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Abbreviations

| | |
|--------|--|
| ACS | Aquatic Conservation Strategy |
| AMA | adaptive management area |
| APHIS | USDA Animal and Plant Health Inspection Service |
| BLM | Bureau of Land Management |
| CCA | Candidate Conservation Agreement |
| CEQ | Council on Environmental Quality |
| DSEIS | Draft SEIS |
| DFWP | Department of Fish, Wildlife, and Parks |
| EIS | environmental impact statement |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act of 1973 |
| ESC | executive steering committee |
| FEMAT | Forest Ecosystem Management Assessment Team |
| FLPMA | Federal Land Policy and Management Act of 1976 |
| FSEIS | Final EIS |
| FWS | US Fish and Wildlife Service |
| GAO | Government Accountability Office |
| GYC | Greater Yellowstone Coalition |
| GYCC | Greater Yellowstone Coordinating Committee |
| GYE | Greater Yellowstone Ecosystem |
| HCA | Habitat Conservation Area |
| HCP | habitat conservation plan |
| IBMP | Interagency Bison Management Plan |
| ICBEMP | Interior Columbia Basin Ecosystem Management Project |
| ICRB | Interior Columbia River Basin |
| IGBST | Interagency Grizzly Bear Study Team |
| INFISH | Inland Native Fish Strategy |
| LCAT | Labor and Community Assistance Team |
| MOU | Memorandum of Understanding |
| MUSY | multiple use and sustained yield |
| NAS | National Academy of Sciences |
| NBS | National Biological Survey |
| NEPA | National Environmental Policy Act of 1969 |

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| | |
|---------|---|
| NFMA | National Forest Management Act of 1976 |
| NMFS | National Marine Fisheries Service |
| NPS | National Park Service |
| NWFP | Northwest Forest Plan |
| PACFISH | Interim Strategies for Managing Anadromous Fish- Producing Watersheds |
| PARC | Division of Predator and Rodent Control (US Fish and Wildlife Service) |
| RCA | riparian conservation area |
| RIEC | Regional Interagency Executive Committee |
| REO | Regional Ecosystem Office |
| ROD | Record of Decision |
| S&M | Survey and Manage |
| SBO | supplemental biological opinion |
| SDEIS | Supplemental Draft EIS |
| SIT | Science Integration Team |
| SEIS | Supplemental EIS |
| USGS | US Geological Survey |



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Introduction

“It has become apparent that we are witnessing one of the most interesting periods in natural resource management since the heady days of Progressivism.”

— John Freemuth, “The Emergence of Ecosystem Management: Reinterpreting the Gospel?” (1996)

“Some have suggested that these differences amount to no less than a radical revision of professional perspectives, values, and management practices—in other words, a paradigm shift.”

— Hanna Cortner and Margaret Moote, *The Politics of Ecosystem Management* (1999)

“Is a new era dawning on the western public domain?”

— Robert Keiter, *Keeping Faith with Nature* (2003)

Background

In the 1990s, scholars, policymakers, land managers, and many others were talking about a “new paradigm” for federal lands and resources: ecosystem management. Advocates of this new approach promised that it would yield a host of benefits: integrating federal land and resource management across jurisdictional boundaries; protecting biodiversity *and* economic development; and making federal management more collaborative and less hierarchical. And it could do all of this, if necessary, without any major legislative changes by using the vast discretionary authority that Congress had delegated to the executive branch.

Why did federal agencies need a new paradigm? In brief, ecosystem management proponents argued, the existing paradigms—preservation and multiple-use conservation—could no longer meet the ecological, legal, or political realities the agencies faced. They were neither comprehensive enough nor coherent enough to deal with the

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complex challenges of managing the federal estate: national park managers could not mitigate external threats on their own; the US Fish and Wildlife Service (FWS) could not keep up with its Endangered Species Act obligations, finding the act's species-based approach expensive and time-consuming; and the Bureau of Land Management (BLM) and the Forest Service could not sustain existing levels of resource development—logging, grazing, and mining—without endless rounds of environmental litigation. As one political scientist had been arguing since the 1960s, “Our national tendency is to deal with environmental problems segmentally [which] has again and again produced some very impractical results.”¹

Proponents offered ecosystem management as a new paradigm that was, above all else, a comprehensive paradigm sufficient to transcend and integrate preservation and conservation. Ecosystem management did not reject preservation and conservation; it simply reframed them in more comprehensive ecological and political terms. Indeed, it gained broad support in the 1990s in part because it was broad enough to afford wide-ranging definitions that appealed to preservationists and conservationists alike. As environmentalist Andy Kerr wrote skeptically, “*ecosystem management* was born of crisis—an ecological crisis that expanded into a political crisis. It was born to appeal to (and to appease) all factions. Environmentalists hear ‘ecosystem,’ while industrialists hear ‘management.’”²

In the 1990s support emerged for different models of ecosystem management. Some embraced *ecosystem* management as a new, substantive paradigm that required federal agencies to prioritize biodiversity and ecosystem integrity above other land and resource values, within the limits of existing law. They saw ecosystem management as an ecological reinterpretation of the preservation paradigm. The FWS, for example, embraced ecosystem management as a broader approach to its strict preservation requirements under the Endangered Species Act (ESA) of 1973. Others saw *ecosystem management* as a procedural paradigm that simply enlarged the emphases of multiple-use management to include a wider range of ecological, economic, and social goals. The Forest Service, for example, explained that ecosystem management was simply a more holistic form of multiple-use decision making that emphasized the insights of ecology and accountability from extensive public participation to ensure a sustainable yield of diverse resources.

Academic scholarship in the 1990s also advanced wide-ranging

definitions and emphases. Some scholars described ecosystem management as a substantive paradigm that prioritized ecological protection; some described it as a procedural paradigm that resolved tensions between ecological protection and resource development through inclusive deliberation. In 1994, biologist R. Edward Grumbine published one of the most widely cited essays on the topic, entitled “What Is Ecosystem Management?” Surveying the existing literature, primarily in the biological sciences, Grumbine identified ten common themes suggesting that ecosystem management was a substantive paradigm focused on environmental protection: “Ecosystem management integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term.”³ Indeed, Grumbine argued, it served as “an early stage in a fundamental reframing of how humans value nature . . . adjusting management to stave off mass extinctions and habitat destruction will not only help to reduce our negative impact on the biosphere but will also give us the opportunity to reinterpret our place on the planet as one species among many.”⁴

In 1999, social scientists Hanna Cortner and Margaret Moote likewise explained in *The Politics of Ecosystem Management* that “the overall goal of ecosystem management is sustaining ecological attributes and functions into perpetuity.” However, they emphasized institutional and procedural elements of the approach, arguing that ecosystem management rested on four main principles: “(1) socially defined goals and objectives; (2) holistic, integrated science; (3) adaptable institutions; and (4) collaborative decision making.”⁵ For scholars, then, interpretations of ecosystem management differed in the relative weight placed on substantive vs. procedural goals. Some advocated for *ecosystem management*; some advocated for ecosystem *management*.

The Clinton administration, which championed ecosystem management in the 1990s, was careful to accommodate these diverse interpretations. For example, the Interagency Ecosystem Management Task Force (IEMTF), which Vice President Gore established in 1993, described ecosystem management variously as a “method for sustaining or restoring natural systems and their functions and values,” “a common sense way for public and private managers to carry out their mandates with greater efficiency,” “a mechanism for resolving conflicts that protects our national economy and the resources on which it is based,” and an approach that “helps build local and regional consensus.”⁶ One did

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not need to choose between environmental protection and resource development, the task force suggested; in ecosystem management, one could enjoy both. Furthermore one did not need to choose between substantive and procedural goals; in ecosystem management one could have substantive goals of ecosystem protection and resource development as well as procedural goals of scientific assessment and open, democratic deliberation: “The goal of the ecosystem approach is to restore and sustain the health, productivity, and biological diversity of ecosystems . . . based on a collaboratively developed vision of desired future conditions.”⁷

Ecosystem management’s broad, or ambiguous, definition was key to its political appeal and enabled eighteen federal agencies with diverse missions, cultures, mandates, and clientele to adopt ecosystem management as official policy in the 1990s. The agencies, ecosystem management proponents argued, had simply focused too narrowly on jurisdictional boundaries, specific resource flows, and expert judgment. If agencies would reframe their work as adaptive and collaborative management of large-scale ecosystems, they could resolve the paradoxes that plagued federal land and resource management. Mike Dombeck, an acting BLM director and later Forest Service chief in the 1990s, wrote with two co-authors, “Sometimes the wrong solutions are applied because the overall goal of land management was mistaken in the first place. If the goal is systemwide—such as restoring the overall health of the watershed—then the proper solution becomes obvious.”⁸ The larger planning scales would make it easier to find room for both protection and use, and collaboration would help agencies and the public form shared goals and resolve conflicts outside the courts. In short, ecosystem management gained popularity because it promised to turn adversarial, zero-sum conflicts into win-win management opportunities.

Said another way, the Clinton administration relied on the broad and ambiguous meaning of ecosystem management in its promise to resolve two basic tensions or paradoxes embedded in federal land and resource management. First, it promised to balance environmental protection and use, arguing that one did not need to choose between protecting ecosystems and developing their resources. Careful planning and management could produce significant timber, forage, minerals, and recreation while simultaneously protecting ecosystem integrity. Second, it promised that scientific expertise and democratic deliberation could work harmoniously in federal land and resource management. These

two sets of commitments—protection and use, and what here will be referred to as scientific authority and democratic authority—certainly do not always conflict. Some management practices, such as a timber harvest designed to enhance wildlife habitat, can advance ecological protection while producing resources. And sometimes expert scientific judgment about how best to protect ecosystems aligns with the majority outcome of public deliberation. What the Clinton administration avoided addressing in any final sense was how it would deal with unavoidable trade-offs between environmental protection and use, and whether it would privilege expert scientific judgments or public opinion when the two conflicted. In other words, the administration avoided the choice between a substantive model of ecosystem management as science-driven ecological protection and a procedural model of ecosystem management as a collaborative and participatory process, informed by scientific information, in which the substantive goals were truly open to debate.

The Clinton administration touted significant successes in ecosystem management, from the Chesapeake Bay to the northwest forests, arguing that the new paradigm had broken through gridlock of the past and opened a new era in federal land and resource management. But critics on both sides expressed disappointment with the trade-offs that emerged in ecosystem management projects. Those who supported *ecosystem* management expressed frustration at compromises between environmental protection and resource production. Those who supported ecosystem *management* complained that instead of providing a genuinely balanced approach, the administration had simply replaced the conservation paradigm with an ecologically oriented preservation paradigm. Ecosystem management, they argued, subordinated human needs to those of other species, and instead of creating win-win solutions, it simply ensured that environmental interests won more often.⁹

When President George W. Bush took office in 2001, those favoring ecosystem *management* found a more sympathetic administration. The new administration rejected the substantive principle of protecting ecological processes and functions over resource outputs and expressed concern about the principle of managing along ecological rather than political boundaries, but it celebrated the principle of adaptive, collaborative management. Interior Secretary Gale Norton, for example, promised over and over again to use “Consultation, Communication, and Cooperation, all in the service of Conservation.” The Bush administration essentially worked to reframe ecosystem management in the rhetoric of

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conservation as efficient use, guided not by scientific or administrative expertise but by cooperation with those who lived and worked on the public lands. The shift prompted a number of scholars to publish essays during the Bush administration with titles such as “Whatever Happened to Ecosystem Management?” and “The U.S. Forest Service: Whither the New Resource Management Paradigm?”¹⁰

Such is the risk of administrative initiatives, which can shift substantially from one president to the next. In the 1990s, with ecosystem management on the ascendency, legal scholars such as Robert Keiter pointed to this vulnerability. In 1996, Keiter wrote, “Within our democratic system, Congress is the ultimate policy-making institution. . . . Until Congress speaks, ecosystem management can only claim a tenuous legitimacy, which also leaves the concept undefined for legal purposes.”¹¹ Congress refused to pass ecosystem management legislation, partly because Republicans who controlled Congress beginning in 1995 generally opposed the Clinton administration’s public land reform initiatives and partly because Congress could not agree on a legal definition of ecosystem management. Senator Mark Hatfield (R-OR) encountered this in 1994 when he introduced an unsuccessful bill that would have given the BLM a procedural ecosystem management mandate.¹² As a result, the paradigm that took shape in the 1990s never solidified as a controlling framework for the federal estate.

Argument

An enormous amount of literature has addressed ecosystem management over the last twenty years. Most of that literature has been in the natural and social sciences and has been preoccupied with questions about its definition, predictive models of its success or failure, and empirical evaluations of its impacts. Far less has been written in the humanities, though many of the exceptions are notable.¹³ This project takes the humanistic road less traveled, providing a selective history of federal ecosystem management. It does not answer the question “What is ecosystem management?” in a categorical or generalized sense, nor does it evaluate the merits of federal ecosystem management efforts in the 1990s over and against other approaches. Rather, it explains why ecosystem management emerged in the 1990s as official federal policy, how federal environmental law shaped two very different models

of ecosystem management, and what remained of ecosystem management during the first decade of the twenty-first century; and it does so through two interrelated arguments.

The first argument draws on the intellectual history of ecology and political science. Both fields went through profound shifts in the middle of the twentieth century, from models that emphasized stability and predictability to models that emphasized dynamism and contingency. The earlier models had promised that agencies could achieve a steady balance between environmental protection and use; the newer models suggested that a fixed balance was illusory. The earlier models had promised managerial control based on scientific and administrative expertise; the later models suggested a far more modest project of managerial coping, informed by scientific expertise but guided by direct public participation. Ecosystem management gained popularity because it reinterpreted the project of federal land and resource management in light of these new ecological and administrative models.

The second, and closely related, argument focuses on the multiple interpretations of ecosystem management—substantive and procedural—and their emphases on scientific and democratic authority. Both science-driven ecosystem protection and open public deliberation were emphasized by the environmental movement of the 1960s and 1970s, and both were written into various environmental laws. When adequate consensus emerged on specific environmental protection goals, Congress passed statutes such as the ESA that established clear environmental protection goals and established science as the primary source of decision-making authority. When adequate consensus was lacking or the issues were too complex to establish clear goals, Congress passed statutes such as the Federal Land Policy and Management Act (FLPMA) of 1976 and the National Forest Management Act (NFMA) of 1976 that required agencies to gather scientific information but to use a participatory process for prioritizing substantive goals. Ecosystem management also emphasized both science-driven ecosystem protection and open public deliberation, promising to integrate them more harmoniously and consistently. But without significant legislative changes, two very different models of ecosystem management emerged under federal law: one substantive, the other procedural.

Substantive ecosystem management was associated with and driven by the ESA and, for the Forest Service, select provisions of NFMA. These laws gave the agencies predetermined goals and priorities, whether it

was the requirement that all federal agencies protect listed threatened and endangered species and their habitat or the requirement that the Forest Service maintain viable populations of all vertebrate species. In the implementation of these laws, scientists became key policymakers, and given the scientific emphasis on ecological complexity, dynamism, and uncertainty in ecological systems, scientists placed enormous constraints on resource development programs. Ecosystem management implemented through the ESA certainly included public participation and deliberation, but primarily as a means of gathering and disseminating information and trying to convince constituencies to support agency actions. This is the model that conservation biologists and environmentalists insisted was the real ecosystem management, namely a model in which ecosystem protection is the prerequisite for all other management actions.

Procedural ecosystem management was associated with and driven by the National Environmental Policy Act of 1969 (NEPA). The stated purpose of the act is to “encourage productive and enjoyable harmony between man and his environment,” but the judicially enforceable requirements are procedural. As the courts have interpreted NEPA, its binding requirement is that agencies, using “a systematic, interdisciplinary approach,” prepare a comprehensive environmental impact statement before undertaking any “major Federal action significantly affecting the quality of the human environment.”¹⁴ Ecosystem management implemented under the NEPA model required agencies to gather all of the relevant scientific information, consider all of the potential environmental impacts of their proposed action, and consider all of the management alternatives available. The agencies were then to use public participation to help them make management decisions that best met public needs, whether or not they privileged what scientists defined as ecosystem integrity. This is essentially the model that the multiple-use agencies and resource extraction industries said was the real ecosystem management. It was an open process of rational decision making in which trade-offs were genuine political calculations.

By the end of the Clinton administration, both models of ecosystem management had been tested. In some cases, the ESA had driven substantive ecosystem management; in other cases, NEPA had supported procedural ecosystem management. The former generated enormous opposition, with critics complaining that the ecosystem management paradigm would invariably expand federal land and resource

preservation at the expense of resource use. Thus, while the Bush administration never renounced ecosystem management as federal policy, it emphasized procedural ecosystem management and worked effectively to block substantive ecosystem management applications.

Despite ecosystem management's decline during the Bush administration and now the Obama administration, it has not disappeared entirely. The basic challenges that prompted ecosystem management and the basic principles that ecosystem management proponents advanced have enduring importance for federal land and resource management. The fact that Congress has not provided any significant new guidance for federal land and resource management means that federal agencies are still caught by two dominant paradoxes: preservation and use; scientific authority and democratic authority. The fact that scholarship and public opinion continue to highlight the inadequacy of the older preservation and conservation paradigms means that federal agencies cannot simply fall back on their earlier sense of mission. Ecology and conservation biology continue to emphasize the complexities and uncertainties of ecological systems, particularly in light of climate change. Political science and public opinion continue to emphasize the need for democratic accountability and for agencies to cooperate across political boundaries. Indeed, as recent developments in collaborative management and partnerships suggest, federal agencies are actively looking for more coherent and integrated ways to address the paradoxes of federal land and resource management. And many of the principles advanced under the banner of ecosystem management in the 1990s continue to influence federal land and resource management in the twenty-first century, albeit prioritized in different ways. The need continues for management that follows ecological boundaries, that protects large-scale ecological processes and functions, and that encourages adaptation and collaboration. What remains unclear is whether or not public land law and politics can address this need in a consistent and effective way.

The chapters that follow are divided into two relatively discrete sections. The first three chapters explain the interconnected roots of ecosystem management: intellectual, political/legal, and practical. Federal ecosystem management was not a developed paradigm, theory, or framework that federal agencies took out of a box and implemented systematically across the federal estate. Rather, ecosystem management was a banner under which federal agencies gathered a variety of emergent

concepts and tools, and its application was shaped directly by specific federal laws and specific management problems.

Chapter 1 explains the intellectual roots of ecosystem management in the fields of ecology and public administration/public policy. The four federal land agencies were all created in the first half of the twentieth century, when the models of ecological and political systems emphasized comparatively static or predictable dynamics. The concepts of ecosystem management—adaptive management, range of variability, population viability analysis, collaborative management, public participation, etc.—reflected a dramatic shift that took place in both ecology and public administration/public policy in the mid- to late twentieth century. The new ecology and the new public administration eschewed the earlier emphasis on stability and detailed predictability, assuming instead that ecological and political systems are complex, dynamic, and fundamentally unpredictable. These assumptions called for dramatic reform of federal land-use planning and management. In particular, scholars called for a shift away from fixed resource production goals and static administrative practices. Federal agencies adopted ecosystem management in part because it promised a complex and flexible approach that better matched ecological and political systems. This is not to say that federal agencies adopted ecosystem management simply because the *ideas* it offered were compelling; these ideas were but one of the roots of federal ecosystem management.

Chapter 2 explains the political and legal roots of ecosystem management, largely in the 1960s and 1970s. These roots are certainly related closely to the intellectual roots, since the American environmental movement that emerged in the 1960s and shaped the political and legal landscape reflected an ecological perspective on the natural world, understanding it not as a collection of resources or objects but as complex webs of interactions and relationships. But this environmental movement was a social and political movement rather than a scientific movement, so these social and political realities require a separate chapter of discussion. As environmental historian Thomas Dunlap explains, the environmental movement was Newton's disciple and Emerson's child.¹⁵ In other words, the environmental movement merged a scientific description of nature with a Romantic understanding of its meaning and value. The laws that Congress passed in response to the environmental movement utterly transformed the federal role in environmental management. Environmentalists demanded both specific protection

measures and a comprehensive environmental policy, and Congress responded with wide-ranging statutes such as the Wilderness Act of 1964, NEPA (1969), the Clean Air Act amendments of 1970, the Clean Water Act amendments of 1972, the ESA (1973), etc. Congress also updated federal land and resource policy as well in statutes such as NFMA (1976) and FLPMA (1976).

Congress could not and did not appreciate the full implications of these new, legally binding commitments. And as federal agencies implemented them in the context of federal land and resource management, they discovered just how demanding meeting these requirements was. Thus, chapter 2 explains the growing tension for federal land and resource agencies between their original mandates to produce and protect resources—economic and recreational—with the new, ecologically informed requirements for environmental protection. They adopted ecosystem management in part because it promised that these were not, in fact, conflicting demands and that they did not need to choose between them.

By focusing on Yellowstone National Park and the surrounding landscape, chapter 3 shows how new scientific ideas and new environmental laws worked together to drive a more ecologically oriented approach to federal land and resource management. As the National Park Service shifted from its initial zoological model of wildlife management, in which it worked to ensure that visitors could enjoy wildlife exhibits, to a more ecologically informed model of protecting both wildlife and the natural processes that sustain it, it increasingly argued that park boundaries were insufficient for the task. Passage of the ESA in 1973 and listing of the grizzly bear drew new planning and management boundaries around all of the federal lands in what the agencies called the Greater Yellowstone Area or Greater Yellowstone Ecosystem. The Park Service, the Forest Service, and the FWS were forced, with mixed reactions, to collaborate on endangered/threatened species protection across their various jurisdictional boundaries. This led in 1990 to what could be considered the first large-scale federal ecosystem management plan, which the Bush administration rejected as a potential extension of the ESA preservation model to the entire Yellowstone ecosystem. The Republican-controlled Congress in the 1990s reiterated this fear and fought the Clinton administration's efforts to make ecosystem management the overarching paradigm for the federal estate.

The second section of the book, chapters 4 through 7, provides a

political history of federal ecosystem management in the late 1980s and 1990s, as it grew out of the roots described in chapters 1 through 3. As with previous administrative reforms, ecosystem management was an effort to renegotiate the complex terms of federal land and resource management within the limits of existing statutes and political will. The thousands of statutes governing the federal estate do not add up to a clear formula for prioritizing management goals, and they lead to various contradictions and tensions for each agency. Ecosystem management was a framework for addressing some of the tensions most pressing on federal agencies at the end of the twentieth century.

Chapter 4 explains how the stage was set for ecosystem management during the George H. W. Bush administration, 1989–1993. Vice President Bush campaigned in 1988 with the promise that he would be “the environmental president,” and he took office with the explicit promises to stop wetlands destruction, address climate change, and reduce acid rain. He also took office with staunch commitments to the Reagan administration’s war on federal regulation and to economic growth as well as with a promise not to let environmental protection slow economic productivity. The administration demonstrated that it was committed to environmental protection, but it disagreed with scientists, the courts, and environmentalists about what this required. The president wanted environmental policy that was predictable, was contained in discrete initiatives, and, above all, did not restrict private property rights and economic development. Ecology and conservation biology both indicated that this desire was unrealistic when dealing with complex ecological systems. The standoff led both to the northern spotted owl crisis and to the surprise twist in which the Forest Service officially adopted ecosystem management in 1992.

Chapter 5 explains the broad adoption of and implementation of ecosystem management during the Clinton administration. In contrast to the Bush administration, the Clinton administration embraced the expansive perspective of ecological science, arguing that it was less of a threat to economic interests and more of a tool that would balance environmental protection and resource development. The administration embraced the broad, somewhat ambiguous banner of ecosystem management, offering it both as a means of science-driven ecosystem protection and as a collaborative, consensus-driven process to establish management goals and carry them out. This pragmatic view of ecosystem management led to widespread experimentation.

Chapters 6 and 7 explain two of the largest and most ambitious ecosystem management projects undertaken during the 1990s: the Northwest Forest Plan (NWFP) and the Interior Columbia Basin Ecosystem Management Project (ICBEMP). These two projects are important because they show the differences between a substantive ecosystem management project driven by the strict requirements of the ESA and NFMA and a procedural ecosystem management project driven by the procedural requirements of NEPA. The NWFP was created quickly with limited political deliberation, since it was created to address a court injunction that had shut down the federal timber program in western Washington, Oregon, and northwestern California. Drafted by scientists, the challenge was not creating the plan but implementing it over the next decade. ICBEMP, by contrast, was initiated partly to avoid the kind of crisis that had necessitated the NWFP. It did not begin with clear substantive goals but with a commitment to develop them in a true collaboration between scientific research and political deliberation. What followed was essentially a decade of deliberation in which the parties could not reach consensus, and ICBEMP ended without an ecosystem management plan.

At the end of the Clinton administration, support for and opposition to ecosystem management was high. Some projects had been consensus-driven environmental victories, some had been contentious efforts driven by the courts, and some had ended without decisive action. The George W. Bush administration did not attack ecosystem management as such. Rather it attacked what it argued was anti-democratic rule by value-laden science, and it promised to return federal land and resource management to a more collaborative political posture that favored the interests of those whose livelihood depended on resource development. Thus, ecosystem management remained official federal policy for the agencies, but the substantive/procedural ambiguity was resolved. The Bush administration reduced ecosystem management to a NEPA-like process without enforceable substantive goals of environmental protection.

While ecosystem management never replaced preservation and conservation as a single, integrated paradigm for all of the federal estate, some of its central tenets still influence how agencies carry out their preservation and conservation responsibilities. The sciences of ecology and conservation biology still emphasize the complexities and irreducible uncertainties involved in ecological systems and still push federal

agencies toward adaptive management that seeks to cope with ecological change rather than control ecological systems in any final sense. While resistance remains, these scientific insights have grown more rather than less persuasive, particularly in light of the uncertainties surrounding global climate change; federal agencies continue to find that individual success requires collaboration across jurisdictional boundaries, both interagency collaboration and cooperation with private and state landowners; and negative forces such as budget cuts and high costs of wildland fire suppression continue to force agencies to look for holistic management approaches that can achieve multiple goals at lower costs. In some ways, then, the banner of ecosystem management has fallen, but the concepts and tools of ecosystem management still influence federal land and resource management today. Undoubtedly, some future administration or Congress will attempt to repackage these tools under another banner and provide the federal estate with more integrated, holistic, and coherent management direction.

