1014-49-1167 **Wandi Ding*** (ding@math.utk.edu), 121 Ayres Hall, 1403 Circle Dr., Knoxville, TN 37996, and **Suzanne Lenhart**, 121 Ayres Hall, 1403 Circle Dr., Knoxville, TN 37996. *Optimal Harvesting of a Semilinear Elliptic Fishery Model.* Preliminary report.

We are considering an optimal harvesting problem for a semilinear elliptic fishery model. We are to maximize the yield while minimizing the cost and variation of the fishing efforts. Existence, necessary conditions for the optimal harvesting are established. The optimal pattern is characterized by a variational inequality involving the solutions of the optimality system. (Received September 27, 2005)