

# License and Size Profiles of Mississippi Seafood and Commercial and Recreational Fishing Sectors



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# License and Size Profiles of Mississippi Seafood and Commercial and Recreational Fishing Sectors

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# License and Size Profiles of Mississippi Seafood and Commercial and Recreational Fishing Sectors

## INTRODUCTION

This bulletin is part of the coast-wide assessment of the economic impacts of the Gulf of Mexico Oil Spill (GOMOS) on the State of Mississippi as mandated by the Mississippi Office of the Governor through the Mississippi Institutions of Higher Learning and the Mississippi Research Consortium. The first marine sector quarterly report discussed the baseline period determination in the assessment of the economic impacts of the GOMOS on the Mississippi fisheries sector (Posadas 2011; Posadas and Posadas 2013). That report compared 2010 Mississippi commercial fisheries landings and landing values — total and by major species — to the pre- and post-Katrina baseline periods.

This bulletin, the second marine sector quarterly report, deals with the license and size profiles of Mississippi seafood and marine-related sectors. The economic sectors included in the analysis are commercial fishing, charter boats for hire, live-bait boats and dealers, and seafood dealers and processors. The overall goal of these profiles is to describe the number of seafood firms and commercial and recreational fishing establishments licensed to operate in Mississippi in 2009–10. These profiles provide snapshots of the levels of effort that these establishments

planned to employ in 2009–10 as compared with two baseline periods.

The economic characteristics include the county locations of all establishments and the lengths of vessels and boats in commercial and recreational fleets. The distribution by county location provides the spatial concentrations of these establishments, thus identifying the areas that might have been heavily impacted by the Deepwater Horizon oil spill. The county locations include the three Mississippi coastal counties, Hancock, Harrison, and Jackson Counties; other Mississippi counties; and some out-of-state counties. Vessel length, reported in feet, is a good indicator of the number of jobs at the vessel level.

The long-term annual databases on commercial licenses sold were compiled from the Mississippi Department of Marine Resources (MDMR 2010). For the purpose of comparison with the Gulf oil spill period, two baseline periods are used in the analysis. The two baseline periods cover the past decade starting in 2000 and ending in 2009. The pre-Katrina period refers to the five years from 2000 to 2004. The post-Katrina period goes from 2005 to 2009. The Gulf oil spill period starts in 2010 and continues to the present.

# ECONOMIC SECTORS

The Mississippi seafood industry consists of the commercial harvesting sector, seafood processors and dealers, seafood wholesalers and distributors, and retail sectors. Recent annual estimates show that the seafood industry generated total sales impacts amounting to \$289.2 million (NOAA Fisheries 2011). The industry created a total of 6,392 jobs and generated personal income totaling \$112.6 million in 2009 (Table 1).

The commercial harvesting sector includes commercial fishermen using various gear on board vessels (more than 5 tons) and boats (less than 5 tons). The commercial fishing sector corresponds to economic sectors 114111 (“Finfish Fishing”) and 114112 (“Shellfish Fishing”) in the North American Industrial Classification System (NAICS 2011). Finfish fishing includes establishments primarily engaged in the commercial catching or taking of finfish (e.g., redfish, trout, tuna) from their natural habitat. Shellfish fishing includes establishments primarily engaged in the commercial catching or taking of shellfish (e.g., clams, crabs, oysters, shrimp) from their natural habitat.

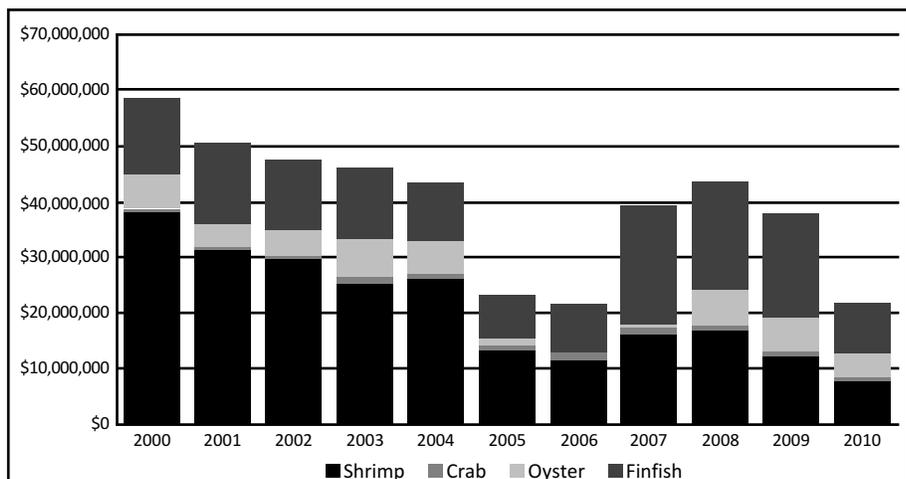
Figure 1 shows the annual landing values of major species harvested by commercial fishermen from 2000 to 2010, including shrimp, oysters, blue crabs, and finfish. The bulk of the finfish landings consisted of menhaden. Recent annual estimates of the economic impact of the commercial harvesting sector show that it produced \$60.9 million in total sales, created 1,238 jobs, and generated \$18.8 million in personal income (Table 1).

Mississippi seafood dealer and seafood processor licenses were merged into one combined seafood dealer and processor license (MDMR 2011). Following are the statutory provisions (laws.com) of the combination license issued by the State of Mississippi as approved on March 13, 2007:

Sector	Sales impacts	Income impacts	Employment impacts
	<i>millions</i>	<i>millions</i>	<i>jobs</i>
Commercial harvesters	\$60.857	\$18.835	1,238
Seafood processors and dealers	\$78.907	\$31.217	1,046
Importers	\$13.652	\$2.188	50
Seafood wholesalers and distributors	\$10.450	\$3.688	112
Retail sectors	\$125.376	\$56.697	3,946
<b>Total impacts</b>	<b>\$289.241</b>	<b>\$112.625</b>	<b>6,392</b>

<sup>1</sup>Includes direct, indirect, and induced economic effects. Source: NOAA Fisheries.

- (1) *Each 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.*
- (2) *Any factory or person engaged in the canning, processing, freezing, drying, or shipping of oysters, fish, saltwater crabs, or saltwater shrimp should be considered a seafood processor.*
- (3) (a) *Any person operating as a wholesale dealer, retail dealer, or processor of seafood shall obtain an annual combination dealer and processor license for a fee of One Hundred Dollars*



**Figure 1. Annual Mississippi commercial landings values by major species. Source of raw data: NOAA Fisheries Statistics Division.**

*(\$100). (b) The license shall be nontransferable, and a license shall be required for each factory or place of business. (c) The combination license shall entitle the licensee to operate as a wholesale dealer, retail dealer, and processor.*

- (4) 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.*
- (5) This section shall not apply to 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.*

The seafood-processing sector primarily corresponds to code 311711 (“Seafood Canning”) and code 311712 (“Fresh and Frozen Seafood Processing”) (NAICS 2011). The processing sector generated \$78.9 million in total sales, created 1,046 jobs, and paid \$31.2 million in personal income (Table 1).

The seafood-wholesaling sector corresponds to NAICS codes 424460 (“Fish and Seafood Merchant Wholesalers”) and 424490 (“Other Grocery and Related Products Merchant Wholesalers”). The wholesaling sector generated \$10.5 million in total sales, created 112 jobs, and paid \$3.7 million in personal income (Table 1).

The seafood-retailing sector corresponds to NAICS code 445220 (“Fish and Seafood Markets”). The retailing sector generated \$125.3 million in total sales, created 3,946 jobs, and paid \$56.7 million in personal income (Table 1).

The Mississippi recreational-fishing sector consists of for-hire charter boats, private boats, and shore recre-

ational anglers. Recent estimates show that the recreational fishing sector generated \$417.1 million in total sales, created 3,188 jobs, and paid \$105.5 million in personal income (NOAA Fisheries 2011).

The live-bait merchant wholesaler sector corresponds to NAICS code 424990 (“Other Miscellaneous Nondurable Goods Merchant Wholesalers”) (NAICS 2011). The Mississippi Commission on Marine Resources (MCMR 2011) views the live-bait fishery “as a service to the recreational fisherman and tourist industry of Mississippi and has determined that regulations are necessary to assure that this service may be performed with minimal impact on shrimp and fish populations.”

The MCMR defines “a live-bait dealer to mean live-shrimp dealer or any person, firm, or corporation who engages in the sale, exchange, barter, or dispensing of shrimp, in a live condition or dead with heads attached, solely as bait only to recreational fishermen within the State of Mississippi, or other licensed live-bait dealers as permitted; and has been duly inspected and permitted as a ‘licensed live bait dealer’ by the MCMR. Said dealer must also actively pursue the business of supplying the needs of sports fishermen in the State of Mississippi with bait, tackle, and other recreational fishing needs.”

The charter-boats-for-hire sector corresponds to NAICS code 487210 (“Scenic and Sightseeing Transportation, Water”) (NAICS 2011). This industry includes establishments primarily engaged in providing recreational fishing excursions and scenic and sightseeing transportation on water. The services provided are usually local and involve same-day return to place of origin.

# RESULTS AND DISCUSSION

## Commercial Shrimping Sector

The commercial shrimping sector contributed less than 6% to the total pounds landed by the Mississippi commercial fisheries sector during the past decade. However, the commercial shrimping fleet landed more than one-half of the total commercial landing value of the state's commercial fishing sector (Figure 1). Table 2 shows commercial shrimp license types and fees issued by the Mississippi Department of Marine Resources (MDMR 2011).

The long-term trends of the numbers of licenses sold to commercial shrimpers are shown in Figure 2. It is evident that there was a steady decline in the number of licenses sold to resident and nonresident commercial shrimp boat owners during the past decade. The number of licenses sold during the post-Katrina period averaged 668 per year as compared with 1,218 per year during the pre-Katrina period.

A total of 787 licenses were sold to commercial shrimp vessel operators during the 2010–11 shrimping season — 636 to resident vessels and 151 to nonresident vessels. The total number of shrimp licenses sold during the 2010–11 season was about 83% compared with the past decade, 65% compared with the pre-Katrina period, and 118% compared with the post-Katrina period (Figure 3). The number of licenses sold to nonresident commercial fishing units remained fairly stable during the past decade.

The state's commercial shrimp fleet has not yet fully recovered from the damages caused by Hurricane Katrina in 2005 (Posadas 2008). In addition to recent natural disasters, the continued decline in ex-vessel prices and the persistent increase in fuel costs during the past decade have reduced the sustainability of the commercial shrimp fisheries.

Apparently, the NOAA Fisheries disaster assistance program approved in 2006 for the Gulf region did not significantly impact the number of shrimp licenses sold in the state. This federal program was administered in Mississippi by the MDMR to participating licensed shrimp fishermen.

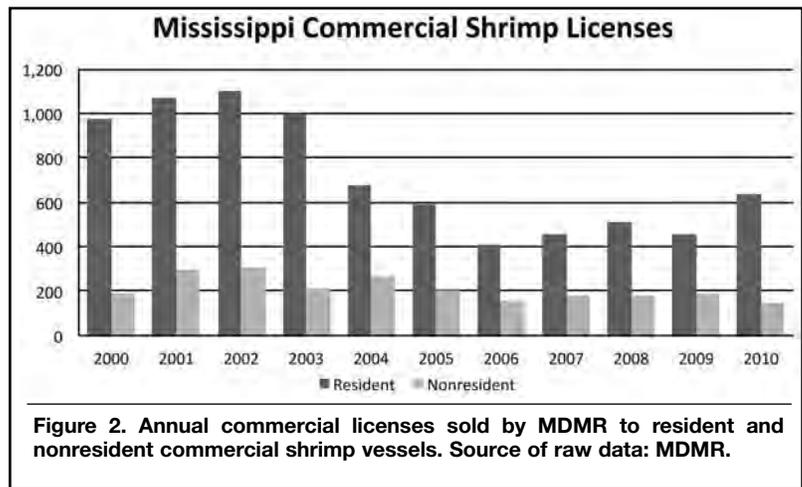


Figure 2. Annual commercial licenses sold by MDMR to resident and nonresident commercial shrimp vessels. Source of raw data: MDMR.

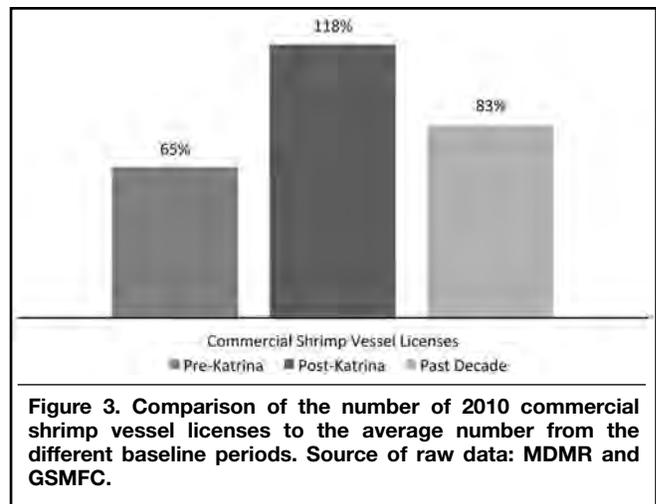


Figure 3. Comparison of the number of 2010 commercial shrimp vessel licenses to the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

Table 2. Types and fees of commercial shrimp licenses issued by MDMR.<sup>1</sup>

Shrimp boat license type	Fees
Under 30-foot boat	\$60
30- to 45-foot boat	\$85
Over 45-foot boat	\$110
Captain's license	\$10
Nonresident shrimp (30 feet or less)	\$110
Nonresident shrimp (30–45 feet)	\$160
Nonresident shrimp (45 feet or more)	\$210
Shrimp Louisiana resident (one trawl)	\$700
Shrimp Louisiana resident (two trawls)	\$800

<sup>1</sup>Source: MDMR (2011).

The decline in the number of shrimp licenses sold after Katrina also could be attributed to the federal moratorium on the sale of new shrimping licenses. This moratorium affected only new entrants to the commercial shrimping sector. The 10-year moratorium on the issuance of commercial shrimp vessel permits was intended to cap the number of vessels in the federal fishery starting in December 6, 2003 (NOAA Fisheries 2012).

More than 66% of the commercial shrimp boats licensed to operate in Mississippi during the 2009–10 shrimp season were based in the three Mississippi coastal counties (Table 3). Almost 33% were from Harrison County, more than 20% were from Jackson County, and 10% were based in Hancock County. About 7% of the commercial shrimp boats were located in other Mississippi counties, and almost 30% were from nearby states.

There were significant differences in the average lengths of the commercial shrimp boats at each county location (Table 4). The average length reported for all the licensed commercial shrimp boats was 50.36 feet. Vessels from out of state were the largest, averaging 61.02 feet, which indicates that they have larger holding capacities for more shrimp catch. The average sizes of the boats located in Harrison, Jackson, and Hancock Counties were 52.31, 46.16, and 37.12 feet, respectively. Shrimp boats from the noncoastal Mississippi counties averaged 28.4 feet.

## Menhaden Fishing Sector

Menhaden fishing produced more than 90% of the total volume of landings by the Mississippi commercial fisheries sector during the past decade. This sector added almost 33% of the total landing value of the entire Mississippi commercial fishing sector. Finfish landings predominantly consisted of menhaden, as shown in Figure 1.

Long-term trends in the numbers of licenses sold to the commercial menhaden-fishing sector are shown in Figure 4. The number of licenses sold during the pre-Katrina period averaged 14 per year compared with 9 per year during the post-Katrina period. More licenses were sold to nonresident operators in the pre-Katrina period.

**Table 3. County distribution of commercial shrimp boats issued 2009–10 licenses by MDMR.<sup>1</sup>**

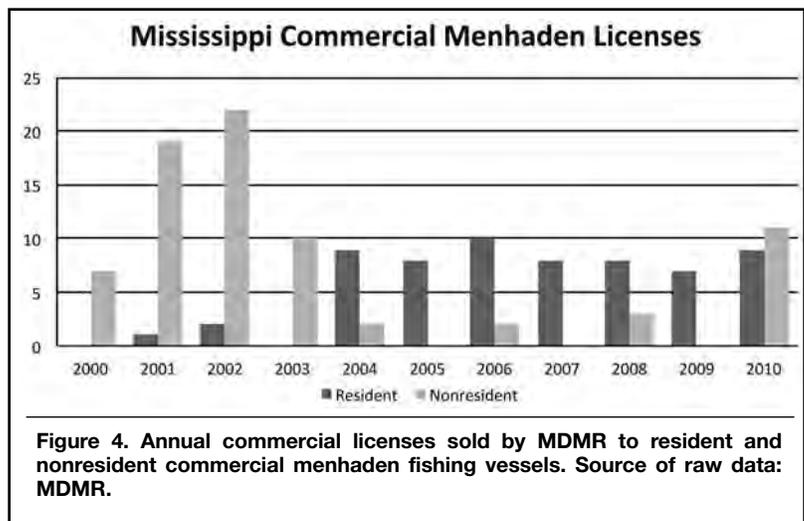
Location	Number	Percent
Hancock County	63	9.8
Harrison County	209	32.7
Jackson County	138	21.6
Other Mississippi counties	45	7.0
Out-of-state counties	185	28.9
Total	640	100.0

<sup>1</sup>Source: MDMR (2010).

**Table 4. County comparison of the lengths of commercial shrimp boats issued 2009–10 licenses by MDMR.<sup>1</sup>**

Location	Mean (ft)	Number	Standard deviation
Hancock County	37.12	60	14.829
Harrison County	52.31	209	21.614
Jackson County	46.16	137	21.462
Other Mississippi counties	28.40	45	12.662
Out-of-state counties	61.02	183	17.230
Total	50.36	634	21.408
F-value	37.810		
Significance level	.000		

<sup>1</sup>Source: MDMR (2010).



Twenty licenses were sold to menhaden fishing vessel operators during the 2010 season, with 9 sold to resident vessels and 11 sold to nonresident vessels. The total number of menhaden fishing licenses sold in 2010 was about 169% compared with the past decade, 139% compared with the pre-Katrina period, and 217% compared with the post-Katrina period (Figure 5). It is noteworthy that there was a dramatic increase in the number of licenses sold to nonresidents in 2010.

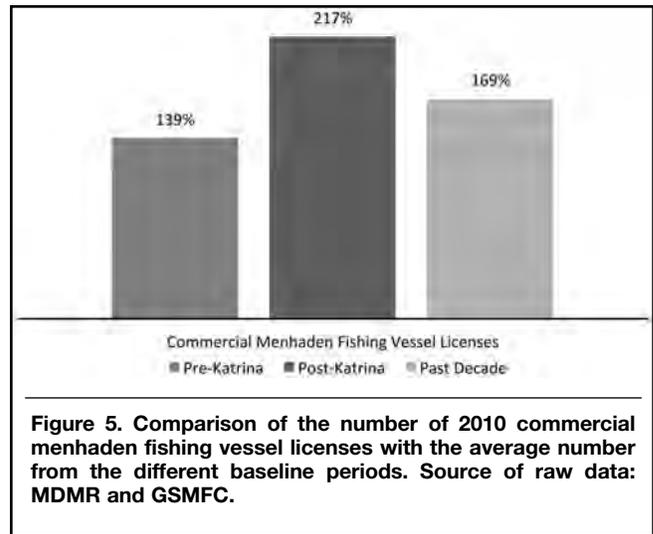


Figure 5. Comparison of the number of 2010 commercial menhaden fishing vessel licenses with the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

### Commercial Hook-and-Line Fishing Sector

Two types of commercial hook-and-line (H&L) licenses were sold by the state, one for fishing vessels and another for commercial fishermen. Long-term trends in the numbers of licenses sold to the commercial H&L fishing units and fishermen continued to increase during the past decade, as shown in Figures 6–7. The numbers of commercial licenses sold to mostly resident H&L vessel operators and fishermen continuously increased over the past decade.

About 48 licenses were sold to H&L vessel operators during the pre-Katrina period, while 109 were sold during the post-Katrina period. The ratio of fishermen to vessels declined from 2.0 during the pre-Katrina period to 1.59 during the post-Katrina period.

The increase in licenses sold during the latter part of the post-Katrina period could be due to the NOAA Fisheries Gulf region disaster assistance program approved by Congress in 2006. This program was administered in Mississippi by the MDMR to participating licensed finfish fishermen.

In 2010, 314 licenses were sold to commercial H&L vessels, primarily to resident vessel operators. The total number of H&L licenses sold in 2010 was about

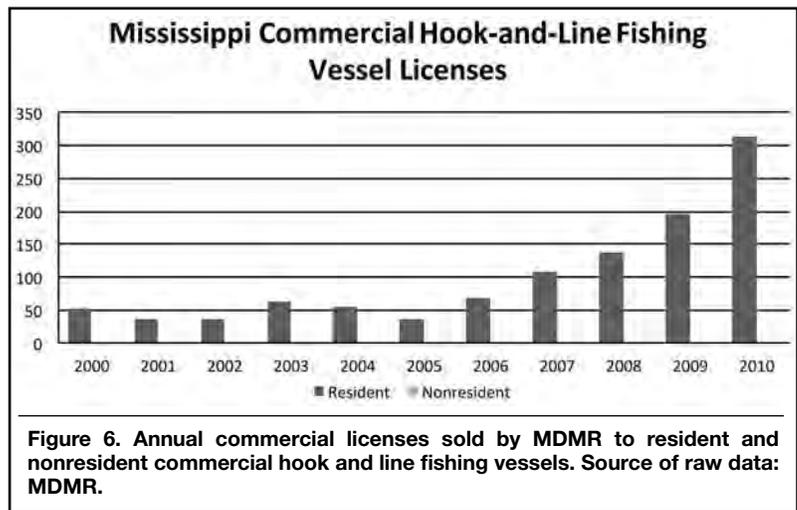


Figure 6. Annual commercial licenses sold by MDMR to resident and nonresident commercial hook and line fishing vessels. Source of raw data: MDMR.

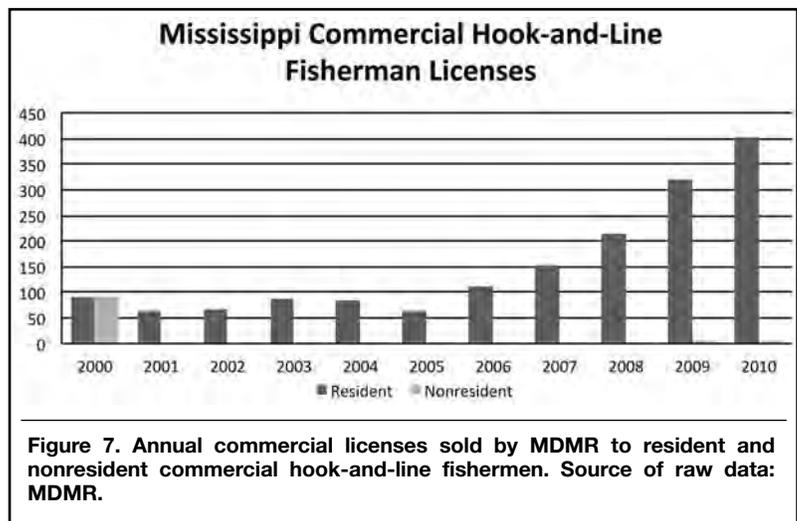


Figure 7. Annual commercial licenses sold by MDMR to resident and nonresident commercial hook-and-line fishermen. Source of raw data: MDMR.

397% compared with the past decade, 649% compared with the pre-Katrina period, and 286% compared with the post-Katrina period (Figure 8).

About 93% of the commercial H&L vessels licensed to operate in Mississippi during the 2009–10 fishing season were based in the three Mississippi coastal counties (Table 5). More than 50% were from Jackson County, while less than 33% were from Harrison County, and less than 10% were based in Hancock County. About 8% were located in other Mississippi counties, and less than 1% of the commercial H&L vessels were from nearby states. There were no substantial variations in the average lengths of the commercial H&L boats at various county locations (Table 6). The average length reported for all the licensed commercial H&L boats was 18.37 feet.

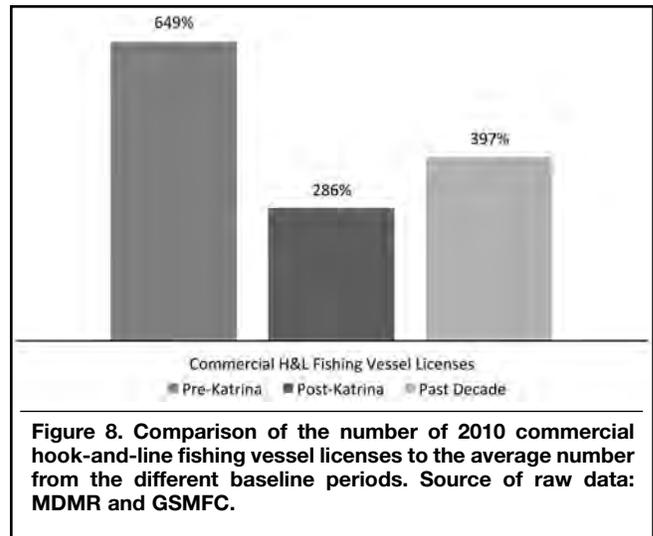


Figure 8. Comparison of the number of 2010 commercial hook-and-line fishing vessel licenses to the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

**Table 5. County distribution of 2009–10 licenses issued by MDMR to commercial hook-and-line vessels.<sup>1</sup>**

Location	Number	Percent
Hancock County	18	9.23
Harrison County	61	31.28
Jackson County	100	51.28
Other Mississippi counties	15	7.69
Out-of-state counties	1	0.51
Total	195	100.00

<sup>1</sup>Source: MDMR (2010).

**Table 6. County comparison of the lengths of commercial hook-and-line vessels issued 2009–10 licenses by MDMR.<sup>1</sup>**

Location	Mean (ft)	Number	Standard deviation
Hancock County	19.29	17	3.853
Harrison County	19.03	59	3.342
Jackson County	17.64	95	3.488
Other Mississippi counties	19.20	15	3.212
Out-of-state counties	20.00	1	—
Total	18.37	187	3.499
F-value	2.17		
Significance level	0.07		

<sup>1</sup>Source: MDMR (2010).

## Commercial Oyster Tonging and Dredging Sector

Commercial oyster harvesters produced slightly more than 1% of the total volume of landings by the Mississippi commercial fisheries sector during the past decade. However, this sector added more than 10% to the total landing value of Mississippi commercial fisheries (Figure 1).

Long-term trends in the numbers of licenses sold to commercial oystermen are shown in Figure 9. The number of commercial licenses sold to resident and nonresident tonging and dredging vessel operators remained stable during the pre-Katrina period, averaging about 326, with

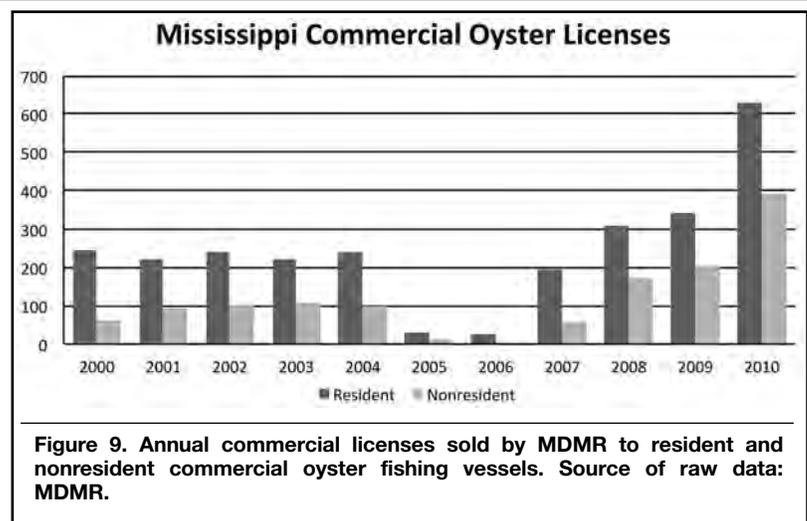


Figure 9. Annual commercial licenses sold by MDMR to resident and nonresident commercial oyster fishing vessels. Source of raw data: MDMR.

233 sold to residents and 93 sold to nonresidents. The devastating effects of Hurricane Katrina on the state’s commercial oyster reefs and tonging and dredging fleet are highlighted by the drastic reductions in the number of licenses sold in 2005 and 2006.

The rapid increase in the number of licenses sold to oyster boats and vessels during the latter part of the post-Katrina period could have been caused by the NOAA Fisheries disaster assistance program for the Gulf region. This assistance program was approved by Congress in 2006 and administered in Mississippi by MDMR. Participants in this program included licensed oyster fishermen.

In the 2010–11 oyster-harvesting season, 1,021 licenses were sold to commercial tonging boat and dredging vessel operators. There was a surge in the sale of commercial oyster licenses to 631 Mississippi residents, with 503 resident oyster-dredging units and 128 resident tonging units. In addition, 390 out-of-state oyster dredging and tonging commercial licenses were sold during that season. The total number of licenses sold during the 2010–11 oyster season was about 344% compared with the past decade, 313% compared with the pre-Katrina period, and 382% compared with the post-Katrina period (Figure 10). The sudden increase in the number of licenses sold during this oyster season could have been triggered by the possible change in the regulatory regime of the fishery into a limited-entry oyster fishery. Oyster license holders seemed to have speculated on the future market value of their licenses.

Less than 60% of the commercial tonging boats and dredging vessels licensed to operate in Mississippi during the 2009–10 oyster season were based in the three Mississippi coastal counties (Table 7). The length of dredging vessels and tonging boats, which averaged 30.54 feet, significantly varied among different county locations (Table 8). The larger vessels generally used in dredging oysters were mostly based in Hancock and Harrison Counties. The relatively smaller boats primarily used for tonging oysters were from Jackson County, other Mississippi counties, and other states. Based on the longer average lengths of the fishing vessels, the three coastal counties have the most fishing capacity in the commercial oyster fleet.

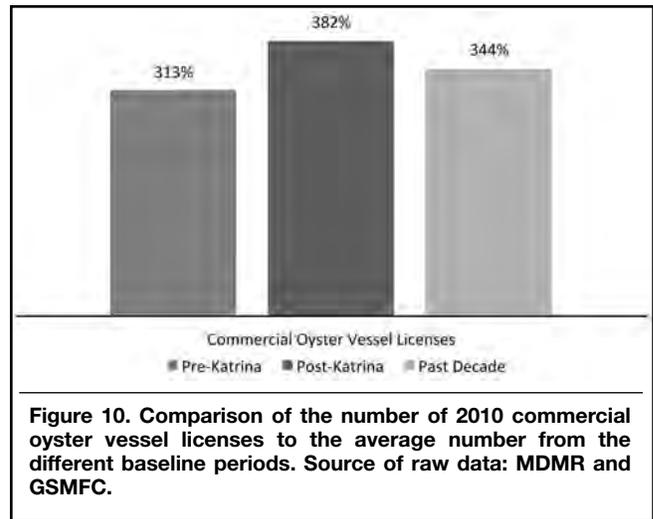


Figure 10. Comparison of the number of 2010 commercial oyster vessel licenses to the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

Table 7. County distribution of 2009–10 licenses issued to commercial oyster boats by MDMR.<sup>1</sup>

Location	Number	Percent
Hancock County	113	20.7
Harrison County	156	28.6
Jackson County	46	8.4
Other Mississippi counties	28	5.1
Out-of-state counties	203	37.2
Total	546	100.0

<sup>1</sup>Source: MDMR (2010).

Table 8. County comparison of the lengths of commercial oyster boats issued 2009–10 licenses by MDMR.<sup>1</sup>

Location	Mean (ft)	Number	Standard deviation
Hancock County	35.57	108	11.42
Harrison County	33.76	152	11.51
Jackson County	29.29	45	12.37
Other Mississippi counties	24.89	27	10.53
Out-of-state counties	26.49	203	8.82
Total	30.54	535	11.27
F-value	19.16		
Significance level	0.00		

<sup>1</sup>Source: MDMR (2010).

## Commercial Crabbing Sector

The Mississippi commercial crab-harvesting sector declined to about one-third of 1% of the total landing volume and less than 2% of the total landing value of the state's commercial fisheries sector during the past decade (Figure 1). The number of licenses sold to commercial crab boat owners averaged 252 per year during the pre-Katrina period, with 232 licenses sold to resident boats (Figure 11). The number sold to commercial crabbing units declined as a result of Hurricane Katrina but started to recover in 2007 up to 2010. An average of 216 licenses were sold each year to commercial crab boats during the post-Katrina period, with 195 boats based in Mississippi counties.

In 2010, mostly resident commercial crab boat operators bought 385 licenses, which was 153% compared with the pre-Katrina period and 179% compared with the post-Katrina period (Figure 12). About 81% of the commercial crabbing vessels licensed to operate in Mississippi during the 2009–10 season were located in the three Mississippi coastal counties (Table 9). The average vessel length was 31.56 feet, but significant variations were observed among different county locations (Table 10). The bigger vessels were mostly based in Harrison County and out-of-state counties.

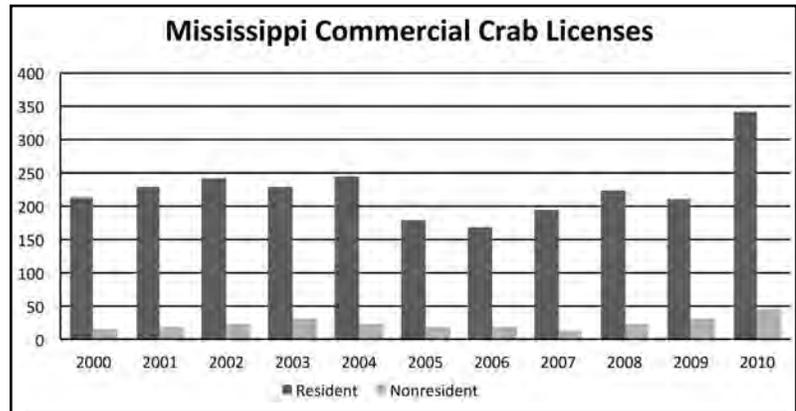


Figure 11. Annual commercial licenses sold by MDMR to resident and nonresident commercial crab-fishing vessel operators. Source of raw data: MDMR.

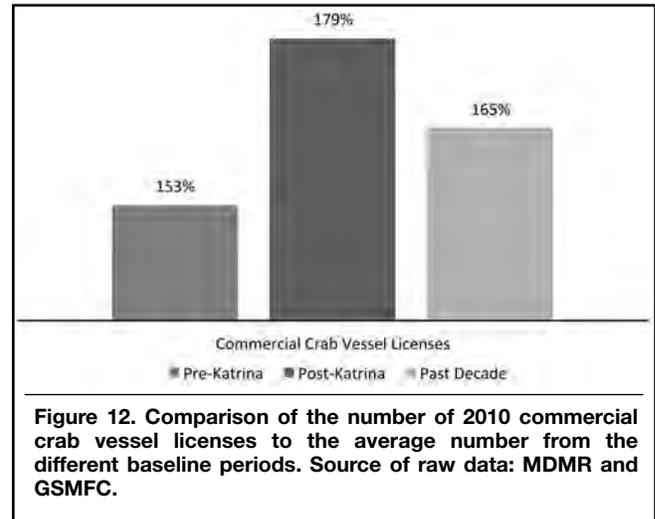


Figure 12. Comparison of the number of 2010 commercial crab vessel licenses to the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

Table 9. County distribution of 2009–10 licenses issued to commercial crab boats by MDMR.<sup>1</sup>

Location	Number	Percent
Hancock County	57	23.9
Harrison County	76	31.9
Jackson County	60	25.2
Other Mississippi counties	15	6.3
Out-of-state counties	30	12.6
Total	238	100.0

<sup>1</sup>Source: MDMR (2010).

Table 10. County comparison of the lengths of crab boats issued 2009–10 licenses by MDMR.<sup>1</sup>

Location	Mean (ft)	Number	Standard deviation
Hancock County	26.93	55	11.31
Harrison County	39.16	75	19.37
Jackson County	27.88	59	17.52
Other Mississippi counties	27.57	14	18.08
Out-of-state counties	30.13	30	10.80
Total	31.56	233	16.96
F-value	6.25		
Significance level	0.00		

<sup>1</sup>Source: MDMR (2010).

## Commercial Live-Bait Dealers

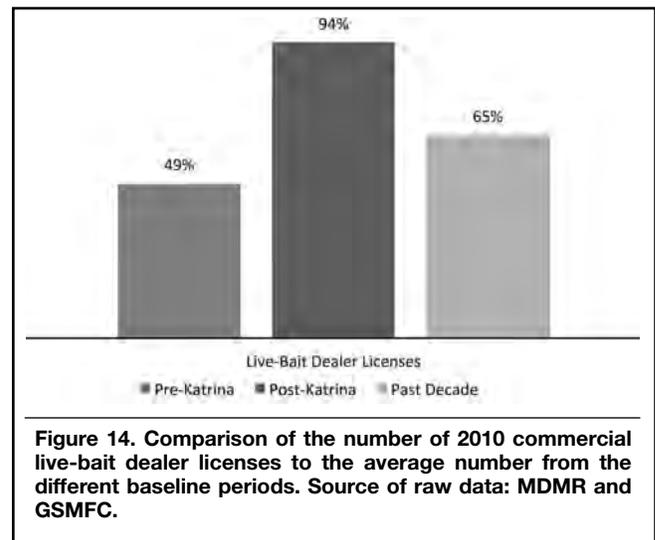
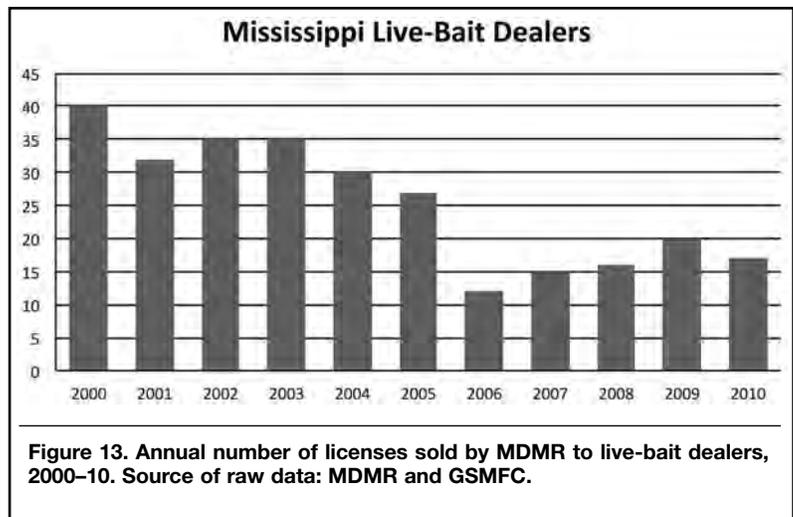
Live-bait dealers sell bait and other fishing supplies to recreational fishermen. The seasonal supply of live bait sold by the dealers came from their own boats or other privately owned boats. The production of farm-raised saltwater live bait has not yet been fully developed in commercial scale and cannot provide a sustainable supply in the region. Long-term trends in the numbers of licenses sold to live-bait dealers during the past decade are shown in Figure 13. The live-bait sector also experienced drastic reduction in the number of licenses issued during the post-Katrina period while showing a slow rate of recovery up to 2009.

The estimated value of total damages to live-bait dealers in coastal Mississippi ranged from \$35,700 to \$415,000 — averaging \$139,028 per facility — for total damages of \$4.17 million (Posadas 2010). The 30 live-bait dealers that participated in the 2005 Katrina survey reported damages from the natural disaster. Less than 50% of the 30 live-bait dealers received or were expecting to receive insurance payments as a result of Hurricane Katrina.

The number of licenses sold during the post-Katrina period averaged 18 per year, while about 34 per year were sold during the pre-Katrina period. This significant difference indicates that the sector has not yet fully recovered from the devastation of Hurricane Katrina (Posadas 2010).

In 2010, MDMR sold 17 licenses to live-bait shop operators — 65% compared with the past decade, 49% compared with the pre-Katrina period, and 94% compared with the post-Katrina period (Figure 14). Similarly, the decline in the number of licenses sold in 2010 was a setback of the increasing trend from 2006 to 2009.

Half of the live-bait dealer licenses were issued to establishments located in Jackson County (Table 11). Thirty percent of the live-bait dealer licenses were sold to Harrison County establishments. The remaining 20% of licenses were sold to Hancock County live-bait dealers.



**Table 11. County distribution of live-bait dealers issued 2009–10 licenses by MDMR.<sup>1</sup>**

Location	Number	Percent
Hancock County	4	20.0
Harrison County	6	30.0
Jackson County	10	50.0
Total	20	100.0

<sup>1</sup>Source: MDMR (2010).

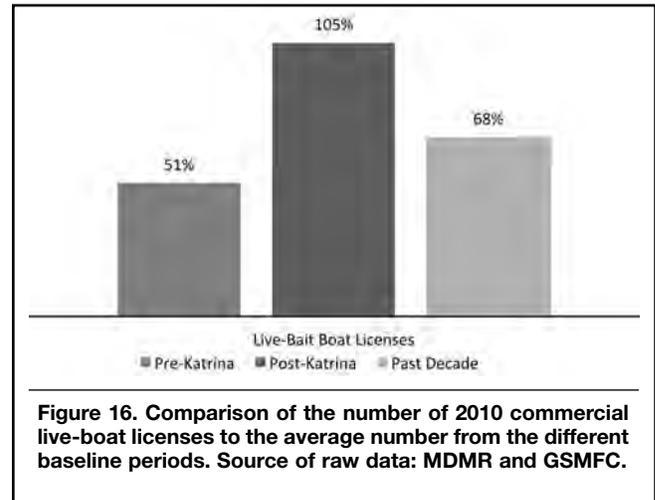
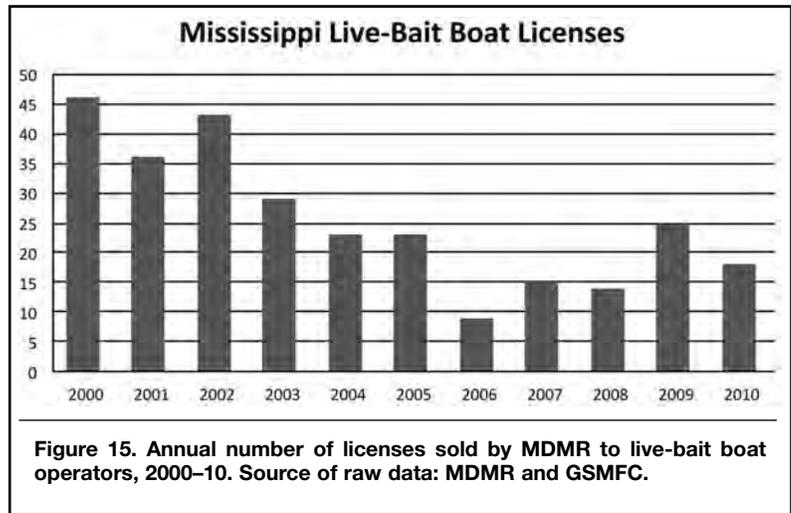
## Commercial Live-Bait Boats

The long-term trends in the numbers of licenses sold to live-bait boat operators during the past decade are shown in Figure 15. This sector also experienced a drastic reduction in the number of licenses issued during the post-Katrina period but showed some signs of recovery in 2009. The number of licenses sold during the post-Katrina period averaged 17 per year, while about 35 per year were sold during the pre-Katrina period. These differences indicate that this sector has not yet fully regained its pre-Katrina status.

In 2010, MDMR sold 18 licenses to resident live bait-boat owners. The total number of licenses sold in 2010 was about 68% compared with the past decade, 51% compared with the pre-Katrina period, and 105% compared with the post-Katrina period (Figure 16).

More than 50 percent of the live-bait boats licensed to operate in Mississippi were based in Jackson County (Table 12). Twenty-five percent of the live-bait boats were located in Harrison County, while more than 20% operated in Hancock County.

There were no significant differences in the average lengths of the live-bait boats at each location (Table 13). The average vessel length reported for the licensed live-bait boats was 32.45 feet.



Location	Number	Percent
Hancock County	5	20.8
Harrison County	6	25.0
Jackson County	13	54.2
Total	24	100.0

<sup>1</sup>Source: MDMR (2010).

Location	Mean (ft)	Number	Standard deviation
Hancock County	29.33	3	4.619
Harrison County	29.50	6	9.225
Jackson County	34.54	13	5.285
Total	32.45	22	6.696
F-value	1.642 ns		
Significance level	0.22		

<sup>1</sup>Source: MDMR (2010).

## Charter Boats for Hire

The long-term trends in the numbers of licenses sold to operators of charter boats for hire during the past decade are shown in Figure 17. There had been a reduction in the total number of licenses sold to charter-boat operators during the post-Katrina period. The number of licenses sold during the post-Katrina period averaged 90 licenses per year, while about 129 licenses per year were sold during the pre-Katrina period.

The significant difference in the average number of boats licensed during the pre- and post-Katrina periods suggests that this sector has not yet fully recovered from the recent natural disasters (Posadas 2010). Hurricane Katrina damaged 70% of charter boats for hire. Damages to boats and engines accounted for 75% of total damages to the charter fleet. A little more than 25% of coastal Mississippi charter boat owners received or expected to receive insurance payments for damages associated with Hurricane Katrina. The NOAA Fisheries disaster assistance program implemented in the Gulf region for charter boats for hire during the post-Katrina period did not have any significant effect on the number of licenses sold in the state.

In 2010, MDMR sold 101 licenses — 99 to residents and 2 to nonresidents. The total number of licenses sold in 2010 was about 92% compared with the past decade, 78% compared with the pre-Katrina period, and 112% compared with the post-Katrina period (Figure 18).

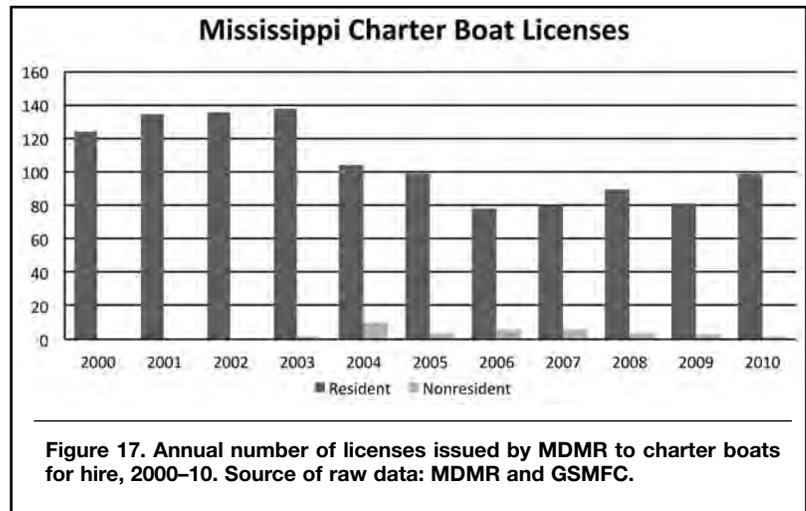


Figure 17. Annual number of licenses issued by MDMR to charter boats for hire, 2000–10. Source of raw data: MDMR and GSMFC.

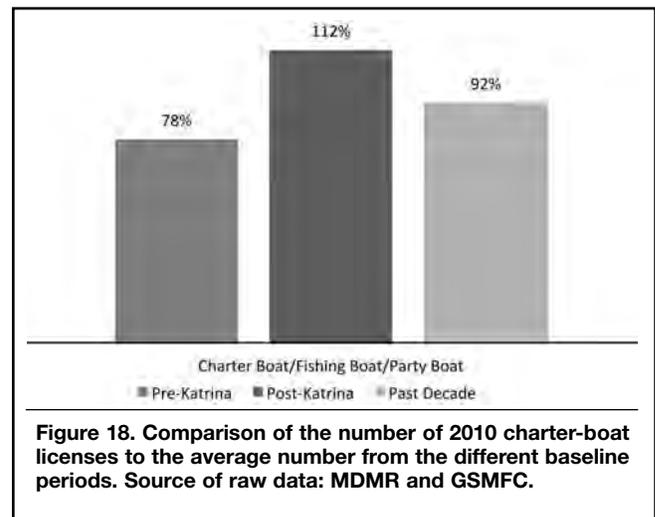


Figure 18. Comparison of the number of 2010 charter-boat licenses to the average number from the different baseline periods. Source of raw data: MDMR and GSMFC.

**Table 14. County distribution of charter boats for hire issued 2009–10 licenses by MDMR.<sup>1</sup>**

Location	Number	Percent
Hancock County	2	2.5
Harrison County	48	59.3
Jackson County	26	32.1
Other Mississippi counties	4	4.9
Out-of-state counties	1	1.2
Total	81	100.0

<sup>1</sup>Source: MDMR (2010).

**Table 15. County comparison of the lengths of charter boats for hire issued 2009–10 licenses by MDMR.<sup>1</sup>**

Location	Mean (ft)	Number	Standard deviation
Hancock County	23.50	2	0.71
Harrison County	38.04	48	21.71
Jackson County	32.31	26	16.46
Other Mississippi counties	41.33	3	21.50
Out-of-state counties	26.00	1	—
Total	35.79	80	19.78
F-value	0.66		
Significance level	0.62		

<sup>1</sup>Source: MDMR (2010).

Almost 60% of the charter boats for hire licensed to operate in Mississippi in 2009 were based in Harrison County (Table 14). Less than 33% of the for-hire charter boats were located in Jackson County. The remaining boats were based in other Mississippi counties or nearby states.

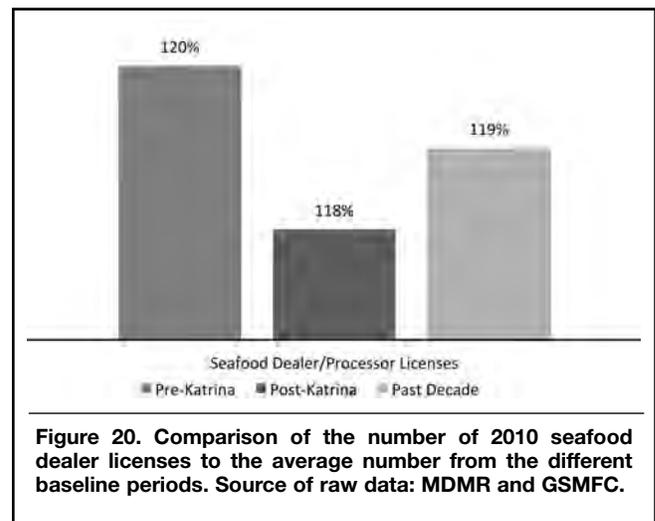
There were no significant differences observed in the average lengths of the charter boats for hire at the various locations (Table 15). The average vessel length reported for all the licensed charter boats for hire was 35.79 feet.

## Seafood Dealing and Processing Sector

Long-term trends in the numbers of licenses sold to seafood dealers and processors during the past decade are shown in Figure 19. There had been a gradual increase in the number of licenses sold to resident and nonresident operators during the pre-Katrina period, totaling 175 licenses in 2000 and 245 licenses in 2004. The bulk of the licenses were sold to resident operators, averaging about 81% of the total sold.

The number of licenses sold during the early post-Katrina period significantly declined but started to recover from 2006 to 2009. Licenses sold to resident operations averaged about 85% of the total. Seafood dealers and processors sustained significant damages during Hurricane Katrina (Posadas 2007). Total estimated damages for seafood processing plants, seafood dealers, and 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 processing plants, damage 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 distribution of total damages was as follows: damages to buildings, equipment, and accessories — 90%; cleaning and disposal — 4%; and inventory losses — 6%.

The number of licenses averaged 207 and 211 per year during the pre- and post-Katrina periods, respectively. For the entire decade, the number of licenses averaged 209 licenses per year, with 84% of the total sold to resident operators. In 2010, MDMR sold 249 licenses — 217 to residents and 42 to nonresidents. The total number sold in 2010 was about 119% compared with the past decade, 120% compared with the pre-Katrina period, and 118% compared with the



post-Katrina period. However, the decline in the number of licenses sold in 2010 was a reversal of the upward trend observed from 2006 to 2009 (Figure 20).

Almost 29% of the seafood dealers/processors licensed to operate in Mississippi in 2009–10 were based in Harrison County (Table 16). Less than 20% of

the dealers/processors were located in Jackson County. More than 29% of the seafood establishments were based in other Mississippi counties. Hancock County had about 8% of the seafood operations. Out-of-state operations made up more than 14% of all the seafood dealers/processors (Table 17).

**Table 16. County distribution of 2009–10 licenses issued by MDMR to seafood dealers/processors.<sup>1</sup>**

Location	Number	Percent
Hancock County	23	8.04
Harrison County	82	28.67
Jackson County	57	19.93
Other Mississippi counties	83	29.02
Out-of-state counties	41	14.34
Total	286	100.00

<sup>1</sup>Source: MDMR (2010).

**Table 17. Sectoral distribution of 2009–10 licenses issued by MDMR to seafood dealers/processors.<sup>1</sup>**

Sector	Number	Percent
Alabama Seafood Dealer	14	4.90
Florida Seafood Dealer's License	1	0.35
Louisiana Resident Seafood Dealer	20	6.99
Resident Menhaden Processor	1	0.35
Nonresident Seafood Dealer	6	2.10
Resident Seafood Dealer and Processor	244	85.31
Total	286	100.00

<sup>1</sup>Source: MDMR (2010).

## RESULTS AND RESEARCH IMPLICATIONS

More than 50% of the total commercial landing value of the state's commercial fishing sector consists of commercial shrimp landings. The number of licenses sold averaged 668 per year during the post-Katrina period as compared with 1,218 per year during the pre-Katrina period. There had been a steady decline in the number of licenses sold to commercial shrimp boats during the past decade. Aside from the recent natural disasters, the continued decline in ex-vessel prices and increasing fuel costs also contributed to the declining economic sustainability of the commercial shrimp industry. A total of 787 licenses were sold to commercial shrimp vessel operators during the 2010–11 shrimping season, which was about 65% of those sold in the pre-Katrina period and 118% of those sold in the post-Katrina period. More than 66% of the commercial shrimp boats licensed to operate in Mississippi during the 2009–10 season were based in the three Mississippi coastal counties. There were significant differences in the average lengths of commercial shrimp boats at each county location. The average length reported for all the licensed commercial shrimp boats was 50.36 feet.

The menhaden-fishing sector added almost 33% of the total landing value of the entire Mississippi commercial fishing sector during the past decade. The number of licenses sold during the pre-Katrina period averaged 14 per year compared with 9 per year during the post-Katrina period. Twenty licenses were sold to menhaden-fishing vessels during the 2010 season, which was about 139% compared with the pre-Katrina period and 217% compared with the post-Katrina period.

Forty-eight licenses were sold to commercial hook-and-line vessel operators during the pre-Katrina period, compared with 109 licenses during the post-Katrina period. A total of 314 licenses were sold to commercial H&L vessel owners in 2010, which was about 649% compared with the pre-Katrina period and 286% compared with the post-Katrina period. Ninety-four percent of the commercial H&L vessels licensed to operate in Mississippi during the 2009–10 fishing season were based in the three Mississippi coastal counties. The average length reported for all the licensed commercial H&L boats was 18.37 feet.

The commercial oyster-harvesting sector added more than 10% to the total landing value of the entire

Mississippi commercial fisheries. The number of commercial licenses sold remained stable during the pre-Katrina period. The impacts of recent natural disasters were highlighted by the drastic reduction in the number of licenses sold in early post-Katrina period. A total of 1,021 licenses were sold in the 2010–11 oyster season, which was about 313% compared with the pre-Katrina period and 382% compared with the post-Katrina period. The sudden increase in the number of licenses sold during this season could have been triggered by a possible regulatory change into a limited-entry oyster fishery. Less than 60% of the commercial fishing units licensed to operate in Mississippi during the 2009–10 season were based in the three Mississippi coastal counties. The length of dredging vessels and tonging boats, which averaged 30.54 feet, significantly varied among different county locations.

The Mississippi commercial crab-harvesting sector declined to about one-third of 1% of the total landings and less than 2% of the total landing value of the state's commercial fisheries sector during the past decade. The number of licenses sold to commercial crab boat operators averaged 252 per year during the pre-Katrina period. The number of licenses sold to commercial crabbers declined as a result of Hurricane Katrina but started to recover starting in 2007 up to 2010. An average of 216 licenses per year were sold to commercial crab boat owners during the post-Katrina period. In 2010, 385 licenses were sold, which was 153% compared with the pre-Katrina period and 179% compared with the post-Katrina period.

There were significant differences in the average number of live-bait dealer licenses sold during the pre- and post-Katrina periods. The number sold during the post-Katrina period averaged 18 per year, while about 34 were sold each year during the pre-Katrina period. This finding indicates that the sector has not yet fully recovered from the devastation brought about by recent natural disasters. MDMR sold 17 licenses to live-bait shop operators in 2010, which was about 65% compared with the past decade, 49% compared with the pre-Katrina period, and 94% compared with the post-Katrina period. The decline in the number of licenses sold in 2010 was a setback of the increasing trend from 2006 to 2009. Fifty percent of the live-bait dealer

licenses were issued to establishments located in Jackson County, 30% were sold to Harrison County establishments, and the remaining 20% were sold to Hancock County dealers.

The number of licenses sold to live-bait boat operators drastically fell during the post-Katrina period but showed some signs of recovery in 2009. The number of licenses sold during the post-Katrina period averaged 17 per year, whereas about 35 licenses per year were sold during the pre-Katrina period. These differences showed that this sector has not yet fully recovered from the damages resulting from recent natural disasters. MDMR sold 18 licenses to resident live-bait boat operators in 2010, which was about 68% compared with the past decade, 51% compared with the pre-Katrina period, and 105% compared with the post-Katrina period. The average Mississippi live-bait boat was about 32 feet long. More than 50% of the live-bait boats licensed to operate in Mississippi were based in Jackson County, 25% were located in Harrison County, and more than 20% operated in Hancock County. There were no significant differences in the average lengths of the live-bait boats at each location.

There was a reduction in the number of licenses sold to operators of charter boats for hire during the post-Katrina period, indicating that the sector has not yet fully recovered from the recent natural disasters. The total number of licenses sold to charter boats for hire in 2010 was about 92% compared with the past decade, 78% compared with the pre-Katrina period, and 112% compared with the post-Katrina period. The

typical licensed charter boat was about 36 feet long. Almost 60% of the charter boats licensed to operate in Mississippi in 2009 were based in Harrison County, less than 33% were located in Jackson County, and the remaining boats were based in other Mississippi counties or nearby states.

There were no significant differences in the average number of seafood dealer/processor licenses sold during the pre- and post-Katrina periods. For the entire decade, the number of licenses averaged 209 licenses per year. In 2010, 249 licenses were sold, which was about 119% compared with the past decade. Most of the seafood dealers/processors licensed to operate in Mississippi in 2009–10 were located in the three coastal counties: Harrison County, 29%; Jackson County, 20%; and Hancock County, 8%.

The distribution by county location determined the spatial concentrations of the affected seafood and fishing establishments, thus identifying the counties that were heavily impacted by the Deepwater Horizon oil spill. These spatial profiles also provided snapshots of the number of licenses sold to the commercial fishing establishments in 2009–10 as compared with two baseline periods. The spatial distributions in 2010 now serve as the benchmark for future spatial analysis of the locations of the various fishing and seafood sectors of the region. It is strongly recommended that spatial distributions of these various economic sectors be conducted in the future to provide information on the spatial changes associated by natural and technological disasters.

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