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Sofya Zaytseva*, szaytseva@uga.edu, and **Romuald Lipcius, Leah B Shaw and Donglai Gong**. *Image Analysis Approach to Understanding Spatial Patterns in Intertidal Oyster Reefs*. Preliminary report.

This talk focuses on pattern formation in intertidal oyster reefs. Despite being a resilient species, the Eastern oyster population has plummeted over the last century, making reef restoration of critical importance. While various aspects of reef development have been studied in the past, the role of flow in oyster reef development remains not well understood. Using drone imagery of an extensive intertidal reef network, we develop an image classification method to delineate the individual oyster reefs and extract useful information regarding their geometry. We then undertake a machine learning approach to investigate different reef configurations (string reefs (perpendicular to flow), fringing reefs (parallel to flow) and patch reefs (no particular orientation)) and explore the interplay between reef geometry, flow conditions and bathymetry and their role in reef persistence. This becomes particularly important for reef restoration and can help determine suitable locations and optimal configurations for the construction of artificial reefs. (Received September 14, 2020)