

LINKING PUBLIC PERCEPTIONS OF SOCIOECONOMIC CHANGE AND MARINE RESOURCE MANAGEMENT IN RURAL MAINE

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Marine Resources and Changing Rural Coastal Communities

Rural coastal regions across the United States are coping with dramatic social and environmental changes. Historically, these areas relied heavily on fishing and marine commerce and these economic activities defined the character of coastal communities. However, shifting ocean and climate conditions, together with inadequate management strategies, have led to sharp declines in harvestable marine resources. These trends, along with increasing competition from aquaculture and international sources of fish, have led to the steady decline of fishing as the central economic activity in many rural coastal communities.

As fishing and other traditional extractive industries have declined, aquaculture and tourism have emerged as important economic alternatives. These changes have not only altered the coastal economy, but also transformed the character of many rural coastal communities, as working waterfronts are replaced by stores and restaurants. Expanding development has also threatened sensitive estuarine habitat, while both air- and waterborne pollutants have impaired the aquatic ecosystems on which human and biological communities depend. Policy makers and community leaders struggle to find adequate responses to the scale, complexity, and speed of these changes. Understanding how residents of rural coastal communities view changing socioeconomic conditions and emerging environmental concerns will help to inform both governance and management decision-making.

Since 2007, researchers at the Carsey Institute of the University of New Hampshire have been investigating these types of transformations through the Community and the Environment in Rural America (CERA) initiative. A key goal of this effort is to provide decision makers and community organizations with information that can assist in promoting social and environmental resilience. In the summer of 2009, Carsey researchers began a new phase of the CERA initiative, looking specifically at coastal communities. As a first step, we surveyed 1,500 residents of two predominantly rural coastal counties (Hancock and Washington) in Maine to gauge their views on social and environmental conditions in their region. This paper presents initial findings from the survey, highlighting important patterns in community perceptions of economic changes, marine resource management, and potential policy solutions.

The Social Importance of Marine Resources in Maine

The coast of Maine is a microcosm of broader social and environmental change in coastal communities across the United States. The two easternmost counties, Hancock and Washington, make up what is known locally as Downeast Maine. This region is composed primarily of small towns scattered along the coast and neighboring islands. Historically, fishing and marine commerce have been the lifeblood of the Downeast region. Today they represent a decreasing share of the economy, but the docks and fishing boats along the shore are emblematic of coastal Maine's identity. Rapid increases in tourism, declining fisheries, and growing threats from pollution are bringing both social and environmental change to Downeast towns and villages.

Survey respondents were asked whether a series of environment-related issues had affected their family or community in the past five years. The results show that people from both counties most frequently cited "loss of fishing jobs or income" as a major issue affecting their family or community. Survey responses indicate that water pollution and the impacts of sprawl and development also are substantial concerns, particularly in Hancock County where scenic areas around Acadia National Park have fueled growth in tourism and new housing development. The survey results show that residents of both counties are concerned with declines in traditional extractive industries and changing patterns of development, which have implications for how they view marine environmental concerns and management responses.

The Social and Environment Implications of Economic Change in Maine

Local concern about the loss of fishing jobs and pollution effects on water resources reflects changing socioeconomic and environmental conditions in Hancock and Washington counties. Maine's fishing industry has declined dramatically in the past 30 years, and these declines have been especially difficult for isolated Downeast communities. Cod harvests, one of Maine's most important commercial species, have fallen in value from over \$16

million in 1991 to \$3.7 million in 2008. Sea scallops have declined from \$15 million in 1981 to \$1.2 million in 2007 (MDMR, 2009). Depletion of fish resources is considered a serious problem.

Although the most severe drops in fish harvests occurred in the late 1990s, the last three years have seen continued steady declines in both Hancock and Washington counties. Even lobster, which has been Downeast Maine's most stable fishery, has declined both in pounds caught and total value from 2006 to 2008 (MDMR, 2009). Although the number of vessels and individuals involved in fishing has stabilized in recent years, overfishing remains a concern. Federal, state, and local government officials have struggled to find methods for managing fisheries that meet the needs of fishing communities while also sustaining marine ecosystems.

As fishing in Downeast Maine declines, other coastal and ocean-related enterprises have become increasingly important. The scenic beauty of the coast attracts thousands of visitors to the region, and tourism is now one of the most important industries in eastern Maine. Hancock and Washington counties have also experienced significant growth in both salmon and shellfish aquaculture. This industry has brought needed revenue and jobs to the fishing sector. However, studies have uncovered new environmental problems resulting from the effluent discharged by fish farming operations (MDMR, 2003). In addition, some residents and coastal towns have raised questions about whether aquaculture operations might diminish the scenic qualities of the area and thus affect tourism.

Pollution from aquaculture operations is not the only environmental problem in coastal Maine. Many scientific reports, from local to global in scale, have documented worrisome levels of mercury, dioxin, and other contaminants in fish and the potential health effects on humans. Contaminants such as PCBs, dioxin, and mercury have been found in ocean fish, such as striped bass, blue fish, and tuna (Osher et. al., 2006; MDHHS, 2008). Red tide algal blooms, linked to changing climatic conditions, have also affected commercial and recreation shellfish harvesters across the state. In Downeast Maine, concerns about waterborne pollutants have led to closures of shellfish beds and affected aquaculture operations. These pollution issues are important concerns in small communities that rely heavily on harvesting blue mussels, quahogs, periwinkles, and soft-shell clams.

The CERA survey asked several questions to assess the extent of concern among Downeast residents regarding these emerging marine issues. The greatest concern among those surveyed is pollution's impact on beaches and clam beds, followed by contamination of seafood and depletion of fisheries by overfishing. Rising sea levels from global warming worry fewer people. Adverse impacts of fish farming ranks lowest among the possible problems. Hancock County residents are generally more concerned than those from Washington County about the marine environmental issues. This may in part reflect the larger number of tourism-related businesses in Hancock County, which could be heavily affected by adverse environmental news.

Management Responses to Marine Environmental Concerns

Survey results reveal considerable concern among Downeast residents about water pollution and the contamination of beaches and clam beds. The agreement regarding pollution suggests this is one area where managers and community members can find common ground on developing solutions. The considerable concern about loss of fishing jobs and the impacts from overfishing, however, creates a conundrum for fishery managers who want to maintain the economic viability of fishing while also ensuring the sustainability of the resource. The economic downturn in the fishing industry, as well as the depletion of fisheries resources, both seem to call for government intervention. To assess how Downeasters view potential government action, we asked respondents whether they favored more or less government regulation of commercial fishing.

Despite the broad concern about both economic and environmental conditions related to fishing, a majority of respondents believe fishery regulations should remain unchanged. Those who work in fisheries are much more likely than others to believe the government should regulate less. However, relatively few people in the random sample of respondents (fewer than 5 percent) say they or a member of their family works in a fishing-related industry. A minority think that additional regulation is needed, but this opinion is more than twice as common among non-fishers. Residents in Hancock and Washington counties differ little in their views about fisheries regulation. Although there are clear differences in residents' views regarding fishery regulations, the relatively high degree of support for maintaining current fishing rules suggests that government officials should focus on more effectively using existing regulations to achieve socioeconomic as well as conservation goals.

The Future of Rural Coastal Communities in Maine

The rapid development of rural coastal areas across the United States has brought significant social and economic change, as well as new environmental problems. Changes in Downeast Maine are emblematic of these national patterns. The character of this region is still strongly tied to extractive industries, making the loss of fishing jobs sharply felt. In areas experiencing the influence of development, sprawl is increasingly worrisome. The loss of scenic beauty could threaten this newly important natural resource that attracts thousands of tourists. Aquaculture is also an important new component of the economy of coastal Maine, and both the environmental and social implications of these activities require further study.

Potential impacts of pollution and seafood contamination are of broad concern. These are areas where civic groups and governmental agencies could find common ground and work toward addressing the sources. Fishing-related issues, on the other hand, appear more divisive and challenging. Fishing's importance economically and in shaping the character of coastal towns underlines the potential troubles raised by overfishing and the impacts of extractive activities on marine ecosystems. The survey results indicate that, although there is general opposition to additional regulations, most Downeast residents prefer to maintain existing fishery management regimes. This leaves open the door for managers and community groups to work within existing regulatory frames to devise novel solutions to the economic and environmental challenges related to fishing.

In recent years, federal, state, and local managers have struggled to find a model for managing fisheries that meets the needs of fishing communities and sustains marine ecosystems. Increased community engagement and local input into management activities and decision making has been proposed as a pathway to more effective solutions. At the present time, the National Marine Fisheries Service is working with fishermen and community and governmental leaders in the region to forward new "area management" approaches that would directly engage fishers in devising and overseeing locally relevant management strategies within existing regulatory frameworks. The CERA results appear encouraging for this approach given Downeast Maine residents and those involved in fishery-related industries in particular oppose additional government regulation of fishing. Government efforts promoting local engagement in environmental management may have greater success given they build on shared values regarding the social and natural character of coastal Maine communities. Ongoing research under the CERA initiative will continue to map this terrain, examining realities and perceptions about socioeconomic and environmental change in these and other rural coastal communities.

References

Maine Department of Health and Human Services, "Report of the Interstate Workgroup on Evaluating Atlantic Coastal Advisories for Recreationally Caught Striped Bass and Bluefish Based on the PCBs (Augusta: Maine Department of Health and Human Services, 2008), available at www.maine.gov/DHHS/eohp/fish/9_08Final.pdf

Maine Department of Marine Resources, *Preliminary 2006–2008 Maine Landings Commercial Fishery Ex-Vessel Value By County* (Augusta: Maine Department of Marine Resources, 2009), available at www.maine.gov/dmr/commercialfishing/recentlandings.htm

Maine Department of Marine Resources, *Maine Aquaculture Review*. (Battelle: West Boothbay Harbor, ME: Maine Department of Marine Resources/Normandeau Associates, 2003)

L. J. Osher et al., "Heavy Metal Contamination from Historic Mining in Upland Soil and Estuarine Sediments of Egypt Bay, Maine, USA," *Estuarine Coastal and Shelf Science*, vol. 70 (2006):169–179

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