ICES CM 2016/Q:340

Targeting sustainable salmon fisheries – what to aim at?

Maija Holma, Marko Lindroos, Soile Oinonen and Atso Romakkaniemi

The debate on fisheries management regimes has long been in favor of a reference point called the maximum sustainable yield (MSY), despite considerable criticism from both fisheries biologists and economists. For example, the recent reform of the European Common Fisheries Policy aims at maintaining or restoring marine resources at levels which can produce MSY yield. However, MSY based management is prone to many difficulties, and it is worth pointing out that alternative applicable management regimes do exist. An alternative reference point called the maximum economic yield (MEY) has been studied thoroughly, and it has been implemented recently as a practical policy in Australia, where the MEY based management of the Northern Prawn fishery has just earned a sustainability certificate from Marine Stewardship Council.

A bioeconomic model is developed to compare the outcomes of biological and economic management regimes in the Northern Baltic salmon fishery. A dynamic optimization model is coupled with an age-structured salmon stock model to maximize the discounted net revenues of the trap net fishery. We apply the year-to-year changes in the parameters of stock-recruit relationship to analyze how the short-run uncertainty on the reproductive capacity affects the long-run optimum under different management regimes. Results suggest that the MEY management can perform better than the current MSY objective in both conserving the stocks and providing economic viability for the fishermen.

Keywords: Management regimes, reference points, bioeconomic modeling, salmon fisheries, MSY, MEY

Contact author: Maija Holma, Doctoral student, Faculty of Agriculture and Forestry, Department of Economics and Management, P. O. box 27, 00014 University of Helsinki, Finland, maija.holma@helsinki.fi