NOAA Technical Memorandum NMFS-XXX-##

Caribbean Ecosystem Status Report

Southeast Integrated Ecosystem Assessment Program

January 2023

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northwest Fisheries Science Center

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1. NOAA Fisheres, Southeast Fisheries Science Center

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Executive Summary

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1 Tracking performance toward fishery management objectives

In this section, we report indicators that are intended to capture progress towards meeting Fishery Management Plan objectives related to food production, socioeconomic health, equity, engagement and participation, bycatch reduction, governance and protection of ecosystems.

2 Risks to meeting fishery management objectives

In this section, we report indicators that capture identified risks to the ecosystem that could impact the ability to meet Fishery Management Plan objectives. Unless otherwise specified, physical indicators reported for the U.S. Caribbean region were calculated over a bounding box with limits of longitude 68 degrees W to 64.5 degrees W and latitude 17.5 degrees N to 18.75 degrees N.

3 Integrated ecosystem perspectives

For the purpose of synthesizing the information contained in the full suite of indicators presented in this report, we analyze the full indicator suite using multivariate methods. Principal components analysis (PCA) is a statistical method that distills a large number of potentially related indicators into a smaller number of indices representing most of the variability in the data set. We analyze the indicator suite separately by category: 1) risks to meeting management objectives, 2) management objective indicators based on fishery-independent data, 3) management objective indicators based on fishery-dependent data, and 4) other management objective indicators. A traffic light plot of the indicator suite is presented for the purpose of comprehensively viewing changes in the different parts of the ecosystem over time (**?@fig-traffic**). A biplot of the principal components analysis is presented to convey temporal patterns in the progression of ecosystem status (figure). PCA was carried out on a scaled matrix for all indicators with at least 12 years of data; any missing values were imputed with means of the time series. In the biplot, the labels represent time (years xxxx-xxxx), the rainbow line represents chronology between adjacent years, and the distance between points conveys how different the indicator values were in those years.

4 Research recommendations

4.1 Risks to meeting management objectives

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4.2 Fishery-dependent and fishery-independent data sources

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4.3 Human dimensions

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5 Acknowledgments

5.1 Contributions

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5.2 Resources

This repo and GitHub Action was based on the tutorial by Openscapes quarto-website-tutorial by Julia Lowndes and Stefanie Butland.

6 Contributors

6.1 Editors

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6.2 Contributors

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References