, including ecological diversity, see COMM. OF SCIENTISTS REPORT, *supra* note 9, at 19–41, 145–52. On economic and social sustainability, see *id.* at 41–63.

30. *See id.* at 149–52.

31. *See id.* at 146–47.

32. Ecological integrity is defined in the report as follows:

> Ecosystems with high ecological integrity continue to express the evolutionary and biogeographic processes that gave rise to the current biota; have a species composition, diversity, and functional organization expected from natural habitats of the region; and are resilient to environmental change and disturbance occurring within their natural range of variability.

Id. at 151.

33. *See* 36 C.F.R. §§ 219.1(b)(3), .19, .26, .27(g) (1999).

surrogate for ecological sustainability should have broad real-world effects: rigorous attention to protecting and restoring species diversity should directly and substantially enhance ecosystem integrity.

The Committee report generally recommends that agency planners and managers be accorded broad discretion in order to encourage creativity and flexibility. Because of the centrality of species diversity, however, the Committee's recommended standard for protecting species diversity sets the bar high for land managers and allows for reasonably broad judicial review. As a non-scientist sitting on the Committee, it was fascinating to watch the recommended standard evolve. Various people and organizations proposed standards that achieved a kind of rigor through mathematics; the requirement might, for example, have read that the Forest Service must assure that there will be a ninety-five percent chance that a species will persist over a period of 100 years. The scientists on the Committee believed that such an approach would devolve into the kind of computer gamesmanship that has plagued Forest Service management under the current regulations. Instead, the Committee settled on the following language, believing that it incorporated a scientific approach into law in a rigorous, yet principled and practical, way:

> The decisions of resource managers must be based upon the best available scientific information and analysis to provide ecological conditions needed to protect and, as necessary, restore the viability of focal species and of threatened, endangered, and sensitive species. A viable species is defined as consisting of self-sustaining populations that are well distributed throughout the species' range. Self-sustaining populations are those that are sufficiently abundant and have sufficient diversity to display the array of life-history strategies and forms that will provide for their persistence and adaptability in the planning area over time.[34]

B. Acknowledging Uncertainty and Disturbances

The report emphasizes that stewardship must acknowledge the basic principles of ecology and act in accordance with them. Ecosystems are dynamic, not static. They are subject to episodic disturbances that shape and reshape them. Yet these natural events are often difficult, and sometimes impossible, to predict. Further, our understanding can be incomplete because ecosystems are variable such that research and experience in one ecosystem may not easily translate to another.[35]

These and other ecological principles should be integrated into forest and rangeland stewardship. Monitoring and adaptive management should be implemented so that the natural dynamics of ecosystems are reflected in evolving stewardship practices. In the past, projections of future commodity yields have

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34. *See* COMM. OF SCIENTISTS REPORT, *supra* note 9, at 151–52.
35. *See id.* at xv–xx, 45, 99–101, 165.

been too optimistic and have not attempted to account for natural disturbances such as fire and insect infestations, which often should be allowed to operate because of their contributions to ecological integrity. The report recommends a conservative approach consistent with these ecological principles and sustainability: "Preserving options presumes that a range of acceptable choices will be available to address the environmental problems confronting future generations. It is also a way of explicitly acknowledging our incomplete knowledge of complex ecological systems."[36]

C. The Role of Independent Scientific Review

A major theme in the report is the need for "science-consistency checks" at several different points in Forest Service planning and management. These reviews should be conducted by independent scientists, including scientists from Forest Service Research, a branch of the agency unrelated to land management.[37] The Committee recommended that such outside reviews be made early in the process, before release of draft environmental impact statements. Later in the process, scientific review should be made of plan implementation through field analyses of projects by independent scientists. The report also recommends the creation of a science advisory board that would examine system-wide issues encountered in national forest management. This national board could be patterned roughly upon the Science Advisory Board of the Environmental Protection Agency.

D. Monitoring and Adaptive Management

One of the major concerns of the Committee lay in the area of monitoring.[38] Monitoring and evaluation, which should link decisions and implementation, have suffered greatly in the budgeting process. Insufficient funding has been made available and, in many instances, much-needed information about plan implementation has never been collected. The report calls for a much greater agency and congressional commitment in this area.

Monitoring helps establish the foundation for adaptive management, an approach urged by the Committee.[39] The "active" adaptive management called for by the Committee treats a management decision as an experiment: as knowledge is accumulated, the original decision may be altered as new information becomes available. Of course, the policy of adaptive management is premised both on ecological notions about the ever-changing quality of ecosystems and on the uncertainties in predicting the individual and cumulative impacts of development projects.

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36. *Id.* at xviii.
37. *Id.* at 125–30.
38. *See, e.g., id.* at 108–10.
39. *See id.* at 110–11.

V. THE AUTHORITY OF THE FOREST SERVICE TO IMPLEMENT SCIENTIFIC MANAGEMENT IN THE NAME OF ECOLOGICAL, ECONOMIC, AND SOCIAL SUSTAINABILITY

The Committee of Scientists' report has been criticized on the ground that the Forest Service lacks authority to adopt such regulations since they would create a new mission for the agency—a job that must be left to Congress.[40] My own sense is that these concerns are unfounded and that a court would be unlikely to strike down regulations that the Forest Service might adopt along the lines recommended by the Committee of Scientists.

Chevron, U.S.A., Inc. v. Natural Resources Defense Council[41] gives administrative agencies broad authority to interpret their implementing statutes.[42] The Organic Act of 1897,[43] directing the Forest Service to regulate "occupancy and use" within the national forests, is broad on its face and has been construed that way by the courts. In 1911, in *Light v. United States*, the Court upheld the 1906 grazing regulations promulgated by Gifford Pinchot, even though grazing is not explicitly mentioned in the Organic Act.[44] Courts have also upheld the Forest Service's administratively-created wilderness system,[45] affirmed its authority to regulate hardrock mining,[46] and otherwise upheld a range of Forest Service actions

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40. *See, e.g.*, Corbin, *supra* note 3, at 413–14.

41. 467 U.S. 837 (1984).

42. The Court in *Chevron* stated: "[W]e have long recognized that considerable weight should be accorded to an executive department's construction of a statutory scheme it is entrusted to administer...." *Id.* at 844 (footnote omitted). This rule has long applied in the field of federal public land law. *See, e.g.*, Udall v. Tallman, 380 U.S. 1, 16 (1965). *See also* Babbitt v. Sweet Home Chapter of Communities for a Greater Oregon, 515 U.S. 687, 703 (1995) (citing *Chevron* and upholding the Interior Department's interpretation of the Endangered Species Act, following rule of deference to agency's "reasonable interpretation"). For other cases applying *Chevron* deference to agency interpretations, see, for example, *NationsBank of North Carolina v. Variable Annuity Life Ins. Co.*, 513 U.S. 251, 257 (1995) (stating that if the agency's interpretation "fills a gap or defines a term in a way that is reasonable in light of the legislature's revealed design, we give [that] judgment 'controlling weight.'" (quoting Chevron, U.S.A., Inc. v. Natural Resources Defense Council, 467 U.S. 837, 844 (1984)) and *Clarke v. Securities Indus. Ass'n*, 479 U.S. 388, 403–04 (1987) ("It is settled that courts should give great weight to any reasonable construction of a regulatory statute adopted by the agency charged with the enforcement of that statute."). *See also* RICHARD J. PIERCE, JR. ET AL., ADMINISTRATIVE LAW AND PROCESS 351 (2d ed. 1992) ("*Chevron* has increased significantly the degree of deference courts accord agency constructions of the statutes they are required to administer.").

43. Organic Act of 1897, ch. 2, 30 Stat. 11, 34–35 (codified as amended at 16 U.S.C. §§ 475, 551 (1994)).

44. *See* Light v. United States, 220 U.S. 523, 536–38 (1911).

45. The Ninth Circuit Court of Appeals upheld the Forest Service's authority to prohibit motorized vehicles in "primitive areas" designated by the agency. *See* McMichael v. United States, 355 F.2d 283, 284–86 (9th Cir. 1965).

46. *See* U.S. v. Weiss, 642 F.2d 296, 298–99 (9th Cir. 1981).

under its delegated power over "occupancy and use."[47] Further, the Forest Service operates under several different statutes, most of which mandate agency actions to achieve "sustained yield," to act in the interest of "future generations," and to protect lands and resources "in perpetuity."[48] So, it is unlikely that a serious question exists with respect to the Forest Service's authority to articulate its land and resource management policies in terms of sustainability.

VI. CONCLUSION

It is, of course, too early to tell if, and how completely, the recommendations of the Committee of Scientists' report will be adopted. As of early 2000, the Forest Service seems determined to base its new regulations on the report, but that could surely change. Among other things, it is not always easy to predict the future of administrative programs in this era of lawmaking by congressional appropriation riders.

Beyond that, fair-minded people may simply decide that the Committee's report contains too much science—that, even in the national forests, we are not yet ready for this much detail on matters such an ecosystem composition, structure, and processes. Perhaps, in a somewhat different spirit, the verdict will be that the Committee failed to break the mold, that much more radical reform is needed to solve the problems that plague national forest management.

But one can hope that the report will at least serve to spur and focus debate on how much science should be integrated into the law of natural resource management. For, in light of the widespread stresses on the land, it does seem that we have reached the moment in history when we ought to face squarely questions such as whether sustainability really should be the guiding star for our public actions with respect to the natural world, whether the ecological component of sustainability should be given primacy, whether we as a society are willing to commit necessary funding to the monitoring and evaluation of projects, and whether we intend to be rigorous in protecting species diversity now and, in years not too far away, ecosystem and genetic diversity as well.

47. *See, e.g.*, WILKINSON & ANDERSON, *supra* note 4, at 52–60.
48. *See, e.g.*, COMM. OF SCIENTISTS REPORT, *supra* note 9, at 14–16.