

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver *Chris*  
Executive Director

ESTIMATED TIME  
6 HOURS

DATE: November 25, 2002

SUBJECT: Essential Fish Habitat

ACTION REQUIRED

- (a) Receive EFH committee report
- (b) Clarify mitigation alternatives for analysis

BACKGROUND

EFH committee report

The Council appointed an EFH Committee in May 2001 to develop alternatives for EFH & HAPC designation, and alternatives to minimize adverse effects of fishing. The Council adopted alternatives for the EIS analysis during its October meeting (motion attached as Item C-3(a)). Since the October Council meeting there have been several EFH subcommittee meetings to incorporate more stakeholder input in developing geographic boundaries for the Council's approved EFH mitigation alternatives. The EFH Committee met after the stakeholder meetings to review suggested closure areas for the alternatives to minimize to the extent practicable adverse impacts of fishing on habitat. A draft Committee report will be available at the Council meeting.

Identify final alternatives for analysis

At this meeting, the Council needs to clarify the final list of mitigation alternatives for analysis. A summarized list of mitigation alternatives, recommended by the EFH Committee, is attached as Item C-3 (b). Staff will provide maps depicting closure areas designated under these alternatives. A preliminary draft of the Supplemental Environmental Impact Statement (SEIS) is scheduled for initial review in April 2003. The terms of the settlement agreement require that a Draft SEIS be available for public review by August 1, 2003.

Many public comments have been received on this issue. Over five hundred form letters were submitted by FAX and generated from the Ocean Conservancy homepage. A sample copy of the letter is attached as Item C-3 (c); the full stack is available for review in the Council meeting room.

Essential Fish Habitat  
Final Council Motion on EFH October 7, 2002.

The Council adopted an EFH problem statement as follows:

The productivity of the North Pacific ecosystem is acknowledged to be among the highest in the world. The Council intends to ensure the continued sustainability of FMP species by considering additional, precautionary and reasonable management measures. Recognizing that in the North Pacific, potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to take action in compliance with the requirements of the Magnuson-Stevens Act to protect the productivity of FMP species by considering additional measures to reduce adverse effects of fishing activities on habitat essential to managed species.

To accomplish this task, the Council will undertake an EIS analysis to:

- 1) Identify and designate Essential Fish Habitat,
- 2) Develop designation criteria for identification of Habitat Areas of Particular Concern, and
- 3) Consider implementation of additional management measures to mitigate, to the extent practicable, identified adverse impacts of fishing on habitat essential to the continued productivity of FMP species.

Additionally, the Council adopted the EFH Committees' recommendations to designate alternatives for EFH and HAPC.

The Council adopted the following EFH Mitigation Alternatives modified from the Committee and AP recommendation:

Alternative 1: Status quo

Alternative 2A: Prohibit use of bottom trawls for GOA Slope rockfish, but allow conversion to fixed gear or pelagic trawl gear.

Alternative 2B: Prohibit use of bottom trawls for GOA Slope rockfish, except within designated "open" areas but allow conversion to fixed gear or pelagic trawl gear.

Alternative 3: Prohibit the use of bottom trawl gear for all groundfish fisheries in the Bering Sea and slope areas of the GOA, except within designated "open" areas. Open areas are based on historic catch and effort information. This alternative includes provisions for rotating open areas. In the Bering Sea, rotating open areas would be designated in Blocks 1,2,3,4 and 6 as identified by the EFH committee, with 4 year closed periods for 25% of each block.

Option: Disks/bobbins would be required on trawl sweeps and footropes to reduce contact with bottom, effectively reducing footprint.

Suboption: In the Bering Sea, rotating open areas would be designated in Blocks 2,3,4 and 6 as identified by the EFH committee, with 4 year closed periods for 25% of each block.

Alternative 4: Prohibit the use of bottom trawl gear for all groundfish fisheries in the Bering Sea and slope areas of the GOA, except within designated "open" areas. Open areas are based on historic catch and effort

information. This alternative includes provisions for rotating open areas. In the Bering Sea, rotating open areas would be designated in Blocks 1,2,3,4 and 6 as identified by the EFH committee, with 4 year closed periods for 25% of each block. In the AI area, no bottom trawling would be allowed in areas with relatively high abundance of gorgonian corals and sponges.

**Suboption:** In the Bering Sea, rotating open areas would be designated in Blocks 2,3,4 and 6 as identified by the EFH committee, with 4 year closed periods for 25% of each block.

**Alternative 5:** Establish closures to the groundfish and scallop fishing with bottom tending gear (longline, pot, dredge and trawl) within the GOA, AI and BS. These closure areas would be based on areas with relatively high abundance of gorgonian corals, sponge and *Boltenia*, and designed to preserve relatively un-impacted benthic habitat.

**In addition:**

- a) Consider the relative advantages to EFH of rationalization.
- b) Each mitigation alternative shall have an experimental model developed to accomplish monitoring and research. Team EFH will be tasked to evaluate these experimental models.
- c) The Council requests the NPRB to call for proposals and fund research that evaluates the recovery time and habitat recovery process within the Bering Sea rotating areas (i.e. – is three years more than sufficient for recovery?)
- d) The Council requests the Joint BOF/Council committee to develop a shared process that sets up stakeholder meetings to facilitate coordinated BOF/Council evaluation of HAPC and MPA.

The following points should be included/addressed in the EIS as practicable:

1. Clarification that task of EFH mitigation measures is to reduce habitat degradation that has or has the high probability of negatively impacting the productivity of FMP species.
2. An assessment of the productivity of the FMP species using the SAFE documents and other available information,
3. Information or evidence linking any adverse effects on the productivity of the FMP species to fishing.
4. Evidence that the proposed mitigation measures will properly mitigate specific adverse impacts to FMP species.
5. An assessment of the level of certainty of information used to determine adverse impacts, linkages to fishing and effectiveness of proposed measures to mitigate specific adverse effect.
6. A cost benefit analysis to determine the “*practicability and consequences*” of adopting proposed mitigation measures. This should also include an assessment of unintended consequences such as increased bycatch and bycatch-triggered closures.
7. An assessment of the costs and benefits of measures already imposed to protect the FMP species including the Bering Sea crab and Pribilof habitat closure areas, salmon, herring, walrus and Steller sea lion closures, and similar closures in the GOA including the Eastern GOA trawl closure and the Mt. Edgecomb Pinnacles and any other closed areas that restrict impact on local habitat.
8. The two million metric ton cap in the BSAI should also be factored in as an existing mitigation measure since the proposed alternatives recommend that TAC reductions should accompany area closures to further protect habitat by reducing fishing effort.
9. A table that compares the proposed mitigation measures, any adverse impacts to FMP species, certainty of scientific information used to determine adverse impact, projected effectiveness and cost of measures to coastal communities and industry participants and projected unintended consequences.
10. An evaluation and comparison of each alternative to the requirements of the National Standards.

**DRAFT Mitigation Alternatives**  
**Recommended by the EFH Committee**

ITEM C-3(b)

(Nov. 4-6, 2002; with comments and refined wording provided by staff 11/22)

**Alternative 1: Status quo.** No additional measures would be taken at this time to minimize the effects of fishing on EFH.

**Alternative 2: Gulf Slope Bottom Trawl Closures:** Prohibit the use of bottom trawls for rockfish in 13 designated areas of the GOA slope (200m-1000m), but allow vessels endorsed for trawl gear to fish for rockfish in these areas with fixed gear or pelagic trawl gear.

*The Committee voted to use the geographic bounds from the subcommittee meeting October 29<sup>th</sup> for Alternative 2. Essentially, given the relative boundaries of the areas, the Committee designated closure areas rather than 'open' areas put forth in the October Council motion. The wording of this alternative reflects this subtle change.*

**Alternative 3: Bottom Trawl Gear Prohibition for GOA Slope Rockfish.** Prohibit the use of bottom trawl gear for targeting GOA slope rockfish species, but allow vessels endorsed for trawl gear to fish for slope rockfish with fixed gear or pelagic trawl gear.

*This alternative was previously called Alternative 2A from the Council's October 2002 motion.*

**Alternative 4: Bottom Trawl Closures in All Management Areas:** Prohibit the use of bottom trawl gear in designated areas of the Bering Sea, Aleutian Islands, and Gulf of Alaska. Bottom trawl gear used in the remaining open areas would be required to have disks/bobbins on trawl sweeps and footropes.

**Bering Sea:** Prohibit the use of bottom trawl gear for all groundfish fisheries in the Bering Sea except within a designated "open" area. The open area is designated based on historic bottom trawl effort. Within the open area, there would be a rotating closure to bottom trawl gear in 5 areas to the north and west of the Pribilof Islands. Closure areas would be designated in Blocks 1,2,3,4 and 6 as identified by the EFH Committee, with 4 year closed periods for 25% of each block. After 4 years, the closed portion of each block would re-open, and a different 25% of each block would close for 4 years, and so on thereafter. After 16 years, all area within each block would have been subject to a 4 year closure, and the rotating closure areas would start over.

**Aleutian Islands:** Prohibit the use of bottom trawl gear for all groundfish fisheries in designated areas of the Aleutian Islands. Closure areas would be designated in the areas of Stalemate Bank, Bowers Ridge, Seguan Foraging Area, and Semisopchnoi Island.

**Gulf of Alaska:** Prohibit the use of bottom trawl gear for rockfish fisheries on 13 designated sites of the GOA slope (200m-1000m). Allow vessels endorsed for trawl gear to fish for rockfish in these areas with fixed gear or pelagic trawl gear.

*The Committee voted to use the geographic bounds from the subcommittee meeting: October 1 for the BS, October 29<sup>th</sup> for the GOA, including the additions of closed areas for the Aleutian Islands from Nov. 6th.*

**Alternative 5: Expanded Bottom Trawl Closures in All Management Areas:** Prohibit the use of bottom trawl gear in designated areas of the Bering Sea, Aleutian Islands, and Gulf of Alaska. Bottom trawl gear used in the remaining open areas would be required to have disks/bobbins on trawl sweeps and footropes.

**Bering Sea:** Prohibit the use of bottom trawl gear for all groundfish fisheries in the Bering Sea except within a designated "open" area. The open area is designated based on historic bottom trawl effort. Within the open area, there would be a rotating closure to bottom trawl gear in 5 areas to the north and west of the Pribilof Islands. Closure areas would be designated in Blocks 1,2,3,4 and 6 as identified by the EFH Committee, with 4 year closed periods for 50% of each block. After 4 years, the closed portion of each block would re-open, and the other 50% of each block would close for 4 years, and so on thereafter.

**Aleutian Islands:** Prohibit the use of bottom trawl gear for all groundfish fisheries in designated areas of the Aleutian Islands. Closure areas would be designated in the areas of Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Yunaska Island. These closure areas extend to the northern and southern boundaries of the AI management unit.

**Gulf of Alaska:** Prohibit the use of bottom trawl gear for all groundfish fisheries on 11 designated sites of the GOA slope (200m-1000m). Additionally, prohibit the use of bottom trawl gear for targeting GOA slope rockfish species, but allow vessels endorsed for trawl gear to fish for rockfish in these areas with fixed gear or pelagic trawl gear.

*The Committee voted to use the geographic bounds from the subcommittee meeting: October 1 for the BS, October 29<sup>th</sup> the GOA, including the additions of extended closed areas for the Aleutian Islands from Nov. 6<sup>th</sup>.*

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### **Other Recommendations**

*THE EFH Committee recommends to Council that the Alternative 5 from the Council's October motion (closure areas for all bottom tending gear in areas with gorgonian corals, sponges, and sea onions) be dropped from the list of mitigation alternatives and be used instead as the starting point for identifying HAPC once the Committee and Council have adopted a HAPC process.*

*The EFH Committee recommends to the Council that they reevaluate Alternative 7 (20% no-take marine reserves), to determine whether it should be included into the suite of alternatives for analysis to satisfy legal or NEPA requirements.*

*Additionally the Committee recommends that if sea lion closed areas in the Aleutian Islands are removed in the future, the committee requests that the Council consider whether "Habitat Areas of Particular Concern" and associated measures should be developed for some or all these areas before they are opened.*

**Table 1. Crosswalk of management measures under the EFH Committee recommended alternatives.**

<u>Management Measures</u>	<u>Alternative 1 No Action</u>	<u>Alternative 2 GOA slope trawl closures</u>	<u>Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish</u>	<u>Alternative 4 Bottom Trawl Closures</u>	<u>Alternative 5 Extended Bottom Trawl Closures</u>	<u>Alternative 6???</u> <u>20% no-take marine reserves</u>
<b>Gear Regulations</b>	<p><u>Groundfish</u>: Only trawl, hook and line, and pot gear allowed. BSAI pollock limited to pelagic trawls only, bio-degradable panels and maximum openings for pot gear.</p> <p><u>Scallop</u>: Only dredge and dive gear allowed, dredge size limited to 15 ft, 4" minimum ring diameter.</p> <p><u>Crab</u>: Only pot gear allowed, pot limits, 10' maximum size, bio-degradable panels, escape rings, pots must be longlined in AI.</p> <p><u>Salmon</u>: area, fishery, and gear type specific regulations.</p>	status quo.	Prohibit bottom trawl gear for targeting GOA slope rockfish species complex [POP, shortraker/rougheye, northern, other slope rockfish]	<p>Measures from Alternative 1, plus:</p> <p>1. A requirement that all bottom trawls must have bobbins or discs on trawl sweeps and footropes.</p>	<p>Measures from Alternative 1, plus:</p> <p>1. A requirement that all bottom trawls must have bobbins or discs on trawl sweeps and footropes.</p> <p>2. Bottom trawl gear prohibited for GOA slope rockfish.</p>	status quo.
<b>Gear Conversion</b>	Conversion from trawl to fixed gear only allowed through permit transfer.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in slope closure areas.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) to fish for slope rockfish.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in slope closure areas.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in slope closure areas.	status quo.
<b>Scientific Monitoring</b>	Not an explicit part of the FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	status quo. By design, no take marine reserves provide a baseline for scientific monitoring.

<u>Management Measures</u>	<u>Alternative 1 No Action</u>	<u>Alternative 2 GOA slope trawl closures</u>	<u>Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish</u>	<u>Alternative 4 Bottom Trawl Closures</u>	<u>Alternative 5 Extended Bottom Trawl Closures</u>	<u>Alternative 6???</u> <u>20% no-take marine reserves</u>
<b>Closure Areas</b>	<p><u>Groundfish:</u> all trawling prohibited year-round in nearshore Bristol Bay, Pribilof Islands area, Southeast AK. No bottom trawling in red king crab savings area, Cook Inlet, Kodiak type 1 crab zones, and most state waters. These areas total about 90,000 nm<sup>2</sup> Many seasonal trawl closures to reduce bycatch. Numerous sea lion closure areas closed to trawl, longline, pot gear for cod, pollock, mackerel fishing. No bottom fishing of any kind on Sitka Pinnacles.</p> <p><u>Scallops:</u> year-round closures in Adak, Unalaska, AK peninsula, Kodiak, Cook Inlet, PWS, and SE AK areas.</p> <p><u>Crab:</u> year-round closures for king crab 10nm around St. Lawrence, King, and Little Diomed Islands. A 3nm closure around St. Matthew, and an area closed in Norton Sound.</p> <p><u>Salmon:</u> area, fishery, and gear type specific regulations.</p>	<p>Measures from Alternative 1, plus additional closures for groundfish fisheries would be established as follows:</p> <p><u>GOA:</u> bottom trawl gear prohibited year-round in 13 areas of the slope (220m-1000m).</p> <p><u>Scallops, Crab, and Salmon:</u> status quo.</p>	<p>status quo.</p>	<p>Measures from Alternative 1, plus additional closures for groundfish fisheries would be established as follows:</p> <p><u>Bering Sea:</u> bottom trawl gear prohibited year-round outside designated open area. Within open area, 25% of blocks north and west of Pribilof Islands closed to bottom trawling on a 4 year rotating basis.</p> <p><u>Aleutian Islands:</u> bottom trawl gear prohibited year-round in areas of Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Semisopochnoi Island.</p> <p><u>GOA:</u> bottom trawl gear prohibited year-round for rockfish fisheries in 13 areas of the slope (220m-1000m).</p> <p><u>Scallops, Crab, and Salmon:</u> status quo.</p>	<p>Measures from Alternative 1, plus additional closures for groundfish fisheries would be established as follows:</p> <p><u>Bering Sea:</u> bottom trawl gear prohibited year-round outside designated open area. Within open area, 50% of blocks north and west of Pribilof Islands closed to bottom trawling on a 4 year rotating basis.</p> <p><u>Aleutian Islands:</u> bottom trawl gear prohibited year-round in areas of Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Yunaska Island. These closures extend to management unit boundaries.</p> <p><u>GOA:</u> bottom trawl gear prohibited year-round for all groundfish fisheries in 11 areas of the slope (220m-1000m).</p> <p><u>Scallops, Crab, and Salmon:</u> status quo.</p>	<p>Measures from Alternative 1, plus for ALL fisheries and ALL gear types, a total of 20% of the BS, AI, and GOA would be set aside as no-take marine reserves. The marine reserves may overlap with existing closures.</p>
<b>Effort Limitation</b>	<p>Limited Entry Permits required for groundfish (with area, species, and gear endorsements), scallops (9 total, with area endorsements) crab (with species endorsements), and salmon fisheries (area, gear, and fishery specific).</p> <p>IFQs for sablefish and halibut fisheries and CDQ's for all groundfish and crab.</p> <p>AFA Cooperatives for BSAI pollock.</p>	<p>Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.</p>	<p>Status quo, except that vessels endorsed for trawl gear can use fixed gear to fish for GOA slope rockfish.</p>	<p>Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.</p>	<p>Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.</p>	<p>Status quo.</p>

<u>Management Measures</u>	<u>Alternative 1 No Action</u>	<u>Alternative 2 GOA slope trawl closures</u>	<u>Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish</u>	<u>Alternative 4 Bottom Trawl Closures</u>	<u>Alternative 5 Extended Bottom Trawl Closures</u>	<u>Alternative 6???</u> <u>20% no-take marine reserves</u>
<p><b>Catch and Bycatch Limits</b></p>	<p><u>BSAI Groundfish</u>: Catch quotas for all species, annual catch limited to 2 million mt. Bycatch limits for halibut, opilio crab, bairdi crab, red king crab, chinook salmon, other salmon, and herring. Fishing for forage fish prohibited.</p> <p><u>GOA Groundfish</u>: Catch quotas for all species. Bycatch limits for halibut. Fishing for forage fish prohibited.</p> <p><u>Scallops</u>: Catch quotas by region. Bycatch limits for king crab and bairdi crab; also opilio crab and in the Bering Sea.</p> <p><u>Crab</u>: Catch quotas by fishery.</p> <p><u>Salmon</u>: area, fishery, and gear type specific regulations.</p>	<p>status quo.</p>	<p>status quo.</p>	<p>status quo.</p>	<p>status quo.</p>	<p>status quo.</p>



November 21, 2002 07:28 PM  
202-872-0619

Chairman David Benton  
North Pacific Fishery Management Council  
AK

Subject: (please enter a personalized subject here)

Dear Chairman David Benton:

I am writing because I am very concerned about the health of our ocean ecosystems. I am particularly concerned about protecting habitats in the North Pacific, including the recently discovered areas of spectacular deep-water corals. I strongly urge you to consider the use of a network of no-take marine reserves as a tool for protecting Essential Fish Habitat (EFH) in the Gulf of Alaska, Bering Sea, and Aleutian Islands ecosystems.

The EFH provisions of the Magnuson-Stevens Fish Conservation and Management Act require fishery management councils and the National Marine Fisheries Service (NMFS) to identify and protect habitat (needed by fish to reproduce, mature and survive) from the effects of fishing. There is strong scientific consensus that marine reserves are very effective at protecting and restoring marine habitats. I am greatly concerned over the North Pacific Fishery Management Council's failure to acknowledge the best available scientific evidence on habitat protection.

The National Environmental Policy Act requires that the Council fully evaluate all reasonable alternatives for the mitigation of the adverse impacts of fishing on EFH. Given the broad scientific consensus on the effectiveness of no-take marine reserves, including the endorsement of their use by the National Academy of Sciences, the Council and NMFS must regard them as a "reasonable alternative" for consideration and include them in their analysis in the Environmental Impact Statement for the protection of EFH.

The use of no-take marine reserves is vital to a conservative approach of EFH protection in light of a great deal of uncertainty regarding the status of the health of the marine ecosystems in the Gulf of Alaska, Bering Sea, and Aleutian Islands. This is especially true of the newly discovered tracts of deep-water corals that are important habitat for groundfish.

I urge you to please include a no-take marine reserves alternative in your Environmental Impact Statement for EFH protection in the North Pacific.

Thank you for considering my views.

Yours truly,

Sandra Warner  
Paseo de los Sabinos 3701 Del Paseo Residencial  
Monterrey, N.L. Mexico, 64920 Mexico

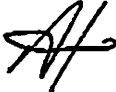
cc:  
Administrator James Balsiger

**Alaska Crab Coalition**

3901 Leary Way N.W. Ste. 6  
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206 547 7560  
Fax 206 547 0130  
[acc-crabak@msn.com](mailto:acc-crabak@msn.com)

**DATE:** November 20, 2002

**TO:** David Benton, Chairman  
North Pacific Fishery Management Council  
Anchorage, Alaska

**FROM:** Arni Thomson, Executive Director 

**RE:** COMMENT ON AGENDA ITEM C-3, EFH  
BERING SEA/ALEUTIAN ISLANDS CRAB FISHERIES  
DESCRIPTIONS, FOOTPRINT CALCULATIONS

**BACKGROUND:**

At a recent EFH Committee meeting in Anchorage, Alaska on October 21-22, the ACC learned that crab pot fisheries were to be included in considering potential closures to protect Essential Fish Habitat in the Bering Sea/Aleutian Islands. However, at the Council meeting in Seattle on October 8<sup>th</sup>, there was no mention of including the crab pot fisheries in mitigation alternatives.

As the EFH Committee and the NPFMC move forward to develop the alternatives for analysis in the DEIS for Essential Fish Habitat, the ACC has recently noticed that mention of the estimated footprint size on the benthic substrate for crab pot fisheries gear in the Bering Sea/Aleutian Islands has not been included in the Fisheries Descriptions of Principal Federal FMP Fisheries for the analysis of Essential Fish Habitat. However, the ACC participated in the EFH fisheries descriptions workshop on March 25-26 and developed calculations of the footprints of crab (and cod pot) fisheries in the BSAI area. Although the footprint calculation was included in the fishery description for the cod pot fishery, (0.17 square mile footprint combined), the footprint descriptions were not included for the crab fisheries.

In this memorandum the ACC will reintroduce the calculation methodology and the footprint estimates for the EFH committee and we would request they be included in the crab fisheries descriptions. As can be seen from this analysis, the footprint for the current operating crab and cod pot fisheries in the Bering Sea/Aleutian Islands is 0.93 of one square nautical mile.

**METHODOLOGY: (1)**

The key to the calculations is the number of pot lifts per fishery. This information is contained in the ADF&G fisheries report summaries, published by the Westward Region in Kodiak, Alaska. The average size of the crab and cod pots is 7' X 7', which can be rounded to 50 square feet per pot. Buoy line attached to the pots in all the pot fisheries, including the Aleutians golden king crab fishery is floating polypropylene, no wire cables are used. To calculate square footage, multiply the number of pot lifts by 50 to arrive at the total square footage of the footprint. Then this is converted to square miles. There are 6,076 feet in a nautical mile and 36.9 million square feet in one nautical square mile.

The fisheries descriptions use the 2000 fishing seasons (1999-2000 for Aleutians Golden king crab), in the descriptions of the gear and operations. ACC also used the year 2000 to calculate the size of the footprints. They are as follows for the crab fisheries:

FISHERY	POTLIFTS	SQUARE FEET	FOOTPRINT
Bristol Bay RKC	98,964	4,948,200	0.13 square mile
Bering Sea Snow	170,064	8,503,200	0.23 square mile
Aleutians Golden	180,169	9,008,450	0.24 square mile
Bering Sea cod	240,000	12,000,000	0.33 square mile
<b>TOTALS</b>	<b>689,197</b>	<b>34,459,850</b>	<b>0.93 square mile</b>

**ADDITIONAL COMMENTS:**

- The EFH Committee should also be aware that the length of the Bristol Bay king crab seasons has been very short during the latter half of the 1990s, three to five days per year. In addition, the fishery was closed in 1994 and 1995 and the Bristol Bay bairdi (tanner) fishery has been closed for rebuilding since 1996. Thus crab fishing gear impacts since 1995 in the Bristol Bay area have been very minimal.
- The Committee should also keep in mind that the Council approved rationalization program for BSAI crab fisheries will have mitigating effects on Essential Fish Habitat. Absent the race for fish and the implementation of quota shares and voluntary cooperatives, there will be less boats fishing, less pots used with longer soak times and less pot lifts. This will reduce impacts to EFH.

(1) NOTES: Calculations are in nautical miles, 6,076 feet in one nautical mile, and 36,919,776 square feet in one square nautical mile. The calculations for the cod fishery have been adjusted to nautical miles (land mile calculations were previously used). The information on the fishery has been provided by industry and it is based on a 40 day fishery, with 40-50 boats in the fishery, an average of 120 pots per vessel that are hauled once in a 24 hour period. A total of 6,000 pots (50 vessels) was used in the calculation of the size of the footprint.

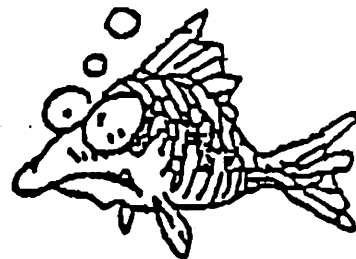
**North  
Pacific  
Longline  
Association**

**RECEIVED**

NOV 22 2002

N.P.F.M.C.

Agenda C-3



Mr. David Benton, Chairman  
North Pacific Fishery Management Council  
605 west 4<sup>th</sup> Avenue  
Anchorage, AK 99501

**RE: EFH Alternatives – Switching to Fixed Gear In GOA; Seabird Regs**

Dear Dave:

Several of the mitigation alternatives recommended by the EFH Committee would allow vessels endorsed for trawl gear to fish for rockfish with fixed gear in the GOA. This raises the specter of inexperienced longliners putting more baited hooks in the water – and catching more seabirds. As you are aware the incidental take of just a few short-tailed albatrosses could put the whole fleet out of business. It has taken the longline fleet five years to learn to effectively avoid seabirds (please see attached graph from Fisheries Information Service). We honestly fear the potential impact of new and inexperienced longliners. The Council might consider allowing conversion to pots, rather than all fixed gear.

Another concern is accounting for halibut bycatch. If trawl vessels switch to fixed gear will their halibut bycatch be taken out of the trawl PSC, or the fixed gear PSC? Only the former would seem fair and equitable.

A seabird-related matter of great concern to our fleet is that NMFS still has not promulgated the revised seabird regulations requiring paired tori lines on longliners 125' in length and greater. We were promised these regulations by August 15 of this year, the start of our fall fishery. We know paired tori lines work well, but you can't enforce a regulation until it's on the books. We hope the Council will inquire into this matter.

Thank You,

Thorn Smith

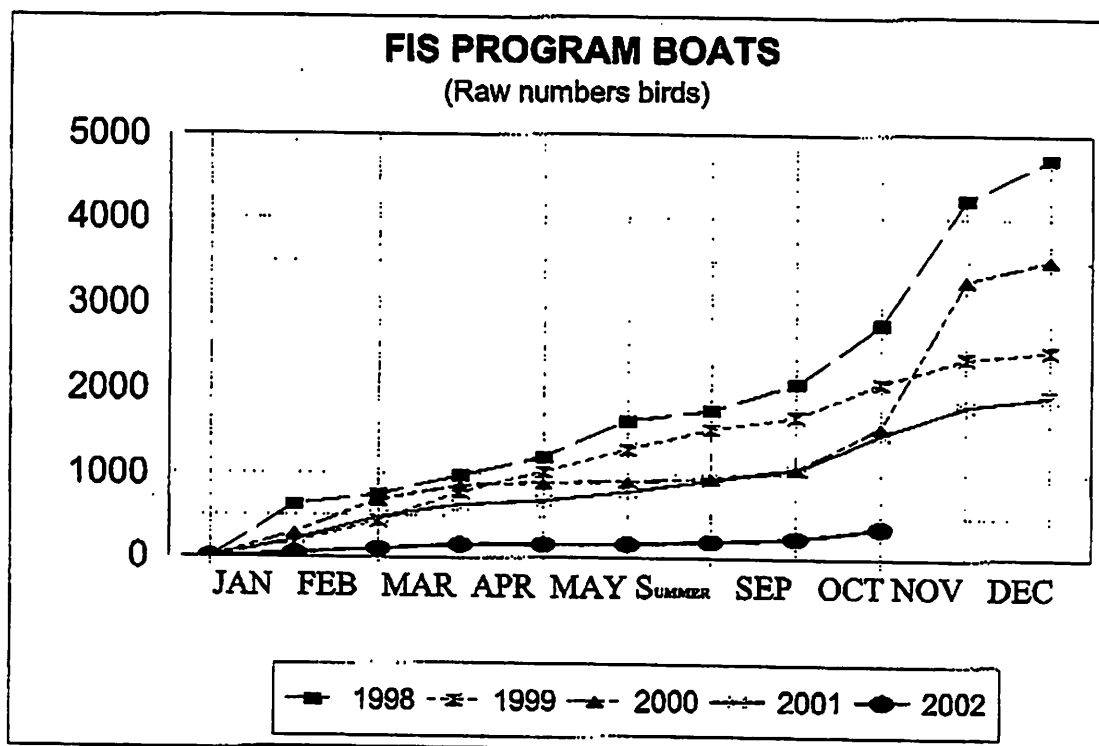
24-Oct-02

**FIS**

**OBSERVED BIRDS (UNEXTRAPOLATED)**

\*INCOMPLETE

	1998		1999		2000		2001		2002	
	month	CML	month	CML	month	CML	month	CML	month	CML
JAN	630	630	177	177	290	290	210	210	40	40
FEB	123	753	255	432	394	884	272	482	58	98
MAR	224	977	347	779	175	859	150	632	53	151
APR	239	1215	254	1033	40	899	58	680	14	165
MAY	429	1644	272	1305	20	919	106	796	2	167
SUMMER	117	1761	231	1536	34	853	138	934	31	198
SEP	314	2075	154	1690	118	1071	127	1061	43	241
OCT	694	2769	395	2085	451	1588	423	1484	129	370
NOV	1447	4216	292	2377	1343	3280	340	1824		
DEC	492	4708	86	2463	227	3524	114	1938		



Information from Janet Smoker, Fisheries Information Services, Juneau, Alaska. Based on information from National Marine Fisheries Service observer reports of incidental takes of all species of seabirds by the freezer-longliner fleet, in both the Bering Sea/Aleutian Islands Area, and the Gulf of Alaska. Use of seabird deterrent devices was first required in 1998 with the USFWS program to provide paired tori lines (deterrent device) initiated in 2000.

Handout for Presentation by Thorn Smith, Executive Director, North Pacific Longline Association. Wednesday, October 30, 2002, U.S. Fish and Wildlife Service Leadership Conference.



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*Delivered facsimile and First Class Mail*

November 22, 2002

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RECEIVED  
NOV 25 2002  
N.P.F.M.C.

Dear Chairman Benton and Dr. Balsiger,

Oceana and The Ocean Conservancy would like to comment on the Essential Fish Habitat (EFH) mitigation alternatives for inclusion in the Draft EFH Environmental Impact Statement. As you know, the Aleutian Islands and Bering Sea are among the foremost biologically productive areas in the world. It is phenomenal that this archipelago contains coral and sponge gardens recently discovered to be as complex and diverse as tropical coral reefs. The hundreds of species of marine life, including corals and sponges, make this thousand-mile archipelago an exceptional biological area of international importance. These living corals and sponges are among the oldest known animals on Earth and they thrive on thousands of years of ancient growth to form complex structural habitat for fish and shellfish in some of the world's richest marine waters. These habitats have no natural disturbance regimes and are quite possibly the slowest recovering biogenic habitats in the ocean. The Aleutians are likely the most diverse and largest area of deep-sea corals and sponges left in the world. As you know, corals and sponges have already been designated as Habitat Areas of Particular Concern, a subset of EFH, by both the Council and NOAA Fisheries.

A recent analysis of observer data provided by Dr. James Balsiger on October 17, 2002 revealed that the rate of coral and sponge bycatch (kg bycatch/ton fish caught) since 1990 has been more than 12 times higher in the Aleutian Islands management areas (1361 kg bycatch/1000 mt) than in either the Bering Sea (107 kg bycatch/1000 mt) or Gulf of Alaska (106 kg bycatch/1000 mt). Over half of all corals and sponges removed from seafloor and counted by observers in Alaska during this period came from the Aleutians, yet this area represents less than eight percent of the total fish caught in the North Pacific.



CHLORINE BLEACH FREE

The January 2001 Draft Programmatic EIS stated that over one million pounds of corals and sponges were caught as bycatch every year from 1997-1999 and the observer data provided by Dr. Balsiger shows that this trend is not declining. The adverse impacts to Essential Fish Habitat in the Aleutian Islands are clearly more than minimal and more than temporary, especially considering the irreversibility of the impacts on human time scales. The EFH final rule makes it clear that impacts to productivity of FMP species do not have to be apparent before Councils must take action. These impacts clearly reduce the quality and quantity of EFH, meeting the EFH Final Rule definition of "adverse effects" (§600.810 (a)). All alternatives in the Draft EIS should include mitigation measures to address these clearly adverse impacts.

Oceana has made several proposals for mitigation measures to address this urgent issue at the May 15-17, 2002 EFH Committee meeting in Sitka, the September 16-18, 2002 EFH Committee meeting in Kodiak, the October Council meeting, and the November 4-6, 2002 EFH Committee meeting in Anchorage. We have also contributed input, maps, and data and made formal information requests at EFH stakeholder meetings regarding mitigation measures in the Aleutian Islands, Bering Sea, and Gulf of Alaska. Our proposals have been excluded from consideration by both the Committee and the Council without explanation. Furthermore, the Council has not provided pertinent data requested by Oceana at the October 22 and 23, 2002 stakeholder meetings on coral and sponge bycatch rates and locations. This information is essential for determining known habitat areas and drawing lines on maps, yet stakeholders and the Committee were pushed to draw lines for alternatives without this information. Furthermore, the mitigation alternatives now being considered lack sufficient commitment to the conservation and protection of EFH.

There has been a scientific focus on the impacts of bottom trawling on seafloor habitats including the National Academy of Sciences (NAS) 2002 Report on the Effects of Trawling and Dredging on Seafloor Habitats and the 2002 International Symposium on the Effects of Fishing on Benthic Habitats. The participating scientists have carefully examined the impacts of bottom trawling on Essential Fish Habitat and recommended management tools appropriate for EFH mitigation of these impacts. One of the major findings of the NAS report is that bottom trawling causes short-term and long-term decreases in productivity and diversity, especially in structurally complex habitats like corals and sponges. Furthermore, the NAS recommends a combination of effort reductions, gear restrictions and area closures as management tools. Several scientists offered suggestions for management approaches to mitigate adverse fishing impacts on corals and sponges in the Aleutian Islands. For example, Dr. Michael Fogarty of Woods Hole Oceanographic Institution recommended zoning bottom trawling into only areas designated for that purpose where trawling will incur minimal damage to habitat. Other options recommended at the conference included effort controls, gear modifications, and marine protected areas. Based on the findings and recommendations of the world's top scientists, Oceana recommends expanding the range of alternatives for mitigating the adverse impacts of bottom trawling.



Furthermore, trawl survey data and observer bycatch data comprise the best available scientific information on the locations and relative abundances of corals and sponges. Several weaknesses in this data were raised by the EFH Committee, including that not all areas were sampled and rocky areas were intentionally avoided. However, the data are extremely useful and robust for showing areas that have been fished with low impacts to habitat and for comparing relative abundances of corals and sponges between sampled sites. The EFH Final Rule requires that mitigation measures must be based on the best available science, so this includes these data sources (§600.815(a)(2)).

We propose a three-part strategy for mitigation measures in the Aleutian Islands including precautionary interim management, comprehensive research and mapping, and a long-term ecosystem plan based on adaptive management. This approach is the result of endless hours of attending meetings, incorporating input from fishermen, soliciting input from scientists, working with Council and NMFS staff, and carefully examining the best available scientific information. Upon close examination, we believe you will agree that this is a highly reasonable alternative worthy of analysis because it protects most of the Aleutians from habitat damage without causing severe socioeconomic impacts. We suspect that upon analysis, this alternative will result in much higher habitat protection at similar socioeconomic costs to the current alternatives proposed by the EFH Committee, thus minimizing the adverse impacts to the maximum extent practicable. Oceana and The Ocean Conservancy formally request that this proposal be added to an existing alternative or incorporated into a new alternative.

The precautionary interim mitigation measures should:

- Prevent the expansion of current bottom trawl fisheries into areas not fished in the last five years. Lines should be drawn at 5 km x 5 km square block scales and provide limited buffers to account for movement of fish.
- Close areas with highest bycatch rates within areas currently fished. Specific areas may be determined using area specific maps on bycatch rates requested by Oceana to NMFS and the NPFMC on October 22 and 23, 2002. TACs are reduced by the amount of fish that historically came from the closed areas, based on a recommendation of the NAS report to offset the effects of displaced effort in the open fishing grounds.
- Use CPUE data to ensure that a reasonable portion of highly profitable areas remain open.
- Include area specific coral and sponge bycatch caps that close specific areas when caps have been exceeded. These caps should decrease by five percent per year beginning with average bycatch in each area over the last five years.

Most fishermen will argue that trawling impacts are concentrated in discrete areas and that they have already damaged all the corals that once existed in current fishing areas. However, observer bycatch data shows that the quantity of coral and sponge bycatch is

not decreasing over time and that corals and sponges are continually being caught in both new areas and historical fishing areas throughout the Aleutian Islands.

The comprehensive research, mapping, and monitoring should take place with participation of fishermen and other stakeholders toward the following objectives:

- Mapping the geographic distribution of corals, sponges, and other sensitive essential fish habitat in the Aleutian Islands region;
- Further studying the ecological linkages of corals and sponges to the productivity of FMP species based on survivorship and recruitment rates for various life stages striving for Level 4 information as defined by the EFH Final Rule (§600.815 (a)(iii)(A)(4));
- Measuring the effects of all gear types used to catch groundfish on corals and sponges including longlines, pelagic trawls, and pots;
- Identifying specific areas where respective gear types may be allowed;
- Experimental fishing permits to explore new fishing grounds while accompanied by 200 percent observer coverage and video on the trawl nets;
- Submitting to the North Pacific Fishery Management Council an annual progress report regarding status of the research;
- Requiring NMFS to complete Annual Habitat Assessment Reports (similar to SAFE reports) that evaluate the effectiveness of EFH mitigation over time;
- Requiring Vessel Monitoring Systems and 100 percent of all catch and bycatch observed, counted, and reported by fisheries observers for all vessels with potential impacts to corals and sponges (phased in if appropriate). Observers would identify corals and sponges to the lowest practicable taxonomic level. Observers from the CADRES program could be tasked with this issue over the next three years to develop efficient and accurate monitoring protocols.
- Inviting and supporting of innovation of non-destructive fishing methods.

The long-term ecosystem plan for the Aleutian Islands should be an iterative process based on adaptive management. Each year, the Annual Habitat Assessment Reports and results from concurrent mapping projects can be used to determine areas where fishing areas may be expanded with minimal impacts to corals, sponges, or other sensitive seafloor habitat. Furthermore, areas that continue to have the highest relative levels of coral and sponge bycatch may become closed over time. NMFS habitat scientists estimate that due to the patchiness of coral and sponge habitat in the Aleutians, mapping will reveal many new areas that can be trawled with minimal damage to habitat. This will mean that fishable areas will grow significantly over time and allow fishing opportunities to expand in the long-term. Theoretically for every closure in one area, there could be a larger new area opened. The ultimate result will be sustainable, profitable fishing only in designated areas where impacts to EFH are minimal.

We recognize that Essential Fish Habitat is a relatively new concept and poses a novel challenge that forces our current system of management to move forward. This is a complex issue and there is more than one right answer. The North Pacific Fishery

Management Council has the opportunity to create a model for the international community showing that profitable fisheries and habitat protection are not mutually exclusive. We are certain that these values can coexist and we are willing to provide further assistance to the Council to achieve these goals.

Finally, we would like to commend the Council and the EFH Committee for all their hard work and genuine efforts on developing the alternatives draft EFH EIS. We would also like to thank the Council for their commitment to public process and for providing an arena for us to participate in this important process. It is apparent that with a bit more work, additional information and expanded alternatives, we could bring forward an EIS that would be truly meaningful for the public.

Sincerely,



Jim Ayers  
Director, North Pacific Regional Office  
Oceana



Kris Balliet  
Alaska Regional Director  
The Ocean Conservancy

**Oceana \* The Ocean Conservancy  
National Audubon Society \* Natural Resources Defense Council  
ReefKeeper International \* Environmental Defense  
Gulf Restoration Network**

November 22, 2002

Dr. William T. Hogarth  
Assistant Administrator  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910

Re: Evaluation of Regional EFH EIS Processes

Dear Dr. Hogarth:

We write on behalf of the undersigned conservation groups monitoring the five essential fish habitat environmental impacts statements (EFH EISs) that were remanded in *American Oceans Campaign et al v. Evans*, No. 1-99CV 00982 (GK). As you know, this is a very important process for both our oceans and its fisheries as the protection of marine habitats is an essential component to conserving healthy marine ecosystems and sustainable fisheries. We write to provide our evaluation of how the regions are doing and to raise both national and region-specific concerns. We respectfully request a meeting with you at your earliest convenience to discuss these issues.

Generally, we appreciate the efforts of the relevant regional offices, Councils, or contractors to provide open and public processes in developing the EFH EISs and welcome the opportunity to participate prior to the official public comment periods. While the level of environmental considerations and compliance with NEPA has generally improved in the past several years, we are concerned, however, about the range of quality in the processes and the lack of strong national oversight from your office.

One of our key concerns is that NMFS headquarters has not provided clear legal guidance regarding NEPA's requirements, or has been unable or slow to respond to legal questions that have arisen. Specifically, your office has not provided sufficient guidance regarding several key issues:

- The need to address indirect, cumulative, and synergistic environmental effects. The EFH EISs must consider the full range of environmental impacts of alternative management measures: direct effects (which include “contamination or physical disruption”),<sup>1</sup> indirect effects (which include “loss of prey or reduction in species’ fecundity”),<sup>2</sup> cumulative impacts (“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions”),<sup>3</sup> and synergistic effects. NMFS should also clarify that “fishing” impacts include all activities associated with fishing operations including, for example, deployment of different fishing gears, anchoring, and the discard of non-target or unwanted catch. Such analyses must be conducted by scientists that are recognized experts in the field of benthic ecosystems and must be based on the best available science.
- The need to fully analyze reasonable alternatives submitted during scoping for the EFH EISs. NEPA requires that all reasonable alternatives submitted during scoping must be developed and analyzed for their environmental benefits and impacts. NRDC v. Morton, 458 F.2d 827, 835 (D.C. Cir. 1972). Furthermore, for those scoping alternatives that are not fully analyzed, the EISs must include adequate justification why these alternatives are not reasonable for implementation. This justification must be based on the best scientific information available.
- The need to develop alternatives that include a suite of management measures. As stated in the joint stipulation, NMFS agreed to consider a range of alternatives that may include “a suite of fishery management measures.” The purpose of this provision was to allow NMFS to compare the environmental effects of groups of management measures with other groups of management measures, to capture the cumulative effects of the various measures that could be implemented. For example, instead of only comparing the effects of certain gear restrictions on EFH, it would be useful to compare various levels of overall protection to EFH, comparing various suites of measures that encompass a variety of tools (e.g., various combinations of time or area management, gear restrictions, and other measures such as quota restrictions).
- The need to provide a full environmental analysis of the “affected environment” and the effects of status quo management on the “affected environment.” It is crucial that each region prepares a full analysis of how status quo management affects the marine ecosystem because, in most regions, such analyses have never been adequately conducted in the past. This is also an essential component for any later comparative analysis of the environmental benefits of alternatives compared to the status quo.

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<sup>1</sup> 50 C.F.R. § 600.810(a).

<sup>2</sup> *Id.*

<sup>3</sup> 40 C.F.R. § 1508.7.

- **NMFS must take final responsibility for the EISs.** Although each region has delegated initial drafting responsibility to a different entity (a contractor in the case of the Gulf and Caribbean regions, the NMFS regional office in the Pacific, the fishery management council in New England, and a combination of council and regional staff in the North Pacific), NMFS should recognize that it is the entity that must ensure compliance with NEPA and the Magnuson Stevens Act. Because NMFS will be the agency held accountable for the EISs, it is critical that it get involved to provide clear direction to the EIS drafters.

In addition to these general comments, a more specific list of our concerns or comments for each region follows.

#### North Pacific

- At its October 7, 2002, meeting, the NPFMC adopted an EFH problem statement that inappropriately links EFH protection to the productivity of FMP species: "Consider implementation of additional management measures to mitigate, to the extent practicable, identified adverse impacts of fishing on habitat essential to the continued productivity of FMP species."<sup>4</sup> Neither NEPA nor the Magnuson Stevens Act limit consideration or mitigation of adverse impacts to only those designated EFH where there exists additional scientific information that links adverse effects to the productivity of the FMP species to fishing. Furthermore, such data have already been incorporated during the initial process to identify and designate EFH. The EIS must contain analysis and alternatives that minimize adverse impacts on designated EFH, regardless of the impacts on species' productivity.
- The EFH Committee has failed to include legitimate proposals for habitat protection for further analysis. For example, Oceana's proposals to: (1) protect deep sea coral habitat in the Aleutian Islands; (2) restrict the use of rockhopper and roller gear; (3) develop a precautionary management approach to protecting EFH; (4) implement a system of habitat research areas; and (5) implement harvest incentives for fishermen using low-impact fishing gear,<sup>5</sup> have all been excluded from the EIS without justification, discussion, or analysis. Similarly, the Committee has refused to consider a marine protected alternative supported by The Ocean Conservancy and others. A number of proposed habitat areas of particular concern (HAPCs) were also rejected for further consideration, apparently under the mistaken impression that HAPCs need not be analyzed because they are not legally required. Whether a particular type of management tool is legally mandated is not the relevant criterion for inclusion as an alternative; as noted above, NMFS must analyze all alternatives that are reasonably available. Specific proposals to protect a particular area (whether or not

<sup>4</sup> See NPFMC, Draft Final Council Motions on EFH October 7, 2002 (<http://www.fakr.noaa.gov/npfmc/Motions/EFH1002.pdf>) (emphasis).

<sup>5</sup> See Comments submitted by American Oceans Campaign (now Oceana) to Mr. Michael Payne, NMFS Alaska Regional Office, Habitat Conservation Division (July 21, 2001).

denominated as HAPCs) must be considered if they are reasonable alternatives. The CEQ regulations require that NMFS "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14. At a minimum, NMFS must explain why it has eliminated specific proposed alternatives from further consideration.

- Despite the recommendations of Council staff, the EFH committee, and multiple stakeholders, the Council is refusing to include for analysis the habitat benefits of a fully protected marine reserve approach.
- The NPFMC has failed to adequately analyze the habitat impacts of status quo activities or provide habitat information that is available for meaningful decisionmaking. The Council has invited stakeholders to draw lines on maps for alternatives without providing specific information about known habitat interactions, such as coral bycatch.

#### Pacific

- We are favorably impressed with the effort the Pacific regional office is undertaking to determine the effects of fishing and management measures on EFH using a science- and GIS map-based approach, and conducting a comparative risk assessment for different habitat types. For the next phase of this effort, it will be important to identify risks based on common trends in comparable habitats when region-specific information is unavailable, as recommended by the National Research Council report on the effects of trawling and dredging. Based on what we have seen to date, we recommend that NMFS consider using or adapting this approach for the other regions.

#### New England

- Many of the alternatives submitted for analysis by Oceana and other environmental groups during the scoping period, and repeatedly throughout the development of the EFH EIS, have not been included in the EFH EIS, nor has there been any adequate analysis justifying the NEFMC's decision to not include such alternatives as reasonable alternatives.
- Many of the alternatives included for analyses in the EFH EIS were developed by a member of the NEFMC's Scallop Plan Development Team using methodologies that are not based on sound ecological principles. Despite the fact that the NEFMC's Habitat Technical Team has thoroughly criticized the analytic approach used to develop these alternatives, the alternatives remain in the proposed draft EIS unchanged.
- The NEFMC also ignored recommended approaches by its own Habitat Technical Team to use modeling approaches that are supported by ecologically sound principles as the basis for analyzing alternatives to protect habitat. This approach could have been fully developed during 2002, but the NEFMC opted not to provide necessary funding to scientists to develop alternatives based on this modeling approach.

- Throughout the development process, NMFS Regional staff have failed to take a leadership role in directing the NEFMC on how to develop legally adequate environmental analyses. Although NMFS provided its preliminary conclusions of a regional gear effects workshop that took place in October 2001, the follow up literature search and analysis intended to compare the workshop findings with existing literature has been delayed.<sup>6</sup> As a result, the environmental analyses of the affected environment and the various EFH alternatives are nowhere near what is required by NEPA, fail to provide full and frank environmental analyses, and do not utilize the latest information to minimize gear impacts occurring in the region.

### Gulf of Mexico

- The lack of NMFS leadership is a key issue for the Gulf. In the early stages of development of the EIS, NMFS counsel provided little guidance to both the contractor and the Gulf Council creating unnecessary legal arguments amongst stakeholders and jeopardizing the court ordered timeline. For example, conservation groups requested that prey species be included in the EFH analysis. It took the NMFS counsel almost two months to issue a legal opinion that confirmed that the Council must consider impacts to prey species to the extent such impacts degrade the quality of EFH. Furthermore, NMFS provided very little guidance on other requirements of both the Magnuson Stevens Act and NEPA, leaving key decisions up to the contractor. Accordingly, issues like cumulative impacts are not being considered at this point in time threatening the court ordered timeline for completing the EIS.

While we are pleased with the recent attention given by the NMFS to the EIS review process, timely and significant guidance must be given to the Council and contractor to ensure the EIS complies with all applicable laws and legal decisions.

- The decision trees for determining which gear impacts are subject to the practicability analysis for minimizing impacts raises concerns. The contractor has decided to use a "decision tree analysis" to prioritize habitats and gear analyses. The third phase of this decision tree ranks habitats by their ecological importance and rarity to obtain a measure of "habitat utility," and then uses this measure to determine whether minimizing adverse gear

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<sup>6</sup>See WORKSHOP ON THE EFFECTS OF FISHING GEAR ON MARINE HABITATS OFF THE NORTHEASTERN UNITED STATES, OCTOBER 23-25, 2001, BOSTON, MASSACHUSETTS. Northeast Region Essential Fish Habitat Steering Committee. (<http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0201/>) ("The second product will be a peer reviewed document produced by NMFS staff which describes gear types used in federal and state waters in the Northeast region, the spatial distribution of fishing trips made by each gear type in federal waters, oceanographic regimes and habitat types in the region, and the results of scientific studies of the effects of fishing gear on benthic habitats in the Northeast U.S. and elsewhere. Preliminary Draft copies of this document (White Paper) were distributed to panel members in advance of the meeting to assist them in achieving workshop objectives. These documents will be available for use by the NEFMC and MAFMC to fulfill their MSFCMA requirements to include an assessment of fishing gear impacts on EFH in all of their FMPs.")



impacts is practicable. Although it is not clear exactly how this process will work, it seems intended to narrow the set of EFH for which minimization of gear impacts will be considered practicable. This approach is inconsistent with the regulatory definition of practicability, which requires balancing costs and benefits of minimizing gear impacts on *all* EFH. Considering the importance of this phase of the decision tree analysis, this approach must be carefully reviewed by the NMFS to determine whether or not it complies with all applicable laws and legal decisions.

- Despite a memorandum from NOAA General Counsel to the Gulf Council and contractor regarding the responsibilities of the Council and the NMFS in addressing prey species in the EIS analysis, the latest draft of the EIS does not fully incorporate all necessary analyses required by applicable EFH regulations. For example, while the classification of habitat types includes known usages (such as feeding) of this habitat by species and a listing of known prey species is given for managed species, information on the taking of prey species, either as direct catch or bycatch, and the identification of habitat for major prey species is not complete at this time.
- We are concerned with the elaborate process and hurdles that groups face in getting proposed alternatives even considered by the contractor.
- Finally, the current draft of this document includes no assessment of fishing gear impacts from the recreational sector, in direct contradiction of applicable legal requirements of the Magnuson Stevens Act and NEPA. This analysis must be completed before any alternatives are generated to address the adverse impacts of fishing gear on EFH.

#### Caribbean

- NMFS involvement in the Caribbean region EFH EIS has been high, but we have the same concerns as the Gulf regarding the proposed decision tree analysis.

Please contact Sylvia Liu, at Oceana, at (202) 833-3900, to set up a meeting with the concerned groups to discuss these issues.

Sincerely,

*Sylvia Liu, on behalf of:*

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Letter to Dr. William T. Hogarth  
November 22, 2002  
Page 7 of 7

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October 25, 2002

David Benton, Chairman  
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605 West 4th Avenue, Suite 306  
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N.P.F.M.C

**Re: Comments on American Sportfishing Association report entitled "No take marine protected areas (nMPAs) as a fishery management tool, a pragmatic perspective" by Robert L. Shipp, Ph.D.**

Dear Chairman Benton,

As members of the academic science community with research experience on marine reserves and marine protected areas, we write today to provide comments on a report released on March 7, 2002 by the American Sportfishing Association addressing the potential role marine reserves as a fishery management tool. We address this issue in detail in the attached document but highlight a few points here. A review of the literature and existing data suggest that this report underestimates the important role marine reserves (referred to as nMPAs in the report) could play in habitat protection and sustaining both fisheries and marine ecosystems. The ASA report is misleading because it:

**1) underestimates the scope of the fisheries problem.** By downplaying the fact that the status of the majority of U. S. fish stocks is unknown, the report minimizes the present number of overfished stocks and the need for new approaches to marine resource management. The reality is that we have assessed only 32% of all the U.S. fish stocks, and of these 27% are overfished.

**2) ignores the important contribution of marine reserves to habitat protection.** The ASA report lists "habitat preservation as an important feature of future management of many fish species", without stating how such protection for so many species will be accomplished. Marine reserves are one of the premiere ecosystem-based management tools because they protect critical habitat by preventing bottom disruption from mining, oil development, and destructive fishing practices. They also preserve the entire natural ecosystem, including biological habitats such as kelp forests and oyster reefs, upon which many species depend.

**3) relies on intrusive, single minded management of scores of species.** Today's fisheries exploit numerous species from finfish to sedentary invertebrates to seaweeds. Managing all these species, one at a time, is the current fisheries paradigm, but this paradigm was generated when fisheries were dominated by a few, high-value finfish. Simultaneously managing all these species for optimum yield, as currently demanded by federal law, is a coordination challenge that no fishery agency has yet met. Reserves can provide management value for hundreds of species at the same time, providing a mechanism for management of many of the species currently mandated.

**4) biases the analysis in favor of traditional fisheries management.** The report does this by assessing the ability of marine reserves to return results (1) when the only goal is maximizing fisheries yield, (2) only when fish stocks are already overfished, and (3) only when compared to a hypothetical situation in which traditional fishery management has worked perfectly. Throughout the ASA report, the approach is to minimize the uncertainty associated with traditional management while maximizing the presumed uncertainty with marine reserves. As a result, the report constrains the potential contribution (now well documented in the scientific literature) of marine reserves to fisheries management.

**5) takes an incomplete view of the role of animal movement in marine reserve function and design.** The report states that because all fish move to some extent, place-based management cannot succeed. In reality, it is precisely because animals move that marine reserves have potential as a fishery management tool. Emerging empirical and theoretical data, which the ASA report minimizes, support the importance of the "spillover effect" of fish movement from reserves to surrounding areas, as well as the "seeding effect" of larvae produced within and dispersed from reserves. Both of these effects replenish populations outside reserves. Moreover, in concentrating on finfish, the report overlooks numerous fisheries species, such as sea urchins, lobsters, crabs, oysters, abalones, sea cucumbers and other invertebrates that move considerably less than do many fishes. In oversimplifying these aspects of life history, the ASA report misrepresents the ability of reserves to contribute to marine stewardship.

**6) dismisses the other important ecosystem and biodiversity goals of marine reserves.** By intentionally excluding non-fishery goals, the report sets aside the important contribution of marine reserves to conserving marine biodiversity and functional marine ecosystems. These benefits are many and are similarly well documented in the peer-reviewed scientific literature. Marine reserves can help maintain the ocean's goods and services on which all humans depend. They can reduce the probability of extinction of species within their borders and act as a buffer against the variability inherent in natural systems and in human behavior. Finally, marine reserves are critical as scientific benchmarks against which to quantify human impacts in the marine environment. Although marine reserves are not a panacea, they are a powerful tool to both conserve biodiversity and enhance fisheries and their immediate application is warranted.

In your work towards sustainable fisheries management, including evaluation of Essential Fish Habitat mitigation alternatives, we hope you will consider the emerging scientific

evidence that conservation (including, habitat protection) and fishery goals are achievable with a network of marine reserves.

Thank you for the opportunity to comment on the American Sportfishing Association's report and to provide you with some of the latest thinking and research about marine reserves. If it would be helpful, we would be happy to explore the possibility of providing scientific testimony to you and the Council. Should you have any questions or comments, we would be happy to discuss them with you as well.

Respectfully submitted\*,



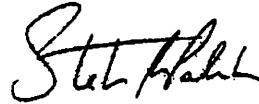
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cc: Dr. James W. Balsiger, Administrator, Alaska Region National Marine Fisheries Service

Comments on ASA report entitled "No take marine protected areas (nMPAs) as a fishery management tool, a pragmatic perspective" by Robert L. Shipp, Ph.D.

By

Drs. Mark Carr, Paul Dayton, Steven Gaines, Mark Hixon, George Leonard,  
Stephen Palumbi, and Robert Warner  
(authors listed alphabetically)  
June 7, 2002

As members of the academic science community with research experience on marine reserves and marine protected areas, we wish to provide comments on a report released on March 7, 2002 by the American Sportfishing Association (ASA) that reportedly evaluates the potential role of marine reserves as a fishery management tool. An examination of the peer-reviewed scientific literature and other existing data suggest that the ASA report seriously underestimates the important role marine reserves (referred to as nMPAs in the report) could play in sustaining both fisheries and marine ecosystems in general. The ASA report is misleading because it:

- underestimates the scope of the fisheries problem,
- biases the analysis in favor of traditional fisheries management,
- ignores the important contribution of marine reserves to the protection of habitats and intact, functional ecosystems,
- takes an incomplete view of how marine reserves may function within a fisheries context, and
- employs faulty logic regarding the presumed costs to fisheries should marine reserves fail to provide fishery benefits.

### 1) The scope of the problem

The ASA report maintains that data from NMFS (2001) show that only 10% of U.S. fish stocks are overfished and that only 6.3% are both overfished and still subject to overfishing. It uses these figures to argue that U.S. fish stocks are generally healthy and that very few are in need of new, more restrictive management measures. These figures, however, are extremely misleading (a point admitted to but downplayed in the report), because the status of the majority of U.S. fish stocks is unknown. The scope of fishery problems is better understood by considering the percentage of assessed stocks that are overfished. Of the 959 U.S. stocks, about 307 have been assessed. Of those, 33% (rather than the 10%, above) are currently classified as overfished (NMFS, 2002) and very few of these are recovering in any substantial way. Along the U.S. west coast the situation is far worse. Of the 82 species of groundfish in the Pacific Fishery Management Council management plan, only 19 (23%) have been reliably assessed. Of these, 9 species (nearly 50%) are classified as overfished (Stephen Ralston, NMFS, personal communication).

In discussing 60 species of reef fishes in the South Atlantic and Gulf of Mexico, where stock assessments for "the vast majority...have not been performed and life history data, including movement patterns, are also unknown", the ASA report posits "any considerations of nMPA benefits for these species is premature." In so doing, the ASA report tacitly assumes that all unassessed stocks are in pristine condition but there is no scientific basis for the assumption that unassessed stocks are any healthier than assessed stocks. A more realistic approach is to apply the percentage of overfished stocks in the known sample to the unknown stocks. In this case, using data from NMFS' most recent report (2002), nearly 316 of the 959 U.S. fish stocks are estimated as overfished. Clearly, the scope of the problem (and the need for new management measures) in U.S. fisheries is substantially greater than that stated in the ASA report. Because many of these are coastal species, near-shore marine reserves could play an important role in their restoration, conservation and sustainable use.

## **2) Achieving multiple fishery and ecosystem goals with marine reserves**

### ***The critical and overlooked goal of habitat and ecosystem protection***

Marine reserves are fundamentally an ecosystem-based management tool whose goal is to protect habitats and intact ecosystems against a variety of threats, including overfishing. It has been well established that many types of ecosystems can dramatically recover when protected from overfishing (e.g., Babcock et al. 1999). Reserves have the potential to conserve and replenish marine ecosystems in ways that may strengthen their resilience in the face of other impacts, such as climate change. They address the needs of thousands of species at the same time, species that humans eat as well as the numerous species that serve as food for the species that humans eat. By protecting habitats, reserves protect the underlying structure of coastal ecosystems and in so doing are critical to maintaining the other non-fishery "goods and services" on which humans depend (Dailey 1997, Costanza 1999).

As an ecosystem management tool, marine reserves can achieve fishery goals that are difficult to accomplish using standard practices such as gear restrictions, seasonal closures, etc. The most important of these is the protection of habitat critical to juvenile and adult survival. Trawling is known to damage bottom habitats and the recovery times for these sensitive habitats in many cases can be far longer than the frequency with which they are trawled (NRC 2002). Although gear restrictions reduce bottom damage, the most effective way to eliminate such impacts entirely is with the use of marine reserves. The scientific literature is replete with examples of the importance of habitat to various aspects of finfish and shellfish life history (e.g., Lindholm et al. 1999; Domeier and Colin 1997; Koenig et al. 2000). The ASA report, too, acknowledges "habitat preservation is an important feature of future management of many fish species" but does not state how such protection for the numerous species being harvested will be accomplished. Because marine reserves protect intact ecosystems, they prevent bottom disruption from mining, oil development, or destructive fishing methods. By preserving entire natural ecosystems, including biological habitats like kelp forests and oyster reefs, they simultaneously protect the species on which many commercial and recreational fisheries depend.

### ***The precautionary approach and overfishing***

The ASA report defines a fishery management tool as “one that *sustains* and/or increases through time the yield of a fish stock” (italics added). This includes precautionary management tools that prevent declines before they occur. The report then contradicts itself by stating only stocks in serious trouble should be managed: if “stocks are healthy, and projected to remain so ... the need for nMPAs as a management tool is nil.” Although yield is an important goal of fishery management, it should not be the only goal and overfishing should not be a prerequisite for the use of marine reserves. By emphasizing a precautionary approach, marine reserves can help reduce the probability that both healthy stocks and those of unknown status become overfished in the first place. Hence, marine reserves can play an important role long before a crisis is reached and long before data are available on the many stocks currently being landed.

The alternative to using marine reserves and a framework of ecosystem management is to rely on multiple, overlapping, single species management plans that become cumbersome and difficult to implement and enforce. Today's fisheries increasingly exploit a plethora of species from finfish to sedentary invertebrates to seaweeds. Managing all these species, one at a time, is the current fisheries paradigm and the mandate of the Magnuson-Stevens Fishery Conservation and Management Act, but this paradigm was generated when fisheries were dominated by a few, high-value finfish. Simultaneously managing all the present day species for optimum yield, as currently demanded by federal law, is a coordination challenge that no fishery agency has yet been able to meet. In contrast to the current approach, marine reserves and an ecosystem approach provide management value for hundreds of species at the same time and provide a unique mechanism for the management of many of the species currently mandated. Sustainable fisheries will only be achieved through a combination of protecting a portion of the stock from fishing mortality and by protecting the habitat on which these and other species depend. Marine reserves can achieve both these goals simultaneously while traditional effort control cannot.

### ***Insurance against the unknowns of natural variability***

An additional fishery benefit is that marine reserves provide insurance against the variability inherent in marine ecosystems. By protecting a proportion of the population (especially large, reproductive females), the resultant larger population will offer more resistance to and resilience from both natural and manmade disturbances, which themselves are highly variable and difficult to predict. This added resistance and resilience will directly benefit the long-term sustainability of fish stocks by reducing the probability of population crashes. In addition, marine reserves provide insurance against our own ignorance in the face of the immense complexity of ocean ecosystems. Although scientists and fishermen have considerable knowledge about fish and their habitats, there is clearly much to be learned. Failures in traditional fishery management are due, in part, to our poor ability to precisely quantify fish stocks and the patterns and consequences of human induced and natural mortality. It is unlikely that the perfect knowledge needed for effective traditional management will ever be achieved. By protecting sections of ecosystems within their borders, marine reserves offer an elegant solution to the problems inherent in single species management highlighted above and the difficulties of limited information. It should be stressed that marine reserves are not an excuse for our limited knowledge. Rather, they



illustrate what new information is needed to manage marine ecosystems effectively and to provide critical baselines for understanding human impacts on marine ecosystems.

#### ***Marine reserves as a supplement to traditional management practices***

We emphasize that marine reserves should not replace traditional management, but should be an additional tool that is compatible with existing approaches. The tenor of the ASA report implies that marine reserves would completely replace traditional fishery management. The academic community has continually argued that marine reserves are not a panacea for the ocean's problems. Like others, we suggest that a combination of traditional management and place-based approaches such as marine reserves can substantially improve the long-term viability of fisheries and the fish stocks on which they depend.

### **3) How reserves function in a fisheries context**

#### ***The role of animal movement***

The ASA report is founded on a misunderstanding of marine reserve function and design. The report maintains that marine reserves "are predicated on two fundamental components: keeping harvesters out and keeping the species in." Although effective enforcement is critical to the success of marine reserves (as it is for *any* management measure), movement of animals and their offspring does not doom marine reserves to failure. On the contrary, marine reserves have the potential to benefit fisheries only if adult fish move and/or their larvae disperse on ocean currents. The ASA report concludes that because nearly all fish move to some extent, that marine reserves cannot possibly work as a management tool. Presenting fish simply as either sedentary or mobile ignores the subtleties in life history and behavior that make many species good candidates for marine reserves. For example, recent data for red drum near Merritt Island in Florida (Roberts et al. 2001) clearly demonstrate reserve effectiveness for this mobile species.

In addition, although the ASA report acknowledges that rocky reefs act as natural refuges for west coast rockfish (and hence, are an effective form of 'natural' marine reserve), it maintains that additional marine reserves would not work. This is especially perplexing because numerous well-respected scientists believe the life history characteristics of rockfish make them some of the best candidates for the habitat protection afforded by marine reserves (Yoklavich 1998). One source of confusion in the ASA report is equating a species range with mobility or range of an individual. Many species are wide ranging (that is, have large geographic ranges) yet do not exhibit wide movement as individuals (that is, individuals themselves do not travel over large distances). Some rockfish are good examples of species with wide ranges yet limited movement. The substantial movement that does occur is part of the life history of the individual, where young rockfish gradually move into deeper water as they grow. Thus, marine reserves could be effectively situated to protect immature rockfish in shallower water and/or large spawning adults in deeper water. In general, the conclusion that marine reserves will not work for many species is simply at odds with the increasing body of empirical evidence that shows that, despite fish movement, marine reserves consistently increase fish abundance, size and reproductive capacity within their borders (e.g.

Halpern, in press). If marine reserves were bound for failure, as the ASA report maintains, then this wealth of scientific data showing strong effects could simply not exist.

### ***Non-fish fisheries***

In concentrating on finfish, the ASA report ignores the growing number of invertebrates that make up U.S. fisheries. Among others, these include lobster, sea urchin, abalone, squid, crab, shrimp and oysters. As finfish landings decline, these “non-fish fisheries” are expanding and now account for over 50% of the gross landings (in dollars) along the U.S. west coast (data available at [http://www.st.nmfs.gov/st1/commercial/landings/annual\\_landings.html](http://www.st.nmfs.gov/st1/commercial/landings/annual_landings.html)). Many of these species are *less* mobile as adults than most of the finfish examined in the ASA report and hence are very strong candidates for the successful use of marine reserves in their management. For example, spatial management has been argued to be a critical component to the management of non-Dungeness crabs (Orensanz et al., 1998) and sea cucumbers (Schroeter and Reed 2001). Because many invertebrates (and some fish) form dense aggregations during mating (Dayton et al. 2000; Tegner et al. 1996; Stokesbury and Himmelman 1993), marine reserves can play a critical role in ensuring densities are large enough to result in successful reproduction. Without the explicit spatial protection afforded by marine reserves, this is unlikely. Even using the faulty logic in the ASA report, if invertebrate fisheries were included, then a substantially larger proportion of fisheries stocks would have been found to benefit from marine reserves.

### ***Evidence and importance of adult spillover and larval seeding***

The ASA report claims that there is no evidence that spillover of adult fish from reserves to surrounding areas occurs. Although empirical studies of spillover are still limited, this important effect of marine reserves has occurred consistently when it has been examined. As the density and size of fish increase within a reserve, individuals move outside the reserve boundaries because of density-dependent effects or ontogenetic habitat shifts. Evidence for adult spillover exists from both the fish (e.g. Roberts et al., 2001) and the fishermen themselves. “Fishing the line” is now a commonplace phenomenon where fishermen congregate at reserve boundaries to capture the large fish as they move outside the reserve borders (McClanahan and Mangi 2000). A recent example includes lobster fisherman setting traps outside the border of the Sambos Ecological Reserve in the Florida Keys (Jim Bohnsack, NMFS, personal communication).

Much more important, however, are the increasing number of observations that marine reserves also export larvae beyond their borders and can act to replenish fisheries via the enhancement of recruitment. For example, when areas of George’s Bank in the Gulf of Maine were closed to groundfishing (Murawski et al. 2000), they subsequently supported a profitable scallop fishery in areas near reserves (Fogarty et al., 2000).

By ignoring that the depletion of breeding adults occurs, the ASA report dismisses the potential of marine reserves to contribute to stock restoration via larval replenishment. It is true that there is often little relationship between stock biomass and recruitment in natural populations because larval production far exceeds recruitment. However, many fished stocks are at such depleted levels that low recruitment clearly limits their ability to recover (Myers and Barrowman 1996). Marine reserves often result in the build up of large numbers of big

fish, including females (Murray et al. 1999). Larger females produce a disproportionately large number of eggs and larvae than smaller fish (Wootton 1990) and thus they play an important potential role in restoring fisheries. Moreover, larger females produce young that are more fit than those produced by smaller individuals (Berkeley et al. submitted). Developing a fishery to protect large females is nearly impossible without using marine reserves. In short, larval dispersal is much more important to enhancing fisheries than is adult spillover and the build up of biomass and reproductive potential increasingly evident within marine reserves could go a long way toward helping to reverse our current crisis in fisheries.

### ***Optimal yield***

The ASA report argues that the yield under a marine reserve scenario is always less than that for a perfectly managed fishery. This argument is predicated on the assumption of an optimally managed fishery, a goal that has rarely (if ever) been achieved using traditional management approaches. Under more realistic conditions, the yield disparity between marine reserves and traditional measure disappears. New modeling results suggest that marine reserves can actually provide an equivalent (Hastings and Botsford 1999) or in some cases greater yield (Gaines et al. in press) when one incorporates our growing knowledge of spatial variation in marine habitats and larval dispersal.

The ASA report cites Murray et al. (1999) and their recommended guidelines for developing marine reserves. We are in total agreement with the report that reserves (and other management measures) should have clear goals, objectives and expectations. For fishery management, we also agree that marine reserves should be evaluated specifically with regard to fishery benefits while not losing sight of their important habitat and ecosystem benefits. We freely admit that data are limited on marine reserve performance for fisheries. Only by establishing a significant network of marine reserves, however, will scientists finally accumulate the empirical data industry seeks illustrating their true potential as a supplemental fishery management tool. There is clearly more to learn, but the evidence available today suggests that marine reserves can contribute to healthy fish stocks.

### **4) Are there costs of “unsuccessful” reserves to fisheries?**

Finally, the ASA report employs faulty logic on the potential costs to fisheries should marine reserves fail to provide fishery benefits. It argues strongly that marine reserves should not be used because they cause significant financial hardship while providing few fishery benefits. As discussed above, the ASA report expects reserves to fail frequently because fish move and consequently will not stay within reserve boundaries. The great irony of this argument is that if reserves provide no benefit (because fish leave protected areas too frequently) then reserves also have little or no cost to fishermen. If the fish are still being caught when they leave the reserve, the only effect on the fishery will be that fish will be caught in different places. Carefully designed and placed reserves could minimize these costs to fishermen. The primary tenet of the report's analysis is that most species will continue to be caught by fishermen since they are too mobile to be protected in reserves. For every species where this is true, reserves should do no harm. As a result, reserves could achieve all of their other non-fishery goals (e.g., conservation of biodiversity, benchmarks for scientific understanding, etc.) while only

changing the location of fishing. In this sense, by arguing against reserves because they will not provide protection from fishing, the ASA report has developed an untenable argument. If these management tools are truly as ineffective as the ASA report would have you believe, then the fishing industry is likely to neither experience the costs and hardship that they maintain nor the fishery benefits that many scientists and conservationists have proposed. Should this be true, reserves could then be established without regard to their effect on fisheries issues.

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CC: James W. Balsiger, Administrator, Alaska Region  
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RE: EFH Marine Reserves Alternative

RECEIVED

NOV 5 2002

N.P.F.M.C.  
October 30 2002

Dear Dr. Balsiger and Chairman Benton:

While The Ocean Conservancy appreciates the scoping process undertaken by both NMFS and the NPFMC as a prelude to the preparation of a draft Environmental Impact Statement on the designation of Essential Fish Habitat, the recent decision by the NPFMC to eliminate from analysis an alternative that establishes a network of marine reserves:

- is inconsistent with the EFH Final Rule,
- undermines the public process,
- puts the NPFMC out of step with the State of Alaska's MPA process, and
- is in conflict with the requirements of the National Environmental Policy Act.

The Ocean Conservancy believes that an alternative based upon a network of marine reserves meets the requirements of the EFH provisions of the Sustainable Fisheries Amendments and is supported by the best available science on habitat protection. This was evident in the EFH Subcommittee's recommendations to the Council, which contained several alternatives that were inclusive of marine reserves. These recommendations explained the rationale for a 20% marine reserves alternative:

*[I]t addresses uncertainty regarding the effects of fishing on habitat by ensuring that at least 20% of benthic habitat would be left entirely*

*undisturbed by fishing.<sup>1</sup>*

This alternative is also a reasonable alternative because it meets the mandate of the EFH Final Rule, which states:

*FMPs should identify a range of potential new actions that could be taken to address adverse effects on EFH, include an analysis of the practicability of potential new actions, and adopt any new measures that are necessary and practicable.<sup>2</sup>*

As you are aware, the EFH Final Rule lists various techniques for mitigating the adverse effects on EFH from fishing. With respect to time and area closures, the rule states:

*These actions may include, but are not limited to, closing areas to all fishing or specific equipment types during spawning, migration, foraging, and nursery activities and designated zones for use as marine protected areas to limit adverse effects of fishing practices . . .<sup>3</sup>*

While the EFH Final Rule does not dictate the use of marine reserves as the technique by which adverse fishing impacts are mitigated, the scientific consensus clearly indicates that marine reserves are an important and effective tool for protecting habitat.<sup>4</sup> This was presented to both NMFS and NPFMC by The Ocean Conservancy in testimony at EFH Committee meetings in Sitka, Kodiak, Anchorage, and Seattle as well as at the October NPFMC meeting in Seattle at which the NPFMC eliminated a marine reserves alternative from consideration.

Based upon the guidance from the EFH Final Rule and the best available science on habitat protection, The Ocean Conservancy requests that the NPFMC reconsider the decision to eliminate a marine reserves alternative from the analysis of mitigating the adverse effects of fishing on EFH. This decision both pre-determines the practicability of marine reserves as a habitat protection tool and ignores the mandates of the National Environmental Policy Act, which requires that NMFS and the NPFMC “[r]igorously explore and objectively evaluate all reasonable alternatives.”<sup>5</sup> Considering the wealth of scientific literature on marine reserves and their efficacy in protecting habitat, it is readily apparent that marine reserves are a “reasonable alternative.”

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<sup>1</sup> EFH Committee Final Recommendations to Council on EFH Alternatives Based on September 16-18, 2002 meetings.

<sup>2</sup> 50 CFR §600.815(a)(2)(ii).

<sup>3</sup> 50 CFR §600.815(a)(2)(iii)(B).

<sup>4</sup> National Research Council (NRC). 2001. Marine protected areas: Tools for sustaining ocean ecosystems. National Academy Press.

<sup>5</sup> 40 CFR §1502.14(a).



Should the NPFMC and NMFS not rigorously evaluate a marine reserves alternative in the draft EFH EIS, the agency will be put in the position of having to supplement the draft EIS with a thorough discussion of the marine reserves alternative.<sup>6</sup> Absent this supplementation, the agency must cite authorities and reasons justifying the exclusion of this alternative.<sup>7</sup> Neither the NPFMC nor NMFS has provided compelling scientific reasons for the exclusion of this alternative for consideration. Please provide this justification.

As you may recall, the NPFMC EFH Committee's final recommendations included several marine reserves alternatives.<sup>8</sup> At the October 2002 NPFMC meeting in Seattle, the Advisory Panel voted to eliminate the marine reserves alternative after receiving this recommendation and hearing from NPFMC staff that it was an important alternative because it tracked the draft Programmatic SEIS and was a legitimate approach to habitat protection. The Advisory Panel made this recommendation after a short discussion and with little justification beyond their reluctance to draw marine reserve lines on a map. Similarly, the NPFMC seemed to eliminate the alternative without compelling reason. Arguments from individual Council members indicated that they felt that it was not a reasonable alternative because it would not be a preferred alternative, would be difficult to craft, could mislead the public into thinking that the NPFMC was seriously considering marine reserves, and would be discussed later in the Programmatic SEIS.

These reasons are not compelling and do not release NMFS and the NPFMC from their NEPA responsibilities. As stated above, NEPA requires the discussion of all reasonable alternatives. A full evaluation of all reasonable alternatives is, in fact, "the heart of an Environmental Impact Statement . . ."<sup>9</sup> Difficulty with crafting an alternative does not waive this duty. As to public perceptions, NEPA is a disclosure statute requiring the NPFMC and NMFS to inform the public of reasonable EFH mitigation alternatives and explore all reasonable means of achieving mitigation. The assumption that the public would be misled if the NPFMC and NMFS ventured into a discussion of marine reserves as an alternative is specious at best. This logic could be used to eliminate every alternative except the preferred alternative, insults the public, and undermines the public process purposes of NEPA.<sup>10</sup>

The argument that the marine reserves alternative will be discussed in the draft Programmatic EIS is similarly unfounded. While the draft Programmatic EIS may include a discussion of the benefits of marine reserves in terms of biodiversity and habitat protection at the programmatic level, this does not waive NEPA requirements

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<sup>6</sup> "Forty Most Asked Questions Concerning CEQ's NEPA regulations," 46 Fed. Reg. 18026 (March 23, 1981), as amended, 51 Fed. Reg. 15618 (April 25, 1986).

<sup>7</sup> *Id.*

<sup>8</sup> EFH Committee Final Recommendations to Council on EFH Alternatives Based on September 16-18, 2002 meetings.

<sup>9</sup> 40 CFR §1502.14.

<sup>10</sup> 40 CFR §1506.16.

for the draft EFH EIS. First, the draft Programmatic EIS is not complete and will not be available for public review before the draft EFH EIS is completed. Second, even if it was, it would not be appropriate to tier the draft EFH EIS to the draft Programmatic EIS in order to eliminate the marine reserves alternative unless the draft Programmatic EIS contained a scientifically credible conclusion that marine reserves were not a reasonable tool for mitigating the adverse impacts of fishing on habitat. Third, if the Programmatic EIS contains only 'management case studies' or 'FMP-like alternatives', there must be a discussion of marine reserves in an EIS that is considering the on-the-ground application of marine reserves. A theoretical discussion of possibly implementing marine reserves within a book-ended range, such as in the forthcoming Programmatic EIS, does not satisfy NEPA's intent or mandate that this reasonable alternative be included in the EFH EIS.

Finally, the NPFMC's decision to eliminate a detailed analysis of the efficacy of marine reserves as an alternative in the draft EFH EIS undermines the joint effort of the State of Alaska and the NPFMC to design and implement a Marine Protected Area strategy. This was illustrated at the recent Alaska Board of Fisheries meeting where Board members questioned the reasons behind the elimination of this alternative. Detailed analysis of the efficacy of marine reserves is beneficial to both processes, is sought after by the State of Alaska, and provides the opportunity for the state and federal management bodies to continue to work together.

In conclusion, public comment, the EFH Final Rule, the best available science and NEPA all compel the inclusion of a marine reserves alternative in the draft EFH EIS. The Ocean Conservancy and other organizations have been working with the agency and the analysts to create a marine reserves alternative in the context of the Programmatic EIS and will be submitting a proposal to the NPFMC at the December meeting. At present, however, we are deeply concerned with the exclusion of a scientifically valid and legally required alternative.

Sincerely,



Whit Sheard  
North Pacific Fish Conservation Program Manager

cc: EFH Subcommittee



**Oregon State  
University**

**Dr. Mark A. Hixon  
Department of Zoology  
Oregon State University  
Corvallis, OR 97331-2914**

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<http://www.onid.orst.edu/~hixonm/index.htm>

1 November 2002

David Benton, Chairman  
North Pacific Fishery Management Council  
605 West 4th Avenue, Suite 306  
Anchorage, AK 99501-2252

Dear Chairman Benton:

As a Professor of Marine Ecology and Conservation Biology at Oregon State University and an expert on coastal marine fishes, I have been studying fishery effects of existing marine reserves along the west coast of the United States. I have been an active participant, as a scientific advisor, to marine reserve processes at the state level (both California and Oregon), as well as the national level (I am a nominee to the new Federal Advisory Committee on MPAs). I understand the North Pacific Fisheries Management Council, in striving for sustainable fisheries management and habitat protection, is considering a wide range of management options.

As marine reserves are becoming better studied, it is clear to many of us in the scientific community that reserves can be an important tool to satisfy multiple goals, including both conservation and fisheries goals. To that end, I write to provide you with scientific evidence from a number of marine reserves on the west coast, summarized in the attached report. This report indicates that networks of marine reserves can provide fisheries effects by supporting more abundant, larger, and more fecund animals than areas outside reserves. Although the reserves studied in this paper focus are in Washington, Oregon, and California, these trends should hold true for waters in other parts of the world, including Alaska.

I hope that this information will prove useful to the Council in their consideration of management alternatives. Should you need more information, or if you are interested in more detailed scientific testimony about marine reserves, do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark Hixon', written in a cursive style.

Mark Hixon  
Professor

## **FISHERY EFFECTS OF EXISTING WEST COAST MARINE RESERVES: THE SCIENTIFIC EVIDENCE**

compiled by Dr. Mark Hixon, Department of Zoology, Oregon State University  
(541-737-5364, hixonm@bcc.orst.edu)

Although fully-protected marine reserves are being touted as effective fishery management tools worldwide, it is important to consider in detail whether existing reserves along the West Coast of the United States provide fishery benefits, or more specifically, would provide benefits if scaled-up. It is clear from the outset that existing West Coast reserves are much too small and too few to benefit fisheries in ways that are directly detectable statistically. Indeed, there are only about 7 fully-protected reserves in Washington (all in Puget Sound, accounting for only ca. 0.003% of state waters), only 1 in Oregon (Whale Cove, ca. 0.003% of state waters), and 11 scattered along the California coast (ca. 0.2% of state waters). However, it is nonetheless possible to examine indicators of whether a scaled-up network of reserves would provide fishery benefits.

The predicted fishery benefits of fully-protected reserves are twofold: (1) the "**seeding effect**," whereby reserves function as a source of eggs and larvae that replenish fish and shellfish populations outside reserves via dispersal in ocean currents, and (2) the "**spillover effect**," whereby reserves function as a source of juvenile and adult emigrants that literally swim or crawl out of reserves into adjacent fished areas. The **seeding effect** occurs only if the *number* and especially the *size* of organisms inside reserves is substantially greater than outside, so that abundant eggs and larvae produced inside reserves can effectively seed a large area outside. The **spillover effect** occurs if (a) the *number* of mobile animals inside reserves becomes great enough that crowding occurs and a substantial number of animals consequently emigrates to adjacent fished areas or (b) the life history of mobile animals is such that they gradually move from habitat to habitat as they grow, so that the early stages of the life history can be protected within reserves, and the animals later move into fished areas. Thus, comparisons inside vs. outside reserves can provide an indication of whether seeding and spillover effects are probable, and examination of *movement* patterns can further suggest whether spillover is likely.

There have been scientifically rigorous comparisons inside vs. outside about a dozen existing reserves in Washington, Oregon, and California that were studied at least 10 years after the reserves were established (Table 1). Excluded from this compilation are analyses of (1) the Edmunds Marine Park in Washington, because seafloor habitats inside and outside the reserve are not strictly comparable, and (2) the Big Creek Reserve in California, because protected status was implemented only in 1994. In all studies, SCUBA divers compared areas inside and outside reserves by visually censusing plots or transects. Compared indicators included seafloor habitats, fish (mostly rockfish) and invertebrate (sea urchin and abalone) number and size, and sometimes calculated egg production. Egg production is well-documented to increase dramatically with body size in these fish and invertebrates, so areas with high abundance and large sizes of animals clearly produce numerous eggs that may contribute to the seeding effect.

**Table 2** summarizes 9 independent scientific studies that compared unfished marine reserves with nearby fished areas of similar seafloor habitat. A total of 22 comparisons involving 17 fished species (1 species of sea urchin, 2 species of abalone, and 14 species of fish) were conducted among the 13 reserves listed in Table 1. Considering cases where statistical differences were detectable, in 15 of 17 comparisons (88%), animals were more abundant inside reserves than outside. In 12 of 15 comparisons (80%), animals were larger inside reserves than outside. In 15 of 17 comparisons (88%), animals were inferred to produce more eggs inside reserves than outside. The exceptions may be cases of smaller species that are out-competed or eaten by more abundant or larger fish inside reserves, although there are presently no definitive data.

**Table 3** summarizes movement patterns of representative West Coast groundfish determined from tag-and-recapture studies. The general life history pattern is that lingcod and rockfishes, among other species, live in shallow water as young, then slowly migrate to deeper water as they grow, eventually living within relatively limited home ranges as adults. Movement distances suggest that these fish could spillover from marine reserves of substantial size. Exceptions include exclusively shallow species that inhabit coastal rocky reefs for their entire juvenile and adult life.

**Overall, for a wide variety of fished species along the U.S. West Coast, available data indicate that the existing few and small marine reserves are effective in supporting substantially more abundant, larger, and more fecund animals (i.e., more eggs) than comparable fished areas outside. Moreover, many groundfish move sufficiently during their lifetimes to allow for spillover to occur from reserves of substantial size. These results are consistent with the prediction that a scaled-up network of numerous larger reserves would produce detectable fishery benefits via both the spillover and seeding effects.**

**TABLE 1.** Existing U.S. West Coast marine reserves that have been the subject of inside vs. outside scientific comparisons. Comparisons made at two other reserves are not included: (1) Edmunds Marine Park in Washington (0.04 nmi<sup>2</sup>, established in 1970) because seafloor inside and outside are not directly comparable; and (2) Big Creek in California (1.11 nmi<sup>2</sup>, established in 1994) because protection is only recent.

Reserve	Area (nmi <sup>2</sup> )	Year	Protection
WASHINGTON:			(reference 2)
Shady Cove	0.49	1990	herring and salmon fishing allowed
Shaw Island	0.37	1990	herring and salmon fishing allowed
Yellow Island	0.07	1990	herring and salmon fishing allowed
OREGON:			(reference 8)
Whale Cove	0.04	1967	fully protected
NO. CALIFORNIA:			(reference 7)
Pt. Cabrillo/Caspar	0.13	1975/90	only sea urchins protected
Salt Point	1.60	1990	only sea urchins protected
Bodega Marine Lab	0.18	1965	only invertebrates protected
Hopkins Marine Lab	0.09	1984	fully protected
Pont Lobos	0.80	1973	fully protected
SO. CALIFORNIA:			(reference 7)
E. Anacapa Island	0.04	1978	fully protected
Laguna Beach	0.04	1973	fully protected
Catalina Marine Lab	0.05	1988	fully protected
La Jolla	0.54	1971	fully protected

**TABLE 2.** Comparisons of number, size, and calculated egg production of fished species inside vs. outside existing U.S. West Coast marine reserves listed in Table 1. "Yes" means that values were statistically greater inside, "No" means that values were statistically greater outside, "ns" means no statistically detectable difference, and "?" means not reported. ("Yes") and ("No") are conclusions regarding egg production based on relative number and size of fish (i.e., egg production not calculated directly, but if number and size of adult fish are greater inside the reserve, than egg production must be greater). "Ref" refers to the reference number(s) cited.

Species	Number	Size	Eggs	Comments	(Ref)
<b>WASHINGTON:</b>					
				[all WA data from 3 reserves]	
lingcod	ns	Yes	Yes		(2,10,11)
black rockfish	Yes	Yes	(Yes)	seen only in reserve	(2)
copper rockfish	Yes	Yes	Yes		(2,10,11)
quillback rockfish	No	No	(No)	competition or predation?	(2)
yellowtail rockfish	Yes	Yes	(Yes)	seen only in reserve	(2)
<b>OREGON:</b>					
red sea urchin	Yes	Yes	Yes		(8)
<b>NO. CALIFORNIA:</b>					
red sea urchin	Yes	?	?	Caspar, Salt Pt., Bodega	(13)
red abalone	Yes	?	?	Caspar, Salt Pt., Bodega	(13)
lingcod	ns	Yes	(Yes)	[fish data from Pt. Lobos]	(18)
cabezon	ns	No	(No)	competition or predation?	(18)
black rockfish	ns	Yes	(Yes)		(18)
black-&-yellow rockfish	No	No	?	conflicting egg data	(9,18)
copper rockfish	Yes	Yes	(Yes)	seen only in reserve	(18)
gopher rockfish	Yes	Yes	(Yes)		(18)
kelp rockfish	ns	Yes	Yes		(9,18)
olive rockfish	Yes	Yes	(Yes)		(18)
vermilion rockfish	Yes	Yes	(Yes)		(18)
<b>SO. CALIFORNIA:</b>					
red sea urchin	Yes	?	?	Anacapa	(1)
pink abalone	Yes	?	?	Anacapa	(1)
barred sand bass	Yes	?	Yes	Laguna (sand bottom)	(17)
kelp bass	Yes	?	Yes	pooled So. Cal. reserves	(17)
California sheephead	Yes	?	Yes	pooled So. Cal. reserves	(17)
Total Yes (greater inside):	15	12	15		
Total No (greater outside):	2	3	2		

**TABLE 3.** Movement patterns of commonly fished West Coast groundfish. The general pattern is that lingcod and rockfish, among other species, live in shallow water as young, then slowly migrate to deeper water as they grow, eventually living within relatively limited home ranges as adults. These data suggest that these fish move sufficiently for the spillover effect to occur from marine reserves of substantial size. Exceptions include exclusively shallow species (e.g., black-and-yellow and gopher rockfish) that inhabit coastal rocky reefs for their entire juvenile and adult life (reference 4). "Ref" refers to the reference number(s) cited.

Species	Location	Movement Distance	Ref
<b>JUVENILE FISH:</b>			
bocaccio rockfish	California	move up to 80 nmi over 2 yr	(3)
brown rockfish	California	move up to 27 nmi as they migrate from San Francisco Bay to the outer coast	(5)
yellowtail rockfish	Washington	move up to 195 nmi as they migrate from Puget Sound to the outer coast	(6)
<b>ADULT FISH:</b>			
lingcod	Alaska	mean movement of 7.2 nmi	(15)
lingcod	British Columbia	95% of males move up to 9 nmi/yr 95% of females move up to 18 nmi/yr	(14)
bocaccio rockfish	California	10 of 16 adults spent less than 10% of 4 mo within 3.5 nmi <sup>2</sup> area, one for 50% of the time, and 5 for the entire time	(16)
yellowtail rockfish	Oregon	adults move up to 0.7 nmi/mo	(12)



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**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**

*National Marine Fisheries Service*

*P.O. Box 21668*

*Juneau, Alaska 99802-1668*

November 29, 2002

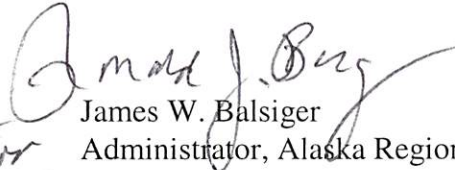
David Benton, Chairman  
North Pacific Fishery Management Council  
605 West 4<sup>th</sup> Street, Suite 305  
Anchorage, Alaska 99501-2252

Dear Dave,

During its October meeting, the Council adopted a problem statement and criteria to guide the development of the Essential Fish Habitat (EFH) Environmental Impact Statement (EIS). As you may recall, NOAA General Counsel expressed concern that some of the specific language in the draft problem statement and criteria did not directly comport with similar provisions in the EFH regulations. The Council decided to include language in the problem statement that stresses the need for compliance with the Magnuson-Stevens Act, as well as language stating that the criteria would only be addressed as practicable. Given those caveats, NOAA General Counsel advised that the problem statement and criteria were legally acceptable. Their rationale was that the modifying language did not bind the Council to address more than the required factors, and that adoption of a problem statement and criteria by the Council cannot supercede the applicable statutory and regulatory requirements for the EIS. Nevertheless, inconsistencies between the Council's language and the applicable regulations could lead to confusion for the public as well as the staff preparing the EIS.

To reduce the potential for misunderstandings, the National Marine Fisheries Service recommends that the Council either drop the problem statement and criteria or modify them to be fully consistent with the Magnuson-Stevens Act and the EFH regulations. We will be prepared to suggest alternative language during the December Council meeting.

Sincerely,

  
James W. Balsiger  
Administrator, Alaska Region



# Essential Fish Habitat

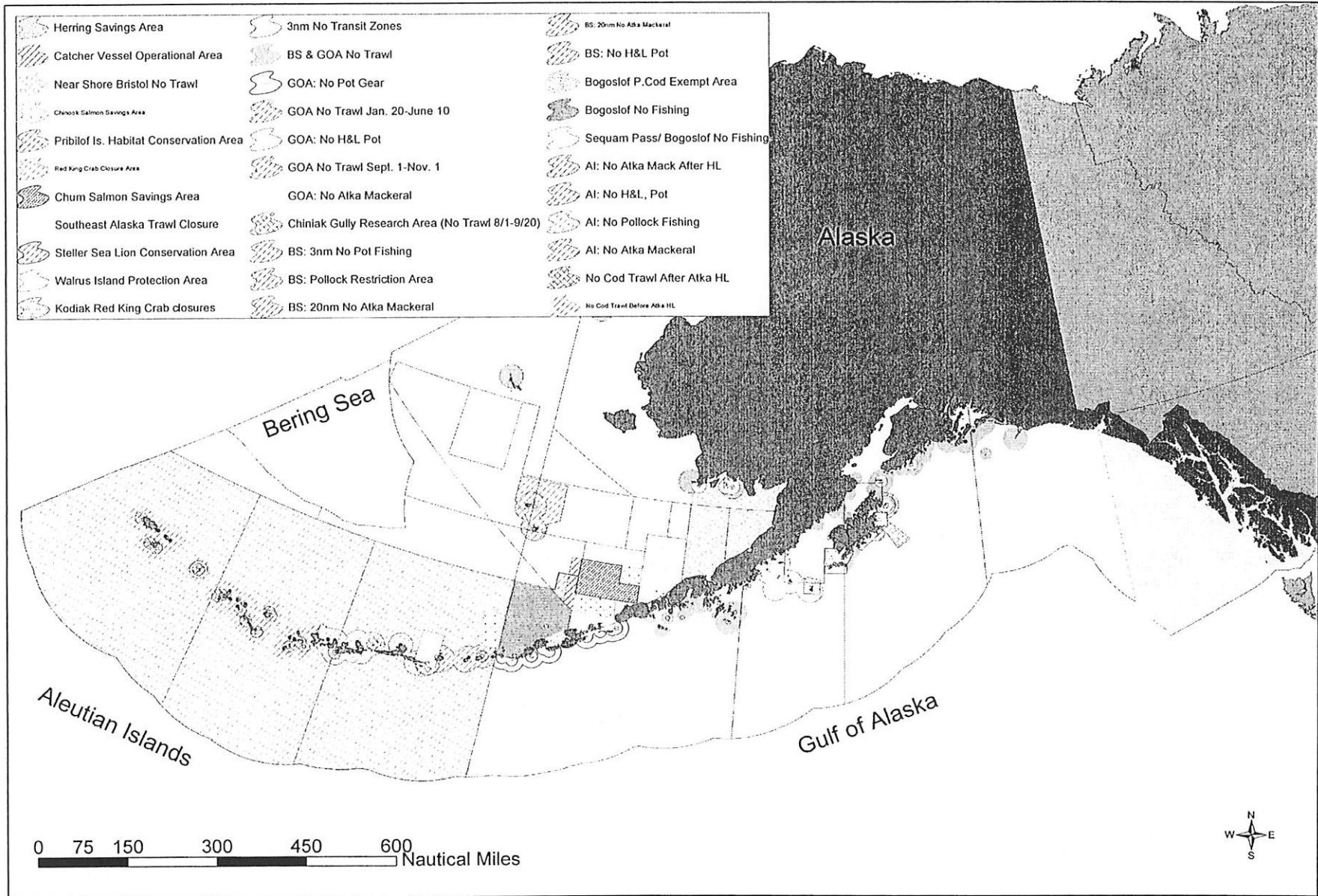
Draft Maps for Mitigation  
Alternatives

for presentation to the  
Council

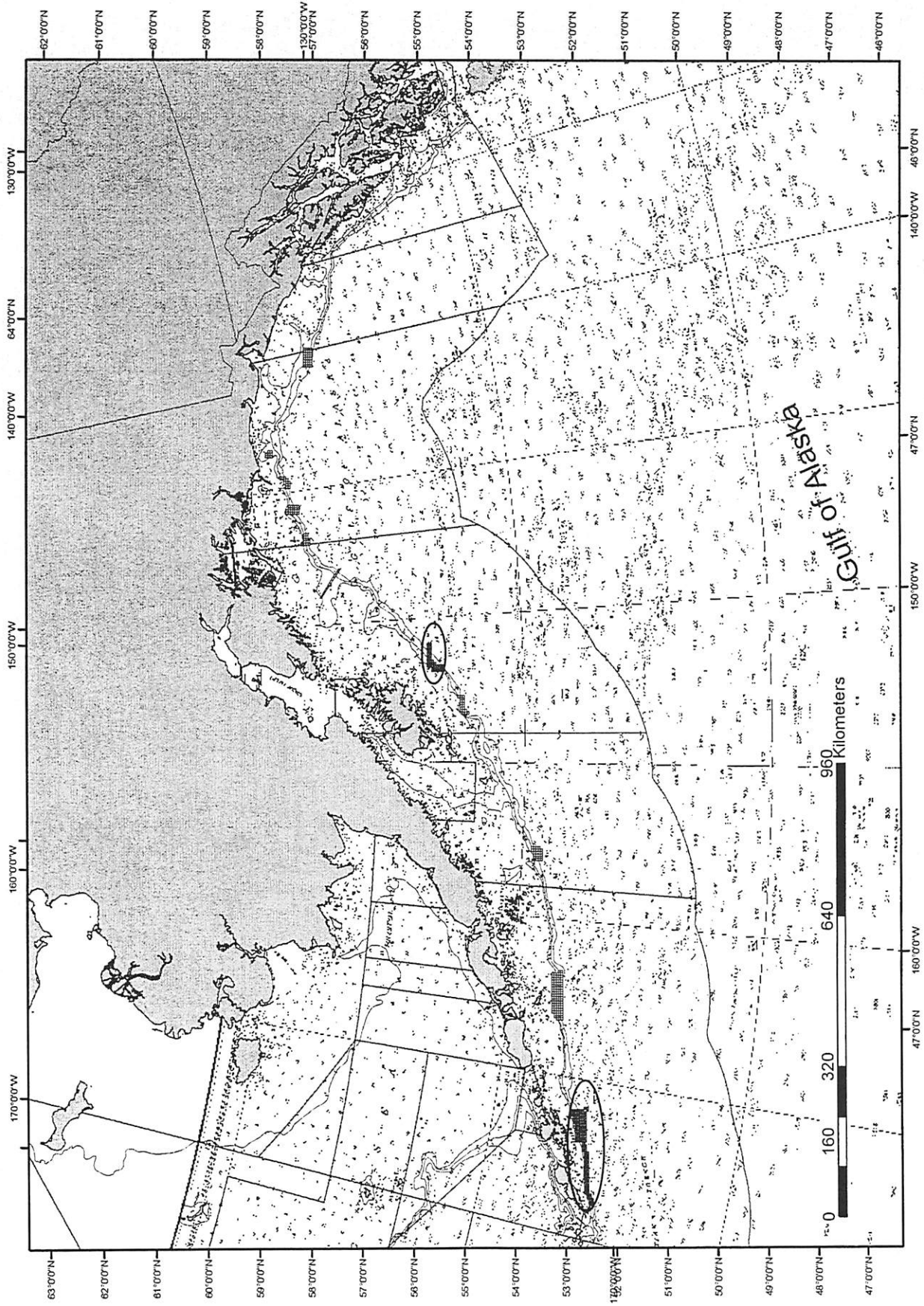
12/5/02

# EFH Mitigation Alternative 1: Status quo

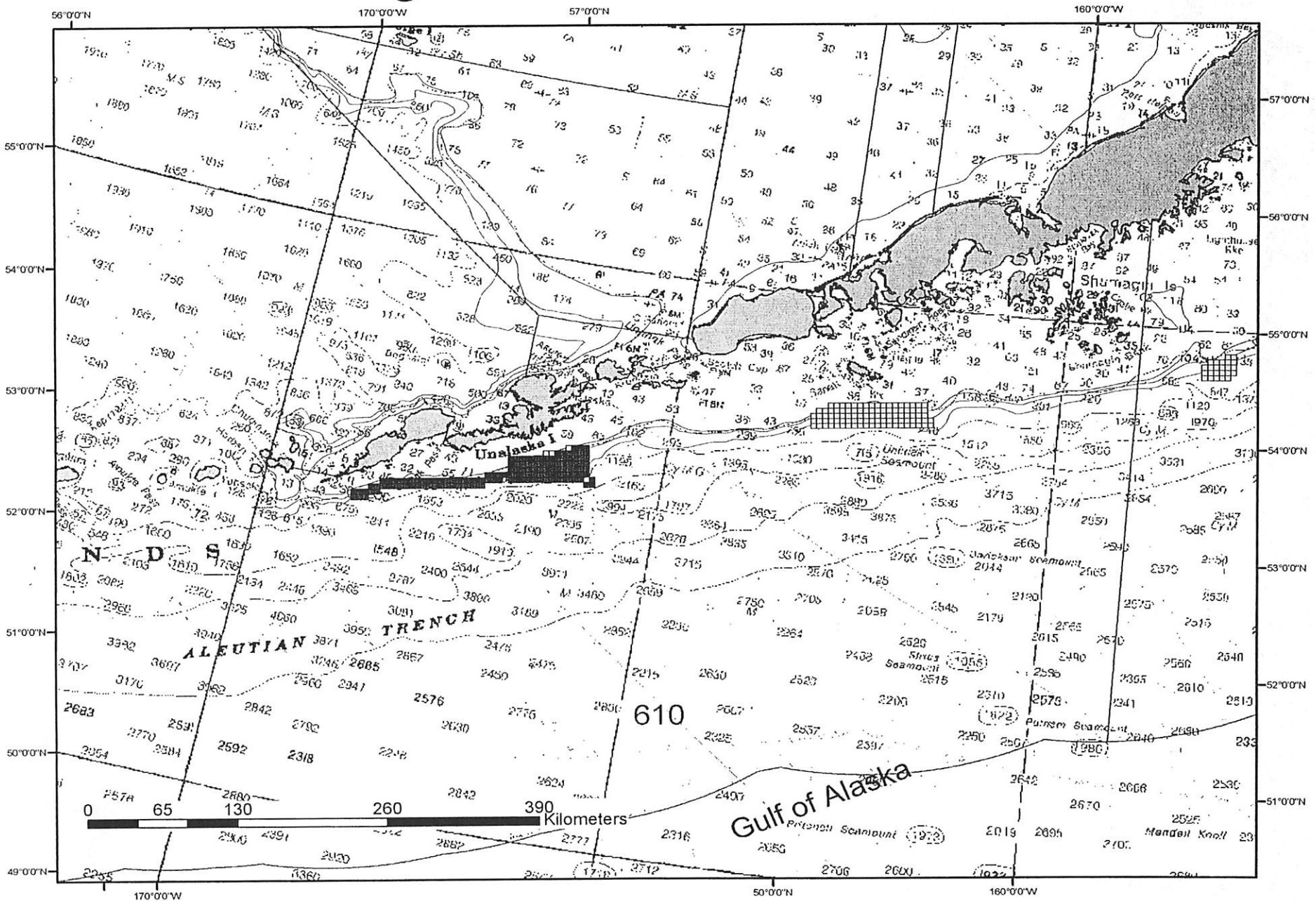
## Fishery Management Closures in Alaska



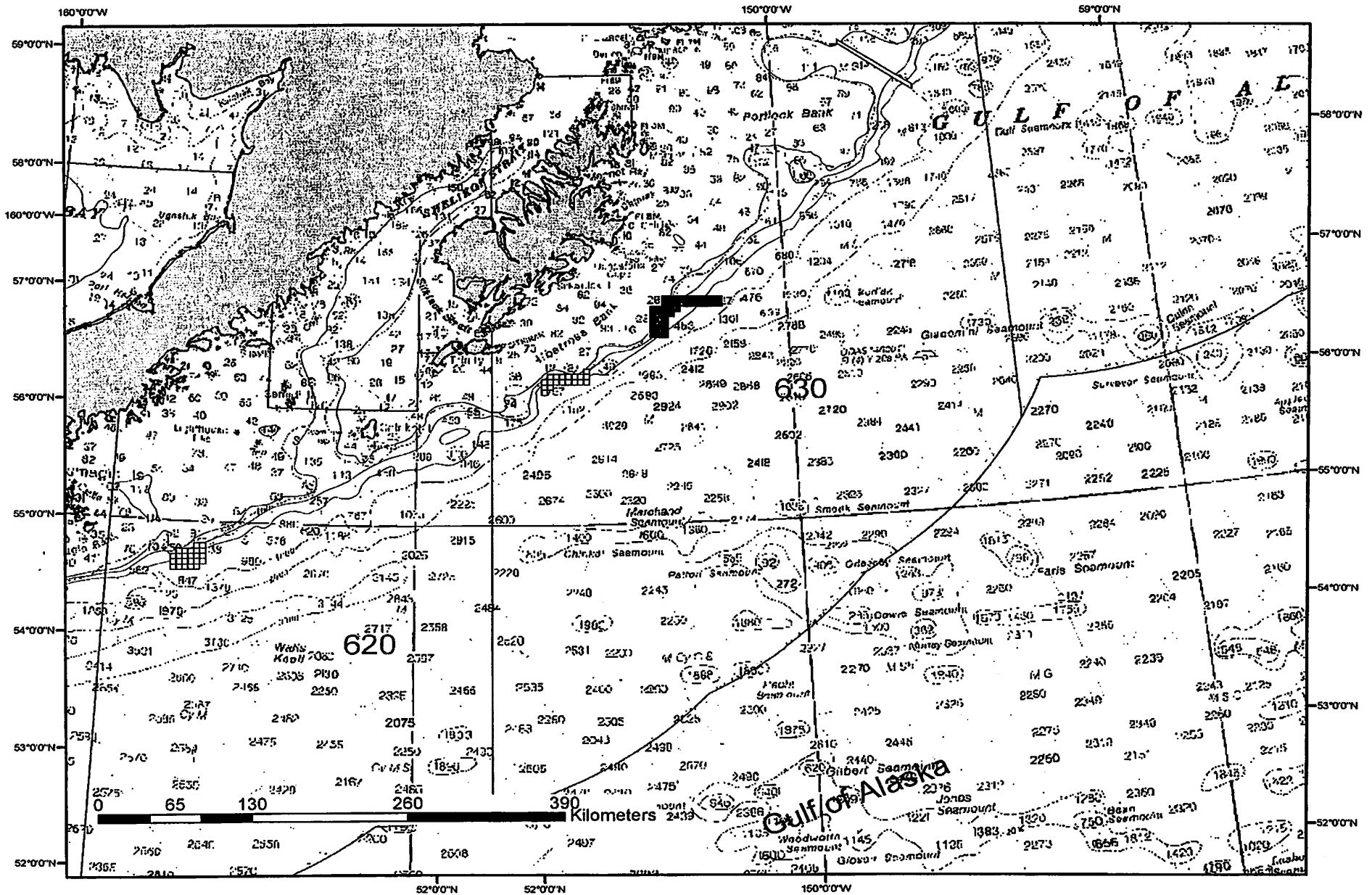
# EFH Mitigation Alternatives 2,4,5



# EFH Mitigation Alternatives 2,4,5

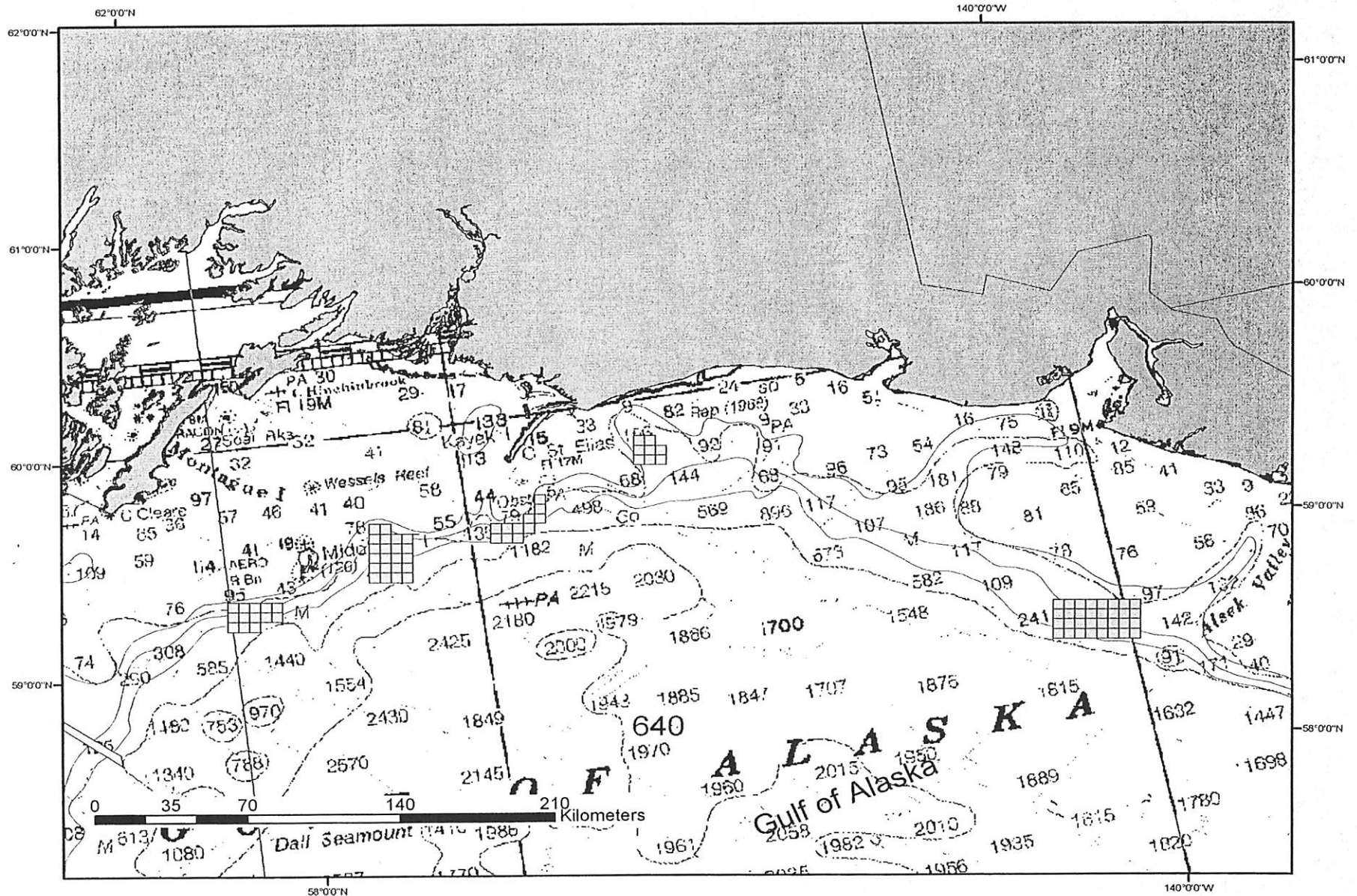


# EFH Mitigation Alternatives 2,4,5

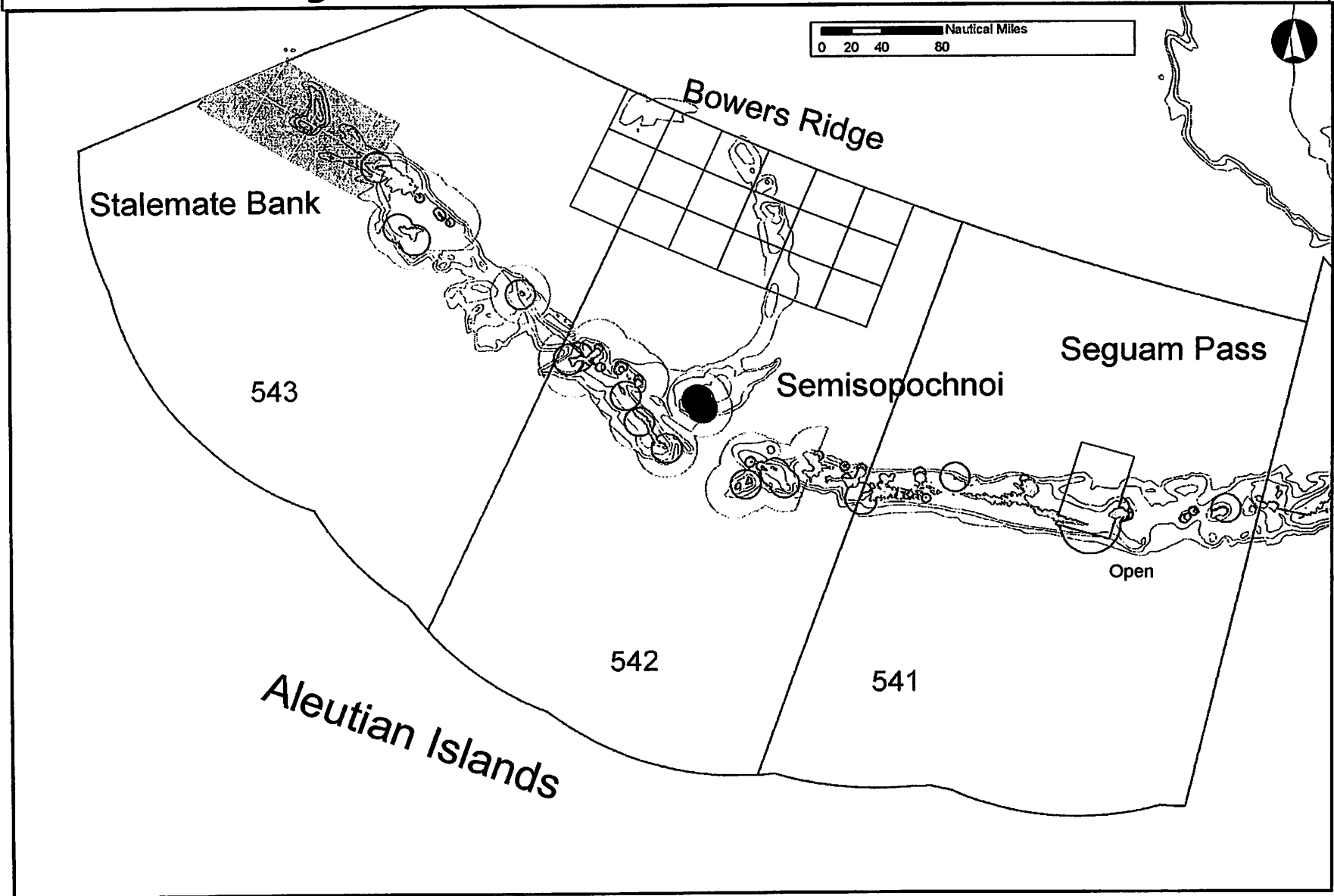




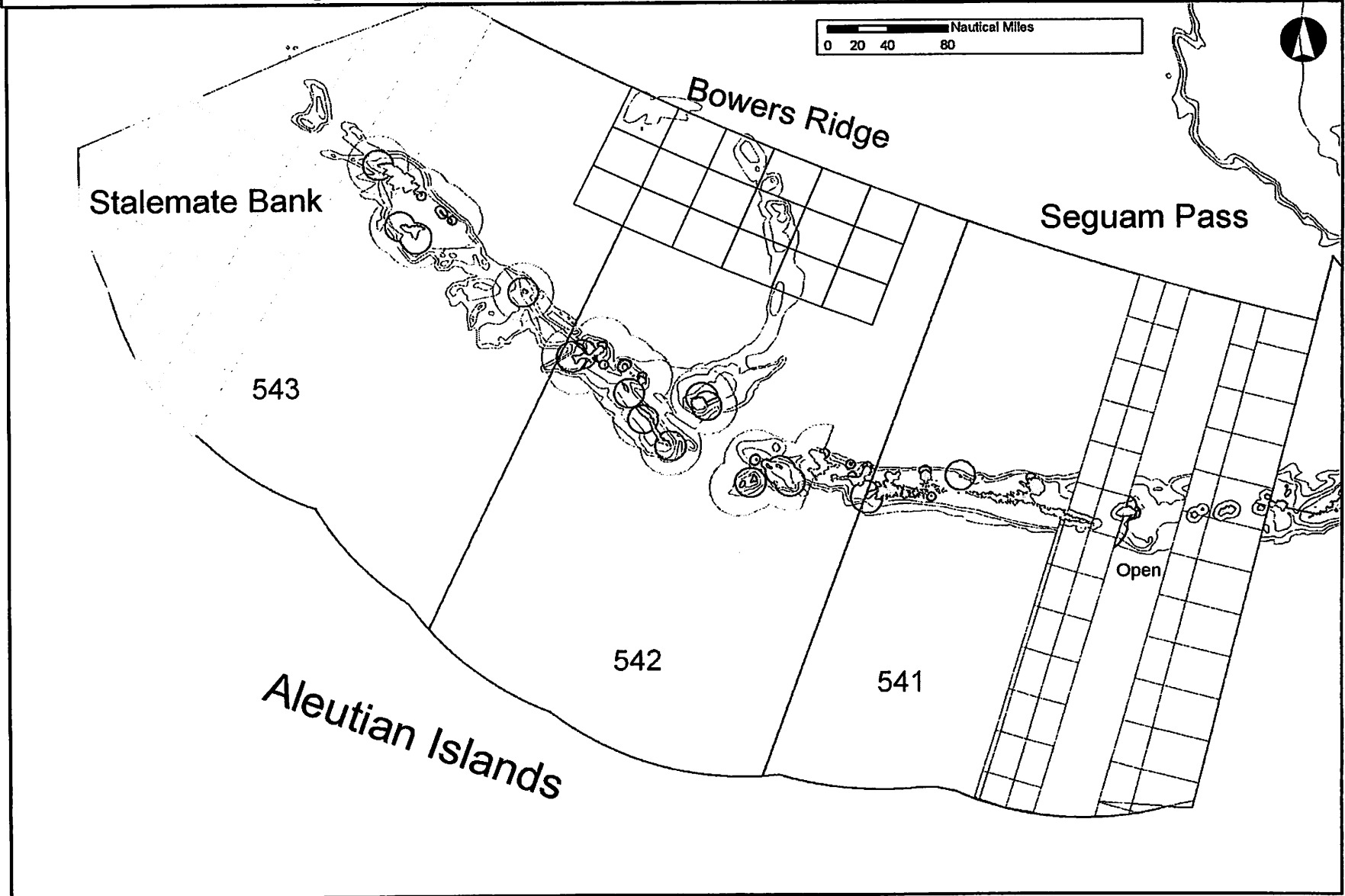
# EFH Mitigation Alternative 2,4,5



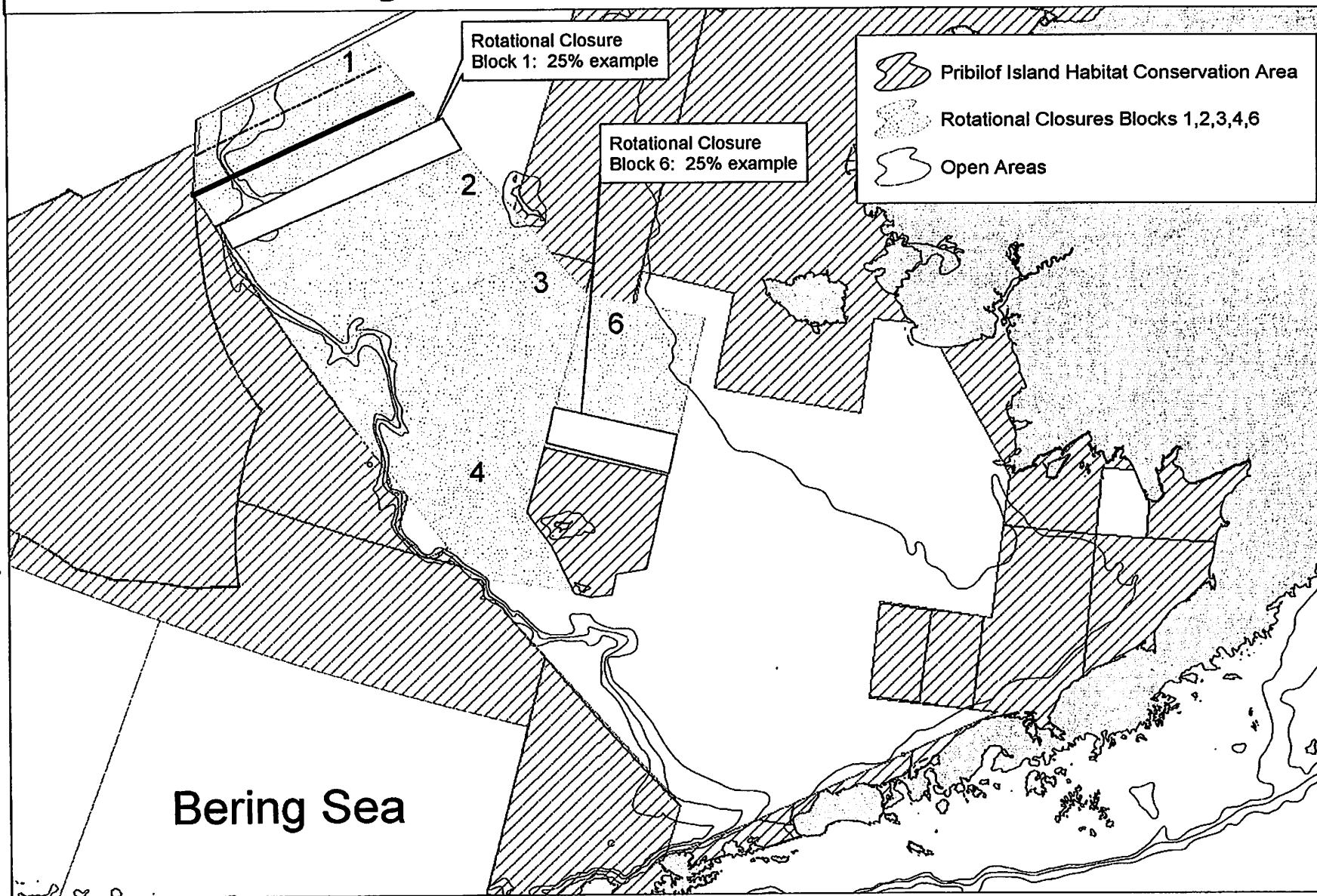
# EFH Mitigation Alternative 4 : Aleutian Islands



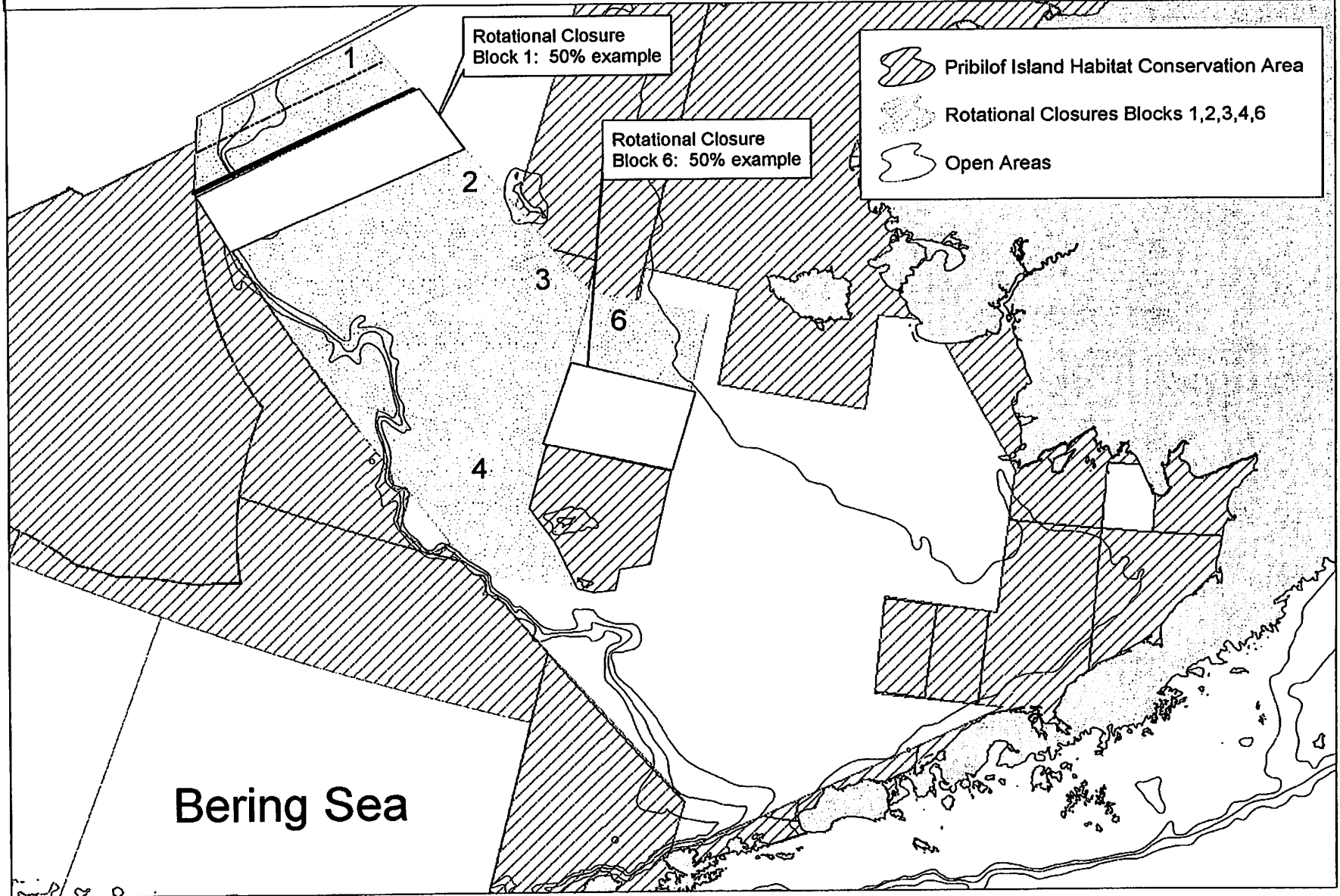
# EFH Mitigation Alternative 5 : Aleutian Islands



# EFH Mitigation Alternative 4 : Bering Sea



# EFH Mitigation Alternative 5 : Bering Sea



**PUBLIC TESTIMONY SIGN-UP SHEET FOR  
AGENDA ITEM C-3 EFH**

**PLEASE SIGN ON THE NEXT BLANK LINE.  
LINES LEFT BLANK WILL BE DELETED.**

	NAME	AFFILIATION
1	Margaret Williams / Joe Sullivan	World Wildlife Fund / Mundy MacGregor
2	Ben Enticknap	Alaska Marine Conservation Council
* 3	Ron Philenopolo	Tox Corp. (needs ppt)
4	Arnie Thomson	A.C.C. Mundy
5	Geoff Jack Sterne	Trustees for Alaska
6	Geoff Shester	Oceana
7	Whit Sheard	The Ocean Conservancy
8	Donna Purkee	UCB
9	Pat Carlson	KIB
10	Simeon Swetozof Jr.	CITY OF ST. PAUL
11	Paul MacGregor	At-Sea Processors Assn.
12	Julie Barry	AGDB
13	GERRY MERRIGAN	PROWLER FISHERIES
14	JOHN GAUVIN	GROUNDFISH FORUM
15	Heather McCarty	CBSPA
16	ELLEN REED	PSAA
17	ED RICHARDSON	PCC
18	Mark Hunt	MPWA
19.		
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21.		
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24.		
25.		

Agenda C-3  
December 2002



2501 M STREET NW, SUITE 300 WASHINGTON, DC 20037 202.833.3900 WWW.OCEANA.ORG

November 22, 2002

Note: Please disregard the previous copy of this letter. This version is identical, but contains an additional organization as a signatory.

Thank you.

*Sylvia Liu*

Sylvia Liu  
Senior Attorney

RECEIVED

NOV 23 2002

N.P.F.M.C

CHLORINE BLEACH FREE



100% SOY INK

**Oceana \* The Ocean Conservancy  
National Audubon Society \* Natural Resources Defense Council  
ReefKeeper International \* Environmental Defense  
Gulf Restoration Network \* Florida Wildlife Federation**

November 22, 2002

Dr. William T. Hogarth  
Assistant Administrator  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910

Re: Evaluation of Regional EFH EIS Processes

Dear Dr. Hogarth:

We write on behalf of the undersigned conservation groups monitoring the five essential fish habitat environmental impacts statements (EFH EISs) that were remanded in *American Oceans Campaign et al v. Evans*, No. 1-99CV 00982 (GK). As you know, this is a very important process for both our oceans and its fisheries as the protection of marine habitats is an essential component to conserving healthy marine ecosystems and sustainable fisheries. We write to provide our evaluation of how the regions are doing and to raise both national and region-specific concerns. We respectfully request a meeting with you at your earliest convenience to discuss these issues.

Generally, we appreciate the efforts of the relevant regional offices, Councils, or contractors to provide open and public processes in developing the EFH EISs and welcome the opportunity to participate prior to the official public comment periods. While the level of environmental considerations and compliance with NEPA has generally improved in the past several years, we are concerned, however, about the range of quality in the processes and the lack of strong national oversight from your office.

One of our key concerns is that NMFS headquarters has not provided clear legal guidance regarding NEPA's requirements, or has been unable or slow to respond to legal questions that have arisen. Specifically, your office has not provided sufficient guidance regarding several key issues:



- The need to address indirect, cumulative, and synergistic environmental effects. The EFH EISs must consider the full range of environmental impacts of alternative management measures: direct effects (which include “contamination or physical disruption”),<sup>1</sup> indirect effects (which include “loss of prey or reduction in species’ fecundity”),<sup>2</sup> cumulative impacts (“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions”),<sup>3</sup> and synergistic effects. NMFS should also clarify that “fishing” impacts include all activities associated with fishing operations including, for example, deployment of different fishing gears, anchoring, and the discard of non-target or unwanted catch. Such analyses must be conducted by scientists that are recognized experts in the field of benthic ecosystems and must be based on the best available science.
- The need to fully analyze reasonable alternatives submitted during scoping for the EFH EISs. NEPA requires that all reasonable alternatives submitted during scoping must be developed and analyzed for their environmental benefits and impacts. NRDC v. Morton, 458 F.2d 827, 835 (D.C. Cir. 1972). Furthermore, for those scoping alternatives that are not fully analyzed, the EISs must include adequate justification why these alternatives are not reasonable for implementation. This justification must be based on the best scientific information available.
- The need to develop alternatives that include a suite of management measures. As stated in the joint stipulation, NMFS agreed to consider a range of alternatives that may include “a suite of fishery management measures.” The purpose of this provision was to allow NMFS to compare the environmental effects of groups of management measures with other groups of management measures, to capture the cumulative effects of the various measures that could be implemented. For example, instead of only comparing the effects of certain gear restrictions on EFH, it would be useful to compare various levels of overall protection to EFH, comparing various suites of measures that encompass a variety of tools (e.g., various combinations of time or area management, gear restrictions, and other measures such as quota restrictions).
- The need to provide a full environmental analysis of the “affected environment” and the effects of status quo management on the “affected environment.” It is crucial that each region prepares a full analysis of how status quo management affects the marine ecosystem because, in most regions, such analyses have never been adequately conducted in the past. This is also an essential component for any later comparative analysis of the environmental benefits of alternatives compared to the status quo.

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<sup>1</sup> 50 C.F.R. § 600.810(a).

<sup>2</sup> *Id.*

<sup>3</sup> 40 C.F.R. § 1508.7.

- NMFS must take final responsibility for the EISs. Although each region has delegated initial drafting responsibility to a different entity (a contractor in the case of the Gulf and Caribbean regions, the NMFS regional office in the Pacific, the fishery management council in New England, and a combination of council and regional staff in the North Pacific), NMFS should recognize that it is the entity that must ensure compliance with NEPA and the Magnuson Stevens Act. Because NMFS will be the agency held accountable for the EISs, it is critical that it get involved to provide clear direction to the EIS drafters.

In addition to these general comments, a more specific list of our concerns or comments for each region follows.

#### North Pacific

- At its October 7, 2002, meeting, the NPFMC adopted an EFH problem statement that inappropriately links EFH protection to the productivity of FMP species: "Consider implementation of additional management measures to mitigate, to the extent practicable, identified adverse impacts of fishing on habitat essential to the continued productivity of FMP species."<sup>4</sup> Neither NEPA nor the Magnuson Stevens Act limit consideration or mitigation of adverse impacts to only those designated EFH where there exists additional scientific information that links adverse effects to the productivity of the FMP species to fishing. Furthermore, such data have already been incorporated during the initial process to identify and designate EFH. The EIS must contain analysis and alternatives that minimize adverse impacts on designated EFH, regardless of the impacts on species' productivity.
- The EFH Committee has failed to include legitimate proposals for habitat protection for further analysis. For example, Oceana's proposals to: (1) protect deep sea coral habitat in the Aleutian Islands; (2) restrict the use of rockhopper and roller gear; (3) develop a precautionary management approach to protecting EFH; (4) implement a system of habitat research areas; and (5) implement harvest incentives for fishermen using low-impact fishing gear,<sup>5</sup> have all been excluded from the EIS without justification, discussion, or analysis. Similarly, the Committee has refused to consider a marine protected alternative supported by The Ocean Conservancy and others. A number of proposed habitat areas of particular concern (HAPCs) were also rejected for further consideration, apparently under the mistaken impression that HAPCs need not be analyzed because they are not legally required. Whether a particular type of management tool is legally mandated is not the relevant criterion for inclusion as an alternative; as noted above, NMFS must analyze all alternatives that are reasonably available. Specific proposals to protect a particular area (whether or not

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<sup>4</sup> See NPFMC, Draft Final Council Motions on EFH October 7, 2002 (<http://www.fakr.noaa.gov/npfmc/Motions/EFH1002.pdf>) (emphasis).

<sup>5</sup> See Comments submitted by American Oceans Campaign (now Oceana) to Mr. Michael Payne, NMFS Alaska Regional Office, Habitat Conservation Division (July 21, 2001).

denominated as HAPCs) must be considered if they are reasonable alternatives. The CEQ regulations require that NMFS “[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.” 40 C.F.R. § 1502.14. At a minimum, NMFS must explain why it has eliminated specific proposed alternatives from further consideration.

- Despite the recommendations of Council staff, the EFH committee, and multiple stakeholders, the Council is refusing to include for analysis the habitat benefits of a fully protected marine reserve approach.
- The NPFMC has failed to adequately analyze the habitat impacts of status quo activities or provide habitat information that is available for meaningful decisionmaking. The Council has invited stakeholders to draw lines on maps for alternatives without providing specific information about known habitat interactions, such as coral bycatch.

#### Pacific

- We are favorably impressed with the effort the Pacific regional office is undertaking to determine the effects of fishing and management measures on EFH using a science- and GIS map-based approach, and conducting a comparative risk assessment for different habitat types. For the next phase of this effort, it will be important to identify risks based on common trends in comparable habitats when region-specific information is unavailable, as recommended by the National Research Council report on the effects of trawling and dredging. Based on what we have seen to date, we recommend that NMFS consider using or adapting this approach for the other regions.

#### New England

- Many of the alternatives submitted for analysis by Oceana and other environmental groups during the scoping period, and repeatedly throughout the development of the EFH EIS, have not been included in the EFH EIS, nor has there been any adequate analysis justifying the NEFMC’s decision to not include such alternatives as reasonable alternatives.
- Many of the alternatives included for analyses in the EFH EIS were developed by a member of the NEFMC’s Scallop Plan Development Team using methodologies that are not based on sound ecological principles. Despite the fact that the NEFMC’s Habitat Technical Team has thoroughly criticized the analytic approach used to develop these alternatives, the alternatives remain in the proposed draft EIS unchanged.
- The NEFMC also ignored recommended approaches by its own Habitat Technical Team to use modeling approaches that are supported by ecologically sound principles as the basis for analyzing alternatives to protect habitat. This approach could have been fully developed during 2002, but the NEFMC opted not to provide necessary funding to scientists to develop alternatives based on this modeling approach.

- Throughout the development process, NMFS Regional staff have failed to take a leadership role in directing the NEFMC on how to develop legally adequate environmental analyses. Although NMFS provided its preliminary conclusions of a regional gear effects workshop that took place in October 2001, the follow up literature search and analysis intended to compare the workshop findings with existing literature has been delayed.<sup>6</sup> As a result, the environmental analyses of the affected environment and the various EFH alternatives are nowhere near what is required by NEPA, fail to provide full and frank environmental analyses, and do not utilize the latest information to minimize gear impacts occurring in the region.

### Gulf of Mexico

- The lack of NMFS leadership is a key issue for the Gulf. In the early stages of development of the EIS, NMFS counsel provided little guidance to both the contractor and the Gulf Council creating unnecessary legal arguments amongst stakeholders and jeopardizing the court ordered timeline. For example, conservation groups requested that prey species be included in the EFH analysis. It took the NMFS counsel almost two months to issue a legal opinion that confirmed that the Council must consider impacts to prey species to the extent such impacts degrade the quality of EFH. Furthermore, NMFS provided very little guidance on other requirements of both the Magnuson Stevens Act and NEPA, leaving key decisions up to the contractor. Accordingly, issues like cumulative impacts are not being considered at this point in time threatening the court ordered timeline for completing the EIS.

While we are pleased with the recent attention given by the NMFS to the EIS review process, timely and significant guidance must be given to the Council and contractor to ensure the EIS complies with all applicable laws and legal decisions.

- The decision trees for determining which gear impacts are subject to the practicability analysis for minimizing impacts raises concerns. The contractor has decided to use a "decision tree analysis" to prioritize habitats and gear analyses. The third phase of this decision tree ranks habitats by their ecological importance and rarity to obtain a measure of "habitat utility," and then uses this measure to determine whether minimizing adverse gear

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<sup>6</sup>See WORKSHOP ON THE EFFECTS OF FISHING GEAR ON MARINE HABITATS OFF THE NORTHEASTERN UNITED STATES, OCTOBER 23-25, 2001, BOSTON, MASSACHUSETTS. Northeast Region Essential Fish Habitat Steering Committee. (<http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0201/>) ("The second product will be a peer reviewed document produced by NMFS staff which describes gear types used in federal and state waters in the Northeast region, the spatial distribution of fishing trips made by each gear type in federal waters, oceanographic regimes and habitat types in the region, and the results of scientific studies of the effects of fishing gear on benthic habitats in the Northeast U.S. and elsewhere. Preliminary Draft copies of this document (White Paper) were distributed to panel members in advance of the meeting to assist them in achieving workshop objectives. These documents will be available for use by the NEFMC and MAFMC to fulfill their MSFCMA requirements to include an assessment of fishing gear impacts on EFH in all of their FMPs.")

impacts is practicable. Although it is not clear exactly how this process will work, it seems intended to narrow the set of EFH for which minimization of gear impacts will be considered practicable. This approach is inconsistent with the regulatory definition of practicability, which requires balancing costs and benefits of minimizing gear impacts on *all* EFH. Considering the importance of this phase of the decision tree analysis, this approach must be carefully reviewed by the NMFS to determine whether or not it complies with all applicable laws and legal decisions.

- Despite a memorandum from NOAA General Counsel to the Gulf Council and contractor regarding the responsibilities of the Council and the NMFS in addressing prey species in the EIS analysis, the latest draft of the EIS does not fully incorporate all necessary analyses required by applicable EFH regulations. For example, while the classification of habitat types includes known usages (such as feeding) of this habitat by species and a listing of known prey species is given for managed species, information on the taking of prey species, either as direct catch or bycatch, and the identification of habitat for major prey species is not complete at this time.
- We are concerned with the elaborate process and hurdles that groups face in getting proposed alternatives even considered by the contractor.
- Finally, the current draft of this document includes no assessment of fishing gear impacts from the recreational sector, in direct contradiction of applicable legal requirements of the Magnuson Stevens Act and NEPA. This analysis must be completed before any alternatives are generated to address the adverse impacts of fishing gear on EFH.

### Caribbean

- NMFS involvement in the Caribbean region EFH EIS has been high, but we have the same concerns as the Gulf regarding the proposed decision tree analysis.

Please contact Sylvia Liu, at Oceana, at (202) 833-3900, to set up a meeting with the concerned groups to discuss these issues.

Sincerely,

*Sylvia Liu, on behalf of:*

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Letter to Dr. William T. Hogarth  
November 22, 2002  
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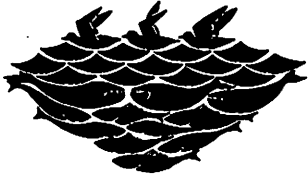
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# Alaska Marine Conservation Council

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November 22, 2002

TO: David Benton, Chairman  
North Pacific Fishery Management Council  
605 W. 4<sup>th</sup> Avenue, Suite 306  
Anchorage, AK 99501-2252

FR: Ben Enticknap, Fisheries Project Coordinator

RE: Agenda Item C-3: Essential Fish Habitat

- Comments on EFH committee alternatives
- Attached letter to NMFS

The Alaska Marine Conservation Council wishes to take this opportunity to comment on the Essential Fish Habitat (EFH) Committee's recommended mitigation alternatives. Additionally, we are including a letter from AMCC to the National Marine Fisheries Service regarding the North Pacific Fishery Management Council, October 2002 motion on EFH (see attachment dated 10/30/2002).

As you are aware, AMCC has been fully engaged in designing a range of habitat protection alternatives through the EFH Committee process. The mitigation alternatives prepared by the EFH Committee represent months of concerted effort by a diverse group of participants. We would like to recognize the accomplishments by the EFH Committee and the significant progression of dialogue among the Committee members in generating mitigation alternatives. This letter highlights aspects of the Committee's recommendations that we feel the Council must adopt, and we offer additional recommendations for how to improve upon the Committee's work.

## 1. Bering Sea

The Bering Sea component of Alternative 4 is designed to have a bottom trawl closure for a four-year period, of 25% of five areas to the west and north of the Pribilof Islands. Additionally, the Committee recommended that in Alternative 5, 50% of the five areas be closed during the rotating cycle. It is important that the EFH EIS analyze a range of habitat protection alternatives that are different from each other and different from status quo. The Committee's recommendations for the Bering Sea components of Alternatives 4 and 5 are designed to be significantly different, providing a range of precautionary habitat protection from status quo. The EFH EIS will provide an analysis of the conservation benefits of closing either 25% or 50% of the determined areas. **AMCC recommends that this range of habitat protection measures for the Bering Sea rotating areas be retained for analysis in the EFH EIS.**

## 2. Aleutian Islands

- The recommended closures to bottom trawling in the Aleutian Islands region described in Alternatives 3 and 4 are the result of a great amount of Committee deliberations. When reviewing coral and sponge bycatch and survey data, it is clear that there are significant amounts of coral and sponge in the central Aleutians. However, the Committee recommended only one habitat conservation area in the central Aleutian Islands, around Semisopchnoi Island, under Alternative 3 and none for Alternative 4. The habitat protection areas recommended by the Committee fall within either existing closures or are located at the extreme fringe of fishing effort. **Therefore, we recommend an additional alternative that provides more protection for sensitive habitats in the central Aleutians, surgically designed to retain important trawl tows.**

In July 2002, National Marine Fisheries Service researchers found exceptional coral and sponge habitat in the central Aleutian Islands near the Andreanof Islands and on Petrel Bank. NMFS researchers reported:

“Dive operations confirmed that coral and sponges are widely distributed in that region; corals and sponges were found at 30 of 31 dive sites. Disturbance to epifauna, likely anthropogenically induced, was observed at most dive sites and may have been more evident in heavily fished areas... Unique coral habitat consisting of high density ‘gardens’ or corals, sponges, and other sessile invertebrates was found at 5 sites between 150 and 350 meter depth. The ‘gardens’ were similar in structural complexity to tropical coral reefs and shared several important characteristics with tropical reefs including complex vertical relief and high taxonomic diversity.” Effects of Fishing Gear on Seafloor Habitat Progress Report for FY 2002. Edited by J. Heifetz, October 2002.

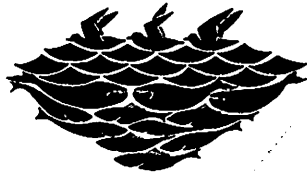
- In addition to a more comprehensive “closed area” approach for the central Aleutians as described above, we recommend another alternative for the Aleutians Islands based on a more comprehensive approach to mitigating effects of bottom trawling in coral and sponge habitat. We believe this is justified in light of known sensitivity and importance of coral and sponge habitat for fish and crab species. **AMCC recommends that the Council adopt an “open area” alternative for bottom trawling in the Aleutian Islands. This approach should be packaged with an “open area” alternative as designed for the Bering Sea, and mitigation for the Gulf of Alaska.**

This alternative would prohibit the use of bottom trawls in the Aleutian Islands region except within designated open areas. The open areas would incorporate current trawl effort, but exclude specific locations with known



high coral abundance or high coral and sponge bycatch. Anticipated research will allow the Council to open more areas where bottom trawl impact would be minimal (those areas found to not have corals and sponges) and protect any newly discovered "gardens" from bottom trawl impacts.

3. **AMCC supports the Committee's recommendation that, "if sea lion closed areas in the Aleutian Islands are removed in the future, the Committee requests that the Council consider whether 'Habitat Areas of Particular Concern' and associated measures should be developed for some or all these areas before they are opened."** This commitment is essential to ensure lasting protection for coral and sponge habitat from increased bottom trawl effort. *However it is important to be clear that in the Aleutian Island region, SSL closures do not prevent bottom trawling for rockfish and flatfish. Therefore, bottom trawling with roller and rockhopper gear can and still occurs inside the 3nm to 10nm closures around SSL rookeries. This is a primary reason for why the recommended Aleutian Island closures under Alternatives 4 and 5 are not sufficient.*



## Alaska Marine Conservation Council

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October 30, 2002

Dr. James Balsiger, Regional Director  
NMFS Alaska Region  
PO Box 21668  
Juneau, AK 99802-1668

Jon Kurland, Director  
Habitat Conservation Division  
NMFS Alaska Region  
PO Box 21668  
Juneau, AK 99802-1668

RE: Essential Fish Habitat/ NPFMC motion on October 7, 2002.

Dear Dr. Balsiger and Mr. Kurland:

We appreciate the work you and NMFS staff are doing to develop alternatives for the Essential Fish Habitat (EFH) EIS. This is a challenging undertaking requiring dedication by agency scientists and preparation of the best available data in order to assist the public and the NPFMC in crafting reasonable but progressive ideas.

This letter is to request some further clarification by NMFS before the final alternatives are adopted in December. First, the NPFMC's EFH problem statement adopted at the October meeting contains language that is inconsistent with the Magnuson-Stevens Act and the EFH Final Rule. Second, we believe that some of the criteria outlined in the EFH mitigation alternatives should be expanded to be consistent with criteria outlined in the Final Rule.

### **1. Concerns about the NPFMC Problem Statement**

The problem statement adopted by the NPFMC stresses that the productivity of managed species is the determining factor for evaluating the need for mitigation measures. The problem statement states:

Recognizing that in the North Pacific, potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to take action in compliance with the requirements of the Magnuson-Stevens Act *to protect the productivity of FMP species by considering additional*

measures to reduce adverse effects of fishing activities on habitat essential to managed species.

To accomplish this task, the Council will undertake an EIS analysis to:

1. Identify and designate Essential Fish Habitat,
2. Develop designation criteria for identification of Habitat Areas of Particular Concern, and
3. *Consider implementation of additional management measures to mitigate, to the extent practicable, identified adverse impacts of fishing on habitat essential to the continued productivity of FMP species.*  
(emphasis added)

Although we agree it is important to promote the “continued productivity of FMP species,” the language in the NPFMC problem statement sets a standard for scientific information that is unavailable for most federally managed fish species. To be able to link habitat to the productivity of an FMP species is possible only for species with level 4 data. The EFH Final Rule states, “At this level, data are available that directly relate the production rates of a species or life stage to habitat type, quantity, quality, and location.”<sup>1</sup> In the Alaska region we only have this level of information for some life stages of salmon. For most FMP species we have level 1 data, indicating only species presence or absence.<sup>2</sup>

Additionally, when replying to public comments on the threshold that requires regional councils to minimize adverse effects on EFH, NMFS has stated, “It is not appropriate to require definitive proof of a link between fishing impacts to EFH and reduced stock productivity before councils can take action to minimize adverse fishing impacts to EFH to the extent practicable. Such requirements would raise the threshold for action above that set by the Magnuson-Stevens Act.”<sup>3</sup>

The caveat in the NPFMC’s motion, that management measures will comply with requirements of the Magnuson-Stevens Act, is negated when the language immediately following this statement is indeed inconsistent with the statute and Final Rule. AMCC requests that you notify the NPFMC of this error and take steps to correct the NPFMC’s problem statement.

## **2. EFH mitigation alternatives**

The EFH Final Rule directs councils to consider the adverse effects of fishing and non-fishing activities on the “habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem”. It defines an adverse effect as

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<sup>1</sup> EFH Final Rule §600.815 (iii).

<sup>2</sup> NPFMC 1999. Environmental Assessment for Amendment 55/55/8/5/5, Essential Fish Habitat. January 20, 1999. Pp. 6-14.

<sup>3</sup> Fed. Reg., vol. 67, no. 12, January 17, 2002, p. 2354.

“any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/ or quantity of EFH.”<sup>4</sup>

The NPFMC’s initial range of mitigation measures from the October meeting are, for the most part, designed to mitigate fishing effects on a narrow selection of benthic organisms and in relatively un-impacted benthic habitats. AMCC considers the EFH mitigation alternatives to be inadequate in two cases:

- Alternative 5 criteria for designing groundfish measures should be expanded to a more representative array of epifauna species of concern. The language for this alternative states, “These closure areas would be based on areas with relatively high abundance of gorgonian corals, sponge and *Boltenia* (sea onions).” However, there are additional benthic habitat features that are vulnerable and should be included in a mitigation alternative. Dr. Craig Rose, in the draft analysis of fishing effects, states, “Organisms that create sheltering habitats in Alaska waters include sponges, soft and stony corals, anemones, gorgonians, asteroids and stalked tunicates.”<sup>5</sup> The current selection of benthic organisms in Alternative 5 is insufficient based on known fishing effects on habitat features and known FMP species associations with other living substrates.<sup>6</sup>
- Most of the alternatives are being constructed to protect habitat in areas that have low to zero fishing effort. For example, the Bering Sea open area encompasses most areas historically fished by bottom trawls. Similarly, Alternative 5 designs closures in areas to preserve “relatively un-impacted benthic habitat.” While we agree there are important conservation benefits to be gained from protecting unfished areas from future impacts, mitigation alternatives should also minimize adverse effects to essential fish habitat in important areas where impact is high.

To summarize, we recommend that NMFS:

- Work with the NPFMC to correct the problem statement relating EFH to productivity;
- Work with the NPFMC to design criteria for EFH mitigation alternatives based on ecological considerations. The selection of epifauna species of concern must be based on available research on living substrates in Alaska and the agency’s analysis of fishing effects;

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<sup>4</sup> EFH Final Rule §600.810(a).

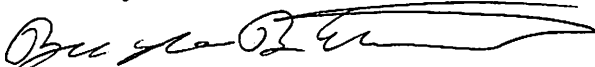
<sup>5</sup> Rose. 2002. An Analysis of the Effects of Fishing on Fish Habitats of the Waters off of Alaska. AFSC, NMFS.

<sup>6</sup> NMFS 2002. Living substrates in Alaska: distribution, abundance and species associations. P. Malecha, AFSC/ABL in AFSC, Effects of Fishing Gear on Seafloor Habitat Progress Report for FY 2002 edited by J. Heifetz, AFSC October 2002.

- Address the NPFMC and EFH committee about designing alternatives that address impacts were they occur in sensitive areas of high habitat value, not only for habitats where low to no fishing effort takes place. This could be accomplished by including a mitigation alternative or option that establishes habitat conservation areas designed to achieve specific conservation objectives. The NPFMC and NMFS have used this approach in the past to create, for example, the Red King Crab Savings Area or the Type I areas around Kodiak Island. For EFH purposes, conservation areas should be designated to protect benthic habitat features, prey species,<sup>7</sup> and habitat for overfished species.<sup>8</sup>

Thank you for your time and consideration of AMCC's concerns. We look forward to working with you and the NPFMC throughout this process.

Sincerely,



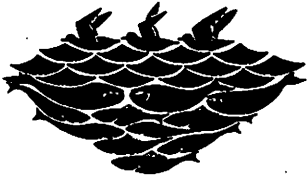
Ben Enticknap  
Fisheries Project Coordinator

cc: North Pacific Fishery Management Council

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<sup>7</sup> "Loss of prey may be an adverse effect on EFH and managed species because the presence of prey makes waters and substrate function as feeding habitat, and the definition of EFH includes waters and substrate necessary to fish for feeding." EFH Final Rule §600.815(7).

<sup>8</sup> "If a species is overfished and habitat loss or degradation may be contributing to the species being identified as overfished, all habitats currently used by the species may be considered essential in addition to certain historic habitats that are necessary to support rebuilding the fishery and for which restoration is technologically and economically feasible." EFH Final Rule §600.815(C).



# Alaska Marine Conservation Council

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November 22, 2002

TO: David Benton, Chairman  
North Pacific Fishery Management Council  
605 W. 4<sup>th</sup> Avenue, Suite 306  
Anchorage, AK 99501-2252

FR: Ben Enticknap, Fisheries Project Coordinator

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## 2. Aleutian Islands

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C-3  
Margaret Williams  
WWF

## **Pribilof Islands Ecosystem Stakeholder Process Organizing Committee**

Administered by: World Wildlife Fund, 406 G Street, Suite 301, Anchorage, AK 99501

• tel (907) 279-5504 • fax (907) 279-5509 • wwf@acsalaska.net

David Benton, Chairman, North Pacific Fishery Management Council  
PO Box 20735  
Juneau, Alaska 99802  
Anchorage, AK

December 2, 2002

Dear Mr. Benton,

As you know, the Bering Sea faces a host of serious issues that affect its fish and wildlife, and the people and businesses that depend on them. Over the past several years, concerns about declines in the halibut and crab fisheries, northern fur seal and bird populations of the Pribilof Islands area have become increasingly acute. We are pleased to share with you here information about last week's Anchorage workshop on *"Fisheries, Fur Seals and the Future: The Pribilof Islands' Perspective,"* which was organized by the Tribal Governments of St. George and St. Paul, World Wildlife Fund and The Nature Conservancy of Alaska to begin a dialogue about these concerns. We would also like to let you know about the broadly inclusive, stakeholder-driven, collaborative process we are now undertaking to address ecological and economic sustainability in the Pribilof Islands region.

As part of an on-going collaborative effort, the workshop sponsors sought to bring together a wide range of interested parties - fishing industry representatives, federal and state agency staff, local fishermen, community leaders, scientists and conservationists - to discuss the status and future of marine conservation and resource management around the Pribilofs. The workshop included discussions on the status and trends of the region's fisheries and wildlife, history and evaluation of the Pribilof Islands Habitat Conservation Area, availability of relevant socioeconomic information, and options for restoring depleted populations. We are especially grateful to Deputy Director David Witherell for joining the meetings and sharing information about the NPFMC.

As a result of the workshop, participants established the Organizing Committee for the Pribilof Islands Ecosystem Stakeholder Process, agreeing to enter into a collaborative planning process to develop a consensus-based approach to addressing fisheries, fur seal and other biological resource management concerns. Participants committed to including key decision makers in the stakeholder process, and to making the process broadly inclusive, balanced and fair. Evie Witten at World Wildlife Fund's Anchorage office will provide staff support for the committee.

Given the high degree of energy and participation at the workshop, the growing trust between stakeholders, and the identification of shared concerns, we are very optimistic about our ability to build a collaborative approach for improving sustainability in the Pribilof Islands ecosystem. We recognize the NPFMC as an essential partner in this initiative, and plan to provide you with regular updates as we progress; we also hope the stakeholder group can rely on the Council and its staff, as well as federal and state agencies for scientific and management information.

If you have any questions about the workshop or our next steps, we would like to hear from you. Thank you for your interest, and your commitment to creating a sustainable future for the Bering Sea.

Sincerely,

The Organizing Committee, Pribilof Islands Ecosystem Stakeholder Process:

  
Aquilina Cestenkof, Tribal Government of St. Paul, Ecosystem Conservation Office

  
Greg McGlashan, Traditional Council of St. George

  
Joe Sullivan, Mundt MacGregor

  
Larry Cetter, APICDA

  
Randy Hagenstein, The Nature Conservancy of Alaska

  
Evie Witten, World Wildlife Fund, Alaska Field Office

Cc: Chris Oliver, Executive Director, NPFMC  
Diana Cote, Executive Director, Alaska Board of Fisheries

C-3  
Ben Enticknap  
AMCC

DATE: December 6, 2002

TO: North Pacific Fishery Management Council

FR: Ben Enticknap, Alaska Marine Conservation Council

RE: Agenda Item C-3: Essential Fish Habitat

The following abstracts are from papers presented at the: *Symposium on Effects of Fishing Activities on Benthic Habitats* November 12 – 14, 2002, Tampa Florida.

DEW, C. B. (braxton.dew@noaa.gov)\* and R. A. McCONNAUGHEY; National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, WA. **Did bottom trawling in Bristol Bay's red king crab broodstock refuge contribute to the collapse of Alaska's most valuable fishery?**

The 1976 Magnuson Act effectively eliminated the Bristol Bay no-trawl zone known as the Pot Sanctuary. Implemented by the Japanese in 1959, the boundaries of this refuge closely matched the well-defined distribution of the red king crab population's mature-female broodstock, thus affording a measure of protection to the reproductive potential of the stock. In 1980, the point at which the commercial harvest of Bristol Bay legal male red king crab had reached an all-time high after a decade-long increase, domestic bottom trawling in the broodstock sanctuary began with the advent of a U.S.-Soviet, joint-venture, yellowfin sole fishery. As the number of unobserved, domestic trawls in the broodstock area increased rapidly after 1980, and anecdotal reports of "red bags" (trawl cod-ends plugged with red king crab) began to circulate, the proportion of males in the mature population (0.25 in 1981 and 0.16 in 1982) jumped to 0.54 in 1985 and 0.65 in 1986. It is unlikely that normal demographics caused this sudden reversal in sex ratio. Our hypothesis is that alternating, sex-specific sources of mortality were at work. Initially there were ten years (1970-1980) of monotonically increasing, male-only exploitation, followed by a drastic reduction in the male harvest after 1980 (to zero in 1983). Also beginning in 1980, there was an increase in bottom trawling among highly aggregated, sexually mature females residing within a previously protected area known to be the primary broodstock habitat and the most productive spawning ground for Bristol Bay red king crab. There has been considerable discussion about possible causes (e.g., meteorological regime shifts, epizootic diseases) of the knife-edge collapse of the Bristol Bay red king crab population in the early 1980s. Our discussion will focus on the temporal and spatial nexus between the population's collapse and the onset of large-scale commercial trawling within the population's primary reproductive refuge.

MCCONNAUGHEY, R.A. (bob.mcconnaughey@noaa.gov)\*, S.E. SYRJALA and C.B. DEW; National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, WA. **Effects of chronic bottom trawling on the size structure of soft-bottom benthic invertebrates.**

Chronic bottom trawling commonly reduces benthic biomass, but it is generally unknown whether this represents a decrease in the mean size and/or the numbers of individuals. Because this distinction provides insight into the mechanism of disturbance and also influences subsequent recovery dynamics, we investigate the matter here. Using comprehensive historical effort data, adjacent untrawled (UT) and heavily trawled (HT) areas were identified along the boundary of a long-standing no-trawl zone in Bristol Bay, a naturally disturbed offshore area of the eastern Bering Sea. The study site is relatively shallow (44-52 m) with a sand substrate, ubiquitous bottom ripples, and strong tidal currents. A modified research trawl was used to collect 42 HT-UT paired samples of benthic infauna and epifauna. These data were used to compare mean sizes (kg) of 16 species of sessile, mobile and infaunal invertebrates. 15 of these taxa were smaller in the HT area, while in one case (red king crab) mean size was greater in the HT area. Length-frequency data indicate the red king crab populations are bimodal, and that substantially fewer smaller-sized crab (rather than more larger individuals) occur in the HT area. Since active fishing in the HT area occurred 3 or more years before our field sampling program, our findings reflect conditions associated with an intermediate stage of recovery. Finally, we compare the observed differences in mean size (attributed to heavy trawling) with natural size variability in the study area based on annual NMFS surveys.

STONE, R. P. (bob.stone@noaa.gov)\*, M. M. MASUDA, and P. W. MALECHA; Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, Juneau, AK. **Spatial distribution and abundance of epifauna on adjacent soft-bottom areas open and closed to bottom trawling in the Gulf of Alaska.**

The spatial distribution and abundance of epifauna were studied at 3 sites in the central Gulf of Alaska where bottom trawling had been prohibited for 11 to 12 years. These areas were closed to assist in rebuilding severely depressed crab stocks. Continuous video footage of the seafloor was collected with an occupied submersible along 41 strip transects. Transects were bisected by the boundary demarcating open and closed areas to bottom trawling at each site. Trawling intensity at the sites was estimated at 11 - 29% of the seafloor per year for the 5 years preceding this study. All megafauna (> 4 cm) were enumerated and their relative position on the seafloor determined. Counts at one site were not completed due to the existence of a natural habitat gradient that confounded any differences between open and closed areas to bottom trawling. At the other two sites, positions of over 150,000 megafauna were determined along 89 km of seafloor. Differences in abundance of sedimentary biogenic structures were also examined. These data will form the basis for determining if ambient levels of bottom trawling, in some of the more intensely trawled areas in the Gulf of Alaska, have changed these soft-bottom marine communities.

C-3  
Ron Philimonoff  
TDX, Inc.

# Bering Sea Essential Fish Habitat

Zemchung / Pribilof Canyon EFH

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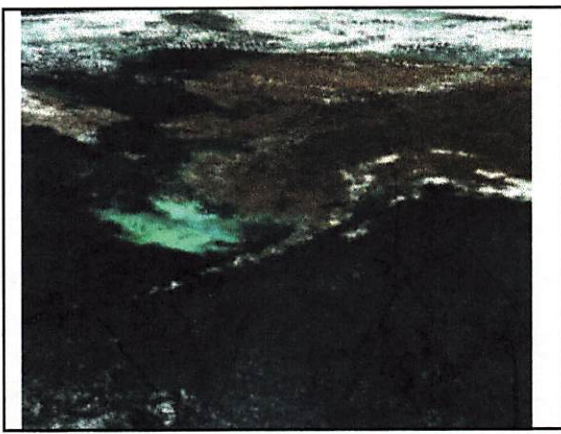
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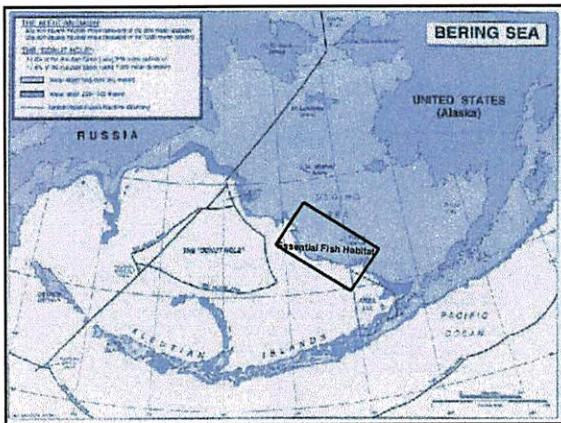
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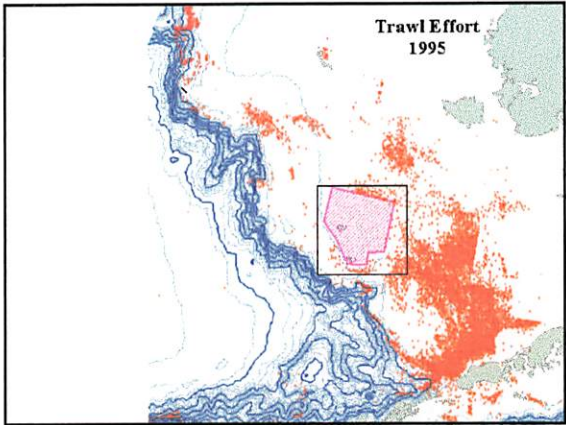
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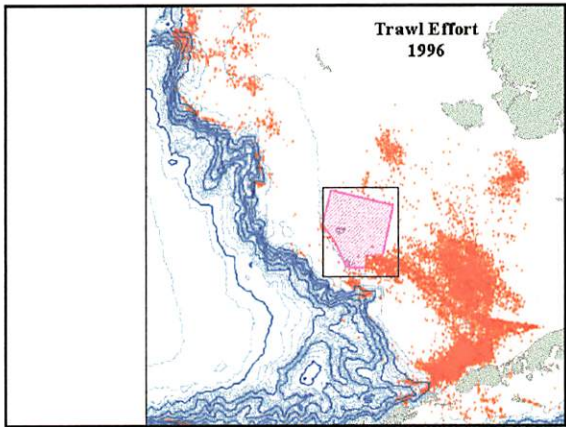
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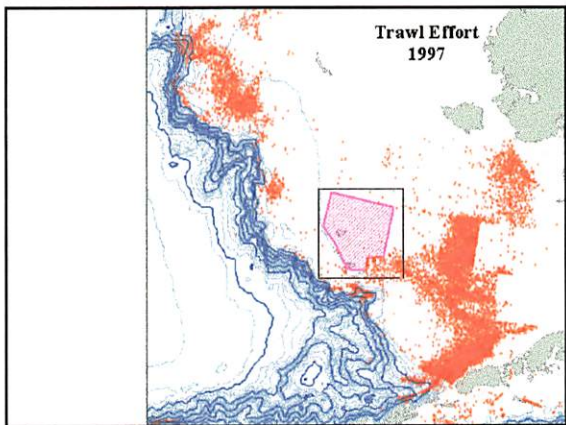
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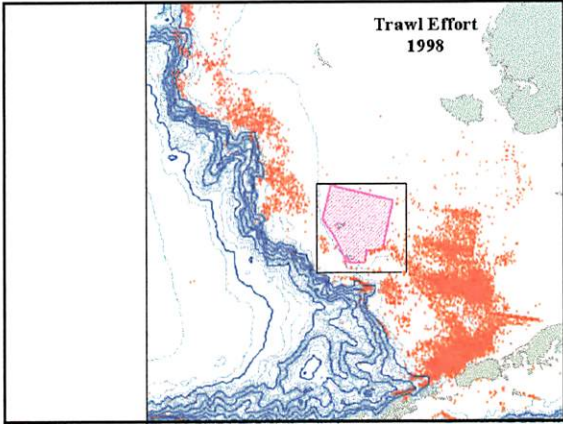
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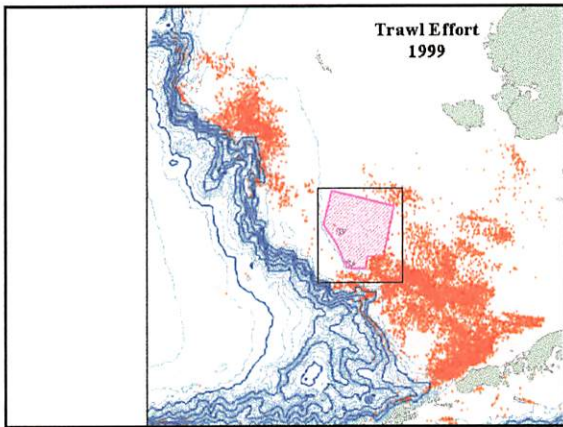
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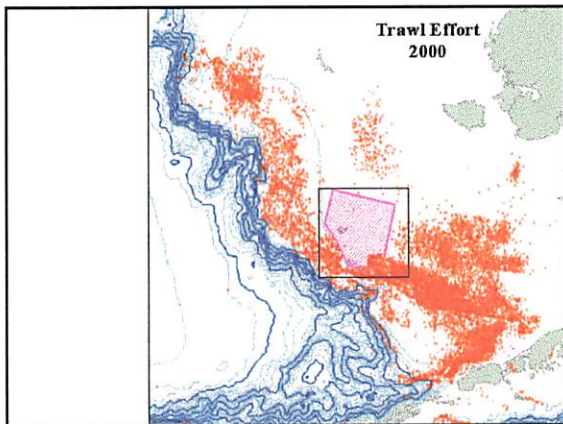
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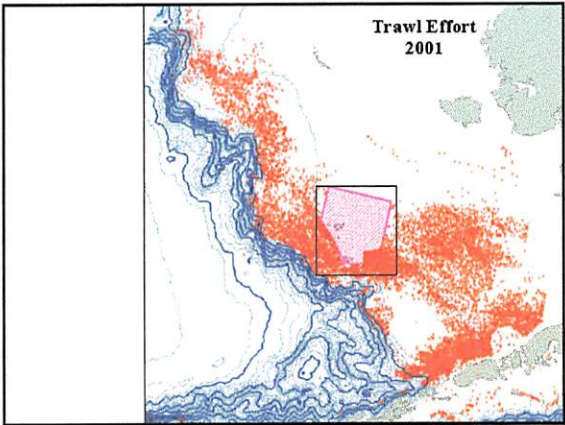
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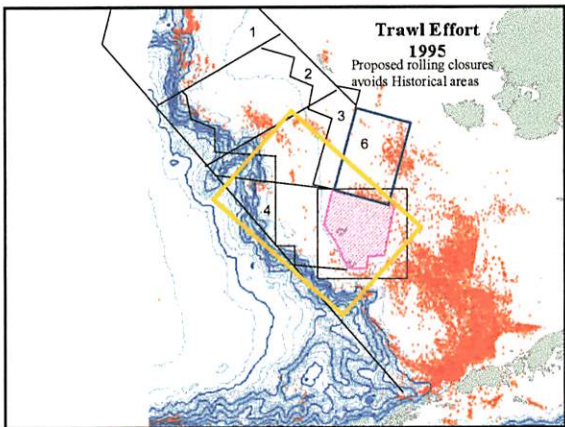
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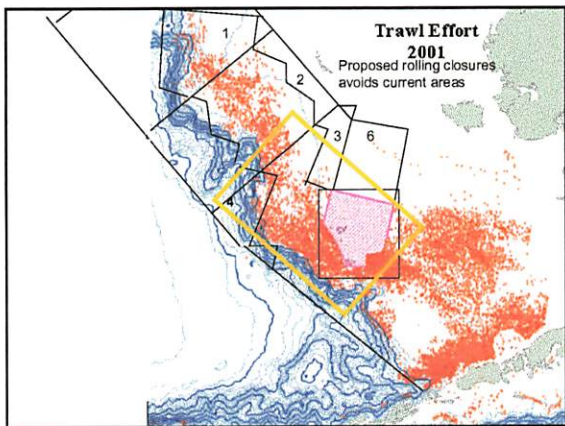
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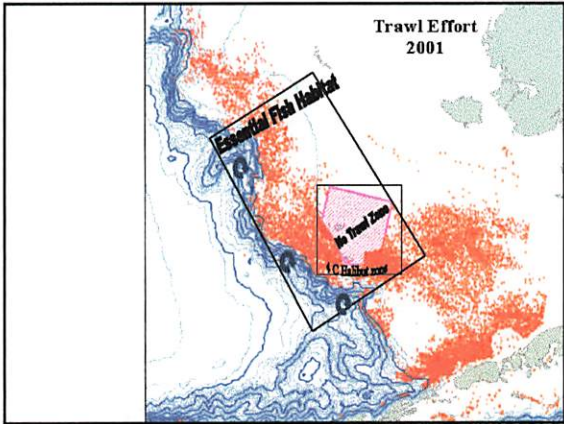
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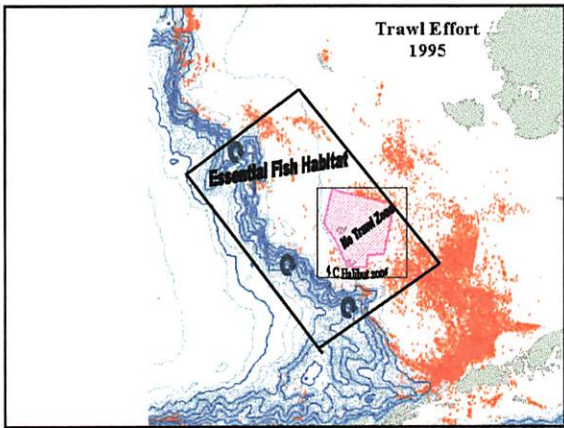
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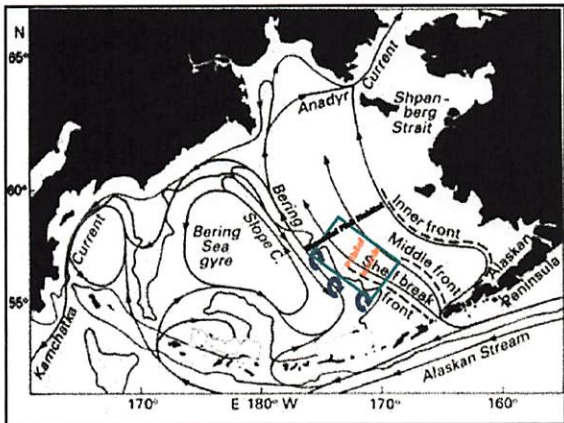
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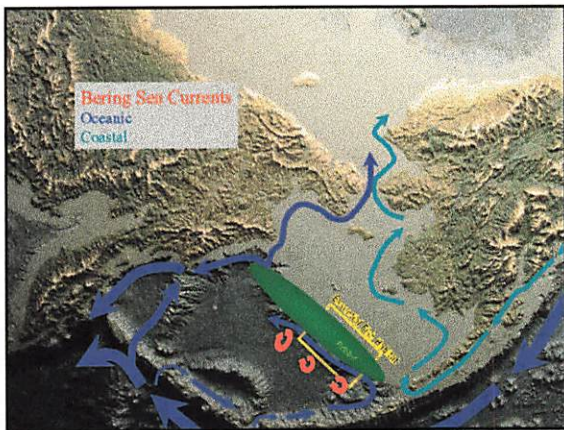
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Bering Sea Currents  
Oceanic  
Coastal

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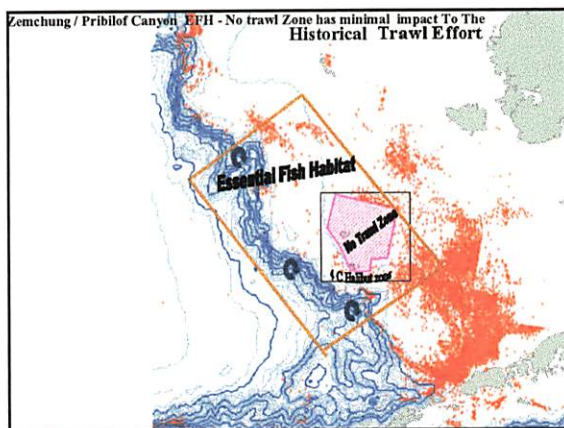
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Zechung / Pribilof Canyon EFH - No trawl Zone has minimal impact To The Historical Trawl Effort

Essential Fish Habitat

No Trawl Zone

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C-3  
Pat Carlson  
Kodiak Island  
Borough

# **ANALYSIS OF ECONOMIC IMPACTS FROM FISHING RESTRICTIONS ON THE KODIAK ISLAND BOROUGH ECONOMY**

**PREPARED FOR:**

**KODIAK ISLAND BOROUGH**



Research-Based Consulting

Juneau  
Anchorage

**NOVEMBER 2002**

***ANALYSIS OF ECONOMIC IMPACTS  
FROM FISHING RESTRICTIONS ON THE  
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***PREPARED FOR:***

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***PREPARED BY:***



***NOVEMBER 2002***

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## Introduction

The Gulf of Alaska and the Bering Sea/Aleutian Islands groundfish fishery is one of the largest volume and highest revenue producing fisheries in the world. With its strategic location and strong fishing tradition, Kodiak is a major center for the processing of groundfish. Kodiak consistently ranks among America's top three seafood ports in ex-vessel value.

In 2001, the McDowell Group completed an assessment of potential impacts on the Kodiak economy from management alternatives proposed by the National Marine Fisheries Service. An economic model was developed for the Kodiak economy based on published employment data, as well as on McDowell Group estimates of the annual average employment and take-home pay of Kodiak-based skippers and crew.

Currently, the National Marine Fisheries Service is continuing the Supplemental Environmental Impact Statement (SEIS) process to assess effects of management alternatives for groundfish in the North Pacific. Kodiak's economy is facing other challenges as well, including low salmon prices and crab fishery rationalization.

This document is an update of the 2001 report and model, and reflects changes in Kodiak's economy due to recent fishery abundance, market conditions, and management regimes. The effects of these changes on Kodiak are summarized below.

## Seafood Industry Trends

### Commercial Fishing Sector

- The Gulf of Alaska (east of Yakutat) pollock and cod quota fell by over 40 percent between 1999 and 2002.
- Approximately 30 thousand metric tons of the available quota were not harvested in 2000 and 2001 due to the closure of areas traditionally fished by the Kodiak fleet, for Stellar sealion protection.
- The total salmon harvest in the Kodiak area, measured in pounds, increased by 20 percent while value declined by 66 percent between 1999 and 2002.
- Ex-vessel value in Pacific Halibut Regulatory Areas 3A and 3B, where most Kodiak vessels fish, has ranged from \$74 million to \$81 million. The 2001 harvest was valued at \$74 million, down about 9 percent from the 2000 value.
- Crab ex-vessel value in the Bering Sea *opilio* and Bristol Bay king crab fisheries, the most important crab fisheries to the Kodiak fleet, declined by 64 percent between 1999 and 2002. Fishermen saw the value of their crab harvest decline by \$167 million.

## Seafood Processing Sector

- The poundage of seafood processed in Kodiak has declined steadily since 1998, dropping from 390 million pounds in 1998 to 270 million pounds in 2001. The 2002 production is expected to be still lower. Groundfish volume landed at Kodiak declined by one-third between 1998 and 2001.
- Pollock production fell from 166 million pounds to 91 million pounds, between 1998 and 2001, a 45 percent drop. Cod production peaked in 1999 at 85 million pounds, then declined to 55 million in 2001, down 35 percent.
- Salmon landings in Kodiak increased in 2001 to 79 million pounds; however, salmon values dropped to \$19 million (a 40 percent drop from the 1999 level of \$31 million).
- Halibut poundage landed at Kodiak declined by 14 percent between 1999 and 2001 as increasing numbers of fishermen landed their fish at Homer or Seward, where prices are higher.
- Crab value landed in Kodiak increased from \$2.8 million in 1999 to \$4.9 million in 2002.
- The ex-vessel value of all seafood processed in Kodiak dropped to a three-year low in 2001 to \$81 million, down from \$104 million in 1999. Cod values dropped by 38 percent, from about \$25 million to \$16 million.

## Trends in Kodiak's Economy

In the McDowell Group's July 2001 report, it was estimated that a 30 percent decline of groundfish volume available to Kodiak processors would result in the closure of one processing plant, the loss of 500 processing jobs, and 200 support sector jobs. The study team also predicted that a portion of the current resident Kodiak processing labor force would move because they could not afford to live in Kodiak year-round due to reduced employment opportunities. These estimates now appear reasonable, and perhaps some were conservative, in light of recent trends in Kodiak.

- Kodiak commercial fishermen's net income in 2001 of approximately \$49 million was 20 percent below the 1999 level of \$63 million. Total income for 2002 is likely to be still lower.
- Processing sector payroll dropped by \$9 million between 1999 and 2001. The loss of another \$8 to \$10 million in processing payroll is expected for 2002.
- It is expected that total seafood industry payroll in Kodiak (including commercial fishing net income and processing payroll) in 2002 will be \$25 to \$30 million below the 1999 level.
- Total seafood industry employment in Kodiak in 2001 averaged approximately 2,700 jobs (including commercial fishing and seafood processing). The 2002 average is expected to drop to about 2,300 jobs, nearly 20 percent below the 1999 average of 2,800 jobs. Almost all of this decline has been in the processing sector.
- A total of four processors closed in 2001 and 2002, including Cook Inlet Processing (doing business as Polar Equipment), Global Seafoods, Kodiak Salmon Packers and Kodiak Seafood Processing.
- These companies accounted for an annual average of almost 300 jobs – about one quarter of shore-based processing employment. Two of the four plants that

closed – Global Seafoods and Cook Inlet Processing – were largely dependent on groundfish and had a combined annual average employment of 265.

- Preliminary 2002 estimates of annual average employment with shore-based processors indicate a decline of almost 500 jobs from the 2000 peak. Shore-based processing employment dropped from 1,458 in 2000 to an estimated 985 in 2002. That represents a drop of about one-third. Most of this decline occurred between 2001 and 2002 (400 of the 500 jobs)
- Even before the dramatic decline in processing employment in 2002, Kodiak's economy was showing signs of weakness. Based on McDowell Group estimates, total borough-wide payroll declined by 8 percent between 1999 and 2001, from \$265 million to \$243 million (this includes estimated net income for fishermen). Annual average employment declined by 150 jobs.
- Kodiak's service sector has been affected by the decline in seafood industry activity and income. For example, retail employment in Kodiak dropped by 70 jobs between 1999 and 2001.
- There are other indicators of a weakening Kodiak economy. For example, the average private sector wage in Kodiak declined 7 percent between 1999 and 2001.
- Though it is too early to measure all the impacts on Kodiak's economy stemming from the decline in the local seafood industry, long-term structural changes are likely. For example, the loss of groundfish volume has led to increasingly seasonal employment and fewer hours of work available. This has and will continue to cause residents to leave the island to seek more stable employment.
- Structural changes in Kodiak's economy, stemming from reduced groundfish harvesting and processing (as well as changes in other fisheries) include a broad range of socioeconomic implications. These include potential decline in school enrollment, loss of tax revenues that support local government services, reduced local investment in housing and businesses, and others.
- The shift to more seasonal labor demand will increase costs to processors, who must recruit, house, feed, transport and train their labor force. This could result in additional plant closures.
- Over the next several years, additional employment and income losses in Kodiak's support sector are expected, as households and businesses adjust to the decline in commercial fishing and processing.
- Additional economic losses associated with fisheries management actions would further hamstring an economy that is already in recession.

A summary of these and other trends is provided in the following table.



**Table 1. Recent Trends in the Kodiak's Fisheries and Economy**

<b>Harvesting Sector <sup>1</sup>(Total Catch and Value of Selected Fisheries Important to the Kodiak Fleet)</b>	<b>1999</b>	<b>2002</b>	<b>% Change</b>
Pollock/cod ex-vessel catch (millions of pounds)	160	84	- 48%
Halibut ex-vessel value (millions of dollars)	\$76	\$80	+ 6
Salmon ex-vessel value (millions of dollars)	\$35	\$12	- 66
Opilio/king crab ex-vessel value (millions of dollars)	\$261	\$94	- 64
Trawl permits fished	40	35 <sup>2</sup>	- 12
Salmon permits fished	397	242	- 39
<b>Kodiak Processing Sector</b>	<b>1999</b>	<b>2001</b>	<b>% Change</b>
Groundfish ex-vessel volume purchased (millions of pounds)	238	176	- 35%
Groundfish ex-vessel value (millions of dollars)	\$41	\$33	-15
Halibut ex-vessel volume purchased (millions of pounds)	9.9	8.5	- 14
Halibut ex-vessel value (millions of dollars)	\$21	\$16	-24
Salmon ex-vessel volume purchased (millions of pounds)	71	79	+11
Salmon ex-vessel value (millions of dollars)	\$31	\$19	- 40
Crab ex-vessel volume purchased (millions of pounds)	1.4	1.4	0
Crab ex-vessel value (millions of dollars)	\$2.8	\$4.9	+ 75
<b>Kodiak Economy</b>	<b>1999</b>	<b>2001</b>	<b>% Change</b>
Shore-based processing employment	1,314	985 <sup>3</sup>	- 25%
Non-government support sector employment	2,430	2,400	- 1
Seafood harvesting payroll (millions of dollars)	\$63	\$49	- 22
Total (All Industries) payroll in Kodiak Island Borough (millions of dollars)	\$265	\$243	-8

1. Data represents total catch and value in each fishery, including Kodiak and non-Kodiak resident harvests.
2. Trawl permits fished is for year 2001 and is based on preliminary data.
3. Represents 2002 processing employment estimate.

## Kodiak Economic Model Output

To describe the Kodiak economy, an export-base model is used (Table 2). The model reflects economic conditions as of 2001, though commercial fishing employment is based on 2000 data. The model shows the relationship between the basic and support sectors of the economy, and provides a baseline against which to gauge the broader impacts of changes in Kodiak fisheries upon the area's economy. Basic industry exports goods and services to markets outside the local area and brings in new money in exchange. Support industry serves the local population and business community, as residents trade existing dollars with their neighbors. Alaska Department of Labor (ADOL) published seafood processing employment data was inaccurate in 2001 due to over-counting of local employment and payroll with Trident Seafoods, according to ADOL. Therefore, employment estimates from 2000 were used from this employer. Discussions with Trident officials indicate that employment in 2000 and 2001 were similar.

## Kodiak's "Economic Engines" — The Basic Economy

Kodiak's economic base industries include commercial fishing, seafood processing, and tourism, as well as agencies that manage base industries, such as the Alaska Department of Fish and Game and the National Marine Fisheries Service. The US Coast Guard is also a base industry. The remainder of the local economy consists of support industries that service the local population and business community.

Kodiak's basic industries account for an annual average of about 4,250 jobs and a payroll of \$146 million (Table 2 and Figure 1). This makes up 55 percent of Kodiak's total employment and 60 percent of total payroll. In terms of employment, the most important basic industries in Kodiak are the seafood industry, the Coast Guard, tourism, heavy construction, and lumber and wood products.

The seafood industry is the largest industry in Kodiak. Annual average employment for Kodiak commercial fishermen was an estimated 946 jobs in 2000, about the same as 1999. Estimated employment in the processing industry declined by almost 500 jobs from 2000 to 2002. Three processors – Global Seafoods, Alaska Salmon Packers and Cook Inlet Processing - closed in the last year.

Basic industry government employment was about the same in 2001 as in 1999 at about 140 jobs. Altogether, the seafood industry accounted for over 2,700 jobs, contributing approximately 64 percent of Kodiak's economic base employment, 35 percent of total employment and 39 percent of total payroll. A similar share (over 60 percent) of Kodiak's support industries (trade, services, etc.) are attributed to the dominant seafood industry.

**Table 2. Kodiak Base and Support Industries, Employment and Payroll, 2001<sup>1</sup>**

Sector	Annual Ave. Employment	% of Total Employment	Total Payroll (\$Millions)	% of Total Payroll
<b>BASIC INDUSTRY</b>				
Seafood				
Seafood Harvesting <sup>2</sup>	946	12%	\$49.0	20%
Processing <sup>3</sup>	1,622	21%	\$39.5	16%
Alaska Dept. of Fish and Game	78	1%	\$3.1	1%
National Marine Fisheries Service	29	<1%	\$1.4	1%
Kodiak National Wildlife Refuge	17	<1%	\$0.8	<1%
Fishery Industrial Technology Center	20	<1%	\$0.8	<1%
<b>Total Seafood</b>	<b>2,712</b>	<b>35%</b>	<b>\$95.0</b>	<b>39%</b>
Alaska Aerospace Devt. Corp.	6	<1%	\$0.2	<1%
Tourism <sup>4</sup>	242	3%	\$4.2	2%
National Interest				
Coast Guard <sup>5</sup>	1,100	14%	\$35.5	15%
Agriculture, Forestry and Manufacturing				
Agricultural services	18	<1%	\$0.2	<1%
Forestry	4	<1%	\$0.2	<1%
Fishing, hunting & trapping	40	<1%	\$2.9	1%
Lumber & wood products	43	1%	\$1.7	1%
Apparel & other textile products <sup>4</sup>	8	<1%	\$0.1	<1%
Heavy Construction	82	1%	\$5.5	2%
<b>Total Basic Industry</b>	<b>4,255</b>	<b>55%</b>	<b>\$145.0</b>	<b>60%</b>
<b>SUPPORT INDUSTRY</b>				
Other Construction	85	1%	\$2.9	1%
Transportation, Comm., Util. (TCU)	228	3%	\$7.6	3%
Wholesale and Retail Trade	818	10%	\$15.9	7%
Finance, Ins. and Real Estate (FIRE)	169	2%	\$5.8	2%
Manufacturing-printing <sup>4</sup>	25	<1%	\$0.2	<1%
Services	1,076	14%	\$28.8	12%
Federal Government <sup>6</sup>	162	2%	\$8.0	3%
State Government <sup>7</sup>	136	2%	\$5.4	2%
Local Government	781	10%	\$22.4	9%
<b>Total Support Industry</b>	<b>3,480</b>	<b>45%</b>	<b>\$96.9</b>	<b>40%</b>
<b>TOTAL ALL INDUSTRIES</b>	<b>7,735</b>	<b>100%</b>	<b>\$242.0</b>	<b>100%</b>

Source: Compiled by McDowell Group, Inc., based on Alaska Department of Labor & Workforce Development data except where noted.

1 Data for federal and state government, including Kodiak National Wildlife Refuge, National Marine Fisheries Service, and Alaska Department of Fish and Game, are for 2000.

2 Seafood harvesting employment and income are McDowell Group, Inc. estimates, based on CFEC permit data and are for 2000.

3 Processing employment from Department of Labor includes both catcher-processor vessels based in Kodiak and shore based processing. Employment and payroll figures from the published ADOL data were adjusted down to account for inaccuracies in Trident Seafood employment figures.

4 McDowell Group, Inc. estimates.

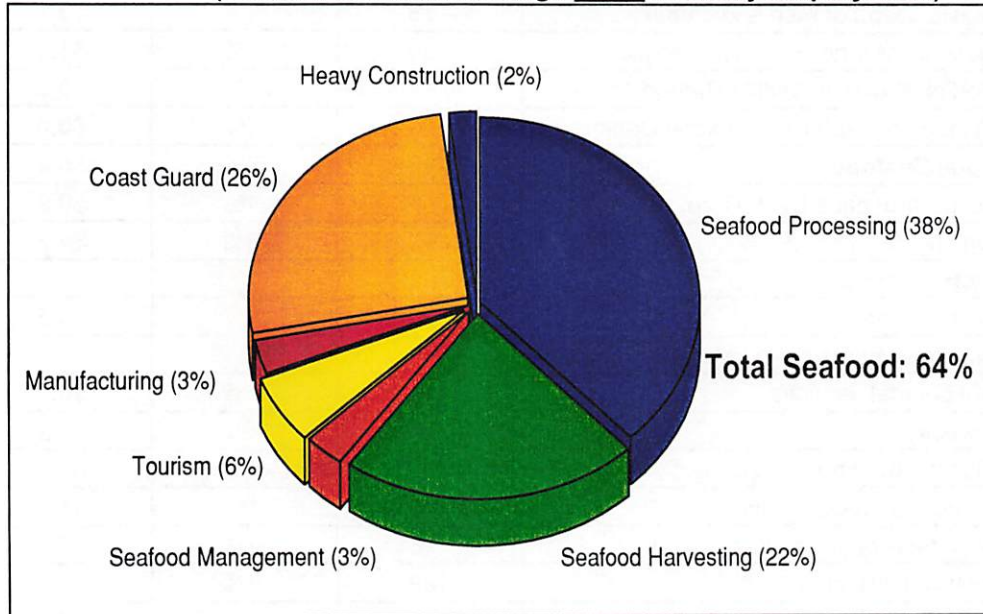
5 Information from Kodiak Island Borough Website.

6 Federal government employment, less National Marine Fisheries Service and Kodiak National Wildlife Refuge positions.

7 State government employment, less ADFG, FITC, and AADC positions.

The Coast Guard is Kodiak's second largest basic industry, accounting for about 26 percent of the basic economy employment. Tourism, timber industry, hatcheries, heavy construction and manufacturing make up the balance of Kodiak's basic industry.

**Figure 1**  
**Kodiak's Basic Industry Composition, 2001**  
**(Percent of annual average basic industry employment)**



Source: McDowell Group and Alaska Department of Labor

Seafood Management employment includes Alaska Dept. of Fish and Game, National Marine Fisheries Service, Kodiak National Wildlife Refuge, Fisheries Industrial Technology Center, and the Kodiak Fisheries Research Center Campus. Alaska Aerospace jobs are not depicted in this chart, as they account for less than 1 percent of basic employment.

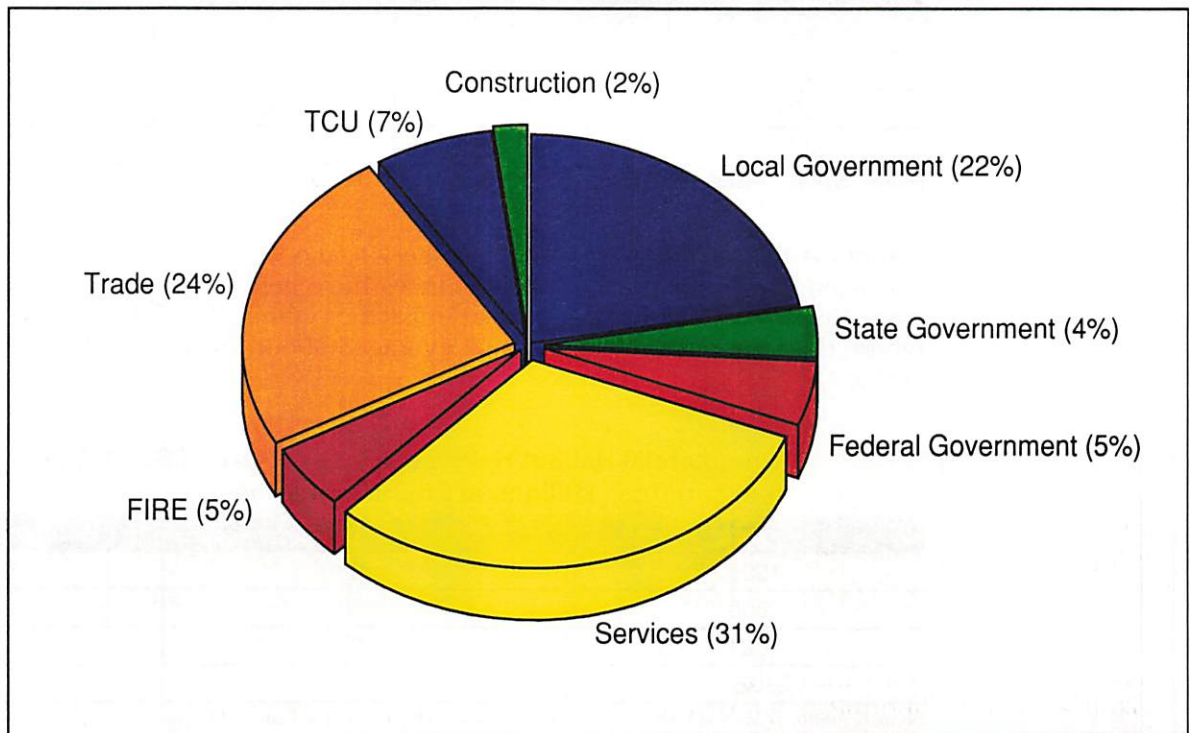
## Kodiak's Support Industries

Support businesses do not create new wealth for the community. However, money brought to the economy by basic industries, such as fishing income, impacts the local economy in many ways as it cycles through support businesses. Local support businesses are important in that they keep money in the local economy.

Kodiak support industries account for an annual average of almost 3,500 jobs and \$97 million in payroll (Table 2 and Figure 2). Support industries provide 45 percent of total employment and 40 percent of total earnings. Support industries linked directly to fisheries include a wide array of businesses, including boat yards, fuel sales, engine mechanics, electricians, freight forwarding, hydraulic service, air taxi, accounting, banking and shipwrights. An estimated 60 percent of Kodiak's support industries are the result of the seafood industry.

In order of employment, the most important support industries in Kodiak are services; government; trade; transportation, communication and utilities (TCU); finance, insurance and real estate (FIRE); construction; and support manufacturing such as printing.

**Figure 2**  
**Kodiak's Support Industry Composition, 2001**  
(Percent of annual average support industry employment)



Source: McDowell Group and Alaska Department of Labor

FIRE: Finance, Insurance, and Real Estate

TCU: Transportation, Communications, Utilities

Manufacturing jobs are not depicted in this chart, as they account for less than 1 percent of basic employment.

## Seafood Harvesting

### Recent Trends in Fisheries Important to Kodiak

The most important fisheries in terms of ex-vessel value to the Kodiak fleet in recent years are groundfish, halibut, salmon and crab.

Most of the Kodiak groundfish fleet fish for cod and pollock in the Gulf of Alaska (excluding West Yakutat and Southeast areas). In 2000 and 2001, about 30 thousand metric tons of fish of the available quota were not harvested due primarily to Stellar sealion conservation programs, which closed areas traditionally fished by the Kodiak fleet. The estimated 2002 harvest was about 5,000 tons shy of the quota as of November 2002 (Table 3).

**Table 3**  
**Pollock and Cod Quota and Harvest**  
**Central and Western Gulf of Alaska, 1999-2002**  
**Thousands of Round Metric Tons**

Year	Catch	Quota	Under Quota
1999	160	160	0%
2000	102	109	-7%
2001	79	102	-23%
2002	90	95	-6%

Source: National Marine Fisheries Service. 2002 data is catch through November 2002.

Halibut is the second most valuable fishery to the Kodiak fleet, and one of the most consistent in recent years. Halibut prices have generally exceeded \$2 per pound since 1999. Most Kodiak vessels fish in Pacific Halibut Regulatory Areas 3A and 3B, where the estimated ex-vessel value averaged about \$78 million from 1999 to 2002 (Table 4).

**Table 4**  
**Commercial Halibut Harvest in Areas 3A and 3B, 1999-2002**  
**Millions of Pounds and Dollars**

Year	Catch	Estimated Value
1999	38	\$76
2000	33	81
2001	37	74
2002*	40	80

Source: National Marine Fisheries Service and Alaska Department of Fish and Game.

\* 2002 catch represents the annual quota.

The Kodiak salmon fishery represents the third most valuable fishery to the Kodiak fleet. From 1999 to 2002, the commercial salmon harvest ranged from 62 to 94 million pounds. The salmon fishery value, however, plummeted to a preliminary total of just \$12 million in 2002 due to low prices for pink and sockeye salmon, the primary species harvested by the Kodiak fleet (Table 5). Preliminary information indicates that the number of permits fished in the Kodiak region declined from 354 in 2001 to 242 in 2002, a decline of 32 percent.

**Table 5**  
**Kodiak Area Commercial Salmon Harvest, 1999-2002**  
**Millions of Pounds and Dollars**

Year	Ex-vessel Catch	Ex-vessel Value
1999	72	\$35
2000	62	21
2001	94	22
2002	87	12

Source: Alaska Department of Fish and Game

Kodiak's commercial crab fleet derives most of its income from the Bristol Bay king crab and Bering Sea *opilio* fisheries. Catch in these two fisheries ranged from 205 million pounds in 1999 to 34 million pounds in 2001 and 2002. Value ranged from \$261 million in 1999 to \$81 million in 2001 (Table 6). Most of the decline was due to the Bering Sea *opilio* fishery, which declined from 194 million pounds worth \$190 million in 1999 to just 25 million pounds worth about \$40 million in both 2001 and 2002.

**Table 6**  
**Commercial Crab Harvest in the Bering Sea Opilio and**  
**Bristol Bay King Crab Fisheries, 1999-2002**  
**Millions of Pounds and Dollars**

Year	Crab Fisheries		Total Value
	<i>Opilio</i>	Red King	
1999	194	11	\$261
2000	34	8	101
2001	25	9	81
2002	25	9	94

Source: Alaska Department of Fish and Game

### Trends for Kodiak Resident Fishermen

Permit and earnings data by community of residence were available through 2000 from CFEC.

In 2000, 594 Kodiak Island Borough residents participated in commercial fishing as permit holders, fishing a total of 1,063 permits (Table 7). This was an increase of both permit holders and permits fished from 1999.

Additionally, 1,178 crew member licenses were sold to Kodiak residents in 2000, a decline of 13 licenses from 1999. Permit holders who work as crew are not included in this crew total.

Nearly one in five of Kodiak's 9,400 adult residents participated in commercial fish harvesting as a permit holder or crew member during 2000, a total of 1,770 individuals.

**Table 7**  
**Kodiak Resident Harvest and Earnings, 1995-2000**

Year	Permit Holders Fishing	Permits Fished	Landings (Millions of Pounds)	Gross Earnings (Millions of Dollars)	Gross Earnings per Permit Holder
1995	610	1,096	335	\$119	\$196,000
1996	578	1,092	241	98	170,000
1997	583	1,111	244	98	168,000
1998	547	996	286	82	149,000
1999	588	1,030	261	115	193,000
2000	594	1,063	220	90	151,000
<b>Average</b>	<b>583</b>	<b>1,065</b>	<b>265</b>	<b>\$100</b>	<b>\$171,000</b>

Source: Alaska Commercial Fisheries Entry Commission

During 2000, Kodiak permit holders landed 220 million pounds of seafood, a 16 percent decline from 1999. Earnings were \$90 million, a decline of 21 percent from 1999. Most of the overall decline from 1999 was due to a \$21 million decline in the value of crab and \$8 million decline in the value of salmon (Table 8).

Ranked by Kodiak resident permit holders' income, groundfish fisheries accounted for the highest value in 2000 (\$28 million), followed by halibut (\$27 million), salmon (\$16 million), crab (\$12 million), sablefish (\$4 million), herring (\$2 million), and all other fisheries combined (\$1 million, Table 8).

**Table 8**  
**Kodiak Resident Earnings by Fishery, 1995-2000**  
Millions of Dollars

Fishery	1995	1996	1997	1998	1999	2000
Crab	\$24	\$17	\$19	\$22	\$33	\$12
Groundfish	39	33	36	19	29	28
Sablefish	5	5	5	4	3	4
Halibut	12	14	21	12	22	27
Herring	6	7	2	2	2	2
Salmon	33	18	14	22	24	16
Other	1	2	1	1	1	1
<b>Total</b>	<b>\$119</b>	<b>\$98</b>	<b>\$98</b>	<b>\$82</b>	<b>\$115</b>	<b>\$90</b>

Source: Alaska Commercial Fisheries Entry Commission

The top five gear types and fisheries for Kodiak resident harvesters were groundfish otter trawl (\$16 million), large vessel halibut longline (\$15 million), small boat halibut longline (\$12 million), salmon purse seining (\$9 million) and tanner crab pot gear (\$8 million). The highest level of participation in terms of permits fished were in the groundfish fisheries (311 permits), followed by salmon (292), and halibut (261)(Table 9).



**Table 9  
Kodiak Resident Commercial Fishing Permits  
Landings and Earnings, 2000<sup>1</sup>**

Permit Code	Fishery	Permits Fished	Pounds	Gross Earnings	Avg. Gross Earnings	Data
D 09J	Dungeness Crab > 60' vessel	6	73,000	\$121,000	\$20,000	Actual
D 91J	Dungeness Crab < 60' vessel	5	<u>91,000</u>	<u>\$160,000</u>	<u>\$32,000</u>	Fishery Avg.
K 91T	Bristol Bay King Crab, > 60' vessel	34	889,000	\$4,294,000	\$126,000	Actual
K 09T	King Crab, Pot Gear, < 60' vessel	1	<u>11,000</u>	<u>\$51,000</u>	<u>\$51,000</u>	Fishery Avg.
K 91K	King Crab, Pot Gear, > 60' vessel	1	Data not available due to State confidentiality standards			
T 91Q	Tanner Crab > 60' Vessel, Bering S.	35	4,043,000	\$7,557,000	\$216,000	Actual
T 91 QD	King Crab Bering S. CDQ	1	Data not available due to State confidentiality standards			
<b>Total Crab</b>		<b>83</b>	<b>5,229,000</b>	<b>\$12,390,000</b>	<b>\$149,000</b>	<b>Actual</b>
C 06B	Sablefish Longline < 60' (NOT SE OR PWS)	22	1,153,000	\$2,423,000	\$110,000	Actual
C 61B	Sablefish Longline > 60' vessel statewide	20	898,000	\$1,973,000	\$99,000	Actual
<b>Total Sablefish</b>		<b>42</b>	<b>2,051,000</b>	<b>\$4,396,000</b>	<b>\$209,000</b>	<b>Actual</b>
I 26B	Ling Cod Mechanical Jig	<u>1</u>	<u>2,600</u>	<u>\$1,700</u>	<u>\$1,700</u>	Fishery Avg.
M 05B	Misc. Finfish Hand Troll	9	61,000	\$25,000	\$2,700	Actual
M 06B	Misc. Finfish Longline, < 60'	50	3,826,000	\$1,502,000	\$30,000	Actual
M 07B	Misc. Finfish Otter Trawl	33	119,665,000	\$16,284,000	\$493,000	Actual
M 09B	Misc. Finfish Pot Gear, < 60' vessel	56	9,780,000	\$3,467,000	\$62,000	Actual
M 26B	Misc. Finfish Mechanical Jig	98	1,613,000	\$640,000	\$6,500	Actual
M 61B	Misc. Finfish Longline, >60'	8	1,357,000	\$541,000	\$68,000	Actual
M 91B	Misc. Finfish Pot Gear, >60'	56	14,722,000	\$5,054,000	\$90,000	Actual
<b>Total Groundfish</b>		<b>311</b>	<b>151,026,000</b>	<b>\$27,514,000</b>	<b>\$88,000</b>	<b>Actual</b>
B 26B	Halibut Mechanical Jig	16	33,000	74,000	\$4,600	Actual
B 06B	Halibut Longline Vessel < 60'	154	4,917,000	\$12,136,000	\$79,000	Actual
B 61B	Halibut Longline > 60'	91	5,887,000	\$14,512,000	\$159,000	Actual
<b>Total Halibut</b>		<b>261</b>	<b>10,837,000</b>	<b>\$26,722,000</b>	<b>\$102,000</b>	<b>Actual</b>
G 01A	Roe Herring Purse Seine	1	<u>187,000</u>	<u>\$54,000</u>	<u>\$54,000</u>	Fishery Avg.
G 01K	Roe Herring, Purse Seine, Kodiak	13	<u>1,677,000</u>	<u>\$582,000</u>	<u>\$45,000</u>	Fishery Avg.
G 01T	Roe Herring, Purse Seine, Bristol By.	18	4,383,000	\$412,000	\$23,000	Actual
G 34K	Roe Herring, Gill Net, Kodiak	6	<u>108,000</u>	<u>\$31,000</u>	<u>\$5,100</u>	Fishery Avg.
G 34T	Roe Herring, Gill Net, Bristol Bay	1	<u>5,800</u>	<u>\$900</u>	<u>\$900</u>	Fishery Avg.
H 01M	Herring Food/Bait Purse Seine, Peninsula/Aleutians	3	<u>604,000</u>	<u>\$121,000</u>	<u>\$40,000</u>	Fishery Avg.
<b>Total Herring</b>		<b>43</b>	<b>9,643,000</b>	<b>\$1,517,000</b>	<b>\$35,000</b>	<b>Actual</b>

(Table 9 continued next page)

Source: Alaska Commercial Fisheries Entry Commission

- Some data was confidential. For these gear groups, fishery average harvest and earnings were used. These estimates are denoted as underlined. Totals may not reflect sums of column items because although data for some fisheries was confidential, the totals by species groupings were available except for groundfish, where the sum of CFEC and fishery averages was used.

**Table 9 (continued)**  
**Kodiak Resident Commercial Fishing Permits**  
**Landings and Earnings, 2000<sup>1</sup>**

Permit Code	Fishery	Permits Fished	Pounds	Gross Earnings	Avg. Gross Earnings	Data
S 01A	Salmon Purse Seine Southeast	3	<u>1,211,000</u>	<u>325,000</u>	<u>\$108,000</u>	Fishery Avg.
S 01K	Salmon Purse Seine Kodiak	131	28,871,000	\$9,391,000	\$72,000	Actual
S 01L	Salmon Purse Seine Chignik	11	<u>1,864,000</u>	<u>\$1,403,000</u>	<u>\$128,000</u>	Fishery Avg.
S 02K	Salmon Beach Seine, Kodiak	2	Data not available due to State confidentiality standards			
S 03E	Salmon Drift Gillnet, PWS	4	99,000	\$109,000	\$27,000	Actual
S 03H	Salmon Drift Gillnet, Cook Inlet	6	83,000	\$54,000	\$9,000	Actual
S 03M	Salmon Drift Gillnet, Peninsula/Aleutians	4	374,000	\$311,000	\$78,000	Actual
S 03T	Salmon Drift Gillnet, Bristol Bay	25	1,421,000	\$940,000	\$38,000	Actual
S 04K	Salmon Set Gillnet, Kodiak	94	6,908,000	\$3,595,000	\$38,000	Actual
S 04T	Salmon Set Gillnet, Bristol Bay	11	275,000	\$181,000	\$16,000	Actual
S 04W	Salmon Gillnet, Kuskokwim	1	<u>6,000</u>	<u>\$2,000</u>	<u>\$2,000</u>	Fishery Avg.
<b>Total Salmon</b>		<b>292</b>	<b>41,056,000</b>	<b>\$16,112,000</b>	<b>\$55,000</b>	<b>Actual</b>
O 09B	Octopus/Squit Pot < 60' Vessel	17	85,000	\$31,000	\$2,000	Actual
O 91B	Octopus/Squid Pot > 60' Vessel	<u>3</u>	<u>4,200</u>	<u>\$1,600</u>	<u>\$500</u>	Fishery Avg.
Q 11B	Sea Cucumber Diving	7	40,000	\$57,000	\$8,000	Actual
U 11B	Sea Urchin Diving	3	Data not available due to State confidentiality standards			
W 22B	Scallop Dredge	1	<u>71,000</u>	<u>\$281,000</u>	<u>\$281,000</u>	Fishery Avg.
<b>Total Other Shellfish</b>		<b>31</b>	<b>388,000</b>	<b>\$1,050,000</b>	<b>\$34,000</b>	<b>Actual</b>
<b>TOTAL KODIAK</b>		<b>1,063</b>	<b>220,000,000</b>	<b>\$90,000,000</b>	<b>\$85,000</b>	<b>N/A</b>

Source: Alaska Commercial Fisheries Entry Commission.

1. Some data was confidential. For these gears, fishery average harvest and earnings were used. These estimates are denoted as underlined italics. Totals may not reflect sums of column items because although data for some fisheries was confidential, the totals by species groupings were available except for groundfish, where the sum of CFEC and fishery averages was used.

### 2000 Kodiak Seafood Harvesting Employment and Earnings Estimates

McDowell Group updated the 1999 employment and payroll estimates with 2000 data from CFEC. This is the most recent year of complete data, according to CFEC. These estimates of annual average employment and take-home pay of Kodiak-based skippers and crew are essential because most government reports do not include employment or personal income from seafood harvesting, Kodiak's most important industry. The source for all other employment data, the Alaska Department of Labor, expresses employment in annual average 12-month equivalents. Harvesting employment estimates use this method to be comparable.

Following the methods used in McDowell Group's 1989 *Alaska Seafood Industry Study*, the study team considered the preparation and fishing time and assigned months of participation to each fishery. Typical crew sizes were assumed for various size vessels. Net earnings as a percent of gross fishery earnings were estimated. The effects of the same vessels and crews being used for different fisheries were considered. Finally, the assumption was made that Kodiak vessels were crewed primarily by Kodiak residents. The result was about 946 seafood harvesting jobs and

\$49 million in skipper and crew personal income, comparable to 12-month land-based salaries and wages (Table 10).

Groundfish and salmon fisheries are the leading employers, with groundfish providing 364 annual average jobs and salmon providing 318 jobs. IFQ holders fishing for halibut provide another 158 jobs, with sablefish, crab, herring and other species combining for about 106 jobs.

**Table 10**  
**Kodiak Seafood Harvesting By Fishery**  
**Employment and Earnings Estimates, 2000**

Fishery	Permits Fished	Annual Average Jobs	Gross Earnings (Millions of Dollars)	Estimated Payroll (Millions of Dollars)
Crab	83	32	\$12	\$7
Groundfish	311	364	28	14
Sablefish	42	28	4	2
Halibut	261	158	27	17
Herring	43	34	1	0.6
Salmon	292	318	16	8
Other	31	12	0.4	0.2
<b>Total</b>	<b>1,063</b>	<b>946</b>	<b>\$90</b>	<b>\$49</b>

Source: Permits fished and gross earnings, Commercial Fisheries Entry Commission. Annual employment and estimated payroll are estimates by McDowell Group, Inc., based on standard crew sizes, months of participation in each fishery, and study team estimates of net "take-home pay" by skippers and crew. Sum of column values may not add due to rounding.

## Seafood Processing

Kodiak is a major seafood port, consistently ranking among America's top three seafood ports in terms of ex-vessel value. Kodiak processors processed an average of over 300 million pounds of seafood worth an average ex-vessel value of \$88 million a year between 1997 and 2001 (Tables 11 and 12). Total groundfish volume has declined over the past 4 years due to declining harvests.

**Table 11**  
**Ex-Vessel Landings of Seafood at Kodiak, 1997-2001**  
(Millions of Pounds)

Species	1997	1998	1999	2000	2001	Average
<b>Crab</b>						
Bering Sea Snow Crab	0.1	0.4	0.3	1.5	0.4	0.5
Dungeness Crab	0.6	0.5	0.6	0.3	0.2	0.4
Bristol Bay King Crab	0.4	0.3	0.5	0.9	0.8	0.6
<b>Total Crab</b>	<b>1.1</b>	<b>1.2</b>	<b>1.4</b>	<b>2.7</b>	<b>1.4</b>	<b>1.5</b>
<b>Groundfish</b>						
Pollock	83.3	165.8	130.5	102.2	90.8	114.5
Pacific Cod	73.1	72.0	85.0	64.9	54.7	69.9
Flatfish	19.8	13.7	8.3	14.8	15.1	14.3
Pacific Ocean Perch	4.8	5.4	5.6	9.0	9.0	6.8
Rockfish	3.0	6.3	8.1	9.2	6.5	6.6
Black Rockfish	0.2	0.2	0.1	0.3	0.2	0.2
<b>Total Groundfish</b>	<b>184.2</b>	<b>263.4</b>	<b>237.6</b>	<b>200.4</b>	<b>176.3</b>	<b>212.3</b>
<b>Sablefish</b>	<b>3.9</b>	<b>3.6</b>	<b>3.2</b>	<b>3.4</b>	<b>2.2</b>	<b>3.3</b>
<b>Salmon</b>	<b>57.8</b>	<b>105.6</b>	<b>70.5</b>	<b>61.8</b>	<b>78.8</b>	<b>74.9</b>
<b>Halibut</b>	<b>11.0</b>	<b>9.1</b>	<b>9.9</b>	<b>9.3</b>	<b>8.5</b>	<b>9.6</b>
<b>Other Species</b>						
Herring	8.0	4.9	3.3	2.7	3.1	4.4
Scallops	0.4	0.4	0.3	0.3	NA	0.4
Sea Cucumbers	0.1	0.1	0.2	0.1	0.2	0.1
Octopus	0.2	0.3	0.3	0.2	NA	0.3
<b>Total Other Species</b>	<b>8.7</b>	<b>5.7</b>	<b>4.1</b>	<b>3.3</b>	<b>3.3</b>	<b>5.0</b>
<b>TOTAL ALL SPECIES</b>	<b>267.0</b>	<b>388.6</b>	<b>326.7</b>	<b>281.0</b>	<b>270.5</b>	<b>306.7</b>

(Note: Totals may not reflect exact summation of columns due to rounding)

Source: Alaska Department of Fish and Game and Kodiak Island Borough

Pollock and Pacific cod alone account for about 60 percent of volume and 34 percent of value of seafood processed in Kodiak. The 2001 season marked the third annual decline in groundfish landings to Kodiak processors. Halibut landings to Kodiak processors have also steadily declined as increasing numbers of fishermen land their fish at Homer or Seward, where prices are higher. Salmon value has declined every year since 1998, and preliminary 2002 data indicates a fourth consecutive year of decline. Crab value landed in Kodiak increased annually from 1998 to 2001.

**Table 12**  
**Ex-Vessel Value of Seafood Landings at Kodiak, 1997-2001**  
**(Millions of Dollars)**

Species	1997	1998	1999	2000	2001	5-Year Average
<b>Crab</b>						
Bering Sea Opilio Crab	\$0.5	\$0.1	\$0.2	\$1.3	\$0.6	\$0.5
Dungeness Crab	1.3	0.7	0.9	0.4	0.4	0.7
Bristol Bay King Crab	1.3	1.2	1.7	1.7	3.9	2.0
<b>Total Crab</b>	<b>3.1</b>	<b>2.0</b>	<b>2.8</b>	<b>3.4</b>	<b>4.9</b>	<b>3.2</b>
<b>Groundfish</b>						
Pollock	8.1	11.6	13.1	8.7	12.7	10.8
Pacific Cod	15.5	13.7	25.5	24.0	15.9	18.9
Flatfish	3.5	2.2	1.3	2.7	2.9	2.5
Pacific Ocean Perch	0.2	0.4	0.5	0.7	0.4	0.4
Rockfish	0.4	0.6	0.7	0.6	0.5	0.6
Black Rockfish	0.1	0.1	0.1	0.1	0.1	0.1
<b>Total Groundfish</b>	<b>27.8</b>	<b>28.6</b>	<b>41.2</b>	<b>36.8</b>	<b>32.5</b>	<b>33.4</b>
<b>Sablefish</b>	<b>8.0</b>	<b>5.2</b>	<b>5.7</b>	<b>7.0</b>	<b>6.9</b>	<b>6.6</b>
<b>Salmon</b>	<b>18.8</b>	<b>29.8</b>	<b>31.1</b>	<b>21.5</b>	<b>18.8</b>	<b>24.0</b>
<b>Halibut</b>	<b>21.0</b>	<b>10.0</b>	<b>20.6</b>	<b>23.1</b>	<b>16.2</b>	<b>18.2</b>
<b>Other Species</b>						
Herring	1.3	0.7	0.8	0.7	0.9	0.9
Scallops	2.6	2.6	1.7	1.7	NA	2.2
Sea Cucumbers	0.2	0.2	0.1	0.2	0.3	0.2
Octopus	0.1	0.2	0.1	0.1	NA	0.1
<b>Total Other Species</b>	<b>4.2</b>	<b>3.7</b>	<b>2.7</b>	<b>2.7</b>	<b>1.2</b>	<b>2.9</b>
<b>TOTAL ALL SPECIES</b>	<b>\$82.9</b>	<b>\$79.3</b>	<b>\$103.9</b>	<b>\$94.5</b>	<b>\$80.5</b>	<b>\$88.3</b>

Source: Alaska Department of Fish and Game and Kodiak Island Borough

Groundfish is the mainstay of Kodiak's processing industry, averaging 69 percent of volume and 38 percent of value from 1997 to 2001 (Tables 13 and 14). Salmon is second in both volume (24 percent) and value (27 percent). Halibut accounts for 3 percent of volume and 20 percent of value, with sablefish accounting for 1 percent of volume and 8 percent of value.

**Table 13**  
**Seafood Landings at Kodiak, 1997-2001**  
**Percent of Ex-Vessel Volume by Species**

Species	1997	1998	1999	2000	2001	5-Year Average
Groundfish	69%	68%	73%	71%	65%	69%
Salmon	22	27	22	22	29	24
Halibut	4	2	3	3	3	3
Herring	3	1	1	1	1	1
Sablefish	1	1	1	1	1	1
Crab	<1	<1	<1	1	1	1
Other	<1	<1	<1	<1	<1	<1
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Alaska Department of Fish and Game and Kodiak Island Borough

Even as the volume of groundfish processed in Kodiak has declined in recent years, the general decline in salmon value from 1997 to 2001 has increased the importance of groundfish as a percentage of total value processed.

**Table 14**  
**Seafood Landings at Kodiak, 1997-2001**  
**Percent of Ex-Vessel Value by Species**

Species	1997	1998	1999	2000	2001	5-Year Average
Groundfish	34%	36%	40%	39%	40%	38%
Salmon	23	38	30	23	23	27
Halibut	25	13	20	24	20	20
Herring	2	1	1	1	1	1
Sablefish	10	7	5	7	9	8
Crab	4	3	3	4	6	4
Other	3	4	2	2	<1	2
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Alaska Department of Fish and Game and Kodiak Island Borough

Kodiak's processors rely heavily on groundfish as their largest volume of fish processed. Six processors (4 large and 2 small) who represent most of the processing capacity in Kodiak were interviewed for their relative volume of fish processed. All processors except one depend on groundfish for at least two-thirds of their volume (Table 15).

**Table 15**  
**Volume of Seafood Processed by Kodiak Processors, 2001**  
 (% of Total Annual Volume)

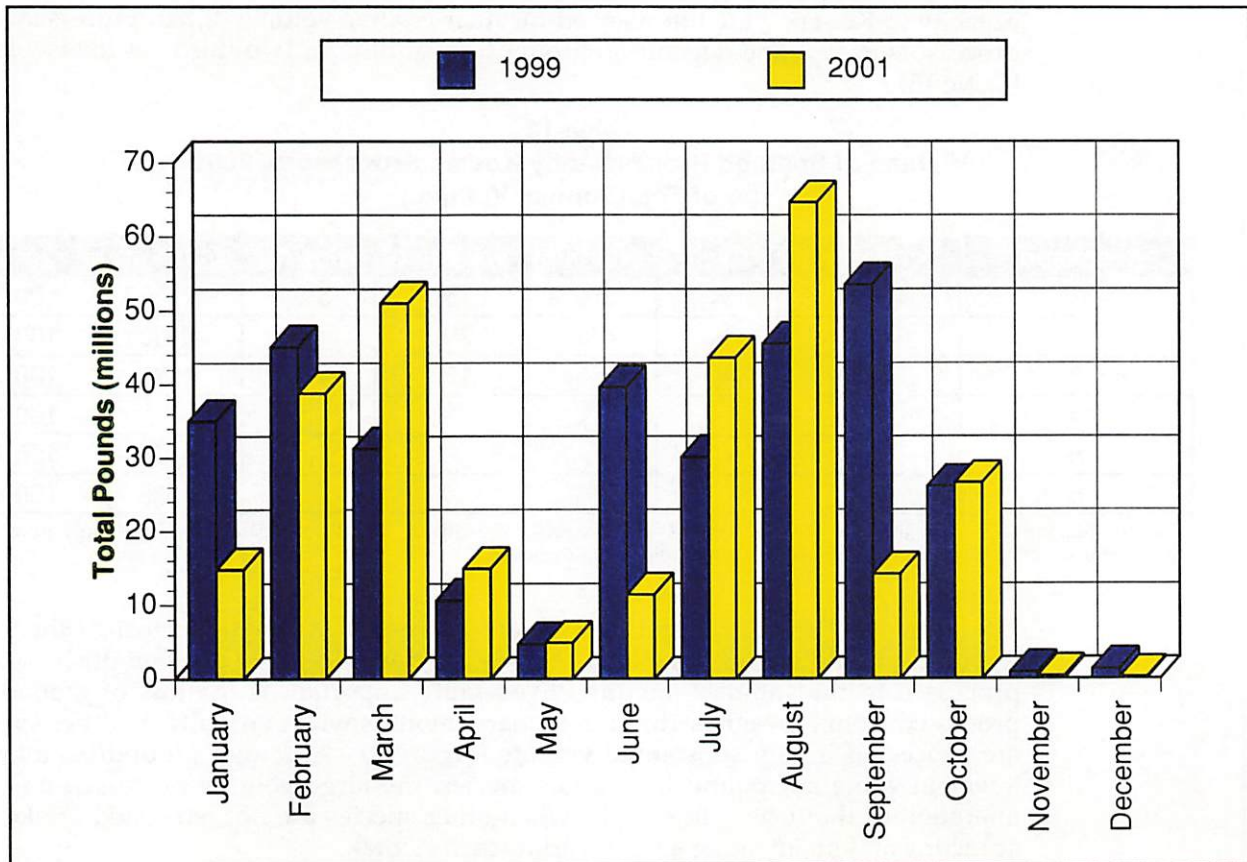
Processor	Groundfish	Crab	Halibut	Sablefish	Herring	Salmon	Total
1	65%	1%	3%	1%	15%	15%	100%
2	70%	1%	4%	2%		23%	100%
3	85%	1%	3%	1%		10%	100%
4	100%						100%
5	88%					12%	100%
6	45%		40%			15%	100%

Source: McDowell Group, Inc. executive interviews with processor executives. Processors 1 through 4 are large processors (employment > 100), and processors 5 and 6 small processors (employment < 50).

Traditionally, Pacific cod and pollock are processed throughout most of the year. Reduced groundfish quotas after 1999 lowered the percentage of groundfish volume processed in the summer months. Even more important is the loss of groundfish processed from November through January, months when virtually no other species are processed in any substantial volume (Figure 3). Although groundfish may be lower in value per pound than other species, the large volume processed and the operation of the fishery in months when other species are not harvested are key to attracting and maintaining a local workforce in Kodiak.

Salmon and herring are processed during May through September. Halibut and sablefish are processed March through November, and rockfish processing peaks in July and August.

**Figure 3**  
**Volume of Seafood Processed in Kodiak, by Month, 1999 and 2001**



Source: Alaska Department of Fish and Game

### Processing Employment

Unlike other areas of the state (Bristol Bay, for example) where processing plants operate seasonally and must import most of their workforce from outside Alaska, Kodiak's year-round processing operations traditionally provide adequate employment and wages to enable most of the processing labor force to live in Kodiak year-round. This, however, may be changing.

A total of 14 shore-based processors operated in the Kodiak Island Borough in 2001. In 2002, three of the 10 largest processors --Global Seafoods, Cook Inlet Processing, and Kodiak Salmon Packers -- closed their plants, as did Kodiak Seafood Processing. Department of Labor (DOL) Statistics show that processing employment increased from 1999 to 2000 and declined in 2001. To assess the impacts of the recent plant closures, the study team examined DOL employment data for the first half (January – June) of 2000, 2001 and 2002, and made estimates of employment for 2002 based on known plant closures (Table 16). Estimated employment for Kodiak shore-based processors will likely dip below 1,000 jobs in 2002.

Interviews with processors indicate that most of their workforce is still based in Kodiak. However, as mentioned earlier, more off-island labor is being used during



peak processing periods because resident processing workers are leaving Kodiak due to lack of work from lower groundfish volume.

**Table 16**  
**Annual Average Employment by Kodiak Shore-based Processors,**  
**1999 to 2001**

Processor	1999	2000	2001	2002
Ocean Beauty Seafoods	337	338	342	206
Trident Seafoods Corporation	100	184	184	188
Cook Inlet Processing (Polar Equipment)	206	228	191	1
North Pacific Processors	218	198	222	182
True World Foods (formerly International Seafoods)	208	147	126	157
Global Seafoods Kodiak LLC	7	137	74	1
Western Alaska Fisheries	137	110	126	133
Alaska Fresh Seafood	36	41	38	40
Kodiak Salmon Packers	21	29	28	1
Kodiak Fishmeal Company	17	16	17	17
Wards Cove Packing Company	3	14	20	9
Island Seafoods	6	9	13	44
Kodiak Seafood Processing	15	4	3	1
Kodiak Smoking & Processing	3	3	6	6
<b>Total</b>	<b>1,314</b>	<b>1,458</b>	<b>1,387</b>	<b>985</b>

Source: Department of Labor and McDowell Group Estimates

## Kodiak Raw Fish Tax Revenue

Alaska's statewide landing and fisheries business taxes apply to seafood landed in each community and borough for processing. A portion of these proceeds is returned by the state to the community and the borough. The taxes received by the Kodiak Island Borough (KIB) in a given fiscal year reflect fisheries revenue from two years prior. For example, the 2002 taxes received by the KIB from the state reflect fisheries taxes collected by the state in 2000.

Payments received in FY 2003 show a sharp decline from FY 2002 payments (Table 17). Payments for FY 2004 are expected to be even lower given the continued decline of groundfish and salmon value during the 2002 fishing season.

**Table 17**  
**Shared Fisheries Tax Received by the Kodiak Island Borough,**  
**FY 1999 - 2002**

Fiscal Year Received by Borough	Fishing Year in which Taxes were Collected	Value of Seafood Landed in Kodiak (millions of dollars)	Landing Tax	Fisheries Business Tax	Total
1999	1997	82.9	13,946	841,131	855,077
2000	1998	79.3	10,247	718,310	728,557
2001	1999	103.9	24,592	923,772	948,364
2002	2000	94.5	5,219	1,282,125	1,287,344
2003	2001	80.5	37,162	759,211	796,393

Source: Dept. of Revenue annual reports on shared taxes.