

“DE LAND IS SINKING”: THE DISAPPEARANCE OF THE LOUISIANA WETLANDS

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The Louisiana wetlands are one of America’s most exotic environments. The geography is a jambalaya of several ecosystems, each adapted to a specific level of salinity. Of these, the freshwater forests and marshes support the greatest diversity of plant and animal life (The Nature Conservancy, n.d.). These wetlands include Louisiana’s legendary swamps and bayous: unhurried water, stealthy alligators, and sturdy cypress trees dramatically draped in Spanish moss.

The freshwater wetlands are disappearing. To say this more accurately – and with a Cajun accent – “De land is sinking [sic]” (Tidwell, 2003, p. 17). The shrimp-boat captain who made that observation did not need a scientist to tell him that his homeland was in peril. He could see for himself that “all dis land around us, as far as you can see, is dropin’ straight down into de water, turnin’ to ocean” (Tidwell, 2003, p. 17). He can point to places where people are *swimming* and tell you that when he was a child, he played baseball in that very location.

A scientist, however, can quantify how rapidly this change is occurring. Astonishingly, every 38 minutes, a football-field sized parcel of wetlands turns to water (Hall, 2006.) To understand why the wetlands are disappearing, one needs to know where they came from. Southern Louisiana was shaped by water that escaped from the Mississippi River. Once free of the channel, floodwaters lost momentum and let go of the sediments collected during their journey. Over time this soil compacted, making room for the next wave of water. This cycle of flooding and settling, and the meandering of the Mississippi River across the flood plain, created the delta that is the foundation of the wetlands.

As Europeans moved into the area, they found this flooding inconvenient. They drained the wetlands and built levees to defend their new homes. Unknowingly, by stopping the flooding, the settlers were contributing to the sinking of their new homeland. Today more than 1,000 miles of levees funnel the precious sediments out to sea (Gibbs, 2004). The end result is that the land subsides, the saltwater intrudes, and freshwater trees and grasses die. In a falling-domino effect, the swamps turn to marshes and the marshes dissolve into open expanses of water.

There are other ways that the wetlands are being destroyed. Forests are clear-cut, swamps are filled in, and navigational canals are sliced into the marshes and swamps. Nutria, rodents native to South America that were imported to harvest for fur, escaped during a hurricane and are now gnawing and burrowing their way through the wetlands. Rising sea levels, a byproduct of global warming, allow saltwater to invade freshwater environments (Louisiana Department of Natural Resources, 2008). Hurricanes also contribute to the loss. For example, hurricanes Katrina and Rita may have decimated over 200 miles of wetlands (National Wildlife Federation, n.d.).

The wetlands aren't just a pretty face; they are actually working hard all the time. Twenty-one percent of the fish harvested in the continental United States come from Louisiana (Louisiana Department of Natural Resources, 2008).



Wetlands provide food, shelter, and breeding grounds for these fish (National Oceanic and Atmospheric Administration, n.d.). In addition, the wetlands are the first-line of defense against hurricanes. Storms from the Gulf of Mexico must make their way past the wetlands before they reach New Orleans. It has been estimated that every 2.7 miles of wetlands can reduce a storm surge by about one foot (Hall, 2006). With each passing year and with every chunk of land that turns to water, the city becomes more vulnerable to storm damage.

It was a powerful experience to witness a forest turning to water. Under the guidance of the Ponchartrain Institute for the Environmental Sciences, we took a canoe trip on Cane Bayou, just north of Lake Ponchartrain. We launched the boats in a channel that was crowded with trees, ribbons of moss hanging from their branches. The trees seemed large at first, but this was put into perspective by a logged cypress stump that was three or four times the diameter of the largest standing tree. After paddling a mile, we came to a cypress graveyard. Scattered across the marsh were lifeless, limbless

tree-trunks, broken off at the top. The towering skeletons served as their own tombstones. The dead trees were evidence that the geomorphic cycle had been broken. The land had settled, but sediment-laden freshwater had *not* come to the rescue. Left unchecked, encroaching saltwater poisoned and drowned the trees.

I went to New Orleans to explore environmental projects that McMaster student Scholars at Defiance College could perform on return trips to the area. One of the places I visited was Turtle Cove Environmental Research Station, a facility operated by Southeastern Louisiana University that sits on the western fringes of Lake Ponchartrain. Its mission is to promote environmental awareness, to work with volunteer groups in restoring the wetlands, and to foster wetlands research.

To get to the station one must travel about five miles by boat via a canal. Housed in an old hunting lodge, the station sits in a former cypress-tupelo swamp that, beginning over a century ago, was clear-cut for the timber. The circular stumps of the trees are visible when the water is low. Small canals, dug as pathways to drag the trees out of the forest, still scar the landscape. Without the canopy of trees, invasive plant species, such as Chinese tallow, thrived in the abundant sunshine.

I spent a day swamp-walking with Michael Greene, a biologist at Turtle Cove. One of Greene's tasks is to plant native vegetation around the station and in a nearby mitigation area, a parcel of land that is being restored as *payback* for the intentional destruction of a wetland. Companies who want to build in a wetland are required by law to offset the damage by financing the restoration of a wetland in some other area. Greene stated that more than 10,000 trees had been planted in the mitigation area (Greene, 2007). Unfortunately, some of the planting was done just before a drought and many of the trees did not survive. Invading saltwater made it difficult for the remaining trees to take hold. In addition, nutria love to dine on cypress saplings, which compounds the challenges.

Forests and marshes provide food and shelter for animals, so loss of the wetlands often leads to reduction in wildlife. Thousands of trees were downed in hurricanes Rita and Katrina, threatening the bird population (National Wildlife Federation, n.d.). Bayou Segnette, on the outskirts of New Orleans, suffered extensive damage in these storms. A park ranger told me that more than half of the mature trees had been destroyed. The loss of these trees meant that wood ducks, which normally nest in tree cavities, would be homeless, so the National Wildlife Federation stepped in to provide

temporary housing for the ducks. I joined a group of fifteen people who came from all over the country to assist this duck population, and together we built six nesting boxes and installed them on the banks of the bayou.

After learning about the damage that is being done to Louisiana's wetlands, one could feel overwhelmed by the enormity of the problem. Stopping the destruction might seem like an impossible challenge. However, progress is being made and there are opportunities for anyone interested in helping. At the time of this writing, a web-search for *Louisiana, wetlands, and volunteer*, produced more than 30,000 hits for organizations that either sponsor volunteer activities or take donations to fund the work. From my research, I've compiled the following list of environmental projects in and around New Orleans:

- ◆ Remove invasive plants. Some introduced plants aggressively out-compete the natives and can dramatically alter an ecosystem (Barataria-Terrebonne National Estuary System, n.d.; United States Geological Survey, 2008).
- ◆ Plant native vegetation such as marsh grass and cypress trees (Barataria-Terrebonne National Estuary System, n.d.).
- ◆ Make fences from recycled Christmas trees that protect the wetland edges from erosion and catch sediment. This has been dubbed the Christmas Tree Project (Louisiana Department of Natural Resources, 2007).
- ◆ Monitor the progress of the water diversion projects. Permeable levees have been built that allow water from the Mississippi to flood into the wetlands. These levees counteract both subsidence and saltwater intrusion (Naomi, 2003).
- ◆ Halt the use of cypress mulch. Some of the mulch that we use in our gardens is harvested from living cypress trees, trees that are necessary to our Gulf Coast wetlands (Save Our Cypress, n.d.).
- ◆ Monitor water quality. Rivers from 31 states, including Ohio, drain into the Mississippi River (Environmental Protection Agency, 2007). Pesticides and fertilizers from Ohio's farmlands get dumped into the wetlands and the Gulf of Mexico. States along the Mississippi River need to take responsibility for the negative impact that these chemicals have on the Gulf region.
- ◆ Monitor pollutants in New Orleans. The floodwaters from Hurricane Katrina left behind toxic chemicals such as lead, arsenic, and petrochemicals. Some of these chemicals are known to cause neurological damage. According to the National Resources Defense Fund (2006), some residential neighborhoods have contaminant levels that are a hundred times greater than the level needed to require a clean-up.

Yes, “de land is sinking.” But everyone can get involved in making an environmental difference in the Louisiana wetlands.

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