

Public Testimony Sign-Up Sheet

Agenda Item D-6 Staff Tasking

	NAME (PLEASE PRINT)	AFFILIATION
1	Dave Benton	MCA
2	Bubba Cook	WWF
3	Stephen Tauten	Lu Dochtermann
4	LORI SWANSON	GROUND FISH FORUM
5	Linda Brehnen	ALFA ALFA
6	Theron Weiser	SCBOA
7	Heather McCarty	CBSEA
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person "to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

MEMORANDUM

TO: Council, SSC and AP Members
FROM: Chris Oliver *Chris*
Executive Director
DATE: May 29, 2007
SUBJECT: Staff Tasking

ESTIMATED TIME
4 HOURS

ACTION REQUIRED

- (a) Review tasking and committees and provide direction.
- (b) Review PSEIS workplan priorities.

BACKGROUND

Committees and Tasking

The list of Council committees is attached as Item D-6(a)(1). Item D-6(a)(2) is the three meeting outlook, and Item D-6(a)(3) and Item D-6(a)(4) respectively are the summary of current projects and tasking. At the last meeting, the Council initiated several new projects (analysis of halibut charter allocation/compensation; analysis of GOA cod sector splits; GOA non-trawl recency; expanded discussion paper on GOA sideboards; analysis of WGOA pollock trip limit; discussion papers on BSAI crab B shares, C share delivery, and legal immunity; a discussion paper on post-delivery transfers of BSAI crab and CGOA rockfish shares; a discussion paper on relaxing VMS requirements for vessels using dinglebar gear; and an independent peer review of the SSL Recovery Plan) to the tasking list. The Council may wish to discuss tasking priorities to address these projects, as well as potential additions discussed at this meeting, given the resources necessary to complete existing priority projects.

In the coming year, we may need to amend our FMPs to be in compliance with rules resulting from Magnuson-Stevens Act revisions (adding required information on economic data collection, establishing annual catch limits, assessment of cumulative effects and safety at sea, etc.). It may be an appropriate time to consider repealing our Salmon FMP, and thus avoid expending substantial staff time to bring the Salmon FMP into compliance. Although the Salmon FMP defers management to the State, and the Council has not been active in managing this fishery since 1990, the FMP still must be in compliance with the MSA requirements. When it was implemented in 1990, the Salmon FMP was necessary to prohibit offshore catch of salmon. However, the MSA currently allows the state to regulate this fishery outside of state waters if there is no FMP. A discussion paper could be prepared to evaluate the pros and cons of repealing the Salmon FMP.

Review groundfish workplan priorities

Consistent with the goals of adaptive management, the Council annually reviews its groundfish management policy. The Council's groundfish policy, including the approach statement and objectives, is attached as Item D-6(b)(1). It was adopted by the Council in 2004 following a comprehensive programmatic review of the fisheries.

The Council has developed a workplan to guide the full implementation of that policy in the management of the fisheries. This workplan was last revised by the Council in February 2007, and is attached Item D-6(b)(2). The Council reviews the status of this workplan at each meeting, and the status update is attached as Item D-6(b)(3).

At this meeting, the Council is scheduled to review the objectives and workplan, and if appropriate, make any changes. It is important to note that while changes to the workplan can be made at any time, changes to the objectives require an FMP amendment.

In February, the Council suggested that they would like to review the requirements of the revised Magnuson-Stevens Act in relation to the workplan. A checklist of FMP changes required by the revised MSA has not yet been prepared, and the Council's required action is somewhat dependent on NMFS national guidance which is not yet finalized. Consequently, these changes will be brought forward to the Council at a subsequent meeting.

Finally, the Council has discussed in the past the possibility of issuing a call for proposals focusing on the groundfish workplan. The Council may wish to take this into consideration at this meeting.

NPFMC Committees & Workgroups
 (revised April 26, 2007)

Council/Board of Fisheries Joint Protocol Committee

Updated: 7/28/03	<u>Council:</u> Dave Benson Doug Hoedel Eric Olson	<u>Board:</u> Mel Morris Art Nelson (Vacant)
Staff: Jane DiCosimo		

Council Coordination Committee

[Designated and renamed by Magnuson Act reauthorization April 2007]

Appointed: 4/05	<u>CFMC:</u> C: Eugenio Pinerio ED: Miguel Rolon	<u>NPFMC:</u> C: Stephanie Madsen ED: Chris Oliver
	<u>GMFMC:</u> C: Robin Riechers ED: Wayne Swingle	<u>PFMC:</u> C: Donald Hansen ED: Don McIsaac
	<u>MAFMC:</u> C: W. Peter Jensen ED: Dan Furlong	<u>SAFMC:</u> C: George J. Geiger ED: Robert Mahood
Staff: Chris Oliver	<u>NEFMC:</u> C: John Pappalardo ED: Paul Howard	<u>WPFMC:</u> C: Frank McCoy ED: Kitty Simonds

Council Executive Committee

Updated: as needed	Chair: Stephanie Madsen Jim Balsiger/Sue Salvesson Denby Lloyd Roy Hyder Jeff Koenings
Staff: Chris Oliver	

Bering Sea Salmon Bycatch Workgroup

Appointed: 3/07	Stephanie Madsen, Co-chair Eric Olson, Co-chair John Gruver Karl Haflinger	Jennifer Hooper Paul Peyton Becca Robbins Gisclair Mike Smith
Staff: Diana Stram		

NPFMC Committees & Workgroups

(revised April 26, 2007)

Crab Committee (NEW)

Appointed 4/25/07	Dave Hambleton	Jake Jacobsen
	Phil Hanson	Rob Rogers
	Chris Heuker	Rick Shelford
Staff: Mark Fina/Chris	Lenny Herzog	Clyde Sterling
Oliver/David Witherell/	John Iani	Mike Woodley

Crab Interim Action Committee

[Required under BSAI Crab FMP]

Jim Balsiger, NMFS Denby Lloyd, ADF&G Jeff Koenings, WDF
--

Ecosystem Committee

Updated: 1/05	Chair: Stephanie Madsen
	Jim Ayers
	Jim Balsiger/Sue Salveson/Jon Kurland
<u>Status</u> : Active	Dave Benton
	Doug DeMaster
	Dave Fluharty
Staff: Chris Oliver/David Witherell/Diana Evans	John Iani

Enforcement Committee

Updated: 7/03	Chair: Roy Hyder
	Lisa Ragone, USCG
	James Cockrell, F&W Protection
<u>Status</u> : Active	Bill Karp, NMFS
	Earl Krygier, ADF&G
	Lisa Lindeman, NOAA - GC
	Jeff Passer, NMFS-Enforcement
Staff: Cathy Coon/Chris Oliver	Sue Salveson, NMFS

NPFMC Committees & Workgroups
(revised April 26, 2007)

Finance Committee

Updated: 9/28/05	Chair: Stephanie Madsen Jim Balsiger/Sue Salvesson Denby Lloyd (ADF&G) Dave Hanson Roy Hyder Jeff Koenings (WDF) Gordon Kruse
<u>Status</u> : Meet as necessary	
Staff: Gail Bendixen/Chris Oliver	

Fur Seal Committee

Updated: 7/25/03	Chair: David Benson Larry Cotter Aquilina Lestenkof Paul MacGregor Anthony Merculief Steve Minor
<u>Status</u> : Active	
Staff: Bill Wilson	

GOA Groundfish Rationalization Community Committee

Appointed: 11/04	Chair: Hazel Nelson Julie Bonney Duncan Fields Chuck McCallum Patrick Norman Joe Sullivan Chuck Totemoff Ernie Weiss
Staff: Nicole Kimball	

Halibut Charter Stakeholder Committee

Appointed: 1/06	Chair: Dave Hanson Seth Bone Robert Candopoulos Ricky Gease John Goodhand Kathy Hansen Kelly Hepler	Dan Hull Joe Kyle Larry McQuarrie Rex Murphy Charles "Chaco" Pearman Greg Sutter
Staff: Jane DiCosimo		

NPFMC Committees & Workgroups

(revised April 26, 2007)

IFQ Implementation Committee

Reconstituted: 7/31/03 Staff: Jane DiCosimo	Chair: Jeff Stephan Bob Alverson Cora Crome Tim Henkel Dennis Hicks	Don Iverson Don Lane Gerry Merrigan Kris Norosz Paul Peyton
--	---	---

Non-Target Species Committee

Updated: 7/06 Appointed: 7/03 Staff: Jane DiCosimo, NPFMC/ Sarah Gaichas, NMFS	Chair: Dave Benson Julie Bonney Ken Goldman Karl Haflinger Simon Kinneen Peggy Murphy	Michelle Ridgway Janet Smoker Paul Spencer Lori Swanson Dave Wood
---	--	---

Observer Advisory Committee

Reconstituted: 1/06 <u>Status</u> : Active Staff: Chris Oliver/ Nicole Kimball	Chair: Joe Kyle Bob Alverson Jerry Bongen Julie Bonney Rocky Caldero Paul MacGregor	Tracey Mayhew Brent Paine Peter Risse Kathy Robinson Susan Robinson Thorn Smith
---	--	--

Pacific Northwest Crab Industry Advisory Committee

Appointed: 2/07 Staff: Diana Stram	Chair: Steve Minor Keith Colburn Lance Farr Phil Hanson Kevin Kaldestad Garry Loncon Gary Painter	Rob Rogers Vic Sheibert Gary Stewart Tom Suryan Arni Thomson, Secretary (non-voting)
---	---	---

NPFMC Committees & Workgroups

(revised April 26, 2007)

Steller Sea Lion Mitigation Committee

Appointed: 2/01 Updated: 1/06 [formerly SSL RPA Committee; renamed February 2002] Staff: Bill Wilson	Chair: Larry Cotter Jerry Bongen Julie Bonney Sam Cotten Ed Dersham John Gauvin John Henderschedt Daniel Hennen	Sue Hills Frank Kelty Terry Leitzell Dave Little Steve MacLean Max Malavansky, Jr Art Nelson
--	--	--

VMS Committee

Appointed: 6/02 <u>Status</u> : Idle, pending direction Staff: Cathy Coon	Chair: Earl Krygier Al Burch Lisa Ragone Guy Holt Bob Mikol	Ed Page Lori Swanson
---	---	-------------------------

DRAFT NPFMC THREE-MEETING OUTLOOK - updated 5/29/07

June 4, 2007 Sitka, Alaska	Aug 1-3 Anchorage	October 1, 2007 Anchorage, Alaska	December 3, 2007 Anchorage, Alaska
<p>SOPPS: <i>Review and action as necessary</i> Draft MMPA LOF for 2008: <i>SSC review</i> SSLMC Report on proposal review: <i>Action as necessary</i> SSL Recovery Plan: <i>Review progress and related ESA discussion paper</i></p> <p>BSAI Crab 'Active Participation': <i>Discussion paper</i> BSAI Crab Custom Processing: <i>Discussion paper</i> BSAI Crab & CGOA Rockfish Post-delivery Transfers: <i>Disc paper</i></p> <p>Charter Halibut Allocation/Compensation: <i>Committee report and action as necessary</i></p> <p>Charter Halibut 2C GHM Measures: <i>Final action</i></p> <p>Halibut Subsistence Rural Definition: <i>Discussion paper</i></p> <p>Observer Program: <i>Cttee Report, Disc paper; action as necessary</i></p> <p>Trawl LLP Recency: <i>Review information to date</i></p> <p>Salmon Bycatch (B-1): <i>Workgroup report/refine alternatives</i></p> <p>GOA arrowtooth MRA: <i>Initial Review</i> CDQ Am. 71/22: <i>Discussion of legal opinion</i></p> <p>CDQ regulation of harvest: <i>Initial Review/Final Action</i> Arctic management: <i>Review discussion paper</i> BS Habitat Conservation: <i>Final Action</i> HAPC Priorities and Timing: <i>Review/Action as necessary</i></p> <p>Research Priorities: <i>Review and Approve</i></p> <p>PSEIS Priorities: <i>Review</i></p> <p>Guidelines for External Review: <i>Review/Approve</i> AI FEP: <i>Review and Approve</i> BSAI Crab Overfishing Definition: <i>Initial Review</i></p>	<p>SSL Recovery Plan Review:</p>	<p>National Bycatch Report: <i>Update</i> Revised NEPA process: <i>Comment</i> Draft MMPA LOF for 2008: <i>Action as necessary (T)</i> SSL Recovery Plan and BiOp Update: <i>Action as necessary</i></p> <p>GOA P cod sector split: <i>Preliminary Review</i> GOA sideboards: <i>Discussion paper; action as necessary</i> GOA fixed gear LLP recency: <i>Discussion Paper, action as necessary</i> WGOA pollock trip limit: <i>Initial Review</i> BSAI Crab data collection quality and confidentiality: <i>Report</i> BSAI Crab 'B' Shares: <i>Discussion paper</i> BSAI Crab 'C' Shares: <i>Initial Review</i> BSAI Crab custom processing: <i>Initial Review (T)</i> Crab Advisory Committee: <i>Report and Action as necessary</i></p> <p>Charter Halibut Allocation/Compensation: <i>Initial Review (T)</i> Charter Halibut Discard Mortality: <i>Discussion paper (T)</i> Charter Halibut Logbook Data: <i>SSC Review</i> Charter Halibut 3A GHM Measures: <i>Initial Review</i> Charter Halibut 2006 Harvests: <i>Status Report</i> Comprehensive Socioecon. Data Collection: <i>Report</i></p> <p>Observer Program Reg. Package: <i>Initial Review (T)</i></p> <p>Trawl LLP Recency: <i>Initial Review (T)</i></p> <p>BSAI Salmon Bycatch (B-1): <i>Initial Review (T)</i></p> <p>GOA arrowtooth MRA: <i>Final action (T)</i></p> <p>CDQ Program: <i>Action as necessary</i></p> <p>Seabird avoidance measures in 4E: <i>Action as necessary</i></p> <p>Other Species: <i>Committee Report (T)</i></p> <p>Groundfish specifications: <i>Initial action</i> BSAI Crab SAFE: <i>Report</i></p> <p>BSAI Crab Overfishing Definition: <i>Final Action</i></p>	<p>SSL BiOp Review: <i>Action as necessary</i></p> <p>GOA P cod sector split: <i>Initial Review</i></p> <p>GOA fixed gear LLP recency: <i>Initial Review (T)</i> WGOA pollock trip limit: <i>Final Action</i></p> <p>Crab 'C' Shares: <i>Final Action</i> BSAI Crab custom processing: <i>Final Action (T)</i></p> <p>Charter Halibut Allocation/Compensation: <i>Final Action (T)</i></p> <p>Charter Halibut Longterm: <i>Committee Report</i> Charter Halibut 3A GHM Measures: <i>Final Action</i></p> <p>Observer Program Reg. Package: <i>Final Action (T)</i></p> <p>Trawl LLP Recency: <i>Final Action (T)</i></p> <p>BSAI Salmon Bycatch (B-1): <i>Final Action (T)</i></p> <p>Groundfish specifications and SAFE Reports: <i>Final Action</i></p>

TAC - Total Allowable Catch
 BSAI - Bering Sea and Aleutian Islands
 IFQ - Individual Fishing Quota
 GHM - Guideline Harvest Level
 HAPC - Habitat Areas of Particular Concern
 LLP - License Limitation Program
 SAFE - Stock Assessment and Fishery Evaluation
 PSC - Prohibited Species Catch

AI - Aleutian Islands
 GOA - Gulf of Alaska
 SSL - Steller Sea Lion
 BOF - Board of Fisheries
 FEP - Fishery Ecosystem Plan
 CDQ - Community Development Quota
 ESA - Endangered Species Act
 (T) Tentatively scheduled

Future Meeting Dates and Locations

June 4 - 12, 2007 in Sitka
 * **August meeting to comment on SSL recovery plan, August 1-3, Anchorage Marriott, Downtown**
 October 1 - 9, 2007 in Anchorage
 December 3 - 11, 2007 in Anchorage
 February 4 - , 2008 in Seattle
 March 31 - , 2008 in Anchorage

Council Project Summary Updated May 24, 2007

Council Projects	Projected Weeks	Council/ NMFS %	Comments
Groundfish Fishery Issues			
GOA Sector Splits	8	70/30	Preliminary review in October (Mark)
GOA Latent Licenses	6	90/10	Discussion paper in October (Mark)
GOA Sideboards	6	90/10	Discussion paper in October (Jon)
IR/IU flatfish trailing amendments (Am 80)	1	80/20	Proposed Rule (Jon/Mark)
Break out other species category into TAC groups	10	60/40	Preliminary analysis in Oct (T) (Jane/NMFS)
Observer Program (fee and deployment mechanism)	0	80/20	Proposed rule published 2/22/07 (Nicole/NMFS)
Observer Program (changes to existing program)	0	80/20	Discussion paper in June (Nicole/NMFS)
BSAI and GOA Dark Rockfish	0	90/10	Being Prepared for Secretarial Review (Diana S./NMFS)
GOA Rockfish Demonstration Program	0	80/20	Post delivery transfers disc paper in June. (Mark/NMFS)
Groundfish overfishing definitions	?	10/90	On hold pending EIS for NS 1 (NMFS HQ)
Trawl LLP Recency	8	90/10	Initial Review in June (Jim/Mark/Elaine/Jeanie/NMFS)
GOA arrowtooth MRA	?	30/70	Initial Review in June (NMFS/Jon).
Pacific cod BS and AI split	8	90/10	Tabled for further discussion in Feb 2008 (Jon/Nicole/NMFS)
Comprehensive economic data collection	?	10/90	Workgroup report in October (NMFS/Mark)
BSAI Sablefish pot fishery regulations	?	70/30	Plan Team Workgroup formed December 2006 (Jane/NMFS)

Halibut Fishery Issues			
Halibut Charter Moratorium	4	90/10	Submitted for Secretarial Review (Jane/Nicole/NMFS/contractor)
Halibut Charter Allocation/Compensated Reallocation	4	90/10	Initial Review in October (Jane/contractor/NMFS)
Halibut Charter Share Based Solutions/Permit Endorsements	4	90/10	Committee Recommendations in Dec 2007 (Jane/contractor)
Halibut Charter 2C GHL Measures	6	90/10	Final Action in June (Jane/contractor/NMFS)
Halibut Charter 3A GHL Measures	6	90/10	Initial Review in October (Jane/contractor/NMFS)
Halibut Subsistence Eligibility	6	90/10	Discussion paper in June (Jane/contractor/NMFS)
IFQ Omnibus 5	0	90/10	Being prepared for Secretarial Review (Jane/Jim/NMFS)
Halibut subsistence III amendment	0	90/10	Being prepared for Secretarial Review (Jane/Jim/NMFS)

Crab Fishery Issues

Crab Overfishing definition revision	4	50/50	Initial review in June (NMFS/ADF&G/Diana S/Jon)
BSAI Crab Custom Processing	?	90/10	Discussion paper in June (Mark/NMFS)
BSAI Crab C-Share 'Active Participation'	?	90/10	Discussion paper in June (Mark/NMFS)
BSAI Crab Post-delivery Transfers	?	80/20	Discussion paper in June (Mark/NMFS)
BSAI Crab Economic Data Reporting	?	30/70	Discuss in October (NMFS/Mark)
BSAI Crab Advisory Committee	?	90/10	discussion papers in June and October (Mark/NMFS)

CDQ Issues

CDQ eligible communities (MSA provision)	0	50/50	Integrated into Am. 71/22 (Nicole)
CDQ: After the fact transfers	2	10/90	Reg. am. being prepared for SOC. (Nicole)
CDQ Cost-Recovery	?	10/90	(NMFS/Nicole)
CDQ Amendment 71/22 (remaining MSA provisions)	?	50/50	Discuss legal opinion and potential alternatives in June (Nicole/NMFS)
CDQ: Regulation of harvest (MSA provision)	4	10/90	Initial/Final action in June (Nicole/NMFS)

Bycatch Issues

Repeal of VIP	0	0/100	Being prepared for Secretarial Review (NMFS)
GOA Salmon and Crab Bycatch Controls	?	80/20	Review data at future meeting (Diana S./Cathy/ADF&G)
BSAI Salmon Bycatch (Package A)	0	80/20	Submitted for Secretarial Review on 3/19 (DianaS/NMFS)
BSAI Salmon Bycatch (Package B)	10	70/30	Workgroup report in June (Diana S./other)
Non-target (other rockfish, other flatfish, o. species) development	?	60/40	Ongoing committee discussions (Jane/NMFS).

Ecosystem Issues

Bering Sea habitat conservation	6	50/50	Final Action in June (NMFS/Cathy/David)
AI Habitat Conservation Area adjustment	2	60/40	Being prepared for Secretarial Review (Cathy/NMFS)
Relax VMS requirement for vessels fishing dinglebar gear	6	20/80	Discussion paper in future (NMFS/Cathy)
Ecosystem-based Management	?	90/10	Alaska Marine Ecosystem Forum established (Diana E)
Aleutian Islands Fishery Ecosystem Plan	2	90/10	Final Action in June (Diana E.)
Arctic Fishery Management Planning	2	90/10	Review draft paper in June (Bill, Diana E/NOAA GC)
ESA Consultation on FMPs	4	80/20	SSL Mitigation Committee reviewing proposals (Bill/NMFS)
SSL Recovery Plan Review	4	50/50	Special Council meeting in August to review plan (Bill/NMFS)
Seabird avoidance measures in 4E	4	50/50	Review draft paper in October (NMFS/Bill)
Seabird interactions	1	20/80	Being prepared for Secretarial Review (NMFS/Bill)

Project timeline and major tasking for council analytical staff. Updated 5/24/07

Analytical Staff	June	July	August	September	October	November	December
Mark Fina, Sr. Economist GOA Sector splits; LLP latency BSAI crab custom processing BSAI crab active participation BSAI crab post delivery transfers BSAI Crab C-shares Miscellaneous Oversight	discussion paper discussion paper discussion paper				Prelim review Initial Review Initial Review		Initial Review Final Action Final Action
Jon McCracken, Economist Crab Overfishing (assist) Arrowtooth MRA Misc. economic assistance	Initial Review (T) Initial Review (T)				Final Action (T) Final Action (T)		
Jim Richardson, Economist GOA Sector splits (assist) Misc. economic assistance Trawl LLP Recency		discussion				Initial Review (T)	Final Action (T)
Jeannie Heltzel, Data Analyst Data Support (all projects) AKFIN Liaison							
Jane DiCosimo, Sr. Plan Coord Other species/non-target Halibut Charter 2C measures Halibut Charter allocation/compensation other Halibut Issues	Final Action discussion papers		Cttee mtg. (T)	PT 9/17-21	Prelim Rev (T) Initial Review (T) Initial Review (T)	PT 11/13-16	Initial Rev (T) Final Action (T) Final Action (T) Cttee report (T)
Diana Stram, Plan Coordinator BSAI Salmon bycatch (Lead) Crab Overfishing Def./Management	discussion paper Initial Review			PT 9/17-21 CPT 9/10-13	Initial Review Final Action (T)	PT 9/17-21	
Bill Wilson, Protect Species Arctic Mgmt issue Marine Mammal Issues Seabird Bycatch FMP Consultation	discussion paper LOF for 2008		SSL Recovery plan review review proposed rule			SSLMC report	
Diana Evans, NEPA Specialist EAM and AI FEP NEPA assistance	Final Action (T)						
Cathy Coon, Fishery Analyst VMS dinglebar exemption Being Sea EFH (lead)	Final Action (T)				Discussion paper		
Nicole Kimball, Fishery Analyst CDQ Projects (lead) Observer Program (lead) Halibut Charter (community) GOA community issues	Initial/Final Action (T) discussion				Discussion paper Initial Review (T)		Final Action (T)

2.2 Management Approach for the BSAI [GOA] Groundfish Fisheries

The Council's policy is to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than reactively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations. The productivity of the North Pacific ecosystem is acknowledged to be among the highest in the world. For the past 25 years, the Council management approach has incorporated forward looking conservation measures that address differing levels of uncertainty. This management approach has in recent years been labeled the precautionary approach. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species. It will carry out this objective by considering reasonable, adaptive management measures, as described in the Magnuson-Stevens Act and in conformance with the National Standards, the Endangered Species Act (ESA), the National Environmental Policy Act, and other applicable law. This management approach takes into account the National Academy of Science's recommendations on Sustainable Fisheries Policy.

As part of its policy, the Council intends to consider and adopt, as appropriate, measures that accelerate the Council's precautionary, adaptive management approach through community-based or rights-based management, ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. All management measures will be based on the best scientific information available. Given this intent, the fishery management goal is to provide sound conservation of the living marine resources; provide socially and economically viable fisheries for the well-being of fishing communities; minimize human-caused threats to protected species; maintain a healthy marine resource habitat; and incorporate ecosystem-based considerations into management decisions.

This management approach recognizes the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision-making.

2.2.1 Management Objectives

Adaptive management requires regular and periodic review. Objectives identified in this policy statement will be reviewed annually by the Council. The Council will also review, modify, eliminate, or consider new issues, as appropriate, to best carry out the goals and objectives of this management policy.

To meet the goals of this overall management approach, the Council and NMFS will use the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004) as a planning document. To help focus consideration of potential management measures, the Council and NMFS will use the following objectives as guideposts, to be re-evaluated, as amendments to the FMP are considered over the life of the PSEIS.

Prevent Overfishing:

1. Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield.
2. Continue to use the 2 million mt optimum yield cap for the BSAI groundfish fisheries. [Continue to use the existing optimum yield cap for the GOA groundfish fisheries.]
3. Provide for adaptive management by continuing to specify optimum yield as a range.
4. Provide for periodic reviews of the adequacy of F_{40} and adopt improvements, as appropriate.
5. Continue to improve the management of species through species categories.

Promote Sustainable Fisheries and Communities:

6. Promote conservation while providing for optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities.
7. Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures.
8. Promote fair and equitable allocation of identified available resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges.
9. Promote increased safety at sea.

Preserve Food Web:

10. Develop indices of ecosystem health as targets for management.
11. Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors.
12. Continue to protect the integrity of the food web through limits on harvest of forage species.
13. Incorporate ecosystem-based considerations into fishery management decisions, as appropriate.

Manage Incidental Catch and Reduce Bycatch and Waste:

14. Continue and improve current incidental catch and bycatch management program.
15. Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
16. Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
17. Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
18. Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.

19. Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species.
20. Control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures.
21. Reduce waste to biologically and socially acceptable levels.

Avoid Impacts to Seabirds and Marine Mammals:

22. Continue to cooperate with U.S. Fish and Wildlife Service (USFWS) to protect ESA-listed species, and if appropriate and practicable, other seabird species.
23. Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
24. Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
25. Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

Reduce and Avoid Impacts to Habitat:

26. Review and evaluate efficacy of existing habitat protection measures for managed species.
27. Identify and designate essential fish habitat and habitat areas of particular concern pursuant to Magnuson-Stevens Act rules, and mitigate fishery impacts as necessary and practicable to continue the sustainability of managed species.
28. Develop a Marine Protected Area policy in coordination with national and state policies.
29. Encourage development of a research program to identify regional baseline habitat information and mapping, subject to funding and staff availability.
30. Develop goals, objectives and criteria to evaluate the efficacy and suitable design of marine protected areas and no-take marine reserves as tools to maintain abundance, diversity, and productivity. Implement marine protected areas if and where appropriate.

Promote Equitable and Efficient Use of Fishery Resources:

31. Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources.
32. Maintain the license limitation program, modified as necessary, and further decrease excess fishing capacity and overcapitalization by eliminating latent licences and extending programs such as community or rights-based management to some or all groundfish fisheries.
33. Provide for adaptive management by periodically evaluating the effectiveness of rationalization programs and the allocation of access rights based on performance.
34. Develop management measures that, when practicable, consider the efficient use of fishery resources taking into account the interest of harvesters, processors, and communities.

Increase Alaska Native Consultation:

35. Continue to incorporate local and traditional knowledge in fishery management.
36. Consider ways to enhance collection of local and traditional knowledge from communities, and incorporate such knowledge in fishery management where appropriate.
37. Increase Alaska Native participation and consultation in fishery management.

Improve Data Quality, Monitoring and Enforcement:

38. Increase the utility of groundfish fishery observer data for the conservation and management of living marine resources.
39. Develop funding mechanisms that achieve equitable costs to the industry for implementation of the North Pacific Groundfish Observer Program.
40. Improve community and regional economic impact costs and benefits through increased data reporting requirements.
41. Increase the quality of monitoring and enforcement data through improved technology.
42. Encourage a coordinated, long-term ecosystem monitoring program to collect baseline information and compile existing information from a variety of ongoing research initiatives, subject to funding and staff availability.
43. Cooperate with research institutions such as the North Pacific Research Board in identifying research needs to address pressing fishery issues.
44. Promote enhanced enforceability.
45. Continue to cooperate and coordinate management and enforcement programs with the Alaska Board of Fish, Alaska Department of Fish and Game, and Alaska Fish and Wildlife Protection, the U.S. Coast Guard, NMFS Enforcement, International Pacific Halibut Commission, Federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.

Groundfish Policy Workplan (revised February, 2008)

1. Prevent Overfishing

- a. continue to develop management strategies that ensure sustainable yields of target species and minimize impacts on populations of incidentally-caught species
- b. evaluate effectiveness of setting ABC levels using Tier 5 and 6 approaches, for rockfish and other species as appropriate
- c. continue to develop a systematic approach to 'lumping' and 'splitting' that takes into account both biologic and management considerations

2. Preserve Food Web

- a. encourage and participate in development of key ecosystem indicators
- b. reconcile procedures to account for uncertainty and ecosystem considerations in establishing harvest limits, for rockfish and other species as appropriate
- c. develop pilot Fishery Ecosystem Plan in the Aleutian Islands

3. Manage Incidental Catch and Reduce Bycatch and Waste

- a. explore incentive-based bycatch reduction programs in GOA and BSAI fisheries
- b. explore mortality rate-based approaches to setting PSC limits in GOA and BSAI fisheries
- c. consider new management strategies to reduce incidental rockfish bycatch and discards
- d. develop statistically rigorous approaches to estimating bycatch in line with national initiatives
- e. encourage research programs to evaluate population estimates for non-target species
- f. develop incentive-based and appropriate biomass-based trigger limits and area closures for BSAI salmon bycatch reduction, as information becomes available
- g. assess impact of management measures on regulatory discards and consider measures to reduce where practicable

4. Reduce and Avoid Impacts to Seabirds and Marine Mammals

- a. continue to participate in development of mitigation measures to protect SSLs through the MSA process, including participation in the FMP-level consultation under the ESA
- b. recommend to NOAA Fisheries and participate in reconsideration of SSL critical habitat
- c. monitor fur seal status and management issues, and convene committee as appropriate
- d. adaptively manage seabird avoidance measures program

5. Reduce and Avoid Impacts to Habitat

- a. evaluate effectiveness of existing closures
- b. consider Bering Sea EFH mitigation measures
- c. consider call for HAPC proposals on 3-year cycle
- d. request NMFS to develop and implement a research design on the effects of trawling in previously untrawled areas

6. Promote Equitable and Efficient Use of Fishery Resources

- a. explore eliminating latent licenses in BSAI and GOA
- b. consider sector allocations in GOA fisheries

7. Increase Alaska Native and Community Consultation

- a. Develop a protocol or strategy for improving the Alaska Native and community consultation process
- b. Develop a method for systematic documentation of Alaska Native and community participation in the development of management actions

8. Improve Data Quality, Monitoring, and Enforcement

- a. expand or modify observer coverage and sampling methods based on scientific data and compliance needs
- b. explore development programs for economic data collection that aggregate data
- c. modify VMS to incorporate new technology and system providers

Groundfish Workplan - priority actions revised in February 2007

General Priority (in no particular order)	Specific priority actions	Related to management objective:	Status (updated 5-24-07)	2007			2008			2009								
				Jun	Oct	Dec	Feb	Apr	Jun	Oct	Dec	Feb	Apr	Jun	Oct	Dec		
Prevent Overfishing	a. continue to develop management strategies that ensure sustainable yields of target species and minimize impacts on populations of incidentally-caught species	5	'other species' breakout analysis for BSAI and GOA initiated	██████████														
	b. evaluate effectiveness of setting ABC levels using Tier 5 and 6 approaches, for rockfish and other species	4	AFSC responding to CIE review of rockfish harvest strategy		██████													
	c. continue to develop a systematic approach to lumping and splitting that takes into account both biological and management considerations	5	on hold pending National Standard 1 guideline revisions															
Preserve Food Web	a. encourage and participate in development of key ecosystem indicators	10	ecosystem SAFE presented annually; AI FEP to identify ecosystem indicators for the Aleutians	████														
	b. Reconcile procedures to account for uncertainty and ecosystem considerations in establishing harvest limits, for rockfish and other species	11	on hold pending National Standard 1 guideline revisions															
	c. develop pilot Fishery Ecosystem Plan for the AI	13	Review in Jun 07	██████														
Manage Incidental Catch and Reduce Bycatch and Waste	a. explore incentive-based bycatch reduction programs in GOA and BSAI fisheries	15	partially addressed by BSAI salmon bycatch analysis	██████████														
	b. explore mortality rate-based approaches to setting PSC limits in GOA and BSAI fisheries	20																
	c. consider new management strategies to reduce incidental rockfish bycatch and discards	17	revised ranking system for species of concern	██████														
	d. develop statistically rigorous approaches to estimating bycatch in line with national initiatives	14, 19	National Bycatch Report update in Oct 07		████													
	e. encourage research programs to evaluate population estimates for non-target species	16																
	f. develop incentive-based and appropriate biomass-based trigger limits and area closures for BSAI salmon bycatch reduction, as information becomes available	14, 15, 20	revise alternatives for regulatory closure areas for Jun 07	██████████														
	g. assess impact of management measures on regulatory discards and consider measures to reduce where practicable	17	partially addressed by GOA arrowtooth MRA analysis	██████														

FROM : Yokohama Trading Sakhalin

PHONE NO. : 7 589 95 1613

MAY. 25 2004 12:35PM P1



TELEPHONES
45-641-7846
45-641-7847

YOKOHAMA TRADING CORPORATION, LTD.

CABLE ADDRESS
"COSMOS" YOKOHAMA

FACSIMILE
045-652-7672

IMPORTERS & EXPORTERS

104 3-CHOME AIOICHO, NAKA-KU
YOKOHAMA, JAPAN

TELEX
03823233 COSMOS J

24.05.04

Ген.Директору
ООО «Торгово-
промышленный союз»
г. ЗОТКИНУ В.И.

Уважаемый Виктор Иванович!

Благодарим Вас за долговременное сотрудничество.
Как Вы знаете мы планируем в 2004 году закупку от заводов ТПС около 500 тонн свежемороженой горбуши и не менее 100 тонн мороженой ястычной икры. Однако, учитывая начало строительства завода СПГ в п. Пригородное и особенно характер дноуглубительных работ в Анивском заливе, убедительно просим Вас для выпуска продукции в наш адрес использовать только сырец выловленный на восточном побережье Сахалина. Надеемся на Ваше понимание в данном вопросе.

С уважением

Представитель фирмы на Сахалине



И.И. ЗОТКИМ Ха Бок

MOSKOW OFFICE
PHONE: (095) 258-60-75
FAX : 258-60-75

VLADIVOSTOK OFFICE
PHONE: (4232) 40-71-09
FAX : 40-71-10

KAMCHATKA OFFICE
PHONE: (41522) 3-17-80
FAX : 3-16-82

SAKHALIN OFFICE
PHONE: (4242) 72-71-14
FAX : 72-74-75
E-mail : yoko_sak@snc.ru

YOKOHAMA TRADING CORPORATION, LTD.

To Gen. Director of
Trading-Industrial Union Ltd.
Mr. Zotkin V.I.

Dear Viktor Ivanovich!

Thank You for long-term cooperation.

As You know in 2004 we are planning to purchase about 500 tn of frozen salmon and not less than 100 tn of frozen salmon caviar produced by Trading-Industrial Union Ltd. plants. However, taking into account the beginning of LNG Plant construction in Prigorodnoye and especially the dredging works in Aniva Bay we kindly ask You to ship to us only the raw fish caught on the eastern shore of Sakhalin island. We hope for your understanding on this matter.

With respect,

Representative of the Company on Sakhalin

_____ Kim Kha Bok

B Cook
WWF
D-6

PRELIMINARY ANNOTATED BIBLIOGRAPHY POTENTIAL IMPACTS OF OFFSHORE OIL AND GAS INDUSTRY ACTIVITY ON FISH RESOURCES, HABITATS, AND FISHERIES

Seismic Exploration

Engås, A. S. Løkkeborg, E. Ona, and A.V. Soldal. 1996. Effects of seismic shooting on local abundance and catch rates of cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*). *Can. J. Fish. Aquat. Sci.* 53:2238-2249.

This study investigated whether seismic exploration affected abundance or catch rates of cod and haddock; acoustic mapping and fishing trials with trawls and longlines were conducted in the central Barents Sea 7 days before, 5 days during, and 5 days after seismic shooting with air guns. Seismic shooting severely affected fish distribution, local abundance, and catch rates in the entire investigation area of 74 X 74 km (40 X 40 nm). Trawl catches of cod and haddock and longline catches of haddock declined on average by about 50% (by mass) after shooting started, which agreed with the acoustic abundance estimates; longline catches of cod were reduced by 21%. Reductions in catch rates were observed 33 km (18 nm) from the seismic shooting area 5.5 X 18.5 km (3 X 10 nm), but the most pronounced reduction occurred within the shooting area, where trawl catches of both species and longline catches of haddock were reduced by about 70% and the longline catches of cod by 45%; a relatively greater reduction was found (in catches and acoustic estimates) for large (>60 cm) than for small fish. Abundance and catch rates did not return to preshooting levels during the 5-day period after seismic shooting ended.

Løkkeborg, S. and A.V. Soldal. 1993. The influence of seismic exploration with airguns on cod (*Gadus morhua*) behaviour and catch rates. *ICES mar. Sci. Symp.*, 196:62-67.

Concern has been expressed by fishermen that sounds generated by acoustic survey devices [seismic airguns] affect commercial fishing. In particular, Norwegian fishermen using long line or trawl have reported significantly reduced catch rates caused by the operations of seismic vessels. This study is based on catch data obtained from long-liners and trawlers fishing in Norwegian waters where seismic survey operations were being conducted. Catch rates of cod obtained within and at various distances from a seismic survey area were compared. The duration of the effect of seismic operations was also investigated. Catch reductions of 55-80% were observed for long lines set within a seismic survey area, and the by-catch of cod in shrimp trawl was reduced by about 80-85%. The by-catch of cod in the trawl fishery for saithe, however, was observed to increase threefold and to return to normal immediately after the seismic work ended. The predominant frequencies of airgun sound spectra match the most sensitive auditory band of cod. The reductions in catch rates are undoubtedly due to behavioral responses of cod to airgun sound. The fish probably avoided the approaching geophysical vessel by swimming away from the sound source, and the amount of fish available to any fishing gear used in this area was thereby reduced. Results from the trawl fishery for saithe were explained by the short duration of sound emissions during this particular seismic survey.

McCauley, R.D., J. Fewtrell, and A.N. Popper. 2003. High intensity anthropogenic sound damages fish ears. *J. Acoust. Soc. Am.* 113:638-642.

Research on the impact of anthropogenic sounds on non-mammalian species, and particularly fishes, has been extremely limited. Offshore oil and gas exploration involves the repetitive use of high-energy noise sources, air guns, that produce a short, sharp, low-frequency sound. A typical seismic survey may involve many hundred thousand signals spread over several weeks. This study shows that the ears of fish (pink snapper, *Pagrus auratus*) exposed to an operating air gun that was moved toward and away from the animals sustained extensive damage to their sensory epithelia that was apparent as ablated hair cells. The sensory hair cells of fish ears are similar to those of other vertebrates. The damage was regionally severe, with no evidence of repair or replacement of damaged

sensory cells up to 58 days after air gun exposure. The damage in the ears of the pink snapper suggest that regeneration, even if it occurred over 58 days, did not counteract the loss of cells resulting from sonic insult. Either damage continued to accrue well after insult, regeneration was slowed or ceased, or significant regeneration did not occur until beyond the 58 day sample period.

Popper, A.N. 2003. Effects of anthropogenic sounds on fishes. *Fisheries* 28:24-31.

There is increasing concern regarding the effect of human-generated (anthropogenic) sounds on marine organisms. While most concern is focused on marine mammals, many of the lower frequency (under 1,000 Hz) sounds are also likely to affect fish. Fishes are of particular concern since many species use sounds to find prey, to avoid predators, and for social interactions. Sounds may affect behavior and/or physiology, although very little is specifically known about how sounds affect fish. Moreover, the sensory receptors used by fishes to detect sounds are very similar to those of marine (and terrestrial) mammals, and, as a consequence, sounds that damage or in other ways affect marine mammals could have similar consequences for fishes. Limited data suggest that short- or long-term exposure to loud sounds (e.g., air guns used for seismic exploration) may alter behavior, and also result in temporary or permanent loss of hearing. Behavioral responses to loud noises may include the fish swimming away from the sound source, thereby decreasing the potential effect of the sound, or the animal 'freezing' and staying in place, thereby leaving the fish open to considerable damage. Alternatively, responses to sound could affect behavior more extensively and result in the fish leaving a feeding ground or an area in which it would normally reproduce or in some other way affect long-term behavior and subsequent survival and reproduction. Changes may be insignificant, but there may also be a more permanent long-term effect if feeding or reproduction is impeded. Another behavioral effect might occur if the increased ambient noise prevented fish from hearing biologically relevant sounds (i.e., masking). Exposure to loud sounds might permanently deafen fish and decrease their survival chances. There is evidence that fishes are able to regenerate sensory hair cells in the ear at least after exposure to certain ototoxic drugs. However, there is yet no evidence as to whether fishes will regenerate sensor hair cells after noise damage.

Construction and Presence of Production Facilities and Infrastructure (noise, habitat disturbances and modifications)

Love, M.S., J.E. Caselle, and L. Snook. 2000. Fish assemblages around seven oil platforms in the Santa Barbara Channel area. *Fish. Bull.* 98:96-117.

Offshore oil platforms provide considerable habitat for marine organisms; sessile invertebrates (primarily mussels, barnacles, and anemones) encrust pilings and well pipes and cover the bottom to form additional habitat. This study surveyed the fishes living on and around several platforms in the Santa Barbara Channel area. The bottom depths of these platforms ranged from 49 – 224 m and midwater beams ranged from 21 – 196 m. Scientists found that there were several distinct differences in the fish assemblages living in the midwater and bottom habitats around all the platforms. Both midwater and bottom assemblages were dominated by rockfishes. Platform midwaters were dominated by young of the year or juveniles up to two years old. Fish assemblages around the bottoms of the platforms were dominated by larger individuals, primarily subadults or adults. There was a consistently greater number of species on the bottom than in the midwater around each platform. The bottom of the platforms provided a larger variety of habitat types than did the midwater. Bottoms are often largely composed of shell mounds that have fallen from the upper parts of the platforms. These mounds, in combination with the wells, crossbeams, and pilings provide a greater degree of habitat complexity and thus, may allow a greater number of species to coexist. Fishing pressure is intense over most of the natural reefs in southern California and platforms may act as refuges for rockfishes and lingcod. Surveys of fish assemblages of 61 natural reefs off southern and central California shows that one oil platform has by far the highest density of adult bocaccio of all of these sites. Fishing by recreational or commercial vessels near platforms is generally discouraged by platform operators. Because larger fishes tend to live close to or inside the platforms, they are difficult to catch because the habitat close to or inside the platforms eludes most fishing gear. Differences observed in fish assemblages among and within platforms suggest that each platform may have unique characteristics. Data derived from this study support the dual hypotheses that artificial structures (such as offshore oil platforms) (1) aggregate marine species and (2) enhance production of marine species.

Love, M.S., D.M. Schroeder, W. Lenarz, A. MacCall, A.S. Bull, and L. Thorsteinson. 2006. Potential use of offshore marine structures in rebuilding an overfished rockfish species, bocaccio (*Sebastes paucispinis*). *Fish. Bull.* 104:383-390.

Beginning in 1995, annual surveys of fish assemblages at oil and gas platforms and natural reefs throughout southern California were conducted. Many California oil and gas platforms harbor three fish assemblages: those that occupy the shell mound area surrounding the base of the platform; those that occupy the waters adjacent to the platform bottom, and those that occupy the midwater. Rockfishes of about 35 species, dominate these assemblages. This study focuses on the role that some California oil and gas platforms play as rockfish nursery habitat. Young of the year (YOY) bocaccio were observed at seven of the eight platforms surveyed. The authors estimated that there was a minimum of 433,682 YOY bocaccio at the seven platforms, constituting about 20% of the average yearly value, and 40% of the median value for the entire range of the species. Based on the model used, the authors estimated that these young fish will eventually contribute slightly less (0.8%) than one percent of the additional amount of fish needed to rebuild the Pacific Coast stock. By comparison with most of the platforms surveyed, there was low or no YOY bocaccio recruitment to natural reefs in southern and parts of central California during 2003. The authors suggest that the California platforms may act as juvenile (particularly YOY) fish refuges, with midwaters of platforms affording spatial refuges. Moreover, the authors suggest the likelihood that many of the YOY bocaccio observed at platforms will either emigrate and seed natural reefs or will reside at the platforms and reproduce.

Spills

Heintz, R.A., S.D. Rice, A.C. Wertheimer, R.F. Bradshaw, F.P. Thrower, J.E. Joyce, and J.W. Short. 2000. Delayed effects on growth and marine survival of pink salmon *Oncorhynchus gorbuscha* after exposure to crude oil during embryonic development. *MEPS* 208:205-216.

Delayed impacts on subsurface aquatic populations from oil spills that influence population recruitment may represent a significant but hidden component to the overall toxicity of a spill by limiting the productivity of affected populations. This study examined the delayed effects on growth and marine survival of pink salmon which were exposed to oil as embryos under conditions similar to those observed after the Exxon Valdez oil spill. Pink salmon exposed to an initial concentration of total polynuclear aromatic hydrocarbons (PAHs) equal to 5.4 ppb experienced a 15% decrease in marine survival compared to unexposed salmon. A delayed effect on growth was measured in juvenile salmon that survived embryonic exposure to doses as low as 18 ppb PAH. Reductions in juvenile growth could account for the reduced marine survival observed in the released fish. Slower-growing pink salmon are likely to be more vulnerable to predation because their small size makes them susceptible to a greater number of predators, and less able to evade attacking predators. The delayed effects resulting from embryonic exposure to PAHs reported here indicate that mortality levels reported for salmon streams contaminated by the Exxon Valdez underestimated the total mortality induced by exposure. When oil contaminates natal habitats, the immediate effects in one generation may combine with delayed effects in another to increase the overall impact on the population. Fish populations whose natal habitats are contaminated with PAHs at low ppb levels can be expected to experience the compound effects of mortality during exposure, reduced survivorship afterwards, and reduced reproductive output at maturity. The broad overlap between fish nursery habitats and sites with elevated PAH loads is therefore a cause of concern.

Mignucci-Giannoni, A.A. 1999. Assessment and rehabilitation of wildlife affected by an oil spill in Puerto Rico. *Environmental Pollution* 104: 323-333.

In January 1994, the barge *Morris J. Berman* spilled approximately 3.6 million liters of oil of San Juan, Puerto Rico. The discharge of fuel oil from the barge resulted in contamination of extensive natural resource areas along more than 48 km of coastline. Thousands of dead and live oiled organisms washed ashore. A minimum of 5687 organisms washed ashore or were found dead from intoxication or suffocation as the oil spill covered organisms in the rocky intertidal and sandy intertidal shores. Organisms were opportunistically collected comprising over 152 species, including cnidarians, annelids, crustaceans, mollusks, echinoderms, fishes, birds, and sea turtles. Molluscs and

echinoderms were noticeably more affected than other species. Within phyla, some species were more affected than others. In the Crustacea, the sally lightfoot crab (an intertidal species) was noticeably the most affected by the oil. Of the Mollusca, periwinkles and chitons were most affected. Rock boring urchins (Echinodermata) were the most impacted species of all species.

Peterson, C.H., S.D. Rice, J.W. Short, D. Esler, J.L. Bodkin, B.E. Ballachey, and D.B. Irons. 2003. Long-term ecosystem response to the *Exxon Valdez* oil spill. *Science* 302:2082-2086.

The ecosystem response to the 1989 spill of oil from the Exxon Valdez into Prince William Sound, Alaska, shows that current practices for assessing ecological risks of oil in the oceans and, by extension, other toxic sources should be changed. Previously, it was assumed that impacts to populations derive almost exclusively from acute mortality. Years of study in the Alaskan coastal ecosystem provide new understanding of long-term biological impacts and recovery processes by marine mammals, seabirds, and large fishes relative to the unexpected persistence of toxic subsurface oil and chronic exposures. Delayed population reductions and cascades of indirect effects postponed recovery. Three major pathways of induction of long-term impacts emerge: (i) chronic persistence of oil, biological exposures, and population impacts to species closely associated with shallow sediments; (ii) delayed population impacts of sublethal doses compromising health, growth, and reproduction; and (iii) indirect effects of trophic and interaction cascades, all of which transmit impacts well beyond the acute-phase mortality. Development of ecosystem-based toxicology is required to understand and ultimately predict chronic, delayed, and indirect long-term risks and impacts.

Chronic exposures for years after the spill to oil persisting in sedimentary refuges were evident from biomarkers in fish intimately associated with sediments for egg laying or foraging. These chronic exposures enhanced mortality for years. After the spill, fish embryos and larvae were chronically exposed to partially weathered oil in dispersed forms that accelerate dissolution of 3-, 4-, and 5-ringed hydrocarbons largely missing from the traditional laboratory toxicity assays. Laboratory experiments showed that these multiringed polycyclic aromatic hydrocarbons (PAHs) from partially weathered oil at concentrations as low as 1 ppb are toxic to pink salmon eggs exposed for the months of development and to herring eggs exposed for 16 days. This process explains the elevated mortality of incubated pink salmon eggs in oiled rearing streams for at least 4 years after the oil spill. Oil exposure resulted in lower growth rates of salmon fry in 1989, which in pink salmon reduce survivorship indirectly through size-dependent predation during the marine phase of their life history. After chronic exposures to embryos in the laboratory to <20 ppb total PAHs, which stunted their growth, the subsequently marked and released pink salmon fry survived the next 1.5 years at sea at only half the rate of control fish. In addition, controlled laboratory studies showed reproductive impairment from sublethal exposure through reducing embryo survivorship in eggs of returning adult pink salmon that had previously been exposed in 1993 to weathered oil as embryos and fry. Abnormal development occurred in herring and salmon after exposure to the *Exxon Valdez* oil. Sediments in protected areas, including oiled mussel beds and shallow eelgrass habitats, also retained contamination, with recovery to background in oiled mussel beds estimated from repeated sampling to require up to 30 years.

Wertheimer, A.C., R.A. Heintz, J.F. Thedinga, J.M. Maselko, and S.D. Rice. 2000. Straying of adult pink salmon from their natal stream following embryonic exposure to weathered *Exxon Valdez* crude oil. *Trans. Amer. Fisheries Soc.* 129:989-1004.

Induced straying of pink salmon was a major concern following the *Exxon Valdez* oil spill; as extraordinary rates of straying were observed in Prince William Sound. Pink salmon are often considered to be more prone to straying than are other species of salmon, based primarily on their rapid colonization of prior or new habitats. The objectives of this study were to determine the effect of oil exposure during simulated intertidal incubations of pink salmon embryos on the straying behavior of these fish as adults returning to spawn. While straying was measured in this study, the authors conclude that the experimental results do not support the hypothesis that oil exposure of embryos was responsible for the high rates of straying observed in Prince William Sound. No treatment effects could be conclusively identified at the exposure levels shown to reduce survival. Differences of straying observed in the study area (southeastern Alaska) relative to Prince William Sound are more likely to be the result of factors such as stream type, stability, and population size than the result of effects of the *Exxon Valdez* oil spill.

Economic Value of Bristol Bay and Southeastern Bering Sea Fisheries

February 2007

B Cook
WWF
D-6

Sustainable fisheries resources potentially affected by offshore oil and gas drilling in the North Aleutian Basin Planning Area are worth more than \$2 billion dollars annually

The economic figures for the fisheries provided below are intended to give an approximate assessment of the value of the fisheries that could be affected by oil and gas leasing and development in the portion of the North Aleutian Basin Planning Area currently targeted for leasing. These fisheries were determined to be potentially affected by the impacts of proposed oil and gas development based on two criteria: 1.) the fisheries take place within or surrounding the proposed lease sale area (Sale 92 area) and/or 2.) the species that are fished utilize habitat within or surrounding the area proposed for leasing.

The impacts of oil and gas development would extend beyond the proposed 5.6 million acre lease sale area. Offshore seismic surveys, infrastructure construction and emplacement, vessel traffic, the discharge of drilling muds and cuttings, as well as chemical or oil spills could affect fisheries that occur inside and outside the lease sale area. Oil and gas activities have the potential to cause displacement from fishing grounds, degradation of fish habitat, as well as lethal and sublethal impacts to fish and their prey. Even the perception of a reduction in the quality of product harvested in the region could drive down prices on the world market.

Values after processing were only available for the federal groundfish fisheries. In all other fisheries the ex vessel values, or value before processing, are given below. Thus, the total value for these fisheries actually exceeds the numbers presented below, as value after processing is higher than the price paid to fishermen at the dock.

Federally-Managed Bering Sea/Aleutian Islands (BSAI) Groundfish

2005 Value after Processing (includes pollock, Pacific cod, and flatfish)¹: \$1.7 billion

Pacific Halibut 2005 Ex vessel value²: \$170 million

Salmon Ex vessel 2006 values³:

- Alaska Peninsula/Aleutian Islands Salmon \$17 million
- Bristol Bay Salmon (includes sockeye and other species) \$94 million
- Kuskokwim Salmon \$1 million
- Yukon Salmon \$3.6 million

Total Salmon: \$115.6 million

Shellfish 2006 Ex Vessel Values⁴:

- Red King Crab 2006 ex vessel value: \$78 million
- Tanner Crab 2006 ex vessel value: \$1.2 million

Total Shellfish: \$79.2 million

State-Managed Groundfish 2005 Ex Vessel Values⁵:

- Bering Sea/Aleutian Islands \$413,000
- Alaska Peninsula \$3 million

Total State-Managed Groundfish: \$3.4 million

Bristol Bay (Togiak) Herring Sac Roe 2006 Ex Vessel Values⁶:

- Seine \$1.7 million
- Gillnet \$ 890,000

Total Herring: \$2.6 million

Overall Total Value: more than \$2.07 billion



Prepared by Kelly Harrell of the Alaska Marine Conservation Council,
(907) 277-5357, kelly@akmarine.org

¹ North Pacific Fisheries Management Council (2006) Stock Assessment and Fishery Evaluation (SAFE) Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Islands Area: Economic Status of the Groundfish Fisheries Off Alaska, 2005. Accessed January 15, 2007 at: <http://www.afsc.noaa.gov/refm/docs/2006/economic.pdf> .

² *Ibid.*

³ Alaska Department of Fish and Game, 2006 Alaska Commercial Salmon Harvest and Ex Vessel Values Accessed December 7, 2006 at:

<http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/blusheet/06exvesl.php> .

⁴ Alaska Department of Fish and Game, 2006 Preliminary Alaska Commercial Shellfish Catches and Ex Vessel Values. Accessed January 22, 2007 at:

<http://www.cf.adfg.state.ak.us/geninfo/shellfish/06value.php> .

⁵ Alaska Department of Fish and Game, 2005 Alaska Commercial Groundfish Harvests and Value (State-Managed). Accessed December 7, 2006 at:

<http://www.cf.adfg.state.ak.us/geninfo/finfish/grndfish/catchval/05grndf.php> .

⁶ Alaska Department of Fish and Game, 2006 Alaska Commercial Herring Sac Roe Harvests and Ex Vessel Values. Accessed December 7, 2006 at:

<http://www.cf.adfg.state.ak.us/geninfo/finfish/herring/catchval/06catch.php> .