

OFF-BOTTOM OYSTER AQUACULTURE IN THE GULF OF MEXICO

2017 Grants



GULF STATES MARINE FISHERIES COMMISSION
March 14, 2018

Sheraton Bay Point Resort
Panama City, FL

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Off-Bottom Oyster Aquaculture in the Gulf of Mexico

Gulf States Marine Fisheries Commission • 68th Annual Spring Meeting
Sheraton Bay Point Resort • Panama City, Florida
March 14, 2018 • 8:30 a.m. – 12:00 p.m.

Agenda

- 8:30 Welcome and Program Overview – *Mr. David Donaldson and Mr. Steve VanderKooy (GSMFC)*
- 8:40 State of Alabama Oyster Aquaculture Permitting and Informational Website Development – *Mr. Chris Blankenship (ADCNR-AMRD)*
- 9:05 Identifying Information Needs and Regulatory Impediments to Off-Bottom Oyster Culture in Texas – *Dr. John Scarpa (TX A&M)*
- 9:30 Development and Operation of a Mobile Oyster Spawning System – *Mr. Julian Stewart (Alma Bryant High School)*
- 9:55 *Break*
- 10:15 Advancing the Gulf of Mexico Shellfish Initiative (GoMexSI) – *Ms. Bethany Walton (MS/AL Sea Grant Consortium)*
- 10:40 Increasing Oyster Production in the Gulf of Mexico: Adopting High-Density Larval Culture at the Auburn University Shellfish Lab – *Mr. Scott Rikard (DISL)*
- 11:05 Initiation of a Program to Produce Florida Tetraploid Founder Stocks for the Gulf Oyster Industry - *Dr. Huiping Yang (U of FL)*
- 11:30 General Q&A on Off-Bottom Oyster Culture - *ALL*
- 11:45 Wrap-Up and Overview of 2018 Off-Bottom Program – *Mr. Steve VanderKooy*
- 12:00 *Adjourn*

Summary

In 2016, the Commission began a cooperative effort with NOAA's Office of Aquaculture to develop and manage a small grants program to address the technical and regulatory opportunities and challenges of oyster farming in the Gulf region. A total of six projects were funded across the Gulf at a total of \$375,000. With the exception of one, the first year of projects has been completed and the PIs attended our general session to present their work and any results.

The six projects ranged from outreach tools for advancing aquaculture to education of future industry participants, development of oyster hatcheries, and creation of tetraploid oyster seed sources for industry expansion throughout the Gulf region.

Work on the six projects began in January 2017 and ran through December 2017. Two of the projects received short extensions; one due to staffing issues and the other due to Hurricane Harvey which affected their ability to conduct work in Texas in the fall.

The six principle investigators presented their work at the half-day General Session at our March 2018 Commission meeting after which there was some good discussion during the panel Q&A session. When asked about long-term funding for enforcement of the oyster farms, the general consensus was that like other private enterprises, it would be up to the business to ensure their security. While agency enforcement staff may occasionally pass by these areas and establish a presence, it is up to the farm owner to pay for and be responsible for their own security. This can be done in a number of ways including having someone onsite as a manager or through the use of technology like wireless security cameras.

One of the general themes of the work conducted was related to restoration. General questions were asked regarding the role of oyster aquaculture in the ecosystem and what long term goals exist to reverse the declines in the Gulf's oyster fishery and populations. Also, who is entering the oyster farming industry? Participants include all backgrounds including other gear fisheries such as shrimpers as well as lawyers and retired business men, not just traditional commercial oystermen. A few of the producers contribute seed and spat to state and local restoration efforts as well. Shell recycling efforts exist all along the Gulf and it is a concept people are embracing and exist in several states working with several of the oyster markets. In Texas, through the restaurant association is going on as much as possible. Alma Bryant High School is directly involved in both the half shell market and restoration, putting spat on shell bags to build up reefs in their lease areas for stabilization and restoration.

There were questions about any conflict on the water between other fisheries and the oyster off-bottom lease fishermen. It is widely accepted that these areas are locations of wild oysters already so there does not seem to be a lot of issues with the use of these areas. Alma Bryant indicated that, since the students were directly involved with the lease and 'farming', there was increased acceptance with their families for the concept. Most of the public wants the benefits which come with an increase in oyster populations so there seems to be greater acceptance as time goes on.

State of Alabama Oyster Aquaculture Permitting and Informational Website Development

Mr. Chris Blankenship, Alabama Department of Conservation and Natural Resources – Marine Resources Division

The purpose of this project was to develop an Oyster Aquaculture Permitting and Informational Website for the State of Alabama. The Department developed and maintains a comprehensive oyster aquaculture permitting and informational website to assist current and potential oyster aquaculture farmers with siting, permitting, coordination, and contact with regulatory agencies to increase efficiencies and to facilitate increased investment in oyster aquaculture in Alabama. First, the AMRD GIS Specialist gathered all pertinent information and developed a GIS mapping product with many layers to assist current and potential oyster aquaculture farmers with siting, availability, and other uses. This GIS product is an integral visual component of the website. Links from the Oyster Aquaculture Review Board's checklist to agency permit applications or web portals should streamline the permitting process. The website is a one-stop-shop for all oyster aquaculture information, research, regulatory contacts, and business plan development for Alabama.

Identifying Information Needs and Regulatory Impediments to Off-Bottom Oyster Culture in Texas

Dr. John Scarpa, Texas A&M University - Corpus Christi

The objective of the project was to identify and report information needs (e.g., variation in oyster genetics or disease along the Texas coast) and regulatory impediments (e.g., lack of legislative authority for agency action, agency goal conflicts) along with solutions for these information needs and regulatory impediments to allow off-bottom oyster culture in Texas. Potential regulatory impediments were identified through approximately monthly meetings and discussions with different leaders of stakeholder groups (i.e., state agency, non-governmental organizations, and commercial harvesters). Impediments were verified, where possible, through written material (e.g., Texas code). Texas Parks and Wildlife Department had initiated discussion with stakeholders regarding a Texas Oyster Aquaculture Plan in the summer of 2015, but this plan has not been placed into action. Legal and regulatory requirements in Texas are the current impediment to off-bottom oyster culture. The information developed during this project should aid Texas state agencies in developing regulatory and legal requirements for off-bottom, mid-water, or surface culture of oysters in Texas waters.

Development and Operation of a Mobile Oyster Spawning System

Mr. Julian Stewart, Alma Bryant High School

This project was intended to produce additional oyster larvae to meet the current and future needs of the developing off-bottom oyster farming industry in the area. The new industry cannot be sustained without an adequate supply of oyster larvae/seed. The primary objective was to develop an additional source of oyster larvae for the Gulf region. The secondary objective was to develop a hatchery capable of being moved to safety during hurricane conditions. Finally, the technology was developed as a means to provide additional training to advanced aquaculture students at the Alma Bryant High School.

Advancing the Gulf of Mexico Shellfish Initiative (GoMexSI)

Ms. Bethany Walton, Mississippi/Alabama Sea Grant Consortium

The development of the GoMexSI is intended to provide a platform to avoid and/or resolve user conflicts related to oyster aquaculture, while also promoting coordination of off-bottom (and on-bottom) oyster aquaculture with other oyster restoration efforts. In other regions, efforts to coordinate commercial oyster farming activities with oyster restoration efforts have engaged shellfish farmers, environmental and oyster restoration groups, state and local agencies, foundations, and others to find solutions to hurdles. Moreover, development of a regional shellfish initiative may help with issues of concern (or 'social license') of off-bottom oyster farming in each Gulf state. GoMexSI has four broad goals: 1) ensure clean and plentiful water to protect and enhance shellfish beds; 2) sustain commercial shellfish harvests and restore oyster stocks; 3) create a public/private partnership for shellfish aquaculture; and 4) use an ecosystem services approach to manage shellfish restoration. To solicit input broadly, we held a series of advertised meetings (at least one in each state) across the region during the first six months of the project with known stakeholders and Mississippi-Alabama Sea Grant conducted an online survey to encourage broad, diverse input and develop a call-to-action for a regional shellfish initiative.

Increasing Oyster Production in the Gulf of Mexico: Adopting High-Density Larval Culture at the Auburn University Shellfish Lab

Dr. Bill Walton, Auburn University and Dauphin Island Sea Lab

This project addresses the challenge of current and future demand for oyster larvae and seed in the region by adopting high-density larval culture at the Auburn University Shellfish Laboratory. First, we converted existing wet lab space into high-density larval culture production. Second, we installed a multi-bag continuous algal bag production system to provide sufficient food for the larval system at maximum production. Lastly, a broodstock-conditioning system was added to maintain oyster broodstock at prime spawning condition through early November, allowing early and late season spawns.

Initiation of a Program to Produce Florida Tetraploid Founder Stocks for the Gulf Oyster Industry

Dr. Huiping Yang, School of Forest Resources and Conservation - IFAS, University of Florida

The goal of this project was to initiate a program for producing patent-free Florida tetraploid founder stocks to meet the needs of the fast-growing oyster farming industry in the Gulf region. The approach used for tetraploid production includes: 1) production of chemically induced triploids, 2) identification of triploid females, and 3) production of tetraploid by crossing oocyte from triploid females with sperm from diploids following by inhibition of polar body I. Through collaborating with three commercial shellfish hatcheries, large-scale production of chemically-induced triploids was performed (24 spawns) through inhibition of polar body 2 using Florida wild oysters as broodstock (Cedar Key, Sarasota, Wakulla, Port Charlotte, Alligator Harbor and Pensacola Bay). Putative triploid larvae survived and spat were harvested in five groups (with broodstock from Cedar Key and Wakulla). After a nursery stage allowing spat to grow into 5 mm, putative triploid seed were planted in a total 7 collaborating farms after

individual ploidy confirmation. Till December 2017, a total of 36,806 putative triploid oysters survived with a triploid percentage ranging from 48-76%, and are reaching adult size. These chemically triploids are ready to be used for induction of tetraploid founders in the 2018 spawning season through crossing oocytes from triploid females with sperm from diploids following with polar body I inhibition.

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