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Woods Hole Sea Grant: 1994-1996 Projects

Development of Laboratory and Field-Based Techniques for the Detection of Illegally Altered Lobsters

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The illegal practice of dipping female, "berried" lobsters in chlorine to remove their eggs has, according to recent reports, become increasingly widespread within the fishery. Up to now, a staining test of the swimmerets that can detect animals whose eggs have been removed by scrubbing has been successful in exposing and limiting the illegal use of berried females. The process of chlorine dipping, however, avoids detection by this method. WHOI Sea Grant is supporting the research and development of a field-based test that would be capable of detecting chlorine-dipped animals. The overall objective is to provide a comprehensive and legally sound framework for the interpretation of guilt or innocence--by law enforcement personnel--of those who would illegally remove berried females from the fishery. Once a testing mechanism has been established, a technical manual will be prepared outlining techniques, procedures and interpretations for use by the regulating agencies who monitor the lobster fishery.

Toxic Red Tides in Massachusetts Bay: Nearshore Processes and Transfer of Toxins Through the Pelagic Food Web

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For the past several years, WHOI Sea Grant has supported research on toxic dinoflagellate blooms. Most recently, efforts have focused on understanding the dynamics of toxic dinoflagellate blooms in Massachusetts Bay, focusing on management issues that have arisen during the controversial construction of a new outfall for sewage effluent. This area experiences recurrent episodes of Paralytic Shellfish Poisoning (PSP) and is poorly studied with respect to bloom dynamics of toxic Alexandrium species. Also, it is "upstream" from important offshore shellfish resources on Georges Bank that are now subject to PSP toxicity, and "downstream" from the outfall that will discharge up to 1.2 billion gallons per day of effluent beginning in 1995 or 1996. Current research will provide data both before and after sewage effluent is diverted from Boston Harbor and is instead released from the controversial outfall nine miles offshore in Massachusetts Bay. Also, the manner in which PSP toxins accumulate in different zooplankton size fractions and fish known to be preferred food for humpback and right whales that feed in the Bay will be investigated. Knowledge gained from this study will help assess possible effects of the change in effluent discharge within the Bay with respect to Alexandrium tamarense bloom dynamics and the transfer of PSP toxins through the food chain.

Biomarkers of Reproductive Damage in Coastal Shellfish Populations from Contaminated Habitats

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The ecological effects of "in place" toxins is a problem for many coastal ecosystems as sediment reservoirs of contaminants such as PCBs and PAHs may be a long-term source even after significant reduction in point-source inputs has been achieved. This Sea Grant-supported study will provide quantitative assessments on the effects of petroleum hydrocarbons on population processes of a valuable commercial resource, the soft shell clam Mya arenaria. Through field collections and laboratory analyses, this study will allow predictions of changes in population parameters of this species with improvements in water and sediment quality. Also, this study will apply data to a demographic model assessing the interactive effects of contaminant exposure and other environmental variables on population dynamics of soft shell clam populations.

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