**BIOMATH SEMINAR**

Friday, April 22

1-2 pm

Harris 4119

Bistability and Asymmetric Dispersal in Models for Chesapeake Bay

Oyster Restoration

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**Abstract:**  Restoration of Chesapeake Bay native oysters is of economic and ecological importance. I will present an ordinary differential equation model for interactions between oysters and sediment. Negative feedback interactions lead to bistability between the extinct state, where sediment dominates, and a high population state. This model displays the Allee effect, in which initial populations below a threshold decline, while those above the threshold can persist. Next, I will consider a metapopulation model that couples together two populations, focusing on a simpler system that also has an Allee effect. We are particularly interested in asymmetric dispersal between populations due to water currents. At high Allee thresholds, we find that asymmetric dispersal can cause global extinction, even though uncoupled populations can persist.