

New England Lobster Settlement Index

Update 2007 – Widening Collaborations

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As the New England Lobster Settlement Index nears its 20th year, it finds itself amidst a widening collaboration, raising the prospect of a larger geographic scope and leading us to wonder if the name “New England” still applies. With the long-standing diver-based suction sampling going strong, passive postlarval collectors are adding to the effort. With support from NOAA’s Northeast Consortium to deploy collectors in New England, other US and Canadian collaborators have found the means to come on board and expand the coverage to span the lion’s share of the American lobster’s geographic range from Rhode Island to Newfoundland, if only for a few years. Collectors have also added a new dimension – depth – to the settlement picture, something not possible with the diver-based survey. This update reports the 2007 settlement

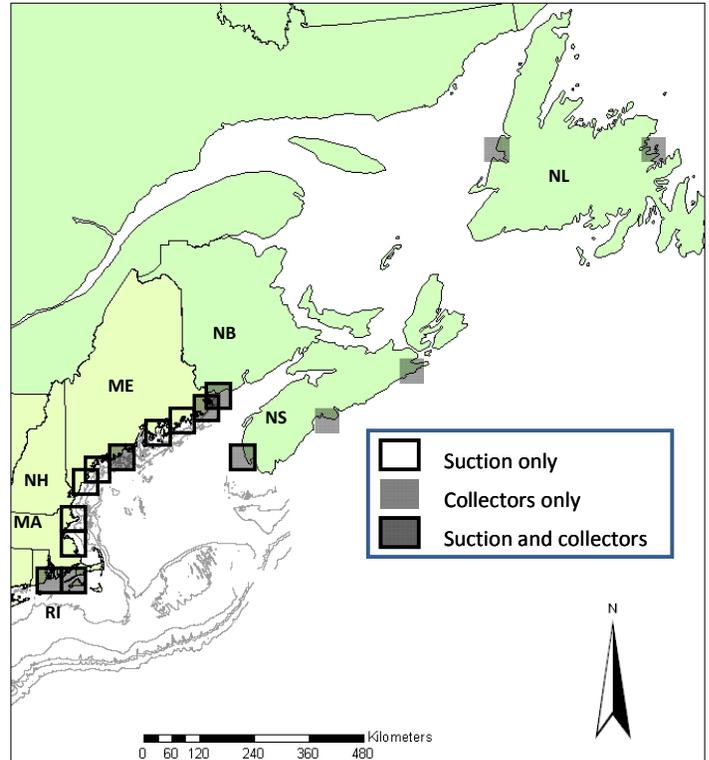


Figure 1. Sampling regions where lobster settlement data were collected in 2007 either by suction sampling, passive collector, or both. Initiated in Maine and Rhode Island in 1989-90, annual suction sampling spans some 65 sites from RI to New Brunswick. The addition of passive collectors to some of these, as well as new regions has considerably added spatial coverage. Boxes surround sites used for regional averages presented in Figs. 2, 3 and 4.

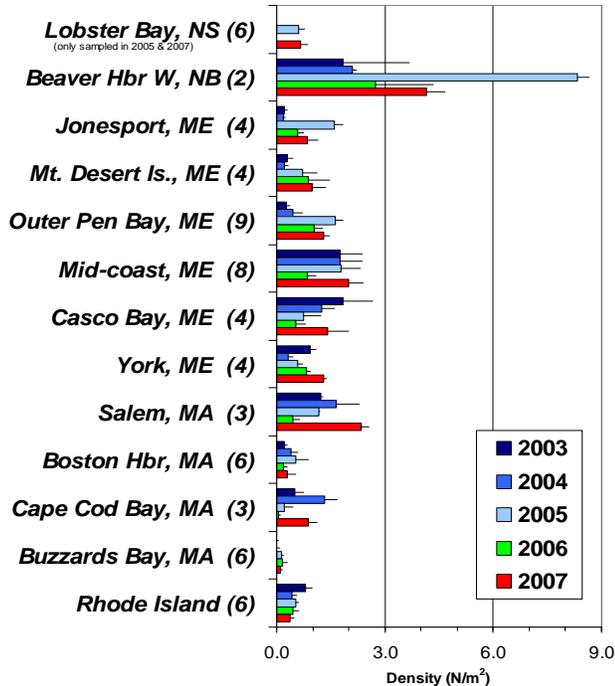


Figure 2. Suction sampling. Regional 5-year time series of average lobster settlement in New England, and southern New Brunswick and Nova Scotia from 2003 to 2007. Number of sites sampled per region in parentheses.

patterns from the long term suction sampling survey, as well as new results of the first widespread deployment of collectors.

• **2007 Suction Sampling:** In the Gulf of Maine, this year was strong across the board with all regions from Cape Cod to the Bay of Fundy generally showing better settlement than in 2006. South of the Cape, however, settlement was slightly below the previous year. This continues the string of robust years we’ve seen since 2001 throughout the Gulf of Maine, and a trend of increasing settlement in recent years from Penobscot Bay eastward. These trends may come as encouraging news to harvesters in Maine who saw a considerable drop in landings in 2007.

• **Postlarval Collectors Open New Windows:** In last year's update we described the successful test of a passive postlarval collector that could be used as an alternative to suction sampling to assess postlarval settlement where diving is not an option. Renewed support from NEC made possible an expanded two-year project in Maine and Rhode Island. The surge of interest from other groups brought participation from Massachusetts, three Canadian Provinces (Fig.1), and even Norway (not shown), more than doubling the effort of the core project. The combined effort represents the largest scale synoptic view of American lobster settlement in a single season ever completed. Settlement was detected as far north as Bonne Bay, Newfoundland (Fig. 3).

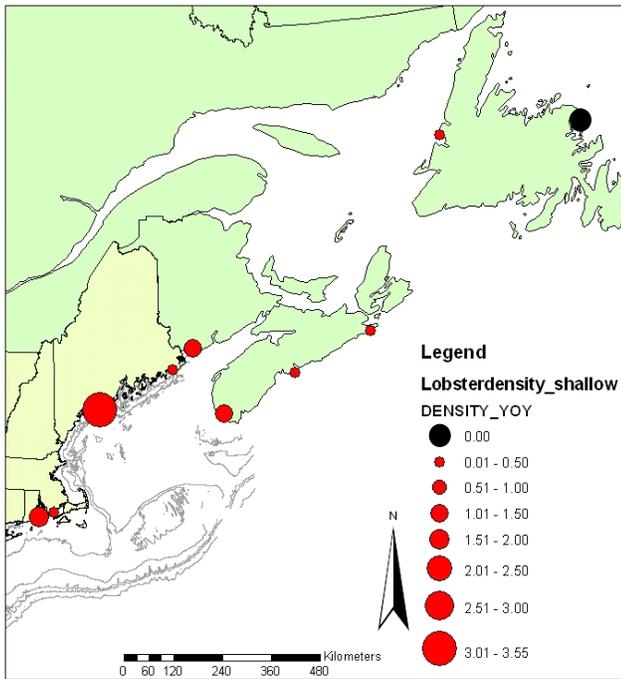


Figure 3. Collector data. Average densities of young-of-year lobsters found in collectors deployed only in the shallow depth stratum (7-18 m) in 2007. Circles represents a regional average of 1-3 sites with >10 collectors per site.

Rhode Island (Skip O'Leary), mid-coast Maine (Matt Parkhurst), and eastern Maine (Norbert Lemieux) each deployed 100 collectors divided among three depths. This deployment revealed a depthwise pattern of settlement and older juvenile lobsters that mirrored the degree of water column thermal stratification. In summer-stratified southern New England and mid-coast Maine most settlement occurred in the shallowest strata, whereas in eastern Maine settlement spread more evenly over all depths (Fig. 4). We were surprised to find newly settled lobsters at depths as great as 80 meters in the Gulf of Maine, despite bone-chilling temperatures of 6-7°C where there would be little prospect for growth. The fate of those lobsters is uncertain.

All told, 2007 not only represents the largest survey yet, it also broke both depth and northern-extent records for reported American lobster settlement. As we enter the 2008 season new collaborators from Atlantic Canada aim to broaden the survey into the southern Gulf of St. Lawrence. And the Scandinavian participation (Norway and Sweden) may even give a first-ever glimpse of newly settled *Homarus gammarus*, the American lobster's European counterpart. That would be an historic event indeed!

The central objective of the New England-based NEC project was to evaluate depth-wise patterns of settlement in three regions of contrasting oceanography: the southern New England shelf, western-central Gulf of Maine, and eastern Gulf of Maine-Fundy regions (Fig. 4a). Collaborating fishermen from

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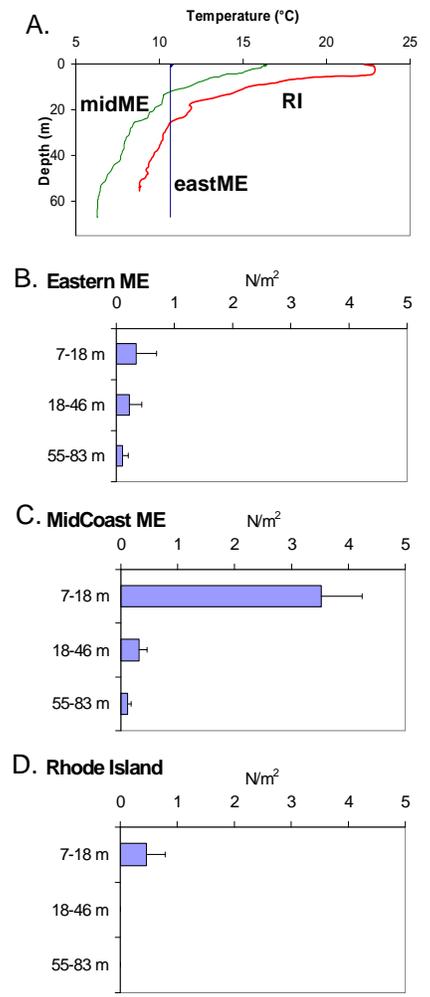


Figure 4. Depth-wise settlement. Temperature profiles in 3 thermally contrasting regions (a), and corresponding densities of young-of-year lobsters found in collectors in those regions by depth (b-c)..