The Effect of Ocean Acidification on Native Oyster Reproduction and Larval Development

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The native Olympic Oyster, Ostrea lurida, once populated the pays on the Pacific Coast. During the California Gold Rush, these oysters were harvested to the extent that they disappeared from most bays. Current oyster farming has replaced them with the larger Pacific oyster, Crassostrea gigas, which is bred in hatcheries then is released to be planted in the bays. Olympic oysters are brooding oysters, which calls for raising their larvae inside of their gonads and releasing them as they reach the spat phase. This contrasts sharply with the Pacific oyster, which are broadcast spawners, requiring larvae to survive as veliger in the open seawater. Veliger larva development is stymied as seawater conditions become more acidic due to ocean acidification. Oyster hatcheries are having to add Calcium Oxide and other chemicals into their natural waters to create conditions that allow good larval development. This project investigates the breeding and rearing successes of Olympic oysters in increasingly acidic conditions in seawater. Carbon Dioxide was bubbled into tanks to create pH balances of 7.0 and 7.5. The breeding and rearing success of these oysters were compared to oysters bred and reared in a tank of about 8.0, which is a healthy oyster environment. Oysters in all tanks bred and reared offspring, though those in more acidic waters tended to grow slower once they had set. Olympic oysters appear to be more resilient than Pacific oysters when surviving through ocean acidification.

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Fourth Award of $500