

# **Impacts of Hurricane Ike on the Southeast Texas Fishing Community**

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## **Introduction**

The western Gulf of Mexico was hit with four named storms in 2008. Hurricane Gustav, Tropical Storm Edouard, and Hurricane Ike all impacted the fishing communities in Jefferson and Orange Counties still struggling with the aftermath of Hurricane Rita in 2005. While spared major damage in the first two events, the sheer size and magnitude of Hurricane Ike affected the entire Gulf of Mexico, but particularly the Galveston Bay Complex and the Sabine Lake area. Fishing communities, recreational marinas, and coastal wetlands were devastated by the large storm surge that scoured the low lying areas.

Already in decline for a number of economic reasons not to be discussed in this paper, the Texas commercial seafood industry was further crippled as a result of damage to vessels, docks, processors, and dealers. Boat owners able to fish immediately after the storm experienced problems with debris, lack of fuel and ice, and selling their products due to the destruction of the shore-side infrastructure. Recreational and charter anglers were also affected by damage to bait shops, marinas, and boat ramps. While the resiliency of fishermen in the Gulf of Mexico is well-documented, the devastation to the fishing communities is unprecedented and aid is needed to rebuild and sustain the infrastructure of this viable community.

## **Background study**

A comprehensive report on the NOAA Fisheries study titled “Identifying Communities Associated with the Fishing Industry in Texas” was published just months after Hurricane Rita made landfall on the Texas/Louisiana border. The study included 67 communities in 18 coastal counties in Texas. The goal was to investigate and describe Gulf communities likely to exhibit some or all of the attributes of “fishing communities” as defined by the Magnuson-Stevens

Fishery Conservation and Management Act as Amended (the Magnuson Act; MSFCMA), and by National Standard 8 (NS-8).<sup>1</sup> That definition is listed below:

The term 'fishing community' means a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops) (Section 300.345, part 3).

The NOAA report can serve as an important pre-assessment of the fisheries infrastructure prior to the 2008 hurricane season. In Orange County, the fishing infrastructure in Bridge City was minimal, with one boat builder/broker and two marinas. Docking facilities and repair facilities were also limited. Two bait and tackle shops supported recreational fishing. Two public boat ramps accommodated anglers. In 2003, four Gulf shrimp permit holders were residing in Bridge City.<sup>2</sup>

In the county seat of Orange, fishing infrastructure was limited and there were signs of diminishing involvement in maritime business and trade. There were three resident Gulf shrimp permit holders in 2003.<sup>3</sup> There was also limited fishing infrastructure in Vidor. Two shops were available to repair fishing gear, and there were a number of seafood retailers based there. One boat ramp was observed for anglers. Five Gulf shrimp permit holders resided there in 2003.<sup>4</sup>

In Jefferson County, seven cities and towns were studied. While many residents accessed marine-related services and infrastructure in nearby Port Arthur, there were some 50 fishing-related businesses in Beaumont, including various boat builders, marinas, retail and wholesale seafood dealers. There was one crawfish plant/farm in Beaumont. In 2003, Beaumont residents

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<sup>1</sup> NS-8 is a component of the Sustainable Fisheries Act, Public Law 104-297, prepared by the National Oceanic and Atmospheric Administration Office of General Counsel in 1997; the Standard provides guidance for addressing community issues in the course of federal management of fisheries along the U.S. coastline.

<sup>2</sup> Impact Assessment, Inc. 2005. *Identifying Communities Associated with the Fishing Industry in Texas*. La Jolla, California, p. 23

<sup>3</sup> *Ibid.* p. 27.

<sup>4</sup> *Ibid.* p. 32.

held a total of four Gulf shrimp permits.<sup>5</sup> There were four fishing-related businesses in Groves. Of these, three were boat builders/brokers and one retail seafood dealer. In 2003, there were four Gulf shrimp permit holders resident here.<sup>6</sup> Various fishing-related businesses were based in Nederland and in neighboring Port Arthur, including some boat dealers and builders, marine supply stores, and a retail seafood dealer. A small fleet of commercial fishery participants resided there, and in 2003, four Nederland residents held Gulf shrimp permits.<sup>7</sup> While recreational angling was very popular in Port Acres, only a handful of residents were involved in commercial fishing activity. Fishing infrastructure was limited.<sup>8</sup>

Extensive fishing-related infrastructure was in place in Port Arthur, including numerous boat builders and brokers, marinas, processors, and retail and wholesale seafood dealers. A fleet of charter vessels was also based there, including a relatively large fleet of trawlers. Thirty-five residents held Gulf shrimp permits in 2003.<sup>9</sup> Many residents in Port Neches engaged in recreational angling, but commercial fishing and related industry were relatively limited. Roughly one-dozen commercial fishing vessels were docked in the area. Two residents held Gulf shrimp permits in 2003.<sup>10</sup> Relatively few fishing-related businesses were based in Sabine Pass. There were, however, numerous shrimp trawlers and commercial fishing and offshore oilfield support infrastructure based along the industrial waterfront. A significant shrimp fleet was operated and supported by Vietnamese persons, though most appear to reside in or hold post office boxes in Port Arthur. In 2003, a single resident was known to hold a Gulf shrimp permit.<sup>11</sup>

In summarizing their three year study, Impact Assessment, Inc. ranked the 68 studied towns and cities by total landings and total commercial permits and licenses held by residents to identify the 20 most active in Texas's marine fisheries. The southeast Texas fishing communities studied were ranked as follows:

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<sup>5</sup> *Ibid.* p. 41.

<sup>6</sup> *Ibid.* p. 45.

<sup>7</sup> *Ibid.* p. 49.

<sup>8</sup> *Ibid.* p. 53.

<sup>9</sup> *Ibid.* p. 57.

<sup>10</sup> *Ibid.* p. 61.

<sup>11</sup> *Ibid.* pp. 65-66.

**Table 1. Community Rankings for Total Landings, Ex-Vessel Value, and Dealer Permits**

Rank	Total Landings and Value (based on all address types)			Dealer Permits		
	Community	Total Pounds	Community	Total Value	Community	# Permits
5	Port Arthur	6,574,094	Port Arthur	18,800,645		
8	»	»	»	»	Port Arthur	21
12	»	»	Port Neches	4,770,455		
16	Port Neches	1,563,161				
19	Port Acres	1,160,492				

Modified from Table 3.19-2 Community Rankings for Total Landings, Ex-Vessel Value, and Dealer Permits<sup>12</sup>

**Table 2. Community Rankings for Licenses and Permits**

Rank	State License Holders 2000*		Federal Permit Holders 2000*		Gulf Shrimp Permits 2003		Recreational Licenses 2000	
	Community	# License	Community	# License	Community	# License	Community	# License
5	Port Arthur	103						
7	»	»	»	»	Port Arthur	35	Port Arthur	3,177
12	»	»	»	»	Vidor	5		
13	»	»	»	»	»	»	Nederland	2,154
14	»	»	»	»	Bridge City	4		
15	»	»	»	»	Groves	4		
16	Beaumont	27	Beaumont	3				
17	»	»	»	»	Nederland	4		
18	»	»	Port Arthur	3	»	»	Groves	1,539
19	Orange	19	»	»				
20	»	»	Nederland	3				

\*The rankings were based on physical address data only. Modified from Table 3.19-3 Community Rankings for Licenses and Permits<sup>13</sup>

As a final point from this study, fishing communities were grouped into basic categorical types in relation to their economic and social attributes. Of the ten cities/towns in Southeast Texas studied, Port Arthur was the only community in Southeast Texas labeled as primarily-involved. Beaumont, Bridge City, Groves, Nederland, Orange, Sabine Pass, and Vidor were the seven communities considered to be secondarily-involved. Port Acres and Port Neches were rated as tangentially-involved.<sup>14</sup>

### Initial Assessments

<sup>12</sup> *Ibid.* p. 396.

<sup>13</sup> *Ibid.* p. 396.

<sup>14</sup> *Ibid.* p. 401.

An accurate assessment of the damage created by Hurricane Ike was needed to ensure that federal funds were both adequate and allocated to the appropriate sectors and recipients. In addition to the resource information available from Texas Parks and Wildlife Department (TPWD) and National Marine Fisheries Service (NMFS), the Texas Sea Grant Extension Program (TXSGEP) took the task of estimating the damages to the area's fisheries infrastructure and lost revenues brought about by the hurricane. The assessment covered commercial seafood processors and dealers, the commercial fishing fleet, live-bait dealers, marinas, and for-hire charter boats. Data were collected from survey questionnaires mailed to a sample of the commercial license holders with resident addresses in the affected counties and surveys passed out to interested parties at public meetings held in January. Personal interviews with fishermen and site visits of facilities were conducted in various coastal locations by county extension personnel to ground truth responses.

### **Built Environment**

The housing shortage is a particular blow to these fishing communities since most fishermen live near their vessels and shops which by their very nature are in the most vulnerable areas for storm surge. In November, Governor Perry's Office release a report assessing preliminary damages incurred across the state during the 2008 Hurricane season. Over 8,000 housing units were lost due to the storm with the highest concentrations located in the cities of Port Arthur/Sabine Pass, Bridge City, City of Orange and Rose City.<sup>15</sup> Only 14 of the 3,400 homes in Bridge City were left as inhabitable."<sup>16</sup> All 216 businesses in Bridge City were severely damaged or destroyed by the storm surge. The greatest portion of the damage will not be covered by insurance because the majority of the city was not required to have flood insurance.<sup>17</sup> The storm surge did not top the Port Arthur seawall, but large waves did crash over the wall causing some flooding of homes within 3 blocks of the seawall. Water did top the levee on the east side of Orange, flooding over 3000 homes.<sup>18</sup>

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<sup>15</sup> FEMA. 2008. Hurricane Ike Impact Report. p.16.

<sup>16</sup> *Ibid.* p. 17

<sup>17</sup> Governor's Office. 2008. *Texas Rebounds: Helping our communities recover from the 2008 hurricane season.* Section 6, p. 15.

<sup>18</sup> <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~storms> retrieved 2/24/09.

## **Natural Environment**

The entire U.S. Gulf Coast was affected by higher than normal water levels as Hurricane Ike grew in size and approached the Southeast Texas coast. Several United States Geological Survey (USGS) sensors indicate that isolated areas of Jefferson County had storm surge heights up to 17 feet.<sup>19</sup> The highest surge measured by the National Ocean Service (NOS) was 12.79 feet at Sabine Pass North just as Ike was making landfall in Galveston.<sup>20</sup> Several miles inland at the head of Sabine Lake, Port Arthur measured a maximum surge of 11.03 feet.<sup>21</sup> Hurricane landfall and associated elevated water levels, waves, and currents can lead to severe coastal change through erosion and re-deposition. The most extreme coastal change regime is associated with inundation, when storm surge exceeds the elevation of the primary dune or beach berm and the entire beach system is submerged.<sup>22</sup> The saltwater intrusion into wetlands and other natural habitats creates ecological upheaval and the disruption of the recreation, leisure and ecotourism uses for these areas.<sup>23</sup> Oyster beds, fishing grounds, and other ecosystems affected by sediment and debris in Sabine Lake, the Chenier Plain marshes and the marshes inland from the eroded beach ridge at the McFaddin National Wildlife Refuge could have lasting impacts for decades.<sup>24</sup> Devastating long-term impacts of marsh loss on fisheries includes production levels of species like blue crab, white shrimp, and redfish.<sup>25</sup> The exact amount of damages and its environmental consequences might not be known for several years.

## **Recreational Fishing Industry**

Recreational fishing is an economically significant industry in Texas. In 2006, Texas was ranked second in the U.S. by total expenditures, which includes trip and durable goods, with \$3.2 billion. Texas was also ranked second by total trip expenditures of \$915 million and ranked fourth with \$2.3 billion in terms of durable good expenditures alone.<sup>26</sup>

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<sup>19</sup> Berg, R. 2009. Hurricane Ike. Tropical Cyclone Report. National Hurricane Center. p. 6.  
[http://www.nhc.noaa.gov/pdf/TCR-AL092008\\_Ike.pdf](http://www.nhc.noaa.gov/pdf/TCR-AL092008_Ike.pdf) retrieved 2/24/09.

<sup>20</sup> *Ibid.*

<sup>21</sup> *Ibid.*

<sup>22</sup> <http://www.usgs.gov/newsroom/article.asp?ID=2020> retrieved 2/11/09.

<sup>23</sup> FEMA, 2008. Hurricane Ike Impact Report. p. 3

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.* p. 42.

<sup>26</sup> Gentner, Brad, and Scott Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. U.S. Dep. Commerce, NOAA Tech. Memo. NMFSF/SPO-94, pp. 21-22.

Sabine Lake and Galveston Bay account for approximately \$356 million in retail sales each year for fishing expenditures which equates to \$650 million in economic impact to the state when indirect expenditures such as lodging, meals, and general merchandise purchase are added.<sup>27</sup> The estimated average percentage of recreational fishing pressure for Sabine Lake for 2005-2007 was 5.6 of the state total.<sup>28</sup> If this percentage is used with Gentner and Steinbeck's recently released report on the economic contribution of marine (aka saltwater) anglers, the recreational fishing industry contributes nearly 700 jobs to the area. When expenditures, output, value added, and income are combined, the percentage for Sabine Lake equals \$191,117.52.

**Table 3. Total Economic Impacts Generated in Texas from Marine Recreational Fishing Trip Expenditures by Resident Status and Mode in 2006 (in thousands of dollars except employment is total jobs)<sup>29</sup>**

TX		Expenditures (\$1,000)	Output (\$1,000)	Value Added (\$1,000)	Income (\$1,000)	Employment (Jobs)
Fishing Mode	Resident Status	\$104,907	\$176,561	\$98,459	\$55,762	1,927
Party/Charter	Resident					
	Non-Resident	\$10,352	\$17,544	\$9,737	\$5,560	186
	Total	\$115,259	\$194,106	\$108,196	\$61,322	2,113
Private/Rental	Resident Status	\$434,337	\$642,548	\$343,173	\$193,323	5,576
	Resident					
	Non-Resident	\$18,597	\$29,999	\$16,230	\$9,473	279
	Total	\$452,934	\$672,547	\$359,403	\$202,796	5,855
Shore	Resident Status	\$317,954	\$457,473	\$247,159	\$140,707	4,195
	Resident					
	Non-Resident	\$21,671	\$33,344	\$17,844	\$10,099	292
	Total	\$339,625	\$490,817	\$265,002	\$150,806	4,487
Total	Resident Status	\$857,198	\$1,276,582	\$688,790	\$389,792	11,698
	Resident					
	Non-Resident	\$50,620	\$80,888	\$43,810	\$25,132	757
	Total	\$907,818	\$1,357,470	\$732,601	\$414,924	12,456

### *Boat Ramps*

Fishery infrastructure was devastated by Hurricane Ike. Many of the damaged boat ramps will require major repairs to become operational. Based on early 2007 estimates received from Jefferson County for repairs to ramps in the Sabine Lake area after Hurricane Rita, it is reasonable to estimate an average of \$125,000 per boat ramp.<sup>30</sup> (Hurricane Rita made landfall on Louisiana-Texas border in 2005, causing major flooding in Port Author and Beaumont.)

<sup>27</sup>TPWD. 2008. Hurricane Ike: Preliminary Analysis of Economic Damages to Texas Coastal Fisheries

<sup>28</sup> *Ibid.*

<sup>29</sup>Gentner and Steinback. 2008, p. 244

<sup>30</sup> TPWD. 2008. Hurricane Ike: Preliminary Analysis of Economic Damages to Texas Coastal Fisheries.

## Marinas

Many coastal marinas have little left to show for what was once a prospering business except for a few piers and piles of rubbles. Pleasure Island Commission member Jimmy Dike estimated that Pleasure Island Marina will not be rebuilt for about three years.<sup>31</sup> All of their 350 wet slips (fixed docks) were heavily damaged or destroyed. Currently, individual boaters are making repairs to the slips with their own funds so they can use them. Pleasure Island also lost their fuel docks, and other services, plus all 77 units of their dry storage.<sup>32</sup>

Sabine Pass Port Authority had Hurricane Ike damage to all 88 slips and fuel docks, right after they had repaired them from Rita. Staff there reported that only the live-aboard slips have power and water and are occupied. The fuel dock has not reopened. A total loss figure for the complex was not available.<sup>33</sup> Rainbow Marina and Sabine Yacht Basin were without phone service when called on February 25<sup>th</sup>, more than five months after the storm.

**Table 4. Marina facilities on the Texas Gulf Coast affected by Hurricane Ike.**

	Recreational Marinas	Wet Slips	Dry Storage	Marina ramps
Total on Texas Coast <sup>34</sup>	107	13,282	4,542	113
Sabine Lake	5	582	326	14
% of coastal total	4.7	4.4	7.2	12.4
% damaged in storm <sup>35</sup>	100	100	100	unknown

Area marinas were struggling to put their businesses back together for the recreational and commercial boating public that was also decimated. The cost of rebuilding marinas is high, and not all can afford the price. For those that can afford to rebuild, they have the opportunity to upgrade their facilities, possibly with the help of grant funds. The Texas Clean Marina Program can work with marinas through ongoing damage assessment and rebuilding. While the affected

<sup>31</sup> quoted in KBMT12 News Jan 29, 2009

<sup>32</sup> Hollin. Feb. 25, 2009. Email detailing conversations with marina staff about damages.

<sup>33</sup> *Ibid.*

<sup>34</sup> Hollin, D.2008. Texas Marina Facilities & Services Directory, Texas Sea Grant Program.

<sup>35</sup> Texas Sea Grant loss assessment (2008) conducted by Dewayne Hollin



counties may never be the same as they were before Hurricane Ike, this challenging opportunity can be taken to rebuild the boating infrastructure to even higher standards.

### *Private Vessels*

According to boat registration statistics obtained from Texas Parks and Wildlife, Jefferson County had 8,615 vessels. Most are 26 feet or smaller, made of fiberglass or aluminum and gasoline powered. Commercial use was designated for 159 vessels, and 8,432 vessels were registered as pleasure craft. Orange County had 6,482 vessels. Most are 26 feet or smaller, made of fiberglass or aluminum and gasoline powered. Commercial use was designated for 43 vessels, and 6,420 vessels were registered as pleasure craft.<sup>36</sup> Of these vessels, an undetermined number have been lost, damaged or destroyed.

### *Charter Boats*

The gray area between recreational fishing and commercial fishing is the for-hire sector, which includes guides, charters and headboats. Ten licensed guides<sup>37</sup> operate out of Southeast Texas and four federal permits<sup>38</sup> are held by this group. Surveys were mailed to each guide service to gather data on their economic losses. Of the 10 fishing guides surveyed, only 4 forms (40%) were returned from the Sabine Lake area. Responses were only received from guide/six-pack operators. No multi-passenger or headboats returned their surveys. Reported lost trips associated with Hurricane Ike in the Sabine Lake area were 56 with a loss of \$36,400 in gross revenue. Lost income for these businesses in the coming year was estimated at \$11,050.<sup>39</sup> With such a small sample reporting, it is difficult to ascertain the true economic impact of the storm. Damages incurred by vessels that did not participate in the survey are not included in the estimates of storm related losses. Therefore, this study underestimates actual losses to the entire charter fleet because an unknown amount of industry-wide losses was not reported.

The major impediments to the local for-hire sector are the high price of fuel, lack of tourism, and damaged infrastructure. Much of the hotel space is occupied by displaced residents, FEMA

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<sup>36</sup> TPWD. 2009. Boat Registration Statistics County Report, retrieved 2/1/09.

<sup>37</sup> TPWD LY 2009 data for residents listing Jefferson or Orange County as a place of residence.

<sup>38</sup> Compiled from data on <http://sero.nmfs.noaa.gov/foia/readingrm.htm> retrieved 2/24/09.

<sup>39</sup> Texas Sea Grant loss assessment (2009) conducted by Rhonda Cummins.

workers, contractors, and insurance agents. The loss of income for this sector primarily comes from cancelled trips and lack of travel to the region. Most charter fishing guides are successful, hardworking small business owners. All who returned surveys stated they planned on staying in business. Many people outside of the industry may not understand the significance of lost trips. The majority of these vessels operate with a high overhead on a limited budget. A few missed trips can mean the difference between survival and the need for an operating loan. Although the gross fee associated with a lost trip would include such expenses as fuel, which obviously would not be expended, most expenses such as dock rent, tackle, insurance, etc. are fixed and have to be paid whether the owner receives payment for a trip or not.

The total losses to the recreational fishing industry will depend on the length of time that recreational fishing in the area is reduced or eliminated by the area's condition. Rebuilding or repairing infrastructure including, but not limited to, marinas, boat ramps, hotels, bait shops, and the infrastructure that supports those businesses will ultimately determine the overall impact to this vital economic sector.

### **Seafood Industries**

The Southeast Texas seafood industry took a hard hit when Hurricane Ike came ashore. A total of 293 businesses were directly impacted in the commercial fisheries of Galveston Bay and Sabine Lake based on license and trip ticket reporting.<sup>40</sup> The most severely damaged were the seafood processors in Port Arthur which were inundated by the high storm surge. According to the National Marine Fisheries Service (NMFS), Texas has four of the 89 major U.S. ports for commercial fishery landings. In 2007, Port Arthur was ranked 20<sup>th</sup> by dollars with \$39 million.<sup>41</sup> When ranked by landings in pounds, Port Arthur was 39<sup>th</sup> with 17.4 million pounds.<sup>42</sup>

According to the Texas Parks and Wildlife Department (TPWD), Sabine Lake and Galveston Bay make up approximately 37% of the inshore waters on the Texas coast, and accounts for approximately 55% of the ex-vessel value of commercial landings, and 36% of the total

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<sup>40</sup> Governor's Office. 2008. *Texas Rebounds: Helping our communities recover from the 2008 hurricane season*. Section 8, p. 21.

<sup>41</sup> [http://www.st.nmfs.noaa.gov/pls/webpls/MF\\_LPORT\\_YEAR.D.RESULTS](http://www.st.nmfs.noaa.gov/pls/webpls/MF_LPORT_YEAR.D.RESULTS) retrieved 2/23/2009.

<sup>42</sup> [http://www.st.nmfs.noaa.gov/pls/webpls/MF\\_LPORT\\_YEAR.P.RESULTS](http://www.st.nmfs.noaa.gov/pls/webpls/MF_LPORT_YEAR.P.RESULTS) retrieved 2/23/2009.

recreational fishing. In annual terms, this region accounts for approximately \$16 million in sales each year for bait, shellfish, and finfish.<sup>43</sup> “The economic impact of these ex-vessel sales conservatively creates<sup>44</sup> a total of \$25 million in economic impact to the state of Texas.”<sup>45</sup>

Trip tickets are a mandatory record-keeping system that requires commercial fishermen and seafood dealers to report detailed records on any seafood landed at a port in Texas.<sup>46</sup> The records include information on the type of species caught, the amount of volume and price received for the catch.

**Table 6. Ex-vessel value (\$) of each species landed commercially from the Sabine Lake system<sup>47</sup>**

Species	2005	2006	2007	Total	3-yr. Average
Finfish	23,329	2,197	10,730	36,256	12,085
Shrimp	721	1,009	5,584	7,314	2,438
Crab	578,275	299,135	312,662	1,190,072	396,691
Bait	34,865	638	11,868	47,371	15,790
Total	637,190	302,979	340,844	1,233,642	411,214

As noted after other devastating coastal storms, the value of damaged infrastructure supporting the seafood industry is difficult to quantify. Infrastructure losses can be characterized as lost or damaged vessels, docks, ice plants and processing facilities but could also include roads and bridges, trucking, cold storage facilities, boat ramps, launches, marinas, bait and tackle shops. Due to the wide-spread displacement of local residents, labor shortages often limit the ability of infrastructure to quickly recover and repair and/or re-build.<sup>48</sup> While some shrimp boats were sunk, tossed on shore, or otherwise damaged, most came through the storm and are ready to fish.

<sup>43</sup> TPWD. 2008. Hurricane Ike: Preliminary Analysis of Economic Damages to Texas Coastal Fisheries.

<sup>44</sup> Tanyeri, Jones, and Jiang. 1998. Economic Impacts of Recreational Activities and Commercial Fishing on the Texas Gulf Coast.

<sup>45</sup> TPWD. 2008. Hurricane Ike: Preliminary Analysis of Economic Damages to Texas Coastal Fisheries.

<sup>46</sup> TPWD began collecting commercial trip ticket records in 2005. These data can be formulated and applied for revenue estimated purposes.

<sup>47</sup> Bohannon. 2008. TPWD Commercial Landings Trip Ticket Program.

<sup>48</sup> Louisiana Department of Wildlife and Fisheries. September 7, 2005. Preliminary Analyses of Economic Losses Caused by Hurricane Katrina to Louisiana’s Fisheries Resources. p. 5.

Storm debris has been, and continues to be, a major problem for shrimp nets, especially in Sabine Lake.<sup>49</sup>

### *Seafood Dealers*

All twenty-two active seafood dealers in the area were closed after the storm with most destroyed or partially destroyed. Many are still not operational. Unfortunately, only two (9%) of the dealers returned a survey and this sample size was too small to draw relevant data.

### *Sabine Lake Fishermen*

Another survey was sent to fishermen with bay and bait licenses that worked on Sabine Lake. Additional surveys were distributed at public meetings held by Texas Sea Grant in Dickinson, Anahuac, and Port Arthur. In total 102 surveys were distributed to the fishermen and 18 responded (17.6%). Collectively, these Sabine Lake fishermen annually spent 1,076 days fishing for bait shrimp, and 782 days fishing for table shrimp. A total of 21 vessels were owned by the 18 respondents. The vessels were broken down by license type with the majority being shrimp (19) boats. One vessel was listed as a combination license (shrimp & unknown); and the question was not answered on the other vessel.

Vessel damage was classified by severity with only 5% (1 vessel) reporting “*no damage*”; 38% (8 vessels) reported “*minor damage*”; 52% (11 vessels) reported “*substantial damage*” with hull or engine repair needed; and 5% (1 vessel) was classified as “*destroyed or lost*” and replacement would be required. Overall, the fleet wide casualty loss was calculated at 9.6%. While 17 of the surveyed vessels (81%) were expected to be operational by August 2009, another 4 vessels (19.0%) were listed as taking an unknown amount of time to repair or replace. Roughly 1 of 5 commercial fishing vessels had an undetermined future and could quiet possibly never fish again depending on a wide range of factors for the owners not covered in the study. None of the respondents owned docks, piers, or bulkheads, nor did any own a fuel storage facility.

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<sup>49</sup> Personal conversations with veteran commercial fishermen 2008.

**Table 7. Estimated Losses and Costs to Repair or Replace All Damaged or Destroyed Assets of the Sabine Lake Fishermen Who Responded to Survey<sup>50</sup>**

<b>Asset Class</b>	<b>Dollars</b>	<b>Percent</b>
Vessels	503,500	100.0
Docks & Piers	0	0
Fuel Systems	0	0
<b>Total Repair/Replacement Cost</b>	<b>503,500</b>	<b>100.0</b>

Survey questions also asked about employment and payroll impacts for the twelve months just prior to the storm and the twelve months afterwards. Respondents provided information about the number of employees and their payroll. From September through December 2007, these fishermen employed an average of 40 workers a month with a payroll value of \$560,700. After Hurricane Ike, data reported for September through December 2008 showed an average of 33 workers employed per month with a payroll of \$275,564. In short, employment of workers decreased by 17.7% and payroll declined 50.9%. An important factor affecting the employment of fishermen was the availability of dockside processors, ice and fuel supplies. Without data documenting the level of damaged experienced by the seafood dealers it was impossible to draw any conclusions on this point.

#### *Projected losses*

Over \$500,000 in losses were reported by the Sabine Lake fishermen. With only 16% of the fishing community responding to the surveys, the total loss was not possible to estimate with reasonable accuracy. These surveys were Texas Sea Grant's first attempt to gather such post-storm data, and were quite remarkable considering the level of devastation experienced by the participants in all areas of their lives. From their responses, it could be possible to extrapolate greater economic loss numbers for the industry. Based on simple mathematics alone, the overall economic loss to the fisheries infrastructure could possibly be estimated as high as \$3 million.<sup>51</sup>

#### **Conclusion**

<sup>50</sup> Survey conducted by Calhoun County Extension Agent Rhonda Cummins, December 2008 thru February 2009. Results compiled by Extension Specialist Mike Haby, June 2009.

<sup>51</sup> Roughly 1 of 6 commercial fishermen/seafood dealers responded to the survey. If the reported losses are multiplied by 6, the result is \$3,021,000.

Long-term recovery has been defined as a rebuilding process to bring back economic activities to the level of pre-disaster as soon as possible.<sup>52</sup> The commercial and recreational fishing industries of Southeast Texas are of no less importance in this regard than any other business, housing, or infrastructure project currently under consideration. Generations of families in Southeast Texas have operated fishing boats, seafood processing facilities, boat yards and support industries. Such water-dependent industries have tremendous economic impacts for the area and the state. Fisheries infrastructures (fishing vessels, docks, ice houses, processing facilities, warehouses and marinas) were directly damaged by Hurricane Ike thus limiting the access, docking, and support services needed by these water-dependent industries. When they are unable to operate, related businesses also suffer. In addition to economic losses, the traditional community culture and character could be lost as the working waterfronts disappear. In rural areas, disasters not only affect economic activities, but may also culminate in hunger and poverty if severe damage is caused to the agriculture and natural resource sectors such as fisheries. Indirect impacts from the storm came through destruction of coastal wetland habitat which provides multiple functions including recreation, leisure and ecotourism. Complete recovery of these areas could take several years. Aid is needed to rebuild and sustain the infrastructure of this area's viable fishing community.

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<sup>52</sup> Erlambang. 2008. Estimating the Economic Impacts of Hurricane Damage on Coastal Fishing Infrastructure. p. 11