

The Future Response of Fisheries Production to Integrated Anthropogenic Forcing: Climate Change and Fishing Pressure

*Colleen Mary Petrik¹, Charles A Stock², Ken Haste Andersen³, James Watson⁴

1. Princeton University, 2. NOAA OAR Geophysical Fluid Dynamics Laboratory, 3. Technical University of Denmark, 4. Stockholm University

Many empirical relationships between commercial fish recruitment and population biomass with the environment exist, however the mechanisms behind these relationships are rarer. These mechanisms are often region-specific and can dissolve over time. We seek a mechanistic understanding of the variability of commercial fish recruitment and population biomass with respect to anthropogenic forcing, both fishing pressure and future climate change. To do so, we have developed a global stage- and size-based mechanistic model that represents the immature and mature stages of forage fishes, large pelagic fishes, and large demersal fishes. In this talk we will present preliminary results of fish biomass under (1) historical climate without fishing, (2) historical climate with fishing, (3) projected business-as-usual climate without fishing, (4) and projected business-as-usual climate and fishing. The stepwise addition of forcings in simulations 1-3 separate the effects of each, while simulation 4 forecasts the potential fish biomass response to the integrated anthropogenic forcings of climate and fishing.

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