



Ask the lobster doc

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This column provides lobster health and handling information.

If you have questions or concerns, contact Cowan at (207) 832-8224 or e-mail <dcowan@lobsters.org>.

Density, temperature connection?

Observations during The Lobster Conservancy's ongoing Juvenile Lobster Monitoring Program (JLMP) have raised this question: Is lobster abundance correlated with temperature?

The JLMP has documented that postlarval abundance, which was relatively flat from 1993 to 2001, increased in 2002 and 2003 and showed even larger increases in 2004 and 2005. First-year lobsters show about a four-fold increase in abundance in recent years, and the abundance of older juveniles has increased over the first 13 years of the time series, though not by such great magnitude.

Temperature data from the Boothbay Harbor, ME time series collected by the

Maine Department of Marine Resources were used to plot mean monthly sea surface temperature. Mean monthly lobster densities are from the Lowell's Cove (Casco Bay, ME) time series.

Notice in the figure (below) that the temperature scale goes from 0° to 21°C while the scale for lobster densities ranges from 0 to 8 lobsters per square meter.

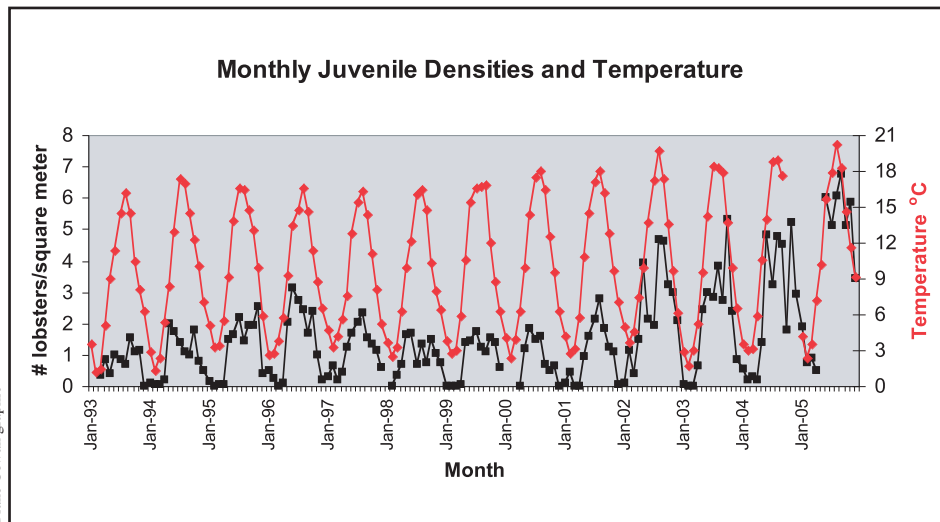
A strong seasonal cycle in temperature coincides with a strong seasonal cycle in lobster abundance in the intertidal zone such that higher lobster densities coincide with higher summer temperatures and lower lobster densities coincide with colder winter temperatures.

In general, the warmer the water, the more juvenile lobsters I find. Most

years, the ups and downs of lobster and temperature follow the same pattern, especially in recent years. Look at 2002-2005.

However, there's a potential catch. The warmest mean temperatures are getting dangerously high. If this increasing temperature trend continues, I expect to see a decline in lobster densities because it simply will become too hot for them to live in the lower intertidal zone.

What does it mean? In the next Ask the Lobster Doc column, I will examine how temperature correlates with each juvenile size class from postlarval settlement and first-year lobsters to older juveniles and explain what I think is going on. ■



Diane Cowan graphic

Temperature is in red and lobster densities in black. Missing data points reflect no data due to malfunction of temperature sensors and storms that prevented lobster sampling.