

One Year Later

# The Deepwater Legacy for Wetlands and Wildlife

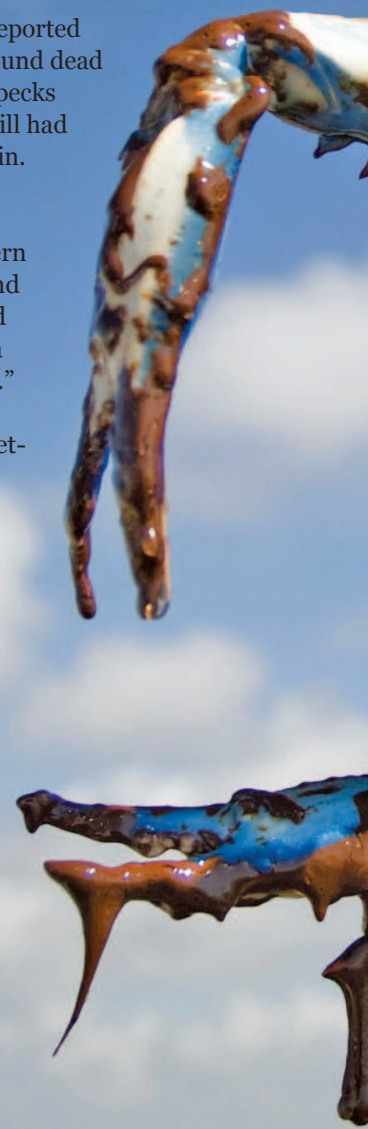
**O**n April 20, 2010, an oil rig in the Gulf of Mexico exploded about 40 miles off the Louisiana coast. The explosion killed 11 people and unleashed a torrent of oil some 5,000 feet below the Gulf's surface. Teams of responders scrambled to address the crisis and assess what this incident—quickly dubbed the worst environmental disaster of our time—would mean for the nation's economy and the region's natural resources.

By July, as oil still gushed, the U.S. Fish and Wildlife Service reported that 2,710 birds, 64 mammals, and 484 sea turtles had been found dead in the vicinity of the spill. A few weeks later, scientists found specks of oil in blue crab larvae—an ominous sign that oil from the spill had entered the Gulf's food web and could start moving up the chain.

As cleanup crews laid lines of boom to keep surface oil from reaching the shore, wildlife professionals watched with concern as toxic crude moved toward area wetlands, vital nurseries and habitat for wildlife. As Coast Guard Admiral Thad Allen, head of the federal effort to contain and clean up the spill, said in a media interview: "Oil in the marshes is a worst-case scenario."

Now, nearly one year later, the impact of the spill on area wetlands doesn't appear to be as severe as many had expected. Though oil did taint the margins of some coastal marsh, the majority of inland marshes remains unharmed. "Overall, given the scale of the spill, things worked out much better than I feared back in the summer," says Tom Moorman, director of conservation planning for Ducks Unlimited.

That's the good news. The bad news is that these coastal wetlands—lifeblood of the Gulf—have been in peril for decades. "The oil spill [was] just adding insult to injury," says Paul Kemp, vice president of the National Audubon Society's Louisiana Coastal Initiative. Every year, thousands of acres of Gulf coastal marshlands vanish due to erosion, subsidence, development, and other strains. "This is a national issue," says Susan Testroet-Bergeron, outreach coordinator for the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) program. "Once the land's lost, it's difficult to bring it back."





A BP contractor displays an oiled blue crab found on Elmer's Island, Louisiana, which was tainted by the oil spill that crippled the Gulf in 2010. Thick crude dripping from the crab's shell hints at the threat the spill posed for area beaches and wildlife.

Credit: BP



# A Vanishing Act

***The struggle to protect the Gulf's imperiled wetlands***

By Divya Abhat

*Divya Abhat is Production Editor/Science Writer for The Wildlife Society.*

**T**he Gulf Coast's wetlands are disappearing fast. From 1998 to 2004, wetlands in Texas, Louisiana, Mississippi, Alabama, and Florida declined by roughly 371,000 acres, a far greater loss than for wetlands in other regions of the United States including the Great Lakes and the Atlantic Coast ([Corn and Copeland 2010](#)).



for the Coastal Wetlands Planning, Protection and Restoration Act program or CWPPRA (pronounced Quip-ruh). “They’re important because they’re the nursery grounds for fisheries, and they’re important for their aesthetic value.” A look at the ecosystem services that wetlands provide drives home the point.

### Too Big to Fail?

The Gulf Coast is perhaps the country’s most critical wintering ground for waterfowl. “All of the predominant waterfowl species in North America are represented in the waterfowl of Louisiana,” says Thomas Michot, research scientist at the University of Louisiana’s Institute for Coastal Ecology and Engineering. The region’s swamps, bogs, and marshes



With roughly 60 percent of the Gulf’s wetlands, Louisiana has been hardest hit, losing some 1,900 square miles of coastal lands from 1932 to 2000 (USGS 2003).

Since the 1930s the state has lost over 1.9 million acres of wetlands, dropping from more than three million acres to only two million today. Approximately 15,000 acres of the state’s wetlands now vanish every year, equivalent to losing a chunk of marsh the size of a football field every 30 to 45 minutes. “This is a system that’s on the edge of collapse,” says Paul Kemp, vice president of the National Audubon Society’s Louisiana Coastal Initiative.

The consequences for the region and its wildlife are severe. Because wetlands are one of the most productive habitats for wildlife and fisheries, their disappearance can have devastating ecological ripple effects. “Wetlands are important because they provide habitat for a host of organisms,” says Susan Testroet-Bergeron, outreach coordinator



Credit: David Hall

provide resting and feeding grounds for green-winged teal (*Anas crecca*), northern shovelers (*Anas chlypeata*), snow geese (*Chen caerulescens*), and hundreds of other bird species that migrate along the Mississippi Flyway. The region is also home to a large number of protected bird species such as the endangered piping plover (*Charadrius melodus*), which winters on Gulf Coast beaches and barrier islands.

Coastal marshes and estuaries are equally important to a variety of fish species. Roughly 97 percent of commercial fishery landings from the Gulf are species that depend on coastal estuaries for the bulk of their life cycles, including reproduction, feeding, and shelter. Because Louisiana is the largest seafood producer in the lower 48 states, with annual retail sales of approximately \$1.8 billion, the loss of its wetlands—

An aerial shot of Louisiana marshlands taken five months after the spill shows little oil damage but plenty of trouble: land subsidence, channelization, and loss of marsh grasses leave large expanses of open water. This makes shorelines vulnerable to storms and depletes habitat for wildlife such as brown pelicans (above), which use area marshes as nesting grounds.

USGS researchers Julie Bernier, Gary Hill, and Kyle Kelso (left to right) travel by airboat through the Sabine National Wildlife Refuge in Louisiana, where they prepare to collect sediment cores and water-level readings to determine the impact of erosion on wetland peat deposits.



Credit: USGS

whether brackish, freshwater, or saline—not only harms a diversity of marsh-dependent species but threatens the economic well-being of the entire region.

That economy is also heavily dependent on recreational activities that rely on wetlands, including bird watching, wildlife photography, hunting, and fishing, which generate billions of dollars annually. In 2004, tourism and recreation employment in the five Gulf Coast states totaled more than 416,000 jobs (Corn and Copeland 2010). In Louisiana alone, state records show that recreational fishing accounts for approximately \$1 billion in retail sales each year, and saltwater sport fishing generates about \$757 million annually. When wetlands vanish, these pursuits also suffer.

The ripple effects go further. Because wetland plants and soils filter impurities from water, the loss of wetlands can lead to higher levels of harmful nitrogen and phosphorous, which wash off fertilized lands, creating dead zones in the water column. According to a study by Ducks Unlimited, a Florida cypress swamp can remove 98 percent of all nitrogen and 97 percent of all phosphorus entering the wetland from wastewater before it enters the groundwater supply. Wetland plants also provide a buffer against storm surge and river floods. Without their marshes and swamps, coastal states would be even more vulnerable to the destructive power of wind and water.

### Prime Suspects in Wetlands Theft

It's no surprise that human activity is the principle cause of wetlands decline across the nation. Over the last two centuries, people have drained, dredged, and leveled wetlands for construction, agriculture, and development of pipelines and shipping channels. In short, "Everything we're doing is shortening the lifespan of the wetlands," says Kemp. Consider the results:

- In the U.S., 22 states have lost more than 50 percent of their original wetlands (Dahl 1990).
- From the mid-1950s to the mid-1970s, an average of 550,000 acres of wetlands vanished annually, largely due to agricultural development (Frayer et al. 1983).
- California has lost more than 90 percent of its original wetlands, most of which were converted to flooded rice fields (USGS).
- Colorado has lost more than half of its wetlands, a result of land-development pressures.
- Louisiana, which has a long history of natural wetland loss and regeneration, has lost more than 50 percent of its wetlands, in large part due to the construction of levees and barriers along the Mississippi River, and dredging of more than 15,000 miles of canals. These man-made modifications have disrupted natural flooding cycles and prevented deposition of sediments that once enriched the wetlands of the Mississippi River Delta.

"One of the biggest things that's blamed for wetland loss is levying of the Mississippi River," says Michot. Ditches, canals, and levees—which modify wetlands to address flood control, irrigation, industrial activity, navigation, and drainage—alter wetland hydrology and increase the speed at which water moves, impacting patterns of sedimentation. Too little sedimentation can speed the loss of wetland through land subsidence (Wetlands Loss and Degradation). "We're still trapping half the sediment up in the Missouri Basin," says Kemp, "and we still haven't connected the river back up with the Delta."

While the effects of shifting sedimentation are relatively well understood, other man-made disasters, such as last year's Deepwater Horizon oil spill, can spark unanticipated problems and guesswork while groping for solutions. A month after the Deepwater explosion sent oil gushing into the Gulf, for example, some of that crude began seeping into the marshes along the coast, forcing officials to consider drastic steps, such as setting fire to the affected wetlands in hopes of floating out the oil. Such aggressive cleanup efforts can do more harm than good to the marshes. "There was a tremendous amount of earth moving, which ultimately has a pretty big impact on environments that are not accustomed to disturbance," Kemp says. "When oil comes in, for the most part you leave it alone because doing anything—other than burning—will do more damage."

Of course nature has a strong hand in wetland destruction. A 2005 USGS report reveals that



Hurricane Katrina caused significant marsh loss in certain Louisiana parishes, converting more than 30 square miles of marsh around a portion of Breton Sound into open water (USGS 2005). Clearly human interference, in combination with storms, sea level rise, and other natural processes, presents a perfect storm of threats to coastal wetlands.

## Efforts to Stem the Shrinkage

In the last two to three decades, protecting coastal marshes has become more of a priority at the federal, state, and local levels. “There’s been a steady increase in attention and funding as people realize this is something that’s not going away unless we do something,” says Michot. As a result, “there have been a number of coastal restoration projects, and a lot of them have been successful.”

CWPPRA, for example, provides funding for projects designed to protect, restore, and enhance Louisiana’s coastal wetlands. Passed in 1990, with authorization until 2019, the CWPPRA program receives approximately \$80 million in federal funds annually, matched by 15 percent state money. Currently, 150 CWPPRA projects are underway, including efforts to create and restore marshes, protect the shoreline, plant vegetation, and trap sediment. “CWPPRA has been very successful,” Testroet-Bergeron says. “It’s a bottom-up approach. It starts with citizens who bring up restoration projects that they think are important.”

One of CWPPRA’s success stories involves reducing the population of nutria, non-native rodents that devour marsh grasses. Introduced in the 1930s, nutria have destroyed about 100,000 acres of marsh across the Louisiana coast. To address the problem, in 2002, Louisiana Wildlife and Fisheries launched the Coastwide Nutria Control Program, a CWPPRA program designed to give hunters and trappers cash incentives of \$5 per tail to remove nutria from the wetlands. The goal was to remove roughly 400,000 nutria each year. In the 2009-2010 trapping season, agency officials reported a harvest of 445,963 nutria (Nutria Control Program). As a result of this effort, the state has successfully managed to control the population, reduce nutria herbivory, and slow the loss of wetland vegetation.

As wetland conservation has become more of a priority, state and federal agencies have developed several other programs and legislative initiatives that help wildlife managers and conservationists to protect and preserve wetlands. For example:

- Last year the USGS’ National Resources Conservation Service (NRCS) launched the Migratory Bird Habitat Initiative in response to the BP oil spill in the Gulf. Through this program, NRCS works with landowners, the U.S. Coast Guard, the U.S. Fish and Wildlife Service, and private organizations to create and improve habitat conditions and food sources for migratory birds that pass through the Gulf region (see article on page 30).
- The North American Wetlands Conservation Act, passed in 1989 and reauthorized and expanded in 2006, provides matching grants to individuals and organizations who have developed partnerships to preserve and protect wetlands for the benefit of migratory birds and other wildlife that rely on wetland ecosystems. Congress appropriated about \$48 million to fund the Act’s Grant Program in 2010.
- In response to Hurricanes Katrina and Rita, in 2005, the Louisiana Legislature restructured the state’s existing Wetland Conservation and Restoration Authority to form the Coastal Protection and Restoration Authority, which was designed to develop and implement a comprehensive coastal protection plan for the state. Between 2007 and 2009, the state devoted \$790 million in budget surplus money to the construction of levees and other coastal restoration



Steady erosion over time pushed a shoreline closer and closer to the steel lighthouse on one of Louisiana’s Chandeleur Islands. In 2005, Hurricane Katrina’s relentless pounding toppled the 110-year-old lighthouse into the Chandeleur Sound.

Credit: LAcoast.gov



projects. (Coastal Protection and Restoration Authority of Louisiana 2011).

Numerous private and nonprofit conservation organizations also contribute to the protection of Gulf Coast wetlands. In 2007, the National Audubon Society launched the Louisiana Coastal Initiative to address coastal wetland loss. According to Audubon's Kemp, the initiative helps jump-start critical projects that might have floundered largely because of a lack of funding. For example, Audubon has worked with the Louisiana Department of Wildlife and Fisheries to map out five "Important Bird Areas" in the Atchafalaya River Basin. Slated for restoration, these areas support a wide variety of birds, including snowy egrets (*Egretta thula*) and roseate spoonbills (*Platalea ajaja*).

A remnant patch of grass stands protected in an area otherwise destroyed by nutria (above right). To help restore part of the Gulf's coastline, volunteers led by a U.S. Fish and Wildlife Service employee (below) wade through muddy waters to replant grass at the Anahuac National Wildlife Refuge in Texas.

Ducks Unlimited has also contributed substantially to wetland conservation, committing to provide \$15 million to restore wetlands in Louisiana. "We did our first project in 1985," says Tom Moorman, director of conservation planning in DU's southern region, "and our program really scaled up in the early 1990s." One notable success is DU's \$1.7 million coastal wetlands project at Louisiana's Pointe Aux Chenes Wildlife Management Area, made possible with additional funding from the North American Wetlands Conservation Act and the Louisiana Department of Natural Resources. By restoring the salinity and hydrology of roughly 4,800 acres of degraded marsh, the project



Credit: LAcoast.gov

improves the productivity of submerged aquatic vegetation, which, in turn, benefits the region's migrating and wintering waterfowl, wading and shorebirds, and estuarine-dependent fish species.

### A Long-Term Investment

Though some may consider the race to save the coastal wetlands a losing battle, others find hope in an apparent shift in conservation priorities. The Obama Administration's proposed 2011 budget calls for \$35.6 million to be dedicated to the Louisiana Coastal Area Ecosystem Restoration program—a multi-agency effort to rebuild Louisiana's coastal wetlands. Although the budget is yet to be approved by Congress, this is the first time since its launch in 2002 that the program is slated to receive federal funding—a move that's considered a milestone. "We saw it as symbolically very important," says Kemp, "even though it wasn't a lot of money."

Cautious optimism marks the mood of most conservationists. Moorman applauds the number of ongoing wetland protection efforts, but with the caveat that most of them are not at a scale that can really create a sustainable coastal wetland system. "All of them need to come together under a single plan, and start thinking at the scale that will solve the issue so it has a sustainable future," he says. "This problem's been around for decades, and it will take decades to solve. It's not going to go away overnight." Wildlife professionals are in the field helping to maintain the momentum. ■

This article has been reviewed by subject-matter experts.



To learn more about wetlands management and for information about online wetlands educational tools, go to [www.wildlife.org](http://www.wildlife.org).



Credit: Steve Hillebrand/USFWS