

G.U.L.F. Sustainability Benchmarking Report
based on
A Checklist for Fisheries Resource Management Issues Seen From The
Perspective of the FAO Code of Conduct for Responsible Fisheries
(“Caddy Checklist”, FAO Circular 917, 1996)

As applied to the **Mississippi shrimp fishery**
brown shrimp (*Farfantepenaeus aztecus*)
white shrimp (*Litopenaeus setiferus*)



Audubon Nature Institute

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The Caddy Checklist (John Caddy, FAO 1996), an operationalized version of the Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries Management, was used to benchmark the Mississippi shrimp fishery, drawing information from the public documents, Mississippi Department of Marine Resources (MDMR) and NOAA Fisheries data and reports, and interviews with MDMR staff and Mississippi shrimp industry members, against the clauses of the Checklist. This Sustainability Benchmarking Report was authored by Audubon Nature Institute, and prepared by Laura Picariello, Research Manager of Gulf United for Lasting Fisheries program, under the GSMFC Oil Disaster Recovery Program, Grant Award No. NA10NMF4770481.

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Key Terms and Acronyms

ASPA- American Shrimp Processors Association	MSCL- Mississippi State Chemical Laboratory
BMP- Best Management Practices	MSDH- Mississippi State Department of Health
BPL- beam plankton nets	MSU- Mississippi State University
BRP- Biological Reference Point	MSY- maximum sustainable yield
CCRF- Code of Conduct for Responsible Fisheries	NMFS- National Marine Fisheries Service
CEA- Cooperative Enforcement Agreement	NEP- National Estuary Program
CONAPESCA- Mexico's National Commission of Aquaculture and Fishing	NERR- National Estuarine Research Reserve
COOL- Country of Origin Labeling	NGO- non-governmental organization
CWCS- Comprehensive Wildlife Conservation Strategy	NIFA- National Institute of Food and Agriculture
CZMA- Coastal Zone Management Act	NOAA- National Oceanic and Atmospheric Administration
CZMP- Coastal Zone Management Program	NPS- National Park Service
DOC- Department of Commerce	NRCS- Natural Resources Conservation Service
DOI- Department of Interior	NRDA- Natural Resource Damage Assessment
EEZ- Exclusive Economic Zone	NWRS- National Wildlife Refuge System
EIS- Environmental Impact Statement	ODRP- Oil Disaster Recovery Program
EPA- Environmental Protection Agency	PA- Precautionary Approach
FAO- Food & Agriculture Organization of the United Nations	RESTORE- Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act
FMP- fishery management plan	SAGARPA- Mexican Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
GCRL- Gulf Coast Research Lab	SEAMAP- Southeast Area Monitoring and Assessment Program
GDAR- Gulf Data, Assessment and Review	SEDAR- Southeast Data, Assessment and Review
GMFMC- Gulf of Mexico Fishery Management Council	SEFSC- Southeast Fisheries Science Center
GOM- Gulf of Mexico	SGCN- species of greatest conservation need
GoMI- Gulf of Mexico Initiative	SPS- Agreement of Sanitary and Phytosanitary Measures
GSMFC- Gulf States Marine Fisheries Commission	SSA- Southern Shrimp Alliance
GSS- Gulf Shrimp System	SWG- State Wildlife Grant
HACCP- Hazard Analysis and Critical Control Points	TBT- Technical Barriers to Trade
IJF- Interjurisdictional Fisheries Program	TED- turtle excluder device
IMMS- Institute for Marine Mammal Studies	TIP- Trip Interview Program
JEA- Joint Enforcement Agreement	USACE- U.S. Army Corps of Engineers
LDWF- Louisiana Department of Wildlife & Fisheries	USDA- U.S. Department of Agriculture
LEC- Law Enforcement Committee	USFDA- U.S. Food and Drug Administration
MCEQ- Mississippi Commission of Environmental Quality	USFWS- U.S. Fish and Wildlife Service
MCMR- Mississippi Commission on Marine Resources	USCG- United States Coast Guard
MDEQ- Mississippi Department of Environmental Quality	USM- University of Southern Mississippi
MDMR- Mississippi Department of Marine Resources	VMS- vessel monitoring system
MDWFP- Mississippi Department of Wildlife, Fisheries, and Parks	WMA- Wildlife Management Area
MSA- Magnuson-Stevens Fishery Conservation and Management Act	WRD- Water Resources Division
	WTO- World Trade Organization

Executive Summary

This project has been conducted under the Gulf States Marine Fisheries Commission (GSMFC) Oil Disaster Recovery Program (ODRP), Grant Award No. NA10NMF4770481, at the request of GSMFC to create Marine Advancement Plans (MAPs) based on assessments of U.S. fisheries in the Gulf of Mexico against internationally recognized standards of sustainability. Comprehensive information on the fishery was gathered through interviews with management and industry representatives, public documents, and research publications, and compared to the United Nations Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries (CCRF). The CCRF is the foundational document for the FAO Ecolabelling Guidelines, as well as many sustainability certification standards currently used in the marketplace. “A checklist for fisheries resource management issues seen from the perspective of the FAO Code of Conduct for Responsible Fisheries”, known as the “Caddy Checklist”, was chosen based on its functionality as an operationalized version of the CCRF. The Caddy Checklist focuses on the sustainability of management measures by addressing five key areas of the fishery: fisheries management, fishing operations, integration of fisheries into coastal area management, post-harvest practices and trade, and fisheries research. By taking clauses of the CCRF and transforming statements into questions, it is possible to measure the robustness of fishery management and sustainability.

The scope of the Mississippi Shrimp MAP includes the shrimp fishery management and fishing operations in Mississippi state waters and federal U.S. Exclusive Economic Zone (EEZ) waters in the Gulf of Mexico for the two primary shrimp species (brown shrimp (*Farfantepenaeus aztecus*), and white shrimp (*Litopenaeus Setiferus*) taken for human consumption. Primary gear types are otter trawl and skimmer trawl. The Mississippi shrimp fishery is part of the larger Gulf of Mexico shrimp fishery including Texas, Louisiana, Alabama and Florida. The fishery is managed by the Gulf of Mexico Fishery Management Council and the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NOAA Fisheries) in federal waters, with each state retaining management authority within state waters.

Of the 174 questions in the SBR used to benchmark the fishery, the Mississippi shrimp fishery received the following rankings, indicating high compliance with CCRF principles:

Mississippi Shrimp Results		
RATING	description	# of questions
GREEN	full credit	154
AMBER	partial credit	17
RED	no credit	0
N/A	not applicable	3

This report has been audited by Global Trust Certification, LTD (GTC), a third-party certification assessment body. GTC verified that the justifications provided for scoring met the approval of a certifying organization. GTC also provided a set of recommendations to increase the scoring of responses that did not meet a full GREEN rating. Recommendations provide by GTC and industry members provide the basis for a Mississippi Shrimp MAP Action Plan. Recommendations for the Texas shrimp fishery include increased compliance with Turtle Excluder Device (TED) and Bycatch Reduction Device (BRD) regulations, evaluation of bycatch and BRD use in state waters, evaluation of observer coverage levels, evaluation of capacity for the state level fishery, documentation of non-fish catches, documentation of crew members and competency training in areas such as TED/BRD maintenance, and updating of the Mississippi state Fishery Management Plan.

Introduction

This project has been conducted under the Gulf States Marine Fisheries Commission (GSMFC) Oil Disaster Recovery Program (ODRP), Grant Award No. NA10NMF4770481 at the request of the commission to assess the sustainability of U.S. state fisheries in the Gulf of Mexico against industry recognized standards of sustainability. The Caddy Checklist was chosen as the basis for the Sustainability Benchmarking Report based on its functionality as an operationalized version of the Code of Conduct of Responsible Fisheries, which is an internationally agreed set of standards developed through the United Nations Food and Agriculture Organization (FAO). The Checklist focuses on the sustainability of management measures; by taking clauses of the Code and transposing statements into questions, it is possible to quantify and score the system used to manage the fishery and measure the robustness of management and sustainability.

The Mississippi shrimp fishery, which is fished within Mississippi state territorial waters and federal Exclusive Economic Zone (EEZ) waters of the Gulf of Mexico, is managed under the aegis of the Gulf of Mexico Fishery Management Council, as established by the Fishery Conservation and Management Act of 1976, NOAA Fisheries, the Mississippi state legislature, and associated regulatory bodies, including the Mississippi Department of Marine Resources (MDMR).

John Caddy, the author of the Checklist (1996), makes a number of pertinent observations for how best to utilize the document and where its potential strengths and weaknesses lie. His points are salient and should be borne in mind when examining how this document was used to benchmark the Mississippi shrimp fishery.

When utilizing the checklist, it is important to remember the scope of the document and its intended purpose as it applies to verifying management practices. *“The [...] document concentrates principally on issues related to fisheries management in the narrower sense of resource management, notably those clauses found in Article 7, Fisheries Management. Selected clauses from other Articles, i.e. Article 8, Fishing Operations, Article 10, Integration of Fisheries into Coastal Area Management, Article 11, Post-Harvest Practices and Trade, and Article 12, Fisheries Research, are also included here, where they seem of particular concern to the question of resource management, sensu strictu, but should also be considered separately where this seems appropriate.”*

Rightfully so, the checklist places the greatest burden of proof on government bodies who ultimately own and control the resources in question. *“A further aspect that was inevitably emphasized by the intergovernmental process that gave rise to the Code is the high proportion of clauses that refer to State responsibility.”* Therefore, benchmarking a fishery and the responses of state management agencies against the checklist is an appropriate use of this document.

The checklist was designed to take into account all users of the resource, whether high-seas or inshore. However, owing to the level of state responsibility within the shrimp fishery and the manner by which United States fisheries are managed, additional modifications are necessary. Caddy addresses this issue by saying, *“This questionnaire does not attempt to cover the full scope of [the FAO Code], however, and it will be necessary to delete or modify the asterisked clauses for fisheries wholly under national jurisdiction.”* In this case, the checklist has been further modified to discount clauses that do not pertain to a U.S. fishery that falls entirely within U.S. jurisdiction. Mississippi shrimp fishery extends beyond state territorial waters and is part of the larger Gulf of

Mexico shrimp fishery; therefore, both state and federal management are considered within this report. This checklist will address regional collaboration between state and federal agencies. In other cases, questions with only a 'yes' or 'no' option have been modified to include 'some' in order to better quantify the efforts of the management agencies.

As an outside and neutral body, Audubon Nature Institute's G.U.L.F. program is capable of maintaining an unbiased view when evaluating Gulf of Mexico state and federal management systems. Additionally, G.U.L.F. has contracted a third party assessment group, Global Trust Certification, Ltd (GTC), to audit this benchmarking report for verification that the scoring and evidence provided meets the approval of an accredited certification body (verification report issued by GTC can be provided upon request.) According to Caddy, this is appropriate given the way in which the checklist was constructed: *"In formulating the individual clauses of the Code as questions, [...] the questions are addressed to a more general audience, when this seemed appropriate, rather than to the "State", so that they can be hopefully answered by different levels of representation of those involved in the fisheries world."* Despite its neutral stance, G.U.L.F.'s answers to the questions found in the checklist will necessarily be subject to the interpretation of the authors, something Caddy himself realized as a reality when using his document. *"There are many pitfalls in attempting to interpret the 'correct' response to, and appropriate overall weighting for, a given question, depending on the definitions followed as well as the point of view. Some simple examples of the problem of definitions are, for example, the common phrases "conservation and management measure", "confidentiality requirements", "complete and reliable statistics", etc."* G.U.L.F. welcomes feedback from MDMR or other agencies that choose to question the interpretations and answers found in this document, and recognizes that this checklist is a living assessment. *"Commonly used meanings of the terms used are implied, but clearly different definitions of a given term exist and will influence how a particular question is answered."* We expect that as technologies and regulations change and improve, so will the answers found in this document.

Sound science requires questioning of information and answers, which is acknowledged by Caddy. *"The particular approach taken to translating the answers to such questions into quantitative terms is certainly debatable, and other weightings for the scores are certainly possible. It is justifiable[...] if only because a scoring of the questionnaire by those involved or interested in the fisheries conservation and management process should lead to a clarification of the current situation of a given fishery. It would be particularly useful if it led to a short commentary by the respondent after each question, reflecting a general consensus on the answer to be provided and discussing its applicability in the particular circumstance of the fishery in question."* Again, Audubon Nature Institute's G.U.L.F. program welcomes the feedback of MDMR managers and scientists, as well as other interested stakeholders.

Finally, it is beneficial for the reader to bear in mind that these clauses are not weighted, but instead each is given the same value regardless of its importance (which is also subjective). *"The questionnaire begins with Article 7, Fisheries Management, and the assumption that a particular fishery resource, with geographical boundaries, is to be managed, and it attempts to establish whether or not issues raised in the Code of Conduct have been dealt with, totally or in part. A possible scoring for the questions is proposed which can be summed separately for each major Article. These scorings should be interpreted with caution, however, not only because of the subjective nature of the responses but also because no attempt is made to ensure that the scores reflect the relative importance of the questions or of the clauses of the Code that refer to it, nor is*

it inevitably the case, given the multiplicity of management systems in operation and the differing importance of the individual questions, that a lower score automatically means that one fishery is "less responsible" than another. The scoring may, however, have some value as an incentive for action and can serve as a way of comparing the performance of a given fishery management system for two or more fisheries.” Part of the value of the checklist is that it allows a reviewer to both consider the peculiarities of a given fishery or management plan while still allowing for some standardization of scoring and therefore an additional objective eye on the processes occurring.

The Mississippi shrimp fishery has been benchmarked here against the Caddy Checklist to compare the management system of the resource against the criteria of international best practices, as applicable to an inshore fishery. The Caddy Checklist consists of a total of 193 questions that encompass five pertinent areas of the Code. With regard to the Mississippi shrimp fishery, some questions referring to international requirements and fisheries based in developing countries are not applicable. One hundred seventy-four questions were identified, which focus on management, objectives, scientific practices, integration into coastal area management, and policy measures, which are directly applicable to state managed fisheries in the Gulf of Mexico. Questions that have been determined as N/A for the Mississippi shrimp fishery are not included in the final scoring. What follows is an assessment of the fishery as it currently stands on the date submitted.

The score of “yes”= 1 **GREEN**, “no” = 0 **RED**, or “Some”= 1/2 **AMBER** is given for each question in the Sustainability Benchmarking Report and is followed by a written response that justifies the rating, provides an explanation or current evidence to support the score, and identifies possible gaps to the particular Code provision under consideration. Each written justification is referenced to sources with websites and other electronic links, when possible, directly below each response to provide further detail for information. Scoring is presented in two separate formats, first, as a “stoplight” system of Red, Amber, Green indicating level of compliance, and secondly, in Appendix A, as a numerical scoring of 1, 1/2, or 0 for each response. As noted above, Caddy recommends caution in utilizing the numerical scores, as questions are not weighted.

The following page provides a chart of ranking for each Sustainability Benchmarking Report question, rated as follows:

GREEN=1 (full credit) **AMBER**=.5 (partial credit) **RED**= 0 (no credit)

N/A= questions that have been excluded from scoring as not relevant at this time

The Mississippi shrimp fishery received the following rankings:

GREEN – 154 **AMBER** – 17 **RED** – 0 **N/A** – 3

Rankings of **AMBER** and **RED** are considered gaps in current practices and G.U.L.F. will utilize these responses in creating a subsequent MAP report containing a series of recommendations for advancement of the fishery towards greater sustainability.

7 – Fisheries Management	Rating
7.1.1 (a)	
7.1.1. (b)	
7.1.1. (c)	
7.1.2 (a)	
7.1.2 (b)	
7.1.3 (a)	
7.1.3 (b)	
7.1.4	
7.1.4 (a)	
7.1.4 (b)	
7.1.4 (d)	
7.1.4 (e)	
7.1.6 (a)	
7.1.6 (b)	
7.1.7 (a)	
7.1.7 (b)	
7.1.8 (a)	
7.1.8 (b)	
7.1.9 (i) – Assessment	
7.1.9 (ii) – Management	
7.1.9 (iii) – Decision making	
7.1.10	
7.2.1 (a)	
7.2.1 (b)	
7.2.1 (c)	
7.2.2 (a)(i)– Defined	
7.2.2 (a)(ii)– Avoided	
7.2.2 (b) – Economic conditions	N/A
7.2.2 (c) – Small-scale interests	
7.2.2 (d) – Biodiversity	
7.2.2 (e) – Depleted stocks	
7.2.2 (f) – Environmental impacts	
7.2.2 (g)(i) – Pollution	
7.2.2 (g)(ii) – Ghost fishing	
7.2.2 (g)(iii) – Fishing methods	
7.2.3	
7.3.1 (a)	
7.3.1 (b)	
7.3.1 (c)	
7.3.1 (d)	
7.3.1 (f)	
7.3.2	
7.3.3 (i) – Plan exists	
7.3.3 (ii) – Plan subscribed to	
7.3.4 (i) – Information gathering	
7.3.4 (ii) – Research	

7.3.4 (iii) – Management	
7.3.4 (iv) – Development	
7.4.2 (i) – Resource	
7.4.2 (ii) – Climate & environment	
7.4.2 (iii) – Socio-economics	
7.4.3(i) – Cost-benefit	N/A
7.4.3 (ii)– Alt. management	
7.4.4	
7.4.5	
7.4.6 (i) – Agreed format	
7.4.6 (ii) – Timely manner	
7.4.7	
7.5.1 (a)	
7.5.1 (b)	
7.5.2/7.5.3 (i) – Target ref. points	
7.5.2/7.5.3 (ii) – Limit ref. points	
7.5.2/7.5.3 (iii) – Research proc.	
7.5.2/7.5.3 (iv) – Mgmt actions	
7.5.5 (a)	
7.5.5 (b)(i) – Natural phenomena	
7.5.5 (b)(ii) – Fishing impact	
7.6.1	
7.6.2	
7.6.3 (a)	
7.6.3 (b)	
7.6.5	
7.6.6	
7.6.7	
7.6.8 (i) – Review procedures	
7.6.8 (ii) – Flexible mechanism	
7.6.9 (a)(i) – Waste and discards	
7.6.9 (a)(ii) – Non-target catch	
7.6.9 (a)(iii) – ETP species	
7.6.9 (b)(i) – Fish size	
7.6.9 (b)(ii) – Gear	
7.6.9 (b)(iii) – Discards	
7.6.9 (b)(iv) – Seasons	
7.6.9 (b)(v) – Closed areas	
7.6.9 (b)(vi) – Artisanal areas	
7.6.9 (b)(vii) – Juveniles	
7.6.9 (c)	
7.6.10	
7.7.1	
7.7.2 (a)	
7.7.2 (b)	
7.7.2 (c)	
7.7.3 (i) – MCS	

7.7.3 (ii) – Observers	
7.7.3 (iii)– Inspection	
7.7.3 (iv) – VMS	
7.7.5 (a)	
7.7.5 (b)	

8 – Fishing Operations	Rating
8.1.1	
8.1.2	
8.1.3	
8.1.4	
8.1.7	
8.1.8	
8.1.9	
8.1.10	
8.2.1 (a)	
8.2.1 (b)	
8.2.4	
8.2.7 (a)	
8.2.7 (b)	
8.4.2	
8.4.3 (a)(i) – Fishing operations	
8.4.3 (a)(ii) – Non-fish catches	
8.4.3 (a)(iii) – Fish catches	
8.4.3 (b)	
8.4.4	
8.4.5	
8.4.6	
8.4.7	
8.4.8 (i) – Environmental impacts	
8.4.8 (ii) – Social impacts	
8.4.8 (iii) – Biodiversity impacts	
8.4.8 (iv) – Coastal fisheries	
8.5.1 (a)	
8.5.1 (a) Supplemental	
8.5.1 (b)	
8.5.2	
8.5.3	
8.5.4	

10 – Institutional Framework	Rating
10.1.1	
10.1.2	
10.1.3	
10.1.4 (a)(i)	

10.1.4 (a)(ii)	
10.1.4 (b)	
10.2.1	
10.2.2 (i) – Economic	
10.2.2 (ii)– Social & cultural	
10.2.3	
10.2.4	
10.2.5 (i) – Environment & biology	
10.2.5 (ii)– Economy & social	
10.2.5 (iii) – Legal & institutional	
10.3.1 (i) – Use of resources	
10.3.1 (ii) – Conservation of environment	

11 – Post-harvest Practices & Trade	Rating
11.1.11	
11.2.3	

12 – Fisheries Research	Rating
12.1 (a)	
12.1 (b)	
12.1 (c)	
12.2	
12.3 (a)	
12.3 (b)	
12.3 (c)	
12.4 (a)	
12.4 (b)	
12.5 (a)	
12.5 (b)	
12.6	
12.7 (a)	
12.7 (b)	
12.8 (a)	
12.8 (b)	
12.10 (a)	
12.10 (b)	
12.10 (c)	
12.11 (a)	
12.11 (b)	
12.12	
12.13 (a)	
12.13 (b)	
12.14	N/A
12.17	

Article 7 – Fisheries Management

7.1.1 (a) Are conservation and management measures based on the best scientific evidence available? **Yes...** [1] **Some...** [½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The Mississippi shrimp fishery is part of a larger Gulf of Mexico shrimp fishery, based on stock determinations, and is managed regionally. Management of the Gulf of Mexico shrimp fishery is the responsibility of the Gulf of Mexico Fishery Management Council (GMFMC) and NOAA fisheries in waters from three nautical miles (nm) out to 200 nm. Individual states maintain responsibility for management within state waters; therefore, Mississippi Department of Marine Resources (MDMR) is responsible for management of shrimp in Mississippi state waters out to three nautical miles. Mississippi participates in the GMFMC and manages the shrimp fishery in state waters consistent with federal regulations.</p> <p>Federal: The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA (first enacted in 1976, and amended in 1996 and 2006) is the primary law governing fisheries management in the U.S.¹ The MSA established eight regional councils with the primary responsibility of developing fishery management plans (FMPs) that comply with 10 National Standards designed to promote sustainable fisheries management. National Standard 2 (NS2) requires that “<i>Conservation and management measures shall be based upon the best scientific information available.</i>”² The MSA, section 302(g)(1)(A) requires each regional management council to form a Scientific and Statistical Committee (SSC) to serve as the council’s scientific and technical advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides “ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices.”³ The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries. In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC, which includes a representative from each of the five Gulf States.</p> <p>NOAA Fisheries Southeast Fisheries Science Center (SEFSC), based in Miami, Florida, is the branch responsible for providing multi-disciplinary research to support management decisions of the GMFMC and NOAA Fisheries.⁴ SEFSC maintains labs in Galveston, TX, Lafayette, LA, Panama City, FL, Pascagoula, MS and Stennis, MS. SEFSC Research and Data programs are responsible for biological, economic and socio-cultural research and data collection for commercial and recreational fisheries, economics and fisheries-independent data. SEFSC conducts stock assessments for all species managed by GMFMC; stock assessments</p>		

for shrimp are conducted through the Galveston Lab Shrimp Fishery research program.⁵ The SEFCS collects fishery-dependent data for the shrimp fishery through the Gulf Shrimp System (GSS). The GSS utilizes port agents throughout the Gulf of Mexico to collect landings data (amount and value) from seafood dealers, and interview data (fishing effort and location) from fishermen.⁶ Additionally, all federal Gulf shrimp permit holders are required to report annual landings each year through the Annual Landings Form (ALF) as a condition for permit renewal. Two separate databases are maintained for port agent and dealer reported data and fishermen reported data.⁷ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program. The ELB program began in 2007 and between 2007 and 2013, NOAA Fisheries funded and collected data on approximated 500 shrimp vessels through the program.⁸ In 2014, the program changed format to a cellular ELB (cELB) program and continues to use a stratified random sampling method to select participants each year. If selected, Gulf shrimp permit holders are required to participate in the program and permit renewal is contingent upon participation. The ELB program collects data on amount and location of shrimp landings. Gulf shrimp permit holders are also required to carry an observer if selected for the Galveston Laboratory Observer Program. Similar to the ELB program, permit holders are selected by the Southeast Regional Director through a stratified random sampling method. The focus of data collection for the observer program for the shrimp fishery is bycatch and bycatch reduction device evaluation.⁹

For the Gulf shrimp fishery, there is a heavy focus on research regarding bycatch of the fishery.¹⁰ The Pascagoula Lab in MS houses the Harvesting Systems Unit, a team of biologists and gear specialists who perform critical research on fishing gear. The Harvesting Systems Unit does extensive research on bycatch reduction devices for the Gulf of Mexico shrimp fishery, including cooperative research with commercial industry members to test improved gear designs, and also conducts trainings and courtesy inspections across the Gulf on commercial shrimp boats to ensure proper use of turtle excluder devices (TEDs) and bycatch reduction devices (BRDs).¹¹ The Galveston Lab focuses research efforts on Fishery Management, Fishery Ecology and protected Species with strong emphasis on research pertaining to all aspects of the shrimp fishery.¹²

GMFMC implemented the Shrimp Fishery Management Plan (FMP) in 1981, which included brown shrimp, white shrimp, pink shrimp (*Penaeus duorarum*), royal red shrimp (*Pleoticus robustus*), seabobs (*Xiphopeneus kroyeri*) and rock shrimp (*Sicyonia brevirostris*) in the Gulf of Mexico. Seabobs and Rock shrimp have since been removed from the plan, and the current shrimp FMP covers management of white, brown, pink and royal red shrimp. The Shrimp FMP is under constant revision based on ongoing research and best available science and the FMP has been amended 16 times since implementation.¹³

The goals/objectives of Shrimp FMP are:¹⁴

- Optimize the yield from shrimp recruited to the fishery
- Encourage habitat protection measures to prevent undue loss of shrimp habitat

- Coordinate the development of shrimp management measures by the GMFMC with shrimp management programs of the several states, where feasible.
- Promote consistency with the Endangered Species Act and the Marine Mammal Protection Act
- Minimize the incidental capture of finfish by shrimpers, when appropriate
- Minimize adverse effects of underwater obstructions to shrimp trawling
- Provide for statistical reporting system

Mississippi:

Mississippi Department of Marine Resources (MDMR) is the state agency charged with management of the shrimp fishery in Mississippi waters and manages the fishery separately, but consistent with, federal management. MDMR representatives sit on the GMFMC and associated scientific and advisory panels, and participate in research activities.

MDMR mission statement is “dedicated to enhancing, protecting and conserving marine interests of the state by managing all marine life, public trust wetlands, adjacent uplands and waterfront areas to provide for optimal commercial, recreational, educational, and economic uses of these resources consistent with environmental concerns and social changes.”¹⁵ The Mississippi Code, Title 49, Chapter 15 pertains specifically to seafood. Section 49-15-301 establishes the Commission on Marine Resources (MCMR) to “regulate all matters pertaining to all saltwater aquatic life and marine resources”, and Section 49-15-11 establishes the Department of Marine Resources (MDMR) “to manage, control, supervise, enforce and direct any matters pertaining to saltwater aquatic life and marine resources under the jurisdiction of the commission”^{16,17} MCMR and MDMR promulgate rules and regulations consistent with Section 49-15-2 (Standards for fishery conservation and management; fishery management plans), which requires that conservation and management measures be based on the best scientific information available.¹⁸ Mississippi Code Section 49-15-307 (Powers and duties of the department) also states that the department shall have the following powers and duties:¹⁹

- *(c) To commission or conduct studies designed to determine alternative methods of managing and conserving the marine resources of this state in a manner to insure efficiency and sustained productivity"*

Mississippi Code, Title 49 (Conservation and Ecology), Chapter 3 (Fisheries and Wildlife Research) establishes, by law, a program “for the discovery and dissemination of knowledge concerning the management and proper utilization of fish and game resources in the state.”²⁰ MS Code 37-101-21 establishes the Gulf Coast Research Lab (GCRL) as a state institution with the purpose “to promote the study and knowledge of science including the natural resources of the State of Mississippi and to provide for the dissemination of research findings and specimens from the Gulf Coast area.”, and MS Code 37-101-19 establishes the use of GCRL by MDMR.^{21,22}

Mississippi Code §49-37-3 (2013) known as the “Statewide Scientific Information Management Act” is designed to establish a coordinated statewide effort for management of scientific information by recognizing the importance of research and data collection by state and federal agencies to effectively manage natural resources and requiring coordination and dissemination of information between agencies and the general public.²³ Mississippi Code §49-37-7 establishes the Statewide Scientific Information Management System Coordination Council and the Executive Director of Marine Resources sits on the council.²⁴

MDMR Marine Fisheries Program “includes conservation and overall management of living marine organisms through research and data collection as modified by relevant social, economic and biological factors.”²⁵ This is accomplished through both fishery-dependent and fishery-independent data collection, biological and socioeconomic research. MDMR partners with several organizations and institutions to carry out such research.

Mississippi’s Fishery-Independent Sampling Program is a collaborative effort between MDMR and GCRL.^{26,27} Fishery-independent sampling began in 1974 utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample.²⁸ MS Code 49-15-15 mandates MCMR to “utilize the resources of the Gulf Coast Research Laboratory to the fullest extent possible” and MS Code 49-15-84 specifically requires the collaboration between MDMR and GRCL on blue crab research and management strategies.^{29,30}

MDMR began implementation the Trip Ticket Program for fishery-dependent data collection in 2002.³¹ The Trip Ticket Program was initially implemented in Florida, and developed for use in the other Gulf states through the GSMFC FIN program. The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis and minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.³² MDMR initially implementing the Trip Ticket Program on a fishery-by-fishery basis and reporting became mandatory for all fisheries, except shrimp, in 2012.³³ Dealers or processors purchasing only shrimp species from a commercial fishermen were exempt from trip ticket reporting, but were still required to report total catch by species and size count, ex-vessel value, condition landed and vessel registration number to MDMR or an authorized port agent.³⁴ In July 2015, MCMR approved a change to Title 22, Part 9 of the Mississippi Administrative Code to include mandatory trip ticket reporting for all seafood and removed the exemption for shrimp dealers. This regulation is currently in the final rulemaking process and will take effect in 2015.

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ 50 CFR §600.133 (Scientific and Statistical Committee) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

⁴ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁵ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁷ NOAA Fisheries. "2010 Analysis of Gulf Shrimp Moratorium Permits."

⁸ "Research" Southeast Fisheries Science Center, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/research_home/index.html

⁹ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

¹⁰ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

¹¹ "Shrimp Researched & Managed by the SEFSC" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/shrimp/>

¹² "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹³ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁴ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

¹⁵ Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/dmr-information/about-us>

¹⁶ Miss. Code Ann. § 49-3-3 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-3>

¹⁷ Miss. Code Ann. § 49-15-2 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-2/>

¹⁸ Miss. Code Ann. § 49-15-301 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-301/>

¹⁹ Miss. Code Ann. § 49-15-307 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-307>

²⁰ Miss. Code Ann. § 49-3-3 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-3/section-49-3-3/>

²¹ Miss. Code Ann. § 37-101-21 <http://law.justia.com/codes/mississippi/2013/title-37/chapter-101/in-general/section-37-101-21>

²² Miss. Code Ann. § 37-101-19 <http://law.justia.com/codes/mississippi/2013/title-37/chapter-101/in-general/section-37-101-19/>

²³ Miss. Code Ann. § 49-37-3 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-37/section-49-37-3/>

²⁴ Miss. Code Ann. § 49-37-7 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-37/section-49-37-7/>

²⁵ *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/dmr-information/about-us>

²⁶ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

²⁷ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

²⁸ [VanderKooy, 2013. p. 85](#)

²⁹ Miss. Code Ann. § 49-15-15 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-15/>

³⁰ Miss. Code Ann. § 49-15-84 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-84>

³¹ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

³² "Trip Ticket Program" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

³³ FIN Committee. 2012. Annual Report of the Fisheries Information Network in the Southeast Region (FIN) January 1, 2011 - December 31, 2011. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20205.pdf>

³⁴ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

7.1.1 (b) Are conservation and management measures designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization and maintain their availability for present and future generations? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
Conservation and management measures at both the state and federal level are designed to ensure long-term sustainability and promote optimum utilization.		

Federal:

The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the MSA, which is the primary law governing fisheries management in the U.S.¹ National Standard 1 (NS1) requires “*Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.*”² Current guidelines for NS1 require specification of maximum sustainable yield (MSY) and Optimum Yield (OY), based on the best scientific evidence available, for each fishery managed by the Councils. Additionally, NS1 requires specification of status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks in the fishery. The NS1 guidelines are designed to prevent overfishing and ensure that the fishery achieve OY and require corrective actions to be taken to rebuild stocks if overfishing or overfished conditions occur.

The GMFMC implemented the Shrimp FMP in 1981, which currently includes brown shrimp, white shrimp, pink shrimp, and royal red shrimp in the Gulf of Mexico.³ The goals/objectives of Shrimp FMP include optimizing the yield of shrimp recruited to the fishery and habitat protection measures to prevent undue loss of shrimp habitat: Amendment 5 of the Shrimp FMP defined overfishing and provided measures to restore overfished stocks, should overfishing occur, for brown, pink and royal red shrimp.⁴ Amendment 7 similarly defined overfishing and measures to restore stocks if overfished for white shrimp.⁵ Amendment 13 further defined reference points for each of the penaeid shrimp species to comply with the requirements of MSA NS1 and includes definitions of Maximum Fishing Mortality Threshold (MFMT) and Minimum Stock Size Threshold (MSSST).⁶ The GMFMC manages the shrimp fishery in relation to these reference points to ensure optimal yield and long-term availability for future generations. Additionally, Amendment 13 implemented a 10-year moratorium on new permits for the federal shrimp fishery, capping the number of licenses in the fishery. GMFMC is currently developing two additional amendments to the shrimp FMP. In 2015, Amendment 15 was passed to redefine the SDC for the shrimp fishery based on updates to the stock assessment model. Amendment 17 is currently being drafted to address the end of the 10 year permit moratorium, which will expire in December of 2016.^{7,8}

The MSA section 306 pertaining to state jurisdictions does provide authority of the U.S. Secretary of Commerce, in the event that the state takes any action, or omits to take action, which would substantially and adversely affect the carrying out of a federal FMP, the ability to regulate the fishery within state boundaries pursuant to the FMP and regulations promulgated to implement that FMP.⁹

Mississippi:

The marine resources of Mississippi are managed by MCMR and MDMR. MCMR was established by MS Code §49-15-301 to “regulate all matters pertaining to all saltwater aquatic life and marine resources” and MDMR, as the administrative arm of the MCMR, was established by MS Code §49-15-11 “to manage, control, supervise, enforce and direct any matters pertaining to saltwater aquatic life and marine resources under the jurisdiction of the commission”^{10,11} MCMR and MDMR

promulgate rules and regulations consistent with MS Code §49-15-2 (Standards for fishery conservation and management; fishery management plans) and MS Code §49-15-307 (Powers and duties of the department).^{12,13}

MS Code §49-15-307 (Powers and duties of the department) requires the department “(c) To commission or conduct studies designed to determine alternative methods of managing and conserving the marine resources of this state in a manner to insure efficiency and sustained productivity”.

MS Code §49-15-2 sets the core standards for management of fisheries in Mississippi and includes “(c) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, but no measure shall have economic allocation as its sole purpose; (f) Conservation and management measures shall, consistent with the conservation requirements of this state (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (i) provide for the sustained participation of the communities”

MDMR mission statement is “dedicated to enhancing, protecting and conserving marine interests of Mississippi for present and future generations. It manages all marine life, public trust wetlands, adjacent uplands and waterfront areas to provide for optimal commercial, recreational, educational, and economic uses of these resources consistent with environmental concerns and social changes.”¹⁴ Such tasks are carried out by legislative actions through the Mississippi Code and rules and regulations promulgated through the Mississippi Administrative Code. Title 22 of the Mississippi Administrative Code is dedicated to MDMR rules and regulations and Part 2 of Title 22 contains specific regulations pertaining to shrimp.¹⁵

With respect to the shrimp fishery, MDMR monitors shrimp populations and fishing activity through the Trip Ticket and Fishery-Independent Sampling Programs, and has several technical measures in place for the protection of shrimp populations and habitat that are consistent with federal shrimp management. MDMR manages the shrimp fishery through seasonal closures to ensure that enough mature shrimp survive to reproduce and to allow for shrimp to grow to marketable size prior to harvest. MDMR and GCRL partner on the Shrimp Sampling Program for brown shrimp to determine seasonal openings based on size count, and the season opens when the majority of shrimp have reached legal size (68 count). MDMR also implemented area closures to protect nursery habitats and prohibits commercial trawling within ½ mile of the shoreline on the mainland and prohibits all shrimping within one mile of the barrier islands.^{16,17}

MDMR participates in the GMFMC process and complies with the conservation and management measures developed by the GMFMC.

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

⁴ GMFMC. *Amendment 5 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 1991. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁵ GMFMC. *Amendment 7 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 1994. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-07%20Final%201994-05.pdf>

⁶ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%200805.pdf>

⁷ GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁸ GMFMC. *Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan*. August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

⁹ MSA Section SEC. 306. STATE JURISDICTION <http://www.mmc.gov/legislation/pdf/msa306.pdf>

¹⁰ Miss. Code Ann. § 49-15-301 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-301/>

¹¹ Miss. Code Ann. § 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11/>

¹² Miss. Code Ann. § 49-15-2 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-2/>

¹³ Miss. Code Ann. § 49-15-307 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-307>

¹⁴ *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/dmr-information/about-us>

¹⁵ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCode/00000063c.pdf>

¹⁶ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

¹⁷ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.1.1 (c) Are management measures currently in effect in the fishery designed for the long-term conservation and sustainable use of fishery resources, as opposed to reasons of short-term expediency? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
The state and federal management agencies (MDMR, GMFMC, and NOAA		

Fisheries) work together to ensure that management measures in both jurisdictions are designed for long-term conservation and sustainable use.

Federal:

The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the MSA, which is the primary law governing fisheries management in the U.S.¹ National Standard 1 (NS1) requires “*Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.*”² The current guidelines for NS1 and measures implemented through the GMFMC Shrimp FMP and amendments, as noted above in response to 7.1.1(b), are designed for long-term, sustainable use of the fishery. See previous response for details.

Mississippi:

The marine resources of Mississippi are managed by MCMR and MDMR. MCMR was established by MS Code §49-15-301 to “regulate all matters pertaining to all saltwater aquatic life and marine resources” and MDMR, as the administrative arm of the MCMR, was established by MS Code §49-15-11 “to manage, control, supervise, enforce and direct any matters pertaining to saltwater aquatic life and marine resources under the jurisdiction of the commission”^{3,4} MCMR and MDMR promulgate rules and regulations consistent with MS Code §49-15-2 (Standards for fishery conservation and management; fishery management plans) and MS Code §49-15-307 (Powers and duties of the department).^{5,6}

MS Code §49-15-307 (Powers and duties of the department) requires the department “(c) *To commission or conduct studies designed to determine alternative methods of managing and conserving the marine resources of this state in a manner to insure efficiency and sustained productivity*”.

MS Code §49-15-2 sets the core standards for management of fisheries in Mississippi and includes “(c) *Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, but no measure shall have economic allocation as its sole purpose; (f) Conservation and management measures shall, consistent with the conservation requirements of this state (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (i) provide for the sustained participation of the communities*”

MDMR mission statement is “dedicated to enhancing, protecting and conserving marine interests of Mississippi for present and future generations. It manages all marine life, public trust wetlands, adjacent uplands and waterfront areas to provide for optimal commercial, recreational, educational, and economic uses of these resources consistent with environmental concerns and social changes.”⁷ Such tasks are carried out by legislative actions through the Mississippi Code and rules and regulations promulgated through the Mississippi Administrative Code. Title 22 of the Mississippi Administrative Code is dedicated to MDMR rules and regulations and Part 2 of Title 22 contains specific regulations pertaining to shrimp.⁸

With respect to the shrimp fishery, MDMR monitors shrimp populations and

<p>fishing activity through the Trip Ticket and Fishery-Independent Sampling Programs, and has several technical measures in place for the protection of shrimp populations and habitat that are consistent with federal shrimp management.</p> <p>MDMR manages the shrimp fishery through seasonal closures to ensure that enough mature shrimp survive to reproduce and to allow for shrimp to grow to marketable size prior to harvest. MDMR and GCRL partner on the Shrimp Sampling Program for brown shrimp to determine seasonal openings based on size count, and the season opens when the majority of shrimp have reached legal size (68 count). MDMR also implemented area closures to protect nursery habitats and prohibits commercial trawling within 1/2 of the shoreline on the mainland and prohibits all shrimping within one mile of the barrier islands.⁹</p>		
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¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² "National Standards Guidelines" NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ Miss. Code Ann. § 49-15-301 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-301/>

⁴ Miss. Code Ann. § 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11/>

⁵ Miss. Code Ann. § 49-15-2 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-2/>

⁶ Miss. Code Ann. § 49-15-307 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-307>

⁷ "Shrimp and Crab Bureau" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

⁸ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCode/0000063c.pdf>

⁹ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.1.2 (a) Have attempts been made to identify domestic parties having a (legitimate) interest in the use and management of fisheries resources? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: The Gulf of Mexico Fishery Management Council (GMFMC), along with NOAA Fisheries, is responsible for monitoring and amending fishery management plans (FMP) to best use the fishery resource in the Gulf of Mexico.¹ In doing so, they solicit participation from the entire fishing community. Their meetings are open to the public and public participation is actively encouraged. GMFMC uses a public</p>		

“scoping” period and schedules public hearings to engage stakeholders with the goal of identifying issues, potential impacts, and alternative solutions to fishery management measures. Once a draft plan is prepared, it is presented to the public through hearings/meetings throughout the Gulf Coast for feedback. Comments submitted at these meetings are recorded and displayed on the GMFMC website. GMFMC also accepts comments through comment forms on their website, via email and mail. All comments are reviewed before FMP decisions are finalized. This final action also occurs publically, during GMFMC meetings.² GMFMC also communicates publicly via newsletters, social media posts, and cell phone applications, all in an effort to effectively disseminate conservation and management information.³ Additionally, for every FMP, there is an Advisory Panel (AP) composed of users of the fishery resource. Commercial and recreational fishermen, buyers, sellers, and consumers are all represented. The AP assists in advising GMFMC in the development of FMPs.⁴

NOAA Fisheries relies on communication with the public to enhance transparency and increase public confidence in management activities. NOAA Fisheries publishes public comments on their website each month.⁵ All reports, including their latest shrimp stock assessments, are always publically accessible via their website.⁶ NOAA Fisheries Southeast Regional Office posts updated links to published fishery bulletins seeking public comment on proposed fishery regulation changes.^{7,8} Their website also contains a News Room link where the public may access recent media activity.⁹

Mississippi:

MDMR solicits participation from the entire fishing community and is required by law at both the state and federal level to allow public participation. As a government body, MDMR falls under the Mississippi Open Meetings Act (MS Code 25-41-1) requiring that all meetings of a government body be open to the public and that the date, time, place and agenda of the meeting be publically posted prior to that date.¹⁰ MDMR meetings are held monthly and follow the open meetings act; therefore, information is publically posted via the MDMR website and a public comment period is scheduled during each meeting.¹¹ MDMR also conducts industry scoping meetings during initial development of new regulations or to address specific issues with a fishery. MDMR has not held a recent public hearing for the shrimping industry, as there have been minimal proposed changes to the shrimping industry regulations and few problems within the shrimp industry itself. MDMR posts proposed rules and public notices on their website and accepts written comments through mail and email.¹² When significant management changes are proposed, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations. MDMR maintains the Shrimp & Crab Bureau, which is one of the five bureaus within MDMR. The Shrimp & Crab Bureau “conserves and revitalizes Mississippi’s shrimp and crab resource” by advising MDMR on activities and regulations for the commercial and recreational shrimp fishery.¹³ MDMR also publishes an annual Shrimp Newsletter that is sent to all MS Commercial Shrimp License holders prior to the opening of shrimp season.¹⁴

<p>Mississippi is also a member of the Gulf States Marine Fisheries Commission (GSMFC). GSMFC is an organization of the five Gulf states that works together to conserve, develop, and fully utilize fishery resources. Each Gulf state is represented equally as GSMFC Commissioners, which set policy, approve budgets, and direct GSMFC activities. GSMFC serves as a discussion center for marine resource issues, allowing stakeholders to voice concerns and opinions regarding fishery resource management. GSMFC meetings are open to the public and allow for public comment periods. Meeting dates, locations and agendas can be found on the GSMFC website.¹⁵</p>		
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<p>Additionally, the American Shrimp Processors Association (ASPA) is a separate industry-led organization for the shrimping industry based in Mississippi. ASPA's goal is to represent the interests of domestic shrimp processors and provide a collective voice for the industry. ASPA works with research and regulatory agencies to collect, prepare, and disseminate important industry information.¹⁶ The Southern Shrimp Alliance (SSA) is an industry-led organization composed of shrimp fishermen, processors, and other shrimp industry members from the eight warm water shrimp producing states in the South: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. SSA works as an advocate for the domestic shrimping industry, attempting to preserve the fishery by supporting state programs that promote domestic shrimp.¹⁷</p>		
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¹ "Gulf Council FAQs" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² "Scoping through Implementation" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

⁴ "Committees & Panels" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/panels_committees/index.php

⁵ "Enhancing Transparency" *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/management/recreational/policy/goal_4.html

⁶ "Stock Status Updates" *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

⁷ "Fishery Bulletin Archives" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁸ "Fishery Bulletins" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁹ *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. <http://sero.nmfs.noaa.gov/index.html>

¹⁰ Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

¹¹ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹² “Public notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

¹³ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹⁴ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

¹⁵ *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015 <http://www.gsmfc.org>

¹⁶ *American Shrimp Processors Association*. Web. Accessed November 2015. <http://www.americanshrimp.com/association/about/>

¹⁷ *Southern Shrimp Alliance*. Web. Accessed November 2015. <http://www.shrimpalliance.com/about/>

7.1.2 (b) Have arrangements been made to consult these parties and gain their collaboration?
Yes...[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: All GMFMC meetings are open to the public.¹ Furthermore, public participation and collaboration is actively encouraged through what GMFMC identifies as a “scoping” period where stakeholders are invited to meet early in the FMP process with the goal of identifying issues, potential impacts, and alternative solutions to fishery management measures. Once a draft plan is prepared, it is presented to the public again through hearings/meetings throughout the Gulf Coast for feedback. Comments submitted at these meetings are recorded and displayed on the GMFMC website. GMFMC also accepts additional comments through comment forms on their website, via email and mail. All comments are reviewed before FMP decisions are finalized. This final action also occurs publically, during GMFMC meetings.² Additionally, for every FMP, there is an Advisory Panel (AP) composed of users of the fishery resource. Commercial and recreational fishermen, buyers, sellers, and consumers are all represented. The AP assists in advising GMFMC in the development of FMPs. The SSC, made up of experts and scientists, also advises GMFMC.³</p> <p>NOAA Fisheries relies on communication with the public to enhance transparency and increase public confidence in management activities. NOAA Fisheries publishes public comments on their website each month.⁴ All reports, including their latest shrimp stock assessments, are always publically accessible via their website.⁵ NOAA Fisheries SERO posts updated links to published fishery bulletins seeking public comment on proposed fishery regulation changes.^{6,7}</p>		

Mississippi:

MDMR meetings occur monthly and locations are rotated between the three coastal counties to provide accessibility to all coastal users. Per the requirement of the MS Open Meetings Act, information of meeting date, time, location, and purpose is publically posted via the MDMR website at least five days prior to the meeting and a public comment period is scheduled during each meeting to allow for public input.^{8,9} MDMR also conducts industry scoping meetings during the development of new regulations or actions for the fishery. MDMR has not held a recent public hearing for the shrimping industry, as there have been minimal proposed changes to the shrimping industry regulations and few problems within the shrimp industry itself. MDMR also posts proposed rules and public notices on the website, and allows for written comment by mail or email.¹⁰ When significant management changes are proposed for industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations. MDMR maintains the Shrimp & Crab Bureau, which is one of the five bureaus within MDMR. The Shrimp & Crab Bureau “conserves and revitalizes Mississippi’s shrimp and crab resource” by advising MDMR on activities and regulations for the commercial and recreational shrimp fishery.¹¹ MDMR also publishes an annual Shrimp Newsletter that is sent to all Commercial Shrimp License holders prior to the opening of shrimp season.¹²

Mississippi also gains industry and stakeholder input through participation in the GSMFC. GSMFC serves as a discussion center for marine resource issues, allowing stakeholders across all five Gulf States to voice concerns and opinions regarding fishery resource management. GSMFC meetings are open to the public and allow for public comment periods. Meeting dates, locations and agendas can be found on the GSMFC website.¹³

Additionally, the American Shrimp Processors Association (ASPA) is a separate industry-led organization for the shrimping industry based in Mississippi. ASPA’s goal is to represent the interests of domestic shrimp processors and provide a collective voice for the industry. ASPA gathers input from its members, who are stakeholders in the shrimp fishery and works with research and regulatory agencies on important industry issues.¹⁴

Similarly, the Southern Shrimp Alliance (SSA) is an industry-led organization composed of shrimp fishermen, processors, and other shrimp industry members from the eight warm water shrimp producing states in the South: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. SSA gathers input from its members and works as an advocate for the domestic shrimping industry, attempting to preserve the fishery by supporting state programs that promote domestic shrimp.¹⁵

¹ “Gulf Council FAQs” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² “Scoping through Implementation” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ “Committees & Panels” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/panels_committees/index.php

⁴ “Enhancing Transparency” *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/management/recreational/policy/goal_4.html

⁵ “Stock Status Updates” *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

⁶ “Fishery Bulletin Archives” *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁷ “Fishery Bulletins” *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁸ Miss. Code Ann. 25-41 (Open Meetings Act) <http://law.justia.com/codes/mississippi/2013/title-25/chapter-41>

⁹ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹⁰ “Public notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

¹¹ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

¹³ *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015 <http://www.gsmfc.org>

¹⁴ *American Shrimp Processors Association*. Web. Accessed November 2015. <http://www.americanshrimp.com/association/about/>

¹⁵ *Southern Shrimp Alliance*. Web. Accessed November 2015. <http://www.shrimpalliance.com/about/>

7.1.3 (a) Where transboundary, straddling or highly migratory fish stocks and high seas fish stocks are exploited by two or more states, do the states concerned cooperate to ensure effective conservation and management of the resources? **Yes...** [1] **Some...** [½] **No...** [0]

Extent of compliance		
Yes	Some	No
The Gulf of Mexico shrimp fishery can be considered a transboundary fishery in the context that the fishery is prosecuted in U.S. state territorial waters throughout the Gulf of Mexico, as well as in federal waters of the U.S. EEZ. Management of the Gulf of Mexico shrimp fishery is the responsibility of the GMFMC and NOAA fisheries in waters from three nautical miles out to 200 nautical miles. Individual states maintain responsibility for management within state waters; therefore, MDMR is responsible for management of shrimp in Mississippi		

state waters out to three nautical miles. MDMR participates in the GMFMC and collaborates with other state and federal agencies on shrimp management in the Gulf.

The GMFMC is one of the regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976.¹ The GMFMC consists of 17 voting members, including the Southeast Regional Administrator of NOAA Fisheries, the directors of the five Gulf state marine resource management agencies and eleven additional members who are nominated by the state governors and appointed by the Secretary of Commerce. In addition, there are four nonvoting members representing the U.S. Coast Guard (USGC), U.S. Fish and Wildlife Service (USFWS), Department of State, and the GSMFC. GMFMC meets five times a year at various locations around the Gulf coast. Proposed rule changes are then submitted to NOAA Fisheries for further review and approval before implementation.

Additionally, Mississippi is a member of the GSMFC, which was established by Congress in 1949 (P.L. 81-66) as a compact of the five U.S. Gulf states.² GSMFC is charged with promoting “better utilization of the fisheries, marine, shell and anadromous, of the seaboard of the Gulf of Mexico, by the development of a joint program for the promotion and protection of such fisheries and the prevention of the physical waste of the fisheries from any cause.” Three representatives from each of the five Gulf States sit on the Commission, including the head of each state’s marine resource agency, a member of the legislature, and a citizen with knowledge of marine fisheries.³ The Commission makes recommendations regarding the management of the fisheries to the governors and legislatures of the five Gulf States. These recommendations are based on scientific studies made by experts from both state and federal resource agencies, and on advice from law enforcement officials and representatives from the commercial and recreational fishing industries.

International:

There is a shrimp fishery prosecuted in Mexican waters in the Gulf of Mexico that harvests the same species (*Farfantepenaeus aztecus* and *Litopenaeus setiferus*), but no formal management body exists across international boundaries in the Gulf of Mexico.⁴ US-Mexico do collaborate on fishery management issues through the United States-Mexico Fisheries Cooperation Program, which is a bilateral consultative agreement that was informally agreed upon by the U.S National Marine Fisheries Service (NMFS) and the Mexican Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA) in 1983.⁵ Three memoranda of understanding (MOU) have been formalized through this relationship including the MEXUS-Golfo research program. Fishery Cooperation Talks (FCT) between NMFS and Mexico’s National Commission of Aquaculture and Fishing (CONAPESCA) occur annually and MEXUS-Golfo working groups are held as needed. Recent FCT meetings have included discussion of sustainable fisheries management, protection and conservation of species such as sea turtles, enforcement cooperation, aquaculture, collaborative research and participation in fisheries related international organizations.⁶ For the purposes of management and assessments of shrimp, no detailed information is available for shrimp caught and and/or landed in Mexico;

<p>therefore, the Gulf of Mexico shrimp stocks are considered from the Mexican border to Florida and assessed accordingly.</p> <p>The SEFSC Galveston Lab shrimp research program includes a Information Transfer for Shrimp Fisheries' project. This project includes communications with Mexico Fishery Laboratories to enhance data collection and promote global stewardship of resources.⁷</p>		
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¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

² *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

³ "Commissioners List" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/#:content@10:links@11>

⁴ FAO. "Shrimp fishing in Mexico" Global Study of Shrimp Fisheries. <ftp://ftp.fao.org/docrep/fao/011/i0300e/i0300e02b.pdf>

⁵ Secretaria de Agricultura, Ganaderia, Desarrollo rural, Pesca y Alimentacion (SAGARPA), 2012. Diario Oficial, Segunda sección, 24 de agosto de 2012. Actualización de la Carta Nacional Pesquera, 236 pp. <http://www.inapesca.gob.mx/portal/documentos/publicaciones/CARTA%20NACIONAL%20PESQUERA/24082012%20SAGARPA.pdf>

⁶ NOAA. 2014. International Agreements Concerning Living Marine Resources of Interest to NOAA Fisheries. http://www.nmfs.noaa.gov/ia/intlagree/docs/2012/international_agreements.pdf

⁷ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

7.1.3 (b) Is there a formal fishery commission or arrangement to which all parties fishing belong?

Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	some	no
<p>The GMFMC was established under the MSA for the management of fisheries in the U.S. EEZ.¹ This area begins where state waters end and extends out to the 200 nautical mile limit of the Gulf of Mexico. GMFMC consists of 17 voting members and four nonvoting members. GMFMC voting members consist of the Southeast Regional Administrator of the National Marine Fisheries Service, directors of the Gulf states marine resource management agencies, nominees and appointees from state governors and the Secretary of Commerce. Nonvoting members consist of representatives from the U.S. Coast Guard, U.S. Fish & Wildlife Service Department of State, and the GSMFC.²</p> <p>The GSMFC is a regional body made up of representatives from each of the five U.S. Gulf states to address state fisheries cooperation and fisheries that span state and federal boundaries. It is made up of 15 Commissioners, three from each Gulf state, who provide direction for policies, projects and associated budgets. One-third are appointed by the state legislatures, one-third are private citizens appointed by states' governors, and the remaining voting members are state fishery resource</p>		

agency directors. Meeting locations and appointed officers rotate among the states so as to better represent the fisheries and coastal areas of the entire Gulf of Mexico.³

Gulf fisheries are also managed through multiple sectors within NOAA Fisheries, all of which rely on cooperation and coordination with each Gulf state. NOAA Fisheries Gulf Branch within the Southeast Regional Office works with GMFMC to develop FMPs, implements regulations, guides fishery management measures, and coordinates public review and comment periods.⁴ The NOAA SEFSC manages multiple species in the Gulf, including shrimp.⁵ NOAA SEFSC collects, analyzes, and manages both economic and biological data for Gulf shrimp species.⁶ SEFSC is tasked with managing the Gulf Shrimp System, a shrimp data program specifically engaged in collecting statistical data from commercial harvesters.⁷ The Galveston Laboratory assists NOAA SEFSC with shrimp research and management. The Galveston Laboratory is a research facility that assesses, manages, maintains and enhances Gulf fishery stocks. It specifically monitors Gulf shrimp stocks (and evaluates their impact on other fisheries) and provides shrimp data to reduce uncertainty in the fishery management plan process.⁸ While Gulf states are not active members of the branches of NOAA Fisheries, their cooperation and coordination are heavily relied upon.⁹

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

³ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/#:content@10:links@11>

⁴ "Gulf of Mexico Fisheries" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/

⁵ "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁶ "Shrimp Researched & Managed by the SEFSC" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/shrimp/>

⁷ "Gulf Shrimp" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁸ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

7.1.4 Do States which have a real interest in the fisheries or the resource outside their jurisdiction cooperate in the work of the relevant regional fisheries management organization or arrangement by becoming a member of such organization and arrangement and by actively participating in its work?

Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	some	no
<p>Federal: Each Gulf state is represented as Voting Members on the GMFMC, which prepares FMPs to manage fishery resources in the Gulf's EEZ.¹ Aside from their role as Voting Members, individual state agents may be called upon by GMFMC to serve on panels and committees.¹ State agencies that work in coordination with GMFMC are the Alabama Department of Conservation and Natural Resources Division, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Louisiana Department of Wildlife and Fisheries, Mississippi Department of Marine Resources, and Texas Parks and Wildlife Department.²</p> <p>Gulf fisheries are also managed through multiple sectors within NOAA Fisheries, all of which rely on data supplied by each Gulf state. NOAA Fisheries Gulf Branch within the Southeast Regional Office works with GMFMC to develop FMPs, implement regulations, guides fishery management measures, and coordinates public review and comment periods.³ The NOAA SEFSC manages multiple species in the Gulf, including shrimp.⁴ NOAA SEFSC collects, analyzes, and manages both economic and biological data for Gulf shrimp species.⁵ SEFSC is tasked with managing the Gulf Shrimp System, a shrimp data program specifically engaged in collecting statistical data from commercial harvesters.⁶ The Galveston Laboratory assists NOAA SEFSC with shrimp research and management.⁷ The Galveston Laboratory is a research facility that assesses, manages, maintains and enhances Gulf fishery stocks. It specifically monitors Gulf shrimp stocks (and evaluates their impact on other fisheries) and provides shrimp data to reduce uncertainty in the fishery management plan process. All five Gulf states contribute to this effort through NOAA Fisheries' port agent data collection system and observer programs.⁸</p> <p>Gulf States: The GSMFC is an organization of the five Gulf states that works together to conserve, develop, and fully utilize fishery resources.⁹ Each Gulf state is represented equally as GSMFC Commissioners, which set policy, approve budgets, and direct GSMFC activities. GSMFC serves as a discussion center for marine resource issues, allowing states to voice concerns and opinions regarding fishery resource management. GSMFC also serves as an avenue for coordination of state and federal agency programs related to fishery management and decisions.</p> <p>Mississippi: Mississippi is a member of both GMFMC and GSMFC, and maintains representatives on subcommittees and advisory panels of each organization.^{10,11} MDMR staff members also participate in research conducted by each organization (explained in more detail below). Mississippi also contributes fishery dependent data to NOAA Fisheries.¹²</p>		

¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

² "Links" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/links/index.php>

³ "Gulf of Mexico Fisheries" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/

⁴ "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁵ "Shrimp Researched & Managed by the SEFSC" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/shrimp/>

⁶ "Gulf Shrimp" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁷ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹⁰ "Commissioners List" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/#:content@10:links@11>

¹¹ "Committee Members" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/panels_committees/index.php

¹² "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

7.1.4 (a) Do all parties attend meetings and collect data in the specified format? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: Representatives from Mississippi (and other Gulf states) serve on GMFMC and its subcommittees.¹ GMFMC meets five times a year in full session and subcommittees meet as needed based on specific project requirements.²</p> <p>Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the Gulf Shrimp System (GSS), established in 1960, is a thorough, consistent data collection system which has provided the NOAA Fisheries Galveston Laboratory scientists with statistical information needed to conduct assessments of the commercial shrimp fishery.³ Port agents collect shrimp fishery data related to pounds of shrimp harvested, value of the catch, size composition, and fishing effort. Trip ticket data from each of the states are verified against port agent sampling data and integrated into the GSS. Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial</p>		

shrimp fishery.⁵ Each Gulf state (including Mississippi) provides data to NOAA port agents in this specific format. This program monitors Gulf shrimp stocks (and evaluates their impact on other fisheries) and provides much needed data to reduce uncertainty in the fishery management plan process. The Galveston Laboratory utilizes port agent data to assist in numerous scientific projects associated with the Gulf shrimp fishery.

NOAA SEFSC also produces the Economics of the Federal Gulf Shrimp Fishery Annual Report. This document discusses shrimp landings, revenue, permits, vessel, and economic status of the shrimp fishery. This report is based on data collected through surveys from permit holding harvesters from across the Gulf states. Information gathered from this survey helps determine economic trends of the industry and helps understand the social and economic impacts regulation changes may have on the fishery and communities.⁴

NOAA Fisheries data are also gathered through observer programs. The Shrimp Bycatch Reduction Device Evaluation Research Program through the Galveston Lab is part of the National Observer Program run by NOAA.⁵ This program consists of onboard monitoring and scientific data analysis. The Observer Program evaluates TEDs and BRDs and documents bycatch volume and species composition. The fishery Observer Program was established in 1987 and has helped provide data for evaluating the economic impact of TEDs and BRDs on the shrimping industry. All five Gulf states contribute to this effort.

Mississippi:

Representatives from Mississippi (and other Gulf states) also sit on the GSMFC and its advisory committees, attend full commission meetings twice annually, and frequent ad hoc committee meetings as needed.^{6,7} MDMR staff participate in and provide data for the following GSMFC programs, among others:^{8,9,10,11,12}

- Fisheries Information Network (FIN)
- Interjurisdictional Fisheries Program (IJF)
- Fisheries Economic Data Program
- Southeast Area Monitoring and Assessment Program (SEAMAP)

Each program works to standardize the format of the data collection process based on program needs and coordinates with state agencies and other partners to carry out that process. Due to the independent development of each states' scientific monitoring programs, some sampling methods are not fully standardized across the region; however, similarities in protocols and type of data collected allow for standardization.

GSMFC recently completed an inshore shrimp fleet data collection program within their Fisheries Economic Data Program to better understand economic performance of the inshore fishery and economic impacts of potential management changes.¹⁷ GSMFC collected data from inshore vessels throughout the five Gulf states. Data consisted of revenue, operating costs, annual expenditures, employment, and vessel characteristics. This information was used to publish multiple reports regarding the economic characteristics of the shrimp industry.¹³

<p>MDMR Shrimp & Crab personnel also regularly work with state agencies and research institutes (University of Southern Mississippi's Gulf Coast Research Laboratory (GCRL), Mississippi Department of Environmental Quality (DEQ), Mississippi Department of Wildlife, Fisheries, and Parks, and the Mississippi State University Coastal Research and Extension Service) as well as federal agencies (NMFS, U.S. Fish and Wildlife Service, and the U.S. Geological Survey).¹⁴ This work includes specific data collecting practices. MDMR, with the GCRL, conducts extensive shrimp sampling to determine season openings. Work with the DEQ includes sampling and testing procedures to determine the safety of commercial seafood.¹⁵ MDMR representatives also attend collective Gulf state meetings and assist in the data collection efforts detailed above.</p>		
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¹ "Committee Members" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/panels_committees/index.php

² "Meetings" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/council_meetings/index.php

³ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ "Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery" *NOAA Southeast Fishery Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁵ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁷ "Commissioners List" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/#:content@10:links@11>

⁸ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁹ "Fisheries Information Network (FIN)" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/fin.php>

¹⁰ "Interjurisdictional Fisheries Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/ijf.php>

¹¹ "Publications: Fisheries Economic Data Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹² "Southeast Area Monitoring and Assessment Program (SEAMAP)" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹³ "Publications: Fisheries Economic Data Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹⁴ "Shrimp and Crab Bureau" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

7.1.4 (b) Is the population analysis updated regularly and in cooperation by a scientific group?
Yes...[1] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: NOAA Fisheries, tasked with conducting research on the Gulf shrimp fishery, analyzes shrimp populations regularly. The NOAA Southeast Fisheries Science Center (SEFSC) manages multiple species in the Gulf, including shrimp. NOAA SEFSC collects, analyzes, and manages both economic and biological data for Gulf shrimp species.¹</p> <p>NOAA SEFSC is tasked with managing the GSS, a shrimp data program specifically engaged in collecting statistical data from commercial harvesters through port agents (see 7.1.4(a) for details). The Galveston Laboratory assists NOAA SEFSC with shrimp research and management by specifically monitoring Gulf shrimp stocks (and evaluates their impact on other fisheries) and providing shrimp data to reduce uncertainty in the fishery management plan process.² The Galveston Laboratory assesses, manages, and maintains the shrimp stock by analyzing fishery dependent landings and independent catch statistics, evaluating FMPs and regulations, developing models to forecast future landings, and monitoring industrial activities which may adversely impact the shrimp stock.³ The Galveston Laboratory aims to meet the above stated goals, as well as monitor shrimp stocks and evaluate shrimp fishery impacts on protected species and other fisheries. The Galveston Laboratory is tasked with assisting in the data collection and analysis for the Gulf Shrimp System.⁴ Port agents collect data needed to complete stock assessment modeling and monitoring, analyze trends of EEZ closures, develop models to assess impacts of closure options, monitor shrimping effort trends and effects on non-target species, and develop ecosystem based fishery models.⁵ NOAA fishery scientists have established five research projects that utilize port data to accomplish the objectives of the Shrimp Fishery Research Program:⁶</p> <ul style="list-style-type: none"> - Shrimp Management: The objective of this project is to determine federal management impacts on the fishery and evaluate alternative management regulations to potentially increase economic growth. - Shrimp Stock Assessment: The objectives of this project are to monitor trends in the shrimp fishery, conduct annual stock assessments, evaluate management options, and develop more reliable stock assessment models. - Information Transfer for Shrimp Fisheries: The objective of this project is to ensure that the best available scientific knowledge is available to fishery managers and decision makers, which is accomplished through data exchanges, meetings, workshops, symposia, cooperative research, and publications. 		

<ul style="list-style-type: none"> - Forecasting Shrimp Harvests: The objective of this project is to produce annual forecasts for brown shrimp harvests (Texas and Louisiana) and pink shrimp harvests (off Florida) to aid management agencies in adjusting measures throughout the year. - Revision of Trophic Model of Assessment of Ecological Interactions Among Shrimp and Bottomfish Assemblages: The objective of this project is to update a trophic ecosystem model that is used in assessing the impacts of trawl bycatch mortalities on trophic structure/ecology, nutrient cycling, and fishery yields of shrimp and finfish. <p>In most cases, the stock assessment will be prepared by NOAA Fisheries assessment biologists; however, occasionally, the assessment may be prepared by a state agency or by a university or independent assessment biologist under contract to NOAA Fisheries or a state agency.⁷</p> <p>The Scientific and Statistical Committee (SSC), made up of experts and scientists, also advises GMFMC.⁸ SSC helps determine of GMFMC and submits these to NOAA Southeast Fisheries Science Center (SEFSC).</p> <p>Stock assessments for popular shrimp species were recently completed in 2014 (including data through 2013).⁹</p> <p><u>Mississippi:</u></p> <p>MDMR maintains the Shrimp & Crab Bureau, which is one of the five bureaus within MDMR.¹⁰ The Shrimp & Crab Bureau “conserves and revitalizes Mississippi’s shrimp and crab resource” by advising MDMR on activities and regulations for the commercial and recreational shrimp fishery. MDMR partners with the Gulf Coast Research Laboratory’s (GCRL) Center for Fisheries Development to sample for shrimp in state waters. Through this sampling, MDMR is able to identify the size of the majority of shrimp, helping to determine the opening of the 2014 season.¹¹</p> <p>Mississippi has not completed a quantitative assessment of shrimp in Mississippi waters since the stock is assessed by NOAA for each shrimp species throughout its range, which includes the entire Gulf of Mexico. However, MDMR continually monitors shrimp populations through the Fishery-Independent Sampling Program partnership with GCRL and the Trip Ticket Program.¹²</p>	
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¹ “Shrimp Researched & Managed by the SEFSC” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/shrimp/>

² “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁴ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ “Galveston Laboratory” NOAA Fisheries. Web. Accessed November 2015.
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ NMFS. 2014 Status of U.S. Fisheries Stock Assessments and other Sources that support Status Determinations.
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/stockassessments_2014_rtc.pdf

⁷ GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council.
<http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁸ GMFMC. *Updated List of Fishery Monitoring and Research Priorities for 2015-2019*.
<http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁹ National Marine Fisheries Service. *2014 Status of U.S. Fisheries*.
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/stockassessments_2014_rtc.pdf

¹⁰ “Shrimp and Crab Bureau” Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹¹ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

¹² “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

7.1.4 (d) Are scientific recommendations of groups reflected in the regulations?
 Yes... [1] Some... [½] No... [0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC maintains a Standing SSC and Special SSC’s for individual management units to provide scientific advice to the Council. The SSC is responsible for advising the Council on the adequacy of scientific information and analyses for proposed management measures and alternatives. The SSC reviews FMPs and amendments, including environmental impact statements, environmental assessments, and regulatory impact reviews and provides a determination of whether these are based on the best scientific evidence available. Additionally, NS1 mandates that annual catch limits (ACLs) set by the Council cannot exceed the recommendations of the SSC.¹</p> <p>The Shrimp FMP and amendments form the basis for the regulations that are promulgated through the Code of Federal Regulations (CFR) by NOAA Fisheries.² Title 50 of the CFR, Part 622, Subpart C contains the regulations for the shrimp fishery of the Gulf of Mexico.³ These regulations reflect the scientific recommendations made through the GMFMC process.</p> <p>Mississippi: MS regulations also reflect the scientific recommendations made by MDMR and</p>		

GCRL biologists, as well as recommendations by GMFMC and GSMFC. Season dates for the shrimp fishery are determined annually based on scientific data provided by the Shrimp Sampling Program to protect juvenile shrimp until they have reached a size to allow for reproduction before entering the fishery. Other regulations for the inshore shrimp fishery include area closures to protect nursery habitat, as recommended by GMFMC, and gear restrictions to reduce impacts to habitat and the ecosystem. ⁴		
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¹ GMFMC, 2012. Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

³ 50 CFR §622 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

⁴ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

7.1.4 (e) Are the regulations respected by the parties concerned? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Regulations promulgated through the Code of Federal Regulations (CFR) are required by law for all participants fishing in the U.S. EEZ and are enforced by NOAA Fisheries Law Enforcement and the U.S. Coast Guard (USCG) Living Marine Resources division.^{1,2,3}</p> <p>Regulations made by GMFMC are respected by the individual states and state regulations for territorial waters are consistent with federal regulations.⁴</p> <p>Each of the five Gulf States has a Joint Enforcement Agreement (JEA) with NOAA Fisheries through the Cooperative Enforcement Program which allows U.S. state conservation law enforcement officers to enforce federal laws and regulations pertaining to marine resources and endangered species.⁵</p>		

¹ 50 CFR §622 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³ "Living Marine Resources" United States Coast Guard. Web. Accessed November 2015. <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

⁵ "Cooperative Enforcement Programs" NOAA Fisheries. Web. Accessed November 2015. http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

7.1.6 (a) Should representatives from relevant organizations, both governmental and non-governmental, concerned with fisheries be afforded the opportunity to take part in meetings of subregional and regional fisheries management organizations and arrangements as observers or otherwise, in accordance with the procedures of the organization or arrangement concerned?

Yes...[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>GMFMC meetings are open to public and allow public comment periods.¹ Meeting dates, locations and agendas are publicized prior to the meeting date. The GMFMC also holds public hearings throughout the region when specific rule changes are proposed. These meetings are also made available through webinar access on the Council website.²</p> <p>GSMFC meetings are also open to the public and allow public comment periods. Meeting dates, locations and agendas can be found on the GSMFC website.³</p>		

¹ "Meetings" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/council_meetings/index.php

² "Watch our meetings live" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/council_meetings/Webinars.php?utm_source=Standing+and+Special+SSC+Meeting+8%2F14&utm_campaign=SSC+8-14&utm_medium=email

³ *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

7.1.6 (b) Subject to the procedural rules on access, are such representatives given timely access to the records and reports of such meetings? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>The GMFMC meeting agendas, meeting minutes, transcripts, scientific reports and other publications are made available online through their website and are also available in writing through public records requests.¹ The GMFMC also provides briefing materials through their website for committee members and general public to access prior to each meeting.² Timelines vary for documents posted in briefing folders depending upon the project but are typically posted a few weeks prior to the meeting for documents being referenced. Meeting minutes from the most recent prior council meeting appear in the briefing folder for the next upcoming council meeting (council meetings occur five times a year and generally fall about two months apart.)</p> <p>GSMFC publishes reports and assessments as soon as possible once approved by the Commission. These reports are posted online in the publications area of the GSMFC website.³ Notification of availability is sent to newspapers and local media as well as posted on GSMFC and state agency social media and web pages and is announced in the GSMFC quarterly newsletter. Meeting minutes and records are compiled into a 'draft minutes book' twice a year after both the Spring and Fall</p>		

annual meetings and sent to the Commissioners and meeting participants within 2-3 months. All GSMFC meeting minutes are collated by year and published annually on the website. Documents that are not immediately available on the website can be requested directly from GSMFC and are typically provided within one week of the request.		
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¹ "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/resource_library.php

² "Council Meeting Briefing Books" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

³ "Publications" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/publications.php>

7.1.7 (a) Have mechanisms been established for fisheries monitoring, surveillance, control and enforcement to ensure compliance with their conservation and management measures for the fishery in question? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>MONITORING:</u></p> <p><u>Federal:</u></p> <p>The SEFSC Fisheries Monitoring Branch monitors the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.¹ Landings data are collected by the SEFSC Fisheries Monitoring Branch from each individual state agency Trip Ticket Reporting Program. NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers. Additional information for shrimp is gathered through the GSS, which includes data collection by port agents stationed throughout the Gulf of Mexico (see 7.1.4(a) for details on GSS).² Furthermore, all federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal. Two separate databases are maintained for port agent and dealer reported data and fishermen reported data.³ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.</p> <p>The ELB program began in 2007 and between 2007 and 2013, NOAA Fisheries funded and collected data on approximated 500 shrimp vessels through the program.⁴ The ELB program collects data on amount and location of shrimp landings. This allows both fishing effort and catch-per-unit effort to be estimated for various shrimping locations, time periods, and vessels. Data from this program is also utilized to generate mortality estimates for a number of bycatch species including red snapper, and to monitor the number of incidental sea turtle takes. In 2014, improvements in technology prompted the program to change format to a cELB program. Utilizing cellular data networks, data are now automatically uploaded and transmitted to the Galveston Laboratory once the vessel is within cellular range. The program continues to use a stratified random sampling method to select participants each year with</p>		

coverage on approximately one third of the fleet at any given time. If selected, Gulf shrimp permit holders are required to participate in the program and permit renewal is contingent upon participation.

Gulf shrimp permit holders are also required to carry an observer if selected for the Observer Program run by the Galveston Laboratory. Similar to the ELB program, permit holders are selected by the Southeast Regional Director through a stratified random sampling method. The focus of data collection for the Observer Program for the shrimp fishery is bycatch and BRD evaluation.^{5,6} 50 CFR 622.52 requires any vessel with a Gulf commercial shrimp vessel permit, if selected by the SRD, to carry a NOAA Fisheries-approved observer and allow the observer free and unobstructed access to the vessel's bridge, working decks, holding bins, weight scales, holds, and any other spaces used to hold, process, weigh or store fish.⁷

50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁸

- 1- General Reporting: commercial vessel owners and operators are required to provide information for any fishing trip, when requested by the SEFSC Science and Research Director (SRD), including vessel identification, gear, effort, amount of shrimp caught by species, shrimp condition, fishing areas and depths, and person to whom sold.
- 2- Electronic Logbook Reporting: vessel owners with a federal Gulf shrimp commercial vessel permit may be selected by the SRD and must participate in the electronic logbook reporting program sponsored by NOAA Fisheries. Compliance with these reporting requirements is required for permit renewal.
- 3- Vessel and Gear Characterization Form: all vessel owners/operators must complete and annual Gulf Shrimp Vessel and Gear Characterization Form when applying for permit renewal. Compliance with these reporting requirements is required for permit renewal.
- 4- Landings Report: the owner/operator of a Gulf commercial shrimp vessel with a federal permit must annually report the vessel's total annual landings of shrimp and value, by species. These data are collected annually from all permit holder using the ALF and compliance with these reporting requirements is required for permit renewal.
- 5- Gulf shrimp dealers: a person who purchases shrimp from a vessel, or person, that fishes for shrimp in the Gulf EEZ or adjoining state waters, or lands shrimp in an adjoining state must provide the following information upon request by the SRD:
 - a. Name and number of vessel from which the shrimp was received
 - b. Amount of shrimp received, by species and size category for each receipt
 - c. Ex-vessel value, by species and size category, for each receipt

NOAA Fishery-Independent resource surveys are conducted through the SEFSC Mississippi Labs. Shrimp/Bottomfish surveys are conducted each Fall and Summer, which are designed to provide a time-series for monitoring trends in resource abundance.⁹ Surveys conducted by NOAA are part of the SEAMAP regional

sampling program, coordinated through GSMFC, providing fishery independent data to enhance scientific evidence used in management decisions.¹⁰ The Summer and Fall SEAMAP Shrimp/Groundfish Surveys are designed to monitor size, abundance and distribution of demersal species, including penaeid shrimp in the Northern Gulf of Mexico from inshore waters out to 60 fathoms.¹¹ Sampling is conducted across all five Gulf states using standardized methodologies and records data on all species caught and environmental parameters at each sampling site. All data from SEAMAP surveys is entered into the SEAMAP Information System, which contains a consistent dataset starting in 1982, and data are available to all participating agencies and to the public upon request.

Mississippi:

MDMR also maintains monitoring programs for both fishery-dependent and fishery-independent data collection. The Fishery Independent Sampling Program is a joint effort between MDMR and GCLR.^{12,13} The sampling program began in 1974, utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample.¹⁴ MS Code 49-15-15 mandates MCMR to “utilize the resources of the Gulf Coast Research Laboratory to the fullest extent possible”¹⁵ MDMR and GCRL collaborate on the Shrimp Sampling Program each Spring from March through June to monitor the brown shrimp population in the Mississippi Sound and determine the brown shrimp season opening once shrimp have reached legal size.¹⁶

The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis and minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.¹⁷ MDMR implemented the Trip Ticket Program on a fishery-by-fishery basis, and implementation for all fisheries began in 2012; however, dealers who purchase only shrimp species were exempt from mandatory reporting, but must continue to report quantity and value and comply with federal reporting requirements.¹⁸ In July 2015, MCMR approved a regulation change to remove the exemption of shrimp dealers from trip ticket reporting. This change is currently in the rulemaking process and will go into effect in 2015; therefore, all shrimp landings in MS will be reported through the Trip Ticket Program once the rule is implemented.

CONTROL:

Federal:

The Gulf of Mexico shrimp fishery is managed by the GMFMC and NOAA fisheries and has regulations in place for entry into the fishery, methods of take, seasonal and area closures and gear requirements.

Federal regulations promulgated through 50 CFR 622 include:¹⁹

- Moratorium permits required. Any vessel fishing for shrimp in the Gulf of Mexico EEZ must have been issued a moratorium permit. No new permits have been added to the fishery since 2005. Permits may be transferred. Permits not renewed are terminated and will no longer be issued.

- Permit renewals are contingent on compliance with all reporting requirements
- A NOAA certified bycatch reduction device (BRD) is required in each net that is rigged for fishing.
- Closure areas:
 - o Texas Closure: from May 15-July 15 each year trawling is prohibited in the EZZ off Texas
 - o Southwest Florida seasonal trawl closure from January 1 through May 20 each year
 - o The Tortugas shrimp sanctuary (off the Florida coast) is completely closed to trawling
 - o Potential closures of the Gulf fishery, determined annually, based on the need for reduction in red snapper bycatch
 - o Shrimp/Stone crab separation zones to prevent gear conflicts between the two fisheries

Mississippi:

The Mississippi shrimp fishery has regulations in place for entry into the fishery, methods of take and required reporting of landings. MDMR requires a Commercial Shrimp license, renewed annually, to participate in the fishery.²⁰ Resident and non-resident licenses are available and may be purchased year-round at the MDMR offices in Biloxi. MDMR also holds license sales in Pass Christian and Pascagoula for the first month of the new license season each year to provide additional access to residents in all three counties.²¹ Regulations on method of take for commercial, recreational, live-bait shrimping are established by Mississippi Admin. Code Title 22, Part 2 and Part 6 including restrictions on legal gear types, gear requirements, minimum size (68 count per pound) and seasonal/area closures.^{22,23,24}

SURVEILLANCE AND ENFORCEMENT:

Federal:

Enforcement of federal fishing regulations is coordinated through NOAA Fisheries Office of Law Enforcement (OLE) and occurs in partnership with the U.S. Coast Guard (USCG) and state agency law enforcement divisions.

NOAA Fisheries OLE plays a direct role in enforcing fishery regulations and protection of marine wildlife and habitat by enforcing domestic and international laws which are “designed to ensure these global resources are available for future generations.”²⁵ NOAA agents and enforcement officers are responsible for ensuring compliance with national marine resource laws and take action if laws are violated. NOAA Fisheries Law Enforcement is responsible for enforcing laws and statutes that fall under the Magnuson-Stevens Fishery Conservation Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Lacey Act and the National Marine Sanctuaries Act. NOAA Office of General Counsel is the civil prosecutor, and the U.S. Department of Justice and the U.S. Attorney’s Office serve as legal advisors and prosecutorial partners in criminal cases. NOAA agents conduct patrols by air, land, and sea, board vessels, conduct investigations, and inspect processing facilities. NOAA also works closely with the U.S. Coast Guard (USCG) as the nation’s leading maritime law enforcement agency and NOAA’s main

enforcement partner. The USCG is the only military organization within the Department of Homeland Security and is responsible for safeguarding U.S. maritime interests and environment.²⁶ The USCG is present on local, regional, national and international levels and is a significant tool to ensure maritime safety, security and environmental stewardship. The USCG is responsible for enforcing federal fisheries laws and regulations as well as marine safety and marine environmental protection laws. The Living Marine Resources division has three main priorities:²⁷

- 1) preventing illegal foreign fishing operations from entering the U.S. EEZ,
- 2) enforcing domestic fisheries law, and
- 3) international fisheries agreement development and enforcement.

Mississippi:

MDMR maintains an Office of Marine Patrol to carry out marine law enforcement activities.²⁸ The Marine Patrol of MDMR hold the same powers and duties as conservation officers as described by MS Code Sections 49-1-13,^{29, 30 31, 32,33} The Marine Patrol is responsible for enforcement of state laws and regulations regarding marine resources, boating safety, navigation hazards and recreational activities. The MDMR Marine Patrol provides 24-hour marine law enforcement and conducts shore and boat patrols, vessel checks, seafood facility inspections, and works closely with other state and federal fisheries enforcement agencies to ensure enforcement of marine resource regulations. In 2012, MDMR Marine Patrol conducted 1,484 hours of shore patrols, 2,396 hours of offshore patrols, over 1,800 vessel checks, over 3,600 harvester inspections, and issued over 800 citations and warnings (100 of which were fishery violations).³⁴ Mississippi Administrative Code Title 22, Part 20 defines the administrative penalty procedures associated with violations of marine resource laws.³⁵ Mississippi also has a Joint Enforcement Agreement (JEA), which is a partnership between NOAA's National Marine Fisheries Service (NMFS) and MDMR on enforcement related activities.³⁶ GSMFC assists in the development of Cooperative Enforcement Agreements (CEA).³⁷ CEAs authorize state marine law enforcement officers to enforce federal laws and regulations. JEAs are formal operations that provide funding to state and territorial law enforcement agencies to perform law enforcement of federal regulations.

¹ "Fisheries Monitoring Branch" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/data/monitoring.htm>

² "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁴ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ "National Observer Program: Shrimp" NOAA Office of Science and Technology. Web. Accessed November 2015. <https://www.st.nmfs.noaa.gov/observer-home/regions/southeast/shrimp>

⁷ 50 CFR §622.52 <http://www.gpo.gov/fdsys/granule/CFR-2013-title50-vol12/CFR-2013-title50-vol12-sec622-52>

⁸ 50 CFR §622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁹ “Mississippi Labs: Surveys” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰ Marty Bourgeois, Lisa Landry, Julia Lightner, Jeff Marx and Katie Semon. *Louisiana Shrimp Fishery Management Plan*. LDWF, Office of Fisheries, updated July 27, 2015. p. 15 <http://www.wlf.louisiana.gov/sites/default/files/pdf/page/37762-fishery-management-plans-marine/shrimpfmp7-27-15.pdf>

¹¹ “SEAMAP Gulf of Mexico Resource Surveys” *Southeast Area Monitoring and Assessment Program*. Web. Accessed Nov. 2015. <http://www.gsmfc.org/seamap-gomrs.php>

¹² VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹³ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁴ [VanderKooy, 2013. p. 85](#)

¹⁵ Miss. Code Ann. § 49-15-15 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-15/>

¹⁶ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

¹⁷ “Trip Ticket Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

¹⁸ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁸ FIN Committee. 2012. Annual Report of the Fisheries Information Network in the Southeast Region (FIN) January 1, 2011 - December 31, 2011. Gulf States Marine Fisheries Commission. Ocean Springs, MS.

¹⁹ 50 C.F.R. § 622 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

²⁰ “Licenses” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/commercial-fishing/licenses>

²¹ “Press Release” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/images/news/15-26-MMS%20MDMR%20to%20sell%20licenses%20in%20Pascagoula%20Pass%20Christian.pdf>

²² MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

²³ Miss. Admin. Code, Title 22, Part 2 <http://dmr.ms.gov/images/regulations/Title-22-Part-02-120114.pdf>

²⁴ Miss. Admin. Code, Title 22, Part 6 <http://dmr.ms.gov/images/regulations/title-22-part-06.pdf>

²⁵ "Enforcement" NOAA Office of General Council. Web. Accessed June 2015. <http://www.gc.noaa.gov/enforce-office.html>

²⁶ United States Coast Guard. Web. Accessed June 2015. <http://www.uscg.mil/top/about/>

²⁷ "Living Marine Resources" United States Coast Guard. Web. Accessed November 2015. <http://www.uscg.mil/hq/cg5/cg531/LMR.asp> ²⁸ Marine Patrol <http://www.dmr.state.ms.us/index.php/marine-patrol>

²⁹ Miss. Code Ann. §49-1-13 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-13>

³⁰ Miss. Code Ann. §49-1-43.1 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43/>

³¹ Miss. Code Ann. §49-1-43.1 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43.1/>

³² Miss. Code Ann. §49-1-44 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-44/>

³³ Miss. Code Ann. 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11>

³⁴ MDMR. 2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011 <http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

³⁵ Miss. Admin. Code Title 22, Part 20 <http://www.sos.ms.gov/ACCode/00000079c.pdf>

³⁶ "Law Enforcement" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://www.dmr.state.ms.us/index.php/marine-patrol/law-enforcement>

³⁷ VanderKooy, S.J. 2014. Gulf of Mexico Cooperative Law Enforcement Operations Plan 2015-16. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20236.pdf>

7.1.7 (b) Have these measures proved effective? Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
Federal: NOAA Fisheries OLE produces Quarterly reports by region to report on enforcement activities, which includes details on violations issues under each federal act enforced by NOAA agents and reports activities of each of the JEAs for states within that region. The FY15 First Quarter Report reflects active monitoring of fisheries in the Southeast Division with 58 total incidents including 25 incidents reported in violation of the MSA, 4 incidents of the endangered species act, 10 incidents of the Marine Mammal Protection Act. ¹ OLE also maintains a current listing of enforcement actions on its website, and an archived listing of enforcement news		

reporting OLE program activities.^{2,3}

The Annual Review of the United States Coast Guard’s Mission Performance (2013) report provides details of USCG activities for each division, including marine living resources.⁴ According to this report, USCG spent 93,004 resource hours on living marine resources activities and compliance with fishing regulations remains above 97% (see chart below).

Performance Measures and Results: The USCG uses the percentage of fishing vessels observed at sea complying with domestic regulations as a measure of its impact on enforcement of U.S. fisheries and protected species regulations. The measure reflects the percentage of USCG boardings at sea where no significant violations of domestic living marine resources regulations were detected. As shown in the following chart, the USCG reported that it met its fishing regulation compliance rate living marine resources performance measure in FY 2013.

Living Marine Resources			
Performance Measure – Fishing Regulation Compliance Rate			
FY 2011 Actual	FY 2012 Actual	FY 2013 Target	FY 2013 Actual
97.4%	98.3%	96%	98.1%
√ Met	√ Met		√ Met

Source: DHS OIG based on USCG-provided data.

Mississippi:

MDMR Annual Reports reflect successes of the Marine Patrol including statistics on hours and areas patrolled, vessel and harvester checks, violations cited for various violations including boating safety and fishery regulations. In 2012, MDMR Marine Patrol conducted 1,484 hours of shore patrols, 2,396 hours of offshore patrols, over 1,800 vessel checks, over 3,600 harvester inspections, and issued over 800 citations and warnings (100 of which were fishery violations).⁵

MDMR enforcement reports reflect active monitoring and citations for the shrimp fishery to ensure compliance of regulations. MDMR reports violations information within the quarterly MDMR newsletter. For the 2012 calendar year, 13 shrimp specific violations were reported out of 1,059 total citations issued by Marine Patrol. In the 2014-15 shrimp season, 15 citations were issued for violations of shrimp regulations.⁶ Shrimp violations typically account for less than 1% of total violations issued, indicating that compliance is high for the shrimp fishery.^{7,8,9,10}

¹ NOAA Fisheries. *Office of Law Enforcement FY15 First Quarter Enforcement Report*. July 2013. http://safmc.net/sites/default/files/Regulations/pdf/NOAAOLE_Q1_2015_PublicReport_Final.pdf

²“Office of Law Enforcement” NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³“News Archive” NOAA Fisheries Office of Law Enforcement. Web. Accessed June 2015. http://www.nmfs.noaa.gov/ole/newsroom/08_news_archive.html

⁴ Department of Homeland Security, Office of Inspector General. *The Annual Review of the United States Coast Guard's Mission Performance (2013)*. OIG-14-140. September 2014.
https://www.oig.dhs.gov/assets/Mgmt/2014/OIG_14-140_Sep14.pdf

⁵ MDMR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011*
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

⁶ MDMR. Unpublished data. August 2015.

⁷ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Winter 2013.
<http://dmr.ms.gov/images/publications/newsletters/winter2013.pdf>

⁸ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Fall 2012.
<http://dmr.ms.gov/images/publications/newsletters/fall2012.pdf>

⁹ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Summer 2012.
<http://dmr.ms.gov/images/publications/newsletters/summer2012.pdf>

¹⁰ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Spring 2012.
<http://dmr.ms.gov/images/publications/newsletters/spring2012.pdf>

7.1.8 (a) Have mechanisms been established to (identify, quantify) prevent or eliminate excess fishing capacity? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
	<p>Federal: Kirkely et al. (2006) includes an analysis of the Gulf of Mexico shrimp fishery to determine the level of overcapacity and costs associated with reducing overcapacity within the fleet. This analysis utilized the average annual yield of shrimp between 1981 and 2001 (101.6 million pounds) as an equivalent to MSY, and used this as the target level in determining the overcapacity of the fishery.¹ The fishery was broken down into subgroups; capacity was determined for each division and then extrapolated to estimate total fleet level activity.</p> <p>Amendment 13 of the Gulf of Mexico Shrimp FMP established a 10-year moratorium on the issuance of commercial shrimp vessel permits capping the number of vessels in the federal fishery.² Amendment 13 notes that the fishery has remained above overfishing and overfished definitions since those definitions were established and current capacity is not a threat to the resource; however, economically the fishery has been operating at a negative profit margin, and a fewer number of vessels in the fishery would allow more profitable harvest of available shrimp resources. Amendment 13 also notes that, due to competition with foreign imports and rising fuel costs, the number of vessels in the fleet has declined and was expected to continue to decline until approximately 2012 when the number of participants reached a more profitable level.</p> <p>Since the implementation of the moratorium, license numbers have been reduced from 1933 permits in 2007 to 1470 permits in 2014. The 10-year moratorium put in place by Amendment 13 expires in December of 2016 and the GMFMC is currently in</p>	

	<p>discussions on the development of Amendment 17 to determine if the moratorium will expire, be extended, or development of a limited-access system will be put in place.³ Amendment 17 has been divided into two separate draft amendments: 17A and 17B. Amendment 17A will determine whether the moratorium will be extended, which is currently the preferred option in place. Amendment 17B is currently working to address the appropriate number of permits for the fishery.⁴ A number of issues have been identified in the current draft of Amendment 17B that must be addressed in order to determine the most appropriate action. First, the number of vessels in the fleet have continued to decline due to economic hardships and there is concern that this trend will continue indefinitely. Second, the current OY for the fishery is defined as equal to MSY, but MSY is calculated for each species individually, not for the fishery as a whole (combined penaeid species). The goal of Amendment 17B is to define optimal yield for the fishery and determine the appropriate number of permits for the fishery based on this updated information.</p> <p><u>Mississippi:</u></p> <p>There is currently no limit on the fishing capacity for the shrimp fishery in Mississippi waters. Licenses are required for commercial, recreational and live-bait shrimping in Mississippi waters and MDMR monitors license numbers annually.⁵ In 2015, three types of commercial shrimp licenses are available based on boat size. Of the 290 resident commercial licenses in the fishery, 108 are boats smaller than 30 feet, 86 are between 30 and 45 feet, and 96 are over 45 feet.⁶ MCMR does have the authority to establish limited-entry for a fishery under MS Code §49-15-16, if it should be determined that a limited-entry system is necessary.⁷ Poor economic conditions of the fishery over the last decade have continued to reduce the number of participants in the fishery and is expected to continue to decline. MDMR monitors these trends and has the authority to act if there are indications that this trend will reverse.</p>	
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¹ James E. Kirkley, John M. Ward, James Nance, Frank Patella, Karyl Brewster-Geisz, Chris Rogers, Eric Thunberg, John Walden, Will Daspit, Brad Stenberg, Steve Freese, Jim Hastie, Stephen Holiman, and, Mike Travis, 2006. *Reducing Capacity in U.S. Fisheries*. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

² GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%200805.pdf>

³ GMFMC. *Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan*. August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

⁴ GMFMC. *Draft options for Amendment 17B of Gulf of Mexico Shrimp Fishery Management Plan*. September 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-10-2015/D-%205%20Shrimp%2017b-%20OY%20and%20Permit%20Pool.pdf

⁵ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁶ MDMR. Unpublished data, August 2015.

⁷ Miss. Code Ann. § 49-15-16 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-16>

7.1.8 (b) Have these measures proved effective? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
	<p>Federal: The moratorium put in place by Amendment 13 capped the number of licenses in the fishery to the number of qualifying permits that were issued in the first year of the moratorium: 1,933 permits. Since 2007, permit numbers have decreased to 1470 permits in 2014 through termination of permits that were not renewed by the permit holder.^{1,2}</p> <p>Mississippi: Since there is no capacity reduction system in place, measures cannot be considered effective. Poor economic conditions of the fishery over the last decade have continued to reduce the number of participants in the fishery and is expected to continue to decline. MDMR monitors these trends and has the authority to act if there are indications that this trend will reverse.</p>	

¹ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² GMFMC. *Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan.* August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

7.1.9 Are the arrangements followed for assessment, management of the fishery and the decision-making process in general transparent?

(i) - Assessment **Yes...[1] No...[0]**

Extent of compliance		
Yes	some	no
<p>Federal: The Gulf of Mexico Fishery Management Council (GMFMC) observes the utmost transparency with regard to their fishery management plans (FMP) and amendments via their website, open meetings, and public comment policies. While GMFMC plays a major role in the management of the Gulf shrimp fishery, it relies heavily on assessment data from NOAA Fisheries.</p> <p>NOAA Fisheries is responsible for assessing and managing Gulf shrimp fisheries.¹ Gulf shrimp stock assessments are conducted annually by NOAA Fisheries SEFSC Galveston Laboratory.</p> <p>To perform these stock assessments, NOAA Fisheries utilizes data from port agents, state trip ticket programs, electronic logbooks (ELB) and observer programs. Information about this data gathering process is published on the Galveston Laboratory's website.² While the actual data are not published, permit holders and vessel operators can request copies of their eELB GPS data. These data, while not available to the public, is used by GMFMC and NOAA Fisheries to assess the status of Gulf shrimp stocks which aids in the management of the fishery.³ NOAA</p>		

Fisheries Southeast Regional Office website contains the Gulf of Mexico Shrimp fishery management plan along with all previous amendments.⁴ NOAA SEFSC publishes the Economics of the Federal Gulf Shrimp Fishery Annual Report on their website, supplying the public with the most recent assessments of the financial and economic status of the fishery.⁵ Stock assessments for penaeid shrimp species are conducted annually and reviewed by the GMFMC SSC and Standing Shrimp SSC for approval, the most recent assessments completed in 2014 and are posted on the Galveston Lab website.⁶

Gulf States:

The GSMFC also plays a role in the Gulf shrimp fishery’s assessment process, and does so with great attention to transparency. GSMFC organizes state supplied data to create regional reports. Once approved by their Commission, GSMFC publishes reports in the publications area of their website.⁷ Notification of availability is sent to newspapers and local media as well as posted on GSMFC and state agency social media and web pages.⁸ GSMFC assessment programs specific to the shrimp industry include the Southeast Area Monitoring and Assessment Program (SEAMAP) Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{9,10} SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys. The Fisheries Economic Data Program published peer-reviewed economic reports in 2014.^{11,12} These reports assessed the economic landscape of the shrimp industry, providing revenue, operating cost, annual expenditure, employment, and harvesting/harvester data. Both the SEAMAP and the Fisheries Economic Data Program examples follow the transparency and publication practices of GSMFC.

Mississippi:

The Mississippi Department of Marine Resources (MDMR) and the Mississippi Commission on Marine Resources (MCMR) are responsible for managing the shrimp fisheries in marine waters of the State of Mississippi. MCMR considers scientific recommendations from MDMR and industry concerns through their commercial fishing representative as they determine season openings and other management measures for the Mississippi shrimp fishery.¹³ Per the requirement of the MS Open Meetings Act, information regarding meeting date, time, location, and purpose is publically posted via the MDMR website at least five days prior to the meeting and a public comment period is scheduled during each meeting to allow for public input.^{14,15} MDMR also conducts industry scoping meetings during the development of new regulations or actions for the fishery. MDMR posts proposed rules and public notices on their website, and allows for written comment by mail or email.¹⁶ When significant management changes are proposed for the industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations. MDMR has not held a recent public hearing for the shrimping industry, as there have been minimal proposed regulations changes.

MDMR maintains the Shrimp & Crab Bureau, which is one of the five bureaus within MDMR. The Shrimp & Crab Bureau “conserves and revitalizes Mississippi’s

<p>shrimp and crab resource” by advising MDMR on activities and regulations for the commercial and recreational shrimp fishery. The Shrimp & Crab Bureau incorporates monitoring and assessment of the shrimp fisheries, issuance of Scientific Collection Permits, inspections and reporting of the live-bait shrimp industry, Real Time Hydrological Monitoring Program, coordination of grants with U.S. Fish and Wildlife Service, and the Interjurisdictional Fisheries Monitoring Program. The Shrimp & Crab Bureau website posts information regarding season openings, closures, and temporary changes to the shrimping season. They also publish the Shrimp Newsletter annually, which is posted on their website as a means of providing the public with information regarding regulation updates, scientific studies, upcoming industry meetings regarding proposed regulation changes, and other shrimping industry related news.¹⁷</p>		
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¹ *FishWatch*. Web. Accessed November 2015. <http://www.fishwatch.gov/>

² “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ “SPGM Electronic Log Book” *NOAA Fisheries, Galveston Lab*. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

⁴ “Gulf of Mexico Shrimp Rulemakings” *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/rules/gulf/shrimp/index.html

⁵ “Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery” *NOAA Southeast Fishery Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁶ NMFS. 2014 Status of U.S. Fisheries Stock Assessments and other Sources that support Status Determinations. http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/stockassessments_2014_rtc.pdf

⁷ “Publications” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/publications.php>

⁸ “Recent News from the Gulf States” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/news.php>

⁹ “Southeast Area Monitoring and Assessment Program (SEAMAP)” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹⁰ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹¹ Miller, Alexander, Maryam Tabarestani, and Jack Isaacs. 2014. *A Survey of Recreational Shrimpers in the Northern U.S. Gulf of Mexico*. Gulf States Marine Fisheries Commission Publication, Publication Number 228. Ocean Springs, Mississippi: <http://www.gsmfc.org/publications/GSMFC%20Number%20228.pdf>

¹² Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

¹³ “Public notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

¹⁴ Miss. Code Ann. 25-41 (Open Meetings Act)
[http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

¹⁵ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/commission-meetings>

¹⁶ Miss. Admin Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

¹⁷ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015.
<http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

7.1.9 (ii) - Management *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: GMFMC manages the Gulf shrimp fishery resources through the shrimp FMP. This plan, implemented as federal regulation in 1981, is available to the public along with all amendments via the GMFMC website.¹ These amendments are the result of a transparent five step process that includes scoping, public hearings, final action, rule making and implementation.²</p> <p>GMFMC meetings are open to the public and allow for public comment periods.³ Meeting dates, locations and agendas are publicized prior to the meeting.⁴ GMFMC also holds public hearings throughout the region when specific rule changes are proposed. These meetings are also made available through webinar access on the GMFMC website.⁵ GMFMC meeting agendas, meeting minutes, transcripts, scientific reports and other publications are made available online through their websites and are also available in writing through public records requests.⁶ GMFMC also provides briefing materials through their website for committee members and the general public to access prior to each meeting.⁷ Timelines vary for documents posted in briefing folders depending upon the project but are typically posted a few weeks prior to the meeting. Meeting minutes from the most recent prior GMFMC meeting appear in the briefing folder for the next upcoming meeting (GMFMC meetings occur five times a year and generally fall about two months apart).</p> <p>NOAA Fisheries, along with GMFMC, is responsible for managing Gulf shrimp fisheries. Stock assessments are developed by the NOAA Fisheries Galveston Laboratory to aid in the management of the fishery.⁸ NOAA Fisheries relies on communication with the public to enhance transparency and increase public confidence in management activities. NOAA Fisheries publishes public comments on their website each month. All reports, including their latest shrimp stock assessment reports, are always publically accessible via their website.</p> <p>Mississippi: As a governing body, MCMR and MDMR are subject to the Mississippi Open Meetings Law requiring transparency in how they make management decisions.⁹ MCMR meetings are open to the public, allow public comment, and transcripts are</p>		

published after the meeting on the MCMR website.¹⁰

Fishermen are active participants at MCMR meetings and make public comment on proposed regulatory changes. Public records are also available for all government bodies, including MDMR, as required by the MS Code, §25-61-1.¹¹ Public notification and participation throughout the decision-making process is required by the MS Administrative Procedures Law and MS Administrative Code, Title 22, Part 15, and encouraged by MDMR.^{12,13} MS Administrative Procedures Law requires all proposed rules to be published in the *Mississippi Administrative Bulletin* and allow for a 25-day public comment period prior to adoption.¹⁴ MS Code 25-43-3.101 defines the terms for soliciting public comment and forming committees to gather public input. If a hearing is requested in writing, the agency must provide an oral hearing on the proposed rule. Additionally, Miss. Admin. Code Pt. 15 sets rule-making procedures specific to MCMR and MDMR. Miss. Admin. Code Pt. 15 requires that MDMR notify the public of proposed rules through publication in a local newspaper as well as maintaining a docket of public notices, hearings, and other rule making activities on the MDMR website.^{15,16} For Public hearings involving rule making, MDMR must publish a notice 20 days prior to the hearing and must include including information on the purpose of the meeting, date, time and location. Public comment is allowed at public hearings on the subject of the hearing. Public comment is taken at public hearings and any written comments are included in the meeting record. Regular MCMR meetings are held monthly and follow the open meetings act; therefore, information is publically posted via the MDMR website and a public comment period is scheduled during each meeting.¹⁷

MDMR also conducts industry scoping meetings during initial development of new regulations or to address specific issues with a fishery. When significant management changes are proposed for the industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations.

¹ "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² "Scoping through Implementation" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ "Meetings" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/council_meetings/index.php

⁴ "Publications" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/publications.php>

⁵ "Watch our meetings live" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/council_meetings/Webinars.php?utm_source=Standing+and+Special+SSC+Meeting+8%2F14&utm_campaign=SSC+8-14&utm_medium=email

⁶ "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/resource_library.php

⁷ “Council Meeting Briefing Books” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

⁸ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meeting%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meeting%20Act.htm?OpenElement)

¹⁰ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹¹ Miss. Code Ann. 25-61 (Public Records Code) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_records_entire_pub_rec_act/\\$FILE/Public%20Records%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_records_entire_pub_rec_act/$FILE/Public%20Records%20Act.htm?OpenElement)

¹² Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

¹³ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

¹⁴ Mississippi Secretary of State’s Office. *Administrative Bulletin* <http://www.sos.ms.gov/adminbulletinsearch/>

¹⁵ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

¹⁶ “Public notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

¹⁷ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

7.1.9 (iii) - Decision-making *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: GMFMC and NOAA Fisheries observe the same transparency requirements in decision-making regarding public meeting information, proposed regulation changes, reports and assessments, and other shrimp fishery publications as detailed in the assessment and management sections above.</p> <p>Mississippi: MCMR and MDMR observe the same transparency requirements in decision-making regarding shrimp industry related activities as detailed in the assessment and management compliance sections above.</p> <p>Gulf States: GSMFC also observes the same transparency requirements detailed in the</p>		

assessment section above.		
Additionally, a recently developed website sponsored by GSMFC, Gulf FINFO, contains information on the shrimp fisheries of the Gulf of Mexico, summarizing management practices, biological information, assessment and monitoring activities, and harvest data with links to population assessments and relevant documents. ¹		

¹ Gulf FINFO. Web. Accessed November 2015. <http://gulffishinfo.org/Species?SpeciesID=102>

7.1.10 Are the conservation and management measures adopted for management of the fishery and the related decision-making process given due publicity in order to ensure that laws, regulations and other legal rules governing their implementation are effectively disseminated?

Yes...[1] **In part...**[1/2] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: Aside from the actions listed above (see response to 7.1.9 regarding scoping and public comment periods, etc.), the GMFMC publishes scientific reports, management plans, amendments, meeting agendas, minutes, and transcripts on their website, ensuring regulatory information is effectively disseminated.^{1,2} Prior to each meeting, briefing materials are also made available online, allowing stakeholders to become familiar with subjects of interest.³ The GMFMC website also contains information regarding recent updates to Gulf fishery regulations, ensuring the public stays apprised of the latest legal rules governing the fishery.⁴ GMFMC also communicates publicly via newsletters, social media posts, and cell phone applications, all in an effort to effectively disseminate conservation and management information.⁵</p> <p>NOAA Fisheries SERO posts updated links to published fishery bulletins seeking public comment on proposed fishery regulation changes.^{6,7} Their website also contains a News Room link where the public may access recent media activity.⁸ The NOAA Fisheries SEFSC website contains a publication database searchable by topic/species. Grants, research programs, technical reports, peer-reviewed publications, and initiatives may be searched through the publications database as well.⁹ The SEFSC Library is also available to the public through the SEFSC website.¹⁰ The SEFSC Galveston Laboratory website also publicizes recent press releases on their website and displays information and links regarding shrimp harvest forecasting reports and assessment information.^{11,12}</p> <p>Gulf States: The GSMFC publishes reports and assessments as soon as possible once approved by the Commissioners. These reports are posted online in the publications area of the GSMFC website.¹³ Notification of availability is sent to newspapers and local media as well as posted on GSMFC and state agency social media and web pages. Meeting minutes and records are compiled into a “draft minutes book” twice a year after both the Spring and Fall annual meetings and sent to the Commissioners and meeting participants within two to three months. All GSMFC meeting minutes are</p>		

collated by year and published annually on the website.¹⁴ Documents that are not immediately available on the website can be requested directly from GSMFC. GSMFC meetings are open to the public and allow for public comment periods. Meeting dates, locations and agendas can be found on the GSMFC website.

Mississippi:

Aside from the actions listed above (see response to 7.1.9) providing transparency throughout the decision-making process, MDMR takes several actions to ensure that adopted regulations are adequately publicized. MDMR posts all fishing regulations on the MDMR website and publishes an annual *Guide to Mississippi Saltwater Fishing, Rules and Regulations*.^{15,16} MDMR also publishes news articles regularly, posts on social media, and produces publications and newsletters to provide the public with information on MDMR activities and regulations pertaining to marine resources.^{17,18,19}

¹ "Meetings" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/council_meetings/index.php

² "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/resource_library.php

³ "Meetings" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/council_meetings/index.php

⁴ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

⁵ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

⁶ "Fishery Bulletin Archives" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁷ "Fishery Bulletins" *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁸ *NOAA Fisheries Southeast Regional Office*. Web. Accessed November 2015. <http://sero.nmfs.noaa.gov/index.html>

⁹ "Publications" *NOAA Fisheries Southeast Fisheries Sciences Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/publications/>

¹⁰ "Library" *NOAA Fisheries Southeast Fisheries Sciences Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/library/>

¹¹ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹² "Brown Shrimp Forecast 2015" *NOAA Fisheries Galveston Laboratory*. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/stories/2015/Brown%20Shrimp%20Forecast/index.html>

¹³ "Publications" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/publications.php>

¹⁴ “Meeting Minutes” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=MINUTES>

¹⁵ “Regulations” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/regulations>

¹⁶ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

¹⁷ “Recent news” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news>

¹⁸ “Publications” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/publications>

¹⁹ “Newsletters” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/newsletters>

7.2 Management objectives

7.2.1 (a) Are fisheries measures based on the best scientific evidence?

Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
The state and federal agencies (GMFMC, NOAA Fisheries, and MDMR) charged with management of shrimp in Mississippi and the Gulf of Mexico are mandated by laws to manage the fishery based on best available scientific evidence. These agencies work closely on research and monitoring and timely scientific information is provided to managers during the decision-making process. For further details on scientific programs and management measures, refer to 7.1.1(a) .		

7.2.1 (b) Are they qualified by relevant environmental and economic factors?

Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
Federal: MSA NS1 requires the consideration of social, economic, and ecological factors in the determination of OY for the fishery. ¹ To the extent possible, relevant social, economic, and ecological factors used should be quantified and must be specified when determining OY. An FMP must address each factor: social, economic, and ecological within the report. Amendment 13 of the Shrimp FMP contains a discussion of environmental and socioeconomic impacts in Actions 6 and 7 with regard to the setting of MSY and OY for the penaeid shrimp species. ² Amendment 15 of the Shrimp FMP includes revisions to the SDC for the fishery and contains updated information on environmental and socioeconomic impacts. ³		

The National Environmental Policy Act (NEPA) requires the analysis of any potentially significant environmental impacts that may result from new regulations or agency actions by all federal government agencies.⁴ Section 304(i) of MSA requires compliance with NEPA regulations with regard to fishery management plans and actions.⁵ NOAA Fisheries determines the analysis level necessary to comply with MSA and NEPA regulations for each FMP amendment and management action.⁶ A summary of findings is compiled in either a Record of Decision or a Finding of No Significant Impact (FONSI) which is included in each FMP or amendment. For the shrimp FMP, an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) has been conducted for each amendment, as necessary. The most recent EA is included with Amendment 13.⁷

National Standard 7 states “*Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.*” The Guidelines to NS7 requires that “supporting analyses for FMPs should demonstrate that the benefits of fishery regulation are real and substantial relative to the added research, administrative, and enforcement costs, as well as costs to the industry of compliance. In determining the benefits and costs of management measures, each management strategy considered and its impacts on different user groups in the fishery should be evaluated.”⁸

Additionally, National Standard 8 requires “*Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities*”⁹

The MSA (section 303 (a)(9)) requires that FMPs include a fishery impact statement (FIS) for the plan or amendment.¹⁰ The FIS includes an assessment of the likely biological, social, economic, and administrative effects, if any, of the conservation and management measures on fishery participants and their communities as well as participants in other fisheries conducted in adjacent areas.

NOAA Fisheries also requires a RIR for each regulatory action of public interest, which provides a review of the level and incidence of impacts associated with the action, a review of the problems and policies prompting the action, and ensures that the agency has comprehensively considered all alternatives.¹¹

Mississippi:

Based on FAO guidelines, one typical method of addressing the broad economic context of a fishery is through consultation with legitimate users.¹² MDMR conducts scoping meetings and public hearings to gain socioeconomic information prior to finalizing new regulations and considers these factors in the decision-making process.^{13,14} The Mississippi Administrative Procedures Law, and Miss. Admin. Code Pt. 15 require public participation in the MCMR and MDMR decision-making process.^{15,16}

MS Code §25- 43-3.105 and §25-43-6 also require the consideration of economic impact when setting rules or making amendments to existing rules.¹⁷ Any proposed regulations that may exceed \$100,000 in total aggregate cost to all persons required to comply must have a written economic impact statement prepared by the agency, which must include, at minimum, a determination of the need for the regulations, benefits to accrue from the regulation, costs to the agency and other state and local agencies involved, an explanation of the costs and benefits to persons directly affected, alternate options and why they were rejected, cost of not adopting the regulation, and a statement on the data and methods used to determine these factors.

Mississippi also addresses environmental factors when setting season dates for the brown shrimp season in Mississippi waters.¹⁸ The Shrimp Sampling Program, a joint program between GCRL and MDMR, conducts sampling each Spring from March to June to determine when shrimp reach a legal size for harvest. Environmental conditions are the largest driver of shrimp growth and survival; therefore, by sampling for shrimp and allowing for flexible season opening dates, MDMR accounts for the variability in environmental factors and protects small shrimp from early harvest. The 2014 MDMR shrimp newsletter notes that salinity, water temperature, rainfall and moon phase are all factors in the setting of season opening dates, and that optimal conditions for brown shrimp occur when the salinities are above 10 parts per thousand (ppt) and water temperatures are greater than 68 degrees Fahrenheit.¹⁹

¹ “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015.
http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

² GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ “National Environmental Policy Act” NOAA Office of Planning and Integration. Web. Accessed November 2015.
<http://www.nepa.noaa.gov/>

⁵ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d))
http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁶ “National Environmental Policy Act Requirements” NOAA Fisheries. Web. Accessed November 2015.
http://www.nmfs.noaa.gov/sfa/laws_policies/msa/nepa.html

⁷ “Shrimp Management Plans” Gulf of Mexico Fishery Management Council. Web. Accessed November 2015.
http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁸ § 600.340 National Standard 7—Costs and Benefits.
http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_7_cfr.pdf

⁹ § 600.345 National Standard 8—Communities
http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_8_cfr.pdf

¹⁰ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d))
http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

¹¹ “Guidance for Conducting Economic and Social Analyses of Regulatory Actions. *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/laws_policies/economic_social/index.html

¹² FAO. 2002. *A fishery manager’s guidebook: Management measures and their application*. FAO Fisheries Technical Paper 424. Rome, Italy. <http://www.fao.org/docrep/015/i0053e/i0053e.pdf>

¹³ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹⁴ “Recent News” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

¹⁵ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

¹⁶ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

¹⁷ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

¹⁸ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹⁹ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.2.1 (c) Have formal reference point(s) based on stock size been established? Yes...[1] No...[0]

Extent of compliance	
Yes	No
<p>Amendment 13 (2005) of the GMFMC Shrimp FMP originally defined the reference points for the Gulf of Mexico shrimp fishery. At the time, amendment 13 noted the following: <i>In accordance with the National Standards guidelines set by MSA, for annual stocks, like penaeid shrimp, it is appropriate to establish an MSY control rule based on maintaining a constant level of escapement (parent stock) each year that will produce sufficient recruits to maintain harvest at historic levels. This approach relates MSY in terms of catch to a quantifiable level of escapement in each stock, where a proxy for B_{MSY} is established as the minimum parent stock size known to have produced MSY the following year.</i>¹</p> <p>Based on these guidelines, Amendment 13 established the following: The MSY values for the penaeid shrimp stocks fall within the range of values defined by the lowest and highest landings taken annually from 1990-2000 that does not result in recruitment overfishing as defined herein:</p> <ul style="list-style-type: none"> - Brown shrimp: MSY is between 67,000,000 and 104,000,000 lbs. of tails - White shrimp: MSY is between 35,000,000 and 71,000,000 lbs. of tails <p>The overfishing threshold is defined as a rate of fishing that results in the parent stock number being reduced below the MSY minimum levels listed below:</p>	

<ul style="list-style-type: none"> - Brown shrimp- 125 million individuals, age 7+ months during the November through February period - White shrimp- 330 million individuals, age 7+ months during the May through August period <p>An overfished condition would result when a parent stock number falls below one-half of the overfishing definition listed below.</p> <ul style="list-style-type: none"> - Brown shrimp - 63 million individuals, age 7+ months during the November through February period - White shrimp - 165 million individuals, age 7+ months during the May through August period <p>Due to recent updates in stock assessment modeling, stock assessments for shrimp are now being conducted with a new model. This model provides different outputs than the original stock assessment models used when the SDC for shrimp stocks was set in Amendment 13. In 2015, the SDC for the shrimp fishery were redefined, through Amendment 15 of the GMFMC Shrimp FMP as the following:²</p> <p>MSY:</p> <ul style="list-style-type: none"> - Brown shrimp: 146,923,100 pounds of tails - White shrimp: 89,436,907 pounds of tails <p>Overfishing:</p> <ul style="list-style-type: none"> - Brown shrimp: F_{MSY} 9.12 - White shrimp: F_{MSY} 3.48 <p>Overfished:</p> <ul style="list-style-type: none"> - Brown shrimp: SSB_{MSY} is 6,098,824 pounds of tails - White shrimp: SSB_{MSY} is 365,715,146 pounds of tails 	
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¹GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²GMFMC. Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

7.2.2 Have management measures taken into account the need to avoid excess capacity and promote conditions under which the interests of fishermen, especially the small-scale, artisanal and subsistence fishery sectors, are protected, the biochemistry conserved, depleted stocks restored and adverse environmental impacts assessed and corrected?

(a)(i) - Is the level of excess capacity defined?¹ **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
	<p>Federal: The Gulf of Mexico shrimp fishery conducted in federal waters is managed by GMFMC and NOAA Fisheries under a federal shrimp permit moratorium system. Capacity of the federal fleet was analyzed in 2006 by Kirkely et al. in a larger study examining overcapacity in several U.S. fisheries.¹ Since that time, the Gulf of Mexico shrimp fishery has seen significant reductions in license numbers due to economic</p>	

	<p>losses of the fishery. The current license moratorium for the federal fleet will expire in 2016. GMFMC and NOAA Fisheries are currently working to assess the capacity of the fishery and determine the appropriate number of permits through Amendments 17A and 17B.^{2,3} For additional details, refer to 7.1.8(a).</p> <p>Mississippi: There is currently no limit on the fishing capacity for the shrimp fishery in Mississippi waters. Licenses are required for commercial, recreational and live-bait shrimping in Mississippi waters and MDMR monitors license numbers annually. In 2015, three types of commercial shrimp licenses are available based on boat size.⁴ Of the 290 resident commercial licenses in the fishery, 108 are boats smaller than 30 feet, 86 are between 30 and 45 feet, and 96 are over 45 feet.⁵ MCMR does have the authority to establish limited-entry for a fishery under MS Code §49-15-16, if it should be determined that a limited-entry system is necessary.⁶ Poor economic conditions of the fishery over the last decade have continued to reduce the number of participants in the fishery and is expected to continue to decline. MDMR monitors these trends and has the authority to act if there are indications that this trend will reverse.</p>	
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¹ James E. Kirkley, John M. Ward, James Nance, Frank Patella, Karyl Brewster-Geisz, Chris Rogers, Eric Thunberg, John Walden, Will Dasplit, Brad Stenberg, Steve Freese, Jim Hastie, Stephen Holiman, and, Mike Travis, 2006. *Reducing Capacity in U.S. Fisheries*. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

² GMFMC. *Draft options for Amendment 17A of Gulf of Mexico Shrimp Fishery Management Plan*. September 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-10-2015/D-4PHDraftShrimp17A

³ GMFMC. *Draft options for Amendment 17B of Gulf of Mexico Shrimp Fishery Management Plan*. September 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-10-2015/D-%205%20Shrimp%2017b-%20OY%20and%20Permit%20Pool.pdf

⁴ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁵ MDMR. Unpublished data, August 2015.

⁶ Miss. Code Ann. § 49-15-16 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-16>

7.2.2 (a)(ii) - Is excess capacity avoided? Yes... [1] Some... [½] No... [0]

Extent of compliance		
Yes	Some	No
	<p>Federal: The moratorium put in place by Amendment 13 capped the number of licenses in the fishery to the number of qualifying permits that were issued in the first year of the moratorium: 1,933 permits.¹ Since 2007, permit numbers have decreased to 1470 permits in 2014 through termination of permits that were not renewed by the permit holder.² GMFMC and NOAA Fisheries are currently reassessing the appropriate number of permits for the fishery through the Shrimp FMP Amendments 17A and B.</p>	

	<p>Mississippi: Since there is no capacity measurement for the inshore Mississippi shrimp fishery, it is not possible to determine if excess capacity has been avoided.</p>	
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¹ GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² GMFMC. Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan. August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

7.2.2 (b) - Do the economic conditions under which the fishery operates promote responsible fisheries? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance
N/A
This question has been omitted from scoring.

7.2.2 (c) - Are interests of small-scale, etc., fishermen accounted for?
Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The original shrimp FMP implemented in 1981 contains a socioeconomic characterization of the fishery.¹ Section 3.5.5 addressed subsistence fishing and determined that there are no individuals, communities or societies were identified to meet the accepted definition; however, there may be some fishermen who partially subsist on shrimp. These fishermen typically fish under recreational permits. Section 3.5.6 addresses Native American rights to resources and traditional fishing practices and did not identify any persons or communities in Mississippi that would require consideration within the FMP.</p> <p>MSA NS4 and MS8 require an evaluation of fishing participants and communities within the fishery and mandates equitable distribution of resources and consideration of community reliance on resources when setting regulations:²</p> <p><i>NS4: Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privilege.</i></p> <p><i>NS8- Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.</i></p>		

Additionally, Executive Order 12898 directs federal agencies to identify and develop strategies to address the human health or environmental effects that agency actions may have a disproportionately high and adverse effect on minority and low-income populations.³

Amendment 13 of the Shrimp FMP section 7.3.2 contains information on the social environment of the shrimp fishery and identifies important communities within the Gulf of Mexico that rely on the shrimp fishery.⁴ Amendment 13 identifies 24 communities that are relatively vulnerable to social and economic impacts of management changes within the shrimp fishery and should be given additional consideration.

Mississippi:

There is no strict definition of “small-scale” or “artisanal” based on FAO guidelines or documents; however, there is agreement that these terms reference specific aspects of a fishery, such as size and scale of the fishery, its proximity to shore and duration of trip, use of technology, and individual ownership as opposed to businesses or corporations.⁵

Based on these guidelines, the Mississippi inshore shrimp fishery conducted within state waters is largely comprised of small-scale fishermen with vessel sizes that are generally small in comparison to the larger, offshore fleets and fishers tend to work with few crewmembers, if any, to a boat. Trips are inshore and daily, not several days out at sea. Mississippi has three separate licenses for commercial shrimping based on boat size, of the 290 current licenses, 108 boats are under 30 ft. and only 96 boats are larger than 45 ft. MDMR considers all of these factors when setting regulations for the inshore fishery and consults with industry representatives through the workshops and public hearings to discuss these factors.^{6,7} MDMR publicizes public hearings, scoping meetings, comment periods for proposed management actions through the MDMR website and encourages public participation through these outlets, and fishermen are actively engaged.^{8,9,10}

MS Code 49-15-64.5 sets policy for commercial shrimp vessel and captain licenses and recreational shrimp vessel licenses and sets fees for licenses based on vessel size, allowing lower costs for smaller vessels within state waters.¹¹ MDMR also considers the interests of local, small-scale fishing communities and individual business owners when setting license fees by creating a lower cost license fee for residents of the state to utilize the resources within state waters.¹²

MDMR also issues recreational shrimp licenses for residents who harvest shrimp for personal consumption and live bait shrimp licenses for shrimpers who provide live shrimp to bait houses for recreational fishing. Shrimp caught under a recreational shrimp license may not be sold. Shrimp caught under a live-bait license must be kept alive onboard the vessel with a maximum allowance of 30 pounds of dead shrimp. Live-bait shrimping is restricted to south of the CXS bridge in all three counties, daytime shrimping only and maximum tow times of 25 minutes.

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² "National Standards Guidelines" NOAA Fisheries. Web. Accessed November 2015.
http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ Executive Order 12898 <http://www2.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice>

⁴ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

⁵ Fisheries and Aquaculture topics. Small-scale and artisanal fisheries. Topics Fact Sheets. Text by Jan Johnson. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 27 May 2005. [Cited 11 August 2014].
<http://www.fao.org/fishery/topic/14753/en>

⁶ "Shrimp and Crab Bureau" Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

⁷ "Recent News" Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

⁸ Guillory, V. Perry, H. VanderKooy, S. 2001. *The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan*. Gulf States Marine Fisheries Commission. Ocean Springs, MS.
<http://www.gsmfc.org/publications/GSMFC%20Number%20096.pdf>

⁹ "Public notices" Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/news-a-events/public-notice>

¹⁰ "Meetings" Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/commission-meetings>

¹¹ Miss. Code Ann. 49-15-64.5 <http://www.lexisnexis.com/hottopics/mscode/>

¹² MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

7.2.2 (d) - Has the biodiversity of aquatic ecosystems been conserved (as a result of operation of the fishery in question)? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
	<p>There are two overarching considerations for the Louisiana shrimp fishery with regard to conservation of biodiversity of ecosystems: bycatch and bottom habitat impacts.</p> <p>Bycatch: Bycatch is a major concern in shrimp fisheries globally and there is much controversy among stakeholders on the potential impacts of shrimp trawling on the ecosystem. A</p>	

FAO report on fishery discards (Kelleher 2005) indicates that, world-wide, shrimp trawl fisheries have both the highest discard rate and volume of all fisheries.¹ This report also notes that warm-water shrimp trawl fisheries typically have significantly higher proportions of bycatch (average: 75% of total catch), than cold-water fisheries (average: 10% of total catch). Environmental impacts associated with bycatch include depletion of species typically caught as bycatch, which may include species that are listed as protected, endangered, or threatened (PET), and alterations of the food web such as trophic cascades. Managers and fishermen throughout the Gulf of Mexico have collaborated to develop and utilize best-practices for bycatch reduction and have made substantial progress in minimizing bycatch impacts. Collaboration is ongoing to develop innovative methods to further address bycatch concerns. NOAA Fisheries National Bycatch Report acknowledges the improvements made to the Gulf of Mexico shrimp fishery and also provides suggestions for additional improvement.²

Trawling, in general, is not considered a selective form of fishing; however, the selectivity of trawls is dependent on a variety of factors including the type and size of trawls, modifications such as BRDs, geographic area fished, and regulations on how they are used. A recent report by the Sustainable Fisheries Partnership (SFP) on shrimp fisheries bycatch highlights the progress that the Gulf of Mexico shrimp fishery has made in recent years to substantially reduce bycatch including the required use of BRDS, TEDs, area closures, effort limitations, and gear restrictions such as configuration and size limits of trawls.⁴ The SFP report notes that the Gulf of Mexico shrimp otter trawl fishery has received “low risk” scores for a majority of categories, with only a few “medium-risk” areas, and no “high-risk” ratings.

The initial NOAA National Bycatch Report, published in 2011, indicated that the fishery bycatch ratio (ratio of the total fishery bycatch to total fishery catch) for the Gulf of Mexico shrimp fishery was .76, the highest of all U.S. fisheries analyzed in the report (note: some fisheries were data-deficient and could not be included, such as the South Atlantic shrimp trawl fishery).⁵ The 2013 update to the National Bycatch Report indicates that improvements in bycatch estimation and bycatch reduction in the Gulf of Mexico shrimp trawl fishery have resulted in a decrease of the fishery bycatch ratio from .76 to .63.⁶ This report shows continued progress in efforts to reduce impacts of bycatch in the fishery; however, the shrimp fishery does still remain one of the highest bycatch fisheries in the U.S. The fishery bycatch ratio for all U.S. fisheries combined is .17. The National Bycatch Report includes a Bycatch Estimation Improvement Plan for the Gulf of Mexico shrimp trawl fishery with recommendations for the fishery.

Initial bycatch to shrimp ratio estimates for the Gulf of Mexico shrimp fishery from 1970s were approximately 10:1, with some estimates, based on season and area, as high as 13.7:1.⁷ Since that time, the implementation of TEDs, BRDs, area closures and significant reductions in shrimp effort have all contributed to substantial decrease in the bycatch of the fishery. Estimates in 2009 concluded that bycatch ratios had remained consistent at approximately 4:1 since 2000.⁸ The 2012 report by Scott-Denton et al., utilizing observer data, determined that total bycatch to shrimp ratio for the federal shrimp trawl fleet had decreased further to 2.5:1 for total bycatch to

shrimp and 2:1 for finfish to shrimp.⁹ Currently, observer data are the only long-term data set documenting bycatch of the fishery and observer coverage is limited (1-2% coverage in the federal fleet and a small number of observers on inshore skimmer vessels). The National Bycatch Report, published by NOAA, considers the observer coverage on the Gulf of Mexico shrimp fleet to be at a pilot/baseline stage and ranks the fishery as a Tier 2 (0=lowest, 4=most successful) for bycatch estimation, indicating that methods for obtaining data and estimating bycatch need improvements before being considered reliable.¹⁰ Characterization of bycatch composition from Scott-Denton et al. (2012) for the federal offshore fleet shows that the majority of species are finfish, but some crustaceans including blue crabs and other shrimp species like seabobs (*Xiphopeneus kroyeri*), and rock shrimp (*Sicyonia brevirostris*) are common.¹¹ The bycatch species identified are consistent with other shrimp trawl bycatch studies conducted within the Gulf of Mexico (Adkins, 1993 in Louisiana, Burrage 2002 in Mississippi, and Fuls et. al 2002 in Texas). Many incidental catch species are utilized by fishermen and may be retained up to certain limits (varies by state), such as seabobs, rock shrimp, blue crabs, and some finfish species.

National Standard 9 of the MSA requires that “conservation and management measures shall, to the extent practicable: (1) minimize bycatch; and (2) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.”¹²

The GMFMC Shrimp FMP contains two objectives that directly address this mandate of the MSA:¹³

- Objective 4: “Promote consistency with the Endangered Species Act and the Marine Mammal Protection Act.”
- Objective 5: “Minimize the incidental capture of finfish by shrimpers, when appropriate.”

Amendment 13 of the Shrimp FMP (2005), established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch composition.¹⁴ These methods include the implementation of an electronic logbook program (ELB) for a statistically significant portion of the fishery to improve data on effort, and mandatory requirements for observer coverage for a randomly selected portion of the fishery to collect data on effort and bycatch composition. Amendment 13 also required annual completion of a Gulf Shrimp Vessel and Gear Characterization Form, required reporting of landings, and placed a moratorium on the issuance of new permits in the fishery. Due to the high costs of outfitting boats with observers, NOAA Fisheries determined at the time that 1% coverage would be adequate to document information on bycatch composition in the fishery and these data could be combined with detailed effort data from ELBs to extrapolate total bycatch numbers for the fishery. Observer data goes into the Southeast Data, Assessment, and Review (SEDAR) process and is utilized in models to determine bycatch of individual species, which are then used in other assessments. There are criticisms by some stakeholders that 1% is not an adequate amount of coverage and could lead to the “observer effect”, where fishermen modify their behavior when observers are present; however, NOAA Fisheries analysts consider 1% to be sufficient.

Endangered Species Bycatch:

One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the ESA, which includes five species of sea turtles, smalltooth sawfish, and Gulf sturgeon.¹⁵ As required under the rigorous requirements of the ESA, each species has a recovery plan and designation of critical habitat. NOAA Office of Protected Resources provides detailed information on each species on their website, with each species site containing details on species status, description, habitat, distribution, population trends, threats, regulatory history and conservation efforts.¹⁶

Sea Turtles:

Five species of sea turtles are known to inhabit areas that overlap with shrimp trawling activity in the Gulf of Mexico:

- [Hawksbill \(*Eretmochelys imbricate*\)](#)
- [Kemp's ridley \(*Lepidochelys kempi*\)](#)
- [Leatherback\(*Dermochelys coriacea*\)](#)
- [Green \(*Chelonia mydas*\)](#)
- [Loggerhead \(*Caretta caretta*\)](#)

Kemp's ridleys are of most concern among the five species due to their limited range, which is primarily within the Gulf of Mexico. The other four species of sea turtles are found worldwide.¹⁷

A National Research Council (NRC) report published in 1990 determined that shrimp trawl bycatch was one of the most significant sources of mortality causing declines in sea turtle populations.¹⁸ Research on TEDs began in the late 1970s, and in 1981 a voluntary program was initiated to encourage fishermen to utilize TEDs in shrimp trawls. Early TED designs were cumbersome and difficult to use and did not gain favor with most fishermen; therefore, TED use was low throughout the 1980s.¹⁹ Federal legislation was passed in 1987 and went into effect in 1989 requiring widespread use of TEDs in shrimp trawls and by 1990 most shrimp trawls were equipped with TEDs. In 1993 a modification was made to allow for increased escape of leatherback turtles and in 2003, and additional modification in regulations to require larger opening further increased escape rates for larger loggerheads and leatherbacks. The 2003 regulation change was expected to reduce mortality of loggerheads by 94% and leatherbacks by 97%. Certified TED designs are required to meet a minimum efficiency threshold of 97% escapement of turtles within a five minute time period. TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011).²⁰



Post-TED mortality estimates are about 94% lower, (4,450 total deaths) than pre-regulation estimates (70,620). Mandatory TED requirements are currently in place for otter trawls in the shrimp fishery in both state and federal waters and Mississippi fully complies with TED requirements.

NOAA and USFWS are jointly responsible for sea turtle conservation under the ESA and are required to consult on all activities that may impact the recovery of each species. Through this consultation process, NOAA has produced several Biological Opinions pertaining to sea turtle conservation and continued authorization of the Gulf of Mexico shrimp fishery. Each Biological Opinion produced by NOAA has authorized the continued operation of the shrimp fishery and includes an Incidental Take Statement. The 2012 Biological Opinion established requirements for enforcement and compliance with TED use in shrimp trawls and set a ‘sea turtle capture rate standard’ that limits the fishery to a 12 % sea turtle capture rate.²¹ The 2014 Biological Opinion maintains this standard (88% effectiveness) in the Incidental Take Statement as a procedure for determining if impacts of the action (continued operation of the shrimp trawl fishery) exceed the expected authorized take.²² If an Incidental Take Statement is exceeded, a new Biological Opinion is initiated. Compliance rates are actively monitored and a minimum 88% effectiveness rate with TED use must be maintained otherwise NOAA Fisheries is required to take action, which could include closure of the fishery.²³ NOAA Fisheries posts compliance data on their website and current data indicate that the Gulf of Mexico shrimp fleet (including Mississippi) is in compliance with TED requirements.²⁴

The 2014 Biological Opinion notes in the Incidental Take section that current data does not allow for reliable estimates of sea turtle take from fishery interactions. The authors note that the last physical observations documenting fishery interactions, which were from “naked nets” (nets without TEDs) in the 1990s, which is not representative of the current fishery. Several assumptions and biases also exist in previous studies to overcome data gaps at the time and these studies are now over 15 years old. Updating survey data to gather the information necessary to make reliable estimates of sea turtle take is considered to be too cost prohibitive; therefore, jeopardy analyses are based on existing knowledge and effort and compliance data from the fishery.²⁵ NOAA Fisheries requested input from NRC on methods for improving sea turtle population assessments and in 2010 NRC published a report on sea turtle status and trends. The overarching conclusion was that several serious demographic data gaps exist precluding accurate assessment and strongly

recommends that NOAA and USFWS develop a coherent national strategy for sea turtle assessment to improve data collection methods, data quality, and data availability, which meets standards of external review.

Currently, TED compliance is enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers. The effectiveness rate required by the Biological Opinion is calculated using NOAA enforcement and inspection rates. Violations are ranked from Level 1 through Level 4 based on severity of violation and likelihood that the offense would lead to a higher turtle capture rate.²⁶ These compliance data are entered into a matrix to determine the overall effectiveness rate of TEDs in the shrimp trawl fleet. NOAA enforcement and inspection data are currently the main sources of information on TED compliance used to determine effectiveness for the Gulf shrimp fleet. Though TED enforcement and inspections are conducted by the USCG and each state agency, these data are not made public and not necessarily included in NOAA's calculations. Many stakeholders believe that measuring TED compliance using only enforcement data biases the calculation negatively because enforcement is not random, rather, enforcement agents tend to target vessels that are more likely to be out of compliance. This leads to higher reporting of offenses and a lack of documentation of vessels that are in compliance. In 2015, representatives from each of the enforcement agencies met to further discuss inconsistencies in inspection methods and concerns over methods used to determine TED compliance.²⁷ State and federal agencies continue to discuss possible solutions to these concerns. NOAA enforcement and inspection rates for the shrimp fishery are low due to a limited number of enforcement agents and few members of the NOAA Gear Monitoring Team (GMT) capable of conducting inspections. In 2015, the federal fishery has over 1300 permits and the number of state licenses range from 300-1000+ permits. NOAA inspections cover about 200 vessels per year.²⁸ Compliance rates are calculated by quarter, and small sample sizes in some months can lead to biases the overall compliance percentages. The inclusion of USCG and state agency enforcement data could improve the sample size and reduce bias in these calculations.

Compliance rates have fluctuated for the past several years and maintaining high TED compliance and effectiveness rates for the fishery requires ongoing efforts. A particular period of concern occurred from March to November 2011, when the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.²⁹ It should be noted that investigation into TED compliance during this time found that the majority of violations were from newly installed TEDs that were not properly installed by net shops. NOAA was able to trace the TEDs back to specific net shops to rectify the problem and the TEDs were corrected prior to the opening of shrimp season; therefore, while compliance rates appear low for this time period, the actual risk to sea turtle populations was avoided.³⁰ Since 2011, education, outreach, and increased courtesy inspections by NOAA GMT and Sea Grant have helped to increase compliance ratings and NOAA now posts compliance numbers quarterly on their website.³¹ MDMR enforcement officers conduct courtesy inspections to ensure that TEDs are installed properly prior to the opening of shrimp season; prior to the 2014 season opening 75 courtesy checks were conducted and all

TEDs were made 100% compliant before operating in MS waters.³²

Regulations for TEDs in skimmer trawls and butterfly nets differ from otter trawls. Currently, regulations for skimmer trawls and butterfly nets require either a TED installed in each net, or adherence to maximum tow times (maximum 55 minutes from April 1 to October 31, and 75 minutes from November 1 to March 31).³³ Skimmer trawls and butterfly nets, because of their design, are pulled in with much higher frequency than otter trawls, which greatly reduces the risk of a sea turtle drowning within a net. Tow time regulations are set based on the biological information regarding the length of time sea turtles can remain submerged. Increased turtle strandings in the Gulf of Mexico in 2010-11 prompted observer coverage and further study of turtle bycatch in skimmers. Observer coverage on the skimmer fleet from 2012 through 2014 indicates that over 60% of tows throughout the 3 years of study have exceeded tow time limits, and low compliance with tow time regulations has raised concerns by stakeholders.^{34,35,36} These reports prompted NOAA to take action in two ways:- 1) increase tow time awareness and education efforts, and 2) research effective TED designed for mandatory use in skimmers. Data from the 2012 observer coverage indicated that the standard 4' TED design currently in use on otter trawls was not able to exclude smaller sized turtles found in nearshore areas where skimmers are used. NOAA is currently researching TED designs and will likely propose a mandatory TED rule for skimmers in the near future. Currently, adhering to tow time restrictions is the most effective way to prevent turtle mortalities in skimmer nets. In 2010-11, MDMR utilized grant funding to provide TEDs to skimmer trawl fishermen and increase outreach and education regarding sea turtle interactions.^{37,38} In 2010, 380 TEDs were distributed to over 190 shrimpers who reported using Skimmers. MDMR personnel conducted 24 trips as observers on commercial vessels that received TEDs to gather data on sea turtle interactions. Only 4 turtles were encountered and all were released alive. MDMR also conducted mailings to all license holders with information on sea turtle interactions, proper handling, and resuscitation, NOAA's TED training video (in English and translated into Vietnamese), and distributed 475 TED angle meters and instructions on use. Mississippi Law states that a regulation cannot be implemented in MS that is stricter than federal regulations; therefore, MDMR cannot mandate TED use in skimmer trawls until a determination and regulation is set by NOAA Fisheries on this issue.³⁹ When renewing licenses in Mississippi, shrimpers are required to report on the gear type used. Of the 320 shrimpers currently licenses, the large majority (198) use only otter trawls, 30 shrimpers report using both otter trawls and skimmers, and 83 shrimpers report using skimmers.⁴⁰ MDMR also acted proactively in 2010 when sea turtle stranding data indicated an increase in strandings in Mississippi waters. MDMR conducted mailings to all fishing license holders (not just shrimpers) with information on sea turtle interactions, proper handling, resuscitation and disentanglement; held fishery interaction seminars throughout the coast, increased compliance checks for TEDs on shrimp vessels; and reduced tow time limits to 30 minutes per trawl (from 55 minutes).⁴¹ In 2011, the Commission on Marine Resources also passed a Sea Turtle Study Resolution supporting a comprehensive Gulf of Mexico sea turtle population and distribution study.⁴²

In addition to efforts to reduce sea turtle mortality from fishery interactions, NOAA Fisheries, USFWS, GSMFC, state agencies and shrimp industry groups have contributed to efforts to protect sea turtle nesting beaches in Mexico and areas throughout the Gulf coast to assist in the recovery of sea turtle populations.⁴³ Protection of nesting grounds has been a significant conservation action by eliminating direct harvest of turtle eggs and reducing nest predation. NOAA SEFSC Galveston Lab participates in a Captive Rearing Program.⁴⁴

[Smalltooth sawfish \(*Pristis pectinata*\)](#)

The Recovery Plan for Smalltooth Sawfish cites bycatch in fisheries (including the shrimp fishery) as a primary reason for the decline of this species.⁴⁵ Previous documentation of landings as incidental catch in the shrimp fishery were reported between 1940s-1980s in Louisiana and Texas; however, there has been minimum documentation of recent landings and informal interviews by port agents indicate that recent interactions are rare. The population of smalltooth sawfish is thought to have declined by as much as 95% and the geographical range of the species is likely significantly diminished. Currently, three NWRs in Florida provide habitat protection for known reproducing populations of smalltooth sawfish. Catch or harm of smalltooth sawfish is illegal, and guidelines have been published on the handling and release of smalltooth sawfish that are incidentally caught in commercial and recreational fisheries. The Recovery Plan estimates for one smalltooth sawfish taken in the shrimp trawl fishery per year. It is possible that the implementation of TEDs and BRDs in the shrimp fishery would allow for smalltooth sawfish escape should interactions with shrimp trawls occur. However, there is still some question; as to whether trawl bycatch might impact recovery if/when this species population begins to rebuild and potential interactions increase.

[Gulf Sturgeon \(*Acipenser oxyrinchus desotoi*\)](#)

The most recent 5-year review (2009) for the Recovery Plan for Gulf Sturgeon notes that bycatch in shrimp trawls has been infrequently documented in past and that implementation of TED and BRD regulations has likely mitigated bycatch impacts to this species.⁴⁶ No regulatory actions are required directly in relation to bycatch of Gulf sturgeon for the shrimp fishery.

Marine Mammal Bycatch:

The MMPA 1994 revision includes changes of regulation regarding the incidental take of marine mammals in commercial fishing operations, requiring a goal to reduce serious injury and mortality of marine mammals to “insignificant levels”, approaching a zero mortality rate. “Insignificant Level” is defined as less than 10% of the potential biological removal (PBR).⁴⁷ NOAA’s Office of Protected Species evaluates fisheries based on their potential interaction with marine mammals during fishing operations and places fisheries into three categories: Cat. I- high interaction, Cat. II- med-low interaction, and Cat. III- little or no known interactions.⁴⁸ The Gulf of Mexico shrimp fishery is currently listed as a Category II fishery on the List of Fisheries.⁴⁹ This determination was based on potential interactions with bottlenose dolphins. Lack of a calculated PBR for the Gulf of Mexico bottlenose dolphin populations, data from stranding programs, and low observer coverage in the fishery are all reasons that prompted NOAA to assign a Cat. II ranking. Cat. II designation requires that each

fishery participant be registered with the Office of Protected species and carry an authorization certificate. Typically, registration with the Marine Mammal Authorization Program is combined with state and federal permitting systems and all fishermen receiving permits are registered with the Office of Protected Species automatically. Cat. II requirements also require the fishery to have an observer program and fishermen must carry an observer onboard if requested, and must comply with any take reduction plans in place. There is currently no take reduction plan in the Gulf of Mexico for bottlenose dolphins. Fishermen are also required to report all incidental injuries and mortalities of marine mammals to the Office of Protected Species.

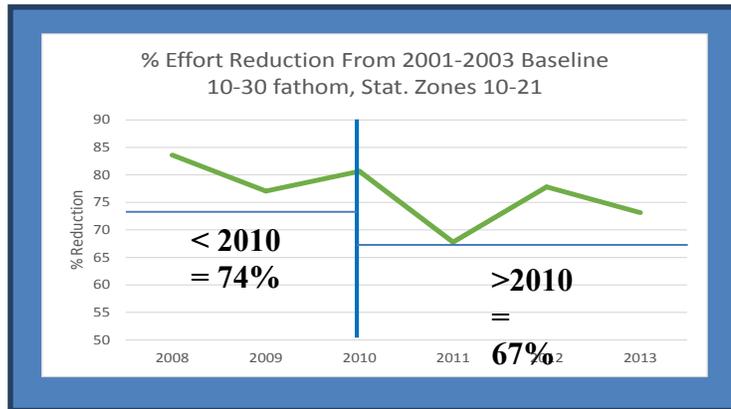
Commercially and/or Recreationally Important Finfish Species Bycatch:

Red snapper (*Lutjanus campechanus*)

Red Snapper bycatch has been another major concern in the Gulf of Mexico shrimp fishery. The Red Snapper fishery in the Gulf of Mexico is considered overfished and is in a rebuilding plan.⁵⁰ This rebuilding plan included a significant reduction in juvenile red snapper bycatch in the Gulf of Mexico shrimp fishery. Amendment 9 of the Shrimp FMP deals directly with the reduction of red snapper bycatch.⁵¹ The goal of Amendment 9 was to reduce bycatch of juvenile red snapper in age 0 and age 1 groups by 50%, which was the amount determined by NOAA Fisheries as necessary for the rebuilding plan. Amendment 9 required the use of BRDs in shrimp trawls west of Cape San Blas, FL in the U.S. EEZ. East of Cape San Blas was exempt at the time due to low abundance of red snapper in this area. State waters were not considered a factor because it was determined that juvenile red snapper typically occur beyond depths of 5 fathoms, and mainly occurred beyond 10 fathoms (80-83% occurrence below 10 fathoms).⁵² BRD requirements included 1) reduction of finfish/shrimp ratio by 50%, 2) does not reduce shrimp catch by more than 3%, and 3) does not increase gear cost by more than 10%. BRD devices are certified by NOAA Fisheries and BRDs are required in all shrimp trawls except royal red trawls and try nets (nets smaller than 12 ft.). The implementation of BRD regulations in 1998, and the requirement of TEDs, which also allow for the release of some finfish bycatch, along with the closure seasons/areas in place, and reduction in shrimp effort since the 1990s have all contributed to significant reductions in juvenile red snapper bycatch. The BRD certification criteria were changed by an August 2006 Regulatory Amendment to require that total finfish reduction be reduced by 30% with no specific red snapper requirement.⁵³ In 2007, Amendment 14 (effective in 2008) established a specific bycatch reduction target for the shrimp fishery and designated seasonal closure restrictions that could be used to manage shrimp fishing effort in relation to the target bycatch reduction goal.⁵⁴ The seasonal closure areas were designated within the statistical zones 10-21 between 10-30 fathoms and designed to start in conjunction with the annual Texas Closure, if needed. The need for the closure, and its duration and extent is determined annually by an SEFSC assessment of the previous year's shrimp effort within the designated zone, and associated red snapper mortality. If it is determined that a seasonal closure is necessary, then the Regional Administrator will set the closed season area and duration as necessary to meet the bycatch reduction target.

Bycatch reduction target for juvenile red snapper in the shrimp fishery have been

meet and exceeded through use of BRDs and significant reductions in shrimp effort (see graph below).⁵⁵



Some stakeholders have also raised concern over other commercially and recreationally important species, such as blacknose shark (*Carcharhinus acronotus*). In 2007, NOAA Fisheries determined that blacknose shark was overfished and experiencing overfishing; bycatch and associated mortality from the shrimp trawl fishery was considered a factor in the decline of the species.⁵⁶ Since this time, the blacknose shark population has been divided into two separate populations: an Atlantic population and a Gulf of Mexico population.⁵⁷ The Atlantic population remains listed as overfished and overfishing; however, the Gulf of Mexico stock is currently considered unknown based on the 2011 NOAA Fisheries stock assessment.⁵⁸ Raborn et al. (2012) determine that implementation of TEDs was effective in mitigating bycatch of blacknose sharks in the Gulf of Mexico shrimp fishery since sharks are also capable of escaping trawls through TEDs.⁵⁹

Other Common Bycatch Species Bycatch:

Amendment 9, requiring BRDs in shrimp trawls west of Cape San Blas, FL was implemented primarily with the intent of reducing juvenile red snapper; however, it also accomplished bycatch reduction of other common finfish species caught in trawls. Amendment 10 followed, requiring BRDs in shrimp trawls east of Cape San Blas to reduce finfish bycatch by 30% as required by the MSA bycatch reduction requirements.⁶⁰ There are no other strategies in place designed to specifically reduce other finfish in the Gulf of Mexico, and targets for reduction are based on finfish as a group. No other finfish in the Gulf of Mexico have been identified as being “at risk” due to bycatch in the shrimp fishery. Many of the typical species caught in shrimp trawls are highly productive, short-lived species with high resilience to fishing pressure.

Common species caught in shrimp trawls include:

- Atlantic croaker (*Micropogonias undulatus*)
- Seatrouts (*Cynoscion sp.*)
- Longspine porgy (*Stenotomus caprinus*.)
- Inshore Lizardfish (*Synodus foetens*)

Based on a recent analysis by Raborn et al. (2014) these are the only finfish species

and genus that represent 5% or higher in bycatch of shrimp trawls. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to any of these species.⁶¹

Mississippi:

Mississippi does not regularly collect information on discards in the inshore shrimp fishery. Retained incidental catch is documented through Trip Ticket Program if sold for commercial purposes. There is some observe coverage on the inshore Skimmer fleet across AL, MS, and LA, started in 2012, which documents bycatch and effectiveness of BRDs, TEDs, and tow-time regulations (see details below).⁶² Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted (brown or white).⁶³ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is “no pressing need” to make BRD use mandatory. BRDs are not required in state waters in Mississippi; however, many fishermen utilize BRDs to reduce catch of unwanted species. MDMR and GCRL conduct fishery-independent surveys, which collect data on the species typically discarded in the shrimp trawl fishery.⁶⁴ If information from the fishery-independent surveys showed a concern for any species in state waters, the agency would evaluate and take action on a case by case basis.

Several studies have indicated that bycatch in skimmer trawls is substantially lower than bycatch in traditional otter trawls. Hein and Meier (1995) discuss the development of the skimmer trawl in Louisiana, which began around 1983 in the Barataria area primarily for use during white shrimp season.⁶⁵ Hein and Meier (1995) found that the advantages of skimmer trawls, including increased shrimp catch (for white shrimp), less debris and bycatch, lower fuel consumption and easier maneuverability in shallow water all lead to the popularization of skimmer use in Louisiana waters. Since the cod end can be retrieved while the net remains in the water fishing, nets are checked and emptied more frequently leading to less bycatch and higher survivability of discards as well as increased quality of retained catch. Early studies of bycatch in skimmer trawls in North Carolina by Coale et al. (1994) comparing skimmer trawls to otter trawls found that skimmers typically caught less bycatch than otter trawls during white shrimp season and bycatch in skimmers had significantly higher survivability rates.⁶⁶ The authors found that this was not the case for brown and pink shrimp season. In 2012, a mandatory observer program was implemented for the northern Gulf skimmer fleet in Louisiana, Alabama, and Mississippi. Annual observer reports are published with data on bycatch rates, sea turtle interactions, BRD and TED use, and adherence to tow time restrictions. Bycatch ratios from these reports are: 2012 ratio was 1.24, 2013 ratio was .92, and 2014 1.94.⁶⁷ These reports also document voluntary use of TEDs and BRDs in skimmers and indicate that over 40% of shrimpers are voluntarily using BRDs, and 3-

5% are voluntarily using TEDs.

BOTTOM HABITAT IMPACTS:

Shrimp trawling can also cause damage to the sea floor by burying, exposing, or injuring marine organisms and submerged vegetation and may also impact the ecosystem by resuspension of sediments and release of nutrients into the water column. The shrimp trawl fishery in the northern Gulf of Mexico primarily trawls with smaller nets and is active in primarily mud, sand or peat bottoms in areas that are storm-prone and typically experience habitat disturbances from natural causes as well as other anthropogenic activities. Chang et al. (2001) examined resuspension of sediments during hurricane events and determined that impacts occur to depths beyond 70 meters.⁶⁸ Typical shrimp trawling activities occur in shallower depths, generally above 30 meters. Dellapenna et al. (2006) determined that the turbidity plume following a shrimp trawl was comparable to the turbidity produced by a 9 to 10 m/s wind event at the study area in Galveston Bay, Texas.⁶⁹ The degree to which bottom trawls disturb sediment depends on the sediment type and the gear type, weight and speed. There are wide-ranging results from previous trawl impact studies possibly due to differences in trawl methods, gear and/or habitat type; however, since trawl gear is designed to maintain contact with the seabed, some level of resuspension and sediment penetration is inevitable. An understanding of ecological effects is dependent on the site-specific characteristics such as bottom type, depth, community type, gear and methods used and the intensity of activity and other natural disturbances. Recovery of trawled substrate is also dependent on sediment type, depth, and natural influences. Few studies have focused on habitat recovery after trawl impacts and most existing studies have not addressed cumulative impacts of repeated trawling occurrences that would be typical of commercial fishing over time.⁷⁰ NRC (2002) reported that, based on rough estimates of the number of times a given area was swept, the Gulf of Mexico was one of the areas of highest intensity of effort.⁷¹ NRC (2002) also notes that a significant reduction in effort has occurred in many areas due to area closures, seasonal closures and gear restrictions. A study by Jennings and Kaiser (1998) found it plausible that light shrimp trawls likely do not cause significant disturbance to shallow water communities in poorly sorted sediments. Additionally, they note that organisms in soft mud are capable of burrowing up to two meters deep and are likely not impacted by passing trawls.⁷² Dellapenna et al. (2006) conducted studies on the impact of shrimp trawling in Galveston Bay, Texas and found that the maximum depth excavated by trawl gear was 1.5 cm.⁷³ Sanchez et al. (2000) similarly found that sporadic episodes of trawling in muddy habitats “may cause relatively few changes in community composition” and that “natural variability at some sites may exceed the effects of disturbance from fishing” and Ball et al. (2000) notes that epifauna are generally scarce in muddy sediment habitats.⁷⁴ Barnette (2001) additionally reports on impacts of skimmer trawls vs. otter trawl, finding that skimmer trawls likely have less impact than otter trawls due to the absence of trawl doors interacting with the floor bottom. Skimmer trawls; however, are typically active in shallower waters (10 feet) and may interact more with sensitive habitats such as submerged aquatic vegetation (SAV). Impacts on EFH have been assessed by NOAA and the GMFMC in the Generic Amendment for addressing EFH requirements in FMPs. The EFH amendment applies to all seven

	<p>GMFMC FMPs.⁷⁵ The Initial EFH amendment was developed in 1998 and included an EIS. Section 5.1 identifies EFH for the shrimp species managed in the Gulf of Mexico Shrimp FMP (brown, white, pink, and royal red). Section 6.1 identifies fishing-related threats, 6.2 identifies non-fishing related threats. Section 7 provides management options to minimize impacts and Section 8 identifies research needs. The EFH amendment is reviewed and updated every five years.</p> <p>The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:⁷⁶</p> <ul style="list-style-type: none"> - prohibit use of trawl gear, bottom longlines, buoy gear and traps on coral reefs in the EEZ (includes East and West Flower Garden Banks, McGrail Bank, Pulley Ridge, North and South Tortugas Ecological Reserve, and coral communities in Stetson Bank) - require a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf of Mexico EEZ. <p>These recommendations were adopted into regulation by NOAA Fisheries.⁷⁷ The EFH review in 2010 found that effort in all commercial fisheries had declines between 2000 and 2008, and that no new recommendations were necessary beyond the 2005 recommendations.</p> <p>Louisiana does not require a weak link on tickler chains in state waters; however, the bottom area is well known and obstructions and reef areas are avoided, and prohibited areas have been established to prevent damage to sensitive habitats.</p>	
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7.2.2 (e) - Have depleted stocks been allowed to recover or, where appropriate, restored?
 Yes...[1] In part...[1/2] No...[0]

Extent of compliance		
Yes	In Part	No
<p>The FAO defines 'depleted' as "A stock, driven by fishing, at very low level of abundance compared to historic levels, with dramatically reduced spawning biomass and reproductive capacity."¹ Based on the recent assessments of brown shrimp and white shrimp, neither population has experienced overfishing or an overfished status since NOAA Fisheries began monitoring the stocks.^{2,3}</p> <p>Amendment 13 of the GMFMC Shrimp FMP states "since shrimp are an annual crop, in that abundance in a given year is dependent on environmental factors rather than fishing effort, fluctuations in effort either up or down have not resulted in significant reductions in spawning stock biomass that could subsequently have caused recruitment overfishing."⁴ In Amendment 13 (2005), the GMFMC established an overfishing level for each of the penaeid species in terms of a parent stock level, and defined an overfished condition as one half of the overfishing parent stock levels.</p>		

<p>Recently, NOAA Fisheries changed from a VPA model to a Stock Synthesis Model to improve the quality of stock assessments. The GMFMC SSC determined that the Stock Synthesis model was the best available science for determining the status of the Gulf shrimp stocks. New SDC were developed to align with model outputs. In 2015, Amendment 15 of the Shrimp FMP redefined the MSY, overfishing and overfished definitions for the shrimp fishery to the following:⁵</p> <p>MSY:</p> <ul style="list-style-type: none"> - Brown shrimp: 146,923,100 pounds of tails - White shrimp: 89,436,907 pounds of tails <p>Overfishing:</p> <ul style="list-style-type: none"> - Brown shrimp: F_{MSY} 9.12 - White shrimp: F_{MSY} 3.48 <p>Overfished:</p> <ul style="list-style-type: none"> - Brown shrimp: SSB_{MSY} is 6,098,824 pounds of tails - White shrimp: SSB_{MSY} is 365,715,146 pounds of tails <p>NOAA Fisheries has monitored stock levels for both shrimp species since 1970. Stock levels for both species have remained above the established thresholds throughout the monitoring period and neither stock is not considered overfished or undergoing overfishing.</p> <p>Mississippi continues to monitor shrimp stocks closely in state waters, and works with the GMFMC and NOAA Fisheries to ensure that shrimp stocks in the Gulf of Mexico remain above the determined reference points.</p>		
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7.2.2 (f) - Have adverse environmental impacts on the stocks from human activities been assessed and, where appropriate, rectified? **Yes...**[1] **In part...**[1/2] **No...**[0]

Extent of compliance		
Yes	In Part	No
.	Due to increases in coastal populations, high shipping traffic and the high activity of oil and gas industry in the Gulf region, environmental impacts from human activities are a constant concern and require regular assessment and rectification when	

necessary. There is a network of agencies and programs responsible for addressing the various human impacts on marine and coastal environments and natural resources in Mississippi and across the Gulf region, as listed below. While efforts by these agencies are ongoing and substantial restoration has taken place, many impacts are still being assessed and have not been fully rectified. Continuing efforts are needed to understand the impacts of disaster events, such as the 2010 Deepwater Horizon Oil Spill, as well as the ongoing concerns of wetlands loss and pollution due to continued coastal population increases.

State agencies:

Mississippi Department of Environmental Quality (MDEQ) is the primary agency in Mississippi responsible for the protection of the state's air, land, and water and the MDEQ mission is "to safeguard the health, safety, and welfare of present and future generations of Mississippians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation."¹

MDEQ is divided into four primary offices: Office of Pollution Control, Office of Land and Water Resources, Office of Geology, and Office of Administrative Services. These four offices each run several programs aimed to prevent pollution, mitigate impacts and improve the quality of the environment and natural resources of Mississippi.

MDEQ Emergency Services Division is the program that responds to spills of oil, hazardous materials, or other pollutants that pose a threat or potential threat to the health and safety of humans and/or the environment.² MDEQ supports local governments for spill response and acts as the coordinator between state and federal response resources.

The MDEQ Water Division falls under the Office of Pollution Control and maintains several branches that coordinate to address water quality and management in Mississippi.³ Branches include: basin management, coastal grants, modeling and Total Maximum Daily Load management, nonpoint source management, and water quality standards.

The MDEQ Office of Pollution Control also manages environmental permits, environmental compliance and enforcement, remediation and waste management.⁴ The MDEQ Beneficial Use program, was established in 2005 allowing for by-product materials generated by industries to be utilized for beneficial use, instead of treated as solid waste disposed in landfills.⁵ This program allows for an increase in recycling and re-use of materials and reduces waste.

MDMR is the primary agency for coastal resource management and administers the Mississippi Coastal Program (MCP), which is a federally approval program designed to protect, restore, and responsibly develop coastal communities and resources.⁶

The MDMR Office of Coastal Resources is also responsible for the Coastal Preserves

<p>Program developed under the Wetlands Protection Act to protect wetlands habitats along the Mississippi coast, and the Wetlands Permitting Program.^{7,8}</p> <p>The MDMR Coastal Restoration and Resiliency Office is responsible for the Coastal Impact Assistance Program (CIAP), and the MS Gulf Coast National Heritage Area.⁹ The CIAP provides federal funding derived from offshore oil and gas lease money to oil-producing states for restoration projects for remediation of industry impacts.¹⁰</p> <p><u>Federal Agencies:</u></p> <p>USCG Marine Environmental Protection Program addresses concerns of invasive species, oil and chemical spills, and ocean dumping.¹¹</p> <p>EPA Emergency Management Program ensures that facilities and organizations take steps to prevent oil spills, chemical accidents, and other emergencies, implement planning and preparedness requirements, and respond to environmental emergencies.¹²</p> <p>NOAA- Office of Response and Restoration provides comprehensive solutions to environmental hazards caused by oil, chemicals, and marine debris, and serves as the scientific support coordinator for the USCG during responses to spills.¹³</p> <p>USFWS- Environmental Contaminants Program emphasizes contingency planning and cooperation at the local, regional and national level in an effort to minimize the injury to fish, wildlife, and sensitive environments from oil spills.¹⁴</p> <p><u>Deepwater Horizon oil spill restoration efforts:</u>¹⁵</p> <p>Numerous state and federal agencies are involved in the restoration efforts for the Deepwater Horizon oil spill that occurred in the Gulf of Mexico in 2010. The Restore MS website provides a compilation of the various ongoing programs and activities related to the spill. The primary programs include:</p> <ul style="list-style-type: none"> - The Natural Resource Damage Assessment (NRDA) is a legal process that works to restore natural resources to pre-spill conditions after they have been impacted due to oil and chemical spills and to compensate the public for impacted resources and services.¹⁶ NRDA is designed to carry out the objectives set forth in the Clean Water Act, the Oil Pollution Act, and the Comprehensive Environmental Response Compensation and Liability Act. - RESTORE Act: The recovery and restoration in response to the 2010 Deepwater Horizon oil spill is still ongoing. In July of 2012 the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) was signed into law to direct the majority (80%) of the civil penalties paid under the Federal Water Pollution Control Act as a result of the spill. RESTORE funds are dedicated to restoration efforts in each of the affected Gulf States.¹⁷ - National Fish and Wildlife Foundation (NFWF) Gulf Environmental Benefit Fund, created from two settlement plea agreements resolving criminal cases against British Petroleum (BP) and Transocean for the Deepwater Horizon oil spill, dedicated funds in each state for natural resource restoration projects.¹⁸

	<p>Numerous NGOs are also active in Mississippi and across the Gulf assisting in environmental restoration activities such as The Nature Conservancy.¹⁹</p>	
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¹ “Gulf of Mexico Oil Spill Links and Public Information” *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. <http://www.deq.state.ms.us/oilspill>

² “Emergency Services Division” *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/Main_EmergencyServices?OpenDocument

³ “Water Division” *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/SurfaceWater_home?OpenDocument

⁴ “Office of Pollution Control” *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/mdeq.nsf/page/About_Office_of_Pollution_Control?OpenDocument

⁵ “Beneficial Use Program” *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/mdeq.nsf/page/SW_MississippiBeneficialUseProgram?OpenDocument

⁶ “Coastal Management” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.state.ms.us/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

⁷ “Coastal Preserves Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://fish.mississippi.gov/index.php/coastal-resources-management/coastal-preserves>

⁸ “Wetlands Permitting” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://fish.mississippi.gov/index.php/coastal-resources-management/wetland-permitting>

⁹ “Coastal Restoration and Resiliency Office” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://fish.mississippi.gov/index.php/coastal-restoration-and-resiliency>

¹⁰ “Coastal Impact Assistance Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://fish.mississippi.gov/index.php/coastal-restoration-and-resiliency/ciap>

¹¹ “Marine Environmental Protection Program” *United States Coast Guard*. Web. Accessed November 2015. <http://www.uscg.mil/top/missions/marineenvironmentalprotection.asp>

¹² “Emergency Management” *Environmental Protection Agency*. Web. Accessed November 2015. <http://www.epa.gov/emergencies/>

¹³ “Office of Response and Restoration” *National Oceanic and Atmospheric Administration*. Web. Accessed November 2015. <http://response.restoration.noaa.gov/>

¹⁴ “Environmental Contaminants Program” *U.S. Fish and Wildlife Service*. Web. Accessed November 2015. <http://www.fws.gov/contaminants/Issues/OilSpill.cfm>

¹⁵ *Restore MS*. Web. Accessed November 2015. <http://www.restore.ms/restore-news/>

¹⁶ “NRDA Mississippi” *Restore MS*. Web. Accessed November 2015 <http://www.restore.ms/nrda-2/>

¹⁷ *Restore the Gulf*. Web. Accessed November 2015. <http://www.restorethegulf.gov/>

¹⁸ "Gulf Environmental Benefit Fund" *National Fish and Wildlife Foundation*. Web. Accessed November 2015. <http://www.restore.ms/national-fish-and-wildlife-foundation/>

¹⁹ "Mississippi" *The Nature Conservancy*. Web. Accessed November 2015. <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/mississippi/index.htm?intc=nature.tnav.where.list&nst=0&adpos=1t1&creative=73331049038&device=c&matchtype=b&network=g&gclid=CJbMi6Pw0MU CFQuMaQodTEUADg>

7.2.2 (g)(i) - Have pollution and waste been minimized? Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: U.S. fisheries are governed by U.S. Coast Guard regulations that aim to minimize environmental impacts including pollution and waste and comply with international MARPOL regulations.¹</p> <p>Mississippi: Mississippi law also addresses waste and pollution through the following state regulations set forth in the Mississippi Administrative Code, Title 11- Mississippi Department of Environmental Quality:²</p> <ul style="list-style-type: none"> - Part 1: Administrative Regulations - Part 2: Air Regulations - Part 3: Hazardous Waste Regulations - Part 4: Nonhazardous Solid Waste Management Regulations - Part 5: Underground Storage Tank Regulations - Part 6: Wastewater Pollution Control Regulations - Part 7: Land and Water Resources Regulations - Part 8: Geology Regulations <p>MDEQ is the environmental agency of the state responsible for protecting the state's public health and natural resources consistent with sustainable economic development.³ MDEQ creates and enforces regulations regarding clean air, clean water and safe management of waste.</p>		

¹ "Environmental Standards Division" *United States Coast Guard*. Web. Accessed November 2015. <http://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-18361&pageTypeId=13489>

² "Environmental Regulations" *Mississippi Department of Environmental Quality*. Web. Accessed November http://www.deq.state.ms.us/mdeq.nsf/page/legal_ENVIRONMENTALREGULATIONSEffectiveAugust262013?OpenDocument

³ *Mississippi Department of Environmental Quality*. Web. Accessed November 2015 <http://www.deq.state.ms.us/>

7.2.2 (g)(ii) - Has catch by lost and abandoned gear of commercial species and other organisms been minimized? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Since gear remains attached to the vessel while actively fishing, typically damaged gear is recovered and repaired, if possible.</p> <p>The original Gulf of Mexico shrimp FMP (1981) notes that one of the problems identified in the fishery is “loss of gear and trawling grounds due to man-made underwater obstructions” and Goal 7 of the FMP is to “minimize adverse effects of underwater obstructions to shrimp trawling”.¹ Measure 10 of the shrimp FMP adopted by the council is “The GMFMC will attempt to reduce, where feasible, the loss of offshore trawlable bottom by establishing within GMFMC a committee to monitor and review construction of offshore reefs, with attention to the needs of reef fish, and shrimp user groups.”</p> <p>The Texas Sea Grant program developed guide books for shrimp vessels in the Gulf of Mexico documenting bottom obstructions and areas to avoid trawling due to potential interactions.^{2,3} Most vessels have utilized these book, and in more recent years, other technologies that help track sea floor obstacles that may interfere with trawl gear.</p> <p>Trawls are also required to have a weak link in the tickler chain that makes contact with the bottom, which is designed to break away to prevent gear from entanglement.⁴</p>		

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² Gary Graham, David Veal, and Bill Hosking. *“Hangs” and Bottom Obstructions of the Mississippi/Alabama Gulf*. TAMU-SG-83-505. Texas Sea Grant, 1983 <http://texaseagrant.org/assets/uploads/publications/1983/83-505.pdf>

³ Gary Graham. *Bottom Fishing Obstructions: Texas/Louisiana Gulf*. TAMU-SG-76-502. Texas Sea Grant. 1975. <http://texaseagrant.org/assets/uploads/publications/1976/76-502.pdf>

⁴ U.S. 50 CFR §622.9 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_19

7.2.2 (g)(iii) - Have selective and environmentally-safe and cost-effective fishing methods been developed? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
	<p>The primary gear types in the Mississippi commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, push trawls, beach seines and cast nets are also sometimes utilized in some inshore areas.^{1,2} Within the Mississippi Sound, shrimp may only be taken with a single net with a maximum size restriction.³ Otter trawls are the primary gear type utilized in the offshore fishery conducted in federal waters; skimmer</p>	

nets have gained popularity in inshore waters.

Otter trawls:

The basic otter trawl is the most common gear type used in Mississippi waters.⁴ Otter trawls were introduced in the shrimp fishery in 1917 and became the dominant gear type of the Gulf of Mexico shrimp fishery.



In the offshore fleet, several configurations of otter trawls have been developed and used over time. From 1917-1940s, the single rig (shown above) was the main style, and is still in use in inshore fisheries. In the 1950s as shrimping moved further offshore, the double rig was developed which utilizes two smaller nets instead of one large net, which increased efficiency and reduced handling problems. More recently, the twin trawl system has become popular, which utilizes four small trawls (one twin trawl on each side of the boat from the outriggers). Studies on twin trawl design show increased catch efficiency, leading to reduced trip time and higher quality, and reduced fuel consumption.⁵

Federal regulations require the use of Turtle Excluder Devices (TEDs) in all otter trawls in the shrimp fishery in both state and federal waters to reduce sea turtle capture.⁶ The Gulf of Mexico shrimp fishery has been identified as a significant source of sea turtle mortality and all five species of sea turtles present in the Gulf of Mexico are currently listed under the Endangered Species Act (ESA). Federal regulations requiring TEDs in all otter trawls for the shrimp fishery went into effect in 1989.⁷ TEDs are not 100% effective; certified TED designs are required to meet a 97% efficiency rate for turtle exclusion within a 5 minute period. Current certified TEDs in use; therefore, are effective in allowing the escape of most turtles caught within shrimp trawls. Turtle mortality has decreased significantly since the implementation of TEDs and most sea turtle populations show signs of rebuilding. Maintaining compliance rates and TED effectiveness above the 88% threshold set by the 2014 Biological Opinion requires continuous efforts throughout the Gulf of Mexico shrimp fishery.

Federal regulations also require the use of Bycatch Reduction Devices (BRDs) in all shrimp trawls fishing in federal waters to reduce the incidental catch of various finfish species.⁸ Amendment 9 first required the use of Bycatch Reduction Devices (BRDs) in shrimp trawls west of Cape San Blas, FL in the U.S. EEZ for the purpose of reducing juvenile red snapper bycatch.⁹ East of Cape San Blas was exempt at the time due to low abundance of red snapper in this area, and state waters were not considered a factor because it was determined that juvenile red snapper typically occur beyond depths of 5

fathoms, and mainly occurred beyond 10 fathoms (80-83% occurrence below 10 fathoms).¹⁰ Amendment 10 followed, requiring BRDs in shrimp trawls east of Cape San Blas to reduce total finfish bycatch by 30% as required by the MSA bycatch reduction requirements.¹¹

Many of the typical species caught in shrimp trawls are highly productive, short-lived species with high resilience to fishing pressure.

Common species caught in shrimp trawls include:

- Atlantic croaker (*Micropogonias undulates*)
- Seatrouts (*Cynoscion sp.*)
- Longspine porgy (*Stenotomus caprinus*,)
- Inshore Lizardfish (*Synodus foetens*)

Based on a recent analysis by Raborn et al. (2014) these are the only finfish species and genus that represent 5% or higher in bycatch of shrimp trawls. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to any of these species.¹²

Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted (brown or white).¹³ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is “no pressing need” to make BRD use mandatory. BRDs are not required in state waters in Mississippi; however, many fishermen utilize BRDs to reduce catch of unwanted species. MDMR and GCRL conduct fishery-independent surveys, which collect data on the species typically discarded in the shrimp trawl fishery. If information from the fishery-independent surveys showed a concern for any species in state waters, the agency would evaluate and take action on a case by case basis.

The SEFSC Pascagoula Lab contains the Harvesting Systems Unit, which is a team of gear specialists and fishery biologists performing research into critical problems relating to commercial and recreational fishing gear to inform and improve fisheries resource management.¹⁴ The Harvest Systems Unit is responsible for the development, evaluation, certification, and national and international technology transfer of turtle excluder devices (TEDs) for trawling gear. The Harvesting Systems Unit is also responsible for the development and assessment of bycatch reduction devices (BRDs) to reduce finfish bycatch in shrimp trawls. Research on TEDs and BRDs for the shrimp fishery is ongoing with annual testing on new designs of these devices to improve efficiency in reducing bycatch and minimizing shrimp loss and studies are conducted both independently, and in collaboration with commercial shrimpers through cooperative research projects. There are currently several certified designs of both TEDs and BRDs approved by the NOAA.^{15,16} Members of the Harvesting Systems Unit also conduct courtesy inspections of TEDs and BRDs installed on shrimp boats during dock visits, workshops and upon request to ensure that these

devices are properly used.

Skimmer trawls:

Skimmer trawls were first developed in Louisiana in the early 1980s and over time have also gained popularity in inshore waters of Mississippi and Alabama. Skimmer trawls are highly effective gear in relatively shallow waters, such as the Mississippi sound. Skimmer trawls are held in place by a frame mounted on the vessel just behind the bow and are pushed through the water, rather than towed behind the vessel like an otter trawl. This allows the vessel to continue to move while the cod end of the trawl is retrieved and emptied, which may be done as often as every 30 minutes.



Currently, federal regulations require either the use of a TED in skimmer nets, or adherence to strict tow times (maximum 55 minutes from April 1 to October 31, and 75 minutes from November 1 to March 31) to reduce sea turtle capture and drowning within skimmer nets.¹⁷ Observer coverage on the skimmer fleet from 2012 through 2014 indicates that compliance with tow-time restricts has ranged from 29% (2014) to 38% (2013) compliant, indicating that over 60% of tows throughout the 3 years of study have exceeded tow time limits.¹⁸

In 2012, NOAA proposed a regulation change requiring the use of TEDs in skimmers; however, research indicated that the majority of turtles (58%) captured in skimmer trawls during observer coverage in 2012 were small enough to pass through the current 4'' TED design. These data caused NOAA to repeal the proposed rule over concern that current TEDs would not efficiently exclude turtles caught using skimmers in the inshore fleet and NOAA began research on new TED designs to address this problem. NOAA is currently actively researching new TED designs to exclude smaller turtles, and outreach efforts have begun to increase awareness of tow time regulations to improve compliance with the current tow time regulations.

When renewing licenses in Mississippi, shrimpers are required to report on the gear type used. Of the 320 shrimpers reporting, the large majority (198) use only otter

trawls, 30 shrimpers report using both otter trawls and skimmers, and 83 shrimpers report using skimmers.¹⁹

Several fishermen in the skimmer trawl fleet in Mississippi do use TEDs voluntarily. In 2010-11, MDMR utilized grant funding to provide TEDs to skimmer trawl fishermen and increase outreach and education regarding sea turtle interactions.^{20,21} In 2010, 380 TEDs were distributed to over 190 shrimpers who reported using Skimmers. MDMR personnel conducted 24 trips as observers on commercial vessels that received TEDs to gather data on sea turtle interactions. Only 4 turtles were encountered and all were released alive. MDMR also conducted mailings to all license holders with information on sea turtle interactions, proper handling, and resuscitation, NOAA's TED training video (in English and translated into Vietnamese), and distributed 475 TED angle meters and instructions on use.

Mississippi Law states that a regulation cannot be implemented in MS that is stricter than federal regulations; therefore, MDMR cannot mandate TED use in skimmer trawls until a determination and regulation is set by NOAA Fisheries on this issue.²² MDMR does actively enforce tow time requirements and compliance with current regulations is high in Mississippi waters.²³

BRDs are not required in skimmer trawls in Mississippi; however, many fishermen utilize these devices to reduce bycatch and culling time.

Bottom habitat impacts:

Shrimp trawling can also cause damage to the sea floor by burying, exposing, or injuring marine organisms and submerged vegetation and may also impact ecosystem by resuspension of sediments and release of nutrients into the water column. The shrimp trawl fishery in the northern Gulf of Mexico primarily trawls with smaller nets and is active in primarily mud, sand or peat bottoms in areas that are storm-prone and typically experience habitat disturbances from natural causes as well as other anthropogenic activities. Chang et al. (2001) examined resuspension of sediments during hurricane events and determined that impacts occur to depths beyond 70 meters.²⁴ Typical shrimp trawling activities occur in shallower depths, generally above 30 meters. Dellapenna et al. (2006) determined that the turbidity plume following a shrimp trawl was comparable to the turbidity produced by a 9 to 10 m/s wind event at the study area in Galveston Bay, Texas.²⁵ The degree to which bottom trawls disturb sediment depends on the sediment type and the gear type, weight and speed. There are wide-ranging results from previous trawl impact studies possibly due to differences in trawl methods, gear and/or habitat type; however, since trawl gear is designed to maintain contact with the seabed, some level of resuspension and sediment penetration is inevitable. An understanding of ecological effects is dependent on the site-specific characteristics such as bottom type, depth, community type, gear and methods used and the intensity of activity and other natural disturbances. Recovery of trawled substrate is also dependent on sediment type, depth, and natural influences. Few studies have focused on habitat recovery after trawl impacts and most existing studies have not addressed cumulative impacts of repeated trawling occurrences that would be typical of commercial fishing over time.²⁶ NRC (2002) reported that, based on rough estimates of

<p>the number of time a given area was swept, the Gulf of Mexico was one of the areas of highest intensity of effort.²⁷ NRC (2002) also notes that a significant reduction in effort has occurred in many areas due to area closures, seasonal closures and gear restrictions. A study by Jennings and Kaiser (1998) found it plausible that light shrimp trawls likely do not cause significant disturbance to shallow water communities in poorly sorted sediments. Additionally, they note that organisms in soft mud are capable of burrowing up to two meters deep and are likely not impacted by passing trawls.²⁸ Dellapenna et al. (2006) conducted studies on the impact of shrimp trawling in Galveston Bay, Texas and found that the maximum depth excavated by trawl gear was 1.5 cm.²⁹ Sanchez et al. (2000) similarly found that sporadic episodes of trawling in muddy habitats “may cause relatively few changes in community composition” and that “natural variability at some sites may exceed the effects of disturbance from fishing” and Ball et al. (2000) notes that epifauna are generally scarce in muddy sediment habitats.³⁰ Barnette (2001) additionally reports on impacts of skimmer trawls vs otter trawl, finding that skimmer trawls likely have less impact than otter trawls due to the absence of trawl doors interacting with the floor bottom. Skimmer trawls; however, are typically active in shallower waters (10 feet) and may interact more with sensitive habitats such as submerged aquatic vegetation (SAV). Impacts on essential fish habitat (EFH) have been assessed by NOAA and the GMFMC in the Generic Amendment for addressing EFH requirements in FMPs. The EFH amendment applies to all seven GMFMC FMPs.³¹ The Initial EFH amendment was developed in 1998 and included an EIS. Section 5.1 identifies EFH for the shrimp species managed in the Gulf of Mexico shrimp FMP (brown, white, pink, and royal red). Section 6.1 identifies fishing-related threats, 6.2 identifies non-fishing related threats. Section 7 provides management options to minimize impacts and Section 8 identifies research needs. The EFH amendment is reviewed and updated every five years.</p> <p>The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:³²</p> <ul style="list-style-type: none"> - prohibit use of trawl gear, bottom longlines, buoy gear and traps on coral reefs in the EEZ (includes East and West Flower Garden Banks, McGrail Bank, Pulley Ridge, North and South Tortugas Ecological Reserve, and coral communities in Stetson Bank) -require a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf of Mexico EEZ. <p>These recommendations were adopted into regulation by NOAA Fisheries.³³ The EFH review in 2010 found that effort in all commercial fisheries had declines between 2000 and 2008, and that no new recommendations were necessary beyond the 2005 recommendations.</p> <p>Mississippi does not require a weak link on tickler chains in state waters; however, the bottom area is well known and obstructions and reef areas are avoided, and prohibited areas have been established to prevent damage to sensitive habitats.</p>

¹ “Allowable Gear” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

³ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁴ MDMR. (date unknown) Mississippi Trawl Gear Characterization. http://www.nmfs.noaa.gov/pr/pdfs/strategy/ms_trawl_gear.pdf

⁵ Twin Trawl design study <http://www.crimond.com/twintrawlreport.htm>

⁶ 50 CFR § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁷ "History of Turtle Excluder Devices (TEDs)" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm>

⁸ U.S. CFR Title 50 §622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

⁹ GMFMC. *Amendment 9 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. 1997. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

¹⁰ Nichols, Scott. *The spatial and temporal distribution of the bycatch of red snapper by the shrimp fishery in the offshore waters of the US Gulf of Mexico*. Pascagoula, Mississippi: National Marine Fisheries Service, Mississippi Laboratories, 1990.

¹¹ GMFMC. *Amendment 10 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. 2002. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

¹² Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Paneaid Shrimp Fishery Bycatch*. LGL Ecological Research Associates, Inc. August 2014. <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWnNBMZzQ/view?pli=1>

¹³ David Burrage "Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery." 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

¹⁴ "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹⁵ "TED Designs" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

¹⁶ "BRD Designs" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

¹⁷ 50 CFR 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

¹⁸ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver "Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery" NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

¹⁹ MDMR. Unpublished Data. August 2015.

- ²⁰ “Grants Project List” National Fish and Wildlife Foundation. Web. Accessed November 2015.
<http://www.nfwf.org/gulf/Pages/projectlist.aspx>
- ²¹ MDMR, *Final Programmatic Report- Reducing Interactions between Fishermen and Gulf Sea Turtles (MS)*, December 2011.
- ²² MS Code 49-15-15 <http://law.justia.com/codes/mississippi/2010/title-49/15/49-15-15/>
- ²³ MDMR. “TED Enforcement Perspectives” PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015
- ²⁴ G. C. Chang, T. D. Dickey, and A. J. Williams III. “Sediment Resuspension over a continental shelf during Hurricanes Edward and Hortense.” *Journal of Geophysical Research*, Vol. 106, No. C5. May 2001
<http://onlinelibrary.wiley.com/doi/10.1029/2000JC900032/pdf>
- ²⁵ Dellapenna et al., 2006 as cited in GMFMC. *5-Year Review of the Final Generic Amendment Number 3 Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the Fishery Management Plans of the Gulf of Mexico*. October 2010.
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>
- ²⁶ Michael C. Barnette. *A review of the fishing gear utilized within the Southeast Region and their potential impacts on essential fish habitat*. NOAA Technical Memorandum NMFS-SEFSC-449. February 2001
<http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>
- ²⁷ National Research Council. *Effects of Trawling and Dredging on Seafloor Habitat*. Washington, DC: The National Academies Press, 2002. doi:10.17226/10323
http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf
- ²⁸ Simon Jennings and Michel Kaiser. “The Effects of Fishing on Marine Ecosystems” *Advances in Marine Biology*. January 1998.
http://www.researchgate.net/profile/Michel_Kaiser/publication/222490649_The_Effects_of_Fishing_on_Marine_Ecosystems/links/0fcfd50af7a1a0577a000000.pdf
- ²⁹ [Dellapenna et al., 2006](#)
- ³⁰ Sanchez et al., 2001 and Ball et al., 2001 as cited in Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>
- ³¹ “Essential Fish Habitat Amendments” *Gulf of Mexico Fishery Management Council*. Web. Accessed November. 2015. http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php
- ³² GMFMC. *Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery, Red Drum, Reef Fish, Coastal Migratory Pelagic Resources, Stone Crab, Spiny Lobster, and Coral*. 2005. http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf
- ³³ 50 CFR § 622.15 (coral protection) and § 622.9 (prohibited gear)
http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

7.2.3 Have the impacts of environmental factors on target species and those species associated with, dependent on, or belonging dependent on the target stocks, been assessed?

Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal:</p> <p>Environmental influences are a significant factor in the population dynamics of the three penaeid shrimp species (brown, white and pink) managed under the federal shrimp FMP. The original shrimp FMP implemented in 1981 states “each year’s take of brown, white, and pink shrimp will be heavily influenced by water salinity and temperature during critical periods of estuarine shrimp growth”, and found that the critical determinant of shrimp production is estuarine environmental conditions.¹ Griffen et al. (1976) attempted to determine yield as a function of discharge from the Mississippi River, which highly impacts salinity and temperature of primary estuarine habitats in the northern Gulf of Mexico.² Tropical storms and heavy rainfall are also noted as significant environmental factors effecting shrimp populations.</p> <p>The SEFSC Galveston Lab recently conducted a study on temperature and salinity effects on growth and survival of white and shrimp in relation to freshwater inflow and potential implications of river diversions.³</p> <p>Environmental impacts in relation to target and non-target species are addressed in the Environmental Assessments (EAs) and Environmental Impact Statements (EISs) prepared for each FMP and amendments.⁴ The original shrimp FMP contains predator and prey information for each penaeid shrimp species. The Essential Fish Habitat (EFH) Generic Amendment (applied to all Gulf of Mexico FMPs) and accompanying EIS also contain detailed information on the shrimp fishery habitat needs, environmental factors, prey dependence, biological and environmental impacts of fishing methods.^{5,6}</p> <p>During the larval stage, shrimp feed on phytoplankton and zooplankton. Postlarval shrimp migrate into estuaries where they become bottom feeders and typically feed on epiphytes, detritus, and algae. Juveniles and adults become more predatory and often prey on polychaetes, amphipods, nemotods, and chironomid larvae, but also continue to feed on detritus and algae. Penaeid shrimp shrimps are preyed upon by a wide variety of finfish species. Primary predators include black drum, redfish, speckled trout, southern flounder, Atlantic croaker, bass and several species of catfish. Many of these species are also common bycatch in the shrimp fishery. These species are monitored through independent sampling programs including annual SEAMAP surveys and resource surveys conducted by the NOAA SEFSC Pascagoula Lab.^{7,8} The Summer and Fall SEAMAP Shrimp/Groundfish Surveys are designed to monitor size, abundance and distribution of demersal species, including penaeid shrimp in the Northern Gulf of Mexico from inshore waters out to 60 fathoms. Sampling is conducted across all five Gulf states using standardized methodologies and records data on all species caught and environmental parameters at each sampling site. All data from SEAMAP surveys is entered into the SEAMAP</p>		

Information System, which contains a consistent dataset starting in 1982, and data are available to all participating agencies and to the public upon request.

Mississippi:

MDMR monitors the effects of environmental factors on target species and associated species through the Fishery-Independent Sampling program. The Fishery Independent Sampling Program is a joint effort between MDMR and GCLR.^{9,10} The program began in 1974, utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample.¹¹ MDMR staff utilize sampling data to analyze trends in species composition and associated factors. Due to the variability in shrimp growth based on environmental conditions, the season opening for brown shrimp in Mississippi waters is based on sampling efforts throughout the spring to determine when shrimp have reached a legal size for harvest. MDMR and GCRL partner on the Shrimp Sampling Program for brown shrimp to determine seasonal openings based on size count, and the season opens when the majority of shrimp have reached legal size (68 count). The 2014 MDMR Shrimp Newsletter notes that optimal growing conditions for brown shrimp occur when salinities are above 10 ppt and water temperatures are greater than 68 degrees Fahrenheit.¹²

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² Griffen et al. as cited in GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.

<http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

³ "Fishery Ecology" NOAA Fisheries. Web. Accessed November 2015.

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_ecology/currentresearch/caernarvon/index.html

⁴ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015.

http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁵ GMFMC. *Generic Amendment for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery, Red Drum, Reef Fish, Coastal Migratory Pelagic Resources, Stone Crab, Spiny Lobster, and Coral*. 1998.

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINALEFH-%20Amendment%201-%20no%20appendices.pdf>

⁶ GMFMC. Final Environmental Impact Statement *Generic Amendment for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery, Red Drum, Reef Fish, Coastal Migratory Pelagic Resources, Stone Crab, Spiny Lobster, and Coral*. 2004.

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf>

⁷ "Southeast Area Monitoring and Assessment Program(SEAMAP)" NOAA Fisheries. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liason_branch/sea_map/index.html

⁸ “SEAMAP Gulf of Mexico Resource Surveys” *Southeast Area Monitoring and Assessment Program*. Web. Accessed Nov. 2015. <http://www.gsmfc.org/seamap-gomrs.php>

⁹ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹⁰ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹¹ [VanderKooy, 2013. p. 85](#)

¹² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.3 Management framework and procedures

7.3.1 (a) Have the management measures developed taken into account the whole stock unit over its entire area of stock distribution? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>The federal Shrimp FMP implemented in 1981 determined the stock unit for the three penaeid shrimp species (brown, white and pink) to be the area of U.S. waters of the Gulf of Mexico bounded on the east side by a natural biological break in fauna on the southeast coast of Florida, and bounded on the west side by the political boundary with Mexico.¹ Detailed information on shrimp stocks and harvest in Mexican waters has not been available at the time of assessments by NOAA Fisheries; therefore, the assumption is made that shrimp moving across international boundaries between the U.S. and Mexico flows equally in both directions, and stocks are assessed and managed only for U.S. waters.²</p> <p>While NOAA Fisheries only regulates the fishery within federal waters, the GMFMC contains representatives from each of the five Gulf states, and the federal shrimp FMP developed by the GMFMC considers all state management measures when determining goals and actions for the federal FMP. Objective 3 of the FMP is to “coordinate the development of shrimp management measures by the GMFMC with the shrimp management programs of the several states, where feasible.” Several actions have been taken since the initial implementation of the FMP to coordinate federal and state measures including adjustment, implementation, and repeal of certain minimum size regulations to create consistency across management areas, and implementation of area and seasonal closures coordinated between state and federal waters.</p> <p>Mississippi participates in the GMFMC process and manages the shrimp fishery in state waters consistent with the GMFMC shrimp FMP and federal regulations.</p>		

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² James Nance. Stock Assessment Report 2008 Gulf of Mexico Shrimp Fishery. NMFS SEFSC Galveston Lab. October 2008. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202009-10/D%20-%204%20Stock%20Assessment%20Report%20GOM%20Shrimp%20Fishery.pdf>

7.3.1 (b) Have previously-agreed management measures established and applied in the same region been considered? Yes... [1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC considers a set of alternatives for each management action when determining measures for the Gulf of Mexico shrimp fishery.¹ Each FMP and amendment contains the full set of alternatives for each action with a discussion of the options and a rationale for the preferred alternative that is selected. Alternatives are developed using a wide range of sources, including management measures that have been established and applied in the region by state management agencies as well as measures applied in the South Atlantic shrimp fishery.</p> <p>Some examples include:</p> <ul style="list-style-type: none"> - A cooperative closure with the state of Texas has been established. Federal EEZ waters adjacent to Texas are closed annually in conjunction with Texas state territorial waters to protect small brown shrimp migrating from estuaries out into the Gulf.² - A minimum size requirement for white shrimp landed in Louisiana. Since Louisiana maintains a minimum size limit for white shrimp in state waters, federal regulations also require that white shrimp caught in the EEZ must meet the minimum size limits set in Louisiana if landed in Louisiana ports.³ <p>Mississippi: MDMR has considered all management measures that are utilized by the GMFMC and NOAA Fisheries and by the state agencies in the other Gulf States and has implemented several regulations based coordination with these organizations. MDMR participates in the GMFMC process and manages the shrimp fishery consistent with the federal shrimp FMP.</p>		

¹ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

³ 50 CFR § 622.56 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

7.3.1 (c) Have all removals and the biological unity and other biological characteristics of the stock been considered? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance																																				
Yes						Some	No																													
<p>Federal: As noted in the draft Amendment 15 to the GMFMC shrimp FMP- “The biological characteristics that affect sustainable yields for penaeid shrimp are unusual. They are an annual crop.”¹ Few individuals survive beyond one year and harvest is primarily on the 0-year class. No stock-recruitment relationship has been determined for the three penaeid shrimp species (brown, white, pink) in the Gulf, and recruitment overfishing is considered not to be possible given economic and technological capabilities of the fishery. “Because of these characteristics, MSY is essentially all the shrimp available to harvest, using current technology.” Abundance greatly varies on an annual basis dependent on temperature and salinity condition in estuaries.</p> <p>In originally determining MSY for the three penaeid shrimp species in the initial Shrimp FMP, a Schaefer model was used to determine MSY based on commercial estimates, then modified to consider environmental factors.² Estimates of recreational and bait fishery harvest, and discards are also added to establish a maximum probable catch for each species.</p> <table border="1"> <thead> <tr> <th></th> <th>Maximum Commercial Yield based on Schaefer model and environmental influences</th> <th>Recreational</th> <th>Bait</th> <th>Discard</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Brown shrimp</td> <td>117 million pounds of tails</td> <td>8</td> <td>2</td> <td>5</td> <td>132</td> </tr> <tr> <td>White Shrimp</td> <td>52 million pounds of tails</td> <td>8</td> <td>1</td> <td>3</td> <td>64</td> </tr> <tr> <td>Pink shrimp</td> <td>19 million pounds of tails</td> <td>0</td> <td>1</td> <td>0</td> <td>20</td> </tr> <tr> <td>All 3 species combined</td> <td></td> <td></td> <td></td> <td></td> <td>216</td> </tr> </tbody> </table>								Maximum Commercial Yield based on Schaefer model and environmental influences	Recreational	Bait	Discard	Total	Brown shrimp	117 million pounds of tails	8	2	5	132	White Shrimp	52 million pounds of tails	8	1	3	64	Pink shrimp	19 million pounds of tails	0	1	0	20	All 3 species combined					216
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<p>Mississippi: MDMR has addressed concerns regarding removal from other sources besides the commercial fishery when setting regulations. MDMR currently limits recreational take and bait fishery landings.</p>																																				

¹ GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

² GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

7.3.1 (d) Has the best scientific evidence available been used to determine, inter alia, the area of distribution of the resource? **Yes...** [1] **Some...** [½] **No...**[0]

Extent of compliance			
Yes		Some	No
The MSA NS2 requires that the best available science be used when establishing conservation and management measures. ¹ The GMFMC ensures this through			

rigorous review of the science and data used to inform management decisions. The GMFMC maintains a Scientific and Statistical Committee (SSC) to serve as the council's scientific and technical advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides "ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices."² The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries. In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC, which includes a representative from each of the five Gulf States.³

The SEFSC Galveston Lab shrimp fishery research program continues to research and maintain the best available science for use in stock assessments and management of the Gulf of Mexico shrimp fishery.⁴ Stock assessments and other scientific reports by the Galveston Lab are reviewed by the GMFMC SSC and Special Shrimp SSC to confirm that they meet the requirement of best available science.

The original shrimp FMP developed by the Gulf council contains detailed information on the stocks, areas of distribution, and biological characteristics of the species under management within the plan. The FMP contains the following information for brown and white shrimp:⁵

- Brown shrimp- range from along the north Atlantic and Gulf of Mexico Coast from Martha's Vineyard, Massachusetts, to the northwestern coast of the Yucatan. The range is not continuous but is marked by an apparent absence of brown shrimp along Florida's west coast between the Sanibel and the Apalachicola shrimping grounds. (Perez Farante, 1969). Highest catches in the Gulf of Mexico are found along the Texas, Louisiana, and Mississippi coasts. Mark-recapture studies have been conducted on brown shrimp populations in the Gulf and indicate mixing of populations along the north central and northwestern Gulf coast. (Gunter, 1962)
- White shrimp- range along the Atlantic coast from Fire Island, New York, to Saint Lucie inlet, Florida, and along the Gulf coast from the mouth of the Ochlochonee River, Florida to Campeche. There are two centers of abundance in the Gulf: one along the Louisiana coast and one in the Campeche area (Perez Farante, 1969).

Additionally, the Essential Fish Habitat (EFH) Amendment includes detailed descriptions of all habitats in the Gulf of Mexico utilized by each shrimp species throughout its life cycle, and defines EFH for each species.⁶

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² 50 CFR §600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rqn=div8

³ “Committees & Panels” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/panels_committees/index.php

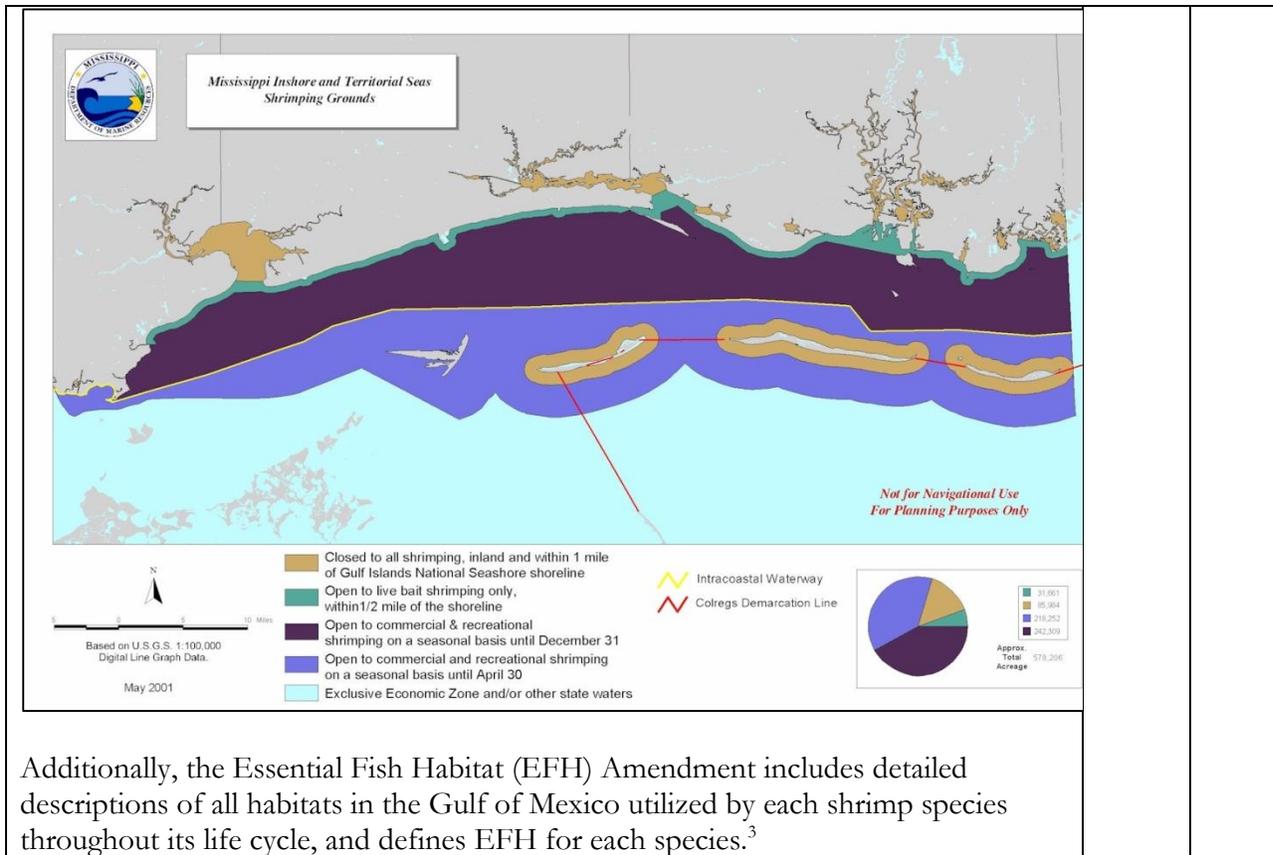
⁴ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

⁶ “Essential Fish Habitat Amendments” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

7.3.1 (f) Has the area through which the species migrates during its life cycle been considered?
 Yes... [1] Some... [½] No... [0]

Extent of compliance		
Yes	Some	No
<p>The life cycles of the penaeid shrimp species found in the Gulf of Mexico are complex and include migration through several different environments. Detailed information on the biology and life cycle of brown and white shrimp is contained in the GMFMC shrimp FMP.¹ Adults typically spawn in the Gulf of Mexico, where fertile eggs hatch into free-swimming larvae. Larval shrimp go through several molts during this free-swimming pelagic stage. During the postlarval stage, shrimp enter estuarine environments and become bottom feeders. Within estuaries, juvenile shrimp typically feed within the marshwater interface or submerged grass beds where there are high concentrations of food supply (detritus, algae, microfauna) and greater protection from predators. The wetland zone is an important component of shrimp habitat because the salinity regimes critical to shrimp growth occur in these areas. As shrimp grow larger (typically between 2.75-4.7 inches), they move to deeper waters and emigrate out into the Gulf of Mexico. This emigration is influenced by tide, temperature, and size. Adult white and brown shrimp prefer soft mud or peat bottoms that contain large amounts of vegetation or decaying matter. Brown shrimp are typically found in mud, sand or shell bottoms and some juvenile brown shrimp may be found in sand or clay bottom. White shrimp prefer muddy or silty bottoms, and are sometimes found in sand or clay bottom that contain fragments of shell. White shrimp predominantly occur in depths shallower than 20 fathoms, and brown shrimp are typically found at depths greater than 20 fathoms.</p> <p>The shrimp FMP recommends that that the Gulf States each consider sanctuary areas within state waters to protect sensitive shrimp nursery habitats. Mississippi has implemented area closures to protect nursery habitats and prohibits commercial trawling within 1/2 mile of the shoreline on the mainland and prohibits all shrimping within one mile of the barrier islands.²</p>		



Additionally, the Essential Fish Habitat (EFH) Amendment includes detailed descriptions of all habitats in the Gulf of Mexico utilized by each shrimp species throughout its life cycle, and defines EFH for each species.³

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

³ "Essential Fish Habitat Amendments" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

7.3.2 In the case of a transboundary, straddling and highly migratory fish stock or high seas fish stock throughout its range, are the conservation and management measures established for such stock within the jurisdiction of the relevant States, or the appropriate subregional, regional fisheries management organizations and arrangements, compatible? **Yes...**[1] **In part...**[1/2] **No...**[0]

Extent of compliance		
Yes	In Part	No
<p>Federal: NOAA Fisheries and the GMFMC are responsible for management measures within the federal EEZ waters of the Gulf of Mexico and each individual state is responsible for management of the fishery within each state's territorial waters (FL and TX: out to nine nautical miles; LA, MS, AL: out to three nautical miles). The federal shrimp FMP implemented in 1981 determined the stock unit for the three penaeid shrimp species (brown, white and pink) to be the area of U.S.</p>		

waters of the Gulf of Mexico bounded on the east side by a natural biological break in fauna on the southeast coast of Florida, and bounded on the west side by the political boundary with Mexico.¹ Detailed information on shrimp stocks and harvest in Mexican waters has not been available at the time of assessments by NOAA Fisheries; therefore, the assumption is made that shrimp moving across international boundaries between the U.S. and Mexico flows equally in both directions, and stocks are assessed and managed only for U.S. waters.²

While NOAA Fisheries only regulates the fishery within federal waters, the GMFMC contains representatives from each of the five Gulf states, and the federal shrimp FMP developed by the GMFMC considers all state management measures when determining goals and actions for the federal FMP. Objective 3 of the FMP is to “coordinate the development of shrimp management measures by the GMFMC with the shrimp management programs of the several states, where feasible.” Several actions have been taken since the initial implementation of the FMP to coordinate federal and state measures including adjustment, implementation, and repeal of certain minimum size regulations to create consistency across management areas, and implementation of area and seasonal closures coordinated between state and federal waters.

Mississippi:

Mississippi participates in the GMFMC process and manages the shrimp fishery in state waters consistent with the GMFMC shrimp FMP and federal regulations. Mississippi regulations include closure areas, closed seasons, and gear restrictions and requirements.

Other Gulf States:

All other Gulf States similarly participate in GMFMC and regulations across all U.S. Gulf States are compatible with federal regulations.

Interanational:

While no formal organization exists between the U.S. and Mexico on fisheries management, there is collaboration between the two countries and regulations in place in Mexico are compatible with U.S. regulations. Fishery management measures in Mexico for the shrimp fishery include the use of TEDs, closure areas, gear restrictions, and effort controls designed to maintain a minimum spawning biomass to ensure long term stability and use of the resource.³

¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² James Nance. *Stock Assessment Report 2008 Gulf of Mexico Shrimp Fishery*. NMFS SEFSC Galveston Lab. October 2008. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202009-10/D%20-%204%20Stock%20Assessment%20Report%20GOM%20Shrimp%20Fishery.pdf>

³ FAO, *Global Study of Shrimp Fisheries*, Fisheries Technical Paper No. 475. 2008.
<ftp://ftp.fao.org/docrep/fao/011/i0300e/i0300e02b.pdf>

7.3.3 Have long-term management objectives been translated into a plan or other management document (subscribed to by all interested parties)?

(i) - Is there a plan? **Yes...**[1] **In part...**[1/2] **No...**[0]

Extent of compliance				
Yes	In Part	No		
<p>Federal: The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the MSA, which is the primary law governing fisheries management in the U.S. The MSA requires that all species managed by the Councils be included in a FMP. The GMFMC manages the three penaeid shrimp species (brown, white, and pink) and royal red shrimp under the Gulf of Mexico Shrimp FMP. The Shrimp FMP was initially implemented in 1981 and has been amended several times as new information and scientific evidence has led to changes in management measures.¹</p> <p>The goals and objectives of the shrimp FMP are:</p> <ul style="list-style-type: none"> - Optimize the yield from shrimp recruited to the fishery - Encourage habitat protection measures to prevent undue loss of shrimp habitat - Coordinate the development of shrimp management measures by the GMFMC with shrimp management programs of the several states, where feasible. - Promote consistency with the Endangered Species Act and the Marine Mammal Protection Act - Minimize the incidental capture of finfish by shrimpers, when appropriate - Minimize conflicts between shrimp and stone crab fishermen - Minimize adverse effects of underwater obstructions to shrimp trawling - Provide for statistical reporting system <p>All five states participate in the GMFMC process and contributed to the development and amendments of the FMP. Each state maintains representatives on the GMFMC, the Shrimp SSC, and the shrimp Advisory Panel (AP). The FMP addresses compatibility between state and federal agencies in joint management of the shrimp fishery. Several measures in the initial FMP adopted by the GMFMC pertain to collaboration between states and/or state and federal management, including:</p> <ul style="list-style-type: none"> - Measure 1: establishment of a cooperative closure with Florida and federal agencies to protect small pink shrimp until the reach legal size. - Measure 2: establishment of a cooperative closure of Texas territorial waters with Federal EEZ waters adjacent to Texas for the protection of small brown shrimp. - Measure 5: The Gulf States are encouraged to adopt flexible management procedures which would provide regulation by administrative agencies of the shrimp resources in inland waters and territorial seas. 				

<p>- Measure 6: The Gulf States are encouraged to adopt reciprocal internal management decisions flexible enough to allow joint management of shrimp with other states and federal agencies.</p> <p>MDMR participates in the GMFMC process, and manages the shrimp fishery in state waters consistent with federal regulations and recommendations.</p> <p>Mississippi: A management plan for Mississippi’s marine fisheries was developed in 1976 and includes a section specific to shrimp.² The document is structured to present broad goals and long-term objectives for overall fisheries management in Mississippi, followed by a series of small fishery plans with additional species-specific objectives. Fishery Management Objectives include:⁵</p> <ul style="list-style-type: none"> - The optimization of fisheries resources- defined as “providing a sustaining supply of fishery products for food and industrial purpose” - A climate conducive to full employment in harvesting - Wise utilization of resources - Full optimization of recreational facilities - Development of a mechanism to resolve conflicts between harvesting segments in order to maintain economic and community health <p>The shrimp portion of the document contains a description of the MS shrimp fishery including trends in commercial, recreational, and bait shrimping, economic factors, industry challenges and areas lacking data which prevent a more comprehensive analysis of the fishery. This document has not been updated since 1976; therefore, it does not reflect many of the significant changes to this industry and more recent management changes.</p>		
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¹ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² Lyles, Charles H. 1976. *A Management Plan for Mississippi's Marine Fisheries*. Mississippi Marine Conservation Commission. Biloxi, MS. <http://www.gsmfc.org/publications/Management%20Plan%20For%20Mississippi's%20Marine%20Fisheries.PDF>

7.3.3 (ii) - Is it subscribed to? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Federal: The Shrimp FMP and amendments form the basis for the regulations that are promulgated through the Code of Federal Regulations (CFR) by NOAA Fisheries. Title 50 of the CFR, Part 622, Subpart C contains the regulations for the shrimp fishery of the Gulf of Mexico. These regulations reflect the recommendations made through the GMFMC process. Regulations promulgated through the Code of Federal Regulations (CFR) are required by law for all participants fishing in the U.S. EEZ and are enforced by NOAA Fisheries Law Enforcement and the U.S. Coast Guard (USCG) Living Marine Resources division. Each of the five Gulf States has a Joint Enforcement Agreement (JEA) with NOAA Fisheries through</p>		

<p>the Cooperative Enforcement Program which allows U.S. state conservation law enforcement officers to enforce federal laws and regulations pertaining to marine resources and endangered species.⁴</p> <p>Regulations made by GMFMC are respected by the individual states and state regulations for territorial waters are consistent with federal regulations.⁵</p> <p>Mississippi: Mississippi regulations reflect the recommendations made in the federal shrimp FMP, including the development of protected areas in shrimp nursery zones, improvements in statistical reporting, and adoption of flexible mechanisms and reciprocal management decisions that allow for joint management of shrimp. MDMR marine patrol enforces all state fisheries regulations as well as federal regulations through the Joint Enforcement Agreement.</p>	
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¹ 50 C.F.R. § 622
http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³ "Living Marine Resources" United States Coast Guard. Web. Accessed November 2015. <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ "Cooperative Enforcement Programs" NOAA Fisheries. Web. Accessed November 2015. http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

⁵ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

7.3.4 Have attempts been made to foster cooperation in all matters related to:
 (i) - information gathering and exchange? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>The GMFMC consists of 17 voting members, including the Southeast Regional Administrator of NOAA Fisheries, the directors of the five Gulf state marine resource management agencies and eleven additional members who are nominated by the state governors and appointed by the Secretary of Commerce.¹ In addition, there are four nonvoting members representing the USCG, USFWS, Department of State, and GSMFC. GMFMC meets five times a year at various locations around the Gulf coast. Information is gathered from the five state agencies and NOAA Fisheries and information exchange occurs through regular meetings of the Council and committees and advisory panels. All information gathered by GMFMC is available through briefing books, reports and other GMFMC documents in the Resource Library posted online.²</p> <p>Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the GSS is a thorough, consistent data collection system which has provided the NOAA Fisheries Galveston Laboratory scientists with statistical information</p>		

needed to conduct assessments of the commercial shrimp fishery (refer to 7.1.4(a) for more detail of the GSS).³ NOAA SEFSC also produces the Economics of the Federal Gulf Shrimp Fishery Annual Report. This document discusses shrimp landings, revenue, permits, vessel, and economic status of the shrimp fishery. This report is based on data collected through surveys from permit holding harvesters from across the Gulf states.⁴

NOAA Fisheries data are also gathered through the Galveston Lab Observer Program and the ELB program (refer to 7.1.7(a) for details on the ELB and observer programs).⁵

GSMFC coordinates with the five Gulf states through several programs to foster cooperation and gather and exchange information. The Fisheries Economic Data Program collects economic data on recreational and commercial fisheries to monitor economic performance and assess economic impacts across all five Gulf states.⁶ The FIN was developed in 1999 out of a recognized need for coordinated and comprehensive data collection throughout the region for both commercial and recreational fisheries. FIN is divided into two sections, ComFIN for commercial fisheries and RecFIN for recreational fisheries. FIN is a state-federal cooperative program combining the efforts of all five Gulf State marine resource agencies, the National Marine Fisheries Service (NMFS), the USFWS the National Park Service (NPS), GMFMC and GSMFC. Its purpose is the collection, management and dissemination of statistical data and information on fisheries throughout the region.^{7,8} Trip Ticket Programs in each of the five Gulf states are coordinated through the FIN program. The SEAMAP was developed for the collection, management and dissemination of fishery-independent data throughout the region and is a partnership between state and federal agencies and university programs. Each year SEAMAP publishes environmental and biological atlases of Gulf of Mexico and SEAMAP data are made available to each of the state and federal agencies for use in various programs and stock assessments.^{9,10}

At the state level, MDMR Shrimp & Crab Bureau personnel regularly work with state agencies and research institutes (University of Southern Mississippi's Gulf Coast Research Laboratory (GCRL), Mississippi Department of Environmental Quality (DEQ), Mississippi Department of Wildlife, Fisheries, and Parks, and the Mississippi State University Coastal Research and Extension Service) as well as federal agencies (NMFS, U.S. Fish and Wildlife Service, and the U.S. Geological Survey).¹¹ This work includes specific data collecting practices. MDMR, with the GCRL, conducts extensive shrimp sampling to determine season openings. Work with the DEQ includes sampling and testing procedures to determine the safety of commercial seafood.¹² MDMR representatives also attend GMFMC and GSMFC meetings and assist in the data collection efforts detailed above.

¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

² "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/resource_library.php

³ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ "Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery" NOAA Southeast Fishery Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁵ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ "Publications: Fisheries Economic Data Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁷ "Fisheries Information Network (FIN)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/fin.php>

⁸ FIN. 2014 Operations Plan for the Fisheries Information Network in the Southeastern United States. GSMFC Number 218. June 2013. <http://www.gsmfc.org/publications/GSMFC%20Number%20218.pdf>

⁹ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹⁰ SEAMAP Subcommittee. Annual Report to the Technical Coordinating Committee Gulf States Marine Fisheries Commission. October 1, 2012 to September 30, 2013. GSMFC No. 221. October 2013. <http://www.gsmfc.org/publications/GSMFC%20Number%20221.pdf>

¹¹ "Shrimp and Crab Bureau" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹² MDMR. Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.3.4 (ii) - fisheries research? Yes... [1] Some... [1/2] No... [0]

Extent of compliance		
Yes	Some	No
<p>Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the GSS is a thorough, consistent data collection system which has provided the NOAA Fisheries Galveston Laboratory scientists with statistical information needed to conduct assessments of the commercial shrimp fishery (refer to 7.1.4(a) for details on the GSS).³ NOAA SEFSC also produces the Economics of the Federal Gulf Shrimp Fishery Annual Report. This document discusses shrimp landings, revenue, permits, vessel, and economic status of the shrimp fishery. This report is based on data collected through surveys from permit holding harvesters from across the Gulf states. Information gathered from this survey helps determine economic trends of the industry and helps understand the social and economic impacts regulation changes may have on the fishery and communities.⁴ NOAA Fisheries data are also gathered through the Galveston Lab Observer Program and the ELB program (refer to 7.1.7(a) for details on the ELB and observer programs).⁵</p> <p>The GMFMC maintains a SSC to serve as the council's scientific and technical</p>		

advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides “ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices.”⁶ In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC. Each SSC includes a representative from each of the five Gulf state agencies.

Further collaboration on fisheries research occurs through the GSMFC. GSMFC coordinates with the five Gulf states through several programs to foster cooperation in research. The Fisheries Economic Data Program collects economic data on recreational and commercial fisheries to monitor economic performance and assess economic impacts across all five Gulf states.⁷ The IJF Program coordinates management efforts between the five states through the development of regional FMPs for fisheries not covered by a GMFMC FMP.⁸ The SEAMAP was developed for the collection, management and dissemination of fishery-independent data throughout the region and is a partnership between state and federal agencies and university programs.⁹

At the state level, MDMR Shrimp & Crab Bureau personnel regularly work with state agencies and research institutes (University of Southern Mississippi’s Gulf Coast Research Laboratory (GCRL), Mississippi Department of Environmental Quality (DEQ), Mississippi Department of Wildlife, Fisheries, and Parks, and the Mississippi State University Coastal Research and Extension Service) as well as federal agencies (NMFS, U.S. Fish and Wildlife Service, and the U.S. Geological Survey).¹⁰ This work includes specific data collecting practices. MDMR, with the GCRL, conducts extensive shrimp sampling to determine season openings. Work with the DEQ includes sampling and testing procedures to determine the safety of commercial seafood.¹¹ MDMR representatives also attend GMFMC and GSMFC meetings and assist in the data collection efforts detailed above.

¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

² *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

³ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ “Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery” *NOAA Southeast Fishery Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁵ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

⁷ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁸ “Interjurisdictional Fisheries Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/ijf.php>

⁹ “Southeast Area Monitoring and Assessment Program (SEAMAP)” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹⁰ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

¹¹ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

7.3.4 (iii) - fisheries management? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>GMFMC promotes cooperation in management between the five states and federal agencies. The GMFMC consists of 17 voting members, including the Southeast Regional Administrator of NOAA Fisheries, the directors of the five Gulf state marine resource management agencies and eleven additional members who are nominated by the state governors and appointed by the Secretary of Commerce.¹ In addition, there are four non-voting members representing the USCG, USFWS, Department of State, and the GSMFC. GMFMC meets five times a year at various locations around the Gulf coast. GMFMC also maintains a specific Shrimp Management Committee including management representatives from the state agencies, NOAA Fisheries, and GSMFC; a Shrimp AP composed of shrimp industry representatives from across the Gulf and a Shrimp SSC made up on biologists from each of the state agencies.² These processes ensure continued communication and collaboration between state and federal agencies and industry participants on fishery management for the Gulf shrimp fishery.</p> <p>Furthermore, the GMFMC Shrimp FMP goals and objectives include “coordinate the development of shrimp management measures by the GMFMC with shrimp management programs of the several states, where feasible.”³ Measures considered and adopted in the original FMP to carry out this goal include:</p> <ul style="list-style-type: none"> - Measure 1: establishment of a cooperative closure with Florida and federal agencies to protect small pink shrimp until they reach legal size. - Measure 2: establishment of a cooperative closure of Texas territorial waters with Federal EEZ waters adjacent to Texas for the protection of small brown shrimp. - Measure 5: The Gulf states are encouraged to adopt flexible management procedures which would provide regulation by administrative agencies of the shrimp resources in inland waters and territorial seas. - Measure 6: The Gulf States are encouraged to adopt reciprocal internal management decisions flexible enough to allow joint management of shrimp with other states and federal agencies. 		

Additionally, GSMFC coordinates with the five Gulf states through several programs to foster cooperation in fisheries management. (For information on GSMFC programs including the Fisheries Economic Data Program, IJF, and SEAMAP, see responses to 7.3.4 (i) and (ii)).		
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¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

² "Committees & Panels" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/panels_committees/index.php

³ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

7.3.4 (iv) - fisheries development? Yes... [1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>The FAO definition of development is “continued progress towards desirable results, rather than growth”.¹</p> <p>The five Gulf states and NOAA Fisheries continue to collaborate on fisheries development through GMFMC.² Through the development of regional assessments and the shrimp FMP, new research is continually shared, additional research and management recommendations are identified, and implementation is encouraged. Some recent developments include improved technology and data collection through the cellular ELB program, continued improvements and certification of new bycatch reduction devices through the Harvesting Systems Unit.^{3,4}</p> <p>Additionally, collaboration through GSMFC has led to the development and implementation of the Trip Ticket Programs allowing for uniform data collection and reporting throughout the five Gulf states, and enhanced seafood marketing through the Gulf States Marketing Coalition initiative.^{5,6}</p>		

¹ "FAO Term Portal- Fisheries" *United Nations Food and Agricultural Organization*. Web. Accessed November 2015. <http://www.fao.org/fi/glossary/>

² *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

³ "ELB FAQs" *NOAA Fisheries, Galveston Lab*. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁴ "Harvesting Systems Unit" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁵ "Fisheries Information Network (FIN)" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/fin.php>

⁶ "Oil Disaster Recovery Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/odrp.php>

7.4 Data gathering and management advice

7.4.2 Has relevant research been carried out on:

(i) - the resource? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>Federal:</u> NOAA Fisheries is responsible for assessing and managing Gulf shrimp fisheries. NOAA SEFSC is the branch responsible for providing multi-disciplinary research to support management decisions of the GMFMC and NOAA Fisheries.¹ SEFSC maintains labs in Galveston, TX, Lafayette, LA, Panama City, FL, Pascagoula, MS and Stennis, MS. SEFSC Research and Data programs are responsible for biological, economic and socio-cultural research and data collection for commercial and recreational fisheries, economics and fisheries-independent data. SEFSC conducts stock assessments for all species managed by GMFMC; stock assessments for shrimp are conducted annually through the Galveston Lab Shrimp Fishery Research Program.² To perform these stock assessments, NOAA Fisheries utilizes data from port agents, state trip ticket programs, electronic logbook data and observer programs.</p> <p>The SEFSC collects fishery-dependent data for the shrimp fishery through the GSS. The GSS utilizes port agents throughout the Gulf of Mexico to collect landings data (amount and value) from seafood dealers, and interview data (fishing effort and location) from fishermen (refer to 7.1.4(a) for details on the GSS).³ Additionally, all federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal. Two separate databases are maintained for port agent and dealer reported data and fishermen reported data.⁴ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program (refer to 7.1.7 (a) for further details on ELB and observer programs). NOAA Fishery-Independent resource surveys are conducted through the SEFSC Mississippi Labs. Shrimp/Bottomfish surveys are conducted each Fall and Summer, which are designed to provide a time-series for monitoring trends in resource abundance.⁵</p> <p><u>Gulf States:</u> GSMFC also plays a role in the Gulf shrimp fishery's assessment process. GSMFC organizes state supplied data to create regional reports. Once approved by the Commission, GSMFC publishes reports in the publications area of their website.⁶ GSMFC assessment programs specific to the shrimp industry include the SEAMAP Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{7,8} SEAMAP Gulf of Mexico survey objectives include (but are not limited to):⁹</p> <ul style="list-style-type: none"> • Monitoring penaeid shrimp size and distribution • Evaluating the "Texas Closure" portion of GMFMC's FMP • Providing data on shrimp and groundfish stocks • Obtaining measurements to determine population size structures 		

The Fisheries Economic Data Program published peer-reviewed economic reports in 2014.^{10,11} These reports assessed the economic landscape of the shrimp industry, providing revenue, operating cost, annual expenditure, employment, and harvesting/harvester data.

Mississippi:

MDMR maintains databases for fishery-dependent and fishery-independent data and the conducts additional studies as the need arises. The Fishery Independent Sampling Program is a joint effort between MDMR and GCLR.^{12,13} The sampling program began in 1974, utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample.¹⁴ MDMR staff utilize these data to assess stock abundance, trends, and fisheries impacts. MDMR and GCRL also partner on the Shrimp Sampling Program for brown shrimp to determine seasonal openings based on size count, and the season opens when the majority of shrimp have reached legal size (68 count).¹⁵ This program runs annual from March through June with GCRL staff conducting regular sampling with plankton tows in the Back Bay, and MDMR staff pull trawls along the coast to determine shrimp size.

The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis and minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.^{16,17} MDMR fully implemented the Trip Ticket Program in 2012 for all species with only an exception for dealers that purchased only shrimp.¹⁸ In July 2015, MCMR voted to amend the regulations and include all shrimp dealers in the reporting requirement, this regulation will take effect in 2015.

¹ "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

² "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ "Gulf Shrimp" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁵ "Surveys" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

⁶ "Publications" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/publications.php>

⁷ "Southeast Area Monitoring and Assessment Program (SEAMAP)" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁸ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁹ “Southeast Area Monitoring and Assessment Program (SEAMAP)” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹⁰ Miller, Alexander, Maryam Tabarestani, and Jack Isaacs. 2014. *A Survey of Recreational Shrimpers in the Northern U.S. Gulf of Mexico*. Gulf States Marine Fisheries Commission Publication, Publication Number 228. Ocean Springs, Mississippi: <http://www.gsmfc.org/publications/GSMFC%20Number%20228.pdf>

¹¹ Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

¹² VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹³ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁴ [VanderKooy, 2013. p. 85](#)

¹⁵ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

¹⁶ “Trip Ticket Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

¹⁷ FIN Committee. 2012. Annual Report of the Fisheries Information Network in the Southeast Region (FIN) January 1, 2011 - December 31, 2011. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20205.pdf>

¹⁸ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

7.4.2 (ii) - climatic and environmental factors? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>Federal: NOAA Fisheries conducts research on climate change and fisheries.^{1,2} In March 2015, NOAA Fisheries released a draft Climate Science Strategy (NCSS) for public comment. This strategy is designed to collect and provide information on changing climate and ocean conditions to better prepare for and respond to climate-related impacts.³ The NCSS includes the following objectives:</p> <ul style="list-style-type: none"> - Objective 1: Identify appropriate, climate-informed reference points for managing living marine resources (LMRs). - Objective 2: Identify robust strategies for managing LMRs under changing climate conditions. 		

- Objective 3: Design adaptive decision processes that can incorporate and respond to changing climate conditions.
- Objective 4: Identify future states of marine and coastal ecosystems, LMRs, and LMR-dependent human communities in a changing climate.
- Objective 5: Identify the mechanisms of climate impacts on LMRs, ecosystems, and LMR-dependent human communities.
- Objective 6: Track trends in ecosystems, LMRs and LMR-dependent human communities and provide early warning of change.
- Objective 7: Build and maintain the science infrastructure needed to fulfill NOAA Fisheries mandates with changing climate conditions.

For each of the objectives listed, there are specific actions identified to help achieve that objective within the strategy. The NCSS also includes a set of priority recommendations.

NOAA conducts monitoring, research, modeling and assessment activities to inform fisheries management and protected resources in a changing environment. The Fish Stock Climate Vulnerability Assessment is currently being used to identify which stock may be most vulnerable to climate change, identifying areas where more data are needed, and providing a basis for actions that can be taken to reduce impacts.⁴

NOAA Fisheries Climate website provides a series of tools currently available regarding climate resilience including OCEANADAPT, which is a web-based tool developed through a partnership between NOAA Fisheries and Rutgers University that provides information about the distribution of commercially and recreationally important marine species over time.^{5,6}

The SEFSC recently published the Ecosystem Status Report for the Gulf of Mexico in December 2013. This report includes information on climate drivers and physical pressures on the GOM ecosystem as well as fishing indicators.⁷

Mississippi:

The Fishery Independent Sampling Program maintained by MDMR and GCLR includes collection of environmental parameters such as temperature, salinity and dissolved oxygen for each sample taken.^{8,9} These data are utilized during analyses of resource trends to identify possible environmental influences on resource abundance.

MDEQ is the primary agency in Mississippi responsible for the protection of the state’s air, land, and water.¹⁰ The Office of Land and Water resources maintains several monitoring programs on water quality and use.¹¹

The Grand Bay National Estuarine Research Reserve (NERR), managed by MDMR, maintains a Research and Monitoring program that includes research on Ecological Effects of Sea Level Rise, and Long-term Monitoring of Environmental Conditions.¹² The System-wide Monitoring Program (SWMP) conducted at Grand Bay NERR began in 1995, and includes monitoring of 1) abiotic indicators of water quality and weather, 2) biological monitoring, and 3) watershed, habitat, and land use.¹³ These indicators are used to identify short-term variability and long-term changes to better

inform coastal area management.

The GCRL Coastal Ecosystems Group also conducts extensive research on the coastal environment of the northern Gulf of Mexico with the goal of understanding habitat and ecosystem structure and function.¹⁴

¹ "Climate, Fisheries, and Protected Resources" *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/stories/2014/03/climate_portal.html

² NOAA Fisheries. *Fish Stock Climate Vulnerability Assessment*. http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/Fish_Stock_Climate_Vulnerability_Assessment.pdf

³ NOAA Fisheries. *Draft Climate Science Strategy*. January 2015. http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/draft_NOAA%20Fisheries_Climate_Science%20Strategy_Jan_2015.pdf

⁴ "Assessing the Vulnerability of Fish Stocks in a Changing Climate" *NOAA Fisheries*. Web. Accessed November 2015. <http://www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks>

⁵ "Climate Tools" *NOAA Office of Science and Technology*. Web. Accessed November 2015. <http://www.st.nmfs.noaa.gov/ecosystems/climate/tools/index>

⁶ *Ocean Adapt*. Web. Accessed November 2015. <http://oceanadapt.rutgers.edu/>

⁷ Mandy Karnauskas, Michael J. Schirripa, Christopher R. Kelble, Geoffrey S. Cook and J. Kevin Craig. Ecosystem Status Report for the Gulf of Mexico. NOAA Technical Memorandum NMFS-SEFSC-653. December 2013. <http://gulfcouncil.org/docs/Gulf%20of%20Mexico%20Ecosystem%20Status%20Report.pdf>

⁸ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁹ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁰ *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/About_About?OpenDocument

¹¹ "Office of Land and Water Resources" *Mississippi Department of Environmental Quality (MDEQ)*. Web. Accessed November 2015. http://www.deq.state.ms.us/mdeq.nsf/page/l&w_home

¹² "Research: overview" *Grand Bay National Estuarine Research Reserve*. Web. Accessed November 2015. <http://grandbaynerr.org/research/>

¹³ *Grand Bay National Estuarine Research Reserve*. Web. Accessed November 2015. <http://www.nerrs.noaa.gov/RCDefault.aspx?ID=18>

¹⁴ "Coastal Ecosystems Group" *Gulf Coast Research Lab*. Web. Accessed November 2015. <http://www.usm.edu/gcrl/ceg/>

7.4.2 (iii) - the socio-economic context? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>Federal:</u> NOAA SEFSC conducts an Annual Economic Survey of Federal Gulf Shrimp Permit Holders each spring collecting data on operating expenses and costs associated with owning and maintaining shrimp vessels.¹ Each year a third of the permit holders are randomly selected for this survey and information is used to assess trends in the financial state of the fishery, social and economic effects of regulations, and other economic factors impacting the Gulf shrimp fishery.</p> <p>NOAA SEFSC also contains a Social Science Research Group (SSRG) that conducts applied research on socio-cultural aspects of marine resources in the Gulf of Mexico.² This research largely focuses on participant and community dependence and engagement in fisheries and is directed by the principles of the MSA National Standard 8:³</p> <ul style="list-style-type: none"> - <i>Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.</i> <p>In 2005, NOAA conducted a series of studies to identify communities associated with the fishing industry and produced a report of the significant fishing communities in Mississippi.⁴</p> <p>The GMFMC shrimp FMP contains a socioeconomic characterization of the shrimp fishery and each amendment to the FMP includes information on social and economic impacts and requires a Regulatory Impact Review.⁵</p> <p><u>Gulf States:</u> GSMFC Fisheries Economic Data Program has conducted similar analyses to the SEFSC Annual Economic Survey for the inshore (non-federally-permitted) fleet in 2008 and 2012.^{6,7,8} Additionally, GSMFC has produced reports on the economic baseline and characterization of dockside seafood dealers, and seafood processors for the U.S. Gulf of Mexico.^{9,10}</p> <p><u>Mississippi:</u> MDMR currently does not have a socio-economic department within its fisheries management program and utilizes the work of the GSMFC and NOAA assessments, and/or assesses socio-economic factors on a case by case basis for specific needs when developing management measures.</p> <p>MDMR solicits participation from the entire fishing community and is required by law at both the state and federal level to allow public participation.¹¹ MCMR meetings are held monthly and follow the open meetings act; therefore,</p>		

<p>information is publically posted via the MDMR website and a public comment period is scheduled during each meeting.¹² MDMR also conducts industry scoping meetings during initial development of new regulations or to address specific issues with a fishery. MDMR also posts proposed rules and public notices on the website and accepts written comments through mail and email.¹³ When significant management changes are proposed for industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations.</p>		
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¹ "Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery" *NOAA Southeast Fishery Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

² "Social Science Research Group" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

³ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁴ Assessment, Impact. Inc., 2006. Identifying communities associated with the fishing industry in Alabama and Mississippi. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>

⁵ "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ "Publications: Fisheries Economic Data Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁷ Miller, Alexander L., and Jack C. Isaacs. 2011. *An Economic Survey of the Gulf of Mexico Inshore Shrimp Fishery: Implementation and Descriptive Results for 2008*. Gulf States Marine Fisheries Commission Publication Number 195 <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

⁸ Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

⁹ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>

¹⁰ Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>

¹¹ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

¹² "Meetings" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹³ "Public notices" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

7.4.3 Has research been carried out on:

(i) - cost-benefits of fishing? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
N/A		
	Omitted from scoring at this time.	

7.4.3 (ii) - alternative management strategies? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Federal: Alternative management strategies are explicitly and transparently considered throughout the management process through GMFMC. Each FMP contains a series of alternatives for each management measure, a rationale for the measure adopted and a list of which alternatives were considered but not adopted.¹ Additionally, all GMFMC meetings, including meetings of the Shrimp Management Committee, Shrimp SSC, Shrimp Advisory Panel, contain discussions of alternative management strategies, which are documented in meeting minutes and are open to the public.²</p> <p>Mississippi: MDMR has considered the management regulations utilized by different states throughout the GOM. Management options are discussed between state agencies through the GMFMC council, committee, and advisory panel meetings, which MDMR representative participate in. In Mississippi, alternative management options are discussed during MCMR meetings. Meeting minutes from MCMR monthly meetings illustrate dialog regarding alternate management strategies based on history and impact of regulations in Mississippi and other Gulf states.³</p>		

¹ "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² "Council Meeting Briefing Books" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

³ "Meeting Minutes" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/transcripts>

7.4.4 Are timely and reliable statistics available on catch and fishing effort maintained in accordance with applicable international standards and practices and in sufficient detail to allow sound statistical analysis? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Federal: The SEFSC Fisheries Statistics Division collects data on the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port</p>		

agent interviews, and independent research.¹ Landings data are collected by the SEFSC Fisheries Monitoring Branch from each individual state agency Trip Ticket Reporting Program. All data are entered into the Fishery Information System (FIS) Metadata Catalog and are accessible by NOAA Fisheries and each of the Gulf state agencies.² NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers. Additional information for shrimp is gathered through the Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico (refer to 7.1.4(a) for details on GSS).³ Weekly reports are posted on the NOAA Fisheries Statistics website documenting Gulf shrimp landings by area and species and ex-vessel price and landings. A monthly Gulf Coast Shrimp Statistics report is also posted.⁴ Federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal. Two separate databases are maintained for port agent and dealer reported data and fishermen reported data. Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program (refer to 7.1.7(a) for details).⁵ 50 CFR 622.51 requires the reporting activities for both harvesters and dealers in the Gulf of Mexico shrimp fishery (refer to 7.1.7(a) for details).⁶

GSMFC data collection programs specific to the shrimp industry include the SEAMAP Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{7,8}

SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys. The Fisheries Economic Data Program published peer-reviewed economic reports in 2014. These reports assessed the economic landscape of the shrimp industry, providing revenue, operating cost, annual expenditure, employment, and harvesting/harvester data.

Mississippi:

MDCMR meets international standards of data collection through a series of programs including the Trip Ticket Program, the Fishery-Independent Sampling Program, and collaboration with other agencies (see 7.1.7(a) for further details).^{9,10,11,12,13} These programs gather the necessary information on total catch, gear and fishing methods, vessel information, location, date, length of trip, and effort data, as well as biological information of the species including age, growth, recruitment, distribution, abundance surveys and environmental factors.

¹ "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/about/statistics.htm>

² "Fisheries Monitoring Branch" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/data/monitoring.htm>

³ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/about/statistics.htm>

⁵ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁷ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁸ "Publications: Fisheries Economic Data Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁹ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁰ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹¹ "Research at the GCRL Center for Fisheries Research and Development" Gulf Coast Research Lab. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹² "SEAMAP" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹³ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

7.4.5 Has sufficient knowledge of social, economic and institutional factors relevant to the fishery in question been developed through data gathering, analysis and research?

Yes... [1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: NOAA SEFSC contains a Social Science Research Group (SSRG) that conducts applied socioeconomic and cultural research on marine resources in the Gulf of Mexico.¹This research largely focuses on participant and community dependence and engagement in fisheries and is directed by the principles of the MSA National Standard 8.²</p> <p>Within the SSRG is a Southeast Shrimp Fisheries research group focuses on data collection and analysis of economic information specific to the shrimp industry. This group conducts the Annual Economic Survey of Federal Gulf Permit Holders each spring. This survey collects information on operating costs, and expenses associated with owning and maintaining shrimp vessels. This information is used to assess trends in the economic state of the Gulf shrimp fishery and determine the impacts of regulation changes and other management actions.^{3,4}</p> <p>In 2005, NOAA conducted a series of studies to identify communities associated with the fishing industry and produced a report of the significant fishing</p>		

communities in Mississippi.⁵ NOAA's Office of Science and Technology has developed social indicators of fishing community vulnerability and resilience, and maintains community profiles of fishing communities throughout the U.S.^{6,7} NOAA SERO also maintains community snapshots on its website of fishing communities throughout the Gulf and includes information on the dominant fisheries, fleet characteristics and demographics of each community.⁸

The GMFMC shrimp FMP also contains a socioeconomic characterization of the shrimp fishery and each amendment to the FMP includes information on social and economic impacts and requires a Regulatory Impact Review.⁹

Gulf States:

GSMFC Fisheries Economic Data Program has conducted analyses (similar to the SEFSC Annual Economic Survey) for the inshore (non-federally-permitted) fleet in 2008 and 2012.^{10,11,12} Additionally, GSMFC has produced reports on the economic baseline and characterization of dockside seafood dealers, and seafood processors for the U.S. Gulf of Mexico.^{13,14}

Mississippi:

MDMR solicits participation from the entire fishing community and is required by law at both the state and federal level to allow public participation.¹⁵ MCMR meetings are held monthly and follow the open meetings act; therefore, information is publically posted via the MDMR website and a public comment period is scheduled during each meeting.¹⁶ MDMR also conducts industry scoping meetings during initial development of new regulations or to address specific issues with a fishery. For example, MDMR recently held a public hearing for commercial crabbers and oystermen to discuss potential projects for each fishery utilizing funds received from NOAA for the 2012 fishery disaster declaration.¹⁷ MDMR also posts proposed rules and public notices on the website and accepts written comments through mail and email.¹⁸ When significant management changes are proposed for industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations.

¹ "Social Science Research Group" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

² The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

³ "Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery" NOAA Southeast Fishery Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁴ NMFS SEFSC. 2011 *Economics of the Federal Gulf Shrimp Fishery Annual Report*. NOAA Southeast Fisheries Science Center. December 2013. http://www.sefsc.noaa.gov/docs/2011_Gulf_shrimp_econ_report.pdf

⁵ Assessment, Impact. Inc., 2006. Identifying communities associated with the fishing industry in Alabama and Mississippi. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>

⁶ “About Social Indicators” *NOAA Office of Science and Technology*. Web. Accessed November 2015. <https://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index>

⁷ Jepson and Colburn, 2013. “Development of Social Indicators of Fishing Community Vulnerability and Resilience in the U.S. Southeast and Northeast Regions.” NOAA OST http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/S3_Fishing_Com_Vulnerability_Resilience.pdf

⁸ “Snapshots of Human Communities and Fisheries in the Gulf of Mexico and South Atlantic” *NOAA Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

⁹ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁰ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹¹ Miller, Alexander L., and Jack C. Isaacs. 2011. *An Economic Survey of the Gulf of Mexico Inshore Shrimp Fishery: Implementation and Descriptive Results for 2008*. Gulf States Marine Fisheries Commission Publication Number 195 <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

¹² Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

¹³ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Docksides Seafood Dealers*. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>

¹⁴ Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors*. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>

¹⁵ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

¹⁶ “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

¹⁷ “Recent News” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

¹⁸ “Public notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

7.4.6 Are fishery-related and other supporting scientific data relating to fish stocks covered by subregional or regional fisheries management organizations or arrangements compiled in an agreed format and provided in a timely manner to the organization or arrangement?

(i) - in an agreed format? Yes... [1] Some... [1/2] No... [0]

Extent of compliance		
Yes	Some	No
<p><u>GMFMC:</u> The GMFMC utilizes data collected through NOAA Fisheries and each of the five Gulf state management agencies. GMFMC maintains a standing Data Collection Committee, which “reviews and advises the Council on the data requirements for managing each fishery, the statistical methodology needed, and on all issues related to data and data collection.”¹</p> <p>The SEFSC Fisheries Statistics Division collects data on the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.² Landings data are collected by the SEFSC Fisheries Statistics Division from each individual state agency Trip Ticket Reporting Program. Data collection methods are coordinated through the GSMFC Fisheries Information Network to ensure that standardized data are collected, where feasible. All data are entered into the Fishery Information System (FIS) Metadata Catalog and are accessible by NOAA Fisheries and each of the Gulf state agencies. NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers on standardized trip ticket forms. Additional information for shrimp is gathered through the GSS, which includes data collection by port agents stationed throughout the Gulf of Mexico (refer to 7.1.4(a) for further detail on the GSS).³ Trip ticket data from each of the states are verified against port agent sampling data and integrated into the GSS. Weekly reports are posted on the NOAA Fisheries Statistics website documenting Gulf shrimp landings by area and species, and ex-vessel price and landings. A monthly Gulf Coast Shrimp Statistics report is also posted.⁴ All federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal. Two separate databases are maintained for port agent and dealer reported data and fishermen reported data.⁵ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{6,7} The new eELB program, which began in 2014, transmits the most recent data from vessels directly to the Galveston Lab whenever the vessel is within cellular range. Data collection by observers is carried out in a standard format defined in an observer manual.</p> <p><u>GSMFC:</u> Fishery-related and other supporting scientific data are gathered individually by each state’s management agency and submitted and reviewed regularly by GSMFC. The GSMFC meets twice a year (March and October) to review scientific data and regional management activities. Data on fishery trends in landings, values, and other activities of the fishery are presented by each state and reviewed at each meeting. The GSMFC IJF program also collects data regularly for regional assessments and FMP updates of stocks not covered by federal FMPs; data are submitted by the states on request based on the needs of specific projects. GSMFC FMPs are reviewed every five years and updated at intervals determined by the TCC.⁸</p>		

<p>GSMFC data collection programs specific to the shrimp industry include the SEAMAP Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{9,10} NOAA coordinates with SEAMAP through the SEFSC Mississippi Labs on annual fishery-independent surveys. Shrimp/Bottomfish surveys are conducted each Fall and Summer, which are designed to provide a time-series for monitoring trends in resource abundance. Data are made available to state and federal resource managers.¹¹</p>		
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¹ GMFMC, 2012. Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/about/statistics.htm>

³ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ "Commercial Fisheries Statistics" NOAA Office of Science and Technology. Web. Accessed November 2015. http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁶ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁸ VanderKooy, Steve. GSMFC. Personal Communication. August, 2014.

⁹ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹⁰ "Publications: Fisheries Economic Data Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹¹ "Mississippi Labs: Surveys" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

7.4.6 (ii) - in a timely manner? Yes... [1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p><u>GMFMC:</u> The GMFMC utilizes data collected through NOAA Fisheries and each of the five Gulf state management agencies. GMFMC maintains a standing Data Collection Committee, which "reviews and advises the Council on the data requirements for managing each fishery, the statistical methodology needed, and on all issues related to data and data collection."¹</p>		

The SEFSC Fisheries Statistics Division collects data on the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.² All data are entered into the Fishery Information System (FIS) Metadata Catalog and are accessible by NOAA Fisheries and each of the Gulf state agencies. NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers. Data are submitted by dealers on a monthly basis. Additional information for shrimp is gathered through the GSS, which includes data collection by port agents stationed throughout the Gulf of Mexico.³ Weekly reports are posted on the NOAA Fisheries Statistics website documenting Gulf shrimp landings by area and species and ex-vessel price and landings. A monthly Gulf Coast Shrimp Statistics report is also posted.⁴ All federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal.⁵ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{6,7} The new cELB program, which began in 2014, transmits the most recent data from vessels directly to the Galveston Lab whenever the vessel is within cellular range. Observer coverage is compiled into annual reports made available to federal and state fisheries managers and posted publically on NOAAs website.

GSMFC:

Fishery-related and other supporting scientific data are gathered individually by each state's management agency and reviewed regularly by GSMFC. The GSMFC meets twice a year (March and October) to review scientific data and regional management activities. Data on fishery trends in landings, values, and other activities of the fishery are presented by each state and reviewed at each meeting.

GSMFC data collection programs specific to the shrimp industry include the SEAMAP Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{8,9} SEAMAP Shrimp/Bottomfish surveys are conducted each fall and summer.¹⁰ SEAMAP data are entered into the Fisheries Scientific Computer System (FSCS) and made available to state and federal managers.

¹ GMFMC, 2012. *Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures*. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/about/statistics.htm>

³ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ "Commercial Fisheries Statistics" NOAA Office of Science and Technology. Web. Accessed November 2015. http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁶ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁸ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁹ "Publications: Fisheries Economic Data Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹⁰ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

7.4.7 With respect to the data collected for management purposes, are applicable confidentiality requirements complied with? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>GMFMC:</u> GMFMC maintains confidentiality of statistics in compliance with 50 CFR 600.130, 600.405, 600.425, and NAO 216-100. The GMFMC may establish policies and procedures applicable to it, its committees, and advisory groups to ensure confidentiality of statistics submitted to GMFMC by federal or state authorities, and private persons. In regards to statistics submitted by a state or federal entity, policies and procedures must be consistent with the laws and regulations of the federal or state entity submitting the statistics.¹ 50 CFR §600.130 requires each regional council to establish procedures for ensuring confidentiality, 50 CFR §600.405 defines the types of statistical information that NOAA is authorized to collect and requires to ensure confidentiality of, and 50 CFR §600.425 pertains to circumstances allowing release or refusal of requested information in compliance with other confidentiality requirements.^{2,3,4}</p> <p>NOAA Administrative Order (NOA) 216-100 "prescribes policies and procedures for protecting the confidentiality of data submitted to and collected by the National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS) as authorized or required by law; informs authorized users of their obligations for maintaining the confidentiality of data received by NMFS; provides for operational safeguards to maintain the security of data; and states the penalties provided by law for disclosure of confidential data."⁵</p> <p><u>GSMFC:</u> GSMFC follows NOAA administrative Order 216-100 "Protection of Confidential Fisheries Statistics"⁵ and adheres to the "Fisheries Rule of Three," which prevents disclosure of proprietary or confidential commercial or financial information regarding fishing and fish processing operations thus preventing the distribution of any fisheries data that would identify a single fisheries entity. GSMFC employees and representatives must sign non-disclosure agreements prior to handling confidential statistics, which includes approval from NMFS. Penalties for unauthorized distribution of confidential fisheries data include both civil and</p>		

<p>criminal actions and are set out in Federal Statutes- U.S.C. 552 and U.S.C 1905.^{6,7}</p> <p>As a government entity, MDMR must abide by strict confidentiality requirements set forth by both state and federal statutes. Summaries of non-confidential data are disseminated to the public and other agencies.⁸ Data collected through the Trip Ticket Program is protected under Mississippi state confidentiality laws.⁹ Miss. Admin. Code Title 22, Part 9 states that all data obtained by MDMR statistical staff in the course of their duties are confidential and may only be released in aggregate, or to a confidentiality officer of NOAA/NMFS or other state agencies that have an MOU with MDMR regarding the sharing of statistical information.¹⁰</p>		
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¹ GMFMC, 2012. *Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures*. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² 50 C.F.R. § 600.130 <http://www.gpo.gov/fdsys/pkg/CFR-2010-title50-vol8/pdf/CFR-2010-title50-vol8-sec600-130.pdf>

³ 50 C.F.R. § 600.405 <https://www.law.cornell.edu/cfr/text/50/600.405>

⁴ 50 C.F.R. § 600.425 <https://www.law.cornell.edu/cfr/text/50/600.425>

⁵ NOA 216-100 https://www.st.nmfs.noaa.gov/st1/recreational/documents/Intercept_Appendices/Appendix%20M%20031408%20NOAA%20administrative%20order%20216-100.pdf

⁶ U.S.C. § 552 <http://www.justice.gov/oip/blog/foia-update-freedom-information-act-5-usc-sect-552-amended-public-law-no-104-231-110-stat>

⁷ 18 U.S.C § 1905 <http://www.law.cornell.edu/uscode/text/18/1905>

⁸ "Publications" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/publications>

⁹ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

¹⁰ Miss. Admin. Code Title 22, Part 9 <http://www.dmr.ms.gov/joomla16/images/regulations/title-22-part-09.pdf>

7.5 Precautionary approach

7.5.1 (a) Has the precautionary approach been applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment?¹ **Yes...**[1] **In part...**[½] **No...**[0]

Extent of compliance		
yes	In Part	No
<p>Federal: The Gulf of Mexico shrimp fishery is managed by NOAA Fisheries and GMFMC under the requirements of the MSA. The ten National Standards of the MSA provide a robust and precautionary approach to fisheries management. The ten</p>		

national standards are as follows:²

- Achieve OY and prevent overfishing
- Based on best available scientific evidence
- Manage stocks as a unit
- Allocations should be fair and equitable, promote conservation, and prevent excessive shares
- Consider efficiency in utilization; not have economic allocation as sole purpose
- Allow for variations and contingencies
- Minimize costs and avoid duplication
- Consider fishing communities to provide for their sustained participation and to minimize adverse economic impacts
- Minimize bycatch and bycatch mortality
- Promote safety of human life at sea

NOAA Fisheries has developed a set of guidelines for each National Standard and all FMPs, amendments and regulations must comply with the National Standards Guidelines. These guidelines explicitly require the consideration of uncertainties in setting conservation and management measures, and mandate the determination of biological reference points and harvest control rules to ensure that overfishing is prevented, overfished stocks are rebuilt within reasonable timeframes, and bycatch is minimized. Additionally, a NOAA Technical Memorandum was published providing guidance on the use of precautionary approaches when implementing NS 1.³ The GMFMC shrimp FMP and amendments comply with all aspects of the National Standards.⁴

Limit and target reference points have been established for the fishery. Currently, The target for each stock is MSY. Amendment 13 of the shrimp FMP determined that there is no biological reason to set OY below MSY because penaeid shrimp are annual stocks whose abundance in a given year is dictated primarily by environmental conditions.⁵

Recent changes have been made to the model used in stock assessments for penaeid shrimp in the Gulf of Mexico to improve assessments. Previously, a VPA model was used in Gulf shrimp stock assessments; however, recently the SSC approved a new Stock Synthesis model as the best scientific model available for these species. Due to the changes in the model outputs, the GMFMC has changed to the SDC for penaeid shrimp species to fit with the new assessment model outputs in Amendment 15 of the GMFMC Shrimp FMP.

The new reference points are:⁶

MSY

- Brown shrimp: MSY is 146,923,100 lbs. of tails
- White shrimp: MSY is 89,436,907 lbs. of tails

Overfishing

The overfishing threshold is defined as the MFMT. The MFMT for each penaeid shrimp stock is defined as the fishing mortality rate at MSY (F_{MSY}).

- Brown shrimp: 9.12
- White shrimp: 3.48

Overfished

The overfished threshold is defined as the MSST. The MSST for each penaeid shrimp stock is defined as the minimum spawning stock biomass at MSY (SSB_{MSY}).

- Brown shrimp: SSB_{MSY} is 6,098,824 lbs. of tails
- White shrimp: SSB_{MSY} is 365,715,146 lbs. of tails

These values will be updated every 5 years through the framework procedure, unless changed earlier by the GMFMC.

Penaeid shrimp in the Gulf of Mexico are exempt from requirements for ACLs and Accountability measures (AMs) because they have a life cycle of approximately one year. MSA Section 600.310(h)(2) states:⁷

(2) Exceptions from ACL and AM requirements—(i) Life cycle. Section 303(a)(15) of the Magnuson-Stevens Act “shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species” (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately 1 year and that the individual has only one breeding season in its lifetime. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.

Annual stock assessments are conducted for the penaeid shrimp species in the Gulf. If MFMT is exceeded for two consecutive years, the appropriate committees and/or panels (e.g. stock assessment panels, advisory panels, SSCs) would convene to review changes in apparent stock size, changes in fishing effort, potential alterations in habitat or other environmental conditions, fishing mortality and other factors that may have contributed to the decline.

Brown shrimp and white shrimp stocks have been monitored by NOAA Fisheries since 1970, and have remained above the minimum thresholds; therefore, have never been determine overfished or overfishing. Recent assessments of the fishery have determined that the current fleet capacity does not have the ability to overfish stocks.⁸ Management of the fishery is largely focused on improving economic conditions and reducing bycatch mortality. Management measures in effect include closed areas for the protection of habitat and small shrimp (which protects against growth overfishing), effort limitations, and required use of BRDs and TEDs to minimize bycatch.

The Precautionary Approach is also mandated in the Guidelines to National Standard 9, with regard to minimizing bycatch and bycatch mortality.⁹

The Shrimp FMP set the following objective: “promote consistency with the ESA and MMPA.” The shrimp fishery has been evaluated in relation to the ESA and MMPA and is consistent with the requirements established to protect species managed under these acts.

ESA:

Section 7(a)(2) of the ESA requires each federal agency to ensure that any action they authorize is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of any listed species. In 2014 and update Biological Opinion was done, under the Section 7(a)(2) requirements, for the continued implementation of sea turtle conservation measures applicable to shrimp trawling and the continued authorization of the Southeast shrimp fisheries.¹⁰ The opinion provides information on interactions with any threatened or endangered species, states the amount of incidental of listed species that may occur, specifies reasonable or prudent measures that are required to minimize impacts, requires monitoring of effects, and recommends conservation measures to further conserve listed species. The biological opinion was based on the best available scientific data and considered uncertainties within the evaluation process. The 2014 biological opinion made recommendations for measures to minimize impacts of incidental take to sea turtles and smalltooth sawfish, and concluded that continued authorization of the Southeast shrimp fisheries in federal waters is not likely to jeopardize the continued existence of threatened or endangered species.

MMPA:

NOAA Office of Protected Species conducted a risk assessment of the shrimp fishery to determine potential impacts to marine mammals. The shrimp fishery was determined as a Category II fishery, indicating that the annual mortality or serious injury of a marine mammal stock is greater than 1% but less than 50 % of the stocks potential biological removal (PBR).¹¹ This requires fishery participants to register with the Office of Protected Species, report any incidences of serious injury or mortality of a marine mammal, and compliance with and take reductions plans that are established. This designation was based primarily on interactions with bottlenose dolphins and there is currently no take reduction plan for bottlenose dolphins in the Gulf of Mexico.

Mississippi:

There is currently no explicit definition of the precautionary approach at the state level of management. While no formal definition of precautionary approach has been implemented for management of the shrimp fishery in Mississippi, management has taken measures to ensure prudent foresight, reduce or avoid risk to the resource, the environment, and the people and does take into account existing uncertainties and potential consequences of incorrect or suboptimal management measures. Mississippi also participates in the GMFMC process and manages the shrimp fishery in state waters consistent with federal management, which is managed under precautionary approach guidelines (as shown above).

¹ FAO 2005-2015. *World inventory of fisheries. Precautionary approach to fisheries management*. Issues Fact Sheets. Text by Serge M. Garcia. Bibliographic citation [online]. Rome. Updated 27 May 2005. [Cited 25 January 2015]. <http://www.fao.org/fishery/topic/13302/en>

² "National Standards Guidelines" NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁴ Restrepo, V.R. et al (1998) “Technical Guidance On the Use of Precautionary Approaches to Implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act” NOAA Technical Memorandum. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/ns1_restrepo_et_al_1998.pdf

⁵ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. *Gulf of Mexico Fishery Management Council*. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁶ GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan*. *Gulf of Mexico Fishery Management Council*. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁷ 50 C.F.R. § 600.310 http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

⁸ Nance, James, Walter Keithly, Jr., Charles Caillouet, Jr., John Cole, Wilson Gaidry, Benny Gallaway, Wade Griffin, Rick Hart, and Mike Travis. 2008. *Estimation of effort, maximum sustainable yield, and maximum economic yield in the shrimp fishery of the Gulf of Mexico*. NOAA Technical Memorandum NMFS-SEFSC 570. http://docs.lib.noaa.gov/noaa_documents/NMFS/SEFSC/TM_NMFS_SEFSC/NMFS_SEFSC_TM_570.pdf

⁹ 50 C.F.R. § 600.310 http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

¹⁰ NMFS. 2014. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. Consultation No. SER-2-13-1225. http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹¹ “List of Fisheries” *NOAA Office of Protected Resources*. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/interactions/lof/>

7.5.1 (b) Has the absence of adequate scientific information been used as a reason for postponing or failing to take conservation and management measures? **No...**[1] **Occasionally...** [½] **Often...**[0]

Extent of compliance		
No	Occasionally	Often
<p>The MSA specifically prevents the absence of scientific information as a reason to postpone conservation and management measures through National Standard 6 (NS6). NS 6 requires the following:¹</p> <ul style="list-style-type: none"> - To the extent practicable, FMPs should provide a suitable buffer in favor of conservation. Allowances for uncertainties should be factored into the various elements of an FMP. Examples are: <ul style="list-style-type: none"> (i) <i>Reduce OY</i>. Lack of scientific knowledge about the condition of a stock(s) could be reason to reduce OY. (ii) <i>Establish a reserve</i>. Creation of a reserve may compensate for uncertainties in estimating domestic harvest, stock conditions, or environmental factors. 		

<p>(iii) <i>Adjust management techniques.</i> In the absence of adequate data to predict the effect of a new regime, and to avoid creating unwanted variations, a Council could guard against producing drastic changes in fishing patterns, allocations, or practices.</p> <p>(iv) <i>Highlight habitat conditions.</i> FMPs may address the impact of pollution and the effects of wetland and estuarine degradation on the stocks of fish; identify causes of pollution and habitat degradation and the authorities having jurisdiction to regulate or influence such activities; propose recommendations that the Secretary will convey to those authorities to alleviate such problems; and state the views of the Council.</p> <p>The GMFMC shrimp FMP is in compliance with all mandates of the MSA and has not used a lack of scientific information as a basis for not implementing conservation measures.²</p> <p>MDMR has also taken several proactive management measures for the shrimp fishery to ensure conservation of the fishery prior to scientific evidence, including closed areas, and closed seasons to protect habitat and smaller shrimp.</p>		
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¹ 50 C.F.R. § 600.310

http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

² "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015.

http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

7.5.2/7.5.3 Has there been an attempt to determine for the stock both safe targets for management (Target Reference Points) and limits for exploitation (Limit Reference Points), and, at the same time, the action to be taken if they are exceeded?

(i) - Have target reference point(s) been established? **Yes...**[1] **In part...**[½] **No...**[0]

Extent of compliance		
Yes	In part	No
<p>Limit and target reference points have been established for the fishery. Currently, The target for each stock is MSY. Amendment 13 of the shrimp FMP established MSY for each stock and determined that there is no biological reason to set OY below MSY because penaeid shrimp are annual stocks whose abundance in a given year is dictated primarily by environmental conditions.¹</p> <p><u>MSY:</u></p> <ul style="list-style-type: none"> - Brown shrimp: 67 to 104 million pounds of tails - White shrimp: 35 to 71 million pounds of tails <p>The Assessment Panel cautioned against the use of point estimates of MSY due to the uncertainty with these estimates, and the potential fluctuations in catch due to the environmental sensitivity of these stocks.</p> <p>Recent changes have been made to the model used in stock assessments for penaeid</p>		

<p>shrimp in the Gulf of Mexico to improve assessments. Previously, a VPA model was used in Gulf shrimp stock assessments; however, recently the SSC approved a new Stock Synthesis model as the best scientific model available for these species. Due to the changes in the model outputs, the GMFMC is currently considering changes to the SDC for penaeid shrimp species to fit with the new assessment model outputs. These changes are addressed in proposed Amendment 15, and are currently going through the rulemaking process.</p> <p>The proposed reference points are:²</p> <p>MSY</p> <ul style="list-style-type: none"> - Brown shrimp: MSY is 146,923,100 lbs. of tails - White shrimp: MSY is 89,436,907 lbs. of tails 		
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¹GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

7.5.2/7.5.3 (ii) - Have limit reference points been established?

Yes...[1] In part...[1/2] No...[0]

Extent of compliance											
Yes	In part	No									
<p>Amendment 13 set the original limit reference points for the fishery as minimum parent stock size. Overfishing and Overfished thresholds for brown and white shrimp were:¹</p> <table border="1"> <thead> <tr> <th></th> <th>overfishing</th> <th>overfished</th> </tr> </thead> <tbody> <tr> <td>brown shrimp</td> <td>125,000,000 individuals (November – February)</td> <td>63,000,000 individuals (November – February)</td> </tr> <tr> <td>white shrimp</td> <td>330,000,000 individuals (May – August)</td> <td>165,000,000 individuals (May – August)</td> </tr> </tbody> </table> <p>Brown shrimp and white shrimp stocks have been monitored by NOAA Fisheries since 1970, and have remained above the minimum parent stock size thresholds; therefore, have never been determine overfished or overfishing.</p> <p>Changes to the model used in stock assessments for penaeid shrimp in the Gulf of Mexico from a VPA model to a Stock Synthesis model required changes to the SDC for penaeid shrimp species to fit with the new assessment model outputs. These changes have recently been adopted through Amendment 15. The new reference points are:²</p> <p>Overfishing:</p> <p>The overfishing threshold is defined as the MFMT. The MFMT for each penaeid shrimp stock is defined as the fishing mortality rate at MSY (F_{MSY}).</p> <ul style="list-style-type: none"> - Brown shrimp: $F_{MSY} = 9.12$ - White shrimp: $F_{MSY} = 3.48$ 		overfishing	overfished	brown shrimp	125,000,000 individuals (November – February)	63,000,000 individuals (November – February)	white shrimp	330,000,000 individuals (May – August)	165,000,000 individuals (May – August)		
	overfishing	overfished									
brown shrimp	125,000,000 individuals (November – February)	63,000,000 individuals (November – February)									
white shrimp	330,000,000 individuals (May – August)	165,000,000 individuals (May – August)									

<p>Overfished:</p> <p>The overfished threshold is defined as the MSST. The MSST for each penaeid shrimp stock is defined as the minimum spawning stock biomass at MSY (SSB_{MSY}).</p> <ul style="list-style-type: none"> - Brown shrimp: SSB_{MSY} is 6,098,824 lbs. of tails - White shrimp: SSB_{MSY} is 365,715,146 lbs. of tails <p>These values will be updated every 5 years through the framework procedure, unless changed earlier by the GMFMC.</p>		
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¹ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

7.5.2/7.5.3 (iii) - Have data and assessment procedures been installed measuring the position of the fishery in relation to the reference points established? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>NOAA SEFSC Galveston Lab conducts ongoing monitoring and research for the Gulf of Mexico shrimp fishery and produces an annual stock assessment report for each shrimp species.¹ GMFMC SSC and Standing Shrimp SSC review stock assessments annually to determine the status of the fishery against established reference points.</p> <p>The current stock assessment model, updated in 2012, now produces different outputs than the previous VPA model that was used at the time initial reference points were set. GMFMC and NOAA Fisheries have recently updated the SDC for shrimp to match the current model outputs.²</p>		

¹ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

² GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

7.5.2/7.5.3 (iv) - Have management actions been agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>Penaeid shrimp in the Gulf of Mexico are exempt from requirements for Annual Catch Limits (ACLs) and Accountability measures (AMs) because they have a life cycle of approximately one year. MSA Section 600.310(h)(2) states:¹</p> <p style="padding-left: 40px;">(2) <i>Exceptions from ACL and AM requirements—(i) Life cycle.</i> Section 303(a)(15) of the Magnuson-Stevens Act“ shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is</p>		

subject to overfishing of that species” (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately one year and that the individual has only one breeding season in its lifetime. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.

Amendment 15 updating the SDC for shrimp, also updated actions to be taken should reference points be exceeded as follows:²

“Annual stock assessments are conducted for the penaeid shrimp species in the Gulf. If MFMT is exceeded for two consecutive years, the appropriate committees and/or panels (e.g. stock assessment panels, advisory panels, SSCs) would convene to review changes in apparent stock size, changes in fishing effort, potential alterations in habitat or other environmental conditions, fishing mortality and other factors that may have contributed to the decline.”

Furthermore, the MSA Section 305 (c) allows for the promulgation of emergency actions. The Secretary of Commerce may promulgate an emergency regulation to respond to an emergency, overfishing, public health or oil spill event, or at the request of GMFMC.³ Such emergency regulations may remain in effect until the circumstance no longer existed, provided that there is an opportunity for public comment after the rule is published. Emergency regulations may address the following situations:

- Ecological- to prevent overfishing or other serious damage to the resource or habitat
- Economic- to prevent a significant direct economic loss
- Social- to prevent a significant community impact or conflict between user groups
- Public Health- to prevent significant adverse health effects to fishery participants and/or consumers

MDMR has the ability to promulgate emergency regulations within state waters when there is evidence of an emergency, such as overfishing or a severe disaster.^{4,5}

¹ 50 C.F.R. § 600.310

http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

² GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

³ NMFS. *Policy Guidelines for Use of Emergency Rules.* January 2007. http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

⁴ Miss. Code Ann. §25-43 (Administrative Procedures Law) <http://msdh.ms.gov/msdhsite/static/resources/1509.pdf>

⁵ Mississippi Secretary of State’s Office. *Administrative Bulletin* <http://www.sos.ms.gov/adminbulletinsearch/>

7.5.5 (a) Have contingency plans been agreed to in advance on the appropriate temporary management response to serious threats to the resource as a result of overfishing or adverse environmental changes or other phenomena adversely affecting the resource?

Yes...[1]Some...[1/2]No...[0]

Extent of compliance		
Yes	Some	No
<p>Based on MSA Section 600.310 (h)(2), penaeid shrimp in the Gulf of Mexico are exempt from requirements for Annual Catch Limits (ACLs) and Accountability measures (AMs) because they have a life cycle of approximately one year; however, they are still required to have SDC, MSY, OY, ABC, and an ABC control rule.¹</p> <p>The current actions defined in the event that stock should drop below limit reference points are established in Amendment 15 as follows:² “Annual stock assessments are conducted for the penaeid shrimp species in the Gulf. If MFMT is exceeded for two consecutive years, the appropriate committees and/or panels (e.g. stock assessment panels, advisory panels, SSCs) would convene to review changes in apparent stock size, changes in fishing effort, potential alterations in habitat or other environmental conditions, fishing mortality and other factors that may have contributed to the decline.”</p> <p>Additionally, the MSA Section 305 (c) allows for the promulgation of emergency actions. The Secretary of Commerce may promulgate an emergency regulation to respond to an emergency, overfishing, public health or oil spill event, or at the request of GMFMC.³ Such emergency regulations may remain in effect until the circumstance no longer existed, provided that there is an opportunity for public comment after the rule is published. Emergency regulations may address the following situations:</p> <ul style="list-style-type: none"> - Ecological: to prevent overfishing or other serious damage to the resource or habitat - Economic: to prevent a significant direct economic loss - Social: to prevent a significant community impact or conflict between user groups - Public Health: to prevent significant adverse health effects to fishery participants and/or consumers <p>In Mississippi, there are currently no specific predetermined actions for the shrimp fishery; however, the season closes annually and does not reopen until MDMR declares a season opening date based on biological thresholds. This allows added flexibility in controlling/restricting harvest. Additionally, MS Code §25-42-7 does provide for temporary emergency measures by granting authority to agencies (including MDMR) to adopt emergency rules in the event that there is an immediate threat to the public health, safety, or welfare.⁴ Emergency rules may be implemented without prior public hearing and such rulings become effective immediately upon filing. Emergency rulings have a maximum period of 120 days, which is renewable once for a 90 day period. The agency is required to take appropriate measures to inform persons affected and emergency rulings are published are published in the <i>Mississippi Administrative Bulletin</i>.⁵</p>		

¹ 50 C.F.R. § 600.310

http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

² GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

³ NMFS. *Policy Guidelines for Use of Emergency Rules.* January 2007. http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

⁴ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

⁵ Mississippi Secretary of State’s Office. *Administrative Bulletin* <http://www.sos.ms.gov/adminbulletinsearch/>

7.5.5 (b) Have these emergency (temporary) responses been agreed to due to:

(i) - natural phenomena adversely impacting the stock? **Yes...**[1] **In Part...**[¹/₂] **No...**[0]

Extent of compliance		
Yes	In Part	No
At both the state and federal level, responses to natural phenomena adversely impacting the stock would follow the same procedures and emergency actions detailed above in response to 7.5.5(a).		

7.5.5 (b)(ii) - fishing adversely impacting the stock? **Yes...**[1] **In Part...**[¹/₂] **No...**[0]

Extent of compliance		
Yes	In Part	No
At both the state and federal level, responses to fishing adversely impacting the stock would follow the same procedures and emergency actions detailed above in response to 7.5.5(a).		

7.6 Management measures

7.6.1 Is the level of fishing permitted commensurate with the current state of the fishery resources?

Yes...[1] **In Part...**[¹/₂] **No...**[0]

Extent of compliance		
Yes	In Part	No
	<p>Federal: The Gulf of Mexico shrimp fishery requires a Gulf of Mexico Shrimp Permit (GMSP) to operate in federal waters of the EEZ, and is currently under a 10-year permit moratorium. No new permits have been added to the fishery since 2005. Permits may be transferred; however, permits that are not renewed or transferred are terminated and will no longer be issued for the fishery. The permit moratorium was put in place by Amendment 13 based on economic goals for the fishery and Amendment 13 notes “that the fishery has remained above overfishing and overfished definitions since those definitions were established and current capacity is not a threat to the resource.”¹ Since the implementation of the moratorium,</p>	

license numbers have been reduced from 1933 permits in 2007 to 1470 permits in 2014.

Year	Number of Valid Permits Each Year	Number of Surrendered Permits Each Year	Number of Permits Terminated Each Year*	Cumulative Number of Permits Lost from the Fishery
2007	1,933	0	NA	NA
2008	1,907	0	26	26
2009	1,722	1	184	211
2010	1,633	1	88	300
2011	1,582	0	51	351
2012	1,534	0	48	399
2013	1,501	0	33	432
2014	1,470	0	31	463

Source: NMFS Southeast Regional Office (SERO) Permits Database

The 10-year moratorium put in place by Amendment 13 expires in December of 2016 and the GMFMC recently approved Amendment 17A, which will extend the moratorium for another 10 years. GMFMC is currently working on Amendment 17B to determine the optimal number of permits for the fishery. Amendment 17A and the draft Amendment 17B both provide updated analyses of the shrimp fleet.^{2,3} indicate that the current number of permits in the fishery is not capable of overfishing any stocks.² This is consistent with previous analyses in 2006 and 2008 indicating that effort has been operating well below MSY for several years.^{4,5}

Mississippi:

MMDR currently does not limit the number of licenses available for the commercial shrimp fishery. A Shrimp/Captain License is required to harvest shrimp in Mississippi waters, and MMDR monitors the number of licenses operating in the fishery and the type of gear used.⁶ Landings and effort data are also reported monthly through the Trip Ticket Program.⁷ MMDR annually reviews stocks, primarily based on landings, Trip Ticket data, and independent monitoring data to determine trends in the fishery.

¹ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%200805.pdf>

² GMFMC. *Amendment 17A to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. March 2005. <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20Amendment%2017A.pdf>

³ GMFMC. *Draft options paper for Amendment 17B of Gulf of Mexico Shrimp Fishery Management Plan*. March 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-04-2016/D%20-%207%20Shrimp%2017b-%200Y%20and%20Permit%20Pool%20032516.pdf

⁴ GMFMC Ad Hoc Shrimp Effort Working Group. "Estimation of Effort, Maximum Sustainable Yield, and Maximum Economic Yield in the Shrimp Fishery of the Gulf of Mexico" 2006. http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL_AdHocEffortReport_1.pdf

⁵ Nance, James, Walter Keithly, Jr., Charles Caillouet, Jr., John Cole, Wilson Gaidry, Benny Gallaway, Wade Griffin, Rick Hart, and Mike Travis. 2008. *Estimation of effort, maximum sustainable yield, and maximum economic yield in the shrimp fishery of the Gulf of Mexico*. NOAA Technical Memorandum NMFS-SEFSC 570. http://docs.lib.noaa.gov/noaa_documents/NMFS/SEFSC/TM_NMFS_SEFSC/NMFS_SEFSC_TM_570.pdf

⁶ GSMFC. Mississippi state report. February 2015. Unpublished.

⁷ "Trip Ticket Program" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

7.6.2 Are fishing vessels allowed to operate on the resource in question without specific authorization? **Yes...**[0] **No...**[1]

Extent of compliance		
No	some	no
<p>Federal: GMFMC requires all vessels intending to harvest shrimp in EEZ waters to be in possession of the appropriate permit. No new permits will be issued, as a permit moratorium is currently in effect.¹ The U.S. Code of Federal Regulations prohibits any person without a permit, license, or endorsement from engaging in an activity which requires a valid Federal permit, license, or endorsement.²</p> <p>Mississippi: As required by MDMR, any vessel fishing commercially for shrimp in Mississippi territorial waters must hold a proper license to catch and sell shrimp. MDMR also requires a recreational license be obtained by harvesters for bait or personal consumption. License information and fees are posted on the MDMR website.³</p>		

¹ GMFMC. *Commercial Fishing Regulations for Gulf of Mexico Federal Waters*. January 2015. http://gulfcouncil.org/fishing_regulations/CommercialRegulations.pdf

² 50 C.F.R. § 622.13 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_113

³ "Licenses" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/licenses>

7.6.3 (a) Have attempts been made to measure fleet capacity operating in the fishery? **Yes...** [1] **Some...** [½] **No...** [0]

Extent of compliance		
Yes	Some	No
<p>Federal: Kirkely et al. (2006) includes an analysis of the Gulf of Mexico shrimp fishery to determine the level of overcapacity and costs associated with reducing overcapacity within the fleet.¹ This analysis utilized the average annual yield of shrimp between 1981 and 2001 (101.6 million pounds) as an equivalent to MSY, and used this as the target level in determining the overcapacity of the fishery. The fishery was broken down into subgroups; capacity was determined for each division and then extrapolated to estimate total fleet level activity.</p> <p>Amendment 13 of the Gulf of Mexico Shrimp FMP established a 10-year moratorium on the issuance of commercial shrimp vessel permits capping the number of vessels in the federal fishery.² Amendment 13 notes that the fishery has</p>		

remained above overfishing and overfished definitions since those definitions were established and current capacity is not a threat to the resource; however, economically the fishery has been operating at a negative profit margin, and a fewer number of vessels in the fishery would allow more profitable harvest of available shrimp resources. The 10-year moratorium put in place by Amendment 13 expires in December of 2016. The GMFMC recently adopted Amendment 17A extending the moratorium for an additional 10 years.³ GMFMC and NOAA Fisheries are currently working to assess the capacity of the fishery and determine the appropriate number of permits through Amendments 17B.⁴ For additional details, refer to 7.1.8(a).

Mississippi:

Fleet capacity for the Mississippi shrimp fishery can be measured by the number of active fishing licenses. Mississippi currently requires one of the following licenses (for either residential or non-residential) if harvesting shrimp in state waters:⁵

- Shrimp / Captain Under 30' Boat
- Shrimp / Captain 30' to 45' Boat
- Shrimp / Captain Over 45' Boat
- Recreational
- Live-bait Shrimp Boat

MDFMR monitors the number of licenses and gear type used. The Trip Ticket Program was implemented to allow for greater detail in measuring effort and harvest data.^{6,7} The Trip Ticket Program collects data on a trip basis requiring reporting of vessel number, gear type, hours fished and harvest data.

Of the 290 resident commercial licenses in the fishery, 108 are boats smaller than 30 feet, 86 are between 30 and 45 feet, and 96 are over 45 feet.⁸

¹James E. Kirkley, John M. Ward, James Nance, Frank Patella, Karyl Brewster-Geisz, Chris Rogers, Eric Thunberg, John Walden, Will Daspit, Brad Stenberg, Steve Freese, Jim Hastie, Stephen Holiman, and, Mike Travis, 2006. *Reducing Capacity in U.S. Fisheries*. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

²GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³GMFMC. *Amendment 17A to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. March 2005. <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20Amendment%2017A.pdf>

⁴GMFMC. *Draft options for Amendment 17B of Gulf of Mexico Shrimp Fishery Management Plan*. September 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-10-2015/D-%205%20Shrimp%2017b-%200Y%20and%20Permit%20Pool.pdf

⁵"Licenses" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/licenses>

⁶Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

⁷ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

⁸ MDMR. Unpublished data. August 2015.

7.6.3 (b) Have mechanisms been established where excess capacity exists to reduce capacity to levels commensurate with sustainable use of the resource? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Federal:</p> <p>Amendment 13 of the Gulf of Mexico Shrimp FMP established a 10-year moratorium on the issuance of commercial shrimp vessel permits capping the number of vessels in the federal fishery.¹ Amendment 13 notes that the fishery has remained above overfishing and overfished definitions since those definitions were established and current capacity is not a threat to the resource; however, economically the fishery has been operating at a negative profit margin, and a fewer number of vessels in the fishery would allow more profitable harvest of available shrimp resources.</p> <p>Amendment 13 also notes that, due to competition with foreign imports and rising fuel costs, the number of vessels in the fleet has declined and was expected to continue to decline until approximately 2012 when the number of participants reached a more profitable level. Since the implementation of the moratorium, license numbers have been reduced from 1933 permits in 2007 to 1470 permits in 2014 and are continuing to decline.² The 10-year moratorium put in place by Amendment 13 expires in December of 2016. The GMFMC recently adopted Amendment 17A to extend the moratorium for an additional ten years.³ Amendment 17B is currently under development to determine the optimal number of permits for the fishery.⁴</p> <p>GMFMC has determined limit reference points for the fishery and defined actions to be taken if limit reference points are exceeded. The current actions defined in the event that stock should drop below limit reference points are:⁵</p> <p>“If the parent stock levels are reduced below the specified index level for a species, NOAA Fisheries will advise the GMFMC and closely monitor the stock. Scientists will forecast recruitment for the coming year-class and determine the amount of fishing effort that will allow the parent stock to exceed the minimum index value. Scientists will also project the expected fishing effort to be expended on that year-class and its effect on the parent stock. The differences between the amount of fishing effort required to increase the parent stock and the expected fishing effort will be compared to see if further action is necessary. If the parent stock for the species is predicted to remain below the index for a second consecutive year, GMFMC will implement any of the following actions deemed appropriate:</p> <ul style="list-style-type: none"> - If fishing effort needs to be reduced, there are multiple options such as reducing fishing effort at the start of the season, reducing fishing effort at the end of the season, or some combination of both, area and seasonal closures, trip limits, or quotas. This action would be accomplished by regulatory amendment and would include a regulatory impact review and environmental assessment.” 		

<p>Mississippi: There is currently no limit on the fishing capacity for the shrimp fishery in Mississippi waters. Licenses are required for commercial, recreational and live-bait shrimping in Mississippi waters and MDMR monitors license numbers annually.⁶ MCMR does have the authority to establish limited-entry for a fishery under MS Code §49-15-16, if it should be determined that a limited-entry system is necessary.⁷ Poor economic conditions of the fishery over the last decade have continued to reduce the number of participants in the fishery and is expected to continue to decline. MDMR monitors these trends and has the authority to act if there are indications that this trend will reverse.</p>		
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¹ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² GMFMC. *Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan.* August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

³ GMFMC. *Amendment 17A to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* March 2005. <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20Amendment%2017A.pdf>

⁴ GMFMC. *Draft options for Amendment 17B of Gulf of Mexico Shrimp Fishery Management Plan.* September 2015. http://gulfcouncil.org/council_meetings/BriefingMaterials/BB-10-2015/D-%205%20Shrimp%2017b-%200Y%20and%20Permit%20Pool.pdf

⁵ GMFMC *Amendment 5 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* January 1991. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁴ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14.* <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁵ Miss. Code Ann. § 49-15-16 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-16>

7.6.5 Has the fishery been regulated in such a manner that conflict among fishers using different vessels, gear and fishing methods are minimized? **Yes... [1] Some... [1/2] No... [0]**

Extent of compliance		
Yes	Some	No
<p>The original shrimp FMP implemented in 1981 identified several areas of user conflicts both with direct use of shrimp resources and with other marine resource users.¹ Direct users include recreational, live-bait, and commercial harvesters and both inshore and offshore fleets.</p> <p>1) Conflicts have arisen between direct users over preferred size of harvest. Some users prefer smaller shrimp typically harvested inshore, especially for the live-bait industry; however, offshore vessels harvest larger shrimp for food consumption. Most states have developed seasons for harvest of shrimp designed to accommodate multiple user needs. Additionally, area</p>		

and seasonal closures (Texas closure and Tortugas closure) have also been set for federal waters to allow for protection of smaller shrimp in some areas until they reach a larger size. In Mississippi, the inshore shrimp season for commercial and recreational harvest is based on shrimp size. MDMR sampling each year determines when shrimp have reached legal size (68 count per pound) and opens the season by public notice once the majority of shrimp are at legal size.² Live-bait shrimping; however, is allowed year-round under strict harvest regulations and minimum size requirements is 100 count per pound.³ Other states have similar regulations for various direct user groups and conflicts have largely been minimized.

- 2) Other direct user conflicts have occurred between ethnic groups within the commercial shrimp fishery. A large influx of Vietnamese fishermen in to 1970s caused conflicts with local fishermen; however, programs developed by state agencies and others including translation of regulations materials into Vietnamese, and education and training programs have help reduce these conflicts.⁴

Conflicts with other fisheries and user groups have also been identified.

- 1) High incidental catch of finfish and shellfish has created conflicts between shrimps and other fisheries that may utilize species discarded by the shrimp fishery. Juvenile groundfish and other species are typically not retained by shrimpers because there is low economic value for them and retaining them would reduce available space for retaining shrimp catch. Regulations developed to reduce bycatch including required BRDs have significantly decreased bycatch of finfish within the shrimp fishery and additional actions, including effort reductions and seasonal closures (if needed) have also helped in reducing bycatch.^{5,6}
- 2) Incidental take of sea turtles has created significant conflicts between commercial shrimpers and environmental groups. Requirements for Turtle Excluder Devices (TEDs), and guidelines on proper handling, resuscitation and release of sea turtles have significantly reduced sea turtle mortality in the Gulf of Mexico shrimp fishery.^{7,8,9} Additionally, the shrimp industry, federal and state agencies have also been active in other conservation efforts to aid the recovery of sea turtle populations including head-start programs to raise hatchling sea turtles in captivity for later release, nest protection programs in Florida, Texas and Mexico, and education programs to raise awareness among user groups regarding sea turtle conservation actions.^{10,11}
- 3) Gear conflicts between shrimpers and stone crab fishermen. The GMFMC shrimp FMP directly addresses conflicts between the shrimp and stone crab fisheries and established five zones within the EEZ to separate shrimp trawling and stone crab trap activity.¹²
- 4) Gear conflicts also occur in state waters between shrimpers and blue crab fishermen. Each of the five Gulf states, including Mississippi, has established trap identification and visibility requirements, restrictions on harvest hours, seasonal and area closures and derelict trap removal programs that all serve to reduce interactions between shrimp traps and crab traps.^{13,14,15}

<p>5) Underwater obstructions that cause loss of gear or trawlable bottom areas in the Gulf include artificial reefs, and oil and gas activities/structures, among others. Measure 10 of the shrimp FMP adopted by the council is “The GMFMC will attempt to reduce, where feasible, the loss of offshore trawlable bottom by establishing within GMFMC a committee to monitor and review construction of offshore reefs, with attention to the needs of reef fish, and shrimp user groups.” Furthermore, the Texas Sea Grant program developed “hang” books as a guide for shrimp vessels in the Gulf of Mexico documenting bottom obstructions and areas to avoid trawling due to potential interactions.^{16,17,18} Additionally, there are federal laws in place that provide for compensation to fishermen to cover damage to gear and vessels from underwater obstructions.</p>	
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¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

³ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.

<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁴ [GMFMC, 1981](#).

⁵ 50 C.F.R. § 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_156

⁶ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

⁷ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁸ 50 C.F.R. § 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_156

⁹ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

¹⁰ “Sea Turtles” *NOAA Fisheries Galveston Lab*. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/seaturtles/index.html>

¹¹ Marty Bourgeois, Lisa Landry, Julia Lightner, Jeff Marx and Katie Semon. *Louisiana Shrimp Fishery Management Plan*. LDWF, Office of Fisheries, updated July 27, 2015. Pages 47. <http://www.wlf.louisiana.gov/sites/default/files/pdf/page/37762-fishery-management-plans-marine/shrimpfpmp7-27-15.pdf>

¹² GMFMC. *Amendment 3 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹³ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCCode/00000063c.pdf>

¹⁴ Miss. Admin. Code Title 22 Part 2 <http://www.dmr.state.ms.us/images/regulations/Title-22-Part-02-120114.pdf>

¹⁵ Derelict Trap Task Force. 2008. Guidelines for Developing Derelict Trap Removal Programs in the Gulf of Mexico. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20154.pdf>

¹⁶ [GMFMC, 1981.](#)

¹⁷ Gary Graham, David Veal, and Bill Hosking. "Hangs" and Bottom Obstructions of the Mississippi/Alabama Gulf. TAMU-SG-83-505. Texas Sea Grant, 1983 <http://texaseagrant.org/assets/uploads/publications/1983/83-505.pdf>

¹⁸ Gary Graham. *Bottom Fishing Obstructions: Texas/Louisiana Gulf*. TAMU-SG-76-502. Texas Sea Grant. 1975. <http://texaseagrant.org/assets/uploads/publications/1976/76-502.pdf>

7.6.6 In the course of deciding on use, conservation and management of the resource, were relevant national laws and regulations relating to the traditional practices needs and interests of indigenous people and local fishing communities highly dependent on these resources for their livelihood taken into account? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>There are no indigenous groups identified in Mississippi that rely on or utilize fishery resources in traditional practices; however, several coastal communities in Mississippi have been identified as fishing communities.¹ NOAA Fisheries and MDMR addresses the needs of these communities through industry engagement activities including industry task forces, scoping meetings and public hearings and accepts public comment in person at meetings and in writing via mail or email.^{2,3,4,5,6,7,8}</p> <p>The draft proposal for GMFMC Amendment 17 contains updated analysis of fishing communities across the Gulf, community dependence on Gulf shrimp and community resilience.⁹</p>		

¹Assessment, Impact. Inc., 2006. Identifying communities associated with the fishing industry in Alabama and Mississippi. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>

² Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

³ "Meetings" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

⁴ "Recent News" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

⁵ "Public Notices" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

⁶ “Shrimp and Crab Bureau” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

⁷ GMFMC, 2012. *Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures*. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

⁸ “Meetings” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/council_meetings/index.php

⁹ GMFMC. *Draft options paper for Amendment 17 of Gulf of Mexico Shrimp Fishery Management Plan*. August 2015. http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

7.6.7 Have the cost-effectiveness and social impact been considered in the evaluation of alternative conservation and management measures? **Yes... [1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>Federal:</u> The MSA National Standards require consideration of cost-effectiveness and social impact when determining conservation and management measures. See response to 7.2.1(b) for full details.</p> <p><u>Mississippi:</u> MDMR holds consults directly with industry members, and holds scoping meetings, public hearings and public comment periods for each new regulation change/addition, which allow MDMR staff to explore the economic and social impacts of various management strategies prior to setting regulations.^{1,2,3,4,5} Additionally, MS Code §25- 43-3.105 and §25-43-6 require MDMR to consider the potential economic impact when setting rules or making amendments to existing rules.⁶ Any proposed regulations that may exceed \$100,000 in total aggregate cost to all persons required to comply must have a written economic impact statement prepared by the agency, which must include, at minimum, a determination of the need for the regulations, benefits to accrue from the regulation, costs to the agency and other state and local agencies involved, an explanation of the costs and benefits to persons directly affected, alternate options and why they were rejected, cost of not adopting the regulation, and a statement on the data and methods used to determine these factors.</p>		

¹ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meeting%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meeting%20Act.htm?OpenElement)

² “Meetings” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commission-meetings>

³ “Recent News” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

⁴ “Public Notices” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

⁵ "Shrimp and Crab Bureau" *Mississippi Department of Marine Resources*. Web. Accessed November 2015.
<http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

⁶ Miss. Code Ann. §25-43 (Administrative Procedures Law)
<http://msdh.ms.gov/msdhsite/ static/resources/1509.pdf>

7.6.8 Are procedures in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review to revise or abolish them in the light of new information?

(i) - Have review procedures been established? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p><u>Federal:</u> The Gulf of Mexico Fishery Management Council (GMFMC) develops Fishery Management Plans (FMPs) for specific fisheries in the Gulf's Exclusive Economic Zone (EEZ). GSFMC proposed management measures become federal regulations through the implementation of these rules by the Secretary of Commerce. The regulations and FMPs are reviewed annually and updated/modified after public review to accommodate changing conditions and needs of the industry or fishery.¹ GMFMC and the National Marine Fisheries Service (NMFS) also use the electronic logbook (ELB) program to assess the status of shrimp stocks in the Gulf of Mexico.² The ELB program provides data on Gulf shrimping efforts that allows both GMFMC and NMFS to review current regulations and determine the impact of proposed management measures.³ NMFS follows set procedures for regulation revision. The Assistant Administrator for Fisheries (AA) is responsible for considering petitions to amend and reviewing existing regulations for possible revision or revocation. Existing rules chosen for review include (but are not limited to) those regulations:</p> <ul style="list-style-type: none"> • For which there is no relevant need • Which have received significant complaints or suggestions • Which carry heavy burdens on those affected • Which need clarification • Which are duplicated • Which have not been evaluated in three or more years <p>A review notice is included in the Regulatory Agenda. The Regulatory Flexibility Act requires an examination of what impacts the rule change may have on a substantial number of small entities (businesses, organizations, governmental jurisdictions).⁴</p> <p><u>Mississippi:</u> Mississippi Department of Marine Resources (MDMR) conducts an annual review of stocks for all fisheries under management. Landings and effort data from the Trip Ticket Program, independent sampling data and other relevant fishery data are reviewed to establish status and trends of stocks and management measures are proposed, if necessary, based on available data.⁵ The Mississippi Administrative Procedures Law defines the rulemaking process, and requires the following actions prior to adoption of regulations:⁶</p>		

<ul style="list-style-type: none"> - notification of intent - public hearing - 25-day comment period <p>MDMR rules and regulations are promulgated through the Mississippi Administrative Code, Title 22.⁷</p> <p>MS Admin. Code §25-43-3.114 requires state agencies, including MDMR, to review all rules and regulations to determine whether any rule should be repealed, amended or replaced by a new rule.⁸</p> <p>The Shrimp and Crab Bureau is one of five bureaus within MDMR. This particular bureau is tasked with managing the state’s commercial and recreational shrimp industry, which includes ongoing monitoring and assessment of the shrimp fishery.⁹</p>		
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¹ “Fishery Management Plans and Amendments” Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/index.php

² “SPGM Electronic Log Book” NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

³ GMFMC. *Framework Action to Establish Funding Responsibilities for the Electronic Logbook Program in the Shrimp Fishery of the Gulf of Mexico*. 2013. <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20ELB%20Abbreviated%20Framework.pdf>

⁴ NMFS. *Operational Guidelines, Fishery Management Plan Process*. Silver Springs, MD, 1997. http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm#existing

⁵ Personal Communication. MDMR staff. May 2014.

⁶ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

⁷ Miss. Admin. Code, Title 22 <http://www.sos.ms.gov/Admincodesearch/>

⁸ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

⁹ “Shrimp and Crab Bureau” Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

7.6.8 (ii) - Does a flexible mechanism for revision of management measures exist?
Yes... [1] Some... [½] No... [0]

Extent of compliance		
Yes	some	no
<p>Federal: Similar to the above answer, regulations and FMPs created and proposed by GMFMC are reviewed annually and updated/modified after public review to accommodate changing conditions and needs.¹ Amendments may be made to original FMPs. In order for an amendment to be implemented, it must go through a scoping process, where GMFMC gathers suggestions and ideas for all stakeholders. Public hearings are held to gain feedback on potential impacts and alternative</p>		

strategies. Once these two actions have been completed, GMFMC must take final action by choosing an appropriate management measure by creating a rule that is necessary and appropriate for the implementation of the amendment. Once approved by the Secretary of Commerce, the rule is published in the Federal Register.

On a national level, the National Marine Fisheries Service (NMFS) is tasked with examining the impacts of proposed rules on small entities, guiding the promulgation of new rules, and reviewing the need for existing rules.² This process of revision is open to the public, allowing anyone to petition NMFS (pursuant to 5 U.S.C. 553(e)) to issue, amend or repeal a rule.³

Through these processes, both GMFMC and NMFS allow for flexibility within the management of the Gulf shrimp industry.

Mississippi:

Mississippi Department of Marine Resources (MDMR) rules and regulations are promulgated through the Administrative Procedures Law (MS Code §25-43). The Mississippi Administrative Procedures Act was designed to perform multiple actions that include increasing public participation and access to the development of administrative rules, allowing for measures of flexibility within the administrative process. It defines the rulemaking process, and requires notification of intent, a public hearing (if requested), publishing in the *Mississippi Administrative Bulletin*, and a 25-day comment period before the proposed regulation may be officially adopted.⁴ MS Admin. Code, Title 22, Part 15 also contains additional rule-making requirements specific to MDMR, which include a required 20-day notice period prior to any meeting pertaining to rule-making.⁵

¹ "Fishery Management Plans and Amendments" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/index.php

² NMFS. *Operational Guidelines, Fishery Management Plan Process*. Silver Springs, MD, 1997. http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm#existing

³ NMFS. *Operational Guidelines, Fishery Management Plan Process*. Silver Springs, MD, 1997. http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm#existing

⁴ Miss. Code Ann. §25-43 (Administrative Procedures Law) <http://msdh.ms.gov/msdhsite/static/resources/1509.pdf>

⁵ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

7.6.9 (a) Are appropriate measures being applied to minimize:

(i) - waste and discards? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
	<p>Initial bycatch ratio estimates for the Gulf of Mexico shrimp fishery from 1970s were approximately 10:1 (bycatch to shrimp), with some estimates based on season and area as high as 13.7:1.¹ Since that time, the implementation of turtle excluder devices (TEDs), bycatch reduction devices (BRDs) and significant reductions in shrimp effort have all contributed to considerable reduction in the bycatch of this fishery. Estimates in 2009 concluded that bycatch ratios had remained consistent at approximately 4:1 since 2000, and the 2012 report by Scott-Denton et al, utilizing observer data, determined that total bycatch to shrimp ratios dropped to 2.5:1 (2:1 for finfish to shrimp).^{2,3} Currently, observer data is the only long-term data set documenting bycatch of the fishery and observer coverage is limited (1-2% coverage in the federal fleet and a small number of observers on inshore skimmer vessels).</p> <p>Federal: Several regulations have been designed to minimize waste and discards in the shrimp fishery. According to the U.S. Code of Federal Regulations, shrimp trawl vessels must have a certified bycatch reduction device (BRD) installed on each net for fishing on their vessel.⁴ to be certified by the NOAA Harvesting Systems Unit, a BRD must reduce finfish bycatch by at least 30% by weight.⁵ NOAA Harvesting Systems Unit continues to research and certify new BRDs designs in an effort to continually improve bycatch reduction in the shrimp trawl fishery.⁶ Furthermore, Amendment of the shrimp FMP also established a series of seasonal/area closures that can be implemented if an annual assessment of red snapper bycatch indicates that bycatch in the shrimp trawl fishery has exceeded its target limit.⁷</p> <p>Turtle exclusion devices (TEDs) are also required on all otter trawls and in skimmer trawls (exemption is allowed if maximum tow times are adhered to) to reduce the bycatch of sea turtles.⁸ Research shows that TEDs also allow the escape of larger finfish species, such as sharks.⁹</p> <p>Vessels harvesting shrimp within Gulf Exclusive Economic Zone (EEZ) by trawl may not exceed the recreational reef bag limits. Reef fish may not be sold when taken under a recreational permit/bag limit.¹⁰</p> <p>Bycatch data from the observer program between 2007 and 2010 indicated that 185 species were observed as incidental catch in the shrimp trawl fishery.¹¹ Analysis of these data found that the dominant species were Atlantic croaker, sea trout, and longspine porgy (approximately 26% of total catch weight). Other species identified were inshore lizardfish, mantis shrimp, portunid crabs, searobins and Gulf butterfish. An assessment of the dominant bycatch species by Raborn et al. (2014) found that shrimp trawl activities did not pose a serious threat to the populations of any of the species analyzed.¹²</p>	

	<p>Mississippi: Licensed shrimp trawlers in Mississippi may retain up to 25 pounds in total weight of white trout, croaker, black drum, ground mullet, gafftopsail catfish and flounder and three dozen blue crabs for personal consumption.¹³ Fish caught coincidental to a live-bait shrimping operation may be retained and sold for chum as long as fish are of legal commercial size. These regulations were designed to reduce discards. Mississippi does not require BRDs in state waters; however, many fishermen use them voluntarily in certain seasons/areas to reduce incidental catch. Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted (brown or white).¹⁴ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is “no pressing need” to make BRD use mandatory.</p>	
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¹ GMFMC. *Amendment 9 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 1997. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

² Frank Helies and Judy Jamison (2009) “Reduction Rate, Species Composition, and Effort: Assessing Bycatch Within the Gulf of Mexico Shrimp Trawl Fishery.” NOAA/NMFS Cooperative Agreement Number NA07NMF4330125 (#101) http://www.gulfsouthfoundation.org/uploads/reports/101_final4.pdf

³ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁴ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

⁵ GMFMC. *Amendment 10 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

⁶ “Harvesting Systems Unit: Gear Development” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/fishinggear.htm>

⁷ GMFMC. *Amendment 14 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

⁸ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁹ Scott Raborn, Benny Gallaway, John Cole, William Gazey and Kate Andrews “Effects of Turtle Excluder Devices (TEDs) on the Bycatch of Three Small Coastal Sharks in the Gulf of Mexico Penaeid Shrimp Fishery” 2012. *North American Journal of Fisheries Management* 32:333-345 <http://www.tandfonline.com/doi/abs/10.1080/02755947.2012.678962#preview>

¹⁰ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

¹¹ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27.
<http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

¹² Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Penaeid Shrimp Fishery Bycatch*. LGL Ecological Research Associates, Inc. August 2014.
<https://drive.google.com/file/d/0B-yvNu3oJn4ZRmF1NEVWNnBMZzQ/view?pli=1>

¹³ MDMR. *Guide to Mississippi Saltwater Fishing Rule and Regulations 2015-16*. June 2015.
<http://dmr.ms.gov/images/publications/2015-16%20Rules%20%20Regs%20combined%20for%20website.pdf>

¹⁴ David Burrage “Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery.” 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

7.6.9 (a)(ii) - catch of non-target species (both fish and non-fish species)?
Yes... [1] Some... [½] No... [0]

Extent of compliance		
Yes	Some	No
	<p>Several regulations have been designed to minimize catch of non-target species in the shrimp fishery.</p> <p>Federal: According to the U.S. Code of Federal Regulations, shrimp trawl vessels must have a certified bycatch reduction device (BRD) installed on each net for fishing on their vessel.¹ to be certified by the NOAA Harvesting Systems Unit, a BRD must reduce finfish bycatch by at least 30% by weight.² NOAA Harvesting Systems Unit continues to research and certify new BRDs designs in an effort to continually improve bycatch reduction in the shrimp trawl fishery.³ Furthermore, Amendment of the shrimp FMP also established a series of seasonal/area closures that can be implemented if an annual assessment of red snapper bycatch indicates that bycatch in the shrimp trawl fishery has exceeded its target limit.⁴</p> <p>Turtle exclusion devices (TEDs) are also required on all otter trawls and in skimmer trawls (exemption is allowed if maximum tow times are adhered to) to reduce the bycatch of sea turtles.⁵ See below response to 7.6.9(a)(iii) for full details on TED use, effectiveness and compliance.</p> <p>Bycatch data from the observer program between 2007 and 2010 indicated that 185 species were observed as incidental catch in the shrimp trawl fishery.⁶ Analysis of these data found that the dominant species were Atlantic croaker, sea trout, and longspine porgy (approximately 26% of total catch weight). Other species identified were inshore lizardfish, mantis shrimp, portunid crabs, searobins and Gulf butterfish.</p>	

An assessment of the dominant bycatch species by Raborn et al. (2014) found that shrimp trawl activities did not pose a serious threat to the populations of any of the species analyzed.⁷

Red snapper (*Lutjanus campechanus*)

Red Snapper bycatch has also been a significant concern in the Gulf of Mexico shrimp fishery. The Red Snapper fishery in the Gulf of Mexico is considered overfished and is in a rebuilding plan.⁸ This rebuilding plan includes a significant reduction in juvenile red snapper bycatch in the GOM shrimp Fishery. Amendment 9 of the shrimp FMP deals directly with the reduction of red snapper bycatch.⁹ The goal of Amendment 9 was to reduce bycatch of juvenile red snapper in age 0 and age 1 groups by 50%, which was the amount determined by NOAA Fisheries as necessary for the rebuilding plan. Amendment 9 required the use of BRDs in shrimp trawls west of Cape San Blas, FL in the U.S. EEZ. East of Cape San Blas was exempt at the time due to low abundance of red snapper in this area, and state waters were not considered a factor because it was determined that juvenile red snapper typically occur beyond depths of 5 fathoms, and mainly occurred beyond 10 fathoms (80-83% occurrence below 10 fathoms).¹⁰ BRD devices are certified by NOAA Fisheries and BRDs are required in all shrimp trawls except royal red trawls and try nets (nets smaller than 12 ft).^{11,12} The implementation of BRD regulations in 1998, and the requirement of TEDs, which also allow for the release of some finfish bycatch, along with the closure seasons/areas in place, and reduction in shrimp effort since the 1990s have all contributed to significant reductions in juvenile red snapper bycatch. In 2007, Amendment 14 (effective in 2008) established a new red snapper bycatch reduction target for the shrimp fishery and designated seasonal closure restrictions that could be used to manage shrimp fishing effort in relation to the target bycatch reduction goal.¹³ The seasonal closure area were designated within the statistical zones 10-21 between 10-30 fathoms and designed to start in conjunction with the annual Texas Closure, if needed. The need for the closure, and its duration and extent is determined annually by an SEFSC assessment of the previous year's shrimp effort within the designated zone, and associated red snapper mortality. If it is determined that a seasonal closure is necessary, then the Regional Administrator will set the closed season area and duration as necessary to meet the bycatch reduction target. Bycatch reduction target for juvenile red snapper in the shrimp fishery have been met and exceeded through use of BRDs and significant reductions in shrimp effort.¹⁴

Some stakeholders have also raised concern over other commercially and recreationally important species, such as blacknose shark (*Carcharhinus acronotus*). In 2007, NOAA Fisheries determined that blacknose shark was overfished and experiencing overfishing, and bycatch and associated mortality from the shrimp trawl fishery was considered a factor in the decline of the species.¹⁵ Since this time, the blacknose shark population has been divided into two separate populations- an Atlantic population and a Gulf of Mexico population.¹⁶ The Atlantic population remains listed as overfished and overfishing; however, the GOM stock is currently considered unknown based on the 2011 NOAA Fisheries stock assessment.¹⁷ Raborn et al. (2012) determine that implementation of TEDs was effective in mitigating bycatch of blacknose sharks in the gulf of Mexico shrimp fishery since sharks are also capable of escaping trawls through TEDs.¹⁸

	<p><u>Mississippi:</u> Mississippi does not require BRDs in state waters; however, many fishermen use them voluntarily in certain seasons/areas to reduce incidental catch. Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted (brown or white).¹⁹ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is “no pressing need” to make BRD use mandatory. MDMR’s Fishery-Independent Sampling Program, in collaboration with GCRL, monitors trends in associated species as well as target species through monthly sampling surveys.²⁰</p>	
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¹ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

² GMFMC. *Amendment 10 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

³ “Harvesting Systems Unit: Gear Development” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/fishinggear.htm>

⁴ GMFMC. *Amendment 14 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

⁵ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁶ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁷ Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Penaeid Shrimp Fishery Bycatch.* LGL Ecological Research Associates, Inc. August 2014. <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMZzQ/view?pli=1>

⁸ “Red Snapper” *Fishwatch.* Web. Accessed June 2015. http://www.fishwatch.gov/seafood_profiles/species/snapper/species_pages/red_snapper.htm

⁹ GMFMC. *Amendment 9 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 1997. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

¹⁰ Nichols, Scott. *The spatial and temporal distribution of the bycatch of red snapper by the shrimp fishery in the offshore waters of the US Gulf of Mexico.* Pascagoula, Mississippi: National Marine Fisheries Service, Mississippi Laboratories, 1990.

¹¹ "BRD Designs" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015.
<http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

¹² 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

¹³ GMFMC. *Amendment 14 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

¹⁴ Gallaway, Benny "Managing Shrimp Trawl Bycatch in the Gulf of Mexico" Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

¹⁵ SEDAR 13. "Stock Assessment Report- Small Coastal Shark Complex, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark" Southeast Data, Assessment, and Review. 2007. http://www.nmfs.noaa.gov/sfa/hms/species/sharks/documents/shark_stock_assessment_report_11-14-07.pdf

¹⁶ SEDAR 21. "HMS Gulf of Mexico Blacknose Shark Stock Assessment Summary report" Southeast Data, Assessment, and Review. 2011. http://www.nmfs.noaa.gov/sfa/hms/species/sharks/documents/gulf_of_mexico_blacknose_shark_assessment_summary_final.pdf

¹⁷ NOAA Fisheries. *Status of Stocks 2014, Annual Report to Congress on the status of U.S. Fisheries.* http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/2014_status_of_stocks_final_web.pdf

¹⁸ Scott Raborn, Benny Gallaway, John Cole, William Gazey and Kate Andrews "Effects of Turtle Excluder Devices (TEDs) on the Bycatch of Three Small Coastal Sharks in the Gulf of Mexico Penaeid Shrimp Fishery" 2012. *North American Journal of Fisheries Management* 32:333-345 <http://www.tandfonline.com/doi/abs/10.1080/02755947.2012.678962#preview>

¹⁹ David Burrage "Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery." 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

²⁰ VanderKooy, S. (ed). 2013. *GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report.* Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

7.6.9 (a)(iii) - impacts on associated, dependent or endangered species?
Yes...[1]Some... [½]No...[0]

Extent of compliance		
Yes	Some	No
	<p>Endangered Species Bycatch: One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the ESA, which includes five species of sea turtles, smalltooth sawfish, and Gulf sturgeon.¹ As required under the rigorous requirements of the ESA, each species has a recovery plan and designation of critical habitat. NOAA Office of Protected Resources provides detailed information on each species on their website, with each species site</p>	

containing details on species status, description, habitat, distribution, population trends, threats, regulatory history and conservation efforts.²

Sea Turtle Bycatch:

Five species of sea turtles are known to inhabit areas with shrimp trawls in the Gulf of Mexico: Hawksbill (*Eretmochelys imbricate*), Kemp's ridley (*Lepidochelys kempii*), Leatherback (*Dermochelys coriacea*), Green (*Chelonia mydas*), and Loggerhead (*Caretta caretta*). Of the five species, the Kemp's ridleys are of most concern in the Gulf of Mexico due to their limited range, which is primarily within the Gulf. The other four species of sea turtles are found worldwide. Sea turtles do not typically nest along the Louisiana coast and primarily utilize Louisiana waters for foraging.³

A National Research Council (NRC) report published in 1990 determined that shrimp trawl bycatch was one of the most significant sources of mortality causing declines in sea turtle populations.⁴ Research on TEDs began in the late 1970s, and in 1981 a voluntary program was initiated to encourage fishermen to utilize TEDs in shrimp trawls. Early TED designs were cumbersome and difficult to use and did not gain favor with most fishermen; therefore, TED use was low throughout the 1980s.⁵ Federal legislation was passed in 1987 and went into effect in 1989 requiring widespread use of TEDs in shrimp trawls and by 1990 most shrimp trawls were equipped with TEDs. In 1993 a modification was made to allow for increased escape of leatherback turtles and in 2003, and additional modification in regulations to require larger opening further increased escape rates for larger loggerheads and leatherbacks. The 2003 regulation change was expected to reduce mortality of loggerheads by 94% and leatherbacks by 97%. Certified TED designs are required to meet a minimum efficiency threshold of 97% escapement of turtles within a five minute time period. TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011):⁶



Post-TED mortality estimates are about 94% lower, (4,450 total deaths) than pre-regulation estimates (70,620). Mandatory TED requirements are currently in place for otter trawls in the shrimp fishery in both state and federal waters (federal jurisdiction of protected species extends into state waters).

NOAA and USFWS are jointly responsible for sea turtle conservation under the ESA and are required to consult on all activities that may impact the recovery of each species. Through this consultation process, NOAA has produced several Biological Opinions pertaining to sea turtle conservation and continued

authorization of the Gulf of Mexico shrimp fishery. Each Biological Opinion produced by NOAA has authorized the continued operation of the shrimp fishery and includes an Incidental Take Statement. The 2012 Biological Opinion established requirements for enforcement and compliance with TED use in shrimp trawls and set a 'sea turtle capture rate standard' that limits the fishery to a 12 % sea turtle capture rate.⁷ The 2014 Biological Opinion maintains this standard (88% effectiveness) in the Incidental Take Statement as a procedure for determining if impacts of the action (continued operation of the shrimp trawl fishery) exceed the expected authorized take. If an Incidental Take Statement is exceeded, a new Biological Opinion is initiated. Compliance rates are actively monitored and a minimum 88% rate with TED use must be maintained otherwise NOAA Fisheries is required to take action, which could include closure of the fishery.⁸ NOAA Fisheries posts compliance data on their website and current data indicate that the Gulf of Mexico shrimp fleet (including Louisiana) is in compliance with TED requirements.⁹

The 2014 Biological Opinion notes in the Incidental Take section (page 231) that current data does not allow for reliable estimates of sea turtle take from fishery interactions. The authors note that the last physical observations documenting fishery interactions, which were from "naked nets" (nets without TEDs) in the 1990s, which is not representative of the current fishery. Several assumptions and biases also exist in previous studies to overcome data gaps at the time and these studies are now over 15 years old. Updating survey data to gather the information necessary to make reliable estimates of sea turtle take is considered to be too cost prohibitive; therefore, jeopardy analyses are based on existing knowledge and effort and compliance data from the fishery.¹⁰ The Louisiana Shrimp FMP notes that data needed for accurate assessments of most sea turtle populations are not available and prevents meaningful evaluations that can benefit management.¹¹ NOAA Fisheries requested input from NRC on methods for improving sea turtle population assessments and in 2010 NRC published a report on sea turtle status and trends. The overarching conclusion was that several serious demographic data gaps exist precluding accurate assessment and strongly recommends that NOAA and USFWS develop a coherent national strategy for sea turtle assessment to improve data collection methods, data quality, and data availability meets standards of external review.

Currently, TED compliance is enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers. The effectiveness rate required by the Biological Opinion is calculated using NOAA enforcement and inspection rates. Violations are ranked from Level 1 through Level 4 based on severity of violation and likelihood that the offense would lead to a higher turtle capture rate.¹² These compliance data are entered into a matrix to determine the overall effectiveness rate of TEDs in the shrimp trawl fleet. NOAA enforcement/inspection data are currently the main source of information on TED compliance used to determine effectiveness for the Gulf shrimp fleet. Though TED enforcement and inspections are conducted by the USCG and each state agency, these data are not made public and not necessarily included in NOAA's calculations. Many stakeholders believe that measuring TED compliance using only enforcement

data biases the calculation negatively because enforcement is not random, rather, enforcement agents tend to target vessels that are more likely to be out of compliance. This leads to higher reporting of offenses and a lack of documentation of vessels that are in compliance. In 2015, representatives from each of the enforcement agencies met to further discuss inconsistencies in inspection methods and concerns over methods used to determine TED compliance.¹³ State and federal agencies continue to discuss possible solutions to these concerns. NOAA enforcement and inspection rates for the shrimp fishery are low due to a limited number of enforcement agents and few members of the NOAA Gear Monitoring Team (GMT) capable of conducting inspections. In 2015, the federal fishery has over 1300 permits and the number of state licenses range from 300-1000+ permits. NOAA inspections cover about 200 vessels per year.¹⁴ Compliance rates are calculated by quarter, and small sample sizes in some months can lead to biases the overall compliance percentages. The inclusion of USCG and state agency enforcement data could improve the sample size and reduce bias in these calculations.

Compliance rates have fluctuated for the past several years and maintaining high TED compliance and effectiveness rates for the fishery requires ongoing efforts. A particular period of concern occurred from March to November 2011, when the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.¹⁵ It should be noted that investigation into TED compliance during this time found that the majority of violations were from newly installed TEDs that were not properly installed by net shops. NOAA was able to trace the TEDs back to specific net shops to rectify the problem and the TEDs were corrected prior to the opening of shrimp season; therefore, though compliance rates appear low for this time period, the actual risk to sea turtle populations was avoided.¹⁶ Since 2011, education, outreach, and increased courtesy inspections by NOAA GMT and Sea Grant have helped to increase compliance ratings and NOAA now posts compliance numbers quarterly on their website.¹⁷ In 2015, overall effectiveness rates remained above 88% for every month, except April (85.15%) with an average overall effectiveness of 93.34%.

Additionally, MDMR enforcement officers conduct courtesy inspections to ensure that TEDs are installed properly prior to the opening of shrimp season; prior to the 2014 season opening 75 courtesy checks were conducted and all TEDs were made 100% compliant before operating in MS waters.¹⁸

Regulations for TEDs in skimmer trawls and butterfly nets differ from otter trawls. Currently, regulations for skimmer trawls and butterfly nets require either a TED installed in each net, or adherence to maximum tow times (maximum 55 minutes from April 1 to October 31, and 75 minutes from November 1 to March 31).¹⁹ Skimmer trawls and butterfly nets, because of their design, are checked with much higher frequency than otter trawls which greatly reduces the risk of a sea turtle drowning within a net, and tow time regulations are set based on the biological information regarding the length of time sea turtles can remain submerged. Increased turtle strandings in the Gulf of Mexico in 2010-11 prompted observer coverage and further study of turtle bycatch in skimmers. Observer coverage on the

skimmer fleet from 2012 through 2014 indicates that over 60% of tows throughout the 3 years of study have exceeded tow time limits, and low compliance with tow time regulations has raised concerns by stakeholders.^{20,21,22} These reports prompted NOAA to take action in 2 ways- 1) increase tow time awareness and education efforts, and 2) research effective TED designed for mandatory use in skimmers. Data from the 2012 observer coverage indicated that the standard 4' TED design currently in use on otter trawls was not able to exclude smaller sized turtles typically found in nearshore areas where skimmers are used. NOAA is currently researching TED designs and will likely propose a mandatory TED rule for skimmers in the future. Currently, adhering to tow time restrictions is the most effective way to prevent turtle mortalities in skimmer nets.

When renewing licenses in Mississippi, shrimpers are required to report on the gear type used. Of the 320 shrimpers reporting, the large majority (198) use only otter trawls, 30 shrimpers report using both otter trawls and skimmers, and 83 shrimpers report using skimmers.²³

Several fishermen in the skimmer trawl fleet in Mississippi do use TEDs voluntarily. In 2010-11, MDMR utilized grant funding to provide TEDs to skimmer trawl fishermen and increase outreach and education regarding sea turtle interactions.^{24,25} In 2010, 380 TEDs were distributed to over 190 shrimpers who reported using Skimmers. MDMR personnel conducted 24 trips as observers on commercial vessels that received TEDs to gather data on sea turtle interactions. MDMR also conducted mailings to all license holders with information on sea turtle interactions, proper handling, and resuscitation, NOAA's TED training video (in English and translated into Vietnamese), and distributed 475 TED angle meters and instructions on use. Mississippi Law states that a regulation cannot be implemented in MS that is stricter than federal regulations; therefore, MDMR cannot mandate TED use in skimmer trawls until a determination and regulation is set by NOAA Fisheries on this issue.²⁶ MDMR does actively enforce tow time requirements and compliance with TED use and tow times is high in Mississippi waters.²⁷

MDMR also acted proactively in 2010 when sea turtle stranding data indicated an increase in strandings in Mississippi waters. MDMR conducted mailings to all fishing license holders (not just shrimpers) with information on sea turtle interactions, proper handling, resuscitation and disentanglement; held fishery interaction seminars throughout the coast, increased compliance checks for TEDs on shrimp vessels; and reduced tow time limits to 30 minutes per trawl (from 55 minutes).²⁹ In 2011, the Commission on Marine Resources also passed a Sea Turtle Study Resolution supporting a comprehensive Gulf of Mexico sea turtle population and distribution study.³⁰

In addition to efforts to reduce sea turtle mortality, NOAA Fisheries, USFWS, GSMFC, state agencies and shrimp industry groups have contributed to efforts to protect sea turtle nesting beaches in Mexico and areas throughout the Gulf coast to assist in the recovery of sea turtle populations.³¹ NOAA SEFSC Galveston Lab participates in 1) Captive Rearing Program, which provides opportunities to research

numerous aspects of sea turtles, 2) Gear Research Program, and 3) the Sea Turtle Stranding and Salvage Program.³²

Smalltooth sawfish (*Pristis pectinata*)

The Recovery Plan for smalltooth sawfish cites bycatch in fisheries (including the shrimp fishery) as a primary reason for the decline of this species.³³ Previous documentation of landings as incidental catch in the shrimp fishery were reported between 1940s-1980s in Louisiana and Texas; however, there has been minimum documentation of recent landings and informal interviews by port agents indicate that recent interactions are rare. The population of smalltooth sawfish is thought to have declined by as much as 95% and the geographical range of the species is likely significantly diminished. Currently, three NWRs in Florida provide habitat protection for known reproducing populations of smalltooth sawfish, catch or harm of smalltooth sawfish is illegal, and guidelines have been published on the handling and release of smalltooth sawfish that are incidentally caught in commercial and recreational fisheries. The recovery Plan estimates for one smalltooth sawfish taken in the shrimp trawl fishery per year. It is possible that the implementation of TEDs and BRDs in the shrimp fishery would allow for smalltooth sawfish escape should interactions with shrimp trawls occur. There is still some question; however, as to whether trawl bycatch might impact recovery if/when this species population begins to rebuild and potential interactions increase.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

The most recent 5-year review (2009) for the Recovery Plan for Gulf Sturgeon notes that bycatch in shrimp trawls has been infrequently documented in past and that implementation of TED and BRD regulations has likely mitigated bycatch impacts to this species.³⁴ No regulatory actions are required directly in relation to bycatch of Gulf sturgeon for the shrimp fishery.

Marine Mammal Bycatch:

The MMPA 1994 revision includes changes of regulation regarding the incidental take of marine mammals in commercial fishing operations, requiring a goal to reduce serious injury and mortality of marine mammals to “insignificant levels”, approaching a zero mortality rate. “Insignificant Level” is defined as less than 10% of the potential biological removal (PBR).³⁵ NOAA’s Office of Protected Species evaluates fisheries based on their potential interaction with marine mammals during fishing operations and places fisheries into three categories: Cat. I- high interaction, Cat. II- med-low interaction, and Cat. III- little or no known interactions.³⁶ The Gulf of Mexico shrimp fishery is currently listed as a Category II fishery on the List of Fisheries.³⁷ This determination was based on potential interactions with bottlenose dolphins. Lack of a calculated PBR for the Gulf of Mexico bottlenose dolphin populations, data from stranding programs, and low observer coverage in the fishery are all reasoned that prompted NOAA to assign a Cat. II ranking. Cat. II designation requires that each fishery participant be registered with the Office of Protected species and carry an authorization certificate. Typically, registration with the Marine Mammal Authorization Program is combined with state and federal permitting systems and all fishermen receiving permits are registered with the Office of Protected Species automatically. Cat. II requirements also require the fishery to have

	<p>an observer program and fishermen must carry an observer onboard if requested, and must comply with any take reduction plans in place. There is currently no take reduction plan in the Gulf of Mexico for bottlenose dolphins. Fishermen are also required to report all incidental injuries and mortalities of marine mammals to the Office of Protected Species.</p>	
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¹ NMFS. 2014. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. Consultation No. SER-2-13-1225. http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

² NOAA Office of Protected Resources. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/species/index.htm>

³ Marty Bourgeois, Lisa Landry, Julia Lightner, Jeff Marx and Katie Semon. *Louisiana Shrimp Fishery Management Plan*. LDWF, Office of Fisheries, updated July 27, 2015. p.42. <http://www.wlf.louisiana.gov/sites/default/files/pdf/page/37762-fishery-management-plans-marine/shrimpfmp7-27-15.pdf>

⁴ National Research Council (US). Committee on Sea Turtle Conservation. *Decline of the sea turtles: causes and prevention*. National Academies Press, 1990.

⁵ "History of Turtle Excluder Devices (TEDs)" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm>

⁶ Elena M. Finkbeiner, Bryan P. Wallace, Jeffrey E. Moore, Rebecca L. Lewison, Larry B. Crowder, and Andrew J. Read, "Cumulative estimates of sea turtle bycatch and mortality in USA fisheries between 1990 and 2007" *Biological Conservation* 144 (2011) 2719–2727 <http://micheli.stanford.edu/pdf/Cumulative%20estimates%20of%20sea%20turtle%20bycatch%20and%20mortality%20in%20U.S.A.%20fisheries%20between%201990-2007.pdf>

⁷ NMFS. 2012. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. http://sero.nmfs.noaa.gov/protected_resources/section_7/freq_biop/documents/fisheries_bo/southeastshrimbiop_final.pdf

⁸ NOAA Fisheries. *Turtle Excluder Device (TED) Compliance Policy*. Draft May 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf

⁹ "TED compliance" NOAA Fisheries. Web. Accessed June 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html

¹⁰ [NMFS. 2014.](#)

¹¹ [Bourgeois et al., 2015. p.48.](#)

¹² NOAA Fisheries. "Penalty Matrix for Endangered Species Act" NOAA Policy for Assessment of Penalties and Permit Sanctions. March 2011. <http://www.shrimppalliance.com/new//wp-content/uploads/2012/03/2pagesfromPenaltyPolicy.pdf>

¹³ Gulf and South Atlantic Fisheries Foundation, "Gulf and South Atlantic News, Volume 16, Issue 1" May 2014 http://gulfsouth.ehclients.com/uploads/newsletters/5_15newsletter_short.pdf

¹⁴ NOAA Fisheries. *Turtle Excluder Device (TED) Compliance Policy*. Draft May 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/0216_southeastern_shrimp_otter_ted_inspections_compliance_sea_turtle_capture_rates_and_ted_effectiveness_april_2014-december_2015.pdf

¹⁵ [NMFS. 2014.](#)

¹⁶ [Bourgeois et al., 2015. p.44.](#)

¹⁷ NOAA Fisheries. TED Effectiveness Rates (April 2014 - July 2015). http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/sea_turtle_capture_rates_and_ted_effectiveness_in_the_southeast_shrimp_otter_trawl_fleet.pdf

¹⁸ MDMR. "TED Enforcement Perspectives" PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015.

¹⁹ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

²⁰ Pulver, J. R., E. Scott-Denton, and J. A. Williams. "Characterization of the US Gulf of Mexico skimmer trawl fishery based on observer coverage." *NOAA Technical Memorandum NMFS-SEFSC 636* (2012): 27. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2012_skimmer_trawl_observer_report.pdf

²¹ Pulver, Jeffrey R., Elizabeth Scott-Denton, and Jo A. Williams. "Observer coverage of the 2013 Gulf of Mexico skimmer trawl fishery." *NOAA Technical Memorandum NMFS-SEFSC 654* (2014): 25. http://www.sefsc.noaa.gov/turtles/TM_NMFS_SEFSC_654_Pulver_et_al_skimmer.pdf

²² Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver "Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery" NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

²³ MDMR, Unpublished data. August 2015.

²⁴ NFWF grant "Reducing Interactions between Fishermen and Gulf Sea Turtles" <http://www.nfwf.org/gulf/Pages/projectlist.aspx>

²⁵ MDMR, *Final Programmatic Report- Reducing Interactions between Fishermen and Gulf Sea Turtles (MS)*, December 2011.

²⁶ Miss. Code Ann. 49-15-15 <http://law.justia.com/codes/mississippi/2010/title-49/15/49-15-15/>

²⁷ MDMR. "TED Enforcement Perspectives" PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015.

²⁸ MDMR. "TED Enforcement Perspectives" PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015.

²⁹ MDMR, “MDMR Responds Proactively to Sea Turtle Issues” Press Release, 25 July 2011.
<http://www.dmr.ms.gov/index.php/news-a-events/recent-news/185-1-81-1st>

³⁰ MDMR, “CMR Approves Sea Turtle Study Resolution” Press Release, 2 July 2012.
<http://www.dmr.ms.gov/index.php/news-a-events/recent-news/196-11-88-jgl>

³¹ [Bourgeois et al., 2015. p.47.](#)

³² “Sea turtles” NOAA Galveston Laboratory. Web. Accessed November 2015.
<http://www.galvestonlab.sefsc.noaa.gov/seaturtles/index.html>

³³ National Marine Fishery Service (NMFS). 2010. *Smalltooth Sawfish 5-Year Review: Summary and Evaluation*.
http://www.nmfs.noaa.gov/pr/pdfs/species/smalltoothsawfish_5yearreview.pdf

³⁴ USFWS and NMFS. 2009. *Gulf Sturgeon (Acipenser oxyrinchus desotoi) 5-Year Review*.
http://www.nmfs.noaa.gov/pr/pdfs/species/gulfsturgeon_5yearreview.pdf

³⁵ “Marine Mammal Protection Act” NOAA Fisheries. Web. Accessed August 2015.
<http://www.nmfs.noaa.gov/pr/laws/mmpa/>

³⁶ “List of Fisheries” NOAA Fisheries Office of Protected Resources. Web. Accessed November 2015.
<http://www.nmfs.noaa.gov/pr/interactions/lof/#report>

³⁷ NOAA Office of Protected Species. “U.S. Atlantic, Gulf of Mexico Shrimp Trawl Fishery”
http://www.nmfs.noaa.gov/pr/pdfs/fisheries/lof2012/southeastern_us_atlantic_gulf_shrimp_trawl.pdf

7.6.9 (b) Are technical measures being taken in relation to:

(i) - fish size? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: White shrimp harvested in Gulf waters are subject to size requirements of the state of Louisiana when possessed within Louisiana waters and landed in Louisiana ports. According to the U.S. Code of Federal Regulations (CFR), shrimp not in compliance with applicable size limits may not be possessed, sold, or purchased and must be released immediately. The CFR holds the operator of the vessel fishing in the Gulf Exclusive Economic Zone (EEZ) responsible for compliance of the size limits specified.¹</p> <p>Mississippi: The Mississippi Department of Marine Resources (MDMR) Shrimp and Crab Bureau, along with the Gulf Coast Research Laboratory’s (GCRL) Center for Fisheries Development, sample for brown shrimp in the Mississippi Sound each year. This sampling helps MDMR’s fisheries scientists determine the exact date for the opening of the shrimp season each year. GCRL is responsible for the plankton tows in search of brown shrimp post larvae, which is the stage of the shrimp’s life cycle when it is extremely small. MDMR trawls throughout Mississippi coastal waters to find juvenile and adult brown shrimp. Legal size shrimp are approximately 100 mm or 3.94 inches long (68 count to the pound). The brown shrimp season’s</p>		

<p>opening date can be determined when the majority of the shrimp are of legal size. Environmental factors such as salinity, water temperature, rainfall and moon phase are also considered when setting the opening of the season. Optimum growing conditions for brown shrimp occur with salinities above 10 parts per thousand (ppt) and water temperatures greater than 68 degrees Fahrenheit.² Shrimp smaller than legal size are not to be taken in Mississippi waters with an exception for licensed live-bait boats.³</p>		
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¹ 50 C.F.R. § 622 <http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622> 156

² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

³ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (b)(ii) - mesh size or gear? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p><u>Federal:</u> According to the U.S. Code of Federal Regulations, explosives, chemicals and plants, fish traps, bottom trawls without a weak link in the tickler chain, and use of Gulf reef fish as bait are all prohibited in the EEZ.¹ In the Gulf EEZ, traps may not be used to fish for royal red shrimp.² Allowable gear for the Gulf of Mexico shrimp fleet are otter trawl, butterfly net, skimmer trawl, and cast net.³ Shrimp trawls in the EEZ are required to have weak links in the tickler chain and must be equipped with a certified BRD.⁴ All shrimp otter trawls in state and federal waters are required to be equipped with a certified TED, and skimmer trawls in state and federal waters are required to have a certified TED or adhere to maximum tow times.⁵</p> <p><u>Mississippi:</u> Mississippi Department of Marine Resources (MDMR) imposes gear size restrictions to control harvests and prevent habitat damage.⁶ Commercial shrimpers may harvest saltwater shrimp with trawls, butterfly nets, skimmer nets, push trawls, beach seines, and cast nets. In Mississippi Sound, north of the barrier islands, shrimp may be taken with a single net no larger than 50 feet along the headrope and 60 feet along the footrope. They may also be harvested in this area with two nets (maximum) each no longer than 25 feet on the headrope and 32 feet on the footrope. A test trawl no longer than 12 feet along the headrope and 15 feet along the footrope and used with boards not more than 30 inches in length is permitted. Trawl doors cannot exceed 8 feet by 43 inches. It is unlawful to use skimmer trawls or wing nets with a maximum size greater than 25 feet on the headrope and 32 feet on the footrope. All recreational and commercial shrimp vessels with mechanical assisted retrieval systems are required to have a turtle exclusion device (TED) or use 55-minute tow times instead.</p>		

<p>A recreational shrimp license is required for recreational harvest by trawl. Recreational shrimpers harvesting with cast nets do not need a fishing license, unless retaining finfish. Recreationally harvested shrimp cannot be sold. Cast nets or Brill nets not exceeding 12 foot maximum radius may be used to catch up to 50 pounds of shrimp per person per day with heads on for personal consumption in the bays located within and surrounding the cities of Bay St. Louis, Ocean Springs, Gautier, and Pascagoula. Shrimp heads may not be removed on site. Small mesh beach seines under 100 foot in length and with maximum 1/4 inch square mesh size are permitted. Holders of recreational shrimp trawling license are limited to use of a single net measuring no larger than 16 foot along the headrope.⁷</p>		
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¹ 50 C.F.R. § 622.9 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_19

² 50 C.F.R. § 622.54 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_154

³ "Allowable Gear" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

⁴ 50 C.F.R. § 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#_top

⁵ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁶ *Gulf FINFO*. Web. Accessed November 2015. <http://gulffishinfo.org/Species?SpeciesID=99>

⁷ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (b)(iii) - discards? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: According to the U.S. Code of Federal Regulations, shrimp trawl vessels must have a bycatch reduction device (BRD) installed on each net for fishing on their vessel.¹ Turtle exclusion devices (TEDs) are also required on all otter trawls and in skimmer trawls (exemption is allowed if maximum tow times are adhered to) to reduce the bycatch of sea turtles.² Vessels harvesting shrimp within Gulf Exclusive Economic Zone (EEZ) by trawl may not exceed the recreational reef bag limits. Reef fish may not be sold when taken under a recreational permit/bag limit.³ These regulations were designed to minimize discards in the fishery.</p> <p>Mississippi: Similarly, Licensed shrimp trawlers in Mississippi may retain up to 25 pounds in total weight of white trout, croaker, black drum, ground mullet, gafftopsail catfish and flounder and three dozen blue crabs for personal consumption.⁴ Fish caught coincidental to a live-bait shrimping operation may be retained and sold for chum as long as fish are of legal commercial size. These regulations were designed to reduce discards.</p>		

¹ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

² 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

³ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

⁴ MDMR. *Guide to Mississippi Saltwater Fishing Rule and Regulations 2015-16* <http://dmr.ms.gov/images/publications/2015-16%20Rules%20%20Regs%20combined%20for%20website.pdf>

7.6.9 (b)(iv) - closed seasons? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: According to the U.S. Code of Federal Regulations, there are numerous closed areas at varying times throughout the Gulf Exclusive Economic Zone (EEZ). Shrimp sanctuaries are also in place in Gulf waters (which prohibit shrimping within their boundaries) to protect marine resources. Each year, a seasonal area closure for the shrimp fishery may be established to reduce juvenile red snapper mortality based on the framework procedure in the Gulf shrimp FMP. Determining the need for closures and the geographical extent and duration is based on an annual assessment (from the Southeast Fisheries Science Center) of shrimp effort and shrimp trawl bycatch mortality.¹ NOAA Fisheries closes federal waters to shrimping off the coast of Texas from approximately mid-May to mid-July (based on sampling conducted by the Texas Parks and Wildlife Department). Federal waters open to shrimp fishing when Texas opens state waters.²</p> <p>Mississippi: The Mississippi Department of Marine Resources' (MDMR) Office of Marine Fisheries determines the opening of the shrimp fishery based on the size of the shrimp. Once shrimp reach legal size, the shrimping season is officially opened by public notice.³</p>		

¹ 50 C.F.R. § 622.55 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_155

² *FishWatch*. Web. Accessed November 2015. http://www.fishwatch.gov/seafood_profiles/species/shrimp/species_pages/brown_shrimp.htm

³ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (b)(v) - closed areas? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: Each year, a seasonal area closure for the shrimp fishery may be established based on the framework procedure in the Gulf Shrimp Fisheries Management Plan (FMP).</p>		

<p>The need for closures and the geographical scope and duration is based on an annual assessment conducted by the Southeast Fisheries Science Center shrimp effort and shrimp trawl bycatch mortality.¹</p> <p>Due to fishing complications with the stone crab industry, five zones have been established in the Gulf EEZ to separate shrimp trawling and stone crab trapping.² Shrimp sanctuaries are also in place in Gulf waters (which prohibit shrimping within their boundaries) to protect marine resources.³</p> <p>Mississippi: Mississippi regulates the areas that shrimp trawling may occur. Trawling is not permitted in any area within a ½ mile of the mainland, except by licensed live-bait dealers. Trawling is prohibited north of Intracoastal Waterway starting at midnight on December 31. Waterways south of Intracoastal Waterway are closed after April 30 and prior to the opening of the shrimp season. Recreational and commercial trawling is prohibited within the boundaries of the Gulf Islands National Seashore (within 1 mile around Ship, Horn and Petit Bois islands).⁴</p>		
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¹ 50 C.F.R. § 622
http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² 50 C.F.R. § 622.55 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_155

³ 50 C.F.R. § 622.55 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50.12.0.1.1.2&rgn=div5#se50.12.622_155

⁴ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (b)(vi) - areas reserved for particular (e.g. artisanal) fisheries? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: There no designated areas within federal waters designed for a specific user group for shrimp. Recreational and live-bait shrimping are regulated within various state waters in the Gulf; however, these activities do not typically occur in federal waters due to distance from shore.</p> <p>Mississippi: Live bait dealers are permitted to harvest within a 1/2 mile distance from shore; this area is prohibited for commercial and recreational trawls.¹ Live bait shrimping is a service to recreational fishermen in Mississippi and beneficial to the tourism industry of the state. This service is regulated in an effort to minimize impact on other fish populations and written applications must be submitted to the Mississippi Commission on Marine Resources (MCMR). The minimum legal size for licensed live-bait dealers is 100 shrimp count to the pound, and boats must be equipped to maintain live shrimp aboard. Tows are limited to 25 minutes or less. Boats are prohibited to have an excess of 30 pounds of dead shrimp on board at any given time. Live bait shrimping is only permitted during the 30 minutes before sunrise and</p>		

ending at sunset. Trawls must be no larger than 16 feet on the headrope and 22 feet on the footrope. In Bayou Caddy, trawls may be 25 feet on the headrope and 32 feet on the footrope. Certain areas are occasionally opened with additional restrictions.		
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¹ MDMR. *Guide to Mississippi Saltwater Fishing Rule and Regulations 2015-16*
<http://dmr.ms.gov/images/publications/2015-16%20Rules%20%20Regs%20combined%20for%20website.pdf>

² GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (b)(vii) - protection of juveniles or spawners? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: Due to high reproductive rates and short life cycles, shrimp stocks are highly resilient to fishing pressures, and management focus is largely on economic improvements and minimizing bycatch, rather than abundance. Therefore, the goal of shrimp size restrictions, while protecting juveniles, is meant to maximize the harvest (while minimizing its environmental impact). Seasons are set according to samples providing information on life cycle and abundance to ensure the shrimp harvested are a marketable size and that enough mature shrimp survive to reproduce and sustain the fishery.¹ According to the U.S. Code of Federal Regulations, shrimp not in compliance with applicable size limits may not be possessed, sold, or purchased and must be released immediately. The U.S. Code of Federal Regulations holds the operator of the vessel fishing in the Gulf Exclusive Economic Zone (EEZ) responsible for compliance of the size limit regulations.²</p> <p>Mississippi: The Mississippi shrimping season is officially opened once the Mississippi Department of Marine Resources (MDMR) determines that the shrimp have reached legal size, protecting shrimp from harvest before reaching maturity. MDMR Shrimp and Crab Bureau, along with the Gulf Coast Research Laboratory's (GCRL) Center for Fisheries Development, sample for brown shrimp in the Mississippi Sound. The sampling is necessary for MDMR's fisheries scientists to determine the exact date for the opening of the 2014 shrimp season. In order for a shrimp to be of legal harvesting size (68 count per pound), it must be approximately 100 mm or 3.94 inches long. The brown shrimp season's opening date can be determined when the majority of the shrimp are of that legal size.^{3,4}</p>		

¹ Gulf FINFO. Web. Accessed November 2015. <http://gulffishinfo.org/Species?SpeciesID=99>

² 50 C.F.R. § 622.56 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_156

³ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

⁴ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

7.6.9 (c) Are suitable arrangements in place to promote, to the extent practicable, the development and use of selective, environmentally safe and cost-effective gear and techniques?

Yes...[1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>The primary gear types in the Mississippi commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, push trawls, beach seines and cast nets are also sometimes utilized in some inshore areas.¹ Otter trawls are the dominant gear in the offshore fleet; skimmers have become popular in inshore waters.</p> <p>Fishermen and managers in the Gulf Of Mexico work collaboratively on innovative gear modifications to reduce impacts. TEDs are required in otter trawls in state and federal waters by federal regulations, and tow time limits are required for skimmer trawls and butterfly nets.² The use of BRDs is required in federal waters and encouraged in state waters, but not required.³ Substantial improvements have been made in reducing impacts of shrimp fishing, however, the Gulf of Mexico shrimp fishery still has one of the highest bycatch ratios among U.S. Fisheries.⁴ Continuing efforts to improve gear designs are ongoing. For specific details on gear selectivity of the Mississippi shrimp trawl fishery, refer to 7.2.2 (g)(iii) response.</p>		

¹ MDMR. *Guide to Mississippi Saltwater Fishing Rule and Regulations 2015-16*
<http://dmr.ms.gov/images/publications/2015-16%20Rules%20%20Regs%20combined%20for%20website.pdf>

² 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

³ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

⁴ National Marine Fisheries Service. 2013. *U.S. National Bycatch Report First Edition Update 1* [L. R. Benaka, C. Rilling, E. E. Seney, and H. Winarsoo, Editors]. U.S. Dep. Commerce.
http://www.st.nmfs.noaa.gov/Assets/Observer-Program/bycatch-report/NBR_FirstEditionUpdate1.pdf

7.6.10 Have measures been introduced to identify and protect depleted resources and those resources threatened with depletion, and to facilitate the sustained recovery of such stocks?

Yes...[1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>The Gulf of Mexico shrimp fishery is managed by the GMFMC and NOAA Fisheries under the principles of the MSA. The GMFMC Shrimp FMP is in compliance with MSA mandates to prevent overfishing and overfished conditions.¹ The GMFMC originally established an overfishing and overfished levels for each of the penaeid species in Amendment 13 of the Shrimp FMP.² NOAA Fisheries has monitored the parent stock levels for all three shrimp species since 1970. Parent stock levels for these species have remained above the established thresholds throughout the monitoring period and all three stocks are not considered overfished or undergoing overfishing.</p>		

Recent changes in the model used for annual stock assessments for the Gulf of Mexico penaeid shrimp species now produce different outputs and in 2015 GMFMC updated the SDC for penaeid shrimp to fit with this new model.³

The new reference points are:

MSY

- Brown shrimp: MSY is 146,923,100 pounds of tails
- White shrimp: MSY is 89,436,907 pounds of tails

Overfishing

The overfishing threshold is defined as the MFMT. The MFMT for each penaeid shrimp stock is defined as the fishing mortality rate at MSY (F_{MSY}).

- Brown shrimp: $F_{MSY} = 9.12$
- White shrimp: $F_{MSY} = 3.48$

Overfished

The overfished threshold is defined as the MSST. The MSST for each penaeid shrimp stock is defined as the minimum spawning stock biomass at MSY (SSB_{MSY}).

- Brown shrimp: SSB_{MSY} is 6,098,824 pounds of tails
- White shrimp: SSB_{MSY} is 365,715,146 pounds of tails

These values will be updated every 5 years through the framework procedure, unless changed earlier by the GMFMC.

Amendment 15 also updated actions to be taken should reference points be exceeded as follows:

- "Annual stock assessments are conducted for the penaeid shrimp species in the Gulf. If MFMT is exceeded for two consecutive years, the appropriate committees and/or panels (e.g. stock assessment panels, advisory panels, SSCs) would convene to review changes in apparent stock size, changes in fishing effort, potential alterations in habitat or other environmental conditions, fishing mortality and other factors that may have contributed to the decline."

NOAA SEFSC Galveston Lab conducts ongoing monitoring and research for the Gulf of Mexico shrimp fishery and produces the following reports: Closure analysis reports for the Texas and Tortugas closure areas, annual stock assessment reports, shrimp stock trend analysis reports, recruitment overfishing monitoring reports, growth overfishing analysis reports, shrimp effort estimation and analysis reports and yield per recruit (YPR) analysis reports.⁴

Penaeid shrimp in the Gulf of Mexico are exempt from requirements for ACLs and Accountability measures (AMs) because they have a life cycle of approximately one year. MSA Section 600.310(h)(2) states:⁵

(2) *Exceptions from ACL and AM requirements—(i) Life cycle.*

Section 303(a)(15) of the Magnuson-Stevens Act "shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species" (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average length of time it takes for an individual to produce a reproductively active offspring is approximately 1 year and that the individual has only

one breeding season in its lifetime. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.		
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¹ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. *Gulf of Mexico Fishery Management Council*. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ GMFMC. *Amendment 15 to the Shrimp Fishery Management Plan*. *Gulf of Mexico Fishery Management Council*. 2015. <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ “Galveston Laboratory” *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ 50 C.F.R. § 600.310 http://www.nmfs.noaa.gov/sfa/CMS_DEV/Councils/Training2013/G1_Nat_Standards_Guidelines.pdf

7.7 Implementation

7.7.1 Has an effective legal and administrative framework been established at the local and national level, as appropriate, for fishery resource conservation and management? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: GMFMC was established by the Fishery Conservation and Management Act of 1976 to create FMPs as a way to conserve Gulf fishery resources.¹ FMPs serve as a basis for the management of the fisheries of the Gulf’s Exclusive Economic Zone (EEZ) which begins at the outer limit of the states’ jurisdictions and extends 200 nautical miles from the shore. FMPs include federal regulations (implemented by the Secretary of Commerce) that are enforced by the U.S. Coast Guard, agents from the National Marine Fisheries Service (NMFS), and the Gulf states.²</p> <p>NOAA Fisheries is responsible for managing the nation’s oceanic resources using the Magnuson-Stevens Act and partnering with regional fishery management councils (GMFMC for the Gulf of Mexico) to:³</p> <ul style="list-style-type: none"> • Conduct fish stock assessments • Set catch limits • Ensure compliance with fishery regulations • Reduce bycatch <p>NOAA Fisheries, also known as (and referred to above as) NMFS, is an office of the National Oceanic and Atmospheric Administration within the Dept. of Commerce. It has five regional offices, six science centers, and over 20 laboratories.</p> <p>Gulf States: GSMFC was established in 1949 by an act of Congress as a compact of all five Gulf</p>		

States with the purpose of promoting better utilization of fisheries of the Gulf of Mexico.⁴ GSMFC is composed of members from each of the five states. GSMFC does not hold regulatory authority, but is empowered to make recommendations to the legislatures of the five states. Their recommendations are based on scientific studies carried out with state and federal agencies on regional concerns and GSMFC acts as a forum to discuss management practices and fishery concerns of regional importance.

Mississippi:

The marine resources of Mississippi are managed by MCMR and MDMR. MCMR was established by MS Code §49-15-301 to “regulate all matters pertaining to all saltwater aquatic life and marine resources” and MDMR, as the administrative arm of the MCMR, was established by MS Code §49-15-11 “to manage, control, supervise, enforce and direct any matters pertaining to saltwater aquatic life and marine resources under the jurisdiction of the commission”^{5,6} MCMR and MDMR promulgate rules and regulations consistent with MS Code §49-15-2 (Standards for fishery conservation and management; fishery management plans) and MS Code §49-15-307 (Powers and duties of the department).^{7,8}

MS Code §49-15-307 (Powers and duties of the department) states:

- *The department shall have the following powers and duties:*
 - (a) *To implement the policy of the commission regarding marine resources within the jurisdiction of the department;*
 - (b) *To apply for, receive and expend any federal or state funds or contributions, gifts, devises, bequests or funds from any other source;*
 - (c) *To commission or conduct studies designed to determine alternative methods of managing and conserving the marine resources of this state in a manner to insure efficiency and sustained productivity;*
 - (d) *To issue permits and licenses authorized by law or regulation;*
 - (e) *To equip and supply check stations, remote duty stations and personnel for extended duty;*
 - (f) *To develop programs to enhance the marketing of the state's recreational and commercial marine resources;*
 - (g) *To provide gear, insignias, and otherwise equip personnel subject to the amount appropriated for those purposes; and*
 - (h) *To discharge any other duties, responsibilities and powers as are necessary to implement this chapter.*

MS Code §49-15-2 sets the core standards for management of fisheries in Mississippi and includes the following requirements:

- *Any fishery management plan, and any regulation promulgated to implement that plan or promulgated under the state seafood laws, shall be consistent with the following standards for fishery conservation and management:*
 - (a) *Conservation and management measures shall be based upon the best scientific information available;*
 - (b) *If it becomes necessary to allocate or assign fishing privileges among various fishermen, that allocation shall be (i) fair and equitable to those fishermen, (ii) reasonably calculated to promote conservation, and (iii) carried out in a manner that no particular individual, corporation or other entity acquires an excessive share of the privileges;*

<p>(c) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, but no measure shall have economic allocation as its sole purpose;</p> <p>(d) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches;</p> <p>(e) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication;</p> <p>(f) Conservation and management measures shall, consistent with the conservation requirements of this state (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (i) provide for the sustained participation of the communities, and (ii) to the extent practicable, minimize adverse economic impacts on those communities;</p> <p>(g) Conservation and management measures shall, to the extent practicable, (i) minimize bycatch, and (ii) to the extent bycatch cannot be avoided, minimize the mortality of that bycatch; and</p> <p>(h) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.</p> <p>The Mississippi Administrative Procedures Law determines the rulemaking process for state agencies and requires the following steps prior to rule adoption:⁹</p> <ul style="list-style-type: none"> - notification of intent published the <i>Mississippi Administrative Bulletin</i> - public hearing in requested - 25-day comment period - Final rule published in the <i>Mississippi Administrative Bulletin</i> 		
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¹ Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. <http://gulfcouncil.org/about/index.php>

² "Gulf Council FAQs" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

³ "Our Mission" NOAA Fisheries. Web. Accessed November 2015. http://www.nmfs.noaa.gov/aboutus/our_mission.html

⁴ Gulf States Marine Fishery Commission. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁵ Miss. Code Ann. § 49-15-301 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-301/>

⁶ Miss. Code Ann. § 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11/>

⁷ Miss. Code Ann. § 49-15-2 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-2/>

⁸ Miss. Code Ann. § 49-15-307 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-307>

⁹ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

7.7.2 (a) Are laws in place that provide for sanctions? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: NOAA Fisheries Law Enforcement enforces more than 35 federal statutes, with most falling within five legislative acts. The Magnuson –Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act of 1972, Endangered Species Act of 1973, Lacey Act Amendments of 1981, and National Marine Sanctuaries Act are enforced by NOAA. Along with 30 other statutes, these five legislative acts help sustain U.S. fisheries.¹ Each of these legislative acts contains information regarding sanctions for people and vessels that violate these laws in U.S. waters.^{2,3,4,5,6}</p> <p>Mississippi: Mississippi Code Title 49, Chapter 15 dictates seafood laws for the state of Mississippi. MS Code § 49-15-63 outlines the rules and regulations regarding penalties for any person, firm, or corporation who violates these laws. It is considered a misdemeanor to violate rules and regulations pertaining to seafood in Mississippi.^{7,8} Fines range from \$100 to \$500 for the first offense unless the violation is committed during a closed season, in which case the fines range from \$500-\$1000. Fines for a second offense committed within three years ranges from \$500 to \$1000, and fines for a third or subsequent offense range from \$2000 to \$4000 or imprisonment in jail for up to 30 days. Upon conviction of a third offense, the offender’s license will be revoked for one year. MCMR also has the authority to suspend the license of a person convicted of a first offense for up to five days, and up to 30 days for a person convicted of a second offense. After the first offense, MCMR has the authority to confiscate equipment used in the subsequent violations including nets, traps and other gear, but not including boats or vessels. If a person is convicted of five or more violations in a five year period, MCMR has the right to permanently revoke the offender’s license.</p> <p>The MDMR Marine Patrol provides 24-hour marine law enforcement and conducts shore and boat patrols, vessel checks, seafood facility inspections, and works closely with other state and federal fisheries enforcement agencies to ensure enforcement of marine resource regulations. In 2012, MDMR Marine Patrol conducted 1,484 hours of shore patrols, 2,396 hours of offshore patrols, over 1,800 vessel checks, over 3,600 harvester inspections, and issued over 800 citations and warnings (100 of which were fishery violations).⁹</p>		

¹ “Laws We Enforce” *NOAA Fisheries*. Web. Accessed November 2015.
http://www.nmfs.noaa.gov/ole/about/what_we_do/laws.html

² MSA §307 (Prohibited Acts) <http://www.nmfs.noaa.gov/sfa/magact/mag3a.html#s307>

³ 16 U.S.C. 1377 §107 (Enforcement) <http://www.nmfs.noaa.gov/pr/laws/mmpa/fulltext.htm#section107>

⁴ “Lacey Act Amendments of 1981” *U.S. Fish and Wildlife Service*. Web. Accessed November 2015.
<http://www.fws.gov/laws/lawsdigest/LACEY.HTML>

⁵ "Legislation" NOAA National Marine Sanctuaries. Web. Accessed November 2015.
<http://sanctuaries.noaa.gov/about/legislation/welcome.html>

⁶ ESA Section 11 (Penalties) http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section11.pdf

⁷ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁸ Miss. Code Ann. § 49-15-63 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-63/>

⁹ MDMR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011*
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

7.7.2 (b) Are these adequate in severity to be effective? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: NOAA's Office of General Council publishes all enforcement decisions and orders on a national level.¹ NOAA Fisheries OLE also produces Quarterly reports by region to report on enforcement activities, which includes details on violations issues under each federal act enforced by NOAA agents and reports activities of each of the JEAs for states within that region. The FY15 First Quarter Report reflects active monitoring of fisheries in the Southeast Division with 58 total incidents including 25 incidents reported in violation of the MSA, 4 incidents of the endangered species act, 10 incidents of the Marine Mammal Protection Act.² OLE also maintains a current listing of enforcement actions on its website, and an archived listing of enforcement news reporting OLE program activities.^{3,4} The Annual Review of the United States Coast Guard's Mission Performance (2013) report provides details of USCG activities for each division, including marine living resources.⁵ According to this report, USCG spent 93,004 resource hours on living marine resources activities and compliance rates with fishing regulations has remained above 97%.</p> <p>Additionally, the NOAA SERO publishes information on turtle excluder device (TED) compliance as it is a priority for federal enforcement in the Gulf.^{6,7} The vast majority of the vessels inspected in 2014 were fully compliant, which indicates the successful nature of the governing regulations. In collecting data on capture and overall TED effective rates, NOAA Fisheries consistently evaluates the degrees of TED violation severity.⁸</p> <p>Mississippi: Shrimp violations are generally low. In the 2014-15 season, 15 citations were issued for shrimp violations in Mississippi waters.⁹ Penalties increase in severity for repeat offenders, and licenses can be revoked, which typically deters additional violations.^{10,11}</p> <p>MDMR reports violations information within the quarterly MDMR newsletter, signifying active monitoring of the enforcement officers, which helps ensure</p>		

compliance of the regulations. For the 2012 calendar year, 11 shrimp violations were reported out of 1,036 total citations issued by Marine Patrol. Shrimp violations for winter and spring 2013 totaled 3 out of 239 citations issued. These reports indicate compliance is high for the shrimp fishery. ^{12,13,14,15,16,17}		
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¹ “Enforcement Decisions and Orders” NOAA Office of General Counsel. Web. Accessed November 2015. <http://www.gc.noaa.gov/enforce-office6.html#nao>

² NOAA Fisheries. Office of Law Enforcement FY15 First Quarter Enforcement Report. July 2013. http://safmc.net/sites/default/files/Regulations/pdf/NOAAOLE_Q1_2015_PublicReport_Final.pdf

³ “Office of Law Enforcement” NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

⁴ “News Archive” NOAA Fisheries Office of Law Enforcement. Web. Accessed June 2015. http://www.nmfs.noaa.gov/ole/newsroom/08_news_archive.html

⁵ Department of Homeland Security, Office of Inspector General. *The Annual Review of the United States Coast Guard’s Mission Performance (2013)*. OIG-14-140. September 2014. https://www.oig.dhs.gov/assets/Mgmt/2014/OIG_14-140_Sep14.pdf

⁶ NOAA Fisheries. TED Effectiveness Rates (April 2014 - July 2015). http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/sea_turtle_capture_rates_and_ted_effectiveness_in_the_southeast_shrimp_otter_trawl_fleet.pdf

⁷ “NOAA assesses civil penalties to shrimpers for alleged Turtle Excluder Device violations.” NOAA News. National Oceanic and Atmospheric Administration. Web. Accessed November. 2015. http://www.noaanews.noaa.gov/stories2011/2011110311_ole_teds.html

⁸ NOAA Fisheries. TED Effectiveness Rates (April 2014 - July 2015). http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/sea_turtle_capture_rates_and_ted_effectiveness_in_the_southeast_shrimp_otter_trawl_fleet.pdf

⁹ MDMR. Unpublished data. August 2015.

¹⁰ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

¹¹ Miss. Code Ann. § 49-15-63 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-63/>

¹² MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Spring 2013. <http://dmr.ms.gov/images/publications/newsletters/spring2013.pdf>

¹³ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Winter 2013. <http://dmr.ms.gov/images/publications/newsletters/winter2013.pdf>

¹⁴ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Fall 2012. <http://dmr.ms.gov/images/publications/newsletters/fall2012.pdf>

¹⁵ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Summer 2012. <http://dmr.ms.gov/images/publications/newsletters/summer2012.pdf>

¹⁶ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Spring 2012. <http://dmr.ms.gov/images/publications/newsletters/spring2012.pdf>

¹⁷ MDMR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Winter 2012. <http://dmr.ms.gov/images/publications/newsletters/winter2012.pdf>

7.7.2 (c) Do sanctions affect (refusal/withdrawal/suspension) authorization to fish in the event of non-compliance with conservation and management measures in force? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	some	no
<p>Federal: NOAA Fisheries Office of Law Enforcement protects Gulf fisheries by enforcing federal regulations in the exclusive economic zone (EEZ).¹ Regarding permit sanctions, statutes provide NOAA with broad authority to suspend or revoke. While suspension and revocation are effective deterrents, NOAA acknowledges that such sanctions have financial consequences beyond the alleged violator. Given this potential negative impact, permit sanctions are only imposed in situations considered “moderate to major” in terms of significance of offence. Permit suspensions include 5-20 days, 20-60 days, 60-180 days, and 180 days to one year. Prior history of violations is considered when determining the appropriate suspension length. Permit revocation is allowed in extreme cases (16 U.S.C. § 1858(g)(i)) including where a permit is obtained fraudulently or where other penalties (fines or permit suspensions) do not address the seriousness of the offence. Permit revocation can only take place with approval of the NOAA General Counsel or Deputy General Counsel.²</p> <p>Mississippi: Upon conviction of a third offense, the offender’s license will be revoked for one year. The Mississippi Commission on Marine Resources (MCMR) also has the authority to suspend the license of a person convicted of a first offense for up to five days, and up to 30 days for a person convicted of a second offense. If a person is convicted of five or more violations in a five year period, MCMR has the right to permanently revoke the offender’s license.^{3,4}</p>		

¹ “Law Enforcement FAQs” NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/faqs.html>

² NOAA Fisheries. “Penalty Matrix for Endangered Species Act” NOAA Policy for Assessment of Penalties and Permit Sanctions. March 2011. <http://www.shrimpalliance.com/new//wp-content/uploads/2012/03/2pagesfromPenaltyPolicy.pdf>

³ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁴ Miss. Code Ann. § 49-15-63 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-63/>

7.7.3 Are there, where appropriate, in place:

(i) - monitoring control and surveillance schemes? **Yes...[1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
State and federal agencies have strong measures in place for monitoring, surveillance and control of fishery resources. Refer to 7.1.7(a) for full details on programs and activities for monitoring, control and surveillance of the Mississippi shrimp fishery.		

7.7.3 (ii) - observer programs? **Yes...[1]Some... [½]No...[0]**

Extent of compliance		
Yes	Some	No
<p>Amendment 13 of the shrimp FMP, established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch composition. These methods include the implementation of an electronic logbook program (ELM) for a statistically significant portion of the fishery to improve data on effort, and mandatory requirements for observer coverage for a randomly selected portion of the fishery to collect data on effort and bycatch composition.¹ Due to the high costs of outfitting boats with observers, NOAA Fisheries determined that 1% coverage would be adequate to document information on bycatch composition in the fishery and these data could be combined with detailed effort data from ELBs to extrapolate total bycatch numbers for the fishery. Observer data goes into the SEDAR process and is utilized in models to determine bycatch of individual species, which is then used in assessments of those species. The most recent report published in 2012 indicates that observer coverage is about 2% for the Gulf and South Atlantic shrimp fisheries due to decreases in effort in the fishery.²</p> <p>Federal Gulf shrimp permit holders are required to carry an onboard observer if selected by the Southeast Regional Office to participate in the Galveston Laboratory Observer Program. This requirement is mandated by 50 CFR Section 622.52 and participation is a condition for annual renewal of federal shrimp permits.³ Permit holders are selected by the Southeast Regional Director through a stratified random sampling method. 50 CFR Section 622.52 requires any vessel with a Gulf commercial shrimp vessel permit, if selected by the SRD, to carry a NMFS-approved observer and allow the observer free and unobstructed access to the vessel's bridge, working decks, holding bins, weight scales, holds, and any other spaces used to hold, process, weigh or store fish.</p> <p>The Galveston Lab Shrimp Bycatch Reduction Device Evaluation Research consists of onboard monitoring and scientific data analysis of the Gulf of Mexico shrimp fleet. The observer program evaluates species composition of shrimp trawl bycatch, and efficacy of turtle excluder devices (TEDs) and bycatch reduction devices (BRDs).⁴ The fishery observer program was established in 1987 as a voluntary program through the Gulf and South Atlantic Fisheries Foundation, Inc. (GSAFF) and became cooperative research program in 1992 between GSAFF and NOAA Fisheries. The shrimp FMP amendment 13 made the program mandatory for the Gulf of Mexico shrimp fleet in federal waters.⁵ The Galveston Lab observer</p>		

<p>program is part of National Observer Program under NOAA Office of Science and Technology.⁶ Data collection by observers is carried out under standardized protocols defined in an observer training manual specific to the Southeast otter trawl and reef fish fisheries.⁷</p> <p>In 2012, observer coverage was added for the inshore skimmer trawl fishery in the northern Gulf of Mexico due to increased sea turtle stranding reports and coverage continued in 2013 and 2014.⁸ The primary objectives were to document interactions with threatened or endangered sea turtles during commercial shrimping operations and to quantify both target and non-target species by area. Coverage is currently low due to difficulties with accurate contact information in state license databases, significant changes in the inshore fleet due to economic difficulties, lack of vessel insurance (which is a requirement for carrying observers), and difficulty in determining participants based on gear type since some states do not issue licenses based on gear type. Reports on the skimmer trawl observer coverage are published annually.</p> <p>Authority to mandate observer coverage falls under the ESA and MSA.⁹</p> <p>There are criticisms by some stakeholders, including environmental NGOs, that the current % coverage is not an adequate and could lead to the “observer effect”, where fishermen modify their behavior when observers are present; however, NOAA Fisheries analysts consider coverage to be sufficient to fulfill the current goals of the program.</p>		
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¹ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

³ 50 C.F.R. § 622.52 <http://www.gpo.gov/fdsys/granule/CFR-2013-title50-vol12/CFR-2013-title50-vol12-sec622-52>

⁴ “Fishery Observer Programs” NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁵ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁶ “National Observer Program: Shrimp” NOAA Office of Science and Technology. Web. Accessed November 2015. <https://www.st.nmfs.noaa.gov/observer-home/regions/southeast/shrimp>

⁷ NMFS. Observer Training Manual: Characterization of the US Gulf of Mexico and Southeastern Atlantic Otter Trawl and Bottom Reef Fish Fisheries. September 2010. https://www.st.nmfs.noaa.gov/Assets/Observer-Program/pdf/Shrimp_Reef_fish_Manual_9_22_10.pdf

⁸ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁹ “2015 Annual determination to implement Sea Turtle Observer Requirement” *Federal Register*. Web. Accessed November 2015. <https://www.federalregister.gov/articles/2015/03/19/2015-06341/2015-annual-determination-to-implement-the-sea-turtle-observer-requirement>

7.7.3 (iii) - inspection schemes? Yes...[1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: Marine resource laws are enforced by both the USCG and NOAA Office of Law Enforcement. Vessels are subject to inspection by both the USCG, and NOAA enforcement agents. ^{1,2} The MSA Section 311 authorizes the following:³ <i>(b) POWERS OF AUTHORIZED OFFICERS.—</i> <i>(1) Any officer who is authorized (by the Secretary, the Secretary of the department in which the Coast Guard is operating, or the head of any Federal or State agency which has entered into an agreement with such Secretaries under subsection (a)) to enforce the provisions of this Act may—</i> <i>(A) with or without a warrant or other process—</i> <i>(i) arrest any person, if he has reasonable cause to believe that such person has committed an act prohibited by section 307;</i> <i>(ii) board, and search or inspect, any fishing vessel which is subject to the provisions of this Act;</i> <i>(iii) seize any fishing vessel (together with its fishing gear, furniture, appurtenances, stores, and cargo) used or employed in, or with respect to which it reasonably appears that such vessel was used or employed in, the violation of any provision of this Act;</i> <i>(iv) seize any fish (wherever found) taken or retained in violation of any Provision of this Act;</i> <i>(v) seize any other evidence related to any violation of any provision of this Act; and</i> <i>(vi) access, directly or indirectly, for enforcement purposes any data or information required to be provided under this title or regulations under this title, including data from vessel monitoring systems, satellite-based maritime distress and safety systems, or any similar system, subject to the confidentiality provisions of section 402;</i> <i>(B) execute any warrant or other process issued by any court of competent jurisdiction; and</i> <i>(C) exercise any other lawful authority.</i></p>		

(2) Subject to the direction of the Secretary, a person charged with law enforcement responsibilities by the Secretary who is performing a duty related to enforcement of a law regarding fisheries or other marine resources may make an arrest without a warrant for an offense against the United States committed in his presence, or for a felony cognizable under the laws of the United States, if he has reasonable grounds to believe that the person to be arrested has committed or is committing a felony. The arrest authority described in the preceding sentence may be conferred upon an officer or employee of a State agency, subject to such conditions and restrictions as are set forth by agreement between the State agency, the Secretary, and, with respect to enforcement operations within the exclusive economic zone [and special areas], the Secretary of the department in which the Coast Guard is operating.*

The USCG Living Marine Resources program provides at-sea enforcement of federal fisheries regulations and other regulations relating to national goals for conservation and management of living marine resources and their environments.

To enforce these laws, all USCG officers and petty officers have the authority to board and inspect and United States vessel in any location.⁴

Mississippi:

MS Code § 49-1-43 determines the powers and duties of conservation officers of the state of Mississippi, as follows:⁵

- To enforce all the laws and regulations of the state relating to wild animals, birds and fish
- To execute all warrants and search warrants for a violation of the laws and regulations relating to wild animals, birds and fish
- To search where the conservation officer has cause to believe and does believe that animals, birds or fish, or any parts thereof, are possessed in violation of law or regulation which includes the examination, without warrant, of the contents of any boat, car, automobile or other vehicle, box, locker, basket, creel, crate, game bag or other package.
- To search, with a warrant, and examine the contents of any dwelling, building, or premises of any person suspected of violating any law or regulations
- To seize all animals, birds or fish, or parts of, taken in violation of the law or regulation
- To seize and confiscate all devices illegally used in taking animals, birds or fish

Conservation officers may enter in or upon public or private lands or waters of the state where game and fish are known to range in the performance of the officer's duties to enforce wildlife laws and shall not be subject to criminal liability while performing such duties.⁶

Marine Patrol officers of MDMR hold the same powers and duties as conservation officers as described by MS Code Sections 49-1-43.⁷

MDMR Seafood Technology Bureau is also responsible for inspections of seafood

<p>facilities. MDMR Seafood Technology Bureau seafood officers conduct quarterly inspections of all seafood processing facilities in MS to ensure sanitation standards and HACCP regulations are being met.⁸ NOAA also conducts Seafood Inspections.⁹</p>		
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¹ United States Coast Guard. *Special Notice to Mariners*. 2001. <http://www.uscg.mil/d1/prevention/NavInfo/navinfo/documents/Enforcement.PDF>

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁴ [United States Coast Guard, 2001.](#)

⁵ Miss. Code Ann. §49-1-43 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43/>

⁶ Miss. Code Ann. §49-1-43.1 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43.1/>

⁷ Miss. Code Ann. 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11>

⁸ "Seafood Technology Bureau" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

⁹ "Seafood Inspection Program" National Oceanic and Atmospheric Administration. Web. Accessed November 2015. <http://www.seafood.nmfs.noaa.gov/>

7.7.3 (iv) - vessel monitoring schemes? **Yes...**[1] **No...**[0]

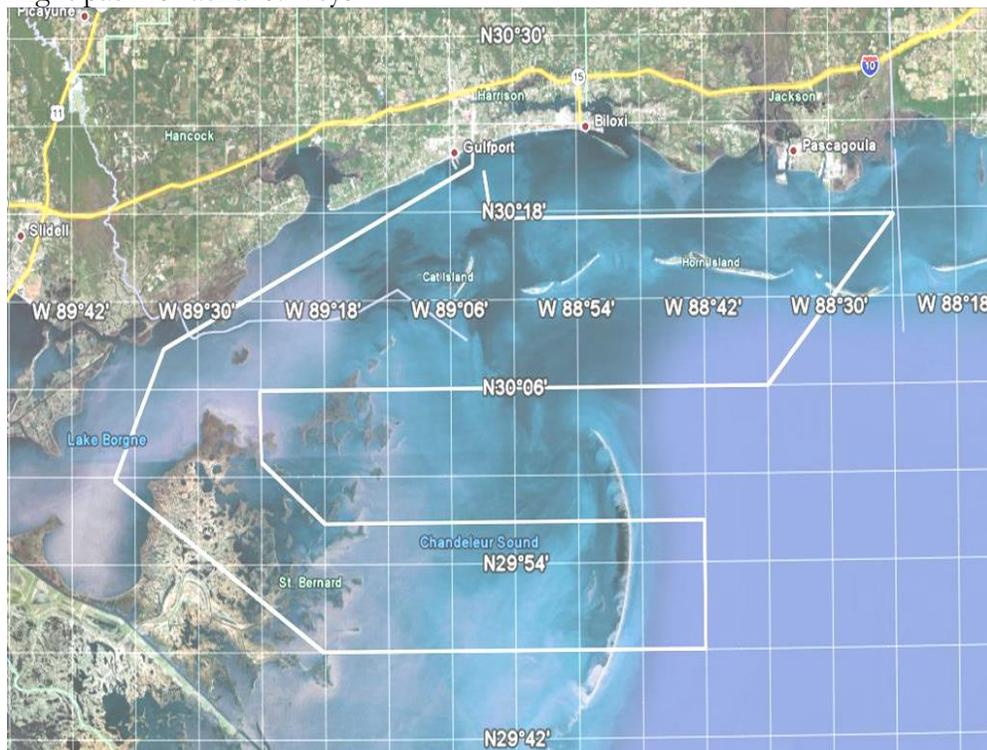
Extent of compliance		
Yes	Some	No
<p>Federal: Federally permitted commercial shrimp vessels in the Gulf of Mexico EEZ are required to participate in an electronic logbook (ELB) program.¹ Amendment 13 of the GMFMC shrimp FMP implemented an ELB program for the federal shrimp fleet to better track shrimp effort and location.² The main purposes of this program are to provide more accurate data to inform annual shrimp stock assessments and annual assessments of mortality for several known bycatch species of the shrimp trawl fishery including red snapper, sea turtles, blacknose shark, and smalltooth sawfish.³ If selected, vessels must carry a data recording device, which is a time-stamped GPS unit that records vessel location at 10- minute intervals. Under the initial ELB program (which began in 2007), data were collected by a technician who met the boat at the dock to download data from the device. Under the new cellular ELB (cELB) system (which began in 2014), data are transmitted directly to the Galveston Lab through a cellular network when the vessel is in cellular range.⁴ Data are compiled and analyzed in shrimp effort estimate reports every four months. Participants are selected by the Southeast Regional Director through a stratified</p>		

random sampling method, and 500 vessels (approximately 1/3 of the fleet) has been selected to participate each year since the start of the program. Participating vessels must annually report information regarding the size and number of shrimp trawls deployed and the types of bycatch reduction devices (BRDs) and turtle excluder devices (TEDs) used. Participation, if selected, is a condition of renewal for federal permits.

Mississippi:

There is currently no VMS or ELB requirements for the inshore Mississippi shrimp fishery; however, MDMR conducts vessel and aerial surveys of state waters to track vessel effort, location and activity. MDMR aerial surveys of MS territorial waters are conducted regularly and documenting number of vessels, vessel and permit type (crab vessel, trawl vessel, skimmer vessel, dredging vessel, recreational vessel, oyster vessel), and location of activity for each vessel. Aerial surveys are conducted between April and December each year, frequency varies, however, in spring and summer months (May-August) surveys are conducted on a biweekly to weekly basis.

Flight path for aerial surveys:



MDMR Marine Patrol also conducts frequent surveys to monitor activity in state waters. In 2012, MDMR Marine Patrol conducted 1,484 hours of shore patrols, 2,396 hours of offshore patrols.

The Mississippi State University Coastal Research & Extension Center also conducted a logbook study with the inshore Mississippi shrimp fleet in 2000-2001. Paper logbooks were developed on waterproof paper modeled after other logbook programs currently in use and cooperative boats were provided with logbooks and a stipend to participate in the program. Data collected included date, vessel position, lengths of tows, shrimp catch and comments (gear problems and/or unusual

environmental conditions encountered). Data were collected from May 2000 through December 2001 and results included a mapping of shrimp effort and effort analyses for both white and brown shrimp seasons of the inshore Mississippi shrimp fleet. ⁵		
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¹ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

² GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council.* 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ GMFMC. *Framework Action to Establish Funding Responsibilities for the Electronic Logbook Program in the Shrimp Fishery of the Gulf of Mexico.* 2013. <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20ELB%20Abbreviated%20Framework.pdf>

⁴ "SPGM Electronic Log Book" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

⁵ David Burrage "Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery." 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

7.7.5 (a) Have States which are members of or participants in subregional or regional fisheries management organizations or arrangements taken steps to implement (into legislation and practice) agreed measures adopted in the framework of such organizations or arrangements?

Yes...[1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Management measures developed by the GMFMC through FMPs and amendments are carried out by NOAA SERO and implemented into regulation through the Code of Federal Regulations (CFR).</p> <p>Regulations that are promulgated through the CFR are required by law for all participants fishing in the U.S. EEZ and are enforced by NOAA Fisheries Law Enforcement and the U.S. Coast Guard (USCG) Living Marine Resources division.^{1,2,3}</p> <p>Regulations made by GMFMC are respected by the individual states and state regulations for territorial waters are consistent with federal regulations.⁴</p> <p>Each of the five Gulf States has a Joint Enforcement Agreement (JEA) with NOAA Fisheries through the Cooperative Enforcement Program which allows U.S. state conservation law enforcement officers to enforce federal laws and regulations pertaining to marine resources and endangered species.⁵</p>		

¹ 50 C.F.R. § 622 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³ “Living Marine Resources” *United States Coast Guard*. Web. Accessed November 2015.
<http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

⁵ “Cooperative Enforcement Programs” *NOAA Fisheries*. Web. Accessed November 2015.
http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

7.7.5 (b) In particular, have measures been adopted to deter the activities of vessels of non-members or non-participants which engage in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: According to the U.S. Code of Federal Regulations, it is unlawful for any person to “engage in an activity for which a valid Federal permit, license, or endorsement is required under this part without such permit, license, or endorsement.”¹ Applicants must submit the Federal Permit Application for Vessels Fishing in the Exclusive Economic Zone (EEZ) to the NOAA Fisheries Southeast Regional Permits Office.² No person or vessel may harvest shrimp or possess shrimp in or from the Gulf EEZ without a commercial vessel permit on board.³ NOAA Enforcement and USCG monitor and enforce these regulations in federal waters.</p> <p>Mississippi: No vessels may operate in Mississippi territorial waters without an appropriate license. Waters are patrolled by MDMR Marine Patrol to ensure that all vessels participating in fishing activities have the proper authorization.^{4,5}</p>		

¹ 50 C.F.R. § 622.13 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_113

² “Permits” NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³ 50 C.F.R. § 622.4 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_14

⁴ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCode/00000063c.pdf>

⁵ MDMR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011*
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

Article 8 - Fishing Operations

8.1 Duties of all States

8.1.1 Are States involved in the fishery ensuring that only fishing operations allowed by them are conducted within waters under their jurisdiction and that these operations are carried out in a responsible manner? *Yes...*[1] *Some...*[½] *No...*[0]

Extent of compliance		
Yes	some	no
<p><u>Federal:</u> According to the U.S. Code of Federal Regulations, it is unlawful for any person to “engage in an activity for which a valid Federal permit, license, or endorsement is required under this part without such permit, license, or endorsement.”¹ Applicants must submit the Federal Permit Application for Vessels Fishing in the Exclusive Economic Zone (EEZ) to the NOAA Fisheries Southeast Regional Permits Office.² No person or vessel may harvest shrimp or possess shrimp in or from the Gulf EEZ without a commercial vessel permit on board.³</p> <p>NOAA’s Office of Law Enforcement protects oceanic wildlife and habitat through enforcement of domestic laws and international treaty requirements. Special agents and enforcement officers ensure compliance with U.S. marine resource laws and take action when laws are violated.⁴ NOAA’s Office of the General Counsel is responsible for prosecuting civil penalty cases, permit sanctions, and administrative forfeitures. Together, these two offices ensure that fishery regulations in the Gulf EEZ are administered and adhered to by resource users.⁵</p> <p><u>Mississippi:</u> No fishing vessels may operate in Mississippi territorial waters without an appropriate license issued by MDMR.⁶ Licenses are available for both Mississippi residents and non-residents of other U.S. Gulf States.⁷ The other four Gulf States also maintain similar licensing requirements for fishing activities within their state territorial waters.⁸ License requirements for recreational and commercial fishing are published annually by MDMR.^{9,10} Waters are patrolled by MDMR enforcement officers to ensure that all vessels participating in fishing activities have the proper authorization and follow all regulations set by MDMR.¹¹</p>		

¹ 50 C.F.R. § 622.13 <http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622> 113

² “Permits” NOAA Southeast Regional Office. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³ 50 C.F.R. § 622.4 <http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622> 14

⁴ “Law Enforcement” NOAA Fisheries. Web. Accessed November 2015.
http://www.nmfs.noaa.gov/ole/about/what_we_do.html

⁵ NOAA Office of General Counsel. Web. Accessed November 2015. <http://www.gc.noaa.gov/enforce-office.html>

⁶ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁷ “Licenses” Mississippi Department of Marine Resources. Web. Accessed November 2015.
http://www.dmr.ms.gov/joomla16/index.php?option=com_content&view=category&id=131&Itemid=405

⁸ GSMFC, 2013. Licenses & Fees for Alabama, Florida, Louisiana, Mississippi, and Texas in Their Marine Waters for the Year 2012. Gulf states Marine Fisheries Commission. Ocean Springs, MS.
<http://www.gsmfc.org/publications/GSMFC%20Number%202019.pdf>

⁹ “Licenses” Mississippi Department of Marine Resources. Web. Accessed November 2015.
http://www.dmr.ms.gov/joomla16/index.php?option=com_content&view=category&id=131&Itemid=405

¹⁰ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

¹¹ MDMR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011*
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

8.1.2 Are States involved in the fishery maintaining a record, updated at regular intervals, on all authorizations to fish issued by them? *Yes...*[1] *Some...*[½] *No...*[0]

Extent of compliance		
Yes	some	no
<p><u>Federal:</u> NOAA Fisheries SERO Permits Office is tasked with managing federal fishing permits of the Gulf of Mexico.¹ The Southeast Permits Office issues permits for 7 to 17 months. By renewing a permit before the expiration date, the permit may be extended for another year. Limited access (or moratorium) permits are allowed to be transferred, which means the permit holder may change ownership of the permit or the vessel the permit is assigned to for fishing purposes. The Southeast Permits Office also manages the Catch History for vessels and permits, which can be requested by the permit or vessel owner.² Vessel permits are not only kept internally, but also available online. Information regarding the vessel, permit holder address, permit effective date and expiration date are listed on the NOAA Fisheries SERO website.³</p> <p><u>Mississippi:</u> Commercial fishing licenses issued by MDMR are renewed annually and MDMR maintains a record of all licenses sold.^{4,5} Additionally, seafood dealers and processors can only purchase seafood from a harvester with a valid commercial fishing license and are required to report harvest data monthly through the Trip Ticket Program.⁶</p>		

¹ “Permits” NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits

[/permit_faq/](#)

² “Permits FAQ” NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³ “Permit Holder Information” NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

⁴ “Licenses” *Mississippi Department of Marine Resources*. Web. Accessed November 2015.
http://www.dmr.ms.gov/joomla16/index.php?option=com_content&view=category&id=131&Itemid=405

⁵ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁶ “Trip Ticket Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

8.1.3 Are states involved in the fishery maintaining, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations allowed by them? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The SEFSC Fisheries Monitoring Branch monitors the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.¹ Landings data are collected by the SEFSC Fisheries Monitoring Branch from each individual state agency Trip Ticket Reporting Program. NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers. Additional information for shrimp is gathered through the GSS, which includes data collection by port agents stationed throughout the Gulf of Mexico (refer to 7.1.4(a) for full details on the GSS).² Furthermore, all federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal.³ ALF forms are mailed to permit holders each spring to report on landings from the previous year. Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program (refer to 7.1.7(a) for full details on these programs).^{4,5}</p> <p>NOAA Fisheries SERO Permits Office is tasked with managing federal fishery permits of the Gulf of Mexico.⁶ The Southeast Permits Office issues permits for 7 to 17 months. Limited access (moratorium) permits are allowed to be transferred, which means the permit holder may change ownership of the permit or the vessel the permit is assigned to for fishing purposes. The Southeast Permits Office also manages the Catch History for vessels and permits, kept internally, but can be made available to the permit or vessel owner upon request.⁷ Records of vessel permits are kept internally by the Permits Office, and are also posted online; information</p>		

regarding the vessel identification, vessel name, permit holder address, permit effective date and expiration are listed on the SERO website.

Vessels operating in the EEZ are required to register with the USCG. All vessels measuring over five tons (generally any vessel over 25 ft length) are required to have a Certificate of Documentation issued through USCG and the USCG maintains records of all federally documented vessels.⁸

NOAA SEFSC also produces the Economics of the Federal Gulf Shrimp Fishery Annual Report. This document discusses shrimp landings, revenue, permits, vessel, and economic status of the shrimp fishery. This report is based on data collected through surveys from permit holding harvesters from across the Gulf states. Information gathered from this survey helps determine economic trends of the industry and helps understand the social and economic impacts regulation changes may have on the fishery and communities.⁹

NOAA SEFSC Galveston Lab conducts ongoing monitoring and research for the Gulf of Mexico shrimp fishery and produces the following reports: closure analysis reports for the Texas and Tortugas closure areas, annual stock assessment reports, shrimp stock trend analysis reports, recruitment overfishing monitoring reports, growth overfishing analysis reports, shrimp effort estimation and analysis reports and YPR analysis reports.¹⁰

Mississippi:

MDMR conducts both fishery-dependent and fishery-independent data collection to determine trends and status of stocks. Resource and harvest data, along with other pertinent information, including special studies by the agency and/or academic institutions, regional reports, and feedback from industry representatives, are reviewed annually by MDMR staff.¹¹ The GDAR 01 report provides a summary of independent sampling methods used by MDMR and GCRL.¹²

MDMR implemented the Trip Ticket Program for fishery-dependent data collection for the blue crab fishery in 2012.¹³ The Trip Ticket Program was initially implemented in Florida, and the GSMFC FIN program assisted in the development of similar programs for each of the other Gulf states. The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis. Prior to 2015, dealers who exclusively purchased shrimp were exempt from trip ticket reporting and reported through other mandatory channels; however, in July 2015, MCMR voted to remove this exemption and beginning in 2015, all shrimp dealers are now required to report. Minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.¹⁴ The Mississippi Trip Ticket forms also require reporting of quantity of gear used and time in the water.¹⁵ Prior to implementation of the Trip Ticket Program, commercial catch statistics were collected by NMFS and those data are available through Fishery Statistics reports.¹⁶

The GSMFC also conducts monitoring and review processes on an annual basis for fishery data. The GSMFC programs: FIN, IJF, Fisheries Economic Data Program, SEAMAP all work to standardize the format of the data collection process based on program needs and coordinate with state agencies and other partners to carry out regular data collection and review. ¹⁷		
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¹ "Fisheries Monitoring Branch" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/data/monitoring.htm>

² "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cfeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁴ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ "Permits FAQ" NOAA Southeast Regional Office. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

⁷ "Permit Holder Information" NOAA Southeast Regional Office. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

⁸ "National Vessel Documentation Center" United States Coast Guard. Web. Accessed November 2015. <http://www.uscg.mil/hq/cg5/nvdc/nvdcfaq.asp#04>

⁹ "Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery" NOAA Southeast Fishery Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

¹⁰ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹¹ MDMR. Personal Communication. May 2014.

¹² VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. p. 84-85 <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹³ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

¹⁴ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁵ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

¹⁶ [VanderKooy, 2013. p. 53](#)

¹⁷ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

8.1.4 Are States involved in the fishery, within the framework of subregional or regional fisheries management organizations or arrangements, cooperating to establish systems for monitoring, control, surveillance and enforcement of applicable measures with respect to fishing operations and related activities in waters outside their jurisdiction? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Each of the five Gulf States and NOAA Fisheries cooperate with neighboring state and federal agencies on monitoring and enforcement of the fishery across state jurisdictional boundaries. All states are actively involved in regional organizations, GSMFC and GMFMC, and cooperate in establishing systems for monitoring, control, surveillance and enforcement of fishing operations throughout the Gulf of Mexico through these organizations.^{1,2}</p> <p>All five Gulf States currently hold cooperative agreements with federal partners through the JEA program.³The JEA is a formal partnership between NOAA Fisheries and each state agency on enforcement related activities that provides federal funding to state and territorial law enforcement agencies to perform enforcement of federal regulations.</p> <p>The GSMFC has a Law Enforcement Committee (LEC) that addresses regional fisheries enforcement needs and objectives.⁴ The LEC consists of members from all five U.S. Gulf of Mexico states, NOAA’s Office of Enforcement, and the USCG, with regular input from NOAA General Counsel and USFWS. The GSMFC IJF program also utilizes the LEC for advice during the FMP development process. GSMFC published a regional pocket guide for use by enforcement officers from all agencies.⁵ GSMFC’s LEC periodically convenes special work sessions to revise LEC’s Operations and Strategic Plans to improve efforts towards regional enforcement goals.^{6,7}</p> <p>GMFMC has a Law Enforcement Advisory Panel that advises the council on regional enforcement matters.⁸ Enforcement of federal regulations developed through GMFMC are handled by NOAA Fisheries and USCG, and reported at regular intervals.⁹</p>		

¹ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

² *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://www.gulfcouncil.org/>

³ “Cooperative Enforcement Programs” *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

⁴ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁵ VanderKooy, S.J. 2014. *Rules and Regulations: Officer's Pocket Guide 2014-2015*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20230.pdf>

⁶VanderKooy, S.J. 2012. *Gulf of Mexico Cooperative Law Enforcement Operations Plan 2013-14*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20208.pdf>

⁷VanderKooy, S.J. 2012. *Gulf of Mexico Cooperative Law Enforcement Strategic Plan 2013-2016*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20207.pdf>

⁸"Advisory Panels" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/panels_committees/advisory_panels.php#LawEnforcement

⁹NMFS. *First Quarter FY 2008 Report, Gulf of Mexico and South Atlantic/Caribbean*. NOAA/NMFS Office for Law Enforcement Southeast Division. 2008. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202008-04/P%20-%20Enforcement%20Reports.pdf>

8.1.7 Are education and training programs enhancing the education and skills of fishers and, where appropriate, their professional qualifications, taking into account agreed international standards and guidelines? **Yes...[1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p>The Mississippi-Alabama Sea Grant Consortium Sea Grant (MASGC) is a federal/state partnership administered by NOAA pairing Sea Grant resources with academic institutions and includes Auburn University, Dauphin Island Sea Lab, Jackson State University, Mississippi State University, University of Alabama, University of Alabama Birmingham, University of Mississippi, University of Southern Mississippi, and University of South Alabama.¹ The MASGC mission is ‘to enhance the sustainable use and conservation of ocean and coastal resources to benefit the economy and environment in Alabama and Mississippi.’² One of the primary focus areas of MASGC is Sustainable Fisheries and Aquaculture.² MASGC offer education and training programs to promote best practices in the fishing industry and update industry members on new technologies and methods that may improve their product or business. This information is disseminated via workshops, websites, social media, and mailed and online newsletters.³ The MASGC program is voluntary and does not provide any documentation of participation or training.</p> <p>Texas Sea Grant has been active in training fishermen and captains across the Gulf of Mexico. In 2014, as part of a grant from the National Fish and Wildlife Foundation, a marine extension agent and a marine fisheries specialist traveled to conduct dockside inspections, reaching 500 captains and crewmembers.⁴</p> <p>The Gulf and South Atlantic Fisheries Foundation is a private, regional nonprofit research and development organization focused on the development of commercial fisheries in the South Atlantic and Gulf of Mexico. The foundation has been active hosting workshops for commercial fishermen for at least 30 years. Efforts focused on in TED and BRD research and development and gear outreach have been deemed successful by NMFS and the Foundation.⁵ The most recent outreach efforts by the Foundation were from 2011-2013. In</p>		

that time period, the Regional Coordinators for the project traveled to 8 States in the Gulf and South Atlantic, visiting 74 cities. Regional Coordinators disseminated TED and BRD instruction manuals in English, Spanish, and Vietnamese. Additionally, TEDs were inspected according to the NOAA Boarding Form to check for any non-compliances while boats were still at the dock and could address any issues.

NOAA, in addition to being responsible for enforcement of TEDs, also has a Gear Monitoring Team (GMT) dedicated to outreach and education on TED regulations. The GMT may conduct targeted to areas of non-compliance based on boarding records.⁶ The GMT coordinator's contact information is also published on NOAA's Southeast Fisheries Science Center's website and he can be contacted directly to do dockside inspections with no penalty attached prior to a vessel's departure.⁷

The Mississippi Department of Marine Resources distributes an annual Shrimp Newsletter through the shrimp and crab bureau. Information in the newsletter includes information from fisheries independent sampling, maps of shrimping grounds, seafood safety, license information, and regulation updates.⁸

Technology transfer between fishermen is also common. A 2002 project that evaluated BRDs in Mississippi vessels saw an increase in the use of BRDs from those involved in the study. Participating vessels found the use of BRDs to be effective at producing a higher quality product and reduces cull time. Many fishermen contacted the principle investigator and participating captains to assist with proper BRD installation in nets, and this occurred in both otter and skimmer trawls.⁹

¹ *Mississippi Alabama Sea Grant Consortium (MASGC)*. Web. Accessed November 2015. <http://masgc.org/about>

² "Sustainable Fisheries and Aquaculture" *Mississippi Alabama Sea Grant Consortium (MASGC)*. Web. Accessed November 2015. <http://masgc.org/focus-areas/article/sustainable-fisheries-and-aquaculture>

³ Posadas, B. *Economic Sectors Targeted by the Mississippi-Alabama Sea Grant Research, Extension, Education, and Outreach Programs*. 2014. <http://msucares.com/pubs/publications/p2849.pdf>. Accessed 8.14.2015

⁴ *Texas Sea Grant*. Web. Accessed November 2015. <http://texasseagrant.org/staff/tony-reisinger/>

⁵ Helies, F.C. Graham, G., Parker, L., Jamison J. 2013. An Expanded Outreach Program and Technology Transfer of Updated Bycatch Reduction Devices and Turtle Excluder Devices to the Southeastern U.S. Shrimp Industry. Final Report. http://www.gulfsouthfoundation.org/uploads/reports/118_final_report.pdf

⁶ NOAA Fisheries. *Southeast Fishery Bulletin*. February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf

⁷ "Sea Turtle Staff" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/turtles/staff.htm>

⁸ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. 2015. <http://www.dmr.ms.gov/images/fisheries/shrimp-crab/shrimping-the-sound-spring-2015.pdf>

⁹Burrage, D. 2002. *Inshore shrimp fishery effort and gear evaluations to mitigate natural disaster impacts on the Mississippi Inshore brown shrimp fishery*. Final Report. 20092

8.1.8 Are records of fishers being maintained which should, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws? **Yes... [1] Some... [1/2] No... [0]**

Extent of compliance	
Yes	No
Some	
<p>Federal: NOAA Fisheries Southeast Regional Office (SERO) Permits Office is tasked with managing federal fishing permits of the Gulf of Mexico.¹ The Southeast Permits Office issues permits for 7 to 17 months. By renewing a permit before the expiration date, the permit may be extended for another year. Limited access (or moratorium) permits are allowed to be transferred, which means the permit holder may change ownership of the permit or the vessel the permit is assigned to for fishing purposes. The Southeast Permits Office also manages the Catch History for vessels and permits, which can be requested by the permit or vessel owner.² Vessel permits are not only kept internally, but also available online. Information regarding the vessel, permit holder address, permit effective date and expiration date are listed on the NOAA Fisheries SERO website.³</p> <p>Vessels operating in the EEZ are required to register with the USCG. All vessels measuring over five net tons (generally any vessel over 25 ft length) are required to have a Certificate of Documentation through the USCG.⁴ Each vessel must be marked with Certificate number and hailing port, and the Certificate of Documentation must be carried onboard the vessel. Certificates are valid for one year and USCG maintains records of all Certificates of Documentation. Fishing vessels must also obtain a fishing endorsement to participate in commercial fishing activities in the EEZ. USCG provides training and issues certificates for Master of Vessels for 25/50/100 Gross Ton vessels.⁵</p> <p>For vessels of 20 gross tons or more, the master of the vessel must have a written agreement with each crewmember on the terms of employment as a crewmember. Crewmembers must be U.S. citizens, or aliens with legal documentation to work in the U.S.⁵ The Captain (Master or individual in charge of the vessel) must be a U.S. citizen.</p> <p>There are no competency requirements, certificates, or licenses required for crew members.</p>	
<p>Mississippi: MDMR requires a commercial fishing license to harvest fish or shellfish in Mississippi waters. For shrimp, harvesters are required to hold a Shrimp/Captain License that must be renewed annually and records are maintained by MDMR.⁶ Commercial boats must be registered with the state unless otherwise registered with the USCG.⁷ Initial vessel registration can be completed through MDMR, or the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP), and all boat registration records are</p>	

<p>maintained by MDWFP. MDMR requires documentation of vessel registration when applying for a fishing license and maintains records of all fishing licenses issued. Fishermen are required to carry physical documentation of both their fishing license and boat registration on board.</p> <p>No documentation is required for additional crew members. There are currently no requirements based on competency and no records maintained for certification of competency within the Mississippi shrimp fishery.</p>	
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¹ "SERO Permits Office" NOAA Fisheries. Web. Accessed December 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

² "Permits FAQ" NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³ "Permit Holder Information" NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

⁴ "National Vessel Documentation Center" United States Coast Guard. Web. Accessed November 2015.
<http://www.uscg.mil/hq/cg5/nvdc/nvdcfaq.asp#04>

⁵ USCG. *Commercial Fishing Vessel Safety Digest*. 2008
<http://www.uscg.mil/d1/prevention/commfishsafetydigest-20081.pdf>

⁶ "Licenses" Mississippi Department of Marine Resources. Web. Accessed November 2015.
<http://dmr.ms.gov/index.php/commercial-fishing/licenses>

⁷ "Boat Registration" Mississippi Department of Wildlife Fisheries, and Parks. Web. Accessed September 2015.
<https://www.mdwfp.com/license/boating-registration.aspx>

8.1.9 Do measures applicable in respect of masters and other officers charged with an offence relating to the operation of fishing vessels include provisions which may permit, *inter alia*, refusal, withdrawal or suspension of authorizations to serve as masters or officers of a fishing vessel?

Yes...[1] No...[0]

Extent of compliance		
No	Some	no
	<p>Federal: There are no provisions which may permit the refusal or suspension of authorizations to serve as masters or officers of a fishing vessel as a means to enforce federal regulations. However, permits attached to the fishing vessel itself can be suspended or revoked, as explained in 7.7.2 (c).¹</p> <p>Mississippi: Individuals registered as captains are subject to penalties if aboard the vessel in violation (if not present, the designated captain will be penalized). If no captain is designated, the owner of the vessel will receive penalties reserved for boat captains. Boat captains and vessel owners are subject to the same license or permit suspensions and revocations as detailed in 7.7.2 (c).²</p>	

¹ “SERO Permits Office” NOAA Fisheries. Web. Accessed December 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

² Miss. Code Ann. § 49-15-63 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-63>

8.1.10 Is an attempt being made to ensure that, through education and training, all those engaged in fishing operations are given information on the most important provisions of this Code, as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations? **Yes... [1] Some... [½] No... [0]**

Extent of compliance		
Yes	Some	No
<p>Federal: GMFMC and NOAA Fisheries publish fishing regulation guides and bulletins containing all regulations and other necessary information regarding commercial fishing in the EEZ. These regulations are posted on websites, distributed through newsletters and published in print form.^{1,2,3} These regulations, as illustrated in other areas of this report, are largely consistent with the important provisions of the CCRF and other relevant international conventions and standards that are applicable to responsible fishing operations.</p> <p>Mississippi: MDMR publishes a commercial fishing regulation guide containing all regulations and other necessary information regarding the practice of commercial fishing in Mississippi.⁴ These regulations and additional information are publicized on the MDMR website and distributed through newsletters, emails, and social media outlets.⁵ These regulations, as illustrated in other areas of this report, are largely consistent with the important provisions of the CCRF and other relevant international conventions and standards that are applicable to responsible fishing operations.</p>		

¹ “Fishing Regulations” Gulf of Mexico Fishery Management Council. Web. Accessed November 2015.
http://gulfcouncil.org/fishing_regulations/index.php

² “Regulations/Policy Branch” NOAA Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/index.html

³ “Fishery Bulletins” NOAA Fisheries Southeast Regional Office. Web. Accessed November 2015.
http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁴ MDMR. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.
<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁵ “Commercial Fishing” Mississippi Department of Marine Resources. Web. Accessed September 2015.
<http://dmr.ms.gov/index.php/commercial-fishing>

8.2 Flag State duties

8.2.1 (a) Are states maintaining records of fishing vessels authorized to fish, which indicate details of the vessels, their ownership and authorization to fish? *Yes...*[1] *Some...*[½] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: NOAA Fisheries SERO Permits Office is tasked with managing federal fishing permits of the Gulf of Mexico.¹ Refer to 8.1.2 for full details.</p> <p>Mississippi: A Mississippi saltwater fishing license is required to harvest fish in coastal and marine waters of the state, and fishing activity is documented through the Trip Ticket Program.^{2,3} Refer to 8.1.2 for full details.</p>		

¹ "Permits" NOAA Southeast Regional Office. Web. Accessed November 2015.

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

² "Licenses" Mississippi Department of Marine Resources. Web. Accessed November 2015.

<http://dmr.ms.gov/index.php/commercial-fishing/licenses>

³ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*.

<http://dmr.ms.gov/images/publications/reg-book.pdf>

⁴ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015.

<http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

8.2.1 (b) Have such vessels have been issued with, and carry on board, a license/permit and authorization to fish? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: To fish for shrimp in the Gulf's EEZ, a commercial vessel permit for Gulf shrimp must have been previously obtained and must be aboard the vessel.¹</p> <p>Mississippi: A specific shrimping license is required and must be renewed annually. The license required is dependent upon the size of the vessel. There is also a Mississippi Captain's License that may be obtained. A recreational shrimp license is required for shrimp harvest by trawl, but not required for harvest by cast net (unless harvesting finfish). Live-bait licenses must be obtained from the Mississippi Commission on Marine Resources (MCMR). Live-bait harvesters must mark their boats and vehicles, signifying that they are a live bait harvester.²</p>		

¹ 50 C.F.R. § 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_150

² GSMFC. *Law Summary 2015*. <http://www.gsmfc.org/publications/GSMFC%20Number%20245.pdf>

8.2.4 Is there legislation requiring fishing gear to be marked, taking into account uniform and recognizable gear marking systems, in order that the owner of the gear can be identified?

Yes...[1]Some... [½]No...[0]

Extent of compliance		
Yes	Some	No
Shrimp gear remains attached to the vessel continuously while fishing; therefore, there are no specific regulations requiring the marking of gear at either the state or the federal level. ^{1,2} Vessels are required to be marked with the appropriate state or federal identification number.		

¹ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

² "Commercial Fishing Regulations for Gulf of Mexico Federal Waters" *Gulf of Mexico Fishery Management Council*. Web. Accessed September 2015. http://gulfcouncil.org/fishing_regulations/CommercialRegulations.pdf

8.2.7 (a) Are states taking enforcement measures in respect of fishing which have been found by them to have violated applicable conservation and management measures, including, where appropriate, making the violation of such measures an offence under state legislation?

Yes...[1]Some... [½]No...[0]

Extent of compliance		
Yes	Some	No
Fishing regulations are mandated under state and federal legislation and strictly enforced by several agencies. Refer to 7.7.2(a) for details of laws pertaining to fishing regulations and enforcement activities in place to ensure compliance.		

8.2.7 (b) Are sanctions applicable in respect of violations and illegal activities adequate in severity to be effective in securing compliance and discouraging violations wherever they occur?

Yes...[1]Some... [½]No...[0]

Extent of compliance		
Yes	Some	No
Penalties and sanctions for violating state and federal fishing regulations are in place and actively enforced. Law enforcement reports by several agencies indicate that compliance is high. Refer to 7.7.2(b) for full details on sanctions and compliance of the Mississippi shrimp fishery.		

8.4 Fishing operations

8.4.2 Have States prohibited within national legislation dynamiting, poisoning and other comparable destructive fishing practices? **Yes...[1] Some...[½] No...[0]**

Extent of compliance		
Yes	some	no
Federal: The U.S. Code of Federal Regulations prohibits destructive fishing practices,		

including use of explosives, toxic chemicals or plants, fish traps, bottom trawls without weak links, and the use of Gulf reef fish as bait. ¹		
Mississippi: Mississippi Code §49-7-69 states “It shall be unlawful for any person in the taking or killing of fur-bearing animals or fish to use poison, explosives or chemicals of any description.” ²		

¹ 50 C.F.R. § 622.9 http://www.ecfr.gov/cgi-bin/text-idx?SID=7663a4568ee406f4e5bcf64f9bfd4de2&node=pt50.12.622&rgn=div5#se50.12.622_19

² Miss. Code Ann. §49-7-69 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-7/in-general/section-49-7-69>

8.4.3 (a) Is documentation required with regard to fishing operations, retained catch of fish and non-fish species and, as regards discards, the information required for stock assessment as decided by relevant management bodies, collected and forwarded systematically to those bodies?

(i) - documentation on fishing operations **Yes...[1]Some... [½]No...[0]**

Extent of compliance		
Yes	Some	No
Documentation on fishing operations is maintained by state and federal agencies for fishing activities in Mississippi and U.S. Gulf of Mexico waters. Refer to 8.1.3 for details on requirements and documentation maintained by each agency.		

8.4.3 (a)(ii) - documentation on non-fish catches **Yes...[1]Some... [½]No...[0]**

Extent of compliance		
Yes	Some	No
	<p>Federal: NOAA Fisheries does not require the direct reporting of non-fish species; however, reporting of interactions with some species is required by the Office of Protected Species.</p> <p>The NOAA Office of Protected Resources annually reviews interactions between fisheries and the protected species under management. There are currently 125 endangered or threatened marine species that fall under NOAA jurisdiction through the ESA, and all marine mammals under the MMPA.¹</p> <p><i>ESA species:</i> There are several species listed under the ESA as threatened or endangered that are known bycatch of the shrimp fishery, including all five sea turtle species found in the Gulf of Mexico, smalltooth sawfish and Gulf sturgeon.² There is currently no direct reporting requirement for interactions with these species. NOAA Office of Protected Resources calculates the annual take of these species based on data from the Observer Program combined with detailed shrimp effort data from the ELB program.³ Compliance with TED requirements is also monitored and the Gulf of Mexico shrimp fishery must maintain an 88% compliance rating, otherwise NOAA</p>	

	<p>is required to take action to reduce potential mortality of sea turtles, which could include closure of the fishery.⁴</p> <p><i>Marine Mammals:</i></p> <p>The office of Protected Resources currently lists the Gulf of Mexico shrimp fishery as a Category II fishery, indicating that the annual mortality or serious injury of a marine mammal stock is greater than 1% but less than 50 % of the stocks potential biological removal (PBR).⁵ The Gulf of Mexico shrimp fishery is known to interact with bottlenose dolphins and lack of a calculated PBR for the Gulf of Mexico bottlenose dolphin populations, data from stranding programs, and low observer coverage in the fishery are all reasons that prompted NOAA to assign a Cat. II ranking. Cat. II designation requires that each fishery participant be registered with the Office of Protected species and carry an authorization certificate. Typically, registration with the Marine Mammal Authorization Program is combined with state and federal permitting systems and all fishermen receiving permits are registered with the Office of Protected Species automatically. Cat. II requirements also require the fishery to have an observer program and fishermen must carry an observer onboard if requested, and must comply with any take reduction plans in place. There is currently no take reduction plan in the Gulf of Mexico for bottlenose dolphins. Fishermen are also required to report all incidental injuries and mortalities of marine mammals to the Office of Protected Species.⁶</p> <p><u>Mississippi:</u></p> <p>There is currently no reporting requirement for capture of non-fish species in Mississippi.</p>	
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¹ NOAA Office of Protected Resources. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/>

² NMFS. 2014. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. Consultation No. SER-2-13-1225. http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

³ GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁴ NOAA Fisheries. TED Effectiveness Rates (April 2014 - July 2015). http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/sea_turtle_capture_rates_and_ted_effectiveness_in_the_southeast_shrimp_otter_trawl_fleet.pdf

⁵ "List of Fisheries" NOAA Office of Protected Resources. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/interactions/lof/>

⁶ "Marine Mammal Authorization Program" NOAA Fisheries. Web. Accessed May 2016. <http://www.nmfs.noaa.gov/pr/interactions/mmap/#report>

8.4.3 (a)(iii) - documentation on fish catches Yes...[1] Some... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The SEFSC Fisheries Monitoring Branch monitors the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.¹ Landings data are collected from each individual state agency Trip Ticket Reporting Program. NOAA Fisheries has a cooperative agreement with each state and relies on the state to collect and process landings data reported by dealers. Additional information for shrimp is gathered through the GSS, which includes data collection by port agents stationed throughout the Gulf of Mexico (refer to 7.1.4(a) for full details on the GSS).² Furthermore, all federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal. ALF forms are mailed to permit holders each spring to report on landings from the previous year.³</p> <p>Mississippi: MDMR meets required standards of data collection through the Trip Ticket Program. MDMR began implementation the Trip Ticket Program for fishery-dependent data collection in 2002.⁴ The Trip Ticket Program was initially implemented in Florida, and developed for use in the other Gulf states through the GSMFC FIN program. The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis and minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.⁵ MDMR implemented the Trip Ticket Program for all fisheries in 2012; however, dealers exclusively purchasing shrimp were exempt from trip ticket reporting but still required to report through other methods.⁶ In July 2015, MCMR voted to remove the exemption, and as of 2015, all shrimp dealers must also report through the trip ticket system. Prior to Trip Ticket implementation, commercial catch statistics were collected by NMFS and data are available through Fishery Statistics reports.⁷</p>		

¹ "Fisheries Monitoring Branch" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/data/monitoring.htm>

² "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cfeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁴ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

⁵ Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

⁶MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

⁷VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

8.4.3 (b) Is such an observer and inspection scheme being established in order to promote compliance with applicable (fishery management) measures? **Yes... [1] Some... [1/2] No... [0]**

Extent of compliance		
Yes	Some	No
	<p><u><i>OBSERVER SCHEME:</i></u> Amendment 13 of the shrimp FMP, established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch composition. These methods include the implementation of mandatory observer coverage for a randomly selected portion of the fishery to collect data on effort and bycatch composition.¹ Federal gulf shrimp permit holders are required to carry an onboard observer if selected by the Southeast Regional Office to participate in the Galveston Laboratory Observer Program. This requirement is mandated by 50 CFR Section 622.52 and participation is a condition for annual renewal of federal shrimp permits.² Permit holders are selected by the Southeast Regional Director through a stratified random sampling method. 50 CFR Section 622.52 requires any vessel with a Gulf commercial shrimp vessel permit, if selected by the SRD, to carry a NMFS-approved observer and allow the observer free and unobstructed access to the vessel's bridge, working decks, holding bins, weight scales, holds, and any other spaces used to hold, process, weigh or store fish.</p> <p>The Galveston Lab Observer Program consists of onboard monitoring and scientific data analysis of the Gulf of Mexico shrimp fleet with a focus on bycatch characterization and shrimp bycatch reduction device evaluation. The observer program evaluates species composition of shrimp trawl bycatch, and efficacy of TEDs and BRDs.³</p> <p>Due to the high costs of outfitting boats with observers, NOAA Fisheries determined that 1% coverage would be adequate to document information on bycatch composition in the fishery when the observer program was made mandatory by shrimp FMP amendment 13.⁴ Amendment 13 notes that 5% coverage is typical of standard observer programs; however, the expense of outfitting the Gulf and South Atlantic shrimp fleet at 5% coverage is too cost prohibitive, and given the current economic condition of the fishery, the industry could not be asked to incur the cost. As part of the bycatch data collection methodology set by amendment 13, the data gathered by observers at the 1% coverage level would then be combined with detailed effort data from the ELB program to extrapolate total bycatch numbers for the fishery. The most recent report from the observer program, published in 2012, indicates that observer coverage is now at about 2% for the Gulf and South Atlantic shrimp fisheries due to decreases in effort in the fishery.⁵ Observer coverage through</p>	

<p>this program only applies to the offshore fleet with federal permits and does not cover inshore state-licensed shrimp trawls. The National Bycatch Report, published by NOAA, considers the Gulf of Mexico shrimp trawl observer coverage to be at a pilot/baseline stage and ranks the fishery as a Tier 2 for bycatch estimation, indicating that methods for obtaining data and estimating bycatch need improvements before being considered reliable.⁶</p> <p>In 2012, observer coverage was added specifically for the inshore skimmer trawl fishery in the northern Gulf of Mexico due to increased sea turtle stranding reports.⁷ The authority to mandate this observer coverage falls under the ESA.⁸ Coverage for the skimmer fleet has continued annually since 2012. Reports on the skimmer trawl observer coverage are published annually. The primary objectives were to document interactions with threatened or endangered sea turtles during commercial shrimping operations and to quantify both target and non-target species by area.⁹ Coverage is currently low due to difficulties with obtaining accurate contact information for state permit holders, significant changes in the inshore fleet due to economic difficulties (boats sold or not active), lack of vessel insurance (which is a requirement for carrying observers), and difficulty in determining participants based on gear type. In 2014, of the 277 permit holders selected for the program, only 15 vessels carried observers.¹⁰ The National Bycatch Report, First Edition Update 1, released in 2013, states that observe data from the Gulf of Mexico shrimp skimmer net fishery was not used in the report because the levels of observer coverage are too low to assess bycatch.¹¹</p> <p>There are strong criticisms by some stakeholders, including environmental NGOs, that the current percent coverage is not an adequate to ensure compliance with conservation measures and is likely to lead to the “observer effect”, where fishermen modify their behavior when observers are present. The National Bycatch Reports also indicate that improvements are needed within the Observer Program to accurately and reliably assess bycatch of the fishery.</p> <p><u>INSPECTION SCHEME:</u> Marine resource laws are enforced by the USCG, NOAA Office of Law Enforcement and LDWF. Refer to 7.7.3 for details on inspection authority and activities by each agency.</p>
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¹GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²50 C.F.R. § 622.52 <http://www.gpo.gov/fdsys/granule/CFR-2013-title50-vol12/CFR-2013-title50-vol12-sec622-52>

³Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁴ GMFMC. *Amendment 13 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁵ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁶ National Marine Fisheries Service. 2011. *U.S. National Bycatch Report* [W. A. Karp, L. L. Desfosse, S. G. Brooke, Editors]. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-117C. http://www.nmfs.noaa.gov/by_catch/BREP2011/2011_National_Bycatch_Report.pdf

⁷ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁸ Federal Register- Annual determination to implement observer coverage <https://www.federalregister.gov/articles/2015/03/19/2015-06341/2015-annual-determination-to-implement-the-sea-turtle-observer-requirement>

⁹ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

¹⁰ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

¹¹ National Marine Fisheries Service. 2013. *U.S. National Bycatch Report First Edition Update 1* [L. R. Benaka, C. Rilling, E. E. Seney, and H. Winarsoo, Editors]. U.S. Dep. Commerce. http://www.st.nmfs.noaa.gov/Assets/Observer-Program/bycatch-report/NBR_FirstEditionUpdate1.pdf

8.4.4 Is the adoption of appropriate technology being promoted taking into account economic conditions for the best use and care of the retained catch? **Yes...[1] Some... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>The United States Code, Title 21, Part 123 and Part 110 establish a mandatory seafood inspection program, Hazard Analysis and Critical Control Points (HACCP), and quality standards for the manufacture, packing and storing of food for human consumption.^{1,2} The FDA maintains a Science and Research (Food) Program that continues to advance knowledge regarding best practices for handling and preparation, and consumer use of foods, including seafood.³</p> <p>At the state level, MDMR Seafood Technology Bureau is responsible for seafood handling and safety and conducts inspections of seafood facilities.⁴ MDMR Seafood Technology Bureau seafood officers conduct quarterly inspections of all seafood</p>		

processing facilities in MS to ensure sanitation standards and HACCP regulations are being met. The Seafood Technology Bureau also provides educational materials and resources for seafood industry members to promote best practices in seafood handling.		
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¹ 21 U.S.C. 123 (FDA HACCP regulations) <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm?CFRPart=123>

² 21 U.S.C. Part 110 (Federal Food, Drug and Cosmetics Act) <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title21/html/USCODE-2011-title21-chap9-subchapIV.htm>

³ "Science and Research (Food)" *U.S. Food and Drug Administration*. Web. Accessed November 2015. <http://www.fda.gov/Food/FoodScienceResearch/default.htm>

⁴ "Seafood Technology Bureau" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.state.ms.us/index.php/marine-fisheries/seafood-technology>

8.4.5 Are States and relevant groups from the fishing industry encouraging the development and implementation of technologies and operational methods that reduce discards?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>The primary gear types in the Mississippi commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, push trawls, beach seines and cast nets are also sometimes utilized in some inshore areas.¹ Otter trawls are the dominant gear in the offshore fleet; skimmers have become popular in inshore waters. Federal regulations require the use of TED is all otter trawls in state and federal waters. Skimmer trawls are required to either use a TED in each net, or adhere to strict maximum tow times to prevent drowning of incidentally captured sea turtles. Trawls are also required to use BRDs in federal waters in depths up to 100 fathoms.</p> <p><u>TEDs:</u> Federal regulations require the use of Turtle Excluder Devices (TEDs) in all otter trawls in the shrimp fishery in both state and federal waters to reduce sea turtle capture and mortality.² Federal regulations requiring TEDs in all otter trawls for the shrimp fishery went into effect in 1989 (for history of TEDs. TEDs are not 100% effective; certified TED designs are required to meet a 97% efficiency rate for turtle exclusion within a 5 minute period. Current certified TEDs in use; therefore, are effective in allowing the escape of most turtles caught within shrimp trawls. Federal regulations require either the use of a TED in skimmer nets, or adherence to strict tow times (maximum 55 minutes from April 1 to October 31, and 75 minutes from November 1 to March 31) to reduce sea turtle capture and drowning within skimmer nets. In 2012, NOAA proposed a regulation change requiring the use of TEDs in skimmers; however, research indicated that the majority of turtles (58%) captured in skimmer trawls during observer coverage in 2012 were small enough to pass through the current 4' TED design.³ These data caused NOAA to repeal the proposed rule over concern that current TEDs would not efficiently exclude turtles caught using skimmers in the inshore fleet and NOAA began research on new</p>		

TED designs to address this problem. NOAA is currently actively researching new TED designs to exclude smaller turtles, and outreach efforts have begun to increase awareness of tow time regulations to improve compliance with the current tow time regulations.

When renewing licenses in Mississippi, shrimpers are required to report on the gear type used. Of the 320 shrimpers reporting, the large majority (198) use only otter trawls, 30 shrimpers report using both otter trawls and skimmers, and 83 shrimpers report using skimmers.⁴

Several fishermen in the skimmer trawl fleet in Mississippi do use TEDs voluntarily. In 2010-11, MDMR utilized grant funding to provide TEDs to skimmer trawl fishermen and increase outreach and education regarding sea turtle interactions.^{5,6} In 2010, 380 TEDs were distributed to over 190 shrimpers who reported using Skimmers. MDMR personnel conducted 24 trips as observers on commercial vessels that received TEDs to gather data on sea turtle interactions. Only 4 turtles were encountered and all were released alive. MDMR also conducted mailings to all license holders with information on sea turtle interactions, proper handling, and resuscitation, NOAA's TED training video (in English and translated into Vietnamese), and distributed 475 TED angle meters and instructions on use. Mississippi Law states that a regulation cannot be implemented in MS that is stricter than federal regulations; therefore, MDMR cannot mandate TED use in skimmer trawls until a determination and regulation is set by NOAA Fisheries on this issue.⁷ MDMR does actively enforce tow time requirements and compliance with TED use and tow times is high in Mississippi waters.⁸ MDMR enforcement division also conducts courtesy inspections at the docks to improve TED compliance.

BRDs:

The U.S. Code of Federal Regulations also requires shrimp trawl vessels to be equipped with a certified bycatch reduction device (BRD) installed in each net used for fishing on their vessel.⁹ To be certified by the NOAA Harvesting Systems Unit, a BRD must reduce finfish bycatch by at least 30% by weight.¹⁰ BRDs are not required in state waters in Mississippi; however, many fishermen utilize BRDs to reduce catch of unwanted species.

Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted (brown or white).¹¹ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is "no pressing need" to make BRD use mandatory.

NOAA Harvesting Systems Unit:

The SEFSC Pascagoula Lab contains the Harvesting Systems Unit, which is a team of gear specialists and fishery biologists performing research into critical problems relating to commercial and recreational fishing gear to inform and improve fisheries resource management.¹² The Harvest Systems Unit is responsible for the development, evaluation, certification, and national and international technology transfer of turtle excluder devices (TEDs) for trawling gear. The Harvesting Systems Unit is also responsible for the development and assessment of bycatch reduction devices (BRDs) to reduce finfish bycatch in shrimp trawls. Research on TEDs and BRDs for the shrimp fishery is ongoing with annual testing on new designs of these devices to improve efficiency in reducing bycatch and minimizing shrimp loss and studies are conducted both independently, and in collaboration with commercial shrimpers through cooperative research projects. There are currently several certified designs of both TEDs and BRDs approved by the NOAA.^{13,14} Harvesting Systems Unit also contains a Gear Monitoring Team (GMT) dedicated to outreach and education on TED and BRD regulations and use. The GMT conduct courtesy inspections of TEDs and BRDs installed on shrimp boats during dock visits, workshops and upon request to ensure that these devices are properly used and may focus on areas of higher non-compliance based on past boarding records.¹⁵ The GMT coordinator's contact information is also published on NOAA's Southeast Fisheries Science Center's website and he can be contacted directly to do dockside inspections with no penalty attached prior to a vessel's departure.¹⁶

Additionally, Texas Sea Grant gear specialists have been active in training fishermen and captains across the Gulf of Mexico in all five states on TED and BRD use and other gear design improvements. In 2014, as part of a grant from the National Fish and Wildlife Foundation, a marine extension agent and a marine fisheries specialist traveled to conduct dockside inspections, reaching 500 captains and crewmembers.¹⁷

The Gulf and South Atlantic Fisheries Foundation is a private, regional nonprofit research and development organization focused on the development of commercial fisheries in the South Atlantic and Gulf of Mexico. The foundation has been active hosting workshops for commercial fishermen for at least 30 years. Efforts focused on TED and BRD research and development and gear outreach have been deemed successful by NMFS and the Foundation.¹⁸ The most recent outreach efforts by the Foundation were from 2011-2013. In that time period, the Regional Coordinators for the project traveled to 8 States in the Gulf and South Atlantic, visiting 74 cities. Regional Coordinators disseminated TED and BRD instruction manuals in English, Spanish, and Vietnamese. Additionally, TEDs were inspected according to the NOAA Boarding Form to check for any non-compliances while boats were still at the dock and could address any issues.

¹ Guide to Mississippi Saltwater Fishing Rule and Regulations 2015-16 <http://dmr.ms.gov/images/publications/2015-16%20Rules%20%20Regs%20combined%20for%20website.pdf>

² 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

³ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁴ MDMR, Unpublished Data. August 2015.

⁵ “Gulf Response Grants” *National Fish and Wildlife Foundation*. Web. Accessed September 2015. <http://www.nfwf.org/gulf/Pages/projectlist.aspx>

⁶ MDMR, *Final Programmatic Report- Reducing Interactions between Fishermen and Gulf Sea Turtles (MS)*, December 2011.

⁷ Miss. Code Ann. 49-15-15 <http://law.justia.com/codes/mississippi/2010/title-49/15/49-15-15/>

⁸ MDMR. “TED Enforcement Perspectives” PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015.

⁹ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

¹⁰ GMFMC. *Amendment 10 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. 2002. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

¹¹ David Burrage “Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery.” 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

¹² “Harvesting Systems Unit” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹³ “TED Designs” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

¹⁴ “BRD Designs” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

¹⁵ NOAA Fisheries. *Southeast Fishery Bulletin*. February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf

¹⁶ “Sea Turtle Staff” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/turtles/staff.htm>

¹⁷ *Texas Sea Grant*. Web. Accessed November 2015. <http://texasseagrant.org/staff/tony-reisinger/>

¹⁸ Helies, F.C. Graham, G., Parker, L., Jamison J. 2013. An Expanded Outreach Program and Technology Transfer of Updated Bycatch Reduction Devices and Turtle Excluder Devices to the Southeastern U.S. Shrimp Industry. Final Report. http://www.gulfsouthfoundation.org/uploads/reports/118_final_report.pdf

8.4.6 Are technologies, materials and operational methods being applied that minimize the loss of fishing gear and the ghost fishing effects of lost or abandoned fishing gear?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
Technologies, materials and methods are being applied by state and federal agencies to minimize the loss of fishing gear and effects of ghost fishing by lost or abandoned gear. Refer to 7.2.2 (g)(ii) response for full details of actions and regulations being taken by each agency.		

8.4.7 Are assessments being carried out of the implications of habitat disturbance prior to the introduction on a commercial scale of new fishing gear, methods and operations?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p><u>Federal:</u> The GMFMC website Fishing Regulations section lists allowable gear for each fishery. Allowable gear for the Gulf of Mexico commercial shrimp fishery includes otter trawl, skimmer trawl, butterfly net and cast net.¹</p> <p>NOAA's Harvesting Systems Unit, housed at the Pascagoula Lab in Mississippi, is a team of biologists and gear specialists who perform critical research on fishing gear. The Harvesting Systems Unit does extensive research on fishing gear, methods, BRDs, and TEDs for the Gulf of Mexico shrimp fishery, including cooperative research with commercial industry members to test improved gear designs and methods.² All gear designs tested by the harvesting systems unit are fully evaluated for impacts. Additionally, any changes in allowable gear would go through the regulatory process, which requires an environmental assessment prior to implementation as required by NEPA and the MSA Section 304(i).³</p> <p><u>Mississippi:</u> Mississippi Administrative Code, Title 22, Part 18 requires an Experimental Gear/Underutilized Species Permit prior to use of new gear types or experimental methods.⁴ The Marine Experimental Gear/Underutilized Species Permit is issued for harvest activities that qualify based upon individual project merit and potential for impact to coastal resources. Recommendations are made by MDMR staff to the Executive or his designee as to the validity of the permit request and if it has sufficient merit for issuance. All permitted activities are subject to an MDMR observer being present during all or some collection events, and submittal of data, including but not limited to species identification, specimen sizes and weights, and sample locations and times, duration and number of sampling events, and disposition of catch. Reporting requirements are determined based upon the project type and scope of work. All proper commercial licenses must also be obtained as determined by the Executive Director or his designee. Proposed gear and harvest methods are evaluated based upon potential for impact to the fishery and environment as well as for effectiveness.⁵</p>		

<p>Additionally, all commercial fishing activities in Mississippi must be reported on Trip Ticket forms, which require reporting of gear type and quantity; therefore, any changes in gear use for the commercial fishery would be detected by MDMR if they occurred.⁶ MDMR regularly monitors trip ticket reports and communicates frequently with industry members.</p>		
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¹ "Allowable Gear" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² "Harvesting Systems Unit" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

³ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁴ [Mississippi Admin. Code, Title 22, Part 18](#)

⁵ MDMR. Guidelines for the Application of a Marine Experimental Gear/Underutilized Species Permit (revised August 2015).

⁶ MDMR. *Trip Ticket Procedures Manual*. January 2012. <http://www.dmr.ms.gov/images/fisheries/finfish/trip-ticket-manual-english.pdf>

8.4.8 Is research being promoted on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities, being promoted?

(i) - on the environmental impacts? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance	Some	No
<p>Yes</p> <p>The Essential Fish Habitat (EFH) Generic Amendment (applied to all Gulf of Mexico FMPs) and accompanying EIS contain detailed information on the environmental impacts of fishing methods.^{1,2} Section 6.1.2.1 of the amendment specifically pertains to impacts from trawl fisheries as does section 3.5.2 of the EIS. The EFH amendment also makes recommendations for minimizing impacts, which have been adopted by the GMFMC.</p> <p>Changes in allowable gear type would occur through amendment of the shrimp FMP and federal regulations. The National Environmental Policy Act (NEPA) requires the analysis of any potentially significant environmental impacts that may result from new regulations or agency actions by all federal government agencies. Section 304(i) of MSA requires compliance with NEPA regulations with regard to fishery management plans and actions.³ NOAA Fisheries determines the analysis level necessary to comply with MSA and NEPA regulations for each FMP amendment and management action. A summary of findings is compiled in either a Record of Decision or a Finding of No Significant Impact (FONSI) which is included in each FMP or amendment. For the shrimp FMP, an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) has been conducted</p>		

for each amendment, as necessary. ⁴ Additionally, Section 303 (a)(9) of the MSA requires that FMPs include a fishery impact statement (FIS) for the plan or amendment. The FIS includes an assessment of the likely biological, social, economic, and administrative effects, if any, of the conservation and management measures on fishery participants and their communities as well as participants in other fisheries conducted in adjacent areas. ⁵		
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¹ GMFMC. *Generic Amendment for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery, Red Drum, Reef Fish, Coastal Migratory Pelagic Resources, Stone Crab, Spiny Lobster, and Coral*. 1998. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINALEFH-%20Amendment%201-%20no%20appendices.pdf>

² GMFMC. Final Environmental Impact Statement *Generic Amendment for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery, Red Drum, Reef Fish, Coastal Migratory Pelagic Resources, Stone Crab, Spiny Lobster, and Coral*. 2004. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf>

³ "National Environmental Policy Act Requirements" NOAA Fisheries. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/laws_policies/msa/nepa.html

⁴ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁵ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

8.4.8 (ii) - on the social impacts? Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: NOAA SEFSC conducts an Annual Economic Survey of Federal Gulf Shrimp Permit Holders each spring collecting data on operating expenses and costs associated with owning and maintaining shrimp vessels.¹ Each year a third of the permit holders are randomly selected for this survey and information is used to assess trends in the financial state of the fishery, social and economic effects of regulations, and other economic factors impacting the Gulf shrimp fishery.</p> <p>NOAA Southeast Fisheries Science Center also contains a Social Science Research Group (SSRG) that conducts applied research on socio-cultural aspects of marine resources in the Gulf of Mexico.² This research largely focuses on participant and community dependence and engagement in fisheries and is directed by the principles of the MSA National Standard 8:³</p> <ul style="list-style-type: none"> - <i>Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of</i> 		

<p><i>such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.</i></p> <p>Changes in allowable gear type would occur through amendment of the shrimp FMP and federal regulations. Section 303 (a)(9) of the MSA requires that FMPs include a fishery impact statement (FIS) for the plan or amendment. The FIS includes an assessment of the likely biological, social, economic, and administrative effects, if any, of the conservation and management measures on fishery participants and their communities as well as participants in other fisheries conducted in adjacent areas.⁴ The GMFMC shrimp FMP contains a socioeconomic characterization of the shrimp fishery and each amendment to the FMP includes information on social and economic impacts and requires a Regulatory Impact Review.⁵ NOAA Fisheries also requires a Regulatory Impact Review (RIR) for each regulatory action of public interest, which provides a review of the level and incidence of impacts associated with the action, a review of the problems and policies prompting the action, and ensures that the agency has comprehensively considered all alternatives.⁶ All amendments and regulatory actions also go through public hearings and comment periods prior to implementation, which provides opportunity for additional input from industry members regarding potential impacts.</p> <p><u>Mississippi:</u></p> <p>Similarly, changes in regulations relating to gear or method of take for the fishery must go through the regulatory process for approval. MDMR conducts scoping meetings, direct stakeholder communications, public hearings, public comment opportunities and advisory committee meetings to address socioeconomic aspects for potential regulation changes.⁷</p>		
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¹ “Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

² “Social Science Research Group” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

³ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁴ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁵ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ “Guidance for Conducting Economic and Social Analyses of Regulatory Actions. *NOAA Fisheries*. Web. Accessed November 2015. http://www.nmfs.noaa.gov/sfa/laws_policies/economic_social/index.html

⁷ Miss. Code Ann. §25-43 (Administrative Procedures Law) <http://msdh.ms.gov/msdhsite/static/resources/1509.pdf>

8.4.8 (iii) - on the impact on biodiversity? Yes...[1] Some...[½] No...[0]

Extent of compliance		
Yes	Some	No
<p>There are two overarching considerations for the Mississippi shrimp fishery with regard to conservation of biodiversity of ecosystems: bycatch and bottom habitat impacts. Research is being conducted to monitor and assess potential impacts.</p> <p><u>Bycatch:</u> The primary gear types in the Mississippi commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, push trawls, beach seines and cast nets are also sometimes utilized in some inshore areas.^{1,2} Trawls are not a selective gear type, and numerous species have been documented as bycatch in shrimp trawl fisheries. Initial bycatch ratio estimates for the Gulf of Mexico shrimp fishery from 1970s were approximately 10:1, with some estimates based on season and area as high as 13.7:1.³ Since that time, the implementation of turtle excluder devices (TEDs), bycatch reduction devices (BRDs) and significant reductions in shrimp effort have all contributed to considerable reduction in the bycatch of this fishery. Estimates in 2009 concluded that bycatch ratios had remained consistent at approximately 4:1 since 2000, and the 2012 report by Scott-Denton et al, utilizing observer data, determined that total bycatch to shrimp ratios dropped to 2.5:1 (2:1 for finfish to shrimp).^{4,5} Currently, observer data is the only long-term data set documenting bycatch of the fishery and observer coverage is limited (1-2% coverage in the federal fleet and a small number of observers on inshore skimmer vessels). The majority of species are finfish, but other species, including sea turtles and some crustaceans such as blue crabs and other shrimp species like seabobs (<i>Xiphopeneus kroyeri</i>), and rock shrimp (<i>Sicyonia brevirostris</i>) are also common bycatch. Many incidental catch species are utilized by fishermen and may be retained up to certain limits (varies by state), such as seabobs, rock shrimp, blue crabs, and some finfish species.</p> <p><u>Harvesting Systems Unit:</u> The SEFSC Pascagoula Lab contains the Harvesting Systems Unit, which is a team of gear specialists and fishery biologists performing research into critical problems relating to commercial and recreational fishing gear to inform and improve fisheries resource management.⁶ The Harvest Systems Unit is responsible for the development, evaluation, certification, and national and international technology transfer of TEDs for trawling gear. The Harvesting Systems Unit is also responsible for the development and assessment of BRDs to reduce finfish bycatch in shrimp trawls. Research on TEDs and BRDs for the shrimp fishery is ongoing with annual testing on new designs of these devices to improve efficiency in reducing bycatch and minimizing shrimp loss and studies are conducted both independently, and in collaboration with commercial shrimpers through cooperative research projects. There are currently several certified designs of both TEDs and BRDs approved by the NOAA.^{7,8}</p> <p><u>Observer Program:</u> NOAA Fisheries monitors bycatch reduction methods and shrimp trawl impacts through an onboard observer program.⁹ The Shrimp Bycatch Reduction Device</p>		

Evaluation Research is an observer program organized and conducted through the Galveston Laboratory. This project consists of onboard monitoring and scientific data analysis. The observer program collects data on bycatch quantity and species composition, and evaluates efficacy of TEDs and BRDs currently in use in the commercial fishery. The fishery observer program was established in 1987 and has helped provide data for evaluating the economic impact of TEDs and BRDs on the shrimping industry.

Several studies have also been funded through NOAA’s Cooperative Research Fund (CRP) to evaluate bycatch reduction devices in the shrimp trawl fishery including projects by the Gulf and South Atlantic Fisheries Foundation (GSAFF).¹⁰

TEDs:

Federal regulations require the use of Turtle Excluder Devices (TEDs) in all otter trawls in the shrimp fishery in both state and federal waters to reduce sea turtle capture.¹¹ The Gulf of Mexico shrimp fishery has been identified as a significant source of sea turtle mortality and all five species of sea turtles present in the Gulf of Mexico are currently listed under the Endangered Species Act (ESA). TEDs are not 100% effective; certified TED designs are required to meet a 97% efficiency rate for turtle exclusion within a 5 minute period.¹² Current certified TEDs in use; therefore, are effective in allowing the escape of most turtles caught within shrimp trawls. NOAA Office of Protected Species conducts assessments for each species of sea turtle, monitors populations and closely monitors compliance with TED regulations and other sea turtle bycatch mitigation measures.¹³ Turtle mortality has decreased significantly since the implementation of TEDs and most sea turtle populations show signs of rebuilding.

TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011):¹⁴

<u>Species</u>	<u>Mortality</u>	
	<u>Pre-regulation</u>	<u>Post-Regulation</u>
<i>Lepidochelys kempii</i>	4,300	2,700
<i>Caretta caretta</i>	63,500	1,400
<i>Chelonia mydas</i>	500	300
<i>Dermochelys coriacea</i>	2,300	40
<i>Ertmochelys imbricata</i>	20	<10
	70,620	4,450

Post-TED mortality estimates are about 94% lower, (4,450 total deaths) than pre-regulation estimates (70,620).

Currently, federal regulations require either the use of TEDs in skimmer nets, or adherence to strict tow times (maximum 55 minutes from April 1 to October 31, and 75 minutes from November 1 to March 31) to reduce sea turtle capture and drowning within skimmer nets.¹⁵ Observer coverage on the skimmer fleet began in 2012.¹⁶ Data from the skimmer trawl observer program indicated that the majority of turtles (58%) captured in skimmer trawls during observer coverage in 2012 were small enough to pass through the current 4’ TED design. These data lead NOAA to repeal a

proposed rule requiring TEDs in skimmer trawl because TEDs would not efficiently exclude turtles caught using skimmers in the inshore fleet. NOAA's Harvesting Systems Unit began research in 2012 on new TED designs to address this problem.

BRDs:

Federal regulations also require the use of Bycatch Reduction Devices (BRDs) in all shrimp trawls fishing in federal waters to reduce the incidental catch of various finfish species.¹⁷ The August 2006 Regulatory Amendment of the shrimp FMP standardizes the requirements for certification of BRDs and requires a minimum 30% finfish bycatch reduction rate.¹⁸ Many of the typical species caught in shrimp trawls are highly productive, short-lived species with high resilience to fishing pressure.

Common species caught in shrimp trawls include: Atlantic croaker (*Micropogonias undulatus*), seatrouts (*Cynoscion sp.*), longspine porgy (*Stenotomus caprinus*), and inshore lizardfish (*Synodus foetens*).¹⁹ Based on a recent analysis by Raborn et al. (2014) these are the only finfish species and genus that represent 5% or higher in bycatch of shrimp trawls. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to any of these species.²⁰

Red snapper bycatch was a significant concern in the GOM shrimp fishery. The Red Snapper fishery in the Gulf of Mexico is considered overfished and is in a rebuilding plan. This rebuilding plan included a significant reduction in juvenile red snapper bycatch in the GOM shrimp Fishery. Implementation of BRD requirements, monitoring systems and seasonal area closures were developed to reduce bycatch of juvenile red snapper. Bycatch rates of juveniles red snapper are assessed annually using data from the observer program and detailed effort data from the ELB program to determine if seasonal closures are necessary to remain below bycatch limits for this species.²¹ Bycatch reduction targets for juvenile red snapper in the shrimp fishery have been met through use of BRDs and significant reductions in shrimp effort.²²

SEAMAP- Gulf of Mexico conducts resource surveys that are used to assess the shrimp populations through the Summer and Fall Shrimp/Groundfish Surveys.²³

These surveys provide valuable information not only on shrimp, but also on the common bycatch species typically found in shrimp trawls. Trends in abundance of all species caught in SEAMAP trawls are monitored, and data from these trawls are used in bycatch estimates by NOAA Fisheries.

Bycatch studies in Mississippi state waters by Burrage (2002) have indicated that bycatch rates for the inshore fishery range from 2.9:1 to 7.7:1 dependent on season and species targeted.²⁴ The primary species found in shrimp trawl bycatch were Atlantic croaker and sand seatrout with seasonal appearances of Gulf menhaden and butterfish. Burrage (2002) found that the species identified as bycatch in the study were short-lived, resilient non-game species, which showed no long-term declines in population. The conclusion of the report notes that BRDs can be an effective method of reducing bycatch and encourages BRD use during seasonal increases in bycatch species; however, no species are threatened by current shrimp trawl activities and there is "no pressing need" to make BRD use mandatory. BRDs are not required in state waters in Mississippi; however, many fishermen utilize BRDs to reduce catch of unwanted species.

MDMR and GCRL conduct fishery-independent surveys, which collect data on the species typically discarded in the shrimp trawl fishery.^{25,26} If information from the fishery-independent surveys indicates a cause for concern for any species in state waters, the agency would evaluate and take action as needed.

Bottom habitat impacts:

Impacts on EFH are assessed by NOAA and the GMFMC in the Generic Amendment for addressing EFH requirements in FMPs. The EFH amendment applies to all seven GMFMC FMPs.²⁷ The Initial EFH amendment was developed in 1998 and included an EIS. Section 5.1 identifies EFH for the shrimp species managed in the Gulf of Mexico Shrimp FMP (brown, white, pink, and royal red). Section 6.1 identifies fishing-related threats, 6.2 identifies non-fishing related threats. Section 7 provides management options to minimize impacts and Section 8 identifies research needs. The EFH amendment is updated every five years.

¹ "Allowable Gear" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

³ GMFMC. *Amendment 9 to the Shrimp Fishery Management Plan*. *Gulf of Mexico Fishery Management Council*. 1997. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

⁴ Frank Helies and Judy Jamison (2009) "Reduction Rate, Species Composition, and Effort: Assessing Bycatch Within the Gulf of Mexico Shrimp Trawl Fishery." NOAA/NMFS Cooperative Agreement Number NA07NMF4330125 (#101) http://www.gulfsouthfoundation.org/uploads/reports/101_final4.pdf

⁵ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁶ "Harvesting Systems Unit" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁷ "TED Designs" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

⁸ "BRD Designs" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

⁹ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹⁰ Frank Helies and Judy Jamison (2009) "Reduction Rate, Species Composition, and Effort: Assessing Bycatch Within the Gulf of Mexico Shrimp Trawl Fishery." NOAA/NMFS Cooperative Agreement Number NA07NMF4330125 (#101) http://www.gulfsouthfoundation.org/uploads/reports/101_final4.pdf

¹² 50 CFR § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

¹² “Turtle Excluder Devices (TEDs)” NOAA Fisheries: Southeast Fisheries Science Center: Mississippi Labs. Web. Accessed September 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/>

¹³ “Sea turtles” NOAA Fisheries. Web. Accessed September 2015. <http://www.nmfs.noaa.gov/pr/species/turtles/>

¹⁴ Elena M. Finkbeiner, Bryan P. Wallace, Jeffrey E. Moore, Rebecca L. Lewison, Larry B. Crowder, and Andrew J. Read, “Cumulative estimates of sea turtle bycatch and mortality in USA fisheries between 1990 and 2007” *Biological Conservation* 144 (2011) 2719–2727 <http://micheli.stanford.edu/pdf/Cumulative%20estimates%20of%20sea%20turtle%20bycatch%20and%20mortality%20in%20U.S.A.%20fisheries%20between%201990-2007.pdf>

¹⁵ 50 CFR § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

¹⁶ Elizabeth Scott-Denton, Jo Williams, and Jeffrey Pulver “Observer Coverage of the 2014 Gulf of Mexico Skimmer Trawl Fishery” NOAA Technical Memorandum NMFS-SEFSC-666 (2014) http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁸ 50 U.S. CFR §622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

⁵ GMFMC. *A Framework Measures to Address the Bycatch Reduction Criterion for Shrimp Trawls in the Gulf of Mexico West of Cape San Blas, Florida Under the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico*. 2006. http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf

¹⁹ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

²⁰ Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Penaeid Shrimp Fishery Bycatch*. LGL Ecological Research Associates, Inc. August 2014. <https://drive.google.com/file/d/0B-yvNu3oJn4ZRmF1NEVWNnBMZzQ/view?pli=1>

²¹ GMFMC. *Amendment 14 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

²² Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” PowerPoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

²³ “Southeast Area Monitoring and Assessment Program (SEAMAP)” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

²⁴ David Burrage “Inshore Shrimp Fishery Effort and Gear Evaluations to Mitigate Natural Disaster Impacts on Mississippi Inshore Brown Shrimp Fishery.” 2002. Mississippi State University Coastal Research & Extension Center. Biloxi, MS.

²⁵ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%202015.pdf>

²⁶ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

²⁷ “Essential Fish Habitat Amendments” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

8.4.8 (iv) - on the impact on coastal fisheries? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The original shrimp FMP implemented in 1981 identified several areas of user conflicts both with direct use of shrimp resources and with other marine resource users.¹ Direct users include recreational, live-bait, and commercial harvesters and both inshore and offshore fleets.</p> <ul style="list-style-type: none"> - Conflicts have arisen between direct users over preferred size of harvest. Some users prefer smaller shrimp typically harvested inshore, especially for the live-bait industry; however, offshore vessels harvest larger shrimp for food consumption. Most states have developed seasons for harvest of shrimp designed to accommodate multiple user needs. Additionally, area and seasonal closures (Texas closure and Tortugas closure) have also been set for federal waters to allow for protection of smaller shrimp in some areas until they reach a larger size. In Mississippi, the inshore shrimp season for commercial and recreational harvest is based on shrimp size. MDMR sampling each year determines when shrimp have reached legal size (68 count per pound) and opens the season by public notice once the majority of shrimp are at legal size.² Live-bait shrimping; however, is allowed year-round under strict harvest regulations and minimum size requirements is 100 count per pound.³ Other states have similar regulations for various direct user groups and conflicts have largely been minimized. <p>Conflicts with other fisheries and user groups have also been identified.</p> <ul style="list-style-type: none"> - Red snapper bycatch has been a major concern in the GOM shrimp fishery. The Red Snapper fishery in the Gulf of Mexico is considered overfished and is in a rebuilding plan.⁴ The red snapper rebuilding plan included a significant reduction in juvenile red snapper bycatch in the GOM shrimp Fishery. Amendment 9 of the shrimp FMP focused on reducing bycatch of juvenile red snapper in age 0 and age 1 groups by 50%, which was the amount determined at the time by NOAA Fisheries as necessary for the rebuilding plan.⁵ Amendment 9 required the use of Bycatch Reduction Devices (BRDs) in shrimp trawls west of Cape San Blas, FL in the U.S. EEZ. East of Cape San Bal was exempt at the time due to low abundance of red snapper in this area, and state waters were not considered a factor because it was determined that juvenile red snapper typically occur beyond depths of 5 fathoms, and mainly 		

<p>occurred beyond 10 fathoms (80-83% occurrence below 10 fathoms).⁶ The BRD certification criteria were changed by an August 2006 Regulatory Amendment to require that total finfish reduction be reduced by 30% with no specific red snapper requirement.⁷ In 2007, Amendment 14 (effective in 2008) established a specific red snapper bycatch reduction target for the shrimp fishery and designated seasonal closure restrictions that could be used to manage shrimp fishing effort in relation to the target bycatch reduction goal.⁸ If it is determined that a seasonal closure is necessary, then the Regional Administrator will set the closed season area and duration as necessary to meet the bycatch reduction target. Bycatch reduction target for juvenile red snapper in the shrimp fishery have been met and exceeded through use of BRDs and significant reductions in shrimp effort.⁹</p> <ul style="list-style-type: none"> - High incidental catch of finfish and shellfish has also created conflicts between shrimpers and the northern Gulf of Mexico groundfish fishery that may utilize species discarded by the shrimp fishery. Juvenile groundfish and other species are typically not retained by shrimpers because there is low economic value for them and retaining them would reduce available space for retaining shrimp catch. Regulations developed to reduce bycatch including required BRDs have significantly decreased bycatch of finfish within the shrimp fishery and additional actions, including effort reductions and seasonal closures (if needed) have also helped in reducing bycatch.^{10,11} - Gear conflicts between shrimpers and stone crab fishermen. The GMFMC shrimp FMP directly addresses conflicts between the shrimp and stone crab fisheries and established five zones within the EEZ to separate shrimp trawling and stone crab trap activity.¹² - Gear conflicts also occur in state waters between shrimpers and blue crab fishermen. Each of the five Gulf states, including Mississippi, has established trap identification and visibility requirements, restrictions on harvest hours, seasonal and area closures and derelict trap removal programs that all serve to reduce interactions between shrimp traps and crab traps.^{13,14,15} 		
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¹ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

² MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

³ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁴ "Red Snapper" *FishWatch*. Web. Accessed June 2015. http://www.fishwatch.gov/seafood_profiles/species/snapper/species_pages/red_snapper.htm

⁵ GMFMC. *Amendment 9 to the Shrimp Fishery Management Plan*. Gulf of Mexico Fishery Management Council. 1997. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

⁶ Nichols, Scott. *The spatial and temporal distribution of the bycatch of red snapper by the shrimp fishery in the offshore waters of the US Gulf of Mexico*. Pascagoula, Mississippi: National Marine Fisheries Service, Mississippi Laboratories, 1990.

⁷ GMFMC. *A Framework Measures to Address the Bycatch Reduction Criterion for Shrimp Trawls in the Gulf of Mexico West of Cape San Blas, Florida Under the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico*. 2006
http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf

⁸ GMFMC. *Amendment 14 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*.
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

⁹ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

¹⁰ 50 C.F.R. § 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_156

¹¹ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

¹² GMFMC. *Amendment 3 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council*. 1984. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-03%20Final%201982-10.pdf>

¹³ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCode/00000063c.pdf>

¹⁴ Miss. Admin. Code Title 22 Part 2 <http://www.dmr.state.ms.us/images/regulations/Title-22-Part-02-120114.pdf>

¹⁵ Derelict Trap Task Force. 2008. *Guidelines for Developing Derelict Trap Removal Programs in the Gulf of Mexico*. Gulf States Marine Fisheries Commission. Ocean Springs, MS.
<http://www.gsmfc.org/publications/GSMFC%20Number%20154.pdf>

8.5 Fishing gear selectivity

8.5.1 (a) Where practicable, is there a requirement that fishing gear, methods and practices are sufficiently selective as to minimize waste, discards, catch of non-target species - both fish and non-fish species - and impacts on associated or dependent species and that the intent of related regulations is not circumvented by technical devices and that information on new developments and requirements is made available to all fishers? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
	The primary gear types in the Mississippi commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, push trawls, beach seines and cast nets are also sometimes utilized in some inshore areas. ^{1,2} Within the Mississippi Sound, shrimp may only be taken with a single net with a maximum size restriction. ³ Otter trawls are the primary gear type utilized in the offshore fishery conducted in federal waters; skimmer	

	<p>nets have gained popularity in inshore waters. There are two overarching considerations for the Mississippi shrimp fishery with regard to gear selectivity and environmental impacts: bycatch and bottom habitat impacts. Fishermen and managers in the Gulf of Mexico work collaboratively on innovative gear modifications to reduce impacts. TEDs are required in otter trawls in state and federal waters by federal regulations, and tow time limits are required for skimmer trawls and butterfly nets.³ The use of BRDs is required in federal waters and encouraged in state waters, but not required.⁴ Substantial progress has been made in minimizing bycatch and impacts to the ecosystem by the Mississippi shrimp fishery; however, some areas for potential improvements remain.⁵</p> <p>Refer to the response to 7.2.2 (g)(iii) for full details on gear selectivity for each allowable gear type.</p>	
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¹ "Allowable Gear" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

³ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

⁴ 50 C.F.R. § 622.53 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_153

⁵ National Marine Fisheries Service. 2013. *U.S. National Bycatch Report First Edition Update 1* [L. R. Benaka, C. Rilling, E. E. Seney, and H. Winarsoo, Editors]. U.S. Dep. Commerce. http://www.st.nmfs.noaa.gov/Assets/Observer-Program/bycatch-report/NBR_FirstEditionUpdate1.pdf

(8.5.1 (a) cont.)

- Are regulatory measures being circumvented by technical devices?

Yes...[0] Some...[1/2] No...[1]

Extent of compliance		
No	Some	Yes
Federal:		
<p>Section 311 of the MSA authorizes NOAA enforcement and USCG agents to “board, and search or inspect, any fishing vessel which is subject to the provisions of this Act” with or without a warrant.¹ Both the USCG and NOAA Office of Law Enforcement actively monitor and enforce all federal fishing regulations including inspections to ensure proper use of gear such as TEDs and BRDs.^{2,3} TED compliance is a particular focus for enforcement officers and TED compliance reports are compiled and analyzed quarterly to ensure that the fishery continues to meet minimum compliance required by the ESA.⁴ Penalties for TED violations are based on the level of violation (Level 1=minor, Level 4=most severe) and penalties can be severe, ranging from a few hundred dollars to several thousand, forfeiture of catch and possible jail time. Additionally, authorization for the continued operation of the Gulf of Mexico shrimp fishery is based on maintaining compliance with TED regulations and the fishery can be close for a period of 30 days if TED compliance drops below the threshold of minimum compliance for two</p>		

consecutive quarters.⁵ These policies typically deter fishermen from circumventing regulatory measures.

Mississippi:

MMDR marine patrol conduct on water and dockside inspections and responds to reports of violations, issuing citations for any violation of gear regulations.^{6,7} MS Code § 49-1-43 authorizes conservation officers to inspect any person or vessel engaged in the take of fish or wildlife, and routinely do inspections of licenses, permits, tags, and gear to ensure that only legal devices are in use.⁸ Conservation officers may enter in or upon public or private lands or waters of the state where game and fish are known to range in the performance of the officer's duties to enforce wildlife laws and shall not be subject to criminal liability while performing such duties.⁹ Marine Patrol officers of MMDR hold the same powers and duties as conservation officers as described by MS Code Sections 49-1-43.¹⁰ In 2012, MMDR Marine Patrol conducted 1,484 hours of shore patrols, 2,396 hours of offshore patrols, over 1,800 vessel checks, over 3,600 harvester inspections, and issued over 800 citations and warnings (100 of which were fishery violations).¹¹ Additionally, MMDR enforcement officers conduct courtesy inspections to ensure that TEDs are installed properly prior to the opening of shrimp season; prior to the 2014 season opening 75 courtesy checks were conducted and all TEDs were made 100% compliant before operating in MS waters.¹²

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/ole/>

³ "Living Marine Resources" United States Coast Guard. Web. Accessed November 2015. <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ NOAA Fisheries. TED Effectiveness Rates (April 2014 - July 2015). http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/sea_turtle_capture_rates_and_ted_effectiveness_in_the_southeast_shrimp_otter_trawl_fleet.pdf

⁵ NOAA Fisheries. *Turtle Excluder Device (TED) Compliance Policy*. Draft May 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf

⁶ MMDR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011* <http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

⁷ MMDR. *Coastal Markers, a Newsletter of the Mississippi Department of Marine Resources*. Fall 2012. <http://dmr.ms.gov/images/publications/newsletters/fall2012.pdf>

⁸ Miss. Code Ann. §49-1-43 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43/>

⁹ Miss. Code Ann. §49-1-43.1 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-1/section-49-1-43.1/>

¹⁰ Miss. Code Ann. 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11>

¹¹ MDMR. 2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

¹² MDMR. "TED Enforcement Perspectives" PowerPoint presentation at the Collaborative NMFS/Industry Workshop, Biloxi, MS March 24-25, 2015.

8.5.1 (b) Are fishers cooperating in the development of selective fishing gear and methods?

Yes...[1] Sometimes...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>NOAA Fisheries SERO Cooperative Research Program (CRP) is a competitive Federal assistance program that funds projects seeking to increase and improve the working relationship between researchers from the National Marine Fisheries Service (NMFS), state fishery agencies, universities, and fishermen. The CRP has as its principal goal to provide a means of involving commercial and recreational fishermen in the collection of fundamental fisheries information to support the development and evaluation of management and regulatory options. Past research projects have included gear testing for BRDs and TEDs with commercial shrimp industry participants.²</p> <p>NOAA SEFSC Harvesting Systems Unit often collaborates with commercial fishermen on research of new gear designs.³</p> <p>Texas Sea Grant has also been active in research of various gear designs including TEDs, BRDs and trawl door fuel efficiency testing with fishermen and captains across the Gulf of Mexico.⁴</p> <p>The Gulf and South Atlantic Fisheries Foundation (GSAFF) is a private, regional nonprofit research and development organization focused on the development of commercial fisheries in the South Atlantic and Gulf of Mexico.⁵ The foundation has been actively working with commercial fishermen for at least 30 years conducting cooperative research and hosting workshops and training opportunities. Efforts focused on in TED and BRD research and development and gear outreach have been deemed successful by NMFS and the Foundation.^{6,7}</p>		

¹ "Cooperative Research Program (CRP)" NOAA Fisheries Southeast Regional Office. Web. Accessed September 2015.
http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/crp/index.html

² NOAA Fisheries, Southeast Regional Office. Cooperative Research Program Award Status Report. 2013.
http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/documents/2013_crp_annual_report.pdf

³ "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015.
http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁴ Texas Sea Grant. Web. Accessed November 2015. <http://texasseagrant.org/staff/gary-graham/>

⁵ "Research" Gulf and South Atlantic Fisheries Foundation. Web. Accessed November 2015. <http://www.gulfsouthfoundation.org/research/>

⁶ GSAFF. *Gulf and South Atlantic News, Volume 16, Issue (May 2015)* http://gulfsouth.ehclients.com/uploads/newsletters/5_15newsletter_short.pdf

⁷ Helies, F.C. Graham, G., Parker, L., Jamison J. 2013. *An Expanded Outreach Program and Technology Transfer of Updated Bycatch Reduction Devices and Turtle Excluder Devices to the Southeastern U.S. Shrimp Industry*. Final Report. http://www.gulfsouthfoundation.org/uploads/reports/118_final_report.pdf

8.5.2 Do regulations governing the selectivity of fishing gear take into account the range of fishing gear, methods and strategies available to the industry? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: Federal regulations allow for several gear types in the Gulf of Mexico shrimp fishery, including otter trawl, butterfly net, skimmer trawl and cast net.¹ Regulations concerning TED use are specific to gear type in order to accommodate differences in design and use.² NOAA SEFSC Harvesting Systems Unit continues to research new designs for TEDs and BRDs specific to each gear type in efforts to further improve bycatch reduction and frequently tests and certifies new designs requested by industry members to expand the available options for BRDs.³</p> <p>Mississippi: Similarly, MDMR allows for various gear types within the inshore shrimp fishery including otter trawls, skimmer trawls, butterfly nets, push trawls, beach seines, and cast nets. Gear regulations and restrictions are specific to gear type including closure areas for certain gears and size restrictions on trawl nets.⁴</p>		

¹ "Allowable Gear" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

³ "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁴ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

8.5.3 Are States and relevant institutions involved in the fishery collaborating in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
NOAA SEFSC Pascagoula Lab houses the Harvesting Systems Unit, a team of		

<p>biologists and gear specialists who perform critical research on fishing gear. The Harvesting Systems Unit does extensive research on bycatch reduction devices for the Gulf of Mexico shrimp fishery, including cooperative research with commercial industry members to test improved gear designs, and also conducts trainings and courtesy inspections across the Gulf on commercial shrimp boats to ensure proper use of turtle excluder devices (TEDs) and bycatch reduction devices (BRDs).¹ Harvesting Systems Unit also contains a Gear Monitoring Team (GMT) dedicated to outreach and education on TED and BRD regulations and use. The GMT conduct courtesy inspections of TEDs and BRDs installed on shrimp boats during dock visits, workshops and upon request to ensure that these devices are properly used.² The GMT travels to all five Gulf states to ensure technology transfer; additionally, the Harvesting Systems Unit is responsible for technology transfer of TEDs internationally and conducts trainings and inspections of shrimp fleets throughout the world.³ NOAA developed a standard TED enforcement boarding form, which is used by each state agency, NOAA enforcement and USCG to inspect TEDs.⁴ The August 2006 Regulatory Amendment of the shrimp FMP standardizes the requirements for certification of BRDs.⁵</p>		
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¹ "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

² NOAA Fisheries. *Southeast Fishery Bulletin*. February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf

³ "Shrimp Import Legislation for Sea Turtle Conservation" NOAA Fisheries. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/species/turtles/shrimp.htm>

⁴ MDMR Shrimp and Crab Bureau. *Shrimping the Sound*. Spring 2014. Newsletter <http://dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

⁵ GMFMC. *A Framework Measures to Address the Bycatch Reduction Criterion for Shrimp Trawls in the Gulf of Mexico West of Cape San Blas, Florida Under the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico*. 2006 http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf

8.5.4 Is cooperation being encouraged with respect to research program for fishing gear selectivity and fishing methods and strategies, dissemination of the results of such research programs and the transfer of technology? **Yes...**[1] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>NOAA SERO disseminates information and results of research through the Southeast Fishery Bulletin.¹ The Mississippi Department of Marine Resources distributes an annual Shrimp Newsletter through the shrimp and crab bureau. Information in the newsletter includes information from fisheries independent sampling, maps of shrimping grounds, seafood safety, license information, and regulation updates.²</p>		
<p>NOAA, in addition to being responsible for enforcement of TEDs, also has a Gear</p>		

Monitoring Team (GMT) dedicated to outreach and education on TED regulations. The GMT may conduct targeted to areas of non-compliance based on boarding records.³ The GMT coordinator's contact information is also published on NOAA's Southeast Fisheries Science Center's website and he can be contacted directly to do dockside inspections with no penalty attached prior to a vessel's departure.⁴

The Mississippi-Alabama Sea Grant Consortium Sea Grant (MASGC) is a federal/state partnership administered by NOAA pairing Sea Grant resources with academic institutions.⁵ The MASGC mission is 'to enhance the sustainable use and conservation of ocean and coastal resources to benefit the economy and environment in Alabama and Mississippi.' One of the primary focus areas of MASGC is Sustainable Fisheries and Aquaculture, and MASGC offers education and training programs to promote best practices in the fishing industry and update industry members on new technologies and methods that may improve their product or business.⁴ This information is disseminated via workshops, websites, social media, and mailed and online newsletters.⁶

Texas Sea Grant has been active in training fishermen and captains across the Gulf of Mexico. In 2014, as part of a grant from the National Fish and Wildlife Foundation, a marine extension agent and a marine fisheries specialist traveled to conduct dockside inspections, reaching 500 captains and crewmembers.⁷

The GASFF has also been active hosting workshops for commercial fishermen for at least 30 years. Efforts focused on in TED and BRD research and development and gear outreach have been deemed successful by NMFS and the Foundation.⁸ The most recent outreach efforts by the Foundation were from 2011-2013. In that time period, the Regional Coordinators for the project traveled to 8 States in the Gulf and South Atlantic, visiting 74 cities. Regional Coordinators disseminated TED and BRD instruction manuals in English, Spanish, and Vietnamese.

¹ NOAA Fisheries. *Southeast Fishery Bulletin*. February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf

² "Commercial Shrimping" *Louisiana Department of Wildlife and Fisheries*. Web. Accessed November 2015. <http://www.wlf.louisiana.gov/fishing/commercial-shrimp>

³ NOAA Fisheries. *Southeast Fishery Bulletin*. February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf

⁴ "Sea Turtle Staff" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/species/turtles/staff.htm>

⁵ *Mississippi Alabama Sea Grant Consortium (MASGC)*. Web. Accessed November 2015. <http://masgc.org/about>

⁶ "Sustainable Fisheries and Aquaculture" *Mississippi Alabama Sea Grant Consortium (MASGC)*. Web. Accessed November 2015. <http://masgc.org/focus-areas/article/sustainable-fisheries-and-aquaculture>

⁷ Posadas, B. *Economic Sectors Targeted by the Mississippi-Alabama Sea Grant Research, Extension, Education,*

and Outreach Programs. 2014. <http://msucares.com/pubs/publications/p2849.pdf>. Accessed 8.14.2015

⁸ Texas Sea Grant. Web. Accessed November 2015. <http://texasseagrant.org/staff/tony-reisinger/>

⁹ Helies, F.C. Graham, G., Parker, L., Jamison J. 2013. An Expanded Outreach Program and Technology Transfer of Updated Bycatch Reduction Devices and Turtle Excluder Devices to the Southeastern U.S. Shrimp Industry. Final Report. http://www.gulfssouthfoundation.org/uploads/reports/118_final_report.pdf

Article 10 - Integration of Fisheries into Coastal Area Management

10.1 Institutional framework

10.1.1 Has an appropriate policy, legal and institutional framework been adopted in order to achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems and the finite nature of their natural resources and the needs of coastal communities?

Yes...[1] Some...[½] No...[0]

Extent of compliance		
Yes	Some	No
<p>There are two primary state agencies in Mississippi that address environmental management and use of living resources: MDMR and the Mississippi Department of Environmental Quality (MDEQ).^{1,2} Through these two state agencies (MDMR and MDEQ), and additional federal programs, a framework exists to fully address environmental and coastal resource management in Mississippi.</p> <p><u>MDMR:</u> The marine resources of Mississippi are administered under MCMR and MDMR as authorized through the Mississippi Code, Title 49 (Conservation).^{3,4} MCMR holds regulatory authority over “all matters pertaining to all saltwater aquatic life and marine resources.” MDMR is the administrative arm of MCMR and is charged with “to manage, control, supervise, enforce and direct any matters pertaining to saltwater aquatic life and marine resources under the jurisdiction of the commission.” Rules and regulations of MCMR and MDMR are promulgated through the Mississippi Administrative Code, Title 22.⁵</p> <p><u>MDEQ:</u> MDEQ and the Mississippi Commission of Environmental Quality (MCEQ) were created by the Legislature in 1989 through Mississippi Code 49-2-4 and 49-2-5, which restructured of the previous Department of Natural Resources.^{6,7} The MCEQ is charged with developing the state’s environmental policies, hearing administrative appeals, and adopting environmental regulations.⁸ MDEQ is the administrative arm charged with carrying out technical, administrative and legal actions regarding environmental policies and management. Laws governing environmental management are established in Mississippi Code, Title 49. MCEQ and MDEQ promulgate rules and regulations through the Mississippi Administrative Code, Title 11.⁹</p>		

MDEQ is divided into four primary offices: Office of Pollution Control, Office of Land and Water Resources, Office of Geology, and Office of Administrative Services.¹⁰ These four offices each run several programs aimed to prevent pollution, mitigate impacts and improve the quality of the environment and natural resources of Mississippi.

MDEQ Emergency Services Division is the program that responds to spills of oil, hazardous materials, or other pollutants that pose a threat or potential threat to the health and safety of humans and/or the environment.¹¹ MDEQ supports local governments for spill response and acts as the coordinator between state and federal response resources.

The MDEQ Water Division falls under the Office of Pollution Control and maintains several branches that coordinate to address water quality and management in Mississippi.¹² Branches include: basin management, coastal grants, modeling and Total Maximum Daily Load management, nonpoint source management, and water quality standards.

The MDEQ Office of Pollution Control also manages environmental permits, environmental compliance and enforcement, remediation and waste management.¹³ The MDEQ Beneficial Use program, was established in 2005 allowing for by-product materials generated by industries to be utilized for beneficial use, instead of treated as solid waste disposed in landfills.¹⁴ This program allows for an increase in recycling and re-use of materials and reduces waste.

Violations of fish and wildlife laws, coastal resource laws and environmental laws may carry both criminal and administrative penalties depending on the severity of the violation.

If changes to permissible or potential use of coastal resources are proposed, Mississippi is governed under MS Code 25-13: Administrative Procedures Law, which requires public participation in the rule-making process and a 25-day notice period before a change is enacted.¹⁵

FEDERAL PROGRAMS:

MDCR is the primary agency that administers the Mississippi Coastal Program (MCP). The MCP is a NOAA-approved program designed to protect, restore, and responsibly develop coastal communities and resources.¹⁶ This federally-approved program provides federal funding through the Coastal Zone Management Act (CMZA) for the implementation of projects and program activities by state and local entities. MS Code 57-15-6 legislatively mandates the preparation and implementation of the CMP.¹⁷ The CMP was designed to preserve, enhance and develop coastal resources for present and future generations and was approved by NOAA, and accepted into the federal CZMP in 1980. Priorities identified in the most recent Assessment and Strategy Report in are:¹⁸

- High Priorities:

- Wetlands
- Coastal Hazards
- Public Access
- Secondary and Cumulative Impacts
- Medium priorities:
 - Special area management planning
 - Aquaculture
 - Marine Debris

The NOAA Office of Ocean and Coastal Resources manages the CZMP and monitors the Mississippi CMP through annual reporting of standardized performance indicators and five year Assessment and Strategy Reports.¹⁹

MDMR also administers the two additional federal programs: the Coastal Impact Assistance Program (CIAP), and the Coastal and Estuarine Land Conservation Program (CELCP).

The a Coastal Impact Assistance Program (CIAP) is a federal funded program administered by USFWS and managed by MDMR.²⁰ CIAP utilizes the royalties from offshore oil and gas leases to fund remediation projects addressing impacts from the oil and gas industry. These funds go to conservation and/or restoration of coastal areas, mitigation of damage to fish, wildlife, or natural resources and implementation of federally approved coastal management plans.

The Coastal and Estuarine Land Conservation program (CELCP) was created through an act of US Congress (Public Law 107-77) “for the purpose of protecting important coastal and estuarine areas that are threatened by conversion.” The Mississippi CELCP encompasses 4,949 square miles and contains one NERR site (Gran Bay), three National Wildlife Refuges, two National Forests, one National Seashore, four State Parks, and eight Wildlife Management Areas.²¹

In partnership with the EPA, the Gulf of Mexico Foundation, and the other four Gulf States, Mississippi also participates in the Gulf Ecological Management Site (GEMS) Program.²² This program “provides a regional framework for focusing attention on areas of special ecological significance to fish, wildlife, and other natural resources and furthers conservation efforts through inter-agency coordination and targeting of research, monitoring and action projects.” There are 22 sites identified as GEMS in Mississippi.²³

The National Estuarine Research Reserve Program (NERR) and the NWRS are two federal programs that provide areas of habitat and wildlife protection and opportunities for research and monitoring.^{24,25} Mississippi currently has one federally approved NERR- the Grand Bay Reserve.²⁶ Mississippi has several National Wildlife Refuges.²⁷ Additionally, Mississippi has one national seashore- the Gulf Islands National Seashore.²⁸

Mississippi coastal restoration efforts related to the Deepwater Horizon Oil Spill

recovery include: <ul style="list-style-type: none"> - NFWF (Gulf Environmental Benefit Fund)²⁹ - NRDA³⁰ - RESTORE (Gulf Coast Ecosystem Restoration Council and the Alabama Gulf Coast Recovery Council)³¹ 		
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¹ *Mississippi Department Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/>

² *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/About_About?OpenDocument

³ Miss. Code Ann. § 49-15-301 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-5/section-49-15-301/>

⁴ Miss. Code Ann. § 49-15-11 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-11/>

⁵ Miss. Admin. Code, Title 22, Part 4 <http://www.sos.ms.gov/ACCode/00000063c.pdf>

⁶ Miss. Code Ann. 49-2-4 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-2/in-general/section-49-2-4/>

⁷ Miss. Code Ann. 49-2-5 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-2/in-general/section-49-2-5/>

⁸ Miss. Code Ann. 49-2-9 (2013) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-2/in-general/section-49-2-9/>

⁹ Miss. Admin. Code, Title 11 [http://www.deq.state.ms.us/mdeq.nsf/pdf/legal_11Miss.Admin.CodePt.1Ch.1./\\$File/11%20Miss.%20Admin.%20Code%20Pt.%201%20Ch.%201..pdf?OpenElement](http://www.deq.state.ms.us/mdeq.nsf/pdf/legal_11Miss.Admin.CodePt.1Ch.1./$File/11%20Miss.%20Admin.%20Code%20Pt.%201%20Ch.%201..pdf?OpenElement)

¹⁰ “Programs” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/Main_programs?OpenDocument

¹¹ “Emergency Services Division” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/Main_EmergencyServices?OpenDocument

¹² “Water Division” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/SurfaceWater_home?OpenDocument

¹³ “Office of Pollution Control” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/About_Office_of_Pollution_Control?OpenDocument

¹⁴ “Beneficial Use Program” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/SW_MississippiBeneficialUseProgram?OpenDocument

¹⁵ Miss. Code Ann. §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

¹⁶ “Coastal Management” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://www.dmr.state.ms.us/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

¹⁷ Miss. Code Ann. §57-15-6 <http://law.justia.com/codes/mississippi/2013/title-57/chapter-15/section-57-15-6>

¹⁸ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

¹⁹ NOAA Office for Coastal Management. Web. Accessed November 2015. <https://coast.noaa.gov/>

²⁰ “Coastal Impact Assistance Program” *Mississippi Department of Natural Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-restoration-and-resiliency/ciap>

²¹ MDMR. *Draft State of Mississippi Coastal and Estuarine Land Conservation Program (CELCP) Plan*. <http://coast.noaa.gov/czm/landconservation/media/celcpplanmsdraft.pdf>

²² “Gulf Ecological Management Sites” *The Gulf of Mexico Foundation*. Web. Accessed November 2015. <http://www.gulfmex.org/conservation-restoration/gems/>

²³ “Mississippi GEMS” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://www.dmr.ms.gov/mississippi-gems>

²⁴ *National Estuarine Research Reserve System*. Web. Accessed November 2015. <http://www.nerrs.noaa.gov/>

²⁵ *National Wildlife Refuge System*. Web. Accessed September 2015. <http://www.fws.gov/refuges/>

²⁶ *Grand Bay NERR*. Web. Accessed September 2015. <http://grandbaynerr.org/>

²⁷ “Mississippi National Wildlife Refuges” *U.S. Fish and Wildlife Service*. Web. Accessed September 2015. <https://www.fws.gov/refuges/profiles/ByState.cfm?state=MS>

²⁸ “Gulf Islands National Seashore” *National Park Service*. Web. Accessed September 2015. <http://www.nps.gov/guis/index.htm>

²⁹ “Gulf Environmental Benefit Fund” *National Fish and Wildlife Foundation*. Web. Accessed November 2015. <http://www.restore.ms/national-fish-and-wildlife-foundation/>

³⁰ *Restore the Gulf*. Web. Accessed September 2015. <http://www.restorethegulf.gov/>

³¹ “NRDA” *Restore MS*. Web. Accessed September 2015. <http://www.restore.ms/nrda-2/>

10.1.2 In view of the multiple uses of the coastal area, are representatives of the fisheries sector and fishing communities consulted in the decision-making processes involved in other activities related to coastal area management planning and development? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
MDMR is responsible for both fisheries management and coastal management; therefore, all rule-making and public participation opportunities provided by MDMR, as described in response to 7.1.2 (a), also apply to coastal management decision-making.		
MCEQ, similar to MCMR, falls under the Open Meetings Act, Public Records Act, and Administrative Procedures Law. ^{1,2,3} These laws require that the public has		

<p>access to, and participates in, the decision-making process. The Commission meets once a month and each meeting is open to the public and allows public comment.⁴ Members of the fishing community are able to engage in the decision-making process through these opportunities.</p> <p>The Mississippi CMP Assessment and Strategy Reports are updated every five years and include stakeholder engagement throughout the process. For the most recent update of the 309 Assessment and Strategy Report, Enhancement Cycle 2016-2020, MDMR developed a Stakeholder Survey to capture stakeholder and private citizen input regarding the priorities, challenges and opportunities of the MCP.⁵ The draft Assessment and Strategy report is also made available for public review and comment for a 30-day period publicized through local newspapers and posted on the MDMR website.⁶</p>		
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¹ Miss. Code Ann. 25-41 (Open Meetings Act)
[http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

² Miss. Code Ann. 25-61(Public Records Act)
[http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_records_entire_pub_rec_act/\\$FILE/Public%20Records%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_records_entire_pub_rec_act/$FILE/Public%20Records%20Act.htm?OpenElement)

³ Miss. Code Ann. §25-43 (Administrative Procedures Law)
<http://msdh.ms.gov/msdhsite/static/resources/1509.pdf>

⁴ “Commission on Environmental Quality” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/About_Commission?OpenDocument

⁵ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

⁶ “Coastal Resources Management” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

10.1.3 Do institutional and legal frameworks regulating the possible uses of coastal resources and their access take into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development? **Yes...**[1] **Partly...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Estuarine areas are protected from activities like construction, dredging and pollution by the federal River and Harbor Protection Act and Wildlife Coordination Act, and by state laws, including the Mississippi Coastal Wetlands Protection Act; the latter act is designed to improve coastal Mississippi through programs that preserve and enhance coastal wetlands and their ecosystems.^{1,2}</p> <p>MDMR is responsible for both fisheries management and coastal management; therefore, all rule-making and public participation opportunities provided by MDMR, as described in response to 7.1.2 (a), also apply to coastal management decision-making. MCMR meetings are held monthly; meeting information is</p>		

<p>publically posted via the MDMR website and a public comment period is scheduled during each meeting.³ MDMR also conducts industry scoping meetings during initial development of new regulations or to address specific issues. For example, MDMR recently held a public hearing for commercial crabbers and oystermen to discuss potential projects for each fishery utilizing funds received from NOAA for the 2012 fishery disaster declaration.⁴ MDMR also posts proposed rules and public notices on the website and accepts written comments through mail and email.⁵ When significant management changes are proposed for industry, MDMR will work with a committee of industry representatives and stakeholders to assist in the development of these regulations.⁶</p> <p>The Mississippi CMP Assessment and Strategy Reports are updated every five years and include stakeholder engagement throughout the process. For the most recent update of the 309 Assessment and Strategy Report, Enhancement Cycle 2016-2020, MDMR developed a Stakeholder Survey to capture stakeholder and private citizen input regarding the priorities, challenges and opportunities of the MCP.⁷ The draft Assessment and Strategy report is also made available for public review and comment for a 30-day period publicized through local newspapers and posted on the MDMR website.⁸</p>		
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¹ Guillory, V. Perry, H. VanderKooy, S. 2001. *The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20096.pdf>

² Miss. Code Ann. § 49-27-3 (Coastal Wetlands Protection Act) <http://law.justia.com/codes/mississippi/2013/title-49/chapter-27>

³ "Meetings" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/commission-meetings>

⁴ "Recent News" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

⁵ "Public Notices" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

⁶ "Shrimp and Crab Bureau" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://www.dmr.ms.gov/index.php/marine-fisheries/shrimp-a-crab>

⁷ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

⁸ "Coastal Resources Management" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

10.1.4 (a)(i) Has the adoption of fisheries practices been promoted that avoids conflict among bottom resource users? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
Both the GMFMC Shrimp FMP and the Louisiana FMP address user conflicts		

associated with the Louisiana shrimp fishery. Refer to 7.6.5 for details on identified user conflicts and actions taken to reduce conflict.		
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(10.1.4 (a)(ii))

- bottom resource users and other users of the coastal area? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The primary conflicts between shrimpers and other resource users beside the fisheries conflicts mentioned above are typically with environmental groups concerned with incidental take of sea turtles. Requirements for Turtle Excluder Devices (TEDs), and guidelines on proper handling, resuscitation and release of sea turtles have significantly reduced sea turtle mortality in the Gulf of Mexico shrimp fishery.^{1,2,3} Additionally, the shrimp industry, federal and state agencies have also been active in other conservation efforts to aid the recovery of sea turtle populations including head-start programs to raise hatchling sea turtles in captivity for later release, nest protection programs in Florida, Texas and Mexico, and education programs to raise awareness among user groups regarding sea turtle conservation actions.^{4,5}</p> <p>In Mississippi, shrimp trawling is prohibited within ½ mile of the mainland, and within 1 mile of the barrier islands.⁶ This regulation reduces conflicts in nearshore areas and protects sensitive habitat areas.</p> <p>The Mississippi CMP Assessment and Strategy Reports are updated every five years and include stakeholder engagement throughout the process. For the most recent update of the 309 Assessment and Strategy Report, Enhancement Cycle 2016-2020, MDMR developed a Stakeholder Survey to capture stakeholder and private citizen input regarding the priorities, challenges and opportunities of the MCP.⁷ The draft Assessment and Strategy report is also made available for public review and comment for a 30-day period publicized through local newspapers and posted on the MDMR website.⁸</p>		

¹ 50 C.F.R. § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

² 50 CFR §622
http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

³ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” PowerPoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

⁴ “Galveston Laboratory” NOAA Fisheries. Web. Accessed November 2015.
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ Marty Bourgeois, Lisa Landry, Julia Lightner, Jeff Marx and Katie Semon. *Louisiana Shrimp Fishery Management Plan*. LDWF, Office of Fisheries, updated July 27, 2015. p.47.
<http://www.wlf.louisiana.gov/sites/default/files/pdf/page/37762-fishery-management-plans-marine/shrimpfmp7-27-15.pdf>

⁶ MDMR, 2013. *Guide to Mississippi Saltwater Fishing, Rules and Regulations 2013-14*. <http://dmr.ms.gov/images/publications/reg-book.pdf>

⁷ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

⁸ "Coastal Resources Management" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

10.1.4 (b) Have procedures and mechanisms been adopted which help settle these conflicts?
 Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC, along with NOAA Fisheries, is responsible for monitoring and amending fishery management plans (FMP) to best use the fishery resource in the Gulf of Mexico.¹ In doing so, they solicit participation from the entire fishing community. Their meetings are open to the public and public participation is actively encouraged. GMFMC uses a public "scoping" period and schedules public hearings to engage stakeholders with the goal of identifying issues, potential impacts, and alternative solutions to fishery management measures. Once a draft plan is prepared, it is presented to the public through hearings/meetings throughout the Gulf Coast for feedback. Comments submitted at these meetings are recorded and displayed on the GMFMC website. GMFMC also accepts comments through comment forms on their website, via email and mail. All comments are reviewed before FMP decisions are finalized. This final action also occurs publically, during GMFMC meetings.² GMFMC also communicates publicly via newsletters, social media posts, and cell phone applications, all in an effort to effectively disseminate conservation and management information.³ Additionally, for every FMP, there is an Advisory Panel (AP) composed of users of the fishery resource. Commercial and recreational fishermen, buyers, sellers, and consumers are all represented. The AP assists in advising GMFMC in the development of FMPs.⁴</p> <p>Mississippi: If MDMR institutes an administrative action that aggrieves a person, including an action that would increase friction between users of the coastal area, that person is able to request a hearing to contest the administrative action within 30 days of that action being passed.⁵ Additionally, Mississippi is governed under the Open Meeting Act, which requires that the deliberative process of the government be open to the public, with notice provided of when and where the meeting will be held, and which includes an opportunity for the people to offer comment on the proposed ruling.⁶</p> <p>The Mississippi CMP also requires consultation and coordination between various user groups in developing consistent management practices. The CMP Assessment and Strategy Reports are updated every five years and include stakeholder engagement throughout the process. For the most recent update of the 309 Assessment and Strategy Report, Enhancement Cycle 2016-2020, MDMR</p>		

developed a Stakeholder Survey to capture stakeholder and private citizen input regarding the priorities, challenges and opportunities of the MCP. ⁷ The draft Assessment and Strategy report is also made available for public review and comment for a 30-day period publicized through local newspapers and posted on the MDMR website. ⁸		
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¹ "Gulf Council FAQs" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² "Scoping through Implementation" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/>

⁴ "Committees & Panels" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/panels_committees/index.php

⁵ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

⁶ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

⁷ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

⁸ "Coastal Resources Management" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-resources-management/773-section-309-assessment-and-strategy>

10.2 Policy measures

10.2.1 Is public awareness being created on the need for the protection and management of coastal resources and the participation in the management process by those affected?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>MDMR publicizes public hearings, scoping meetings, comment periods for proposed management actions and encourages public participation through these outlets.^{1,2,3,4} Similarly, MDEQ also publicizes public hearings, and MCEQ meetings, and public notices through the MDEQ website.^{5,6} If either agency institutes an administrative action that aggrieves a person, that person is able to request a hearing to contest the administrative action within 30 days of that action being passed.^{7,8}</p> <p>Mississippi is governed under the Open Meeting Act, which requires that the deliberative process of the government be open to the public, with notice provided of when and where the meeting will be held, and which includes an opportunity for the people to offer comment on the proposed ruling.⁹</p>		

Aside from these outlets of engagement in the decision-making process, there are numerous initiatives for public awareness regarding protection and management of Coastal Resources through MDMR.

The Mississippi Coastal Management Program (CMP), governed under MDMR, has program activities including coastal cleanup, implementation of public access construction projects, planning support for local governments, and providing grant funds to Mississippi's coastal communities and partners. The Mississippi CMP's annual grant program supports projects that protect, enhance, and improve the management of natural, cultural, and historical coastal resources and that increase the sustainability, resiliency and preparedness of coastal communities and economies.¹⁰

In 2012, The Mississippi Governor created the Go Coast 2020 Commission as the advisory body to provide guidance on the allocation of funds received through the RESTORE Act in the wake of the 2010 Deepwater Horizon oil spill.¹¹ Go Coast 2020 included participation by over 100 small businesses, community leaders, elected official, and citizens across the state of Mississippi. Eight focus areas were determined (eco-restoration, economic development, seafood, infrastructure, tourism, workforce development, small business, and research and education) and a committee of stakeholders was formed for each focus area. Public comment was taken through the GoCoast2020 website, and listening sessions to gain further public input were held in each of the coastal counties. This group produced a report in 2013 that outlines priorities and recommendations for use of restoration funds to be received by Mississippi state from the RESTORE Act.¹²

MDMR also maintains programs for education and public enlightenment with respect to the wildlife and other natural resources in Mississippi.¹³

NERR sites provides a 'living classroom' for education on estuaries and coastal resources.¹⁶ The Grand Bay NERR Education program includes K-12 education, teacher training programs, and general public outreach.¹⁴

The Mississippi-Alabama Sea Grant Consortium offers a variety of educational experiences from K-12 summer camps through workshops for teachers covering a wide variety of coastal and environmental topics.¹⁵

There are also numerous NGOs in Mississippi and across the Gulf of Mexico addressing coastal resource awareness, restoration and protection.

¹ Miss. Code Ann. 25-41 (Open Meetings Act)

[http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)

² "Meetings" *Mississippi Department of Marine Resources*. Web. Accessed September 2015.

<http://dmr.ms.gov/index.php/commission-meetings>

³ "Recent News" *Mississippi Department of Marine Resources*. Web. Accessed September 2015.

<http://dmr.ms.gov/index.php/news-a-events/recent-news/636-14-41-mms>

⁴ “Public Notices” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/news-a-events/public-notice>

⁵ “Mississippi Commission on Environmental Quality” *Mississippi Department of Environmental Quality*. Web. Accessed November 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/About_Commission?OpenDocument

⁶ “Public Notices” *Mississippi Department of Environmental Quality*. Web. Accessed November 2015. <http://opc.deq.state.ms.us/publicnotice.aspx>

⁷ Miss. Admin. Code Title 22, Part 15 <http://www.dmr.state.ms.us/joomla16/images/regulations/title-22-part-15.pdf>

⁸ MS Code §25-43 (Administrative Procedures Law) http://msdh.ms.gov/msdhsite/_static/resources/1509.pdf

⁹ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meeting%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meeting%20Act.htm?OpenElement)

¹⁰ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

¹¹ *Go Coast 2020*. Web. Accessed September 2015. <http://www.gocoast2020.com/about/>

¹² Go Coast 2020 Commission. *Go Coast Final Report*. January 2013. <http://www.gocoast2020.com/wp-content/uploads/finalreport.pdf>

¹³ “Education” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/education>

¹⁴ *National Estuarine Research Reserve System*. Web. Accessed November 2015. <http://www.nerrs.noaa.gov/>

¹⁵ *Grand Bay NERR*. Web. Accessed September 2015. <http://grandbaynerr.org/>

¹⁶ *Mississippi Alabama Sea Grant Consortium (MASGC)*. Web. Accessed November 2015. <http://masgc.org/about>

10.2.2 Has an attempt been made to assess the economic, social and cultural value of coastal resources in order to assist decision-making on their allocation and use?

(i) - economic **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
Gulf States Marine Fisheries Commission, a research and information-sharing network consisting of the five Gulf states, has conducted socioeconomic research on the baseline of seafood dealers and processors in each of the Gulf States, including overall workforce satisfaction. ^{1,2} The GSMFC Economics program also produced economics surveys of the inshore shrimp fisheries. ^{3,4}		
NOAA conducts research on the demographics and economies of coastal communities, including housing an index of the total economy of coastal areas. ^{5,6}		
The National Ocean Economics Program (NOEP), sponsored by NOAA, provides		

<p>current policy-relevant economic and demographic information on changes and trends along the U.S. coast and coastal waters.⁷</p> <p>Gulffishinfo.gov, a program of GSMFC, also collects and makes public information about the economic status of Gulf of Mexico fisheries.⁸</p> <p>Mississippi State University Coastal Research and Extension Center has produced a series of economic impact reports on the Mississippi seafood industry including processing, wholesale, seafood markets, and restaurants and in some cases broken down by species.⁹ In 2012, the Mississippi seafood industry generated over \$377,000 million and supported 8,500 jobs.</p> <p>The Go Coast 2020 final report, developed after the Deepwater Horizon spill includes some statistics on Mississippi Gulf Coast economics including revenue and job creation, by industry, for the three Gulf Coast Counties.¹⁰ This report identifies valuable coastal resources in Mississippi and plans to allocate restoration funds to protect and restore these assets. The Go Coast Report identifies Tourism as a major industry of the Mississippi Gulf Coast, with 18% of total Gulf Coast employment in the tourism industry. In 2011, tourism sales were projected to be over \$1.7 billion and in 2012, the Leisure and Hospitality industry sustained over 27,000 jobs.</p>		
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¹ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>

² Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>

³ Miller, Alexander L., and Jack C. Isaacs. 2011. *An Economic Survey of the Gulf of Mexico Inshore Shrimp Fishery: Implementation and Descriptive Results for 2008*. Gulf States Marine Fisheries Commission Publication Number 195 <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

⁴ Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

⁵ "Social Science Research Group" NOAA Southeast Fisheries Sciences Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

⁶ NOAA's *State of the Coast*. Web. Accessed November 2015. <http://stateofthecoast.noaa.gov/economy.html>

⁷ *National Ocean Economics Program*. Web. Accessed November 2015. <http://www.oceaneconomics.org/About/overview.aspx>

⁸ *Gulf FINFO*. Web. Accessed November 2015. <http://gulffishinfo.org/Gulf-Fisheries-Economics>

⁹ *Mississippi State University Coastal Research and Extension Center*. Web. Accessed November 2015. <http://www.coastal.msstate.edu/sea-grant-publications>

¹⁰ Go Coast 2020 Commission. *Go Coast Final Report*. January 2013. <http://www.gocoast2020.com/wp-content/uploads/finalreport.pdf>

10.2.2 (ii) - social and cultural Yes...[1] Some...[½] No...[0]

Extent of compliance		
Yes	Some	No
<p>MDMR mission statement is “dedicated to enhancing, protecting and conserving marine interests of the state by managing all marine life, public trust wetlands, adjacent uplands and waterfront areas to provide for optimal commercial, recreational, educational, and economic uses of these resources consistent with environmental concerns and social changes.”¹ Regulatory actions by MDMR are required to include assessment of social and economic impacts and MS Code 49-15-2 (Core standards for management of fisheries) states that conservation and management measures shall “(i) provide for the sustained participation of the communities, and (ii) to the extent practicable, minimize adverse economic impacts on those communities.”² MDMR also manages the MS Gulf Coast National Heritage Area designed to promote understanding of and to conserve and enhance the heritage resources of the Mississippi Gulf Coast.³ The Mississippi Gulf Coast National Heritage Area Management Plan contains an assessment of social and cultural assets of the Mississippi coast and establishes a plan to maintain and promote these assets.⁴</p> <p>GSMFC has conducted socioeconomic research on the baseline of seafood dealers and processors in each of the Gulf States, including overall workforce satisfaction and the value of being involved in the seafood sector.^{5,6} The Blue Crab Regional Management Plan published by GSMFC in 2001 also includes information on the demographics, social, culture and economic, of the blue crab fishery.⁷</p> <p>NOAA conducted research in 2005 to identify communities associated with the fishing industry in coastal Alabama and Mississippi to assist in management of resources by identifying areas of economic and social dependence on the resource. This report provides profiles of 14 communities along the Mississippi coast including a brief cultural geographic description, earnings by industry, population demographics, and fishing infrastructure and activities for each community. Results indicated that fishing was the primary local economy in two communities: Biloxi, and Lakeshore; and ten other communities were at least moderately engaged in the fishing industry (Moss point, Ocean Springs, D’Iberville, Long Beach, Pass Christian, Bay St. Louis, Kiln, Pearlington, and Waveland.)⁸ The NOAA Southeast Fisheries Science Center contains a socioeconomic research group that conducts applied research on socioeconomic and cultural aspects of marine resources in the Gulf of Mexico and recently developed ‘community snapshots’ on the Southeast Regional Office (SERO) website providing socioeconomic information on coastal communities.^{9,10}</p> <p>The Go Coast 2020 final report, developed after the Deepwater Horizon spill includes some statistics on Mississippi Gulf Coast economics contains information on social and cultural aspects of the Mississippi coast.¹¹</p>		

¹ Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/dmr-information/about-us>

² Miss. Code Ann. § 49-15-2 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-2/>

³ “MS Gulf Coast National Heritage Area” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-restoration-and-resiliency/ms-gulf-coast-national-heritage>

⁴MDMR. *Mississippi Gulf Coast National Heritage Area Management Plan*. December 2005. <http://dmr.ms.gov/images/cmp/final-MGCNHAMP.pdf>

⁵ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>

⁶ Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>

⁷ Guillory, V. Perry, H. VanderKooy, S. 2001. The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20096.pdf>

⁸ Assessment, Impact. Inc., 2006. Identifying communities associated with the fishing industry in Alabama and Mississippi. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>

⁹ “Social Science Research Group” NOAA Southeast Fisheries Sciences Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

¹⁰ “Snapshots of Human Communities and Fisheries in the Gulf of Mexico and South Atlantic” *NOAA Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

¹¹ Go Coast 2020 Commission. *Go Coast Final Report*. January 2013. <http://www.gocoast2020.com/wp-content/uploads/finalreport.pdf>

10.2.3 Have risks and uncertainties involved in the management of coastal areas been taken into account in setting policies for the management of coastal areas? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
The Mississippi CMP contains a comprehensive section on risk assessment and coastal hazards which is constantly under review and update through the CZMA structure. ¹ <i>The CMP Draft 309 Assessment and Strategies Report 2016-2020</i> , section on assessment of coastal hazards details types of hazards, level of risk, geographic scope of risk, potential losses and management strategies that are currently in effect or recommendations for further action. Evaluation of susceptibility, mitigation planning, preparedness, response and recovery are considered for the following coastal hazards: flooding, storm surge, geological hazards, erosion, sea level rise, land subsidence, and tropical storms. The <i>CMP Draft Assessment and Strategies Report</i>		

2016-2020 also addresses emerging issues that present a threat to wetlands and identifies information needs to address these issues.		
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¹ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

10.2.4 In accordance with capacities, have measures been taken to establish or promote the establishment of systems to monitor the coastal environment as part of the coastal management process using physical, chemical, biological, economic and social parameters?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>There is a network of programs responsible for monitoring the coastal environment of Mississippi and the Gulf of Mexico taking into account physical, chemical, biological, economic, and social parameters.</p> <p>MDEQ is divided into four primary offices: Office of Pollution Control, Office of Land and Water Resources, Office of Geology, and Office of Administrative Services.¹ These four offices each run several programs aimed to prevent pollution, mitigate impacts and improve the quality of the environment and natural resources of Mississippi and have monitoring systems in place. MDEQ maintains monitoring programs for air quality, water quality and pollution levels.^{2,3,4}</p> <p>MDMR is the primary agency responsible for coastal management. MDMR administers the Mississippi CMP. As part of the federal CZMP, the CMP has specific performance measures designed by NOAA to evaluate the performance of CMPs and NERR sites. The Mississippi CMP includes long-term monitoring and data collection of those performance measures including both environmental and socioeconomic factors.^{5,6,7,8} MDMR maintains a pollution monitoring program for Mississippi coastal wetlands, beaches and waterways involving mapping and removal of marine debris.⁹</p> <p>MDMR is also responsible for biological monitoring and monitoring of resource use including fishery-dependent and fishery-independent monitoring systems. Mississippi's Fishery-Independent Sampling Program is a collaborative effort between MDMR and GCRL.^{10,11} Fishery-independent sampling began in 1974 utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample.¹² MDMR conducts hydrological monitoring in partnership with the U.S. Geological survey, since 1988, in Mississippi Sound to gather real-time hydrological data used for fisheries management.¹³ Fishery-dependent monitoring is done through the Trip Ticket Program. MDMR began implementation the Trip Ticket Program for fishery-dependent data collection in 2002.¹⁴ The Trip Ticket Program was initially implemented in Florida, and developed for use in the other Gulf states through the GSMFC FIN program. The Trip Ticket Program is a mandatory reporting program for catch data at the trip</p>		

level reported by dealers on a monthly basis and minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished.¹⁵ MDMR is implementing the Trip Ticket Program on a fishery-by-fishery basis, and implementation for the blue crab fishery began in 2012, currently all species except shrimp are required to report through the Trip Ticket Program in Mississippi.¹⁶

As government entities, both MDMR and MDEQ are governed under the Open Meeting Act, which requires that the deliberative process of the government be open to the public, with notice provided of when and where the meeting will be held, and which includes an opportunity for the people to offer comment on the proposed ruling.¹⁷

In addition to the partnership with MDMR to collect fishery-independent data, GRCL maintains other monitoring programs that also provide data for fisheries and coastal management. GCRL, in conjunction with MDEQ, conducts year-round beach monitoring to test for water quality parameters, and the Center for Fisheries participates in sampling for the SEAMAP biological monitoring program.^{18,19}

Gulf-wide and national monitoring programs also provide valuable data for fisheries and coastal management in Mississippi including:

- [National Atmospheric Deposition Program](#)
- [Gulf of Mexico Coastal Ocean Observing System \(GCOOS\)](#)
- [National Data Buoy Center](#)
- [National Weather Service](#)
- [NOAA Tide reports](#)
- [USGS Water Data](#)

NOAA SEFSC conducts an Annual Economic Survey of Federal Gulf Shrimp Permit Holders each spring collecting data on operating expenses and costs associated with owning and maintaining shrimp vessels.²⁰ Each year a third of the permit holders are randomly selected for this survey and information is used to assess trends in the financial state of the fishery, social and economic effects of regulations, and other economic factors impacting the Gulf shrimp fishery.

GSMFC Fisheries Economic Data Program has conducted economic analyses for the inshore (non-federally-permitted) shrimp fleet in 2008 and 2012.^{21,22,23} GSMFC has also conducted socioeconomic research on the baseline of seafood dealers and processors in Mississippi and other Gulf states, including overall workforce satisfaction and the value of being involved in the seafood sector.^{24,25}

The GMFMC shrimp FMP contains a socioeconomic characterization of the shrimp fishery and each amendment to the FMP includes information on social and economic impacts and requires a Regulatory Impact Review.²⁶

NOAA Fisheries Southeast Regional Office also conducts socioeconomic research

on coastal communities in Mississippi. In 2005, NOAA produced a report identifying fishing communities in coastal Mississippi, and currently SERO maintains ‘community snapshots’ on their website including demographic and economic information on coastal communities. ^{27,28,29}		
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Economic and social monitoring are also an integral part of coastal monitoring and NOAA Center for Sponsored Coastal Ocean Research conducts research on economic and social impacts of both natural and anthropogenic events and influences on coastal communities. ³⁰		
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¹ “Programs” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/Main_programs?OpenDocument

² “Air quality monitoring” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/MDEQ.nsf/page/Air_AmbientAirQualityStandardsMonitoringandAttainmentPlanning?OpenDocument

³ “Water Quality Assessments” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/FS_SurfaceWaterQualityAssessments?OpenDocument

⁴ “Total Maximum Daily Load Program” *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument

⁵ “Coastal Management Program Performance Measures” *NOAA Office for Coastal Management*. Web. Accessed November 2015. <http://coast.noaa.gov/czm/performance/>

⁶ NOAA. *Coastal Zone Management Act Performance Measures System, Performance Measures*. 2013. <http://coast.noaa.gov/czm/media/perfmeasures2011.pdf>

⁷ NOAA. *Coastal Zone Management Act Performance Measures System, Contextual Indicators*. 2010. http://coast.noaa.gov/czm/media/contextual_indicator_list.pdf

⁸ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

⁹ “Pollution Impact Monitoring Program” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/environment/pollution/282-impact-monitoring-program>

¹⁰ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%202015.pdf>

¹¹ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹² [VanderKooy, 2013. p. 85](#)

¹³ “Hydrological monitoring” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/environment/hydrological-monitoring>

¹⁴ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

- ¹⁵ “Trip Ticket Program” *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>
- ¹⁶ FIN Committee. 2012. Annual Report of the Fisheries Information Network in the Southeast Region (FIN) January 1, 2011 - December 31, 2011. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20205.pdf>
- ¹⁷ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meetings%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meetings%20Act.htm?OpenElement)
- ¹⁸ “Beach monitoring” *Gulf Coast Research Lab*. Web. Accessed September 2015. http://www.usm.edu/gcrl/beach_monitoring/
- ¹⁹ “Center for Fisheries research” *Gulf Coast Research Lab*. Web. Accessed September 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php
- ²⁰ “Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery” *NOAA Southeast Fishery Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>
- ²¹ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>
- ²² Miller, Alexander L., and Jack C. Isaacs. 2011. *An Economic Survey of the Gulf of Mexico Inshore Shrimp Fishery: Implementation and Descriptive Results for 2008*. Gulf States Marine Fisheries Commission Publication Number 195 <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>
- ²³ Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>
- ²⁴ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers*. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>
- ²⁵ Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors*. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>
- ²⁶ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php
- ²⁷ Assessment, Impact. Inc., 2006. *Identifying communities associated with the fishing industry in Alabama and Mississippi*. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>
- ²⁸ “Social Science Research Group” *NOAA Southeast Fisheries Sciences Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>
- ²⁹ “Snapshots of Human Communities and Fisheries in the Gulf of Mexico and South Atlantic” *NOAA Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

³⁰ NOAA Center for Sponsored Coastal Ocean Research. Web. Accessed November 2015.
<http://coastalscience.noaa.gov/about/centers/cscor>

10.2.5 Has multi-disciplinary research in support of coastal area management been promoted on

(i) - environmental and biological aspects? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>In addition to monitoring, the above programs listed in 10.2.4 contain research activities to support coastal area management.</p> <p>The Mississippi CMP also provides for an annual grant cycle which allows for continued research on coastal issues of priority.¹</p> <p>The Grand Bay National Estuarine Research Reserve (NERR), managed by MDMR, maintains a Research and Monitoring program that includes research on Ecological Effects of Sea Level Rise, and Long-term Monitoring of Environmental Conditions.²</p> <p>The System-wide Monitoring Program (SWMP) conducted at Grand Bay NERR began in 1995, and includes monitoring of 1) abiotic indicators of water quality and weather, 2) biological monitoring, and 3) watershed, habitat, and land use.³ These indicators are used to identify short-term variability and long-term changes to better inform coastal area management.</p> <p>The GCRL Coastal Ecosystems Group also conducts extensive research on the coastal environment of the northern Gulf of Mexico with the goal of understanding habitat and ecosystem structure and function.⁴</p> <p>The GEMS Program is a partnership between federal and state agencies to further coastal conservation through targeted research and monitoring, and development of action plans.⁵ Mississippi currently has three sites in the GEMS program.⁶</p>		

¹ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

² *Grand Bay NERR*. Web. Accessed September 2015. <http://grandbaynerr.org/>

³ "Research: overview" *Grand Bay National Estuarine Research Reserve*. Web. Accessed November 2015. <http://grandbaynerr.org/research/>

⁴ "Coastal Ecosystems Group" *Gulf Coast Research Lab*. Web. Accessed September 2015. <http://www.usm.edu/qcrl/ceg/>

⁵ "Gulf Ecological Management Sites" *The Gulf of Mexico Foundation*. Web. Accessed November 2015. <http://www.gulfmex.org/conservation-restoration/gems/>

⁶ "Mississippi GEMS" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://www.dmr.ms.gov/mississippi-gems>

10.2.5 (ii) - economic and social aspects? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The Mississippi CMP provides for an annual grant cycle which allows for continued research on coastal issues of priority, including social and economic aspects of coastal use, development and education.¹</p> <p>NOAA Center for Sponsored Coastal Ocean Research conducts research on economic and social impacts of both natural and anthropogenic events and influences on coastal communities.²</p> <p>NOAA SEFSC conducts an Annual Economic Survey of Federal Gulf Shrimp Permit Holders each spring collecting data on operating expenses and costs associated with owning and maintaining shrimp vessels.³ Each year a third of the permit holders are randomly selected for this survey and information is used to assess trends in the financial state of the fishery, social and economic effects of regulations, and other economic factors impacting the Gulf shrimp fishery.</p> <p>GSMFC Fisheries Economic Data Program has conducted economic analyses for the inshore (non-federally-permitted) shrimp fleet in 2008 and 2012.^{4,5,6} GSMFC has also conducted socioeconomic research on the baseline of seafood dealers and processors in Mississippi and other Gulf states, including overall workforce satisfaction and the value of being involved in the seafood sector.^{7,8}</p> <p>The GMFMC shrimp FMP contains a socioeconomic characterization of the shrimp fishery and each amendment to the FMP includes information on social and economic impacts and requires a Regulatory Impact Review.⁹</p> <p>NOAA Fisheries Southeast Regional Office also conducts socioeconomic research on coastal communities in Alabama. In 2005, NOAA produced a report identifying fishing communities in coastal Mississippi, and currently SERO maintains ‘community snapshots’ on their website including demographic and economic information on coastal communities.^{10,11,12}</p> <p>Both MDMR and MDEQ are required, through the regulatory process and under the Alabama Open Meetings Act to include public participation in the rulemaking process and that the deliberative process be open to the public, with notice provided of when and where the meeting will be held, and which includes an opportunity for the people to offer comment on the proposed ruling.^{13,14}</p>		

¹ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

² NOAA Center for Sponsored Coastal Ocean Research. Web. Accessed November 2015. <http://coastalscience.noaa.gov/about/centers/cscor>

³ “Economic Data Collection for the Gulf of Mexico and South Atlantic Shrimp Fishery” NOAA Southeast Fishery Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁴ “Publications: Fisheries Economic Data Program” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁵ Miller, Alexander L., and Jack C. Isaacs. 2011. *An Economic Survey of the Gulf of Mexico Inshore Shrimp Fishery: Implementation and Descriptive Results for 2008*. Gulf States Marine Fisheries Commission Publication Number 195 <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

⁶ Miller, Alexander, and Jack Isaacs. 2014. *An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012*. Gulf States Marine Fisheries Commission Publication, Publication Number 227. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

⁷ Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers*. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20226.pdf>

⁸ Miller, Alexander, Jack Isaacs, and Latika Bharadwaj. 2014. *An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors*. Gulf States Marine Fisheries Commission Publication, Publication Number 225. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20225.pdf>

⁹ “Shrimp Management Plans” *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁰ Assessment, Impact. Inc., 2006. *Identifying communities associated with the fishing industry in Alabama and Mississippi*. Final report. NOAA Fisheries, South East Region. US Department of Commerce. WC133F-03-SE-0603. St. Petersburg, Florida. <http://www.st.nmfs.noaa.gov/humandimensions/publications/community-profiles-pub/index>

¹¹ “Social Science Research Group” NOAA Southeast Fisheries Sciences Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/socialscience/>

¹² “Snapshots of Human Communities and Fisheries in the Gulf of Mexico and South Atlantic” *NOAA Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

¹³ Miss. Code Ann. §25-43 (Administrative Procedures Law) <http://msdh.ms.gov/msdhsite/static/resources/1509.pdf>

¹⁴ Miss. Code Ann. 25-41 (Open Meetings Act) [http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/\\$FILE/Open%20Meeting%20Act.htm?OpenElement](http://www.ethics.state.ms.us/ethics/ethics.nsf/PageSection/A_meetings_meetings_law/$FILE/Open%20Meeting%20Act.htm?OpenElement)

10.2.5 (iii) - legal and institutional aspects? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
Under Title 49 (Conservation) of the Mississippi Code, MDMR and MDEQ recognize that important ecological, cultural, historic and aesthetic values of the coastal area are essential to the well-being of all citizens, and legislates to maintain that well-being. ¹ Mississippi marine resources are subject to the rulings of state government, and governed under the MS Code, Title 49, Chapter 4 and the Mississippi		

Administrative Code, Title 22. ^{2,3}		
The Mississippi CMP utilizes an array of legal and institutional resources and continues to research and incorporate resources from both state and federal programs and agencies. ⁴		

¹ Miss. Code, Title 49 (Conservation) <http://law.justia.com/codes/mississippi/2013/title-49>

² Miss. Code, Title 49, Chapter 4 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-4/>

³ Miss. Admin. Code, Title 22 <http://www.sos.ms.gov/admincodesearch/>

⁴ MDMR. *Mississippi Coastal Program Draft 309 Assessment and Strategy Report, 2016-2020 Enhancement Cycle Report*. 2015. <http://dmr.ms.gov/images/dmr/MS-Draft-309-Assessment-and-Strategy-2016-2020.pdf>

10.3 Regional cooperation

10.3.1 Do States with neighboring coastal areas cooperate with one another in:

(i) - the sustainable use of resources? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Fisheries Resources in the Gulf of Mexico are managed regionally by GMFMC and/or coordinated through GSMFC.^{1,2}</p> <p>The GMFMC is one of the regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976. The GMFMC consists of 17 voting members, including the Southeast Regional Administrator of NOAA Fisheries, the directors of the five Gulf state marine resource management agencies and eleven additional members who are nominated by the state governors and appointed by the Secretary of Commerce. In addition, there are four nonvoting members representing the U.S. Coast Guard, U.S. Fish and Wildlife Service, Department of State, and the Gulf States Marine Fisheries Commission. GMFMC meets five times a year at various locations around the Gulf coast. GMFMC is charged with development of FMPs for all species managed in federal waters and collaborates on management with the five Gulf states. Proposed rule changes are then submitted to NOAA Fisheries for further review and approval before implementation. GMFMC has developed a shrimp FMP, which was implemented in 1981 and has been updated several times. One of the stated objectives of the FMP is to “coordinate the development of shrimp management measures by the GMFMC with shrimp management programs of the several states, where feasible”.³</p> <p>The Gulf States Marine Fisheries Compact promotes the efficient utilization of fisheries and sound conservation practices through collaboration and data-sharing between states for effective management.⁴ Recommendations for potential management actions to ensure the sustainability of resources are included in the regional management plans, though no state is required to implement the</p>		

recommendations.⁵

The US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Gulf of Mexico Initiative (GoMI) was created to assist producers in the five Gulf States by improving water quality and ensuring sustainable production.⁶ GoMI provides financial assistance and resources to help producers apply sustainable practices and wildlife habitat management. GoMI also works to reduce and control agricultural run-off and decrease use of over-utilized water resources. A series of NRCS programs are available to GoMI including the Environmental Quality Incentives Program, Wildlife Habitat Incentive Program, Wetlands Reserve Program, and Conservation Stewardship Program.

There is cooperation between the United States and Mexico regarding fisheries management in the Gulf of Mexico. The United States-Mexico Fisheries Cooperation Program is a bilateral consultative agreement that was informally agreed upon by NMFS and SAGARPA in 1983.⁷ Three memoranda of understanding (MOU) have been formalized through this relationship including the MEXUS-Golfo research program. Fishery Cooperation Talks (FCT) between NMFS and CONAPESCA occur annually and MEXUS-Golfo working groups are held as needed. Recent FCT meetings have included discussion of sustainable fisheries management, protection and conservation of species such as sea turtles, enforcement cooperation, aquaculture, collaborative research, and participation in fisheries related international organizations.

¹ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

² *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://www.gulfcouncil.org/>

³ GMFMC. *The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Gulf of Mexico Fishery Management Council, Tampa, Florida. 1981. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

⁴ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁵ Guillory, V. Perry, H. VanderKooy, S. 2001. *The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20096.pdf>

⁶ "Gulf of Mexico Initiative (GoMI)" *United States Department of Agriculture (USDA) Natural Resources Conservation Service*. Web. Accessed November 2015. <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull//?cid=stelprdb1046039>

⁷ NOAA. 2014. *International Agreements Concerning Living Marine Resources of Interest to NOAA Fisheries*. http://www.nmfs.noaa.gov/ia/intlagree/docs/2012/international_agreements.pdf

10.3.1 (ii) - the conservation of the environment? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
The Gulf of Mexico Alliance is a state, federal, and private partnership designed to		

enhance regional cooperation in the Gulf of Mexico in order to advance the environmental and economic health of the Gulf.¹ The Alliance serves as a forum for shared knowledge and reduces duplication of effort by encouraging collaboration. The Alliance's main focuses until 2014 include water quality, nutrient reduction, ecosystem assessment, coastal community resilience and habitat conservation and restoration. In 2014 the Alliance restructured, and moving forward will be focused on water resources, habitat, community resilience, data and monitoring, wildlife and fisheries, and education and engagement. The EPA Gulf of Mexico Program also works regionally in the Gulf with all five states to enhance community resilience, protect coastal habitat and ecosystems, and improve water quality.² The NERR system provides an opportunity for collaboration and shared research knowledge between NERR sites across the Gulf of Mexico. There are also numerous NGOs working to address regional conservation concerns within the Gulf of Mexico.³

International cooperation occurs between the United States and Mexico on environmental conservation. The North American Agreement on Environmental Cooperation (NAAEC) is a side agreement between the United States, Canada and Mexico, developed around the North American Free Trade Agreement (NAFTA), recognizing the need for environmental coordination and cooperation. This agreement establishes general obligations to which each country is committed and each member establishes its own policies and levels of environmental protection based on these commitments. The Commission for Environmental Cooperation and the North American Fund for Environmental Cooperation (NAFEC) were established through the NAAEC.⁴ The United States and Mexico also work in cooperation with the International Maritime Organization (IMO) on addressing marine pollution issues from vessel discharge and ocean dumping.⁵

¹ *Gulf of Mexico Alliance*. Web. Accessed November 2015. <http://www.gulfofmexicoalliance.org/>

² "Gulf of Mexico Program" *Environmental Protection Agency*. Web. Accessed November 2015. <http://www.epa.gov/gmpo/>

³ "National Estuarine Research Reserve System" *NOAA Office of Coastal Management*. Web. Accessed November 2015. <http://www.nerrs.noaa.gov>

⁴ *Commission for Environmental Cooperation*. Web. Accessed November 2015. http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=310&BL_ExpandID=878

⁵ *International Maritime Organization*. Web. Accessed November 2015. <http://www.imo.org/About/Pages/Default.aspx>

Article 11 - Post-Harvest Practices and Trade

11.1 Responsible fish utilization

11.1.11 Is international domestic trade in fish and fishery products in accord with sound conservation and management practices through the identification of the origin of fish and fish products traded?
Yes...[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The United States is a member of the World Trade Organization, and thus prescribes to the rules and regulations of members bodies as relates to import and export of goods.¹ According to the 2012 report by the FAO on the State of Fisheries and Aquaculture, the United States had surpassed Japan as the largest importer of shrimp in the world.²</p> <p>Within their Technical Barriers to Trade (TBT) regulations, the World Trade Organization requires that trade access is granted equally, under uniformly favorable conditions and that a product may not be discriminated against in the marketplace due to origin.³</p> <p>Within the United States, under the Code of Federal Regulations 101.18, identification of fishery products from domestic and international trade are required by the Customs and Border Protection Authority to have labels identifying their origin;⁴ under the U.S. Department of Agriculture (USDA) Country of Origin Labels (COOL) Act, fish and shellfish shall be labeled to indicate whether they are from a farmed or wild-caught product.⁵ At any time, the USDA may audit origin claims to verify an origin claim or product label.⁶ The USDA Agricultural Marketing Service (AMS) is charged with administering and enforcing COOL requirements.^{7,8} Under Section 403(a)(1) of 21 CFR 101,18, The Food and Drug Administration (FDA) prohibits any imported or domestic products from mislabeling or misleading consumers as to a product's origin.⁹ The Federal Food, Drug and Cosmetics Act requires that all products entering into the United States have a label, in English, that contains information on nutrition, serving size, country of origin, and manufacturer's name and address.¹⁰</p> <p>The imports of seafood and shrimp from abroad are managed under the Imported Seafood Safety Program and Hazard Analysis and Critical Control Points (HACCP) regulations administered by the U.S. Food and Drug Administration (FDA), which is charged with protecting human health through monitoring of food safety.¹¹ Under the regulations of the FDA, in the course of HACCP testing, imported shrimp in which "adulterants" (antibiotics) are found are refused entry into the United States.¹² In 2008, according to the FDA, 6.9% of imported shrimp contained illegal amounts of antimicrobial residue and were refused entry in to U.S. ports.¹³ There is currently a "Detention without Physical Examination" refusal in effect for several major companies that import shrimp into the United States.¹⁴</p> <p>NOAA/NMFS tracks imports and exports through the United States by type and</p>		

<p>country of origin, and makes their findings available on their website.¹⁵</p> <p>Mississippi also has laws pertaining to labeling and disclosure of information regarding the source of certain seafood. MS Code 69-1-55 pertains to misrepresentation of shrimp and crawfish and defines the requirements for labeling any crawfish or shrimp products as domestic, and penalties for misrepresenting, either verbally or in writing on a menu, any imported shrimp or crawfish product as domestic.¹⁶ MS Code 69-7- 607 similarly sets regulation for the labeling of certain fish products.¹⁷</p>		
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¹ World Trade Organization. (2015). *Members and Observers of the WTO*. Retrieved from World Trade Organization: https://www.wto.org/english/thewto_e/countries_e/org6_map_e.htm

² Food and Agriculture Organization of the United Nations. (2012). *State of the World Fisheries and Aquaculture*. Rome: FAO.

³ World Trade Organization. (1994, April 15). *Agreement on Technical Barriers to Trade*. Retrieved from Legal Texts: the WTO Agreements: https://www.wto.org/english/docs_e/legal_e/ursum_e.htm

⁴ 21 C.F.R. § 101.18

⁵ 2 C.F.R. § 60.200

⁶ 2 C.F.R. § 60.300 (2)

⁷ U.S. Department of Agriculture, Agricultural Marketing Service. Web. Accessed November 2015. <http://www.ams.usda.gov/AMSV1.0/cool>

⁸ "COOL Compliance and Enforcement Requirements" U.S. Department of Agriculture. Web. Accessed November 2015. <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5095400>

⁹ 21 C.F.R. § 101.18

¹⁰ Nam, V. T. (2005). *U.S. Technical Barriers to Trade and Vietnamese Seafood Exports*. Tokyo: National Economics University. Retrieved from <http://www.grips.ac.jp/vietnam/VDFTokyo/Temp/Doc/2005/DP07E-TVNamJul05.pdf>

¹¹ U.S. Department of Health and Human Services. (2015, March 24). *The Imported Seafood Safety Program*. Retrieved from The Food and Drug Administration: <http://www.fda.gov/Food/GuidanceRegulation/ImportsExports/Importing/ucm248706.htm#HACCP>

¹² Lee, J. O., & Phelps, N. (2014). *Antimicrobial Residue in Farmed Shrimp*. Minneapolis : University of Minnesota College of Veterinary Medicine.

¹³ U.S. Department of Health and Human Services. Web. Accessed March 2015.. <http://www.fda.gov/Food/GuidanceRegulation/ImportsExports/Importing/ucm248706.htm#HACCP>

¹⁴ Lee, J. O., & Phelps, N. (2014).

¹⁵ National Marine Fisheries Service. (2015, May). *National Oceanic and Atmospheric Administration*. Retrieved from Commercial Fishery Statistics: <http://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/trade-by-product>

¹⁶ Miss. Code Ann. §69-1-55

<https://law.resource.org/pub/us/code/ms/ms.scan.2012/gov.law.ms.code.14a.2012.pdf>

¹⁷ Miss. Code Ann. §69-7-607 <http://msdh.ms.gov/msdhsite/ static/resources/428.pdf>

11.2 Responsible international trade

11.2.3 Are measures affecting international trade in fish and fishery products transparent, based, when applicable, on scientific evidence, and in accordance with internationally agreed rules?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>The United States International Trade Commission regulates trade of seafood products in accord with World Trade Organization (WTO) agreements.^{1,2} The WTO, created in 1995, is an international organization that deals with rules of trade between nations through agreements that are negotiated and signed by participating countries with the aim of helping producers, exporters and importers conduct business internationally.³ WTO agreements relating to fish products include the Agreement of Sanitary and Phytosanitary Measures (SPS), the Agreement on Technical Barriers to Trade (TBT) Agreement, the Agreement on Subsidies and Countervailing Measures.</p> <p>The WTO SPS Measures are designed to protect human, animal and plant life or health and the Agreement on TBT requires member countries to utilize internationally agreed standards as the basis for technical trade regulations and limits on imports from other countries. The SPS Agreement recognizes the right of each country to protect its population, but requires that any measures taken to restrict trade be based on scientific evidence or risk assessment and the TBT Agreement set rules on how to handle aspects such as labeling disputes or testing procedures. U.S. practices are in accordance with the WTO agreements on SPS and TBT.</p> <p>In 1995, the USFDA implemented the Hazard Analysis and Critical Control Point (HACCP) system for fish and fishery products stipulating that seafood importers must meet the same HACCP requirements as U.S. processors. The USFDA detains and inspects samples of imported seafood at ports of entry into the U.S. under the Federal Food, Drug, and Cosmetic Act (FFDCA) and reports on all detentions and violations.⁴ USFDA foreign inspection coverage is based on product priorities and country-specific factors such as a history of high volume seafood exported to the US, or past violations and outcomes.⁵</p> <p>Under the Food Safety Modernization Act (FSMA), which went into effect in 2011, The USFDA is required to report annually on the scope of their responsibility and activities under its jurisdiction. <i>The Annual Report on Food Facilities, Food Imports, and FDA Foreign Offices</i> contains information on USFDA actions including cooperation with other state, federal and local agencies, number of inspections of both domestic and foreign facilities, and number of samples analyzed for USFDA compliance.⁶ The USFDA website contains features providing access and transparency of agency activities.</p>		

The US is a participating member of the Agreement on Subsidies and Countervailing Measures and has entered into, or is currently negotiating, several free trade agreements to minimize trade restrictions and obstacles.⁷ Through these agreements, the US has reduced or eliminated most trade restrictions and the has some of the lowest tariffs among participating nations.⁸

Thailand, Indonesia, Ecuador, India, Vietnam, Mexico, and Malaysia are some of the largest exporters of shrimp into America, all of whom are also members of the WTO.^{9,10} Imports of shrimp have recently (May, 2015) been refused from Malaysia for human health concerns, including unsafe levels of bacteria and nitrofurans, an antibiotic used to treat farmed shrimp that has carcinogenic effects in humans.¹¹ Additionally, several firms from Indonesia and Malaysia have been placed on a “Detention without Physical Examination” list due to consistently unsafe levels of antibiotics.¹²

The United States implemented Public Law 101-162, Section 609 in 1989, which prohibits the import of shrimp products that were harvested with commercial fishing technology that may adversely affect sea turtles.^{13,14} Nations that have adopted sea turtle protection programs comparable to the U.S. or where incidental capture does not present a threat to sea turtles are exempt from this ban. Nations that seek to import shrimp into the U.S. must be certified annually, and the U.S. may inspect, if requested, portions of a nation’s shrimp trawl fleet to verify that proper sea turtle conservation measures (use of TEDs) are in place. NOAA Fisheries Harvesting Systems Unit also provides extensive training throughout the world to improve TED use in trawl fisheries. There are approximately 40 countries certified to export shrimp to the U.S. and a listing of certified nations is published annually in the Federal Register.¹⁵ When this law was first implemented, several disputes were filed; however, ultimately the WTO found that the U.S. compliance measures are justified as a conservation measure under Article XX(g) of the GATT 1994.¹⁶

Concerns regarding Illegal, Unreported and Unregulated (IUU) fishing has recently become the focus of a new Presidential Initiative designed to combat IUU fishing, including identifying actions for how to limit seafood fraud and work with international partners to track seafood from harvest points to entry into the United States.¹⁷ Eliminating IUU fishing would also extend to the Trans-Pacific Partnership, which is a regional trade agreement currently being brokered between the United States and many nations who export large amounts of seafood into the U.S, though reservations have been expressed regarding the impact the TPP would have on the U.S.’s ability to refuse unsafe seafood from potential TPP partners.^{18,19}

In 2013, the Coalition of Gulf Shrimp Industries filed a petition to launch a Countervailing Duty Investigation into the effects of importation of shrimp and potential market distortion of domestic product because of subsidies offered to exporters, claiming that unfair trading was damaging American shrimp industry.²⁰ After several years, it was determined that unfair trading was not the cause of impacts to the domestic shrimp industry, but it was instead the effects of the 2010 BP oil spill;

no countervailing duties were lifted.²¹

Sponsored by Louisiana Congressman Bill Boustany, H.R. 1907, the Trade Enforcement and Trade Facilitation Act (PROTECT Act) introduced in 2015, proposes stricter oversight and potential power of trade refusals relating to IUU imports affecting the health of the domestic shrimp market; it is touted as a solution to the impacts imported shrimp have on prices of domestic shrimp.²² The bill has not yet passed and it is unclear what effect it would have on international trade in shrimp products.

¹ *The United States International Trade Commission*. Web. Accessed November 2015. <http://www.usitc.gov/tata/hts/bychapter/>

² "Fish Trade Regulations" *FAO*. Web. Accessed November 2015. <http://www.globefish.org/fish-trade-regulations-on-the-web.html>

³ The World Trade Organization (WTO). Web. Accessed September 2015. http://wto.org/english/thewto_e/thewto_e.htm

⁴ Allshouse, J., J. Buzby, D. Harvey, and D. Zorn. Chapter 7. International Trade and Food Safety, Chapter 7- International Trade and Seafood Safety. Economic Research Service/USDA.

⁵ FDA. 2012. Report to Congress: Annual Report on Food Facilities, Food Imports, and FDA Foreign Offices, Provisions of the FDA Food Safety and Modernization Act <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Seafood/ucm150954.htm>

⁶ *Food and Drug Administration*. Web. Accessed November 2015. <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm315486.htm>

⁷ Renée Johnson. *Sanitary and Phytosanitary (SPS) and Related Non-Tariff Barriers to Agricultural Trade. Specialist in Agricultural Policy*. Congressional Research Service Report 7-5700. R43450. March 31, 2014 <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43450.pdf>

⁸ Roheim, C.A. 2004. "Impacts on Sustainability." *Global agricultural trade and developing countries* (2004): 275. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/GATChapter15.pdf>

⁹ National Marine Fisheries Service. (2015, May). *National Oceanic and Atmospheric Administration*. Retrieved from Commercial Fishery Statistics: <http://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/trade-by-product>

¹⁰ World Trade Organization. (2015). *United States of America and the WTO*. Retrieved from Member Information: https://www.wto.org/english/thewto_e/countries_e/usa_e.htm

¹¹ U.S. Food and Drug Administration. (2015, June 9th). *Import Alert 16 - 129*. Retrieved from http://www.accessdata.fda.gov/cms_ia/importalert_31.html

¹² U.S. Food and Drug Administration. (2015, June 9th). *Import Alert 16 - 129*. Retrieved from http://www.accessdata.fda.gov/cms_ia/importalert_31.html

¹³ "Shrimp Import Legislation for Sea turtle Conservation" *NOAA Fisheries*. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/species/turtles/shrimp.htm>

¹⁴ 16 U.S.C. 1537 <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title16/html/USCODE-2011-title16-chap35-sec1537.htm>

¹⁵ *Federal Register*. Web. Accessed November 2015. <https://www.federalregister.gov/articles/2015/05/27/2015-12750/certifications-pursuant-to-section-609-of-public-law-101-162>

¹⁶ World Trade Organization. (1998). *Case DS58 US Shrimp*. Geneva: World Trade Organization. https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds58_e.htm

¹⁷ National Oceanic and Atmospheric Administration. (2015, June 17th). *NOAA Fisheries*. Retrieved from Presidential Initiative on Combating Illegal, Unreported, and Unregulated (IUU) Fishing and Seafood Fraud: <http://www.fisheries.noaa.gov/ia/iuu/taskforce.html>

¹⁸ Center for Food Safety. (2014, December). *Seafood Safety and the Trans-Pacific Partnership (TPP)*. Retrieved from Center for Food Safety: http://www.centerforfoodsafety.org/files/tpp-and-seafood-fact-sheet_00590.pdf

¹⁹ National Oceanic and Atmospheric Administration. (2015, June 17th).

²⁰ Department of Commerce. (2013, January 18th). *Commerce Initiates Countervailing Duty Investigations of Certain Frozen Warmwater Shrimp from the People's Republic of China, Ecuador, India, Indonesia, Malaysia, Thailand, and the Socialist Republic of Vietnam*. Retrieved from International Trade Administration: http://enforcement.trade.gov/download/factsheets/factsheet_multiple-shrimp-cvd-init-20130118.pdf

²¹ Murphy, S. (2015, April 6th). *U.S. Rejects COGSI Countervailing Duty Appeal*. Retrieved from Seafood Source News: <http://www.seafoodsource.com/news/supply-trade/27930-u-s-court-rejects-cogsi-shrimp-countervailing-duty-appeal>

²² H.R. 1907 – Trade Enforcement and Facilitation Act of 2015, Sec. 421

Article 12 - Fisheries Research

12.1 Responsible fishing requires the availability of a sound scientific basis to assist fisheries managers and other interested parties in making decisions, taking into account the special needs of developing countries.

(a) Is appropriate research conducted into all aspects of fisheries, including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
NOAA Fisheries is responsible for Gulf-wide research on fisheries, including biological, ecological, technology, and socioeconomics. NOAA's SEFSC, based in Miami, FL, is the branch responsible for providing multi-disciplinary research to support management decisions of the GMFMC and NOAA Fisheries. ¹ GSMFC also contributes to research on Gulf of Mexico Fisheries through the SEAMAP and Fisheries Economic Data Programs. ² For details on SEFSC and GSMFC research pertaining to the resource, environment, and socioeconomics, see responses to 7.1.7 (a) and 7.4.2 (i) - 7.4.2 (iii).		

MDMR supports a wide range of ongoing research covering all aspects of fisheries management including biological, ecological, economic, socio-cultural, and aquaculture science. Research on the resource and environmental factors are carried out through MDMR's fishery independent monitoring program and trip ticket program.^{3,4,5} For details on these programs, refer to the response to 7.1.7 (a).

MDMR also collaborates on environmental and fisheries related research with other government agencies including MDEQ, MDWFP, and NOAA, as well as academic and research institutions such as the Gulf Coast Research Lab, Mississippi State University Coastal Research and Extension Center, and the Institute for Marine Mammal Studies.⁶

The GCRL Thad Cochran Marine Aquaculture Center is the center of marine aquaculture research in Mississippi.⁷ This facility houses aquaculture research for blue crab, marine shrimp, red snapper, spotted seatrout, and striped bass.

MDMR also manages the Grand Bay Reserve in partnership with NOAA as part of the National Estuarine Research Reserve (NERR) Program.⁸ NERR sites function as "living laboratories" and provide areas for long-term monitoring and research of important estuaries.

Nutritional science is researched by national organizations such as the USDA and academic institutions such as the Mississippi State University Department of Food Science, Nutrition, and Health Promotion.^{9,10} Nutritional information is also disseminated by the Gulf States Marketing Coalition as a part of the GSMFC ODRP program.^{11,12}

The Mississippi State University- Coastal Research and Extension Center- Seafood Processing Lab also provides scientific and technical guidance to the Mississippi seafood industry to assist industry in maintaining compliance with state and federal regulations and best practices in post-harvest handling and processing.¹³

¹ "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

² *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

³ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁴ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

⁵ "Trip Ticket Program" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

⁶ MDMR. 2011 *Comprehensive Annual Report Fiscal Year Ended June 30, 2011*
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

⁷ "Thad Cochran Marine Aquaculture Center" *Gulf Coast Research Lab*. Web. Accessed September 2015.
<http://www.usm.edu/gcrl/cmac/>

⁸ "Research: overview" *Grand Bay National Estuarine Research Reserve*. Web. Accessed November 2015.
<http://grandbaynerr.org/research/>

⁹ "Center for Food Safety and Applied Nutrition" *U.S. Food and Drug Administration*. Web. Accessed November 2015.
<http://www.fda.gov/aboutfda/centersoffices/officeoffoods/cfsan/default.htm#>

¹⁰ "Department of Food Science, Nutrition, and Health Promotion" *Mississippi State University*. Web. Accessed September 2015.
<http://www.fsnhp.msstate.edu/>

¹¹ *Gulf Seafood Marketing Coalition*. Web. Accessed September 2015.
<http://eatgulfseafood.com/userfiles/file/Nutritional%20Guide.pdf>

¹² "Oil Disaster Recovery Program. *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015.
<http://www.gsmfc.org/odrp.php>

¹³ *Mississippi State University Extension*. Web. Accessed September 2015.
http://msucares.com/crec/seafood_processing.html

12.1 (b) Are research vessel surveys of the resource and the marine environment carried out?
Annually...[1] **Occasionally...**[1/2] **No...**[0]

Extent of compliance		
Annually	Occasionally	No
<p>Federal: NOAA Fisheries SEFSC conducts resource surveys in the Gulf of Mexico through the Mississippi Labs.¹ Annual surveys include the Groundfish surveys, Longline surveys, Marine Mammal surveys, Plankton surveys, and Reef fish surveys. Groundfish surveys have been conducted since the 1950s and consist of two bottomfish trawl surveys (summer and fall) and a small pelagic trawl survey in winter.² Longline surveys occur yearly utilizing commercial longline gear.³ Plankton surveys are conducted throughout the year sampling for fish eggs, larvae and juveniles and their zooplankton predators and prey; Winter surveys focusing on grouper and tilefish species, Spring surveys focus on bluefin tuna, and Fall surveys focusing on spawning fish such as red drum, mackerels and snappers.⁴ Sampling is conducted using a variety of gear types including bongo nets, neuston nets, CUFES, MOCNESS and Methot trawls. Fishery-independent data collected through resource surveys provides a valuable time-series to monitor trends in resource abundance and is utilized in NOAA stock assessments and other research programs.</p> <p>SEAMAP- Gulf of Mexico also conducts resource surveys that are used to assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys.⁵ Objectives include (but are not limited to):</p>		

- Monitoring penaeid shrimp size and distribution
- Evaluating the “Texas Closure” portion of GMFMC’s FMP
- Providing data on shrimp and groundfish stocks
- Obtaining measurements to determine population size structures

Other annual SEAMAP resource surveys include the Spring Plankton Survey, Reef Fish Survey, Fall Plankton Survey and plankton and environmental data surveys. SEAMAP-Gulf produces Environmental and Biological Atlases of the Gulf of Mexico, which include information on dominant finfish and invertebrate catches from surveys, environmental data and survey methodology. Additionally, SEAMAP may participate in other projects such as the Fish Tagging Cruise, and coordinating finfish bycatch estimates.

Mississippi:

The Fishery Independent Sampling Program is a joint effort between MDMR and GCLR.^{6,7} The sampling program began in 1974, utilizing trawls, seines, and beam plankton nets (BPLs) for monthly surveys. Sampling occurs at fixed locations and all organisms collected are brought to the lab for processing. Data on temperature, salinity, and dissolved oxygen are also recorded for each sample. The Mississippi Department of Marine Resources (MDMR) Shrimp and Crab Bureau, along with the Gulf Coast Research Laboratory’s (GCRL) Center for Fisheries Development, sample for brown shrimp in the Mississippi Sound each year. This sampling helps MDMR’s fisheries scientists determine the exact date for the opening of the 2014 shrimp season. GCRL is responsible for the plankton tows in search of brown shrimp post larvae, which is the stage of the shrimp’s life cycle when it is extremely small. MDMR trawls throughout Mississippi coastal waters to find juvenile and adult brown shrimp.⁸

¹ “Mississippi Labs: Surveys” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

² “Groundfish Surveys” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/groundfish.htm>

³ “Longline Surveys” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/longline.htm>

⁴ “Plankton Surveys” *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/plankton.htm>

⁵ “Southeast Area Monitoring and Assessment Program (SEAMAP)” *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁶ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁷ “Research at the GCRL Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web.

Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

⁸ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

12.1 (c) Are appropriate research and training facilities available and provisions made for staffing and institution building to conduct the necessary research? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The NOAA southeast Regional Office is located in St. Petersburg, Florida. NOAA SEFSC has laboratory locations in Beaufort, North Carolina, Galveston, Texas, Lafayette, Louisiana, Miami, Florida, Panama City, Florida, Pascagoula, Mississippi, and Stennis Space Center, Mississippi.¹</p> <p>For certain programs, such as the observer program detailed in 12.1 (b), NOAA Fisheries may also make use of private companies to recruit, hire, and deploy observers. These observers are highly trained according to strict guidelines set by the SEFCS Galveston Laboratory.²</p> <p>The Gulf of Mexico Fishery Management Council (GMFMC) headquarters is located in Tampa, Florida.³</p> <p>The Gulf States Marine Fisheries Commission (GSMFC) is located in Ocean Springs, Mississippi.⁴</p> <p>Mississippi: MDMR headquarters are located in Biloxi, MS and this location houses the majority of the department's offices and labs.⁵ MDMR also manages the Grand Bay NERR research facilities and partners with other institutions, such as GCRL, to enhance research capabilities.^{6,7}</p>		

¹ "About Us" *NOAA Southeast Regional Office*. Web. Accessed November 2015. http://sero.nmfs.noaa.gov/about_us/what_we_do/index.html

² NMFS. *Observer Training Manual: Characterization of the US Gulf of Mexico and Southeastern Atlantic Otter Trawl and Bottom Reef Fish Fisheries*. September 2010. https://www.st.nmfs.noaa.gov/Assets/Observer-Program/pdf/Shrimp_Reef_fish_Manual_9_22_10.pdf

³ "Contact Us" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/contact.php>

⁴ "Contact Us" *Gulf State Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/contact.php>

⁵ *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/>

⁶ *Grand Bay NERR*. Web. Accessed September 2015. <http://grandbaynerr.org/>

⁷ *Gulf Coast Research Lab*. Web. Accessed September 2015 <http://www.usm.edu/gcrl/>

12.2 Has an appropriate institutional framework been established to determine the applied research which is required and its proper use? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC maintains a Scientific and Statistical Committee (SSC) responsible for providing scientific advice to the Council.¹ The SSC is responsible for advising the Council on the adequacy of scientific information and analyses for proposed management measures and alternatives. The SSC reviews FMPs and amendments, including environmental impact statements, environmental assessments, and regulatory impact reviews and provides a determination of whether these are based on the best scientific evidence available. The SSC establishes research priorities based on management needs and submits these to NOAA Southeast Fisheries Science Center (SEFSC).² Research is then carried out by SEFSC’s various labs and research programs across the Gulf o meet these needs.³</p> <p>Mississippi: MDMR organizational structure is designed to develop management strategies, determine research needs, conduct research based on those needs, utilize the results of research in management decisions, and ensure enforcement of adopted regulations.^{4,5} Academic institutions and non-government organizations are also often utilized for applied research on specific coastal issues. MS Code 49-15-15 mandates MCMR to “utilize the resources of the Gulf Coast Research Laboratory to the fullest extent possible” and MS Code 49-15-84 specifically requires the collaboration between MDMR and GRCL on blue crab research and management strategies.^{6,7} MDMR and GCRL collaborate closely on a variety of fisheries and coastal research.⁸ MDMR also participates in applied research for regional organizations, including GSMFC and GMFMC.</p>		

¹ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

² GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

³ “Research and Data” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁴ Mississippi Department of Marine Resources. Web. Accessed September 2015. <http://dmr.ms.gov/>

⁵ MDMR. *2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011* <http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

⁶ Miss. Code Ann. § 49-15-15 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-15/>

⁷ Miss. Code Ann. § 49-15-84 <http://law.justia.com/codes/mississippi/2013/title-49/chapter-15/article-1/section-49-15-84>

⁸ “Center for Fisheries Research and Development” *Gulf Coast Research Lab*. Web. Accessed September 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

12.3 (a) Are data generated by research being analyzed and the results of such analyses published in a way that confidentiality is respected where appropriate? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>GMFMC, GSMFC and LDWF each maintain strict confidentiality requirements in compliance with state and federal laws. For full details, refer to 7.4.7 response.</p> <p>NOAA stock assessments, FMPs and other reports are reviewed by the GMFMC SSC and are published on the GMFMC website in accordance with the confidentiality requirements.</p> <p>GSMFC research is peer-reviewed and published on the GSMFC website. Summaries of non-confidential data are disseminated to the public and other agencies.</p> <p>MDMR utilizes resource and harvest data for internal needs and trends reports that are reviewed annually by MDMR staff. MDMR does not regularly publish data; however, summaries of data sent to other agencies and data that are released to the public follow strict guidelines of confidentiality set by state law. Data collected through the MDMR Trip Ticket Program is protected under confidentiality requirements through The Mississippi Administrative Code, Title 22, Part 9, and through NOAA Administrative Order 216-100.^{1,2} Summaries of data are periodically released by MDMR in annual reports, newsletters and other publications.³</p>		

¹ Miss. Admin. Code Title 22, Part 9 <http://www.dmr.ms.gov/joomla16/images/regulations/title-22-part-09.pdf>

² NOAA 216-100 https://www.st.nmfs.noaa.gov/st1/recreational/documents/Intercept_Appendices/Appendix%20M%20031408%20NOAA%20administrative%20order%20216-100.pdf

³ “Publications” *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/news-a-events/publications>

12.3 (b) Are results of analyses being distributed in a timely and readily understandable fashion in order that the best scientific evidence be made available as a contribution to fisheries conservation, management and development? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The GMFMC meeting minutes, stock assessments, scientific reports and other publications are made available online through their website and are also available in writing through public records requests.¹ The GMFMC also provides briefing materials through their website for committee members and general public to access prior to each meeting.² Timelines vary for documents posted in briefing</p>		

folders depending upon the project but are typically posted a few weeks prior to the meeting for documents being referenced. Meeting minutes from the most recent prior council meeting appear in the briefing folder for the next upcoming council meeting (council meetings occur five times a year and generally fall about two months apart.)

The SEFSC Fisheries Statistics Division collects data on the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research and publishes summary reports and analyses.³ Landings data are collected by the SEFSC Fisheries Monitoring Branch from each individual state agency Trip Ticket Reporting Program. All data are entered into the Fishery Information System (FIS) Metadata Catalog and are accessible by NOAA Fisheries and each of the Gulf state agencies. Additional information for shrimp is gathered through the Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.⁴ Weekly reports are posted on the NOAA Fisheries Statistics website documenting 1) Gulf Shrimp Landings by area and species, and 2) ex-vessel price and landings, and a monthly Gulf Coast Shrimp Statistics report is also posted.⁵

GSMFC publishes reports and assessments as soon as possible once approved by the commission. These reports are posted online in the publications area of the GSMFC website.⁶ Notification of availability is sent to newspapers and local media as well as posted on GSMFC and state agency social media and web pages and is announced in the GSMFC quarterly newsletter. Meeting minutes and records are compiled into a 'draft minutes book' twice a year after both the spring and fall annual meetings and sent to the commissioners and meeting participants within 2-3 months. All GSMFC meeting minutes are collated by year and published annually on the website. Documents that are not immediately available on the website can be requested from GSMFC and are typically provided within one week of the request.

MDMR raw data are available immediately to resource managers as needed for use in management decisions. Data are analyzed in yearly trends reports and reviewed by MDMR staff. Analyzed reports are disseminated throughout the agency in a timely manner for in-house use and reporting. Non-confidential information and summaries are made available to other agencies and non-governmental institutions and published through newsletters and public reports.^{7,8} Special studies conducted by MDMR scientists may also be published in scientific journals and presented at conferences when relevant. Contact information is provided for primary authors or principle investigators of published reports for further inquiry.

¹ "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/resource_library.php

² "Council Meeting Briefing Books" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

³ "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/about/statistics.htm>

⁴ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015.
<http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁵ "Commercial Fisheries Statistics" NOAA Office of Science and Technology. Web. Accessed November 2015.
http://www.st.nmfs.noaa.gov/st1/market_news/

⁶ "Publications" Gulf States Marine Fisheries Commission. Web. Accessed November 2015.
<http://www.gsmfc.org/publications.php>

⁷ "Publications" Mississippi Department of Marine Resources. Web. Accessed September 2015.
<http://dmr.ms.gov/index.php/news-a-events/publications>

⁸ MDMR. 2011 Comprehensive Annual Report Fiscal Year Ended June 30, 2011
<http://www.dmr.state.ms.us/joomla16/images/dmr/2012-dmr-annual-report.pdf>

12.3 (c) In the absence of adequate scientific information, is appropriate research being initiated in a timely fashion? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC maintains a SSC responsible for providing scientific advice to the Council.¹ The SSC is responsible for advising the Council on the adequacy of scientific information and analyses for proposed management measures and alternatives. The SSC establishes research priorities based on management needs and submits these to NOAA SEFSC.² Research is then carried out by SEFSC's various labs and research programs across the Gulf to meet these needs.³</p> <p>Mississippi: MDMR continually strives to keep pace with changing research priorities as a result of fluctuating fisheries dynamics and needs. Resource monitoring and regular review of harvest and resource data highlights changing research needs and provides a basis for research priorities. MDMR works closely with institutions such as GCRL to supplement research capabilities and fulfill research needs.</p>		

¹ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC)
http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

² GMFMC. Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019. Gulf of Mexico Fishery Management Council.
<http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

³ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015.
<http://www.sefsc.noaa.gov/research/>

12.4 (a) Are reliable and accurate data required to assess the status of fisheries and ecosystems - including data on bycatch, discards and waste - being collected? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>NOAA Fisheries is responsible for assessing and managing Gulf shrimp fisheries. NOAA SEFSC is the branch responsible for providing multi-disciplinary research to support management decisions of the GMFMC and NOAA Fisheries.¹ SEFSC Research and Data programs are responsible for biological, economic and socio-cultural research and data collection for commercial and recreational fisheries, economics and fisheries-independent data. For full details on NOAA's data collection programs, including port agents, trip tickets, and required reporting by fishermen, refer to the responses to 7.4.6 and 7.1.7 (a).</p> <p>Amendment 13 of the Shrimp FMP, established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch composition.² These methods include the implementation of an ELB for a statistically significant portion of the fishery to improve data on effort, and mandatory requirements for observer coverage for a randomly selected portion of the fishery to collect data on effort and bycatch composition. The Electronic Logbook (ELB) Program and the Observer Program are run by the Galveston Lab.^{3,4} Both programs became mandatory in 2007 and, if selected, Gulf shrimp permit holders are required to participate in these programs and permit renewal is contingent upon participation. Permit holders are selected by the Southeast Regional Director through a stratified random sampling method. The ELB program collects data on amount and location of shrimp landings. The focus of data collection for the shrimp fishery Observer Program is bycatch and BRD evaluation.⁵ The Observer Program evaluates TEDs and bycatch reduction devices (BRDs), quantifies bycatch and characterizes bycatch species composition. The Galveston Lab regularly publishes research on the shrimp fishery and contributes data and research results to the National Observer Program, which also produces reports biannually. Bycatch data from the observer and ELB programs is also utilized by the SEDAR process when conducting stock assessments of other species.⁶ The most recent report on shrimp otter trawl bycatch (Scott-Denton et al. 2012) from the Galveston Lab determined that total bycatch to shrimp ratio had decreased to 2.5:1 for total bycatch to shrimp and 2:1 for finfish to shrimp.⁷ Characterization of bycatch composition from this report shows that the majority of species are finfish, but some crustaceans including blue crabs and other shrimp species like seabobs (<i>Xiphopeneus kroyeri</i>), and rock shrimp (<i>Sicyonia brevirostris</i>), and sea turtles are also known bycatch species.⁸ This bycatch species composition is consistent with other shrimp trawl bycatch studies conducted within the Gulf of Mexico (Adkins, 1993 in Louisiana, Burrage 2002 in Mississippi, and Fuls et. al 2002 in Texas). Based on a recent analysis by Raborn et al. (2014) the only species (or species group) that represent 5% or higher in shrimp trawl bycatch are Atlantic croaker, seatrouts, longspine porgy, and inshore lizardfish. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to their populations.⁹ One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the ESA, which includes</p>		

five species of sea turtles, smalltooth sawfish, and Gulf sturgeon.¹⁰ As required under the rigorous requirements of the ESA, each species has a recovery plan and designation of critical habitat. USFWS and NOAA Office of Protected Resources are responsible for research and assessment of species on the endangered species list and assessments and recovery plans are updated every five years.¹¹ NOAA is also required to consult on activities that may impact endangered species and has produces several Biological Opinions relating to sea turtles and the shrimp trawl fishery in the Gulf of Mexico. The most recent biological opinion was published in 2014 and authorizes the continued operation of the shrimp trawl fishery.¹² A new consultation (resulting in a biological opinion) is initiated if there is new information or an action is modified that has not previously been considered, or if an incidental take statement is exceeded. Promoting consistency with the ESA and MMPA, and minimizing incidental capture of finfish species are two major objectives of the GMFMC Shrimp FMP.¹³

Mississippi:

MDMR does not conduct stock assessments specific to shrimp in Mississippi waters because they are part of a larger Gulf of Mexico stock assessed by GMFMC (see above); however, MDMR does monitor shrimp abundance in state waters through trends reports. MDMR data collection occurs through a series of programs including the Trip Ticket Program and the Fishery-Independent Sampling Program.^{14,15,16} These programs gather the necessary information on total catch, gear and fishing methods, vessel information, location, date, length of trip, and effort data, as well as biological information of the species including age, growth, recruitment, distribution, abundance surveys and environmental factors. MDMR began implementation of the Trip Ticket Program for fishery-dependent data collection in 2000 on a fishery-by-fishery basis and implementation for all fisheries went into effect in 2012.^{17,18} The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis. Minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished. Trip Tickets are submitted monthly to MDMR. MDMR Fishery-Independent Sampling Program data are initially made available as raw data to MDMR fishery managers for necessary management decisions. Data then go through a QA/QC process and are collated and reviewed annually to determine status and trends of stocks. Data from both programs are submitted regularly to regional organizations, such as GSMFC and GMFMC, as needed. Summaries of non-confidential information are made available to the public.^{19,20}

¹ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

² GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁴ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁵ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁷ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27. <http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁸ [National Marine Fisheries Service. 2011.](#)

⁹ Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Penaeid Shrimp Fishery Bycatch*. LGL Ecological Research Associates, Inc. August 2014. <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMZzQ/view?pli=1>

¹⁰ NMFS. 2012. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. http://sero.nmfs.noaa.gov/protected_resources/section_7/freq_biop/documents/fisheries_bo/southeastshrimpbio_final.pdf

¹¹ NOAA Office of Protected Resources. Web. Accessed November 2015. <http://www.nmfs.noaa.gov/pr/species/index.htm>

¹² NMFS. 2014. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. Consultation No. SER-2-13-1225. http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹³ "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁴ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁵ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%202015.pdf>

¹⁶ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁷ "Trip Ticket Program" *Mississippi Department of Marine Resources*. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

¹⁸ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20
http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁹ "Publications" *Gulf States Marine Fisheries Commission*. Web. Accessed September 2015.
<http://www.gsmfc.org/publications.php>

²⁰ "Resource Library" *Gulf of Mexico Fishery Management Council*. Web. Accessed September 2015.
http://gulfcouncil.org/resources/resource_library.php

12.4 (b) Are these data being provided, at an appropriate time and level of aggregation, to relevant States and subregional, regional and global fisheries organizations? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC utilizes data collected through NOAA Fisheries and each of the five Gulf state management agencies. GMFMC maintains a standing Data Collection Committee, which "reviews and advises the Council on the data requirements for managing each fishery, the statistical methodology needed, and on all issues related to data and data collection."¹</p> <p>The SEFSC Fisheries Statistics Division collects data on the Gulf of Mexico shrimp fishery through required reporting of landings data by dealers and fishermen, port agent interviews, and independent research.² Landings data are collected by the SEFSC Fisheries Monitoring Branch from each individual state agency Trip Ticket Reporting Program. All data are entered into the FIS Metadata Catalog and are accessible by NOAA Fisheries and each of the Gulf state agencies. Data are submitted to each state agency by dealers on a monthly basis. Additional information for shrimp is gathered through the GSS.³ Port agents are responsible for collecting both landings data from seafood dealers and interview data from either the captain or a member of the crew and data entry into the GSS is ongoing as information is collected. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. Weekly reports are posted on the NOAA Fisheries Statistics website documenting Gulf shrimp landings by area and species, and ex-vessel price and landings. A monthly Gulf Coast Shrimp Statistics report is also posted.⁴ Additionally, all federal Gulf shrimp permit holders are required to report annual landings each year through the ALF as a condition for permit renewal.⁵ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{6,7} The new cELB program, which began in 2014, transmits the most recent data from vessels directly to the Galveston Lab whenever the vessel is within cellular range. Observer coverage is compiled into annual reports made available to federal and state fisheries managers and posted publically on NOAAs website.</p> <p>NOAA Fishery-Independent resource surveys are conducted through the SEFSC Mississippi Labs. Shrimp/Bottomfish surveys are conducted each Fall and Summer, which are designed to provide a time-series for monitoring trends in resource</p>		

abundance.⁸ Data are made available to both state and federal resource managers.

GSMFC:

Fishery-related and other supporting scientific data are gathered individually by each state's management agency and submitted and reviewed regularly by GSMFC. The GSMFC meets twice a year (March and October) to review scientific data and regional management activities. Data on fishery trends in landings, values, and other activities of the fishery are presented by each state and reviewed at each meeting. The GSMFC IJF program also collects data regularly for regional assessments and FMP updates of stocks not covered by federal FMPs; data are submitted by the states on request based on the needs of specific projects. GSMFC FMPs are reviewed every five years and updated at intervals determined by the Technical Coordinating Committee (TCC).⁹

GSMFC data collection programs specific to the shrimp industry include the Southeast Area Monitoring and Assessment Program (SEAMAP) Gulf of Mexico Resource Surveys and the Fisheries Economic Data Program, among others.^{10,11}

Mississippi:

MDMR data collection occurs through a series of programs including the Trip Ticket Program and the Fishery-Independent Sampling Program.^{12,13,14} These programs gather the necessary information on total catch, gear and fishing methods, vessel information, location, date, length of trip, and effort data, as well as biological information of the species including age, growth, recruitment, distribution, abundance surveys and environmental factors. MDMR began implementation of the Trip Ticket Program for fishery-dependent data collection in 2000 on a fishery-by-fishery basis and implementation for all fisheries went into effect in 2012.^{15,16} The Trip Ticket Program is a mandatory reporting program for catch data at the trip level reported by dealers on a monthly basis. Minimum data required includes: trip date, trip number, vessel ID number, participant ID number, species, quantity landed, landing condition, market size range, ex-vessel value, location landed, dealer ID, transaction date, gear used, and area fished. Trip Tickets are submitted monthly to MDMR. MDMR Fishery-Independent Sampling Program data are initially made available as raw data to MDMR fishery managers for necessary management decisions. Data then go through a QA/QC process and are collated and reviewed annually to determine status and trends of stocks. Data from both programs are submitted regularly to regional organizations, such as GSMFC and GMFMC, as needed for reports and assessments. Summaries of non-confidential information are made available to the public.^{17,18}

¹ GMFMC, 2012. Gulf of Mexico Fishery Management Council Statement of Organization Practices and Procedures. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.st.nmfs.noaa.gov/st1/market_news/

³ "Gulf Shrimp" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ "Fisheries Statistics" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

⁶ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁸ "Mississippi Labs: Surveys" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

⁹ VanderKooy, Steve. GSMFC. Personal Communication. August, 2014.

¹⁰ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

¹¹ "Publications: Fisheries Economic Data Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

¹² Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹³ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

¹⁴ "Research at the GCRL Center for Fisheries Research and Development" Gulf Coast Research Lab. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁵ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

¹⁶ Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁷ "Publications" Gulf States Marine Fisheries Commission. Web. Accessed September 2015. <http://www.gsmfc.org/publications.php>

¹⁸ "Resource Library" Gulf of Mexico Fishery Management Council. Web. Accessed September 2015. http://gulfcouncil.org/resources/resource_library.php

12.5 (a) Are States monitoring and assessing the state of the stocks under their jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
Federal: NOAA SEFSC Galveston Lab conducts ongoing monitoring and research for the		

<p>Gulf of Mexico shrimp fishery and produces the following reports: Closure analysis reports for the Texas and Tortugas closure areas, stock assessment reports, shrimp stock trend analysis reports, recruitment overfishing monitoring reports, growth overfishing analysis reports, shrimp effort estimation and analysis reports and YPR analysis reports.¹</p> <p>Mississippi: MDMR regularly monitors stocks under state jurisdiction through the Fishery-Independent Sampling Program and harvest data are collected through the Trip Ticket Program.^{2,3,4} Habitat alteration and pollution are highly regulated and monitored through the MDMR coastal programs, MDEQ Office of Pollution Control and USACE.^{5,6,7}</p>		
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¹ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

² VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

³ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

⁴ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

⁵ "Coastal Resources Management" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/coastal-resources-management>

⁶ "Office of Pollution Control" *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/About_Office_of_Pollution_Control?OpenDocument

⁷ "Mississippi Valley Division" *U.S. Army Corps of Engineers*. Web. Accessed September 2015. <http://www.mvd.usace.army.mil/>

12.5 (b) Have they established the research capacity necessary to assess the effects of climate or environment change on fish stocks and aquatic ecosystems? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: NOAA Fisheries conducts research on climate change and fisheries.^{1,2}</p> <p>In March 2015, NOAA Fisheries released a draft Climate Science Strategy (NCSS) for public comment. This strategy is designed to collect and provide information on changing climate and ocean conditions to better prepare for and respond to climate-related impacts.³</p> <p>The NCSS includes the following objectives:</p> <ul style="list-style-type: none"> - Objective 1: Identify appropriate, climate-informed reference points for managing living marine resources (LMRs). 		

- Objective 2: Identify robust strategies for managing LMRs under changing climate conditions.
- Objective 3: Design adaptive decision processes that can incorporate and respond to changing climate conditions.
- Objective 4: Identify future states of marine and coastal ecosystems, LMRs, and LMR-dependent human communities in a changing climate.
- Objective 5: Identify the mechanisms of climate impacts on LMRs, ecosystems, and LMR-dependent human communities.
- Objective 6: Track trends in ecosystems, LMRs and LMR-dependent human communities and provide early warning of change.
- Objective 7: Build and maintain the science infrastructure needed to fulfill NOAA Fisheries mandates with changing climate conditions.

For each of the objectives listed, there are specific actions identified to help achieve that objective within the strategy. The NCSS also includes a set of priority recommendations.

NOAA conducts monitoring, research, modeling and assessment activities to inform fisheries management and protected resources in a changing environment. The Fish Stock Climate Vulnerability Assessment is currently being used to identify which stock may be most vulnerable to climate change, identifying areas where more data are needed, and providing a basis for actions that can be taken to reduce impacts.⁴

NOAA Fisheries Climate website provides a series of tools currently available regarding climate resilience including OCEANADAPT, which is a web-based tool developed through a partnership between NOAA Fisheries and Rutgers University that provides information about the distribution of commercially and recreationally important marine species over time.^{5,6}

The SEFSC recently published the Ecosystem Status Report for the Gulf of Mexico in December 2013. This report includes information on climate drivers and physical pressures on the GOM ecosystem as well as fishing indicators.⁷

Mississippi:

The Fishery Independent Sampling Program maintained by MDMR and GCLR includes collection of environmental parameters such as temperature, salinity and dissolved oxygen for each sample taken.^{8,9} These data are utilized during analyses of resource trends to identify possible environmental influences on resource abundance.

MDEQ is the primary agency in Mississippi responsible for the protection of the state's air, land, and water.¹⁰ The Office of Land and Water resources maintains several monitoring programs on water quality and use.¹¹

The Grand Bay National Estuarine Research Reserve (NERR), managed by MDMR, maintains a Research and Monitoring program that includes research on Ecological Effects of Sea Level Rise, and Long-term Monitoring of Environmental Conditions.¹² The System-wide Monitoring Program (SWMP) conducted at Grand Bay NERR began in 1995, and includes monitoring of 1) abiotic indicators of water quality and

weather, 2) biological monitoring, and 3) watershed, habitat, and land use. ¹³ These indicators are used to identify short-term variability and long-term changes to better inform coastal area management.		
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The GCRL Coastal Ecosystems Group also conducts extensive research on the coastal environment of the northern Gulf of Mexico with the goal of understanding habitat and ecosystem structure and function. ¹⁴		
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¹ "Climate Portal" NOAA Fisheries. Web. Accessed November 2015.
http://www.nmfs.noaa.gov/stories/2014/03/climate_portal.html

² NOAA Fisheries. *Fish Stock Climate Vulnerability Assessment*.
http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/Fish_Stock_Climate_Vulnerability_Assessment.pdf

³ NOAA Fisheries. *Draft Climate Science Strategy*. January 2015.
http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/draft_NOAA%20Fisheries_Climate_Science%20Strategy_Jan_2015.pdf

⁴ "Assessing the Vulnerability of Fish Stocks in a Changing Climate" NOAA Fisheries. Web. Accessed November 2015. <http://www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks>

⁵ "Climate Tools" NOAA Office of Science and Technology. Web. Accessed November 2015.
<http://www.st.nmfs.noaa.gov/ecosystems/climate/tools/index>

⁶ *Ocean Adapt*. Web. Accessed November 2015. <http://oceanadapt.rutgers.edu/>

⁷ Mandy Karnauskas, Michael J. Schirripa, Christopher R. Kelble, Geoffrey S. Cook and J. Kevin Craig. *Ecosystem Status Report for the Gulf of Mexico*. NOAA Technical Memorandum NMFS-SEFSC-653. December 2013.
<http://gulfcouncil.org/docs/Gulf%20of%20Mexico%20Ecosystem%20Status%20Report.pdf>

⁸ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215.
<http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁹ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

¹⁰ *Mississippi Department of Environmental Quality*. Web Accessed September 2015.
http://www.deq.state.ms.us/MDEQ.nsf/page/About_About?OpenDocument

¹¹ "Office of Land and Water Resources" *Mississippi Department of Environmental Quality*. Web Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/l&w_home

¹² "Research: overview" *Grand Bay National Estuarine Research Reserve*. Web. Accessed November 2015.
<http://grandbaynerr.org/research/>

¹³ *Grand Bay NERR*. Web. Accessed September 2015. <http://grandbaynerr.org/>

¹⁴ "Coastal Ecosystems Group" *Gulf Coast Research Lab*. Web. Accessed September 2015.
<http://www.usm.edu/gcrl/ceg/>

12.6 Are states taking steps to support and strengthen research capabilities to meet acknowledged scientific standards? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA (first enacted in 1976, and amended in 1996 and 2006) is the primary law governing fisheries management in the U.S.¹ The MSA established eight regional councils with the primary responsibility of developing fishery management plans (FMPs) that comply with 10 National Standards designed to promote sustainable fisheries management. National Standard 2 (NS2) requires that “<i>Conservation and management measures shall be based upon the best scientific information available.</i>”² The MSA, section 302(g)(1)(A) requires each regional management council to form a Scientific and Statistical Committee (SSC) to serve as the council’s scientific and technical advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides “ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices.”³ The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries. In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC, which includes a representative from each of the five Gulf States.</p> <p>The SSC establishes research priorities based on management needs and submits these to NOAA Southeast Fisheries Science Center (SEFSC).⁴ Research is then carried out by SEFSC’s various labs and research programs across the Gulf o meet these needs.⁵</p> <p>Mississippi: MDMR regularly reviews scientific protocols and methods and updates procedures as necessary to keep pace with advances in fisheries science. MDMR partners with GCRL on scientific research for fisheries and coastal ecosystems. MDMR and GCRL scientists attend workshops and conferences to stay up-to-date on current research methods within their field, and participate in regional organizations, including GSMFC and GMFMC to collaborate on scientific research.^{6,7}</p>		

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

⁴ GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁵ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁶ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁷ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://www.gulfcouncil.org/>

12.7 (a) Are states cooperating with relevant regional organizations to encourage research in order to ensure optimum utilization of fishery resources? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the MSA, which is the primary law governing fisheries management in the U.S. The MSA established eight regional councils with the primary responsibility of developing fishery management plans (FMPs) that comply with 10 National Standards designed to promote sustainable fisheries management.¹ National Standard 1 (NS1) requires “<i>Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.</i>”² Current guidelines for NS1 require specification of maximum sustainable yield (MSY) and Optimum Yield (OY), based on the best scientific evidence available, for each fishery managed by the Councils. Additionally, NS1 requires specification of status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks in the fishery. The NS1 guidelines are designed to prevent overfishing and ensure that the fishery achieve OY and require corrective actions to be taken to rebuild stocks if overfishing or overfished conditions occur.</p> <p>The GMFMC implemented the Shrimp FMP in 1981, which currently includes brown shrimp, white shrimp, pink shrimp, and royal red shrimp in the Gulf of Mexico.³ The goals/objectives of Shrimp FMP include optimizing the yield of shrimp recruited to the fishery. Amendment 5 of the Shrimp FMP defined overfishing and provided measures to restore overfished stocks, should overfishing occur, for brown, pink and royal red shrimp, and Amendment 7 similarly defined overfishing and measures to restore stocks if overfished for white shrimp.^{4,5} Amendment 13 further defined reference points for each of the penaeid shrimp species to comply with the requirements of MSA NS1 and includes definitions of Maximum Fishing Mortality Threshold (MFMT) and Minimum Stock Size Threshold (MSST).⁶ The GMFMC manages the shrimp fishery in relation to these reference points to ensure optimal yield and long-term availability for future generations.</p> <p>Mississippi participates in research to support optimal utilization of resources</p>		

<p>regionally through GMFMC.⁷</p> <p>Though there is currently no formal cooperation with respect to the shrimp fishery, there is cooperation between the United States and Mexico regarding fisheries management in the Gulf of Mexico. The United States-Mexico Fisheries Cooperation Program is a bilateral consultative agreement that was informally agreed upon by the NMFS and SAGARPA in 1983.⁸ Three memoranda of understanding (MOU) have been formalized through this relationship including the MEXUS-Golfo research program. Fishery Cooperation Talks (FCT) between NMFS and CONAPESCA occur annually and MEXUS-Golfo working groups are held as needed. Recent FCT meetings have included discussion of sustainable fisheries management, protection and conservation of species such as sea turtles, enforcement cooperation, aquaculture, collaborative research and participation in fisheries related international organizations.</p>		
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¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² "National Standards Guidelines" NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁴ GMFMC. Amendment 5 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 1991. <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁵ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%200805.pdf>

⁷ Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. <http://www.gulfcouncil.org/>

⁸ NOAA. 2014. International Agreements Concerning Living Marine Resources of Interest to NOAA Fisheries. http://www.nmfs.noaa.gov/ia/intlagree/docs/2012/international_agreements.pdf

12.7 (b) Are they stimulating the research required to support national policies related to fish as food? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
Unites States Code, Title 21, Part 123 and Part 110 establish a mandatory seafood inspection program (HACCP) and quality standards for the manufacture, packing and storing of food for human consumption. ^{1,2}		
The FDA maintains a Science and Research (Food) Program that continues to		

advance knowledge regarding potential food hazards, best practices for handling and preparation, and consumer use of foods, including seafood.³The FDA conducts seafood testing to ensure safety and has produced several reports on testing of Gulf seafood conducted after the 2010 Deepwater Horizon Oil Spill.

NOAA also conducts seafood testing, collecting samples of shellfish and sediment from over 60 sites across the GOM to test for chemical and microbial contaminants.⁴

In Mississippi, four state agencies are involved in seafood safety testing- MDMR, MDEQ, Mississippi State Department of Health (MSDH), and the Mississippi State Chemical Laboratory (MSCL).^{5,6,7,8,9} Samples are collected from open water by MDMR staff and tested for polycyclic aromatic hydrocarbons (PAHs), and dispersant chemicals at the MSCL. The MDMR Seafood Technology Bureau is also responsible for inspection of all seafood facilities to ensure that sanitation standards and HACCP regulations are being met.¹⁰

The Mississippi Seafood Marketing Program, authorized by MS Code 49-15-307, works to promote Mississippi seafood and inform the public regarding information on health, quality and safety of seafood from the GOM.¹¹

The USDA is also involved in food safety, security, quality standards, and nutrition.¹² USDA National Institute of Food and Agriculture (NIFA) supports research in many aspects of food and agriculture.¹³ The USDA also provides Dietary Guidelines to advise consumers on health eating.¹⁴

The GSMFC ORDP initiatives are currently working to support national policies related to fish as food by addressing Gulf seafood marketing, traceability, sustainability, and seafood safety issues.¹⁵

¹ 21 U.S.C. 123 (FDA HACCP regulations)

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm?CFRPart=123>

² 21 U.S.C. 110 (Federal Food, Drug and Cosmetics Act) <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title21/html/USCODE-2011-title21-chap9-subchapIV.htm>

³ "Science and Research (Food)" *U.S. Food and Drug Administration*. Web. Accessed November 2015. <http://www.fda.gov/Food/FoodScienceResearch/default.htm>

⁴ "Keeping Seafood Safe" *NOAA*. Web. Accessed November 2015. http://www.noaa.gov/100days/Keeping_Seafood_Safe.html

⁵ MDMR. *Mississippi Seafood Safety, a Newsletter of the Mississippi Department of Marine Resources*. <http://www.dmr.state.ms.us/joomla16/images/publications/seafood-technology/seasafe.pdf>

⁶ "Seafood Technology Bureau" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

⁷ *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. <http://www.deq.state.ms.us/>

⁸ Mississippi State Department of Health. Web. Accessed September 2015. <http://msdh.ms.gov/>

⁹ Mississippi State Chemical Lab. Web. Accessed September 2015. <http://www.mscl.msstate.edu/>

¹⁰ "Seafood Technology Bureau" Mississippi Department of Marine Resources. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

¹¹ Mississippi Gulf Fresh Seafood. Web. Accessed September 2015. <http://www.msseafood.com/>

¹² U.S. Department of Agriculture. Web. Accessed November 2015. <http://www.usda.gov/wps/portal/usda/usdahome?navid=food-nutrition>

¹³ "Research" U.S. Department of Agriculture. Web. Accessed November 2015. <http://www.csrees.usda.gov/qlinks/research.html>

¹⁴ "Dietary Guidelines" U.S. Department of Agriculture. Web. Accessed November 2015. <http://www.health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>

¹⁵ "Oil Disaster Recovery Program" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/#:content@10:links@11>

12.8 (a) Is research being conducted into the study and monitoring of human food supplies from aquatic sources and the environments from which they are taken to ensure that there is no adverse health impact on consumers? **Yes...[1] Some...[1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>NOAA conducts seafood testing, collecting samples of shellfish and sediment from over 60 sites across the GOM to test for chemical and microbial contaminants.¹</p> <p>The FDA also has authority to regulate seafood harvest and processing through the Food, Drug and Cosmetics Act and assists states with matters concerning sanitary quality of seafood through the Public Health Services Act.^{2,3}</p> <p>In Mississippi, four state agencies are involved in seafood safety testing- MDMR, MDEQ, Mississippi State Department of Health (MSDH), and the Mississippi State Chemical Laboratory (MSCL).^{4,5,6,7,8} Samples are collected from open water by MDMR staff and tested for polycyclic aromatic hydrocarbons (PAHs), and dispersant chemicals at the MSCL. The MDMR Seafood Technology Bureau is also responsible for inspection of all seafood facilities to ensure that sanitation standards and HACCP regulations are being met.⁹</p>		

¹ "Keeping Seafood Safe" NOAA. Web. Accessed November 2015. http://www.noaa.gov/100days/Keeping_Seafood_Safe.html

² Guillory, V. Perry, H. VanderKooy, S. 2001. *The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan*. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20096.pdf>

³ "Seafood HACCP" U.S. Food and Drug Administration. Web. Accessed November 2015.

<http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006764.htm>

⁴ MDMR. *Mississippi Seafood Safety, a Newsletter of the Mississippi Department of Marine Resources*. <http://www.dmr.state.ms.us/joomla16/images/publications/seafood-technology/seasafe.pdf>

⁵ "Seafood Technology Bureau" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

⁶ *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. <http://www.deq.state.ms.us/>

⁷ *Mississippi State Department of Health*. Web. Accessed September 2015. <http://msdh.ms.gov/>

⁸ *Mississippi State Chemical Lab*. Web. Accessed September 2015. <http://www.mscl.msstate.edu/>

⁹ "Seafood Technology Bureau" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

12.8 (b) Are results of such research being made publicly available? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
USFDA provides Consumer Updates on seafood through their website and via email updates. ¹		
MDMR publishes results of seafood testing in a seafood safety newsletter, which is posted on the MDMR website. ^{2,3}		
MDEQ newsletter reports results of the seafood safety testing program. ⁴ The MDEQ website also contains posts regarding fish consumption advisories. ⁵		

¹ "Consumption Advisories" *U.S. Food and Drug Administration*. Web. Accessed November 2015. <http://www.fda.gov/forconsumers/consumerupdates/ucm397443.htm>

² MDMR. *Mississippi Seafood Safety, a Newsletter of the Mississippi Department of Marine Resources*. <http://www.dmr.state.ms.us/joomla16/images/publications/seafood-technology/seasafe.pdf>

³ "Seafood Technology Bureau" *Mississippi Department of Marine Resources*. Web. Accessed September 2015. <http://dmr.ms.gov/index.php/marine-fisheries/seafood-technology>

⁴ MDEQ. *Environmental News*. Volume 12, Issue 2. February 2015. [http://www.deq.state.ms.us/mdeq.nsf/pdf/Main_ExternalNewsletterFeb2015/\\$File/externalfeb.pdf?OpenElement](http://www.deq.state.ms.us/mdeq.nsf/pdf/Main_ExternalNewsletterFeb2015/$File/externalfeb.pdf?OpenElement)

⁵ "Mississippi Fish Advisories" *Mississippi Department of Environmental Quality*. Web. Accessed September 2015. http://www.deq.state.ms.us/mdeq.nsf/page/FS_Mississippi_Fish_Advisories?OpenDocument

12.10 (a) Are studies on the selectivity of fishing gear, the environmental impact of fishing gear on target species and on the behavior of target and non-target species in relation to such fishing gear being conducted as an aid for management decisions? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
Research is being conducted on selectivity of fishing gear and methods and programs		

are in place to monitor and assess potential impacts of fishing gear on target and non-target species.

NOAA's Pascagoula Lab in Mississippi houses the Harvesting Systems Unit, a team of biologists and gear specialists who perform critical research on fishing gear. The Harvesting Systems Unit does extensive research on BRDs for the Gulf of Mexico shrimp fishery, including cooperative research with commercial industry members to test improved gear designs, and also conducts trainings and courtesy inspections across the Gulf on commercial shrimp boats to ensure proper use of TEDs and BRDs.¹ Current research being conducted by the Harvesting Systems Unit includes new TED designs for use in skimmer trawls.

Amendment 13 of the Shrimp FMP, established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch composition.² These methods include the implementation of an ELB for a statistically significant portion of the fishery to improve data on effort, and mandatory requirements for observer coverage for a randomly selected portion of the fishery to collect data on effort and bycatch composition.

The NOAA SEFSC Galveston Lab focuses research efforts on fishery management, fishery ecology and protected species with strong emphasis on research pertaining to all aspects of the shrimp fishery.³ Data are collected on the shrimp fishery through the ELB Program and the Observer Program, managed by the Galveston Lab.⁴ Both programs became mandatory in 2007 and, if selected, Gulf shrimp permit holders are required to participate in these programs and permit renewal is contingent upon participation. Permit holders are selected by the Southeast Regional Director through a stratified random sampling method. The ELB program collects data on amount and location of shrimp landings. The focus of data collection for the shrimp fishery Observer Program is bycatch and BRD evaluation.⁵ The Observer Program evaluates TEDs and bycatch reduction devices (BRDs), quantifies bycatch and characterizes bycatch species composition. The Galveston Lab regularly publishes research on the shrimp fishery and contributes data and research results to the National Observer Program, which also produces reports biannually. Bycatch data from the observer and ELB programs is also utilized by the SEDAR process when conducting stock assessments of other species.⁶ The most recent report on shrimp otter trawl bycatch (Scott-Denton et al. 2012) from the Galveston Lab determined that total bycatch to shrimp ratio had decreased to 2.5:1 for total bycatch to shrimp and 2:1 for finfish to shrimp.⁷ Characterization of bycatch composition from this report shows that the majority of species are finfish, but some crustaceans including blue crabs and other shrimp species like seabobs (*Xiphopeneus kroyeri*), and rock shrimp (*Sicyonia brevirostris*), and sea turtles are also known bycatch species.⁸ This bycatch species composition is consistent with other shrimp trawl bycatch studies conducted within the Gulf of Mexico (Adkins, 1993 in Louisiana, Burrage 2002 in Mississippi, and Fuls et. al 2002 in Texas). Based on a recent analysis by Raborn et al. (2014) the only species (or species group) that represent 5% or higher in shrimp trawl bycatch are Atlantic croaker, seatrouts, longspine porgy, and inshore lizardfish. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to their populations.⁹

One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the ESA, which includes five species of sea turtles, smalltooth sawfish, and Gulf sturgeon.¹⁰ As required under the rigorous requirements of the ESA, each species has a recovery plan and designation of critical habitat. USFWS and NOAA Office of Protected Resources are responsible for research and assessment of species on the endangered species list and assessments and recovery plans are updated every five years.¹¹ NOAA is also required to consult on activities that may impact endangered species and has produced several Biological Opinions relating to sea turtles and the shrimp trawl fishery in the Gulf of Mexico. The most recent biological opinion was published in 2014 and authorizes the continued operation of the shrimp trawl fishery.¹² A new consultation (resulting in a biological opinion) is initiated if there is new information or an action is modified that has not previously been considered, or if an incidental take statement is exceeded. Promoting consistency with the ESA and MMPA, and minimizing incidental capture of finfish species are two major objectives of the GMFMC Shrimp FMP.¹³

Several studies have also been funded through NOAA's Cooperative Research Fund (CRP) to evaluate bycatch reduction devices in the shrimp trawl fishery including projects by the Gulf and South Atlantic Fisheries Foundation (GSAFF).¹⁴

BOTTOM HABITAT IMPACTS:

Impacts on EFH are assessed by NOAA and the GMFMC in the Generic Amendment for addressing EFH requirements in FMPs. The EFH amendment applies to all seven GMFMC FMPs.¹⁵ The initial EFH amendment was developed in 1998 and included an EIS. Section 5.1 identifies EFH for the shrimp species managed in the Gulf of Mexico Shrimp FMP (brown, white, pink, and royal red). Section 6.1 identifies fishing-related threats, 6.2 identifies non-fishing related threats. Section 7 provides management options to minimize impacts and Section 8 identifies research needs. The EFH amendment is updated every five years.

¹ "Harvesting Systems Unit" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

² GMFMC. Amendment 13 to the Shrimp Fishery Management Plan. Gulf of Mexico Fishery Management Council. 2005. <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ "Research" Southeast Fisheries Science Center, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/research_home/index.html

⁴ "ELB FAQs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵ "Fishery Observer Programs" NOAA Fisheries, Galveston Lab. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁷ Scott-Denton, E., P. Cryer, M. Duffy, J. Gocke, M. Harrelson, D. Kinsella, J. Nance, J. Pulver, R. Smith, and J. Williams. 2012. Characterization of the U.S. Gulf of Mexico and South Atlantic penaeid and rock shrimp fisheries based on observer data. *Marine Fisheries Review* 74:1-27.
<http://www.thefreelibrary.com/Characterization+of+the+U.S.+Gulf+of+Mexico+and+South+Atlantic...-a0323658377>

⁸ [National Marine Fisheries Service. 2011.](#)

⁹ Scott Raborn, Benny Gallaway, and John Cole. *Descriptive Assessment of the Most Prevalent Finfish Species in the US Gulf of Mexico Paneaid Shrimp Fishery Bycatch*. LGL Ecological Research Associates, Inc. August 2014.
<https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWnNBMZzQ/view?pli=1>

¹⁰ NMFS. 2012. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act.
http://sero.nmfs.noaa.gov/protected_resources/section_7/freq_biop/documents/fisheries_bo/southeastshrimpbiop_final.pdf

¹¹ NOAA Office of Protected Resources. Web. Accessed November 2015.
<http://www.nmfs.noaa.gov/pr/species/index.htm>

¹² NMFS. 2014. Endangered Species Act section 7 consultation biological opinion: reinitiation of Endangered Species Act (ESA) Section 7 consultation on the continued implementation of the sea turtle conservation regulations under the ESA and the continued authorization of the Southeast U.S. shrimp fisheries in federal waters under the Magnuson-Stevens Fishery Management and Conservation Act. Consultation No. SER-2-13-1225.
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹³ "Shrimp Management Plans" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015.
http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁴ Frank Helies and Judy Jamison (2009) "Reduction Rate, Species Composition, and Effort: Assessing Bycatch Within the Gulf of Mexico Shrimp Trawl Fishery." NOAA/NMFS Cooperative Agreement Number NA07NMF4330125 (#101) http://www.gulfsouthfoundation.org/uploads/reports/101_final4.pdf

¹⁵ "Essential Fish Habitat Amendments" *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

12.10 (b) Is an attempt being made through research to minimize non-utilized catches?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<u>Harvesting Systems Unit:</u> The SEFSC Pascagoula Lab contains the Harvesting Systems Unit, which is a team of gear specialists and fishery biologists performing research into critical problems relating to commercial and recreational fishing gear to inform and improve fisheries resource management. ¹ The Harvest Systems Unit is responsible for the development, evaluation, certification, and national and international technology transfer of TEDs for trawling gear. The Harvesting Systems Unit is also responsible for the development and assessment of BRDs to reduce finfish bycatch in shrimp trawls. Research on TEDs and BRDs for the shrimp fishery is ongoing with annual testing on new designs of these devices to improve efficiency in reducing bycatch		

<p>and minimizing shrimp loss and studies are conducted both independently, and in collaboration with commercial shrimpers through cooperative research projects. There are currently several certified designs of both TEDs and BRDs approved by the NOAA.^{2,3}</p> <p><u>Observer Program:</u> NOAA Fisheries monitors bycatch reduction methods and shrimp trawl impacts through an onboard observer program.⁴The Shrimp Bycatch Reduction Device Evaluation Research is an observer program organized and conducted through the Galveston Laboratory. This project consists of onboard monitoring and scientific data analysis. The observer program collects data on bycatch quantity and species composition, and evaluates efficacy of TEDs and BRDs currently in use in the commercial fishery. The fishery observer program was established in 1987 and has helped provide data for evaluating the economic impact of TEDs and BRDs on the shrimping industry.</p> <p>Several studies have also been funded through NOAA’s Cooperative Research Fund (CRP) to evaluate bycatch reduction devices in the shrimp trawl fishery including projects by the Gulf and South Atlantic Fisheries Foundation (GSAFF).⁵</p>		
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¹ “Harvesting Systems Unit” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

² “TED Designs” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

³ “BRD Designs” NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

⁴ “Galveston Laboratory” NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ Frank Helies and Judy Jamison (2009) “Reduction Rate, Species Composition, and Effort: Assessing Bycatch Within the Gulf of Mexico Shrimp Trawl Fishery.” NOAA/NMFS Cooperative Agreement Number NA07NMF4330125 (#101) http://www.gulfsouthfoundation.org/uploads/reports/101_final4.pdf

12.10 (c) Is the biodiversity of ecosystems and the aquatic habitat being safeguarded?
Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
	<p>There are two overarching considerations for the Louisiana shrimp fishery with regard to conservation of biodiversity of ecosystems: bycatch and bottom habitat impacts. Substantial progress has been made in minimizing impacts to biodiversity and the ecosystem by the Louisiana shrimp fishery; however, some areas for potential improvements remain.</p> <p>Refer to responses to 7.2.2 and 7.6.9(a) for full details on bycatch, discards, waste, gear selectivity, endangered and threatened species and habitat impacts.</p>	

12.11 (a) Before the commercial introduction of a new type of gear, is a scientific evaluation of its impact on the fisheries and ecosystems where it will be used being undertaken?

Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
Both state and federal agencies limit the type of gear used within the fishery and new gear types are researched and permitted on a case by case basis. Refer to 8.4.7 response full for details.		

12.11 (b) Is the effect of such gear introduction monitored? Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal:</p> <p><i>Required Reporting:</i> 50 CFR 622.51 requires fisherman with a Gulf of Mexico Shrimp Permit to submit a Vessel and Gear Characterization Form annually when renewing their permits.¹ The forms allows NOAA to track gear usage and changes in gear type/use.</p> <p><i>Observer Program:</i> NOAA Fisheries monitors bycatch reduction methods and shrimp trawl impacts through an onboard observer program.² The Shrimp Bycatch Reduction Device Evaluation Research is an observer program organized and conducted through the Galveston Laboratory. This project consists of onboard monitoring and scientific data analysis. The observer program collects data on bycatch quantity and species composition, and evaluates efficacy of TEDs and BRDs currently in use in the commercial fishery. The fishery observer program was established in 1987 and has helped provide data for evaluating the economic impact of TEDs and BRDs on the shrimping industry.</p> <p><i>Resource surveys:</i> SEAMAP- Gulf of Mexico conducts resource surveys that are used to assess the shrimp populations through the Summer and Fall Shrimp/Groundfish Surveys.³ These surveys provide valuable information not only on shrimp, but also on the common bycatch species typically found in shrimp trawls. Trends in abundance of all species caught in SEAMAP trawls are monitored, and data from these trawls are used in bycatch estimates by NOAA Fisheries.</p> <p>Mississippi: MDMR trip ticket data collection requires reporting of gear types and quantities with landing information allowing MDMR to monitor use of gear types in commercial harvest.^{4,5} Combined with data from Fishery-Independent Sampling Program, MDMR is able to detect changing trends in coastal resources, associated species and habitats that may be affected by new harvest methods.^{6,7}</p>		

¹ 50 C.F.R. § 622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cefeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

² "Galveston Laboratory" NOAA Fisheries. Web. Accessed November 2015. http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ "Southeast Area Monitoring and Assessment Program (SEAMAP)" Gulf States Marine Fisheries Commission. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁴ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

⁵ "Trip Ticket Program" Mississippi Department of Marine Resources. Web. Accessed November 2015. <http://dmr.ms.gov/index.php/commercial-fishing/trip-ticket-program>

⁶ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁷ "Research at the GCRL Center for Fisheries Research and Development" Gulf Coast Research Lab. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

12.12 Are traditional fisheries knowledge and technologies being investigated and documented, in particular those applied to small-scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
An extensive history of the development of the shrimp fishery has been investigated and documented in the GMFMC shrimp FMP. This FMP has been updated several times and each amendment contains updated information of socio-cultural aspects of the fishery. ¹		

¹ "Shrimp Management Plans" Gulf of Mexico Fishery Management Council. Web. Accessed November 2015. http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

12.13 (a) Is the use of research results as a basis for the setting of management objectives, reference points and performance criteria being promoted? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
Federal: The GMFMC manages the Gulf of Mexico shrimp fishery under the principles of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA (first enacted in 1976, and amended in 1996 and 2006) is the primary law governing fisheries management in the U.S. ¹ The MSA established eight regional councils with the primary responsibility of developing fishery management plans (FMPs) that comply with 10 National Standards designed to promote sustainable fisheries management.		

National Standard 1 (NS1) requires “*Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.*”² Current guidelines for NS1 require specification of maximum sustainable yield (MSY) and Optimum Yield (OY), based on the best scientific evidence available, for each fishery managed by the regional councils. Additionally, NS1 requires specification of status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks in the fishery.

National Standard 2 (NS2) requires that “*Conservation and management measures shall be based upon the best scientific information available.*”³

The MSA, section 302(g)(1)(A) requires each regional management council to form a Scientific and Statistical Committee (SSC) to serve as the council’s scientific and technical advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides “ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices.”⁴ The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries. In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC, which includes a representative from each of the five Gulf States. The SSC establishes research priorities based on management needs and submits these to NOAA Southeast Fisheries Science Center (SEFSC).⁵ Research is then carried out by SEFSC’s various labs and research programs across the Gulf to meet these needs.⁶

Mississippi:

MDMR conducts scientific monitoring and research, in conjunction with GCRL, which is directly in support of management and conservation decisions for the coastal resources of Mississippi. MDMR regularly monitors stocks under state jurisdiction through Fishery-Independent Sampling Program and harvest data collected through the Trip Ticket Program.^{7,8,9} MDMR actively participates in GMFMC and GSMFC and utilizes the research and recommendations provided by these organizations.

¹ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 - 1891(d)) http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ “National Standards Guidelines” NOAA Fisheries. Web. Accessed November 2015. http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

⁴ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

⁵ GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁶ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁷ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁸ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

⁹ Donaldson, D. 2004. *Overview of State Trip Ticket Programs in Gulf of Mexico*. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

12.13 (b) Is research being used to help ensure adequate linkages between applied research and fisheries management? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: GMFMC has a SSC to serve as the council’s scientific and technical advisory body, which assists with development, collection, evaluation, and peer review of biological, statistical, economic, social, and other scientific information. Each SSC provides “ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, MSY, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices.”¹ The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries. In addition to the primary Standing SSC for the GMFMC, there is also a Special Shrimp SSC, which includes a representative from each of the five Gulf States. The SSC establishes research priorities based on management needs and submits these to NOAA Southeast Fisheries Science Center (SEFSC).² Research is then carried out by SEFSC’s various labs and research programs across the Gulf to meet these needs.³</p> <p>Mississippi: MDMR is responsible for coordinating and conducting applied research for statewide concerns and utilizing that research for management recommendations.^{4,5} For the shrimp fishery, MDMR works with the GCRL on a Shrimp Sampling Program to determine shrimp size and abundance when setting season dates for the fishery.⁶</p>		

¹ 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

² GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

³ "Research and Data" NOAA Southeast Fisheries Science Center. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁴ VanderKooy, S. (ed). 2013. GDAR01 Gulf of Mexico Blue Crab Stock Assessment Report. Gulf States Marine Fisheries Commission. Ocean Springs, MS. GSMFC Number 215. <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

⁵ "Research at the GCRL Center for Fisheries Research and Development" *Gulf Coast Research Lab*. Web. Accessed November 2015. http://www.usm.edu/gcrl/fisheries_center/current.fisheries.research.php

⁶ MDMR. *Shrimping the Sound, a Newsletter of the Mississippi Department of Marine Resources Shrimp and Crab Bureau*. Spring 2014. <http://www.dmr.ms.gov/images/publications/newsletters/Shrimp-Spring-2014.pdf>

12.14 Are States conducting scientific research activities in waters under the jurisdiction of another State, ensuring that their vessels comply with the laws and regulations of that State and international law? **Yes...**[1] **No...**[0]

Extent of compliance		
N/A (not included in scoring)		
NOAA does not conduct scientific research in waters under the jurisdiction of another country within the Gulf of Mexico.		
Mississippi does not conduct scientific research in waters under the jurisdiction of another state.		

12.17 Are States, either directly or with the support of relevant national organizations, developing collaborative technical and research programs to improve understanding of the biology, environment and status of transboundary aquatic stocks? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
The GMFMC is one of the regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976. ¹ The GMFMC is a collaboration between NOAA Fisheries and the five Gulf state marine resource management agencies with additional representation from the U.S. Coast Guard, U.S. Fish and Wildlife Service, Department of State, and the Gulf States Marine Fisheries Commission. The GMFMC maintains a Scientific and Statistical Committee (SSC) responsible for providing scientific advice to the GMFMC. ² The SSC is responsible for advising GMFMC on the adequacy of scientific information and analyses for proposed management measures and alternatives. The SSC establishes research priorities based on management needs and submits these to NOAA Southeast Fisheries Science Center (SEFSC). ³ Research is then carried out either by NOAA Fisheries SEFSC's various labs and research programs across the Gulf or through collaboration with each of the five Gulf state resource management agencies. ⁴ Additionally, GSMFC provides technical and research programs through collaboration between the five U.S. Gulf States to support fisheries management. ⁵ The SEAMAP and Economic Data programs each provide		

research support to shrimp fishery management in the Gulf of Mexico.^{6,7} GSMFC maintains a Technical Coordinating Committee (TCC), which provides technical and scientific advice to the commission and reviews reports and actions by other GSMFC committees and programs.

International:

There is a shrimp fishery prosecuted in Mexican waters in the Gulf of Mexico, but no formal management body exists across international boundaries. The U.S. and Mexico do collaborate on fishery management issues through the United States-Mexico Fisheries Cooperation Program, which is a bilateral consultative agreement that was informally agreed upon by the U.S National Marine Fisheries Service (NMFS) and the Mexican Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA) in 1983.⁸ Three memoranda of understanding (MOU) have been formalized through this relationship including the MEXUS-Golfo research program. Fishery Cooperation Talks (FCT) between NMFS and Mexico's National Commission of Aquaculture and Fishing (CONAPESCA) occur annually and MEXUS-Golfo working groups are held as needed. Recent FCT meetings have included discussion of sustainable fisheries management, protection and conservation of species such as sea turtles, enforcement cooperation, aquaculture, collaborative research and participation in fisheries related international organizations.⁹ For the purposes of management and assessments of shrimp, no detailed information is available for shrimp caught and and/or landed in Mexico; therefore, the Gulf of Mexico shrimp stocks are considered from the Mexican border to Florida and assessed accordingly.

The SEFSC Galveston Lab shrimp research program includes a Information Transfer for Shrimp Fisheries' project. This project includes communications with Mexico Fishery Laboratories to enhance data collection and promote global stewardship of resources.¹⁰

¹ *Gulf of Mexico Fishery Management Council*. Web. Accessed November 2015. <http://gulfcouncil.org/about/index.php>

² 50 C.F.R. § 600.133 Scientific and Statistical Committee (SSC) http://www.ecfr.gov/cgi-bin/text-idx?SID=a85fa5586a3b7f4f03ddb01c0411a72c&mc=true&node=se50.12.600_1133&rgn=div8

³ GMFMC. *Gulf of Mexico Fishery Management Council Updated List of Fishery Monitoring and Research Priorities for 2015-2019*. Gulf of Mexico Fishery Management Council. <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁴ "Research and Data" *NOAA Southeast Fisheries Science Center*. Web. Accessed November 2015. <http://www.sefsc.noaa.gov/research/>

⁵ *Gulf States Marine Fishery Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/>

⁶ "Southeast Area Monitoring and Assessment Program (SEAMAP)" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/seamap.php>

⁷ "Publications: Fisheries Economic Data Program" *Gulf States Marine Fisheries Commission*. Web. Accessed November 2015. <http://www.gsmfc.org/pubs.php?s=ECON>

⁸ Secretaria de Agricultura, Ganaderia, Desarrollo rural, Pesca y Alimentacion (SAGARPA), 2012. Diario Oficial, Segunda sección, 24 de agosto de 2012. Actualización de la Carta Nacional Pesquera, 236 pp.
<http://www.inapesca.gob.mx/portal/documentos/publicaciones/CARTA%20NACIONAL%20PESQUERA/24082012%20SAGARPA.pdf>

⁹ NOAA. 2014. *International Agreements Concerning Living Marine Resources of Interest to NOAA Fisheries*.
http://www.nmfs.noaa.gov/ia/intlagree/docs/2012/international_agreements.pdf

¹⁰ "Galveston Laboratory" *NOAA Fisheries*. Web. Accessed November 2015.
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

APPENDIX A: MISSISSIPPI SHRIMP INDUSTRY DISCUSSION SUMMARY

During the initial development of the Mississippi Shrimp MAP, G.U.L.F. staff conducted a series of preliminary interviews with active Mississippi shrimp industry members to gain input directly from the industry on their experiences, concerns and recommendations for the fishery. Below is a summary of concerns and recommendations provided during these interviews. (See Appendix D-Timeline for detail on when/where interviews were conducted).

Mississippi Shrimp Industry Comments:

- Challenges
 - Consistent price
 - Tension between harvesters and processors
- Wouldn't be against TEDs in skimmers being a law in Mississippi, but Mississippi can't have a law that is stricter than federal law
- Would like to see a Shrimp Task Force in Mississippi similar to that in Louisiana and the Blue Crab Task Force that already exists in MS
- Do have to buy product from elsewhere to process
- Most product goes to the Atlantic
- If do get a question about sustainability from buyers, a letter from the company explaining why sustainable usually works
- Some businesses function solely as a dealer between producer and processor

APPENDIX B: RECOMMENDATIONS PROVIDED BY GLOBAL TRUST CERTIFICATION LTD (GTC)

Taken from the MARINE ADVANCEMENT PLAN (MAP) VERIFICATION REPORT for the Mississippi Shrimp Fishery:

GTC Ltd has been contracted by Audubon Nature Institute, as an independent assessment body, competent in objective fishery evaluation to provide third-party verification of reports compiled by Gulf United for Lasting Fisheries (G.U.L.F.) for the development of Fishery Marine Advancement Plans (MAPs) in the US Gulf Of Mexico.

The Marine Advancement Plan (MAP) Verification Report provides a detailed evaluation of the Sustainability Benchmarking Report for the **Mississippi Shrimp Trap Fishery**, an assessment against FAO criteria according to FAO Circular 917 (Caddy Checklist, 1996) and a draft action plan of recommendations which can form the basis of the MAP for the fishery. The Report confirms any existing gaps (weaker scores) identified in the Sustainability Benchmark Report and identifies any additional areas where the GTC evaluation team considers that further gaps are present.

The following provides a summary of the issue under evaluation for each AMBER or RED rated clause and makes recommendations on the advancement activities that will support closing the gap or resolving the identified issue.

Fishery Recommendations: “No”-rated (0-scoring) clauses

No clauses have been “No”-scored.

Fishery Recommendations: “Some”-rated (1/2-scoring) clauses

RECOMMENDATION 1:

7.1.8 (a)(b) – Have mechanisms been established to (identify, quantify) prevent or eliminate excess fishing capacity? Have these measures proved effective?

7.2.2 (a)(i,ii) – Is the level of excess capacity defined? Avoided?

Summary:

At Federal level, an analysis of the Gulf of Mexico shrimp fishery to determine the level of overcapacity and costs associated with reducing overcapacity within the fleet was carried out. The fishery was broken down into subgroups; capacity was determined for each division and then extrapolated to estimate total fleet level activity. Amendment 13 of the Gulf of Mexico Shrimp FMP established a 10-year moratorium on the issuance of commercial shrimp vessel permits capping the number of vessels in the federal fishery. The 10-year moratorium put in place by Amendment 13, has been renewed for an additional 10 years, and the GMFMC is currently in discussions on the development of Amendment 17B to reevaluate capacity and determine the optimal number of permits for the fishery.

At the State level, there is currently no limit on the fishing capacity for the shrimp fishery. MCMR does have the authority to establish limited-entry for a fishery under MS Code §49-15-16, if it should be determined that a limited-entry system is necessary.

Recommendation:

At the State level:

- An optimal or target capacity should be defined; and
- Measures to control fishing effort should be implemented such as capping the number of licenses.

RECOMMENDATION 2:

7.2.2 (d) Has the biodiversity of aquatic ecosystems been conserved (as a result of operation of the fishery in question)?

7.2.2 (g)(iii) Have selective and environmentally-safe and cost-effective fishing methods been developed?

7.6.9 (a) Are appropriate measures being applied to minimize:

- (i) - waste and discards?
- (ii) - catch of non-target species (both fish and non-fish species)?
- (i) - impacts on associated, dependent or endangered species?

8.5.1 (a) Where practicable, is there a requirement that fishing gear, methods and practices are sufficiently selective as to minimize waste, discards, catch of non-target species - both fish and non-fish species - and impacts on associated or dependent species and that the intent of related regulations is not circumvented by technical devices and that information on new developments and requirements is made available to all fishers?

12.10 (c) Is the biodiversity of ecosystems and the aquatic habitat being safeguarded?

Summary:

Bycatch is a major concern in shrimp fisheries and there is much controversy among stakeholders on the potential impacts of shrimp trawling on the ecosystem. Managers and fishermen throughout the Gulf of Mexico have cooperated to utilize best-practices for bycatch reduction and continue to collaborate on innovative methods to further reduce bycatch; however, the shrimp industry continues to draw criticism by some due to the continued mortality of some bycatch species. Several regulations have been designed to minimize waste and discards, catch of non-target species, and impacts on associated, dependent or endangered species. However, gear compliance rates can be improved and maintained for optimal reduction of bycatch.

Recommendation:

The rating in this section should improve over time as:

- the level of compliance with tow time for shrimpers not using TEDs increases and/or NOAA carries out a regulation requiring TEDs in skimmer trawls
- The TED compliance rate for otter trawls increases and remains as high as possible
- The observer coverage for both Federal and State entire shrimp fishing fleet (otter trawl and skimmer trawl) should be assessed to determine appropriate coverage level and, if necessary, increase coverage levels
- Increase the documentation on bycatch, and the effectiveness of BRDs in state waters and require BRD use in state waters
- State and Federal agencies shall find solutions regarding inconsistencies in inspection methods and concerns over methods used to determine TED compliance.
- Education, outreach activities shall be maintained helping to increase compliance rates.

RECOMMENDATION 3:

7.2.2 (f) Have adverse environmental impacts on the stocks from human activities been assessed and, where appropriate, rectified?

Summary:

A network of Federal and State agencies as well as numerous NGOs assesses and addresses the human impacts on marine and coastal environments and natural resources both in Mississippi and across the Gulf region. However there are many impacts which are still under assessment and have not been fully rectified – for example, the 2010 Deepwater Horizon oil spill, the 2014 Galveston oil spill, and the ongoing wetlands loss and pollution caused by coastal population increases.

Recommendation:

The advice of the network of agencies assessing the human impacts on marine and coastal environments and natural resources is implemented and all the current research efforts are supported.

RECOMMENDATION 4:

8.1.8: Are records of fishers being maintained which should, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws?

Summary:

At Federal level, for vessels of 20 gross tons or more, the master of the vessel must have a written agreement with each crewmember on the terms of employment as a crewmember. Crewmembers must be U.S. citizens, or aliens with legal documentation to work in the U.S. The Captain (Master or individual in charge of the vessel) must be a U.S. citizen.

At the State level, MDMR maintains records of license holders, but no documentation is required for additional crew members. There are no requirements based on competency for entry into the fishery, and no records on competency are maintained.

Recommendation:

The score of this section could be improved with the introduction of record-keeping of crew members other than license holders at the State level. Additionally, competency training in areas such as TED/BRD maintenance for captains and crew, safety regulations, and quality and handling guidelines could improve this scoring.

RECOMMENDATION 5:

8.1.9 Do measures applicable in respect of masters and other officers charged with an offence relating to the operation of fishing vessels include provisions which may permit, *inter alia*, refusal, withdrawal or suspension of authorizations to serve as masters or officers of a fishing vessel?

Summary:

At Federal level, there are no provisions which may permit the refusal or suspension of authorizations to serve as masters or officers of a fishing vessel as a means to enforce federal regulations. However, permits attached to the fishing vessel itself can be suspended or revoked, as explained in 7.7.2 (c).

Recommendation:

The score of this section could improve with the introduction in the Federal regulations of the refusal or suspension of authorizations to serve as masters or officers of a fishing vessel as a means to enforce regulations.

RECOMMENDATION 6:

8.4.3 (a) Is documentation required with regard to fishing operations, retained catch of fish and non-fish species and, as regards discards, the information required for stock assessment as decided by relevant management bodies, collected and forwarded systematically to those bodies?

(Note: This clause is broken down into 3 scoring responses but the below recommendation is specific to non-fish species, and does not include documentation on retained catch of fish species.)

(ii) - documentation on non-fish catches

Summary:

NOAA Fisheries does not require the direct reporting of non-fish species; however, reporting of interactions with some species is required by the Office of Protected Species. In addition, there is currently no reporting requirement for capture of non-fish species in Mississippi.

Recommendation:

Development and implementation of a non-fish catches monitoring system at both Federal and State level. Non-fish catch data shall be returned to the management bodies for analysis.

RECOMMENDATION 7:

8.4.3 (b) Is such an observer and inspection scheme being established in order to promote compliance with applicable (fishery management) measures?

Summary:

The most recent report from the observer program, published in 2012, indicates that observer coverage is now at about 2% for the Gulf and South Atlantic shrimp fisheries due to decreases in effort in the fishery. Observer coverage through this program only applies to the offshore fleet with federal permits and does not cover inshore state-licensed shrimp trawls. Amendment 13 notes that 5% coverage is typical of standard observer programs; however, the expense of outfitting the Gulf and South Atlantic shrimp fleet at 5% coverage is too cost prohibitive, and given the current economic condition of the fishery, the industry could not be asked to incur the cost. In 2012, observer coverage was added specifically for the inshore skimmer trawl fishery in the northern Gulf of Mexico due to increased sea turtle stranding reports. In 2014, of the 277 permit holders selected for the program, only 15 vessels carried observers.

Recommendation:

The rating in this section should improve over time with the increase of the observer coverage for both Federal and State entire shrimp fishing fleet.

Additional comments

RECOMMENDATION 8:

Although 7.3.3 Plan exists scores "Yes", the reviewer recommends:

- Update the section specific to shrimp of the 1976 management plan for Mississippi's marine fisheries to reflect the significant changes to the industry and the more recent management changes;

OR

- Develop a fishery management plan for shrimp fisheries in Mississippi state waters including management objectives.

APPENDIX C: Benchmarking Results: Numerical Scoring

See Introduction section for details on the use of the Caddy Checklist and caution regarding numerical scoring.

SUMMARY BY ARTICLE

Article	Best Score Possible	State score	%
7- Fisheries Management	96	90.5	94%
8- Fishing Operations	32	329.5	92%
10- Coastal Areas Management	16	16	100%
11- Post-Harvest Practices and Trade	2	2	100%
12- Fisheries Research	25	24.5	98%
total	171	162.5	95%

Article 7: Fisheries Management Scorecard

Code Provision	Best Score Possible	State Score	%
7.1 General	22	21	95%
7.2 Management Objectives	13	10.5	81%
7.3 Management Framework & Purposes	12	12	100%
7.4 Data Gathering & Management Advice	9	9	100%
7.5 Precautionary Approach	9	9	100%
7.6 Management Measures	21	19	90%
7.7 Implementation	10	10	100%
Article 7 Overall	96	90.5	94%

Article 8: Fishing Operations

Code Provision	Best Score Possible	State score	%
8.1 Duties of All States	8	7	87.5%
8.2 Flag State duties	5	5	100%
8.4 Fishing Operations	13	12	92%
8.5 Fishing gear selectivity	6	5.5	92%
Article 8 Overall	32	29.5	92%

Article 10: Integration of Fisheries into Coastal Area Management

Code Provision	Best Score Possible	State score	%
10.1 Institution framework	6	6	100%
10.2 Policy Measures	8	8	100%
10.3 Regional cooperation	2	2	100%
Article 10 Overall	16	16	100%

Article 11: Post-Harvest Practices and Trade

Code Provision	Best Score Possible	State score	%
11.1 Responsible fish utilization	1	1	100%
11.2 Responsible international trade	1	1	100%
Article 10 Overall	2	2	100%

Article 12: Fisheries Research

Code Provision	Best Score Possible	State score	%
12.1	3	3	100%
12.2	1	1	100%
12.3	3	3	100%
12.4	2	2	100%
12.5	2	2	100%
12.6	1	1	100%
12.7	2	2	100%
12.8	2	2	100%
12.10	3	2.5	83%
12.11	2	2	100%
12.12	1	1	100%
12.13	2	2	100%
12.14	N/A	N/A	N/A
12.17	1	1	100%
Article 12 Overall	25	24.5	98%

APPENDIX D: FAO DEFINITIONS

DEPLETED: A stock driven by fishing at very low level of abundance compared to historic levels, with dramatically reduced spawning biomass and reproductive capacity.

OVERFISHED: When exploited beyond an explicit limit which its abundance is considered “too low” to ensure safe reproduction.

FISHING CAPACITY: 1. The potential fishing effort that could be exerted in a fishery, over a period of time (year, season) if all fishers are participating and all vessels and gear are fully used. 2. The maximum amount of fish that could be taken in a fishery or by a single fishing unit (e.g. a fisher, community, vessel or fleet) over a period of time (season, year), given the biomass and age structure of the fish stock and the present state of the technology in the absence of any regulated catch limitations and if the means available are fully used. 3. The amount of fishing effort that a fishing boat or a fleet of fishing boats could exert if not constrained by restrictive management measures. 4. The quantity of fish that can be taken by a fishing unit, for example an individual, community, vessel or fleet, assuming that there is no limitation on the yield from the stock (FAO, 1997). Usually expressed in terms of some measure of vessel size, such as gross tonnage, hold capacity, horsepower. Reflects potential rather than nominal fishing effort.

EXCESS CAPACITY: In the short-term, fishing capacity that exceeds the capacity required to capture and handle the allowable catch. In the long-term, fishing capacity that exceeds the level required to ensuring sustainability of the stock and the fishery at the desired level. Fishing capacity in excess of what is required to reach the agreed catch or effort objectives materialized by agreed target reference points (e.g. MSY, F0.1, MEY, etc.)

FISHING EFFORT: The amount of fishing gear of a specific type on the fishing grounds over a given unit of time for example hours trawled per day, number of hooks set per day or number of hauls of a beach seine per day. When two or more kinds of gear are used, the respective efforts must be adjusted to some standard type before being added.

PRECAUTIONARY APPROACH:

A) The precautionary approach involves the application of prudent foresight, taking into account the uncertainties in fisheries systems and the need to take action with incomplete knowledge. It requires, inter alia, 1) consideration of the needs of future generations and avoidance of changes that are not potentially reversible; 2) prior identification of undesirable outcomes and of measures that will avoid them or correct them promptly; 3) that any necessary corrective measures are initiated without delay and that they should achieve their purpose promptly, on a timescale not exceeding two to three decades; 4) that where the likely impact of resource use is uncertain, priority should be given to conserving the productive capacity of the resource; 5) that harvesting and processing capacity should be commensurate with estimated sustainable levels of resource, and that increases in capacity should be further contained when resource productivity is highly uncertain; 6) all fishing activities must have prior management authorization and be subject to periodic review; 7) an established legal and institutional framework for the fishery management, within which management plans that implement the above points are instituted for each fishery; 8) appropriate placement of the burden of proof by adhering to the requirements above.

B) A set of agreed cost-effective measures and actions, including future courses of action, which ensures prudent foresight, reduces or avoids risk to the resource, the environment and the people, to the extent possible, taking explicitly into account existing uncertainties and the potential consequences of being wrong.

APPENDIX E: G.U.L.F. Mississippi Shrimp MAP Timeline

April 2014	
30th	Federal Management Meeting: Pascagoula, MS - met with members of NOAA to discuss TED regulations
May 2014	
2nd	Industry meeting: - Met with American Shrimp Processor's Association (ASPA) - Introduced MAP project's goals and objectives
June 2014	
16th	Federal Management Meeting: Panama City, FL - Observed and assisted with NOAA testing of new TED designs
May 2014-April 2015 Data Collection	
March 2015	
25th	Industry meeting: Biloxi, MS - Enforcement workshops organized by Texas Sea Grant and Gulf and South Atlantic Fisheries Foundation - Discussed issues with consistency of TED enforcement
31st	Industry meeting:, Biloxi, MS - Update on projects - Scoping for individuals who may want to be involved in MAP Committee
June 2015	
5th	Industry Meeting: Pascagoula, MS - Concern over price fluctuations - Harvesters and processors tend to clash - Would like to see development of a shrimp task force in MS
5th	Industry meeting: Biloxi, MS - Met with Sea Grant Agents - Trying to develop tools so fishermen can develop business plans
5th	Industry meeting: Pass Christian, MS - Does not get too many sustainability questions, but a letter from them about practices usually suffices - Tried Seafood Trace, but does not use anymore – customers didn't care about proof and wasn't seeing benefits.
28th	Industry and management: Biloxi, MS - Members of industry and MDMR present - Discussed progress of MAP and implications for MS - Approached Task Force about acting as MAP Committee
29th	Management meeting: Biloxi, MS - Continued discussions about MAP - Data collection with MDMR

July 2015 – SBR submitted for review by third-party	
28th	Management meeting: Biloxi, MS - Discussed preliminary results of SBR - Continued data collection
August 2015 – Finalization of SBR	
August 2015 – Finalization of SBR	
28th	Management meeting: Biloxi, MS - Discussed preliminary results of SBR - Continued data collection
October 2015	
5th-7th	Federal Management Meetings: Galveston, TX - GMFMC meeting - Met with NOAA representatives to discuss Observer Program details
November 2015	
2nd-5th	Gulf States Marine Fisheries Commission meeting: St. Augustine, FL - Met with management representatives to discuss status of MAP
April 2016 – Finalization of SBR	
8th	American Shrimp Processors Association: Biloxi, MS - Presentation on status of shrimp MAPs across the Gulf - Met with industry members to discuss actions for the MAP
20th	Industry meetings: Biloxi, MS - Met with management to updated SBR and discuss status of MAP - Met with industry representatives to discuss potential actions for MAP
20th	NOAA Scoping meeting: Biloxi, MS - discussion with industry members on potential TED requirements in skimmer trawls
28th	Management and Industry meetings: Biloxi, MS - Met with management to updated SBR and discuss status of MAP - Met with industry representatives to discuss potential actions for MAP