

Integrating climate change vulnerability indices on a scale relevant to fishery managers

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Abstract

Climate change effects on fisheries will undoubtedly have socio-economic impacts on coastal communities. However, it has proved challenging to integrate all of the available climate change indices in a form that can be used efficiently by adaptation planners, policy makers and/or fishery managers. In Atlantic Canada, fishery managers make decisions at the scale of the stock management unit, and that process is unlikely to change as rapidly as the climate has been. Here, we combine vulnerability indices on a scale that is meaningful to fisheries managers. The Management Unit Vulnerability Assessment aggregates information at the spatial scale of a stock, in this case, lobster (*Homarus americanus*), across Nova Scotia, Canada. The information includes socio-economic dependence on the fishery, economic diversity of fishery, population size, status of harbor infrastructure, total replacement cost of each harbor, probability of risk to increased sea-level rise and storm surge, and the likely response of, in this case, lobster to climate change. Information is summarized into 4 main indices for each harbor within a management unit, and their distribution can be displayed by management unit across the region. Our proximate goal is that the data comprising the Management Unit Vulnerability Assessment will be available online and allow fishery managers to take a geographical perspective to adaptation planning, as well as to anticipate changes in productivity and abundance across borders of neighbouring communities. Our ultimate goal is to provide the necessary information used by policy makers to make decisions on management objectives and tradeoffs.

Keywords:

Climate change, lobster, thermal habitat, coastal vulnerability, harbour infrastructure, climate projections, fishery management

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