

Oyster Research and Restoration 2020 Annual Legislative Report

University of North Carolina Wilmington

Oyster Brood Stock Development Program/Shellfish Research Hatchery

In 2019/20, the NC General Assembly provided \$500,000 to the Department of Environmental Quality to support operations at the UNCW Shellfish Research Hatchery (SRH). The hatchery continues to use these funds to expand and strengthen its selective breeding program with the goal of developing lines of oysters that perform well (fast growth, high survival) in North Carolina waters. The 2019/2020 funds were allocated to support personnel (2 positions not yet filled, 2 full time technicians, 8 part-time student workers; 57%), expendable supplies (6%) and to obtain/replace equipment (20%). Additional funds have been budgeted for the continued monitoring of disease, genetics and water quality, system maintenance and operational support. We anticipate the carry over to be larger than previous years due to the ongoing challenges that are a consequence of Hurricanes Florence, Dorian and Covid-19.

The 2019 production cycle began early (in January) with the spawning of the remaining 2018 broodstock in an effort to offset the losses experienced as a result of Hurricane Florence. Successful spawns decreased from 25 in 2018 to 17 in 2019, due to a lower number of suitable broodstock (consequence of Hurricane Florence) and only a single successful triploid spawn (3 attempts). Support to the industry and research in 2019 continued with over 350,000 seed (129,000 in 2018) and 5.5 million larvae (8.2 million in 2018) being provided by the SRH. Additionally, over 150,000 seed scallops and clams were provided to the shellfish community. A significant portion of the 2019 broodstock did not reproduce due to the presence of a pathogen (larval trematode) that interferes with reproductive development, rendering the oysters sterile. Infection rate in 2018 averaged 4% while in 2019 the average was 20% and in some groups the infection rates were over 40%. The elevation in infection may be related to the aftermath of Hurricane Florence and research is ongoing to determine whether the high rates of infection will be a chronic problem. The SRH breeding program and our ability to fulfill our mission was again compromised significantly by an early September hurricane (Dorian). Efforts to mitigate storm-related losses this time took the form of putting a portion of the most valuable resources under mild refrigeration. Our strategy was partially successful. Oysters under refrigeration suffered high mortality, but because only a small portion (~8.5%) of total inventory was affected the overall mortality following Dorian was much lower than after Florence. We continue to learn from these events and are working to develop best practices for protecting shellfish resources from hurricane impacts. The hatchery infrastructure again was not impacted.

Preparations for the 2020 production season began in January, with fifteen hundred oysters from 5 genetic lines being brought in for conditioning. Three of the lines are the oldest of the SRH's selected lines and the 2018 oysters are 8-19% larger at 18 months of age after 3 generations of breeding despite being impacted by two hurricanes. Spawning was scheduled to start in mid-March. Because of the labor-intensive nature of spawning and larval production, and current guidelines for social distancing and stay-at-home policies due to Covid-19, the spawning season was not started and it is unclear when research activities will again be possible. Strategies are

under development with the goal of minimizing the impacts of this interruption on the breeding program's progress towards breeding a better performing oyster for the aquaculture industry.

N.C. Division of Marine Fisheries

Restoration Activities

Cultch Planting

In Fiscal Year 2019-2020, the net appropriation for cultch planting is \$798,054, with \$157,542 of that as reoccurring funds. 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. As of March 1, 2020, the division had purchased 32,358 bushels of oyster shells at a total cost of \$80,738, including transportation. The division had arranged to purchase and transport an estimated 47,000 bushels of shell which had not yet been delivered, at an estimated cost of \$117,076, bringing the total number of oyster shells purchased by the division to 79,358 bushels of shell at an estimated cost of \$197,814. To supplement purchased shell, the division is currently under contract to receive approximately 226,000 bushels of marine limestone marl for cultch planting at a total cost of \$410,850. As of March 1, 2020, the division had received approximately 120,000 bushels at a cost of \$212,850. The remaining 106,000 bushels of limestone are scheduled for delivery at a cost of \$198,000. The remaining funds will be used to support program operations, including material deployments, and other shellfish rehabilitation objectives.

In addition, the division has contracted to refit one of its deployment vessels, RV Cape Fear, following damages from Hurricane Florence. The vessel refit will be paid for primarily by shellfish rehabilitation vessel appropriations. The total estimated project cost is \$94,735, however a portion of this refit was performed in the previous fiscal year. In Fiscal Year 2019-2020, as of February 14, 2020, the project had incurred \$7,684.55, with an anticipated \$43,185.00 remaining before completing the project. Total estimated cost for this project in FY 19-20 is \$50,569.55.

Oyster Sanctuaries

In Fiscal Year 2019-2020, the net appropriation for the Oyster Sanctuary program is \$500,000 all of which is reoccurring. Using these funds, the Oyster Sanctuary program has elected to expand the recently completed Swan Island Sanctuary. In previous years, the division held a partnership with the North Carolina Coastal Federation, splitting material acquisition and deployment costs respectively. In this fiscal year, that partnership does not exist so the division must bear all costs. As of March 1, 2020, the division had purchased and delivered 10,033.58 tons of Class B marine limestone marl at a total cost of \$438,980.10. Also as of March 1, the division was preparing to award a contract for reef deployment at a total cost of \$273,900. Additional funding to support the Swan Island expansion was provided by the shellfish rehabilitation cultch planting budget.