
Introduction: Weathering the Storms: Vulnerability and Resilience in the Northeast Fishing Industry

Patricia Pinto da Silva

**Northeast Fisheries Science Center
National Marine Fisheries Service
Woods Hole, MA**

Madeleine Hall-Arber

**Center for Marine Social Sciences
MIT Sea Grant College Program
Cambridge, MA**

When strong northeasterly winds pushing warm moisture from the Atlantic's Gulf Stream up the east coast collide with the cold Arctic air from Canada, a Nor'easter is born. The storms formed offshore can be extremely powerful with heavy winds and precipitation. Like a Nor'easter, a complex set of pressure forces have coalesced around the fisheries of the Northeast U.S. in the last decade or two, creating a wide range of vulnerabilities and responses.

It is almost impossible to live in this region and not have heard about someone whose family, business or community has been impacted by fishing regulations, coastal gentrification, rising fuel costs, and other factors. Commercial fishing is an intrinsic part of the history and character of this region, and many still depend upon the industry. While most think of fishermen as the main protagonists in this ongoing drama, the iconic image of the fisherman often conceals the diversity of participants involved. Not only can 'fishermen' be boat captains, permanent crew members, transient crew or vessel owners, they may be male or female, members of different ethnic groups, come from multi-generations of fishermen, or may be the first generation to go to sea. Though fishermen are usually among the first to feel the effects of change, many others depend on the viability of the fishing industry including the owners and employees of shoreside service companies and processing plants, as well as their families and their communities.

Although an assessment of the social impacts of regulatory changes is a legal requirement, information about marine fishery participants is rather limited and most assessments have relied primarily on landings records and other quantitative data related to vessel activity. In recent years, maritime anthropologists, human ecologists, and others (several of whom are represented in this special section) have contributed to the growing body of literature designed to better explain the human dimensions involved with commercial fishing and the sea.

This special section focuses on vulnerability and resilience among fisheries stakeholders in the Northeast U.S. While the cases are situated in the Northeast, conclusions and approaches are likely to resonate for those working on similar issues elsewhere. We have made an effort to bring together researchers whose work has used a variety of methods and approaches. Through ethnography, case study research, interviews, participant observation, and quantitative data analysis, each researcher is helping to elucidate the concepts of vulnerability and resilience. While not all the papers herein are congruent and some may even be controversial, each contributes to the study of the community vulnerability and resilience in the context of fisheries management.

Clay and Olson's article sets the stage for the section by thoroughly reviewing the legislative history of fisheries management in the region, focusing on the legal and policy requirements for assessing vulnerabilities. Equally important, they highlight significant themes in approaches to community evaluation, ecological anthropology, and ecosystem-based management, and trace the recent history of assessing vulnerability, risk, and resilience. The authors further emphasize the complexity of quantifying these attributes, making it clear that multiple issues and values affect outcomes. Their reference list will be invaluable to anyone interested in fishing communities, social impact assessments, and vulnerability and resilience, regardless of geographic location.

St. Martin and Hall-Arber explore the concept of community by combining ethnographic research and GIS mapping tools, and generate a new way of visualizing community. Their collaborative project reveals the limitations of relying on legislated definitions of fishing communities as port-based. They emphasize the importance of: (a) fishing communities at sea; (b) local environmental knowledge; and (c) the differential impacts and responses to regulatory changes over time. The authors underscore that the develop-

ment of communities at sea is a dynamic process, which offers opportunity for creative participation in management and for enhanced resiliency of community processes.

Tuler et al. disaggregate the related concepts of risk and vulnerability and offer a definition of vulnerability that focuses on the susceptibility to stress of individuals and social and natural systems. Seven factors (demographic, individual decision-making, institutional, economic, socio-cultural, technological and environmental) are discussed as driving forces of vulnerability. Because the fishing industry is “not an organic whole” and participants experience differential impacts based on such factors as “vessel size, species fished, gear requirements, and demographic factors,” the authors note that social impact assessments often miss nuances that are revealed by an examination of vulnerability.

Turning to a specific locale (i.e., New Bedford, Massachusetts), Georgianna and Shader document the social and economic impacts of ‘days-at-sea’ fishing regulations on the New England groundfish and sea scallop fleets in this port. Their results illustrate the tremendous value of collaboration between academia and the fishing industry by the acquisition of detailed economic data generally unobtainable by outsiders. Their work also clarifies the range of positive and negative impacts of regulations that have affected both vulnerability and resilience in New Bedford.

Pollnac and Poggie posit a human ecology model comprising (a) physical, political and social components which generate stress for fishermen, and (b) psychological and other adaptations which reduce or eliminate this stress. They argue that fishermen are attracted to their trade precisely because it is a relatively dangerous and stressful occupation, and further suggest that less risky alternative occupations may not generate the same degree of job-satisfaction and well-being. They argue that fishermen tend to be active, adventurous, aggressive and courageous individuals, who are unlikely to be

happy in other occupations.

Hall-Arber and Mrakovcich report on efforts currently underway to improve resilience in Massachusetts fishing communities by providing hands-on training in vessel safety. In addition to describing this training, the authors reflect on why fishermen—who others describe as attracted to risk—are participating in significant number in the training whereas in the past such training was largely ignored. They also provide data obtained from participant interviews and observations for exploring the recent heightened response to fishing hazards. The potential for “developing a ‘culture of safety’ in the fishing industry in the Northeast” is also discussed.

In their exploration of community responses and resilience, Hartley et al. present two case studies of grassroots, collaborative initiatives, which were organized to address and relieve some of the pressures faced by fishing communities. One study describes the development of a fishing industry health care plan in Massachusetts, while the other focuses on the preservation of Sewall’s Bridge Dock, a working waterfront parcel in York, Maine. The authors review some of the literature on collaboration, including the work providing the analytical framework used in their case studies. A preliminary network analysis of the case studies is also presented that reveals the roles that individuals and elements of the “internal processes of collaboration” played in attaining the successful outcomes in the two initiatives.

In sum, this section provides a valuable look at the challenges of studying fishing communities and how they are affected by regulatory and other changes. A recurring theme is the benefit of collaborative efforts in obtaining data essential to understanding human dimensions. The analytical models, approaches, and case studies included in this section will be useful for developing a more comprehensive understanding of the relationships between people and the sea, as well as for improving social impact assessments.