

Physical & Chemical Environment

Research Synopsis

Exposure of Lobsters to the Varied Chemical and Biological Environment of Long Island Sound

Anthony Paulson, NOAA Fisheries, Howard Laboratory, Sandy Hook, NJ; Ashok Deshpande, NOAA Fisheries, Howard Laboratory, Sandy Hook, NJ; Co-investigator: Andrew F. J. Draxler, NOAA Fisheries, Howard Laboratory, Sandy Hook, NJ

Paulson, Deshpande, and Draxler will document lobster responses to the chemical and biological conditions of Long Island Sound in an attempt to uncover any direct relationship between lobster health and their environment. The experiment will examine the health of lobsters under ambient Long Island Sound conditions during the time period when lobsters are believed to be most susceptible to these conditions. Lobsters taken from outside the affected areas will be evaluated, and then placed in cages at six sites around western and central Long Island Sound. The sites will be chosen to span a variety of environmental conditions. Scientists will monitor the cages for four weeks, and routinely recover lobsters from each site to evaluate them for changes that may be the result of exposure to naturally occurring biogeochemicals (such as ammonia and sulfide) as well as contaminants. Lobster health will be assessed by bacterial determinations, and physiological condition.

Administrator: NOAA National Marine Fisheries Service

Environmental Change in LIS in the Recent Past

Johan Varekamp, Wesleyan University, Connecticut, et al.

This project is building on an ongoing study, where the researchers will evaluate sediment cores to develop a detailed time-line that summarize the environmental changes in Long Island Sound over the last decade. Evaluation of sediment will generate information on water temperatures, organisms within the food chain, Dissolved Oxygen, pollution and salinity. This study will help ascertain whether the lobster die-off is more strongly linked to global climate change or local contamination with pollutants or nutrients.

Administrator: Connecticut Department of Environmental Protection



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Long Island Sound Lobster Research Initiative is a research collaboration of National Oceanic Atmosphere Administration's (NOAA) National Marine Fisheries Service, Connecticut Department of Environmental Protection, and the Sea Grant Programs in New York and Connecticut.



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Relationship Between American Lobster Mortality in LIS and Prevailing Water Column Conditions

Robert E. Wilson, Marine Sciences Research Center, Stony Brook University, Stony Brook, New York. R. Lawrence Swanson, Marine Sciences Research Center, Stony Brook University. Duane E. Waliser, Marine Sciences Research Center, Stony Brook University.

Wilson, Swanson and Waliser will examine water quality factors such as temperature, salinity, dissolved oxygen, and pollutants with respect to the lobster mortalities. The lobsters are vulnerable to stress and sometimes die when exposed to unfavorable environmental conditions, especially during the molt cycle when they are more vulnerable. Environmental factors can act singularly or in combination to cause sublethal stress that increases sensitivity to events that would normally be tolerated. Significantly elevated bottom temperatures during the summer and fall of 1999 led the researchers to focus primarily on co-variations in temperature and dissolved oxygen.

Administrator: New York Sea Grant

Effects of Temperature and Body Size on Metabolic Stress in LIS Lobsters

Glenn Lopez, Marine Sciences Research Center, Stony Brook University, Stony Brook, New York. Robert M. Cerrato, Marine Sciences Research Center, Stony Brook University

Lopez and Cerrato will try to determine how high summer temperatures in Long Island Sound's bottom waters may have negative impacts on lobsters, and if larger lobsters are more susceptible to temperature stress than smaller ones. The results of their lab studies may be used to predict the effects of long-term changes in summer temperatures on the health of Long Island Sound lobster population. The study will shed light on normal patterns of lobster stress and mortality as well as the extraordinary mortality event of fall 1999.

Administrator: New York Sea Grant

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