Monitoring and Adaptive Management Activity Implementation Plan

Louisiana Coastwide Fish and Shellfish Monitoring Program

1. Introduction

The Deepwater Horizon (DWH) oil spill settlement in 2016 provides the Natural Resource Damage Assessment (NRDA) Trustees (Trustees) up to $8.8 billion, distributed over 15 years, to restore natural resources and services injured by the spill. As described in the DWH oil spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS) (DWH Trustees 2016), the Trustees selected a comprehensive, integrated ecosystem approach to restoration. The Final PDARP/PEIS considers programmatic alternatives, composed of Restoration Types, to restore natural resources, ecological services, and recreational use services injured or lost as a result of the DWH oil spill incident. As shown in the PDARP/PEIS, the injuries caused by the DWH oil spill affected such a wide array of linked resources over an enormous area that the effects must be described as constituting an ecosystem-level injury. The PDARP/PEIS and information on the settlement with BP Exploration and Production Inc. (called the Consent Decree) are available at the Gulf Spill Restoration website.

Given the unprecedented temporal, spatial, and funding scales associated with the DWH oil spill restoration effort, the Trustees recognized the need for robust Monitoring and Adaptive Management (MAM) to support restoration planning and implementation. As such, the following proposed monitoring program will provide essential data towards the programmatic goals established in the PDARP/PEIS to "Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation" to ensure that the portfolio of restoration projects provides long-term benefits to natural resources and services injured by the spill (Appendix 5.E of the PDARP/PEIS). This framework allows the Trustees to evaluate restoration effectiveness, address potential uncertainties related to restoration planning and implementation, and provide feedback to inform future restoration decisions. The integrated restoration portfolio emphasizes the broad ecosystem benefits that can be realized through coastal habitat restoration in combination with resource-specific restoration in the ecologically interconnected northern Gulf of Mexico ecosystem (DWH Trustees 2016). Most of the planned restoration projects identified in the integrated restoration portfolio (DWH Trustees 2016) are concentrated in coastal Louisiana and in conjunction with the Louisiana Coastal Master Plan (CPRA 2017a). More specifically, the large-scale sediment diversions and a suite of marsh creation and ridge restoration projects are concentrated in Breton Sound and Barataria Basins (LA TIG 2018) and designed to restore connectivity with the Mississippi River, promote deltaic processes, and create and restore marshes for the region. This suite of projects includes projects that are proposed but with no funding and projects that have received funding for one or more of the various project stages (planning, engineering and design, construction, etc.). The Barataria Basin and the delta region experienced the highest degrees of shoreline oiling from the Deepwater Horizon Oil Spill (DWHOS) (Nixon et al. 2016); heavy oiling and remediation efforts caused direct mortality and reduced growth of wetland vegetation and fauna associated with these habitats, increased erosion rates of the already fragile and degrading marshes in Louisiana, and mortality or degradation to estuarine-dependent fish and invertebrates. (DWH Trustees 2016). In addition to Barataria and Breton Sound basins, there are additional major Louisiana State Master projects proposed within all coastal regions of the state, affecting local conditions within those estuaries, making the coastwide nature of the Fisheries Independent Monitoring Program (FIMP) important on multiple temporal and spatial scales. In Louisiana, NRDA restoration projects are focused in the eastern parts of Louisiana, where injury occurred. The Louisiana State Master Plan and NRDA Restoration Plans overlap in many critical ways,

including the focus on restoring large-scale, foundational delta processes, and restoring the habitat where many flora and fauna were injured during the DWHOS, to achieve ecosystem restoration and thriving estuarine species populations. The FIMP program described below provides critical data to help achieve the overlapping restoration goals in the Louisiana State Master Plan and NRDA Restoration Plans. The monitoring program proposed below allows for the continuation and expansion of fisheries-independent data collection in order to establish a proper baseline condition as large-scale restoration projects, such as river diversions, proceed, as well as provide information on various fisheries populations that are commercially and recreationally important in Louisiana and provide large quantities of seafood to the larger United States.

2. Purpose of this document

This MAM Activities Implementation Plan (MAIP) describes the MAM activity, "*Fisheries-Independent Monitoring Program*" to address restoration priorities described in the PDARP/PEIS. This MAM activity is intended to support evaluation of regional restoration outcomes within the Louisiana Restoration Area; perform data aggregation and data management; resolve critical information gaps and uncertainties for restoration planning, inform restoration decision-making; and perform monitoring to inform the design and implementation of future restoration projects. This document provides information about the activities to be implemented and the data gaps and uncertainties they will address; describes their applicability to the PDARP/PEIS and the Louisiana Restoration Area MAM strategy (DHLTIG 2021); describes their consistency with the programmatic alternative selected by the DWH Trustees in the PDARP/PEIS, OPA, and compliance with NEPA.

This MAM activity is consistent with the DWH Final PDARP/PEIS. The FIMP provides valuable data for the nearshore habitats and resources targeted for NRDA restoration, including coastal wetlands, oysters, nekton, and prey resources (e.g., shrimps, crab, fishes) for threatened and/or endangered species such as the gulf sturgeon, sea turtles, and marine mammals. The Louisiana Trustee Implementation Group (LA TIG) can use the data provided by the coastwide FIMP to assess changes in the fish, shellfish and their associated habitats (physical habitat with accompanying environmental data) in the basins over time, allowing for assessment of the influence of the comprehensive, integrated portfolio of restoration projects at a coastwide or regional-scale within the Gulf of Mexico (GOM) and relative to other drivers and long-term trends in the basins.

3. Monitoring and Adaptive Management: Fisheries-Independent Monitoring Program

3.1. MAM Activity Description

3.1.1. Background

The coastwide FIMP provides valuable data for the nearshore habitats and resources targeted for NRDA restoration, including coastal wetlands, oysters, nekton, and prey resources (e.g., shrimp, crab, fishes) for threatened and/or endangered species such as the gulf sturgeon, sea turtles, and marine mammals. The LA TIG can use the data provided by the coastwide FIMP to assess changes in the fish, shellfish and their associated habitats (physical habitat with accompanying environmental data including, conductivity, dissolved oxygen, salinity, air and water temperature, turbidity, and pH) in the basins over time, allowing for assessment of the influence of the comprehensive, integrated portfolio of restoration

projects at a coastwide or regional-scale within the GOM and relative to other drivers and long-term trends in the basins. This MAIP is very similar to the 2018 MAIP that was previously funded. The main difference between the two MAIPs is the elimination of the electrofishing/gear study where extra electrofishing samples were collected paired with seine samples to study the differences in gear effectiveness in collecting a representative sample. This funded study is complete and therefore the extra electrofishing samples are no longer needed. Other than this change, the sample regime, gear types, etc. in this MAIP are similar to the previous 2018 MAIP. LDWF is currently contracted by CPRA to conduct the portion of coastwide FIMP sampling outlined in the proposal below. LDWF intends to continue to collect the remainder of the LDWF FIMP sampling not funded by this scope of services (approximately 72% of all coastwide FIMP sampling) because the data are important to statewide (e.g., West et al. 2016) and gulf-wide fisheries assessments and management actions (e.g., GDAR 2013, SEDAR 2013, Hart 2016a,b). The total cost of FIMP, for all projects and programs, over three years is $13,734,049.56.

This activity will collect data relative to fisheries abundance and size of a variety of species, using a variety of gear types. Refer to Section 4 of this document for how this activity supports multiple restoration approaches and types as outlined in the PDARP/PEIS. Also described in Section 4 is the LA TIG's MAM Strategy (DHLTIG 2021) fundamental and SMART objectives that are supported by the data collection described in this document. The large-scale, long-term data set that results from the FIMP data collection is invaluable to understanding coastal Louisiana fishery dynamics spatially and temporally.

3.1.1.1. History of Fisheries-Independent Monitoring Program

The FIMP has been in existence since 1967. Below is a brief history on the development of the program and data application or uses:

- LDWF original FIMP
  - Program began in 1967 and continues to the present
  - Used to track the relative abundance, status and trends, species composition and size distribution of key fish and shellfish within Louisiana's coastal basins
  - Fisheries management purposes (e.g. setting seasons, harvest limits).
- Caernarvon and Davis Pond Freshwater Diversion
  - Caernarvon Freshwater Diversion began operating in 1992 and Davis Pond Diversion in 2002
  - FIMP monitoring data within the respective receiving basins became a source for evaluating potential diversion effects on key fish and shellfish distributions over time.
  - The LDWF and CPRA have maintained an inter-agency field monitoring and data sharing agreement for the two basins since the opening of the diversions.
- Expansion under CPRA's System Wide Assessment and Monitoring Program (SWAMP)
  - Increased the number of monitoring stations and frequency of some sampling events to enhance seasonal or within-year sampling of the key species (Hijuelos and Hemmerling 2016).
  - Provides important data to continue the long-term baseline data collection for future restoration projects
  - Provides additional statistical power and rigor to better evaluate population responses to resource management actions, coastal restoration projects, and/or environmental changes caused by regional climatic factors, major storm events, and catastrophes such as the DWHOS.
  - The SWAMP was designed to provide the necessary environmental, ecological, and socioeconomic data indicative of system condition or status within all or part of a hydrographic basin as well as monitoring Louisiana's coastal zone as a whole (Hijuelos et al. 2013)
- Deepwater Horizon Oil Spill

- The expanded FIMP also include stations that were added in 2010 in response to resource monitoring and assessment needed for the DWHOS.
- Added stations to support the long-term population assessment and recovery monitoring for Louisiana's coastal fish and shellfish resources impacted by the spill.
- The monitoring framework includes an increased number of stations to provide spatio-temporal fish data (with accompanying water quality and physical habitat data) that is useful for evaluation of the DWH-related restoration projects and outcomes.

3.1.2. Objectives

The FIMP is a comprehensive fish and shellfish monitoring program that is supported by multiple funding sources and used to meet multiple program and scientific objectives. In this document we present the entire FIMP program in order provide a comprehensive understanding of the coastwide fisheries data collection but will specify throughout the document which gear types and sampling regimes are supported by this funding request and which are supported by other funding streams including LDWF, and Caernarvon and Davis Pond Freshwater Diversions.

The FIMP supports the following program areas and objectives in coastal Louisiana:

- **Fisheries Management by LDWF**
  - Status and trends of fisheries populations on spatial and temporal scales
  - Setting seasons and harvest limits for commercially and recreationally important species
- **CRPA SWAMP Network**
  - Provide fisheries data for modeling efforts that support Coastal Master Plan development and implementation
    - FIMP data is essential for species specific HSIs and aquatic species population models including Ecopath with Ecosim (EwE) and the Comprehensive Aquatic Systems Model (CASM)
    - These HSIs and models are applied during the Louisiana State Master Plan development processes to past trends in aquatic species population dynamics and to estimate habitat and population changes under future scenarios, with and without Mast Plan projects
  - Restoration project specific modeling and planning
  - Provide a baseline for future restoration projects
  - Evaluate the effect of constructed restoration projects, including diversions, marsh creation, ridge restoration, oyster reef restoration, etc., on estuarine-dependent species population dynamics on a variety of spatial and temporal scales
- **Deepwater Horizon Oil Spill**
  - Assess estuarine-dependent species population dynamics for injured species, to assess restoration or legacy injury
  - Assess project impacts for restoration projects funded and implemented through DWHOS penalty funding streams (RESTORE, NFWF, NRDA, etc.).

Below, the MAIP is divided into subsections to describe the gear types and sampling strategies carried out in the five Coastal Study Areas (CSAs), or coastal basins, of Louisiana (Figure 1) which were divided to reflect similar hydrologic conditions based on freshwater influences and tidal influences from the gulf, and regional geomorphology and weather patterns. Also indicated will be the various funding streams supporting each gear type and which portion, if any, is supported by the funding requested in this document.

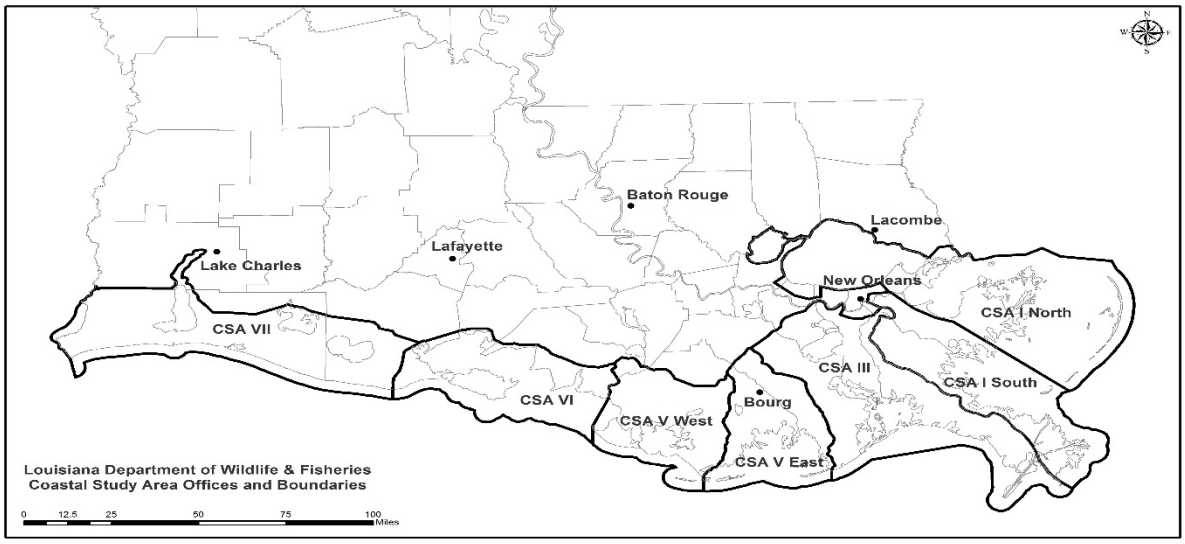

Figure 1: The boundaries for the coastal study areas (CSAs) with the LDWF offices. CSA I North and South = Pontchartrain Basin; CSA III = Barataria Basin; CSA V East and West = Timbalier and Terrebonne Basin; CSA VI = Vermilion Basin; and CSA VII = Calcasieu and Sabine Basin. Source: LDWF 2019

3.1.3. Tasks

Tasks and sampling methodology will be described below by gear type. Table 1 provides a summary of all gear types, sample numbers, and sampling frequency. The FIMP will provide data on many species that are specifically mentioned as injured in the DWHOS in section 4.3/Toxicity of the PDARP/PEIS. Below is a table of species that are directly mentioned in the toxicity section of the PDARP/PEIS as injured and the FIMP collects relevant population data.

Common Name	Scientific Name	Main Exposure Vector	Impacts	Life Stage Impacted
Southern Flounder	*Paralichthys lethostigma*	Contaminated Sediments	Tissue damage to lethality	All
Red Drum	*Sciaenops ocellatus*	Contaminated Sediments	Reduced growth	Juvenile
Gulf Killifish	*Fundulus grandis*	Contaminated Sediments and Suspended Sediments	Impaired embryo development, decreased hatch rates, mortality	Embryo
Brown Shrimp	*Farfantepenaeus aztecus*	Contaminated Sediments	Reduced growth	Adult
White Shrimp	*Litopenaeus setiferus*	Contaminated Sediments	Reduced growth	Adult
Fiddler Crabs	*Uca longisignalis*	Contaminated Sediments	Mortality	Larvae
Eastern Oysters	*Crassostrea virginica*	Contaminated sediments, suspended sediments and water	Decreased fertilization rates, developmental abnormalities, decreased settlement rates, mortality	Eggs, sperm, embryos, veligers, pediveligers, early spat
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Weathered oil	DNA damage and immune injury	Juvenile
Red Snapper	*Lutjanus campechanus*	Oil	Possible impacts in the form of growth reductions, skin lesions, shifts in diet, recruitment (evidence not conclusive of impact or no-impact)	All
Spotted Seatrout	*Cynoscion nebulosus*	Oil	Impaired reproduction	All

At the beginning of each gear type, the funding streams supporting that gear type will be indicated. Detail about each funding stream (sample numbers supported, etc.) can be found at the end of each gear type. Funding streams include LDWF funded coastwide fisheries sampling as part of their management program, SWAMP added stations and sampling events, Caernarvon Freshwater Diversion fisheries impact

sampling, Davis Pond Freshwater Diversion fisheries impact sampling, and NOAA NMFS added stations to investigate changes in fisheries dynamics due to marsh creation projects in a localized region. The entire FIMP sampling program is described below for context. However, only portions of the FIMP program are proposed for NRDA funding; those requests are indicated as "SWAMP" in the "Funding" bullets under each sampling method.

3.1.3.1. Bottom Trawls (6-foot, 16-foot, and 20-foot)

The 6-foot balloon otter trawls, 16-foot flat otter trawls, and 20-foot balloon otter trawls are used to sample penaeid shrimps, blue crab (*Callinectes sapidus*), groundfish, and several other species caught in high abundance within the nearshore shelf waters. The trawl data have been useful in the past to evaluate the catch per unit effort (CPUE) spatially and temporally with the salinity, temperature, turbidity and dissolved oxygen (DO) data collected concurrently in response to the opening of freshwater diversions and major hurricanes (e.g., Piazza and LaPeyre 2009 and 2010, Sable and Villarrubia 2011a,b, O'Connell et al. 2014), the DWHOS (e.g., van der Ham and de Mutsert 2014, Ward et al., in review), and in relation to varying environmental conditions and differences in habitat (e.g., Chesney et al. 2000, Sable et al. 2010).

<u>Six-foot Trawls:</u>

- Funding for this gear type from LDWF and NOAA NMFS

Purpose:

The 6-foot balloon otter trawls are used to sample juvenile penaeid shrimp in the shallow marsh edge habitats and interior water bodies. The data are used to provide relative abundance and size distribution data for managing the inshore brown and white shrimp fisheries including when each season is opened and closed. More detail on data uses can be found in the LWDF fisheries manual (LDWF 2019) and attached here as Appendix 1.

Methods:

The 6-foot trawls are sampled weekly from April through early May, and then semi-monthly in June through July for a total of nine sampling events per year (Table 1). There are 92 six-foot trawl stations across the coast, and a random number of stations are sampled for each sampling event from predefined geographical strata in each CSA (i.e., 12 of 22 stations in Pontchartrain; 10 of 26 stations in Barataria; 12 of 39 stations in Timbalier/Terrebonne; 5 of 5 stations in Vermilion; 0 stations in Calcasieu/Sabine) (Figure 2). Only penaeid shrimp are identified, counted, and up to 50 measured (in 5 mm length groups) per species. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

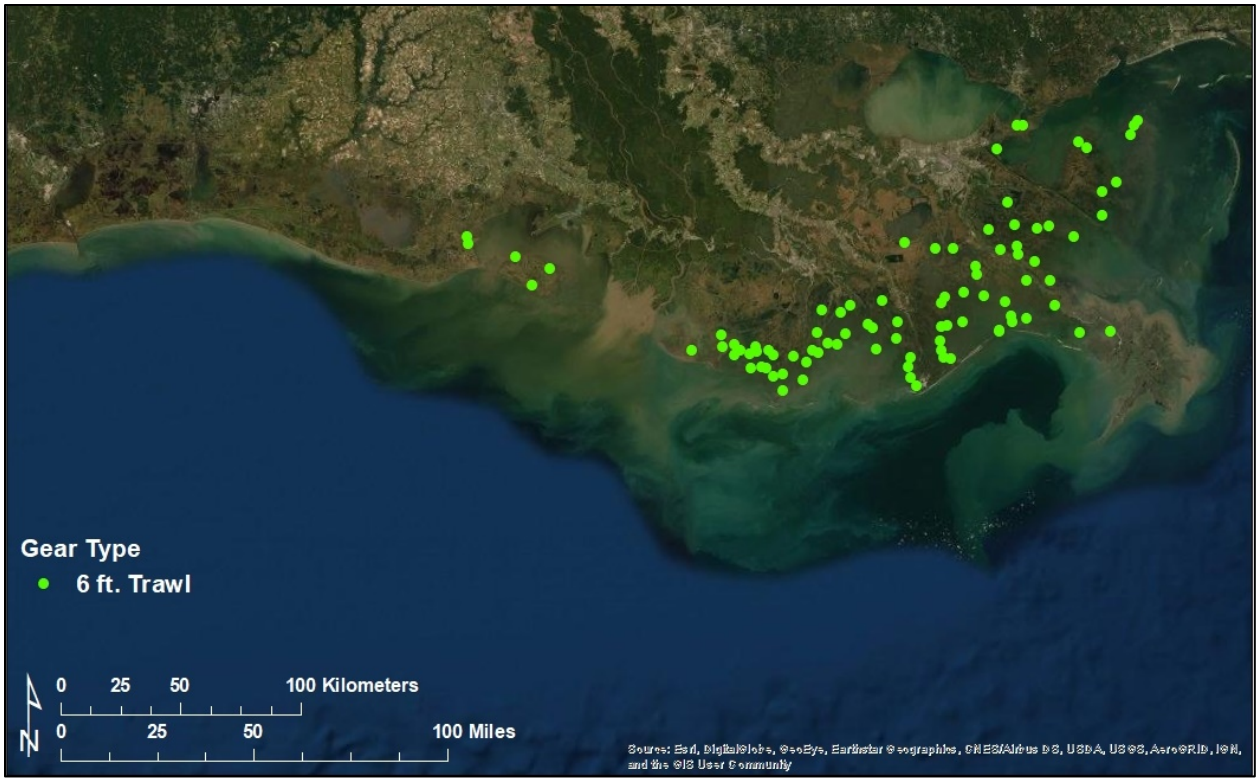

Figure 2: The six-foot trawl station locations.

Funding Streams:

- LDWF
  - The 6-foot trawl samples are used to manage the coastwide brown and white shrimp fisheries, therefore this gear type is entirely funded by LDWF.
- NOAA NMFS
  - NOAA added three additional 6-foot trawl sites. These samples are to assess the impact of the Large-Scale Barataria Marsh Creation project (BA-0207) that is currently under construction. Samples were collected before construction began and will continue when construction is complete. This sampling will begin in calendar year (CY) 2024 and proceed every other year for the life of the project. The three stations will be sampled twice per month from April through July for a total of 24 samples (this frequency is different than LDWF's normal frequency for 6' trawls). These samples will be supported by NOAA NMFS. These samples will be funded under a separate resolution.

<u>Sixteen-foot Trawls:</u>

- Funding for this gear type from LDWF, SWAMP, Caernarvon and Davis Pond Freshwater Diversions.

Purpose:

The 16-foot trawls are used to collect juvenile and sub-adult fish and shellfish in the non-vegetated bottom habitat of larger bays and lakes to provide relative abundance and size distribution data for managing the inshore brown and white shrimp fisheries. They are also used by CPRA and NOAA NMFS to determine long-term patterns in relative abundance, size distribution, and seasonal occurrence by life

stage within the estuaries of several other key fish and invertebrate species, such as blue crab and ground fish, in the coastal basins. The 16-foot trawl data are used to determine indices of relative abundance and recruitment of blue crab in Louisiana's estuaries (West et al. 2016). These data are also used to initialize and calibrate fish habitat suitability index models (Hijuelos et al. 2016) and estuarine food web models (de Mutsert et al. 2016; Dynamic Solutions 2016) used in the Louisiana Coastal Master Plan and large-scale coastal restoration projects for evaluation of potential species impacts and responses.

Methods:

The 16-foot trawls are sampled semi-monthly from April through July and in December, then monthly from August through November and January through March, for a total of 17 sampling events per year (Table 1). CPRA determined that a frequency of 17 sampling events per year, beyond the 11 sampling events deemed necessary by LDWF for management, would provide the temporal resolution necessary to appropriately manage the river diversion projects and provide input to Coastal Master Plan predictive models (see table below). There are 101 stations (91 LDWF, 10 SWAMP) that are sampled 17 times per year for a total of 1,717 samples annually (Figure 3). More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

Jan				Feb				Mar				Apr				May				Jun			
	X				X						X		X		X	X			X			X	X
Jul				**Aug**				**Sep**				**Oct**				**Nov**				**Dec**			
	X		X				X			X				X				X			X		

X= LDWF pays for this sampling event

X = CPRA pays for this sampling event

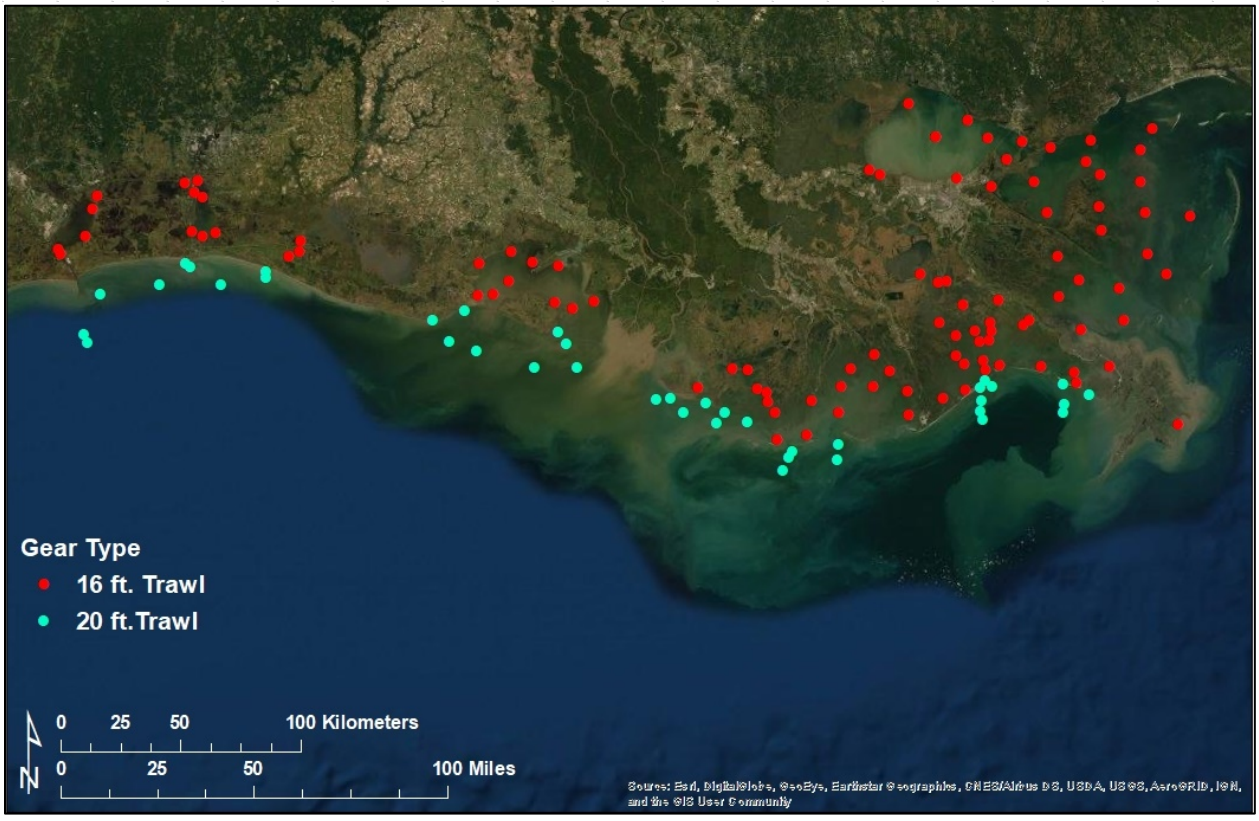

Figure 3: The sixteen-foot and twenty-foot trawl station locations.

Funding Streams:

- LDWF
  - Supports 11 sampling events (see table above) at 91 stations
- SWAMP
  - At 70 sampling stations, 6 events per year (see table above) will be supported by NRDA
  - 10 new sampling stations added in Barataria with all 17 events, annually, supported by NRDA
- Caernarvon Freshwater Diversion (CPRA)
  - 6 events per year at all 6 stations in Breton Basin
- Davis Pond Freshwater Diversion (CPRA)
  - 6 events per year at 15 stations in Barataria Basin

Twenty-foot Trawls:

- Funding for this gear type from LDWF only

Purpose:

Sampling with 20-foot balloon trawls in the nearshore shelf waters of Louisiana began in 2013. Nearshore stations previously sampled with 16-foot trawls were converted to 20-foot trawl stations, and additional 20-foot trawl sample stations were added throughout Louisiana's offshore waters in order to better sample the brown and white shrimp fishery resources. The 20' trawls expand the coverage for monitoring shrimp, crabs, and groundfish in the shelf waters and provide indices of relative abundance and size distribution of the species for the region. The trawl data is used to open and close the offshore shrimp fishery seasons within the respective coastal basins.

Methods:

The 20-foot trawls are sampled semi-monthly in April and in December, then once per month in January, March, May and November for a total of eight sampling events per year (Table 1). There are a total of 39 stations that are sampled 8 times a year for a total of 312 samples per year (Figure 3). More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

Funding Streams:

- LDWF
  - Supports all 312 annual samples

3.1.3.2. Marsh Edge and Finfish: Seines, Gill Nets, Trammel Nets

Fifty-foot Seine

- Funding for this gear type from SWAMP, NOAA NMFS, and Caernarvon and Davis Pond Freshwater Diversions

Purpose:

The 50-foot bag seine is used to sample the relative abundance and size distribution of small juvenile shrimps, crabs, and fish along the shoreline and shallow marsh edge habitats within the coastal basins. CPRA funds all seine sampling to monitor juvenile abundance in available marsh edge habitat, and the changes in each with changing environmental conditions and coastal restoration efforts. The importance of coastal wetlands to fishery species productivity via nursery habitat function, providing foraging grounds for growth and predation and refuge from mortality has been addressed in numerous independent field studies, modeling and meta-analyses (e.g., Minello 1999, Zimmerman et al. 2000, Minello and Rozas 2002,

Minello et al. 2003, Rozas et al. 2005, Baker and Minello 2010, Roth et al. 2008, Rozas and Minello 2011, Rozas et al. 2014, Leo et al. 2015, Sable and Rose, in review). The seine data also provide species composition, relative distribution, and ancillary life history information on selected species for population assessment and initialization and testing of the existing CASM and EwE estuarine food web models used by CRPA in Coastal Master Plan development.

Methods:

The 50-foot seine is with 3/16 inch square mesh. A total of 105 seine stations are currently sampled monthly year-round (Figure 4, Table 1). The 21 stations in Barataria and 12 stations in Breton Sound are paid for by the Davis Pond and Caernarvon Freshwater Diversions, respectively, and therefore are not charged for in this scope of work. There will also be three seine stations added at the request of NOAA NMFS for restoration project specific monitoring. The three additional sites will follow the same protocol and sampling frequency as the existing stations (monthly sampling, year round). Therefore, there will be a total of 108 seine stations. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

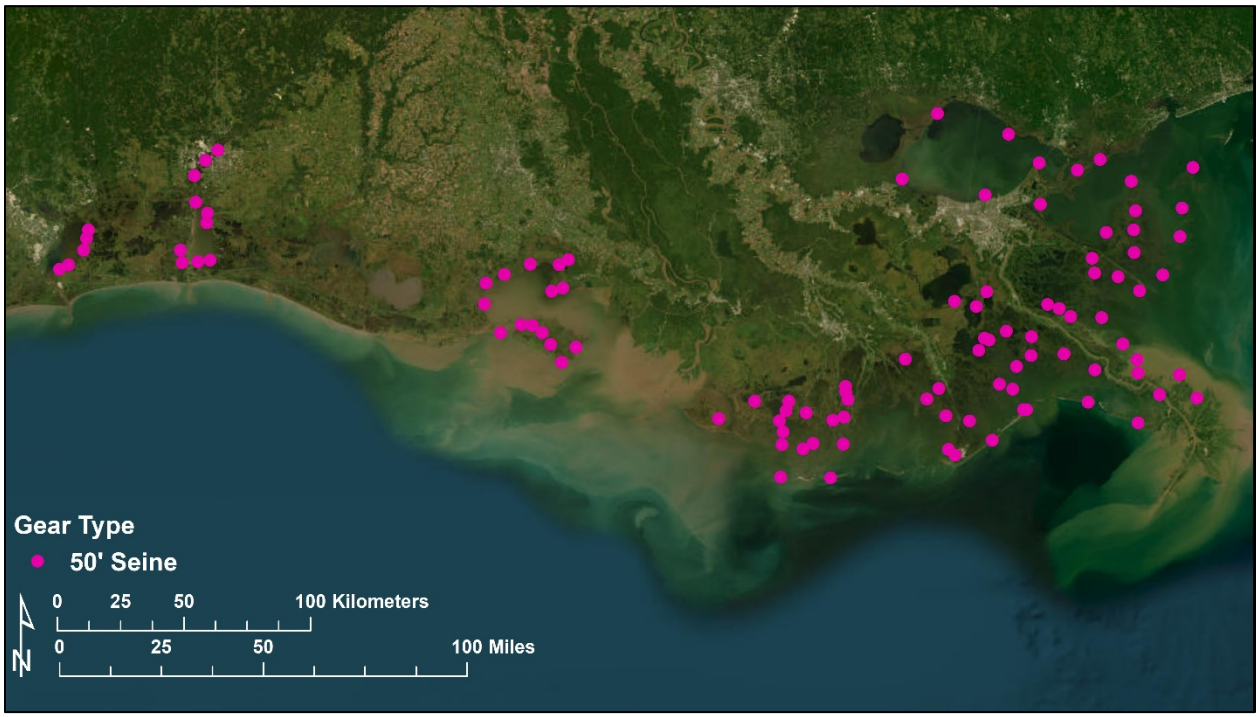

Figure 4: Fifty-foot bag seine station locations.

Funding Streams:

- SWAMP
  - 12 events at 72 sampling locations per year will be supported by NRDA for a total of 864 samples
- NOAA NMFS
  - 3 new stations sampled 12 times per year will be supported by NRDA for a total 36 samples. These samples are to assess the impact of the Large-Scale Barataria Marsh Creation project (BA-0207) that is currently under construction. Samples were collected before construction began and will continue when construction is complete. This sampling will begin in CY 2024 and proceed every other year for the life of the project. These will be supported under a separate NRDA resolution.
- Caernarvon Freshwater Diversion (CPRA)
  - 12 events per year at all 12 stations in Breton Basin

- Davis Pond Freshwater Diversion (CPRA)
  - 12 events per year at all 21 stations in Barataria Basin

Gill Nets

- Funding for this gear type is from LDWF and SWAMP

Purpose:

Gill nets are used to sample larger subadult and adult finfish (e.g., spotted seatrout, Gulf menhaden, red drum) in the open waters of the estuaries. The gill net data are used by LDWF and NOAA NMFS to estimate fisheries-independent indices of age-1+ relative abundance and size distribution for fishery stock assessment of gulf menhaden (SEDAR 2013), striped mullet (West et al. 2013), spotted seatrout (West et al. 2016), and red drum (Powers and Burns 2010). The gill nets also provide species composition, relative distribution, and ancillary life history information on selected species for population assessment and updating and refining of the existing CASM and EwE estuarine food web models used in CPRA Coastal Master Plan development.

Methods:

A 750-foot monofilament gill net composed of five panels of differing mesh sizes is used to sample monthly from October through March, with bi-monthly samples taken in April through September, for a total of 18 sampling events within the year (Table 1). There are currently 110 gill net stations in coastal Louisiana (Figure 5), with 54 stations randomly selected by basin per sample event (Table 1). In FY 2020, coastwide SWAMP analysis added 4 stations to CSAs 6 and 7 (only two are sampled at each event) in order to expand spatial coverage of the samples within the western basins to more effectively evaluate the coastwide patterns in species. The number of random stations per basin are 15 of 32 stations in Pontchartrain, 14 of 24 stations in Barataria, 5 of 24 stations in Timbalier/Terrebonne, 10 of 15 stations in Vermilion, and 10 of 15 stations in Calcasieu/Sabine. All individual fish caught by the gill nets are identified and counted, and up to 30 specimens per panel are measured to the nearest mm in length. Best management/monitoring practices will be used specifically for the gill and trammel nets for the benefit of protected species. Prior to deploying gill nets, the field biologists will carefully observe the area for the presence of any protected species (e.g., sea turtles). If they observe any protected species, sampling will not occur until the animals leave the area on their own volition. Once the net is set and fishing, if any protected species are observed in the area, fishing will cease and the net retrieved immediately. Sampling will not resume until the animals leave on their own volition. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

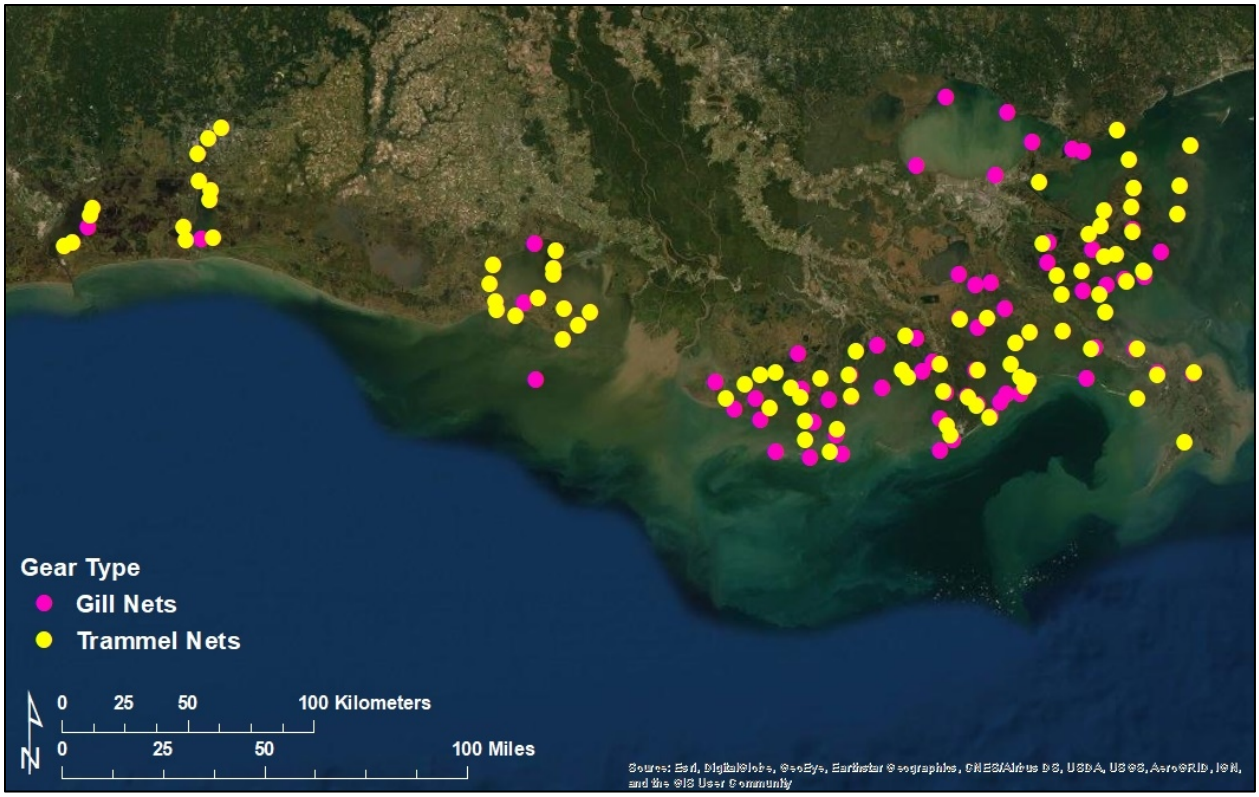

Figure 5: Gill net and trammel net stations.

Funding Streams

- LDWF
  - 52 stations with 18 sampling events for a total of 936 samples per year.
- SWAMP
  - 2 stations with 18 sampling events per year will be paid for by NRDA for a total of 36 samples.

<u>Trammel Nets</u>

- Funding for this gear type is from LDWF only.

Purpose:

Trammel nets capture a wider variety of size classes of finfish than the gill net. They have traditionally been used in Louisiana to capture higher trophic-level predators such as sheepshead and black drum. The trammel net data are used as fisheries-independent indices of relative adult abundance in fishery stock assessments for red drum (Powers and Burns 2010), Southern flounder (Davis et al. 2015a), sheepshead (West et al. 2015), and black drum (Davis et al. 2015b) in Louisiana's state waters. The data are used to evaluate relative abundance and size indices of late young-of-the year, subadult and adult finfish that are important to commercial and recreational fisheries.

Methods:

The 750' trammel net is an inshore gear consisting of three layers of net panels grouped together in a sandwich-like fashion. The inner panel mesh is smaller and the outer panel mesh is large enough to allow the inner panel to be pushed through, causing a pocketing effect for tangling individual fish. The trammel nets are sampled monthly from October through March for a total of six sampling events within a year

(Table 1). Many of the trammel net stations overlap or are the same as the gill net stations (Figure 5). There are 89 trammel net stations in coastal Louisiana (Figure 5), with 45 stations randomly selected by basin for each sample event (Table 1). The number of stations randomly selected from each basin is 11 of 25 stations for Pontchartrain, 6 of 16 stations for Barataria, 12 of 22 stations in Timbalier and Terrebonne, 6 of 13 stations in Vermillion, and 10 of 13 stations in Calcasieu/Sabine. All individual fish caught by the trammel nets are identified and counted, and up to 30 specimens of each species are measured to the nearest mm in length. Described under the gill net gear type, best management/monitoring practices are used for the benefit of protected species. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

Funding Streams:

- LDWF
  - 45 stations are surveyed 6 times for a total of 270 samples per year.

3.1.3.3. Oysters: Square Meter and Dredge Sampling

Two gear types are used to monitor the oyster resources at the basin-scale and coastwide. The square meter and oyster dredge samples are used to characterize oyster spat settlement, size distribution, and mortality for management and assessment of Louisiana's oyster fishery (LDWF 2015). The oyster data have also been evaluated for opening and operation of freshwater diversions (e.g, La Peyre et al. 2009), the DWHOS (DWH Trustees 2016), and to estimate and compare long-term oyster production in the coastal basins (e.g., Lowe et al. 2017). Oyster health and the population-level responses to changing estuarine conditions are major concerns for CPRA and resource damage assessments such as that performed for the DWHOS (DWH Trustees 2016). Spat settlement, oyster size distribution and mortality are important to monitor in the square meter and oyster dredge samples along with temperature, salinity, turbidity, dissolved oxygen, and sessile competitors and/or predators as planned coastal restoration projects like the large-scale river diversions will likely change these conditions and affect the oyster populations.

<u>Square-Meter Samples</u>

- Funding for this gear type is from LDWF and SWAMP

Purpose:

Square-meter oyster samples are used to estimate the density (number per m^2) of living and dead spat (< 1 inch), seed (1 to 3 inches), and sack (> 3 inches) oysters on the public seed oyster grounds within the coastal basins as well as predatory mussels. The data are used to characterize oyster spat settlement, size distribution, and oyster mortality on the public oyster grounds. The spat recruitment, size distribution, and mortality estimates from the data are combined with estimates from the oyster dredge samples to produce annual values of the total available oysters on the public seed grounds by basin and coastwide (LDWF 2015). The data also provide counts or presence/absence data for reef-associated species such as gobies, crabs, shrimps, and fish predators like black drum and sheepshead (e.g., Humphries and La Peyre 2015) to help inform modeling of food web interactions and how the reefs can function as habitat to alter growth and survival of the species living on them.

Methods:

Five replicate samples are taken at each of the 103 meter-square stations in late June or early July each year (Figure 6). At 9 stations in Barataria Basin and 44 stations in the Pontchartrain Basin, additional sampling events were added in the spring and fall with three replicates, by the SWAMP program (Table

1). The SWAMP program also added 25 stations in Barataria Basin where spring, summer and fall sampling will take place with three replicates each time (Table 1). The SWAMP stations and sampling events were added to provide additional seasonal data to support CPRA with evaluation and assessment of the oyster populations that likely will be affected by the large-scale river diversion projects designed to divert freshwater, sediments, and nutrients into the basins. For each replicate sample, a $1m^2$ frame is laid on top of the oyster bed and a certified diver collects all material from within the frame to an approximate depth of six inches. Oysters are separated into live and recently dead spat, seed, and sack oysters, then counted and measured in 5mm length groups. Live gastropods, crabs, and mussels are counted. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2018) attached as Appendix 1.

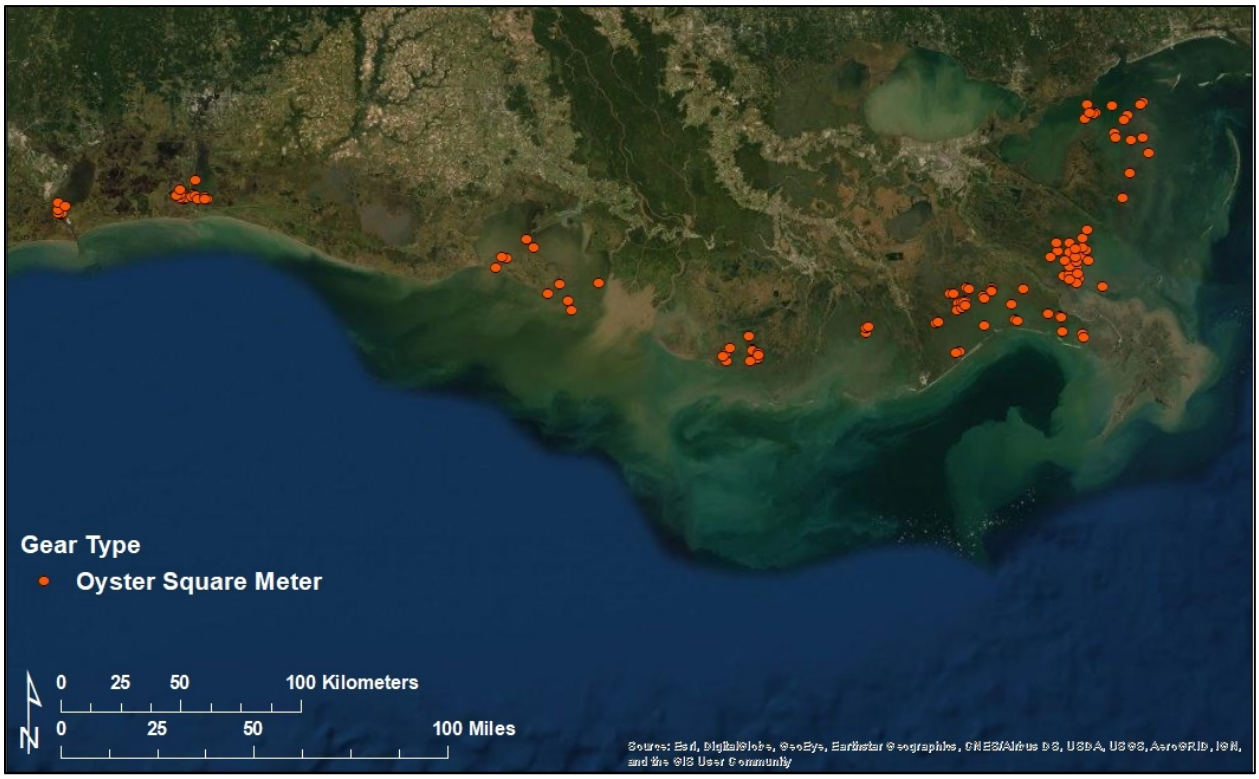

Figure 6: Oyster square-meter station locations.

Funding Streams

- LDWF
  - 102 stations are sampled in the summer each year.
- SWAMP
  - 25 new stations sampled 3 times per year and 51 existing stations have two sampling events per year added will be paid for by NRDA for a total of 177 sampling events per year.

<u>Oyster Dredge Samples</u>

- This gear type is funded by LDWF and SWAMP.

Purpose:

The oyster dredge is used to sample oysters, fouling organisms, and other sessile organisms such as the oyster drill and hooked mussel in order to characterize oyster spat set, size distribution, and mortality of oysters throughout the year. The average monthly oyster sizes and mortality rates are estimated from the dredge samples and combined with the square meter data for LDWF fishery management actions (Banks et al. 2016) and the oyster stock assessment report (LDWF 2015) for the public oyster grounds in each basin and coastwide. The average spat settlement and the number of Southern oyster drill predators for the oyster grounds are also estimated from the dredge samples as an index of annual recruitment and predation mortality for the stock assessments (LDWF 2015). A newly published study uses the long-term dredge data to relate growth and mortality rates of spat, seed, and sack oysters on the public oyster grounds to temperature and salinity (Lowe et al. 2017). The growth and mortality response curves to seasonal salinity and temperature provide updated and local information to better inform the habitat suitability indices as well as predict basin-scale and coastwide production potential for fishery management actions and coastal restoration impacts.

Methods:

A 24-inch-wide oyster dredge is used to take samples monthly, except for July, for a total of 11 sample events within the year (Table 1). LDWF may also sample weekly in April and May in order to adaptively manage the oyster fishery within the basins, if needed and funding is available. All 78 (75 LDWF, 3 SWAMP) of the coastwide dredge station locations are sampled at each event (Figure 7), with two replicate dredge samples taken per site (Table 1). Each replicate dredge sample is pulled for three minutes. All dredge samples are processed as previously described for square meter samples, with limitations on the number of oysters measured. A total number for each species other than oysters is recorded. A total number of each size class (spat, seed, and sack) of oysters is recorded. More detail on sampling methods can be found in the LDWF fisheries manual (LDWF 2019) attached as Appendix 1.

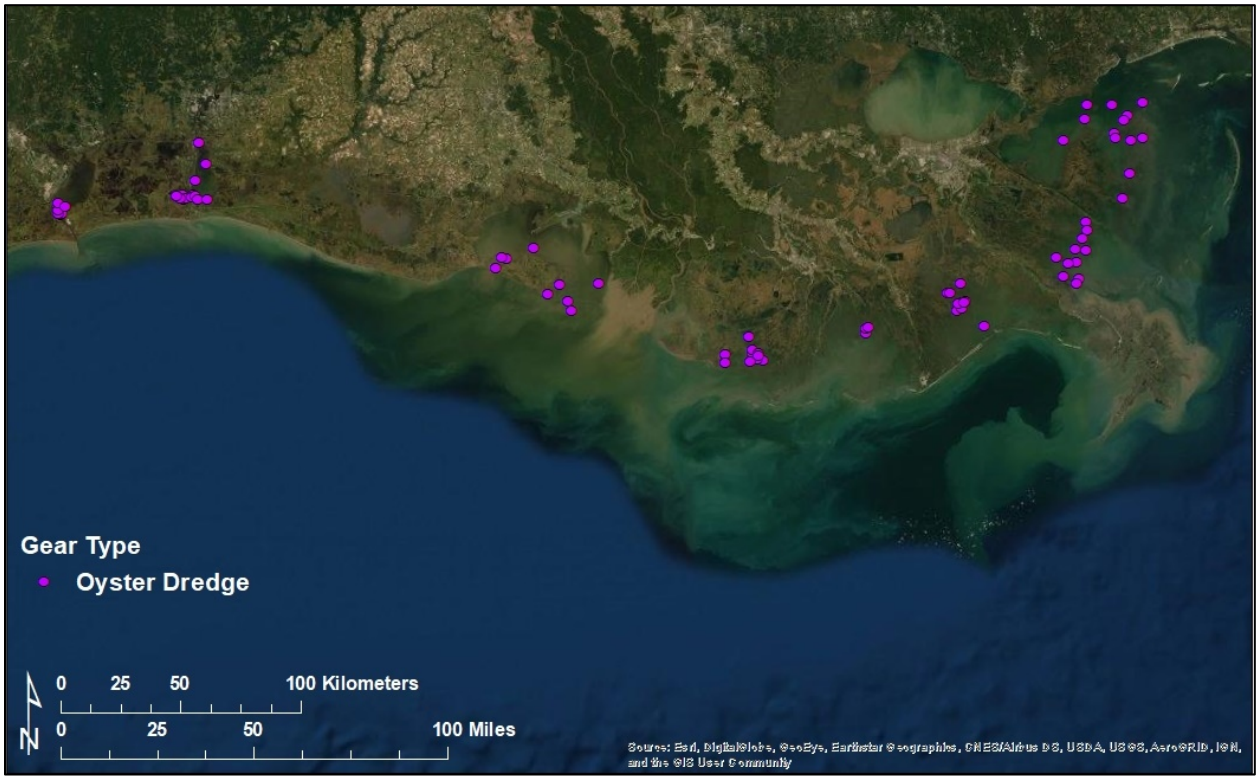

Figure 7: Oyster dredge station locations.

Funding Stream

- LDWF
  - 76 stations are sampled 11 times per year for a total of 836 samples.
- SWAMP
  - 3 stations were added by SWAMP that will be sampled 11 times per year, paid for by NRDA, for a total of 33 samples for year.
  -

Table 1: Annual coastwide fisheries-independent monitoring program (FIMP) sampling frequency and number.

		Samples Not Part of This Agreement										Samples paid by this Agreement						Total FIMP Samples	
		LWDF					Caernvon and Davis Pond Freshwater Diversions					SWAMP Supplemental Samples						Total Sample by Gear Type	
Geartype	Sampling Frequency	# Stations	# Events	# Reps	# Samp. w/ reps	# Samp. w/o Reps ****	Station Type	# Stations	# Events	# Reps	# Samp.	Station Type	Stations Added	# Events Added	# Reps	# Samp. w/ reps	# Samp. w/o Reps ****	Total # Samp. w/ reps.	Total # Samp. w/o Reps ****
16' Trawl*	Semi-monthly: Apr to Jul; Dec Monthly: Aug to Nov; Jan to Mar	91***	11	1	1,001	1,001	Existing - CFD	6	6	1	36	Existing (70)**		6	1	420	420	**1,717**	**1,717**
							Existing - DPFW	15	6	1	90	New	10 stations in BA	17	1	170	170		
Oyster Dredge*	Monthly exc. Jul; Weekly Adaptive Management: Apr through May	75	11	2	1,524	762						New	3	11 (exc. July)	2	66	33	**1,590**	**795**
Oyster M^2*	Annual: Late Jun or Early Jul	103	1	5	515	103						New	25 in BA	3 (Summer, Fall, Spring)	3	225	75	**1,058**	**284**
												Existing (9 in BA)		2 (Fall, Spring)	3	54	18		
												Existing (44 in PO)		2 (Fall, Spring)	3	264	88		
Seine*	Monthly						New - CFD	12	12	1	144	New	72**	12	1	864	864	**1,260**	**1,260**
							New-DPFD	21	12	1	252								
Gill Net*	Semi-monthly: Apr to Sep Monthly: Oct to Mar	52	18	1	936	936						New	2 (1 in CSA6, 1 in CSA7)	18	1	36	36	**972**	**972**
Trammel Net	Monthly: Oct to Mar	45	6	1	270	270												**270**	**270**
6' Trawl	Weekly: Apr to early May Semi-monthly: Jun to Jul	39	9	1	351	351												**351**	**351**
20' Trawl	Semi-monthly: Apr, Dec Monthly: Jan, Mar, May, Nov	39	8	1	312	312												**312**	**312**
Sub - Totals					**4,909**	**3,735**					**522**					**2,099**	**1,704**	**7,530**	**5,961**
Grand Totals		**4,257**										**1,704**						**5,961**	

***Denotes the gear types that have been factored in for funding by the contract agreement because they provide data for continued population assessment and evaluation of species responses to DWH-related restoration**
**** Number of stations excluding stations in Breton and Barataria Basins paid for by Caernarvon and Davis Pond Freshwater Diversions**
***** There are 91 existing 16' trawl stations that LDWF monitors 11 times a year, Caernarvon and Davis Pond Diversions pay for an additional 6 events at 21 of those stations, and SWAMP pays for additional 6 events at the remaining 70 stations and all 17 events at 10 new stations**
****** Billing is by sampling station, replicates are included in sample price. Number of samples without replicates was used to make the budget found in Table 2.**

3.1.4. Budget

A detailed budget by gear type, including cost per sample and annual cost, can be found in Table 2. A total budget including CPRA administrative costs can be found in Table 3. The total funding for LDWF to continue the enhanced coastwide FIMP with support from NRDA in Louisiana for 3 years is $4,095,336.11 for three years ($1,330,596.55 for FY21, $1,364,800.51 for FY22, and $1,399,99.05 for FY 23). This will ensure adequate spatial and temporal coverage to properly evaluate benefits and impacts from future restoration projects and recovery from the DHWOS. In addition to the data that is collected under this MAIP, the NRDA TIG will also receive the fisheries data funded by LDWF and CPRA that are not funded through this proposal. Therefore, for cost to NRDA for this MAIP, NRDA will receive a data set with the value of over $13.2 million (total cost of FIMP program) over the three years of the MAIP.

Table 2: Budget for fisheries sampling only for fiscal years 24, 25, and 26 for cost to NRDA.

Fisheries-Independent Monitoring Program Sample Collection for NRDA Resolution

		FY 24 Costs		FY25 Costs		FY26 Costs			
Geartype	Total # of Annual Samples paid by NRDA	Cost/ Sample	Total For NRDA	Cost/ Sample	Total For NRDA	Cost/ Sample	Total For NRDA	Total Cost to NRDA for 3 Years	% of FIMP Total Funded by NRDA
16' Trawl	590	$698.07	$411,861.30	$716.34	$422,640.60	$735.10	$433,709.00	$1,268,210.90	34%
Oyster Dredge	33	$628.89	$20,753.37	$645.08	$21,287.64	$661.69	$21,835.77	$63,876.78	4%
Oyster M^2	181	$1,181.20	$213,797.20	$1,213.75	$219,688.75	$1,247.20	$225,743.20	$659,229.15	65%
Seine	864	$698.51	$603,512.64	$717.34	$619,781.76	$736.69	$636,500.16	$1,859,794.56	69%
Gill Net	36	$760.89	$27,392.04	$781.16	$28,121.76	$801.97	$28,870.92	$84,384.72	4%
Totals	**1,704**		**$1,277,316.55**		**$1,311,520.51**		**$1,346,659.05**	**$3,935,496.11**	**30%**

Table 3: Total cost to NRDA for fisheries sampling and CPRA's administrative costs to administer the contract with LDWF and other duties.

Total Budget for NRDA				
Item	**FY 24 Costs**	**FY25 Costs**	**FY26 Costs**	**Total Cost to NRDA for 3 Years**
Fisheries Sampling	$1,277,316.55	$1,311,520.51	$1,346,659.05	$3,935,496.11
Contract Administration - CPRA	$53,280.00	$53,280.00	$53,280.00	$159,840.00
Grand Totals	**$1,330,596.55**	**$1,364,800.51**	**$1,399,939.05**	**$4,095,336.11**

3.1.5. Timeline

The activities described above and in Table 1 reflect annual activities. This resolution requests that the scope of work, be approved for an extension of 36 months, from July 1, 2023 through June 30, 2026 to aid in restoration planning and monitoring for species that received direct injury during the DWHOS. The frequency and timing of sample collection by gear type can be found in Table 1. In total, the NRDA LA TIG will be enhancing the FIMP by supporting the collection of over 1,700 additional samples annually to further restoration monitoring, both baseline and post-project, population assessments for injured species, and management of commercially and recreationally important species in Louisiana that are important seafood species nationwide.

3.1.6. Data management and reporting

Data management by LDWF includes all field data input, QA/QC, and quarterly dissemination of electronic data to CPRA through an established internet-based portal. All data are logged on field data sheets by coastal biologists. The field data sheets are scanned as electronic pdf files and the hardcopies are archived at the field offices. As field data sheets are collected, they are entered into computer data files and initially reviewed by the LDWF data management section for quality assurance. The final QA/QC'd data maintained by the Fisheries Database Manager will be provided to CPRA on a quarterly (3 month) basis with an expected three month lag time from data collection to delivery on the internet-based portal. All QA/QC'd data files are delivered as csv files to the internet-based portal maintained between CPRA and LDWF. The fisheries data are loaded into Coastal Information Management System (CIMS) on an annual basis within the first quarter of the following year. The data are publicly available on the (CIMS) maintained by the CPRA. All QA/QC'd data will also be made available through the LA TIG for storage and public access on the DIVER Restoration Portal (Section 10.6.5 of SOP; DWH NRDA Trustees, 2016) within one year from when the data are collected. CPRA and the LA TIG are currently in discussions of how to link this publicly available data to DIVER.

In addition to sharing of the electronic data files, LDWF will prepare an annual report on the coastwide FIMP sampling conducted by the field offices. The report will cover each calendar year (CY) of data collection and be submitted to CPRA by the end of March and will be made available to the LA TIG. The summary report will briefly describe the data collection by gear type such as completeness for the samples, any missed samples, and observations or issues associated with the data that may impact the data or their interpretation. The summary report will also include any interpretation or insights into what the field biologists are seeing with the data collection.

4. Consistency of MAM Activity with the PDARP/PEIS

This MAM activity is consistent with and supports multiple programmatic goals (section 5.3) in the PDARP/PEIS, including a variety of restoration types (section 5.5) and restoration approaches (Appendix 5.D). This MAM activity supports the programmatic goals of, (1) Restore and conserve habitat; (2) Replenish and Protect Living Coastal and Marine Resources; (3) Provide and enhance recreational activities; and (4) Provide for monitoring, adaptive management, and administrative oversight to support restoration implementation. The FIMP will support a variety of restoration types described in the PDARP/PEIS, mainly Sections 5.5.2, *Wetlands, Coastal, and Nearshore Habitats* and 5.5.15, *Monitoring and Adaptive Management*. However, the FIMP also supports the goals of the restoration type sections of 5.5.6, *Fish and Water Column Invertebrates*; 5.5.9, *Oysters*; and 5.5.14, *Provide and Enhance Recreational Opportunities*. The PDARP/PEIS makes numerous references to creation and restoration of multiple habitat types, especially through restoring natural processes such as reconnecting the Mississippi River to its delta through river diversions and is listed as a main strategy for restoring habitat (Section 5.5.2.2). The FIMP will also provide data for monitoring and adaptive management of restoration project performance and important fisheries resources, including determining recovery from injury during the DWHOS. FIMP data is essential for species specific HSIs and aquatic species population models including Ecopath with Ecosim (EwE) and the Comprehensive Aquatic Systems Model (CASM). These HSIs and models are applied during the Louisiana State Master Plan development processes to past trends in aquatic species population dynamics and to estimate habitat and population changes under future scenarios, with and without Master Plan projects. Therefore, the FIMP provides baseline data for future, planned sediment diversions in Louisiana's Coastal Master Plan, important resource management data and is an essential part of Operations, Maintenance, and Adaptive Management Plans (OMAM) for large-

scale restoration projects in Louisiana. Below, find the rationale for how this data supports and is consistent with a variety of restoration approaches found in the PDARP/PEIS appendices 5.D and 5.E. Restoration approaches listed in the PDARP/PEIS are appropriate under the Oil Pollution Act (OPA).

- Habitat Restoration Approaches (D.1)
  - Restore and Preserve Mississippi-Atchafalaya River Processes (D.1.2)
    - River diversions represent a long-term strategy to restore injured wetlands and resources by reducing widespread loss of existing wetlands.
    - Currently no large-scale sediment diversions exist on the Mississippi River
    - FIMP data would be used to update models for diversion planning, act as baseline, construction phase and post-construction monitoring data for basin fisheries, provide the ability to adaptively manage project outcomes as benefits and impacts become more clear.
  - Restore Oyster Reef Habitat (D.1.3)
    - The FIMP would not directly restore habitat but would provide data to inform the placement of cultch, living shorelines, and where to deploy a spawning stock of oysters.
  - Protect and Conserve Marine, Coastal, Estuarine, and Riparian Habitats (D.1.7)
    - The FIMP data would inform the restoration approach to develop and implement management activities at restoration projects by providing fisheries population data and trends, as well as pre- and post- project monitoring.
- Fish Restoration Approaches (D.3)
  - Reduce impacts of ghost fishing through gear conversion and/or removal (D.3.1)
    - The FIMP would provide data that could help assess the effectiveness of removal or gear conversion projects, especially if these projects were executed on a large-scale
    - The FIMP data could be useful especially if there is industry wide changes (e.g. biodegradable panels on all crab traps) that limit ghost fishing on a regional scale.
  - Voluntary reduction in Gulf Menhaden Harvest (D.3.3)
    - The FIMP would provide data that could help set voluntary management quotas for companies.
  - Voluntary Fisheries-Related Actions to Increase Fish Biomass (D.3.5)
    - The FIMP could provide valuable data to determine management activities that would increase fish biomass and provide data to show success or impacts of management actions that are taken.
- Monitoring and Adaptive Management (5.E)
  - The FIMP would provide both project level (E.3.1) and resource level (E.3.2) monitoring
    - This coast-wide data set will provide for project specific, especially in the case of river diversions, monitoring that will "*inform restoration planning, supports the evaluation of project performance and ensures project compliance.*" It will also provide feedback information in order to adaptively manage projects.
    - The coast-wide data set would also provide important resource information and "*can fulfill data and information needs for multiple projects benefitting a common injured resource, thereby promoting efficiency and consistency in data collection and restoration evaluation."*

This MAM Activities Implementation Plan (MAIP) describes MAM Activity for a fisheries-independent monitoring plan (FIMP) to address the following priorities of various restoration types described in the PDARP/PEIS:

- Wetlands, Coastal, and Nearshore (Section 5.5.2 in PDARP/PEIS)
  - ❖ Goals Addressed:

- Restore a variety of interspersed and ecologically connected coastal habitats in each of the five Gulf states to maintain ecosystem diversity, with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities.
- Restore for injuries to habitats in the geographic areas where the injuries occurred, while considering approaches that provide resiliency and sustainability.

❖ Rationale

- The FIMP will be used as baseline monitoring for large-scale marsh restoration in the form of sediment diversions and marsh creation, barrier island restoration, and SAV restoration. The diversions will reconnect the Mississippi River to its delta, re-establish important deltaic processes, restore and nourish marsh, and introduce nutrients which support various terrestrial and aquatic food webs. Diversions will also provide resiliency to nearby communities through land building and increase wetland sustainability. Analysis of FIMP data will allow a better understanding of the effects of restoration actions on service flows.
- The FIMP will assess populations of estuarine-dependent fish species, shrimp and oysters in order to understand population dynamics and recovery from the DWHOS
- The FIMP is focused in Louisiana where most of the oiling from DWH occurred.

- Fish and Water Column Invertebrates (Section 5.5.6 in PDARP/PEIS)

❖ Goals Addressed:

- Restore injured fish and invertebrate species across the range of coastal and oceanic zones by reducing direct sources of mortality.

❖ Rationale

- The FIMP will assess fish and invertebrate populations across the estuary which will provide critical management information in order to maintain species populations
- Water quality data collected in conjunction with fish and invertebrate surveys will provide some context for organism population fluctuation and trends.

- Oysters (Section 5.5.9 in PDARP/PEIS)

❖ Goals Addressed:

- Restore oyster abundance and spawning stock to support a regional oyster larvae pool sufficient for healthy recruitment levels to subtidal and nearshore oyster reefs.
- Restore resilience to oyster populations that are supported by productive larval source reefs and sufficient substrate in larval sink areas to sustain reefs over time.

❖ Rationale

- The FIMP will provide population estimates for a variety of oyster life stages which will aid in the management of this important resources towards the goal of having a self-sustaining oyster population and industry.

- Provide and Enhance Recreation Opportunities (Section 5.5.14 in PDARP/PEIS)

❖ Goals Addressed:

- Increase recreational opportunities such as fishing, beach-going, camping, and boating with a combination of ecological restoration and creation of infrastructure, access, and use opportunities.

❖ Rationale

- The FIMP with assess populations of some recreationally important fish to allow for management decisions that protect and enhance the resource for coastal anglers.

- Monitoring and Adaptive Management (Section 5.5.15 in PDARP/PEIS)

❖ Goals Addressed:

- Increase the likelihood of successful restoration
- Provide feed-back for management decisions

❖ Rationale

- The FIMP will be used as baseline monitoring for sediment diversions and continue after diversions are in operation in order assess project impact on fisheries, and will allow for adaptive management decisions about diversion operations. The FIMP will also serve as baseline and post- project monitoring for other coastal restoration project types in the Louisiana Coastal Master Plan (CPRA 2017a), including marsh creation and ridge restoration. Data analysis will allow evaluation of the effectiveness of restoration actions and techniques, in order to adaptively manage project areas and to improve site selection and techniques for future restoration actions.

This MAM activity aligns with the LA TIG's MAM Strategy (DHLTIG 2021) by addressing Wetlands, Coastal, and Nearshore Habitats (WCNH), Oysters, and Cross-Restoration Type Fundamental Objectives and SMART Objective/MAM Needs:

Fundamental Objectives Addressed:

- WCNH #7: Provide benefits to estuarine dependent fish and invertebrates (nekton and benthic) at a variety of life stages through habitat restoration.
- Oysters #1: Maintain or increase oyster abundance on managed or restored areas of public oyster seed grounds (POSG) over time.
- Cross Restoration #2: Support injured species (trophic structure) via the estuarine food web structure (benthic and pelagic).

SMART Objective/MAM Needs Addressed:

- WCNH #7a: Develop reference ranges for density and relative abundance of target fish and invertebrate guilds or species, based on natural variability of relative abundance and density at appropriate reference site; identify the distance from the restored area at which a restoration effect could be detected. The FIMP data are specifically mentioned under this objective.
- WCNH #7b: Estimate the effects of changes in habitat availability and type, and other restoration actions, on estuarine community structure, food web, and population connectivity. The FIMP data will provide a baseline as well as future data to assess the impact of restoration on fish populations.
- Oyster #1a: Oyster density on coastal Louisiana POSGs and DWH NRDA restored oyster reefs is at least 20 seed-sized oysters (25mm or larger) per square meter at least once during annual sampling within each 4-year monitoring window following project construction. The FIMP data is collected on POSGs using both oyster dredge 11 months per year and meter square in the summer with supplemental sampling at some sites in the spring and fall.
- Cross Restoration #2a and 2b: The FIMP will provide data to help assess the objectives of; 2a) Assess whether the DWH NRDA restoration portfolio supports lower trophic level diversity, distribution, and productivity comparable to appropriate reference areas, when accounting for expected changes in environmental drivers, and 2b) develop approach to analyze and synthesize food web characteristics, identify and characterize appropriate reference ecosystems/basins.

The FIMP activities described above will clearly address many of the key areas of restoration outlined in the PDARP/PEIS by leveraging a coast-wide, long-term data set that monitors the populations of many

species that received direct injury during the DWHOS. The FIMP will provide valuable data towards NRDA TIG's vision of large-scale restoration of multiple coastal and marine habitats and the ability to conduct proper monitoring and adaptive management on restoration projects and important fishery resources.

5. Evaluation of NEPA Requirements

The Trustees' approach to compliance with NEPA summarized in this section is consistent with, and tiers where applicable, from the PDARP/PEIS Section 6.14.4. Resources considered and impacts definitions (minor, moderate, major) align with the PDARP/PEIS. Relevant analyses from the PDARP/PEIS are incorporated by reference. Such incorporation by reference of information from existing plans, studies or other material is used in this analysis to present a concise document that briefly provides sufficient evidence and analysis to address the Louisiana TIG's compliance with NEPA (40 CFR 1506.3, 40 CFR § 1508.9). All source documents relied upon are available to the public and links are provided in the discussion where applicable.

As discussed in Chapter 6 of the PDARP/PEIS, a TIG may propose funding a planning phase (e.g., initial engineering, design, and compliance) in one plan for a conceptual project, or for studies needed to maximize restoration planning efforts. This would allow the TIG to develop information needed leading to sufficient project information to develop a more detailed analysis in a subsequent restoration plan, or for use in the restoration planning process. Where these conditions apply and activities are consistent with those described in the PDARP/PEIS, NEPA evaluation is complete and no additional evaluation of individual activities is necessary at this time.

5.1. NEPA Review of MAM Activity

Consistent with the impacts considered in the PDARP/PEIS, this activity utilizing the gear and methods described in Section 3.1.3 above, would include minimally intrusive field activities to occur in the five (5) CSAs identified in Figure 1, as well as data-based activities. Impacts to the biological and physical environment from field activities could include short-term, minor disturbance of habitats and species; and short-term, minor disturbance to terrestrial, estuarine and marine environments through the use of a variety of gear types that may temporarily disturb marsh edge and benthic habitats during sampling. Gear types used in this sampling program include: bottom trawls (6, 16, and 20 foot) which sample shallow open water environments at different depths; Seines, gill nets, and trammel nets for marsh edge sampling; and oyster dredge and meter square sampling, used for oyster reef sampling. Impact from these sample collection activities are expected to be minor and temporary. The trawl nets will temporarily disturb the bottom during the 10-minute trawl, where there is some bottom disturbance that does not dig deeply into the benthic environment. Gill and trammel nets may cause temporary and minor bottom disturbance when they are set, as lead lines on either end of the net sit on the bottom during deployment. Seine samples could result in temporary disturbance of the nearshore bottom and the marsh. The net is anchored into the marsh on one side, then dragged around to anchor down the shoreline at another location. The net is than brought in from shore. Therefore, there is a temporary disturbance in the marsh where people are walking and the net is anchored. The bottom could also be disturbed as the net is brought into shore. The meter square sampling results in a disturbance via the removal of all encrusting organisms and associated material from the meter square area. This activity is conducted via the use of SCUBA, therefore, there is no other disturbance associated with anchoring boats, etc. The oyster dredge results in a temporary and minor bottom disturbance as the 24-inch dredge is dragged in a circular motion for 3 minutes. Analysis of the data collected, planning meetings, and preparation of reports are data-based components of this activity. The sampling regime requested in this document does not constitute additional sample collection from what has been occurring since at least 2018. The direct disturbance

from the variety of fisheries sampling techniques and gears is minor and temporary, and therefore does not convey and long-term or cumulative impacts to the environment. Many of the techniques have been used for decades, and there is no evidence of any cumulative impact thus far, at the proposed density of sampling. Consistent with the analysis in Section 6.4.14 of the PDARP/PEIS, environmental consequences would be direct, short-term, minor impacts through the associated field work. The data gathered would provide critical data on the population status of a variety of commercially and recreationally important fisheries species that were injured in the DWHOS as well as important baseline and MAM data for future large-scale restoration initiatives in Louisiana, such as Mississippi River Diversions.

LDWF has over 50 years of experience in this type of data collection and have developed a thorough field manual for this type of sampling, which is updated periodically (LDWF 2022). The manual includes protocol for pre-sampling survey for any threatened and endangered species. In addition, there are specific protocols that personnel must take for marine mammals, sea turtles and Diamondback terrapins if one of these organisms are captured during fisheries sampling. Best management/monitoring specific to each gear type and practice as described in Section 3.1.3 above will be used for the benefit of protected species. Data collection by this means does not require federal nor state permits for actions involving threatened and endangered species. Based on review of the proposed activities against those actions previously evaluated in the PDARP/PEIS, no additional NEPA evaluation is likely necessary.

NEPA Conclusion

After review of the proposed activities against those actions previously evaluated in the PDARP/PEIS, the Louisiana TIG determined that the environmental consequences resulting from this MAM activity falls within the range of impacts described in Section 6.4.14 of the PDARP/PEIS, thus no additional NEPA evaluation is necessary at this time.

6. Compliance with Environmental Laws and Regulations

The Louisiana TIG has completed technical assistance with the appropriate regulatory agencies for this project and consultations and reviews are complete. NMFS ESA consultation on the Louisiana FIMP was completed in 2018 and is still in effect. The USFWS ESA consultation and other Federal statues are complete as it was determined that existing agreements between LDWF and USFWS are in place that address compliance issues. Coastal Barrier Resources Act compliance is currently in progress.

Federal environmental compliance responsibilities and procedures follow the Trustee Council Standard Operating Procedures (SOP), which are laid out in Section 9.4.6 of that document. Following the SOP, the Implementing Trustees for each activity will ensure that the status of environmental compliance (e.g., completed vs. in progress) is tracked through the Restoration Portal.

Documentation of regulatory compliance will be available in the Administrative Record that can be found at the DOI's Online Administrative Record repository for the DWH NRDA (https://www.doi.gov/deepwaterhorizon/adminrecord). The current status of environmental compliance can be viewed at any time on the Trustee Council's website: http://www.gulfspillrestoration.noaa.gov/environmental-compliance/.

Table 4: Status of federal regulatory compliance reviews and approvals for the proposed project: Fisheries-Independent Monitoring Program

Federal Statute	Compliance Status
Bald and Golden Eagle Protection Act (USFWS)	N/A
Coastal Barrier Resources Act (USFWS)	In Progress
Coastal Zone Management Act	N/A
Endangered Species Act (NMFS)	Complete
Endangered Species Act (USFWS)	N/A
Essential Fish Habitat (NMFS)	Complete
Marine Mammal Protection Act (NMFS)	In Progress
Marine Mammal Protection Act (USFWS)	N/A
Migratory Bird Treaty Act (USFWS)	N/A
National Historic Preservation Act	Under Evaluation
Rivers and Harbors Act/Clean Water Act	

7. Activity Close Out

In accordance with Section 9.5.1.6 of the TC SOPs, the Implementing Trustee shall provide the LA TIG with a closeout report after all activities and expenditures have been accomplished. The Final Report shall include a description and any documentation of the completed activity, estimated benefits to natural resources, the final funding balances and any transfers described in Section 7 of the TC SOPs, a summary of the results of monitoring, and any recommendations on adaptive management for the activity. Upon request, the Implementing Trustee shall provide the LA TIG with additional information and supporting documents to complete the closeout report.

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Appendix 1:
Marine Fisheries Section Independent Sampling Activities: Field Manual, October 2022

Marine Fisheries Section

Independent Sampling Activities

Field Manual

October 2022

INTRODUCTION

The Mission of the Louisiana Department of Wildlife and Fisheries (LDWF) is 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 LDWF Office of Fisheries is mandated to protect, manage, and conserve the valuable marine resources of Louisiana. The mission of the Office of Fisheries is to ensure that living aquatic resources are sustainable for present and future generations of Louisiana citizens by providing access and scientific management. The goals of the Office of Fisheries are to improve their ability to manage living aquatic resources through enhancement and more efficient and effective data collection, analysis and regulation and to improve access to those resources. Within the Office, the Marine Fisheries Section is charged with management of the full range of Louisiana's estuarine and marine resources. Participation in numerous local, state, regional, national and international committees, task forces and councils provides professional expertise in the development of state and federal regulation, legislation and standards governing the wise use of renewable natural resources. In order to more efficiently manage the inshore and nearshore fisheries resources of the state, LDWF's Marine Fisheries Section has revised its previous monitoring program and established a new, more flexible approach that encompasses a broader geographic scale.

Sampling protocols described in this document depict only current standard sampling requirements, which may be exceeded periodically to obtain additional biological data for management decisions. For instance, supplemental trawl samples may be taken to quantify distribution, abundance, and size of penaeid shrimp to provide data for managers to recommend the opening and closing of seasons. In addition, the regularly scheduled sampling program may be augmented by monitoring of specific events such as floods, fish kills, chemical or oil spills, habitat modifications, and evolving management strategies.

The fishery independent monitoring program is central to the core duties of the Section and involves field sampling and biologist-led data collection for the main resource groups.

DRESS CODE

Clothing should be appropriate to assigned duty and should reflect the professional nature of a LDWF employee. Clothing should never be torn, badly faded, or badly soiled. There should be no open-toed or unsecured shoes worn during field activities. Flip-flops are not allowed as Department footwear while on duty. Clothing should not contain non-Department related slogans or images with the exceptions found in the LDWF Dress Code Policy. Whenever possible, clothing items should be worn so that the public can clearly recognize you as a LDWF employee.

VEHICLE SAFETY

All vehicles should be equipped with first aid and roadside emergency kits, including jumper cables and fire extinguishers. Additionally, all vehicles should have trailer hitches with all three trailer ball sizes (1 7/8", 2", and 2 5/16"). All vehicles should also contain all necessary insurance and registration paperwork, accident report forms, and some way to photo-document any damages. Refer to Department Policies in regards to use and operation of the vehicles as well as requirements for training.

TRAILER SAFETY

Inspect the trailer before each use as to overall roadworthiness including brake systems, if equipped, and lighting. If vessels are loaded on the trailer, make sure that any loose items within the boat are secured before travel. Perform routine maintenance on trailer and thoroughly rinse trailers with freshwater after every use.

VESSEL SAFETY

Always make sure to operate vessel within the limits, type, and capacity as rated. If a vessel has not been given a capacity by the USCG, then Supervisors can designate the capacity after discussion. Standard operating procedures while operating Department watercraft follow:

- Life jacket use is mandatory while the vessel is underway or engine is engaged
- All vessels are to be equipped and comply with applicable USCG and LDWF safety guidelines
- All vessels must comply with USCG/LDWF lighting requirements, where applicable
- VHF radios are mandatory in vessels. These may be handheld radios if space is limited
- GPS units are mandatory in vessels. These may be handheld units.

All vessels will be equipped with first aid kits, common tools, and an anchor with rope. All vessels will have one spare propeller per engine and the appropriate spare hardware for each propeller (spacer, nut, thrust washer, cotter pin, etc.), in addition to the tools necessary to replace the propeller in the field. Vessels utilizing propellers with Flo-Torq-style hubs will be equipped with replacement hubs and tools necessary to replace the hub in the field.

STATION LOCATION

A station is intended to characterize a specific habitat type within a salinity zone of a basin, using a gear with consistent efficiency and selectivity characteristics (e.g. mesh size, twine size, trawl boards). It is necessary to ensure that everything is done to make those samples as replicable as possible, and comparable across time. Note: effective gear operation is also required for replicability, as described elsewhere in this manual.

Samples shall always be collected as close to the actual station coordinates as possible. It is understood that sampling directly on the station may not always be practical due to circumstances beyond the crew's control (e.g. – recreational or commercial fishing activity at the station, high winds, low water conditions, oyster reef heterogeneity, shoreline erosion, etc…). However, any deviation from the station must not exceed a ¼ mile radius from the point where the sample is initiated and must be of the same habitat type, as well as can be determined based on on-site observations and professional judgement. Any significant deviation within the ¼ mile radius, and the reason for the deviation, must be noted on the data sheet. For any sample that cannot be conducted within these criteria, the crew leader must notify their Supervisor as soon as possible to explain the situation and discuss options (try again later that day, forego the sample until another day, etc…). If the Supervisor cannot be reached while the crew is on the water, they should forego the sample and notify their Supervisor no later than close of business the same day.

Any stations that may need to be permanently moved or deactivated due to changes in site conditions (marsh edge, water depth, habitat type, etc.) must be provided by the CSA Manager to the responsible DCL-B or Program Manager, and the Operations Manager, for review and approval before submitting the request to Data Management. It is the responsibility of all field personnel to notify their chain of command if changes in site conditions potentially warrant moving or deactivating a station.

Care must be taken when identifying a new station location that the location not have features that might make the station unique within that habitat/zone/basin, unless there is a reason noted to do so (e.g. sampling a new cultch plant or an artificial reef). Such reasons should be noted in the request to establish the station location.

If an approved station move is less than 1,500 yards from the original station location, Data Management will update the coordinates for the existing station. If an approved station move is greater than 1,500 yards from the original station, Data Management will create a new station based on the approved coordinates and deactivate the old station. A brief explanation for the station move shall be recorded in the station comments by Data Management.

COASTAL SAMPLING BASINS

For resource monitoring purposes, the Louisiana coast is divided into five large hydrological basins, with a field office representing each of those (Figure 1). Geographic boundaries of the basins are as follows:

Pontchartrain Basin (CSA 1)

The Pontchartrain Basin is bordered on the north by the Mississippi state line and on the south by the west bank of the Mississippi River running through South Pass. This includes major water bodies such as Chandeleur, Breton, and Mississippi Sounds, Lakes Borgne and Pontchartrain, Black Bay, Bay Gardene, and California Bay, as well as the Biloxi Marsh and the eastern Mississippi River Delta. Monitoring is conducted out of field offices located in Lacombe and New Orleans. This basin contains Coastal Study Area (CSA) 1 and the portion of historical CSA 2 east of the Mississippi River.

Barataria Basin (CSA 3)

The Barataria Basin is bounded to the east by the western shore of the Mississippi River through South Pass and to the west by the eastern shore of Bayou Lafourche. This includes Bay Adams, Sandy Point Bay, Barataria Bay, Caminada Bay, Little Lake, and Hackberry Bay. This area also contains the majority of the fisheries infrastructure lying along the Mississippi River and Bayou Lafourche. Monitoring is conducted from offices in New Orleans and the Fisheries Research Lab. This basin contains historical CSA 3 and portions of historical CSA 2 west of the Mississippi River.

Terrebonne Basin (CSA 5)

The Terrebonne Basin is bounded to the east by the eastern shore of Bayou Lafourche and to the west by the eastern shore of the Atchafalaya River, and includes Point au Fer Island. Major water bodies include Timbalier Bay, Lake Raccourci, Terrebonne Bay, Lake Pelto, Caillou Bay, Caillou Lake, Lake Mechant, Lake DeCade, and Four-League Bay. Monitoring is conducted from the field office in Bourg. This basin consists of historical CSAs 4 and 5.

Vermilion Basin (CSA 6)

The Vermilion Basin is bounded to the east by the eastern shore of the Atchafalaya River and to the west by the western shore of the Freshwater Bayou Canal. Major water bodies include Vermilion Bay, Weeks Bay, West Cote Blanche Bay, East Cote Blanche Bay, and Atchafalaya Bay. Monitoring is conducted from the field office in Lafayette. This basin is composed of the historical CSA 6.

Calcasieu Basin (CSA 7)

The Calcasieu Basin is bounded to the east by the western shore of Freshwater Bayou Canal, and to the west by the Louisiana/Texas state line. Major water bodies within this basin include, the Mermentau River Basin,

Calcasieu Lake, Lake Charles, Grand Lake, Prien Lake, and Sabine Lake. Monitoring is conducted from the field office in Lake Charles. This basin is composed of historical CSA 7.

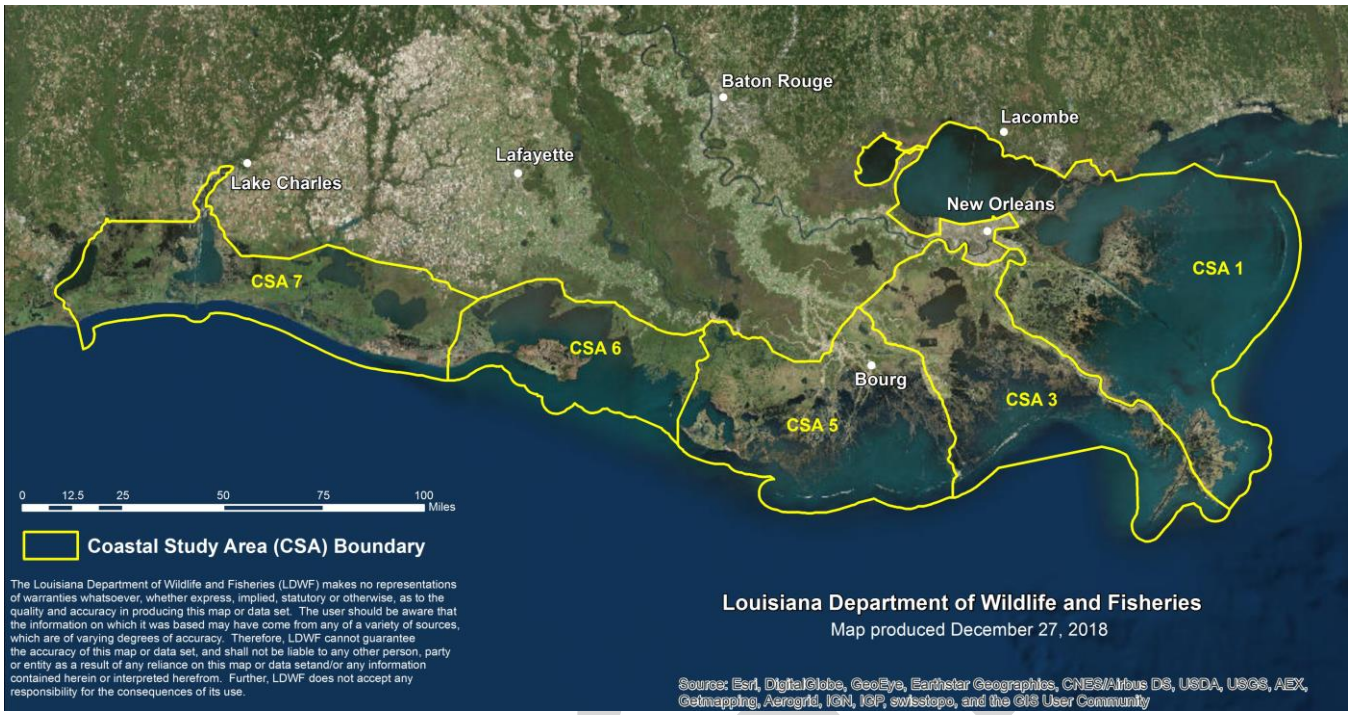


Figure 1. Map of Coastal Study Areas / Hydrologic Sampling Basins.

MONITORING PROGRAMS

CRUSTACEAN PROGRAM

This fisheries-independent monitoring program is largely based upon methodology developed during the Cooperative Gulf of Mexico Estuarine Inventory and Study (GMEI; Perret et al. 1971). That project was conducted in cooperation with the Gulf States Marine Fisheries Commission (GSMFC), the states of Alabama and Mississippi, and the National Marine Fisheries Service (NMFS) laboratories at Galveston, Texas and St. Petersburg, Florida. Standardized sampling methods and procedures used in the GMEI were developed by the Technical Coordinating Committee of the GSMFC.

Marine Fisheries Section's shrimp trawl database dates back to 1965 for some areas in Louisiana. The program has been modified over the years to reflect changes in habitat, management, and gears. Enhanced monitoring was initiated in 2010 to increase the spatial coverage of the program. Revisions to sampling frequency were initiated in 2013 to more efficiently gather the required data. Beginning in 2013, nearshore stations previously sampled with 16 foot (ft.) trawls were sampled with 20 ft. trawls and additional offshore sample sites were added throughout Louisiana's offshore waters. Current sampling gears include 6 ft. and 16 ft. trawls for inshore stations, as well as 20 ft. trawls for nearshore stations. Sampling for this program also provides data for use in stock assessment development for multiple species.

FINFISH PROGRAM

Louisiana's coastal waters provide some of the most productive natural habitats in the world, creating an environment that nurtures a variety of abundant finfish species. Species such as spotted seatrout, red drum, black drum, sheepshead, flounder, striped mullet, and Atlantic croaker are just some of the important species

monitored by the finfish sampling program. Louisiana's natural finfish resources provide for large and robust commercial and recreational fisheries that require diligent monitoring.

In order to successfully manage this natural abundance of finfish, the finfish sampling program regularly samples coastal finfish populations to collect biological data on fish species as well as water quality and environmental conditions. Fisheries-independent sampling data collected through this program provide management tools used to protect and enhance our valuable finfish resources. Information from the program allows for the development of indices of abundance and ancillary life history information to inform the status of fish stocks that occur in Louisiana's coastal waters at some point in their life cycle. Data are also shared with federal fish managers for some gulf-wide finfish assessments and monitoring for trends in abundance.

The current monitoring program was developed in 1985, with most data being available from 1986 forward. While some modifications in sample site selection and frequency of sampling have occurred since 2010, the sampling gear used has not changed since the late 1980s. Several finfish sampling gear types are used coastwide to target various life stages of estuarine-dependent fishes. Gears used include bag seines, gill nets, and trammel nets. The program also incorporates data on finfish species from special projects and 16 ft. trawl samples collected as part of the Crustacean Program.

Seine sampling utilizes a 50 ft. bag seine to sample juvenile finfish, shellfish, and other marine organisms in order to monitor size distribution, seasonal and long-term trends, and community structure. Gill net sampling utilizes a 750 ft. experimental monofilament gill net for collecting data on relative abundance, size distribution, and ancillary life history information for selected finfish species. Trammel net sampling utilizes a 750 ft. trammel net for collecting data on relative abundance, size distribution, and ancillary life history information for selected finfish species.

MOLLUSK PROGRAM

The most important species of mollusk managed within the program is the Eastern Oyster (*Crassostrea virginica*). Oysters grow in abundance in the rich coastal waters of Louisiana and can be found naturally in dense aggregations called reefs, or beds, both in the intertidal and subtidal environment. Oyster reefs comprise the majority of hard substrate found in Louisiana's coastal waters and a multitude of estuarine organisms are associated with these reefs. Many animals, including fish, crabs, worms, and meiofauna, use oyster reefs for both shelter and forage area.

In the early part of the 20th century, the state of Louisiana began leasing state water bottoms to private citizens for the raising and farming of oysters (prior to this time individual parish governments leased the water bottoms). The state also maintains large acreages of water bottoms that are designated as public seed grounds and reservations. During the open oyster season, properly licensed fishermen can harvest oysters from the public reefs. These public areas are actively managed to provide a steady supply of seed oysters for fishermen to transplant onto private leases.

There are several other abundant molluscan species in Louisiana that are frequently exploited but not actively managed. Several species of clams can be found in coastal waters and fishermen have tried to market one species, the Quahog clam (*Mercenaria spp*.), in years past. The two most abundant species of squid found in Louisiana waters, Atlantic brief squid (*Lolliguncula brevis)* and longfin squid (*Lolligo pealei*), have minor commercial value and are typically not targeted, but are utilized if taken as bycatch. The southern oyster drill (*Stramonita haemostoma*) is a predatory snail that feeds on oysters and can be extremely abundant on subtidal oyster reefs in higher salinity waters, posing a serious threat to oyster populations. They are occasionally collected for use in a variety of local dishes.

In addition to data collection and analysis, the planting of suitable hard substrate on water bottoms is also an integral management technique employed by LDWF. The placing of substrate, called cultch deposition or

planting, provides free-swimming oyster larvae a firm attachment site on which to settle and grow. The practice of cultch deposition was first utilized in 1917, but began extensively in the 1930s when the state used fossil clam shell as cultch material on the seed grounds. After shell dredging was stopped in the1990s, the state looked to other possible sources and materials for cultch. Today, cultch deposition is carried out on state seed grounds using materials such as oyster shell, limestone, and crushed concrete. In addition, the Michael C. Voisin Oyster Hatchery in Grand Isle may be utilized in conjunction with the Remote Setting Facility in Buras to deploy oyster larvae and spat-on-shell onto public oyster grounds to rehabilitate these areas.

The LDWF has developed successful oyster management techniques over the last century that continue to yield a steady supply of both sack and seed oysters on the public grounds. State biologists use two gear types, 24 inch (in.) wide hand dredge and square meter frame, when sampling the public reef areas and analyze the data to determine overall health of the oyster resource. By taking samples (with replication) from multiple locations on the public grounds, oyster density can be estimated. Oyster densities are expanded by reef area to obtain estimates of stock size. Reef areas are determined using periodic side-scan sonar surveys, historical reef maps, and poling surveys. In addition, Sustainable Oyster Shellstock models, also called shell budget models, are also being developed and utilized to provide harvest thresholds that will maintain reef material.

SPECIAL PROJECTS

Special projects may be initiated within Louisiana's estuarine systems when there is a need for additional fisheries monitoring and appropriate funding is available. For example, modifications to the freshwater inflow into these systems make it necessary to adapt monitoring plans for specific restoration projects or basins in order to improve the ability of monitoring programs to identify changes in the affected system.

COASTWIDE SAMPLING (Wildlife and Fisheries Monitoring Agreement)

The current Coastwide Sampling Monitoring Agreement between LDWF and the Coastal Protection and Restoration Authority (CPRA), Coastwide Fish and Shellfish Monitoring Program FY2021 - FY2023, includes continued specific comprehensive monitoring by LDWF within the project areas of the Davis Pond and Caernarvon Freshwater Diversions. Additionally, current Monitoring Agreement includes more focused monitoring by LDWF to capture conditions across coastal Louisiana to better assess a range of restoration projects. Currently, all seine samples and 35% (6 of 17 annual events) of 16 ft. trawl samples are taken under the Monitoring Agreement. In the Barataria Basin, LDWF has enhanced current monitoring to include ten additional 16 ft. trawl SWAMP sites, three additional oyster dredge SWAMP sites, 25 additional square meter SWAMP sites, increased square meter site sampling frequency (April/May and September/October), and the addition of electrofishing sampling at select seine sites (12). In the Pontchartrain Basin, LDWF has enhanced current monitoring to include increased sampling frequency (April/May and September/October) of existing square meter sites. In the Vermilion and Calcasieu/Sabine Basins, two additional SWAMP seine stations and two additional SWAMP gill net stations have been added to each basin. The additional seine stations will be sampled during each seine event, but only one additional gill net sample for each basin will be drawn for each event. These monitoring activities are subject to change with each new FY Monitoring Agreement.

GEARS

16 ft. INSHORE TRAWL

A 16 ft. flat otter trawl is used to sample penaeid shrimp, blue crabs, finfishes, and other marine organisms in the larger inshore bays and waterways. The webbing, size of individual sections, and other specifications for a 16 ft. flat otter trawl are described in Appendix A.

The objectives of this project are to determine relative abundance and size distribution of selected species and to provide data for use in the development of management recommendations that include openings and closures of

harvest seasons. Indices of abundance of other species (e.g. blue crabs) gathered from this gear are used for stock assessments and monitoring of other fisheries groups and species.

Whenever possible, samples are to be taken during weeks illustrated in the Sampling Schedule box below. Deviations from the schedule due to weather and/or complications should be after consultation between Basin Manager, Crustacean Program Manager, and the Operations Manager. A summary of specific data uses at certain times for penaeid shrimp is below.

- Data collected in January and February are primarily used in monitoring white shrimp abundance and size during potential extensions of the fall inshore shrimp season.
- Data collected in March and April are used in monitoring over-wintering white shrimp abundance and size for use in potential emergency openings of special spring inshore or offshore shrimp seasons within each coastal basin.
- Sample data collected in late April and the first week of May are used in developing recommendations to the Louisiana Wildlife and Fisheries Commission (LWFC) relative to opening dates for the spring inshore shrimp seasons.
- Data collected in June and July are used for both recommending emergency closures and potential extensions of the spring inshore shrimp season in inshore waters.
- Sample data collected in late July and early August are used in developing recommendations to the LWFC relative to potential opening dates for the fall inshore shrimp season.
- Data collected from mid-August through December are used in monitoring white shrimp distribution, abundance and size, and used in developing recommendations to the Secretary for emergency closures and potential extensions for the fall inshore shrimp season.

16 ft. Trawl Sampling Schedule

JAN				FEB				MAR				APR				MAY				JUN			
	x				x						x		x		x	x		x				x	x
JUL*				**AUG****				**SEP**				**OCT**				**NOV**				**DEC**			
	x		x				x**			x				x				x			x		

*Weekly sampling typically conducted by CSA 6 in July.
**August 16 ft. trawl samples should be taken the week prior to the opening of the fall season.

Sampling Procedure

The 16 ft. trawl is attached to a 1/2 in. diameter nylon rope, Kevlar rope, or stainless steel tow line and bridle. The length of the bridle is 2-3 times the trawl width. Tow line length is normally at least 4-5 times the maximum depth of water. The trawl is towed for ten minutes (timed from when the trawl first begins to move forward to when it stops forward movement) at a constant speed and in a weaving or circular track to allow the prop wash to pass on either side of the trawl.

All organisms are identified to species, counted, and up to 50 individuals of each species measured in 5 millimeter (mm) intervals or work groups. Size measurements are taken as follows: shrimp - anterior tip of rostrum to posterior tip of telson; crabs - carapace width (CW); squid - mantle length; medusoid jellyfish - diameter; stingray - disc width; and other finfish - total length (tip of snout to tip of longest lobe of compressed caudal fin). Blue crabs

(*Callinectes spp*.) larger than 55 mm CW are sexed and all females staged (i.e. immature, mature or gravid). The presence of any external parasites, eggs, and molt phase are noted under species specific observation codes

6 ft. INSHORE TRAWL

A 6 ft. balloon otter trawl is used to sample juvenile penaeid shrimps in shallow edge habitats in the interior marshes. The webbing, size of individual sections, and other specifications for a 6 ft. two-seam balloon trawl are described in Appendix A.

Sample data collected in April and the first week of May are used in presenting recommendations to the LWFC relative to potential opening dates for the spring inshore shrimp season within each basin. Sample data collected in June and July are used in monitoring the distribution and size frequency of newly recruited white shrimp (*Litopenaeus setiferus*) during the spring inshore shrimp season. Recommendations are developed and presented, if necessary, to the Secretary for emergency actions to close all or parts of inshore waters to shrimping within each basin.

6 ft. Trawl Sampling Schedule

JAN				FEB				MAR				APR				MAY				JUN			
												x	x	x	x	x					x	x	x
JUL				**AUG**				**SEP**				**OCT**				**NOV**				**DEC**			
x																							

Sampling Procedure

A 3/8 in. diameter tow line and bridle is attached to the 6 ft. trawl. Tow line and bridle length determinations are identical to that of the 16 ft. trawl. Gear deployment is identical to that described for 16 ft. trawls. Only penaeid shrimp are identified, counted, and up to 50 measured (in 5 mm work groups) per species.

Based upon the desired level of precision, a basin-specific number of weekly samples is drawn from the total list of 6 ft. trawl stations based on power analysis of data from prior years. The number of stations are distributed among, and randomized within, geographical stratifications identified within each coastal basin. If more samples are required than a multiple of the number of strata, then additional random samples are chosen from a randomly selected stratum. Stratification ensures better spatial coverage over a weekly sampling event.

The Pontchartrain Basin has six strata, the Barataria and Terrebonne Basins have four each, and due to the historically documented homogeneity of its habitat during 6 ft. trawl sampling, the entire Vermilion Basin is treated as a single stratum. Due to the limited availability of this habitat in the Calcasieu system, this gear is not used in that basin.

20 ft. NEARSHORE TRAWL

A 20 ft. semi-balloon trawl with aluminum doors is used to sample nearshore bottoms within Louisiana territorial waters. The webbing, size of individual sections, and other specifications for the 20 ft. trawl are described in Appendix A.

Sample data collected within these areas are used primarily in presenting recommendations to the LWFC on shrimping closures in all or portions of outside waters. These closures are designed to protect small over-

wintering white shrimp in areas where significant numbers occur and allow them the opportunity to reach marketable sizes and/or re-enter inshore waters for harvest in the spring.

Sample data are also used in developing and presenting recommendations to the Secretary and the LWFC for emergency closing and reopening of these waters when closures are no longer needed. Louisiana has recently acted to expand its reef fisheries jurisdiction seaward nine nautical miles from the coastline and there is a need to collect additional data in these waters for management purposes.

Sample data collected in November, December and January are used in presenting recommendations to the LWFC and/or Secretary concerning potential closures of portions of state outside waters to shrimping. Historical data indicate that significant numbers of small over-wintering white shrimp occupy portions of state outside waters and these closures protect these individuals.

Data collected from March through early May are used in presenting recommendations to the LWFC and/or Secretary concerning potential reopening of portions of state outside waters to shrimping.

Sample data are not collected in state outside waters seaward of Breton and Chandeleur Sounds.

20 ft. Trawl Sampling Schedule

JAN				FEB				MAR				APR				MAY				JUN			
	x										x	x		x		x							
JUL				**AUG**				**SEP**				**OCT**				**NOV**				**DEC**			
																		x		x		x	

Sampling Procedure

The method of use is similar to that of 16' trawls. All organisms are identified to species, counted, and up to 50 individuals of each species measured in 5 mm intervals. Size measurements are taken as follows: shrimp - anterior tip of rostrum to posterior tip of telson; crabs - carapace width (CW); squid - mantle length; medusoid jellyfish - diameter; stingray - disc width; and other finfish - total length (tip of snout to tip of longest lobe of compressed caudal fin). Blue crabs (*Callinectes sapidus*) larger than 55 mm CW are sexed and all females staged (i.e. immature, mature or gravid). The presence of any external parasites, eggs, as well as molt phase (i.e soft) is noted under species specific observation codes.

Whenever possible, samples are to be taken during weeks illustrated in the Sampling Schedule above. Deviations from the schedule should be after consultation between Basin Manager, Crustacean Program Manager, and the Operations Manager.

GILL NET

The experimental gill nets are 750 ft. long, 8 ft. deep, and comprised of five connected 150 ft. panels of 1 in., 1¼ in., 1½ in., 1¾ in., and 2 in. bar mesh. Large floats and anchor weights are attached to the float line and lead line, respectively, at each end of the gill net at a distance of 6 ft. from the end of the mesh portion of the net. The webbing, size of individual sections, and other specifications for the experimental gill net are described in Appendix A.

The gill net is used to sample juvenile, sub-adult and adult fishes providing information on relative abundance, year class strength, movement and gonad condition. Within each basin, a subset of active stations are randomly

chosen for each sampling event to achieve desired levels of precision. Current numbers sampled per event in each basin are listed in Table 1.

The gillnet survey was conducted from 1986 to April of 2013 at fixed sampling locations within each CSA. The 1¼ in. and 1¾ in. bar mesh were not included until 1988. In October of 2010, additional fixed stations were added to this survey allowing more spatial coverage within basins. Beginning in April of 2013, the survey design was modified so that sampling locations are now selected randomly from the established stations within each basin.

Table 1. Numbers of gill net samples taken per month in each sampling basin

Basin	**April through September**	**October through March**
Pontchartrain	30	15
Barataria	28	14
Timbalier / Terrebonne	10	5
Vermilion*	20	10
Calcasieu	10	5
Sabine	8	4
Calcasieu or Sabine*	2	1

* 1 additional station drawn per event for SWAMP per the FY19-20 CS11 Agreement.

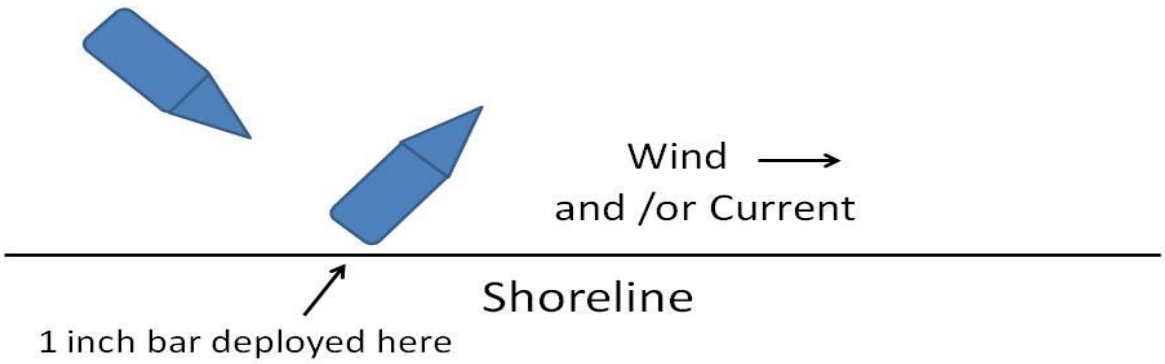
Sampling Procedure

Gill nets shall be checked and readied for deployment after the previous sampling location and prior to arriving at the next sampling site. The sampling vessel shall approach a gill net site from the opposing shoreline and never travel across or through a sampling site, but arrive from either end of a sampling location. Nets must be immediately deployed when arriving at a site with no unnecessary vessel traffic at the sampling location prior to net deployment (any hydrographic information will be taken after the net has been set or retrieved). Deployment shall always begin with the 1 in. bar mesh end of the net and set with the wind or current (whichever is strongest), to allow for retrieval against the wind or current.

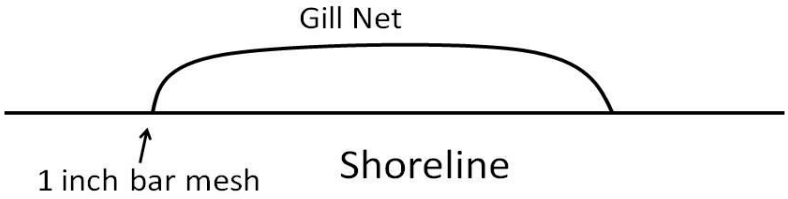
The sampling vessel should approach the site at approximately a 45-degree angle towards the point of deployment of the 1 in. bar mesh. The operator will make a 90 degree turn so as to swing the stern end of the vessel as close to shore as possible without running aground or endangering the crew. The anchor attached to the 1 in. bar mesh lead line should be thrown as close to the shoreline or reef as possible. The operator will then continue away from the shoreline or reef, then run along the shoreline so as to set the gill net in a semi-parabolic shape. The vessel should angle back towards the shoreline when the 2 in. bar mesh begins to deploy. The gill net set will be complete when the anchor attached to the 2 in. bar mesh lead line is thrown as close to the shoreline or reef as possible. When deploying the gill net, the vessel will remain on the outside of the gill net. After net deployment has successfully closed both ends of the gill net to the extent practicable, the operator will run the vessel around the inside and then the outside of the net three times from end to end while getting ever closer to the net. The net is then retrieved and pulled aboard from the down-wind or down-current end.

Net configuration or distance from shoreline or reef may vary slightly because of water depth, presence of obstructions, or physical space limitations (keep in mind we are sampling the marsh edge and a net should be deployed closer rather than farther from the shoreline).

Sampling vessel approach to a shoreline when setting a gill net.



Gill net set along a shoreline



All organisms are removed and placed in baskets corresponding to each mesh size or panel of the net. Organisms that are not gilled are noted as tangled (i.e. those fish which have not penetrated individual meshes to the back of the operculum). Up to 30 individuals of the species listed in Table 2 are to be individually measured

(total length-mm) per panel (see note below about species requiring additional information); remaining individuals over 30 are to be counted and weighed (in aggregate with the 30 measured), then added to calculate total number and total weight of individuals sampled per panel and use weight method: Precise Weight of Complete Sample (*i.e.* - total weight of individuals summed, plus the weight of the extra). If a weight measurement is less than 1 gram, then measure to the nearest 1/10th of a gram; if not, measure to the nearest gram (for very large samples, it is understood that weight may be recorded to the 1/100th of a kilogram). Species other than those listed in Table 2 are counted and weighed (grams) in aggregate, using weight method: Precise Weight of Complete Sample *(i.e.* – total weight of entire sample of that species per panel).

Individual weight (grams) and individual length (total mm) are recorded for up to 30 individuals per mesh panel of red drum, spotted seatrout, striped mullet, black drum, southern flounder, and sheepshead. Sex and gonadal condition are recorded for the following individuals of the appropriate size: red drum (≥500mm), spotted seatrout (≥225mm), striped mullet (≥250mm), black drum (≥600mm), southern flounder (≥170mm), and sheepshead (≥250mm). If only individual weights are taken and these comprise the entire sample of a species by panel, then use weight method: Sum of Individual Weights. If more than 30 individuals of these species are present in a panel and the weight of the additional fish over 30 is obtained, use weight method: Precise Weight of Complete Sample (*i.e.* - total weight of individuals summed, plus the weight of the extra). Blue crabs larger than 55 mm CW are sexed and all females staged (i.e. immature, mature or gravid). If otoliths are removed from a fish for aging, refer to the Biological Sampling document for ancillary information to be collected. If otoliths are removed from a fish for aging refer to the Biological Sampling document for ancillary information to be collected.

Table 2. Species list for individual measurements in seine, trammel and gill net samples

All shark species	Pink shrimp
Alligator garfish	Red drum*
Atlantic croaker	Sand seatrout
Black drum*	Sheepshead*
Blue crab	Southern flounder
Bluefish	Southern kingfish
Brown shrimp	Spanish mackerel
Centrarchidae (all species)	Spot
Florida pompano	Spotted seatrout*
Gafftopsail catfish	Striped bass
Gulf kingfish	Striped mullet
Gulf menhaden	White shrimp

*species will have a minimum of 50 measured in **trammel nets** as these have special requirements, and may show a bimodal distribution in the gear.

Gillnet Sampling Schedule

Gill net samples are collected semi-monthly from April through September, and monthly from October through March. Sampling events, when semi-monthly, shall be spaced to increase temporal coverage of the month (i.e.:

sampled 1st and 3rd week or 2nd and 4th week). If Draw 1 samples are not completed in the 1st week, they should be completed in the 2nd week. Draw 2 samples should not begin until the 3rd week and any repeat Draw 1 samples taken in the 2nd week should be spaced appropriately.

JAN				FEB				MAR				APR				MAY				JUN			
	x				x				x			x		x		x		x		x		x	
JUL				**AUG**				**SEP**				**OCT**				**NOV**				**DEC**			
x		x		x		x		x		x			x				x				x		

SEINE

The bag seine is 50 ft. long, 6 ft. deep and has a 6 ft. by 6 ft. bag in the middle of the net. The nylon, tarred #44 delta knotless netting has a mesh size of 3/16 in. A lead and float line runs the entire length of the seine. The webbing, size of individual sections, and other specifications for the bag seine are described in Appendix A.

The seine is used to sample young-of-the-year of important species and to provide information on growth and movement of selected species. These samples also capture smaller prey species as well as other components of marsh-edge and shoreline habitat assemblages not sampled with other gears.

The seine survey has been conducted from 1986 to present at fixed sampling locations. In October of 2010, additional fixed sampling locations were added to this survey allowing for more spatial coverage within each CSA. Prior to October 2010, samples were collected monthly from January-August and twice monthly from September-December. Beginning in October of 2010, sampling frequency was changed to quarterly and continued at this frequency until July of 2014. In July of 2014, per the FY15 Wildlife and Fisheries Monitoring Agreement with CPRA, sampling frequency reverted back to monthly, and included all pre- and post-2010 sampling locations.

Sampling Procedure

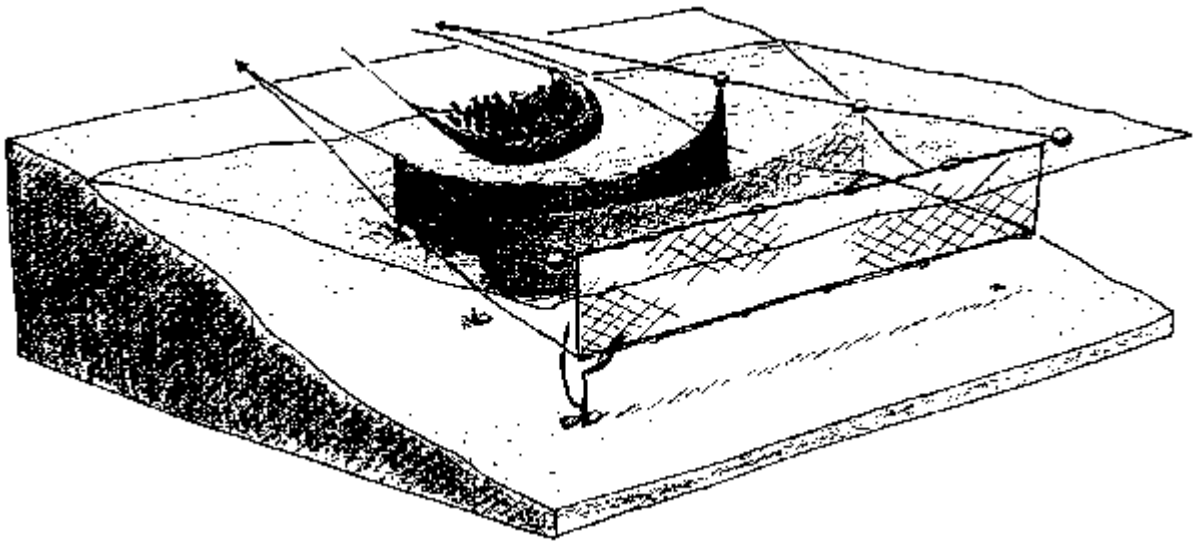
Preferred seine sampling locations are those areas of shoreline that slope gradually into deeper water and are obstruction free. The ends of the seine are held open with 6 ft. aluminum or galvanized poles, which are attached to the float and lead lines directly at the net with no gap. A bridle is attached to each pole to prevent the net from falling or leaning forward from the top during retrieval, and to keep the lead line on the bottom. Attached to each bridle shall be a line of 100 ft. in length. The line originating from the bridle on the right side of the seine (when facing the inside of the seine) shall have an anchor at its terminus for deployment to the shoreline when seining from a boat.

Seine sampling locations should be selected to avoid water depths that exceed net height when the net is deployed 100 ft. from the shoreline. In cases where deploying the seine 100 ft. from shore would result in a depth greater than 6 ft., the net should be deployed at the maximum distance from shore that allows the float line to remain just above the surface of the water.

Seine nets shall be prepared and fully ready to deploy prior to arriving at the sampling site. When maneuvering a vessel to a sample location, the field crew should minimize site disturbance and not transit the shoreline on either side of, or within, the sampling location. The sampling vessel shall be maneuvered in such a manner as to arrive perpendicular to the “outside” edge of the sampling location and in such a manner as to disturb the site as little as possible (engine trimmed up, vessel at idle, etc.). The outside edge of a sampling location is that spot at which the line with anchor will be deployed.

When deploying the seine from a vessel over soft bottom, a crewmember shall take the haul line with the anchor attached and shall be dropped off on shore (if there are only two crewmembers on the vessel, the haul line shall be securely anchored to ensure it remains on shore). The seine shall be deployed from the bow of the vessel. The operator will maneuver the vessel directly away from shore in a perpendicular manner at the lowest possible speed, so as not to disturb the site, until the 100 ft. of haul line is deployed. The operator will then turn the vessel 90 degrees and deploy the seine parallel to shore, insuring the seine is deployed without twists and the bag portion of the seine is properly deployed without twists or folds on the outside, non-shoreline facing, side of the net. When the net is completely out of the vessel and parallel to the shoreline, the operator shall return the vessel to shore on a perpendicular course. When onshore, each haul line shall be held by a crewmember to begin net retrieval. Net retrieval will be done by both crewmembers pulling in unison as to achieve a semicircular shape while insuring the lead line remains in contact with the bottom. Once both guide poles are at the shoreline the seine should be pulled ashore by grabbing the lead and float lines at the same time and pulling the seine ashore. Organisms caught in the wings of the seine are shaken down towards the bag and then collected.

When deploying a seine over hard-bottom areas, the sample is taken in a more conventional manner. The vessel operator approaches the seine site and follows all protocols as described above, however the seine is then walked offshore by two crewmembers to a point 100 ft. from shore. The net is then stretched out and pulled parallel to the shoreline. The ends of the net are swept in toward the shoreline while the net is drawn ashore. As with the methods above it is critical that the lead line remain in contact with the substrate until the net is pulled completely ashore. Contents are then removed using methods described earlier.



All organisms collected in seine samples are identified to species and counted. Up to 30 individuals of the species listed in Table 2 are to be individually measured (total length-mm); remaining individuals over 30 are to be counted and weighed (in aggregate), then added to calculate total number and total weight of individuals sampled using the weight method: Precise Weight of Complete Sample (*i.e.* - total weight of individuals summed, plus the weight of the extra. If a weight measurement is less than 1 gram, then measure to the nearest 1/10th of a gram; if not, measure to the nearest gram (for large samples, it is understood that weight may be recorded to the 1/100th

of a kilogram). Species other than those listed in Table 2 are counted and weighed (grams) in aggregate, using weight method: Precise Weight of Complete Sample (*i.e.* – total weight of entire sample of that species per panel).

Individual weight (grams) and individual length (total mm) are recorded for up to 30 individuals per sample of the following individuals: red drum, spotted seatrout, striped mullet, black drum, southern flounder, and sheepshead. If only individual weights are taken, and these comprise the entire sample of a species, then use weight method: Sum of Individual Weights. If more than 30 individuals of these species are present in a sample and the weight of the additional fish over 30 is obtained, use weight method: Precise Weight of Complete Sample (total weight of individuals summed, plus the weight of the extra). Blue crabs larger than 55 mm CW are sexed and all females staged (i.e. immature, mature or gravid).

Seine Sampling Schedule

Seine samples are currently taken monthly under the FY18-20 Wildlife and Fisheries Monitoring Agreement with CPRA. Sampling times should be chosen to ensure a uniform amount of time between sampling events.

ELECTROFISHING

Electrofishing sampling will be conducted with a Smith-Root 9.0 GPP Electrofisher, or equivalent, utilizing an 11 in. anode ring on a 6-12 ft. telescoping prod pole. Specifications for this gear are described in Appendix A.

Electrofishing pilot sampling was coupled with monthly seine sampling in the Barataria Basin in FY18 (up to 22 seine stations), and reduced to 12 stations in FY19.

Electrofishing is a widely used fish sampling technique in freshwater ecosystems (Eggleton et al., 2010) where it generally samples more species than seining or trapping methods. Electrofishing also allows for more efficient sampling of structurally complex habitats such as littoral vegetation and submerged aquatic macrophytes. Electrofishing is less constrained by temporal variability in fish movements. Previously, elevated electrical conductivities have precluded the use of electrofishing in estuaries; however, recent advances in electrical technology within the electrofishing gear itself now allow for use of this gear in conductivities of up to 20,000µS cm^{-1}.

Sampling Procedure

Upon arriving at each sampling station, a 50m buffer on either side of the seine sample location will be set before conducting electrofishing sampling. Following the estuarine electrofishing methodology of Warry et al. (2013), electrofishing will consist of three separate sampling events of 90 seconds total “on-time” each, comprising 270 total seconds electrofishing sampling per station. Each 90 second “on-time” event will be considered a discrete replicate of three for 12 of the 22 seine stations within Barataria Basin. Using GPS receivers, a total distance track will be recorded for each of the three 90 second sampling events to give a total distance in meters for each 90 second event. This will total up to 36 electrofishing samples per month for a total of up to 432 samples annually. Samples will be worked-up utilizing the seine sample protocol during the field component of the sampling, but lab work will be needed for some species identification. Samples with high abundance will be tagged in the field and brought to the laboratory for positive identification and enumeration.

Electrofishing Sampling Schedule

Electrofishing samples will be taken monthly at select seine stations per the FY18-20 Wildlife and Fisheries Monitoring Agreement with CPRA. Sampling times should be chosen to ensure a uniform amount of time between sampling events.

TRAMMEL NET

The trammel net is 750 ft. in length and 6 ft. in depth, consists of 3 walls, and is constructed of treated nylon. The webbing and other specifications for a trammel net are described in Appendix A.

The net is used to sample finfish to obtain indices of abundance, size distribution, and ancillary life history information on selected species. Sampling stations, as for gillnets, are randomly chosen within each basin.

The trammel net survey was conducted from 1986 to April of 2013 at fixed sampling locations within each CSA. In October of 2010, additional fixed stations were added to this survey allowing more spatial coverage within CSAs. Beginning April of 2013, the survey design was modified to randomly select stations from the established stations within each CSA.

Sampling Procedure

The deployment and retrieval procedures for trammel nets are the same as described for gill nets above. Fish are processed in the same manner as described earlier for gill net samples, except that there are no mesh or tangled/gilled code designations. There are also more specimens (up to 50) of the species listed in Table 2 individually measured if a sample of 30 (or general inspection of the sample) indicates that there may be more than one mode of length for any of those species. Additionally, since there are special requirements and a bimodal distribution may exist, up to 50 individuals each of black drum, red drum, sheepshead, and spotted seatrout are individually measured and weighed, and sex and gonadal condition are recorded for appropriately sized individuals, as indicated in the gill net sample procedures.

Trammel Net Sampling Schedule

Trammel net samples are taken once monthly from October through March. Sampling times should be chosen to ensure a uniform amount of time between sampling events.

SQUARE METER FRAME

Square meter frame sampling (also referred to as oyster stock assessment sampling) is the primary method used to assess oyster populations on the Public Oyster Seed Grounds (POSG). A one square-meter aluminum frame is used to quantitatively determine oyster density and to provide ancillary data on oyster recruitment, fouling organism density, recent oyster mortality, and the presence of oyster predators.

This quantitative sampling technique has the primary goal of providing an annual estimate of available oyster resources on the POSG. Secondary goals of the sampling include providing data on size-frequency, spatial distribution, recruitment, and recent mortality of oysters, as well as presence/absence data on reef-associated animals. Current sampling occurs throughout coastal Louisiana in early July of each year (Table 3). Quantitative data (numbers of oysters per square meter) are multiplied by the estimates of reef acreage (where available) to produce an estimate of available oyster resources on reefs in each basin.

Sampling Procedure

Sampling stations are typically the same each year, however, stations may be shifted or additional stations may be added (on new cultch plants for example) to ensure representative samples are being collected. At each sample location, sampling personnel utilize PVC, bamboo, or other appropriate pole to probe the water bottoms to ensure they are located over the reef habitat. Once the reef is located, the vessel is secured and the one square-meter aluminum frame is randomly placed onto the reef. Certified SCUBA divers descend to the bottom and collect all oysters, shell, loose surface material, associated macroscopic organisms, etc. to a depth of approximately six inches within the frame. Such collection is emptied into a marked receptacle and deemed the

replicate sample. The number of replicate samples taken at each station has changed most recently in July 2010. Currently, five replicate samples are collected at each station.

For newly established cultch plants, a ¼ meter square frame is used to collect samples for the first two years after creation, during which these areas are typically closed to harvest. Five replicate samples are collected on each cultch plant per sampling event. A grid of the entire cultch plant comprising at least 25 cells is created and 5 grid cells are randomly selected to determine the location for the 5 replicate samples (grid cell center point). Once a cultch plant is opened for public harvest, a square meter station is typically established within its boundaries and added to regular sampling rotations unless oyster population characteristics closely resemble those found at an adjacent station.

When processing square-meter or ¼ meter samples, all live oysters and shells from recently dead oysters are counted and measured in 5 mm intervals. Shells from recently dead oysters are classified as "box" (both valves attached) or "valve" (one valve). Oyster size is determined by measuring the "straight-line" distance from the hinge to the apex of the shell. Live gastropods, crabs, and mussels are counted. Cultch type and reef condition may be noted on the field data sheet, when appropriate. Additional parameters are collected for use in the Sustainable Oyster Shellstock Model (see Sustainable Oyster Shellstock Training Handbook).

Table 3. Statewide square-meter sampling program summary as of September 2022.

Basin	# of Stations	# of Replicates	Total # Samples Taken
Pontchartrain	44	5 (SA*), 3 (SWAMP)	484
Barataria	34 (9 SA*, 25 SWAMP)	5 (SA*), 3 (SWAMP)	324
Terrebonne	19 (16 CSA-5 West, 3 CSA-5 East**)	5	95
Vermillion	11	5	55
Calcasieu/Sabine	20 (14 Calc, 6 Sabine**)	5	100
Total	***128***		***1058***

*Stock Assessment

**Every Other Year (Odd Years)

Square Meter Sampling Schedule

Standard square meter sampling occurs once per year in early July. Additional square meter sampling currently occurs in April, July, and September in the Barataria and Pontchartrain Basins per the FY21-23 Wildlife and Fisheries Monitoring Agreement with CPRA described above, with only three replicates per station. New cultch plant sampling is conducted at the same time as standard square meter sampling.

Due to Act 159 (May 2018) that instituted a moratorium on oyster fishing in Sabine Lake, Sabine Lake square meter sampling will now only occur every other year, skipping July 2018 and starting with July 2019. Additional sampling events may be approved as needed to monitor for possible mortality events associated with significant freshwater input events.

Due to lack of live resource in the CSA-5 East (East Terrebonne Basin) POSG areas since 2019, it was decided in September 2022 to reduce the square meter sampling frequency for the three stations in CSA-4 to every other year, starting in July 2023, to follow the same schedule as Sabine Lake square meter sampling discussed above.

OYSTER DREDGE

A 24 in. wide oyster dredge with 10 teeth is used to sample oysters, fouling organisms, and other sessile marine organisms. The specifications for this oyster dredge are described in Appendix A.

This gear is generally utilized for non-quantitative data collection, but may generate some quantitative data such as an estimate of recent oyster mortality (%). This fisheries-independent sampling program has the primary goal of monitoring for recent oyster spat settlement and mortality events throughout the year. Secondary goals include providing information on size-frequency and growth of oysters, as well as presence/absence data on reef-associated animals.

Sampling Procedure

Sampling stations are typically the same each year, however, stations may be shifted or additional stations may be added to ensure representative samples are being collected. At each sample location, sampling personnel shall utilize PVC, bamboo, or other appropriate pole to probe the water bottoms for a reasonable amount of time to ensure they are located over oyster reef habitat. Probing the bottom to find the reef habitat is necessary as without a sample of reef habitat, no oyster data could be generated. The oyster dredge is deployed and towed from the boat in a circular fashion for three minutes at each station. Testing may be needed to determine the appropriate length of rope best suited to the sampling location, but the length is typically two to three times the depth of the water. The dredge is retrieved and the contents of the dredge collected into a marked receptacle. Each collection is deemed a replicate sample.

For new cultch plants, a 24 in. hand dredge will be used to collect samples three times a year, during the January, April, and October standard dredge sampling events. A minimum of five replicate samples will be performed during each sampling event; one replicate sample per randomly-selected grid cell on each cultch plant (see ¼ meter square sampling grid selection above). A fine-mesh net (similar to the cod end of a trawl) will need to be attached to the dredge bag in order to collect samples on new cultch plants due to the small size of the cultch material.

All dredge samples are processed as previously described for square meter samples, with limitations on the number of oysters measured. For oysters less than 25 mm in height, a maximum of 100 live spat and 100 dead spat (“box” and/or "valve" shells) are measured. For oysters 25 mm – 74 mm in height, a maximum of 100 live seed oysters, and 100 dead seed oysters (“box” and /or “valve”) are measured. For oysters larger than 75 mm in height, a maximum of 100 live sack oysters, and 100 dead sack oysters (“box” and /or “valve”) are measured. A total number for each species other than oysters is recorded. A total number of each size class (spat, seed, and sack) of oysters is recorded. The number of replicate samples taken at each station has changed most recently in February 2014. Currently, two replicate dredge tows are taken at each sample station.

For recording cultch observations on dredge data sheets, indicate substrate type if it can be determined from sample. If cultch material of any type is collected in the sample, indicate the type of material and amount. Amount can be recorded as individual pieces, if a small amount, or it can be recorded as a proportion of the size of the bag, or similar description, if a larger amount. Weight of cultch material collected in dredge samples is NOT obtained.

Dredge Sampling Schedule

This sampling is undertaken once per month during for every month except July, for a total of 11 sampling events per year (Table 4). Prior to July 2018, LDWF conducted 15 dredge sampling events per year (twice per month in May, Jun, Sep, and Oct, and once per month in Jan, Feb, Mar, Apr, Aug, Nov, and Dec).

JAN				FEB				MAR				APR				MAY				JUN			
	x				x				x				x				x				x		
JUL				**AUG**				**SEP**				**OCT**				**NOV**				**DEC**			
					x				x				x				x				x		

Table 4. Statewide annual dredge sampling program summary as of September 2022.

Office	# of Sampling Events	# of Stations	# of Replicates	Total # Taken
Pontchartrain	11	24	2	528
Barataria	11	12 (9 Reg., 3 CPRA)	2	264
Terrebonne	CSA-5 West – 11, CSA-5 East – 4*	13 (10 CSA-5 West, 3 CSA-5 East*)	2	244
Vermilion	11	10	2	220
Calcasieu/Sabine	Calcasieu–11,Sabine-4*	19 (13 Calc, 6 Sabine*)	2	334
Total		***78***		**1590**

*Quarterly

Due to Act 159 (May 2018) that instituted a moratorium on oyster fishing in Sabine Lake, Sabine Lake dredge sampling will now only occur quarterly instead of monthly. Dredge samples in Sabine Lake shall be taken during the January, April, and October standard dredge sampling events. In years when July square meter samples are not conducted, dredge samples shall be conducted instead. Additional sampling events may be approved as needed to monitor for possible mortality events associated with significant freshwater input events.

Due to lack of live resource in the CSA-5 East (East Terrebonne Basin) POSG areas since 2019, it was decided in September 2022 to reduce the dredge sampling frequency for the three stations in CSA-4 to quarterly instead of monthly, Dredge samples at these three stations shall be taken during the January, April, and October standard dredge sampling events. In years when July square meter samples are not conducted, dredge samples shall be conducted instead.

ENVIRONMENTAL OBSERVATIONS

Hydrological and climatic measurements are taken in conjunction with all biological samples. The measured parameters are air and water temperature (°C), water transparency (ft.), conductivity (millimhos/centimeter), dissolved oxygen (mg/L), and salinity (ppt). Air temperature is measured with a mercury thermometer or with an electronic meter. Water transparency is measured with an all-white 30 cm diameter, Secchi disk suspended from a staff or line. The Secchi disk is lowered into the water to the point at which it is no longer visible. The disk is then gradually raised up to the point at which it barely becomes visible, and the depth recorded to the nearest tenth of a foot.

Conductivity, salinity, water temperature, and dissolved oxygen are measured to the nearest tenth of the appropriate unit using a YSI or equivalent instrument. All instruments are calibrated as described in the instrument manual, or by standard EPA or APHA Standard Methods. A calibration log is maintained that includes notes of any problems with the meter, repairs, deviations from standard, etc. Two readings at depth should be

taken at each sampling event at one foot below the surface and one foot above the bottom. Additional readings may also be taken to delineate thermoclines, haloclines, or areas of anoxia / hypoxia.

MARINE MAMMALS, SEA TURTLES, DIAMONDBACK TERRAPINS, and STURGEON

Personnel are to always visually survey an area for marine mammals, sea turtles, and any threatened or endangered species prior to sampling. If such are observed directly in a sample area, personnel should delay sampling until the animal has left the site, or retrieve gear immediately if an animal is observed directly in the sample site, then continue sampling once the animal has left the area.

Marine mammals captured in any sampling gear from any project should have a Level A Marine Mammal Stranding Report completed. NOAA Marine Mammal Handling and Release Guidelines shall be adhered to for all marine mammal encounters.

Sea turtles captured in any sampling gear from any project should have a Sea Turtle Stranding and Salvage Network (STSSN) Stranding Report completed (incidental capture) with all pertinent biological and environmental data collected per the stranding form. The Curved Carapace Length (Notch-Notch) measurement (mm) should be entered into DMS with the corresponding length method selected - Curved Carapace Length (Notch-Notch). NOAA Sea Turtle Handling and Release Guidelines shall be adhered to for all sea turtle encounters.

Diamondback terrapins captured in any sampling gear from any project should be measured by plastron length (mm) and released, and this data entered into DMS with the corresponding length method selected - Plastron Length.

The disposition of any marine mammal, sea turtle, diamondback terrapin, or sturgeon (any species) captured in any sampling gear shall be recorded on field datasheets, along with any pertinent comments, and that information shall be entered into DMS. The same procedure shall apply for any threatened or endangered species that is captured in any sampling gear.

Literature Cited

Eggleton, M. A., Jackson, J. R. & Lubinski, B. J. (2010). Comparison of gears for sampling littoral-zone fishes in floodplain lakes of the Lower White River, Arkansas. North American Journal of Fisheries Management 30, 928-939.

Warry, F. Y., Reich, P., Hindell, J. S., McKenzie, J. & Pickworth, A. (2013). Using new electrofishing technology to amp-up fish sampling in estuarine habitats. Journal of Fish Biology 82, 1119-1137.

Appendix A

Gear Specifications

EXPERIMENTAL MONOFILAMENT GILL NETS

Each net to be exactly 750 ft. in length and exactly 8 ft. in depth. Each net to be totally nylon monofilament in construction and composed of five (5) panels each of the following mesh sizes:

1. Exactly 150 ft. X 8 ft., 1 in. bar, 2 in. stretched mesh, and composed of #6 twine size with a diameter of 0.40 mm and break test strength of 17 pounds (lbs.). Panel to measure 55 meshes deep and 1800 meshes long.

2. Exactly 150 ft. X 8 ft., 1¼ in. bar, 2½ in. stretched mesh, and composed of #10 twine size with a diameter of 0.52 mm and minimum break test strength of 26 lbs. Panel to measure 44 meshes deep and 1500 meshes long.

3. Exactly 150 ft. X 8 ft., 1½ in. bar, 3 in. stretched mesh, and composed of #10 twine size with a diameter of 0.52 mm and minimum break test strength of 26 lbs. Panel to measure 37 meshes deep and 1200 meshes long.

4. Exactly 150 ft. X 8 ft., 1¾ in. bar, 3½ in. stretched mesh, and composed of #10 twine size with a diameter of 0.52 mm and minimum break test strength of 26 lbs. Panel to measure 32 meshes deep and 1050 meshes long.

5. Exactly 150 ft. X 8 ft., 2 in. bar, 4 in. stretched mesh, and composed of #10 twine size with a diameter of 0.52 mm and minimum break test strength of 26 lbs. Panel to measure 28 meshes deep and 900 meshes long.

- All panels to be sewn together in a continuous fashion.
- All panels to be doubled selved along both the float and lead lines and attached to the float and lead lines using the one-half hanging ratio.
- Hangings to ensure the following sequence:
  - (1 in. X 2 in.) pick-up 12 meshes per 1 ft. hanging,
  - (1¼ in. X 2½ in.) pick-up 10 meshes per 1 ft. hanging,
  - (1½ in. X 3 in.) pick-up 8 meshes per 1 ft. hanging,
  - (1¾ in. X 3½ in.) pick-up 7 meshes per 1 ft. hanging,
  - (2 in. X 4 in.) pick-up 6 meshes per 1 ft. hanging.
- Lead line and float line to be hung with nybond 11 size #15 (green) twine.
- All junctions of the five panels to be marked with high visibility red twine.
- Float line to be composed of 3/8 in. diameter hollow braided polypropylene and lead line to be composed of #65, 5/16 in. diameter lead core line weighing 65 pounds per 600 ft.
- Float line to have white tapered spongex floats, 2 in. in thickness, 3½ in. in length with a 3/8 in. diameter hole and spaced every 4 ft. along the entire length of the net.
- Vendor Gill Net Hanging Instructions:

- All panels to be sewn together in a continuous fashion. All panels to be doubled selved along both the float and lead lines and attached to the float and lead lines using the one-half hanging ratio. Hangings to ensure the following sequence: (1" x 2") pick-up 12 meshes per 1' hanging, (1-1/4" x 2-1/2") pick-up 10 meshes per 1' hanging, (1-1/2" x 3") pick-up 8 meshes per 1' hanging, (1-3/4" x 3-1/2") pick-up 7 meshes per 1' hanging, (2" x 4") pick-up 6 meshes per 1' hanging. Lead line to be hung with nybond size 12 (#18, 165 lb. test) green twine. Float line to be hung with nybond 11 size #15 (green) twine. All junctions of the five panels to be marked with high visibility red twine. Float line to be composed of 3/8" diameter hollow braided polypropylene and lead line to be composed of #65, 5/16" diameter lead core line weighing 65 pounds per 660'. Float line to have white tapered spongex floats, 2" in thickness, 3-1/2" in length with a 3/8" diameter hole and spaced every 4 feet along the entire length of the net. Floats to be tied to float line on both sides to prevent slippage. Hangings to be tied tightly (without slack) to float line and lead line.

EXPERIMENTAL TRAMMEL NETS

Each net to be exactly 750 ft. in length by 6 ft. in depth. Net to be totally nylon in construction. Mesh size to be:

- Inner wall: 1 5/8 in. bar, 3¼ in. stretched mesh, #6 twine size.
- Outer walls: 6 in. bar, 12 in. stretched mesh, #9 twine size.
- Lead line to be #65 lead core, 5/16 in. diameter braided.
- Float line to be composed of 3/8 in. diameter hollow braided polypropylene.
- Float line to have white tapered spongex floats, 3½ in. in length, 2 in. in thickness and a 3/8 in. diameter hole spaced every 3 ft. along its entire length.
- Webbing to be hung using the one-half hanging ratio and double selvage.
- Depth of inner wall to be 36 meshes deep.
- Depth of outer walls to be 7 meshes deep.
- All webbing to be treated with plastic net dip (black) so as to resist rotting. Vendor to minimize treatment of white spongex floats.
- Vendor to avoid using too high of a plastic net dip concentration so as to maintain flexibility in the webbing.
- Lead line to be hung with nybond size 12 (#18, 165 lb. test) green twine. Float line to be hung with nybond size 11 (#15) green twine. Floats to be tied to float lines on both sides to prevent slippage. Hangings to be tied tightly (without slack) to float line and lead line.
- Ties 6" apart. Four meshes picked up at each tie for the 1-5/8" bar (3-1/4" stretched) mesh. One mesh picked up per tie for the 6" bar (12" stretched mesh).

EXPERIMENTAL BEACH SEINES

- Each seine to be exactly 50 ft. in length, 6 ft. in depth and have a 6 ft. X 6 ft. bag as an integral part of the net.
- Bag to be located mid-way the length of the net.

- Mesh size throughout the seine to be 3/16 in. square mesh and composed of heavy delta #44 knotless netting.
- Float line to be composed of 3/8 in. diameter braided nylon. Float line to have tapered spongex floats, 2 in. in thickness, 3½ in. in length with 3/8 in. diameter hole, with a buoyancy of 2.5 ounces per float or greater, and spaced every 18 in. along the entire length of the net.
- Lead line to have ball-shaped leads approximately 2 ounces in weight spaced every 18 in. along the entire length of the net.
- Net to be attached to float and lead line at a minimum of every 3 inches. Hangings to be tied tightly (without slack) to float line and lead line.
- Net to be treated with plastic net dip (black) so as to resist rotting, but vendor to avoid using too high of a plastic net dip concentration so as to maintain flexibility in the webbing.

ELECTROFISHER

- Smith-Root 9.0 GPP Electrofisher, or equivalent, with dual foot switch.
- 11 in. anode ring on a 6-12 ft. telescoping prod pole.

6 ft. BALLOON TRAWLS

- Two seam 6 ft. balloon trawls, body to be constructed of ¾ in. stretched (3/8 in. bar) mesh.
- Mesh to be composed of # 6 (50 lb. test) nylon.
- Bag to be constructed of ½ in. stretched (1/4 in. bar) mesh composed of # 44 heavy delta webbing.
- Bag to measure 75 meshes long.
- Head-rope and foot-rope to be composed of 3/8 in. twisted poly Dacron.
- All hangings to utilize # 21 (204 lb. test) green nylon twine. Head-rope to be hung with three 1½ in. X 2 in. spongex floats spaced 2 ft. apart along the center of the head-rope.
- A minimum of 2½ ft. of extra head-rope and foot-rope on each end of the net shall be provided in order to attach to doors.
- Two loops (28 links each) of # 3 American galvanized chain to be hung in set back on each end of foot-rope with a third loop (14 links) centered and hung on the foot-rope.
- Top of trawl body to measure 90 meshes at mouth, 15 meshes at tail and 120 meshes deep.
- Bottom of trawl body to measure 90 meshes at mouth, 15 meshes at tail and 110 meshes deep.
- Each wing to measure 26 meshes at mouth, 10 meshes at tail and 141 meshes total length.
- Top corner wedges in wing to be 49 meshes long and 15 meshes wide with 4 meshes at end of wing.
- Bottom corner wedges in wing to measure 54 meshes long and 15 meshes wide.
- All trawls to be treated with green plastic net dip thinned to provide a reasonable degree of pliability.
- Boards to be constructed of ¾ in. marine plywood.

- Boards to measure 14 in. long, 9 in. tall at back and 7 in. tall at front with a 2 in. front rounded corner.
- Chain bridle to be constructed of 1/8 in. standard galvanized links containing 16, 10, 15 and 9 links, respectively (see drawing).
- Two iron flat bars measuring ¼ in. X 1½ in. X 12 in. to be bolted to the bottom side of each trawl door.

16 ft. FLAT OTTER TRAWLS

- Four seam flat otter trawl body to be constructed of 1½ in. stretched (3/4 in. bar) mesh.
- Mesh to be composed of # 9 (86 lb.test) nylon.
- Bag to be constructed of ½ in. stretched (1/4 in. bar) mesh composed of # 44 heavy delta webbing.
- Bag to measure 54-60 in. long.
- Head-rope and foot-rope to be composed of 3/8 in. twisted poly Dacron.
- All hangings to utilize # 21 (204 lb. test) green nylon twine.
- Head-rope to be hung with four 3 in. X 1½ in. spongex floats spaced evenly along the center of the head-rope.
- A minimum of 3½ ft. of extra head-rope and foot-rope on each end of the net shall be provided in order to attach to doors.
- Foot-rope to be hung with 1/8 in. (long-link) chain along the entire length and hung in 20 links/loop intervals.
- Top of trawl body to measure 120 meshes wide at mouth (to measure 16 ft. of webbing along head-rope), 12 meshes at tail and 110 meshes deep.
- Bottom of trawl body to measure 120 meshes at mouth (to measure 20 ft. of webbing along foot-rope), 32 meshes at tail and 90 meshes deep.
- Each wing to measure 30 meshes at mouth (29 in. staging from float line to lead line), 21 meshes at tail and 140 meshes deep.
- Top corner wedge to end with four (4) meshes.
- Bottom corner wedge to end with three (3) meshes.
- All trawls to be treated with green plastic net dip thinned to provide a reasonable degree of pliability.
- Plywood boards (preferred) to be constructed of ¾ in. marine plywood. Slotted boards to be constructed of ½ in. treated pine.
- Boards to measure 24 in. long, 14 in. tall at back and 10 in. tall at front with a 4 in. front rounded corner.
- Chain bridle to be constructed of 3/16 in. standard galvanized links containing 17, 10, 16 and 9 links, respectively.
- Curved iron flat bar measuring 3/8 in. X 2 in. to be bolted to the bottom of each trawl board.

20 ft. SEMI-BALLOON TRAWL

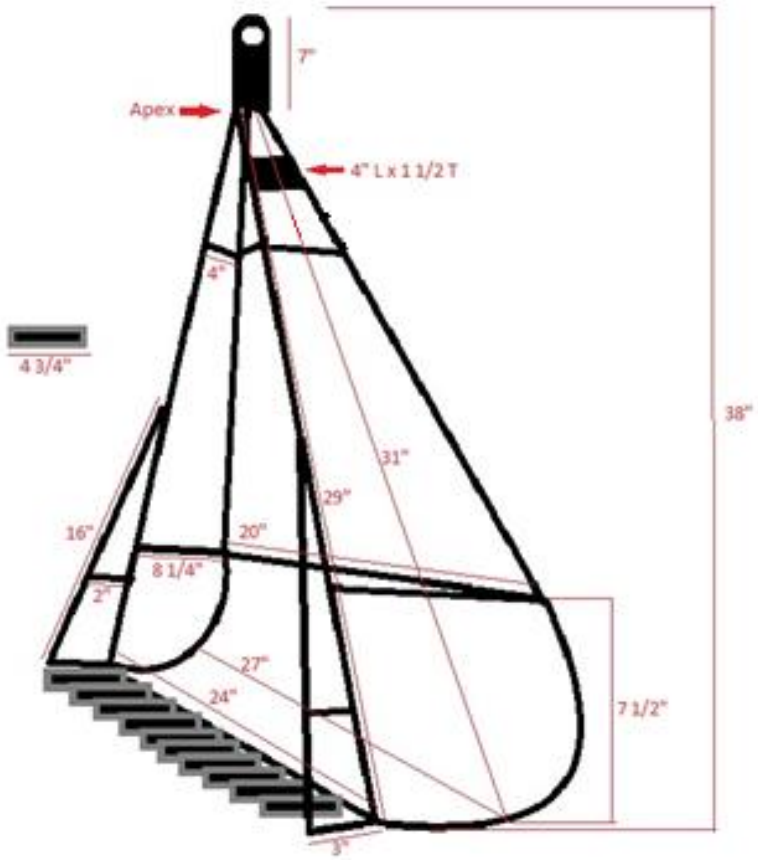
- Four-seam body webbing is constructed of #9 (1.5 in.) stretched mesh.
- Cod end constructed of #44 heavy delta (0.5 in.) stretched mesh and is 72 in. in circumference and 54 in. long.
- Head rope length measures 20 ft. and is 3/8 in. polydacron rope.
- Foot rope (lead line) measures 24.9 ft. and is 3/8 in. polydacron rope.
- Leads measure 5 ft. in length with a 5/16 in. thimble spliced in
- Head rope contains five (5) evenly spaced 3 in. X 3 in. floats
- Foot rope with five loops of 3/16 in. galvanized chain on each end and three single loops at center
- Front of each wing is constructed with 6 ft. of ¼ in. polydacron rope and tied at 4.5 ft. from each end to the head and foot ropes.
- Top of body measures 184 meshes wide by 142 meshes deep, finished at 42 meshes
- Bottom of body measures 170 meshes wide by 110.5 meshes deep, finished at 53 meshes.
- Top wedge measures 40 meshes deep = 96 bars plus 12 sets 2+1 point
- Bottom wedge measures 60 meshes deep = 96 bars plus 12 sets 2+1 point
- Set back cut-out = 14 meshes with 2:1 taper. Set back on 11th mesh.
- Wings measure 59.5 meshes wide by 160 meshes deep. Topside tapered with 40 straight meshes then 2:1 taper to point.
- Back end of net measures 100 meshes in circumference
- Doors are constructed of 1/8 in. aluminum plate with a ½ in. x 3 ft. aluminum shoe and measure 36 in. long by 18 in. tall.
- Back side of door vertically reinforced with 2 lengths of 1 in. x 2 in. aluminum channel.
- Three 1.5 in. wide water gaps measuring 6 in., 15 in., and 7 in. cut horizontally midway along length of board.
- Chain bridle constructed of 3/16 in. NACM stainless steel chain with 1¼ in. stainless shackle.
- Top front chain measures 18 links, top bottom chain measures 16 links
- Top back chain measures 28 links, bottom back chain measures 26 links.

24 in. OYSTER DREDGE

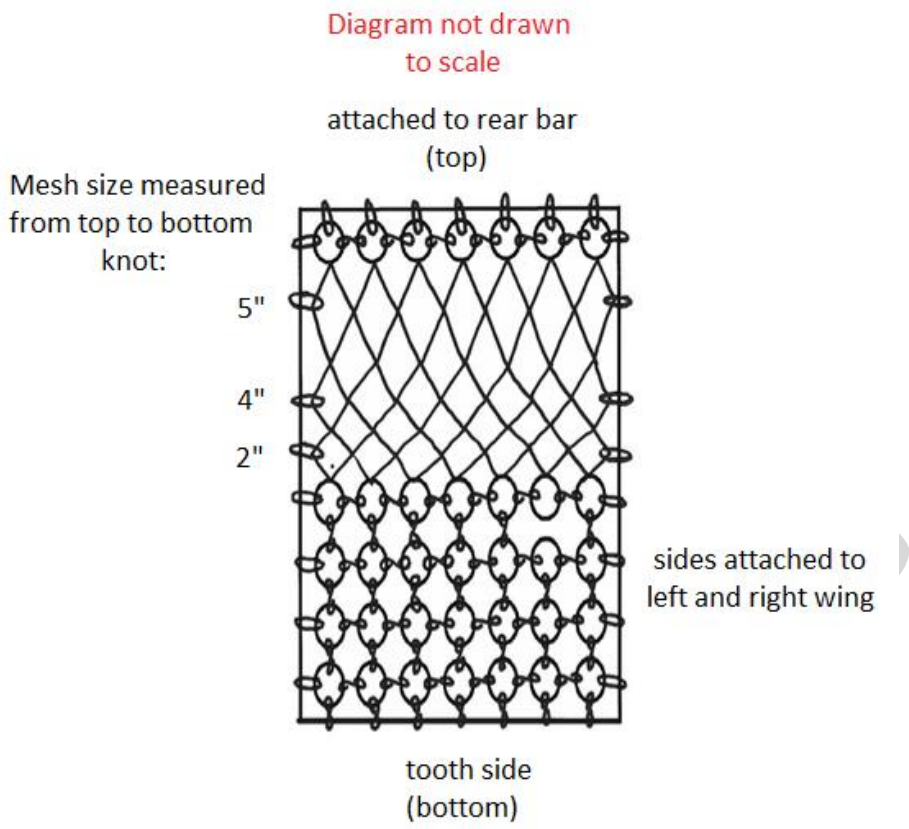
- Oyster Dredge Frame to measure 27” wide, 8” deep, and no longer than 31” from tooth bar to apex.
- Dredge to be constructed of 3/8” diameter iron rod.
- Dredge to measure approximately 38” total in height.

- Tooth bar to consist of 1” diameter iron bar 24” in length containing 10 teeth (made using 1/2” bar for each tooth) with each tooth measuring 4 ¾” in length (from front of tooth bar) spaced approximately 2” apart along the tooth bar. Teeth to be set on a 5-degree upward angle, and each tooth to be tapered to a point.
- Dredge to have ¼” rod set just below the tooth bar in order to attach bag rings.
- Bag to be constructed with 3/8” nylon with knotted mesh (5” mesh, measured knot to knot, tapering down to 4” and then 2” mesh to allow for variable sized catch) at the top and chain at the bottom, with iron rings attached to the rod located below the tooth bar, and with two 5” rings attached to the chain bag as handles for emptying.
- Chain to be constructed of ¼” iron, consisting of four rows of 2 ½” diameter rings attached with S hooks
- Dredge, with all hardware, is to weigh approximately 37 pounds.
- Dredge, chain, and hardware shall be hot-dip galvanized so as to retard rust.

Dredge Frame Drawing



Dredge Bag Drawing



SQUARE METER FRAME

- Square meter frame to be constructed of 2 in. (vertical) by 3 in. (horizontal) by ¼ in. thick aluminum angle.
- Each side (inside length) of frame shall be 1 meter in length.

Appendix B

Station Locations by Coastal Study Area and Gear

CSA 1

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 1 - Gill Net	2001	Seabrook Bridge	30.03278	-90.03667	30° 01' 58" N	090° 02' 12" W
	2003	Bonnet Carre Spillway	30.07472	-90.36306	30° 04' 29" N	090° 21' 47" W
	2005	Point aux Herbes	30.14767	-89.88244	30° 08' 51.61" N	089° 52' 56.78" W
	2006	Goose Point	30.25833	-89.98111	30° 15' 30" N	089° 58' 52" W
	2007	Shore west of Tangipahoa	30.31806	-90.23472	30° 19' 05" N	090° 14' 05" W
	2010	Main Pass	29.30333	-89.25167	29° 18' 12" N	089° 15' 06" W
	2012	Lake Catherine	30.12222	-89.71889	30° 07' 20" N	089° 43' 08" W
	2017	Bayou Deedie	30.11028	-89.67333	30° 06' 37" N	089° 40' 24" W
	2019	Lena Lagoon	29.84306	-89.61064	29° 50' 35.01" N	089° 36' 38.30" W
	2025	Hopedale Lagoon	29.81333	-89.65833	29° 48' 48" N	089° 39' 30 W
	2032	Bayou Boue	29.62083	-89.70722	29° 37' 15" N	089° 42' 26" W
	2040	Quatro Caballo/ 4 Horse Lake	29.68417	-89.69333	29° 41' 03" N	089° 41' 36" W
	2053	Pelican Island	29.5	-89.53833	29° 30' 00" N	089° 32' 18" W
	2056	Deadman Island	29.74152	-89.35859	29° 44' 29.47" N	089° 21' 30.92" W
	2061	Point Gardner	29.6544	-89.4419	29° 39' 15.83" N	089° 26' 30.84" W
	2062	Bayou Batola	29.75992	-89.64696	29° 45' 35.71" N	089° 38' 49.05" W
	2067	North Black Bay/ Gallega	29.64028	-89.60889	29° 38' 25" N	089° 36' 32" W
	2068	East Pearl River	30.18361	-89.53028	30° 11' 01" N	089° 31' 49" W
	2069	Bayou Bienvenue	30.00215	-89.85963	30° 00' 07.74" N	089° 51' 34.66" W
	2070	Malhereux Point	30.07195	-89.49101	30° 04' 19.02" N	089° 29' 27.63" W
	2071	Bayou Magnolia	29.89786	-89.59046	29° 53' 52.28" N	089° 35' 25.67" W
	2072	Bob's Lakes	29.97278	-89.47	29° 58' 22" N	089° 28' 12" W
	2073	Muscle Bay	29.90173	-89.48028	29° 54' 06.22" N	089° 28' 49" W
	2074	Long Lagoon	29.81859	-89.48152	29° 49' 06.92" N	089° 28' 53.47" W
	2075	Grand Pass	30.12056	-89.22944	30° 07' 14.01" N	089° 13' 45.98" W
	2076	Fishing Smack Bay	29.97314	-89.28139	29° 58' 23.30" N	089° 16' 53" W
	2077	Martinbox Bayou	29.87854	-89.30401	29° 52' 42.74" N	089° 18' 14.43" W
	2078	Lake of Two Trees	29.74028	-89.54944	29° 44' 25" N	089° 32' 58" W
	2096	Lake Lery	29.78778	-89.82722	29° 47' 16" N	089° 49' 38" W
	2097	Grand Lake	29.71556	-89.83222	29° 42' 56" N	089° 49' 56" W
	2098	Mozambique	29.64889	-89.52167	29° 38' 56" N	089° 31' 18" W
	2099	Sable Island	29.39694	-89.48583	29° 23' 49" N	089° 29' 09" W

Intentionally left blank.

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 1 - Oyster Dredge	3001	Bay Long	29.50833	-89.59167	29° 30' 30" N	089° 35' 30" W
	3002	Lake Machais	29.70833	-89.48889	29° 42' 30" N	089° 29' 20" W
	3003	Lake Fortuna North	29.67944	-89.48472	29° 40' 46" N	089° 29' 05" W
	3004	Turkey Bayou	30.10472	-89.29861	30° 06' 17" N	089° 17' 55" W
	3005	Grassy Island	30.15	-89.46667	30° 09' 00" N	089° 28' 00" W
	3006	Cabbage Reef	30.15306	-89.22556	30° 09' 11" N	089° 13' 32" W
	3008	Three-Mile Bay	30.03917	-89.35278	30° 02' 21" N	089° 21' 10" W
	3009	Petit Island	30.09806	-89.47889	30° 05' 53" N	089° 28' 44" W
	3021	South Black Bay	29.56028	-89.53444	29° 33' 37" N	089° 32' 04" W
	3028	East Pelican	29.49944	-89.52639	29° 29' 58" N	089° 31' 35" W
	3029	Mangrove	29.47889	-89.53999	29° 28' 44" N	089° 32' 24" W
	3032	East Bay Crabe	29.55667	-89.56972	29° 33' 24" N	089° 34' 11" W
	3033	East Bay Gardene	29.58167	-89.62194	29° 34' 54" N	089° 37' 19" W
	3036	Lake Fortuna South	29.65028	-89.50444	29° 39' 01" N	089° 30' 16" W
	3039	Horseshoe Reef	29.60278	-89.49389	29° 36' 10" N	089° 29' 38" W
	3040	East Karako	30.02	-89.23389	30° 01' 12" N	089° 14' 02" W
	3041	West Karako	30.01194	-89.28306	30° 00' 43" N	089° 16' 59" W
	3044	Grand Banks	30.14778	-89.36028	30° 08' 52" N	089° 21' 37" W
	3048	Lake Borgne Zone 3	30.02056	-89.57583	30° 01' 14" N	089° 34' 33" W
	3049	Drum Bay	29.88861	-89.29194	29° 53' 19" N	089° 17' 31" W
	3050	Morgan Harbor	29.79583	-89.32861	29° 47' 45" N	089° 19' 43" W
	3051	Johnson Bayou	30.0875	-89.31083	30° 05' 15" N	089° 18' 39" W
	3052	Shell Point	30.02306	-89.35194	30° 01' 23" N	089° 21' 07" W
	3086	2009 Lonesome CP	29.608033	-89.54012	29°36'28.92"	-89°32'24.44"
CSA 1 - Oyster Square Meter	3001	Bay Long	29.50833	-89.59167	29° 30' 30" N	089° 35' 30" W
	3003	Lake Fortuna North	29.67944	-89.48472	29° 40' 46" N	089° 29' 05" W
	3004	Turkey Bayou	30.10472	-89.29861	30° 06' 17" N	089° 17' 55" W
	3005	Grassy Island	30.15	-89.46667	30° 08' 60" N	089° 28' 00" W
	3006	Cabbage Reef	30.15306	-89.22556	30° 09' 11" N	089° 13' 32" W
	3007	Grand Pass	30.14278	-89.23972	30° 08' 34" N	089° 14' 23" W
	3008	Three-Mile Bay	30.03917	-89.35278	30° 02' 21" N	089° 21' 10" W
	3089	Three-Mile Pass (2013 CP)	30.06123	-89.37299	30° 03' 40" N	089° 22' 23" W
	3091	2012 Lake Fortuna CP	29.64770	-89.5028	29° 38' 51.73" N	089° 30' 10.08" W
	3009	Petit Island	30.09806	-89.47889	30° 05' 53" N	089° 28' 44" W
	3010	Halfmoon Island	30.11944	-89.43194	30° 07' 10" N	089° 25' 55" W
	3011	Millenium Reef	30.11278	-89.44611	30° 06' 46" N	089° 26' 46" W
	3012	Snake Island	29.63389	-89.56417	29° 38' 02" N	089° 33' 51" W
	3013	Jessie's Island	29.635	-89.61806	29° 38' 06" N	089° 37' 05" W
	3015	North Black Bay	29.61278	-89.50889	29° 36' 46" N	089° 30' 32" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	3016	Bayou Lost	29.60083	-89.61722	29° 36' 03" N	089° 37' 02" W
	3018	Black Bay	29.59694	-89.56556	29° 35' 49" N	089° 33' 56" W
	3019	West Bay Crabe	29.56528	-89.58667	29° 33' 55" N	089° 35' 12" W
	3020	Stone Island	29.57611	-89.54139	29° 34' 34" N	089° 32' 29" W
	3021	South Black Bay	29.56028	-89.53444	29° 33' 37" N	089° 32' 04" W
	3022	Elephant Pass	29.54139	-89.56417	29° 32' 29" N	089° 33' 51" W
	3023	Curfew/Iron Banks	29.53667	-89.53361	29° 32' 12" N	089° 32' 01" W
	3025	California Bay	29.51111	-89.56667	29° 30' 40" N	089° 34' 00" W
	3026	Telegraph	29.51611	-89.53222	29° 30' 58" N	089° 31' 56" W
	3027	Sunrise Point	29.49472	-89.56639	29° 29' 41" N	089° 33' 59" W
	3028	East Pelican	29.49944	-89.52639	29° 29' 58" N	089° 31' 35" W
	3029	Mangrove Point	29.47889	-89.54	29° 28' 44" N	089° 32' 24" W
	3032	East Bay Crabe	29.55667	-89.56972	29° 33' 24" N	089° 34' 11" W
	3033	East Bay Gardene	29.58163	-89.64554	29° 34' 53.87" N	089° 38' 43.93" W
	3035	Battledore Reef	29.46417	-89.42861	29° 27' 51" N	089° 25' 43" W
	3036	Lake Fortuna South	29.65028	-89.50444	29° 39' 01" N	089° 30' 16" W
	3039	Horseshoe Reef	29.60278	-89.49417	29° 36' 10" N	089° 29' 39" W
	3040	East Karako	30.02	-89.23389	30° 01' 12" N	089° 14' 02" W
	3041	West Karako	30.01194	-89.28306	30° 00' 43" N	089° 16' 59" W
	3044	Grand Banks	30.14438	-89.35889	30° 08' 39.76" N	089° 21' 32" W
	3046	Martin Island	29.96	-89.20833	29° 57' 36" N	089° 12' 30" W
	3049	Drum Bay	29.88861	-89.29194	29° 53' 19" N	089° 17' 31" W
	3050	Morgan Harbor	29.79583	-89.32861	29° 47' 45" N	089° 19' 43" W
	3051	Johnson Bayou	30.0875	-89.31083	30° 05' 15" N	089° 18' 39" W
	3052	Shell Point	30.02306	-89.35194	30° 01' 23" N	089° 21' 07" W
	3054	Wreck	29.56472	-89.48306	29° 33' 53" N	089° 28' 59" W
	3055	East Stone	29.58306	-89.51472	29° 34' 59" N	089° 30' 53" W
	3056	Round Island	30.11974	-89.45672	30° 07' 11.06" N	089° 27' 24.19" W
	3086	2009 Lonesome CP	29.608033	-89.54012	29°36'28.92" N	-89°32'24.44" W
CSA 1 - Seine	2000	Little Lake	30.15883	-89.60881	30° 09' 31.78" N	089° 36' 31.69" W
	2000	Goose Point	30.25833	-89.98111	30° 15' 30" N	089° 58' 52" W
	2112	Pontchartrain Beach Seine	30.03351	-90.05973	30° 02’ 00.62”N	090° 03’ 35.04”W
	2004	Bonnet Carre Spillway	30.10778	-90.42194	30° 06' 28" N	090° 25' 19" W
	2004	Main Pass Seine	29.30014	-89.24472	29° 18' 00.49" N	089° 14' 41" W
	2008	Shore West of Tangipahoa	30.33833	-90.27	30° 20' 18" N	090° 16' 12" W
	2009	Point aux Herbes	30.15356	-89.85816	30° 09' 12.81" N	089° 51' 29.37" W
	2013	Lake Catherine	30.12379	-89.7032	30° 07' 25.64" N	089° 42' 11.51" W
	2023	Bayou Batola	29.75583	-89.64472	29° 45' 21" N	089° 38' 41" W
	2024	Hopedale Lagoon	29.80833	-89.65306	29° 48' 30" N	089° 39' 11" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2028	Bayou Pointe a la Hache	29.57806	-89.75806	29° 34' 41" N	089° 45' 29" W
	2033	Cocahoe Lagoon	29.633	-89.793	29° 37' 58.79" N	089° 47' 34.80" W
	2034	Bayou LaCroix	29.655	-89.85972	29° 39' 18" N	089° 51' 35" W
	2045	Lost Lake	29.73745	-89.80352	29° 44' 14.83" N	089° 48' 12.66" W
	2049	Pelican Seine " Iron Banks"	29.50972	-89.53347	29° 30' 35" N	089° 32' 00.49" W
	2050	Sable Island	29.39556	-89.47944	29° 23' 44" N	089° 28' 46" W
	2055	Deadman Island	29.74146	-89.35857	29° 44' 29.25" N	089° 21' 30.85" W
	2060	Bayou Frenpiquant	29.68744	-89.46461	29° 41' 14.78" N	089° 27' 52.59" W
	2063	Bay Gardene	29.60499	-89.61335	29° 36' 17.94" N	089° 36' 48.07" W
	2064	Mozambique	29.648	-89.52	29° 38' 52.79" N	089° 31' 12" W
	2069	Bayou Bienvenue	30.00157	-89.85994	30° 00' 05.65" N	089° 51' 35.78" W
	2070	Malhereux Point	30.07141	-89.49195	30° 04' 17.06" N	089° 29' 31.02" W
	2071	Bayou Magnolia	29.89865	-89.59005	29° 53' 55.13" N	089° 35' 24.18" W
	2072	Bob's Lake	29.97278	-89.47	29° 58' 22" N	089° 28' 12" W
	2073	Muscle Bay	29.90266	-89.47844	29° 54' 09.56" N	089° 28' 42.38" W
	2074	Long Lagoon	29.81863	-89.48087	29° 49' 07.06" N	089° 28' 51.14" W
	2075	Grand Pass	30.12056	-89.22944	30° 07' 14" N	089° 13' 46" W
	2076	Fishing Smack Bay	29.97363	-89.27995	29° 58' 25.06" N	089° 16' 47.81" W
	2077	Martinbox Bayou	29.87854	-89.30401	29° 52' 42.74" N	089° 18' 14.43" W
	2078	Lake of Two Trees	29.74028	-89.54944	29° 44' 25" N	089° 32' 58" W
CSA 1 - Trammel	2014	Main Pass	29.30694	-89.24861	29° 18' 25" N	089° 14' 55" W
	2018	Lena Lagoon	29.84249	-89.61057	29° 50' 32.96" N	089° 36' 38.05" W
	2020	Hopedale Lagoon	29.81333	-89.65833	29° 48' 48" N	089° 39' 30" W
	2030	Second Bay	29.60167	-89.77778	29° 36' 06" N	089° 46' 40" W
	2035	Lake Batola	29.68528	-89.84083	29° 41' 07" N	089° 50' 27" W
	2036	Quatro Caballo/4 Horse Lake	29.68417	-89.69333	29° 41' 03" N	089° 41' 36" W
	2041	Lake Lery	29.79056	-89.81672	29° 47' 26" N	089° 49' 00.20" W
	2057	Bayou Batola	29.76	-89.64694	29° 45' 36" N	089° 38' 49" W
	2058	Point Gardner	29.67727	-89.45021	29° 40' 38.17" N	089° 27' 00.75" W
	2059	Deadman Island	29.74148	-89.35844	29° 44' 29.32" N	089° 21' 30.38" W
	2065	California Bay	29.51444	-89.61417	29° 30' 52" N	089° 36' 51" W
	2066	Bay Gardene	29.58667	-89.64556	29° 35' 12" N	089° 38' 44" W
	2068	East Pearl River	30.18361	-89.53028	30° 11' 01" N	089° 31' 49" W
	2069	Bayou Bienvenue	30.00176	-89.85978	30° 00' 06.34" N	089° 51' 35.20" W
	2070	Malhereux Point	30.06986	-89.49145	30° 04' 11.50" N	089° 29' 29.21" W
	2071	Bayou Magnolia	29.8973	-89.59032	29° 53' 50.27" N	089° 35' 25.14" W
	2072	Bob's Lakes	29.97278	-89.47	29° 58' 22" N	089° 28' 12" W
	2073	Muscle Bayou	29.90224	-89.47952	29° 54' 08.06" N	089° 28' 46.25" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2074	Long Lagoon	29.81882	-89.48025	29° 49' 07.73" N	089° 28' 48.88" W
	2075	Grand Pass	30.12056	-89.22944	30° 07' 14" N	089° 13' 46" W
	2076	Fishing Smack Pass	29.97667	-89.27917	29° 58' 36" N	089° 16' 45" W
	2077	Martinbox Bayou	29.87854	-89.30401	29° 52' 42.74" N	089° 18' 14.43" W
	2078	Lake of Two Trees	29.74028	-89.54944	29° 44' 25" N	089° 32' 58" W
	2100	Mozambique	29.64028	-89.51	29° 38' 25" N	089° 30' 36" W
	2101	Sable Island	29.4	-89.47556	29° 24' 00" N	089° 28' 32" W
CSA 1 - 16' Trawl	1000	Redfish Bay	29.08722	-89.11389	29° 05' 14" N	089° 06' 50" W
	1000	The Separator	29.63861	-89.52306	29° 38' 19" N	089° 31' 23" W
	1002	Grand Pass	29.73	-89.60833	29° 43' 48" N	089° 36' 30" W
	1002	Yaratich Bay/Main Pass	29.33	-89.22306	29° 19' 48" N	089° 13' 23" W
	1005	Seabrook Bridge	30.03278	-90.03667	30° 01' 58" N	090° 02' 12. " W
	1006	Bonnet Carre Spillway	30.07472	-90.41306	30° 04' 29" N	090° 24' 47. " W
	1007	Point aux Herbes	30.18361	-89.89722	30° 11' 01" N	089° 53' 50" W
	1008	Mid-Lake Causeway	30.1925	-90.12139	30° 11' 33" N	090° 07' 17" W
	1009	Goose Point	30.25222	-89.98306	30° 15' 08" N	089° 58' 59" W
	1010	Shore w. of Tangipahoa River	30.31806	-90.23472	30° 19' 05" N	090° 14' 05" W
	1013	Lake Eugenie	29.91361	-89.42389	29° 54' 49" N	089° 25' 26" W
	1014	Cat Island Pass	30.19917	-89.18306	30° 11' 57" N	089° 10' 59" W
	1017	Bay Eloi	29.7409	-89.41432	29° 44' 27.23" N	089° 24' 51.54" W
	1023	North Chandeleur Sound	30.09028	-88.915	30° 05' 25" N	088° 54' 54" W
	1029	Middle Chandeleur Sound	29.86833	-89.03444	29° 52' 06" N	089° 02' 04" W
	1037	Elephant Pass	30.00028	-89.24333	30° 00' 01" N	089° 14' 36" W
	1039	Mitchell Island	29.88556	-89.22806	29° 53' 08" N	089° 13' 41" W
	1060	Petit Pass	30.08133	-89.47982	30° 04' 52.78" N	089° 28' 47.34" W
	1061	Grand Pass	30.11949	-89.2394	30° 07' 10.16" N	089° 14' 21.84" W
	1063	Rigolets	30.14397	-89.62921	30° 08' 38.28" N	089° 37' 45.14" W
	1080	Bayou Bienvenue	29.99833	-89.88861	29° 59' 54" N	089° 53' 19" W
	1118	Kelly Gap	29.455	-89.51833	29° 27' 18" N	089° 31' 06" W
	1122	Breton Sound	29.48361	-89.33389	29° 29' 01" N	089° 20' 02" W
	1134	MRGO Rocks	29.60444	-89.34778	29° 36' 16" N	089° 20' 52" W
	1139	Nine-Mile Bayou	30.03528	-89.42	30° 02' 07" N	089° 25' 12. " W
	1159	Treasure Pass	29.82874	-89.42084	29° 49' 43.45" N	089° 25' 15. " W
	1176	Pintail Pass	29.58167	-89.61	29° 34' 54" N	089° 36' 36" W
	1196	St. Joe Pass	30.16361	-89.45111	30° 09' 49" N	089° 27' 04 " W
	1197	Alligator Point	30.01222	-89.70361	30° 00' 44" N	089° 42' 13" W
	1198	Shell Beach	29.89528	-89.65056	29° 53' 43" N	089° 39' 02" W
	1199	South Chandeleur Sound	29.65194	-89.14722	29° 39' 07" N	089° 08' 50" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	1200	Hospital Wall	30.16694	-89.75028	30° 10' 01" N	089° 45' 01. " W
	1201	Chef Pass	30.09956	-89.8172	30° 05' 58.40" N	089° 49' 01.90" W
CSA 1 - 6' Trawl	1001	Lake Lery	29.79833	-89.82167	29° 47' 54" N	089° 49' 18" W
	1003	Quatro Caballo/4 Horse	29.69667	-89.7	29° 41' 48" N	089° 42' 00" W
	1004	Spanish Lake	29.70028	-89.90944	29° 42' 01" N	089° 54' 34" W
	1042	Bayou Platte	30.08986	-89.73622	30° 05' 23.49" N	089° 44' 10.38" W
	1044	Marques Canal	30.08634	-89.77728	30° 05' 10.82" N	089° 46' 38.20" W
	1056	False Mouth Bayou	30.01778	-89.50861	30° 01' 04" N	089° 30' 31" W
	1063	Bayou Eloi	29.74083	-89.41444	29° 44' 26.99" N	089° 24' 51.98" W
	1077	Bayou Marron	29.9925	-89.47389	29° 59' 33" N	089° 28' 26" W
	1081	Bienvenue Lagoon	30.00005	-89.8605	30° 00' 00.18" N	089° 51' 37.80" W
	1083	Bayou Palo	29.664	-89.54	29° 39' 50.40" N	089° 32' 24" W
	1084	Bottle Bayou	29.707	-89.648	29° 42' 25.20" N	089° 38' 52.79" W
	1089	Fucich Bayou	29.51222	-89.66194	29° 30' 44" N	089° 39' 43" W
	1097	Cow Bayou	29.575	-89.713	29° 34' 30" N	089° 42' 46.79" W
	1100	Bass Field	29.58806	-89.795	29° 35' 17" N	089° 47' 42" W
	1101	Bayou LaCroix	29.63806	-89.86778	29° 38' 17" N	089° 52' 04" W
	1102	Lil Crevasse	29.63167	-89.7875	29° 37' 54" N	089° 47' 15" W
	1106	Petit Lake	29.71333	-89.79667	29° 42' 48" N	089° 47' 48" W
	1141	Picnic Bayou	30.0375	-89.28139	30° 02' 15" N	089° 16' 53" W
	1146	Drum Bayou	30.07333	-89.2675	30° 04' 24" N	089° 16' 03" W
	1148	Bayou Creque	30.09027	-89.25215	30° 05' 24.98" N	089° 15' 07.74" W
	1156	Bayou Mussel	29.91306	-89.40556	29° 54' 47" N	089° 24' 20" W
	1161	Jules Cut	29.86367	-89.35063	29° 51' 49.21" N	089° 21' 02.27" W

CSA 3

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 3 - Electrofishing	2004	Spoonbill Bay	29.55694	-90.01111	29° 33' 25" N	090° 00' 40" W
	2007	Bay Raquette	29.53583	-89.90961	29° 32' 09" N	089° 54' 34.59" W
	2008	The Pen	29.64111	-90.09075	29° 38' 28" N	090° 05' 26.69" W
	2011	Little Lake	29.53361	-90.10167	29° 32' 01" N	090° 06' 06" W
	2015	Turtle Bay	29.5275	-90.0825	29° 31' 39" N	090° 04' 57" W
	2031	Manilla Village	29.42822	-89.98936	29° 25' 41.59" N	089° 59' 21.69" W
	2040	Creole Bay	29.36944	-90.04417	29° 22' 10" N	090° 02' 39" W
	2041	Wilkinson Bay	29.46444	-89.91	29° 27' 52" N	089° 54' 36" W
	2044	Sandy Point	29.21972	-89.48306	29° 13' 11" N	089° 28' 59" W
	2045	Bay Adams	29.41083	-89.65528	29° 24' 39" N	089° 39' 19" W
	2046	Hospital Bay	29.31583	-89.39556	29° 18' 57" N	089° 23' 44" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2069	South Lake	29.24139	-90.16972	29° 14' 29" N	090° 10' 11" W
CSA 3 - Gill Net	2001	Lake Salvador	29.68139	-90.19944	29° 40' 53" N	090° 11' 58" W
	2003	Bayou Rigolettes	29.64272	90.13144	29° 38' 33.79" N	090° 07' 53.18" E
	2180	Northern Coffee Gill	29.52081	90.148	29° 31' 14.92" N	090° 08' 52.8" E
	2178	Spoonbill Canal Gill	29.567	90.02292	29° 34' 01.2" N	090° 01' 22.51" E
	2009	Bay Raquette	29.53333	-89.92306	29° 32' 00" N	089° 55' 23" W
	2010	The Pen	29.65194	-90.06667	29° 39' 07" N	090° 04' 00" W
	2013	Fisherman's Point	29.52528	-90.08611	29° 31' 31" N	090° 05' 10" W
	2019	Grand Isle Beach	29.24611	-89.96083	29° 14' 46" N	089° 57' 39" W
	2020	Oak's Bay	29.24443	-90.0193	29° 14' 40" N	090° 01' 9.4" W
	2023	Grand Terre Beach	29.27611	-89.93611	29° 16' 34" N	089° 56' 10" W
	2032	Caminada Bay	29.2221	-90.0459	29° 13' 19.6" N	090° 02' 45.2" W
	2034	East Grand Terre	29.28611	-89.93417	29° 17' 10" N	089° 56' 03" W
	2037	Manilla Village	29.43194	-89.98944	29° 25' 55" N	089° 59' 22" W
	2039	Elmer's Island	29.17	-90.08	29° 10' 12" N	090° 04' 48" W
	2041	Wilkinson Bay	29.46885	-89.91083	29° 28' 07.86" N	089° 54' 39" W
	2043	Bastian Island	29.29667	-89.69639	29° 17' 48" N	089° 41' 47" W
	2051	Bay Sansbois	29.47167	-89.77861	29° 28' 18" N	089° 46' 43" W
	2058	West Little Lake	29.52417	-90.20278	29° 31' 27" N	090° 12' 10" W
	2059	South Lake	29.24694	-90.17528	29° 14' 49" N	090° 10' 31" W
	2060	Bay Rambo	29.33972	-90.13889	29° 20' 23" N	090° 08' 20" W
	2061	Lake Palourde	29.21667	-90.13139	29° 13' 00" N	090° 07' 53" W
	2062	Sandy Point	29.2175	-89.48444	29° 13' 03" N	089° 29' 04" W
	2063	Bay Adams	29.40806	-89.64694	29° 24' 29" N	089° 38' 49" W
	2064	Hospital Bay	29.31	-89.39722	29° 18' 36" N	089° 23' 50" W
CSA 3 - Oyster Dredge	3000	N. Hackberry Bay Cultch Plant	29.41722	-90.0325	29° 25' 02" N	090° 01' 57" W
	3001	S. Hackberry Bay Cultch Plant	29.3872	-90.0508	29° 23' 14" N	090° 03' 03" E
	3002	L. Barataria Bay Cultch Plant	29.33028	-89.94	29° 19' 49" N	089° 56' 24" W
	3003	Lower Hackberry	29.39139	-90.05139	29° 23' 29" N	090° 03' 05" W
	3004	Middle Hackberry	29.40083	-90.035	29° 24' 03" N	090° 02' 06" W
	3005	Upper Hackberry	29.42139	-90.03083	29° 25' 17" N	090° 01' 51" W
	3006	2008 Hackberry Bay CP	29.42528	-90.01528	29° 25' 31" N	090° 00' 55" W
	3007	2012 Hackberry Bay CP	29.41710	-90.04975	29° 25' 02" N	090° 02' 59" W
	3020	2014 Hackberry Cultch Plant	29.420987	-90.0231	29° 25' 15.55" N	090° 01' 23.16" W
	3017	Little Lake 1	29.45639	-90.09306	29° 27' 23" N	090° 05' 35.01" W
	3018	Little Lake 2	29.4579	-90.0801	29° 27' 28.43" N	090° 04' 48.36" W
	3019	Bayou St. Dennis	29.49064	-90.0369	29° 29' 26.30" N	090° 02' 12.84" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 3 - Oyster - Square Meter	3000	N. Hackberry Bay Cultch Plant	29.41722	-90.0325	29° 25' 02" N	090° 01' 57" W
	3001	S. Hackberry Bay Cultch Plant	29.3872	-90.0508	29° 23' 14" N	090° 03' 03" E
	3002	L. Barataria Bay Cultch Plant	29.33028	-89.94	29° 19' 49" N	089° 56' 24" W
	3003	Lower Hackberry	29.39139	-90.05139	29° 23' 29" N	090° 03' 05" W
	3004	Middle Hackberry	29.40083	-90.035	29° 24' 03" N	090° 02' 06" W
	3005	Upper Hackberry	29.42139	-90.03083	29° 25' 17" N	090° 01' 51" W
	3006	2008 Hackberry Bay Cultch Plant	29.42528	-90.01528	29° 25' 31" N	090° 00' 55" W
	3007	2012 Hackberry Bay Cultch Plant	29.41710	-90.04975	29° 25' 02" N	090° 02' 59" W
	3020	2014 Hackberry Cultch Plant	29.420987	-90.0231	29° 25' 16" N	090° 01' 23" W
	3019	SWAMP 1 C	29.47294	-90.01279	29° 28' 23" N	090° 00' 46" W
	3022	SWAMP 1 D	29.47518	-90.00901	29° 28' 31" N	090° 00' 32" W
	3023	SWAMP 1 G	29.46784	-90.00169	29° 28' 04" N	090° 00' 06" W
	3024	SWAMP 2 C	29.40584	-90.01926	29° 24' 21" N	090° 01' 09" W
	3025	SWAMP 5 C	29.23631	-90.04727	29° 14' 11" N	090° 02' 50" W
	3026	SWAMP 5 D	29.23037	-90.06078	29° 13' 49" N	090° 03' 39" W
	3027	SWAMP 6 B	29.47106	-89.90527	29° 28' 16" N	089° 54' 19" W
	3028	SWAMP 6 E	29.46072	-89.90612	29° 27' 39" N	089° 54' 22" W
	3029	SWAMP 6 F	29.45803	-89.90613	29° 27' 29" N	089° 54' 22" W
	3030	SWAMP 9 B	29.40929	-89.82165	29° 24' 33" N	089° 49' 18" W
	3031	SWAMP 10 A	29.35079	-89.80543	29° 21' 03" N	089° 48' 20" W
	3032	SWAMP 10 E	29.34353	-89.79778	29° 20' 37" N	089° 47' 52" W
	3033	SWAMP 11 D	29.36596	-89.66568	29° 21' 57" N	089° 39' 56" W
	3034	SWAMP 12 B	29.35757	-89.61505	29° 21' 27" N	089° 36' 54" W
	3035	SWAMP 12 H	29.35418	-89.60603	29° 21' 15" N	089° 36' 22" W
	3036	SWAMP 13 B	29.29912	-89.6067	29° 17' 57" N	089° 36' 24" W
	3037	SWAMP 14 B	29.28722	-89.51941	29° 17' 14" N	089° 31' 10" W
	3038	SWAMP 14 E	29.27611	-89.51404	29° 16' 34" N	089° 30' 501" W
	3039	SWAMP 15 E	29.46345	-89.76576	29° 27' 48" N	089° 45' 57" W
	3040	SWAMP 16 A	29.44081	-89.94249	29° 26' 27" N	089° 56' 33" W
	3041	SWAMP 16 D	29.43315	-89.93735	29° 25' 59" N	089° 56' 14" W
	3042	SWAMP 19 C	29.45523	-90.08073	29° 27' 19" N	090° 04' 51" W
	3043	SWAMP 19 F	29.45293	-90.06875	29° 27' 11" N	090° 04' 08" W
	3044	SWAMP 20 C	29.34517	-90.14637	29° 20' 43" N	090° 08' 47" W
	3045	SWAMP 20 G	29.34899	-90.13595	29° 20' 56" N	090° 08' 09" W
CSA 3 - Seine	2000	Lake Salvador	29.67675	-90.20962	29° 40' 36.29" N	090° 12' 34.62" W
	2002	Bayou Rigolettes	29.67072	-90.13	29° 40' 14.59" N	090° 07' 48" W
	2177	Spoonbill Canal Seine	29.56833	90.02325	29° 34' 05.99" N	090° 01' 23.7" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2007	Bay Raquette	29.53056	-89.90861	29° 32' 09" N	089° 54' 34.59" W
	2008	The Pen	29.64111	-90.09075	29° 38' 28" N	090° 05' 26.69" W
	2011	Little Lake	29.53361	-90.10167	29° 32' 01" N	090° 06' 06" W
	2015	Turtle Bay	29.5275	-90.0825	29° 31' 39" N	090° 04' 57" W
	2179	Northern Coffee Seine	29.52296	90.14731	29° 31' 22.66" N	090° 08' 50.32" W
	2029	Grand Terre Beach	29.27611	-89.93722	29° 16' 34" N	089° 56' 14 W
	2172	Bassa Bassa Bay South	29.3500	-89.991667	29° 21' 00.00" N	089° 59' 30.00" W
	2031	Manilla Village	29.42822	-89.98936	29° 25' 41.59" N	089° 59' 21.69" W
	2176	Grand Isle Cove	29.26917	-89.95639	29° 16' 9" N	89° 57' 23" W
	2039	Elmer's Island	29.17139	-90.08	29° 10' 17" N	090° 04' 48" W
	2040	Creole Bay	29.36944	-90.04417	29° 22' 10" N	090° 02' 39" W
	2041	Wilkinson Bay	29.4675	-89.91214	29° 28' 03" N	089° 54' 43.69" W
	2042	Bay Sansbois S	29.46917	-89.78056	29° 28' 07" N	089° 46' 50" W
	2043	Bastian Island	29.29889	-89.70444	29° 17' 56" N	089° 42' 16" W
	2044	Sandy Point	29.21972	-89.48306	29° 13' 11" N	089° 28' 59" W
	2045	Bay Adams	29.41083	-89.65528	29° 24' 39" N	089° 39' 19" W
	2046	Hospital Bay	29.31583	-89.39556	29° 18' 57" N	089° 23' 44" W
	2069	South Lake	29.24139	-90.16972	29° 14' 29" N	090° 10' 11" W
CSA 3 - Trammel	2014	Turtle Bay	29.52528	-90.08611	29° 31' 31" N	089° 05' 10" W
	2024	East Grand Terre	29.28667	-89.93361	29° 17' 12" N	089° 56' 01" W
	2025	Grand Terre Beach	29.27611	-89.93611	29° 16' 34" N	089° 56' 10" W
	2026	Manilla Village	29.43686	-89.98644	29° 26' 12.69" N	089° 59' 11.19" W
	2027	Bassa Bassa	29.36	-90.00833	29° 21' 36. N	090° 00' 30" W
	2035	Queen Bess	29.30256	-89.95997	29° 18' 09.19" N	089° 57' 35.89" W
	2041	Wilkinson Bay	29.46444	-89.91	29° 27' 52" N	089° 54' 36" W
	2047	West Little Lake	29.52532	-90.20393	29° 31' 31.15" N	089° 12' 14.15" W
	2048	South Lake	29.24147	-90.17233	29° 14' 29.29" N	090° 10' 20.39" W
	2049	Bay Rambo	29.32894	-90.13031	29° 19' 44.19" N	090° 07' 49.09" W
	2050	Lake Palourde	29.21306	-90.13583	29° 12' 47" N	090° 08' 09" W
	2051	Bay Sansbois	29.47722	-89.7775	29° 28' 38" N	089° 46' 39" W
	2052	Sandy Point	29.22278	-89.48278	29° 13' 22" N	089° 28' 58" W
	2053	Bay Adams	29.40528	-89.64472	29° 24' 19" N	089° 38' 41" W
	2054	Hospital Bay	29.30306	-89.395	29° 18' 11" N	089° 23' 42" W
	2055	Elmer's Island	29.16611	-90.08472	29° 09' 58" N	090° 05' 05" W
CSA 3 - 16' Trawl	1000	Salvador DP	29.67917	-90.20306	29° 40' 45" N	090° 12' 11" W
	1001	Rigolettes DP	29.645	-90.12694	29° 38' 42" N	090° 07' 37" W
	1002	Little Lake DP	29.49361	-90.12611	29° 29' 37" N	090° 07' 34" W
	1005	Snail Bay DP	29.44278	-90.05917	29° 26' 34" N	090° 03' 33" W
	1009	Spoonbill DP	29.55667	-90.02444	29° 33' 24" N	090° 01' 28" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	1013	The Pen DP	29.64972	-90.08944	29° 38' 59" N	090° 05' 22" W
	1039	Caminada	29.23889	-90.02417	29° 14' 20" N	090° 01' 27" W
	1044	Independence	29.31222	-89.93528	29° 18' 44" N	089° 56' 07" W
	1051	Ronquille	29.32972	-89.87111	29° 19' 47 N	089° 52' 16" W
	1059	St. Mary	29.41833	-89.95667	29° 25' 06" N	089° 57' 24" W
	1068	Lake Palourde	29.212	90.122	29° 12' 43. N	090° 07' 18" E
	1073	Bayou Wilkinson	29.4875	-89.91028	29° 29' 15" N	089° 54' 37" W
	1074	Grand Bayou	29.49917	-89.75	29° 29' 57" N	089° 45' 00" W
	1076	Hospital Bay	29.31028	-89.4025	29° 18' 37" N	089° 24' 09" W
	1082	Bayou Casse Tete	29.36972	-90.06111	29° 22' 11" N	090° 03' 40" W
	10-1501	Hermitage	29.57172	-89.86807	29° 34' 18.19" N	89° 52' 05.04" W
	25-1502	Scofield Bay	29.25487	-89.54517	29° 15' 17.53" N	89° 32' 42.60" W
	28-1503	Middle Bank	29.34912	-89.94265	29° 20' 56.82" N	89° 56' 33.54" W
	31-1504	Bay Joe Wise	29.32201	-89.69595	29° 19' 19.24" N	89° 41' 45.40" W
	44-1505	Saturday Island	29.42127	-89.91501	29° 25' 16.57" N	89° 54' 54.01" W
	53-1506	Bay Sansbois	29.47748	-89.76696	29° 28' 38.93" N	89° 46' 01.04" W
	89-1507	Bay Jacquin	29.29515	-89.55476	29° 17' 42.53" N	89° 33' 17.13" W
	108-1508	Bayou St. Denis	29.46003	-89.97339	29° 27' 36.09" N	89° 58' 24.21" W
	117-1509	Bay Chene Fleur	29.45986	-89.90162	29° 27' 35.47" N	89° 54' 05.81" W
	156-1510	Bay Champagne	29.33583	-90.02543	29° 20' 08.98" N	90° 01' 31.54" W
CSA 3 - 20' Trawl	1019	Grand Isle 5 mile	29.15833	-89.95861	29° 09' 30" N	089° 57' 31" W
	1020	Grand Isle 7 mile	29.125	-89.9475	29° 07' 30" N	089° 56' 51" W
	1021	Empire 5 mile	29.17417	-89.60028	29° 10' 27. N	089° 36' 01" W
	1022	Empire 7 mile	29.14361	-89.60028	29° 08' 37" N	089° 36' 01" W
	1038	Grand Isle Beach	29.24417	-89.95722	29° 14' 39" N	089° 57' 26" W
	1064	3 Mile Grand Terre	29.25083	-89.90333	29° 15' 03" N	089° 54' 12" W
	1065	Grand Terre Beach	29.27389	-89.935	29° 16' 26" N	089° 56' 06" W
	1075	Empire Jetty	29.25	-89.6	29° 15' 00" N	089° 36' 00" W
	1077	Sandy Point	29.20778	-89.49	29° 12' 28" N	089° 29' 24" W
	1078	3 Mile Grand Isle	29.19583	-89.95167	29° 11' 45" N	089° 57' 06" W
CSA 3 - 6' Trawl	1004	Snail Bay	29.42972	-90.05639	29° 25' 47" N	090° 03' 23" W
	1007	Mud Lake	29.46389	-90.02	29° 27' 50" N	090° 01' 12" W
	1008	Little Lake	29.44928	-90.10111	29° 26' 57.40" N	090° 06' 04" W
	1010	Wilkinson Bay	29.45028	-89.93417	29° 27' 01" N	089° 56' 03" W
	1011	Lake Five	29.53111	-89.9625	29° 31' 52" N	089° 57' 45" W
	1012	Round Lake	29.56194	-89.96611	29° 33' 43" N	089° 57' 58" W
	1014	Porpoise	29.21861	-90.08389	29° 13' 07" N	090° 05' 02" W
	1015	Airplane Lake	29.22167	-90.11167	29° 13' 18" N	090° 06' 42" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	1016	Bayou Garci	29.25167	-90.12389	29° 15' 06" N	090° 07' 26" W
	1017	Bay Jacques	29.28556	-90.13	29° 17' 08" N	090° 07' 48" W
	1021	Bay Rambo	29.33639	-90.11861	29° 20' 11" N	090° 07' 07" W
	1023	Bay L'ours	29.34417	-90.09583	29° 20' 39" N	090° 05' 45" W
	1024	Billet Bay Crash	29.36333	-89.75667	29° 21' 48" N	089° 45' 24" W
	1047	Bay Dispute	29.31333	-89.87167	29° 18' 48" N	089° 52' 18" W
	1048	Grand Bank Bayou	29.32111	-89.87111	29° 19' 16" N	089° 52' 16" W
	1053	Bay Long	29.34917	-89.81722	29° 20' 57" N	089° 49' 02" W
	1054	Creole Bay	29.35672	-90.03144	29° 21' 24.19" N	090° 01' 53.18" W
	1056	Grand Ecaille	29.37333	-89.82278	29° 22' 24" N	089° 49' 22" W
	1060	Bay Batiste	29.42472	-89.84167	29° 25' 29" N	089° 50' 30" W
	1069	Bayou Fernandez	29.50348	-89.75033	29° 30' 12.53" N	089° 45' 01.17" W
	1070	Bayou Vacherie	29.40556	-89.62917	29° 24' 20" N	089° 37' 45" W
	1071	Dry Cypress	29.306	-89.522	29° 18' 21.60" N	089° 31' 19.20" W
	1072	Yellow Cotton	29.30528	-89.39583	29° 18' 19" N	089° 23' 45" W
	1079	Lake Salvador	29.6575	-90.27194	29° 39' 27" N	090° 16' 19" W
	1080	Bernstein Cut	29.63056	-90.14028	29° 37' 50" N	090° 08' 25" W
	1081	Upper Bayou Dupont	29.63768	-90.06704	29° 38' 15.65" N	090° 04’ 1.34" W

CSA 5

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 5 - Gill Net	2016	Bay Antoine	29.24556	-90.74194	29° 14' 44" N	090° 44' 31" W
	2028	Taylor's Bayou	29.17806	-91.02444	29° 10' 41" N	091° 01' 28" W
	2036	Lake Mechant	29.332211	-90.93898	29° 19' 55.96" N	090° 56' 20.31" W
	2038	Lake Tambour	29.28333	-90.525	29° 17' 00" N	090° 31' 30" W
	2039	Wonder Lake	29.43333	-90.53611	29° 26' 00" N	090° 32' 10" W
	2053	Catfish Lake	29.37222	-90.31389	29° 22' 20" N	090° 18' 50" W
	2064	Bay Junop	29.25333	-91.04083	29° 15' 12" N	091° 02' 27" W
	2075	Last Island	29.04667	-90.80944	29° 02' 48" N	090° 48' 34" W
	2077	Raccoon Point	29.06111	-90.96056	29° 03' 40" N	090° 57' 38" W
	2079	Timbalier Island	29.09	-90.24	29° 05' 24" N	090° 14' 24" W
	2080	Pierle Bay	29.16667	-90.29	29° 10' 00" N	090° 17' 24" W
	2085	Last Island	29.05	-90.69333	29° 03' 00" N	090° 41' 36" W
	2087	Four League Bay	29.31361	-91.20278	29° 18' 49" N	091° 12' 10" W
	2088	Lake Decade	29.41028	-90.86306	29° 24' 37" N	090° 51' 47" W
	2089	Bayou Severin	29.32736	-90.82313	29° 19' 38.50" N	090° 49' 23.27" W
	2090	Bay Charlie	29.16444	-90.80306	29° 09' 52" N	090° 48' 11" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2101	Oyster Bayou	29.2175	-91.12611	29° 13' 03" N	091° 07' 34" W
	2108	Little Lake	29.25889	-90.2625	29° 15' 32" N	090° 15' 45" W
	2109	Bay Courant	29.33667	-90.35639	29° 20' 12" N	090° 21' 23" W
	2110	Sulfur Mine	29.45722	-90.37611	29° 27' 26" N	090° 22' 34" W
	2111	Bodwin Point	29.11667	-90.71472	29° 07' 00" N	090° 42' 53" W
	2112	Bay Cocodrie	29.25222	-90.65	29° 15' 08" N	090° 39' 00" W
	2113	Lake Robinson	29.33306	-90.65306	29° 19' 59" N	090° 39' 11" W
	2118	Little Lewis Canal	29.32235	-90.773	29° 19' 20" N	090° 46' 23" W
CSA 5 - Oyster Dredge	3000	Walker's Point	29.2475	-90.93667	29° 14' 51" N	090° 56' 12" W
	3001	Grand Pass	29.25861	-90.93333	29° 15' 31" N	090° 56' 00" W
	3004	Outlaw Cove	29.21833	-90.89139	29° 13' 06" N	090° 53' 29" W
	3026	SL 2004 Cultch Plant	29.225	-90.91444	29° 13' 30" N	090° 54' 52" W
	3027	Old Camp	29.21583	-90.94667	29° 12' 57" N	090° 56' 48" W
	3029	LM 2004 Cultch Plant	29.31111	-90.94778	29° 18' 40" N	090° 56' 52" W
	3031	Mid-Bay Junop	29.24444	-91.05333	29° 14' 40" N	091° 03' 12" W
	3033	Lower Bay Junop	29.21167	-91.05167	29° 12' 42" N	091° 03' 06" W
	3039	Lake Felicity	29.315	-90.44444	29° 18' 54" N	090° 26' 40" W
	3040	Lake Chien	29.33417	-90.44722	29° 20' 03" N	090° 26' 50" W
	3041	Lake Chien 2009 Cultch Plant	29.33472	-90.43778	29° 20' 05" N	090° 26' 16" W
	3042	2009 Cultch Plant	29.24583	-90.91	29° 14' 45" N	090° 54' 36" W
	3045	2012 SL Cultch Plant	29.239502	-90.91146	29° 14' 22.21" N	090° 54' 41.26" W
CSA 5 - Oyster Square Meter	3010	Walker's Point	29.2475	-90.93667	29° 14' 51" N	090° 56' 12" W
	3015	Mid-Sister Lake	29.235	-90.9275	29° 14' 06" N	090° 55' 39" W
	3020	Grand Pass	29.25861	-90.93333	29° 15' 31" N	090° 56' 00" W
	3021	N. '94 Shell Plant	29.24806	-90.92639	29° 14' 53" N	090° 55' 35" W
	3022	Mid '94 Shell Plant	29.23806	-90.92694	29° 14' 17" N	090° 55' 37" W
	3023	S. '94 Shell Plant	29.22472	-90.90889	29° 13' 29" N	090° 54' 32" W
	3024	N. '95 Shell Plant	29.2575	-90.935	29° 15' 27" N	090° 56' 06" W
	3026	SL 2004 Cultch Plant	29.225	-90.91444	29° 13' 30" N	090° 54' 52" W
	3028	Old Camp	29.21583	-90.94667	29° 12' 57" N	090° 56' 48" W
	3029	LM 2004 Cultch Plant	29.31111	-90.94778	29° 18' 40" N	090° 56' 52" W
	3035	South Bay Junop (Rat Bayou)	29.21667	-91.04833	29° 13' 00" N	091° 02' 54" W
	3036	Mid Bay Junop	29.24444	-91.05333	29° 14' 40" N	091° 03' 12" W
	3037	Junop Bayou de West	29.23583	-91.06167	29° 14' 09" N	091° 03' 42" W
	3038	N. Bay Junop (Buckskin)	29.265	-91.02917	29° 15' 54" N	091° 01' 45" W
	3039	Lake Felicity	29.315	-90.44444	29° 18' 54" N	090° 26' 40" W
	3040	Lake Chien	29.33417	-90.44722	29° 20' 03" N	090° 26' 50" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	3041	Lake Chien 2009 Cultch Plant	29.33472	-90.43778	29° 20' 05" N	090° 26' 16" W
	3042	SL 2009 Cultch Plant	29.24583	-90.91	29° 14' 45" N	090° 54' 36" W
	3045	2012 SL Cultch Plant	29.239502	-90.91146	29° 14' 22.21" N	090° 54' 41.26" W
CSA 5 - Seine	2011	Bayou Grand Caillou	29.17056	-90.93333	29° 10' 14" N	090° 56' 00" W
	2014	Sister Lake	29.21583	-90.92778	29° 12' 57" N	090° 55' 40" W
	2031	Sanders Bay	29.25611	-90.9425	29° 15' 22" N	090° 56' 33" W
	2033	Mud Lake	29.29111	-90.915	29° 17' 28" N	090° 54' 54" W
	2034	Bayou Chevreau	29.32528	-90.90278	29° 19' 31" N	090° 54' 10" W
	2041	Moss Bay	29.216389	-90.69389	29°12'59.00"N	90°41'38.00"W
	2057	Cross Roads	29.32778	-90.66167	29° 19' 40" N	090° 39' 42" W
	2060	Lake Quitman	29.35417	-90.67083	29° 21' 15" N	090° 40' 15" W
	2061	Lake Boudreaux	29.37361	-90.67083	29° 22' 25" N	090° 40' 15" W
	2074	Bay Coon Road	29.16833	-90.685	29° 10' 06" N	090° 41' 06" W
	2076	Last Island	29.051155	-90.83853	29° 03' 04.16" N	090° 50' 18.69" W
	2082	Trinity Bayou	29.04917	-90.73917	29° 02' 57" N	090° 44' 21" W
	2095	Four League Bay	29.26667	-91.18861	29° 16' 00" N	091° 11' 19" W
	2096	Lost Lake	29.32694	-91.04167	29° 19' 37" N	091° 02' 30" W
	2097	Bayou Severin	29.28541	-90.8585	29° 17' 07.47" N	090° 51' 30.58" W
	2098	Bay Charlie	29.17306	-90.80694	29° 10' 23" N	090° 48' 25" W
	2099	Bay Antoine	29.25417	-90.725	29° 15' 15" N	090° 43' 30" W
	2100	Dog Lake	29.15417	-90.84778	29° 09' 15" N	090° 50' 52" W
	2102	Fourchon	29.12111	-90.2325	29° 07' 16" N	090° 13' 57" W
	2103	Devil's Bay	29.14194	-90.25861	29° 08' 31" N	090° 15' 31" W
	2104	Little Lake	29.26111	-90.26583	29° 15' 40" N	090° 15' 57" W
	2105	Bay Courant	29.32333	-90.34167	29° 19' 24" N	090° 20' 30" W
	2106	Catfish Lake	29.39061	-90.33819	29°23'26.20"N	90°20'17.50"W
	2107	Sulfur Mine	29.46611	-90.42528	29° 27' 58" N	090° 25' 31" W
CSA 5 - Trammel	2005	Sulfur Mine	29.46528	-90.42083	29° 27' 55" N	090° 25' 15" W
	2010	Dog Lake	29.16833	-90.84	29° 10' 06" N	090° 50' 24" W
	2018	Bay Moncleuse	29.25556	-90.85639	29° 15' 20" N	090° 51' 23" W
	2025	Bay Cocodrie	29.25333	-90.64833	29° 15' 12" N	090° 38' 54" W
	2027	Lake Mechant	29.329772	-90.93654	29° 19' 47.18" N	090° 56' 11.55" W
	2030	Bay Voisin	29.21667	-90.98056	29° 13' 00" N	090° 58' 50" W
	2049	Old Lady Lake	29.31833	-90.41333	29° 19' 06" N	090° 24' 48" W
	2059	Lake Quitman	29.33333	-90.65694	29° 20' 00" N	090° 39' 25" W
	2067	Blue Hammock Bayou	29.3025	-91.08333	29° 18' 09" N	091° 05' 00" W
	2073	Oak Bayou	29.13889	-90.70722	29° 08' 20" N	090° 42' 26" W
	2081	Lake Chien	29.34444	-90.43667	29° 20' 40" N	090° 26' 12" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2083	Trinity Island	29.05583	-90.73917	29° 03' 21" N	090° 44' 21" W
	2086	Lake Boudreaux	29.41417	-90.62694	29° 24' 51" N	090° 37' 37" W
	2091	Four League Bay	29.25472	-91.16139	29° 15' 17" N	091° 09' 41" W
	2092	Lost Lake	29.33583	-91.02056	29° 20' 09" N	091° 01' 14" W
	2093	Mud Lake	29.28806	-90.89556	29° 17' 17" N	090° 53' 44" W
	2094	Bay Round	29.10361	-90.84	29° 06' 13" N	090° 50' 24" W
	2114	Fourchon	29.10889	-90.24722	29° 06' 32" N	090° 14' 50" W
	2115	Devil's Bay	29.14278	-90.25917	29° 08' 34" N	090° 15' 33" W
	2116	Little Lake	29.26611	-90.27278	29° 15' 58" N	090° 16' 22" W
	2117	Catfish Lake	29.36417	-90.28583	29° 21' 51" N	090° 17' 09" W
	2118	Little Lewis Canal	29.32235	-90.773	29° 19' 20" N	090° 46' 23" W
CSA 5 - 16' Trawl	1006	Hackberry Lake	29.20833	-90.87167	29° 12' 30" N	090° 52' 18" W
	1010	Bay Moncleuse	29.245	-90.87167	29° 14' 42" N	090° 52' 18" W
	1019	Sister Lake	29.26111	-90.91667	29° 15' 40" N	090° 55' 00" W
	1026	Lake Mechant	29.33056	-90.95556	29° 19' 50" N	090° 57' 20" W
	1057	Four League Bay	29.3	-91.15	29° 18' 00" N	091° 09' 00" W
	1063	Moss Bay	29.21167	-90.68111	29° 12' 42" N	090° 40' 52" W
	1071	Terrebonne Bay	29.16667	-90.565	29° 10' 00" N	090° 33' 54" W
	1085	Lake Barre	29.26444	-90.55417	29° 15' 52" N	090° 33' 15" W
	1091	Lake Pelto	29.08333	-90.70667	29° 05' 00" N	090° 42' 24" W
	1103	Lost Lake	29.33583	-91.02056	29° 20' 09" N	091° 01' 14" W
	1104	Caillou Boca	29.06667	-90.83333	29° 04' 00" N	090° 50' 00" W
	1105	Dog Lake	29.16667	-90.845	29° 10' 00 N	090° 50' 42" W
	1107	Lake Tambour	29.33	-90.51	29° 19' 48" N	090° 30' 36" W
	1108	Lake Felicity	29.26056	-90.41806	29° 15' 38" N	090° 25' 05" W
	1109	Bay Courant	29.3175	-90.34583	29° 19' 03" N	090° 20' 45" W
	1110	Catfish Lake	29.376944	-90.31139	29°22' 37"N	90°18'41"W
	1111	Little Lake	29.24	-90.27	29° 14' 24" N	090° 16' 12" W
	1112	Devil's Bay	29.14861	-90.26667	29° 08' 55" N	090° 15' 60" W
CSA 5 - 20' Trawl	1057	Bayou DeWest 3-mile	29.135	-91.08833	29° 08' 06" N	091° 05' 18" W
	1072	Pass Raquette 5-mile	29.2275	-91.34389	29° 13' 39" N	091° 20' 38" W
	1074	Whiskey Pass 7-mile	28.94944	-90.80833	28° 56' 58" N	090° 48' 30" W
	1075	Cat Island Pass 7-mile	28.98806	-90.575	28° 59' 17" N	090° 34' 30" W
	1076	Oyster Bayou 3-mile	29.17563	-91.23032	29° 10' 32.26" N	091° 13' 49.15" W
	1077	Point Au Fer 1-mile	29.22805	-91.2872	29° 13' 40.98" N	091° 17' 13.91" W
	1093	Whiskey Pass Beach	29.02333	-90.76944	29° 01' 24" N	090° 46' 10" W
	1096	Caillou Bay	29.16667	-90.95833	29° 10' 00" N	090° 57' 30" W
	1097	Bayou DeWest 1-mile	29.17306	-91.05306	29° 10' 23.01" N	091° 03' 11.01" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	1101	Oyster Bayou	29.20833	-91.13333	29° 12' 30" N	091° 08' 00" W
	1121	Whiskey Pass 3-Mile	29.0	-90.78333	29° 00' 00 N	090° 47' 00" W
	1123	Cat Island Pass 3-mile	29.04611	-90.56972	29° 02' 46" N	090° 34' 11" W
CSA 5 - 6' Trawl	1001	Dog Lake	29.16972	-90.84056	29° 10' 11" N	090° 50' 26.01" W
	1002	Bay Charlie	29.17333	-90.80333	29° 10' 24" N	090° 48' 12" W
	1004	Hackberry Lake	29.195	-90.87333	29° 11' 42" N	090° 52' 24" W
	1005	Redfish Bayou	29.2	-90.895	29° 12' 00" N	090° 53' 42" W
	1011	Bay Del 'Quest	29.24667	-90.84333	29° 14' 48" N	090° 50' 36" W
	1012	Sister Lake	29.26	-90.91528	29° 15' 36" N	090° 54' 55" W
	1013	Bay Severin	29.26167	-90.8625	29° 15' 42" N	090° 51' 45" W
	1014	Bay Cocodrie	29.25	-90.65	29° 15' 00" N	090° 39' 00" W
	1015	American Bay	29.19722	-90.94333	29° 11' 50" N	090° 56' 36" W
	1018	Sanders Bay	29.25167	-90.94306	29° 15' 06" N	090° 56' 35" W
	1020	King Lake	29.26333	-90.98333	29° 15' 48" N	090° 59' 00" W
	1022	Mud Lake	29.28	-90.91667	29° 16' 48" N	090° 55' 00" W
	1024	New Route Bay	29.28917	-91.01167	29° 17' 21" N	091° 00' 42" W
	1027	Bay LeFleur	29.2875	-90.60833	29° 17' 15" N	090° 36' 30" W
	1029	Bayou Charles Theriot	29.32167	-90.5325	29° 19' 18" N	090° 31' 57" W
	1039	Bay Henry	29.26	-90.67694	29° 15' 36" N	090° 40' 37" W
	1041	Landry Bay	29.19167	-90.26667	29° 11' 30" N	090° 16' 00" W
	1042	Little Lake	29.24875	-90.29344	29°14'55.50"N	90°17'36.40"W
	1044	Bay Rosa	29.269889	-90.30194	29°16'11.60"N	90°18'7.00"W
	1046	Bay Jean La Croix	29.36514	-90.42764	29°21'54.50"N	90°25'39.50"W
	1056	Mud Hole Bay	29.24889	-91.01	29° 14' 56" N	091° 00' 36" W
	1058	Mosquito Bay	29.2675	-91.19583	29° 16' 03" N	091° 11' 45" W
	1059	Violin Lake	29.27833	-91.06167	29° 16' 42" N	091° 03' 42" W
	1061	Lost Lake	29.32667	-91.06667	29° 19' 36" N	091° 04' 00" W
	1062	Oak Bayou	29.15	-90.71667	29° 09' 00" N	090° 43' 00" W
	1064	Moss Bay	29.2175	-90.70056	29° 13' 03" N	090° 42' 02" W
	1067	Pelican Lake	29.11	-90.80667	29° 06' 36" N	090° 48' 24" W
	1079	Devil's Bay	29.15	-90.25833	29° 09' 00" N	090° 15' 30" W
	1083	Old Lady Lake	29.25833	-90.40278	29° 15' 30" N	090° 24' 10" W
	1087	Bay Bourbeaux	29.31644	-90.5514	29°18'59.20"N	90°33'5.20"W
	1106	Bay Antoine	29.23861	-90.75667	29° 14' 19" N	090° 45' 24" W
	1113	Lake Boudreaux	29.4125	-90.63194	29° 24' 45" N	090° 37' 55" W
	1114	Lake Robinson	29.32833	-90.65333	29° 19' 42" N	090° 39' 12" W
	1115	Madison Bay	29.39972	-90.55333	29° 23' 59" N	090° 33' 12" W
	1116	Wonder Lake	29.429301	-90.55138	29°25'45.50"N	90°33'5.00"W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	1117	PACWMA	29.44083	-90.37444	29° 26' 27" N	090° 22' 28" W
	1118	Lake Chien	29.35194	-90.43667	29° 21' 07" N	090° 26' 12" W
	1119	Catfish Lake	29.36028	-90.3075	29° 21' 37" N	090° 18' 27" W
	1120	Fourchon	29.11889	-90.23167	29° 07' 08 N	090° 13' 54" W

CSA 6

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 6 - Gill Net	2001	Hell Hole	29.61194	-92.09917	29° 36' 43" N	092° 05' 57" W
	2005	South Pt.	29.49361	-91.77222	29° 29' 37" N	091° 46' 20" W
	2016	Redfish Pt.	29.65528	-92.13139	29° 39' 19" N	092° 07' 53" W
	2020	C.P Cove	29.72528	-91.86417	29° 43' 31" N	091° 51' 51" W
	2026	Lake Tom	29.57111	-91.82639	29° 34' 16" N	091° 49' 35" W
	2032	Tete Butte	29.58472	-92.09444	29° 35' 05" N	092° 05' 40" W
	2034	Pavy Reef	29.55861	-92.01722	29° 33' 31" N	092° 01' 02" W
	2035	Mound Point	29.47472	-91.82278	29° 28' 29" N	091° 49' 22" W
	2048	Hammock	29.70917	-91.86028	29° 42' 33" N	091° 51' 37" W
	2049	Shark Island	29.791	-91.85	29° 47' 27.6" N	091° 51' 00" W
	2050	Michael Point	29.62361	-91.92583	29° 37' 25" N	091° 55' 33" W
	2051	Lake Point	29.56889	-91.71028	29° 34' 08" N	091° 42' 37" W
	2057	Lake Point	29.74361	-91.10861	29° 44' 37" N	091° 06' 31" W
	2038	Point Champlain Gill-SWAMP	29.81887	-91.93915	29° 49' 8" N	091° 56' 21" W
	2039	Big Charles Gill-SWAMP	29.60684	-91.98474	29° 36' 25" N	091° 59' 05" W
CSA 6 - Oyster Dredge	3000	Big Charles	29.61417	-91.98694	29° 36' 51" N	091° 59' 13" W
	3001	Indian Point	29.61889	-92.00889	29° 37' 08" N	092° 00' 32" W
	3003	Bayou Blanc	29.51333	-91.75833	29° 30' 48" N	091° 45' 30" W
	3003	Nickle Reef	29.419	-91.708	29° 25' 08.40" N	091° 42' 28.79" W
	3004	Highspot	29.491968	-91.75785	29° 29' 31.08" N	091° 45' 28.26" W
	3011	Sally Shoal	29.65444	-91.87111	29° 39' 16" N	091° 52' 16" W
	3012	Rabbit Island	29.51583	-91.58972	29° 30' 57" N	091° 35' 23" W
	3013	Middle Reef	29.45278	-91.72389	29° 27' 10" N	091° 43' 26" W
	3014	North Reef	29.47917	-91.80778	29° 28' 45" N	091° 48' 28" W
	3015	Lighthouse Point	29.57972	-92.03444	29° 34' 47" N	092° 02' 04" W
CSA 6 - Oyster Square Meter	3000	Big Charles	29.61417	-91.98694	29° 36' 51" N	091° 59' 13" W
	3001	Indian Point	29.61889	-92.00861	29° 37' 08" N	092° 00' 31" W
	3002	Vermilion Bay	29.685	-91.90111	29° 41' 06" N	091° 54' 04" W
	3003	Bayou Blanc	29.51333	-91.75833	29° 30' 48" N	091° 45' 30" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	3003	Nickle Reef	29.419	-91.708	29° 25' 08.40" N	091° 42' 28.79" W
	3004	Highspot	29.491968	-91.75785	29° 29' 31.08" N	091° 45' 28.26" W
	3011	Sally Shoal	29.65444	-91.87111	29° 39' 16" N	091° 52' 16" W
	3012	Rabbit Island	29.51583	-91.58972	29° 30' 57" N	091° 35' 23" W
	3013	Middle Reef	29.45278	-91.72389	29° 27' 10" N	091° 43' 26" W
	3014	North Reef	29.47917	-91.80778	29° 28' 45" N	091° 48' 28" W
	3015	Lighthouse Point	29.57972	-92.03444	29° 34' 47" N	092° 02' 04" W
CSA 6 - Seine	2000	Stumpy	29.84694	-91.80306	29° 50' 49" N	091° 48' 11" W
	2006	Boston	29.78889	-92.06611	29° 47' 20" N	092° 03' 58" W
	2009	Fearman	29.66722	-92.15833	29° 40' 02" N	092° 09' 30" W
	2014	C.P. Cove	29.74306	-91.85361	29° 44' 35" N	091° 51' 13" W
	2025	Lucien	29.58472	-91.91139	29° 35' 05" N	091° 54' 41" W
	2030	Mound	29.47417	-91.81972	29° 28' 27" N	091° 49' 11" W
	2033	Southwest Pass Beach	29.58417	-92.04667	29° 35' 03" N	092° 02' 48" W
	2043	Horse Bayou	29.73972	91.81722	29° 44' 23" N	091° 49' 02" E
	2044	Weeks Bay	29.82306	-91.83083	29° 49' 23" N	091° 49' 51" W
	2045	Chene Bayou	29.60694	-91.94333	29° 36' 25" N	091° 56' 36" W
	2046	Lake Ferme	29.53889	-91.87	29° 32' 20" N	091° 52' 12" W
	2047	Bayou Blanc	29.52806	-91.76583	29° 31' 41" N	091° 45' 57" W
	2056	Shell Island	29.76	-92.13028	29° 45' 36" N	092° 07' 49" W
	2036	Point Champlain Seine-SWAMP	29.82578	-91.94896	29° 49' 33" N	091° 56' 56" W
	2037	Big Charles Seine - SWAMP	29.61072	-91.98851	29° 36' 39" N	091° 59' 19" W
CSA 6 - Trammel	2001	Hell Hole	29.61194	-92.09917	29° 36' 43" N	092° 05' 57" W
	2005	South Pt.	29.49361	-91.77222	29° 29' 37" N	091° 46' 20" W
	2016	Redfish Pt.	29.65528	-92.13139	29° 39' 19" N	092° 07' 53" W
	2020	C.P Cove	29.72528	-91.86417	29° 43' 31" N	091° 51' 51" W
	2026	Lake Tom	29.57111	-91.82639	29° 34' 16" N	091° 49' 35" W
	2032	Tete Butte	29.58472	-92.09444	29° 35' 05" N	092° 05' 40" W
	2034	Pavy Reef	29.55861	-92.01722	29° 33' 31" N	092° 01' 02" W
	2035	Mound Point	29.47472	-91.82278	29° 28' 29" N	091° 49' 22" W
	2048	Hammock	29.70917	-91.86028	29° 42' 33" N	091° 51' 37" W
	2049	Shark Island	29.79083	-91.84972	29° 47' 27" N	091° 50' 59" W
	2050	Michael Point	29.62361	-91.92583	29° 37' 25" N	091° 55' 33" W
	2051	Lake Point	29.56889	-91.71028	29° 34' 08" N	091° 42' 37" W
	2057	VRCO	29.74361	-91.10861	29° 44' 37" N	091° 06' 31" W

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Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 6 - 16' Trawl	1001	Lake Pt.	29.56667	-91.70028	29° 34' 00" N	091° 42' 01" W
	1006	Indian Pt.	29.63056	-92.04167	29° 37' 50" N	092° 02' 30" W
	1010	Vermilion Bay	29.66694	-91.93972	29° 40' 01" N	091° 56' 23" W
	1013	Blue Pt.	29.74694	-91.88056	29° 44' 49" N	091° 52' 50" W
	1014	VRCO	29.72639	-92.10889	29° 43' 35" N	092° 06' 32" W
	1050	Champlain Pt.	29.78944	-91.9625	29° 47' 22" N	091° 57' 45" W
	1051	Ivanhoe	29.73278	-91.76	29° 43' 58" N	091° 45' 36" W
	1052	Tunnel Pt.	29.59639	-91.77833	29° 35' 47" N	091° 46' 42" W
	1053	Point Marone	29.6	-91.60833	29° 36' 00" N	091° 36' 30" W
	1059	Hell Hole	29.62694	-92.10833	29° 37' 37" N	092° 06' 30" W
CSA 6 - 20' Trawl	1004	Freshwater Bayou	29.533	-92.302	29° 31' 58.80" N	092° 18' 07.20" W
	1005	South Pt.	29.48333	-91.7625	29° 29' 00" N	091° 45' 45" W
	1021	Tete Butte	29.56833	-92.16667	29° 34' 06" N	092° 10' 00" W
	1049	Nickle Reef	29.43944	-91.72778	29° 26' 22" N	091° 43' 40" W
	1061	Tiger Shoal	29.51361	-92.055	29° 30' 49" N	092° 03' 18" W
	1069	Offshore East Gulf	29.35	-91.68333	29° 21' 00" N	091° 41' 00" W
	1070	Offshore Middle Gulf	29.35	-91.86667	29° 21' 00" N	091° 52' 00" W
	1071	Offshore West Gulf	29.45	-92.23333	29° 27' 00" N	092° 14' 00" W
CSA 6 - 6' Trawl	1008	Lake Fearman	29.69472	-92.16833	29° 41' 41" N	092° 10' 06" W
	1009	Michael Cove	29.62722	-91.94333	29° 37' 38" N	091° 56' 36" W
	1012	Mud Lake	29.721	-92.1575	29° 43' 15.60" N	092° 09' 27" W
	1017	Oyster Lake	29.52917	-91.86861	29° 31' 45" N	091° 52' 07" W
	1019	Blanc Lake	29.57722	-91.79667	29° 34' 38" N	091° 47' 48" W

CSA 7

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 7 - Gill Net	2000	Coffee Ground	29.94951	-93.75721	29° 56' 58.23" N	093° 45' 25.95" W
	2001	Bridge Bayou	29.92013	-93.76385	29° 55' 12.46" N	093° 45' 49.86" W
	2002	Johnson's Bayou	29.82462	-93.83733	29° 49' 28.63" N	093° 50' 14.38" W
	2003	Blue Buck Point	29.8092	-93.87369	29° 48' 33.12" N	093° 52' 25.28" W
	2006	Southwest West Cove	29.83472	-93.37306	29° 50' 05" N	093° 22' 23" W
	2007	Northeast West Cove	29.87972	-93.38028	29° 52' 47" N	093° 22' 49" W
	2008	Turner's Bay	30.05556	-93.30806	30° 03' 20" N	093° 18' 29" W
	2013	Lambert's	29.84417	-93.25889	29° 50' 39" N	093° 15' 32" W
	2014	Commissary Point	29.97694	-93.27306	29° 58' 37" N	093° 16' 23" W
	2017	Deatonville	30.01139	-93.27	30° 00' 41" N	093° 16' 12" W
	2024	Haymark Loop	30.14538	-93.32402	30° 08' 43.36" N	093° 19' 26.47" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	2025	Prien Lake	30.19972	-93.27824	30° 11' 59" N	093° 16' 41.66" W
	2028	Rose Bluff Cutoff	30.17683	-93.30992	30° 10' 36.59" N	093° 18' 35.71" W
	2027	East Pass Gill - SWAMP	29.83789	93.30802	29° 50' 16.40" N	093° 18' 28.87" W
	2004	Willow Bayou Gill - SWAMP	29.87788	93.77645	29° 52' 40.37" N	093° 46' 35.22" W
CSA 7 - Oyster Dredge	3000	Southeast Rabbit Island	29.84303	-93.37556	29° 50' 34.90" N	093° 22' 32.01" W
	3001	Northeast Rabbit Island	29.85694	-93.38222	29° 51' 25" N	093° 22' 56" W
	3002	West Cove Transplant	29.8475	-93.36972	29° 50' 51" N	093° 22' 11" W
	3003	Big Washout	29.85667	-93.33833	29° 51' 24" N	093° 20' 18" W
	3004	Little Washout	29.85028	-93.34083	29° 51' 01" N	093° 20' 27" W
	3005	Middle of Lake	29.85417	-93.32889	29° 51' 15" N	093° 19' 44" W
	3006	Turner's Bay	30.05556	-93.31222	30° 03' 20" N	093° 18' 44" W
	3007	Commissary Point	29.9725	-93.27944	29° 58' 21" N	093° 16' 46" W
	3008	Long Point	29.911	-93.325	29° 54' 39.60" N	093° 19' 30" W
	3010	2009 Cultch Plant	29.84321	-93.31859	29° 50' 35.55" N	093° 19' 06.92" W
	3011	West Rabbit Island	29.847	-93.395	29° 50' 49.20" N	093° 23' 42" W
	3012	Sabine Lake 1	29.77917	-93.90778	29° 46' 45" N	093° 54' 28" W
	3013	Sabine Lake 2	29.78611	-93.90444	29° 47' 10" N	093° 54' 16" W
	3014	Sabine Lake 3	29.785	-93.91806	29° 47' 06" N	093° 55' 05" W
	3015	Sabine Lake 4	29.79917	-93.91667	29° 47' 57" N	093° 55' 00" W
	3016	Sabine Lake 5	29.82333	-93.91972	29° 49' 24" N	093° 55' 11" W
	3017	Sabine Lake 6	29.81	-93.88556	29° 48' 36" N	093° 53' 08" W
	3018	Chenier Reef	29.84945	-93.28372	29° 50' 58.02" N	093° 17' 01.39" E
	3020	West Cove Central	29.855492	-93.40901	29° 51' 19.77" N	093° 24' 32.44" W
	3021	Lamberts Reef	29.84121	-93.27682	29° 50' 28.37" N	093° 16' 36.55" W
CSA 7 - Oyster Square Meter	3000	Southeast Rabbit Island	29.84303	-93.37556	29° 50' 34.90" N	093° 22' 32.01" W
	3001	Northeast Rabbit Island	29.85694	-93.38222	29° 51' 25" N	093° 22' 56" W
	3002	West Cove Transplant	29.8475	-93.36972	29° 50' 51" N	093° 22' 11" W
	3003	Big Washout	29.85667	-93.33833	29° 51' 24" N	093° 20' 18" W
	3004	Little Washout	29.85028	-93.34083	29° 51' 01" N	093° 20' 27" W
	3005	Middle of Lake	29.85417	-93.32889	29° 51' 15" N	093° 19' 44" W
	3008	Long Point	29.911	-93.325	29° 54' 39.60" N	093° 19' 30" W
	3010	2009 Cultch Plant	29.84321	-93.31859	29° 50' 35.55" N	093° 19' 06.92" W
	3011	West Rabbit Island	29.847	-93.395	29° 50' 49.20" N	093° 23' 42" W
	3012	Sabine Lake 1	29.77917	-93.90778	29° 46' 45" N	093° 54' 28" W
	3013	Sabine Lake 2	29.78611	-93.90444	29° 47' 10" N	093° 54' 16" W
	3014	Sabine Lake 3	29.785	-93.91806	29° 47' 06" N	093° 55' 05" W
	3015	Sabine Lake 4	29.79917	-93.91667	29° 47' 57" N	093° 55' 00" W
	3016	Sabine Lake 5	29.82333	-93.91972	29° 49' 24" N	093° 55' 11" W

Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
	3017	Sabine Lake 6	29.81	-93.88556	29° 48' 36" N	093° 53' 08" W
	3018	Chenier Reef	29.84945	-93.28372	29° 50' 58.02" N	093° 17' 01.39" W
	3019	NW Rabbit Island	29.85935	-93.39211	29° 51' 33.65" N	093° 23' 31.59" W
	3020	West Cove Central	29.855492	-93.40901	29° 51' 19.77" N	093° 24' 32.44" W
	3021	Lamberts Reef	29.84121	-93.27682	29° 50' 28.37" N	093° 16' 36.55" W
	3029	Lamberts 2015 Cultch	29.83944	-93.28361	29° 50' 21.98" N	093° 17' 01.00" W
	3030	WC 2015 Cultch	29.87694	-93.39361	29° 52' 36.98" N	093° 23' 37.00" W
CSA 7 - Seine	2000	Coffee Ground	29.94951	-93.75721	29° 56' 58.23" N	093° 45' 25.95" W
	2001	Bridge Bayou	29.92013	-93.76385	29° 55' 12.46" N	093° 45' 49.86" W
	2002	Johnson's Bayou	29.82462	-93.83733	29° 49' 28.63" N	093° 50' 14.38" W
	2003	Blue Buck Point	29.8092	-93.87369	29° 48' 33.12" N	093° 52' 25.28" W
	2006	Southwest West Cove	29.83472	-93.37306	29° 50' 05" N	093° 22' 21" W
	2007	Northeast West Cove	29.87972	-93.38028	29° 52' 47" N	093° 22' 49" W
	2008	Turner's Bay	30.05039	-93.31795	30° 03' 1.42" N	093° 19' 5.99" W
	2013	Lambert's	29.84417	-93.25889	29° 50' 39" N	093° 15' 32" W
	2014	Commissary Point	29.97694	-93.27306	29° 58' 37" N	093° 16' 23" W
	2017	Deatonville	30.01139	-93.27	30° 00' 41" N	093° 16' 12" W
	2024	Haymark Loop	30.14538	-93.32402	30° 08' 43.36" N	093° 19' 26.47" W
	2025	Prien Lake	30.19972	-93.27824	30° 11' 59" N	093° 16' 41.66" W
	2028	Rose Bluff Cutoff	30.17683	-93.30992	30° 10' 36.59" N	093° 18' 35.71" W
	2027	East Pass Gill - SWAMP	29.83789	93.30802	29° 50' 16.40" N	093° 18' 28.87" W
	2004	Willow Bayou Gill - SWAMP	29.87788	93.77645	29° 52' 40.37" N	093° 46' 35.22" W
CSA 7 - Trammel	2000	Coffee Ground	29.94951	-93.75721	29° 56' 58.23" N	093° 45' 25.95" W
	2001	Bridge Bayou	29.92013	-93.76385	29° 55' 12.46" N	093° 45' 49.86" W
	2002	Johnson's Bayou	29.82462	-93.83733	29° 49' 28.63" N	093° 50' 14.38" W
	2003	Blue Buck Point	29.8092	-93.87369	29° 48' 33.12" N	093° 52' 25.28" W
	2006	Southwest West Cove	29.83472	-93.37306	29° 50' 05" N	093° 22' 23" W
	2007	Northeast West Cove	29.87972	-93.38028	29° 52' 47" N	093° 22' 49" W
	2008	Turner's Bay	30.05556	-93.30806	30° 03' 20" N	093° 18' 29" W
	2013	Lambert's	29.84417	-93.25889	29° 50' 39" N	093° 15' 32" W
	2014	Commissary Point	29.97694	-93.27306	29° 58' 37" N	093° 16' 23" W
	2017	Deatonville	30.01139	-93.27	30° 00' 41" N	093° 16' 12" W
	2024	Haymark Loop	30.14538	-93.32402	30° 08' 43.36" N	093° 19' 26.47" W
	2025	Prien Lake	30.19972	-93.27824	30° 11' 59" N	093° 16' 41.66" W
	2028	Rose Bluff Cutoff	30.17683	-93.30992	30° 10' 36.59" N	093° 18' 35.71" W

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Area and Gear	Number	Name	Latitude	Longitude	Latitude	Longitude
CSA 7 - 16' Trawl	1000	West Black Bayou	29.99889	-93.75053	29° 59' 56" N	093° 45' 01.90" W
	1001	Gray's Canal	29.94934	-93.77274	29° 56' 57.62" N	093° 46' 21.86" W
	1002	Johnson's Bayou	29.84722	-93.79889	29° 50' 50" N	093° 47' 56" W
	1003	Blue Buck Point	29.79846	-93.91658	29° 47' 54.45" N	093° 54' 59.68" W
	1004	Sabine Causeway	29.77989	-93.90818	29° 46' 47.60" N	093° 54' 29.44" W
	1015	Turner's Bay	30.05722	-93.31639	30° 03' 26" N	093° 18' 59" W
	1017	Old Revetment	29.85	-93.29694	29° 51' 00" N	093° 17' 49" W
	1018	Grand Bayou	29.86194	-93.24222	29° 51' 43" N	093° 14' 32" W
	1024	S. Ship Channel	29.86861	-93.34389	29° 52' 07" N	093° 20' 38" W
	1025	N. Ship Channel	30.01556	-93.33083	30° 00' 56" N	093° 19' 51" W
	1026	Salt Ditch	30.04833	-93.37564	30° 02' 54" N	093° 22' 32.30" W
	1040	Mermentau River North	29.83137	-92.87097	29° 49' 52.93" N	092° 52' 15.49" W
	1041	Mermentau River Central	29.79319	-92.87923	29° 47' 35.48" N	092° 52' 45.22" W
	1042	Mermentau River South	29.77245	-92.92506	29° 46' 20.81" N	092° 55' 30.21" W
	1065	Hebert's Landing	29.99611	-93.29778	29° 59' 46" N	093° 17' 52" W
CSA 7 - 20' Trawl	1005	Sabine Near Offshore	29.69416	-93.80671	29° 41' 38.97" N	093° 48' 24.15" W
	1006	Sabine Far Offshore	29.68582	-93.79632	29° 41' 08.95" N	093° 47' 46.75" W
	1070	Gulf 92	29.75071	-93.31595	29° 45' 2.05" N	093° 18' 57.42" W
	1043	Mermentau River Near Offshore	29.71565	-93.01983	29° 42' 56.34" N	093° 01' 11.38" W
	1044	Mermentau River Far Offshore	29.6938	-93.01984	29° 41' 37.67" N	093° 01' 11.42" W
	1064	Gulf 91	29.72528	-93.34667	29° 43' 31" N	093° 20' 48" W
	1066	Calcasieu SE OS	29.6668	-93.2128	29° 40' 00.47" N	093° 12' 46.08" W
	1067	Calsasieu SW OS	29.6668	-93.4803	29° 40' 00.47" N	093° 28' 49.07" W
	1068	Sab. Ext OS	29.63242	-93.73169	29° 37' 56.71" N	093° 43' 54.08" W