



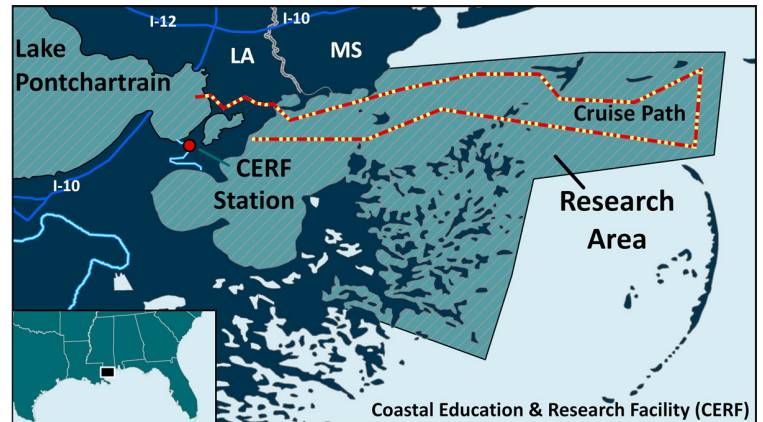
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Discovery Porthole

Sharing Research with Educators and the Public

The Pontchartrain Basin: after the oil spill

Scientists with the University of New Orleans were busy monitoring the coastal ecosystem of the Pontchartrain Basin in Louisiana following the Deepwater Horizon oil spill. Their monitoring program aimed to track and evaluate the effects of oiling on eelgrass, oysters and clams, and free swimming fish and invertebrates. The information gained from this study builds on existing monitoring programs addressing the importance of the natural resources of the ecosystem.



Research scientists from the Pontchartrain Institute for Environmental Sciences (PIES) at the University of New Orleans (UNO) primarily study the Pontchartrain Basin, a large *watershed* covering 10,000 square miles. The basin region is made up of many diverse ecosystems including rivers, bayous, swamps, hardwood forests and marshes that provide habitat to many species of fish, birds, mammals, reptiles and plants. One of the institute's most recent projects focused on the potential negative effects of the oil spill on eelgrass and other species of *submerged aquatic vegetation* (SAV), eastern oysters and *Rangia* clams (two local bivalves), and free swimming fish and invertebrates. Scientists also tracked the movement of oil from the spill in the basin by analyzing the water, tissue samples collected from oysters and clams, the grasses and other vegetation and sediment samples.



Eelgrass, Rangia clams and oysters collected from the Pontchartrain Basin for oil spill monitoring. Photo credit: UNO PIES

While scientists have noticed a decline in grasses in oil affected areas, they have not been able to link the loss directly to the oil spill. Historical data show a gradual decline of freshwater SAV in the area and severe damage in some areas due to Hurricane

Katrina. Therefore, the loss they have seen is likely due to a decrease in overall *water quality*, not oil exposure. Hurricanes have also had a negative effect on bottom dwelling invertebrates like the common *Rangia* clams. No live clams were sampled during this study, likely a result of prior damage from hurricanes. Stress, triggered by unfavorable conditions like improper temperature or salinity, pollution, infection, etc., can be measured in oysters through a series of laboratory tests. These tests were conducted on oysters collected from oiled and non-oiled areas within the Pontchartrain Basin. Although stress was detected in oysters collected in oiled regions, scientists believe the effect was likely linked to the salinity of the water, not oil. Similarly, the disease known as *Dermo*, caused by a parasite commonly found in warm waters, was found at increased levels in oysters from oil affected areas but can potentially be attributed to salinity, not oil. Additionally, several UNO scientists have yet to see significant changes in populations of fish, crabs or shrimp when compared with historical data from the region. While this is a positive sign, long term, chronic effects of the oil spill are yet to be determined and continued research is needed.

Education Extension

Key Terms: *watershed, ecosystem, habitat, pollution*

Classroom Activity: The Pontchartrain Basin Watershed

A watershed is the area of land where all surface and ground water and precipitation drain to the same location. The Pontchartrain Basin watershed drains the creeks, rivers and lakes of southern Louisiana into the Gulf of Mexico. The water carries along with it naturally occurring nutrients and sediments but also harmful pollutants.

Supplies: *shallow pan, aluminum foil, cocoa powder, green drink powder*

Directions: 1) Discuss what a watershed is using the Pontchartrain Basin or a local example. Where does the water in the watershed come from, where does it go? What influences the quality of the water? 2) Construct a watershed using a shallow pan and aluminum foil. 3) Using a spray bottle, make it rain in your watershed. Identify where the water collects. 4) Add sediment (cocoa) to your watershed 5) Make it rain on your watershed again and notice what happens to the sediments. How could those sediments affect the rest of the watershed? 6) Add fertilizer (drink powder) around the land representing farms and golf courses and make it rain. How does adding fertilizer affect your watershed? What can be done to limit the excess fertilizer in your watershed?

Ocean Literacy Principles: 1. The Earth has one big ocean with many features, 5. The ocean supports a great diversity of life and ecosystems, 6. The ocean and humans are inextricably interconnected

National Science Standards: A. Science as Inquiry: Abilities necessary to do scientific inquiry; C. Life Science: Populations and ecosystems; G. History and Nature of Science: Science as a human endeavor

Visit <http://dhp.disl.org/resources.html> for lesson plans and additional marine-related activities.

**Use the key terms above to search for additional lesson plans on the web!*

Did You Know...

A *watershed* is the area of land where all of the water drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean. Small or big, everyone lives in a watershed.

The term *submerged aquatic vegetation (SAV)* refers to all underwater flowering plants. Resembling grasses, these plants live in shallow estuaries along the gulf coast and require high light levels for photosynthesis to occur.

Water quality can be reduced by human activities that introduce nutrients, like those in fertilizers, and by natural events like hurricanes. SAV is particularly sensitive to poor water quality. Excess nutrients can cause algae to grow, shading out the plants and killing them.

Dermo is an infection caused by a parasite that occurs in warm bodies of water and accumulates in the body tissues of filter feeding animals like oysters and mussels. While the infection can kill the host animal, it is not known to cause illness in humans.

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