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Ecosystem Management and the Everglades: A Legal and Institutional Analysis

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ECOSYSTEM MANAGEMENT AND THE EVERGLADES: A LEGAL AND INSTITUTIONAL ANALYSIS*

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I. INTRODUCTION

In the 1993 Report of the National Performance Review, the Clinton administration launched the federal government on a new course in environmental policy: ecosystem management.\(^1\) Based on Vice President Gore's recommendation, the President directed all agencies to implement ecosystem management across the country. Also in 1993, the Florida Legislature directed the newly created Department of Environmental Protection (DEP) "[t]o protect the functions of entire ecological systems through enhanced coordination of public land acquisition, regulatory, and planning programs."\(^2\) Seizing on this direction, the state agency began its own reexamination of how environmental policy is implemented in Florida.\(^3\)

Both the federal and state agencies charged with implementing ecosystem management began developing individualized ecosystem management principles which were gleaned from existing literature\(^4\) and tailored, in sometimes subtle ways, to reflect the goals and mission of the particular implementing agency. In 1994, an interdisciplinary group of scientists and professionals developed and refined a set of site specific ecosystem management principles for the Everglades ecosystem under the auspices of the United States Man and the Biosphere Program (USMAB).\(^5\)

Three dominant themes can be distilled from ongoing efforts to identify a set of generic principles to guide the management philosophy known as "ecosystem management." These include: (1) the

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3. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, BEGINNING ECOSYSTEM MANAGEMENT: AN ACTION PLAN FOR DEVELOPMENT OF AN ECOSYSTEM MANAGEMENT IMPLEMENTATION STRATEGY (1994).
5. The authors of this manuscript participated in the nine day Everglades charrette organized by USMAB's Human Dominated Ecosystems Directorate. UNITED STATES MAN AND THE BIOSPHERE PROGRAM, U.S. DEPARTMENT OF STATE, US MAB HUMAN-DOMINATED SYSTEMS DIRECTORATE WORKSHOP ON ECOCLOGICAL EN DPOINTS AND SUSTAINABILITY GOALS 8-9 (May 1992) [hereinafter USMAB]. The organizers used the Biosphere Reserve model and the freshly minted ecosystem management principles as the organizational basis for this exercise in scenario consequence analysis of "ecological endpoints" involving the Everglades ecosystem. Id. at 5-6; see also Mark A. Harwell, Ecosystem Management to Achieve Ecological Sustainability: The Case of South Florida, ENVTL. MGMT. (forthcoming 1996) (giving a complete synopsis of the five year history of the process).
notion of boundaries, both geographical and institutional; (2) scientific uncertainty; and (3) governance. This article analyzes the manner in which the present legal and institutional framework for environmental management addresses these themes.

Part II identifies the problems inherent in defining the appropriate management unit for ecosystem management and in delineating the unit's boundaries in the face of inherently complex and unstable ecological factors. Part II also considers the more insidious institutional boundaries that influence the effectiveness of agencies established under the traditional resource management paradigm that existed prior to the ecosystem management regime.

Part III examines the manner in which the legal system treats scientific uncertainty. Two principles of ecosystem management involve uncertainty: (1) the best science available; and (2) adaptive management. The principle that ecosystem managers must use the best science available suggests that the complete absence of scientific certainty should not be a basis for failing to make management decisions. To address uncertainty, ecosystem management principles have adopted a methodology known as adaptive management. Adaptive management encourages policy and management experimentation as a means to discover appropriate approaches to managing systems.6

Part IV considers the governance framework for ecosystem management through an examination of existing institutions, as currently permitted and constrained by law. This part also examines potential institutions. These institutions include innovative governance mechanisms such as compacts involving federal and state legislation where power is shifted to regional organizations, interinstitutional and intergovernmental mechanisms that improve ecosystem scale coordination within existing power relationships, and emerging non-governmental grass roots governance institutions. Part IV also discusses the governance mechanisms recently proposed by federal and state advisory groups to achieve ecosystem management in South Florida. Part IV concludes with a discussion of other potentially applicable governance mechanisms that would require greater levels of institutional restructuring than suggested by current proposals.

II. THE BOUNDARY CONUNDRUM

A. Geographic Boundaries: Defining the Appropriate Management Unit

The revelation of ecosystem management, if it can be viewed as a revelation, stems from the realization that the rigid hierarchical structure of the institutions previously developed to manage the environment have ignored the spatial hierarchy of natural systems. Our political and management institutions have not evolved along the same lines as ecosystems. Thus, incongruence exists between the legal and biotic boundaries. Many argue that this fundamental geographical disconnect has permitted ecosystem decline. As a result, government agencies, resource managers, and scientists are rethinking how management hierarchies have evolved, in hopes of better representing whole systems.

In a reconstructive effort, the United States Forest Service has adopted a management approach described as the National Hierarchical Framework of Ecological Units, based on units referred to as “Ecoregions,” which enable evaluation of broad scale influences. The United States Fish and Wildlife Service, on the other hand, is looking to “watersheds” as the basic unit for implementing its own view of ecosystem management. In Florida, the DEP recently...

7. The novelty of this revelation can be questioned. There is a volume of literature about river basin administration discussing the concept of “institutional fragmentation” and its effects on watershed management, including, to some extent, the management of water related ecosystems. See, e.g., DOUGLAS S. KENNEY & WILLIAM B. LORD, COORDINATION MECHANISMS FOR THE CONTROL OF INTERSTATE WATER RESOURCES: A SYNTHESIS AND REVIEW OF THE LITERATURE, TASK 2 REPORT: LITERATURE REVIEW (on file at the Center for Govtl. Responsibility, University of Florida College of Law). Indeed, as these authors note, as early as the latter part of the nineteenth century the famed explorer of the Colorado River and first head of the United States Geological Survey advocated the concept of linking land and water institutions along “hydrologic basins.” Id. at 18 (citing J.W. POWELL, REPORT ON THE LANDS OF THE ARID REGION OF THE UNITED STATES WITH A MORE DETAILED ACCOUNT OF THE LANDS OF UTAH, H.R. DOC. NO. 73, 45TH CONG., 2d Sess. (1878); J.W. Powell, Institutions for Arid Lands, XL THE CENTURY 111-16 (May-Oct. 1890)).


10. STAFF OF HOUSE COMMITTEE ON NATURAL RESOURCES, 103D CONG., 2d Sess., ECOSYSTEM MANAGEMENT: SUSTAINING THE NATION’S NATURAL RESOURCES TRUST 5-6 (1994) [hereinafter NATURAL RESOURCES TRUST].

11. E.g., D. Scott Slocombe, Implementing Ecosystem-Based Management: Development of Theory, Practice, and Research for Planning and Managing a Region, 43 BIOSCIENCE 612 (Oct. 1993).


13. U.S. FISH AND WILDLIFE SERVICE, AN ECOSYSTEM APPROACH TO FISH AND WILDLIFE CONSERVATION: AN APPROACH TO MORE EFFECTIVELY CONSERVE THE NATION’S BIODIVERSITY 6 (1994). With regards to a definition for “watershed,” one commentator stated that the definition is unclear. Michael C. Blumm, Seven Myths of Northwest Water Law and Associated
announced an ecosystem management initiative based on the concept of "place" which is to succeed the previous media-based and site-based systems.\textsuperscript{14} Others have advanced theories of "greater ecosystems," management units based on the spatial requirements of large free-ranging mammals,\textsuperscript{15} and "bioregionalism," a concept of decentralized governance based loosely on biological and cultural geography.\textsuperscript{16} To some extent, however, these efforts simply replace one boundary problem with another, because ecoregions, greater ecosystems, bioregions, watersheds and places are not necessarily coterminous.\textsuperscript{17} In addition, these efforts oversimplify the ecological and institutional complexities that abound in efforts to rethink traditional resource management.\textsuperscript{18}

The spatial and temporal complexity and variability of ecosystems ensures that there can be no institutional mechanism that completely integrates the management of structure, components, and functions of intact ecosystems.\textsuperscript{19} Facile efforts to reconstruct the geographical basis of resource management regimes may still not achieve ecosystem management. In South Florida, for example, hydrology is considered the defining characteristic of the Everglades ecosystem.\textsuperscript{20} An institution, the South Florida Water Management District, illustrates this system's hydrologic boundaries. Moreover, the District has existed for more than twenty years and has much of the authority to manage the system,\textsuperscript{21} yet scientists contend that the

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\textsuperscript{14} FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, ECOSYSTEM MANAGEMENT IMPLEMENTATION STRATEGY: ACTION PLAN 4 (Ernie Barnett et al. eds., 1995) [hereinafter FLORIDA ACTION PLAN].
\textsuperscript{15} R. Edward Grumbine, Protecting Biological Diversity Through the Greater Ecosystem Concept, 10 NATURAL AREAS 114-20 (1990).
\textsuperscript{17} M. Lynne Corn, Ecosystems, Biomes and Watersheds: Definitions and Use, Cong. Res. Serv. Rep. (ENR) No. 655, at 5-7 (July 14, 1993).
\textsuperscript{18} See generally id. at 705-11.
\textsuperscript{19} Keiter, supra note 8, at 301-04 (describing ecosystems and limitations of agencies under statutory law): R. EDWARD GRUMBINE, GHOST BEARS: EXPLORING THE BIODIVERSITY CRISIS 57-60 (1992) [hereinafter GHOST BEARS].
\textsuperscript{20} USMAB, supra note 5, at 103; U.S. ARMY CORPS OF ENGINEERS, CENTRAL AND SOUTHERN FLORIDA PROJECT, RECONNAISSANCE REPORT, COMPREHENSIVE REVIEW STUDY 111-12 (1994).
\textsuperscript{21} USMAB, supra note 5, at 104.
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Everglades system has been in a state of consistent decline throughout this period.\textsuperscript{22}

Even capturing an entire watershed, like the Everglades, within the jurisdiction of a single resource agency with an ecosystem mandate would not necessarily resolve the dilemma posed by ecosystem complexity.\textsuperscript{23} Within the Everglades watershed, for example, the Florida panther, a wide-ranging endangered species, disregards any efforts to be pigeonholed into a hydrologic ecosystem classification system. In the West, where the grizzly bear ranges across watersheds, this realization has led to the term “greater ecosystem.”\textsuperscript{24} Greater ecosystems have been defined as “self sustaining ecological land units of a scale large enough to support and maintain viable populations of large vertebrates and all the plant and animal species native to the area.”\textsuperscript{25} A greater ecosystem that reflects the historic range of a viable population of panthers in South Florida may not be limited to the hydrologic boundaries of the Everglades watershed.

Unfortunately, even a greater ecosystem fails to capture the ranges of migratory wildlife like the wading birds and neotropical songbirds that inhabit South Florida during some portion of their life.\textsuperscript{26} Consequently, facile efforts to realign jurisdictional boundaries along ecosystem lines, without far-reaching political and institutional realignments, cannot bring about the sustainability goals of ecosystem management.

\subsection*{B. Institutional Boundaries}

Ecosystem management fundamentally challenges the long-standing boundaries established to manage resources within and across institutions. These boundaries, including those referred to as “turf,”\textsuperscript{27} are often deeply imbedded in statutory directives, agency

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\textsuperscript{22} See generally Stephen S. Light et al., The Everglades: Evolution of Management in a Turbulent Ecosystem, in LANCE H. GUNDERSON ET AL., BARRIERS & BRIDGES TO THE RENEWAL OF ECOSYSTEMS AND INSTITUTIONS 103, 103-168 (1995).
\textsuperscript{24} GHOST BEARS, supra note 19, at 57-60.
\textsuperscript{26} Birds are the most numerous wildlife in the Everglades area; more than 220 species reportedly use the habitat of the terrestrial and freshwater glades. In South Florida, about “60 percent of the bird species reported regularly” are migrating visitors or winter residents. N. SCOTT SCHOMER & RICHARD D. DREW, U.S. FISH & WILDLIFE SERVICE, OFFICE OF BIOLOGICAL SERVICES, AN ECOLOGICAL CHARACTERIZATION OF THE LOWER EVERGLADES, FLORIDA BAY, AND THE FLORIDA KEYS 137 (1982).
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goals, missions and constituencies.\textsuperscript{28} The classic and often-cited example of a turf battle, that continues to have profound contemporary implications, can be found in the decision earlier this century to include the Forest Service in the Department of Agriculture rather than in the Department of Interior. Pitted as a battle between John Muir's preservationists and Gifford Pinchot's wise conservationists,\textsuperscript{29} the battle for the hearts and minds of the public lands managers continues to this day. Indeed, to some extent, ecosystem management may be viewed as an end-of-the-century effort to finally reconcile these two viewpoints under the mantle of ecological sustainability.\textsuperscript{30}

The deeply ingrained institutional biases that impede effective ecosystem management have often developed from interpretations or perceptions of the historical missions of resource management agencies.\textsuperscript{31} In the Pacific Northwest, for example, logging interests have argued that certain turn-of-the-century commodity driven statutory directives prohibit the implementation of ecosystem management. Lawsuits by the timber industry challenged the Clinton administration's efforts to implement ecosystem management in the Northwest. Complaints filed in federal court by the timber industry alleged that the Oregon and California Railroad and Coos Bay Wagon Road Lands Act subordinated all activities incompatible with maximum sustained yield timber harvesting in the region, and hence prohibited implementation of an ecosystem-based management framework.\textsuperscript{32}

This philosophy, that new agency activities must be subordinated to previous directives, is not limited to Western lands or timber. Perhaps the closest federal institutional and statutory analog affecting South Florida can be found in the United States Army
Corps of Engineers (Corps) ecosystem management responsibilities. An agency historically less likely to be charged with an ecosystem management mandate than the Forest Service, the Corps is lodged in an even more improbable Department: the Department of Defense.\textsuperscript{33} A complete discussion of this improbable relationship follows.

1. Deconstructing Federal Projects for Ecosystem Purposes

Similar to the forests of the Northwest, the massive mid-century public works projects, like the Central and Southern Florida Project, are subject to claims of conflicting priorities. In South Florida, agricultural interests continue to argue that the authorizing legislation for the Flood Control Project subordinates environmental protection to flood control and water supply for agricultural and urban needs, and even prohibits environmental restoration. This is the essence of a challenge by the farming interests in South Dade County to the Park Service’s efforts to raise water levels in the C-111 canal to improve water deliveries to the Everglades National Park’s Taylor Slough.\textsuperscript{34} This theme was reiterated by farming interests in the Everglades Agricultural Area throughout the Everglades water quality litigation.\textsuperscript{35}

Recent efforts at ecosystem restoration have also been affected by the Corps’ statutory mandate to develop economically viable projects. In South Florida, ecosystem restoration often means the deconstruction and reorientation of aspects of the Central and Southern Florida Project, the massive plumbing system that has made South Florida habitable for five million humans.\textsuperscript{36} However, the Corps’ public works projects typically require a demonstration of economic return on the public’s investment, the so-called benefit-cost ratio. While scientists have grappled for decades with a means to put dollar figures on the environmental services provided by ecosystems, the results are imprecise. As a result, major structural modifications to the Central and Southern Florida Project for environmental enhancement require a Congressional waiver from the net positive economic effect requirement. This authority was recently provided

\textsuperscript{33} The Corps’ reluctance to take on multiple purpose mandates has a long history which dates back to the progressive movement at the end of the last century. See SAMUEL P. HAYS, CONSERVATION AND THE GOSPEL OF EFFICIENCY: THE PROGRESSIVE CONSERVATION MOVEMENT 1890-1920 (1959).


\textsuperscript{36} See, e.g., FLA. STAT. § 373.4592 (1995) (describing the most recent Everglades Program).
by Subsection 903(c) of the Water Resources Development Act. This has also been the case for the controversial Kissimmee River restoration project, where cost overruns have trebled the costs of the partial restoration it will achieve. As deconstruction projects become increasingly comprehensive and expensive, it is likely that opponents of environmental restoration will become more critical of the costs of maintaining ecosystems.

2. Institutional Culture and the Battle for Turf

Even where institutions have determined to implement ecosystem management, differing agency conceptions of their missions may perpetuate entrenched agency cultures and affect how they actually perform ecosystem management. For example, most recent definitions of ecosystem management contain some reference to the importance of reconciling the interactions between humans and the ecosystem. The draft principles and guidelines for ecosystem management offered by the White House Office of Environmental Policy as guidance to agencies reinforce this definition. Historically, federal multiple use agencies, such as the Forest Service and the Bureau of Land Management, have embraced this reconciliation between humans and the environment. Resource protection

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39. R. Edward Grumbine, What is Ecosystem Management?, 8 CONSERVATION BIOLOGY 27, 30-31 (1994) (listing the accommodation of human use and occupancy as one of the five specific goals "frequently endorsed" as crucial to the success of ecosystem management); Keiter, supra note 8, at 300 (stating that "[e]ven the words 'ecosystem management' imply a merging of the natural and human: 'ecosystem' implies a natural setting driven by natural processes, while 'management' implies a human presence and involvement in shaping the natural world. Ecosystem management, therefore, should not be viewed as a policy that omits human concerns from the management equation.").
agencies, such as the National Park Service and the United States Fish and Wildlife Service, on the other hand, focus on a preservation mandate. Conflicts between preservation and human use continue to linger in public land management decisions.

In Florida too, institutional culture has affected either the nature and extent of agency commitment to resource protection or the public’s perception of that commitment. For example, the South Florida Water Management District’s legacy as the institutional successor to the Central and Southern Florida Flood Control District and Everglades Drainage District continues to survive and affect public perception of its mandate. Moreover, the merger between the Florida Department of Natural Resources (DNR) and the Florida Department of Environmental Regulation that created the DEP caused potential internal agency conflict over mandate and a concern that the new agency might inherit the land management agency’s personality. In addition, some critics believe that the Florida Game and Fresh Water Fish Commission (GFWFC) remains inordinately tied to the limited hunting and fishing mandate its name implies, despite a broader constitutional mandate to protect all wildlife.41

Finally, questions of mission and turf can profoundly affect the nature and extent of interagency and intergovernmental coordination, vital to ecosystem management.42 Operating in a highly charged political environment, and sensitive to managerial discretion, agencies have been reluctant to become involved in the plans and proposals of sister agencies.43 One example of this institutional behavior was the difficulty in uniting federal agencies within the Department of Interior and the Department of Agriculture with the Corps in the politically charged Everglades water quality litigation,

41. See generally Game Commission Faulted on Protection of Wildlife, MIAMI HERALD, May 28, 1991, at 8B; Karl Vick, Black Bears as Targets and Road Kill Series: Column One, ST. PETERSBURG TIMES, May 21, 1993, at 1A; see also infra note 58. The GFWFC was granted authority over fish and wildlife of the state and property of the state in an amendment to the 1885 Florida Constitution in 1942; this constitutional revision left the entire administrative structure of the GFWFC to be determined by the Legislature. The 1942 amendment authorized the Legislature to enact statutes which conferred upon the GFWFC the authority to promulgate rules and regulations to carry into effect its powers. FLA. CONST. art. IV § 9.


particularly when it entailed the Corps becoming a plaintiff against the South Florida Water Management District. 44

The relation between federal and state agencies brings with it the historical baggage of comity and federalism. The Everglades water quality litigation was also viewed by some as a federal power grab, derailing a state planning process that would have achieved the same result sought by federal litigation. 45 Regardless of the validity of these assertions, perception can be as important an obstacle to achieving ecosystem management through intergovernmental coordination as reality.

C. Boundaries and Ecosystem Management in Florida

1. Devolution, Delegation, Deference, Consolidation, Co-location and Cooperation: The Institutional Language of Ecosystem Management in Florida

In Florida, the boundary conundrum in ecosystem management has been somewhat simplified by ongoing institutional processes that began prior to the emergence of ecosystem management as a governmental management paradigm. In 1972, Florida was divided along hydrologic boundaries into regional water management districts which were later placed under the general supervision of the newly created State Department of Environmental Regulation. 46 In 1993, the Florida Environmental Reorganization Act (Reorganization Act) consolidated the State’s land management agency, the DNR, with its environmental regulatory agency, the Department of Environmental Regulation, to form the Department of Environmental Protection (DEP). 47 The DEP continues to exercise supervisory authority over the water management districts and has created regional offices that conform geographically and are co-located with the water management districts. 48

In addition, the Reorganization Act consolidated several regulatory actions; for example, the dredge and fill and surface water management permits were merged into a single environmental resource

44. The South Florida Water Management District was apparently an agency with which the Corps enjoyed good relations; the Corps had supervisory control over the project and actual responsibility for the water pumps involved, but was not consulted before this lawsuit was filed. Dewitt John, Leadership in the Everglades: The Politics of Restoring an Ecosystem, in Civic Environmentalism: Alternatives to Regulation in States and Communities 147, 156-58 (1993).

45. Id. at 147-49.


Statutory authority for implementation of the permitting program devolved directly to the water management districts. While these concurrent efforts to consolidate and delegate environmental management to geographically decentralized institutions caused consternation among environmentalists who prefer multiple checks on resource decisions, the efforts were consistent with ecosystem management's goal of holistic and decentralized management at the most geographically appropriate level.

The delegation of regulatory and land management authority to the appropriate level of government is a key recommendation of DEP's recent ecosystem management initiative. The 1993 legislation also authorized the DEP to develop rules for regional mitigation banks to offset the effects of development activities under its regulatory jurisdiction. This legislation requires DEP and the water management districts to consider cumulative impacts in ruling on permits, which one commentator considers the key to meaningful ecosystem management. Thus, at the state level, Florida appears to be moving its institutions in a direction that addresses both the geographical and institutional boundary conundrums of ecosystem management; however, significant gaps remain.

One such gap is in the protection of upland wildlife habitat. The "comprehensive" environmental resource permit only regulates impacts to aquatic and wetlands-dependent species from the construction and operation of surface water management systems and activities in wetlands. Although the Florida GFWFC has a broad constitutional mandate to protect wildlife, it has, until recently, largely limited its activities to the regulation of hunting and fishing and the direct taking of protected species. It has declined to follow the controversial lead of the United States Fish and Wildlife Service.

50. FLA. STAT. § 373.441 (1995).
51. See, e.g., FLORIDA ACTION PLAN, supra note 14, at 24-25.
52. Id. at 22.
54. Id. § 373.414(8).
55. Keiter, supra note 43, at 50.
57. Through the authority of section 7(a)(2), 16 U.S.C. § 1536(a)(2) (1994), of the Endangered Species Act, the Secretary of the Fish and Wildlife Service defined "harm" broadly to include habitat modification. 50 C.F.R. § 17.3 (1995). The validity of this broad definition of harm was upheld by the United States Supreme Court. Babbitt v. Sweet Home Chapter of Communities for a Great Oregon, 115 S. Ct. 2407 (1995). For a full discussion of the history of this issue, see Steven G. Davison, Alteration of Wildlife Habitat as a Prohibited Taking Under the Endangered Species Act, 10 J. LAND USE & ENVTL. L. 155 (1995), and A. Kimberly Rockwell, The Fifth Amendment Implications of Including Habitat Modification in the Definition of Harm to
and regulate the destruction of habitat. In addition, Florida lacks the regulatory tools that would encourage the development of habitat conservation plans authorized by federal endangered species legislation.

Florida’s approach to upland habitat protection has developed primarily through an ambitious land acquisition scheme that targets environmentally sensitive lands, and a statewide “Greenways” initiative under the auspices of the DEP that utilizes wildlife corridor theory from conservation biology as one of its organizing principles. Recent advances in mapping technology along with the development of scientifically based reserve design parameters suggested by biologists have permitted planners to target and prioritize acquisition efforts. In addition, pilot projects involving incentive-based cooperative efforts on private lands, including a large scale initiative to conserve the Florida Panther habitat in Southwest Florida, contribute to Florida’s developing upland ecosystem management planning framework.

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58. The authority of the GFWFC to protect habitat in addition to protecting individual animals has been challenged. See Kathleen L. Blizzard, The Gopher Tortoise Incidental Takings Rule, in WILDLIFE, HABITAT AND LAND USE: FLORIDA’S DEVELOPING ZOO 8.15-8.18 (1991). This may be a manifestation of an agency culture. The GFWFC has historically focused on recreational hunting and fishing as its primary mandate, but has authority to regulate more broadly as well. See generally FLA. STAT. § 372 (1995). In contrast, the U.S. Fish and Wildlife Service is currently advocating ecosystem management. See U.S. FISH AND WILDLIFE SERVICE, supra note 13. However, public access to the decision making of the GFWFC could make a difference, and the Florida Chamber of Commerce recently supported amending Florida’s Administrative Procedure Act to extend its provisions to the GFWFC. Sally Bond Mann, A Symposium on the Florida Administrative Procedure Act, Reforming the APA: Legislative Adventures in the Labyrinth, 22 FLA. ST. U. L. REV. 307, 319 (1994).

59. The ESA prohibits federal agency action that jeopardizes the existence of threatened or endangered species or that adversely affects the critical habitats of these species. However, some takings otherwise banned are possible under section 10(a) of the ESA which provides for incidental taking permits from the Fish and Wildlife Service if the taking is only incidental to an otherwise lawful activity. Applications for these permits must include a Habitat Conservation Plan (HCP). The approval process for the incidental taking permit is demanding. The FWS is concerned only that the species not be jeopardized by the effects of the proposed activity, and does not consider the need for development. See generally C. Anthony Arnold, Conserving Habitats and Building Habitats: The Emerging Impact of the Endangered Species Act on Land Use Development, 10 STAN. ENVTL. L.J. 1 (1991); see also The Endangered Species Act, 16 U.S.C. §§ 1531-1543 (1994). Compare FLA. ADMIN. CODE ANN. r. 39-27.002 (1995).

60. FLORIDA GREENWAYS COMMISSION, CREATING A STATEWIDE GREENWAYS SYSTEM: FOR PEOPLE, FOR WILDLIFE, FOR FLORIDA, REPORT TO THE GOVERNOR 17-18 (Dec. 1994).

61. JAMES COX ET AL., FLORIDA GAME & FRESH WATER FISH COMM’N, CLOSING THE GAPS IN FLORIDA’S WILDLIFE HABITAT CONSERVATION SYSTEM 1, 33 (1994).

62. 1995, Fla. Laws ch. 95-275. “Florida supports the only population of panthers remaining in the eastern U.S.” Cox, supra note 61, at 3. The greater Everglades ecosystem, in its present state, appears to be simply too small to maintain a genetically diverse and sufficiently populous deme of Florida panthers. William B. Robertson & Peter C. Frederick, The Faunal
Another significant gap is the weakness of the linkages between land and water management. Local governments in Florida have comprehensive responsibility for planning and regulating land use, with limited oversight by the Florida Department of Community Affairs and regional planning councils. Although local governments are required to be consistent with the state comprehensive plan and strategic regional policy plans prepared by the State’s Regional Planning Councils, there is no requirement that plans preserve ecosystem functions or that they be consistent with the regional plans of the water management districts. In addition, regional planning councils reflect the political boundaries of counties, contributing to the institutional complexity of consolidating land and water planning within ecosystems.

Recommendations have recently been put forward to strengthen the relation between land use decisionmaking and water management planning. A state task force has suggested requiring consistency between the strategic regional policy plans of the regional planning councils and the water management district plans. More recently, the Governor’s Commission for a Sustainable South Florida has made similar recommendations with regard to local government plans. The effectiveness of these reforms would depend on the quality and specificity of the plans and the degree to which consistency between regional strategic plans, water management district plans, and local plans can be achieved.


63. FLORIDA LAND USE & WATER PLANNING TASK FORCE, RECOMMENDATIONS OF THE LAND USE & WATER PLANNING TASK FORCE, FINAL REPORT 1 (Dec. 1994). This task force, commonly known as the Tschinkel Commission after its Chairperson Victoria Tschinkel, previously the Secretary of the Florida Department of Environmental Regulation, was established pursuant to section 77 of chapter 93-206, Laws of Florida. Id. at Appendix [hereinafter Tschinkel Commission Recommendations]. The mandate for the Commission to make recommendations on water policy to the Florida Legislature is codified. FLA. STAT. §§ 403.031, 373.019 (1995). Because of the various planning agencies involved in Florida governance, there is a distinct need for a coordinated regional approach. See also GOVERNOR’S COMMISSION FOR A SUSTAINABLE SOUTH FLA., INITIAL REPORT 158 (Oct. 1995) [hereinafter GOVERNOR’S COMMISSION].


65. Tschinkel Commission Recommendations, supra note 63, at 1-3.

66. GOVERNOR’S COMMISSION, supra note 63, at 43-45.
2. Re"placing" the Boundary Line

Efforts are now underway in Florida to directly address the ecosystem management boundary conundrum. The Reorganization Act requires the DEP to protect entire ecological functions through coordination of regulatory and planning programs as well as through land acquisitions.\(^67\) Seizing on this statutory mandate, the DEP recently launched an ecosystem management initiative by establishing partnerships with private interests and other agencies while emphasizing research, education, communication, and coordination with existing authorities.\(^68\) The result of DEP’s effort is its Ecosystem Management Implementation Strategy and Action Plan (Action Plan).\(^69\) The Action Plan addresses both the geographical and institutional boundary issues in ecosystem management. It centers on the development of a new geographical approach, termed "place-based management."\(^70\) Place-based management appears to be an effort to move towards ecologically determined geographic boundaries, such as watersheds, as the basis for environmental management. The DEP approach will create a statewide framework of Ecosystem Management Areas (EMAs) "big enough to allow major hydrological and ecological connections to be addressed on a regional scale."\(^71\) An appendix to the Action Plan provides evaluation criteria for establishing EMAs, and offers a tentative geographic delineation of EMAs throughout the state.\(^72\) From the boundary standpoint, a key evaluation criteria is the avoidance of jurisdictional overlap. Accordingly, the Action Plan has attempted to conform EMAs to DEP district and water management district boundaries where possible. However, there is no discussion of reconfiguring DEP’s administrative structure to conform to the EMA management unit. Instead, the emphasis remains on cooperation and coordination across non-conforming boundaries.\(^73\)

In South Florida, the DEP proposal would create two EMAs within the boundaries of the South Florida Water Management District. A South Florida EMA is subdivided for management into three subregions: (1) the Greater Kissimmee River and Lake Okeechobee; (2) Loxahatchee/Hungryland Slough and Allapattah Flats;

\(^{68}\) See FLORIDA ACTION PLAN, supra note 14.
\(^{69}\) Id.
\(^{70}\) Id. at 6.
\(^{71}\) Id. at 8.
\(^{72}\) FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, ECOSYSTEM MANAGEMENT IMPLEMENTATION STRATEGY: VOL. II - APPENDICES (Sept. 1995).
\(^{73}\) Id. at II-4, V-1.
and (3) the Greater Everglades. The Florida Keys are a separate EMA. The DEP recommends deferring EMA management to the South Florida Water Management District and other current ecosystem initiatives underway in the EMA. In addition, legislative authority establishes Florida Bay as an ecosystem management case study under DEP’s direction.

Two other major efforts to coordinate ecosystem management are underway in South Florida. As one of four pilot projects in ecosystem management, the Clinton administration established an Interagency Task Force on the South Florida Ecosystem, chaired by the Assistant Secretary for Fish and Wildlife and Parks within the Department of Interior. The Task Force includes representatives from the Departments of Commerce, Justice, Agriculture, the Army (Civil Works), and the Environmental Protection Agency (EPA). An Interagency Working Group of local agency representatives was also created to assist the task force in developing “consistent policies, strategies, plans, programs and priorities for addressing the concerns of the South Florida ecosystem.”

The other major effort at intergovernmental and interest group coordination is the Governor’s Commission for a Sustainable South Florida, composed of thirty-five voting members representing all of the state, regional, and local agencies involved in the management of growth in South Florida, as well as representatives of major interest groups. In addition, there are five non-voting federal representatives. The Commission is charged with numerous tasks, including a review of existing planning and regulatory programs affecting the Everglades ecosystem and recommending strategies for improved management. Each of these groups is formulating policies and plans to coordinate activities across institutional boundaries. These are discussed in greater detail in Part IV which addresses ecosystem governance.

D. Procedural Boundaries

Beyond the problems associated with defining the geographically appropriate management unit and changing ingrained institutional behavior resulting from conflicting legislative directives and agency
culture, Congress and state legislatures have, sometimes inadvertently, erected procedural boundaries which confound efforts to implement coordinated ecosystem management. Perhaps the most controversial of these has been the Federal Advisory Committee Act. Critics contend that this once obscure statute inhibits the ability of federal agencies to participate in intergovernmental coordination efforts without complying with onerous procedural requisites. It has been successfully applied to stymie ecosystem level intergovernmental coordination in the Pacific Northwest. Recent statutory amendments have improved its utility in intergovernmental ecosystem management coordination efforts, however. In addition, federal budgetary restrictions have been observed to hinder ecosystem management.

Finally, procedural requirements for long-range planning by multiple agencies and governments with jurisdiction in a single ecosystem inhibit coordinated management. For example, the National Park Service, the United States Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration all share land management jurisdiction of the Everglades ecosystem in South Florida, yet all develop separate plans, at different times and with sometimes disparate objectives. Planning horizons differ significantly among state and local agencies as well. At the same time, Congress has authorized the Corps to undertake a complete restudy of the Central and Southern Florida Project in an effort to make it more responsive to the current ecological crisis. Yet the State and federal government have already agreed to massive structural alterations in the Project to settle recent water quality litigation that may

81. Id. at §§ 14(b)-(c) (requiring that advisory committees not take any action until after filing a charter, even when renewing the charter; charter renewal is frequent and is required every two years for committees created by Congressional mandate); e.g., Seattle Audubon Society v. Lyons, 871 F. Supp. 1291, 1308-10 (W.D. Wash. 1994) (finding that FEMAT violated the Federal Advisory Committee Act).
82. The Interagency Ecosystem Management Task Force, a national task force established in August 1993 in response to Vice President Gore’s National Performance Review, commented on this. HEALTHY ECOSYSTEMS, supra note 40, at 10 (referring to the Unfunded Mandates Reform Act, 2 U.S.C. § 1534 (1994)).
83. Id. at 12 (making recommendations to improve allocations); see also NATURAL RESOURCES TRUST, supra note 10, at 8.
84. GAO/RCED-94-111, supra note 38, at 8.
85. The Governor’s Commission estimated that there are approximately 200 plans addressing water issues in South Florida. GOVERNOR’S COMMISSION, supra note 63, at 158.
inhibit redesign flexibility. Emergency responses to single issues that arise within the watershed present the Corps with moving targets in the context of its efforts to achieve ecosystem level rehabilitation of the Project.

1. The "Common Law" of Ecosystem Management and Environmental Federalism

Certain statutes can cut across the boundaries of agency jurisdiction to encourage interagency and intergovernmental coordination in support of ecosystem management objectives, where other substantive law permits. This is particularly true at the federal level where the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) each invoke consultation procedures that cross agency jurisdictional boundaries and intergovernmental coordination. The Federal Coastal Zone Management Act has also been cited as a cross-cutting interagency, intergovernmental coordination mechanism which may provide an appropriate model for ecosystem management. Taken together, these statutes, as well as other federal land management statutes, may be described as creating an emerging common law of ecosystem management. There is continuing interest in revising each of these statutes to better reflect principles of ecosystem management. Moreover, to the extent that entrenched agency culture frustrates implementation of ecosystem management, mechanisms exist within these statutes for citizen enforcement of their provisions either directly or through the Administrative Procedures Act.

The opportunities to inject ecosystem-based considerations into decisionmaking that cross-cutting federal process statutes like NEPA and the consultation provisions of the ESA provide are threatened by

90. See, e.g., Keiter, supra note 43, at 46-60.
91. Cortner, supra note 27, at 229-30.
92. See generally Keiter, supra note 43 (explaining that statutes like NEPA cut across the boundaries, requiring all agencies to comply with its procedures).
a process that goes to the heart of the federal environmental regulatory system. Congress designed most substantive federal environmental regulatory programs, like the Clean Water Act and the Clean Air Act, to eventually be assumed by the states. This is compatible with the ideal of implementing ecosystem management at the most appropriate level. However, the inter-agency coordination and review functions provided by NEPA and the consultation provisions of the ESA require federal action to trigger them. These coordination tools may be lost where the federal government delegates away substantive federal programs and hence does away with the opportunity for NEPA and ESA review. For example, Florida is aggressively pursuing assumption of the federal government’s water quality permitting programs, administered by the EPA and the Corps. Yet Florida lies in the minority of states that have no cross-cutting comprehensive NEPA-like review of proposed activities that may affect the environment. Moreover, Florida lacks the strong citizen enforcement mechanisms that federal law provides, and maintains a restricted regulatory approach for the protection of endangered species.

E. Conclusion

The boundary conundrum in ecosystem management remains its most perplexing dimension. The open and fluid nature of ecological systems juxtaposed against the rigidity and imperfection of human institutions virtually assures that the conundrum will remain unresolved. Nevertheless, it seems equally clear that measures can be and have been taken to reduce the complexities caused by non-conforming geographical and institutional boundaries. In Florida, this task was greatly simplified by the presence of a 1972 law which divided management of resources considered most critical to ecosystem management among institutions whose boundaries are aligned to reflect those resources. In South Florida this may yet prove to be


96. Florida does, however, have some laws which protect the life of the endangered species itself; the Florida panther, for example, is protected by section 372.671, Florida Statutes. Tina L. Morin, Note, Indians, Non-Indians, and the Endangered Panther; Will the Indian/Non-Indian Conflict be Resolved Before the Panther Disappears?, 13 PUB. LAND L. REV. 167, 167 (1992). Florida also has laws which provide certain administrative agencies, such as the water management districts, the authority to implement a certain amount of habitat protection for these species in wetlands. See FLA. STAT. §§ 373.413, 373.414(1)(A)2 (1995); supra notes 58-59 and accompanying text.

97. In 1972, the Florida Legislature passed “four landmark pieces of legislation . . . that had a profound effect on regional management.” Light, supra note 22, at 133-34. See generally, LUTHER CARTER, THE FLORIDA EXPERIENCE: LAND AND WATER POLICY IN A GROWTH STATE 125-37 (1974). One of these, the Water Resources Act, established regional water districts which received jurisdiction over environmental protection under chapter 373, Florida Statutes. Id.
particularly fortuitous. More recent legislative and administrative reforms, as well as proposals being offered by federal and state advisory bodies, also support the objectives of devolution, delegation, and deference to the most appropriate management unit, while the corresponding processes of consolidation, coordination, and co-location signal a move toward a more holistic approach to resource management. Despite these promising actions, the long-standing reluctance of resource agencies to cede authority within and among sovereigns, coupled with the historical baggage that agencies bring with them, threaten efforts to achieve ecosystem-level governance.98

III. CONFRONTING UNCERTAINTY: SCIENCE, THE LAW AND ADAPTIVE MANAGEMENT IN THE EVERGLADES ECOSYSTEM

Ecosystem science remains a complex discipline fraught with uncertainties.99 Indeed, it might be argued that the only constant for ecologists is change.100 Most of the frequently referenced ecosystem management principles address the problem of uncertainty by encouraging managers to go forward with the best available scientific knowledge and to embrace uncertainty by adopting a strategy referred to as "adaptive management."101 This appears to be the approach resource managers have selected for South Florida. The system-wide restudy of the Central and Southern Florida Project, under direction of the Corps, acknowledges fundamental ecological uncertainties in what a restored Everglades ecosystem should look like; hence, uncertainties in how a new management system should be designed.102 Adaptive management offers a convenient tool to confront these uncertainties. However, both the law and

101. See, e.g., Grumbine, supra note 39; Lee & Lawrence, supra note 98, at 434-42.
sociopolitical factors may confound efforts to apply adaptive management on an ecosystem scale.\textsuperscript{103}

\textbf{A. Scientific Uncertainty and the Law}

The admonition to use the best science available serves as a reminder to scientists and resource managers that they do not operate in a vacuum, and must engage in some level of reasoned guess work to advance the decisionmaking process. This attribute of science has been best explained by Professor Latin in the introduction to his 1982 essay on the law and scientific uncertainty as follows:

When confronted by uncertainty in the course of a scientific investigation, the systematic response of a scientist is suspension of judgment pending the acquisition of more data and the development of testable hypotheses. In science, 'no decision' can mean just that. In legal disputes, however, 'no decision' perpetuates the status quo and ordinarily promotes some interests at the expense of others. Lacking a comparable option to suspend the flow of events, legal decisionmakers must often create public policy in spite of, or in light of, the absence of reasonable scientific consensus.\textsuperscript{104}

The law tends to encourage regulatory inaction in the face of uncertainty.\textsuperscript{105} The application of legal devices relating to standard of review and burden of proof in regulatory proceedings support this view.\textsuperscript{106} In the context of the development of environmental policy, the standard of review refers to the statutory guidelines by which agencies implement policy through agency action. For example, the Florida Administrative Procedures Act requires that agencies demonstrate that their regulatory activities, known as rules and orders, are not "arbitrary or capricious."\textsuperscript{107} Yet where uncertain outcomes are likely, the likelihood of legal arbitrariness may increase commensurately. For example, if an agency wished to test a particular management strategy, such as altering a regulation schedule at a water control structure to test the downstream effects on water quality, it

\begin{thebibliography}{99}
\item 106. Id. at 364-82.
\item 107. FLA. STAT. § 120.52(8)(e) (1995). The 1996 Florida Legislature significantly weakened the authority of agencies to rely on incipient policy. 1996, Fla. Laws ch. 96-159 (codified at FLA. STAT. § 120.57(1)(e)).
\end{thebibliography}
may be subject to attack on the grounds that the action is arbitrary since the effects are unknown.\textsuperscript{108} To mitigate some of the hardship posed by the demand for certainty, administrative and environmental law doctrines have developed which require deference to agency science and incorporate wide error margins into the assessment of risk.\textsuperscript{109} More recently, a normative framework known as the precautionary principle has emerged in international environmental law that shifts the burden of proof in the face of scientific uncertainty to those proposing activities which might adversely affect the environment.\textsuperscript{110}

\textbf{B. Adaptive Management}

Proponents of ecosystem management have recognized the dilemma presented by scientific uncertainty in the management context and embraced the principle of adaptive management. Indeed, virtually every collection of domestic ecosystem management principles, however varied, explicitly incorporates adaptive management as a guiding principle.\textsuperscript{111} Florida is no exception. Both DEP and the Governor's Commission for a Sustainable South Florida strongly endorse the principle.\textsuperscript{112} Adaptive management also appears to underlie a major non-governmental initiative in South Florida.\textsuperscript{113} In addition, the Corps' Comprehensive Review Study

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\item \textsuperscript{108} However, in Florida law, a mechanism that gives agencies some latitude in policy making is the so-called doctrine of "incipient policy." McDonald v. Department of Banking & Finance, 346 So. 2d 569, 577 (Fla. 1st DCA 1977). This legal theory arose from the recognition that all agency action cannot be predetermined by rules or orders. Agencies must have some carefully controlled flexibility to implement programs within the interstices of statutes. The legal doctrine which considers cumulative impacts in wetlands when permitting first emerged in this context and was subsequently codified. See Thomas T. Ankersen, \textit{Cumulative Impacts in Florida Environmental Decisionmaking: Finding the Straw That Breaks the Camel's Back (And Equitably Distributing All the Others)}, 60 FLA. B. J. 21, 25 (Mar. 1986).
\item \textsuperscript{109} Tarlock, \textit{supra} note 104, at 1135-37.
\item \textsuperscript{111} The dominant themes of ecosystem management espoused by commentators and agencies are collected in Grumbine, \textit{supra} note 39, at 30.
\item \textsuperscript{112} FLA. DEPT. OF ENVTL. PROTECTION, BEGINNING ECOSYSTEM MANAGEMENT 4 (Apr. 1994); GOVERNOR'S COMM'N FOR A SUSTAINABLE SOUTH FLA., INITIAL REPORT 47-48 (Oct. 1995) (stating that "[f]ederal, state, and regional agencies and local governments should apply principles of adaptive management in their planning and implementation activities to maintain flexibility and to incorporate the results of previous actions).”
\end{itemize}
ECOSYSTEM MANAGEMENT

assumes that South Florida ecosystem restoration would be implemented in accordance with an adaptive management strategy, but defers delineating the details of such a strategy to a subsequent phase.114

Adaptive management recognizes scientific uncertainty as an essential assumption in resource policy development.115 Adaptive management suggests that ecosystem management, including ecosystem management policy, should take place in incremental but reversible steps, or probes, designed to test hypotheses concerning appropriate management techniques.116 For proponents of adaptive management, outcomes become less important than the knowledge gained from them. One commentator stated, "surprises are opportunities to learn rather than failures to predict."117 Adaptive management moved from the laboratory to center stage in the ecosystem management debate when scholars suggested explicitly incorporating social and political factors into adaptive decisions.118 Its application in resource management has been pioneered in an applied context in the Pacific Northwest by the Northwest Power Planning Council, a regional compact entity, with efforts to reconcile the restoration of Salmon with hydropower development.119 More recently, adaptive management has emerged as a management strategy in efforts to undertake multispecies habitat conservation planning in Southern California, as well as in efforts to reconcile biodiversity protection with timber harvesting in the Pacific Northwest and the Greater Yellowstone Ecosystem.120

114. C&SF RECONNAISSANCE REPORT, supra note 102, at 114.
115. Tarlock, supra note 104, at 1139-44.
120. Tarlock, supra note 104, at 1141-44 (explaining California's plan for "large scale, multispecies equivalents" of habitat conservation plans authorized by the Endangered Species Act and the southern California pilot project in the coastal scrub sage); see also Seattle Audubon Society v. Lyons, 871 F. Supp. 1291, 1304-06 (W.D. Wash. 1994) (describing adaptive management use in 1994 federal plan in the Pacific Northwest); see also infra notes 315-24 and accompanying text (explaining the activities concerning the Greater Yellowstone Ecosystem).
Adaptive management has also been described as a radical doctrine, since it encourages experimenting with resources at ecosystem or population-level scales.\footnote{121}{Volkman & McConnaha, supra note 118, at 1255-56.} For example, in fisheries management, it has been applied to deliberately over-harvest or under-harvest fish populations.\footnote{122}{Id.} Both the law and politics may confound a manager’s ability to apply this radical doctrine, as case studies from the Pacific Northwest and South Florida demonstrate.

1. The Everglades Nutrient Removal Project – An Adaptive Management Case Study

Adaptive management, a means to deal with uncertainty in decisionmaking, may be affected by the burden of proof in environmental and administrative law.\footnote{123}{Flournoy, supra note 105, at 354-56.} For example, the South Florida Water Management District recently developed an experimental program designed to treat nutrient-laden agricultural stormwater runoff prior to discharge into a water conservation area. The 3681 acre Everglades Nutrient Removal Project (ENR) is one of the largest constructed wetlands in the world and was designed to test the ability of such areas to meet stringent water quality standards.\footnote{124}{This project was implemented, after heated public debate, as an “experimental artificial wetland” designed to remove nutrients, such as phosphorous, from the water runoff of what is referred to as the Everglades Agricultural Area. See, e.g., John, supra note 44, at 154-55. The project was first approved on an experimental basis in 1988 and was proposed again in the Everglades SWIM plan in 1989. Id.} Although considered an initial experiment before the implementation of a larger treatment system, the EPA required that an NPDES permit be obtained pursuant to the Clean Water Act. This placed the burden of proof on the water management district to demonstrate that the experimental system would meet regulatory water quality standards. Because the project was designed to test whether it would work on a larger scale, it implicitly involved fundamental uncertainties concerning the ability to satisfy standards. The circular logic involved in requiring managers to give assurances that a project can meet a standard, when the project has been designed to test whether the standard can be met, could have a substantial chilling effect on adaptive management projects, particularly those on an ecosystem scale.

Despite some level of uncertainty, the EPA issued the ENR water quality permit based on assumptions made concerning the efficacy of the ENR project to accomplish its remedial objective.
surprisingly, the ENR permit was challenged by an environmental
group, the Friends of the Everglades, on the ground that the experi-
mental nature precluded any assurance the discharge would meet
water quality standards.¹²⁵

The ENR permit challenge presents an array of example prob-
lems associated with the use of adaptive management as a means to
implement ecosystem management. One of the issues raised in the
permit challenge stemmed from EPA’s decision not to undertake
NEPA review of the ENR project. EPA’s decision was premised on
the ground that a permit issued for a structure designed to improve
water quality was not a “major action significantly affecting the
environment.”¹²⁶ However, in the context of ecosystem scale experi-
mentation where outcomes are uncertain, a conclusion of this sort
may not always be warranted. Indeed, this too became a basis for
the Friends of the Everglades’ challenge.¹²⁷

In addition, after the development of NEPA, the legal doctrine of
“segmentation” emerged, reflecting concerns that agencies might
attempt to circumvent NEPA by dividing otherwise major projects
into smaller segments where the individualized NEPA review of
small project segments would not reveal the full range and nature of
environmental impacts.¹²⁸ Experiments like the ENR project may be
viewed as a segmentation approach to system scale water quality
management. This also appears to have been a reason for the
Friends of the Everglades’ challenge to the ENR on NEPA grounds.
Indeed, the decision of the Florida legislature to adopt the ENR
project concept as the means to treat runoff from the entire Ever-
glades Agricultural Area,¹²⁹ even before the ENR became opera-
tional, suggests that segmentation can occur by default as well.

The Legislature’s decision to operationalize the ENR experi-
mental design also raises a political problem encountered in

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¹²⁵. John E. Childe, Friends of the Everglades, Request for Evidentiary Hearing before the
Environmental Protection Agency on NPDES Permit No. FL0043885, at 54 (1994). Similar
concerns were raised regarding the federal dredge and fill permit. Letter from Terry L. Rice,
Colonel, Dep’t of the Army, Jacksonville Dist. Corps of Eng’rs, to Sam E. Poole, Executive
Responsibility, University of Florida College of Law).
¹²⁶. Childe, supra note 125, at 53.
¹²⁷. The group’s comments to the EPA’s draft permit provisions stated that “since the ENR
is an experiment, unproven in its ability to treat even phosphorus effectively, an E.I.S. . . .
should be conducted before a permit is issued.” Friends of the Everglades, Comments on EPA
Draft Permit No. FL0043885 - Public Notice No. 94fl0004 (undated) (on file at the Center for
Govtl. Responsibility, University of Florida College of Law).
implementing adaptive management.\textsuperscript{130} Adaptive experiments can be long term and highly visible, developing expectations and reliance among a public anxious for results and reluctant to accept the experimental nature of the project. In the Northwest, for example, an adaptive experiment was designed to test the efficacy of relocating Salmon hatchlings by moving them around dams on the Columbia River. Even before study results on the long-term effects on the fish had been obtained, the Northwest Power Planning Council was pressured to operationalize the experiment on a larger scale.\textsuperscript{131} The analogy to the ENR project is evident; due to politics involved in the Everglades restoration, rather than waiting for the results of the ENR experiment, the initiative was approved systemwide by a hastily crafted political compromise before it had been fully operationalized as an experiment.

2. Adaptive Management and the ESA - The Modified Water Deliveries Problem

Proponents of adaptive management cite the congressional mandate to experiment with water deliveries from the Central and Southern Florida Flood Control Project (C&SF Project) into the Everglades National Park as an example of legislative authorization to pursue an adaptive management policy in the Everglades ecosystem. The 1984 legislation authorized the Corps, in conjunction with the water management district, to experiment with deliveries of water to the Everglades National Park based on a concept referred to as the "rainfall plan."\textsuperscript{132} According to one commentator, "[t]he rainfall plan is part of an experimental program authorized by Congress . . . which permits 'a series of iterative field tests . . . with the ultimate goal being the development of an optimum delivery plan for

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\textsuperscript{130} Volkman & McConnaha, supra note 118 at 1258-62.
\textsuperscript{131} The Northwest Power Planning Council was formed in 1981 pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980, 16 U.S.C. §§ 839(a)-839(h) (1994). Lee & Lawrence, supra note 98, at 433 n.2. As per the instructions of the Act, the Council adopted a program for fish and wildlife in 1982 which was subsequently amended as the Columbia River Basin Fish and Wildlife Program § 1500 (1984). Id. at 431 & 432 n.1.
\end{flushleft}
the [Everglades National Park].” Implementation has proven problematic.

After a series of experimental tests, the Corps selected an alternative referred to as the “modified raindriven plan” and initiated consultation with the United States Fish and Wildlife Service (USFWS) pursuant to Section 7 of the Endangered Species Act. The USFWS concluded that the Corps’ preferred alternative, the result of an ongoing adaptive process, would “jeopardize the future” of the federally endangered snail kite by altering hydroperiods in nesting habitat. However, the USFWS authorized the activity through an incidental take permit pursuant to the ESA.

Recently, a coalition of prominent environmental groups (coalition) issued a notice of intent (notice) to file suit pursuant to the citizen suit provisions of the ESA on a variety of grounds, including the 1990 USFWS Biological Opinion. The coalition alleges that the Corps failed to consult and to reinitiate consultation with the USFWS pursuant to Section 7 of the ESA on a variety of water delivery manipulations taken pursuant to the C&SF Project beginning in 1985, the year after the experimental water delivery program was authorized. The coalition also alleges that water delivery manipulations have also directly taken several species in violation of the ESA.

The recent challenge to the C&SF Project’s modified water deliveries plan suggests that ecosystem-scale experiments involving populations of endangered species, incidentally or otherwise, are likely to engender significant opposition, even when couched in the adaptive patina of increasing scientific understanding. In the notice, the coalition claimed that even if the Corps had sought and received approval for an incidental taking in connection with the

133. Light & Dineen, supra note 132, at 80 (citing U.S. ARMY CORPS OF ENGINEERS CENTRAL AND SOUTHERN FLORIDA PROJECT, WATER CONTROL PLAN FOR WATER CONSERVATION AREAS - EVERGLADES NATIONAL PARK AND ENP - SOUTH DADE CONVEYANCE SYSTEM (Oct. 1992)).

134. Id. at 76.

135. The USFWS Biological Opinion also intimated that the Corps’ experimental tests should have required consultation. The USFWS issued its report, as well as the Biological Opinion, in 1990. U.S. DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE, BIOLOGICAL OPINION, MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK (Feb. 1990).

136. “Incidental take” authorizes the taking of endangered species when the harm to the species is “incidental” to the proposed activity, and the take is subject to an approved conservation plan. 16 U.S.C. §§ 1536(b)(4), 1539(a)(2) (1994).

137. Letter from Natural Resources Defense Council et al. to Bruce K. Babbitt, Secretary, U.S. Dep’t of Interior 6 (Sept. 15, 1995) (giving notice of intent to sue for Everglades and Florida Bay restoration and failure to monitor in accordance with the USFWS Biological Opinion (1990)) (on file at Center for Govtl. Responsibility, University of Florida College of Law).

138. Id. at 4-5.

139. Id.
experimental water deliveries, “such approval, in any event, would have no scientific and legal basis.” Moreover, it appears that the coalition has a clear view of what is required to achieve ecosystem restoration in the Everglades National Park, and hence the measured policy and management probes premised on scientific uncertainty are viewed suspiciously. For example, in the notice, the coalition complains that the Corps’ restoration plan will not be implemented for another twenty years, and they “cannot simply ‘wait’ another twenty years.” The Corps argues caution is necessary “because of the uncertainties regarding the ecological responses that will occur as more natural hydrological conditions are established.”

C. Conclusions on Adaptive Management

As these cases suggest, the implementation of adaptive management policies is problematic under the current environmental regulatory framework. The application of legal standards like the burden of proof and the standard of review, along with substantive and procedural constraints built into legislation like the ESA, may limit experimentation and, in many cases, frustrate adaptive management design. Professor A. Dan Tarlock suggests that this result is inevitable, because adaptive management is the product of thought in current ecological theory referred to as the “nonequilibrium paradigm” which suggests there is no balance of nature as it has been historically conceptualized. In contrast, most contemporary environmental law emerged from the equilibrium paradigm. As a result, Tarlock contends that existing legal tools and processes leave legal decision makers ill-equipped to deal with the open-ended

140. Id. at 5, sec. 3.
141. Id. at 3.
142. C&SF RECONNAISSANCE REPORT, supra note 102, at 114.
143. Professor Tarlock explains in the biographical note attached to his article concerning the nonequilibrium paradigm in ecology, that he is a Professor of Law at Chicago-Kent College of Law in the Illinois Institute of Technology. He credits scientists who served with him on several of the National Academy of Science’s National Research Council boards and committees for educating him in the “practice and potential of science.” The boards and committees on which he served dealt with applications of social and physical science information to environmental regulation. Tarlock, supra note 104, at 1121 n.*.
144. Tarlock, supra note 104, at 1139-44. Indeed, Professor Tarlock has also suggested that under current standards of judicial review there is a possibility that courts may be unwilling to recognize the validity of the entire science of conservation biology, the principle scientific basis of ecosystem management. Id. at 1138 (discussing the possible effect of a products liability case. Daubert v. Merrell Dow Pharmaceuticals, 113 S. Ct. 2786 (1993), if the principles announced were applied in the context of regulatory science).
experimentation, premised on scientific uncertainty, that characterizes the new paradigm.145

Beyond technical legal considerations and the philosophical dimensions of paradigm shifts, the aforementioned incidents, and others like them, suggest that political factors may also inhibit ecosystem scale experimentation. The political decision to operationalize the Everglades Nutrient Removal Project experiment even before the first test results emerged is a case on point. In addition, environmentalists remain suspicious of bureaucratic motives and may view adaptive management as just another agency ploy to pursue traditional resource exploitation policies. This appears to have been the case with proposed adaptive experiments in timber harvesting plans in the Pacific Northwest and in the Greater Yellowstone Ecosystem.146 Indeed, it is difficult to find references to any ecosystem scale adaptive management experiments that have not become embroiled in political controversy.

IV. ECOSYSTEM GOVERNANCE

Ecosystem management’s call for geographical and institutional realignments, the adoption of management theories like adaptive management, and reaffirmation of humankind’s place in the ecosystem management paradigm has prompted a reexamination of the appropriate mechanisms for ecosystem governance. Throughout the country, managers and politicians are experimenting with non-traditional interinstitutional, intergovernmental arrangements designed to move toward ecosystem-level governance.147 In many, if not most cases, established institutions with multi-jurisdictional and intergovernmental governance capacity predate the emergence of ecosystem management as a governance concept. These institutions have served as convenient laboratories to test the implementation of ecosystem management principles.

145. Tarlock explains that the law requires a “casual link between human behavior and environmental degradation before an individual can be subject to regulation” and clarifies that, because this rests on notions fundamental due process, the rules of evidence and standards of review as currently applied assume that “preexisting data will be collected and applied to establish cause-in-fact.” Id. at 1138.


The nature and extent of multi-jurisdictional management capacity within these regional institutions vary considerably. In some instances, like the New Jersey Pinelands Reserve Act or the Northwest Electric Power Planning and Conservation Council Act, the arrangements represent wholesale political realignments where construction and regulatory powers have been shifted to ecosystem or watershed level institutions. This has been referred to by scholars in regional public administration as "hard management." In other instances, like the California Biodiversity Agreement and the Southern Appalachian Biosphere Cooperative Agreement, the arrangements are limited to interinstitutional and intergovernmental coordinating mechanisms and advisory boards, sometimes referred to as "soft management" mechanisms. In the contemporary parlance of ecosystem management, this has also been described as "process" ecosystem management. Finally, there are a number of grass roots and nongovernmental initiatives, like the Greater Yellowstone Coalition’s A Blueprint for the Future and the emerging “bioregional” movement, that suggest new methods to achieve ecosystem governance.

All of these arrangements may advance the goals of ecosystem management by offering alternatives to the institutional arrangements that scientists and managers believe have contributed to ecosystem decline in the past. All offer some potential for application to the Everglades ecosystem. Each emerged from unique political, historical and environmental circumstances, however, and must be viewed accordingly.

A. Regional Compacts

Perhaps the most powerful interinstitutional governance mechanism available for ecosystems that lie within the jurisdictions of separate sovereigns in the United States is the compact. Compacts are typically agreements between states, ratified by Congress.

148. See infra notes 176 & 268 and accompanying text.
149. Cf. Kenney & Lord, supra note 7, at 7 (explaining similar shifts).
150. Id. at 7 (citing Martha J. Derthick, Between State and Nation: Regional Organizations of the United States (1974) and differentiating from the soft management advisory and advocacy functions).
151. See infra note 311 and accompanying text (explaining the Appalachian Cooperative Agreement); see infra note 325 and accompanying text (explaining the California Agreement).
152. Kenney & Lord, supra note 7, at 7 (explaining soft management).
153. See Ghost Bears, supra note 19, at 160; Keiter, supra note 43, at 48.
155. The United States Constitution provides that “No State shall, without the consent of Congress . . . enter into any Agreement or Compact with another State.” U.S. Const. art. I, § 10,
There are, however, hybrid forms in which the federal government is a party. Even local governments have been participants in compact commissions. Compacts have been likened to international treaties since they involve an agreement between separate sovereigns, and to contracts because they involve mutually enforceable obligations between parties. Thus, for example, the agreement between the State of Florida and the Seminole Tribe of Florida concerning water rights in South Florida is described as a water rights compact. In recent years, the relevance of the compact form to ecosystem management initiatives has been explicitly recognized, as is indicated by its incorporation into a proposed federal ecosystem management bill.

In *Northeast Bancorp, Inc. v. Board of Governors*, the United States Supreme Court articulated the indicia of interstate compacts: (1) establishment of a joint organization for regulatory purposes; (2) conditional consent by member states in which each state is not free to modify or unilaterally repeal its participation; and (3) state enactments which require reciprocal action for their effectiveness. Until recently, the central issue in determining whether a pact is a compact was the extent to which the interstate agreement encroached on federal law, thereby requiring the consent of Congress. However, in *Cuyler v. Adams*, the United States Supreme Court refused to look behind the congressional action to determine whether any federal law had actually been encroached upon, apparently assuming that congressional ratification itself was sufficient to transform an agreement between states into a compact.

States have used compacts for a wide variety of reasons, such as resolving boundary disputes, harmonizing criminal procedures,

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157. *Id.* at 2; see also BLACK'S LAW DICTIONARY 322 (6th ed. 1993); WEBSTER'S UNABRIDGED DICTIONARY 299 (1994).


164. See, e.g., Cuyler, 449 U.S. at 433 (involving the New Jersey Interstate Agreement on Detainers).
and streamlining interjurisdictional transportation and regional planning. Perhaps its most preeminent use, however, is in the area of interstate water allocation and river basin management. A flurry of interstate water compacts were enacted during the fifty year period following the first such compact, the Colorado River Compact, which was concluded in 1929. These compacts coincided generally with the heyday of large public works projects for irrigation, reclamation, flood control, water supply, and power.

Interstate compacts usually feature a governing body known as a compact commission, headed by gubernatorial appointees of the compacting states and occasionally non-voting federal members. Decisions of a compact commission often require a unanimous vote, a factor that substantially weakens their effectiveness. Often, compact commissions offer a forum for dispute resolution. However, the actual role and authority of compact commissions is highly variable, depending largely on local circumstances and political context.

Interstate compacts may appear somewhat irrelevant to the Everglades ecosystem, because it lies entirely within the boundaries of one state. However, management and ownership of the Everglades ecosystem is shared by separate sovereigns: the federal government, the State of Florida, and two Indian tribes. In addition to the lessons compacts provide for interjurisdictional resource management, a hybrid form of compact, referred to as a federal-interstate compact, suggests that compact use is not irrelevant to the Everglades situation. The term "compact" has been used to describe an agreement between the United States and a single state, Montana, governing the disposition of geothermal activity adjacent to Yellowstone National Park.

168. KENNEY & LORD, supra note 7, at 19; see also COUNCIL OF STATE GOVERNMENTS, INTERSTATE COMPACTS AND AGENCIES (1983) (providing detailed listing of compact entities, including their nature and administrative structure).
169. KENNEY & LORD, supra note 7, at 8.
170. Id. at 9.
171. MUYS, supra note 167.
172. Water Rights Compact, H.B. 692, 53d Leg., 1993 Mont (enacted) (compact between Montana & National Park Service); see also Old Faithful Protection Act, H.R. 1137, 103d Cong.,
B. Federal-Interstate Compacts

Federal-interstate compacts differ from interstate compacts in that the federal government participates as a partner in the compact commission. Commentators view this institutional arrangement as having all of the hard management potential of traditional interstate compacts, with the added advantage of having the federal government, with its resources, as a participant. Two institutions of this nature have been created, one involving the Delaware River and the other concerning the Susquehanna River. The legislative and administrative frameworks of the two entities are virtually identical. Additionally, the Northwest Electric Power Planning and Conservation Council is another compact entity involving several states and the federal government, although it differs substantially in the nature of federal involvement. These federal and state institutions are typically characterized by multiple-purpose mandates, which lend credence to their viability as ecosystem managers.

The most significant feature of federal-interstate compacts, the potential to subordinate federal interests to a regional compact, withstood constitutional challenge in Seattle Master Builders Association v. Pacific Northwest Electric Power and Conservation Planning Council. The Ninth Circuit held that the fact that the Northwest Electric Power and Conservation Planning Council, created by compact under the Northwest Electric Power Planning and Conservation Act, had discretion to regulate matters affecting the Bonneville Power Administration, a federal agency, did not violate the Appointments Clause of the United States Constitution. This has been
viewed as a significant factor in the development of principles of federalism in the United States, in addition to its value as a tool for forging interinstitutional mechanisms for ecosystem management.

The Delaware River Compact requires the development of a multipurpose basinwide comprehensive plan administered by an agency called the Delaware River Basin Commission (Commission). From an ecosystem management standpoint, the comprehensive nature of the Compact's mandate is notable, since it deals with water supply, pollution control, flood protection, watershed management (including soil conservation, forestry, and fish and wildlife), recreation, hydroelectric power, and the regulation of withdrawals and diversions. The Commission is comprised of the governors of each of the signatory states and one federal commissioner appointed by the President. Decisions are taken by majority vote rather than the unanimity that is more typical among states reluctant to sacrifice sovereignty to a regional entity. The Commission is charged with developing a long range comprehensive plan, and a water resource program based on the plan that addresses both the quantity and quality of the water resources in the basin. Significantly, the comprehensive plan is enforceable; all projects within the basin that may have a "substantial effect on the water resources of the basin" must be submitted to the Commission for a determination of consistency with the plan. Proposed state and federal projects must first be submitted to the Commission and included in the comprehensive plan before they are authorized. The Commission has both regulatory authority and the authority to finance and construct capital improvements. In addition, the Commission may assess

reflect regional geographic and climatic differences" and that the value of conservation should be determined based on "'methodology developed by the Council as part of the plan.'" Id. at 1370 (citing S. Rep. No. 96-272, 96th Cong., 1st Sess. 2 (1979)).

181. Dave Frohmayer, Seattle Master Builders and Creative Cooperative Federalism, The Compact Clause, the Appointments Clause and the New Cooperative Federalism: The Accommodation of Constitutional Values in the Northwest Power Act, 17 ENVR. L. 767, 776 (1987); see also Seattle Master Builders Ass'n, 768 F.2d at 1376 (Beezer, J., dissenting). It is noteworthy that one of the examples offered by the court was the Federal Flood Control Act under which federal flood control projects are subject to state water law. Id. at 1364; see also Frohmayer, supra, at 775.

182. See Frohmayer, supra note 181, at 767.


184. Id. §§ 4-10.

185. Id. § 2.2.

186. Id. § 5; see also Kenney & Lord, supra note 7, at 8-9; Michael J. Donahue, Michigan Sea Grant College Program, Institutional Arrangements for Great Lakes Management: Past Practices and Future Alternatives (1987).

187. Delaware River Basin Compact, supra note 183, § 3.2.

188. Id. § 3.8.

189. Id. §§ 11.1, 2.
fees for the use of its facilities, another factor of great significance for the independence of a regional entity.

1. The Northwest Power Act

The Northwest Electric Power Planning and Conservation Act is noteworthy as a model for multi-jurisdictional ecosystem management, for launching a new era of creative cooperative federalism, and as a laboratory for adaptive management. This compact attempts to reconcile the provision of hydroelectric power from the Columbia River Basin in the four state region of Washington, Montana, Oregon, and Idaho with the effects of power generation on fish and wildlife, particularly spawning anadromous fish. The compact created a Council consisting of two gubernatorial appointees from each state. Council decisions are made by majority vote, effectively subordinating state and federal sovereignty to the regional Council.

The compact requires the Council to prepare a Regional Conservation and Electric Power Plan, and a program to "protect, mitigate, and enhance fish and wildlife including related spawning grounds and habitat, on the Columbia River and its tributaries." Significantly, from the standpoint of ecosystem management principles, the compact requires that the fish and wildlife program "deal with [the Columbia River] and its tributaries as a system." In addition, the Compact requires the Bonneville Power Administration and other federal agencies to provide "equitable treatment" of fish and wildlife and their habitat with the purposes of power generation at hydroelectric facilities, effectively elevating the ecosystem to a coequal status with power development considerations within the basin. The Compact also provides that user fees attached to utility rates may pay for the fish and wildlife mitigation and enhancement.

190. Id. § 3.7.
191. See supra note 179.
192. Frohnmayer, supra note 181, at 768.
193. "Adaptive management was first applied as an explicit policy on the ecosystem scale in the 1984 revision of the Columbia basin program". Lee, supra note 119, at 54. Lee, a political scientist, is a principle proponent of adaptive management and served on the Northwest Power Planning Council. Id. at vii. Lee criticizes the plan for over emphasis on salmon and its spawning habits, but concludes that the plan nonetheless "exercises ecosystem influence." Id. at 56.
195. Id. § 839b(a)(2)(B).
196. Id. § 839b(c)(2).
197. Id. § 839b(h)(1)(A) (emphasis added).
198. Id.
Both of these characteristics, a level playing field for ecosystem considerations and a financial mechanism derived from the use of the ecosystem, are highly significant from the standpoint of ecosystem management.

2. The Lake Tahoe Regional Planning Compact

The Lake Tahoe Regional Planning Compact provides an interesting example of a multi-jurisdictional hard management instrument involving a shared boundary resource among sovereigns. Perhaps this compact's greatest contributions have been the creation of a commission with authority to manage a shared water resource and a governance structure for regional resource management. However, despite broad resource regulatory and management authority, water quantity issues appear to be excluded from the compact's jurisdiction due in part to the existence of a prior interstate water allocation compact.

The Lake Tahoe Regional Planning Compact was first adopted by the states of California and Nevada in 1969. The two states and Congress strengthened the compact in 1980. The Compact emerged as a result of growing concern over the effects that rapid growth and development was having on Lake Tahoe, a shared boundary water between California and Nevada. The Compact established the Tahoe Regional Planning Agency (Agency), with what one court has described as "broad powers to make and enforce a regional plan of an unusually comprehensive scope." Perhaps most interesting, the Agency consists of representatives of state and local government. The federal government, however, does not sit on the Agency.

199. The compact requires that fish and wildlife be protected, mitigated, and enhanced. Id. § 839b(h)(11)(A)(i). In addition, the compact provides that customers will pay all costs necessary to conserve the resources and meet power requirements. Id. § 839(4).

200. See Lee & Lawrence, supra note 98, at 439; see also Lee, supra note 119, at 19-50, 64-65.

201. Lake Tahoe is the boundary between California and Nevada. The basin area includes "three Nevada counties, two California counties, one California city, and a dozen federal and state agencies with varying degrees of responsibility." Gary D. Meyers & Jean Meschke, Proposed Federal Land Use Management of the Columbia River Gorge, 15 ENVTL. L. 71, 89 (1984).


207. The Lake Tahoe Regional Planning Compact, NEV. REV. STAT. ANN. § 277.200 (1993). The California delegation includes representatives of two counties and one city government appointed by the respective governing bodies, one member appointed by the governor, one.
the Agency even though it is a major landholder within the Lake Tahoe Basin. A capped apportionment formula divided among the local governments within the region, with unspecified additional discretionary contributions provided by the states, also pursuant to an apportionment formula, provides the Agency's financial base.

The powers of the Agency include the authority to adopt and enforce a regional plan, to implement ordinances in furtherance of the plan, and to establish "environmental threshold carrying capacities." While more than a majority vote is required in some cases, the Compact does not require unanimity to promulgate Agency decisions, to adopt or amend the regional plan, or to implement ordinances. Accordingly, both state and local sovereignty is effectively ceded to the regional entity.

The Compact requires that the regional plan be a single enforceable plan with correlated elements, including a land use plan which provides the following:

integrated arrangement and general location and extent of, and the criteria and standards for, the use of land, water, air, space and other natural resources within the region, including but not limited to, an indication or allocation of maximum population densities and permitted uses.

Other plan elements include transportation, conservation, recreation, and public services and facilities. In addition, local governments may enact stricter ordinances than those required by the plan, but are otherwise preempted. Projects, defined as activities that may substantially affect the resources of the region, require Agency approval and must be consistent with the regional plan to be approved. Interestingly, the Compact provides that the Agency member appointed by the speaker of the state assembly, and one member appointed by the Senate Rules Committee (these latter state appointees represent the state at large and may not reside within the jurisdiction). A representative of the U.S. Forest Service does, however, sit on the Agency's Advisory Planning Commission. The Nevada delegation has a similar composition, with one less state representative.


209. Lake Tahoe Regional Planning Compact, supra note 202, at art. VIII(a).

210. Id. at art. I(b).

211. To adopt, amend, or repeal environmental threshold carrying capacities, the regional plan, ordinances, rules or regulations, the vote of at least four members of a state, in agreement with the vote of at least four members of the other state, is required. Id. at art. III(g)(1).

212. Id. at art. V(c)(1).

213. Id. at arts. V(c)(2)-(5).

214. Id. at art. VI(a).

215. Id. at art. II(h).

216. Id. at art. VI(b).
must prepare an environmental impact statement when "acting upon matters that have a significant effect on the environment," including proposed projects.\textsuperscript{217}

The original Lake Tahoe Compact was criticized as a failure for a number of reasons. Perhaps the most significant of these was the preponderance of local government officials on the original Agency, which was thought to lead to parochialism in land use decisions.\textsuperscript{218} In its first ten years, the Agency approved ninety-six percent of the development proposals it considered.\textsuperscript{219} The 1980 Compact reformed the Agency's composition by increasing the state appointees by four, altering the balance of power.\textsuperscript{220} In addition, a provision in which development proposals were deemed approved unless specifically denied within sixty days was amended to require the Agency to explicitly deny or approve proposals.\textsuperscript{221} Nonetheless, in 1984 a federal court enjoined the Agency from approving any further development projects until the states adopted a management plan in compliance with the Compact.\textsuperscript{222}

3. Columbia River Gorge Compact

The latest major administrative experiment in regionalism, the Columbia River Gorge National Scenic Area Act,\textsuperscript{223} also represents the most complex and carefully balanced effort to reconcile federal, state, and local sovereignty concerns under a single management

\textsuperscript{217} Id. at art. VII(a).

\textsuperscript{218} The Tahoe experience demonstrates that local residents of the area are subject to development pressures. See Meyers & Meschke, supra note 201, at 91. "[T]he Tahoe Regional Planning Agency...achieved national recognition as a failure." Blair supra note 147, at 892. The original compact contained a ten member commission, six of whom were representatives of local governments within the Agency's jurisdiction. Id. at 892-93 (citing Lake Tahoe Bi-State Compact, Act of Dec. 18, 1969, Pub. L. No. 91-148, 83 Stat. 360 (1969), at art. III(a)). Although this compact was approved by a special act of Congress, it was not codified in the U.S.C. Id. at 892 n.109. The original compact was called the Lake Tahoe Bi-state Compact, but was referred to as the Tahoe Regional Planning Compact when codified in the California and Nevada statutes. Lake Tahoe Planning Compact, supra note 202.

\textsuperscript{219} Blair, supra note 147, at 892 (citing Bookman, Lake Tahoe Plan Holds Lessons for Columbia River Gorge, VANCOUVER COLUMBIAN, Apr. 10, 1983, at C15). These projects were approved not only because of the preponderance of local officials in the Agency, but also because the representatives of the two states often could not agree and the original compact provided that any proposed development project not specifically denied with 60 days was approved. Id. at 893 n.115.

\textsuperscript{220} Id. at 893 (citing the Lake Tahoe Bi-State Compact, Act of Dec. 19, 1980, Pub. L. 96-551, 94 Stat. 3233 (1980)).

\textsuperscript{221} Id. at 893 n.115 (citing Act of Dec. 19, 1980 at art. III(g)(1)).


regime. Indeed, soon after its passage, it was touted as a model for other natural systems, including the Everglades ecosystem. At the same time, the long and tortured legislative history of the Act, and its complex statutory framework, suggests the increasing difficulty of multi-jurisdictional regional ecosystem-scale management initiatives in the United States, particularly in the era of new federalism and increasing hostility toward government.

The federal legislation that emerged in 1986 represents nearly a decade of efforts to reconcile the geopolitical complexities of the Columbia River Gorge with its management requirements. The National Scenic Area encompassed six counties, nine cities, seven ports, and numerous unincorporated communities in the states of Washington and Oregon, as well as at least twenty-six other administrative entities with jurisdiction.

The impetus for the legislation's unique framework came largely as a reaction to a request to study the area for inclusion in the National Park System.

The federal legislation and subsequent state compact establishing the National Scenic Area preserves the dual management authority of the federal and state governments. The Scenic Area is divided into three management categories, classified as special management areas (SMAs), urban areas (UAs), and general management areas (GMAs), whose boundaries are included on a map incorporated into the legislation.

The thirteen cities and towns within the UAs are exempt from the Act. The United States Forest Service has jurisdiction over the SMAs, which comprise approximately forty-five percent of the Scenic Area. The SMAs include both public and private land, and are the most significant lands for Scenic Area purposes. The Forest Service has administrative authority to make minor

224. Blair, supra note 147, at 868 n.5 (citing THE OREGONIAN, Nov. 24, 1986 at 1, col. 2). The Columbia River Gorge National Scenic Area Act, 16 U.S.C. §§ 544-544(p) (1994), created a “novel mechanism for protecting large, populous, and geographically-complex areas which . . . may be unsuitable for more traditional protection as a national park or national recreation area.” Id. at 867.

225. Both the legislative history of the Columbia River Gorge legislation and an excellent narrative description of its statutory framework are discussed in exhaustive detail in Blair's article. Blair, supra note 147.

226. Id. at 872.

227. Id. at 879-80.

228. 16 U.S.C. §§ 544, 544b(a)(2), 544b(b)(2)(A), 544b(e)(2) (1994); see also Blair, supra note 147, at 935-36.


230. The jurisdiction of the Forest Service is implemented by the Secretary of Agriculture who has authority over the SMAs. 16 U.S.C. § 544f(a)(1) (1994).

231. Blair, supra note 147, at 935.

232. Id. at 934.
revisions to the SMA boundaries, subject to certain consultation requirements. 233

The GMAs, which also encompass about forty-five percent of the Scenic Area, 234 are managed by the Columbia River Gorge Commission, as enabled by the Federal Act 235 and established pursuant to state compact. 236 The Commission is comprised of twelve voting members. 237 Half of the voting members are appointed by each state’s Governor and half by the governing body of each county within the Scenic Area. 238 Those appointed by a county’s governing body must reside within the county, but not necessarily the Scenic Area. 239 One gubernatorial appointee from each state must reside within the Scenic Area. 240 Interestingly, no member of the Commission may be a locally appointed or elected official. 241 This provision is apparently premised on the concern that an appointed or elected official may be more likely to engage in short-term decisionmaking 242 due to political considerations. In addition, the United States Forest Service sits in an ex officio capacity on the Commission. 243

The dual federal-state management scheme is reconciled through the development of a comprehensive management plan. 244 Both the federal legislation and the state compact require that local land use activities within the Scenic Area be consistent with the management plan. 245 The Forest Service and the Commission prepare plans for the SMAs and GMAs respectively. 246 These plans must be based on a resource inventory, an economic opportunity study, and a recreational assessment of the Scenic Area. 247 Both the Commission and the Secretary of Agriculture (i.e., the Forest Service) must develop

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234. Blair, supra note 147, at 935.
238. Id.
239. Id. § 544c(a)(1)(C)(i).
240. Id. §§ 544c(a)(1)(C)(ii)-(iii).
241. Id. § 544c(a)(3).
242. Blair, supra note 147, at 936.
244. Blair, supra note 147, at 937.
245. Id.
246. 16 U.S.C. §§ 544d(a)(1)(B), (a)(3)(D), (c)(4), (c)(5)(A) (1994) (referring to SMAs); id. § 544e(a) (referring to GMAs).
247. Id. § 544d(a)(1) (requiring resource inventory); id. § 544d(a)(2) (requiring economic opportunity study); id. § 544d(a)(3) (requiring recreation assessment).
land use designations within the Scenic Area that are consistent with a set of development standards listed in the legislation.\textsuperscript{248}

The final Comprehensive Management Plan (Plan) contains the components developed by the Forest Service and the Commission.\textsuperscript{249} The Plan must include the land use designations adopted by each entity and incorporate without change the Forest Service’s management direction for federal lands, as well as the Forest Service’s guidelines for the development of land use ordinances within SMAs.\textsuperscript{250} Adoption of the Plan requires a majority vote by the full Commission, including the affirmative vote of at least three members from each state.\textsuperscript{251} The Secretary of Agriculture must then have an opportunity to approve the Plan.\textsuperscript{252} If the Secretary does not concur with the Plan, suggested modifications will be made and the Commission may revise it, or adopt by vote a Plan that is consistent with the Act’s requirements.\textsuperscript{253} A two-thirds vote of the Commission, including the majority of members from each state, is required to adopt a Plan that has not been modified according to the Secretary’s suggestions.\textsuperscript{254} The Plan will subsequently be reviewed at least every ten years to determine whether revisions are needed.\textsuperscript{255}

Once approved, local governments must submit revised land use ordinances for approval to the Commission regardless of whether they lie within an SMA or GMA.\textsuperscript{256} If the land use ordinance is approved by the Commission, and it is within an SMA, it is forwarded to the Secretary of Agriculture for concurrence.\textsuperscript{257} The cumbersome and more complex provisions for SMAs were apparently included to alleviate concerns in Congress and the Reagan administration that the Act would authorize “federal zoning,”\textsuperscript{258} and were based on the approach used in the Cape Cod National Seashore legislation,\textsuperscript{259} discussed later in this section.

The Scenic Area legislation contains a number of other noteworthy provisions. The Act provides an interim regulatory framework until completion and approval of the Plan that vests substantial

\textsuperscript{248} Id. § 544d(b)(1).
\textsuperscript{249} Id. §§ 544d(c)(1)-(5).
\textsuperscript{250} Id. §§ 544d(c)(2), (c)(4), (c)(5)(A).
\textsuperscript{251} Id. § 544d(c).
\textsuperscript{252} Id. § 544d(f)(1).
\textsuperscript{253} Id. §§ 544d(f)(2), (3)(A)-(B).
\textsuperscript{254} Id. § 544d(f)(3)(B).
\textsuperscript{255} Id. § 544d(g).
\textsuperscript{256} Id. §§ 544e(b)(1) (concerning GMAs), 544f(h)(2) (concerning SMAs).
\textsuperscript{257} Id. § 544f(i).
\textsuperscript{258} Blair, supra note 147, at 920-22, 945.
\textsuperscript{259} Id. at 951-53.
authority in the federal government.\footnote{260} The Act and counterpart state compact legislation requires federal and state agencies with jurisdiction within the Scenic Area to exercise their authority in a manner consistent with the respective legislation.\footnote{261} The Act also includes special provisions to protect tributaries to the Columbia River Gorge.\footnote{262} For example, tributaries that flow through the SMAs are automatically classified as wild and scenic rivers under the National Wild and Scenic Rivers Act.\footnote{263}

Federal financial and technical assistance is provided to local governments to develop local land use ordinances,\footnote{264} and local governments are authorized to receive a greater percentage of the timber receipts and payments in lieu of taxes for lands acquired by the Forest Service within SMAs.\footnote{265} The Act provides both the Secretary of Agriculture and the Commission with the authority to seek injunctive relief for violations of the Act, the management plan, or land use ordinances within their respective jurisdictions.\footnote{266} A citizen suit provision is also included which authorizes adversely affected citizens to sue the Commission, the Secretary, or any county for violations of the Act.\footnote{267}

\section*{C. Federal and State Regional Legislation}

In addition to the compact instrument, there have been a number of federal and state legislative initiatives aimed at overcoming the institutional boundary difficulties associated with multi-jurisdictional governance of ecosystems or watersheds. Even though not formally styled as such, many of these enjoy the attributes of resource compacts, for example, agreements between sovereigns to cooperatively manage a resource. In addition, some possess hard management features where some sovereignty is ceded and governance, including regulatory oversight, is transferred to an ecosystem level entity.

\footnotetext{260}{Id. at 953-55.} \footnotetext{261}{Id. at 957.} \footnotetext{262}{Id. at 957-60.} \footnotetext{263}{16 U.S.C. § 544k(a) (1994).} \footnotetext{264}{Id. § 544(a).} \footnotetext{265}{Blair, supra note 147, at 961-62. Payments in lieu of taxes are a means by which the federal government compensates local governments for the diminution of the property tax base occasioned by the conversion of taxable private property to public lands. Id.} \footnotetext{266}{Id. at 962-63. However, the Secretaries are only granted the authority to request the U.S. Attorney General to seek an injunction. Id.} \footnotetext{267}{16 U.S.C. § 544m(b)(2) (1994).}
1. The New Jersey Pinelands Reserve Act

Perhaps the most celebrated effort at regional ecosystem scale governance is found in the New Jersey Pinelands National Reserve (Reserve). The Reserve comprises approximately one million acres of pine barrens interspersed with urban and agricultural land uses in close proximity to several major metropolitan areas, including New York City. It has attracted international attention as a functioning example of the biosphere reserve model of protected areas management, integrating human and natural systems. It has attracted national attention for its reliance on state and local cooperative management, although both federal and state governments retain significant oversight control over regional administration.

Although the economic and political stimulus for the Reserve emerged at the federal level, management occurs primarily at the state and local level. In 1978, Congress established the Reserve as a unique federal lands designation within the National Park System. The principal feature of the legislation was the inclusion of economic incentives, especially for land acquisition, to encourage New Jersey and local governments to adopt an ecosystem level governance strategy that minimized federal management. The Act called for the Secretary of the Interior to request that the Governor of New Jersey form a state planning entity for the purposes of preparing a comprehensive master plan for the Reserve. The planning entity included a federal representative, representatives of each of the counties within the Reserve, and seven at-large members appointed by the Governor. The planning entity was charged with a number of implementation responsibilities, including the development of components to ensure coordination and consistency among local, state and federal programs and policies, and programs for state and local implementation providing for the "maximum feasible local government and public participation" in the Reserve's


272. Id. § 471i(f)(4).
management. Failure to adopt a plan acceptable to the Secretary of the Interior would have resulted in a termination of further federal assistance. Moreover, all revisions to the comprehensive plan also require federal approval, and can result in a similar sanction. The National Park Service has been charged with providing the federal role in Reserve management.

Land acquisition was also geared toward maximizing state and local, rather than federal ownership. The federal government could either provide funds for land acquisition or acquire the land itself and then convey it to the appropriate state or local governmental entity upon approval of the comprehensive management plan.

To implement the federal legislation, New Jersey enacted state legislation creating the New Jersey Pinelands Commission as an independent regional governance body according to the federal directive. While the composition of the Commission followed the federal guidelines, the state legislation provides the Governor with veto authority over Commission actions and the power to appoint the Commission’s chairperson, effectively retaining state sovereignty over the region. The state legislation also gives the Commission authority to implement the comprehensive master plan, institutionalizing its governance role. Local government master plans must conform to the regional plan and the Commission has final review authority over all development activities in the Reserve.

The Pinelands state legislation also creates a Pinelands Municipal Council, consisting of the mayor or a designee of the mayor from each municipality located in the Reserve. The Act requires the Commission to submit the comprehensive management plan, and any revisions to the plan, including any minimum standards for municipal and county plans and ordinances, to the Council for consideration prior to adoption. The Council has sixty days to “state its position” on the plan or amendments, but its recommendations are merely advisory. The Commission retains discretion to submit other matters to the Council for advisory opinions. Moreover, the

273. Id. §§ 471i(f)(7)-(8).
274. Id. § 471i(g)(5).
275. Id. § 471i(g)(6).
276. Protecting the New Jersey Pinelands, supra note 268, at 177-79.
279. Id. §§ 13:18A-5.g-h.
280. Id. § 13:18A-12.
283. Id. §§ 13:18A-7.g-h.
Council may submit recommendations to the Commission on any matter it deems advisable, regardless of whether the matter was referred by the Commission.285

In addition, the state legislation creates an independent Pine-lands Development Credit Bank, housed within the State Department of Banking.286 The Bank is governed by a Board of Directors consisting of ex officio representatives of three state agencies, the Chairman of the Commission, and an equal number of representatives from the Reserve appointed by the Governor.287

D. Soft Management – Interinstitutional and Intergovernmental Coordination Mechanisms

1. The Great Lakes Commission and Ecosystem Charter

The Great Lakes Commission is a regional coordinating body created by interstate compact in 1955 to promote integrated comprehensive use and conservation of the water resources in the Great Lakes Basin.288 Perhaps the most interesting feature is the invitation it offers to Canadian provinces within the basin to join in the compact in the same capacity as states,289 although apparently none have done so. Although created by compact, the Commission’s functions remain completely advisory and, indeed, it is expressly forbidden from wielding any regulatory authority.290 The Commission does, however, have the authority to collect and interpret data, consider the need for navigation and public works projects in the basin, undertake policy analysis, and draft model uniform legislation.291 In this capacity, the Commission is a useful interjurisdictional mechanism for promoting the development of basin science and policy at the ecosystem level. This is a particularly useful tool

286. Id. § 13:18A-33.a.
287. Id. § 13:18A-33.b.
288. Letter from Joseph K. Hoffman, Chair, Great Lakes Commission, to Thomas T. Ankersen, Center for Governmental Responsibility, University of Florida College of Law (Sept. 8, 1994) (on file at the Center for Govtl. Responsibility, University of Florida College of Law); see also MICH. COMP. LAWS ANN. § 324.32201, at art. IV (West 1995).
289. This is reflected in the final draft of the new Ecosystem Charter for the Great Lakes-St. Lawrence Basin published in August of 1994 and in article II of its codification. Great Lakes Basin Compact, MICH. COMP. LAWS ANN. § 324.32201 (West 1995). The Preamble of the Ecosystem Charter explains that the foundation for the Charter "is a heritage of binational cooperation to ensure the informed use, management, conservation, and protection of the Great Lakes - St. Lawrence Ecosystem" and is built upon agreements such as the U.S. - Canada Boundary Waters Treaty of 1909. THE GREAT LAKES COMMISSION, ECOSYSTEM CHARTER FOR THE GREAT LAKES - ST. LAWRENCE BASIN, FINAL DRAFT i (1994).
290. Id. at art. VI.N.
291. Id. at arts. VI.A.-N.
where there is no other ecosystem level entity, especially in an ecosystem like the Great Lakes Basin which is politically fragmented by a plethora of separate sovereigns, including nation-states, and institutionally fragmented by a variety of regional and subregional entities governing different aspects of ecosystem policy.  

Indeed, the Great Lakes Commission recently spearheaded a drive to adopt an Ecosystem Charter for the Great Lakes-St. Lawrence Basin. According to its authors, this vision document sets forth a "series of guideposts to achieve [the vision] through principles and findings drawn from existing laws, treaties, agreements, and policies." Notwithstanding its legislative history from the pre-ecosystem management era, the charter principles reflect the equivalent of many principles recently articulated as the basis of ecosystem management. In addition, in 1989 the governors of the Great Lakes states endowed the "Great Lakes Protection Fund" in the nation's first multistate environmental endowment.

2. The Cape Cod National Seashore Commission

The Cape Cod National Seashore (Seashore) provides a different model of a direct federal/local government partnership. The administrative boundaries of the Seashore include a variety of federal, state, and privately owned lands, and six local governments. As the first National Park to be created within and surrounding an area with 300 years of settlement history, it has been heralded as a successful experiment in "bioregionalism" by one commentator.  

The Seashore's enabling legislation authorized land acquisition by condemnation. However, within the six municipalities involved, federal condemnation authority is suspended where the Secretary of the Interior approves the municipalities' zoning

293. Letter from Joseph K. Hoffman, supra note 288.
294. See Biological Conservation Newsletter No. 134, Dep't of Botany, Smithsonian Institution, Great Lakes Protection Fund 1-2 (July 1994).
296. See Charles H.W. Foster, The Cape Cod National Seashore: A Landmark Alliance 67-68 (1985). The Seashore was the first major national park for which Congress authorized funds to facilitate acquisition by the National Park Service; this was necessary because of the many different major landowners in the area, which included both state and federal entities. Id. Commenting on the success of the Seashore as a bioregional experience, Foster notes that the Seashore was a sound implementer of conservation, but he contributes a large portion of the success to the Advisory Commission that kept the "successive park administrations' feet to the fire on this issue." Id. at 82.
ordinances pursuant to regulations promulgated by the Secretary. This coercive authority is an unusual feature which allows direct federal oversight of local land use decisionmaking. To receive approval, local zoning bylaws must prohibit all commercial and industrial uses other than those permitted by the Secretary by regulation,\(^{298}\) and promote the preservation and development of the Seashore.

The enabling legislation also calls for the creation of an Advisory Commission, with a ten year statutory life,\(^{299}\) and subsequent biennial administrative renewals.\(^{300}\) The Commission is comprised of representatives from each of the six municipalities, a representative of the county that comprises the Cape, two representatives of the Commonwealth of Massachusetts, and one representative of the Department of the Interior.\(^{301}\) The Commission's authority is only advisory, although the Secretary is required to consult with the Commission prior to decisions concerning the use of property within the Seashore.\(^{302}\) This continuing consultation requirement has been viewed as a significant factor in the Commission's success in influencing policy decisions within the Seashore.\(^{303}\)

3. Biosphere Reserves: The Southern Appalachian Man and the Biosphere Cooperative

Biosphere reserves are an international designation for protected areas established under the auspices of the United Nations Educational, Scientific, and Cultural Organization (UNESCO).\(^{304}\) Designations are made by an international coordinating committee pursuant to the recommendations of national committees. The classical biosphere reserve model incorporates a "core area," usually a park or other similar management category for strict nature protection, a "buffer zone" or multiple use zone that incorporates manipulative research and extraction activities such as forestry, and a "zone of

\(^{298}\) 16 U.S.C §§ 5(b)-(c) (1994).
\(^{299}\) Id. § 8.
\(^{300}\) Foster, supra note 296, at 46.
\(^{302}\) Id. §§ 8(f)-(g).
\(^{303}\) "Far from being constrained by any lack of authority, the Commission had actually gained latitude in expressing its opinions, unencumbered as it now was by any official responsibility for its recommendations." Foster, supra note 296, at 81-82.
\(^{304}\) See Michel Batisse, The Biosphere Reserve: A Tool for Environmental Conservation and Management, 9 Env'tl. Conservation 101-11 (Summer 1982). Batisse, the Deputy Assistant Director-General for Science (Env't and Natural Resources) of UNESCO, explains that the program on Man and the Biosphere, from which USMAB originated, was initiated by a resolution of the 'Biosphere Conference' convened in Paris by UNESCO in 1968. Id. at 101.
transition" or cooperation for traditional land use. There are a substantial number of biosphere reserves in the United States, mostly corresponding to significant national parks and other already established protected areas. For example, Everglades National Park is an internationally recognized biosphere reserve. Although some countries have adopted the biosphere reserve model as a formalized category of protected area subject to management and regulation, the United States has not. In the United States, the concept remains focused primarily on the soft management objectives of research, monitoring, and education for existing protected areas. The classical biosphere reserve model, however, more truly reflects the principles of ecosystem management, with an emphasis on human/ecosystem interactions. The New Jersey Pinelands, also a designated biosphere reserve, reflects these principles, and indeed has been touted as an international exemplar of the model.

The Southern Appalachian Man and the Biosphere Cooperative is an initiative of the United States Man and the Biosphere Program to foster regionalism in reserve management. The Southern Appalachians region contains three biosphere reserves, including the Great Smoky Mountains National Park, the United States Forest Service's Coweeta Hydrologic Laboratory in North Carolina, and the National Environmental Research Park in Oak Ridge Tennessee. In 1988, these three reserves were included in USMAB's first regional biosphere reserve, known as the Southern Appalachian Regional

305. Id. at 102; see also Michel Batisse, Developing and Focusing the Biosphere Reserve Concept, 22 NATURE & NAT. RESOURCES 2 (1986) (describing the formulation of the biosphere reserve concept based on the author's keynote address presented at the European MAB Conference on Biosphere Reserves and Ecological Monitoring in Ceske Budejovice, Czechoslovakia in 1986).

306. DE KLEMM, supra note 269, at 1.

307. Sax & Keiter, supra note 42, at 248 n.174. The biosphere reserves in the U.S. "include: Big Bend, Big Thicket, Redwood, Cumberland Island, Cape Lookout, Channel Islands, Denali, Everglades, Glacier Bay, Glacier, Great Smoky Mountains, Haleakala, Hawaii Volcanoes, Isle Royale, Death Valley, Joshua Tree, Gates of the Arctic, Noatak, Olympic, Organ Pipe Cactus, Rocky Mountain, Sequoia-Kings Canyon, Congaree Swamp, Virgin Islands, [and] Yellowstone." Id.

308. DE KLEMM, supra note 269, at 2.

309. As previously noted, Everglades National Park is an internationally recognized biosphere reserve, yet the designation, limited by the Park boundaries, has none of the man/environment interface management attributes typically attributed to biosphere reserves. A project sponsored by the United States Man and the Biosphere Human Dominated Ecosystem Directorate recently focused on the Everglades and identified a number of scenarios for Everglades management based on biosphere reserve principles. For the purposes of analysis, all of these scenarios expanded the boundaries of the Everglades Biosphere Reserve to more accurately reflect biosphere reserve and ecosystem management principles. USMAB, supra note 5. No proposal to actually amend the boundaries to reflect these principles is forthcoming, however.

310. See DE KLEMM, supra note 269, at 2.
Biosphere Reserve (Regional Reserve), which extends from Southern Georgia to Northern Virginia, and encompasses federal, state, and private lands.\textsuperscript{311}

To implement the regional perspective associated with the Regional Reserve, a number of federal land management agencies entered into an interagency cooperative agreement. The agreement also enabled the participation of state agencies as well as non-profit organizations. In addition, the Regional Reserve sponsors formed a non-profit organization known as the Southern Appalachian Man and the Biosphere Foundation to develop a "model of cooperative, integrated, regional resource management."\textsuperscript{312} Most of the founding directors are the federal signatories to the cooperative agreement.\textsuperscript{313} The cooperation model exemplified by the Regional Reserve recently received recognition as an appropriate ecosystem management coordination mechanism by the federal Interagency Task Force on Ecosystem Management.\textsuperscript{314}

4. The Greater Yellowstone Coordinating Committee

In many respects the controversy over management of Yellowstone National Park and its surrounding ecosystem may be viewed as the catalyst for the emergence of the ecosystem management paradigm. Scientists in the 1970s concluded that the Park itself was too small to insure an intact ecosystem, which led to its designation as a Greater Ecosystem.\textsuperscript{315} Greater Ecosystem in the context of Yellowstone is characterized as the area needed to ensure a viable population of grizzly bears. Encompassed within this area are three states, seven national forests and two national parks, as well as three national wildlife refuges and Indian reservations.\textsuperscript{316} In addition, there is a smaller but biologically significant percentage of state and private lands encompassed within the Greater Yellowstone Ecosystem.\textsuperscript{317}

\textsuperscript{311} See, e.g., de Klemm, supra note 269, at 1; Healthy Ecosystems, supra note 40, at 33.

\textsuperscript{312} Southern Appalachian Man and the Biosphere Foundation, Bylaws of the Southern Man and the Biosphere Foundation art. II (July 1988) (on file at the Center for Gov't Responsibility, University of Florida College of Law).

\textsuperscript{313} Id. at 3-4.

\textsuperscript{314} Healthy Ecosystems, supra note 40, at 33, 37, 39, 43-44.

\textsuperscript{315} See Frank C. Craighead, Jr., Track of the Grizzly 239-40 (1979) (noting that the appropriate area for grizzly habitat was the "Yellowstone ecosystem," a five million acre area defined by the Craighead research team, as opposed to just the Yellowstone National Park).


\textsuperscript{317} Goldstein, supra note 146, at 5-6.
In the Greater Yellowstone Ecosystem, the first institutional boundary obstacles emerged within sister agencies of the federal government, the Forest Service and the National Park Service, where different perceptions of mandate, inadequate coordination mechanisms, and entrenched agency cultures inhibited ecosystem management even within a single sovereign. To redress these problems, these federal land management agencies revived a coordinating mechanism first established in the 1960s known as the Greater Yellowstone Coordinating Committee (GYCC). The legal basis of the coordination is a Memorandum of Understanding between the regional offices of the two agencies that creates no enforceable obligations. However, a 1985 Congressional Research Service (CRS) report solicited by Congress concluded that this and the other coordinating mechanisms in Greater Yellowstone were inadequate "for providing complete, coordinated management of the Yellowstone ecosystem."

In the wake of the CRS report, and under the aegis of the Memorandum of Understanding, the GYCC launched a new program of interagency coordination. Phase One examined all of the existing planning efforts in the region by the two agencies to develop a means of coordinating them. This became known as the Aggregation Report. The agencies stopped short of preparing any sort of regional plan, but, as a result of the Aggregation Report, the GYCC did appoint a Regional Team Leader to coordinate management and planning. In Phase Two of the coordination plan, the Team Leader was assigned responsibility for developing a "vision for the future" document to "define management priorities within the Yellowstone region."

Development of the Greater Yellowstone Ecosystem vision document became a highly politicized process and put agency staff, environmentalists, and commodities groups at odds with one another. After several abortive drafts, the document that ultimately emerged apparently satisfied no one and failed to identify...
substantive regional management goals or suggest any coherent regional ecosystem policy, either within the existing management framework or through some other ecosystem-wide coordination mechanism.\textsuperscript{323} Moreover, there have been no further efforts at administrative reform to expand the GYCC to reflect all of the management units within Greater Yellowstone.\textsuperscript{324} More recently, however, a non-governmental organization, the Greater Yellowstone Coalition, produced its own vision document, which is discussed below.\textsuperscript{325} In addition, there have been a number of bills put forth in Congress to tackle the seemingly intractable task of coordinating land management in the divisive atmosphere of Greater Yellowstone.

5. The California Agreement on Biological Diversity

California's Agreement on Biological Diversity is a state level soft management coordination approach that merits discussion. The Agreement on Biological Diversity is a memorandum of understanding (MOU), initially signed by ten state and federal environmental agencies.\textsuperscript{326} The MOU resulted directly from the growing number of endangered species conflicts in California and from a recognition of the jurisdictional boundary dilemma in ecosystem management.\textsuperscript{327}

The MOU creates a three-tiered soft management structure, premised on geographic bioregions. The top tier is the statewide executive council, chaired by the Secretary of the California Resources Agency, which was established to set statewide goals for the protection of biodiversity, to seek funding, and, importantly, "to develop the necessary state and regional institutions."\textsuperscript{328} The second tier consists of bioregional councils, made up of regional administrators from signatory agencies who are to encourage participation by county governments, environmental groups, and in-

\textsuperscript{323} Goldstein, supra note 146, at 24-27.
\textsuperscript{324} Telephone Interview with Eric Glick, Executive Director, Greater Yellowstone Coalition, Bozeman, Montana (Oct. 13, 1995).
\textsuperscript{325} See infra notes 338-44 and the accompanying text.
\textsuperscript{326} THE RESOURCES AGENCY OF CALIFORNIA, MEMORANDUM OF UNDERSTANDING, CALIFORNIA’S COORDINATED REGIONAL STRATEGY TO CONSERVE BIODIVERSITY, “THE AGREEMENT ON BIOLOGICAL DIVERSITY” (Sept. 19, 1991) (on file at Center for Govtl. Responsibility, University of Florida College of Law) [hereinafter MEMORANDUM OF UNDERSTANDING]. The number of signatories was later increased to twenty-four. Douglas P. Wheeler, Forward: A Strategy for the Future, 12 STAN. ENVTL. L.J. ix, xii (1993).
\textsuperscript{328} MEMORANDUM OF UNDERSTANDING, supra note 325, at V.A.
dustry groups. These entities are charged with developing regional biodiversity strategies and seeking "[r]egional solutions to regional issues." Finally, the MOU calls for the formation of localized watershed and landscape associations, in which the local staff of signatory agencies will encourage participation by the local public, landowners, and private organizations. These associations are encouraged to "develop specific cooperative projects" through a "Coordinated Resource Management Planning process" and are the forum for local conflict resolution. To some extent the biodiversity MOU appears to be a recognition of the grass roots bioregional movement in the United States. Its proponents recognize that grass roots watershed and landscape councils, local groups forming biogeographic associations, already existed in California or were forming in advance of the MOU's bioregional council structure. The biodiversity MOU may also suggest an effort to institutionalize the "epistemic community," or "shadow network" as it is described in some of the Everglades literature; these networks are often loose collaborations of agency and non-agency personnel who pursue particular missions within institutions but without institutional sanction. Despite its emphasis on voluntary action and soft management, the California biodiversity MOU nonetheless aroused the ire of local governments that feared it represented an inroad into local government land use prerogatives.

It could be said that Florida, with its unique division of the state into hydrogeographic units based on watersheds, already has the bioregional (or at least hydroregional) institutional infrastructure that California is seeking through the biodiversity MOU. However, the California approach, with its identification of watershed and landscape associations, represents an additional level of biogeographic decentralization, interagency cooperation, and grass roots

329. Id. at V.C.
330. This process relies on techniques used in the Coordinated Resource Management Program, which was developed in the early 1900s and which coordinates state and federal participants. Jensen, supra note 326, at 275 n.2 and accompanying text.
331. MEMORANDUM OF UNDERSTANDING, supra note 325, at V.D.
332. See Donald Alexander, Bioregionalism: Science or Sensibility?, 12 ENVTL. ETHICS 161 (1990) (discussing the origins of the bioregional movement and offering a critique of its decentralistic regionalism premises). Certain supporters of bioregionalism suggest that the concept should be institutionalized through regional administrative structures. See generally M.V. McGinnis, Bioregionalism: Reconciling Nature and the Bureaucratic Experience (unpublished Ph.D. dissertation, University of California, Santa Barbara (1993)).
333. Wheeler, supra note 325, at xiii.
334. This shadow network, sometimes described as an "informal collegia of scientists," is critical for strategy, advanced learning, and innovation. Light, supra note 22, at 167.
335. Jensen, supra note 326, at 276-77.
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participation that may be instructive for governance of the Greater Everglades Ecosystem.

E. Non-governmental Initiatives

Governance is inherently governmental, yet non-governmental organizations can play a significant role in advocating appropriate governance mechanisms. This is particularly true where effective innovation threatens traditional boundaries and entrenched agency cultures. In addition, as previously mentioned, political scientists have long recognized the importance that organized non-governmental interests, or epistemic communities, play in policy development. 336

1. The Greater Yellowstone Coalition

Formed in 1983, the Greater Yellowstone Coalition (GY Coalition) is an advocacy group of citizen activists and local, regional, and national sportsman and conservation groups dedicated to preserving and protecting the Greater Yellowstone ecosystem. Perhaps disappointed with the progress toward ecosystem-based management exhibited by the federal land management agencies and the vision document described above, 337 the GY Coalition launched the Greater Yellowstone Tomorrow Project in 1989. In the first phase of the project, the GY Coalition produced a document called An Environmental Profile of the Greater Yellowstone Ecosystem. The GY Coalition followed this ecosystem inventory profile with a comprehensive ecosystem-based strategy entitled Sustaining Greater Yellowstone: A Blueprint for the Future (Blueprint). 338

The GY Coalition’s Blueprint is a thoughtful, wide-ranging, regional analysis of ecosystem management and sustainable development issues that includes a compendium of specific and non-specific recommended reforms needed to achieve the coalition’s goals. The recommendations advocate changes in resource law, including the passage of a Greater Yellowstone Ecosystem Act that would address land management issues across institutional boundaries. 339 The recommendations also suggest specific changes in

337. See supra note 293 and accompanying text.
338. See generally BLUEPRINT, supra note 154.
339. The executive summary of the Blueprint suggests that Congress should establish a new “Sustainable Ecosystem” model for Greater Yellowstone. Id. at 7. Other recommendations include, reforming the mining law, establishing base grazing fees, and reforming subdivision laws. Id. at 9, 11, 12.
resource administration and policy, including consolidation of the numerous land management units within the ecosystem.\footnote{340}

In addition to traditional ecosystem management reforms, the \textit{Blueprint} suggests a number of reforms related to economic policies and tax incentives to encourage private participation in its sustainability goals. Furthermore, the \textit{Blueprint} recommends changes in resource management to reduce subsidies and recognize carrying capacities, and changes in science and education to develop compatible research standards and protocols, regionalize data collection, and prioritize research.\footnote{341}

Among the proposals particularly relevant to governance of a greater ecosystem like the Everglades is the recommendation that the boundaries of the Yellowstone Park International Biosphere Reserve be extended to encompass all public lands within the Yellowstone ecosystem.\footnote{342} Moreover, the \textit{Blueprint} recommends the formation of a biosphere reserve steering committee comprised of citizen’s groups, county, state, and federal governments, as well as regional universities. The steering committee would foster policy reforms supported by science and provide a potential mechanism for dispute resolution.\footnote{343} The \textit{Blueprint} also suggests forming, by interstate compact, a Greater Yellowstone Sustainable Communities Board, consisting of representatives of the three states and twenty counties within the ecosystem. The Board would provide financial and technical assistance and foster interstate cooperation. In addition, the \textit{Blueprint} calls for an interagency Biodiversity Assessment Committee which would prepare a Biodiversity Conservation Plan with set objectives for species and plant communities across administrative boundaries.\footnote{344}

\textit{2. The Northern Rockies Ecosystem Protection Act}

The proposed Northern Rockies Ecosystem Protection Act (Bill) was originally drafted and urged upon Congress by western grass roots conservation organizations.\footnote{345} Although the Bill failed to become law, it is significant to conservation biology because it

\footnotesize{340. In particular, the \textit{Blueprint} recommends a steering committee to represent all affected interests and plan action. \textit{Id.} at 7.}

\footnotesize{341. \textit{Id.} at 13.}

\footnotesize{342. \textit{Id.} at 12-13.}

\footnotesize{343. \textit{Id.} at 9.}

\footnotesize{344. \textit{Id.} at 13 (providing only an abbreviated description of the plan put forth in the full text of \textit{Blueprint}).}

\footnotesize{345. \textit{WILD ROCKIES ACTION FUND, NORTHERN ROCKIES ECOSYSTEM PROTECTION ACT} 1 (1993) (describing the genesis of the Act) (on file at the Center for Govtl. Responsibility, University of Florida College of Law).}
represents perhaps the first attempt to actually codify the current reserve design principles emerging from relatively new science. The Bill’s ambitious objective was to utilize the new reserve design principles to integrate federal land management of more than twenty million acres in five major western ecosystems across five states in the Northern Rockies. The boundary delineation for this bioregion was to be based at least in part on population viability analyses of large free-ranging mammals, particularly wolves and grizzly bears. Essentially, the Bill advocated working within the existing federal land management framework to expand the protected area designations of national parks and wilderness areas within five semi-contiguous major ecosystem blocks. However, the proposed law would have created a new federal land management category referred to as “biological connecting corridors,” consisting of designated wildland areas located between the major ecosystems blocks. Special management criteria were proposed for application in these biological connecting corridors. In addition, the Bill designated certain degraded national forest lands as part of a National Wildland Restoration and Recovery System, and would have established a special unit within the Forest Service described as the National Wildland Recovery Corps.

Interestingly, the Bill did not propose any novel administrative framework for integrated management of the bioregion, but instead deferred such considerations. The only coordination mechanism proposed consisted of an interagency team to “monitor, evaluate, and make adjustments to insure [sic] long term results.” The Bill did, however, propose the formation of a governmental review board which included private sector participation. The review board was designated to evaluate federal agency goals and mandates within the bioregion and “legally restate and unify the various agency resource management mandates,” and make

348. H.R. 2638, 103d Cong., 1st Sess. § 4(a)(2) (1993). This probably represents the first time the term “bioregion” has been formally used in an articulated legislative proposal. California, of course, made it administrative policy in its biodiversity MOU, as discussed previously. See MEMORANDUM OF UNDERSTANDING, supra note 325 and accompanying text.
349. Bader, supra note 346, at 62.
351. Id.
352. Id. § 9.
353. Id. § 12(b).
recommendations to Congress within three years. Because the Bill failed, these mechanisms were never tested.

F. Governance and the Greater Everglades Ecosystem

Two major governmental efforts to coordinate ecosystem management are underway in South Florida. Each created a soft management advisory body, and each contains federal and state representatives. The Everglades ecosystem is also currently the focus of both federal and state ecosystem management demonstration projects. In addition, there is a significant non-governmental and academic interest in ecosystem level activities, including an Everglades Coalition of environmental groups and a major initiative of a charitable foundation to support systemwide approaches to Everglades issues. Moreover, the Everglades is included as a case study in a nationwide ecosystem policy study by the Keystone Center in Boulder, Colorado. Seemingly forgotten in the midst of these efforts, is the Governor's Office's Save Our Everglades Program, perhaps the oldest institutional effort to view the Everglades as a system.

1. The South Florida Task Force for Ecosystem Restoration

The Clinton administration established an Interagency Task Force on the South Florida Ecosystem as one of four pilot projects in ecosystem management. The task force is chaired by the Assistant Secretary for Fish and Wildlife and Parks of the Department of Interior, and has representatives from the Department of Commerce, Department of the Army (Civil Works), EPA, Department of Justice, and EPA, Department of Justice.

354. Id. § 12(d).
355. The Bill was touted as an attempt to "save the biotic 'parts,'" based on Aldo Leopold's statement that "the first step in intelligent tinkering is to save all the parts." Bader, supra note 346, at 61, 64. Despite support from over 200 organizations, and perhaps because of a lack of endorsement by mainstream national conservation organizations, the Bill died in Congress. Id. at 64. Perhaps the Bill received insufficient support because it aspired to prevent numerous road building and timber sales development projects already planned by the United States Forest Service. Id. at 62.
356. One of these is the South Florida Task Force for Ecosystem Restoration. See INTER-AGENCY AGREEMENT, supra note 77. The other is the Governor's Commission for a Sustainable South Florida which was established by executive order. Florida Exec. Order No. 94-54 (Mar. 3, 1994).
357. At the urging of Art Marshall and other environmentalists who advocated a unified program of restoration from the headwaters of the Kissimmee River to Florida Bay, Friends of the Everglades, For the Future of Florida: Repair the Everglades (3d ed., 1982), Governor Bob Graham began the Save Our Everglades program in 1983, which continued through the administration of his Republican successor, Bob Martinez, and continues in the Lawton Chiles administration. OFFICE OF THE GOVERNOR, SAVE OUR EVERGLADES: TENTH ANNIVERSARY, 1983-1993 (1993). The overall goal of the program was that by the year 2000, the Everglades would appear and function more like it did in 1900.
Department of Transportation, and Department of Agriculture. An Interagency Working Group of local federal representatives was also established to assist the task force with the plans, policies, and priorities necessary for addressing South Florida ecosystem concerns.

During its first year, the Task Force and Working Group assisted the Corps in redesigning the Central and Southern Florida Project, and with several other projects. In addition, the Task Force and Working Group developed proposals for multispecies recovery planning, a regional wetlands conservation plan, a Florida Bay science plan, and several other initiatives. In one major aspect, however, the task force was limited. Because of the Federal Advisory Committee Act, the working group could not include representatives from state or local agencies. In 1995, that deficiency was remedied by the Unfunded Mandates Reform Act, and the group now includes state and tribal representatives.

2. The Governor's Commission for a Sustainable South Florida

The other major effort at intergovernmental and interest group coordination in the Everglades is the Governor's Commission for a Sustainable South Florida (GCSSF). The GCSSF is composed of thirty-five voting members representing all of the state, regional, and local agencies involved in the management of growth in South Florida, as well as representatives of major interest groups. There are also five non-voting federal representatives.

The GCSSF was charged with numerous tasks, including a review of existing planning and regulatory programs affecting the Everglades ecosystem, and recommending strategies for improved management. The GCSSF recently released its initial report, including conclusions and specific recommendations relating to

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358. INTERAGENCY AGREEMENT, supra note 77, at iv.
359. Id.
360. WORKING GROUP ANNUAL REPORT, supra note 78.
362. The Unfunded Mandates Reform Act of 1995 modified the Federal Advisory Committee Act mandate by exempting meetings of federal agencies with state, local and tribal officials for the purpose of exchanging views, information or advice relating to shared responsibilities. 2 U.S.C. § 1534(b) (1994). In addition, the Unfunded Mandates Reform Act requires agencies to “develop an effective process to permit elected officers of State, local, and tribal governments . . . to provide meaningful and timely input in the development of regulatory proposals containing significant Federal intergovernmental mandates.” Id. § 1534(a).
364. Id.
regional governance. This report specifically identifies the boundary problems inherent in the present institutional framework for environmental management in South Florida. The report states that “the broad and difficult problem of restoration, sustainability, and systematic management of the region’s resources” is “not achieved by coordination but by unification.” The report concludes that “[u]nfortunately, a system of governance which could provide this unification does not currently exist in the region.” The recommendations reflect both procedural reforms and coordination efforts designed to improve regional governance capacity.

The principle procedural reforms advocated concern the coordination of existing local and regional planning efforts. Perhaps the most significant of these is a recommendation that local land use planning be held to a compatibility standard with the water management district’s water supply planning. Although “compatibility” is a weaker standard than the “consistency” standard presently imposed on local government land development action, this recommendation represents a significant procedural reform with substantive ramifications for regional governance.

In addition, the GCSSF recommends that the Department of Community Affairs reject any revised local government comprehensive plan as “not in compliance” if the District and DEP determine that the amendment will negatively impact the sustainability of natural systems. In essence, these recommendations would shift power to the only entity in the Greater Everglades Ecosystem with boundaries that coincide with the ecosystem.

Another recommendation for procedural reform calls for mandatory coordination among the five regional planning councils (RPCs) within the Greater Everglades Ecosystem. The RPCs, comprised of

365. By holding meetings of the federal interagency working group in conjunction with the Governor’s Commission meeting, communication among the federal, state and local participants was enhanced. GOVERNOR’S COMMISSION, supra note 64, at 158-66.
366. Id. at 158.
367. Id.
368. Id.
369. Id. at 50. Cf. Tschinkel Commission Recommendations, supra note 63, at 27, 36 (recommending that Strategic Regional Policy Plans should be compatible with the rule adopted portions of water management district plans, but that local governments should not be required to follow district plans).
372. GOVERNOR’S COMMISSION, supra note 63, at 51.
local government representatives and gubernatorial appointees, are required to adopt Strategic Regional Policy Plans (SRPPs) to guide local governments in their planning efforts. There is no requirement for coordination among the RPCs in South Florida, however, and limited authority to require the consistency of local plans with the SRPPs.

In terms of actual regional governance mechanisms, the Commission recommends the creation of two new coordination mechanisms, an Everglades Charter and an Everglades Partnership, as well as the perpetuation of the Governor’s Commission for a Sustainable South Florida, or some similar advisory body. The Everglades Charter would be a combined state and federal task force to replace the present South Florida Ecosystem Restoration Task Force. It would have similar advisory and coordinating functions.

The Everglades Partnership would be a private, nonprofit corporation, with representation by universities, environmental groups, business leaders, and governmental agencies. It would have a strong scientific review function. Finally, the Governor’s Commission would continue to review and monitor all of the other planning and coordination efforts, and would continue building community consensus. The report states that the Commission’s role as a regional governance institution “would not be limited to an advisory capacity,” yet there is little in the report to suggest any additional authority. Moreover, the Commission does not offer any specific suggestions concerning how, and under what circumstances, it would exercise even an advisory capacity.

G. Conclusion – Ecosystem Governance in the Greater Everglades

The unique circumstances of South Florida probably ensures that none of the existing ecosystem-level coordination mechanisms discussed above will satisfy the governance needs of the Everglades ecosystem. Each of the existing mechanisms developed from a unique political and social history and specific environmental circumstances, and are tailored accordingly. Moreover, it can be argued that none of these mechanisms approach the level of complexity posed by the Everglades in terms of sheer numbers of

375. Id. at 159.
376. Id. at 160.
377. Id.
378. Id.
379. Id.
jurisdictions, let alone by the ecological and political aspects of governance in a human-dominated, intensively managed watershed.

Florida's strong tradition of local government home rule and antipathy for imposed solutions does not bode well for proposals emanating from Washington or Florida's capitol in Tallahassee.\(^{380}\) The State's experience with the controversial "Area of Critical State Concern" program during the 1970s provides convincing evidence in this regard.\(^{381}\) Nonetheless, many elements of the multijurisdictional approaches adopted by other regions, as well as the political lessons they provide, offer guidance in regional institutional design that may be beneficial in the Greater Everglades Ecosystem.

The strategies currently proposed by the Governor's Commission for a Sustainable South Florida and the federal South Florida Interagency Task Force, while notable, do not fundamentally change the institutional framework that has allowed ecosystem decline. Both reflect coordination efforts that attempt to breach, but not dissolve, the institutional boundaries that proponents of the ecosystem management paradigm contend impede true ecosystem management. Indeed, the Governor's Commission recommended an increase in the number of institutions operating in the ecosystem, adding three new institutions with overlapping mandates. A measure of more fundamental institutional reform may be required to break the cycle of crisis-precipitated "barriers and bridges" that has characterized the Everglades' turbulent history.\(^{382}\) Ironically, many of the procedural, administrative, and regulatory reforms currently underway in the name of federalism and streamlining, both in Florida and the United States, appear well-suited to the development of an ecosystem governance paradigm premised on regionalism.


\(^{382}\) For a complete description of the turbulent Everglades history, see Light, supra note 22, at 103-69. "A barrier is an impediment or obstacle to renewal or sustainability; a bridge is an enhancement of steps to the same goal." Id. at 151. These "barriers and bridges are intimately linked to . . . the multiplicity of goals . . . derived by humans . . . in attempting to control . . . a turbulent environment." Id.
1. The Inter-sovereign Compact: A Hard Management Institutional Reform Model

Parallel institutional reform at the state and federal level, shifting governance to the regional level through an agreed framework for shared-sovereign management, and possibly including a federal/state/tribal/local compact, could result in improved ecosystem management in the Everglades. The Columbia Gorge National Scenic Area legislation and compact is a particularly useful model of a similar regional framework. Within this general reform framework, a myriad of methods can be utilized to craft an ecosystem-level governance mechanism.

At the federal level, there appears to be an unnecessarily fragmented land management framework in South Florida. Federal lands management is shared by three cabinet-level departments (Interior, Commerce, and Defense), four agencies (the National Park Service, the Fish and Wildlife Service, the Army Corps of Engineers, and the National Atmospheric and Oceanic Administration), and six major administrative units (Everglades National Park, Big Cypress National Preserve, Biscayne National Park, Florida Keys National Marine Sanctuary, Loxahatchee National Wildlife Refuge, and the Central and Southern Florida Project). Rather than having components of the ecosystem managed by separate but equal bureaucratic administrative units in different agencies and departments, management units could be consolidated into a single entity that manages the federally owned components of the ecosystem in a more holistic fashion. This, coupled with other procedural reforms, would reduce the need for interagency coordination mechanisms at the federal level, and eliminate artificial, and sometimes unintended, procedural barriers to joint projects by discrete agencies. The National Park Service is considering a restructuring that would cluster parks within a single “system office” grouped loosely along ecosystem lines, but this alone would not completely resolve the federal interjurisdictional problem in South Florida. Significantly, the President’s Interagency Ecosystem Management Task Force has specifically recommended the reconfiguration of land management...

383. This approach was recommended by the Greater Yellowstone Coalition for the multiplicity of units of the United States Forest Service in the Greater Yellowstone Ecosystem. BLUEPRINT, supra note 154.

384. To some extent, the national forests in Florida already function under the framework approach which the Park Service is considering. See generally NAT’L PARK SERV., RECOMMENDATION FOR Restructuring the National Park Service (July 1994); NAT’L PARK SERV., ECOSYSTEM MANAGEMENT IN the NATIONAL PARK SERVICE, DISCUSSION DRAFT (Sept. 1994) (on file at the Center for Govtl. Responsibility, University of Florida College of Law).
agency boundaries in appropriate circumstances to achieve ecosystem management.\textsuperscript{385}

The Corps remains the most significant federal institutional actor in the Greater Everglades Ecosystem. Yet the Corps’ non-regulatory responsibilities, which until recently largely related to navigation, flood control, and the construction and maintenance of the Central and Southern Florida Project, could plausibly be assumed by the local sponsor, the South Florida Water Management District. One approach to phasing out the federal role in the Central and Southern Florida Project, for example, might permit the Corps to conclude planning efforts for the Restudy, and after approval by Congress, delegate implementation to the District with ongoing provisions for federal funding. The Clinton administration recently proposed studying similar possibilities in the context of federal water projects generally.\textsuperscript{386} This localized control would be consistent with notions of federalism currently proposed by Congress in other areas of public administration. Moreover, Florida is already seeking assumption of much of the Corps’ environmental regulatory authority.

The South Florida Water Management District is already an ecosystem level governance institution. It possesses many attributes of management that commentators have suggested are necessary for successful regional governance, including regulatory authority, independent financing capacity, and a strong technical capacity, as well as an ecosystem mandate. However, not all the sovereigns extant in the Everglades ecosystem are represented by the District. Currently, the District Governing Board is comprised only of the Governor’s political appointees from within the District.

One approach to reconfigure this governance structure might be to provide local governments (at least at the county level or through Regional Planning Councils), the Indian Tribes, the State of Florida, and the federal government with participation on the Governing Board, possibly through a compact arrangement. Another approach might be to redefine the “Greater Everglades Ecosystem” to coincide with the larger South Florida watershed and create a parallel management entity with supervisory authority over proposed ecosystem activities using similar principles of comity among sovereigns. Any revamped ecosystem governance unit should be required to develop an ecosystem management plan which, depending on the degree of

\textsuperscript{385} Healthy Ecosystems, \textit{supra} note 40, at 9.

\textsuperscript{386} This is part of the President’s “Reinventing Government” initiative and is thought to advance two goals: cutting federal government costs and “fostering local control of facilities that most directly affect local agencies.” \textit{Federal Facilities Transfer Program Moves Unevenly Along}, \textit{Cal. Water L. \\& Pol’y Reporter} (1995).
autonomy desired, could be subject to approval by the State through DEP, the Governor and Cabinet, and by the federal government. An appropriate method for reconciling federal and state ecosystem planning and management under a single umbrella should be considered, as in the Columbia River Gorge National Scenic Area.

Local government land use planning should be consistent with the regional ecosystem plan, as contemplated by the Governor's Commission for a Sustainable South Florida and the State Land and Water Task Force. Delegation of federal and state environmental regulatory and management authority to the ecosystem level should continue, with the caveat that federal procedural safeguards, e.g., NEPA and ESA consultation and citizen intervention, must be implemented at the state and district level through legislation, and that state and federal oversight of these programs is maintained.

2. Mandatory Consultation: Soft Management Coordination Mechanism Models

Even in the absence of a shift toward regional governance through the reallocation of power, significant advances can be made with a soft management approach. Indeed, the Governor's Commission for a Sustainable South Florida apparently offers such an approach, albeit somewhat unwieldy given the multiplicity of soft management coordination mechanisms recommended. The Commission's Initial Report is vague, however, on the means by which the coordination would be carried out on a day-to-day basis.

The Cape Code National Seashore Commission may provide an appropriate model to consider. Even though it relies on soft management techniques, the Cape Cod Commission is viewed as highly effective in promoting regional governance. A key factor of this perception may be the mandatory consultation requirement included in the Commission's authorizing legislation. Actions that may affect the Seashore must first be submitted to the Commission for review. Although the Commission's review is advisory, the procedural formality creates a forum for independent scrutiny which the Commission takes seriously.

387. See GOVERNOR'S COMMISSION, supra note 63; Tschinkel Commission, supra note 63.
388. See generally GOVERNOR'S COMMISSION, supra note 63.
This mandatory consultation approach is also used in the New Jersey Pinelands Reserve, requiring consultation between the Pinelands Commission and the Municipal Council. In addition, mandatory consultation provisions have been effective in federal environmental legislation such as the ESA and NEPA.

Mandatory consultation could be implemented in conjunction with the soft management approaches advocated by the Governor's Commission for the Everglades ecosystem. Under this framework, significant decisions of the District, the federal government, and other governance entities that may affect the ecological integrity of the ecosystem, would be subject to mandatory, but non-binding, review by an advisory board such as the Governor's Commission.

The USMAB offers another useful soft management coordination mechanism model that should be considered for the Everglades ecosystem. The USMAB model focuses on interdisciplinary research, education, intergovernmental coordination, and public participation. It explicitly recognizes the need to accommodate humans within the ecosystem and the artificiality of management boundaries, the key ingredients in principles of ecosystem management. Despite the explicit soft management mandate, however, the USMAB program has been cramped in the United States by a reluctance to expand biosphere reserve initiatives beyond individual land management units, even where the units are publicly owned.\(^3\) This reluctance is manifest in the Everglades Biosphere Reserve designation, which is limited to Everglades National Park, and tends to demonstrate how much of a change is required to achieve the goals of ecosystem management. However, this reluctance was overcome in the Southern Appalachian USMAB Cooperative, which incorporated three designated reserves within a multijurisdictional regional boundary. That Cooperative was cited by the President's Inter-agency Ecosystem Management Task Force as an example of what does work.\(^1\)

Both the Everglades Charter and the Everglades Partnership proposed by the Governor's Commission encompass objectives that could be accomplished by an expanded biosphere reserve program in the Everglades ecosystem. Moreover, explicitly adopting this regional biosphere reserve model and program in South Florida could bring with it the added value associated with inclusion within an international research and information network based on common parameters for comparative study and application.

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390. See Sax & Keiter, supra note 42, at 253-57.
391. HEALTHY ECOSYSTEMS, supra note 40, at 35-37.