



#### NAME

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#### TITLE OF PRESENTATION

Fishing as an evolutionary driving force: can we design fish populations?

#### ABSTRACT OF PRESENTATION

Evidence is mounting that commercial fishing is often driving life-history evolution in wild fish populations. Commercial-scale fishing typically means that mortality rates in fish populations are much elevated relative to their natural levels, and accordingly, the expected life span is shortened. This favours life-history variants that complete their life cycle faster than before. This is particularly well-documented for age and size at first spawning: in many fish populations, fish reach sexual maturity much earlier than before. At short times scales (few years), such changes are negligible. However, fisheries-induced evolutionary changes are typically cumulative, and changes can become significant after just few decades. From human perspective, such evolution is a double-edged sword. When fish adapt to elevated mortality, they become more resilient to excessive fishing pressure. Evolution may thus compensate for mismanagement and contribute to food security. However, this comes at a cost. Typically, fish populations adapted to fishing are less productive and characterized by smaller body sizes. Uncontrolled fisheries-induced evolution may therefore erode the capacity of wild fish stocks to produce food for the humankind. This raises the question what we could do to avoid such undesirable evolution? Or even better, can harvest such that evolution works in our favour, improving qualities of wild fish?

#### BIOGRAPHICAL NOTE

Mikko Heino is a professor in fisheries biology at the University of Bergen and chief scientist at the Institute of Marine Research, both in Bergen, Norway, and research scholar at the International Institute for Applied Systems Analysis (IIASA) in Austria. Prof. Heino is a specialist in population ecology and applied evolution, with particular interest in contemporary evolution in fishes driven by exploitation. He studied biology and mathematics at the University of Helsinki, Finland, where he completed his master's degree in 1994 and PhD degree in 1998; he was awarded the Dissertation Prize of the University of Helsinki for his thesis on theoretical evolutionary ecology.