

Hurricane Harvey Damage Assessment: Provisional Results for the Texas Commercial and For-hire Fisheries and Associated Businesses

Evaluación de los Daños Causados por el Huracán Harvey: Resultados Provisionales para la Industria Pesquera Comercial y de Alquiler y las Empresas Asociadas en el Estado de Texas

Évaluation des Dégâts Causés par l'Ouragan Harvey: Résultats Provisoires pour l'Industrie des Pêcheries Commerciales et Récréatives et les Entreprises Associées Dans l'État de Texas

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ABSTRACT

Shortly after Hurricane Harvey, NOAA Fisheries Southeast Regional Office coordinated a rapid appraisal of damages to the fishing industry and its support businesses within the state of Texas. NOAA staff began preliminary fieldwork in late September to organize the rapid appraisal. By early October NOAA staff was in the field conducting interviews with affected business owners, commercial and recreational fishermen. Fieldwork covered the coast from Nueces to Jefferson County, including Harris and continued through the first half of November. During the fieldwork phase an online survey was developed and provided to the state Texas to place on their websites. A phone survey was also developed and contracted out and was initiated once the fieldwork phase was completed. A total of 817 businesses and individuals participated in all phases of the appraisal in Texas. Damage assessment totals for various sectors are presented along with a discussion of the following disaster declarations and subsequent allocation of funds by Congress and preparations for future hurricane disasters.

KEYWORDS: Natural disasters, rapid assessment, fisheries, Texas, National Marine Fisheries Service

INTRODUCTION

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) and Interjurisdictional Fisheries Act (IFA) include language to recognize the impacts of disasters upon US fisheries, particularly Sections 312(a) and 315 of the MSA and Sections 308(b) and 308(d) of the IFA (<https://www.fisheries.noaa.gov/national/laws-and-policies/policy-directive-system>). There have been over 80 fisheries disasters requested since 1985 and financial assistance for the affected parties can be granted if the request is approved and Congress provides funding (<https://www.fisheries.noaa.gov/national/funding-and-financial-services/fishery-disaster-determinations>). Once a determination of a fishery disaster has been approved, the Secretary of Commerce requires the Assistant Administrator of NOAA Fisheries to conduct an analysis and a report to help determine the magnitude of harm incurred by the industry within 60 days. These reports can vary in scope and breadth, but for hurricanes, especially if they have an impact on a large geographic range, the data collection can be quite wide-ranging in trying to capture all affected parties and entail mixed methodologies. In the past, NOAA Fisheries has hired independent firms to conduct some assessments which have included extended fieldwork, however, this made timely access to data and information more challenging. Following Hurricane Sandy, it was decided to conduct the analysis utilizing NOAA personnel to expedite the data collection and analysis for the report. The methodology used during that assessment, funneled data directly to a central location where rapid quality control and analysis by NOAA personnel could be accomplished and facilitated a more timely reporting of results. Following similar protocols used during the fieldwork and data collection for Hurricane Sandy (NOAA 2013, Colburn et al. 2015), NOAA Fisheries deployed personnel to both Texas and Florida to gather information for Hurricanes Harvey and Irma. Similar protocols were used for Hurricanes Irma and Maria in Puerto Rico and the US Virgin Islands with data collected by territorial personnel and contractors (<https://www.fisheries.noaa.gov/feature-story/noaa-releases-economic-impact-evaluations-hurricanes-irma-and-maria-disasters>). Here the data collected and reports from the Hurricane Harvey assessment are discussed with some insights for future assessments.

Hurricane Harvey made landfall near Rockport, Texas on August 25, 2017 as a category 4 storm with damaging winds of 130 mph or greater. The brunt of wind and storm surge damage occurred near Rockport and Port Aransas, causing considerable devastation to these small coastal communities along the Texas coast. The storm moved slightly north and east and then stalled causing prolonged heavy rains resulting in extreme flooding events throughout Texas and into Louisiana, with the city of Houston undergoing particularly heavy flooding. The Governor of Texas estimated the total damage from Hurricane Harvey to be between \$150 billion to \$180 billion for his state alone and requested a fisheries disaster in a letter dated February 14, 2018.

Texas' commercial fisheries alone accounted for \$195 million in landings revenue and saltwater anglers spent \$425 million on fishing trips in the state in 2016 (National Marine Fisheries Service, 2018). The coastal towns and communities in Texas depend on fisheries to different degrees. Hurricane Harvey's direct path crossed areas of Texas that are among

some of the state's more dependent on commercial and recreational fishing. Without these important industries, the economic base for many of these coastal communities would be far less diverse and not as robust, so understanding the scope of damage and geographic range of impacts is essential.

To understand the effects of the storm on the fishing industries within the affected coastal area, NOAA Fisheries provided assistance to Texas Parks & Wildlife Department by conducting a rapid appraisal of damage from Hurricane Harvey through in-person, online and phone surveys in those areas suffering the most damage from the storm. Initial fieldwork was conducted the last week of September along the Texas coast from Nueces to Jefferson County to capture the scope of the impacts on both commercial and recreational fisheries. Teams were dispatched to conduct in person data collection from Nueces to Jefferson Counties the second week of October through mid-November. Through all phases of data collection, a total of 817 businesses and individuals participated in the surveys (in-person, on-line and phone surveys) through November 17, 2017. Of those businesses that participated 53% reported some type of damage and 23% of vessel owners had damages. Total damages estimated from the analysis to businesses and vessels exceeded \$58 million. The estimated total revenue lost to both commercial and recreational fishing at the time of surveying was \$36.2 million and an immediate job loss of over 1,700 (The number of immediate jobs lost was not considered permanent as many workers were unable to work for a variety of reasons, some of which could be resolved over time).

Surveys were implemented through several methodologies using permit lists from both State and Federal databases. Because we did not have probability samples, it was decided to use an average loss method of obtaining overall estimated damages to the various industries. The estimated damages were calculated by dividing the sum of damages reported from those surveyed within a particular damage category by the total number of respondents in that category that reported damages. We then took the percentage of those who responded with damages within a business category times the number within our sample frame to get an overall estimate of who may have had damages. That number within that business category was then multiplied by the average damages within a particular damage category. For example, if six commercial fishing respondents out of 50 reported having gear damages and our overall sample frame had 250 commercial fishermen, 12% of our overall sample or 30 would be expected to have had gear damaged. The average damages from the six respondents would be multiplied by 30 to provide an estimate of total gear damages for commercial fishermen.

THE IMPACT TO COMMERCIAL FISHERIES

The commercial fishing operations affected by Hurricane Harvey included a few Gulf fishing vessels that sustained damage or sunk. While most Gulf vessels were not damaged, there were reports that some crew and their families were living on vessels because their homes were flooded, thus preventing them from being able to fish. However, the larger impact was upon the small inshore

fishing fleet of shrimp, oyster and crab fishermen that saw many more vessels damaged, sank or destroyed. Commercial vessel owners surveyed had an average damage of \$10,000/vessel according to survey results. For oyster fishermen an important question at that time was whether they would be ready for the upcoming opening of the fall season which was usually around the first of November. Conversations reported with those fishermen suggested that difficulty in securing funds to repair their vessel in time was complicated by the fact that most owners lacked insurance. Further contributing to their problems was applying for a disaster loan from the Small Business Association often required documentation they did not possess and was considered a burdensome process. Many were left to draw from savings or other financial resources which often meant relying on personal relationships with family or friends. Total estimated damages to commercial vessels and gear were approximately \$5.7 million with another \$6.6 million in damages to facilities associated with their business operations which included docks and other related buildings.

Hurricane Harvey affected seafood dealers and processors primarily through damage to facilities, loss of seafood, and damage to equipment, piers and docks. However, it was the expected revenue loss as a result of the lack of product being available that contributed the greatest impacts and which may have continued to grow long after the storm. Many oyster processors were projecting even larger losses in the future as freshwater inflows from the extensive flooding devastated oyster reefs, especially in Galveston Bay. Some of those reefs may take years to recover. A few dealers lost power for a number of days and lost product as a result of the lack of ice or refrigeration. Average total damages of \$82,000 and average revenue loss of \$106,000 were reported for those seafood dealers and processors responding to the survey. Total damages to facilities were estimated to be close to \$1.6 million and damages to equipment was around \$1.7 million, with the greatest being seafood losses estimated at around \$7.4 million.

Seafood markets and restaurants were a small portion of the total sample and they were one of the least impacted business sectors included in the surveys. Whether that was because of their limited numbers in the sample or they actually did have less damage is unknown. Of those retail seafood businesses surveyed that were affected, many saw power outages affecting refrigerated and frozen product. In fact, the largest loss reported for this group was seafood at just over \$600,000 in total losses estimated. The estimated average in total damages was \$9,000 and \$25,000 in lost revenue as reported through the NOAA assessment.

THE IMPACT TO RECREATIONAL FISHERIES

Hurricane Harvey had a significant impact upon the Texas for-hire fleet, which includes inshore fishing guides, charter and headboats. Many experienced numerous cancellations in the wake of the storm as customers had few if any places to stay during their planned visits. Recreational fishing businesses were estimated to have suffered \$4.1 million in damages to vessels and gear in the affected areas. Damaged docks and a lack of fuel and bait

further curtailed fishing operations. In fact, damages to facilities and docks were estimated to be over \$23.6 million, some of the highest reported damages. Overall, those for-hire fishermen who responded indicated that they were shut down an average of 32 days, with many respondents indicating they were not open over the lucrative Labor Day weekend. Many docks, marinas, and hotels were still not repaired or re-built months after the storm and these losses were likely to continue to mount, possibly into the next year. The Texas' for-hire fleet sustained damages averaging \$27,000/vessel estimated from the survey.

Of the bait and tackle shops surveyed, at least 54% sustained damages with an average of \$56,000 per shop. These businesses were often not covered by insurance or had the wrong insurance or high deductibles that exceeded the damage level according to those who were interviewed. Damages to facilities, equipment and docks was estimated to be near \$3 million. In addition, 92% of shops surveyed were closed in the days immediately following the storm. On average, shops were closed for 22 days resulting in a \$28,000 loss in revenue.

There were few marinas and other businesses included in the sample, so figures here may not be representative of the complete impacts along the coast to these types of businesses. These businesses included marinas, boatyards and marine supply along with other business types. Approximately 41% of these types of businesses in the survey had damages, with damages to buildings averaging \$134,000 per business and pier and dock damages averaging \$119,000. Substantial damage was seen to have occurred to dry storage facilities along the coast primarily in Aransas and Calhoun Counties. On average, marinas and related businesses reported a \$94,400 loss in revenue and total estimated damage to facilities of \$1.2 million. Reported total losses to equipment and bait & seafood were estimated to be \$800,000 and \$100,000, respectively.

DISCUSSION

On March 27, 2018, the Secretary of Commerce declared a federal fisheries disaster in Texas. The U.S. Congress allocated \$200 million for fishery disaster funds in May 2018 for Hurricanes Harvey, Irma, and Maria. The estimates provided from the rapid assessment were used to eventually allocate \$14 million dollars for relief to the State of Texas. Those funds are still waiting to be distributed following review of the state's spending plan and implementation of that plan.

In review of the methods and analysis used to conduct the damage assessments for Hurricanes Harvey, Irma and Maria, NOAA Fisheries is considering modifying the approach to reduce the amount of fieldwork and in person surveying that is conducted. With the possibility of increased storm activity in the future, placing NOAA personnel in the field to collect data becomes more of a challenge. It is especially challenging when the geographical area to be assessed can cover several hundred miles with communities spread throughout. Phone surveys seem to work well as long as enough time has passed after the storm and services have been restored. In addition, there are no NOAA Fisheries personnel who are dedicated to

disaster assessment. Therefore, finding individuals who can set aside other priorities to do fieldwork and conduct analysis can be problematic. During the Hurricane Harvey assessment, NOAA personnel who conducted fieldwork in Texas came from not only the Southeast, but several different locations including: Headquarters (Silver Spring, MD), the Northeast (Woods Hole, MA) and Northwest (Seattle, WA) Science Centers. NOAA Fisheries continues to revise methods and techniques to efficiently and effectively conduct these rapid assessments. In doing so, NOAA Fisheries has significantly increased the timeliness of reporting damage assessments to our constituents and continue to work diligently with our state and federal partners in improving our approach to understanding the impacts of hurricanes on the fishing industry.

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