

Katrina damage blamed on wetlands loss

By Tim Hirsch
BBC Environment correspondent in the Mississippi Delta

Two months after Hurricane Katrina slammed into the coast of Louisiana and Mississippi, the scale of the disaster is increasingly being attributed to the disappearance of the region's swamps and marshes.

There are serious fears that the further destruction of wetlands caused by the storm itself could leave the area even more exposed to future hurricanes.

A fierce debate is now raging in Louisiana about the steps which should be taken to try to reverse the loss of land to the ocean - and how best to protect the state's population.

The entire region around New Orleans is built on the sediments deposited by the mighty Mississippi River over thousands of years.

The river itself has changed course many times as it naturally seeks the line of least resistance to the Gulf of Mexico - and that is what forms the delta shape.

Deltas are naturally inclined to sink, but in the past this was counteracted by the new deposits of silt dumped on the land as the river floods each year.

This process has been interrupted by the widespread system of embankments or levees which have been constructed along large parts of the river over more than a century.

In addition, the extraction of oil and gas from rock layers underneath the delta is believed to have speeded up the subsidence, according to research by the United States Geological Survey.

Funnel effect

Coastal scientists have been arguing for years that the re-engineering of the delta was leaving the population living there dangerously exposed to storm surges created by hurricanes.

It is fair to say that the Gulf Outlet played some role in making the situation worse

Hassan Mashriqui
Louisiana State University

An especially controversial project was the construction in the 1960s of the Mississippi River Gulf Outlet (MRGO), a 200m wide canal designed to provide a shortcut for large ships from New Orleans to the ocean.

The canal, known locally as "Mr Go", drove straight through an area of dense swampland, and

local people have been campaigning for years to get it closed, claiming that it provided a "hurricane highway" which threatened the communities east of the city.

Mark Davis of the Coalition to Restore Coastal Louisiana told the BBC News website the shipping traffic had never materialised.

"And as we see in the wake of Katrina, it provided a funnel in its levees and other structures, for bringing storm surge in huge concentrations to communities where people lived and worked, and wiped them out," he said.

One of the most devastated areas, St Bernard Parish, lies just south of the canal, and it was from that direction that the tidal surge burst over the levee and inundated the community of 58,000, killing more than 100 people.

According to new modelling and field observations from Louisiana State University, the MRGO may have made the storm surge 20% higher, and two or even three times faster as it crashed into the city.

Hassan Mashriqui of the LSU Hurricane Center said, "We found out that wherever the Gulf Outlet had eaten up more wetlands and exposed the levee system, that is where much more breaches happened. "Where there were tree lines protecting the levees, they were in much better shape.

"It is fair to say that the Gulf Outlet played some role in making the situation worse."

High cost

Another area where the loss of wetlands is being identified as a factor in making Katrina more destructive is Plaquemines Parish, the thin finger of land which protrudes into the Gulf of Mexico as the Mississippi completes its journey to the sea.

In some communities there is scarcely a building still standing, ravaged by the storm surge as Katrina passed across.

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Carlton Dufrechou
Lake Pontchartrain Basin Foundation

According to Kerry St Pe of the Barataria Terrebonne National Estuary Programme, the dense cypress swamps which used to provide natural protection have been degraded by the intrusion of salt water brought further inland by the building of shipping channels.

In addition, the silt dredged out from the river has been dumped in deep water on the edge of the continental shelf, instead of being allowed to replenish the wetlands.

"We've always said that the cost of not restoring this system was far greater than the cost of restoring it. These two hurricanes [Katrina and Rita] proved that we were absolutely correct," said Mr St Pe.

'More vulnerable'

Well before Hurricane Katrina, an ambitious \$14bn programme was put forward to restore the Louisiana wetlands through a series of river diversions and other projects.

One of its chief proponents was Len Bahr, adviser to the Louisiana state governor.

"We didn't get the funding we needed, we didn't move fast enough," he told the BBC News website.

"Now a lot of money will no doubt be spent. It is my great hope that it is spent not just to rebuild the city I love, but to invest significantly in the natural system which creates an apron of marshes, barrier islands and coastal forests, that provide tremendously efficient energy absorption from marine forces."

Navigating an effective coastal restoration programme through the notoriously rocky waters of Louisiana politics and special interest groups will not be easy. And there is another problem.

Katrina and Rita themselves dealt a severe blow to the remaining wetlands as the marsh grasses were smashed up and overwhelmed by the storm surges.

Carlton Dufrechou of the Lake Pontchartrain Basin Foundation said, "We lost in excess of 30 sq miles (78 sq km) of our coast just during the 36 hours of Hurricane Katrina, and it will be very very difficult to restore that coastline.

"Each time we lose more coastline that makes New Orleans and the metropolitan area much more vulnerable to storm surges. The levees are now more vulnerable than they were prior to Katrina because we have less wetlands protecting them."

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