

The BP Blowout and the Social and Environmental Erosion of the Louisiana Coast

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“There, shockingly, along the grassy bayou bank, I can now make out a dozen or so old tombs, all in different stages of submersion, tumbling brick by brick into the bayou water The bayou is swallowing the dead here.”¹ This quote comes from a book, whose subtitle says it all: “The Rich Life and Tragic Death of Louisiana’s Cajun Coast.” The author, Mike Tidwell, observes that the “whole ragged sole of the Louisiana boot, an area the size of Connecticut . . . is literally washing out to sea . . . taking with it entire Cajun towns and an age-old way of life.”² But the Louisiana coast is not the only part of the Gulf that is in deep trouble, and the Cajuns are not the only group to suffer the consequences.

Despite the attention the Gulf of Mexico (the Gulf) has received since the BP *Deepwater Horizon* blowout, it may take years before the consequences of this disaster will be fully understood.³ All of this attention to the spill is warranted by the magnitude of the disaster. It risks, however, obscuring the context surrounding the spill itself. Members of the public who were following events might well have supposed that the spill was a gigantic blot on an otherwise unblemished natural coast-

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1. MIKE TIDWELL, BAYOU FAREWELL: THE RICH LIFE AND TRAGIC DEATH OF LOUISIANA’S CAJUN COAST 29 (2003).

2. *Id.* at 6.

3. See Cain Burdeau & Seth Borenstein, *Gulf Survival: Scientists Lower Gulf Health Grade*, U.S. NEWS & WORLD REP. (Oct. 19, 2010), <http://www.usnews.com/science/articles/2010/10/19/gulf-survival.html>.

line and thriving marine ecosystem. But even before the spill, the Gulf waters, the U.S. Gulf Coast, and the communities that live on the coast were all under threat.⁴

The spill was only one more insult to a region already suffering ongoing harm. In July 2010, an Associated Press survey asking Gulf scientists to rate the status of the Gulf on a 0 to 100 scale, with 0 being dead and 100 being pristine, found the region to be a 71.⁵ In October, this number dropped only 6 additional points to 65.⁶ To explain this relatively small drop, one must understand the history of social and environmental erosion of the Louisiana coast.

Like the Gulf's ecosystems, some human coastal communities were especially vulnerable to the incremental harm of the spill because of their already precarious positions. Also lost in the discussion of the oil spill's impacts have been the disproportionate effects upon certain communities—communities that have been no strangers to the steady deterioration of the Gulf of Mexico. Long before oil began to spew into the Gulf of Mexico on April 20, 2010, the Gulf had been paying the price for unchecked development, aggressive extraction of oil and natural gas, and an attitude of indifference to environmental conse-

4. See, e.g., ROBERT R. M. VERCHICK, *FACING CATASTROPHE* 16–17 (2010) (noting that since the nineteenth century scientists have raised concerns about the limits on the use of wetlands). At present, the definitive discussion of the spill itself seems to be NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL & OFFSHORE DRILLING, *DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING* (2011) [hereinafter *BP OIL SPILL COMM'N*]. The National Commission also provides a good summary of the situation facing the Gulf today.

The largest and most formidable challenges, however, are to bring balance and efficiency to the Gulf's shared marine resources, and to address the rapid and continuous loss of wetlands, barrier islands, and shorelines comprising the Mississippi Delta and associated Chenier Plain of southwestern Louisiana. While many areas along the Gulf Coast require such restoration, the Mississippi Delta and the Gulf itself requires [sic] special attention.

Id. at 199.

While this article was in press, the Gulf Coast Ecosystem Restoration Task Force issued a preliminary draft of its policy recommendations which emphasizes the need to consider the spill in the context of the Gulf's other environmental problems and of the needs of coastal communities. See *Press Release: Gulf Coast Task Force Releases Ecosystem Restoration Strategy*, available at <http://www.epa.gov/gulfcoasttaskforce/>.

5. Burdeau & Borenstein, *supra* note 3.

6. *Id.*

quences.⁷

The recent focus on the BP oil spill overlooks thousands of environmental indignities visited on the Gulf over the last several decades. The Gulf is littered with around 4000 offshore oil and gas platforms and tens of thousands of miles of pipeline in the central and western Gulf of Mexico, where ninety percent of the country's offshore drilling takes place.⁸ Even before the BP oil spill, over half a million gallons of oil had spilled in various accidents.⁹ The Gulf of Mexico has had to absorb the environmental consequences of upriver use of fertilizers and pesticides and an array of point-source pollution.¹⁰ Bombs, chemical weapons, and other ordnance litter the Gulf's floor, after frequent dumping in the middle of the twentieth century.¹¹ As we will see, these are only some of the threats facing the Gulf.

This Article begins in Part I with a survey of the multitudinous troubles facing the Gulf and its communities before the *Deepwater Horizon* spill. Those troubles range from a disappearing coastline to invasive species and an aquatic dead zone. Part II discusses the spill itself and its impact. At present, the impacts of the spill do not seem to be as catastrophic as initially feared, but the spill has made a bad environmental situation worse. Part III then considers some affirmative steps that could help address the long-term deterioration of the Gulf Coast. Dramatic improvement would require expenditure of large amounts of federal money and passage of new federal legislation protecting the Gulf, neither of which seems likely at present. However, while adding to the woes of the Gulf, the spill also provides opportunities to build institutional and informational infrastructure that, over time, can help slow or reverse the deterioration of the Gulf.

It would be gratifying to offer a master plan for fixing the Gulf, but such a plan would be fruitless without a degree of political commitment that is unlikely in at least the next decade. There are many small initiatives that can cumulatively begin to make inroads on the Gulf's problems, including, most obviously, efforts to ensure that the BP oil spill is not followed by similar disasters. Rather than attempting to catalogue all of

7. *Id.*

8. Campbell Robertson, *Gulf of Mexico Has Long Been Dumping Site*, N.Y. TIMES, July 30, 2010, at A1.

9. *Id.*

10. *Id.*

11. *Id.*

those potential initiatives, this Article focuses on efforts to build the governance and information infrastructure that can provide the framework for future initiatives. Combined with individual reform efforts, these institutional infrastructure improvements can have a synergistic effect, helping to energize and support future efforts in the same direction.

In many ways, the situation in the Gulf is a preview of problems that will be facing the United States and the world in years to come due to climate change.¹² Sea level rise is one of the most predictable effects of climate change.¹³ Apart from the unknown contribution of melting from Greenland and Antarctica,¹⁴ the simple change in temperature of the oceans will contribute to thermal expansion, just as increased temperature causes the mercury in a thermometer to rise.¹⁵ This rise in sea level will result in loss of coastal lands,¹⁶ inundation of some estuary systems with salt water, salt water intrusions into some drinking sources, and increased exposure to flood damage.¹⁷ Two-thirds of all U.S. coastal wetlands would be lost with a one-meter rise in sea level.¹⁸ In terms of ecology, even moderate climate change will trigger significant extinctions.¹⁹

12. For scientific background on climate change, see DAVID ARCHER & STEFAN RAHMSTORF, *THE CLIMATE CRISIS: AN INTRODUCTORY GUIDE TO CLIMATE CHANGE* (2010).

13. See, e.g., K. Hasselman et al., *The Challenge of Long-Term Climate Change*, 302 *SCIENCE* 1923, 1924 fig. 1 (2003) (predicting a two-meter increase in sea level under a “business as usual” scenario by year 2100, but only twenty centimeters under an optimum regulatory strategy).

14. NICHOLAS STERN, *THE STERN REVIEW: THE ECONOMICS OF CLIMATE CHANGE* 20 (2007); see also RICHARD ALLEY ET AL., *INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 4–5* (2007).

15. Changes in ocean temperature will also affect fish stocks. See Hans O. Portner & Rainer Knust, *Climate Change Affects Marine Fishes Through the Oxygen Limitation of Thermal Tolerance*, 315 *SCIENCE* 95 (2007).

16. A. BARRIE PITTOCK, *CLIMATE CHANGE: TURNING UP THE HEAT* (2005). Examples include China, India, Pakistan, Bangladesh, and the United States. *Id.* at 264, 268, 278.

17. See ELIZABETH KOLBERT, *FIELD NOTES FROM A CATASTROPHE: MAN, NATURE, AND CLIMATE CHANGE* 123–24 (2006) (indicating that what are now hundred-year floods could become routine by late this century); see also PITTOCK, *supra* note 16, at 118 (stating that without adaptive measures, annual flood losses would increase by £ 1–24 billion in different scenarios).

18. THOMAS R. KARL ET AL., *GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES* 84 (Thomas R. Karl et al. eds., 2009).

19. *Id.* at 162.

The Gulf is already experiencing many of these ills, but scientists project even more severe changes due to climate change throughout the Southeast: loss of barriers to hurricane storm surges, rapid salt-water intrusion into coastal forests and freshwater aquifers, droughts leading to wildfires and drying of lakes, ponds, and wetlands, extinction of aquatic species, and declining fish and shellfish populations due to the rapid loss of coastal marsh are all possible.²⁰

In these respects, like the proverbial canary in the coal mine, what we see today in the Gulf Coast is an early warning indicator of trouble ahead. We will have to worry about disappearing wetlands and other changes in many parts of the United States. The Gulf offers us the opportunity to learn how to respond to these challenges before they become widespread.

I. PUTTING THE BP OIL SPILL IN ITS CONTEXT

What was the Gulf like before the big spill? We cannot understand the spill in isolation. Rather, we need to understand the human communities, geological changes, and ecosystems that were already in place before the spill.

The Gulf is not just another coastal strip or water body, and its coastal communities are not fungible with those on the Atlantic or the Pacific shores. The Gulf Coast is home to some unique communities, having their own distinctive cultures and histories.²¹ These communities have long been under threat because of deterioration of fishing and because the very land on which they rest has begun to vanish into the water.²² These

20. *Id.* at 115–16. The effect of the spill itself on these problems is not yet known. There is particular uncertainty about the effects on deep water biological communities. According to the National Commission,

Because the *Deepwater Horizon* spill was unprecedented in size, location, and duration, deepwater ecosystems were exposed to large volumes of oil for an extended period. It will take further investigation and more time to assess the impacts on these ecosystems, their extent and duration. Unfortunately, except for studies that have focused on rare and specialized communities associated with rocky outcrops or seeps, scientific understanding of the deepwater Gulf ecosystem has not advanced with the industrial development of deepwater drilling and production.

BP OIL SPILL COMM'N, *supra* note 4, at 182.

21. See generally VERCHICK, *supra* note 4, at 16 (“[W]e are all tangled up in a maze of pipelines, industry, and marine commerce that interacts with community, culture, recreation, and tourism [A] hodge podge of human activities.”).

22. *Id.* at 16–19.

communities are the subject of Part A.

Part B discusses the environmental threats facing the Gulf even before the BP *Deepwater Horizon* blowout. A recent estimate is that environmental risks could cost the Gulf as much as \$350 billion in economic loss over the next twenty years; notably, one sponsor of the study was Swiss Re, a leading international reinsurance company.²³ The harm done by the BP oil spill is an add-on to the other impeding threats.

Part C discusses the barriers that have long prevented effective response to these issues. The Gulf has sometimes seemed as distinctive in its resistance to environmental protection as in its ecology and culture. Much of the information needed to address problems in the region is yet to be developed, so too for the governance structure to implement solutions. These longstanding barriers will not give way overnight, but Part III of the article will suggest some incremental efforts to address them.

A. COASTAL COMMUNITIES

Other parts of the country were founded by farmers and ranchers. Before oil and gas development, however, the Gulf Coast was primarily used for fishing, trapping, and transportation.²⁴ Even today, it is home to fishing communities with unique histories and cultures. The earliest non-native inhabitants of the coast were refugee Acadians from Canada.²⁵ The modern-day Cajuns are the descendants of the Acadians expelled from modern day Nova Scotia and resettled in the marshes of Louisiana.²⁶ The Cajuns settled on the coast because other cultures had already laid claim to much of the inland territory, but they found that there was little agricultural land available among the marsh and swamp lands.²⁷ Traditionally, farmers—the displaced Acadians—were forced to adapt to a lifestyle focused on fishing.²⁸ From these unique marshland

23. News Release, Entergy, Entergy Study Finds Environmental Risks Could Coast Gulf Coast \$700 Billion (Oct. 20, 2010), http://www.energy.com/news_room/newsrelease.aspx?NR_ID=1906.

24. VERCHICK, *supra* note 4, at 16.

25. Herbert R. Padgett, *Physical and Cultural Associations on the Louisiana Coast*, 59 ANNS. ASS'N AM. GEOGRAPHERS 481, 481 (1968).

26. *Id.*

27. *Id.*

28. *Id.*

beginnings, the Cajuns of Louisiana developed a distinct and complex cultural identity, expressed in language, food, dance, folklore, and other traditions.²⁹ Cajun culture is not unitary; rather, “Cajun identity is so distinct that each town often has its own cuisine, musical style, and dialect.”³⁰

The oil spill has threatened Cajun culture because it challenges traditional fishing livelihoods and threatens to undermine the Cajun tradition of self-reliance. Many of the small fishing communities in the Louisiana coastal zone have been in existence for 200 years or more.³¹ These communities turned to capturing “fish, crawfish, frogs, and the collection of Spanish moss (used for mattress filler),” and selling these products to nearby New Orleans.³² As fishing technology developed in the 1950s and 60s, these communities increasingly relied on salt-water fisheries and shellfisheries for their livelihood.³³ As the bounty of the Gulf declines along with the region’s environment, the Cajun people face greater uncertainty when they take to their fishing boats.

In addition to Cajuns, the coast is also home to around 20,000 Native Americans.³⁴ For instance, tribes in southern Louisiana depend on marshlands that were inundated by Hurricanes Rita and Katrina, with eighty percent of the homes flooded.³⁵

Besides these coastal communities, other aspects of the region are connected with the coast. Although not (yet) physically on the coast, New Orleans is closely tied to the coastal ecosystem. If all the wetlands were lost, the city would only be twenty-five miles from the coast and even more vulnerable to hurricanes.³⁶ Shipping is a key industry, further tying the city to the coast.³⁷ Although jazz has been replaced by hip hop and rap as popular music, the city retains a distinctive culture with “the

29. Mark Guarino, *BP Oil Spill Imperils Cajun Culture*, CHRISTIAN SCI. MONITOR (Aug. 6, 2010), <http://www.csmonitor.com/USA/Society/2010/0806/BP-oil-spill-imperils-Cajun-culture>.

30. *Id.*

31. *Id.*

32. *Id.*

33. *Id.*

34. VERCHICK, *supra* note 4, at 142.

35. *Id.*

36. DOUGLAS BRINKLEY, *THE GREAT DELUGE: HURRICANE KATRINA, NEW ORLEANS, AND THE MISSISSIPPI GULF COAST* 12 (2006).

37. *Id.* at 31.

bohemian-anarchistic-libertarian mix of an international port city.”³⁸

New Orleans is also home to vulnerable communities. Prior to Hurricane Katrina, two-thirds of the population was African American.³⁹ During the post-World War II industrial boom, the chemical and plastics industries built up factories in disenfranchised, predominantly black neighborhoods.⁴⁰ Each year these industrial complexes release millions of pounds of carcinogens.⁴¹ In Mossville, Louisiana, residents have three times the dioxin level of the national average.⁴² The Inter-American Commission of Human Rights has agreed to hear a petition from residents of Mossville.⁴³ It is the first environmental case from the U.S. to go before the Commission.⁴⁴ Minority communities were also impacted by more recent events. Many communities of Asian Americans (especially Vietnamese) were devastated by hurricanes in New Orleans and by the decline in the fishing industry.⁴⁵

These communities should be subjects of special concern for several reasons. First, they are often politically and economically disempowered, ill-prepared to protect their own interests either in the political arena or the marketplace. Second, these communities and their unique cultures are not readily portable. If their livelihoods, lands, or homes are destroyed, individuals may relocate but communities’ ties and distinctive cultures may be lost. In a society where migration and mass media tend to homogenize our culture, we should prize these unique communities and their distinctive histories.

B. THE GULF ECOSYSTEM

When the BP oil spill began, the Gulf of Mexico was already suffering the effects of a century of environmental neglect. The spill was simply the latest blow to a damaged ecosys-

38. *Id.* at 29, 47.

39. *Id.* at 33.

40. Ike Sriskandarajah, *Living on Earth*, PUB. RADIO INT’L (Apr. 26, 2010), <http://www.pri.org/science/environment/human-rights-in-cancer-alley-1965.html>.

41. *Id.*

42. *Id.*

43. *Id.*

44. *Id.*

45. VERCHICK, *supra* note 4, at 142.

tem. This section surveys the preexisting problems: disappearing wetlands, a growing dead zone, and threatened biodiversity. Because so many coastal communities depend on fishing for their livelihoods, these communities are inevitably impacted when ecosystems are eroded by human activities. Indeed, many of them are seeing the very land beneath their feet erode away.

1. Disappearing Wetlands

Disappearing wetlands are in some ways the most obvious of the Gulf's problems. Their disappearance is a particular concern because they provide benefits that extend far beyond the swamplands and marshes themselves. Coastal wetlands provide many ecological services:

In addition to storm protection services, the Louisiana coastal plain provides many other benefits. It offers habitat for countless species, including commercially significant sea life and waterfowl. Fisheries in the Gulf of Mexico provide about [twenty] percent of all seafood consumed in the United States. Nearly all of that catch is dependent, in some way, on the universe of microscopic plant and animal life first nurtured in the coastal plain. With more than five million birds wintering in Louisiana, the Louisiana coastal plain provides crucial rest stops to migrating birds. Finally, Louisiana's coastal marshes provide services that are vital to water quality. . . . The coast's storm protection, habitat, and water treatment services, while impossible to precisely quantify, surely amount to billions of dollars of commercial benefit per year.⁴⁶

Since the 1930s, however, one-third of Louisiana's wetlands, an area the size of Delaware, has disappeared.⁴⁷ Data from a U.S. Fish and Wildlife Service wetlands survey show that, though the rate of loss has slowed, Louisiana is still losing 32,000 acres of wetland every year.⁴⁸ At the current rate of wetland loss, by the year 2040, Louisiana will have lost more than

46. VERCHICK, *supra* note 4, at 18–19. According to the National Commission, the Gulf Coast produces more than one third of domestic seafood supply, diverse fish nursery and feeding grounds, and “some of the best beaches and waters in the United States for recreation and tourism.” BP OIL SPILL COMM’N, *supra* note 4, at 187. “Coastal tourism and commercial fisheries generate more than \$40 billion of economic activity annually in the five Gulf States.” *Id.*

47. Ken Wells, *Collapsing Gulf Marsh Dwarfs Oil Spill as Ecological Disaster*, STATESMAN.COM (Sep. 7, 2010, 9:41 PM), <http://www.statesman.com/news/nation/collapsing-gulf-marsh-dwarfs-oil-spill-as-ecological-902420.html> (footnote omitted).

48. U.S. ENVTL. PROT. AGENCY, WETLAND EXTENT, CHANGE, AND SOURCES OF CHANGE, *available at* <http://cfpub.epa.gov/eroe/index.cfm?fuseaction=detail.viewInd&lv=list.listByAlpha&r=188230&subtop=202>.

one million acres of coastal wetlands since 1978. As a result, fisheries could decline by thirty percent and wildlife dependent on the marshes would suffer.⁴⁹ Louisiana's wetlands account for forty percent of total wetlands in the continental United States, and the state also accounts for eighty percent of wetlands lost.⁵⁰ There are multiple causes of the rapid loss of these freshwater wetlands: levees along the Mississippi built in 1927 prevent silt from reaching the wetlands, natural contraction of peat soils, and geological settling.⁵¹ While it is difficult to attribute a percentage of environmental degradation to human activities, the offshore drilling industry has substantially contributed to the rapid destruction through dredging for drilling rigs, pipelines, and navigation channels.⁵²

After the catastrophic levee failures that allowed Hurricane Katrina's floodwaters to advance into the heart of New Orleans, efforts to restore and enhance the city's flood protection system have largely failed to consider the effects of human development upon the region's natural defenses.⁵³ Louisiana's wetlands are an incredible ecological resource, and their steady destruction left the city more vulnerable than it otherwise would have been.⁵⁴ Further, wetlands are essential to the health of Louisiana's fish and seafood industry, they shelter and feed five million migratory birds annually, filter pollutants from the water, and help slow storm surges.⁵⁵ The barrier islands in the Gulf of Mexico have also gradually disintegrated, at least in part due to human activities, leaving the vast system of sheltered wetlands along Louisiana's delta plain increasingly exposed to open-gulf conditions.⁵⁶

In addition to increased erosion, coastal wetlands have also suffered because of declines in the countervailing forces that build and maintain the lands. After floods in 1927, the United

49. COASTAL WETLANDS, PROTECTION AND RESTORATION ACT, MANAGING AGENCIES, WETLAND LOSS IN LOUISIANA (1997), <http://www.lacoast.gov/reports/rct/1997/5.htm>.

50. Judith Perhay, *Louisiana Coastal Restoration: Challenges and Controversies*, 27 S.U. L. REV. 149, 155 (2000).

51. Wells, *supra* note 47.

52. *Id.*

53. See Bob Sullivan, *Wetlands Erosion Raises Hurricane Risks*, MSNBC.COM (Aug. 29, 2005, 9:17 PM), <http://www.msnbc.msn.com/id/9118570/>.

54. *Id.*

55. Wells, *supra* note 47.

56. Sullivan, *supra* note 53.

States built levees along the Mississippi that have prevented silt from reaching Louisiana wetlands.⁵⁷ Since the construction of these levees, wetlands have been starved of sediment, causing them to “become waterlogged, sink and die.”⁵⁸ The silt ends up uselessly collecting at the bottom of the Gulf of Mexico.⁵⁹ Thus, efforts to reduce flooding in the Mississippi River basin have increased the risk of flooding along the coast of the Gulf of Mexico.⁶⁰

After Hurricane Katrina, it became apparent that the disappearance of the wetlands created a major risk to the region.⁶¹ Wetlands absorb the impact of storms, slowing them down once they make landfall.⁶² Storm surges are reduced by approximately one foot for every 2.7 miles of wetlands.⁶³ However, New Orleans is now increasingly exposed to violent storms because so many of the wetlands have collapsed, in part due to the levee system that surrounds the city.⁶⁴ In addition, barrier islands provide protection for “half a million people from violent storms, along with an international commercial-industrial complex worth billions.”⁶⁵ Yet, these barrier islands are rapidly disappearing.⁶⁶

The problems discussed in this section are on the landward side of the coastline. All is far from well, however, on the seaward side. There are several other major threats to the health of the Gulf ecosystem, which are discussed in the next two subsections.

2. The Dead Zone

The dead zone is an unmistakable sign that the marine ecosystem is under threat. An 18,000 square kilometer seasonal “dead zone” of low dissolved oxygen threatens marine life on the Texas-Louisiana shelf. First recognized in the 1970s, the Gulf of Mexico dead zone is the largest in the Western Hemi-

57. Wells, *supra* note 47.

58. *Id.*

59. *Id.*

60. Sullivan, *supra* note 53.

61. *Id.*

62. *Id.*

63. *Id.*

64. *Id.*

65. VERCHICK, *supra* note 5, at 34.

66. *Id.* at 34–35.

sphere.⁶⁷ The size of the dead zone varies from year to year, but at its largest, in 2002, it covered 22,000 square kilometers—an area as large as the state of Massachusetts.⁶⁸ Research suggests that fertilizer leaching from agricultural production along the Mississippi River may be responsible for the river's nutrient loading and hypoxia which causes the dead zone.⁶⁹ Thus, the zone is at its worst during peak farming months, from May till September. The Mississippi watershed drains forty-one percent of the land area of the contiguous United States.⁷⁰ More than half of the estuaries that experienced a hypoxic event are in the Mississippi River plume.⁷¹

Dead zones throughout the world have spread exponentially since the 1960s—the Gulf being a prime example.⁷² The area of hypoxia shrinks to less than 5000 square kilometers during years with low river flow.⁷³ However, the dead zone more than triples in size during periods of high flow.⁷⁴ While climate change promises to have complicated effects on the dead zone, climate models predict that climate change will deplete oceanic oxygen by increasing stratification and change rainfall patterns so as to cause increased discharges from the Mississippi River.⁷⁵

Even apart from climate change, however, the situation is very serious. Each spring, a massive slug of nutrients flows down the Mississippi River and empties into the Gulf of Mexico, forcing aquatic life to flee or else suffocate.⁷⁶ Hypoxia leaves habitats inhabitable. For example, “[i]n marine systems, when oxygen levels fall to within 1.0–2.0 ml/liter, mobile organisms,

67. EUGENE H. BUCK, CONG. RESEARCH SERV., *MARINE DEAD ZONES: UNDERSTANDING THE PROBLEM* 7 (2007).

68. *Id.*

69. *Id.* at 8.

70. *Id.*

71. *Id.* at 6.

72. Robert J. Diaz & Rutger Rosenberg, *Spreading Dead Zones and Consequences for Marine Ecosystems*, 321 *SCIENCE* 926, 926 (2008).

73. *Id.* at 928.

74. *Id.*

75. *Id.* at 929.

76. J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 *CALIF. L. REV.* 59, 60 (2010). For detailed scientific information about the hypoxia issue, see ELIZABETH B. JEWETT ET AL., *COMM. ON ENV'T AND NATURAL RES., SCIENTIFIC ASSESSMENT OF HYPOXIA IN U.S. COASTAL WATERS* 11–22 (2010).

such as pelagic fish, begin to migrate out of the affected area.”⁷⁷ The current and future potential effects upon Gulf species of the growing hypoxic region include: “(1) altered coastal phytoplankton based food webs, (2) noxious algal blooms, (3) altered benthic ecosystems, (4) reduced economic productivity in both commercial and recreational fisheries, and (5) both direct and indirect impacts on fisheries, such as direct mortality and altered migration which may lead to declines in populations and landings.”⁷⁸

Despite the destruction to life, the federal government has been unable or unwilling to take substantial action to limit the upriver fertilizers and manures causing the damage.⁷⁹

A thirty percent decrease in the Mississippi River nitrate influx, according to model simulations, would reduce the frequency of hypoxia by thirty-seven percent.⁸⁰ However, a twenty percent increase in Mississippi River discharge, thought possible as a result of climate change, would increase the frequency of hypoxia by the same amount.⁸¹ Therefore, if climate change does substantially increase discharges, it may be necessary to decrease nitrogen flux by more than thirty percent if policy-makers become serious about addressing hypoxia.⁸²

3. Threats to Biodiversity

The Gulf of Mexico is home to twenty-eight species of marine mammals, including six that are listed under the Endangered Species Act (ESA) as endangered.⁸³ Five species of turtles in the region are listed under the ESA.⁸⁴ These animals are concentrated in areas that provide shelter, feedings, and places suitable for reproduction.⁸⁵ The extent to which these optimal

77. Mary L. Belefski & Larinda T. Norton, *Hypoxia in the Gulf of Mexico: A Historical and Policy Perspective*, 12 TUL. ENVTL. L.J. 331, 335 (1999).

78. *Id.* at 338.

79. See BUCK, *supra* note 67, at 13–16.

80. Nancy Rabalais et al., *Simulated Responses of the Gulf of Mexico Hypoxia to Variations in Climate and Anthropogenic Nutrient Loading*, 42 J. MARINE SYSTEMS 115, 115–126 (2003).

81. *Id.*

82. *Id.*

83. NAT'L OCEANIC & ATMOSPHERIC ADMIN., AN OVERVIEW OF PROTECTED SPECIES COMMONLY FOUND IN THE GULF OF MEXICO 5 (2006), <http://sero.nmfs.noaa.gov/pr/pdf/Protected%20Species%20In%20GOM-web%20version%202-7-08.pdf>.

84. *Id.* at 6.

85. *Id.* at 8.

habitats have suffered as a result of the oil spill depends upon whether oil comes into contact with these habitats.⁸⁶ However, because much oil and gas extraction occurs in or near habitats of protected species, there is a particular danger when a spill occurs.⁸⁷ The risks of a spill are amplified because oil-drilling platforms serve as underwater islands that often provide artificial habitat to a wide array of species.⁸⁸ Rapid, severe declines in coastal and oceanic shark populations in the northwest Atlantic and Gulf of Mexico have led to population loss of ninety-nine percent of some species.⁸⁹

The Bluefin tuna is a species in the Gulf that is being closely monitored in the wake of the oil spill.⁹⁰ Since 1950, the Bluefins have been in rapid decline.⁹¹ A twenty-year plan to rebuild the stock has utterly failed.⁹² A new model suggests that two cyclonic eddies—preferred spawning areas for the Bluefin tuna—were substantially contaminated by the oil spill at the exact time that spawning should be occurring.⁹³ The Bluefin is now under consideration for listing as an endangered species.⁹⁴ The Bluefin is representative of many struggling species in the Gulf of Mexico that could be dealt a fatal blow by the oil spill.

Climate change promises to have many complex, and mostly negative, effects on the Gulf of Mexico. Rising waters will increase coastal erosion.⁹⁵ Indeed, as early as 1990, Congress made an official finding that “[t]here is a growing need to plan

86. BP OIL SPILL COMM’N, *supra* note 4, at 178.

87. *Id.* at 83.

88. *Id.* at 174–75. (discussing how the spill also impacted the deepwater bathypelagic zone, which contains cold-water corals, fish, bacteria, mussels and tubeworms, as well as diving sperm whales).

89. Andrea Thompson, *Shark Population Collapse Causing Other Species to Vanish*, FOXNEWS.COM (Apr. 2, 2007), <http://www.foxnews.com/story/0,2933,262486,00.html>. See generally BP OIL SPILL COMM’N, *supra* note 4, at 178 (discussing that species with essential habitats near the spill included sharks of various kinds, swordfish, marlin tuna, and sailfish).

90. BP OIL SPILL COMM’N, *supra* note 4, at 180–81.

91. Julia Whitty, *Bluefin Tuna Spawning Mid-Spill Right Now*, MOTHER JONES (May 28, 2010, 3:29 PM), <http://motherjones.com/blue-marble/2010/05/bluefin-tuna-spawning-mid-spill-right-now>.

92. *Id.*

93. *Id.*

94. Allison Winter, *Gulf Spill Spurs U.S. to Weigh Protections for Bluefin Tuna*, GREENWIRE (Oct. 12, 2010), <http://www.eenews.net/Greenwire/print/2010/10/12/21>.

95. KARL ET AL., *supra* note 18, at 12.

for sea level rise” in light of global warming and its effect on sea level.⁹⁶ Most importantly, marine habitats have already suffered significant losses for a variety of reasons—including coastal agricultural, industrial, and urban development.⁹⁷ Climate change is expanding the range of some fishes and decreasing the range of others with unpredictable results.⁹⁸ While some foundation species may be able to keep pace with changes to the ecosystem by migrating landward, this depends on water rising at a sufficiently slow rate. A recent study found regional increases in air and sea surface temperatures of greater than 3°C over a thirty-year period.⁹⁹ This change in temperature correlates with northern shifts in the distribution of warm water fishes in the Gulf of Mexico.¹⁰⁰

Circulation patterns and the input of freshwater drive productivity and connectivity within the Gulf of Mexico.¹⁰¹ The movement of three species of fish, the Atlantic goliath grouper, red grouper, and tilefish is in part controlled by these circulation patterns and the flow of freshwater.¹⁰² In turn, these fishes have a profound shaping effect upon their habitats, which likely influences the livelihood of many other species in the Gulf.¹⁰³ Biodiversity exists in a delicate balance, and climate change may have a disruptive effect upon this balance.¹⁰⁴

Invasive species are also a threat to the Gulf ecosystem. The Gulf of Mexico Program (GMP) sponsors a multi-stakeholder Invasive Species Focus Team, focusing on shrimp viruses, ballast water, and the prevention of new introductions of invasive species.¹⁰⁵ The majority of the Invasive Species Focus Team’s efforts have been on addressing the first two of the-

96. Coastal Zone Reauthorization Amendments of 1990, Pub. L. No. 101-508, § 6202(a)(7), 104 Stat. 1388-300 (1990).

97. Felicia Coleman & Christopher Koenig, *The Effects of Fishing, Climate Change, and Other Anthropogenic Disturbances on Red Grouper and Other Reef Fishes in the Gulf of Mexico*, 50 INTEGRATIVE & COMP. BIOLOGY 201, 208 (2010).

98. *Id.* at 208–09.

99. Joel Fodrie et al., *Climate-Related, Decadal-Scale Assemblage Changes of Seagrass-Associated Fishes in the Northern Gulf of Mexico*, 16 GLOBAL CHANGE BIOLOGY 48, 48 (2009).

100. *Id.*

101. Coleman & Koenig, *supra* note 97, at 202.

102. *Id.*

103. *Id.* at 204–05.

104. *Id.*

105. ENVTL. PROT. AGENCY, 855-R-00-003, AN INITIAL SURVEY OF AQUATIC INVASIVE SPECIES ISSUES IN THE GULF OF MEXICO REGION 4 (2000).

se three.¹⁰⁶ The GMP works with the five Gulf States to develop action plans “to minimize introductions and impacts of invasive species.”¹⁰⁷ Twenty-five of seventy-five non-indigenous species in the Gulf of Mexico are fish species.¹⁰⁸ At least ten of these were deliberate introductions.¹⁰⁹ An additional fifteen fish species represent unintentional releases from aquaria.¹¹⁰ Thus, with an eye to fishing, human demands have been put before the natural balance of the Gulf. While GMP may strive to reverse the trend towards the proliferation of invasive species, it is unclear whether its efforts can cancel out the forces that have brought so many invasive species to the Gulf in the first place.

C. BARRIERS TO ENVIRONMENTAL IMPROVEMENT IN THE GULF

The Gulf is blessed in many respects, but the capacity to protect the regional environment is not one of them. The Gulf is backward in environmental matters. Commitment to regulation and scientific research in the Gulf States has always lagged behind other areas of the United States.¹¹¹ The Environmental Protection Agency’s (EPA) funding for the Gulf is a fraction of what is allocated to the Chesapeake Bay Program and Great Lakes Program.¹¹² Environmental groups in the Gulf are poorly organized and lack resources, and many of the prominent nation-wide environmental groups do not have an office in the region.¹¹³ Because of lack of support from the Gulf States, many environmental groups have been hesitant to commit resources to the Gulf region.¹¹⁴ A culture of environmental disinterest has been fostered in the Gulf States largely

106. *Id.* at 40.

107. *Id.* at 4.

108. U.S. ARMY CORPS OF ENG’RS, ERDC/TN ANSRP-05-4, INVASIVE AND ESTUARINE ANIMALS OF THE GULF OF MEXICO 3 (2005).

109. *Id.*

110. *Id.*

111. Robertson, *supra* note 8, at A14. According to the National Commission, “[u]nfortunately, comprehensive data on conditions before the spill—the natural ‘status quo ante’ from the shoreline to the deepwater Gulf—were generally lacking.” BP OIL SPILL COMM’N, *supra* note 4, at 174.

112. Laura Tuma, *The Gulf of Mexico Gets a Helping Hand*, TEX. COMMISSION ENVTL. QUALITY, http://www.tceq.texas.gov/assets/public/comm_exec/pubs/pd/020/04-04/gulf-x.pdf (last visited Sept. 9, 2011).

113. Robertson, *supra* note 8, at A14.

114. *Id.*

because these state governments fear the economic consequences of more rigid enforcement of environmental laws.¹¹⁵

The Gulf States have often resisted tougher regulations or stricter enforcement of existing regulations because of fears that such changes could chase away much needed jobs.¹¹⁶ With complicit states and the absence of watchdog environmental groups, environmental violations often go unreported or unpunished.¹¹⁷ Kieran Suckling of the Center for Biological Diversity remarked, “The environmental movement was either so far removed from it that it was unaware, or it was aware and afraid to challenge it because of local politics Or it was unwilling to challenge because it has written off the gulf as America’s dumping ground.”¹¹⁸ Notably, of a thousand lawsuits filed by environmental groups against federal agencies regarding inadequate or absent environmental impact statements, only one involved oil and gas operations in the Gulf.¹¹⁹

While organizations like Natural Resources Defense Council, Center for Biological Diversity, and Earthjustice have offices in the Chesapeake Bay and Great Lakes regions, they have no presence in Louisiana, Alabama, and Mississippi.¹²⁰ Earthjustice does have an office in Florida, but its office appears to be primarily concerned with the Everglades and other Florida-specific environmental issues.¹²¹ While the oil spill did grab these organizations’ attention, it is unclear whether they will remain involved in the Gulf of Mexico now that the crisis is over. As discussed in Part III, it is important to obtain additional funding to make this feasible.

The challenges facing the Gulf of Mexico are many and daunting. Although the Clean Water Act has been effective at

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.*

119. Mike Soraghan, *Gulf Spill: Enviro Groups Ignored Gulf Before BP Disaster*, N.Y. TIMES: GREENWIRE (Sept. 27, 2010), <http://www.nytimes.com/gwire/2010/09/27/27greenwire-enviro-groups-ignored-gulf-before-bp-disaster-96055.html>.

120. See *About NRDC*, NATURAL RES. DEF. COUNCIL, <http://www.nrdc.org/about/> (last visited Sept. 13, 2011); *Contact Us*, CTR. FOR BIOLOGICAL DIVERSITY, <http://www.biologicaldiversity.org/about/contact/index.html> (last visited Sept. 13, 2011); *Contact Us*, EARTH JUSTICE, <http://earthjustice.org/about/contact> (last visited Sept. 13, 2011).

121. See *Florida*, EARTH JUSTICE, <http://earthjustice.org/about/offices/florida> (last visited Sept. 9, 2011).

regulating point source pollution from specific factories and waste plants throughout much of the country, nonpoint source pollution has been intractable.¹²² The Gulf of Mexico may provide the most blatant example of the disastrous effects of this regulatory shortcoming. Many upstream states contribute to the growing dead zone problem in the Gulf of Mexico, and even if the Gulf States could mobilize to address environmental problems, the upstream states would have little incentive to reduce the nitrogen and other chemicals flowing down the Mississippi River.¹²³ While national environmental groups might be able to bring attention to the complex environmental issues facing the Gulf of Mexico, members of these groups have found much of the Gulf to be a hostile fundraising and political atmosphere.¹²⁴ For decades, the Gulf States have fostered a lax political culture that prioritizes business interests over ecosystem health.¹²⁵ The Gulf States are among the poorest in the nation, and their state governments fear the economic consequences of more rigorous environmental laws and enforcement.¹²⁶

When all these obstacles are considered together, it is apparent that there will be no silver bullet for the Gulf of Mexico. As it has taken many generations to create such a dramatic environmental problem in the region, it may take a serious commitment of economic and scientific resources over a comparable period of time to significantly restore the Gulf of Mexico.

II. THE BP OIL SPILL AND ITS AFTERMATH

The Gulf of Mexico received national headlines for weeks during the BP *Deepwater Horizon* oil spill. The spill is described in Part A of this section, while its impact, particularly on vulnerable communities, is discussed in Part B.

A. THE SPILL

An informed observer in the spring of 2010 would have known that the situation in the Gulf was not good. But things were about to get even worse. On April 20, 2010, while drilling

122. Robertson, *supra* note 8, at A14.

123. *Id.*

124. *Id.*

125. *Id.*

126. *Id.*

at the Macondo Prospect about fifty-two miles southeast of Venice, Louisiana, an explosion on the *Deepwater Horizon* caused by a blowout killed 11 of 126 crewmen.¹²⁷ Two days later, despite efforts to put out the blaze on the oil rig, the *Deepwater Horizon* sank in 5000 feet of water.¹²⁸ On April 23, the Department of Homeland Security stated the incident “poses a negligible risk to regional oil supply markets and will not cause significant national economic impacts.”¹²⁹ White House Press Secretary Robert Gibbs, too, minimized the nature of the incident, announcing, “I doubt this is the first accident that has happened and I doubt it will be the last.”¹³⁰ However, on this same date, President Obama issued a statement identifying the blowout as a “number one” priority, and BP officials acknowledged the threat of catastrophic environmental consequences.¹³¹

On April 24, 2010, oil was confirmed to be leaking from the well, and the next day the U.S. Coast Guard announced its intention to use remote underwater vehicles to stop the leak.¹³² Throughout the end of April, May, and June, estimates of the flow of oil increased from 1000 barrels of crude per day (bpd), to 5000 bpd, to as many as 60,000 bpd.¹³³ For perspective, this could mean that an amount of oil equal to the Exxon Valdez spill could have been gushing into the Gulf of Mexico every four days.¹³⁴ At least one expert predicted the spill flow was even

127. *Deepwater Horizon Oil Rig Fire Leaves 11 Missing*, ASSOCIATED PRESS, Apr. 21, 2010, available at <http://www.guardian.co.uk/world/2010/apr/21/deepwater-horizon-oil-rig-fire>.

128. *BP Oil Spill Timeline*, GUARDIAN, July 22, 2010, <http://www.guardian.co.uk/environment/2010/jun/29/bp-oil-spill-timeline-deepwater-horizon>. For a detailed discussion of the events leading up to the spill, see BP OIL SPILL COMM'N, *supra* note 4, at 89–122. The Commission identifies management failures by industry and a dysfunctional regulatory system as “root causes” of the blowout. *Id.* at 122–27. The accident resulted from clear mistakes made in the first instance by BP, Halliburton, Transocean, and government officials who, relying too much on industry’s assertions of the safety of their operations, failed to create and apply a program of regulatory oversight that would have properly minimized the risks of deepwater drilling. *Id.* at 127.

129. *BP Oil Spill Timeline*, *supra* note 128.

130. *Id.*

131. Suzanne Goldenberg, *Fear of Ecological Disaster Played Down After Oil Rig Collapse in US*, GUARDIAN (U.K.), Apr. 24, 2010, at 36.

132. *BP Oil Spill Timeline*, *supra* note 128.

133. Justin Gillis, *Estimates of Oil Flow Jump Higher*, N.Y. TIMES, Jun. 15, 2010, <http://www.nytimes.com/2010/06/16/us/16spill.html>.

134. *Id.*

higher than 60,000 bpd.¹³⁵

In May 2010, Congress learned that BP, Halliburton Company, and Transocean Ltd. ignored safety warnings in the hours before the *Deepwater* explosion, and a group of Minerals Management Service scientists claimed they were pressured to change the findings of internal studies if they predicted a substantial danger of an accident or harm to the Gulf ecosystem.¹³⁶ On May 16, BP began to draw some of the spewing oil up to the surface using a tube inserted into the leaking pipe; however, this strategy proved largely ineffective at recovering a substantial portion of the oil.¹³⁷ On May 18, the no fishing zone covered nineteen percent or about 90,000 square miles of the Gulf of Mexico.¹³⁸ BP announced on June 6 that a containment cap was capturing 10,000 bpd.¹³⁹ On July 7, the Associated Press released an investigation indicating that there were 27,000 abandoned oil wells in the Gulf, some dating back to the 1940s, and many badly sealed.¹⁴⁰ This investigation thus forced the public to confront the possibility that other major leaks were possible. On July 15, BP finally stopped the flow of oil for the first time in nearly three months.¹⁴¹ And about three weeks later on August 4, BP executed a successful 'static kill,' and a cement plug introduced on September 19 left the well effectively dead and the crisis officially over.¹⁴²

B. ENVIRONMENTAL AND HUMAN IMPACTS

Although the oil leak has been stopped, there are continued disputes over the environmental impacts of the spill. For example, it is unclear to what extent oil will continue to pollute the Gulf coast, whether species such as the dwarf seahorse can overcome the loss of so much of its habitat, and whether dispersants used during cleanup efforts may have unforeseen conse-

135. Richard Harris, *Gulf Spill May Far Exceed Official Estimates*, NAT'L PUB. RADIO (May 14, 2010), <http://www.npr.org/templates/story/story.php?storyId=126809525>.

136. *BP Oil Spill Timeline*, *supra* note 128.

137. *Id.*

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.*

142. *Id.*

quences on the environment.¹⁴³

In a July 2010 report, the *Scientific American* noted that oil often includes highly toxic compounds—such as naphthalenes, benzene, toluene, and xylenes—capable of seriously affecting humans, animals, and plants.¹⁴⁴ With inhalation and ingestion of these compounds being the most dangerous mode of exposure, there is a risk of mutations that can reduce fertility and cause cancer and other serious problems.¹⁴⁵ Some 16,000 species inhabit the Gulf, and it is difficult to predict what long-term effects the oil spill will have on them.¹⁴⁶

Columbia University's National Center for Disaster Preparedness interviewed 1200 adults on the Gulf Coast during the oil spill and found that the spill had seriously impacted the health and economic viability of Gulf Coast communities.¹⁴⁷ Twenty percent of Gulf Coast residents reported a drop in income, and more than twenty-five percent thought they might have to move away from the Gulf.¹⁴⁸ Forty percent said they had experienced physical health problems that they attributed to the spill, and thirty percent reported that their children had experienced physical health issues or mental distress from the spill.¹⁴⁹

African Americans, Southeast Asians, and Native Americans in the region are often heavily dependent on the seafood industry for jobs.¹⁵⁰ The National Environmental Justice Advisory Council called for federal agencies to target disaster response efforts to communities of color and Native Americans,

143. *Id.* The difficulties encountered in closing the well are discussed in BP OIL SPILL COMM'N, *supra* note 4, at 129–70.

144. David Biello, *Lasting Menace*, SCI. AM., July, 2010, at 16.

145. *Id.*

146. *Id.*

147. *Survey of Coastal Residents Shows Gulf Oil Spill Has Significant Impact on Families*, SCI. DAILY (Aug. 4, 2010), <http://www.sciencedaily.com/releases/2010/08/100803132740.htm>.

148. *Id.*

149. *Id.*

150. *See Native American Group Hit Hard By Oil Spill*, NAT'L PUB. RADIO (June 3, 2010), <http://www.npr.org/templates/story/story.php?storyId=127405886&sc=emaf> (transcript available with online recording); Mark Schleifstein, *Environmental Justice Concerns Arising from Gulf of Mexico Oil Spill Aired*, TIMES-PICAYUNE, June 15, 2010, http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/06/environmental_justice_concerns.html; Gia Grier McGinnis, *BP Oil Spill Spurs More Action for Gulf Environmental Justice*, SUITE101 (July 11, 2010), <http://www.suite101.com/content/bp-oil-spill-spurs-more-action-for-gulf-environmental-justice-a260120>.

groups that have historically been overlooked.¹⁵¹ In response to concerns that the oil spill was having disproportionate effects on minority communities, EPA Administrator Lisa Jackson added staff to incorporate environmental justice concerns, including access to better consultation with government and environmental testing information.¹⁵² “People of the Gulf Coast need our support today more than ever before,” Jackson said.¹⁵³ She concluded, “The people who are most vulnerable to the impacts of this spill must be empowered during our response and the long-term recovery.”¹⁵⁴

The Vietnamese community in the Gulf provides a powerful example of how certain minority groups face particular dangers after the oil spill. Many Vietnamese in the Gulf are refugees whose families have fished for generations.¹⁵⁵ Many Vietnamese in the region do not possess other skill sets. Furthermore, many in this Vietnamese community have poor English language skills, and adjusting to depleted fisheries will thus involve this additional language hurdle.¹⁵⁶ During the oil spill crisis, the federal government also did not do a great job of communicating the details of the fishing closures to non-English speakers.¹⁵⁷ Some older Vietnamese fishermen were stopped and fined because they did not know that areas were closed to fishing.¹⁵⁸

Perhaps the greatest cause for concern in the environmental justice community has been the disposal of oil-related debris in communities of color. BP has been relying on landfills in neighborhoods where mainly African Americans, Latinos, and Asians live.¹⁵⁹ BP’s federally approved waste disposal plan

151. McGinnis, *supra* note 150.

152. Schleifstein, *supra* note 150.

153. *Id.*

154. *Id.* This article focuses on the environmental justice (EJ) implications of the spill itself. For a study of EJ issues involving the response to the spill and the compensation system, see Hari M. Osofsky et al., *Environmental Justice and the BP Deepwater Horizon Oil Spill* (forthcoming, NYU Environmental Law Journal) (on file with author).

155. See BP OIL SPILL COMM’N, *supra* note 4, at 193 (noting that roughly one-fifth of the Southeast Asian immigrants on the Gulf Coast are fisherman).

156. Schleifstein, *supra* note 150.

157. *Id.*

158. *Id.*

159. Robert D. Bullard, *BP’s Waste Management Plan Raises Environmental Justice Concerns*, DISSIDENT VOICE (July 29, 2010),

ships oil spill garbage to nine dump sites in the South.¹⁶⁰ In five out of nine of the facilities, minorities comprise a majority of residents living near the disposal facilities.¹⁶¹ People of color comprise about twenty-six percent of the population in coastal counties.¹⁶² The disproportionate environmental burden BP's dumping plan places on minority communities compounds the burden these communities already bear, including the difficulty of the Hurricane Katrina recovery, economic paralysis, and racial inequality.¹⁶³

The Houma Nation and other Native American groups fear that the cultural and economic impacts from the loss of fishing activities will be too great to overcome.¹⁶⁴ The United Houma Nation is an Indian Tribe with 17,000 members that lives in the bayous of Southeast Louisiana.¹⁶⁵ The tribe is recognized by the state of Louisiana, but is not federally recognized, which means that the tribe does not enjoy the benefits inherent to federal recognition such as support by the Bureau of Indian Affairs.¹⁶⁶ Like other coastal communities, many members of the tribe are economically and culturally tied to the fishing industry.¹⁶⁷ The oil spill is only the latest chapter of exploitation that the oil industry has visited on the Houmas.¹⁶⁸ In the 1950s and

<http://dissidentvoice.org/2010/07/bp%E2%80%99s-waste-management-plan-raises-environmental-justice-concerns/> (commenting on how African American and Latino communities have been and continue to be used as dumping grounds for various types of waste).

160. *Id.*

161. *Id.*

162. *Id.*

163. Michelle Chen, *BP's Dumping Oil-Spill Waste in Communities of Color, Study Finds*, COLOR LINES (Aug. 3, 2010), http://colorlines.com/archives/2010/08/environmental_racism_surfacing_in_bp_spill_waste_management.html (recounting the trials faced by minority populations in the Gulf region due to the BP oil spill). For further discussion of the issue, see Osofsky et al., *supra* note 154, at MS 13–17.

164. *Deepwater Horizon Oil Rig Fire Leaves 11 Missing*, *supra* note 127.

165. *Native American Group Hit Hard By Oil Spill*, *supra* note 150 (detailing the history of the Houma Nation and how the tribe has been affected by the oil spill).

166. *Id.*

167. *Id.*

168. *Id.* As the BP Oil Spill Commission puts it, “Just as they began to recover from four hurricanes in three years, many members of Gulf coastal tribal communities for whom fishing is a lifestyle and a livelihood, suffered directly from the oil spill and face a difficult future.” BP OIL SPILL COMM’N, *supra* note 4, at 194. Like Cajuns, tribal members also face disappearing lands. As a former chief explained, “When I was little there were fields that we [the Houma People] raised cattle and horses on. We had gardens and the kids played base-

60s, the oil and gas industry conned poorly educated Houma Indians into signing away their land.¹⁶⁹ Canal digging also allowed saltwater intrusion into tribal areas.¹⁷⁰ The Houmas are one more coastal community that is teetering on the brink, and it remains to be seen whether their unique culture and way of life can withstand yet another attack.

It is not only minority cultures, such as the Houmas and Cajuns, that have been affected by the spill or the Gulf's other problems. But these cultures are of special concern because they are less capable of protecting their interests through the democratic process or private sector. These cultures, with their unique histories, also add something distinctive to the American mix. We are at risk of losing these communities along with the land and the fisheries that support them.

III. SEEKING A WAY FORWARD: SCATTERED RAYS OF SUNSHINE THROUGH DARK CLOUDS

The Gulf presents a witch's brew of chronic environmental harm, acute pollution, and threatened communities. Given the complexities of the problems and the organizational and political difficulties, it would be unrealistic to propose any simple solution. There are, however, some positive steps that could improve the situation. Part A discusses the potential for more comprehensive ecosystem management in the Gulf, which could help address some of the chronic environmental problems. Part B discusses some ways that the BP Oil spill might provide the occasion for at least modest forward progress.

A. CREATING THE INFRASTRUCTURE FOR EFFECTIVE POLICY COORDINATION

The Gulf of Mexico Program (GMP) was initiated in 1988 by the EPA as a non-regulatory program.¹⁷¹ The GMP was founded on principles of partnership, science-based information, and citizen participation.¹⁷² The GMP was modeled af-

ball. Now there is no such thing. The backyards are water." *Id.* at 203.

169. *Native American Group Hit Hard By Oil Spill*, *supra* note 150.

170. *Id.*

171. See generally *What is the Gulf of Mexico Program*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/gmpo/about/whatisgmp.html> (last updated May 7, 2010) (describing the background, challenges, partnerships and priorities of the Gulf of Mexico Program).

172. *Id.*

ter the Great Lakes and Chesapeake Bay Programs, all striving to apply principles of adaptive management to address complex ecosystem degradation.¹⁷³ The GMP accepted the reality that no one agency or institution has the capacity to “fix” the Gulf on its own. Instead, interested groups and individuals must work together to address the complex challenges facing the region.¹⁷⁴ In 2009, building off of an effort in 2006 to set goals for regional partnership, the GMP, Gulf States, and Federal government completed a five-year Action Plan addressing the most pressing issues in the Gulf.¹⁷⁵ The Action Plan centers on addressing hypoxia and ensuring the continued sustainability of the Gulf Coast economy.¹⁷⁶

The GMP was created and funded largely at the insistence of congressional delegations seeking to receive the same attention given to the Great Lakes and Chesapeake Bay.¹⁷⁷ While these delegations did secure some funding for the GMP, it has remained insubstantial when compared to the Great Lakes and Chesapeake Bay counterparts.

An impressive \$475 million is being used to launch a new Great Lakes Restoration Initiative.¹⁷⁸ President Obama’s Great Lakes Restoration Initiative is the largest such effort in two decades.¹⁷⁹ In February 2010, EPA Administrator Lisa Jackson issued a five-year Action Plan intended to “operationalize” the lofty goals previously set for restoration of the Great Lakes region.¹⁸⁰ Jackson envisions spending a total of \$2.2 billion for executing the Action Plan.¹⁸¹ The Great Lakes Interagency Task Force aligns eleven U.S. cabinet and federal agency heads

173. *Id.*

174. *Id.*

175. *Id.*

176. *Id.*

177. *Id.*

178. U.S. ENVTL. PROT. AGENCY, GREAT LAKES RESTORATION INITIATIVE PROPOSED 2010 FUNDING PLAN 1 (2009) (describing the funding details of the Great Lakes Restoration Initiative).

179. GREAT LAKES RESTORATION INITIATIVE (Feb. 21, 2010), <http://greatlakesrestoration.us/?p=445> (noting on its homepage that this is “the largest investment . . . in two decades” with the report elaborating on the Action Plan for the Great Lakes Restoration Initiative).

180. Henry Henderson, *Hope for an Effective “Great Lakes Action Plan”*, NAT. RESOURCES DEF. COUNCIL STAFF BLOG (Feb. 22, 2010), http://switchboard.nrdc.org/blogs/hhenderson/hope_for_an_effective_great_la.html (reporting on the details and likely effectiveness of the “Great Lakes Action Plan”).

181. *Id.*

to coordinate restoration efforts for the Great Lakes region.¹⁸² This task force emphasizes collaboration between state and local governments, Native American tribes, members of Congress, citizen groups, and the Canadian government in order to achieve the protection and sustainable use of environmental and natural resources.¹⁸³

The outcome-oriented Great Lakes Restoration Initiative will focus on toxic substances and other selected areas of concern; invasive species; near shore health and nonpoint source pollution; habitat and wildlife protection and restoration; and accountability, monitoring, evaluation, communication, and partnerships.¹⁸⁴ All Great Lakes States currently have fish consumption advisories.¹⁸⁵ A new invasive species arrives in the Great Lakes on average every eight months.¹⁸⁶ Pollution from nonpoint sources continues to wreak havoc on fragile Great Lakes ecosystems.¹⁸⁷ Precious habitat is being attacked by any number of factors, including development and competition with invasive species.¹⁸⁸ The new Initiative recognizes that the status quo is the continued deterioration of the region and that serious resources are needed to stem this downward trend.¹⁸⁹

Like the Great Lakes Program, the Chesapeake Bay Program has been well-coordinated and well-funded. The Chesapeake Bay Commission was created in 1980 to coordinate policy-making in the region and serve as the legislative arm of the Chesapeake Bay Program.¹⁹⁰ Fifteen legislators from three states—Maryland, Virginia, and Pennsylvania—the governors of each of these states, and three citizen representatives work together to manage biodiversity, land conservation, and water quality.¹⁹¹

182. *Great Lakes Interagency Task Force*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/greatlakes/iatf/> (last updated Apr. 7, 2009).

183. *Id.*

184. *See generally* GREAT LAKES RESTORATION INITIATIVE, *supra* note 189, at 16.

185. *Id.* at 7.

186. *Id.*

187. *Id.*

188. *Id.*

189. *See id.*

190. *Policy for the Bay*, CHESAPEAKE BAY COMM'N, <http://www.chesbay.us/> (last visited Sept. 26, 2011) (describing the members and history of the Chesapeake Bay Commission).

191. *Id.*

The specific responsibilities of the Commission are the following:

Identifying concerns requiring interjurisdictional coordination and cooperation; [c]ollecting, analyzing, and disseminating information pertaining to the region and its resources for the respective legislative bodies; [r]ecommending legislative and administrative actions necessary to encourage effective and cooperative management of the bay; [r]epresenting the common interests of the member states as they are affected by the activities of the federal government; [p]roviding an arbitration forum to serve as an advisory mediator for conflicts among the states.¹⁹²

Over a ten-year period ending in 2004, Maryland, Virginia, Pennsylvania, and the District of Columbia invested \$2.7 billion to restore the Chesapeake Bay.¹⁹³ Eleven federal agencies contributed an additional \$972 million.¹⁹⁴ These funds were specifically used for “water quality improvements, sound land use, vital habitat protection and restoration, living resource protection and restoration, and stewardship and community engagement.”¹⁹⁵

While the Great Lakes and Chesapeake Bay are clearly important to the welfare of the United States, it is difficult to provide an explanation for why federal funding for these two regions should so dramatically outpace that for the Gulf of Mexico. Taking the Great Lakes region as an example, it is obvious why it makes sense to protect an area that provides some thirty million Americans with drinking water and represents the foundation of a multi-billion dollar economy.¹⁹⁶ Still, the Gulf of Mexico, with its wealth of resources and many coastal communities, would seem to be of similar significance to the nation. Yet, congressional appropriations for the GMP peaked in 1993, 1994, and 1995, at just over \$4 million.¹⁹⁷ Since 1995, funding for GMP has actually been in decline, despite the continued challenges facing the region.¹⁹⁸ In 1999, the extramural budget was nearly halved from its peak, standing at \$2.2 mil-

192. R.I. HOUSE OF REPRESENTATIVES, BAY TRUST COMMISSION FINDINGS AND RECOMMENDATIONS 9 (2004).

193. *Funding and Financing*, CHESAPEAKE BAY PROGRAM, <http://www.chesapeakebay.net/fundingandfinancing.aspx?menuitem=14907> (last visited Sept. 26, 2011) (reporting on the costs associated with the restoration of the Chesapeake Bay).

194. *Id.*

195. *Id.*

196. *See* GREAT LAKES RESTORATION INITIATIVE, *supra* note 179, at 6.

197. Belefski & Norton, *supra* note 77, at 339–40.

198. *Id.*

lion.¹⁹⁹ The GMP office has only 13.8 full-time employees.²⁰⁰ Considering these numbers alone, it is not surprising that the GMP has not been able to turn the tide on environmental decline in the region.

As of 2004, the Great Lakes Program and Chesapeake Bay Program were funded at a combined \$35 million per year.²⁰¹ Although the Gulf of Mexico is the most economically productive body of water in North America, relied upon by millions to provide income, the Gulf only receives a fraction of the funding commanded by the Great Lakes and Chesapeake regions.²⁰² Unlike the Great Lakes and Chesapeake Bay Programs, the GMP must be funded each year from EPA's operating budget, thus creating an additional layer of unpredictability of funding.²⁰³ Although the GMP strives to make the most of the funding through the use of communications, education, and partnerships, it simply does not have the resources to ensure the protection of public health, stem the influx of pollutants, or restore habitats.²⁰⁴ While there have been individual success stories, such as the restoration of the Bahia Grande wetlands, many other ecosystems have been left in steady decline.²⁰⁵

New programs to support Gulf restoration have been proposed by the Obama Administration, but the details of some of these federal plans remain vague, and the financing is viewed as inadequate to reverse a history of environmental neglect.²⁰⁶ There have been some reasons to be optimistic, "including a new four-year, \$320 million federal initiative dedicated to substantially reducing the nitrogen coming into the gulf by work-

199. *Id.*

200. *Id.*

201. See *Funding and Financing*, *supra* note 193 ("[s]ince 1995, the EPA funding . . . has remained steady at about \$20 million annually"); *Great Lakes National Program Office*, U.S. ENVTL. PROT. AGENCY, <http://epa.gov/greatlakes/about.html> (last updated Feb. 24, 2009) ("USEPA's Great Lakes National Program Office . . . [has] a budget of almost \$15 million).

202. Belefski & Norton, *supra* note 77, at 333, 339–40.

203. *Id.* at 339–40.

204. *Id.* at 354–55.

205. Diaz & Rosenberg, *supra* note 72, at 926–27; James Pinkerton, *Bahia Grande Transformed from Barren to Beautiful*, HOUS. CHRON. (Oct. 2, 2005), <http://www.chron.com/news/houston-texas/article/Bahia-Grande-transformed-from-barren-to-beautiful-1574830.php>.

206. Robertson, *supra* note 8, at A14.

ing with agricultural states upriver.”²⁰⁷This initiative is squarely directed at reducing hypoxia, but it remains unclear the extent to which this commitment will actually be able to prevent the flow of nitrogen into the Gulf of Mexico.²⁰⁸ Further, while the hypoxia issue is one of the most significant problems facing the Gulf, it is not the only issue; other problems will go unabated.

In April 2010, the GMP announced another positive development: the Gulf of Mexico Foundation, a private non-profit organization, will receive \$1.2 million to coordinate habitat conservation and restoration efforts in the Gulf of Mexico.²⁰⁹ The National Oceanic and Atmospheric Administration (NOAA) established a regional partnership with the Gulf of Mexico Foundation in 2001 in an effort to maximize resources allocated to restore marsh and wetland habitats.²¹⁰ Yet—although a step in the right direction—it is doubtful that the Gulf of Mexico Foundation will make a significant impact with such limited funding.

The Obama Administration also points to the Interagency Ocean Policy Task Force as an example of its efforts to improve the condition of the Gulf.²¹¹ Through the task force, the Administration has set forth an initial gulf restoration road map, although details remain vague and uncertain.²¹² The Obama Administration has already hedged on the potential effectiveness of the task force, as EPA Administrator Lisa Jackson has warned that “thorny jurisdictional problems between the federal government and the states” limit the ability of the federal government to take forceful action in the Gulf.²¹³

Nevertheless, encouraging signs should not be minimized or ignored. President Obama has highlighted the national significance of the Gulf and the need for serious restoration.²¹⁴

207. *Id.*

208. *Id.*

209. *GMP Receives \$1.2 Million for Habitat Conservation*, GULF MEX. ALLIANCE (Apr. 2010), <http://www.gulfmex.org/newsletter/spring2010.html#habitat>.

210. Press Release, Nat’l Oceanic & Atmospheric Admin., *NOAA Provides \$250,000 to the Gulf of Mexico Foundation* (Nov. 15, 2001), <http://www.publicaffairs.noaa.gov/releases2001/nov01/noaa01r114.html>.

211. Robertson, *supra* note 8, at A14.

212. *Id.*

213. *Id.*

214. Erik Stokstad, *Looking Beyond the Spill, Obama Highlights Long-term Restoration*, 328 *SCIENCE* 1618 *passim* (2010).

Prior to President Obama, the last president who is said to have expressed any serious interest in the Gulf was Theodore Roosevelt, a century earlier.²¹⁵

In an October 5, 2010 executive order, the President may have taken the largest step forward by establishing another task force—the Gulf Coast Ecosystem Restoration Task Force—composed of federal agency officials and state representatives, with the objective of coordinating federal efforts and developing a restoration strategy for presidential consideration.²¹⁶ Ecosystem restoration is broadly defined:

“Ecosystem restoration” means all activities, projects, methods, and procedures appropriate to enhance the health and resilience of the Gulf Coast ecosystem, as measured in terms of the physical, biological, or chemical properties of the ecosystem, or the services it provides, and to strengthen its ability to support the diverse economies, communities, and cultures of the region. It includes activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity, and sustainability. It also includes protecting and conserving ecosystems so they can continue to reduce impacts from tropical storms and other disasters, support robust economies, and assist in mitigating and adapting to the impacts of climate change.²¹⁷

It remains to be seen whether this task force will be successful in devising an effective and politically feasible plan, but it does provide hope that the attitude of indifference in the region can be broken.

The problems facing the Gulf could not be solved overnight even by an omnipotent regulatory program with an unlimited budget. It is inappropriate to use such an idealized regulatory as our benchmark for assessing progress. Rather, we need to concentrate on moving the status quo in the right direction, and in particular on creating a more viable forum for state and federal officials to coordinate their actions and develop joint programs. The Obama Administration seems to be moving in the right direction on these issues, although as with all things political, the future remains unpredictable.

B. THE BP OIL SPILL AS THE OCCASION FOR NEW INITIATIVES

Some leaders in the Gulf States believe that a dramatic influx of funding for Gulf restoration efforts and infrastructure improvements could go a long way towards securing the future

215. BRINKLEY, *supra* note 36, at 12.

216. Exec. Order No. 13,554, 75 Fed. Reg. 62,313 (Oct. 5, 2010).

217. *Id.*

of the Gulf States. American engineers point to the Netherlands as an example of where a sustained and serious commitment to flood control has minimized the risk of future flooding.²¹⁸ American engineers claim that the Dutch are not doing anything particularly innovative or unique; rather, they have been willing to spend more than \$15 billion to combat the prospect of future flooding.²¹⁹ It is expected that even more may be required to restore the Gulf.²²⁰ However, while the flood control infrastructure of the Netherlands is impressive, it provides limited insight on how the Gulf of Mexico can address its own unique environmental concerns. As anyone who has visited both would surely realize, Louisiana is not Holland, and the problems facing the two are different in important respects.

For environmental restoration and flood control to be simultaneously pursued, policymakers must keep both goals in mind at all times. Further, while the federal government has discussed the possibility of increasing funding to Louisiana flood control, there are some doubts as to whether the Army Corps of Engineers and Louisiana state government are really in a position to work a dramatic improvement to Louisiana's flood infrastructure.²²¹ While it may be true that funding limitations substantially affect the Gulf States and that the Netherlands has shown what can be accomplished with a heavy financial commitment, the complicated and connected challenges of flood control and environmental restoration likely cannot be solved with increased funding alone, even if that funding were to be forthcoming.

This section considers some more modest steps toward strengthening the planning process and providing better institutional infrastructure to support future planning and regulatory efforts. The suggestions here are not radical or transformative, but they may cumulatively provide momentum for the process of putting effective environmental protections in place. Having invested considerable effort and funding over the course of the last century in creating the problems that now beset the Gulf, we cannot expect overnight solutions.

218. Brett Martel, *Louisiana Delegation Studies Flood Control Systems in the Netherlands*, ASSOCIATED PRESS (Mar. 7, 2006), <http://www.highbeam.com/doc/1P1-119434688.html>.

219. *Id.*

220. *Id.*; BP OIL SPILL COMM'N, *supra* note 4, at 210 (providing estimates of \$15 to \$20 billion over the span of thirty years to restore the gulf).

221. Martel, *supra* note 218.

1. Improved Regulatory Tools

Despite reasons to remain pessimistic, the BP oil spill continues to represent an important opportunity to reverse the trend towards environmental and cultural destruction of the Gulf of Mexico. For instance, the spill has already resulted in limiting the categorical exclusions that formerly exempted so much oil and gas leasing activity from scrutiny under National Environmental Policy Act of 1969 (NEPA).²²² As Professor Oliver Houck explains, “[a]t bottom, the problem is vision. Neither the Corps nor the state [of Louisiana] has the history, appetite, or even the legal authority to take on the job of planning and managing a sustainable Louisiana coastal zone.”²²³ Houck thus makes the difficult but compelling argument that the Gulf Coast cannot be fully restored, and in fact, the United States as a society and the Gulf States in particular must begin a frank discussion about how much of the Gulf Coast can be restored and where people can most securely reside.²²⁴ Houck notes that NEPA could be a useful tool for evaluating the Gulf coast’s real alternatives.²²⁵ If it is to fulfill this promise, however, it needs to be taken seriously as a planning tool rather than viewed as an annoying paperwork requirement. As with other planning efforts, NEPA will be most useful if it is used in conjunction with scenario planning and with special emphasis on impacts on the most vulnerable ecosystems and communities, such as Gulf Coast coastal communities.²²⁶

Another potentially useful tool is Coastal Zone Management Act (CZMA), which provides an under-utilized lever for states to control oil and gas development.²²⁷ Section 307 of the

222. *Boemre Comprehensive Review of Its Categorical Exclusions for Outer Continental Shelf Decisions*, BUREAU OCEAN ENERGY MGMT., REG., & ENFORCEMENT, <http://www.boemre.gov/eppd/compliance/nepa/policy/ce/index.htm> (last visited Oct. 6, 2011).

223. Oliver A. Houck, *Retaking the Exam: How Environmental Law Failed New Orleans and the Gulf Coast South and How It Might Yet Succeed*, 81 TUL. L. REV. 1059, 1082 (2007).

224. *Id.* at 1083.

225. *Id.*

226. See Daniel A. Farber, *The Challenge of Climate Adaptation: Assessing Current Planning and the Need for Action-Forcing Requirements*, J. ENV. L. (2011), available at <http://jel.oxfordjournals.org/content/early/2011/08/25/jel.eqr015.full.pdf?keytype=ref&ijkey=IhHQEKBZY0xzzrW>.

227. 16 U.S.C. § 1451 (2006); see Sam Kalen, *The BP Macondo Well Exploration Plan: Wither the Coastal Zone Management Act?*, 40 ENV. L. REP.

CZMA requires federal agencies to carry out any activities “that affect . . . any land or water use or natural resource of the coastal zone” consistently (to the maximum extent possible) with the state coastal zone plan.²²⁸ The underutilization of the CZMA has been partly the result of indefensible resistance by federal leasing authorities, which the Obama Administration should terminate post-haste.²²⁹ Despite its political ties to the petroleum industry, the State of Louisiana actually had tried to prevent some destructive development using its powers under the CZMA, despite being supine on other occasions, so a change in federal policy could have practical impact.²³⁰ Other Gulf States should be encouraged to strengthen their currently weak CZMA programs.²³¹

It is also time to address the problem of coordinating Gulf policy. We now have something of a surplus of Gulf coordinating agencies: the Restoration Task Force, the GMP, and the Gulf of Mexico Alliance. In an ideal world, these groups would be consolidated. Failing that, perhaps a Gulf coordinating forum could be established where representatives of these different groups could exchange information and harmonize their plans. Although it was underfunded and proved unable to cope with fierce disputes among stakeholders, the former joint California-federal collaboration—known as CALFED—provides one model for “modular” partnerships between regulatory authorities.²³²

Money may or may not be the root of all evil, as the saying has it, but it is definitely a prerequisite for combating some of those same harms. As we saw earlier, regulators, public interest groups, and scientists have been starved of funding in the Gulf.²³³ The next subsection addresses some routes to remedying that situation at least in part. Stronger institutional and informational infrastructure are as crucial for long-term sustainability as physical infrastructure, and like physical infrastructure, they do not come free.

11,079, 11,080–83 (2010).

228. 16 U.S.C. § 1456(c)(1)(A), (C) (2006).

229. Kalen, *supra* note 227, at 11,081–82.

230. *Id.* at 11,082–83.

231. See Houck, *supra* note 223, at 1074–76.

232. Jody Freeman & Daniel A. Farber, *Modular Environmental Regulation*, 54 DUKE L.J. 795 *passim* (2005).

233. Robertson, *supra* note 8, at A14; Tuma, *supra* note 112.

2. Using Post-Spill Funding to Create Needed Institutional Infrastructure

Money of various kinds will flow into the Gulf region as a result of the spill. Most of the money will undoubtedly be used to address the immediate harms caused by the spill, but the Gulf will be just as vulnerable in the future unless some of the funding is used to strengthen critical institutions needed for sustainability.

The September 2010 Mabus Report calls for the President to urge Congress to pass legislation that would dedicate a portion of Clean Water Act civil penalties paid by those responsible for the spill to those impacted by it.²³⁴ Under the current system, money collected under the Clean Water Act must be deposited into the Oil Spill Liability Trust Fund and cannot be put into the Gulf Coast Recovery Fund.²³⁵ The Mabus Report recommends that this policy be changed to allow the Clean Water Act civil penalties to flow into the Gulf Coast Recovery Fund, that a Gulf Coast Recovery Council be established to manage these funds and regional recovery efforts, that a percentage of the civil penalties be directed to the Gulf States, and that some money be set aside for responding to future spills.²³⁶ If implemented, this source of funding could also be used to strengthen the GMP, so as to help ensure that the results of restoration are not subject to further degradation.

Informational infrastructure in the region also needs strengthening. BP has already pledged \$500 million over the next ten years for scientific research by Gulf Coast universities, of which \$35 million has already gone out as fast-track grants to study the impact of the spill.²³⁷ The funds will be administered by the Gulf of Mexico Alliance, a partnership of the five Gulf Coast States.²³⁸ This funding will strengthen our infor-

234. RAY MABUS, U.S. NAVY, AMERICA'S GULF COAST: A LONG TERM RECOVERY PLAN AFTER THE *DEEPWATER HORIZON* OIL SPILL 4–8, 10, 19–20 (2010), available at <http://www.restorethegulf.gov/sites/default/files/documents/pdf/gulf-recovery-sep-2010.pdf>.

235. *Id.* at 5.

236. *Id.* at 5–10.

237. *BP and the Gulf of Mexico Alliance Announce Implementation of BP's \$500 Million Independent Research Initiative*, BP (Sept. 29, 2010), <http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7065262>.

238. *Id.*; see GULF MEX. ALLIANCE, <http://www.gulfofmexicoalliance.org/> (last visited Sept. 26, 2011).

mation base about the ecosystems in the region, but it may also help strengthen the capacity of these universities to remain active in the future in this area of research.

Besides better science, we also need better estimates of ecosystem services for use in cost-benefit analysis. At the federal level, cost-benefit analysis (CBA) is central to current agency decisions but its legitimacy is sharply contested. For the past three decades, regulatory agencies, like the EPA, have been required to perform cost-benefit analyses and to presumptively base their decisions on the results.²³⁹ While CBA is controversial, it shows no sign of disappearing, and it is important that the crucial ecosystem services provided by the Gulf be properly valued when the federal government makes decision.²⁴⁰ This is another area where the oil spill is likely, ironically, to provide useful assistance, as the government seeks to establish natural resources damages.²⁴¹ Section 1002(b)(2)(A) of the Oil Pollution Act authorizes the federal government or other public trustees to recover “[d]amages for injury to, destruction of, loss of, or loss of use of, natural resources, including the reasonable costs of assessing the damage.”²⁴² Thus, the litigation process itself will generate a great deal of valuable scientific and economic information about the Gulf coast.²⁴³

Civil litigation could be another source of funding for insti-

239. Regulatory review takes place within the Office of Information and Regulatory Affairs (OIRA). For a description of the development of the Office of Management and Budget’s (OMB) role in regulatory oversight, along with some useful suggestions for improving cost-benefit analysis and for collected papers reflecting the spectrum of views about CBA and its validity, see *COST-BENEFIT ANALYSIS: LEGAL, ECONOMIC, AND PHILOSOPHICAL PERSPECTIVES* (Matthew D. Adler & Eric A. Posner eds., 2000); *REFORMULATING REGULATORY IMPACT ANALYSIS* (Winston Harrington et al. eds. 2009); RICHARD REVESZ & MICHAEL LIVERMORE, *RETAKING RATIONALITY: HOW COST BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH* (2008); Daniel H. Cole, “Best Practice” Standards for Regulatory Benefit-Cost Analysis, 23 RES. IN LAW & ECON. 1 (2007).

240. For further discussion of the ecosystem services approach, see James Salzman, *Creating Markets for Ecosystem Services: Notes from the Field*, 80 N.Y.U. L. REV. 870 (2005); James Salzman et al., *Protecting Ecosystem Services: Science Economics, and Law*, 20 STAN. ENVTL. L.J. 309 (2001).

241. See James W. Boyd, *How Do You Put a Price on Marine Oil Pollution Damages*, RESOURCES, Summer 2010, at 22.

242. 33 U.S.C. § 2702 (b)(2)(A) (2006).

243. The effort to collect the relevant scientific data is described in Matthew P. Coglianese, *The Importance of Determining Potential Chronic Natural Resource Damages From the Deepwater Horizon Accident*, 40 ENV. L. REP. 11,100 (2010).

tutional infrastructure. Class action litigation is already pending as a result of the spill.²⁴⁴ Frequently, there are insufficient claimants to use up all of a class recovery, and the funds are then allocated through settlement or by the court in order to provide indirect benefits to the class members.²⁴⁵ Under the *cy pres* doctrine, judges enjoy broad discretion to allocate the funds, although uses that have some nexus to the subject of the litigation are usually favored.²⁴⁶ These funds could well be used to strengthen environmental groups in the Gulf region and strengthen environmental programs at Gulf colleges and universities. Without reliable scientific information from trusted local sources, action to save the Gulf will remain elusive—though obviously information by itself is no guarantee of an appropriate regulatory response.

Private philanthropy could also serve a valuable role in strengthening civil society in the Gulf region. The available amounts of money are not likely to be vast. But, environmental actors in the Gulf are so poorly funded that even small infusions of cash could have a dramatic impact. A federal judge could well foster such funding during the *cy pres* process by taking “bids” from organizations, with the value of the bid to be judged partly on the basis of merit (proposed projects, prior record of success, strong institutional capacity) and partly on the organization’s securing a commitment for matching funds from the charitable sector. This would allow *cy pres* funds to be leveraged with private philanthropy.

The current financial weakness of key institutions in the Gulf region means that it would take huge amounts of funding to fully remedy the situation. On the other hand, because the current baseline is low, the marginal effect of additional funding may be relatively large. Thus, even modest increases in funding could have significant effects on the vitality and activity of these institutions.

244. By June, before the spill had ended, one website reported a “class action lawsuit frenzy.” See Greg Jacobs, *BP Oil Spill Sparks Class Action Lawsuit Frenzy*, THE GOAL GROUP BLOG (June 4, 2010), <http://thegoalgroup.wordpress.com/2010/06/04/bp-oil-spill-sparks-class-action-lawsuit-frenzy/>.

245. Sam Yospe, Note, *Cy Pres Distributions in Class Action Settlements*, 2009 COLUM. BUS. L. REV. 1014, 1015–16 (2009).

246. *Id.* at 1024–27.

IV. CONCLUSION

As we have seen, the BP oil spill was yet another insult to already threatened human and biological communities. It would be hard to think of a more challenging venue for addressing environmental problems. The mix of problems is forbidding, including rapidly eroding wetlands, climate change, endangered species, and a gigantic aquatic dead zone. These problems have mostly been the subject of not-so-benign neglect, akin to the regulatory neglect that cumulated in the disastrous BP oil spill.

The political problems are also daunting. Five states border the Gulf, of which two are among the nation's poorest and least environmentally oriented. Another thirty states contribute to the hypoxia problem. The oil industry has been a major contributor to the problems and exercises great political clout in the region. In short, the term "collective action problem" does not begin to explain the economic and political complexities.

Successfully addressing these problems will require major new regulatory initiatives to prevent loss of wetlands, protect endangered species, and control hypoxia. It will also require heavy financial assistance to fund these initiatives and provide appropriate flood protection to the Gulf Coast. The political will for these measures may not exist as yet. This political will may depend on changes in our national politics beyond anyone's power to control, and in any event is not on the immediate horizon. In the meantime, however, we must continue to work in the right direction and to create the infrastructure to implement more ambitious programs when the political climate allows.

The BP oil spill itself may indirectly assist in improving the situation. Through *cy pres* settlements, voluntary payments by BP, and perhaps civil penalties, the spill may provide funding to strengthen the institutional and scientific foundation for environmental regulation. The spill has already helped strengthen NEPA in its application to offshore oil and gas projects, and it could help revitalize CZMA. With luck, better regulations will address the safety of future oil operations in the Gulf. Perhaps most importantly, the acute crisis of the spill has helped mobilize attention to the Gulf, which may help catalyze responses to the Gulf's chronic ills.

The Gulf's problems are a preview of the difficulties we are likely to face in this century, with eroding coasts and wetlands and ecological disruption threatening coastal communities and

their livelihoods. Climate change will unsettle marine and coastal ecosystems in many parts of the world, while rising seas erode coastal areas and threaten cities with flooding. We need to learn how to deal with these issues today before they arise at greater scale and severity tomorrow. By beginning to focus on the problems of the Gulf, we will obtain valuable expertise with applications in other parts of the United States and in places around the world.

Thus, the Gulf is a valuable laboratory for learning to address the environmental upheavals we can expect to come. But the Gulf is also worth saving for its own sake. As Mike Tidwell, the journalist whose words began this article, has aptly said, “What’s being lost is an American treasure, a place as big as the Everglades and just as beautiful.”²⁴⁷

247. TIDWELL, *supra* note 1, at 6.