

## **Benthic Assessment of the Deepwater Horizon Accident: A Worm's Eye View**

**Drew A. Carey<sup>1</sup>, Joseph D. Germano<sup>1</sup>, Kersey Sturdivant<sup>1</sup>, Daniel Doolittle<sup>1</sup>**

<sup>1</sup>INSPIRE Environmental, Middletown, RI, United States.

### **ABSTRACT**

Environmental assessment in the aftermath of the Deepwater Horizon accident was performed in preparation for anticipated NRDA litigation and not available for public release. Extensive seafloor investigations were carried out with Sediment-Profile and Plan View Imaging (SPI/PV) between 2011–2014. This innovative optical coring method revealed stunning insights about the true extent and duration of impacts to the seafloor and surrounding benthic community. The results of these investigations documented numerous confounding factors that contributed to past misinterpretations of results from more traditional sediment sampling efforts. In the past three decades, studies of benthic community responses to oil exploration in the Gulf of Mexico have been carried out with different sized box corers (0.2 sqm and 0.1 sqm) as well as multi-corers, and samples have been sieved to a depth of 10 cm (assuming that few, if any, animals live below 5-7 cm in deep-sea sediments). All information released to date about benthic community impacts to the Deepwater Horizon accident has been based on results obtained with these traditional sediment sampling and analyses techniques. With the final court settlement information from NRDA studies can finally be presented publically. A series of three SPI/PV cruises looking at both near-field and far-field impacts to the benthic community in the vicinity of the Deepwater Horizon wellhead sampled stations in eight radial transects from the wellhead to look at near-field impacts (to 10 km from the wellhead) and far-field impacts (10-120 km from the wellhead). Three replicate images were analyzed from 809 stations, a spatial and temporal dataset economically infeasible using traditional sediment sampling techniques. The response of the benthic community to the fallout from the Deepwater Horizon accident was dramatic yet predictable, because it mimicked the response and recovery pattern documented for similar quantum inputs of a food source (natural seeps, seafloor vents, whale carcasses) to what is normally an oligotrophic system. Natural recovery in the deep-sea benthic ecosystem surrounding the wellhead is occurring faster than originally predicted in much of the popular media and scientific literature. The presentation will provide an overview of the Deepwater Horizon benthic results and link to applicable methods for marine Environmental Baseline Studies and Environmental Impact Assessments.