

## Environmental Studies Program: Studies Development Plan | FY 2024–2025

Field	Study Information
Title	Collecting Fishers’ Ecological Knowledge (FEK) for Use in Gulf of Maine Offshore Wind Planning
Administered by	Office of Renewable Energy Programs
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Procurement Type(s)	Cooperative Agreement
Performance Period	FY 2024–2026
Final Report Due	TBD
Date Revised	January 27, 2023
Problem	Fishers’ Ecological Knowledge (FEK) provides a rich and untapped source of information that can be used to inform BOEM’s decisions regarding offshore wind but has been underutilized.
Intervention	Collection of FEK with interviews, workshops, mapping, and other methods.
Comparison	FEK will enhance other forms of information collection about fishing activity.
Outcome	Spatial data and a study report will be expected as a minimum deliverable. With FEK, BOEM will be able to better understand important fisheries concerns and aid in the avoidance, minimization, and mitigation of impacts to fishermen.
Context	Gulf of Maine

**BOEM Information Need(s):** BOEM relies on existing information about the use of the ocean by fishers that is collected through monitoring such as vessel management system (VMS), vessel trip reporting (VTR), and automatic identification system (AIS) data. These methods do not capture all of the activity and often miss important fishing activities on the OCS. BOEM uses this information in the analysis of impacts to fishers and for appropriate mitigation measures. Fisher’s Ecological Knowledge (FEK) is a type of traditional ecological knowledge that can be defined as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes et al. 2000). Researchers in the Gulf of Maine have acknowledged the importance of collecting FEK to fill in data gaps and to provide context to numerous fisheries population trends and habitat associations. An effort to collect, verify, and incorporate FEK in the Gulf of Maine will improve our information base and thus the decisions made by BOEM. This information will be applied to BOEM’s spatial planning efforts to develop and manage lease areas in the Gulf of Maine.

**Background:** The Gulf of Maine is a complex ecosystem that forms the basis of a rich and dynamic fishing economy. While the region is extensively studied for fisheries management, there are many unknowns regarding these fisheries. Past efforts for collect FEK in the Gulf of Maine have provided some indications of the challenges and benefits to engaging these communities. St. Martin and Hall-Arber (2008) found that in their efforts to engage with the broad fishing community, individuals withheld fishing location information from each other and federal resource managers to protect their interests. In

a more recent study, DeCelles et al. (2017) found that combining FEK and scientific studies improved the spatial and temporal resolution of information related to cod spawning activities on Georges Bank. The Gulf of Maine ecosystem is changing rapidly due to warming of the ocean that results in changing distributions of key marine species. With the development of offshore wind, there is a new need for updating fisheries information and collecting baseline data. A greater understanding of the marine ecosystem in the Gulf of Maine and the people who rely on it is needed to contextualize scientific data both spatially and temporally for an improved understanding of ocean use. A key aspect missing is the ecological knowledge gained by fishers who have been using this area for generations and recognize the changes that are occurring.

Information about past and current fishing grounds, using the changes that are occurring can help with predictions for the future. This is true not only for the areas fished, but for the socioeconomic dynamics in the region and the impacts to the way of life and economy of the region. Mapping of fishing grounds using FEK is one aspect important to understanding the ecosystem. This information can be used to understand where gear types are used as well as which ports. Historical use of fishing grounds and how they are changing can be captured.

**Objectives:** The objective of this study is to improve BOEM's understanding of the use of the Gulf of Maine for fishing and the importance of fishing to the regional economy through collection of FEK. BOEM would partner with the Responsible Offshore Science Alliance (ROSA) and potentially other interested organizations to conduct this study.

**Methods:** First, this study will identify local fishing communities willing to provide FEK. Next, these data and information efforts will require interviews and/or workshops to collect FEK. Participatory mapping of fishing grounds is one potential method to capture FEK. Importantly, clear methods for documenting, validating, and analyzing FEK must be established and executed. These data must be synthesized in an acceptable format (i.e., GIS and report documentation) to ensure the information can be incorporated into planning and resource management decisions. Provide guidance through workshops on navigating and interacting with available spatial data tools like Marine Cadastre or the Regional Ocean Portals (e.g., NROC). Provide regular updates to fishermen regarding the spatial planning process and data needs in the Gulf of Maine. This effort will also require considerations for data confidentiality to ensure that fishing community information collected for this study are not misused. This will be very important to instill confidence among fishers to accurately collect FEK.

**Specific Research Question(s):**

1. Where are the historical fishing grounds located in the Gulf of Maine based on FEK?
2. How have these fishing grounds changed over the past few decades?

**Current Status:** N/A

**Publications Completed:** N/A

**Affiliated WWW Sites:** N/A

**References:**

Berkes F, Colding J, Folke C. 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications* 10:1251–1262 .

- DeCelles GR, Martins D, Zemeckis DR, Cadrin SX. 2017. Using fishermen's ecological knowledge to map Atlantic cod spawning grounds on Georges Bank. *ICES Journal of Marine Science* 74:1587–1601.
- St. Martin K, Hall-Arber M. 2008. Creating a place for community in New England fisheries. *Human Ecology Review* 15(2):161–170.