

1092-49-201

Horst Behncke and **Wandi Ding*** (wandi.ding@mtsu.edu), 1301 E. Main Street, MTSU Box 34, Murfreesboro, TN 37132, and **Suzanne Lenhart**. *Discrete Time Optimal Harvesting of Fish Populations with Age Structure*.

We consider an optimal fishery harvesting problem using an age-structured population model with nonlinear recruitment. The motivating example is Atlantic Cod. The goal is to maximize the profit (total gain) of fishing. The feature is not only we seek to find the optimal harvesting strategy for each age class, but also to find the optimal net size. Using the extension of Pontryagin's Maximum Principle to discrete systems, we are able to derive the necessary conditions and the characterizations for the optimal harvesting strategies. Numerical simulations are provided. (Received August 09, 2013)