1116-92-222 **Ryan Norris**, **Julia Earl**, **Paula Federico**, **Christine Sample*** (samplec@emmanuel.edu), **Ruscena Wiederholt**, **Jay Diffendorfer** and **John Fryxell**. *A fundamental modeling framework for spatio-temporal population dynamics.*

Mathematical models have made critical contributions to understanding the processes that drive the abundance and distribution of organisms in space and time. However, variations among the approaches pose a challenge in synthesizing results, as well as make it difficult to apply species-specific models to different ecological systems. Our objective is to develop a single mathematical framework that is flexible enough to capture the spatio-temporal dynamics in a wide variety of ecological systems. To do this, we adopt a network modeling approach. Nodes of a weighted and directed graph represent habitats with unique demographic attributes. Edges represent potential for movement between habitats. Population growth and movement in the network are simulated using discrete time steps. We demonstrate that this unified modeling framework can accommodate different spatially-structured populations. We also show how the model can be used to test, for example, the importance of a particular habitat on the survival of a migratory population. Results from such perturbation analysis can help inform management and conservation decisions. (Received August 14, 2015)