



**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 Alabama shrimp fishery
brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*)
pink shrimp (*Farfantepenaeus duorarum*)**



Audubon Nature Institute

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Confidential

Prepared by Audubon G.U.L.F.

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 Alabama shrimp fishery, drawing information from the public documents, Alabama Department of Conservation and Natural Resources (ADCNR) and NOAA fisheries data and reports, and interviews with ADCNR staff and Alabama 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

ACAMP- Alabama Coastal Management Plan	MSA- Magnuson-Stevens Fishery Conservation and Management Act
ACWCS- Alabama Comprehensive Wildlife Conservation Strategy	MSY- maximum sustainable yield
ADCNR- Alabama Department of Conservation and Natural Resources	NEP- National Estuary Program
ADEM- Alabama Department of Environmental Management	NERR- National Estuarine Research Reserve
AFO- Animal Feed Operations	NGO- non-governmental organization
BMP- Best Management Practices	NIFA- National Institute of Food and Agriculture
CCMP- Comprehensive Coastal Management Plan	NOAA- National Oceanic and Atmospheric Administration
CCRF- Code of Conduct for Responsible Fisheries	NOEP- National Ocean Economics Program
CEA- Cooperative Enforcement Agreement	NPS- National Park Service
CONAPESCA- Mexico's National Commission of Aquaculture and Fishing	NRCS- Natural Resources Conservation Service
COOL- Country of Origin Labeling	NRDA- Natural Resource Damage Assessment
CW- carapace width	NWRS- National Wildlife Refuge System
CZMA- Coastal Zone Management Act	ODRP- Oil Disaster Recovery Program
CZMP- Coastal Zone Management Program	PA- Precautionary Approach
DOC- Department of Commerce	RESTORE- Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act
DOI- Department of Interior	SAGARPA- Mexican Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
EEZ- Exclusive Economic Zone	SEAMAP- Southeast Area Monitoring and Assessment Program
EMC- Environmental Management Commission	SEDAR- Southeast Data, Assessment and Review
EPA- Environmental Protection Agency	SEFSC- Southeast Fisheries Science Center
FAMP- Fishery Assessment and Monitoring Program	SERO- Southeast Regional Office
FAO- Food & Agriculture Organization of the United Nations	SGCN- Species of Greatest Conservation Need
GDAR- Gulf Data, Assessment and Review	SLD- State Lands Division
GMFMC- Gulf of Mexico Fishery Management Council	SPS- Agreement of Sanitary and Phytosanitary Measures
GOM- Gulf of Mexico	SWG- State Wildlife Grant
GoMI- Gulf of Mexico Initiative	TBT- Technical Barriers to Trade
GSMFC- Gulf States Marine Fisheries Commission	TED- terrapin excluder device
HACCP- Hazard Analysis and Critical Control Points	TIP- Trip Interview Program
IJF- Interjurisdictional Fisheries Program	UAB- University of Alabama, Birmingham
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
MBNEP- Mobile Bay National Estuary Program	USFWS- U.S. Fish and Wildlife Service
MRD- Marine Resources Division	USCG- United States Coast Guard
	VMS- vessel monitoring system
	WMA- Wildlife Management Area
	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 quantify and score the system used to manage the fishery and measure the robustness of management and sustainability.

The scope of the Alabama Shrimp MAP includes the shrimp fishery management and operations in Alabama state waters and federal management and fishing operations in U.S. Exclusive Economic Zone (EEZ) waters in the Gulf of Mexico for the three primary shrimp species (brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus Setiferus*), and pink shrimp (*Farfantepenaeus duorarum*) taken for human consumption. Primary gear types are otter trawl and skimmer trawl. The Alabama shrimp fishery is part of the larger Gulf of Mexico Shrimp Fishery including Texas, Louisiana, Mississippi 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), with each state retaining management authority within state waters.

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

Alabama Shrimp Results		
RATING	description	# of questions
GREEN	full credit	149
AMBER	partial credit	22
RED	no credit	0
N/A	not applicable	3

In numerical scoring (GREEN =1, AMBER = .5, RED = 0) the Alabama shrimp fishery scored **93%**.

The following report has audited by Global Trust Certification, LTD (GTC), a third party sustainability certification organization. GTC verified that the rationale provided for scoring met the approval of a formal certification assessment body (CAB) and provided a set of recommendations to increase the scoring of responses that did not meet a GREEN rating. A summary of commercial industry interviews and recommendations is also included in this report. Recommendations provided by GTC and industry members provide the basis for the development of a MAP Action Plan for the Alabama shrimp fishery.

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

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 Alabama 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. Alabama 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 ADCNR 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 ADCNR 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 Alabama 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 Alabama shrimp fishery, some questions referring to international requirements and fisheries based in developing countries are not applicable. One hundred seventy-four questions were identified, all of 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. What follows is an assessment of the fishery as it currently stands on the date submitted.

A score is given for each question in the Sustainability Benchmarking Report, which 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 electronic links, when possible, directly below each response to provide easy access to further detail on the topic. 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 Alabama shrimp fishery received the following rankings:

GREEN – 149 **AMBER** – 22 **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.

In numerical scoring, Alabama shrimp fishery received an overall score of 93%.

Broken down by article:

Article 7= 91%, Article 8= 92%, Article 10= 100%, Article 11= 100%, and Article 12= 96%.

(See Appendix C)

ALABAMA SHRIMP SUSTAINABILITY BENCHMARK RATINGS

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) – Alternative 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 – Target reference points	
7.5.2 – Limit reference points	
7.5.2 – Research procedures	
7.5.2 – Management 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) – Non-target impacts	
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) – Between bottom users	
10.1.4 (a)(ii) – Between bottom	

users & others	
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... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>The Alabama 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, Alabama Department of Conservation and Natural Resources (ADCNR) is responsible for management of shrimp in Alabama state waters out to three nautical miles. Alabama 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 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

Alabama:

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

The mission of the ADCNR Marine Resources Division (MRD) is to “manage the state’s marine fishery resources through research, enforcement, and education for the maximum benefit of the resources and the citizens of Alabama.”¹⁵ MRD carries out this mission by conducting both fishery-dependent and fishery-independent data collection, which is reviewed annually to determine trends and status of stocks.¹⁶ MRD contains three sections - an Administrative Section, a Marine Fisheries Section, and an Enforcement Section. The Marine Fisheries Section is responsible for data collection and conducts projects that provide necessary and sound biological data to support various management decisions under consideration by marine fisheries administrators. To accomplish this goal, the Marine Fisheries Section maintains ongoing biological sampling, data analysis and basic research programs.

Fishery-independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).¹⁷ ADCNR began fisheries data collection in 1977, initially for shrimp and crab. Since the start of the data collection program, it has seen several revisions to continue to improve the quality and scope of sampling. In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with Alabama Department of Environmental Management (ADEM) to include collection of environmental parameters on water quality and moved to sampling on a quarterly basis until 2000, when the program reinitiated monthly sampling collection. In 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl), seines, gill nets and beam plankton trawls (BPLs) and utilize these data to assess stock abundance, trends, and fisheries impacts. This research forms the basis of ADCNR’s management decisions.

ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹⁸ The Trip Ticket Program was initially implemented in Florida,

<p>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. 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.</p> <p>ADCNR also coordinates with and participates in research conducted by regional organizations including the GMFMC and the Gulf States Marine Fisheries Commission (GSMFC) scientific monitoring and review processes, and incorporates recommendations by these regional bodies into management decisions.^{19,20}</p>		
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¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ 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&rgn=div8

⁴ SEFSC Research <http://www.sefsc.noaa.gov/research/>

⁵ SEFSC Galveston Lab- Shrimp Fishery Research http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ Gulf Shrimp System <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁷ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁸ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁹ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

¹⁰ SEFSC Shrimp research <http://www.sefsc.noaa.gov/species/shrimp/>

¹¹ SEFSC Pascagoula Lab Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹² SEFSC Galveston Lab Shrimp research http://www.galvestonlab.sefsc.noaa.gov/research/research_home/index.html

¹³ GMFMC Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁴ The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

¹⁵ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

¹⁶ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

¹⁷ FAMP <http://www.outdooralabama.com/sample-processing>

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 GSMFC website <http://www.gsmfc.org/>

²⁰ GMFMC website <http://www.gulfcouncil.org/>

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
<p>The Alabama shrimp fishery is part of a larger Gulf of Mexico shrimp fishery, based on stock determination, and is managed regionally. 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, ADCNR is responsible for management of shrimp in Alabama state waters out to three nautical miles. ADCNRR participates in the GMFMC and collaborates with other state and federal agencies on shrimp management in the Gulf.</p> <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 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 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</p>		

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. 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. Amendment 15 is currently in the rulemaking process to redefine the SDC for the shrimp fishery utilizing updated stock assessments, and 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

Alabama:

The marine resources of Alabama are managed through ADCNR/MRD. ADCNR was created by statute through the Code of Alabama Title 9, Chapter 2 "to exercise a direct and effective control over the natural resources, state parks and historical sites of the state" and its duties include "full jurisdiction and control of all seafoods existing or living in the waters of Alabama and of all public and natural oyster reefs and oyster bottoms of the State of Alabama, and it shall ordain, promulgate and enforce all rules, regulations and orders deemed by it to be necessary for the protection, propagation or conservation of the same".¹⁰ Such actions are carried out through the Alabama Administrative Code.¹¹ The stated goal of ADCNR in their 2011-2012 annual report is "to promote the statewide stewardship and enjoyment of Alabama's natural resources, and to ensure that future generations will be able to enjoy these resources."¹² The mission of the ADCNR/MRD is to "manage the state's marine fishery resources through research, enforcement, and education for the maximum benefit of the resources and the citizens of Alabama."

With respect to the shrimp fishery, ADCNR MRD monitors shrimp populations and fishing activity through the Trip Ticket Program and FAMP, and has several technical measures in place for the protection of shrimp populations and habitat that are consistent with federal shrimp management.^{13,14} ADCNR MRD 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.¹⁵ MRD FAMP sampling efforts increase during shrimp seasons (up to 50 extra tows) for the specific purpose of shrimp sampling in order to determine when shrimp reach legal size for harvest (68 count of fewer per pound).¹⁶ MRD also

<p>implements area closures to protect nursery habitats and prohibits commercial trawling within streams, bayous, creeks, and enclosed areas with seagrass beds.</p> <p>ADCNR also participates in the GMFMC and GSMFC and complies with the conservation and management measures developed by the GMFMC.^{17,18}</p>		
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¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ GMFMC Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁴ GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁵ GMFMC shrimp FMP Amendment 7 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-07%20Final%201994-05.pdf>

⁶ GMFMC Shrimp FMP Amendment 13
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁷ GMFMC shrimp FMP draft Amendment 15
<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁸ GMFMC shrimp FMP draft scoping document for Amendment 17
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 Ala. Code, Title 9, Chapter 2 <http://codes.lp.findlaw.com/alcode/9/2>

¹¹ Alabama Administrative Code <http://www.alabamaadministrativecode.state.al.us/>

¹² ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

¹³ FAMP <http://www.outdooralabama.com/sample-processing>

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 Ala. Admin. Code, r. 220-3-.01 http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁶ ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

¹⁷ GSMFC website <http://www.gsmfc.org/>

¹⁸ GMFMC website <http://www.gulfcouncil.org/>

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
<p>The Alabama shrimp fishery is part of a larger Gulf of Mexico shrimp fishery, based on stock determination, and is managed regionally. 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, ADCNR is responsible for management of shrimp in Alabama state waters out to three nautical miles. ADCNR participates in the GMFMC and collaborates with other state and federal agencies on shrimp management in the Gulf.</p> <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 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 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. The requirements of NS1 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, 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, 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 National Standard 1 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. Additionally, Amendment 13 implemented a 10-year moratorium on new permits for the federal shrimp fishery, capping the number of licenses in the</p>		

fishery. GMFMC is currently in the process of developing two additional amendments to address SDC relevant to updated stock assessment techniques and future permit regulations to be put in place at the end of the current 10-year permit moratorium.

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.⁷

Alabama:

In Alabama, long-term objectives of fisheries management, in general, are defined by state law. Recent amendment to the Alabama Constitution, known as the “Sportsperson’s Bill of Rights” states ‘(a) The people have a right to hunt, fish, and harvest wildlife, including by the use of traditional methods, subject to reasonable regulations, to promote wildlife conservation and management, and to preserve the future of hunting and fishing.’⁸

Alabama Code, Title 9 defines the general functions and duties of ADCNR as follows:⁹

Section 9-2-2

(1) To protect, conserve and increase the wildlife of the state and to administer all laws relating to wildlife and the protection, conservation and increase thereof;

(8) To recommend to the Legislature such legislation as may be needed further to protect, conserve, increase or to make available or useful the wildlife and other natural resources, state parks and the monuments and historical sites of Alabama.

And

Section 9-2-4

(a) The Department of Conservation and Natural Resources shall have full jurisdiction and control of all seafoods existing or living in the waters of Alabama and of all public and natural oyster reefs and oyster bottoms of the State of Alabama, and it shall ordain, promulgate and enforce all rules, regulations and orders deemed by it to be necessary for the protection, propagation or conservation of the same.

MRD is the division within ADCNR responsible for the Alabama blue crab fishery, the mission of MRD is to “manage the state’s marine fishery resources through research, enforcement, and education for the maximum benefit of the resources and the citizens of Alabama.”¹⁰ MRD carries out this mission through their enforcement, fisheries and administrative sections.

With respect to the shrimp fishery, ADCNR MRD monitors shrimp populations and fishing activity through the Trip Ticket Program and FAMP, and has several technical measures in place for the protection of shrimp populations and habitat that are consistent with federal shrimp management.^{11,12} ADCNR MRD 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.¹³ MRD FAMP sampling efforts increase during shrimp seasons (up to 50

<p>extra tows) for the specific purpose of shrimp sampling in order to determine when shrimp reach legal size for harvest (68 count of fewer per pound).¹⁴ MRD also implements area closures to protect nursery habitats and prohibits commercial trawling within streams, bayous, creeks, and enclosed areas with seagrass beds.</p> <p>ADCNR also participates in the GMFMC and GSMFC and complies with the conservation and management measures developed by the GMFMC.^{15,16}</p>		
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¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ GMFMC Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁴ GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁵ GMFMC shrimp FMP Amendment 7 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-07%20Final%201994-05.pdf>

⁶ GMFMC Shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁷ MSA Section SEC. 306. STATE JURISDICTION <http://www.mmc.gov/legislation/pdf/msa306.pdf>

⁸ Ala. Const. amend. 892 <http://alisondb.legislature.state.al.us/alison/codeofalabama/constitution/1901/CA-2810489.htm>

⁹ Ala. Code, Title 9 <http://codes.lp.findlaw.com/alcode/9/2/1>

¹⁰ ADCNR 2011-12 Annual Report, p. 5 <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

¹¹ FAMP <http://www.outdooralabama.com/sample-processing>

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 Ala. Admin. Code, r. 220-3-.01 http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁴ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

¹⁵ GSMFC website <http://www.gsmfc.org/>

¹⁶ GMFMC website <http://www.gulfcouncil.org/>

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><u>Federal:</u></p> <p>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 “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>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</p> <p><u>Alabama:</u></p> <p>ADCNR Marine Resources Division (MRD) 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, MRD falls under the Alabama Open Meetings Act (AL Code 36-25A) 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 The Conservation Advisory Board, which aids in the formulation of policies for the Department of Conservation, meets to discuss a variety of natural resource issues. Information from these meetings are publically posted via the ADCNR website and a public announcement is made on this same website prior to the meeting.¹¹ ADCNR posts proposed rules and public notices on their website and accepts written comments through mail and email.¹² MRD also engages the industry and the public through their Facebook page.¹³</p> <p>ADCNR is also a member of the Gulf States Marine Fisheries Commission</p>		

(GSMFC), which 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.¹⁴

The American Shrimp Processors Association (ASPA) is a separate industry-led organization for the shrimping industry. A number of Alabama shrimpers and processors are members of ASPA.¹⁵ 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

Additionally, Organized Seafood Association of Alabama (OSAA) serves the shrimp fishery by identifying industry issues, obtaining fisheries input, and engaging federal and local officials in order to voice industry concerns. Membership is open to the shrimp and other commercial industries (processors, seafood businesses, vessels, individual workers, etc.). OSAA also promotes Alabama seafood to consumers in an effort to protect the domestic market.¹⁸ OSAA reaches interested parties through their website, and posts information on upcoming events.¹⁹

¹ GMFMC FAQs website http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² GMFMC Scoping through implementation website http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ GMFMC website <http://gulfcouncil.org/>

⁴ GMFMC Committees & panels website http://gulfcouncil.org/panels_committees/index.php

⁵ NOAA transparency webpage http://www.nmfs.noaa.gov/sfa/management/recreational/policy/goal_4.html

⁶ NOAA Fisheries stock status updates
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

⁷ NOAA Fisheries Southeast Regional Office fishery bulletin archives
http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁸ NOAA Fisheries bulletins webpage http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁹ NOAA Fisheries Southeast Regional Office website <http://sero.nmfs.noaa.gov/index.html>

¹⁰ AL Open Meetings Act Code 36-25A <http://codes.lp.findlaw.com/alcode/36/25A>

¹¹ AL Conservation Advisory Board <http://www.outdooralabama.com/conservation-advisory-board>

¹² ADCNR Proposed rule changes <http://www.outdooralabama.com/proposed-dcnr-rules>

¹³ MRD Facebook page <https://www.facebook.com/AlabamaMarineResourcesDivision>

¹⁴ GSMFC website <http://www.gsmfc.org>

¹⁵ ASPA membership webpage <http://www.americanshrimp.com/association/membership/>

¹⁶ American Shrimp Processors Association website <http://www.americanshrimp.com/association/about/>

¹⁷ Southern Shrimp Alliance website <http://www.shrimpalliance.com/about/>

¹⁸ Organized Seafood Association of Alabama About Us webpage
<http://www.eatalabamawildseafood.com/about-us.html>

¹⁹ Organized Seafood Association of Alabama Calendar/News webpage
<http://www.eatalabamawildseafood.com/calendar-news.html>

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 Scientific and Statistical Committee (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 Southeast Regional Office posts updated links to published fishery bulletins seeking public comment on proposed fishery regulation changes.^{6,7}</p>		

Alabama:

Alabama Marine Resources Division (MRD) holds the Conservation Advisory Board meetings in different locations across the state. Per the requirement of the Alabama Open Meetings Act, information of meeting date, time, location, and purpose is publically posted via the ADCNR website at least seven calendar days prior to the meeting.⁸ ADCNR posts proposed rules and public notices on their website and accepts written comments through mail and email.⁹ MRD also engages the industry and the public through their Facebook page.¹⁰

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.¹¹

The American Shrimp Processors Association (ASPA) is a separate industry-led organization for the shrimping industry of which a number of Alabama shrimpers and processors are members.¹² 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 Gulf of Mexico shrimp fishery, and works with research and regulatory agencies on important industry issues.¹³ 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.¹⁴

Organized Seafood Association of Alabama (OSAA) is another industry-led organization serving the shrimp industry. OSAA collaborates with the industry and consults officials on matters that affect the fishery. Membership is open, and information is posted to their website.¹⁵

¹ GMFMC FAQs website http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² GMFMC Scoping through implementation website http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ GMFMC Committees & panels website http://gulfcouncil.org/panels_committees/index.php

⁴ NOAA transparency webpage http://www.nmfs.noaa.gov/sfa/management/recreational/policy/goal_4.html

⁵ NOAA Fisheries stock status updates http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

⁶ NOAA Fisheries Southeast Regional Office fishery bulletin archives http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁷ NOAA Fisheries bulletins webpage http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

⁸ AL Code 36-25A <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-3>

⁹ ADCNR Proposed rule changes <http://www.outdooralabama.com/proposed-dcnr-rules>

¹⁰ MRD Facebook page <https://www.facebook.com/AlabamaMarineResourcesDivision>

¹¹ GSMFC website <http://www.gsmfc.org/index.php>

¹² ASPA membership webpage <http://www.americanshrimp.com/association/membership/>

¹³ American Shrimp Processors Association website <http://www.americanshrimp.com/association/about/>

¹⁴ Southern Shrimp Alliance website <http://www.shrimpalliance.com/about/>

¹⁵ Organizes Seafood Association of Alabama <http://www.eatalabamawildseafood.com/>

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... [1/2] No...[0]**

Extent of compliance		
Yes	Some	No
<p>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.</p> <p>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, ADCNR MRD is responsible for management of shrimp in Alabama state waters out to three nautical miles. MRD participates in the GMFMC and collaborates with other state and federal agencies on shrimp management in the Gulf.¹</p> <p>The GMFMC is one of the regional Fishery Management Councils established by the Fishery Conservation and Management Act of 1976.² 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. Proposed rule changes are then submitted to NOAA Fisheries for further review and approval before implementation.</p> <p>Additionally, Alabama is a member of the Gulf States Marine Fisheries Commission</p>		

(GSMFC), which was established by Congress in 1949 (P.L. 81-66) as a compact of the five U.S. Gulf states.³ 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 GSMFC, including the head of each state’s marine resource agency, a member of the legislature, and a citizen with knowledge of marine fisheries.⁴ The GSMFC 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, but no formal management body exists across international boundaries in the Gulf of Mexico. 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; 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 an 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

¹ Gulf FINFO Brown Shrimp webpage <http://gulffishinfo.org/Species?SpeciesID=99>

² GMFMC <http://gulfcouncil.org/about/index.php>

³ GSMFC website <http://www.gsmfc.org/>

⁴ GSMFC website- Commissioners List <http://www.gsmfc.org/#:content@10:links@11>

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 SEFSC Galveston Lab- Shrimp fishery research projects
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] **No...**[0]

Extent of compliance		
Yes	some	no
<p>The GMFMC was established under the Magnuson-Stevens Fishery Conservation and Management Act (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 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</p> <p>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 Southeast Fisheries Science Center (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</p>		

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		
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¹ Magnuson-Stevens Fishery Conservation and Management Act of 1976. Public Law 94-265
<http://www.nmfs.noaa.gov/sfa/magact/>

² GMFMC website <http://www.gulfcouncil.org/>

³ GSMFC website <http://www.gsmfc.org/#:content@10:links@11>

⁴ NOAA Fisheries Southeast Regional Office Gulf branch operations website
http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/

⁵ NOAA Southeast Fisheries Science Center website <http://www.sefsc.noaa.gov/research/>

⁶ SEFSC shrimp management website <http://www.sefsc.noaa.gov/species/shrimp/>

⁷ SEFSC Gulf Shrimp System website <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁸ Galveston Laboratory fishery management branch website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html

⁹ NOAA Fisheries Galveston Laboratory website
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] **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 ADCNR, 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 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 Southeast Fisheries Science Center (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</p>		

SEFSC is tasked with managing the Gulf Shrimp System, a shrimp data program specifically engaged in collecting statistical data from commercial harvesters through port agents.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

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.

Alabama:

Alabama is a member of both GMFMC and GSMFC, and maintains representatives on subcommittees and advisory panels of each organization.^{10,11} ADCNR MRD staff members also participate in research conducted by each organization (explained in more detail below). Alabama also contributes fishery dependent data to NOAA Fisheries.¹²

¹ GMFMC website <http://www.gulfcouncil.org/>

² GMFMC links <http://gulfcouncil.org/links/index.php>

³ NOAA Fisheries Southeast Regional Office Gulf branch operations website http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/

⁴ NOAA Southeast Fisheries Science Center website <http://www.sefsc.noaa.gov/research/>

⁵ SEFSC shrimp management website <http://www.sefsc.noaa.gov/species/shrimp/>

⁶ SEFSC Gulf Shrimp System website <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁷ Galveston Laboratory fishery management branch website http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html

⁸ NOAA Fisheries Galveston Laboratory website http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ GSMFC website <http://www.gsmfc.org/>

¹⁰ GSMFC commissioners list <http://www.gsmfc.org/#:content@10:links@11>

¹¹ GMFMC committee members: http://www.gulfcouncil.org/panels_committees/index.php

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><u>Federal:</u> Representatives from Alabama (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, 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.⁴ Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery.⁵ Each Gulf state (including Alabama) 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 (see below for details).</p> <p>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.⁶</p> <p>NOAA Fisheries data are also gathered through observer programs.⁷ 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 evaluates turtle excluder devices (TEDs) and bycatch reduction devices (BRDs). 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.⁸ All five Gulf states contribute to this effort.⁹</p> <p><u>Gulf States:</u> Representatives from Alabama (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.^{10,11} ADCNR MRD staff participate in and provide data for the following GSMFC programs, among others:^{12,13,14,15,16}</p> <ul style="list-style-type: none"> - 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.¹⁸

Alabama:

ADCNR MRD personnel have actively sampled Alabama state waters in order to effectively manage marine fisheries for their state. The Fisheries Assessment and Monitoring Program (FAMP) provides fishery-independent data that helps determine the population status of marine organisms throughout Alabama's coastal waters.¹⁹ Trawl sampling is one of the numerous programs within the FAMP. The trawl sampling program, started in 1977, has consistently supplied the state with the necessary data to make informed decisions on when to open/close the shrimping season. This trawling program now provides not only shrimp data, but community-level data to help AMRD make ecosystem based management more effective.²⁰ In 1998, AMRD adjusted its sampling to acquire data needed to work in collaboration with Alabama Department of Environmental Management (ADEM). In 2010, in order to keep consistent with data collection methods of the Gulf State Marine Fisheries Commission (GSMFC), AMRD adjusted their sampling methods in accordance with GSMFC's SEAMAP methods. By following SEAMAP's methods in the collection and processing of shrimp (and other marine organisms) data, AMRD's sampling protocol helped create consistency throughout the Gulf region.²¹

¹ GMFMC committee members: http://www.gulfcouncil.org/panels_committees/index.php

² GMFMC meetings http://www.gulfcouncil.org/council_meetings/index.php

³ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ NOAA SEFSC Economics of the Federal Gulf Shrimp Fishery Annual Report website publication

<http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁷ NOAA Fisheries Galveston shrimp program website

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ NOAA Fisheries Galveston shrimp program website

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ NOAA Fisheries Galveston shrimp program website

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹⁰ GSMFC website <http://www.gsmfc.org/>

¹¹ GSMFC commissioner list: <http://www.gsmfc.org/#:content@10:links@11>

¹² GSMFC programs: <http://www.gsmfc.org/#:content@12:links@13>

¹³ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

¹⁴ GSMFC IJF Program <http://www.gsmfc.org/#:content@11:links@17>

¹⁵ GSMFC Fisheries Economic Data Program <http://www.gsmfc.org/#:content@18:links@19>

¹⁶ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

¹⁷ GSMFC Fisheries Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>

¹⁸ GSMFC Fisheries Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>

¹⁹ AMRD Sample Processing webpage

<http://www.outdooralabama.com/sample-processing>

²⁰ AMRD Trawl Sampling webpage

<http://www.outdooralabama.com/rawl-sampling>

²¹ AMRD Sample Processing webpage

<http://www.outdooralabama.com/sample-processing>

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 NOAA SEFSC is tasked with managing the GSS, a shrimp data program specifically engaged in collecting statistical data from commercial harvesters</p>		

through port agents. 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, maintains, and enhances 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

- 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.
- 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.

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

The Scientific and Statistical Committee (SSC), made up of experts and scientists, also advises GMFMC.⁸ SSC helps determine research priorities of GMFMC and submits these to NOAA Southeast Fisheries Science Center (SEFSC).

Stock assessments for popular shrimp species were recently completed in 2014 (including data through 2013).⁹

Alabama:

AMRD personnel have actively sampled Alabama state waters in order to effectively manage marine fisheries for their state. The Fisheries Assessment and Monitoring Program (FAMP) provide fishery-independent data that helps determine the population status of marine organisms throughout Alabama's coastal waters.¹⁰ Trawl sampling is one of the numerous programs within the FAMP. The trawl sampling program, started in 1977, has consistently supplied the state with the necessary data to make informed decisions on when to open/close the shrimping season. This trawling program now provides not only shrimp data, but community-level data to help AMRD make ecosystem based management more effective.¹¹

¹ NOAA SEFSC shrimp research and management website <http://www.sefsc.noaa.gov/species/shrimp/>

² NOAA Fisheries Galveston Laboratory website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ NOAA Fisheries Galveston Laboratory website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ NOAA Fisheries Galveston Laboratory fishery management branch website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html

⁵ GMFMC fishery monitoring and research priorities website
<http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁶ NOAA Fisheries Galveston Laboratory fishery management branch website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html

⁷ NOAA Fisheries Galveston Laboratory website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ GMFMC fishery monitoring and research priorities website
<http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

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

¹⁰ ADCNR MRD Sample Processing webpage
<http://www.outdooralabama.com/sample-processing>

¹¹ ADCNR MRD Trawl Sampling webpage
<http://www.outdooralabama.com/rawl-sampling>

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>Alabama: Alabama regulations also reflect the scientific recommendations made by ADCNR MRD 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 FAMP 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.^{4,5}</p>		

¹ [GMFMC SOPP](#)

² GMFMC shrimp FMP http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

³ Code of Federal Regulations Title 50- Wildlife and Fisheries Part 622, Subpart C- Shrimp Fishery of the Gulf of Mexico <http://www.ecfr.gov/cgi-bin/text-idx?SID=2e8bf827e3e57b5f54f32668bb7a3234&mc=true&node=pt50.12.622&rgn=div5#sp50.12.622.c>

⁴ FAMP <http://www.outdooralabama.com/sample-processing>

⁵ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

7.1.4 (e) Are the regulations respected by the parties concerned? Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
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>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>		
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¹ 50 CFR Part 622

http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² NOAA Fisheries Office of Law Enforcement <http://www.nmfs.noaa.gov/ole/>

³ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ Ala. Admin. Code, r. 220-3-.01 http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

⁵ NOAA Cooperative enforcement programs

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 GMFMC meetings website http://www.gulfcouncil.org/council_meetings/index.php

² GMFMC meetings webinar access

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 GSMFC website <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] **Some...**[1/2] **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 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.</p>		

¹ GMFMC documents http://www.gulfcouncil.org/resources/resource_library.php

² GMFMC briefing materials: http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

³ GSMFC publications <http://www.gsmfc.org/#:content@5:links@6>

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... [1/2] 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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.² Port agents are responsible for collecting both landings data from seafood dealers and</p>		

interview data from either the captain or a member of the crew. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. Trip Ticket data from each of the states are verified against port agent sampling data and integrated into the GSS. 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. 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 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 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 bycatch reduction device evaluation.^{5,6}

50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁷

- 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

50 CFR 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.⁸

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

Alabama:

ADCNR MRD maintains monitoring programs for both fishery-dependent and fishery-independent data collection.^{10,11} Fishery independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).¹² ADCNR began fisheries data collection in 1977, initially for shrimp and crab, and has continued to revise the program to improve the quality and scope of sampling. Most recently, in 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl) for collection of juveniles and adults within deeper waters, seines targeting juveniles in shoreline habitats, and beam plankton trawls (BPLs) targeting early life history stages of specimens in nearshore habitats. Sampling for each method is conducted monthly at fixed locations; stations were determined at the start of the program to be most representative of the fauna found in Alabama waters. Sampling is conducted in Perdido Bay, Little Lagoon, Mississippi Sound, Lower and Upper Mobile Bay and Alabama territorial sea. All specimens collected during sampling are retained and brought to the Dauphin Island Laboratory for processing. MRD staff utilize these data to assess stock abundance, trends, and fisheries impacts. The Trip Ticket Program gathers commercial harvest data that is reported on a per trip basis and submitted to ADCNR monthly.¹³ These programs ensure constant monitoring of fishery resources.

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:¹⁴

- 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 for the fishery.

- 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

Alabama:

The Alabama shrimp fishery has regulations in place for entry into the crab fishery, methods of take for both recreational and commercial fishermen and required reporting of landings. ADCNR requires a Commercial Shrimp Boat license, renewed annually, to participate in the fishery.¹⁵ Resident and non-resident licenses are available and can be purchased online or at the Marine Resources offices in Gulf Shores or Dauphin Island. Regulations on method of take for both commercial and recreational shrimping are established by Ala. Admin. Code Chapter 220-3-.01 including restrictions on legal gear types, gear requirements, and seasonal/area closures.^{16,17} The Trip Ticket Program went into effect in Alabama in 2000 to collect harvest data at the trip level for commercial landings. Reporting is mandatory for seafood dealers, wholesalers, or fishermen directly if they sell direct to an individual, restaurant, or retailer. Data collected includes species harvested, ex-vessel value, area fished, gear type and fishermen’s identification information and are reported monthly.¹⁸

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.”¹⁹ 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.²⁰ 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- 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.²¹

Alabama:

Until recently, ADCNR utilized two separate programs for enforcement of activities in Alabama waters. The Marine Police Division of ADCNR was responsible for boating safety, navigation hazards and recreational activities, and the Marine Resources Division Enforcement Section is responsible for enforcement of state laws and regulations regarding marine resources.²² Effective January 2015, the Marine Police Division has moved to the Alabama Law Enforcement Agency, but continues to retain the same duties. The MRD Enforcement Section conducts shore and boat patrols, boat checks, seafood facility inspections, and works closely with other state and federal fisheries enforcement agencies to ensure enforcement of marine resource regulations. In the 2011-2012 fishing year, MRD enforcement conducted 18,030 hours of patrols, over 11,400 boat checks, 1300 facility inspections, issued over 3000 citations and warnings, and participated in 9733 hours with the NMFS interjurisdictional fisheries enforcement program.

Alabama also has a Joint Enforcement Agreement (JEA), which is a partnership between NOAA's National Marine Fisheries Service (NMFS) and MRD on enforcement related activities. GSMFC assists in the development of Cooperative Enforcement Agreements (CEA).²³ 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.²⁴

¹ SEFSC Fisheries Monitoring Branch <http://www.sefsc.noaa.gov/data/monitoring.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁴ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵ Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ NOAA OST: National Observer Program: shrimp <https://www.st.nmfs.noaa.gov/observer->

[home/regions/southeast/shrimp](#)

⁷ 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>

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

⁹ SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰ FAMP <http://www.outdooralabama.com/sample-processing>

¹¹ 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 ADCNR MRD, revised March 2012. Assessment Sampling- Standard Operating Procedures. unpublished.

¹³ Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

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

¹⁵ ADCNR fishing license information <http://www.outdooralabama.com/alabama-license-information>

¹⁶ Ala. Admin. Code, r. 220-3.31Crabs http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁷ ADCNR Commercial Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

¹⁸ Ala. Admin. Code, r. 220-3.35 Seafood Reporting And Landing Regulation http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁹ *"Enforcement" NOAA Office of General Council. Web. Accessed June 2015.*

²⁰ *United States Coast Guard. Web. Accessed June 2015.*

²¹ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

²² ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

²³ 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>

²⁴ NOAA Cooperative Enforcement Program Manual. 2012. http://www.nmfs.noaa.gov/ole/docs/2012/2012_program_manual.pdf

7.1.7 (b) Have these measures proved effective? **Yes... [1] Some... [1/2] 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.

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.

Alabama:

ADCNR Annual Reports reflect successes of the Marine Police and the MDR Enforcement Section including statistics on miles and areas patrolled, boat hours, number of interactions and arrests made for various violations including boating safety and fishery regulations. In 2011/12, ADCNR Marine Police conducted over 26,600 hours of patrols resulting in over 15,000 vessel contacts, 2,000 arrests and 4,000 written warnings; MRD Enforcement Section conducted over 18,000 hours of boat and shore patrols including over 11,400 boat checks, 26,000 recreational fisherman checks, 8,000 commercial fisherman checks, and 1,300 seafood facility inspections and resulting in more than 3,000 citations and written warnings. MRD Enforcement Section also conducted 9,733 hours of service as part of the NMFS interjurisdictional fisheries enforcement program.⁵

ADCNR enforcement reports reflect active monitoring and citations for the shrimp fishery to ensure compliance of regulations.⁶

¹ NOAA Fisheries OLE FY15 First Quarter Enforcement Report
http://safmc.net/sites/default/files/Regulations/pdf/NOAAOLE_Q1_2015_PublicReport_Final.pdf

² "Office of Law Enforcement" NOAA Fisheries. Web. Accessed June 2015.

³ "News Archive" NOAA Fisheries Office of Law Enforcement. Web. Accessed June 2015.

⁴ The Annual Review of the United States Coast Guard's Mission Performance (2013)
https://www.oig.dhs.gov/assets/Mgmt/2014/OIG_14-140_Sep14.pdf

⁵ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

⁶ ADCNR, unpublished data. 2013-2014 shrimp violations report.

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.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 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. Since the implementation of the moratorium, license numbers have been reduced from 1933 permits in 2007 to 1470 permits in 2014.³ The 10-year moratorium put in place by Amendment 13 expires in December of 2016 and the GMFMC is currently in 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.</p> <p>Alabama: There is currently no limit on the fishing capacity for the shrimp fishery in Alabama waters. Licenses are required for commercial, recreational and live-bait shrimping in Alabama waters and MRD monitors license numbers annually.⁴ Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp</p>	

	imports began to impact domestic shrimp ex-vessel prices and placed an economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip. ⁵ This downward trend has continued since 2004 and is expected to continue indefinitely.	
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¹ Kirkely et al. (2006) Reducing Capacity in U.S. Fisheries. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

² GMFMC shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ Draft options paper for Amendment 17 of GMFMC shrimp FMP 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 ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁵ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005. http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

7.1.8 (b) Have these measures proved effective? Yes... [1] Some... [1/2] 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</p> <p>Alabama: Since there is no capacity reduction system in place, measures cannot be considered effective. Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp imports began to impact domestic shrimp ex-vessel prices and placed an economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip.³ This downward trend has continued since 2004 and is expected to continue indefinitely.</p>	

¹ GMFMC shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² Draft options paper for Amendment 17 of GMFMC shrimp FMP 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 ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.
http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.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><u>Federal:</u> 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 Southeast Fisheries Science Center (SEFSC) Galveston Laboratory. To perform these stock assessments, NOAA Fisheries utilizes data from port agents, state trip ticket programs, and observer programs. The electronic logbook (ELB) Program allows both fishing effort and catch-per-unit effort to be estimated for various shrimping locations, time periods, and vessels (through data recording devices aboard selected vessels). 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 as a condition of permit renewal. Improvements in technology have been made; the cellular electronic logbook (cELB) utilizes cellular data networks to transmit data to the National Marine Fisheries Service (NMFS) for analysis. Data are automatically uploaded and transmitted to the Galveston Laboratory once the vessel is within cellular range.²</p> <p>Information about this data gathering process is published on the Galveston Laboratory's website.³ While the actual data are not published, permit holders and vessel operators can request copies of their cELB 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.⁴ NOAA Fisheries Southeast Regional Office website contains the Gulf of Mexico Shrimp fishery management plan along with all previous amendments.⁵ 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.⁶ 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.^{7,8}</p> <p><u>Gulf States:</u> The Gulf States Marine Fisheries Commission (GSMFC) also plays a role in the Gulf</p>		

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.⁹ Notification of availability is sent to newspapers and local media as well as posted on GSMFC and state agency social media and web pages.¹⁰ 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.^{11,12} SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys. Objectives include (but are not limited to):¹³

- Monitoring panaeid 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.^{14,15} 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 listed above.

A recently developed website sponsored by GSMFC, Gulf FINFO,¹⁶ also contains information on the shrimp fisheries of the Gulf of Mexico, summarizing management practices, biological information, assessment and monitoring activities, and contains links to population assessments and other relevant documents.

Alabama:

ADCNC MRD works with both GMFMC and GSMFC to ensure reliable assessments are completed on Gulf shrimp. ADCNR MRD is represented on the GMFMC Council as well as the GSMFC Commission.^{17,18} In the state of Alabama, efforts are made to ensure that data used for assessing fisheries is available to the public. The FAMP sampling methods are publically described on the ADCNR website and data from this program can be obtained by making a public records request.^{19,20}

¹ FishWatch website

http://www.fishwatch.gov/seafood_profiles/species/shrimp/species_pages/brown_shrimp.htm

² NOAA Fisheries Galveston Laboratory ELB website <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

³ NOAA Fisheries Galveston Laboratory website <http://www.galvestonlab.sefsc.noaa.gov/>

⁴ NOAA Fisheries Galveston Laboratory ELB website <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

⁵ NOAA Fisheries Gulf of Mexico Rulemaking website

http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/rules/gulf/shrimp/index.html

⁶ NOAA SEFSC Economic Data Collection for Gulf Shrimp Fisheries website
<http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁷ NMFS 2014 Status of U.S. Fisheries
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/stockassessments_2014_rtc.pdf

⁸ SEFSC Galveston Lab Publications <http://www.galvestonlab.sefsc.noaa.gov/publications/>

⁹ GSMFC publications <http://www.gsmfc.org/#:content@10:links@6>

¹⁰ GSMFC news website <http://www.gsmfc.org/news.php>

¹¹ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹² GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

¹³ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹⁴ GSMFC Recreational shrimpers publication
<http://www.gsmfc.org/publications/GSMFC%20Number%202228.pdf>

¹⁵ GSMFC Economic survey <http://www.gsmfc.org/publications/GSMFC%20Number%202227.pdf>

¹⁶ Gulf FINFO <http://gulffishinfo.org/Species?SpeciesID=99>

¹⁷ GMFMC Council Members website http://gulfcouncil.org/about/fishery_council_members.php

¹⁸ GSMFC Commissioners List <http://www.gsmfc.org/commiss.php>

¹⁹ FAMP <http://www.outdooralabama.com/sample-processing>

²⁰ Ala. Code §36-12-40 <http://codes.lp.findlaw.com/alcode/36/12/3/36-12-40>

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 fishery management plan (FMP). This plan, implemented as federal regulation in 1981, is available to the public along with all amendments via the GMFMC website.^{1,2} These amendments are the result of a transparent five step process that includes scoping, public hearings, final action, rule making and implementation.³ GMFMC meetings are open to the public and allow for public comment periods.⁴ Meeting dates, locations and agendas are publicized prior to the meeting.⁵ 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.⁶ 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.⁷ GMFMC also provides briefing materials through their website for committee members and</p>		

the general public to access prior to each meeting.⁸ 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).

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.⁹ 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.¹⁰

A recently developed website sponsored by GSMFC, Gulf FINFO, also contains information on the shrimp fisheries of the Gulf of Mexico, summarizing management practices and providing links to management related documents.¹¹

Alabama:

Regulatory hierarchy in Alabama for fishery management is as follows:

- Governor
- State Legislature
- Department of Conservation and Natural Resources Commissioner
- Conversation Advisory Board
- ADCNR Marine Resources Division Director

As a governing body, ADCNR is subject to the Alabama Open Meetings Law requiring transparency in how the Commissioner, the Advisory Board and the Department make management decisions regarding wildlife.¹² Conservation Advisory Board meetings are open to the public, allow public comment, and transcripts are published after the meeting on the ADCNR website.¹³ Fishermen are active participants at Advisory Board meetings and make public comment on proposed regulatory changes. Public records are also available for all government bodies, including ADCNR, as required by the Ala. Code, §36-12-40.¹⁴

There is public participation throughout the decision-making process for proposed rule and regulation changes as required by the Alabama Administrative Procedure.¹⁵ A 35-day proposed rule notice is published in the *Alabama Administrative Monthly*, posted on the ADCNR website, and announced through other media sources.¹⁶ ADCNR typically conducts a public hearing during the 35-day period to gather public input and may also consult advisory committees or industry organizations, such as the Organized Seafood Association of Alabama for industry recommendations and support throughout the regulatory process.¹⁷ Once action has been taken, adopted regulations are published in the *Alabama Administrative Monthly* and disseminated through various media by ADCNR.

¹ GMFMC meetings website http://www.gulfcouncil.org/council_meetings/index.php

- ² GMFMC Shrimp Management Plans http://gulfcouncil.org/fishery_management_plans/shrimp_management.php
- ³ GMFMC Implementation http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php
- ⁴ GMFMC meetings website http://www.gulfcouncil.org/council_meetings/index.php
- ⁵ GSMFC publications <http://www.gsmfc.org/#:content@5:links@6>
- ⁶ GMFMC meetings webinar access http://gulfcouncil.org/council_meetings/Webinars.php?utm_source=Standing+and+Special+SSC+Meeting+8%2F14&utm_campaign=SSC+8-14&utm_medium=email
- ⁷ GMFMC documents http://www.gulfcouncil.org/resources/resource_library.php
- ⁸ GMFMC briefing materials: http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php
- ⁹ NOAA Fisheries Galveston Laboratories http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program
- ¹⁰ GSMFC publications <http://www.gsmfc.org/#:content@5:links@6>
- ¹¹ Gulf FINFO (<http://gulffishinfo.org/Species?SpeciesID=99>)
- ¹² Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>
- ¹³ ADCNR Advisory Board meetings and transcripts <http://outdooralabama.com/conservation-advisory-board>
- ¹⁴ Ala. Code §36-12-40: Alabama public writings law <http://codes.lp.findlaw.com/alcode/36/12/3/36-12-40>
- ¹⁵ Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>
- ¹⁶ Alabama Administrative Monthly <http://www.alabamaadministrativecode.state.al.us/monthly.html>
- ¹⁷ Organized Seafood Association of Alabama <http://www.eatalabamawildseafood.com/>

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>Gulf States: GSMFC also observes the same transparency requirements detailed in the assessment section above.</p> <p>Alabama:</p>		

<p>Conservation Advisory Board meetings are open to the public, allow public comment, and transcripts are published after the meeting on the ADCNR website.¹ Fishermen are welcome participants at Advisory Board meetings and typically make public comment on proposed regulatory changes. Public records are also available for all government bodies, including ADCNR as required by the Ala. Code §36-25A-1 and §36-12-40.^{2,3}</p> <p>There is public participation throughout the decision-making process for proposed rule and regulation changes as required by Alabama Administrative Procedure Act.³ A 35-day proposed rule notice is published in the <i>Alabama Administrative Monthly</i>, posted on the ADCNR website, and announced through other media sources.⁵ ADCNR typically conducts a public hearing during the 35-day period to gather public input and may also consult advisory committees or industry organizations, such as the Organized Seafood Association of Alabama for industry recommendations and support throughout the regulatory process.⁶ Once action has been taken, adopted regulations are published in the <i>Alabama Administrative Monthly</i> and disseminated through various media by ADCNR.</p>		
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¹ ADCNR Advisory Board meetings and transcripts <http://outdooralabama.com/conservation-advisory-board>

² Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

³ Ala. Code §36-12-40: Alabama public writings law <http://codes.lp.findlaw.com/alcode/36/12/3/36-12-40>

⁴ Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>

⁵ Alabama Administrative Monthly <http://www.alabamaadministrativecode.state.al.us/monthly.html>

⁶ Organized Seafood Association of Alabama <http://www.eatalabamawildseafood.com/>

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 Gulf of Mexico Fishery Management Council (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>		

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.⁶ All reports, including their latest shrimp stock assessments, are always publically accessible via their website.⁷ NOAA Fisheries Southeast Regional Office posts updated links to published fishery bulletins seeking public comment on proposed fishery regulation changes.^{8,9} Their website also contains a News Room link where the public may access recent media activity.¹⁰

The NOAA Fisheries Southeast Fisheries Science Center (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.¹¹ The SEFSC Library is also available to the public through the SEFSC website.¹²

NOAA Fisheries SEFSC Galveston Laboratory publishes scientific reports on their website through their publications tab.¹³ The website also publicizes recent press releases on their website and displays information and links regarding shrimp harvest forecasting reports and assessment information.^{14,15}

Gulf States:

The Gulf States Marine Fisheries Commission (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.¹⁶ 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.¹⁷ All GSMFC meeting minutes are collated by year and published annually on the website.¹⁸ 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.¹⁹

Alabama:

Aside from the actions listed above (see response to 7.1.9) providing transparency throughout the decision-making process, ADCNR takes several actions to ensure that adopted regulations are adequately publicized. The ADCNR website posts all fishing regulations and maintains a series of social media accounts to provide updated information to specific user groups.^{20,21,22} ADCNR posts regularly on social media sites to inform the public of activities, as well as update the public on season openings and closures and regulation changes.²³

¹ GMFMC meetings website http://gulfcouncil.org/council_meetings/index.php

² GMFMC documents http://www.gulfcouncil.org/resources/resource_library.php

³ GMFMC meetings website http://gulfcouncil.org/council_meetings/index.php

⁴ GMFMC website <http://gulfcouncil.org/>

⁵ GMFMC website <http://gulfcouncil.org/>

⁶ NOAA transparency webpage http://www.nmfs.noaa.gov/sfa/management/recreational/policy/goal_4.html

⁷ NOAA Fisheries stock status updates
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/status_updates.html

⁸ NOAA Fisheries Southeast Regional Office fishery bulletin archives
http://sero.nmfs.noaa.gov/fishery_bulletins/bulletin_archives/index.html

⁹ NOAA Fisheries bulletins webpage http://sero.nmfs.noaa.gov/fishery_bulletins/index.html

¹⁰ NOAA Fisheries Southeast Regional Office website <http://sero.nmfs.noaa.gov/index.html>

¹¹ NOAA SEFSC publications database <http://www.sefsc.noaa.gov/publications/>

¹² NOAA SEFSC library <http://www.sefsc.noaa.gov/library/>

¹³ NOAA Fisheries Galveston publications <http://www.galvestonlab.sefsc.noaa.gov/publications/index.html>

¹⁴ NOAA Galveston Laboratory website <http://www.galvestonlab.sefsc.noaa.gov/>

¹⁵ NOAA Fisheries Galveston Laboratory Brown Shrimp Forecast 2015
<http://www.galvestonlab.sefsc.noaa.gov/stories/2015/Brown%20Shrimp%20Forecast/index.html>

¹⁶ GSMFC publications <http://www.gsmfc.org/#:content@5:links@6>

¹⁷ GSMFC meeting minutes <http://www.gsmfc.org/pubs.php?s=MINUTES>

¹⁸ GSMFC meeting minutes <http://www.gsmfc.org/pubs.php?s=MINUTES>

¹⁹ GSMFC website <http://www.gsmfc.org/index.php>

²⁰ ADCNR Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

²¹ ADCNR Social Media <http://www.outdooralabama.com/social>

²² ADCNR news <http://www.outdooralabama.com/news>

²³ ADCNR Facebook page <https://www.facebook.com/pages/Outdoor-Alabama/91170969884>

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 Alabama 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, Alabama Department of Conservation and Natural Resources (ADCNR) is responsible for management of shrimp in Alabama state waters out to three nautical miles. Alabama participates in the GMFMC and manages the shrimp fishery in state waters consistent with federal regulations.

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 “*Conservation and management measures shall be based upon the best scientific information available.*”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.

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 for shrimp are conducted through the Galveston Lab Shrimp Fishery research program.⁵ The SEFSC 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 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

Alabama:

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

The mission of the ADCNR Marine Resources Division (MRD) is to “manage the state’s marine fishery resources through research, enforcement, and education for the maximum benefit of the resources and the citizens of Alabama.”¹⁵ MRD carries out this mission by conducting both fishery-dependent and fishery-independent data collection, which is reviewed annually to determine trends and status of stocks.¹⁶ MRD contains three sections - an Administrative Section, a Marine Fisheries Section, and an Enforcement Section. The Marine Fisheries Section is responsible for data collection and conducts projects that provide necessary and sound biological data to support various management decisions under consideration by marine fisheries administrators. To accomplish this goal, the Marine Fisheries Section maintains ongoing biological sampling, data analysis and basic research programs.

Fishery-independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).¹⁷ ADCNR began fisheries data collection in 1977, initially for shrimp and crab. Since the start of the data collection program, it has seen several revisions to continue to improve the quality and scope of sampling. In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with Alabama Department of Environmental Management (ADEM) to include collection of environmental parameters on water quality and moved to sampling on a quarterly basis until 2000, when the program reinitiated monthly sampling collection. In 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl), seines, gill nets and beam plankton trawls (BPLs) and utilize these data to assess stock abundance, trends, and fisheries impacts. This research forms the basis of ADCNR’s management decisions.

ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹⁸ 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. 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.

ADCNR also coordinates with and participates in research conducted by regional organizations including the GMFMC and the Gulf States Marine Fisheries

Commission (GSMFC) scientific monitoring and review processes, and incorporates recommendations by these regional bodies into management decisions. ^{19,20}		
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¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ 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&rgn=div8

⁴ SEFSC Research <http://www.sefsc.noaa.gov/research/>

⁵ SEFSC Galveston Lab- Shrimp Fishery Research http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ Gulf Shrimp System <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁷ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁸ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁹ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

¹⁰ SEFSC Shrimp research <http://www.sefsc.noaa.gov/species/shrimp/>

¹¹ SEFSC Pascagoula Lab Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹² SEFSC Galveston Lab Shrimp research http://www.galvestonlab.sefsc.noaa.gov/research/research_home/index.html

¹³ GMFMC Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁴ The Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-01&02%20Final%201981-11.pdf>

¹⁵ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

¹⁶ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

¹⁷ FAMP <http://www.outdooralabama.com/sample-processing>

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 GSMFC website <http://www.gsmfc.org/>

²⁰ GMFMC website <http://www.gulfcouncil.org/>

7.2.1 (b) Are they qualified by relevant environmental and economic factors?
 Yes... [1] Some... [1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal:</p> <p>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</p> <p>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.³ Section 304(i) of MSA requires compliance with NEPA regulations with regard to fishery management plans and actions.⁴ NOAA Fisheries determines the analysis level necessary to comply with MSA and NEPA regulations for each FMP amendment and management action.⁵ 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 13.⁶</p> <p>SEC. 303 (a)(9) of the MSA requires that FMPs include a fishery impact statement (FIS) for the plan or amendment.⁷ 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.</p> <p>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.⁸</p> <p>Alabama:</p> <p>Based on FAO guidelines, one typical method of addressing the broad economic context of a fishery is through consultation with legitimate users.⁹ ADCNR conducts scoping meetings and public hearings to gain socioeconomic information prior to finalizing new regulations and considers these factors in the decision-making process.¹⁰ The Alabama Administrative Procedures Act also requires that any proposed regulations that may have an economic impact be accompanied by a fiscal note prepared by the agency, which must include, at minimum, a determination of the need for the regulations, an explanation of the costs and benefits, why the proposal is</p>		

<p>considered to be the most cost effective, efficient, and feasible means for achieving the stated purpose, effects on cost of living, business, and employment within the geographical area effected, and the uncertainties associated with estimations of costs and benefits.¹¹ The Alabama Administrative Procedures Act also requires information on the effect of potential regulation on the environment and public health and determination of detrimental effect on environmental and public health if regulation is not implemented.</p> <p>Alabama considers environmental factors when setting management measures for the shrimp fishery in Alabama waters, including season dates and closures areas. FAMP trawl sampling each Spring allows MRD to monitor shrimp size and ensure that shrimp harvest is at legal size count.^{12,13}</p>		
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¹ MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

² GMFMC Shrimp FMP Amendment 13 (see pages 22-23)
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ NOAA-NEPA Coordination <http://www.nepa.noaa.gov/>

⁴ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁵ NOAA MSA NEPA Requirements http://www.nmfs.noaa.gov/sfa/laws_policies/msa/nepa.html

⁶ GMFMC Shrimp FMP Amendment 13
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁷ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

⁸ NOAA Regulatory Impact Review Requirements
http://www.nmfs.noaa.gov/sfa/laws_policies/national_standards/documents/ns1-3-7_rir_clean_1-8-15.pdf

⁹ A fishery manager’s guidebook: Management measures and their application. FAO Fisheries Technical Paper 424. Rome. 2002. <http://www.fao.org/docrep/015/i0053e/i0053e.pdf>

¹⁰ ADCNR Community meeting notice <http://www.outdooralabama.com/alabama-oyster-community-meeting>

¹¹ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

¹² FAMP <http://www.outdooralabama.com/sample-processing>

¹³ ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.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
<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</i>	

(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.¹

The current values, as determined through Amendment 13 of the shrimp FMP are:

MSY:

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:

- Brown shrimp: MSY is between 67,000,000 and 104,000,000 pounds of tails
- White shrimp: MSY is between 35,000,000 and 71,000,000 pounds of tails
- Pink shrimp: MSY is between 6,000,000 and 19,000,000 pounds of tails

OVERFISHING:

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:

- 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
- Pink shrimp- 100 million individuals, age 5+ months during July-June period

OVERFISHED:

An overfished condition would result when a parent stock number falls below one-half of the overfishing definition listed below.

- 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
- Pink shrimp- 50 million individuals, age 5+ months during the July through June period

Due to recent updates in stock assessment modeling, stock assessments for shrimp are now being conducted with a new model that provides different outputs than the original stock assessment models used when the Status Determination Criteria (SDC) for shrimp stocks was set in Amendment 13. GMFMC is currently in the final stage of Amendment 15 to adjust the SDC for each of the three penaeid shrimp species to fit the new stock assessment model.²

¹ GMFMC shrimp FMP Amendment 13

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² GMFMC shrimp FMP draft Amendment 15

<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?

7.2.2 (a)(i) - Is the level of excess capacity defined? **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. 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. Since the implementation of the moratorium, license numbers have been reduced from 1933 permits in 2007 to 1470 permits in 2014.³ The 10-year moratorium put in place by Amendment 13 expires in December of 2016 and the GMFMC is currently in discussions on the development of Amendment 17 to determine if the moratorium will expire, by extended, or development of a limited-access system will be put in place.</p> <p>Alabama: There is currently no limit on the fishing capacity for the shrimp fishery in Alabama waters. Licenses are required for commercial, recreational and live-bait shrimping in Alabama waters and MRD monitors license numbers annually.⁴ Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp imports began to impact domestic shrimp ex-vessel prices and placed an economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip.⁵ This downward trend has continued since 2004 and is expected to continue indefinitely.</p>	

¹ Kirkely et al. (2006) Reducing Capacity in U.S. Fisheries. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

² GMFMC shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ Draft options paper for Amendment 17 of GMFMC shrimp FMP
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 ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁵ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.
http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

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.^{1,2}</p> <p>Alabama: Since there is no capacity reduction system in place, measures cannot be considered effective. Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp imports began to impact domestic shrimp ex-vessel prices and placed an economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip.³ This downward trend has continued since 2004 and is expected to continue indefinitely.</p>	

¹ GMFMC shrimp FMP Amendment 13
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%200805.pdf>

² Draft options paper for Amendment 17 of GMFMC shrimp FMP
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 ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.
http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

7.2.2 (b) - Do the economic conditions under which the fishery operates promote responsible fisheries? Yes... [1] Some... [½] 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...[½] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal:</p> <p>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 Alabama 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> <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</p> <p>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.</p> <p>Alabama:</p> <p>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</p>		

<p>corporations.⁵</p> <p>Based on these guidelines, the Alabama shrimp fishery is predominantly comprised of small-scale fishermen because vessel sizes are generally small in comparison to large industrial fleets and fishers tend to work one or two men to a boat. Trips tend to be inshore and daily, not several days out at sea⁶ ADCNR considers all of these factors when setting regulations for the fishery and consults with industry representatives through advisory groups and public hearings to discuss these factors. ADCNR publicizes public hearings, scoping meetings, comment periods for proposed management actions and encourages public participation through these outlets, and fishermen are actively engaged.^{7,8,9} The Organized Seafood Association of Alabama (OSAA) is an industry-led group created to support the seafood industry of Alabama. OSAA has four advisory boards: oyster, crab, shrimp, and gill net/hook & line. These advisory boards identify issues within the fisheries, obtain input from industry members, and interact with local, state and federal resource managers to address possible changes in fishery management.¹⁰</p> <p>ADCNR also considers the interests of local, small-scale fishing communities and individual business owners when setting license fees by creating a lower cost license fees for residents of the state to utilize the resources within state waters.¹¹</p>		
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¹ GMFMC Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

² MSA National Standards 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 Shrimp FMP http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php

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 Miller, Alexander and Jack Isaacs. 2012. An Economic Survey of U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results from 2012. Gulf States Marine Fisheries Commission Publication, Publication Number 226. Ocean Springs, Mississippi. <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

⁷ Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

⁸ ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

⁹ ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

¹⁰ Organized Seafood Association of Alabama <http://www.eatalabamawildseafood.com/>

¹¹ ADCNR fishing license information <http://www.outdooralabama.com/alabama-license-information>
<http://codes.lp.findlaw.com/alcode/9/11/2/9-11-32>

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>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.</p> <p>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 13.7:1.¹ 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). 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. 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>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.”⁴</p> <p>The GMFMC shrimp FMP contains two goals/objectives that directly address this mandate of the MSA:⁵</p> <ul style="list-style-type: none"> - 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.” <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.⁶ 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. Amendment 13 also required annual completion of a Gulf Shrimp Vessel and Gear Characterization Form, requires reporting of landings, and placed a moratorium on the issuance of new permits in the fishery. Due to the high costs of outfitting boats</p>	

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. 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 for the current goals of the program.

ENDANGERED SPECIES:

One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the Endangered Species Act (ESA), which includes five species of sea turtles (Hawksbill, green, Kemp’s Ridley, leatherback, and loggerhead), smalltooth sawfish, and Gulf sturgeon (a subspecies of Atlantic sturgeon).⁷ 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.⁸

Sea Turtles (5 species are found in the Southeast Region):

- Hawksbill (*Eretmochelys imbricate*)
<http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm>
- Kemp's ridley (*Lepidochelys kempi*)
<http://www.nmfs.noaa.gov/pr/species/turtles/kempstridley.htm>
- Leatherback (*Dermochelys coriacea*)
<http://www.nmfs.noaa.gov/pr/species/turtles/leatherback.htm>
- Green (*Chelonia mydas*)
<http://www.nmfs.noaa.gov/pr/species/turtles/green.htm>
- Loggerhead (*Caretta caretta*)
<http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm>

- NRC (1990) determined that shrimp trawl bycatch was one of the most significant sources of mortality causing declines in sea turtle populations.⁹ Research on turtle excluder devices (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, so TED use was low throughout the 1980s.¹⁰ Federal legislation went into effect requiring widespread use of TEDs in shrimp trawls in 1989 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. Compliance rates are actively monitored and a minimum 88% compliance rate with TED use must be maintained otherwise NOAA Fisheries is required to take action, which could include closing down the fishery.¹¹

TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011):¹²

Species	Mortality	
	Pre-regulation	Post-Regulation
Atlantic/Gulf		
<i>Lepidochelys kempi</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>Eretmochelys 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).

- Mandatory TED requirements are currently in place for all otter trawls in the shrimp fishery in both state and federal waters (federal jurisdiction of protected species extends into state waters) and Alabama fully complies with TED requirements.¹³
- Currently, TED compliance is enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers.
- The 2012 and 2014 biological opinions require an 88% effectiveness rate for TEDs in the Gulf and South Atlantic shrimp trawl fisheries.¹⁴ This rate is calculated using NOAA enforcement and inspection rates and 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.¹⁵ 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 only 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 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.¹⁶ 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 only about 200 vessels per year.¹⁷ Compliance rates are calculated by quarter, and small sample sizes in some months can lead to biases the overall compliance percentages.

- TED compliance and effectiveness rates are a continuing concern for the fishery due to the problems mentioned above and because compliance rates have fluctuated around the minimum compliance rate for the past several years. From March to November 2011, the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.¹⁸ 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.¹⁹ TED compliance rates in the past year have fluctuated monthly ranging between 76 and 97% (April 2014- July 2015 compliance rates with an overall average above 90%.²⁰
- Currently regulations for skimmer trawls 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).²¹ 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 much criticism from some stakeholders.²² NOAA is currently researching appropriate TED designs for skimmer trawls and education activities are underway to increase awareness and compliance with tow time regulations for shrimpers not currently using TEDs in skimmers. The Alabama fleet only contains approximately 60 skimmer vessels within the 300 vessel fleet (based on trip ticket reporting from 2005-2014) and ADCNR enforces all TED regulations.²³

NOAA, state agencies and shrimp industry members (including the Texas Shrimp Association) have contributed to efforts protecting sea turtle nesting beaches in Mexico and areas throughout the Gulf coast to assist in the recovery of sea turtle populations. 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.²⁴

Smalltooth sawfish (*Pristis pectinata*)

<http://www.nmfs.noaa.gov/pr/species/fish/smalltoothsawfish.htm>

- The Recovery Plan for smalltooth sawfish cites bycatch in other fisheries as a primary reason for the decline of this species.²⁵ 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 National Wildlife Refuges 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*)

<http://www.nmfs.noaa.gov/pr/species/fish/gulfsturgeon.htm>

- 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.²⁶ No regulatory actions are required directly in relation to bycatch of Gulf sturgeon for the shrimp fishery.

MARINE MAMMALS:

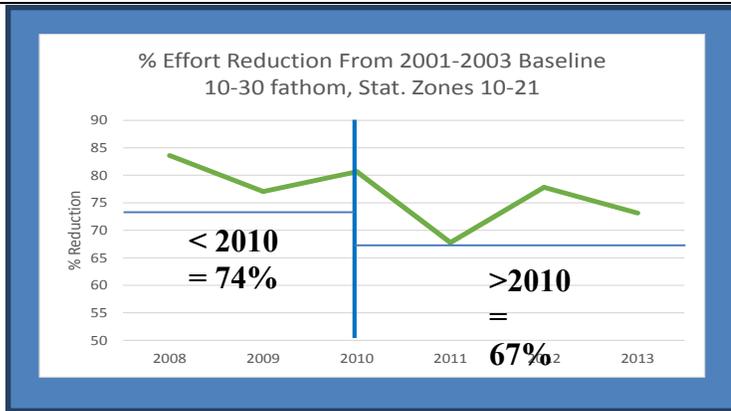
The Marine Mammal Protection Act (MMPA) 1994 revision includes changes of regulation regarding the incidental take of marine mammals in commercial fishing operations, requiring a goal to reduce serious injury and mortality of marine mammals to “insignificant levels”, approaching a zero mortality rate. “Insignificant Level” is defined as less than 10% of the potential biological removal (PBR).²⁷ 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.²⁸ The Gulf of Mexico shrimp fishery is currently listed as a Category II fishery on the List of Fisheries.²⁹ 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 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:

Red snapper (*Lutjanus campechanus*)

Red Snapper bycatch has been another 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.³⁰ This rebuilding plan included 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.³¹ 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 Bycatch Reduction Devices (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).³² BRD requirements included: 1) reduction of finfish/shrimp ration 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.³³ 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.³⁴ 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 (see graph below).³⁵



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.³⁶ Since this time, the blacknose shark population has been divided into two separate populations- an Atlantic population and a Gulf of Mexico population.³⁷ 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.³⁸ 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.³⁹

OTHER FISH SPECIES:

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.⁴⁰ 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 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.⁴¹

Alabama:

Alabama 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.⁴² There is some observe coverage on the inshore skimmer fleet across AL, MS, and LA, which began in 2012, that documents bycatch and effectiveness of BRDs, TEDs, and tow-time regulations.⁴³ The Alabama fleet currently has approximately 60 active skimmer vessels within the active 300 vessel fleet (based on trip ticket reporting from 2005-2014) and ADCNR enforces all TED regulations.⁴⁴

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014.⁴⁵ This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs. Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ray catch. ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.⁴⁶

Bycatch studies in neighboring 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).⁴⁷ 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 Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species. ADCNR MRD conducts fishery-independent surveys (FAMP), which collect data on the species typically discarded in the shrimp trawl fishery.⁴⁸ 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.

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.⁴⁹ 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.⁵⁰ 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.⁵¹ 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.⁵² 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.⁵³ 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.⁵⁴ 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.⁵⁵ 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.⁵⁶ 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. The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:⁵⁷

- 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.⁵⁸ The EFH review in 2010 found that effort in all commercial fisheries had declines between 2000-2008, and that no new recommendations were necessary beyond the 2005 recommendations.</p> <p>Alabama 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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¹ GMFMC shrimp FMP Amendment 9 <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 NOAA National Standard Guidelines http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

⁵ GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ GMFMC shrimp FMP Amendment 9 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

⁷ 2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

⁸ Office of Protected Resources <http://www.nmfs.noaa.gov/pr/species/index.htm>

⁹ NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf

¹⁰ SEFSC Mississippi Labs History of TEDs <http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm>

¹¹ NOAA Fisheries TED Compliance rates 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

¹² 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>

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

- ¹⁴ 2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf
- ¹⁵ Penalty Matrix for Endangered Species Act TED Violations <http://www.shrimpalliance.com/new//wp-content/uploads/2012/03/2pagesfromPenaltyPolicy.pdf>
- ¹⁶ 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
- ¹⁷ NOAA Draft TED compliance policy http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf
- ¹⁸ 2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf
- ¹⁹ "TED compliance" NOAA Fisheries. Web. Accessed June 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html
- ²⁰ NOAA, 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
- ²¹ 50 CFR § 223.206 http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf
- ²² Elizabeth Scott-Denton, Jo Willians, 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 ADCNR, Unpublished Data. August 2015.
- ²⁴ NOAA Galveston Lab sea turtle programs <http://www.galvestonlab.sefsc.noaa.gov/seaturtles/index.html>
- ²⁵ Smalltooth Sawfish Recovery Plan- 2010 review http://www.nmfs.noaa.gov/pr/pdfs/species/smalltoothsawfish_5yearreview.pdf
- ²⁶ Gulf Sturgeon Recovery Plan- 2009 review http://www.nmfs.noaa.gov/pr/pdfs/species/gulfsturgeon_5yearreview.pdf
- ²⁷ Marine Mammal Protection Act" NOAA Fisheries. Web. Accessed August 2015. <http://www.nmfs.noaa.gov/pr/laws/mmpa/>
- ²⁸ Office of Protected Species List of Fisheries <http://www.nmfs.noaa.gov/pr/interactions/lof/#report>
- ²⁹ NOAA Office of Protected Species. List of Fisheries- Southeastern 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
- ³⁰ "Red Snapper" *Fishwatch*. Web. Accessed June 2015.
- ³¹ GMFMC shrimp FMP Amendment 9 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>

- ³² 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.
- ³³ GMFMC shrimp FMP 2006 Regulatory Amendment
http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf
- ³⁴ GMFMC shrimp FMP Amendment 14
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>
- ³⁵ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.
- ³⁶ SEDAR 13: Stock Assessment Report- Small Coastal Shark Complex, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark
http://www.nmfs.noaa.gov/sfa/hms/species/sharks/documents/shark_stock_assessment_report_11-14-07.pdf
- ³⁷ SEDAR 21: HMS Gulf of Mexico Blacknose Shark Stock Assessment Summary report, 2011.
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- ³⁸ NOAA, Status of Stocks Report, 2014
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- ³⁹ 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>
- ⁴⁰ GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>
- ⁴¹ Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMzQ/view?pli=1>
- ⁴³ 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
- ⁴⁴ ADCNR, Unpublished data. August 2015.
- ⁴⁵ ADCNR, *NFWF Final Programmatic Report*, 2014.
- ⁴⁶ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015
- ⁴⁷ 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.

⁴⁸ FAMP <http://www.outdooralabama.com/sample-processing>

⁴⁹ Chang et al. 2001 <http://onlinelibrary.wiley.com/doi/10.1029/2000JC900032/pdf>

⁵⁰ Dellapenna et al., 2006 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

⁵¹ Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>

⁵² NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf

⁵³ Jennings and Kaiser 1998
http://www.researchgate.net/profile/Michel_Kaiser/publication/222490649_The_Effects_of_Fishing_on_Marine_Ecosystems/links/0fcfd50af7a1a0577a000000.pdf

⁵⁴ Dellapenna et al., 2006 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

⁵⁵ Sanchez et al., 2001 and Ball et al., 2001 as cited in Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>

⁵⁶ EFH amendments
http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

⁵⁷ EFH Amendment 3 http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf

⁵⁸ 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

7.2.2 (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, white, and pink shrimp, none of these populations have experienced overfishing or an overfished status since NOAA Fisheries began monitoring the stocks.^{2,3,4,5}</p> <p>Amendment 13 of the GMFMC shrimp FMP notes:⁶</p> <ul style="list-style-type: none"> “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” <p>The GMFMC has established an overfishing level for each of the penaeid species in terms of a parent stock level, as follows:</p> <ul style="list-style-type: none"> Brown Shrimp - 125 million individuals, age 7+ months during the November through February period. 		

<ul style="list-style-type: none"> - White Shrimp - 330 million individuals, age 7+ months during the May through August period. - Pink Shrimp-100 million individuals, age 5+ months during the July through June period. <p>GMFMC defines an overfished condition as one half of the above parent stock levels. NOAA Fisheries has monitored the parent stock levels for all three shrimp species since 1970. Parent stock levels for all three species have remained above the established thresholds throughout the monitoring period and all three stocks are not considered overfished or undergoing overfishing.</p>		
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¹ FAO Fisheries Glossary- Depletion <http://www.fao.org/fi/glossary/>

² 2008 Brown and White shrimp stock assessment <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202009-10/D%20-%204%20Stock%20Assessment%20Report%20GOM%20Shrimp%20Fishery.pdf>

³ Brown shrimp stock assessment for 2011 <http://www.galvestonlab.sefsc.noaa.gov/publications/pdf/936.pdf>

⁴ White shrimp stock assessment for 2011 <http://www.galvestonlab.sefsc.noaa.gov/publications/pdf/935.pdf>

⁵ Pink shrimp stock assessment update 2014 <http://www.galvestonlab.sefsc.noaa.gov/publications/pdf/957.pdf>

⁶ GMFMC shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

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
	<p>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 Alabama 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.</p> <p><u>State agencies:</u> Alabama Department of Environmental Management (ADEM) is the primary agency in Alabama responsible for the protection and improvement of Alabama's environment and the health of its citizens. ADEM programs are broken into four divisions: Air, Coastal, Waste/Remediation, and Water. These four divisions each run</p>	

several programs aimed to prevent pollution, mitigate impacts and improve the quality of the environment and natural resources of Alabama.

- ADEM Emergency Response is the lead program for spills of oil or hazardous material and fish kills.² ADEM supports local governments for spill response and acts as the coordinator between state and federal response resources. ADEM is the technical advisory agency responsible for identifying contamination and directing the treatment, and removal of hazardous materials released into the environment in Alabama.
- ADEM administers the Alabama Coastal Area Management Program (ACAMP) as a joint effort with ADCNR designed to “promote, improve and safeguard the lands and waters located in Alabama’s coastal area.”³ The ADEM Coastal Division is also responsible for the Alabama Coastal Nonpoint Pollution Control Program, the Coastal Watershed Survey Program, and handle permitting for projects that have the potential to impact Alabama’s coastal resources.
- The ADEM Water Division coordinates a series of programs related to water quality and management.⁴ Current programs under the Water Division include the Clean Vessel program regulating and monitoring waste discharge from vessels, the Animal Feed Operations (AFO) program regarding waste treatment and disposal of waste materials, a stormwater runoff program, the Drinking Water Branch, the Groundwater Branch, a Forestry BMPs Program regulating waste and pollution related to timber harvest, permitting programs for pesticide use and industrial discharges, and the Water Quality Program managing surface water quality, protection, and use.
- The ADEM Waste/Remediation Division handles hazardous waste and solid waste management as well as remediation of contaminated sites through the Brownfields/Voluntary Cleanup Program and assists the EPA in Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) projects.⁵

ADCNR State Lands Division, Coastal Section is responsible for the overall management of the ACAMP and works jointly with ADEM to implement the plan, which includes coastal cleanups, implementation of public access projects, support to local governments and grant funding to coastal communities to support projects that “protect, enhance and increase sustainability, resiliency, and preparedness of coastal communities and economies.”⁶

Federal Agencies:

- USCG Marine Environmental Protection Program addresses concerns of invasive species, oil and chemical spills, and ocean dumping.⁷
- 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.⁸
- 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.⁹

- 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.¹⁰

PROGRAMS:

- 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.¹¹ 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.
- The Coastal Impact Assessment Program (CIAP) provides federal funding derived from offshore oil and gas lease money to oil-producing states for restoration projects for remediation of industry impacts.¹²
- 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.¹³ Alabama developed the Alabama Gulf Coast Recovery Council (AGCRC) to handle and direct funds received by the state of Alabama through the RESTORE Act. See <http://www.restorealabama.org/> for more details on the AGCRC and RESTORE activities in Alabama.
- The Mobile Bay National Estuary Program (NEP) program is a collaborative public/private partnership administered and funded by the EPA (under the Clean Water Act) working to promote watershed management and address environmental issues in Mobile Bay.¹⁴ The program addresses water quality, living resource abundance, rate of habitat loss and conservation, and sustainable community growth and development.

Numerous NGOs are also active in Alabama assisting in environmental restoration including The Nature Conservancy, Mobile Baykeepers, and the Alabama Coastal Foundation, among others.^{15,16,17}

¹ ADEM <http://adem.alabama.gov/default.cnt>

² ADEM Emergency Response Program <http://adem.alabama.gov/moreInfo/emergencyResponse.cnt>

³ ADEM Coastal Division <http://adem.alabama.gov/programs/coastal/default.cnt>

⁴ ADEM Water Division <http://adem.alabama.gov/programs/water/default.cnt>

⁵ ADEM Waste/Remediation Division <http://adem.alabama.gov/programs/land/default.cnt>

⁶ ADCNR Coastal Area Management Program <http://www.outdooralabama.com/alabama-coastal-area-management-program>

⁷ USCG Marine Environmental Protection Program <http://www.uscg.mil/top/missions/marineenvironmentalprotection.asp>

⁸ EPA Emergency Management <http://www.epa.gov/emergencies/>

⁹ NOAA Office of Response and Restoration <http://response.restoration.noaa.gov/>

¹⁰ USFWS Environmental Contaminants Program <http://www.fws.gov/contaminants/Issues/OilSpill.cfm>

¹¹ Alabama NRDA process <http://www.alabamacoastalrestoration.org/nrda.aspx>

¹² Alabama CIAP Program <http://www.outdooralabama.com/state-alabama-coastal-impact-assistance-program>

¹³ RESTORE ACT <http://www.restorethegulf.gov/>

¹⁴ Mobile Bay NEP http://www.mobilebaynep.com/who_we_are/our_history

¹⁵ The Nature Conservancy- Alabama <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/alabama/placesweprotect/>

¹⁶ Mobile Baykeeper <http://www.mobilebaykeeper.org/>

¹⁷ Alabama Coastal Foundation <http://www.joinacf.org/>

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>Alabama: Alabama law also addresses waste and pollution through the following state regulations set forth in the Alabama Code:²</p> <ul style="list-style-type: none"> - Chapter 22 Water Pollution Control - Chapter 22A Environmental Management - Chapter 24 Water Well Standards - Chapter 25 Water and Wastewater Systems and Treatment Plants - Chapter 27 Solid Waste - Chapter 28 Alabama Air Pollution Control Act - Chapter 30 Hazardous Wastes Management - Chapter 34 Water Pollution Control Authority - Chapter 38 Alabama Agricultural Nonpoint Source Financial Assistance Act 		

<ul style="list-style-type: none"> - Chapter 40A Alabama Scrap Tire Environmental Quality Act - Title 35, Chapter 19, Alabama Uniform Environmental Covenants Act - Title 9, Conservation and Natural Resources, Chapter 7 Preservation, Development, Etc., of Coastal Areas. <p>The Alabama Department of Environmental Management (ADEM) is the environmental agency of the state responsible for protecting the state’s public health and natural resources consistent with sustainable economic development.³ The creates and enforces regulations regarding clean air, clean water and safe management of waste.</p>		
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¹ U.S. Coast Guard Office of Operating and Environmental Standards, <https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-18361&pageTypeld=13489>

² Alabama Environmental Laws <http://www.adem.state.al.us/alEnviroReglaws/default.cnt>

³ ADEM <http://www.adem.state.al.us/alEnviroRegLaws/default.cnt>

7.2.2 (g)(ii) - Has catch by lost and abandoned gear of commercial species and other organisms been minimized? **Yes... [1] Some... [1/2] 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 utilizes 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>		

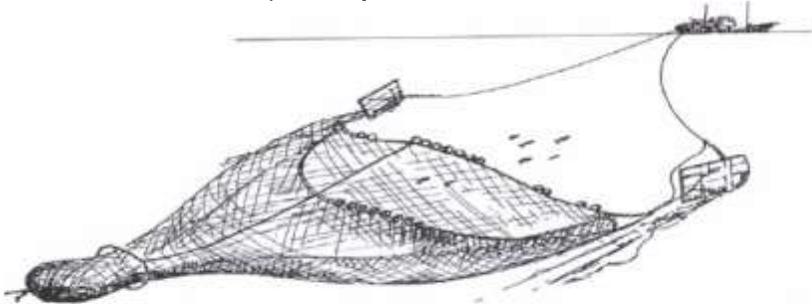
¹ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² MS-AL Hang book <http://texasseagrant.org/assets/uploads/publications/1983/83-505.pdf>

³ TX-LA Hang Book <http://texasseagrant.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 Alabama commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, pusher-head trawls and cast nets are also sometimes utilized in inshore areas.^{1,2} Within inside waters (bays, sounds, etc.) a trawl or trawls used together may not exceed 50 feet as measured along the main topline..³ Otter trawls are the primary gear type utilized in the offshore fishery conducted in federal waters; skimmer nets have gained popularity in inshore waters.</p> <p><u>Otter trawls:</u> The basic otter trawl is the most common gear type used in Alabama 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.</p>  <p style="text-align: center;">Figure 3 Otter Trawl</p> <p>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</p> <p>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%</p>	

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. East of Cape San Blas was exempt at the time due to low abundance of red snapper in this area.⁹ 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 neighboring 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 Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species.

ADCNR 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 has 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.

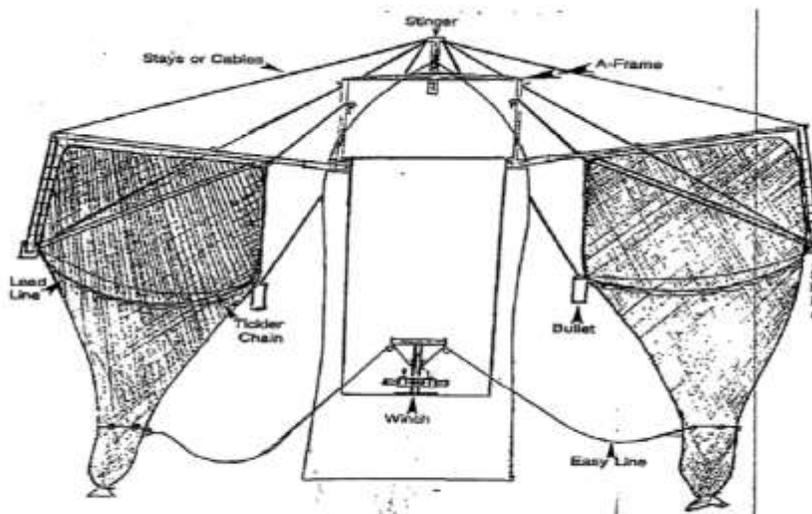


Figure 5 Skimmer Trawl

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.

The Alabama fleet currently has approximately 60 active skimmer vessels within the active 300 vessel fleet (based on trip ticket reporting from 2005-2014) and ADCNR enforces all TED regulations.¹⁹

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.²⁰ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ ray catch.

ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.²¹

Studies indicate that skimmer trawls typically have lower bycatch rates than otter trawls, especially during white shrimp season.^{22,23} BRDs are not required in skimmer trawls in Alabama; however, some fishermen utilize these devices to further 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 the number of times 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.

The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:³²

- 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.

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.

Alabama 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.
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¹ GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

³ ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁴ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.
http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_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 SEFSC Mississippi Labs History of TEDs <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 shrimp FMP Amendment 9 <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 shrimp FMP amendment 10
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

¹² Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <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 SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹⁵ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

¹⁶ BRD designs <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 Skimmer observer data
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

¹⁹ ADCNR, Unpublished Data. August 2015.

²⁰ ADCNR, *NFWF Final Programmatic Report*, 2014.

²¹ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015

²² Skimmer observer data
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

²³ Comparisons of Shrimp Catch and Bycatch between a Skimmer Trawl and an Otter Trawl in the North Carolina Inshore Shrimp Fishery
http://www.researchgate.net/publication/254310611_Comparisons_of_Shrimp_Catch_and_Bycatch_between_a_Skimmer_Trawl_and_an_Otter_Trawl_in_the_North_Carolina_Inshore_Shrimp_Fishery

²⁴ Chang et al. 2001 <http://onlinelibrary.wiley.com/doi/10.1029/2000JC900032/pdf>

²⁵ Dellapenna et al., 2006 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

²⁶ Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>

²⁷ NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf

²⁸ Jennings and Kaiser 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 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

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 EFH amendments
http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

³² EFH Amendment 3 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
Federal: 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.

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

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}

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}

Alabama:

ADCNR MRD monitors the effects of environmental factors on target species and associated species through the FAMP. The fishery-independent sampling aims to assess the entire fish community and utilizes different gear types to collect data of various species and stages of life cycle within different habitats.⁹ Salinity, water temperature, and dissolved oxygen are also recorded for each sample. ADCNR also coordinates with ADEM on environmental monitoring and management.¹⁰

¹ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² Griffen et al. as cited in the GMFMC shrimp FMP
<http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

³ Galveston Lab- current research
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_ecology/currentresearch/caernarvon/index.html

⁴ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁵ EFH Amendment <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINALEFH-%20Amendment%201-%20no%20appendices.pdf>

⁶ EFH Amendment EIS <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf>

⁷ SEAMAP
http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/seamap/index.html

⁸ NOAA SEFSC Pascagoula Lab. <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

⁹ FAMP <http://www.outdooralabama.com/sample-processing>

¹⁰ ADEM <http://www.adem.state.al.us/default.cnt>

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... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p>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. 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</p>		

<p>closures coordinated between state and federal waters. Alabama participates in the GMFMC process and manages the shrimp fishery in state waters consistent with the GMFMC shrimp FMP and federal regulations.</p>		
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¹ GMFMC Shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² Stock Assessment Report 2008 Gulf of Mexico Shrimp Fishery
<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. 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>Alabama: ADCNR 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. ADCNR participates in the GMFMC process and manages the shrimp fishery consistent with the federal shrimp FMP.</p>		

¹ GMFMC Shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

² GMFMC Shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

³ [50 CFR § 622.56](#)

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: “The biological characteristics which effect sustainable yields for penaeid shrimp are unusual. They are an annual crop.” 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. In 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.¹ 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>(in millions of pounds od tails)</td> <td></td> <td></td> <td></td> <td>216</td> </tr> </tbody> </table> <p>Amendment 13 of the shrimp FMP established a Minimum Parent Stock Size (MSST) known to produce MSY the following year and set MSY based on the lowest and highest landings taken annual from 1990-2000.² MSY for the brown shrimp stock is between 67 and 104 million pounds of tails MSY for the white shrimp stock is between 35 and 71 million pounds of tails MSY for the pink shrimp stock is between 6 and 19 million pounds.</p> <p>Alabama: ADCNR MRD has addressed concerns regarding removal from other sources besides the commercial fishery when setting regulations. ADCNR MRD currently has separate regulations and limits take for recreational and live-bait shrimping.^{3,4,5}</p>							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	(in millions of pounds od tails)				216
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¹ GMFMC Shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² GMFMC shrimp FMP Amendment 13 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ ADCNR Commercial Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁴ ADCNR Recreational Shrimping Regulations
<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.pdf>

⁵ ADCNR Live-bait Regulations
[http://www.outdooralabama.com/sites/default/files/images/file/Live%20Bait%20Handout%20Aug12\(2\).pdf](http://www.outdooralabama.com/sites/default/files/images/file/Live%20Bait%20Handout%20Aug12(2).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
<p>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</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> - 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 		

<p>shrimp populations in the Gulf and indicate mixing of populations along the north central and northwestern Gulf coast. (Gunter, 1962)</p> <ul style="list-style-type: none"> - 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 Ochlachonee 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). - Pink shrimp- range along the Atlantic from the lower Chesapeake Bay south to around the Florida Keys and up and around the Gulf coast to Isla Mujeres, Mexico. Major concentrations are found off southwest Florida and in the southeast part of Golfo de Campeche. <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. EFH amendments http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php</p>		
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¹ [“Magnuson-Stevens Act” NOAA Fisheries. Web. Accessed July 2015.](#)

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&rgn=div8

³ GMFMC Science Committees http://gulfcouncil.org/panels_committees/scientific_statistical_committees.php

⁴ SEFSC Galveston Lab <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

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 or mangrove-water 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</p>		

<p>bottom that contain fragments of shell. Pink shrimp prefer mud or silt bottoms with coral sand and mixed mollusk shell, or firm sand. White shrimp predominantly occur in depths shallower than 20 fathoms, brown shrimp are typically found at depths greater than 20 fathoms, and pink shrimp are typically found between 20-35 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. Alabama has implemented area closures to protect nursery habitats as follows:</p> <ul style="list-style-type: none"> - All rivers (with exception), streams, bayous and creeks within the State are permanently closed. Areas of Portersville Bay, Cat and Marsh Island and Coffee Island are closed as well. Herron Bay and portions of the Mississippi Sound north of the Gulf Intracoastal Waterway are closed. All of Weeks Bay is closed (with some exceptions for dip nets). The Theodore Industrial Canal, Bon Secour Bay, and waters north of Battleship Parkway are closed. Certain portions of Mobile Bay and Mobile County are closed. Areas north of Lillian Bridge and in Little Lagoon Pass in Baldwin County, and Perdido Pass are closed.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</p>		

¹ GMFMC Shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

³ EFH amendments 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. 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</p>		

<p>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.</p> <p><u>Alabama:</u> Alabama participates in the GMFMC process and manages the shrimp fishery in state waters consistent with the GMFMC shrimp FMP and federal regulations. Alabama regulations include closure areas, closed seasons, and gear restrictions.</p> <p><u>Other Gulf States:</u> All other Gulf States similarly participate in GMFMC and regulations across all U.S. Gulf States are compatible with federal regulations.</p> <p><u>Interanational:</u> 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</p>		
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¹ GMFMC Shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² 2008 Brown and White shrimp stock assessment <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 (i) - Have long-term management objectives been translated into a plan or other management document (subscribed to by all interested parties)?

- Is there a plan? **Yes...**[1] **In part...**[½] **No...**[0]

Extent of compliance		
Yes	In Part	No

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 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. 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

The goals and objectives of the shrimp FMP are:

- 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

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:

- 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.

ADCNR participates in the GMFMC process, and manages the shrimp fishery in state waters consistent with federal regulations and recommendations.

Alabama:

Alabama does not have a formal fishery management plan specific to the shrimp

fishery. The fishery is governed under legislative statutes and regulations promulgated through the Alabama Administrative Code, and is consistent with regulations and recommendations of the federal GMFMC shrimp FMP. ^{2,3}	
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¹ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

² Ala. Code, Title 9, Chapter 2 <http://codes.lp.findlaw.com/alcode/9/2>

³ Ala. Admin. Code, r. 220-3-01 <http://www.alabamaadministrativecode.state.al.us/docs/con /220-3.pdf>

7.3.3 (ii) - Is it subscribed to? **Yes... [1] Some... [1/2] 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.</p> <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.</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> <p>Alabama: Alabama 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. ADCNR marine patrol enforces all state fisheries regulations as well as federal regulations through the Joint Enforcement Agreement.</p>		

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

² NOAA Fisheries Office of Law Enforcement <http://www.nmfs.noaa.gov/ole/>

³ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ ADCNR Commercial Shrimping Regulations

⁵ NOAA Cooperative enforcement programs

http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

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 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. 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 Gulf Shrimp System, 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.⁴ Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery.⁵ Each Gulf state (including Alabama) 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 (see below for details).</p> <p>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.⁶</p> <p>NOAA Fisheries data are also gathered through observer programs.⁷ 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 evaluates turtle</p>		

excluder devices (TEDs) and bycatch reduction devices (BRDs). 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.⁸ All five Gulf states contribute to this effort.⁹

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.¹⁰ The Fisheries Information Network (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 U.S. Fish and Wildlife Service, the National Park Service, GMFMC and GSMFC. Its purpose is the collection, management and dissemination of statistical data and information on fisheries throughout the region.^{11,12} Trip Ticket Programs in each of the five Gulf States are coordinated through the FIN program. The Interjurisdictional Fisheries (IJF) Program coordinates management efforts between the five states through regular meetings and the development of regional FMPs.¹³

The Southeast Area Monitoring and Assessment Program (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.^{14,15}

At the state level, ADCNR MRD personnel regularly work with other state agencies and research institutes (Dauphin Island Sea Lab (DISL), Alabama Department of Environmental Management (ADEM), , and the Alabama Cooperative Extension Program (ACES)) as well as federal agencies (NOAA Fisheries, U.S. Fish and Wildlife Service, and the U.S. Geological Survey).^{16,17,18,19,20} This work includes specific data collecting practices. ADCNR MRD conducts fishery-independent sampling in collaboration with ADEM and these agencies also collaborate on sampling and testing procedures to determine the safety of commercial seafood.^{21,22} ADCNR representatives also attend GMFMC and GSMFC meetings and assist in the data collection efforts detailed above.

¹ GMFMC <http://gulfcouncil.org/about/index.php>

² GMFMC Resource Library http://gulfcouncil.org/resources/resource_library.php

³ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ NOAA SEFSC Economics of the Federal Gulf Shrimp Fishery Annual Report website publication
<http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁷ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹⁰ GSMFC Fisheries Economic Data Program <http://www.gsmfc.org/#:content@18:links@19>

¹¹ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

¹² 2014 Operations Plan for the Fisheries Information Network in the Southeastern United States. FIN. June 2013. GSMFC Number 218. <http://www.gsmfc.org/publications/GSMFC%20Number%20218.pdf>

¹³ GSMFC IJF Program <http://www.gsmfc.org/#:content@11:links@17>

¹⁴ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

¹⁵ Annual Report to the Technical Coordinating Committee Gulf States Marine Fisheries Commission. October 1, 2012 to September 30, 2013. SEAMAP Subcommittee. October 8, 2013 GSMFC No: 221
<http://www.gsmfc.org/publications/GSMFC%20Number%20221.pdf>

¹⁶ Dauphin Island Sea Lab Coastal Initiative Program http://www.disl.org/coastal_initiative

¹⁷ ADEM <http://adem.alabama.gov/default.cnt>

¹⁸ Alabama Cooperative Extension Service (ACES) <http://www.aces.edu/main/>

¹⁹ USFWS National Wildlife Refuges <http://www.fws.gov/refuges/refugeLocatorMaps/Alabama.html>

²⁰ USGS <http://waterdata.usgs.gov/nwis/>

²¹ FAMP <http://www.outdooralabama.com/sample-processing>

²² Alabama Seafood Testing Results http://www.adph.org/epi/assets/AL_Seafood_Testing_Results+.pdf

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

Extent of compliance		
Yes	Some	No
Fisheries research for the Gulf of Mexico shrimp stocks is mainly conducted by NOAA Fisheries, with additional research on inshore waters by individual state agencies. This research is shared through the GMFMC and GSMFC processes. ^{1,2}		

Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the Gulf Shrimp System, 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.⁴ Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery. Each Gulf state (including Alabama) 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 (see below for details).

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.⁵

NOAA Fisheries data are also gathered through observer programs.⁶ 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 evaluates turtle excluder devices (TEDs) and bycatch reduction devices (BRDs). 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.⁷ All five Gulf states contribute to this effort.⁸

The GMFMC maintains a Scientific and Statistical Committees (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."⁹ The SSC typically includes economists, biologists, sociologists and natural resource attorneys who are knowledgeable about the technical aspects of Gulf fisheries and includes representatives from each Gulf state. 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 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.¹⁰ The Fisheries Information Network (FIN) was developed to coordinate 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 U.S. Fish and Wildlife Service, the National Park Service, GMFMC and GSMFC to collect, manage and disseminate statistical data and information on fisheries throughout the region.^{11,12} The Interjurisdictional Fisheries (IJF) Program coordinates management efforts between the five states through the development of regional FMPs for fisheries not covered by a GMFMC FMP.¹³ The Southeast Area Monitoring and Assessment Program (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.^{14,15}

At the state level, ADCNR MRD personnel regularly work with other state agencies and research institutes (Dauphin Island Sea Lab (DISL), Alabama Department of Environmental Management (ADEM), , and the Alabama Cooperative Extension Program (ACES)) as well as federal agencies (NOAA Fisheries, U.S. Fish and Wildlife Service, and the U.S. Geological Survey).^{16,17,18,19,20} This work includes specific data collecting practices. ADCNR MRD conducts fishery-independent sampling in collaboration with ADEM and these agencies also collaborate on sampling and testing procedures to determine the safety of commercial seafood.^{21,22} ADCNR representatives also attend GMFMC and GSMFC meetings and assist in the data collection efforts detailed above.

¹ GMFMC <http://gulfcouncil.org/about/index.php>

² GSMFC <http://www.gsmfc.org/>

³ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ NOAA SEFSC Economics of the Federal Gulf Shrimp Fishery Annual Report website publication
<http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁶ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁷ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ 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&rgn=div8

¹⁰ GSMFC Fisheries Economic Data Program <http://www.gsmfc.org/#:content@18:links@19>

¹¹ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

¹² 2014 Operations Plan for the Fisheries Information Network in the Southeastern United States. FIN. June 2013. GSMFC Number 218. <http://www.gsmfc.org/publications/GSMFC%20Number%20218.pdf>

¹³ GSMFC IJF Program <http://www.gsmfc.org/#:content@11:links@17>

¹⁴ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

¹⁵ Annual Report to the Technical Coordinating Committee Gulf States Marine Fisheries Commission. October 1, 2012 to September 30, 2013. SEAMAP Subcommittee. October 8, 2013 GSMFC No: 221 <http://www.gsmfc.org/publications/GSMFC%20Number%20221.pdf>

¹⁶ Dauphin Island Sea Lab Coastal Initiative Program http://www.disl.org/coastal_initiative

¹⁷ ADEM <http://adem.alabama.gov/default.cnt>

¹⁸ Alabama Cooperative Extension Service (ACES) <http://www.aces.edu/main/>

¹⁹ USFWS National Wildlife Refuges <http://www.fws.gov/refuges/refugeLocatorMaps/Alabama.html>

²⁰ USGS <http://waterdata.usgs.gov/nwis/>

²¹ FAMP <http://www.outdooralabama.com/sample-processing>

²² Alabama Seafood Testing Results http://www.adph.org/epi/assets/AL_Seafood_Testing_Results+.pdf

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

Extent of compliance		
Yes	Some	No
GSMFC promotes cooperation in management between the five states and federal agencies. The GSMFC 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 U.S. Coast Guard, U.S. Fish and Wildlife Service, Department of State, and the Gulf States Marine Fisheries Commission. GSMFC meets five times a year at various locations around the Gulf coast. GSMFC also maintains a specific Shrimp Management Committee including management representatives from the state agencies, NOAA Fisheries, and GSMFC; a Shrimp Advisory Panel composed of shrimp industry representatives from across the Gulf and a Shrimp SSC made up on biologists from each of the state agencies. ^{2,3} These processes ensure continued communication and collaboration between state and federal agencies and industry participants on fishery		

management for the Gulf shrimp fishery.

Furthermore, the GMFMC shrimp FMP goals and objectives include “3) 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:

- 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. The Fisheries Economic Data Program collects economic data on recreational and commercial fisheries to monitor economic performance and impacts and aids management agencies in all five Gulf States.⁴ The Fisheries Information Network (FIN) provides coordinated and comprehensive data on both commercial and recreational fisheries to managers throughout the Gulf.^{5,6} The Interjurisdictional Fisheries (IJF) Program coordinates management efforts between the five states through regular meetings and the development of regional FMPs for species not covered under GMFMC FMPs.⁷ The Southeast Area Monitoring and Assessment Program (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.^{8,9}

¹ GMFMC <http://gulfcouncil.org/>

² GMFMC Committees, Advisory Panels, and SSCs http://gulfcouncil.org/panels_committees/index.php

³ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

⁴ GSMFC Fisheries Economic Data Program <http://www.gsmfc.org/#:content@18:links@19>

⁵ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

⁶ 2014 Operations Plan for the Fisheries Information Network in the Southeastern United States. FIN. June 2013. GSMFC Number 218. <http://www.gsmfc.org/publications/GSMFC%20Number%20218.pdf>

⁷ GSMFC IJF Program <http://www.gsmfc.org/#:content@11:links@17>

⁸ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

⁹ Annual Report to the Technical Coordinating Committee Gulf States Marine Fisheries Commission. October 1, 2012 to September 30, 2013. SEAMAP Subcommittee. October 8, 2013 GSMFC No: 221
<http://www.gsmfc.org/publications/GSMFC%20Number%20221.pdf>

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

Extent of compliance		
Yes	Some	No
<p>FAO definition of development “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 indentified, 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 lead 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 Fisheries Department Glossary <http://www.fao.org/fi/glossary/>

² GMFMC <http://gulfcouncil.org/>

³ SEFSC Galveston Lab- cELB program <http://www.galvestonlab.sefsc.noaa.gov/ELB/index.html>

⁴ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁵ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

⁶ GSMFC ODRP Program <http://www.gsmfc.org/#:content@10:links@11>

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>Federal: 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</p>		

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.

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.³ 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.⁴ 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.⁵ 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.⁶

Gulf States:

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 their Commission, GSMFC publishes reports in the publications area of their website.⁷ 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.^{8,9} SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys. Objectives include (but are not limited to):¹⁰

- Monitoring panaeid 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.^{11,12} These reports assessed the economic landscape of the shrimp industry, providing revenue, operating cost, annual expenditure, employment, and harvesting/harvester data.

Alabama:

The ADCNR/MRD maintains databases for fishery-dependent and fishery-independent data and the department conducts additional studies as the need arises.^{13,14}

Fishery independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).¹⁵ ADCNR began fisheries data collection in 1977, initially for shrimp and crab, and has continued to revise the program to improve the quality and scope of sampling. Most recently, in 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl) for collection of juveniles and adults within deeper waters, seines targeting juveniles in shoreline habitats, and beam plankton trawls (BPLs) targeting early life history stages of specimens in nearshore habitats. Sampling for each method is conducted monthly at fixed locations; stations were determined at the start of the program to be most representative of the fauna found in Alabama waters. Sampling is conducted in Perdido Bay, Little Lagoon, Mississippi Sound, Lower and Upper Mobile Bay and Alabama territorial sea. All specimens collected during sampling are retained and brought to the Dauphin Island Laboratory for processing. MRD staff utilize these data to assess stock abundance, trends, and fisheries impacts. The Trip Ticket Program gathers commercial harvest data that is reported on a per trip basis and submitted to ADCNR monthly.¹⁶ These programs ensure constant monitoring of fishery resources.

¹ SEFSC Research <http://www.sefsc.noaa.gov/research/>

² SEFSC Galveston Lab- Shrimp Fishery Research
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ Gulf Shrimp System <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ 2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁵ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁶ Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁷ GSMFC publications <http://www.gsmfc.org/#:content@10:links@6>

⁸ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

⁹ GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

¹⁰ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹¹ GSMFC Recreational shrimpers publication
<http://www.gsmfc.org/publications/GSMFC%20Number%202228.pdf>

¹² GSMFC Economic survey <http://www.gsmfc.org/publications/GSMFC%20Number%202227.pdf>

¹³ FAMP <http://www.outdooralabama.com/sample-processing>

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 ADCNR MRD, revised March 2012. Assessment Sampling- Standard Operating Procedures. unpublished.

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

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. <p>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.</p> <p>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</p>		

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

Alabama:

Since 1998 ADCNR's FAMP program has partnered with ADEM to collect environmental data, such as water quality parameters, during fishery-independent sampling.^{8,9} ADCNR also collaborates with the Mobile Bay NEP on environmental monitoring and watershed management.^{10,11} ADCNR also utilizes research from the Dauphin Island Sea Lab (DISL) Coastal Initiative Program.¹² DISL was founded by the State Legislature and is Alabama's marine science education and research laboratory. Projects from DISL address effects of climatic and environmental change on fish stocks and ecosystems through program such as the Marine Ecosystems Response Lab.¹³ Mississippi-Alabama Sea Grant Consortium (MASGC) Sustainable Fisheries and Aquaculture section also contributes to research relating to climatic and environmental factors effecting Alabama fisheries.¹⁴

¹ NOAA http://www.nmfs.noaa.gov/stories/2014/03/climate_portal.html

² 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
http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/draft_NOAA%20Fisheries_Climate_Science%20Strategy_Jan_2015.pdf

⁴ NOAA Assessing Vulnerability of Fish Stocks
<http://www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks>

⁵ NOAA Fisheries Climate Tools <http://www.st.nmfs.noaa.gov/ecosystems/climate/tools/index>

⁶ OCEANADAPT <http://oceanadapt.rutgers.edu/>

⁷ Ecosystem Status NOAA Fisheries "Report for the Gulf of Mexico" December 2013
<http://gulfcouncil.org/docs/Gulf%20of%20Mexico%20Ecosystem%20Status%20Report.pdf>

⁸ FAMP <http://www.outdooralabama.com/sample-processing>

⁹ ADEM <http://adem.alabama.gov/default.cnt>

¹⁰ Mobile Bay National Estuary Program- environmental monitoring <http://www.mymobilebay.com/>

¹¹ Mobile Bay NEP- watershed management
http://www.mobilebaynep.com/news/successful_restoration_project_benefiting_mobile_bay

¹² Dauphin Island Sea Lab Coastal Initiative Program http://www.disl.org/coastal_initiative

¹³ Marine Ecosystems Response Lab <http://merl.disl.org/>

¹⁴ Mississippi-Alabama Sea Grant Consortium (MASGC) Sustainable Fisheries and Aquaculture
<http://masgc.org/projects/details/a-circulation-and-transport-model-for-fishery-management-in-mobile-bay-and-eastern-mississippi-sound>

7.4.2 (iii) - the socio-economic context? **Yes... [1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p>Federal:</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.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 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 Alabama.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>Gulf States:</p> <p>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</p>		

for the U.S. Gulf of Mexico.^{9,10}

Alabama:

ADCNR currently does not have a socio-economic department within its fisheries management and utilizes the work of the GSMFC and NOAA Fisheries assessments, and/or assesses socio-economic factors on a case by case basis for specific needs when developing management measures.

ADCNR conducts scoping meetings, direct stakeholder communications, public hearings, and provides public comment opportunities to address socioeconomic aspects for potential regulation changes.^{11,12,13,14} Additionally, ADCNR, when setting new regulations for the fishery, is required by the Administrative Procedures Act to evaluate local economic impact prior to adoption of any proposal.¹⁵ A fiscal note evaluating economic impact evaluations are included in the proposal, and proposed rules must be published in the *Alabama Administrative Monthly* 35 days prior to action to allow for public comment.

¹ SEFSC Economic Research- shrimp <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

² NOAA SEFSC Social Science Research Group <http://www.sefsc.noaa.gov/socialscience/>

³ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.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 GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ GSMFC Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>

⁷ 2008 Economic Survey of Inshore Shrimp Fleet GSMFC <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

⁸ 2012 Economic Survey of Inshore Shrimp Fleet GSMFC <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 Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

¹² ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

¹³ ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

¹⁴ ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

¹⁵ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

7.4.3 Has research been carried out on:

(i) - cost-benefits of fishing? **Yes... [1] Some... [½] No...[0]**

Extent of compliance	
N/A	
	Omitted from scoring at this time.

7.4.3 (ii) - alternative management strategies? **Yes... [1] Some... [½] 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>Alabama: ADCNR considers several potential management strategies as a part of the process of developing or modifying regulations and utilizes research and industry scoping to determine best course of action. ADCNR/MRD biologists have reviewed research done by other Gulf States, University of Alabama-Birmingham, Dauphin Island Sea Lab, and the Gulf Coast Research Lab to help guide in management decisions. Much of this research and dialog is conducted informally. Management options are presented and discussed at ACAB meetings and the advisory board makes recommendations to the Commissioner based on thorough discussion of options. ACAB agendas are available to indicate topics of discussion and meeting minutes are posted online.</p>		

¹ GMFMC Shrimp FMP and Amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

² GMFMC Briefing Materials http://gulfcouncil.org/resources/council_meeting_briefing_books.php

³ Alabama Conservation Advisory Board meeting Minutes <http://www.outdooralabama.com/conservation->

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... [½] 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 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. 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.² 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. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. 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 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.³</p> <p>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. 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.⁴ 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 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 bycatch reduction device evaluation.^{5,6}</p> <p>50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁷</p>		

<p>6- 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.</p> <p>7- 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.</p> <p>8- 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.</p> <p>9- 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.</p> <p>10- 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:</p> <ol style="list-style-type: none"> 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 <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 abundance.⁹</p> <p>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} SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys. Objectives include (but are not limited to)¹²:</p> <ul style="list-style-type: none"> • Monitoring panaeid 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 <p>The Fisheries Economic Data Program published peer-reviewed economic reports in 2014.^{13,14} These reports assessed the economic landscape of the shrimp industry, providing revenue, operating cost, annual expenditure, employment, and harvesting/harvester data.</p>		
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Alabama:

ADCNR meets international standards of data collection through a series of programs including the Trip Ticket Program, the FAMP, and collaboration with other agencies such as GSMFC SEAMAP data collection program and NMFS port surveys through the Trip Interview Program (TIP).^{15,16,17,18} 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.

ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹⁹ 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. 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 ADCNR. Trip ticket data are checked against post agent sampling data for verification, and enforcement agents conduct facility inspections to ensure compliance with reporting.^{20,21}

¹ SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³ NOAA Fisheries Statistics http://www.st.nmfs.noaa.gov/st1/market_news/

⁴ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵ Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ NOAA OST: National Observer Program: shrimp <https://www.st.nmfs.noaa.gov/observer-home/regions/southeast/shrimp>

⁷ 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>

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

⁹ SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹¹ GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

¹² GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹³ GSMFC Recreational shrimpers publication

<http://www.gsmfc.org/publications/GSMFC%20Number%20228.pdf>

¹⁴ GSMFC Economic survey <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

¹⁵ Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹⁶ FAMP <http://www.outdooralabama.com/sample-processing>

¹⁷ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

¹⁸ NOAA SEFSC Trip Interview Program (TIP) <http://www.sefsc.noaa.gov/interview/>

¹⁹ (Donaldson, D. 2004)

²⁰ Schaffer, Nicole. ADCNR Biologist II. Personal Communication. May 2015.

²¹ (Donaldson, D. 2004)

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... [½] 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.¹ This research largely focuses on participant and community dependence and engagement in fisheries and is directed by the principles of the MSA National Standard 8.²</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 communities in Alabama.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</p>		

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}

Alabama:

ADCNR conducts scoping meetings, direct stakeholder communications, public hearings, and provides public comment opportunities to address socioeconomic aspects for potential regulation changes.^{15,16,17,18} Additionally, ADCNR, when setting new regulations for the fishery, is required by the Administrative Procedures Act to evaluate local economic impact prior to adoption of any proposal.¹⁹ A fiscal note evaluating economic impact evaluations are included in the proposal, and proposed rules must be published in the *Alabama Administrative Monthly* 35 days prior to action to allow for public comment.

¹ NOAA SEFSC Social Science Research Group <http://www.sefsc.noaa.gov/socialscience/>

² MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

³ SSRG Southeast Shrimp Fisheries <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁴ 2011 Economics of the Federal Gulf Shrimp Fishery Annual Report
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 NOAA OST Social Indicators <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 NOAA SERO Community Snapshot
http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

⁹ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹⁰ GSMFC Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>

¹¹ 2008 Economic Survey of Inshore Shrimp Fleet GSMFC

<http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

¹² 2012 Economic Survey of Inshore Shrimp Fleet GSMFC

<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 Dockside 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 Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

¹⁶ ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

¹⁷ ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

¹⁸ ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

¹⁹ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

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</p>		

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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.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. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. Data collection by port agents is conducted throughout the Gulf in a standardized protocol. 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.⁴ Additionally, all federal Gulf shrimp permit holders are required to report annual landings each year through the Annual Landings Form 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 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. Data collection by observers is carried out in a standard format defined in an observer manual.

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. Data are made available to both state and federal resource managers.⁸

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}

¹ GMFMC SOPP <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

³ Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ NOAA Fisheries Statistics http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 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>

⁶ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁸ SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

⁹ VanderKooy, Steve. GSMFC. Personal Communication. August, 2014.

¹⁰ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹¹ GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

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> <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. 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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.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. 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.⁴</p> <p>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</p>				

<p>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 abundance. Data are made available to both state and federal resource managers.⁸</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 Technical Coordinating Committee (TCC).⁹</p> <p>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}</p>		
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¹ GMFMC SOPP <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

³ Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ NOAA Fisheries Statistics http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 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>

⁶ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁸ SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

⁹ VanderKooy, Steve. GSMFC. Personal Communication. August, 2014.

¹⁰ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹¹ GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

7.4.7 With respect to the data collected for management purposes, are applicable confidentiality

requirements complied with? Yes... [1] Some... [½] 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 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, ADCNR 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 ADCNR falls under the Alabama Public Writings Law, which provides for the confidentiality of commercial or financial information.⁹ Seafood reporting requirements are defined in the Alabama Administrative Code §220-3-.35.¹⁰</p>		

¹ [GMFMC SOPP](#)

² 50 CFR §600.130 <http://www.gpo.gov/fdsys/pkg/CFR-2010-title50-vol8/pdf/CFR-2010-title50-vol8-sec600-130.pdf>

³ 50 CFR §600.405 <https://www.law.cornell.edu/cfr/text/50/600.405>

⁴ 50 CFR §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 ADCNR Publications <http://www.outdooralabama.com/publications>

⁹ Ala. Code §36-12-40: Alabama public writings law <http://codes.lp.findlaw.com/alcode/36/12/3/36-12-40>

¹⁰ Ala. Admin. Code, r. 220-3.35 http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.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...**[¹/₂] **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 national standards are as follows:²</p> <ul style="list-style-type: none">- 1) Achieve OY and prevent overfishing- 2) based on best available scientific evidence- 3) Manage stocks as a unit- 4) Allocations should be fair and equitable, promote conservation, and prevent excessive shares- 5) Consider efficiency in utilization; not have economic allocation as sole purpose- 6) Allow for variations and contingencies- 7) Minimize costs and avoid duplication- 8) Consider fishing communities to provide for their sustained participation and to minimize adverse economic impacts- 9) Minimize bycatch and bycatch mortality- 10) Promote safety of human life at sea <p>NOAA Fisheries has developed a set of guidelines for each National Standard and all FMPs, amendments and regulations must comply with the National Standards</p>		

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 National Standard 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

MSY:

- Brown shrimp: 67 to 104 million pounds of tails
- White shrimp: 35 to 71 million pounds of tails
- Pink shrimp: 6 to 19 million pounds of tails

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.

Currently, the limit reference points for the fishery are set as minimum parent stock size. Overfishing and Overfished thresholds for , and pink shrimp are:

	overfishing	overfished
brown shrimp	125,000,000 individuals, age 7+ months (November – February)	63,000,000 individuals, age 7+ months (November – February)
white shrimp	330,000,000 individuals, age 7+ months (May – August)	165,000,000 individuals, age 7+ months (May – August)
Pink shrimp	100 million individuals, age 5+ months (July – June)	50 million individuals, age 5+ months (July – June)

Penaied 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:⁶

(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.

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 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.

The proposed reference points are:⁷

MSY

- Brown shrimp: MSY is 146,923,100 lbs. of tails
- White shrimp: MSY is 89,436,907 lbs. of tails
- Pink shrimp: MSY is 17,345,130 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 (FMSY).

- Brown shrimp: $F_{MSY} = 9.12$
- White shrimp: $F_{MSY} = 3.48$
- Pink shrimp: $F_{MSY} = 1.35$

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 (SSBMSY).

- Brown shrimp: SSBMSY is 6,098,824 pounds of tails
- White shrimp: SSBMSY is 365,715,146 pounds of tails
- Pink shrimp: SSB_{MSY} is 23,686,906 pounds of tails

These values will be updated every 5 years through the framework procedure, unless changed earlier by the GMFMC.

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, white, and pink shrimp stocks have been monitored by NOAA Fisheries

since 1970, and have remained above the minimum parent stock size thresholds; therefore, have not been determine overfished or overfishing. The 2007 stock assessment for pink shrimp did initially find that pink shrimp were experiencing overfishing; however, it was determined that the traditional model used (VPA) could not accommodate low effort and the finding of overfishing was not accurate. This prompted a change in the model used for shrimp assessments, which are now conducted with a Stock Synthesis Model approved by the GMFMC SSC as the best available model for this species.⁸ Recent assessments of the fishery have determined that the current fleet capacity does not have the ability to overfish stocks.⁹ 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.¹⁰

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.¹¹ 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).¹² 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.

Alabama:

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 Alabama, 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. Alabama 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 MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ GMFMC shrimp FMP and amendments
http://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 shrimp FMP Amendment 13
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁶ [50 C.F.R. 600.310](#)

⁷ GMFMC Shrimp FMP proposed amendment 15
<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁸ Nance, J. M. 2008. Review of the status and health of the shrimp stocks for 2007. Report to the Gulf of Mexico Fishery Management Council. August 2008. 6 pp.
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202008-08/D%20-%203%20NMFS%20Status%20&%20Health%20of%20Shrimp%20Stocks.pdf>

⁹ Nance et al 2008 "ESTIMATION OF EFFORT, MAXIMUM SUSTAINABLE YIELD, AND MAXIMUM ECONOMIC YIELD IN THE SHRIMP FISHERY OF THE GULF OF MEXICO"
http://docs.lib.noaa.gov/noaa_documents/NMFS/SEFSC/TM_NMFS_SEFSC/NMFS_SEFSC_TM_570.pdf

¹⁰ [50 C.F.R. 600.310](#)

¹¹ 2015 Southeast Shrimp Biological Opinion
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

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. (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. (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>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>ADCNR 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 sensitive habitat and smaller shrimp.</p>		

¹ [50 C.F.R. 600.310](http://www.ecfr.gov/title16/chapterII/subchapterB/part300/section300.310)

² GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

7.5.2 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?

- 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 - Pink shrimp: 6 to 19 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 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 pounds of tails - White shrimp: MSY is 89,436,907 pounds of tails - Pink shrimp: MSY is 17,345,130 pounds of tails 		

¹GMFMC shrimp FMP Amendment 13

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²GMFMC Shrimp FMP proposed amendment 15

<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

(7.5.2 cont.)

- Have limit reference points been established? **Yes...**[1] **In part...**[1/2] **No...**[0]

Extent of compliance								
Yes	In part	No						
<p>Currently, the limit reference points for the fishery are set as minimum parent stock size. Overfishing and Overfished thresholds for brown and white shrimp are:¹</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <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> </tbody> </table>		overfishing	overfished	brown shrimp	125,000,000 individuals (November – February)	63,000,000 individuals (November – February)		
	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)
Pink shrimp	100 million individuals, age 5+ months (July – June)	50 million individuals, age 5+ months (July – June)

Brown, white and pink 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. The 2007 stock assessment for pink shrimp did initially find that pink shrimp were experiencing overfishing; however, it was determined that the traditional model used (VPA) could not accommodate low effort and the finding of overfishing was not accurate. This prompted a change in the model used for shrimp assessments, which are now conducted with a Stock Synthesis Model approved by the GMFMC SSC as the best available model for this species.²

The recent changes made to the model used in stock assessments for penaeid shrimp in the Gulf of Mexico now requires adjustments to the reference points. 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, which produces different outputs. 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.

The proposed reference points are:³

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: $F_{MSY} = 3.48$
- Pink shrimp: $F_{MSY} = 1.35$

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
- Pink shrimp: SSB_{MSY} is 23,686,906 pounds of tails

These values will be updated every 5 years through the framework procedure, unless changed earlier by the GMFMC.

¹GMFMC shrimp FMP Amendment 13

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²Nance, J. M. 2008. Review of the status and health of the shrimp stocks for 2007. Report to the Gulf of Mexico Fishery Management Council. August 2008. 6 pp.

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/BB%202008-08/D%20-%203%20NMFS%20Status%20&%20Health%20of%20Shrimp%20Stocks.pdf>

³GMFMC Shrimp FMP proposed amendment 15

<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

(7.5.2 cont.)

- Have data and assessment procedures been installed measuring the position of the fishery in relation to the reference points established? **Yes... [1] Some... [1/2] 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 reference points were set. GMFMC and NOAA Fisheries are currently in the process of updating the SDC for shrimp to match the current model outputs.²</p>		

¹SEFSC Galveston Lab Shrimp Research

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

²GMFMC Shrimp FMP proposed amendment 15

<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

(7.5.2 cont.)

- 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... [1/2] No... [0]**

Extent of compliance		
Yes	Some	No
<p>Penaied 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>(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 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</p>		

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.

Current actions defined should the fishery be determined overfished are:²

“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:

- 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.”

Amendment 15, which proposes a change in the SDC, also proposes the following actions should these new reference points be exceeded:³

- “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.⁴ 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 group
- Public Health- to prevent significant adverse health effects to fishery participants and/or consumers

¹ [50 C.F.R. 600.310](#)

² GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

³ GMFMC Shrimp FMP proposed amendment 15 <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ NOAA Policy Guidelines for Use of Emergency Rules http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

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:</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.”² <p>Amendment 15, which proposes a change in the SDC, also proposes the following actions should these new reference points be exceeded:³</p> <p>“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</p>		

<p>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.⁴ 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 group - Public Health- to prevent significant adverse health effects to fishery participants and/or consumers <p>There are currently no predetermined actions at the state level by ADCNR; however, Ala. Code §41-22-23 does provide for temporary emergency measures by granting authority to ADCNR to adopt emergency rules in the event that there is an immediate the public or the resource regulated by the department.⁵ Such rulings become immediately effective upon filing and are published in the <i>Alabama Administrative Monthly</i>.⁶</p>		
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¹ [50 C.F.R. 600.310](#)

² GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

³ GMFMC Shrimp FMP proposed amendment 15 <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ NOAA Policy Guidelines for Use of Emergency Rules http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

⁵ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

⁶ *Alabama Administrative Monthly* <http://www.alabamaadministrativecode.state.al.us/monthly.html>

7.5.5 (b)(i) Have these emergency (temporary) responses been agreed to due to:
 - natural phenomena adversely impacting the stock? **Yes...**[1] **In Part...**[1/2] **No...**[0]

Extent of compliance		
Yes	In Part	No
<p>The current actions defined in the event that stock should drop below limit reference points are: “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</p>		

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:

- 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.”²

Amendment 15, which proposes a change in the SDC, also proposes the following actions should these new reference points be exceeded:³

“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.”

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.⁴ 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 group
- Public Health- to prevent significant adverse health effects to fishery participants and/or consumers

There are currently no predetermined actions at the state level by ADCNR; however, Ala. Code §41-22-23 does provide for temporary emergency measures by granting authority to ADCNR to adopt emergency rules in the event that there is an immediate the public or the resource regulated by the department.⁵ Such rulings become immediately effective upon filing and are published are published in the *Alabama Administrative Monthly*.⁶

¹ [50 C.F.R. 600.310](#)

² GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend->

[05%20Draft%201991-01.pdf](#)

³ GMFMC Shrimp FMP proposed amendment 15

<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ NOAA Policy Guidelines for Use of Emergency Rules

http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

⁵ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

⁶ Alabama Administrative Monthly <http://www.alabamaadministrativecode.state.al.us/monthly.html>

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
<p>The current actions defined in the event that stock should drop below limit reference points are:</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.”² <p>Amendment 15, which proposes a change in the SDC, also proposes the following actions should these new reference points be exceeded:³</p> <p>“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.⁴ Such emergency regulations may remain in effect until the circumstance no longer existed, provided that there is an opportunity for public</p>		

<p>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 group - Public Health- to prevent significant adverse health effects to fishery participants and/or consumers <p>There are currently no predetermined actions at the state level by ADCNR; however, Ala. Code §41-22-23 does provide for temporary emergency measures by granting authority to ADCNR to adopt emergency rules in the event that there is an immediate the public or the resource regulated by the department.⁵ Such rulings become immediately effective upon filing and are published in the <i>Alabama Administrative Monthly</i>.⁶</p>		
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¹ [50 C.F.R. 600.310](#)

² GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

³ GMFMC Shrimp FMP proposed amendment 15 <http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁴ NOAA Policy Guidelines for Use of Emergency Rules http://www.nmfs.noaa.gov/sfa/management/councils/training/2014/c_h2_policy_directive_01-101-07.pdf

⁵ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

⁶ *Alabama Administrative Monthly* <http://www.alabamaadministrativecode.state.al.us/monthly.html>

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><u>Federal:</u> 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 is currently in 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. The draft scoping document for Amendment 17 provides updated analysis of the shrimp fleet and indicates 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 in the fishery has been operating well below MSY for several years.^{3,4}

Alabama:

ADCNR MRD currently does not limit the number of licenses available for the commercial shrimp fishery. A Commercial Shrimp Boat License is required to harvest shrimp in Alabama waters, and MRD monitors the number of licenses operating in the fishery.⁵ Landings and effort data are also reported monthly through the Trip Ticket Program.⁶ MRD annually reviews stocks, primarily based on landings, Trip Ticket data, and independent monitoring data to determine trends in the fishery and coordinates with GMFMC.

Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp imports began to impact domestic shrimp ex-vessel prices and placed an economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip.⁷ This downward trend has continued since 2004 and is expected to continue indefinitely.

¹GMFMC shrimp FMP Amendment 13
<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²GMFMC shrimp FMP draft scoping document for Amendment 17
http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

³GMFMC Ad Hoc Shrimp Effort Working Group. (2006) "Estimation of Effort, Maximum Sustainable Yield, and Maximum Economic Yield in the Shrimp Fishery of the Gulf of Mexico"
http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL_AdHocEffortReport_1.pdf

⁴Nance et al. 2008 “ESTIMATION OF EFFORT, MAXIMUM SUSTAINABLE YIELD, AND MAXIMUM ECONOMIC YIELD IN THE SHRIMP FISHERY OF THE GULF OF MEXICO”
http://docs.lib.noaa.gov/noaa_documents/NMFS/SEFSC/TM_NMFS_SEFSC/NMFS_SEFSC_TM_570.pdf

⁵ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

⁶ ADCNR. Personal Communication. June 2015.

⁷ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.
http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

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>Alabama: Anyone fishing commercially for shrimp in Alabama territorial waters must hold either a Residential Commercial Shrimp Boat License, or a Non-Resident Commercial Shrimp Boat License, a Saltwater Recreational Fishing License or a Live Saltwater Bait License.³</p>		

¹Commercial Fishing Regulations for Gulf of Mexico Federal Waters
http://gulfcouncil.org/fishing_regulations/CommercialRegulations.pdf

²CFR Title 50 §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

³ADCNR fishing regulations <http://www.outdooralabama.com/regulations-and-enforcement>

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</p>		

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.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. Since the implementation of the moratorium, license numbers have reduced from 1933 permits in 2007 to 1470 permits in 2014.³ The 10-year moratorium put in place by Amendment 13 expires in December of 2016 and the GMFMC is currently in 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.

Alabama:

Fleet capacity for the Alabama shrimp fishery can be measured by the number of active fishing licenses. Alabama currently requires one of the following licenses (for either residential or non-residential) if harvesting shrimp in state waters:⁴

- Shrimp Boat License- under 30' boat
- Shrimp Boat License- between 30' to 45' boat
- Shrimp Boat License- over 45' boat
- Saltwater Recreational Fishing License
- Live Saltwater Bait License

ADCNR monitors the number of licenses. The Trip Ticket Program was implemented to allow for greater detail in measuring effort and harvest data.^{5,6} The Trip Ticket Program collects data on a trip basis requiring reporting of vessel number, gear type, hours fished and harvest data.

¹Kirkely et al. (2006) Reducing Capacity in U.S. Fisheries. NOAA Technical Memorandum NMFS-F/SPO-76. <http://spo.nmfs.noaa.gov/tm/tm76.pdf>

²GMFMC shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³Draft options paper for Amendment 17 of GMFMC shrimp FMP http://gulfcouncil.org/council_meetings/Briefing%20Materials/BB-08-2015/D%20-%204%20Revised%20Draft%20Options%20Amendment%2017%20-Shrimp%20Permit%20Moratorium%20072915.pdf

⁴ADCNR fishing regulations <http://www.outdooralabama.com/regulations-and-enforcement>

⁵Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

⁶ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

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: 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. 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 and the GMFMC is currently in 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.</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:³ “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>Alabama: There is currently no limit on the fishing capacity for the shrimp fishery in Alabama waters. Licenses are required for commercial, recreational and live-bait shrimping in Alabama waters and ADCNR monitors license numbers annually.⁴ Participation in the Alabama shrimp fishery has declined significantly since 2001, when foreign shrimp imports began to impact domestic shrimp ex-vessel prices and placed an</p>		

economic burden on the fishery. From 2001 to 2004, there was a 31% reduction in trips taken by the inshore Alabama shrimp fleet and a 20% reduction in fishing time per trip. ⁵ This downward trend has continued since 2004 and is expected to continue indefinitely.		
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¹ GMFMC shrimp FMP Amendment 13

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

² Draft options paper for Amendment 17 of GMFMC shrimp FMP

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 shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁴ ADCNR, unpublished data. August 2015.

⁵ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005.

http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

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... [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> <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 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 Alabama, the inshore shrimp season for commercial and recreational harvest opens when the majority of shrimp are of legal size. ADCNR sampling each year confirms that shrimp have reached legal size (68 count per pound) when the season.² Live-bait shrimping; however, is allowed year-round under strict harvest regulations and there is no minimum size requirement.³ Other states have similar regulations for various direct user groups and conflicts have largely been minimized.</p> <p>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</p>		

<p>into Vietnamese, and education and training programs have help reduce these conflicts.⁴</p> <p>Conflicts with other fisheries and user groups have also been identified.</p> <ol style="list-style-type: none"> 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) 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.⁷ 3) Gear conflicts also occur in state waters between shrimpers and blue crab fishermen. Each of the five Gulf states, including Alabama, 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.^{8,9} 4) 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.^{10,11,12} Additionally, there are federal laws in place that provide for compensation to fishermen to cover damage to gear and vessels from underwater obstructions. 	
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¹ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² FAMP <http://www.outdooralabama.com/sample-processing>

³ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁴ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

⁵ U.S. CFR Title 50 Part 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.

⁷GMFMC shrimp FMP Amendment 3 http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁸ ADCNR Summary of Blue Crab Regulations [http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12\(1\).pdf](http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12(1).pdf)

⁹ 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>

¹⁰ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

¹¹ MS-AL Hang book <http://texasseagrant.org/assets/uploads/publications/1983/83-505.pdf>

¹² TX-LA Hang Book <http://texasseagrant.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 Alabama that rely on or utilize fishery resources in traditional practices; however, several coastal communities in Alabama have been identified as fishing communities.¹ NOAA Fisheries and ADCNR address 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} The draft proposal for GMFMC Amendment 17 contains updated analysis of fishing communities across the Gulf, community dependence on Gulf shrimp and community resilience.⁷</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>

²Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

³ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

⁴ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

⁵ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

⁶ GMFMC SOPP <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

⁷ Draft options paper for Amendment 17 of GMFMC shrimp FMP 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>Federal: The MSA National Standard 7 states “<i>Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.</i>” 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.”¹</p> <p>Additionally, National Standard 8 requires “<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>”²</p> <p>SEC. 303 (a)(9) of the MSA requires that FMPs include a fishery impact statement (FIS) for the plan or amendment.³ 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.</p> <p>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.⁴</p> <p>The GMFMC shrimp FMP complies with all requirement of the MSA and associated National Standards guidelines. The shrimp FMP and each Amendment contain assessments of economic and social impacts when considering each alternative for management actions.⁵</p> <p>Alabama: ADCNR holds scoping meetings, public hearings and public comment periods for each new regulation change/addition, which allow MRD staff to explore the economic and social impacts of various management strategies prior to setting regulations.^{6,7,8,9} Additionally, ADCNR, when setting new regulations for the fishery, is required by the Administrative Procedures Act to evaluate local economic impact prior to adoption of any proposal.¹⁰ A fiscal note evaluating economic impact evaluations are included in the proposal, and proposed rules must be published in the <i>Alabama Administrative Monthly</i> 35 days prior to action to allow for public comment.</p>				

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

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

³ MSA SEC. 303 (a)(9) <http://www.nmfs.noaa.gov/sfa/magact/mag3.html>

⁴ NOAA policies- RIR http://www.nmfs.noaa.gov/sfa/laws_policies/national_standards/documents/ns1-3-7_rir_clean_1-8-15.pdf

⁵ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

⁷ ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

⁸ ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

⁹ ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

¹⁰ Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>

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>Federal: 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 		

<ul style="list-style-type: none"> • 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>Alabama:</u></p> <p>ADCNR DMR 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.</p> <p>Pursuant to the Code of Alabama, Title 9, ADCNR is required to produce an annual report to the Governor on activities and accomplishments of the department.⁵ ADCNR rules and regulations are promulgated through the Administrative Procedures Act, approved by the Alabama Legislature in 1983. The Administrative Procedures Act define the rulemaking process, and requires the following actions prior to adoption of regulations:^{6,7}</p> <ul style="list-style-type: none"> - notification of intent - public hearing - 35-day comment period - Final review by a Joint House and Senate Review Committee <p>The Alabama Conservation Advisory Board (ACAB) is designed to provide advice on policies and regulations of ADCNR and reviews current and proposed regulations relating to fish and wildlife resources.⁸</p>		
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¹GMFMC Fishery Management Plan webpage http://gulfcouncil.org/fishery_management_plans/index.php

²NOAA Galveston Laboratory ELB Program webpage <http://www.galvestonlab.sefsc.noaa.gov/ELB/>

³2013 Framework Action to the Shrimp FMP <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20ELB%20Abbreviated%20Framework.pdf>

⁴NMFS Procedures for Development of Regulations http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm#existing

⁵Code of Alabama, Section 9-2-2 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

⁶Perry, H. VanderKooy, S. 2015. The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan. Gulf States Marine Fisheries Commission. Ocean Springs, MS. **In publication. Section 8.**

⁷Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>

⁸Code of Alabama, Section 9-2-14 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

7.6.8 (ii)- Does a flexible mechanism for revision of management measures exist? **Yes...**[1] **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 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.</p> <p>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</p> <p>Through these processes, both GMFMC and NMFS allow for flexibility within the management of the Gulf shrimp industry.</p> <p>Alabama: ADCNR rules and regulations are promulgated through the Administrative Procedures Act, approved by the Alabama Legislature in 1983.⁴ The Alabama Administrative Procedures Act was designed to:⁵</p> <ul style="list-style-type: none"> - Provide legislative oversight - Increase public accountability of administrative agencies - Simply government by a standard procedure that all agencies must follow - Increase public access to government information - Increase public participation in the development of administrative rules - Increase fairness in in case proceedings - Simply the judicial review process <p>The Administrative Procedures Act define 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 - 35-day comment period - Final review by a Joint House and Senate Review Committee <p>The Alabama Conservation Advisory Board (ACAB) is designed to provide advice on policies and regulations of ADCNR and reviews current and proposed regulations relating to fish and wildlife resources.⁷</p>		

¹GMFMC Fishery Management Plan webpage http://gulfcouncil.org/fishery_management_plans/index.php

²Office of Sustainable Fisheries Procedures for Development of Regulations
http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm

³NMFS Procedures for Development of Regulations
http://www.nmfs.noaa.gov/sfa/domes_fish/OperationalGuidelines/OGdevelop_regs.htm#existing

⁴Code of Alabama, Section 9-2-2 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

⁵ALA CODE § 41-22-2 <http://codes.lp.findlaw.com/alcode/41/22/41-22-2>

⁶Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>

⁷Code of Alabama, Section 9-2-14 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

7.6.9 (a) Are appropriate measures being applied to minimize:

- (i) - waste and discards? **Yes... [1] Some... [1/2] 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 Maintaining TED compliance and effectiveness rates</p>	

<p>is an ongoing effort throughout the Gulf of Mexico shrimp fishery.</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><u>Alabama:</u></p> <p>It is unlawful for any person to discard dead fish, fish parts or carcasses or other dead seafood within 500 feet of any shoreline. Additionally, it is unlawful for any person aboard a shrimping vessel to discard any dead seafood or bycatch into the waters of the Gulf of Mexico (including Pelican Bay) within three miles of the beach or into any creek, bayou, river or stream.¹³</p> <p>Alabama does not require BRDs in state waters; however, many fishermen use them voluntarily in certain seasons/areas to reduce incidental catch.</p> <p>Bycatch studies in neighboring 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 shrimp FMP Amendment 9 <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 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

⁵ GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

⁶ SEFSC Harvesting Systems Unit Gear Development <http://www.sefsc.noaa.gov/labs/mississippi/fishinggear.htm>

⁷ GMFMC shrimp FMP Amendment 14 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

⁸ 50 CFR § 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 2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.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 Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNNBMZzQ/view?pli=1>

¹³ Ala. Admin. Code, r. 220-3.31Crabs http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.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>Federal: Several regulations have been designed to minimize catch of non-target species in the shrimp fishery.</p> <p>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</p>	

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

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 Research shows that TEDs also allow the escape of larger finfish species, such as sharks.⁶ TEDs are 97% effective in allowing for release of turtles, and a compliance rate of 88% for TED use is required by the industry; therefore, some turtle mortality still occurs. TED compliance is currently enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers. The 2012 and 2014 biological opinions require an 88% effectiveness rate for TEDs in the Gulf and South Atlantic shrimp trawl fisheries.⁷ This rate is calculated using NOAA enforcement and inspection rates and 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.⁸ These compliance data are entered into a matrix to determine the overall effectiveness rate of TEDs in the shrimp trawl fleet on a quarterly basis. NOAA enforcement/inspection data are currently the only 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 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.⁹ 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 only about 200 vessels per year.¹⁰ Compliance rates are calculated by quarter, and small sample sizes in some months can lead to biases the overall compliance percentages.

TED compliance and effectiveness rates are a continuing concern for the fishery due to the problems mentioned above and because compliance rates have fluctuated around the minimum compliance rate for the past several years. From March to November 2011, the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.¹¹ 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.¹² TED compliance rates in the past year (April 2014- July 2015) have fluctuated monthly ranging between 76 and 97% compliance rates with an overall average above 90%.¹³

Bycatch data from the observer program between 2007 and 2010 indicated that 185 species were observed as incidental catch in the shrimp trawl fishery.¹⁴ 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.¹⁵

Red snapper (*Lutjanus campechanus*)

Red Snapper bycatch has previously been 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.¹⁶ This rebuilding plan included 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.¹⁷ 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).¹⁸ 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. 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.¹⁹ 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.²⁰

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.²¹ Since this time, the blacknose shark population has been divided into two separate populations- an Atlantic population and a Gulf of Mexico population.²² The Atlantic population

	<p>remains listed as overfished and overfishing; however, the GOM stock is currently considered unknown based on the 2011 NOAA Fisheries stock assessment.²³ 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.²⁴</p> <p>Alabama:</p> <p>It is unlawful for any person to discard dead fish, fish parts or carcasses or other dead seafood within 500 feet of any shoreline. Additionally, it is unlawful for any person aboard a shrimping vessel to discard any dead seafood or bycatch into the waters of the Gulf of Mexico (including Pelican Bay) within three miles of the beach or into any creek, bayou, river or stream.²⁵</p> <p>Alabama does not require BRDs in state waters; however, many fishermen use them voluntarily in certain seasons/areas to reduce incidental catch.</p> <p>Bycatch studies in neighboring 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).²⁶ 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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¹U.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

²GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

³SEFSC Harvesting Systems Unit Gear Development <http://www.sefsc.noaa.gov/labs/mississippi/fishinggear.htm>

⁴GMFMC shrimp FMP Amendment 14 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>

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

⁶Scott 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>

⁷2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

- ⁸ Penalty Matrix for Endangered Species Act TED Violations <http://www.shrimpalliance.com/new//wp-content/uploads/2012/03/2pagesfromPenaltyPolicy.pdf>
- ⁹ 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
- ¹⁰ NOAA Draft TED compliance policy http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf
- ¹¹ 2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf
- ¹² "TED compliance" NOAA Fisheries. Web. Accessed June 2015. http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html
- ¹³ NOAA, 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
- ¹⁴ 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>
- ¹⁵ Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWnNBMZzQ/view?pli=1>
- ¹⁶ "Red Snapper" *Fishwatch*. Web. Accessed June 2015.
- ¹⁷ GMFMC shrimp FMP Amendment 9 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-09%20Final%201997-02.pdf>
- ¹⁸ 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.
- ¹⁹ GMFMC shrimp FMP Amendment 14 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>
- ²⁰ Gallaway, Benny "Managing Shrimp Trawl Bycatch in the Gulf of Mexico" Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.
- ²¹ SEDAR 13: Stock Assessment Report- Small Coastal Shark Complex, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark http://www.nmfs.noaa.gov/sfa/hms/species/sharks/documents/shark_stock_assessment_report_11-14-07.pdf
- ²² SEDAR 21: HMS Gulf of Mexico Blacknose Shark Stock Assessment Summary report, 2011. http://www.nmfs.noaa.gov/sfa/hms/species/sharks/documents/gulf_of_mexico_blacknose_shark_assessment_summary_final.pdf

²³ NOAA, Status of Stocks Report, 2014
http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2014/2014_status_of_stocks_final_web.pdf

²⁴ 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>

²⁵ Ala. Admin. Code, r. 220-3.31Crabs http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

²⁶ 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)(iii) -impacts on associated, dependent or endangered species? **Yes...[1]Some... [½]No...[0]**

Extent of compliance		
Yes	Some	No
	<p>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.”¹</p> <p>The GMFMC shrimp FMP contains two goals/objectives that directly address this mandate of the MSA:²</p> <ul style="list-style-type: none"> - 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.” <p>ENDANGERED SPECIES:</p> <p>One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the Endangered Species Act (ESA), which includes five species of sea turtles (Hawksbill, green, Kemp’s Ridley, leatherback, and loggerhead), smalltooth sawfish, and Gulf sturgeon (a subspecies of Atlantic sturgeon). As required under the rigorous requirements of the ESA, each species has a recovery plan and designation of critical habitat. NOAA Office of Protected Species 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.³ 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.⁴ The opinion provides information on interactions</p>	

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.

Sea Turtles:

Turtle exclusion devices (TEDs) are required on all otter trawls and in skimmer trawls (exemption is allowed if maximum tow times are adhered to) in state and federal waters to reduce the bycatch of sea turtles.⁵ NRC (1990) determined that shrimp trawl bycatch was one of the most significant sources of mortality causing declines in sea turtle populations. Federal legislation went into effect requiring widespread use of TEDs in shrimp trawls in 1989 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. Compliance rates are actively monitored and a minimum 88% compliance rate with TED use must be maintained otherwise NOAA Fisheries is required to take action, which could include closing down the fishery. TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011):⁶

Species	Mortality	
	Pre-regulation	Post-Regulation
Atlantic/Gulf		
<i>Lepidochelys kempi</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 regulations for skimmer trawls 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). 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 much criticism from some stakeholders.⁷ NOAA is currently researching appropriate TED designs for skimmer trawls and education activities are underway to

increase awareness and compliance with tow time regulations for shrimpers not currently using TEDs in skimmers. The Alabama fleet only contains approximately 60 skimmer vessels within the 300 vessel fleet (based on trip ticket reporting from 2005-2014) and ADCNR enforces all TED regulations.⁸

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.⁹ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ ray catch.

ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.¹⁰

TED compliance is currently enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers. The 2012 and 2014 biological opinions require an 88% effectiveness rate for TEDs in the Gulf and South Atlantic shrimp trawl fisheries.¹¹ This rate is calculated using NOAA enforcement and inspection rates and 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 on a quarterly basis. NOAA enforcement/inspection data are currently the only 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 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 only 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.

TED compliance and effectiveness rates are a continuing concern for the fishery due to the problems mentioned above and because compliance rates have fluctuated around the minimum compliance rate for the past several years. From March to November 2011, the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.¹⁵ 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.¹⁶ TED compliance rates in the past year (April 2014- July 2015) have fluctuated monthly ranging between 76 and 97% compliance rates with an overall average above 90%.¹⁷

Additionally, NOAA, state agencies and shrimp industry members (including the Texas Shrimp Association) have contributed to efforts protecting sea turtle nesting beaches in Mexico and areas throughout the Gulf coast to assist in the recovery of sea turtle populations. 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.¹⁸

Smalltooth sawfish

The Recovery Plan for smalltooth sawfish cites bycatch in other fisheries as a primary reason for the decline of this species.¹⁹ 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 National Wildlife Refuges 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

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.²⁰ No regulatory actions are required directly in relation to bycatch of Gulf sturgeon for the shrimp fishery.

MARINE MAMMALS:

The Marine Mammal Protection Act (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.²¹ “Insignificant Level” is defined as less than 10% of the potential biological removal (PBR). 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. 1- high interaction, Cat. 2- med-low interaction, and Cat. 3- little or no known

<p>interactions. The Gulf of Mexico shrimp fishery is currently listed as a Category 2 fishery on the List of Fisheries.²² This determination was based on potential interactions with bottlenose dolphins.²³ 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. 2 ranking. Cat. 2 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. 2 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.</p>
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¹ MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

² GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

³ NOAA Office of Protected Species <http://www.nmfs.noaa.gov/pr/species/index.htm>

⁴ 2015 Southeast Shrimp Biological Opinion
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

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

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 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 ADCNR, Unpublished Data. August 2015.

⁹ ADCNR, *NFWF Final Programmatic Report*, 2014.

¹⁰ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015

¹¹ 2014 Southeast Shrimp Biological Opinion
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹² Penalty Matrix for Endangered Species Act TED Violations <http://www.shrimpalliance.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 Draft TED compliance policy
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf

¹⁵ 2014 Southeast Shrimp Biological Opinion
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹⁶ "TED compliance" NOAA Fisheries. Web. Accessed June 2015.
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html

¹⁷ NOAA, 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 SEFSC Galveston Lab sea turtle program <http://www.galvestonlab.sefsc.noaa.gov/seaturtles/index.html>

¹⁹ NOAA Office of Protected Species Smalltooth sawfish Recovery Plan- 2010 review
http://www.nmfs.noaa.gov/pr/pdfs/species/smalltoothsawfish_5yearreview.pdf

²⁰ NOAA Office of Protected Species Gulf Sturgeon Recovery Plan- 2009 review
http://www.nmfs.noaa.gov/pr/pdfs/species/gulfsturgeon_5yearreview.pdf

²¹ Marine Mammal Protection Act" NOAA Fisheries. Web. Accessed August 2015.
<http://www.nmfs.noaa.gov/pr/laws/mmpa/>

²² Office of Protected Species List of Fisheries <http://www.nmfs.noaa.gov/pr/interactions/lof/#report>

²³ NOAA Office of Protected Species. List of Fisheries- Southeastern 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>Alabama: AMRD personnel actively sample Alabama state waters in order to effectively manage marine fisheries for the state. The Fisheries Assessment and Monitoring Program (FAMP) provides fishery-independent data that helps determine the</p>		

<p>population status of marine organisms throughout Alabama’s coastal waters.² Trawl sampling is one of the numerous programs within the FAMP. The trawl sampling program, started in 1977, has consistently supplied the state with the necessary data to make informed decisions on when to open/close the shrimping season. This trawling program now provides not only shrimp data, but community-level data to help AMRD make ecosystem based management more effective.³ In 2010, in order to keep consistent with data collection methods of the Gulf State Marine Fisheries Commission (GSMFC), AMRD adjusted their sampling methods in accordance with GSMFC’s SEAMAP methods.⁴</p> <p>Legally, commercial shrimpers must not take shrimp smaller in size than 68 count (68 shrimp or less per pound). There are no legal size restrictions for recreational shrimp harvested.⁵</p>		
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¹U.S. CFR Title 50 Part 622 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622_156

²AMRD Sample Processing webpage <http://www.outdooralabama.com/sample-processing>

³AMRD Trawl Sampling webpage <http://www.outdooralabama.com/rawl-sampling>

⁴AMRD Sample Processing webpage <http://www.outdooralabama.com/sample-processing>

⁵2015 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

7.6.9 (b)(ii) - mesh size or gear? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal: 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>Alabama: Gear restrictions in Alabama are imposed by the ADCNR MRD to help control harvests and prevent habitat damage. There are currently no limitations on mesh size for commercial shrimpers. In certain inland waters, trawls (combined) cannot exceed 50’ measured along the main top line, with up to two trawls used at the same time (not including a try trawl, which must not exceed 10’ on the main top line).⁶ Commercial shrimpers (towing otter trawls) are required to use turtle excluder devises (TEDs).⁷ Those using skimmer trawls, pusher-head trawls, and butterfly nets may limit tow times in lieu of using TEDs. Recreational shrimpers are not required</p>		

<p>to use TEDs in otter trawls less than 16 feet if they are not using machinery, such as a winch or capstan, to retrieve their nets. Without machinery to pull their nets, recreational shrimpers have to check and empty their nets more often (as their load becomes heavier with longer tow times).^{8,9,10}</p> <p>Certain other restrictions apply to the commercial shrimping industry. Trawl wings must be cut and tied to the wing line only on points. It is illegal to use a trawl when the length of the top leg line exceeds the length of the bottom leg line. No webbing, mesh, or netting is allowed to be hung or tied between the rear of the trawl board or door and the adjacent wing line. It is also illegal to hang webbing, mesh, or netting between the top leg line and bottom leg line as to extend the width of the trawl over the legal width.¹¹</p> <p>Recreational shrimpers are allowed only one trawl not exceeding 16 feet as measured at the main top line. There are no restrictions on mesh size or on cast nets.¹²</p>	
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¹U.S. CFR Title 50 §622.9 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_19

²U.S. CFR Title 50 §622.54 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_154

³GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

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

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

⁶ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁷ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁸Gulf FINFO, Alabama Shrimp Profile, Management Program <http://gulffishinfo.org/Species?SpeciesID=99>

⁹NMFS TED regulations http://www.nmfs.noaa.gov/pr/pdfs/fr/ted_regulations.pdf

¹⁰ADCNR Recreational Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.pdf>

¹¹2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

¹²2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.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</p>	

	<p>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>Alabama:</p> <p>It is unlawful for shrimpers (commercial and recreational) to retain redfish or speckled trout caught via trawl. Discarding dead fish or dead seafoods within 500 feet of a shoreline or into Gulf of Mexico waters within three nautical miles of the Gulf beaches, or within streams, rivers, bayous, or creeks is illegal. To deter turtles from being caught in shrimp trawls, turtle excluder devices (TEDs) are required on all shrimp trawlers in state and federal waters.⁴ Commercial shrimpers may retain bycatch up to the recreational limit and according to legal requirements (size limits, etc.). Commercial shrimpers may retain crabs for commercial purposes if they also hold a Commercial crab license. Recreational shrimpers are limited to possession of five gallons of legal size crabs for personal consumption.⁵</p> <p>BRDs are not required in state waters, but are encouraged.</p>	
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¹U.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

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

³2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

⁴ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁵ADCNR Recreational Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.pdf>

7.6.9 (b)(iv) - closed seasons? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal:</p> <p>According to the U.S. Code of Federal Regulations, there are numerous closed areas at varying times throughout the Gulf EEZ. Shrimp sanctuaries are also in place in Gulf waters (which prohibit shrimping within their boundaries) to protect marine resources.</p> <p>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</p>		

Department). Federal waters open to shrimp fishing when Texas opens state waters. ²		
<p>Alabama:</p> <p>Shrimp seasons in Alabama are set by AMRD according to data collected through their sampling program. Waters are opened when the average sample is market sized or larger (68 head on per pound). Most season openings occur in early summer (and close in the spring).³</p> <p>There are permanently closed areas, along with designated exclusive bait areas, which are only open to live bait dealers year round.⁴</p>		

¹U.S. Code of Federal Regulations Title 50 §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

²NOAA FishWatch website http://www.fishwatch.gov/seafood_profiles/species/shrimp/species_pages/brown_shrimp.htm

³Gulf FINFO website, Alabama Shrimp Profile, Harvesting <http://gulffishinfo.org/Species?SpeciesID=99>

⁴2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

7.6.9 (b)(v) - closed areas? *Yes...*[1] *No...*[0]

Extent of compliance		
Yes	some	no
<p>Federal:</p> <p>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). 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>Alabama:</p> <p>There are permanently closed areas, along with designated exclusive bait areas, which are only open to live bait dealers year round.⁴ All rivers (with exception), streams, bayous and creeks within the State are permanently closed. Areas of Portersville Bay, Cat and Marsh Island and Coffee Island are closed as well. Herron Bay and portions of the Mississippi Sound north of the Gulf Intracoastal Waterway are closed. All of Weeks Bay is closed (with some exceptions for dip nets). The Theodore Industrial Canal, Bon Secour Bay, and waters north of Battleship Parkway are closed. Certain portions of Mobile Bay and Mobile County are closed. Areas north of Lillian Bridge and in Little Lagoon Pass in Baldwin County, and Perdido Pass are closed.⁵</p>		

¹NMFS Southeast Regional Office Federal Regulations 50 Part 622 http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

²U.S. Code of Federal Regulations Title 50 §622.55 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_155

³U.S. Code of Federal Regulations Title 50 §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

⁴2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

⁵ADCNR Recreational Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.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 are 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>Alabama: There are designated exclusive bait areas, which are only open to live bait dealers year round.¹ Exclusive bait areas are closed to commercial shrimping. Licensed recreational shrimpers and live saltwater bait dealers are allowed to harvest shrimp in exclusive bait areas in Alabama. In Baldwin County, Wolf Bay, Oyster Bay, Blakely River, and Terry Cove are exclusive bait areas. In Mobile County, Arlington Channel, East Fowl River Channel, Bayou La Batre Channel, Dauphin Island Bay, Buchanan Bay, Confederate Pass, British Bay, Columbia Bay, Colony Bay, Spanish Bay, and Barcelona Bay are exclusive live bait shrimping areas. Seasonal bait areas are open exclusively to commercial and recreational taking of live saltwater bait when adjacent waters are closed. Pt. Clear and Mullet Point are seasonal bait areas.²</p>		

¹2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.pdf>

²ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.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</p>		

<p>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>Alabama: Alabama commercial shrimpers must not take shrimp smaller in size than 68 count (head on per pound), as set by AMRD. This limit is largely set for marketability of the harvest, as shrimp are considered an annual crop, and therefore, the stocks are not as affected by fishing pressure. This size limit also protect juveniles and allows for spawning prior to entry into the fishery. There are no restrictions on the legal size of shrimp harvested recreationally; however, recreational shrimping is only allowed in waters open to commercial shrimping (where shrimp have been confirmed to be of legal size), and in waters reserved for bait shrimping.^{4,5}</p>		
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¹Gulf FINFO website <http://gulffishinfo.org/Species?SpeciesID=99>

²U.S. Code of Federal Regulations Title 50 §622.56 http://www.ecfr.gov/cgi-bin/text-idx?SID=c1452f0a1551a55a4307efe4c53b57ee&mc=true&node=pt50.12.622&rgn=div5#se50.12.622_156

⁴Gulf FINFO Website <http://gulffishinfo.org/Species?SpeciesID=99>

⁵2014 GSMFC Law Summary <http://www.gsmfc.org/publications/GSMFC%20Number%20235.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... [½] No...[0]

Extent of compliance		
Yes	Some	No
<p>The primary gear types in the Alabama 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. More recently, the twin trawl design has become popular with the offshore otter trawl fleet. Studies on twin trawl design show increased catch efficiency, leading to reduced trip time, higher quality product, and reduced fuel consumption.²</p> <p>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.³ 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 (for history of TEDs, see http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm). 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</p>		

effective in allowing the escape of most turtles caught within shrimp trawls. 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. 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. 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.⁴

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.⁵ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ ray catch.

ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.⁶

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.⁷ To be certified by the NOAA Harvesting Systems Unit, a BRD must reduce finfish bycatch by at least 30% by weight.⁸ BRDs are not required in state waters in Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species.

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.⁹ 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.^{10,11} 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.¹² 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.¹³

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.¹⁴

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.¹⁵ 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 ADCNR Commercial Shrimping Regulations

<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

² Twin Trawl efficiency study <http://www.crimond.com/twintrawlreport.htm>

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

⁴ http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁵ ADCNR, *NFWF Final Programmatic Report*, 2014.

⁶ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015

⁷ 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

⁸ GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

⁹ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

¹⁰ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

¹¹ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

¹² Southeast Fishery Bulletin, February 20, 2013.
http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf, Accessed 8.13.2015

¹³ <http://www.sefsc.noaa.gov/species/turtles/staff.htm>, Accessed 8.13.2015

¹⁴ Texas Sea Grant. <http://texasseagrant.org/staff/tony-reisinger/>

¹⁵ 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

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 has established an overfishing level for each of the penaeid species in terms of a parent stock level, as follows:²</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. - Pink Shrimp - 100 million individuals, age 5+ months during the July through June year. <p>GMFMC defines an overfished condition as one half of the above parent stock levels.</p> <ul style="list-style-type: none"> - Brown Shrimp - 63 million individuals, age 7+ months during the November through February period. - White Shrimp - 160 million individuals, age 7+ months during the May through August period. - Pink Shrimp - 50 million individuals, age 5+ months during the July through June year. <p>NOAA Fisheries has monitored the parent stock levels for all three shrimp species since 1970. Parent stock levels for all three species have remained above the established thresholds throughout the monitoring period and all three stocks are not considered overfished or undergoing overfishing.</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:³

(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.

Recent changes in the model used for annual stock assessments for the Gulf of Mexico penaeid shrimp species now produce different outputs and the GMFMC is in the process of updating SDC for penaeid shrimp to fit with this new model.⁴

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.⁵

Current actions defined should the fishery be determined overfished are:⁶

“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:

- 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.”

¹ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

² GMFMC Shrimp FMP Amendment 13

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁶ [50 C.F.R. 600.310](#)

⁴ GMFMC Shrimp FMP proposed amendment 15

<http://gulfcouncil.org/docs/amendments/Shrimp%20Amendment%2015%20FINAL.pdf>

⁵ SEFSC Galveston Lab Shrimp Research

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁶ GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.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 fishery management plans (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 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</p>		

<p>acts as a forum to discuss management practices and fishery concerns of regional importance.</p> <p>Alabama: The marine resources in Alabama state waters (out three nautical miles into Gulf of Mexico waters) are managed directly by the Alabama Department of Conservation and Natural Resources (ADCNR). ADCNR is established through the Code of Alabama, Title 9, Chapter 2.⁵ The Commissioner of ADCNR, appointed by the Governor, holds the authority to manage fishery resources in Alabama, and may promulgate rules and regulations designed for the protection and conservation of all seafood. Most regulations are promulgated through the Administrative Procedures Act, approved by the Alabama Legislature in 1983, with the exception of bag limits and season dates. The Alabama Administrative Procedures Act determines the rulemaking process and requires the following steps prior to rule adoption:⁶</p> <ul style="list-style-type: none"> - notification of intent - public hearing - 35-day comment period - Final review by a Joint House and Senate Review Committee <p>Code of Alabama, Title 9, Chapter 2 also established the Alabama Conservation Advisory Board (ACAB) designed to provide advice on policies and regulations relating to seafood and wildlife. The ACAB consists of the Governor, ADCNR Commissioner, Director of the Auburn University Agriculture and Extension Service, and 10 additional board members appointed by the Governor.⁷ The Marine Resources Division (MRD), also developed through Code of Alabama, Title 9, is the branch of ADCNR that is responsible for conducting research related to marine resources, providing recommendations to the Commissioner, and enforcing state laws and regulations.⁸</p>		
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¹GMFMC About Us <http://gulfcouncil.org/about/index.php>

²GMFMC FAQ http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php#1

³NOAA Fisheries Mission http://www.nmfs.noaa.gov/aboutus/our_mission.html

⁴GSMFC <http://www.gsmfc.org/>

⁵Code of Alabama, Section 9-2-2 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

⁶Perry, H. VanderKooy, S. 2015. The Blue Crab Fishery of the Gulf of Mexico, United States: A Regional Management Plan. Gulf States Marine Fisheries Commission. Ocean Springs, MS. **In publication. Section 8.**

⁷Code of Alabama, Section 9-2-14 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

⁸Code of Alabama, Section 9-2-14 <http://codes.lp.findlaw.com/alcode/9/2/4>

7.7.2 (a) Are laws in place that provide for sanctions? **Yes...[1]Some... [½]No...[0]**

Extent of compliance

Yes	Some	No
<p>Federal: NOAA Fisheries Law Enforcement is responsible for enforcing national laws and vessels that violate these laws are subject to penalties through NOAA Office of General Counsel.^{1,2} They 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.³ Each of these legislative acts contains information regarding sanctions for people and vessels that violate these laws in U.S. waters.^{4,5,6,7,8}</p> <p>Alabama: Marine Police Division, or Marine Patrol Enforcement, is part of the Alabama Law Enforcement Agency.⁹ Marine Police patrol public waterways, supervise non-commercial boats and operator licensing, and serve to educate the public.¹⁰ Penalties range from \$50 (for minor infractions such as taking more than one gallon of shrimp in a bait area) to \$1000 (for no seafood dealers’ license).¹¹ In the 2011-2012 fishing year, enforcement conducted 18,030 hours of patrols, over 11,400 boat checks, 1300 facility inspections, issued over 3000 citations and warnings, and participated in 9733 hours with the NOAA Fisheries interjurisdictional fisheries enforcement program.¹²</p>		

¹ NOAA Enforcement http://www.nmfs.noaa.gov/ole/about/what_we_do.html

² NOAA Office of General Counsel http://www.nmfs.noaa.gov/ole/about/our_partners/general_counsel.html

³ NOAA Law Enforcement Laws http://www.nmfs.noaa.gov/ole/about/what_we_do/laws.html

⁴ Magnuson-Stevens Prohibited Acts <http://www.nmfs.noaa.gov/sfa/magact/mag3a.html#s307>

⁵ MMPA Enforcement Section 107 <http://www.nmfs.noaa.gov/pr/laws/mmpa/fulltext.htm#section107>

⁶ Lacey Act Amendments <http://www.fws.gov/laws/lawsdigest/LACEY.HTML>

⁷ NMSA Legislation <http://sanctuaries.noaa.gov/about/legislation/welcome.html>

⁸ ESA Penalties http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section11.pdf

⁹ Alabama Act 2013-67 http://www.alea.gov/Documents/Documents/AboutHome-Act2013_67.pdf

¹⁰ Alabama Law Enforcement Agency, Legacy Agency Biographies <http://www.alea.gov/Home/wfContent.aspx?ID=4&PLH1=plhAbout-LegacyAgenciesBiography#ADR>

¹¹ Alabama Fine Schedule http://judicial.alabama.gov/library/rules/ja20_appxb.pdf

¹² ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

7.7.2 (b) Are these adequate in severity to be effective? Yes... [1]Some... [½]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 issued 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.</p> <p>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.</p> <table border="1"> <thead> <tr> <th colspan="4">Living Marine Resources</th> </tr> <tr> <th colspan="4">Performance Measure – Fishing Regulation Compliance Rate</th> </tr> <tr> <th>FY 2011 Actual</th> <th>FY 2012 Actual</th> <th>FY 2013 Target</th> <th>FY 2013 Actual</th> </tr> </thead> <tbody> <tr> <td>97.4%</td> <td>98.3%</td> <td>96%</td> <td>98.1%</td> </tr> <tr> <td>√ Met</td> <td>√ Met</td> <td></td> <td>√ Met</td> </tr> </tbody> </table> <p>Source: DHS OIG based on USCG-provided data.</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>Alabama: Penalties range from \$50 (for minor infractions such as taking more than one gallon of shrimp in a bait area) to \$1000 (for no seafood dealers’ license).⁹ There is no established progression for increase of fines but a judge may impose higher penalties for repeat offenders.¹⁰</p>	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		
Living Marine Resources																						
Performance Measure – Fishing Regulation Compliance Rate																						
FY 2011 Actual	FY 2012 Actual	FY 2013 Target	FY 2013 Actual																			
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¹NOAA Enforcement Decisions and Orders <http://www.gc.noaa.gov/enforce-office6.html#nao>

² NOAA Fisheries OLE FY15 First Quarter Enforcement Report http://safmc.net/sites/default/files/Regulations/pdf/NOAAOLE_Q1_2015_PublicReport_Final.pdf

³"Office of Law Enforcement" NOAA Fisheries. Web. Accessed June 2015.

⁴"News Archive" NOAA Fisheries Office of Law Enforcement. Web. Accessed June 2015.

⁵The Annual Review of the United States Coast Guard's Mission Performance (2013) https://www.oig.dhs.gov/assets/Mgmt/2014/OIG_14-140_Sep14.pdf

⁶ NOAA Fisheries, Protected Resources, Current Compliance Rates 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. 03 Nov. 2011. Web. 15 Aug. 2015. http://www.noanews.noaa.gov/stories2011/2011110311_ole_teds.html

⁸ NOAA Fisheries, Protected Resources, Current Compliance Rates 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

⁹Alabama Fine Schedule http://judicial.alabama.gov/library/rules/ja20_appxb.pdf

¹⁰Personal Communication. Major Scott Bannon, Chief Enforcement Officer, Alabama Marine Resources Division. March 2015.

¹¹ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.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] Some... [1/2] 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</p>	

	<p>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><u>Alabama:</u> Alabama law does not explicitly require suspension or revoking of fishing licenses for the shrimp fishery based on violations of fisheries management regulations; however, a judge determining penalties for violations may suspend or revoke a shrimp fishing license either for a set period of time, or permanently depending on the severity of violations. At least one case has been documented where a judge permanently revoked a fishing license for repeat offenses by an individual.³</p>	
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¹NOAA Fisheries Law Enforcement FAQ webpage <http://www.nmfs.noaa.gov/ole/faqs.html>

²NOAA Enforcement and Litigation http://www.gc.noaa.gov/documents/031611_penalty_policy.pdf

³Blankenship, Chris. ADCNR/MRD. Personal Communication. June 2015.

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
<p><u>MONITORING:</u> <u>Federal:</u> 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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.² 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. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. Trip Ticket data from each of the states are verified against port agent sampling data and integrated into the GSS. 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. 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 In 2014, the program changed format to a cellular ELB (cELB) program</p>		

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 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 bycatch reduction device evaluation.^{5,6}

50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁷

- 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

50 CFR 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.⁸

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

Alabama:

ADCNR MRD maintains monitoring programs for both fishery-dependent and fishery-independent data collection.^{10,11} Fishery independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).¹² ADCNR began fisheries data collection in 1977, initially for shrimp and crab, and has continued to revise the program to improve the quality and scope of sampling. Most recently, in 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl) for collection of juveniles and adults within deeper waters, seines targeting juveniles in shoreline habitats, and beam plankton trawls (BPLs) targeting early life history stages of specimens in nearshore habitats. Sampling for each method is conducted monthly at fixed locations; stations were determined at the start of the program to be most representative of the fauna found in Alabama waters. Sampling is conducted in Perdido Bay, Little Lagoon, Mississippi Sound, Lower and Upper Mobile Bay and Alabama territorial sea. All specimens collected during sampling are retained and brought to the Dauphin Island Laboratory for processing. MRD staff utilize these data to assess stock abundance, trends, and fisheries impacts. The Trip Ticket Program gathers commercial harvest data that is reported on a per trip basis and submitted to ADCNR monthly.¹³ These programs ensure constant monitoring of fishery resources.

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:¹⁴

- 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 for the fishery.
- 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

- Shrimp/Stone crab separation zones to prevent gear conflicts between the two fisheries

Alabama:

The Alabama shrimp fishery has regulations in place for entry into the crab fishery, methods of take for both recreational and commercial fishermen and required reporting of landings. ADCNR requires a Commercial Shrimp Boat license, renewed annually, to participate in the fishery.¹⁵ Resident and non-resident licenses are available and can be purchased online or at the Marine Resources offices in Gulf Shores or Dauphin Island. Regulations on method of take for both commercial and recreational shrimping are established by Ala. Admin. Code Chapter 220-3-.01 including restrictions on legal gear types, gear requirements, and seasonal/area closures.^{16,17} The Trip Ticket Program went into effect in Alabama in 2000 to collect harvest data at the trip level for commercial landings. Reporting is mandatory for seafood dealers, wholesalers, or fishermen directly if they sell direct to an individual, restaurant, or retailer. Data collected includes species harvested, ex-vessel value, area fished, gear type and fishermen’s identification information and are reported monthly.¹⁸

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.”¹⁹ 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.²⁰ 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- 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.²¹

Alabama:

Until recently, ADCNR utilized two separate programs for enforcement of activities in Alabama waters. The Marine Police Division of ADCNR was responsible for boating safety, navigation hazards and recreational activities, and the Marine Resources Division Enforcement Section is responsible for enforcement of state laws and regulations regarding marine resources.²² Effective January 2015, the Marine Police Division has moved to the Alabama Law Enforcement Agency, but continues to retain the same duties. The MRD Enforcement Section conducts shore and boat patrols, boat checks, seafood facility inspections, and works closely with other state and federal fisheries enforcement agencies to ensure enforcement of marine resource regulations. In the 2011-2012 fishing year, MRD enforcement conducted 18,030 hours of patrols, over 11,400 boat checks, 1300 facility inspections, issued over 3000 citations and warnings, and participated in 9733 hours with the NMFS interjurisdictional fisheries enforcement program.

Alabama also has a Joint Enforcement Agreement (JEA), which is a partnership between NOAA's National Marine Fisheries Service (NMFS) and MRD on enforcement related activities. GSMFC assists in the development of Cooperative Enforcement Agreements (CEA).²³ 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.²⁴

¹SEFSC Fisheries Monitoring Branch <http://www.sefsc.noaa.gov/data/monitoring.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³2010 Analysis of Gulf Shrimp Moratorium Permits, NOAA.

⁴ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵Observer Program

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶NOAA OST: National Observer Program: shrimp <https://www.st.nmfs.noaa.gov/observer-home/regions/southeast/shrimp>

⁷50 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>

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

⁹SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰FAMP <http://www.outdooralabama.com/sample-processing>

¹¹Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

¹²ADCNR MRD, revised March 2012. Assessment Sampling- Standard Operating Procedures. unpublished.

¹³Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20
http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf

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

¹⁵ADCNR fishing license information <http://www.outdooralabama.com/alabama-license-information>

¹⁶Ala. Admin. Code, r. 220-3.31Crabs http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁷ADCNR Commercial Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

¹⁸Ala. Admin. Code, r. 220-3.35 Seafood Reporting And Landing Regulation
http://www.alabamaadministrativecode.state.al.us/docs/con_/220-3.pdf

¹⁹ ["Enforcement" NOAA Office of General Council. Web. Accessed June 2015.](#)

²⁰ [United States Coast Guard. Web. Accessed June 2015.](#)

²¹ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

²²ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

²³VanderKooy, 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>

²⁴NOAA Cooperative Enforcement Program Manual. 2012.
http://www.nmfs.noaa.gov/ole/docs/2012/2012_program_manual.pdf

7.7.3 (ii) - observer programs? Yes...[1]Some... [½]No...[0]

Extent of compliance		
Yes	Some	No
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

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.

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 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

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.

Authority to mandate observer coverage falls under the ESA and MSA.⁹

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.

¹ GMFMC Shrimp FMP Amendment 13

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

²Scott-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 CFR §622.52 <http://www.gpo.gov/fdsys/granule/CFR-2013-title50-vol12/CFR-2013-title50-vol12-sec622-52>

⁴ SEFSC Galveston Lab Observer Program

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 NOAA OST: National Observer Program <https://www.st.nmfs.noaa.gov/observer-home/about-nop/activities/index>

⁷ Observer Manual 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

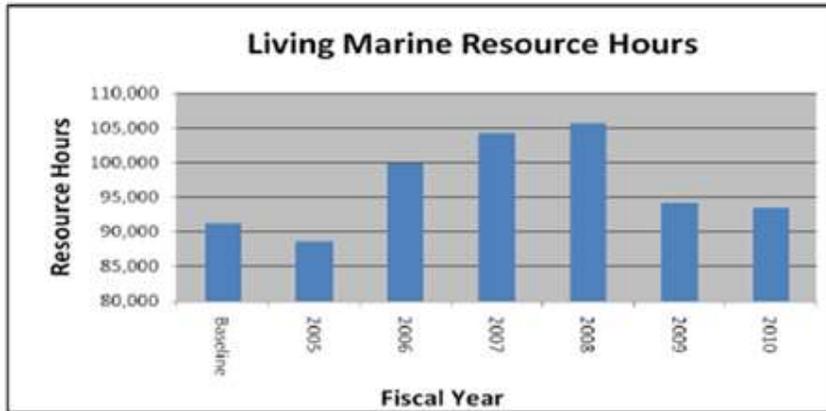
⁹ Federal Register- Annual determination to implement observer coverage

<https://www.federalregister.gov/articles/2015/03/19/2015-06341/2015-annual-determination-to-implement-the-sea-turtle-observer-requirement>

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></p>		

<p>(ii) board, and search or inspect, any fishing vessel which is subject to the provisions of this Act;</p> <p>(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;</p> <p>(iv) seize any fish (wherever found) taken or retained in violation of any Provision of this Act;</p> <p>(v) seize any other evidence related to any violation of any provision of this Act; and</p> <p>(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;</p> <p>(B) execute any warrant or other process issued by any court of competent jurisdiction; and</p> <p>(C) exercise any other lawful authority.</p> <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.</p> <p>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.</p> <p>The following chart details the number of resource hours (flight hours and/or vessel hours) USCG staff dedicate to the Living Marine Resources Program.⁴</p>	
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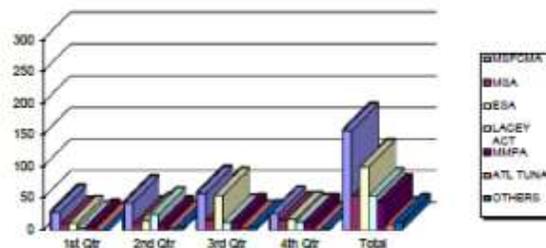
NOAA/NMFS Southeast Division OLE provides quarterly reports for activity in the Gulf of Mexico and South Atlantic/Caribbean.⁵ This document includes reporting of incidents by investigation type for violations of the MSA, National Marine Sanctuary Act, ESA, Marine Mammal Protection Act, Lacey Act, and other Federal and State regulations(see chart below for FY 2013 4th Quarter statistics.)

NUMBER OF INCIDENTS OPENED BY INVESTIGATION TYPE

FY 2013 4th QUARTER
Southeast Division

Investigation Type	FY 2012		FY 2013	
	4 th Quarter	Total For Year	4 th Quarter	Total For Year
AT	1	7	1	9
ESA	43	229	18	101
Lacey Act	6	50	18	55
Magnuson Act	52	341	26	158
MMPA	4	198	14	45
MSA	18	97	17	55
Other Federal or State Regulations	2	15	3	14
TOTAL	126	937	97	437

Incidents by Investigation Type FY13



This report also includes information on OLE outreach and training activities and JEA statistics by state.

Alabama:

<p>Code of Alabama, Section 9-2-65 determines the powers and duties of game and fish wardens of the state of Alabama. Officially known as conservation enforcement officers, game and fish wardens have the following powers and duties:⁶</p> <ul style="list-style-type: none"> - To enforce all laws of the state relating to birds, animals and fish - To execute all warrants and search warrants for violation of any game, fish or fur laws of the state - To serve subpoenas issued for the examination, investigation and trail of any violations against laws relating to game, fur bearers, birds and fish - To carry firearms when in the discharge of official duties - To confiscate game, birds, animals, or fish, or parts thereof which have been taken, killed or held in a manner contrary to state laws - To enter upon any land or water in the performance of their duty <p>ADCNR MRD also inspects catch and landings reports submitted by dealers through the Trip Ticket Program.⁷ Trip ticket data are checked against port agent sampling data for verification, and enforcement agents conduct facility inspections to ensure compliance with reporting.^{8,9} NOAA also conducts Seafood Inspections.¹⁰</p>		
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¹ [United States Coast Guard, Special Notice to Mariners. 2001.](#)

² ["Office of Law Enforcement" NOAA Fisheries. Web. Accessed June 2015.](#)

³ MSA http://www.nmfs.noaa.gov/msa2005/docs/MSA_amended_msa%2020070112_FINAL.pdf

⁴ [Department of Homeland Security, Office of Inspector General, Annual Review of the United States Coast Guard's Mission Performance \(FY 2010\). Washington D.C., 2011.](#)

⁵ [NOAA Fisheries, Office of Law Enforcement. Southeast Atlantic & Caribbean 4th Quarter FY 2013 Report. 2013.](#)

⁶ Ala. Code, Section 9-2-65 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-65.htm>

⁷ ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition

⁸ Schaffer, Nicole. ADCNR Biologist II. Personal Communication. May 2015.

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 NOAA Seafood Inspection Program <http://www.seafood.nmfs.noaa.gov/>

7.7.3 (vi) - 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</p>	

	<p>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 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.</p> <p>Alabama: There is currently no VMS or logbook requirements for the inshore Alabama shrimp fishery.</p>	
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¹ 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>

² GMFMC Shrimp FMP Amendment 13 <http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

³ Framework Action to Establish Funding Responsibilities for the Electronic Logbook Program in the Shrimp Fishery of the Gulf of Mexico <http://gulfcouncil.org/docs/amendments/Final%20Shrimp%20ELB%20Abbreviated%20Framework.pdf>

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... [1/2] 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</p>		

regulations for territorial waters are consistent with federal regulations. ⁴		
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		

¹ 50 CFR Part 622

http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf

² NOAA Fisheries Office of Law Enforcement <http://www.nmfs.noaa.gov/ole/>

³ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ ADCNR Commercial Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

⁵ NOAA Cooperative enforcement programs 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>Alabama: No vessels may operate in Alabama territorial waters without an appropriate license. Waters are patrolled by ADCNR Marine Police and MRD enforcement officers to ensure that all vessels participating in fishing activities have the proper authorization.⁴</p>		

¹ U.S. Code of Federal Regulations Title 50 §622.13 http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rqn=div5#se50.12.622_113

² NOAA Fisheries Southeast Permits Office webpage http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³ U.S. Code of Federal Regulations Title 50 §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 ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.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 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>Alabama:</u> No fishing vessels may operate in Alabama territorial waters without an appropriate license issued by ADCNR. Licenses are available for both Alabama residents and non-residents of other U.S. Gulf States. The other four Gulf States also maintain similar licensing requirements for fishing activities within their state territorial waters.⁶ License requirements for recreational and commercial fishing are published annually by ADCNR.^{7,8} Waters are patrolled by Alabama Marine Police enforcement officers to ensure that all vessels participating in fishing activities have the proper authorization and follow all regulations set by ADCNR.⁹</p>				

¹ U.S. Code of Federal Regulations Title 50 §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 NOAA Fisheries Southeast Permits Office webpage http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³U.S. Code of Federal Regulations Title 50 §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

⁴NOAA Fisheries Law Enforcement webpage http://www.nmfs.noaa.gov/ole/about/what_we_do.html

⁵NOAA Office of General Counsel website <http://www.gc.noaa.gov/enforce-office.html>

⁶GSMFC 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>

⁷ADCNR Recreational Fishing License Requirements <http://www.outdooralabama.com/saltwater-recreational-licenses>

⁸ADCNR Resident Saltwater Commercial Fishing Licenses <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

⁹ Alabama Law Enforcement Agency, Legacy Agencies Biographies <http://dps.alabama.gov/Home/wfContent.aspx?ID=4&PLH1=plhAbout-LegacyAgenciesBiography#AMP>

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...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<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>Alabama: Commercial fishing licenses issued by ADCNR are renewed annually and ADCNR 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>		

¹NOAA Fisheries SERO Permits Office webpage http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

²NOAA Fisheries SERO Permits FAQ http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³NOAA Fisheries SERO Permit holder information webpage http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

⁴ADCNR Recreational Fishing License Requirements <http://www.outdooralabama.com/saltwater-recreational-licenses>

⁵ADCNR Resident Saltwater Commercial Fishing Licenses <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

⁶ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

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><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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.² Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the 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. Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery. Each Gulf state (including Alabama) provides data to NOAA port agents in this specific format. Furthermore, 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. ALF forms are mailed to permit holders each spring to report on landings from the previous year.</p> <p>Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{4,5} The ELB program, which began in 2007, collects data on approximated 500 shrimp vessels each year through the program. The ELB program collects effort data including amount and location of shrimp landings (see 7.7.3 for details). Gulf shrimp permit holders are also required to carry an observer if selected for the Observer Program run by the Galveston Laboratory. The focus of data collection for the observer program for the shrimp fishery is bycatch estimates and composition as well as evaluation of bycatch reduction devices.</p> <p>50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁶</p>		

<p>6- 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.</p> <p>7- 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.</p> <p>8- 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.</p> <p>9- 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.</p> <p>10- 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:</p> <ol style="list-style-type: none"> 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 <p>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.⁷</p> <p>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.⁸</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 abundance.⁹</p>		
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Alabama:

ADCNR/MRD 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 MRD staff.¹⁰ The GDAR 01 report provides a summary of ADCNR independent sampling methods.¹¹

ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹² 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. 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. The Alabama Trip Ticket forms also require reporting of quantity of gear used.¹³ Prior to 2000, commercial catch statistics were collected by NMFS and data are available through Fishery Statistics reports.¹⁴

The GSMFC also conducts scientific monitoring and review processes on an annual basis for resource and harvest 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.^{15,16,17,18,19}

¹SEFSC Fisheries Monitoring Branch <http://www.sefsc.noaa.gov/data/monitoring.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ 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>

⁷NOAA SEFSC Economics of the Federal Gulf Shrimp Fishery Annual Report website publication
<http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁸NOAA Fisheries Galveston Laboratory website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰ ADCNR. Personal Communication. March 2015.

¹¹ 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. 85-87
<http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>

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 ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition

¹⁴ (VanderKooy, 2013. P. 53)

¹⁵ GSMFC programs: <http://www.gsmfc.org/#:content@12:links@13>

¹⁶ GSMFC Fisheries Information Network (FIN) <http://www.gsmfc.org/#:content@20:links@21>

¹⁷ GSMFC IJF Program <http://www.gsmfc.org/#:content@11:links@17>

¹⁸ GSMFC Fisheries Economic Data Program <http://www.gsmfc.org/#:content@18:links@19>

¹⁹ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

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</p>		

<p>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>		
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¹GSMFC <http://www.gsmfc.org/>

²GMFMC <http://www.gulfcouncil.org/>

³NOAA/NMFS Cooperative Enforcement Program
http://www.nmfs.noaa.gov/ole/about/our_programs/cooperative.html

⁴GSMFC Fisheries Enforcement Program <http://www.gsmfc.org/#:content@11:links@12>

⁵VanderKooy, 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>

⁸GMFMC Law Enforcement Advisory Panel
http://www.gulfcouncil.org/panels_committees/advisory_panels.php#LawEnforcement

⁹NOAA/NMFS Law Enforcement Report <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.’ 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>		

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

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 2011-2013.⁵ 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.

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

¹Mississippi Alabama Sea Grant Consortium (MASGC) <http://masgc.org/about>

²MASGC Sustainable Fisheries and Aquaculture <http://masgc.org/focus-areas/article/sustainable-fisheries-and-aquaculture>

³Posadas, B. 2014. Economic Sectors Targeted by the Mississippi-Alabama Sea Grant Research, Extension, Education, and Outreach Programs. <http://msucares.com/pubs/publications/p2849.pdf>. Accessed 8.14.2015

⁴Texas Sea Grant. <http://texasseagrant.org/staff/tony-reisinger/>

⁴Helies, 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

⁵ Southeast Fishery Bulletin, February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf, Accessed 8.13.2015

⁶<http://www.sefsc.noaa.gov/species/turtles/staff.htm>, Accessed 8.13.2015

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... [½] No... [0]**

Extent of compliance

Yes	Some	No
	<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>Alabama: ADCNR requires a commercial fishing license to harvest fish or shellfish in Alabama waters. For shrimp, harvesters are required to hold a Commercial Shrimp Boat License that must be renewed annually and records are maintained by ADCNR MRD.¹ Commercial boats must be registered through ADCNR unless otherwise registered with the USCG.² ADCNR maintains records of license holders and boat registration and fishers are required to carry physical documentation of these licenses on board. No documentation is required for additional crew members.</p> <p>There are currently no requirements based on competency and no records maintained for certification of competency within the Alabama shrimp fishery.</p>	

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

²NOAA Fisheries SERO Permits FAQ

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³NOAA Fisheries SERO Permit holder information webpage

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_inform

<p>ADCNR publishes a commercial fishing regulation notices containing all regulations and other necessary information regarding the practice of commercial fishing in Alabama.⁴ These regulations and additional information are publicized on the ADCNR 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>		
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¹ GMFMC Fishing Regulations http://gulfcouncil.org/fishing_regulations/index.php

² NOAA SERO Fishing Regulations http://sero.nmfs.noaa.gov/sustainable_fisheries/policy_branch/index.html

³ NOAA SERO Fishery Bulletins http://sero.nmfs.noaa.gov/fishery_bulletins/

⁴ Alabama Commercial Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

⁵ ADCNR Press releases <http://www.outdooralabama.com/press-releases>

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...*[1/2] *No...*[0]

Extent of compliance		
Yes	some	no
<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 identification, vessel name, permit number, permit holder address, permit effective date and expiration date are listed on the NOAA Fisheries SERO website.³</p> <p>Alabama: For the shrimp fishery, a specific Commercial Shrimp Boat License is required and must be renewed annually.⁴ An individual must purchase a license to take or possess shrimp for commercial purposes in state waters.⁵ ADCNR maintains records of all commercial licenses issued and a license number is assigned with each license. Only one license record is issued per license and must be available to be presented upon request at all times while harvesting.^{6,7} Recreational shrimping in Alabama requires a boat license. If taking shrimp by cast net, a recreational saltwater fishing license is required as well.⁸</p>		

<p>Registration to operate a vessel is also required by ADCNR and registration records are maintained separately. Vessel registration is required for all mechanically powered boats, sailboats and for-hire vessels.⁹ A registration certificate is issued for the vessel, which documents the details of the vessel (size, type), ownership information and a registration number, and must be carried onboard.</p> <p>ADCNR also maintains records of all commercial landings through the Trip Ticket Program which verifies that all seafood sales are made by a licensed fishermen and each trip ticket form collects data on the fisherman's license number, the vessel number, the area fished and the location landed.^{10,11}</p>		
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¹NOAA Fisheries SERO Permits Office webpage

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

²NOAA Fisheries SERO Permits FAQ

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

³NOAA Fisheries SERO Permit holder information webpage

http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

⁴ADCNR Resident Saltwater Commercial Fishing Licenses <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

⁵ <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

⁶ALA CODE § 9-12-124 <http://codes.lp.findlaw.com/alcode/9/12/2/3/9-12-124>

⁷ALA CODE § 9-12-118 <http://codes.lp.findlaw.com/alcode/9/12/2/3/9-12-118>

⁸ ADCNR Recreational Shrimp Regulations

<http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.pdf>

⁹ADCNR Boat registration <http://www.outdooralabama.com/boat-registration>

¹⁰Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20

http://www.sefsc.noaa.gov/sedar/download/SEDAR7_DW20.pdf?id=DOCUMENT

¹¹ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

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: Similar to the above response (see 8.2.1 (a)), to fish for shrimp in the Gulf's Exclusive Economic Zone (EEZ), a commercial vessel permit for Gulf shrimp must have been previously obtained and must be aboard the vessel. A moratorium on commercial permits for Gulf shrimp has been issued and is in effect. No additional permits will be issued, but permits for Gulf shrimp are transferable. Renewal of a commercial permit is dependent on compliance with recordkeeping and reporting</p>		

<p>requiriements.¹</p> <p>Alabama: For the shrimp fishery, a specific Commercial Shrimp Boat License is required and must be renewed annually.² Recreational shrimping in Alabama requires a boat license. If taking shrimp by cast net, a recreational saltwater fishing license is required as well.³</p> <p>At the time of registration of a vessel, the vessel owners are also issued a certificate for the vessel and a registration number; registration certificates must be carried onboard and the registration number must be displayed on the hull of the vessel.⁴</p>		
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¹CFR 50 <http://www.ecfr.gov/cgi-bin/text-idx?SID=86d3e4e21c5c4a3cd94b7f259d8700e1&node=50:12.0.1.1.2&rgn=div5#se50.12.622> 150

²ADCNR Resident Saltwater Commercial Fishing Licenses <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

³ ADCNR Recreational Shrimp Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Rec%20Aug13.pdf>

⁴ADCNR Boat registration <http://www.outdooralabama.com/boat-registration>

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 ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

²Commercial Fishing Regulations for Gulf of Mexico Federal Waters 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
Federal: NOAA Fisheries Law Enforcement enforces more than 35 federal statues, 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} 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.⁷ 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 responsible for enforcing federal fisheries laws and regulations as well as marine safety and marine environmental protection laws.⁸ The Living Marine Resources division has three main priorities- 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.⁹

Alabama:

Violations of Alabama fishing regulations are Class C misdemeanors, and penalties range in severity of fines from \$25 to \$500 and/or three months in jail depending on the offense.^{10,11} Penalties relating to shrimp violations typically incur between \$50-\$600 fines for initial offense.^{12,13}

220-3-.01 (2)	Taking more than one gallon of shrimp in bait area	\$50
220-3-.01 (3)	Catching shrimp in closed waters	\$600
220-3-.01 (5)	Washing shrimp trawl in closed area	\$50
220-3-.01 (7) (A)	Dragging live-bait boat for more than 20 minutes	\$250
220-3-.01 (7) (B)	Shrimping by trawl that exceeds 50 feet	\$500
220-3-.01 (10)	Dragging trawl on oyster reef	\$250
9-12-54.3	Using an uninspected live-bait boat	\$250
9-12-54.3	Failing to display "live bait" on boat in 6-inch letters	\$250
9-12-54.4	Over-limit bait shrimp	\$250
9-12-54.4	Using oversize bait trawl	\$250
9-12-54.4	Possessing more than one basket of bait shrimp	\$250
9-12-54.4	Selling dead bait shrimp in packages that exceed 1 pound	\$250
9-12-54.5	Catching more than five gallons of shrimp per person per day- recreational	\$100
9-12-54.5	Shrimping in closed waters- recreational	\$100
9-12-54.6	Shrimping in bait area during closed times	\$100
9-12-93	Shrimping without a license	\$100
9-12-94	Failure to have shrimp license in possession	\$50
9-12-122	Commercial shrimp trawling in closed waters	\$600

There is no established progression for increase of fines but a judge does consider

<p>prior offenses when determining penalties and may impose higher penalties for repeat offenders.¹⁴</p> <p>In the 2011-2012 fishing year, MRD enforcement conducted 18,030 hours of patrols, over 11,400 boat checks, 1300 facility inspections, issued over 3000 citations and warnings, and participated in 9733 hours with the NMFS interjurisdictional fisheries enforcement program.¹⁵ Shrimp violations are generally low, with about xx violations per year.⁷</p>		
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¹NOAA Law Enforcement Laws http://www.nmfs.noaa.gov/ole/about/what_we_do/laws.html

²Magnuson-Stevens Prohibited Acts <http://www.nmfs.noaa.gov/sfa/magact/mag3a.html#s307>

³MMPA Enforcement Section 107 <http://www.nmfs.noaa.gov/pr/laws/mmpa/fulltext.htm#section107>

⁴Lacey Act Amendments <http://www.fws.gov/laws/lawsdigest/LACEY.HTML>

⁵NMSA Legislation <http://sanctuaries.noaa.gov/about/legislation/welcome.html>

⁶ESA Penalties http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section11.pdf

⁷ [“Enforcement” NOAA Office of General Council. Web. Accessed June 2015.](#)

⁸ [United States Coast Guard. Web. Accessed June 2015.](#)

⁹ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

¹⁰ 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>

¹¹ALA CODE § 9-12-124 <http://codes.lp.findlaw.com/alcode/9/12/2/3/9-12-124>

¹²Alabama Supreme Court Extended Schedule of Fines http://judicial.alabama.gov/library/rules/ia20_appxb.pdf

¹³ALA CODE § 13A-5-3 Classification of offenses <http://codes.lp.findlaw.com/alcode/13A/5/1/13A-5-3>

¹⁴Personal Communication. Major Scott Bannon, Chief Enforcement Officer, Alabama Marine Resources Division. March 2015.

¹⁵ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

¹⁶ADCNR MRD Enforcement Report- 2013-14 shrimp violations. Unpublished.

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
<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</p>		

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.

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.

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

Alabama:

Violations of Alabama fishing regulations are Class C misdemeanors, and penalties range in severity of fines from \$25 to \$500 and/or three months in jail depending on the offense.^{9,10} Penalties relating to shrimp violations typically incur between \$50 and \$600 in fines for initial offense.^{11,12} There is no established progression for increase of fines but a judge may impose higher penalties for repeat offenders.¹³ Recent ADCNR/MRD enforcement reports indicate that shrimp violations are generally low.¹⁴

¹ NOAA Enforcement Decisions and Orders <http://www.gc.noaa.gov/enforce-office6.html#nao>

² NOAA Fisheries OLE FY15 First Quarter Enforcement Report
http://safmc.net/sites/default/files/Regulations/pdf/NOAAOLE_Q1_2015_PublicReport_Final.pdf

³ "Office of Law Enforcement" NOAA Fisheries. Web. Accessed June 2015.

⁴ "News Archive" NOAA Fisheries Office of Law Enforcement. Web. Accessed June 2015.

⁵ The Annual Review of the United States Coast Guard's Mission Performance (2013)
https://www.oig.dhs.gov/assets/Mgmt/2014/OIG_14-140_Sep14.pdf

⁶ NOAA Fisheries, Protected Resources, Current Compliance Rates
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. 03 Nov. 2011. Web. 15 Aug. 2015.
http://www.noaanews.noaa.gov/stories2011/2011110311_ole_teds.html

⁸ NOAA Fisheries, Protected Resources, Current Compliance Rates
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 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>

¹⁰ ALA CODE § 9-12-124 <http://codes.lp.findlaw.com/alcode/9/12/2/3/9-12-124>

¹¹ Alabama Supreme Court Extended Schedule of Fines
http://judicial.alabama.gov/library/rules/ja20_appxb.pdf

¹² ALA CODE § 13A-5-3 Classification of offenses <http://codes.lp.findlaw.com/alcode/13A/5/1/13A-5-3>

¹³ Personal Communication. Major Scott Bannon, Chief Enforcement Officer, Alabama Marine Resources Division. March 2015.

¹⁴ ADCNR MRD Enforcement Report- 2013-14 shrimp violations. Unpublished.

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
<p>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</p> <p>Alabama: Alabama law states "Any person who takes, catches, kills or attempts to take, catch or kill fish by depositing in any public stream or public body of water in Alabama any poison, poisonous substance, fishberries, lime or other deleterious or poisonous matter or any person who takes, catches, kills or attempts to take, catch or kill fish in</p>		

any of the public streams or public bodies of water in this state by the use of giant powder, dynamite, gunpowder or any other explosive substance must, on conviction, be fined not less than \$50.00 nor more than \$200.00, to be paid into the State Treasury to the credit of the Game and Fish Fund of the Department of Conservation and Natural Resources.” ²		
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¹CFR Title 50 §622.9 http://www.ecfr.gov/cgi-bin/text-idx?SID=7663a4568ee406f4e5bcf64f9bfd4de2&node=pt50.12.622&rqn=div5#se50.12.622_19

²ALA CODE § 9-11-93 <http://codes.lp.findlaw.com/alcode/9/11/3/9-11-93>

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
<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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.² Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the 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. Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery. Each Gulf state (including Alabama) provides data to NOAA port agents in this specific format. Furthermore, 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. ALF forms are mailed to permit holders each spring to report on landings from the previous year.</p> <p>Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{4,5} The ELB program, which began in 2007, collects data on approximated 500 shrimp vessels each year through the program. The ELB program collects effort data including amount and location of shrimp landings (see 7.7.3 for details). Gulf shrimp permit holders are also required to carry an observer if selected for the Observer Program run by the Galveston</p>		

Laboratory. The focus of data collection for the observer program for the shrimp fishery is bycatch estimates and composition as well as evaluation of bycatch reduction devices.

50 CFR 622.51 requires the following reporting activities for the GOM shrimp fishery:⁶

- 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 Fisheries Southeast Regional Office (SERO) Permits Office is tasked with managing federal fishing permits of the Gulf of Mexico.⁷ 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.⁸ Vessel permits are not only kept internally, but also available online. Information regarding the vessel identification, vessel name, permit number, permit holder address, permit effective date and expiration date are listed on the NOAA Fisheries SERO website.⁹

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 and USCG maintains records of all federally documented vessels.¹⁰

Alabama:

ADCNR meets required standards of data collection through the Trip Ticket Program. ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹¹ 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. 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. The Alabama Trip Ticket forms also require reporting of quantity of gear used.¹² Prior to 2000, commercial catch statistics were collected by NOAA Fisheries and data are available through Fishery Statistics reports.¹³

Registration to operate a vessel is also required by ADCNR and registration records are maintained separately. Vessel registration is required for all mechanically powered boats, sailboats and for-hire vessels.¹⁴ A registration certificate is issued for the vessel, which documents the details of the vessel (size, type), ownership information and a registration number, and must be carried onboard.

ADCNR requires a commercial fishing license to harvest fish or shellfish in Alabama waters. For blue crab, harvesters are required to hold a Commercial Shrimp Boat License that must be renewed annually and records are maintained by ADCNR MRD.¹⁵

¹SEFSC Fisheries Monitoring Branch <http://www.sefsc.noaa.gov/data/monitoring.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁵Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁶ 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>

⁷NOAA Fisheries SERO Permits Office webpage
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/index.html

⁸NOAA Fisheries SERO Permits FAQ
http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/permits/permit_faq/

⁹NOAA Fisheries SERO Permit holder information webpage http://sero.nmfs.noaa.gov/operations_management_information_services/constituency_services_branch/freedom_of_information_act/common_foia/SPGM.htm

¹⁰USCG Vessel Documentation <http://www.uscg.mil/hq/cg5/nvdc/nvdcfaq.asp#04>

¹¹ 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 ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition

¹³ (VanderKooy, 2013. P. 53)

¹⁴ ADCNR Boat registration <http://www.outdooralabama.com/boat-registration>

¹⁵ ADCNR Resident Saltwater Commercial Fishing Licenses <http://www.outdooralabama.com/resident-saltwater-commercial-licenses>

8.4.3 (a)(ii) - documentation on non-fish catches **Yes... [1]Some... [1/2]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 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> 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</p>	

	<p>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>Alabama:</u> There is currently no reporting requirement for capture of non-fish species in Alabama.</p>	
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¹ NOAA Office of Protected Resources <http://www.nmfs.noaa.gov/pr/>

² 2015 Southeast Shrimp Biological Opinion
http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

³ GMFMC shrimp FMP Amendment 13
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁴ NOAA Fisheries TED Compliance rates
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 Office of Protected Species- List of Fisheries <http://www.nmfs.noaa.gov/pr/interactions/lof/>

⁶ Marine Mammal Interaction reporting form <http://www.nmfs.noaa.gov/pr/interactions/lof/#report>

8.4.3 (a)(iii) - documentation on fish catches **Yes...[1] Some... [½] No...[0]**

Extent of compliance		
Yes	Some	No
<p><u>Federal:</u> 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 Gulf Shrimp System (GSS), which includes data collection by port agents stationed throughout the Gulf of Mexico.² Through the management of NOAA Fisheries SEFSC and Galveston Laboratory, the GSS, established in 1960, is a thorough, consistent data collection</p>		

<p>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. Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery. Each Gulf state (including Alabama) provides data to NOAA port agents in this specific format. Furthermore, 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. ALF forms are mailed to permit holders each spring to report on landings from the previous year.⁴</p> <p><u>Alabama:</u> ADCNR meets required standards of data collection through the Trip Ticket Program. ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.⁵ 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. 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. The Alabama Trip Ticket forms also require reporting of quantity of gear used.⁶ Prior to 2000, commercial catch statistics were collected by NMFS and data are available through Fishery Statistics reports.⁷</p>		
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¹SEFSC Fisheries Monitoring Branch <http://www.sefsc.noaa.gov/data/monitoring.htm>

² Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

³NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ 50 CFR §622.51 <http://www.ecfr.gov/cgi-bin/text-idx?SID=c3f4a934de419ab9e1d3eaf7cfeab60&node=50:12.0.1.1.2.3.1.2&rgn=div8>

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

⁶ ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition

⁷ VanderKooy, 2013. p. 53

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><i>OBSERVER SCHEME:</i> Amendment 13 of the shrimp FMP, established bycatch reporting methodologies for the fishery to collect better information on the catch, effort, and bycatch</p>	

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.

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 turtle excluder devices (TEDs) and bycatch reduction devices (BRDs).³

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 this program only applies to the offshore fleet with federal permits and does not cover inshore state-licensed shrimp trawls.

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.⁶ The authority to mandate this observer coverage falls under the ESA.⁷ 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.⁸ 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.⁹

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.

INSPECTION SCHEME:

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.^{10,11}

The MSA Section 311 authorizes the following:¹²

(b) POWERS OF AUTHORIZED OFFICERS.—

(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—

(A) with or without a warrant or other process—

(i) arrest any person, if he has reasonable cause to believe that such person has committed an act prohibited by section 307;

(ii) board, and search or inspect, any fishing vessel which is subject to the provisions of this Act;

(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;

(iv) seize any fish (wherever found) taken or retained in violation of any provision of this Act;

(v) seize any other evidence related to any violation of any provision of this Act; and

(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;

(B) execute any warrant or other process issued by any court of competent jurisdiction; and

(C) exercise any other lawful authority.

(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.¹³

NOAA/NMFS Southeast Division OLE provides quarterly reports for activity in the Gulf of Mexico and South Atlantic/Caribbean. This document includes reporting of incidents by investigation type for violations of the MSA, National Marine Sanctuary Act, ESA, Marine Mammal Protection Act, Lacey Act, and other Federal and State regulations,(see chart below for FY 2013 4th Quarter statistics.)¹⁴ This report also includes information on OLE outreach and training activities and JEA statistics by state.

Alabama:

Inspection schemes are in place through the ADCNR MRD. Code of Alabama, Section 9-2-65 determines the powers and duties of game and fish wardens of the state of Alabama. Officially known as conservation enforcement officers, game and fish wardens have the following powers and duties:¹⁵

- To enforce all laws of the state relating to birds, animals and fish
- To execute all warrants and search warrants for violation of any game, fish or fur laws of the state
- To serve subpoenas issued for the examination, investigation and trial of any violations against laws relating to game, fur bearers, birds and fish
- To carry firearms when in the discharge of official duties
- To confiscate game, birds, animals, or fish, or parts thereof which have been taken, killed or held in a manner contrary to state laws
- To enter upon any land or water in the performance of their duty

MRD conservation officers have the right, authorized by the Alabama Code, Section 9-12-31 , to board any boat, barge, or other watercraft engaged in the taking of seafoods; to enter the place of business of any person, firm, corporation or association engaged in sales or processing of seafoods in the seafood industry; and to determine by inspection or investigation if such boat or business is in full compliance with provisions of the seafood laws of the state.¹⁶

ADCNR MRD also inspects catch and landings reports submitted by dealers through the Trip Ticket Program.¹⁷

NOAA also conducts Seafood Inspections.¹⁸

¹ GMFMC Shrimp FMP Amendment 13

<http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

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

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 GMFMC Shrimp FMP Amendment 13

<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 Elizabeth Scott-Denton, Jo Willians, 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

⁷ 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>

⁸ Elizabeth Scott-Denton, Jo Willians, 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 Elizabeth Scott-Denton, Jo Willians, 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 [United States Coast Guard, *Special Notice to Mariners*. 2001.](#)

¹¹ [“Office of Law Enforcement” NOAA Fisheries. Web. Accessed June 2015.](#)

¹² MSA http://www.nmfs.noaa.gov/msa2005/docs/MSA_amended_msa%20_20070112_FINAL.pdf

¹³ [Department of Homeland Security, Office of Inspector General, *Annual Review of the United States Coast Guard’s Mission Performance \(FY 2010\)*. Washington D.C., 2011.](#)

¹⁴ [NOAA Fisheries, Office of Law Enforcement. *Southeast Atlantic & Caribbean 4th Quarter FY 2013 Report*. 2013.](#)

¹⁵ Ala. Code, Section 9-2-65 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-65.htm>

¹⁶ ALA CODE § 9-12-31 <http://codes.lp.findlaw.com/alcode/9/12/2/1/9-12-31>

¹⁷ ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition

¹⁸ NOAA Seafood Inspection Program <http://www.seafood.nmfs.noaa.gov/>

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, The Alabama Department of Public Health (ADPH) Seafood Branch regulates seafood handling and safety at all establishments where food for human consumption is sold.⁴ A permit from ADPH is required for anyone who sells seafood directly to the public and food establishments, including retail stores, may require prior inspection, depending on the classification of the vendor and/or type of food being sold.⁵ In addition to its own regulations, Alabama has adopted the U.S. Department of Health and Human Services Food Code (2005 edition).⁶ Alabama Administrative Code, Section 420-3-15 defines the Crab Sanitation Program with specific regulations regarding condition of crabs, labeling, handling, facility and sanitation requirements, quality standards, compliance and enforcement.⁷</p>		

¹21 U.S.C. Part 123, FDA HACCP regulations

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm?CFRPart=123>

²21 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>

³FDA Science and Research (Food) <http://www.fda.gov/Food/FoodScienceResearch/default.htm>

⁴ALA. CODE § 22-20-5 (2011). REGULATIONS FOR ESTABLISHMENTS HANDLING FOOD AND PROVIDING PUBLIC ACCOMMODATIONS <http://codes.lp.findlaw.com/alcode/22/1/20/22-20-5>

⁵ALA. ADMIN. CODE r. 420-3-22-.08. RULES OF ALABAMA STATE BOARD OF HEALTH BUREAU OF ENVIRONMENTAL SERVICES. FOOD ESTABLISHMENT SANITATION. <http://www.alabamaadministrativecode.state.al.us/docs/hlth/420-3-22.pdf>

⁶U.S. Department of Health and Human Services Food Code (2005 edition) <http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/ucm2016793.htm>

⁷Ala. Admin. Code r. 420-3-15. Rules of the Alabama State Board of Health Bureau of Environmental Sciences. Crab Sanitation Program. <http://www.adph.org/foodsafety/assets/CRABRULES.pdf>

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 Alabama commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, pusher-head trawls 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 in 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, see http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm). 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 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.</p> <p>A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.⁴ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ray catch.</p> <p>ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.⁵</p> <p><u>BRDs:</u> 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.⁶ To be certified by the NOAA Harvesting Systems Unit,</p>		

a BRD must reduce finfish bycatch by at least 30% by weight.⁷ BRDs are not required in state waters in Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species.

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.⁸ 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.^{9,10} 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.¹¹ 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.¹²

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.¹³

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.¹⁴ 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 ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

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

³ http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

⁴ ADCNR, *NFWF Final Programmatic Report*, 2014.

⁵ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015

⁶ 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

⁷ GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

⁸ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁹ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

¹⁰ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

¹¹ Southeast Fishery Bulletin, February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf, Accessed 8.13.2015

¹² <http://www.sefsc.noaa.gov/species/turtles/staff.htm>, Accessed 8.13.2015

¹³ Texas Sea Grant. <http://texasseagrant.org/staff/tony-reisinger/>

¹⁴ 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
The original Gulf of Mexico shrimp FMP (1981) identifies one of the problems in the fishery as “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>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.² Since gear remains attached to the vessel while actively fishing, typically damaged gear is recovered and repaired, if possible.</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.^{3,4} Most vessels have utilized these books, and in more recent years, other technologies that help track sea floor obstacles that may interfere with trawl gear.</p>	
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¹ GMFMC shrimp FMP and amendments

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

² 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

³ MS-AL Hang book <http://texasseagrant.org/assets/uploads/publications/1983/83-505.pdf>

⁴ TX-LA Hang Book <http://texasseagrant.org/assets/uploads/publications/1976/76-502.pdf>

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>Federal: 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>Alabama: There are no specific regulations in Alabama requiring research on impacts prior to the use of new gear types; however, there are currently regulations in place on the use of most potential gear types that could be utilized in the shrimp fishery including nets, dredges, trawls, traps, and longlines and each of these gear types have been evaluated for environmental impacts.⁴ These regulations make it highly unlikely that a</p>	

	<p>new gear type would be introduced into the fishery that had not already been evaluated for impacts due to prior use in another fishery.</p> <p>Additionally, all commercial fishing activities in Alabama are highly monitored and 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 ADCNR/MRD as soon as they occur. ADCNR/MRD regularly monitors trip ticket reports and communicates frequently with industry members; therefore, any new gear introductions would be detected early and prior to widespread use. Commercial scale use of new gear or methods would prompt research and potential regulation changes for the fishery if impacts are detected.</p>	
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¹ GMFMC Fishing Regulations- Allowable Gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² SEFSC Pascagoula Lab Harvesting Systems Unit
http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

³ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

⁴ ADCNR Commercial Fishing Regulations <http://www.outdooralabama.com/regulations-and-enforcement>

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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<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 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</p>		

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

² EFH Amendment EIS <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20EFH%20EIS.pdf>

³ NOAA Fisheries 'NEPA Policy' Web. Accessed July 2015. http://www.nmfs.noaa.gov/sfa/laws_policies/msa/nepa.html

⁴ GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁵ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

8.4.8 (ii) - on the social impacts? Yes...[1] Some...[1/2] No...[0]

Extent of compliance		
Yes	Some	No
<p>Federal:</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.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 such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.</i> <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</p>		

<p>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>Alabama:</u> Similarly, changes in regulations relating to gear or method of take for the fishery must go through the regulatory process for approval. ADCNR conducts scoping meetings, direct stakeholder communications, public hearings, and public comment opportunities to address socioeconomic aspects for potential regulation changes.⁷</p>		
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¹ SEFSC Economic Research- shrimp <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

² NOAA SEFSC Social Science Research Group <http://www.sefsc.noaa.gov/socialscience/>

³ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

⁴ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

⁵ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ NOAA RIR requirements http://www.nmfs.noaa.gov/sfa/laws_policies/national_standards/documents/ns1-3-7_rir_clean_1-8-15.pdf

⁷ Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>

8.4.8 (iii) - on the impact on biodiversity? **Yes...**[1] **Some...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Bycatch is a major concern in shrimp trawl 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 continue to collaborate on research of innovative methods for further reduction of impacts.</p> <p>The primary gear types in the Alabama commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, pusher-head trawls 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</p>		

(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 (*Xiphopeneus kroyeri*), and rock shrimp (*Sicyonia brevirostris*) 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.

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.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}

Observer Program:

NOAA Fisheries monitors bycatch reduction methods and shrimp trawl impacts through an onboard observer program.⁹ 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.

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 stock 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

Species	Mortality	
	Pre-regulation	Post-Regulation
Atlantic/Gulf		
<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>Eretmochelys 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 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.¹⁵ Observer coverage on the skimmer fleet began in 2012 due to concerns regarding increased strandings of sea turtles in 2010 and 2011.¹⁶ 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 began research in 2012 on new TED designs to address this problem and is currently actively researching new TED designs to exclude smaller turtles.

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.¹⁷ Only one turtle (Kemp's Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ray catch. ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.¹⁸

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.¹⁹ 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.²⁰ 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*).²¹ 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.²²

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.²³ 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.²⁴ 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.²⁵

SEAMAP- Gulf of Mexico conducts resource surveys that are used to assess the shrimp populations through the Summer and Fall Shrimp/Groundfish Surveys.²⁶ 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.

ADCNR is responsible for biological monitoring through the Fisheries Assessment and Monitoring Program (FAMP).^{27,28} ADCNR began fisheries data collection in 1977, initially for shrimp and crab. In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with ADEM to include collection of environmental parameters on water quality. 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:

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.²⁹ 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. Impacts on essential fish habitat (EFH) have been assessed by NOAA and the GMFMC in the Generic Amendment for addressing EFH

<p>requirements in FMPs. The EFH amendment applies to all seven GMFMC FMPs.³⁰ The Initial EFH amendment was developed in 1998 and includes 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. The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:³¹</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. These recommendations were adopted into regulation by NOAA Fisheries.³² 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. 		
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¹ GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² ADCNR fishing regulations <http://www.outdooralabama.com/regulations-and-enforcement>

³ GMFMC shrimp FMP Amendment 9 <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 SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁷ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

⁸ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

⁹ NOAA Fisheries Galveston shrimp program website 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

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

- ¹² SEFSC “TEDs” <http://www.sefsc.noaa.gov/labs/mississippi/ted/>
- ¹³ NOAA Office of Protected Species “sea turtles” <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 Skimmer observer data
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf
- ¹⁷ ADCNR, *NFWF Final Programmatic Report*, 2014.
- ¹⁸ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015
- ¹⁹ 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
- ²⁰ GMFMC shrimp FMP 2006 Regulatory Amendment
http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf
- ²¹ 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>
- ²² Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMZzQ/view?pli=1>
- ²³ “Red Snapper” *Fishwatch*. Web. Accessed June 2015.
- ²⁴ GMFMC shrimp FMP Amendment 14
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amend%2027-%20Shrimp%20Amend%2014.pdf>
- ²⁵ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.
- ²⁶ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>
- ²⁷ FAMP <http://www.outdooralabama.com/sample-processing>
- ²⁸ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.
- ²⁹ Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>
- ³⁰ EFH amendments

http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php)

³¹ EFH Amendment 3 http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf

³² 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

8.4.8 (iv) - on the impact on coastal fisheries? **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>3) 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 Alabama, the inshore shrimp season for commercial and recreational harvest opens when the majority of shrimp are of legal size. ADCNR sampling each year confirms that shrimp have reached legal size (68 count per pound) when the season.² Live-bait shrimping; however, is allowed year-round under strict harvest regulations and there is no minimum size requirement.³ Other states have similar regulations for various direct user groups and conflicts have largely been minimized.</p> <p>4) 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</p> <p>Conflicts with other fisheries and user groups have also been identified.</p> <p>5) 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}</p> <p>6) Gear conflicts between shrimpers and stone crab fishermen. The GMFMC shrimp FMP directly addresses conflicts between the shrimp and stone crab</p>		

<p>fisheries and established five zones within the EEZ to separate shrimp trawling and stone crab trap activity.⁷</p> <p>7) Gear conflicts also occur in state waters between shrimpers and blue crab fishermen. Each of the five Gulf states, including Alabama, 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.^{8,9}</p> <p>8) 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.^{10,11,12} 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 shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² FAMP <http://www.outdooralabama.com/sample-processing>

³ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁴ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

⁵ U.S. CFR Title 50 Part 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 GMFMC shrimp FMP Amendment 3 http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁸ ADCNR Summary of Blue Crab Regulations [http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12\(1\).pdf](http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12(1).pdf)

⁹ 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>

¹⁰ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

¹¹ MS-AL Hang book <http://texasseagrant.org/assets/uploads/publications/1983/83-505.pdf>

¹² TX-LA Hang Book <http://texasseagrant.org/assets/uploads/publications/1976/76-502.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
	<p>The primary gear types in the Alabama commercial shrimp fishery are otter trawls and skimmer trawls. Butterfly nets, pusher-head trawls and cast nets are also sometimes utilized in some inshore areas.^{1,2} Otter trawls are the primary gear type utilized in the offshore fishery conducted in federal waters; skimmer nets have gained popularity in inshore waters.</p> <p><u>Otter trawls:</u> 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</p> <p>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 Turtle mortality has decreased significantly since the implementation of TEDs and most sea turtle populations show signs of rebuilding. TEDs, however, 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.</p> <p>Maintaining high compliance rates throughout the fishery is also an ongoing effort. Compliance rates for the Gulf of Mexico fishery have varied widely from year to year and continued outreach and education activities are necessary to keep the fishery above the 88% effectiveness rate required by the ESA 2014 biological Opinion.</p> <p>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</p>	

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 fathom).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*), and 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

Common bycatch species in Alabama include several marketable species such as crabs, sheepshead, flounder, southern kingfish and sand seatrout; which are often retained by shrimpers.¹³

BRDs are not required in state waters in Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species.

ADCNR is responsible for biological monitoring through the Fisheries Assessment and Monitoring Program (FAMP).¹⁴ ADCNR began fisheries data collection in 1977, initially for shrimp and crab. In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with ADEM to include collection of environmental parameters on water quality.

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.

Skimmer trawls:

Skimmer trawls were first developed in Louisiana in the early 1980s and over time has also gained popularity in inshore waters of Mississippi and Alabama.¹⁵ Skimmer trawls are highly effective gear in relatively shallow waters. 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.¹⁶ 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.¹⁷ 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.

A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.¹⁸ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ray catch.

ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.¹⁹

BRDs are not required in skimmer trawls in Alabama; 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.²⁰ 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. The degree to which bottom trawls disturb sediment depends on the sediment type and the gear type, weight and speed and 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. 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. 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.²¹ 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.²² 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.²³ Barnette (2001) additionally reports on impacts of skimmer trawls versus otter trawls, 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.²⁴ 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.

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.²⁵ 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.^{26,27} 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.²⁸ TED and BRD instruction manuals are distributed in English, Spanish, and Vietnamese.

The Mississippi-Alabama Sea Grant Consortium Sea Grant (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.'²⁹ One of the primary focus areas of MASGC is Sustainable Fisheries and Aquaculture.³⁰ 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.³¹

Texas Sea Grant has also 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.³²

	<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.³³ 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. 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.³⁴</p>	
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¹ GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² ADCNR fishing regulations <http://www.outdooralabama.com/regulations-and-enforcement>

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 SEFSC Mississippi Labs History of TEDs <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 shrimp FMP Amendment 9 <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 shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-10%20Final%202002-07.pdf>

¹² Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWnNBMzQ/view?pli=1>

¹³ ADCNR. *Alabama Trawl Gear Characterization Report*, 2005. http://www.nmfs.noaa.gov/pr/pdfs/strategy/al_trawl_gear.pdf

¹⁴ FAMP <http://www.outdooralabama.com/sample-processing>

¹⁵ Stephen Hein and Paul Meier, *Skimmers: Their Development and Use in Coastal Louisiana*. <http://spo.nmfs.noaa.gov/mfr571/mfr5712.pdf>

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

- ¹⁷ Skimmer observer data
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf
- ¹⁸ ADCNR, *NFWF Final Programmatic Report*, 2014.
- ¹⁹ ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015
- ²⁰ Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>)
- ²¹ NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf
- ²² Jennings and Kaiser 1998
http://www.researchgate.net/profile/Michel_Kaiser/publication/222490649_The_Effects_of_Fishing_on_Marine_Ecosystems/links/0fcfd50af7a1a0577a000000.pdf
- ²³ Sanchez et al., 2001 and Ball et al., 2001 as cited in Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>)
- ²⁴ EFH amendments
http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php)
- ²⁵ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm
- ²⁶ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>
- ²⁷ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>
- ²⁸ <http://www.sefsc.noaa.gov/species/turtles/staff.htm>, Accessed 8.13.2015
- ²⁹ Mississippi Alabama Sea Grant Consortium (MASGC) <http://masgc.org/about>
- ³⁰ MASGC Sustainable Fisheries and Aquaculture <http://masgc.org/focus-areas/article/sustainable-fisheries-and-aquaculture>
- ³¹ Posadas, B. 2014. Economic Sectors Targeted by the Mississippi-Alabama Sea Grant Research, Extension, Education, and Outreach Programs. <http://msucares.com/pubs/publications/p2849.pdf>. Accessed 8.14.2015
- ³² Texas Sea Grant. <http://texasseagrant.org/staff/tony-reisinger/>
- ³³ 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
- ³⁴ Burrage, D. 2002. Inshore shrimp fishery effort and gear evaluations to mitigate natural disaster impacts on the Mississippi Inshore brown shrimp fishery. Final Report.

(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:		

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 consecutive quarters.⁵ These policies typically deter fishermen from circumventing regulatory measures.

Alabama:

ADCNR MRD conservation enforcement officers conduct on water and dockside inspections and respond to reports of violations, issuing citations for any violation of gear regulations.^{6,7} Conservation officers have authorization grant by Code of Alabama, Section 9-2-65 and 9-12-31, 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.^{8,9} In the 2011-2012 fishing year, MRD enforcement conducted 18,030 hours of patrols, over 11,400 boat checks, 1300 facility inspections, issued over 3000 citations and warnings.¹⁰

Additionally, ADCNR enforcement officers conduct courtesy inspections, when requested, to ensure that TEDs are installed properly prior to the opening of shrimp season.

¹ MSA http://www.nmfs.noaa.gov/msa2005/docs/MSA_amended_msa%2020070112_FINAL.pdf

² NOAA Fisheries Office of Law Enforcement <http://www.nmfs.noaa.gov/ole/>

³ USCG Living Marine Resources <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

⁴ NOAA Fisheries TED Compliance rates

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 Draft Ted compliance Policy (2015)

http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf

⁶ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

⁷ ADCNR, unpublished data. 2013-2014 blue crab violations report.

⁸ Ala. Code, Section 9-2-65 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-65.htm>

⁹ ALA CODE § 9-12-31 <http://codes.lp.findlaw.com/alcode/9/12/2/1/9-12-31>

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>		

¹NOAA Fisheries SERO. CRP program http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/crp/index.html

² NOAA Fisheries SERO. CRP Award Status Report. http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/documents/2013_crp_annual_report.pdf

³NOAA SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁴Texas Sea Grant. <http://texasseagrant.org/staff/gary-graham/>

⁵GSAFF Research <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

⁷Helies, 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.gulfsothfoundation.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>Alabama: Similarly, ADCNR allows for various gear types within the inshore shrimp fishery including otter trawls, skimmer trawls, butterfly nets, pusher-head trawls 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 GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

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

³ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁴ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.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
<p>NOAA SEFSC Pascagoula Lab 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).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</p>		

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. The August 2006 Regulatory Amendment of the shrimp FMP standardizes the requirements for certification of BRDs. ⁴		
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¹SEFSC Pascagoula Lab Harvesting Systems Unit
http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

²Southeast Fishery Bulletin, February 20, 2013.
http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf, Accessed 8.13.2015

³NOAA ‘Shrimp Import Legislation for Sea Turtle Conservation’
<http://www.nmfs.noaa.gov/pr/species/turtles/shrimp.htm>

⁴GMFMC shrimp FMP 2006 Regulatory Amendment
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 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.² 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.³</p> <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.⁴ 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.’⁵ 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. This information is disseminated via workshops, websites, social media, and mailed and online newsletters.⁶</p> <p>Texas Sea Grant has been active in training fishermen and captains across the Gulf</p>		

<p>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</p> <p>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.</p>		
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¹ Southeast Fishery Bulletin, February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf , Accessed 8.13.2015

² Southeast Fishery Bulletin, February 20, 2013. http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2013/fb13-011_otter_trawl_regs.pdf, Accessed 8.13.2015

³ <http://www.sefsc.noaa.gov/species/turtles/staff.htm>, Accessed 8.13.2015

⁴ Mississippi Alabama Sea Grant Consortium (MASGC) <http://masgc.org/about>

⁵ MASGC Sustainable Fisheries and Aquaculture <http://masgc.org/focus-areas/article/sustainable-fisheries-and-aquaculture>

⁶ Posadas, B. 2014. Economic Sectors Targeted by the Mississippi-Alabama Sea Grant Research, Extension, Education, and Outreach Programs. <http://msucares.com/pubs/publications/p2849.pdf>. Accessed 8.14.2015

⁷ Texas Sea Grant. <http://texasseagrant.org/staff/tony-reisinger/>

⁸ 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

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 Alabama that address environmental management and use of living resources: ADCNR and ADEM.</p> <p>The marine resources of Alabama are administered under the ADCNR as authorized through the Code of Alabama, Section 9 (Conservation and Natural Resources). The Commissioner of ADCNR holds regulatory authority. The duties of the ADCNR are</p>		

to, “protect, conserve, and increase the wildlife of the state and to administer all laws relating to wildlife and the protection, conservation, and increase thereof.”¹ The Marine Resources Division (MRD) and the State Lands Division (SLD) specifically address the conservation and use of marine resources and habitats. ADCNR rules and regulations are promulgated through the Alabama Administrative Code, Chapter 220.²

ADEM was created through the Alabama Environmental Management Act of 1982, which also established the Environmental Management Commission (EMC).³ The EMC is charged with developing the state’s environmental policies, hearing administrative appeals, and adopting environmental regulations. ADEM is the administrative arm charged with carrying out environmental policies and management to ensure clean air, clean water and proper management of waste.⁴ It is the agency responsible for emergency response to spills of hazardous materials and coordinates cleanups and remediation projects, pollution prevention programs, and permitting for activities that have potential environmental impacts. Laws governing environmental management include the Code of Alabama, Title 22, Chapters 22-40, and Title 9, Chapter 7.⁵ ADEM promulgates rules and regulations through the Alabama Administrative Code, Chapter 335.⁶

The district courts of Alabama are able to try and convict people or corporations that are in violation of game and fish laws.⁷ The Commissioner of the ADCNR is able to close seasons if it is found, upon a survey by the department, that such a measure is necessary to protect or conserve species of fish.⁸

If changes to permissible or potential use of coastal resources is proposed, Alabama is governed under an open-meeting act, which requires 35 days of notice before a change is enacted, in addition to a public comment period.⁹ Any additional rules and regulations that would affect conservation or research activities require full participation by interested parties.¹⁰

Through these two state agencies and additional federal programs, a framework of programs exists to fully address coastal resource management in Alabama.

ADCNR State Lands Division (SLD) manages three Coastal Resource Planning and Management programs: the Alabama Coastal Area Management Program (ACAMP), the Alabama Coastal Impact Assistance Program (CIAP), and the Alabama Coastal and Estuarine Land Conservation Program (CELCP).¹¹

The ACAMP is a NOAA-funded program managed jointly through ADEM and ADCNR State Lands Division (SLD). 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. Alabama Coastal Area Act, (Ala. Code 9-7-15) calls for the development of the ACAMP.¹² The ACAMP was designed to preserve, enhance and develop coastal resources for present and future generations. Code of Alabama, Title 9 states that it is state policy “to preserve, protect, develop and, where possible, to restore or enhance the resources of the state’s coastal area for this and succeeding generations,” to achieve “wise use” of

coastal resources, and to work cooperatively to solve environmental problems.¹³ The ACAMP was approved by NOAA, and accepted into the federal CZMP in 1979.¹⁴ ADCNR SLD manages all planning and policy development related to the ACAMP, and ADEM handles all permitting, monitoring and enforcement aspects of the ACAMP including Federal Consistency review. Annual program activities include coastal cleanups, public access projects, planning support for local governments, grant funding for community projects. Priorities identified in the most recent Assessment and Strategy Report in 2010 are:¹⁵

- Coastal Natural Hazards Response
- Secondary and Cumulative Impacts
- Ocean Resources
- Wetlands

The NOAA Office of Ocean and Coastal Resources manages the CZMP and monitors the Alabama CMZ through annual reporting of standardized performance indicators and five year Assessment and Strategy Reports.¹⁶

In addition to the ACAMP, Alabama also has a Coastal Impact Assistance Program (CIAP) which is a federal funded program administered by USFWS and managed by ADCNR.¹⁷ 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 Alabama CELCP encompasses 7800 square miles, contains one NERR site managed by Alabama (Weeks Bay) and part of a second NERR site managed by Mississippi (Grand Bay), as well as two wildlife refuges (Bon Secour, and Grand Bay), and the Mobile Bay National Estuary Program.¹⁸

In partnership with the EPA, the Gulf of Mexico Foundation, and the other four Gulf States, Alabama also participates in the Gulf Ecological Management Site (GEMS) Program.¹⁹ 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 three sites identified as GEMS in Alabama- Weeks Bay NERR, The Orange Beach Maritime Forest, and the Mobile-Tensaw River Delta.²⁰

The EPA also administers and funds the Mobile Bay National Estuary Program (MBNEP). The Mobile Bay Comprehensive Conservation Management Plan (CCMP) was approved by the EPA in 2002. The MBNEP mission is to “promote wise stewardship of the water quality characteristics and living resource base of the Mobile Bay estuarine system” and utilizes local citizens, local, state and federal government agencies, other environmental organizations and academic institutions to implement

the CCMP.²¹

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.^{22,23} Alabama currently has one federally approved NERR- the Weeks Bay Reserve.²⁴ Alabama also has two National Wildlife Refuges- the Bon Secour NWR and the Grand Bay NWR.²⁵ Additionally, Alabama has one national park- the Gulf Islands National Seashore.²⁶

Other Alabama coastal restoration efforts related to the Deepwater Horizon Oil Spill recovery include:²⁷

- NFWF (Gulf Environmental Benefit Fund)
- NRDA
- RESTORE (Gulf Coast Ecosystem Restoration Council and the Alabama Gulf Coast Recovery Council)²⁸

¹ALA CODE § 9-2-2 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

²Ala. Admin. Code r. 220 http://www.alabamaadministrativecode.state.al.us/docs/con_/index.html

³Alabama Environmental Management Act <http://codes.lp.findlaw.com/alcode/22/1/22A>

⁴ADEM <http://adem.alabama.gov/default.cnt>

⁵ADEM Environmental Laws <http://www.adem.state.al.us/alEnviroRegLaws/default.cnt>

⁶Ala Admin. Code r. 335 <http://www.alabamaadministrativecode.state.al.us/docs/adem/index.html>

⁷Ala. Code § 9-11-6 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-11-6.htm>

⁸Ala Code § 9-2-7 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-7.htm>

⁹Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

¹⁰ADEM promulgation of rules <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-7-16.htm>

¹¹ADCNR Coastal Management <http://www.outdooralabama.com/coastal-resource-planning-and-management>

¹²ALA CODE 9-7-15 "Coastal Area Act" <http://codes.lp.findlaw.com/alcode/9/7/9-7-15>

¹³ACAMP <http://www.adem.state.al.us/alEnviroReglaws/files/Division8.pdf>

¹⁴ALA CODE 9-7-10 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-7-10.htm>

¹⁵ACAMP 309 Assessment and Strategy Report (2010)
<http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

¹⁶NOAA Office of Coastal and Ocean Resources <http://coastalmanagement.noaa.gov/mystate/tx.html>

¹⁷Alabama Coastal Impact Assistance Program <http://www.outdooralabama.com/state-alabama-coastal-impact-assistance-program>

¹⁸Alabama CELCP http://www.outdooralabama.com/sites/default/files/images/File/Weeks_Bay/2005_05AL_CELCP.pdf

¹⁹Gulf Ecological Management Site Program <http://www.epa.gov/gmpo/gem2.html>

²⁰Alabama GEMS <http://www.sarpc.org/gems/index.html>

²¹Mobile Bay National Estuary Program <http://www.mobilebaynep.com/Publications.htm>

²²NERR Program <http://www.nerrs.noaa.gov/>

²³National Wildlife Refuge System <http://www.fws.gov/refuges/>

²⁴Weeks Bay NERR <http://www.outdooralabama.com/weeks-bay-reserve>

²⁵FWS National Wildlife Refuges <http://www.fws.gov/refuges/refugeLocatorMaps/Alabama.html>

²⁶National Park Service- Gulf Islands National Seashore <http://www.nps.gov/guis/index.htm>

²⁷Alabama Coastal Restoration Efforts <http://www.alabamacoastalrestoration.org/>

²⁸Alabama Gulf Coast Recovery Council <http://restorealabama.org/>

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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>If the Alabama Department of Environmental Management (ADEM) 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.¹ Additionally, Alabama 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.²</p> <p>The ACAMP Assessment and Strategy Reports are updated every five years and include stakeholder engagement throughout the process. The draft Assessment and Strategy report is made available for public review and comment for a 30-day period publicized through local newspapers and posted on the ADCNR website.³ Additionally, the ACAMP Assessment and Strategy Report was reviewed by the Coastal Resources Advisory Committee, made up of seven members from the two coastal counties in Alabama who represent the interests of coastal communities.⁴</p> <p>The Conservation Advisory Board provides advice on the policies of the ADCNR, and its members, who are Alabamian citizens, scientists and business owners, are appointed by the Governor of Alabama to represent each of Alabama's seven congressional districts.⁵ District 1, which encompasses Alabama's shoreline and</p>		

coastal areas, is represented by a marine science expert. ⁶ ADCNR conducts scoping meetings, direct stakeholder communications, public hearings, and provides public comment opportunities to address community needs when developing potential regulation changes. ^{7,8,9}		
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¹Alabama Environmental Management and Laws <http://www.adem.state.al.us/alEnviroRegLaws/default.cnt>

²Open Meeting Act of 2005, AL SB101 2005, <https://www.openmeetings.alabama.gov/generalpublic/downloads/Act2005-40.pdf>

³ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

⁴Ala. Code § 22-22A-12 <http://codes.lp.findlaw.com/alcode/22/1/22A/22-22A-12>

⁵Guillory, 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>

⁶ADCNR Conservation Advisory Board <http://www.outdooralabama.com/conservation-advisory-board>

⁷ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

⁸ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

⁹ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

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...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
Estuarine areas are protected from activities like construction, dredging and pollution by the River and Harbor Protection Act, the Wildlife Coordination Act and the Coastal Area Board Act; the latter act is designed to improve waters in coastal Alabama through programs that preserve and enhance the resources for future well-being and welfare of current citizens. ¹		
The Seafood Fund established within the Code of Alabama uses monies generated from licenses and fees to ensure that the development of the seafood industry allows for the preservation, protection and development of fish and shellfish, and other projects that are deemed beneficial to the area. ²		
The ADEM must solicit participation from coastal resource users and other governing agencies in order to carry out the management programs outlined in Section 9 of the Code of Alabama. ³		
The development of the ACAMP and each five year Assessment and Strategy		

Report involve public comment and participation regarding coastal management, and the Coastal Resources Advisory Committee includes representatives from the Alabama coastal communities as well as the Commissioner of ADCNR. ^{4,5}		
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¹Guillory, 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>

²Ala. Code § 9-2-89 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-89.htm>

³Ala. Code § 9-7-16 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-7-16.htm>

⁴ACAMP 309 Assessment and Strategy Report (2010)
<http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

⁵Ala. Code § 22-22A-12 <http://codes.lp.findlaw.com/alcode/22/1/22A/22-22A-12>

10.1.4 (a)(i) Has the adoption of fisheries practices been promoted that avoids conflict among bottom resource users? **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>5) 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 Alabama, the inshore shrimp season for commercial and recreational harvest opens when the majority of shrimp are of legal size. ADCNR sampling each year confirms that shrimp have reached legal size (68 count per pound) when the season.² Live-bait shrimping; however, is allowed year-round under strict harvest regulations and there is no minimum size requirement.³ Other states have similar regulations for various direct user groups and conflicts have largely been minimized.</p> <p>6) 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</p> <p>Conflicts with other fisheries and user groups have also been identified.</p>		

<p>9) 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}</p> <p>10) 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.⁷</p> <p>11) Gear conflicts also occur in state waters between shrimpers and blue crab fishermen. Each of the five Gulf states, including Alabama, 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.^{8,9}</p> <p>12) 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.^{10,11,12} 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 shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

² FAMP <http://www.outdooralabama.com/sample-processing>

³ ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁴ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

⁵ U.S. CFR Title 50 Part 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 GMFMC shrimp FMP Amendment 3 http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁸ ADCNR Summary of Blue Crab Regulations [http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12\(1\).pdf](http://www.outdooralabama.com/sites/default/files/images/file/Crab%20Handout_com_July12(1).pdf)

⁹ 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>

¹⁰ GMFMC shrimp FMP <http://gulfcouncil.org/docs/amendments/SHRIMP%20FMP%20Final%201981-11.pdf>

¹¹ MS-AL Hang book <http://texasseagrant.org/assets/uploads/publications/1983/83-505.pdf>

¹² TX-LA Hang Book <http://texasseagrant.org/assets/uploads/publications/1976/76-502.pdf>

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 Alabama, shrimp trawling is prohibited within shrimp nursery areas as follows: All rivers (with exception), streams, bayous and creeks within the State are permanently closed. Areas of Portersville Bay, Cat and Marsh Island and Coffee Island are closed as well. Herron Bay and portions of the Mississippi Sound north of the Gulf Intracoastal Waterway are closed. All of Weeks Bay is closed (with some exceptions for dip nets). The Theodore Industrial Canal, Bon Secour Bay, and waters north of Battleship Parkway are closed. Certain portions of Mobile Bay and Mobile County are closed. Areas north of Lillian Bridge and in Little Lagoon Pass in Baldwin County, and Perdido Pass are closed.⁶</p> <p>The ACAMP, which has been in effect since 1979, is designed to identify and evaluate the State's coastal resources, determine present and potential uses and conflicts of those resources, and establish priorities and guidelines for use.⁷ The Coastal Resources Advisory Committee, made up of seven members from the coastal counties of Alabama, advises the department of all matters of coastal area use.⁸</p>		

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

² 50 CFR § 622
<http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CB4QFjAAahUKEwjUxdbgr6>

[THAhWCF5IKHUFhAxw&url=http%3A%2F%2Fsero.nmfs.noaa.gov%2Fsustainable_fisheries%2Fpolicy_branch%2Fdocuments%2Fpdfs%2Fcurrent_50cfr622_regulations.pdf&ei=lqvLVdSsOIKvyATBwo3gAQ&usg=AFQjCNHL-3DExdc70KBWrkBYAtTnJ4w6g&bvm=bv.99804247,d.aWw](http://www.nmfs.noaa.gov/sustainable_fisheries/policy_branch/documents/pdfs/current_50cfr622_regulations.pdf&ei=lqvLVdSsOIKvyATBwo3gAQ&usg=AFQjCNHL-3DExdc70KBWrkBYAtTnJ4w6g&bvm=bv.99804247,d.aWw)

³ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” Powerpoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

⁴ SEFSC Galveston Lab <http://www.galvestonlab.sefsc.noaa.gov/seaturtles/index.html>

⁵ Sea turtle nesting projects...

² ADCNR Commercial Shrimping Regulations <http://www.outdooralabama.com/sites/default/files/images/file/Shrimp%20Handout%20Com%20July12.pdf>

⁷ ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

⁸ Ala. Code § 22-22A-12 <http://codes.lp.findlaw.com/alcode/22/1/22A/22-22A-12>

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>Alabama: If ADEM 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</p>				

<p>action being passed.⁵ Additionally, Alabama 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 ACAMP also requires consultation and coordination between various user groups in developing consistent management practices.⁷ A Coastal Advisory Board was initially created for the development of the ACAMP and charged with evaluating potential coastal development, including determination of the present and potential uses and the present and potential conflicts in the uses of each coastal resource, broad guidelines on priority of uses in particular areas, and allowing for adequate provision for public notice, public hearings and judicial review as provided for under Alabama law.⁸ In 1982, the Coastal Advisory Board became the Coastal Resources Advisory Committee, responsible for advising the department on all aspects of coastal area use.⁹</p>		
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¹ GMFMC FAQs website http://gulfcouncil.org/resources/education_faqs/education_council_faqs.php

² GMFMC Scoping through implementation website http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

³ GMFMC website <http://gulfcouncil.org/>

⁴ GMFMC Committees & panels website http://gulfcouncil.org/panels_committees/index.php

⁵ ADEM Admin. Code r. 335.2.1.04 <http://alabamaadministrativecode.state.al.us/docs/adem/335-2-1.pdf>

⁶ Open Meeting Act of 2005, AL SB101 2005 <https://www.openmeetings.alabama.gov/generalpublic/downloads/Act2005-40.pdf>

⁷ ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

⁸ Ala. Code § 9-7-15 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-7-15.htm>

⁹ Ala. Code § 22-22A-12 <http://codes.lp.findlaw.com/alcode/22/1/22A/22-22A-12>

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
ADCNR publicizes public hearings, scoping meetings, comment periods for proposed management actions and encourages public participation through these outlets. ^{1,2,3,4}		

Similarly, ADEM also publicizes public hearings, and Environmental Management Commission meetings, and public notices through the ADEM website, and distributes a brochure with information on public participation in the rulemaking and permitting process.^{5,6,7} If the Alabama Department of Environmental Management 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.⁸

Alabama 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

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 both agencies.

Alabama Coastal Area Management Plan (ACAMP), governed under the ADEM, has program activities include coastal cleanup, implementation of public access construction projects, planning support for local governments, and providing grant funds to Alabama's coastal communities and partners. ACAMP'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.^{10,11}

The Alabama Gulf Coast Recovery Council, which was formed in the wake of the 2010 Deepwater Horizon oil spill, has held public meetings since 2010 to submit ideas for and discuss potential restoration projects related to the spill recovery efforts.¹²

The Code of Alabama states that the duty of the ADCNR is to carry on a program of education and public enlightenment with respect to the wildlife and other natural resources, state parks and the monuments and historical sites of Alabama.¹³ ADCNR runs a series of conservation education and volunteer programs to engage the public in environmental stewardship.^{14,15}

NERR sites provides a 'living classroom' for education on estuaries and coastal resources.¹⁶ The Weeks Bay NERR Education program includes K-12 education, teacher training programs, and general public outreach at the Wetlands Education Center and Visitor Center.¹⁷

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.¹⁸

There are also numerous NGOs in Alabama and across the Gulf of Mexico addressing coastal resource awareness, restoration and protection.

¹Ala. Code §36-25A-1: Alabama Open Meetings Law <http://codes.lp.findlaw.com/alcode/36/25A/36-25A-1>

²ADCNR Alabama Conservation Advisory Board meetings <http://www.outdooralabama.com/conservation-advisory-board>

³ADCNR MRD Oyster Community meeting <http://www.outdooralabama.com/alabama-oyster-community-meeting>

⁴ADCNR proposed rules <http://www.outdooralabama.com/proposed-dcnr-rules>

⁵ADEM public hearings and commission meetings <http://www.adem.state.al.us/newsEvents/pubHearings.cnt>

⁶ADEM public notices
<http://www.adem.state.al.us/newsEvents/publicNotices.cnt>

⁷ADEM. Public Participation in the ADEM Rulemaking and Permitting Processes. Brochure.
<http://adem.alabama.gov/moreInfo/pubs/Permit1004.pdf>

⁸ADEM Admin. Code r. 335.2.1.04 <http://alabamaadministrativecode.state.al.us/docs/adem/335-2-1.pdf>

⁹Open Meeting Act of 2005, AL SB101 2005
<https://www.openmeetings.alabama.gov/generalpublic/downloads/Act2005-40.pdf>

¹⁰ADEM Coastal Programs <http://adem.alabama.gov/programs/coastal/default.cnt>

¹¹ACAMP 309 Assessment and Strategy Report (2010)
<http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

¹²Alabama Gulf Coast Recovery Council www.restorealabama.org

¹³Ala. Code §9-2-2 <http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/9-2-2.htm>

¹⁴ADCNR Conservation Education <http://outdooralabama.com/conservation-education>

¹⁵ADCNR Volunteer opportunities <http://www.outdooralabama.com/volunteer-opportunities-0>

¹⁶NERR education programs: <http://nerrs.noaa.gov/Education.aspx>

¹⁷Weeks Bay NERR <http://www.outdooralabama.com/education-weeks-bay>

¹⁸Mississippi- Alabama Sea Grant Consortium <http://masgc.org/education>

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,		

<p>including overall workforce satisfaction.^{1,2}</p> <p>NOAA conducts research on the demographics and economies of coastal communities, including housing an index of the total economy of coastal areas.^{3,4}</p> <p>The National Ocean Economics Program (NOEP), sponsored by NOAA, provides current policy-relevant economic and demographic information on changes and trends along the U.S. coast and coastal waters.⁵</p> <p>Gulffishinfo.gov, a program of GSMFC, also collects and makes public information about the economic status of the fishery.⁶</p> <p>After the Deepwater Horizon oil spill, a Natural Resources Disaster Assessment was conducted to ascertain the effect of the oil on marine mammals, fish, shellfish, coastal habitats and human uses of coastal resources. As a result of this assessment, a number of projects have been identified that will assist in decision-making regarding the most effective ways to offset damage.⁷ This report contains a chapter on the economic health of the coast including statistics on fishing and tourism industries. The Alabama Gulf coast generates approximately \$1 billion annual revenue through commercial and recreational fishing and seafood processing, and over \$3.2 billion in direct tourism. This accounts for over 15,000 jobs in fishing and processing and over 40,000 jobs in the tourism industry.</p>		
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¹Miller, 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>

²Miller, 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>

³NOAA socioeconomic research group SEFSC <http://www.sefsc.noaa.gov/socialscience/>

⁴NOAA State of the Coast <http://stateofthecoast.noaa.gov/economy.html>

⁵NOEP <http://www.oceaneconomics.org/About/overview.aspx>

⁶Gulf FINFO <http://gulffishinfo.org/Gulf-Fisheries-Economics>

⁷Coastal Recovery Commission of Alabama, 2011. *A Roadmap to Resilience: Towards a Healthier Environment, Society and Economy for Coastal Alabama*. Report. <http://crcalabama.org/wp-content/uploads/2011/02/CRC-Report-02-2011.pdf>

10.2.2 (ii) - social and cultural **Yes...[1] Some...[½] No...[0]**

Extent of compliance		
Yes	Some	No
The Code of Alabama and ADCNR recognizes that important ecological, cultural, historic and aesthetic values to the coastal area are essential to the well-being of all citizens, and legislates to maintain that well-being. ¹		
GSMFC has conducted socioeconomic research on the baseline of seafood dealers		

<p>and processors in each of the Gulf States, including overall workforce satisfaction and the value of being involved in the seafood sector.^{2,3} 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.⁴</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 30 communities along the Alabama coast including a brief cultural geographic description, earnings by industry, population demographics, and fishing infrastructure and activities for each community. Results indicate that fishing is a primary local economy in eight communities: Bayou la Batre, Bon Secour, Coden, Dauphin Island, Grand Bay, Gulf Shores, Irvington, and Orange Beach; and four other communities are at least moderately engaged in the fishing industry (Fairhope, Foley, Mobile, Theodore).⁵ 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.^{6,7}</p> <p>After the Deepwater Horizon oil spill, a Natural Resources Disaster Assessment was conducted to ascertain the effect of the oil on marine mammals, fish, shellfish, coastal habitats and human uses of coastal resources. As a result of this assessment, a number of projects have been identified that will assist in decision-making regarding the most effective ways to offset damage.⁸ This report contains information on social and cultural aspects of the Alabama coast.</p>		
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¹Ala. Code, Title 9, chapter 7 <http://codes.lp.findlaw.com/alcode/9/7>

²Miller, 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>

³Miller, 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>

⁴Guillory, 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>

⁵Assessment, 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>

⁶NOAA socioeconomic research group SEFSC <http://www.sefsc.noaa.gov/socialscience/>

⁷NOAA SERO Community Snapshots http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

⁸Coastal Recovery Commission of Alabama, 2011. *A Roadmap to Resilience: Towards a Healthier Environment, Society and Economy for Coastal Alabama*. Report. <http://crcalabama.org/wp-content/uploads/2011/02/CRC-Report-02-2011.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
<p>The ACAMP 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 Section 309 Assessment and Strategies Report 2010</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.² 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>2010 Assessment and Strategies Report</i> also addresses threats to wetlands and ranks types of threats, severity and reversibility of each risk.</p> <p>The Coastal Area Board Act was enacted in 1976 to ensure that use of coastal areas was managed under a program that was designed to preserve and enhance the coastal resources of Alabama for current and future citizen's well-being.³ In 1982, protection of air, land and water resources was consolidated with the creation of the Alabama Department of Environmental Management, which incorporated and standardized all existing protection regulation and the Coastal Area Board became the current Coastal Resources Advisory Committee.⁴</p>		

¹Alabama CAMP <http://www.adem.state.al.us/alEnviroReglaws/files/Division8.pdf>

²ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

³Guillory, 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>

⁴Ala. Code § 22-22A-12 <http://codes.lp.findlaw.com/alcode/22/1/22A/22-22A-12>

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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>There is a network of programs responsible for monitoring the coastal environment of Alabama taking into account physical, chemical, biological, economic, and social parameters.</p> <p>ADEM is the primary agency responsible for environmental management.¹ ADEM</p>		

programs are broken into four divisions: Air, Coastal, Waste/Remediation, and Water. These four divisions each run several programs aimed to prevent pollution, mitigate impacts and improve the quality of the environment and natural resources of Alabama. There are several monitoring programs that address water quality for groundwater, surface water, and coastal waters, air quality, nonpoint source pollution and beaches.^{2,3,4,5}

ADEM and ADCNR jointly administer the ACAMP. As part of the federal CZMP, the ACAMP has specific performance measures designed by NOAA to evaluate the performance of CMPs and NERR sites. The ACAMP includes long-term monitoring and data collection of those performance measures including both environmental and socioeconomic factors.^{6,7,8,9}

ADCNR is responsible for biological monitoring including fishery-dependent and fishery-independent monitoring systems. Fishery-independent sampling is conducted through the Fisheries Assessment and Monitoring Program (FAMP).^{10,11} ADCNR began fisheries data collection in 1977, initially for shrimp and crab. In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with ADEM to include collection of environmental parameters on water quality.. In 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl), seines, gill nets and beam plankton trawls (BPLs) and utilize these data to assess stock abundance, trends, and fisheries impacts. Fishery-dependent monitoring is done through the Trip Ticket Program. ADCNR implemented the Trip Ticket Program for fishery-dependent data collection in 2000.¹² 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.

As government entities, both ADEM and ADCNR 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.¹³

The Mobile Bay National Estuary Program (MBNEP) and Dauphin Island Sea Lab (DISL) also provide data on environmental monitoring.¹⁴ Seven monitoring stations throughout coastal Alabama are maintained by DISL and provide both meteorological and hydrological data. Data includes wind speed and direction, air temperature, photosynthetically active radiation, total solar radiation, barometric pressure, precipitation, water temperature, dissolved oxygen level and percent, salinity, turbidity, chlorophyll, and conductivity. Data are reported in real-time through the mymobilebay.com website maintained by MBNEP and data sets can be downloaded for specific time series and parameters. This site also links to data from various other monitoring programs including:

- National Atmospheric Deposition Program <http://nadp.sws.uiuc.edu/>
- Gulf of Mexico Coastal Ocean Observing System (GCOOS) <http://gcoos.org/>
- National Data Buoy Center <http://www.ndbc.noaa.gov/index.shtml>
- National Weather Service <http://www.srh.noaa.gov/mob/>
- NOAA Tide reports <http://tidesonline.nos.noaa.gov/>
- USGS Water Data <http://waterdata.usgs.gov/nwis/>

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.¹⁵ 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.^{16,17,18} GSMFC has also conducted socioeconomic research on the baseline of seafood dealers and processors in Alabama and other Gulf states, including overall workforce satisfaction and the value of being involved in the seafood sector.^{19,20}

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.²¹

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 Alabama, and currently SERO maintains 'community snapshots' on their website including demographic and economic information on coastal communities.^{22,23,24}

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.²⁵

¹ADEM <http://www.adem.state.al.us/default.cnt>

²ADEM, 2012. Integrated Water Quality Monitoring and Assessment Report. <http://adem.alabama.gov/programs/water/waterforms/2012AL-IWQMAR.pdf>

³ADEM, 2013. State of Alabama Ambient Air Monitoring 2013 Consolidated Network Review. <http://adem.alabama.gov/programs/air/airquality/2013AmbientAirPlan.pdf>

⁴ADEM Coastal Alabama Beach Monitoring Program <http://adem.alabama.gov/programs/coastal/beachMonitoring.cnt>

⁵ADEM Nonpoint Source Management Program <http://adem.alabama.gov/programs/water/nps/npsMgmt.cnt>

⁶NOAA Coastal Management Program <http://coast.noaa.gov/czm/performance/>

- ⁷NOAA, 2011. Coastal Zone Management Act Performance Measures System, Performance Measures. <http://coast.noaa.gov/czm/media/perfmeasures2011.pdf>
- ⁸NOAA, 2010. Coastal Zone Management Act Performance Measures System, Contextual Indicators. http://coast.noaa.gov/czm/media/contextual_indicator_list.pdf
- ⁹ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>
- ¹⁰FAMP <http://www.outdooralabama.com/sample-processing>
- ¹¹ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.
- ¹²Donaldson, D. 2004. Overview of State Trip Ticket Programs in Gulf of Mexico. SEDAR7-DW-20 http://sedarweb.org/docs/wpapers/SEDAR7_DW20.pdf
- ¹³Open Meeting Act of 2005, AL SB101 2005 <https://www.openmeetings.alabama.gov/generalpublic/downloads/Act2005-40.pdf>
- ¹⁴MBNEP and DISL environmental Monitoring <http://www.mymobilebay.com/>
- ¹⁵SEFSC Economic Research- shrimp <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>
- ¹⁶GSMFC Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>
- ¹⁷2008 Economic Survey of Inshore Shrimp Fleet GSMFC <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>
- ¹⁸2012 Economic Survey of Inshore Shrimp Fleet GSMFC <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>
- ¹⁹Miller, 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>
- ²⁰Miller, 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>
- ²¹GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php
- ²²Assessment, 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>
- ²³NOAA socioeconomic research group SEFSC <http://www.sefsc.noaa.gov/socialscience/>
- ²⁴NOAA SERO Community Snapshots http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/
- ²⁵NOAA Center for Sponsored Coastal Ocean Research <http://www.cop.noaa.gov/default.aspx>

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 ACAMP also provides for an annual grant cycle which allows for continued research on coastal issues of priority.^{1,2}</p> <p>NERR conducts ongoing research of coastal estuaries.³ Alabama currently has one NERR- the Weeks Bay NERR that conducts system-wide monitoring and research.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 Alabama currently has three sites in the GEMS program.⁶</p>		

¹Alabama Coastal Area Management Program <http://www.outdooralabama.com/alabama-coastal-area-management-program>

²ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

³The National Estuarine Research Reserve System (NERR) <http://www.nerrs.noaa.gov/Default.aspx>

⁴Weeks Bay NERR research <http://www.outdooralabama.com/weeks-bay-research>

⁵Gulf Ecological Management Site Program <http://www.epa.gov/gmpo/gem2.html>

⁶Alabama GEMS <http://www.sarpc.org/gems/index.html>

10.2.5 (ii) - economic and social aspects? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The ACAMP 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.^{1,2}</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.³</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.⁴ 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.^{5,6,7} GSMFC has</p>		

<p>also conducted socioeconomic research on the baseline of seafood dealers and processors in Alabama and other Gulf states, including overall workforce satisfaction and the value of being involved in the seafood sector.^{8,9}</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.¹⁰</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 Alabama, and currently SERO maintains ‘community snapshots’ on their website including demographic and economic information on coastal communities.^{11,12,13}</p> <p>Both ADCNR and ADEM 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.^{14,15}</p>		
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¹Alabama Coastal Area Management Program <http://www.outdooralabama.com/alabama-coastal-area-management-program>

²ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

³NOAA Center for Sponsored Coastal Ocean Research <http://www.cop.noaa.gov/default.aspx>

⁴SEFSC Economic Research- shrimp <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

⁵GSMFC Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>

⁶2008 Economic Survey of Inshore Shrimp Fleet GSMFC <http://www.gsmfc.org/publications/GSMFC%20Number%20195.pdf>

⁷2012 Economic Survey of Inshore Shrimp Fleet GSMFC <http://www.gsmfc.org/publications/GSMFC%20Number%20227.pdf>

⁸Miller, 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>

⁹Miller, 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>

¹⁰GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

¹¹Assessment, 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>

¹² NOAA socioeconomic research group SEFSC <http://www.sefsc.noaa.gov/socialscience/>

¹³ NOAA SERO Community Snapshots http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/

¹⁴ Code of Alabama, Section 9-2-14 <http://codes.lp.findlaw.com/alcode/9/2/1/9-2-2>

¹⁵ Open Meeting Act of 2005, AL SB101 2005 <https://www.openmeetings.alabama.gov/generalpublic/downloads/Act2005-40.pdf>

10.2.5 (iii) - legal and institutional aspects? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Under Title 9 of the Code of Alabama, ADCNR and ADEM 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 Alabama marine resources are subject to the rulings of state government, and governed under Title 9 of the Code of Alabama, Chapters 2 & 12.^{2,3} Resources are also monitored through the Coastal Area Board Act, which was enacted to ensure that use of coastal areas was managed under a program that was designed to preserve and enhance the coastal resources of Alabama for current and future citizen's well-being.⁴</p> <p>The ACAMP utilizes an array of legal and institutional resources and continues to research and incorporate resources from both state and federal programs and agencies.^{5,6}</p>		

¹Ala. Code Title 9 <http://codes.lp.findlaw.com/alcode/9>

²Ala. § 9-2 <http://codes.lp.findlaw.com/alcode/9/2>

³Ala. § 9-12 <http://codes.lp.findlaw.com/alcode/9/11>

⁴Guillory, 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>

⁵ACAMP 309 Assessment and Strategy Report (2010) <http://coastalmanagement.noaa.gov/mystate/docs/al3092011.pdf>

⁶Coastal Zone Management in Alabama. Fact Sheet. http://www.coastalstates.org/wp-content/uploads/2014/02/AlabamaFY13Factsheet_11by17.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 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.³ Using models, the Gulf Data, Assessment and Review program (GDAR) of the GSMFC compiles information provided by representatives and departments of each Gulf state (as directed by the Compact) in order to accurately capture the overall stock status of crab throughout the Gulf of Mexico.⁴ Recommendations for potential management actions to ensure the sustainability of resources are included in the regional Blue Crab Management Plan, though no state is required to implement the recommendations.⁵</p> <p>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.</p> <p>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.</p>		

¹GSMFC <http://www.gsmfc.org/>

²GMFMC <http://www.gulfcouncil.org/>

Ala. Code §9-12-180 <http://codes.lp.findlaw.com/alcode/9/12/5>

⁴VanderKooy, 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>

⁵Guillory, 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>

⁶United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Gulf of Mexico Initiative (GoMI) <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/?cid=stelpdrb1046039>

⁷NOAA. 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...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>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</p> <p>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</p>		

¹GOM Alliance <http://www.gulfofmexicoalliance.org/>

²EPA Gulf of Mexico Program <http://www.epa.gov/gmpo/>

³NERR Program <http://www.nerrs.noaa.gov>

⁴Commission for Environmental Cooperation http://www.cec.org/Page.asp?PageID=1226&SiteNodeID=310&BL_ExpandID=878

⁵IMO website <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...**[½] **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 country of origin, and makes their findings available on their website.¹⁵</p> <p>Alabama also has laws pertaining to labeling and disclosure of information regarding the source of certain seafood. Alabama Legislature also passed the 'Right to Know Country of Origin of Fish Notice Requirements law which requires food establishments serving farm-raised or wild caught fish to place a disclaimer or notice on the menu stating "Under Alabama law, the consumer has the right to know, upon request to the food service establishment, the country of origin of farm-raised fish or wild fish.", and must be able to provide information on the country of origin of the product. In lieu of the disclaimer, the food establishment may place the state name, USA, or the country of origin name.¹⁶</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 CFR 101.18

⁵ 2 CFR, Title 7, 60.200

⁶ 2 CFR, Title 7, 60.300 (2)

⁷ USDA AMS <http://www.ams.usda.gov/AMSV1.0/cool>

⁸ USDA COOL Compliance and Enforcement Requirements
<http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5095400>

⁹ 21 CFR 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. (2015, March 24).
<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 Ala. Admin. Code r. 420-3-22-.03 <http://www.alabamaadministrativecode.state.al.us/docs/hlth/420-3-22.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</p>		

and foreign facilities, and number of samples analyzed for USFDA compliance.⁶ The USFDA website contains features providing access and transparency of agency activities.

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

<p>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</p> <p>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.</p>		
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¹The United States International Trade Commission <http://www.usitc.gov/tata/hts/bychapter/>

²FAO. Fish Trade Regulations <http://www.globefish.org/fish-trade-regulations-on-the-web.html>

³The World Trade Organization (WTO) website http://wto.org/english/thewto_e/thewto_e.htm

⁴Allshouse, 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.

⁵FDA. 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>

⁶FDA <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm315486.htm>

⁷Congressional Research Service Report 7-5700. R43450. Sanitary and Phytosanitary (SPS) and Related Non-Tariff Barriers to Agricultural Trade. Renée Johnson, Specialist in Agricultural Policy. March 31, 2014 <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43450.pdf>

⁸Roheim, C.A. 2004. "Impacts on Sustainability." *Global agricultural trade and developing countries* (2004): 275. <http://siteresources.worldbank.org/INTPROSPECTS/Resources/GATChapter15.pdf>

⁹National 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>

¹⁰World 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

¹¹U.S. Food and Drug Administration. (2015, June 9th). *Import Alert 16 - 129*. Retrieved from http://www.accessdata.fda.gov/cms_ia/importalert_31.html

¹²U.S. Food and Drug Administration. (2015, June 9th). *Import Alert 16 - 129*. Retrieved from http://www.accessdata.fda.gov/cms_ia/importalert_31.html

¹³NOAA "Shrimp Import Legislation for Sea turtle Conservation" <http://www.nmfs.noaa.gov/pr/species/turtles/shrimp.htm>

¹⁴ [16 U.S.C. 1537](#)

¹⁵ Federal Register <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...[1/2] 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 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. 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. ² SEFSC conducts stock assessments for all species managed by GMFMC; stock assessments for shrimp are conducted through the Galveston Lab Shrimp Fishery research program. ³ 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.⁴ Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program; these programs provide detailed information on shrimp effort and characterization of bycatch in the shrimp trawl fishery.^{5,6} Research on bycatch reduction is also a primary focus for the Gulf of Mexico shrimp fishery and is carried out by NOAA's Harvesting Systems Unit, a team of biologists and gear specialists who perform critical research on fishing gear and methods.⁷ 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.⁸ The 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.⁹ The SSRG 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.¹⁰ 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.¹¹

GSMFC also contributes to research on Gulf of Mexico Fisheries through the SEAMAP and Fisheries Economic Data Programs. The Fisheries Economic Data Program has also conducted economic analyses for the inshore (non-federally-permitted) shrimp fleet and developed reports on the economic baseline and characterization of dockside seafood dealers, and seafood processors for the U.S. Gulf of Mexico.¹² SEAMAP Gulf of Mexico Resource Surveys assess the shrimp fishery through the Summer and Fall Shrimp/Groundfish Surveys.¹³

ADCNR supports a wide range of ongoing research covering all aspects of fisheries management including biological, ecological, economic, socio-cultural, and aquaculture science.

ADCNR began fisheries data collection in 1977, initially for shrimp and crab. Since the start of the data collection program, it has seen several revisions to continue to improve the quality and scope of sampling.^{14,15} In 1980, data collection expanded to include all shrimp, crab, and finfish species and in 1998 the program shifted again to partner with Alabama Department of Environmental Management (ADEM) to include collection of environmental parameters on water quality and moved to sampling on a quarterly basis until 2000, when the program reinitiated monthly sampling collection. In 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. Survey methods include monthly surveys using trawls (16' otter trawl), seines, gill nets and beam plankton trawls (BPLs) and utilize these data to assess stock abundance, trends, and fisheries impacts. This research forms the basis of ADCNR's management decisions. In addition to regular monitoring through FAMP, ADCNR MRD's Fisheries Section works with other state and federal agencies through various projects addressing Alabama's marine resources, and data needs to effectively manage those resources.¹⁶ The Trip Ticket

<p>Program also provides fishery-dependent data for research needs including landings, values, gear and effort.¹⁷ Socioeconomic research is conducted through a variety of methods including field and mail surveys, public hearings written comment periods, and economic impact assessments for new regulations.^{18,19} ADCNR also collaborates with other government agencies including ADEM and NOAA, and academic institutions, such as the Dauphin Island Sea Lab, on environmental and fisheries related research.^{20,21}</p> <p>ADCNR MRD also manages the Claude Petet Mariculture Center (CPMC). Since its construction in 1974, CPMC has had provided research opportunities for basic and applied research in estuarine and marine ecology.²² CPMC provides support for coastal fishery management including wet and dry labs, shop and storage facilities and brackish pond use. CPMC has also been utilized for aquaculture research, and as a hatchery for fishery restoration programs including restocking of red drum and striped bass.</p> <p>ADCNR also manages the Weeks Bay Reserve in partnership with NOAA as part of the National Estuarine Research Reserve (NERR) Program.²³ NERR sites function as “living laboratories” and provide areas for long-term monitoring and research of important estuaries.</p> <p>Nutritional science is researched by national organizations such as the USFDA and academic institutions such as the Alabama A&M Food Science Program.^{24,25} Nutritional information is also disseminated by the Gulf States Marketing Coalition as a part of the GSMFC ODRP program.^{26,27}</p>		
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¹ SEFSC Research <http://www.sefsc.noaa.gov/research/>

² SEFSC Rsearch and Data Collection programs <http://www.sefsc.noaa.gov/research/>

³ SEFSC Galveston Lab- Shrimp Fishery Research http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁴ Gulf Shrimp System <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁵ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁶ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁷ SEFSC Pascagoula Lab Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁸ SEFSC Galveston Lab Shrimp Research http://www.galvestonlab.sefsc.noaa.gov/research/research_home/index.html

⁹ NOAA SEFSC Social Science Research Group <http://www.sefsc.noaa.gov/socialscience/>

¹⁰ SEFSC Economic Research- shrimp <http://www.sefsc.noaa.gov/socialscience/shrimp.htm>

- ¹¹ NOAA SERO Community Snapshot http://sero.nmfs.noaa.gov/sustainable_fisheries/social/community_snapshot/
- ¹² GSMFC Economic Data Program publications <http://www.gsmfc.org/pubs.php?s=ECON>
- ¹³ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>
- ¹⁴ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.
- ¹⁵ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>
- ¹⁶ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>
- ¹⁷ 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 Ala. Code §41-22-23 <http://codes.lp.findlaw.com/alcode/41/22/41-22-23>
- ¹⁹ Ala. Code §41-22: Administrative Procedure <http://codes.lp.findlaw.com/alcode/41/22>
- ²⁰ Dauphin Island Sea Lab- Coastal Initiative http://www.disl.org/coastal_initiative
- ²¹ ADEM <http://www.adem.state.al.us/default.cnt>
- ²² Claude Peteet Mariculture Center (CPMC) <http://www.outdooralabama.com/claude-peteet-mariculture-center>
- ²³ Weeks Bay Reserve <http://www.outdooralabama.com/weeks-bay-reserve>
- ²⁴ FDA Center for Food Safety and Applied Nutrition <http://www.fda.gov/aboutfda/centersoffices/officeoffoods/cfsan/default.htm#>
- ²⁵ Alabama A&M Food Science Program <http://www.aamu.edu/academics/alns/foodandanimalsciences/pages/food-science-program.aspx>
- ²⁶ GSMC <http://eatgulfseafood.com/userfiles/file/Nutritional%20Guide.pdf>
- ²⁷ GSMFC ODRP <http://www.gsmfc.org/#:content@10:links@11>

12.1 (b) Are research vessel surveys of the resource and the marine environment carried out?
Annually...[1] **Occasionally...**[½] **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,</p>		

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.

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):

- 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.

Alabama:

ADNR MRD FAMP resource sampling conducts monthly vessel surveys utilizing trawls, seines, beam plankton trawls, and gill nets to determine stock abundance, size, life history stages, species composition, distribution, trends and fisheries impacts of fish and shellfish throughout Alabama waters.^{6,7} In 2010, FAMP protocols were revised to match the current SEAMAP data collection methods in recognition of the need for Gulf-wide standardized data collection methods. There is an annual review of both resource sampling and harvest data by ADCNR biologists and managers. The GDAR01 regional blue crab stock assessment utilized trawl data only from each of the five states because gillnet and seine data were not consistently collected throughout the five Gulf states independent sampling programs.⁸

¹ SEFSC Mississippi Labs Resource Surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

² SEFSC Groundfish Surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/groundfish.htm>

³ SEFSC Longline Surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/longline.htm>

⁴ SEFSC Plankton Surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/plankton.htm>

⁵ GSMFC SEAMAP <http://www.gsmfc.org/seamap-gomrs.php>

⁶ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.

⁷ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

⁸VanderKooy, 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>

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 Southeast Fishery Science Center (SEFSC) has laboratory locations in Beaufort, North Carolina, Galveston, Texas, Lafayette, Louisiana, Miami, Florida, Panama City, Florida, Pascagoula, Mississippi, and Stennis Space Center, Mississippi. The only Gulf state not represented is Alabama.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 The Gulf States Marine Fisheries Commission (GSMFC) is located in Ocean Springs, Mississippi.⁴</p> <p>Alabama: ADCNR headquarters is located in the Alabama state capital, Montgomery, to facilitate government participation and activities. ADCNR MRD offices/labs are located throughout the coast with one facility on Dauphin Island and one in Gulf Shores.⁵ The Claude Peteet Mariculture Center, located in Gulf Shores, functions as research facility for MRD and the Weeks Bay NERR provides additional research capabilities.^{6,7}</p>		

¹NOAA SERO locations webpage http://sero.nmfs.noaa.gov/about_us/what_we_do/index.html

² 2015 NOAA Observer Training Manual
http://www.galvestonlab.sefsc.noaa.gov/forms/observer/obs_training_manual_1_2015.pdf

³ GMFMC Contact Us webpage <http://gulfcouncil.org/contact.php>

⁴ GSMFC Contact Us webpage <http://www.gsmfc.org/contact.php>

⁵ ADCNR locations <http://outdooralabama.com/contact-us>

⁶ Claude Peteet Mariculture Center (CPMC) <http://www.outdooralabama.com/claude-peteet-mariculture-center>

⁷ Weeks Bay Reserve <http://www.outdooralabama.com/weeks-bay-reserve>

12.2 Has an appropriate institutional framework been established to determine the applied research which is required and its proper use? **Yes...**[1] **Some...**[1/2] **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 to meet these needs.³</p> <p>Alabama: ADCNR MRD 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. For example, the Fisheries Oceanography of Coastal Alabama (FOCAL) program, funded by ADCNR MRD and housed at the Dauphin Island Sea Lab's Richard C. Shelby Center for Ecosystems-Based Fishery Management, provides data on Alabama's nearshore and shelf environments as it related to fisheries production.⁶ Dauphin Island Sea Lab-Coastal Initiative also conducts applied research in many areas relevant to fisheries management, including invasive species, coastal restoration, and ecosystem monitoring.⁷ ADCNR also participates in applied research for regional organizations, including GMFMC and GSMFC.</p>		

¹ 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&rgn=div8

² GMFMC fishery monitoring and research priorities website <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

³ SEFSC Research and Data Programs <http://www.sefsc.noaa.gov/research/>

⁴ ADCNR Marine Resources Division <http://outdooralabama.com/saltwater-fishing-alabama>

⁵ ADCNR MRD Fisheries Section <http://outdooralabama.com/marine-resources-division-fisheries-section>

⁶ Dauphin Island Sea Lab FOCAL program <http://focal.disl.org/>

⁷ Dauphin Island Sea Lab- Coastal Initiative http://www.disl.org/coastal_initiative

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...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>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} 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>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 listed above.</p> <p>GSMFC research is peer-reviewed and published on the GSMFC website.⁶ As government entity, GSMFC 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. GSMFC follows NOAA administrative Order 216-100 “Protection of Confidential Fisheries Statistics” and adheres to the “Fisheries Rule of Three” that prevents disclosure of proprietary or confidential commercial or financial information regarding fishing and fish processing operations by preventing the distribution of any fisheries data that would identify a single fisheries entity.⁷ 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 criminal actions and are set out in Federal Statutes - U.S.C. 552 and U.S.C 1905.^{8,9}</p> <p>ADCNR MRD utilizes resource and harvest data for internal needs and trends reports that are reviewed annually by MRD staff. ADCNR MRD 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. ADCNR falls under the Alabama Public Writings Law, which provides for the</p>		

confidentiality of commercial or financial information. ¹⁰		
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¹ [GMFMC SOPP](#)

² 50 CFR §600.130 <http://www.gpo.gov/fdsys/pkg/CFR-2010-title50-vol8/pdf/CFR-2010-title50-vol8-sec600-130.pdf>

³ 50 CFR §600.405 <https://www.law.cornell.edu/cfr/text/50/600.405>

⁴ 50 CFR §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 GSMFC publications <http://www.gsmfc.org/#:content@5:links@6>

⁷ NOAA Administrative Order 216-100 https://www.st.nmfs.noaa.gov/st1/recreational/documents/Intercept_Appendices/Appendix%20M%20031408%20NOAA%20administrative%20order%20216-100.pdf

⁸ 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>

⁹ 18 U.S.C §1905 <http://www.law.cornell.edu/uscode/text/18/1905>

¹⁰ Ala. Code §36-12-40: Alabama public writings law <http://codes.lp.findlaw.com/alcode/36/12/3/36-12-40>

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 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>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</p>		

<p>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</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.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 directly from GSMFC and are typically provided within one week of the request.</p> <p>ADCNR MRD 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 MRD 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.⁷ Special studies conducted by ADCNR MRD scientists are also 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.</p>		
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¹GSMFC documents http://www.gulfcouncil.org/resources/resource_library.php

²GSMFC briefing materials: http://www.gulfcouncil.org/resources/council_meeting_briefing_books.php

³SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

⁴ Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁵NOAA Fisheries Statistics shrimp reports http://www.st.nmfs.noaa.gov/st1/market_news/

⁶GSMFC Publications Listings <http://www.gsmfc.org/#:content@3:links@4>

⁷ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.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
Federal:		

<p>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 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>Alabama: ADCNR 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.</p>		
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¹ 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&rgn=div8

² GMFMC fishery monitoring and research priorities website

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

³ SEFSC Research and Data Programs <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>Federal: 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. 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 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. 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.³ Port agents are responsible for collecting both landings data from seafood dealers</p>		

and interview data from either the captain or a member of the crew. Data collected by port agents include amount and value of shrimp landed, fishing effort, and locations fished. Port agents have collected these data for decades in a very similar format, allowing for consistent, reliable scientific analysis of the commercial shrimp fishery. Trip Ticket data from each of the states are verified against port agent sampling data and integrated into the GSS. The SEFSC Galveston Laboratory manages the GSS, established in 1960, which is a thorough, consistent data collection system. The GSS has provided NOAA Fisheries Galveston Laboratory scientists with statistical information needed to conduct assessments of the commercial shrimp fishery.⁴ The Galveston Lab Shrimp Research Program monitors Gulf shrimp stocks, evaluates the shrimp fisheries impact on other fisheries, and provides much needed data to reduce uncertainty in the fishery management plan process.

Data are also collected on the shrimp fishery through the Electronic Logbook (ELB) Program and the Observer Program.^{5,6} 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. 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 and is used in annual assessments of shrimp fishery effort. The Galveston Lab Observer Program consists of onboard monitoring and scientific data analysis.⁷ The observer program monitors bycatch, analyses bycatch composition and evaluates turtle excluder devices (TEDs) and bycatch reduction devices (BRDs). 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.⁸ All five Gulf states contribute to this effort.⁹ Bycatch data from the observer program is combined with effort data from the ELB program to determine estimates of bycatch of individual species, which is used in other stock assessments for GMFMC managed species.

Data from the SEAMAP Gulf of Mexico Resource Surveys are also used in stock assessments of the Gulf shrimp stocks. The Summer and Fall Shrimp/Groundfish Surveys objectives include (but are not limited to):¹⁰

- Monitoring panaeid 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 GMFMC maintains a Scientific and Statistical Committees (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.”¹¹ The SSC reviews shrimp stock assessments and other reports produced by the Galveston shrimp

research program to ensure that the best scientific information is utilized.

Alabama:

ADCNR does not conduct stock assessments specific to shrimp in Alabama waters because they are part of a larger Gulf of Mexico stock assessed by GMFMC (see above); however, ADCNR does monitor shrimp abundance in state waters through trends reports. ADCNR data collection occurs through a series of programs including the Trip Ticket Program and FAMP.^{12,13,14,15} 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. ADCNR MRD collects fishery-independent data through FAMP.¹⁶ FAMP monthly sampling surveys utilize trawls, seines, BPL trawls, and gill nets to determine stock abundance, size, life history stages, species composition, and distribution of fish and shellfish throughout all habitats of coastal Alabama waters. In Alabama, trawls have been towed each month at fixed stations, chosen to best represent Alabama's marine fauna, since 1981. Trawls are conducted regularly using a 16-foot flat two-seam trawl with 10-minute tow times. Fishery-dependent data are collected monthly through the Trip Ticket Program.¹⁷ ADCNR instituted a Trip Ticket Program in 2000, requiring all dealers of aquatic products to report statistical harvest data on a trip basis. This system is equivalent to the reporting systems used nationally for collection of commercial landings data and requires the following standard information: 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, unloading date, gear type and quantity, area fished. 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.^{18,19}

¹ SEFSC Research <http://www.sefsc.noaa.gov/research/>

² SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

³ Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁵ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁶ Observer Program
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

⁷ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁸ NOAA Fisheries Galveston shrimp program website
http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

⁹ NOAA Fisheries Galveston shrimp program website http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

¹⁰ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹¹ 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&rgn=div8

¹² ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

¹³ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.

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 ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

¹⁶ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

¹⁷ ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

¹⁸ GSMFC Publications Listings <http://www.gsmfc.org/#:content@3:links@4>

¹⁹ GMFMC Resource Library 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 Fishery Information System (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 1) Gulf Shrimp Landings by area and species, and 2) ex-vessel price and landings, and a monthly</p>		

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.

50 CFR 622.51 also requires the following annual reporting activities for the Gulf of Mexico shrimp fishery:⁸

- 11- General Reporting: commercial vessel owners and operators are required to provide information for any fishing trip, including vessel identification, gear, effort, amount of shrimp caught by species, shrimp condition, fishing areas and depths, and person to whom sold.
- 12- 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
- 13- 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.
- 14- 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:
 - a. Name and number of vessel from which the shrimp was received
 - b. Amount of shrimp received, by species and size category
 - 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 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).¹⁰

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.^{11,12}

Alabama:

Trip ticket data are collected on a monthly basis by each of the five Gulf States.¹³

Trip ticket information is gathered by the NOAA SEFSC for the purpose of maintaining a regional data set for the Gulf of Mexico.¹⁴ NOAA-NMFS has agreements with each of the state agencies to gather data on landings quantity and value, which are compiled into a continuous data set beginning in 1960. These data set is available online.¹⁵

ADCNR MRD FAMP data are initially made available as raw data to MRD 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 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.¹⁶

¹ GMFMC SOPP <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SOPPs.pdf>

² SEFSC Fisheries Statistics Division <http://www.sefsc.noaa.gov/about/statistics.htm>

³ Gulf Shrimp System (GSS) <http://www.sefsc.noaa.gov/fisheries/gulfshrimp.htm>

⁴ NOAA Fisheries Statistics http://www.st.nmfs.noaa.gov/st1/market_news/

⁵ 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>

⁶ ELB FAQs <http://www.galvestonlab.sefsc.noaa.gov/ELB/FAQ/index.html>

⁷ Observer Program http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#observer_program

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 SEFSC Mississippi Labs- resource surveys <http://www.sefsc.noaa.gov/labs/mississippi/surveys/index.htm>

¹⁰ VanderKooy, Steve. GSMFC. Personal Communication. August, 2014.

¹¹ GSMFC SEAMAP website <http://www.gsmfc.org/seamap-gomrs.php>

¹² GSMFC Fisheries Economic Data Program website <http://www.gsmfc.org/pubs.php?s=ECON>

¹³ FIN Committee. 2014. Annual Report of the Fisheries Information Network in the Southeast Region (FIN) January 1, 2013 - December 31, 2013. Gulf States Marine Fisheries Commission. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20231.pdf>

¹⁴ NOAA SEFSC Landings Data <http://www.sefsc.noaa.gov/data/landings.htm>

¹⁵ NOAA Commercial Fishery Statistics <http://www.st.nmfs.noaa.gov/commercial-fisheries/>

¹⁶ GSMFC Publications Listings <http://www.gsmfc.org/#:content@3:links@4>

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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>Federal: 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, 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>Alabama: ADCNR MRD regularly monitors stocks under state jurisdiction through FAMP and harvest data collected through the Trip Ticket Program.^{2,3,4} Habitat alteration and pollution are highly regulated and monitored through both ADEM and USACE.^{5,6} The EPA Gulf Ecology conducted a study in 2009 on cumulative effects of coastal habitat alteration on fisheries resources using blue crab and Mobile Bay as the case study in their modeling framework.^{7,8}</p>		

¹ SEFSC Galveston Lab Shrimp Research http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

² ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.

³ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

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 ADEM <http://adem.alabama.gov/default.cnt>

⁶ USACE, Mobile District <http://www.sam.usace.army.mil/>

⁷ EPA Gulf Ecology Division <http://www.epa.gov/ged/research.html>

⁸ Jordan, S. J., Smith, L. M., & Nestlerode, J. A. (2009). Cumulative effects of coastal habitat alterations on fishery resources: toward prediction at regional scales. *Ecology and Society*, 14(1), 16. <http://www.ecologyandsociety.org/vol14/iss1/art16/>

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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No

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:

- 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

Alabama:

ADCNR MRD Fisheries Section conducts monthly monitoring of marine resources through FAMP and trends are analyzed annually. FAMP monitoring is conducted in partnership with ADEM to also sample for hydrologic data including water quality parameters such as dissolved oxygen, salinity, and temperature.^{8,9} Changes to fish stocks and/or aquatic systems would be detected through FAMP sampling and

analysis. ADEM also has several monitoring programs that address air quality, and water quality for groundwater, surface water, and beaches. ^{10,11,12}		
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¹ NOAA http://www.nmfs.noaa.gov/stories/2014/03/climate_portal.html

² 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 http://www.st.nmfs.noaa.gov/Assets/ecosystems/climate/documents/draft_NOAA%20Fisheries_Climate_Science%20Strategy_Jan_2015.pdf

⁴ NOAA Assessing Vulnerability of Fish Stocks <http://www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks>

⁵ NOAA Fisheries Climate Tools <http://www.st.nmfs.noaa.gov/ecosystems/climate/tools/index>

⁶ OCEANADAPT <http://oceanadapt.rutgers.edu/>

⁷ Ecosystem Status NOAA Fisheries “Report for the Gulf of Mexico” December 2013 <http://gulfcouncil.org/docs/Gulf%20of%20Mexico%20Ecosystem%20Status%20Report.pdf>

⁸ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

⁹ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.

¹⁰ ADEM <http://www.adem.state.al.us/default.cnt>

¹¹ ADEM, 2012. Integrated Water Quality Monitoring and Assessment Report. <http://adem.alabama.gov/programs/water/waterforms/2012AL-IWQMAR.pdf>

¹² ADEM, 2013. State of Alabama Ambient Air Monitoring 2013 Consolidated Network Review. <http://adem.alabama.gov/programs/air/airquality/2013AmbientAirPlan.pdf>

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</p>		

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.

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 to meet these needs.⁵

Alabama:

ADCNR MRD continually seeks to update staffing, methods and procedures and secure additional sources of funding to support such advancements as necessary to keep pace with advances in fisheries science. MRD recently applied and was awarded a \$9.6 million in funding from the NFWF Gulf Environmental Benefit Fund for four projects, including:⁶

- Alabama Barrier Island Restoration Assessment
- Coastal Habitat Restoration Planning Initiative
- Enhanced Fisheries Monitoring in Alabama’s Marine Waters
- Alabama Marine Mammal Conservation and Recovery Program

The Enhanced Fisheries Monitoring in Alabama’s Marine Waters project provides \$1.8 million for implementation and expansion of data collection for both fishery-dependent and fishery-independent information to support stock assessments in Alabama waters. A portion of this funding will go towards direct monitoring for the blue crab fishery to collect detailed commercial catch information on biostatistics, discards, and effort.⁷ ADCNR is currently working to add additional staffing with expertise in stock assessment and quantitative analysis to improve data available for management decisions.

ADCNR scientists also 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.^{8,9}

¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ 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&rgn=div8

⁴ GMFMC fishery monitoring and research priorities website <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁵ SEFSC Research and Data Programs <http://www.sefsc.noaa.gov/research/>

⁶ NFWF Gulf Environmental Benefit Fund- Alabama <http://www.nfwf.org/whoweare/mediacenter/pr/Pages/gulf-al-pr-14-1117.aspx>

⁷ NFWF Project: Enhanced Fisheries Monitoring in Alabama’s Marine Waters <http://www.nfwf.org/gulf/Documents/al-fisheries-i-14.pdf>

⁸ GSMFC <http://www.gsmfc.org/>

⁹ GMFMC <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 (MSS^T).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>Alabama 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 MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁴ GMFMC shrimp FMP Amendment 5 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amend-05%20Draft%201991-01.pdf>

⁵ GMFMC shrimp FMP and amendments
http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ GMFMC shrimp FMP Amendment 13
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Shrimp%20Amend%2013%20Final%20805.pdf>

⁷ GMFMC <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...**[½] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>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}</p> <p>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.³ The 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.⁴</p>		

<p>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.⁵</p> <p>In Alabama, three agencies are involved in seafood safety testing- Alabama Department of Agriculture and Industry (ADAI), ADCNR MRD, and Alabama Department of Public Health (ADPH).^{6,7,8} Samples are collected from open water, and seafood processors and tested for polycyclic aromatic hydrocarbons (PAHs), dispersant chemicals, and heavy metals.⁹</p> <p>The Alabama Seafood Marketing Coalition (ASMC), developed by the governor in 2011, works to promote Alabama seafood and inform the public regarding information on health, quality and safety of seafood from the GOM.¹⁰</p> <p>The USDA is also involved in food safety, security, quality standards, and nutrition.¹¹ USDA National Institute of Food and Agriculture (NIFA) supports research in many aspects of food and agriculture.¹² The USDA also provides Dietary Guidelines to advise consumers on health eating.¹³</p> <p>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.¹⁴</p>		
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¹ 21 U.S.C. Part 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 FDA Science and Research (Food) <http://www.fda.gov/Food/FoodScienceResearch/default.htm>

⁴ FDA Gulf of Mexico Oil Spill <http://www.fda.gov/food/ucm210970.htm>

⁵ NOAA Keeping Seafood Safe http://www.noaa.gov/100days/Keeping_Seafood_Safe.html

⁶ ADAI Food Safety <http://www.agi.alabama.gov/divisions/food-safety>

⁷ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

⁸ ADPH seafood testing <http://www.adph.org/epi/Default.asp?id=5648>

⁹ Alabama Seafood Testing Results http://www.adph.org/epi/assets/AL_Seafood_Testing_Results+.pdf

¹⁰ Alabama Seafood Marketing Coalition <http://eatalabamaseafood.com/>

¹¹ USDA <http://www.usda.gov/wps/portal/usda/usdahome?navid=food-nutrition>

¹² USDA research <http://www.csrees.usda.gov/qlinks/research.html>

¹³ USDA Dietary Guidelines <http://www.health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>

¹⁴ GSMFC ORDP <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 Alabama, three agencies are involved in seafood safety testing- Alabama Department of Agriculture and Industry (ADAI), ADCNR MRD, and Alabama Department of Public Health (ADPH).^{4,5,6} Samples are collected from open water, and seafood processors and tested for polycyclic aromatic hydrocarbons (PAHs), dispersant chemicals, and heavy metals.⁷</p>		

¹ NOAA Keeping Seafood Safe 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 FDA seafood HACCP <http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006764.htm>

⁴ ADAI Food Safety <http://www.agi.alabama.gov/divisions/food-safety>

⁵ ADCNR 2011-12 Annual Report <http://www.outdooralabama.com/sites/default/files/2011-12Annual%20Report.pdf>

⁶ ADPH seafood testing <http://www.adph.org/epi/Default.asp?id=5648>

⁷ Alabama Seafood Testing Results http://www.adph.org/epi/assets/AL_Seafood_Testing_Results+.pdf

12.8 (b) Are results of such research being made publicly available? **Yes...**[1] **Some...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>USFDA provides Consumer Updates on seafood through their website and via email updates.¹</p> <p>ADPH publishes results of seafood testing and fish consumption advisories on their website and issues news releases.^{2,3}</p> <p>USFDA also provides Consumer Updates on seafood through their website and via email updates.⁴</p>		

¹ USFDA consumption advisories <http://www.fda.gov/forconsumers/consumerupdates/ucm397443.htm>

² ADPH seafood testing <http://www.adph.org/epi/Default.asp?id=5648>

³ ADPH Fish Consumption Advisories http://www.adph.org/tox/assets/2014%20_FishAdvisory.pdf

⁴ USFDA consumption advisories <http://www.fda.gov/forconsumers/consumerupdates/ucm397443.htm>

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...**[1/2] **No...**[0]

Extent of compliance		
Yes	Some	No
<p>The primary gear types in the Alabama 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}</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.³ 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.^{4,5}</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.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). TEDs are not 100% effective; certified TED designs are required to meet a 97% efficiency rate for turtle exclusion within a 5 minute period.⁷ 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 stock assessments for each species of sea turtle, monitors populations and closely monitors compliance with TED regulations and other sea turtle bycatch mitigation measures.⁸ Turtle mortality has decreased significantly since the implementation of TEDs and most sea turtle populations show signs of rebuilding. 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.⁹ Observer coverage on the skimmer fleet began in 2012 due to concerns regarding increased strandings of sea turtles in 2010 and 2011.¹⁰ 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</p>		

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. A study on turtle bycatch reduction in skimmer trawls was conducted in Alabama waters between 2012 and 2014. This study, supported by a grant from NFWF, examined shrimp and bycatch rates between skimmer nets with and without TEDs.¹¹ Only one turtle (Kemps Ridley) was observed during all testing, and the study found that use of TEDs in skimmers resulted in lower bycatch, by weight, due to reduction in shark/ ray catch. ADCNR has also recently initiated a Skimmer Net Monitoring Program, which will conduct monthly sampling with skimmer nets documenting all species caught during sampling.¹²

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.¹³ 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.¹⁴ 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*), and Inshore Lizardfish (*Synodus foetens*).¹⁵ 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.¹⁶

SEAMAP- Gulf of Mexico conducts resource surveys that are used to assess the shrimp populations through the Summer and Fall Shrimp/ Groundfish Surveys.¹⁷ 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 neighboring 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.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.

BRDs are not required in state waters in Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species.

ADCNR MRD conducts fishery-independent surveys, which collect data on the species typically discarded in the shrimp trawl fishery.²⁰ 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.

Observer Program:

NOAA Fisheries monitors bycatch reduction methods and shrimp trawl impacts through an onboard observer program.²¹ 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.

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).²²

¹ GMFMC Allowable gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² ADCNR fishing regulations <http://www.outdooralabama.com/regulations-and-enforcement>

³ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

⁴ TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

⁵ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

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

⁷ SEFSC "TEDs" <http://www.sefsc.noaa.gov/labs/mississippi/ted/>

⁸ NOAA Office of Protected Species "sea turtles" <http://www.nmfs.noaa.gov/pr/species/turtles/>

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

¹⁰ Skimmer observer data
http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/2014_skimmer_trawl_observer_report.pdf

¹¹ ADCNR, *NFWF Final Programmatic Report*, 2014.

¹² ADCNR, *Skimmer Net Monitoring Program Standard Operating Procedures Manual*, August 2015

¹³ 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

¹⁴ GMFMC shrimp FMP 2006 Regulatory Amendment

http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf

¹⁵ 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>

¹⁶ Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMzQ/view?pli=1>

¹⁷ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

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 FAMP <http://www.outdooralabama.com/sample-processing>

²¹ NOAA Fisheries Galveston shrimp program website http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

²² 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 (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
<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.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 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.⁴ The Shrimp Bycatch Reduction Device Evaluation Research is an observer program organized and conducted through the</p>		

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). ⁵		

¹ SEFSC Harvesting Systems Unit http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

² TED designs <http://www.sefsc.noaa.gov/labs/mississippi/ted/designs.htm>

³ BRD designs <http://www.sefsc.noaa.gov/labs/mississippi/brd/designs.htm>

⁴ NOAA Fisheries Galveston shrimp program website 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>Bycatch is a major concern in shrimp trawl 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 reducing bycatch and habitat impacts and continue to collaborate on innovative methods for further reduction.</p> <p>The dominant gear types in the shrimp trawl fishery are otter trawls and skimmer trawls. 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 13.7:1.¹ 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} 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 known bycatch species. Many incidental catch species are</p>	

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.”⁴

The GMFMC shrimp FMP contains two goals/objectives that directly address this mandate of the MSA:⁵

- 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.”

NOAA Fisheries has implemented several management measures to accomplish these goals.

TEDS:

One of the primary areas of focus for bycatch management in the shrimp trawl fishery has been on interactions with species listed under the Endangered Species Act (ESA), which includes five species of sea turtles (Hawksbill, green, Kemp’s Ridley, leatherback, and loggerhead), smalltooth sawfish, and Gulf sturgeon (a subspecies of Atlantic sturgeon).⁶ 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.⁷

NRC (1990) determined that shrimp trawl bycatch was one of the most significant sources of mortality causing declines in sea turtle populations.⁸ Research on turtle excluder devices (TEDs) began in the late 1970s, and in 1981 a voluntary program was initiated to encourage fishermen to utilize TEDs in shrimp trawls.⁹ Early TED designs were cumbersome and difficult to use and did not gain favor with most fishermen, so TED use was low throughout the 1980s. Federal legislation went into effect requiring widespread use of TEDs in shrimp trawls in 1989 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. Compliance rates are actively monitored and a minimum 88% compliance rate with TED use must be maintained otherwise NOAA Fisheries is required to take action, which could include closing down the fishery.¹⁰ TEDs have been very effective at reducing sea turtle shrimp trawl mortality as summarized by Finkbeiner et al. (2011):¹¹

Species	Mortality	
	Pre-regulation	Post-Regulation
Atlantic/Gulf		
<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).

Mandatory TED requirements are currently in place for all otter trawls in the shrimp fishery in both state and federal waters (federal jurisdiction of protected species extends into state waters) and Alabama fully complies with TED requirements.

TED compliance is currently enforced by NOAA Fisheries enforcement agents, USCG, and each of the five state agency enforcement officers. The 2012 and 2014 biological opinions require an 88% effectiveness rate for TEDs in the Gulf and South Atlantic shrimp trawl fisheries.¹² This rate is calculated using NOAA enforcement and inspection rates and 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.¹³ These compliance data are entered into a matrix to determine the overall effectiveness rate of TEDs in the shrimp trawl fleet on a quarterly basis. NOAA enforcement/inspection data are currently the only 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 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.¹⁴ 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 only about 200 vessels per year.¹⁵ Compliance rates are calculated by quarter, and small sample sizes in some months can lead to biases the overall compliance percentages.

TED compliance and effectiveness rates are a continuing concern for the fishery due to the problems mentioned above and because compliance rates have fluctuated around the minimum compliance rate for the past several years. From March to November 2011, the TED compliance rate was as low as 66%, with an effectiveness rate ranging between 83-85%.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 TED compliance rates in the past year have fluctuated monthly ranging between 76 and 97% (April 2014- July 2015 compliance rates with an overall average above 90%).¹⁸

Currently regulations for skimmer trawls 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). 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 much criticism from some stakeholders.¹⁹ NOAA is currently researching appropriate TED designs for skimmer trawls and education activities are underway to increase awareness and compliance with tow time regulations for shrimpers not currently using TEDs in skimmers.

BRDS:

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 when fishing in the EEZ up to a depth of 100 fathoms.²⁰

Red snapper bycatch has been another 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. This 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 by NOAA Fisheries as necessary for the rebuilding plan.²¹ 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 Blas was exempt at the time due to low abundance of red snapper in this area.²² 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).²³ 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.²⁴ 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.²⁵ 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.²⁶

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 total finfish bycatch by 30% as required by the MSA bycatch reduction requirements.²⁷ 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 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 of total bycatch found in shrimp trawls. Analysis of these species indicates that shrimp trawl bycatch does not pose a threat to any of these species.²⁸

Bycatch studies in neighboring 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 shrimp or white shrimp).²⁹ 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, especially during seasonal increases in some 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 Alabama; however, many fishermen utilize BRDs to reduce catch of unwanted species. ADCNR MRD conducts 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.

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.³⁰ 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.³¹ 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.³² 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.³³ 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.³⁴ 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.³⁵ 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.³⁶ 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.³⁷ 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. The 2005 EFH Amendment 3 recommends the following management measures related to the shrimp fishery to minimize impacts:³⁸

- 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)

	<p>-require a weak link in the tickler chain of bottom trawls on all habitats throughout the Gulf of Mexico EEZ. These recommendations were adopted into regulation by NOAA Fisheries.³⁹ 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>	
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¹ GMFMC shrimp FMP Amendment 9 <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 NOAA National Standard Guidelines http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

⁵ GMFMC shrimp FMP and amendments http://gulfcouncil.org/fishery_management_plans/shrimp_management.php

⁶ 2015 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

⁷ NOAA Office of Protected Resources <http://www.nmfs.noaa.gov/pr/species/index.htm>

⁸ NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf

⁹ SEFSC Mississippi Labs History of TEDs <http://www.sefsc.noaa.gov/labs/mississippi/ted/history.htm>

¹⁰ NOAA Fisheries TED Compliance rates 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

¹¹ 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>

¹² 2014 Southeast Shrimp Biological Opinion http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹³ Penalty Matrix for Endangered Species Act TED Violations <http://www.shrimpalliance.com/new/wp-content/uploads/2012/03/2pagesfromPenaltyPolicy.pdf>

¹⁴ 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

¹⁵ NOAA Draft TED compliance policy

http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/documents/ted_compliance_policy.pdf

¹⁶ 2014 Southeast Shrimp Biological Opinion

http://sero.nmfs.noaa.gov/protected_resources/sea_turtles/documents/shrimp_biological_opinion_2014.pdf

¹⁷ “TED compliance” NOAA Fisheries. Web. Accessed June 2015.

http://sero.nmfs.noaa.gov/protected_resources/sea_turtle_protection_and_shrimp_fisheries/index.html

¹⁸ NOAA, 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

¹⁹ 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

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

²¹ 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

²² GMFMC shrimp FMP Amendment 9 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amendment%20Final%201997-02.pdf>

²³ 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.

²⁴ GMFMC shrimp FMP 2006 Regulatory Amendment

http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/shrimp/archives/shrimp_reg_amend_aug_2006.pdf

²⁵ GMFMC shrimp FMP Amendment 14

<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/Final%20RF%20Amendment%2027-%20Shrimp%20Amendment%2014.pdf>

²⁶ Gallaway, Benny “Managing Shrimp Trawl Bycatch in the Gulf of Mexico” PowerPoint Presentation, Science and Sustainability Forum, New Orleans, October 2014.

²⁷ GMFMC shrimp FMP amendment 10 <http://gulfcouncil.org/Beta/GMFMCWeb/downloads/SHRIMP%20Amendment%20Final%202002-07.pdf>

²⁸ Raborn et al. 2014 characterization of bycatch in shrimp trawl fishery <https://drive.google.com/file/d/0B-yvNu3ojn4ZRmF1NEVWNnBMZzQ/view?pli=1>

²⁹ 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.

³⁰ Chang et al. 2001 <http://onlinelibrary.wiley.com/doi/10.1029/2000JC900032/pdf>

³¹ Dellapenna et al., 2006 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

³² Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>

³³ NRC 2002 http://www.arrancoast.com/science/effects_of_trawling_and_dredging_on_seafloor_habitat.pdf

³⁴ Jennings and Kaiser 1998
http://www.researchgate.net/profile/Michel_Kaiser/publication/222490649_The_Effects_of_Fishing_on_Marine_Ecosystems/links/0fcfd50af7a1a0577a000000.pdf

³⁵ Dellapenna et al., 2006 as cited in EFH Amendment 3
<http://gulfcouncil.org/Beta/GMFMCWeb/downloads/EFH%205-Year%20Review%20Final%2010-10.pdf>

³⁶ Sanchez et al., 2001 and Ball et al., 2001 as cited in Barnette, 2001 <http://www.safmc.net/managed-areas/pdf/Barnettegear.pdf>

³⁷ EFH amendments
http://gulfcouncil.org/fishery_management_plans/essential_fish_habitat.php

³⁸ EFH Amendment 3 http://gulfcouncil.org/Beta/GMFMCWeb/downloads/FINAL3_EFH_Amendment.pdf

³⁹ 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

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
	<p>Federal: 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>Alabama: There are no specific regulations in Alabama requiring research on impacts prior to</p>	

<p>the use of new gear types; however, there are currently regulations in place on the use of most potential gear types that could be utilized in shrimp fishery including nets, dredges, trawls, traps, and longlines and each of these gear types have been evaluated for environmental impacts. These regulations make it highly unlikely that a new gear type would be introduced into the fishery that had not already been evaluated for impacts due to prior use in another fishery.</p>

¹ GMFMC Fishing Regulations- Allowable Gear http://gulfcouncil.org/fishing_regulations/allowable_gear.php

² SEFSC Pascagoula Lab Harvesting Systems Unit
http://www.sefsc.noaa.gov/labs/mississippi/harvesting_systems.htm

³ MSA http://www.greateratlantic.fisheries.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf

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>Alabama: ADCNR trip ticket data collection requires reporting of gear types and quantities with landing information allowing ADCNR to monitor use of gear types in commercial harvest.^{4,5} Combined with data from FAMP, MRD are able to detect changing trends in coastal resources, associated species and habitats that may be affected by new</p>		

harvest methods. ⁶		
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¹ 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>

² NOAA Fisheries Galveston shrimp program website http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

³ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

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 ADCNR MRD. 2003 Alabama Trip Ticket Manual, 2nd Edition.

⁶ FAMP <http://www.outdooralabama.com/sample-processing>

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		

¹GMFMC shrimp FMP and amendments http://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
<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.</p> <p>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 regional councils. Additionally, NS1 requires specification of status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks in the</p>		

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

Alabama:

ADCNR MRD conducts scientific monitoring and research directly in support of management and conservation decisions for the coastal resources of Alabama. ADCNR MRD regularly monitors stocks under state jurisdiction through FAMP and harvest data collected through the Trip Ticket Program.^{7,8,9} ADCNR regularly monitors stocks under state jurisdiction through FAMP.¹⁰ ADCNR actively participates in GMFMC and GSMFC and utilizes the research and recommendations provided by these organizations.

¹ MSA http://www.mmc.gov/legislation/pdf/msf_cm_act.pdf

² MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

³ MSA National Standards http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html

⁴ 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&rgn=div8

⁵ GMFMC fishery monitoring and research priorities website <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁶ SEFSC Research and Data Programs <http://www.sefsc.noaa.gov/research/>

⁷ ADCNR MRD, 2011. Assessment Sampling, Standard Operating Procedures.

⁸ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

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 FAMP <http://www.outdooralabama.com/sample-processing>

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 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.”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>Alabama: ADCNR MRD is responsible for coordinating and conducting applied research for statewide concerns and utilizing that research for management recommendations.⁴ ADCNR MRD was recently awarded NFWF grant for fisheries and coastal monitoring which will be utilized to increase data collection and research in Alabama waters.⁵</p>		

¹ 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&rgn=div8

² GMFMC fishery monitoring and research priorities website <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

³ SEFSC Research and Data Programs <http://www.sefsc.noaa.gov/research/>

⁴ ADCNR MRD Fisheries Section <http://www.outdooralabama.com/marine-resources-division-fisheries-section>

⁵ NFWF Project: Enhanced Fisheries Monitoring in Alabama’s Marine Waters <http://www.nfwf.org/gulf/Documents/al-fisheries-i-14.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.

Alabama 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
<p>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.</p> <p><u>International:</u> 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</p>		

<p>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.</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.¹⁰</p>		
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¹ GMFMC <http://gulfcouncil.org/about/index.php>

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&rgn=div8

³ GMFMC fishery monitoring and research priorities website <http://www.gulfcouncil.org/resources/SEDAR/GMFMC%20Updated%20List%20of%20Fishery%20Research%20and%20Monitoring%20Priorities%202015-2019.pdf>

⁴ SEFSC Research and Data Programs <http://www.sefsc.noaa.gov/research/>

⁵ GSMFC website <http://www.gsmfc.org/>

⁶ GSMFC SEAMAP <http://www.gsmfc.org/#:content@22:links@23>

⁷ GSMFC Fisheries Economic Data Program publications <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 SEFSC Galveston Lab- Shrimp fishery research projects http://www.galvestonlab.sefsc.noaa.gov/research/fishery_management/index.html#shrimp_program

APPENDIX A: ALABAMA SHRIMP INDUSTRY DISCUSSION SUMMARY

During the initial development of the Alabama Shrimp MAP, G.U.L.F. staff conducted a series of preliminary interviews with active Alabama 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).

Alabama Shrimp Industry Comments:

- Not a lot of pressure for sustainability information from buyers right now
- Challenges
 - Making a profit
 - Already compliant boats with TEDs
 - Some TED enforcement issues
 - Observer coverage – doesn't seem random, some people seem to always get picked
- Customers do ask for traceability, but don't necessarily use Trace Register
- Europe cares more about traceability and military
 - Can do , but not ideal
 - Upload trip ticket info for traceability
- Buy from some skimmers, more skimmers fish in the fall
- Captains do TED and safety trainings
- Ship product primarily to northeast and Midwest, no international shipping
- Some do have to ship product in to process
- Wide market nationally, some international market

APPENDIX B: RECOMMENDATIONS PROVIDED BY GLOBAL TRUST CERTIFICATION LTD (GTC)

Taken from the MARINE ADVANCEMENT PLAN (MAP) VERIFICATION REPORT for the Alabama 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 **Alabama shrimp trawl 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

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 – Is the level of excess capacity defined? Avoided?

7.6.1 Is the level of fishing permitted commensurate with the current state of the fishery resources?

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 expires in December of 2016 and the GMFMC is currently in discussions on the development of Amendment 17 to determine if the moratorium will expire, by extended, or development of a limited-access system will be put in place.

At the State level, there is currently no limit on the fishing capacity for the shrimp fishery.

Recommendation:

At the State level:

- An optimal or target capacity should be defined; and
- Mechanisms to control fishing effort should be implemented such as capping the number of licenses.

7.2.2 (cont.) – Has the biodiversity of aquatic ecosystems been conserved (as a result of operation of the fishery in question)?

- Have selective and environmentally-safe and cost-effective fishing methods been developed?

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.

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 as TED compliance rate remains as high as possible. The observer coverage for both Federal and State entire shrimp fishing fleet should be increased to increase the documentation on bycatch, and the effectiveness of BRDs, TEDs, and tow-time regulations. State and Federal agencies shall find solutions regarding inconsistencies in inspection methods and concerns over methods used to determine TED compliance. Also, education, outreach activities shall be maintained helping to increase compliance rates. Additionally, BRDs should be mandatory in State waters.

7.2.2 – Environmental impacts: 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.

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

- Is there a plan?

Summary:

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. The shrimp FMP includes goals and objectives.

Recommendation:

Develop a fishery management plan for shrimp fisheries in Alabama state waters including management objectives, and consistent with regulations and recommendations of the federal GMFMC shrimp FMP.

7.6.9 (a) Are appropriate measures being applied to minimize:

- waste and discards?
- catch of non-target species (both fish and non-fish species)?
- impacts on associated, dependent or endangered species?

7.6.9 (b) Are technical measures being taken in relation to:

- discards?

Summary:

Several regulations have been designed to minimize waste and discards, catch of non-target species, and impacts on associated, dependent or endangered species. However, observer coverage indicates that 60% of tows throughout the 3 years of study have exceeded tow time limits, and low compliance with tow time regulations has raised much criticism from some stakeholders; and Alabama does not required BRDs in state waters.

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 as TED compliance rate remains as high as possible. The observer coverage for both Federal and State entire shrimp fishing fleet should be increased to increase the documentation on bycatch, and the effectiveness of BRDs, TEDs, and tow-time regulations. State and Federal agencies shall find solutions regarding inconsistencies in inspection methods and concerns over methods used to determine TED compliance. Also, education, outreach activities shall be maintained helping to increase compliance rates. Additionally, BRDs should be mandatory in State waters.

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?

Summary:

Alabama law does not explicitly require suspension or revoking of fishing licenses for the shrimp fishery based on violations of fisheries management regulations; however, a judge determining penalties for violations may suspend or revoke a blue crab fishing license either for a set period of time, or permanently depending on the severity of violations. At least one case has been documents where a judge permanently revoked a fishing license for repeat offenses by an individual.

Recommendation:

Alabama law should explicitly require suspension or revoking of fishing licenses for the shrimp fishery based on violations of fisheries management regulations.

7.7.3 Are there, where appropriate, in place:

- vessel monitoring schemes?

Summary:

There is currently no VMS or ELB requirements for the inshore Alabama shrimp fishery.

Recommendation:

Implement VMS or ELB requirements for the inshore Alabama shrimp fishery, or implement surveys to track fishing effort, location and activity.

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, ADCNR 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.

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.

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.)

- 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 Alabama.

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.

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.

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?

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?

Summary:

There are no specific regulations in Alabama requiring research on impacts prior to the use of new gear types.

Recommendation:

A specific regulation requiring research on the impacts on fisheries and ecosystems prior to the introduction of new fishing gears, methods and operations should be introduced.

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?

Summary:

The primary gear types in the Alabama 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. Within the Mississippi Sound, shrimp may only be taken with a single net with a maximum size restriction. Otter trawls are the primary gear type utilized in the offshore fishery conducted in federal waters; skimmer nets have gained popularity in inshore waters.

Recommendation:

The rating in this section should improve over time as the level of compliance with tow time for shrimpers not using TEDs increases. The observer coverage should be increased in Federal waters, an observer programs should be implemented in Texas waters, and NOAA enforcement activities should be increased. State and Federal agencies shall find solutions regarding inconsistencies in inspection methods and concerns over methods used to determine TED compliance. Also, education, outreach activities shall be maintained helping to increase compliance rates. Additionally, BRDs should be mandatory in State waters.

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	87.5	91%
8- Fishing Operations	32	29.5	92%
10- Coastal Areas Management	16	16	100%
11- Post-Harvest Practices and Trade	2	2	100%
12- Fisheries Research	25	24	96%
total	171	159	93%

Article 7: Fisheries Management

Code Provision	Best Score Possible	State Score	%
7.1 General	22	21	%
7.2 Management Objectives	13	9.5	%
7.3 Management Framework & Purposes	12	11.5	100%
7.4 Data Gathering & Management Advice	9	9	100%
7.5 Precautionary Approach	9	9	100%
7.6 Management Measures	21	18.5	%
7.7 Implementation	10	9	90%
Article 7 Overall	96	87.5	91%

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	11.5	88%
8.5 Fishing gear selectivity	6	6	100%
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	1.5	75%
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	96%

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. Alabama Shrimp MAP Timeline

April 2014 – Start of Alabama Shrimp MAP	
23rd	Industry Meeting: Mobile, AL -Attended Alabama Seafood Summit -Discussed G.U.L.F. and MAP program with shrimp processors and restaurateurs
30th	Federal Management Meeting: Pascagoula, MS - met with members of NOAA to discuss TED regulations
May 2014	
2nd	Industry meeting: Biloxi, MS - Met with American Shrimp Processor’s Association (ASPA) - Introduced MAP project’s goals and objectives
June 2014	
16th	Federal Management Meeting: Pensacola, FL - Assisted with testing TEDs in skimmer trawls
May 2014-February 2015 Data Collection	
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 - ASPA - Update on projects - Scoping for individuals who may want to be involved in MAP Committee
April 2015	
15th	Industry meeting: New Orleans, LA - discussed TED regulations and enforcement
June 2015	
4th	Industry Meeting: Bayou La Batre, AL - Not a lot of pressure from buyers - Biggest challenge for the industry are making a profit - Have to source from all over the Gulf and North Carolina to meet demand - More questions about sustainability from overseas
4th	Industry Meeting: Bayou La Batre, AL - Challenge with consistency of observer coverage and TED enforcement - Regularly train fleet on TEDs and safety - Have some customers that ask for Traceability
4th	Management meeting: Dauphin Island, AL - Discussed progress of shrimp MAP
July 2015 – Continued research and benchmarking	
August 2015 – SBR submitted for review by third-party and finalization of SBR	