# The Effects of salinity and temperature on the populations of *Vibrio parahaemolyticus* and *Vibrio vulnificus* in Breton Sound and Barataria Bay: A 3-year study

Spence Colwell [1], Nabanita Bhattacharyya[1], Brian Matherne[1,2], Martin Maxwell[1], and Aixin Hou[1]* (corresponding author: ahou@lsu.edu)

(1) Department of Environmental Sciences, Louisiana State University, Baton Rouge, Louisiana, USA

(2) Department of Biological Sciences, University of North Texas, Denton, Texas, USA

*Vibrio vulnificus* and *Vibrio parahaemolyticus* are halophilic gram-negative bacteria that are ubiquitous in estuarine and marine environments. These two species are known to cause gastroenteritis and septicemia in humans. The objective of this study was to better understand the relationships of *V. vunificus and V. parahaemolyticus* with varying levels of salinity and temperature in Breton Sound and Barataria Bay. Water samples were collected from each water body along salinity gradient transect monthly from September 2007 through July 2010. Also, sediment and live oyster samples were collected exclusively from the Breton Sound from March 2008 through July 2010. The population of *V. vulnificus* and *V. parahaemolyticus* was measured using plating method. The abundance of putative *V. parahaemolyticus* and *V. vulnificus* in Barataria Bay and Breton Sound waters was seasonally dominated by water temperature, but spatially controlled by salinity level. Like that in the waters of Breton Sound, the population of putative *V. parahaemolyticus* and *V. vulnificus* in Breton Sound sediments also followed a trend. The effects of freshwater diversion and heavy storms on the population of these two species in the coastal waters were observed. In addition, detection of *V. vulnificus* and *V. parahaemolyticus* is being carried out using PCR. The occurrence of *vvhA* was about 50-55% in the tested putative strains; the presence of *viuB* in the *vvhA* positive samples was rare. This work would eventually lead to the establishment of a statistical relationship between the *Vibrio* concentrations and environmental parameters, in particular salinity and temperature, in the Gulf water.