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Michael R. Kelly* (mkelly14@utk.edu) and **Suzanne Lenhart**. *Optimal fishery harvesting on a nonlinear parabolic PDE in a heterogeneous spatial domain*. Preliminary report.

We use the tool of optimal control to investigate harvesting strategies for maximizing yield of a fish population in a heterogeneous, finite domain. We determine whether these solutions include no-take marine reserves as part of the optimal solution. The fishery stock is modeled using a nonlinear, parabolic partial differential equation with logistic growth, movement by diffusion and advection, and with Robin boundary conditions. The objective for the problem is to find the harvest rate that maximizes the discounted yield. Optimal harvesting strategies are found numerically. (Received September 08, 2013)