

Q&A: Scientist helps fish harvesters implement adaptive strategies to climate change

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Lisa Auermuller of Rutgers University. Credit: Jeff Arban/Rutgers University

For hundreds of years, business owners engaged in New Jersey's commercial fisheries industry have weathered adversity, from coastal storms to species shifts. Recognizing this resilience, and acknowledging the challenges posed by global climate change, Rutgers scientists have

come to their assistance.

One of the results of recent efforts is a guide that researchers have developed for marine businesses, [A Resilience Checklist for New Jersey's Commercial Fishing Industry](#).

Lisa Auermuller, director of the Megalopolitan Coastal Transformation Hub, which is based in the Department of Marine and Coastal Sciences in the Rutgers School of Environmental and Biological Sciences (SEBS), worked with a number of Rutgers scientists on the effort, including Douglas Zemeckis, a marine extension agent, and Eleanor Bochenek, the retired director of the Fisheries Cooperative Center, and Richard Lathrop, director of Rutgers Center for Remote Sensing and Spatial Analysis.

Auermuller explained the overall endeavor.

What aspects of climate change have most affected New Jersey shore's commercial fisheries? Are there economic repercussions?

In New Jersey, coastal fishing communities from small villages to large ports are seeing increased regular flooding, coastal storms, sea level rise and shifts in the populations of their catches. These working waterfronts are on the front lines of these impacts, experiencing damage to infrastructure and disruption to the transportation of the catch.

In addition, as ocean waters warm, the range of many marine species is shifting. For example, over the past 50 years, the fall range of the summer flounder, a commercially lucrative variety, has shifted 72 miles north, shrunk in size overall by 99 total miles and descended about 22 feet. Changes in fish populations require commercial fishers to adapt in

how they make a living.

This affects all of us. The New Jersey commercial fishing industry brings in an estimated \$4.5 billion annually from fisheries, aquaculture and [recreational fishing](#). If the industry is adversely impacted, so is the state's economy.

How can scientists help those engaged in the commercial fishing industry to weather the effects of climate change?

The Rutgers team worked with fisheries resource managers and commercial fishing industry stakeholders from the diverse ports of Belford, Barnegat Light, Cape May and Port Norris to develop the Resilience Checklist.

This checklist helps commercial fishers and businesses identify opportunities to improve resilience to storms and other coastal hazards, as well as changes in the productivity and distribution of fish populations. Each section includes [online resources](#) that can be used to learn more and develop solutions to improve resilience.

Although it can be used individually by one [business](#) or fisher, the checklist is most effective when completed collaboratively by several fishing businesses or fishers from a New Jersey port or dock. The purpose of the checklist is to start conversation and coordination among dock managers, fishers, processors, dealers and others involved in the industry about planning and preparation to address vulnerabilities. The overall resilience of a port or dock depends on the ability of each member of its fishing community to assess and address risks.

How can planning and preparation, as advised in the

checklist, make a difference?

Commercial fishing communities know, perhaps better than many others, that storms, floods and shoreline erosion are a natural part of living and working on the coast. Coastal hazards can damage assets, disrupt business and cause financial loss. Climate change threatens to increase the intensity and frequency of coastal hazards and changes in the fish population. Knowing that these challenges have impacted fishing businesses in the past—and will continue to cause impacts in the future—highlights the importance of planning and preparation to improve resilience.

Even if a fishing vessel is unaffected by floods, the fishing business could suffer if flooding damages or prevents access to land-based infrastructure. This includes boat ramps, docks, processing facilities and vendors operating restaurants, many of which were destroyed by Superstorm Sandy. Businesses that are prepared to respond to coastal hazards can more quickly resume operations during or after a coastal hazard event. Proactively planning for recovery allows a business to implement actions and "bounce forward" by rebuilding in stronger, smarter, safer and more resilient ways.

What happens next?

Since the 1600s, New Jersey's fishing industry has continuously adapted to change. In the face of challenges on land and water, from [coastal storms](#) to species shifts, commercial fisheries are resilient because they must be to survive.

The checklist has been distributed to commercial fisheries, ports, docks and fisheries scientists and managers. Rutgers scientists also developed an [interactive story map](#) to guide checklist users as they assess coastal

flooding threats via Rutgers' [NJFloodMapper tool](#). Owners of the state's commercial fishing businesses now have a guided way to reflect on steps they have already taken to be resilient and to identify opportunities to further prepare for current and future risks.

Provided by Rutgers University

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