

## Session: Community Resilience

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NOAA's vision of the future is one of healthy ecosystems, communities and economies that are resilient in the face of change and for which resilience can be improved by anticipating, absorbing, and diffusing change--whether sudden or prolonged (NOAA Next Generation Strategic Plan, the NOAA Annual Guidance Memorandum for 2016-2020, the 2015-2019 GARFO Strategic Plan, the NMFS National Climate Science Strategy, and the Northeast Regional Climate Action Plan).

Our concern within NMFS with fishing communities and community resilience is longstanding. The 1996 re-authorization of the Magnuson-Stevens Act created a definition for "fishing community" and introduced National Standard 8 (NS8), informally known as the "communities standard" that refers to community dependence, engagement, and sustained participation.

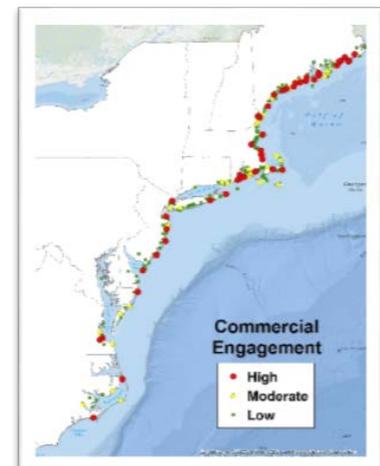
Our work today on understanding community resilience centers on providing 1) broad historical, social, and economic descriptions of communities, 2) quantitative survey and indicator data, and 3) qualitative data such as conceptual models, oral histories and ethnographic interviews.

Our descriptions began with long-form community profiles, and research into the definition and nature of fishing communities (Clay and Olson 2008). Next we created the "[snapshots](#)" that were easier for managers and the public to use for a basic understanding of key fishing community parameters. We have broadened our focus over time to look at connections between fishing vessels and fishing communities (Lee et al. 2017, Olson 2010) and between fishing communities and the larger food system (Stoll et al. 2015) and issues of food policy that affect fisheries and the communities associated with them (Love et al. In press).

In terms of quantitative data collection, we have conducted a survey on the impacts of Hurricane Sandy on New York and New Jersey fishing communities (Colburn et al. 2015), a job satisfaction survey (Pollnac et al. 2014), and a social capital survey (Holland et al. 2013). We have conducted surveys of vessel owners (Cutler, in press) and crew (Henry and Olson 2014) that can help to understand elements of the National Performance Measures including job satisfaction that feed into broader fishing community resilience. We plan to conduct these crew/owner surveys on a 3-year cycle. In addition, we have created quantitative Community Social Vulnerability Indicators (CSVIs) to describe aspects of fishing community vulnerability and resilience, based primarily on the US Census and NMFS landings databases. They are connected to the Performance Measures through the Well-Being category (Clay, et al. 2014). These include indicators of social vulnerability, gentrification pressure, and both, commercial and recreational fishing engagement and reliance (Colburn and Jepson 2012, Jepson and Colburn 2013). Begun as a joint NEFSC/SERO project covering 2,800 communities between Maine and Texas, these indicators became the focus of a national NMFS Work Plan (led by an SSB-staff member) that expanded to nearly 3,800 communities nationwide. The CSVIs are available to the public on a [web based mapping tool](#) and have been utilized in the Northeast in SIAs for the Multispecies (Groundfish) and Monkfish fisheries, in ecosystem assessments,



Credit: Lisa L. Colburn



climate change assessments (Colburn et al. 2016), and as a performance measure for community participation in catch share programs (Colburn et al. In press).

While quantitative data allow for time series that are easier to connect to mathematical ecological models, qualitative conceptual models provide an increasingly common way to connect the social systems to marine ecological systems in ways that allow for understanding connections and feedback loops (DePiper et al. 2017). Further, qualitative data are vital for background and context and can be useful for Social Impact Assessments (Colburn and Clay 2011). We have combined surveys with open-ended questions, as in the study noted above on the resilience and recovery of fishing communities impacted by Hurricane Sandy (Clay et al. 2016). SSB has also been a leader in the creation of the NMFS [Voices from the Fisheries website](#) that connects researchers and the public to over 1300 oral histories from collections around the US and its territories. We have also mined both oral histories developed by NEFSC (115) and on *Voices* to look at other aspects of fishing community resilience, such as the rising average age of fishermen or ‘graying of the fleet’. This last was a joint project between the Northeast and West Coast regions. Among the 115 NEFSC-collected oral histories is a set of 40 that were conducted specifically to improve our understanding of impacts of catch shares in the Northeast Groundfish fishery on individuals, households, and communities (Clay et al. 2013). Related work has involved interviews on the governance of Northeast Groundfish sectors (catch share groups) (Olson and Pinto da Silva 2014).

In more community outreach based work, Lisa Colburn and Patricia Clay also participated in 2015 in the Greater Atlantic and West Coast Region Fishing Community Resilience Study Group. Based on its results, NEFSC and GARFO are working to discern possible strategies for boosting community resilience within NMFS legal authorities.



Credit: Joshua Wrigley ([Voices from the Fisheries](#))

While we have made some strides in the implementation of occasional primary data collection efforts and have made solid use of existing secondary data sources, our ability to systematically track changes in communities over time remains limited. There are several reasons for this. First, funding for primary data collection is limited. Second, OMB clearance is time consuming, often delaying our ability to collect information in a timely fashion. Third, FTE staffing is limited. None of these is likely to change in the near future. We do, however, seek to use internal and external grants, to extend our base budget.

## References

[Clay, Patricia and Julia Olson. 2008. Defining ‘Fishing Communities’: Vulnerability and the Magnuson-Stevens Fisheries Conservation and Management Act. \*Human Ecology Review\* 15\(2\):143-160.](#)

Clay, P.M., Colburn, L.L. and Seara, T. 2016. Social bonds and recovery: An analysis of hurricane Sandy in the first year after landfall. *Marine Policy*, 74, pp.334-340.

[Clay, Patricia M., Lisa L. Colburn, and Lauren Downs. 2013. Understanding Impacts on Fishermen and their Families from New England Catch Shares. National Working Waterfronts and Waterways Symposium. Seattle, March 26, 2013.](#)

[Clay, P.M., Kitts, A. and da Silva, P.P., 2014. Measuring the social and economic performance of catch share programs: Definition of metrics and application to the US Northeast Region groundfish fishery. \*Marine Policy\* 44:27-36.](#)

Clay, Patricia M., Silva, Angela and Pitts, Alyson, Van Oostenburg, Max and Morris, Jolvan. Graying of the Fleet: A Bi-coastal Comparison. Presented by Clay at Society for Applied Anthropology meeting in Santa Fe, New Mexico, March 27-April 2, 2017.

[Colburn, Lisa L., Patricia M. Clay, Tarsila Seara, Changhua Weng, and Angela Silva. 2015. \*Social and Economic Impacts of Hurricane/Post Tropical Cyclone Sandy on the Commercial and Recreational Fishing Industries: New York and New Jersey One Year Later\*. NOAA Technical Memorandum NMFS-F/SPO-157.](#)

Colburn, L.L. and Jepson, M., 2012. Social indicators of gentrification pressure in fishing communities: A context for social impact assessment. *Coastal Management* 40(3):289-300.

Colburn, L.L. and Clay, P.M. 2011. The role of oral histories in the conduct of fisheries Social impact Assessments in Northeast US. *Journal of Ecological Anthropology* 15(1):74-80.

Colburn, Lisa L., Michael Jepson, Amber Himes-Cornell, Karma Norman, Stephen Kasperski, Changhua Weng and Patricia M. Clay. In Press. Community Participation in U.S. Catch Share Programs. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum.

[Colburn LL et al. 2016. Indicators of climate change and social vulnerability in fishing dependent communities along the Eastern and Gulf Coasts of the U.S. \*Marine Policy\* 74: 323–333.](#)

Cutler, Matthew. An Overview of the Survey on the Socio-economic Aspects of Commercial Fishing Vessel Owners in the Northeast. NOAA Technical Memorandum (In Press)

DePiper, G.S. et. al. 2017. Operationalizing Integrated Ecosystem Assessments within a multidisciplinary team: lessons learned from a worked example. *ICES Journal of Marine Science* March 2017 (Advance Access): DOI: 10.1093/icesjms/fsx038.

Henry, Anna and Julia Olson. 2014. An Overview of the Survey on the Socio-economic Aspects of Commercial Fishing Crew in the Northeast. NOAA Technical Memorandum NMFS-NE-230.

Holland, D.S., Kitts, A.W., Da Silva, P.P. and Wiersma, J., 2013. Social capital and the success of harvest cooperatives in the New England groundfish fishery. *Marine Resource Economics* 28(2):133-153.

[Jepson, M. and Colburn, L.L., 2013. Development of social indicators of fishing community vulnerability and resilience in the US southeast and northeast regions. NOAA Technical Memorandum NMFS-F/SPO-129.](#)

[Lee, M.Y., Speir, C., Carr-Harris, A. and Benjamin, S., 2017. Geographic Concentration of the Atlantic Sea Scallop Fishery. \*Review of Regional Studies\*, 47\(1\):25-46.](#)

Love, Dave, Jillian Fry, Patricia Pinto da Silva, Julia Olson, Patricia M. Clay. In Press. Fisheries, Food, and Health in the United States: Finding Common Ground Across Domains of the Food System. *Agriculture and Food Security Journal*.

Olson, J. and Pinto da Silva, P., 2014. Changing boundaries and institutions in environmental governance: perspectives on sector management of the Northeast US groundfish fishery. *Maritime Studies* 13(1):3.

Olson, J., 2010. Seeding nature, ceding culture: redefining the boundaries of the marine commons through spatial management and GIS. *Geoforum* 41(2):293-303.

[Pollnac, Richard B., Tarsila Seara, and Lisa L. Colburn. 2014. Aspects of Fishery Management, Job Satisfaction and Well-being among Commercial Fishermen in the Northeast Region of the United States, Society and Natural Resources, Vol. 0, 2014, pp. 1-18.](#)

Stoll, J, P. Pinto da Silva, J. Olson, S. Benjamin. 2015. Expanding the 'geography 'of resilience in fisheries by bringing focus to seafood distribution system. *Ocean & Coastal Management* 116:185-192.