

A NOVEL APPROACH FOR ESTIMATING HURRICANE DAMAGES TO COASTAL FISHING INFRASTRUCTURE

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In the last decade, several hurricanes have severely damaged the infrastructure and livelihoods of commercial and recreational fishers along the northern Gulf of Mexico. Four storms (Ivan in 2004; and Katrina, Rita, and Wilma in 2005) rank in the top ten strongest hurricanes on record for Atlantic Basin. Rapid assessments of economic damage are typically published in the popular media following these events, however, estimation methods often vary greatly depending on the source and focus of the assessment. Despite inconsistencies, such assessments are often used as the basis for proposed economic and ecosystem recovery efforts, even though many of the initial estimates lack the data required to be conclusive in nature. As part of an ongoing effort to assist coastal states in the acquisition and distribution of federal aid during the recovery process, research under this project has sought to produce more detailed examinations of fisheries infrastructure damage using new estimates generated from a combination of established and novel procedures for quantifying damage from natural disasters. Hurricane storm surge modeling data is used in combination with trip ticket data from commercial fishing revenues and vessel markets to obtain geographically-specific estimates of the damages to coastal fisheries infrastructure. A GIS context is used to map peak storm surge height for more than 100,000 geo-coded fishing infrastructure locations in coastal Louisiana. Ground-truth surveying is used for estimating, among other things, the percent of infrastructure that was lost due to the storms and the dollar amount of that damage for each location. This information is then used to statistically estimate surge-specific damage functions that are subsequently applied to all (non-sample) infrastructure sites, thereby allowing the calculation of aggregate storm impacts. Estimates of direct damages to commercial infrastructure are based on characteristics obtained from pre- and post-storm vessel registration records and from price regressions estimated using data from marine trade publications and websites. Recent applications of this technique in the wake of Hurricanes Katrina and Rita in 2005, and Hurricanes Gustav and Ike in 2008 have allowed for more rapid and spatially-precise estimates of fisheries infrastructure damages. The specificity of these estimates, in most cases to the firm level, has been a welcome addition of information to the state and federal agencies tasked with damage assessment and recovery funding allocation. The primary goal of this research is to more efficiently guide the allocation of fisheries recovery funding. A secondary goal involves the potential mitigation of future damages through the use of simulations to inform the siting and development future infrastructure development.