Applied Dynamical Systems Seminar

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Wednesday, October 5, 2016
HH-3017 from 2:00-3:00 p.m.

A stage-structured mathematical model for fish stock with harvesting

Abstract:

In this talk, I will propose a mathematical model for a single species fish stock with three stages structure: juveniles, small adults and large adults with two harvesting strategies for mature classes, maturity and size selectivities. The purpose of the work is to investigate the dynamical behavior of the model and discuss the effect of harvesting. I will identify the adult reproduction number R_A for the model; obtain the local and global stability of the trivial equilibrium when $R_A<1$; discuss the population persistence and existence of a unique positive equilibrium when $R_A>1$. Numerically, I will investigate the influence of harvesting functions, discuss the optimal harvesting rates and explore the effect of periodic coefficients on the dynamical system. This is a joint work with Dr. Yuan Yuan.