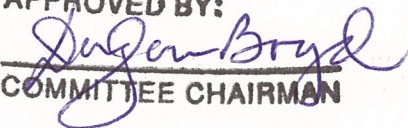


Commission Business Session
Thursday, March 17, 2022
Panama City Beach, FL

APPROVED BY:

COMMITTEE CHAIRMAN

Call to Order

Chairman Doug Boyd called the meeting to order at 9:15 a.m. The following Commissioners and/or Proxies were present:

Doug Boyd, **Chairman**, *Citizen Representative from Texas*, Boerne, TX
Scott Bannon, ADCNR/MRD, Gulf Shores, AL (*Proxy for Chris Blankenship*)
Chris Nelson, *Citizen Representative from Alabama*, Bon Secour Fisheries, Bon Secour, AL
Joe Spraggins, MSDMR, Biloxi, MS
Read Hendon, *Citizen Representative from Mississippi*, USM/GCRL, Ocean Springs, MS
Christopher Mace, TPWD, Corpus Christi, TX (*Proxy for Carter Smith*)
Jason Froeba, LDWF, Baton Rouge, LA (*Proxy for Jack Montoucet*)

Virtual:

Dan Ellinor, FWC, Tallahassee, FL (*Proxy for Eric Sutton*)
Senator Jay Luneau, Alexandria, LA

Staff

Dave Donaldson, *Executive Director*, Ocean Springs, MS
Nancy Marcellus, *Administrative Officer*, Ocean Springs, MS
Chery Noble, *Administrative Assistant*, Ocean Springs, MS
Steve VanderKooy, *IJF Program Coordinator*, Ocean Springs, MS
Jeff Rester, *SEAMAP/Habitat Coordinator*, Ocean Springs, MS
Gregg Bray, *FIN Program Manager*, Ocean Springs, MS
Joe Ferrer, *Systems Administrator*, Ocean Springs, MS
James Ballard, *Sport Fish Restoration/Aquatic Invasives Coordinator*, Ocean Springs, MS
Donna Bellais, *ComFIN Programmer*, Ocean Springs, MS
Doug Snyder, *RecFIN (SE) Programmer/Survey Coordinator*
Angie Rabideau, *Senior Accountant*, Ocean Springs, MS
Deanna Valentine, *Scanning Specialist*, Ocean Springs, MS
Debbie McIntyre, *Staff Assistant*, Ocean Springs, MS
Ali Wilhelm, *Staff Assistant*, Ocean Springs, MS
Charlie Robertson, *Fisheries Restoration Coordinator*, Ocean Springs, MS

Others

Rick Burris, MSDMR, Biloxi, MS
Allan Brown, USFWS, Atlanta, GA
Glenn Constant, USFWS, Baton Rouge, LA
Jack McGovern, NOAA Fisheries, St. Petersburg, FL
Trevor Moncrief, MSDMR, Biloxi, MS
Darin Topping, TPWD, Rockport, TX
Jill Hendon, GCRL/USM, Ocean Springs, MS
Deke Tompkins, ASMFC/USGS, Annapolis, MD
Laura Picariello, TXSG, Galveston, TX

Julie Falgout, LASG, Houma, LA
Tony Reisinger, TXSG, San Benito, TX

Virtual:

Brian Pawlak, NOAA Fisheries, Silver Spring, MD

D. Donaldson gave a brief overview of the Commission's voting procedures and stated there was a quorum.

Adoption of Agenda

A break was added after Item No. 4 and there will be a discussion of Travel Insurance under Other Business. J. Spraggins moved to adopt the agenda with changes. S. Bannon seconded the motion and it passed unanimously.

Approval of Minutes (October 21, 2021 - Virtual)

S. Bannon moved to approve the October 21, 2021 minutes as submitted. R. Hendon seconded and the motion passed unanimously.

GSMFC Standing Committee Reports

Technical Coordinating Committee (TCC)

D. Topping stated the TCC held a General Session at the beginning of the meeting which focused on the U.S. Fish and Wildlife Service (FWS) Small Grants Program's current research on nonindigenous invasive species. A summary of the presentations will be available on the website in the near future.

D. Topping stated Jamie Reinhardt provided an update on the DWH Fish and Water Column Invertebrate Strategic Plan. The purpose of the plan is to help guide restoration planning. He stated USGS Wetland and Aquatic Research Center (WARC) staff gave a presentation that highlighted the importance of the history of the partnership between USGS and GSMFC. They provided an overview of the primary research areas they are involved in and emphasized building partnerships to improve the acoustic telemetry capabilities for species of interest.

Motion: TCC recommends GSMFC and USGS develop a cooperative partnership to work together on shared research needs in the Gulf of Mexico.

The Commission approved the motion unanimously.

D. Topping reported Mike Celata updated the group on the progress BOEM has made with regards of renewable wind energy leasing in the gulf. He addressed some of the major FAQs received during the comment period and discussed next steps in the leasing process for the Gulf. He said S. VanderKooy gave the IJF updates and provided an overview of the SuRF funding for the 2022 projects. They are hoping to finalize the red drum profile by October 2022 and a task force will soon be established to start working on a profile for mangrove snapper. J. Rester gave an update on the CARES Act Program which has distributed over \$26M to approved applicants in Texas, Louisiana, Mississippi and Alabama.

Subcommittee Reports

Artificial Reef (AR)

The Atlantic States Marine Fisheries Commission and Gulf States Marine Fisheries Commission are planning to hold a joint AR Subcommittee meeting in-person this summer. Possible agenda topics include wind farms, Gulf/Atlantic AR footprint estimations, socioeconomic benefits, biological opinions, sea turtle entrapment and entanglement issues, damage of reef modules from hurricanes and commercial fishing, eDNA monitoring, and rig decommissioning due to bankruptcy.

Crab Subcommittee

The Subcommittee heard a presentation on predatory habitat impacts to blue crab populations. States gave updates on terrapin work related to bycatch reduction devices and updates on landings and fishery independent monitoring. There was also a discussion on alternative gears for harvesting recreational blue crabs.

GulfFIN

GulfFIN data storage and dissemination of state survey data was discussed. Federal partners would like access to this data via GulfFIN but some states are not currently doing this and would need to consider this process. Other considerations need to be made concerning short-term and long-term data availability and a working group may need to be developed to determine the best way to handle this. The same working group may also be tasked with reviewing and updating the MRIP regional implementation plan that is out of date.

The committee discussed a request from the Gulf Council SSC to look at Shrimp Observer Bycatch data and identify priority species that state stock assessors could benefit from having timely access to catch estimates. There was also concern that some unspecified groups are reported as opposed to individual species as well as some of the bycatch estimates being large. After some discussion amongst committee members the committee made the following motion:

Motion: The TCC moves that Gulf States Marine Fisheries Commission send a letter to the SEFSC requesting they present to the TCC the verification process of the bycatch of state managed priority species in the shrimp observer bycatch program.

The Commission approved the motion unanimously.

The Committee considered funding priorities for 2023 and decided to include all ongoing tasks as high priority for inclusion in the 2023 FIN Cooperative Agreement. The committee also included Biological Sampling as high priority since its funding is set to run out in December 2022.

Motion: The TCC moves to include all ongoing GulfFIN tasks (Coordination and Administration of FIN Activities, Collecting, Managing and Disseminating Marine Recreational Fisheries Data, Operation of FIN Data Management System, Trip Ticket Program) and reinstating Biological Sampling for Age Structures and Lengths as high priority funding items for 2023.

The Commission approved the motion unanimously.

Molluscan Shellfish Subcommittee

The Subcommittee learned about a database summarizing oyster restoration projects funded by DWH funds. They discussed impacts from hurricanes to alternative oyster aquaculture farms, which have been significant in recent years. They also covered oyster shell recycling programs, oyster management plans, and oyster restoration activities within each of the states. Remote setting hatchery facilities are being used by most states to supplement restoration.

SEAMAP

Subcommittee members discussed ongoing surveys, how they can be optimized, and made more cost efficient. They anticipate 2022 surveys to take place as normal. Members debated whether vertical longline sampling should continue based on concerns about how the data is/isn't being used. J. Rester informed the Subcommittee of Tom Van Devender's passing and stated he was a passed Subcommittee member and Coordinator, and contributed greatly towards Mississippi fishery resources. The Subcommittee approved a motion to provide a resolution in honor of Thomas Van Devender.

Motion: The TCC moves that the Commission to provides a resolution in honor of Thomas Van Devender in recognition of his efforts towards Mississippi fishery resources over the course of his career.

D. Donaldson stated if passed, the resolution would be presented to a family member at the next Commission meeting. **J. Hendon** stated another option would be to have Harriet Perry accept it in his honor.

The Commission approved the motion unanimously.

TCC Discussion of Election of Officers

D. Topping said the TCC continued a discussion on the election of officers from a previous meeting and the TCC passed the following motion:

Motion: The TCC moves to defer election of officers until the October meeting and revisit it on an annual basis.

The Commission approved the motion unanimously.

D. Donaldson noted that the Commission will be discussing election of officers for all Committees/Subcommittees under agenda item *Future Meetings*.

State/Federal Fisheries Management Committee

Menhaden Advisory Committee (MAC)

T. Moncrieff reported the MAC met Tuesday and there are no actions or motions to consider. He said Ray Mroch (NOAA Beaufort) presented the 2021 landings. The NOAA forecast for 2022 is 387,000mt based on the fishing in 2021. There was a discussion about reviewing the forecast model, making improvements and adding in some variables to try to improve the accuracy of the model. He reviewed the Atlantic fishery and stated the TAC for reduction was reduced slightly to 194,000mt coastwide in 2021 and the ASMFC is beginning its next assessment for Atlantic menhaden.

T. Moncrief stated Jason Adriance provided an update on Louisiana's index of abundance (IOA) for the seine, gill net, and trawl projects from their fishery independent sampling. While there is some variability from year to year, the trend is generally stable in all the indices since the mid-2000s. Peter Himchak (Omega Protein) reported the surveillance audit for Gulf Menhaden MSC Certification was completed. Francois Kuttel (Daybrook) indicated the results of the turtle observer pilot that the industry was assisting with determined that drone observation did not work well nor did moving observers from the remote vessel to the steamer to view pump out. The camera systems on board did seem to identify targets which were deployed since no turtles were actually encountered during the tests. The system was able to identify the foam turtles that were randomly released into the net. Jason Adriance from Louisiana will be releasing an RFP later this spring for a bycatch study of the reduction fleet

Sea Grant Fisheries Extension Meeting Report

L. Picariello reported the Sea Grant Fisheries Extension Advisory Committee met yesterday. She said each state provided reports on current projects and regional updates were given to the Committee. She reviewed each states' reports and regional updates. **C. Nelson** asked about the potential upcoming closures for the oyster fishery in Texas and the impacts that is having throughout the supply chain across the Gulf. He said Texas is one of the most significant wild harvest fisheries at this point. He said discussions have taken place on possibly Sea Grant facilitating a meeting between all parties involved to discuss concerns on this issue and he wanted to make the Commission aware of this and to be involved in any further discussions or meetings. She will keep the Commission informed on this specific issue. Detailed information on the Sea Grant meeting is in the Sea Grant section of these minutes.

NOAA Fisheries Southeast Regional Office Comments

Jack McGovern introduced himself and stated he is the Assistant Regional Administrator for Sustainable Fisheries at the SERO. He said Kim Amendola is now Deputy Regional Administrator for SERO. He reported the for-hire red snapper season should be announced soon and they expect this season to be similar to the previous season. They are working on two red snapper framework amendments that were approved by the Gulf Council and they would increase catch limits and help calibrate the state surveys. The Gulf Council received an update on the Great Red Snapper Count and recommendations were made to increase catch levels. This will be discussed at the next Gulf Council meeting. He said Lane Snapper catch limits increased in December and they will close the harvest when the catch limit is expected to be reached. The Descend Act became effective on January 13, 2022 and it requires all vessels to have a venting tool, or descending device, rigged and ready to use when fishing for reef fish species in Gulf federal waters. He said they are working on Reef Fish Amendment 32 that will modify the catch limit, size limit and possession limits of cobia. They are working on 2 rulemaking actions for red grouper. One is based on Reef Fish Amendment 53 that would change sector allocations and reduce catch levels based on a new assessment that used data from MRIP, and the other is based on a new assessment that would increase the catch limits for red grouper based on an interim analysis by the science center that shows the stock has rebuilt some. The Gulf Council is also scheduled to take final action on historical captain conversions which would provide the opportunity for 3 of the remaining eligible individuals to replace their historical captain permits with standard for-hire permits. They will also act on Amendment 34 which changes catch limit and allocations for Atlantic King Mackerel. He said there are a number of ongoing actions by the Gulf Council including updating the Shrimp FMP to address the expiration of the 3G cellular units used for the electronic logbooks, working on amendments for gag and greater amberjack as stock assessments show they are being

overfished, and two actions for Gulf King Mackerel to change sector allocations then a framework amendment to increase the catch levels. He said the SEFHIER program is entering into phase 2 which is the requirement for the positioning of cellular VMS units and updating FAQ's working with fishermen to improve compliance. Also, they continue to work with the Commission to fund the dockside survey. He said lastly, Kelly Donnelly indicates the Bonnet Carré disaster spend plans from Alabama and Mississippi were sent to headquarters for review and submission to OMB, and the Louisiana plan is undergoing technical review.

USFWS Region 4 Office Comments

Allan Brown stated he will give this report with the FWS Budget Update Report.

NOAA Fisheries and US Fish & Wildlife Budget Updates

Brian Pawlak gave a virtual NOAA Fisheries Management & Budget Update. He stated the continuing resolution is over and the FY2022 Budget has been approved and signed. He said they expect to have the FY2023 Budget by the end of April. The FY2022 Budget is \$1.02B which is an increase of \$51.1M over FY2021. He reviewed how funding is split across the four primary activities which are Protected Resources, Fisheries Science and Management, Enforcement and Habitat Conservation and Restoration. There was an increase for the Regional Councils and Fisheries Commissions. He explained the many steps and challenges of distributing the funds to the various programs once appropriations are announced and approved. He said NMFS has received partial apportionment funding for GSMFC of \$750K for FY2022. As soon as the remaining funds are approved, they will be sent to the Commission. He reviewed all FY2022 Programs and their budgets and the FY2022 Red Snapper Enacted Language. He then informed the Commission on the NAPA Report Recommendations and COVID policies for the future.

A. Brown gave a presentation on the USFWS budget explaining the federal budget process and how the appropriations are made to various programs. He reviewed a table with the President's budget, previous enacted budget, then the house and senate budget and the amounts for each subactivity. He said the final budget for the FWS and FAC program was \$220M which is an increase from the previous budget. He reviewed the Southeast region's percent of the national allocation for each major funding category which are Hatchery OPS, Hatchery Maintenance, Habitat Assessment, Habitat PA, Population Assessment, FWCO Equipment and Aquatic Invasive Species. The Southeast region receives roughly 2.1% of the habitat population budget for the FWS and that supports 13 FTEs (full time employees) in 4 offices across the whole Southeast which consists of 10 states, Puerto Rico and the USVI. He said the Southeast has 62% of the freshwater fishes, 75% of the nation's muscels, 70 major river basins, 18% of the barriers, and 50% of the Nation's wetlands. The 13 employees in the four offices do an incredible job for the amount of resources they are responsible for. He reiterated the importance of continuing the cooperative efforts with the Commission and with the gulf states as they develop priorities in the future.

GSMFC Program Reports

Interjurisdictional Fisheries Program

S. VanderKooy stated the full report is in Tab B of the Briefing Book. He said they are close to finishing the Red Drum Management Profile and they will start a Mangrove Snapper Management Profile this summer after the TCC selects a Task Force. The Tripletail genetics work continues and fin clips from around the world have been processed. He will invite Dr. Saillant (USM) to present the results to the TCC at the October meeting. They are doing more acoustic work targeting Tripletail and have nearly gated the entire Mississippi Sound. Lastly, **S. VanderKooy** said the

Flounder Symposium will be held in Baton Rouge in two weeks and 84 people have registered to attend. He invited all to attend but they do not have time slots for anymore presentations.

Aquaculture Program

S. VanderKooy stated the Aquaculture update is in Tab C of the Briefing Bok. He reviewed a Table of the FY2022 Gulf of Mexico Marine Aquaculture Pilot Project Grants. Additional funds were provided to the Commission through NOAA for development of an Integrated Multi-Trophic Aquaculture (IMTA) demonstration project to culture native species of finfish, bivalve mollusks, and macroalgae in the region's states waters. The RFP was released in July with \$1.8M available. There was only one project submission so it was awarded to Dr. John Valentine at DISL.

SEAMAP

J. Rester reported the Fall Shrimp/Groundfish Survey took place in October/November 2021 sampling 274 stations. The Environmental Data Work Group met and reviewed the environmental section of the trawling operations manual. The Commission worked with the Fish and Wildlife Foundation of Florida, Inc. to acquire acoustic cameras and hardware for sampling reef fish. FWRI will use the cameras to develop techniques and protocols for reef fish sampling that SEAMAP can use in the western Gulf of Mexico. SEAMAP continues to discuss the future of the Vertical Line Survey. If data from the Vertical Line Survey are not used in the next Red Snapper stock assessment, the survey will probably be discontinued. The Subcommittee has discussed several options for how SEAMAP partners can contribute to existing or new surveys if the survey is discontinued. SEAMAP will again be level funded for FY22 at \$5.125M being split between the Gulf, South Atlantic and Caribbean components. SEAMAP plans to conduct the Spring Plankton, Bottom Longline, Vertical Line, Summer Shrimp/Groundfish, Reef Fish, Fall Plankton, and Fall Shrimp/Groundfish Surveys in 2022. The Commission continues to manage SEAMAP data and distribute the data to interested parties.

CARES Act

J. Rester reported the original CARES Act has been completed and over \$20M was paid to almost 1,600 applicants. The CARES Act 2.0 was signed into law on December 27, 2020 with approximately \$26M made available to affected applicants. He reviewed how the funds were/will be distributed throughout the states. The detailed amounts for each state are in Tab E of the Briefing Book.

Sportfish Restoration (SFRP)

J. Ballard stated the complete report is in Tab F of the Briefing Book. He showed a video on the water quality monitoring project. He said in an effort to better assess the water quality at artificial reef sites off the Mississippi Coast, they have deployed multiparameter datasondes at several sites. He explained the different steps in deploying the datasondes and stated they have collected over 11,000 data records during the first deployment. Three more units will be deployed in 2022. He reported the 4th year of the Jimmy Sanders Memorial Lionfish Challenge ended in December 2021. It was a virtual tournament using *Fishing Chaos*. They collected 31 lionfish off of Mississippi throughout the entire year.

Aquatic Nuisance Species Programs (ANS)

J. Ballard said the ANS Report is in Tab G of the Briefing Book. He reported the general session in the TCC was presentations on the USFWS ANS Small Grants Program and there will be a report on the session posted on the GSMFC website. He said that 43 projects at almost \$1.1M have been

funded over the last 7 years through this program. They are continuing their effort with the invasive species traveling trunk and over the last 3 months requests to utilize the trunk has increased. He reported he chairs the ANSTF Prevention Subcommittee which has been tasked with 5 action items and they just recently added 2 more items which are to identify some steps needed to conduct traffic assessments to inform strategic placement of roadside inspection stations and to establish a fish production and retail hitchhiker mitigation workgroup. The GSARP is hoping to have an in-person regional panel meeting this spring but they will have to get approval through FACA. The Task Force will hold their next meeting in May virtually on the 24-26th.

Fisheries Information Network (FIN)

G. Bray gave a slide presentation on the 2021 fisheries dependent collection and monitoring program. He said they accomplished all of their goals and considered 2021 a success. They also fully implemented electronic tablets for MRIP dockside surveys and implemented the SEFHIER dockside validation survey. He said they should be able to accomplish all 2022 goals at level funding that they will receive from NOAA.

Fisheries Restoration (FRP)

C. Robertson stated the report is in Tab I of the Briefing Book. The main focus of the program is to work with NOAA and Florida Sea Grant on the *Return Em' Right* program which focuses on best practices of using fish descending devices and distributing that information to all fishermen. The Human Dimensions Survey of that program began in April 2021 and it will focus on interviewing fishermen on their knowledge, behaviors and perceptions regarding best handling and release practices for reef fish. They are also working with Florida Sea Grant on education and outreach for the program to help distribute descending devices and building awareness of the program.

State Directors' Reports

D. Boyd stated all reports except Florida's have been submitted and will be included in the minutes. **D. Ellinor** stated Florida's report will be submitted after the meeting. **D. Boyd** asked each Director to give a brief overview of their report.

Alabama

S. Bannon reported their sampling went well and they met most of their goals. He said they received \$8M to deploy about 1,700 additional artificial reefs. They completed the CARES Act packages and thanked staff for their help. He said they continue to work on developing a hatchery for oysters and they had a 79 day wild harvest season last year and harvested 50K sacks which doubled the previous year's harvest. They are working on a data system to have an online dashboard on Alabama's website to review oyster harvest including how much is being harvested and how many people are participating. They are participating in the SEFHIER program and the enforcement personnel have personally met with all the federal for-hire boat personnel to ensure they are participating. He said everyone is excited about using the tablets for all the dockside surveys.

Florida

D. Ellinor stated he will not give a report but will submit the detailed report when he gets back to the office.

Mississippi

J. Spraggins stated they have had a very busy year. The red snapper season opened May 28th with several closures to assess the stock. There were a total of 119 days fished and 143,042.7 pounds were harvested, so they were actually under their ACL by about 7-8K pounds. He said the *Tails 'n' Scales* program will start again over Memorial Day weekend. They are also doing a new assessment on spotted sea trout; they participated in tripletail tagging with USFWS through SFRP; they tagged 102 southern flounder; and they continue their cobia sampling effort. He said Mississippi has not had a decent oyster harvest since 2019 when the Bonnet Carré was opened. There was a very small harvest in 2020 but none in 2021 due to record rainfall. They are working to rebuild oysters but it will take time. They also had one of the lowest shrimp and crab seasons on record in 2021. They are working to rebuild the artificial reefs and DMR has been working with homeland port security at the Ports of Gulfport and Pascagoula.

Louisiana

J. Froeba reported Louisiana has been working on Hurricane Ida impact assessments. As mentioned in the Sea Grant report, they worked with LASG to develop an economic damage and impact assessment model. There are almost \$580M in losses and damages. They are working with the LA Commission to implement new spotted sea trout regulations and the Commission recently passed a fall closure for commercial and recreational flounder harvest. He said they have decided against a long-term flounder tagging program because they do not catch enough so they are working on establishing a long term monitoring program with a specific gear (modified fyke net with a box) for flounder to try to develop some indices of abundance for stock assessments. He said they received NRDA funding to put rock and cultch plants on 200 acres to start developing brood reefs for oysters. They lost all the fall season from the oyster hatchery due to Hurricane Ida but the facility did well and when electricity did come back it served as the base camp of operations for state personnel. He said the legislature passed a license restructure for the department so all of the commercial and recreational licenses were redone and simplified. It has been 40 years since this has been done so there was some “sticker” shock on the new prices. The restructure makes the licenses more user friendly than in the past.

Texas

C. Mace reported there has been a decline in the coastwide catch rate for spotted seatrout in both spring and fall sampling periods due to winter storm Uri. Therefore, a temporary 2-year reduction in daily bag limit and size change in the slot limit was enacted to help the species recover from the freeze. They have seen a long-term declining trend in population abundance estimates for southern flounder so regulation changes have been enacted. He said federal waters adjacent to Texas were closed to the take of red snapper August 5, 2021 and is forecasted to reopen in the summer of 2022. Texas state waters were closed on November 15, 2021 and reopened January 1, 2022. He said the *iSnapper* mobile reporting app will continue to be promoted through 2022 and both TPWD and TAMUCC creel surveys will be used to validate reporting in *iSnapper* and for calculating estimates through the non-mandatory reporting system. There is a proposal to close 3 Texas Bays to harvesting oysters. They are the Mesquite Bay, Carlos Bay and Aros Bay which are small primary and secondary Bays on the mid-Texas coast located between Aransas Bay and San Antonio Bay. Public opinion is currently being sought regarding this proposal and the proposal will be discussed with the Commission during next week's March meeting. Blue crab trends in Texas remains relatively unchanged from last year's report. Preliminary data collected during the 2022 abandoned crab trap clean-up documented 250 volunteers participating collecting about 1,258 derelict crab traps. During the TPWD 2021 creel survey year 1,108 surveys were conducted at boat access sites along the coast for private boat anglers. All 60 vertical longline stations were

completed for the SEAMAP program across all 3 depth strata and over 3 stat zones off of Texas and out of the 8 different species caught red snapper made up 90.6% percent of the catch composition.

Future Meetings

N. Marcellus stated the fall meeting is scheduled for October 18-20, 2022 and Texas will be the host state. She said no location has been selected and asked the Commissioners if they had a preference for where the meeting will be held. She asked them to please send that to her and she would solicit bids for hotels.

The Commission discussed changing the annual meeting format to one time a year in October. If an issue needs to be discussed or decided before the October meeting, the Commission or Executive Committee can meet virtually or via conference call. The Subcommittees can still meet in-person or virtually, as needed.

S. Bannon *moved* the GSMFC move to one general meeting in October of each year. In addition, Committees and Subcommittees may meet at their discretion anytime during the year. **J. Spraggins** *seconded the motion and it passed unanimously.*

More discussion ensued on should officers serve only one meeting or two and questions were asked about changing the Rules and Regulations or Bylaws to change the meeting format. Staff will review the Rules and Regulations and Bylaws and inform the Commission if they have to be changed.

NOTE: Rules and Regulation updated August 2015 **ARTICLE II. MEETINGS**

Section 1. Meetings shall be held at the call of the Chair. The Commission shall have at least two Regular meetings each year unless changed by unanimous consent of the Commission, one designated as the “Annual Meeting” shall begin during the week in the month of October that contains the third Thursday and Friday and one designated as the “Spring Meeting” shall begin during the week in the month of March that contains the third Thursday and Friday. Meeting dates may be changed by unanimous consent of the Commission. Other meetings shall be designated as Special Meetings and may be held in person or by conference call. Upon the written request of a majority of the Commissioners of each state from three or more states, the Chair shall call a Special Meeting of the Commission.

ARTICLE IV. OFFICERS AND COMMITTEE

Section 1. The officers of the Commission shall consist of a Chair, a First Vice-Chair and a Second Vice-Chair. In the temporary absence of the Chair, the First Vice-Chair shall have the power and authority of the Chair, and in the event the Chair ceases to be a Commissioner, the First Vice-Chair shall automatically become Chair of the Commission. In the absence of both the Chair and the First Vice-Chair, the Second Vice-Chair shall preside. No proxy, except as provided in Article IV, Section 3, shall serve as Chair, First Vice-Chair, or Second Vice-Chair.

Section 2. The Chair and two Vice-Chairs shall normally be elected at the Annual Meeting and shall serve until their successors have been duly elected and qualified, but may be elected at a Regular or Special Meeting of the Commission should vacancies occur provided due notification of such election is served as provided for in Article II, Section 3, of these Rules and Regulations.

Review of Committee Listings

D. Donaldson stated that in Tab N there is a Committee Listing of active committee representatives for each state. He asked the Commission to review their state and to send any changes to him. He said these representatives can be changed at their discretion anytime throughout the year by sending him an email for the record.

Publications List and Web Statistics

D. Donaldson stated this in informational only and if anyone has questions, to contact him.

Other Business

The Commission discussed paying travel insurance when purchasing airline tickets. **D. Donaldson** said there has only been a few times when someone had to cancel and the airline issued a credit that could be used for future Commission travel.

Action: The Commission asked staff to research if it would be beneficial to start purchasing travel insurance and to present the information at the next Commission meeting.

There being no further business, the meeting adjourned at 12:59pm.

ATTACHMENT I

STATE DIRECTORS' REPORTS

Gulf States Marine Fisheries Commission
72nd Annual Spring Meeting
Technical Coordinating Committee
Wednesday, 16 March 2022
Panama City Beach, Florida

1. Emerging Issues Pertinent to Gulf of Mexico Fisheries.

Proposed Regulatory Changes/Proposals

Statewide Recreational Fishing

Spotted Seatrout Harvest Rules - Recommended adoption of proposed changes (adopted by the TPW Commission at the January 2022 meeting, effective March 16, 2022 – August 31, 2023).

- The new rule changes bag, possession, and length limits for spotted seatrout and mirrors those imposed by the emergency rule (minimum length limit of 17 inches, maximum length limit of 23 inches, possession limit of three fish) over a larger geographical area and specifies a date certain of August 31, 2023 for those limits to expire, at which time the harvest regulations would revert to the previous limits.

Oyster Management Strategies Update - Briefing

- Texas Parks and Wildlife Department (TPWD) staff briefed the Texas Parks and Wildlife Commission on the current status of the oyster fishery. The briefing included a summary of recent public concerns and potential management strategies that are currently being evaluated.
- Closure of Oyster Reef Areas - Request Permission to Publish Proposed Changes in the Texas Register. The proposed amendment would permanently close reefs in Ayres, Mesquite, and Carlos Bays to harvest.

Oyster Updates

Commercial Oyster Mariculture (COM) Update

In 2019, the 86th Texas Legislature authorized the Texas Parks and Wildlife Commission (TPWC) to create a Texas Oyster Mariculture Program. The TPWC adopted rules in May 2020, and the department continued work to develop the permitting system and guidelines and began accepting mariculture applications in the fall of 2020. Significant program developments include:

- Working with Texas Sea Grant to provide public trainings on the oyster mariculture permitting process.
- Working with Texas Sea Grant to develop an online permitting flowchart that will be available on Sea Grant's website to help the public navigate the permitting process.
- Continued refinement of program processes, procedures, guidance documents, application forms and online resources including an online permitting portal.

- Continued coordination with other state and federal agencies regarding required permits for various aspects of the program, specifically regarding changes in response to the renewal of the NWP 48 General Conditions.
- Refined biosecurity protocols for the importation of out-of-state oyster seed as well as production of oysters at in-state hatcheries to protect wild oyster genetics.
- Development of an oyster hatchery permitting and oversight process.
- Refining the standardized permit application and natural resource survey protocol to ensure no negative impacts to natural resources.
- Coordinating with the General Land Office to host GIS shapefiles as web services for creation of an online Spatial Planning Tool that allows for the visualization of the user conflicts and natural resources around the proposed site.

There are currently three permitted sites (1 conditional) as of February 2022 (Table 1); however, there are twelve additional prospective applicants that are being considered.

Table 1. Permitted Texas Commercial Oyster Mariculture applicants.

Applicant	Date application received	Applied acreage	Shellfish area	Area	Status	Permit Date
Oyster Company, LLC	1/14/2021	8	TX-32	Copano Bay	Permitted	7/26/2021
Texas Sustainable Oysters, LLC	1/11/2021	9.74	TX-1	East Galveston Bay	Permitted	9/24/2021
David Aparicio	9/1/2021	5	TX-14	Tres Palacios Bay in Matagorda Bay System	Conditional Permit	11/8/2021

Oyster Reef Habitat Mapping

The Department’s Habitat Assessment team has finished mapping oyster habitat in Lavaca and Tres Palacios Bays using bathymetric side-scan sonar and will be mapping oyster reefs in Aransas Bay this year (2022).

Oyster Reef Restoration (Non-HB51)

Texas Parks and Wildlife has restored over 580 acres of oyster reef coastwide. The following was primarily funded using Hurricane Harvey Fisheries Disaster Declaration grant.

- 35 Acres on Dollar Reef in Galveston Bay in 2021

- 2 Acres of Pepper Grove Reef in Galveston Bay in 2021
- 25 acres on Keller Reef in Matagorda Bay in 2021
- 34 acres on Grass Island reef in Aransas Bay in 2020
- 15 acres on Sabine Reef in 2020

Oyster Shell Recovery

HB51 (85th Legislative Session, 2017) included a requirement that dealers purchasing oysters harvested from Texas bay systems return 30%, by volume, of the total quantity of oysters harvested during the previous license year. In lieu of returning this cultch back to public oyster reefs, dealers can pay the department a sack fee that will allow the department to return an equivalent amount to public reefs. The current amount of this fee per sack is \$1.32 (has not been increased). Since 2018, 3,383,661 sacks were harvested, which converts to \$4,466,431 in fees or 58,743.78 cu yds of cultch. So far, \$1,067,943 in fees and 35,666 cubic yards of cultch have been placed in the bays by oyster dealers. Out of all the required payments, 61% have been with cultch and 24% has been through monetary payments (Table 2).

Table 2. Summary of Oyster Shell Recovery program (LY2018-2022)

LY (Sep-Aug)	Sacks Harvested	Cultch Due (cu yds)	Fee in lieu of cultch	Final Disposition		% accounted for	Total paid if cultch and fee added	
				Cultch (cu yds)	Fee (\$)		cultch	fee
2018	564,787	9,805.30	\$745,518	6,590.60	\$248,448	100.5		
2019	754,565	13,100.00	\$996,025	9,705.30	\$228,047	97.0		
2020	878,503	15,251.70	\$1,159,624	3,220.00	\$298,329	46.8		
2021	861,939	14,964.12	\$1,137,759	16,150.20	\$200,438	125.5		
2022	323,867	5,622.65	\$427,504	0	\$92,681	21.7		
Total	3,383,661	58,743.78	\$4,466,431	35,666.10	\$1,067,943	84.6	49,712.0	\$3,779,725
Balance (as of 2/10/2022)		9,031.8	\$686,706	60.7%	23.9%			

Texas Oyster Landings

Commercial oyster landings (public and private reefs) in Texas have been variable over the last 20 years (license years, Sep-Aug); however, after a low point in harvest in 2016 of 315,424 sacks, landings have increased significantly to a recent peak in 2020 of 861,967 sacks. A similar harvest was reported in 2021 (Figure 1). This increase in landings occurred despite a decrease in the sack limit from 50 to 30 sacks and limiting fishing to only weekdays. A factor that appears to be related to the increase in harvest is the increase in active oyster vessels fishing over those same periods, with only 302 oyster vessels fishing in 2016 then increasing to 486 vessels fishing in 2020 (Figure 2). There is a moratorium on new licenses, but inactive (not fished) licenses have been transferred

to license holders that are actively fishing. The 2022 season has had similarly high harvest rates to the last several years when comparing the first 60 days of the season (Nov-Dec; Figure 3). However, our management teams have been closely monitoring reefs in our public harvest areas using Targeted Oyster Sampling (TOS) with dredges to determine if Market Oyster CPUE and % undersized oyster thresholds for closing reef areas have been met. Over the course of this season many of our reef areas were found to have fallen below the CPUE and % undersized levels that would necessitate a closure of those areas. As of February, only a few bays remain open to harvest based on our closure thresholds (but are closed off/on due to rainfall; <https://www.dshs.state.tx.us/seafood/shellfish-status.aspx>), and it is likely that season harvest levels will fall well below what has been seen in recent years. There was some indication that flood events in July may have contributed to some oyster mortality on the reefs, which may have reduced the market oysters available to a recently growing fleet of oyster vessels.

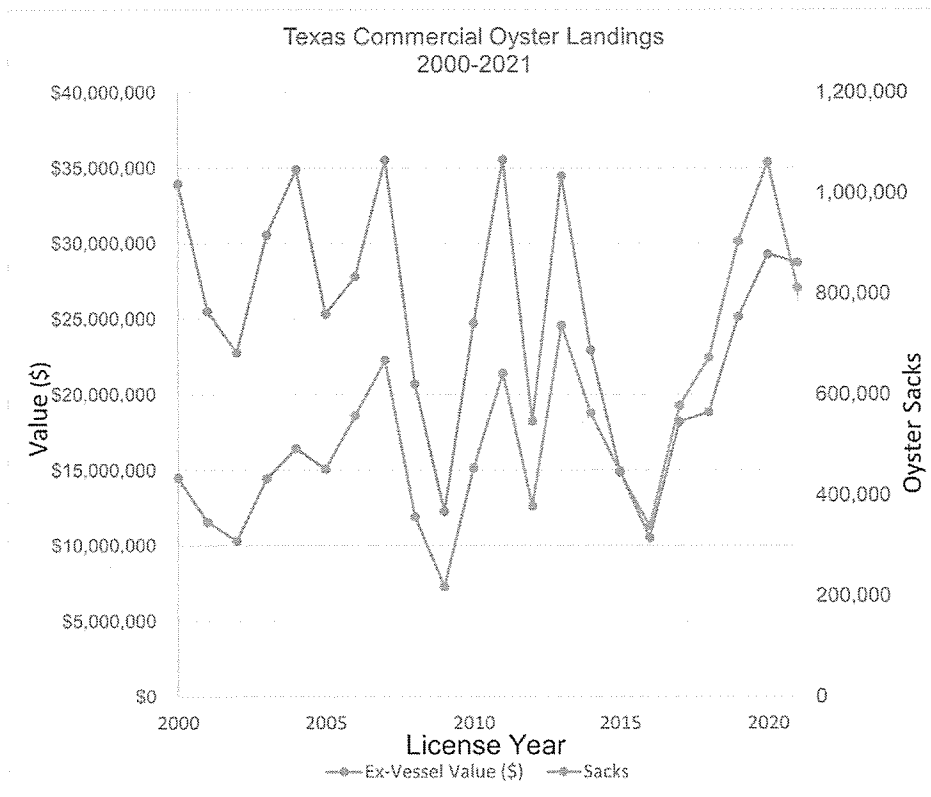


Figure 1. Texas commercial oyster harvest from 2000 to 2021 license years (Sep-Aug).

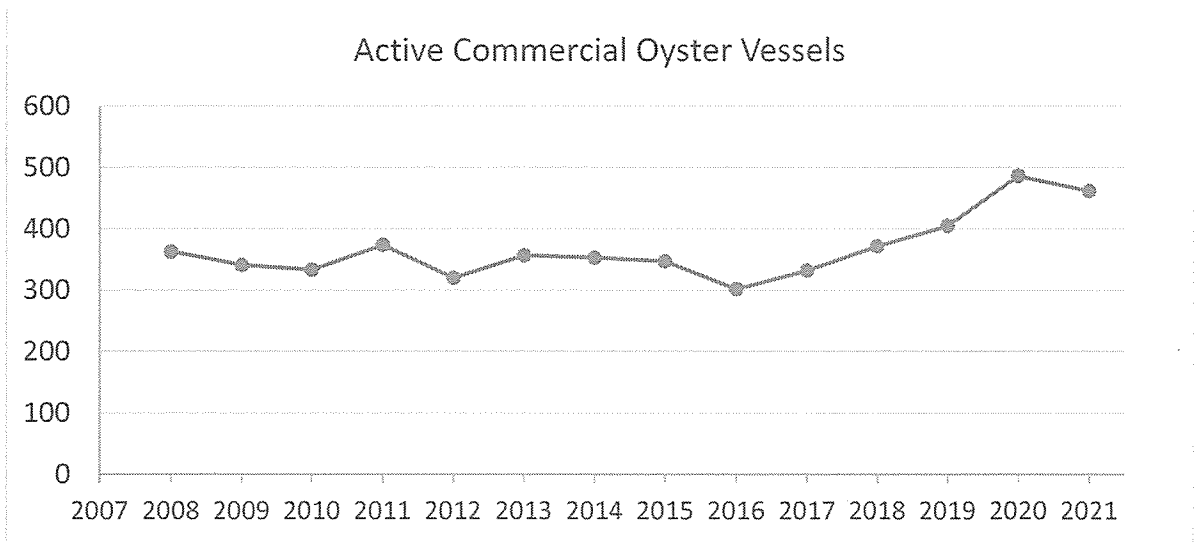


Figure 2. Active oyster vessels (reported on Trip Tickets).

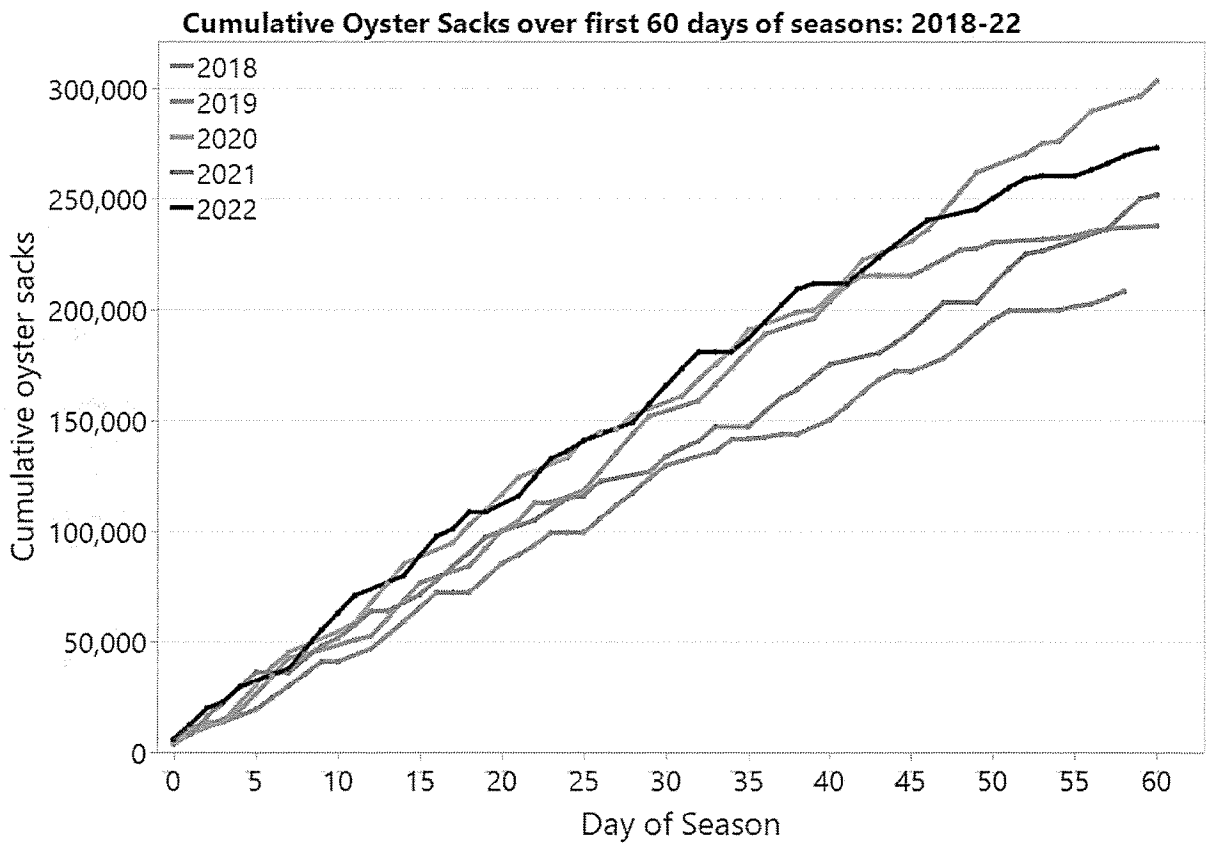


Figure 3. Cumulative number of sacks collected by the Texas oyster industry during the first 60 days (Nov-Dec) of the last 5 years of the public season.

Southern Flounder

The Southern Flounder is highly sought after in both the recreational and commercial fisheries in Texas. TPWD fishery-independent catch rate data show pronounced long-term declining trends in all life stages, from juvenile recruits to adults. For example, recent gill net survey data showed decreases in catch rates of 60% or greater compared to historic long-term trends (Figure 4).

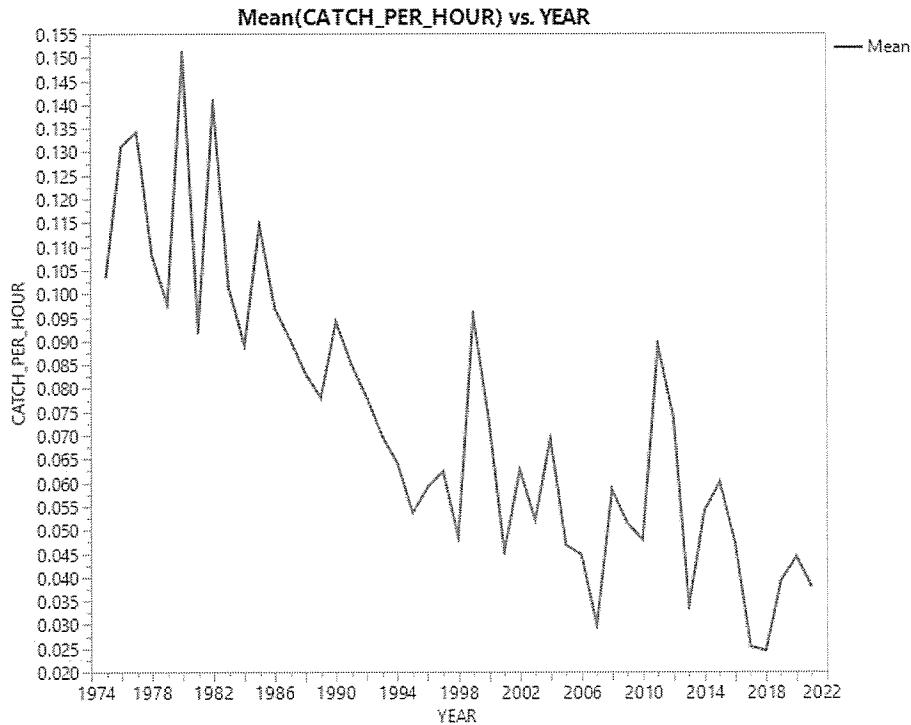


Figure 4. Gill net catch rates (catch/hour) of Southern Flounder (Fall season 1975-2021).

Based on these long-term downward trends in abundance and declining commercial (Figure 5) and recreational landings, the Texas Parks and Wildlife Commission approved regulation changes in May 2020 designed to increase spawning biomass. The change in the increased minimum length limit from 14 inches to 15 inches was implemented on September 1, 2020, and the second part of the action closed the season for both commercial and recreational harvest from November 1 - December 14 each year beginning on Sept. 1, 2021. The combination of these rules should allow more females to reach sexual maturity prior to being harvested and increase escapement of females to the Gulf for spawning, therefore increasing recruitment. The full benefit from these regulations will take a generation (approximately 6 years) to be realized.

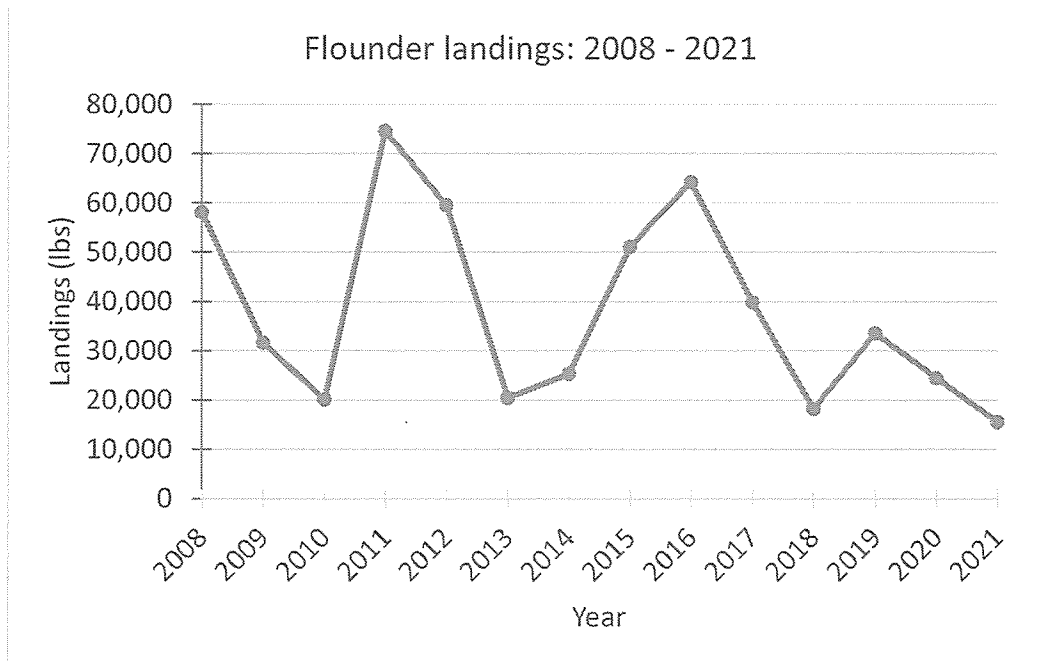


Figure 5. Texas commercial flounder landings (Trip Tickets) from 2008-2021.

Spotted Seatrout

Following winter storm Uri (Feb 14, 2021) a decline in the coastwide catch rate for Spotted Seatrout was observed in both spring and fall gill net sampling periods as compared to long-term trends from TPWD’s fisheries independent monitoring program (Figures 6 and 7). The most noteworthy declines were in bays and estuaries on the middle and southern coast of Texas. Therefore, a proposal was presented to the Texas Parks and Wildlife Commission to adopt a temporary, two-year reduction in daily bag limit and change in the slot size limit to help the species recover from the freeze. The proposal mirrored the emergency Spotted Seatrout regulation for the Laguna Madre that was effective 4/1/2021 - 9/27/2021. This rule will include all coastal waters from the Rio Grande northward to Highway FM 457 in Sargent, excluding Galveston Bay and Sabine Lake. This proposal was approved by the Texas Parks and Wildlife Commission (TPWC) during the January 2022 meeting and will go into effect beginning March 16, 2022 and expire August 31 of 2023.

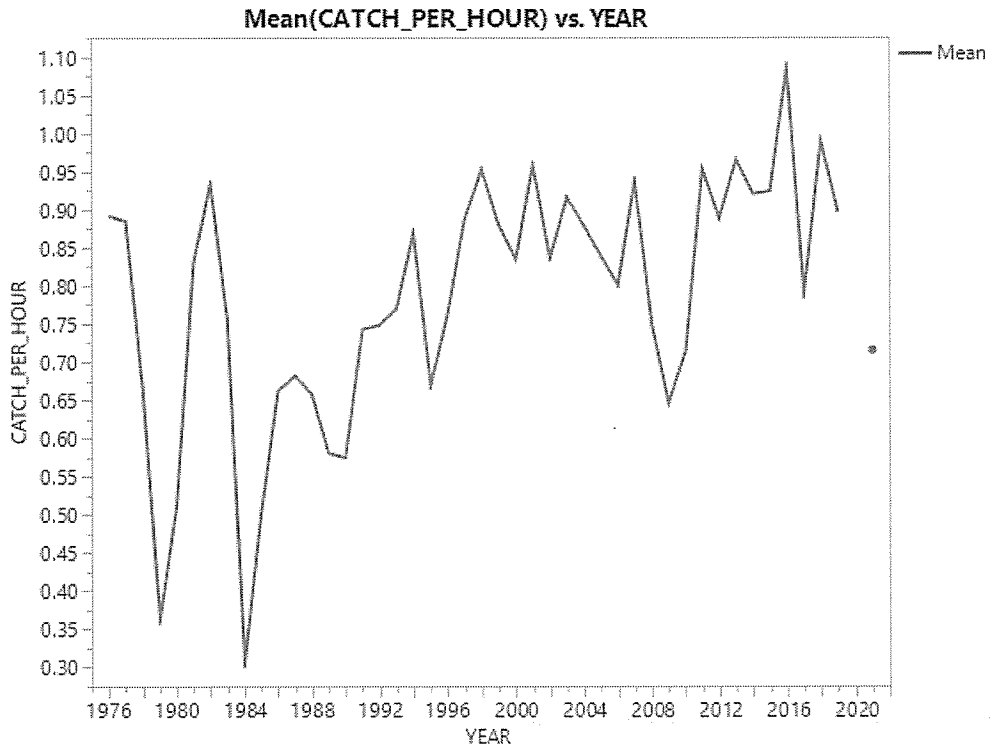


Figure 6. Catch per hour of Spotted Seatrout from Spring gillnets. 2020 data were not collected due to COVID restrictions. 2021 data are represented by the single dot.

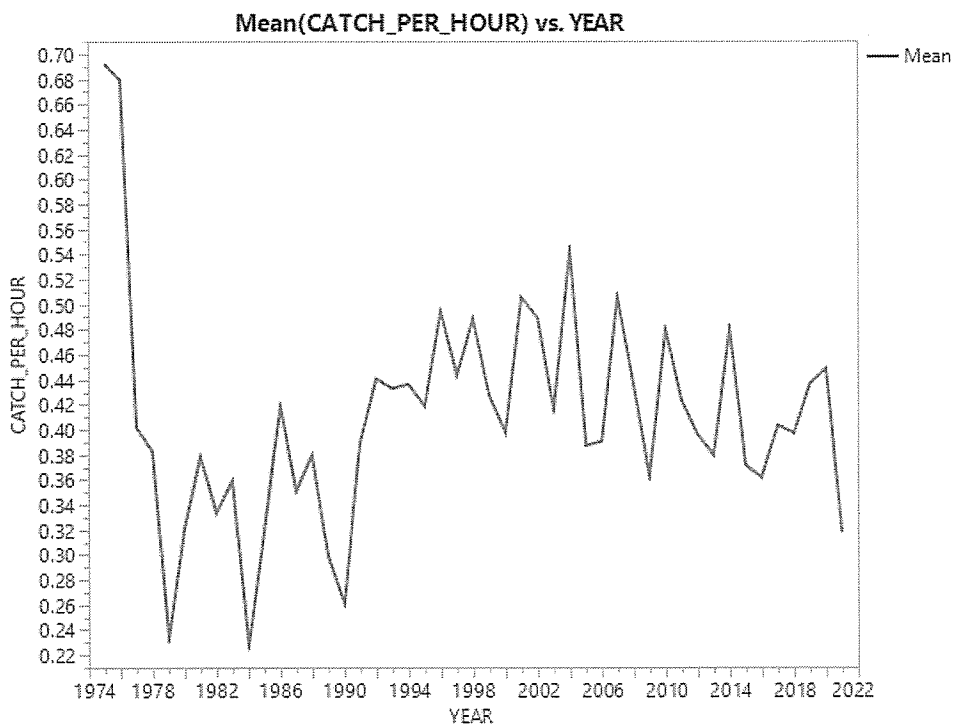


Figure 7. Catch per hour of Spotted Seatrout from Fall 2021.

CARES Act Updates

CARES Act funding notification letters were sent out to qualified license holders in February 2021. They could apply for losses within three separate sectors: Commercial Fishery Participant, Wholesale Seafood/Bait Dealer, and for-hire/guide. In the first round, Texas was given (after admin expenses) \$8,968,805 to cover losses within these sectors (64.3 % for Commercial Fishery, 25.1% for Seafood Dealers, and 10.6% for For-Hire sector). Additionally, Texas received \$7,534,853 in second round funding at the same allocation proportions (total of \$16,503,658 for both rounds). We received 456 applications across all three sectors and approved 136 applications. For the first round of applications, each qualified applicant was able to get 100% of losses covered, and total approved distributions in the first round totaled \$9,899,168 (Table 3). After distributions of Round 1 (and partial Round 2) funds, Texas had \$6,604,490 remaining.

Some applicants claimed they did not receive notification of their initial denial and chance to appeal. In addition, we had a number of applicants that would have qualified with greater than a 35% loss based on their income as provided on their initial application (but did not appeal for some reason). Since Texas had significant funds remaining and the low initial approvals in some sectors, we opened up a second chance appeals period for those that would have met a greater than 35% loss based on their income in the initial application. Letters of this funding opportunity were sent out by certified mail on February 1, 2022, and applicants were given 14-business days to submit required documents. In all, 85 applicants were given this second chance and sent letters (2 for-hire guides, 79 fishery participants, and 4 seafood dealers). We are currently receiving documents for sector appeals.

Table 3. Summary of Texas CARES Act applications and funding distribution.

Sector	NOAA Allocation Proportions	First Round Funds	Second Round Funds	Total funds	# applicants	# approved	Approved distributions
Commercial Fishing	64.3	\$5,766,942	\$4,844,910	\$10,611,852	322	37	\$4,320,889
Seafood Dealers	25.1	\$2,251,170	\$1,891,248	\$4,142,418	17	5	\$3,532,436
Recreational For-Hire	10.6	\$950,693	\$798,694	\$1,749,387	116	94	\$2,045,843
All Sectors	100	\$8,968,805	\$7,534,853	\$16,503,658	456	136	\$9,899,168

2. Activities Related to Artificial Reef Programs.

Rigs-to-Reefs

Table 4. Rigs-to-Reefs sites, donations, and deployment dates

Structure	Reef Site	Platform Size	Donor	Donation Amount	Deployment Date
HI-A-537 B	HI-A-555	8-pile	Freeport McMoRan	\$300,000	09/26/21
HI-A-536 C	HI-A-555	8-pile	Freeport McMoRan	\$300,000	10/01/21
HI-A-446 A	HI-A-466	8-pile	Fieldwood Energy	\$180,000	10/08/21

- Three 8-pile platforms owned by Freeport McMoRan Oil & Gas and awaiting deployment at HI-A-555 (2 structures) and HI-A-330 (1 structure). Each structure's donation agreement was finalized at \$300,000.
- Currently, there are 3 platform donations in negotiation, including the Exxon-Mobile Hoover Spar.

Ships-to-Reefs

- *No updates at this time*

Nearshore Reefs

- Memorial Reefs, Inc. deployed 3 reef balls at Barr's Reef on September 27th. Memorial Reefs, Inc. is based out of Hawaii and has deployments internationally. This was their first deployment in Texas waters, and we look forward to working with them again.



- Laredo Construction LLC, in partnership with Atlantis Marine Habitats, was awarded the reefing contract for Big Man’s, Kate’s and Sabine Nearshore Reefs. The contract will place 1,150 pyramids and 255 low relief plates at the reefs with a total cost of \$2.7m. Most of the funding is coming from Hurricane mitigation funds, with an additional \$559,000 from CCA. Laredo began deployment of the reef materials in early December. All 150 pyramids for the Sabine HI-20 nearshore reef site and the 500 pyramids for the Big Man’s reef site were deployed by 16 December 2021. Deployments at Kate’s reef site of both pyramids and reef plates should be completed before the end of February.



Grants / Administration

- The Artificial Reef Program was awarded funding for a project under the Texas Coastal Management Program (CMP) Grant Cycle 26. This funding will allow for the deployment of 100 pyramids and 100 low-relief reef plates at the Sabine Nearshore Reef Site (HI-20). Staff are working with the contracting and purchasing division to amend the contract with Laredo Construction, Inc. for the additional structures. The ARP anticipates the deployment of new nearshore materials in the Sabine nearshore reef site in Spring 2022.
- The GLO Asset Removal team and the ARP finalized the plan for the removal of the old Queen Isabella Causeway off Port Isabel/South Padre Island. The GLO has ownership of the bridge and it must be removed at some point soon. Estimates show that it may require \$10-12m for removal (and reefing). A contract between the GLO and the ARP will allow for the ARP to oversee and carry out the required archeology survey for a new reef site. The contracted vendor, SEARCH, Inc., has received the antiquities permit from the Texas Historical Commission and but weather conditions kept the survey from occurring.

However, SEARCH has found a larger vessel that should be able to negotiate the winter seas and the survey is currently set for mid-February.

3. Activities Associated with the Gulf of Mexico Crab Fisheries.

Abandoned Crab Trap Removal Program

The Texas Parks and Wildlife Department (TPWD) closed state waters to crabbing (with crab traps) 10 consecutive days beginning February 18, 2022. During this time, crab traps encountered are classified as “abandoned” and may be removed by Law Enforcement personnel, Department staff, and any member of the general public. Updates on total traps removed will be provided in the Fall, 2022 report.

Blue Crab Updates

Blue crab trends in Texas remain relatively unchanged from last year’s report. Based on TPWD fishery independent catch rates, coastwide relative abundance of blue crabs has shown significant declines since the 1980’s. This trend is generally consistent in all Texas bays. While these trends have largely stabilized since the early 2010’s, and gill net surveys suggest increased catch rates of adult blue crabs in recent years (Figure 8), bag seine and bay trawl catch-rates (Figure 9 and 10, respectively) suggest that juvenile abundance continues to remain low. Further analysis of this data suggests that juvenile mortality is increasing and thus the population is not seeing an overall increase in abundance.

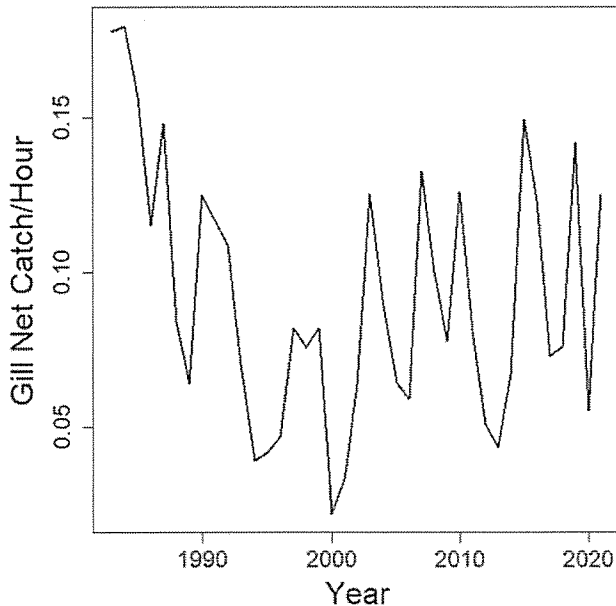


Figure 8. Blue crab catch rate in fishery independent gill net surveys conducted in Texas bays. Note, gill net samples were not collected during the spring of 2020 due to the COVID-19 pandemic (i.e., 2020 consists of only fall gill net samples).

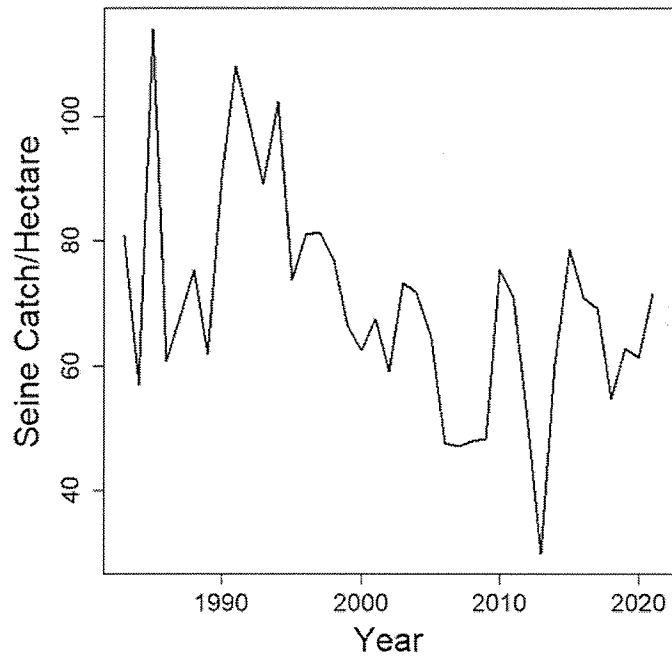


Figure 9. Blue crab catch rate in fisheries independent bag seine surveys conducted in Texas bays.

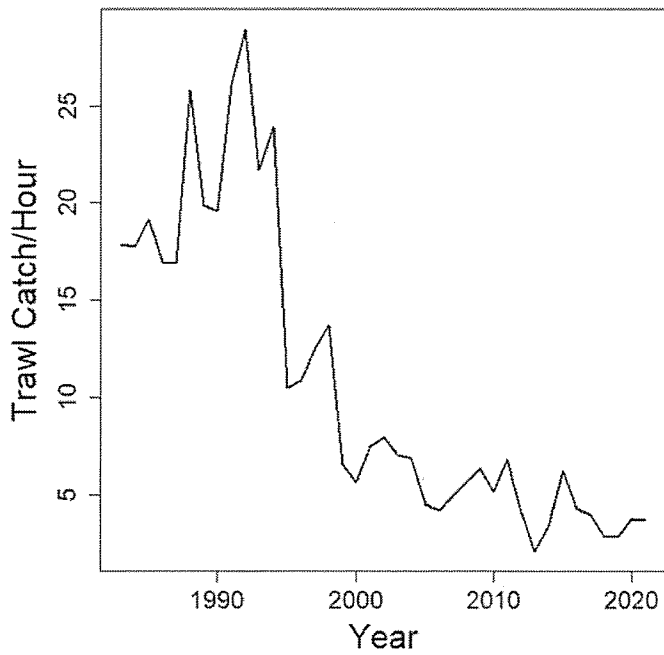


Figure 10. Blue crab catch rate in fisheries independent bay trawl surveys conducted in Texas bays.

Commercial Landings

Total commercial landings of blue crab have significantly declined since the 1980's. This is, in part, due to commercial license buy-back that began in the late-1990's. The 2021 landings continue that slight downward trend (Figure 11); in 2021, total landings of blue crab in Texas were 3,341,709 lbs. which is 41% lower than the 37-year annual average of 5,672,167 lbs; however, 2021 landings are only a 3 and 8% decrease over the 10 and 20-yr average landings.

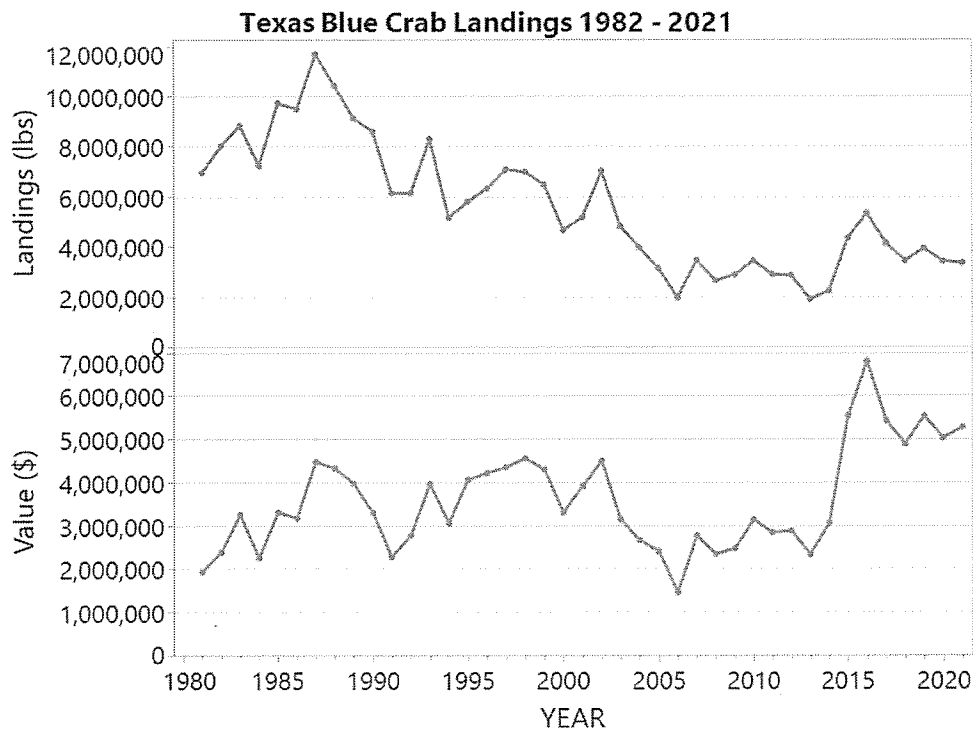


Figure 11. Total annual landings and value of blue crab in Texas.

4. Activities Related to Fisheries Dependent Data Collection.

Texas Trip Ticket Program

Trip ticket staff have continued to work with BlueFin software developers to improve the production version of the VESL web-based Trip Ticket System. As of February 2022, we have 202 dealers (out of 313 current) using the new VESL system, including new dealers and previous electronic and paper dealers. There are still 27 dealers using the original electronic program and 84 dealers using paper tickets. We continue to move dealers from the original electronic program to VESL and try to persuade paper dealers to switch. So far, we have received positive feedback from these dealers on the new system. We continue to work with our programmers and dealers to address any issues. The main advantages of the new system are the ease of access (web-based mobile devices can be used) and that we have added many validation steps to improve the accuracy of vessel, fisherman and dealer license data. In 2022, VESL was still being updated

(developed with BlueFin programmers) to allow for federally permitted seafood dealers to report. They currently report via the original electronic program.

Fishery-Dependent harvest data collection (creel surveys)

During the Texas Parks and Wildlife Department’s 2020-21 creel survey year (15 May 2020 through 14 May 2021), 1,108 surveys were conducted at boat-access sites along the coast.

For private-boat bay-pass anglers, an estimated 5,895,300 man-hours were expended to harvest an estimated 1,364,600 fishes. Staff conducted 12,668 target interviews involving 32,233 anglers. Of the 56 species encountered, Spotted Seatrout, Red Drum, and Atlantic Croaker were most frequently landed. Mean party size was 2.5 people and mean trip length was 5.6 hours. Staff observed 38,299 fishes and measured the length for 28,896 of them.

For private-boat Texas Territorial Sea anglers, an estimated 133,800 man-hours were expended to harvest an estimated 33,700 fishes. Staff conducted 498 target interviews involving 1,429 anglers. Of the 41 species encountered, Red Snapper, King Mackerel, and Spotted Seatrout were most frequently landed. Mean party size was 2.9 people and mean trip length was 6.3 hours. Staff observed 2,266 fishes and measured the length for 1,565 of them.

For private-boat Exclusive Economic Zone anglers, an estimated 129,600 man-hours were expended to harvest an estimated 28,300 fishes. Staff conducted 319 target interviews involving 1,240 anglers. Of the 36 species encountered, Red Snapper and King Mackerel were most frequently landed. Mean party size was 3.9 people and mean trip length was 7.7 hours. Staff observed 1,954 fishes and measured the length for 1,343 of them.

Fishery-dependent collection of otoliths for the Gulf States Biosampling program

We started a new agreement with the GSMFC biosampling program to collect otoliths from select species, starting in September 2021 (Table 5). Otoliths are being collected from recreational anglers and aged via independent contractors paid by GSMFC. To date, the following samples have been processed at our facility:

Table 5. Summary of otoliths collected from recreational species at boat ramps for Gulf States Biosampling program.

Common Name	Scientific Name	Processed	Requested
Gray Snapper	<i>Lutjanus griseus</i>	0	75
Vermillion Snapper	<i>Rhomboplites aurorubens</i>	24	170
Red Snapper	<i>Lutjanus campechanus</i>	19	400
Triggerfish	<i>Balistes capricus</i>	0	50
King Mackerel	<i>Scomberomorus cavalla</i>	1	300
Sheepshead	<i>Archosargus probatocephalus</i>	55	70
Southern Flounder	<i>Paralichthys lethostigma</i>	17	100
Black Drum	<i>Pogonias cromis</i>	155	340
Red Drum	<i>Sciaenops ocellatus</i>	216	750
Spotted Seatrout	<i>Cynoscion nebulosus</i>	384	1500

iSnapper – mobile reporting app

iSnapper will continue to be promoted through 2022. Both TPWD and TAMUCC creel surveys will be used to validate reporting in *iSnapper*, and to use for calculating estimates through the (non-mandatory) app reporting system.

5. Activities Related to Fisheries-Independent Sampling.

SEAMAP

Bottom longline and Vertical line sampling

2021 SEAMAP operations were completed last October. We are planning to upgrade the longline winch on the R/V Nueces, which covers the mid-Texas coastal area.

All 60 vertical longline stations were completed across all three depth strata and over 3 stat zones off Texas (Table 6). In 2021, 383 fish were caught, and out of the 8 different species caught, Red Snapper made up 90.6% of the catch composition. In 2021, the majority of stations had positive catches of Red Snapper (72.7-85.7% of stations), with the 10-20 zone having the greatest % of stations with snapper. This is strikingly different than previous years, as this stratum is usually the lowest % of stations, but is likely due to the inclusion (and selection) of more stations within this stratum in stat zone 21, which tends to have more snapper in shallow water. However, as usual, higher CPUEs of Red Snapper were encountered in the deeper two depth strata (19.8-20.4 RS/100 hks vs only 12.4 RS/100 hks in the shallow stratum; Table 6).

Table 6. Summary of Red Snapper catch from SEAMAP Vertical Line Survey sampling from 2017 – 2021 by depth strata (no surveys were completed in 2020 due to COVID-19).

Year	Depth Strata (m)	# of Stations	# of Hooks Fished	# of Red Snapper	Mean TL (mm)	Mean Weight (kg)	# of Stations with Red Snapper	% Stations with Red Snapper	CPUE (RS/100 hks)	Yearly CPUE (RS/100 hks)
2017	10-20	9	260	17	273	0.39	7	77.8	6.5	21.6
	20-40	18	420	140	484	1.71	16	88.9	33.3	
	40-150	32	960	198	504	1.78	29	90.6	20.6	
2018	10-20	8	240	10	262	0.27	3	37.5	4.2	18.3
	20-40	19	570	152	476	1.69	13	68.4	26.7	
	40-150	33	990	167	497	1.82	28	84.8	16.9	
2019	10-20	8	240	28	395	0.94	4	50.0	11.7	20.0
	20-40	19	570	161	457	1.44	14	73.7	28.2	
	40-150	36	1140	201	527	2.00	23	63.9	17.6	
2021	10-20	7	210	26	281	0.32	6	85.7	12.4	19.3
	20-40	20	600	119	397	1.05	16	80.0	19.8	
	40-150	33	990	202	449	1.36	24	72.7	20.4	

6. Other State Activities.

Fisheries Enhancement Program (Hatcheries)

During this fiscal year-to-date, the saltwater enhancement program has stocked 7,184,332 fingerlings in Texas' public waters (Note, most fingerlings are stocked during the summer; Table 7).

Table 7. Total Red Drum, Spotted Seatrout, and Southern Flounder fingerlings produced and stocked into various Texas water bodies during FY 2022 (9/1/2021 – 2/4/2022).

FY 2021 Water Body	Red Drum Fingerlings Stocked	Spotted Seatrout Fingerlings Stocked	Southern Flounder Fingerlings Stocked
Aransas		570,522	3,915
Corpus Christi		207,272	
East Matagorda		191,597	
Galveston		336,670	
Lower Laguna Madre		685,844	
Sabine Lake			
San Antonio	156,994	1,125,545	
West Matagorda	255,938	1,071,755	
Upper Laguna Madre	872,596	718,102	
Freshwater			
Calaveras	643,620		
Kleberg Park	3,356		
Lake Bryan			
Victor Brauning	340,606		
Total	2,273,110	4,907,307	3,915

License Buyback Program

There have been no Buyback rounds since last report

Perry R. Bass Marine Fisheries Research Station Updates

PRB Projects

Eastern Oyster (*Crassostrea virginica*) population genomics

This project consists of sampling oysters throughout the Gulf and generating a high resolution SNP genomic data set. Genomic sequencing of samples from Florida ($n = 3$), Louisiana ($n = 2$), Alabama ($n = 1$) and Texas ($n = 11$), has been completed. Sequencing and bioinformatics are being supported by the Marine Genomics lab at Texas A&M Corpus Christi (MGL). We have created a final variant file including nearly 20,0000 unique genomic loci that will be used for spatial genetic analysis; analysis of that data set is ongoing both at PRB and MGL.

Detection of shrimp black gill disease in wild Gulf shrimp

We are continuing work on a study on the presence and prevalence of shrimp black gill (sBG) in White (*Litopenaeus setiferus*) and Brown (*Farfantepenaeus aztecus*) Shrimp in Texas. We have identified the pathogen that seems to drive this condition in Texas, using DNA sequencing technology. In 2019, $n = 1,605$ shrimp (White and Brown Shrimp combined) were sampled and sBG detection was conducted using a PCR test coupled with lab examination/diagnosis. We are continuing and expanding our sampling effort for this project. Sampling has continued in 2020 and 2021. In an effort to assess impacts to Gulf commercial shrimping, we have partnered with Texas Agrilife Sea Grant extension and the offshore shrimp trawl fishing community to expand sampling offshore and link it directly to the industry. Sampling has now been completed and data analysis is ongoing. A paper reporting the presence and prevalence of sBG has been published in Marine and Coastal Fisheries (AFS, below).

Swinford J., and J. Anderson. **2021**. Prevalence of black gill (*Hyalophysa lynni*) in white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*) along the Texas gulf coast. *Marine and Coastal Fisheries*. <https://doi.org/10.1002/mcf2.10153>

Observation of growth in two sizes of post-release Red Drum *Sciaenops ocellatus*

We are cooperating with the TPWD stock enhancement branch to determine whether there are differences in growth and body condition between stock enhancement Red Drum that are above versus below the size targeted (35 mm) at the time of harvest. Samples of fish were collected at harvest, and individuals were fit with coded wire tags and released into wet lab tanks. Six trials have been completed (May, August, November 2020, May, August, November 2021) and data analysis is ongoing. Preliminary results suggest that fish below target have a higher mortality rate post-harvest, and there are also differences in daily growth between individuals above and below harvest targets.

Determination of hatching dates in wild Southern Flounder (*Paralichthys lethostigma*)

Young-of-the-year Southern Flounder are being collected during fishery independent sampling (TPWD). Otoliths are being extracted from all individuals and daily increment rings are being used to determine hatching dates for Southern Flounder. Hatching dates will be related back to environmental (water quality) conditions to understand spawning and hatching conditions for Southern Flounder in the wild. Daily rings are present and countable. We have also observed accessory growth centers that might be associated with metamorphosis. Additionally, a collaborative component to this project with the TPWD stock enhancement program has yielded direct comparisons of growth and metamorphosis in wild versus hatchery fish. Preliminary results of this study include (1) relative consistency in daily growth of hatchery versus wild fish, (2) temporal and regional differences in the timing of metamorphosis (and ostensibly hatch), of Southern Flounder along the Texas coastline based on reverse calculations of growth from wild-caught fish over the last 30 years, and (3) progressive changes to the timing of hatch and metamorphosis in this species over the entire time series. Data analysis complete, manuscript in review.

Taxonomic uncertainty in ladyfish (*Elops saurus* versus *E. smithi*) in the western Gulf of Mexico

Research conducted in the last decade described a new species of ladyfish, *Elops smithi*, which occurs in sympatry with *E. saurus* in the Gulf of Mexico. We have collected 354 ladyfish specimens

via TPWD fishery independent sampling. Morphological characters which diagnose each species have been counted and paired with mtDNA sequencing to take census of these species in Texas' waters. To date, both species have been identified in Texas, with *E. saurus* (approximately 90% of specimens) encountered more frequently than *E. smithi*. We are also using otolith increment analysis to observe age/growth parameters in *Elops sp.* Analysis is complete, manuscript in preparation.

Investigating the use of environmental DNA (eDNA) for assessing presence and abundance of marine finfish in the coastal waters of Texas

We are in year 2 of a proof-of-concept study to test the efficacy of eDNA as a sampling methodology in the various estuarine habitats in Texas. We are now testing a community-level assay (DNA metabarcoding) to detect marine species. To date, we have (1) produced a reliable Sciaenidae family-specific qPCR detection assay, (2) identified a reliable water sampling/DNA extraction protocol using Smith Root filter cups, and (3) used wet lab trials to test the efficacy of sampling, extraction, and PCR steps. We have also built a DNA sequence reference file specific to the expected community structure of Texas' estuaries. The reference consists of >700 species that are commonly encountered in TPWD CF sampling gears and references a DNA sequence locus (mtDNA cytochrome oxidase) commonly used for barcoding studies. This reference file has been tested successfully by our staff against commonly used DNA metabarcode program pipelines. Side-by-side water sampling with TPWD gill nets is anticipated in the Spring of 2022. Funding was extended to Dec. 2022 through SuRF funds (GSMFC).

Analysis of taxonomic uncertainty and field identification of snook (*Centropomus sp.*) (NEW)

In order to improve field identification of the two snook species that occur in Texas, we will pair morphological examination with genetic identification (DNA sequencing) in order to identify key characters for each species. Previous work in our lab has identified problems with using commonly employed keys to differentiate *C. undecimalis* from *C. mexicanus* in Texas. Additionally, age/growth curves generated from otoliths obtained from TPWD field-identified specimens indicate (1) 2 different growth trajectories, suggesting species-specific growth functions, and (2) data contamination of each growth function due to (presumed) misidentification in the field. For otoliths already on hand, we will explore improving taxonomic ID using species-specific differences in gross otolith morphology (i.e., fourier series shape analysis using the uncut, paired saggital otolith). Field sampling will begin in Fall of 2021 and field specimens will be used to validate otolith shape differences and further examine external morphological key characters using a number of published keys. We anticipate the following deliverables: (1) improvement of the key characters that can be used for field identification of *Centropomus sp.* in Texas, and (2) taxonomic resolution of potentially mis-identified otolith snook specimens for accurate age/growth function analysis.

Collaborative projects

Range-wide population genetic structure of Alligator Gar (*Atractosteus spatula*)

In collaboration with Dr. Brian Kreiser, (University of Southern Mississippi), we are analyzing mitochondrial DNA (mtDNA) sequence data already on hand in our lab, in an effort to examine the range-wide population structure of the species. Dr. Kreiser is analyzing a microsatellite DNA data set, and together we will attempt to compare and contrast historical versus contemporary patterns of movement and demographic exchange among drainages in the Gulf of Mexico

basin. Manuscript preparation has been completed and journal submission is anticipated in Spring of 2022.

Using population genomics to inform stock enhancement and ecosystem-based management of Spotted Seatrout *Cynoscion nebulosus*

In collaboration with Drs. Portnoy and Hollenbeck (TAMUCC) as well as TPWD hatchery staff (Mace, Fincannon, Cason) we will be collecting YOY spotted seatrout in conjunction with TPWD routine monitoring samples starting in Spring 2022 (bag seines and gill nets). The collections will serve two purposes: (1) we intend to examine genomic patterns of variation which have a spatial component (population genetics), and (2) we intend to estimate the contribution of hatchery-origin Spotted Seatrout to fish sampled in the wild. An additional deliverable of this project will be a genetic linkage map that will be generated by examining full- and half-sibling crosses from hatchery Spotted Seatrout families. This project is funded through Sea Grant and is anticipated to last through 2024.

Utilizing eDNA and plankton sampling to monitor American Eel recruitment in Texas (NEW)

In collaboration with Drs. Guillen and Oakley (U. Houston, Clear Lake) we will be using a combined eel ramp and eDNA approach to identify potential migratory routes and timing for American Eel juveniles. Eel entrapment structures (aka “eel ramps”) will be located along several lower rivers in Texas spanning from the Nueces River up through several northern coast drainages (specific sample sites not yet selected). Regular checks of these ramps will coincide with eDNA water sampling. We are also partnering informally with Steven Davis (Lower Colorado River Authority) to assay similar sites in his area using eDNA methods. We have selected appropriate DNA assays and have quality controlled the lab eDNA steps and water sampling methodology. Site selection and deployment is set to roll out in Spring 2022. The intent of this project is to identify timing of Glass Eel migration into Texas river drainages. Work is supported through State Wildlife Grant funds (SWG).

Identification of a novel lineage within the Fat Snook species-complex of the genus *Centropomus* (Perciformes: Centropomidae) (NEW)

We are supporting the work of Dr. Seifu Seyoum and others (Florida FWRI), in an effort to describe the evolutionary history and population genetics of the Fat Snook complex (*C. parallelus/mexicanus*) throughout the Gulf of Mexico and northern Caribbean. The TPWD has long recognized that there might be problems with the currently described phylogeny in this group, and we have agreed to partner with Dr. Seyoum in describing some of the inconsistencies associated with DNA sequence data and lineage definitions. This is an FWRI-lead effort; our role is in provision of DNA samples from Texas Fat Snook, and we are assisting Dr. Seyoum with data analysis and manuscript preparation.

Gulf States Marine Fisheries Commission
Technical Coordinating Committee
2022 Louisiana Spring State Report

Contents

Emerging Issues Pertinent to Gulf of Mexico Fisheries	1
Activities Related to Artificial Reef Programs	2
Activities Associated with the Gulf of Mexico Crab Fisheries.....	3
Policy and Regulations	3
Derelict Crab Trap Program	3
Sustainability.....	4
Stock Assessments	4
Landings	4
Blue Crab Biological Sampling.....	5
Activities Related to Fisheries Dependent Data Collection	5
LA Creel	5
Age and Growth	7
Commercial Shrimp, Oyster, and Crab Seasons and Landings.....	8
Activities Related to Fisheries Independent Sampling	10
Stock Assessments	10
Fisheries Research Lab.....	11
Southeast Area Monitoring and Assessment Program (SEAMAP)	11
Black Drum Life History Study	11
Sheepshead Life History Study	11
Southern Flounder Experimental Gear/Fyke Net Pilot Survey	11
Artificial Reef Monitoring for Sportfish	11
Shrimp Sampling	12
Crab Sampling	13
Oyster Sampling.....	13
Finfish Sampling.....	14
Other State Activities	14
Finfish Seasons and Regulations	14
Marine Mammal and Sea Turtle Monitoring	15
Michael C. Voisin Oyster Hatchery	15
Spat on Shell Projects.....	16
Boating and Non-Boating Access Projects	16
Seafood Industry Professionalism.....	17
Aquatic Plant Control.....	18

Emerging Issues Pertinent to Gulf of Mexico Fisheries

COVID-19 / CARES Act

The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020. COVID-19 directly affected the United States (US) economy due to Stay at Home orders and the closing of all nonessential businesses. The US government acted quickly to assist the public when Congress passed the CARES Act and it was signed into law by President Trump on March 27, 2020. The CARES Act was an over \$2 trillion economic relief package that contained \$300 million for the US Secretary of Commerce to provide to affected fishery participants. The Louisiana Department of Wildlife and Fisheries (LDWF) compiled a report showing losses in economic value by fishery and submitted to NOAA for approval. Louisiana is to receive a total of \$14,785,244 in economic assistance for eligible fishery participants. The Gulf States Marine Fisheries Commission (GSMFC) will administer economic assistance to the eligible participants in LA through direct payments based on the approved LA Spending Plan.

LDWF developed an online application portal for its CARES ACT Program and contracted with South Central Planning and Development Commission (SPDC) for assistance with the application process. LDWF set its initial application period to open at 8am September 14 and set it to close on October 26 at 11:59 pm. During this time, 1335 applications were received by LDWF. Due to the low turnout and a very active hurricane season, LDWF extended the application period until 11:59pm November 23. On November 14, LDWF held an in person application event in Lake Charles to assist those in SW LA who were affected by Hurricanes Laura and Delta. Thirty four people showed up at the event and LDWF collected 21 applications. By the end of the application period on November 23, LDWF received 1695 applications. By the end of June 2021 the review process was complete and 1175 applicants received a total of \$14,397,430.90.

Due to the ongoing adverse impacts of COVID-19 on March 29, 2021 the Secretary of Commerce announced an additional \$255 million in fisheries assistance funding provided by the Consolidated Appropriations Act of 2021 (3. NOAA Fisheries 2021). The Consolidated Appropriations Act of 2021 states that funding will support activities previously authorized under Sec. 12005 of the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). Louisiana's allocation of the \$255 million made available to fishery participants totals \$12,477,165.

LDWF made some minor adjustments to its previously approved 2020 spend plan and made some minor modifications to its current online application portal. LDWF again contracted with South Central Planning and Development Commission (SPDC) for assistance with the application process and translation services. LDWF opened the application period August 9 through August 29, 2021. LDWF reviewed and processed over 1500 applications and submitted a finalized list of approved applicants to GSMFC in December of 2021. A second round of payments with the remaining CARES funds is scheduled to be submitted to GSMFC in February of 2022.

Hurricane Ida Impacts

Hurricane Ida made landfall at Port Fourchon on August 29, 2021 as a major, category 4 storm. Hurricane Ida had a widespread area of impact, from western Terrebonne Parish to the Louisiana/Mississippi state line. An infrastructure assessment for each of the commercial fishery sectors has not been completed at this time. Losses within the shrimp, oyster and blue crab industries have been confirmed. Several processors suffered major to total losses of their facilities, while others received minor to moderate damage but a total loss of frozen product. Vessels have been reported on the opposite sides of levee systems, flipped in the marsh and bayous, and damaged. The alternative oyster culture industry took a major loss, while the traditional on bottom oyster reefs have encountered some muddy overbudern on reefs; clean up efforts have started to decrease mortality on the reefs.

LDWF has begun working with Louisiana Sea Grant to develop an economic damage assessment similar to what was completed after Hurricane Katrina, which will include both infrastructure and revenue losses of the commercial industry in the impacted areas. The assessment will utilize LDWF trip ticket and licensing data, geospatial wind and surge data, and information collected directly from those impacted.

LDWF's Fisheries Research Lab on Grand Isle survived the storm very well and sustained minor water damage. The island has been without power or water service since August 29. The lab is currently being utilized as a base of operations for the local authorities and the National Guard and is operating using generator power and regular fuel and water deliveries. While the lab serves this function, it will not be utilized by staff for LDWF operations. Contractually obligated sampling that normally occurs out of the lab is being conducted from several other locations.

Oyster Lease Moratorium

The Louisiana Wildlife and Fisheries Commission (LWFC) has approved a notice of intent for lifting the oyster lease moratorium. This public comment period has passed and the new regulations have been ratified. Currently, LDWF is coordinating with the Office of State Lands (OSL) and the Coastal Protection and Restoration Authority (CPRA) to work through Phase 0 oyster lease applications which is expected to conclude in the fourth quarter of 2022.

Activities Related to Artificial Reef Programs

Offshore

LDWF's Artificial Reef Program continues to assess and permit reef deployments related to offshore oil and gas structures. The Program has accepted three oil and gas structures.. There are 48 structures permitted for deployment as permanent artificial reefs, and one new reef site has been recently proposed. Permitting of an additional 43 structures is currently underway.

Multi-beam surveying of the Program's offshore reefs is ongoing (annually) and is available on the Program's website.

Inshore

LDWF's Artificial Reef Program enhanced the Independence Island artificial reef with 15,000 tons of crushed limestone in July 2021. The Program also holds a permit to enhance the Finfish Reef in Calcasieu Lake and has applied to enhance the Bay Ronquille Reef near Grand Isle.

Nearshore

LDWF's Artificial Reef Program completed two new nearshore reefs (Vermilion 69 and South Timbalier 51) and enhanced an existing nearshore reef (Bay Marchand 3) in partnership with CCA. The reefs were constructed with recycled concrete structures. The Program also has permits and agreements to create three more nearshore reef sites.

Monitoring

Through funds provided by the Louisiana Restoration Area Trustee Implementation Group, LDWF continued the monitoring of all completed inshore and nearshore artificial reef enhancement sites. This is part of a 5-year plan to assess the success of artificial reefs enhanced in an effort to mitigate for recreational use opportunities lost during the Deepwater Horizon Oil Spill. Monitoring efforts include the study of the aquatic organisms utilizing the reef enhancement sites via the use of gillnetting, rod and reel sampling, and benthic tray observations, as well as observations of recreational users. Together, those efforts are intended to provide insight into the overall biological health of the reef enhancement sites as well as insight into whether those sites are providing enhanced recreational opportunities to the public.

Activities Associated with the Gulf of Mexico Crab Fisheries

Policy and Regulations

During the 2021 Regular Session, Senate Bill 134 (SB134) was brought before legislation to ban nighttime shrimping in Lake Pontchartrain; this bill was drafted on behalf of the crab fishermen utilizing those state waters. SB134 was voluntarily deferred in the Senate Committee on Natural Resources and it was transistioned into a study resolution. Within the study resoltution, the crab task force and shrimp task force, with input from the Department, will study ways to minimize damage to crab traps in Lake Pontchartrain and report any recommendations to the Senate Committee on Natural Resources on or before February 4, 2022.

A letter from the crab task force and shrimp task force was sent to the Senate Committee on Natural Resources on January 20, 2022. The joint task force recommended that no additional regulations are placed upon the shrimp industry and that these advisory boards (task forces) are dedicated to work out common issues within each industry.

Derelict Crab Trap Program

The Louisiana Wildlife and Fisheries Commission (LWFC) adopted a Notice of Intent in August 2021 to establish four defined derelict crab trap cleanup areas during the 2022 harvest season. Within the four areas, the use of crab traps would be prohibited for up to fourteen days.

These closure areas are to be held within the Barataria Basin, Calcasieu Basin, Terrebonne Basin, and Vermilion-Tech Basin. A scheduled volunteer event is planned to take place on the first Saturday of the Barataria Basin closure and the Calcasieu Basin closure.

The closure are scheduled as follows:

- Terrebonne Basin – February 1, 2022 – February 14, 2022.
- Vermilion-Teche - February 1, 2022 – February 14, 2022.
- Barataria Basin – February 7, 2022 – February 20, 2022.
- Calcasieu Basin – February 18, 2022 – February 23, 2022.

A Pilot Program that was developed by the Department and Pontchartrain Conservancy was brought to the crab task force to gather interest and consideration. The crab task force requested a flyer be developed that could be used as a short survey to gather information from the local fishermen about participating in the Pilot Program. No responses were received and it was determined that the Pilot Program would be put on hold during the 2022 harvest season.

Sustainability

The fourth surveillance audit and reassessment of the Louisiana blue crab commercial trap fishery against the Audubon Nature Institute's Gulf United for Lasting Fisheries Responsible Fisheries Management (Gulf-RFM) Standard v1.2 took place on May 19, 2021. The final audit report and reassessment were published later in 2021 and recommended that the Louisiana blue crab commercial trap fishery remain certified.

The Louisiana Crab Task Force voted to have Global Trust take over the Marine Stewardship Council (MSC) assessments. Information for the third surveillance audit of the Louisiana blue crab commercial trap fishery against the MSC fisheries standards was gathered by Global Trust during the Gulf-RFM audit on May 19, 2021. The MSC final audit report recommended continued certification.

Stock Assessments

No formal stock assessment was completed for the Louisiana blue crab stock in 2022. Blue crab indices of abundance and model estimates were developed to assist with the two sustainability certification audits. Model estimates indicated that the Louisiana blue crab is not overfished or experiencing overfishing.

Landings

All landings data presented in this section are preliminary and subject to change.

Blue crab landings from July - December in 2021 totaled 24.5 million pounds with a dockside value of approximately \$41.9 million. Landings from this period in 2021 showed an increase of two percent when compared to the five-year average (2016-2020), while the dockside value

increased by approximately 47 percent. With the increase of dockside value, the July – December 2021 average price per pound was \$1.71, which is \$0.52 above the five-year average.

Blue crab annual landings in 2021 totaled 45.4 million pounds with a dockside value of \$86.7 million. Annual blue crab landings in 2021 were 11 percent above the five-year average, while the 2021 dockside value was 55 percent higher than the five-year average. Annual price per pound in 2021 was \$1.91. Landings from January – August of 2021 total approximately 33 million pounds, while the five-year average was 27.5 million pounds. A decrease of one million pounds was observed in September 2021 landings when compared to the five-year average due to the impacts of Hurricane Ida.

Blue Crab Biological Sampling

In the fall of 2020, the GSMFC awarded the Department with a grant from its IJ funding to sample commercial blue crab and collect data that will assist in characterizing the size and sex composition of commercially landed blue crab. Sampling began in January 2021, with each coastal study area (CSA) responsible for collecting data on 510 crab per two month period, or wave. There are a total of 5 CSAs, so an expected total of 2,550 blue crab are sampled every two months. A total of approximately 16,350 blue crabs were sampled during 2021 (data still being verified). Of the 16,350 crabs sampled, 12,018 were male and 4,332 were female. Market grade #2, or medium, consisted of 5,573 crabs sampled, while #1, or large, crabs sampled numbered 4,108. Additional market grades that are notable were starlight run, females, and factory.

Activities Related to Fisheries Dependent Data Collection

LA Creel

Through the LA Creel program, 6,614 recreational fishing trips, comprised of 17,263 individual anglers, were surveyed dockside during 2021 Sample Weeks 27-52 (July 5, 2021 – January 2, 2022). Fifty-eight different interviewers completed 713 of the 806 assignments as drawn during the sample period. Fourteen additional assignments required site substitution. Two assignments were worked, but at the wrong site. In total, 729 assignments were worked. Tropical Storm Nicholas led to state office closures that resulted in the cancellation of two assignments. Hurricane Ida resulted in 72 assignment cancellations due to damage and lengthy state office closures. Three more assignments should have been worked, but were missed due to various reasons.

Fish kept by anglers and allowed to be viewed by interviewers are referred to as observation Type 1 fish. Fish in possession of the angler at the time of survey but not seen by the interviewer are classified as observation Type 2 fish. Although we count shellfish whenever present, LA Creel is concerned with finfish. For that reason, observation figures pertain to finfish only. For the sample period, 53,244 Type 1's, equalling 78 percent of all fish in possession of the angler at the time of survey, were identified and counted by staff. Type 1

observation numbers have been depressed since the onset of COVID in 2020 as social distancing became commonplace. There were 15,158 Type 2 observations made.

Ninety-four species were represented among Type 1 fish. Spotted sea trout was the most commonly counted species, with 27,573. Red Drum was second with 8,360 counted and Sheepshead was the third most common with 3,308 counted.

Certain species returned to the water or caught and used for bait are also recorded. Those species are:

1. Black Drum
2. Gray Snapper
3. Gray Triggerfish
4. Greater Amberjack
5. King Mackerel
6. Largemouth Bass
7. Red Drum
8. Red Snapper
9. Sheepshead
10. Southern Flounder
11. Spanish Mackerel
12. Spotted Seatrout

Fish thrown back because they were under the legal minimum length are coded as Type 3. Fish caught and used as bait during the trip are coded as Type 4. Fish thrown back or given away before being surveyed for any reason not covered by codes 3 and 4, such as too big, not wanted, etc., are coded as Type 5. Discard data is collected as per the Department's contract with GSMFC.

During the same period as provided above, staff recorded 39,458 Type 3's, 0 Type 4's, and 6,418 Type 5's.

In addition to the dockside survey, angler effort must be determined to generate harvest estimates. LA Creel uses two separate surveys to determine angler effort. One survey targets charter captains in which ten percent of the approximately 1,000 charter license holders and thirty percent of the approximately 140 charter license holders who also have a Recreational Offshore Landing Permit (ROLP) are drawn at random each sample week. The ROLP is a free permit required to possess tunas, billfish, swordfish, amberjacks, groupers, snappers, hinds, cobia, wahoo, and dolphinfish in Louisiana waters. The purpose of the ROLP is to increase the chances of drawing anglers who fish offshore for effort surveys. One hundred percent of ROLP holding charter captains are drawn during state and federal red snapper season. Department staff attempt to contact drawn captains to ask about the number of charter trips taken during

the sample week, how many paying customers were on each trip, and what basin the trip occurred in.

During 2021 Sample Weeks 27-52, 4,002 captains were drawn, with replacement. Of those, a total of 2,283 captains (57%) completed the survey. As a result, the estimated number of saltwater charter fishing trips taken during the period was 83,820.

The other effort survey pertains to private anglers exclusively. Each sample week, not including weeks that fall within Red Snapper seasons, a total of 1,600 Louisiana recreational saltwater fishing license holders are drawn at random for participation in the effort survey. Twelve hundred of the 1,600 are derived by drawing 300 licensed anglers from each of LA Creel's four regions to generate landings estimates. A separate random selection of 400 is made from ROLP holders. During Red Snapper seasons, the number of private ROLP anglers drawn for the effort survey increases from 400 to 800. A service contracted by the Department is tasked with contacting drawn license holders to ask questions, such as basin fished in, number of trips taken, about any saltwater fishing trips they may have taken during the sample week.

During 2021 Sample Weeks 27 – 52, a total of 49,600 Louisiana recreational saltwater fishing license holders were drawn, with replacement. Of those, a total of 24,390 (50%) completed the survey. The estimated number of private saltwater fishing trips taken during the period was 812,100.

The iPad application used for data entry of dockside surveys was to be rebuilt in the spring of 2019, but was pushed back to the spring of 2020. The contractor hired to perform the rebuild finished their work as scheduled and the rebuild was released to field staff in the fall of 2020. However, several issues affected performance and reliability. Although the app remains on field iPads, a new contract is being developed for the contractor to provide ongoing maintenance support so faults can be corrected and improvements made as needed. Final adjustments to a working version were underway in late fall 2021. A stable release is expected in early 2022.

Age and Growth

Since the new BIOFIN agreement covers recreational species only, LDWF's Age and Growth Lab in Baton Rouge relies on the National Oceanic and Atmospheric Administration's (NOAA) TIP sampling for commercial otoliths. The lab has processed recreational, commercial and independent otoliths during 2021. From July 1, 2021 through December 31, 2021, the lab has received 6,279 recreational marine fisheries otoliths and aged 4,856 of these otoliths. All otolith collection and ageing data has been transferred to GSMFC through the month of September. Staff are currently completing November and December otolith processing.

Otolith totals are as follows:

- Black Drum – 672
- Cobia – 9
- Gray Snapper – 30
- Greater Amberjack – 7
- Gray Triggerfish – 0
- King Mackerel – 0
- Red Drum – 1235
- Red Snapper – 759
- Sheepshead – 505
- Southern Flounder – 347
- Spotted Seatrout – 2453
- Striped Mullet – 167
- Tripletail - 20
- Vermilion Snapper – 29

Commercial Shrimp, Oyster, and Crab Seasons and Landings

Shrimp

The 2021 fall inshore shrimp season opened on August 9, 2021 in all state inside waters except for the portion of Louisiana inside waters known as the Biloxi Marsh, which opened on August 27, 2021..

The 2021 fall inshore shrimp season closed in all state inside waters on December 20, 2021 except for the open water areas east of the Mississippi River: Lake Pontchartrain, Lake Borgne, Mississippi Sound, and the open waters of Breton and Chandeleur Sounds.

Shrimp landings (all species combined and heads on unless specified otherwise) between July - Decemebr 2021 totaled approximately 41.8 million pounds with a dockside value of \$75.1 million. The 2021 shrimp landings during this period decreased by approximately 17 percent compared to the five-year average, while the dockside value fell by 3 percent. While overall numbers in 2021 were low compared to the five-year average, the shrimp average price per pound in this period was \$1.80, which is \$0.27 above the five-year average.

Louisiana brown shrimp landings during the time period mentioned above in 2021 are typically low since the spring inshore shrimp season has closed, but landings totaled 4.2 million pounds with a dockside value of \$7.1 million. This was a decrease of 21 and 6 percent when compared to the five-year average, respectively. Price per pound for brown shrimp was \$0.27 above the five-year average during this period. Brown shrimp annual landings in 2021 were up slightly compared to 2020, but were 40 percent below the annual five-year average; annual brown shrimp dockside value was 10 percent below the five-year average. While landings have been down the past three years, the five-year average is skewed by the abnormally high brown

shrimp landings in 2018 (42 million pounds). Brown shrimp price per pound in 2021 was the highest it has been during the reporting period.

White shrimp landings in July – December 2021 showed a 17 percent reduction from the five-year average, but was slightly above 2020 landings. More than 37.4 million pounds of white shrimp were landed during this period with a dockside value of \$67.9 million. Even with the landings reduction in this period, the 2021 dockside value was only 2 percent below the five-year average; price per pound during this period of 2021 was nearly \$0.30 above the five-year average. White shrimp annual landings in 2021 totaled 54.1 million pounds and had a dockside value of \$102.6 million. Landings in 2021 were 13 percent below the five-year average, but the high price per pound lead to a 4 percent increase in dockside value when compared to the five-year average.

Blue Crab

Described in the Activities Associated with the Gulf of Mexico Crab Fisheries section above.

Oyster

The table below summarizes the 2021-2022 Louisiana public oyster ground season through the end of calendar year 2021. The goal was to reduce harvest stress on the resource, allowing for continued recovery, while continuing to use thresholds from the shell budget model.

2021-2022 LDWF Oyster Season Summary (As of January 4, 2022)						
CSA	Area	Season Opening	Season Closure	Season/type	Days open	Harvest
1	POSG East of Mississippi river and North of MRGO			closed		
	POSG East of Mississippi river and South of MRGO			closed		
3	Hackberry Bay			closed		
	Little Lake, Baratavia Bay			closed		

5	Deep Lake, Lake Chien, Lake Felicity and Lake Tambour	closed				
	Bay Junop, Lake Mechant	closed				
	Sister Lake	25-Oct	25-Oct	Seed Harvest	1	1,105 bbls
26-Oct		29-Oct	Market Harvest	4	1,334 sacks	
6	Vermilion Bay	closed				
7	Calcasieu Lake	1-Nov	TBD	East Side: Market Harvest	65	151 sacks
		1-Nov	TBD	West Cove: Market Harvest	65	2,299 sacks

*Harvest numbers are reported through LDWF surveys conducted during oyster fishing activities.

Activities Related to Fisheries Independent Sampling

Stock Assessments

LDWF completed an update stock assessment of Striped Mullet in November of 2021 that was presented to the LFWC for transmittal to the Louisiana Legislature in February 2022. This assessment uses a statistical catch-at-age model to estimate annual time-series of spawning stock biomass and fishing mortality rates. Time-series of fishery catches-at-age along with a relative abundance index developed from the LDWF fishery independent marine experimental gillnet survey are the primary model inputs. Based on results of this assessment, the Striped Mullet stock is currently not overfished or undergoing overfishing.

LDWF presented an updated assessment of spotted seatrout to the LWFC in November 2021. This assessment also uses a statistical catch-at-age model to estimate annual time-series of spawning stock biomass and fishing mortality rates. Time-series of fishery catches-at-age along with relative abundance indices developed from the LDWF fishery independent marine experimental gillnet survey are the primary model inputs. This was the second update assessment in the last two years, both updates indicated the stock is overfished and undergoing overfishing. The LWFC has not adopted any management changes to date.

LDWF began a stock assessment of Red Drum in 2021 that will be completed in 2022. This assessment also uses a statistical catch-at-age model to estimate annual time-series of spawning stock biomass and fishing mortality rates. Time-series of fishery catches-at-age along with abundance indices developed from the LDWF fishery independent marine trammel net survey, the LDWF component of the SEAMAP nearshore bottom long line survey, and the historic NOAA Fisheries mark and recapture population estimates are the primary model inputs.

Fisheries Research Lab

LDWF's Fisheries Research Lab in Grand Isle is the base for the state's research projects offshore fisheries independent monitoring. The lab also serves as a point of contact for the public, visiting researchers, and educational programs. Some current activities at the lab are summarized below:

Southeast Area Monitoring and Assessment Program (SEAMAP)

LDWF participated in three SEAMAP surveys: Shrimp/Groundfish, Vertical Line, and Bottom Longline. If not for Hurricane Ida, LDWF would have also participated in Plankton sampling for SEAMAP, but we were unable. The summer Shrimp/Groundfish survey was completed over three days with environmental and biological data collected at 21 stations during the survey period. Fall Shrimp/Groundfish was restricted to 1 day of sampling due to weather and 6 stations were completed. The Vertical Line survey sampled 64 sites on a mixture of platform, artificial reef, and natural bottom habitats from July through August. Bottom Longline sampled July through October and is split into summer and fall sampling periods. The all seasons Bottom Longline sampling has yielded 37 stations sampled with 10 and 27 stations in summer and fall during this reporting period, respectively.

Black Drum Life History Study

In winter and spring of 2021, the Fisheries Research Lab sampled 112 Black Drum females. Ovaries were taken from all 112 females and all have been histologically processed. Hurricane Ida has slowed our ability to process samples but fecundity samples will be counted after sheepshead fecundity is completed. The majority (48%) of Black Drum sampled were age 21-25 while 24 and 19 percent were from ages 15-20 and 25-30 years, respectively. When analysis is completed, this data will determine if spawning stock biomass is an appropriate proxy for total egg production and will further inform managers for establishing regulations.

Sheepshead Life History Study

In 2021, LDWF biologists sampled 141 female Sheepshead from March through May. Histological processing revealed that 79% of the females collected were in spawning condition, which led to the ongoing processing of 93 fecundity samples from hydrated individuals. Currently, we have prepared and scanned 53 fecundity samples, but have yet to count them. Ages range from 2-9 years with age 3-5 accounting for 71% of the sample.. Sheepshead look to be daily spawners that spawn for only two months. When data analysis is complete, this data will determine if spawning stock biomass is an appropriate proxy for total egg production and will further inform managers for establishing regulations.

Southern Flounder Experimental Gear/Fyke Net Pilot Survey

Southern Flounder adults are not well represented in the current LDWF independent sampling. Gillnet and trammel net surveys have been sampling very low numbers of Southern Flounder and the trawl surveys have mainly caught juveniles. Quantitatively, the annual average Southern Flounder catch rate from 2015-2021 in trammel nets was 4.9% of the stations sampled and 1.4% in gillnets. Because of this data gap, fyke nets are currently being tested to

potentially establish a new fisheries independent survey. A traditional fyke net with an all hoop cod-end was originally used but only yielded 3 Southern Flounder in 4 months of sampling. Once a switch was made to a modified fyke net with a box on the front of the net, catch significantly increased to 166 Southern Flounder with 92 net-days from October 19th through December 2021. There was also an effort to sample with the original fyke net in the Fall of 2021 but there were only 5 caught from 42 net-days. Percent positive catch was 51.1% for the modified fyke net whereas the original fyke net had a 4.3% catch rate. It seems obvious that the change from a hoop front to a box front of the net has made a large difference in Southern Flounder catchability. Sampling will continue through April and final analysis for the year will be reported then.

Artificial Reef Monitoring for Sportfish

In order to enhance the monitoring of sportfish species on artificial reef structures, LDWF biologists from the Grand Isle Fisheries Research Lab are using a combination of vertical line sampling, video sampling, and diver surveys. A total of 30 artificial reef structures were sampled using both hooked vertical line and camera gear and 4 structures were sampled by divers with camera recordings. Over 80% of the vertical line catch was comprised of Red Snapper, which had a 41% positive catch rate from all hook sizes. Overall, in positive catch samples, 2.93 Red Snapper were caught per hook-hour. Video analysis has been delayed due to Hurricane Ida.

Shrimp Sampling

LDWF conducts fisheries independent sampling for shrimp year-round statewide using three trawl sizes: 6-foot, 16-foot, and 20-foot. The 6-foot trawl samples gather data in the interior marshes of Louisiana and are used to set the opening and closing dates for the spring inshore shrimp season. These samples are typically taken throughout April and again at the end of June and beginning of July, depending on environmental conditions. From July - December 2021, a total of six 6-foot trawl samples were conducted. Throughout 2021, a total of 294 6-foot trawl samples were conducted. A small portion of these samples were collected as a component of a monitoring agreement with another state agency and not for monitoring the resource for a closure.

The 16-foot trawl sampling data are used to constantly monitor the state shrimp resource, along with other species of interest, and set the opening and closing dates for the fall inshore shrimp season. During July - December 2021, a total of 715 16-foot trawl samples were conducted. A total of 1,623 16-foot trawl samples were conducted throughout 2021.

The 20-foot trawl sampling data are used to monitor shrimp resources in state offshore waters. A total of 117 20-foot trawl samples were conducted during July - December 2021. Data collected in the 20-foot trawl samples were used to open and close portions of state offshore waters. These samples are primarily taken during the winter and spring months. A total of 242 20-foot trawl samples were taken in 2021.

Crab Sampling

Fisheries independent sampling data for blue crab is collected with 16-foot trawls. These data are used to calculate juvenile and adult blue crab indices of abundance for the blue crab stock assessment.

Oyster Sampling

LDWF conducts fisheries independent sampling for oysters year-round, statewide, using two gear types (24-inch hand dredge and square-meter frame: m²) within the public oyster areas, and analyzes the data collected to determine overall health of the oyster resource throughout the year. Dredge sampling was conducted monthly, except the month of July, on 72 sampling stations. Stations are representative of known and historical public ground reefs. Station locations range from the Louisiana/Mississippi state line to the western shore of Calcasieu Lake. In addition, six stations in Sabine Lake were dredge sampled quarterly during the reporting period. Two dredge replicates were taken per station to monitor size frequency, presence and/or absence of resource, and mortality. A total of 740 dredge samples were collected between July 1, 2021 and December 31, 2021.

LDWF biologists performed quantitative evaluations using SCUBA equipment to collect oyster samples from within a square-meter frame as part of LDWF Annual Oyster Stock Assessment, and as part of the System-Wide Assessment and Monitoring Program (SWAMP). Annual stock assessment samples are taken in July of each year, at each station; five replicate square-meter samples are collected and data combined to produce average density of spat, seed, and sack oysters per meter. Oyster density was multiplied by the associated reef acreage to obtain an estimate of total oyster population size. There are currently 102 square-meter sites in the database, resulting in 510 samples being collected.

Sabine Lake was closed to oyster harvest by Act 159 (RS2018). To reduce program costs, dredge sampling is conducted quarterly in Sabine Lake and square-meter sampling is conducted during odd-numbered years. As per the schedule, the six Sabine sites were sampled in 2021 for the Annual Oyster Stock Assessment (OSA). The data from that sampling is reflected in the totals presented.

LDWF conducts additional square-meter oyster "SWAMP" (System-Wide Assessment and Monitoring Plan) sampling in the spring and fall in the Pontchartrain and Barataria Basins under an agreement with the Louisiana Coastal Protection and Restoration Authority (CPRA). During OSA sampling, sampling is conducted at 25 SWAMP-specific stations in the Barataria Basin. Those stations are located on private oyster leases. Unlike OSA sampling, which requires five replicates per station, only 3 replicates are taken for SWAMP sampling. During the Fall SWAMP sampling event, which occurred in September/October 2021, 228 samples were taken from 42 sites in the Pontchartrain Basin and 34 sites in the Barataria Basin.

LDWF uses oyster stock assessment information to make recommendations regarding setting oyster seasons to the Louisiana Wildlife and Fisheries Commission. Seasons can open as early as

mid-September and can run through the end of April of the following year. Seasons may be closed or delayed if biological concerns or enforcement problems are encountered.

Finfish Sampling

LDWF conducts biological monitoring for finfish statewide in the coastal, nearshore, and offshore areas of Louisiana. During fiscal year 2020-21, the fisheries independent finfish sampling program collected 948 gillnet samples, 1,264 seine samples, and 264 trammel net samples for a 98 percent overall completion rate statewide. Electro-fishing samples (144 total) are being conducted within some Louisiana estuarine environments to provide fisheries data to CPRA. Some minor reductions in sampling will be realized in fiscal year 2021-22 sampling, especially the July through December period due to impacts from Hurricane Ida.

Other State Activities

Finfish Seasons and Regulations

Louisiana waters opened to the commercial harvest of King Mackerel on July 1, 2021, concurrent with an opening in federal waters.

Louisiana waters reopened to the commercial harvest of Blacktip and small coastal sharks on July 1, 2021 after a seasonal closure from April 1, 2021 through June 30, 2021.

Louisiana waters reopened to the recreational harvest of Greater Amberjack on August 1, 2021 through October 31, 2021 after a seasonal closure from June 1, 2021 through July 31, 2021, concurrent with a reopening in federal waters.

Louisiana waters reopened to the commercial and recreational harvest of Gray Triggerfish on August 1, 2021 after a seasonal closure from June 1, 2021 through July 31, 2021, concurrent with a reopening in federal waters.

Louisiana waters opened to the commercial harvest of Florida Pompano with strike nets from August 1, 2021 through October 31, 2021.

Louisiana and federal waters closed to the recreational harvest of Red Snapper on September 6, 2021 and reopened on September 24, 2021 for a daily season with a four fish bag limit.

Louisiana waters closed to the recreational harvest of red grouper and gray triggerfish on September 15, 2021, concurrent with a closure in federal waters.

At its regular meeting on October 8, 2021, the LWFC ratified a Notice of Intent (NOI) to add coastal buffer zones to commercial menhaden harvest regulations. Public comment was being accepted through Thursday, December 2, 2021.

Louisiana waters closed to the commercial and recreational harvest of lane snapper on October

18, 2021, concurrent with a closure in federal waters.

Louisiana waters opened to the commercial harvest of Striped Mullet with strike nets on October 18, 2021.

Louisiana waters closed to the commercial harvest of Gulf Menhaden for reduction on November 1, 2021.

Louisiana waters opened to the harvest of bait Gulf Menhaden on November 2, 2021 and closed on December 1, 2021.

Louisiana waters closed to the recreational harvest of Gag on December 31, 2021.

Louisiana waters closed to the commercial harvest of Spotted Seatrout on December 31, 2021.

Louisiana and federal waters closed to the recreational harvest of red snapper on December 31, 2021.

Marine Mammal and Sea Turtle Monitoring

The marine mammal stranding program and the sea turtle stranding program are administered and coordinated directly by NOAA in Louisiana.

Michael C. Voisin Oyster Hatchery

The Michael C. Voisin Oyster Hatchery located on Grand Isle, Louisiana, is operated through a collaborative effort between LDWF and Louisiana Sea Grant (LSG). LSG assists with facility operations, provides technical guidance, manages the LSG Breeding Program, and supports the oyster industry through extension, outreach, and research projects. LDWF focuses on the production of diploid and triploid seed and larvae for state restoration projects, as well as commercial sales to support the industry.

Fall 2021 Season

The Fall 2021 hatchery production focused on producing diploid and triploid pediveligers and seed for LDWF sales. Hatchery operations were significantly impacted by Hurricane Ida (August 26, 2021). Prior to Hurricane Ida, approximately 638,498 diploid and triploid pediveligers were set on 250 micron microcultch to produce seed for LDWF sales. All of these larvae set were lost due to Hurricane Ida.

Pediveligers set in the previous reporting period to produce seed for LDWF sales (9,962,951 diploid and triploid pediveligers) were lost in the Michael C. Voisin Oyster Hatchery nursery due to loss of critical utilities on Grand Isle.

In addition to oyster larvae, the Michael C. Voisin Oyster Hatchery also produces all of its own marine microalgae to feed to the oyster larvae. In the Spring 2021 season, the microalgae continued to experience water quality issues. Different culprits were looked into such as: water quality (i.e. vibrio, bacteria, toxins, and heavy metals), filtration issues, and contamination. It was also determined that our LED lighting may not be optimal for the growth of our marine microalgae.

Spat on Shell Projects

The Michael C. Voisin Oyster Hatchery produces diploid oyster larvae for setting on shell, which is then referred to as spat-on-shell and is used for State oyster restoration projects. To prepare for setting on shell, mesh bags that are three feet long are filled with recycled oyster shell and are called shellbags. Recycled shell were obtained through a collaboration with the Coalition to Restore Coastal Louisiana's Oyster Shell Recycling Program. In 2021 there were three spat-on-shell (SOS) deployments—one: first deployment in May deployed in Karako Bay (Biloxi Marsh/Pontchartrain Basin); and the second one and third deployments in June and August, respectively, to Independence Island (Barataria Bay Basin). Follow up monitoring to assess survival success are typically scheduled for months 1, 6, and 18 post deployment, weather permitting.

In November 2021, no resource was found at Independence Island., most likely due to sedimentation and strong currents due to Hurricane Ida. Karako Bay SOS deployment was sampled in December 2021, on which a total of 112 live seed and spat, and 148 dead seed/spat were observed.

Oyster Cultch Plant and Broodreef Projects

In September 2021, LDWF completed the construction of an oyster reef in Sister (Caillou) Lake to increase oyster habitat and fisheries production. The construction process, known as cultch planting, is a proven habitat improvement technique used by LDWF and consisted of spreading approximately 29,500 cubic yards of crushed limestone on the lake bottom to create estimated 200 acres of artificial oyster reef.

In December 2021, LDWF completed construction of four broodstock reefs located at Petit Pass, Karako Bay, Lake Machias, and Mozambique Point in Plaquemines and St. Bernard Parishes. The objective of the brood reefs is to establish protected (oyster harvest is prohibited) spawning stock reef network that can help repopulate surrounding areas, including public oyster harvest areas and private leases. Approximately 5,000 cubic yards of limestone was placed within 10-

acre sites at each location for a total of about 20,000 cubic yards of new oyster reef. During material deposition, emphasis was placed on creating off-bottom relief.

In October 2021, LDWF completed a water bottom assessment survey of three areas totaling approximately almost 900 acres in Drum Bay (St. Bernard Parish, Louisiana) to identify existing oyster reefs, characterize bottom types, and assist in the planning and of future restoration projects, such as placement of a cultch plant project scheduled for construction in Spring 2022.

All reef construction and water bottom assessment projects were funded through Deepwater Horizon Natural Resource Damage Assessment (DWH NRDA) settlement dollars to help restore for injuries to oysters that occurred as a result of the spill. The Louisiana Trustee Implementation Group (LA TIG) approved 26 million dollars in oyster projects, including enhancing oyster recovery using brood reefs, cultch-plant oyster restoration, and hatchery-based oyster restoration.

These oyster projects are among the first projects included in the Department's "Louisiana Oyster Management and Rehabilitation Strategic Plan" to be initiated. A copy of the plan can be viewed here:

<https://www.wlf.louisiana.gov/assets/Resources/Publications/Oyster/Final-Draft---Oyster-Strategic-Plan---12.30.20.pdf>

LDWF will monitor the performance of the reefs through regularly scheduled sampling events.

Boating and Non-Boating Access Projects

LDWF has several new and ongoing boating and fishing access projects, which are funded through the Sport Fish Restoration Program and administered by local entities. LDWF accepts project proposals on an annual basis and evaluates them based on ranking criteria and available funding. Current projects include:

- St. Tammany Fishing Pier – construction is completed
- New Iberia Boat Slips Boating Infrastructure Grant Program – construction is completed
- City of New Iberia CVA Sanitation Facility – design phase
- City of New Iberia Civic Center Marina Phase I – construction phase
- Marina Del Ray Renovations – permitting phase
- City of New Iberia Civic Center Marina Phase II – design phase
- Town of Leonville Boat Launch Improvements – design phase
- Town of Madisonville Boat Launch Improvements – construction phase
- Bucktown Harbor Marina and Dock Renovation – permitting phase

Additional boating and fishing access projects were recently approved by the Louisiana Trustee Implementation Group for funding from the *Deepwater Horizon* oil spill and are currently being designed and implemented.

Repairs are underway at existing and ongoing projects to address damage resulting from Hurricane Ida.

Seafood Industry Professionalism

LDWF seeks to give the state's seafood industry access and training to the latest trends, requirements, and technology in their profession, as expert training will yield higher quality products and give the seafood community a competitive advantage in the marketplace. Since the launch of Louisiana Fisheries Forward: Advancing Our Seafood Industry, this one-of-a-kind professionalism program for Louisiana's commercial fishing industry has received inquiry, acknowledgement, and recognition throughout many facets of local, regional, national and global fishing industries.

The Louisiana Fisheries Forward (LFF) contract concluded at the end of the 2021 calendar year but during this final period, an alligator industry whiteboard video was developed. To date the alligator initiative has included an industry overview report and a study on the best management practices handling wild alligator meat along with corresponding educational alligator fact sheets.

Additionally, LFF released a preliminary report characterizing the bycatch encountered by gear type in Louisiana's black drum and sheepshead fisheries. This preliminary report is scheduled to be finalized once data from additional commercial fishing trips can be obtained.

Aquatic Plant Control

Invasive aquatic vegetation continues to threaten access and recreational activities throughout Louisiana. Fall surveys conducted from November – December 2021 revealed an estimated 193,917 acres of nuisance aquatic plant coverage, mostly composed of water hyacinth (52,275 acres) and giant salvinia (32,733 acres). Fall surveys are conducted at the end of the growing season and usually reflect higher coverage than spring surveys conducted at the beginning of the growing season. From July 1, 2021 through December 31, 2021, LDWF applied EPA-approved herbicides to 12,593 acres of nuisance vegetation across the state. The majority of plant control efforts focused on giant salvinia and water hyacinth, with 5,767 and 4,441 acres treated, respectively.

Winter temperatures and isolated flood events have the potential to be major factors in determining the severity of aquatic vegetation impacts, especially giant salvinia, in Louisiana. A significant freeze event in February 2021, for the duration of several days, provided excellent control of aquatic vegetation throughout the state. Impacts from this event lasted throughout the growing season, and is evident in our most recent aquatic weed estimates. Vegetation assessments will be made again in the spring, and early season herbicide applications will be scheduled accordingly.

Giant salvinia weevils continue to provide excellent control of the exotic weed throughout south Louisiana. Established populations of the weevil are present throughout coastal Louisiana, and have significantly reduced the need for herbicide applications to giant salvinia in those areas. Established populations have also been found this year in waterbodies where the weevils had previously been unable to survive. Iatt Lake, Black-Clear Lake, and the Larto-Saline Complex have all benefited from what appears to be established, surviving weevil populations. The presence of high weevil numbers in these lakes is resulting in thinner mats, less biomass, and less overall coverage of giant salvinia in some cases. Weevil populations in these and other lakes are being monitored regularly to track survival from year to year.

Gulf States Marine Fisheries Commission
 Technical Coordinating Committee
 Mississippi State Report (July 1, 2021 – December 31, 2021)

1. Emerging Issues in the Gulf of Mexico Fisheries	2
CARES Act	2
2. Activities Related to Artificial Reef Programs	2
3. Activities Related to Fisheries Dependent Sampling	3
MRIP	3
Trip Tickets	3
Age and Growth	3
Tails ‘n’ Scales	3
4. Activities Related to Fisheries Independent Sampling	4
Finfish Sampling	4
Shrimp and Crab Sampling	5
Shellfish Sampling	6
5. Other State Activities	6
State Records for Recreational Fishing	6
Live Bait Shrimp Licensing and Special Permits	6
Skimmer TED reimbursement Program	6
Derelict Crab Trap Removal Program	7
Oyster Aquaculture	7
Harmful Algal Bloom (HAB) Events	7
Shellfish Management	7
Seafood Technology Bureau	7
Remote Oyster Setting Facility Project	8

1. Emerging Issues Pertinent to Gulf of Mexico Fisheries

CARES Act

Mississippi received \$2,960,079 CARES Act II funds, and those funds were distributed to eligible commercial fishermen, charter fishermen, and seafood dealer/processors in an equitable manner. The second round of CARES Act funding resulted in 252 eligible participants by MDMR. This eligible group consisted of 189 commercial fishermen, 41 charter fishermen, and 22 dealer/processors. Mississippi residents with the eligible in-state and out-of-state licenses self-certified over 35% lost revenue for the varying months identified in the spend plan, when compared to the same months in previous years.

2. Activities Related to Artificial Reef Programs

The Artificial Reef Bureau (ARB) continued monthly monitoring of fish assemblages and physiochemical parameters at selected inshore reef sites. In conjunction with the Gulf States Marine Fisheries Commission (GSMFC), the third annual Jimmy Sanders' Memorial Lionfish Challenge began May 14, 2021 and ran through December 1, 2021. During July through December, nine participants harvested a total of 19 lionfish, making a total of 38 for the entire year.

In December 2020, ARB staff began deployments of materials donated by Ingalls Shipyard into FH-13. Now completed, this project has contributed 8,096 tons of clean concrete material and 1,872 tons of steel H-beams to new artificial reef structures.

Monitoring was conducted on the new structures deployed in FH-13 via juvenile tagging studies. Juvenile fish traps were deployed on these sites and allowed to soak for one hour. All reef fish captured were weighed, measured, tagged and released. Fifteen total traps were set and retrieved. Data was collected from a total of 155 juvenile reef fish representing five species that were captured, tagged, and released.

The Artificial Reef Bureau received and stockpiled 16 truckloads of donated concrete culverts totaling 158 pieces from two separate contractors. These materials will be deployed at a future date and location to be determined by availability of funding.

Efforts to renew USACE permits for all nearshore artificial reefs are ongoing.

Having submitted three separate pre-proposals to NFWF for funding under the Gulf Environmental Benefit Fund, and receiving invitations to submit full proposals, Artificial Reef Bureau staff continues to work with NFWF to develop project objectives and procedures for all three projects. The projects under consideration are completion of Katrina Key, an inshore reef assessment, and enhancement of Cat Island, FH-8, FH-9/11, and FH-10 Reefs.

Five new lighted pilings with hazard signage were installed at Katrina Key to mark the reef boundaries of previously deployed material. These pilings replaced temporary hazard buoys deployed during the construction phase of the Katrina Key reef expansion.

3. Activities Related to Fisheries Dependent Sampling

MRIP

The Finfish Bureau (FB) continued to oversee the Marine Recreational Information Program (MRIP) in Mississippi. A total of 215 assignments and 861 surveys were completed July through December 2021 in Jackson, Harrison, and Hancock Counties. A total of 11 assignments were cancelled due to staff error (2), Hurricane Ida (7), and COVID-19 (2).

Trip Tickets

The FB collected commercial seafood landings data from processors, dealers, and fishermen utilizing the Mississippi Trip Ticket program. This data allows management of the resource and effective monitoring of the quota on Red Drum, Spotted Seatrout, and Southern Flounder. From July through December 2021, there were 3,181 paper and electronic trip tickets submitted for 322 commercial fishermen by 70 dealers participating in the trip ticket program. The number of commercial fishermen selling their catch using a Fresh Product Permit and participating in the trip ticket program was 52. After several beta versions the new commercial trip ticket reporting system, VESL, developed by BlueFin Data went live on July 1, 2021. The FB and the Shrimp and Crab Bureau (SCB) is continuing to work with BlueFin Data and Federal partners to make the new system available to federally permitted dealers. The FB and SCB are also working with BlueFin Data to develop an electronic reporting system for Mississippi Off Bottom Oyster Aquaculture (OBOA) in the form of a mobile application and a web based electronic monthly dealer ticket for the Mississippi Live Bait industry. The finalized forms are expected to be completed concurrently and will be available to OBOA harvesters and live bait dealers tentatively in 2022.

Age and Growth

The FB collected and processed 114 otoliths as part of the MDMR Biological Sampling Program from seven select species: Gray Snapper, Red Drum, Red Snapper, Southern Flounder, Spotted Seatrout, Tripletail, and one additional species, Golden Tilefish.

Tails 'n' Scales

Red Snapper is currently managed under amendment 50C to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico. Mississippi along with the other gulf states moved into state management of Red Snapper beginning with the 2020 season. Management rules for 2021 were set for a private recreational and state for-hire season in state and federal waters off Mississippi to open May 28, 2021, at 12:01am and close July 5, 2021, at 11:59pm. The season re-opened on August 6, 2021, at 12:01am and closed August 8, 2021, at 11:59pm. The season re-opened fully on August 13, 2021, at 12:01am and closed September 6, 2021, at 11:59pm. The season re-opened fully again on October 1, 2021, at 12:01am and remained

open until November 21, 2021, at 11:59pm. The season was open for a total of 119 days. The private recreational sector's harvest for 2021 was 143,042.7 pounds, representing 94.4% of Mississippi's private recreational Annual Catch Limit (ACL) (151,550 pounds). The federal for-hire component was given an 86-day season, lasting from June 1 to August 1 and from October 15 to November 6. Vessels with federal reef fish permits are not included under amendment 50 but are required to obtain Tails n' Scales trip authorization prior to fishing. Mississippi's recreational Red Snapper electronic reporting system, Tails n' Scales began updates for use in the 2022 season after final closure of the 2021 season.

4. Activities Related to Fisheries Independent Sampling

Finfish Sampling

Long-term fishery independent sampling continued in conjunction with the NOAA Project "Monitoring and Assessment of Mississippi's Interjurisdictional Marine Resources". The FB completed 56 gill net sets at ten stations to collect finfish species for subsequent age-and-growth analysis as well as other biological data. A total of 172 otoliths were collected from July through December 2021 and samples were collected from ten different species: Sheepshead, Spotted Seatrout, Southern Kingfish, Striped Mullet, Red Drum, Spanish Mackerel, Southern Flounder, Black Drum, Sand Seatrout, and Gulf Flounder.

Through a project funded by the USFWS Sport Fish Restoration Program, the FB deployed 10 additional satellite tags on Atlantic Tripletail in the fall of 2021 as continuation of the 2019 and 2020 Atlantic Tripletail deployment dataset. One fish was recaptured, and staff redeployed the retrieved tag on an additional fish.

The acoustic telemetry work funded by the USFWS Sport Fish Restoration program for interagency, cooperative tracking of multiple species in Mississippi state waters continued. Acoustic receivers in the project array continued to undergo routine cleaning, maintenance, and data downloads. Some receivers had to be redeployed or replaced after tropical systems moved through the area. Ridged acoustic receiver mounts were constructed, and seven receivers were deployed onto the Pascagoula channel day markers. A total of nine receiver mooring buoys were constructed and deployed between Horn and Sand islands. Water temperature and conductivity data loggers were installed on four mooring buoys in the array. Traditional capture methods (hook and line) and experimental fyke nets were set up in the Biloxi Back Bay and Pascagoula to sample Southern Flounder. In the months of August, September and October, a total of 61 Southern Flounder were collected, externally acoustically tagged, and released. Sampling efforts for acoustic tagging of Cobia occurred in July, September, and October 2021. Although no additional transmitters were deployed in Cobia this year, two individuals that were tagged and released in 2020 did return to MS state waters. Both Cobia were detected on acoustic receivers between Ship Island and Horn Island. One individual was detected during September and remained detected within that area for roughly 18 days. The other Cobia was detected during October and remained detected for nearly 20

days.

The Fyke Net sampling program, which is used to target Southern Flounder, continued during the months of July through November. No sampling occurred in December. Fyke nets were set and retrieved on a bi-weekly basis at the three original sampling locations (Davis Bayou, Deer Island, and Belle Fontaine) and the two new additional sampling locations in Pascagoula that were established in June 2021. During these events, a total of 102 Southern Flounder were collected. Other species observed in the fyke nets included Atlantic Croaker (166), Blue Crab (125), Black Drum (23), Red Drum (19), Hardhead Catfish (17), Spot (10), Pinfish (7), Atlantic Spadefish (3), Southern Kingfish (3), Striped Mullet (3), Atlantic Stingray (2), and Gray Snapper (1).

Shrimp and Crab Sampling

The Shrimp and Crab Bureau (SCB) continued to conduct monthly fishery independent trawl sampling under the NOAA project “Monitoring and Assessment of Mississippi’s Interjurisdictional Marine Resources”. This sampling program includes 14 fixed stations located in the western Mississippi Sound and along a transect from Horn Island to the upper end of the Back Bay of Biloxi. Sampling was conducted using a 16’ otter trawl with liner in the cod end. A total of 80 trawls were completed from July to December 2021. Five trawl samples were not collected for December 2021 in the Western Sound due to boat engine problems.

The SCB continued fishery independent trap surveys for Blue Crabs within three major estuaries: St. Louis Bay, Back Bay of Biloxi, and the lower Pascagoula River. Each estuary was sampled monthly from July to December 2021 for a total of 18 sample sets. This program, which began in September 2014, provides data on CPUE, size and sex composition, Blue Crab abundance, and bycatch composition and 273 sample sets have been completed since the beginning of the project.

The SCB continued to conduct monthly fishery independent shrimp trawls to monitor seasonal abundance and size of penaeid shrimp within the Mississippi Sound. This sampling program includes 10 fixed stations located across the Mississippi Sound from the mouth of St. Louis Bay east to Round Island using a standard 16’ otter trawl. Sampling frequency increases to weekly in April and twice per week in May to monitor brown shrimp growth. A total of 62 trawls were completed from July to December 2021.

The SCB continued a fishery independent study using experimental gear types in Mississippi coastal waterways. The program was funded through the GSMFC IJ State Research Funding (SuRF) Program. Two experimental trawls, 6’ and 12’ otter trawls, were tested for collection of juvenile finfish, penaeid shrimp and blue crabs. Two samples were collected with each trawl size in each of the three coastal counties at randomly selected sites each month. A total of 72 small trawls were completed from July to December 2021.

The SCB also began a fishery independent crab trap survey in Mississippi commercial Blue Crab harvest waters. Six crab traps were placed at a randomly selected site in each of the three coastal counties every month to provide data on CPUE, size and sex composition, Blue Crab abundance, and bycatch composition. A total of 108 traps were set and pulled from July through December 2021.

Shellfish Sampling

The MDMR Shellfish Bureau (SB) conducts an extensive oyster reef assessment on all significant public oyster resources in state waters each year. This assessment includes one-minute dredge tows and diver square meter samples for analysis of oyster health, growth, productivity, abundance, and predatory behavior. This data is used for resource management and enhancement. From July through December 2021, the Shellfish Bureau conducted 124 dredge tows, 175 square-meter samples, and cultivated 160 acres of the western Mississippi Sound.

5. Other State Activities

State Records for Recreational Fishing

A total of 13 recreational fishing records were approved as state records July through December 2021. There were three Conventional Tackle records approved: Keeltail Pomfret (*Taractes rubescens*), Bull Shark (*Carcharhinus leucas*), Vermillion Snapper (*Rhomboplites auroubens*), Golden Tilefish (*Lopholatilus chamaeleonticeps*), and Inshore Lizardfish (*Synodus foeten*). A total of two fly records were approved: Shark Sucker (*Echeneis naucrates*) and Little Tunny (*Euthynnus alletteratus*). There were five youth records approved during the timeframe: Red Snapper (*Lutjanus campechanus*), Cownose Ray (*Rhinoptera bonasus*), Scamp (*Mycteroperca phenax*), and twice for Ladyfish (*Elops saurus*).

Live Bait Shrimp Licensing and Special Permits

The SCB manages the live bait shrimp licensing program. Inspections and technical assistance were provided, as needed, to the 10 licensed dealers across Mississippi's three coastal counties. The SCB also manages the MDMR Special Permitting program which includes Scientific Research Permits, Brood Stock Permits, Non-profit Harvesters Permits, and Experimental Gear Permits. SCB staff issued 19 Special Permits from July to December 2021.

Skimmer TED Reimbursement Program

MDMR Office of Marine Fisheries staff continued development and implementation of a program to reimburse shrimpers who purchase turtle excluder devices (TEDs) for their skimmer vessels. This project is intended to mitigate financial impacts to those vessels affected by the National Marine Fisheries Service (NMFS) December 20, 2019, final rule, which requires all skimmer vessels 40' in length and larger to use TEDs in their nets beginning August 1, 2021.

Approximately 9 shrimpers were reimbursed for their purchase of a TED from July to December 2021.

Derelict Crab Trap Removal Program

The SCB removed a total of 33 crab traps from the environment between July and December 2021. The Mississippi Derelict Crab Trap Removal program began in 1999, and to date, has removed a total of 22,283 traps from Mississippi state waters.

Oyster Aquaculture

The SB began training the fourth class of Off-Bottom Oyster Aquaculture Program (OBOA) participants in 2021. The OBOA Program addresses all aspects of off-bottom oyster farming appropriate to the local and regional area in oyster aquaculture operations, including business development and aquaculture methodologies. There is now a total of 465 acres available for commercial farming behind Deer Island. MDMR currently has 63 acres leased by 34 farmers and upwards of 3.3 million oyster seed being cultured. Commercial operations harvested approximately 100,000 oysters from July to December 2021.

Harmful Algal Bloom (HAB) Events

No significant HAB events occurred in the Mississippi Sound and relevant fishery areas in July through December 2021.

Shellfish Management

The SB monitors water quality and maintains molluscan shellfish growing water classifications as defined by the National Shellfish Sanitation Program through the Shellfish Sanitation and Compliance Program. This monitoring program mitigates the risk to human health from consuming raw oysters contaminated by fecal coliforms. These bacteria indicate the possible presence of pathogenic bacteria, viruses, and protozoans found in human and animal wastes. In addition to maintaining oyster growing waters classifications, the water quality samples are used to manage the openings and closings of oyster reefs for harvest. The samples are collected in sterile bottles by boat one-half meter below the surface on the windward side and transported to an FDA-certified microbiology laboratory for analysis. During the months of July to December 2021, Staff collected 341 routine water samples and 5 tissue samples from 62 sites across the Mississippi Sound.

Seafood Technology Bureau

The Seafood Technology Bureau (STB) conducted a total of 102 inspections (routine, follow-up, and certification inspections). A total of 77 sanitation and Hazard Analysis Critical Control Point (HACCP) deficiencies were cited. The bi-annual water quality sampling for seafood processing facilities for September was finalized with a total of 14 samples taken.

Due to COVID-19 restrictions in 2021, Basic Seafood HACCP training workshops could not be

held. Therefore, HACCP workshops were arranged to be taught in 2022. The first class will be held in February 2022. Depending on industry requests for additional training, HACCP workshops will be planned accordingly.

Remote Oyster Setting Facility Project

MDMR is in Phase I of the RESTORE Council-funded *Remote Oyster Setting Facility Project*. The purpose of the *Remote Oyster Setting Facility Project* is to provide a facility that has the capability to set 2.5 billion oysters/year to restore Mississippi's decimated oyster reefs at a faster rate than could be achieved in the wild. During Phase I, planning activities are being undertaken to assess the overall feasibility of the facility and determine infrastructure layout ongoing operational and maintenance costs, setting efficiencies and production milestones. The MDMR has identified the Port of Gulfport as the ideal location to situate the Oyster Setting Facility. MDMR successfully produced 11,703,819 spat on shell oysters over the course of six individual production runs that were completed within five months in the Summer of 2021. This equates to 16.18% of the oyster larvae setting/surviving until deployment. The average size of the oysters planted was 2.74mm for the season. In total, 46.8 cubic yards of spat on shell was deployed in Biloxi Bay on existing MDMR cultch plant locations. MDMR spent \$68,227.11 for the entire season including staffing, boat usage, cultch material, equipment, and supplies which translates to \$0.005 (half a penny) per oyster produced.

**Alabama State Report
Gulf States Marine Fisheries Commission's
Spring 2022 – Florida meeting**

Emerging Issues Pertinent to Gulf of Mexico Fisheries.

Regulatory/Administration

The AMRD determined final distribution amounts for those individuals and business entities who applied to Round II of Alabama's Coronavirus Aid, Relief and Economic Security (CARES) Act program and met the eligibility criteria. Distribution amounts and payment information was provided to the Gulf States Marine Fisheries Commission for payment.

Beginning in 2021, mandatory reporting of recreationally caught Gray Triggerfish and Greater Amberjack landed in Alabama was also required for owner/operators of private recreational and state charter vessels.

Activities Related to Artificial Reef Programs.

Phase II of the National Fish and Wildlife Foundation Alabama Artificial Reef and Habitat Enhancement Project continues to provide funding for reef fish habitat enhancement and monitoring projects in the inshore, nearshore, and offshore waters of Alabama.

The AMRD acquired authorization from the Army Corps of Engineers to construct four inshore reefs in Mobile Bay and construction specifications are currently being drafted. Additionally, multiple contracts totaling \$7,393,200 to construct/deploy 1,659 artificial reef modules have been executed and construction is underway. To date, 823 juvenile reef fish shelters have been deployed under the previously mentioned contracts along water bottoms approximately 6-9 nm offshore of Alabama that were recently authorized as artificial reef zones by USACE. An additional 180 concrete/limestone tetrahedron-shaped reef modules measuring 25' in height have also been deployed under the previously referenced contracts along water bottoms approximately 35 – 45 nm offshore of Alabama. Finally, partnerships with the Alabama Wildlife Federation and Alabama Power have resulted in the construction of 29 artificial reefs approximately 6 – 9 nm offshore of Dauphin Island. These reefs consist of juvenile reef fish shelters, out of date equipment from the Barry Steam Plant, a 195' X 35' hopper barge and tetrahedron-shaped artificial reef modules measuring 10' in height.

A total of 176 individual reefs constructed by members of the public were inspected and permitted by AMRD staff for deployment in the Offshore General Reef Permit Zones offshore of Alabama. A majority of the reef structures consisted of chicken transport cages, prefabricated

concrete reef modules, and steel framed boxes. The structures were deployed between approximately 15 miles to 50 miles offshore of Alabama along water bottoms authorized for artificial reef construction activities.

Activities Associated with the Gulf of Mexico Crab Fisheries.

No derelict trap collection activities were conducted in 2021. AMRD continues to monitor the number of derelict traps and is currently working with our partners to determine if a derelict cleanup will be conducted in 2022.

Activities Related to Fisheries Dependent Data Collection.

1. APAIS

AMRD continued the tablet-based data collection of dockside Access Point Angler Intercept Survey (APAIS) interviews and validation of charter vessel activity to complement the NOAA Fisheries For-Hire Survey. From September 1 through December 31, 2021, AMRD samplers completed a total of 164 APAIS assignments and 1,204 anglers were interviewed. No assignments were cancelled during the reporting period. Semi-annual training and fish tests were given to APAIS staff in August 2021 and February 2022.

2. Biological sampling

The Biological Sampling Program for the collection of otoliths from recreationally harvested marine finfish continued during the reporting period. From September 1 through December 31, 2021 a total of 53 sets of otoliths were collected by AMRD staff representing 11 out of 13 primary target species. Additional funding from the Gulf States Marine Fisheries Commission to continue this program started on September 1, 2021 and will continue for 16 months.

3. Snapper Check

Alabama's recreational Red Snapper season opened May 28th and closed December 27th. Anglers were allowed to harvest red snapper during four day extended weekends (Fri.-Mon.). Preliminary Red Snapper harvest estimates for private vessel and for-hire vessel anglers from Alabama's Snapper Check program is estimated at 783,348 pounds and 151,069 pounds, respectively. The 2022 Alabama private recreational annual catch limit wasn't exceeded. AMRD received 6,381 private vessel and 705 state charter vessel landing reports.

4. SEFHIER

AMRD received funding through the commission this year to conduct dockside surveys of federal for-hire vessels (charter/headboat) that electronically report their catch under NOAA Fisheries' Southeast For-Hire Integrated Electronic Reporting (SEFHIER) program. The electronic reporting program was implemented on January 5, 2021 with the dockside survey portion of the program beginning October 1, 2021. The tablet-based dockside surveys are

collected through an application developed for SEFHIER. From October 1, 2021 through December 31, 2021, AMRD samplers completed a total of 23 out of 30 assignments and out of the completed assignments, 21 federal for-hire captains were interviewed. During the reporting period, the initial 7 of 30 assignments were cancelled due to the lack of trained staff to successfully conduct the dockside surveys.

Activities Related to Fisheries Independent Sampling.

1. Shellfish

During our 2021 annual oyster reef assessment, the quadrat samples had a similar density of legal-sized oysters to that of the 2020 samples. The 2021 samples showed a reduction of spat and sub-legal oysters from 2020. The possible reason for reduced spat and sub-legal oyster abundance is extended washes of fresh water occurring for 89 days from February to March of 2021 and again for 55 days from June to August of 2021.

After analysis of the 2021 oyster reef quadrat surveys, the AMRD decided to open the public oyster reefs to harvest on October 4, 2021. Harvest continued for 79 working days and closed on January 21, 2022. Oysters comprising a total of 50,020 sacks (including standard AL commercial sacks plus standardized recreationally harvested sacks) were harvested from oyster reefs on Heron Bay, Cedar Point West, and Cedar Point East. Alabama harvest averaged 633.17 sacks per day (min 14.2 / max 1043.40 sacks) and 127 harvesters per day (min 6 / max 204 harvesters).

The AMRD opened the reefs on the first four Saturdays of the season to provide an opportunity for youth participation in the harvest. On these Saturdays, the reefs were opened to harvest for all commercial and recreational harvest, however the reefs closed at 12:00 pm instead 2:00pm. Saturday harvests were discontinued after the first four weeks due to a lack of participation.

During the 2021 oyster season, AMRD continued to use our oyster reef grid system to manage harvest on individual reef areas. AMRD staff monitored grids in which harvest took place and opened and closed specific grids as needed to move oyster catchers off sufficiently harvested areas. This ensured that there was a more even distribution of harvest across productive reefs. Harvesters were able to see which grids were open and monitor their position within the grid system by accessing a web link on their smart phones.

The AMRD introduced and sold a new recreational harvest tag at the Oyster Management Station during the 2021 harvest season. Recreational harvesters were required to purchase a tag and attach it to whatever container they used to hold their recreational harvest. Recreational harvesters can harvest up to 100 legal-sized (min. 3 in.) oysters per person per day and oysters can only be harvested from reefs and at times open to commercial harvest. The introduction of this tag has allowed AMRD to collect data on recreational harvest which has been difficult to

determine in the past. A total of 1,177 recreational tags were sold. One hundred oysters is approximately 0.6 of a legal Alabama sack. Using this conversion factor, 1,177 recreational sacks equals approximately 706.2 legal commercial sacks. Our harvest of commercial, recreational, and total sacks is detailed below:

Commercial Sacks Harvested	= 49,314
Recreational Sacks Harvested (converted)	= 706.2 (1177 tags x 0.6)
Total Sacks Harvested	= 50,020

The AMRD obtained Natural Resources Disaster Assessment (NRDA) funding for the construction of an Eastern oyster hatchery and remote larval setting facilities. Construction should begin in Summer of 2022 with oyster spat production anticipated Fall of 2022.

2. SEAMAP

SEAMAP activities planned for 2022 include remotely operated vehicle video, vertical line, nearshore bottom longline and trawl surveys. The trawl cruise will be in conjunction with the Gulf Coast Research Laboratory as staff from Alabama and Mississippi are working from the same vessel for sampling from statistical zones 8-12. Alabama will not schedule an ichthyoplankton cruise as National Marine Fisheries Service will collect stations off Alabama for the foreseeable future.

3. Inshore Gillnet

Independent gillnet sampling was conducted each month for calendar year 2021 using small mesh perpendicular sets with mesh sizes ranging from 2-4 inches, and large mesh parallel sets with mesh sizes ranging from 4.5-6 inches. A total of 237 of 240 scheduled hour-long sets were completed with a total of 59 different species sampled comprising 6,604 observed individuals. Hurricane Ida, bad weather, and staffing issues prevented us from completing 3 net sets in August. For the year, 1,689 otoliths were collected from sampled individuals in addition to taking measurements of length, weight, sex, and gonad weight.

Gulf Menhaden scales and otoliths age comparisons were completed and submitted earlier in the year. A comprehensive review of Sheepshead was conducted on independent and dependent data from Alabama waters. The analysis produced graphs for length-weight relationships, bootstrapped vonBertalanffy growth, gonadal somatic index (GSI) over time, gillnet size selectivity of gear, index of abundance over time, catch curve for survival, mean length at age (ages 1-4) over time, and a total length (TL) to fork length (FL) conversion. The table below is a list for each species of number caught, catch per unit effort (net sets), and otoliths collected for the entire year of 2021 from gillnets, trawls, seines, marine enforcement seizures, and other sources.

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Species	Caught	CPUE	Otoliths		
			Gillnet	Trawl	Enforcement/ Misc
Atl. Croaker	587	2.4664	173	--	--
Bl. Drum	41	0.1723	40	--	--
Bluefish	15	0.0630	2	--	--
Fl. Pompano	2	0.0084	2	--	--
G. Flounder	1	0.0042	1	3	--
Gray Snapper	2	0.0084	1	1	--
Gulf Menhaden	1451	6.0966	--	--	--
Red Drum	39	0.1639	39	2	--
S. Kingfish	37	0.1555	37	57	--
S. Mullet	668	2.8067	416	--	--
Sand Seatrout	82	0.3445	64	--	--
Sheepshead	15	0.0630	15	1	41
So. Flounder	8	0.0336	6	1	--
Sp. Mackerel	74	0.3109	70	--	--
Sp. Seatrout	474	1.9916	470	--	--
W. Mullet	378	1.5882	263	--	--
Totals	3874*	--	1583	64	41

**Total catch of fish species listed above.*

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Other State Activities.

1. Mariculture

The Claude Petet Mariculture Center (CPMC) continued stock enhancement efforts through the Fall and winter of 2021. Since mid-September, an additional 84,228 Spotted Seatrout were released into coastal Alabama waters. Trout spawning will continue in Spring 2022. Florida

Pompano spawning has been poor with the transition to a new spawning hormone. No additional fish were released since the last update. CPMC is making a strong push to rotate out all broodfish for the 2022 spawning season to see if this will be a remedy for the issue. Southern Flounder culture began January 2022 and will continue through March 2022. Releases will begin in February 2022.

CPMC staff will continue to assist researchers from Auburn University who have been contracted using Inter Jurisdictional Funds (IJF) provided by the Gulf States Marine Fisheries Commission to conduct a cryogenic preservation study of Southern Flounder sperm. CPMC and Auburn University staff will continue to evaluate the most effective methods for cryopreserving Southern Flounder milt. In addition, fresh milt will be tested against previously cryopreserved milt to see the effects on survival and growth of larval fish.

2. Boating Access

Fort Morgan boat ramp and fishing pier remains under active renovations that include capping the seawall, pouring a concrete surface and installing railings for the construction of a fishing pier. Shoreline stabilization, expansion and resurfacing of the parking area at the Delta Port boat launch are completed. Repairs to the Pines boat ramp have been initiated with construction to begin sometime in 2022.

3. Outreach

The AMRD Fisheries and Enforcement sections participated in the Alabama Coastal BirdFest, an outreach event with school children. The Alabama Seafood Marketing Program continued with public relations, television commercials, print ads and articles, radio ads, billboards, distribution of marketing materials and sponsorships of events. The marketing program's website is www.eatalabamaseafood.com.

4. Enforcement

From October 2021 through February 2022, AMRD enforcement officers conducted 4,009 commercial fishermen intercepts, 10,593 recreational fishermen intercepts, 424 seafood dealer and processor inspections, 6,682 hours of patrol (combined vessel patrol and shore patrol), and boarded 2,354 vessels.

In 2021, the National Marine Fisheries Service implemented a requirement for the Federal For-Hire charter fishing industry; the Southeast For-Hire Integrated Electronic Reporting Program (SFHIER). This program requires all Federally permitted for-hire charter fishing vessels to electronically report each of their fishing trips, along with the total number of fishermen and a summary of fishes caught and their quantities. AMRD enforcement officers were very active during the charter fishing season to ensure that the vessels were following the new reporting requirements as well as helping educate the charter captains on the program.

As the restrictions related to Covid-19 continue to decrease, there are more and more outreach events taking place. As a result, the Enforcement Section's opportunities for outreach has drastically increased over the previous two years.

In January 2022, the Enforcement Section completed the newest expansion of the Coastal Remote Monitoring System with funding from a FEMA Port Security Grant. The grant provided \$273,865 in funding. This funding allowed AMRD Enforcement to add two new camera locations, upgrade the storage capacity of captured video, and upgrade many of the older cameras to high-definition cameras. Currently, the 23 camera system can store high-definition video of the monitored boating access points and other high values areas for nearly six months at a time.

The Enforcement and Fisheries Sections continue work under a dual grant intended to monitor and protect marine mammals and marine turtles. One of the grant's objectives is to monitor turtle crawls and nesting areas to help prevent nest damage caused by the public. The funding also provides for materials that target the public and educate them the potential harm they can unknowingly cause on turtle nests and turtle hatching runs. Funding also provides educational material outlining the dangers caused by marine mammal interactions with people and how current laws related to these interactions are crucial to the protection of marine mammals and marine turtles. The two portable camera units, that were purchased with this grant, allow the biological (and enforcement) staff of AMRD the ability to monitor turtle nesting areas 24 hours a day, with live video feeds. When deployed, the cameras can track turtle movements, human interactions and monitor known nesting sites.