

**Report to North Carolina's Fiscal Research Division and
House and Senate Appropriations Committees on
Agriculture, Natural and Economic Resources**



Oyster Research and Restoration Activities

March 1, 2024

Division of Marine Fisheries

**NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY**

Pursuant to S.L. 2017-57, Sec. 13.12

Oyster Research and Restoration 2024 Annual Legislative Report

University of North Carolina Wilmington *Oyster Broodstock Development Program/Shellfish Research Hatchery*

The NC General Assembly provides support for the UNCW Shellfish Research Hatchery (SRH) through the NCDEQ to support a selective breeding program for the development of fast-growing, resilient oyster lines that perform well in North Carolina waters. This year's funds were allocated to support personnel, expendable supplies and to obtain/maintain/replace equipment. We also continued to monitor disease in and the genetic diversity of the oyster lines and collect data on water quality. We upgraded our photobioreactor in late fall and the inaugural run resulted in double the cell counts of our previous system, and we were able to harvest algae for ~month. We are encouraged that this expansion of our algal production capacity will contribute to the overall productivity of the SRH.

The 2023 oyster production cycle began in March 2023. Twenty-one spawns were executed over the 13-week season, with 20 successful sets (~54,000,000 larvae, a ~79% increase over 2022). Support to the industry and research community continued with over 1,000,000 seed oysters and 2 million larvae being supplied by the SRH. Additionally, 62,000 seed scallops and over 500,000 clam seed were provided to the industry in 2023. In addition to the core breeding program, we continue to work with colleagues at NCSU and UNC-CH on the recurring mortality that has troubled the industry in recent years. We have provided sentinel oysters and have conducted our own sentinel deployments in southeastern estuaries to get a better understanding of the breadth and severity of the problem. We also have produced two sets of oysters targeting this mortality problem. The first set (3 lines) involved the survivors of the 2022 mortality event in Bogue and Core Sounds. By comparing survival of the offspring of oysters that survived mortality events to those derived from oysters not experiencing mortality, we can test whether we can breed for increased resilience to the causative agent (currently unknown, but under investigation). The second set (5 lines) are focused on the question of whether hatchery propagation inadvertently results in less resilient oysters that are more vulnerable to pathogens when deployed onto farms. We will do this by comparing the survival of oysters with extensive hatchery histories with those with no history of hatchery propagation. These lines are currently on the UNCW farm, and we expect to deploy them broadly in March. This research is being supported by NC Policy Collaboratory.

Preparations for the 2024 production season are underway. We have ~1,400 oysters conditioning with the expectation that spawning will start mid-March. The even year lines that will be spawned in 2024 were, for the most part, initiated in 2012. These 2022 oysters are 19-36% larger than their 2012 ancestors and a significant proportion (~82.4%) of oysters in these selected lines reach market size (~3in) in 18 months. We anticipate continuing our experiments (initiated in 2023) using epinephrine to set oysters without substrate and chemical production of triploids as a pathway to a pure North Carolina line of tetraploids, something that has been sought by the industry for more than a decade.

N.C. Division of Marine Fisheries

Restoration Activities

Cultch Planting

In fiscal year 2023-2024, the net appropriation for cultch planting is \$798,054, all of which is recurring. The division typically purchases shell throughout the year and marl in February, thus some of the expenditures for this fiscal year have not yet been incurred. By the end of the fiscal year, the division estimates purchasing a grand total of 17,300 bushels of shell at an estimated cost of \$74,363.61. As of January 26, 2024, the division had purchased 4,857.70 bushels of oyster shells at a total cost of \$21,072.03, including transportation. To supplement purchased shell, the division anticipates purchasing approximately 329,333 bushels of marine limestone marl for cultch planting at total estimated cost of \$783,600. The combined estimated cost of cultch planting materials (shell and limestone) for FY 23-24 is \$804,672.03. The cost of diesel fuel as well as other goods and services related to marine operations have increased substantially over previous fiscal years. Therefore, as compared to previous years, a larger proportion of annual appropriations for shellfish rehabilitation will be budgeted to account for these increases. Supplementary funding will be provided by unobligated Oyster Sanctuary program appropriations, as that program is a component of overall shellfish rehabilitation efforts.

In addition to funding provided for cultch planting, the general assembly provided an additional recurring annual appropriation of \$250,000 to support two FTEs and operating costs for the RV Oyster Creek. As of January 26, 2024, candidates for both positions have been recommended for hire, pending approval. The remaining funds will be used to directly support vessel operations.

Oyster Sanctuaries

In fiscal year 2023-2024, the revised net appropriation for the Jean Preston Oyster Sanctuary Network is \$850,000, all of which is recurring. This FY, the Department of Environmental Quality and Division of Marine Fisheries entered a new three-year partnership with the North Carolina Coastal Federation to construct two new oyster sanctuaries. To fulfill the obligations of this partnership, the Division is prepared to enter a contract to purchase and deliver 13,000 tons of Class A granite rock at a total cost of \$767,000 in the current FY. Additional material purchases will be made at that level in FY 24-25 and FY 25-26. Remaining appropriated funds will be used to support shellfish rehabilitation objectives, including program operations, reef construction materials, material deployments, and equipment replacement and repairs.

Also under the aforementioned partnership, the North Carolina Coastal Federation will reimburse the Division for expenses to support the project, up to \$900,000 total over three years. On January 25, 2024, the division requested reimbursement for \$234,211.40 for project-related expenses in quarters 1 and 2, including heavy equipment acquisition and stockpile site infrastructure. Anticipated additional reimbursable expenses for this FY may include fuel, temporary staff, stockpile site needs, and support for equipment, up to an estimated \$50,000 for quarters 3 and 4.