



***Economic Assessment of the
Impacts of Hurricane Katrina
on Mississippi Seafood
Processors and Dealers***



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**Economic Assessment of the Impacts of Hurricane Katrina
on Mississippi Seafood Processors and Dealers**

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Mississippi Sea Grant Extension Program

Biloxi, Mississippi

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INTRODUCTION

An economic assessment of the seafood processors and dealers was undertaken to determine the level of damage sustained as a result of Hurricane Katrina in Mississippi. The devastation by this hurricane had 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 this storm was needed to ensure that federal funds are both adequate and allocated to the appropriate sectors and recipients.

The assessment, to the extent possible, identified all seafood processing plants, seafood dealers and support facilities in the affected areas that existed prior to the hurricanes, identified original physical characteristics 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 processing of seafood products can resume (Figure 1 and Table 1). Similar economic assessments of the damages on the commercial fishing fleet (Posadas, 2006b), charter boats for hire, marinas and livebait dealers

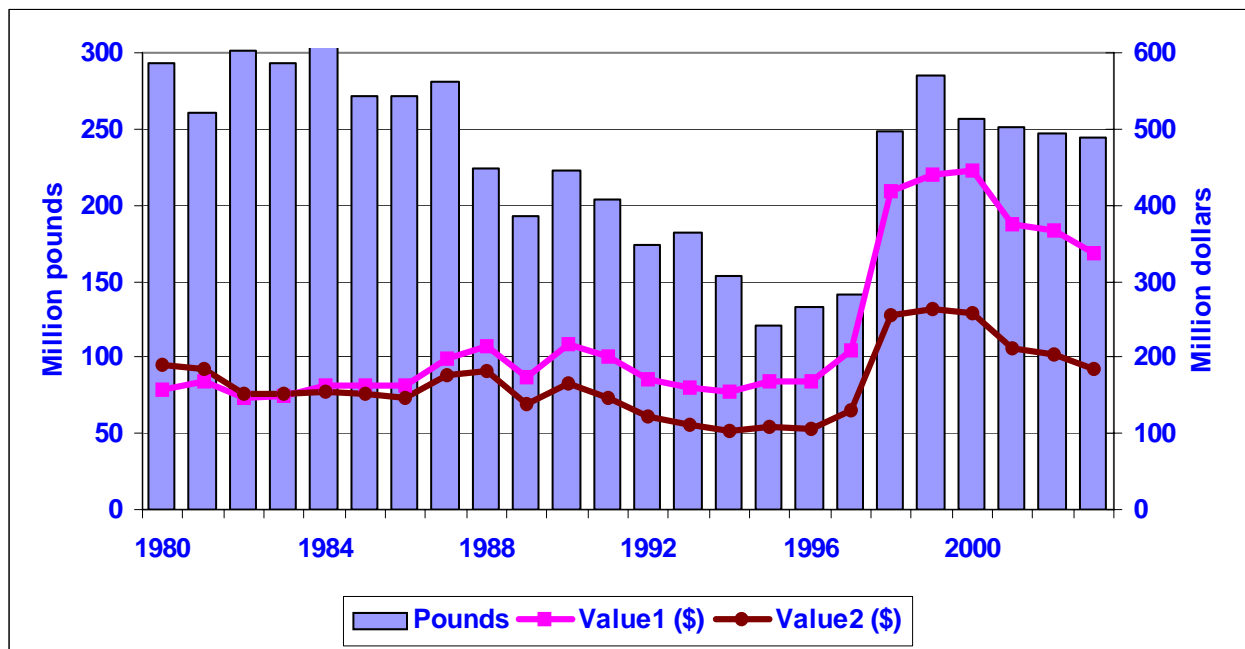


Figure 1. Volume and Plant-gate Values (in current [1] and deflated [2] prices) of Mississippi Seafood Processing Production. Source: National Marine Fisheries Service, personal communication.

(Posadas, 2006c) and recreational boats (Posadas, 2006d) were also conducted. Similar economic assessments were also conducted in Alabama (Chang, et al., 2006), Louisiana (Caffey, et al., 2006) and Florida (Adams and Gregory 2006). With all this information regarding the impacts of hurricanes on the regions' fisheries industry, the role of the federal government during hurricanes had been outlined (Ward, 2006). The damage assessment included the following information about the processing plants, seafood dealers and support facilities:

1. Inventory of facilities that existed at each county.
2. Original capital investment made in the facilities.
3. Estimate of physical damages to the facilities and the dollar value of that damage by county.
4. Estimate of the replacement cost of the capital needed to reestablish the facilities.
5. The level of insurance presently existing for the facilities, the capital debt remaining to be paid off, and whether the plant or some other collateral is used to secure the loan.

Table 1. Plant-gate Values and Number of Workers Employed in Mississippi Seafood Processing Plants		
Category	2003 plant gate values (\$) ¹	2003 number of workers ¹
Shrimp	73,402,922	503
Oysters	9,181,372	288
Crabs	838,128	78
Finfish ²	254,441,324	1,713
Total	337,863,746	2,582

¹ - National Marine Fisheries Service (2004). Personal communication.

² - These numbers were imputed from the total values and the individual values for shrimp, oysters and crabs, which included foodfish, and other finfish species including menhaden.

The National Marine Fisheries Service and the Mississippi Department of Marine Resources have an urgent and compelling need to immediately assess the damage inflicted on the seafood processors and dealers in Mississippi by the recent hurricane. The adverse social and economic impacts of the hurricane 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 processors and dealers and associated communities in recovering their economic vitality (Figure 1 and Table 1). 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.

There were 69 licensed seafood processing establishments in Mississippi when the hurricane hit the state (Table 2). Majority (82.7%) of the processing plants were located in the three coastal counties, with 49.3% in Harrison County, 20.3% in Jackson County, 13.0% in Hancock County, 4.3% in Pearl River County and the remaining 13.0% in other counties.

A total of 141 seafood dealers were licensed in Mississippi in 2005 (Table 2). More than half (56.1%) were located in the three coastal counties of Hancock (13.5%), Harrison (27.7%), and Jackson (14.9%), 7.8% in Pearl River County and 36.2% were located in other counties.

Table 2. Number of Mississippi Seafood Processing Plants and Dealers				
County	2005 licensed seafood processing plants ¹		2005 licensed seafood dealers ¹	
	Number	Percent	Number	Percent
Hancock	9	13.0%	19	13.5%
Harrison	34	49.3%	39	27.7%
Jackson	14	20.3%	21	14.9%
Pearl River	3	4.3%	11	7.8%
Others	9	13.0%	51	36.2%
Total	69	100.0%	141	100.0%

¹ - Mississippi Department of Marine Resources-Data management Office (2005). Personal communication.

METHODS

Data Collection

The assessment of the impacts of the natural catastrophic events on the state seafood processing plants and dealers covered the following facilities licensed by the Mississippi Department of Marine Resources - Office of Management Operations (DMR-OMO) in 2005: seafood processors - 69 plants; and seafood dealers - 141 houses. For the purpose of this study, the following definitions of seafood establishments are used:

1. Seafood means all oysters, saltwater fish, saltwater shrimp, diamondback terrapin, sea turtle, crabs and all other species of marine or saltwater animal life existing or living in the waters within the territorial jurisdiction of the State of Mississippi (Mississippi Code, 2006a).
2. Seafood wholesaler - any person buying or handling seafood secured from commercial fishermen, or from other wholesale dealers, for the purpose of resale, whether handling on a commission basis or otherwise, and every resident person shipping seafood out of the State of Mississippi on

consignment or order, except fishermen shipping their own catch, shall be considered a wholesale dealer and shall obtain a license and pay an annual license fee of One Hundred Dollars (\$100.00). The privilege of a wholesaler shall also include the privilege of a retailer without additional license. Where seafood is sold at retail in grocery stores and meat markets which pay a city, county or state privilege license for that operation, those grocery stores and meat markets shall not be liable for the payment of the tax above levied (Mississippi Code, 2006b).

3. Seafood processor - any factory or person engaged in the canning, processing, freezing, drying or shipping of oysters, fish, saltwater crabs or saltwater shrimp shall be considered a seafood processor and shall obtain a license and pay an annual privilege tax of Two Hundred Dollars (\$200.00). It is unlawful for any factory or person to engage in the canning, processing, freezing, drying or shipping of oysters, fish, saltwater crabs or saltwater shrimp without first having obtained that license. The privilege of a processor shall also include the privileges of a wholesaler without additional license. The privilege tax license shall be nontransferable and a license shall be required for each factory or place of business. This license shall not apply to, nor shall the payment of the annual privilege tax of Two Hundred Dollars (\$200.00) be due by, a dealer in fresh seafood who merely preserves the seafood for future sale to prevent spoilage and is in competition with other retailers who are not required to pay this tax (Mississippi Code, 2006b).

Land-based support facilities (5), consisting of trucking (1) ice and fuel docks (2) and net making and repair (2) facilities were included in this assessment. Data were collected from survey questionnaires (Appendix A) mailed to all the facilities in November 2005. Personal interviews and site visits of facilities were conducted in four coastal locations by personnel of the Mississippi Department of Marine Resources-Seafood Technology Bureau (DMR-STB) and the Mississippi State University-Coastal Research and Extension Center (MSU-CREC) from October to December 2005. Follow-up telephone

interviews with the facilities were conducted by personnel of DMR-STB from January through February 2006.

Estimation Procedures

The total damages associated with the hurricanes to licensed resident commercial seafood processing plants and seafood dealers were estimated by using the following formulas:

Total reported damages
= damages to buildings
+ damages to processing, storage, refrigeration, and delivery equipment, and other accessories
+ cleaning, removal and disposal costs
+ inventory losses
Total projected damages
= average total damages reported by sample processing plants or seafood dealers
X total number of processing plants or seafood dealers

The net damages to licensed resident commercial seafood processing plants and seafood dealers were estimated as follows:

Net reported damages
= total reported damages
- total insurance payments received
Net projected damages
= average net damages reported by sample processing plants or seafood dealers
X total number of processing plants or seafood dealers

The total initial investment on licensed resident commercial seafood processing plants and seafood dealers were estimated by using the following formulas:

Total reported initial investment

$$\begin{aligned} &= \text{investment on buildings} \\ &+ \text{investment on processing, storage, refrigeration, and delivery equipment, and} \\ &\quad \text{other accessories} \end{aligned}$$

Total projected initial investment

$$\begin{aligned} &= \text{average initial investment reported by sample processing plants or seafood dealers} \\ &\times \text{total number of processing plants or seafood dealers} \end{aligned}$$

The total outstanding loans of licensed resident commercial seafood processing plants and seafood dealers were estimated by using the following formulas:

Total reported outstanding loans

$$\begin{aligned} &= \text{outstanding loans from U.S. Small Business Administration} \\ &+ \text{outstanding loans from other sources} \end{aligned}$$

Total projected outstanding loans

$$\begin{aligned} &= \text{average outstanding loans reported by sample processing plants or seafood} \\ &\quad \text{dealers} \\ &\times \text{total number of processing plants or seafood dealers} \end{aligned}$$

Once fully recovered to pre-Katrina levels, the total annual gross sales of licensed resident commercial seafood processing plants and seafood dealers that would be lost due to lost market channels were estimated by using the following formulas:

Total projected annual gross sales

= average 2004 annual gross sales reported by sample processing plants or seafood dealers
X total number of processing plants or seafood dealers

Total projected annual gross sales that would be lost due to lost market channels

= average percent of annual gross sales that would be lost due to lost market channels
X total projected annual gross sales

RESULTS

Location of Establishments

The 2005 official list of licensed seafood processing plants provided by DMR-OMO showed nine plants or establishments were located in Hancock County, 34 in Harrison County, 14 in Jackson County, and three in Pearl River County (Table 3 and Figure 1). There were nine seafood processing establishments in other counties including Stone (2), Forrest (1), Copiah (1), Green (1), Marion (1), Lawrence (1) and Adams (1) counties.

Based on the DMR-OMO 2005 listing, there were 141 seafood dealers in the state of Mississippi mainly located in Hancock County - 19 establishments, Harrison County - 39, Jackson County - 21, and Pearl River County - 11 (Table 3). There were 51 seafood dealers scattered in other counties primarily in Forrest (7), Hinds (4), Jones (4), Lawrence (4), and Rankin (3) counties.

Of the five participating land-based support facilities, four were located in Harrison County and one in Hancock County. There was no official list on land-based support facilities.

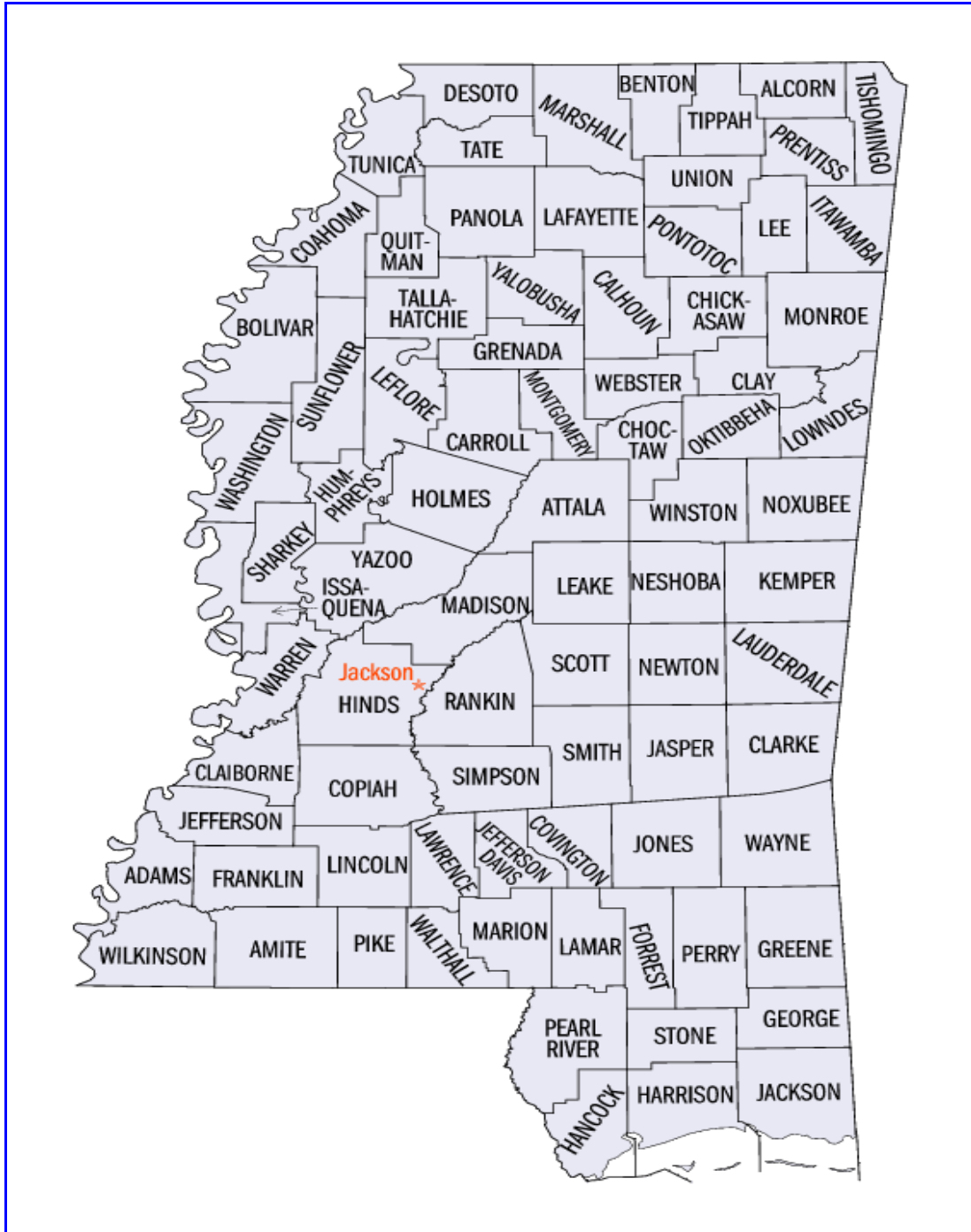


Figure 1. Map of Mississippi Counties. Source: U.S. Census Bureau, State and County Quick Facts. http://quickfacts.census.gov/qfd/maps/mississippi_map.html. Verified February 16, 2006.

Participating Establishments

A total of 80 interviews with seafood processing plants (32), seafood dealers (43) and support facilities (5) were completed between November 2005 and February 2006, representing an average response rate of 37.2% (Table 3). Of the 215 questionnaires mailed to these business establishments, 40 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 45.7%. In computing the final values of all the variables, however, the total population of 215 seafood establishments was used.

County	2005 seafood processing plants ¹			2005 seafood dealers ¹		
	Population	Sample	Percent	Population	Sample	Percent
Hancock	9	3	33.3%	19	5	26.3%
Harrison	34	19	55.9%	39	11	28.2%
Jackson	14	9	64.3%	21	8	38.1%
Pearl River	3	0	0.0%	11	2	18.2%
Others	9	1	11.1%	51	17	33.3%
Total	69	32	46.4%	141	43	30.5%
Net response rate of all sectors to mail, personal and telephone interview ¹						45.7%

¹ - Including five land-based support facilities and excluding the 40 returned mail surveys which were not deliverable to the last known addresses.

Total Damages

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 (Table 4). Among the processing plants, damages to buildings, equipment and accessories comprised 72%

of total damages, while cleaning and disposal added 2% and inventory losses added 26%. Among seafood dealers, the distributions of total damages was as follows: damages to buildings, equipment and accessories - 90%, cleaning and disposal - 4%, and inventory losses - 6%.

County	Seafood processing plants			Seafood dealers		
	Population	Average	Total	Population	Average	Total
Hancock	9	1,706,167	15,355,500	19	446,680	8,486,920
Harrison	34	1,340,058	45,561,962	39	264,935	10,332,481
Jackson	14	610,222	8,543,111	21	101,361	2,128,586
Pearl River	3	NA	NA	11	15,375	169,125
Others	9	22,400	201,600	51	21,460	1,094,477
Total	69	1,127,937	77,827,681	141	151,157	21,313,205
Total projected damages for all sectors ¹					\$101,259,884	

¹ - Including \$2,119,000 total damages for the land-based support facilities.

Harrison County reported most of the damages, \$45.6 million for processing plants and \$20.3 million for seafood dealers. Hancock County reported damages amounting to \$15.4 million for processing plants and \$8.5 million for seafood dealers. Total damages in Jackson County reached \$8.5 million for processing plants and \$2.1 million for seafood dealers.

Net Damages

Net damages to these seafood establishments 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 (Table 5). 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 paid could be higher as soon as these establishments settle their claims with their insurance providers.

County	Seafood processing plants			Seafood dealers		
	Population	Average	Total	Population	Average	Total
Hancock	9	1,706,167	15,355,500	19	239,680	4,553,920
Harrison	34	1,103,742	37,527,225	39	236,535	9,224,865
Jackson	14	568,000	7,952,000	21	100,799	2,116,774
Pearl River	3	NA	NA	11	3,375	37,125
Others	9	22,400	201,600	51	21,460	1,094,477
Total	69	975,749	67,326,681	141	128,720	18,149,517
Total projected net damages for all sectors ¹					\$85,668,098	

¹ - Including \$1,919,000 net damages for the land-based support facilities.

The net damages to establishments located in Harrison County were \$37.5 million and \$9.2 million for processing plants and seafood dealers, respectively. Hancock County reported net damages amounting to \$15.4 million for processing plants and \$4.5 million for seafood dealers. Net damages in Jackson County were \$7.9 million and \$2.1 million for processing plants and seafood dealers, respectively.

Foregone Revenues Due to Lost Market Channels

In addition to damages to facilities and inventory losses, these seafood establishments would also incur revenue losses associated with market channels of their seafood products destroyed by the hurricanes, e.g., New Orleans, and local markets. The total annual gross sales foregone due to lost market channels of seafood products produced by these establishments amounted to \$123.7 million. The 69

processing establishments lost \$81.0 million gross sales as a result of losing 57.1% of their markets of seafood products and services. The 141 seafood dealers lost \$42.4 million in annual gross sales due to 47.6% shrinkage the markets of their seafood products. The five land-based support facilities lost \$0.3 million in annual sales due to lost markets of products and services.

Table 6. Estimated Annual Gross Sales Lost Due to Lost Market Channels of the Mississippi Seafood Processing Plants and Seafood dealers and Land-Based Support Facilities						
County	Seafood processing plants			Seafood dealers		
	Population	Percent lost	Annual sales lost	Population	Percent lost	Annual sales lost
Hancock	9	63.3%	5,927,688	19	83.0%	24,689,512
Harrison	34	45.6%	45,608,813	39	52.3%	14,990,198
Jackson	14	76.9%	14,298,395	21	49.4%	1,943,137
Others	12	30.0%	1,087,247	62	22.9%	1,184,729
Total	69	57.1%	81,006,872	141	47.6%	42,350,434
Total projected annual gross sales for all sectors ¹						\$123,662,056

¹ - Including \$304,750 for the land-based support facilities.

When considered on a regional basis, these lost market channels represent a considerable reduction in the levels of economic activity, income generation, employment creation, and tax collections. The number of workers employed by these establishments had shrunk to 11% of its size before Hurricane Katrina.

Initial Investment Requirements

Rebuilding the damaged seafood establishments would require new private investments in building structures, equipment and other accessories, and supplies and materials. 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.

Table 7. Estimated Initial Investment on Mississippi Seafood Processing Plants and Seafood dealers and Land-Based Support Facilities						
County	Seafood processing plants			Seafood dealers		
	Population	Average	Total	Population	Average	Total
Hancock	9	1,479,600	13,316,400	19	332,600	6,319,400
Harrison	34	905,594	30,790,183	39	387,617	15,117,076
Jackson	14	484,711	6,785,956	21	154,268	3,239,618
Pearl River	3	NA	NA	11	91,000	1,001,000
Others	9	160,000	1,440,000	51	73,211	3,733,774
Total	69	811,876	56,019,471	141	233,612	32,939,298
Total projected initial investment in all sectors ¹					\$90,305,769	

¹ - Including \$1,347,000 initial investment on land-based support facilities.

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 7). To encourage these 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.

Outstanding Loans

These seafood establishments reported total outstanding loans amounting to \$18.5 million (Table 8). The seafood dealers had outstanding loans amounting to \$3.8 million which were all from sources other than the U.S. Small Business Administration (SBA). Among the processing plants, almost all the loans (except for some in Jackson County) which amounted to \$14.5 million were made from sources other than the SBA.

Table 8. Estimated Total Outstanding Loans of Mississippi Seafood Processing Plants and Seafood dealers and Land-Based Support Facilities						
County	Seafood processing plants			Seafood dealers		
	Population	Average	Total	Population	Average	Total
Hancock	9	675,667	6,081,000	19	83,600	1,588,400
Harrison	34	154,800	5,263,200	39	0	0
Jackson	14	167,216	2,341,019	21	20,290	426,088
Pearl River	3	0	0	11	60,000	660,000
Others	9	0	0	51	0	0
Total	69	210,619	14,532,742	141	26,680	3,761,876
Total projected outstanding loans of all sectors ¹					\$18,484,617	

¹ - Including \$190,000 total outstanding loans of the land-based support facilities.

SUMMARY AND IMPLICATIONS

The tasks involved in estimating the economic damages to the Mississippi seafood establishments associated with Hurricane Katrina have been extremely difficult and very time-consuming. Most of the operators and/or owners of the facilities, however, were 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.

Approximately 97% of all the seafood processing plants reported damages associated with Hurricane Katrina. Total damages amounted to \$78 million distributed as follows: damages to buildings and equipment – 72%, costs of clean-up and disposal – 2%, and inventory losses – 26%. At the time of the survey, only about 14% of the reported damages were covered by insurance payments received.

More than half (53%) of the seafood dealers reported damages associated with Hurricane Katrina. Total damages were estimated to reach \$21 million which consisted of damages to buildings and equipment – 90%, costs of clean-up and disposal – 4%, and inventory losses – 6%. Only about 15% of the reported damages were covered by insurance.

This information on the damages to the Mississippi seafood establishments has been transmitted to local, state and federal agencies responsible for managing, regulating and assisting these industries. The economic recovery of these industries in the future will depend on the timing and magnitude of the responses of these agencies and the private sector to the devastation.

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Appendix A.. SURVEY OF DAMAGES FROM HURRICANES KATRINA AND RITA ON
 MISSISSIPPI SEAFOOD PROCESSORS AND DEALERS

1. NAME OF COMPANY: _____

2. CITY PLANT IS LOCATED:

3. PROCESSING ACTIVITIES (Please check all that applies):

Crab processor

Oyster processor

Shrimp processor

Foodfish processor

Industrial fish processor

Seafood dealer

ESTIMATE OF FACILITIES AND PRODUCT INVENTORY LOSSES

4. Please describe the type, size and initial investment on the buildings, processing equipment, delivery equipment, and other accessories in your facility before Katrina:

Category	Description - type, length, width	Number	Estimated initial investment (\$)
Buildings			
Processing equipment			
Refrigeration/Storage equipment			
Delivery equipment			
Other accessories			
Total			

5. If your facility was damaged by H. Katrina, what are your best estimates of the costs of the damages to your facility and inventory of seafood products that you need to restore to pre-Katrina level? If not please proceed to questions number 7-10.

Category	Estimated costs of the damages to facility to restore to pre-Katrina level	Estimated costs of demolition, removal, disposal & clean up	Amount already spent to restore	Additional amounts needed to restore
Buildings				
Equipment				
Total				

6. How much was the estimated value of seafood products and supplies that was lost during the hurricanes? \$ _____

INSURANCE AND LOANS ON DAMAGED FACILITIES

7. What is the amount of insurance coverage you expect for the damages? \$ _____
8. What is the amount of outstanding loan you have on the facilities?
- Loans from Small Business Administration \$ _____
- Loans from other sources \$ _____

ESTIMATION OF LOST REVENUES AND MARKETING OPPORTUNITIES

9. What was your gross annual sales in 2004 (before H. Katrina)? \$ _____
10. How many workers did you employ in 2004 (before H. Katrina)? _____
11. How many workers are you employing now (after H. Katrina)? _____
12. Once fully recovered, what is your best estimate of the pre-Katrina level of total sales that you will lose due to lost market channels? _____ percent

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