

American Lobster Settlement Collaborative

Update 2008 – A Growing Network

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This year saw further coast-wide expansion of US and Canadian collaboration, continuing the long-standing diver-based suction sampling and widening deployments of passive postlarval collectors. Just as we mark the 20th year of suction sampling in mid-coast Maine, New Hampshire has resumed sampling after a decade-long hiatus, filling a conspicuous gap in New England participation. Welcome back NH! The real geographic expansion, though, has been in the deployment of collectors in all the provinces of Atlantic Canada, including what is likely to be a one-time sampling effort in Newfoundland. This surpasses last year's effort which was already the largest synoptic view of lobster settlement ever conducted. While not likely to be sustained at this scale, prospects are good that some level of long-term monitoring will continue with collectors for some years to come, especially in Canada. This update reports the

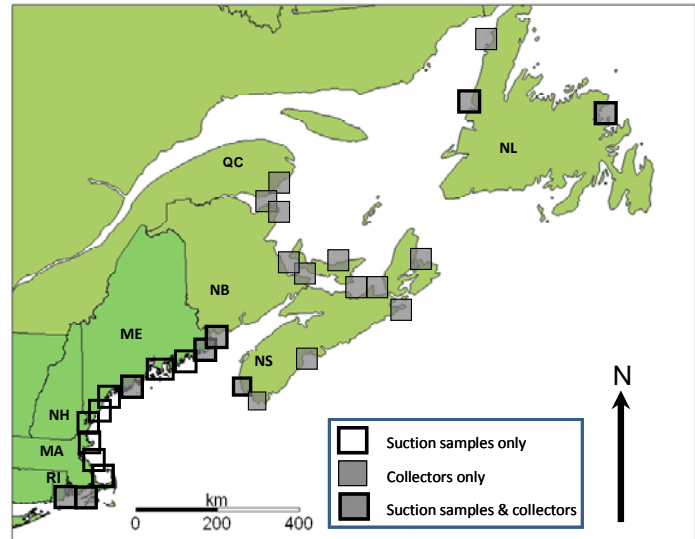


Figure 1. Sampling regions. Lobster settlement data were collected in 2008 either by suction sampling, passive collector, or both. Initiated in Maine and Rhode Island in 1989-90, annual suction sampling spans some 70 sites from RI to New Brunswick, with a single year effort in Newfoundland in 2008. Passive postlarval collectors have considerably added spatial coverage. Boxes surround sites used for regional averages presented in Figs. 2 and

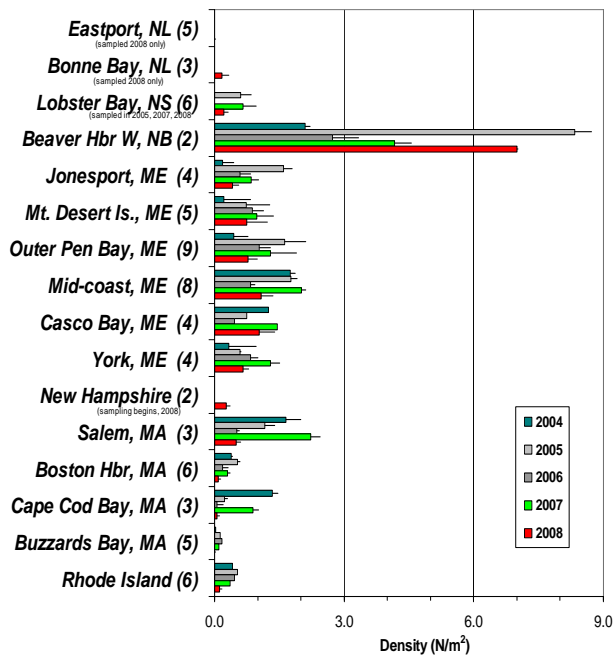


Figure 2. Suction sampling. Regional 5-year time series of average lobster settlement in New England and Atlantic Canada from 2004 to 2008. Number of sites sampled per region in parentheses.

2008 settlement patterns from the long term suction sampling, as well as the second, and in some places final, year of coast-wide and depth-wise collector deployment (Fig. 1).

• **2008 Suction Sampling:** The first-ever suction sampling in Newfoundland revealed barely detectable densities of young-of-year lobster at this northern extreme in the species' range (Fig. 2). Further south, from Lobster Bay, Nova Scotia to Rhode Island, where annual time series exist, 2008 was a poor year relative to 2007, some locations dropping by more than 50%. Beaver Harbor, New Brunswick, was the only exception with higher young-of-year densities compared to 2007. Southern New England is a region of particular concern. Rhode Island reported its lowest numbers in its 19-year record. Buzzards Bay's already low densities fell below detectable levels for the first time in its 15-year time series. Time will tell whether 2008 is an anomalous year or the beginning of a downward trend from a series of relatively strong years in New England since 2001.

• **Postlarval Collectors:** Our deployment of passive postlarval collectors expanded considerably from 2007 to 2008, with the second and last year of NOAA Northeast Consortium support for the New England deployment, and enlarged Canadian participation. The combined effort resulted in 1127 collectors deployed from Newfoundland to Rhode Island. From this large-scale perspective, the Gulf of Maine and southwest Gulf of St. Lawrence look to be the hot spots for settlement and older juveniles, with Newfoundland and eastern Nova Scotia more sparsely populated (Fig. 3). The general spatial agreement of high young-of-year densities with high older juvenile densities suggest regional differences in juvenile abundance, and perhaps fishery yields, are driven by the availability of settlers.

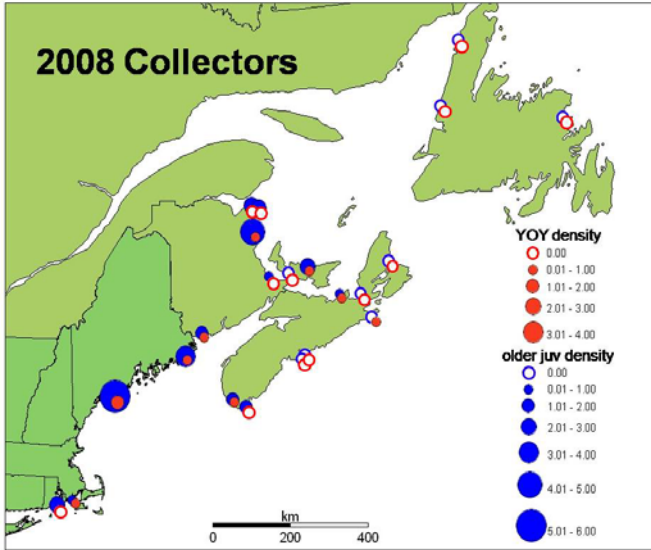


Figure 3. Collector data. Average densities of young-of-year (red) and older juvenile lobsters (blue) found in collectors deployed only at the shallow depth stratum (7-18 m) in 2008. Symbols represent a regional average of 1-3 sites with >10 collectors per site.

In each region 100 collectors were divided among three depths. Depth-wise patterns of settlement have been consistent over the two years in mirroring the degree of water column thermal stratification. That is, in summer-stratified southern New England and mid-coast Maine most settlement occurred in the shallowest depths, whereas in eastern Maine settlement spread more evenly over all depths down to more than 80 m (Fig. 4).

Taken together, the numbers of lobsters in collectors are strongly correlated with those in suction samples from the same site. As we continue with monitoring, it will be important to know how to calibrate our regional estimates of settlement strength by the two methods.

As we enter the 2009 season, we celebrate the 20th anniversary of the settlement index with a workshop in Boothbay Harbor on June 19-21, hosted by Bigelow Laboratory and Maine Department of Marine Resources, and convening collaborators up and down the coast. The aim is to take a critical look back at our accomplishments, and look ahead to prioritize monitoring and research opportunities the collaborative creates. Looming large is the need to think strategically about the funding challenges ahead to keep the time series going. For more information on the workshop contact Rick Wahle at rwahle@bigelow.org.

In New England for the second year we used collectors to evaluate depth-wise patterns of settlement in three regions of contrasting oceanography: southern New England shelf, central Gulf of Maine, and eastern Gulf of Maine (Fig. 4).

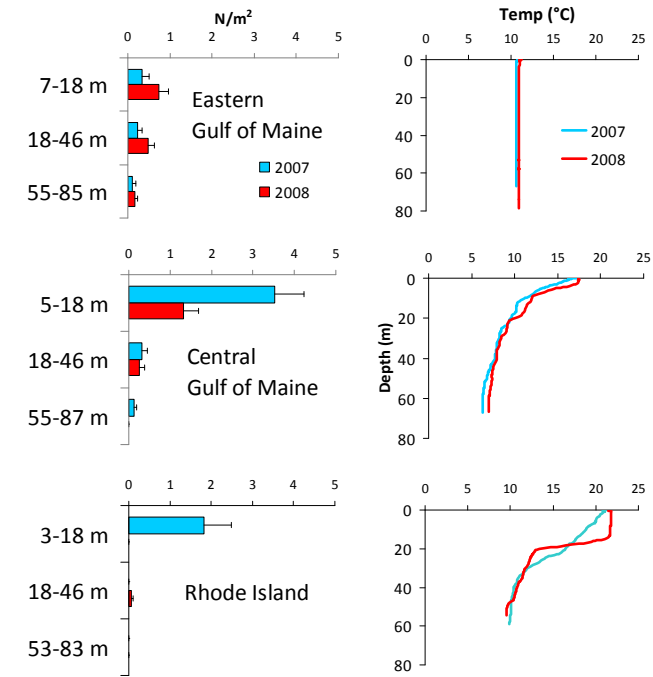


Figure 4. Lobster settlement by depth. Settlement densities in 2007 and 2008 at 3 depth strata in the eastern and central Gulf of Maine and Rhode Island (left panel), and typical temperature profiles in those regions (right panel).