



## Global Trust MSC Pre-Assessment Report

Louisiana State

White Shrimp (*Litopenaeus setiferus*) and Brown Shrimp (*Farfantepenaeus aztecus*)

Butterfly Net, Skimmer & Otter Trawl Fishery

Louisiana State Waters (up to 3nm offshore)

**FAO 31**

Managed by the Louisiana Department of Wildlife and Fisheries

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## Executive Summary

The Louisiana State White Shrimp (*Litopenaeus setiferus*) and Brown Shrimp (*Farfantepenaeus aztecus*) Fishery caught by Butterfly Net, Skimmer & Otter Trawl, managed by the Louisiana Department of Wildlife and Fisheries within the State's 3 nm jurisdiction has been pre-assessed to the Marine Stewardship Council's Standard for Sustainable Fisheries.

This report follows the requirements for conducting an MSC pre-assessment. It identifies the fishery strengths and the potential unit or units for certification. Of course, the report also identifies challenges or obstacles that the fishery may face during a more rigorous and publicly transparent MSC full assessment process. This preliminary assessment uses all reasonably available information and culminates with a recommendation as to the current suitability of the fishery to enter full assessment. It must be stressed that the results are indicative only and only through a full assessment would absolute confirmation of these indications be known. However, the report does provide a strong indication of the potential obstacles, gaps and the strengths that are features of the fishery at this time with respect to meeting the MSC Standard.

On the basis of the information reviewed by our professional assessment team, Global Trust would not recommend that the fishery proceed directly to full MSC assessment at this time. There are a number of obstacles in the management system and key information gaps that would create a substantial challenge for the fishery to meet the required minimum aggregate score of 80% for certification purposes. It should be clearly stated though that obstacles and challenges to the MSC full assessment does not mean the fishery is unsustainable. It simply means that information peculiar to the MSC program is currently not available to allow assessment of the fishery according to the specific clauses and performance indicators contained within the MSC assessment methodology.

The first part of the report provides an overview of the fishery. It includes: short description; geographic location; history; current operation and management systems in place in the fishery and; and, the biology of the target species. The second part of the report is focused on MSC issues, scoring processes and recommendations. It is in tabular format and provides the specific rationales (as understood at this preliminary stage) for the potential scores on each Performance Indicator (PI) used in the MSC assessment process. There are seven performance indicators under Principle 1 (the stock), fifteen under Principle 2 (the ecosystem), and nine under Principle 3 (the management system).

Specific outcomes are documented in the main body and tables within the second part of the report. A summary of these is presented here:

- There is insufficient information to adequately score most of the performance indicators (PI's) under Principle 1 due to the absence of management elected biological reference points or proxies for the stock. Most of Principle 1 PI's relate to the stock status and the appropriateness of the harvest strategy in relation to the stock as measured by such reference points through time (typically 3 to 5 years). Their absence makes it extremely difficult to demonstrate that the fishery is managed according to Maximum Sustainable Yield (MSY) or with a precautionary approach. The pre-assessment report makes reference to the federal waters fishery for these two species and the

appropriateness of presenting the state waters fishery as a sub-fishery of the federal fishery for assessment purposes.

- The greatest challenge to the Principal 2 assessment is caused by insufficient data in the format required for MSC purposes. It may be likely that analyses of trip ticket data is or can be made available, and this may result in favorable scores for some of the PI's under Principle 2. Currently, however, there appears to be insufficient separation of shrimp catches in state waters from those in federal waters, and the federal fishery is not currently featured within the proposed unit of assessment. There is also insufficient data on by-catch species by quantity and by gear type. Additional information such as by-catch species types and their quantities for each gear type as provided through observer programs for example, may provide substantiation for these PI's for scoring purposes. For Endangered Threatened or Protected (ETP) species, there would appear to be insufficient objective information available at this time for adequate evaluation of this PI. Louisiana has an established a statute that prohibits LDW&F from enforcing Turtle Excluder Device (TED) regulations within inshore state waters, in direct contradiction of federal regulations. Collection of observer data on sea turtle bycatch and the analysis of this data would be important for documenting the significance of this problem in the Louisiana inshore shrimp fishery. For Habitat and Ecosystem PI's, there are no recent data, analyses or reports available regarding the impact of the Louisiana inshore shrimp fishery on the habitat which would be required to evaluate this PI. It may be likely that the fishery could pass this PI, but information would be required to eventually demonstrate that the fishery meets the minimum score. There are also potential anthropogenic effects on the fishery habitat that would need to be considered, e.g., oil spills. Other effects of the fishery on ecosystem structure and function may relate to the position of shrimp in the food chain and any wider effects on the fishery beyond the individual interactions that would be investigated under retained, by-catch, ETP and habitat PI's. As a potential area of data, it may be likely that there is information available from the federal fishery that would be comparable and usable for assessment purposes for the assessment of the state waters fishery.

- Principle 3 PI's evaluate the management system of the fishery under two main sections; the overall management framework used, which in this case refers to both state and federal frameworks, and the more specific management system applicable to the shrimp fisheries under pre-assessment.

The overall legal and government framework supporting the Louisiana fishery management system should be capable of delivering the requirements necessary to meet the PI's concerning the overall fishery management framework. However, there are potential challenges with regard to the MSC Principles and Criteria in that the system does not overtly appear to utilize the types of fish stock, habitat and ecosystem management approaches that are highly prescribed by the MSC assessment process. As noted, they appear in the federally managed fishery and there may be benefits for them being connected. A specific fishery management plan for state waters does not appear to be available, although management actions did result in a draft plan in the 1990s. The fisheries are currently managed on an open access basis and certain areas of the system may conflict with federal

management measures, such as the prohibition on enforcing the federal TED/BRD regulations in the state waters. However, there seems to be a considerable amount and variety of data being collected while various these fisheries are underway and there are the legal arrangements available for fishery specific management objectives and plans to be prescribed. There is also, on first review, an effective enforcement system in place for the fishery and no signs of poor compliance with the existing regulatory system.

In relation to ETP species and the ecosystem approach the collection of observer data on sea turtle bycatch and habitat, and the analysis and publication of this data, would help to understand the significance of these interactions in the Louisiana inshore shrimp fishery. Louisiana and the LDW&F could also adopt National Marine Fisheries Service (NMFS) NMFS regulations with regard to TEDs, so as to comply with ESA based regulations. Without this information or a change in management approach, it is likely that the fishery will have difficulty meeting the requirements for MSC Certification.

Therefore, the recommendation from Global Trust is not to proceed to full assessment until there is clarification, assured availability and analysis of the required information and data for each of the PI's of the MSC scoring system.

## 1. Introduction

This Pre-assessment was conducted to determine what obstacles might be present for 'The Louisiana State White Shrimp (*Litopenaeus setiferus*) and Brown Shrimp (*Farfantepenaeus aztecus*) fishery caught by Butterfly Net, Skimmer & Otter Trawl Fishery, within the State's 3nm jurisdiction' proceeding to a full MSC assessment. This pre-assessment report is a guidance document only and may differ from the outcome of a more rigorous MSC Full Assessment through full consultation with stakeholders in the fishery and through a complete assessment process.

- Site visits with the client were undertaken from the 8<sup>th</sup> to the 10<sup>th</sup> November 2010 by Global Trust Certification Ltd representative Mike Rose and expert assessor Eric Dunne in Baton Rouge, Louisiana with representatives of the Louisiana Department of Wildlife and Fisheries (LDW&F). Global Trust advisors, Joe DeAlteris and Eric Dunne, are independent responsible and fully qualified to assess this fishery.
- This pre-assessment was conducted in accordance with the guidelines contained in the MSC Fisheries Assessment Methodology v2, MSC Principles and Criteria for Sustainable Fishing, MSC Fisheries Certification Methodology Version 6.1, Policy Advisory 15 v 1, Policy Advisory 11 v 1 and TAB Directive D-003 v1.
- The information used in this pre-assessment included publicly available material from a range of sources, including official websites. Other sources of information include published books and peer-reviewed scientific papers. The Information Sources used in this Pre-assessment are recorded throughout the report.

Main websites accessed:

Marine Stewardship Council [www.msc.org](http://www.msc.org)

Louisiana Department of Wildlife and Fisheries <http://www.wlf.louisiana.gov>

Gulf States Marine Fisheries Division <http://www.gsmfc.org/#:links@1>

Louisiana Seafood Promotion and Marketing Board [www.louisianaseafood.com](http://www.louisianaseafood.com)

## 2. Name of the Fishery

The Fishery being considered in this pre-assessment is the Louisiana State White shrimp (*Litopenaeus setiferus*) and Brown shrimp (*Farfantepenaeus aztecus*) fishery harvested by butterfly net, skimmer & otter trawl conducted in Louisiana State Waters (up to 3nm offshore), and managed by the Louisiana Department of Wildlife and Fisheries (LDW&F).

This pre-assessment is specifically for the fishery within 3nm of the Louisiana coastline and under the State control of LDW&F. A substantial amount of harvesting takes place by Louisiana registered shrimp vessels outwards of the 3nm zone. This fishery is part of the US EEZ and management is the responsibility of the Gulf of Mexico Fisheries Management Council, which is empowered via the US Magnuson-Stevens Fishery Conservation Act. The Council prepares fishery management plans consistent with National Standards for fishery conservation and management. In addition, the Gulf States Marine Fisheries Commission provides a scientific advisory arm to the 5 US Gulf States and provides a forum for multi-State discussion on fishery conservation matters. Individual states do not relinquish any authority to the Commission. Careful consideration should be given on the eventuality that the fishery moves to full assessment on the proposed fishery jurisdiction.

The shrimp fishery is managed interjurisdictionally and the percent contributions for shrimp landed in Louisiana and harvested in state and federal waters are 65% of shrimp harvested from state waters, and 35% from federal waters. The primary difference is that Louisiana maintains an open access shrimp fishery while vessels fishing for shrimp in the Gulf EEZ must hold a shrimp vessel moratorium permit issued by NOAA Fisheries. Louisiana manages its waters separately from federal waters but in a manner consistent with federal management.

## 3. Species Common Name(s)

White shrimp (*Litopenaeus setiferus*) are also known as Lake Shrimp and Fall Shrimp. Other common names for the White shrimp include Grey shrimp, Green shrimp, Common shrimp, Daytona shrimp, and Southern shrimp.

Brown shrimp (*Farfantepenaeus aztecus*) are also known as Brazil and Spring Shrimp. Brown shrimp are also known as brownies, green lake shrimp, red shrimp, redtail shrimp, golden shrimp, native shrimp, and, in North Carolina, summer shrimp.

Southern brown shrimp (*Penaeus subtilis*) is also marketed as shrimp or Brown shrimp. Several other species of shrimp are also marketed as shrimp.

#### 4. Latin Name

White shrimp (*Litopenaeus setiferus*) are formally known as *Penaeus setiferus*.

Brown shrimp (*Farfantepenaeus aztecus*) should be differentiated from a similar species of brown shrimp (*Penaeus subtilis*).

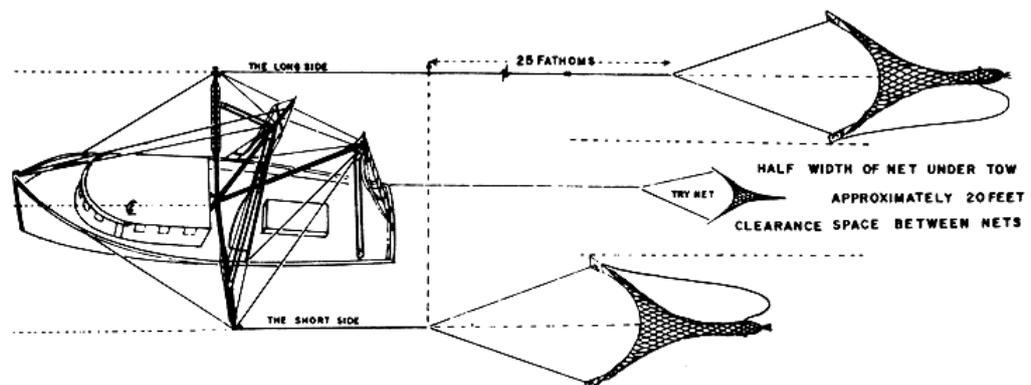
#### 5. Method of Catch

The method of capture for both species under this pre-assessment is by butterfly net, skimmer nets, and otter trawl. There are other legal commercial catching methods such as the cast net and traps but these are not considered under this assessment.

Trawls are generally funnel-shaped nets that are pulled through the water or along the seabed with otter boards, which spread the mouth of the net open during the soak. Trawl nets must have a minimum mesh size of  $\frac{5}{8}$  inch (1.56cm) square or 1 and  $\frac{1}{4}$  inch (3.2cm) when stretched. An exceptions to this rule is during the fall inshore shrimp season where mesh sizes cannot be less than  $\frac{3}{4}$  inch (0.4cm)<sup>2</sup> or 1 and  $\frac{1}{2}$  inch (3.75cm) stretched from the Atchafalya River West to the western shore of Vermillion Bay and Southwest Pass (see Figure 4), at Marsh Island in the state's inside waters.

Table 1 Double Rig Shrimp Otter Trawler

Source: [www.fao.org/fishery/fishtech/1022/en](http://www.fao.org/fishery/fishtech/1022/en)



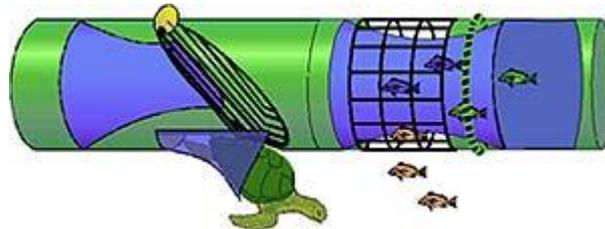
Otter Trawls voluntarily incorporate Turtle Excluder Device (TEDs) inside Louisiana state (territorial <3nm) waters. Federal law requires that all shrimp trawlers with a powered retrieval system must have an approved TED<sup>1</sup> installed in each trawl except for trawls with test nets. These are nets that

<sup>1</sup> [http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg\\_2-21-03.pdf](http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg_2-21-03.pdf)

have a head-rope of less than 12 feet. In federal waters, it is also a mandatory requirement for all shrimp trawls to have an installed approved Bycatch Reduction Devices (BRDs)<sup>2</sup>.

**Table 2 Trawl net incorporating a Turtle Excluder Device.**

Source: [http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg\\_2-21-03.pdf](http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg_2-21-03.pdf)



**Otter trawls** are the most frequently deployed harvesting method for bait shrimp within the southeast U.S. coastal states. Commercial bait shrimpers using otter trawls are exempt from TED use under the assumption that they are towed for shorter durations of time and have a circulation tank onboard to ensure that the shrimp can be harvested alive. Under federal law, a bait shrimp trawl is allowed a TED exemption if the vessel has a valid state 'bait shrimp license' on board and retains less than 32 pounds of dead shrimp. Marine turtles are susceptible to capture in these bait shrimp trawls, however survival rates are suggested to be higher as tow times are shorter allowing turtles to be released before drowning. Otter trawls used to harvest bait shrimp in Louisiana are also limited in size to 25 ft. as measured along the head-rope and 33 ft. as measured along the footrope. Bait shrimp may only be fished during daylight hours.

From the Louisiana Shrimp Laws<sup>3</sup> 2008-2009:

**Skimmer nets** – *Double skimmer nets used on a vessel cannot have an individual net frame larger than 16 ft. measured horizontally, 12 ft. measured vertically, or 20 ft. measured diagonally. Reinforcement framing that may be attached to the net frame is not considered in determining the dimensions of a double skimmer net. The lead line of a double skimmer net cannot measure more than 28 ft. for each net. Individual skimmer nets cannot be tied together to exceed the above stated specifications.'*

Skimmers<sup>4</sup> resemble butterfly nets as both gears are "pushed" alongside the vessel and fished in pairs on the sides of the vessel and are held open by a metal framework. They are also deployed and hauled in a similar manner, fished continuously with little or no interruption in fishing time, and subjected to similar legal restrictive measures in mesh size and net dimensions<sup>1</sup>. While skimmers are

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<sup>2</sup> [http://www.lsu.edu/seagrantfish/management/TEDs&BRDs/brds\\_specs.htm](http://www.lsu.edu/seagrantfish/management/TEDs&BRDs/brds_specs.htm)

<sup>3</sup> Louisiana Shrimp Laws 2008-2009 <http://www.lsu.edu/slegal/pdfs/LouisianaShrimpLaws2008.pdf>

<sup>4</sup> Skimmer nets that are deployed in Louisiana <http://spo.nmfs.noaa.gov/mfr571/mfr5712.pdf>

pushed alongside the vessel, the otter trawl is towed at various distances behind the vessel using a pair of otter boards to spread the net. The opening of the skimmer net is always in front of the vessel's prop wash. A skimmer trawls consist of an "L" shaped frame constructed from metal pipe with a shoe or skid on the outboard leg. The outboard wing edge and head-rope of the trawl is attached around the frame. The inboard wing edge of the trawl is attached to a line suspended from the frame and ends at a weight and when deployed this rides slightly off the bottom. The skid is an optional feature on the butterfly net since it is not normally fished on the seabed. Skimmer trawls are more easily operational in movement and hauling the cod-end, the frame and mouth of the trawl. Skimmer trawls are used exclusively in inshore waters in Louisiana and skimmers may also be rigged with low opening nets to target brown shrimp. Skimmer trawls are exempt from TED regulations and must be fished in accordance with tow time restrictions. Because skimmers are typically rigged to fish higher in the water column incidences of turtle capture may be greater than a lower opening otter trawl. Many Louisiana fishermen have converted their gear to the more versatile skimmer rigs and due to the TED exemption<sup>5</sup>. In the year 2000, the number holding license was estimated at 1337<sup>5</sup>

From the Louisiana Shrimp Laws<sup>6</sup> 2008-2009:

*'Butterfly nets - Single stationary butterfly nets cannot have a net frame larger than 22 ft. measured horizontally or vertically, whichever is greater. Double stationary butterfly nets cannot have an individual net frame larger than 12 ft. measured horizontally or vertically, whichever distance is greater. Double butterfly nets used on a vessel cannot have individual net frames larger than 16 ft. measured horizontally or 12 ft. measured vertically.*

Butterfly nets are sometimes consist of a square metal frame that forms the mouth of the net. Webbing is attached to the frame and diminishes back to the cod-end. The nets can be fished from a stationary platform or a pair of nets can be attached to either side of a vessel. In Louisiana, fishers regularly use a platform attached to the shore in man-made passes, bayous, or canals. The butterfly nets are not fished on the bottom compared to the skimmer and are typically set, or pushed so that the top of the frame and net are exposed above the surface of the water. Butterfly nets may be hauled up and deployed without raising the gear out completely of the water. Vessels fishing with these nets usually operate in the deeper parts of rivers, channels and canals, avoiding shallower sloping banks. Butterfly nets are also exempt from TED regulations and must be fished in accordance with regulated tow times<sup>5</sup>. The gear is capable of incidental sea turtle capture as it is fished off the bottom and in deeper parts of channels but the chance of turtle interaction with this gear may be somewhat less than skimmer gear.

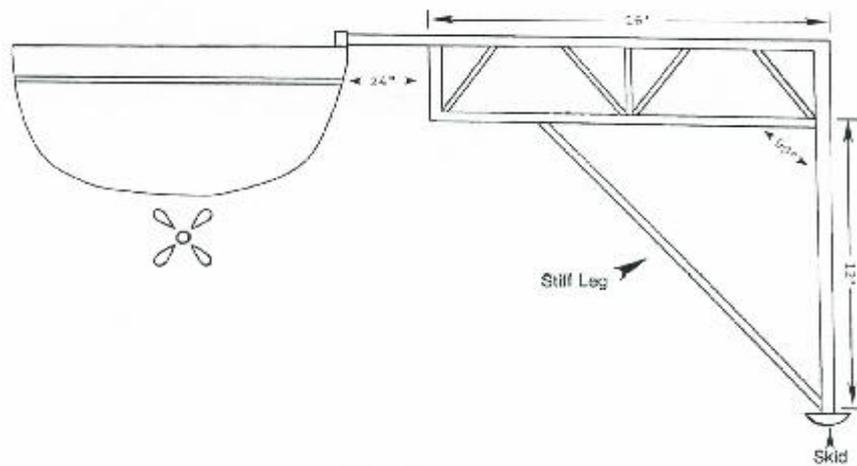
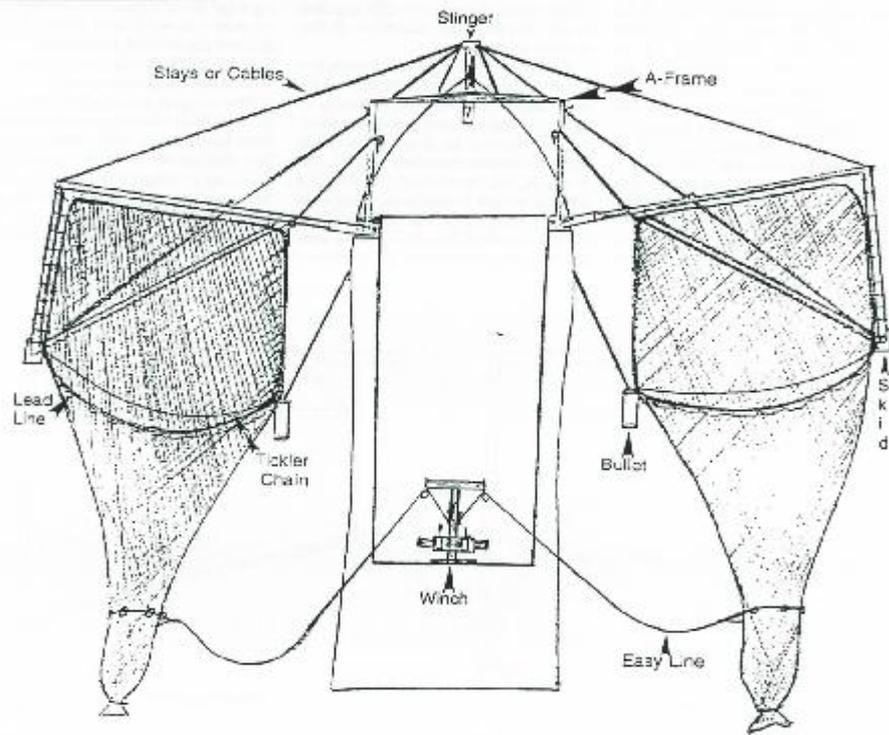
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<sup>5</sup>Horst, J., & Holloway, H. , 2002. Louisiana License Statistics and Trends, 1987-2000: Commercial fishing, recreational gear, commercial wildlife, and related industries. Unpublished report. Louisiana sea grant college program. Louisiana State University, 161 p.

<sup>6</sup> Louisiana Shrimp Laws 2008-2009 <http://www.lsu.edu/sglegal/pdfs/LouisianaShrimpLaws2008.pdf>

**Table 3 Skimmer nets and basic Frame design<sup>4</sup>**

Source: <http://spo.nmfs.noaa.gov/mfr571/mfr5712.pdf>

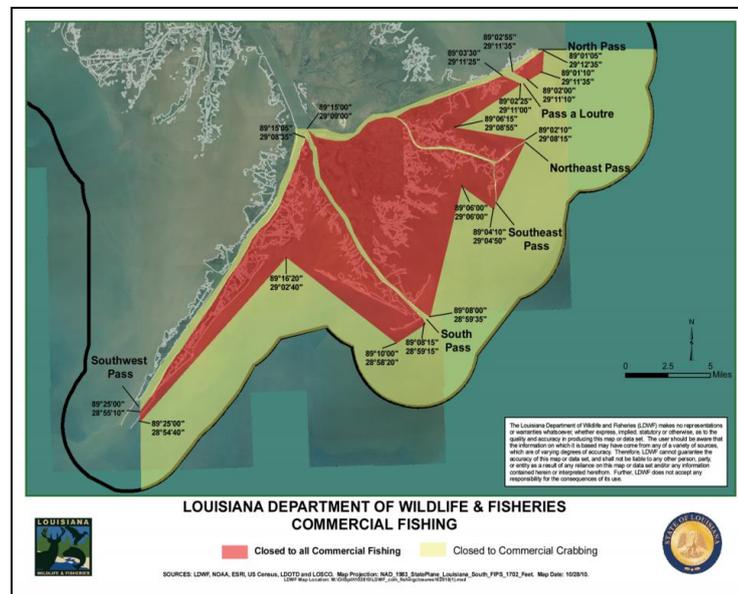


## 6. Location and scale of Fishery

The Louisiana Brown and White Shrimp (gears) Fishery are located in the state waters of Louisiana and governed by State Laws inside the federal line (inshore waters less than 3nm) within FAO fishing area 31. Shrimp fishing areas in Louisiana are divided into inshore waters, the offshore territorial sea and the federal Exclusive Economic Zone (EEZ). The line that separates state territorial waters from the EEZ generally runs along the Louisiana coast three miles from shore. In addition, for general management purposes, state inshore and state offshore territorial waters have been divided into three shrimp management zone.

**Figure4. Commercial Fishing Closed Areas**

Source: <http://www.lsu.edu/seagrantfish/index.html>



### Shrimp Fishing Zones

**Zone 1** extends from the Louisiana and Mississippi state line to the eastern shore of South Pass of the Mississippi River.

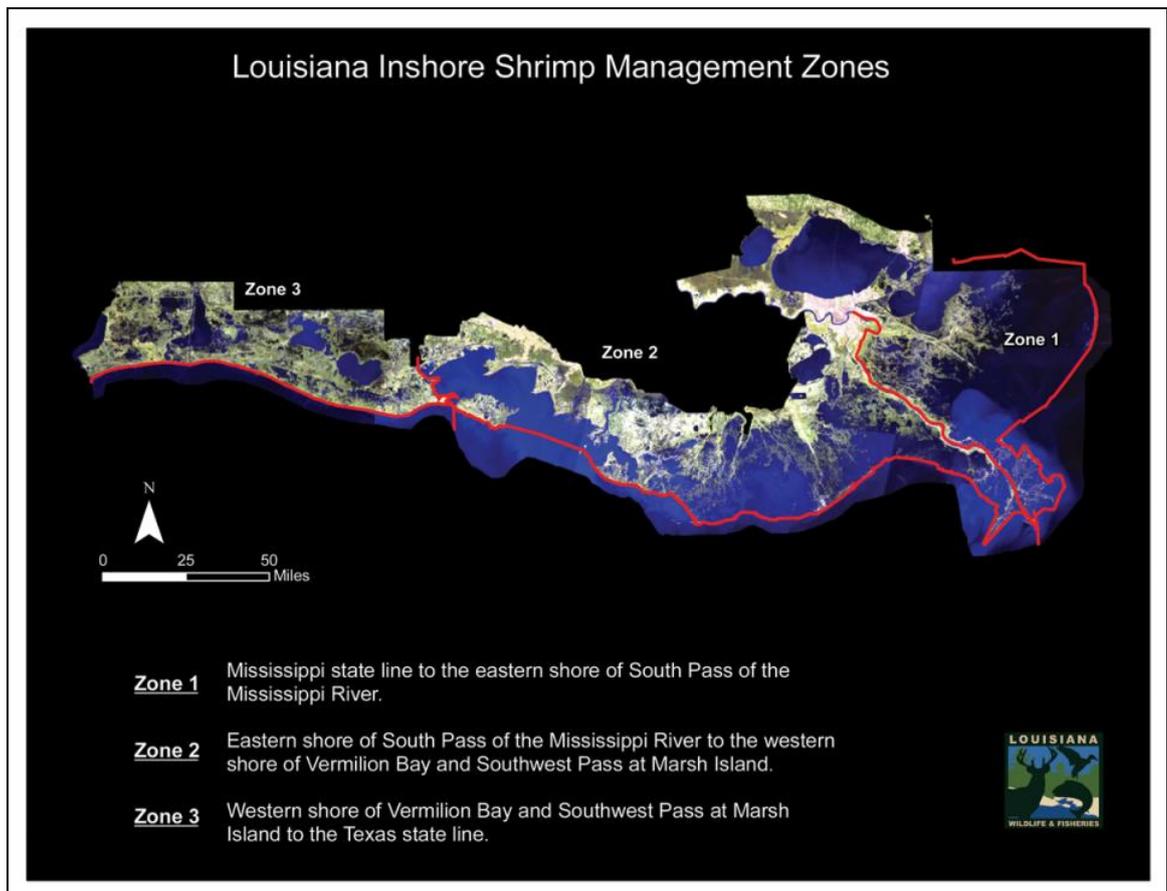
**Zone 2** extends from the eastern shore of South Pass of the Mississippi River to the western shore of Vermilion Bay and Southwest Pass at Marsh Island.

**Zone 3** extends from the western shore of Vermilion Bay and Southwest Pass at Marsh Island to the Louisiana-Texas state line. Please refer to Figure 4.

LDW&F<sup>7</sup> regulates all fishing activities within the Louisiana state water, but as an exceptions shrimp landed and transported into the state from federal waters, which extend from the territorial sea boundary out to 200 miles from the coastline are also controlled by the LDW&F. This is the Exclusive Economic Zone (EEZ), sometimes referred to as “federal outside waters,” in which the Gulf of Mexico Fishery Management Council exercises jurisdiction over shrimp resources.

**Table 4 Louisiana Shrimp Fishing Zones**

Source: <http://www.wlf.louisiana.gov/fishing/shrimp>



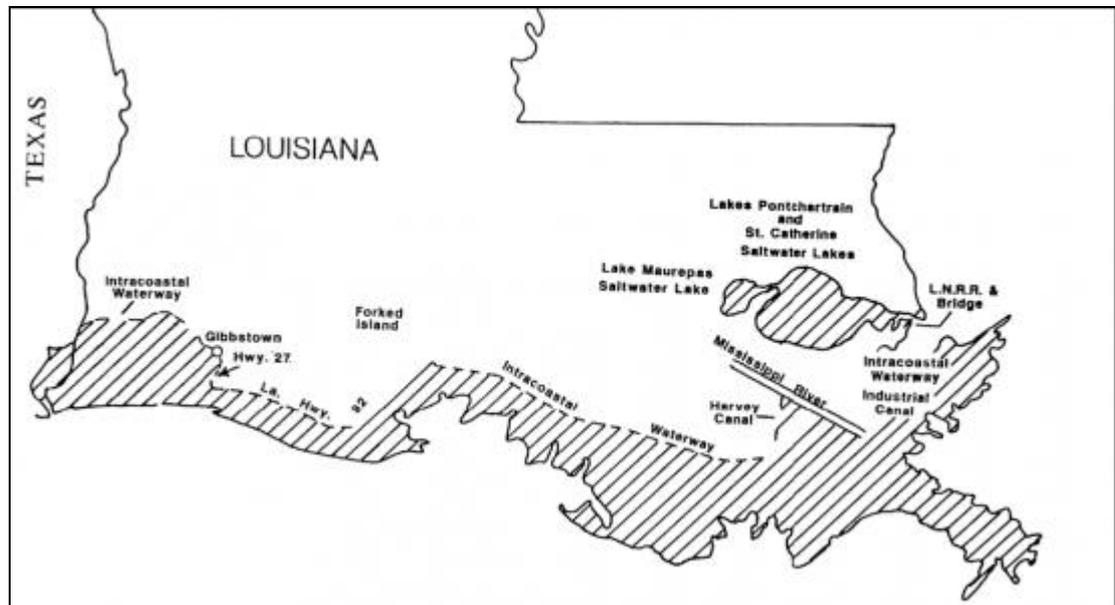
### Saltwater Line

The Louisiana legislature defined the freshwater and saltwater areas of the state by drawing a line from the Texas state line to a region easterly to the Mississippi state line. The areas south of the line, plus several saltwater lakes and waterways are considered as saltwater areas and all other areas north of the line are considered freshwater areas. This is also referred to as the “inside/outside shrimp line”.

<sup>7</sup> Louisiana department of Wildlife and Fisheries website <http://www.wlf.louisiana.gov/>

**Table 5 Louisiana Saltwater Line**

Source: <http://www.wlf.louisiana.gov/fishing/saltwater-freshwater-line>



## 7. Fishing Season and Biology of the Species

The LDW&F controls fishing seasons (two at least per year) in state waters and these are flexible (closing and opening) depending on biological and technical data on shrimp populations in Louisiana waters.<sup>8</sup> Brown shrimp seasons are opened by the Louisiana Wildlife and Fisheries Commission (the Commission) no later than the third Monday in May, after considering the LDW&F's projections as to when fifty (50) percent of the brown shrimp crop will be one hundred per pound.<sup>8</sup> The Commission also has the authority to open or close outside waters by zone each year as it deems appropriate based upon technical and biological data that indicates that marketable shrimp in sufficient quantities are available for harvest. Finally, the Commission also has the right to set special shrimp seasons for all or part of the state waters.

From the Louisiana Shrimp Laws<sup>8</sup> 2008-2009:

*'The spring inshore season begins in late May or early June and extends into July. The fall inshore season usually begins in late August and extends into November or December. The shrimp season in Louisiana's offshore territorial waters is usually open year-round. However, the Commission has authority to close this area when deemed necessary. The shrimp season in the Federal waters of the Gulf outside (south) of Louisiana's territorial waters is usually open all year; these waters are controlled by the federal government.'*

<sup>8</sup> Louisiana Shrimp Laws 2008-2009 <http://www.lsu.edu/sglegal/pdfs/LouisianaShrimpLaws2008.pdf>

There is also no limit on the size of shrimp taken during open seasons but there is regulation pertaining to:

*'possession count on saltwater white shrimp taken in either inside or outside (offshore) waters of Louisiana of 100 count (whole shrimp per pound). This size restriction applies to the taking or possession of such shrimp aboard a vessel, with the exception of the period from October 15 through the third Monday in December when there shall be no possession count on saltwater white shrimp taken or possessed'. When more than 50 percent by weight of the saltwater shrimp taken or possessed is seabobs or brown shrimp, then the maximum allowable amount of undersized white shrimp taken or possessed shall not exceed 10 percent by weight of the total saltwater shrimp taken or possessed'.*

### Louisiana Shrimp Lifecycle

Both brown<sup>9</sup> <sup>10</sup>and white shrimp<sup>11</sup> <sup>12</sup> are r-strategists, defined as short-lived (18-24 months) and with a high fecundity (spawning 215,000 to 1 million eggs every three days).<sup>13</sup> In their unstable and unpredictable environment, these r-selected species have small bodies, can produce quickly, mature early, have a short generation time but can disperse offspring widely. These traits produce an organism that is resilient to the pressures of fishing and makes them a valuable fishery.

*'Because temperature and salinity changes affect the life stages of each shrimp species in a slightly different manner, shrimp **Error! Bookmark not defined.** occupy many niches in Louisiana's estuaries and in Gulf waters. Reproducing populations of several species of shrimp mature through the postlarval and subadult stages in Louisiana's estuaries at slightly different times of the year, sometimes overlapping in habitat use, sometimes occupying different niches in state waters. This size difference occurs because white shrimp remain longer in estuaries, responding only to very strong tidal changes that stimulate movement in and out of the estuaries. White shrimp also tend to migrate back through the passes into estuaries over winter'.*

Brown shrimp<sup>14</sup> are caught as deep as 50 fathoms (300 foot/91m), but most catches are caught in less than 30 fathoms (180 foot/55m). Juveniles are found in both estuaries and marine habitat and adults are strictly found in marine habitats. Brown can be identified by a brown coloured grooved on either side of the spine, on the head and on either side of the tail. They have medium-length antennae. They are abundant in spring and early summer. They average at approximately 70-80 per pound.

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<sup>9</sup> [http://www.nmfs.noaa.gov/fishwatch/species/brown\\_shrimp.htm](http://www.nmfs.noaa.gov/fishwatch/species/brown_shrimp.htm)

<sup>10</sup> Lassuy, D.R. 1983. Species Profiles: Life Histories and Environmental Requirements (Gulf of Mexico) – Brown shrimp. U.S. Fish and Wildlife Service, Division of Biological Services. FWS/OBS-82/11.1. U.S. Army Corps of Engineers, TR EL-82-4. 15 pp.

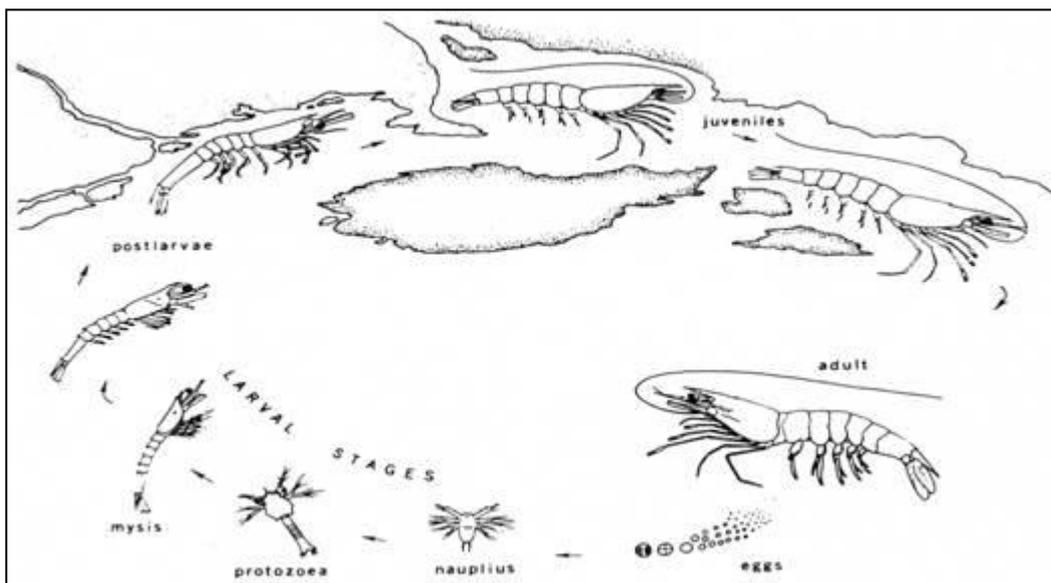
<sup>11</sup> Muncy, R.J. 1984. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Gulf of Mexico)— White Shrimp. U.S. Fish and Wildlife Service, FWS/OBS-82/11.20. U.S Army Corps of Engineers, TR EL-82-4. 19 pp.

<sup>12</sup> [http://www.nmfs.noaa.gov/fishwatch/species/wild\\_white\\_shrimp.htm](http://www.nmfs.noaa.gov/fishwatch/species/wild_white_shrimp.htm)

<sup>13</sup> [http://www.nwrc.usgs.gov/wdb/pub/species\\_profiles/82\\_11-090.pdf](http://www.nwrc.usgs.gov/wdb/pub/species_profiles/82_11-090.pdf)

<sup>14</sup> [http://www.lsu.edu/seagrantfish/pdfs/lifecycle\\_shrimp.pdf](http://www.lsu.edu/seagrantfish/pdfs/lifecycle_shrimp.pdf)

Figure 1 Shrimp Lifecycle



White shrimp<sup>15</sup> are typically caught in nearshore waters, to a depth of 20 fathoms (120 foot/37m) in shallower depths than the brown shrimp. White shrimp predominate from summer to late December. They are white to gray with long blank antennae and they do not have grooves on the head or tail. Louisiana shrimpers normally harvest white shrimp averaging 30 to 40 per pound. White shrimp spawn in offshore waters of Gulf of Mexico (8m to 31m deep) where salinities are at least 27ppt (parts per thousand). Both white and brown species favour muddy or peaty bottoms, sometimes with sand, clay, or broken shells.

Shrimps release their tiny eggs at specific salinities when water temperature increases significantly deep in the waters of the Gulf of Mexico. These microscopic eggs float in the water column and are a food source for zooplankton, filter feeders and a selected food source for some small fishes at the bottom of the sea's food web. Maturation from egg to larvae is brief but shrimp eggs are present in the plankton as a food source for the food web nearly continuously as spawning occurs, several times annually. White shrimp spawn two or three times when stimulated by temperature increases from late spring to early fall from April to September off Louisiana. Brown shrimp spawn throughout the year, although April to May and September through November appear to be peak spawning times off Louisiana's coast<sup>15</sup>.

Larvae develop from these fertilized floating eggs released in the plankton and grow or moult within a week or two. At this stage they are defined as Nauplii and Protozoa larvae and drift through the water column with no control over their feeding or movement. Their diet at this stage consists of nanoplankton, zooplankton, suspended detritus and phytoplankton. The third stage is the mysis and by now the recognizable tiny shrimp are being carried shoreward by wind-driven currents. The Mysis Larvae stage where the larvae continue to feed on zooplankton and grow to a size larger enough for small fish to actively feed on them. Also at this stage in their lifecycle the Mysis larvae can respond to light in such a way as to avoid it and sink to further depths in the water column avoiding predators. After this stage, the larvae (4-6 week period) grow legs that enable them to swim and walk and they

<sup>15</sup> [http://www.lsu.edu/seagrantfish/pdfs/lifecycle\\_shrimp.pdf](http://www.lsu.edu/seagrantfish/pdfs/lifecycle_shrimp.pdf)

resemble mature shrimp. Tides and wind driven currents drive this post larvae shrimp juvenile into inside brackish estuarine bays and coastline. White shrimp don't reach estuaries until early summer when temperatures increase. In the estuaries and bays white shrimp feed and grow from July to December. Here they mainly reside at the seabed forage & graze on plant detritus acting as a key part of the ecosystem and niche where it resides consuming and recycling detritus. Once shrimp reach a marketable size, inside waters are opened for the white shrimp fishing season. The estuaries serve as protection from predators. Many marine and estuarine fish prey on white shrimp. White shrimp feed and grow inshore until they are large enough to move offshore or until the Autumn which is in contrast to brown shrimp travelling out offshore.

Juvenile shrimp (1-2 months after post larval stage) are active throughout soft shallow areas in the estuary in salt waters and outside water in protected coastal areas. They are preyed upon by small juvenile fish and also act as predators in the food web preying on each other, and they consume whatever is available such as detritus, fish remains, sponges, corals, copepods, other crustaceans, algae and vascular plant stems and roots. Juvenile white shrimp move farther up into the estuary than juvenile brown shrimp but both will eventually move offshore.

Temperature and salinity changes stimulate growth and regulate the maturing shrimp's migration pattern within the estuary and back out to sea. Colder conditions move the shrimp back into the estuary and areas protected from heavy winds, tides and these become packed with sub-adults waiting for a flush of high tide to take them back out to sea. The sub-adult forages for detritus, organism remains, algae as well as other juvenile shrimp. Out to open sea adult shrimp are opportunistic omnivores and continue to grow in size on the seabed at approximately 60-500 feet depth. A one year old adult shrimp are harvested by commercial trawlers and preyed upon by many fish species. A sharp rise in water temperatures will stimulate the spawning of females, producing thousands of eggs that will be fertilised that start the cycle again.

Postlarval brown shrimp begin entering estuaries in western Louisiana in mid-February and continues throughout the month of July. Several waves of post-larvae may enter with peak recruitment from February through early April. Environmental conditions and biological factors affect the survival and growth of young shrimp that enter the estuaries.

## **8. Units of Certification**

The MSC Guidelines to Certifiers specifies that the unit of certification is defined as:

"The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock) and management framework".

Six units of certification for this Fishery are defined as follows:

	<b>Unit of certification 1</b>	<b>Unit of certification 2</b>
<b>Species</b>	<i>Litopenaeus setiferus</i>	<i>Farfantepenaeus aztecus</i>
<b>Common name</b>	White shrimp	Brown shrimp
<b>Geographical range of fishing operation</b>	Louisiana State Waters (up to 3nm offshore)	
<b>Stock</b>	The Gulf of Mexico Shrimp Stock within the 3 nautical mile limit of state waters	
<b>Method of capture</b>	Butterfly net	
<b>Management System</b>	This fishery is managed under the Louisiana Department of Wildlife and Fisheries (LDW&F) within the 3nm state waters.	
<b>Client Group</b>	To be determined	

	<b>Unit of certification 3</b>	<b>Unit of certification 4</b>
<b>Species</b>	<i>Litopenaeus setiferus</i>	<i>Farfantepenaeus aztecus</i>
<b>Common name</b>	White shrimp	Brown shrimp
<b>Geographical range of fishing operation</b>	Louisiana State Waters (up to 3nm offshore)	
<b>Stock</b>	The Gulf of Mexico Shrimp Stock within the 3 nautical mile limit of state waters	
<b>Method of capture</b>	Otter Trawl	
<b>Management System</b>	This fishery is managed under the Louisiana Department of Wildlife and Fisheries (LDW&F) within the 3nm state waters.	
<b>Client Group</b>	To be determined	

	<b>Unit of certification 5</b>	<b>Unit of certification 6</b>
<b>Species</b>	<i>Litopenaeus setiferus</i>	<i>Farfantepenaeus aztecus</i>
<b>Common name</b>	White shrimp	Brown shrimp
<b>Geographical range of fishing operation</b>	Louisiana State Waters (up to 3nm offshore)	
<b>Stock</b>	The Gulf of Mexico Shrimp Stock within the 3 nautical mile limit of state waters	
<b>Method of capture</b>	Skimmer net	
<b>Management System</b>	This fishery is managed under the Louisiana Department of Wildlife and Fisheries (LDW&F) within the 3nm state waters.	
<b>Client Group</b>	To be determined	

## 9. Client Contact Details

The contacts for the client group are:

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## 10. Client Group

The client group for MSC purposes would require further definition in the event of the fishery proceeding to full assessment. The client group is wholly and exclusively covered by the certificate.

## 11. Other Eligible Fishers

If this fishery should progress under an MSC full assessment then a comprehensive list of all eligible fishers will be required by the client.

## 12. Fishing Operators

If this fishery should progress under an MSC full assessment then a list of all eligible fishing operators will be included under the client group. Any vessel fishing vessel or entity prosecuting the Brown and White Shrimp fisheries defined by the inshore gears within 3nm of the coast and under the authority of the LDW&F and within the definition of the units of certification landing in Louisiana State Waters, will be defined as an operator.

### **13. Certificate Sharing Mechanism**

In the course of the certification it is possible that further clients outside the unit of certification may seek to join under this certification if successful. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification.

### **14. Risk Based Framework.**

There is no indication that use of the risk-based framework is required, or that it would offer any advantages over the standard Fisheries Assessment Methodology (FAM).

### **15. Enhanced Fisheries (when applicable)**

From the material provided there appears to be no enhancement in this fishery.

### **16. Management System**

#### **General Fishery Management Structure and Framework**

In the United States, individual state governments are empowered to manage fisheries that take place within State Waters. These waters vary from three to twelve miles from land; in the case of Louisiana they extend three imperial nautical miles seaward from the baseline (normally taken as the mean low-water mark) from which the extent of the continental shelf is measured<sup>16</sup>.

The form of government in Louisiana is based on the presidential republic system of the United States. The state governor is elected separately from members of the state legislature and heads the executive branch of government which is separate from the legislative branch. That branch is the Louisiana State Legislature which is a bicameral institution and the law-making body of the state. It can enact statutes concerning all and any aspects of fisheries in State Waters. Together with the LDW&F, the Commission and the Louisiana Wildlife and Fisheries Foundation (LWFF) it forms the current structure of fisheries management in Louisiana. The Louisiana Seafood Promotion & Marketing Board supports the industry through seafood promotion and marketing initiatives.

When enacting fisheries laws the State Legislature may receive advice from the Commission and the LDW&F, as well as representation from the fishing industry and other interested parties. It occasionally enacts laws largely on the basis of lobbying by fisheries interests. It empowers the LDW&F or the Commission to carry out certain fisheries management activities, or in some cases, it restrains what these agencies may do. All of the laws respecting management of the State's fisheries are contained in various State Statutes that have been enacted over the years.

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<sup>16</sup> ["What is the Outer Continental Shelf?"](#), by [Minerals Management Service](#) of the [U.S. Department of the Interior](#)

The LDW&F is in the executive branch of government, and is the state agency responsible for management of the state's renewable natural resources including all wildlife and all aquatic life. Specifically, the LDW&F, is given statutory authority by RS 56:6 (25)(a) to *“set seasons, times, places, size limits, quotas, daily take, and possession limits, based upon biological and technical data, for all wildlife and fish. Any such rule or regulation shall have as its objective the sound conservation, preservation, replenishment, and management of that species for maximum continuing social and economic benefit to the state without overfishing that causes short-term or long-term biological damage to any species, and regarding all species of fish, without overfishing that leads to such damage”*. The LDW&F is headed by a Secretary, a non-elected official appointed by the governor and confirmed by the State Senate.

The Commission is a policy decision-making body but it also can set opening times for specified fisheries and conducts adjudicatory hearings on license suspensions or sanctions. Its decisions would be informed by input from LDW&F and the fishing industry. These could result in new actions by the LDW&F or new legislation enacted by the Legislature. The LDW&F is a non-profit public, charitable foundation, tax exempt under Section 501(C) (3) of the Internal Revenue Code. Its goals include habitat conservation, environmental education and training, natural resource research and management and general financial assistance to the LDW&F programs and projects so that it may better serve the public.<sup>17</sup> The Louisiana Seafood Promotion & Marketing Board supports the commercial fishing industry through market development, support of seafood industry trade associations and fisheries agencies, seafood promotions and special events, advertising and public relations.<sup>18</sup> The Board is composed of members appointed by the Governor representing the different sectors of the industry.

The general approach to fisheries management in Louisiana is based heavily on the use of legislative statutes under Title 56 of the Revised Statutes and administrative regulations under Title 76 of the Louisiana Administrative Code. The management arrangement for shrimp seems to have changed little over time. Annual adjustments seem to be the exception rather than the rule. The prohibition on enforcing the federal TED and BRD regulations in state waters, retaining all decision-making on permitted gear types and specifying the amount of advance time that must be given for closure notifications may conflict with the management systems ability to demonstrate compliance to MSC requirements.

In (56:638.5) of 1991, the Legislature adopted standards for harvesting, conservation and management of finfish resources that require management and conservation measures to:

- prevent overfishing;
- be based on best scientific, economic, biological and sociological information;
- manage any fish stock as an unit throughout its range in state waters;
- ensure allocations are fair, equitable, promote conservation, create no excessive individual shares and are in the best interests of Louisianans;
- be not based solely on economic allocation of the resource;
- minimize costs and avoid duplication;

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<sup>17</sup> <http://www.wlf.louisiana.gov/lwff>

<sup>18</sup> <http://louisianaseafood.com/>

- allow for differences in fisheries resources.

In the Louisiana Right to Fish Act (Title 56: 640.1) of 1986, the Legislature confirmed that “all citizens of the state have a right to fish in marine waters as long as they are in compliance with current licensing requirements. Conservation and management decisions shall be fair and equitable to all the people of the state and implemented in such a manner that no individual, corporation, or other entity acquires an excessive share of such rights and privileges. The right to fish does not convey any property right or ownership in the fishery resource, but rather **recognizes continued public access to fishing opportunities in marine waters.**” (Emphasis added)

The legislature further recognized “that the state's marine fishery resources require proper management in order to be sustained biologically and to continually produce a maximum yield of social and economic benefits. **To this end, restrictions on legal fishing methods to harvest finfish, shrimp, oysters, crabs, and other marine fish species may become necessary.**” (Emphasis added)

These various broad objectives are further promoted in the LDW&F Strategic Plan for 2008/09 through the following Mission Statement:

“To manage, conserve, and promote wise utilization of Louisiana's renewable fish and wildlife resources and their supporting habitats through replenishment, protection, enhancement, research, development, and education for the social and economic benefit of current and future generations; to provide opportunities for knowledge of and use and enjoyment of these resources; and to promote a safe and healthy environment for the users of the resources.”

Currently there is insufficient evidence formalized measures, processes or actions that meet or advance these management objectives. For example, there is a general absence of formal fishery management plans.

### **Shrimp Management Framework**

Management of Brown and White shrimp in the Gulf of Mexico is divided /shared between the federal and various state governments. In federal waters, Gulf of Mexico shrimp are managed by the Gulf of Mexico Fishery Management Council (Gulf Council) and the National Marine Fisheries Service (NMFS), a branch of the National Oceanographic and Atmospheric Administration (NOAA). Commercial vessels fishing in jurisdictional state waters are subject to state-specific fishing regulations. Louisiana shrimpers fishing in federal waters are subject to the requirements of the Gulf of Mexico Shrimp Management Plan (GOMSMP).<sup>19</sup> Management requirements in federal waters include seasons, vessels permits with a moratorium on new permits, reporting requirements, mandatory observer coverage if selected by NMFS, area closures including closures to protect juvenile red snapper, gear restrictions and requirements for approved turtle excluder devices and bycatch reduction devices. In state waters, Louisiana follows the principles of the GOMSMP in its management of shrimp fishing in State Waters<sup>20</sup>, including reliance on the Gulf of Mexico Fisheries

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<sup>19</sup> [http://www.gulfcouncil.org/fishery\\_management\\_plans/shrimp\\_management.php](http://www.gulfcouncil.org/fishery_management_plans/shrimp_management.php)

<sup>20</sup> But LDW&F is prohibited by state law from enforcing the federal TED/BRD regulations in state waters but these can be enforced there by the US Coast Guard. Also, the shrimp fishery in Louisiana state waters is open access to residents and non-residents.

Management Council's stock assessment for stock status information. However, evidence of the use of the shrimp management measures in the federal plan appears to conflict with this.

Shrimping areas in Louisiana are divided into inside waters, or those within bays and estuaries, and outside waters, which extend three miles from the shoreline into the Gulf of Mexico. This boundary between the State's inside and outside waters is called the Shrimp Line. Beyond the three mile mark the national EEZ is managed by the Federal Government through NMFS. Shrimp fishing in the EEZ off Louisiana is subject to the GOMSMP.<sup>21</sup>

### **Shrimp Task Force**

The Governor established a Shrimp Task Force by Executive Order<sup>22</sup> in August 2009 that included state agency representatives, single representatives from the Shrimp Harvester Advisory Panel and from the Shrimp Processor Advisory Panel, two from universities, and one from NOAA. This Task Force addressed and advised on all matters its members considered of concern in the shrimp industry, including the adoption of limited entry and a moratorium on shrimp gear licenses<sup>23</sup>, even though fishery management was not clearly covered in its terms of reference. This Task Force ended in March 2010 when the processor representatives withdrew.<sup>24</sup> It was replaced by another shrimp task force authorized by Act 606 of the 2010 Regular Legislative Session. The members include six non-voting representatives from relevant state agencies, three from the harvesting and three from the processing sectors, and one dock buyer of shrimp.<sup>25</sup> This newly constituted task force has not yet met. Its terms of reference<sup>26</sup> are to:

- coordinate efforts to increase shrimp production and marketability.
- study the decline in shrimp marketability and market price,
- study the impacts of imported shrimp on the domestic market,
- assist in the development of a state shrimp inspection program,
- assist in the development of a Louisiana shrimp certification and branding program,
- make recommendations on policies to help enhance the domestic shrimp industry,
- make recommendations to government on issues pertaining to the shrimp industry and shrimp production.

It is uncertain whether Fishery management issues are part of the terms of reference of this task force.

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<sup>21</sup> <http://www.gulfcouncil.org/index.php>

<sup>22</sup> [http://www.wlf.louisiana.gov/sites/default/files/pdf/document/6570-](http://www.wlf.louisiana.gov/sites/default/files/pdf/document/6570-Governor%20Jindals%20Executive%20Order%20creating%20the%20Louisiana%20Shrimp%20Task%20Force/ex-order-for-task-force.pdf)

Governor%20Jindals%20Executive%20Order%20creating%20the%20Louisiana%20Shrimp%20Task%20Force/ex-order-for-task-force.pdf

<sup>23</sup> [http://www.wlf.louisiana.gov/sites/default/files/pdf/shrimp\\_task\\_force/6556-](http://www.wlf.louisiana.gov/sites/default/files/pdf/shrimp_task_force/6556-Shrimp%20Task%20Force%20Meeting%20TUESDAY,%20MARCH%2023,%202010/Draft_Shrimp_Task_Force_Meeting_Minutes_3-23-10.pdf)

[Shrimp%20Task%20Force%20Meeting%20TUESDAY,%20MARCH%2023,%202010/Draft\\_Shrimp\\_Task\\_Force\\_Meeting\\_Minutes\\_3-23-10.pdf](http://www.wlf.louisiana.gov/sites/default/files/pdf/shrimp_task_force/6556-Shrimp%20Task%20Force%20Meeting%20TUESDAY,%20MARCH%2023,%202010/Draft_Shrimp_Task_Force_Meeting_Minutes_3-23-10.pdf)

<sup>24</sup> Draft Minutes of March 23 2010 meeting at: <http://www.wlf.louisiana.gov/shrimp-task-force>

<sup>25</sup> <http://www.legis.state.la.us/billdata/streamdocument.asp?did=722350>

<sup>26</sup> Ibid

## 17. Catch Data

Brown and white shrimp are the most financially important and commonly landed shrimp species in Louisiana waters and both species provide short-lived annual crops. Both species are subjected to fishing from inland waters and estuaries, throughout the state-regulated waters and into federal waters of the EEZ. Brown shrimp usually spawn earlier in the year, and are most abundantly harvested in May, June and July whereas white shrimp are most abundantly harvested in August, September, and October.

In Louisiana's waters, 60-65 percent of white shrimp are harvested in coastal or bay waters, whereas the majority of brown shrimp in Louisiana are harvested in deeper offshore waters. However, some adults of both species are available throughout a large portion of the year. Although commercial shrimpers harvest almost as many brown as white shrimp in a given year, white shrimp typically grow to a larger size before they are harvested. From the information provided, white shrimp landings recorded followed a general upward trend up until 2005, peaked in 2005 with landings recorded at over 122 million pounds of commercial value 143 million dollars. This declined to approximately a third of this in terms of landings and to less than half of the commercial value in 2006. White shrimp declined greatly from 2005 levels to 265,630 pounds in 2009 with an increase in 2010 to 3.3 million pounds.

Brown shrimp landings followed a similar trend increasing upwards to peak levels in 2005, 2006 and 2009 of more than 33 million for each of those years but with a decline in 2007 to approximately 2 million from the previous year 33 million pounds in 2006. Brown shrimp landings for 2010 were recorded at over 27.9 million pounds. Commercial values of brown shrimp peaked in 2005 worth of 866 million dollars and at a lower value of 71.8 million dollars in 2006.

Total landings for brown shrimp from 1999 to 2010 fell below white shrimp values by approximately 50 million pounds of shrimp in weight. However the total value of brown shrimp over these years was greater than for white shrimp.

**Table 6: Louisiana State Brown Shrimp landings 1999 to 2010 (LDW&F Trip Ticket data)<sup>27</sup>**

Year	Landings (in whole weight pounds)	Dockside Value\$
1999	13626960	11119539
2000	3571709	2653853
2001	8075709	15042181
2002	81,96094	7607617
2003	25055020	23754605
2004	19312173	44333326
2005	30235435	86605212
2006	33,057050	71,899313
2007	266007	1,94711

<sup>27</sup> These data were obtained from the Louisiana Department of Wildlife and Fisheries and only state waters are considered.

2008	28266817	369,16850
2009	33310560	56368195
2010	27,960124	46,485126
<b>Total</b>	<b>230933664</b>	<b>402980533</b>

**Table 7: Louisiana White Shrimp landings 1999 to 2010 (LDW&F Trip Ticket data)<sup>28</sup>**

Year	Landings (in whole weight pounds)	Dockside Value\$
1999	1141500	625210
2000	2913513	1439829
2001	1657975	939010
2002	14619121	12344139
2003	64555451	65050327
2004	15199378	33464445
2005	122,195994	143,131308
2006	490,11073	56634557
2007	48,85178	13356538
2008	2659137	3647849
2009	2,65630	158246
2010	3,340019	6623856
<b>Total</b>	<b>282443974</b>	<b>337415319.8</b>

## 18. History of the Fishery

Shrimp fishing in Louisiana is suggested to have been initiated in the late 1600s. In 1774, the first settlers in Louisiana fished in the lakes south of New Orleans using small skiffs or wading in shallow waters, caught shrimp with seine nets in the shallow coastal lakes and bays and along the beach. Louisiana fishermen alternated their fishing pattern by shrimping during the spring, summer and fall months, then oyster fishing and trapping during the winter months. A comprehensive account of the earliest shrimping in Louisiana can be sourced in account by Landry<sup>29</sup>.

In the late 1800s, the haul seine net was commonly used along the Louisiana coast. Crews of eight to twenty men manned the larger sailing luggers and rowed small skiffs to set the nets, some of which had dimensions as great as 1800 feet. While a crew sailed the lugger, men in the small skiffs played out the net by rowing away from the lugger, then circling back. The lead, or weighted, edge of the net dragged along the bottom, forcing the shrimp and fish to collect in the wider, pouch-like central area of the seine. The shrimp were then dipped out of the net, placed in the boat's holds and kept cool with dampened palmetto leaves. Use of the haul seine continued until about 1930 for several reasons. It was well suited to the mud-bottomed shallow bays of the inshore waters and the nets themselves represented considerable investments of the shrimpers.

<sup>28</sup> These data were obtained from the Louisiana Department of Wildlife and Fisheries.

<sup>29</sup> Landry, L (2002). Shrimping in Louisiana: Overview of a Tradition. In Louisiana living traditions articles and essays [http://www.louisianafolklife.org/LT/Articles Essays/creole art shrimping overv.html](http://www.louisianafolklife.org/LT/Articles%20Essays/creole%20art%20shrimping%20overv.html)

In 1917, the otter trawl was introduced to the Gulf Coast region from the Atlantic fisheries which first tested it in the early decades of this century along the Carolina coast. Although the adoption of the trawl represented a considerable investment requiring modification of the lugger to gasoline or diesel power, the rewards were great. Its use expanded the fisherman's range by opening new fishing grounds in deeper waters, and increased the per-man production by cutting the necessary manpower to two or three. In the early days of shrimping, the shrimp were then transferred to ice boats that checked the shrimpers' progress and carried the shrimp to the shoreline platforms for sale and processing. Some shrimp were sold by the shrimpers directly to the drying platforms.

About 1933 another type of trawling rig came into use known as the "night trawl" or "butterfly" (wing) net, it is used in shallow water at night when the shrimp are near the surface of the water. Some of the early frames for the butterfly nets came from the barrel rims used in the sugar factories. This type of net is generally used on small, fast luggers, and Lafitte skiffs, or is mounted to docks or platforms along the bank of the waterway".

### **History of the Louisiana Department of Wildlife & Fisheries Enforcement Division<sup>30</sup>**

Louisiana's first wildlife conservation law was passed in 1857 and the agency was established 1872 as an Oyster Fishing Regulatory Board, with many more oyster regulations following in the 1880s. In 1909 a more formal body was created and given the task of overseeing wildlife and fisheries conservation in Louisiana and was called the Louisiana Board of Commissioners for the Protection of Birds, Game and Fish. In 1910, the Louisiana Oyster Commission (which had been created in 1902) merged with the Board of Commissioners to create the Louisiana Department of Conservation. In 1912, the Conservation Commission of Louisiana was formed as a department of State government, with the mission of providing for the protection of birds, fish, shellfish, wild quadrupeds, forestry and mineral resources of the state. In 1918 the name of the agency changed back to the Department of Conservation, and directed that it be controlled by an officer known as the Commissioner of Conservation, who would be appointed by the Governor, by and with the consent of the Senate, for a term of four years. In 1944, the Louisiana Department of Wild Life and Fisheries was officially created. In 1952, the agency's name was changed to the name Louisiana Wild Life and Fisheries Commission. The current Louisiana Department of Wildlife & Fisheries was created in 1975. The Enforcement Division eventually took over regulation of all hunting, fishing, and boating in the state of Louisiana.

A historical account of the legislation of Louisiana shrimp fishing can be sourced from Louisiana Paenaid Shrimp Management Plan<sup>31</sup> which describes the history of Louisiana shrimp laws from 1888 until 1992

Table 8 and Table 9, depicts the total commercial value and amount of brown and white shrimp taken in Louisiana waters in pounds, metric tons and in terms of dockside value, from 1962 until 2009. This information was sourced from the NFMS<sup>32</sup> Commercial Fishery Harvest Statistics database and shows total national landings from Louisiana state and federal waters in an historical context. If

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<sup>30</sup> <http://www.wlf.louisiana.gov/>

<sup>31</sup> 1992. A Fisheries Management Plan for Louisiana's Penaeid Shrimp Fishery. Baton Rouge, Louisiana.

<sup>32</sup> [http://www.st.nmfs.noaa.gov/st1//commercial/landings/annual\\_landings.html](http://www.st.nmfs.noaa.gov/st1//commercial/landings/annual_landings.html)

this fishery should enter into a full MSC assessment then the information from both state and federal waters would need to be analyzed and substantiated.

**Table 8 Total Commercial White Shrimp Landings in Louisiana (Federal & State<sup>33</sup>), 1962-2009<sup>34</sup>**

Year	Metric Tons	Pounds	\$
1962	9,782.3	21,565,973	8,369,799
1963	23,821.9	52,517,829	13,502,713
1964	19,419.7	42,812,721	14,600,735
1965	14,765.5	32,552,111	11,502,380
1966	13,821.0	30,469,835	13,468,010
1967	10,895.6	24,020,532	11,122,098
1968	11,368.5	25,063,077	12,635,308
1969	19,468.7	42,920,647	20,576,618
1970	19,979.6	44,046,976	20,469,877
1971	20,239.2	44,619,335	26,154,963
1978	20,302.4	44,758,597	63,888,458
1979	13,162.3	29,017,574	65,304,036
1980	20,750.3	45,746,215	70,250,469
1981	22,020.8	48,546,994	83,245,661
1982	16,375.6	36,101,722	77,497,420
1983	14,969.1	33,000,783	74,617,603
1984	20,808.7	45,874,767	82,349,897
1985	24,417.0	53,829,621	85,992,920
1986	32,450.6	71,540,547	132,634,718
1987	24,046.0	53,011,888	102,226,379
1988	20,695.3	45,624,881	78,177,451
1989	18,226.1	40,181,325	63,107,789
1990	20,272.6	44,692,880	80,627,757
1991	21,022.6	46,346,466	86,457,426
1992	21,240.9	46,827,690	82,801,494
1993	16,984.9	37,445,002	66,905,325
1994	21,208.3	46,755,748	96,610,742
1995	23,021.3	50,752,831	104,361,998
1996	13,321.7	29,368,912	60,464,626
1997	16,442.6	36,249,347	76,359,872
1998	24,005.4	52,922,374	100,524,635
1999	25,055.2	55,236,737	105,315,024
2000	34,411.8	75,864,291	152,374,346
2001	24,334.8	53,648,584	93,715,169
2002	21,430.5	47,245,582	77,272,332
2003	28,990.7	63,912,851	82,069,068
2004	33,894.9	74,724,642	96,955,824
2005	27,888.6	61,483,211	91,249,707
2006	40,309.3	88,865,876	108,414,904
2007	29,246.3	64,476,408	95,533,601

<sup>33</sup> This information would need to be substantiated further with the LDW&F if the fishery progressed to full MSC assessment.

<sup>34</sup> <http://www.noaa.gov/fisheries.html>

<b>2008</b>	28,620.2	63,095,993	107,430,070
<b>2009</b>	35,873.2	79,085,949	94,159,761

**Table 9 Total Commercial Brown Shrimp Landings in Louisiana (Federal & State<sup>35</sup>), 1962-2009<sup>36</sup>**

<b>Year</b>	<b>Metric Tons</b>	<b>Pounds</b>	<b>\$</b>
<b>1962</b>	5,913.4	13,036,627	4,563,398
<b>1963</b>	12,328.7	27,179,843	6,203,225
<b>1964</b>	7,312.0	16,120,139	4,116,750
<b>1965</b>	13,069.6	28,813,346	7,909,744
<b>1966</b>	13,727.6	30,263,827	10,576,469
<b>1967</b>	21,785.1	48,027,532	12,614,798
<b>1968</b>	18,973.1	41,828,149	12,837,532
<b>1969</b>	17,668.7	38,952,379	12,515,225
<b>1970</b>	19,695.7	43,421,103	13,760,117
<b>1971</b>	21,443.0	47,273,322	16,995,294
<b>1978</b>	25,376.5	55,945,092	35,822,179
<b>1979</b>	19,751.5	43,544,237	53,660,411
<b>1980</b>	15,606.0	34,404,993	37,306,950
<b>1981</b>	26,033.3	57,392,972	50,267,849
<b>1982</b>	23,005.6	50,718,109	63,930,889
<b>1983</b>	18,110.0	39,925,384	55,510,427
<b>1984</b>	24,647.5	54,337,801	58,093,040
<b>1985</b>	25,378.0	55,948,367	46,563,483
<b>1986</b>	28,468.1	62,760,689	68,818,756
<b>1987</b>	26,443.0	58,296,288	78,688,116
<b>1988</b>	23,799.2	52,467,622	68,936,672
<b>1989</b>	25,030.1	55,181,298	64,985,876
<b>1990</b>	32,487.9	71,622,853	71,039,376
<b>1991</b>	19,932.0	43,942,110	53,040,606
<b>1992</b>	18,257.9	40,251,413	57,721,719
<b>1993</b>	18,417.5	40,603,125	43,931,558
<b>1994</b>	16,131.0	35,562,392	57,171,391
<b>1995</b>	20,422.6	45,023,769	61,201,539
<b>1996</b>	23,324.0	51,420,083	61,837,922
<b>1997</b>	19,566.9	43,137,080	67,213,611
<b>1998</b>	22,743.7	50,140,696	54,985,093
<b>1999</b>	26,538.4	58,506,585	63,132,470
<b>2000</b>	28,175.4	62,115,420	96,514,340
<b>2001</b>	28,714.0	63,302,987	90,520,847
<b>2002</b>	24,231.3	53,420,402	61,280,654
<b>2003</b>	26,583.1	58,605,029	51,964,591
<b>2004</b>	25,013.7	55,145,295	40,413,287
<b>2005</b>	17,663.2	38,940,349	41,101,637

<sup>35</sup> These landings are sourced from the NFMS Commercial Fishery Harvest Statistics database and include state and federal landings. These figures are for general reference and put the fishery into a historical context.

<sup>36</sup> <http://www.noaa.gov/fisheries.html>

<b>2006</b>	21,775.7	48,006,642	38,831,190
<b>2007</b>	20,469.8	45,127,747	43,815,591
<b>2008</b>	11,304.4	24,921,659	22,693,702
<b>2009</b>	15,644.9	34,490,647	26,241,609

## 19. Other Fisheries in the Area

There are currently six federal fishery management plans in the Gulf of Mexico in addition to shrimp; these include Reef Fish, Spiny Lobster, Stone Crab, Corals, Migratory Pelagics and Red Drum. Currently the only fishery undergoing MSC Assessment in Louisiana state waters is the Louisiana Blue Crab Fishery.<sup>37</sup>

The Louisiana Shrimp Fishery outside the Louisiana State Line interacts with many other fisheries through retaining non targeted species and through interaction of gear with other gears and habitat.

- Red Snapper
- Oysters beds
- Bait shrimp
- Blue crab
- Red drum

Harvesting white shrimp, commonly found inside the ten-fathom contour, has limited impact on juvenile red snapper because of the small quantity of red snapper found at that depth. Brown shrimp habitat, however, frequently overlaps with juvenile red snapper habitat and shrimpers fishing for brown shrimp in the western Gulf of Mexico frequently net juvenile red snapper. Brown shrimp range extends offshore approximately 40 fathoms with most catches made from June through October.

In Louisiana there are small-scale inshore bait fisheries for juvenile shrimps to be used as bait in recreational fisheries. Both inshore and offshore fishermen exploit the same shrimp population at different stages of the life cycle. The bait catch information is not recorded and there are no restrictions in Louisiana Law. As juvenile shrimp contribute to adult catch rates large harvesting rates for bait could have a significant effect on stocks.

Shrimp trawl bycatch accounts for approximately 90% percent of juvenile red snapper<sup>38</sup> mortality because they share the same habitat as sub-adult brown shrimp until they reach maturity, resulting in significant bycatch in shrimp trawl nets during the shrimping season. Brown shrimp habitat, however, frequently overlaps with juvenile red snapper habitat and shrimpers fishing for brown shrimp in the western Gulf of Mexico frequently net juvenile red snapper. Harvesting white shrimp, commonly found inside the ten-fathom contour, has limited impact on juvenile red snapper because of the small quantity of red snapper found at that depth.

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<sup>37</sup> [www.msc.org](http://www.msc.org).

<sup>38</sup> [http://www.nmfs.noaa.gov/fishwatch/species/red\\_snapper.htm](http://www.nmfs.noaa.gov/fishwatch/species/red_snapper.htm)

## 20. External Influences

The main external influences on the Louisiana shrimp fishery (non fisheries) are the loss of coastal habitats<sup>39</sup> and its effect on water conditions, recent hurricanes, and the BP 2010 oil spill<sup>40</sup> which has significantly interrupted this fishery with potentially significant effects.

## 21. Main Commercial Market

Nearly all shrimp from the Louisiana are marketed, and consumed in the US. Some are frozen at sea, but most are landed fresh. Wild shrimp from the Gulf of Mexico and the South Atlantic compete with less expensive imported shrimp, which causes economic problems for the domestic fisheries. Approximately 40% of all shrimp caught in the US is landed in Louisiana. At the state level, the value of shrimp landings oscillates around US\$ 250 million every year, i.e., about 67% of the value of all commercial fisheries landings in the state. Accordingly, shrimp landings generate in Louisiana a total economic effect of about US\$2.2 billion.

## 22. Certification Body

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<sup>39</sup> <http://www.coast2050.gov/report.pdf>

<sup>40</sup> <http://www.wlf.louisiana.gov/oilspill>

### 23. Stakeholders

The following list is not exhaustive but indicates a range of consultations that would be carried out in the event that a full assessment is undertaken. This list would be completed in consultation with the stakeholders identified below and additional stakeholders may be identified during the assessment through public announcements by the MSC. However, ‘stakeholders’ for consultation must have a valid and established interest in the fisheries under assessment.

Stakeholders may include the following:

Organization
Louisiana Shrimp Task Force
Louisiana Seafood Promotion Board
Texas Shrimp Association
Louisiana State University
University Of Florida
Texas Sea Grant
Texas A&M
Gulf Of Mexico Fishery Management Council
The Environmental Defence Fund
The Ocean Conservancy
The Sustainable Fisheries Partnership
Alabama Department Of Conservation And Natural Resources
Mississippi Department Of Fisheries, Wildlife And Parks
South eastern Fisheries Association
Louisiana Shrimp Association
National Marine Fisheries Service
Florida Fish And Wildlife Commission
Texas Department Of Parks And Wildlife
Oceans Trust
Florida Sea Grant
The Gulf And South Atlantic Fishery Foundation
Oceana
Caribbean Conservation Corps
Southern Shrimp Alliance

### 24. Chain of Custody

In Louisiana, anybody purchasing seafood species directly from fishers, shrimpers, or other harvesters for commercial purposes, is required to complete a “trip ticket” detailing species, volume (in pounds), and payment (dockside value) of products exchanged between harvesters and purchasers. These data, published in the NMFS Commercial Fishery Harvest Statistics, provide a measure of activity between Louisiana shrimpers and dockside dealers.

It is not certain at this time if the trip ticket system distinguishes catches of each shrimp species based on whether they came from state, federal or other state waters. This would be a requirement, as specified by the existing units of certification, for product to enter the chain of custody if the fishery were to move to full assessment.

## 25. Preliminary Evaluation

### MSC PRINCIPLES AND CRITERIA

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles and their supporting Criteria are presented below.

#### Principle 1

**A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery<sup>41</sup>:**

#### Intent:

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

#### Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

#### Principle 2

**Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.**

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<sup>41</sup> The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations.

Intent:

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

**Principle 3**

**The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.**

Intent:

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

**A. Management System Criteria:**

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process.
3. Be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings.
4. Observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability.

5. Incorporates an appropriate mechanism for the resolution of disputes arising within the system<sup>42</sup>.
6. Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing.
7. Act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty.
8. Incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion.
9. Require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted.
10. Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:
  - a. setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
  - b. identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
  - c. providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
  - d. mechanisms in place to limit or close fisheries when designated catch limits are reached;
  - e. establishing no-take zones where appropriate.
11. Contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

## **B. Operational Criteria**

Fishing operation shall:

12. Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive.
13. Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas.
14. Not use destructive fishing practices such as fishing with poisons or explosives;
15. Minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch etc.
16. Be conducted in compliance with the fishery management system and all legal and administrative requirements.

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<sup>42</sup> Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

17. Assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

## 26. Conclusions and Recommendations

On the basis of the information reviewed by our professional assessment team, Global Trust would not recommend that the fishery proceed directly to full MSC assessment at this time. There are a number of obstacles in the management system and key information gaps that would create a substantial challenge for the fishery to meet the required minimum aggregate score of 80% for certification purposes. It should be clearly stated though that obstacles and challenges to the MSC full assessment does not mean the fishery is unsustainable or, in fact, under managed. It simply means that information peculiar to the MSC program is currently not available to allow assessment of the fishery according to the specific clauses and performance indicators contained within the MSC assessment methodology.

Indeed, the sustainability of the fishery may well be secured under current management arrangements. The general tenor of state objectives seems to be maintenance of open access, maximization of production and employment, preservation of the cultural basis of the fisheries while preventing overfishing by applying management and conservation measures that are a complex combination of objectives to follow, or adhere to, in developing and implementing sustainable fisheries management policies. There is, however, no clear indication of a precautionary approach to management and there is no clear indication that the objectives which are actually guiding current decision-making are consistent with MSC Principles for productive stock management (P1) and preservation of, or preventing irreversible damage to, fish habitat and ecosystems (P2).

- **Fishery within scope of the MSC program**

According to the information provided the fishery is within the full scope of the MSC scheme.

- **Applicability of the default FAM assessment tree**

There are no enhancement activities utilized and the fishery appears appropriate for assessment.

- **Evaluation of the fishery**

There is insufficient information to adequately score most of the performance indicators (PI's) under **Principle 1** due to the absence of management elected biological reference points or proxies for the stock. Most of Principle 1 PI's relate to the stock status and the appropriateness of the harvest strategy in relation to the stock as measured by such reference points through time (typically 3 to 5 years). Their absence makes it extremely difficult to demonstrate that the fishery is managed according to MSY or with a precautionary approach. The pre-assessment report makes reference to the federal waters fishery for these two species and the appropriateness of presenting the state waters fishery as a sub-fishery of the federal fishery for assessment purposes.

The greatest challenge to the **Principal 2** assessment is caused by insufficient data in the format required for MSC purposes. It is possible that further analyses of trip ticket data may result in favorable scores for some of the PI's under Principle 2. Currently, however, there appears to be insufficient separation of shrimp catches in state waters from those in federal waters, and the federal fishery is not currently featured within the proposed unit of assessment. There is also insufficient data on by-catch species by quantity and by gear type. Additional information such as by-catch species types and their quantities for each gear type as provided through observer programs for example, may provide substantiation for these PI's for scoring purposes.

For ETP assessment, there would appear to be insufficient objective information available at this time for adequate evaluation of this PI. Louisiana has an established a statute that prohibits LDW&F from enforcing TED regulations within inshore state waters, in direct contradiction of federal regulations. Collection of observer data on sea turtle bycatch and the analysis of this data would be important for documenting the significance of this problem in the Louisiana inshore shrimp fishery. For Habitat and Ecosystem PI's, there are no recent data, analyses or reports available regarding the impact of the Louisiana inshore shrimp fishery on the habitat which would be required to evaluate this PI. It may be likely that the fishery could pass this PI, but objective information would be required to demonstrate that the fishery meets the minimum score. There are also potential anthropogenic effects on the fishery habitat that would need to be considered, e.g., oil spills. Other effects of the fishery on ecosystem structure and function may relate to the position of shrimp in the food chain and any wider effects on the fishery beyond the individual interactions that would be investigated under retained, by-catch, ETP and habitat PI's. As a potential area of data, it may be likely that there is information available from the federal fishery that would be comparable and usable for assessment purposes for the assessment of the state waters fishery.

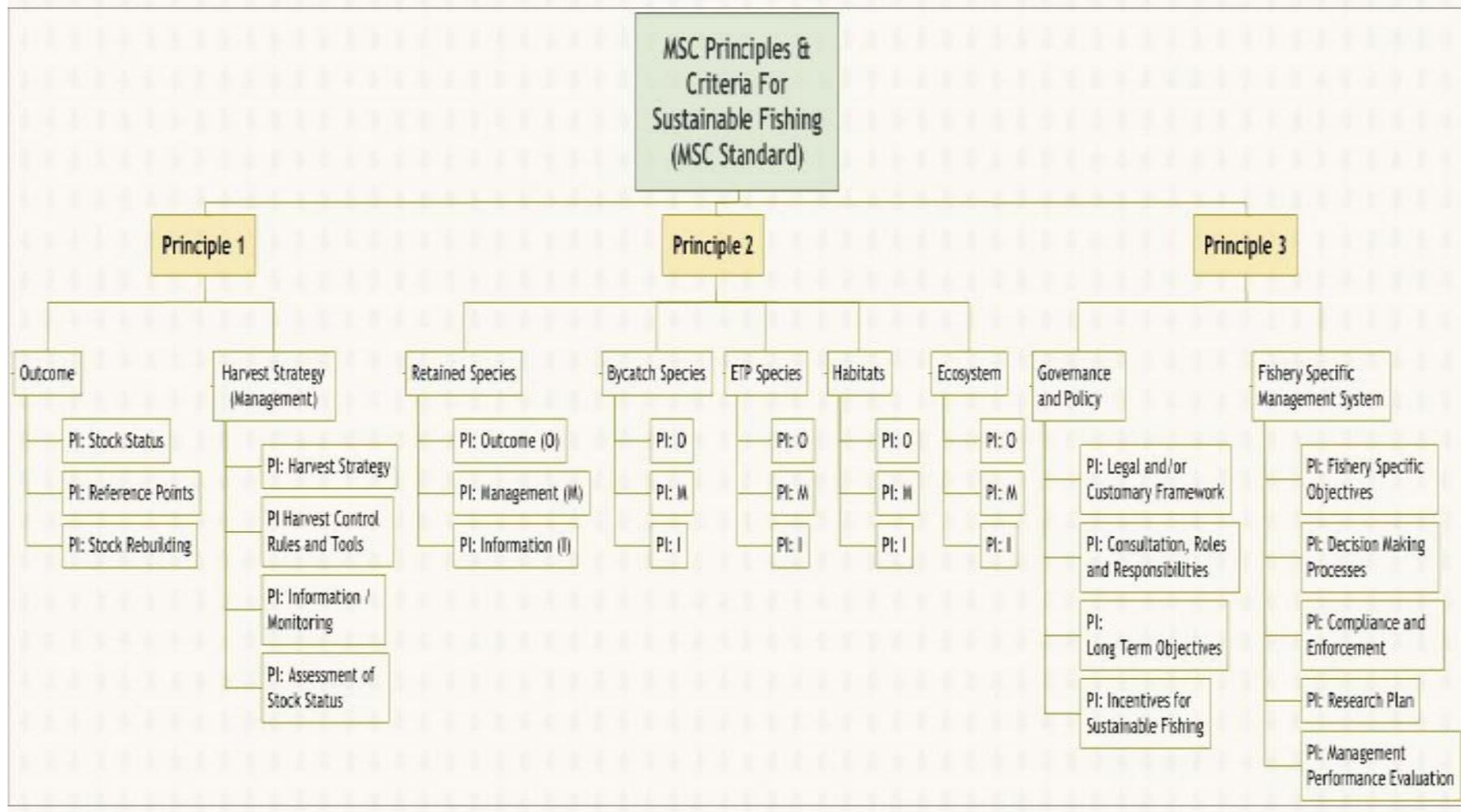
**Principle 3** PI's evaluate the management system of the fishery under two main sections; the overall management framework used, which in this case refers to both state and federal frameworks, and the more specific management system applicable to the shrimp fisheries under pre-assessment.

The overall legal and government framework supporting the Louisiana fishery management system should be capable of delivering the requirements necessary to meet the PI's concerning the overall fishery management framework. However, there are potential challenges with regard to the MSC Principles and Criteria in that the system does not overtly appear to utilize the types of fish stock, habitat and ecosystem management approaches that are highly prescribed by the MSC assessment process. As noted, they appear in the federally managed fishery and there may be a cause for them being connected. A specific fishery management plan for state waters does not appear to be available, although management actions did result in a draft plan in the 1990s. The fisheries are currently managed on an open access basis and certain areas of the system may conflict with federal management measures, such as the prohibition on enforcing the federal TED/BRD regulations in the state waters. However, there seems to be a considerable amount and variety of data being collected while various these fisheries are underway, and there are the legal arrangements available for fishery specific management objectives and plans to be prescribed. There is also, on first review, an effective enforcement system in place for the fishery and no signs of poor compliance with the existing regulatory system.

If Louisiana regulations in this fishery were consistent with federal fisheries, it could be considered a subset of the Gulf of Mexico fishery, and then the entire fishery could be assessed as a single unit, or Louisiana as a subset of the entire Gulf of Mexico fishery and assessed separately.

Overall, the outcome of the pre-assessment would not suggest that the fishery (as presented) will readily meet the requirements for MSC full assessment. Many of the PI's could not be scored effectively due to insufficient specific information on the stock and interactions of the fishery on ecosystem components. However, as stated, the authors clearly note that this outcome does not determine that the fishery is unsustainable or under managed. It is more the case that it is quite difficult to ascertain the relative performance of the fishery according to strict MSC Principles and Criteria which demand the availability of very specific data for successful assessments. Overall there is a general lack of documentation that supports a sustainable fishery based on MSC criteria.

**ANNEX 1: MSC Default Assessment Tree**



**ANNEX 2: Preliminary Evaluation Score Results**

**Principle 1**

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>				
<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>				
<p><b>1.1.1 Stock Status</b></p> <p>The Stock is at a level which maintains high productivity and has a low probability of recruitment overfishing.</p>	60	<p>It is likely that (&gt;70% chance) that the stock is above the point where recruitment would be impaired.</p>	No	<p>The LDW&amp;F manages the Louisiana shrimp fisheries with closed seasons, counts (number of shrimp per pound) and gear restrictions. However, it is an open-access fishery and therefore there are no limitations on the number of participants or the total effort that can be applied to the resource. In contrast the federal waters fishery is limited entry, and fishing effort is additionally controlled with seasons. These federal regulations along with gear restrictions and catch count regulations control fishing mortality. The stocks of white and brown shrimp that are being harvested in the inshore Louisiana fishery cannot be distinguished from the stocks taken in federal waters. While there annual stock assessments for white and brown shrimp in federal waters, there are no corresponding stock assessment for Louisiana inshore waters. Further clarification and substantiation of shrimp data from landings taken specifically within inshore waters is needed.</p>
	80.1	<p>It is highly likely (&gt;80% chance) that the stock is above the point where recruitment would be impaired.</p>		

	80.2	The stock is at or fluctuating around its target reference point.		
	100.1	There is a <i>high degree of certainty</i> that the stock is above the point where recruitment would be impaired.		
	100.2	There is a <i>high degree of certainty</i> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <i>over recent years</i> .		
<b>SUMMARY SCORE</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: red; color: white; text-align: center;">&lt;60</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: orange; color: black; text-align: center;">60-75</div> <div style="border: 1px solid black; padding: 2px; background-color: green; color: black; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	<60	Substantiated data on shrimp landings taken specifically within inshore waters is deficient. With regard to this PI, the fishery will not pass as it is now, primarily due to a lack of data. Therefore, there is an absence of assessment data that provides evidence of stock maintained at levels above the point where recruitment would be impaired. If the fishery was demonstrably a part of the federal fishery more substantial evidence from the federal assessment would be available.

FAM Performance Indicator	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>1.1.2 Reference Points</b>  Limit and Target Reference Points are appropriate for the stock.	60	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	No	Stocks of white and brown shrimp that are being harvested in the inshore Louisiana fishery can not be distinguished from the stocks taken in federal waters. While there annual stock assessments for white and brown shrimp in federal waters, there are no corresponding stock assessment for Louisiana inshore waters. There are no reference points established for the Louisiana inshore shrimp fishery.
	80.1	Reference points are appropriate for the stock and can be estimated.		
	80.2	The limit reference point is set above the level at which there is an appreciable risk of impairing Reproductive capacity.		
	80.3	The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or Status.		
	80.4	For low trophic level species, the target reference point takes into account the ecological role of the stock.		
	100.1	Reference points are appropriate for the stock and can be estimated.		
	100.2	The limit reference point is set above the level at		

		which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u> .		
	100.3	The target reference point is such that the stock is maintained at a level consistent with BMSY or some ensure or surrogate with similar intent or Status, <u>or a higher level</u> , and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.		
<b>SUMMARY SCORE</b>	<div style="background-color: red; color: black; text-align: center; padding: 2px;">&lt;60</div> <div style="background-color: orange; color: black; text-align: center; padding: 2px;">60-75</div> <div style="background-color: green; color: black; text-align: center; padding: 2px;">80-100</div>	<b>Refer to FAM for guidance</b>	<60	Substantiated data on shrimp landings taken specifically within inshore waters is deficient. With regard to this PI, the fishery will not pass as it is now, primarily due to a lack of reference points chosen by management as appropriate for each species. If the fishery was demonstrably a part of the federal fishery, the federal fishery stock assessment may provide sufficient information to allow scoring of this PI.

FAM Performance Ind	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>PI 1.1.3 Stock Rebuilding</b>  Where the stock is depleted, there is evidence of rebuilding.	60.1	Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place.	No	There is insufficient information on the stock biomass (reference points) and substantiated landing data for the State fishery to verify if stocks are in a depleted state or not.
	60.2	Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified</u> timeframe.		
	80.1	Where stocks are depleted rebuilding strategies are in place.		
	80.2	There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modeling or previous performance that they will be able to rebuild the stock within a specified timeframe.		
	100	Where stocks are depleted, strategies are <u>demonstrated</u> to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the <u>shortest practicable</u> timeframe.		
<b>SUMMARY SCORE</b>	<60 60-75 80-100	<b>Refer to FAM for guidance</b>	<60	With regard to this PI, the fishery will not pass as it is now, primarily due to a lack of reference points chosen by management as appropriate for each species.

FAM Performance Indicator	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>PI 1.2.1 Harvest Strategy</b>  There is a robust and precautionary harvest strategy in place.	60.1	The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.		There are no objectives for the inshore stock that are reflected in BRP's as no BRP's are available for the stock.
	60.2	The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.		Harvest strategy is open access limited by season to protect spawning and legal gears. Entry is controlled more so by market/economic cost/opportunities to entry rather than biological objectives.
	60.3	<u>Monitoring</u> is in place that is expected to determine whether the harvest strategy is working.	NO	There are no BRP's available for the inshore State managed stock, hence it is not possible to evaluate or monitor the harvest strategy.
	80.1	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management objectives reflected in the target and limit reference points.		
	80.2	The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.		
	100.1	The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and		

		limit reference points.		
	100.2	The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.		
	100.3	The harvest strategy is periodically reviewed and improved as necessary.		
<b>SUMMARY SCORE</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: red; color: white; text-align: center;">&lt;60</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: orange; color: black; text-align: center;">60-75</div> <div style="border: 1px solid black; padding: 2px; background-color: green; color: black; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	<60	The harvest strategy (seasonal open access and size limit) perhaps, may be appropriate for the stock as these fisheries can be highly productive. However, there is no empirical evidence available to base this assumption upon. Hence, scoring of these PI's is not possible at this time. If there is evidence that demonstrates connectivity between the State and Federal stocks, there may be merit in investigating the State approach to BRP's, and harvest strategy.

FAM Performance Indicator	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
Principle 1	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that depleted the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>PI 1.2.2 Harvest Control Rules and Tools</b>  There are well defined and effective harvest control rules in place	60.1	Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.		Substantiated data on shrimp landings taken specifically within inshore waters is deficient. Reference points and control rules cannot be established for the Louisiana inshore shrimp fisher due to lack of data. It is important to note that the white and brown shrimp fisheries for federal waters have annual stock assessment, established reference points and an ad hoc control rule, that ensures the sustainability of the fishery.
	60.2	There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	No	Substantiated data on shrimp landings taken specifically within inshore waters is deficient, there are no stock assessments for the resource that is part of the fishery being assessed, nor tools in place to limit fishing mortality (above an open/close season) if required in the fishery being assessed.  There are fish size limits, daily catch and/or possession limits, gear specifications and limits, licensing fees and, in some instances, market demand. While all these exist for the federal water white and brown shrimp fisheries, because Louisiana fishery regulations are not consistent with federal regulations, it is difficult to consider Louisiana as a subset of the federal water fishery. Without this information, neither reference points nor control rules can be established for the Louisiana inshore shrimp fishery. It is important to note that the white and brown shrimp fisheries have annual stock assessment, established reference points and an ad hoc control rule, to support the

				sustainability of the fishery.
	80.1	<u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.		
	80.2	The <u>selection</u> of the harvest control rules takes into account the main uncertainties.		
	80.3	<u>Available evidence indicates</u> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.		
	100.1	<u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.		
	100.2	The <u>design</u> of the harvest control rules take into account a wide range of uncertainties.		
	100.3	<u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control Rules.		
<b>SUMMARY SCORE</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: red; color: white; text-align: center;">&lt;60</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px; background-color: orange; color: black; text-align: center;">60-75</div> <div style="border: 1px solid black; padding: 2px; background-color: green; color: black; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	<60	With regard to this PI, the fishery will not pass as it is now, primarily due to a lack of substantiated data. Regulations are also inconsistent with federal regulations that would allow the state fishery to be a subset of the federal water fishery for which there are stock assessments, reference points, and an ad hoc harvest control rule. Without knowledge of stock and performance (BRP's and limits on fishing mortality) or connection as a sub-fishery to the

				federal fishery, it is difficult to score the fishery under PI 1.2.2.
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FAM Performance Indicator	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>PI 1.2.3 Information and Monitoring</b>  Relevant information is collected to support the harvest strategy	60.1	<u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	No	Substantiated data on shrimp landings taken specifically within inshore waters is deficient. There are no stock assessments for the resource that is part of the fishery being assessed, therefore there is no information available on the Louisiana inshore fishery. As such there is no monitoring of the status of the Louisiana inshore shrimp fishery. While all these exist for the federal water white and brown shrimp fisheries, because Louisiana fishery regulations are not consistent with federal regulations, it is impossible to consider Louisiana as a subset of the federal water fishery.
	60.2	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.		
	80.1	<u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.		
	80.2	Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u> , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.		

	80.3	There is good information on all other fishery removals from the stock.		
	100.1	A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.		
	100.2	All <u>information</u> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties</u> in the information [data] and the robustness of assessment and management to this uncertainty.		
<b>SUMMARY SCORE</b>	<60 60-75 80-100	<b>Refer to FAM for guidance</b>	<60	With regard to this PI, the fishery will not pass as it is now primarily due to a lack of data. Regulations are also inconsistent with federal regulations that would allow the state fishery to be a subset of the federal waters.

FAM Performance Indicator	Scoring issue#	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>PI 1.2.4 Assessment of Stock Status</b>  There is an adequate assessment of the stock status	60.1	The assessment estimates stock status relative to reference points.	No	As noted previously, substantiated data on shrimp landings taken specifically within inshore waters is deficient and there are no stock assessments for the resource that is part of the fishery being assessed.
	60.2	The assessment identifies major sources of uncertainty...		
	80.1	The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.		
	80.2	The assessment takes uncertainty into account.		
	80.3	The assessment of stock status is subject to peer review.		
	100.1	The assessment is appropriate for the stock and for the harvest control rule, and takes into account the major features relevant to the biology of the species and the nature of the fishery.		
	100.2	The assessment takes uncertainty into account and is evaluating stock status relative to reference points in a probabilistic way.		
	100.3	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.		

	100.4	The assessment has been <u>externally and internally</u> peer reviewed.		
<b>SUMMARY SCORE</b>	<60	<b>Refer to FAM for guidance</b>	<60	<p>It may be possible for the federal stock assessment to be used in surrogate as an indicator of stock health for inshore waters. However, there is currently insufficient availability or analysis of data on landings from the inshore fishery and consistency in regulations with the federal system to interpret the feasibility of this approach.</p> <p>With regard to this PI, the fishery will not pass as it is now primarily due to a lack of data.</p>
	60-75			
	80-100			

**Principle 2**

<b>Principle 2</b>						
<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>						
<b>Retained species</b>						
2.1.1 Status	The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.					
2.1.2 Management	There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.					
2.1.3 Information	Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.					
<b>FAM Performance Indicator</b>	<b>Estimated PI Score in range</b>			<b>Scoring Issues likely to</b>		<b>Rationale for estimated scores (information and references)</b>
<b>Retained Species</b>	<60	60-75	>80	Fail the Principle	Raise a condition	The Gulf of Mexico shrimp fisheries, in general only retain shrimp that is consistent with count regulation and daily limits, and may retain small amounts of other captured species within daily possession limits. The LDW&F has the ability to analyze trip ticket report data to capture landings of non-target species taken with shrimp fishing gear (trawls, skimmer nets and butterfly nets) in state waters as well as in federal waters provided these shrimp were landed in Louisiana and that non-target species were sold in Louisiana, but cannot distinguish between fishing activity in state and federal waters.
<b>2.1.1 Status</b>				<60		No data are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI.
<b>2.1.2 Management</b>				<60		LDW&F has regulation in place that limit daily possession limits for other species of catch that may be retained. Therefore it is likely that the fishery will pass this PI, but specific information on the extent of those retained catches will be required to properly assess this PI.

<b>2.1.3 Information</b>				<60		Insufficient data is available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI.
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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>				
		<b>By-catch species</b>				
2.2.1 Status	The fishery does not pose a risk of serious or irreversible harm to the retained/(bycatch) species and does not hinder the recovery of depleted retained species.					
2.2.2 Management	There is a strategy in place for managing retained/bycatch species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.					
2.2.3 Information	Information on the nature and extent of retained/(bycatch) species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.					
<b>FAM Performance Indicator</b>	<b>Estimated PI Score in range</b>			<b>Scoring Issues likely to</b>		<b>Rationale for estimated scores (information and references)</b>
<b>By-catch species</b>	<60	60-75	>80	Fail the Principle	Raise a condition	All shrimp trawl fisheries have issues with bycatch of juvenile fish and other species that are taken in the small mesh trawls, and ultimately discarded with a high mortality. Discards in some shrimp fisheries are more than 75% by weight, and how serious this issue is for any shrimp fishery depends on the species being discarded and their stock status. In federal waters, finfish bycatch reduction devices (BRDs) are required in specific areas and times to reduce juvenile finfish bycatch.
2.2.1 Status				<60		No recent data on bycatch are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI. Collection of observer data on bycatch and the analysis and publication of this data would be a start to understanding the significance of this problem in the Louisiana inshore shrimp fishery.
2.2.2 Management				<60		No recent data on bycatch are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI, nor are there any regulations requiring BRDs consistent with federal waters. Therefore it is likely that the fishery will have difficulty passing this PI.
2.2.3 Information				<60		No recent data on bycatch are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have

						difficulty passing this PI.
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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>				
		<b>ETP Species</b>				
2.3.1 Status	The fishery meets national and international requirements for protection of ETP species. The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.					
2.3.2 Management	The fishery has in place precautionary management strategies designed to: - meet national and international requirements; ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species;- and minimise mortality of ETP species.					
2.3.3 Information	Relevant information is collected to support the management of fishery impacts on ETP species, including;- information for the development of the management strategy;- information to assess the effectiveness of the management strategy;- and information to determine the Status of ETP species.					
<b>FAM Performance Indica</b>	<b>Estimated PI Score in range</b>			<b>Ration Scoring Issues likely to</b>		<b>Rationale for estimated scores (information and references)</b>
<b>ETP Species</b>	<b>&lt;60</b>	<b>60-75</b>	<b>&gt;80</b>	Fail the Principle	Raise a condition	Shrimp trawl fisheries may interact with sea turtles resulting in bycatch. Sea turtles are protected by the Endangered Species Act, (ESA). Turtle excluder devices (TEDs) have been developed to release sea turtles incidentally captured in trawl nets. TEDs have been proven to both release sea turtles with minimal negative impact, and to have minimal impact on shrimp species capture rates. Louisiana has an established a statute that prohibits LDW&F from enforcing TED regulations within inshore state waters, in direct contradiction of federal regulations. <sup>43</sup>
2.3.1 Status				<b>&lt;60</b>		No recent data on sea turtle bycatch or interactions are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI. Collection of observer data on sea turtle bycatch and the analysis and publication of this data would be a

<sup>43</sup> [http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg\\_2-21-03.pdf](http://www.lsu.edu/seagrantfish/pdfs/teds/FedReg_2-21-03.pdf)

<sup>43</sup> [http://www.lsu.edu/seagrantfish/management/TEDs&BRDs/brds\\_specs.htm](http://www.lsu.edu/seagrantfish/management/TEDs&BRDs/brds_specs.htm)

					start to understanding the significance of this problem in the Louisiana inshore shrimp fishery.
2.3.2 Management				<60	No recent data on sea turtle bycatch are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI, nor is there enforcement of federal regulations requiring TEDs in state waters. Therefore it is likely that the fishery will have difficulty passing this PI.
2.3.3 Information				<60	No recent data on sea turtle bycatch are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI, nor is there enforcement of federal regulations requiring TEDs in state waters. Therefore it is likely that the fishery will have difficulty passing this PI. Recent information from other similar fisheries may be available (state) which provides an indication of interaction of gears with ETP species.

<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>				
		<b>Habitat</b>				
2.4.1 Status	The fishery does not pose an irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.					
2.4.2 Management	There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.					
2.4.3 Information	Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.					
<b>FAM Performance Indicator</b>	<b>Estimated PI Score in range</b>			<b>Ration Scoring Issues likely to</b>	<b>Rationale for estimated scores (information and references)</b>	
<b>Habitat</b>	<60	60-75	>80	Fail the Principle	Raise a condition	Trawling clearly disturbs the habitat, but those effects are minimized in sand and mud environments. Shrimp trawling in the inshore waters of Louisiana probably has minimal negative impact on the ecosystem, but no specific study results were available to better assess this issue. There are clearly other habitat related issues that affect the Louisiana shrimp fishery and this resource. Habitat degradation and loss due to a variety of anthropogenic causes is a problem that will eventually affect the future of this fishery.
2.4.1 Status				<60		No recent data, analyses or reports are available on the impact of the Louisiana inshore shrimp fishery on the habitat that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI. However, it is likely that the fishery could conditionally pass this PI, but information would be required to eventually demonstrate that the fishery passes this PI.
2.4.2 Management				<60		This is yet another reason for a precautionary approach to management of the fishery and the need to conserve the resource, as management of the fishery is within the control of LDW&F, but control of other factors such as habitat degradation is may be outside the control of the fishery management agency. No recent data, analyses, or reports are available for the Louisiana

					inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI.
2.4.3 Information				<60	No recent data, analyses or reports are available on the impact of the Louisiana inshore shrimp fishery on the habitat that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI. However, it is likely that the fishery could conditionally pass this PI, but would information would be required to eventually demonstrate that the fishery passes this PI. There may be other information from federal assessments or other fisheries that can be utilized.

Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.			
		<b>Ecosystem</b>			
2.5.1 Status	The fishery does not pose a serious or irreversible harm to the key elements of ecosystem structure and function.				
2.5.2 Management	There are measures to ensure that the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.				
2.5.3 Information	There is adequate knowledge of the impacts of the fishery on the ecosystem.				
FAM Performance Indicator	Estimated PI Score in range			Ration Scoring Issues likely to	Rationale for estimated scores (information and references)
<b>Ecosystem</b>	<60	60-75	>80	Fail the Principle	Raise a condition
	<p>The ecosystem impacts of the Louisiana shrimp inshore shrimp fishery are potentially wide ranging. The direct removal of the target species will clearly affect the availability of forage food for other species. The mortality of discarded juvenile fish and other species that are incidentally captured by the small mesh nets can have a substantial impact on the population levels of these species, and the dead discards can have an impact of scavenging species. Habitat impact of trawling is an additional issue that must be considered.</p> <p>Most importantly, sea turtles have been identified as a bycatch species in trawl fisheries<sup>44</sup> and the lack of enforcement of NMFS TED regulations under the ESA in Louisiana inshore water represents a serious exception for marine conservation efforts.</p>				
2.5.1 Status				<60	
	No recent data, analyses or reports on ecosystem impacts of the Louisiana inshore shrimp fishery are available for that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI.				
2.5.2 Management				<60	
	As noted previously, collection of observer data on sea turtle bycatch/habitat and the analysis and publication of this data would help to understand the				

<sup>44</sup> Epperly, S., L. Avens, L. Garrison, T. Henwood, W. Hoggard, J. Mitchell, J. Nance, J. Poffenberger, C. Sasso, E. Scott-Denton, and C. Yeung. 2002. Analysis of sea turtle bycatch in the commercial shrimp fisheries of southeast U.S. waters and the Gulf of Mexico. U.S. Department of Commerce, NOAA Technical Memorandum NMFSSEFSC.490, 88 pp.

					significance of this interaction in the Louisiana inshore shrimp fishery. Louisiana and LDW&F could also adopt NMFS regulations with regard to TEDs, so as to comply with ESA based regulations. Without this information or a change in management approach, it is likely that the fishery will have difficulty passing this PI.
2.5.3 Information				<60	<p>No recent data, analyses or reports on ecosystem are available for the Louisiana inshore shrimp fishery that can be used to evaluate this PI. Therefore it is likely that the fishery will have difficulty passing this PI.</p> <p>Insufficient stock data and BRP's considered appropriate for long term recruitment and precautionary approach with respect to ecosystem functioning are available. Information from federal assessments or other fisheries might support the substantiation of the effects of ecosystem interactions in state waters.</p>

**Principle 3**

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Governance and Policy</b>			
<b>PI 3.1.1</b>	<p>The management system exists within an appropriate and effective legal and/or customary framework which ensure that it:</p> <ul style="list-style-type: none"> <li>Is capable of delivering sustainable fisheries in accordance with MSC Principle 1 and 2</li> <li>Observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood, and Incorporates an appropriate dispute resolution framework</li> </ul>			
<b>Legal and customary framework</b>	60.1	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.		<p>The Louisiana fisheries management system operates under State authority in a mature democracy. It is highly governed by State law and appears to be generally consistent with national and international standards.</p> <p>What is unclear is whether there is an overarching fishery conservation and management act that provides for explicit adoption of, and adherence to, clear and concrete sustainable fishing policies. As a result, some measures have been legislated that without objective confirmation, may be construed as anti-conservation in result; the most notable being the prevention of TED/BRD device enforcement and prohibition of a shrimp count size rule from mid-October to mid December.</p>
	60.2	The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising		The State supports the principles of the Magnuson-Stevens Fishery Conservation and Management Act

		within the system.		in its enforcement and fisheries management activities <sup>45</sup> and apparently other federal management initiatives in the Gulf of Mexico. <sup>46</sup> The system does not appear to be subject to continual legal disputes and, because entry to fishing generally is not restricted, little need seems to exist for specific legal mechanisms to ensure protection of the right of any dependent people to fish for food or livelihood. Title 56 does provide for some independent appeal committees to deal with specific licensing decisions and a general provision for appeals to the LWFC in cases where other appeals are unsatisfactory or where licence suspensions or similar sanctions are considered unfair or wrong.
	60.3	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.		The overall legal and associated government framework supporting the Louisiana fishery management system should be capable of delivering sustainable fisheries, observing legal rights to fish of any dependent people and settling disputes as necessary. The shortcoming, in terms of MSC Principles and Criteria, is that the system does not overtly appear to utilize, or adhere to, the necessary fish stock, habitat and ecosystem management objectives, approaches and principles that are required to demonstrably prove that fish stocks and their habitat and ecosystems are being managed in a manner that maintains them at high productivity levels as prescribed by MSC Principles and Criteria.
	60.4	The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.		

<sup>45</sup> LDW&F Strategic Plan 2010/12-2015/16; available at <http://www.wlf.louisiana.gov/about-LDW&F>.

<sup>46</sup> Except enforcement of the TED/BRD rules in State waters.

	80.1	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.		
	80.2	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	NO	
	80.3	The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.		
	80.4	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.		
	100.1	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.		
	100.2	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.		
	100.3	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.		

	100.4	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.		
<b>SUMMARY SCORE</b>	<div style="background-color: #FF0000; color: white; padding: 2px; text-align: center;">&lt;60</div> <div style="background-color: #FF8C00; color: white; padding: 2px; text-align: center;">60-75</div> <div style="background-color: #00FF00; color: white; padding: 2px; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	60-75	Therefore, this PI would, at the very best, warrant a conditional pass. The legislative framework is capable of delivering adequate statutes to support sustainable fishing but the evidence of the approaches that must be adopted to demonstrate sustainable fish stock, habitat and ecosystem management in order to fulfill MSC requirements were not available on initial review.

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Governance and Policy</b>			
<b>PI 3.1.2</b>	The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties.			
<b>Consultation, roles and responsibilities</b>	60.1	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.		While there is an extensive list of defunct, semi-functioning Task Forces and advisory committees among the various Gulf State fisheries (and now only one fully functioning Task Force), there clearly are a number of avenues through which industry input is possible, although this may not be actively sought. The meetings of the Wildlife and Fisheries Commission are open to the public and allow for fishermen and others to present proposals or requests directly to the Commission. Several task forces and advisory councils are in place for specific species or fisheries. These include an emerging Shrimp and an active Oyster Task Force and Advisory Councils for Louisiana Alligator and Hunting and Fishing Education. Similar bodies did exist for other fisheries, such as Freshwater Recreational Fishing, but appear to have become inactive. These bodies usually consists of industry and government representatives and advise the Legislature, the Commission or the Department on matters relating to the management, development and promotion of the fishery activity involved.
	60.2	The management system includes consultation processes that obtain relevant information from the		There is an absence of formal time-period fishery management plans and a widespread absence of

		main affected parties, including local knowledge, to inform the management system.		species/fisheries advisory committees to regularly address fishery management issues, propose adjusted or new management measures and generally keep the management of the fishery under regular review.
	80.1	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	NO	In the context of MSC Performance Indicator 3.1.2 this consultative arrangement for the shrimp fishery appears to fall a little short of the mark in that it is not clear that it will feed directly into the shrimp fishery management system, or that it will provide information to fish managers to be used to develop management measures for shrimp or that use made of given information is explained. (In fairness, the current Shrimp Task Force has yet to meet.) The greatest overall obstacle to these consultative arrangements receiving a pass mark may be that the lack of an overarching fisheries conservation and management act that requires explicit adoption of, and adherence to, sustainable fishing. Consequently, the State Legislature is not bound to base its decisions to introduce new fishery management measures on the results on any formalized process that requires objective professional advice and information.
	80.2	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.		
	80.3	The consultation process provides opportunity for all interested and affected parties to be involved.		

	100.1	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.		
	100.2	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.		
	100.3	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.		
<b>SUMMARY SCORE</b>	<60 60-75 80-100	<b>Refer to FAM for guidance</b>	60-75	For all these reasons, this PI might warrant a conditional pass.

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Governance and Policy</b>			
<b>PI 3.1.3</b>	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporate the precautionary approach.			
	60	Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are implicit within management policy.	No	Title 56 <sup>47</sup> of the Louisiana Revised Statutes contains several parts or sections that could be taken to establish a range of overall and long-term objectives for management of fisheries. These were also referenced in a draft Shrimp Management Plan that was prepared in 1992 <sup>48</sup> .
	80	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.		
	100	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.		
<b>SUMMARY SCORE</b>	<60 60-75	<b>Refer to FAM for guidance</b>	<60	There is a general absence of relevant, consistent and operative objectives that would cause decision-making to be consistent with MSC Principles and the Precautionary Approach. This would likely cause a Fail on this PI under a full

<sup>47</sup>

<sup>48</sup> Information supplied by LDW&F, January 2011.

	80-100			<p>assessment based upon the information currently available to the assessment team.</p> <p>Moreover, at this time, there is no clear indication of the objectives which are actually guiding current decision-making, supported by empirical evidence and are consistent with MSC Principles for productive stock management (P1), preservation of, or preventing irreversible damage to, fish habitat and ecosystems (P2). There is no clear indication of how the Precautionary Approach has been adopted.</p>
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FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Governance and Policy</b>			
<b>PI 3.1.4</b>	The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.			
	<b>60</b>	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	No	<p>While there does not appear to be direct financial incentives or subsidies in the Louisiana fishery that would contribute to unsustainable fishing, there is the possibility that the general management approach may provide the basis for such an outcome. Evidence is generally not available to indicate whether or not the current fishery management system has caused or prevented unsustainable fishing. The apparent high natural productivity of State waters appears to be the basis for an absence of both input and output controls.</p> <p>The fishery management system for shrimp does not use limited entry licensing, vessel capacity limits, or direct catch controls in almost all cases. Instead, it relies on a variety of indirect effort control measures such as seasons, fish size limits, daily catch and/or possession limits, gear specifications and limits, licensing fees and, in some instances, market demand. These are all classic open access management measures from which catch quotas are almost totally absent. A number of past attempts to introduce limited entry licensing all failed in Louisiana.</p> <p>Also, based on the evidence available so far, there</p>

				<p>is no indication that the overall management system, as required under 3.1.1 above, seeks to ensure that negative incentives do not develop.</p> <p>Without this sort of in-depth analysis of fishery effects on the relative state of fish stocks and the ecosystem, it cannot be shown that the system does not create the conditions for unsustainable fishing or that such incentives have identified and measures taken to avoid them.</p>
	80	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.		
	100	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.		
<b>SUMMARY SCORE</b>	<div style="background-color: red; color: white; padding: 2px; text-align: center;">&lt;60</div> <div style="background-color: orange; color: white; padding: 2px; text-align: center;">60-75</div> <div style="background-color: green; color: white; padding: 2px; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	< 60	For all these reasons, and because proof that incentives to unsustainable fishing do not exist or is not available, this PI would have difficulty achieving a Pass mark in a full assessment.

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
Principle 3	Fishery Specific Management &System			
PI 3.2.1	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.			
	60	Objectives which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are implicit within the fishery's management system.	No	<p>The draft 1992 Shrimp Management Plan synthesized the following as objectives for the shrimp fishery based on the various policy objectives as stated by the Legislature:</p> <ul style="list-style-type: none"> <li>• Perpetuate the renewable shrimp stocks;</li> <li>• Enhance the economic benefits provided by the resource to Louisiana;</li> <li>• Conserve the cultural heritage of the fishery;</li> <li>• Conform to the standards of the federal Magnuson Fishery Conservation Management Act (now the Magnuson-Stevens Fishery Conservation and Management Act);</li> <li>• Increase employment in the shrimp industry;</li> <li>• Provide for the economic stability of the fishery;</li> <li>• Provide for a constant supply of shrimp to Louisiana restaurants.</li> </ul> <p>This draft Plan does not appear to have ever been officially approved or adopted; it is available only in draft form. We have been advised that the objectives outlined in it have been adopted by LDW&amp;F for its managing of the shrimp fishery.</p>

				<p>We have also been advised that LDW&amp;F supports the objectives as outlined in the federal Shrimp Fisheries Management Plan for the Gulf of Mexico. These are; optimizing yield from shrimp recruited in the fishery, habitat protection measures to prevent habitat losses, coordinate development of shrimp management measures with the states, where feasible, promote consistency with threatened and endangered species, and minimize finfish bycatch and conflicts with other users.</p> <p>However, evidence to verify this currently falls short of the MSC pass requirements in that the fishery sets clear specific objectives, include the short and long-term, be consistent with achieving the outcomes expressed by P1 and P2 and that they be explicit in the management system.</p>
	80	Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are explicit within the fishery's management system.		
	100	Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are explicit within the fishery's management system.		
<b>SUMMARY SCORE</b>	<div style="background-color: red; color: white; padding: 2px; text-align: center;">&lt;60</div> <div style="background-color: orange; color: black; padding: 2px; text-align: center;">60-75</div>	<b>Refer to FAM for guidance</b>	< 60	Therefore, based on information presented thus far, the fishery would be challenged in meeting the minimal 60% score for this PI.

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FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Fishery Specific Management &amp;System</b>			
<b>PI 3.2.2</b>	The fishery-specific management system includes effective decision- making processes that result in measures and strategies to achieve the objectives.			
	60.1	There are informal decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	NO	<p>The decision making process for management of shrimp in Louisiana largely mirrors the structure of the overall fishery management system as outlined in PI 3.1.1 “The Legal and Customary Framework”. The State Legislature is the supreme decision maker, providing the decisions for management programs and policies, the types of permitted fishing gear and placing certain bounds on what LDW&amp;F or the Commission may do such as the prohibition on enforcing the federal TED/BRD regulations in state waters and specifying the length of advance times for closure notifications.</p> <p>The LDW&amp;F was created by the State Legislature to be the operational agency that manages fisheries and wildlife in Louisiana. It can provide advice to the Legislature and the Commission on policy and programs. The Commission is a policy decision-making body that considers, adopts or rejects recommendations from the LDW&amp;F on</p>

		<p>such matters as season times, closures, fishing rules etc. It also will consider representations made to it by fishermen or other interested parties and may decide on management actions that are within the powers entrusted to it by the Legislature.</p> <p>While it may appear complex at first glance the Louisiana fisheries management decision-making processes appear to be well understood (and used) by those involved. Industry reportedly first lobbies the Department in respect of a problem, issue or proposal. If they are unsuccessful in getting a favourable decision, they then may make their case to the Commission. If unsuccessful there, their final recourse is to lobby the Legislature to have their issue dealt with through statute change or resolution. There are apparently cases when this approach has resulted in changes being achieved at the higher level of authority, e.g., TED<sup>49</sup> and BRD<sup>50</sup> non-enforcement, crawfish trap mesh size.<sup>51</sup></p> <p>In the case of the shrimp fishery it is unclear as to which short and long-term fishery management objectives that the overall decision-making process is seeking to achieve, although there is an</p>
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<sup>49</sup> L.R.S Title 56, 57.2

<sup>50</sup> Ibid, 57.4

<sup>51</sup> There is no biological basis for this measure; it was enacted at the insistence of one group of fishermen who were convinced another group were taking too small a size of crawfish.

				implicit objective of maximizing production and employment over time. There is, moreover, no indication in evidence so far, that the precautionary approach is considered or used in any way, or that the best information is made available for use. It also is unclear as to the extent that relevant research, monitoring, evaluation and consultation occurs to identify serious fishery management problems that the decision-making process should respond to.
	60.2	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.		
	80.1	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.		
	80.2	Decision-making respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
	80.3	Decision-making processes use the precautionary approach and are based on best available information.		
	80.4	Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.		

	100.1	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.		
	100.2	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
	100.3	Decision-making processes use the precautionary approach and are based on best available information.		
	100.4	Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.		
<b>SUMMARY SCORE</b>	<div style="background-color: red; color: white; text-align: center; padding: 2px;">&lt;60</div> <div style="background-color: orange; color: white; text-align: center; padding: 2px;">60-75</div> <div style="background-color: green; color: white; text-align: center; padding: 2px;">80-100</div>	<b>Refer to FAM for guidance</b>	<60	There is insufficient evidence available at this time that allows for the fishery to be scored under this PI. It is unlikely that a conditional pass could be achieved.

FAM Performance Indicator	Scoring issue #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Fishery Specific Management &amp;System</b>			
<b>PI 3.2.3</b>	<b>Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.</b>			
<b>Compliance enforcement</b>	60.1	Monitoring, control and surveillance mechanisms exist and are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.		The specialized enforcement capability that exists in LDW&F appears to be well qualified, trained and organized <sup>52</sup> . Managers appear satisfied with the results achieved in enforcement of fisheries management measures.
	60.2	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.		There is apparently an internal consultative arrangement whereby Enforcement will re-deploy staff to meet specific fishery management requirements, for example, near opening and closing times for major fisheries. The escalating system of penalties and sanctions for fishing infractions appears to be considered an effective deterrent in reducing repeat violations. This involves classification of offences into Classes One to Eight that have increasing levels of penalties prescribed for each successive offence. There are also a variety of licence suspensions provisions and escalating

<sup>52</sup> See pp 7-9 of LDW&F Annual Report 2008/09 at <http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/33565-2008-09-annual-report/08-09annualreport.pdf>

				sanctions contained in Title 56.
	60.3	Fisheries are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.		While data results of enforcement activities were not obtained, such statistics are available. A general summary of 2009 enforcement operation is available in the LDW&F's annual Report for 2008/09. <sup>53</sup> The view expressed by all mangers during the Site Visit was that there is no systematic non-compliance in this shrimp. While the LDW&F cannot enforce federal exclusion device regulations in state waters, many fishermen are using them and report they are useful in reducing by-catch and time spent cleaning the retained catch.
	80.1	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.		
	80.2	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	No	
	80.3	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.		
	80.4	There is no evidence of systematic non-compliance.		

<sup>53</sup> <http://www.wlf.louisiana.gov/publications>

	100.1	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.		
	100.2	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.		
	100.3	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.		
	100.4	There is no evidence of systematic non-compliance		
<b>SUMMARY SCORE</b>	<div style="background-color: red; color: white; padding: 2px; text-align: center;">&lt;60</div> <div style="background-color: orange; color: black; padding: 2px; text-align: center;">60-75</div> <div style="background-color: green; color: white; padding: 2px; text-align: center;">80-100</div>	<b>Refer to FAM for guidance</b>	60-75	This PI would warrant a pass, as the compliance and enforcement provisions appear to be such that existing shrimp management measures are being enforced, sanctions exist and are applied and there is no reported evidence of harvesters not generally complying with the management system including the provision for information reporting.

FAM Performance Indicator	Scoring #	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>	<b>Fishery Specific Management &amp;System</b>			
<b>PI 3.2.4</b>	The fishery has a research plan that addresses the information needs of management.			
<b>Research Plan</b>	60.1	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	No	<p>Overall, there seems to be a considerable amount and variety of data being collected while various fisheries are underway, but a good deal of it is not analyzed to inform or evaluate management decisions or changes.</p> <p>Fisheries under quota (black drum) or for which stock assessments are conducted (black drum and oyster) seem to have more organized forms of regular data collection covering such things as effort/participation, biological sampling, hydrological data and catch levels. The Trip Ticket system appears to be a good source of data for many analytical purposes that are still being identified and/or discovered. It is used to monitor catch quotas in the few fisheries where these are used.</p> <p>Beyond that there is no indication that the type of research plan required under PI 3.2.4 exists for the shrimp fishery. Since no shrimp stock assessment is conducted by the State no TAC or related calculations are attempted; the shrimp seasons are opened on fixed dates or on a size count and closed when the catch per day drops below a certain size</p>

				count limit. It is unclear what collected or analyzed fisheries data is given to, or discussed with, interested parties in the industry.  However, collection and analysis activity in the state's shrimp fishery could be argued to contribute to achievement of objectives that are explicit with MSC Principles 1 and 2 as such objectives for the fishery are not apparent.
	60.2	Research results are available to all interested parties.	No	
	80.1	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.		
	80.2	Research results are disseminated to all interested parties in a timely fashion.		
	100.1	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.		
	100.2	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.		
<b>SUMMARY SCORE</b>	<60 60-75 80-100	<b>Refer to FAM for guidance</b>	< 60	This PI would not warrant a pass as further information would be required on a research plan for the specific fishery management system in order to provide for a pass score under 3.2.4.

FAM Indicator	Perform	Scoring issue	Scoring Issue	Met? (Yes/No)	Notes
<b>Principle 3</b>		<b>Fishery Specific Management &amp;System</b>			
<b>PI 3.2.5</b>		There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management.			
<b>Monitoring Management Performance Evaluation</b>	60		The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.		The management of the shrimp fishery the management system for this fishery does not appear to undergo any regular and objective evaluation or review of any elements. There is insufficient evidence that substantiates an approach to shrimp management that is consistent with MSC principles. The GOM Shrimp fishery is not causing overfishing as determined by the Gulf of Mexico Fishery Management Council in its stock assessment for federal waters and this may provide a basis for state management purposes.  No formal fisheries management plan for Louisiana shrimp exists. A 1992 management plan document is still in draft form.
	80		The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.	No	
	100		The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.		

<b>SUMMARY SCORE</b>	<60	<b>Refer to FAM for guidance</b>	60-75	This fishery would warrant a pass of 60 as a new Shrimp Task Force exists and may scrutinize aspects of fisheries management approach used for this fishery.
	60-75			
	80-100			