

Title: **Optimal Management of Conflicting Species: Grey Seal (*Halichoerus Grypus*) and Baltic Salmon (*Salmo Salar L.*)**

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Abstract: Conservation goals and resource use can easily conflict when externalities exist. This is the case in the Baltic Sea with grey seal (*Halichoerus grypus*) and Atlantic salmon (*Salmo salar*). Both of the species have been defined as critically endangered in the late 20th century but due to conservation schemes, harvest controls and enhanced environmental quality the situation of both species has ameliorated. Grey seal population has been growing quickly after 1980s and is now regarded as near threatened whereas salmon is still regarded as endangered. The disadvantages towards the professional fishing have been growing along with the increasing grey seal population in the Northern Baltic. Catch losses (eaten and injured fish) and broken fishing gears have been identified as the most common seal induced damages to the fishery. Fishery, however, poses a threat to grey seals that are caught as by-catch. To these ends, we construct an age-structured bioeconomic model accounting for both species. The model observes commercial and recreational salmon fisheries and the damages caused by seals especially to commercial fishery. Further, the model accounts for the non-use and potential use value of increasing seal stock. Numerical methods are used to solve the socially optimal number of seals and optimal harvest allocation between commercial and recreational salmon fisheries.