

## **WATERFRONT LAND USE CHANGE AND MARINE RESOURCE CONDITIONS: THE CASE OF NEW BEDFORD/FAIRHAVEN HARBOR**

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A major challenge in gauging impacts of fisheries management on coastal fishing communities has been the lack of understanding of the interactions between changes in fish stocks and waterfront land uses. This study examines this connection in the New Bedford/Fairhaven area using parcel data and GIS tools. Although land-use decisions are influenced by many complex market and regulatory factors, our study indicates that a significant relationship does exist between fish stock conditions and coastal land uses.

As a case study we examine the New Bedford/Fairhaven Harbor that straddles the Acushnet River and flows into Buzzards Bay. The majority of the harbor-related and commercial fishing businesses are in the City of New Bedford with a smaller portion – most of the marine service and vessel businesses across the river in the Town of Fairhaven. The harbor is home to one of the most important U.S. commercial fishing ports; New Bedford's commercial fishing revenue totaled \$206.5 million in 2004. The two study areas, concentrated along the port, cover 2% and 0.7% of New Bedford and Fairhaven respectively.

The method consists of: 1) data collection, 2) data analysis and modeling, and 3) policy analysis. The data collection phase has two sub-phases: spatial database development, and collection of resource indicators and industry data. The former is primary data, collected for the purposes of this study. The latter is secondary data collected mostly from government agencies. The second phase consists of qualitative and quantitative analysis of variables and modeling using (logit) regression analysis. In the policy analysis stage, we summarize the significance of the results of these analyses for resource managers and make recommendations for future research needs.

The main result of our study indicates that a significant relationship exists between waterfront land uses and stock conditions of sea scallops that accounted for about 50% of the total fish landings by weight in the harbor and over 50% by value of landings for the past two decades. Specifically, results show that a waterfront parcel is more likely to be used for marine purposes when fishery resources (scallop) are good, if its area is large, and if it is on the New Bedford side of the harbor. The results suggest that the cumulative effect of marine resource conditions can substantially alter marine industry's location decisions and may have long-term and multi-sector impacts at the community level.

The relationship modeled in this study reinforces the importance of land-marine connections and suggests that coastal towns are adapting to changing stock conditions even in the spatial structure of their communities, by relying significantly on rebounding species. A next step in an expanded study will examine whether such relationships can be found in other more minor fishing ports with less peripheral long-term infrastructure. This study confirms that regulators and policymakers concerned with protecting marine related uses in coastal communities should not neglect the importance of rebuilding and maintaining fisheries stocks and *vice versa*.

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