BUILDING THE PLANE WE'RE FLYING: CHALLENGES AND OPPORTUNITIES IN LOUISIANA COASTAL RESTORATION AND PROTECTION

By

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First and foremost, I would like to offer my sincere gratitude to the participants who gave me as little as 15 minutes to as many as three hours worth of memorable conversation. It helped define for me what it is to be a Louisianan if only adopted. The energy and the passion that came through these interviews only renewed my desire to return from the chilly clime of Michigan to feel the marsh between my toes.

I would also like to thank my advisor, Julia Wondolleck, most of all for her patience but also her depth and breadth of insight into the collaborative process not to mention the process of writing a thesis. My appreciation goes out to Douglas Wilcox formerly of the USGS who is now living his dream at SUNY Brockport. He maintained my sanity by serving as mentor and kept me in the marsh and exercising my GIS skills. Thanks to David Katz for providing much needed support and encouragement and a more than occasional crack of the whip.

Since the 1849 and 1850 Swamp Land Acts, the federal government has had a hand in cutting off sediment to coastal marshes and encouraging development of wetlands. It has since reversed course by closing the MRGO, creating programs to take lands out of agricultural production returning them to wetlands, and potentially funding a coast-wide restoration and protection scheme costing somewhere in the billions of dollars. There have been numerous strategies to restore coastal Louisiana and those efforts have become more serious over time however this is not just a state issue. Louisiana wetland loss gained traction as a national issue on August 29th, 2005 with landfall of Hurricanes Katrina and Rita. Within three years after the storms national environmental advocacy organizations like the Environmental Defense Fund and the National Wildlife Federation set up office and established campaigns to fight the good fight. Long time advocates of Louisiana wetlands wondered, “Is it too little, too late?” These two storms gave more advertising time to coastal Louisiana wetland loss than the America’s Wetland campaign ever could have afforded though perhaps not always with the desired consequences. Many people simply wrote off coastal Louisiana as an unnecessary federal expense, without acknowledging the contributions and sacrifices that her people have made for the development of this nation—not unselfishly, many times unknowingly, and sometimes against our will. Many states have destroyed and lost a greater percentage of wetlands than Louisiana. We have kept what we have because they are our sustenance, our livelihood, our source of joy. Without waxing philosophic, we need these wetlands to continue to be who we are. The nation needs them, because they keep prices down on fossil fuels, bulk commodities, and seafood. Good food and good music await those on vacation and are a staple of everyday life for those who live here. The number one reason bringing tourists to the state is visiting with family and friends. Perhaps the nation needs us to remember how to enjoy life.

Appreciation and understanding has increased since the storm. Perhaps that understanding and appreciation is waning as the memory of the storms distances itself, but there are

people who are constantly working on this issue, in fact almost an entire agency in addition to the numerous individuals working in the non-profit sector, etc., you know who you are. It is to those individuals that I dedicate this work.

> *"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood, who strives valiantly; who errs and comes short again and again; because there is not effort without error and shortcomings; but who does actually strive to do the deed; who knows the great enthusiasm, the great devotion, who spends himself in a worthy cause, who at the best knows in the end the triumph of high achievement and who at the worst, if he fails, at least he fails while daring greatly so that his place shall never be with those cold and timid souls who know neither victory nor defeat."*

Finally, my goal for this paper is to incite enthusiasm for the fascinating process taking place in state government right now and to illuminate opportunities for future studies examining these efforts. The more we examine this effort, the more we can improve upon it and hold our results to a higher standard. This effort is not happening in a vacuum. Similar works are coevolving across the nation in the Sacramento-San Joaquin delta, in South Florida, in the Chesapeake Bay, in the Pacific Northwest on the Columbia River, the Great Lakes, and so on. No where else in the country are the rewards so tangible, so visceral as right here in coastal Louisiana, whether to *down the bayou* Cajuns or cosmopolitan Creoles.

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ABSTRACT

In response to significant wetland loss and damage to the hurricane protection system occurring in the 2005 hurricane season, the Louisiana legislature directed the Department of Natural Resources (DNR), responsible for coastal restoration, to work in partnership with the Department of Transportation and Development (DOTD), responsible for hurricane protection or levee building, to create a master plan to conserve, restore, and protect the coastline. This newly introduced collaborative dynamic, the Coastal Protection and Restoration Authority (CPRA) and its implementing arm the Office of Coastal Protection and Restoration (OCPR) is consistent with a trend in large-scale ecosystem governance. Fifteen key informants from six different perspectives -- levee districts, DNR, DOTD, Governor's Office of Coastal Activities, University Scientists, and state legislators – were interviewed for this study in order to answer two overarching questions. First, how is the CPRA unique? Second, what challenges and opportunities face it?

The initiating crisis provided the conditions necessary for policy entrepreneurs to overcome previous barriers to collaboration and reinvigorate state led comprehensive coastal planning. Further, crisis drew national attention which in turn created national support. Top-down executive level leadership at the state level facilitated an increase in coordination between multiple levels of government. The newly established OCPR, not yet operating at full capacity, has the potential to build capabilities in planning and management of restoration and protection features that rival if not supersede the work of the U.S. Army Corps of Engineers. Funding constraints tie state activity firmly to the U.S. Army Corps of Engineers and the congressional funding process through the Water Resources Development Act. Challenging the continued success of the organization is the state's ability to maintain focus and momentum over time in face of changing administrations both nationally and at the state level, short memory of the public and special interests, as well as managing controversial components of previous plans.

INTRODUCTION

> *"Crisis: an unstable or crucial time or state of affairs in which a decisive change is impending; especially one with the distinct possibility of a highly undesirable outcome."* —Webster's Ninth New Collegiate Dictionary
>
> *"We are living in an historic moment, one that presents us with a stark choice: whether to make the bold and difficult decisions that will preserve our state's future, or cling to the status quo and allow coastal Louisiana and its communities to wash away before our eyes." —Master Plan, 2007*

Headlines read "*Drowning…the Delta*," "*Losing Ground*," "*Vanishing Coast*," "*Washing Away*," and "*Gone with the Water*;" pithy sound bites describing the state of "*Losing Louisiana*," (Blum & Roberts, 2009; Bourne Jr., 2004; Public Broadcasting System, 2002; Schleifstein, 2002; Yeoman, 2010). Is this sensationalism merited? Louisiana's wetlands, or America's Wetlands as they are billed by the failed public relations organization of the same name, are disappearing at an alarming rate (Miller & Holloway, 2006). Literature on Louisiana coastal wetland loss inevitably cites startling statistics describing an ecosystem on the brink of collapse.

From 1932 to 2010 Louisiana lost a total of 1,883 square miles of coastal wetlands, approximately a quarter of wetlands existing in 1932 (Couvillion et al., 2011). Land loss rates have varied over time. From 1956 to 1974, land loss rate averaged upwards of 42 square miles per year (Britsch & Dunbar, 1993). From 1983 to 1990 the rate slowed to a brisk 25 square miles per year (Britsch & Dunbar, 1993). From 1985 to 2010 coastal wetland loss slowed to around 16.57 square miles per year or a football field every hour (Couvillion et al., 2011).

This trend is not yet a claim for victory. The most important process that builds and maintains marsh, deposition of Mississippi River sediment loads into the coastal area, has been hampered by the combination of two factors: the amount of sediment loads in the river and the ability of these loads to reach the coastal area. Damming in the Upper Mississippi River Basin has caused a significant reduction of Mississippi River sediment loads. Downriver, leveeing the channel for purposes of flood control and navigation prevents much of this sediment from reaching existing marsh, sending some of these loads past the continental shelf into the abyss of the Gulf of Mexico (Blum & Roberts, 2009; Kesel, 1989). Damming upriver is entirely outside of Louisiana's authority. Reconnecting sediment pathways downriver can be a contentious endeavor due to the many different conflicting interests affected.

Coastal wetlands are not only important for the economy they create, but for the economy they protect. Coastal wetlands in Louisiana protect vital shipping and energy infrastructure as well as support robust commercial, sport, and subsistence fisheries. For every 2.7 miles of marsh, storm surge is reduced by one foot (Gedan, Kirwan, Wolanski, Barbier, & Silliman, 2010; U.S. Army Corps of Engineers, 1963). The actual variation in the relationship between marsh and storm surge is a function of multiple variables such as topography, shoreline geomorphology, soil type, and vegetative structure (Feagin, 2009; Gedan et al., 2010). Some scientists have questioned the importance of wetlands in coastal protection, arguing the relationship is tenuous at best because of these complex variables (Borrelli et al., 2007). These uncertainties have some scientists and policy analysts calling for retreat from the coastline (Blum & Roberts, 2009; Kesel, 1989; Young, 2008).

Nevertheless, countries across the globe confronted with protecting their coastlines and major coastal cities from the threat of relative sea level rise (RSLR) and coastal storms have turned to constructing coastal wetlands as "*bioshields"* (Feagin et al., 2010; Gedan et al., 2010). At stake in Louisiana are two million lives, little less than half the state population, but more than half its gross domestic product.

The issue of Louisiana coastal wetland loss gained national traction with the storms of the 2005 hurricane season. Hurricanes Katrina and Rita were slow moving storms that built up storm surges as tall as thirty feet in some areas. They exposed weaknesses in a hurricane protection system built across forty years, multiple generations of politicians, and engineers. They created 217 square miles of open water, an area the equivalent to ten to fifteen years worth of land loss. If decision-makers and coastal advocates thought they had *"No Time to Lose"* before the storm, the only way to describe the current situation was *CRISIS (*Burby et al., 1999*)*. Louisiana wetlands were "*hanging on by fingernails*" ("*Coastal Issues*," 2007). The accelerated land loss, displacement of people, death toll, and loss of property were all just a taste of what was to come if the state failed to counteract wetland loss and build sufficient hurricane protection.

Since Louisiana's first coastal management act was legislated in 1972 to regulate coastal activities, there has been some form of plan to regulate, protect, or restore the coastline. Each plan was assumed to be the most comprehensive or overarching plan to date until new information and initiative prompted a new plan which replaced, incorporated, and expanded upon its predecessor. Causes of wetland loss were identified and agreed upon. Some were outside of the state's jurisdiction such as reduced sediment

load and others such as subsidence were beyond its control. Some were simply too expensive. Regardless, there remained a wealth of agreed upon techniques including but not limited to vegetative plantings, marsh terracing, backfilling of canals, and large-scale river diversions.

Scientific consensus does not provide automatic policy solutions however. One public university scientist summarized the scientific community's perspective on the policy process in this way, "*Louisiana has the technical expertise, and these experts are talking. Administratively we are not*" ("*Coastal Issues*," 2007) While there remain technical uncertainties in coastal restoration techniques and planning, significant political and process-oriented problems plague today's efforts (Slaughter, 2007). For example, there is serious doubt, if not complete confidence among many whether there is enough sediment in the river to restore the coast to any previous point in time (Blum & Roberts, 2009). The question confronting decision-makers then is *what* and *who* to protect and to what extent.

States are often limited in their capacity to address complex water resource issues by the sheer volume of data and technology involved, disjointed agency relationships, extrajurisdictional factors, and legal authority; however, they do possess a higher tolerance for experimentation, better understanding of the problem, more direct public accountability, and stronger local relationships than the feds (Hines & Smith, 1973; Stoerker, 1992). Ultimately, it is the state that must and does take the lead in water resources management (Stoerker, 1992; Vigmostad, Mays, Hance, & Cangelosi, 2005). To meet these challenges, states have looked to alternative forms of governance eschewing traditional methods of managing through agencies with discrete jurisdictions in favor of

developing interagency collaborative capacity and public-private partnerships (Bardach, 1998).

Although collaborative forms of governance have been documented for decades (Bardach, 1998), their application across the nation to the restoration and management of large-scale ecosystems is novel and marked by the lack of a common vocabulary among researchers (Karkainnen, 2002). Collaborative environmental governance and management, collaborative resource management, and co-management are all terms gaining use by researchers to describe a growing number of resource management regimes with several defining characteristics (Gunderson, Holling, & Light, 1995; Heikkila & Gerlak, 2005; Karkainnen, 2002; Wondolleck & Yaffee, 2000). These characteristics include an integrated system of management fitted to the natural system to be managed, an experimental nature providing for adjustment, and a hybrid public/private governance structure (Bardach, 1998; Gunderson et al., 1995; Karkainnen, 2002). Notable examples of large-scale resource management collaboratives are the California Federal Bay Delta Program (CAL-FED), Comprehensive Everglades Restoration Program (CERP), Chesapeake Bay Program (CBP), and the Northwest Power and Conservation Council (NPCC) (Heikkila & Gerlak, 2005; Vigmostad et al., 2005).

Such tailored large-scale ecosystem governance structures have arisen out of necessity as decision-makers recognize connections among resource uses and users across the landscape. Yet, individuals within these efforts may see their efforts as novel, and their situations wholly unique (White, 2009). Indeed, "*novel ecosystems*" resulting from altered hydrology, introduced species, and other human-induced changes across the landscape may

have no analog in the natural world (Hobbs, Hallett, Ehrlich, & Mooney, 2011). This ecological novelty of the landscape and the threats to its integrity may then imbue novel or unique characteristics onto the management structure (Danter, Griest, Mullins, & Norland, 2000; Light, Gunderson, & Holling, 1995; Robertson & Choi, 2010). The driving force behind these changes, anthropogenic modification to the landscape, remains the same, and there is much that can be learned. Challenges to one system, imply challenges to another. "*The winds of Hurricane Katrina have reached California—blowing out the flicker of confidence that officials had in the ability of…levees to withstand earthquakes, rising sea levels, and inevitable winter floods*" (Little Hoover Commission, 2005). Reducing the learning curve in implementing a successful restoration strategy, can save precious time and innumerable dollars dealing with the complexity of managing conflicting interests, ecological puzzles, and waiting on performance assessments (Vigmostad et al., 2005). In the case of Louisiana where millions of lives and livelihoods are at stake with the threat of significant land loss, efforts to reduce the learning curve seem not only a matter of cost-efficiency but a matter of public safety.

The newly created and little-examined Louisiana Coastal Protection and Restoration Authority (LCPRA, Brown Cunningham Gannuch, Shaw Environmnetal & Infrastructure, & Halcrow) is one of, if not the most recent attempt at collaborative environmental governance at the large-scale ecosystem level in the United States. It is the result of both a continuing evolution towards collaborative governance and an urgent response to *Crisis*, specifically Hurricanes Katrina and Rita of 2005. Full responsibility for conserving and protecting the lives of coastal inhabitants, the economy supported by coastal Louisiana, and

the very land itself lies solely with the CPRA. The adequacy of funds, like the total cost of necessary projects, available to the CPRA is difficult to gauge and opinions vary. There are many funding sources, both state and federal, few of which are fixed.

The race to restore as many sustaining coastal processes as possible in the advance of climate change and a severely compromised system will not last long and efficiency is imperative. On many levels the state has made coastal restoration a priority and has emphasized urgency. Executive Order #7 issued by Governor Bobby Jindal has made coastal restoration priority for every state agency, mandating that "*all regulatory programs*, *contracts, grants and all other functions vested in them*" be consistent with the master plan[1]. Governor-imposed expenditure and hiring freezes affect every department *except* the CPRA[2]. In partnering with the Army Corps of Engineers (Corps), the CPRA is framing the work to be done as a "*national emergency*" in order to infuse collaboration between it and the Corps with a sense of urgency (Governor's Advisory Commission, 2011).

CPRA

Act 8 of the 1st Extraordinary Session of the Louisiana Legislature following Hurricanes Katrina and Rita created the Louisiana Coastal Protection and Restoration Authority (CPRA) intending to coordinate the activities of the Louisiana Department of Transportation and Development (DOTD) and the Louisiana Department of Natural

[1] Executive Order No. BJ 2008 - 7
[2] Executive Order No. BJ 2001 - 7

Resources (DNR)[3]. Before the CPRA was created, the DOTD was responsible for hurricane protection (predominately via levee building), and the LDNR was responsible for coastal restoration. There was an identified need for increased cooperation between the two agencies, but sufficient and necessary incentive did not yet exist to overcome barriers preventing a voluntary formal agreement between the two agencies. Coastal restoration and protection projects competed for funds through the same funding processes, on the federal level through the Water Resources Development Act and similarly at the state level within appropriative committees of the legislature. The two agencies were not only adversarial in terms of funding, but also differed procedurally. Communication between the two was limited. Talks meant to bring about improved coordination and possible merger between the two agencies ended with no finished product largely due to disagreement concerning funding.[4]

Following the devastating storms of the 2005 hurricane season, preliminary data from water gauges were released showing that levees with little to no marsh buffer fared much worse than levees with greater area of marsh buffer (Ford, 2007). Previous studies and anecdotal evidence had roughly established that every three miles of wetland buffer reduced storm surge by one foot(U.S. Army Corps of Engineers, 1963), but it was the tragic and highly publicized impact to coastal communities that was attributed to wetland loss

[3] Revised Statutes 49:213:1-8
[4] Brad Hanson, Personal Communication; Randy Hanchey, Personal Communication

that allowed policy entrepreneurs to take advantage of this reawakened public awareness, a newfound sense of urgency and interdependence to overcome previous obstacles to collaboration (Weber, 2009).

The two activities – hurricane protection and coastal restoration – would no longer be independently managed. By September 2005, a bill was introduced to the State legislature. In November, the authorizing legislation was passed. In February 2006, an Integrated Planning Team was created to produce a Master Plan that would establish a vision of coastal Louisiana realizing four objectives: reduced risk, ensured sustainability, protected diversity of habitats, and maintained cultural heritage of coastal communities (LCPRA et al., 2006) . A preliminary report was finished by June 2006 and sent to Congress via a US Army Corps preliminary restoration plan in July. Between July of 2006 and April of 2007, when the final master plan was submitted to the State legislature, approximately one hundred meetings took place in the form of stakeholder workshops, public review meetings, and technical review panels.

The combination of characteristics defining the CPRA such as a large-scale resource management collaborative born out of crisis, mandated by the Louisiana legislature, and led by an executive office denote certain expected attributes. The CPRA conforms almost uniformly to the concept of mandated inter-organizational relations as described by Raelin (1980). The CPRA is the evolutionary product of past interactions between the two agencies and has secured permanence by means of statute (Raelin, 1980). Failed talks aiming to create collaboration illustrate a limited relationship based on exchange whereby the two agencies came together acknowledging the gains to be had through collaboration,

but were limited by financial considerations. Under the CPRA mandate and with the help of a consultant, the two agencies constructed a Memorandum of Understanding. As in an exchange network, each agency may choose to leave the network, but according to the agreement, only after three years. There are two subsets of mandated networks as described by Raelin (1980). The CPRA can be said to be a hybrid of the two subsets as a formal agreement (subset 1) but also mandated by an external party – the Louisiana legislature – creating a legal-political network (subset 2).

Though the CPRA has inherited technical plans from previous efforts and has already adopted two annual plans approving specific projects, anticipating the challenges, and opportunities of this new effort is an important step in contributing to this process. To determine the optimal structure for and to identify the challenges facing the collaborative effort of the CPRA, the state hired the consulting agency, SSA Consultants. SSA has turned to other large-scale resource collaboratives like the California Bay Delta Authority (Cal-Fed), the Comprehensive Everglades Restoration Plan (CERP), the Chesapeake Bay Program (CBP), and the Northwest Power and Conservation Council (NPCC) to extract empirical examples of challenges and successes that the CPRA will likely face. Their research suggested a certain structure which was used as a starting point for the administration and members of the CPRA.

The difficulties facing the creative body of the CPRA in creating the CPRA were described by one member with the analogy, "*It feels like we're building the plane we're flying*," (Slaughter, 2007). This statement echoes what researchers have said about the process as well. Osborne and Gaebler, quoting privatization researcher E.S. Savas, refer to

this particular type of multi-tasking by government agencies as attempts by a rower to act as coxswain at the same time he or she is rowing (Osborne & Gaebler, 1993). As Ostrom (1990) notes, "*Getting the institutions right is a difficult, time-consuming, conflict-ridden process*." Those involved in coastal restoration do not yet know where the CPRA mission will end or what the future holds for the organization as challenges for its authority become apparent. For example, zoning and planning are essential tools of coastal protection yet the authority for these tools lies within municipalities and local governments. Limits on the number of state level departments prevent it from becoming an agency currently, yet after the storm more than thirteen constitutional amendments were made. Potential for growth looms, yet limited resources and bureaucratic hurdles may prove to be constraining factors.

Research questions

This thesis seeks to break ground concerning the study of the collaborative dynamic within the CPRA in the hopes that opening discussion will encourage further reflection among participants as well as introduce this case to researchers of collaborative governance. In particular, the thesis examines two questions:

1. How is the CPRA unique?
2. What challenges and opportunities does it face?

By defining characteristics of this latest coastal management effort that set it apart from previous state coastal management efforts and other examples of large-scale collaborative governance processes, this thesis also reveals commonalities. Adding one new data point to the field of collaborative governance that describes the observed and

anticipated challenges and opportunities of this new formation will hopefully inform future efforts.

Interviews were carried out in September and October of 2008 during the month following Hurricanes Gustav and Ike, therefore the number of participants may have been negatively affected as potential participants were less accessible. The scope of this study does not include the structure of the CPRA and no attempt will be made to address the changing nature of the division positions within this new office. The OCPR was not created until July of 2009, well after interviews had already taken place. The changing nature of the organizational structure and relationship of the CPRA and the OCPR, challenged long-distance observation. Positions in the organization continue to be added as its responsibilities grow.

Methods

A rapid appraisal method was used in order to maintain pace with the urgency driving decisions at the state and local level as well as to capture unforseeable perspectives. The form of rapid appraisal method chosen, key informant interviews, involves conversing with individuals extremely knowledgeable on a topic in order to provide a quickly obtained but relatively "*in-depth understanding of complex systems or processes*" while also capturing "*new ideas and issues that may not [be] anticipated*," (Kumar, 1986). Key informant interviews are especially useful when there is a need to understand "*motivation, behavior, and perspectives*" (Kumar, 1986).

Key informant interviews with sixteen individuals from participating organizations were held over the phone and lasted anywhere from thirty minutes to three hours. Five open-ended questions were asked and (See Appendix A). Interviewees were chosen based on their strategic involvement with the coastal restoration and protection framework. Chosen individuals received a recruitment email describing the study and asking for their participation. Fifteen of thirty-two individuals contacted consented to an interview – a forty-seven percent response rate. Several times an individual declined to participate but suggested another individual within the division to participate. If a participant seemed particularly helpful and interested in the study then the researcher would ask for names of other persons the participant thought might be informative. Recruitment then followed the same procedure as described above. Calls were recorded with permission of the participant, transcribed and coded using qualitative research software.

Given the small community, the decision was made to not attribute quotes taken from these interviews as they were used only to illustrate generalized concepts, and not to single out the speaker. All but one participant, Senator Reggie Dupres, preferred anonymity in the final publication. In addition, informants were provided with excerpts from their interview to be potentially used. Written feedback was then requested and incorporated into the final document.

Although the DOTD offices concerning coastal protection were smaller than the relevant DNR offices and thus provided fewer personnel to the OCPR, the DOTD perspective was nevertheless under served, providing only two participants out of fifteen.

Outline of thesis

This thesis is organized into the following five chapters:

Chapter 1 introduces the reader to the critical nature of Louisiana coastal wetland loss and the decision to create a restoration framework that included levee building and other protection measures. Furthermore, the trend and significance of collaborative governance is highlighted before describing how the devastation of the 2005 storm season provided the impetus to overcome barriers to following this trend in Louisiana coastal management and continues to provide a sense of urgency that fuels decision-making at the state level.

Chapter 2 provides background understanding and is divided into three parts: resource characteristics, decision-maker perspectives, and the evolution towards increased collaboration across both state and federal agencies to manage Louisiana coastal resources. Part one describes the geophysical aspect of coastal Louisiana, the populations who live there, and their use of coastal wetland resources. It also outlines the causes and impacts of coastal wetland loss. Part Two describes the five central perspectives examined in this paper: the Governor's office, levee districts, the Department of Natural Resources, the Department of Transportation and Development, and the Army Corps of Engineers. Finally, Part Three follows the chronological sequence of coastal policies that have modified agency interactions and authority since 1972, the year of the first state Coastal Zone Management Act.

Chapter 3 describes the unique characteristics of the CPRA. Initiated by crisis, the CPRA has built on increased public awareness at both the state and national level which

has led to an increase in political support and funding. Strong executive level leadership has facilitated an increase in coordination between multiple levels of government and improved consistency. These conditions, in addition to the coupling of protection and restoration measures, have made what is essentially the return to a previous restoration framework, Coastal 2050, a truly unique venture.

Chapter 4 examines the challenges and opportunities facing the CPRA. These include various aspects of building state capacity and maintaining focus and momentum. The newly established OCPR, not yet operating at full capacity, has the potential to build capabilities in planning and management of restoration and protection features that rival if not supercede the work of the Corps. Yet, funding constraints tie state activity firmly to the institution and the congressional funding process through the Water Resources Development Act. Challenging the continued success of the organization is the state's ability to maintain focus and momentum over time in face of changing administrations both nationally and at the state level, short memory of the public and special interests, as well as managing controversial components of previous plans.

Finally, Chapter 5 presents Discussion and Conclusions. There are many years of learning ahead of the CPRA. Learning comes from making mistakes, recognizing connections, observing others, and responding to abrupt changes in the system, such as the inevitable disaster. In order to maintain momentum and stay on task, the CPRA must show bold and decisive action with clarity of purpose. It must not get bogged

down with imposed bureaucracy stemming from working with the Corps, accepting support from the CEQ, and collaborating with similar initiatives.

CHAPTER 2: BACKGROUND

Resource characteristics, decision-maker perspectives, and the evolution of coastal restoration frameworks provide a rich backdrop for the dynamic restructuring occurring in Louisiana state government today . Part One of this chapter describes the geophysical aspects of coastal Louisiana, the populations that live there, and their use of coastal wetland resources. It also outlines the causes and impacts of coastal wetland loss. Part Two describes the five central perspectives examined in this paper: the Governor's office, levee districts, the Department of Natural Resources, the Department of Transportation and Development, and the Army Corps of Engineers. Finally, Part Three follows the chronological sequence of coastal policies that have modified agency interactions and authority since 1972, the year of the first state Coastal Zone Management Act.

Resource Characteristics

In the dynamic landscape that is Coastal Louisiana, the interface between fresh water from the Mississippi River and the saline water of the Gulf of Mexico create distinct vegetative communities. The sediment carried by flows originating as far north as Canada can create shoals blocking river traffic in as little as a day, and build deltaic lobes and barrier islands that come and go across geologic time scales. Almost half of the state's population lives in this ever changing landscape living off of its productivity and creating a unique cultural identity. This landscape is slowly disappearing, taking along with it the livelihoods it once supported and changing the population culturally. The shipping and energy

infrastructure that facilitates transport of cheap bulk commodities and provides oil and natural gas to the rest of the nation is in peril.

Coastal Louisiana: "*Less a place than a process*"

The Louisiana coastal zone covers 14,913 square miles, of which 6,737 square miles is open water and 8,176 square miles is land[5] (LDNR, 2008). These wetlands are not uniform but exhibit an array of vegetative communities following the salinity gradient inward from the gulf.

"*In geologic terms, [coastal Louisiana] is less a place than a process"* (Davis, 2008). The coastal plains of Louisiana stretch from its border with Mississippi to its border with Texas and can be broadly divided into two geomorphic types. The deltaic plain to the South East was built by sedimentation from the Mississippi River (Figure 1). The chenier plain to the west is a series of beach-ridge complexes paralleling the Gulf of Mexico's shoreline built by coastal depositional processes using littoral drift of sediment deposited by the Mississippi River to the east (Figure 1). Land considered uplands today was at one time formed by deltaic processes. Pleistocene terraces, the land behind these coastal plains, are downward slanting plains originating from the interface of sea and river as glacier size and sea level alternately expanded and contracted (Yodis, Colten, & Johnson, 2003).

[5] Water is typically classified as area having no permanent vegetation. Floating vegetation is counted towards water area, not land area. Permanent vegetation, meaning vegetation attached to substrate, as in a marsh, is counted as land (Britsch & Dunbar, 1993).

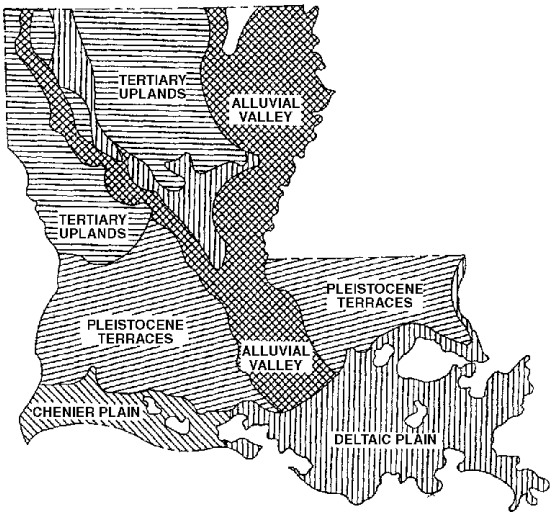

Figure 1: Geomorphic Landscape of Louisiana

The Deltaic plain can be further divided into lobes that over the past 6,000 years were each created by a different path of the Mississippi River as it sought a steeper, more direct route to the Gulf of Mexico (Figure 2). Recent research suggests that processes that formed the ridge complexes to the west may be more complex than originally thought and therefore may be distinguished according to their formative processes (R. A. McBride, Taylor, & Byrnes, 2007).

The processes that created the existing coastal plains are still at work on the landscape today though at times with the intervention of human engineering. The Mississippi may no longer seek a shorter and steeper path to the gulf at the expense of the economically and culturally important port cities residing on its banks. A control structure maintains a flow rate of 70/30 between its existing route and the path of the distributary it would tend to follow in the absence of such control measures. In the Chenier plain, efforts

to control depositional processes include but are not limited to jetties, berms, and beach nourishment.

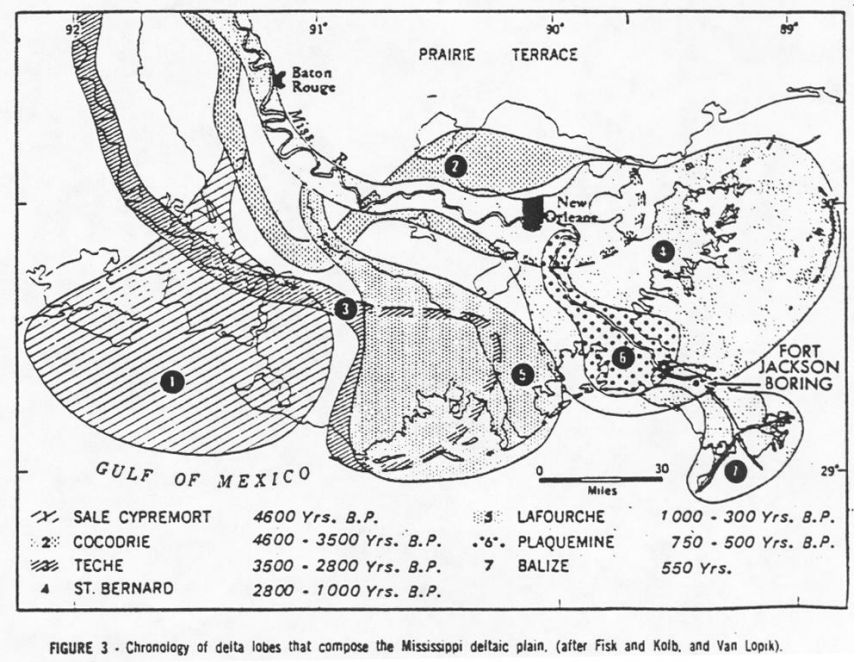

FIGURE 3 - Chronology of delta lobes that compose the Mississippi deltaic plain. (after Fisk and Kolb, and Van Lopik).

Figure 2: Deltaic Lobes of the Mississippi River

Concept of a "*Working Coast*[6]"

> *When you start to frame your work, you need to frame it in the context of Louisiana's landscape, which is not Georgia, North Carolina, South Carolina, or somewhere else where you go a short distance back from the water which*

[6] John Hannavy in his work *Britain's Working Coast in Victorian and Edwardian Times* gives a description of the English working coast that could also be said to describe the Louisiana coast. "*The coastline of Victorian and Edwardian Britain provided beauty, isolation, entertainment, and the venue for most people's holidays. But it was also a thriving center of industry - shipbuilding and fishing, plus the numerous trades associated with dockyards, coastal transport and the leisure industry;*" For more on Louisiana as a working coast, see Gramling and Hagelman, 2005. A Working Coast: People in Louisiana Wetlands. Journal of Coastal Research, SI(44), 112-133.

is lapping against a nice pretty beach. There's this concept that we're all living in the marsh, and that's not true either. — Participant

Unlike Florida, Coastal Louisiana is not a condo coast. There are no white sand beaches and rows of hotels lining the beach boulevard. It is a working coast and between "solid" ground and the Gulf lie miles of salt marsh, then brackish marsh, intermediate marsh, then fresh water marsh. In such a landscape, it is difficult to compartmentalize the pristine from the lived in. Louisiana coastal wetlands provide fur, subsistence, sport, and commercial fisheries. Hunting expenditures in the state totaled 599 million dollars (Louisiana Department of Wildlife and Fisheries, 2005). The 2005-2006 fur harvest from coastal wetlands generated 1.17 million dollars (Louisiana Department of Wildlife and Fisheries, 2006). The 2005-2006 alligator harvest generated 38 million dollars (Louisiana Department of Wildlife and Fisheries, 2005). The largest commercial shrimp, oyster, and blue crab fisheries in the nation are located here and account for twenty-six percent of total commercial landings by weight – excluding oysters - in the lower forty-eight states (National Marine Fisheries Service, 2005).

Wetlands provide the state with flood protection from both inland sources such as the Mississippi River and from the Gulf of Mexico. These wetlands protect valuable shipping and energy related infrastructure. Five of the fifteen busiest ports in the U.S. by tonnage are located in southern Louisiana and handle approximately twenty percent of the nation's total waterborne commerce (U.S. Army Corps of Engineers, 2003). More than 80% of the nation's offshore oil and gas is produced off Louisiana's coastline and 25% of foreign and domestic oil meant for domestic use comes through its ports (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 2003). This could have changed had an

end to an off-shore drilling moratorium not been recently renewed in 2010 following the landmark explosion and oil spill at the Deepwater Horizon rig in the Gulf of Mexico. Given the severity of the spill, an end to this moratorium does not seem likely any time soon. As of 2007, including Outer Continental Shelf production, Louisiana ranks first out of fifty states in crude oil production and second in natural gas. Excluding Outer Continental Shelf production, Louisiana ranks fourth in the production of crude oil and fifth in the production of natural gas (Technology Assessment Division, 2008). As one participant put it, "*Two-thirds of our Gross State Product comes from below I-10*".

Population

> *We need to meet an ever greater challenge, not just restoring sustainability to the ecosystem, but to the communities and the cultures that are so unique to Louisiana. That's the wrinkle that really distinguishes our challenges from some of those other efforts. — Participant*

Post-storm in 2006, over two million people, a little less than half of the state's population, lived in the 20 coastal parishes that make up Coastal Louisiana (LDNR, 2008). Sixty-four percent of Louisiana's population growth between 1990 and 1997 occurred in the coastal parishes (Coast 2050). About half of this population lived within the deltaic plains (Coast 2050). Prior to the storm, Louisiana had the highest nativity rate in the nation at 79.4% (Census Bureau, 2000).

Resource problems

There are many problems associated with coastal wetland loss. Oil, gas, and shipping infrastructure are made more vulnerable to hurricanes. In addition to becoming more vulnerable, coastal communities are losing vital sources of revenue, means of

subsistence, and the very ground upon which they stand. Commercial fisheries have seen declines due to habitat loss. Even seemingly non-related sectors bear the cost of land loss. When saline storm surges reach inland, declines in agricultural production occur (Louisiana Coastal Wetlands Conservation and Restoration Task Force & Wetlands Conservation and Restoration Authority, 1998). For example, declines in Gulf menhaden catch destined for the fishmeal market may alter the costs of chicken, salmon, and dog food as these buyers are forced into finding alternatives.

Identified causes of problems

Major causes of land loss include barrier island degradation, storms, saltwater intrusion, canals, oil and gas development, levee systems, sediment reduction, sea level rise, and subsidence. Climate change has made seasonal storms more severe and the Gulf waters warmer causing their expansion resulting in sea level rise (Emanuel, 2005). Channeling and leveeing of the Mississippi River has prevented delivery of sediment to marshes prone to natural subsidence as the organic soils supporting them decompose and compact (Templet & Meyer-Arendt, 1988). Upriver damming of the Mississippi River has reduced the sediment load carried by its waters such that even if the state were able to harness one hundred percent of diversions for restoration projects, the sediment load still would not be adequate to restore the coast (Blum & Roberts, 2009).

Indicators of Problem Severity

Relative to other large-scale collaborative initiatives, the CPRA serves a smaller immediate population and is more limited in geographic extent (Heikkila & Gerlak, 2005).

The effects of this wetland loss, however, may be felt through the country with increasing costs to the nation in fuel prices and the cost of shipping commodities. The Federal Trade Commission places responsibility for an average fifty cent rise in gasoline after Katrina compounded by another twenty cent rise after Rita (Federal Trade Commission, 2006)[7]. The inability of goods to pass through the coastal Louisiana port system has consequences for commodities markets. For example, New Orleans is a major center of coffee bean imports and roasting and stores approximately one sixth of U.S. coffee stores. The fear that the amount of coffee stored in New Orleans was destroyed by Hurricane Katrina was linked to an increase of the price of coffee by 5-7% on the New York Stock Exchange in the days after the storm ("Katrina's Impact on the U.S. Economy," 2005). These prices immediately fell, because the warehouses of coffee beans, on high ground next to the river, were untouched.

Perspectives

A majority of participants interviewed represented more than one perspective. Six participants represented three or more perspectives, five represented two or more, and just four represented only a single perspective, two of which were DOTD employees.

[7] Market reactions that cause this include energy firms diverting supply from lower-priced areas to higher priced areas, firms drawing down their inventories, refineries not affected by the hurricanes increasing output, and the importation of gasoline increasing (Federal Trade Commission, 2006).

Governor's Office of Coastal Activities. The Governor's Office of Coastal Activities (GOCA) is led by the Executive Assistant to the Governor. Within GOCA is the Governor's Advisory Commission (GAC) advisor to the Governor and forum for the various interests of its members. The Advisory Commission is currently made up of 36 members serving four-year terms representing the following sectors: academic, non-profit, business/industrial, conservation, energy, political subdivisions of the states (parishes and municipalities), commercial fishing, recreational fishing, oyster industry, coastal landowners, ports and related industries, maritime industry, the chairmen of state and house related committees and, finally, six at-large members appointed by the governor. Three of these members - the chairmen of house and senate committees on transportation and development and the maritime representative - were added following Katrina. In addition, either the Governor or the Commission can invite federal agency members to act as non-voting members. Administrative duties related to the function of the Commission are carried out by GOCA. Members are compensated for travel expenses and meals at the state employee rate but otherwise are not paid.

Before the storms of 2005, the Advisory Commission's primary role was as advisor and mediator. The Advisory Commission's responsibilities included advising the Executive Assistant and the Governor on the status and direction of coastal restoration, providing a forum for the exchange of information among interests, fostering cooperation among various interests, foreseeing and taking action to avoid conflict. Periodically it would review aspects of the coastal restoration program as it saw fit and yearly would provide a report

acknowledging progress, identifying challenges and making recommendations. In general, the Advisory Commission provided continuity among gubernatorial administrations[8].

With the inception of the CPRA, the advisory commission has refocused its energies as many of its former duties and operations are now carried out by the Office of Coastal Protection and Restoration, the implementing arm of the CPRA. Members of the Commission have stated that they see themselves as high level advocates now in the CPRA process with direct access to CPRA's executive leadership (Slaughter, 2007).

Department of Natural Resources. Before the creation of the CPRA, the Office of Coastal Restoration and Management was responsible for creation and implementation of a master plan to maintain, conserve, and protect the state's coastal wetlands. Within the Office of Coastal Restoration and Management were the Divisions of Coastal Restoration, Engineering, and Management. The Coastal Restoration and Engineering Divisions were responsible for project construction. The main function of the Coastal Management Division was regulating activity in the coastal zone through issuing coastal use permits.

Department of Transportation and Development. Before the storms of 2005, the Office of Public Works, Intermodal Transportation, and Hurricane Flood Protection was responsible for 2800 miles of navigable waterways, 27 locks, 39 port authorities, 470 dams and an offshore oil terminal authority. The DOTD also served as the quality check for the levee district maintenance.

[8] Act 114, First Extraordinary Session of 2002 Louisiana Legislature; RS49:214.11-2

Levee Districts. Before federal responsibility for a comprehensive levee system came about, riverfront property owners were responsible for levee building on their respective properties. The Swamp Land Acts of 1849 and 1850 gave federally owned swamp lands to states which then sold the acreage to private landowners who would then be responsible for putting the land into production and protecting it with levees. As a means of privatizing levee building, the Acts were counterproductive. In Louisiana, upwards of nine million acres were transferred to private ownership, which simply increased the value of land and the size of the population behind a fragile patchwork of levees that would repeatedly fail to control the volume of water coming down the Mississippi and its tributaries (Colten, 2005). Levee boards appeared and coevolved starting in the middle to late 1800's as a means of organizing this construction and maintenance of levees (Barry, 1997; Van Heerden & Bryan, 2006). In 1866, the state began regulating levee construction through the Board of Levee Commissioners (Ardoin, 2010).

The burden of levee building, flood damages, and shipping channel maintenance overwhelmed a post-Civil War Delta and drove the state of Louisiana to seek federal intervention. The Civil War devastated poorly constructed levees in Louisiana and elsewhere along the Mississippi River, threatening croplands and urban areas (Colten, 2005; Kelman, 2003; M. G. McBride & McLaurin, 1995). One Senator is quoted as saying, "*Without levees, our country is a waste and we are beggars*" (M. G. McBride & McLaurin, 1995). In 1871, the state contracted levee oversight to a private corporation, the Louisiana Levee Company, and funded work through a three-mill tax (Ardoin, 2010). The Louisiana Levee company was abolished and the state returned to the system of levee districts, each lead by

a board of commissioners responsible for the levees within its district (Ardoin, 2010). Representatives of Louisiana went on a fundraising tour in the North to sell bonds to supplement the tax. Failing to raise funding through the sale of state bonds, Louisiana Senators launched a campaign for a federal Mississippi River Commission (M. G. McBride & McLaurin, 1995). The Commission, established in 1879, would oversee levee building along the Mississippi River in partnership with the levee boards, not for flood control but for purposes of navigation based on the recommendations of the U.S. Levee Commission five years prior (Barry, 1997). The creation of the Mississippi River Commission was the foot in the door for federally funded flood control projects. In 1917 the Ransdell-Humphreys Act made levee boards cost-share partners in levee building *for flood control* along the Mississippi River only. The Jones-Reid Bill or Mississippi Rivers and Tributaries Act in 1928 finally made levee building with the goal of flood control a federal responsibility tasked to the US Army Corps (Corps), though the levee districts were still responsible for purchasing rights of way and conducting maintenance. The 1936 Overton Act reimbursed levee districts for purchased rights of way and tasked the Corps with performing cost-benefit analyses to determine whether a project should be built (Reuss, 1982; U.S. Army Corps of Engineers, 2010).

Generally, the Corps builds the levees which the Levee districts then maintain, inspect every ninety days, and report semi-annually on the condition of the levee. The Corps inspects these levees once a year and reviews the reports it receives from the district. Levee boards have the authority to buy and sell land, to expropriate land as long as the owner is compensated at fair market value, and to build and maintain levees and associated

drainage projects. Additionally, they have their own police force and can build and maintain recreational facilities on and adjacent to holdings. These *non-flood assets* as they are called*,* especially in and around Orleans Parish, drew a fair amount of scrutiny after the storm as they were considered to be not so much income generators for levee projects, but distractions from the core mission of the levee districts (Derthick, 2007)

After the storm flaws in the levee board system became apparent: ambiguous authority and bureaucratic jurisdictions. Despite the longstanding relationship between levee boards and the Corps, confusion and debate existed about exactly which activities are the responsibility of the Corps and which are the responsibility of the districts, resulting in repair delays and even levee failures (Derthick, 2007; Independent Levee Investigation Team, 2006). In 1880, there were five levee boards. By 2005 the number had grown to twenty-five. Levee boards are funded by property taxes. When there are multiple parishes in one district, the least contributing member may receive less than what it pays in for construction and maintenance activity from the district (Alford, 2006). There is incentive then to break off from the larger district to form a smaller district where one hundred percent of monies go back into the parish's system of protection. This is exactly what happened in the greater metropolitan area of New Orleans. Before the storm, the single system protecting the greater metropolitan area of New Orleans spanned four different levee districts as well as several different sewage and water districts managing the pumps. After the storm, the state consolidated levee boards with the intention of reducing such bureaucratic jurisdictions. This resulted primarily in the creation of the South East Louisiana

Flood Protection Authority and the South West Louisiana Flood Protection Authority which span the greater New Orleans Metropolitan area and the downriver system.

Army Corps of Engineers. The U.S. Army Corps of Engineers is responsible for 14,000 miles of the estimated 100,000 miles of levees in the U.S. (U.S. Army Corps of Engineers, 2010). Levees do not have to be built by the Corps to be under its jurisdiction, but they must follow through a certification process performed by either a certified engineer or a federal agency to receive accreditation. The Corps requires semi-annual reports from the non-federal sponsor (the local levee district) on the inspection, operation, and maintenance of the levee (33CFR208_10).

While working with the Corps has the advantages of federal funding, technical assistance, and liability in case of emergency, the length of time it takes for the Corps to study and implement a project can be prohibitively long. While the Corps performs the necessary Reconnaissance, Feasibility, and Environmental Impact Statements, the cost of a project can escalate over time as energy costs rise and development ensues putting more lives and property at risk. A member of GOCA was quoted as saying "*study is often a four-letter word*" to coastal residents waiting on hurricane protection *(Buskey, 2008).* A striking example is the Morganza-to-the-Gulf project. The first Reconnaissance Report was authorized in 1992. Almost twenty years later, the Corps has not finished studying the project and at current estimates will not reach completion until approximately 2025, totaling more than thirty years from inception to the project's close.

Table 1. Estimated cost of Morganza-to-the-Gulf Hurricane Protection Project over time (emphasis on structural protection)

Estimated Cost of Morganza-to-the-Gulf since 2000				
	Year			
Costs	2000[1]	2002[2]	2007[3]	2008[4]
Total Project Cost	$ 550,000,000.00	$ 680,000,000.00	$ 912,000,000.00	$ 11,000,000,000.00
Total Federal Cost[5]	$ 358,000,000.00	$ 442,000,000.00	$ 592,800,000.00	$ 7,150,000,000.00
Total Non-Federal Cost[5]	$ 192,000,000.00	$ 238,000,000.00	$ 319,200,000.00	$ 3,850,000,000.00

[1] Water Resources and Development Act, 2000
[2] Chief's Report. http://www.mvn.usace.army.mil/prj/mtog/EAS/Chiefs23Aug02.pdf. Accessed November 1, 2008.
[3] Project Fact Sheet. http://www.mvn.usace.army.mil/prj/mtog/project_fact_sheet___morganza.asp accessed November 1, 2008.
[4] Numbers are approximate. Buskey, N. "Morganza could cost an 'impossible' $10.7 billion". *Daily Comet*. Tuesday, June 17, 2008
[5] Based on a 35:65 state:federal cost-share

Currently Louisiana is waiting on the results of a study commissioned by Congress to analyze various alternatives for coastwide protection and restoration. Called the Louisiana Coastal Protection and Restoration Study (LaCPR), the LaCPR report will provide specific guidance on both protecting South Louisiana from storms and restoring the coastal wetlands. The Corps has emphasized that this is only a study, and not a plan. Whereas a plan would indicate a preferred alternative, and the possibility for funding, this study merely provides multiple scenarios bolstering manmade structural protection with restoration projects.

Scientific Community. The scientific community referred to here is made up of scientists most closely associated with universities and outside of state and federal

agencies. In March of 2007, scientists and engineers from eight universities sent an open letter addressed to then Governor Kathleen Blanco and Army Corps Lieutenant General Carl Strock asking for a more active involvement in the planning process as opposed to reactive. They also cautioned against over reliance on structural measures (Bart et al., 2007).

Evolution towards increased state capacity and collaboration across agencies

Coastal wetland loss as an anthropogenic function became apparent in the 1950's (Britsch & Dunbar, 1993). Projects instigating the loss were made with the knowledge of the local impacts of such loss but were dismissed either because of the abundance of wetlands across the landscape or out of narrow economic considerations (CEI, 1984 p. 24). Coordinated restoration efforts did not start until after the first of a series of mapping projects quantified the extent of the loss (Gagliano, 1970). Completed in 1973, a total of 18 reports examined coastal area trends, identified causes both natural and anthropogenic of land loss, and provided management recommendations in the form of a multi-use management plan for fish and wildlife (U.S. Army Corps of Engineers, 2004). Generalizing from these first steps to address land loss, the state response to this problem can be characterized as having evolved from narrowly focused resource management to the broad, complex orchestration of entities addressing social, economic, and ecological concerns. Additionally, it is the state in this last effort which has assumed responsibility for initiating and directing this movement.

Federal Coastal Zone Management Act, 1972

The Federal Coastal Zone Management Act was passed in 1972, around the time other national environmental legislation was being passed and about the same time coastal

land loss was becoming an issue. Recognizing the impact of competing demands on fragile coastal ecosystems its purpose was to minimize their impact by initiating a coastal use permitting system. The Louisiana State and Local Coastal Resources Management Act (Act 361) was passed in 1978 to regulate the activities that affect wetland loss and allowed parishes to apply for their own permitting program. The resulting Louisiana Coastal Resources Program (LCRP) became a federally approved coastal zone management program in 1980.

Louisiana Coastal Wetland Conservation and Restoration Management Act

Setting the stage for a federal bill addressing land loss in coastal Louisiana was Act 6 of the Second Extraordinary Legislative Session of 1989. Called the Louisiana Coastal Wetland Conservation and Restoration Management Act, the bill took several important steps towards building state capacity. It brought the LCRP, Louisiana's federally approved coastal management program under the management of the DNR. It then tasked the DNR with creating a comprehensive coastal restoration plan and created the Coastal Restoration Division (CRD) to house the expertise to do so. It also created a fund, the Wetland Conservation and Restoration Fund (Wetland Trust Fund). Monies for the fund continue to accrue from taxes on oil and gas activities and are devoted specifically to CRD projects within the comprehensive plan. It also created a state level authority, the Wetlands Conservation and Restoration Authority (WCRA), to oversee the plan.

Breaux Act (CWPPRA), 1990

Within a year, a related federal bill, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA)[9], was passed. It provided for 75/25 federal/state cost sharing. Although some of the money is directed towards other states, a majority of the funds – created from taxing fishing equipment, motorboats, and engine fuel – is dedicated to Louisiana. The state receives approximately $50 million annually (National Research Council, 2005). Approximately 30% goes towards the National Coastal Wetlands Conservation Grant Program and the North American Wetlands Conservation Fund. The other 70% goes towards the Army Corps of Engineers for construction and other associated activities in the Louisiana coast. The Breaux Act, as it is called in Louisiana after its sponsor the popular and longtime senator John Breaux, created a state and federal collaborative called the Breaux Act Task Force to oversee the development of a comprehensive restoration plan. This plan stipulated that any and all programs affecting coastal wetlands would be consistent with its purposes yet gave no procedural guidance on how to do so and was not enforced (Coastal 2050, 1998).

The model for restoration set by the Breaux Act Task Force continues to be used today, amidst some controversy. Annually, the Breaux Act Task Force submits a Project Priority List (PPL) to Congress. The decision tool used to fund projects involves three steps. First, projects are submitted to the Task Force. Second, Task Force Work Groups then review projects and make recommendations. The final step is a determination of technical

[9] Pronounced “quip-ruh”

merit, cost effectiveness, and predicted benefits from stated acreage of wetlands to be improved and/or created in addition to their purported quality as determined by the Wetland Value Assessment (WVA). For twenty years from the time of completion, a maintenance and monitoring phase commences whereby the realized benefits are compared to the predicted benefits. From 1990 to 2003, 142 projects were approved, and 68 constructed totaling 218.5 square miles of improved wetlands over twenty to thirty years at a cost of 504 million dollars (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 2003). What would have taken the state with its showcase restoration program twenty to thirty years to protect, conserve, or restore, hurricanes Katrina and Rita would destroy in two weeks.

Coastal 2050, 1998

By 1997, it became apparent that Breaux Act activities were insufficient to fully restore the coast. Only 25% of the expected coastal wetland loss over the next fifty years would have been countered by full implementation of CWPPRA's projects (U.S. Army Corps of Engineers, 2004). The Breaux Act Task Force along with the Wetland Authority prepared the Coastal 2050 plan aiming to create a still more comprehensive plan for a sustainable coast. It would integrate the comparatively piecemeal lists of projects created by CWPPRA into a plan that would reverse the trends of land loss over the next 30 years at an estimated total cost of 14 billion dollars, roughly 470 million dollars per year.

It also began to look at linkages among coastal activities and sought input from stakeholders through 65 regional public meetings gathering input from more than 1,700

people. It highlighted the beneficial use of dredge material, the need to coordinate mitigation projects with an overarching restoration plan, providing for the impact of diversion projects on communities and oyster leases, the need for and enforcement of wake limits in areas sensitive to erosion, improve land rights acquisition procedures, etc. Although the Breaux Act had called for programmatic consistency across the board, the state still had not acted to ensure this consistently occurred. At this point in time the local New Orleans District of the Army Corps of Engineers began to work with the EPA and the FWS to develop interim guidance in addition to working at the level of the Mississippi Valley Division to ensure consistency.

Although Coastal 2050 saw the state establish the groundwork for building state capacity, it still relied heavily on federal funding through WRDA and federal technical assistance through the Corps of Engineers to implement its restoration plan.

Louisiana Coastal Area Studies (LCA), 2002

The drawbacks of relying on federal funding and technical support are epitomized in the Corps' draft LCA Comprehensive Study and its later abbreviated form as the near-term LCA study. The original draft LCA study was the beginning reconnaissance, feasibility, and environmental impact studies for the 14 billion dollar long-term restoration plan envisioned by Coastal 2050. The US Office of Management and Budget (OMB) under the Bush Administration advised the Corps to scale down the draft LCA study and choose only the most pressing projects. This was a setback to Louisiana coastal restoration in at least three ways. First, it cemented the state's reliance on federal funding and timing. WRDA authorizes but does not fund projects. Funding comes later through the appropriations

process, specifically the Energy and Water Development Appropriations bill. A prior attempt by the state in 2000 to gain a fixed source of revenue for its restoration plan through OCS funding that would ease its dependence on WRDA had failed. The state was putting most of its eggs in one basket. Second, it placed Louisiana coastal restoration in competition for funding with Florida. In 2000, the Bush Administration committed to funding a several billion dollar Comprehensive Everglades Restoration Project, as a "*wetland investment…particularly significant to the nation*" (U.S. Government Printing Office, 2004). In the second biennial programmatic review of CERP, reliance on federal funding was one factor slowing the process down (Graf et al., 2008). In its assessment of the Corps' wetland restoration programs in 2004, OMB gave the Corps 17 out of 100 points (Office of Management and Budget, 2004). Louisiana and Florida were competing for funding administered by an agency that the Bush Administration rated "*ineffective*"(U.S. Government Printing Office, 2004). The third setback to the state was that the LCA study to be approved was a return to a technocratic restoration framework with narrowly defined goals and projects carried out in isolation without broad public support and involvement (National Research Council, 2005).

CPRA, 2005

> *"…under governor Mike Foster, I had sort of tried to bring up the idea of a state department of water resources which would consolidate these issues. It was ultimately shot down because...of the…political egos of these department heads who don't want to give up any of their authority"* – State Senator Reggie Dupre

The 2005 hurricane season reinforced the importance of comprehensive planning to decision-makers and brought back Coastal 2050-like initiatives only with a greater sense of

urgency: regional public meetings, reducing the number of planning units, consolidating cumbersome political jurisdictions, building state capacity through strong leadership at the executive level and technical expertise, and addressing linkages among coastal activities at all possible levels. Most importantly, it brought the activities of the DNR and the DOTD under one roof which would allow the state to act as full partner to the Corps, not just a consumer of services.

To coordinate between the two agencies the legislature expanded upon the duties of an existing authority, the Coastal Wetlands Conservation and Restoration Authority (CWCRA) renaming it the CPRA and adding the element of coastal protection to its oversight of the development of a master plan addressing coastal restoration. Recognizing the catastrophic importance of coastal restoration to hurricane protection, the Authority has remedied the previously disjointed and counterproductive operations of the two agencies by putting the relevant offices under the roof of the Office of Coastal Protection and Restoration (OCPR), the implementing arm of the CPRA.

The original statute passed in 1989, about 16 years previous, reads "*efforts by the state to address the myriad interrelated problems of coastal land loss have been inadequate, fragmented, uncoordinated, and lacking in focus and strong direction.*" The goal of the original authority was to strike a "*balance between development and conservation*"(La. R.S. 49:213:1(C)). Although wetland loss slowed, it did not reverse. The language was vague legislating that "*wetlands conservation and restoration be elevated in tandem to a position within state government of high visibility and action and … be of high priority within that structure*" (La. R.S. 49:213:1(D)). The first published Master Plan quoting

Act 8 boasts that it will now, assumedly unlike before, provide "*aggressive state leadership and direction*" (CPRA, 2007, p. 2). This exact language is not what is original about this bill and has been present in the statute since its passage in 1989. Act 8 created no new funding sources for the CPRA. Expenses incurred by the CPRA were to come from the existing Coastal Conservation and Restoration Fund now called the Coastal Protection and Restoration Fund (CPRF) in addition to other existing funds for which CPRA now has authority. This begs the question, is the CPRA really heading in a new direction? What is different about the CPRA? What is unique about this effort that makes it not just another plan? How is it more than just a reorganization of offices and a restatement of commitment? These questions will be discussed in the next chapter.

CHAPTER 3: WHAT MAKES THE CPRA UNIQUE?

Initiated by CRISIS

> *"We felt like we were Chicken Little running around saying the sky is falling and now as a result of the hurricanes we now see that the sky has fallen. That has done more to bring about awareness than anything."*
> *—participant*

To a greater extent than any other large scale resource management effort mentioned, the CPRA is a product of Crisis. With Crisis comes a sense of urgency, now or never, a heightened awareness of one's surroundings that lends itself to great change and opportunity to move forward differently than before (Light et al., 1995). As one participant put it, *"We'd been saying that Louisiana is losing coastal habitat at an alarming rate and nothing meaningful was done until about 1990 when CWPPRA was passed and even that was a relatively small amount of money. The big battle has been national recognition of the problem and national support for fixing the problem."* The storm season of 2005 awakened the public and decision-makers to the very real consequences of wetland loss: loss of homes, livelihoods, and human life. At the national level, the state has now secured a commitment through the Roadmap for Gulf Coast Ecosystem Restoration in addition to funding opportunities that had been limited before. Already the Obama administration has secured 35.6 million dollars for the LCA study and an additional 10 million dollars for mapping and restoration of wildlife habitat. "*A huge amount of the coastal restoration aspects of the state master plan are essentially an expansion and reiteration of the 2050 plan with the addition of the coastal protection areas mentioned with more prominence.*

*There really are not a lot of new con*cepts *in the master plan. They're things that we've been talking about for years*." Having acknowledged the problem for decades and incrementally building institutional capacity, it was only through crisis that the state was able to secure federal support.

One participant who had been involved in coastal restoration for decades identified a cyclical nature of federal involvement, circling between crisis-response by the Corps in managing regional water resources, responding to each new crisis in an expansion of authority. Starting in 1927 with the Great Flood where Congress finally authorized the Corps to build levees for flood control, then achieving authority for hurricane protection in the aftermath of Hurricane Betsy in 1965. The CPRA is the latest of this institutional response to crisis.

Leadership — One Voice

One important goal of previous plans that was never achieved is consistency across all levels of state government. Towards this end Governor Jindal passed an Executive Order mandating that all levels of state government review their operations to ensure they were not working at cross purposes with the master plan. One participant remarked upon the success of this effort, *"One of the great things about this is that when someone sees an issue…it won't be left on the table unaddressed."* Individuals working to identify those issues are rewarded with further responsibility, "*When you complain about something you get appointed as chairman.*" The increased coordination between levels of government

both horizontally and vertically is mutually reinforcing. One participant described this simple yet profound difference made by CPRA:

> *"…Having all the decision-makers in one place you don't have to say, 'okay, let's go back and see what the coastal zone manager of that parish feels'…The state is managing the plan. We're truly one sponsor."*

Increased coordination between levels of government

Participants acknowledged increased interaction between different levels of government in addition to a turnaround among actors, notably parishes and levee districts. A member of the DNR said, "*I've been involved with restoration for a long time and I've never had anywhere near this level of contact with the local levee districts, and I think that's a very good thing*." One participant from the levee district perspective who previously had difficulty working with one of the parishes within his district noted with satisfaction that the parish leader now signs interagency agreements with the levee district before any project, even laying riprap. Participants from the levee district perspective were also looking forward to integrating proposed restoration projects into a larger plan with the potential for expanded resources such as technical assistance and funding. Levee districts are not without their own resources, they have the ability to quickly obtain rights of way for projects, something that the Corps or the state take longer to do. The knowledge that a project was more than an isolated effort, that it was a piece of a larger network of integrated public works made implementation more rewarding. Perhaps this is one of the reasons why CPRA members have seen parishes become more aggressive in planning restoration projects and coordinating them with the state plan. One such parish has even

begun modeling, and in such a novel way that it has attracted the attention of the state. Participants who felt that they did not have a voice before the storm now feel that they are part of the process. For example:

> *"I sat there at a regular CPRA meeting and listened to this big, bold announcement from [the Secretary of the DNR] and Governor Blanco and she's announcing this fantastic project, a diversion project that sits right in the middle of a 28 mile levee system that I'm trying to get approval for and nobody until that day had spoken to us about it. I looked over at the folks at DNR, and I said, 'nothing personal, but wouldn't we want to integrate this into the levee system that we're trying to build here? You may want to put in a flood wall. Maybe I can help you acquire land? Maybe I could provide some financial assistance?' Half of 'em called me a smart ass, but the next day I had half the DNR and the levee district office with their maps telling me about this project and trying to figure out how to integrate it. That's how you're supposed to do it! We're not there yet, but I've got plenty more examples of how this process is improving. Had I done the same thing thirty years ago, they'd a told me, 'shut up, --. You do levees, we'll do diversions.' Now when I speak, or the Coalition[10] speaks, they gotta listen. That wasn't the case before."*

Strong Leadership within the Governor's Office

> *"Back then we sort of envisioned or talked about what back then I can remember calling it a coastal czar a person who would answer directly to the governor and cut through the red tape and work alongside the federal government but again, I think you had what were strong personalities as department heads of the DOTD and the DNR. In order to consolidate these missions someone has to be able to give up some of their authority and to share. I think there has always been this reluctance to do that."*

[10] Coalition to Restore Coastal Louisiana

Advocates of coastal restoration have long identified a need for leadership at the executive level to bring together agencies working at cross purposes. Immediately after the storm, talks of an MOU or formal cooperation between the two agencies were attended by then governor Kathleen Blanco. The governor's office has been instrumental in ensuring consistency, supplying resources, and maintaining momentum to get the job done. Executive Order #7 issued by Governor Bobby Jindal made coastal restoration priority for every state agency, mandating that "*all regulatory programs*, *contracts, grants and all other functions vested in them*" be consistent with the master plan[11]. Governor-imposed expenditure and hiring freezes affect every department *except* the CPRA[12]. In partnering with the Army Corps of Engineers (Corps), the governor's office is framing the work to be done as a "*national emergency*" in order to infuse collaboration between it and the Corps with a sense of urgency (Governor's Advisory Commission, 2011).

Reprisal of a Systems Perspective

One participant encapsulated the core similarities of efforts like CERP, Cal-fed, and the Chesapeake by saying, "*They're all interested in big issues and how you engineer a system to be more environmentally sustainable*." CPRA participants felt their difference was

[11] Executive Order No. BJ 2008 - 7
[12] Executive Order No. BJ 2001 - 7

the human component, noting that they were working to sustain not just the ecosystem but the communities within, a matter of self-preservation. For example, one participant commented:

> *"They are looking at it from the ecosystem restoration perspective with the socio-economic on the periphery, and they may argue if you were to talk to someone directly involved that point to some degree, but I really believe the CPRA master plan brings into the forefront the reality of the situation in that this can never go back to a pristine state because we do live and work in the coast of Louisiana even more so than people do in the Sacremento-San Joaquin Valley area, even more so than people do in the Everglades are even, even though people are encroaching more and more into the Everglades. From that perspective, we need to meet an ever greater challenge, not just restoring sustainability to the ecosystem, but to the communities and the cultures that are so unique to Louisiana. That's the wrinkle that really distinguishes our challenges from some of those other efforts."*

The challenge then is coupling the institution that governs the coastal system with the system itself.

Conclusion

Initiated by crisis, the CPRA has built on increased public awareness at both the state and national level which has led to an increase in political support and funding. Strong executive level leadership has facilitated an increase in coordination between multiple levels of government and improved consistency. These conditions, in addition to the coupling of protection and restoration measures, have made what is essentially the return to a previous restoration framework, Coastal 2050, a truly unique venture.

CHAPTER 4: CHALLENGES AND OPPORTUNITIES

> *"It's not the science that's holding them back or the lack of science. It's the will to do things, agreement about what needs to be done. That's a political choice, not a scientific choice. The whole idea is that we have to reconnect the delta to the river, as simple as that. We want to do it as sustainably as possible. Failing that, then we get some kind of compromise, but it's all political."* —participant from the scientific community

The various challenges facing the CPRA are all aspects of building state capacity and maintaining momentum. The solutions to these specific challenges are opportunities waiting to be realized. The experience of the Integrated Planning Team in drafting the first Master Plan represents the first integration of restoration staff and protection staff. Securing billions of dollars from a Congress skeptical of both the state's efforts and the Corps' ability to restore wetlands while competing with a rival effort for those dollars is no small task. Continuing on with the focus and momentum realized after the storm season of 2005 is challenged by changing administrations both nationally and at the state level, short memory of the public and special interests, operational barriers, and managing controversial components of previous plans or legacy issues.

Building State Capacity: "If the Feds can't do it, How can we?[13]"

There are many elements that comprise state capacity. One is the ability of restoration employees to work with protection employees. The first instance of

[13] (Vigmostad et al., 2005)

collaboration between restoration employees and protection employees took place in a highly compressed process necessary for the timely creation of the master plan. A limiting factor in state capacity is funding which is influenced by relations with Congress and the administration in office. The state cannot generate adequate funds to cover the cost of a system-wide coastal protection and restoration plan, and must rely on the federal government. Louisiana was unsuccessful in pushing through a fixed funding mechanism with OCS monies while that same year Florida successfully submitted CERP, a several billion dollar restoration plan through WRDA.

Integrated Planning Team and the Creation of the Master Plan[14]

Before the OCPR was created in 2009, to combine both restoration and protection employees, the first episode of collaboration between the two groups besides emergency field work during the storm {Katrina?]occurred for the creation of the Master Plan. [this first sentence needs help; it is awkwardly written.] The legislative mandate for the CPRA called for a new master plan that took into account the siting of levees as well as the restoration of ecological functions. The Integrated Planning Team (IPT) was the eight person group that along with the help of the DNR, the DOTD, and consultants steered the creation of this Plan. *"[Getting] the right people on the team*" was a challenge according to one former member. Those chosen to participate had select experience working with others outside their agency. The team leader was someone who had worked for both the Army Corps of Engineers and

the LDNR. The LDNR houses both engineers and biologists working together to create the coastal restoration plan as required by the Breaux Act. Together they perform Ecological Reviews of projects to assess the effects of an engineering project component. During and after the hurricanes, field staff of the LDNR and LDOTD worked together at emergency centers and in the field to assess damage to hurricane protection structures.

Once team members were chosen and seated at the table members of the different camps became aware of very real barriers to successful collaboration. Each side was there, because they "*all agreed [the plan] was important to...our state's future" and "all easily agreed to the four objectives in the master plan, no problem*." The difficulty members say was that they "*had different viewpoints on how to get there*." Both sides recount the difficult process of "*two different missions having to learn how to communicate with each other*."

From the LDNR perspective:

> *"[we] already felt like we knew what we were doing. We'd been doing this large-scale planning for a while and suddenly we were like, 'Wait a minute, we don't know what these people are talking about. They're talking a whole different language, and we don't understand their perspective, and we don't understand things that are important to them to meet their missions and agency priority.'*

Members spent a little less than a year together creating the plan and learning daily to "*respect what's brought to the table by the group*" and "*get a feel for understanding for what are primary and secondary issues*." Once a member finally interpreted the relative priority of issues of other parties at the table, it became a question of "*seeing whether you're just holding on to your opinion out of stubbornness and ego and whether you maybe need to change, or alter your own expectations*." The process was short and intense. "*We*

didn't have the luxury of saying, 'we'll deal with it tomorrow.' …it was a pressure cooker, there's no doubt about it…daily there was a blowup and having to walk away and cool off and come back to work through it….15-20 minutes to an hour later."

A public input process was initiated, called "*Louisiana Speaks*," that took advantage of a post-storm regional planning effort already in place by the Louisiana Recovery Authority (LRA). The name is a reference to the organization "*America Speaks*" which facilitated public input during a three-day long conference two months after the storm to create a common vision for rebuilding[15] with 150 chosen members of the public from across the region plus planning professionals and public officials. Louisiana Speaks continued this process by continuing to hold meetings across the region on various topics. It was at these meetings that IPT members found themselves again at odds not only having to explain and defend themselves to planning participants from opposite 'camps' but with "*people who we had worked with our whole careers from our individual perspectives from either protection or restoration…a hundred people in the room and we're having these battles and not just battling people who are in [opposite camps] but people within your camp*." It was at these meetings that members of the IPT recognized the same learning that was happening within their small group, in these larger planning meetings. "*Suddenly people's thinking would*

[15] The state was interested in their work after reviewing the planning effort implemented after the September 11th terrorist attacks in New York City on the World Trade Center towers to determine rebuilding priorities. The results of this effort, called, "listening to the city," convinced the city to scrap the existing plans for rebuilding based on diverging interests among city residents as gathered through this process.

start to evolve more quickly than others and you would see sort of…people's consciousness expanding…maybe that's a little too esoteric but it was really happening."

Members recalled working long weekdays, over the weekends and through holidays, all while getting little to no sleep at times. IPT members were all quick to point out that the Corps' plan which was slated to come out at the same time as the state plan but on which work had already commenced, was not complete at the time the state released its master plan. By completing the master plan in the given time frame, an IPT member said, "*It gave us the opportunity…to go to Washington with a document in hand and say, 'Look, Louisiana is serious. We are moving forward with or without…the help of the federal government or the ability of the Corps of Engineers to move forward in a timely fashion. We have chosen to take control of our own destiny*.'" The analogue to the IPT within CERP found the same to be true. With a similar crunch upon them, they had buttons printed with their deadline that read, "*July 99 – Yes We Can*" (Vigmostad et al., 2005). For CERP, meeting that deadline was essential for getting federal funding through the 2000 WRDA bill.

Though not perfect, the plan would, according to one member, "*get us to the next step*" and that "*despite our best of intentions, the master plan represents a framework…a concept that has a lot more years and a lot more people's brilliant minds to be dedicated to it…to be effective on the ground…But, being able to communicate that to people who hold the purse strings in Washington is crucial to get it to work*." Indeed, the master planning process continues each year as an annual plan is passed.

Competition with Florida?

The effort most prominent in participants' minds was the Comprehensive Everglades Restoration Program. In many participants' minds, Louisiana had a history of competing with Florida for federal dollars. One reason is that it is the closest large-scale restoration effort in proximity, but also in terms of contextual similarities. Florida has four national parks and twenty wildlife refuges, in addition to tens of endangered species (Vigmostad et al., 2005). Louisiana has one National park, twenty National Wildlife Refuges and established populations of three endangered species (U.S. Fish and Wildlife Service). Another reason is that both plans have broadly similar goals such as hydrologic restoration, water supply, and sustainability. At the root of both systems is activity by the Corps of Engineers. In the 1950's, the Corps delivered the Central and South Florida Project (C&SF) re-engineering water flow throughout central and southern Florida for hurricane protection, urban and agricultural water supply. Severe degradation of natural systems at the tip of Florida - coral reefs and the Everglades famed "*river of grass*" - resulted from the lack of fresh water and concentrations of pollutants (Douglas, 1986). The causes of Louisiana's degrading coast are manifold. Most significantly the Corps' push to levee the Mississippi river to protect communities and agriculture from flooding and the 10,000+ miles of canals cut through the marsh for oil and gas exploration done by a billion dollar industry. The Mississippi River freshwater that reaches the marsh has only 30% of the sediment that it held prior to substantial damming activities mostly outside of Louisiana's jurisdiction in the Midwestern agricultural region.

In 2000, both Louisiana and Florida invested heavily in securing federal funding for their large-scale restoration plans through Congress. Florida chose to propose one

comprehensive program through WRDA while Louisiana proposed to fund its existing state program through a funding mechanism within the Conservation and Reinvestment Act (CARA). CARA would have given states with offshore oil and gas drilling annual fixed revenue from extraction activities meant to be spent on the environment. This revenue would have been *direct*, meaning that the federal government would have had limited say on how Louisiana spent the money before it was spent besides directing it for "*the environment*". Louisiana already received royalties, but CARA would have ensured that those royalties would have been proportionate with the extraction activity instead of the prior arrangement whereby these funds are allocated to all coastal states through an application process. Additionally, Congress would not have access to spend this money for other purposes or the option to not spend it. The bill meant to circumvent the costly delays that both Florida and Louisiana would eventually encounter by waiting for congressional funding for projects through WRDA. In the end, CERP was approved and the CARA funding mechanism was not. Louisiana went on to follow in CERP's footsteps by putting forth a comprehensive ecosystem restoration plan through WRDA though it is still waiting to see any movement.

Before Hurricane Katrina hit, the state of Louisiana was struggling to pass its near term LCA projects through Congress. One can only speculate as to which pathway for federal funding of each state's restoration plan was more effective in the end. The crisis and later change in administration from Bush to Obama served to help Louisiana secure federal funding. While the change in administration certainly did not harm Florida, it certainly did not provide the same benefits as the Bush administration. The Second

Biennial Review of CERP's progress performed by the independent scientific review panel of the National Academy of Sciences in 2008 reads:

> *The committee concludes that the CERP is bogged down in budgeting, planning, and procedural matters and is making only scant progress toward achieving restoration goals. Meanwhile, the ecosystems that the CERP is intended to save are in peril, construction costs are escalating, and population growth and associated development increasingly make accomplishing the goals of the CERP more difficult. Lack of timely restoration progress by the CERP, to date, has been largely due to the complex federal planning process and the need to resolve conflicts among agencies and stakeholders.*
>
> *However, future restoration progress is likely to be limited by the availability of funding and the current authorization and funding mechanisms. In periods of restricted funding and limited capability to move forward on many fronts, the ability to set priorities and implement them is critical. Much good science has been developed to support the restoration efforts, and the foundations of adaptive management have been established to support the CERP. To avert further declines, CERP planners should address major project planning and authorization hurdles and move forward expeditiously with projects that have the most potential for contributing to natural system restoration progress in the South Florida ecosystem.*

A third biennial review in 2010 echoes the same issues. The lesson here is two-fold and not new. Vigmostad (2005) in her comparison of seven large-scale restoration programs including CERP summarizes "*Congress will not write a blank check*" and "*ecosystem restoration plans designed to include federal funds will be unsuccessful if the authorized funds are not forthcoming*". The question then remains, if the federal government played a role in creating these problems, how can it provide funding, technical expertise, and other resources in a timely manner while satisfying congressional demands for transparency and national interest? One funding option for large-scale ecosystem restoration efforts like those of CERP, the CPRA, and the Great Lakes is omnibus legislation

wherein Congress commits a certain level of investment in these large-scale ecosystems as an expression of nation interest. Another option would be to secure the type of executive support that the Gulf Coast has achieved from the Council on Environmental Quality. Whatever the solution may be, it may be found sooner if like many parallel technical issues facing these ecosystems the issue is addressed by epistemic communities. .

Expectations and Distrust

One aspect of turnover that is widely known is that members of the DOTD who were slated to join the OCPR either declined to do so, or made the move only to return to their home office a short time later. Perspective on this differed by whether the participant was a member of the OCPR or not and it indicates that the slightest perceived failure - in this case the failure of the OCPR to retain its employees – is being scrutinized. The implications for such observation are manifold. One idea which SSA consultants tried to emphasize in their work for the state, and it is evident when speaking to members of the OCPR, is that mistakes are inevitable and are to be regarded as learning opportunities. "*If you're not making mistakes, you aren't pushing the envelope*" (Slaughter, 2007). Those outside the process may not be receiving this message and may judge more harshly.

> *"Some of the people who were slated to come over they either didn't come or didn't stay very long. I'm talking about a fairly small fraction of the organization, but we're still working to get up to full strength. …Some people just had problems with change. Others may have thought that's really not what they wanted to do. We do have a very heavy workload here and perhaps they didn't have such a workload where they came from but for various reasons they chose not to come, but a vast majority of folks who were placed with the organization are still here."* —Participant

Another implication of increased scrutiny is that an unintended lack of transparency

could be construed as purposeful and call into question the process. For example, Integrated Planning Team members emphasized the rushed pace and at times contentious nature of the planning process. Some outside the process felt that it was done behind closed doors in order to exclude certain segments of the scientific community.

At a broader level is the issue of Congressional trust. Casting a shadow over Louisiana congressional appeals for a short time and perhaps even still is the *Pelican Brief* or the Hurricane Katrina Disaster Relief and Economic Recovery Act. The Act presented to Congress by junior senators Landrieu (D-LA) and Vitter (R-LA) sought $250 billion dollars in addition to the $63 billion dollars already authorized by Congress. For that price the complete roster of Coastal 2050 projects could have been restored 18 times. The Pelican Brief would have waived National Environmental Protection Act and Clean Water Act provisions for Corps projects in the state as well as eliminated the thirty percent state cost-share.

Many times over, high level participants spoke of ways in which the state was working to prove its credibility as a recipient of federal funding using as examples the success of specific projects such as flood walls in New Orleans holding up against the surges of Hurricanes Gustav and Ike. The letters from Senator Vitter to the Corps also serve in a way to provide reason for the state to directly receive money that would otherwise go to the Corps by highlighting incidents of misappropriations of funding by the Corps. In order to address congressional limitations, Louisiana has reached out to other states emphasizing that the same issues plaguing Louisiana currently could prove potentially troublesome for others who rely on the Corps for flood protection (Little Hoover Commission, 2005).

Highlighting financial mismanagement, failed levees, skewed cost-benefit analyses, and poor performance history in wetland restoration on the part of the Corps is in some way, a means of painting the state as a victim of bureaucracy and establishing the case for direct federal funding of an established state-implemented restoration and protection program in Louisiana.

> *"It all comes back to putting the people in charge that you either trust 'em or you don't. If you don't trust 'em they don't need to be in those jobs …I've never had any problem firing anybody for not performing. Whether it be a consultant that you sign an agreement with or a maintenance worker on the levee, you do what you're paid to do or 'see ya', ya know? I understand that in the past because of …the political history not the efforts … but our political history has been that we've not always done things right. We've not always done things above board. 'It's Louisiana, you know' and I hear that until I'm sick of it! At some point in time,…Give Louisiana a chance. We've got a governor, by god, I mean, 200% has talked about ethics and reform and has made moves and put people in positions that should be able to do things properly. Trust us! … everyone is willing to accept the compromises here and there and at the end of the day they see the greater benefit. … Audit my books. I don't care if you look once a week at 'em. …We've earned where we are right now. We've earned not being trusted and somewhere along the line I hope that someone gives us a chance to do it the right way."*

Mass resignations from public boards due to a new ethics law that required full disclosure of personal assets may signify that not everyone welcomes audits and increased scrutiny (Lundin, 2008).

Willingness to make Hard Decisions

A challenge in assuming leadership is having the willingness to make hard political decisions. Participants questioned whether the state would have the fortitude when necessary. Several specific incidents indicated that, as one participant put it, "*The jury's still out*." Statewide minimum zoning standards passed by the legislature soon after Katrina

were repealed following appeals by the homebuilder lobby. One Parish was able to kill a significant freshwater diversion project in its jurisdiction because of what they saw as adverse impacts. In a conflict with DNR over a specific project for the beneficial use of dredge material, the Corps found a politically influential individual within the maritime transportation industry to approach the highest level of state government to say that the project would harm the marine transportation industry. As a participant commented, "*There's a fairly short memory in a number of special interest groups and the public in general"*.

Doing Business with the Corps

As a consumer of Corps products and services, one of the tasks for the CPRA is to negotiate the quality of work within the time frame it desires. In order to achieve this, the state must transition from a mere consumer of Corps services to full partner. The Corps and the state already work very closely through project management plans to allow the state to make changes. The state has several trump cards up its sleeve to guarantee results. It can refuse to provide right of ways for projects, and it can also use the federal consistency clause from the CZMA to veto components of a project or a project altogether.

Despite these powers, many participants were quick to point out the need for improved relations between the Corps and the State. One participant remarked, "*It's not like based on the experience we have that we would pick this agency to work with*." In many ways, now that the state is improving its in-house project planning and management capabilities within the OCPR, the Corps is becoming a rival institution. Participants spoke of the reorganizing of state institutions as "*taking control of our destiny*," "*taking control of the*

trajectory of change," and ultimately that "*coastal restoration should be a state responsibility carried out with federal funding*." The Corps was seen as a major roadblock. "*We can't save Coastal Louisiana under [Corps oversight]." "We can't take control of our destiny because of the Corps*."

In addition to those categories of challenges, specific incidents were also highlighted. Most recently Louisiana's junior senator sent a letter to the Commanding General of the Corps to express outrage that slightly more than thirty million dollars in 2006 Emergency Supplemental Appropriation funds meant for the repair and improvement of non-federal levees in Terrebonne Parish two years later still had not been received. Not only had the funds not been received, but the letter alleged that the funds had already been spent on a mentoring program with a state university. The senator claimed that flooding in the parish this past storm season could have been prevented had those repairs been made. In 2006, there was also the case of faulty pumps purchased through a bidding process that was accused of being rigged. Corps contractors had copied and pasted specifications for pumps from a specific firm instead of using specifications required as estimated to do the job. The firm whose specifications were used had already bought the engines used to power the pumps before it had won the bid. In this instance, it does seem that the state is willing to step up and put pressure on entities like the Corps regardless of the outfall.

The perceived relationship with the Corps seems to be better at the local level, for example with members of the Mississippi Valley District headquarters in New Orleans than with the Corps at the national level. "*You can either stand up there with me or I can say that I did this in spite of the Corps. This colonel, has accepted that challenge. He's told me, if*

someone's holding up your project, you call me. If someone's not cooperating, you call me. When I go to the Corps for a meeting, there's thirty people there. It's crazy that there has to be thirty people, but it's 30 people all hearing the same message." Ideally the state would like an office of Corps members located in house to work solely on Louisiana coastal restoration. "*We are forming all sorts of partnerships with the corps after Katrina. That relationship is getting somewhat better. It's not what it needs to be.*"

Maintaining Focus and Momentum

Challenging the continued focus and momentum of the CPRA are changing administrations both nationally and at the state level, short memory of the public and special interests, operational barriers, and managing controversial components of previous plans or legacy issues.

Changing Administrations, Partisanship, and Public Support

A unique challenge to mandated collaboratives is sustaining the mandate. There was a desire among participants that the issuing crisis creating the need for collaboration would create focus and momentum over the long term, transcending administrations, and partisan politics. The organization has already undergone its first change in administration and has fared well. The mandate for the CPRA was created under the Blanco administration in 2005, and by 2007 saw the governorship change hands and parties. The Governor's Executive Assistant on Coastal Activities, Sidney Coffee, was replaced with Garret Graves, a decade long veteran of Congressional committees. The Governor's Advisory Commission largely stayed the same. A significant turnover of appointed officials took place. Of the

three members of the existing Executive Implementation team only one remained after the transition. In fact, the secretary of the DNR was one of only two Secretaries to remain under the Jindal administration. The other was the Secretary of the Department of Revenue. Again in 2008 it seemed there was potential for another change when the recently elected governor made the short list for potential vice presidential candidates for the Republican Party in the 2008 presidential election. When asked if this was a concern for the CPRA process, participants did not express concern. One even reported that like other colleagues, having a Louisiana governor as vice president might raise Louisiana's issues in the next presidential administration[16]. Participants shared confident optimism that this organization will transcend partisan politics over the long term.

Operational Barriers

Barriers to operations can be as small as mail servers from different agencies not being set up to allow addresses from other agencies to as large as employees of different agencies having different requirements and restrictions on the amount of time they can work. Participants reported a number of operational barriers including the previous two examples in addition to the following: changing and co-location of offices, staff vacancies,

[16] The Democratic winner of the 2008 election, Barack Obama, split what was once a solidly Republican voting bloc in the South - except for 1976, 1992 and 1996 when *Southern* governors Jimmy Carter and Bill Clinton won the presidency. Louisiana's nine electoral votes went to John McCain the Republican candidate. A senior research associate at the Joint Center for Political and Economic Studies in Washington, said of the new administration, "The South is so out now...[Obama] is not going to have a Southern mentality, and neither is anybody around him." "There won't be a bunch of James Carvilles in the White House," in reference to the Louisianian who was President Clinton's top strategist in the 1992 campaign. Instead the Chicago consultant, David Axel rod will be "Obama's Carville" who the research associate calls -- "an urban guy from the North with an urban Northern guy's sensibilities." (Tilove, November 5, 2008).

field staff integration, and turnover. These challenges all have the potential to aggravate the challenge of a heavy workload and a high stress environment, but participants did not seem overwhelmed.

> *"In our office we could easily have more staff than what we have now. We're addressing that in the next legislative session. We're going to lay the groundwork to get some more positions approved - more personnel and more funds. It's just a small step, but we're getting better as we go. …at some point in the future we all kind of agree that this office of coastal protection will have to have some higher level agency status, a stand alone agency with independent funding instead of an office within another branch of state government."*

Prior to the storms of 2005, the LDNR was facing loss of trained staff to the private sector and to the Corps which offered better pay and benefits (Slaughter, 2007). Post-storm, the creation and elaboration of the OCPR's duties created more positions than staff members available from home agencies. Budget cuts prompted the Governor to impose a halt on agency expenditures. Although Governor Jindal exempted the OCPR from a hiring freeze, allowing it to fill those positions, the state still has to contend with contractors from the private sector attempting to lure away trained staff. Leadership within the OCPR recognized that vacancies are prohibiting them from working at full capacity and added to the stress and workload of current employees. They did not however see that filling these vacancies would be difficult. They reasoned that the organization had a lot of pull in terms of attracting not only the best and the brightest, but a sufficient quantity of applicants as well, particularly with the state of the economy.

> *"Our employees work at a higher pace, quicker and more demand of them and we're not going to settle for people not getting things done and not meeting schedules, a different culture than what a lot of people are used to in state government. Some people will leave us, but we'll get better people to fill these positions. This is one of the biggest civil engineering feats in the*

world. There are people around the world who want to work with us just because of that. So I think we'll have a motivated group of people who are here because they want to work on this project. Those who are not willing to work will leave."

The very challenges that employees face, are the same opportunities that they look forward to. Participants, after talking about the difficulties of their jobs, would often follow up with comments that explained their passion for their work, or how their job satisfied the need for an intellectually stimulating environment. These challenges are not always welcomed, "*There are some days where I really don't want to fight that battle and other days it's like, 'let's go!'"*

Legacy Issues

The CPRA framework is yet another layer in forty years of coastal restoration efforts. Participants in the process have developed a certain callous to previous restoration plans: *"If we had used all of that paperwork [from previous plans] to rebuild the coast we probably would have had it done by now*". Others however emphasize these plans are "*additive*" and acknowledge that today's efforts have built off of much of the baseline monitoring that was done for previous plans. "*Why would we throw out what had been good work?*" said one participant.

Not all past projects or program features are worth keeping. What participants called "*bad projects*" have survived,as residuals of previous restoration frameworks that either need to be reworked or thrown out altogether. Many participants thought "*good science*" would address issues of that sort, but then it became clear that the definition of good science was not uniform across all participants. One element of previous restoration

frameworks that repeatedly came up is a decision tool developed during the Breaux Act used to select projects for the final Project Priority List to be funded by Congress, the Wetland Value Assessment (WVA).

> *"As used, WVA analysis provides some standard for comparison, but it is not a true scientific assessment. Of course those who actually do WVA analysis would argue this point, but the fact is best professional judgment – no matter how good – is not a data rich, process-based method for analyzing potential project benefits. This has been a long-standing point of contention between the academic community and the agency personnel who do the work. One of the many purposes of the state's newly created Center for Applied Engineering and Science is to develop the tools that will allow for a more comprehensive, data rigorous method for forecasting not just individual project benefits but the basin-wide or even coast-wide benefits of projects working together."* –Participant

Every participant who could be described as coming from the scientific community perspective and even some agency employees expressed concern that what they saw as a "*relatively quick qualitative evaluation of project alternatives*" was being sold as real science. Said one participant

> *"These are very rudimentary tools. They were developed by the agencies [as] decision assistance tools, not science tools. I helped set that up originally, because there were no tools in the early nineties…I always thought it would be a stopgap thing…but now it has become enshrined and now it's almost seen as science. I always thought of it as being a simple comparison tool, but it has now taken on a certain religious meaning or something."*

The creation of the WVA is a simplification of Habitat Evaluation Procedures and Habitat Suitability Indices that were then modified for coastal habitats. The results are extrapolations over time and space that give a rough estimate of the benefits of one project

over another. In one hour, it is estimated that a decision maker can assess one acre of habitat.

Conclusion

The various challenges and opportunities facing the CPRA are all aspects of building state capacity and maintaining momentum. The experience of the Integrated Planning Team in drafting the first Master Plan represents the first steps towards solidifying the connection between the coastal restoration perspective and the coastal protection perspective. Funding constraints tie state activity firmly to the congressional funding process through the Water Resources Development Act and thus to the Corps. Securing billions of dollars from a Congress skeptical of both the state's efforts and the Corps' ability to restore wetlands while competing with a rival effort for those dollars is no small task. Yet, with these challenges come opportunity. Congressional funding is added incentive to maintain transparency, stay on task, and prove commitment through making politically unpalatable decisions. Both CERP and the CPRA are working on parallel issues, though contextually distinct, which may offer opportunities for realizing collaborative advantage. Relationships between the relevant decision-makers, not just the scientists need to be fostered. The newly established OCPR, not yet operating at full capacity, has the potential to build capabilities in planning and management of restoration and protection features that rival if not supercede the work of the Corps.

Challenging the continued focus and momentum of the CPRA are changing administrations both nationally and at the state level, short memory of the public and

special interests, and managing controversial components of previous plans or legacy issues. The administrative changes that have taken place occurred fairly early on in the process, when a sense of urgency still infused the political process and before the exact structure was in place and thus anything to affect. Time will fade the sense of urgency from the public memory and weaken the resolve to refuse acquiescing to special interests. Legacy issues continue to divide interests. The continued use of the WVA, serves as an indicator of exclusion from the process.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

This thesis sought to expand knowledge on newly formed large-scale ecosystem collaborative governance processes by identifying the unique characteristics of the CPRA framework and examining the challenges and opportunities facing policy and project implementation within the first few years of its mandate.

The major hurdles to coastal restoration and protection are political; however they are not all what the literature suggests they would be. While the literature suggests that data and technology, disjointed agency workings, and legal authority are the usual weaknesses at the state level, this is not the case in Louisiana. The state has over forty years of data collection and technology developed by strong coastal science programs within the state university system, and the private sector in the nation's largest coastal laboratory. By combining the DNR and the DOTD offices under the OCPR, the state has addressed disjointed agency workings. By establishing strong leadership at the executive level, it has given itself the legal authority to address inconsistencies at multiple levels of government. The question is whether it will choose to to do so in cases where such action is politically unpopular but necessary for the overall goals of the master plan.

Whereas direct public accountability has been noted as a strength in the state management of water resources, in the context of restoration and protection it works to stifle necessary but politically unpalatable decisions. There are many instances where restoration and protection techniques create contention. Levee siting has the potential to result in the taking of private property. Diversions change flow regimes affecting

development and alter salinity gradients thus affecting oyster leases and other fisheries. Every participant interviewed suggested that at some point the state will need to take decisive and bold action to identify which areas will receive what level of protection, the idea being that some populations would receive more protection than others and some no protection at all. This triage concept is found in state planning documents, however no significant movement has been made in this direction. Without action, the decision will be made for the state by the next disaster. It is the responsibility of the executive leadership to address the great white elephant in the room of restoration and protection.

There are many similarities between the Coastal 2050 and the CPRA frameworks. The initiating crisis that supplied the CPRA with the critical momentum to ensure consistency across multiple levels of government and gain necessary national support in ways Coastal 2050 efforts were unable to, will eventually fade from memory. At that point in time, without a sense of urgency, a natural tendency toward bureaucracy like that experienced by Cal-fed will only be countered by leadership. Structure and incentive provided at the national level by the CEQ's Roadmap for the Gulf Coast may provide leadership or act as another layer of bureaucracy. It is too early in the process to tell. One certainty for the state is that another disaster will happen. Since the Civil War, disasters have occurred roughly every thirty years: the Great Flood of 1927, Hurricane Betsy in 1965, and Hurricane Katrina in 2005. It may turn out that yesterday's solutions are the problems future policy makers will have to address. Instilling an adaptive nature, as the CPRA framework has done, is essential to nimbly address future challenges.

As other large-scale ecosystem governance structures are established and seek federal support, the CERP and CPRA experience with the WRDA funding process indicates that a new avenue needs to be created to support those structures nationally. Relationships can be fostered among policy makers from different systems now to encourage that discussion. Time and continued transparency will work to eliminate the distrust at the federal level of Louisiana Congressional appeals for funding.

Close collaboration with a special in-house office of the Corps may preclude efforts to reform the Corps as an institution through Congress, especially if the state continues to build its planning and management capabilities. Relationships developed with the Corps at the New Orleans and Mississippi Valley District level seemed more positive than the state's relationship with members of the Corps at the national level. Unless another path if forged, working with the Corps is necessary even if not desired.

Future Research

Future research directions suggested by the findings of this thesis include the following topics. Both CERP and CPRA are currently bogged down in the Congressional funding and authorization process for their major restoration programs. Is there value in replacing competition with collaboration in going after such funding? How can similar efforts like the Everglades and CPRA work together on a policy level to avoid competition for federal dollars or seek other sources of funding? Do other efforts already exist that can highlight the importance of coordination among major restoration programs that allows

resource sharing, avoids competition for restoration dollars, and publicizes shared issues such as hypoxia?

Public awareness is one key to public support of large-scale diversions and other potentially divisive restoration techniques. Research has been conducted comparing respondents' comfort level in explaining drivers of coastal wetland loss and methods of coastal restoration. Mail surveys were conducted to compare the upper Mississippi River Basin and the Lower Mississippi River Basin. Studies to assess levels of public awareness strictly within Louisiana at the regional level – South versus North, South East versus South West – might help public awareness campaigns like America's Wetland better address public knowledge gaps. A survey of Louisiana residents' coastal knowledge might help assess general awareness of the population served by these projects.

Considerable change took place in the OCPR structure over the course of three years. Why? How? What was the process by which the structure was decided upon and how do members of the CPRA anticipate it changing or evolving over time? What norms are being cultivated in the OCPR as an institution?

BIBLIOGRAPHY

Alford, J. (2006, January 7). Repeating History *The Gambit*.

Ardoin, L. (2010). Levees in Louisiana and Certification: Louisiana Transportation Research Center.

Bardach, E. (1998). *Getting agencies to work together: the practice and theory of managerial craftsmanship* Washington, D.C.: Brookings Institution Press,.

Barry, J. (1997). *Rising Tide: the great Mississippi flood of 1927 and how it changed America*. New York: Touchstone.

Bart, H., Bea, R., Chambers, J., Day, J., Gagliano, S., Hester, M., et al. (2007). *Open Letter of Louisiana Scientists and Engineers on Coastal Planning*.

Blum, M. D., & Roberts, H. H. (2009). Drowning of the Mississippi Delta due to insufficient sediment supply and global sea-level rise. *Nature Geoscience, 2*(7), 488-491.

Borrelli, M., Blanton, B., Bush, D., Coburn, A., Dally, B., Fenster, M., et al. (2007). *Expert Panel Assessment of Coastal Hazard Mapping in the Southeastern U.S.* Paper presented at the First Cullowhee Coastal Conference

Bourne Jr., J. K. (2004, October). Gone with the Water. *National Geographic*.

Britsch, L. D., & Dunbar, J. B. (1993). Land Loss Rates: Louisiana Coastal Plain. *Journal of coastal research, 9*(2), 324-338.

Burby, R., Clipp, A., Daigle, D., Davis, D., Davis, M., Emmer, R., et al. (1999). *No Time to Lose: Facing the Future of Louisiana and the Crisis of Coastal Land Loss*. Baton Rouge, LA: Coalition to Restore Coastal Louisiana,o. Document Number)

Buskey, N. (2008, November 11). Terrebonne Parish projects to undergo million-dollar studies. *Houma Today*,

Coastal Issues (2007). [streaming internet]. In Council for a Better Louisiana (Producer), *Focus on Louisiana*: Cox.

Colten, C. (2005). *An Unnatural Metropolis: wresting New Orleans from nature*. Baton Rouge, LA: Louisiana State University Press.

Couvillion, B. R., Barras, J. A., Steyer, G. D., Sleavin, W., Fischer, M., Beck, H., et al. (2011). *Land Area Change in Coastal Louisiana from 1932 to 2010: U.S. Geological Survey Scientific Investigations Map 3164, scale 1:265,000*. Retrieved. from.

Danter, K. J., Griest, D. L., Mullins, G. W., & Norland, E. (2000). Organizational Change as a Component of Ecosystem Management. *Society & Natural Resources, 13*(6), 537-547.

Davis, M. (2008). Whole New Ballgame: Coastal Restoration, Storm. Protection, and the Legal Landscape after Katrina. *Louisiana Law Review, 68*(2), 419-441.

Derthick, M. (2007). Where Federalism Didn't Fail. *Public Administration Review, 67*, 36-47.

Douglas, M. S. (1986). *The Everglades: River of Grass*. Miami: Banyan Books.

Emanuel, K. (2005). *Divine Wind: the history and science of hurricanes*. Oxford: Oxford University Press.

Feagin, R. A. (2009). Does vegetation prevent wave erosion of salt marsh edges? *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, 106*(25), 10109-10113.

Feagin, R. A., Mukherjee, N., Shanker, K., Baird, A., Cinner, J., Kerr, A., et al. (2010). Shelter from the storm? Use and misuse of coastal vegetation bioshields for managing natural disasters. *Conservation Letters, 3*(1), 1-11.

Federal Trade Commission. (2006). *Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases*. Retrieved. from.

Ford, M. A. (2007). After the Storms: Restoration in a Post-Catastrophic Hurricane Landscape. *National Wetlands Newsletter, 29*(5), 44.

Gedan, K., Kirwan, M., Wolanski, E., Barbier, E., & Silliman, B. (2010). The present and future role of coastal wetland vegetation in protecting shorelines: answering recent challenges to the paradigm. *Climatic Change, 106*(1), 7-29.

Graf, W. L., Beissinger, S. R., Blum, L., Boesch, D. F., Davis, F., Driscoll, C. T., et al. (2008). *Progress Toward Restoring the Everglades: The Second Biennial Review*. Washington, D.C.: National Research Councilo. Document Number)

Gunderson, L., Holling, C. S., & Light, S. S. (1995). *Barriers and bridges to the renewal of ecosystems and institutions*. New York: Columbia University Press.

Heikkila, T., & Gerlak, A. K. (2005). The Formation of Large-scale Collaborative Resource Management Institutions: Clarifying the Roles of Stakeholders, Science, and Institutions. *Policy Studies Journal, 33*(4), 583-612.

Hines, N. W., & Smith, J. P. (1973). *Rational Institutional Arrangements for Water Resources Management*. Iowa City, Iowa: Iowa State Water Resources Research Instituteo. Document Number)

Hobbs, R. J., Hallett, L. M., Ehrlich, P. R., & Mooney, H. A. (2011). Intervention Ecology: Applying Ecological Science in the Twenty-first Century. *BioScience, 61*(6), 442-450.

Independent Levee Investigation Team. (2006). Chapter Thirteen: Organized for Success. In *New Orleans Levee Systems*.

Karkainnen, B. (2002). Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism. *Virginia Environmental Law Journal 21*.

Katrina's Impact on the U.S. Economy. (2005). 2008, from http://www.economywatch.com/world_economy/usa/katrina-impact-us-economy.html

Kelman, A. (2003). *A River and Its City: the nature of landscape in New Orleans*. Berkeley: University of California Press.

Kesel, R. H. (1989). The role of the Mississippi River in wetland loss in southeastern Louisiana, U.S.A. *Environmental Geology, 13*(3), 183-193.

Kumar, K. (1986). *Conducting Key Informant Interviews in Developing Countries* (No. 13). Washington, D.C. : United States Agency for International Developmento. Document Number)

LCPRA, Brown Cunningham Gannuch, I., Shaw Environmnetal & Infrastructure, I., & Halcrow, I. (2006). *Louisiana Comprehensive Coastal Protection Master Plan: Plan Formulation Report*. Baton Rouge, LAo. Document Number)

Light, S. S., Gunderson, L., & Holling, C. S. (1995). The Everglades: Evolution of Management in a Turbulent Ecosystem. In *Barriers and Bridges to the Renewal of Ecosystems and Institutions* (pp. 103-168). New York: Columbia University Press.

Little Hoover Commission. (2005). *Still Imperiled, Still Important: The Little Hoover Commission's Review of the CALFED Bay-Delta Program* o. Document Number)

Louisiana Coastal Wetlands Conservation and Restoration Task Force. (2003). *Breaking New Ground in Louisiana: The 2003 Evaluation Report to the U.S. Congresson the Effectiveness of the Coastal Wetlands Planning, Protection and Restoration Act Projects*. Baton Rouge, LA: Louisiana Department of Natural Resourceso. Document Number)

Louisiana Coastal Wetlands Conservation and Restoration Task Force, & Wetlands Conservation and Restoration Authority. (1998). *Coast 2050: Toward a Sustainable Coastal Louisiana*. Retrieved. from.

Louisiana Department of Wildlife and Fisheries. (2005). *The Economic Benefits of Fisheries, Wildlife and Boating Resources in the State of Louisiana.* . Baton Rouge, LAo. Document Number)

Louisiana Department of Wildlife and Fisheries. (2006). *2005-2006 Annual Report*. Baton Rouge, LAo. Document Number)

Lundin, B. (2008, Wednesday, July 2). Officials resign amid ethics chaos*. Daily Comet*,

McBride, M. G., & McLaurin, A. M. (1995). The Origin of the Mississippi River Commission. *Louisiana History: The Journal of the Louisiana Historical Association, 36*(4), 389-411.

McBride, R. A., Taylor, M. J., & Byrnes, M. R. (2007). Coastal morphodynamics and Chenier-Plain evolution in southwestern Louisiana, USA: A geomorphic model. *Geomorphology, 88*(3-4), 367-422.

Miller, C., & Holloway, M. (2006). Public Awareness and Perceptions of Wetland Loss in Coastal Louisiana.

National Marine Fisheries Service. (2005). *Fisheries of the United States,* . Retrieved. from http://st.nmfs.gov/st1/fus/fus04/index.html.

National Research Council. (2005). *Drawing louisiana's New Map: Addressing Land Loss in Coastal Louisiana*: National Academies Press.

Office of Management and Budget. (2004). *Performance and Management Assessments: Army Corps of Engineers Non-regulatory Wetlands Activities*. Retrieved. from http://www.whitehouse.gov/omb/budget_fy2004_pma.

Osborne, D., & Gaebler, T. (1993). *Reinventing Government: how the entrepreneurial spirit is transforming the public sector*. New York: Penguin.

Public Broadcasting System. (2002). Losing Ground, *NOW with Bill Moyers*: Public Affairs Television.

Raelin, J. A. (1980). A Mandated Basis of Interorganizational Relations: The Legal Political Network. *Human Relations, 33*(1), 57-68.

Reuss, M. (1982). The Army Corps of Engineers and Flood-Control Politics on the Lower Mississippi. *Louisiana History: The Journal of the Louisiana Historical Association, 23*(2), 131-148.

Robertson, P. J., & Choi, T. (2010). Ecological Governance: Organizing Principles for an Emerging Era. *Public Administration Review, 70*, s89-s99.

Schleifstein, M. (2002, June 23-27). Washing Away. *Times Picayune*, from http://www.nola.com/washingaway/

Slaughter, C. (2007, September 12). *Update on CPRA Organizational Structure.* Paper presented at the Governor's Advisory Commission on Coastal Protection, Restoration, and Conservation Meeting Minutes, Baton Rouge.

Stoerker, H. E. (1992). The State Perspective. In M. Reuss (Ed.), *Water resources Administration in the United States: Policy, Practice, & Emerging Issues. Selected Papers from the American Water Resources Association National Forum on Water Management Policy* (pp. 274-282). East Lansing: American Water Resources Association / Michigan State University Press.

Technology Assessment Division. (2008). *Selected Louisiana Energy Statistics* Retrieved. from http://dnr.louisiana.gov/sec/execdiv/techasmt/energy_facts_annual/LEF_2008.pdf.

Templet, P. H., & Meyer-Arendt, K. J. (1988). Louisiana wetland loss: A regional water management approach to the problem. *Environmental Management, 12*(2), 181-192.

U.S. Army Corps of Engineers. (1963). *Morgan City, Louisiana and Vicinity*. New Orleans, LA: New Orleans District,o. Document Number)

U.S. Army Corps of Engineers. (2003). *Water-borne Commerce of the United States. Part 5 – National Summaries*. Retrieved. from http://www.iwr.usace.army.mil/ndc/wcsc/pdf/wcusnatl03.pdf.

U.S. Army Corps of Engineers. (2004). *Louisiana Coastal Area Study: Main Report*. Retrieved. from.

U.S. Army Corps of Engineers. (2010). Significant Laws and Programs Related to the Army Corps of Engineers Authority in Designing, Building, and Maintaining Levees. Retrieved July 17 2011, from http://www.usace.army.mil/LeveeSafety/Background/Documents/prog_timeline.pdf

U.S. Fish and Wildlife Service. (2011). Endangered Species Program: Species Search. Retrieved July 16, 2011, from http://www.fws.gov/endangered/species/

U.S. Government Printing Office. (2004). U.S. Government Budget for Fiscal Year 2004. 2011, from http://www.gpoaccess.gov/usbudget/fy04/browse.html

Van Heerden, I. L., & Bryan, M. (2006). *The Storm: what went wrong and why during Hurricane Katrina*. London: Penguin.

Vigmostad, K. E., Mays, N., Hance, A., & Cangelosi, A. (2005). *Large Scale Ecosystem Restoration: Lessons for Existing and Emerging Initiatives*. Washington, D.C.: Northeast Midwest Instituteo. Document Number)

Weber, E. P. (2009). Explaining Institutional Change in Tough Cases of Collaboration: Ideas in the Blackfoot Watershed. *Public Administration Review, 69*(2), 314-327.

White, N. (2009). *Institutionalizing Alternative Dispute Resolution: Insights from the experiences of state level environemental and Public Policy Offices* Unpublished Dissertation, University of Michigan, Ann Arbor, MI.

Wondolleck, J. M., & Yaffee, S. L. (2000). *Making Collaboration Work: Lessons from Innovation in Natural Resource Management*. Washington, D.C.: Island Press.

Yeoman, B. (2010). Are We Losing Louisiana: the view from 500 ft [Electronic Version]. *One Earth*. Retrieved 24 July 2011,

Yodis, E. G., Colten, C., & Johnson, D. C. (2003). *Geography of Louisiana*. Boston: McGraw Hill.

Young, R. S. (2008, October 5-9). *Restoring coastal Louisiana will not guarantee the protection of infrastructure from storms; policy makers should also plan for strategic relocation of critical infrastructure and vulnerable communities* Paper presented at the Geological Society of America Annual Meeting, Houston, TX.

APPENDIX A

1. I find it interesting that many people working within the master planning process have worked on many sides of the table. In order to better understand the perspective that you bring to the table, I'd like to know your education and work history. Could you summarize for me any education or professional training you've had and what jobs you've held leading up to your current position?

2. Cal-Fed, Comprehensive Everglades Restoration Program, and the Chesapeake Bay Program are all efforts that have been compared to the LCPRA. Are you familiar with these efforts and do you think this is a fair comparison? How is the LCPRA similar and/or different and why?

3. Prior to the current master planning process were Louisiana's Coastal Zone Management Program, CWPPRA, Coastal 2050, and the LCA study. This is not a complete list by any means, but generally speaking, each of these was an attempt to be more comprehensive than the restoration process that preceded it. What sets the CPRA apart from its predecessors is that it integrates the siting and implementation of coastal restoration features with that of protection features. It also attempts to coordinate among a number of different entities to a level unattained by previous efforts. Can you think of any other ways that the LCPRA is different from previous restoration plans?

4. I am interested in how the master planning process is influenced by the challenges it faces and how it may create challenges. I'd like to talk some about the challenges that [YOUR ORGANIZATION] has had to face with implementation of the master plan and what challenges may exist in [YOUR ORGANIZATION'S] future in working the implementation of the master plan. What were some challenges that [YOUR ORGANIZATION] had to address after the inception of the master plan?

5. Can you think of any opportunities that [YOUR ORGANIZATION] has been able to take advantage of since its inception? Can you think of any opportunities that [YOUR ORGANIZATION] might take advantage of in the future that it hasn't been able to yet?