Best Practices for measuring marine biodiversity for wise management of local and regional fisheries.

Mejores Prácticas para medir la biodiversidad marina para una gestión inteligente de las pesquerías locales y regionales.

Meilleures Pratiques de mesure de la biodiversité marine pour une gestion avisée des pêcheries locales et régionales.

ANA CAROLINA PERALTA, AND FRANK MULLER-KARGER
Institute for Marine Remote Sensing, College of Marine Science, Knight Oceanographic Research Center, University of South Florida (USF), St. Petersburg, Florida USA
Peraltabrichtova@Usf.Edu; Carib@Usf.Edu

EXTENDED ABSTRACT

Capacity development plays a crucial role in enhancing the skills, knowledge, and resources required for effective collection of marine biodiversity data. By improving data collection techniques, quality control measures, and analysis methods, capacity development efforts can enable researchers to generate reliable and comparable data. The Ocean Best Practices System (OBPS) plays a crucial role in advancing the field of biodiversity assessment by promoting standardized approaches, facilitating knowledge sharing, and fostering collaboration (IOC Ocean Best Practices System, 2023). Following best practices facilitate the seamless integration of datasets from various sources, enabling comprehensive assessments of marine biodiversity across different regions and ecosystems. An example of marine life data collection is the Marine Biodiversity Observation Network (MBON), which collects data using standardized methods and mobilizes these data into the Ocean Biodiversity Information System (OBIS), which is a free, accessible biodiversity data repository. OBIS and MBON are committed to promoting best practices in marine biodiversity data collection. These initiatives establish and disseminate the use of standardized methods for the collection and publication of marine biodiversity data by utilizing common data formats (Darwin Core), standards (EML and ISO for metadata), and vocabularies (WoRMS and NERC Vocabulary Server), permitting researchers to share, integrate, and compare datasets easily. To build a holistic understanding of marine biodiversity patterns and changes, it is essential to expand partner networks for biodiversity data collection. OBIS and MBON actively collaborate with various organizations, research institutions, and citizen scientists to foster partnerships and data-sharing agreements.

This collaboration facilitates the generation of comprehensive products such as maps and models that demonstrate biodiversity patterns and changes over space and time. Training opportunities are supported by the Ocean Teacher Global Academy (OTGA) for learning how to share the data into open access repositories such as OBIS and to learn about standardized ocean data collection, focusing on regional monitoring programs, such as MBON. Using OBIS as a marine biodiversity data clearinghouse allows the information to be discovered by publicly sharing its metadata; for example, fisheries application case studies use data shared in OBIS to analyze species distribution patterns and thermal tolerance range, contributing to the understanding of fishery dynamics and supporting sustainable management strategies (Asch and Erisman 2018; J.J. Selvaraj et al. 2022).

Species distribution models using data from OBIS demonstrated that future conservation efforts of the Nassau Grouper (and endangered fish species occurring in the Caribbean region) may need to be adjusted to account for changes in the seasonality of spawning, a northward shift in their distribution, and shortening of the spawning season. One of the key values of data management is to share data following the FAIR and CARE principles (Global Indigenous Data Alliance, 2023). Open data avoids unnecessary duplication, and because the data are more visible, it leads to more collaboration and advances in the fields of research and innovation, which in turn leads to greater impact. Good data management and stewardship is not a goal in itself but rather a pre-condition that supports knowledge discovery and innovation.

KEYWORDS: Best practices, biodiversity standards, open-access data, conservation, data mobilization.

LITERATURE CITED

Asch, R.G.; Erisman, B. (2018). Spawning aggregations act as a bottleneck influencing climate change impacts on a critically endangered reef fish. Diversity Distrib. Online first. https://onlinelibrary.wiley.com/doi/abs/10.1111/ddi.12809.

GIDA (2023) Global Indigenous Data Alliance https://www.gida-global.org/care

OBPS (2023) Ocean Best Practices System. Intergovernmental Oceanographic Commission of UNESCO. www.oceanbestpractices.org.

Selvaraj, J.J.; Rosero-Henao, L.V.; Cifuentes-Ossa, M.A.2023. Small-Scale Fisheries in the Colombian Pacific: Understanding the Impact of Climate Change on Fishermen's Livelihoods. Fishes, 8, 453. https://doi.org/10.3390/fishes8090453