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STUDY TITLE: An Analysis of the Impacts of the Deepwater Horizon Oil Spill on the Gulf Seafood Industry

REPORT TITLE: Synthesis Report: An Analysis of the Impacts of the Deepwater Horizon Oil Spill on the Gulf Seafood Industry

CONTRACT NUMBER(S): M14PC00002

SPONSORING OCS REGION: Gulf of Mexico

APPLICABLE PLANNING AREA(S): Gulf of Mexico

FISCAL YEAR(S) OF PROJECT FUNDING: 2013, 2014, 2015, 2016

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COST(S): FY 2014: $145,148.98; FY 2015: $101,977.04; FY 2016: $108,762.73(Travel not included)

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KEY WORDS: Gulf, seafood, industry, Deepwater Horizon, oil spill, economic, impacts and damages.

BACKGROUND: On April 20th 2010 an unexpected influx of hydrocarbons escalated to a blowout on the Deepwater Horizon (DWH) rig causing an estimated 4.9 million barrels of crude oil to leak into the Gulf of Mexico more than 40 miles off the Louisiana coast. On April 30, 2010 the first commercial fisheries closures began at the state level, when the Louisiana Department of Wildlife and Fisheries began to close oyster grounds due to concerns with food safety. Subsequently on May 2, 2010 federal authorities began to close offshore waters to fishing. The largest closure at any given time was from June 2 to June 4, 2010, when 36.6% of Gulf waters were closed. Although most closures were lifted by December of 2010, the area closest to the spill was not reopened until April 19, 2011. The period of these closures, from May to December of 2010, is known as the damage period, and according to government harvest records appears to be the time period where the DWH oil spill has had the most direct impact on the Gulf of Mexico seafood industry.

OBJECTIVES: (1) Improve understanding of the varied impacts of the DWH oil spill on the individuals and firms that comprise the Gulf's seafood industry. (2) Improve understanding of the structure of the Gulf's seafood industry and how this structure may have been altered as a result of the DWH oil spill. (3) Provide information that will be used to improve the nation's response to future oil spills as it relates to the Gulf's seafood industry.

Key considerations and criteria with respect to selecting the methods used included that it would: (1) Capture the effects of the Deepwater Horizon oil spill across the value chain (i.e., from the harvest sector through retail). (2) Include the species and/or fisheries important to each of the five Gulf States. (3) Utilize species/fisheries distinctions commonly used in the literature, available data, and definitions of the "damage period" from previous analysis. (4) Develop a model that would have subsequent uses. (5)

Provide substantive discussion regarding nuances in the data (and estimated economic impacts) with respect to spatial, temporal and marketing differences across species/fisheries.

DESCRIPTION: The introductory sections of this study provide an in-depth descriptive analysis of how the oil spill may have affected the Gulf seafood industry. The analysis begins with the geographic distribution of impacts to improve understanding of spatial effects across fisheries, states and associated coastal communities. Potential longer-term effects of the DWH oil spill on the Gulf of Mexico ecosystem are considered at a higher aggregate level, as well as potential implications at the fishery level. A potential change in consumer perception and, thus, demand of Gulf seafood is discussed. Larger changes in the U.S. economy during the pre- and post-spill period are also noted and discussed with respect to potential effects on seafood demand. Initial adjustments in markets due to product shortages and food safety concerns are summarized, and challenges faced by Gulf seafood producers trying to regain market share from lower-cost import products and domestic producers is also discussed. The temporary fisheries closures implemented by the government due to safety concerns caused by the spill are summarized spatially and temporally to allow for direct comparison to changes in harvest patterns. The introductory section of this study concludes with a summary of how these impacts were or were not able to be factored into the subsequent economic impact model developed for this study.

The seafood industry research sections of this study begin with a general overview of the fishing industry and the associated supply chain in the Gulf of Mexico. The fishery industry summary includes a review of the regulatory structure and harvest trends, and a discussion of typical trade routes and practices, as well as some general insights into how they were affected during the DWH oil spill. Each species category is broken down into sub-chapters that are reviewed relative to the specific intricacies of the species and species groupings contained in the study. By presentation of this detailed fishery and supply chain information, the study allows the reader to better understand the factors that influence fishery harvests by species category and state within the Gulf of Mexico. The final subchapter of the fishery industry background presents the Seafood Compensation Program and details how the program was applied to reach settlement amounts for the seafood industry participants.

The impact modeling section of this research begins with a review of the associated impact model literature that was used to determine the model structure and present a solid rationale for model choice and design. This portion of the study goes on to detail the development and construction of the custom I/O impact model, with an overview of the multiplier construction, trade flows, margins, model structure, and assumptions. The methodology behind the model is presented, along with the model's assumptions and the source of the data behind the customization of the model for this project. Options for input data are reviewed and established based on the time periods established by the settlement, and two different market scenarios are developed (market dynamic and market constant) which estimate impacts based on the dockside value changes.

The concluding sections of this research present the overall results of the model scenarios by supply chain segment, and give a summary of which segments in the Gulf as a whole were most impacted. The study breaks down these results by species and state for employment, sales, value add, and income for the two scenarios (market dynamic and market constant) used in the impact model. A final concluding summary and discussion of these results is presented and discussed relative to what could be drawn from the earlier qualitative research in the study.

SIGNIFICANT CONCLUSIONS: Although the study offers a robust range of impact estimates, without further empirical examination of the complex cause and effect relationships that have influenced the revenues in these fisheries, definitive impacts estimates derived by the spill will remain conjectural. The research in this study contributed two key research components: a well-developed economic impact model for the Gulf of Mexico fisheries, and expansive examination of the factors that have affected

revenues in the Gulf Seafood industry during and after the DWH oil spill event. Given these conclusions and notable contributions, we feel the results below can be used to bookend impacts that have occurred in the short term, and should be a strong framework for any further studies that attempt to define impacts to a tighter range.

STUDY RESULTS: At a Gulf-wide level, the following results were produced by the impact modeling exercise of this study. Overall, the DWH oil spill generated between $51.7 and $952.9 million loss in total sales. This loss also cost the region $21.4-$392.7 million in value added, $21.6 - $309.8 million in income, and 740 – 9,315 jobs. The harvesting sector bore the brunt of those losses, losing between $20.1 - $354.5 million in total sales, $7.9 - $137.8 million in value added, $11.9 - $126.3 million in income, and between 449 – 3,809 jobs. The sector that fared the best was the dealer sector, losing $4.3 - $80.6 million in total sales, $887,000 - $16.8 million in value added, $652,000 - $12.3 million in income, and 28 – 527 jobs.

STUDY PRODUCT(S): Carroll, Michael. 2014. Discussion Write-Up Seafood Industry Structure and Impacts: An Analysis of the Impacts of the Deepwater Horizon Oil Spill on the Gulf Seafood Industry. Research report by The VERTEX Companies for the U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. BOEM Contract No. M14PC00002. VERTEX Project Number: 26485.

Carroll, Michael. 2014. Literature Review: An Analysis of the Impacts of the Deepwater Horizon Oil Spill on the Gulf Seafood Industry. Research report by The VERTEX Companies for the U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. BOEM Contract No. M14PC00002. VERTEX Project Number: 26485.

Carroll, Michael, Brad Gentner, Sherry Larkin, Kate Quigley, Nicole Perlot, Lisa Dehner, and Andrea Kroetz. 2016 Synthesis Report: An Analysis of the Impacts of the Deepwater Horizon Oil Spill on the Gulf Seafood Industry. Final research report and custom economic impact model by The VERTEX Companies for the U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. BOEM Contract No. M14PC00002. VERTEX Project Number: 26485.

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