

Pursuing Fisheries Management from an Ecosystem Perspective

EBFM workshop participants at the Ala Moana Hotel on Oct. 4, 2022. Photo: WPRFMC.



Have you ever wondered how stock assessment scientists estimate the overall biomass of a managed stock like tuna or bottomfish? Well, scientists do the best they can to incorporate various times series of data into a mathematical model to calculate a fishing mortality rate and biomass. The information comes from many sources including fishery-dependent (from commercial and noncommercial catches) and fishery-independent (from scientific surveys) data, and biosamples such as otoliths (ear stones/bones) and gonads that determine life history information. Scientists' estimates are then compared to reference points and thresholds to determine if a stock is overfished or experiencing overfishing.

Commercial fish biomass gives an indication of overall stock status, fishing pressure, habitat conditions and recruitment success, or the number of fish that survive long enough to enter a fishery.

This approach is a tried and true method used to manage fisheries all over the nation. Stock assessors and fishery managers continue to improve these assessments by taking into account various environmental factors, aspects of physical oceanography and/or predator-prey relationships. The models used to incorporate all of these different parameters are described as taking an Ecosystem-Based Fisheries Management (EBFM) approach to understanding stock dynamics.

The National Marine Fisheries

Service (NMFS) defines EBFM as a *holistic approach that recognizes all the interactions within an ecosystem rather than considering a single species or issue in isolation. The goal of ecosystem-based management is to maintain ecosystems in a healthy, productive, and resilient condition so they can provide the services humans want and need.*

Fishery managers and scientists from the Western Pacific Regional Fishery Management Council, NMFS Pacific Islands Fisheries Science Center (PIFSC) and Pacific Islands Regional Office (PIRO) met for an EBFM Priorities Workshop Oct. 4, 2022, to map out the implementation of EBFM in our region. This inclusive approach works toward sustainable management of the breadth of ecosystem components and management unit species. EBFM cannot succeed without effective, transparent and frequent communication allowing adaptive management to respond to emerging science. This workshop provided the opportunity to share priorities and capabilities, and to listen, talk and brainstorm activities that can be achieved in the next five to 10 years.

During the workshop, each office outlined its priorities for EBFM. The Council and PIRO highlighted the management process and necessary steps to implement future ecosystem work into policy. PIFSC followed by presenting the available data and funds available to collect data in the near future. Then, the workshop focused on an EBFM success story—the West Hawai'i Integrated Ecosystem Assessment (IEA). This IEA addressed the longest contiguous

coral reef track in the State of Hawai'i. The area supports a wide variety of geographically specific users. The nexus of these attributes allowed the IEA team to create a mechanism for collaborative, interdisciplinary and adaptive approaches to best manage these unique resources. This presentation and discussion helped guide the afternoon session of the workshop where ultimately, the three offices worked to develop a unified process based on collaboration and communication that will help set the stage for ongoing EBFM efforts in the Pacific Islands Region.



What's Next?

The Council, PIFSC and PIRO identified staff that will participate in ongoing working groups that will meet quarterly to identify projects and refine the process needed to implement EBFM into upcoming fishery stock assessments, which will be outlined in a workshop report presented at the 193rd Council meeting in December 2022. As more ecosystem considerations are incorporated into the stock assessment process, scientists and managers will continue to improve the models used to project real life scenarios and work to increase the confidence in data that informs marine policy. 🐟

For more information, visit:

Council EBFM: www.wpcouncil.org

Council Fishery Ecosystem Plans: www.wpcouncil.org/fishery-ecosystem-plans-amendments

NMFS – EBFM: www.fisheries.noaa.gov/national/ecosystems/ecosystem-based-fisheries-management