

Dr. John W. Fleeger

The Deepwater Horizon Oil Spill; The Estuarine Point of View.

Abstract: The blowout of the Deepwater Horizon oil drilling platform led to the release of over 200 M gal of crude oil into the Gulf of Mexico in 2010. Over 2000 km of shoreline was subsequently oiled, the largest ever reported worldwide, with about 1000 km of coastal wetland shorelines receiving oil. Some of the heaviest oiling was in Barataria Bay, Louisiana where over 70 km of estuarine shoreline was heavily and persistently oiled. The focus of this presentation will be to quantify oiling impacts and long-term recovery on saltmarsh vegetation (with consequences to saltmarsh loss), benthic microalgae and benthic invertebrates. Heavily oiled marshes suffered near 100% mortality of vegetation, microalgae and invertebrates. Although recovery for some taxa began quickly, within 1-3 years, recovery for other taxa was incomplete after 9 years. For example, *Spartina alterniflora*, the dominant marsh macrophyte, began to recover after about 3 years while *Juncus roemerianus* was reduced in abundance throughout the study period. However, neither aboveground nor belowground plant biomass fully recovered. Invertebrate recovery was also variable but positively affected over time by the recovery of *Spartina alterniflora* aboveground biomass and of microalgae. Slowly recovering taxa included an infaunal polychaete that only began to recover as soil quality improved. Unexpectedly, some taxa, most notably microalgae and amphipods, increased in abundance well above regional means for relatively brief periods suggesting that the underlying ecological relationships are poorly understood in unoiled marshes, and even less obvious in the highly disrupted ecosystem present during recovery. Thus, the study of recovery may shed light on basic, underlying ecological relationships. Studies such as these are important to better remediate future spills, and to improve restoration efforts.



Dr. John W. Fleeger is well-known nationally and internationally for his research on small marine benthic organisms known as meiofauna. His work spanned a broad spectrum of questions, including competitive interactions among and between species, and his last—and perhaps most impactful—project was on the ecological impact of the Deepwater Horizon oil spill in the Gulf of Mexico.

In addition to serving on several national review panels, Dr. Fleeger was elected chair of the International Association of Meibenthologists and served as president of the Gulf Estuarine Society. He received his bachelor's in biology from Slippery Rock University, his master's in zoology from

Ohio University, and his doctorate in marine science from the University of South Carolina. Immediately after receiving his PhD, Dr. Fleeger joined the then-LSU Department of Zoology & Physiology and was promoted to professor in 1988.