

**ASSESSMENT OF THE IMPACTS OF KATRINA ON MISSISSIPPI COMMERCIAL
AND RECREATIONAL FISHERIES**

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ABSTRACT

An economic assessment of the commercial harvesting sector, seafood processing and distribution sectors, charter boats for hire, livebait boats and dealer houses, marinas, support facilities, and recreational boats was undertaken in Mississippi to determine the level of damage sustained as a result of Hurricane Katrina. The devastation by this hurricane has created an urgent and compelling need to complete damage assessments in the affected areas in as short a period as possible. An accurate assessment of the damage created by this storm is needed to ensure that federal funds are both adequate and allocated to the appropriate sectors and recipients. The damage assessment included the following information about the boats/vessels, processing plants, dealer houses and support facilities: 1. Inventory of facilities that existed at each port or community; e.g., marinas, processing plants, fish houses, bait and gear shops, ice houses, recreational boats and other support facilities. 2. Original capital investment made in the facility or site. 3. Estimate of physical damage to a facility or site and the dollar value of that damage by community. 4. Estimate of the replacement cost of the capital needed to reestablish that facility or site as an operational entity. 5. The level of insurance presently existing for the entity, the capital debt remaining to be paid off, and whether the plant or some other collateral is used to secure the loan. The adverse social and economic impacts of these hurricanes are reduced if recovery is not prolonged. This is accomplished by providing the necessary aid and assistance as quickly as possible. This assessment will aid in identifying critical relief, support, and rebuilding needs to assist the seafood processing and dealer sector and associated communities in recovering their economic vitality. This assessment is a necessary first step in providing the necessary aid to the affected businesses and communities.

Keywords: disaster damage assessment, Mississippi seafood industry

INTRODUCTION

An economic assessment of the commercial harvesting sector, seafood processing and distribution sectors, for-hire charter boats, livebait boats and dealer houses, marinas and support facilities was undertaken in Mississippi to determine the level of damage sustained as a result of Hurricane Katrina. The devastation by these hurricanes has created an urgent and compelling need to complete damage assessments in the affected areas in as short a period as possible. Congress will be developing damage assistance programs for the Gulf region in the near future. An accurate assessment of the damage created by these storms is needed to ensure that federal funds are both adequate and allocated to the appropriate sectors and recipients. The commercial harvesting and processing of seafood products in the state (Table 1) contribute a significant portion of the state economy in terms of employment and income generated (1).

Table 1. Commercial Landings and Processing Production Plant-gate Values

Category	2004 Landing Values ¹	2003 Processing Plant-gate Values ¹
Shrimp	\$26,524,987	\$73,402,922
Oysters	\$6,073,242	\$9,181,372
Crabs	\$705,705	\$838,128
Foodfish	\$896,252	\$84,432,502
Industrial fish	\$9,590,368	NA
Total	\$43,790,554	\$337,863,746

¹ - Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD.

The assessment, to the extent possible, identified all boats/vessels, processing plants, seafood dealer houses and support facilities in the affected areas that existed prior to the hurricanes, identified original physical characteristics (number of boats/vessels and buildings, types and quantity of equipment) and production levels for these operations, and provided an estimate of the cost of rebuilding or repairing the facilities structure and equipment to their pre-hurricane state so that harvesting and processing of seafood products can resume. The damage assessment included the following information about the boats/vessels, processing plants, dealer houses and support facilities:

1. Inventory of facilities that existed at each port or community; e.g., marinas, processing plants, fish houses, bait and gear shops, ice houses, recreational boats and other support facilities.
2. Original capital investment made in the facility or site.

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3. Estimate of physical damage to a facility or site and the dollar value of that damage by community.
4. Estimate of the replacement cost of the capital needed to reestablish that facility or site as an operational entity.
5. The level of insurance presently existing for the entity, the capital debt remaining to be paid off, and whether the plant or some other collateral is used to secure the loan.

The National Oceanic and Atmospheric Administration (NOAA) has an urgent and compelling need to immediately assess the damage inflicted on the seafood processing and dealer sector in Mississippi by the recent hurricanes. The adverse social and economic impacts of these hurricanes are reduced if recovery is not prolonged. This is accomplished by providing the necessary aid and assistance as quickly as possible. This assessment will aid in identifying critical relief, support, and rebuilding needs to assist the seafood processing and dealer sector and associated communities in recovering their economic vitality. This assessment is a necessary first step in providing the necessary aid to the affected businesses and communities. Providing the proper levels of assistance in a timely manner will reduce the waste and inefficient use of assistance and, ultimately, reduce the cost to the government and the nation.

METHODS

The assessment of the impacts of the natural catastrophic events on the state commercial and recreational fisheries and charter boat industries covered the following resident boats/vessels and facilities (net of double-counting due to multiple licenses issued to some boats and plants):

1. Commercial seafood processors (69 plants) and dealers (141 houses),
2. Commercial fishing fleet (1,030 vessels/boats),
3. Livebait dealers (30 houses),
4. Marinas (37 facilities)
5. For hire charter boats (100 vessels/boats),
6. Land-based support facilities (5 facilities).

Data were collected from survey questionnaires mailed to all resident boats/vessels and facilities licensed in the state of Mississippi. Personal interviews and site visits of facilities were conducted in four coastal locations by personnel of the Mississippi Department of Marine Resources-Office of Marine Fisheries (DMR) and the Mississippi State University-Coastal Research and Extension Center (MSU). The damages associated with the hurricane to resident commercial seafood processing plants and seafood dealer houses licensed by DMR were estimated by using the following formulas:

$$\begin{array}{lcl} \text{Total reported damages} & = & \text{damages to buildings} \\ & + & \text{damages to processing, storage, refrigeration, and} \\ & & \text{delivery equipment, and other accessories} \\ & + & \text{cleaning, removal and disposal costs} \end{array}$$

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$$\begin{array}{rcl}
 & + & \text{inventory losses} \\
 \text{Total projected damages} & = & \text{average total damages reported by sample processing} \\
 & & \text{plants or seafood dealer houses} \\
 & \times & \text{total number of processing plants or seafood dealer} \\
 & & \text{houses}
 \end{array}$$

The damages to the resident commercial fishing fleet and for hire charter boats licensed by DMR were estimated as follows:

$$\begin{array}{rcl}
 \text{Total reported damages} & = & \text{damages to boats/vessels and engines} \\
 & + & \text{damages to fishing gear and other accessories} \\
 & + & \text{cleaning, towing and disposal costs} \\
 \text{Total projected damages} & = & \text{average total damages reported by sample boats or} \\
 & & \text{vessels} \\
 & \times & \text{total number of boats or vessels}
 \end{array}$$

The damages to the resident marinas licensed by DMR were estimated by using the following formulas:

$$\begin{array}{rcl}
 \text{Total reported damages} & = & \text{damages to buildings} \\
 & + & \text{damages to wet slips and dry storage} \\
 & + & \text{damages to jetties and ramps} \\
 & + & \text{damages to equipment and other accessories} \\
 & + & \text{dredging, cleaning, and disposal costs} \\
 & + & \text{inventory loss} \\
 \\
 \text{Total projected damages} & = & \text{average total damages reported by sample marinas} \\
 & \times & \text{total number of marinas}
 \end{array}$$

The damages to resident commercial livebait dealers licensed by DMR were estimated by using the following formulas:

$$\begin{array}{rcl}
 \text{Total reported damages} & = & \text{damages to buildings} \\
 & + & \text{damages to holding equipment} \\
 & + & \text{damages to livehaul equipment} \\
 & + & \text{damages to other accessories} \\
 & + & \text{cleaning, removal and disposal costs} \\
 & + & \text{inventory loss} \\
 \\
 \text{Total projected damages} & = & \text{average total damages reported by sample dealer} \\
 & & \text{houses} \\
 & \times & \text{total number of dealer houses}
 \end{array}$$

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Similar formulas were used to estimate total reported and projected initial investment, insurance payments and outstanding loans in each of the above-mentioned sectors included in this assessment. There are other information collected during the survey but were not included in this paper including annual sales, number of persons employed, sales foregone due to lost markets channels, and number of jobs lost. More detailed explanation of the methods and results of the economic assessment of the damages associated with the hurricane in Mississippi are shown in earlier reports (2, 3, 4, 5). Similar economic assessments were also conducted in Alabama (6), Louisiana (7) and Florida (8). With all this information regarding the impacts of hurricanes on the regions's fisheries industry, an outline of the role of the federal government during hurricanes had been presented (9).

RESULTS

A total of 510 interviews with resident Mississippi commercial fishermen were completed between November 2005 and February 2006, representing an average response rate of 49.6% (Table 2). Of the 1,030 questionnaires mailed to these fishing establishments, 62 mails were returned since they were undeliverable to the last known or forwarding addresses, with one commercial fisherman reported as deceased. Excluding the 62 returned mails, the net response rate to the mail and personal survey was 53%.

Eighty interviews with seafood processing plants (32), seafood dealers (43) and land-based support facilities (5) were completed between November 2005 and February 2006, representing an average response rate of 37.2%. Of the 215 questionnaires mailed to these business establishments, 40 mails were returned since they were undeliverable to the last known or forwarding addresses. Excluding the 40 returned mails, the net response rate to the mail, personal and telephone survey was 46%.

Forty-two charter boat operators participated in the mail survey and personal interviews between November 2005 and February 2006, representing a response rate of 42%. There were 37 marinas in the three coastal counties when Hurricane Katrina landed in the Mississippi Gulf Coast. All of these facilities were damaged by the hurricane. A sample of 10 marinas responded to the survey representing a response rate of 27%. Eleven livebait dealers out of the 30 listed responded to the survey representing a 36.7% response rate. All of the livebait dealers were damaged by the hurricane.

Total Reported and Projected Damages

The total estimated damages on the resident Mississippi commercial fishing fleet amounted to \$35.3 million (Table 2). These damages represent 26.8% of the total initial investment on the commercial fishing fleet. The damages to boats, fishing gear and other accessories contributed 97% of all reported damages (Table 3). Damages reported by commercial fishermen ranged from \$0 to \$600,000. Only 13% of all commercial boats/vessels did not receive any damages associated with Hurricane Katrina.

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The total estimated damages for the 69 seafood processing plants, 141 seafood dealers and 5 land-based support facilities amounted to \$101.3 million. These damages consisted of \$77.8 million for processing plants, \$21.3 million for seafood dealers and \$2.1 million for land-based support facilities. Among the processing plants, damages to buildings, equipment and accessories comprised of 72% of total damages, while cleaning and disposal added 2% and inventory losses added 26%. Among seafood dealers, the distribution of total damages was as follows: damages to buildings, equipment and accessories - 90%, cleaning and disposal - 4%, and inventory losses - 6%.

Table 2. Total Reported and Projected Damages to the Mississippi Commercial and Recreational Fishing Industries

Sector	Units	Population	Sample	Percent	Reported Damages	Projected Damages
Fishing Fleet	boats/vessel	1,030	510	50%	\$17,511,201	\$35,296,550
Seafood Processors	plants	69	32	46%	\$36,093,997	\$77,827,680
Seafood Dealers	houses	141	43	30%	\$6,046,299	\$21,313,204
Charter Boats	boats/vessel	100	42	42%	\$924,500	\$2,201,190
Livebait Dealers	houses	30	9	30%	\$1,251,250	\$4,170,833
Support Services	facilities	5	5	100%	\$2,119,000	\$2,119,000
Marinas	facilities	37	10	27%	\$11,184,870	\$41,384,018
Total		1,412	651	46%	\$75,131,117	\$184,312,475

The total estimated damages on the resident Mississippi ‘charter boat for hire’ fleet amounted to \$2.2 million. The damages to boats and engines accounted for more than three-fourth of total damages to the charter fleet. The reported damages ranged from \$0 to \$111,000 per boat with an average of \$22,523 per boat. Thirty-one percent of the operators interviewed reported no damages on their boats, engines, fishing gear and other accessories. The total damages to the Mississippi marinas located in the three coastal counties reached \$41.38 million. The individual damages reported by the participating marinas ranged from \$8,000 to \$5,392,000 with an average of \$1.11 million per marina. Approximately 80% of the reported damages involved damages on buildings, slips and storage. The total damages to livebait dealers ranged from \$35,700 to \$415,000 which averaged \$139,028 per facility or totaled \$4.17 million.

Table 3. Breakdown of Total Reported Damages to the Mississippi Commercial and Recreational Fishing Industries

Sector	Damages on Assets	Cleaning and Disposal Costs	Inventory Loss ¹	Total Damages
Fishing Fleet	\$16,939,422	\$571,779	NA	\$17,511,201
Seafood	\$25,972,812	\$560,500	\$9,560,685	\$36,093,997
Seafood Dealers	\$5,464,956	\$230,952	\$350,391	\$6,046,299
Charter Boats	\$896,300	\$28,200	NA	\$924,500
Livebait Dealers	\$947,500	\$92,550	\$211,200	\$1,251,250
Support Services	\$1,821,500	\$38,000	\$259,500	\$2,119,000
Marinas	\$10,158,370	\$840,000	\$186,500	\$11,184,870
Total	\$62,200,860	\$2,361,981	\$10,568,276	\$75,131,117

¹ - No inventory loss was estimated for the commercial fleet and charter boats. A few fishermen interviewed cited inventory losses consisting of diesel fuel and hydraulic fluid.

Initial Investment Requirements

Rebuilding the damaged commercial fishing fleet would require new private investments to replace or repair of boats/vessels, equipment and other accessories. Total initial investments on these fishing units amounted to \$131.8 million consisting primarily of boats/vessels and engines (Table 4). To encourage new private investments, new infrastructures would be required, including but not limited to, access to loading, unloading, ice and fuel, and repair facilities. Needless to say, these fishing units would need safe access to the state and federal fishing waters without undue risks and uncertainties associated with debris brought by the hurricanes.

In order to rebuild the damaged seafood processing plants, dealer houses and support facilities, new private investments in building structures, equipment and other accessories, and supplies and materials are required. These investment decisions would have to consider domestic as well as international market forces affecting the demand and supply of seafood products. These market forces would surely affect decisions involving the location of the establishments, the size of the facilities, the technological options, and the forms of products or services. Total initial investments on these establishments amounted to \$90.3 million consisting of \$56.0 for processing plants, \$32.9 million for seafood dealers and \$1.3 million for land-based support facilities (Table 4). To encourage new private investments, new public infrastructures would be required, including but not limited to, access to the new facilities, and waste treatment and disposal facilities.

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Restoring the damaged for-hire charter fleet, marina facilities and livebait dealer houses to pre-Katrina level would require new private and public investments to replace or repair buildings, boats, equipment and other accessories. Total initial investments on the charter fleet amounted to \$13.9 million which averaged more than \$139,000 per boat. The average initial investment on marinas was more than \$1.0 million each or a total of \$37.58 million for all the coastal marinas damaged by the hurricane. An average investment of more than \$83,000 was reported among livebait dealers and totaled \$2.5 million. To encourage new private investments to replace or repair the charter fleet, new infrastructures would be required, including but not limited to, access to loading, unloading, ice and fuel, and repair facilities. These fishing units would likewise need safe access to the state and federal fishing waters.

Table 4. Estimated Initial Investment and Damages to Assets of Mississippi Commercial and Recreational Fishing Industries

Sector	Total Reported Assets	Total Projected Assets	Percent Damaged
Fishing Fleet	\$60,509,045	\$131,763,882	28%
Seafood Processors	\$24,356,292	\$56,019,471	100%
Seafood Dealers	\$5,606,689	\$32,939,298	97%
Charter Boats	\$5,150,660	\$13,920,703	17%
Livebait Dealers	\$751,300	\$2,504,333	100%
Support Services	\$1,347,000	\$1,347,000	100%
Marinas	\$11,406,370	\$42,203,568	89%
Total	\$109,127,356	\$280,698,255	57%

Net Damages

Net damages to the commercial fishing establishments reached \$33.6 million. These net damages accounted for 95.2% of total damages indicating that insurance payments covered 4.9% of total damages. Several of these fishing units (97.4%) did not carry any insurance coverage or were not expecting any insurance payments for damages.

Net damages to seafood processors, dealers and support facilities reached \$85.7 million consisting of \$67.3 million for processing plants, \$18.7 million for seafood dealers and \$1.9 million for land-based support facilities. These net damages accounted for 84.6% of total damages indicating that insurance payments amounted to 15.4% of total damages. The percent of total damages covered by insurance could be higher as soon as these seafood establishments settle their claims with their insurance providers.

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The net damages to the 'charter boats for hire' reached \$1.7 million. The net damages accounted for 74.7% of total damages indicating that insurance payments covered 25.3% of total damages. Almost three fourths (73.2%) of the participating charter boats did not receive or were not expecting any insurance payments for damages. Total net damages to coastal marinas associated with the devastating hurricane reached \$37.67 million. Approximately 9% of total damages reported by marina operators were covered by insurance since 60% did not receive or were not expecting any insurance payments. Only 13.9% of the total damages sustained by the livebait dealers were covered by insurance. The net damages to this sector amounted to \$3.58 million.

Outstanding Loans

The commercial fishing fleet reported total outstanding loans amounting to \$48.2 million. Estimated outstanding loans amounting to \$31.1 million were borrowed from the U.S. Small Business Administration (SBA). Estimated loans from other sources amounted to \$17.2 million.

The seafood processors and dealers reported total outstanding loans amounting to \$18.5 million. The seafood dealers had outstanding loans amounting to \$3.8 million which were all from sources other than SBA. Among the processing plants, almost all the loans which amounted to \$14.5 million were made from sources other than the SBA.

The participating charter boats reported total outstanding loans amounting to \$2.87 million. Estimated outstanding loans amounting to \$0.097 million were borrowed from SBA while the bulk of the estimated outstanding loans came from other sources which amounted to \$2.77 million. Coastal marinas had a total of \$14.57 million outstanding loans before the hurricane. Most of it (\$10.33 million) came from SBA and the remaining \$4.23 million were from other sources, e.g., private banks and relatives. Livebait dealers had outstanding loans amounting to more than \$89,000 at the time of the hurricane. These livebait facilities borrowed both from SBA and private banks.

SUMMARY AND IMPLICATIONS

The tasks involved in estimating the economic damages to the Mississippi seafood establishments, and commercial and recreational fisheries associated with Hurricane Katrina had been extremely difficult and very time-consuming. Majority of the operators and/or owners of the boats/vessels and facilities, however, had been extremely cooperative in providing the economic information required in conducting a fairly exhaustive assessment. The results of the assessment indicated massive devastation of all the sectors included in the survey.

This information on hurricane damages had been transmitted to local, state and federal agencies responsible for managing, regulating and assisting these industries. The primary short-term needs would include the removal of debris in fishing grounds and waterways, rebuilding of docking, repair, fuel and ice facilities, and creation of storm shelters for boats/vessels in safe inland waters. The future of these industries would depend on the timing and magnitude of the response of these agencies and the private sector to the devastation.

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ENDNOTES

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