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A Review Of Coastal Governance

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COASTAL GOVERNANCE. Richard Burroughs. Island Press, 2011.

As human and natural stresses on the nation's coasts increase, there is an urgent need to find practical and effective methods of resolving conflicting uses and to develop innovative governance frameworks for healthier and more productive coastal areas. In his concise and useful book, *Coastal Governance*, Richard Burroughs provides readers with a fundamental understanding of the primary drivers of coastal change in the United States and describes how more effective policy methodologies can contribute to practical problem solving in these extraordinarily unique and important areas. On the book's first page Burroughs previews the main themes of the text by writing:

> [c]onflict arises when expectations and realities diverge. The conflict exposes the extent to which we as a society understand the coast and the multiple values we bring to managing it. Ultimately the choices we make as a society, expressed through government policies, will determine the future of the coasts. This book explains those choices, how we have made them in the past, and how we can improve them for the future.[1]

Intended as an inexpensive introductory text for undergraduate and graduate-level students from a variety of disciplines, *Coastal Governance* will be a valuable primary or secondary text for courses dealing with a large number of subjects including coastal management, land planning, environmental law and policy, environmental science and related fields. Burroughs is a long-time professor of marine affairs at the University of Rhode Island and an adjunct professor of coastal science and policy at Yale University. Books with this breadth of coverage and

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1. RICHARD BURROUGHS, COSTAL GOVERNANCE 1-2 (2011).

integration of information across many human and natural activities are generally written as collaborative efforts between multiple authors. It is a reflection of Burroughs' experience and depth of knowledge that he undertook the difficult task of sole authorship of this wide-ranging volume intended for a broad audience.

Organizationally, chapters 1 and 2 introduce the coastal and ocean policy process. Chapters 3-10 provide well-chosen case studies of coastal activities that are in need of policy analysis and solutions. The book also contains a thought-provoking list of classroom discussion questions, broken down by chapter; a thorough compilation of references and additional materials for further reading; as well as a glossary of technical terms.

Coastal Governance begins with a description of the current status of U.S. coastal waters and the anthropogenic and natural drivers for environmental change that are covered in the book.[2] These drivers include: population growth, fossil fuel combustion, sewage discharge, oil and gas development, shipping, habitat conservation, coastal development, farming and land development, and fishing.[3] It then summarizes the findings of the two national commissions tasked with identifying deficiencies in current policies.[4] This summary, like other issues deemed of special significance, is set aside in a series of easily identifiable boxes to highlight their importance to the reader.

Three distinct frameworks for assessment and action are described and have relevance throughout all of the chapters of the book. They are:

1. *sector-based management*, which defines problems as harm resulting from single uses and seeks to restrict or modify those uses through regulations and permits;
2. *spatial management*, which seeks to resolve conflicts in a specific geographic area through land/sea use "zoning" plans; and
3. *coastal ecosystem governance*, which promotes sustainable natural and social systems through diverse management techniques that shape human activity in concert with the limits of natural systems.[5]

According to Burroughs, coastal management is evolving from sector-based to spatial and ultimately to ecosystem-based approaches.

2. *Id.* at 2-4.
3. *Id.* at 4 tbl. 1.1.
4. *Id.* at 8 box 1.1.
5. *Id*. at 10.

Collections of these three different management approaches are currently being employed to manage conflicts and accommodate human activities within sustainable natural systems.[6]

Chapter 2 describes the policy process and analyzes methods to understand and ultimately create effective governance systems. This policy process ideally can be viewed as the following series of stages:

1) problems are defined
2) solutions are considered
3) a response is selected
4) a program is implemented
5) a program is evaluated for its effectiveness.[7]

In earlier periods, policy formation was dominated both in design and implementation by the government.[8] Today, coastal governance is no longer within the sole purview of the government, but has been opened up to a much broader range of institutions and actors. Voluntary organizations, private markets, educational institutions, and others may all contribute to policy and management initiatives.[9] The remainder of chapter 2 explains how these stages of the policy process operate and briefly examines how they are applied in real world settings such as the *Exxon Valdez* oil spill. Examples of the practical application of these five stages of the policy process provide an important organizational and analytical tool. It is especially useful for students because it helps them to break down complex factual scenarios into easily digestible pieces and to visualize policy-making as a sequential process. In one of the few criticisms I have regarding the structure of the book, the five stages of the policy process play a large role in chapter 3, but generally disappear as an analytical devise in middle chapters, only to reappear in chapters 9 and 10.[10]

Chapters 3-6 focus on specific coastal activities that continue to be primarily managed under sector-based approaches and dominated by governmental permits related to specific actions. Wastewater is the subject of chapter 3.[11] Burroughs believes wastewater treatment is an example of a relatively successful sector-based management approach. While pointing out the remaining gap between current and desired water

6. *Id.*
7. *Id.* at 13 (internal citations omitted).
8. *Id.* at 14.
9. *Id.* at 14-15.
10. *See infra* p. 11 and notes 78-81.
11. BURROUGHS, *supra* note 1, at 30.

quality, he suggests that government-mandated sewage treatment laws have generally improved water quality and protected human health.[12] In this instance technology provided an effective solution to the problem of pathogen discharge to coastal waters and there is little need to adjust the sector-based management approach.

The production of offshore oil and gas in chapter 4 presents a more complicated sector-based scenario. After a good descriptive summary of the origins and importance of offshore energy development, the chapter describes the significant environmental and social impacts of offshore oil. Table 4.2 summarizes these impacts and provides an excellent illustration of why conflicts relating to oil activities are so complex as compared to other coastal activities such as wastewater treatment.[13] Despite these complexities, Burroughs describes an oil and gas legal and management framework that is primarily sector-based and governed by a set of permitting requirements that "apportions jurisdiction and establishes leasing procedures, assesses responsibility for spills and cleanup, and defines the relations that oil development will have with other coastal interests."[14] After summarizing over a dozen federal statutes that are applicable to the industry, Burroughs contends that "[i]f these laws had been able to protect the environment, while providing for harmonious uses for all coastal interests, then conflicts among users and between state and federal governments would have been minimal."[15] Instead, the existing management framework led to a divide between state and federal control over oil and gas resources known as the "seaweed rebellion" in which many states vigorously opposed federal oil leasing.[16] This was ameliorated to some extent by changes in federal law in 2005 and 2006 that gave additional revenue to states bordering the Gulf of Mexico.[17] However, Burroughs believes that the current sector-based management approach is ineffective and "further adjustments in decisions, goals, and processes are in order."[18]

One issue that is not addressed in the chapter, but is exacerbated by sector-based management is a doctrine that public choice theorists call

12. *Id.* at 39-40.
13. *Id.* at 51 tbl.4.2.
14. *Id.* at 56.
15. *Id.* at 61.
16. *Id.* at 61-62.
17. *Id.* at 63.
18. *Id.* at 63.

"regulatory capture."[19] This problem of regulatory agency capture became readily apparent in the aftermath of the BP *Deepwater Horizon* oil spill on April 20, 2010.[20] The offshore oil industry's technological complexity, private-sector financial risk, and huge potential for federal government revenue from royalties contributed to an ineffective and dysfunctional regulatory system.[21] Rather than acting in the public interest, the federal agency in charge of regulating the industry, the former Marine Minerals Service (MMS), began instead to advance the interests of the entities it was empowered to regulate.[22] As a result of its reliance on the technological expertise of offshore energy producers and affiliated service industries, as well as its financial largess in the form of lease payments and royalties, MMS declined to actively exercise its enforcement authority and watered down regulations at the industry's behest.[23] The Obama Administration's recent decision to structurally reform MMS into the new Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE) by splitting its regulatory and leasing functions into two separate administrative entities is a good first step.[24] However, the pressures that contributed to the agency capture of MMS are still in place and additional ongoing management reforms are required. It also serves as a warning to prevent other agencies from getting too close to the industries that they are mandated to regulate.

Chapter 5 on dredging begins with an historical discussion of how the process of dredging grew as waterborne trade increased in the United States.[25] Its use "in port expansion is not only a local concern, but has

19. *See* Daniel C. Esty, *Toward Optimal Environmental Governance*, 74 N.Y.U. L. Rev. 1495, 1515-18 (1999) (providing an overview of public choice distortions and especially egregious examples of agency capture).

20. *See generally* NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, DEEPWATER: THE GULF OIL SPILL DISASTER AND THE FUTURE OF OFFSHORE DRILLING (2011), *available at* http://www.oilspillcommission.gov/ (providing a comprehensive examination of the causes of the BP *Deepwater Horizon* oil spill); *see also* WILLIAM FREUDENBURG & ROBERT GRAMLING, BLOWOUT IN THE GULF: THE BP OIL SPILL DISASTER AND THE FUTURE OF ENERGY IN AMERICA (2010).

21. NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL, *supra* note 20, at 76-77.

22. *Id.*

23. *Id.*

24. *See generally* Bureau of Ocean Energy Mgmt. Regulation, and Enforcement, *Reorganization and Regulatory Reform*, BUREAU OF OCEAN MGMT. REG., AND ENFORCEMENT, http://boemre.gov/ReorganizationRegulatoryReform.htm (last visited May 19, 2011) (providing an explanation of the above mentioned organizational reforms).

25. BURROUGHS, *supra* note 1, at 66-68.

national economic implications."[26] Consequently, the environmental costs of dredging were not taken into serious consideration by policymakers until the early 1970s when they were incorporated into permitting processes created under the following statutes: the National Environmental Policy Act of 1969; the ocean dumping provisions of the Marine Protection, Research, and Sanctuaries Act of 1972; and the Federal Water Pollution Control Act of 1972 (also known as the Clean Water Act).[27] Moreover, from 1824 to 1986 the Corps of Engineers assumed responsibility for the deepening of navigation channels and their maintenance and associated expenses.[28] After 1986 the law changed to increase local participation in funding and to explicitly recognize the need for improved environmental protection in all dredging operations.[29]

Despite improvements in management over the years, Burroughs argues that the current governance structure "pits proponents of dredging against proponents of environmental protections, but fails to provide an effective structure for compromise and cohesive solutions."[30] Using the decades long conflict over dredging in the Port of Oakland as a case study, he points to a series of enduring positive changes occurring nationally that include incorporating diverse stakeholders early in the process and requiring local participation and funding of dredging projects.[31] In terms of the policy process, dredging illustrates the potential gridlock that occurs because "sector-based management starts with needs of individual, and often opposed, sectors rather than a broader common interest."[32]

Wetlands in Chapter 6 represent the last example of sector-based management. After describing the nature and extent of coastal wetlands in the U.S., with special emphasis on wetlands along the Gulf Coast, the chapter provides a good explanation of their value from the perspective of the doctrine of ecosystem services. Wetlands provide ecosystem services that "can include water purification, oxygen supply, moderation of storm impacts, decomposition of wastes, sediment/nutrient transport, support of human cultures, and aesthetics," among others.[33] However, the country has clearly favored transportation corridors, agriculture,

26. *Id.* at 67.
27. *See id.* at 74-75.
28. *Id.* at 78.
29. *Id.*
30. *Id.* at 81.
31. *Id.* at 84.
32. *Id.* at 85-86.
33. *Id.* at 89.

mineral extraction, and residential and industrial development over preservation of wetlands.[34] For example, since the 1970s, 200,000 acres of intertidal wetlands have been lost.[35] These losses, despite a national policy goal of "no net loss of wetlands," indicates that current sector-based approaches to managing wetlands through section 404 of the Clean Water Act have proven unable to rise to the challenges posed by individual and cumulative human activities and modifications of coastal wetlands, including the increasing threat from sea level rise.

Burroughs places much of the blame on the fragmentation of authority in section 404 of the Clean Water Act, which assigns two agencies, the Corps of Engineers and the Environmental Protection Agency, with different core missions to administer the program.[36] While ineffective administrative mechanisms may contribute to some extent to the problem of wetlands loss, Burroughs refrains from discussing the far greater role that partisan politics and ideological disagreements have played in reducing the amount of coastal wetlands subject to governmental control and protection. Partisan political and legal battles that pit the rights of private landowners against the public's right to protect wetlands have also played a strong role in the loss of these important ecosystems.[37] For example, depending on how courts and administrative agencies ultimately interpret a series of U.S. Supreme Court decisions, including *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*[38] and *Rapanos v. United States*,[39] federal legal protections may apply to as little as 20 percent of the nation's wetlands or to as much as 60 percent or more.[40]

Despite the generally inadequate governance framework for wetlands, Burroughs notes that public perceptions are changing as a result of the natural and human tragedies caused by recent hurricanes in the Gulf Region.[41] These events focused the nation's attention on the ongoing loss of marshes in coastal Louisiana and the effect that this loss had on rendering the city of New Orleans more vulnerable to the harms created by Hurricane Katrina. Although the process of recreating these

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34. *Id.* at 93.

35. *Id.* at 100.

36. *Id.* at 102.

37. John M. Broder, *After Lobbying Wetlands Rules are Narrowed*, N.Y. TIMES, July 6, 2007, http://www.nytimes.com/2007/07/06/washington/06wetlands.html.

38. 531 U.S. 159 (2001).

39. 547 U.S. 715 (2006).

40. JON KUSLER, THE SWANCC DECISION: STATE REGULATION OF WETLANDS TO FILL THE GAP 6-7 (2004), *available at* http://aswm.org/fwp/swancc/aswm-int.pdf.

41. BURROUGHS, *supra* note 1, at 102-03.

wetlands remains in doubt, the recognition of the damage and the attempt to address it are hopeful signs according to Burroughs.

Chapters 7 and 8 demonstrate that activities on land affect coastal waters and introduce spatial planning and ecosystem governance approaches to management. Chapter 7 describes the Federal Coastal Zone Management Act (CZMA) as the foundation of a spatial planning approach to coastal governance.[42] Under the CZMA, federally approved state plans exert geographically-based land and water use controls and "establishes a spatial management scheme that designates zones for particular uses and provides guidance about how they will be conducted."[43] Burroughs believes that this shift from regulation of uses to holistic management of geographic areas is valuable because it requires consensus among many parties and requires that decisions relating to preference of activities be made proactively rather than retroactively.[44] As a measure of its growing importance, eighteen federal programs are listed that incorporate spatial planning dimensions.[45]

Tools used for spatial management such as legislative and administrative processes, zoning, setbacks, fee-simple acquisition, purchase of development rights, tax incentives, and targeted public infrastructure are explained and examples are provided.[46] Finally, differences in how spatial planning is employed on land versus offshore areas are described.[47] Unlike on land, current frameworks in the U.S. seldom mandate planning across all activities in marine areas.[48] Moreover, ocean regions lack a common vision of goals for the future.[49] Burroughs suggests that many of these deficiencies may be addressed if the framework for regional coastal and marine spatial planning that was recently proposed by the Obama administration's Ocean Policy Task Force comes to fruition.[50]

Spatial management has clearly enhanced the nation's ability to resolve conflict and manage coastal areas.[51] However, continued evaluation and enhancement is required. Difficult questions remain about how to identify goals, performance standards, data quality, and

42. *Id.* at 104-05.
43. *Id.* at 109.
44. *Id.* at 116.
45. *Id.* at 110-11 tbl. 7.2.
46. *Id.* at 116-19.
47. *Id.* at 121.
48. *Id.*
49. *Id.*
50. *Id.* at 121-22.
51. *Id.* at 122-23.

success of sector-based and spatial-based approaches to management.[52] According to Burroughs, sector-based practices fail to synthesize and manage across coastal uses in an effective manner.[53] Spatial management practices, while accommodating multiple uses, fail to advance ecosystem health.[54] After decades of implementation, the ecological health of some coastal waters lags and coastal lands are increasingly subject to sprawling development. New methods must be developed as a means to enhance and focus coastal management in the future. Chapter 8 introduces ecosystem-based management as the next stage of coastal governance.[55]

Ecosystem-based management is defined in the book as "structuring societal behavior in ocean and coastal systems so that humans promote ecosystem health and resilience while allowing sustainable uses of goods and services."[56] The linkages between ecosystems and societal systems are illustrated by using an extended analysis of the impacts of fertilizers in the Mississippi River watershed on water quality in the Gulf of Mexico.[57] After explaining the chemical and biological effects of nitrogen flows on marine systems, Burroughs describes how human activities dramatically increase the flow of nitrogen to coastal waters, resulting in significant changes in the marine environment.[58] Sewage, crop and lawn fertilizers, and the burning of fossil fuels all contribute nitrogen to coastal lands and waters.[59] Large quantities of these nitrogen sources find their way down the Mississippi River watershed and into the Gulf of Mexico.[60] Excessive nitrogen causes rapid phytoplankton growth, which, in turn, diminishes dissolved oxygen levels in coastal waters.[61] When dissolved oxygen drops below a certain level, many marine organisms cannot survive; consequently, these areas are known as dead zones." During summer months, an enormous dead zone averaging 13,500 square kilometers develops in the Northern Gulf of Mexico off the coasts of Louisiana and Texas.[62]

52. *Id.* at 123.
53. *Id.* at 124.
54. *Id.*
55. *Id.*
56. *Id.* at 123.
57. *Id.* at 124.
58. *Id.* at 125.
59. *Id.* at 125-26.
60. *Id.* at 127.
61. *Id.*
62. *Id.*

The purpose of reviewing the causes of the Gulf of Mexico dead zone is to demonstrate that even though ecosystem science provides a clear understanding of how this linked/natural system works, past fragmented sector-based management initiatives have been unable to slow down the phenomenon. Instead, Burroughs advocates that the problem be managed in an integrated fashion using natural boundaries and operating at a landscape scale.[63] He then explains that shifting to ecosystem-based management will require a change in behavior of a wide variety of target groups, such as Midwest farmers and Gulf-based fishers, and may also require the use of new policy tools to influence their actions.[64] These tools include rules, incentives, education, technical assistance, learning, and other techniques.[65] Many are categorized in a useful table that describes the type of tool, a description, and examples.[66]

Burroughs seems to have no illusions regarding the complexities associated with employing an ecosystem-based approach, yet is optimistic that it can be achieved. He observes that "ecosystem-based management rests on the principle that real solutions involve the full spectrum of social and ecological systems. By involving new target groups, employing new tools, and incorporating agents throughout the society, [ecosystem-based management] seeks to address the root causes of problems."[67]

There is no doubt that ecosystem-based management is the predominant new paradigm in coastal governance. However, one aspect of the issue that Burroughs does not explicitly address is the ease by which non-environmental political decisions may derail well designed ecosystem-based frameworks. For example, ecosystem-based initiatives to address the issue of nitrogen loading in the Mississippi River watershed were moving forward prior to Congress' decision in 2007 to enact a renewable fuels standard that requires ethanol production to triple in the next twelve years.[68] Government subsidies are causing farmers to plant more corn for ethanol.[69] More nitrates are discharged from corn fields than any other crop, leading to a significant worsening of the Gulf

63. *Id.* at 129.

64. *Id.* at 132-33.

65. *Id.* at 133 fig. 8.3.

66. *Id.* at 134 tbl. 8.2.

67. *Id.* at 135.

68. Carolyn Lochhead, *Dead zone in the gulf linked to ethanol production*, S.F. CHRONICLE, July 6, 2010, http://articles.sfgate.com/2010-07-06/news/21939174_1_dead-zone-ethanol-production-oil-spill.

69. *Id.*

of Mexico dead zone.[70] Sadly, this decision, which had more to do with the importance of Iowa and other Midwest farm states in presidential election politics than with protecting the environment, reversed many of the benefits associated with the innovative use of ecosystem-based management.[71]

Chapters 9 and 10 further elaborate on the value of ecosystem-based management by offering additional case studies relating to watersheds/bays and fisheries management. River systems and watersheds are the quintessential integrated ecosystems. Because rivers flow to the ocean, activities occurring in the watershed many miles inland determine the conditions at the coast.[72] Burroughs describes how the interconnected nature of water systems was recognized by the nation's policy makers nearly a century ago and he identifies the creation of the Tennessee Valley Authority in the 1930s as an early model of watershed management.[73] During the 1950s to 1980s, watershed management declined in favor of water supply, hydroelectric power, and flood control.[74] However, it became clear in the 1990s that meeting environmental objectives required a return to regional management, and programs were established such as those that attempted to restore salmon populations or improve degraded bodies of water such as the Chesapeake Bay.[75]

The series of Chesapeake Bay improvement initiatives between 1987 and the present are described as examples of unsuccessful policy processes.[76] While originally viewed favorably, Burroughs points out that "a truly successful program must also include means to change human behavior and must record real changes in the natural and social environments."[77] The results for the Chesapeake have not been good and the bay remains in a stable yet degraded state.

In his recommended remedies for improving the Chesapeake Bay, Burroughs returns to the five stages of the policy process that were the focus of chapters 2 and 3.[78] He takes readers through a persuasive analysis illustrating how ecosystem-based management techniques could have been applied during the five stages of policy development with

70. *Id.*
71. *Id.*
72. BURROUGHS, *supra* note 1, at 143.
73. *Id.* at 144.
74. *Id.* at 145-46.
75. *Id.* at 146.
76. *Id.* at 156-57.
77. *Id.* at 156.
78. *See supra* p. 3-4 and notes 7-10.

much better results.[79] In summary, Burroughs asserts that those who manage the Chesapeake "have made considerable progress in problem definition and planning, but are facing major difficulties in program execution as evidenced by gaps between goals and current conditions in the bay."[80]

The primary theme in the book's final chapter on fisheries returns to the differences between traditional species dominated fisheries management and the ecosystem approach. A good general discussion of fisheries biology and management practices is followed by an explanation of the Magnuson-Stevens Fishery Conservation and Management Act. The mandate of Regional Fisheries Management Councils are described and evaluated through the lens of the five stages of policy development as in the previous chapter. The remainder of the chapter explores the principles of an ideal ecosystem-based management approach to fisheries, which incorporates a more complete set of trophic interactions with impacts on human livelihoods and communities.[81] Achieving these goals will require the empowerment of additional stakeholders and processes through new mixes of techniques including co-management, community-based management, and privatization.[82]

Burroughs concludes with a nice review of the book's main points and an informative summary of the primary ecosystem-based management elements as they exist in watershed and bay management as well as fisheries. It is his belief that "ecosystem-based management has the potential to be just as significant, if not farther reaching, as the broad changes in environmental law enacted in the 1970s."[83] Despite this aspiration, Burroughs admits that "for the foreseeable future coastal and ocean management will rely on a mix of the sector, spatial, and ecosystem-based approaches."[84]

Coastal Governance provides an interesting and practical guide to more effective coastal decision-making. It stresses the importance of sustaining a healthy marriage between public policy and science, and suggests practical solutions to difficult coastal problems and conflicts. For these reasons, it should be a welcome and valuable addition to the book collections of students and professionals alike.

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79. BURROUGHS, *supra* note 1, at 157-61.
80. *Id.* at 162.
81. *Id.* at 176.
82. *Id.* at 184.
83. *Id.* at 191.
84. *Id.* at 191-92.