Join this UCT-SANCOR Seminar

By

Dr. Samantha Siedlecki (University of Connecticut)

Projecting resilience for sea scallops along the Northwest Atlantic shelf to multiple stressors - a Climate services story

Date:
Monday, 10 March 2025

Time:
13h00 SAST

In-person venue:
UCT Oceanography Seminar Room, RW James Building (map here)

Online Teams link available here.

Overview

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[1] ECS Federal, LLC, in support of NOAA Fisheries, Northeast Fisheries Science Center
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The Atlantic sea scallop fishery is worth more than $500 million per year, is the second highest fisheries revenue in the United States, and the largest wild scallop fishery in the world. Scallop habitat is changing as New England waters warm, freshen, and becomes lower in oxygen and pH. As a result, sea scallop biomass has been predicted to decline by more than 50% by the end of the century, due to ocean acidification, but other stressors like warming also impact their vulnerability through altered growth, reproduction, and shell calcifying ability. A decline in biomass could lead to ecosystem-wide changes in the abundance and distribution of sea scallops across the Northeast U.S. Shelf, and negative impacts on many coastal communities reliant on sea scallops for their culture, livelihoods, and well-being. The vulnerability and resilience of fishing communities to the effects of warming and ocean acidification (OA) on Northeast species is dependent on their adaptive capacity in relation to both social and environmental exposure and sensitivity factors. The regional contribution of calcifiers like sea scallop to total regional landed value has steadily increased over recent decades as has the fishing community dependence on it as a source of revenue. Recent outcomes of workshops led by the Northeast Coastal Acidification Network (NECAN) include an agreement by industry representatives that there is a need for advance warning for any changes which might impact their business. Here, we provide a spatially- explicit regional projection of changes within the sea scallop fishing zones which can inform fishery management and allow communities that rely on Atlantic sea scallops to plan and explore scenarios that would enable them to become more resilient to future change that considers both OA and warming. In particular, the role of closures and management area changes informed by the projected conditions is explored alongside the management and industrial community within the context of past adaptation strategies made by the industry. The results have been presented in a series of workshops designed with a focus group approach that includes members of the scallop fishery, aquaculture, and coastal communities that depend on this marine resource, and the summary of those workshops will also be presented.

About the speaker

As an oceanographer, Dr. Siedlecki focuses on coastal regions where she implements numerical simulations to investigate and identify processes within that environment responsible for the biogeochemical dynamics in both the modern and future oceans. She received her PhD from the University of Chicago where she focused on largely on theoretical systems of the ocean. As a postdoctoral fellow at JISAO at the University of Washington, she began simulating Washington and Oregon waters using realistic simulations of ocean acidification variable and hypoxia developed as part of the Coastal Modeling Group there. At JISAO, she extended that work to include seasonal (J-SCOPE) and short term (LiveOcean) forecasts. Now an associate professor at the University of Connecticut, she has begun exploring regional climate projections of ocean conditions on both the west and east coast of the US. She has recently co-authored a chapter in the United States' 4th National Climate Assessment and the 2nd State of the Carbon Cycle Report, and been named a Kavli Fellow. Through work with colleagues on both coasts as well as new collaborators part of the Early Career Faculty Innovators Program at NCAR, she and her group at UConn are partnering with social scientists to bring these tools into decision making frameworks to aid coastal communities and the challenges they face with respect to marine resource planning. As part of her appointment as a Fulbright Global Scholar, she was a visiting professor at the University of Bologna working with the UN Decade programme CoastPredict in late 2024 and is now a visiting scholar at UCT and SAEON working with Sarah Fawcett and Jennifer Veitch.