

Essential Fish Habitat Progress Report April 2003

Review of Materials Distributed

- EIS Table of Contents
- RIR Table of Contents
- Chapter 1 (Purpose and Need)
- Chapter 2 (Alternatives)
- Research and Monitoring Approaches
- Unpublished manuscript on living substrates (Melacha et al.)

Review of SSC Concerns from February 2002

- Conceptual approach to minimizing effects of fishing on EFH.
- Goals, origin, justification, tools, and objectives of minimization alternatives.
- Research plan.
- Analysis components.

Overview of Alternatives to Minimize the Effects of Fishing on EFH

Notes on Chapter 2

- Includes overview of previous actions (section 2.2.2), a review of development EIS alternatives (section 2.2.3 and Table 1), examples for EFH & HAPC designation alternatives, objectives of minimization alternatives, updated maps and text, and description of alternatives considered but not analyzed (section 2.4).
- Details added to Alternative 5B. Still need data to determine: 1) TAC reduction for each species, and 2) coral/bryozoan and sponge bycatch limits. (see p. 2-44)
- Alternative 6 clarified to include the longline halibut fishery. [Note that jigs, dinglebar, troll, gillnet, and all other legal gear types would be allowed within the reserve areas, and that subsistence and recreational fisheries would not be affected.]

SSC Concern #1: Conceptual Approach pages 2-37 through 2-39

- A spreadsheet analysis showed that the scallop, salmon, and crab fisheries had much smaller footprints and habitat impacts than groundfish fisheries, so focus turned to groundfish fisheries.
- Alternatives 1-5 are based primarily on Rose model incorporating groundfish fishery spatial fishing intensity, sensitivity, and habitat recovery. The spreadsheet and Rose model comprise the evaluation required by the EFH final rule.
- No quantitative threshold has been established to decide what fishing activity adversely effects EFH in a manner that is more than minimal and not temporary.
- The Rose model ranked fisheries based on relative impacts to habitat. Fisheries with highest impacts addressed in all alternatives, lower impacts addressed in higher # alternatives. Measures for AI added in Alternatives 4 and 5 to address limitations of the draft model.
- Alternatives 5B and 6 were not directly based on the model results.

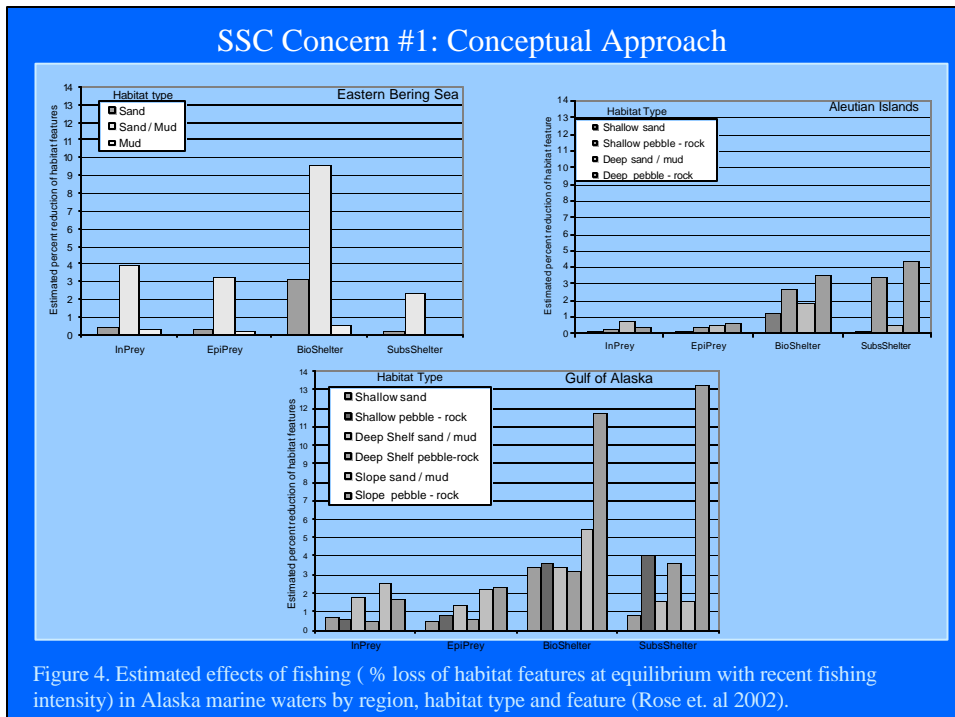


Figure 4. Estimated effects of fishing (% loss of habitat features at equilibrium with recent fishing intensity) in Alaska marine waters by region, habitat type and feature (Rose et. al 2002).

SSC Concern #1: Conceptual Approach

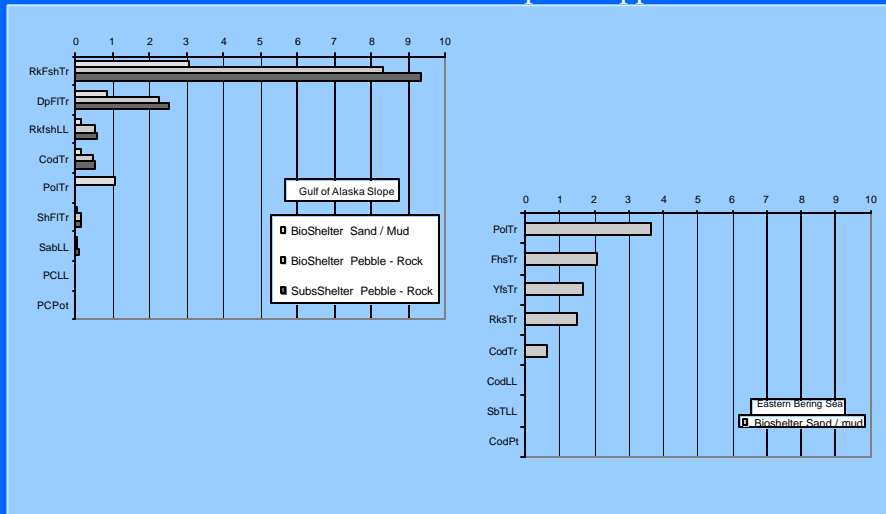


Figure 5. Fishery distribution of estimated effects of fishing (% loss of habitat features at equilibrium with recent fishing intensity) for features with > 5% effect A) Gulf of Alaska slope shelter features b) Eastern Bering Sea sand/ mud bioshelter (Rose et. al 2002)

SSC Concern #2: Objectives of Alternatives pages 2-39 through 2-46, table on 2-64

- Goal of all alternatives is to minimize adverse effects of fishing to the extent practicable (EFH regulations in section 1.5.6)
- Objectives and rationale have been listed for each alternative.
- Alternatives 2-5, developed by the EFH Committee, include area closures and gear modifications (Alts 4-5) designed to reduce the effects of specific fisheries on specific habitat features, and to allow some portion of the bottom to recover. The size of the closures and the number of fisheries included, and the relative amount of EFH conservation, increase with alternative #.
- Alternative 5B, proposed by Oceana, aims to reduce the effects on sessile epifauna in the Aleutian Islands.
- Alternative 6, proposed by The Ocean Conservancy, aims to eliminate all effects of all bottom fishing gear (dredges, trawls, longlines, and pots) on 20% of the seafloor.

SSC Concern #2: Tools used in Alternatives pages 2-38 through 2-46, table on 2-64-67

The NRC report "Effects of Trawling and Dredging on Seafloor Habitat" recommended 3 tools for managing effects of trawling on habitat: effort reduction, gear modifications, and closed areas.

- Effort reduction is not directly considered in most of the alternatives because trawl effort is relatively low off Alaska, and fishing effort is already directly controlled (through IFQs, CDQs, LLPs, rationalization programs) and indirectly controlled through OY cap, bycatch limits, and conservative TACs. Alternative 5B reduces effort via TAC reduction.
- Gear modifications are included in Alternatives 2-5: voluntary change from bottom trawl to fixed or pelagic trawl gear for GOA slope rockfish fisheries, and minimum roller size for footrope and sweeps on bottom trawls used in the Bering Sea.
- Closed areas are included in all alternatives. There are bottom trawl closures in Alternatives 2-5, and closures to all bottom tending gear in Alternative 6.

SSC Concern #3: Research Plan

- A draft discussion outline of research and monitoring approaches was prepared by NMFS.
- The EIS will describe the overall goals and objective for research and monitoring for each alternative
- Once the Council selects a preferred alternative, staff will develop the necessary analysis to implement research and monitoring in a subsequent process (EA/RIR).

SSC Concern #4: Analytical Components

- The draft table of contents for the EIS and RIR list components of the analysis.
- SSC recommended that analysis should include: 1) ability of alternative to meet the stated objectives; 2) biological consequences of recolonization of invertebrates and fish; 3) economic and social costs by sector and community; and 4) enforceability.

Overview of Minimization **Alternative 1**

page 2-39

Origin: National and Council policy, FMP amendments, regulations

Objectives: Conserve, restore, and maintain habitat for fish productivity

Measures: gear restrictions, MPAs harvest limits, effort limits, rationalization programs, other regulations (reviewed on pages 2-2 through 2-8)



Overview of Minimization **Alternative 2**

page 2-39

Origin: EFH Committee

Rationale:

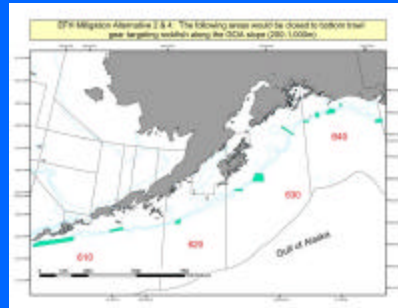
- Addresses fishery with highest score from Rose model

Objectives:

- Allow some recovery of GOA slope
- Provide incentive for gear conversion
- Limit restrictions to reasonable measures

Measures:

- Prohibit bottom trawling for rockfish in designated areas of GOA slope,
- Allow conversion from bottom trawl to pelagic trawl or fixed gear to fish for rockfish within these areas



Overview of Minimization **Alternative 3**

page 2-40

Origin: EFH Committee

Rationale:

- Addresses fishery with highest score from Rose model; more protective

Objectives:

- Allow more recovery of GOA slope
- Provide incentive for gear conversion
- Limit restrictions to reasonable measures

Measures:

- Prohibit bottom trawling for rockfish on **ALL** areas of GOA slope,
- Allow conversion from bottom trawl to pelagic trawl or fixed gear to fish for rockfish on the slope



Overview of Minimization **Alternative 4**

page 2-40

Origin: EFH Committee

Rationale:

- Addresses fisheries with highest score from Rose model, plus protection for all areas

Objectives:

- Allow some recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (Bering Sea trawl disc requirement)
- Provide incentive for gear conversion (GOA rockfish fisheries)
- Limit restrictions to reasonable measures

Measures:

- 'Open' areas in for BS bottom trawl
- Bottom trawl closures in all areas
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope)



Overview of Minimization **Alternative 5A**

page 2-42

Origin: EFH Committee

Rationale:

- Similar to Alternative 4 but larger areas, more protective

Objectives:

- Prevent expansion of trawl effort (BS)
- Allow more recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (Bering Sea trawl disc requirement)
- Provide incentive for gear conversion (GOA rockfish fisheries)
- Limit restrictions to reasonable measures

Measures:

- 'Open' areas for BS bottom trawl
- Bottom trawl closures in all areas (more extensive in BS and AI; more restrictive in GOA - all slope closed to rockfish bottom trawl & designated areas closed to all bottom trawl)
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope)



Overview of Minimization **Alternative 5B**

page 2-43

Origin: Oceana (AI portion); EFH Committee (BS, GOA)

Objectives:

- Prevent expansion of trawl effort (BS, AI)
- Allow more recovery in areas of BS and AI shelf/slope, and GOA slope
- Reduce contact of gear on bottom (Bering Sea trawl disc requirement)
- Provide incentive for gear conversion (GOA rockfish fisheries)
- Indirectly control effort in AI (via TAC reduction)
- Control/reduce bycatch of sessile invertebrates (AI)

Measures:

- 'Open' areas in BS and AI
- Bottom trawl closures in all areas
- AI only: TAC reduction; bycatch limits for sponges, corals, and bryozoans; VMS: mandatory research plan
- Gear regulations for BS trawl
- Voluntary gear conversion (GOA slope rockfish)



Overview of Minimization **Alternative 6**

page 2-45

Origin: The Ocean Conservancy/NMFS

Rationale:

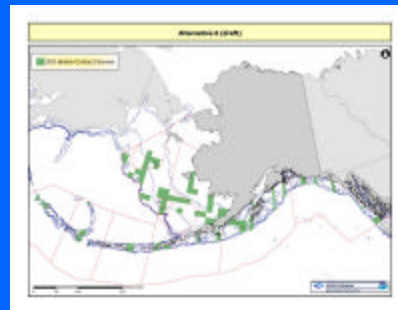
- Addresses impacts from all fisheries that contact the bottom.

Objectives:

- Allow 20% of all shelf and slope areas to fully recover from any and all impacts due to fisheries

Measures:

- Prohibit commercial fisheries from using bottom tending gear in designated areas.
- Includes all status quo measures as well.



EFH EIS – Mitigation Alternative 5b

The Aleutians suboption has four components:

- No expansion of bottom trawl fisheries
- Close areas with high rates of bycatch and low rates of catch
- Area-specific bycatch limits
- Comprehensive research and monitoring plan

Also assumes 100% VMS and observer coverage

EFH EIS – Mitigation Alternative 5b

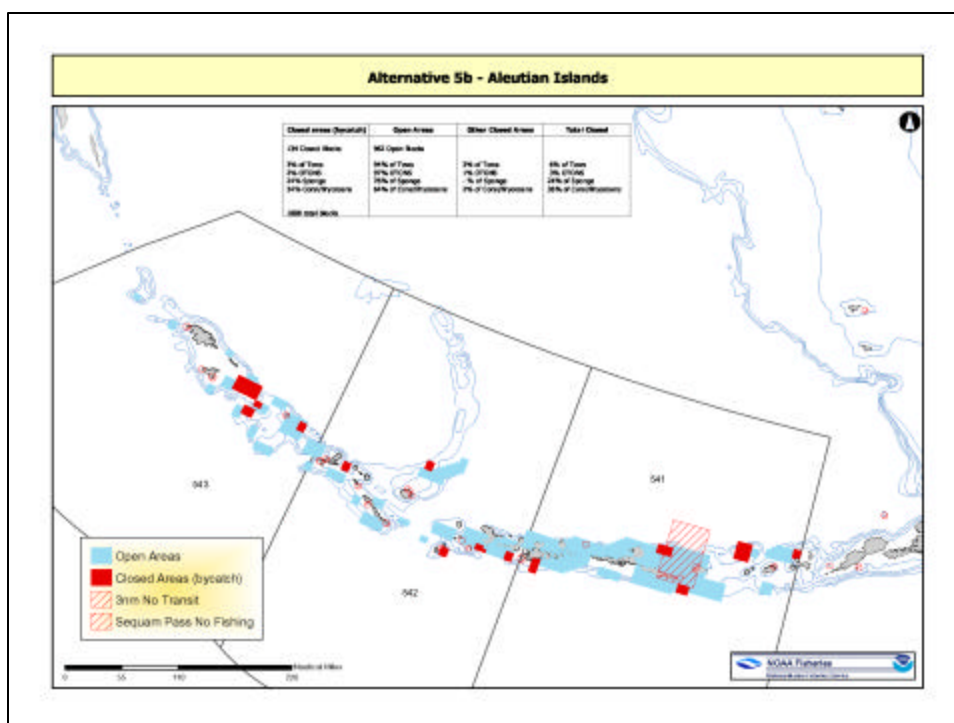
No expansion of bottom trawl fisheries (Open Areas)

- Based on effort during 1990-2001 (NORPAC)
- Summed points to 5k grids
- Three categories based on distribution
- Included all grids in the highest category
- Open areas include grids of high effort as well as low and none due to an attempt to square areas off.

EFH EIS – Mitigation Alternative 5b

Close areas with high rates of bycatch and low rates of catch (areas closed due to bycatch)

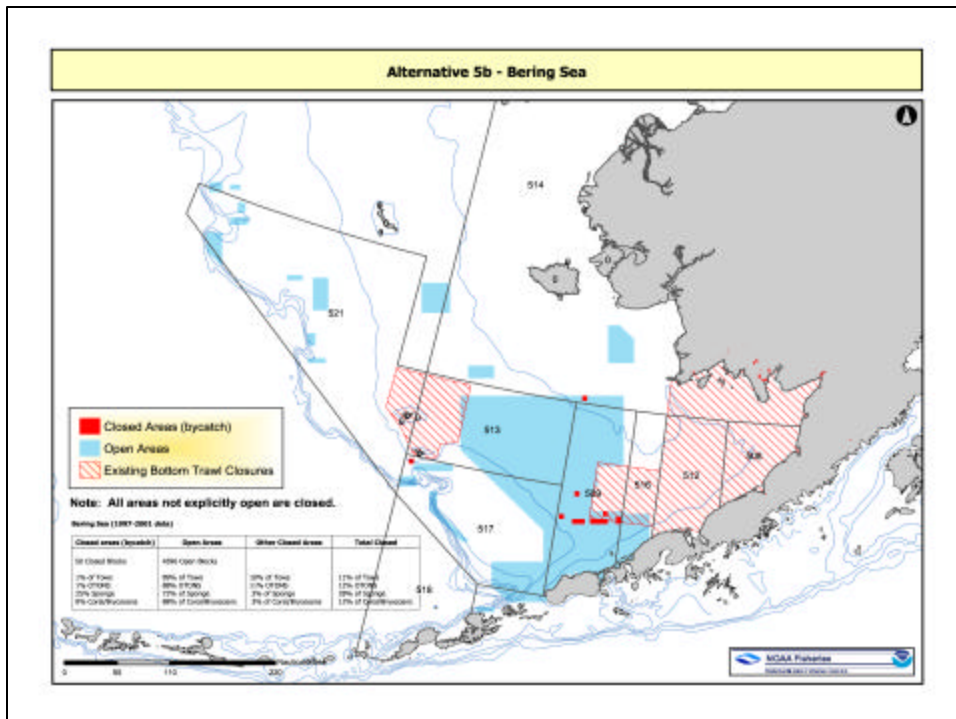
- Summed points to 5k grids
- Created ratio of bycatch CPUE to catch CPUE
- Displayed 5 categories
- Included all grids in highest two categories, adjacent blocks in third category
- Minimum size was 4 blocks. Closed areas include grids of high ratio as well as low and none due to an attempt to square areas off.



EFH EIS – Mitigation Alternative 5b

Aleutians (1990-2001 data)

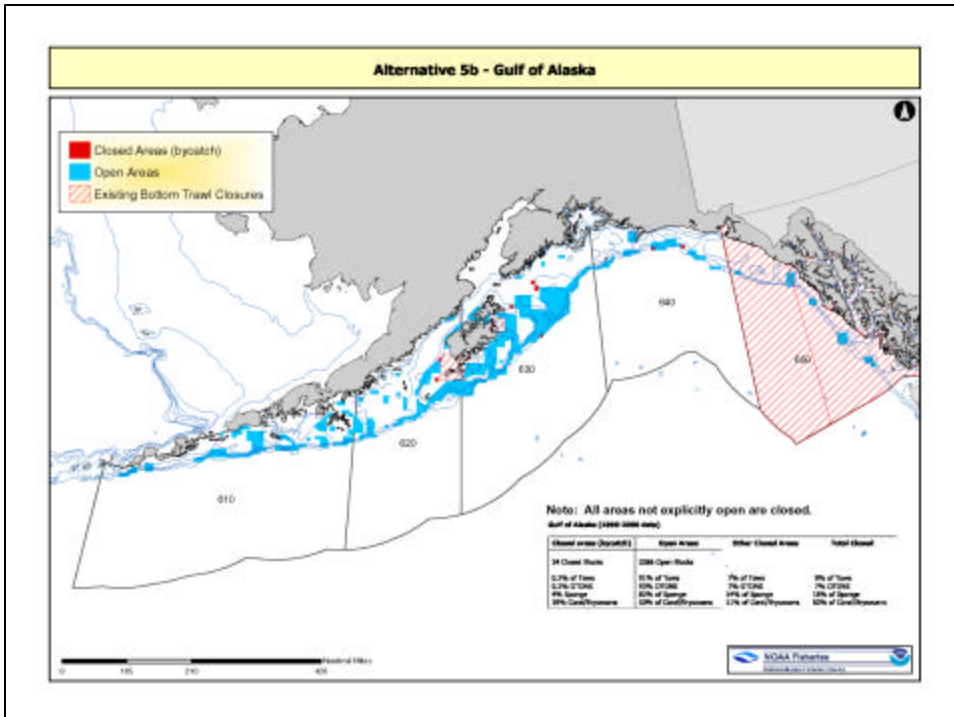
Open Areas	Closed areas (bycatch)	Other Closed Areas	Total Closed
94% of Tows 97% OTONS 76% of Sponge 64% of Coral/Bryozoans	3% of Tows 2% OTONS 24% Sponge 34% Coral/Bryozoans	3% of Tows 1% OTONS - % of Sponge 2% of Coral/Bryozoans	6% of Tows 3% OTONS 24% of Sponge 36% of Coral/Bryozoans



EFH EIS – Mitigation Alternative 5b

Bering Sea (1997-2001 data)

Closed areas (bycatch)	Open Areas	Other Closed Areas	Total Closed
1% of Tows 1% OTONS 25% Sponge 9% Coral/Bryozoans	89% of Tows 88% OTONS 72% of Sponge 88% of Coral/Bryozoans	10% of Tows 11% OTONS 3% of Sponge 3% of Coral/Bryozoans	11% of Tows 12% OTONS 28% of Sponge 12% of Coral/Bryozoans



EFH EIS – Mitigation Alternative 5b

Gulf of Alaska (1990-2000 data)

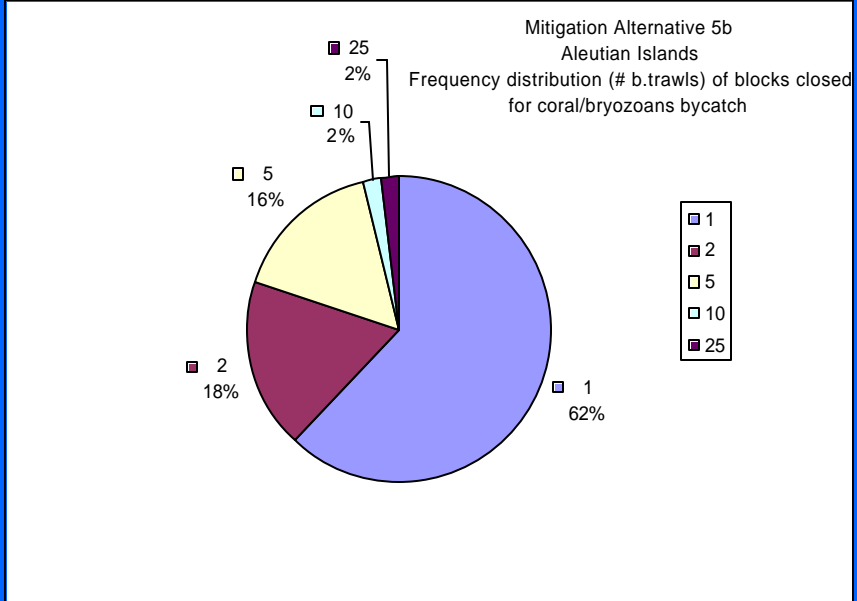
Closed areas (bycatch)	Open Areas	Other Closed Areas	Total Closed
0.2% of Tows 0.2% OTONS 4% Sponge 39% Coral/Bryozoans	91% of Tows 93% OTONS 82% of Sponge 50% of Coral/Bryozoans	7% of Tows 7% OTONS 14% of Sponge 11% of Coral/Bryozoans	9% of Tows 7% OTONS 18% of Sponge 50% of Coral/Bryozoans

EFH EIS – Mitigation Alternative 5b

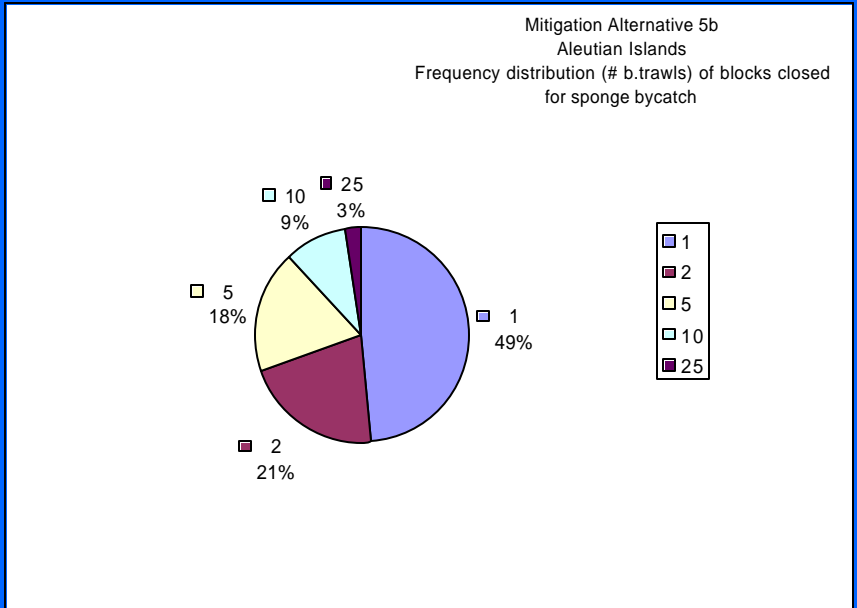
During analysis, trend was noticed that closed blocks with the highest CPUE tended to have a lower number to total hauls in the grid.

Initial frequency analysis of sponge and coral/bryozoan catch.

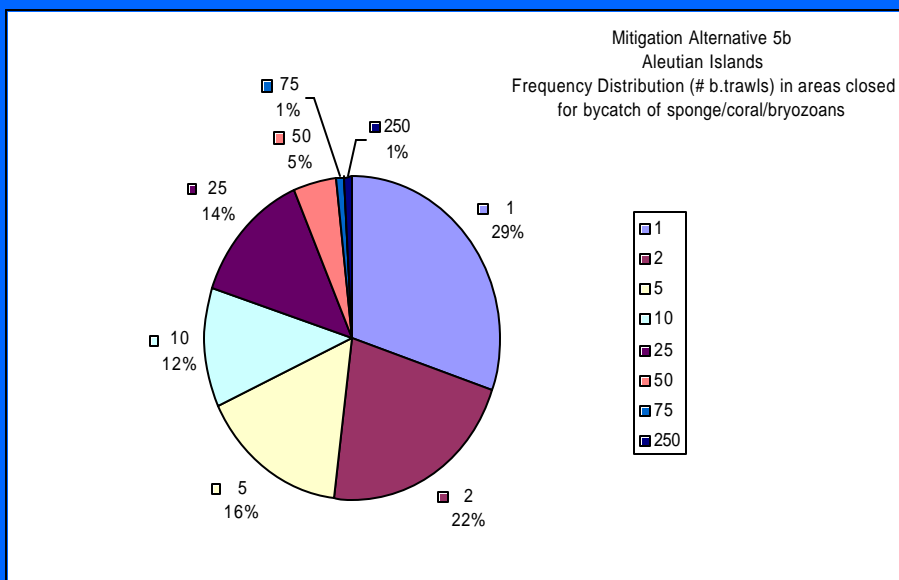
EFH EIS – Mitigation Alternative 5b



EFH EIS – Mitigation Alternative 5b



EFH EIS – Mitigation Alternative 5b



Research and Monitoring Components of Council Motion

Each mitigation alternative shall:

- Include a research and monitoring component to determine the efficacy of the alternative, and to determine to the extent practical the effects of fishing on habitat.
- Describe the intent and objectives of its research component

The final research design will be developed in a subsequent process

Discussion of Research and Monitoring in the EFH EIS

The EFH EIS WILL describe the overall goals and objectives for research and monitoring for each mitigation alternative.

The EFH EIS will NOT discuss different research areas (specific research closures) or specific experimental designs for each alternative.

Analyses to implement research and monitoring will occur in a subsequent process.

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The EFH EIS will NOT discuss different research areas (specific research closures) or specific experimental designs for each alternative.

Analyses to implement research and monitoring will occur in a subsequent process.

This Subsequent Process Will:

- Develop a hypothesis driven research design for the preferred alternative
- Include public and Council input to help select research areas
- Evaluate options through an Environmental Assessment
- Have a Regulatory Impact Review and Regulatory Flexibility Act analysis of the socioeconomic impacts
- However, implementation will be contingent upon availability of funds

Preliminary Approaches Discussion Outline of DRAFT Research and Monitoring Approaches

For Each Minimization Alternative This
Outline Contains:

- Objective(s)
- General Research Question(s)
 - Research Activities
 - Research Time Frame

Alternative 1: Status Quo General Research Questions

- Consideration of ecosystem health and the effect of fishing on EFH with focus on whether adverse impacts alter structure, function, and/or rates of ecosystem processes.
- Scientific assessments should address whether fishing activities reduce habitat suitability for marine resources and thus affect sustainable harvest levels.
- In particular, habitat-mediated effects on spawning, breeding, feeding, growth and shelter of FMP species should be examined.
 - A two stage process that requires identification of specific effects attributable to fishing activities and interpretation of these effects to determine the positive/negative ecological implications.

Alternative 1: Status Quo Research Activities

Three experimental approaches are applicable:

- Compare conditions in heavily fished and lightly fished/unfished areas that are in close proximity and otherwise similar.
- Compare conditions before and after experimental fishing to identify short-term (acute) effects on the benthos.
- Determine rates of disturbance with repetitive fishing of specific grounds.

Alternative 1: Status Quo Research Time Frame

Long Term: Until such time as more systematic methods are developed and implemented, and the overall level of research effort increases.



Alternatives 2 – 6
Objectives, Research Questions,
and **Research Activities**

Two Components to Test the Efficacy
of the Alternatives:

1. Are Impacts Reduced ?
2. **Is Benthic Habitat Recovered ?**

EXAMPLE

Alternative 2: Gulf Slope Bottom Trawl Closures: Prohibit the use of bottom trawls for rockfish in 11 designated areas of the GOA slope, but allow vessels endorsed for trawl gear to fish for rockfish in these areas with fixed gear or pelagic trawl gear.

Objectives to Reduce Impacts:

Restrict the higher impact trawl fisheries from a portion of the slope, thus encouraging a switch to fixed gear and pelagic trawls.

Objectives for **Benthic Habitat Recovery:**

Allow benthic habitat within these areas to recover or remain relatively undisturbed

Alternative 2 – Research Questions for Reduce Impacts

- Does the closure effectively restrict higher impact trawl fisheries from a portion of the GOA slope?
- Is there increased use of alternative gears in the closed areas?
- Does total bottom trawl effort in adjacent open areas increase as a result of effort displaced from closed areas?
- Do bottom trawls affect these benthic habitats more than the alternative gears?

Alternative 2 – Research Activities To Determine if Impacts are Reduced

- Use effort data to establish a baseline for comparison of fishing gear activity in the closed and open areas.
 - Investigate experimentally, in a comparable and relatively undisturbed area, the relative effects of bottom trawl and alternative gears.
- Compare changes in the structure and function of benthic communities and populations, as well as important physical features of the seabed after comparable harvests.

Alternative 2 – Research Questions to Determine Benthic Habitat Recovery

- Did the habitat within these areas recover or remain unfished because of these closures?
- Do recovered habitats support more/healthier FMP fish?

Alternative 2 – Research Activities To Determine Recovery of Benthic Habitat

- Monitor the structure and function of benthic communities and populations, as well as physical features of the seabed.
- Replicated biological sampling with grabs, trawls, and underwater ROV or submersible observations.
- Use acoustical surveys with multibeam, side scan, or single beam devices, coupled with grab and video groundtruthing to compare physical features.
- Assess the impacts of alternative gears while also monitoring recovery in areas that are unfished.

For Detailed information
See DRAFT “Discussion
Outline of Research and
Monitoring Approaches
For Evaluation of EFH
Mitigation Alternatives”
NMFS, March 20, 2003

