Fishing Gear Effects on Marine Habitats

A National Database of Research Publications and Online Application

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Background and Purpose

- **Purpose** is to provide an easily accessible and searchable tool to assist Council/NOAA staff, researchers, and stakeholders in evaluating/managing the adverse effects of fishing gears on marine/estuarine habitats
- **Approach**
  - Contractor working with Project Oversight Team (MAFMC, NEFMC, NPFMC, NOAA OHC)
  - Sought input from all regional NOAA and FMC staff
  - Two-phases:
    - Phase 1 = how to improve/expand original database and develop online application
    - Phase 2 = populate database and disseminate results
- **Resulting product**
  - Online application available as of mid-October, database will continue to be updated through 2024 via this contract (see Next Steps for future plans)

Financial support was provided by NOAA Office of Habitat Conservation and MAFMC

Original Database

- Original NEFMC database was used to provide input data for Swept Area Seabed Impact / Fishing Effects models used to estimate effects of fishing on EFH
- Limited to pubs relevant to FEDERAL waters of Greater Atlantic Region, i.e., gears used in region, habitats that exist in region
- Limited to research published through ca 2018
- Empirical studies only (e.g., no models)
- Data used for in-house vulnerability assessment and modelling, stored in a Microsoft Access database, not searchable or widely accessible
- Shared with NPFMC and Fishing Effects Modelling Team at Alaska Pacific University, but not widely distributed

New Database

What's included

As before:

- International impacts-related studies (not just U.S.)
- Limited to habitat impacts of fishing gear, not broader ecosystem effects of fishing, but DOES include a broad range of gear/habitat types and effects

Additions:

- More comprehensive scope with studies relevant to ALL regions of U.S. and its territories, i.e., now includes tropical habitat types
- Added modelling and analytical studies
- Effort made to locate and include more non-peer-reviewed pubs
- Broader range of data elements captured for each study
- Links to pdfs and ability to download reference data

New Database

Example Topics Covered

- European scallop dredges, beam trawls
- Mechanical rockweed harvesters, clam rakes
- Derelict (not ghost) fishing gear
- Water column effects (e.g., turbidity)
- Biogeochemical effects
- Deep-sea corals
- Canyons, seamounts
- Seagrass, IT macroalgae habitats
- Gear technology studies
- Global-wide research (eg carbon storage)

https://fishmaps.shinyapps.io/FishingEffectsDatabase

The Fishing Gear Effects on Marine Habitats Database Home About Map Submit

300 results found

Search full database: ?

Enter Search Term(s)

Search Study ID

Filters: ?

Publication Type

- ☐ Journal article (259)
- ☐ Book section (20)
- ☐ Conference presentation (1)
- ☐ Grant report (4)
- ☐ Technical report (9)

Study ID #	Title	Year	Author
11	The impacts of mobile fishing gear on seafloor habitats in the Gulf of Maine (Northwest Atlantic): implications for conservation of fish populations	1996	Auster, P.J., R.J. Malatesta, R.W. Langton, L. Watling, P.C. Valentine, C.L.S. Donaldson, E.W. Langton, A.N.Shepard, and W.G. Babb
17	Long- and short-term consequences of a Nephrops trawl fishery on the benthos and environment of the Irish Sea	2000	Ball, B.J., G. Fox, and B.W. Munday
21	Mortality in megafaunal benthic populations caused by trawl fisheries on the Dutch continental shelf in the North Sea in 1994	2000	Bergman, M. J. N. and J. W. Van Santbrink
24	Fishing effects on diversity, size and community structure of the benthic invertebrate and fish megafauna on the Bay of Biscay coast of France	2004	Blanchard, F., F. LeLoc'h, C. Hily and J. Boucher
34	Effects of commercial otter trawling on benthic communities in the southeastern Bering Sea	2005	Brown, E.J., B. Finney, S. Hills, and M. Dommisse

Data Extraction

- 18 Data Elements, 57 fields in spreadsheet
  - Data Elements = Key aspects of study that could be objectively assessed for each with reasonable effort
- Only methods/physical context of each publication, no results except for abstract
- Focus on methods (e.g., how field work was done, not statistical tests), study location, study type, substrate type(s), gear types(s), recovery yes/no, natural energy at study site(s), etc.
- Short methods/approach text that summarizes objectives/purpose, data collection methods, study design, other methodological info not included in abstract
- Details re: gear(s) used, substrate type, vulnerable invertebrate types

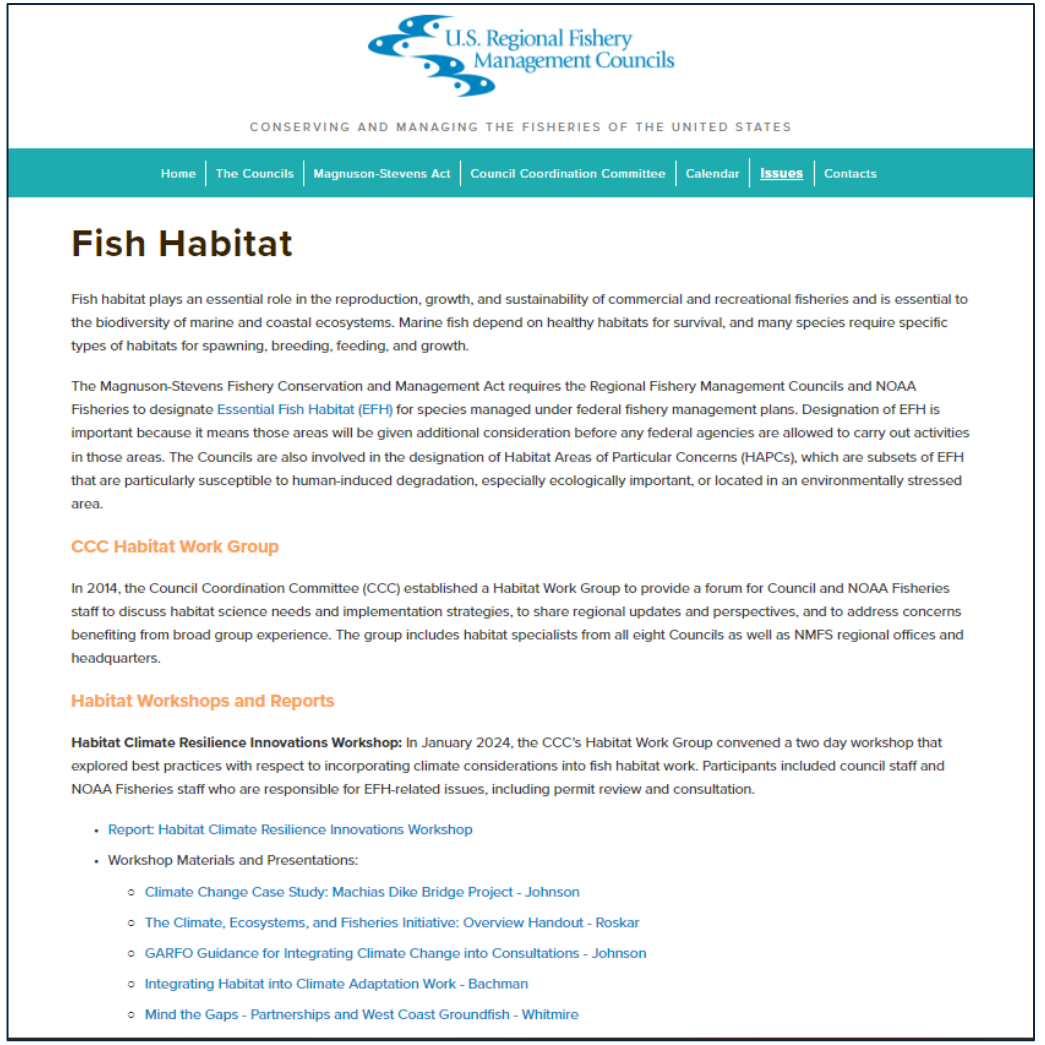
Next Steps

- Now that database is complete, Project Team recommends:
  - CCC collectively assumes long-term maintenance
  - CCC utilizes its Habitat Work Group (HWG) for support

Next Steps

- Requires R-Shiny App host
  - MAFMC can continue to host for now
- Database link added to CCC Webpage
- New records:
  - Train a few HWG members to add records
  - HWG puts standing reminder in agendas to highlight additions, EFH Review needs, and ensure new staff are trained as needed

https://www.fisherycouncils.org/habitat



U.S. Regional Fishery Management Councils

CONSERVING AND MANAGING THE FISHERIES OF THE UNITED STATES

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Fish Habitat

Fish habitat plays an essential role in the reproduction, growth, and sustainability of commercial and recreational fisheries and is essential to the biodiversity of marine and coastal ecosystems. Marine fish depend on healthy habitats for survival, and many species require specific types of habitats for spawning, breeding, feeding, and growth.

The Magnuson-Stevens Fishery Conservation and Management Act requires the Regional Fishery Management Councils and NOAA Fisheries to designate Essential Fish Habitat (EFH) for species managed under federal fishery management plans. Designation of EFH is important because it means those areas will be given additional consideration before any federal agencies are allowed to carry out activities in those areas. The Councils are also involved in the designation of Habitat Areas of Particular Concerns (HAPCs), which are subsets of EFH that are particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area.

CCC Habitat Work Group

In 2014, the Council Coordination Committee (CCC) established a Habitat Work Group to provide a forum for Council and NOAA Fisheries staff to discuss habitat science needs and implementation strategies, to share regional updates and perspectives, and to address concerns benefiting from broad group experience. The group includes habitat specialists from all eight Councils as well as NMFS regional offices and headquarters.

Habitat Workshops and Reports

Habitat Climate Resilience Innovations Workshop: In January 2024, the CCC's Habitat Work Group convened a two day workshop that explored best practices with respect to incorporating climate considerations into fish habitat work. Participants included council staff and NOAA Fisheries staff who are responsible for EFH-related issues, including permit review and consultation.

- Report: Habitat Climate Resilience Innovations Workshop
- Workshop Materials and Presentations:
  - Climate Change Case Study: Machias Dike Bridge Project - Johnson
  - The Climate, Ecosystems, and Fisheries Initiative: Overview Handout - Roskar
  - GARFO Guidance for Integrating Climate Change into Consultations - Johnson
  - Integrating Habitat into Climate Adaptation Work - Bachman
  - Mind the Gaps - Partnerships and West Coast Groundfish - Whitmire

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Development work by Dave Stevenson (contracted; database and records) and Tori Kentner (MAFMC; application development)

Project Oversight from Michelle Bachman (NEFMC), Jessica Coakley (MAFMC), and Sarah Rheinsmith (formerly NPFMC, now GFMC)

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