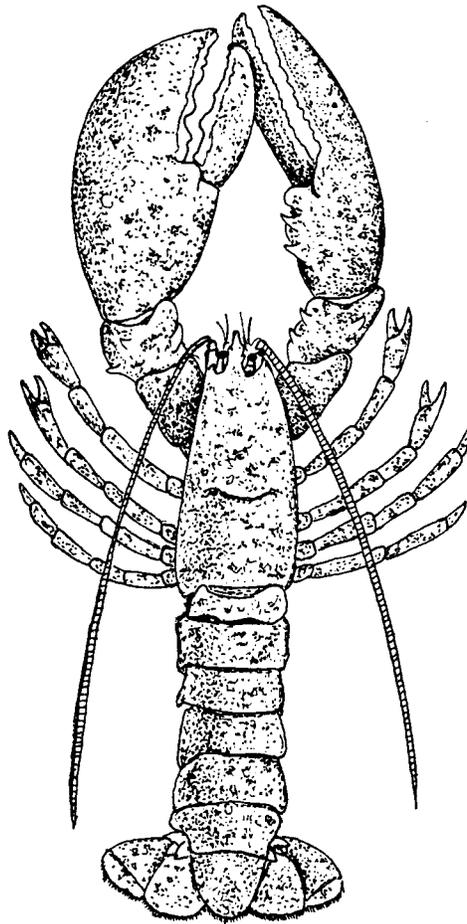


The Status of the Long Island Sound Lobster Resource



Fishery-Dependent Monitoring of the Long Island Sound Lobster Fishery

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The New York State Department of Environmental Conservation (NYS DEC) and the Connecticut Department of Environmental Protection (CT DEP) monitor the lobster harvest in each state through fishermen's logbooks, annual recall surveys, and at sea observer programs. This information shows that there had been an increase in the annual harvest of lobsters each year from the late 1980s through the late 1990s. This increase was correlated with an increase in lobster fishing effort as measured by the number of traps fished, as well as an increase in the abundance of lobsters as measured by the CT DEP Long Island Sound trawl survey. These trends were reversed around the time of the mortality event that affected Long Island Sound (LIS) lobsters and crabs in 1999. The recent harvest levels are approximately 30% of their pre-die-off peak.

By mid-winter of 2000, observations and reports of dead lobsters had decreased to background levels. The observations and reports of dead lobsters increased again in the late summer and fall of 2001 and 2002. The event in 2002 began earlier than in 1999 (mid-August), occurred Sound wide, and was restricted to lobsters (crabs seemed unaffected).

Despite a declining number of licensed commercial lobstermen and reductions in the number of permitted traps, the Long Island Sound lobster fishery remains over capitalized. Although exploitation rate is down, the combined natural and fishing mortality rate is up. The size distribution of lobsters in the Long Island Sound remains truncated at the first molt increment above legal size. Therefore, the number of lobsters available for harvest is directly dependent upon the number of lobsters molting into legal size each season.

Shell disease symptoms have remained fairly uncommon in the western LIS and are more common further east in the Sound. October and November of 2002 had the highest prevalence (15-22%) of shell disease in the eastern half of the Sound for the three-year time series. Shell disease symptoms continue to be prevalent in about 40% of the total catch east of the Connecticut River. Although symptoms in this area were less prevalent in 2002 than in 2001, the symptoms were more severe in 2002. Overall symptoms prevalence is lower during the molting seasons. Shell disease symptoms were also common in samples from the Atlantic Ocean about 8 miles off Jones Beach. The low incidence of symptoms in the WLIS suggests that there is little movement of infected lobsters from east to west. Minimal westward movement of lobsters is corroborated by results of more than two decades of tagging studies performed by Don Landers at Millstone Environmental Lab.

The global economic effects on demand in concert with strong lobster landings from down east Maine and parts of Canada have kept lobster prices fairly stable. Without high wholesale prices, much of the LIS lobster fishery became commercially nonviable in the fall of 2002 and many fishermen stopped fishing or hauled their traps very infrequently. In New York this resulted in a rapid closeout of a federal and state funded effort reduction program as fishermen were forced to divest from the industry.

The future of the Long Island Sound lobster fishery over the next several years does not look optimistic. The combination of declining abundance and truncated size distribution has reduced the potential annual reproductive output of the LIS lobster population. Evidence of limited westward migration in addition to a reduced stock size in much of southern New England suggests there will not be rapid immigration to the central and western Sound. Cyclic mortality surges in late summer and early fall over the past several years suggest environmental stressors continue to contribute to population declines. Increased time intervals between checking lobster trap gear because of poor catches could exacerbate existing lobster health problems. The fishery's reliance on first molt group lobsters restricts annual harvest to the number of animals molting to legal

size each year. Global economics and alternative sources of lobsters are likely to keep dockside lobster prices from increasing significantly. Region-wide over-capitalization, the high cost of doing business in coastal NY/CT communities, and the limited opportunities available in other commercial fisheries suggests that the Long Island Sound lobster industry will continue to be in economic distress over the next several years. The long-term viability of this industry is uncertain.

Fishery-Independent Monitoring of the Long Island Sound Lobster Fishery

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CT DEP monitors the status of important marine populations through a Long Island Sound Trawl Survey (LISTS) conducted in spring (April-June) and fall (September-October) every year since 1984. Indices of relative abundance for lobster catches rose dramatically from 1997 through 1999 and declined just as dramatically from 2000-2002. Although the 2002 spring index ranked 11th out of 19, the 2002 fall index is the lowest in the time series (19th).

CT DEP also initiated several studies in 2001 to investigate causes and consequences of a major die-off of lobsters in western Long Island Sound (LIS). Two studies meant to complement each other are a tagging program and a genetic analysis. As of January 1, 2003, a total of 7,888 lobsters have been tagged and released throughout the three basins of Long Island Sound (east, central, west). Preliminary movements have been calculated for recaptures during the first year at large. For the majority of recaptured lobsters, net movement was less than 1 kilometer. Few animals crossed from one basin to another or left the Sound. In order to examine long term differences among the Sound's lobsters, a genetic analysis was conducted by Dr. Joseph Crivello at UCONN, Storrs. Examination of DNA microsatellite markers of egg-bearing lobsters from the three LIS basins and offshore (Hudson Canyon) indicate that eastern and central LIS lobster populations are more genetically similar than offshore and western LIS populations. There were much larger levels of genetic difference between western LIS lobsters and other tested populations. These differences suggest that some unknown factors are limiting gene flow between the Sound and offshore, and between central and western LIS. If these preliminary findings remain consistent through the 3-year study, the implications are that (1) lobsters within Long Island Sound function as a distinct population; (2) lobsters within the Sound's western basin normally have little biological communication with the rest of the Sound; and (3) population rebuilding in the west following the die-off will have to occur primarily through enhanced local reproduction and survival rather than immigration from adjacent areas.