AFTER THE STORM: RESTORING AMERICA'S GULF COAST WETLANDS. NATIONAL WETLANDS NEWSLETTER SPECIAL REPORT.

Restoring Coastal Louisiana: Dispelling Myths and Seeking Opportunities

In the weeks and months following the hurricanes, Americans sought to understand the catastrophe's causes and consequences—but, says the author, they were often misled by inaccurate reports and ill-conceived theories. Here, a marine ecologist and a New Orleans native dismisses the most persistent fallacies.

BY DONALD F. BOESCH

As a native New Orleanian, coastal scientist, and advisor to state and federal agencies on the restoration of Louisiana's coast, I followed with intense interest the catastrophic events that played out along the Gulf Coast over that four-week period in August and September. Hurricanes Katrina and Rita were immense and powerful storms that drew national and international attention not only to physical destruction, human suffering, and governmental failings, but also to the deteriorated state of Louisiana's coastal wetlands and the need to restore them. From the press and assorted self-proclaimed experts I heard many inaccuracies and misconceptions about the region, what happened, and what the future portends—myths, if you will. Here, I will try to dispel some of these myths, using this analysis as a jumping-off point for a new perspective on how the restoration of Louisiana's doubly damaged ecosystems could now proceed.

Myths Dispelled

Many myths developed as a result of naive and sensational reporting, aided by pundits and op-ed writers in the pursuit of their own agendas. Some of these myths are being gradually dispelled as more information becomes available, but many still enjoy healthy circulation:

1. *The French colonists established New Orleans in a risky place.* In locating the city intended to control access to the Mississippi River, Bienville carefully selected a site on relatively high ground along the river's banks. This was the only site that also afforded access to navigable tidal waters through Lake Pontchartrain. River floods were always a risk, even well upstream along the lower Mississippi, but hurricane storm surge risks are now greater than when the city was established because of expanded development and loss of protective wetlands.

2. *New Orleans is sinking into the Gulf of Mexico because the supply of alluvial sediments has been stopped by levees.* The reason that much of New Orleans and its suburbs are below sea level—by 10 feet or more in some places—has more to due with compression of swamp soils after they were drained for development than with subsidence of geological strata and lack of accretion of alluvial sediments, although both of the latter are certainly factors. Most of the soil compression has already taken place. The portions of the city built on alluvial deposits are subsiding at a rate of approximately 4 mm per year, a rate roughly comparable to that of other Gulf Coast cities and much less than the rate experienced by the rest of the Mississippi deltaic plain to the south.

3. *New Orleans flooded because levees along Lake Pontchartrain were not high enough to handle a category 4 or 5 hurricane*. The National Hurricane Center reported in late December that, contrary to earlier reports, Katrina was actually a category 3 storm when it made landfall. It now seems certainly the case that New Orleans proper flooded when floodwalls along drainage canals failed, even though the storm surge from Katrina was not high enough to overtop them. On the other hand, the levee defenses of the eastern portions of the city (including the Lower Ninth Ward) and the St. Bernard Parish suburbs were clearly overtopped by Katrina's unprecedented storm surge, advancing not from Lake Pontchartrain but from the east via Lake Borgne and Breton and Chandeleur Sounds. The advance of the storm surges from both Katrina and Rita appears to have been facilitated by two dredged channels, the Mississippi River Gulf Outlet and the Gulf Intracoastal Waterway. After construction of MRGO in the early 1960s, saltwater intrusion resulted in the loss of extensive cypress swamp area on the city's eastern flank.

4. *The proposed Lake Pontchartrain hurricane barrier, stopped by environmentalists in the 1970s, would have prevented flooding*. The levee and floodgate system proposed in the 1970s would not have prevented flooding of the eastern parts of the city and suburbs. As already noted, water levels in Lake Pontchartrain did not exceed the levee design.

5. *The New Orleans region would not have flooded if there had not been massive wetland loss over the past 50 years*. Wetlands do dissipate storm surges, but the Katrina storm surge was so enormous that at least the eastern suburbs would have experienced flooding even if the area's original wetlands had remained undamaged. However, it is likely that MRGO and the loss

Donald F. Boesch is president of and professor at the University of Maryland Center for Environmental Science. A marine ecologist, he has conducted estuarine and oceanographic research along the U.S. Gulf Coast and eastern seaboard, China, and Australia. He has served on numerous boards and committees of the National Research Council and chaired the committee that produced the recent report Adaptive Management for Water Resources Project Planning.

In 1993, the Louisiana Coastal Wetlands Conservation and Restoration Taskforce estimated that the natural services of Louisiana's wetlands and the human infrastructure they support are worth more than $100 billion.

of swamps increased the magnitude of the surge confronting eastern levee defenses. Flooding in New Orleans proper was more related to floodwall failure than to an extraordinary surge in Lake Pontchartrain. On the other hand, wetland loss probably contributed to the flooding of many smaller communities in southern Louisiana that resulted from Hurricane Rita.

6. *The floodwaters in New Orleans were a "toxic soup" contaminating Lake Ponchartrain and the Gulf and rendering buildings uninhabitable*. While contaminated with fecal and other microbial pathogens, the floodwaters that were eventually pumped back into the lake did not have levels of toxins that would pose a health risk through contact or cause contamination of seafood or damage to the lake ecosystem, much less to the Gulf of Mexico. The hyping of the risk posed by toxic residues probably slowed reoccupation and remediation of what probably is the most serious long-term health risk, mold.

7. *New Orleans will only survive as an island, like Venice*. Long surrounded by swamps, Lake Ponchartrain, and the Mississippi River, the city has certainly functioned as an island, with access primarily via bridges and elevated roadways. But the city no longer has navigable canals running through town. And, as long as the levees hold, it is unlikely that New Orleans will rely on gondolas, pirogues, or other watercraft for transportation within the city.

8. *Because of global warming, sea level rise will eliminate Louisiana's coastal wetlands by the end of the century*. While accelerated sea level rise will pose a considerable threat to coastal wetlands everywhere, sedimentation from the Mississippi River can allow Louisiana wetlands to keep pace with rates of sea level rise anticipated this century. While some regions far removed from a source of river sediments are likely to see further contraction of wetlands as sea levels increase, other regions could remain healthy if they were reopened to river discharges.

9. *Hurricane Rita did comparatively little damage*. This statement is certainly true in terms of life and property damage, but when all reports are in, it may be that Rita had a greater impact on Louisiana's coastal wetlands than Katrina. Unlike Katrina, whose impacts centered on the southeastern part of the state, Rita caused a substantial storm surge over the entire length of the Louisiana coast.

Restoration Plans

Although the alarming loss of Louisiana coastal wetlands was first noted in

the early 1970s, it took authorities approximately 20 years to develop initiatives to slow or reverse the dramatic loss of coastal wetlands—a loss estimated at up to 50 square miles per year at one point. The Coastal Wetlands Planning, Protection, and Restoration Act of 1990, currently funded at $50 million per year, has provided for planning and implementation of numerous small- to mid-scale wetland restoration projects. Growing from CWPPRA, the first strategic coastal restoration plan, Coast 2050, was developed in 1998.

The U.S. Army Corps of Engineers and the state used Coast 2050 as basis for a recent feasibility study to develop the Louisiana Coastal Area Ecosystem Restoration Plan, which could cost $5 to $17 billion depending on the plan options chosen. After considering a 2003 draft of the LCA Plan, the federal Office of Management and Budget instructed the Corps to reduce the cost of the plan to roughly $2 billion and narrow the plan's focus to five near-term projects and other demonstration projects. A final LCA Plan was developed along these lines and was released in 2004. It is currently awaiting congressional authorization.

The Coast 2050 and LCA (both draft and final) plans use as framework a set of complementary projects or restoration features designed within four basins along the Louisiana coast. These projects are for the most part much larger than those that could be supported by CWPPRA, and they focus particularly on reintroductions of river water and sediment into estuarine-wetland basins and restoration and maintenance of coastal barriers that limit the erosive forces of waves, tides, and storm surges.

New Opportunities

Hurricanes Katrina and Rita have changed the calculus of Louisiana coastal restoration in a number of ways. First, they have raised national awareness of the seriousness and urgency of the problem of coastal wetland loss, enhancing the prospects of substantial commitment of federal resources to coastal wetland restoration. Second, they will force those planning coastal restoration to integrate ecosystem restoration, flood protection, and navigation in ways that were not possible under the LCA Plan, which was required only to focus on ecosystem restoration. Third, by raising public concern and changing where and how people live and pursue economic interests, the hurricanes altered some of the constraints that had limited the LCA process. Previously, stakeholder concerns prevented planners from considering the abandonment of infrastructure or dramatic changes in environmental conditions. Now, citizens and leaders are more aware of the damage done by MRGO, for example, and also are beginning to recognize the consequences of wetland loss caused by saltwater intrusion. Finally, the hurricanes have changed the landscape that serves as the starting point for restoration. The more comprehensive 2003 draft of the LCA Plan, as opposed to the 2004 version currently awaiting congressional consideration, should serve as the starting point for post-Katrina and post-Rita thinking. Policymakers, restoration leaders, and scientists and engineers should recognize that recent events present both new requirements and new opportunities for restoring coastal Louisiana. ■

Courtesy of J. Pendergrass

Since the 1950s, oil and natural gas interests and shipping engineers have cut more than 8,000 miles of canals through Louisiana's wetlands.