## Groundfish Essential Fish Habitat Data Preparation Technical Assistance

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires essential fish habitat (EFH) provisions of federal fishery management plans (FMPs) to be reviewed and updated based on new scientific evidence or other relevant information [16 USC§1855(b)(1)(A)], and EFH regulatory guidelines note the review should be conducted at least once every five years [50 CFR 600.815(a)(10)]. EFH regulatory guidelines also state the review of information should include, but not be limited to, evaluating published scientific literature and unpublished scientific reports; soliciting information from interested parties; and searching for previously unavailable or inaccessible data [50 CFR 600.815(a)(10)]. In addition, Councils should consider different types of information according to its scientific rigor and must demonstrate that the best scientific information available was used in the description and identification of EFH [50 CFR 600.815(a)(1)(ii)(B)].

The Council will determine when to initiate the next Pacific Coast Groundfish (Groundfish) EFH review based on staff availability and other priorities. To ensure the EFH review considers as much relevant information as possible, it is important for interested stakeholders to identify and prepare that information well in advance. This is especially important for datasets that will require additional processing, validation, classification, or analysis to ensure they can be used during the review. This document provides recommendations for preparing and making key data and other scientific information available in time for the next Groundfish EFH review. Other types of information will also be important to the EFH review, but this technical assistance focuses on two key data types - seafloor substrate and deep-sea corals and sponges (DSCS) - that may require additional time for processing and analysis. Please note that this document is not the formal "call for information and data," which will be issued after the Council initiates the review.

Substrate and associated biotic components are two key indicators of Groundfish EFH. As a result, rocky reefs, canopy kelp, and seagrass have all been identified as Groundfish habitat areas of particular concern (HAPC), in addition to estuaries and "areas of interest." HAPCs, addressed in the EFH regulations at 50 CFR 600.815(a)(8), are subsets of EFH that can be used to focus conservation efforts. The Groundfish FMP also identifies structure-forming invertebrates, including deep-sea corals and sponges, and methane seeps, including associated carbonate rock, which are often associated with rocky reefs HAPC, as potentially important and vulnerable components of groundfish habitat. Because information related to these habitats is likely to play an important role in the next EFH review, recommendations for preparing key data types, including formats and established repositories, are included below.

### General Comments and Recommendations

- Maximizing data quality, utility, and integrity are important for demonstrating that the best scientific information available is used. Key considerations when evaluating scientific rigor include relevance (e.g., timeliness, spatial scale), replicability, and level of peer review (e.g., peer reviewed literature vs. unpublished report).
- Data should be made publicly available to the greatest extent practicable and include detailed metadata.

**Specific Recommendations**

Substrate and associated biotic components

- Classifying substrate and associated biotic component data per the Coastal and Marine Ecological Classification Standard (CMECS) is strongly encouraged as it is the federal standard and enables a consistent interpretation of the habitat types represented and their relevance for Groundfish EFH and HAPCs. CMECS promotes interoperability and common language by providing a standardized framework and terminology for classifying and describing coastal and marine ecosystems. For anyone not familiar with CMECS, we recommend starting with this FAQ document for background and context.
- Marine geophysical data, including bathymetry, acoustic backscatter, seismic reflection data, seafloor samples, and any derived habitat interpretations (e.g., substrate and biotic components) should be submitted to appropriate repositories. The NOAA National Centers for Environmental Information (NCEI) accepts marine geological and geophysical datasets from both NOAA and non-NOAA researchers. Other commonly-used repositories for these types of data include the Marine Geoscience Data System (MGDS) and the U.S. Geological Survey's Coastal and Marine Geoscience Data System.
    - Publication in data repositories makes data available for use and incorporation into regional data products, such as the CMECS substrate and biotic habitat maps created as a companion to the report on U.S. West Coast Nearshore Habitat Use (Bizzarro et al. 2022). These data are maintained by the Pacific Marine and Estuarine Fish Habitat Partnership, administered by Pacific States Marine Fisheries Commission.
- To facilitate consistent interpretations of benthic habitats, the following suggestions should be implemented to the greatest extent practicable:
    - If feasible, interpretations should be performed, or at least assisted, by individuals with expertise in relevant fields (e.g., marine geology, marine geophysics, seafloor mapping, benthic ecology, or other related disciplines).
    - In general, for swath mapping data, a supervised numerical classification of acoustic backscatter combined with derivatives of bathymetry data should be used for inferring hard substrate to preserve the detail allowed by the resolution of the raster data. Derivatives of data can be rugosity (i.e., ruggedness) when the resolution is on the order of 1 meter, or slope when the resolution is on the order of 10 m or more.
    - When possible, validate (i.e., ground truth) habitat classifications using targeted collection of underwater imagery or seafloor sampling that both delineates habitat boundaries and characterizes distinct habitat patches.
    - Include detailed metadata, preferably Federal Geographic Data Committee compliant, including information on collection methods[1], navigational accuracy, map scale, and method of interpretation.

[1]For more information on marine geophysical data collection methods, see the Standard Ocean Mapping Protocol (SOMP), a standardized technical protocol for data acquisition, processing, and archiving. The SOMP is built from existing standards and best practices developed by the ocean and coastal mapping community. Chapters 2, 3, and 5 are particularly relevant as they address bathymetry, backscatter, and side scan sonar collection/acquisition, processing, and delivery of data.

- For more information on benthic habitat mapping methodologies and technologies, see Misiuk et al. 2024.

Deep-sea Corals and Sponges

- Occurrence data, species distribution models, publications, etc. should be submitted to appropriate repositories. The NOAA Deep-sea Coral Research and Technology Program (DSCRTP) accepts occurrence data, models, reports, and relevant publications, and disseminates those via their Deep-Sea Coral Data Portal. The Ocean Biodiversity Information System (OBIS) and Global Biodiversity Information Facility (GBIF) both accept occurrence data, though there are some differences in how they structure their data.
- For NOAA DSCRTP, refer to the NOAA Deep-Sea Coral Portal Data resources page, their data submission template, and/or send an email to deepseacoraldata@noaa.gov.
- Occurrence data submitted to NOAA DSCRTP are integrated into quarterly updates of the National Database for Deep-sea Corals and Sponges and available via the Deep-Sea Coral Portal, as well as into regular updates of OBIS and GBIF.
- Species distribution models provide a useful tool for identifying suitable habitat for DSCS off the West Coast, but the chosen modeling framework, parameters, and quality of the input data are all important considerations. For instance, parameters including scale, presence vs. presence/absence vs. abundance, taxonomic resolution, and validation methods can influence the model outputs substantially. Therefore, we encourage the use of established good practices for species distribution modeling (e.g., see Winship et al. 2020).

Pacific Fishery Management Council, January 2026

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