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NEWS & ANALYSIS

Ecological Restoration and the Public Lands: Toward a More Natural Order

by Robert B. Keiter

"[T]he task . . . is to become a co-worker with nature in the reconstruction of the damaged fabric . . ."

—William Perkins Marsh (1864)

"This is a day of redemption and of hope. It's a day when the limits of what is possible have been greatly expanded because we are showing our children that restoration is possible, that we can restore a community to its natural state."

—Secretary of the Interior Bruce Babbitt (1995)

Less than 200 years ago, when the Lewis and Clark Expedition traversed the American West en route to the Pacific Ocean, it encountered a largely untouched and still primitive landscape. Millions of bison criss-crossed the Great Plains, grizzly bears roamed the region, salmon choked many of the rivers, and fires routinely burned the prairies and forests. The region's native ecosystems, having evolved over the millennia, were shaped primarily by natural disturbance regimes. To be sure, the region's native inhabitants had a hand in the process, setting fires, taking wildlife, and even building modest dams, but these impacts had not unraveled historic evolutionary patterns. By the mid-20th century, however, that same western landscape looked quite different. European settlement and the persistent onslaught of modern civilization had markedly altered ecological patterns: cattle had replaced bison on the plains, only a few remnant grizzly bears remained, annual salmon runs were in decline, and fires were regularly suppressed with ruthless efficiency. Intent on making the landscape safe and productive, we eliminated entire species and disrupted natural processes on a hitherto unprecedented scale. Ecological simplification was the order of the day.

With the advent of the 21st century, serious efforts are underway to reverse this destructive pattern and to restore extirpated species, natural processes, and historical disturbance regimes. Ecological restoration has gained increasing respectability, leading some astute observers to conclude that undoing the environmental mistakes and miscalculations of the past will define the next era in western natural resource policy. Whether that proves true or not, the remarkable fact is that major ecological restoration efforts are afoot, and even larger projects are on the drawing board. Witness the return of the wolf to the northern Rockies and the reintroduction of fire on the public lands—two promi-

nent examples of our emerging commitment to making the landscape whole again. Serious proposals have surfaced to translocate grizzly bears onto new terrain in central Idaho, to remove costly dams from the Columbia River system on behalf of the salmon, and to make ecological restoration a management priority across the Interior Columbia Basin's public lands. The recent proliferation of ecological restoration initiatives and proposals can only be regarded as a sea of change in how we value the natural world. Just how this change has occurred and where it may lead offers a fascinating excursion into the evolving human relationship with nature and the policy priorities that are redefining that relationship.

A Legacy of Simplification

The American West has not generally been linked with ecological restoration. The reason is obvious: for most of the 20th century, the West's lands and waters were managed primarily for utilitarian purposes. The goal was to produce timber, grass, water, minerals, big game, and scenic vistas for human consumption. Natural resource policy, focused as it was on specific commodities and production goals, essentially segmented the public domain into separate resource-based regimes. In the case of timber, the forest was managed to produce harvestable and preferably even-aged timber stands, which meant eliminating natural fires, suppressing pest infestations, and accelerating growth rates. In the case of grasslands, the range was managed to produce maximum forage for domestic livestock, with little concern for competing wildlife or other range resources. In the case of water, rivers were dammed to retain and harness this precious resource, and water was appropriated from streambeds for consumptive uses—all with little regard for the river as an organic entity. In the case of wildlife, habitat was protected for valuable big game animals while other species were either ignored or actively eradicated. Even when sustainability was the ostensible goal, it was defined narrowly in sustained yield terms, not with a view toward maintaining ecosystems or species in perpetuity. In the name of productivity, vital ecological components and processes were dismissed, suppressed, or otherwise eliminated from the landscape to protect more valuable resources. The result, we now know, has been the ecological transformation of the landscape, including the loss of biodiversity, impaired ecosystem processes, and a generally degraded environment.

The legacy of unbridled utilitarianism is painfully evident across the West. On lands administered by the Bureau of Land Management (BLM), unregulated mining activities have scarred the landscape, leaving behind gaping pits, open mine shafts, and unsecured tailing piles as silent testa-

Robert Keiter is Wallace Stegner Professor of Law and Director of the Wallace Stegner Center for Land, Resources, and the Environment at the University of Utah S.J. Quinney College of Law. This Article contains modified excerpts from his forthcoming book, *KEEPING FAITH WITH NATURE: ECOSYSTEMS, DEMOCRACY, AND AMERICA'S PUBLIC LANDS*, which will be published by Yale University Press in the summer of 2003. The University of Utah College of Law Faculty Research Fund helped support this project. The author would like to thank his colleague, Bob Adler, for his insightful comments on an earlier draft of this Article.

ments to another era.¹ In the arid Southwest and elsewhere, the public range has been sorely abused: sensitive riparian areas have been trampled and destroyed while overgrazing has depleted the native grasses, facilitated the spread of exotic plant species and noxious weeds, and eliminated important fish and wildlife habitat.² On national forest lands, widespread clearcutting has denuded entire hillsides, triggered countless landslides, degraded once-pristine water sources, reduced vegetative diversity, and destroyed valuable wildlife habitat.³ Over 400,000 miles of access roads have been constructed in the national forests, further fragmenting the landscape, silting stream beds, and displacing resident wildlife.⁴ By routinely excluding fires from the landscape, the public land agencies have eliminated a key ecological process and dramatically altered the composition and structure of forest and range ecosystems. Moreover, the legacy of dams, diversion projects, and the prior appropriation system has left the region's river systems a shadow of their former selves, driving once populous fish species toward extinction and leaving many streams without water during the dry season. This cumulative legacy of widespread environmental degradation and ecological simplification has set the stage for a new restoration policy.

On occasion, however, the West's public lands have played an important albeit limited ecological restoration role, primarily as nature reserves. One of the nation's first and most important wildlife restoration achievements occurred at the end of the 19th century when Yellowstone National Park's military caretakers imported remnant plains bison from Montana and Texas to begin recovering this once plentiful species from near extinction. Yellowstone provided the transplanted bison with a sanctuary, where they eventually flourished under the National Park Service's (NPS) watchful eye.⁵ Early in the 20th century, Yellowstone also helped to recover badly depleted elk populations, translocating park elk to nearby states to stabilize existing herds and establish new ones.⁶ As protected sanctuaries, the

early national parks and national wildlife refuges often sheltered big game and waterfowl from local hunting and poaching pressures. And in the years predating passage of the Endangered Species Act (ESA), the region's national parks and wilderness areas provided a final refuge for dwindling grizzly bear populations and other large carnivores. Of course, even the national parks were not immune from the era's utilitarian values. The government's aggressive predator control campaign extended into the parks, and the NPS routinely constructed roads and visitor facilities with little regard for how these projects would impact wildlife habitat or for other ecological consequences.⁷

Elsewhere, restoration has occupied a more central role on the public lands, particularly in the East and Midwest. According to one study, "the work of the Forest Service in rehabilitating the eastern national forests . . . is one of the great conservation achievements of American history."⁸ Early in the 20th century, following a series of devastating floods and fires, the U.S. Congress adopted the Weeks Act of 1911, which authorized federal funding to purchase lands "located on the headwaters of navigable streams."⁹ Armed with this new acquisition authority, the U.S. Forest Service (Forest Service) began buying cut-over eastern forest lands beset with serious erosional problems and high wildfire risks. Once purchased, the Forest Service set about rehabilitating the lands with the goal of recreating productive forests. Through a combination of tree replanting programs, various Civilian Conservation Corps (CCC) projects, and just letting nature (but not fire) take its course, the eastern forests were transformed and rejuvenated in little more than half a century. Buoyed by the region's moist weather and rich soils, the federal revegetation efforts were remarkably successful: hardwood stands now cover many of the northern forests, while restocked softwood pines blanket many of the southern and midwestern forests. The question is no longer how to heal these forests, but rather how to apportion their timber, watershed, recreational, and other resources among the large and diverse populace that lives nearby.¹⁰ Whether a similar transformation awaits the western national forests remains to be seen, though many of the same forces that drove eastern forest restoration are now present on the western landscape.

Toward a New Restoration Imperative

That neither the federal nor state agencies have yet formulated a comprehensive ecological restoration agenda for the West's public lands is not surprising. Restoration ecology is still in its youth, having only emerged as a distinct sub-discipline of ecology during the latter part of the 20th century. The concept of ecological restoration has its origins in the CCC's 1935 tall-grass prairie restoration initiative at the

1. U.S. GENERAL ACCOUNTING OFFICE (GAO), FEDERAL LAND MANAGEMENT: AN ASSESSMENT OF HARDROCK MINING DAMAGE (1988); JOHN D. LESHY, THE MINING LAW: A STUDY IN PERPETUAL MOTION 183-228 (Resources for the Future 1987).
2. DEBRA L. DONAHUE, THE WESTERN RANGE REVISITED: REMOVING LIVESTOCK FROM PUBLIC LANDS TO CONSERVE NATIVE BIODIVERSITY 42-66 (University of Oklahoma Press 1999); U.S. GAO, PUBLIC RANGELANDS: SOME RIPARIAN AREAS RESTORED BUT WIDESPREAD IMPROVEMENT WILL BE SLOW (1988) [hereinafter U.S. GAO, PUBLIC RANGELANDS].
3. PAUL W. HIRT, A CONSPIRACY OF OPTIMISM: MANAGEMENT OF THE NATIONAL FORESTS SINCE WORLD WAR II 245-51, 271-78 (University Press of Kansas 1996); CHARLES F. WILKINSON, CROSSING THE NEXT MERIDIAN: LAND, WATER, AND THE FUTURE OF THE WEST 135-53 (Island Press 1992). See also RICHARD W. BEHAN, PLUNDERED PROMISE: CAPITALISM, POLITICS, AND THE FATE OF THE FEDERAL LANDS (Island Press 2001).
4. U.S. Department of Agriculture (USDA), U.S. Forest Serv., Administration of the Forest Development System: Temporary Suspension of Road Construction and Reconstruction in Unroaded Areas, 63 Fed. Reg. 4351 (Jan. 28, 1998) (proposal); 64 Fed. Reg. 7290 (Feb. 12, 1999) (final interim rule). See also *Special Section: Ecological Effects of Roads*, CONSERVATION BIOLOGY, Feb. 2000, at 16-94.
5. H. DUANE HAMPTON, HOW THE U.S. CAVALRY SAVED OUR NATIONAL PARKS 165-67 (Indiana Univ. Press 1971); AUBREY L. HAINES, 2 THE YELLOWSTONE STORY 54-77 (Colorado Associated Univ. Press 1977).
6. Daniel A Poole & James B. Trefethen, *The Maintenance of Wildlife Populations*, in WILDLIFE AND AMERICA 339 (Howard P. Brokaw ed., Council on Environmental Quality 1978); JAMES B.

TREFETHEN, AN AMERICAN CRUSADE FOR WILDLIFE (Winchester Press 1975).

7. RICHARD WEST SELLARS, PRESERVING NATURE IN THE NATIONAL PARKS: A HISTORY 71-75, 119-24 (Yale Univ. Press 1997).
8. WILLIAM E. SHANDS & ROBERT G. HEALY, THE LANDS NOBODY WANTED xiv (The Conservation Foundation 1977).
9. SAMUEL T. DANA & SALLY K. FAIRFAX, FOREST AND RANGE POLICY 111-14 (McGraw Hill 2d ed. 1980); Martha Carlson, *Private Lands-Public Forest: The Story of the Weeks Act*, FOREST NOTES, Summer 1986, at 3.
10. Bill McKibben, *An Explosion of Green*, ATLANTIC MONTHLY, Apr. 1995, at 61.

University of Wisconsin Arboretum. The project was designed to restore the full suite of native grasses that covered the midwestern prairies before they were converted to monocultural farmlands. After several years fruitlessly planting and replanting the native grasses without discernible progress, Arboretum scientists discovered that fire, which had periodically scorched the prairies before European settlement, was an essential element in maintaining these grassy ecosystems. This discovery confirmed two important and interrelated insights: a comprehensive understanding of ecosystem structure and processes was critical to any restoration initiative, and meaningful restoration efforts must focus on the ecosystem as a whole and not individual elements of it. Meanwhile, Aldo Leopold, who was also at the University of Wisconsin and a participant in the Arboretum experiments, initiated his own well-chronicled prairie restoration project, seeking to recover native plant and animal communities on a piece of derelict farmland he had acquired.¹¹ In tandem, these two Wisconsin initiatives are widely credited with giving birth to the concept of ecological restoration.¹²

Before the mid-1930s, there was little interest in ecological restoration and even less understanding of it. Ecology was still viewed primarily as a theoretical and descriptive science with little practical application. Most ecologists did not manipulate the natural systems they studied; they were content merely to observe, describe, and analyze them.¹³ With utilitarianism dominating natural resource policy, nature manipulation was the province of the resource disciplines. It was the agriculture, forestry, hydrology, range, and wildlife scientists who were energetically engineering nature to increase crop, forage, timber, water, and big game productivity. But Leopold and other ecologists were beginning to realize that the era's unbridled grazing, logging, and predator eradication policies had impoverished the landscape and upset long-standing ecological relationships. As usual, Leopold was prescient about what was needed: "The time has come for science to busy itself with the earth itself. The first step is to reconstruct a sample of what we had to start with."¹⁴

Over the ensuing years, various ecological restoration concepts have attained independent stature, while restoration ecology has emerged as a discrete discipline. The success of the University of Wisconsin Arboretum prairie restoration experiments not only demonstrated the value and complexity of ecological restoration, but it also spawned other restoration initiatives. Although most early ecological restoration experiments involved relatively small-scale, site-specific projects, the next generation of projects has expanded the restoration agenda to embrace entire watersheds

as well as large chunks of the public domain.¹⁵ Ecology as a science has evolved from a purely theoretical discipline into a practical one too: scientists now regularly manipulate ecosystems to study disturbance processes; they generally agree that ecological systems can be recreated; and they routinely employ new computer and satellite technologies to assist with these tasks. The American public, confronted with widespread environmental degradation, has demanded that public officials begin to redress this unsavory legacy by reclaiming or restoring degraded landscapes. A new generation of environmental laws, including the Clean Water Act (CWA), the ESA, the Surface Mining Control and Reclamation Act (SMCRA), and the Superfund legislation, have not only legitimized the notion of environmental restoration, but have compelled sometimes expensive corrective actions.¹⁶ Bolstered by these developments, in 1987, a group of involved scientists established the Society for Ecological Restoration to promote "ecological restoration as a means of sustaining the diversity of life on [e]arth and reestablishing an ecologically healthy relationship between nature and culture."¹⁷ Since then, numerous books and two new journals devoted to the topic of ecological restoration have been published, providing both theoretical and practical meaning to this new discipline.¹⁸

Understanding Ecological Restoration

Ecological restoration can be defined simply as "the return of an ecosystem to a close approximation of its condition prior to disturbance."¹⁹ It seeks to recreate or repair "the structure, function, and integrity of indigenous ecosystems and the sustaining habitats they provide." It is correctly perceived as a holistic process focused on the entire ecosystem and not individual elements.²⁰ To accomplish these objectives, the restoration process frequently entails active management "to accelerate recovery of degraded ecosystems by

11. ALDO LEOPOLD, *A SAND COUNTY ALMANAC* (Oxford Univ. Press 1949).

12. William R. Jordan III et al., *Restoration Ecology: Ecological Restoration as a Technique for Basic Research*, in *RESTORATION ECOLOGY: A SYNTHETIC APPROACH TO ECOLOGICAL RESEARCH* 3-4 (William R. Jordan III et al. eds., Cambridge Univ. Press 1987) [hereinafter *RESTORATION ECOLOGY*]; STEPHANIE MILLS, *IN SERVICE OF THE WILD: RESTORING AND REINHABITING DAMAGED LAND* 93-129 (Beacon Press 1995).

13. A.D. Bradshaw, *Restoration: An Acid Test for Ecology*, in *RESTORATION ECOLOGY*, *supra* note 12, at 25-27.

14. Aldo Leopold, *The Arboretum and the University*, 18 *PARK & RECREATION* 59-60 (1934), *quoted in* *THE ESSENTIAL ALDO LEOPOLD: QUOTATIONS AND COMMENTARIES* 123 (Curt Meine & Richard L. Knight eds., University of Wisconsin Press 1999).

15. Peter S. White, *Spatial and Biological Scales in Reintroduction*, in *RESTORING DIVERSITY: STRATEGIES FOR REINTRODUCTION OF ENDANGERED PLANTS* 49-86 (Donald A. Falk et al. eds., Island Press 1996) [hereinafter *RESTORING DIVERSITY*].

16. See generally CELIA CAMPBELL-MOHN ET AL., *ENVIRONMENTAL LAW: FROM RESOURCES TO RECOVERY* (West Publishing Co. 1993).

17. Society for Ecological Restoration Mission Statement (1993), reprinted in Wallace W. Covington et al., *Ecosystem Restoration and Management: Scientific Principles and Concepts*, in 2 *ECOLOGICAL STEWARDSHIP: A COMMON REFERENCE FOR ECOSYSTEM MANAGEMENT* 601 (Robert C. Szaro et al. eds., Elsevier Science Ltd. 1999) [hereinafter *ECOLOGICAL STEWARDSHIP*].

18. See, e.g., *RESTORATION ECOLOGY*, *supra* note 12; RESEARCH COUNCIL COMMITTEE ON RESTORATION OF AQUATIC ECOSYSTEMS, *RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY, AND PUBLIC POLICY* (National Academy Press 1992) [hereinafter *RESTORATION OF AQUATIC ECOSYSTEMS*]; BEYOND PRESERVATION: RESTORING AND INVENTING LANDSCAPES 32 (A. Dwight Baldwin et al. eds., University of Minnesota Press 1994) [hereinafter *BEYOND PRESERVATION*]; *RESTORING DIVERSITY*, *supra* note 15; DONALD HARKER ET AL., *LANDSCAPE RESTORATION HANDBOOK* (Lewis Publishers 2d ed. 1999); STEVEN G. WHISENANT, *RESTORING DAMAGED WILDLANDS: A PROCESS-ORIENTED, LANDSCAPE-SCALE APPROACH* (Cambridge Univ. Press 1999). See also *RESTORATION AND MANAGEMENT NOTES*, published by the University of Wisconsin Arboretum, and *RESTORATION ECOLOGY*, published by Blackwell Science.

19. John J. Berger, *Ecological Restoration Comes of Age*, *FORUM FOR APPLIED RES. & PUB. POL'Y*, Summer 1995, at 90; *RESTORATION OF AQUATIC ECOSYSTEMS*, *supra* note 18, at 2.

20. Covington et al., *supra* note 17, at 601; *RESTORATION OF AQUATIC ECOSYSTEMS*, *supra* note 18, at 2.

complimenting or reinforcing natural processes.”²¹ Indeed, restoration ecologists employ several different—though often complementary—strategies to change ecological conditions toward a desired pre-disturbance state. Structural restoration strategies generally aim to reengineer an ecosystem’s prevailing physical attributes, which can involve realigning stream banks, using fire to recreate habitat conditions, or removing physical barriers to fish or wildlife movement. Land use strategies are employed to change the intensity, distribution, timing, or duration of uses affecting the landscape, which can range from eliminating timber harvesting in sensitive drainages to rearranging livestock grazing patterns. And biological control strategies are designed to alter species composition within an ecosystem, either by eliminating undesirable species like noxious weeds or by reintroducing desirable ones like endangered wolves or black-footed ferrets. All of these restoration strategies are being employed on the West’s public lands, with the choice depending on the overall goals, existing conditions, project scale, and related political, economic, and social factors.²²

Ecological restoration has roots in both the utilitarian and preservation traditions that have long dominated natural resource policy. On one hand, with its recognition that active management and intervention may be necessary to reestablish ecosystem components or processes, ecological restoration resembles traditional conservation policy, which has historically viewed human intervention as essential to improve nature for productive purposes. But with its focus on restoring ecosystem integrity, ecological restoration also deviates from traditional conservation policy, which is ordinarily associated with the sustained use of single resources without regard for the broader implications of such use. On the other hand, committed to the goal of recreating pre-disturbance natural conditions, ecological restoration emulates traditional preservation policy, which has focused on protecting undisturbed landscapes and pristine settings. Yet with its emphasis on active intervention, ecological restoration also deviates from traditional preservation policy, particularly the goal of precluding or minimizing human intervention into natural systems. In an effort to reconcile these seemingly contradictory traditions, restoration advocates argue that by placing people in an active and reciprocal relationship with nature, ecological restoration fosters a more pragmatic and enduring human connection with nature than is true with a purely noninterventionist preservationist policy. Others worry, however, that restoration ecology could be used to create a false dichotomy between preservation and restoration, or to stoke our latent hubris over the human ability to control nature.²³

A New Restoration Agenda

Ecological restoration projects are now ubiquitous across the western landscape, stunning both in their diversity and origins. Whether the agency mission is multiple use or preservation, restoration is now acknowledged to fit within that mission. The projects encompass an impressive array of ecological concerns and settings: rangelands; riparian corridors; forest health; native species diversity; abandoned mine sites; wetlands; river corridors and dam sites; exotic species; wildfires; seasonal floods; and other disturbance regimes. Many of the projects are small-scale in design, covering only a few acres or a single drainage; others are much larger in scope, covering entire river systems or ecoregions. Some projects have grass-roots origins; others have been administratively conceived by agency officials. Several have been driven by litigation or the threat of litigation; still others have their genesis in congressional legislation. Many cut across traditional agency boundaries, creating new interagency relationships as well as myriad public-private partnership arrangements.²⁴ While still uncharted territory, this budding new era of ecological restoration places less emphasis on commodity development and more emphasis on safeguarding environmental amenities.

The existing laws, rather than impeding these new restoration policies, have instead been employed to promote an active ecological restoration agenda. Many of the applicable laws trace their origins to the early 1970s when Congress passed a welter of new environmental protection laws, few of which were originally viewed in ecological restoration terms. The organic statutes governing the public land agencies—namely the National Forest Management Act (NFMA), Federal Land Policy and Management Act (FLPMA), and the amended National Wildlife Refuge System Administration Act—may not contain explicit references to ecosystem restoration, but the basic multiple use and preservation mandates are broad enough to encompass restoration within the public land agencies’ overall responsibilities. These laws also establish an integrated, interdisciplinary planning process that is well-suited to identifying and developing restoration opportunities. The powerful ESA, with its explicit commitment to averting extinctions, essentially compels the federal agencies to integrate species conservation and recovery considerations into their planning and decision processes.²⁵ Other laws also support an active restoration agenda: SMCRA imposes explicit recla-

(1993); Robert Elliot, *Extinction, Restoration, Naturalness*, 16 ENVTL. ETHICS 135 (1994).

21. Covington et al., *supra* note 17, at 601; RESTORATION OF AQUATIC ECOSYSTEMS, *supra* note 18, at 17-21; Andy P. Dobson et al., *Hopes for the Future: Restoration Ecology and Conservation Biology*, 277 SCIENCE 515 (1997).

22. See James G. Kenna et al., *Ecosystem Restoration: A Manager’s Perspective*, in ECOLOGICAL STEWARDSHIP, *supra* note 17, at 620-21; RESTORATION OF AQUATIC ECOSYSTEMS, *supra* note 18, at 17-18; HARKER ET AL., *supra* note 18, at 19-40, 63-90.

23. Compare Jordan, “Sunflower Forest”: *Ecological Restoration as the Basis for a New Environmental Paradigm*, in BEYOND PRESERVATION, *supra* note 18, at 17-34, with G. Stanley Kane, *Restoration or Preservation? Reflections on a Clash of Environmental Philosophies*, in BEYOND PRESERVATION, *supra* note 18, at 69-84. See also Alastair S. Gunn, *The Restoration of Species and Natural Environments*, 13 ENVTL. ETHICS 213 (1991); C. Mark Cowell, *Ecological Restoration and Environmental Ethics*, 15 ENVTL. ETHICS 19

24. See Joseph L. Sax, *The New Age of Environmental Restoration*, 41 WASHBURN L.J. 1 (2001); ACROSS THE GREAT DIVIDE: EXPLORATIONS IN COLLABORATIVE CONSERVATION AND THE AMERICAN WEST (Philip Brick et al. eds., Island Press 2001); DOUGLAS S. KENNY, *THE NEW WATERSHED SOURCE BOOK: A DIRECTORY AND REVIEW OF WATERSHED INITIATIVES IN THE WESTERN UNITED STATES* (Natural Resources Law Center 2000); STEVEN L. YAFFEE ET AL., *ECOSYSTEM MANAGEMENT IN THE UNITED STATES: AN ASSESSMENT OF CURRENT EXPERIENCE 16-17, 73-75* (Island Press 1996); KEYSTONE CENTER, *THE KEYSTONE NATIONAL POLICY DIALOGUE ON ECOSYSTEM MANAGEMENT B-1 to B-39* (1996).

25. See *Sierra Club v. Glicksman*, 156 F.3d 606, 29 ELR 20159 (5th Cir. 1998); J.B. Ruhl, *Section 7(a)(1) of the “New” Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies’ Duty to Conserve Species*, 25 ENVTL. L. 1107 (1995); see also Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 ECOLOGY L.Q. 1 (1996).

mation obligations for mine sites; the NFMA contains express biodiversity protection and tree restocking requirements; and the CWA's unambiguous purpose is "to restore and maintain the chemical, physical, and biological integrity of the [n]ation's waters."²⁶ Moreover, the National Environmental Policy Act (NEPA) mandates a time-tested environmental impact statement (EIS) procedure that can be used to examine the environmental implications of restoration proposals and engage the public in the process.²⁷ These laws have not only created a legal framework supportive of ecological restoration, but they have also served as the catalyst for litigation that has, in turn, spurred several noteworthy restoration efforts.²⁸

Wolves and Other Predators

One of the federal government's most prominent, controversial, and thus far successful ecological restoration efforts is the northern Rockies gray wolf reintroduction initiative. With the advent of European settlement, the wolf was labeled a "beast of destruction," and the federal government was prodded into an active extermination campaign that eliminated wolves from the West by the mid-1930s.²⁹ By the late 1960s, though, the wolf had regained a measure of scientific respectability as its role in the ecological order became better understood. Following passage of the ESA in 1973, the U.S. Fish and Wildlife Service (FWS) was charged with preparing a wolf recovery plan, which eventually proposed translocating wolves from Canada to the western United States. Although wolves were beginning to make their own way back into northern Montana from Canada by the mid-1980s, the FWS still supported actively reintroducing them into Yellowstone National Park and central Idaho's expansive wildlands.³⁰

The key to the proposed reintroduction was the ESA's §10(j) experimental population provision, which Congress added in 1982 to facilitate controversial species reintroductions by increasing management flexibility and thus hopefully reducing local opposition.³¹ Under §10(j), the re-

introduced wolves were denominated a "nonessential" experimental population, a designation that not only reduced the level of legal protection they enjoyed but also allowed local ranchers to kill individual depredating wolves.³² To facilitate the federal reintroduction effort, Defenders of Wildlife, a national environmental organization that had long advocated wolf restoration, unilaterally established a private wolf compensation fund designed to reimburse ranchers for livestock losses attributed to the wolves. Nonetheless, the region's ranchers vigorously fought the restoration proposal, first in Congress where they forestalled it for nearly a decade, and then in the courts where they initially succeeded in convincing a Wyoming federal judge to order removal of the wolves.³³ But the U.S. Court of Appeals for the Tenth Circuit subsequently ruled that the wolf reintroduction was legal under §10(j), thus allowing the wolves to remain and legitimizing the use of the ESA's experimental population provision to restore extirpated predators and other controversial species.³⁴ By then, of course, the reintroduced wolves were thriving in their new surroundings. With wolf numbers approaching levels that qualify as a recovered population, the FWS is beginning to explore removing the species from the endangered species list and returning management responsibility to the states.

The ESA's §10(j) experimental population provision is also being used in other controversial wolf reintroduction programs. The FWS has reintroduced an experimental population of Mexican wolves to their native habitat in Arizona and New Mexico.³⁵ But local ranchers and others have strongly opposed this reintroduction effort too, and several of the initially released wolves were killed illegally, forcing the agency to relocate the others to a more remote wilderness setting. Faced with a legal challenge to the reintroduction effort, the courts have upheld the program, and the local wolf population is beginning to grow.³⁶ Moreover, the FWS has successfully defended its North Carolina red wolf reintroduction program against a broad-based constitutional challenge.³⁷ Although the agency does not contemplate any

26. See 30 U.S.C. §1258, ELR STAT. SMCRA §508 (SMCRA reclamation plan requirements); 16 U.S.C. §1604(g)(3)(B), ELR STAT. NFMA §6(g)(3)(B) (NFMA biodiversity provision); §16 U.S.C. §1604(g)(3)(E)(ii), ELR STAT. NFMA §6(g)(3)(E)(ii) (NFMA five-year tree restocking requirement); 33 U.S.C. §1251(a), ELR STAT. FWPCA §101(a) (CWA water quality restoration).

27. 42 U.S.C. §4332(2)(C), ELR STAT. NEPA §102(2)(C); Dinah Bear, *Using the National Environmental Policy Act to Protect Biological Diversity*, 8 TUL. ENVTL. L.J. 77 (1994); Robert B. Keiter, *NEPA and the Emerging Concept of Ecosystem Management*, 25 LAND & WATER L. REV. 43 (1990).

28. See Daniel F. Luecke, *An Environmental Perspective on Large Ecosystem Restoration Processes and the Role of the Market, Litigation, and Regulation*, 42 ARIZ. L. REV. 395, 399 (2000); see also Bonnie G. Colby & Tamra P. d'Estree, *Evaluating Market Transactions, Litigation, and Regulation as Tools for Implementing Environmental Restoration*, 42 ARIZ. L. REV. 381 (2000).

29. BRUCE HAMPTON, *THE GREAT AMERICAN WOLF* 255 (Henry Holt & Co. 1997). See also BARRY HOLSTUN LOPEZ, *OF WOLVES AND MEN* (Charles Scribner's Sons 1978); *WAR AGAINST THE WOLF: AMERICA'S CAMPAIGN TO EXTERMINATE THE WOLF* (Rick McIntyre ed., Voyageurs Press 1995).

30. U.S. DEPARTMENT OF THE INTERIOR (DOI), U.S. FWS, *NORTHERN ROCKY MOUNTAIN WOLF RECOVERY PLAN* (1987).

31. 16 U.S.C. §1539(j), ELR STAT. ESA §10(j). See also Federico Cheever, *From Population Segregation to Species Zoning: The Evolution of Reintroduction Law Under Section 10(J) of the Endangered*

Species Act, 1 WYO. L.J. 287 (2001); Holly Doremus, *Restoring Endangered Species: The Importance of Being Wild*, 23 HARV. ENVTL. L. REV. 1 (1999).

32. U.S. DOI, U.S. FWS, *THE REINTRODUCTION OF GRAY WOLVES TO YELLOWSTONE NATIONAL PARK AND CENTRAL IDAHO FINAL ENVIRONMENTAL IMPACT STATEMENT* (1994). See also Steven H. Fritts et al., *Planning and Implementing a Reintroduction of Wolves to Yellowstone National Park and Central Idaho*, 5 RESTORATION ECOLOGY 7-27 (1997).

33. See THOMAS McNAMEE, *THE RETURN OF THE WOLF TO YELLOWSTONE* (Henry Holt & Co. 1997); HANK FISCHER, *WOLF WARS: THE REMARKABLE INSIDE STORY OF THE RESTORATION OF WOLVES TO YELLOWSTONE* (Falconer Press 1995).

34. *Wyoming Farm Bureau Fed'n v. Babbitt*, 987 F. Supp. 1349 (D. Wyo. 1997), *rev'd*, 199 F.3d 1224, 30 ELR 20289 (10th Cir. 2000).

35. U.S. DOI, U.S. FWS, *REINTRODUCTION OF THE MEXICAN WOLF WITHIN ITS HISTORIC RANGE IN THE SOUTHWESTERN UNITED STATES FINAL ENVIRONMENTAL IMPACT STATEMENT* (1996). See also U.S. FWS, *Mexican Wolf Returns to the Wild*, ENDANGERED SPECIES BULL., Mar. 1998, at 12.

36. *New Mexico Cattle Growers Ass'n v. U.S. Fish & Wildlife Serv.*, 81 F. Supp. 2d 1141 (D.N.M. 1999).

37. *Gibbs v. Babbitt*, 31 F. Supp. 2d 531 (E.D.N.C. 1998), *aff'd*, 214 F.3d 483, 30 ELR 20602 (4th Cir. 2000), *cert. denied*, 531 U.S. 1145 (2001). See 50 C.F.R. §17.84(c) (1999); 51 Fed. Reg. 41790 (1986). See also Jennifer Gilbreath, *A Bright Decade for the Red Wolf*, ENDANGERED SPECIES UPDATE, July/Aug. 1998, at E18; T. Edward Nickens, *North Carolina Wolf Country*, WILDLIFE CONSERVATION, Jan/Feb. 1999, at 64.

further wolf reintroductions,³⁸ the net effect of the court decisions is to validate §10(j) as a predator restoration tool.

Elsewhere, the FWS is using §10(j) to return black-footed ferrets, California condors, and perhaps even grizzly bears to their native habitat. In the black-footed ferret and California condor cases, the FWS initially established captive breeding programs to rebuild badly depleted populations, and then began returning some animals back into the wild as experimental populations.³⁹ Although both recovery programs generated controversy and litigation, the reintroductions have proven basically successful and opposition appears to be fading.⁴⁰ Moreover, during President William J. Clinton's Administration, the FWS was poised to use §10(j) to reintroduce grizzly bears into the Selway-Bitterroot ecosystem in central Idaho—another species restoration proposal that triggered intense local opposition.⁴¹ Even though the proposed reintroduction plan would have given a local citizen management committee unprecedented oversight responsibility for managing the reintroduced bears, the state of Idaho sued to block the reintroduction effort and eventually convinced President George W. Bush's Administration to jettison the proposal.⁴² Thus, even as §10(j) has facilitated various ecological restoration initiatives, many westerners still resent the federal regulatory intrusion that the ESA represents, as well as the prospect of sharing their landscape with potentially destructive animals.

Fire Restoration and the Forest Health Debate

The past couple decades have witnessed a major federal effort to restore fire to its historic role on the West's public lands. Originally, the western landscape burned at regular intervals, though some ecosystems burned more frequently than others and some experienced more intense fires than others. The West's native inhabitants also broadcast fire across the landscape, using it in their agricultural, hunting, and military pursuits. But once the white settlers arrived, they pressured the federal government to control wildfires, not only to protect communities but also to safeguard timber and other valuable resources from destruction. By the early 1900s, the federal public land agencies committed themselves to a total fire suppression policy, though the realities

of the landscape mostly restricted their efforts to easily accessible front country venues. But following World War II, the agencies acquired surplus military aircraft and other mechanized equipment that enabled them, with the aid of new CCC-constructed roads, to expand their fire control efforts into the backcountry. By then, though, scientists were already questioning the wisdom of extinguishing all fires, and the agencies had begun to realize just how costly the total suppression policy might be. By the 1970s, heavily influenced by the much-vaunted Leopold report on resource management in the national parks,⁴³ both the NPS and the Forest Service were allowing natural fires to burn in remote backcountry areas where human lives and structures were not at risk. In short, fire was beginning to reclaim its historic role as a natural disturbance process in the ecosystem.⁴⁴

But for fire, the road to ecological respectability has been anything but smooth. During the hot and dry summer of 1988, nearly one-half of Yellowstone National Park was consumed in flames when several backcountry blazes roared out of control and raced through the park's tinder-dry lodgepole pine forests. The scene transfixed the American public, triggered an intense local reaction to the park's prevailing "let burn" policy, and forced the agencies to reinstate a total suppression policy pending a reevaluation of their fire management plans.⁴⁵ But once the political spotlight had faded, the agencies quietly reaffirmed their commitment to a prescribed fire policy that acknowledged fire's historic ecological role, while simultaneously instituting more rigorous evaluation and control policies.⁴⁶ Since then, 3 more disastrous fire seasons—1994 when 14 firefighters died in Colorado, 2000 when Los Alamos was engulfed in flames and over 10 million acres burned across the West, and 2002 when more than 6 million acres burned and over 200 communities were evacuated—have forced the federal agencies to further reevaluate their fire policies. In each instance, they have reaffirmed that fire is "a critical natural process [that] must be reintroduced into the ecosystem," while also calling for landscape-scale fire planning processes, interagency coordination, more collaboration with state, tribal, and local jurisdictions, and more public in-

38. *But see* Heidi Ridley, *Opening the Door to Wolf Recovery*, DEFENDERS, Fall 1999, at 6 (promoting additional wolf restoration efforts in Olympic National Park, White Sands National Monument, and the Adirondacks).

39. U.S. FWS, PACIFIC REGION, RECOVERY PLAN FOR THE CALIFORNIA CONDOR (1996); U.S. DOI, BLM, BLACK-FOOTED FERRET REINTRODUCTION CONATA BASIN/BADLANDS, SOUTH DAKOTA FINAL ENVIRONMENTAL IMPACT STATEMENT (1994).

40. Les Line, *Phantom of the Plains: The Continuing Saga of the Black-Footed Ferret*, WILDLIFE CONSERVATION, July/Aug. 1997, at 20; TIM W. CLARK, AVERTING EXTINCTION: RECONSTRUCTING ENDANGERED SPECIES RECOVERY (Yale Univ. Press 1997); BRIAN MILLER ET AL., PRAIRIE NIGHT: BLACK-FOOTED FERRETS AND THE RECOVERY OF ENDANGERED SPECIES (Smithsonian Institution Press 1996); Jane Hendron, *Condor Soars Toward Recovery*, ENDANGERED SPECIES BULL., Mar. 1998, at 26; Frank Graham Jr., *Day of the Condor*, AUDUBON, Jan/Feb. 2000, at 46.

41. *See* U.S. FWS, GRIZZLY BEAR RECOVERY IN THE BITTERROOT ECOSYSTEM FINAL EIS (2000); Sarah B. Van de Wetering, *Bears, People, Power*, CHRONICLE OF COMMUNITY, Winter 1998, at 15.

42. U.S. FWS, Reevaluation of the Record of Decision for the Final EIS and Selection of the Alternative for Grizzly Bear Recovery in the Bitterroot Ecosystem, 66 Fed. Reg. 33623-24 (June 22, 2001); *Grizzly Reintro Plan Dead*, ENDANGERED SPECIES & WETLANDS REP., June 3, 2001, at 3.

43. A. Starker Leopold et al., *Wildlife Management in the National Parks*, in TRANSACTIONS OF THE TWENTY-EIGHTH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 29, 29-44 (1963), reprinted in Larry M. Dilsaver, AMERICA'S NATIONAL PARK SYSTEM: THE CRITICAL DOCUMENTS 237, 237-52 (Larry M. Dilsaver ed., Rowman & Littlefield 1994).

44. *See generally* DAVID CARLE, BURNING QUESTIONS: AMERICA'S FIGHT WITH NATURE'S FIRE (Praeger 2002); STEPHEN J. PYNE, AMERICA'S FIRES: MANAGEMENT ON THE WILDLANDS AND FORESTS (Forest History Society 1997); STEPHEN J. PYNE, FIRE IN AMERICA: A CULTURAL HISTORY OF WILDLAND AND RURAL FIRE (Princeton Univ. Press 1982).

45. MICAH MORRISON, FIRE IN PARADISE: THE YELLOWSTONE FIRES AND THE POLITICS OF ENVIRONMENTALISM (Harper Collins 1993); Dennis H. Knight, *The Yellowstone Fire Controversy*, in THE GREATER YELLOWSTONE ECOSYSTEM: REDEFINING AMERICA'S WILDERNESS HERITAGE 87 (Robert B. Keiter & Mark S. Boyce eds., Yale Univ. Press 1991); Norman Christensen et al., *Interpreting the Yellowstone Fires of 1988*, 39 BIOSCIENCE 678 (1989); Paul Scullery, *The Fires and Fire Policy*, 39 BIOSCIENCE 686 (1989).

46. USDA & U.S. DOI, FIRE POLICY MANAGEMENT REVIEW TEAM, FINAL REPORT ON FIRE MANAGEMENT POLICY (1989) reprinted in 54 Fed. Reg. 25666 (June 16, 1989). *See also* U.S. GAO, FEDERAL FIRE MANAGEMENT: LIMITED PROGRESS IN RESTARTING THE PRESCRIBED FIRE PROGRAM (1990).

volvement in fire management planning.⁴⁷ At the same time, the federal agencies have progressively edged closer to an active fuel management program as a prerequisite to restoring fire to the landscape.⁴⁸

Indeed, our evolving fire restoration policies are closely related to the debate over forest health in the West's national forests. During the past century, federal fire suppression policies have altered ecological conditions across the western landscape. The absence of fire has changed the composition and distribution of tree and plant species, facilitated the spread of exotic species, promoted the buildup of woody debris (fuel loading), and displaced some species. Scientists generally agree that these policies have created older, denser, and less healthy forests prone to larger, more intense fires, which can present serious control problems. At the same time, excessive logging has denuded the forests and the accompanying roads have fragmented the landscape, diminishing old growth habitat and silting streams, while also creating additional fuel loading problems. Despite recent efforts to reintroduce prescribed fires to the public lands, the amount of acreage actually burned remains quite small compared to the amount that historically was scorched by fires. As a result, the aging forests now represent a significant fire hazard that not only endangers valuable timber and other resources but nearby communities as well.⁴⁹ In fact, with the West's continuing population growth and increased urbanization, the federal agencies face the difficult task of reconciling their fire policies with the growing need to protect homes and property in the region's rapidly expanding urban-wildland interface zones—a problem that was highlighted by the catastrophic Los Alamos fire.

Although most observers agree that health must be restored to the West's forests, major disagreements persist over how to recreate pre-settlement forest ecosystem conditions while addressing the fire danger. Environmental groups tend to support the goal of forest restoration through reforestation, road closures, prescribed burning, soil stabilization projects, and limited thinning in urban-wildland interface zones. They are very leery of any active restoration program that includes logging as a component, recalling that the timber industry used the 1994 timber salvage rider and other legal exemptions to undertake large-scale commercial logging on the region's forests under the guise of restoring forest health.⁵⁰ The Forest Service, timber interests, and oth-

ers, however, believe that an active fuel treatment program is necessary to restore a productive and ecologically healthy forest while protecting adjacent communities from runaway fires. A high profile forest restoration project outside Flagstaff, Arizona, is putting this latter approach to the test; it may reveal whether the agencies can be trusted to thin rather than log their timber in the name of ecological restoration.⁵¹ But regardless, the Flagstaff project already suggests that restoring true ecological health to the West's expansive forest lands will be an expensive and long-term process. No ready market exists for the small diameter trees that are being thinned, and environmental skeptics have already challenged several of the Flagstaff thinning proposals.

Moreover, the forest health-fire debate has sparked an intense confrontation over proposed changes to the legal framework governing public land decision processes. Because there is little federal law expressly addressing fire policy on the public lands, the federal agencies have considerable discretion to define their own fire management policies.⁵² In doing so, however, the agencies must adhere to NEPA environmental analysis, NFMA forest planning, and ESA consultation procedures, particularly when implementing fuel treatment and salvage logging projects. Opponents of such projects have appealed and litigated a number of allegedly ill-considered proposals, scoring several notable court victories. Convinced that time is of the essence, federal officials have decried these legal delays, asserting that procedural gridlock is the largest obstacle they face in fireproofing the forests.⁵³ The Bush Administration has responded with legislative proposals that would both override NEPA environmental review obligations and limit judicial review for designated forest health projects.⁵⁴ When the 107th Congress failed to pass comprehensive forest health legislation, the agencies unveiled their own administrative reform agenda, seeking to eliminate NEPA review of forest thinning and rehabilitation projects through categorical ex-

47. U.S. DOI & USDA, FEDERAL WILDLIFE FIRE MANAGEMENT POLICY AND PROGRAM REVIEW: FINAL REPORT iii (1995). See also JOHN N. MACLEAN, FIRE ON THE MOUNTAIN: THE TRUE STORY OF THE SOUTH CANYON FIRE (William Morrow & Co. 1999).

48. USDA & U.S. DOI, NATIONAL FIRE PLAN: MANAGING THE IMPACT OF WILDFIRES ON COMMUNITIES AND THE ENVIRONMENT 2 (2000); OFFICE OF THE PRESIDENT, HEALTHY FORESTS: AN INITIATIVE FOR WILDFIRE PREVENTION AND STRONGER COMMUNITIES 8-12 (2002) [hereinafter PRESIDENT'S HEALTHY FORESTS INITIATIVE].

49. See PRESIDENT'S HEALTHY FORESTS INITIATIVE, *supra* note 48; U.S. GAO, WESTERN NATIONAL FORESTS: A COHESIVE STRATEGY IS NEEDED TO ADDRESS CATASTROPHIC WILDFIRE THREATS (1999); ASSESSING FOREST ECOSYSTEM HEALTH IN THE INLAND WEST (R. Neal Sampson & David L. Adams eds., Food Products Press 1994); SEARCH FOR A SOLUTION: SUSTAINING THE LAND, PEOPLE, AND ECONOMY OF THE BLUE MOUNTAINS (Raymond G. Jandl & Thomas M. Quigley eds., American Forests 1996); NANCY LANGSTON, FOREST DREAMS, FOREST NIGHTMARES: THE PARADOX OF OLD GROWTH IN THE INLAND WEST (University of Washington Press 1995).

50. Patti A. Goldman & Kristen L. Boyles, *Forsaking the Rule of Law: The 1995 Logging Without Laws Rider and Its Legacy*, 27 ENVTL. L. 1035 (1997).

51. See *Greater Flagstaff Forests Partnership*, at <http://www.gffp.org> (last visited Sept. 30, 2002); Michelle Nijhuis, *Flagstaff Searches for Its Forests' Future*, HIGH COUNTY NEWS, Mar. 1, 1999, at 8-12; see also Wallace W. Covington & M.M. Moore, *Postsettlement Changes in Natural Fire Regimes and Forest Structure: Ecological Restoration of Old Growth Ponderosa Pine Forests*, in ASSESSING FOREST ECOSYSTEM HEALTH IN THE INLAND WEST, *supra* note 49, at 153.

52. See *McDougal v. U.S. Forest Serv.*, 195 F. Supp. 2d 1229 (D. Or. 2002); *Thune v. United States*, 41 Fed. Cl. 49 (Fed. Cl. 1998); Laura Sweedo, *Where There Is Fire, There Is Smoke: Prescribed Burning in Idaho's Forests*, 8 DICK. J. ENVTL. L. POL'Y 121 (1999); Peter H. Froelicher, *Issues of Liability Surrounding Fire Management in the Greater Yellowstone Area*, 27 LAND & WATER L. REV. 123 (1992); STEPHEN J. PYNE ET AL., INTRODUCTION TO WILDLAND FIRE 329-39 (John Wiley 2d ed. 1996).

53. For examples of successful environmental challenges to salvage logging or forest thinning proposals, see *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 29 ELR 20424 (9th Cir. 1998); *Sierra Club v. Bosworth*, 199 F. Supp. 2d 971, 32 ELR 20618 (N.D. Cal. 2002); *League of Wilderness Defenders v. Forsgren*, 184 F. Supp. 2d 1058 (D. Or. 2002). On the notion of procedural gridlock, see USDA, U.S. FOREST SERV., THE PROCESS PRECIPITATION: HOW STATUTORY, REGULATORY, AND ADMINISTRATIVE FACTORS AFFECT NATIONAL FOREST MANAGEMENT (2002). See also Jack Ward Thomas, *Stability and Predictability in Federal Forest Management: Some Thoughts From the Chief*, 17 PUB. LAND & RESOURCES L. REV. 9, 18-21 (1996).

54. See PRESIDENT'S HEALTHY FORESTS INITIATIVE, *supra* note 48; H.R. 5376, 107th Cong. (2002). See also USDA, U.S. Forest Serv., *Health Forest Initiative*, at <http://www.fs.fed.us/projects/HFI.shtml> (last visited Sept. 20, 2002).

clusions, to expedite endangered species consultations, and to limit administrative appeal opportunities.⁵⁵ But fearing a repeat of the 1995 salvage logging imbroglio, environmental groups have vehemently resisted congressional waivers of legal protections and judicial review options, arguing that appeals are the only way to ensure that fuel treatment projects are legitimate and accountable.⁵⁶ In short, the forest health controversy has shifted into a full-scale debate over the continuing validity of the laws governing the public lands and the role of the courts in enforcing them.

Range Restoration

On the BLM public lands, restoration efforts have primarily focused on repairing rangelands and damaged riparian corridors. The principal culprit has been the cow and overgrazing. Neither the much-heralded Taylor Grazing Act of 1934, the FLPMA of 1976, nor the Public Rangelands Improvement Act of 1978 have noticeably stemmed the continuing decline in range conditions. Indeed, a 1988 U.S. General Accounting Office study reported that “many [riparian areas] are in degraded conditions” and “the number of [restoration] successes is small compared to the area still needing restoration.”⁵⁷ The Clinton Administration’s Rangeland Reform regulations have established ecologically based range management standards and vested statewide Resource Advisory Councils with oversight responsibility for improving range conditions, which should bolster nascent restoration efforts.⁵⁸ But in many locations, environmental groups and ranchers are at odds over what is needed to restore range and riparian health: environmentalists are convinced that livestock reductions and more oversight are necessary, while ranchers have resisted reducing herd numbers or any graz-

ing access limitations.⁵⁹ Recent litigation, including the Comb Wash proceedings and several grazing-related ESA cases, has forced federal land managers to restrict previously unregulated grazing practices; the decisions hold that the public land agencies have both the duty and authority to remedy degraded range conditions.⁶⁰

Against this backdrop, the BLM and area ranchers have undertaken several cooperative restoration projects designed to improve range and riparian conditions, and ultimately forage productivity. Two of the most prominent examples are the Trout Creek Mountains Working Group in southeastern Oregon and the Malpai Borderlands Initiative on the Arizona-New Mexico border. Confronted with declining range conditions, a group of Trout Creek area ranchers began meeting with the BLM and local environmentalists to address overgrazing problems. They eventually conceived a grazing strategy that included the short-term exclusion of cattle from riparian areas, modest reductions in overall livestock numbers, and active monitoring of cattle movements. The proposal has withstood the subsequent listing under the ESA of the Lahontan cut-throat trout, and most participants agree that range conditions are improving.⁶¹ In the case of the Malpai Borderlands group, local ranchers and other private landowners have joined together to “restore and maintain the natural processes that create and protect healthy, unfragmented landscapes to support a [regionally] diverse, flourishing community of human, plant and animal life.” Working with federal and state officials, they have reintroduced fire to the range ecosystem in order to restore native grasslands, and created a unique grassland banking system that encourages ranchers to donate conservation easements in an effort to forestall subdivision development in the area.⁶² While not without lingering controversy, both of these projects represent a new breed of locally conceived, consensus-based, landscape-level restoration initiatives designed to recover range ecosystems to a more sustainable condition.

55. See USDA, U.S. Forest Serv., National Environmental Policy Act Documentation Needed for Fire Management Activities; Categorical Exclusions, 67 Fed. Reg. 77038-44 (Dec. 16, 2002); Memorandum from Director, U.S. Fish and Wildlife Service, and Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, to their respective Regional Directors and Administrators, Evaluating the Net Benefit of Hazardous Fuels Treatment Projects (Dec. 10, 2002) (available from the ELR Guidance & Policy Collection, ELR Order No. AD-4796); USDA, U.S. Forest Serv., Notice, Comment, and Appeal Procedures for Projects and Activities on National Forest System Lands, 67 Fed. Reg. 77451 (Dec. 18, 2002); Brian Stempeck, *Bush Moves to Speed Up Forest-Thinning Projects*, LAND LETTER, Dec. 12, 2002, at 1.

56. See Press Release, The Wilderness Society, Administration Proposal Would Eliminate Environmental Protections for National Forests (Oct. 9, 2002), at <http://www.wilderness.org/newsroom> (last visited Nov. 12, 2002); Nathaniel Lawrence, Natural Resources Defense Council Senior Attorney, *Gridlock on the National Forests* (Testimony presented before the U.S. House of Representatives, Subcommittee on Forests and Forest Health, Committee on Resources, Dec. 4, 2001) at <http://www.nrdc.org/land/forests> (last visited Nov. 12, 2002). See also Patti A. Goldman & Kristen L. Boyles, *Forsaking the Rule of Law: The 1995 Logging Without Laws Rider and Its Legacy*, 27 ENVTL. L. 1035 (1997).

57. U.S. GAO, PUBLIC RANGELANDS, *supra* note 2, at 2, 4, 35; DONAHUE, *supra* note 2, at 42-66.

58. 43 C.F.R. §§4.77, 1784.0-1 to 1784.62, 4100.0-1 to 4180.2 (1999). See U.S. DOI, BLM, RANGELAND REFORM '94: FINAL ENVIRONMENTAL IMPACT STATEMENT (1994). See also Public Lands Council v. Babbitt, 167 F.3d 1287 (10th Cir. 1999), *aff'd*, 529 U.S. 728 (2000). See generally Bruce M. Pendery, *Reforming Livestock Grazing on the Public Domain: Ecosystem Management-Based Standards and Guidelines Blaze a New Path for Range Management*, 27 ENVTL. L. 513 (1997); Karl N. Arruda & Christopher Watson, *The Rise and Fall of Grazing Reform*, 32 LAND & WATER L. REV. 413 (1997).

59. See Joseph M. Feller & David E. Brown, *From Old-Growth Forests to Old-Growth Grasslands: Managing Rangelands for Structure and Function*, 42 ARIZ. L. REV. 319, 335-39 (2000); REED F. NOSS & ALLEN Y. COOPERRIDER, *SAVING NATURE'S LEGACY: PROTECTING AND RESTORING BIODIVERSITY* 248-63 (Island Press 1994); DONAHUE, *supra* note 2, at 272; WILKINSON, *supra* note 3, at 75-113. See also DAN DAGGETT: BEYOND THE RANGELAND CONFLICT: TOWARD A WEST THAT WORKS (Gibbs Smith 1995); KARL HESS JR., *VISIONS UPON THE LAND: MAN AND NATURE ON THE WESTERN RANGE* (Island Press 1992).

60. National Wildlife Fed'n v. BLM, 140 IBLA 85 (1997); see also Southwest Ctr. for Biological Diversity v. U.S. Forest Serv., 82 F. Supp. 2d 1070, 30 ELR 20354 (D. Ariz. 2000); Pacific Rivers Council v. Thomas, 936 F. Supp. 738, 27 ELR 20163 (D. Idaho 1996); Oregon Natural Desert Ass'n v. Green, 953 F. Supp. 1133, 27 ELR 20858 (D. Or. 1997).

61. See Doc & Connie Hatfield, *Trout Creek Mountain Working Group*, at <http://www.mtnvisions.com/Aurora/tcmwghat.html> (Nov. 15, 2000); Ron Rhew, *Oregon Lahontan Cutthroat Trout, and Results of Six Years of Management Developed by the Trout Creek Working Group*, at <http://www.mtnvisions.com/Aurora/ronrhew.html> (Nov. 15, 2000); Tom Knudson, *The Ranch Restored: An Overworked Land Comes Back to Life*, HIGH COUNTRY NEWS, Mar. 1, 1999, at 13; David E. Brown, *The Trout Creek Mountain Experience*, 58 WILDERNESS 28 (1995).

62. See Kelly Cash, *Malpai Borderlands: The Searchers for Common Ground*, in *CROSS THE GREAT DIVIDE*, *supra* note 24, at 112; William McDonald & Ronald J. Bemis, *Community Involvement and Sustainability: The Malpai Borderlands Effort*, in *NATURE AND HUMAN SOCIETY: THE QUEST FOR A SUSTAINABLE WORLD* 596 (Peter H. Raven ed., National Academy Press 1997).

Dams, Floods, and River Restoration

Numerous ecological restoration projects are now focused on restoring degraded river ecosystems.⁶³ Across the country, federal and local officials have begun to remove antiquated smaller dams from rivers in order to restore a free flowing water regime and improve aquatic habitat conditions. In the Northwest, the NPS is moving forward with the Elwha River dam removal proposal in order to unclog historic salmon migration routes into the Olympic National Park backcountry.⁶⁴ In the Columbia River drainage, many observers contend that the only way to restore salmon runs is to breach the lower Snake River dams, which have created slackwater reservoirs that impede the juvenile smolts as they journey downriver to the ocean. Although the federal agencies, citing the costs involved, have thus far resisted these dam removal proposals, they are actively employing alternative engineering strategies to restore salmon runs, most notably an elaborate fish barging program that has so far met with limited success.⁶⁵ Other recent river restoration initiatives have involved restoring cyclical floods to dammed rivers in an effort to emulate high-flow, spring runoff conditions that shaped these river ecosystems over the centuries. In one highly publicized experiment, the Bureau of Reclamation modified its Glen Canyon dam water releases in order to mimic the spring flood conditions that historically characterized the Colorado River ecosystem.⁶⁶ In total, the various river restoration initiatives acknowledge that dams have significantly altered many western watersheds, and that it is time to begin restoring the myriad ecological benefits that free flowing rivers provide. Only time will tell whether any major dams will fall.

Restoration on a Regional Scale: Interior Columbia Basin Ecosystem Management Project (ICBEMP) and Beyond

On an even grander scale, the Forest Service and the BLM have jointly collaborated on the multiyear ICBEMP planning initiative that proposed giving ecological restoration

priority in managing over 63 million acres of public land in 4 different states. The ICBEMP project was driven by concern over declining salmon runs and clear evidence that excessive timber harvesting, grazing, and road building had significantly altered regional ecological conditions and enhanced fire risks across the region.⁶⁷ Chastened by the spotted owl controversy on the region's west-side forests, the federal agencies sought to avoid such a conflict on the east-side public lands, which could shut down logging operations and disrupt rural economies across the region. Although the courts temporarily halted timber sales following the National Marine Fisheries Service's (NMFS') decision to list the Snake River chinook salmon under the ESA,⁶⁸ the agencies were able to devise interim protective management standards, and thus avoid a prolonged cessation in activities. But once the ICBEMP project released its initial findings, local congressmen intervened into the process and forced the agencies to reevaluate linkages between the area's rural communities and public land extractive industries. Not surprisingly, the subsequent report concluded that any significant change in federal logging levels and related policies could adversely affect these communities.⁶⁹ Nonetheless, the agencies initially endorsed a new regionwide management policy designed to "aggressively restore ecosystem health through active management, the results of which resemble endemic disturbance processes, including insects, disease, and fire."⁷⁰

That proposal, however, proved just the opening salvo in what was to become an increasingly contentious regional ecosystem restoration experiment. The timber industry and local communities objected that the plan lacked any specific commitment to productive economic activities; environmentalists condemned its emphasis on active management and the absence of protected nature reserves; and the federal regulatory agencies—namely the FWS, the NMFS, and the U.S. Environmental Protection Agency—responded that the project's emphasis on active restoration, particularly the forecasted increase in timber harvesting, could imperil terrestrial and aquatic habitat as well as water quality. Faced with this overwhelmingly negative reaction to the initial ICBEMP restoration proposal, Congress reentered the fray and threatened to defund the entire project.⁷¹

In response, the agencies reiterated their commitment to an active restoration agenda as "the best strategy for: restoring the health of the forests, rangelands, and aquatic-ripar-

63. See Ludwik A. Teclaff & Eileen Teclaff, *Restoring River and Lake Ecosystems*, 34 NATURAL RESOURCES J. 905 (1994). See also Denise D. Fort, *Restoring the Rio Grande: A Case Study in Environmental Federalism*, 28 ENVTL. L. 1 (1998).

64. See Pub. L. No. 102-495, 106 Stat. 3173 (1992); U.S. DOI, NPS, ELWHA RIVER ECOSYSTEM RESTORATION IMPLEMENTATION FINAL ENVIRONMENTAL IMPACT STATEMENT (1996); Phillip M. Bender, *Restoring the Elwha, White Salmon, and Rogue Rivers: A Comparison of Dam Removal Proposals in the Pacific Northwest*, 17 J. LAND RESOURCES & ENVTL. L. 189 (1997); Robert C. Wunderlich et al., *Restoration of the Elwha River Ecosystem*, FISHERIES, Aug. 1994, at 11. See also William Booth, *Across Pacific Northwest, Downward Trend for Dams: Oregon Set to Dismantle Two; Effort Will Aid Salmon Runs*, WASH. POST, Nov. 20, 2002, at A3.

65. See MICHAEL C. BLUMM, SACRIFICING THE SALMON: A LEGAL AND POLICY HISTORY OF THE DECLINE OF THE COLUMBIA BASIN SALMON (Bookworld Publications 2002); John M. Volkman, *How Do You Learn From a River? Managing Uncertainty in Species Conservation Policy*, 74 WASH. L. REV. 719 (1999). See generally Christine A. Klein, *On Dams and Democracy*, 78 OR. L. REV. 641 (1999).

66. See Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, 106 Stat. 4669; U.S. DOI, U.S. BUREAU OF RECLAMATION, OPERATION OF GLEN CANYON DAM FINAL ENVIRONMENTAL IMPACT STATEMENT (1995); Michael Conner, *Extracting the Monkey Wrench From Glen Canyon Dam: The Grand Canyon Protection Act—An Attempt at Balance*, 15 PUB. LAND L. REV. 135 (1994). See also Colby & d'Estree, *supra* note 28, at 392 (describing a flood release proposal for the Friant Dam on the San Joaquin River).

67. USDA, U.S. FOREST SERV. & U.S. DOI, BLM, INTEGRATED SCIENTIFIC ASSESSMENT FOR ECOSYSTEM MANAGEMENT IN THE INTERIOR COLUMBIA BASIN 68 (1996).

68. Pacific Rivers Council v. Thomas, 30 F.3d 1050, 24 ELR 21367 (9th Cir. 1994); Pacific Rivers Council v. Thomas, 873 F. Supp. 365, 25 ELR 20765 (D. Idaho 1995); Pacific Rivers Council v. Thomas, 897 F. Supp. 454, 25 ELR 20809 (D. Idaho 1995) (dissolving earlier injunction).

69. U.S. DOI, BLM, ECONOMIC AND SOCIAL CONDITIONS OF COMMUNITIES, INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT (1998).

70. 1 USDA, U.S. FOREST SERV. & U.S. DOI, BLM, EAST-SIDE DRAFT ENVIRONMENTAL IMPACT STATEMENT 3-28 (1996). See also J. FORESTRY, Oct. 1998, at 4-46.

71. U.S. GAO, ECOSYSTEM PLANNING: NORTHWEST FOREST AND INTERIOR COLUMBIA RIVER BASIN PLANS DEMONSTRATE IMPROVEMENTS IN LAND-USE PLANNING, app. II, at 4.3.1 (1999). See also Jack Ward Thomas & Jory Ruggerio, *Politics and the Columbia Basin Assessment—Learning From the Past and Moving to the Future*, 19 PUB. LAND & RESOURCES L. REV. 33 (1998).

ian ecosystems in the project area; recovering plant and animal species (including fish) species; avoiding future species listings; and providing a predictable level of goods and services”⁷² To placate Congress, the ICBEMP planners eschewed rigid regional management standards and instead devised general strategies for restoring landscape-scale ecological processes (including prescribed burning), improving terrestrial habitat for diverse indigenous species, and reinvigorating aquatic habitat and riparian conditions. These strategies included the creation of designated nature reserve areas, a tiered analysis process designed to integrate planning and project decisions, and adaptive management techniques, including a monitoring and evaluation program. Under the proposal, logging was expected to increase by 5%, though many of the sales would be stewardship sales involving smaller logs; grazing was expected to decrease by 10%; and prescribed burning would increase by more than 700%—all of which was predicted to create 4,000 new public land-related jobs.⁷³ But the ICBEMP plan was completed during the waning days of the Clinton Administration and the accompanying record of decision was never signed, leaving the proposal in political and legal limbo.

The Bush Administration, rather than endorse the binding standards contained in the final ICBEMP proposal, has instead significantly reshaped the initiative. Confronted with an assortment of unhappy constituencies, estimated implementation costs that could exceed \$67 million annually, and the prospect of legal challenges that could delay agency planning throughout the basin, the Bush Administration adroitly converted the ICBEMP initiative from a multi-agency action document into a less imposing strategy document. The new strategy document—endorsed through a memorandum of understanding signed by the affected land management and regulatory agencies—incorporates the final EIS’ fundamental commitment to ecosystem restoration without mandating specific planning or species recovery standards. Drawing upon the wealth of scientific and other information developed during the extended multiyear project, it articulates general principles for land management agencies to utilize in their planning and project decision processes. It calls upon them to consider terrestrial and aquatic habitat protection and restoration opportunities, to utilize multiscale environmental analyses, to coordinate among themselves and with neighbors, and to employ adaptive management techniques. But where the original ICBEMP proposal would have set clear resource management priorities and standards, the strategy document is purposefully more flexible, giving individual national forests and BLM districts greater leeway in how they implement its principles to accommodate local circumstances. Moreover, this more flexible approach reflects the uneasy tension that persists between the land management agencies (whose primary concern is overseeing their own individual resources) and

the regulatory agencies (whose statutorily mandated focus is on regionwide species conservation and environmental quality concerns). Now lacking real legal teeth, the expansive and expensive ICBEMP experiment may have pushed untested ecosystem management and restoration concepts to their geographic and political limits.⁷⁴

Elsewhere, the federal government has undertaken other large-scale ecosystem restoration projects, which variously aim to restore degraded public lands, free flowing rivers, and native biodiversity. Most of the projects employ an integrated, ecosystem-based planning process, using regional assessments to marry ecological restoration goals with local economic and social concerns. In California’s Sierra Nevada mountains, the federal public land agencies sponsored the Sierra Nevada Ecosystem Project; they initially completed a regional assessment and then prepared a regional EIS that significantly revised forest management policies in response to forest health, fire, and biodiversity conservation concerns.⁷⁵ Other major ecological restoration initiatives include the massive South Florida Everglades project to restore free flowing water to the Everglades National Park environment, the San Francisco Bay Delta project (nicknamed CALFED) to enhance freshwater flows into San Francisco Bay to protect its fragile ecology and safeguard endangered salmon runs, and the southern Appalachian Man and the Biosphere program to promote sustainable development and ecosystem management in the region.⁷⁶ With variations, similar regional restoration proposals have surfaced in the Greater Yellowstone Ecosystem, southern Rockies, Colorado Plateau, and Great Basin.⁷⁷ Collectively, the breadth

72. USDA, U.S. FOREST SERV. & U.S. DOI, BLM, INTERIOR COLUMBIA BASIN SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT ch. 1, at 17 (2000) [hereinafter INTERIOR COLUMBIA BASIN SUPPLEMENTAL DEIS]; USDA, U.S. FOREST SERV. & U.S. DOI, BLM, INTERIOR COLUMBIA BASIN FINAL ENVIRONMENTAL IMPACT STATEMENT, PROPOSED DECISION 1 (2000).

73. USDA, U.S. FOREST SERV. & U.S. DOI, BLM, REPORT TO THE CONGRESS ON THE INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT 21-33 (2000) [hereinafter ICBEMP REPORT TO CONGRESS]; INTERIOR COLUMBIA BASIN SUPPLEMENTAL DEIS SUMMARY, *supra* note 72, at 23.

74. See U.S. FOREST SERV. ET AL., THE INTERIOR COLUMBIA BASIN STRATEGY: A STRATEGY FOR APPLYING THE KNOWLEDGE GAINED BY THE INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT TO THE REVISION OF FOREST AND RESOURCE MANAGEMENT PLANS AND PROJECT IMPLEMENTATION (2002); Natalie Henry, *Columbia River Basin: Feds Abandon Regional Ecosystem Management Project*, LAND LETTER, Feb. 27, 2003, at 7. See also Lorna Jorgensen, *The Move Toward Participatory Democracy in Public Land Management Under NEPA: Is It Being Thwarted by the ESA?*, 20 J. LAND RESOURCES & ENVTL. L. 311 (2000).

75. See 1 CENTER FOR WATER AND WILDLAND RESOURCES, STATUS OF THE SIERRA NEVADA: ASSESSMENT SUMMARIES AND MANAGEMENT STRATEGIES (University of California, Davis 1996); USDA, U.S. FOREST SERV., SIERRA NEVADA FOREST PLAN AMENDMENT FINAL ENVIRONMENTAL IMPACT STATEMENT (2001). See also Lawrence Ruth, *Conservation on the Cusp: The Reformation of National Forest Policy in the Sierra Nevada*, 18 UCLA J. ENVT. L. & POL’Y 1 (1999/2000); TIMOTHY P. DUANE, SHAPING THE SIERRA: NATURE, CULTURE, AND CONFLICT IN THE CHANGING WEST (University of California Press 1999).

76. See, e.g., Alfred R. Light, *Ecosystem Management in the Everglades*, NAT. RESOURCES & ENV’T, Winter 2000, at 166; Cory W. Borish et al., *Conducting Regional Environmental Assessments: The Southern Appalachian Experience*, in ECOSYSTEM MANAGEMENT FOR SUSTAINABILITY: PRINCIPLES AND PRACTICES ILLUSTRATED BY A REGIONAL BIOSPHERE RESERVE COOPERATIVE 117 (John D. Peine ed., Lewis Publishers 1999); Elizabeth Ann Rieke, *The Bay-Delta Accord: A Stride Toward Sustainability*, 67 U. COLO. L. REV. 341 (1996); Robert J. Glennon & John E. Thorson, *Federal Environmental Restoration Initiatives: An Analysis of Agency Performance and the Capacity for Change*, 7 ARIZ. L. REV. 483, 516-21 (2000).

77. See, e.g., GREATER YELLOWSTONE COALITION, SUSTAINING GREATER YELLOWSTONE: A BLUEPRINT FOR THE FUTURE (1994); GRAND CANYON TRUST, BEYOND THE BOUNDARIES: THE HUMAN AND NATURAL COMMUNITIES OF THE GREATER GRAND CANYON (1997); FOREST FRAGMENTATION IN THE SOUTHERN ROCKY MOUNTAINS (Richard L. Knight et al. eds., University Press of Colorado 2000); BLM, THE GREAT BASIN: HEALING THE LAND (2000).

and scope of the projects and proposals are striking, though the actual on-the-ground results are still subject to debate.

Surveying the Road Ahead

As these new ecological restoration programs take hold on the West's public lands and waterways, several difficult issues must yet be addressed. First, pervasive federal, state, and local tensions have resurfaced in response to these initiatives, highlighting the need to reconcile federal ecological restoration goals with local economic interests, traditional state jurisdictional prerogatives, and similar concerns. Second, given the scientific and other complexities inherent in ecological restoration, its proponents are still divided over appropriate restoration goals as well as the degree of active intervention necessary to achieve those goals. Third, because many of the existing or proposed initiatives involve costly restoration strategies, proponents must begin to identify potential revenue sources to pay for these projects. Finally, with the advent of the Bush Administration and its new public land priorities, the federal enthusiasm for ecological restoration may have begun to wane, posing the question of just how durable many of these initiatives really are.

Federalism conflicts are not new to the West, but they could undermine the nascent ecological restoration agenda. Whether the restoration objective is wolves, fire, or the entire Interior Columbia Basin ecosystem, local resistance could undo even the most elegantly designed initiative. Although the new restoration initiatives may have altered traditional management priorities, state and local concerns are being addressed in the process, as they must be. Virtually every federal restoration initiative has entailed numerous public involvement opportunities as well as related social and economic impact studies. As importantly, most of the restoration initiatives are linked to emergent collaborative conservation principles, which has brought local citizen-driven groups, partnerships, and the like into federal agency decision processes.⁷⁸ The Bitterroot grizzly bear reintroduction proposal, for example, contemplated a citizen management committee that would have been responsible for establishing local bear management policy, reflecting an unprecedented federal willingness to relinquish significant endangered species oversight authority. Federal fire policy revisions have focused on local safety and property protection concerns; the Western Governors' Association has played a key role in promoting these modifications, while citizen initiatives like the Greater Flagstaff Forests Partnership have introduced shared decisionmaking into the forest restoration agenda.⁷⁹ To the extent that restoration proposals are perceived as threatening local industries or communities, proponents of these projects must be prepared to demonstrate that they offer realistic alternative economic opportu-

nities that can enhance community welfare. The key is to conceive of ecological restoration as a joint enterprise, one that seeks to ensure local engagement and to accommodate related economic concerns.

Ecological restoration policy is still mired in contentious debates linked to competing utilitarian and preservation views of nature. Although the fundamental goal of ecological restoration is to reestablish natural or historic pre-disturbance conditions, there is no consensus over how these targeted conditions are determined or what historical era should be used as the appropriate reference point. Some argue that pre-settlement conditions are not a credible restoration target, both because Native Americans had already reshaped the environment before European settlers arrived and because ecosystems are inherently dynamic and unstable over time.⁸⁰ Others believe that the pre-European environment is an appropriate reference point, noting that Native American practices had a limited impact on the regional environment while acknowledging the ever-changing nature of ecosystems.⁸¹ To address these concerns, ecological restoration goals can be framed in terms of the trajectory of evolutionary change, the ultimate task being to bring the system back into a more natural evolutionary pattern.⁸² Restoration policy also must confront the question of intrusiveness: when is it appropriate to intervene intensively with engineering solutions, and when should nature be left to take its own course? There may be no easy or universally applicable answer to this problem. If the ecosystem is not severely damaged or if evolutionary patterns of change are not seriously askew, then reliance upon natural evolutionary processes may be sufficient to mend the damage without intensive human intervention. But if that is not the case, then some degree of human intervention—selective thinning, captive breeding, prescribed burning, and the like—may be necessary to move ecological conditions back within evolutionary patterns of change.⁸³ Given the complexity of any ecosystem, managerial caution and humility should be the watchword in any event. This argues for an adaptive management strategy that utilizes inventory, monitoring, and adjustment protocols.⁸⁴ With these safeguards, it should be possible to move forward with an expansive ecological restoration agenda, recognizing that there is really little dispute over the need to begin repairing the worst errors of the past.

78. On the collaborative conservation movement, see RONALD D. BRUNNER ET AL., *FINDING COMMON GROUND: GOVERNANCE AND NATURAL RESOURCES IN THE AMERICAN WEST* (Yale Univ. Press 2002); JULIA M. WONDOLLECK & STEVEN L. YAFFEE, *MAKING COLLABORATION WORK: LESSONS FROM INNOVATION IN NATURAL RESOURCE MANAGEMENT* (Island Press 2001); *ACROSS THE GREAT DIVIDE*, *supra* note 24.

79. See USDA ET AL., *NATIONAL FIRE PLAN, A COLLABORATIVE APPROACH FOR REDUCING WILDLAND FIRE RISKS TO COMMUNITIES AND THE ENVIRONMENT: 10-YEAR COMPREHENSIVE STRATEGY 2-3* (2001); see also <http://www.fireplan.gov/> (last visited Nov. 20, 2002).

80. See Thomas M. Bonnicksen et al., *Native American Influences on the Development of Forest Ecosystems*, in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 439; *WILDERNESS AND POLITICAL ECOLOGY: ABORIGINAL INFLUENCES AND THE ORIGINAL STATE OF NATURE* (Charles E. Kay & Randy T. Simmons eds., University of Utah Press 2002).

81. See Covington et al., in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 599; James G. Kenna et al., *Ecosystem Restoration: A Manager's Perspective*, in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 619.

82. See Covington et al., in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 602-03; LANGSTON, *supra* note 49, at 274-78. See also Penelope Morgan et al., *Historical Range of Variability: A Useful Tool for Evaluating Ecosystem Change*, in *ASSESSING FOREST ECOSYSTEM HEALTH IN THE INLAND WEST*, *supra* note 49, at 87.

83. See Covington et al., in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 605-06; Kenna et al., in *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 620-30.

84. On the concept and practice of adaptive management, see Bernard T. Bormann et al., *Adaptive Management*, in 3 *ECOLOGICAL STEWARDSHIP*, *supra* note 17, at 505; KAI N. LEE, *COMPASS AND GYROSCOPE: INTEGRATING SCIENCE AND POLITICS FOR THE ENVIRONMENT* (Island Press 1993); CARL J. WALTER, *ADAPTIVE MANAGEMENT OF RENEWABLE RESOURCES* (McGraw Hill 1986).

The sheer size, complexity, and duration of many ecological restoration initiatives make them expensive propositions, raising the question of how to pay for these programs. In the case of the ICBEMP initiative, for example, the cost exceeded \$40 million just to produce the final plan, related studies, and environmental documents, and that figure does not include the estimated \$67 million annual implementation costs associated with the preferred alternative.⁸⁵ Although the ICBEMP projections forecast 4,000 new public land-related jobs, this may not translate into enough local political support to ensure long-term congressional funding. Are alternative funding arrangements available to support such projects? Congress might consider creating an ecosystem restoration trust fund, deriving the necessary revenue from an earmarked fee (or tax) imposed upon the activities of timber operators, miners, ranchers, recreationists, and other public land users.⁸⁶ Congress also might conditionally allocate a portion of these trust funds to state and local governments to encourage them to coordinate with their federal neighbors, which would thus expand the scope of these embryonic ecological restoration efforts. In addition, Congress might encourage private landowners and others to participate in these efforts through targeted tax breaks, federal grants, or similar incentives.⁸⁷ Moreover, drawing upon the liability provisions in the Oil Pollution Act of 1990, Congress might consider creating a natural resource damage cause of action designed to recover the costs for restoring despoiled public land resources from those responsible for the damage.⁸⁸ Relatedly, Congress should neither encourage nor subsidize private behavior contrary to established ecological restoration goals; it should not, for example, offer federal disaster insurance to homeowners who build in the urban-wildland interface zone where forest fires are a very real likelihood.⁸⁹ Until secure funding sources are estab-

lished and carefully targeted toward coordinated restoration efforts, the most ambitious projects in the ecological restoration agenda may languish, regardless of their merits.

The Bush Administration has a public lands agenda that diverges significantly from the Clinton Administration's endorsement of large scale ecological restoration initiatives. Accelerated energy production is right at the top of its priorities,⁹⁰ while ecosystem management ideas barely rate a mention. That does not mean, however, that ecological restoration has disappeared from the agenda or that it will fade away. Wolf restoration is a virtual fait accompli, locally conceived range restoration initiatives have developed a momentum of their own, and the ecological importance of fire cannot be ignored (though the public land agencies now seem more intent on promoting legal reform than revising forest management practices).⁹¹ The Everglades initiative is also still on course, but the Bush Administration has reshaped the ICBEMP initiative, and its enthusiasm for the Sierra Nevada initiative appears lukewarm at best, signaling a likely retrenchment away from large-scale regional planning strategies.⁹² Although this squares with the Bush Administration's rhetorical commitment to empowering local communities, it ignores the underlying ecological and legal realities that have driven public land policy toward regional planning. Laws like the ESA, NEPA, and even the NFMA—as interpreted by the courts—have virtually forced the public land agencies to expand the scale of their planning efforts and to pursue an active restoration agenda.⁹³ The payoff is not just a healthier environment, but a more productive landscape too. Indeed, an ecologically healthy landscape could bring a measure of stability to the traditional extractive industries while also supporting the new recreation and other amenity-based industries that have assumed an ever-more prominent role within western communities.⁹⁴ Thus, even if the Bush Administration derails individual restoration initiatives, the long-term trend is decidedly in this direction, as reflected in the nation's shifting economic and social priorities.

85. See U.S. FOREST SERV. & BLM, REPORT TO THE CONGRESS ON THE INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT 18 (2000). See also U.S. GAO, ECOSYSTEM PLANNING: NORTHWEST FOREST AND INTERIOR COLUMBIA BASIN PLANS DEMONSTRATE IMPROVEMENTS IN LAND-USE PLANNING (1999).

86. See Glennon & Thorson, *supra* note 76, at 524 n.281 (proposing an American Heritage Fund to support watershed restoration initiatives). See also 30 U.S.C. §§1231-1243, ELR STAT. SMCRA §§401-414 (creating the abandoned mine reclamation fund); Pub. L. No. 107-63, 115 Stat. 466 (2001) (reauthorizing the experimental recreation fee demonstration program that enables the public land agencies to charge access fees which are then earmarked for local maintenance and rehabilitation purposes); cf. RANDALL O'TOOLE, REFORMING THE FOREST SERVICE 216 (Island Press 1988) (suggesting creation of a wilderness trust fund). To minimize future restoration costs, Congress also should impose explicit legal restoration obligations on anyone who extracts or intensively uses public land resources, delegating authority to the responsible management agency to establish specific restoration standards through its planning processes. See, e.g., 30 U.S.C. §§1265, 1273, ELR STAT. SMCRA §§515, 523 (establishing standards for restoring strip-mined lands).

87. See Barton H. Thompson Jr., *Providing Biodiversity Through Policy Diversity*, 38 IDAHO L. REV. 355 (2002); David Farrier, *Conserving Biodiversity on Private Land: Incentives for Management or Compensation for Lost Expectations?*, 19 HARV. ENVTL. L. REV. 303 (1995).

88. See 33 U.S.C. §§2701-2761, ELR STAT. OPA §§1001-7001; 15 C.F.R. pt. 990 (2002). See also James L. Nicoll, *The Irrationality of Economic Rationality in the Restoration of Natural Resources*, 42 ARIZ. L. REV. 463 (2000).

89. The federal government, however, must be prepared to compensate homeowners in the event an agency-ignited prescribed fire rages out of control (as occurred at Los Alamos in 2000), something that it has

regularly accomplished through private bills. *But see* McDougal v. U.S. Forest Serv., 195 F. Supp. 2d 129 (D. Or. 2002); Thune v. United States, 41 Fed. Cl. 49 (Fed. Cl. 1998).

90. See WHITE HOUSE, RELIABLE, AFFORDABLE, AND ENVIRONMENTALLY SOUND ENERGY FOR AMERICA'S FUTURE: REPORT OF THE NATIONAL ENERGY POLICY DEVELOPMENT GROUP (2001).

91. See PRESIDENT'S HEALTHY FORESTS INITIATIVE, *supra* note 48.

92. See *Enviros Feel They're on Short End of Sierra Nevada Stick*, PUB. LAND NEWS, Mar. 15, 2002, at 8; *USDA Lets Sierra Nevada Plan Stand; Lawsuits Expected Next*, PUB. LAND NEWS, Jan. 4, 2002, at 9.

93. See, e.g., *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 25 ELR 20711 (W.D. Wash. 1994), *aff'd sub nom.* *Seattle Audubon Soc'y v. Moseley*, 80 F.3d 1401, 26 ELR 20980 (9th Cir. 1996); *Pacific Rivers Council v. Thomas*, 30 F.3d 1050, 24 ELR 21367 (9th Cir. 1994); see also Robert B. Keiter et al., *Legal Perspectives on Ecosystem Management: Legitimizing a New Federal Land Management Policy*, in 3 ECOLOGICAL STEWARDSHIP, *supra* note 17, at 9.

94. See, e.g., THOMAS M. POWER & RICHARD BARRETT, COWBOY ECONOMICS: PAY AND PROSPERITY IN THE NEW AMERICAN WEST (Island Press 2001); THOMAS M. POWER, LOST LANDSCAPES AND FAILED ECONOMIES: THE SEARCH FOR A VALUE OF PLACE (Island Press 1996); Robert B. Keiter, *Change Comes to the Public Lands: New Forces, Directions, and Policies*, 46 ROCKY MTN. MIN. L. INST. 3-1 (2000); Raymond Rasker, *A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands*, 65 U. COLO. L. REV. 369 (1994).

Conclusion

Not long ago, it was federal policy to eradicate predators, suppress all fires, harvest old growth timber, and dam free flowing rivers with little or no regard for the environmental consequences of these policies. Now, however, the federal government has begun repairing the costly legacies of these often short-sighted policies. Wolves have been restored to their native habitat in several corners of the West, fires have come to be regarded as a critical natural process and allowed to burn in select locations, forests are being seen as valuable ecological strongholds rather than mere

tree farms, and serious discussions are afoot to remove some dams and other diversion projects. Although many westerners remain skeptical of these new restoration policies, the gathering evidence suggests that a restored landscape offers manifold benefits without unduly disrupting community life. As this is borne out on the ground and as local residents are more fully integrated into planning efforts, the pace and scale of ecological restoration may well begin to accelerate. Neither the technical challenges nor political obstacles involved in restoring native ecosystems will disappear, but they may not prove as daunting as originally thought.