

The Deepwater Horizon Story

from the deep

HML researchers continued efforts in 2013 to assess injuries to dolphins in the Gulf of Mexico as a result of the *DWH* oil spill, expanding health assessment studies to include dolphins in Mississippi and Alabama waters in addition to the previously sampled dolphin population in Barataria Bay, Louisiana.

A dolphin health assessment study in 2011 led by HML researchers found that dolphins in Barataria Bay, an area that received significant and prolonged oiling from the *DWH* spill, suffered from a number of disease conditions. Barataria Bay dolphins showed symptoms of hypoadrenocorticism, consistent with adrenal toxicity previously described in experimental studies of mink exposed to oil. “Cortisol, produced by the adrenal gland, is essential for responding to stressful conditions. Barataria Bay dolphins had abnormally low cortisol concentrations and this could ultimately lead to a number of complications and in some situations even death.”

The Barataria Bay dolphins also were five times more likely to have moderate to severe lung disease, sometimes characterized by lung masses.

The findings surprised them because of the severity of the disease in the animals.

The health assessment study was repeated in June 2013 to examine whether the health of Barataria Bay dolphins had improved. Researchers

from the HML Genomics Core joined the collaboration and sampling was conducted to examine how gene expression profiles may differ among dolphins with different disease conditions. New field-based techniques for dental examination, including radiographs, also were added.

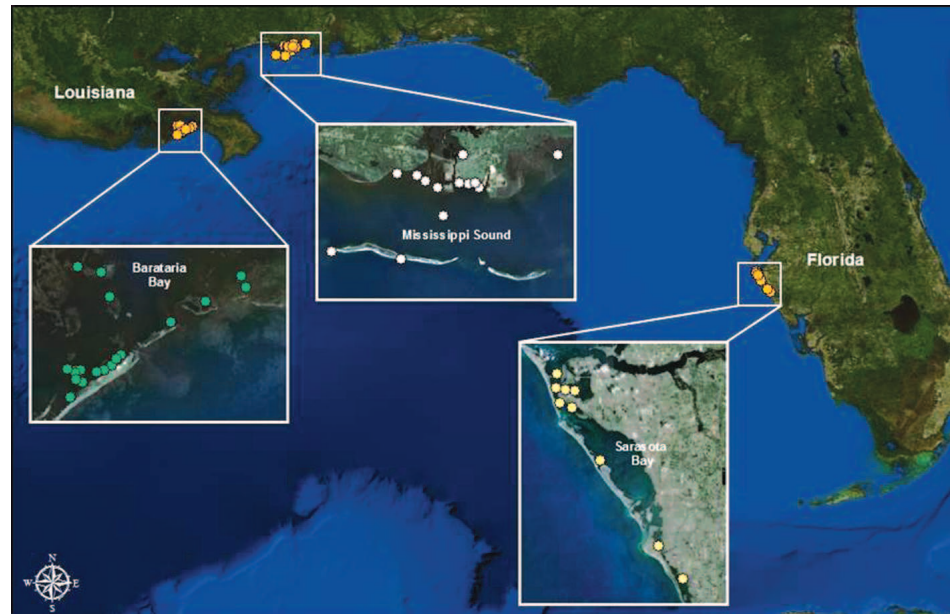
Sampling also was expanded to include Mississippi and Alabama coastal waters, and improved satellite-linked tags were used to monitor dolphin movements for several months following their evaluation.

Laboratory analyses of samples and follow-up photographic monitoring in the study sites will

continue in 2014, she said. The potential population-level impacts of the *DWH* spill are still being assessed, but the high prevalence and severity of disease conditions and an ongoing rise in dolphin deaths in the northern Gulf of Mexico raise significant concern and suggest the need for continued monitoring, she said.

“This is the first peer-reviewed publication to come out on what we’re finding in the Gulf with regard to mammals following the *DWH* oil spill. We are seeing significant health issues in the dolphins,” she said. “The issues are consistent with the effects you might expect to see after exposure to oil. Particularly with marine mammals, which are long-lived species, if there are health effects, it may take years to fully quantify the ultimate impacts on survival and reproduction.”

That ties into work being done in other labs, such as that of MUSC researcher Louis Guillette. Schwacke said the HML collaborative environment is a scientific catalyst. “Having someone down the hall who you can bounce ideas off of is fantastic.”



This map shows locations of dolphins captured and sampled for health assessments and then released during 2013 in the Barataria Bay, Mississippi Sound and Sarasota Bay areas.