

Title: **Fisheries induced evolution. A review**

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Abstract: Age and size at maturity are key life-history traits in a fish stock. At the individual level, age and size at maturity affect fecundity, growth and survival. At the population level these factors interact to affect the age and size distribution, the population dynamics and the productivity of the stock. Recent studies have shown that high levels of fishing mortality may act as a selective force, favoring individuals that mature at an early age and small size. In general, somatic growth is dramatically decreased after maturation, implying that, as age and size at maturity are driven to lower levels, the stock will consist of smaller individuals. Smaller fish have lower fecundity than larger fish, implying a reduction in recruitment rates and a greater exposure to stochastic events. Together, these effects may reduce the yield of the stock, increase risk of extinction and have a number of adverse effects on the ecosystem. The effects of fisheries induced evolution may also be slow to reverse or even irreversible. Hence, both profitability considerations and the precautionary principle call for taking fisheries induced evolution into account when managing fish stocks. This paper reviews theoretical and empirical work on fishery induced evolution, focusing on management practices that may reduce the evolutionary impact of harvesting.