

Executive Summary

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) governs marine fisheries management in United States waters (3 miles from shore). In 1996, the U.S. to assist the fishery management councils (FMCs) Habitat (EFH) in fishery management plans (FMPs) the consideration of actions to ensure the ocean requires federal agencies to consult with the Nat proposed actions that are permitted, funded, or u To specifically meet national standards, EFH de measures shall be based on the best scientific and contingencies in fisheries, fishery resources, and *Essential Fish Habitat from Non-fishing Activities* EFH consultations and activities that may adverse measures for a wide variety of non-fishing activi into four broad environmental categories to whic (2) hardbottom, streams, rivers, and lakes; (3) m marine and offshore zones.

Alaska extends over Arctic, subarctic, and temperate ecosystems (LMEs) exist in these climate zones coastal zones are identified within the nearshore terrestrial ecoregions are defined above the high water, the most important EFH feature, moves d 2016 report introduces an ecosystem-based appa understanding of the existing ecosystem process attributes¹ necessary for fish and invertebrate su summaries our current understanding of climate effects on EFH and includes recommendations f climate change. The exact reason why climate c climate scientists, oceanographers, and fisheries oceanic, and regional weather patterns. An indica sea ice. Scientists at NMFS's Alaska Fisheries S marine conditions have altered trophic dynamics commercial fish species in the Eastern Bering Se temperatures (SSTs) in the Gulf of Alaska (GOA) and abundance.

The NMFS Alaska Regional Division of Habitat makers and the public on activities that may affe Recommendations to conserve healthy fish stock

Impacts to Essential Fish Habitat from Non-fishing Activities in Alaska

November 21, 2016

Prepared by

National Marine Fisheries Service, Alaska Region
Habitat Conservation Division



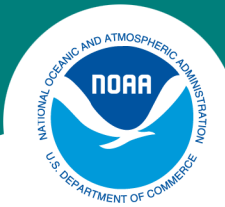
National Marine Fisheries Service, Alaska Region

¹ An EFH attribute is water and air quality or characteristic above or supported by water, related biology, chemistry, or geology that benefits aquatic or marine species and trophic levels at several possible life history stages.

NOAA FISHERIES SERVICE

1 What is the Non Fishing Report is used for...

2 New to the 2016 Review



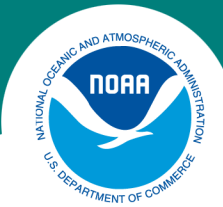
What is the Non-Fishing Impacts Report Used for?

The primary purpose is to give Federal action agencies and development project proponents a sense of what NMFS may offer during an EFH consultation for activities that may adversely affect EFH.

Meets a Mandatory EFH Content within FMPs [50 CFR 600.815(a)(4)]

Serves as a source document for...

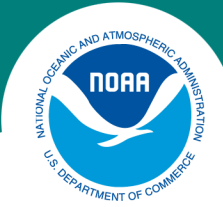
- ✓ Federal action agencies
- ✓ The public
- ✓ A source document



HCD Review

NMFS HCD Subject Matter Experts reviewed the November 2011 report and concluded:

- 1) A lot of the information remains valid; just needs updating
- 2) Agreed that the overall intent also remains valid, as it:
 - a. Meets the EFH Final Rule requirement to include Non-fishing actions in FMPs (one of the 10 EFH Required Components).
 - b. Gives federal actions agencies, dealing with these activities, a sense of where NMFS may advise them of action they undertake, authorize, or fund.
- 3) Lastly, thought that we could make the report better and give it a fresh look.

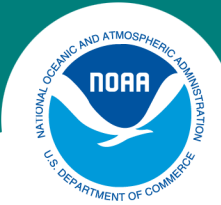


2016 Report Presents

Ecosystem Approach to running water...

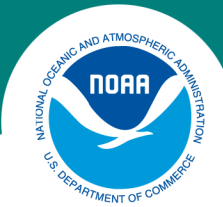
- New introductions discuss ecosystem processes that represent EFH
- Wetlands; Riverine; Estuarine; Marine
 - Discusses EFH attributes
- Ecosystem Considerations (EBFM)





Complimentary to NOAA Programs

- ✓ NOAA Organizational Structure & Mission
- ✓ NOAA Strategic Plan
- ✓ 2015 NOAA Fisheries Climate Science Strategy
- ✓ 2016 NMFS Draft Climate Science Action Plan
- ✓ Ecosystem Based Fisheries Management
- ✓ Alaska Fisheries Science Plan
- ✓ AFSC Annual Guidance Memorandum
- ✓ Alaska EFH Research Plan



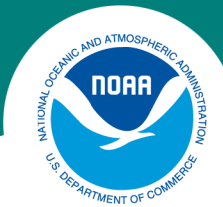
Layout Changes – Rivers to Ocean

1. Climate Change and Ocean Acidification
2. Wetlands and Woodlands
3. Headwaters, Streams, Rivers, and Lakes
4. Estuaries and Nearshore Zones
5. Marine and Offshore Zones

All sections initiate with a Current Condition and Habitat Metrics discussion. Each segment *flows* into the next. Described activities end with Recommended EFH Conservation Measures.

The diagram illustrates the interconnectedness of physical, biological, and human systems in the Alaska coastal ecosystem. Key components include:

- Physical Processes:** The Aleutian Low Pressure system drives the Alaska Current, which is influenced by wind and Ekman Transport. A continental shelf break and a trench front are shown. Downwelling and upwelling are driven by lunar forcing. Turbulence and tidal mixing occur near the sill and deep hole. The carbon pump and shell break front are also indicated.
- Biological Processes:** The food web starts with phytoplankton, moving through zooplankton, forage fish, and large fish. Salmon migration is shown with fry and adults. Benthic communities, including overwintering copepods, are part of the deep-sea ecosystem. Sea birds and marine mammals are also depicted.
- Human Activities:** Tourism, recreation, commercial fishing, sport fishing, and subsistence are shown as human interactions with the ecosystem. Coastal communities are also represented.
- Environmental Factors:** Airborne contamination and precipitation are shown as external inputs. Freshwater runoff and old carbon + nutrients are also depicted.



Alaska Large Marine Ecosystems

Alaska Marine Ecosystem Considerations

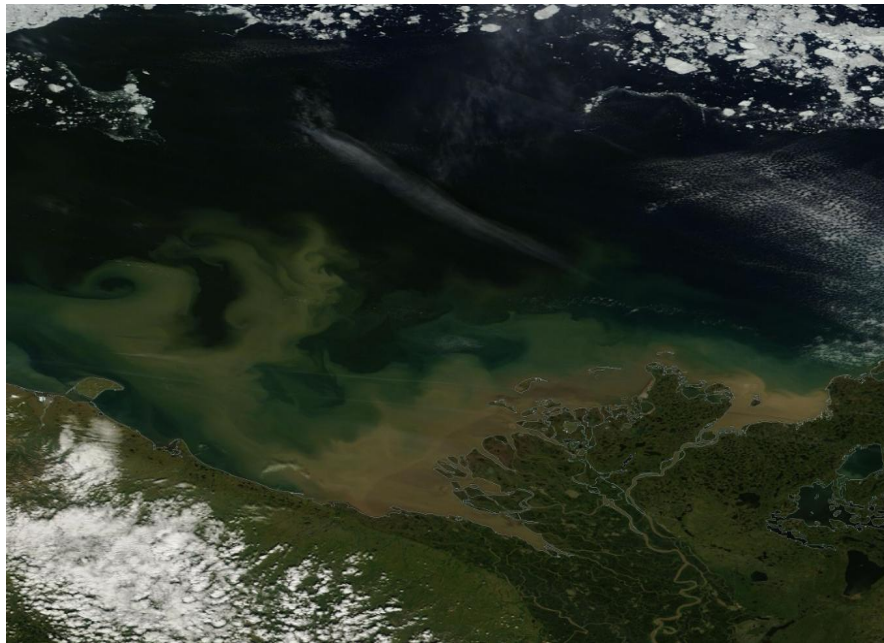
[Home](#) [Report](#) [Assessments](#) [Report Cards](#) [Hot Topics](#) [Links](#)

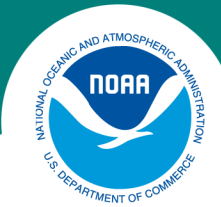
The Ecosystem Considerations report is produced annually to compile and summarize information about the status of the Alaska Marine Ecosystem for the [North Pacific Fishery Management Council](#), the scientific community and the public. The report includes ecosystem report cards, ecosystem assessments, and ecosystem and ecosystem-based management indicators for the Eastern Bering Sea (EBS), Aleutian Islands (AI), the Gulf of Alaska (GOA), and Arctic ecosystems.

| Eastern Bering Sea | Aleutian Islands |
|---|---|
| <ul style="list-style-type: none"> • Assessment • Report Card • Hot Topics <ul style="list-style-type: none"> ◦ Chum Salmon ◦ Bird Sightings | <ul style="list-style-type: none"> • Assessment • Report Card |
| Gulf of Alaska | Arctic |
| <ul style="list-style-type: none"> • Assessment • Report Card • Hot Topics <ul style="list-style-type: none"> ◦ Too Warm? ◦ Age-0 Pollock ◦ Marine Mammals | <ul style="list-style-type: none"> • Assessment • Hot Topics <ul style="list-style-type: none"> ◦ Polar Bears |

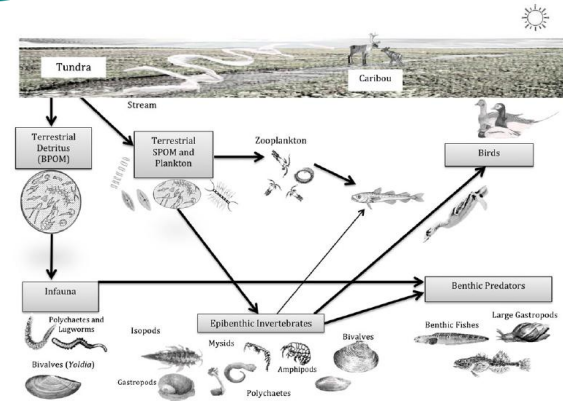
Riverine, Estuarine and Marine Interface

Copper, McKenzie and Yukon Rivers Plumes





Interfaces - continued



Dunton, K.H., Schonberg, S.V. and Cooper, L.W., 2012. Food web structure of the Alaskan nearshore shelf and estuarine lagoons of the Beaufort Sea. *Estuaries and Coasts*, 35(2), pp.416-435.

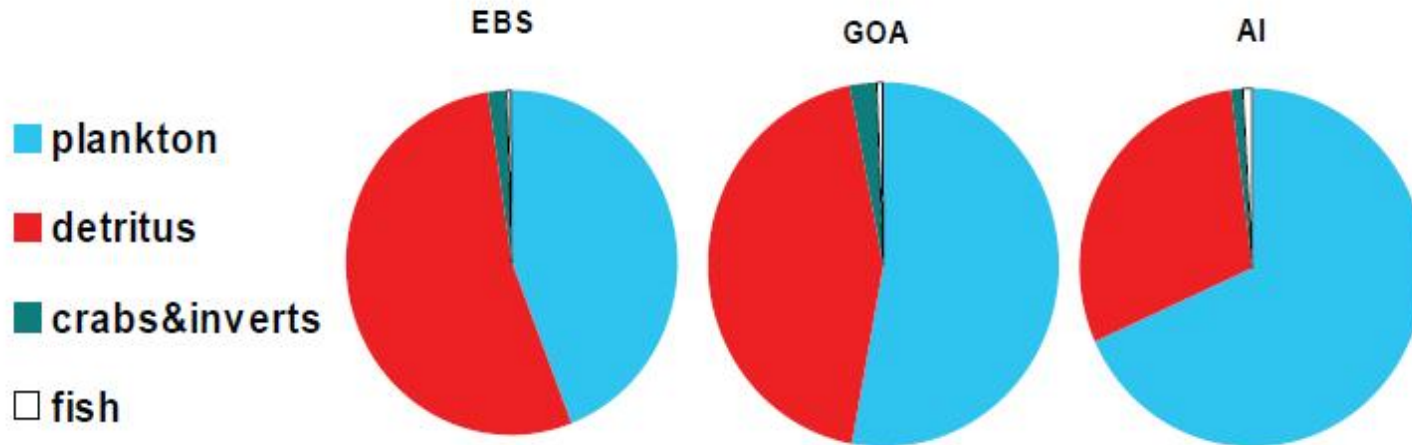
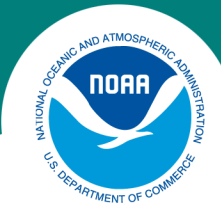


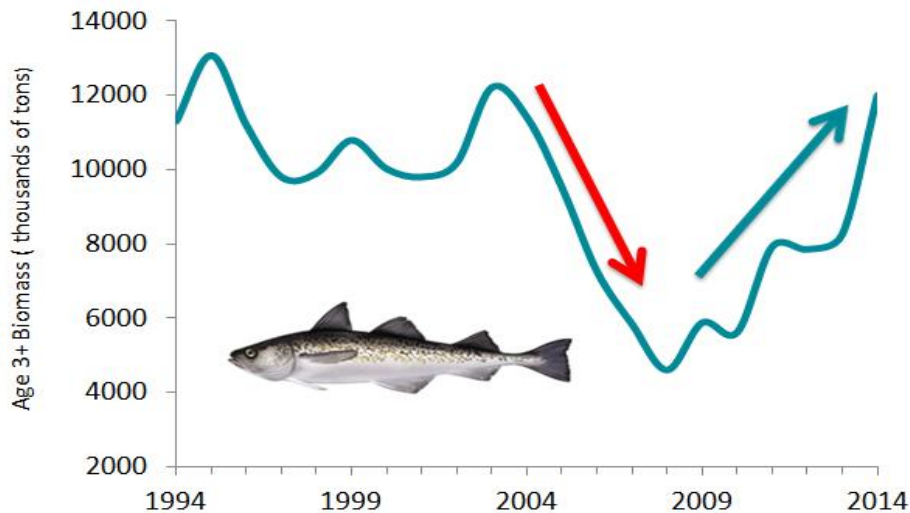
Figure 5. Proportion of total ecosystem consumption by prey classes in the Eastern Bering Sea (EBS), Gulf of Alaska (GOA) and Aleutian Islands (AI).



Climate Change

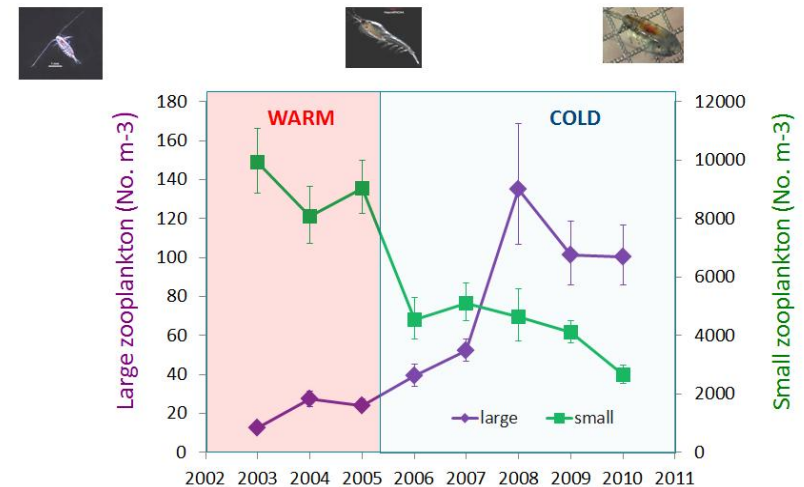
New Chapter presents simple discussion of Climate Change in Alaska

- Presents climate change in the context of easily visible and less visible measures
- Presents recent observations on sea surface temperatures, sea ice extend and duration, influences on trophic dynamics, fish species range, distribution and recruitment

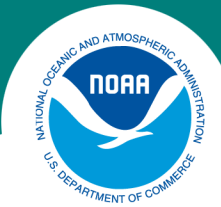


Ianelli, 2013. Assessment of the walleye pollock stock in the eastern Bering Sea. NPFMC BS/AI Assessment

Late Summer (Aug – Oct) Zooplankton Biomass



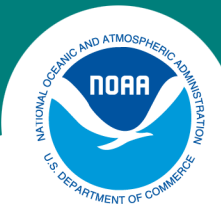
Eisner, L., Napp, J., Mier, K., Pincuk, A., Andrews A. 2014. Climate-mediated changes in zooplankton community structure for the eastern Bering Sea. Deep Sea Res II, DOI: 10.1016/j.dsr2.2014.03.004.



EFH Conservation Measures Climate Change

- Reasonable alternatives to consider short and long-term effects, benefits, and mitigation.
- Discussion of ecological and biological responses to changing conditions.
- Projects that will have decadal level effects should brief NMFS and the NPFMC for interpretation as to whether or not the activity will adversely affect any managed fishery resource.
- Action agencies hold a combined local and regional biological resource managers meeting to detail climate change uncertainties, including communities at risk.

[Page 31-32 of Report]:



EFH Conservation Measures Marine Fiber Optic Cable

Seafloor Cable Recommendations

- Locate cable alignments to avoid damage to marine and estuarine habitat
- Avoid high-relief bottom habitat inhabited by corals and sponges

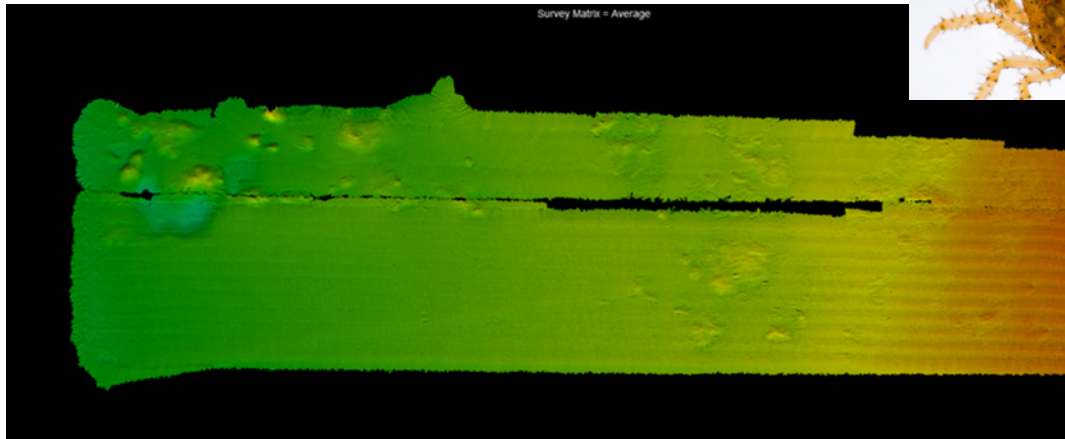


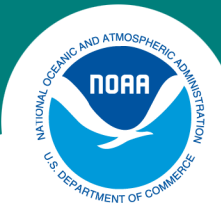


EFH Conservation Measures Nearshore-Coastal Marine Mining

Nearshore Coastal Marine Mining Recommendations

- Seasonal restrictions avoiding impacts to larval and juvenile life stages
- Avoid long term impacts or alterations in nearshore trophic dynamics

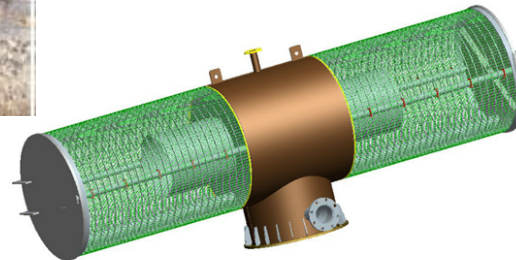


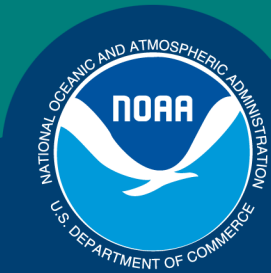


EFH Conservation Measures

Marine Intakes and Terminals - Pipelines Crossings

- Avoid marine pipeline construction phases during fish migrations or spawning seasons
- Seasonal restrictions may mitigate impacts
- Avoid increased mortalities to nearshore sub-adult populations
- Maintain migratory pathways for anadromous species





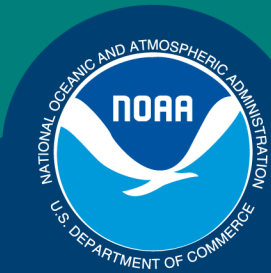
Non Fishing Impacts to EFH

Acknowledgements need to be extended to some and/or all, wholly or in part...

Kerim Aydin, Steve Barbeaux, Jim Ianelli, Kimberly Rand, Bob Lauth, Bob McConnaughey, Stefani Zador, Ed Farley, Joe Orsi, Ellen Yasumiichi, Andrew Grey, Phil Mundy, Matt Eagleton, Carl Markon, Sarah Trainor, Terry Chapman, Lyman Thorsteinson, Durell Smith, Vanessa Skean, Kyle Holgreff, Vanessa von Biela, Lauren Bell, Tammy Hoem-Neher, Gary Lamberti, Daniel Schindler, Dan Rinella, etc...

**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship



Contact(s):

Jeanne Hanson

Assistant Regional Administrator, Habitat Conservation Division

jeanne.hanson@noaa.gov

Matthew P. Eagleton

EFH Regional Coordinator

matthew.eagleton@noaa.gov

**NOAA
FISHERIES
SERVICE**



Non-fish Report Comments (to date)

- ✓ Great job and a good change - Kudos
- ✓ Marine Section
 - ✓ ADD Shipping Section, including expected vessel traffic
 - ✓ Arrange related activities into this topic area
- ✓ Include a couple more ecosystem references [I.e., Bering Sea Climate Change & Action Plan; (Spencer)]
- ✓ Discuss spatial aspect and context of activities
- ✓ Some areas appear to not have been updated, as compared to others
- ✓ Use most recent and exact sources (not tier links to other links)