



FAO-BASED RESPONSIBLE FISHERIES MANAGEMENT CERTIFICATION

FISHERY ASSESSMENT VALIDATION REPORT ON FAO CONFORMANCE CRITERIA FOR FIVE LOUISIANA FISHERIES

- Shrimp - White Shrimp (*Litopenaeus setiferus*) and Brown Shrimp (*Farfantepenaeus aztecus*)
 - Catfish- Channel Catfish, (*Ictalurus punctatus*), Flathead Catfish (*Pylodictis olivaris*) and Blue Catfish (*Ictalurus furcatus*)
 - American Oyster - (*Crassostrea virginica*)
 - Black Drum -(*Pogonias cromis*)
 - Crawfish - Red Swamp Crawfish (*Procambarus clarkii*), Southern White River Crawfish (*Procambarus zonangulus*)
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Summary

The FAO-Based Responsible Fisheries Management Certification Program is a voluntary, third party independent verification that, fisheries are operating according to the criteria specified by the FAO Code of Conduct for Responsible Fisheries (FAO Code) and the FAO Guidelines for the Eco-labeling of Products from Marine Capture Fisheries.

Five Louisiana State fisheries were selected for provisional review and validation assessment against the key criteria of the FAO.

Validation assessment form part of the procedure for FAO certification of fisheries and is valuable for the purposes of providing an initial review of the fisheries' with respect to their preparedness for full assessment. The process includes background review of the fishery and its management according to the FAO Criteria. The assessment includes on-site meetings with fishery managers and desk-top review and analysis of available information on the fishery resource and its management.

On site visits were conducted by Global Trust in February 2011, followed by information collection, review and analysis.

In each of the five fisheries under provisional assessment, the outcome did not support immediate progression of the fisheries to full assessment against FAO based Responsible Fisheries Management Certification. However, within each of the candidate fisheries there were varying degrees of evidence that suggests intermediate and promising applicability to the FAO Criteria. Conversely, there were a number of areas where the available information suggests low applicability at this time.

Fishery resource management in Louisiana is strongly influenced by the exceptional productivity and resilience of the Mississippi Delta and surrounding area. It appears that many stocks are highly productive and resilient to fishing as proven by any amount of historically reasonable fishing efforts could diminish. In several cases, it may be argued that species are so prolific and short lived that classic annual stock assessment may be unnecessary, futile, or impossible.

It is also stressed that, FAO based assessments, require a substantial amount of information in order for the assessment to proceed. The absence of such 'evidence', normally leads to weaker scores as the evaluation is difficult to perform. These gaps do not automatically mean irresponsible fishery behavior, more so, they relate to the way certification programs require that substantial amount of data and information being available.

A summary of the assigned confidence ratings during the validation assessment is provided (Table 1). More detailed outcomes of each fishery against each fundamental clause of the FAO Conformance Criteria are also presented in Section 7.

Fishery performance, based on the evidence available is rated with either low, medium or high confidence by the assessment team. A low confidence rating would represent an area of major non conformity during a full assessment. A medium confidence rating would most likely correspond to one or more minor non conformances against the FAO clauses. In other words, these areas under assessment may demonstrate partial conformity but insufficient evidence to support higher confidence ratings. Finally, high confidence is assigned when there is sufficient information and evidence available from the fishery to support full confidence in meeting the FAO Criteria.

At this time, Global Trust does not propose the immediate entry of any of the candidate fisheries into full FAO assessment. However, there were some positive and encouraging outcomes of the assessment where evidence ratings were achieving Medium and High categories. All fisheries were assigned a High confidence rating for Section E (Implementation, Monitoring & Control). The specialized enforcement capability that exists in the Law Enforcement Division (LED) of LDW&F appears to be well qualified, trained and organized. It is a fully commissioned state-wide law enforcement agency with a primary role of ensuring compliance with fishery and wildlife licensing and harvesting regulations.

Oyster and black drum fisheries tended to achieve higher scores than shrimp sp., crawfish sp., and catfish species. For these two species, evidence suggests that there are more activities including; stock survey, fishery dependent information collection and a basis for stock assessment activities performed than for the other candidate fisheries within Louisiana State waters. However, there would be significant challenges for these fisheries in full FAO assessment due to the low ratings achieved in section C and D to clearly demonstrate a precautionary approach to resource use and that management measures are proven to maintain stocks at levels capable of producing sustained yields. Assessors also noted that in many cases, it is likely that an array of fishery dependent and independent information exists which could form the start of more formal stock assessment activities. It is also noted that FAO validation assessment is based on a short review of information that is readily available for each fishery and it may be the case that LDFW fishery scientists and managers are engaged in fisheries development activities that were not included in this initial review of the candidate fisheries.

Table 1. Summary of Outcome Ratings for Each Fishery

Fundamental Clause	Fishery Under Evaluation				
	Shrimp sp.	Black Drum	Oysters	Crawfish sp.	Catfish sp.
A. Fishery Management System	Low to Medium	Medium	Medium	Medium	Low to Medium
Fundamental Clause 1	Low	Medium	Medium	Medium	Medium
Fundamental Clause 2	Medium	Low	Medium	Medium	Low
Fundamental Clause 3	Medium	Medium	Medium	Low	Low
B. Science and Stock Assessment	Low	Medium	Medium	Low	Low
Fundamental Clause 4	Low	Medium	Medium	Low	Low
Fundamental Clause 5	Low	Medium	Medium	Low	Low
C. The Precautionary Approach	Low	Low to Medium	Low to Medium	Low	Low
Fundamental Clause 6	Low	Medium	Low	Low	Low
Fundamental Clause 7	Low	Low to Medium	Low to Medium	Low	Low
D. Management Measures	Low	Low to Medium	Low to Medium	Low	Low
Fundamental Clause 8	Low	Low to Medium	Low to Medium	Low	Low
Fundamental Clause 9	Low	Low	Low	Low	Low
Fundamental Clause 10	Low to Medium	Medium	Medium	Medium	Medium
E. Implementation, Monitoring & Control	High	High	High	High	High
Fundamental Clause 11	High	High	High	High	High
Fundamental Clause 12	High	High	High	High	High
F. Serious Impacts of the Fishery on the Ecosystem	Low	Low	Low	Low	Low
Fundamental Clause 13	Low	Low	Low	Low	Low
Fundamental Clause 14	N/A	N/A	Medium	N/A	N/A

1.0 Introduction

This assessment validation of five selected Louisiana State fisheries fulfills the first part of the assessment procedure of the FAO based Responsible Fisheries Management Certification Program. This is a voluntary assessment promoted by the Louisiana Department of Wildlife and Fisheries (LDW&F) who wish to provide Louisiana fisheries with an independent, third party certification program that can be used to verify that they are responsibly managed according to the FAO Code of Conduct for Responsible Fisheries.

The assessment is based on the criteria specified in the Food and Agriculture Organization's (FAO) Code of Conduct for Responsible Fisheries (1995) and the minimum criteria set out for marine fisheries in the FAO Guidelines for the Eco-Labeling of Fish and Fishery Products from Marine Capture Fisheries (2005/2009), hereafter referred to as the FAO Criteria.

The assessment validation has been carried out according to the procedures and requirements of the FAO based Responsible Fisheries Management Certification Program operated by Global Trust according to EN45011/ISO Guide 65 accredited certification procedures.

The purpose of the validation report is to provide an initial assessment of the applicant fishery's ability to meet the requirements of certification.

The objectives are to:

- Evaluate and confirm the Applicant fishery information
- Provide a short overview of the fishery management system(s) and a short evaluation based on initial review of the ability of the applicant fishery's to meet the requirements of certification
- Provide information important for the progression to full assessment of the fishery against the FAO Criteria and requirements of certification

The report provides information for guidance for planning and carrying out a full assessment of the fishery against the requirements of the FAO based Responsible Fisheries Management Certification Program.

The activities that have been conducted during this validation stage include:

- Client meeting and confirmation of the fishery(ies) for assessment
- Fishery management and fishery specific literature and documentation review
- On-site initial fishery management consultation meetings

2.0 Fishery Applicant Details

The applicant representing the fisheries that has requested assessment is the LDW&F. The LDW&F is the State body responsible for the management of fisheries inside the 3nm limit zone of Louisiana State waters. It is charged with the responsibility of managing and protecting Louisiana's natural resources.

This project was commissioned by LDW&F to establish a set of reasoned documents and analysis that would provide the State guidance and insights for the further development of its sustainability initiatives. In that regard, LDW&F have requested assessments reflecting the fundamental requirements of the 1995 FAO Code of Conduct for Responsible Fisheries (FAO CCRF), and which identify gaps between leading sustainability standards and the existing Louisiana Fisheries Management framework. Finally, the review and directions that may arise from these analyses will allow the State to identify long-term cost-saving approaches for protecting the fisheries and bringing them into full and appropriate sustainability assessments.

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3.0 Background to Fisheries

3.1 Summary of Species Biology

Species	Life-Cycle	Reproductive Strategy	Feeding/Habitat/Distribution
<p>White Shrimp (<i>Litopenaeus setiferus</i>)</p> <p>Brown Shrimp (<i>Farfantepenaeus aztecus</i>)</p> <p>Butterfly Net, Skimmer & Otter Trawl Fishery</p>	<p>Temperature and salinity changes affect the life stages of each shrimp species in a slightly different manner. 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 area 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, several times annually.</p>	<p>Both brown^{1 2} and white shrimp^{3 4} 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)⁵. In their unstable and unpredictable environment, these r-selected species have small bodies, can produce quickly, mature early and have a short generation time but can disperse offspring widely. These traits produce an organism that is resilient to the pressures of fishing.</p> <p>White shrimp spawn in offshore waters of Gulf of Mexico (8m to 31m deep) where salinities are at least 27ppt (parts per thousand). In the open sea adult shrimp are opportunistic omnivores and continue to grow in size on the seabed at approximately 60-500 feet depth. A sharp rise in water temperatures will stimulate the spawning of females, producing thousands of eggs when fertilised that start the cycle again.</p> <p>Brown shrimp spawn throughout the year, although April to May and September through November appear to be peak spawning times off Louisiana's coast⁶. Larvae develop from fertilized floating eggs released in the plankton and grow or moult within a week or two. They are carried shoreward inside brackish bays and estuarine shorelines by wind-driven currents, providing a valuable food source for small fish.</p>	<p>Shrimp Error! Bookmark not defined. Error! Bookmark not defined. occupy many niches in Louisiana's estuaries and in Gulf waters. Both white and brown species favour muddy or peaty bottoms, sometimes with sand, clay, or broken shells. Reproducing populations of several species of shrimp mature through the post-larval and sub-adult 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'. The estuaries serve as protection from predators. 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.</p> <p>Post-larval 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.</p>

<p>Catfish</p> <p>Hoop nets, wire nets, trammel nets, slat traps, cans, & hook and line Fishery</p>	<p>In general, male catfish species initiate the spawning activities by first preparing a nesting site. He will clear an area of debris from an easily protected area. Upon completion of egg deposition and fertilization, the male chases the female away and tends the eggs and fry after they hatch. The male fans the eggs with his fins to keep them free of sediments and to provide aeration.</p> <p>Channel catfish normally spawn once a year which begins in late spring to early summer when water temperature reaches at least 70° F. While optimum spawning temperature is 78° F, in Louisiana the spawning season can extend into August. The spawn usually occurs under ledges, around and in submerged logs, stumps, or roots.</p> <p>Blue catfish normally spawn once a year which begins when water temperature reaches at least 70° F. In Louisiana the spawning season extends from April to June. Blue catfish are cavity nesters and the spawn usually occurs behind rocks, under ledges, around and in submerged logs, stumps, or root wads.</p> <p>Flatfish head catfish variation in age at maturity seems to be related to duration in the growing seasons; with fish in the southern areas of its' range maturing at younger ages and shorter length than populations at northern latitudes. There is also wide variation in length at sexual maturity as well, with some populations</p>	<p>The total fecundity or reproductive potential of channel catfish can range from approximately 1,000 to 60,000 eggs per year. The number of eggs increases with age and length, with the average fecundities being about 4,000 eggs per pound of body weight of the female channel catfish. Eggs require 6-7 days at 76° F to hatch. Age at sexual maturity ranges from 2 to 12 years, but it is generally 3-5 years. This variation in age at maturity seems to be related to duration in the growing seasons; with fish in the southern areas of its' range maturing in 2-3 years, and at 6-12 years at northern latitudes. There is also wide variation in length at sexual maturity as well, with some populations maturing as small as 7 inches, and others as large as 21 inches before they spawn the first time. Most do reach sexual maturity somewhere between 11 to 14 inches in total length. Channel catfish as small as 6.5 inches in total length have been captured in Louisiana waters carrying fully ripe eggs.</p> <p>Blue Catfish Age at sexual maturity ranges from 4 to 7 years, but it is generally 4-5 years in Louisiana. Eggs require 7-8 days at 76° F to hatch. The total fecundity or reproductive potential of blue catfish can range from approximately 10,000 to 60,000 eggs per year. The number of eggs increases with age and length, with the average fecundities being about 500 eggs per pound of body weight of the female blue catfish.</p> <p>Flathead catfish Eggs are laid in adhesive masses which may contain 100,000 eggs or more. The male fans the eggs with his fins to keep them free of sediments and to provide aeration. Newly hatched fry remain near the nest for several days before dispersing. Age at sexual maturity in flathead catfish varies, but it is generally 4-6 years.</p>	<p>Channel catfish are omnivorous⁷. They have been observed to ingest plant matter including filamentous algae and plant seeds, but in no study has plant matter comprised the bulk of items consumed. Post larvae feed primarily on zooplankton, while larger juveniles in the 1 to 4 inch size range on aquatic insects, especially midges, mayflies and black flies. The length at which channel catfish begin feeding on fish varies from 6 to 15 inches depending on availability, but feed on a variety of items including terrestrial insects, crawfish, shrimps, mussels, snails and frogs.</p> <p>Blue catfish⁸ are more predatory than channel catfish. Post larvae feed primarily on zooplankton, while larger juveniles in the 1 to 4 inch size range on aquatic insects, especially midges, mayflies, black flies and worms. Blue catfish are the largest catfish in the United States. In coastal marshes and large natural lakes blue catfish range from 1 to well over 30 pounds, while attaining even larger sizes (> 100 lbs.) in inland reservoirs and rivers, with longevity exceeding + 20 years. Abundant populations of smaller, often "stunted" 8 – 15" fish have been identified in some upland reservoirs of Louisiana. In coastal marshes they have been observed to ingest plant matter including filamentous algae while feeding on gastropods and crustaceans.</p> <p>Flathead catfish are predatory animals⁹. Post larvae feed primarily on zooplankton, with the transition from an invertebrate diet occurring by the time the fingerlings are 1.0 to 1.5 inches in length. By the time they are adults they are completely predacious on fishes. They tend to be solitary fish by nature and are extremely</p>
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	<p>maturing as small as 17 inches, and others as large as 25 inches in total length.</p>		<p>aggressive to con-specifics.</p> <p>Flathead catfish nest in cavities during the summer months when temperatures reach 65° to 76° F. In Louisiana this is from April to early July. In coastal marshes and large natural lakes flathead catfish range from 3 to 10 pounds, while attaining much larger sizes in inland reservoirs and rivers. Abundant populations of larger flatheads can be found in many of Louisiana's upland reservoirs.</p>
<p>American Oyster Dredge, Scraper & Tong Fishery</p>	<p>The American Oyster is dioecious changing from male to female (protandry) or from female to male (protogyny), but few are true hermaphrodites. Oysters develop functional gonads at a young age (2 to 3 months) and are less than 1cm in size (< 1 cm).</p> <p>Growth changes temperature, environmental factors, food and depending on the stage of the lifecycle. Typically Louisiana young oysters¹⁰ grow 0.26mm to 0.33mm per day, and reach 30 mm in 3 months, 55 mm in one year, 85 mm in 2 years and 115 mm in 3 years; depending on the specific area. Growth rate are thought to generally increase in exposed areas with increased turbidity and may relate to phytoplankton activity.</p> <p>Spawning sites are closely linked to increases in dissolved oxygen levels in the water and each female may spawn 20 to 30 times, peak spawning occurs in spring/neap tides and in the early evening. Eggs hatch seaward and are carried offshore by currents until, larval and small juvenile black drum swim inshore with incoming tides where they settle out in the marshes.</p>	<p>This species is oviparous and releases gametes into the water column during reproduction, stimulated by water temperature changes which may vary depending on the stock/population. Temperature or salinity changes usually trigger the release of sperm from one or more males.</p> <p>Louisiana stocks spawn in late May and June, when males release pheromones and sperm into the waters which stimulates the females to release their eggs (23 million to 86 million eggs/spawning)¹⁰. They spawn several times per season.</p> <p>The egg hatches 6 hours after fertilization when water temperatures are at 24°C and remain in the water column as larvae for 2 to 3 weeks passing through several stages of development. The larvae are vigorous swimmers and have a pair of pigmented eyes, an elongate foot, and a large byssal gland and are 0.3mm in size. Oyster larvae then start a crawling phase and look for substrate to attach and cement themselves with a drop of liquid cement from a pore in their foot, which they lose and are now termed oyster spat. These newly settled oysters prefer substrate like shells and stones in the sub-tidal and metamorphosis may be delayed if these suitable substrates are not found. Juveniles (approximately</p>	<p>This oyster inhabits estuaries, sub-tidal and tidal regions, approximately in an area of 3600 km² (1400m²) of suitable habitat along the gulf coast of Louisiana. Brackish water produces a unique chemical environment in which oysters flourish and the tide disperses a variety of nutrients from rivers across the oyster beds. Extreme fluctuations in water temperature and salinity in these shallow estuarine environments coupled with low level rain fall can affect the status of this resource as this species is an immobile bottom dweller that needs a steady flow of water through the gills for respiration, feeding, and excretion.</p> <p>Adults are sessile organisms, living in clumps of reefs and beds. These communities change the habitat in which they live by altering water currents around them.</p>

		26mm) are now called seed oysters.	
<p>Black Drum</p> <p>Otter Trawl, Set Lines, Butterfly Net, Skimmer Net and Trot Lines Fishery</p>	<p>Black drum mature and begin to spawn at 2 - 6 years of age (17.7 - 27.6 inches). Males mature earlier but both sexes are multiple spawners with continuous oocyte recruitment spawning approximately every 3 days.</p> <p>Black drum can be described as heavy bodied fish with large heavy pharyngeal teeth in the back of their throats that are used to crush mollusks and their shells. Juveniles under 8 inches feed mainly on marine worms and small fish, greater than 8 inches feed on mollusks and oysters, clams and mussels. <i>Pogonias cromis</i> grows to a maximum size of approximately 170 cm (67 inches) and may weigh as much as 51.3 kg (113.1 pounds).</p>	<p>During a 16 week spawning period, spawning frequency is 7 days yielding approximately 11-60 million ova, in Louisiana from December to April. Ripe black drum may spawn at water temperatures of 15-25°C (60.8-77.0°F) from January to May. Eggs of black drum are pelagic and measure 0.8 - 1 mm (0.031 - 0.039 inches) in diameter with 2-6 oil droplets in the early stages. Droplets merge into a single drop in later stages prior to hatching. Eggs hatch in less than 24 hours at 20 °C. Larvae measure approximately 1.9 - 2.4 mm (0.075 - 0.094 inches) TL at hatching. The yolk sac is completely absorbed when larvae grow to 2.8 mm (0.11 inches). Upon reaching approximately 15 mm (0.59 inches) TL, the overall adult body shape is recognizable.</p>	<p>They remain as adults in bays, bayous, tidal passes and inshore and offshore environments where they then spawn (lasts up to 16 weeks) and complete their life cycle.</p>
<p>Red Swamp Crawfish <i>Procambarus clarkia</i></p> <p>Southern White River Crawfish <i>Procambarus zonangulus</i></p> <p>Trap Fishery</p>	<p>The red swamp crawfish spawn year-round, sometimes multiple times per year and usually mature in April to June. Most young appear in the September to December period. Red swamp crawfish exhibit two patterns: a wandering phase characterized by short peaks of high speed of locomotion and a longer stationary phase when crawfish hide in burrows emerging at dusk to forage/feed. During the wandering phase, breeding males move up to 17 km in four days and cover a wide area, thus increasing dispersion. The red swamp crawfish may reach a weight greater than 50 g and up to a size between 2.2-4.7 in long.</p> <p>Life span of a crawfish is about 2-3 years.</p>	<p>These species are considered successful colonizers and r-strategists¹¹, exhibiting a short life cycle and high fecundity. When they become established they eventually become a keystone species. Both species, possess traits that are usually associated with animals that live in warmer environments, i.e., short-lived (2 years or less), high juvenile survival, and can alternate between reproductively active and inactive forms.</p> <p>The number of eggs laid varies with female size, but large red swamp or white river crawfish females can have more than 500 eggs. The average lifetime of red swamp crawfish is 5 years.</p> <p>Hatchlings go through 11 molts, the length of time between molts and size increases varies greatly due to factors such as age of young, water temperature, water quality, food quality and quantity, population density, oxygen levels and to the lesser extent by genetic influences.</p>	<p>Crawfish are herbivores, detritivores, omnivores, and obligate carnivores. They feed on small fish and shrimp including mud puppies, small mouth bass and rock bass. Crawfish are nocturnal and hide during the day. Crawfish are normally 100% aquatic but can survive out of the water as long as their gills remain wet. Crawfish of all ages and sizes, whether mature or immature and male or female, will dig or retreat to burrows to survive periods of dewatering.</p> <p>Red crawfish prefer more nutrient rich-waters, can tolerate lower oxygen levels than those of the white river crawfish. White river crawfish prefer flooded wetlands with flowing, well oxygenated water. The red swamp crawfish inhabits slow flowing rivers, marshes, reservoirs, irrigation systems and rice paddies. A temperature range of 65-77F is best growth of most species but they can survive over a much wider range.</p>

3.2 Fishery Location(s)

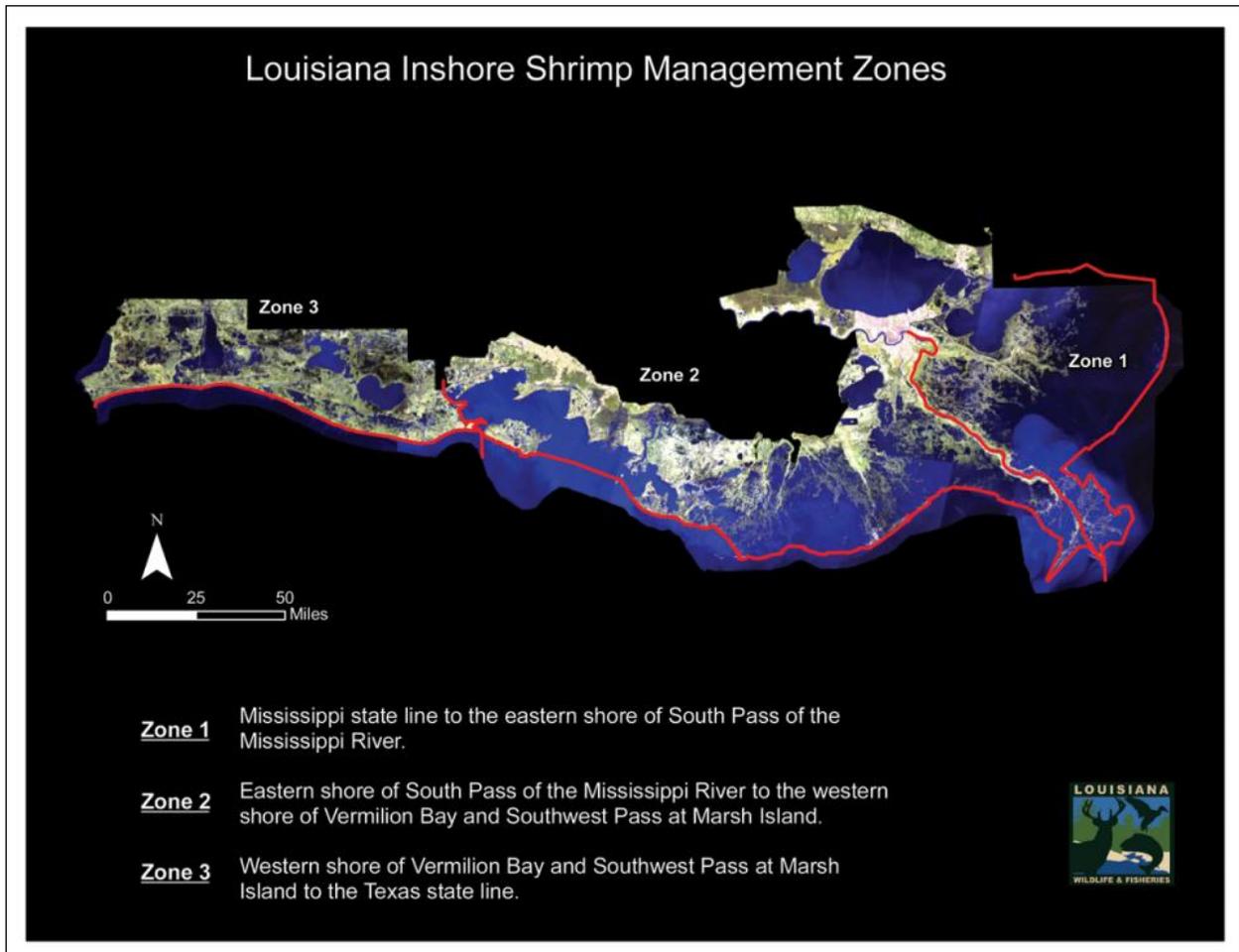
The selected fisheries are located in the state waters of Louisiana and are governed by State Laws inside the federal line (inshore waters less than 3nm) within FAO fishing area 31. The line that separates state territorial waters from the EEZ generally runs along the Louisiana coast three miles from shore.

3.2.1 Shrimp

Shrimp fishing areas in Louisiana are divided into inshore waters, the offshore territorial sea and the federal Exclusive Economic Zone (EEZ). The Louisiana Brown and White Shrimp Trawl Fishery are further divided into state inshore and state offshore territorial waters into three shrimp management zones. **Zone 1** extends from the Louisiana and Mississippi state line to the eastern shore of the 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. Louisiana Department of Wildlife and Fisheries¹² (LDW&F) regulates all fishing activities within the Louisiana state water, but as an exception 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.

Figure 1 Louisiana State Shrimp Fishing Zones

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



3.2.2 Catfish

Most catfish harvesting occurs in the large inland rivers and natural coastal lakes of Louisiana where robust catfish populations exist. The large natural lakes along Louisiana’s entire coastline support the most important commercial fisheries for catfish, particularly channel and blue catfishes. More inland waters such as the Atchafalaya basin and Toledo Bend Reservoir also support robust fisheries. They are found also in ponds, lakes, rivers and backwaters¹³. They are found in Louisiana’s major lakes, including Anacoco Lake, Black Bayou Lake, Caddo Lake, Caney Creek Reservoir, Catahoula Lake, Cheniere Brake Lake, Cocodrie Lake, Corney Lake, Cross Lake, Cypress Bayou Reservoir, Grand Lake, Latt Lake, Lac des Allemands, Lake Bistineau, Lake Claiborne, Lake Henderson, Lake Maurepas, Lake Palourde, Lake Rodemacher, Lake Salvador,

Lake Verret, Saline Lake (Clarence), Sibley Lake, Toledo Bend, Turkey Creek Lake, and Wallace Lake¹³.

Figure 2 Lakes of Louisiana



3.2.3 Crawfish

The majority of the wild-caught crawfish is harvested from the Atchafalaya Basin and Vermilion Teche River region. The Atchafalaya Basin is the most important crawfish production area in North America and is divided into sub-Basins. This area covers the entire lowland between Baton Rouge and Lafayette. Another important area is the delta (new land) area south of Morgan City where the Atchafalaya River enters Atchafalaya Bay. Crawfish are found virtually everywhere in the Atchafalaya Basin but are concentrated in the cypress-tupelo-gum swamps on the east and west sides of the Basin. These “hot spots” are specifically located about 20-30 miles north of Morgan City in the vicinity of Bayou Pigeon and Belle River to the east and Buffalo Cove to the west.

The region is divided into eastern and western sections by the main channel of the Atchafalaya River.

Figure 3 Atchafalaya Basin regions, Louisiana.

Eastern Side	Western Side
Alabama Bayou	Henderson
Bayou Des Glaises	Lost Lake
Pigeon Bay	Warner Lake
Flat Lake	Cow Island Lake
Flat Lake	Cocodrie Swamp
Six Mile Lake	Beau Bayou
	Buffalo Cove
	Six Mile Lake

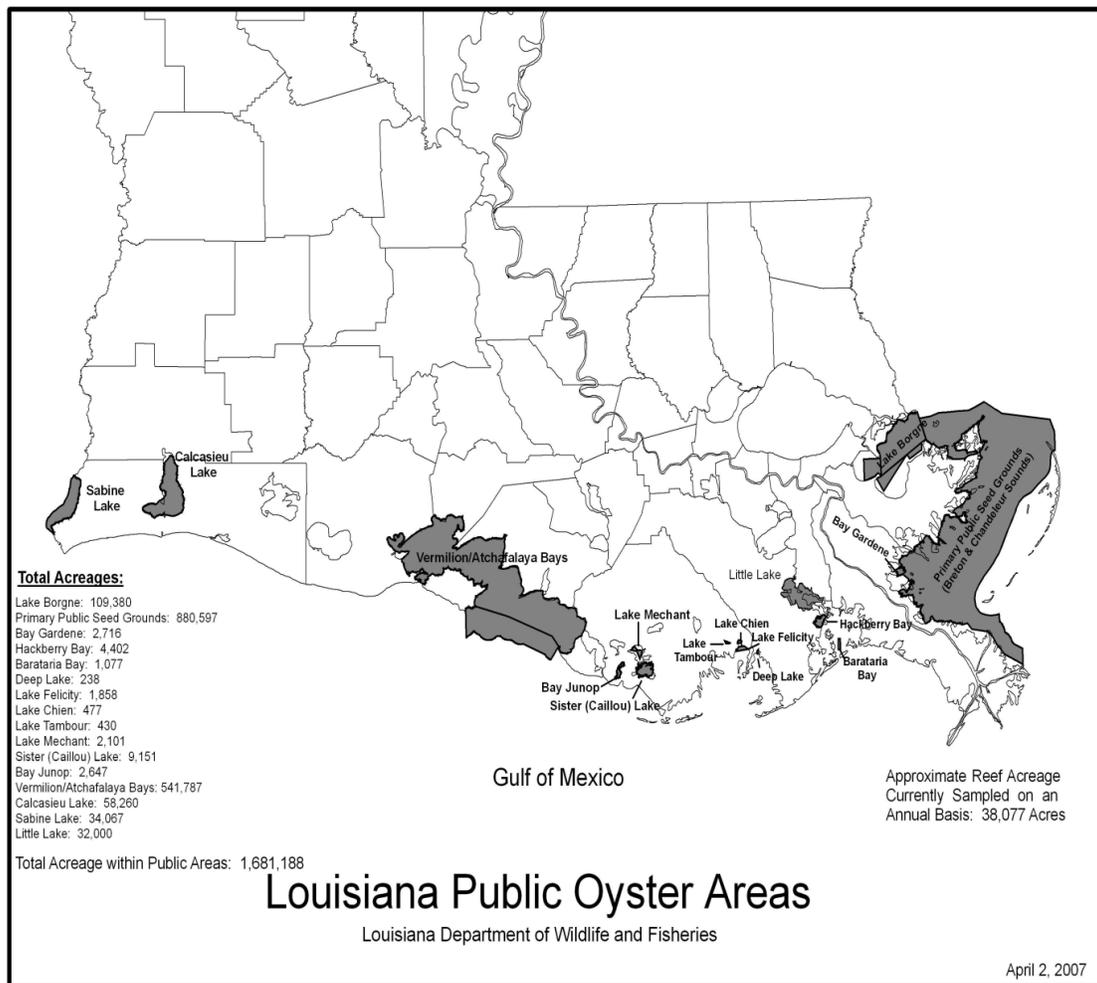
3.2.4 Oysters

Oyster grounds are divided between public and private in Louisiana. There is a strong legal bias against any State interference or interaction on private grounds. Public grounds comprise approximately of 1.7 million acres and private grounds comprise 390,000 acres. The private grounds are under 15-year leases and the owners are expected to maximize productivity. A moratorium on private leases was implemented in 2002 because of coastal habitat concerns and associated restoration strategies.

Harvests from private leases for commercial purposes are unlimited. Recreational oyster fishermen may harvest oysters: in leased areas only with the written permission of the lease holder; in personally leased areas; and, in areas open to the public for the harvesting of oysters. The catch is limited to two sacks per person per day for personal consumption.

The LDW&F is responsible for managing this resource on public grounds through monitoring the size and health status of stocks through activities such as setting oyster seasons, monitoring harvest levels reef building and permit controls. Public seed grounds, which are designated by the LDW&F, are shown in Figure 4. This FAO validation refers to the fishery harvested on public grounds only, although private leased grounds are referred to throughout as both harvests are closely inter-linked/ related to each other.

Figure 4 Louisiana Public Oyster Areas¹⁴



3.2.5 Black drum

Black drum are found along the western Atlantic Ocean¹⁵ from the Bay of Fundy, Nova Scotia, southward into the Gulf of Mexico, and south to Argentina. They are common from southern New Jersey, from Chesapeake Bay to the mouth of the Rio Grande, and are most abundant in the Gulf of Mexico along the Texas and Louisiana coasts. Black Drum are the most abundant east of the Mississippi River, and larger drum can be found inshore from March through September. During fall and winter months large black drum can also be found offshore. Both large and small drum are available in November through to March west of the Mississippi River.

Black drum is the primary commercial species harvested in Louisiana and the commercial fishery operates primarily within state waters (from the coastline upward to the saltwater line) and outside territorial waters (from the coastline seaward to 3 miles), and in federal waters of the EEZ. The commercial fishery is an open access fishery and harvesters, fish black drum with other predominant species targeted over the course of the fishing year and where black drum may be a part of their overall fishing effort.

The black drum fishery¹⁵ in Louisiana can be separated into small juvenile drum (<27 inches), and adult or "bull drum" (>27 inches). Both markets differ in terms of operation and markets. The inshore fishery generally operates coast-wide and targets all marketable size drum. In the adult fishery, which operates mainly east of the Mississippi River, more than 90% of the catch consisted of large drum targeted during the spring and summer months by haul seines and strike-gill nets. In recent years the majority of black drum are targeted and landed west of the Mississippi River. Significant numbers of large drum are also trawl caught, offshore in federal waters during the winter months.

3.3 Fishery Management 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 measured¹⁶.

As with all US 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 (and the judicial). The legislative branch is the Louisiana State Legislature where representatives are elected to a bicameral institution which constitutes the law-making body of the state. It can enact statutes concerning all and any aspects of fisheries in State Waters.

Together with the Louisiana Department of Wildlife and Fisheries (LDW&F), the Louisiana Wildlife and Fisheries Commission (LWFC) 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 LWFC 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 LWFC to carry out certain fisheries management activities, or in some cases, it restrains what these agencies may do. All laws respecting management of the State's fisheries that have been enacted over the years are contained in a wide, and often dis-jointed, array of statutes under Title 56 of the Louisiana Revised Statutes.

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 Louisiana Wildlife and Fisheries Commission is a policy decision-making body but it also can set opening times for specified fisheries and conducts adjudicatory hearings on licence suspensions or sanctions. Its decisions can 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 Louisiana Wildlife and Fisheries Foundation 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.¹⁷ The Louisiana Seafood Promotion & Marketing Board (LSPMB) 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.¹⁸ The Board is composed of members appointed by the Governor representing different sectors of the industry.

The general approach to fisheries management in Louisiana is based on the use of legislative statutes under Title 56 of the Revised Statutes of Louisiana and administrative regulations under Title 76 of the Louisiana Administrative Code. It appears that the management arrangements for many fisheries change little over long periods of time. Annual, or even short term, adjustments are limited and few.

3.4 Stock Assessment Methods and Practices

A table summarizing the stock assessment methods and practices where applied.

Fishery	Main activities of stock assessment and practices
Shrimp	While there are annual stock assessments conducted for white and brown shrimp in federal waters, corresponding stock assessment for Louisiana inshore waters are not conducted and as such there are no reference points established currently for the Louisiana inshore shrimp fishery. The LDFW 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. Therefore, there is an absence of assessment data that provides evidence of stock maintained at levels above the point where recruitment would be impaired. 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. If current regulations were consistent with federal regulations this could 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.
Crawfish	The LDW&F manages the Louisiana crawfish fishery by requiring a commercial fishing license for all participants, but there are no restrictions on the number of traps, length of traps, trap tags, trap removal, natural or artificial baits, minimum or maximum size of crawfish, sex, quotas, daily take, or possession limits for crawfish taken under a commercial license. There are also no restrictions on the seasons, day or night fishing under a commercial license. There are no stock assessments, and although landings data is collected on the fishery through the trip ticket system, it appears that there is no distinction made between the two species in the data. There appears to be no clear harvest strategy and dockside market demand limits the fishery, and at present protects the resource for possible over-exploitation. However, it should be noted that this resource is very prolific, and years of very low catches related to low availability due to low river water levels and resulting limited habitat, are followed by years of very high catches due to high availability due to high river water levels and increased habitat availability. It could be argued that stock assessments or harvest

	<p>forecasts are not required, but if demand were greater, and exploitation increased, there are no statutory or regulatory mechanisms in place to control fishing mortality, so as to protect the spawning resource from over-exploitation, if required.</p> <p>The management system has not selected any formal reference points for the fishery and it appears that there are no generic or proxies promoted as potential use. In their absence, it may be possible to select appropriate proxies for both or one of these as an indicator of stock size in relation to the fisheries. The stock is very sensitive to environmental conditions and this may be stronger determinant of stock recruitment and size than the fishery.</p>
Catfish	<p>The LDF&W manages the Louisiana catfish fishery by requiring a commercial fishing license for all participants, but there are no restrictions on gear types, or the amount of gear used for catfish taken under a commercial license. There are also no restrictions on the seasons, day or night fishing under a commercial license. There are no stock assessments, and although landings data is collected on the fishery through the trip ticket system, there is may be no distinction made between the three species in the data. There appears to be no clear harvest strategy, and to protect juvenile immature fish with a minimum fish size regulation that is adjusted to the particular species of catfish to ensure that 50% recruits to the fishery spawn once before being landed. At present there are no statutory or regulatory mechanisms in place to control fishing mortality and protect the spawning resource from over-exploitation should that become necessary. The existing fish size limits are intended to ensure that 50% of the recruits to the fishery spawn once before being caught. Landings data by species or other fishery dependent data have not been compiled for this fishery, nor is there any formalized collection and use of fishery independent data. Therefore, there is no monitoring of the status of the Louisiana inshore catfish stocks.</p>
Black Drum	<p>The Marine Fisheries Division of LDW&F develops management recommendations for Louisiana’s black drum resources through an ongoing systematic sampling and monitoring program which utilizes a variety of gear types designed to provide technical data on population dynamics and associated hydrological and environmental conditions. This has resulted in an extensive and continuous coast-wide fishery-independent data set since 1986.</p> <p>The following sampling activities are conducted year-round:</p> <ul style="list-style-type: none"> • Monitoring phase - conducted year-round at designated sampling stations in inshore and beach areas • Over 2,560 samples collected annually throughout Louisiana’s 7 major bay systems • Hydrological (conductivity, salinity and water temperature) data are collected in conjunction with each sample • Additional hydrological data transmitted from data collection

	<p>platforms located in remote coastal areas are additionally utilized¹⁹.</p> <p>Additional information on harvest comes from statewide sampling programs that monitor ages and sizes of fish harvested in the recreational and commercial fisheries through dockside surveys.</p> <p>There is a legislated target for management of Black Drum: the maintenance of a Spawning Potential Ratio (SPR) of 30% for the stock in Louisiana State waters. If that target is not met the fishery must be closed for one year. This appears close to being part of the precautionary approach. Since introduced in 1995, the SPR targets have been very easily met each every year.</p>
Oyster	<p>Clear stated harvest strategies have not been established at present. While there are seasonal restrictions on fishing, there is no catch quota, and fishing on public grounds is open access. There are annual stock assessments, based on considerable sampling effort, that summarize both landings and estimated stock size in terms of seed and sack or market size oysters. At the present time (2011) the results of the 2010 oyster stock assessment indicate that oyster abundance is well below its long term average, and this situation has existed for almost a decade. The 2010 stock assessment notes one coastal study area (CSA II) where landings of market size oysters exceeded the estimated stock size, indicating 100+% exploitation rate of the fishable biomass. The oyster resource stock size is below long term average and there appears to be an absence of measures such as limit effort or set low quotas, so as to preserve the resource from over-harvest and eventual recruitment failure and initiate a stock rebuilding program.</p>

4. Proposed Units of Certification

The proposed units of certification are based on a combination of the species, the geographic region, gears and management system. All five fisheries that are the subject of this validation assessment are under the common management of the LDW&F and within Louisiana State waters.

Species	Regions	Gears	Management System
Brown Shrimp White Shrimp	Louisiana State waters to 3nm	Butterfly net Otter Trawl Skimmer net	This Fishery is managed under the Louisiana Department of Wildlife and Fisheries (LDW&F) within the 3nm state waters.
American Oyster	Public Oyster State Grounds Louisiana State waters to 3nm in specific regions.	Dredge	
Black Drum	Louisiana State waters to 3nm	Otter Trawl Butterfly Net, Skimmer Net, Trot/Set Line	
White River Crawfish Red Swamp Crawfish	Louisiana State waters to 3nm	Crawfish Trap	
Channel Catfish Blue Catfish Flathead Catfish	Louisiana State waters to 3nm	Nets (Hoop nets, wire nets, gill nets, trammel nets), Cans Hook and line (incl. trotline set line or limb line and stump lines).	

5. Initial Consultation Process

Following engagement for this project Global Trust hired dedicated and qualified professional assessors to ensure the best possible analysis and outcomes. Following preliminary research and planning activities a series of consultation meetings were held in Baton Rouge from November 9-11, 2010.

Global Trust was represented at these meetings by Mike Rose and Eric Dunne. The process was open and exploratory with separate sessions for each of the five fisheries under review. This resulted in approximately half day per fishery, although some species, such as shrimp, required additional time for discussion. Each sessions typically began with an overview of Global Trust's role and the purpose of the meetings, plus an issue-by-issue analysis (aided by PowerPoint overviews) of the key issues that must be addressed regarding certification processes.

The strength of these consultation sessions was the direct and open participation by the key LDW&F management and science staff. LDW&F provided their full attention to the discussions on each fishery and ensured the participation of their in-house experts for each fishery. Various LDW&F staff, especially senior biology managers, participated over the three days of meetings, including: Mark Schexnayder; Jason Froeba; Jody David; Michael Walker; Patrick Banks; Joe West; Bobby Reed; Andy Fischer; Lucy Beaty, Rene Lebreton; and others. Each meeting consisted of a detailed review of the fishery management practices. The contributions of the LDW&F experts were invaluable but not limited to the Baton Rouge meetings. Following the November consultation process Global Trust reassessed its understandings and determined where additional information would be required. This resulted in a detailed set of additional questions being sent to the LDW&F for review and comments by their expert teams which were sent back to the Global Trust assessors. This consultation process was instrumentally important for the completion of this validation report.

6. FAO Conformance Criteria

This report is an initial assessment performed on five Louisiana fisheries. The comments that follow are based on the review against the FAO Conformance Criteria's- Fundamental Clauses derived from the FAO Standards (FAO Code of Conduct for Responsible Fisheries and FAO Guidelines for the Eco-labeling of Fishery Products from Marine Capture Fisheries).

The report provides an initial evaluation of the strengths in the fishery management system for each fishery and then gaps that would require addressing in order fulfil the requirements for certification. It is stressed that the gaps may arise for several reasons and are not presented to suggest that the fisheries are not sustainable. More so the FAO assessment requires that

substantial information is available in order that the evidence of responsible management can be measured against each clause of the FAO Standards. Where there is insufficient information to document a high compliance to the clause this is stated. However, a lower confidence rating does not automatically mean that the management system is insufficient. It may relate to insufficient information being available for that particular clause.

However, to achieve certification a fishery must not only be well managed to modern standards as implicit in the FAO CCRF but must be seen to be so managed. In those circumstances, the existence of data, information and documentation that substantiates the positive effects or outcomes of the fishery management activities against the relevant standard are crucial. It is also appreciated, that preparation of such material for assessment requires resource allocation by fishery clients which may not always be at disposal during the validation stage of an assessment.

In full assessment, all non conformances arising from low or medium ratings would be addressed before certification can be awarded. Corrective actions may be proposed and accepted by the appointed assessment team and reviewed by certification oversight which is then implemented over an acceptable period of time. The time period is dependent on the nature and extent of the original non conformity. This is most likely where original non conformances are minor. Surveillance audits are then used to assess the progression and implementation of corrective actions. Where several major non-conformances arise, it is unlikely that certification will be awarded until corrective actions are completed or substantial progression in their implementation has taken place.

A summary of the outcome of the validation assessment is provided. Based on the level of detail permitted through validation assessment, it appears that the wild oyster and black drum fisheries may need to make the fewest improvements (relatively) in overall management arrangements to create the conditions for conformance validation.

FAO Based Conformance Criteria

The validation assessment was conducted according to the Global Trust procedures for FAO-Based RFM Certification in accordance with EN45011/ISO/IEC Guide 65 accredited certification procedures. The assessment is based on the criteria specified in the Food and Agriculture Organization of the United Nations (FAO) 1995' Code of Conduct for Responsible Fisheries and the minimum criteria set out for marine fisheries in the FAO Guidelines for the Eco-Labeling of Fish and Fishery Products from Marine Capture Fisheries (2005/2009), hereafter referred to as the FAO Criteria.

The assessment is based on 6 major components of responsible management derived from the FAO CCRF and Guidelines for the Eco-labeling of products from marine capture fisheries.

- A. The Fisheries Management System**
- B. Science and Stock Assessment Activities**
- C. The Precautionary Approach**
- D. Management Measures**
- E. Implementation, Monitoring and Control**
- F. Serious Impacts of the Fishery on the Ecosystem**

These six major components are supported by 14 fundamental clauses which in turn are sustained by 96 sub-clauses. Collectively, these form the FAO Conformance Criteria against which a fishery applying for RFM certification is assessed. For validation assessment purposes, only the top 14 fundamental clauses are used to perform the evaluation.

Validation assessment does not provide a deep analysis as would be performed during full assessment conditions. As such, validation assessments can provide an overall indication of the preparedness of a candidate fishery for full assessment purposes based on a short review of the available evidence. Evidence ratings are provided as an indication of outcomes based on the evidence provided and without further analysis. For this reason, some areas are occasionally assigned intermediate ratings to indicate some evidence that higher scores might be achievable in full assessment based on the likelihood of further supporting evidence being available. Where insufficient information was available, low scores were assigned. Preparedness for assessment purposes against the FAO criteria does not necessarily mean there is an absence of responsible fisheries management. It may be a function of insufficient preparation of information, documented evidence etc. that is required to perform the assessment.

The FAO Fundamental Conformance Criteria

A. The Fisheries Management System

1. There must be a structured and legally mandated management system based upon and respecting International, National and local fishery laws and considering other coastal resource users, for the responsible utilization of the stock under consideration and conservation of the marine environment.
2. Management organizations must participate in coastal area management related institutional frameworks, decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and the avoidance of conflict among users.
3. Management objectives must be implemented through management rules and actions formulated in a plan or other framework.

B. Science and Stock Assessment Activities

4. There must be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.
5. There must be regular stock assessment activities appropriate for the fishery resource, its range, the species biology and the ecosystem and undertaken in accordance with acknowledged scientific standards to support optimum utilization of fishery resources.

C. The Precautionary Approach

6. The current state of the stock must be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and target. Remedial actions must be available and taken where reference point or other suitable proxies are approached or exceeded.
7. Management actions and measures for the conservation of stock and the aquatic environment must be based on the Precautionary Approach. Where information is deficient, a suitable method using risk assessment must be adopted to take into account uncertainty.

D. Management Measures

8. Management must adopt and implement effective measures including; harvest control rules and technical measures applicable to sustainable utilization of the fishery, and based upon verifiable evidence and advice from available scientific and objective, traditional sources.
9. There must be defined management measures, designed to maintain stocks at levels capable of producing maximum sustainable yield.
10. Fishing operations must be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.

E. Implementation, Monitoring and Control

11. An effective legal and administrative framework must be established and compliance ensured, through effective mechanisms for monitoring, surveillance, control and enforcement for all fishing activities within the jurisdiction.

12. There must be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.

F. Serious Impacts of the Fishery on the Ecosystem

13. Considerations of fishery interactions and effects on the ecosystem must be based on best available science, local knowledge where it can be objectively verified and using a risk based management approach for determining most probable adverse impacts. Adverse impacts on the fishery on the ecosystem must be appropriately assessed and effectively addressed.

14. Where fisheries enhancement is utilized, environmental assessment and monitoring must consider genetic diversity and ecosystem integrity.

7. FAO Validation Assessment Outcome

7.1 Summary of key gaps noted during the evaluation

A. The Fisheries Management System

- A legislated requirement is needed to ensure that conservation and sustainability measures are inviolate imperatives that are based on sound scientific analysis and imposed in general conformance with the major principles of the FAO Code of Conduct for Responsible Fishing.
- Explicit, visible and formal consultative arrangements that involve participants in addressing the management of fishing activities on a regular basis must be adopted for each of the five fisheries.
- An explicit and approved management framework document must be prepared for each fishery that specifies such details as a science-based assessment of the current status of the resource, the conservation and sustainability objectives adopted for the fishery, the harvest controls and related measures that are used to achieve these objectives, input from the consultative activities used as well as an indication of enforcement priorities for each fishery. These framework documents should focus on management of the fishing activities and be subject to annual consultation, updating or confirmation.
- The greatest overall obstacle to explicit implementation of any of these management objectives is the lack of a legislated overarching fisheries conservation and management imperative that would require a cohesive approach to fishery management involving explicit adoption of, and adherence to, sustainable fishing policies and practices. Consequently, the overall management system is not bound to base decisions on fishery

management measures on the results of any formalized cohesive process that requires objective, independent, professional, scientific advice and information.

B. Science and Stock Assessment Activities

- The existing fishery data collection activities for all five fisheries may need to be re-oriented or if available, presented in a format that focuses on the types of fishery dependent and independent data available. This data should be analysed so as to allow for proper monitoring and evaluation of the resource being exploited. (N.B some of these activities are already being carried out for oyster and black drum and other fisheries to a lesser extent, but these also need some expansion). These data collection activities should also consider the inclusion of data to quantify the bycatch, discards and endangered species effects of each of the five fisheries.
- Stock assessments or other scientifically-acceptable evaluations that are appropriate for monitoring and quantifying the status of the resources being exploited should be conducted for each fishery on an appropriate cycle. In the case of catfish and crawfish these assessments/evaluations must specifically and objectively address the scientific suitability of the current management parameters and measures in maintaining these stocks at acceptable spawning biomass levels that avoids resource over-exploitation. The oyster and black drum assessments may need to be expanded to include evaluation of current biomass levels and rates of exploitation. In the case of shrimp, adoption of the federal stock assessment and the indicated management measures might be sufficient to demonstrate conformance with the FAO Standards.

C. The Precautionary Approach

- A precautionary approach to fishery management as described by the FAO Standards is a pre-requisite for certification. Therefore, the forms of precautionary approaches that would be suitable and justifiable for management of each fishery must be investigated in the context of the biological characteristics of the species involved. Suitable reference points, related proxies or verifiable substitutes should be examined and designed for each fishery. It may not be necessary, as is the case with many well managed fisheries for traditional and explicit target and limit reference points to be available for consideration of a precautionary approach as this the case in the candidate fisheries. However, the fishery management system must be able to demonstrate a

clear management approach that can be proven to be precautionary in order to meet assessment requirements.

- Appropriate management and related measures should be developed and adopted based along the approach of the precautionary principle that is determined to be acceptable for each species. These must be such that they can be demonstrated to bring a high likelihood of mitigating against potential risks of impacts of serious concern; either to the target stocks or components of the ecosystem.

D. Management Measures

- The various harvest controls and associated technical measures currently used in each fishery should be reviewed and evaluated using accepted scientific procedures to document the extent to which they are achieving sustainable utilization of the resource.
- New harvest controls and technical measures should be evaluated and implemented to support current ones and those determined to be inadequate for conservation and sustainability.
- The suite of management measures used in each fishery should be formally evaluated to determine the extent to which they are maintaining the exploited stocks at sustainable levels. In this context, the open access approach and absence of direct effort controls would require evidence that direct effort controls are not needed to sustain these fisheries at maximum productivity.
- A documented policy that demonstrates the commitment to responsible fishing practices and with reference to delivering specific and defined objectives for each of the stocks under consideration and ecosystem components would provide for a firm basis for measuring and benchmarking progress.
- The impact of current measures such as suspending size counts for a specified period in the shrimp fisheries to prolong the fishing season may present a challenge during full assessment, unless strong documentary evidence can be presented that demonstrates that this practice does not have a detriment effect on long term sustainable use and does not negatively effect the management objectives for conservation.

E. Implementation, Monitoring and Control

- The overall monitoring, control and surveillance function that has been established to support the fishery management system in Louisiana and it appears to adequately conform to the requirements for FAO Certification. A formalized annual evaluation of fisheries enforcement activities in terms of the contribution to achieving a high level of compliance with rules and regulations was not reviewed during the assessment and

would be useful for demonstration of the effectiveness of the monitoring, control and enforcement system.

F. Ecosystem Impacts of Fisheries

- Potential ecosystem impacts should be adequately addressed and effectively assessed. There are current gaps in the information on the ecosystem impacts of the fishery. This is not uncommon in fisheries management. However, from this preliminary evaluation, there may be absences of formalized data collection, compilation and analyses which would need to be available for demonstrating the understanding of impacts and their mitigation. It would be appropriate to consider the serious risks of potential long-term, significant and irreversible impacts and assessment may be on a risk basis where data does not allow a fully empirical based approach to be taken.
- The assessment notes that the current rejection of the TED regulations that are used in Federal waters will cause a significant gap in demonstrating responsible fisheries management unless there is extremely compelling documented evidence that demonstrate them not being required, and this being universally accepted by the various management organizations and stakeholders.

7.2 FAO Validation Assessment Outcome

A The Fisheries Management System

<p>1. There must be a structured and mandated management system based upon and respecting International, National and local fishery laws, for the responsible utilization of the entire stock under consideration and conservation of the marine environment.</p>
<p style="text-align: right;">FAO CCRF Criteria Refs: 7.1.3/7.1.4/7.3.1/7.3.2/7.3.4/7.7.1/10.3.1</p>
<p>Evidence adequacy rating:</p>
<p> <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low </p>
<p>There is medium confidence that the available information indicates that the overall Louisiana fisheries management system meets all the requirements of this clause in respect of the five fisheries under review. A management system is in place for the conservation and utilization of fish resources in Louisiana state waters and therefore is applicable to all 5 candidate fisheries. The state management system is mandated through a series of structured laws and regulatory management statutes for the implementation of measures intended for managing the utilization of these fish resources by state residents and non-residents.</p> <p>As outlined above, the overall Louisiana fisheries management system is highly structured and legally mandated by an array of legislative measures contained in Title 56 of the Louisiana Revised Statutes and regulatory measures in Title 76 of the Louisiana Administrative Code. It appears to be generally consistent with national and international standards in so far as the State supports the principles of the Magnuson-Stevens Fishery Conservation and Management Act in its enforcement and fisheries management activities²⁰ and apparently also other federal management initiatives in the Gulf of Mexico.¹ The state is a member of the Gulf States Marine Fisheries Commission.²¹ The management system does not restrict entry to fishing by residents or non-residents, provides some independent appeal committees to deal with specific licensing decisions and a general provision for appeals to the LWFC in cases where these other appeals are unsatisfactory or where licence suspensions or similar sanctions are considered unfair or in error.</p> <p>The overall legal and associated government framework supporting the Louisiana fishery management system should be technically capable of achieving responsible utilization of these five species fisheries. However, there is insufficient evidence at this time that it utilizes, or adheres to modern fish stock, habitat and ecosystem management objectives, approaches and principles that are required to demonstrably prove that fish stocks and their habitat and</p>

¹ Except enforcement of the TED/BRD rules in State waters.

ecosystems are being managed in a manner that provides for responsible resource utilization and marine conservation. A primary gap in the system appears to be that there is no overarching fishery conservation and management based legislation that explicitly requires the adoption of, and adherence to, clear and concrete sustainable fishing policies and practices. Additionally, some measures have been legislated that may be construed as having a negative impact on conservation in intent or result; the most notable being the prevention of TED/BRD device enforcement and prohibition on using a shrimp count size rule from mid-October to mid-December.

2. Management organizations must participate in coastal area management related institutional frameworks, decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and the avoidance of conflict among users.

**FAO 7.1.1/7.1.2/7.4.1/7.4.2/12.3
FAO Eco-labeling Guidelines 29.2/29.4**

Evidence adequacy rating:

High

Medium

Low

There was insufficient evidence available that sufficiently indicates formal coastal area management and establishment of related institutional frameworks in the Louisiana fisheries management system. While there have been a variety of Task Forces and advisory committees in the various State fisheries, there are few or only emerging fora that may undertake the institutional frameworks and decision making processes prescribed in Criteria 2. However, the meetings of the Wildlife and Fisheries Commission are open to the public and allow fishermen and others to present proposals or requests directly to the Commission in the time allowed for public input near the end of the meetings and further evidence of the effectiveness of this process would provide a basis for a higher evaluation. At a fishery specific level, there are few species/fisheries advisory committees across the 5 candidate fisheries that may address fishery management issues, review stock status, propose adjusted or new management measures and generally keep the management of the fishery under regular review. The availability of further evidence of the outcome of the existing processes may support a higher evaluation outcome.

There is very little evidence that Coastal area management is actively engaged in or encouraged, although the LDW&F 2008/09 Annual Report refers to the review of coastal use permits within the public oyster seed grounds and of habitat projects²².

From a general sense, further evidence of consultative and decision-making processes and activities that actively support sustainable and integrated use of living marine resources and the avoidance of conflicts amongst users would be required before all 5 fisheries proceed.

However, that is not to say that in certain cases, the potential fora for undertaking these activities are not in existence. Current bodies usually consist of industry and government representatives and advise the Legislature, the Wildlife and Fisheries Commission or the Department on matters relating to development and promotion of the fishery sector involved; fishery and coastal area management issues are usually not the primary focus of these bodies.

The current status as of Q1 2011:

- A Crawfish Task Force still exists but apparently, meets infrequently and meetings are seldom attended by harvesters².
- There are 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.

There were no formal consultative arrangement for catfish and black drum noted at the time of the validation assessment.

3. Management objectives must be implemented through management rules and actions formulated in a plan or other framework.

FAO 7.3.3/7.2.2

Evidence adequacy rating:

High Medium Low

The Louisiana Revised Statute Title 56 contains several parts or sections that can be taken to establish a range of overall and long-term objectives for management of fisheries. These include the following statement of objectives of 1978 in relation to seafood industries in the context of underutilized species:

“It is the policy and purpose of this Sub-part to provide every method of encouragement and assistance to the commercial fishermen of the state of Louisiana, to protect a culture and heritage that is unique to Louisiana, to prevent unemployment of Louisiana citizens, to assure adequate food for Louisiana citizens and to provide for economic stability in those areas of Louisiana so dependent on the seafood industry. To that end, the state shall foster and encourage its seafood industries.” (56:571A).

² Response from LDW&F on Crawfish follow-up questions.

In the case of marine finfish management (56:638.4) its policy in 1991 was stated:

“Stewardship of the state’s saltwater finfish resources shall have as its utmost concern the continued health and abundance of the resource and its environs, shall provide for the optimum sustained benefits to the state, shall be responsive to the needs of interested and affected citizens, shall ensure the proper and fair utilization of these resources for the citizens of the state in present and future generations, shall preserve the state’s exclusive right to manage the fisheries within or beyond its jurisdiction and shall be based on the best scientific information available.”

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 a 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;
- 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.”*

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.**”

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.”

The legislative framework for the implementation of policy for the overall, long-term sustainable utilization of Louisiana state managed fisheries appears appropriate for meeting the broad requirements of the clause in general. However, at the fishery specific level, apart from the 30% SPR requirement for the black drum fishery there appears to be no official management objectives for the other fisheries that corresponds to the implementation of the overall framework policy.

There is an absence of formal approved fishery management plans or frameworks for individual fisheries that include considerations as current stock status, specific fishery objectives, consultation arrangements and results, current management measures, research needs, enforcement priorities and management review provisions.

However, a variety of fisheries management objectives exists at different places in the overall management system which may form the basis for more formal fisher specific plans but currently, further evidence would be required to meet clause 3.

B Science and Stock Assessment Activities

4.. There must be effective fishery data (dependent and independent) recording, reporting and analysis for stock management purposes.

FAO 7.4.4/7.4.6/8.4.3/12.4
Eco-Label Guidelines 29.1

Evidence adequacy rating:

High **Medium** **Low**

In general, there is an overall low to medium level (depending on fishery) of confidence that the available information indicates the fisheries meet the requirements of this clause. The evidence is summarized for each fishery.

Black Drum (medium)

The Marine Fisheries Division of LDW&F develops management recommendations for Louisiana’s black drum resources through an ongoing systematic sampling and monitoring program which utilizes a variety of gear types designed to provide technical data on population dynamics and associated hydrological and environmental conditions. This has resulted in an

extensive and continuous coast-wide fishery-independent data set since 1986.

The following sampling activities are conducted year-round:

- Monitoring phase - conducted year-round at designated sampling stations in inshore and beach areas
- Over 2,560 samples collected annually throughout Louisiana's 7 major bay systems
- Hydrological (conductivity, salinity and water temperature) data are collected in conjunction with each sample
- Additional hydrological data transmitted from data collection platforms located in remote coastal areas are additionally utilized.¹⁹

Sampling gears include 50' beach seines, experimental gillnets, trammel nets, and 16' flat otter trawls. Additional information on harvest comes from statewide sampling programs that monitor ages and sizes of fish harvested in the recreational and commercial fisheries through dockside surveys. The evidence available presents a 'good' medium level of confidence that that there is effective fishery data recording and reporting in place.

Catfish (low)

The assessors could not find evidence of compilation of landings data by species for this fishery nor other fishery dependent data in any formalized collection sense. Evidence of an effective monitoring of the status of the Louisiana inshore catfish stocks would need to be demonstrated to meet the requirements of clause 5 for this fishery.

Crawfish (low)

Landings data by species or other fishery dependent data have not been compiled for this fishery, nor is there any formalized collection and use of fishery independent data. Evidence of an effective monitoring of the status of the Louisiana crawfish stocks would need to be demonstrated to meet the requirements of clause 5 for this fishery.

Oyster (medium)

Louisiana has a well developed system to collect information of the status of the oyster stock and to monitor landings. The status of the oyster resource is evaluated annually in seven Coastal Study Areas using accepted fishery independent sampling procedures. Landings data are collected from the state's Trip Ticket data reporting system. The fishery independent survey data and fishery dependant landings data are summarized in the annual stock assessment but that only forecasts likely abundance for the upcoming season. There is a medium level of confidence that there is an effective fishery data recording, reporting system in place for stock

analysis and management purposes.

Shrimp (low)

There appears to be no separate data on landings of shrimp taken specifically within state waters. There is fishery independent survey of the federal fishery which may be useful in providing a basis for the monitoring of shrimp within the State water complex although currently, it is not explicit how this data and information is used.

As indicated above, except for Black Drum and Oyster, there is no formalized collection and effective use of dependent and independent fishery data. In the case of Black Drum and Oyster such data are recorded, reported and/or analyzed in the context of the stock management measures which are applied to these species. A TAC is used for black drum only (first set in 1990 and unchanged since then). No such activities take place for the other three fisheries. The Trip Ticket system would appear to be an untapped source of fisheries dependent data that could be further utilised in this context.

5. There must be regular stock assessment activities appropriate for the fishery resource, its range, the species biology and the ecosystem and in accordance with acknowledged scientific standards to support optimum utilization of fishery resources.

FAO CCRF: 7.2.1/12.2/12.5/12.6/12.7/12.17

Evidence adequacy rating:

High

Medium

Low

There does not appear to be regular stock assessment activities carried out for each of the candidate species. The stock assessment of Black Drum could be considered close to the type of stock evaluation that could be used to support management measures in support of optimum utilization of resources. There are also assessment activities carried out on oyster stocks which could provide sufficient feedback of management practices. In addition, there are a number of data sources available to management which could be further explored and form the basis of undertaking an assessment of the status of stocks in relation to fishing.

Black Drum (Medium)

The LDW&F conducts an assessment of the black drum stock found in state waters. This was a biennial assessment that now will be conducted every five years. These stock assessment reports may not be available for general public review. The primary of this stock is to determine

if the SPR target is being met.

Catfish (Low)

There are no stock assessments conducted on the resources exploited by this fishery. Consequently, there is no monitoring of the status of the Louisiana catfish resource. There are no statutory or regulatory mechanisms in place to control fishing mortality and protect the spawning resource from over-exploitation should that become necessary.

Crawfish (Low)

There are no stock assessments conducted on the resource exploited by this fishery. Consequently, there is no monitoring of the status of the Louisiana crawfish resource. It could be argued that stock assessments or harvest forecasts are not required due to spawning potential and habitat availability, but if exploitation were to increase, there are no statutory or regulatory mechanisms in place to control fishing mortality and protect the spawning resource from over-exploitation.

Oyster (Medium)

There are annual stock assessments that give forecast estimates of seed and sack sized oyster abundance. However, the assessments do not currently estimate exploitation rates nor any reference points to which estimated annual stock abundance and exploitation rates could be compared for the effective precautionary management of the fishery. Therefore, no statutory or regulatory mechanisms exist to control fishing mortality and protect this resource from over-exploitation.

Shrimp (Low)

The State does not conduct stock assessments on the resource that is prosecuted by the fishery in its waters. The stocks of white and brown shrimp harvested in the inshore Louisiana fishery cannot be distinguished from those in federal waters where annual stock assessments are conducted. However, the Louisiana shrimp fishery regulations are not consistent with federal ones which would be more appropriate if the Louisiana inshore fishery were to be considered a subset of the federal waters fishery. Therefore, no statutory or regulatory mechanisms exist to control fishing mortality and protect this resource from over-exploitation in state waters.

C. The Precautionary Approach

6. The current state of the stock must be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and targets. Remedial actions must be available and taken where references points or other suitable proxies are approached or exceeded.

FAO CCRF 7.5.2/7.5.3

Evidence adequacy rating:

High

Medium

Low

Based on the information outlined above, there is low confidence that the adequate information is available to meet this clause for the catfish, crawfish and shrimp fisheries. With the possible exception of black drum and oyster, the data that would be required to calculate appropriate reference points for stocks to allow for effective management may not currently be readily available. Consequently, remedial actions have not been designed relative to limit or threshold reference points to correct unsatisfactory conditions that may develop in these fisheries.

Reference Points/Remedial Actions

Black Drum (Medium)

There is a legislated target for management of Black Drum: the maintenance of a Spawning Potential Ratio (SPR) of 30% for the stock in Louisiana State waters. If that target is not met the fishery must be closed for one year. This appears close to being part of the precautionary approach. Since introduced in 1995, the SPR targets have been very easily met each every year.

Catfish, Wild Caught (Low)

Reference points or control rules are not established for the Louisiana catfish fishery. There is insufficient evidence at this time of analysis of landings data by species, surveys or stock assessments of the resource that could be used to set reference points. There are no management measures in place to limit fishing mortality in this fishery if it were determined to be required.

Crawfish, Wild Caught (Low)

Reference points or control rules are not established for the Louisiana crawfish fishery and no evidence of the assessment of landings data by species or stock assessments of the resource are conducted. There are no management measures in place to limit fishing mortality in this fishery if it were determined to be required.

Oyster (Low)

While the annual stock assessments produce estimates of likely landings and estimated stock size there appears to be no attempt to actively manage or control harvesting if stock abundance is below the long term average (or any other level). Oyster abundance currently appears to be at a low historical level, but no apparent effort is being made to actively manage harvesting effort or restrict the fishery removals. In other words, no reference points or relevant proxies are calculated to guide management of this resource and no specific measures are in place to limit fishing mortality in this fishery if it were determined to be required.

Shrimp (Low)

The stocks of white and brown shrimp harvested in the inshore Louisiana fishery are indistinguishable from those in federal waters. While the latter are assessed annually no corresponding stock assessments are conducted for Louisiana inshore waters and data on landings of shrimp taken specifically within inshore waters may be insufficient to conduct such analyses. There were no reference or related proxy points available during the validation activities to guide management of this fishery and it appears that no specific measures are in place to limit fishing mortality in this fishery if it were determined to be required.

7. Management actions and measures for the conservation of stock and the aquatic environment must be based on the Precautionary Approach. Where information is deficient a suitable method using risk assessment must be adopted to take into account uncertainty.

**FAO 7.5.1/7.5.4/7.5.5
ECO 29.6/32**

Evidence adequacy rating:

High Medium Low

There was insufficient evidence available that management actions are based on the precautionary approach and that risk assessments are performed where data is deficient to take uncertainty into account. The data available in the Trip Ticket system may provide a basis for improved knowledge of stock status.

Black Drum (Low to Medium)

Black drum is subject to catch quotas and a legislated target for management: the maintenance of a Spawning Potential Ratio (SPR) of 30% for the stock in Louisiana State

waters. If that target is not met the fishery must be closed for one year. This appears close to being part of the precautionary approach. Since introduced in 1995, the SPR targets have been very easily met each. It is uncertain, if the situation has arisen to test the implementation of the rule so that if the fishery were approaching this target point the annual TAC would be adjusted downward as a first measure.

Catfish, Wild Caught (Low)

The existing fish size limits are intended to ensure that 50% of the recruits to the fishery spawn once before being caught. Otherwise, the catch by commercial fishermen is largely unrestricted. A commercial fishing license is required to fish catfish commercially but is not limited. There are no restrictions on the amounts of approved gears used. There are no restrictions on seasons or on day or night fishing. There is insufficient information available that can demonstrate that such an open fishery, without high level of knowledge of the stock status can be considered a precautionary approach as there appears to be no documented assurance the spawning stock is protected from possible over-exploitation. Also, there are no measures to limit fishing mortality should that be required.

Crawfish, Wild Caught (Low)

All participants in the Louisiana crawfish fishery require a personal commercial fishing license, which is not limited. There are no restrictions on the number and length of traps, trap tags, trap removals, natural or artificial baits and the size or sex of crawfish taken. There are no total catch quotas, daily take, or possession limits for commercial crawfish fishing. There are also no restrictions on fishing seasons or day or night fishing. Currently, market demand limits the fishery, and appears to protect the resource for possible over-exploitation. This is a very prolific resource, with years of very low catches immediately followed by years of very high catches. All this is the result of changes in annual availability related to river water levels and the resulting changes in crawfish habitat. It could be argued that stock assessments or harvest forecasts are not required and harvests could be linked to habitat availability in any one season, but if exploitation were to increase, there appears to be no statutory or regulatory mechanisms in place to control fishing mortality and protect the spawning resource from over-exploitation.

Oyster (Low)

The management strategy for this fishery remains a combination of open access on public grounds and lease arrangements for other areas (there is currently a moratorium on issuing new leases and Oyster Seed Ground Vessel Permits). Fishery and gear licences are required and seasonal fishing restrictions also exist. There is no catch quota but there is a minimum shell size for oyster caught on public grounds coupled with minimum size and number limits

on dredges. The season for public grounds is usually closed when the catch per day falls below a specified level; (although commercial harvesting has usually stopped by then). There is no documented evidence that this approach is protecting this resource from overexploitation.

A precautionary approach for this fishery could be orientated to place limits on effort or catch quotas if the oyster resource stock size fell below some pre-determined scientifically justified level. This would then preserve the resource from over-exploitation and potential recruitment failure.

Shrimp (Low)

Personal, fishery and gear licences are required to fish shrimp commercially. Participation in the fishery is open access. The only limit on effort is through the restrictions on the numbers and sizes of trawls that can be towed at one time. There are size count limitations but these are prohibited by statute from being enforced from mid-October to Mid-December, thus preventing closure of the fishery during that time period. Management of this fishery in State waters has inconsistencies with measures for the fishery in federal waters where there are stock assessments, a formal harvest strategy and regulations to limit fishing mortality. There is no documented evidence that the state’s management approach is precautionary with respect to protecting the shrimp stocks in its waters from overexploitation.

D. Management Measures

8. Management must adopt and implement effective measures including; harvest control rules and technical measures applicable to sustainable utilization of the fishery, and based upon verifiable evidence and advice from available scientific and objective, traditional sources.

FAO: CCRF 7.6.1/7.6.9
Eco-Label 30

Evidence adequacy rating:

High Medium Low

Based on the information outlined in Section C on the current evidence of the measures implemented, there is low confidence that the information indicates any of the five fisheries would meet the overall requirements of this clause. The harvest controls and technical

measures vary somewhat by fishery but they are essentially open access, indirect effort controls with only one fishery under a catch quota. Market demand (catfish and crawfish), appears to provide the basis for limitation on exploitation levels. Except possibly for black drum, there is no clear documented evidence that the current harvest control rules and technical measures for these species demonstrably provide effective mechanisms in achieving sustainable utilization of each fishery. Similarly, there was relatively little evidence available that demonstrates that up-to-date scientific and objective information, whilst may be available, is used in the evaluation of management measures and control rules.

Black Drum (Low to Medium)

The Marine Fisheries Division of LDW&F develops management recommendations for Louisiana's black drum resources through an ongoing systematic sampling and monitoring program which utilizes a variety of gear types designed to provide technical data on population dynamics and associated hydrological and environmental conditions. This has resulted in an extensive and continuous coast-wide fishery-independent data set since 1986.

The following sampling activities are conducted year-round:

- Monitoring phase - conducted year-round at designated sampling stations in inshore and beach areas
- Over 2,560 samples collected annually throughout Louisiana's 7 major bay systems
- Hydrological (conductivity, salinity and water temperature) data are collected in conjunction with each sample
- Additional hydrological data transmitted from data collection platforms located in remote coastal areas are additionally utilized.

Sampling gears include 50' beach seines, experimental gillnets, trammel nets, and 16' flat otter trawls. Additional information on harvest comes from statewide sampling programs that monitor ages and sizes of fish harvested in the recreational and commercial fisheries through dockside surveys. The LDW&F conducts an assessment of the black drum stock as found in state waters. This was a biennial assessment that now will be conducted every five years. These stock assessment reports are available to the public.

Catfish, Wild Caught (Low)

Overall, while a considerable amount and variety of data is collected while this fishery is underway, a good deal of it does not appear to be analyzed to inform or evaluate management decisions or changes. There is no information available that indicates any formal research is conducted to provide relevant and timely information to assist catfish management. The rationale that the current fish size limits provides the opportunity for 50

percent of recruits to the fishery to spawn at least appears based on general catfish biology. There is no documented evidence that LDW&F conducts any current biological or related research on Louisiana catfish to evaluate the existing or alternative management measures.

Crawfish, Wild Caught (Low)

Similarly for crawfish, overall, there appears to be a considerable amount and variety of data collected while this fishery is underway. However, evidence of the analysis and how this data is used to inform or evaluate management decisions or changes was not available. There is no documented evidence that LDW&F conducts any current biological or related research on Louisiana crawfish to evaluate the existing or alternative management measures. The rationale that no specific active control rules are required because the resource is so prolific and resilient is rooted in general biological knowledge of this species, its habitat and the long-term history of exploitation does support this. However, more formal documented evidence and proof of this would be required and supported by precautionary measures and controls to meet the requirements of the clause.

Oyster (Low to Medium)

The status of the oyster resource is evaluated annually in each of seven Coastal Study Areas using accepted fishery independent sampling procedures. The primary purpose of the oyster stock assessment seems to be forecasting the likely abundance in the upcoming season. No TAC or exploitation rate calculations are undertaken; the oyster season is opened on a size prediction and closed when the catch per day drops below a pre-set level. However, it is uncertain if these controls are effective at ensuring the sustainable utilization of the fishery. There is no documented evidence that current biological or related research on Louisiana oysters to verify the current or alternative management measures.

Shrimp (Low)

The State does not conduct shrimp stock assessments although the GSFMC assesses stocks in federal waters. The shrimp seasons in state waters are opened on fixed dates or on a size count and closed when the catch per day drops below a certain size count limit, but the use of these is prohibited from mid-October to mid-December. Louisiana does not use the same management measures that are in effect in federal waters. There is no documented evidence that LDW&F conducts any current biological or related research on shrimp in Louisiana waters to evaluate the effectiveness of current or alternative management measures.

9. There must be defined management measures designed to maintain stocks at levels capable of producing maximum sustainable yields.

FAO CCRF:

7.1.8/7.4.3/7.6.3/7.6.6/7.6.10/8.4.5/8.4.6/8.4.7/8.4.8/8.5.1/8.5.3/8.5.4/8.11.1/12.10/12.11

Evidence adequacy rating:

High

Medium

Low

There is low confidence that the available information is adequate to meet this clause. There was no evidence available that demonstrated that management measures consider excess capacity. Open access is the norm and there is no form of direct capacity controls are applied. This may be based on social and economic factors but it is not certain that these arrangements create excess fishing capacity, under-employment of labor and capital as well as stock levels that are below the maximum that could be sustainable. This approach relies heavily on market demand to limit effort and catches at levels that do not cause over-exploitation. Measures do not include substantial input/output controls, such as limited entry and associated capacity controls, individual quota shares and few output control rules. There are no objective analyses available that fully assess this open-access approach.

9. Management Measures/Maximum Sustainable Production Levels

Black Drum (Low)

Louisiana manages the black drum fishery in its state waters using state established regulations and state produced stock assessments. Its fisheries rules apply to any fishing of black drum by its residents in the EEZ, but little directed fishing is carried out there. Legal commercial gear is limited to trawl nets, set lines and hook and line. Pompano strike nets in excess of one thousand two hundred feet in length or using more than one strike net from any vessel at any time is prohibited.

The start of the fishing year is set at September 1. The minimum legal size for commercial fishing is 16 inches in total length. Also, commercial fishermen are allowed to harvest black drum over 27 inches until the annual quota has been met. The commercial harvest limit is an annual quota of 3.25 million pounds for fish measuring 16-27 inches total length and an annual harvest quota of 300,000 fish longer than 27 inches total length. The black drum TAC has never been reached (20 years). In the absence of any other effort controls, it may raise the question whether it has any effect on the fishing activity, in spite of the SPR target.

A commercial fisherman's license, a vessel licence and a gear license for each type and unit of gear used is required to fish commercially. The fees for non-residents are several factors higher than for residents. The fishery remains open access for residents and non-residents.

A trip ticket must be recorded at the first point of sale of black drum.

Catfish, Wild Caught (Low)

Catfish are managed through size and daily bag regulations, gears and methods, expanding the natural range through introductions, enhancing natural recruitment by supplemental stocking and preserving or enhancing habitat. There are no closed seasons for any species of freshwater catfish in Louisiana waters. There are specific minimum total length sizes for each of the three catfish species but no commercial harvest limit. A commercial fisherman's license, a vessel licence and a gear license for each type and unit of gear used are required. The fees for non-residents are several factors higher than for residents. The fishery is an open access fishery for residents and non-residents. There are reporting requirements for each sale and additional licences required when a fisherman sells directly to consumers or out of state.

Crawfish, Wild Caught (Low)

The commercial crawfish sector is subject to gear, licensing and reporting requirements. There are minimum opening and mesh size measures for crawfish traps but no limits on the number or length of traps that may be used. There are also no limits on trap removals, natural or artificial baits, minimum or maximum size or sex of crawfish taken under a commercial license. There are no limits on daily or seasonal catches or possession totals. There are no season restrictions or restrictions on day or night fishing under a commercial license. A commercial fisherman's license and a crawfish trap fee are required by residents and non-residents. Licence access is open entry for both residents and non-residents. Additional selling licences are required when selling to other than fish buyers. A trip ticket must be recorded at the first point sale of crawfish. There is no analysis that assesses if these measures are capable of maintaining sustainable harvests from the fishery.

Oyster (Low)

Seasons are designated for different public oyster beds by openings or closures within specified time periods as biological data indicate. State public oyster beds (seed grounds and reservations) are generally open from the first Wednesday following Labor Day to April 30 of the following year. No public ground or reservation shall be fished for market sacks until the second Monday in October. Oysters may be fished at any time of year on leases, unless a lease is under a Department of Health and Hospitals (DHH) closure order.

All oysters taken from public grounds must be three inches or greater in length from hinge to mouth. A lessee of private oyster grounds may be permitted to take undersized oysters from public grounds for bedding purposes only. Size restrictions do not apply to oysters commercially harvested from a private lease. There are no volume limits on commercial

harvest from private leases.

Oysters may be taken from public grounds by dredges, scrapers and tongs. Dredges and scrapers shall be no longer than six feet in width measured along the tooth bar. The dredge teeth shall be no longer than five inches and there shall be no more than seven dredges in use on any one vessel. Dredges shall not be used in a manner that removes excessive non-living reef material with seed oyster loads or causes physical destruction to the natural reefs.

The use of dredges in Calcasieu and Sabine Lake is limited to a single hand dredge or a single scraper with mechanical assist that has a tooth or flat bar of no more than 36 inches in length.

Any oysters taken from the public natural reefs or the oyster seed grounds or reservations, except those in Calcasieu Lake or Sabine Lake, shall be placed only on a vessel which has been issued an Oyster Seed Ground Vessel permit.

All fishermen must obtain a Commercial Fisherman's licence, an oyster harvester license, appropriate vessel registrations and a licence for each type of oyster gear fishing gear to be used. Generally, there are no restrictions on the issuance of these licences; limited entry does not apply, except that no new Public Oyster Seed Ground Vessel Permits have been available since December 31, 2009. A trip ticket must be recorded at the first point sale of oyster. It is uncertain if these set of measures are evaluated in order to confirm their capability at producing maximum sustainable levels of oyster harvests.

Shrimp (Low)

Shrimping areas in Louisiana are divided into inside waters, those within bays and estuaries, and outside waters, which extend three miles from the shoreline into the Gulf of Mexico. Shrimp fishing in the EEZ off Louisiana is subject to the Gulf of Mexico Shrimp Management Plan of the Gulf of Mexico Fishery Management Council²³.

The minimum shrimp trawl mesh size is 1 ¼ inch mesh (stretched), except in the Vermillion Bay area during the fall shrimp season when 1 ½ inch is the minimum. There are number and size restrictions on the amount of fishing and test trawls that can be towed in inside and outside waters.

The fishing seasons for brown and white shrimp are determined by their annual life cycles and growth rates. The brown shrimp season is usually from May to July. The season for white shrimp usually runs from late August into December. Season openings and closures are based on size counts that indicate sufficient marketable shrimp are available for harvest.

There are no count limitations on any saltwater shrimp taken or in possession once the spring

season is open. The count restriction in the Fall season applies when shrimp are onboard a vessel, unless the catch was imported from another state. A Legislature-imposed ban on the possession count on white shrimp is in effect from October 15 to the third Monday in December, effectively preventing closure of fishing based on size count during that time.

A fisherman must possess a commercial fisherman's license, a vessel licence in saltwater areas and a gear license for each shrimp trawl, butterfly net, skimmer net and a one-time annual shrimp gear fee. Access to shrimp fishing in state waters is open entry. Additional selling licences are required for sales to other than fish buyers. A trip ticket must be recorded at the first point sale of shrimp. Evaluation of these measures does not appear to be undertaken with respect to providing for maximum sustainable yield.

10. Fishing operations must be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.

FAO CCRF: 8.1.7/8.1.10/8.2.4

Evidence adequacy rating:

High

Medium

Low

Based on the above, there is medium confidence that the available information is adequate to support this clause being met. There is no formal evidence that responsible fishing practices are directly promoted or of general responsible fishing training for commercial fishermen. But there is a wide variety of laws and regulations governing the conduct of most fishing operations.

Responsible Fishing Practices

As outlined in the previous section, all fishing activities require personal, vessel and gear licences. The latter include rules for permitted gear types as well as amounts and sizes that may be used in commercial and recreational harvesting. There are also seasons for some fisheries and zones where fishing cannot take place at some or all times.

A special two year apprentice licence is provided by Statute 56 for individuals who wish to enter the commercial saltwater finfish fishery. While there are a variety of environmental educational efforts undertaken by LDW&F these are generally aimed at increasing public awareness and are not specifically directed at training of fishermen. The United States Government adheres to the FAO Code of Conduct for Responsible Fishing (CCRF) but there is no clear indication that Louisiana espouses the principles of this non-binding code.

There is provision in Statue 56 for retrieval of derelict crab traps including creation of a “Derelict Crab Trap Removal Account” from licence fees; and provisions exist in Title 76 for removal of crab traps by anyone after seasons have closed. There are also a wide variety of requirements throughout Statue 56 that can be construed as contributing to orderly fishing such as limits on numbers of gear units in many fisheries, banning of commercial gear in designated refuge areas etc. There are some counter-intuitive situations such as the use of TEDs and BRDs by Louisiana shrimp fishermen even though state enforcement of the federal rules is banned by statute.

E. Implementation, Monitoring and Control

11. An effective legal and administrative framework must be established and compliance ensured through effective mechanisms for monitoring, surveillance, control and enforcement for all fishing activities within the jurisdiction.

FAO CCRF: 7.1.7/7.7.3/7.7.5/7.6.2/8.1.1/8.1.4/8.2.1

Eco-label Guidelines: 9.5

Evidence adequacy rating:

High

Medium

Low

Based on the information outlined above, there is high confidence that the information available is adequate to indicate this function meets the clause. There is evidence that effective monitoring and enforcement exists to reinforce the legal framework that has been established for fishery management in Louisiana.

The specialized enforcement capability that exists in the Law Enforcement Division (LED) of LDW&F appears to be well qualified, trained and organized. It is a fully commissioned state-wide law enforcement agency with a primary role of ensuring compliance with fishery and wildlife licensing and harvesting regulations. It is organized along para-military lines for efficiency of operations, equitable enforcement and use of available resources. The LED is headed by a Colonel who has two Lt. Colonels reporting to him. The state is divided into nine enforcement regions, each headed by a Captain who commands two-three district supervisors of Lieutenant rank. The Law Enforcement Division also has five specialized units: the Special Investigations Unit, the Special Operations Section, the Statewide Strike Force, the Oyster Strike Force and the Aviation Section. The first three deal with such issues as illegal sales of fish and wildlife, license fraud, smuggling, interstate commerce violations, mis- or non-reporting of fish catches, harvesting oysters in closed areas, stealing from oyster leases etc²⁴. The LED enters into annual joint enforcement agreements with NOAA to patrol for compliance with federal commercial and recreational fishing regulations, mainly in the Gulf of

Mexico³.

The wildlife agents within the LED who are primarily responsible for enforcement of oyster regulations are the members of the Oyster Strike Force (OSF)²⁵. This small unit is made up of agents from the coastal areas of the state who concentrate their enforcement efforts in the state's prime oyster growing waters. The OSF is funded in part by oyster harvester license fees collected by the department.

In the Oyster fishery, the responsibility for monitoring and enforcement of the health-related rules and regulations governing water quality, harvest methods, refrigeration, transportation, processing and packing rests with both the Louisiana Dept. of Health and Hospitals (LDHH) and LDW&F's Law Enforcement Division. The primary responsibility of LED is to patrol oyster growing areas. When waters are closed to harvest due to unacceptable levels of pollution or due to natural events such as toxic algae blooms, it is LDW&F's responsibility to enforce the closure.

Wildlife agents patrolling oyster waters must also see that other regulations pertaining to oysters are enforced. These regulations include tagging requirements, refrigeration, size restrictions, harvest hours, required licenses and gear regulations. In addition to these regulations, wildlife agents must protect oysters from theft. Much of Louisiana's prime oyster growing waters are under lease to oyster farmers who invest significantly in this oyster crop through seeding and overall management.

Fishery managers appear satisfied with the results achieved in enforcement of fisheries management measures generally. The LED will, in consultation with fishery managers, re-deploy staff to meet specific fishery management requirements, for example, monitoring opening and closing times for major fisheries. The view expressed by all managers during the Site Visit was that there is no systematic non-compliance with various fisheries rules and regulations.

12. There must be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.

FAO CCRF: 7.7.2/8.2.7

Evidence adequacy rating:

High

Medium

Low

Based on the above, there is high confidence that the available information is adequate to indicate the requirements of this clause are being met. There is clear evidence that a significant sanctions framework exists to effect compliance with fisheries laws.

12. Sanctions

Title 56 provides for an escalating system of penalties and sanctions for fishing infractions that involves classification of offences into Classes One to Eight with increasing levels of penalties prescribed, including imprisonment, for each successive offence. There are also a variety of licence suspensions provisions within the escalating sanctions contained in Title 56. All of these sanctions and penalties appear to be considered an effective deterrent in reducing repeat violations. The view expressed by all managers during the Site Visit was that there is no widespread non-compliance with various fisheries rules and regulations.

F. Serious Impacts of the Fishery (s) on the Ecosystem

13. Considerations of fishery interactions and the effects on the ecosystem must be based on best available science, local knowledge where it can be objectively verified and using a risk based management approach for determining most probable adverse impacts. Adverse impacts of the fishery on the ecosystem must be appropriately assessed and effectively addressed.

FAO CCRF: 7.2.3

Eco-label Guidelines 29.3/31

Evidence adequacy rating:

High

Medium

Low

There is generally low confidence that the available information is adequate to indicate that any of the five fisheries fully meets this clause. While there may be little negative impacts by some of the fisheries, such as crawfish and catfish, there was little evidence available, except possibly in the case of oyster and black drum, that adverse impacts of each fishery on the ecosystem are monitored, assessed and effectively addressed. Hence, there was insufficient evidence that even the possible positive cases are not adequately documented to demonstrate the facts. Evidence of the use of local knowledge in the consideration of ecosystem effects is not overtly obvious in the present overall approach. The Fish Ticket system may provide information on the environmental circumstances of the candidate fisheries, although it is not known to what extent this reporting system is currently utilized.

Most particularly, the ban on enforcement of federal TED regulations in Louisiana inshore waters despite the demonstrated evidence that sea turtles are taken in shrimp trawl fisheries will be seen as a serious lack of concern for marine conservation.

Black Drum (Low)

The Marine Fish Division indicates that observer data regarding the effects of fish trawling over mud bottom are available but were not supplied. The trawl fishery for black drum is prosecuted, generally, over less sensitive bottoms. The trot line fishery, where the majority of the commercial effort occurs, has not been examined for ecosystem effects, though some published information does exist on species distribution of bycatch.

There are peer-reviewed articles available by independent researchers regarding discarded species in relation to black drum trot lines. Currently a low rating is assigned with regard to clause 13. However, observer data and the results of reports and associated outcomes may provide additional evidence that allows a higher rating to be assigned.

Catfish (Low)

While there are LDF&W regulations to limit daily possession limits for some retained species, no data are available to evaluate the extent to which other species are retained or discarded from catfish gears. Likewise, no data have been provided to indicate if any ETP species are discarded or released from catfish gears. Diamond back terrapin turtles could be captured in catfish hoop nets or other traps. This is a protected species in some areas but Louisiana apparently has a small directed fishery for them, if not taken by traps and in other than the mid-April to mid-June period.⁴

The catfish fishery in the freshwaters of Louisiana probably has minimal negative impact on the habitat and the ecosystem, but no specific study results were available to document this conclusion.

Crawfish (Low)

While there are LDW&F regulations to limit daily possession limits for some retained species, no data are available to evaluate the extent to which other species are retained or discarded from crawfish traps.

No data have been provided to evaluate if any ETP species are captured in the crawfish traps and subsequently discarded or released. Potentially, diamond back terrapin turtle could be captured if the crawfish trap opening or funnel was large enough.

The crawfish trap fishery in the freshwaters of Louisiana probably has minimal negative impact on

⁴ Title 56, R.S 56:635

habitat and the ecosystem, but no specific study results were available to document this conclusion. There are clearly other habitat related issues that affect the Louisiana crawfish fishery and resource. The seasonal abundance of crawfish is related to river water levels; higher water levels clearly provide more habitat and greater abundance of crawfish. The ecosystem impacts of the Louisiana crawfish fishery are likely minimal. This is an annual crop of a short-lived and highly variable species, so it is unlikely that the harvest has a substantial ecosystem impact.

Oyster (Low)

The Louisiana oyster fishery is a single target species fishery harvested on oyster reefs by the traditional oyster gears: dredge, scrape and tongs. There is likely little retained catch of other organisms other than some demersal finfish and blue crabs that may be taken and retained for personal consumption. However, there are generally no data on this matter to make a final determination. For example, there is the potential for the dredge and scrape to occasionally take diamond-back terrapin turtles but without some data it is not possible to make a final determination on this issue.

The Louisiana oyster reef or bars provide excellent habitat for a wide variety of estuarine species, and, therefore, have high ecosystem value. The oyster tongs, scrapes or dredges clearly disturbs the integrity of the oyster reef, especially the towed gears. The catch with these gears includes both seed and market sized oysters and shell from the reef. The retention of oysters also results in a loss of shell material (cultch) from the reefs. The capacity for increased oyster production on Louisiana's public oyster seed grounds is largely dependent upon the amount of suitable habitat available for larval oyster attachment and oyster spat growth. Hard, clean substrate is critical to developing a viable oyster reef. The LDW&F has been depositing cultch material (mainly native shell materials) on public oyster grounds to build and enhance reefs since 1919. Louisiana experiences a shell deficit as a far greater amount of shell is removed from public oyster grounds than is returned for habitat development and enhancement. Over the long term, excess removal of shell from the reef may also reduce the reef elevation and quality, especially with rising sea-levels.

Habitat loss due to oyster fishing is potentially problematic in Louisiana and could be contributing to reduced stock abundance. The loss is due to both a lack of harvested shell stock being returned to the reefs and excessive cultch removal in the harvesting process. There appear to be no regulations on the volume of shell or cultch that can be taken as part of the oyster fishery nor a requirement to return that the shell of shucked or processed oysters to the reefs.

The Louisiana oyster fishery is a fixed bottom industry which involves private leasing of grounds, laying cultch to promote enhanced settlement of spat, some transferring of undersized oysters mainly from public grounds to private grounds, reef development and restoration, and shell recovery schemes. Public grounds may be considered as being within the scope of habitat enhancement through natural reef restoration and reef development (habitat modification). Any

modifications to habitat of the oyster stock are considered reversible in this fishery and that they do not cause serious or irreversible harm to the natural ecosystem's structure and function. Natural reef systems are highly diverse high value ecosystems. On public grounds reef restoration and development and shell recovery schemes²⁶ are established which enhance and support these ecosystems adding value rather than causing irreversible harm.

There are however no specific studies results were available to document this conclusion.

The ecosystem value of oyster reefs is high. The ecological health of the reefs and that of the oysters and other estuarine organisms are influenced by numerous climate or environmental factors and anthropogenic impacts, in addition to harvesting activity. The climatic or environmental factors include temperature, salinity, subsidence of the Mississippi delta, eustatic sea level rise. The anthropogenic factors include oil development and oil spills and the effects of water salinity and sediment input to the estuaries from the initial development and more recent openings of the Mississippi River levees.

Shrimp (Low)

The Gulf of Mexico shrimp fisheries generally only retain shrimp in accordance with count regulation and daily limits and may retain small amounts of other captured species within daily possession limits. For landings in Louisiana, trip ticket data may identify catches of non-target species taken with shrimp fishing gear but cannot distinguish between state and federal waters.

Shrimp trawl fisheries tend to have bycatch issues with juvenile fish and other species taken in the small mesh trawls and discarded with a high mortality. The severity of discards in any shrimp fishery depends on the species discarded and their stock status. In federal waters in the Gulf of Mexico, finfish bycatch reduction devices (BRDs) are required in specific areas and times to reduce juvenile finfish bycatch.

Many shrimp trawl fisheries also have problems with sea turtle 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 on them and on shrimp catch rates. Louisiana has a statute that prohibits LDW&F from enforcing the federal TED regulations within inshore state waters. No recent data on sea turtle bycatch are available for the Louisiana inshore shrimp fishery.

Trawling disturbs the habitat, but those effects are minimized in sand and mud environments. Therefore, shrimp trawling in the inshore waters of Louisiana probably has minimal negative impact on the ecosystem, but no specific study results are available to support this conclusion. Habitat degradation and loss due to a variety of anthropogenic causes is a problem that will eventually affect the future of this fishery. But control of other factors such as habitat degradation

may be outside the control of the fishery management agency.

The ecosystem impacts of the Louisiana inshore shrimp fishery are potentially wide ranging. The direct removal of the target species may 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 while the dead discards can have an impact of scavenging species.

14. Where fisheries enhancement is utilized, environmental assessment and monitoring must consider genetic diversity and ecosystem integrity.

Evidence adequacy rating:

High

Medium

Low

Fishery enhancement is not utilized by the hatchery rearing of any juveniles for release of any of the public fishery assessed. However, oysters may be re-laid from State fishery to private lease waters for bedding/on-growing but this is not considered as an enhancement practice for the wild public fishery since stock is removed rather than added.

If general restoration of depleted wild stocks via hatchery propagation was a feature of the fishery, the clause would be applicable. In these cases, the assessment would consider potential genetic alteration on the recipient population as planted stocks survive and reproduce. Changes in effective population size of the wild population, and changes in the genetic composition of the recipient population are main areas that would be of concern. These changes may range from benign to harmful, depending on the particular situation²⁷.

There are natural reproductive components of the stock on which the harvest on private leases occurs that maintain themselves without having to be restocked every year. The private fishery incorporates an element of harvesting of a wild population (wild spat or oyster seed) and the natural productivity and genetic biodiversity of that population is not undermined as it incorporates natural setting. The oyster species are native to the geographic region of the fishery and the natural production areas from which the fishery's catch originates.

However, further investigation may be warranted on any impacts of trans-locating from one area to discrete areas at a distance from the original place with respect to any local adaptation expressed by American oysters. These studies were not available at the time of this pre assessment but may be necessary if the fishery progresses into a full assessment.

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²³ <http://www.gulfcouncil.org/index.php>

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