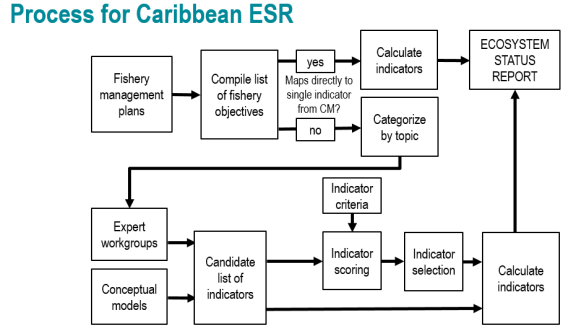
U.S. Caribbean
Snapshot Ecosystem Status Report

2025

This is a short-form update to the full 2025 U.S. Caribbean Ecosystem Status Report (ESR) [1] highlighting the recent status of environmental, ecological, and socioeconomic factors. Indicators were compiled into two categories: tracking performance toward fishery management objectives and risks to meeting fishery management objectives.



Overview of recent trends

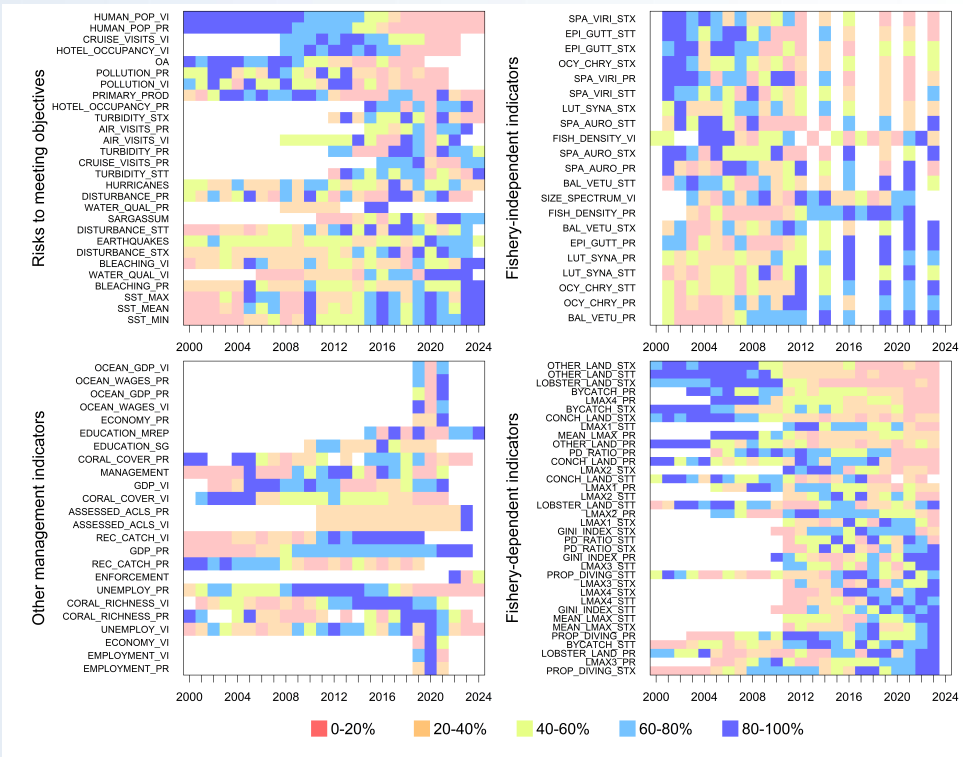
Performace indicators

- 17 indicators were compiled to track perfomance towards management objectives.
- Indicators were categorized as relating to food production, socioeconomic health, equality, engagement and participation, bycatch reduction, governance, and protection of ecosystems.
- add some text about indicators

Risk indicators

- 13 indicators were compiled to track risks to meeting management objectives.
- Indicators track changes in the physical environment and human activities.
- Major recent changes in the physical environment include increased sea surface temperature, coral bleaching stress, and ocean acidification.
- Other insights?

Integrated Ecosystem Perspectives



Analysis

Multivariate methods (principal components analysis and traffic light plot; see details in full report) were used to synthesize the information contained in the full suite of indicators.

Interpretation

The traffic plot conveys that many indicator values underwent rapid change in the period 2017-2021, and the PCA biplots confirm these patterns as there are larger two-dimensional shifts between these years. These shifts are most likely driven by several major stressor events in this time period, including the major hurricanes Maria and Irma (2017) and the COVID pandemic (2020-2021). Together, the multivariate analyses suggest that these events have had some destabilizing impacts on the U.S. Caribbean fishery ecosystem.

Indicator	Units	Extent/sub-indicator	Trend symbol	Slope symbol	Mean	SD	Min year	Max year
Recent trend above average								
U S Caribbean sea surface temperature	Degrees Celsius	monthly mean	+	↑	0	0.99	1982	2025
U S Caribbean sea surface temperature	Degrees Celsius	monthly minimum	+	↑	0	0.99	1982	2025
U S Caribbean sea surface temperature	Degrees Celsius	monthly maximum	+	↑	0	0.99	1982	2025
Disturbance indicator	Difference from mean landings	St Croix	+	↓	0.01	0.01	2000	2023
Earthquake activity	Number of events	Caribbean	+	↓	38.56	82.5	2000	2024
Mean Enteroccocus count	Number per 100 mL	Puerto Rico	+	↑	47.3	28.32	2006	2023
Commercial fish density	Average number per transect	Puerto Rico	+	→	3.98	1.51	2003	2021
Gross Domestic Product	Current U S dollars (billions)	Puerto Rico	+	→	47.03	40.25	1960	2023
Proportion of landings in Lmax class	Proportion	60-100 cm	+	↑	0.6	0.04	2005	2023
Recent trend below average								
Percent coral cover	Percent cover	USVI	-	↓	15.9	3.42	2001	2021
Cruise passengers	Thousands of people	Puerto Rico	-	↓	1513.99	563.3	2008	2022
Total non-resident hotel registrations	numbers of people	Puerto Rico	-	→	4376.2	850.61	2008	2022
Ocean acidification	Surface aragonite saturation	Caribbean	-	↓	4.22	0.12	1980	2020
Ratio of pelagic to demersal landings	Landings ratio	Puerto Rico	-	↓	0.19	0.03	2005	2023
Total population	Thousands of people	Puerto Rico	-	→	3600.51	200.84	1990	2024
Total population	Thousands of people	USVI	-	→	101.91	7.91	1990	2024
Proportion of trips using non-selective gears	Proportion	St Thomas and St John	-	↓	0.18	0.05	2000	2023
Conch landings	Thousands of pounds	Puerto Rico	-	→	278.88	90.38	2000	2023
Landings of all other species	Thousands of pounds	St Thomas and St John	-	→	420.03	190.8	2000	2023
Landings of all other species	Thousands of pounds	St Croix	-	→	499.72	292.98	2000	2023
Unemployment rate	Percent	Puerto Rico	-	↓	12.63	3.07	1986	2024

* The table above shows details for indicators with recent trends (last 5 years of available data) either above or below the average of the time series. For each indicator, the units and extent or sub-indicator name are presented, as well as a symbol for whether the recent trend is above or below average (+ or -) and a symbol for whether the slope of a linear model fit to the last 5 years of data is increasing, decreasing, or stable compared to the long-term slope. The mean of the time series, standard deviation, minimum year and maximum year are also presented. Indicators were excluded if there was no data available after 2020. The code used to create this report can be viewed online: github.com/NEFSC/READ-EDAB-bsbESP

We welcome your observations! Please contact mandy.karnauskas@noaa.gov or carissa.gervasi@noaa.gov with questions or comments on the information presented in this report.

References

1. R. Tabandera, A. Tyrell, M. McMahan, & P. Perez, Black sea bass ecosystem considerations and indicator development. (2024). https://doi.org/10.25923/EZ9G-AF05.
2. P. S. Fratantoni, T. Holzwarth, & M. H. Taylor, Description of oceanographic conditions on the northeast U.S. Continental shelf during 2014. (2015).
3. L. Jean-Michel, G. Eric, B.-B. Romain, G. Gilles, M. Angélique, D. Marie, B. Clément, H. Mathieu, L. G. Olivier, R. Charly, C. Tony, T. Charles-Emmanuel, G. Florent, R. Giovanni, B. Mounir, D. Yann, & L. T. Pierre-Yves, The Copernicus Global 1/12° Oceanic and Sea Ice GLORYS12 Reanalysis. *Frontiers in Earth Science*, **9** (2021) 698876. https://doi.org/10.3389/feart.2021.698876.