1096-92-1185 **Romuald N. Lipcius*** (rom@vims.edu), **Leah B. Shaw**, **Junping Shi**, **Jian Shen** and **Allison M. Colden**. *Synergy of Mathematical Modeling and Ecology in Native Oyster Restoration.*

Native oyster populations have been depleted worldwide, leading to large-scale restoration efforts, which have failed until recently. One cause of the failure has been the lack of comprehensive population models linked to ecological experiments that produce realistic parameter estimates and process functions. We have developed a system of ordinary differential equations with three state variables, oyster biomass, reef volume, and sediment volume, which portray the nonlinear dynamics of the system. Predictions from the model have (i) generated novel hypotheses about oyster population dynamics, including the potential for alternative stable states and spatial self-organization, (ii) been used to inform multi-million dollar native oyster restoration efforts in Chesapeake Bay, and (iii) been tested with complementary field experiments that examine model predictions and in turn produce reliable parameter estimates and process functional forms. We discuss the value and provide specific examples of the integration of mathematical modeling and ecological experiments for effective native oyster restoration. (Received September 13, 2013)