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QUANTIFYING EFFECTS OF CULTURE METHODS ON QUALITY AND CONSISTENCY OF EASTERN OYSTER, *Crassostrea virginica*

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Despite a traditional focus on effects of culture methods on growth and survival, oyster farmers have a number of production methods and techniques to improve the quality and consistency of their product, though these often are not well-documented in the scientific literature. Here we present the preliminary results of a two-year field test initiated in summer 2015 in Mississippi Sound (AL, USA) to evaluate the effects of three culture methods upon eastern oyster, *Crassostrea virginica*, quality metrics and consistency: selection of ploidy (triploid or diploid), desiccation regime to control bio-fouling, and stocking density. Quality is defined in terms of measurable attributes including cup ratio, fan ratio, cleanliness (degree of fouling), condition index, percent infestation by mud worms, body/meat condition and shell fullness. The last two metrics will be determined using the standardized methodology described in the Australian Seafood Cooperative Research Center's Pacific Oyster Grading System, with standards adapted for the eastern oyster. For each response variable, the effects of each factor upon the coefficient of variation (as a measure of the consistency of each measure of quality) will be reported. Finally, the importance of these quality attributes to consumers will be discussed.

EASTERN OYSTER LARVAE *Crassostrea virginica* REMOTE SET PRACTICE IN DELAWARE

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Shellfish aquaculture has become a new hope for the coastal community in Delaware, with the approval of new regulations allowing commercial shellfish aquaculture practices. The past 10 years leading up to these regulations, Delaware Inland Bays have been home to a small community-based oyster mitigation program, which biennially distributes oyster spat on shell to volunteer citizen growers. The use of cost-effective culture techniques to culture oysters for restoration has developed into an integral part of the ecological restoration efforts. Spat on shell was provided to volunteer growers through a 'remote set', which allowed larvae to settle on cultch in a closed tank system. Since 2009, simple alterations in choices of shell containment gear were made to try to increase settling efficiency rate and spat set. Shell containment gears included common diamond plastic mesh bags (2009, 2011), wire baskets (2011), and plastic aquaculture trays (2013). Setting efficiency was estimated at 6.25%, 8.98%, and 13.28% in the respective 2009, 2011, and 2013 remote sets. For small scale growers, the stacked aquaculture trays had the highest set efficiency in our program and proved advantageous for several reasons, including: reduced handling time, uniform shell distribution within tanks, and easy-to-clean detritus between shell layers. Determining the remote set process success is often neglected, yet gathering this critical information will inform managers of the approximate number of spat distributed in small scale programs and commercial scale aquaculture operation alike. Further spat efficiency will be monitored for all three methods during summer 2015 to confirm our findings.

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PREVENTATIVE TREATMENTS FOR BLISTER WORM (A PEST SPECIES) IN THE EASTERN OYSTER

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The polychaete *Polydora websteri*, or “blister worm,” burrows into shells of several commercially important shellfish species, including those of the Eastern oyster *Crassostrea virginica*. Oysters served on the half shell are not only less attractive when the worms are present, but mud and detritus can leak out during shucking and create off-flavors, potentially damaging the reputation of a farm. Various kinds of chemical, fresh water, and brine baths have been used to treat blister worm, but none has reliably eliminated worms in established burrows. Additionally, many of these methods are labor intensive and complex. This research explores whether periodic air-drying and pressure washing can reduce the settlement of larval *P. websteri* and block blister worm infestations before they occur. Oysters were held in surface cages that were air-dried for 4 hr or 24 hr every week or in cages that were air-dried and pressure washed. A set of oysters was sampled from each cage bimonthly from May through October 2014, and examined for the presence of newly constructed worm burrows. We examine the differences between the various treatments.

IN-SITU STUDY OF THE FLOATING RAFT SYSTEM FOR OYSTER AQUACULTURE

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Oysters not only are delicious but also enriched with nutrition; thus, they have being loved for generations. The main oyster aquaculture sites spread along the southwestern coastal regions of Taiwan. The oyster rafts made by bamboo and Styrofoam have about 2-year life span. They are frequently abandoned in the coastal areas and cause serious environmental problem. Thus this project intends to investigate the capability of a set of oyster raft against current and waves and improve its durability in the field. The numerical model is established based on the lumped mass method as well as the modified Morison equation by calculating the drag and inertia forces on each element. Then the 4th-order Runge-Kutta (RK4) method is used as a time marching scheme to predict the displacement and velocity of nodes for the next time step. The Modified JONSWAP spectrum is used in this study. Two instruments such as ADCP (Acoustic Doppler Current Profiler) and tension gauge are deployed in the field to measure the wave/current data as well as the mooring line tension. The numerical results of mooring tension show good agreement with the measurements of field test. With this validation, a suitable numerical model was established and is ready for applying to any in-situ raft system for planning or design purposes.

SANITARY QUALITY OF OYSTERS (*Crassostrea iredalei*) PRODUCED IN SELECTED AREAS IN PANAY, WESTERN VISAYAS, PHILIPPINES

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Oyster farming is an important source of livelihood in many coastal communities in the Philippines. The sanitary quality of oysters mirror the conditions of their culture environment, hence monitoring of the production areas is essential to ensure safety to human consumption. This study evaluated the load of *Escherichia coli*, *Salmonella*, *Vibrio cholerae* and *V. parahaemolyticus* in oysters' meat and fecal coliforms of the rearing water in selected areas in Roxas City and municipality of Ivisan, Capiz province, Panay, Western Visayas, Philippines over a period of 10 months. Sampling sites include Brgy. Culajao (3 sampling stations) and Brgy. Cagay (5) in Roxas City, respectively, and Brgy. Cabugao (4) in Ivisan. Higher coliform counts were noted in the water samples collected from all stations in Brgy. Culajao and Brgy. Cagay during the warmest dry month (May) with counts ranging from 33 to 920 MPN/ 100 ml while in Brgy. Cabugao, coliform counts were within the acceptable range (<2 to 13 MPN/ ml) set by the US Shellfish Sanitation Program Shellfish Harvesting Area Classification Criteria. Coliform counts obtained for all sampling stations from June to January ranged from <2 to 79 MPN/100 ml. Similarly, *E. coli* counts in oysters' meat were higher during the warm dry months, i.e. May and June, with counts ranging from 280 to >2000 MPN/ 100 ml. Additionally, *E. coli* counts in oysters' meat during the rainy months (August to October) were comparable with those obtained in dry months. *V. cholerae* was not detected in any of the oyster samples examined whilst *V. parahaemolyticus* count was within the acceptable range. On the contrary, *Salmonella* was erratically detected in oysters collected from all sampling stations. Our current data indicate that oysters harvested from these areas are safe for human consumption provided that they undergo proper relaying and depuration procedures. In addition, because stake method has been predominantly practiced in these areas, organic matter and sulfur levels in the sediments of these sites examined were apparently high, suggesting the need to shift from the current to an environment friendly method such as raft or longline.