

# ECOSYSTEM MANAGEMENT: IS IT LAW?

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## INTRODUCTION

Although the term is frequently used as if it refers to a single unit or method, "ecosystem management" has a widely different meaning. "Ecosystem" can be applied to a great variety of natural features or processes, the choice of which inevitably reflects different "management" objectives. Despite this ambiguity, ecosystem management has important biological meaning and significant legal implications.

## WHICH ECOSYSTEM? WHAT MANAGEMENT?

The term ecosystem can refer to numerous spatial descriptions of the natural environment: a single drop of water, a pond, a watershed, a vegetation type, a mountain range, the habitat supporting migratory wildlife, or the entire ecosphere. It may also be applied to a host of distinct physical or biologic processes or systems: nutrient and energy cycles; the role of fire, insects, and disease; global weather patterns.

Which of these descriptions is relevant depends on the particular question asked. If the focus is on fish, then watersheds provide the most helpful framework; if the focus is on spotted owls, then older successional stages of coniferous forest are relevant; if the focus is on grizzly bears, then undeveloped mountain ranges are important. If humans are included, human settlements and economic and cultural systems are also relevant. Not only is the term ecosystem coherent only in relation to a particular object of management, the choice of focus will inevitably reflect the agenda of its proponent. This is illustrated by a survey of current approaches to ecosystem management.

Of all ecosystem management proposals, perhaps the Greater Yellowstone Ecosystem (GYES) is the most familiar. Interest in GYES stems from heightened recognition that natural processes operate without regard to park boundaries and that parks are affected by, and affect, use of adjacent lands. This suggests coordinated management of wildlife, fire, and energy development.

The concept and boundaries of the GYES, however, tend to vary with each proponent and are not always limited to physical or biological features closely connected to the park itself. For example, the Wilderness Society's proposed GYES encompasses essentially all national forest lands between Logan, Utah and Bozeman, Montana (Wilderness Society 1987), its purpose being to connect to Yellowstone all existing and proposed wilderness areas on seven different national forests by returning various corridor areas to an undisturbed state. The end result is a

"macroreserve" constituting "the largest expanse of protected land" outside of Alaska and a "magnificent showpiece" of national commitment to "biological diversity" (Id. at 7). It is indeed a grandiose preservation proposal—and on that level an expression of park values—but one only superficially rationalized in terms of distinctive park ecology.

The Park Service approach to GYES is more closely focused on the distinctive biologic and geologic resources of Yellowstone, but its version of GYES is altered management of adjacent national forest and private lands to further park objectives. There is no suggestion that park management be modified, where ecologically defensible, to accommodate desires of local citizenry or the management goals of national forests which lie within the ecosystem. Rather, coordinated management is solely for the purpose of protecting and expanding traditional park resources and values.

This same reflection of traditional mission is illustrated by the manner in which other federal land agencies have defined ecosystem management. As we might suspect, the Fish and Wildlife Service has defined ecosystem management in order to protect fish and wildlife. Protection of the former is illustrated by a recent national ecosystem approach to its coordination responsibilities which starts by dividing the United States according to major watersheds (Fish & Wildlife Service 1994). Elsewhere, the Service is also engaged in a program called "gap analysis" which uses GIS overlays to identify habitats for rare biota that currently lack complete legal protection (Scott et al. 1993), an exercise which effectively recommends a preservation system for wildlife.

The Forest Service approach to ecosystem management represents an effort to balance its frequently conflicting duties of environmental protection and economic use. For instance, the Environmental Assessment for Implementing Interim Strategies for Managing Anadromous Watersheds (PACFISH) proposes to eliminate logging and restrict grazing and recreation within prescribed distances of streams throughout the Columbia Basin pending site specific watershed analysis. PACFISH is a response to the recent listing, or expected listings, of numerous anadromous fish stocks under the Endangered Species Act. The Forest Service goal here is to assure protection of aquatic and riparian habitat which may be important to threatened and endangered species of anadromous fish, avoiding the sort of train wreck involved with the spotted owl.

Another example is the Eastside Forest Ecosystem Health Assessment (Forest Health), which proposes to use a range of presettlement landscape patterns to establish the parameters for

timber harvest and other use. The theory is that natural biodiversity will be maintained if development mimics natural forces, especially fire. The driving concern in this case is forest condition. Decades of logging and effective fire protection have left forests overstocked with seral stands and dominated by fir species highly susceptible to insects and disease. Dead and dying stands are widespread, fuel loads are high, and forests are potentially subject to catastrophic fires. A return to natural conditions apparently requires thinning and prescribed burning, activities which will provide ecologic, safety, and economic benefits.

Thus, the Forest Service approach to ecosystem management reflects its response to particular management problems. PACFISH is ecosystem management responsive to potential legal controversy. Forest Health is ecosystem management responsive to regional conservation, safety, and economic concerns. Other agencies have similarly defined ecosystems to reflect their particular concerns and objectives. The Fish and Wildlife Service has defined ecosystem management to further protection of fish and wildlife; the Park Service has defined ecosystem management to enhance traditional park resources and values; and the Wilderness Society has defined ecosystem management in order to maximize wilderness protection. It is apparent that "ecosystem management" represents a means rather than an end, and that "management" goals will initially define the relevant "ecosystem," rather than the other way round.

This does not mean, however, that ecosystem management is without important new content. While the natural environment may be described in a variety of ways, in all cases ecosystem management connotes focus on particular natural boundaries and/or processes. Inevitably, this will heighten sensitivity to the particular ecological features which are identified. Although the choice of a particular ecosystem is discretionary, and will reflect particular agency objectives, each agency will thereafter be legally judged by the measures of the ecosystem selected.

Ecosystem management also appears to represent a major change in federal forest policy. By shifting emphasis from potential human use to historic biologic conditions, increased emphasis on preservation seems inevitable. This appears to be confirmed by the Clinton administration's response to the spotted owl injunctions (FEMAT 1993). Under Option Nine, federal forest land in the Pacific Northwest, perhaps the most productive public forest land in the country, is overwhelmingly classified for parks, wilderness, watershed protection, and wildlife habitat; less than 25% is even potentially available for logging. By any measure this represents a dramatic reversal of historic assumptions about management and use of multiple-use land.

### IS IT LAW?

Law is commonly defined as general principles which are enforceable by courts. In order to examine the relationship of ecosystem management to law, I propose to explore three broad questions:

- 1) Is ecosystem management required by law? To what extent is an ecosystem management helpful in discharging existing legal duties?

- 2) Is ecosystem management lawful? To what extent does existing law provide adequate legal authority to implement ecosystem management?
- 3) Is ecosystem management enforceable? To what extent does ecosystem management provide the sort of standards which courts will enforce?

Ecosystem management consists of diverse and evolving initiatives, and I propose to outline only the relevant framework. To the extent the analysis is particular, the principal focus is on Forest Service proposals. National forests are the public lands most relevant to the topic of this conference, and it is the difficult—perhaps impossible—mission of harmonizing protection and development on these lands which spawns so much legal attention.

### Is Ecosystem Management Required By Law?

The principal ecological duties on national forests are contained in three major statutes, the National Environmental Policy Act, 42 USC 4331-32 (NEPA), the Endangered Species Act, 16 USC 1536, 1538 (ESA), and the National Forest Management Act, 16 USC 1604 (NFMA).

Statutory duties under NEPA are procedural. Agencies are required to assess the impacts of, and alternatives to, any federal decision which has potentially significant effects on the natural environment. When taken together with concepts of judicial review, NEPA effects a sort of "environmental due process." Following an opportunity for comment by potentially affected parties, federal agencies are required to make formal findings detailing the environmental consequences of, and a formal explanation of the public interest justifying, proposed changes in the environmental status quo.

The duty to examine environmental impacts is rigorous and includes secondary and indirect impacts, low probability but potentially grave risks, and cumulative impacts arising from proposed as well as otherwise foreseeable federal, state, or private activities. The process is also open-ended. As significant new knowledge of ecological relationships surfaces, agencies must take this information into account in reassessing both ongoing activities and new proposals.<sup>9</sup>

In short, NEPA requires federal agencies to be knowledgeable about all potentially significant ecological implications of their activities. To the extent that ecosystem management involves informed ecological planning, it is already required by NEPA and helpful in assuring this sort of informed judgment. However, since ecosystem management involves particular substantive ends, it necessarily goes beyond the procedural requirements of NEPA, and must be squared with requirements of other laws.

In contrast to the process approach of NEPA, ESA provides strict biological standards. Under Section 4, the listing of a species must be based solely on biology, and social and economic considerations are permitted only marginally in the designation of habitat critical to recovery. Once listed, Section 7 of ESA bars

federal agencies from undertaking any action which is likely to jeopardize any distinct population of a listed species or which materially alters its critical habitat. These protections may be overridden by economic or social considerations only if they are judged to be of overwhelming importance by a cabinet committee, following an exacting adversary process and the inevitable judicial review.

In addition, Section 9 prohibits anyone from "taking" a threatened or endangered animal species, a proscription which courts have, with the aid of a broadly drawn Fish and Wildlife Service regulation, generally interpreted to include harmful modification of habitat.<sup>1</sup> One effect of this broad interpretation is to extend protection of habitat for listed species to private land. Another is to render the consultation process between federal agencies and Fish and Wildlife Service open to collateral attack in federal court on any detail the Fish and Wildlife Service has not clearly approved in a biological opinion.<sup>2</sup>

Also, the uncompromising species viability provisions of NFMA regulations require the Forest Service to "insure . . . viable populations" of all existing vertebrate species, a standard which requires that both the species and its habitat to remain "well distributed" over each forest. Although complementing ESA protections, the NFMA species viability regulation goes considerably further, attaching at an earlier point than ESA, before a species is threatened or endangered, and presumably applying to a larger number of species. Moreover, the use of the language "shall . . . insure," as compared to the ESA language "insure . . . action . . . is not likely," arguably requires a higher level of confidence in predicting a lack of prejudice to a relevant species. Of greatest importance, however, is that the species viability applies to forest plans. This effectively requires the Forest Service to have a formal plan to anticipate and prevent listing of any vertebrate species under ESA. The failure to have an effective plan in place for protection of the spotted owl was the central illegality relied upon by Judge Dwyer in the Seattle Audubon case against the Forest Service.

PACFISH is apparently designed to anticipate and assure compliance with legal requirements of ESA and NFMA. It obviously responds to the sorts of planning and management deficiencies found in the Seattle Audubon case and is patterned after the riparian reserves contained in the FEMAT report. Thus, the fate of Option Nine before Judge Dwyer may have much to say about whether PACFISH achieves its intended goals.

Forest Health will undoubtedly aid ecological knowledge and may provide a formula by which both sustainable use and protection of biological diversity can be achieved. If so, Forest Health may avoid application of ESA requirements and assure compliance with NFMA. Representing a proposed new balance between development and protection, Forest Health will have to be incorporated into forest plans and squared with applicable requirements for that process, including NEPA.

The ecosystem approach represented by PACFISH and Forest Health is generally responsive to the ecological duties contained in NEPA, ESA, and NFMA. Nonetheless, ecosystem management may create some legal difficulty.

Legal issues proceed from the particular—from whatever project or programmatic decision is made and challenged. To the extent that ecosystem management anticipates and addresses particular controversies, it will be legally useful. However, ecosystem management can be variously defined, and a chosen approach may or may not speak to the particular issues which arise. This is not necessarily a problem if the approach is not so elaborate that it discourages other more relevant analysis. However, if a particular planning system is too elaborate and complex, resources may be diverted from more useful inquiry. Thus, the first caution about ecosystem management, or any complex planning system, is not to place "all the eggs in one basket."

Another problem which attaches to complex planning systems is best described by the old saw, "the bigger they are the harder they fall." Professor Behan (1981) had this response to NFMA planning:

RPA/NFMA mandates with the force of law that forest plans will be rational, comprehensive, and essentially perfect. . . . But a corollary of statutory perfection has become apparent lately, and it is sobering indeed: an imperfect plan is an illegal plan, and if there is a fir tree in Oregon that will mean litigation later.

An elaborate planning system is prone to error. Any material error may render the whole edifice legally suspect, providing an occasion for an injunction as broad as defined by the parameters of the plan, until it is fixed. The past 25 years of national forest litigation provides some vivid examples.

Like PACFISH and Forest Health, RARE I was an attempt by the Forest Service to settle controversy over protection and development on national forests. By initiating a national program to provide wilderness protection for significant roadless areas not addressed by the Wilderness Act, the Forest Service hoped to minimize conflict over other areas it wished to access for timber purposes. However, environmentalists successfully attacked this initiative as lacking compliance with NEPA and on that basis obtained nation-wide injunctive relief against timber sales in any undeveloped area. Forest plans, though of more limited scope, contain a similar potential for broad injunctive relief, though courts have thus far postponed final determination of compliance with a number of legal requirements until particular proposals are made. The Seattle Audubon case provides another example. Development of regional guidelines for protection of the spotted owl provided a programmatic framework for region-wide injunctive relief when Judge Dwyer concluded that these standards failed to assure compliance with the viability regulation.<sup>3</sup>

Although the ecosystem approach involved in various ecosystem management schemes will tend to aid compliance with existing law, if too elaborate and complex, it may divert agencies from addressing issues arising from more particular actions, and may create the opportunity for error which will form a basis for broad-based judicial intervention.

## Is Ecosystem Management Lawful?

This may seem like an odd question since ecological planning is required by NEPA and since forms of ecosystem management are mandated by ESA and NFMA. However, to the extent that the Forest Service has discretion, it is required to address economic and social considerations as well, particularly those relevant to the well being of local communities. Moreover, duties of even the strictest statute have limits.

### Potential Subject Matter Limits

Under the Multiple Use and Sustained Yield Act, 16 USC 529, the Forest Service is required to give "due consideration to relative values of the various resources in particular areas." This imposes a duty to weigh potential social and economic use, as well as environmental considerations, before making decisions. Further, under NFMA, use allocations struck from existing forest plans are controlling until those plans are revised in accordance with applicable planning procedures. Management strategies based on newly identified natural boundaries or concepts will have to be squared with these duties, to the extent Forest Service has a choice in the matter.

The last qualification is an important one. The ESA circumscribes otherwise discretionary decisions with strict biologically-based standards. To the degree that ecosystem management is necessary to achieve duties imposed by ESA, social and economic considerations are irrelevant. However, to the extent that ecosystem management goes beyond ESA, or other similarly strict legal standards, it must be squared with broader economic and social obligations. Thus, if reasonably conceived, PACFISH probably requires only limited economic and social justification. On the other hand, Forest Health, representing an important new balance between protection and use, will undoubtedly require more exacting economic and social analysis.

As uncompromising as ESA is, in fact because it is so uncompromising, there are important limits on ecosystem protection which it provides. The biologically-based standards of ESA have tremendous potential for harsh economic and social impacts. Recognizing this, congress limited habitat protection to the minimum necessary to assure recovery of a listed species. This is clear from the structure and purposes of ESA and is made explicit in the Section 3(5) definition of critical habitat (that which is necessary for recovery) as confined to the "geographical area occupied by the species at the time it is listed." This definition further prohibits inclusion of suitable but unoccupied areas without a specific finding by the Secretary of Interior that expansion of a species' range is essential to recovery:

Critical habitat . . . means . . . specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species. . . Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

Thus, habitat protection under ESA must be related to the requirements of the particular species which are listed. More broadly conceived habitat protection, such as that suggested by proposals for endangered ecosystem legislation, must be justified on grounds other than the ESA and squared with other relevant authority.

In a similar fashion, the proceduralization of the diversity language in NFMA could be interpreted as a limitation on the substantive content of the diversity and species viability requirements in NFMA regulations.

Admittedly, these issues are speculative at this point; they may not be raised or may be resolved in different ways. But one must remember that our system tends to be hydraulic. When one branch of government is unresponsive to a particular problem, sympathy may be found elsewhere. Throughout the past 20 years, the Forest Service has been pressured to maintain historic levels of wood products despite imposition of increasingly stringent environmental standards, and much law has been made by plaintiffs concerned with the environmental impacts of doing so. The pendulum now appears to have swung sharply in the other direction. Consequently, different interests may be prompted to resort to courts, and courts may be called on to address other aspects of relevant statutes. The recent rulings that FEMAT violated the Federal Advisory Committee Act<sup>4</sup>, and that the Fish and Wildlife Service exceeded its authority in defining unlawful taking to include modification of habitat on private lands<sup>5</sup>, could be harbingers of things to come.

### Potential Geographical Limits

Ecosystems rarely conform to political boundaries. Consequently, there are likely to be circumstances where the cooperation or compliance of adjoining non-federal landowners may be essential to achieve federal purposes for ecosystem management. Therefore, another aspect of the lawfulness of ecosystem management is the degree to which land agencies may regulate beyond their borders.

The federal government enjoys not only the rights of ownership, but also exercises constitutionally delegated governmental power over federal public lands. By means of an expansive reading of the Article Four property clause, courts have permitted land agencies to regulate activities on adjoining state and private land when these activities endanger federal resources or interfere with federal management purposes. Thus, land agencies apparently have a recognized legal basis for regulating use on adjoining state and private land if necessary to ecosystem management objectives on federal land.

Despite the apparent clarity of this principle, land agencies have sparingly asserted their authority. In the absence of firmer congressional direction, this is probably wise. Broad regulation of adjoining landowners would be a marked departure from historical practice and would unquestionably raise intense opposition to the interference with private land use and invasion of state and local prerogatives. The consistency provisions in Section 202(c)(9) of FLPMA clearly direct BLM to minimize

such intrusions in planning for the public domain, and the general scope of NFMA and its coordination requirements might imply similar limits on national forests. In addition, case precedent encompasses only a cautious extension of federal property authority to in-holdings and immediately adjoining property. A markedly more expansive assertion of regulatory authority over neighboring land might well invite reassessment of federal property power.

### Potential Limits on Means

Even if agencies possess authority to regulate, there may be circumstances where regulation is lawful only if landowners are compensated. The 5th Amendment to the Constitution proscribes taking of "private property for public use without just compensation." This prohibition applies not only to physical occupancy of private land by the government, but may apply to government regulation of private land use as well.

The question of when regulation amounts to a taking requiring compensation, broadly stated, is whether the burden of public advantage can fairly be borne by an individual or should instead be borne by the general public. Three major notions have dominated this broad question: (1) A general regulation of land use is valid if an owner is left with reasonable economic use. This broadly applicable principle leaves considerable leeway for government regulation without regard to highest and best use of any particular parcel. (2) Furthermore, the assurance of residual economic utility is limited by the concept of "reasonableness." No owner has the right to create a public or private nuisance, and such effects can be prohibited even if this may be the only present practical use. Thus, courts have permitted the nearly complete destruction of existing businesses or property when it is harmful to neighboring uses. This analysis has also been applied to activities which are cumulatively harmful to particular common or public resources. (3) On the other hand, government regulation may effect something very close to actual occupancy. This occurs where an owner is peculiarly disadvantaged in order for the public to obtain beneficial use of private property.<sup>6</sup> If so, a taking may be recognized even though impairment of economic utility is modest.

Protection of wildlife and wildlife habitat on private land frequently brings nuisance notions into conflict with occupancy notions. If an owner is prohibited from protecting private property from wildlife depredation or is required to maintain habitat conditions essential to wildlife, is the state merely protecting a public resource from harmful individual activity, or is the public essentially occupying and using private land? Although some important recent cases reject the latter characterization and the Supreme Court has called into question the utility of the harm prevention/benefit acquisition analysis,<sup>7</sup> the underlying equitable notions are likely to continue to affect judicial and legislative decisions.

Wildlife protection measures which largely destroy the economic utility of private land will likely be held to require compensation, particularly if regulation bars traditional farm or forest use. Otherwise, such regulation is valid without compen-

sation, unless, perhaps, only a single or a small number of owners is singled out, particularly if wildlife measures represent a significant change in the biological status quo.

### Is Ecosystem Management Enforceable?

This question is designed to focus on the manner in which standards are designed and the relationship of such design to judicial enforcement. Standards may be fashioned in such broad terms that a decision-maker is unlikely to act unlawfully so long as the final decision lies within the general field entrusted to agency action. Decisions may be circumscribed procedurally by requirements for public participation, analysis of specified factors, and explanation of choice; or, standards may permit only a narrow range of action. Both central administrative direction and legal enforcement depend on the formulation of explicit standards. On the other hand, if a process is to be flexible and managerial, standards for final decisions must remain broad and, in the national forest context, local.

The NFMA diversity provision and implementing regulations illustrate various ways standards may be formulated. The NFMA diversity requirement, 16 USC 1604(g)(3)(B), is broad and general:

(The Forest Service shall) "specify guidelines . . . which . . . provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives."

This language clearly contemplates that diversity will be considered in forest planning and authorizes the agency to formulate more specific requirements, but Congress has also left it to the Forest Service to determine the proper balance between the protection of diversity and the provision for other uses of national forest resources. This language might well prompt a court to call for an investigation of the impacts on natural diversity of government action and, perhaps, for an explanation of the balance struck, but is unlikely to justify greater judicial direction.

By contrast, the diversity standards in Forest Service regulations are more explicit, both substantively and procedurally. The diversity regulation, 36 CFR 219.27(g) provides:

"management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal species . . . so it is at least as great as that which would be expected in a natural forest. . . . Reductions in diversity . . . may be prescribed only where needed to meet overall multiple-use objectives."

This language makes natural diversity the norm, not merely one factor to be considered among others. It permits non-environmental considerations to outweigh diversity but only if special circumstances justify it. In contrast to the statute, the diversity regulation shifts the burden of proof. Under this language, any departure from natural diversity would require investigation and explanation, and a court might insist on the adoption of any reasonable alternative less disruptive to diversity.

The viability regulation, 36 CFR 219.19 goes considerably further, leaving little room for choice and permitting no consideration of social factors:

"Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species. . . . (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 throughout 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 . . ."

Here discretion is confined to determining whether forest plans will leave all vertebrate species and their habitats well distributed throughout the forest. Unless the Forest Service has a credible basis for making such a judgment, a court is likely to enjoin all action potentially harmful to wildlife or wildlife habitat, regardless of economic or social consequences—as the Seattle Audubon case illustrates.

PACFISH, a response to an impending legal problem occasioned by the viability regulation and declining salmon stocks, imposes a number of substantive and procedural standards which courts will undoubtedly enforce. Within clearly defined physical boundaries, logging is prohibited and general standards are provided for grazing and recreation. Both the initial assessment and the subsequent watershed analysis are to be conducted according to NEPA procedures. On the other hand, standards applicable to post interim action are not entirely clear. This probably means that standards are still evolving. It could also mean that there is discretion for different local approaches or that the initial standards establish minimum requirements.

Forest Health is more clearly an agency initiative and presently lacks much in the way of enforceable standards. Managerial discretion will be maximized if policies remain reasonably broad, and local officials are accorded discretion to fashion different approaches to defining and implementing actions seeking to mimic historic ranges of ecological conditions.

## CONCLUSION

In 1891, Congress adopted legislation authorizing the President to create forest reserves. Because Congress provided no management direction, the effect of creating a reservation was to remove such lands from any lawful use. This occasioned an historic debate over management of these lands which ultimately gave rise to the National Forest Organic Act in 1897.

The 1890s debate over management authority reflects attitudes about protection and development of natural resources which are familiar today—some argued for preservation, some for returning lands to settlement and sale, and some for a third approach, regulated use. Like all legislation, the end result was something of a compromise; however, the philosophy of regulated use came to dominate the debate until the final legislation.

A century after the forest reserves legislation, Judge Dwyer entered an injunction closing forests of the Pacific Northwest to logging, the historically dominant economic use. Like the closure effected 100 years earlier by the forest reserve legislation, this broad injunction has occasioned another historic debate over the management direction of these lands.

The current focus on ecosystem management is an attempt to redefine management direction on public land, particularly national forests. Although the debate involves much information not available a century ago, the philosophic positions are familiar. The fate of Forest Service ecosystem management will have much to say about the management direction for national forests on the centennial of the Organic Act, three years hence.

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## Footnote References

- <sup>0</sup> See Keiter, "An Introduction to the Ecosystem Management Debate" in Keiter and Boyce (ed.), *The Greater Yellowstone Ecosystem* 10-12 (1991).
- <sup>1</sup> CEQ Guidelines, 40 CFR 1502.16 (environmental consequences), 1502.22 (incomplete or unavailable information), and 1508.25 (scope) cover the basic requirements. Thatcher, *Understanding Interdependence in the Natural Environment: Some Thoughts on Cumulative Impact Assessment*, 20 *Env'tl. L.* 611 (1990), addresses the utility of cumulative impact assessment to ecological information.
- <sup>2</sup> The duty to supplement existing plans with new information was recognized by the Supreme Court in *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360 (1989) and was central to the spotted owl litigation against BLM, see *Portland Audubon Society v. Babbitt*, 998 F.2d 705 (9th Cir. 1993).
- <sup>3</sup> The Bush administration attempts to obtain an exemption of a portion of BLM sales floundered on the procedural requirements for formal adjudication which the Ninth Circuit held were applicable to Endangered Species Committee proceedings, *Portland Audubon Society v. Endangered Species Committee*, 984 F.2d 1534 (9th Cir. 1993).
- <sup>4</sup> *Palila v. Hawaii Dept. of Land and Natural Resources*, 639 F.2d 495 (9th Cir. 1981); *Sierra Club v. Yeutter*, 926 F.2d 429 (5th Cir. 1991); *Contra, Sweet Home Chapter of Communities for a Great Oregon v. Babbitt*, 24 ELR 20680 (D.C. Cir. 1994).
- <sup>5</sup> See *Sierra Club v. Yeutter*, supra note 5; *Swan View Coalition v. Turner*, 824 F. Supp. 923 (D. Mont. 1992).
- <sup>6</sup> *Seattle Audubon Society v. Evans*, 771 F. Supp. 1081 (W.D. Wash. 1990), affd, 952 F.2d 297 (9th Cir. 1991).
- <sup>7</sup> E.g. *Idaho Conservation League v. Mumma*, 946 F.2d 717 (9th Cir. 1992); *Resources Ltd. v. Robertson*, 8 F.3d 1394 (9th Cir. 1993).
- <sup>8</sup> In contrast to the RARE process, the regional nature of spotted owl habitat may have left the Forest Service with little discretion in its level of approach.
- <sup>9</sup> The diversity provisions of NFMA direct the Forest Service to "provide for the diversity of plant and animal communities . . . in order to meet overall multiple-use objectives." The Randolph bill, championed by environmentalists, sought to impose substantive guarantees of species diversity and habitat protection. Because of concern that this language was too inflexible, congress used the above language to direct consideration of diversity in the regulations and planning mandated by NFMA. See Wilkinson and Anderson, *Land and Resource Planning in the National Forests*, 64 *Ore. L. Rev.* 1, 290-96 (1985). This could be interpreted to leave the matter to agency rulemaking, as Wilkinson and Anderson suggest, or could be interpreted as envisioning informed balancing of ecological, economic, and social considerations in the course of forest planning, something the current rule does not permit.
- <sup>10</sup> *Northwest Forest Council v. Espy*, No. 93-1621 (D. D.C. 1994).
- <sup>11</sup> *Sweet Home Chapter*, supra note 5.
- <sup>12</sup> *United States v. Alford*, 274 U.S. 264 (1927)(statute prohibiting leaving an unextinguished fire near public forest); *United States v. Lindsey*, 595 F.2d 5 (9th Cir. 1979)(regulation closing adjoining land to campfires); *United States v. Brown*, 552 F.2d 817 (8th Cir. 1977)(regulation prohibiting hunting on in-holding within national park); *Minnesota v. Block*, 660 F.2d 1240 (8th Cir. 1981)(use of motor vehicles on in-holdings within wilderness area).
- <sup>13</sup> Although time honored, the assertion that governmental authority under Article Four is plenary is potentially so broad as to swallow up fundamental notions of limited federal powers and state sovereignty.
- <sup>14</sup> E.g., *Goldblatt v. Hempstead*, 369 U.S. 590 (1962)(prohibition of use of quarry in residential area); *Keystone Bituminous Coal Assn. v. DeBenedictis*, 480 U.S. 470 (prohibition of coal mining causing surface subsidence).
- <sup>15</sup> E.g., *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982)(requirement that landlords permit attachment of cable facility to buildings); *Nollan v. California Coastal Commn*, 483 U.S. 825 (1987)(exaction of public right of way as a condition of residential use).
- <sup>16</sup> *Mountain States Legal Fdn. v. Hodel*, 799 F.2d. 1423 (10th Cir. 1987)(government refusal to obey statutory duty to remove wild horses from private grazing land); *Moerman v. California*, 21 *Cal.Rptr.2d* 329 (Ct.App. 1993)(reintroduction of elk causing crop depredation); cf. *Christy v. Hodel*, 857 F.2d 1324 (9th Cir. 1988)(no due process right to protect domestic animals from destruction by grizzly bear).
- <sup>17</sup> *Lucas v. South Carolina Coastal Council*, 112 S.Ct. 2886, 2897-2900 (1992).