Adapting Fisheries Management to a Changing Ecosystem
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Case Study 8

Multivariate approaches for EBFM implementation in the U.S. Caribbean

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ABSTRACT

The fisheries of the U.S. Caribbean are some of the smallest in the U.S. in terms of volume of landings, fleet size and monetary absolute value, and where the implementation of stock assessments has been hindered by the availability of data (i.e. data poor region). However, they are very diverse fisheries that target the highest number of management unit species in the country, likely due to the high diversity of habitats exploited (i.e. about 80% of species are related to coral reefs). Moreover, due to the coastal nature of the fisheries (i.e. artisanal + limited shelf area), many other drivers potentially affect non-fishing mortality rates of targeted species. Under these circumstances, it is proposed that the implementation of an Ecosystem Based Fisheries Management (EBFM) approach could help overcome historical caveats in the region. Consequently, one of the main objectives is to develop a Fishery Ecosystem Plan (FEP) to guide the implementation of the EBFM approach. The first step to accomplish this, and the focus of this presentation, is to describe the fisheries system using a multi-specific, multi-driver perspective. This effort used a qualitative approach based on conceptual models of different stakeholder's perceptions of the ecosystem, as well as a quantitative multivariate framework that recognized the multi-specific, multi-driver nature of the U.S. Caribbean fisheries. Preliminary results showed that: i) the conceptual model methodology is effective in helping to identify components which are currently not being fully assessed or monitored in the region (e.g., recreational fisheries), ii) multivariate analysis detected consistent temporal trends across different types of data (i.e. fisheries independent vs dependent), iii) temporal trends of the structure and composition of landings and fish assemblages were related to multiple drivers (in addition to fishing removals), and iv) multivariate methods proved to be useful alternatives in identifying indicators and threats. One important conclusion is that, for the approach presented here to provide information that guides decision-making in the region, the development of a novel cross-mandate policymaking process is a crucial step for the success of EBFM implementation in the U.S. Caribbean.