Impacts of Deepwater Horizon Oiling on Mississippi-Alabama Island Marshes: Technical Memorandum

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Summary

Barrier islands, such as those located off the coast of Mississippi and Alabama, are well known for providing valuable ecosystem services. Over time, these important resources are being degraded by a combination of natural (e.g., barrier narrowing due to wave erosion) and anthropogenic (e.g., navigational channels limiting sediment transport) chronic stressors (Morton, 2008). In addition to chronic stressors such as described above, barrier islands can be subjected to acute perturbations, including incidents such as the Deepwater Horizon (DWH) oil spill. The coastal islands of Mississippi and Alabama, including marsh habitats, experienced oiling as a result of the DWH oil spill (Michel et al., 2013). As a component of the DWH Natural Resource Damage Assessment (NRDA), a field study was conducted to determine the impacts of DWH oiling on coastal wetland vegetation (CWV) in the island marsh habitats of Mississippi and Alabama (Hester and Willis, 2011). The number of study sites in this habitat type was limited to a total of 11 and sampling was not initiated until spring 2011. Readers are referred to Hester and Willis (2011) for detailed information regarding the installation of CWV sampling stations, sampling approach, and analytical procedures. Statistical analyses of data collected through the CWV assessment were performed as described in Shams et al. (2015). Statistically significant impacts to key indicators of CWV health and productivity, such as live aboveground biomass, were generally undetected. This may reflect in part the limited statistical power of the study due to the small number of sites.

References

Morton, R. A. Historical Changes in the Mississippi-Alabama Barrier-Island Chain and the Roles of Extreme Storms, Sea Level, and Human Activities. *Journal of Coastal Research* **2008** *24*(6), 1587-1600.

Michel, J.; Owens, E. H.; Zengel, S.; Graham, A.; Nixon, Z.; Allard, T.; Holton, W.; Reimer, P. D.; Lamarche, A.; White, M.; Rutherford, N.; Childs, C.; Mauseth, G.; Challenger, G.; Taylor, E. Extent and Degree of Shoreline Oiling: *Deepwater Horizon* Oil spill, Gulf of Mexico, USA. *PLoS ONE* **2013** *8*(6): e65087. doi:10.1371/journal.pone.0065087

Hester, M. W.; Willis, J. M. National Oceanic and Atmospheric Administration (NOAA). *Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico, August 4, 2011*. **2011**. Web. 30 Mar 2015.

Shams, L.; Zhang, M.; Rouhani, S. Technical Memorandum: CWV Dynamic Table. **2015**.