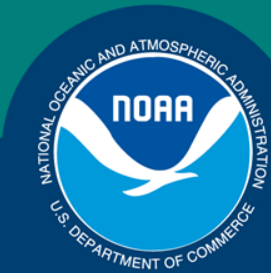


*Science, Service, Stewardship*



# **Sociocultural Dimensions of Climate Change in Northeast Marine Fisheries**

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Duke University Marine Lab

**NOAA  
FISHERIES  
SERVICE**



## Overview

- Fishermen – commercial, recreational and subsistence
- Impacts to Fishermen, Fishing Families and Fishing Communities
- Tools being used by NEFSC to track social and economic changes in fishing behavior and community vulnerability and resilience
- Governance issues



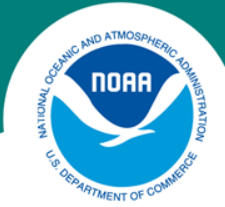
## Commercial Fishermen: A Way of Life, not Just a Job

- Value independence and risk taking
- May subsidize fishing with another job to stay on the water
- Commonly use kin as crew or consider crew to be family
- Value traditions and traditional fishing grounds
- May choose day vs trip or target species based on family considerations and personal preferences
- Tend to have a “sense of place”



## Recreational Fishermen: More than just the Fish

- Value fishing and fishing locations as connections to parents/grandparents
- For sportfishermen tournaments are also about the people they have a history of meeting there
- For some, the fish are also critical additions to family diets and nutrition – partial subsistence use
- Recreational fishermen are members of a networked “community”



## Subsistence Fishermen

- "Off the radar"
- Lumped with recreational fishermen (ex., licensing)
- Almost totally inshore
- Probably least "mobile" sector
- Substantially affected by climate change (ex., SLR)



## Climate-related Impacts to Fishermen, Fishing Families, and Fishing Communities

- As fish ranges, for example, change fishermen must move with them or change species. This can mean:
- Changing vessel or gear, switching from day to trip or the reverse, moving families to new communities to keep day fishing or lessen trip lengths
  - Losing the advantage of local fishing knowledge, and social networks at sea and on land
  - Additional impacts from climate change effects on land, especially sea-level rise that can affect shoreside infrastructure and homes



## Tools and Methods for Tracking Social and Economic Change

- Fishery Performance Indicators
- Community Vulnerability Indicators
- Community Snapshots and Profiles
- Communities at Sea
- Social and Natural Scientists Working Collaboratively



## Fishery Performance Indicators Categories

**Financial Viability** -- The financial condition of fishing vessel owners and crew, fishing households, and businesses that provide fishing-related goods and services, and businesses in the marketing chain

**Distributional Outcomes** – The outcomes related to how the benefits and costs of climate change-related impacts are distributed among individuals, groups, and communities

**Stewardship** -- The degree to which participants use the fishery resources in a careful and responsible way, and the degree to which participants have a sense of stewardship

**Governance** -- The degree to which stakeholders participate in the process of decision-making and implementation, the transparency and legitimacy of that process, the effectiveness and complexity of regulations, the degree of adaptability/flexibility of the management process, and the cost to government and participants to implement a management program

**Well-being** -- The degree to which an individual, family, or larger social grouping (e.g., firm, community) can be characterized as being healthy (sound and functional), happy, and prosperous (Pollnac et al. 2006[2008]).

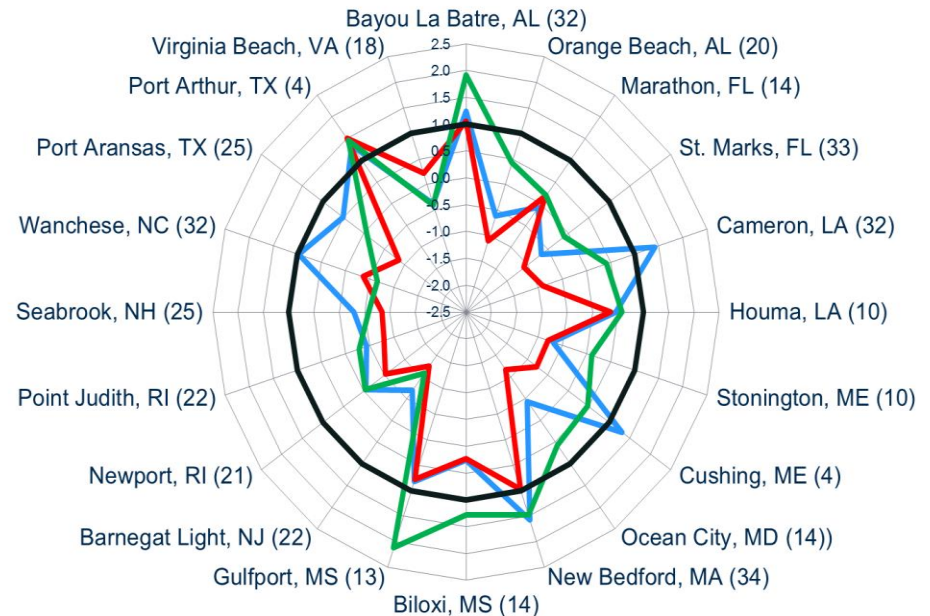
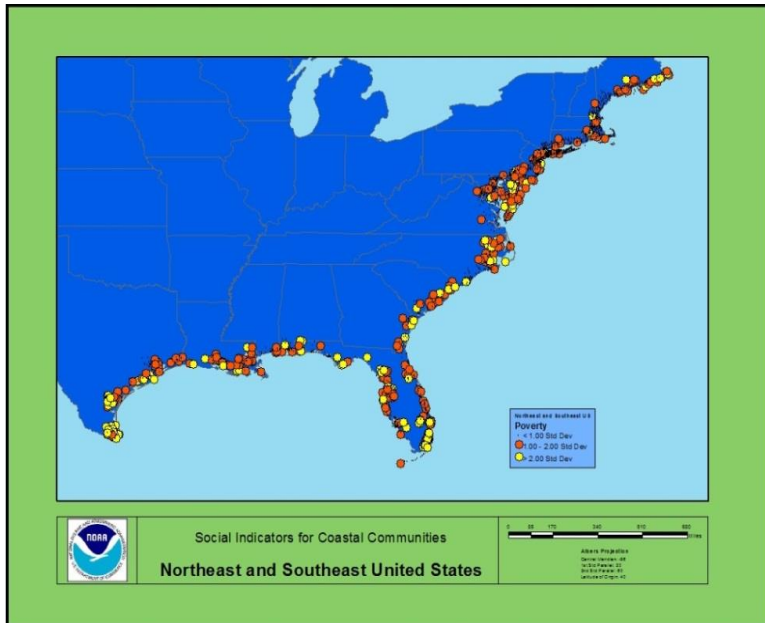




# Community Vulnerability Indicators

Current indicators useable by the public via an interactive mapping tool at:

<http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/index>





## Community Snapshots and Profiles

- Community Snapshots use the most recent Census data (2010) and landings data (2012) to provide brief overviews.

<http://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php>

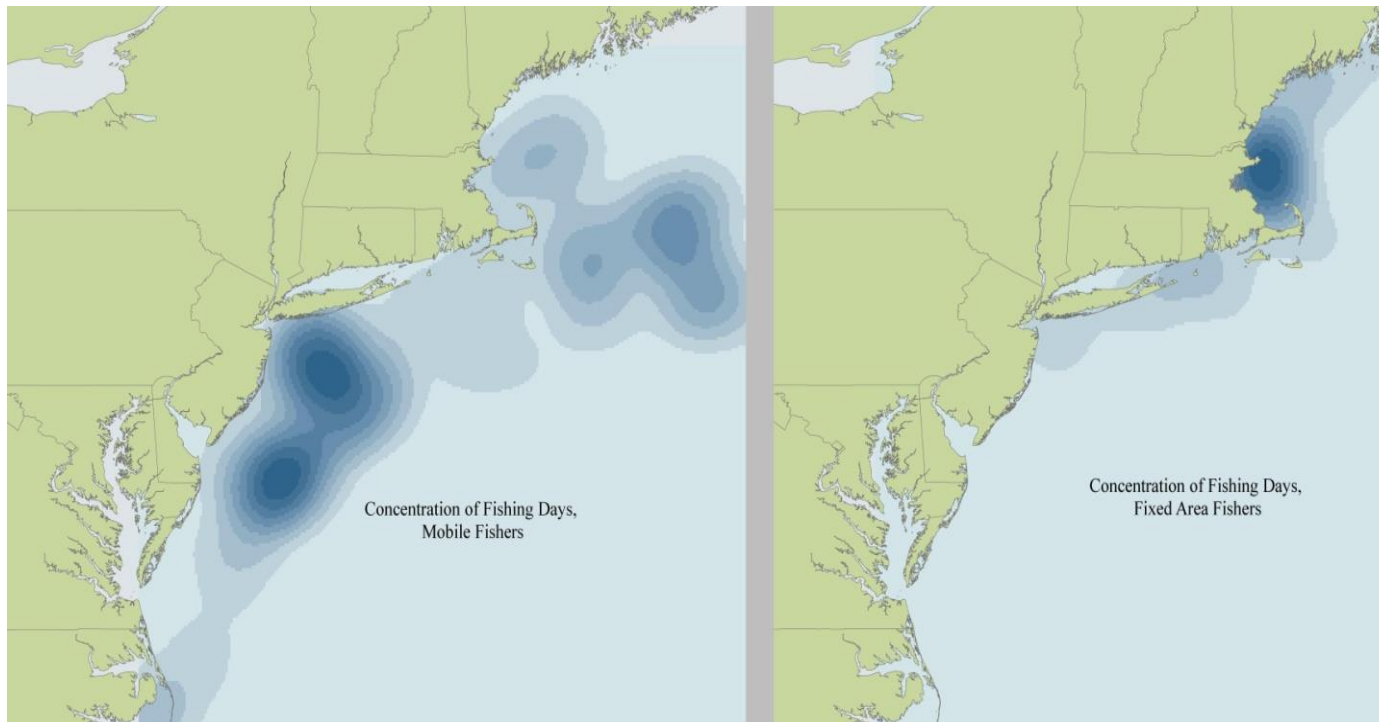
- Community profiles are longer and include information on history, cultural importance of fishing, and other aspects. However, these date from 2006-2008. Plans for updating them are under discussion.

<http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>



## Communities at Sea and other Spatial Groupings

Fishing Patterns of Mobile vs. Fixed Gear Vessels:



Communities at Sea tracks connections among ports and areas  
fished.



## Collaboration among Social and Natural Scientists

- Working together on modeling, via Atlantis, by adding economic (input-output) and social (community vulnerability indicators) to existing biological and ecological models.
- Producing joint documents such as the 2011 and 2013 Ecosystem Status Reports.
- Improving our understanding of feedback across social and ecological systems.



## Governance Issues

Place-related fishery regulations may need to change:

- New, extinguished, or joint fishery management council regulation for some species
- Re-examine locations and timing of permanent and seasonal closures
- Adjust any quotas/TACs/ACLs that may be place-based, e.g, Gulf of ME cod vs. Georges Bank or the north/south stock split for monkfish
- In general, maintaining or creating flexibility is key



## For further questions...

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And also.....

Griffis, R. and Howard, J. [Eds.]. 2012. *Oceans and Marine Resources in a Changing Climate: A Technical Input to the 2013 National Climate Assessment*. Washington, DC: Island Press.