Understanding life history changes in harvested fish stocks: Phenotypic plasticity and genetic change

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Age and size at maturity have shown large changes in many fish stocks after the introduction of heavy fishing. The question is whether these changes is caused by evolutionary genetic changes due to fishing, or by long term environmental changes (phenotypic plasticity). In the north-east Arctic cod stock it has been observed a decreasing trend in age at maturity from the 1920's to the 1980's. Before 1920 only mature fish on the spawning was exploited, but around 1920 a heavy trawl fishery began on the cods feeding grounds. The aim of this project is to explore if it is likely that the observed decrease in age at maturity of north-east arctic cod is caused by genetic selection. A theoretical model is made, which contains the most important factors acting on the dynamics of the fish stock. Simulations with this model, using different values for heretability in age at maturity, will hopefully show if it is possible that genetic changes may have taken place over a period of 60-70 years or not.