AGENDA ITEM D-4
SEPTEMBER 1992

MEMORANDUM

TO: Council, SSC, and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: September 17, 1992

SUBJECT: Proposed Eastern Gulf Trawl Closure (Amendment 26a)

ACTION REQUIRED

Receive Rockfish Committee report and consider final action on proposed Amendment.

BACKGROUND

Last June the Council reviewed information contained in the proposed Eastern Gulf trawl closure analysis, prepared by the State of Alaska and LGL Research Associates. The Council deferred action until the September meeting and requested staff to gather additional information relative to gear interactions with benthic habitat and rationales for previous amendments to the Gulf FMP dealing with gear conflicts. The report compiled by agency staff was mailed to you last week. Item D-4 (a) is a copy of a memorandum which outlines the establishment of that Committee, its tasks and the data requested.

The Rockfish Committee met Sunday, September 20 to discuss the new information and possibly develop recommendations for the Council. Staff will be available to answer any questions on the information contained in the report.

In June the Council also requested that work begin on a long-range comprehensive rockfish management strategy for the Gulf. The 3rd and 4th chapters of the rockfish report contain information regarding rockfish stock assessment methodologies which have been used in the past and some possible management options for the future. This issue is scheduled for Council discussion under Agenda Item D-8(a). The Rockfish Committee may provide recommendations to the Council on this issue as well.

North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
Anchorage, Alaska 99501

Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

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MEMORANDUM

COPY

TO: Gulf Rockfish Committee

FROM: Clarence G. Pautzke
Executive Director

DATE: July 15, 1992

SUBJECT: Eastern Gulf Closure and Comprehensive Management Plan

In June the Council postponed the final decision on the proposed Eastern Gulf trawl closure and voted to establish an industry/agency Gulf Rockfish Committee to:

1. Review the proposed trawl closure of the Eastern Gulf of Alaska.

2. Develop a comprehensive rockfish management plan for the entire Gulf of Alaska.

Chairman Lauber has appointed the following industry members to the committee:

Linda Behnken (Committee Chair)	Alaska Longline Fishermen's Association
George Anderson	Fishing Company of Alaska
Dave Benson	Arctic Alaska Fisheries
Vince Curry	American Factory Trawlers Association
Dan Falvey	Alaska Longline Fishermen's Association
Raquel Goñi	Aquatic Resources Conservation Group
Harold Thompson	Sitka Sound Seafoods

Nominations have been solicited from ADF&G and NMFS for the agency side of the committee and I will let you know their names when available.

Your first meeting has been scheduled for Thursday, August 20, in Juneau, and we may continue into Friday. You will be on your own nickel and we need to make every effort to minimize expenses. Therefore, I suggest we begin the meeting at 10 a.m. Flights arrive from Sitka and Seattle by 9:30 a.m. so lodging expenses will be minimized by not having to come in the night before. The meeting will be in the first-floor meeting room at the Travelodge near the airport. If you stay overnight on Thursday night, there are the Baranof (907-586-2660) and the Westmark (800-544-0970) hotels in town, or near the airport, the Travelodge (907-789-9700), and the Best Western Country Lane Inn (907-789-5005).

Eastern Gulf Trawl Closure

Of most immediate concern to the committee is the proposed trawl closure. This was the primary reason for appointing the rockfish committee. Bob Alverson, in making his motion to postpone a decision on Amendment 26, said that the user groups should meet to review all information germane to the closure, discuss the problems with trawling in the Eastern Gulf, and determine if there were any mutually agreeable solutions. The Council needs your recommendations by their September 21-25 meeting when a final decision is scheduled.

Between now and August 20, I am asking ADF&G and NMFS staff to work with my staff in developing the following information for your review:

1. Amendment 10 to the Gulf plan and associated logbook information documenting trawl/longline gear conflicts in the Eastern Gulf, and the impact of foreign trawl effort on longline CPUE.

2. Amendment 1 to the Snapper Grouper plan in the South Atlantic which prohibited trawling in coral areas.

3. Data from the 1990 Eastern Gulf of Alaska Triennial Trawl Survey that may describe the distribution and abundance of coral and other invertebrates in Southeast Outside. Particular attention needs to be paid to rougheye rockfish habitat, and whether research surveys are conducted so differently from commercial operations, that observations of bottom impacts cannot be extrapolated from one to the other.

4. Accuracy of trawl survey estimates of Pacific Ocean Perch and other rockfish species.

5. Logbook data that may show overlap of longline and trawl operations and the impacts of one gear type on another's CPUE.

6. Descriptive information on substrate type and benthic communities derived from logbooks, sea-floor maps, observer reports on bycatch of benthic invertebrates and prohibited species such as salmon.

7. Longline and trawl impacts on coral habitat.

8. Ability of managers to control harvest within TACs and to prevent localized depletion.

9. Smaller areas that might be closed to protect rockfish stocks.

10. Unobserved rockfish mortality in the trawl and longline fisheries.

11. Preliminary assessments of rockfish abundance, population dynamics, and possible rebuilding schedules.

12. Impacts of lost gear on habitat and marine mammal and fish populations.

13. Amendment 14 analysis of gear conflicts and grounds preemption.

The agency team will do their best to garner the above information for your consideration by the August meeting. Then the committee will need to develop their management recommendations for the Council concerning Amendment 26.

Comprehensive Rockfish Management

Less immediate, but of equal importance, is comprehensive management of rockfish throughout the Gulf of Alaska. This is the second major area of emphasis for the committee. To start the ball rolling, I am requesting nominations from ADF&G and NMFS for a core group of 3-5 scientists to initiate development of a comprehensive plan. They will begin work in late July and a status report will be made to the committee on August 20. I would not expect a great amount of detail at that time, but their plan should address at least the following points:

1. Status and trends for each component of the rockfish complex in the Gulf.

2. Appropriateness of current TACs and ABCs and exploitation rates.

3. Rebuilding schedules with emphasis on a 15 year cycle.

4. Rockfish habitat requirements.

5. Gear impacts.

6. Management options.

The group will present a more complete plan of action to the Gulf of Alaska groundfish plan team in early September during the normal team meetings on stock assessment. Members of the SSC also will be asked to comment on the work plan before the September Council meeting. By then we should have a good idea on how much effort and time will be needed to complete development of the comprehensive plan. The Council also may want to take the team's initial findings into account when setting TACs for 1993.

We also need to establish a schedule for the industry committee to meet with the agency group during the fall. I would like to target the January meeting for initial review of the plan and supporting documentation. After public review in March, the Council could take final action in April and forward the amendment to the Secretary of Commerce.

Please review the above approach to address rockfish problems in the Gulf of Alaska and be prepared for a full blown discussion on August 20. Chris Oliver will be the lead contact for this issue on our Council staff.

Final Caveat: The above list of information needs for the Gulf closure is extremely long. If it becomes impossible to provide it, the committee may want to postpone their August 20 meeting until September.

cc Council members

TRAWL ROCKFISH INDUSTRY
PROPOSAL FOR MANAGEMENT OF EASTERN GULF OF ALASKA
ROCKFISH AND HABITAT

The following compromise offered by trawl rockfish fishermen was endorsed by the NPFMC Advisory Panel for Council action.
The NPFMC Rockfish Committee met to consider current options presented within draft Amendment 26 for management of rockfish in the Eastern Gulf of Alaska. It was noted the Magnuson Act provides all U.S. fishermen with the basic right to participate in harvest of National fisheries resources within the EEZ. No single option presented under Amendment 26 addresses all concerns discussed. Some management options were considered unnecessarily severe.

Fishermen from all gear groups agree on the need to preserve fisheries and coral habitat in the Southeast Gulf of Alaska. Fisheries activity by all gear groups occurs within or adjacent to coral habitat in the Southeast. While it is apparent all fishing gear will have some impact on coral since coral removals occur from use of longline, trawl and other gear, no current evidence establishes significant impacts on Southeast Alaska coral habitat caused by any gear group harvesting rockfish in the Southeast. Fishermen feel additional inquiry is warranted and desire an improved understanding of the scope and nature of Southeast Alaska coral habitat. Many fishermen also want a determination of coral habitat sensitivity to continued rockfish fishing activity by trawl, longline, pot, jig or any other form of rockfish fishing activity.

SUGGESTED COMPROMISE ACTION

In an effort to address management issues at hand, and to improve available knowlege of Southeast Alaska habitat within an appropriate time, fishermen have endorsed the following plan:

1. **ABCs and TAC.** Continued conservative management of Southeast rockfish stocks and fishing quotas. For the next 5 years annual TACs should be set at 10% below the ABC for all Southeast rockfish species.

2. **Recommendations for current Eastern Gulf of Alaska rockfish quota management:**

a) Shortraker/rougheye will be designated bycatch only in the Eastern Gulf of Alaska for 1993.

b) POP and other slope rockfish will be managed as a target fishery in the Eastern Gulf. Other slope rockfish in the Eastern Gulf will close when/if bycatch of Demersal shelf rockfish reaches 25 metric tons.

c) 1% bycatch retention limit for Demersal Shelf Rockfish will continue to apply for trawl gear.

3. **Improved Survey Techniques.** Design and implementation of improved rockfish survey techniques to limit the apparent overestimation and underestimation which present surveys produce. Rockfish fishing is a specialized activity and industry input into rockfish survey systems should be considered.

4. **Effort Limitation Program/Initial Industry Development.** Implementation of an industry committee incorporating staff support to design and recommend within one year, an effort limitation program for all rockfish gear groups currently harvesting rockfish in Southeast Alaska. The Council is encouraged to designate and announce a December, 1992 date for cut off for all gear groups of new entrants into Southeast Alaska rockfish fisheries.

5. **Habitat Definition.** Request NMFS to implement a program which will accomplish the following by 19__:

a) Conduct a comprehensive survey to record all coral habitat in the Gulf of Alaska. (Availability of new hydroacustic resources were noted.)

b) Task a scientific team to identify and designate coral and other benthic habitat critical for continuing recruitment of rockfish stocks and maintenance of a generally healthy ecosystem within Southeast Alaska. This team should define isolated areas suitable for future fishing gear impact studies for all gear types harvesting rockfish.

6. **Improve Rockfish Fishery and Coral Impact Data.** Expand the current rockfish fishery data collection system to provide accurate and timely data of all rockfish harvest, bycatch, and discard activity. The expanded data system should cover all gear groups harvesting rockfish in the Southeast. Vessel participation in expanded at-sea observer coverage data collection, check-in/check-out precedures, and logbooks requirements specifically designed to record coral removals should be required as a precondition to rockfish fishing within Southeast Alaska.

7. **Establish an Rockfish Gear Conflict Committee.** A gear conflict committee should be constituted by two representatives from all gear groups harvesting rockfish in Southeast Alaska. The purpose of a Rockfish Industry Gear Conflict Committee is implementation of an efficient communication and cooperation system on the fishing grounds between gear groups. The system should be capable of receiving and arbitrating complaints of gear conflicts. The Committee objective is to minimize actual gear conflicts between gear groups and keep gear dispute resolution within the industry.

Falvey
ALFA

Rockfish Committee

Proposed Alternative

1. Close deepwater Rockfish (i.e. P.O.P. Rougheye/Shortraker, idiot) to directed fishing by all gear types.

2. Designate the area east of 140 degrees West longitude a hook & line zone.

3. Allow an experimental trawl fishery east of 140 degrees West longitude for research purposes.
   The Studies will Examine:

   a) status of rockfish stocks
   b) central rockfish habitat
   c) gear impact

TOTAL P. 4

NO TRAWLERS !

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D-4 SEP 1992

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!! Ban Trawling off Southeast!

	signature	name (print)	address
1	Ken Fanning	KEN FANNING	Box 287 YAKUTAT, AK. 99689
2	Russell W. Wade	Russell W. Wade	P.O. Box 66 Cordova, AK 99574
3	Shawn Glover	SHAWN GLOVER	PO BOX 161 YAKUTAT AK. 99689
4	Barbara E Johnson	Barbara E Johnson	PO Box 97 Yakutat AK
5	Henry L Benson	HENRY L Benson	Gen Del Yak
6	Kenneth J Hansen	Kenneth J Hansen	Po Box 73 Yak AK
7	Mary Jane Bond	Mary Jane Bond	PO Box 263 Yak, AK.
8	Kelly J Strauch	Kelly J. Strauch	P.O. Box 303 Yak. Ak.
9	Joe Nelson	JOE NELSON	Po Box 77 Yak AK
10	Gary Klushkan	Gary Klushkan	P.O. Box 253 Yak Ak
11	Richard L Koroch	Richard L. Koroch	Box 246 Yakutat AK. 99689
12	[illegible] Bremner	[illegible] Bremner	Box 281 yakutat
13	Bruce Hedlund	BRUCE HEDLUND	P.O. Box 335 SEWARD, AK 99664
14	John P. Nolan	John P. Nolan	Box 64 Seward AK
15	Gary Gustafson	Gary Gustafson	Gen Del Seward AK 99664
16	Gary W. Wilson	Gary W. Wilson	P.O. Box 127 Mesa Wa 99343
17	Dave Hinkins	DAVE HINKINS	Box 996 Moses Lake WA 98837
18	Gary H [illegible]	Gary H [illegible]	[illegible] WA 98837
19	Rodney K Rill	Rodney K. Rill	451 Olympia Rd Mesa Wash 99343
20	Jack Druckenmiller	Jack Druckenmiller	PO Box 126 Yakutat AK 99689
21	J.M. Erie	J. M. Erie	P.O. Box 333 Yakutat, AK 99689-0333
22			
23			

TOTAL P. 4

NO TRAWLERS !

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Sitka, AK 99835

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	signature	name (print)	address
1.	Fred Bemis	FRED BEMIS	YAKUTAT P.O Box 33
2.	Byron Jay Malott	Byron Jay Malbott	Yakutat Box 317
3.	Albert W Peterson Jr	Albert W Jr	Yakutat Box 194
4.	Raymond Sensmeier	RAY SENSMEIER	YAKUTAT, AK Box 8
5.	Eric Jensen	Eric Jensen	Yak. AK. Box 4
6.	Gus Bremner	Gus Bremner	Yak AK Bx. 195,
7.	Larry Bemis Jr	LARRY Bemis	YAK AK Box 192
8.	Howard Bremner	HOWARD Bremner	Yak AK Box 195
9.	James I. Jensen Jr	JAMES I. JENSEN JR	Box 292 YAK, AK
10.	Vincent Johnson	Vincent A Johnson	Yakutat AK 99689 99689
11.	William Skeetz	William Skeetz	Yakutat, AK Box 456
12.	Ted Valle Jr.	TED VALLE JR.	Yak AK Box 467
13.	Andreya Valle	ANDREYA VALLE	P.O. Box 87 Yak. AK, 99689
14.	James H Bremner	JAMES H. BREMNER	po Box 53 yak AK 99689
15.	Allen Bremner	ALLEN Bremner	" #286 YAK 99689
16.	Paul J. Trollan	PAUL J. TROLLAN	AHRNKLIN SPIT YAKUTAT AK 99689
17.	Leslie T. Long	LESLIE T. LONG	P.O. 64 yakutat 99689
18.	Greg Valle	Greg Valle	P.O. Box 87 Yak. AK 99689
19.	Leon S. Phillips	Leon S. Phillips	1019 Crawford St Anch. AK 99502
20.	Vernon R Hansen	VERNON R HANSEN	P.O. Box 100 YAK. AK
21.	Alvin H Smith	ALVIN H. SMITH	Box 153, YAKUTAT, AK 99689
22.	John C Bremner	John C Bremner	Yak, Ak 99689
23.	Debbie Lekanof	Debbie Lekanof	Box 300 yakutat, AK 99689

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NO TRAWLERS !

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	signature	name (print)	address
1.	Richard Pelley	RICHARD PELKEY	Box 351 YAKUTAT AK
2.	Deanc Firestack	DEANC FIRESTACK	Box 25 Yakutat AK
3.	Bob Fraker	Bob Fraker	Box 284 yak
4.	Greg Veiteling	Greg Veitenlings	Box 411 YAK
5.	Steve Wells	Steve Wells	Box 118 YAK.
6.	Loretta Eades	LORETTA EADES	Box 228 YAKUTAT
7.	Diana Medley	DIANA Medley	Box 95 Yakutat
8.	Jon Jensen	Jon Jensen	Box 462 " "
9.	Percy S Gurnee	PERCY S GURNEE	Gen 99689
10.	Bob Wright	Gen 99689	
11.	William L Nichols	William L. Nichols	PO 191 Yakutat
12.	David E Metz	David E Metz	P.O. Box 191 "
13.	Debrak Metz	DEBRA K metz	P.O. Box 191 Yakutat
14.	Bill McCutchen	Bill McCutchen	PO Box 313 Yakutat
15.	Ted Mossburg	Ted Mossburg	Box 313 YAK.
16.	Earl Mossburg	Earl Mossburg	1450 Tongass Ketch AK 99901
17.	Roy Hines	Roy HINES	Box 972 WARD Cove 99928
18.	Russell Ansay	Russell Ansay	P.O. Box 102036 Anchorage AK
19.	Neva Ogle	NEVA OGLE	PO Box 97 - YAKUTAT, AK 99689
20.	Ila Mankins	ILA MANKINS	P.O. Box 17 YAKUTAT AK 99689
21.	Kathryn Bulard	Kathryn Bulard	PO Box 344 Yakutat AK 99689
22.	Judy Ross	Judy Ross	P.O. Box 371 YAKUTAT, AK. 99689
23.	Sam Johnson	SAM Johnson	Box-412 YAK YAKUTAT, AK

TOTAL P. 4

NO TRAWLERS !

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Sitka, AK 99835

We support Amendment 26 trawling east of 140 degrees West Longitude must be prohibited!! Ban Trawling off Southeast !

	signature	name (print)	address
1.		Clifford Wilms Jr	GEN-DEL YAK
2.		F.L. RYMAN	Box 347, YAKUTAT, AK
3.		STEVE FORSYTH	Box 102 Yakutat ak 99689
4.		TOM FIRESTACK	6540 Glacier Hwy #27 9980
5.	Ed Merrill		Box 287 Yakutat, AK
6.		Dale A. Wells PO Box 176	Yakutat AK 99689
7.		Paul G. Smith	24002 13th Ave. S. Des moines WA 98198
8.		Nelson Inada	P.O.B. 305 Yakutat, AK 99689
9.		RONALD C BULLER	P.O Box 208 Yakutat AK 99689
10.		George Ramos	PO Box 128 Yakutat Ak
11.		GEORGE A. VALLE III	P.O Box 87 YAKUTAT AK.
12.		NINA HANSEN	P.O. Box 54 Yakutat AK 99689
13.		Shirlie Vale PO Box 442,	YAKUTAT, AK 99689
14.		Norma Moreman Box 194	Yakutat AK 99689
15.		George Henriger Box 12	Yakutat, AK 99689
16.		Box 145	Yakutat AK 99689
17.		Scott Nelson Box 117	Yakutat, AK 99689
18.		STEPHANY C VALE	BOX 82 YAKUTAT 99689
19.		Greg Johnson P.O. Box 108	Box 108 Yakutat 99689
20.		Joseph M Jensen P.O 142	Yakutat AK 99689
21.		DAVID J MILTON JR	YAKUTAT AK 99689
22.		BRUCE L. JENSEN	PO Box 297 YAKUTAT AK 99689
23.		Charlene GEORGE	PO Box 176 YAKUTAT AK 99689

TOTAL P. 4

NO TRAWLERS !

SEND TO ACFA
Box 1229
SITKA AK 99835

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	signature	name (print)	address
1.	Todd F Remme	TODD F. REMME	Box 171 Yakutat
2.	Douglas E Brooks	DOUGLAS E BROOKS	P.O Box 305
3.	Norm Wahlen	Norm Wahlen	709 LAKE St Sitka
4.	L Tejeda	LEO TEJEDA	P.O. Box 283 - YAK AK 99689
5.	Nancy H. Remme	Nancy H. Remme	Box 305 Yak. Ak. 99689
6.	Tami Demmert	TAMI DEMMERT	YAKUTAT, AK.
7.	Chris Hanson	Chris Hanson	Petersburg
8.		PRISCILLA I ANCHETA	P.O. 305 YAKUTAT AK 99689
9.	Susan Briggs	Susan Briggs	BOX 154 Yakutat
10.	Chris Nelson	Chris Nelson	Box 257 Yakutat
11.	Bradley D Bond	Bradley D Bond	Box 382 Yakutat
12.	Rhonda Robbins	RHONDA K. ROBBINS	BOX 69; YAKUTAT
13.	J Michael Sinder	J. Michael Sinder	Box 138 yakutat 99689
14.	Jeanette Hixon	JEANNETTE HIXON	BX 274 Yak. AK. 99689
15.	Olof Tollan	OLOF TOLLAN	BX 373 YAK AK. 99689
16.	Les Holcomb	Les Holcomb	BX 143 YAK. AK. 99689
17.	Mark C. Hawney	Mark C. Hawney	206 Morton Ave. Port Angeles Wa 98362
18.	Julie J Gallagher	Julie J Gallagher	Box 14 YAKUTAT AK 99689
19.	T.J. Gallagher	T.J. Gallagher	BOX 14 YAK. AK. 99689
20.		Steven P Dice	Box 8541 Mssla, MT 59807
21.	James A. Carson	JAMES A. CARSON	2420 JUY ST. PORT TOWNSEND Wa. 98368
22.	Dan Abbe		4320 N.E. 56th St. Seattle WA 98105
23.	Ron Converse	Ron Converse	BOX 172 YAKUTAT, AK 99689

TOTAL P. 4

NO TRAWLERS !

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We support Amendment 26 trawling east of 140 degrees West Longitude must be prohibited!! Ban Trawling off Southeast Ak

	signature	name (print)	address
1	[illegible]	Ingvald Totland	Box 27, Yak AK
2	Dena Hammond	Dena Hammond	Box 187 YAK, AK.
3	[illegible]	Constance A. Klushkan	Box 57 YAK, AK
4	Lila I. Kaesunkf	Lila I. Kaesunkf	331 Yak.
5	Norma Mourn	Norma Mourn	1411 Yak
6	Pandy Hender	Pandy Hensler	Box 86 YAK. AK.
7	[illegible]	Case Mapes	Box 215 YAK. AK.
8	Walter Johnson	Walter Johnson	Box 145 YAK AK
9	Chantil Bremner	Chantil Bremner	P.O. Box 374, Yak. AK 99689
10	Paula Totland	Paula Totland	P.O. Box 27 YAK
11	LaDonna James	LaDonna James	Box 9 "
12	Rusty Hippchen	Rusty Hippchen	Gen. Deliv. Yak
13	Harold Lewis	Harold Lewis	Box 124 Yakutat
14	Betty J Bulker	Betty Bulker	B 208 "
15	Robert B Bulard	Robert B Bulard	B 208
16	Loyd J Brown	Loyd J Brown	Box 951
17	Roger D Williams	Roger Williams	Box 144 Yakutat
18	Gayla Valle	Gayla C. Valle	Box 272 Yakutat
19	[illegible]	R. Clark	Box 22 YAK 99689
20	Louise Haywood	Louise Haywood	PO Box 132 Yakutat AK
21	[illegible]	Craig W. Swanson	Box 211 Yak.
22	[illegible]	Maurice E. Carbis	Box 382 Yak AK
23	Jay B Hensley	Jay B Hensley	Box 148 Yak AK

NO TRAWLERS !

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Box 629
Sitka, AK 99835

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	signature	name (print)	address
1.	James K Nelson	JAMES K NELSON	BOX 103
2.	Jim Russell	JIM RUSSELL	BX 301
3.	Eli Hanlon	ELI HANLON	BX 183
4.	Gary Miller	GARY MILLER	BX 231
5.	Judith Yim	Judith Yim	Box 298
6.	Steven L Volz	STEVEN L. VOLZ	Box 167
7.	Loretta Nelson	Loretta Nelson	Box 125
8.	Rosalise Adams	ROSALISE ADAMS	Box 201
9.	Cynthia Petersen	Cynthia Petersen	Box 602
10.	Tami Demment	TAMI DEMMENT	BOX 56
11.	Rube Evens	———	BOX 56
12.	Tinamarie Valle	Tinamarie Valle	BX44 Yakutat AK 99689
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TOTAL P. 4

NO TRAWLERS !

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Box 1229
SITKA, AK 99835

We support Amendment 26: trawling east of 140 degrees West Longitude must be prohibited!! Ban Trawling off Southeast Ak

	signature	name (print)	address
1.	John Matsko	John M. MATSKO	ANKOW RD-SEA RANCH LANDING Gen Del YAKUTAT
2.	James Ross	JAMES ROSS	PO Box 383 YAKUTAT AK. 99689
3.	~~Tracy Bulard~~	TRACY Bulard	~~PO Box 334~~ YAKUTAT, Alaska 99689
4.	Fred B Henry	Fred B. Henry	Box 165 Yakutat AK 99689
5.	Russell Bogan	Russell Bogan	Yakutat
6.	Bill Eades	Bill EADES	Box 228 YAK AK 99689
7.	James W Howard	James W Howard	Box 89 Yakutat AK 99689
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NO TRAWLERS !

Send To ALFA
Box 229
Sitka, AK 99835

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	signature	name (print)	address
1		Brannon Powell	Box 159 Yak
2	Joan Pond	Joan Pond	Box 345 Yakutat
3	Steve Henry	Steve Henry	po Box 305, YAKUTAT 99689
4	Dennis Henry	Dennis Henry	po Box 165 YAKUTAT
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TOTAL P.04

No TRAWLERS !

Send To ALFA
Box 629
SITKA AK
99835

We support Amendment 26 trawling east of 140 degrees West Longitude must be prohibited!! Ban Trawling off Southeast !

	signature	name (print)	address
1	John W. Moorman	John W. Moorman	P.O. Box 194 Yakutat, AK. 99689
2	Cynthia Johnson	Cynthia Johnson	PO Box 308 Yakutat Yenue Bayview Dr.
3	Huda Macallin	Huda Macallin	9825 35th S.W. Seattle WA, 98106
4	Scott Dree	Scott Dree	2421 Kinney N.W. G.R. Mich. 49504
5	James I. Jensen	James I. Jensen Sr	S/O Mahti Bay Dr PO Box 277 Yakutat AK 99689
6	Vernon P. Schumacher	Vernon P. Schumacher	Northwind Fisheries Vessel Yakutat, AK 99689
7	Daryl K. James	Daryl R. JAMES	P.O.Box 411 Yakutat, AK 99689
8	Gary Gray	Gary Gray	P.O.Box 304 Yakutat AK 99689
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To Bob Younce	From SSS-YAK
Co. Rm 426	Co. Todd Kitmur
Dept.	Phone #
Fax #	Fax #

I GUESS YOU PICKED UP THE REST BOB

Todd

NO TRAWLERS !

Send To ALFA
Box 629
Sitka, AK 99835

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	signature	name (print)	address
1.	John G Williams Jr	John G Williams Jr	Box 98 Yakutat AK 99689
2.	Leslie A. Jones	LESLIE A. JONES	BOX 431 - YAKUTAT, AK. 99689
3.	~~Ernest M. Happy~~	Ernest M. Happy	P.O. Box 34 Yak. Ak. 99689
4.	Janell D Briggs	JANELL D BRIGGS	Box 121 Yakutat, AK 99689
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AQUATIC RESOURCES CONSERVATION

G R O U P

September 22, 1992

104th Plenary Session
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
September 21-27, 1992
Anchorage, Alaska

STATEMENT TO THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL ON

THE FUTURE ROCKFISH MANAGEMENT IN THE GULF OF ALASKA AND PROPOSED EASTERN GULF TRAWL CLOSURE

Aquatic Resources Conservation Group is a non-profit, public-interest, consultative group of professionals dedicated to the use of science, economics, law, and policy to maintain healthy, diverse ecosystems in the face of increasing pressure to exploit their resources.

At this time we wish to speak in favor of a very conservative management of the Gulf of Alaska slope rockfish stocks. This proposal concerns the current state of the stocks and the ABC and OFL specifications, changes needed in the management of small rockfish TACs, and concerns about habitat degradation and its potential implications for the recovery of rockfish stocks.

1. Status of Gulf of Alaska slope rockfish stocks.

Survey biomass estimates of most rockfish species declined substantially in 1990 when compared with 1987 (from 816,448 mt to 372,046 mt, a 54% statistically significant decline). The larger decreases were observed for Pacific ocean perch (POP), shortraker, and harlequin rockfishes (Heifetz & Clausen, 1992).

Although changes of this magnitude in the biomass of slow growing rockfish species is not to be expected in a 3- year

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period, it should be noted that trawl surveys are a questionable tool for estimating rockfish biomass (Heifetz & Clausen, 1992). Although it has been traditionally believed that trawl surveys tend to underestimate rockfish biomass (SSC discussions, NPFMC, September 1992), recent submersible observations show a herding effect of the trawl gear on POP (Krieger, 1991, in review) which would result in overestimation of POP biomass.

Application of the stock synthesis model (Method, 1990) to POP catch data from the foreign and domestic fishery, CPUE from the Japanese fishery, age and length survey data, and trawl biomass estimates from 1984, 1987, and 1990, show inconsistencies between trawl survey biomass values and survey age and length data, as well as CPUEs (Heifetz & Ianelli, 1992). The configuration of the model in which the 1984 and 1987 survey biomass estimates were disregarded provided the best fit to the rest of the data. This indicates that POP biomass may be at very low levels, lower than believed until now.

Stock synthesis biomass projections for 1993 depending on the recruitment values chosen (average of year classes during 1970-1985 or smallest of 1970-1984) ranged between 94,308 mt and 70,780 mt. The most optimistic of the two is substantially lower than the average of the 1987-1990 surveys or the 1990 survey alone (229,139 and 129,734 mt) used in previous assessments.

Not only the biomass is at very low levels, but the population is composed of few age classes with only 12% of the individuals in 1987 older than 15 years (compared to the lightly exploited northern rockfish population where the percentage was 40%) (Heifetz & Clausen, 1992). This is also cause for serious concern.

The incorporation of age composition and other data for POP in the stock synthesis model indicated that use of the mean of the 1987 and 1990 surveys was unfounded. However, for the other species in the slope rockfish group where information is lacking to use this model, the Plan Team chose to recommend ABCs based on the average biomass estimates of the two surveys. Despite the stability of the relative abundance indices for shortraker and ruogheye, given that for these species less information is available (i.e. not age or length composition data) and stock abundance is low or unknown, it appears that a reasonable course of action would be to adopt the most cautious estimate. As remarked by the authors of the POP synthesis model, "placing equal emphasis on inconsistent data points results in taking the average between inconsistent values. The danger here is that the truth may not be the average but one of the extremes" (Heifetz & Ianelli,

1992). Thus, the most recent, lower 1990 biomass estimates should be adopted as a preferable, more protective value.

The context of the GOA Rockfish Comprehensive Management Plan is the acknowledged need of more conservative management for the protection and rebuilding of the depleted rockfish stocks. It is being increasingly recognized that the biological nature of these species appears to preclude their recovery from overfishing while still maintaning a viable and productive fishery (Francis, 1985). Catches of the slope rockfish complex, however, increased from 1,000 mt in 1985 to almost 21,000 mt in 1990, decreasing thereafter.

ABCs for all slope rockfish species should be apportioned by areas in proportion to the biomass distribution encountered in the most recent survey. Given the apparent limited mobility, depressed biomass levels in different areas and uncertain level of exploitation of slope rockfish, setting Gulfwide overfishing levels seems inadequate for these species (NPFMC, 1992b).

In the past, low ABCs for POP and SR/RE in some areas of the Gulf have lead to a Gulfwide pooling of the overfishing limits (Summary SAFE 1993). Problems associated with managing small TACs should be solved by means that do not threaten depletion of localized socks or subunits of the Gulf of Alaska populations. It should be kept in mind that the assumption of single stocks for the slope rockfish species in the Gulf has been adopted due to lack of information on stock composition of the Gulf rockfish.

2. Gulf of Alaska Rockfish Management.

In the GOA during 1991 there were several instances where rockfish catches exceeded the ABCs: Central GOA POP (54%), Gulfwide POP (6%), and central GOA pelagic shelf rockfish (4%) (ABB, 1991). In 1992, the eastern Gulf TAC for POP was exceeded by 4%, while the central Gulf TAC was surpassed by 49% and the ABC by 26%. As a result the POP Gulfwide overfishing level was overrun. Additionally, the eastern Gulf ABC for SR/RE was also exceeded by 12% this year (ABB, 1992).

The inability of current management tools in controlling harvest rates of rockfish fisheries in the Gulf results in insufficiently conservative management of rockfish stocks (NPFMC, 1992b). Large factory trawlers can easily overshoot the TACs of the target species (POP) as well as those taken as

bycatch, such as shortraker and rougheye. Low biomass levels due to the depleted state of many of these stocks together with optimistic expectations about management's ability to control harvest results in TACs, ABCs, and overfishing levels being systematically overrun.

High bycatch of rockfish occurs in unobserved hook and line fisheries for rockfish, sablefish, and halibut, as well as in observed hook and line and trawl fisheries (NPFMC, 1992b), where it is believed to be under-reported (Hartmann, 1992, in review). ARC's estimates of rockfish discards in the GOA based on observer 1990 data show that the level of incidental catches in some cases equals the directed fishery takes. Discard rates are (Hartmann, 1992):

-Slope complex: 17.9% (100% coverage) total: 3,769 mt.
-Pelagic complex.: 16.5% (100% cov.) total 256 mt.
-DSR: 54.1% (25% coverage) total 654 mt.
-All rockfish: 17.9% (5.21% total disc).

Therefore, to improve the management of the Gulf rockfish stocks we believe that some important changes are needed:

- TACs, ABCs, and overfishing levels should be set with buffers between them.
- Bycatch needs should be estimated and taken from the TAC at the beginning of the year.
- Targeting of rockfish species with small TACs should be prohibited.
- Observer information should be used to calculate total catches for in-season management. Observer coverage should be expanded in the hook and line fleet.
- Develop explicit re-building schedules for depleted stocks and consider a zero exploitation rate as a management alternative.

3. Rockfish Habitat Considerations.

A Comprehensive Management Plan for the GOA rockfish stocks must take into consideration the habitat needs of the different rockfish species.

Lack of adequate information, and sometimes contradictory information, hampers our ability to understand rockfish associations with specific types of habitats and to evaluate its importance for the viability and recovery of populations.

Coral and associated macrobenthic invertebrates species appear to provide suitable habitat for juveniles of POP and other

rockfish species (NPFMC, 1992a). Other rockfish associated with coral forests are members of the "demersal shelf" complex. Early literature indicates association of POP with coral habitat (Alverson and Westrheim, 1961 and Lestev, 1961, cited in Major and Shippen, 1970) and the question remains as to whether coral formations used to be prevalent in areas where POP was abundant (Aleutians and GOA) and heavy exploitation decimated both POP and live bottom habitat.

The Southeast Outside (SEO) district of the GOA is characterized by a much narrower shelf than other parts of the GOA and a higher proportion of rocky bottom. The bottom topography limits the available trawlable area and the trawling which occurs appears to concentrate in very small portions of the area (NPFMC, 1992a).

The only study on coral distribution conducted in the GOA concluded that the Eastern Gulf has more diversity and abundance of corals than any other parts of Alaska (Cimberg et al., 1981). The coral species that can be primary constituents of the marine ecosystem in this area are species of Gorgonians, such as *Paragorgia arborea* and *Primnoa willei* (see Appendix to this statement, p.9). The role that these treelike soft corals play in the South-Atlantic marine communities is described by Cairns (1977) as "very important in the ecological balance of the reef ecosystem" and "participating in numerous interactions with other animals, such as serving as a food source for snails and a refuge for fish and shrimp". The estimated rate of growth of *Primnoa* is only 1 cm/year (Cimberg et al., 1981). Since colonies can reach 1.5 meters (Kessler, 198?), reconstruction of lost coral habitat can be expected to take a long time.

Because the predominant fish species taken in the Eastern Gulf by trawl gear are rockfish, part of that trawl effort takes place over rocky substratum where live bottom habitat occurs. There are numerous studies documenting the destructive impacts of trawling on coral habitat (see Appendix to this statement), but none relative to the North Pacific Ocean. These studies contain evidence that it is physically and economically feasible to trawl on hard, rocky/coral habitat and that this in fact occurs in several areas of the world. Effects of trawl impact in the Gulf of Alaska coral formations has not been assessed and evidence of current impacts is very limited (NPFMC, 1992b). Some evidence of impacts of longline gear on coral from the observer program is also available, but studies to assess these impacts do no appear to have been conducted, presumably due to the perceived low impact of this gear. However, concentrated longline effort in complex live bottom habitat also may have detrimental impacts.

We believe that protection of critical benthic habitat should become part of any comprehensive rockfish management plan in the Gulf of Alaska. Closure of the narrow Southeast shelf to trawling and limiting longline effort in critical areas can be expected to facilitate both management and recovery of slope rockfish stocks and the preservation of remaining sensitive habitat in the Eastern Gulf of Alaska.

Studies on rockfish habitat needs and distribution of remainder critical habitat should be research priorities under the plan. Setting up fisheries reserves to "protect critical spawning stock biomass, intra-specific genetic diversity, population age structure, recruitment supply to adjacent areas, and ecosystem balance" as proposed in Alternative 3 of the Supplemental Information document should be given serious consideration in a long term management plan.

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NPFMC, 1992b. Supplemental Information for the proposed Eastern Gulf Trawl Closure and Future Management of Rockfish in the Gulf of Alaska. Anchorage, Alaska, September 9, 1992.

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APPENDIX
September 22, 1992

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NOTES ON TRAWL GEAR IMPACTS ON THE BENTHIC ENVIRONMENT AND CORAL TYPE AND DISTRIBUTION IN RELATION WITH ROCKFISH IN THE GULF OF ALASKA

Aquatic Resources Conservation Group is a non-profit, public-interest, consultative group of professionals dedicated to the use of science, economics, law, and policy to maintain healthy, diverse ecosystems in the face of increasing pressure to exploit their resources.

SUMMARY NOTES OF LITERATURE REVIEW:

CURRENT KNOWLEDGE OF THE EFFECTS OF TRAWL GEAR ON THE BENTHIC ENVIRONMENT

Caddy, J.F. 1973. Underwater observations on tracks of dredges and trawls and some effects of dredging on a scallop ground. *Journal Fisheries Research Board of Canada*, vol. 30, No. 2.

p. 179. *"Even a relatively minor fishery may have a significant cumulative effect on bottom macrotopography under these conditions (slow tidal currents).* In this area (Chaleur Bay) it was possible to distinguish between tracks presumed left by otter trawls and by two types of scallop dredges tested. Both scallop dredges contribute to an appreciable roughening of the bottom, lifting large boulders from the sediment and overturning

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many of them, presumably leading to destruction of the epifauna on their upper surfaces."

Van Dolah, R.F., P.H. Wendt, and N. Nicholson, 1987. Effects of a research trawl on a hard-bottom assemblage of sponges and corals. *Fisheries Research*, 5: 39-54.

Abstract: "Effects of a research trawl on several coral and sponge species assessed in a shallow-water, hard-bottom area off the Atlantic coast. Some damage to individuals of all target species was observed immediately after trawling, but only the density of barrel sponges (Cliona spp.) was significantly reduced. For the other sponge species and hard corals (Oculina varicosa), changes in density were not statistically significant. Twelve months after trawling, the abundance of specimens counted in the trawl quadrats had increased to pre-trawl densities or greater. *Trawl damage detected in this study was less severe than the damage reported for a similar habitat in a previous study. Differences are attributed to: 1) differences in the roller design of the trawls used, and 2) differences in the number of times the same bottom was trawled.*" (note: in this study the trawl was passed over the studied area only once).

de Groot, S.J. 1984. The impact of bottom trawling on the benthic fauna of the North Sea. *Ocean Management*, 9: 177-190.

p. 188. "The effect of the passage of a trawl gear over the sea bed varies greatly with its nature, silt, mud, sand, gravel or rocky.... Under normal working conditions, trawls influence only the top layer of the seabed; penetration will be up to 30 mm on muddy ground and 10mm on sandy ground. In tidal waters the surface of the sea bed is by no means permanent... *A beam trawl with tickler chains catches far more benthos (about 10 times as much) than a ground trawl without ticklers.* On some grounds otter trawls with ticklers catch too much benthos for economic working. *Some groups of animals, e.g. hydrozoans, echinoderms, suffer heavy damage by trawling. It is not unthinkable that there are long-term effects, shifts in macrobenthos composition, in the North Sea.* The trend will presumably be a shift to relative increase in polychaetes and a relative decrease in molluscs and crustaceans, but this will not lead to a food shortage for the fish in the North Sea... Summarizing, *it is a proven fact that bottom trawls influence benthic life negatively.* However, as we accept fisheries as a method to support our food supply and as the damage is relatively small, these negative effects may considered to be acceptable."

Graham, M. 1955. Effect of trawling on animals of the sea bed. ***Papers in Marine Biology and Oceanography,*** **suppl. to vol. 3 of Deep Sea Research, pp. 1-6.**

Summary: "Damage to fish food species trawled over in the main area of the North Sea plaice, cannot be serious; otherwise there would be a noticeable difference where trawling is impossible, as close to light vessels or among the under-water sand-dunes. Trawling, even with a tickler chain, seems again to escape the so viable indictment." (Note: The study was carried out in the "usual clean, sandy ground. frequented by plaice" and the author was not interested in damages to non-food species for plaice).

Rijnsdorp, A.D. 1988. Report of the study group on the effects of bottom trawling. ICES CM 1988/B:56.

p. 20. *"On a commercial beam trawl, the tickler chains from the groundrope may need to be changed about every 6 weeks and the tickler chains from the shoes every 12 weeks indicating the extent of the abrasion by chains in the seabed."*

"The depth to which the shoes of a beam trawl or chains of a beam or otter trawl penetrate into the sediment will depend on the consistency of the sediment and also critically on the relationship between the speed of the tow and the weight of the gear."

p. 22. *"Based on many years of observations (60) German scientists were able to demonstrate long term changes in the marine ecosystem due to trawling: they found a shift in abundance and species composition over the years. The number of individuals per unit area increased. Molluscs and crustaceans decreased in species numbers and diversity since 1920s polychaetes increased.* Hence, a shift from relatively slow growing and reproducing epibenthic species towards rapidly growing and reproducing species (Wadden Sea). Similar changes observed in the English Channel (Holme, 1983) and macrofauna of Dogger Bank."

" An increase in growth rate of flatfish species , specially those feeding in polychaetes (soles), has been observed in areas regularly disturbed by bottom trawls."

" In heavily fished squares (30x30 miles squares) in the Netherlands, every square meter of the seabed is trawled, on average, at least 7 times a year."

Sainsbury, K.J. 1988. The ecological basis of multispecies fisheries and management of a demersal fishery in tropical Australia. *In: Fish Population Dynamics.* J.A. Gulland (ed), John Wiley & Sons Ltd.

p. 364. *"The demersal environment of the Australian Northwest Shelf is known to have altered during this period (since 1960) because the quantity of epibenthic fauna (mostly sponges, alcionarians, and gorgonians) caught in trawls is now considerably lower than it was prior to and during early development of the pair trawl fishery. These studies in the Northwest shelf indicate that the biomass of epifaunal organisms has dropped dramatically with trawling and changed the dominant species of fish caught."*

The author found "a significant reduction in sponge frequency on the Australian northwest shelf between 1967-1973 and 1979. Loss of sponges, together with alcionarians and gorgonians lead to a change in the catch composition of the trawl fishery in the area."

p. 365- Fishes associated with habitats containing large epibenthos, Lethrinus and Lutjanus had decreased significantly. Other fish species which occur mostly over open sand had increased in biomass. *A general decrease in diversity can be predicted as long-lived-slow growing species are removed or killed by human activities*

Hutchings, P. 1990. Review of the effects of trawling on macrobenthic epifaunal communities, *Australian Journal of Marine and Freshwater Research*, 41: 111-120.

p. 116. *"Trawling physically removes or damages much of the macro-epibenthic fauna. Small colonies that may survive a single trawl will not survive repeated trawls."*

"The bycatch in terms of number of species per haul and the average weight of bycatch was significantly greater in 'lightly' trawled areas than in heavily trawled areas."

" Once epifaunal communities are re-established, the subsequent time taken for recovery of the associated fish and crustacean populations is not known."

Van Dolah, R. F., P.H. Wendt, and M.V. Levisen. Effects of shrimp trawling on benthic communities in two South Carolina sounds. *Fisheries Research*, 12: 139-156.

"Two estuarine sounds in South Carolina were studied to evaluate the effects of commercial shrimp trawling on abundance and diversity of benthic infaunal assemblages. *Based on cluster analysis, there were no differences among sites with respect to species composition between the two areas. Penaeus species harvested in the state occur over soft bottoms.* Taxonomic groups

with the greatest number of species in both sounds were polychaetes, amphipods, and molluscs."

"Because previous studies of hard bottom areas have shown that trawling causes damage or loss of epifaunal organisms (Wener, 1983, Van. Dolah et al., 1987) these areas should be avoided by trawlers."

Riesen, W. & K. Reise, 1982. macrobenthos of the subtidal Wadden Sea: Revisited after 55 years. ***Helgolander Meeresuntersuchungen, 35, 409-423.***

Summary and p. 421. "Reefs of the colonial polychaete Sabellaria spinulosa stood on the way of shrimp trawling and became destroyed together with the associated fauna. Local fishermen claim to have ground them with heavy gear because the reefs ripped apart the nets when fishing for shrimp."

Jones, J. B. 1992. Environmental impact of trawling on the seabed: a review. ***New Zealand Journal of Marine and Freshwater Research, vol. 26: 59-67.***

Abstract: "There are few conclusive changes linking trawling to observed environmental changes since it is difficult to isolate the cause. *However, permanent faunal changes brought about by trawling have been recorded. Research has established that the degree of impact depends on the weight of the gear, the towing speed, the nature of the bottom, and the strength of the currents. The greater the frequency of the impact the greater the likelihood of permanent change.* In many cases, firm conclusions about the impacts of trawling cannot be reached because relevant information on the physical effects of trawling was not available, and the impact of other effects such as eutrophication, pollution, and natural fluctuations cannot be estimated."

p. 60. Chong et al. (1987), cited in Jones (1992), assert that the Indonesian government ban on trawling "caused no reduction in total landings and that there was a positive impact on fishing profitability as a result of recovery of overfished stocks, improved value of the catch, and redistribution of benefits towards the local communities."

Conclusions: *"The evidence is that bottom trawling has an impact on the environment, but the extent and duration of the impact varies depending on local conditions.*

Bradstock, M. and D.P. Gordon, 1983. Coral-like bryozoan growths in Tasman Bay and their protection to conserve commercial fish stocks. ***New Zealand Journal of Marine and Freshwater Research,*** **vol. 17: 159-163.**

Introduction: "Trawling off the North Coast of New Zealand's South Island began in 1946, and fishermen observed the association of juveniles of important commercial species with abundant clumps of "coral" . These fish species are the snapper Chrysophrys auratus, the tarakihi Cheilodactylus macropterus, and john dory Zeus faber."

Effects of trawling, p. 162. "Before 1956 fishermen avoided the coralline grounds, as their nets of natural fibers were easily snagged and torn by the bryozoan "coral". One of the grounds was subsequently fished by specially designed nets, floating just clear of the seaflor, because the coral was dominated by the comparatively light and brittle Hippomenella vellicata (coarse foliaceus, honeycombs to 0.3 m across and 0.15 m of bilaminar sheets of zooids)."

"By contrast, the Separation Point coral ground, comprising the mainly heavy Celleporaria agglutinans was not fished until strong, buoyant synthetic netmaking fibers became available after 1960. *Trawl nets were designed expressly for fishing these grounds, using chains, sledges, and rolling bobbins. Along with the sweep wires and otter boards common to all trawl gear these caused extensive destruction of the coralline growths. Their size and extent was progressively reduced until by the late 1970s, they were virtually destroyed.*

With loss of shelter and availability of food organisms there has been a reduction in numbers of juvenile tarakihi and snapper in these important nursery grounds. In December 1980, and area of these grounds was closed to power-fishing methods (trawling, Danish-seining, and dredging) which were likely to continue destroying the coralline growths. Restoration of the habitat is being monitored. *The authors believe that this was the first time that coral (bryozoans) have become protected, in effect to conserve a commercial fishery."*

Saxton, F. 1980. Coral loss could deplete fish stocks. ***Catch,*** **September 1980, p. 12-13.**

p.12. *"On a study on the history of the coral beds in the Tasman bay, fishermen were asked to compare conditions in the past with those prevailing today."*

"The most important finding was that the Separation Point coral bed had been the site of a vast nursery that had disappeared and that there is concern as to the effect that this will have on future stocks of these species."

"The problem of trawling over coral in the Tasman Bay was simply that the trawl net ripped whenever it encountered coral. If the net picked up coral blocks it became heavier and sank hard onto the bottom, increasing the likelihood of damage. These problems were considerable in the years when nets were made of natural fiber and easily torn. *However, even before synthetic material appeared, trawlers had devised techniques which allowed them to trawl over coral.* Some large vessels attached cow hides under the cod end to protect the mesh, while other fishermen used extra floats on the net to keep it above the coral. Another widespread practice was the attachment of a sledge to the center of the groundrope, the sledge slid along the bottom and raised the groundrope up to half a meter. Tickler chains were also dispensed with when trawling on new coral beds. Once the coral became "broken in" a skilled trawlers could use a tickler that traveled well ahead of the groundrope so that any coral thrown up off the bottom by the tickler had time to fall to the sea bed before the groundrope could pass over it... *As the coral is broken in it becomes easier to work, and it is therefore easier for trawlers with less experience to enter the fishery."*

"All the fishermen interviewed stressed that whatever technique used, it was impossible for an otter trawl to fish over coral without causing damage. This was often referred to as "breaking in" a coral bed. The sweeps and bottom bridles usually rub along the bottom for part of their length. Together with the heavy otter boards these will tow long furrows of destruction even if the net itself is floating well clear the bottom."

p. 13. "When the first buoyant synthetic (drummoline) became available in 1964, it became possible to make an ideal "coral trawl"

"In 1976-77, when trawling began in Separation Point nursery area, local fishermen expressed concern at this new practice and there was a lot of local support for legally closing the area. There was the suggestion that fasteners be placed through the area to deter would-be illegal trawling."

Cimberg, R., T. Gerrodette, and K. Muzik. 1981. Habitat requirements and expected distribution of Alaska coral. Office of Marine Pollution Assessment. Final Rep. Res. Unit No. 601, 83 p.

"Recolonization of tropical corals communities requires at least several decades to recover from major perturbation. Considering a predicted growth rate of 1 cm/year for Primnoa, a colony of 1 m would require at least 100 years to return to the pre-impacted state."

Wilson, J.B. 1979. "Patch development of the deep water coral Lophelia pertusa (L.) on Rockall Bank. *J. Mar. Biol. Ass. U.K.*, 59: 165-177.

"Patches of the deep water coral Lophelia would be broken by trawling, providing new settlement substratum and increasing the rate of colonization. He also noted that the coral grows at only 6 mm per year at the depth studied (250-350 m). But because the coral grows at a rate of 6 mm/year only and dies in contact with the substratum, repeated trawling would be expected to eradicate, rather than spread, the coral."

Netherlands Institute for Sea Research, 1990. Effects of beam trawl fishery on the bottom fauna in the North Sea. *BEON Rapport 8.*

p.8. Study of the effects of beam trawl fishery on the seabottom (penetration-depth of the tickler chains) and on the benthic systems (disturbance).

Summary: "The presence of benthic infauna in the catches of the beamtrawl indicated that tickler chains and the ground chain most likely scrapped off successive layers of sediment and reached at least 6 cm into the sediment. It is possible that this happened only in part of the trawled area."

"Threefold trawling on the investigated hard-sandy bottom resulted in a statistically significant decrease in density (40-60%) of starfishes Asterias rubens, small individuals of the heart urchin Echinocardium conchilega, and Spiophanes bombyx. A non-significant decrease in density (10-25%) was observed for small crustaceans, large individuals of bivalves, and the heart urchin. The starfishes are probably dispersed, the other animals killed."

"Direct effects of beamtrawling on the benthic fauna in the investigated area are clearly detectable, indicating the structure of the benthic community in the area studied, which was intensively trawled, already differs from a non-fished area.

ADDITIONAL INFORMATION ON TRAWL IMPACTS: THE SOUTH ATLANTIC AND SOUTEAST ALASKA

Supplemental information for the proposed eastern Gulf trawl closure and future management of the rockfish in the Gulf of Alaska, NPFMC, September 9, 1992.

p.2. **The South Atlantic Fishery Management Council** "prohibited the use of trawl gear to harvest snapper/grouper in the directed fishery "to address problems of habitat damage and growth overfishing". *Under commercial trawling conditions, a live bottom area may be trawled through over and over, and habitat*

damage would be expected to be much greater than that described in the Van Dolah et al., 1987 study. The Council, concluded that there would be a net loss of existing habitat, which is counter to the Council's habitat policy and the Magnuson Act. The Council also concluded *"that the level of damage to the live bottom in the South Atlantic is significant and the available knowledge was not sufficient to risk impacting the long-term abundance of snapper and groupers by reducing their habitat."*

p. 6. **Non-trawl gear impacts.** Regarding impacts on the benthic environment of other gears, NMFS scientists submersible dives off Southeast Alaska indicate that "setline gear often lies slack on the sea-floor and meanders considerably along the bottom. During the retrieval process the line sweeps the bottom for considerable distances before lifting off the bottom. It snags on whatever objects are in its path, including rocks and corals. Hard corals are broken and soft corals appear unaffected by the passing line."

p. 7. **Trawl marks.** "Trawl marks were numerous on hard substratum. Recent marks in soft bottom sites off Yakutat and displaced habitat was evident: boulders and cobble were displaced and flora were knocked down or missing. Some red tree coral was observed on rocky ridges; two broken pieces were observed near trawl door marks. These sites contained sparse population of SR and other rockfish."

CORAL DISTRIBUTION IN THE GULF OF ALASKA

Kessler, D.W. Alaska Saltwater Fishes and Other Sea Life. NMFS, Kodiak Laboratory, NWAFC/NOAA.

Eunepthya fruticosa or sea raspberry: brainlike shape when contracted; size about 10, can expand to considerable sizes when undisturbed. Common north and south of the Alaska Peninsula.

Paragorgia arborea or Kamachatka coral: Treelike colony, branching in several palnes. soft skeleton, easily broken. Height to 40 inches. Brick read, yellow or cream colored. Uncommon north and South of the Alaska Peninsula. Found in deep water along th shelf break.

Callogorgia sp. or golden coral: Treelike colony. Skeleton hard or horny, can be polished and made into jewelry. Golden brown. Height: 24 inches. Uncommon south of the Alaska Peninsula.

Primnoa willeyi or red tree or Alaska coral: Large, treelike colony, branching in several planes. Skeleton hard or horny. Red or orange. Can be polished and made into jewelry. Common south and rare north of the Alaska Peninsula.

Barr, L and N. Barr. 1983. Under the Alaskan Seas. The shallow water marine invertebrates. *Alaska Northwest Publishing Company. Anchorage, Alaska.*

Allopora campyleca: Colonies of about 10 cm. or more. Irregular branching. Soft. Occurs from Aleutian Islands to Southeast Alaska. Not common but abundant in localized of moderate tidal currents. Colonies piked up on longline gear and anchors on rock-rubbled bottoms. Subspecies A.c. paragea.

Group OCTOCOROLARIA: Large branching colonies of sea fans (gorgonians, e.g. PAragorgia arborea). Occasionally abundant). Depending in the species, height ranges from 25 cm and 2 meters. Hard internal skeleton. Alaska specimens not well known.

Balanophylia elegans or cup coral. small size. Calcare skeleton. California to Southeast Alaska.

Others: Sea pens; sea whips: 3species occur in in Alaska. Colonies do not retract. Common in sandy bottoms in Southeast alaska.

Cairns, S. 1977. Guide to the commoner shallow-water gorgonians (sea-whips, sea-feathers, and sea-fans) of Florida, the Gulf of Mexico, and the Caribbean region. *Sea Grant Field Series,* No. 6.

p. 9. "Gorgonians are very important in the ecological balance of the reef ecosystem. The numerous interactions with other animals, including : functioning as a holdfast for hermit crabs, brittlestars and crinoids, a substrate for encrusting fire coral, parasitic copepods, barnacles and symbiotic zooxanthella, a food source for snails, and a refuge for fish and shrimp that mimic the gorgonians in shape and color."

Allan Kohn, Zoology Department, University of Washington. Telephonic conversation July, 1992

Species: *Paragorgia sp. 50-200 mts, Primnoa sp. 300-800 mts.* Form aggregations,no reefs because do not have hard skeleton. Some less common species have calcareous skeleton.

Steve Cairns. Smithsonian Institution, National Museum of Natural History. Telephonic conversation, July 1992.

Soft corals in Alaska: *Gorgoniaceas* get as large as trees and can be primary constituents of habitat or ecosystem. Type of coral easy to get tied up in gear. Genus: Paragorgia. Also Primnoa: soft.

Hard corals: small; 3-4 species in that region, attached to hard substrate; too small to be primary constituent of any habitat/ecosystem.

NPFMC, 1992, p.6.: Submersible dives at depths of 188-365 m. from Yakutat to Dixon Entrance: "Extensive areas of forests of red tree coral (Primnoa) were encountered on six dives; were located on rugged habitat consisting of boulders and bedrock. The coral was abundant and reached heights of approx. 2 m. Hydrocorals and soft corals were also observed.

P.8. **NPFMC, 1992, Coral distribution in the Eastern GOA.**

- Observer and logbook info. "In Southeastern Alaska there was only one single observation of coral (0.047 tn) in 1991. Unidentified invertebrates accounted only for 0.079 mt in 1991 trawl fishery. Gulfwide: 1990 observers reported 206 occurrences of coral (4 in Southeast)." In 1991, 170 occurrences, none in Southeast. Most of these boats (Gulfwide) are 30% coverage and can choose where and when to get monitoring. (Note: It is not clear whether or not observers systematically report coral given that in most cases coral likely comes entangled in the net or as few individual pieces in the bag, unlikely to end up in the observer's basket).

RACEBASE/NMFS: "Not much being recorded because when coral was encountered, the net was damaged and the catch was not enumerated or weighted. Recently enumerated 18 catches: unidentified stony coral; identification is questionable because some soft common corals are hard or stony in appearance (Primnoa) . 7 catches: identified as P. willeyi . Two other coral catches identified as: Eunephtya *sp.*(sea raspberry). 19 catches in vicinity of Dixon entrance, 6 around Cape Ommaney, and the rest close to Alsek Valley." (Note: It should be kept in mind that NMFS surveys are designed to avoid rough habitat where coral could be encountered).

- Expected distribution: **Cimberg et al., 1981:** "Southeast Alaska probably has the largest number of coral species due to the variety of habitats in terms of depth , substratum, temperature and currents. Primnoa or red tree corals (1-800 m) are more abundant in southeast AK than in any other region. Other species of fan corals have been observed as well as bamboo corals, cup corals, soft corals, and hydrocorals. Bamboo corals

(300-3500 m.) exist in rocky, stable substratum and have a low tolerance for sediments. Soft corals (10-800 m) exist on a wide range of substratum. Hydrocorals (700-950m)."

ROCKFISH HABITAT

Major, R.L. and H.H. Shippen, 1970. Synopsis of Biological Data on Pacific Ocean Perch, Sebastes alutus..

p. 5. Distribution: POP are commonly found along the outer continental shelf and on the upper continental slope at depths of 150 to 460 m. The species is common in and along gullies, canyons, and submarine depressions of the upper continental slope. These areas characteristically have a gravel or rocky bottom and frequently contain large boulders. *Typical invertebrate animals taken in the trawl fishery for POP are Alaska coral; varieties of deepwater starfish, and sea urchins (Alverson and Westrheim, 1961).*

p. 24. Fishing: Lestev (1964) reported that Russian fishermen, after extensive testing of several types of trawls in the Bering Sea in 1960, concluded that herring trawls of the Polish or Kaliningrad types were most successful for catching POP. *He found that because S. alutus are so often found over rough, coral bottom, it was necessary to rig the trawls as lightly as possible.*

Supplemental Information on rockfish and the proposed Eastern Gulf trawl closure. NPFMC, 1992.

p. 7. "Adult Pacific ocean perch (POP): encountered over flat, pebble substratum at depths >230 m. All schools of more than 30% were observed over this substratum. Adult POP were associated with a wide variety of habitat, but the more rugged the fewer the number of adult POP. Adults were uncommon in rugged habitats were high quantities of red tree coral *Primnoa* were observed."

Shortraker: "Were observed at depths between 250m-365m (max. depth of submersible). Shortraker rockfish were observed on 3-12 degrees sloping terrain of either silt or pebbles interspersed with boulders. Common on the shelf break containing mixtures of clay, sand, pebble, boulders, and bedrock. Occasional pieces of tree coral were observed on the shelf break."

Small red-rockfish and juvenile POP: "Most small rockfish were associated with habitat ranging from cobble fields to coral forests. They appear to use rugged habitat for protection. Sharpchin rockfish and juvenile POP were the most common rockfish sampled with bottom trawls in rugged areas of boulders and cobble."

Other rockfish: "Other species of solitary large rockfish were observed in a variety of smooth and rugged habitats; often associated with some type of habitat boundary change, such as the edge of a coral forest."

FISHING GEAR IMPACT RESEARCH NEEDS

Netherlands Institute for Sea Research/Netherlands Institute for Fisheries Investigations/North Sea Directorate, 1990.

The results of this study, in line with previous studies, clearly show detectable effects, but can never be translated into long term predictions.

To be able to study long and short-term effects of beamtrawl fishing on the North Sea ecosystem fishing should be banned in a large representative fishing area. In such an are, as well as in normal trawling ground the development of the benthic fauna, commercial and non-commercial fish and sediment characteristics should be studied for at least 10-20 years.

Sainsbury, 1988.

Research needed. p. 117: Research is needed to determine which gear is most efficient, not only in terms of the target species but also in causing the least impact on epifaunal communities.

Rijnsdorp, 1988

Specific recommendations to countries bordering the North Sea:

- That observations be made of the physical disturbance to various types of sea bed caused by bottom trawling gears and in the mechanical performance of these gears.
- To reliably quantify the effects of bottom trawling on benthic communities, up-to-date catch and effort data, particularly in spatial distribution, be collected.
- That a pilot study be conducted to evaluate the practicality of measuring the effects of bottom trawling on benthic communities.

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