

An underwater photograph of a vibrant coral reef. In the foreground, there are large, rounded coral structures in shades of red and orange. To the right, there are yellow, branching coral structures. Several small, yellow and orange clownfish are swimming around the coral. In the background, the water is a deep blue, and there are more coral structures and some green algae. A semi-transparent white rectangular box with a thin black border is positioned in the center-left of the image, containing text.

Caribbean Fishery Management Council  
(CFMC)

185<sup>th</sup> General Meeting

ECOSYSTEM BASED FISHERIES MANAGEMENT -  
TECHNICAL ADVISORY PANEL  
(EBFM TAP)

UPDATE

Ecosystem Based Fisheries Management -  
Technical Advisory Panel (EBFM-TAP)

December 4-5, 2024

Sennai Habtes

EBFM TAP Chair

Bureau Chief, Fisheries

VI DPNR – Division of Fish & Wildlife

A large light blue circle with a white border, containing the text "EBFM TAP History Background" in white. The circle is positioned on the left side of the slide, overlapping a dark grey vertical bar.

# EBFM TAP History Background

October 23, 2019: CFMC establishes EBFM Technical Advisory Panel

December 10-11, 2019: EBFM TAP Members Appointed

## The EBFM TAP Charter - Elements

- Council established the EBFM TAP to assist in the development, collection, evaluation, and peer review of such statistical, biological, economic, social, and other scientific information relevant to the Council's development of the FEP and amendments.
- The EBFM TAP is composed of individuals engaged in ecosystem research or knowledgeable and interested in the conservation and management of the ecosystems of *managed* fisheries. The EBFM TAP shall reflect the expertise and interest from the standpoint of the scientific need for advice of the Council within the Council's geographical area of concern.
- The EBFM TAP provides expert scientific and technical advice to the Council on the development of, on the preparation of fishery ecosystem plan, and on the effectiveness of such plan once in operation. The TAP aids the Council in identifying scientific resources available for the development of plans, in establishing the objectives of plans, in establishing criteria for judging plan effectiveness and in the review of plans

A large light blue circle with a white border, containing the text 'EBFM TAP History Background'. The circle is positioned on the left side of the slide, overlapping a dark grey vertical bar.

# EBFM TAP History Background

## The EBFM TAP Charter - Objectives

- The EBFM TAP shall provide the Council ongoing scientific advice on ecosystem-based fishery management for fishery management decisions, including recommendations for habitat status, social and economic impacts of management measures, and ecosystem-based impacts (stressors) on sustainability of fishing practices

## MISSION

The overarching *goal* of the Fishery Ecosystem Plan (FEP) is to promote ecosystem-based approaches to ensure healthy, resilient and productive marine ecosystems and the fisheries resources dependent upon those ecosystems, within the context of the unique biological, ecological, economic, social and cultural characteristics of those fishery resources and the communities dependent on them.

- **Framework that promotes the following goals:**
  - Increase human community resilience within the context of changing ecosystems;
  - Promote ecosystem resilience within the context of changing ecosystems;
  - Define present ecosystem status/functionality;
  - Understand dynamics of fisheries and ecosystem services;
  - Describe key ecosystem linkages;
  - Identify research priorities;
  - Identify additional ecosystem-essential species in need of conservation and management;
  - Understand the risks to the fishery ecosystem and tradeoffs from different management strategies;
  - Improve the data and information needed to support marine ecosystem management;
  - Prevent overfishing and/or ecosystem overfishing;
  - Achieve optimum yield;
  - Incorporate ecosystem considerations into stock assessments;
  - Bring ecosystem considerations into the decision-making process;
  - Promote adaptive management policies (Revising MSA, National SSC, CCC).



# EBFM TAP MEETING – 8/1/24-8/2/24



- Presentations:
  - CFMC US Caribbean Fisheries Dependent Data – GIS Portal Update – Martha Prada (CFMC)
  - EBFM Roadmap Implementation Efforts – Tauna Rankin, Maria Lopez-Mercer (NOAA OHC; NOAA SERO)
  - NOAA Marine Spatial Planning Data Efforts – Joe Seraphy & Jennifer White (NOAA NCOOS)
  - National SCS Workshop Update – Tarsilla Seara ( NOAA NFSC)
  - Risk Assessment Development – Leigh Fletcher (Ocean Systems Laboratory, Inc./BioImpacts, Inc.)
- Working Group & Synergistic Project Updates & Discussion
  - Define Needs in Draft FEP and Develop Plan to accomplish
  - Writing & Draft Development Schedule/Assignments
  - Finalize Risk Assessment Framework and Define
- Plan Out FEP Drafting
  - Finalize Indicator List
  - Approve Risk Assessment Framework
  - Develop Framework for FEP implementation & use by CFMC
  - Infrastructure and Data Management Plan

# WORKING GROUPS

## Conceptual Models Melding

Members: JJ Cruz Mota, T. Seara, O. Tzadik, S. Stephenson, L. Rivera, R. Appledorn (?), T. Rankin  
Outputs: Indicators & Gaps, Model Framework, Appendix of CM's, Comparative model analysis, Indicator Rankings

## Ecosystem Indicators

Members: M. Karnauskas, JJ Cruz Mota, S. Williams, T. Seara, O. Tzadik, S. Habtes, T. Rankin  
Outputs: Suite of ESR Indicators, Data Repository, CM & Quantitative indicators, Process of indicator prioritization, List of ESR & CM indicators

## Risk Assessment

Members: S. Habtes, O. Tzadik, M. Karnauskas, T. Rankin, L. Rivera Garcia, K. McCarthy, S. Stephenson  
Outputs: Define indicators from the master indicator list, identify drivers and receivers as ecosystem components to develop strategic objectives to inform the council

## Data Repository Multi-Species Modeling Roadmap

Members: S. Habtes, O. Tzadik, E. Cruz-Rivera, K. McCarthy, S. Williams, S. Stephenson, G. Garcia-Moliner, H. Townsend  
Outputs: Strategy for developing data management and coordination policies and infrastructure necessary to develop EBFM operational management/multi-species stock-assessment in the US Caribbean through CFMC.

## Drafting FEP

TBD

# FEP DEVELOPMENT – TECHNICAL WRITING & SYNERGISTIC PROJECTS

- Technical Writer – Katherine Tzadik
  - PEW Charitable Trusts Completed Draft: 7/2023
  - 4 Chapters:
    - Introduction, Vision, Framework, Strategic Objectives, Synthesis of the U.S. Caribbean Fisheries System, Indicators.
- Risk Assessment – Technical Writer
  - Tauna Rankin (NOAA – Habitat Consrv.) & Council Staff
    - MSA - Sustainable Fisheries internal funding
  - Contractor – **BiolImpact – Leigh Fletcher** - Developing Risk Assessment Framework for FEP – Summer 2025
- Data Repository/Multi-species Modeling Roadmap WG #4
  - IRA proposal - S. Habtes & Council Staff – Developing a US Caribbean COP for EBFM & Multi-species Modeling – in review
  - Coordination with DMACS Hubs, & Modeling Groups in and outside the region.

## LENFEST JJ WILLIAMS SEARA PROPOSAL Completed GOALS

To guide the development of a Fishery Ecosystem Plan for the U.S. Caribbean by defining management objectives and developing models that describe these marine ecosystems and help identify threats and factors that influence change across the region.

### OBJECTIVES

- 1) To develop both a conceptual and quantitative model that describes the Caribbean ecosystem within a fisheries context based on stakeholder perceptions and data collected, respectively;
- 2) To select and estimate indicators of the performance of the model under different conditions (threats, impacts, human activities, etc.);
- 3) For a final product, we will work with stakeholders by integrating results from both models to identify the main indicators and threats potentially affecting the fisheries systems.

## SEFSC KARNAUSKAS, Arnold PROPOSAL Near Complete GOAL

Identification of quantitative indicators, conduct additional indicator synthesis work (multivariate analyses, threshold detection analysis) to understand overall trends in the ecosystem, and begin to develop hypotheses and an understanding of relationships between ecosystem components.

### OBJECTIVE

Identify, acquire, compile, and conduct spatial and temporal analyses of pertinent data needed for development of an ecosystem status report for the U.S. Caribbean region



# STRATEGIC AND OPERATIONAL OBJECTIVES

- **Ecological/Habitat/Biotic**

- Reduce the degradation and enhance the recovery and resistance of marine habitats, particularly coral reefs
- Maintain structure and function of essential fish habitat, especially sensitive nursery habitats
- [Ensure ecosystem-essential species are considered in management \(operational\)](#)
- [Reduce and monitor marine diseases \(operational under reduce degradation\)](#)
- Maintain larval connectivity pathways necessary for successful recruitment on ecologically and commercially important fishes in the US Caribbean

- **Socio-Economic**

- Maintain and promote social cultural and economic resilience of fishing communities in the US Caribbean
- [Support tourism opportunities that promote healthy fisheries and habitat \(operational under maintain and promote social, cultural...\)](#)
- [Develop education and outreach opportunities that support sustainable fisheries and habitat \(operational under maintain and promote social, cultural...\)](#)
- Increase adaptive capacity of fishing communities to climate change impacts

## **Abiotic**

- Minimize the impacts of climate variability and enhance resilience of fisheries to climate variability in the US Caribbean

## **Anthropogenic Sources of Impact**

- Incorporate ecosystem considerations into stock assessments
- Bring ecosystem considerations into the decision-making process
- Ensure sustainable fishing (from all sectors) to maintain ecosystem integrity, and optimizes benefits across all stakeholder groups
- Ensure water quality is sufficient to promote healthy habitats and fish populations
- Ensure minimal impact of anthropogenic impacts and disturbances (including coastal development) on coastal marine habitats and fisheries
- [Ensure data collection incorporates sources from all sectors \(commercial, recreational, for-hire\) to inform management decisions in the US Caribbean \(for operational objectives\)](#)

## **Management/Policy/Governance**

- Promote adaptive management practices
- Ensure greater equity and environmental justice among stakeholders for fisheries in the US Caribbean
- Enhance inter-jurisdictional collaboration to promote healthy fisheries and ecosystems
- Eliminate illegal, unreported, and unregulated fishing



1. Introduction

- a. Purpose, need, and limits of the FEP
- b. Goals and objectives
- c. Approach of EBFM
  - i. Within EBFM context:
    - 1. US Caribbean jurisdictions
    - 2. MSA
    - 3. Other federal law, federal agencies, and obligations
    - 4. Local regulations

2. Ecosystems and ecosystem services

- a. Local interface between fisheries, fishery communities, and ecosystem management
- b. Basic description, compare/contrast, and describe connectivity among the three island platforms with regards to:
  - i. Society and Culture
  - ii. Economics
  - iii. Ecology
  - iv. Fisheries

3. Ecosystem indicators

- a. ESR
- b. Conceptual Models
- c. Other available products for reference

4. Use of Indicators in Management

- a. Other ecosystem approaches
  - i. MSA Revision
  - ii. FMP amendments
  - iii. CFMC policy statements
  - iv. Integrated Ecosystem Assessment
- b. Tools for Council Use:
  - i. Risk Assessment
  - ii. Quantitative Models
  - iii. Restoration/Mitigation
  - iv. Other Management Approaches (i.e. Harvest Control Rules)

5. Plan Moving Forward

- a. Research needs
- b. Strategic objectives
- c. Operational objectives
- d. Performance measures
- e. Management strategy Evaluation
- f. Review and revision schedule

## NEXT STEPS

Activity	Expected Date of Completion
Revise and draft EBFM TAP goals and objectives	December 2020
Draft FEP goals and objectives	April 2021
Continue to collect and analyze existing data sets from Lenfest, SeaMap, ESR, etc... <ul style="list-style-type: none"> <li>Expected products = a centralized repository of data (e.g., MBON, Caricoos, etc.); summary analyses of pertinent datasets; potentially peer-reviewed publications</li> </ul>	April - December 2021
Complete all conceptual models	June 2022
Meld conceptual models to create island-specific conceptual models	December 2022
Use the conceptual models & additional products to develop an island-specific risk assessment framework for consideration by the SSC, that will be used to inform approaches that will be presented in the FEP.	June 2025
Use the conceptual models and other products produced by the ESR, EBFM TAP, and by the Lenfest FEP project to identify ecosystem indicators that should be monitored. In addition to inclusion in the FEP, these indicators will be presented to the SSC and the CFMC for consideration to include in EBFM management practices.	June 2025

## NEXT STEPS

Activity	Expected Date of Completion
Develop strategic objectives, prioritize the objectives, and outline a vision for the use of the FEP for consideration in the CFMC processes.	August 2024
Develop operational objectives with concrete action items to be presented in the FEP, for consideration by the CFMC.	August 2025
Develop performance measures and draft a management strategy that can be used situationally during CFMC decision making, to be presented in the FEP, for consideration by the CFMC.	August 2025
Develop a feedback mechanism for adaptive management to be presented in the FEP, for consideration by the CFMC.	August 2025
Develop a draft FEP document	November 2025
Submit FEP for council approval	March 2023