



SUSTAINABLE FISHERIES AND AQUACULTURE

IMPACTS

S.C. Sea Grant Consortium Partnership Puts South Carolina Triploid Oyster Seed in the Hands of Oyster Growers

Julie Davis, S.C. Sea Grant Consortium

Relevance: In April of 2014, amid concerns over disease transfer, the state of South Carolina introduced a moratorium on importing oyster seed, which meant that growers had to seek out new seed sources and develop the capacity to produce seed within South Carolina if the industry was to continue to develop. Shortly following the moratorium, one grower expressed interest in expanding nursery production and building a hatchery to meet the company's needs for seed as well as the needs of other South Carolina growers. The S.C. Sea Grant Consortium, with an objective to build a sustainable industry that is adaptable to environmental and regulatory changes, offered technical assistance to support the development of a reliable, in-state source of oyster seed. The demand for triploid seed continues to grow.

Response: The S.C. Sea Grant Consortium provided technical expertise on hatchery and nursery system design and implementation of standard operating procedures to build capacity and optimization of production to currently the only commercial-scale nursery in the state. Beginning in 2014, the Consortium, in partnership with industry, launched an effort with the goal of producing triploid oyster seed using only South Carolina broodstock. The program also aims to develop a diverse line of broodstock to meet the industry's needs into the future.

Results: In 2017, because of Consortium efforts, seed orders for all South Carolina oyster farmers were filled with triploid seed produced in-state using only South Carolina broodstock. Growers in North Carolina and Florida were also able to procure seed from South Carolina, and seed was distributed throughout the South Atlantic as part of a USDA South Regional Aquaculture Center-funded research project. Over 3 million seed were sold, which represents a conservative average market value to the growers of \$1.8 million, and \$6 million in restaurant retail value. Growers have reported excellent performance from these oysters of local parentage, with fast growers reaching harvest size in 10 months. In addition to supporting commercial triploid production, tetraploid broodstock development work continued in 2017, which will ensure a continued source of triploid oysters.

Recap: S.C. Sea Grant Consortium technology transfer efforts have resulted in the propagation of South Carolina-based seed stock to supply the rapidly emerging oyster-farming industry in South Carolina and throughout the South Atlantic region, with a potential value at harvest reaching \$1.8 million and restaurant retail value of \$6 million.

Oyster Farming Inventory Management Tool Developed by the S.C. Sea Grant Consortium Attracts Interest from Growers throughout South Atlantic and Gulf Regions

Julie Davis and Ryan Bradley, S.C. Sea Grant Consortium

Relevance: Oyster farming using off-bottom methods continues to expand in the South Atlantic and Gulf of Mexico regions. Farming using these techniques involves growing oysters in mesh containerized units suspended or floating above the seafloor. Growers routinely service each unit to ensure product quality and carefully track each unit, not only for their own information but to meet operational and regulatory



requirements. Growers commonly track their inventory in a notebook or other similar paper fashion. As farms scale up, however, using this method can become cumbersome and inefficient for tracking inventory and planning activities.

Response: The Consortium’s Living Marine Resources Extension Specialist (LMRS) and Assistant to the Director for Administration worked together to develop a simple spreadsheet to individually track containerized units on an oyster farm. The farmer is able to easily determine which bags are due for servicing and what service is due. The customizable sheet allows the grower to sort by bag type, seed type or source, location, or service due. The LMRS presented and customized the tool for growers throughout the region. It continues to be refined for maximum utility.

Results: The Consortium’s LMRS was invited to present the inventory management tool to 20 beginning oyster farmers and oyster-farming trainees at the Wakulla Environmental Institute in Florida. In addition, five growers reached out from South Carolina, North Carolina, Louisiana, and Alabama to have the tool customized to their farm’s specific needs. It was also shared with a company creating a mobile application for oyster farm inventory management to aid in developing their tool. Growers who have adopted the system report it has saved them time and increased their confidence that containerized units are serviced on time, which has resulted in improved survival and growth rates of the animals and greater work efficiency.

Recap: S.C. Sea Grant Consortium improved upon an oyster farm inventory management tool which attracted interest from throughout the South Atlantic and Gulf region and increased efficiency, survival rates, and confidence for early adopters.

ACCOMPLISHMENTS

S.C. Sea Grant Consortium-led Effort Results in Synchronized Deployment of Oyster Farming Experiment Throughout South Atlantic and Gulf Region

Julie Davis, S.C. Sea Grant Consortium

A Consortium-led effort to examine biofouling control practices in the South Atlantic and Gulf Coast states was initiated in 2017 with funding provided by the Southern Regional Aquaculture Center (SRAC). The Consortium’s Living Marine Resources Specialist coordinated shipment and construction of 84 cages and 504 bags for the study and production of 75,000 seed for the study. Twelve cages were deployed in each of seven states (LA, MS, AL, FL, GA, SC, NC), and seed was deployed in each state within two weeks of each other. Industry partners in each state will execute the fouling control regimes, and two graduate students (one on each coast) will perform quarterly biological monitoring. Project results as well as outreach materials will be produced during 2018.

S.C. Sea Grant Consortium and Partners Convene Seafood Summit for Over 100 Seafood Producers in South Carolina

Julie Davis, S.C. Sea Grant Consortium

The S.C. Sea Grant Consortium was successful in acquiring funding from the National Sea Grant Program Office to support the S.C. Seafood Summit. The S.C. Seafood Summit had been held in the past, hosted by the S.C. Seafood Alliance, but had been in a hiatus due to lack of support. The Consortium partnered with the Alliance and hosted 116 seafood producers, resource managers, distributors, and chefs at James Island County Park on March 17, 2017. The State Assistant Commissioner of Agriculture provided



opening remarks. The program included “state-of-the-resource” updates from resource managers, panel discussions on marketing and how to form a seafood association, as well as a report out of the Consortium’s previous work to identify and assess issues and priorities for maintaining, preserving, and enhancing traditional working waterfronts.

South Carolina Aquaculture Producer Participates in a Sea Grant Association Capitol Hill Aquaculture Briefing in Washington, DC before Congressional and Agency Staff

Frank Roberts, Lady’s Island Oyster; Julie Davis, and M. Richard DeVoe, S.C. Sea Grant Consortium

The owner of a Beaufort County oyster company explained at a Capitol Hill briefing Tuesday how the S.C. Sea Grant Consortium helped spark growth in shellfish aquaculture in the state. Frank Roberts of Lady’s Island Oyster joined aquaculturists from California, Maine, Michigan and Mississippi on a Sea Grant Association panel entitled “Aquaculture in the United States: Enhancing Growth of the Domestic Industry.” The briefing was sponsored by Sen. Roger Wicker, a Republican from Mississippi, and Sen. Lisa Murkowski, a Republican from Alaska. In South Carolina, Roberts is among the growing number of oyster culturists who has benefited from the Consortium’s investments in research and technical education. Roberts stepped up to meet the demands of this growing industry by starting a hatchery. Roberts said after three years of building his seed line, he has orders for nearly three million seed in 2017. And now the state has 16 oyster growers, with 10 more seeking permits.

S.C. Sea Grant Consortium Scientists Examine Impacts of Abundance on Genetic Diversity in Black Sea Bass

Tanya Darden, Mike Denson, Kimberly Kanapeckas, and Erin Weeks, South Carolina Department of Natural Resources

The exploitation of reef fishes off the southeastern U.S. coast by commercial and recreational fishermen has increased dramatically since the early 1970s. The traditional method of determining population health is through stock assessments, while a complementary, though much less used, method is to evaluate the genetic diversity of the population. Studies on a variety of marine fish species in recent years have provided evidence that a reduction in population size diminishes genetic diversity, resulting in serious negative implications for a stock’s long-term sustainability and ability to recover from overfishing. By tracking temporal changes in effective population sizes and other measures of genetic diversity, it is possible to generate population data that can independently corroborate (or refute) trends seen in a stock assessment and reveal additional vital characteristics of the population that are important for conservation and management. The target reef species, black sea bass, has experienced overfishing and, under a rebuilding plan, has completely recovered, providing an excellent opportunity to explore patterns of genetic changes in overfished populations. S.C. Sea Grant Consortium researchers at the S.C. Department of Natural Resources-Marine Resources Research Institute are testing whether genetic diversity changes occur in populations as abundance decreases (overfishing) and increases (recovery). 850 historic and contemporary genetic samples have been organized, genomic DNA from all samples collected, and a genetic marker panel of seven microsatellites for black sea bass is under development. Results from the project have the potential to provide a genetic health assessment of current recovered black sea bass and a better understanding of the influence of overfishing on the genetic health and sustainability of this economically and recreationally important reef fish species.