



Advances in Habitat Science to Support EFH:

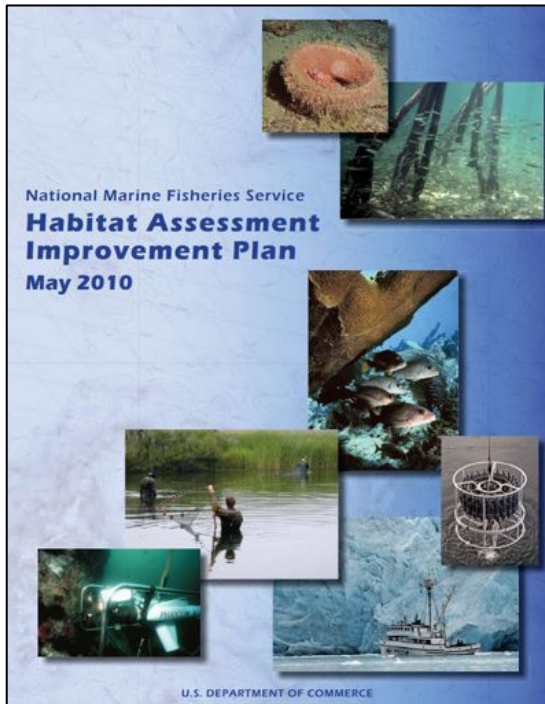
The **BIG** Picture

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NOAA-NMFS Office of Science & Technology
EFH Summit, May 2016



Habitat Assessment Improvement Plan (HAIP)



Habitat:

- Place where species live
- Forms structural matrix of ecosystems
- Characterized by physical, chemical, biological, and geological components of the ocean environment

HAIP strategy:

- Support increased **habitat science** and **assessments** to meet MSA mandates

Habitat Science:

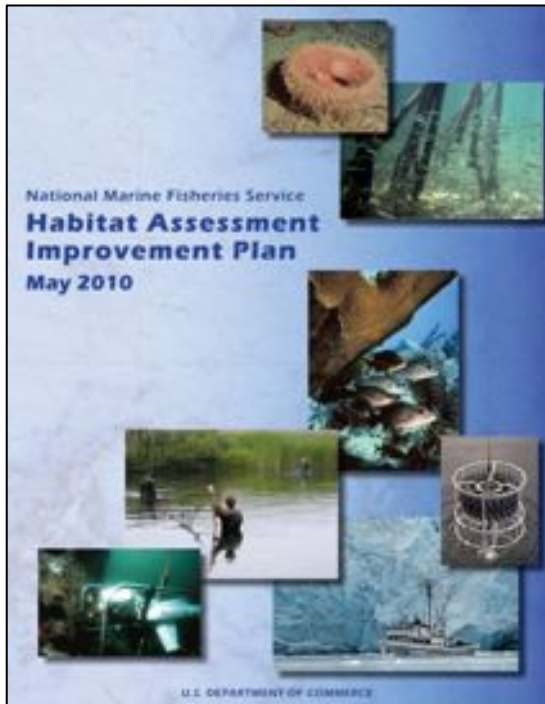
- Study of relationships among species & their environments in relation to fishery production and ecosystems

Habitat Assessment:

- Process/products associated with the best available info on habitat characteristics relative to the population dynamics of fishery species and LMRs



HAIP Recommendations



- Improve habitat assessments to integrate habitat information into stock assessments
- Improve identification and impact assessments of EFH
- Prioritize stocks and geographic locations that would benefit from habitat assessments (HAPWG)
- Increase collection of habitat data during fishery-independent surveys
- Develop a plan for better utilizing advanced technology
- Convene regional and national workshops
- Develop a NOAA-wide strategic plan
- Develop new budget and staffing initiatives
- Engage with partners

HAIP: Progress Six Years Later



Progress has been made on many of the recommendations:

- Improving stock assessments
- Improving fishery-independent surveys
- Furthering EFH designation
- Advancing habitat science, conservation, and management
- Budget initiatives
- HAIP team intact and functioning

But there's a long way to go:

- Many data gaps remain
- Limited capacity to fill these gaps
- Many competing priorities
- Budget initiatives



Studies Improving Stock Assessments

- **2010 to 2016:** \$3.4M in studies (32 projects) have been funded to incorporate habitat into stock assessments.

Successful examples:

- Northeast Butterfish
 - Scaled catchability for survey data based on thermal habitat
 - Accounts for habitat-dependent survey error
- West Coast groundfish
 - Habitat-based predictive models of groundfish abundance
- Gulf Brown Shrimp

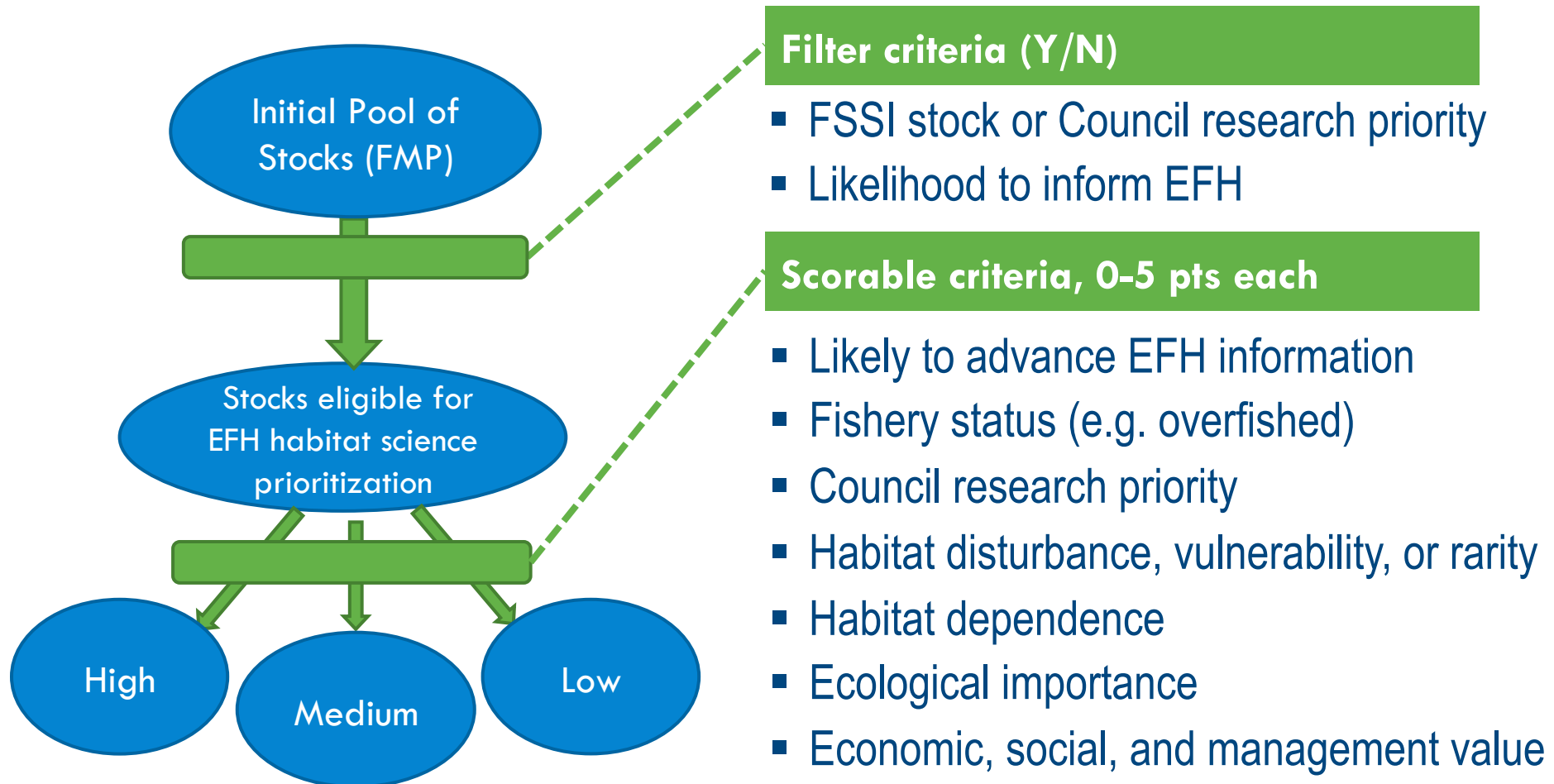
The screenshot displays the NOAA Office of Science and Technology website. The top navigation bar includes links for NOAA HOME, WEATHER, OCEANS, FISHERIES, CHARTING, SATELLITES, CLIMATE, RESEARCH, COASTS, and CAREERS. Below this is the NOAA logo and the text "NOAA OFFICE OF SCIENCE AND TECHNOLOGY NATIONAL MARINE FISHERIES SERVICE". The main content area is titled "2015 Projects" and lists four projects:

- Improving Stock Assessments for Rockfishes Using Habitat-referenced Acoustic Surveys in the Gulf of Alaska**
Principal Investigator: Chris Wilson
Region: Alaska Fisheries Science Center (AFSC)
- Distribution and application of a new geostatistical index: standardization and habitat modeling tool for stock assessments and essential fish habitat designation in Alaska and Northwest Atlantic regions**
Principal Investigator: Jim Thorson
Region: Northwest Fisheries Science Center (NWFS)
- Using habitat-specific, spatial demographic information to improve stock assessments of groundfishes**
Principal Investigator: Jameal Samhouri
Region: Northwest Fisheries Science Center (NWFS)
- Incorporating hypoxia-based habitat compression impacts into the stock assessment process for tropical pelagic billfish and tuna**
Principal Investigator: Eric Prince
Region: Southeast Fisheries Science Center (SEFSC)

<http://www.st.nmfs.noaa.gov/ecosystems/habitat/funding/projects/index>

Prioritization for Habitat Science for EFH

- Prioritize stocks to improve EFH consultations
- Regional rankings - SW, NW, and NE completed; PI and AK in progress



National Habitat Assessment Workshops (NHAWs)

NHAW I (2010):

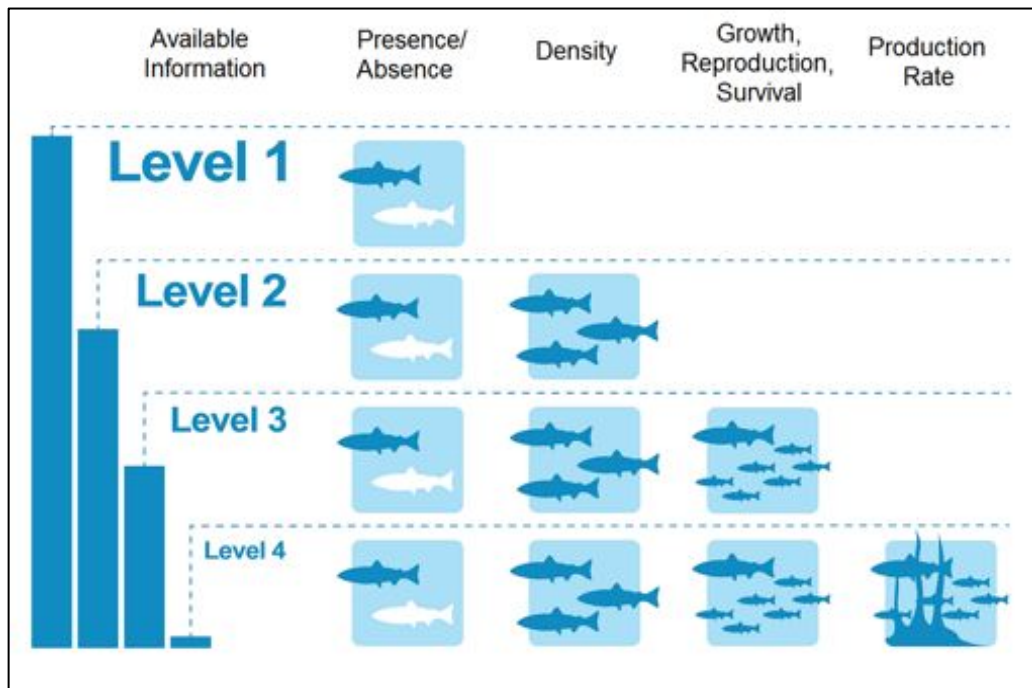
- Focused on enhancing communication between habitat scientists and managers
- Joint session with National Stock Assessment Workshop (NSAW)
- Provided information exchange to help determine and address habitat science needs

NHAW II (2012):

- The **quantitative** link between **inshore habitat** and **offshore fisheries production** was identified as a high priority knowledge gap
- Three pilot projects supported by S&T and OHC
- Provided basis for budget initiatives



Information Levels for EFH Designation



- Most EFH is Level 1
- Level 2-4 only exists for handful of species and life stages
- NMFS supports studies to incorporate Level 2-4 data into EFH and HAPC designations
 - Where possible, focus on supporting high-priority stocks



NOAA HABITAT CONSERVATION | HABITAT PROTECTION
NATIONAL MARINE FISHERIES SERVICE

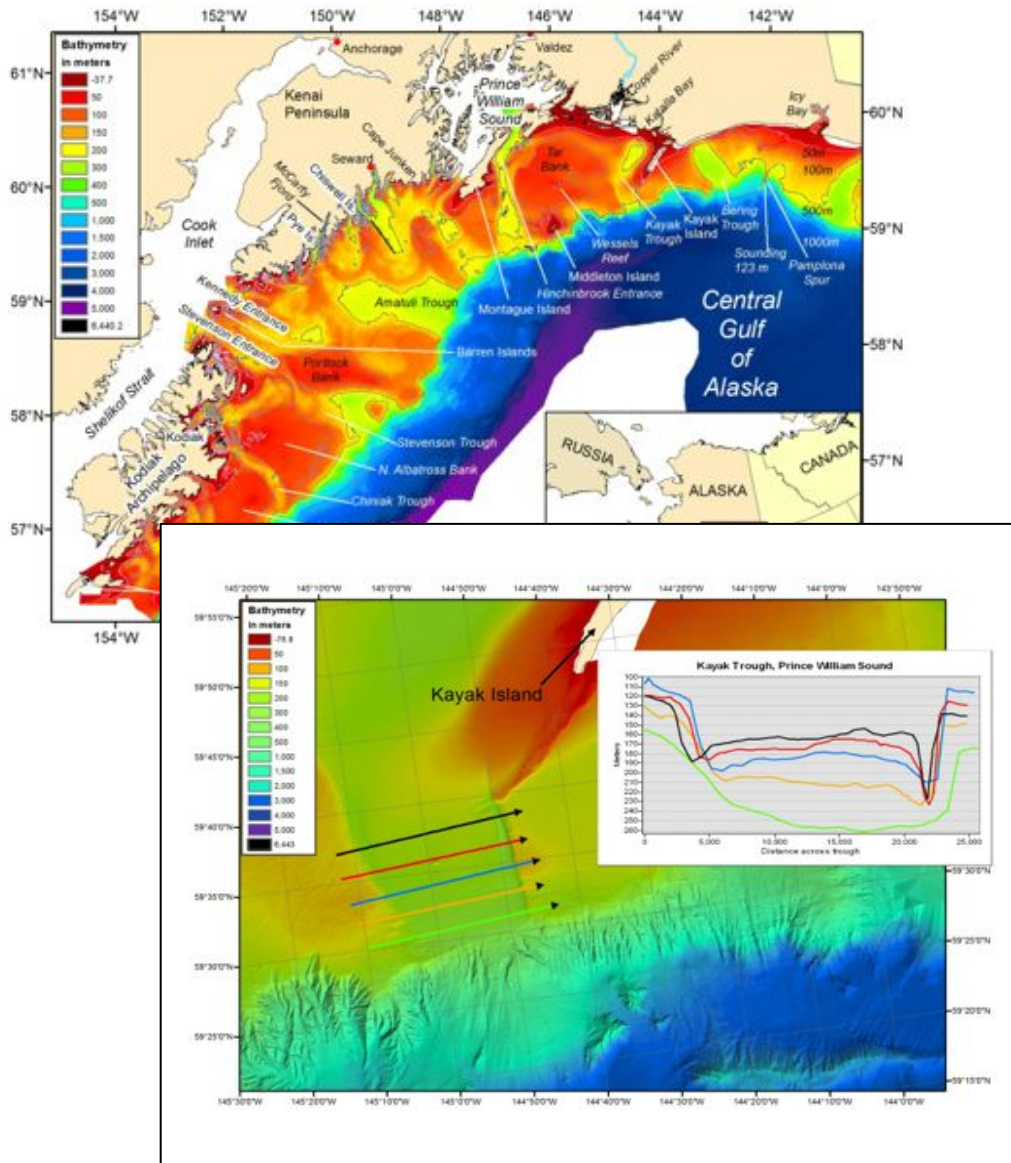


NOAA FISHERIES

Science for EFH Designation

2014 Eagleton et al. (AKRO)

- Surveyed Gulf of Alaska and Norton Sound fish habitat & benthic substrate
- Biogenic information incorporated into habitat impacts models:
 - **refined Alaska EFH** and moved species descriptions to **Level 2 density information**
- Resulted in data-driven predictions of the 95% species distribution range
- Enhanced habitat-based modeling for Stock Assessments



Habitat Science is Key Component of EBFM

- **NMFS close to adopting formal EBFM Policy**
 - A systematic approach to fisheries management in a geographically specified area that contributes to the resilience and sustainability of the ecosystem; recognizes physical, biological, economic, and social interactions ... seeks to optimize benefits among a diverse set of societal goals.
- **Habitat information and conservation** are major components of EBFM.



- MSA encourages councils to use ecosystem & habitat science; FEPs include habitat information

Future Directions

There's still a lot of science to do:

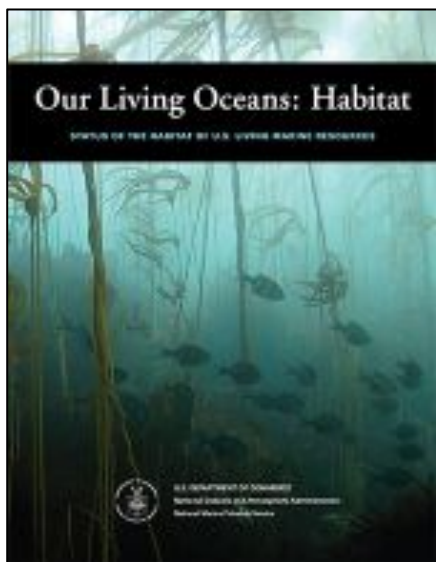
- Habitat mapping
 - Status, trends, quantities
- Habitat-specific vital rates by life stage
 - Growth/survival/productivity by life stage
- Ecological connections between estuarine/coastal and offshore habitats and stocks
- Climate change impacts on habitat and species
- Ecosystem Services Valuation of key habitats



How Can We Get There?

- Improve habitat assessments to integrate habitat information into stock assessments
- Improve identification and impact assessments of EFH
- **Prioritize stocks and geographic locations that would benefit from habitat assessments (HAPWG)**
- **Increase collection of habitat data during fishery-independent surveys**
- **Develop a plan for better utilizing advanced technology**
- Convene regional and national workshops
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For More Information



O u r L i v i n g O c e a n s : H a b i t a t
<http://st.nmfs.noaa.gov/ecosystems/habitat/plans/olohabitat>

NMFS Habitat Assessment Improvement Plan

<http://www.st.nmfs.noaa.gov/ecosystems/habitat/publications/haip/index>

NMFS Habitat Science Website

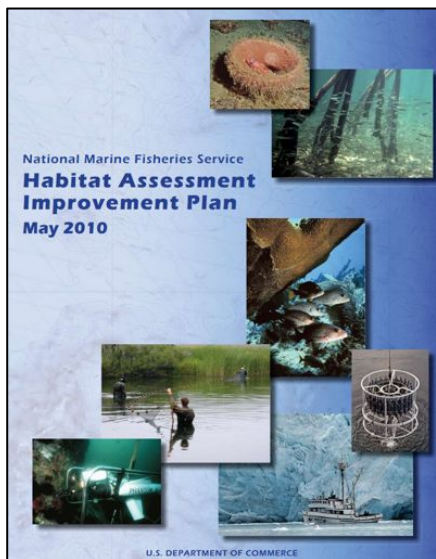
<http://www.st.nmfs.noaa.gov/ecosystems/habitat/>

NOAA Habitat Blueprint

<http://www.habitat.noaa.gov/habitatblueprint/>

NOAA-NMFS Office of Habitat Conservation

<http://www.habitat.noaa.gov/>



Questions?

