Small Business Impacts Associated with the 2010 Oil Spill and Drilling Moratorium in the Gulf of Mexico

- Final Technical Report -

Small Trawl Vessel Transiting Oiled Waters near Grand Isle in 2010

Prepared for the

U.S. Small Business Administration
Office of Advocacy

by

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Dr. Joseph M. Johnson
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August 20, 2012

Dear Dr. Johnson:

I am pleased to submit the attached technical report entitled *Small Business Impacts Associated with the 2010 Oil Spill and Drilling Moratorium in the Gulf of Mexico*. The deliverable is specified in Contract SBAHQ-11-M-0210 and, as required, provides detailed description and analysis of the initial effects of the spill and subsequent offshore drilling moratorium on small businesses in the affected region.

The study described in this report has identified important kinds and patterns of economic and social impacts. Please note, however, that project findings should be considered preliminary in nature since the effects of the spill, fishery closures, offshore drilling moratorium, and related claims and litigation processes continue to unfold at the time of this writing. Previous research clearly supports the assertion that spill-related effects will continue to emerge well into the future.

The study involved development of an extensive database regarding pertinent social, economic, and demographic trends and current conditions in the spill-affected region. While only a small portion of the information generated during the course of the project is represented in the attached report, the complete database is available to improve understanding of the long-term effects of the spill and moratorium.

We would like to express our appreciation for your diligent oversight of this important project. It is our hope that the attached report will prove useful to your agency's efforts to support the development and growth of our nation's small businesses.

Sincerely yours,

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List of Acronyms

ADCNR	Alabama Department of Conservation and Natural Resources
AHTSV	Anchor-handling tug supply vessel
BARA	Bureau of Applied Research in Anthropology, University of Arizona
BP	British Petroleum
BEA	Bureau of Economic Analysis, U.S.
BOEM	Bureau of Ocean Energy Management, U.S. Department of the Interior
CBP	County Business Pattern database
CSC	Coastal Services Center, NOAA, U.S. Department of Commerce
GCCF	Gulf Coast Claims Facility
GEMS	Gulf Ecological Management Sites
GNO Inc.	Greater New Orleans, Incorporated
IEM	Innovative Emergency Management, Inc.
IAI	Impact Assessment, Inc.
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LMSDC	Louisiana Minority Supplier Development Council
MDMR	Mississippi Department of Marine Resources
NAICS	North American Industry Classification System
NMFS	National Marine Fisheries Service, NOAA, U.S. Department of Commerce
NOAA	National Oceanic and Atmospheric Administration, U.S. Department of Commerce
NRDA	National Resource Damage Assessment
OSLTF	Oil Spill Liability Trust Fund
OPA	Oil Pollution Act of 1990
OPEC	Organization of Petroleum Exporting Countries
PRA	Paperwork Reduction Act of 1995
SBA	Small Business Administration, U.S.
SBO	Survey of Business Owners database
USCG	United States Coast Guard, Department of Homeland Security
VOO	Vessels of Opportunity Program
WBEC	Women’s Business Enterprise Council

Small Business Impacts Associated with the 2010 Oil Spill and Drilling Moratorium in the Gulf of Mexico

1.0 Introduction

This report summarizes research undertaken to examine the effects of the 2010 *Deepwater Horizon* oil spill and subsequent six-month drilling moratorium on small businesses in the Gulf of Mexico. The project was administered by the United States Small Business Administration (SBA), Office of Advocacy, under Contract SBAHQ-11-M-0210. The mission of the SBA Office of Advocacy is to encourage policies that support the development and growth of American small businesses.[1] The project was undertaken by Impact Assessment, Inc. (IAI). IAI is a social science research firm that specializes in issues associated with the management of public trust resources along the coastal zone of the U.S. and abroad.[2]

1.1 Essential Background

On April 20, 2010, an explosion occurred on the *Deepwater Horizon*, a semi-submersible offshore drilling rig which was operating above Mississippi Canyon Block 252 (MCB 252), some 45 miles southeast of Venice, Louisiana. The explosion killed 11 workers and injured 16. For nearly three months following the incident, an estimated 4.9 million barrels or 205 million gallons of crude oil continued to spill from the platform's damaged wellhead into the surrounding waters of the Gulf of Mexico (National Oceanic and Atmospheric Administration or NOAA 2011). Although the chemical attributes of oil from MCB 252 were considered likely to biodegrade more rapidly than many other sources of crude (NOAA 2010a), certain portions of the Gulf were eventually affected by viscous oil, tar balls, and sheen.

In order to ensure that seafood affected by the oil spill did not pose a risk to human health, federal and state agencies closed large areas of the Gulf of Mexico to commercial and recreational fishing activities. As much as 37 percent of federal waters and 85 percent of state waters were closed to fishing at the peak of the event. This obviously led to the unavoidable temporary loss of

[1] The SBA Office of Advocacy funds research into a variety of small business issues around the United States, and it is the principal source for statistical information regarding small business activity in the nation. For additional information about the agency, including the results of research sponsored in years past, please see http://www.sba.gov/advocacy/847.

[2] IAI staff began conducting ethnographic research in the Gulf region soon after it was learned that spill was likely to reach the Gulf coastline. This effort was a natural extension of a large body of research that had been completed by the firm over the last 14 years, including: (a) development of a Gulf-wide pre-deepwater drilling socioeconomic baseline for the U.S. Department of the Interior, Minerals Management Service (MMS, now the Bureau of Offshore Energy Management) (IAI 2008); (b) descriptive assessment of 335 Gulf communities for the U.S. Department of Commerce, NOAA Fisheries Service (e.g., IAI 2005); (c) detailed assessment of the effects of Hurricanes Katrina and Rita on fishing communities across the region, also for the NOAA Fisheries Service (IAI 2007; Petterson et al. 2006); (d) social and cultural assessment of the Gulf of Mexico blue crab fishery, for the Gulf States Marine Fisheries Commission (Guillory et al. 2001, IAI 2001); and (e) a traditional use study of the Barataria Unit of the Jean LaFitte National Historical Park and Preserve, for the U.S. Department of the Interior, National Park Service (IAI 1998).

opportunities in the harvest, processing, and distribution sectors of the region's commercial fishing industry and among businesses in the region's recreational fishing industry. Persons who normally use marine resources for personal or familial consumption also experienced loss of opportunity to do so. A six-month moratorium on offshore drilling was declared while the accident was under investigation, thereby leading to economic loss in that industry. The coastal tourism industry was also affected: many prospective visitors altered their plans, based on what could be learned or imagined about the effects of the oil on the region's beaches and estuaries.

The initial impacts of the spill and subsequent moratorium were challenging to the owners of many small businesses along the coast of the Gulf of Mexico. This is true not only because of spill-induced loss of business opportunities, but also because the spill and moratorium are the most recent in a long series of events and processes that have significantly affected small business activity across much of the region. These occurrences include, but are not limited to: increasing national reliance on non-domestic sources of seafood during the 1990s; growing public and private sector interest in deepwater drilling opportunities during the late 1990s and early 2000s; natural disasters such as Hurricanes Katrina and Rita during the mid-2000s; rapid and significant increases in fuel prices beginning around 2006; dramatic change in the national and regional economies beginning in 2008; and ongoing regulatory changes and other challenges in the commercial fishing industry.

Researchers seeking to examine and analytically isolate any positive or negative effects of the oil spill and moratorium on small businesses must therefore consider the broad social and economic context in which these events and processes occurred. Precise analysis is challenging, since multiple events can exert complex effects on small businesses over the course of time. For example, certain business owners in the Gulf region report that the hurricanes of the mid-2000s required them to focus on rebuilding facilities and re-establishing clientele (many of whom were also impacted by the storms), and any progress made toward recovery was subsequently constrained by the national recession. The oil spill led to diminished business opportunities among some such business owners, to spill clean-up opportunities among others, and to various compensatory claims and litigation settlement possibilities among all affected parties. As such, parsing the effects of the spill requires consideration of interactive effects between sources of social and economic change and analytical control of such factors, as these have conditioned life in the region over recent decades and during the period since the accident and spill occurred.

1.2 Project Goal and Objectives

The goal of the project described in this report is to generate qualitative and quantitative description and focused analysis of the effects of the 2010 oil spill and subsequent offshore drilling moratorium on small businesses around the Gulf of Mexico. This requires the satisfaction of a series of interrelated objectives, as follow:

(1) Develop a set of hypotheses regarding the effects of the oil spill and moratorium;

(2) Identify a bounded (tractable) study area within which to test the hypotheses: key attributes of such study areas should vary so as to enable sufficient understanding of the effects of the spill on a range of pertinent sectors and businesses in the Gulf region;

(3) Develop a research design to enable collection and analysis of pertinent quantitative and qualitative data with which to test the hypotheses;

(4) Collect and analyze primary and secondary source data; describe the social and economic context within which the accident, spill and moratorium occurred; analytically parse the effects of these events from other sources of change and/or describe and analyze the cumulative or synergistic effects of multiple events and processes on small businesses in the region and variability in the response of small business owners to such events and processes; and

(5) Generate draft and final reports describing the human context in which the oil spill and moratorium occurred, and the discernible effects of these events on small business owners in the Gulf of Mexico given other abrupt and/or ongoing sources of social and economic change in the region.

1.3 Research Hypotheses

Based on review of literature regarding the effects of oil spills on resource-dependent communities around the nation, results of fieldwork conducted during the early phases of the *Deepwater Horizon* event, and the stated informational needs of the SBA as described in the project solicitation, three basic hypotheses were developed to guide the current research. These are as follow:

- The *Deepwater Horizon* oil spill and offshore drilling moratorium have disproportionately impacted minority-owned small businesses in the Gulf of Mexico region;

- The *Deepwater Horizon* oil spill and offshore drilling moratorium have disproportionately affected very small businesses in the region;

- The *Deepwater Horizon* oil spill and offshore drilling moratorium have disproportionately affected small businesses in the most geographically isolated portions of the region.

1.4 The Study Counties, Parishes, and Communities

The nation's largest oil spill to date has affected many individuals, businesses, fleets, and communities along the Gulf of Mexico. The scope of effects is such that all communities and affected economic sectors cannot be studied in full. This study involves examination of the effects of the spill and moratorium on communities and sectors that are likely to have been impacted in a variety of ways, thus enabling representation of a range of impacts through work in a feasible number of study areas.

The study communities are depicted in Table 1-1 below. Given the need to examine the effects of the spill and moratorium on the region's commercial and recreational fishing fleets and related economic sectors, it was deemed important that each of the study communities be involved in these activities to greater and lesser extents. Similarly, it was necessary to work in communities that are closely associated with the oil and gas industry and related sectors. Communities in Terrebonne, Lafourche, and Jefferson Parishes in Louisiana were chosen for the study for this reason. Certain communities in Baldwin and Mobile Counties in Alabama and in Harrison County in Mississippi are largely dependent on marine-related tourism and were included in the study in order to provide insight into the effects of the spill on businesses involved in this important form of industry. Some communities, such as Buras-Triumph in Plaquemines Parish, and Grand Isle in Jefferson Parish, are relatively isolated in geographic terms and also were inordinately impacted by Hurricane Katrina. Research in these areas thereby enhanced understanding of the potentially confounding effects of such factors on accurate analysis of the spill and its impacts on small businesses across the region. Finally, numerous minority-owned firms are located in Plaquemines and Terrebonne Parishes in Louisiana, Mobile County in Alabama, and Harrison County in Mississippi. Work in these areas facilitated the testing of hypotheses regarding the impacts of the spill and moratorium on these types of businesses.

Table 1-1 Study Parishes, Counties, and Communities

State	Parish or County	Communities
Louisiana	Terrebonne	Houma
	Lafourche	Galliano, Golden Meadow
	Jefferson	Barataria-Lafitte, Grand Isle
	Plaquemines	Boothville-Venice, Buras-Triumph
	St Bernard	St. Bernard[3]
Mississippi	Harrison	Biloxi, Pass Christian
Alabama	Mobile	Bayou La Batre
	Baldwin	Orange Beach-Gulf Shores, Bon Secour

[3] Includes the small, geographically proximate communities of Yscloskey, Hopedale, and Shell Beach.

1.5 Research Methods

A combination of social science research methods was used to test the project research hypotheses. These included: (a) compilation and review of pertinent background literature, (b) compilation and analysis of archived time-series data, and (c) in-depth ethnographic fieldwork. The literature review guided the topical and geographic focus of the research; analysis of secondary source data assisted in specifying the effects of the spill and moratorium to date; and field research provided direct insight into the experiences of small business owners in the study communities.

The review focused on the following materials: (1) technical reports developed by or for government agencies; (2) scientific journal articles; (3) survey research conducted primarily by local non-government agencies; and (4) articles and reports disseminated through online sources and local, regional, and nationally distributed newspapers and magazines. The scientific nature of the current project requires emphasis on sources (1) and (2) above, but popular news articles have also been consulted as useful sources of real-time information. It should be noted that scientific journal articles regarding the effects of the spill on business activity and other dimensions of life in the region are limited in number given the time required for research manuscripts to progress through the publication process (see Lambert et al. 2011).

The research team continued to review and annotate pertinent scientific literature and other forms of relevant information as it became available. The objective of this component of the project was to inform the overall analysis while providing the SBA with sources relevant to its mission.

The research team has sought to identify the universe of small businesses recently or currently involved in the fishing and oil and gas industries in the study communities. A total of 1,525 such businesses were identified; these were organized in a database by community and relevant North American Industry Classification System (NAICS) code. The data are used here to indicate the degree to which each community is involved in the fishing and offshore oil and gas industries.

In order to assess the extent to which persons in each of the study counties and parishes are involved in the harvest sector of the fishing industry, we utilized commercial fishing licensing and permit data generated by NOAA, National Marine Fisheries Service (NMFS). These data are particularly useful since so many small businesses in the spill-affected region are small fishing operations, many of which do not involve formal hiring of employees. The U.S. Census Bureau uses the term "non-employer" for such businesses, and the term is used throughout this report to differentiate small businesses that do and do not hire employees. The latter group is included in the above-mentioned hypothesis regarding very small businesses. The research team also acquired and compiled business data from several private sector sources. These include Dun and Bradstreet and local Yellow Pages datasets,[4] and data from local Chambers of Commerce, economic development agencies, seafood marketing associations, and minority business owner organizations.

[4] Alabama, Mississippi, and Louisiana Yellow Pages and Business Profiles: http://alabama.4ra.in, http://mississippi.4ra.in, and http://louisiana.4ra.in; and Manta Connect Business Profiles, www.manta.com.

The "Censtats," "Nonemployer Statistics," and "Survey of Business Owners (SBO)" databases are useful sources of pertinent information available from the U.S. Census Bureau. The SBO is conducted every five years. Although data from these sources are aggregated by county or parish, we correlate the information with field-based observations to further understanding of which and how many potentially affected businesses are located in the study communities and larger region. The most current and comprehensive secondary source of business data of utility for the current project is the County Business Pattern (CBP) Database for 2010.

It is emphasized here that while certain available forms of information have proven to be useful for indicating spill-related changes in small business activity across the Gulf region, the present analysis is unavoidably limited by the timing of agency data collection efforts vis-à-vis the timing of the spill event, and the unavoidable lag that occurs between collection and dissemination of pertinent information. For instance, decennial census data generally do not capture spill-related changes since the spill had only just occurred when such data were collected by the Census Bureau, and because 2011 updates that would otherwise indicate first year changes were not yet available at the time of this study. Some of the available data, such as NMFS license, permit, and landing data for 2011, do capture spill-related changes when assessed in relation to prior years and when considered in relation to other sources of change in the region. These are used accordingly. But we note here that primary source data, i.e., data from in-depth interview work, and certain up-to-date analyses generated by other research entities are, at this point in time, the most up-to-date and direct source of information about the impacts of the spill on small businesses in the study region. In cases where such information was deemed valid, it is used in its own right for descriptive and analytical purposes and in order to augment and cross-validate available secondary source indications of spill and moratorium-induced change.

In keeping with the intent of the study to contribute to assessment of the effects of the spill and moratorium over time, we have compiled and here provide the sponsor with certain relevant and available time-series information regardless of its temporal capacity to indicate spill-induced changes. In this respect, we have constructed a baseline understanding of pertinent trends and conditions among small businesses in the region. This is a vital and necessary first step in a more comprehensive assessment effort that will be possible only when and as additional data are released by the cognizant agencies. Spill-related impacts undoubtedly will occur well into the future since the original accident and spill events, and subsequent clean-up, litigation, and settlement have and will continue to alter the pre-spill trajectory of social and economic life across the region (cf. IAI 2012).

Ethnographic observation and in-depth interviews used to inform the current analysis were conducted in three phases. The first phase of work was undertaken during the weeks and months immediately following the spill event. The intent of this work was to systematically document early phases of response to the spill, during which emerging problems and attempted solutions began to influence long-term outcomes. Special attention was applied to variation in formal and informal response strategies, and to the consequences of such strategies as these manifested over time in the commercial fishing and related sectors of the region's economy.

Initial fieldwork for the current study commenced during October 2011. The objectives for this exploratory phase of work were to establish rapport with and initiate discussions with key persons

in the region's economic development agencies, Chambers of Commerce, community-based organizations, and local government agencies involved in the response effort. The work also involved collection of pertinent literature and data maintained by such entities. The initial round of interviews focused on the following themes: trends in activity among small businesses during the years preceding the spill; near-term and projected long-term effects of the spill and/or drilling moratorium on local businesses; and efforts undertaken by local, state, and federal agencies and community-based organizations to assist small businesses affected by the spill.

A second period of in-depth ethnographic field research occurred during the winter of 2012. Work was focused on the Louisiana and Alabama study communities. Interviews were conducted with: business owners in the commercial and recreational fishing industries; representatives and business owners active in the oil and gas industry; and representatives and business owners in the coastal tourism industry. Objectives included: (1) interview work with small business owners; (2) follow-up discussions with key public officials and community-based organization staff who were involved in the response effort and with whom we had interacted previously; (3) facilitation and documentation of focus group meetings with business owners in the study communities; (4) ongoing review of pertinent literature and data collected by or produced for a variety of agencies active in the region; and (5) acquisition of pertinent marine fisheries data.

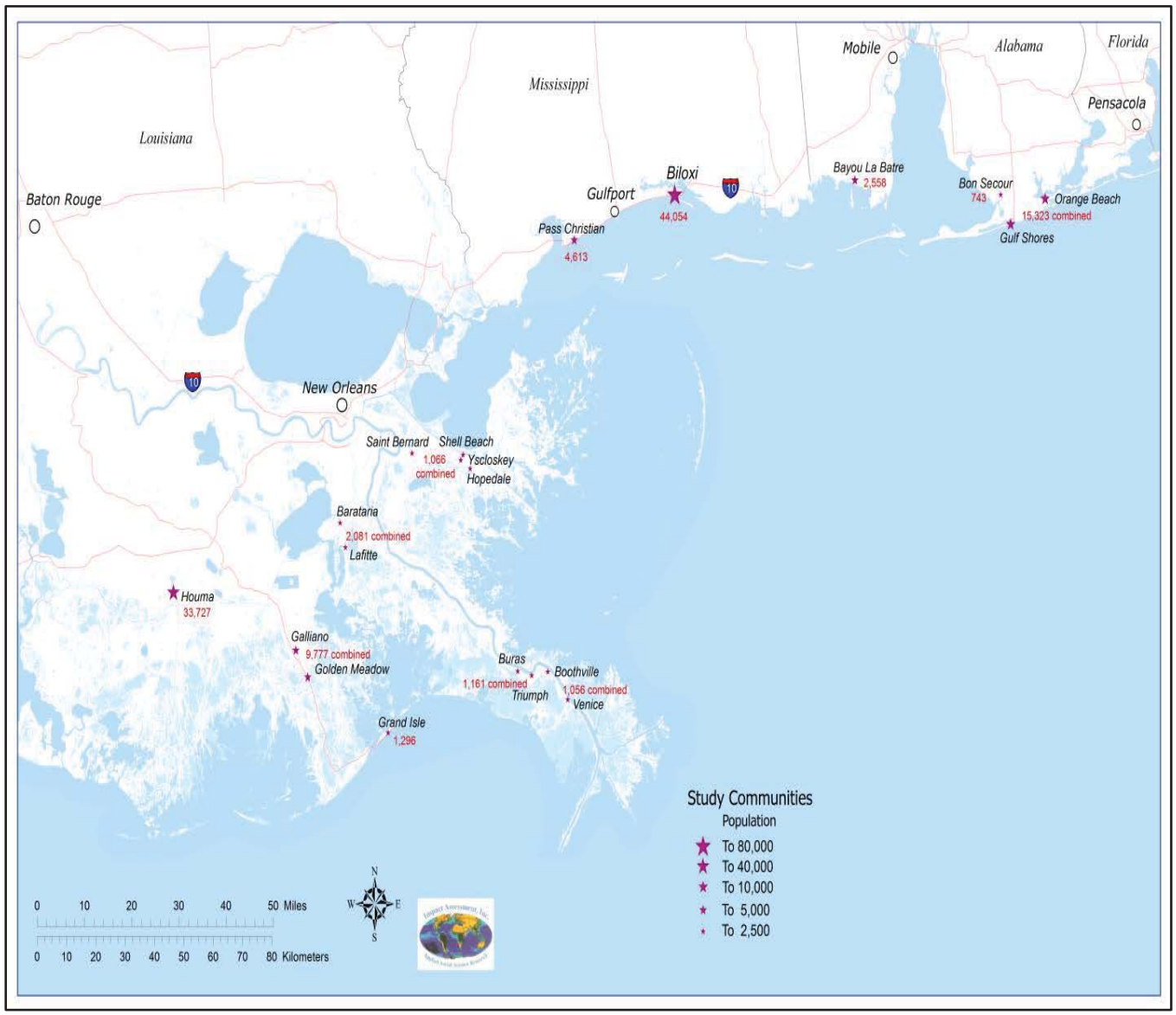
During the course of in-depth discussions with key informants, field staff collected basic data regarding: the characteristics of small business owners and their firms; sources of capital and disaster assistance; size of the business; annual sales or receipts; and the nature of business activities prior to, during, and 18 months after the spill. Substantive discussions focused on: (1) factors affecting business trends prior to the spill and the offshore drilling moratorium; (2) oil spill-related challenges and opportunities; and (3) business strategies following the spill. Data acquired during such discussions assisted in the identification and analysis of businesses most significantly affected by the spill and drilling moratorium; the kinds of strategies that have been most effective in mitigating the deleterious effects of these events; and characteristics and behaviors that have rendered various business owners more or less vulnerable to deleterious effects in the near-term and over a longer period of time. Such discussions were also held with persons operating minority- or women-owned businesses and with key persons knowledgeable of such businesses in the study communities. Well over 100 in-depth interviews were conducted during the course of the project; many involved multiple follow-up discussions.[5]

1.6 Organization of the Report

Following this introductory discussion, Chapter Two provides an overview of the study communities and their respective counties/parishes, with descriptive emphasis on trends and current conditions in the principal forms of industry and business activity in each area. Chapter Three describes pertinent aspects of the offshore oil and gas industry. Chapter Four discusses the

[5] All data collection procedures associated with this project were undertaken in accordance with the Paperwork Reduction Act of 1995 (PRA; Public Law 104-13), portions of which require that federally sponsored social research effectively: (a) reduces paperwork and other burdens on the public, (b) minimizes the costs of information collection activities, (c) ensures the satisfaction of specific agency needs, (d) maximizes the practical utility of such research, and (e) avoids collection of duplicate information. Formal survey methods were not employed during the course of this study; interviews were rather open-ended in nature and based on a semi-structured protocol.

region's commercial fishing industry and inter-community variation of vulnerability and resilience of the involved sectors and businesses to social and environmental change. Chapter Five describes pertinent aspects of the region's tourism industry, including sectors and businesses associated with the recreational fishing industry. Chapter Six concludes the report with summary discussion of spill-induced impacts to small businesses across the study region, and discussion of findings in relation to the project research hypotheses.



Map 1-1 Study Communities
(See Appendix A for full-scale version)

2.0 Overview of Study Parishes, Counties, and Communities

This section of the report provides overview description of the manner and extent to which residents of the study communities, parishes, and counties are involved in the region's principal forms of business and industry. The description is based on secondary source data and data of observation. The material is provided as necessary descriptive context for subsequent analysis provided in the current report, and as essential baseline data needed to conduct any future research of the ongoing effects of the spill on the region's small businesses.

2.1 Terrebonne Parish, Louisiana

Geographic Overview. Terrebonne Parish is located in southernmost Louisiana. Terrebonne is one of the largest parishes in the state, encompassing 1,255 square feet of land and 825 square miles of water. The parish is bordered on the east and northeast by Lafourche Parish and on the west and northwest by Assumption Parish. Average elevation is 12 feet above sea level. The northern portion of the parish is used primarily for agriculture, while the estuarine-rich areas to the south support various commercial and recreational fishing activities.

Terrebonne is one of the state's most important staging areas for the offshore oil and gas industry. Multiple narrow ridges of land and accompanying marshes and bayous in the southern portion of the parish are known as the "five fingers" region. Geographically isolated, communities situated on these narrow areas of land exhibit distinctive social attributes and economic conditions.

The year 2010 Census enumerated 111,860 residents in the parish. This is an increase of seven percent above the year 2000 figure (U.S. Census Bureau 2010a). Houma is the parish seat and the center of oil and gas support activities and services.

Economic Overview. The Terrebonne Parish economy has long been grounded in its natural resources. Commercial fishing, sugar production, and petroleum production were important in historical terms. Today, more offshore oil and supply companies are based in Terrebonne Parish than anywhere else in the state. Hundreds of businesses in the parish supply the industry with drilling materials and services, oil field services, site preparation services, air and marine transportation services, offshore catering, navigational services, offshore contract labor, and shipbuilding services.

The Houma Navigation Canal and the Intracoastal Waterway bisect the parish, facilitating transportation of heavy oil industry machinery to and from the Gulf of Mexico. Businesses in the oil and gas industry sectors have been expanding since the 1990s.

Earnings in the oil and gas sector totaled $387 million in 2010, reflecting a 26 percent increase since 2001 (Bureau of Economic Analysis 2012). The marine transportation sector has grown in conjunction with offshore oil and gas extraction activities, and now constitutes 20 percent of all transportation and warehousing business establishments in the parish.

Terrebonne Parish is one of the leading seafood-producing regions in Louisiana (Louisiana Department of Wildlife and Fisheries 2010). Shrimp, oysters, crabs, and menhaden are

particularly important commercial fisheries here, while flounder, red snapper, cobia, and king mackerel are important to recreational anglers and businesses supporting recreational fishing.

Business Overview. According to the U.S. Census Bureau County Business Patterns database, approximately 10,000 businesses were registered in Terrebonne Parish in 2009 (U.S. Census Bureau 2010b). This figure includes 2,950 employer establishments and 7,068 non-employer firms (Table 2-1).

As noted in Chapter One, the U.S. Census defines an employer establishment as a business that pays a number of employees. A non-employer firm is defined as a business that is owned and operated by a self-employed person who has no paid employees. Significantly, non-employer firms comprise 71 percent of all businesses in Terrebonne Parish. Additionally, non-employer firms account for 95 and 99 percent of all fishing and oil and gas-related businesses, respectively.

Most employer establishments in Terrebonne Parish are small businesses. Forty-six percent of all employer establishments in Terrebonne employ between one and four workers; 68 percent employ nine or fewer workers. The mining industry represents 18 percent of all employer businesses in the parish. Retail services, professional, scientific, and technical services, and the commercial fishing industries are also principal businesses in Terrebonne, representing a host of employers.

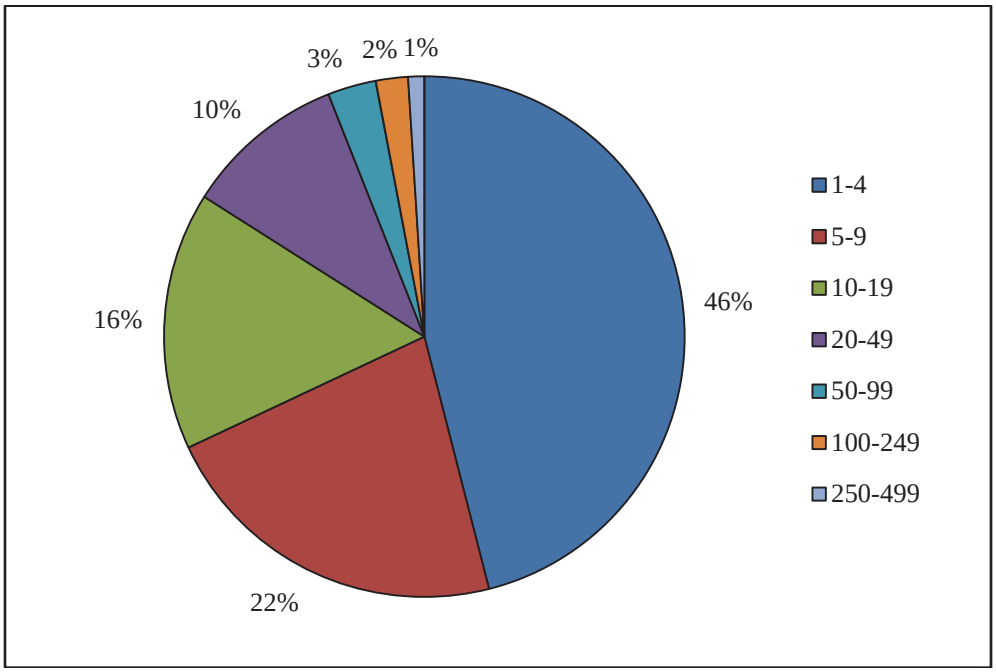


Figure 2-1 Terrebonne Parish Businesses by Class Size in 2009
Source: U. S. Census Bureau (2010b)

Table 2-1 Small Business Establishments in Terrebonne Parish in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employers + Non-Employers	Industry as a Percent of Total Parish Businesses
11----	Forest, fish, hunt, and agric.	16	965	981	9
21----	Mining, quarry, oil&gas extraction	84	93	177	18
22----	Utilities	5	W	5	<1
23----	Construction	261	941	1,202	12
31-33	Manufacturing	133	111	244	2
42----	Wholesale trade	209	86	295	3
44-45	Retail trade	482	528	1,010	10
48-49	Transportation & warehousing	169	397	566	6
51----	Information	38	41	79	<1
52----	Finance and Insurance	197	201	398	4
53----	Real estate, rental, and leasing	158	649	807	8
54----	Prof, scientific, tech services	281	711	992	10
56----	Admin&Support;Waste mgmt	124	618	742	7
61----	Educational services	16	95	111	1
62----	Health care, social assistance	269	339	608	6
71----	Arts, entertainment, recreation	40	194	234	2
72----	Accommodations, food services	234	108	342	3
81----	Other services	217	988	1,205	12
99----	Industries not classified	2	0	2	<1
Total		**2,950**	**7,068**	**10,000**	**100**

Source: U.S. Census Bureau (2010b)

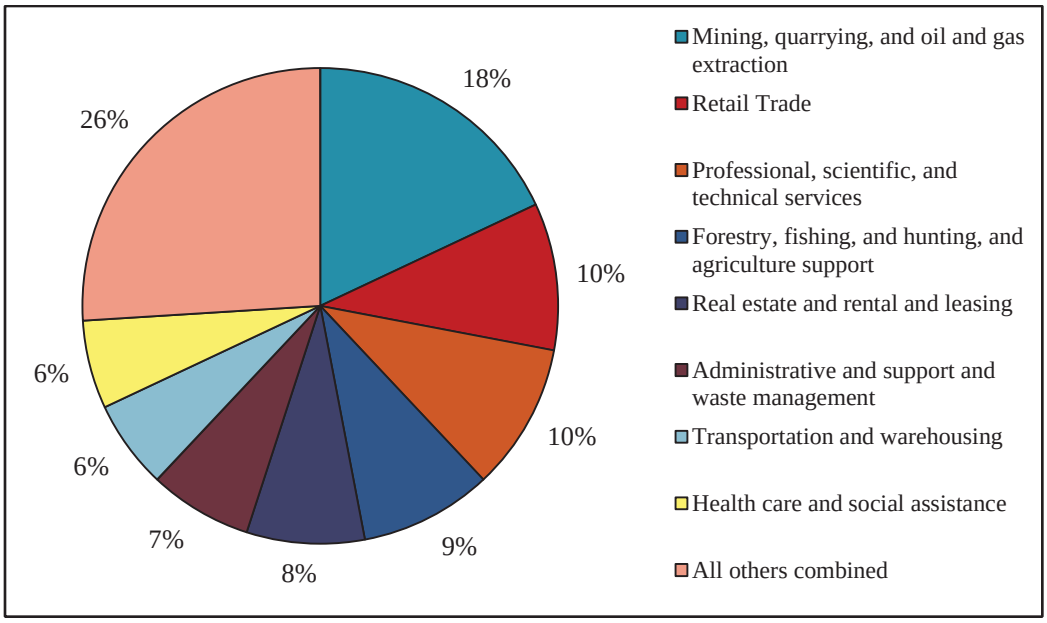


Figure 2-2 Terrebonne Parish Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

According to the NOAA Coastal Services Center (CSC 2012), marine-related businesses provided 24 percent of the total jobs in Terrebonne Parish in 2009, an increase of eight percent since 2005. This equates to about 13,300 jobs and $2 billion in total revenue.[6] The predominant marine-related sectors in Terrebonne Parish are offshore mineral extraction (35 percent), tourism and recreation (28 percent), marine transportation (six percent), and marine construction (four percent).

2.1.1 Houma

Houma is the seat of government and center of commerce in Terrebonne Parish. The city is located approximately 57 miles southeast of New Orleans. With a 2010 population of 33,727 persons, Houma is also the most populous city in the parish (U.S. Census Bureau 2010a). Houma's population has increased by four percent since the U.S. Census enumerated 32,393 residents in 2000.

The workforce in this mid-sized city is relatively diversified. Most persons are employed in sugarcane production, the petrochemical industry, and various manufacturing and oil and gas industry sectors. Several local fabrication yards build platforms for the offshore oil and gas industry). Many small businesses in Houma support commercial fishing operations undertaken from the surrounding communities of Bayou du Large, Chauvin, Cocodrie, Dulac, Isle Jean Charles, Montegut, Pointe-aux-Chenes, and Theriot.

Approximately 8,300 employer businesses are located in Houma; 474 (or six percent) are marine-dependent. The term "marine-dependent" is used here and throughout this document to indicate direct and ongoing rather than indirect and sporadic relationships between businesses and the marine environment. For instance, commercial fishing operations and businesses providing direct support to the commercial fishing and offshore oil and gas industries are, for the purposes of this project, considered directly dependent on the marine or marine environment. A business that is only partially and indirectly involved in support of commercial or recreational marine activities, such as a large retail outlet that provides fishing tackle, is not categorized as a marine-dependent business.

The intent here is to indicate the percentage of local businesses that likely were directly affected by closure of fishing areas and by the moratorium on offshore oil and gas activity. Table 2-2 below depicts the number and type of marine-dependent businesses present in Houma at the time of this study. Seventy-four percent of Houma's 474 marine-dependent businesses serve the oil and gas industry.

Many Houma-based marine-dependent businesses with paid employees are small businesses. Forty-one percent employ four or fewer workers, 58 percent employ nine or fewer workers, and 90 percent employ 49 or fewer workers. Nearly all of the small businesses employing more than 50 workers serve the oil and gas industry. One seafood processor in Houma employs roughly 100 workers.

[6] These data and similar data provided in this report exclude revenue generated by self-employed individuals.

Table 2-2 Marine-Dependent Businesses in Houma in 2011*

NAICS Code	Description	Number	Percent of Total
211111	Oil & Gas Extraction	7	1
213111	Drilling Oil & Gas Wells	31	6
213112	Support Activities for Oil & Gas Operations**	66	14
231712	Oil & Gas Pipeline Construction	7	1
238910	Site Prep & Related Construction for Oil & Gas Ops	87	18
311712	Fresh & Frozen Seafood Processing	9	2
324110	Petroleum Refineries	7	1
333132	Oil & Gas Machinery & Equipment Manufacturing	89	19
336611 & 336612	Ship and Boat Building & Repairing	38	8
424460	Fish & Seafood Merchant, Wholesale	14	3
424720	Petrol & Petrol Products Merchant Wholesalers	5	1
441222	Boat Dealer (Includes Accessories & Marine Supplies)	32	7
445210	Fish & Seafood Merchant, Retail	24	5
451110	Bait and Tackle, Retail	5	1
487210	Scenic & Sightseeing Water Transportation	16	3
488320	Marine Cargo Handling	3	1
488330	Navigational Services to Shipping	23	5
532411	Water Transportation Equipment, Rental & Leasing	5	1
713930	Marinas	7	1
Total		**474**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011; * Non-employer firms not included; **Includes: Supplies, Equipment, Vessel Leasing, Logging & Perforation, Hauling, Tank Cleaning, etc.

The U.S. Census collects data about minority-owned businesses in places with a resident population of at least 5,000. In 2007, the year of the last economic census, 9,874 small businesses were located in Terrebonne Parish, 10 percent of which were minority-owned. More than one-third of all such businesses in the parish are located in Houma; 11 percent of which are minority-owned. Although a high percentage of Native Americans live in Houma, very few local businesses are Native American-owned. Similarly, very few businesses in Houma are owned by women (Table 2-3). Note that certain data are suppressed by the Census Bureau due to confidentiality issues.

Table 2-3 Minority-Owned Businesses in Houma, Terrebonne Parish, and Louisiana in 2007

Population and Business Ownership		Houma	Terrebonne Parish	Louisiana
Total Population (2010)		33,727	111,860	4,533,372
Number of Businesses (2007)		3,442	9,874	375,808
African-American-Owned Businesses (2007)	Expressed as %	8	6	16
Asian-Owned Businesses (2007)		3	2	3
Hispanic-Owned Businesses (2007)		S	S	3
Native American-Owned Businesses (2007)		S	2	>1
Native Hawaiian-Owned Businesses (2007)		F	F	0
Women-Owned Businesses (2007)		20	24	27

Source: U.S. Census Bureau 2007; F = Fewer than 100 Businesses; S = Suppressed

2.2 Lafourche Parish, Louisiana

Geographic Overview. The center of Lafourche Parish is located approximately 60 miles southwest of New Orleans in southeast Louisiana. The parish is bordered on the north by St. James Parish, on the east by St. Charles and Jefferson Parishes, on the south by the Gulf of Mexico, and on the west by Terrebonne and Assumption Parishes. Bayou Lafourche bisects the parish, east to west, while the Intracoastal Waterway transects the parish, north to south. State Route 1 also transects the parish on a north/south axis along Bayou Lafourche. Both of the study communities are situated along this roadway. The parish has an average elevation of seven feet.

The word "Lafourche" derives from French for "the fork," descriptive of the parish geography, with a long narrow handle to the north and tine-like fingers of low-lying land and bayous on its southern end (IAI 2005). The bayou landscape was first settled by Canary Islanders and Acadians during the mid- and late-1700s; thus, the origins of modern day Lafourche Parish are strongly rooted in these cultures (Din 1986; IAI 2005). The year 2010 Census enumerated 96,318 residents, an increase of seven percent since the year 2000 census.

Economic Overview. Historically based in timber and sugar production, the Lafourche economy is now based primarily in offshore oil and gas industry support services, shipbuilding, and seafood production. Commercial fishing fleets in Lafourche Parish are among the state's leaders in landings of shrimp (LDWF 2010). Sugar production continues to be of economic importance. The Louisiana Offshore Oil Port (LOOP) is located at Port Fourchon. Constructed in 1978, the LOOP is the nation's first deepwater port capable of unloading crude oil from supertankers.

Oil and natural gas reserves are extensive in this region of the state. In 2010, mining constituted some four percent of all parish earnings, nearly all of which were derived through oil and gas extraction and associated support services. Industry earnings for these sectors totaled $106 million in 2010, an increase of 60 percent since 2001 (Bureau of Economic Analysis 2012). The marine transportation sector is particularly significant in economic terms.

Business Overview. According to the U.S. Census Bureau (2010b), approximately 48,132 businesses were located in Lafourche Parish in 2009. This includes 11,928 employer establishments and 36,204 non-employer firms (Table 2-4). Most business establishments in Lafourche Parish are classified as small businesses. Fifty-one percent of all establishments in Lafourche employ between one and four workers and 73 percent employ nine or fewer workers. Some 15 percent of all parish businesses are involved in the construction sectors.

According to CSC (2012), marine-related small businesses provided 19 percent of all jobs in Lafourche Parish in 2009, an increase of 26 percent since 2005. Such firms employed about 7,050 persons and generated some $1 billion in goods and services. The predominant marine-related sectors in Lafourche Parish are marine transportation (49 percent) and offshore mineral extraction (13 percent). Tourism and recreation are also important aspects of the region's economy.

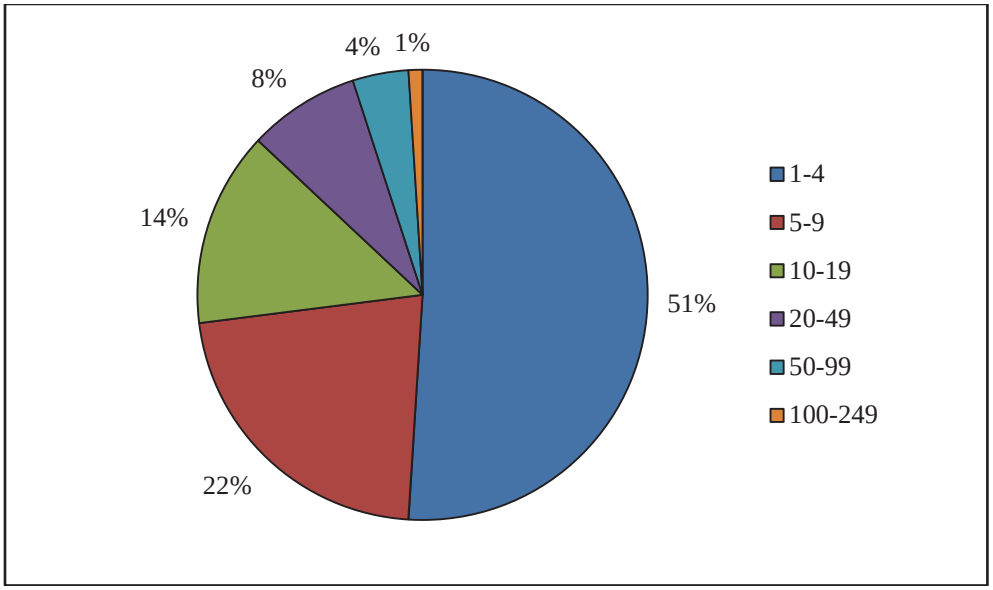


Figure 2-3 Lafourche Parish Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

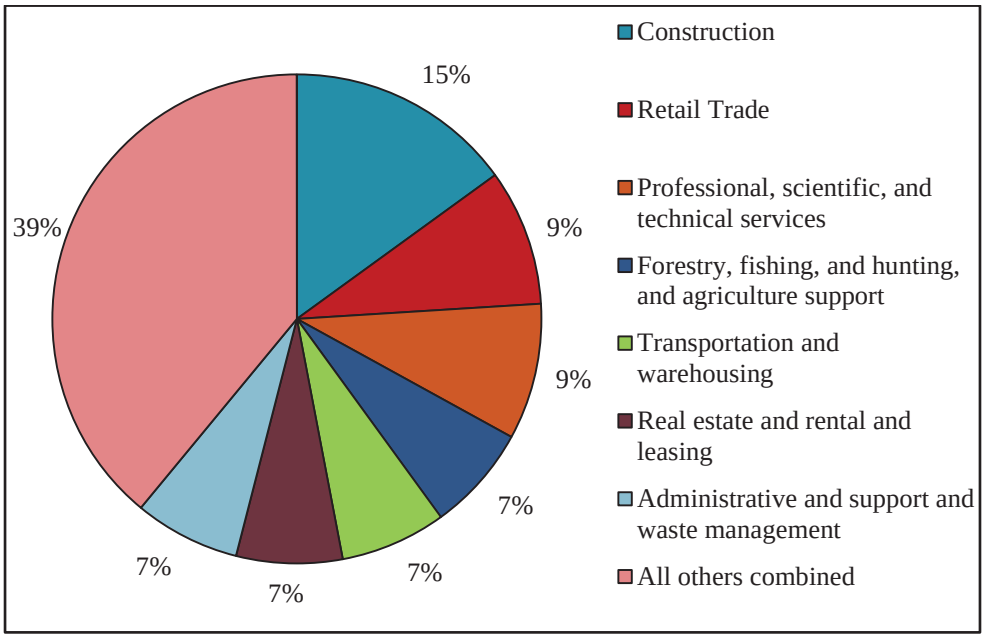


Figure 2-4 Lafourche Parish Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

2.2.1 Galliano

Galliano is located along Highway 1 on the banks of Bayou Lafourche, north of Golden Meadow and south of Larose. Residents share services with neighboring communities; it is often difficult for the uninitiated to determine where one community begins and the other ends (IAI 2008). Galliano had a year 2010 population of 7,676, an increase of four percent since 2000. The community is unincorporated.

The Galliano economy is based primarily in the commercial fishing industry, the oil and gas industry, and related services. Some 71 (or nearly 19 percent) of the 406 employer businesses in Galliano are marine-dependent. Table 2-4 below lists the number and type of marine-dependent businesses in the community at the time of this study; 48 (or 68 percent) of the 71 marine-dependent businesses serve the oil and gas industry.

Table 2-4 Marine-Dependent Businesses in Galliano in 2011*

NAICS Code	Description	Number	Percent of Total
213112	Oil Field Service (Includes: Drilling, Eqmt, Vessel Leasing, etc.)	4	6
231710	Oil & Gas Pipeline Construction	4	6
238910	Site Prep & Related Construction for Oil & Gas Ops	2	3
311712	Fresh & Frozen Seafood Processing	3	4
332312	Boat Fabrication	1	1
336611& 336612	Ship and Boat Building & Repairing	4	6
423860	Marine Transp. Equip. Supplies & Services, Wholesale	2	3
424460	Fish & Seafood Merchant, Wholesale	3	4
441222	Boat Dealer (Includes: Accessories & Marine Supplies)	5	7
445210	Fish & Seafood Merchant, Retail	1	1
487210	Scenic & Sightseeing Transp Water (Includes Charter Services)	6	8
483211	Inland Marine Freight Transportation	1	1
488320	Marine Cargo Handling	2	3
488330	Navigational Services to Shipping	12	17
488390	Support Activities: Water Transp., Comm. Boat Rental	19	27
541690	Fishing Consultant	1	1
721211	RV Parks & Campgrounds; Fishing Lodges	1	1
Total		**71**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011
*Non-employer firms not included

Many employer businesses in Galliano are very small. Thirty-five percent of the 71 marine-dependent businesses located in the town employ four or fewer workers, half employ nine or fewer workers, and 89 percent employ between one and 49 workers. Some businesses servicing the oil and gas industry employ 50 or more workers.

2.2.2 Golden Meadow

Golden Meadow is located at the southern terminus of the continuous linear settlement that stretches from Larose to Golden Meadow. It is the largest incorporated community along Bayou Lafourche. Golden Meadow had a 2010 year population of 2,101, a decrease of four percent or 92 persons since 2000.

Offshore oil and gas exploration and production are central to the local economy, as is the commercial seafood industry. Recreational fishing businesses are also important. Some 37 percent of the 150 employer businesses located in Golden Meadow are marine-dependent; 25 percent of these businesses service the offshore oil and gas industry. These are all small businesses: 44 percent employ between one and four persons, and 80 percent employ less than 20 persons. Fifty-six percent of marine-dependent businesses report annual receipts totaling less than $1 million dollars.

As of 2007, there were 7,950 businesses in Lafourche Parish, some six percent of which were minority-owned. In Galliano, approximately five percent of the town's 806 businesses were Native American-owned. The percentage of Native American small businesses in Galliano in 2010 (5.4 percent) is significantly higher than for either the parish (2.8 percent) or the state (0.7 percent) as a whole. The percentage of women-owned businesses in Galliano is also significantly higher (Table 2-5). Because the resident population of Golden Meadow is below 5,000, comparable data are not available for this study community.

Table 2-5 Minority-Owned Businesses in Galliano, Lafourche Parish, and Louisiana in 2007

Population and Business Ownership		Galliano	Lafourche Parish	Louisiana
Total Population (2010)		7,676	96,318	4,533,372
Number of Businesses (2007)		806	7,950	375,808
African-American-Owned Businesses (2007)	Expressed as %	F	2	16
Asian-Owned Businesses (2007)		F	3	3
Hispanic-Owned Businesses (2007)		F	>1	3
Native American-Owned Businesses (2007)		5	S	>1
Native Hawaiian-Owned Businesses (2007)		F	F	0
Women-Owned Businesses (2007)		34	24	27

Source: U.S. Census Bureau (2007); F = Fewer than 100 Businesses; S = Suppressed

2.3 Jefferson Parish, Louisiana

Geographic Overview. Jefferson Parish is located in southeast Louisiana. The parish is bordered by Orleans and Plaquemines Parishes to the east, Lafourche and St. Charles Parishes to the west, and by the Gulf of Mexico to the south. The Mississippi River bisects the parish, with Lake Pontchartrain defining its northern boundary and Barataria Bay forming its southern boundary. The parish has an average elevation of five feet.

The northern portion of Jefferson Parish is urban and densely populated; the southern portion is relatively rural, consisting of sparsely populated communities and large areas of bayou and marshland habitat. With a year 2010 population of 432,552 persons, Jefferson Parish is the state's most populous parish. The 2010 population figure reflects a decrease of five percent from 2000 (U.S. Census Bureau 2010).

Significant out-migration occurred in 2005 after Hurricanes Katrina and Rita damaged or destroyed many homes, buildings, and marine infrastructure. Many displaced residents could not afford to rebuild in the area and settled in other parishes or states.

Economic Overview. The economy of Jefferson Parish is intimately and obviously linked to that of New Orleans, the suburbs of which comprise most of the parish. The 2010 population of New

Orleans was 343,829 persons (U.S. Census Bureau 2010a). The city is said to be "small business friendly" (Lee 2009), and Greater New Orleans, Inc. (2009) reports that only 44 firms in the Greater New Orleans Metropolitan Area employ 1,000 or more persons.

Numerous hospitals, health care facilities, and business service centers are based in Jefferson Parish, as are numerous businesses supporting the offshore oil and gas industry. In 2010, businesses in the mining sectors in Jefferson Parish accounted for $300 million in earnings, an increase of 10 percent since 2001 (Bureau of Economic Analysis 2012)

Business Overview. According to the U.S. Census Bureau (2010b), approximately 11,928 employer establishments and 36,204 non-employer firms were located in Jefferson Parish in 2009, for a combined total of 48,132 businesses (Table 2-6).

Non-employer firms comprise nearly 75 percent of all businesses in Jefferson Parish, and with the exception of large corporations based in Greater New Orleans, most are small businesses. Indeed, fifty percent of business establishments in Jefferson Parish employ between one and four workers, and 73 percent employ between one and nine workers. In terms of industry emphases, 25 percent of businesses in the county are categorized in the professional, scientific, technical, and construction sectors.

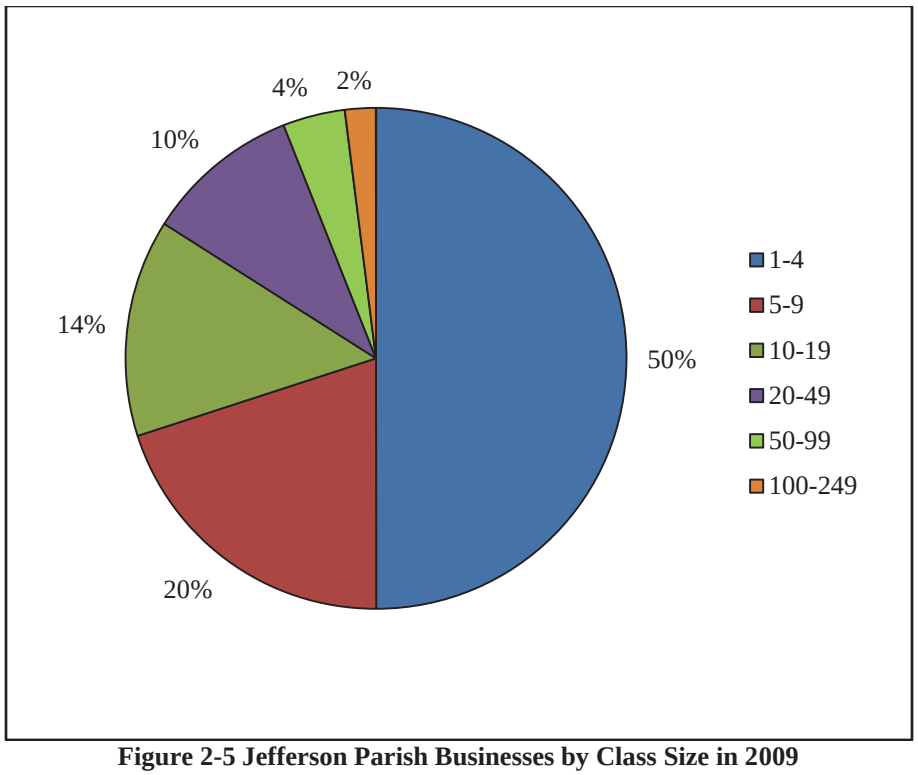


Figure 2-5 Jefferson Parish Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

Table 2-6 Small Business Establishments in Jefferson Parish in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employer + Non-Employers	Industry as a Percent of Total Parish Businesses
11----	Forest, fish, hunt,& agri support	5	810*	815	2
21----	Mining, quarry, oil&gas extraction	46	238**	284	<1
22----	Utilities	30	17	47	<1
23----	Construction	1,106	4,990	6,096	13
31-33	Manufacturing	333	363	696	1
42----	Wholesale trade	903	568	1,471	3
44-45	Retail trade	1,820	2,343	4,163	9
48-49	Transportation & warehousing	417	2,239	2,656	5
51----	Information	162	337	499	1
52----	Finance & Insurance	909	1,122	2,031	4
53----	Real estate, rental & leasing	515	3,406	3,921	8
54----	Prof, scientific, tech services	1,370	4,285	5,655	12
55----	Mgmt of Companies & Enterprises	85	0	85	<1
56----	Admin & Supp; Waste mgmt	633	3,922	4,555	9
61----	Educational services	118	640	758	2
62----	Health care, social assistance	1,314	2,474	3,788	8
71----	Arts, entertainment, recreation	144	1,410	1,554	3
72----	Accommodation, food services	1,060	730	1,790	4
81----	Other services (excludes Publ Admin)	951	6,310	7,261	15
99----	Industries not classified	7	0	7	<1
Total		**11,928**	**36,204**	**48,132**	**100**

Source: U.S. Census Bureau (2010b)

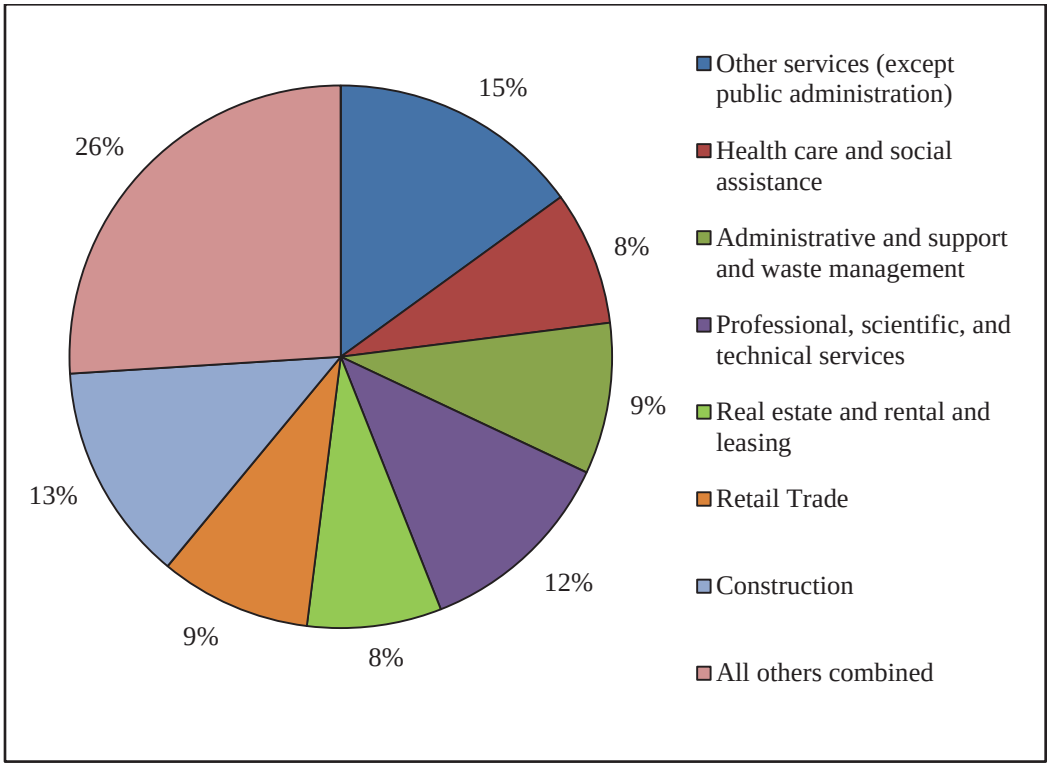


Figure 2-6 Jefferson Parish Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

According to CSC (2012), marine-related businesses provided eight percent of all jobs in Jefferson Parish in 2009, employing a total of 15,465 workers and accounting for $2 billion in goods and services. The predominant marine-related sectors in the parish include: tourism and recreation, ship and boat building, boat sales, seafood processing, retail seafood sales, commercial fishing, offshore mineral extraction, marine transportation, and marine construction. The tourism and recreation sectors employ 31 percent of persons working in or for marine-related businesses in Jefferson Parish (CSC 2012).

As of 2007, nearly 27 percent of the 45,343 businesses then extant in Jefferson Parish were minority-owned. The percentages of Asian-owned and Hispanic-owned businesses in the parish are higher for the state as a whole (Table 2-7).

Table 2-7 Minority-Owned Businesses in Jefferson Parish and Louisiana in 2007

Population and Business Ownership		Jefferson Parish	Louisiana
Total Population (2010)		432,522	4,533,372
Number of Businesses (2007)		45,343	375,808
African-American-Owned Businesses (2007)	Expressed as %	13	16
Asian-Owned Businesses (2007)		5	3
Hispanic-Owned Businesses (2007)		8	3
Native American-Owned Businesses (2007)		>1	>1
Native Hawaiian-Owned Businesses (2007)		F	0
Women-Owned Businesses (2007)		25	27

Source: U.S. Census Bureau (2007)

2.3.1 Barataria-Lafitte

Barataria and Lafitte are census-designated places (CDPs) located in central Jefferson Parish. Although the U.S. Census regards Barataria and Lafitte as two geographically distinct communities, residents in this area often speak of the two as a single place. The towns share a church, school, and post office, and are connected by a drawbridge. Additionally, Barataria residents typically frequent Lafitte for many goods and services, as businesses in Lafitte outnumber those in Barataria three to one. Given spatial contiguity, extent of community interdependence, and local perspectives on the matter, the communities are addressed as one: Barataria-Lafitte.

According to the most recent decennial census, the population of Barataria-Lafitte was 2,081 persons (U.S. Census Bureau 2010a). The population has decreased by nearly 30 percent since 2000. Much of the attrition occurred after Hurricanes Katrina and Rita led to extensive flooding in the region, destroying many homes and local infrastructure (Foster 2005). Barataria-Lafitte is five feet above sea level.

Commercial and recreational fishing and offshore oil production are important components of the local economy. Close proximity to Barataria Bay, Lake Salvador, and vast wetland areas in the region provide extensive opportunities for inshore shrimping, crabbing, and fishing. The Barataria Channel and Intracoastal Waterway facilitate access to the Gulf of Mexico and as such are heavily trafficked by a variety of vessels involved in commercial fishing activities and in support of offshore oil and gas operations.

Barataria-Lafitte is also becoming an increasingly popular area for tourists. The Barataria Unit of the Jean Lafitte National Historical Park attracts many annual visitors. The Barataria Unit is an 8,600-acre preserve of coastal wetlands, freshwater marshes, swamps, and hardwood forests.

Some 26 percent of all employer businesses in Barataria-Lafitte are marine-dependent. Most marine-dependent businesses are located in the Lafitte portion of town, where extensive fishing infrastructure serves both commercial and recreational fishermen. Recreational fishing activities reportedly have grown in importance during the last decade, and numerous fishing guides and charter operators are based here.

Approximately 15 businesses in Barataria-Lafitte provide services to the region's offshore oil and gas industry. All employ four or fewer persons. Annual receipts are significant, however, exceeding $1 million on average during 2011.

Table 2-8 Marine-Dependent Businesses in Barataria-Lafitte in 2011*

NAICS Code	Description	Barataria	Lafitte	Barataria-Lafitte	Percent
211111	Oil & Gas Producer	0	1	1	1
213112	Oil Field Service	0	10	10	12
311712	Fresh & Frozen Seafood Processing	0	3	3	4
336612	Ship Building & Repair	1	6	7	9
423860	Marine Transp Equip. & Services, Wholesale	0	3	3	4
424460	Fish & Seafood Merchant, Wholesale	4	8	12	15
445210	Fish & Seafood Merchant, Retail	1	6	7	8
451110	Sport Goods (Includes nets, bait, & gear)	0	2	2	2
487210	Scenic&Sightseeing, Water (Charter Services)	10	15	25	31
488330	Navigational Services to Shipping	1	5	6	7
713930	Marinas	1	4	5	6
Total		**18**	**63**	**81**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011); *Non-employer firms not included

The majority of businesses in Barataria-Lafitte are very small; 74 percent employ four or fewer workers, 86 percent employ nine or fewer, and 98 percent employ between one and 49 workers. Two businesses involved in ship fabrication and boat manufacturing employ more than 50 persons. Nearly 50 percent of all employer businesses in the area generate annual receipts ranging between $100,000 and $999,000.

2.3.2 Grand Isle

Grand Isle is a seaside town located west of Venice in southernmost Jefferson Parish. The town is situated on Louisiana's only inhabited barrier island; it is accessed by a bridge from neighboring Lafourche Parish. A unique mix of local residences and "fishing camps" characterize the area. There is heavy identification with Cajun heritage among many long-time residents. Such persons often have French surnames and are part of extensive regional kinship systems. Many owners of seasonally occupied beachfront residences live most of the year in their primary residences in New Orleans, Baton Rouge, Houma, and Lafayette.

The local economy is based largely in seafood production and coastal recreation. A handful of retail businesses serve both resident and visiting populations, but many services are not available on this island. A 400-foot fishing pier at Grand Isle State Park at the east end of the island is a popular tourist destination. During a typical summer, Grand Isle lodging facilities and restaurants are filled to capacity.

The Census-enumerated population of Grand Isle was 1,296 persons in 2010, down from 1,541 persons in 2000. Many permanent residents relocated after storm effects from Hurricane Katrina destroyed their homes in late August 2005: Grand Isle received 12 feet of storm surge from Barataria Bay. Hurricane Rita, which occurred on September 24, 2005, caused additional damage and complicated overall recovery efforts.

Numerous commercial fishing vessels moor in the Grand Isle area. The petroleum industry is also locally important. A large Exxon facility, established during the late 1950s, is located on the east end of Grand Isle. A Coast Guard facility and a Louisiana Department of Wildlife and Fisheries research station are also based on the island.

Thirty percent of all employer-based businesses in Grand Isle are marine-dependent. Table 2-9 below depicts the number and type of marine-dependent businesses in Grand Isle at the time of this study.

Table 2-9 Marine-Dependent Businesses in Grand Isle in 2011

NAICS Code	Description	Number	Percent of Total
213112	Oil Well Drilling Services	10	24
311712	Fresh & Frozen Seafood Processing	2	5
312113	Ice Manufacturing	1	2
336611	Ship & Boat Building & Repair	1	2
424460	Fish & Seafood Merchant, Wholesale	3	7
441222	Boat Dealers (includes parts & supplies)	1	2
445220	Fish & Seafood Merchant, Retail	3	7
451110	Sport Goods (includes nets, bait, & gear)	2	5
487210	Scenic & Sightseeing Transportation Water	5	12
532411	Commercial Boat Rental	1	2
713930	Marinas	5	12
721110	Hotels & Motels Except Casino Hotels	8	19
Total		**42**	**100**

Source: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011

The majority of businesses in Grand Isle are very small; 59 percent employ four or fewer workers, 83 percent employ between one and nineteen workers, and 93 employ between one and 49 workers. The two businesses employing more than 50 workers provide support for offshore oil and gas operations. Sixty percent of all employer businesses in Grand Isle generate annual receipts ranging between $50,000 and $500,000.

2.4 Plaquemines Parish, Louisiana

Geographic Overview. Plaquemines Parish is located in the far southeast corner of Louisiana. The parish is a sparsely populated peninsula that extends into the Gulf of Mexico. Two-thirds of

the region is comprised of low-lying estuaries. Plaquemines is bordered by Jefferson Parish to the west and St. Bernard Parish to the north, and is bisected by the Mississippi River. The parish has an average elevation of six feet above sea level.

The year 2010 Census enumerated 23,042 residents in Plaquemines Parish, a decrease of 14 percent from 2000 (U.S. Census Bureau 2010). A significant demographic shift occurred when many residents of lower Plaquemines Parish relocated to inland areas following Hurricane Katrina.

Economic Overview. Marine activities are central to the parish economy. Extent of seafood production is second only to that of Terrebonne Parish. The port of Empire-Venice has continually ranked in the top ten ports in the nation for landings and ex-vessel value of seafood (NMFS 2010). Shrimp and oysters are the principal commercial species harvested from local waters.

Oil and natural gas reserves are quite extensive in this region, and many firms are involved in the manufacture of industrial machinery and equipment needed to service offshore facilities. As of 2010, oil and gas extraction and support activities accounted for $105 million (or eight percent) of all earnings in the parish, a 10 percent decrease since 2001. The manufacturing industry currently accounts for 20 percent of all earnings in the parish (Bureau of Economic Analysis 2012).

Business Overview. Approximately 679 employer establishments and 2,087 non-employer firms were located in Plaquemines Parish at the time of the last Census (Table 2-10). Significantly, non-employer firms comprised 75 percent of all businesses in the parish and accounted for 99 and 11 percent of all fishing and oil and gas-related businesses, respectively. Most employer establishments in Plaquemines Parish are small businesses; 45 percent employ between one and four workers, and 66 percent employ nine or fewer workers. In terms of industry emphases, the fishing industry represents 23 percent of all employer businesses in the parish.

According to CSC (2012), marine-related businesses provided 26 percent of all jobs in Plaquemines Parish in 2009. In that same year, marine-related businesses provided employment for about 3,750 persons and generated $1 billion in goods and services. The predominant marine-related sectors in Plaquemines Parish are marine transportation and offshore mineral extraction. Tourism and recreation, and ship and boat building are also important to the region (CSC 2012).

Table 2-10 Small Business Establishments in Plaquemines Parish in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employer + Non-Employers	Industry as a Percent of Parish Businesses
11----	Agri, forestry, fishing, and hunting	7	634	641	23
21----	Mining, quarry, oil&gas extraction	40	5	45	2
22----	Utilities	8	0	8	0
23----	Construction	66	224	290	10
31-33	Manufacturing	35	21	56	2
42----	Wholesale trade	64	18	82	3
44-45	Retail trade	65	98	163	6
48-49	Transportation, warehousing	98	130	228	8
51----	Information	3	9	12	0
52----	Finance & Insurance	20	22	42	2
53----	Real estate, rental & leasing	40	169	209	8
54----	Prof, scientific, & tech services	51	155	206	8
55----	Mgmt of Companies & Enterprises	4	0	4	0
56----	Admin&Support; Waste Mgmt	35	205	240	9
61----	Educational services	5	33	38	1
62----	Health care, social assistance	21	50	71	3
71----	Arts, entertainment, recreation	10	50	60	2
72----	Accommodation, food	49	54	103	4
81----	Other services (exclude Public Admin)	58	210	268	10
Total		**679**	**2,087**	**2,766**	**100**

Source: U.S. Census Bureau (2010b)

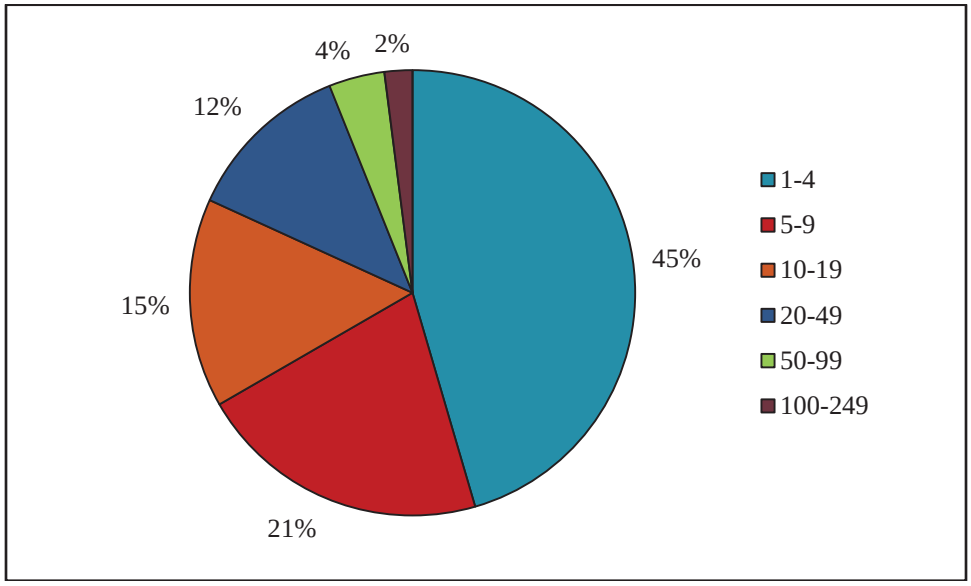


Figure 2-7 Plaquemines Parish Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

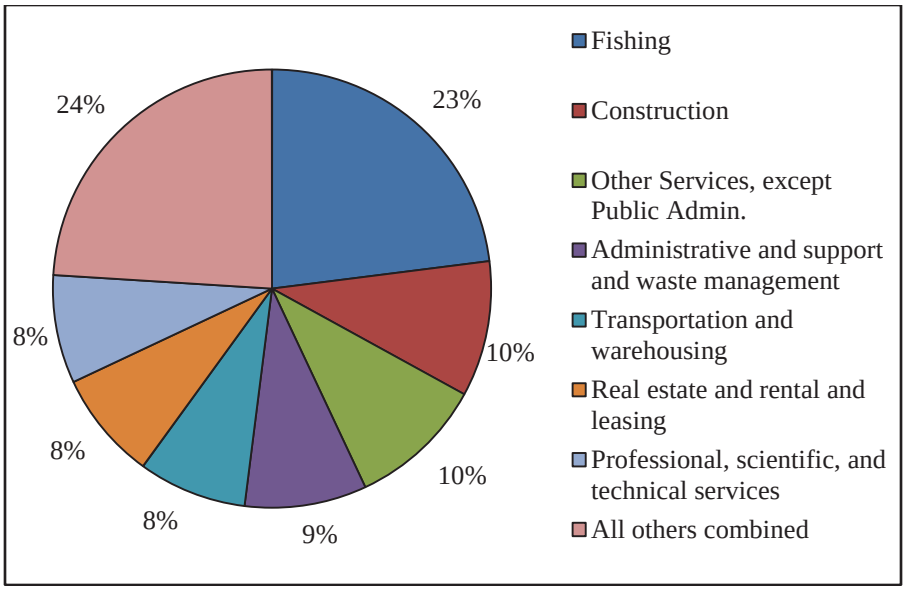


Figure 2-8 Plaquemines Parish Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

As of 2007, 2,269 businesses were located in Plaquemines Parish. Nearly 13 percent were minority-owned.

Table 2-11 Minority-Owned Businesses in Plaquemines Parish and Louisiana in 2007

Population and Business Ownership		Plaquemines Parish	Louisiana
Total Population (2010)		23,042	4,533,372
Number of Businesses (2007)		2,269	375,808
African-American-Owned Businesses (2007)	Expressed as %	10	16
Asian-Owned Businesses (2007)		S	3
Hispanic-Owned Businesses (2007)		S	3
Native American-Owned Businesses (2007)		3	>1
Native Hawaiian-Owned Businesses (2007)		F	0
Women-Owned Businesses (2007)		28	27

Source: U.S. Census Bureau (2007); F = Fewer than 100 Businesses; S = Suppressed

2.4.1 Boothville-Venice

Boothville and Venice are small unincorporated communities situated directly adjacent to the Mississippi River. Boothville is often regarded as a part of the Venice community and Venice is locally regarded as the southern terminus of Boothville. Many residents of Boothville list businesses with Venice addresses.

With a combined year 2010 population of 1,056, total residency in Boothville-Venice has decreased by 64 percent since the U.S. Census enumerated 2,899 residents in 2000. Many residents relocated after Hurricane Katrina made landfall and destroyed most of the buildings in the area.

The Boothville-Venice economy is deeply rooted in commercial fishing and offshore oil and gas production and related services. Citrus farming also remains important. Many residents work at

least part-time in the fishing industry and supplement their income with second jobs in the agriculture and petroleum industries (IAI 2005). Locally, the principal seafood products are shrimp, crabs, and oysters. In 2009, Empire-Venice ranked 2nd and 7th among the nation's ports in terms of seafood landings and ex-vessel value of seafood products, respectively. Between 2000 and 2009, seafood landings at regional ports averaged 349 million pounds, with an average ex-vessel value of $57 million.

Although commercial fishing remains very important to the local economy, local residents assert that the petroleum industry has eclipsed the importance of fishing in recent years, and many local businesses now service the offshore drilling industry. Guided fishing charters and recreational angling are also increasingly important sources of local revenue.

There are approximately 170 employer-based businesses in Boothville-Venice, roughly 46 percent of which are marine-dependent (Manta 2011, Intelligent Direct 2011, Louisiana Yellow Pages 2011). Notably, non-employer firms comprise 75 percent of all businesses in the parish (U.S. Census Bureau 2010b).

About 50 establishments (64 percent) of Boothville-Venice's 79 marine-dependent businesses provide services to the oil and gas industry. The remaining 29 establishments (36 percent) of marine-dependent businesses primarily serve the commercial and recreational fishing industries. Marine-dependent businesses in Boothville-Venice are small businesses. Fifty-one percent employ four or fewer workers, 69 percent employ nine or fewer workers, and 97 percent employ 49 or fewer workers. Only two businesses in the area employ more than 50 workers; both provide services to the oil and gas industry.

Table 2-12 Marine-Dependent Businesses in Boothville-Venice in 2011*

NAICS Code	Description	Number	Percent of Total
211111	Oil & Gas Extraction	2	3
213111	Drilling Oil & Gas Wells	1	1
213112	Support Activities for Oil & Gas Operations**	6	8
231712	Oil & Gas Pipeline Construction	1	1
238910	Site Prep & Related Construction for Oil & Gas Ops	23	29
324110	Petroleum Refineries	2	3
333132	Oil & Gas Machinery & Equip. Manufacturing	6	8
336611	Ship Building & Repairing	3	4
424460	Fish & Seafood Merchant, Wholesale	7	9
441222	Boat Dealer (incl: Accessories & Marine Supplies)	3	4
451110	Bait and Tackle, Retail	1	1
483211	Inland Water Freight Transportation	2	3
486110	Pipeline Transportation of Crude Oil	1	1
487210	Scenic & Sightseeing Transp Water (incl: Charter Serv)	8	10
488330	Navigational Services to Shipping	3	4
532411	Water Transportation Equipment, Rental & Leasing	1	1
713930	Marinas	5	6
721110 & 721214	Fishing Camps and Motels	3	4
Total		**78**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011; Non-employer firms not included; ** Includes supplies, equipment, vessel leasing, logging & perforation, hauling, tank cleaning, and other services

2.4.2 Buras-Triumph

Buras-Triumph is located on the west bank of the Mississippi River. Buras-Triumph had a year 2010 population of 1,161 persons, a decrease of 65 percent since 2000. Like Boothville-Venice, local residents regard Buras-Triumph as a single, continuous community rather than as two distinct towns.

The local economy depends heavily on commercial fishing, petroleum extraction, and citrus farming. Shrimp, oysters, crab, mullet, and oysters are the primary commercial species. Barataria Bay provides easy access to deepwater fishing, and the levees along Highway 23 provide easy access to freshwater. Commercial and recreational fishing are supported by a modest amount of marine infrastructure. Since the mid-2000s, the local economic emphasis has been shifting from commercial fishing to offshore oil and gas activities and recreational fishing.

Approximately 168 employer businesses are located in Buras-Triumph; 54 establishments are marine-dependent (Manta 2011, Intelligent Direct 2011, Louisiana Yellow Pages 2011). Non-employer firms comprise 75 percent of all businesses in the parish (U.S. Census Bureau 2010b).

Table 2-13 below depicts marine-dependent employer businesses based in Buras-Triumph at the time of this study. About 25 marine-dependent businesses provide services to the oil and gas industry. Twenty-nine establishments are involved in commercial and recreational fishing activities.

Table 2-13 Marine-Dependent Businesses in Buras-Triumph in 2011

NAICS Code	Description	Number	Percent of Total
211111	Oil & Gas Extraction	4	7
213111	Drilling Oil & Gas Wells	2	4
213112	Support Activities for Oil & Gas Operations*	5	9
238910	Site Prep&Related Construction for Oil & Gas Ops	3	6
333132	Oil & Gas Machinery & Equipment Manufacturing	3	6
424460	Fish & Seafood Merchant, Wholesale	8	15
441222	Boat Dealer (includes Accessories and Marine Supplies)	2	4
445220	Fish & Seafood Markets, Retail	2	4
451110	Bait and Tackle, Retail	2	4
487210	Scenic & Sightseeing Transp Water (incl Charter Services)	7	13
488310	Port & Harbor Operations	1	1
488330	Navigational Services to Shipping	4	7
488390	Other Support Services for Water Transportation	4	7
713930	Marinas	2	4
721110 & 721214	Fishing & Hunting Accommodations, Hotels and Motels	5	9
Total		**54**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011; * Includes supplies, equipment, vessel leasing, logging & perforation, hauling, tank cleaning, and other services

All marine-dependent businesses in Buras-Triumph are small; 67 percent employ four or fewer workers, 87 percent employ nine or fewer workers, and 96 percent employ 19 or fewer workers. The largest employer in the area–a recreational boat rental service– employs about 30 workers.

2.5 St. Bernard Parish, Louisiana

Geographic Overview. St. Bernard is a water-bound parish located five miles southeast of New Orleans. The Mississippi Sound forms the eastern perimeter of the parish, while the Mississippi River flows along the northwest boundary. Most of the 1,794 square miles encompassed by the parish are comprised of streams, lakes, and bays.

The elevation of St. Bernard Parish ranges from six feet below sea level to 12 feet above sea level and, as such, the parish is prone to flooding. Erosion is extensive (Heinrich 2005). Indeed, St. Bernard Parish was the only parish in the State of Louisiana to be completely inundated by storm surge from Hurricane Katrina.

The year 2010 Census enumerated 35,897 residents, a decrease of 47 percent from 2000 (U.S. Census Bureau 2010a). This dramatic shift is a direct result of emigration following Hurricane Katrina.

Economic Overview. St. Bernard Parish has a diverse industrial base. Sugar and petrochemical production occurs along the highly fertile east bank of the Mississippi River, while seafood processing and shipbuilding takes place in the southern portion of the parish. Residents of the southernmost part of St. Bernard Parish depend almost entirely on commercial shrimp and crab harvesting and oyster farming (Heinrich 2005).

The manufacturing industry currently generates the largest amount of individual earnings, roughly 26 percent of the parish total. The petroleum and coal products sub-sector accounts for the majority of earnings (Bureau of Economic Analysis 2012). The construction industry and government enterprises are also significant sources of parish earnings, accounting for 19 percent and 16 percent, respectively (Bureau of Economic Analysis 2012). Oil and gas extraction remains economically significant, but earnings from this sector have decreased over the last decade.

Business Overview. According to the U.S. Census Bureau (2010b), there were 3,014 businesses in St. Bernard Parish: 627 employer establishments and 2,387 non-employer firms. Non-employer firms comprise 79 percent of all businesses in St. Bernard Parish. Fifty-six percent of all employer establishments in Plaquemines employ between one and four workers, and 78 percent employ nine or fewer workers. In terms of industry emphases, the fishing industry represents 23 percent of all employer businesses in the parish. The vast majority of non-employers businesses are fishing-related.

According to CSC (2012), marine-related businesses provided 19 percent of all jobs in St. Bernard Parish in 2009, an increase of 12 percent since 2005. Such businesses provided employment for about 1,900 persons and generated $198 million in goods and services. The predominant marine-related sectors in St. Bernard Parish are tourism and recreation, and marine transportation (NOAA CSC 2012).

Table 2-14 Small Business Establishments in St. Bernard Parish in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employers + Non-Employers	Industry as a Percent of Total Parish Businesses
11----	Agri, forestry, fishing, hunting	2	372	374	12
21----	Mining, quarry, oil&gas extraction	7	D	7	0
22----	Utilities	3	0	3	0
23----	Construction	103	463	566	19
31-33	Manufacturing	35	26	61	2
42----	Wholesale trade	27	25	52	2
44-45	Retail trade	123	137	26	1
48-49	Transportation warehousing	31	137	168	6
51----	Information	1	12	13	0
52----	Finance & Insurance	25	24	49	2
53----	Real estate rental & leasing	18	127	145	5
54----	Prof, scientific, & tech services	37	148	185	6
55----	Mgmt of Companies&Enterprises	2	0	2	0
56----	Admin & Support;Waste Mgmt	27	255	282	9
61----	Educational services	5	29	34	1
62----	Health care, social assistance	55	93	148	5
71----	Arts, entertainment, recreation	9	74	83	3
72----	Accommodation, food	61	38	99	3
81----	Other services (excl Public Admin)	56	425	481	16
Total		**627**	**2,387**	**3,014**	**100**

Source: U.S. Census Bureau (2010b)

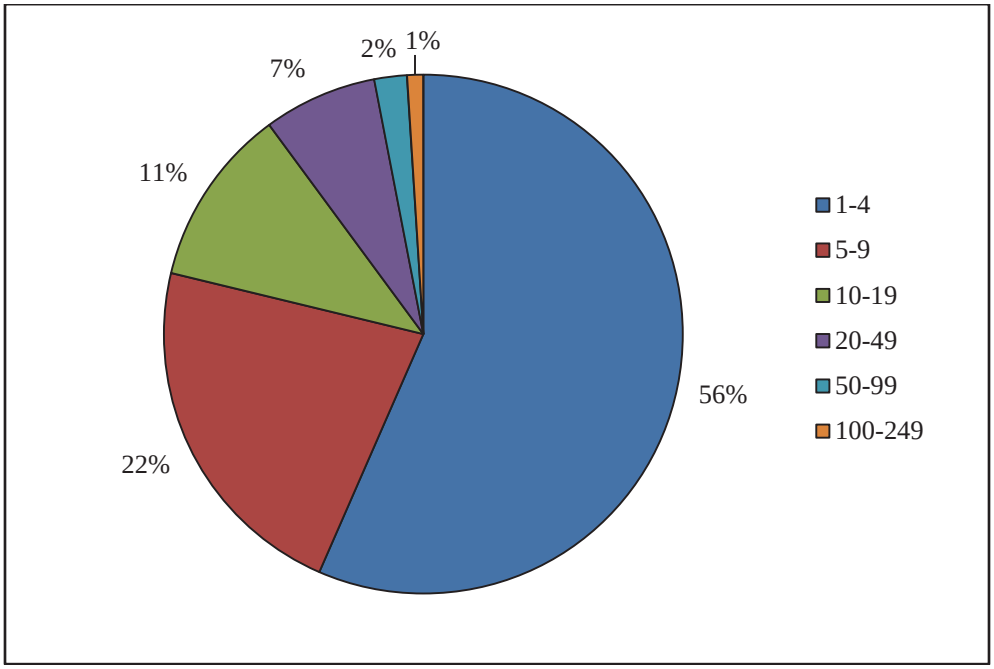


Figure 2-9 St. Bernard Parish Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

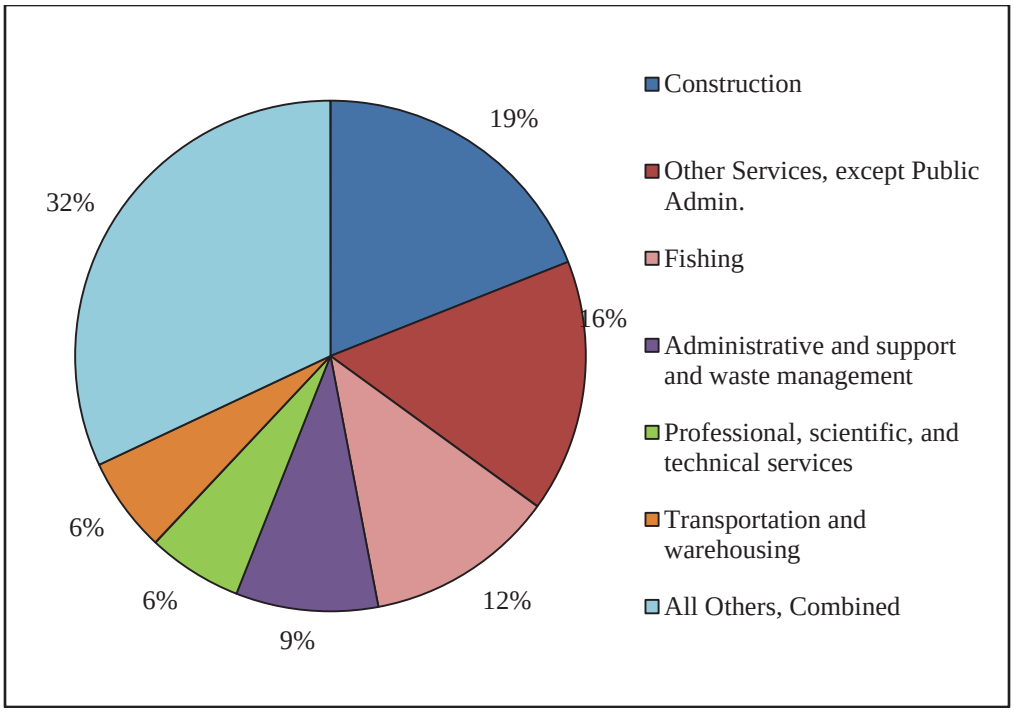


Figure 2-10 St. Bernard Parish Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

As of 2007, 2,807 businesses were located in St. Bernard Parish. Nearly 16 percent were minority-owned (U.S. Census Bureau 2007).

Table 2-15 Minority-Owned Businesses in St. Bernard Parish and Louisiana in 2007

Population and Business Ownership		St. Bernard Parish	Louisiana
Total Population (2010)		35,897	4,533,372
Number of Businesses (2007)		2,807	375,808
African-American-Owned Businesses (2007)	Expressed as %	8	16
Asian-Owned Businesses (2007)		S	3
Hispanic-Owned Businesses (2007)		8	3
Native American-Owned Businesses (2007)		S	>1
Native Hawaiian-Owned Businesses (2007)		F	0
Women-Owned Businesses (2007)		20	27

Source: U.S. Census Bureau (2007); F = Fewer than 100 Businesses; S = Suppressed

2.5.1 St. Bernard

The unincorporated fishing-oriented communities of St. Bernard, Shell Beach, Yscloskey, and Hopedale areas are located just east of the Mississippi River. St. Bernard had a year 2000 population of 1,066 persons; 2010 population data for this community is not available. St. Bernard is surrounded by several lakes, waterways, canals, and bayous. Commercial and recreational fishing activities are central to the St. Bernard economy. Shrimp, oysters, crab, and mullet are important commercial species here, while largemouth bass are popular recreational fishes. Oil and gas-related support activities also contribute to the local economy.

There are approximately 300 employer-based businesses in St. Bernard; some 16 percent are marine-dependent (Manta 2011, Intelligent Direct 2011, Louisiana Yellow Pages 2011). Non-employer firms comprise 79 percent of all businesses in the parish (U.S. Census Bureau 2010b). About 68 percent of all marine-dependent establishments in St. Bernard provide services to the commercial and recreational fishing sectors. Marine-dependent businesses (77 percent) in St. Bernard employ four or fewer workers, 90 percent employ nine or fewer workers, and 100 employ 49 or fewer workers.

Table 2-16 Marine-Dependent Businesses in St. Bernard Parish in 2011*

NAICS Code	Description	Number	Percent of Total
213112	Support Activities for Oil & Gas Operations	4	9
221210	Natural Gas Distribution	1	2
324110	Petroleum Refineries	2	4
312113	Ice Manufacturing	3	6
333132	Oil & Gas Machinery & Equipment Manufacturing	1	2
336612	Boat Building	1	2
424460	Fish & Seafood Merchant, Wholesale	16	34
445220	Fish & Seafood Market, Retail	7	15
487210	Scenic & Sightseeing Transportation Water	3	6
488310	Port & Harbor Operations	1	2
488390	Other Support Activities for Water Transportation	6	13
713930	Marinas	2	4
Total		**47**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011) 2011; *Non-employer firms not included

2.6 Harrison County, Mississippi

Geographic Overview. Harrison County is located along the Gulf of Mexico in southernmost Mississippi. The 2010 population was 187,105 persons (U.S. Census 2010). The county is part of the Gulfport–Biloxi, Mississippi Metropolitan Statistical Area. The region was severely impacted by Hurricane Camille in 1969 and again by Hurricane Katrina in 2005. The county encompasses some 976 square miles of low-lying land and estuaries. Portions of the coastal zone are within the Gulf Islands National Seashore, administered by the National Park Service.

Economic Overview. Agriculture, timber production, and marine fisheries have been of historic significance to the Harrison County economy. The industries continue in importance, but coastal tourism and especially casino gaming have become increasingly significant attractions, drawing persons from throughout the region and elsewhere in the nation. Gentrification has occurred subsequent to the effects of Hurricane Katrina.

Business Overview. According to the U.S. Census Bureau (2009), there were approximately 4,185 employer establishments and 11,554 non-employer firms in Harrison County in 2009. Non-employer firms comprise nearly 73 percent of all businesses in Harrison County. Most employers in Harrison County are small businesses; nearly 50 percent employ between one and four workers, and 71 percent employ between one and nine workers. Nearly 88 percent of these firms are in the fishing sector. Approximately 17 firms in the county employ more than 500 workers; most are casino-hotels and health care establishments. In terms of industry emphases, construction and retail trade sectors account for 26 percent of all businesses in the county.

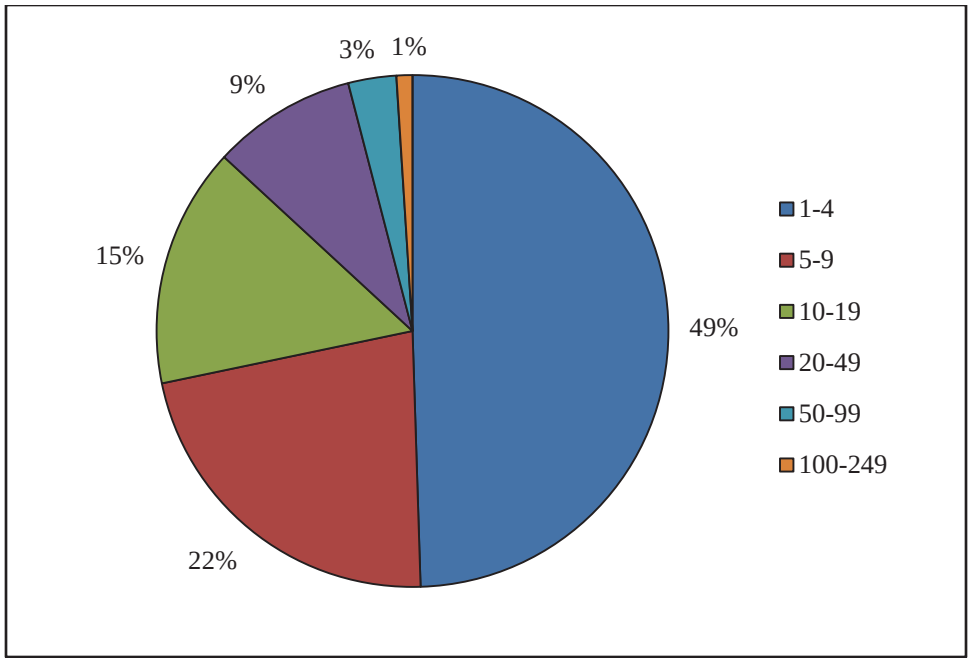


Figure 2-11 Harrison County Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

Table 2-17 Small Business Establishments in Harrison County in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employers + Non- Employers	Industry as a Percent of Total County Businesses
11----	Forest, fish, hunt & agri	2	420*	422	3
21----	Mining, quarry, oil&gas extraction	2	8	10	<1
22----	Utilities	32	17	49	<1
23----	Construction	393	1,955	2,348	15
31-33	Manufacturing	106	115	221	1
42----	Wholesale trade	179	144	323	2
44-45	Retail trade	804	916	1,720	11
48-49	Transportation & Warehousing	127	460	587	4
51----	Information	66	99	165	1
52----	Finance & Insurance	311	315	626	4
53----	Real estate rental & leasing	241	1,114	1,355	9
54----	Prof, scientific, tech services	396	1,011	1,407	9
55----	Mgmt of Companies&Enterprises	16	0	16	<1
56----	Admin & Support; Waste Mgmt	190	1,287	1,477	9
61----	Educational services	39	160	199	1
62----	Health care & social assistance	440	1,025	1,465	9
71----	Arts, entertainment, recreation	49	403	452	3
72----	Accommodation, food services	385	156	541	3
81----	Other services	404	1,949	2,353	15
99----	Industries not classified	3	0	3	<1
Total		**4,185**	**11,554**	**15,739**	**100**

Source: U.S. Census Bureau (2010b)

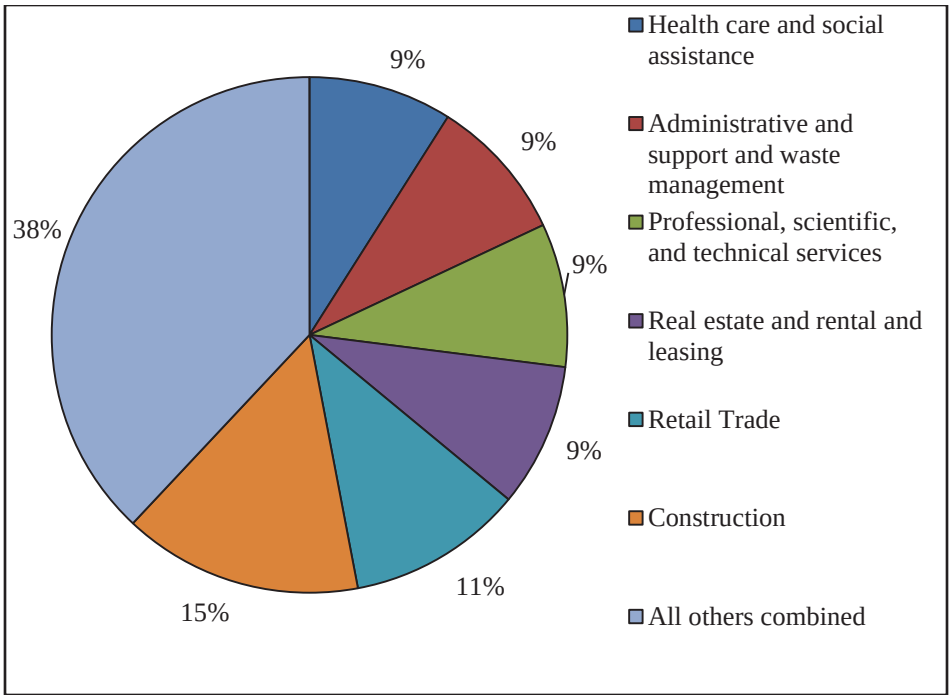


Figure 2-12 Harrison County Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

According to CSC (2012), marine-related businesses provided nearly 11 percent of jobs in Harrison County in 2009, employing a total of 8,968 workers and accounting for $316 million in goods and services. These data exclude the self-employed. Principal sectors include: tourism and recreation, ship and boat building, boat dealers, seafood processing, retail seafood markets, fishing, offshore mineral extraction, marine transportation, marine construction, and other sectors suppressed to protect the confidentiality of certain businesses. The tourism and recreation sectors employ 75 percent of persons active in marine-related business in Harrison County (CSC 2012).

Gaming is the leading source of tourism-derived revenue in Harrison County. Nine waterfront casinos are based in the county, primarily located in Biloxi. The county leads Mississippi in tourism expenditures; in both fiscal years 2009 and 2010, tourism expenditures in Harrison County amounted to around $1.3 billion (Mississippi Development Authority 2012). In addition to gaming, many people come to Harrison to fish or visit one or more of the county's seven Gulf Ecological Management Sites (GEMS).

2.6.1 Biloxi

The coastal city of Biloxi (2010 population, 44,504 persons) is located in the southeastern corner of Harrison County. The city is bordered on the south by the Mississippi Sound, on the east by Biloxi Bay, and on the north by the Back Bay of Biloxi. The Gulf of Mexico is approximately 12 miles south, with access via Mississippi Sound.

The city of Biloxi has eight waterfront casino-hotels. This underlies the city's status as an important tourist destination, particularly during the winter months, when the warm climate offers an escape from that of cities further north.

The commercial and recreational fishing sectors also provide important sources of employment. The commercial seafood industry is vitally important to the city's economy. Seafood production and associated activities typically generate as much as $400 million annually (IAI 2007). Approximately two percent of employer-based businesses in Biloxi serve some aspect of the commercial or recreational fishing industry, and 94 percent of the 115 marine-dependent businesses in Biloxi provide goods or services to those sectors. Relatively few businesses in Biloxi serve or support the oil and gas industry. The majority of marine-dependent businesses are very small; 81 percent employ fewer than ten workers and 61 percent employ less than five persons. Seventy-seven percent of these businesses generate annual revenue of less than $2 million.

Table 2-18 Marine-Dependent Businesses in Biloxi in 2011

NAICS Code	Description	Number	Percent of Total
237990	Other Heavy and Civil Engineering Construction	5	4
311712	Fresh & Frozen Seafood Processing	14	12
336611	Boat Building & Repair	7	6
424460	Fish & Seafood Merchant, Wholesale	18	16
424710	Petroleum Bulk Stations & Terminals	2	2
441222	Boat Dealers (includes parts & supplies)	8	7
445220	Fish & Seafood Merchant, Retail	8	7
451110	Sport Goods (includes nets, bait, & gear)	9	8
45431	Fuel Services	2	2
487210	Scenic & Sightseeing Transp. Water (incl Charter Services)	27	23
488330	Navigational Services to Shipping	4	3
713930	Marinas	8	7
721214	Recreational & Vacation Camps	3	3
Total		**115**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Mississippi Yellow Pages 2011

2.6.2 Pass Christian

Pass Christian is located along U.S. Highway 90 in the southwestern portion of Harrison County, approximately 23 miles west of Biloxi. The town is surrounded by Mississippi Sound and St. Louis Bay. There were 4,613 persons living in Pass Christian in 2010, down 1,966 persons or 30 percent from 2000. The seafood industry has been prominent throughout the town's history and remains an important source of employment today. Tourism, gaming enterprises, and professional sales-related occupations are also sources of local employment.

At present, approximately four percent of all businesses in Pass Christian are marine-dependent. The majority provide goods and services to the commercial and recreational fishing industry. Recreational fishing is popular in Pass Christian, and four charter boat firms are based here. Eight marine-dependent businesses serve the oil and gas industry.

Table 2-19 Marine-Dependent Businesses in Pass Christian in 2011

NAICS Code	Description	Number	Percent of Total
213112	Support Activities for Oil & Gas Operations	4	10
237990	Heavy and Civil Engineering Construction	3	8
311712	Fresh & Frozen Seafood Processing	2	5
324110	Petroleum Refineries	1	3
424460	Fish & Seafood Merchant, Wholesale	12	32
441222	Marine Equipment & Supplies	2	5
451110	Sporting Goods (includes dive equip. & bait)	2	5
445220	Fish and Seafood Merchant, Retail	2	5
487210	Scenic & Sightseeing Transportation Water	4	11
488330	Navigational Services to Shipping	3	8
713930	Marinas	3	8
TOTAL		**38**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Mississippi Yellow Pages (2011)

Some 76 percent of marine-dependent businesses in Pass Christian employ between one and four workers, and 87 employ less than ten persons. Only one business, a wholesale seafood establishment, employs more than 50 workers. Sixty-three percent of the marine-dependent businesses in Pass Christian generate annual receipts of less than $1 million (Manta 2011).

Decline in population in both Biloxi and Pass Christian is largely attributable to Hurricane Katrina. The storm effects left many residents without homes or employment. Pass Christian residents suffered extensive wind and water damage, and all but 500 of approximately 8,000 permanent residences and many retail establishments were damaged or destroyed. Flooding in the eastern part of Pass Christian exceeded 20 feet above ground level (IAI 2007). Many residents displaced by the hurricane ultimately resettled in other locations.

As of 2007, 3,406 small businesses were located in Biloxi, 10 percent of which were minority-owned. The percentage of Asian-owned businesses in Biloxi is relatively higher than elsewhere in Harrison County or Mississippi as a whole. Many Asian refugees settled in the Point Cadet area of Biloxi and now work in the harvesting and processing sectors of the commercial fishing industry.

Table 2-20 Minority-Owned Businesses in Biloxi, Pass Christian, Harrison County and Mississippi in 2007

Population and Business Ownership		Biloxi	Pass Christian[7]	Harrison County	Mississippi
Total Population (2010)		44,054	4,613	187,105	2,967,297
Number of Businesses (2007)		3,406	n/a	14,674	225,997
African-American-Owned Businesses (2007)	Expressed as %	S	n/a	11	18
Asian-Owned Businesses (2007)		8	n/a	5	2
Hispanic-Owned Businesses (2007)		2	n/a	2	1
Native American-Owned Businesses (2007)		F	n/a	S	>1
Native Hawaiian-Owned Businesses (2007)		F	n/a	F	0
Women-Owned Businesses (2007)		24	n/a	25	27

Source: U.S. Census Bureau (2007); F = Fewer than 100 firms; S = Suppressed

[7] The population size of Pass Christian is below the threshold for inclusion in the Economic Census 2007 Survey of Business Owners.

2.7 Mobile County, Alabama

Geographic Overview. Mobile County is located immediately east of the Mississippi border in the far southwest corner of Alabama. Mobile County is bordered by Baldwin County to the west, Washington County to the north, and the Gulf of Mexico to the south. Many rivers, lakes and tributary streams traverse the county, flowing toward Mobile Bay and the Mississippi Sound. The county encompasses 1,239 square miles of land, and is relatively urban and industrial. It had a year 2010 population of 412,992, marking a three percent increase since 2000. Mobile is the second-most populous county in the state.

Economic Overview. Mobile County's economy has traditionally been based in ship building and chemical and paper-product manufacturing. Today, the economy is based in government services, the manufacture of metal and chemicals, health care and social assistance, and construction. Taken together, these sectors represent 49 percent of all county earnings in 2010 (Bureau of Economic Analysis 2012).

More than 180 businesses provide services to the oil and gas industry in the county (Mobile Chamber of Commerce 2011). Oil production is increasingly important. In 2010, mining constituted 0.6 percent of Mobile County earnings, nearly all of which were derived from oil and gas extraction. Industry earnings for this sector totaled $66 million, reflecting an increase of 32 percent since 2001 (Bureau of Economic Analysis 2012).

Shrimp, oysters, and crabs are the primary species harvested by local commercial fishing fleets. Bayou La Batre is the leading port in the state, and one of the top-ranking ports in the nation in terms of total value of landings. The majority of Alabama's commercial shrimp harvesting is undertaken in Mobile Bay and in the Gulf waters off of Mobile County. Numerous seafood processors, wholesalers, retailers, and restaurants are located throughout the county.

Business Overview. According to the U.S. Census Bureau (2010b), approximately 37,736 businesses were located in Mobile County: 9,000 employer establishments and 23,736 non-employer firms. Non-employer firms comprise 76 percent of all businesses in the county. Forty-eight percent of all employer establishments in Mobile County employ between one and four workers; 69 percent employ nine or fewer workers.

In terms of industry emphases, the service sectors represent 20 percent of all employer businesses in the county. Many construction and retail businesses are also based in Mobile County.

Table 2-21 Small Business Establishments in Mobile County in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employers + Non-Employers	Industry as a Percent of Total County Businesses
11----	Agri, forestry, fish, hunt	36	569	605	2
21----	Mining, quarry, oil&gas extraction	17	90	107	0
22----	Utilities	33	10	43	0
23----	Construction	839	4,013	4,852	13
31-33	Manufacturing	356	341	697	2
42----	Wholesale trade	590	376	966	3
44-45	Retail trade	1,554	2,063	3,617	10
48-49	Transportation & Warehousing	340	1,024	1,364	4
51----	Information	140	205	345	1
52----	Finance & Insurance	654	786	1,440	4
53----	Real estate, rental & leasing	429	2,276	2,705	7
54----	Prof, scientific, tech services	887	2,432	3,319	9
55----	Mgmt of Companies & Enterprises	70	0	70	0
56----	Admin & Support;WasteMgmt	444	3,735	4,179	11
61----	Educational services	95	540	635	2
62----	Health care, social assistance	740	2,461	3,201	8
71----	Arts, entertainment, recreation	107	912	1,019	3
72----	Accommodation, food services	653	501	1,154	3
81----	Other services	1,016	6,402	7,418	20
	TOTAL	**9,000**	**28,736**	**37,736**	**100**

Source: U.S. Census Bureau (2010b)

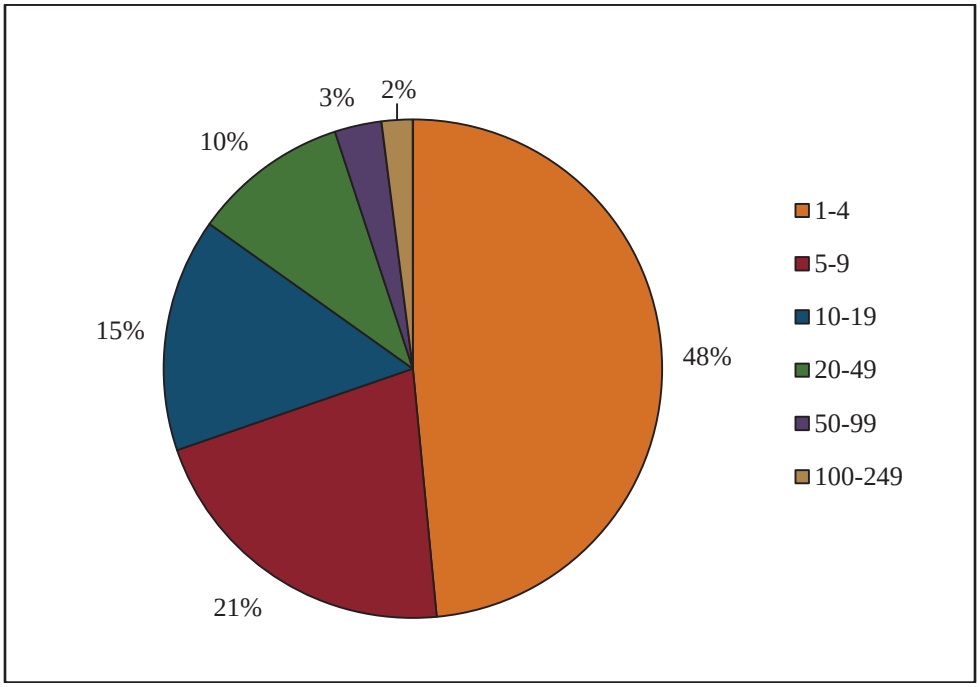


Figure 2-13 Mobile County Businesses by Class Size in 2009
Source: U.S. Census Bureau (2010b)

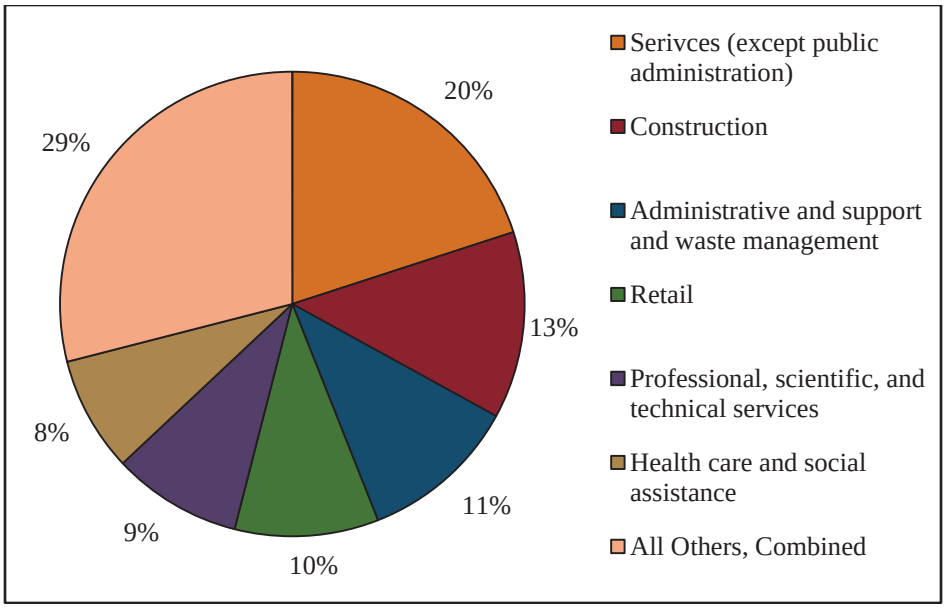


Figure 2-14 Mobile County Businesses by Industry in 2009
Source: U.S. Census Bureau (2010b)

According to NOAA CSC (2012), marine-related businesses provided seven percent of all employer-based jobs in Mobile County in 2009. In that same year, marine-related businesses provided employment for about 11,431 persons and generated $1 billion in goods and services. The predominant marine-related sectors in Mobile County are tourism and recreation, ship and boat building, marine transportation, and seafood harvesting and processing. Offshore mineral extraction and marine construction are also economically important to the region (CSC 2012).

As of 2007, 34,836 businesses were based in Mobile County. Approximately 22 percent of these were minority-owned.

Table 2-22 Minority-Owned Businesses in Mobile County and Alabama in 2007

Population and Business Ownership		Mobile County	Alabama
Total Population (2010)		412,992	4,779,736
Number of Businesses (2007)		34,836	382,350
African-American-Owned Businesses (2007)	Expressed as %	19	15
Asian-Owned Businesses (2007)		2	2
Hispanic-Owned Businesses (2007)		1	1
Native American-Owned Businesses (2007)		S	1
Native Hawaiian-Owned Businesses (2007)		F	>1
Women-Owned Businesses (2007)		30	28

Source: U.S. Census Bureau (2007); S = Suppressed; F = Fewer than 100 businesses

2.7.1 Bayou La Batre

Bayou La Batre is located on the southern coast of Mobile County, approximately seven feet above sea level. Several bodies of water surround the small community and facilitate easy access to the Gulf of Mexico, some 17 miles south. The waters, which include Bayou La Batre and the Mississippi Sound, also provide for commercial and recreational fishing activities. The year 2010 population was 2,558 persons, an increase of 11 percent since the U.S. Census enumerated 2,313 residents in 2000.

The seafood and shipbuilding industries are central to the Bayou La Batre economy. Alabama's seafood industry is centered in Bayou La Batre, and secondarily in Bon Secour in neighboring Baldwin County. Individuals and firms in Bayou La Batre have long been among the nation's leading processors of oysters, shrimp, and crabmeat.

There are approximately 250 employer businesses in Bayou La Batre; 98 establishments (or 39 percent) are marine-dependent (Manta 2011, Intelligent Direct 2011, Louisiana Yellow Pages 2011). Notably, non-employer firms comprise 76 percent of all businesses in the county (U.S. Census Bureau 2010b).

Some 81 percent of Bayou La Batre's 98 marine-dependent businesses support commercial and/or recreational fishing activities. An estimated 19 businesses provide services to the oil and gas industry. Some 41 percent of marine-dependent employer businesses in Bayou La Batre employ four or fewer workers, 53 percent employ nine or fewer workers, and 90 percent employ 49 or fewer workers. Businesses employing more than 50 workers are in the seafood processing and shipbuilding industries.

Table 2-23 Small Business Establishments in Bayou La Batre in 2011

NAICS Code	Description	Number	Percent of Total
213112	Support Activities for Oil & Gas Operations	3	3
311712	Fresh & Frozen Seafood Processing	19	20
336611	Ship Building & Repair	14	14
336612	Boat Building & Repair	8	8
424460	Fish & Seafood Merchant, Wholesale	28	29
424720	Other Petroleum Merchant, Wholesale	1	1
441222	Boat Dealers (Equipment & Supplies)	11	11
445210	Fish & Seafood Merchant, Retail	10	10
451110	Sport Goods (includes nets, bait, & gear)	2	2
454310	Fuel Oil Dealers	1	1
487210	Scenic & Sightseeing Transp Water (charter services)	1	1
Total		**98**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Louisiana Yellow Pages (2011); Non-employer firms not included

2.8 Baldwin County, Alabama

Geographic Overview. Baldwin County, the largest county in Alabama by area, is located in the southwestern portion of the state. The county is bordered by Mobile County on the west, the State of Florida on the east, Monroe County on the north, Washington and Clarke Counties on the northwest, and Escambia County (Alabama) on the northeast. The Gulf of Mexico is due south. The northern region of the county is characteristically rural and agricultural, while the coastal region is more metropolitan and economically dependent on marine-related tourism. Many persons travel to Baldwin County to utilize its 32 miles of sandy white beaches and 26 mile of bay waterfront. More than 1,600 hotel rooms accommodate visitors.

With a year 2010 population 182,265 persons, Baldwin County's population has increased 30 percent since the Census 2000 (U.S. Census Bureau 2010). Many of the communities throughout Baldwin are unincorporated and relatively sparsely populated.

Economic Overview. Baldwin County's economy traditionally has been based in agriculture and forestry, commercial fishing, and manufacturing. In terms of commercial fishing, the Bon Secour-Gulf Shores port region is the most productive in the state, and among the most productive ports in the nation. Between 2000 and 2009, seafood landings here averaged five million pounds, with an average ex-vessel value of $8 million.

The service sector has been the fastest growing employment sector in the county since 1980, and has grown in conjunction with coastal tourism. The services sectors also provide support to the oil and gas industry, which has been marginally important to the local economy since the early 1980s. In 2010, oil and gas extraction and associated support activities constituted less than one percent of Baldwin County earnings (Bureau of Economic Analysis 2012).

Today, the county's economy is significantly supported by government enterprises, retail services, health care and social assistance, construction, manufacturing, and accommodations and food services. Together, these sectors represent 65 percent of the county's total earnings in 2010 (Bureau of Economic Analysis 2012).

Business Overview. According to the U.S. Census Bureau (2010b) approximately 18,987 businesses were located in Baldwin County in 2009: 4,812 employer establishments and 14,175 non-employer firms. Some 55 percent of all establishments in Baldwin County employ between one and four workers and 76 percent employ nine or fewer workers. In terms of industry emphases, construction, retail trade, real estate and leasing, and professional, scientific, and technical services accounted for 48 percent of all businesses in the county.

Table 2-24 Small Business Establishments in Baldwin County in 2009

NAICS Code	Sector	Number of Employer Firms	Number of Non-Employer Firms	Total Employers + Non-Employers	Industry as a Percent of Total County Businesses
11----	Forest, fish, hunt, agriculture	9	316	325	2
21----	Mine, quarry, oil & gas extraction	8	74	82	0
22----	Utilities	10	11	21	0
23----	Construction	561	2,280	2,841	15
31-33	Manufacturing	158	181	339	2
42----	Wholesale trade	210	250	460	2
44-45	Retail trade	964	1,097	2,061	11
48-49	Transportation & Warehousing	118	459	577	3
51----	Information	55	138	193	1
52----	Finance & Insurance	315	472	787	4
53----	Real estate, rental & leasing	308	1,799	2,107	11
54----	Prof, scientific, tech services	446	1,676	2,122	11
55----	Mgmt of Companies and Enterprises	23	0	23	0
56----	Admin & Support; Waste Mgmt	241	1,627	1,868	10
61----	Educational services	35	268	303	2
62----	Health care & social assistance	417	710	1,127	6
71----	Arts, entertainment, recreation	68	538	606	3
72----	Accommodation and food services	424	212	636	3
81----	Other services (excl Public Admin)	436	2,067	2,503	13
99----	Industries not classified	6	0	6	0
Total		**4,812**	**14,175**	**18,987**	**100**

Source: U.S. Census Bureau County Business Patterns (2010b)

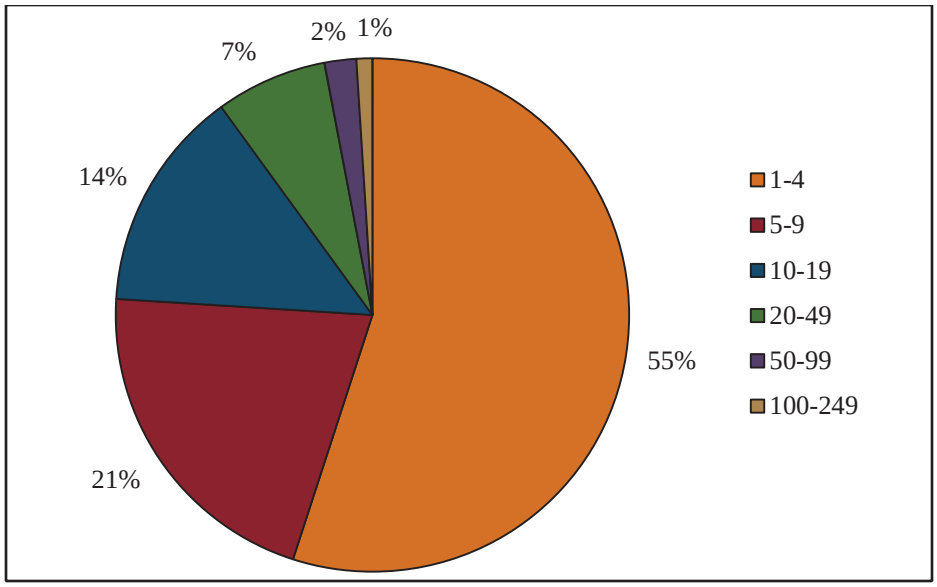


Figure 2-15 Baldwin County Businesses by Class Size in 2009
Source: U.S. Census (2010b)

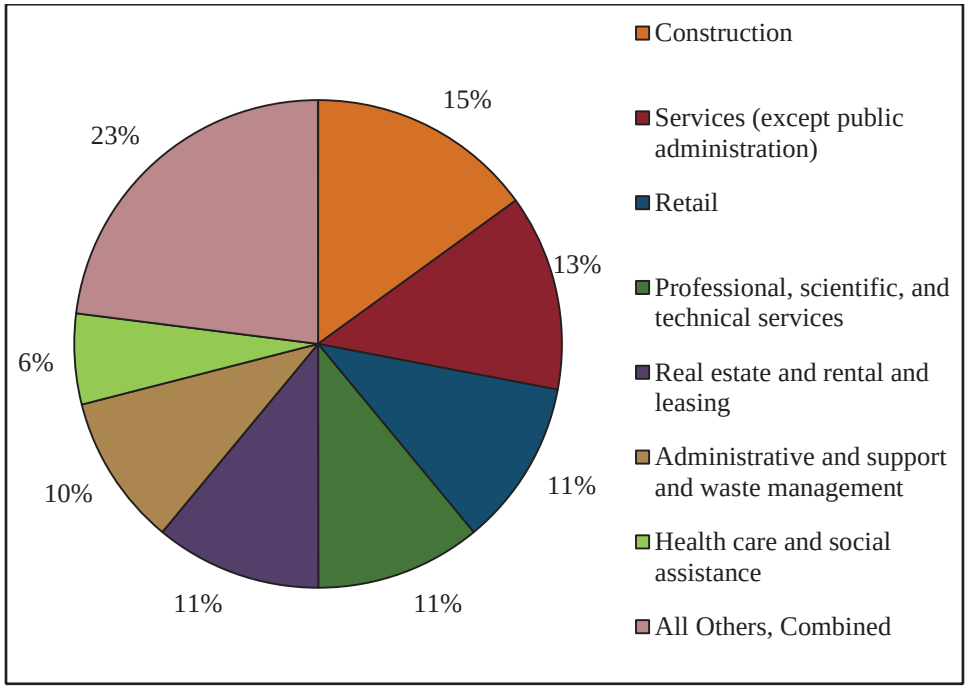


Figure 2-16 Baldwin County Businesses by Industry in 2009
Source: U.S. Census (2010b)

According to CSC (2012), marine-related businesses provided 12 percent of all jobs in Baldwin County in 2009. Such firms provided employment for about 7,305 persons and generated $244 million in goods and services. The predominant marine-related sectors in Baldwin County are tourism and recreation, marine transportation, and seafood harvest and processing.

2.8.1 Bon Secour

The unincorporated community of Bon Secour is located on the northeast banks of Bon Secour Bay and the northwest banks of the Bon Secour River in southwestern Baldwin County. The community's location on the Gulf Coast, and its average elevation of ten feet above sea level, render it vulnerable to wind and storm surge damage from hurricanes. Flooding from both Hurricane Ivan (2004) and Katrina (2005) was extensive in Bon Secour, where storm surges reached heights of more than 20 feet (IAI 2007).

The Census 2010 enumerated 743 residents in Bon Secour. This was a significant increase above the 2000 Census figure of 305 persons. Much of the growth may be attributed to extensive rebuilding subsequent to Hurricane Katrina.

Bon Secour, along with Bayou La Batre, is one of two major fishing ports in the State of Alabama. The area is homeport to about 25 commercial fishing vessels and two major seafood processors, each of which employs more than 100 workers. Oysters and shrimp are the principal seafood products.

There are approximately 80 employer-based businesses in the small community of Bon Secour; an estimated 20 percent are marine-dependent businesses (Manta 2011, Intelligent Direct 2011, Alabama Yellow Pages 2011). An estimated 63 percent of Bon Secour's 16 marine-dependent businesses support commercial fishing activities.

Table 2-25 Marine-Dependent Businesses in Bon Secour in 2011

NAICS Code	Description	Number	Percent of Total
311712	Fresh & Frozen Seafood Processing	2	12
336612	Boat Building & Repair	1	6
424460	Fish & Seafood Merchant, Wholesale	3	19
441222	Boat Dealers (Equipment & Supplies)	3	19
445210	Fish & Seafood Merchant, Retail	4	25
451110	Sport Goods (includes nets, bait, & gear)	1	6
488330	Navigational Services to Shipping	2	12
Total		**16**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Alabama Yellow Pages 2011; Non-employer firms not included

Roughly 63 percent of marine-dependent businesses in Bon Secour employ four or fewer workers, and 88 percent employ nine or fewer workers. Only two businesses employ more than 100 workers; both are seafood processors.

2.8.2 Orange Beach-Gulf Shores

Orange Beach and Gulf Shores are located in southern Baldwin County adjacent to the Gulf of Mexico. Gulf Shores is a barrier island connected to Orange Beach via Canal Drive. Both Orange Beach and Gulf Shores are beach resort tourist destinations, with growing year-round and seasonal populations. The communities are mixed-residential in nature, with homes interspersed among high-rise condominiums, hotels, and small businesses. Most residents regard the towns as a single community. The resident population is growing rapidly. The combined total of 15,323

residents in 2010 is well above the combined total of 8,828 residents enumerated by the year 2000 Census (U.S. Census Bureau 2010a).

The Orange Beach-Gulf Shores economy is based largely in retail sales and tourism-related services. Notably, more than 90 charter fishing operations are available for hire from one of the 22 local marinas. Boat dealers and seafood restaurants are numerous. A relatively small commercial fishing fleet is also active in the area. Shrimp and various finfish are the primary commercial species of interest.

There are approximately 3,393 employer-based businesses in Orange Beach-Gulf Shores. Roughly 14 percent may be considered marine-dependent (Manta 2011, Intelligent Direct 2011, Alabama Yellow Pages 2011).

Table 2-26 Marine-Dependent Businesses in Orange Beach-Gulf Shores in 2011

NAICS Code	Description	Number Orange Beach	Number Gulf Shores	Total	Percent of Total
213111	Drilling Oil & Gas Service	0	1	1	0
213112	Support Activities for Oil & Gas	0	3	3	1
237990	Other Heavy & Civil Engineering Constr	7	4	11	5
238910	Site Preparation Contractors	0	1	1	0
311711	Seafood Canning	0	1	1	0
333923	Overhead Traveling Crane, Hoist & Monorail Sys Mftg	0	1	1	0
336612	Boat Building & Repair	6	7	13	6
424460	Fish & Seafood Merchant, Wholesale	1	3	4	2
441222	Boat Dealers	20	10	30	13
445210	Fish & Seafood Merchant, Retail	3	6	9	4
451110	Sport Goods (includes nets, bait, & gear)	8	1	9	4
487210	Scenic & Sightseeing Transp., Water (incl. Charter Servs)	82	10	92	39
483211	Inland Water Freight Transportation	1	0	1	0
488330	Navigational Services to Shipping	5	1	6	3
493190	Boat Storage	1	0	1	0
532292	Recreational Rental Goods	0	1	1	0
713930	Marinas	18	5	23	10
721110	Hotels & Motels (except casino hotels)	0	15	15	6
721211	RV Parks & Campgrounds	0	14	14	6
Total		**152**	**84**	**236**	**100**

Sources: Manta (2011), Intelligent Direct (2011); Alabama Yellow Pages 2011

Some sixty-nine percent of marine-dependent businesses in Orange Beach-Gulf Shores employ four or fewer workers, 85 percent employ nine or fewer, and 99 percent employ fewer than 49 workers. The establishments employing more than 50 workers- a state park and a marina- are oriented toward the tourism industry.

In 2007, there were 19,035 businesses in Baldwin County. Approximately five percent of these were minority-owned.

Table 2-27 Minority-Owned Businesses in Baldwin County and Alabama in 2007

Population and Business Ownership		Orange Beach	Gulf Shores	Baldwin County	Alabama
Total Population (2010)		5,441	9,741	182,265	4,779,736
Number of Businesses (2007)		1,160	1,736	19,035	382,350
African-American-Owned Businesses (2007)	Expressed as %	F	F	3	15
Asian-Owned Businesses (2007)		F	F	1	2
Hispanic-Owned Businesses (2007)		F	S	1	1
Native American-Owned Businesses (2007)		F	F	>1	1
Native Hawaiian-Owned Businesses (2007)		F	F	F	0.1
Women-Owned Businesses (2007)		25	18	27	28

Source: U.S. Census Bureau (2007); F = Fewer than 100 Businesses, S = Suppressed

Shrimp Trawl Vessels Moored at Bon Secour Prior to Hurricane Katrina

3.0 The Oil and Gas Industry

This chapter addresses the effects of the *Deepwater Horizon* oil spill and subsequent moratorium and regulatory changes on small businesses serving the oil and gas industry. The discussion is divided into two sections: the first describes the nature of the industry and trends over time across the study region; the second section addresses the effects of the moratorium and establishments of new permitting processes. The section provides an overview of key events and effects; factors influencing short term viability of impacted businesses; and discussion of impacts, adaptive strategies, and consequences.

3.1 Small Business Activity and the Offshore Oil and Gas Industry in the Gulf of Mexico

Overview. Oil and gas drilling efforts in the Gulf of Mexico region date to the late 1940s. Drilling activity accelerated when domestic oil prices increased dramatically as a consequence of the OPEC embargo in 1973 and 1974. With inshore fields throughout southern Louisiana having already been extensively exploited, developers began to consider the Gulf of Mexico Outer Continental Shelf (OCS).

By the end of the 1970s, 12,500 platforms were producing oil on the OCS (IAI 2008). Small oil companies were pivotal in offshore development, and small businesses proliferated to support offshore activities (Mason 2010). These businesses offered specialized equipment and skills, and often gained an advantage by patenting their products (Sell and McGuire 2008).

Offshore development diminished in 1982 due to declines in world oil prices, a decrease in demand, and the imposition of the Crude Oil Windfall Profit Tax. Employment opportunities in the oil and gas support sector diminished accordingly. Many boat builders who constructed drilling support vessels began to build boats for use by fishermen, and companies specializing in oil field trucking shifted or expanded their operations to include overland hauling of freight (Sells and McGuire 2008). Consolidation and streamlining occurred as oil companies looked elsewhere for opportunities. The downturn lasted until around 1987.

In the mid 1990s increases in global demand for oil gave rise to a cycle of expansion in offshore drilling and related sectors in the Gulf region. Aided by technological advancements in seismology, exploration activities moved into deeper waters and extended the productivity of older shelf fields (Austin et al. 2004; IHS CERA 2011a). Activity on the OCS required new or modified equipment and larger crews.

Expansion was subsequently tempered in the late 1990s when global supply exceeded demand and prices fell accordingly. Industry consolidation occurred once again; certain firms merged and others failed (Sells and McGuire 2008). World oil prices increased in 2001 and expansion of the offshore industry in the Gulf of Mexico resumed in earnest.

Major hurricanes damaged offshore infrastructure in the Gulf of Mexico in 2005. Informants involved in the current study report that, in 2007, the oil industry entered another down cycle marked by an overall lack of investment in drilling. Representatives of firms with the necessary equipment and skills for both offshore and onshore exploration and production report that they had shifted their focus to shale drilling in northern Louisiana and other areas prior to the 2010 oil spill.

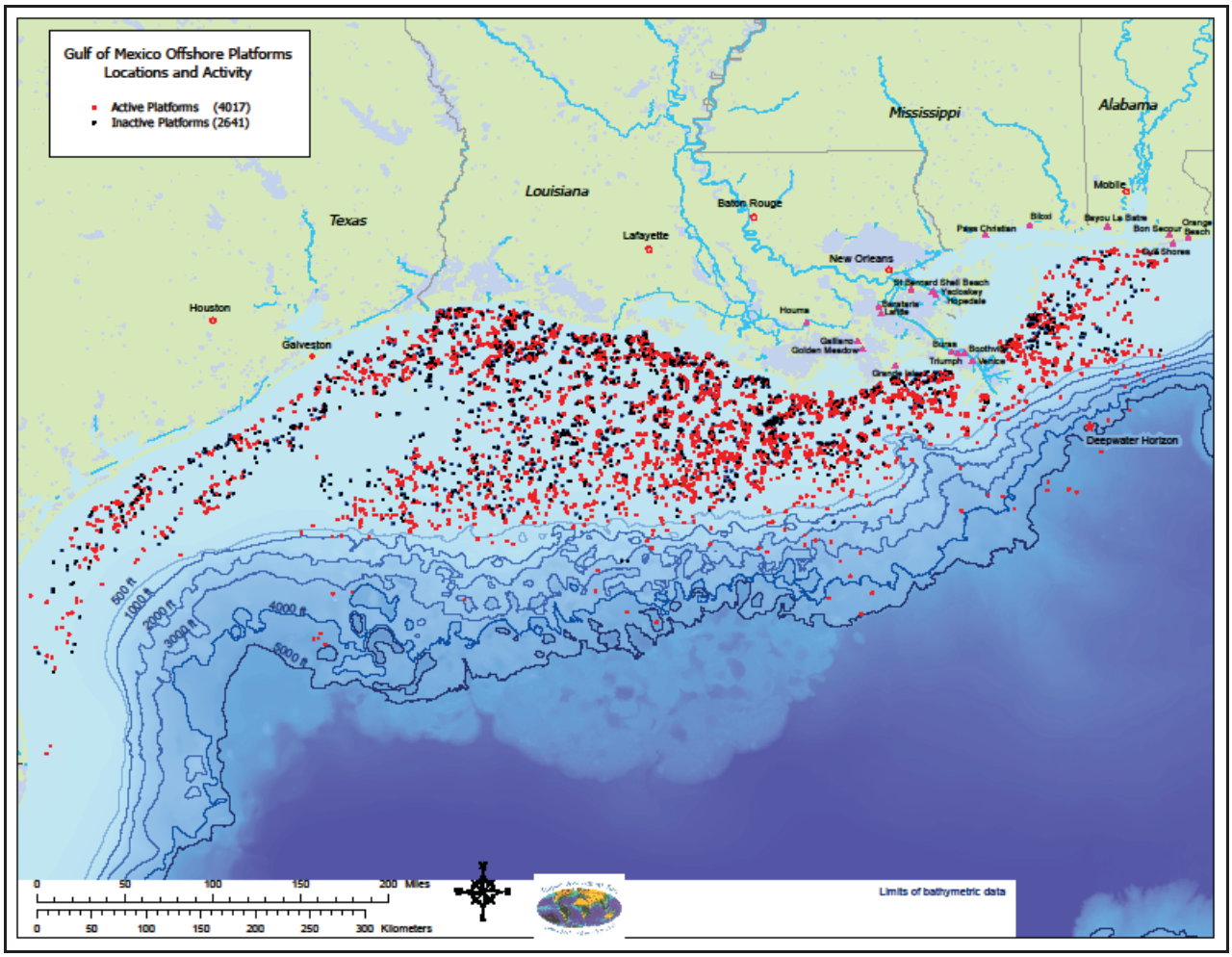
As of 2009, Louisiana was the nation's third-ranking state in terms of total energy production (U.S. Energy Information Administration 2009), far exceeding that of both Mississippi and Alabama. Some 320,000 Louisiana residents are currently employed in the oil and gas industry and associated support sectors (Hargreaves 2011). Significantly, both the oil/gas and seafood industries provide critical sources of jobs and revenue in Louisiana, and especially in Lafourche, Jefferson, Plaquemines, and St. Bernard Parishes. It is not uncommon for commercial fishermen in these parishes to seek employment in the offshore oil industry during poor fishing seasons (IAI 2007, 2008).

Currently, oil and gas production on the Gulf of Mexico OCS occurs in three benthic zones: shallow shelf, deep water, and ultra-deep water (>5,000 feet). Shallow water production has decreased dramatically since 2000 and has been exceeded by deepwater production for over a decade (IHS CERA 2011a). Most capital investment is currently being applied to deepwater operations; it is here that the largest oil and gas reserves are being discovered, and where the majority of production is taking place (Nobel 2010; IHS CERA 2011a). Output from ultra-deep wells reportedly has been increasing since 2005. Map 3-1 below depicts the location and activity of offshore platforms in the Gulf of Mexico.

Businesses supporting the offshore oil and gas industry have frequently been confronted with perturbations in the energy market and the changing nature, location, and technological demands of offshore activity. Companies in the support sector have had to adapt through innovation and diversification. Entry of small businesses into the oil and gas industry can be costly, constrained as the process is by safety regulations, and bonding, insurance, and licensing requirements.

Currently, the offshore oil and gas industry in the Gulf of Mexico is comprised of variably sized businesses– from small family-owned firms to large international companies. Companies are often distinguished by specialty and phase of production: (1) exploration, (2) extraction or production, (3) refinement, and (4) distribution. Each phase requires a variety of support services and associated factors, each of which is germane to analysis of the impacts of the *Deepwater Horizon* oil spill and subsequent moratorium. These include: (1) types and quantities of materials, labor and services required for each phase of development; (2) trends and current conditions for the various support sector activities; and (3) size characteristics and geographic distribution of businesses associated with the provision of material, labors, and services for each phase.

The exploratory and initial drilling stages involve relatively more labor and supplies than the ongoing production phase. Further, deepwater drilling operations require more labor and supplies than shallow water drilling (McGuire 2004).



Map 3-1 Drilling Platforms in the Gulf of Mexico (see Appendix A for full-scale version)

The involvement of small businesses in the oil and gas industry in the Gulf is most pronounced in the following activities: offshore supply services, geophysical/seismic services, environmental consulting, dredging, and underwater construction (Dismukes 2010). Participants in the current study assert that many self-employed contractors are involved in the transportation of supplies and personnel to offshore rigs and platforms. Provisioning of supplies and catering services are said to be highly competitive. Small businesses generally are not extensively involved in rig contracting or large scale/platform fabrication due to the need for substantial capital investment. Small fabrication yards are usually highly specialized (BOEM 2011a)

In the mid 1990's, the Women's Business Enterprise Council was established in Louisiana, Mississippi, Alabama, Tennessee, and Florida to facilitate the creation and support of female-owned and -managed enterprises in the region. Similarly, the Louisiana Minority Supplier Development Council was established in 1978 to support ethnic diversity in the private and public sectors, and to encourage the development of minority-owned businesses. Both Councils are supported by major oil corporations in the Gulf region. Member businesses are often involved in the oil and gas industry. According to the Women's Business Enterprise Council, certified women's business enterprises are involved in the oil and gas industry in what has historically been considered "non-traditional" roles. These involve the provision of equipment and technical

services. Such persons have also been involved in more traditional roles, such as offshore catering services. According to the Louisiana Minority Supplier Development Council, certified minority-owned business enterprises are typically involved in parts manufacturing, temporary staffing, operation of offshore supply vessels, and various professional services.

3.2 Community-Level Engagement in the Region's Offshore Oil and Gas Industry

Of the communities addressed in the current study, nine are significantly involved in the region's oil and gas industry: Houma, Golden Meadow, Galliano, Barataria-Lafitte, Bayou La Batre, St. Bernard, Boothville-Venice, Buras-Triumph, and Grand Isle. Below we provide a brief description of local involvement in the oil and gas industry as occurred during the course of the current project.

Houma, Louisiana. Houma and the inland cities of Morgan City and Lafayette are currently the three major areas of support services for the offshore oil and gas industry. Subsequent to completion of the Houma Navigation Canal in 1962, the city has been an important fabrication center for platforms and rigs, and a principal staging base for delivery of supplies. Many of Houma's pioneering entrepreneurs began work in the industry during the 1970's.

Houma continues to be an important supply and service center for shallow water activities, and the highest concentration of platform fabrication yards for the region can be found here and in Jefferson Parish (BOEM 2011a). U.S. Coast Guard data indicate over 500 vessels registered to Houma-based businesses or individuals provide services to the oil and gas industry (USCG 2012). LeBlanc (2011) reports that one out of three employed residents work in the region's oil and gas industry.

Golden Meadow-Galliano, Louisiana. Galliano and Golden Meadow are situated on the main route connecting Houma, Port Fourchon, and Grand Isle to the Gulf of Mexico. As noted in Chapter Two of this report, most marine-dependent small businesses in the Golden Meadow-Galliano area are involved in the commercial fishing industry or provide various goods and services to offshore oil and gas operations. Many of these businesses involve use of boats. U.S. Coast Guard data indicate the presence of 318 documented commercial vessels registered to local individuals and businesses in the Golden Meadow-Galliano area (USCG 2012).

Barataria-Lafitte and Grand Isle, Louisiana. Many local businesses in these communities provide goods and support services to the oil and gas industry. Persons from these communities often commute to jobs associated with OCS infrastructure, which include a large petrochemical plant, 46 oil and gas terminals, 17 shipyards or ship repair facilities, six platform fabrication facilities, two natural gas processing facilities, and 15 heliports or helipads (Kaplan et al. 2011; BOEM 2011a).

Bayou La Batre, Alabama. In Bayou La Batre, shipbuilding is the main form of participation in the region's oil and gas industry. Bayou La Batre is the regional center for fabrication of offshore supply vessels and tugboats. Fabrication yards vary in size and specialty; some also serve the commercial fishing industry. U.S. Coast Guard data indicate that 25 vessels serving the region's

oil and gas industry are registered to Bayou La Batre-based businesses or individuals (USCG 2012).

St. Bernard, Louisiana. The following OCS-related infrastructure is located in St. Bernard Parish: two refineries, three natural gas processing facilities, twelve terminals, and one port. While the majority of this infrastructure is located in the Chalmette area, many residents of St. Bernard commute to jobs in and around Chalmette (Kaplan et al. 2011).

Buras-Triumph and Boothville-Venice, Louisiana. Many residents of these communities commute to jobs in Plaquemines Parish-based facilities that support offshore drilling on the OCS. This includes: one refinery, 72 terminals, one port, four shipyards or ship repair facilities, five supply bases, two platform fabricating facilities, two natural gas processing facilities, one waste facility and 19 heliport/helipads (Kaplan et al. 2011). The port of Venice is a principal service base for mobile rigs in the Gulf of Mexico (BOEM 2011a). U.S. Coast Guard data indicate that 31 towing vessels, tank barges, and offshore supply vessels are registered to Buras-Triumph-based businesses or individuals. Approximately 20 vessels registered to Boothville-Venice-based businesses or individuals service the oil and gas industry.

3.3 Industry Trends Prior to the Spill

As noted above, oil and gas industry trends in the Gulf of Mexico tend to relate to volatility in supply, demand, and associated prices. Prices are, in turn, affected by a variety of factors including: international and domestic economic activity; economic and political conditions and output in oil-producing countries; discovery of offshore reserves; and technological advances in the offshore industry (Dismukes 2010). Environmental regulations, tax policies, corporate capital and willingness to undertake operations also exert significant influences on domestic oil and gas industry activity in the Gulf of Mexico. Thus, the industry is challenging, even apart from the effects of specific events that have occurred during and since 2005.

Approximately 4,000 platforms were in production in the Gulf region when Hurricanes Katrina and Rita made landfall in 2005. The storms damaged many offshore platforms and rigs in the Gulf of Mexico. Onshore infrastructure and supporting business sectors were also severely impacted. Hurricane Katrina destroyed or damaged 66 platforms and 13 drilling rigs, leading to significant short-term declines in oil and natural gas production. Hurricane Rita destroyed or damaged 101 platforms and 14 rigs, furthering delays in production (Dismukes 2010).

OCS-related onshore infrastructure and the business support sectors in Plaquemines, Jefferson, and St. Bernard Parishes were particularly hard hit (Kaplan et al. 2011). Notably, while the storms eventually led to increased business opportunities associated with recovery, the offshore oil and gas industry was constrained because much of the local labor force was displaced for many months. Ship building and fabrication yards in Bayou La Batre, Alabama also experienced damage from Hurricane Katrina, and the same region was significantly impacted by Hurricanes Gustav and Ike in 2008. While many coastal communities were severely impacted by Katrina (IAI 2007) and subsequent storms, the need to facilitate recovery of the offshore oil and gas industry following Katrina and Rita provided consistent employment opportunities for residents with the skills and capacity to contribute.

Storm recovery did occur. But just prior to the *Deepwater Horizon* accident, spill, and moratorium, the region's offshore oil and gas industry was experiencing a downturn in activity due to: the economic recession, volatile fuel prices, expansion of drilling activity at onshore shale formations, and increasing offshore drilling activity abroad (GNO Inc. 2011, 2012; Quest Offshore 2011).

The downturn affected companies differently. For example, companies specializing in, or supporting shallow water operations (which involve contracts of a relatively short duration) were experiencing and/or anticipating financial problems as early as 2008. Such firms began to develop strategies for persisting through the challenges. By way of contrast, firms specializing in or supporting deepwater drilling (which typically involves contracts of relatively longer duration) were tending to exhibit greater stability at the onset of the national recession. In 2009, many companies that engaged in shallow water drilling operations and associated support activities in the Gulf region were responding to declining oil and gas prices and the tightening of the credit market by streamlining operations, such as reducing salaries and laying-off employees and contractors (Dismukes 2010).

3.4 The Moratorium and Related Context

The *Deepwater Horizon* accident occurred on April 20, 2010. On May 28, 2010, the Secretary of the Interior announced a "six-month suspension of all pending, current, or approved offshore drilling operations of new deep-water wells in the Gulf of Mexico and Pacific regions." In June, 2010, the U.S. Department of the Interior, Minerals Management Service was initially reorganized as the Bureau of Ocean Energy, Management, Regulation, and Enforcement (BOEMRE). The agency instituted new regulatory requirements for offshore oil and gas drilling activity along the nation's OCS.

On May 6, 2010, permitting actions required for drilling on the OCS were halted while a thirty-day safety review was initiated. The suspension covered both approved drilling permits and any permits still under consideration. Shallow water rigs and deepwater platforms that were already producing oil were not affected by the moratorium (National Marine Industries Association 2010).

On May 28, BOEMRE announced a six-month moratorium on all exploratory drilling in depths greater than 500 feet. The closure affected 36 rigs operating in the Gulf (Louisiana Workforce Commission 2010). On June 8, permitting activities for shallow water drilling resumed under new regulatory requirements.

BOEMRE was further reorganized on October 1, 2011 to become the Bureau of Ocean Energy Management (BOEM), and the Bureau of Safety and Environmental Enforcement (BSEE). BOEM lifted the remaining moratorium on deep water drilling later in October of the same year.

Table 3-1 Timeline: Offshore Moratorium and Related Events

Date	Year	Event
April 20	2010	*Deepwater Horizon* Accident
May 06	2010	MMS suspends approved permits to drill new wells and ceases issuing new permits to drill shallow- and deepwater wells, pending a 30-day safety review.
May 10	2010	Secretary of the Interior calls for the reorganization of MMS.
May 28	2010	BOEMRE announces a six-month moratorium on drilling of new wells in water deeper than 500 feet, and requires currently active deepwater rigs to stop drilling, effective May 30. Platform maintenance and oil production support activities are allowed to continue.
June 8	2010	BOEMRE lifts moratorium on permitting activities for shallow waters (< 500 feet).
June 22	2010	A Federal District Court temporarily suspends deepwater moratorium.
July 12	2010	BOEMRE re-imposes a revised moratorium suspending deepwater drilling through November 30, 2010. Workers on rigs utilizing subsea and surface blowout preventers are affected.
October 12	2010	BOEMRE lifts the moratorium for deep water permits, allowing operators in compliance with all new rules and requirements to resume exploratory drilling.
October 15	2010	BOEMRE mandates new regulations for decommissioning wells.
February 28	2011	BOEMRE approves the first deepwater drilling permit following the moratorium.
May 14	2011	The Obama administration announces that new areas in the Gulf of Mexico will open for new oil and gas leases.
June 6	2011	BOEMRE announces several measures for streamlining the permitting process for oil and gas drilling.
October 1	2011	BOEMRE becomes BOEM and BSEE.
December 14	2011	BOEM holds the first oil and natural gas lease sale in the Gulf of Mexico since the *Deepwater Horizon* explosion and oil spill (Western Gulf of Mexico Lease Sale 218).
January 26	2012	President Obama announces that all available un-leased areas in the Central Planning Area off Louisiana, Mississippi and Alabama (38 million acres) will be available for lease on June 20, 2012.

Although the moratorium did not affect production or employment associated with already-producing wells, it did affect shallow-water drilling permit approval rates and it did preclude employment actually and potentially associated with exploratory deepwater drilling. The post-spill diminishing rate of approval for new permits to drill in shallow and deepwater areas of the Gulf is depicted in Figure 3-1 below.

The rate of approval for shallow-water drilling did not return to pre-spill levels until December 2010, six months after the moratorium was suspended. Between April and October, 2010, only 12 permits for shallow-water drilling were issued. This is in contrast to the year prior to the oil spill, when seven shallow-water permits were approved on average each month of the year.

The first post-moratorium deepwater permit was approved on February 28, 2011. By April 2011, 11 new deepwater permits had been issued in the Gulf (Hargreaves 2011).

But the rate of approval for new deepwater permits did not return to pre-spill levels until August 2011. Moreover, permits needed to maintain already-producing deepwater wells also were approved at lower than average rates during this period (IHS CERA 2011b). IHS CERA (2011a) reports that during the six months following the suspension of the deepwater moratorium, new regulations resulted in slower permitting, a backlog of pending approvals, and diminished rates of permit approvals.

In June 2011, BOEM announced plans to streamline the permitting process for offshore drilling and production activities (Amy 2011). In June 2012, BOEM announced new lease sale areas in the central portion of the Gulf of Mexico OCS.

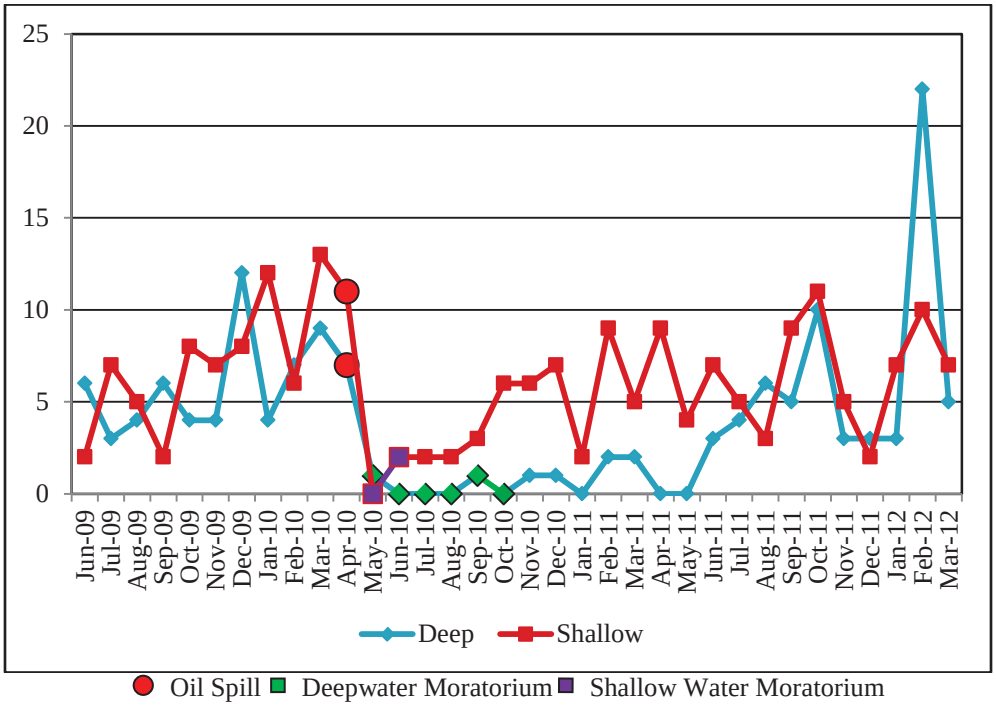


Figure 3-1 Offshore Drilling Permitting Trends in the Gulf of Mexico
Source: GNO Inc. (2011)

3.5 Effects of the Moratorium

Overview. Facing a six-month moratorium and new permitting regulations, certain oil companies renegotiated leases and drilling companies terminated contracts. The effects of the situation are evident in the number of active rigs, rates of use of offshore support vessels, and pay rates for associated services before and during the moratorium.

The number of active rigs provides a good indication of demand for the products and services provided by the oil and gas industry support sector. Figures 3-2 and 3-3 depict the number of active rotary rigs in Southern Louisiana for the periods 2009 to 2012, and 2000 to 2012, respectively. The counts include all onshore, nearshore, and offshore drilling operations. A trend of decline in all drilling activities is noted beginning in 2008, indicating the pervasive effects of the economic recession. The extent of offshore drilling activities (obviously) bottoms out during the moratorium. Thus, the cessation of offshore drilling activities during the moratorium occurred during a significant overall down-phase in the oil and gas industry as it occurs throughout Southern Louisiana. Drilling in all areas is presently on the rise.

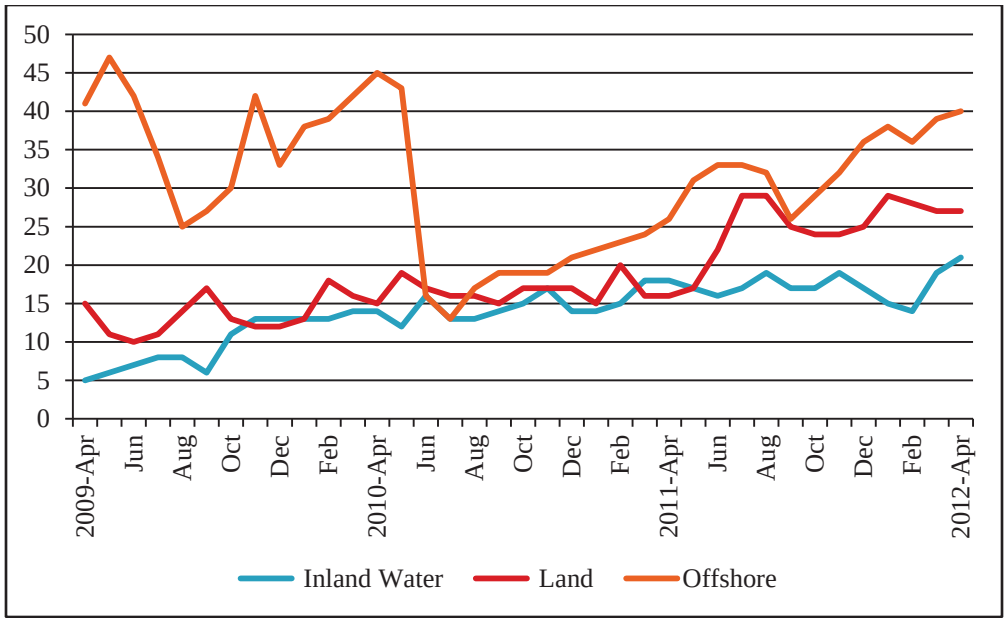


Figure 3-2 Active Rigs in Southern Louisiana, Monthly Average: April 2009-April 2012
Source: Baker Hughes 2012, http://investor.shareholder.com/bhi/rig_counts/rc_index.cfm

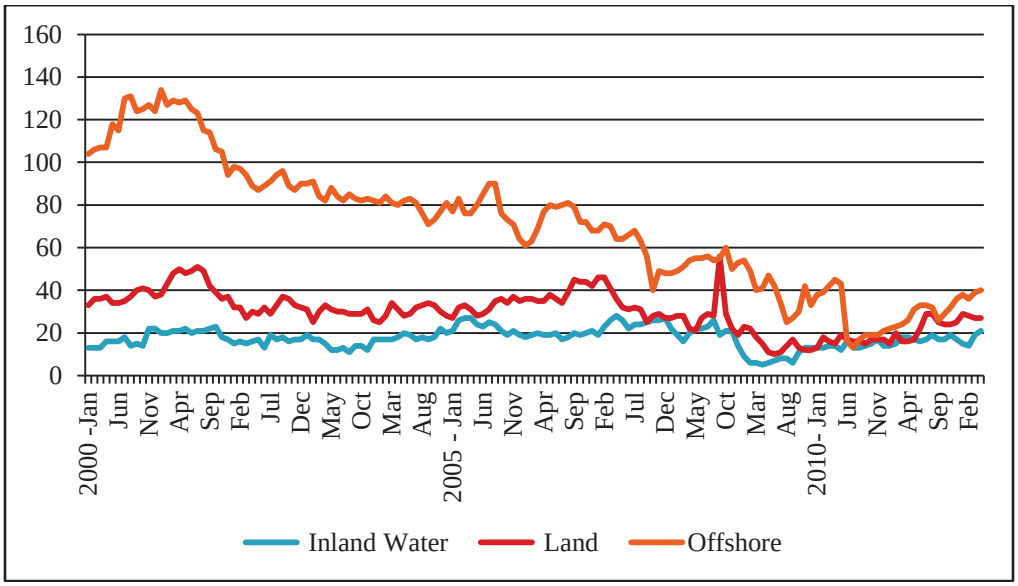


Figure 3-3 Active Rigs in Southern Louisiana, Monthly Average
Source: Baker Hughes 2012, http://investor.shareholder.com/bhi/rig_counts/rc_index.cfm

Diminished offshore, nearshore, and onshore drilling has significant implications for the wide variety of small businesses that support such activity. Idle rigs equate with idle support services. This, in turn, leads to loss of income for small businesses, as described by many interviewees during the current project. But such impacts are often unevenly distributed, and this was the case following the spill-induced moratorium in the Gulf of Mexico. For instance, some small business owners were able to adapt to the moratorium by finding temporary work in other regions. But others reported reluctance to seek new work, fearing compromise of established relationships with larger corporations when the moratorium was lifted.

It can also be logistically difficult for certain specialized businesses to shift their support services from offshore operations to shallow-water or land-based operations. Firms providing more generalized or geographically dispersed support services have a competitive advantage in such situations, and this was true in certain instances during the offshore moratorium in the Gulf of Mexico.

Finally, the overarching context of diminished drilling activity during an ongoing period of economic recession significantly increased the overall level of competition among support sector firms during the moratorium. This was the case among supply and crew boat operations, the owners and operators of which are said to have competed avidly for work in shallow waters of the Gulf during the offshore moratorium. Such competition also led to diminished rates of pay (termed "day rates" in the industry). This was especially true for large service vessels (Greenberg 2012a), such as anchor-handling tug supply vessels (AHTS vessels). Notably, owners of certain firms that operate large support vessels in the Gulf of Mexico shifted their operations overseas during the moratorium (LeBlanc 2011).

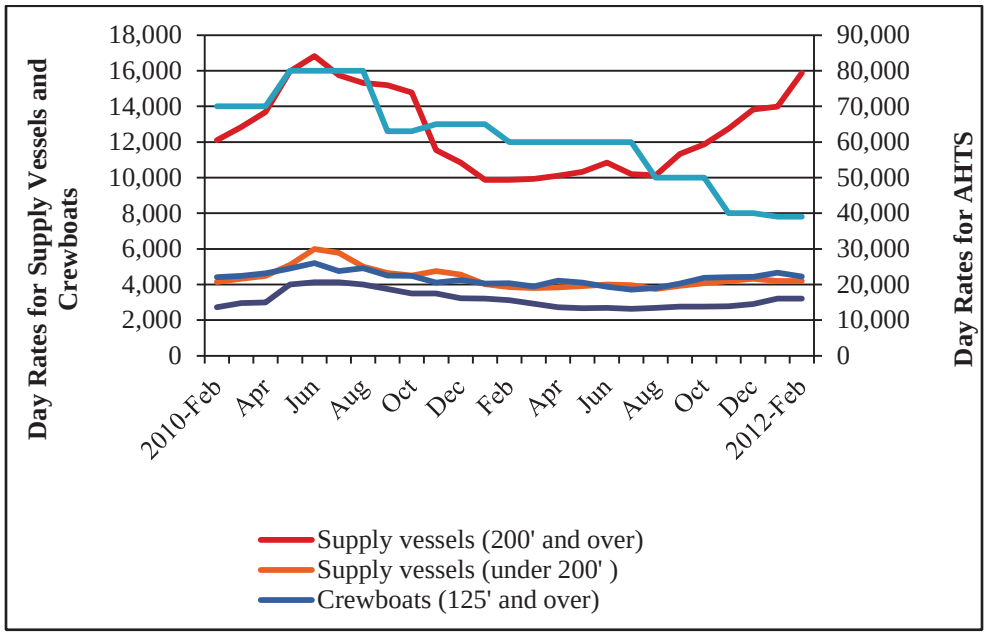


Figure 3-4 Day Rates for Vessels Supporting Oil and Gas Industry Operations
Source: Workboat 2012, http://www.workboat.com/day-rates.aspx

More than 850 support vessels of various types are qualified to operate in association with drilling operations on the Gulf of Mexico OCS. Small business owners and operators in this sector report extensive daily operating expenses and a highly competitive market. Some 70 percent of operating costs involve fixed overhead expenditures, such as ongoing vessel and gear maintenance costs, inspection fees, employee benefits, and so forth. Thus, when work opportunities are minimal, economic losses can be extensive (BOEM 2011a), and successful business owners will have developed and implemented strategies for streamlining their operations over the long-term. But significant perturbations, such as major storms, large spill events, major regulatory changes, and macroeconomic factors can present significant challenges even to the most prudent business owners and long-term planners.

Interview data make clear that small business owners attempting to adapt to declining opportunities resulting from the moratorium and slowed permitting processes typically sought to reduce expenses and/or access new or additional sources of income, credit, or loan-derived capital. Reduction of expenses reportedly involved: the laying-off of non-essential employees; reducing employee work hours; temporarily retiring certain vessels; and/or selling non-essential equipment (see also Thomson 2011). Small business owners who depend on semi-skilled labor often reported significant downsizing of staff, in some cases leaving the firm functioning only through their own labor. Those business owners who depend on a mix of semi-skilled and skilled labor, such as pipeline construction and offshore supply operations, typically reduced the overall number of employees, but retained persons with indispensible skills and qualifications. Many business owners offered the perspective that it was necessary to retain essential staff in anticipation of future contracts, even if that meant operating in the red for a period of time. Such persons report that finding skilled employees can be difficult, and loss of trained employees is particularly costly in the long-run.

The Mitigating Effects of Oil Spill Clean-up Opportunities. Ironically, the oil spill itself helped to mitigate the negative impacts of the moratorium on small businesses in the region. Alternative forms of employment were available during the moratorium, at least in certain sectors. But again, involvement of small businesses in such optional forms of work was variable in nature, conditioned as it was by the functional or logistical capacity of the businesses in question to participate in oil spill clean-up and related activities.

The oil spill did generate a variety of opportunities for marine-related small businesses in the study communities. For example, qualified captains and crew members of fishing vessels and oil and gas industry support vessels could potentially work as first responders and/or in ongoing clean-up and remediation activities. The possibility of becoming involved in such activities and offsetting losses incurred by fishery closures and the moratorium related to: (a) the qualifications of such persons to participate in spill clean-up activities; (b) the capacity to provide needed goods or services; (c) the extent to which such goods or services were needed in any given locality, with more and better opportunities available in areas most extensively affected by the spill; and (d) the rate of compensation for providing such goods and/or services vis-à-vis monies that could be earned by other means.

Small environmental consulting firms and firms providing environmental mitigation goods and services are an essential part of the oil and gas industry in the Gulf of Mexico. Of note, owners and operators of many such businesses in the study communities engaged in disaster recovery efforts following Hurricane Katrina. As such, many were experienced and logistically well-prepared to offer rapid response services during the 2010 oil spill. Owners and operators of a wide range of businesses in the affected region reported involvement in oil spill response efforts. These include owners and operators of: offshore supply vessels; tugs and barges; catering services; general marine supply/hardware suppliers; specialized pipe, boom, and hose suppliers; temporary labor leasing firms; dock yards and off-loading facilities; boat yards and fabrication services; and shipyards, among others.

Some small business owners contracted directly with the responsible party, while others worked as subcontractors for BP, for state and federal agencies, and for larger private firms and

corporations involved in the response effort. Owners of most such businesses involved in the response reported having previous experience in the oil and gas industry support sectors and/or disaster recovery work, and many had previously developed business relationships with BP, with other large petroleum development corporations, and/or with prime contractors of large corporations.

Thus, many small businesses were well-qualified and ready to undertake clean-up and remediation duties during the moratorium. This was not universally the case, however, and in certain instances, community leaders and representatives of local agencies acted as intermediaries between the responsible party and local small business owners, facilitating alternative spill-related employment options for the latter during the course of the moratorium. Representatives of the Minority Supplier Development Council and the Women's Business Enterprise Council reported that many member businesses continue to maintain strong relationships with the oil and gas industry in the Gulf region.

Compensation for Losses. Despite various opportunities to participate in the clean-up phase of the event, many individuals and small firms did not qualify for involvement, were not in ideal logistical positions to participate, or could not otherwise successfully compete for such opportunities. In this respect, it should be kept in mind that many small businesses that might have been involved in spill response activities had, in some manner, been previously disabled by Hurricane Katrina and subsequent storm events, and/or by challenges associated with the recession, rising fuel costs, and other complicating factors.

It is also important to note that businesses affected by the moratorium were not entitled to compensation from the responsible party. The Gulf Coast Claim Facility (GCCF) rejected approximately 1,500 business claims and 4,500 individual claims on the basis that BP was not legally required to compensate income lost due to the government's actions in imposing a drilling moratorium (Hammer 2011b).

A Rig Worker Assistance Fund was established at the behest of the Obama administration to aid workers who had been displaced from offshore drilling operations as a result of the spill and moratorium. Workers on rigs in shallow waters were not eligible (BOEM 2011a). Moreover, fewer than ten percent of an estimated 9,000 employee workforce applied for initial aid, and less than four percent ultimately received compensation. Those who did receive compensation were typically awarded between $3,000 and $30,000 (Hammer 2011a). An additional 1,100 workers applied at a later date, and 408 applicants received compensation by the summer months of 2011. Of note, assistance was not available to offset small business losses; owners of such firms qualified for assistance only if and to the extent that they reduced or eliminated their own salaries (Hammer 2011a).

The Temporal Nature of Impacts. Due to the phased nature of offshore production activities, and variable degrees of involvement of small businesses in spill clean-up activities, the impact of the moratorium was not immediately evident across all service and support sectors. In one of the study areas in which many small businesses are deeply involved in offshore oil and gas industry support activities, negative economic impacts clearly varied among the sectors in question. For instance, negative economic effects reportedly occurred between May and August 2010 among

firms involved in provision of temporary labor services; during the winter months of 2011 among offshore material suppliers and various drilling specialists; and during the spring months of 2012 for marine fabricators specializing in the construction and maintenance of offshore platforms.

Results of a survey conducted between November and January 2012 (GNO Inc. 2012) indicate that a variety of economic impacts accrued to small businesses as a result of the moratorium and subsequent slowdown in offshore permitting. Such effects apparently were persistent in nature, continuing to affect businesses across the region well into 2012.[8] The results for 102 participating companies were as follow: 41 percent of respondents stated that they had not generated profits since the permitting slowdown; 76 percent reported spending cash reserves as a result of the moratorium and slowdown, with 27 percent reporting that more than half of such reserves were spent to sustain the business during the period in question; and 82 percent reported use of personal savings to keep the business viable, with 13 percent using all of their savings to do so. Some 50 percent of respondents reported that they laid-off employees, and 39 percent reported having to reduce employee salaries or hours in order to lessen overall expenditures. About 46 percent of respondents reported having to relocate some or all of their operations in order to obtain new business (GNO Inc. 2012).

Data gathered through discussions with key persons involved in the present study support these findings. But it should be emphasized that: (a) detrimental impacts appear to have been limited primarily to certain specialized businesses that were not readily able to adapt through participation in alternative forms of employment, such as spill response and remediation; (b) assessment of the effects of the moratorium and slowed permitting are analytically confounded by an overall down-phase in the region's offshore oil and gas industry which, in turn, relates to the national and global recession, regulatory constraints, and other factors; and (c) deleterious impacts now appear to be diminishing.

Regarding point (3) above, two shipbuilders in one of our study communities describe a recent upturn in business and hiring activity, and three leading offshore support vessel owner-operators in the area state that they have recently acquired new contracts. An owner-operator of a large support vessel in one study community estimated a profit margin of eight percent during the second quarter of 2012.

Common Adaptive Strategies. Small businesses responded to the moratorium in various ways that are worthy of reiteration, given the focus of the current project. In order to retain viability in a particularly challenging economic and regulatory climate, owners of small businesses in the study communities commonly engaged certain adaptive measures that are likely to be repeated, should such challenges arise in the future. These include: (1) competing for work in other regions or sectors; (2) extending existing lines of credit or seeking new sources of capital; (3) reducing employee salaries or benefits; (4) spending cash reserves and, in some cases, personal saving to maintain operations; and (5) submitting claims for loss of opportunity and/or seeking redress through litigation. Additional forms of response identified through in-depth interviews with business owners in the region involved: requests for expedited payment for performance on existing contracts; lowering bids on new contract proposals to a point that would allow the

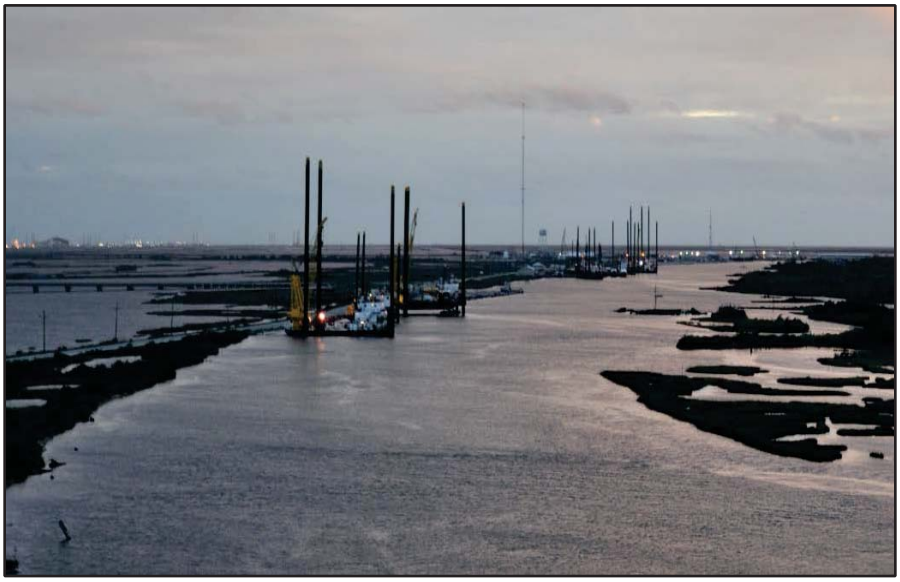
[8] Authors of the study note that the survey may have involved response bias wherein negatively impacted business owners were more likely to respond than business owners who had experienced no effects or positive effects.

prospective contractor to merely break even; diversifying operations and establishing marketing plans to announce new services; relocating bases of operation; and early retirement.

Prospects for the Future. Deepwater drilling activity in the Gulf of Mexico has been on the rise, subsequent to suspension of the offshore moratorium and a gradual increase in rates of permitting. By the end of July 2011, 12 semi-submersible rigs and six deepwater drilling ships resumed work in the region (BOEM 2011a), as did the many firms involved in offshore support services. By September 2011, several newly built ultra deepwater rigs were moved to the Gulf region, and additional deepwater rigs were scheduled for work in 2012 (Greenberg 2012b).

BOEM (2011a) reports that the effects of the moratorium and permitting slowdown are not expected to diminish drilling activities or demand for offshore support services over the long-term. Further, some public officials interviewed during the current study believe that the new regulatory environment will reduce risk in the offshore environment. From the perspective of owners of small businesses involved in safety training and regulatory compliance, post-spill regulatory changes have generated new opportunities. But other business owners envision the new regulatory environment as burdensome, increasing training and paperwork requirements. Of note, insurance costs for various aspects of offshore drilling operations have increased by as much as 50 percent (Hammer 2010).

New regulations include stricter attention to safety requirements associated with the decommissioning of offshore wells. According to certain interviewees involved in the present research, such regulations may increase work opportunities for fabricating yards and barge companies in the Gulf region. Companies specializing in underwater welding, engineering, and other services would likely also benefit.



Rigs and Support Vessels Idling at Port Fourchon in 2010

4.0 The Commercial Fishing Industry

The following pages describe pertinent aspects of the Gulf of Mexico marine fisheries and fisheries-related impacts of the *Deepwater Horizon* oil spill. The discussion is organized by two basic topics. The first involves essential contextual background regarding the nature of commercial fisheries in the study parishes, counties, and communities. The second addresses spill impacts and issues associated with the project research hypotheses.

4.1 Commercial Fisheries in the Study Region

Overview. Commercial fishing is an economically significant industry in the Gulf of Mexico. In 2009, 1.2 billion pounds of seafood were landed at Louisiana ports, with an ex-vessel value of $274 million. In that same year, fishermen landed 230 million pounds of seafood in Mississippi and 28.9 million pounds in Alabama, with landings valued at $38 million and $39 million, respectively (NOAA Fisheries 2009a).

Table 4-1 Gulf States Commercial Fishing Revenue, 10-Year Average: 2000-2010

Species	Ex-Vessel Value by State in Millions of Dollars		
	Alabama	Louisiana	Mississippi
Oyster	1.8	34.6	4.7
Shrimp	33.3	147.0	20.8
Blue Crab	1.5	31.6	0.6
All Species, Combined	42.2	293.8	39.5
Total: 375,700,000 pounds			

Source: NMFS (2010)

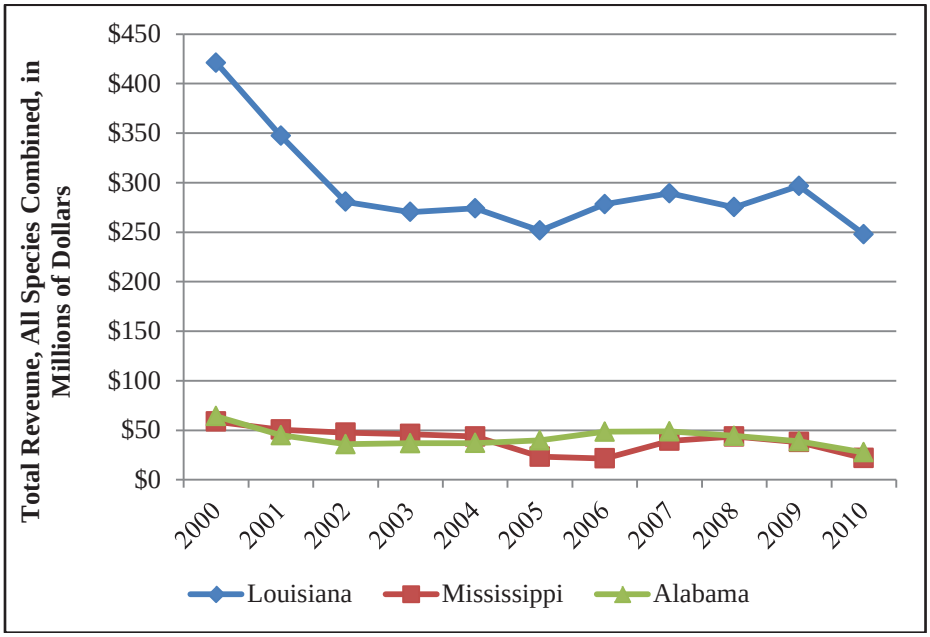


Figure 4-1 Trends in Ex-Vessel Value of Landings, Northern Gulf States
Source: NMFS (2010)

Seafood harvested in the region is important to the nation as a whole. In 2009, the combined harvest of fleets in Louisiana, Mississippi, and Alabama led the nation in landings of: oysters, accounting for 70 percent of the nation's harvest; shrimp, 47 percent of the nation's harvest; and blue crab, 31 percent of the nation's harvest.

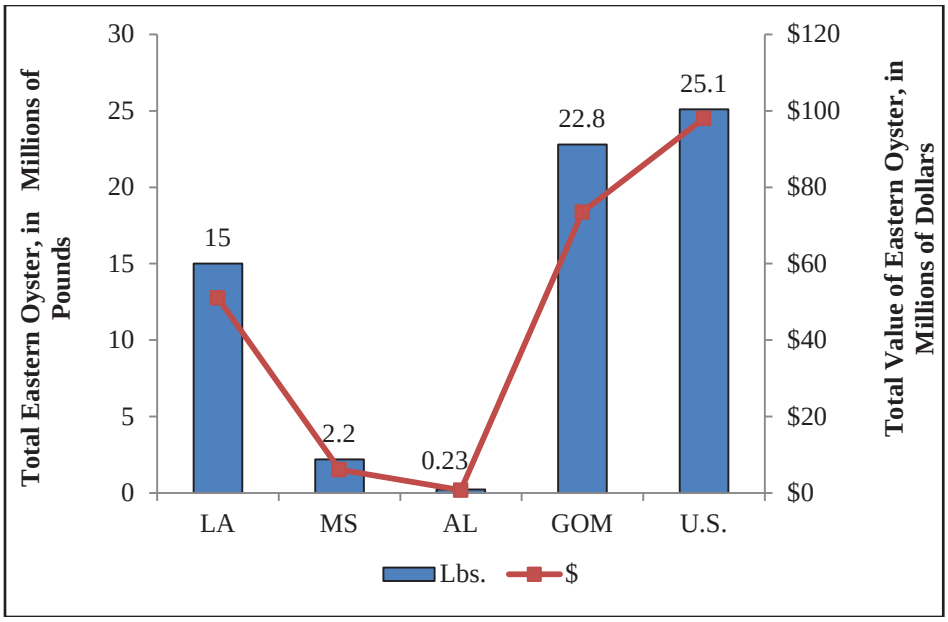


Figure 4-2 Oyster Landings in Pounds and Value in 2009
Source: NMFS (2009)

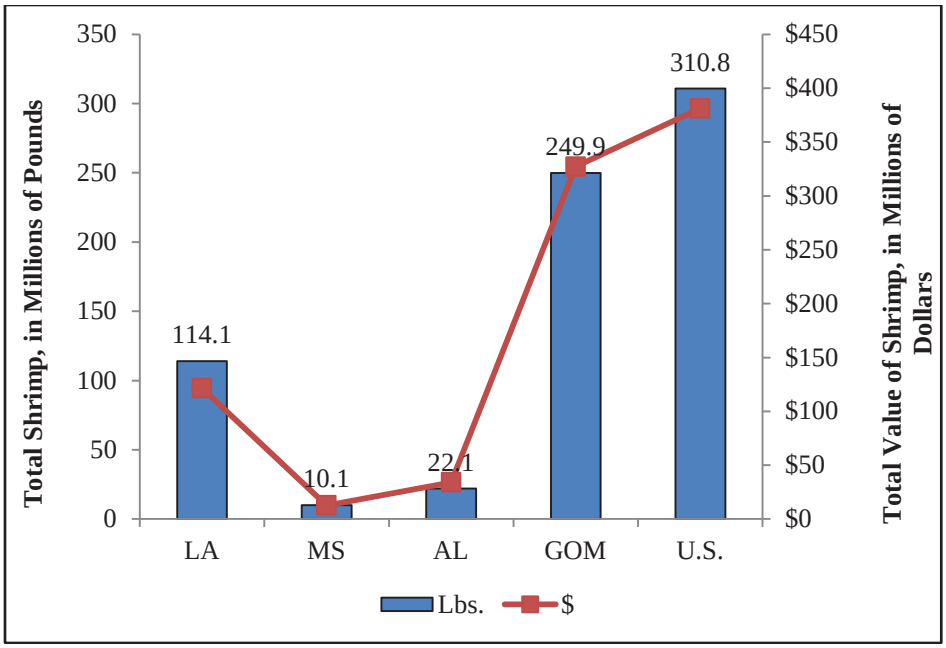


Figure 4-3 Shrimp Landings in Pounds and Value in 2009
Source: NMFS (2009)

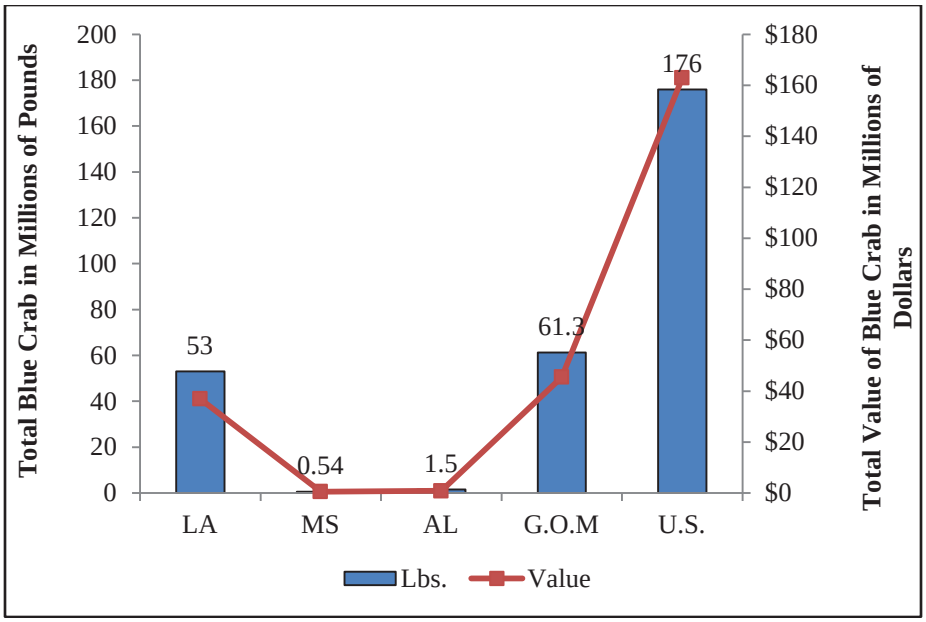


Figure 4-4 Blue Crab Landings in Pounds and Value in 2009
Source: NMFS (2009)

Twelve percent of the leading seafood-producing ports in the nation are located in the Northern Gulf region, and two-thirds of these ports are located in the project study communities. In Louisiana, the most consistently highly productive port areas are: Empire-Venice, Golden Meadow-Leeville, Barataria-Lafitte, and Delacroix-Yscloskey. Significant amounts of shrimp are landed at the ports of Barataria-Lafitte and Delacroix-Yscloskey. Vessels at Empire-Venice, Bayou La Batre, and Gulfport-Biloxi also land large volumes of shrimp and oysters. The table below depicts the leading seafood-producing ports in Louisiana, Mississippi, and Alabama in terms of ex-vessel value of landings. Other leading ports are included for comparison.

Table 4-2 Total Commercial Fishery Landings at Study Community Ports and Ranking by Value: 2009*

Port	State	Parish or County	U.S. Rank by Value	Value in Millions	Pounds in Millions
Empire-Venice	LA	Plaquemines	7th	67.1	411.8
Dulac-Chauvin	LA	Terrebonne	10th	50.9	42.4
Intracoastal City	LA	Vermilion	23rd	30.2	244.7
Bayou La Batre	AL	Mobile	24th	30.0	21.0
Golden Meadow-Leeville	LA	Lafourche	28th	27.4	25.6
Barataria-Lafitte	LA	Jefferson	33rd	25.9	25.9
Delacroix-Yscloskey	LA	St. Bernard	43rd	19.7	13.4
Gulfport-Biloxi	MS	Harrison	44th	19.3	12.9
Pascagoula-Moss Point	MS	Jackson	45th	18.6	217.4
Cameron	LA	Cameron	55th	11.9	178.8
Bon Secour-Gulf Shores	AL	Baldwin	77th	6.0	5.0

Source: NMFS (2010a); *There are 94 ranked ports in the United States

The processing and distribution of seafood are important components of each state's economy. Between 2000 and 2010, plants in Louisiana, Mississippi, and Alabama processed a total of 8.1 billion pounds of seafood, valued at $8.7 billion. Of that total, 5.3 billion pounds or 65 percent of seafood was processed at plants in Louisiana, 29 percent in Mississippi, and six percent in

Alabama. In 2009, approximately 130 processing establishments employed more than 6,550 workers in the Gulf region. In 2009, in Louisiana alone, approximately 4,200 persons worked in seafood processing plants (White 2010a).

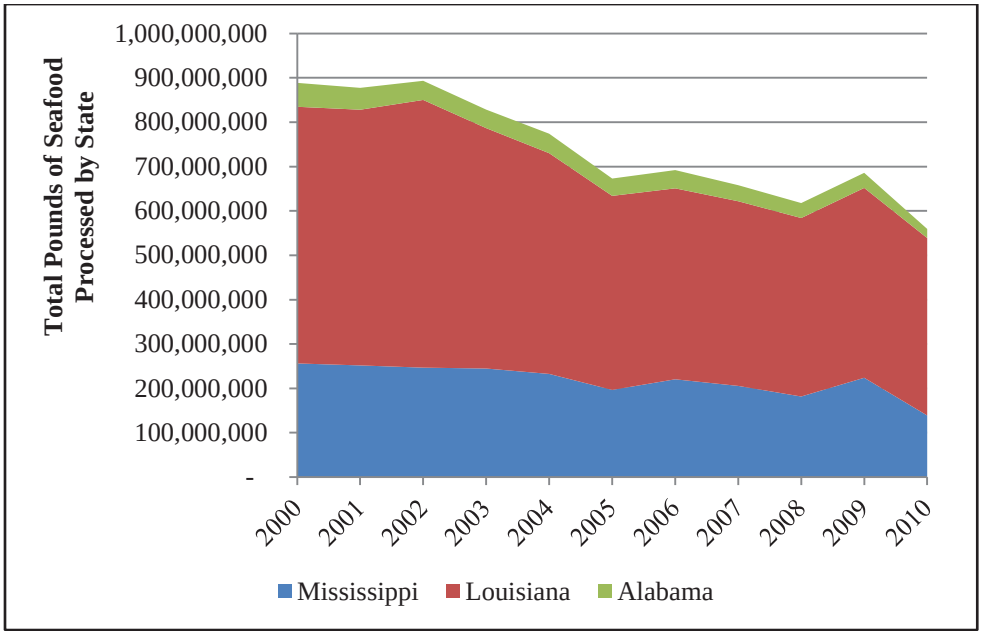


Figure 4-5 Total Pounds of Seafood Processed in the Northern Gulf States: 2000-2010
Source: NMFS Personal Communication (2010)

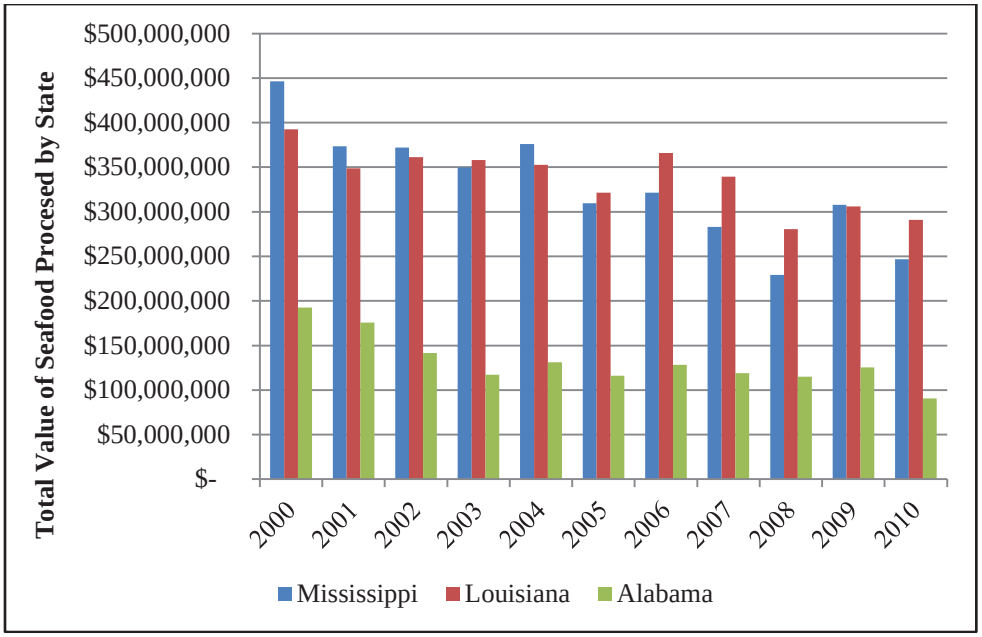


Figure 4-6 Total Value of Seafood Processed in the Northern Gulf States: 2000-2010
Source: NMFS Personal Communication (2010)

Important Industry Characteristics. The commercial fishing fleets and processing and distribution businesses that participate in the Gulf region's seafood industry exhibit a great deal of diversity in terms of scale and capacity of operations, and degree of specialization. Diversity

aside, four important commonalities can be noted of the region: (1) the extensive contributions made by ethnic minorities; (2) the presence of kin-based networks of fishery participants; (3) the extensive involvement of part-time and seasonal workers; and (4) the prevalence of cash-based economic transactions.

In the 1970s and 1980s, large-scale immigration of persons from Vietnam, Cambodia, and Laos to the Gulf region changed the nature of the region's commercial fisheries. The Mary Queen of Vietnam Community Development Corporation, Inc. (2012) estimates that one in three of the 40,000 Southeast Asians now residing in Louisiana, Mississippi, and Alabama work in the seafood industry, and that Vietnamese and Southeast Asian fisherman own and operate one-third of all shrimp vessels active along the Gulf Coast (see also Crabtree 2007). Many such persons arrived in the U.S. with extensive fishing skills and business acumen and therefore adapted quickly to the demands of fishing in the Gulf of Mexico (IAI 2007).

Other distinctive ethnic groups are extensively involved in Gulf fisheries. For instance, sizeable concentrations of Cajun and Native American shrimpers are active in south Louisiana, and many Croatian and French shrimpers are active in Mississippi (Rogers et al. 2011). Members of tribal communities, such as the United Houma Nation, fish both commercially and for subsistence purposes. In Plaquemines Parish, many oyster fishermen are second- and third-generation Croatian fishermen. A sizeable community of African-American fishermen is active in the Pointe a la Hache and Port Sulphur areas of Plaquemines Parish, and many persons of Hispanic ancestry participate in the seafood processing sector across the Gulf of Mexico.

Distinctive ethnic groups aside, many Gulf fishermen and business owners are members of families with a long legacy of participation in marine fisheries. Fishing and harvesting of shrimp and shellfish are important organizing aspects of social life throughout the coastal zone of Louisiana, Mississippi, and Alabama. Seafood processing and distribution of seafood products provide jobs for many thousands of residents. It is also true that families and coastal communities rely on seafood for dietary purposes and for use during various celebrations and cultural functions. As such, the oil spill affected resources that are, in many ways, pivotal to the well-being of many people in communities throughout the region.

Commercial production and distribution of seafood in the Gulf of Mexico and elsewhere very typically involves both full-time and part-time employment. Piece-work, temporary work, and seasonal work are common arrangements in certain sectors. For instance, fishermen need deckhands and this arrangement often (but not always) involves a high turnover rate. Seafood processors need crab pickers, oyster shuckers, fish cleaners, and seafood packers, and this workforce expands on a seasonal basis. Deckhands are typically paid a percentage of the value of the catch after operational costs are subtracted. Such persons are considered self-employed and are responsible for their own taxes. Seasonal employees in the processing sector are usually paid either an hourly wage or on a piece-work basis; employment is terminated when the season is over or a specific job is completed.

Although skilled and stable workers are much valued by most employers and the best may attain salaried positions, generally speaking, part-time and seasonal laborers typically work without benefits, and with little job security. Long-term employer-employee relationships do develop, and some persons are able to work throughout the year by rotating through the various processing

seasons for shrimp, oysters, and various finfish. Some workers take on jobs for part of the year in other sectors, such as the regional agriculture industry. In terms of numbers of workers, seasonal employment in the seafood processing sector in the Gulf is typically dominated by persons of Vietnamese, Cambodian, and Laotian ancestry, and by persons of Hispanic ethnicity. Seasonal work also supports local youth and young adults of all ethnicities.

Much of the labor aspect of the Gulf seafood industry has long functioned through cash-based arrangements. Fishermen, small seafood wholesale and retail businesses, and persons in many of the small businesses that support the industry frequently transact goods and services with cash rather than credit. Barter of goods for labor is common in many small communities throughout the region, and many persons operating small businesses in the seafood harvest and distribution sectors operate "under the table," that is, without full attention to tax issues and/or documentation of seafood landings and sale of seafood. From a cultural perspective, it is also often the case that ethnic minority participants in the seafood industry share labor, fiscal resources, and seafood. Given such informal arrangements, many participants tend to lack full documentation of labor hours and earnings.

Although participants in the region's commercial fishing fleets have reportedly improved documentation practices following Hurricane Katrina (due to missed opportunities for receiving aid), the problems persist in many areas. As discussed later in this report, the situation has complicated the claims process associated with the oil spill resulting from the *Deepwater Horizon* accident in 2010.

The Principal Fisheries. The primary commercial fisheries in the region addressed by the current study are the shrimp, crab, and oyster fisheries. The shrimp fishery (comprised of brown and white shrimp) is the most economically significant commercial fishery in the Northern Gulf. Between 2000 and 2010, brown shrimp and white shrimp accounted for an average of 79 percent of total commercial fishing revenue in Alabama, 53 percent of the total in Mississippi, and 50 percent of the total in Louisiana. Oysters rank second in terms of economic significance in the harvest and distribution sectors, and blue crab ranks third.

The Shrimp Fishery. The Gulf of Mexico shrimp fleet involves a wide range of participants, from small family operations to large corporation-owned fleets (cf. Lambert et al. 2012). Vessel size tends to correlate with range of operations. Variability in size of vessel, range, seasonal patterns of operation, expenditures, and other aspects of the shrimp fishery are important considerations for understanding the impacts of the oil spill and associated fishery closures. The large- and small-vessel fleets are described in brief here, though many Gulf-based shrimp vessels fall within a continuum of length and associated operational characteristics.

At one end of the continuum are the approximately 450 trawl vessels in the 100-foot range. These are highly capitalized vessels equipped with large diesel engines, sophisticated marine electronics, and refrigeration systems that allow captains and crews to shrimp in offshore waters from Texas to Florida, frequently for weeks at a time. Captains of such vessels deliver to buyers throughout the Gulf region. By selectively shrimping in state and federal jurisdiction waters throughout the region, captains can remain legally operational from late February through the end of December. Operating expenses are high, but the fleet harvests most of the large, high-value shrimp in the Gulf (Seedco Financial and California Environmental Associates 2012).

At the other end of the continuum are relatively small and relatively under-capitalized “bay boats” that typically utilize side-rigged butterfly nets (also known as wing nets or "paupiers"). Typically under 25 feet in length, the vessels remain in the inshore and occasionally the nearshore waters of the Gulf. Operating expenses are relatively low. Most small-vessels are used for day trips only, though overnight and multi-day trips are not uncommon among captains operating somewhat larger boats. Operators tend to be active during time-limited state water shrimp seasons; opening and closing dates vary by state. The captains of many such vessels participate in multiple fisheries, including those for finfish and crab, and many take on other forms of work on a seasonal basis. With some 2,000 active small-vessels, the Louisiana inshore shrimp fleet is the largest in the Gulf. Harvest activity occurs subsequent to the spring opening for white shrimp, the late summer opening for brown shrimp, and late summer/fall return of white shrimp.

***Oyster Harvesting*.** Oyster harvesting has long been an important source of food and income for residents of small communities throughout much of the Gulf of Mexico. This fishery requires relatively little investment and, for the knowledgeable harvester, effort typically generates a high yield. Many persons oyster to complement work in other fisheries, and many harvest the creatures for consumptive purposes. As one shellfisherman in Alabama reported “everyone’s second job [in this community] is as an oysterman.”

Oyster harvesting can be conducted in certain accessible areas at low tide without a boat. Single specimens are simply gathered and/or may be knocked from clusters using a hammer. The work is dangerous, given the very sharp nature of the shells. Some small vessel operators use this straightforward approach, while others use long tongs, which enable harvesting in deeper water. Dredging operations are more productive, require a vessel of sufficient size along with dredging gear, and as many as three to four persons.

Oyster Dredge Vessel Moored at Hopedale in St. Bernard Parish, 2011

The harvest of oysters in the study region occurs in privately owned lease areas and on public (tidal) lands. Large privately owned oyster beds are common in Louisiana, whereas the majority of oysters in Alabama and Mississippi are harvested in public trust areas. In Louisiana, leasers often enter into "sharecropping" arrangements with free-lancing oystermen; the latter work the area in return for a portion of the yield. The productivity of oyster beds varies extensively, and harvest efforts must be rotated through different beds over time. Oysters are carefully managed on state lands to prevent disease and overharvesting. Peak harvest occurs during the cooler months.

Blue Crab Fishery. Crab harvesting occurs in the inshore areas of the Gulf of Mexico. Many individuals use traps to capture the crabs for consumption and/or small-scale commercial purposes. This can occur at dockside or from very small vessels. True commercial crabbing operations are typically conducted from small- and medium-sized vessels. Captains of the former often set between 25 and 100 traps, and captains of vessels larger than about 35 feet often utilize hundreds of traps. The latter often sell the product to wholesalers. There are no seasonal closures. However, much of the region's harvest is landed between the late spring and early winter months.

The Finfish Fisheries. A variety of finfish are targeted in bays, coastal areas, and deep waters of the Gulf. Different species are harvested on a commercial basis during different parts of the year, in accordance with seasonal availability and regulations.

Small skiffs and rudimentary forms of gear are often used to pursue species such as redfish, trout, bluefish, Spanish mackerel, sheepshead, and mullet. Many commercial fishermen active in the small-vessel fleet combine pursuit of finfish with shrimping and crabbing. Larger ocean-going vessels are often used to harvest grouper and red snapper. Both grouper and red snapper have more recently become regulated by an individual fishing quota (IFQ) system. A large-vessel long-line fleet targets yellowfin tuna, mahimahi, cobia, and swordfish in the deep waters of the Gulf. Much of the fleet is comprised of fishermen from Venice, Louisiana. A purse seine fleet targets menhaden, primarily in state waters. Menhaden is typically caught in high volumes and is used as bait and in livestock feed, fertilizers, and cosmetics (IEM 2010).

4.2 The Seafood Processing and Distribution Sectors

The seafood processing and distribution sectors in the Gulf region are highly diversified in terms of the scale and capacity of operations, degree of specialization, sources of seafood, and nature of market demand. A system of social and economic relationships enables the process to function over the course of time. System components include: the harvest sector, seafood buyers and dealers, seafood processors, seafood distributors, seafood retailers, and restaurants. The chain of relationships is not necessarily linear, in that any given business in a given sector may participate in other sectors as well (see also Lambert et al. 2012). Businesses functioning within a chain of established relationships tend to be highly interdependent, and interruption in any given sector can affect the entire chain of operations. Relationships between harvesters and buyers have often been established over many years in a single community or group of communities.

Seafood distribution businesses in the Gulf region often differ in terms of size and associated levels of investment and overhead. They also often differ in terms of marketing strategies. Some seafood is sold locally or regionally, some is distributed nationally or internationally, and some firms are highly diversified in terms of geographic distribution of seafood products. Certain firms are decidedly specialized in terms of species marketed.

Buyers representing processing firms in the Gulf region typically obtain shrimp directly from a group of local harvesters. Buyers representing larger firms may buy shrimp from harvesters throughout the larger region. Processing firms typically peel and package shrimp for wholesale distribution; breading shrimp is also a common way to add value to the product, and therefore increase the profit margin.

Representatives of wholesale seafood firms also typically obtain shrimp directly from commercial harvesters, from middle-men brokers, and/or from processors or other wholesalers. Many wholesalers are participants in networks of brokers who maintain relationships with firms outside the region. Many wholesalers in the Gulf region increasingly purchase and distribute imported seafood products.

Dockside Seafood Retailer in Bon Secour, Alabama

Retail buyers and restaurateurs often purchase shrimp directly from commercial harvesters, or from wholesalers or processors. Some seafood retailers also work in the harvest sector.

The value of shrimp increases as it moves through the chain of distribution. For example, dockside brokers were recently paying shrimpers in the study communities around $4.00 per pound on average for medium-sized shrimp. The shrimp were sold at around $4.60 per pound to an area processor, and once processed (headed), the shrimp were worth $6.00 per pound at the local retail market and as much as $9.00 per pound at more distant markets. Some high volume processors purchase and freeze large quantities of shrimp at the beginning of each season and

distribute the product during subsequent months. Certain individual consumers also buy large amounts of fresh shrimp when the prices are good, and freeze them for use throughout the year.

Businesses involved in the processing and distribution of oysters vary widely in terms of scope of operations. For instance, one dealer/processor in the study region maintains approximately 100 clients, including restaurants and retail operations across the Gulf and Southeast Atlantic. The owner harvests most of the oysters and obtains about 25 percent through a network of producers across the Gulf region. His processing plant can handle as many as 600 bags per day. Many operations in the study area are much smaller, processing 40 to 80 bags per day and supplying product to one or two wholesale clients.

In the Gulf region, the oyster business is dominated by particular families and networks. Clients rely heavily on suppliers' reputation for product quality. Client-supplier relations are locally described in terms of "loyalty," which is sustained by the reputation of the families involved.

Blue crab is commonly sold whole and live or as fresh or frozen meat. Crab picking is labor intensive. Women of Asian ancestry currently are the mainstays of the crab-picking labor force; prior to the immigration of Southeast Asians to the Gulf region, African-American women provided much of this labor. The crab processing season is from April through November. Bayou La Batre is an important center of crab processing.

The menhaden fishery is highly consolidated and vertically integrated. The Gulf coast industry consists of three companies and four processing plants (BARA 2011). These operate their own fishing fleets and spotting planes, and distribute their own products. Menhaden fishing and processing occur primarily in Louisiana and Mississippi.

In addition to the many businesses involved in the seafood distribution chain, commercial fishermen are supported by and support a variety of other businesses. Although needs vary by fishery and fishing operation, the businesses most commonly used are: marine supply and repair services, fuel docks, ice stations, boatyard/vessel fabrication and repair facilities, and marinas. Marine supply and repair services differ in terms of degree of specialization/diversification of products and clients.

Cajun Netmaker, Golden Meadow, Louisiana

Boatyards differ in terms of client base - commercial fishermen, charter operators, recreational fishermen, sailors, pleasure boat operators, and operators of vessels that support the oil and gas industry. Many boatyards that serve the commercial fishing sector allow fishermen to undertake aspects of the repair work.

Support sector businesses report seasonal variation in activity. Commercial fishing activity at boatyards peaks in spring, as boat operators undergo routine maintenance to ready their boats for the peak harvest season. During the summer, most boatyard activity involves repair work. Owners of fishing equipment supply stores report extensive lulls in business activity during the winter months.

The commercial fishing sector is also supported by local and statewide commercial fishing organizations. These promote the seafood industry through marketing strategies and through intervention in legal and regulatory affairs. Commercial fishing organizations played pivotal roles in ensuring the proper distribution of disaster funds following Hurricane Katrina, and have assumed similar roles following the 2010 oil spill.

4.3 Study Community Engagement in the Commercial Fishing Industry

Eleven of the study communities are significantly involved in the region's commercial fishing industry. These are, in order of size, as defined by total number of businesses involved in seafood distribution: Bayou La Batre (Mobile County, Alabama); Biloxi (Harrison County, Mississippi); Golden Meadow-Galliano (Lafourche Parish, Louisiana); Barataria-Lafitte (Jefferson Parish,

Louisiana); St. Bernard (St. Bernard Parish, Louisiana); Pass Christian (Harrison County, Mississippi); Bon Secour (Baldwin County, Alabama); Buras-Triumph (Plaquemines Parish, Louisiana); Grand Isle (Jefferson Parish, Louisiana); and Boothville-Venice (Plaquemines Parish, Louisiana).

4.3.1 Bayou La Batre, Alabama

Bayou La Batre is a leading seafood-producing port in the Gulf. Between 2000 and 2009, seafood landings averaged 20 million pounds, with an average ex-vessel value of $35 million. In 2009, the Bayou La Batre port region ranked 35th and 24th among the nation's port in terms of seafood landings and value, respectively. As discussed in greater detail later in this report, the amount and value of landings at Bayou La Batre declined considerably during the year of the *Deepwater Horizon* oil spill.

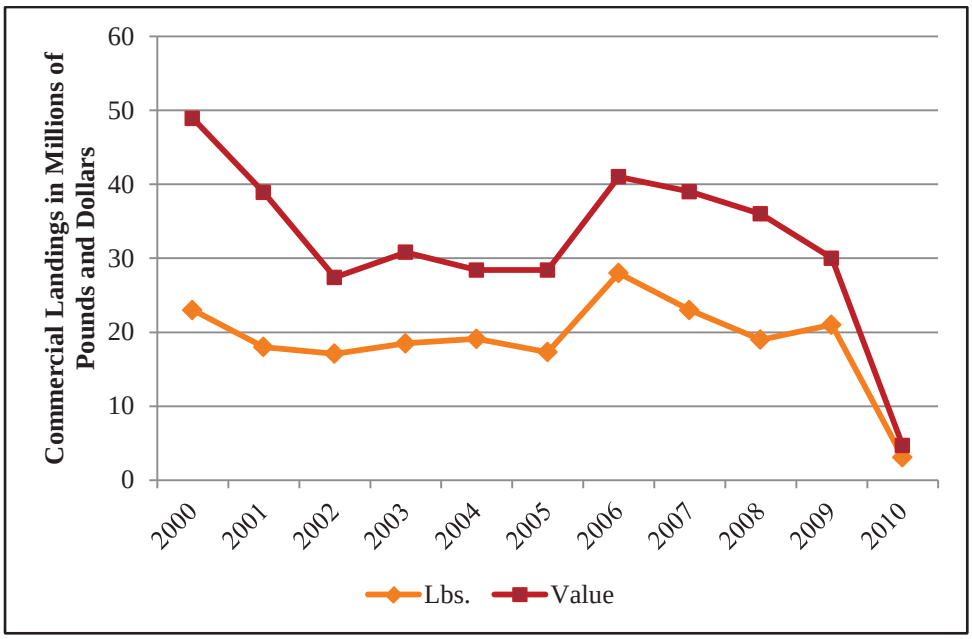


Figure 4-7 Landings & Ex-Vessel Value, All Species: Bayou La Batre
Source: NMFS (2011d)

A dense concentration of commercial fishing support businesses is located in Bayou La Batre. Numerous boatyards and half of all processing plants in Alabama are located here. Most seafood processed in the community is from Louisiana or the East Coast. Three of the 19 seafood processing businesses employ between 50 and 200 workers. Local processing activities include: cleaning, heading, picking, shucking, grading, breading, packaging, freezing, and transporting seafood products. Over 100 commercial fishing vessels are registered to Bayou La Batre-based businesses or individuals (USCG 2012).

4.3.2 Biloxi and Pass Christian, Mississippi

Biloxi is a major seafood-producing port area. Between 2000 and 2009, an annual average of 14.5 million pounds of seafood was landed at Biloxi-Gulfport, with an average ex-vessel value of $23 million. In 2009, the port ranked 48th in the nation in terms of landings (12.9 million pounds)

and 44th in terms of ex-vessel value of landings ($19.3 million). Shrimp, oysters, and menhaden are the primary species landed in the area. Figure 4-8 below depicts amount and ex-vessel value of landings, 2000-2010. The amount and value of landings in this port region declined precipitously during the Katrina disaster and again during the *Deepwater Horizon* oil spill.

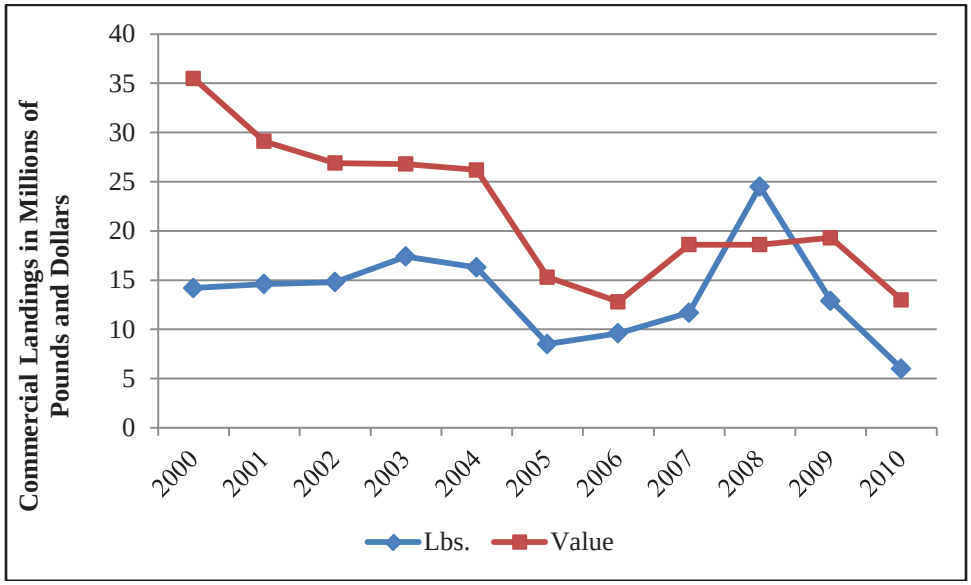


Figure 4-8 Landings & Ex-Vessel Value, All Species: Biloxi-Gulfport
Source: NMFS (2011d)

Two-thirds of all processing firms in Mississippi are located in Biloxi. Six of the 14 firms here employ between 50 and 100 workers; four employ 15 or fewer workers. Much of the shrimp processed in Biloxi is trucked in from Louisiana and Texas, or imported from other nations, including Brazil, China, India, Thailand, Indonesia, and Vietnam (NMFS 2009). Although a few of the smaller volume processors and dealers in Biloxi are almost entirely dependent on domestic shrimp, most import 50 to 90 percent of their products (IAI). Similarly, over 80 percent of oysters processed in Biloxi are harvested from other states. Most of the Mississippi-grown oysters that are processed in Biloxi come from the reefs in the western Mississippi Sound, primarily around Pass Marianne, Telegraph, and Pass Christian (Deepwater Horizon Natural Resource Trustees 2011). Coast Guard data indicate 135 commercial fishing vessels are registered to Biloxi-based businesses or individuals (USCG 2012).

Pass Christian harvesters and seafood processors specialize in oysters. One of the largest oyster reefs on the Mississippi Gulf Coast is near Pass Christian (Harrison County Development Commission 2012). Captains and crew of many of the 45 or so local commercial fishing vessels tong or dredge for oysters. Most of these harvesters also rely on shrimping. Many residents are employed at one of the two local seafood processing facilities. Some of the locally processed oysters are shipped to Biloxi for subsequent distribution.

Pass Christian Marina in 2011

4.3.3 Golden Meadow-Galliano, Louisiana

Galliano and Golden Meadow are adjacent to large shrimping grounds. Access to offshore waters is available via Bayou Lafourche. Fleets based in the Golden Meadow-Leesville area are among the most productive in the nation. Between 2000 and 2009, seafood landings at this port region averaged 22 million pounds, with an average ex-vessel value of $28 million. In 2009, the port of Golden Meadow-Leesville ranked 28th in the nation for value of landings. Over 25 million pounds of seafood worth 27.4 million dollars were landed that year. Figure 4-9 below depicts landings and ex-vessel value for the area for the period 2000 through 2010. Again, the graph makes clear that landings and ex-vessel values decline during the year of the oil spill.

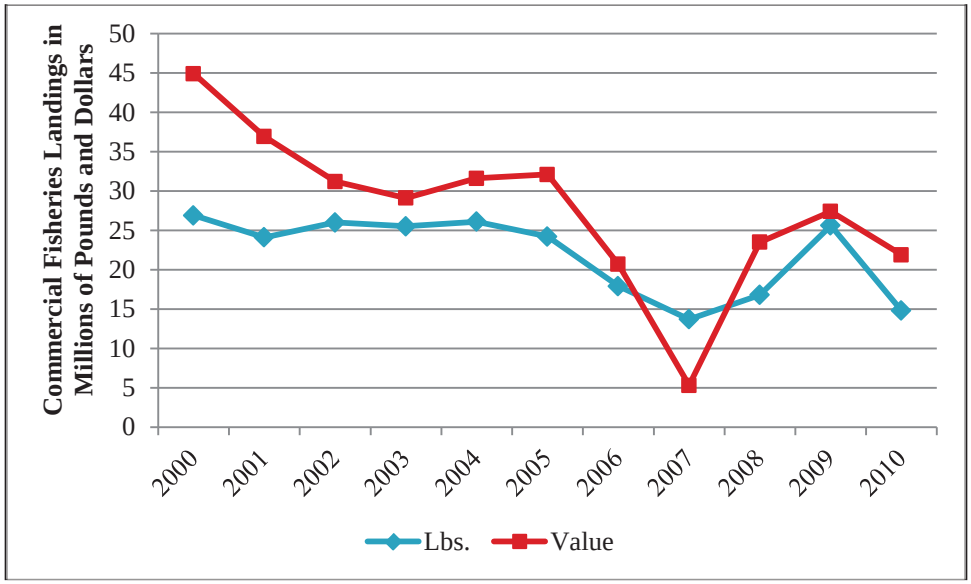


Figure 4-9 Landings & Ex-Vessel Value, All Species: Golden Meadow-Leesville
Source: NMFS (2011d)

U.S. Coast Guard data indicate that 60 commercial fishing vessels are currently registered to businesses or individuals based in Galliano, and 318 boats are registered to individuals and businesses with a Golden Meadow address (USCG 2012). Most of the latter serve the offshore oil and gas industry.

4.3.4 Barataria-Lafitte and Grand Isle, Louisiana

Fleets in the Barataria-Lafitte port region are also highly productive. Between 2000 and 2009, seafood landings here averaged 16 million pounds annually, with an average ex-vessel value of $19 million. Landings increased significantly after Hurricane Katrina. This relates to the hurricane-induced loss of marine and commercial fishing infrastructure in the Empire-Venice and Grand Isle areas, and the subsequent extensive use of remaining infrastructure in the Barataria-Lafitte area. In 2009, the Barataria-Lafitte port region ranked 29th and 33rd in the nation in terms of seafood landings and value, respectively. Figure 4-10 below depicts landings and ex-vessel values at the port for the period 2000 to 2010. Significant declines in 2010 are attributed to fishery closures resulting from the *Deepwater Horizon* oil spill.

U.S. Coast Guard data indicate that 34 commercial fishing vessels are registered to businesses or individuals based in Barataria-Lafitte (USCG 2012). Baratia-Lafitte is homeport to numerous commercial shrimping vessels, and to a local small-boat fishing fleet. Most local fishermen in the area supplement fishing activities with part-time work as electricians, welders, carpenters, and mechanics in the region's shipyards and refineries. Numerous marinas and vessel repair facilities are located here, as are three seafood processing facilities, the largest of which employed 20 people at the time of this study.

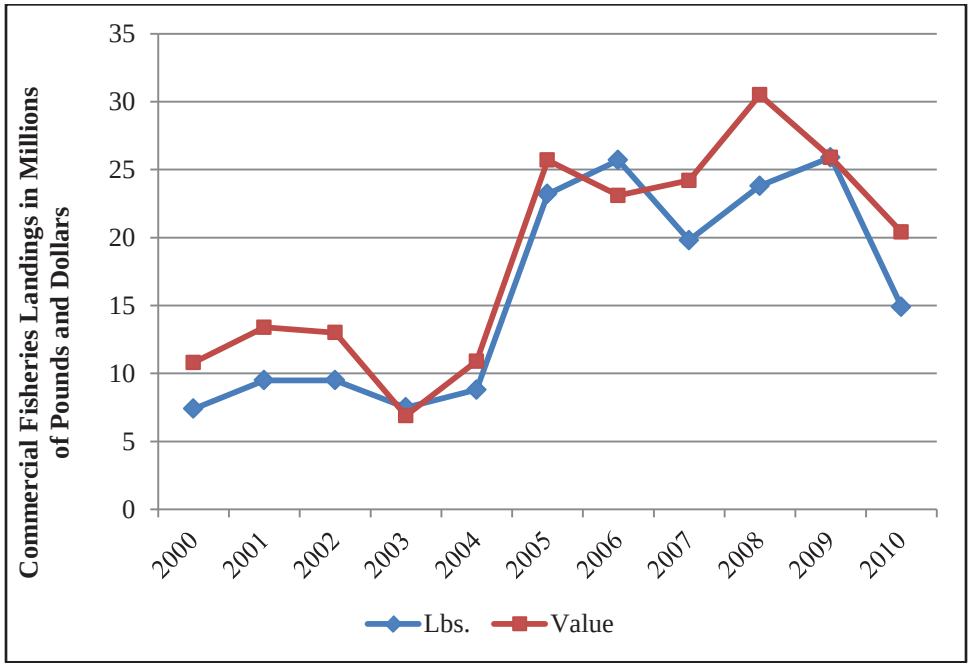


Figure 4-10 Landings & Ex-Vessel Value, All Species: Barataria-Lafitte
Source: NMFS (2011d)

A small commercial fishing and shrimping fleet is based in Grand Isle. Most local vessels are capable of day trips in the nearshore waters adjacent to the community. Local commercial operators harvest various finfish, crabs, shrimp, and oysters, and sell their products directly to residents and visiting tourists. A local seafood dealer transacts large volumes of seafood across the Gulf of Mexico region.

Commercial Shrimp Trawl Vessels near Lafitte, Louisiana

4.3.5 St. Bernard Area, Louisiana

Delacroix-Yscloskey is a high-volume seafood producing port in Louisiana. Between 2000 and 2004, an average of 18 million pounds of seafood valued at over 18 million dollars was landed here. The area was heavily damaged during Hurricane Katrina and therefore landings data for 2006 and 2007 are not available. In 2009, 13.4 million pounds of seafood worth $19.7 million were landed at Delacroix-Yscloskey. The port was ranked 43rd in the nation for value of landings that year. As indicated in Figure 4-11 below, landings and ex-vessel value dropped precipitously during the year of the oil spill.

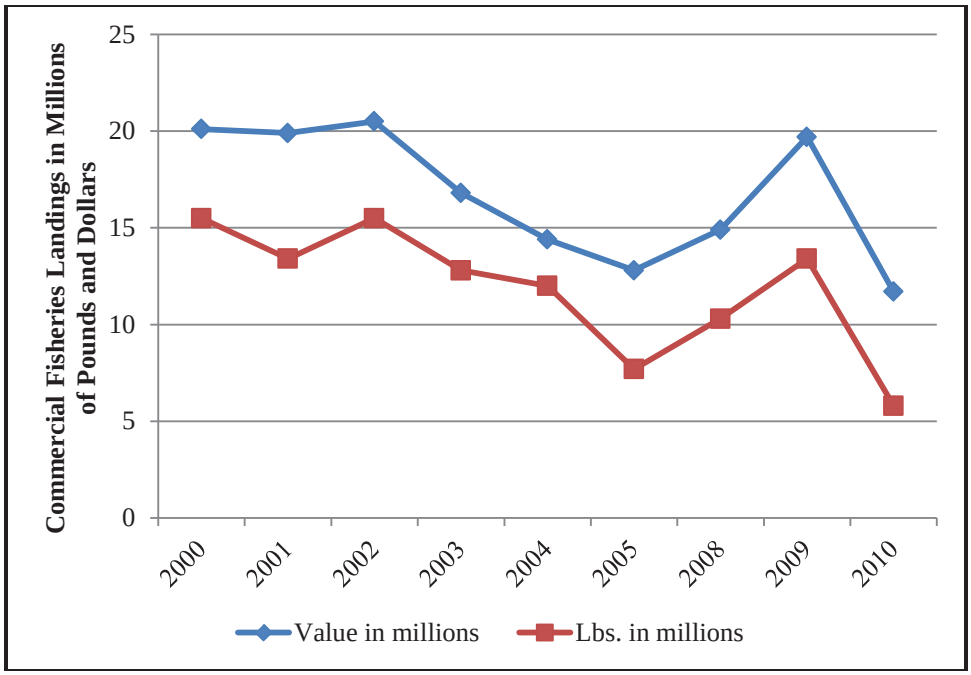


Figure 4-11 Landings & Ex-Vessel Value, All Species: Delacroix-Yscloskey*
Source: NMFS (2011d); *Data not available for 2006 and 2007

Commercial Fishing Vessels Moored in St. Bernard Parish in 2011

U.S. Coast Guard data indicate that a total of 41 commercial fishing vessels were registered to businesses or individuals in the community of St. Bernard at the time of this study (USCG 2012). Numerous seafood wholesalers are based in the community.

4.3.8 Bon Secour, Alabama

Annual seafood landings in the Bon Secour-Gulf Shores area averaged five million pounds during the period 2000 to 2009, with an average ex-vessel value of $8 million. In 2009, the port was ranked 77th in the nation for value of landings. Some five million pounds of seafood worth $6 million was landed at the port that year. Figure 4-12 below depicts landings and ex-vessel value at the port for between 2000 and 2010. Of particular note, landings and ex-vessel value of the catch increased significantly during the year of the oil spill. As discussed again later in this report, the increase was the combined result of: (a) concentrated fishing effort in areas around Bon Secour that were not affected by the spill and thus were not closed to fishing, and (b) coincidental abundance of various species during the seasons in question.

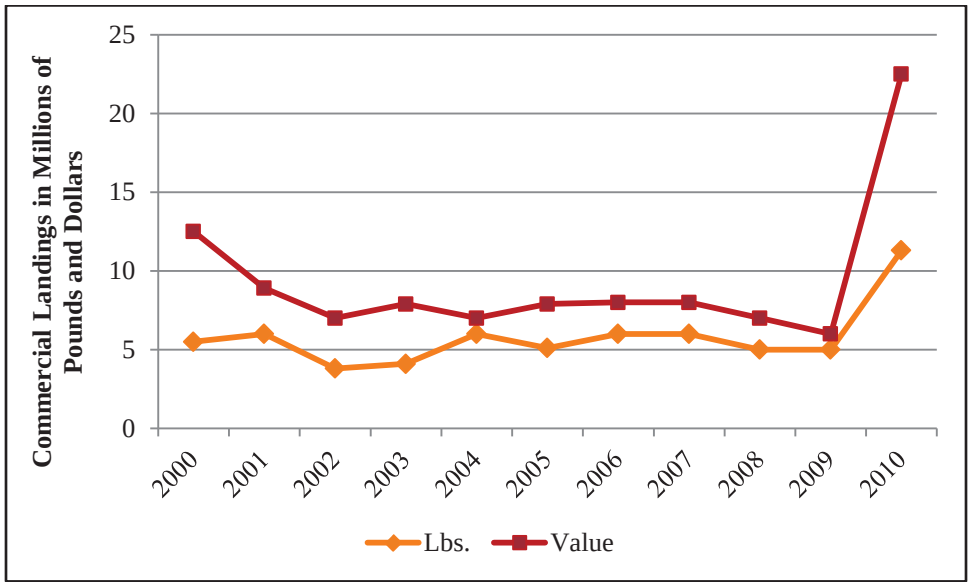


Figure 4-12 Landings & Ex-Vessel Value, All Species: Bon Secour
Source: NMFS (2011d)

Bon Secour is homeport to about 25 commercial fishing vessels (USCG 2012). Resident fishermen tend to participate in finfish, shrimp, and crab fisheries, in that order of prevalence. Small-vessel fishermen typically pursue various fish species with gill nets. The majority of local fishermen utilize medium-sized vessels to harvest shrimp in Mobile Bay and along the beaches of nearby Gulf Shores. Most local commercial crabbers typically set between 50 and 100 pots and sell much of their catch live.

There are two major seafood processors in Bon Secour, each of which employs more than 100 workers. A few small businesses provide boat building and repair services. Local boat dealers and the newer local marinas are oriented toward recreational fishing and boating.

4.3.9 Buras-Triumph and Boothville-Venice, Louisiana

Seafood landings at the Empire-Venice port region (which incorporates Buras-Triumph and Boothville-Venice) averaged 349 million pounds between 2000 and 2009, with average ex-vessel value of $57 million. The port was ranked 2nd and 7th in the nation in terms of seafood landings

and ex-vessel value, respectively. Figure 4-13 below depicts landings and ex-vessel value for the port for the period 2000 to 2010. Of note, total landings declined significantly in association with damage caused by Hurricane Katrina in 2005 and in association with the *Deepwater Horizon* oil spill in 2010.

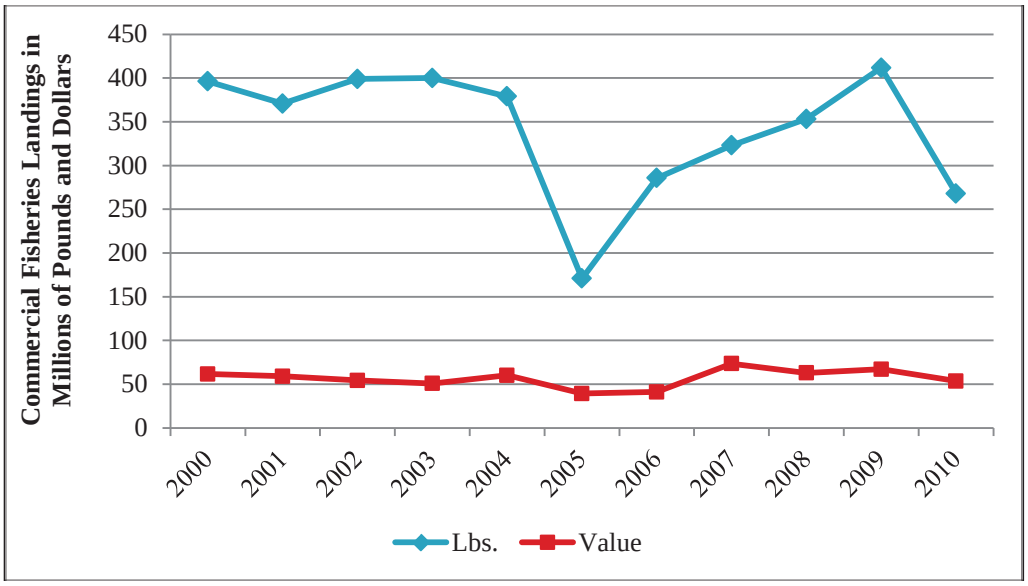


Figure 4-13 Landings & Ex-Vessel Value, All Species: Buras-Triumph, Boothville-Venice
Source: NMFS (2011d)

U.S. Coast Guard data indicate that over 80 commercial fishing vessels are registered to individuals and/or businesses in the Boothville-Venice and Buras-Venice areas.

4.4 Regional Fisheries Trends and Conditions Prior to the Spill

Imports versus Exports. Gulf of Mexico commercial fishermen faced a series of challenges prior to the 2010 oil spill. For example, participants in the harvest sector of the region's shrimp fishery have had to contend with continually decreasing market prices, even as domestic consumption of shrimp has increased over time. The problem is the result of increasing importation of shrimp from other nations which, in turn, relates to the relatively cheap cost of the product in the domestic marketplace. The situation is depicted in Figure 4-14.[9] Of note in the graph, the peak import year of 2006, the year following Hurricane Katrina, was especially challenging for shrimpers throughout much of Gulf of Mexico (cf. IAI 2007).

[9] U.S. shrimp imports averaged 508,580 tons per year during the period 2000-2010. In contrast, shrimp *exports* averaged only 10,000 tons per year during the period, resulting in a consistently significant annual trade deficit (NMFS 2011).

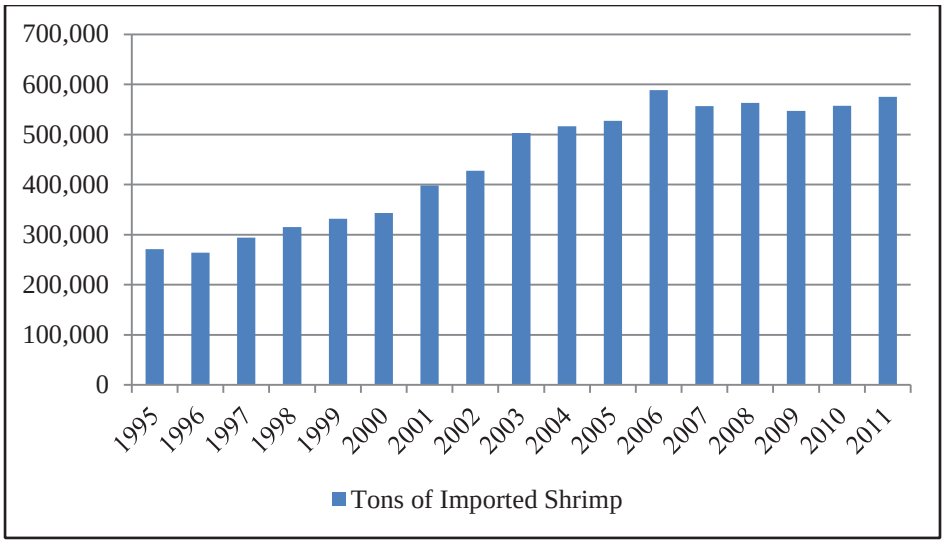


Figure 4-14 Tons of Shrimp Imported into the United States: 1995 to 2011
Source: NMFS (2012a)

Shrimpers and processors have responded to the extensive importation of non-domestic shrimp in the domestic marketplace by advocating a specialized market and brand for Gulf-caught shrimp. The genesis of certain seafood associations in the region derives from this movement.

Trends in the Processing Sector. Trends in the commercial fisheries harvest sectors are naturally reflected in levels of activity in the seafood processing sectors. Figures 4-15 through 4-17 below depict trends in the total amount and value of processed seafood, and the number of seafood processing plants in the Louisiana, Mississippi, and Alabama between 2000 and 2010. Of note is a generalized decrease in processing activity throughout the region over time, and a universal decrease in pounds of seafood processed in 2010. Factors associated with the apparent increase in the number of processors active in Mississippi in 2010 are discussed later in this chapter.

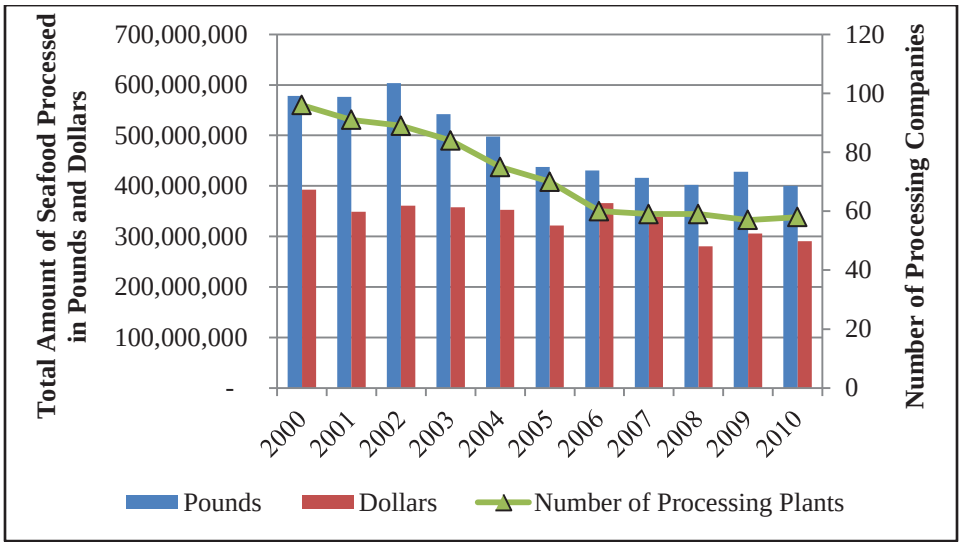


Figure 4-15 Recent Trends in Seafood Processing in Louisiana
Source: NOAA NMFS, Personal Communication (2012)

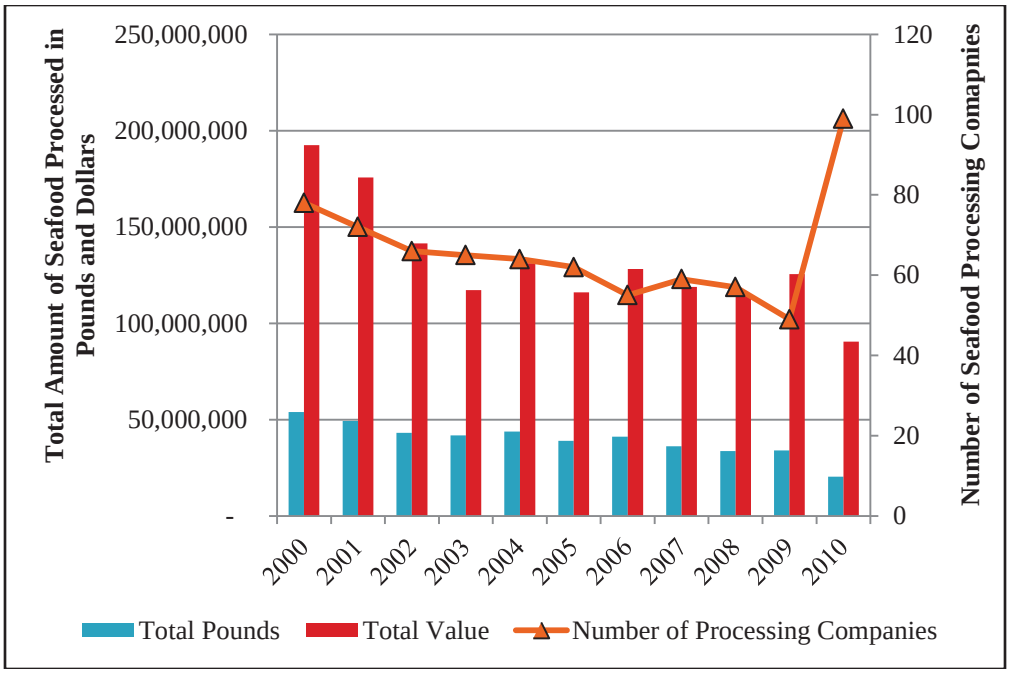


Figure 4-16 Recent Trends in Seafood Processing in Mississippi
Source: NOAA NMFS, Personal Communication (2012)

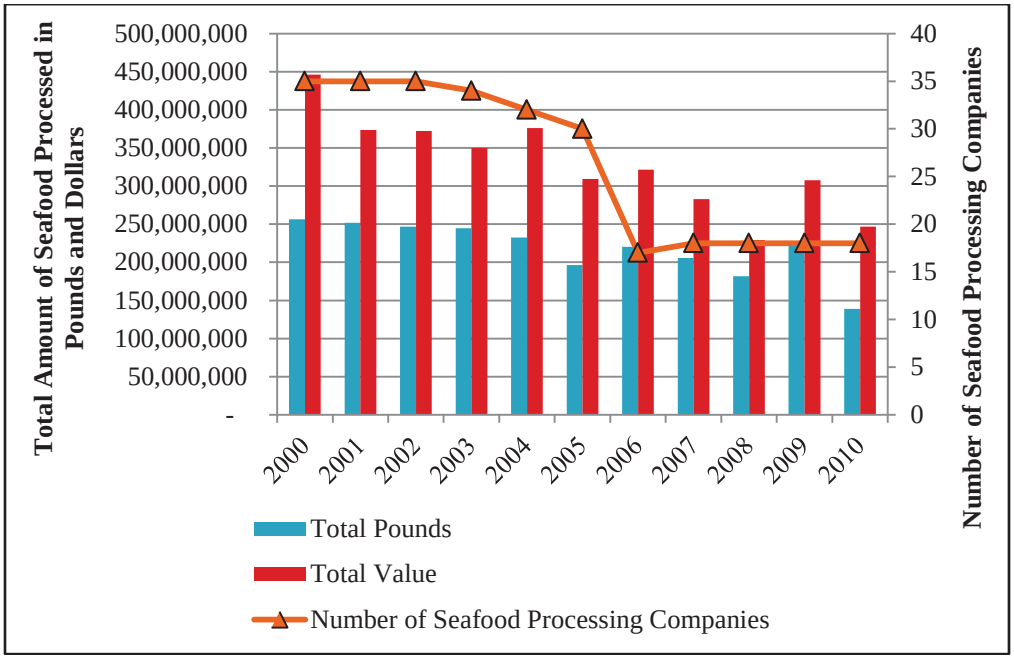


Figure 4-17 Recent Trends in Seafood Processing in Alabama
Source: NOAA NMFS, Personal Communication (2012)

Trends in the Support Sectors. Declining participation and production in the Gulf fisheries harvest sector has consistently impacted various businesses in the support sector. Business owners in the study communities report that boatbuilding yards throughout the Gulf region have become increasingly dependent on business provided by recreational fishing enthusiasts. Some report a gradual shift in business toward operators of vessels working in the oil and gas industry.

For instance, since the early 2000s, many of the boatyards in Bayou La Batre that formerly constructed shrimp trawlers for use throughout the region, increasingly undertook contract to build and refit tugboats and other vessels used to support offshore oil and gas operations.

Hurricane Effects. As described in IAI (2007), Hurricanes Katrina and Rita damaged or destroyed physical and service infrastructure in many fishing-oriented communities throughout the Gulf region, significantly disrupting the regional and national seafood supply chain. Frozen seafood was ruined due to loss of electricity. Many vessels sank. Thousands of persons in the seafood harvest and distribution sectors were displaced from their jobs and home communities. Moreover, lucrative post-hurricane cleanup and construction work attracted many persons away from the commercial fishing industry. In short, the storms of the mid-2000s significantly altered the configuration and capacity of marine fisheries across the Gulf region.

Hurricane damage to homes and marine fisheries interests in the region was truly widespread. In Pass Christian, Mississippi, all but 500 of approximately 8,000 permanent residences were damaged or destroyed by Hurricane Katrina. In Biloxi, Katrina destroyed or seriously damaged six of the 18 largest seafood processing plants, and many piers, docks, boat launches. The storm destroyed about one-third of the shrimp fleet in the Point Cadet area. The waterfront here has been gentrified: numerous casinos have been constructed, and the availability of waterfront space for vessel mooring and seafood processing and distribution has diminished significantly.

With the majority of land lying below 12 feet above sea level, St. Bernard Parish received the brunt of a storm surge from Hurricane Katrina. The area was completely inundated and experienced the largest population exodus of all Louisiana parishes. Repair of marine infrastructure was still occurring at the time of this study. Hurricane Rita, which occurred on September 24, 2005, further complicated already challenging Katrina recovery efforts throughout much of the Gulf region.

Fishery resources were differentially impacted by the series of hurricanes. Oyster beds frequently suffer damage from freshwater intrusion and sedimentation following hurricanes, and this occurred in many areas during the major storms of the 2000s. Shrimp and crab resources, however, reportedly were relatively healthy after the hurricanes.

At the time of the *Deepwater Horizon* accident and spill, many Gulf coast business owners in the seafood industry were still addressing or recovering from the effects of hurricanes Katrina (2005), Rita (2005), Ike (2008), and Gustav (2008). Some businesses experienced delays in receipt of insurance monies and resorted to loans and other sources of capital to repair and rebuild facilities. Such business owners therefore entered the oil spill recovery period with diminished operational capacity and higher than usual debt burdens. Others did receive insurance monies and grant assistance; this enabled options for recovery strategies. But notably, owners of many damaged businesses did not desire to devote the time, energy, and resources needed to rebuild after the hurricanes. Many properties were sold, and many new seafood businesses were just getting established when the *Deepwater Horizon* accident and spill occurred in 2010.

Environmental Challenges. Participants in the oyster fishery reportedly face a variety of challenges related to changes in the biophysical environment. These include: loss of suitable

oyster habitat, red tides, disease, over-harvesting, and freshwater intrusion events. Given such problems, agencies have responded by limiting the number of commercial licenses issued and establishing new residency requirements for acquiring licenses. Promotion of habitat restoration and seeding of public use areas has also been undertaken, and non-governmental organizations have sponsored some such efforts. In some cases, local oyster harvesters have been paid to participate in these kinds of projects.

Ongoing Regulatory Challenges. Participants in the commercial harvest sector have also faced ongoing regulatory challenges. Shrimpers frequently describe challenges associated with evolving requirements for use of turtle exclusion devices (TEDs). Fishermen in the region report challenges associated with banning or increased restrictions on the use of gill nets (depending on the region in question), and the more recent introduction of quota systems for red snapper and grouper. Persons in the oyster industry discuss problems associated with Food and Drug Administration (FDA) rules regarding the processing of shellfish. Regulations change continually, and many persons in the harvest sector report difficulty tracking such changes and responding effectively to the associated paperwork requirements.

Rising Fuel Costs. Research participants involved in the commercial harvest sectors invariably report challenges associated with increasing fuel costs. These often constitute a fundamental constraint on range of harvesting activity. According to Seedco Financial and California Environmental Associates (2012), fuel expenditures typically account for between 25 and 50 percent of total operating costs among participants in the Gulf shrimp fisheries. Of note, fuel costs rose precipitously around the nation in 2006, during the period of initial recovery from Hurricanes Katrina and Rita. Some operators contacted during the current study report that rising fuel costs have required that they take certain risks to maintain a profit margin, reducing the number of crew and foregoing certain aspects of vessel maintenance. Some small-boat captains have chosen to work as crew members on other vessels rather than attempt to operate their own fishing boats in the current economic climate.

Market Challenges. Certain commercial fishermen in the study communities have responded to decreasing seafood prices and increasing expenses by adopting new distribution strategies to stay competitive. These include direct sales, wherein the harvester sells directly to consumers, obviating costs associated with brokering seafood through buyers and processors. The direct sale approach works particularly well for shrimp harvesters who are located in or near populous areas or tourist destinations. Most fishermen undertaking this approach do so prudently, selling a portion of their catch to local shrimp dealers and thereby maintaining good social relationships should the direct sale approach falter. The increasing popularity of direct sales has reportedly led to a decline in the number of retail seafood establishments in some of the study communities.

Many commercial fishermen in the study communities report having experienced an economically challenging shrimp season in 2009. Overall landings in Louisiana, Mississippi, and Alabama exceeded those of 2008, but ex-vessel prices for virtually all grades of shrimp averaged 50 percent lower in 2009 than in 2008, thereby adding to the variety of challenges that were being experienced when the oil spill occurred in 2010.

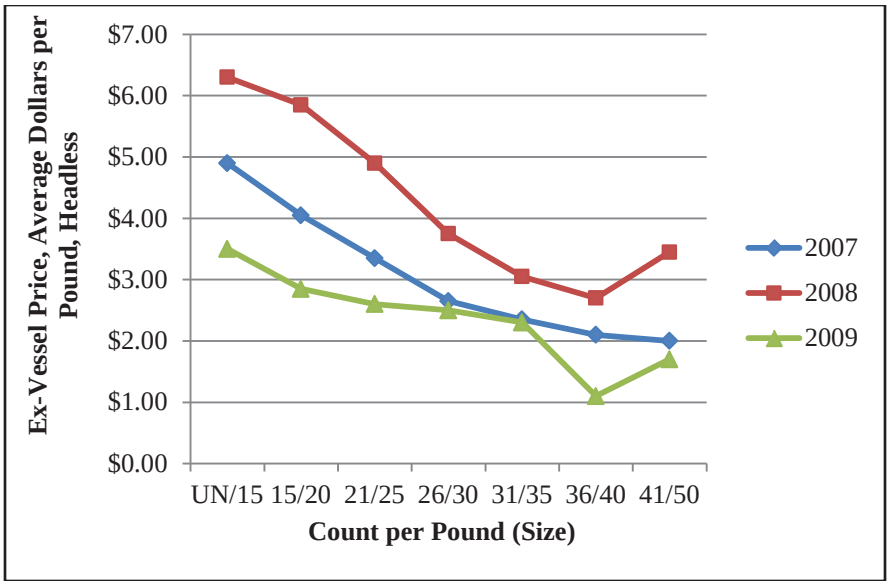


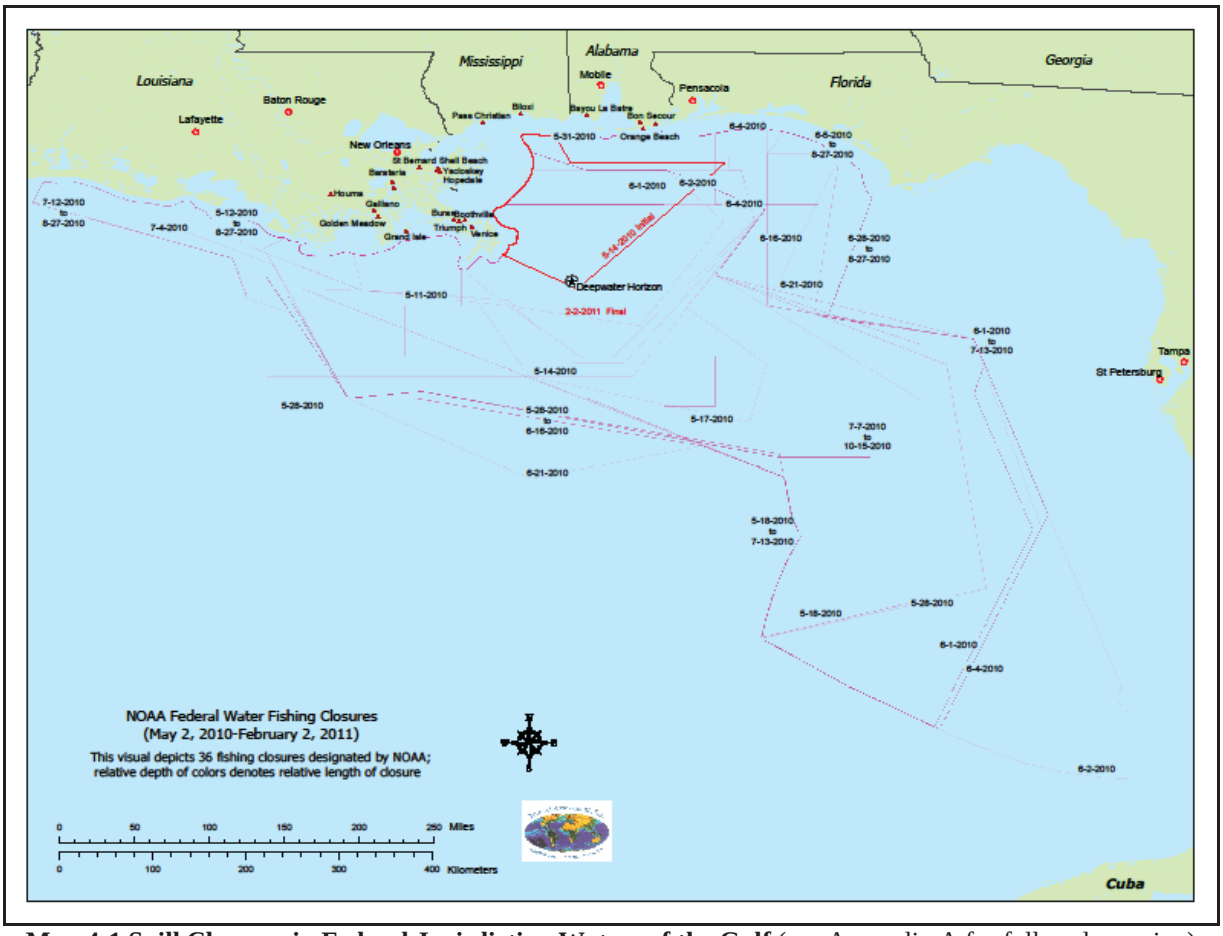
Figure 4-18 Average Ex-Vessel Value for Shrimp, Northern Gulf Region
Source: NMFS (2012a)

The Economy. While the complexities and full effects of the recent (ongoing) economic crisis need not be reviewed here, the situation clearly has impacted households and small businesses throughout the study region. Again, the problems were compounded by the fact that residents and small business owners in the Gulf region were in the midst of recovering from a major natural disaster when the effects of the financial crisis on Wall Street began to affect the economies of other regions. Unemployment rates were significantly elevated in the Gulf region following the hurricanes, and these remained inordinately high throughout much of the Gulf region well into 2010. Fishermen report that alternative or secondary forms of employment were already difficult to find when the oil spill occurred. For many persons in the harvest sector, loans and lines of credit were and continue to be difficult and expensive to acquire, rendering new ventures and, in some cases, even rudimentary vessel repair and gear replacement difficult to accomplish. In sum, fishermen, householders, and small business owners throughout the study region were undergoing a variety of economic stresses prior to the 2010 oil spill. There were exceptions, of course, but both primary and secondary source data collected during the course of this project make clear that economic challenges were and remain truly widespread.

4.5 Initial Effects of the Oil Spill and Clean-up

Overview. State and federal fishery management agencies responded to the initial accident at MCB 252 by closely monitoring, among other factors: (a) the efforts of at-sea first responders; (b) the degree of effectiveness of dispersants and other ways and means of containing the spill; (c) the behavior of plumes of oil rising from the wellhead and efforts to cap the well; (d) the continual movement of tongues and slicks of oil that reached the surface; (e) weather and sea surface conditions affecting such movement; and (f) the efforts of response crews in the nearshore, inshore, and land-sea interface along the affected and potentially affected shorelines. The agencies collaborated in various decision-making processes and eventually closed large areas of federal and state jurisdiction water to commercial and recreational fishing activity. Closures were staged in relation to a highly dynamic situation, and thus, in certain instances, specific areas

were reopened and closed once again, sometimes on short notice. This was an unavoidable outcome of the need to minimize the risks of contaminated seafood reaching the marketplace while ensuring maximal economic opportunities for persons in the harvest sector and, by extension, persons working in the processing, distribution, and other commercial and recreational fishery support sectors across the region. At the peak of the closure process, approximately 37 percent of federal waters and 85 percent of state waters in the Northern Gulf region were closed to commercial and recreational fishing fleets.



Map 4-1 Spill Closures in Federal Jurisdiction Waters of the Gulf (see Appendix A for full-scale version)

The oil spill and subsequent fishery closures coincided with seasonal abundance of brown shrimp and menhaden, the regulatory seasons for which typically open during late spring. The crab fishery was also occurring in the region at this time, as were offshore fisheries for grouper and various pelagic and coastal pelagic species.

Shrimpers especially often rely on peak season harvest for the majority of their yearly income and to cover many operating expenses. Certain buyers in the region typically purchase large quantities of brown shrimp during peak season, to be sold throughout the year. Many fishermen and buyers contacted during this study anticipated that the 2010 season would be a good year for the shrimp industry, based on indications of abundance and improving market conditions. The crab harvest was also anticipated to be favorable in certain areas, as indicated by high catch rates during the preceding fall season. The spill also coincided with the spawning season or important

larval stages for: white shrimp, yellowfin tuna, blue crab, and oysters. This furthered concerns about the potential effects of oil and dispersants on the future status of these species.

Timeline of Closures and Related Events. Fishery closures and opportunities for fishery participants to be involved in paid oil spill clean-up activities diminished harvest levels throughout the affected region during 2010. This, in turn, impacted many small businesses directly and indirectly involved in seafood production and distribution in the Gulf of Mexico.

Table 4-3 Timeline of Critical Events Relating to Spill-Induced Fishery Closures

Date	Year	Event
April 20	2010	*Deepwater Horizon* Accident
April 29	2010	NMFS begins sampling seafood for pollution; Governor of Louisiana declares state of emergency; Fresh water diversions are initiated in Louisiana as oil spill defense measure; LDWF opens shrimp season early
April 30	2010	LDWF initiates commercial fisheries closures and Louisiana Department of Health and Hospitals initiates closures of oyster grounds
May 1	2010	Governors of Mississippi and Alabama declare states of emergency
May 2	2010	NOAA initiates commercial fisheries closures; more than 6,800 square miles of federal waters are effected by closure; Vessels of Opportunity (VOO) program initiated in Terrebonne Parish, Louisiana
May 7	2010	Oil spill reaches areas of Louisiana and Alabama; Emergency food assistance program is initiated for Louisiana
May 9	2010	LDWF announce and then cancels second emergency shrimp opener
May 24	2010	U.S. Commerce Secretary declares federal fisheries disaster for Louisiana, Mississippi, and Alabama
June 1	2010	Mississippi Department of Marine Resources (MDMR) closes state waters to commercial fishing
June 2	2010	NOAA closures of federal waters reaches maximum extent
June 16	2010	BP announces $20 billion fund to compensate for losses to individuals and businesses, natural resource damages, and response costs to state and local agencies
July 30	2010	LDWF announces partial opening of state waters to commercial fishing.
August 6	2010	MDMR and Mississippi Department of Environmental Quality announce opening of state waters to commercial fishing for finfish and shrimp
August 16	2010	Alabama Department of Conservation and Natural Resources (ADCNR) announces opening of state waters to commercial fishing; U.S. Commerce Secretary announces Restoration and Recovery Grants for affect Gulf States
August 21	2010	MDMR announces state waters are open to commercial crab harvest
September 15	2010	VOO programs in Alabama and Mississippi are terminated
September 23	2010	Feinberg announces that VOO monies will not be considered as income in compensation claims
November 8	2010	MDMR opens some public leases to oyster harvest
November 11	2010	98% of Louisiana state waters are opened to commercial fishing
November 15	2010	LDWF announces opening of oyster beds for harvesting in Terrebonne and Lafourche Parishes
Spring	2011	Army Corps of Engineers diverts fresh water from Mississippi to avoid flooding
April 19	2011	NOAA announces that all federal waters are open
April 21	2011	National Resource Damage Assessment (NRDA) Trustees announce $1 billion fund from BP for Gulf Coast restoration projects

Seafood Safety Issues. Although shrimp and crab fisheries were reopened during the second half of 2010, many patrons remained uncertain about the safety of consuming seafood landed in the Gulf of Mexico. Various studies confirm this situation (Alexander Block 2012; FKM 2011; Del Bianco 2011).[10] A study commissioned by the Gulf Coast Business Council reported that Americans residing in other parts of the nation were more concerned with spill-related food safety issues than were residents of the Gulf region (FKM 2011). The Louisiana Seafood Promotion and Marketing Board predicted that it would take at least five years to restore the reputation of seafood products from the region (Jonsson 2010). The current project furthers such findings: many harvesters, buyers, wholesalers, and distributors in the region contend that American consumers remained reluctant to purchase Gulf-caught shrimp after the spill and that demand for non-domestic shrimp increased accordingly.

Changes in Landings and Value. Available data indicate a significant shift in commercial fisheries productivity and profitability in the Gulf of Mexico between 2009 and the year of the spill. This has obvious implications for small businesses in all fisheries sectors across the area. At the regional level, 186 million pounds of seafood were harvested in 2010. This is a 23 percent reduction from the previous ten-year average of 252 million pounds. Shrimp production dropped from 76 million pounds in 2009 to 46.9 million pounds in 2010 (NOAA Fisheries 2011a). In Mississippi, fishermen harvested only 1.4 million pounds of oysters in 2010, compared to an annual average of 2.4 million pounds between 2000 and 2009 (NOAA Fisheries 2011b).

Table 4-4 depicts various fisheries data that are indicative of spill-induced changes in levels of production and value of catch in our study communities. In most port areas, levels of production during the year of the spill are well below the ten-year average and below the levels indicated for 2009. Case-in-point is the Biloxi, Mississippi port area. In other communities, the volume of landings is significantly higher than average, and higher than in 2009.

Of particular note is the dramatic increase for the Bon Secour-Gulf Shores area in Alabama. Diminished landings obviously relate diminished opportunities to harvest seafood as a result of area closures. Significant increases in landings correspond with spatially concentrated fishing effort in areas that were not closed, and offloading of the catch at ports in close proximity to such areas, such as Bon Secour. Significant increases in ex-vessel value undoubtedly relate to increased demand for seafood in a context of diminished landings.

[10] The studies indicate that between 17 and 30 percent of consumers limited purchase of Gulf seafood following the 2010 oil spill.

Table 4-4 Landings Trends by Study Area Ports, All Species

Port	2000-2009 (10-Year Average)	2009 (Millions)	2010 (Millions)	2010 (% of Average)	2010 (% of 2009)
Empire-Venice, La	$349	$412	$268	77	65
	57 lbs	67 lbs	54 lbs	95	81
Golden Meadow- Leesville, La	$28.3	$27.4	$21.9	77	80
	22.7 lbs	25.6 lbs	14.8 lbs	65	58
Barataria-Lafitte, La	$18.4	$25.9	$20.4	111	79
	16.1 lbs	25.9 lbs	14.9 lbs	93	56
Delacroix-Yscloskey, La	$13.9	$19.7	$11.7	84	59
	10.1 lbs	13.4 lbs	5.8 lbs	57	43
Dulac, Chauvin, La	$48.6	$50.9	$32.8	67	64
	39.2 lbs	42.4 lbs	45.1 lbs	115	106
Bayou La Batre, Al	$34.9	$30.0	$4.7	13	16
	20.4 lbs	21.0 lbs	3.1 lbs	15	15
Bon Secour-Gulf Shores, Al	$8.02	$6.0	$22.5	280	375
	5.2 lbs	5.0 lbs	11.3 lbs	215	226
Gulfport-Biloxi, Ms	$22.91	$19.3	$13	57	67
	14.4 lbs	12.9 lbs	6 lbs	42	47

Source: NMFS 2011a

Complete commercial landings data for 2011 were not available at the time of this writing. Preliminary data for the region's shrimp fishery, however, suggest some recent improvement. Shrimpers in the Northern Gulf region landed about 65.7 million pounds in 2011 (all shrimp species combined), somewhat less than the 76 million pounds harvested during the same period in 2009, but significantly more than the 46.9 million pounds landed in 2010 (NOAA Fisheries 2010a).

The Most Recent Documented Harvest. There has been much speculation about the potential biological impacts of the oil spill on living marine resources throughout the affected region. Interview data suggest that the shrimp harvest varied by sub-region and species during 2011. For example, commercial shrimpers in the Grand Isle area report that the brown shrimp harvest was relatively poor when compared to other years, but that the white shrimp harvest was relatively good. In Terrebonne Parish, shrimpers reported that the 2011 spring season for brown shrimp yielded a moderate volume of small individuals, but that the white shrimp season yielded a small volume of large individuals. In other areas, however, the 2011 white shrimp season reportedly yielded very little poundage and that market conditions rendered the catch "largely worthless" (Robertson 2011).

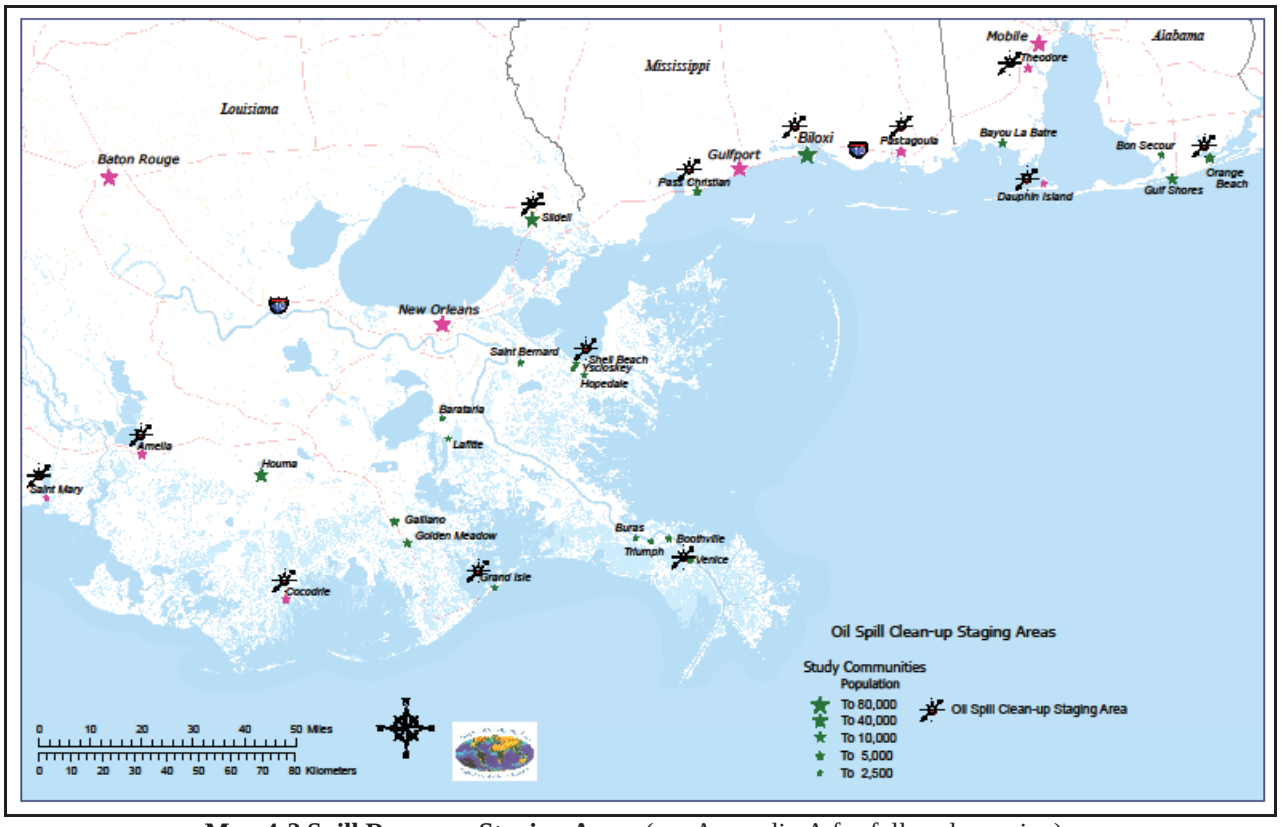
With respect to the 2011 crab harvest, crabbers in St. Bernard Parish reported low levels of productivity, but reasonable and steady prices. In Bayou La Batre, crabs reportedly were abundant, but the season was short-lived. Harvest rates and prices for menhaden reportedly were good in 2011, and BARA (2011) reports that the grouper and red snapper fisheries were profitable in 2011.

Harvest rates for oysters typically vary between locations. St. Bernard oyster harvesters reported a generally low rate of harvest for 2011. Pass Christian oystermen reported a similarly poor harvest (see also Pham-Bui 2011). Given high demand and relatively low supply, market prices for oysters reportedly were relatively high across the Gulf region during much of 2011.

Response-Related Small Business Opportunities. Area closures, disrupted supply channels, and widespread perceptions that Gulf seafood was unsafe have challenged commercial fishing and seafood-related businesses in the study region since the 2010 oil spill. While several factors have served to mitigate detrimental impacts among small businesses in the various fishery sectors, these are not necessarily evenly or equitably distributed. For instance, although the oil spill affected the near-term viability of certain businesses, compensation for economic loss has not necessarily been easily or readily acquired. For instance, participation in spill clean-up activities provided a means for maintaining household income when fishing options were precluded by area closures. But not all fishermen were qualified to participate in the clean-up, not all were logistically or proximally situated to do so, and not all were willing to become involved in such operations.

During the first several months of the spill, when the damaged wellhead was leaking thousands of barrels of oil per day, numerous commercial fishermen in the study region participated in some aspect of the response: many were employed through BP's Vessels of Opportunity (VOO) Program, performing tasks such as transportation of personnel and supplies, laying and retrieving of oil absorbent boom, and assisting in wildlife rescue work. Owners of seafood docks, marinas, and boatyards leased dock and yard space to the responsible party and its contractors, and sold fuel to VOO program participants. Other business owners profited from sales and provision of services to the influx of public officials, emergency response workers, journalists, scientists, wildlife rescue personnel, and onlookers.

The ability of small business owners to offset economic losses caused by the spill through engagement in various response activities was in large part related to their proximity to the clean-up and response staging areas. Seventeen staging areas were established within two weeks of the spill in the following communities: Amelia, Cocodrie, Grand Isle, Shell Beach, Slidell, St. Mary, and Venice in Louisiana; Biloxi, Pascagoula, and Pass Christian in Mississippi; Dauphin Island, Orange Beach, and Theodore in Alabama; and Panama City, Pensacola, Port St. Joe, and St. Marks in Florida.



Map 4-2 Spill Response Staging Areas (see Appendix A for full-scale version)

By the beginning of July 2010, some 5,000 vessels were contracted for involvement in the VOO program, with 3,000 utilized on any given day (BP 2010). Upon qualification for the program, captains received start-up checks of $5,000. Daily rates for vessels of opportunity on active duty were based on vessel size. Rates varied from $3,000 for vessels over 65 feet in length, to $1,200 for vessels less than 30 feet in length. Crew members typically were paid $200 per day (Florida Senate 2010).

By September 23, 2010, when the majority of VOO program duties had been completed, the total amount of payments made through the program to Louisiana fishermen, vessel owners, and crew was $195 million. Although approximately 15,700 Louisiana residents had applied to participate in the program, only 1,238 were ultimately involved (IEM 2010). Participants in the VOO program who were contacted during this study reported that participation helped sustain their families during an otherwise highly challenging period in their lives. Participants who were able to secure sufficient work time on the water often reported that the income was on par with, or exceeded, normal fishing-related income. Owners of businesses in response staging areas at which VOO program vessels were highly active reported that the program helped to minimize economic losses and the need for employee layoffs.

Spill response activities provided direct employment opportunities for certain captains and crew members, and indirect benefits to certain small businesses in the spill-affected region. But the VOO program was often said to be less than ideal because it was perceived that benefits did not accrue to those who were most heavily impacted by the spill. It should be noted here that a fully equitable program would be difficult to achieve under the most ideal circumstances, and that the

need for effective response in a rapidly changing environment of immense geographic scope rendered full equitability a truly challenging objective.

Challenges notwithstanding, the VOO program was criticized for: (a) facilitating participation by individuals who were not affected by the spill; (b) not limiting the number of vessels to one per participating owner; (c) allowing a biased participant selection process; (d) failing to employ local residents who had met all of the training and equipment requirements; and (e) allocating at-sea work time in an uneven fashion among participating captains. Based on such criticism, administrators of the VOO program eventually altered hiring policies to ensure that: (a) captains of non-commercial vessels were hired only when no other suitable vessel was available in the area in question, and (b) only one vessel per owner could be used in the program (BP 2010). Parallel programs were established in response to criticisms that knowledgeable local residents in certain rural areas were poorly represented in the response effort (Olson 2010).

Type of vessel was an important criterion in the participant selection process for the VOO program. Specialized vessels were needed to meet the demands of specific conditions. For example, vessels with minimal draft were needed to work in shallow waters and estuaries, and more seaworthy vessels were needed to skim oil or transport personnel and supplies in the offshore zone. Relatively fast vessels were needed for emergency medical response. In Louisiana, a wide variety of boats were used in the VOO program: offshore charter fishing vessels, beamy oyster boats and crew boats, shrimp trawlers, and small and large tug boats. Owners and/or operators of such vessels reportedly were more likely to be considered for participation than persons owning or operating other craft.

Some participants in the current study report that they and others in their social circles hesitated to apply for participation in the VOO program. Captains cited concerns about the possible health effects of working with benzene-laden oils; others discussed uncertainty regarding fishing closures and when they might be able to fish again. Still others wanted to be sure they would be adequately compensated for their work in the program, and paid in a timely manner. Of note from a sociological perspective, participation in the program by persons of Vietnamese ancestry is said to have been hindered by linguistic and cultural problems (cf. Mississippi Coalition of Vietnamese American Fisherfolk and Families 2010). A countering perspective holds that regional fishing organizations and influential members of the fishing community were actively involved in disseminating and translating information about the VOO program to those who might otherwise encounter difficulties in understanding the requirements.

Some vessel owners and operators participating in the VOO program reported delayed payment for services rendered. Others asserted that the responsible party failed to replace damaged equipment or pay for decontamination of their boats. Problems reported by owners of support businesses included: slow payment for supplies or services rendered, and uncompensated use of dock space by persons participating in the VOO program. Moreover, certain informants characterized clean-up operations as disorganized and inefficient, asserting that such problems were in large part the result of the VOO hiring process, which is said to have involved the hiring of captains who possessed only a limited understanding of local waters.

Compensation for Losses. The process through which claims for lost fishing opportunities are to be settled has evolved over time. That is, the authority overseeing the claims process, the categories of claims and claimants, and requirements for documentation have evolved as the magnitude of losses and claims became clear. In June 2010, at the behest of the Obama administration, BP established a $20 billion Oil Spill Liability Trust Fund under the Oil Pollution Act of 1990 (OPA) to compensate individuals and businesses harmed by the oil spill. An initial round of $5,000 emergency advance checks was widely distributed to claimants across the spill-affected region.

In August of 2010, authority for the claims and disbursement process was transferred to the Gulf Coast Claims Facility (GCCF). The GCCF was headquartered in Dublin, Ohio, and was led by Kenneth Feinberg. With the exception of oil rig workers,[11] the GCCF reviewed applications submitted by any individual or business owner who could demonstrate spill-induced: (a) loss of profits or earning capacity; (b) damages to real or personal property; (c) loss of access to or availability of subsistence resources; and/or (d) physical injury to self or injury to or death of a relative. The type and extent of documentation required to substantiate a given claim varied by the nature of the claim. All application forms were made available on the GCCF website and were also accessible at one of 14 satellite GCCF offices, then located throughout the Gulf region.[12]

The GCCF administered four types of claims: Emergency Advance Payments, Interim Payments, Quick Final Payments, and Full Review Final Payments. Emergency Advance Payments (EAPs) were administered between August 23 and November 23, 2010. EAPs compensated eligible applicants for up to six months of seasonally adjusted lost income or profits, and required relatively minimal documentation. After November 23, injured parties could apply for Interim or Final payments. Interim Payments were disbursed on a quarterly basis to eligible claimants for all past losses resulting from the spill.

Quick Final Payments were offered to claimants who received either Emergency Advance or Interim payments. No further documentation of losses or damages was required for this settlement. However, claimants were required to sign a "Release and Covenant Not to Sue" agreement, which released BP from any future liability. GCCF distributed a fixed final payment amount of $5,000 to eligible individual claimants, and $25,000 to eligible business claimants. Persons who received compensation from BP prior to the establishment of the GCCF were ineligible for this type of assistance (GCCF 2010).

Persons who were ineligible for, or opted not to file a Quick Payment Final Claim, had the option of submitting a Full Review Final Payment claim, which considers all past *and* future losses caused by the spill (GCCF 2010). Documentation requirements included: "a list of property or natural resources that were injured, damaged, destroyed, lost, or adversely impacted resulting in

[11] A separate $100 million Rig Worker Assistance Fund (RWAF) was established for offshore oil rig employees who experienced economic hardship as a result of the moratorium on deepwater drilling. The RWAF was administered through the Gulf Coast Restoration and Protection Foundation, a supporting organization of the Baton Rouge Area Foundation.

[12] Eight centers were located in Louisiana, two in Mississippi, and four in Alabama. The majority of centers closed or consolidated operations between June and December 2011.

loss of profits; description and documentation of business losses due to the spill; copies of letters of business cancellations caused by the spill; fishing licenses; maps or descriptions of the area showing the business location; financial statements for years 2007 through 2010; signed copies of income tax returns and schedules for the period 2007 through 2009; details of efforts to mitigate losses or explanation of why no mitigation efforts were undertaken; and documentation of insurance or other collateral source payments from government entities" (GCCF 2010). Recipients also were required to sign a "Release and Covenant Not to Sue" agreement.

By September 23, 2010, over $275 million had been distributed to Louisiana fishermen (IEM 2010). By February 2012, GCCF had disbursed $6.2 billion to over 220,000 individuals and business claimants.

Table 4-5 Claims and Compensatory Awards as of February 2012

Claimant Categories	Number of Claims by State		
	Louisiana	**Mississippi**	**Alabama**
Total Number of Claims	373,592	107,787	141,155
Total Number of Claimants (paid & under review)	215,320	62,318	78,754
Total Number of Individual Claimants	182,386	52,657	57,459
Total Number of Business Claimants	32,934	9,661	21,295
Total Number of Quick Final Payments Issued	44,489	11,926	21,524
Individual Claimants	36,049	9,246	13,760
Business Claimants	8,440	2,680	7,663
Total Number of Interim Payments Issued	5,186	3,258	3,881
Individual Claimants	3,036	2,271	1,414
Business Claimants	2,150	987	2,467
Total Number of FRFP Payments Issued	15,547	5,519	8,312
Individual Claimants	11,426	4,045	4,236
Business Claimants	4,121	1,474	3,795
Total Number Of Claimants Denied	44,998	17,441	16,513
Number of Claimants Represented by Counsel	34,717	9,661	12,520
Number of Claims Pd to Business Owners by Industry	97,330	8,987	24,662
Seafood Harvesting	8,752	1,659	1,481
Seafood Processing and Distribution	709	193	311
Total Compensation to Seafood Harvesting, Processing, and Distribution Business Owners	$426 million	$73.2 million	$74.5 million
Total Compensation to Business Owners, All Industries	**$983 million**	**$303 million**	**$732 million**

Source: Gulf Coast Claims Facility (2012)

As of February 2012, the claims facility handled over one million claims. Approximately 60 percent were denied compensation. The majority of denials were due to lack of appropriate documentation or because the claim did not fall into a compensable category. For instance, claims submitted by businesses affected by the moratorium on deepwater drilling were ineligible. The situation was not amenable to many spill-affected individuals in the harvest sector given the commonality of informal economic transactions and limited record-keeping among members of the group.

Some claimants and prospective claimants responded to the GCCF process by: (1) handing the claims process by themselves; (2) receiving the assistance of state or non-profit agencies in filing a claim or claims; (3) working with lawyers to file a claim or claims; or (4) foregoing the possibility of compensation through the claims process. Many affected business owners in the

seafood harvesting, processing, and distribution sectors did file claims with the GCCF and received compensation for lost earnings. Individuals and small business owners who have been regularly employed and who followed certain documentation practices prior to the spill (for example, tracking and documenting expenditures and earnings on a regular basis) tended to fare well during the claims process, reportedly receiving fair and timely compensation for lost income. But staff at various agencies that offered assistance with GCCF claims asserted that claims processors often did not adequately understand the nature of commercial fishing and the seafood processing and distribution industry. As a result, many claimants reported dissatisfaction with the process. These included persons who had (a) recently started new marine-related businesses, (b) undertaken new jobs in the industry, (c) were still recovering from hurricane losses and did not have a consistent record of employment or earnings since the disaster, or (d) were working in fisheries that had undergone recent down cycles.

Oyster harvesters reported facing special difficulties in the claims process. For example, questions arose as to whether damages in the oyster fishery were to be treated as a loss of income and/or as property damages and whether damages were caused by the spill and related response efforts or naturally occurring flood-related freshwater inundation. Disputes about the nature of oyster die-offs and acceptable formulas for compensation reportedly led to a high number of unresolved claims.

Inadequate documentation and language or literacy challenges reportedly have been pronounced among temporary workers and members of ethnic minority groups. Of note, interviewees in these groups also commonly stated that they were unable to acquire VOO work or other employment during the fishery closures.

Certain business owners in the commercial fishery support sectors, such as owners of vessel repair yards, stated that compensatory monies enabled them to retain their own skilled employees for a period of time after the spill. Such employees were often put to work on yard maintenance and other tasks that could not be undertaken during periods of normal business activity. But it was reportedly the case that very little new business was being undertaken while the major fisheries were closed, and that many businesses were operating without a profit during the period. Ethnographic fieldwork undertaken during the spring months of 2012 revealed that many business owners in the affected region were receiving compensatory awards after having responded to multiple requests for additional documentation.

Some business owners have opted to receive interim payments on a quarterly basis and retain the right to sue BP for damages. Many persons in the commercial fishing industry joined the class action suit against BP.

Notably, the claims process generated social impacts in certain study communities. Some persons sought and received compensation and others did not, in some cases generating interpersonal tensions and economic disparities. Similar outcomes have been observed in relation to other large oil spills in the U.S. (cf. IAI 1990, 2011, 2012).

Due to widespread concerns regarding fairness and consistency, an independent evaluation of GCCF procedures was undertaken at the behest of the Justice Department. The evaluation

confirmed some public concerns expressed by claimants and staff at various agencies aiding claimants, while also verifying the success of GCCF in administering a large volume of diverse claims. The evaluation indentified errors in the claims process that reportedly negatively impacted some 7,300 claimants and involved some $64 million. Overpayment of claimants was also identified. GCCF is currently rectifying underpaid claims (BDO Consulting 2012).

On April 18, 2012, legal counsel for BP agreed with plaintiffs' counsel in the class action suit to dissolve the GCCF and establish a court-supervised settlement process that will disburse as much as $7.8 billion in settlement monies from the original $20 billion GCCF trust. The new process was initiated in June 2012. Among other changes, the process recognizes the risk of ongoing losses to affected individuals and businesses (expressed as risk transfer premiums), and entitles the claimants to reimbursement for accounting fees.

Table 4-6 Risk Transfer Premiums (RTP) by Claimant Category

Claimant/Claim Type	RTP Multiplier
Oyster Leaseholders	8.75
Shrimp Boat Owners	8.25
Shrimp Boat Captains	7.25
Finfish and Crab Boat Owners	6
Other Seafood Vessel Owners	5.5
Fishing/Crabbing Boat Captains	5
Other Seafood Boat Captains	4.5
Seafood Processors (Including Workers)	2.25-3
Coastal and Wetland Property Owners	2.5
Tourism and Charter Fishing Businesses (Including Workers)	1.25-2.5
Seafood Boat Workers	2.25
Seafood Dealers (Including Workers)	2.25
Other Businesses (Including Workers)	.25-1

Source: U.S. District Court, Eastern District of Louisiana (2012); Mowbray (2012)

Differences in rates of compensation, especially as they relate to RTFs, are likely to have long-term implications in the seafood industry (Business Wire 2012). In addition, compensation to failed businesses could allow owners to establish new fishing or seafood businesses in the future.

Agency-Related Disaster Recovery Assistance. Various federal, state, and local government agencies and community-based and religious organizations have played critical roles in helping small businesses remain viable following the oil spill and moratorium. Near-term and long-term solutions have been advanced. Types of assistance vary by agency. These include: direct financial assistance; technical and training guidance; mental health and crisis counseling; housing; and translating services. Certain agencies have been active in distributing money and/or food to those in immediate need.

Small business development centers, non-governmental organizations, Chambers of Commerce, and regional SBA offices, in particular, have assisted small businesses with the filing of spill compensation claims, and with disaster loan applications, loan and mortgage re-financing or deferral applications, and applications for various types of grants. Similarly, fishing associations helped fishermen hoping to participate in VOO programs and assisted them in the claims filing process. Many commercial fishermen and other small business owners participating in this study

report that such assistance has been invaluable in negotiating what are often said to be complicated relief application procedures.

Various existing programs that were established to serve fishing communities in the Gulf region have also responded to the spill event. Some programs used their expertise to assist commercial fishermen to transition into other marine-related forms of employment after the spill, such as: ecotourism guiding, charter fishing operations, marine emergency response, oil industry services, and coastal restoration, among others. Opportunities in coastal restoration are anticipated to be more widely available in the region following initiation of a $1 billion coastal restoration project, funded through the levying of fines against BP under stipulations in the Clean Water Act. Programs designed to assist fishermen and workers in the seafood processing sector to acquire employment as necessary in non-maritime fields have also been active since the spill.

The ability of individuals and business owners to access agency assistance is related to a variety of factors, such as: the local presence of such programs; availability of translation services; and possession of documentation needed to receive employment assistance or business training. Agency staff members assert that they and the spill-impacted persons and businesses they serve face a variety of challenges associated with ongoing disaster relief efforts in economically stressed communities. These include community and agency fatigue arising from negotiation of who deserves what assistance and to what extent, and the involvement of non-local persons in local response efforts in small community settings.

The source and amounts of funding available to relief agencies determine what kind of assistance can be offered, where, and for how long. Non-profit agencies operate on a combination of sources, including state and federal funding, foundation grants and private contributions and, in the case of the current crisis, monies from the responsible party. Currently, many agencies in the region are operating on funds that were disbursed to aid communities following hurricanes Katrina, Rita, and Ike. Significant amounts of funding have been provided through the Department of Labor; these funds require that assistance be directed toward displaced workers.

Financial assistance has consistently been available through SBA loan programs. Low interest loans were available to assist in avoiding interruptions to the business operation in question: monies were not intended to cover lost profits, loss or damage to property, or for refinancing of existing debt. Deferrals were made available to assist spill-affected business owners who had previously acquired SBA loans following the hurricanes in the mid-2000s. The SBA undertook considerable outreach work following the oil spill– through regional business recovery centers and the activities of loan officers who, in some cases, distributed information directly to fishermen and business owners in the study communities. Certain participants in the current study report that they did not avail themselves to SBA loan opportunities. The stated rationale often related to extensive indebtedness following the hurricanes and lack of willingness to encumber homes or boats as collateral; the latter requires insurance that many fishermen do not carry.

As of spring 2012, staff members of the Louisiana Small Business Development Center report that many commercial fishermen in the spill-affected region are currently relying in part on federal grant money allocated in response to Hurricanes Gustav and Ike, Department of Labor

workforce investment grants, Trade Adjustment Assistance grants, and subsidies associated with anti-dumping tariffs.[13] Further assistance to the commercial fishing industry is being provided through a $50 million grant from BP to promote Gulf of Mexico seafood. Some $30 million has been used to assist the industry in Louisiana, and $20 million has been used to assist the industry in Alabama, Mississippi, and Florida (Alexander-Block 2012).

4.6 Common Adaptive Strategies

Adaptation in the Commercial Harvest Sector. Due to regional differences in the timing and length of spill-induced fishery closures and normal seasonal closures, the initial impact of the spill on the region's harvest sector varied extensively. For example, small-vessel shrimpers were able to remain active during the beginning of the allowable season before spill-related fishery closure precluded operations. This allowed at least some amount of shrimp to be harvested and enabled regional processors to freeze the product for distribution during subsequent months. In the Bayou La Batre area, oyster harvesters were able to continue harvesting in Mobile Bay throughout the entirety of the season, since this area was never closed. Similarly, Lake Pontchartrain, Lake Borgne, and estuaries around Lafitte were not closed.

Licensing data and reports from the field suggest that displacement of effort occurred in relation to the Gulf crab fishery. For instance, the number of crab licenses sold in all five spill-affected parishes increased between 2009 and 2010. The most notable increases occurred in Plaquemines and St. Bernard Parishes. Comparison of 2009 and 2010 data reveal a 59 percent increase in crab harvesting licenses in Plaquemines Parish in 2010, and 32 percent increase in St. Bernard Parish.

Notably, increased harvest activity very typically occurred in areas that were not closed, as displaced fishermen from newly closed areas arrived with hopes of continuing to operate. It should be noted that travel associated with such displacement can be expensive for the participants (cf. IAI 2010) and can result in spatial conflicts between local and non-local fishermen (IAI 2006). Displacement can also lead to reconcentration of fishing effort in new areas, with implications for status of the overall ecosystem (cf. Glazier 2011). Such effects are similar to those associated with the establishment of no-take marine reserves along other portions of the nation's coastal zone (IAI 2011b).

Crab harvesters were required to pull their traps in advance of potential area closures after the 2010 spill so as avoid potential hazards to navigation for spill response vessels. This led to diminished profit among certain participants in the fleet (Mississippi Coalition of Vietnamese Fisherfolk and Families 2010; BARA 2011).

Operators of large shrimp trawlers and pelagic fishing vessels reportedly refocused their efforts in the waters along Texas, the Gulf Coast of Florida, and portions of the Southeast Atlantic coastline. It should be noted that uncertainty about the fate and consequences of the spilled oil, and which areas could be closed in the future, made fishing decisions among distant water fleets quite difficult and potentially costly.

[13] The TAA program provides one-time payments of up to $12,000 for vessel owners, captains, and crew in the shrimp industry. The intent is to assist persons who have been negatively affected by U.S. trade policies regarding importation of seafood.

As closed areas were sporadically or gradually reopened, incentives to immediately return to fishing were often diminished. This was due to a variety of factors, including: (a) ongoing uncertainties regarding consumer demand and associated pricing in the marketplace during an oil spill; (b) concerns that monies earned through fishing in 2010 could invalidate claims for spill compensation from BP; (c) concerns that vessels would be contaminated by oil and would have to expend monies to decontaminate them; (d) reports that marine resources were contaminated in certain areas as a result of the spill; (e) reduced need to fish, crab, or oyster given income earned through work in the VOO program; and (f) a limited number of available crew members, given engagement in alternative forms of employment and/or monies received through participation in the VOO program or public assistance programs in the region.

Declines in the ex-vessel value of shrimp and increasing fuel prices were particularly strong disincentives for resuming fishing operations during the latter part of 2010. There were also reports that certain species were immediately less abundant as a direct result of the spill and widespread use of chemical dispersants. This perspective was often tempered by perspectives holding that it was not yet possible to determine the biological effects of the spill or dispersants, given ongoing natural cycles of scarcity and abundance, and the ongoing effects of factors unrelated to the spill.

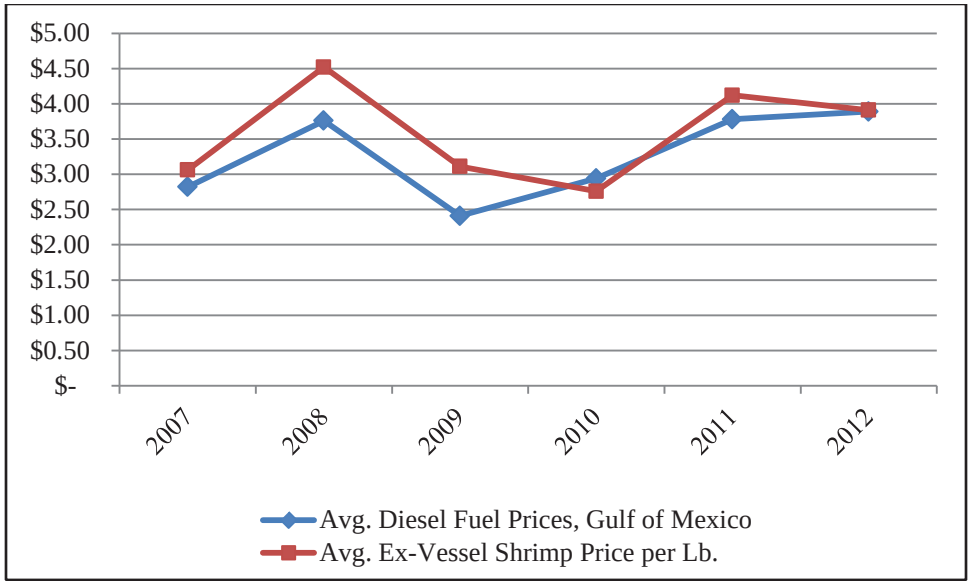


Figure 4-19 Diesel Fuel Prices and Market Prices for Shrimp in the Gulf Region
Sources: Energy Information Administration (2012); NMFS (2012)

Those who returned to their fishing operations reported various outcomes. Shrimpers in Bon Secour reported that resources were abundant when the area's fishery opened during the fall months of 2010. Many shrimpers from Louisiana subsequently refocused their efforts to the Alabama coastline– reversing the normal pattern, wherein Alabama shrimpers work along the Louisiana coast in the fall. As noted earlier in this chapter, this situation led to a particularly high volume of landings in the port region of Bon Secour-Gulf Shores in 2010.

Certain fishermen reported that the volume of *individual* landings was, on the whole, greater than normal, since relatively few fishermen were operating in the Northern Gulf region during the spill year: a fact not well-represented in aggregate landings data for the period. Moreover, as noted earlier, the ex-vessel value of seafood was, on the whole, higher in 2010 than in 2009– an effect of ongoing demand vis-à-vis significantly reduced supply. Thus, certain fishermen appear to have fared relatively well during the spill period. In some cases, this occurred through chance proximity of the fisherman or fleet in question to open areas. In other cases, success was achieved through savvy, awareness, and motivation to actively adapt to the situation.

Licensing data (2010) and reports from the field suggest that many commercial, recreational, and subsistence fishermen positioned themselves to take advantage of clean-up related work opportunities, and sought to ensure that their rights to compensation were protected. Many individuals registered to participate in the VOO program, which required that participants be licensed commercial operators. Awareness of the potential benefits of participating in the VOO program and other potentially beneficial programs undoubtedly is associated with the documented surge in commercial fishing permits during 2010. This dramatic increase, represented in Figure 4-20 below, was noted across all parishes and counties involved in the current study. A similarly dramatic increase in other forms of documentation among participants in the Gulf region's commercial fishing industry clearly indicates heightened awareness of compensation possibilities during the year following the spill.

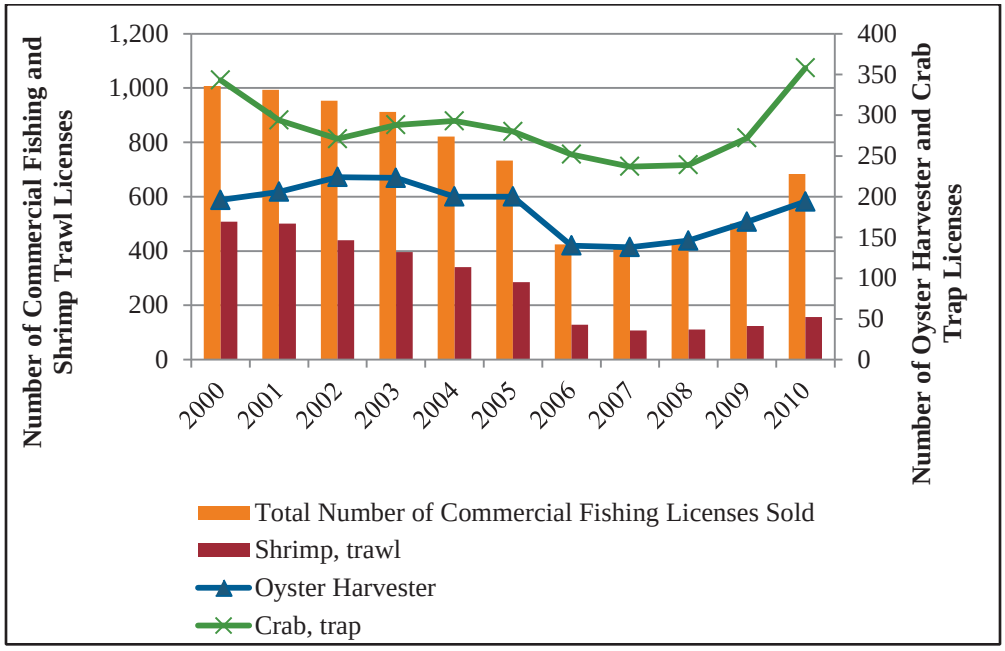


Figure 4-20 Trends in Commercial Fishing Licenses: St. Bernard Parish
Source: www.wlf.louisiana.gov/licenses/statistics

Adaptive Strategies among Seafood Processors and Distributors. Regional processors and distributors faced a shortage of local seafood during and after the 2010 oil spill. Despite limited supply, many processors and wholesalers remained operational to the extent possible, hoping to retain skilled employees and valued clients until conditions improved. Such businesses were also challenged by unpredictable concentrations in supply. These were related to spatial shifts in openings and closures. Finally, processors and distributors were subject to the effects of reduced demand, related to public perception that Gulf seafood was tainted.

Many small business owners in the processing and distribution sector report that they were gradually forced to mitigate losses by cutting employee hours, laying off non-essential workers, and/or replacing highly paid workers with less expensive labor, if and when possible. Many businesses ceased operating for a period of time. The need for such measures varied across the study communities, largely in relation to proximity to closed fishing areas.

Crab buyers and processors in St. Bernard Parish reportedly reduced their own profit margins by offering higher prices to crabbers at dockside. This strategy functioned to offset the crabber's fuel costs and encouraged resumption of harvest activities, thereby giving the processors additional resources for marketing.

A few well-established large-scale processors and distributors were able to continue operating, despite close proximity to closed fishing areas. This was so because the owners of such businesses could draw on resources provided by harvesters from throughout the larger region, and from elsewhere in the nation and world. Some such business owners operate their own fleets and directed the captains to work in unaffected portions of the Gulf and in waters along the East Coast. Of note, one large-scale business owner reported that he expected many of his buyers to remain loyal even after the spill, since he was able to maintain flow of product when others in the region could not. By way of contrast, small-volume operators and owners of recently established businesses typically had little alternative resources from which to draw and thus fared poorly.

Small business owners in the oyster industry adapted to a regional shortage in products by sourcing oysters from outside the Gulf region. Oysters were trucked in from Washington State and North Carolina, and flown from Korea, Venezuela, and Vietnam. Crab processors reportedly sourced crabs from Florida and the Carolinas.

Demand for Gulf seafood improved in 2011, following a widespread and well-funded media effort to ensure prospective consumers that Gulf seafood was being thoroughly tested, and that no contaminated products were reaching the marketplace. This was widely considered to be a successful effort, which led to improved conditions among all sectors of the region's seafood industry.

Adaptation in other Fishery Sectors. Owners and operators of fishery support businesses, such as boatyards and gear suppliers, reported significant decreases in business during 2010. Boatyard operators reported numerous cancellations of repairs and orders for engines and parts, as “there was no reason for fishermen to undertake maintenance work.” Some business owners reported that they were compelled by economic problems to reduce employee hours and shift attention to inventory and maintenance of equipment and grounds rather than undertake profitable repair work for customers.

A few business owners in the St. Bernard Parish support sector reported that receipt of compensatory monies served to prevent bankruptcy. Many also reported utilizing some of their personal savings to maintain operations. Business reportedly has continued to be slow in 2011 and 2012.

Prospects for the Future. The 2010 spill and subsequent spill response efforts were in many ways problematic for participants in marine fisheries across the affected region**.** Positive outcomes are generally perceived to have been balanced by less than beneficial effects. For instance, certain harvesters of Vietnamese and Laotian ancestry in the Bayou La Batre area have traditionally been limited to small-scale nearshore crabbing, but have recently been able to purchase shrimp trawlers, since these were available in that area at bargain rates following the spill. While this outcome may be seen as positive for the new entrants in the distant water shrimp fishery, the boats were available largely because the former owners were forced to exit the industry due to a series of economic problems that ultimately could not be addressed.

Increased business activity is expected to occur as claims are settled and monies are awarded over time. But many small business owners in the harvesting, processing, and distribution sectors of the Gulf Coast commercial fishing industry believe that the long-term viability of their businesses depends in large part on the effects of the spilled oil and dispersants on the region's marine ecosystems and associated seafood resources. A commonly expressed perspective holds that, unless the resources and ecosystems remain healthy, and consumer interest in purchasing Gulf seafood returns to its robust pre-spill status, it will be difficult for many small businesses to survive in the 21st century.

5.0 The Marine-Related Tourist Industry

The following pages describe important aspects of marine-related recreation and associated business activity in the Gulf of Mexico. The chapter describes small business participation in the region's tourism industry and related sectors, and reviews the 2010 oil spill, as this affected life in the study communities and larger region.

5.1 Marine-Related Tourism

The marine-related tourism economy of the Gulf Coast region is multi-faceted. Visitors arrive from around the nation to participate in a variety of activities: beach-going, wildlife viewing, eco-tourism, recreational fishing, and various water sports. Consumption of local seafood is particularly important. Thousands of local small businesses support or enable such activities.

The beaches of Mississippi and Alabama, which include Biloxi and Orange Beach-Gulf Shores, often draw residents from the northern states during the winter months. Visitors from various southern and southeastern states often visit in the summer months. New Orleans is a popular destination year-round. The Gulf region is also popular for conferences and conventions and, in the case of Biloxi, for gaming. Tourism and recreational needs in Biloxi and Orange Beach- Gulf Shores are served by an extensive complex of restaurants, retail stores, and entertainment venues, a significant proportion of which are franchised businesses. Business owners work closely with Chambers of Commerce, visitors' bureaus, and real estate agencies to publicize and promote regional and local attractions.

The majority of visitors to the bayou areas of Louisiana come to the region to engage in recreational fishing, hunting, and other outdoor activities. The needs of visitors here are served by a limited range and number of businesses. Most are small and independently owned. Lodging is typically provided in the form of small hotels, fishing lodges, campgrounds, and trailer parks. Many of the residential structures ("fishing camps," in the local parlance) are remotely owned.

Recreational Fishing. Recreational fishing is highly significant in social and economic terms across the Gulf region, and it is an important component of marine-related tourism. Approximately 3.2 million recreational anglers took a total of 24 million fishing trips in the Gulf of Mexico in 2008 (NOAA 2010a). The industry consistently generates roughly $1 billion in annual retail sales in Louisiana alone. Saltwater angling generates some $757 million in annual revenue, and sustains more than 7,700 jobs in Louisiana (Kuriloff and Polson 2010). Louisiana, Alabama, and Mississippi rank 15th, 16th, and 25th in the nation, respectively, in terms of the number of registered recreational fishing vessels (U.S. Coast Guard 2009, 2010, 2012).

Table 5-1 Non-Commercial Vessels Registered in the Study Region

State	2008	2009	2010	2011
Alabama	272,558	270,726	271,377	265,526
Mississippi	191,312	194,016	156,216	156,743
Louisiana	302,753	303,111	302,141	302,974

Source: United States Coast Guard (2009, 2010, 2012)

Between 2000 and 2009, the average number of angling trips by Northern Gulf states was as follows: 1,654,000 in Alabama; 1,796,000 in Mississippi, and 4,058,000 in Louisiana. These figures include all modes of fishing: shoreline angling, fishing from privately owned and rented boats; party (head) boat fishing; and fishing with a guide or charter captain. The average annual number of for-hire angling trips taken during the period 2000 to 2009 was as follows: 65,570 in Alabama; 16,280 in Mississippi; and 136,470 in Louisiana (NMFS 2012).

Nearly 60 percent of all angling trips, regardless of mode, were taken along the Louisiana coastline. The majority of trips were taken by recreational fishermen in privately owned or rented boats in the state's nearshore and inshore zones.

Recreational fishing opportunities are available throughout the year in and around the study communities. Commonly targeted inshore species include redfish, trout, and catfish, among many others. Popular nearshore species include Spanish mackerel, cobia, bluefish, and many others. Popular offshore species include fishes in the snapper-grouper complex and various pelagic species, among many others.

State and federal authorities regulate recreational fishing activities. The requisite agencies administer licenses, develop management plans and associated regulations, and otherwise oversee the fisheries and resources. Recreational fishing enthusiasts include those who own fishing vessels and those who charter others' services. Charter operators typically specialize in either offshore pelagic and bottom fishing, or nearshore and inshore fishing. The former require relatively larger and more costly vessels. The latter typically utilize small- to medium-sized vessels in the nearshore zone, and small vessels with minimal draft in the inshore waters. The service sector for recreational fishing includes a wide variety of vessel, engine, and gear suppliers; marinas; lodges; and bait purveyors, among others.

Respondents report and data indicate that the recreational fishing industry is growing in economic importance in the Gulf region as a whole. Figure 5-1 depicts the number of charter guide licenses issued in the state of Louisiana and the five parishes of interest between 2000 and 2011. The significant decline noted in 2006 is indicative of the impact of Hurricane Katrina. Data are not available for 2007 and 2008. Data do not indicate that significant changes in trends occurred in the study parishes in relation to the oil spill.

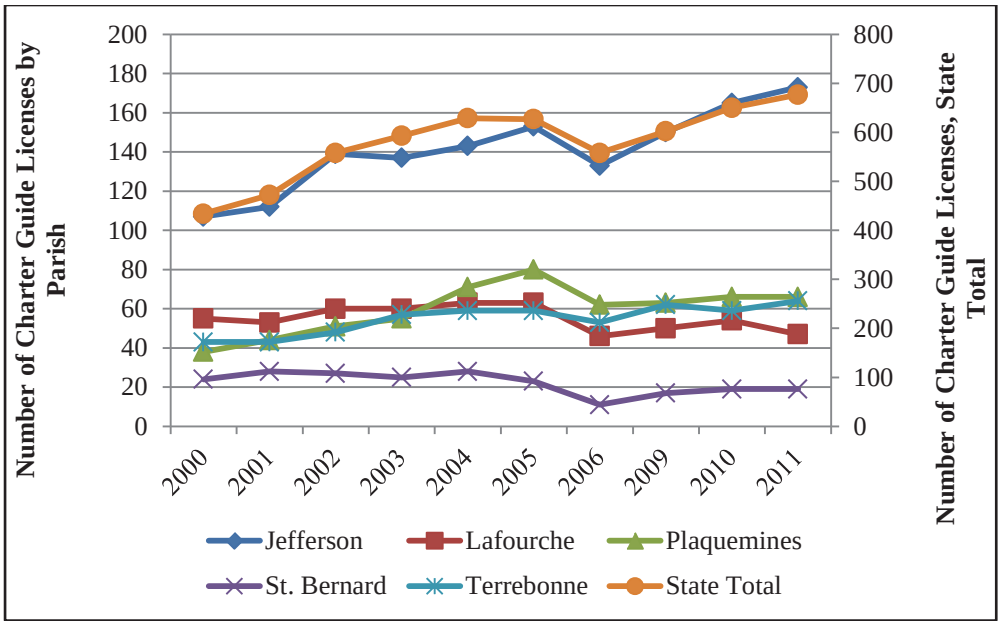


Figure 5-1 Trends in Charter and Guide Licenses in Louisiana and Study Parishes
Source: www.wlf.louisiana.gov/licenses/statistics

5.2 Tourism and the Study Communities

Tourists who visit the Gulf Coast to enjoy marine-related recreational activities typically utilize the services of a variety of local businesses. Many of these businesses also serve the needs of local resident. For the purposes of the current study, we focus on those kinds of businesses that are most frequently and unambiguously identified with marine-related tourism.

Marine-related tourism is of notable importance in five of our thirteen study communities. These are: Orange Beach, Biloxi, Grand Isle, Boothville-Venice, and Buras-Triumph. This section describes select aspects of businesses involved in marine-related tourism in each area.

5.2.1 Grand Isle and Barataria-Lafitte, Louisiana

Grand Isle provides the only road-accessible barrier island between Biloxi, Mississippi and the Texas coast. Some 300,000 persons visit the area each year (Grimm 2010). Grand Isle is a well-known destination for charter and recreational fishing. Charter fishing draws customers from an extensive out-of-state market, including states in the Southeast, the West, and the Midwest. Many recreational anglers trailer small-vessels to Grand Isle from Louisiana towns and cities such as Baton Rouge, Lafayette, and New Orleans.

The Grand Isle Tourist Commission lists 29 active charter boat captains; of these, reportedly only eight live in Grand Isle. Many local charter operators work on a part-time basis, and maintain jobs as mechanics, firemen, or in various aspects of the oil and gas industry. Grand Isle fishing clubs and other entities hold some 20 fishing tournaments each summer. The Tarpon Rodeo festival, scheduled for the last weekend of July, is the largest tournament. The influx of visitors at this time frequently creates traffic jams on the island's single roadway.

Lodging is available at small locally owned hotels, campgrounds, and rental apartments and cottages. Many homes are owned by persons who maintain primary residences in New Orleans, Baton Rouge, Houma, and Lafayette.

Fish Camps and Second Homes on Grand Isle, Louisiana

The Barataria-Lafitte area is an increasingly recreational area. Recreational fishing and tourism have grown in importance during the last decade, as evinced by the high number of charter operations relative to other marine-dependent businesses in the area. Some 25 charter operators or guides are available to provide a recreational fishing experience in the area's productive bayous and canals. Numerous marinas, bait and tackle shops, and vessel sales and repair facilities comprise the local support infrastructure for recreational fishing.

5.2.2 St. Bernard, Louisiana

The highly productive bayous, canals, and other bodies of water in St. Bernard Parish are popular fishing areas for anglers from around the nation. Largemouth bass are particularly popular among recreational anglers, and many hunters come to the region in winter to hunt ducks, geese, and other waterfowl. Some 20 charter operations or guide services are available in this area. These vary extensively in terms of extent of services offered. One business owner typically runs six or seven trips on weekend days and four to five trips during the week at the height of the season. There are two marinas in the area.

5.2.3 Galliano and Golden Meadow, Louisiana

Small businesses in Galliano and Golden Meadow provide a range of services to visiting recreational anglers. Numerous boat and sporting goods dealers are based here. These businesses also support and are supported by the region's large commercial fishing fleet. U.S. Coast Guard data indicate that 21 passenger or charter vessels are registered to Golden Meadow- based businesses or individuals; 42 passenger or charter vessels are registered to Galliano-based businesses or individuals (USCG 2012).

5.2.4 Houma, Louisiana

Numerous businesses in Houma provide services to the recreational and commercial fishing industries. As such, the area is a common destination for charter and commercial captains and vessel owners needing fishery-specific supplies and services. Recreational anglers on their way to destinations such as Grand Isle often stop in Houma for gears and supplies. U.S. Coast Guard data indicate that 66 recreational vessels and 66 passenger or charter vessels are registered to Houma-based businesses or individuals (USCG 2012).

5.2.5 Buras-Triumph and Boothville-Venice, Louisiana

Numerous businesses in Buras-Triumph and Boothville-Venice support recreational fishing activities. These include: boat and engine dealers, boat storage facilities, marinas, charter fishing services, restaurants, and lodging facilities. The recreational fishing and charter industry has developed quickly and extensively here.

Recreational fishing guide services are an increasingly important source of local revenue. U.S. Coast Guard data indicate that are 16 passenger or charter vessels registered to Buras-Triumph-based businesses or individuals; and 26 passenger or charter vessels are registered to Boothville-Venice-based businesses or individuals (USCG 2012).

Many charter services operating from Boothville-Venice are owned by residents who live in other parts of the Gulf region. Many charter operators maintain two residences; a winter residence in or closer to New Orleans and a summer residence, which also typically operates as a lodge. During the peak recreational fishing season from May to October, charter operators often work seven days a week. Numerous guides provide duck hunting services in the area during the late fall and winter months.

Sport Fishing Vessels at Venice Marina in Louisiana

5.2.6 Orange Beach-Gulf Shores and Bon Secour, Alabama

Beach recreation, recreational boating and fishing, ecotourism, and bird-watching form the core of marine-dependent tourist activities in Orange Beach-Gulf Shores, Alabama. According to Convention and Visitors Bureau data, Orange Beach-Gulf Shores receive over 500,000 visitors from around the region and other parts of the nation during the peak summer season (Alabama Gulf Coast Convention and Visitors Bureau 2008, 2009).

A dense concentration of tourist-dependent businesses are located in the Orange Beach-Gulf Shores area, including restaurants, retail stores, and family-oriented amusements. Remotely owned condominiums, rental cottages, and apartments are the principal accommodations for visitors. Realty agencies manage accommodations and also play a significant role in marketing local attractions. A high percentage of franchise businesses are located here. Visitors arrive primarily by automobile, supporting restaurants and retail establishments in the many communities along the Interstates 10 and 65, and State Highways 98 and 59.

Marinas, boat dealers, boatyards and storage facilities, bait and tackle shops, and charter services comprise the recreational fishing support sector. Marinas and boat yards in Orange Beach-Gulf Shores and Bon Secour depend on business from charter vessels, pleasure boats, private motor yachts, and sail boats. The Orange Beach Fishing Association lists approximately 150 members. Charter operations occur in the nearshore and offshore waters. According to U.S. Coast Guard data, a total of 249 recreational vessels and 71 passenger/charter vessels are registered to businesses or individuals with Orange Beach-Gulf Shores addresses (USCG 2012).

The primary marine-dependent tourist businesses in Bon Secour are boat dealerships, boat building and repair facilities, and sporting goods stores. A significant proportion of sales at local seafood retail establishments in Bon Secour are associated with visiting tourists.

5.2.7 Bayou La Batre, Alabama

Bayou La Batre is an important point of access for visiting recreational anglers, and numerous local businesses support the recreational fishing industry. Various boat dealers and bait and tackle shops are based here. U.S. Coast Guard data indicate that 28 passenger or charter vessels are registered to Bayou La Batre-based businesses or individuals (USCG 2012). Numerous visitors come to Bayou La Batre for kayaking, canoeing, and bird watching. The accommodations sector for marine-related tourism is not well developed here.

5.2.8 Biloxi and Pass Christian, Mississippi

Biloxi's tourism economy is based largely in gaming and golfing, but marine-related tourism is also significant. There are six marinas in the city, with some 133 locally based recreational vessels and 44 charter vessels (USCG 2012). More than 25 charter operations are available for hire at the Biloxi Small Craft Harbor and Point Cadet Marina. Fishing trips are usually undertaken in Mississippi Sound or in the offshore waters of the Gulf. At least seven recreational fishing tournaments are held in Biloxi throughout the year (City of Biloxi 2012). Five boat

launches and seven fishing piers in and around the city are available for recreational boating and fishing enthusiasts (City of Biloxi 2012). Accommodations are provided primarily by casino hotels, franchise hotels, and small locally owned hotels and apartment rentals.

Recreational fishing is also popular in Pass Christian. The community provides significant support to recreational fishing enthusiasts in the form of marinas, bait and tackle shops, and sporting goods stores. Four charter boat operations based here.

5.3 Regional Trends Prior to the Spill

Business owners in the marine-related tourism industry often discuss three fundamental factors that have influenced business patterns over the last decade. These are: the hurricanes of the mid-2000s; the recent economic recession; and fishing regulations.

Hurricanes are common sources of social and economic change in Gulf Coast communities. In the near-term, the coastal tourism industry can be impacted by cancellation of reservations, evacuations and, in certain cases, property damage and loss of life. Such storms can also result in long-term changes, such as changes to coastal topography, large-scale damage to coastal infrastructure, and subsequent to disbursement of relief funds, gentrification of certain areas (IAI 2006).

Most recently, Hurricanes Ivan, Katrina, and Rita resulted in loss of life, widespread destruction of coastal infrastructure, and loss of income during peak fishing and tourist seasons in the Gulf of Mexico. Of note, loss of recreational fishing infrastructure following Katrina and Rita undoubtedly is associated with steep declines in resident and non-resident saltwater recreational licenses in St. Bernard and Plaquemines Parish. Similarly, U.S. Census data for Plaquemines Parish indicates that the number of small marine-related businesses declined dramatically after Hurricane Katrina. Full recovery has not yet occurred. Given extensively damaged infrastructure, certain charter captains in Plaquemines and St. Bernard Parishes have adapted to the situation by converting their homes into fishing lodges in order to accommodate prospective customers.

Louisiana Fishing Vessels Displaced and Damaged by Katrina, 2006

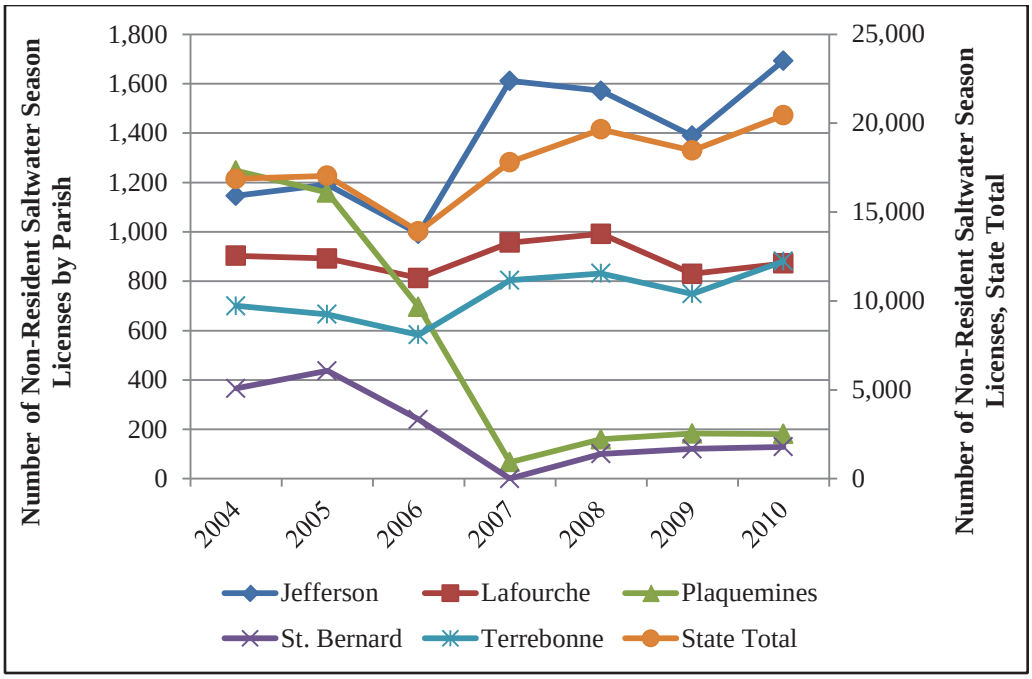


Figure 5-2 Trends in Non-Resident Saltwater Fishing Licenses by Study Parish
Source: LDWF (2012)

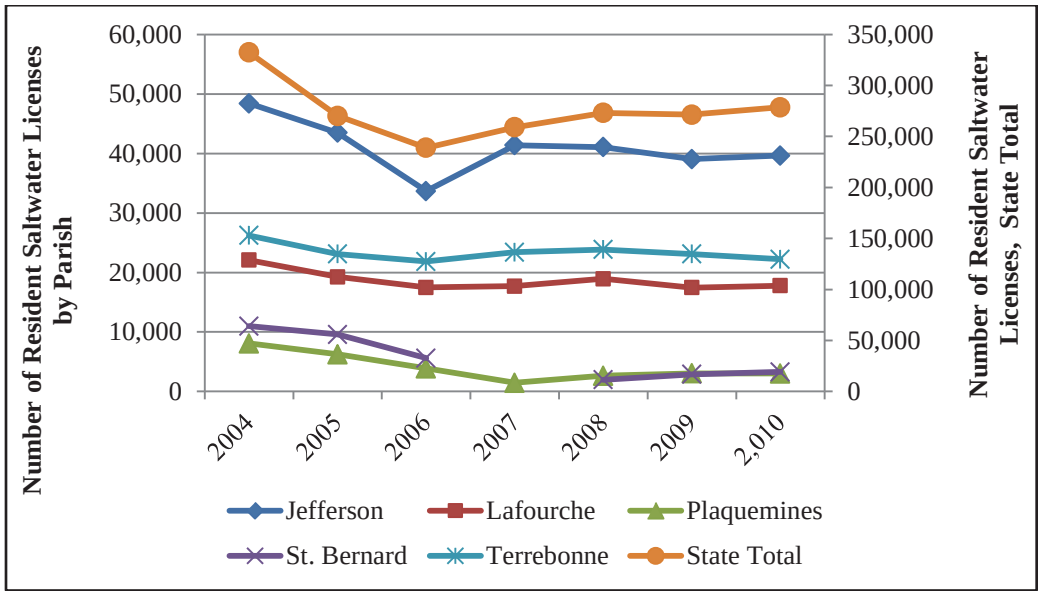


Figure 5-3 Trends in Resident Saltwater Fishing Licenses by Study Parish*
Source: LDWF (2012); * Data for St. Bernard Parish not available

The national economic recession has posed additional challenges to the recreational fishing support sector, especially boat dealers and charter operators. Owners of boat yards also report declines in the amount of business associated with recreational boaters and anglers. The problems have been compounded by rapidly escalating fuel prices, which, beginning around 2006, deflated automobile travel and the number of summer tourists visiting Orange Beach– Gulf Shore. Rising fuel prices also increased expenditures for offshore charter operators in the Gulf region.

The impact of hurricanes and fuel prices notwithstanding, the charter fishing industry reportedly has been robust in recent years. The most significant challenge currently confronting owners and operators reportedly relates to new regulations on red snapper, a particularly popular target species for offshore sport fishing. Charter operators throughout the region report that these and other regulations are forcing them to shift their attention to the inshore zone, despite the interests of clientele who prefer the deeper waters of the Gulf.

Business owners and public officials contacted during the current study often asserted that it was widely hoped that 2010 would be a year of unqualified recovery from the impacts of the hurricanes and the recession. For instance, real estate agents in Orange Beach-Gulf Shores report that based on predictions for an active summer season for tourism and related sales and rentals in 2010, area business owners had increased staff and inventory during the early spring months so as to prepare for a busy summer. As noted below, the oil spill negated these and other positive eventualities for owners of small businesses in the affected region.

5.4 Initial Effects of the Oil Spill

As discussed earlier in this report, approximately 37 percent of federal waters and 85 percent of state waters were closed to fishing at the peak of the area closure process. The closures included recreational fishing activity of all kinds. Beach closures and swimming advisories were also announced as conditions warranted. Spill-related events and processes impacting the marine-related tourism industry are summarized in Table 5-2 below.

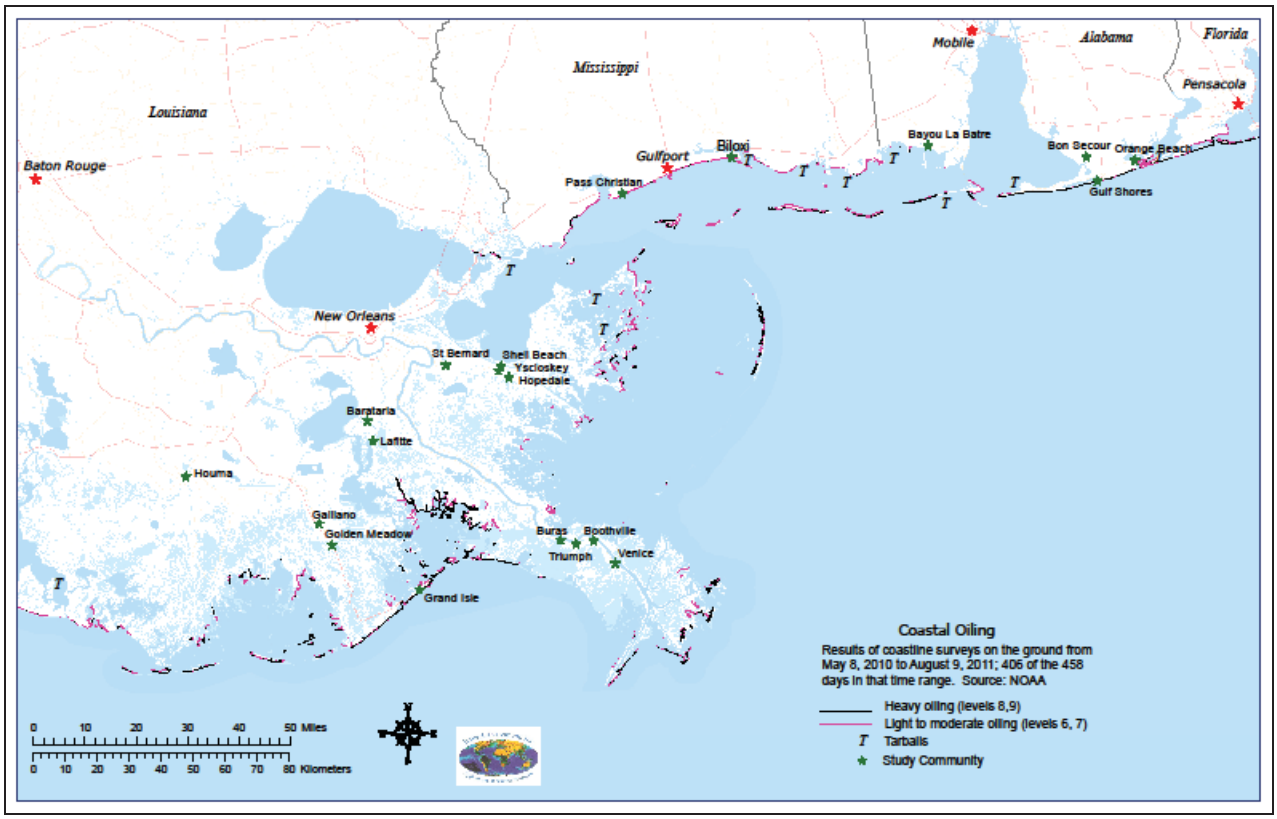
Sandpiper Feeding amid Clumps of Mousse on Grand Isle, Summer 2010

Table 5-2: Timeline of Events: Spill Effects on Marine-Related Recreation

Date	Year	Event
April 20	2010	*Deepwater Horizon* Accident
April 30	2010	LDWF initiates recreational fisheries closures
May 1	2010	Governors of Mississippi and Alabama declare states of emergency
May 3	2010	NOAA initiates recreational fisheries closures; more than 6,800 square miles of federal waters affected; VOO Programs initiated
May 5	2010	Louisiana Department of Social Services requests food assistance in 14 coastal parishes due in part to loss of subsistence fisheries
May 17	2010	BP announces grants of $15 million for Louisiana, for Alabama, and for Mississippi to support tourism
May 21	2010	Grand Isle beaches are closed until mid-to-late August
May 24	2010	U.S. Commerce Secretary declares federal fisheries disaster for Louisiana, Mississippi, and Alabama
May 27	2010	Louisiana Tourism Coastal Coalition is created to manage national advertising campaign
June 1	2010	MDMR and ADCNR initiate closures of state waters to recreational fishing
June 2	2010	NOAA closure of federal waters reaches maximum at 36.6% of Gulf EEZ
June 4	2010	BP announces system of advanced payment for individuals losing income and businesses losing net profit
June 16	2010	BP announces $20 billion fund to compensate for losses to individuals and businesses, natural resource damage, and response costs to state and local agencies
August 6	2010	MDMR and Mississippi Department of Environmental Quality announce opening of state waters to recreational fishing for finfish and shrimp
August 16	2010	ADCNR announces opening of state waters to recreational fishing
September 15	2010	VOO programs in Alabama and Mississippi terminated
November 1	2010	BP announces $30 million grant for Louisiana to promote tourism, $40 million fund to support seafood testing, and $140 million to amend coastal degradation
March 8	2011	BP announces $16 million grant for Alabama to support tourism
March 15	2011	BP announces $16 million grant for Mississippi to support tourism
April 21	2011	National Resource Damage Assessment (NRDA) announces $1 billion fund from BP for Gulf Coast restoration projects

Although the extent of oiling varied in reality, businesses in coastal communities throughout the region were heavily affected by public perception that oiling was severe and widespread. The *Deepwater Horizon* accidents and spill were televised events, of course, and news focused on the amount of oil being released, efforts to cap the wellhead, and potential and actual effects on the region's wildlife, fishing industry, and coastal communities. News coverage was more extensive at the beginning of the crisis and decreased as the spill was contained. For many communities and businesses, media attention was most damaging.

High cancellation rates were noted during the oil spill. A poll conducted in 2010 for the Department of Culture, Recreation, and Tourism indicated that 29 percent of those with plans to visit Louisiana cancelled or postponed trips because of the spill (Schleifstein 2010b). While businesses associated with marine-related tourism in Pass Christian reported significantly diminished activity, gaming-related tourism in Biloxi remained near normal levels. Of note, managers for rental properties along the East Coast reported elevated bookings from tourists who customarily vacation along the Gulf Coast (Associated Press 2010).



Map 5-1 Distribution of Oil along the Gulf Coastline (as of August 2011; see Appendix A for full-scale version)

Charter fishing operators in spill-affected portions of Louisiana waters began receiving cancellations within one week of the spill (Marshall 2010b). In order to avert fishing-related tourism losses, LDWF officials approved a catch-and-release program to allow for some recreational fishing activity in closed areas that did not visually exhibit oiling. But the program was quickly abandoned, given concerns about the potential effects of chemical dispersants on the resources and anglers (Crawford 2010). In Grand Isle, fishing closures led to the cancellation of all fishing tournaments scheduled for the summer of 2010. In other spill affected areas of the Gulf, charter operators and those providing eco-tourism services experienced severe declines in business, especially once oil reached the shores of the community and/or fishery closures were initiated (cf. Vasilina 2010).

All forms of data collected during the present study indicate significant declines in activity among marine-related tourism businesses during and following the oil spill. Sales of resident and non-resident recreational saltwater fishing licenses dropped by as much as 50 percent in Louisiana in 2010 (cf. Scott 2010). While some 50,000 state resident recreational saltwater fishing licenses were issued in Louisiana between April 21 and June 24 in 2009, only 25,771 resident licenses were issued during the same period in 2010– a 48 percent decrease. The number of non-resident saltwater recreational licenses dropped from 3,669 in 2009 to 1,325 in 2010, a 64 percent decrease. The number of freshwater recreational fishing licenses issued in Louisiana also diminished– from 78,594 in 2009 to 53,968 in 2010, a 31 percent decrease (LDWF 2010).

As noted in Figure 5-4 below, the estimated number of recreational fishing trips decreased most significantly in Louisiana during 2010, with a less significant decrease noted for Alabama. Slightly increasing activity in Mississippi may relate to displacement from more extensive closures in adjacent states. Notably, the data indicate increasing recreational angling activity in all states during 2011.

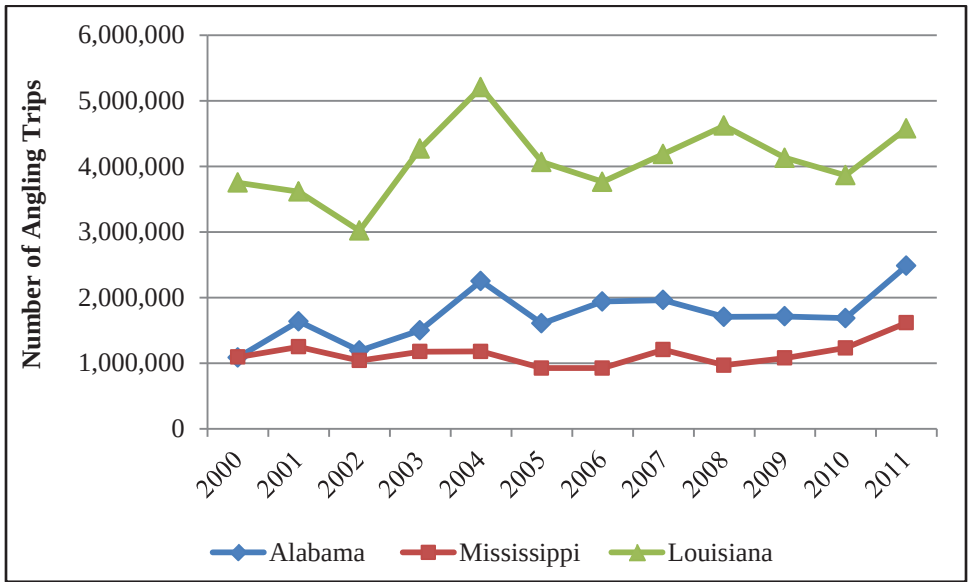


Figure 5-4 Trends in Recreational Fishing Trips, All Modes and Areas
Source: NMFS (2012)

Charter and guide fishing decreased dramatically in all Gulf states during the year of the spill. Return to pre-spill levels of activity had not yet occurred in Louisiana when field research was conducted in the study communities in 2011.

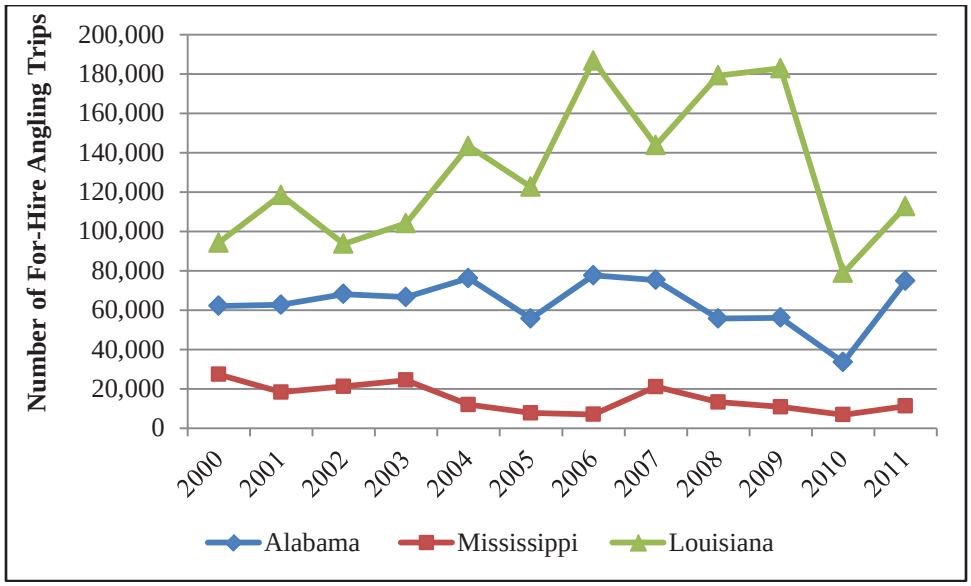


Figure 5-5 Trends in For-Hire Recreational Fishing Trips, All Areas
Source: NMFS (2012)

According to the Alabama Gulf Coast Convention and Visitors Bureau, the number of persons visiting Orange Beach–Gulf Shores declined by 40 percent during the months following the spill. Some 574,100 visitors were enumerated during the summer of 2009. Only 346,900 visitors were enumerated during the summer of 2010. The loss of visitor expenditures was estimated to be some $97 million (Klages 2010, 2011). Recovery occurred quickly: some 593,600 visitors were enumerated during the summer of 2011, an increase of over three percent above the figure for the summer of 2009. Charter fishing operators contacted during this study reported that business picked up rapidly during the autumn months of 2010, after closed areas were reopened and public perception about extensive oiled had eased. The summer of 2011 reportedly was very active for charter fleets in the area.

In contrast, charter operators in Jefferson and St. Bernard Parishes in Louisiana reported ongoing problems in 2011, with revenues as much as 60 percent below those of 2009. Managers of marinas, which customarily serve visiting boaters and fishermen - both from within the state and from other parts of the nation - reported that business activity was reasonable, but that visitation from outside the state remained depressed.

Grand Isle fishing tournaments were scheduled as usual in 2011. These reportedly brought in weekend visitors to the area, which provided an opportunity to see the much-improved status of the area's nearshore waters and recreational fishing opportunities. Some 600 persons participated in the first tournament of the 2011 season; a better turn-out than in 2009. Further, the rate of participation in the largest tournament of the season was 20 percent above that for 2009 (BARA 2011). However, according to the island's Tourism Commissioner and other key persons, overall business activity remained depressed in 2011. According to local charter operators, the sport fishing season in general was not particularly notable in terms of landings.

In Bayou La Batre, recreational fishing activity reportedly rebounded quickly once the spill-induced area closures were lifted. Bait and tackle shops reported extensive demand for bait, as rod and reel anglers from Mobile fished the bayous in increasing numbers.

5.5 Adaptive Responses to the Spill

Overview. Area fishing closures, swimming advisories, beach closures, and emphasis of the national media on environmental and social impacts presented significant challenges to recreational fishing and other tourism-related businesses in the study communities. Various strategies were undertaken by business owners to minimize economic losses. These included participation in oil spill response activities, and use of marketing and promotional efforts to minimize or counter the deleterious effects of national media reports. Participation in claims and litigation processes, and application for assistance from various relief organizations was also undertaken.

Oil Spill Response Opportunities. During the several months following the *Deepwater Horizon* accidents, oil spill response work provided an important source of income for charter operators and owners of marine-related tourist businesses that were otherwise struggling due to loss of businesses. For the vast number of participating charter captains, employment in the VOO program ended during the late summer months of 2010; though lingering response work in Plaquemines and Jefferson Parishes provided work for some charter operators into the autumn.

As noted in Chapter Four of this report, charter boats were in high demand during the spill response. High-speed vessels were often used for emergency medical response, and large charter vessels were ideal for press tours and other functions requiring relatively large, comfortable spaces. Notably, many charter captains in the study region were closely affiliated with local marinas designated as staging areas for spill response and were therefore in a good position to become involved in the response (see also BARA 2011).

Charter vessel owners and their crewmembers who were employed on a regular basis reported doing well in financial terms during the response period. However, as was the case for VOO participants from the commercial fishing sector, participating charter vessel owners and operators reported dissatisfaction with the payment schedule at the beginning of the program, and difficulty in reimbursement for damaged equipment and decontamination of vessels at the conclusion of the program. Some participants reported that the ultimately were not reimbursed for such costs. Such problems aside, charter operators widely reported that participation in the VOO program was useful during this challenging period in their careers.

Participation in the VOO reportedly led to some competitive advantage during the ensuing charter fishing seasons. That is, some participants used money earned during their tenure in the program to purchase new equipment and gear. Of note, LDWF data indicate a 15 percent increase in the number of resident charter operators and fishing guides in Jefferson Parish between 2009 and 2011. This underscores the fact that while the spill year was challenging, it was not without significant opportunities.

This held true for the recreational fishing support sector as well. The ability of business owners to offset spill-induced losses related in large part to the influx of federal, state, BP, and associated contractors, and their respective needs for supplies, lodging, food, and various other goods and services. As such, many owners of marinas, boatyards, and fishing lodges in the study communities leased dock and yard space, sold fuel, and provided food and accommodations to first responders, VOO participants, and others involved in the response. According to Kirkham (2010), over 48,000 people were employed at the peak of the response.

Such business also profited from the arrival of spill clean-up laborers. Owners of fish camps, marinas with associated lodging, and real estate managers reported profiting from a protracted clean-up effort. Owners of inns and lodges in Buras, who normally serve oil field workers and recreational fishermen, also reported experiencing large influxes of clean-up crews along with journalists and public officials (White 2010a). In some cases, additional staff were hired and additional beds were purchased to accommodate the needs of visiting workers. Regional participants in recreational fisheries, however, experienced difficulties beyond the tainted waters and fish: the influx of outsiders and the disruptions caused by crowding and strained local services.

Application for Compensation. Owners of businesses in the recreation-related support sectors generally maintained consistent documentation of business activities and were therefore in a good position to file readily demonstrable claims for lost opportunities and income. The situation was mixed among charter vessel operators– some did have consistently valid records in hand, and others did not. The fact that (typically undocumented) tips are an important source of income for

charter fishing captains and crew members was particularly problematic in the claims process. Charter operators reported additional claims-related challenges, such as claims information being misplaced by GCCF administrators, a lack of continuity in personnel working on a given claim, and uncertainty regarding the arrival of compensation. The latter problem reportedly made business-related planning a difficult undertaking until fishery closures were rescinded.

In September 2010, it was announced that VOO monies were exempt from consideration as income in the calculation of compensation, but for charter captains and commercial fishermen only. Income derived from clean-up support services provided by owners of other marine-related businesses was not exempt. A number of participants in this study reported that they did not file for spill compensation for this reason.

Notably, a ruling in the class action suit against BP reversed VOO income exemptions for charter operators. Such persons will now be subject to recalculation of compensation (Webwire 2012). VOO monies earned by commercial and recreational fishermen remain exempt.

Application for Other Forms of Assistance. As noted elsewhere in this report, various government agencies and community-based organizations sought to assist local businesses following the oil spill. In Louisiana, Department of Labor grants of $5,000 were made available to assist charter operators, and numerous captains applied for and received such assistance. Similarly, training programs funded by the State Department of Labor have assisted charter fishing businesses with post-spill promotional efforts. Finally, charter operators are responding to efforts undertaken by non-profit organizations to prepare them for prospective new employment opportunities in coastal restoration. Although BP-funded coastal restoration opportunities are likely to be extensive, these likely will not be widely available for some time (Seedco Financial and California Environmental Associates 2012).

Community-Level Response. An organized community response to the spill was undertaken in the populous Orange Beach-Gulf Shores area. Business leaders collaborated to identify a single meeting place for various parties to meet on a regular basis, and to facilitate a clearinghouse for information regarding the course of the spill and rolling fishery closures. Regional university faculty members were recruited to help craft an effective long-term response plan.

Representatives of area chambers of commerce sought ways to update prospective tourists about the status of the marine environment. Various social media were used to creatively disseminate such information. Beach grooming machines were modified for clean-up duties. Many business owners in the lodging sector offered discounts to potential visitors. The overall effort appears to have facilitated a relatively speedy recovery in the area.

A non-profit organization called the Coastal Resiliency Coalition was established after the spill. The group was formed to conceptualize and implement new business ventures in spill-affected communities in Mississippi and Alabama.

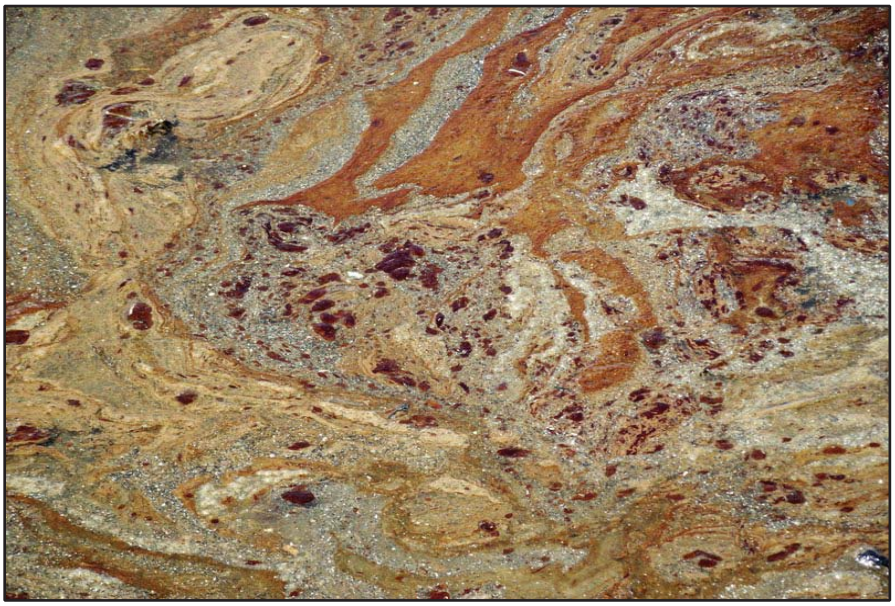
Prospects for the Future. Charter guides throughout the study communities report that repeat business depends on one's reputation as a good fishing guide, on the degree of success of any given fishing trip or trips, and on subsequent word-of-mouth referrals. Many captains expressed concern that problems during the oil spill would lead to permanent loss of clientele. It was widely

feared that, having been forced to fish elsewhere during the spill and closures, former clients would discover alternative, equally attractive fishing destinations elsewhere.

Such outcomes did not transpire in the Orange Beach-Gulf Shores area, ostensibly because captains and marina owners sought to inform clientele about the status of the area closures and what was being caught once the closures were lifted. Opening of the red snapper fishery during the fall months of 2010 reportedly re-stimulated recreational charter fishing activity once the closures were ended.

In St. Bernard Parish, charter operators and owners of marinas also reported somewhat improving conditions during the summer months of 2011. But many captains related their concerns that the ongoing recession and public perceptions about the effects of the spill on the marine environment would continue to dampen patronage.

During the early summer months of 2010, BP announced three grants of $15 million to support tourism-related business activity in Louisiana, Mississippi, and Alabama. Additional grants followed, with Louisiana receiving another $30 million in November of 2010, and Mississippi and Alabama receiving an additional $16 million each in March 2011. Discussants in the study communities have expressed varying perspectives regarding the likely success of such grant monies. According to the Gulf Coast Business Council Research Foundation (2010), the impact of the spill on tourism along the Mississippi coastline was mitigated in part by effective media campaigns funded through BP grants. Similarly, key informants in the Orange Beach-Gulf Shores area believe that BP funding has had a positive impact. Discussants in Grand Isle and other Louisiana study communities are more guarded about the future, often stating that while marketing is good for tourism, it does not ensure that the marine environment and persons who rely on a healthy marine environment will be free of spill-induced problems in the years to come.



Close-up View of Viscous Crude on Beach near Barataria Pass, July 2010

6.0 Summary Conclusions

Overview. This report has described select trends and conditions among small businesses affected by the 2010 oil spill in the Gulf of Mexico. The report describes the nature of such effects, how they varied across the study region, and why. This concluding chapter summarizes key project findings in relation to project goals, objectives, and research hypotheses.

The overarching goal of the project reviewed in this report was to generate preliminary description and analysis of the effects of the 2010 oil spill and offshore drilling moratorium on small businesses in the affected region. The work was purposely undertaken in the most extensively affected areas of the Gulf, and the study communities were chosen to facilitate understanding of the effects of the spill on a range of pertinent economic sectors and businesses.

A variety of primary and secondary source data were collected and analyzed to enable valid understanding of the changing social and economic context within which the accident, spill, and moratorium occurred. A large database was developed to facilitate time-series analysis of various factors affecting small business activity in the study area; a small portion of the compiled dataset is represented in this report. Newly emerging quantitative data can be added to this database over time to facilitate an increasingly comprehensive assessment of spill impacts and to advance the testing of important research hypotheses.

6.1 Summary Overview of Pre-Existing Challenges

- Examination of business patterns in the study area underscores the significant level of local and regional dependence on marine-related industries, especially commercial fishing and offshore oil and gas development;

- Non-employer businesses are particularly common in the region; most of these are small-scale commercial fishing operations;

- Marine-related tourism-oriented businesses are increasingly important in social and economic terms in most of the study communities, but especially in the most populous communities such as Houma, Biloxi, and Orange Beach-Gulf Shores;

- Various factors were constraining economic activity in the study region prior to the 2010 oil spill and moratorium; these were both exogenous and endogamous in nature;

- The hurricanes of the mid-2000s fundamentally altered economic conditions among all marine-related sectors in each of the study communities, parishes, and counties; storm-induced out-migration has contributed to attrition of marine-related businesses across the region;

- Interview and archival data clearly indicate that owners of most small businesses in the coastal zone very typically were in the gradual process of rebounding from the effects of the hurricanes when the oil spill occurred– such was the unprecedented scale of effects resulting from the winds, storm surge, and floods associated with Hurricanes Katrina and Rita in 2005;

- The hurricane recovery process was complicated by the effects of the national recession, which began to dampen business activity throughout the Gulf region in 2008;

- Rising fuel prices were also creating economic challenges prior to the spill, particularly for participants in the harvest sector of the region's commercial fishing industry and among charter vessel operators in the recreational fishing industry;

- Rising fuel prices and the recession were constraining tourism-related travel to the Gulf of Mexico just prior to the 2010 oil spill;

- Participants in the Gulf region's offshore oil and gas industry were experiencing the effects of a downturn in activity just prior to the 2010 spill and subsequent moratorium; this too was related to the economic recession and volatile fuel prices, along with increasing corporate interest in onshore prospects in Louisiana, and offshore prospects in other nations;

- Finally, owners and operators of many small businesses in the harvesting and processing/distribution sectors of the region's commercial fishing industry have been struggling with depressed market prices for Gulf seafood for at least a decade; the situation is clearly linked to extensive importation of relatively cheap seafood products from other parts of the world – this problem presented yet another challenge to small business owners prior to the spill.

6.2 Summary Overview of Oil Spill and Moratorium Impacts

- Given a context of numerous pre-existing challenges, most small business owners in the study communities were not well-positioned to lose income or employment opportunities as a result of the oil spill and/or offshore drilling moratorium;

- Loss of opportunity and income in the commercial fishery sectors was unavoidable, however, since federal and state agencies sought to minimize the possibility of contaminated seafood reaching the marketplace by closing large areas of the northern Gulf of Mexico to fishing activities;

- Area closures directly affected the commercial harvest sector, and indirectly but significantly affected the seafood processing and distribution sectors and the many and various businesses that support the industry; many thousands of individuals and small businesses lost income and employment opportunities for the duration of the closures, with as yet uncertain implications for the future of such businesses in a perennially competitive environment;

- Because area closures also precluded recreational fishing, charter fishing operators and the various businesses that support the recreational fishing industry also lost income and employment opportunities for the duration of the closures, with as yet uncertain implications for the future of such businesses;

- Similarly, the moratorium on offshore drilling and an associated slowdown in offshore permitting reduced revenue and new contractual opportunities, thereby directly impacting many hundreds of small businesses that would otherwise have continued to provide specialized goods and services to the industry;

- Conditions in the offshore oil and gas support sectors gradually began to improve as permitting restrictions were eased; recent reports suggest that further improvements are likely to occur over the long-term;

- Small businesses active in the marine-related tourism industry lost income and employment opportunities as prospective tourists responded to widespread media reports that beaches and waterways were heavily oiled; representatives of municipalities in other regions reported that many Gulf tourists opted for East Coast destinations during the summer of 2010; an education and outreach campaign helped to mitigate losses in 2011;

- Extent of economic impacts to businesses active in fishing-related sectors in the study communities was closely related to proximity to the spilled oil and associated fishing closures – close proximity tended to be associated with deleterious economic impacts;

- Conversely, distance from the spilled oil and associated closures was associated with less extensive and deleterious economic effects;

- An exception to this pattern involved establishment of spill response staging areas in 17 communities across the region; staging areas were emplaced in five of the study communities; spill responders passing through these areas required local goods and services, thereby stimulating economic activity and partially countering deleterious effects related to area fishing closures;

- In some areas, such as Bon Secour, minimal oiling and lack of closures led to highly concentrated fishing activity, and thus to: (a) higher than normal volume of landings, (b) significantly heightened profits, and (c) development of new clientele among local processors and seafood dealers;

- In some instances, closure-induced concentration of fishing activity led to social conflicts between local and non-local harvesters.

6.3 Summary Overview of Adaptive Responses

- Interviews with key persons in the study communities made clear that some degree of attrition in the number of viable marine-related businesses has occurred as a result of the oil spill and associated fishery closures, though such discussions often included mention of pre-existing problems, many of which were related to the impacts of Hurricanes Katrina and Rita; additional primary and secondary source data are needed to better understand the rates and causes of small business attrition in the study communities over time;

- Although loss of income in the various marine-related sectors was often offset directly by opportunities to participate in oil spill response work, and indirectly through opportunities to provide goods and services to spill responders, such opportunities were not universally available; access to such options related especially to proximity to staging areas, qualifications to participate in the Vessels of Opportunity program, and the outcome of the selection process associated with the VOO program;

- The VOO program was helpful to those persons in the commercial fisheries harvest sector who successfully applied to the program and received consistent employment; the program was locally criticized for not consistently assisting those who were in greatest need;

- Filing of claims for compensation from the responsible party was a common adaptive measure among owners of spill-affected small businesses; compensation was not available to business owners who had been affected by the moratorium;

- Interview data, archival information, and observation suggest that preexisting economic difficulties among business owners of Southeast Asian ancestry served to exacerbate deleterious spill impacts; moreover, some members of this group reportedly experienced a relatively high rate of initial difficulty in applying for compensation due to linguistic barriers– such problems reportedly were eventually mitigated through effective translation;

- The spill compensation process was locally criticized; critical business owners described a complex and laborious application and documentation process, delayed compensation, and other problems; the Gulf Coast Claims Facility was replaced with a court-directed claims process in 2012;

- Although many small business owners sought alternative forms of employment and/or income during the spill and moratorium, such opportunities were limited given the concurrent economic recession and lingering impacts of the hurricanes;

- Various forms of assistance were available to persons who sought external aid; although successful acquisition of assistance was an effective form of adaptation for many business owners, key public officials assert that multi-functioning spill assistance centers could serve to streamline delivery of aid and compensation during any potential spill events in the region; officials asserted that such centers should: (a) be administered by persons with extensive disaster relief experience; (b) facilitate effective coordination between governmental and non-governmental response entities, (c) offer practical assistance to persons seeking relief, including directed assistance to persons who do not use English as a first language and persons who do not possess the ability to comprehend complex application forms and processes; and (d) identify temporary employment alternatives for spill-affected residents, with prioritized placement of such persons in paid spill response activities.

6.5 Regarding the Research Hypotheses

- Although interview data indicate that the oil spill and related events exacerbated preexisting economic challenges among business owners of Southeast Asian ancestry, a similar situation was observed among many business owners in the study region irrespective of minority or non-minority status; moreover, extensive outreach efforts reportedly served to mitigate cultural-linguistic challenges associated with application for aid and compensation; as such, the working hypothesis that the 2010 Gulf oil spill disproportionately affected minority-owned small businesses cannot be clearly substantiated without additional research and monitoring over the course of time;

- Research findings support the hypothesis that the spill and offshore drilling moratorium disproportionately affected very small businesses in the region; this relates to the findings that: (a) individual participants in the harvest sector of the region's commercial fisheries were significantly impacted by area fishing closures and had few options for alternative employment; (b) charter operators in the study region were significantly impacted by fishery closures and had few options for alternative employment; (c) very small businesses in the commercial fishing support sector were indirectly but significantly affected by area fishing closures, and (d) owners of very small businesses in the oil and gas industry support sector were temporarily impacted by the moratorium and the permitting slowdown.

- Finally, the study findings do not clearly support the hypothesis that the oil spill and offshore drilling moratorium disproportionately affected small businesses in the most geographically isolated portions of the region; this relates to the fact that deleterious economic impacts were most closely related to proximity to oiled areas and related fishing closures irrespective of geographic isolation, and that economic benefits were most significant in the response staging areas irrespective of geographic isolation.

6.6 Conclusion

- Project findings should be considered preliminary in nature; the social and economic effects of the spill, fishery closures, and the offshore drilling moratorium continue to unfold at the time of this writing; previous research supports the assertion that such impacts will continue to emerge well into the future;

- This study has identified important kinds and patterns of economic and social impacts; consideration of these findings may facilitate a valid research agenda for investigating and analyzing spill-related impacts as they emerge and evolve in the years to come;

- This study has also initiated development of a valid baseline understanding of pertinent social, economic, and demographic trends and current conditions in the spill-affected region; future research efforts would benefit through use of this understanding and by the addition of newly emerging quantitative data of relevance to the study topics and hypotheses.

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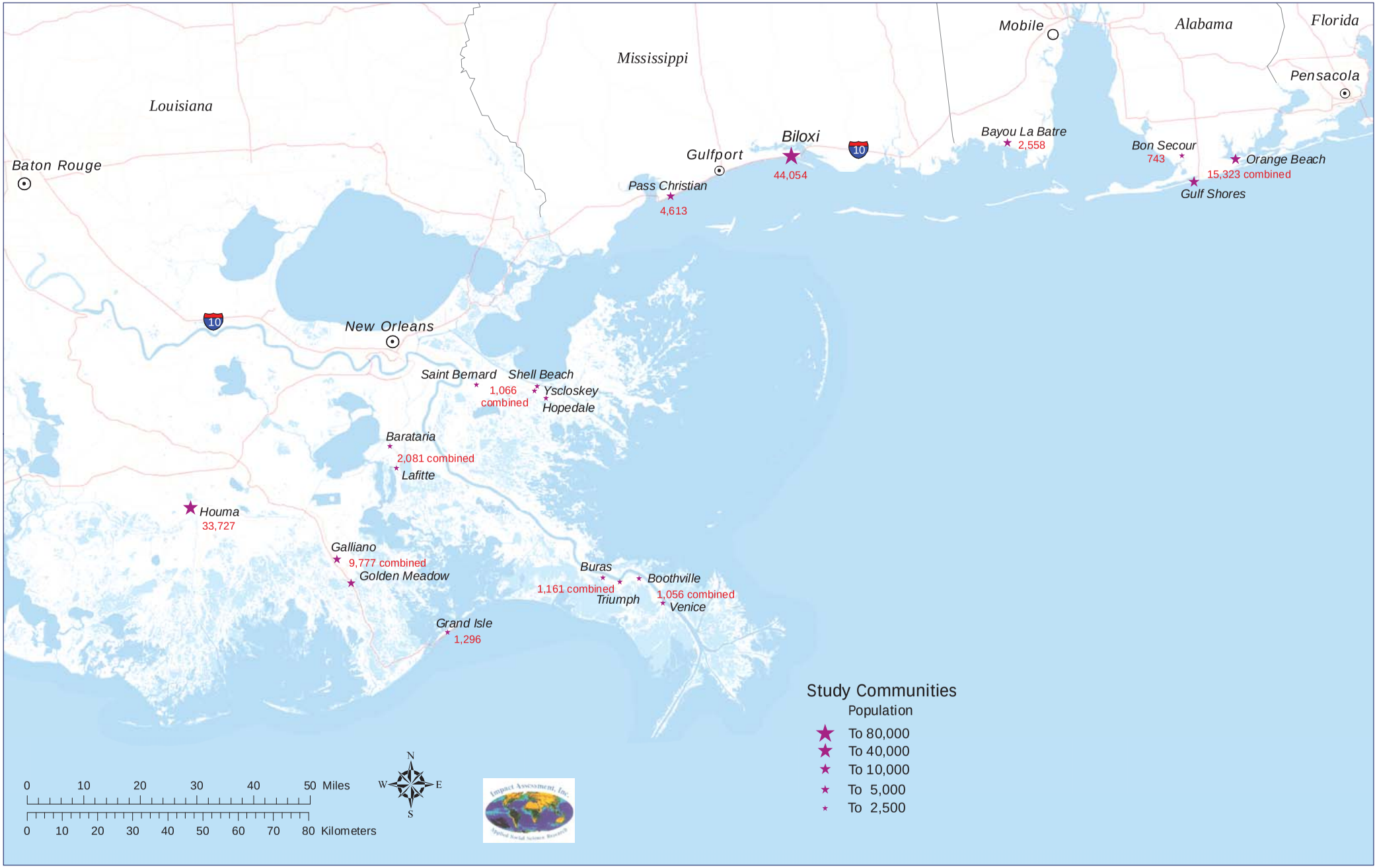
Appendix A

Project Maps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Gulf Shores
10
New Orleans
Saint Bernard
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Hopedale
Barataria
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Lafitte
Houma
33,727
Galliano
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Golden Meadow
Buras
1,161 combined
Triumph
Boothville
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Venice
Grand Isle
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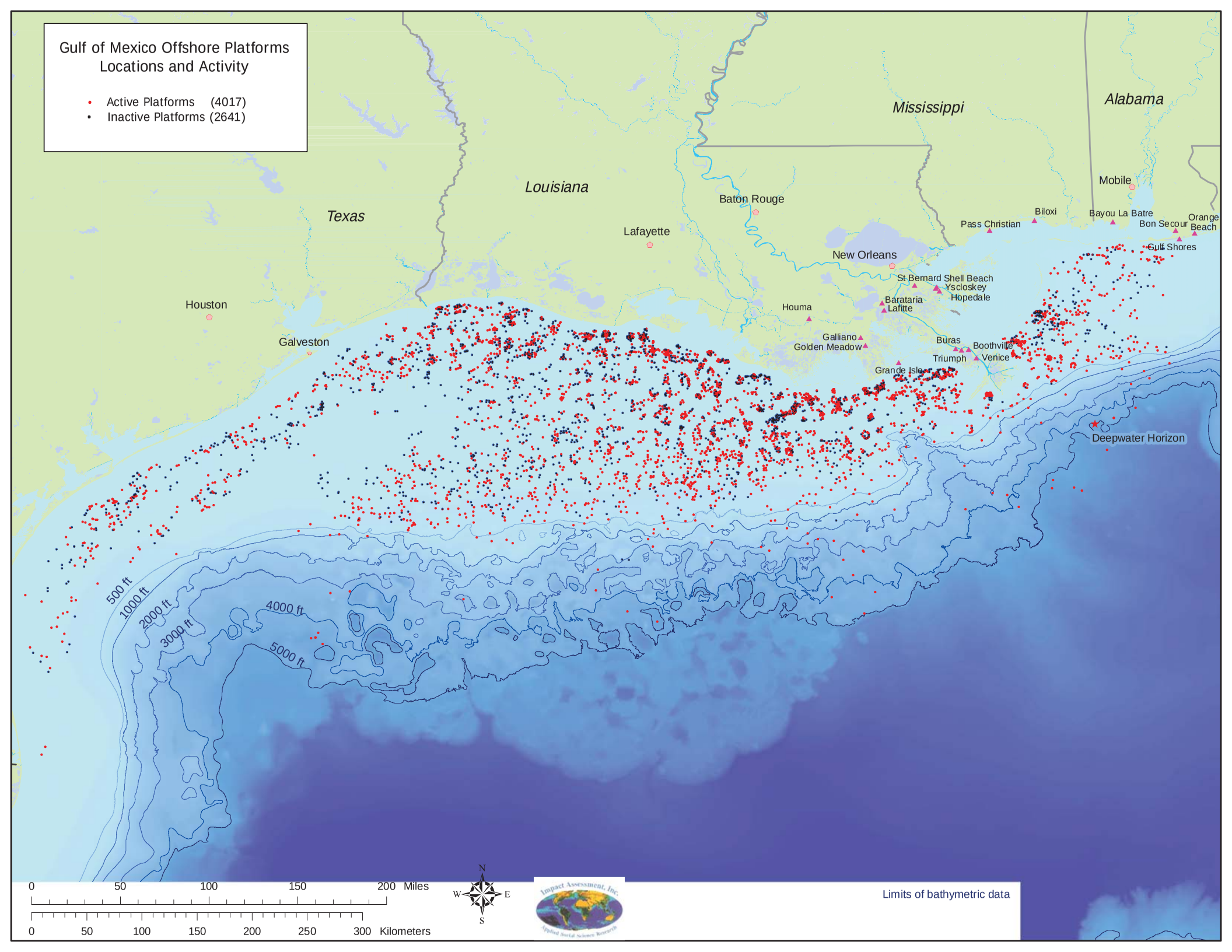
Gulf of Mexico Offshore Platforms
Locations and Activity
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Inactive Platforms (2641)
Texas
Louisiana
Mississippi
Alabama
Houston
Galveston
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Baton Rouge
New Orleans
Mobile
Biloxi
Pass Christian
Bayou La Batre
Bon Secour
Orange Beach
Gulf Shores
St Bernard Shell Beach
Yscloskey
Hopedale
Barataria
Lafitte
Houma
Galliano
Golden Meadow
Buras
Boothville
Venice
Triumph
Grande Isle
Deepwater Horizon
500 ft
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3000 ft
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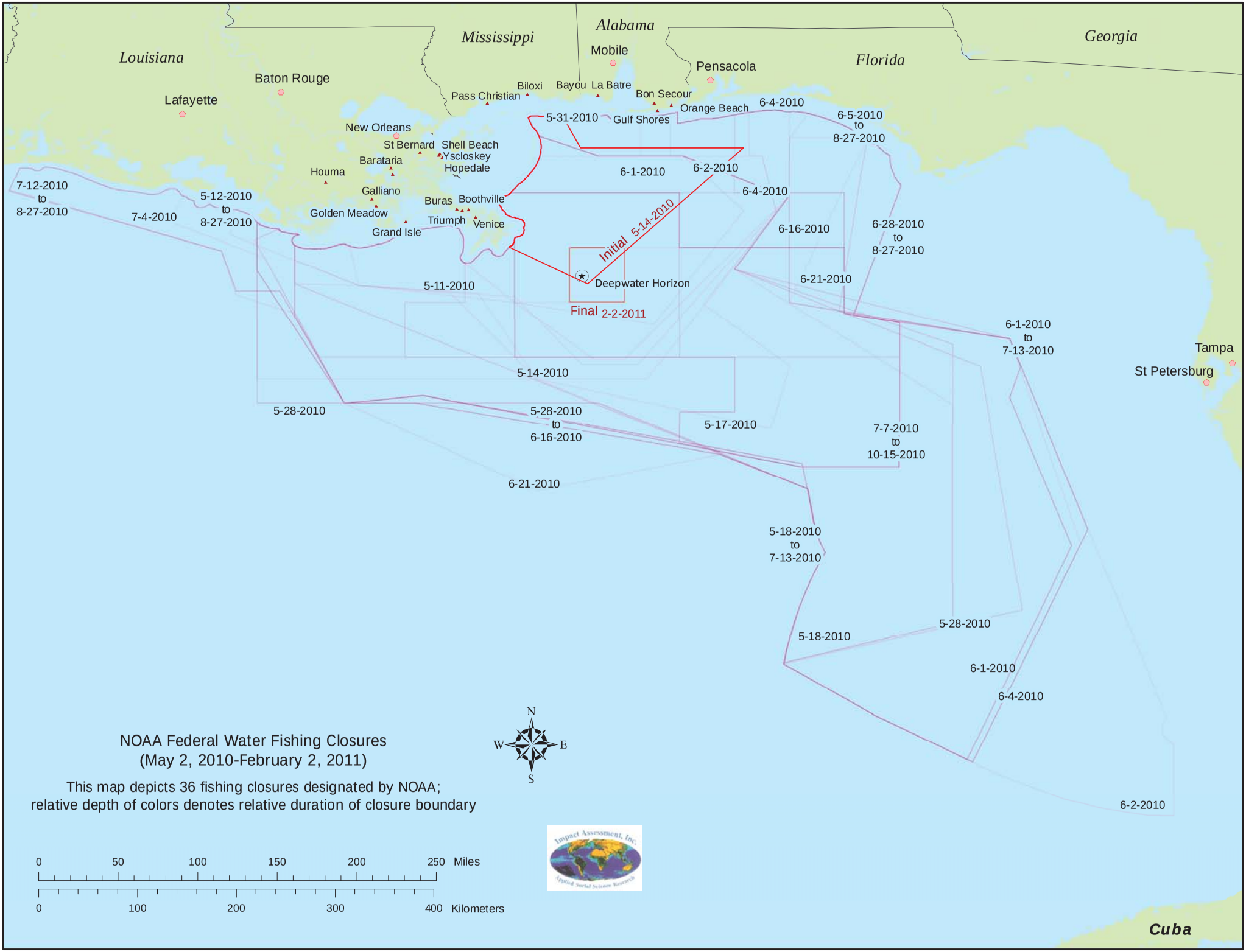
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Gulf Shores
New Orleans
St Bernard
Shell Beach
Ysclosky
Hopedale
Barataria
Houma
Galliano
Golden Meadow
Grand Isle
Buras
Boothville
Triumph
Venice
Deepwater Horizon
Initial 5-14-2010
Final 2-2-2011
5-31-2010
6-4-2010
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6-1-2010
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5-28-2010
5-18-2010
6-1-2010
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NOAA Federal Water Fishing Closures
(May 2, 2010-February 2, 2011)
This map depicts 36 fishing closures designated by NOAA;
relative depth of colors denotes relative duration of closure boundary
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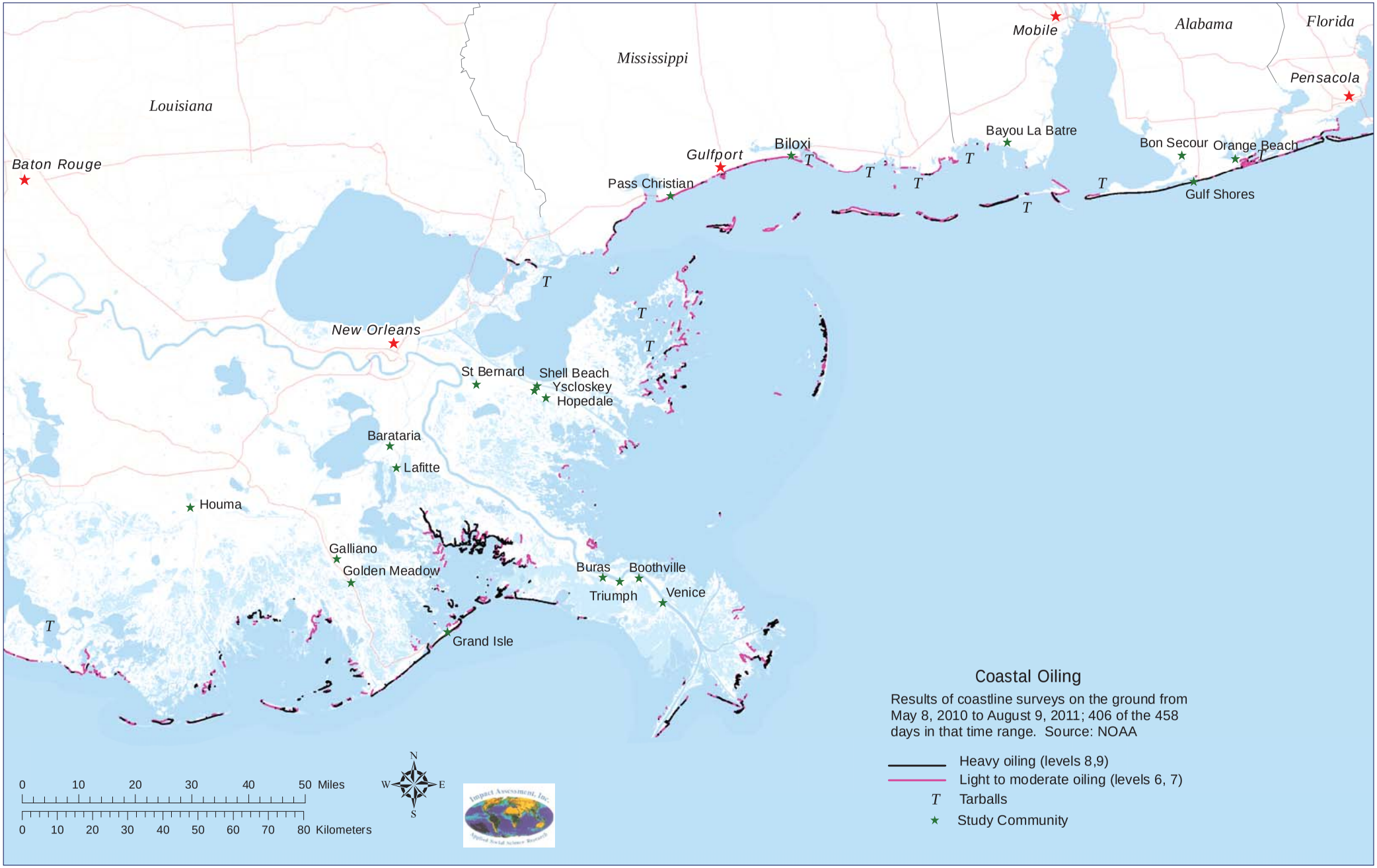
Impact Assessment, Inc.
Applied Social Science Research
Cuba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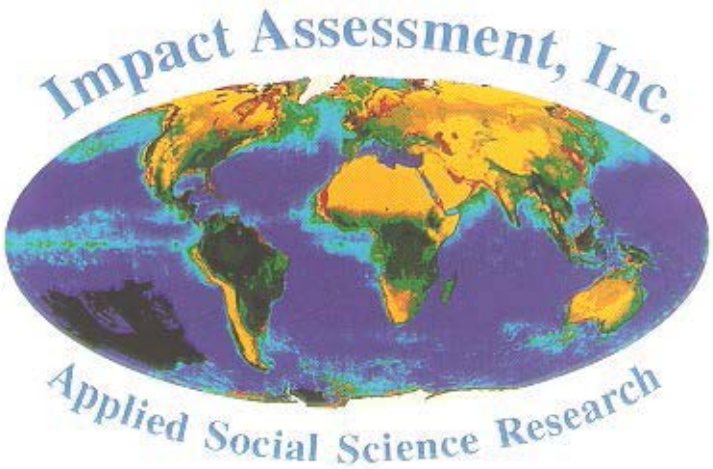
Grand Isle
T
0 10 20 30 40 50 Miles
0 10 20 30 40 50 60 70 80 Kilometers
N
W
E
S
Coastal Oiling
Results of coastline surveys on the ground from May 8, 2010 to August 9, 2011; 406 of the 458 days in that time range. Source: NOAA
Heavy oiling (levels 8,9)
Light to moderate oiling (levels 6, 7)
T Tarballs
Study Community


Louisiana
Mississippi
Alabama
Mobile
Theodore
Baton Rouge
Biloxi
Pascagoula
Gulfport
Pass Christian
Bayou La Batre
Bon Secour
Orange Beach
Gulf Shores
Dauphin Island
Slidell
New Orleans
Saint Bernard
Shell Beach
Yscloskey
Hopedale
Barataria
Lafitte
Amelia
Houma
Saint Mary
Galliano
Golden Meadow
Buras
Triumph
Boothville
Venice
Grand Isle
Cocodrie
Oil Spill Clean-up Staging Areas
Study Communities
Population
To 80,000
To 40,000
To 10,000
To 5,000
To 2,500
Oil Spill Clean-up Staging Area
0 10 20 30 40 50 Miles
0 10 20 30 40 50 60 70 80 Kilometers
N
W
E
S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Applied Social Science Research