

**When is an EIS appropriate?**

- ◆ New circumstances or information relevant to environmental concerns
  - amendments 70/70 to the FMPs
  - endangered status of SSL
  - need to avoid jeopardy or adverse modification of critical habitat
  - new interpretations of effects based on scientific studies

**Significance of environmental concern determined by**

- ◆ Applying CEQ regulations regarding context and intensity
- ◆ Applying NAO 216-6, Section 6.02 (8 tests)

**Purpose of SSL Protection Measures**

- 1 modify BSAI and GOA pollock, Pacific cod and Atka mackerel fisheries such that the reconfigured fisheries do not jeopardize the continued existence of SSL or adversely modify their critical habitat.
- 2 Modify the fisheries such that the reconfiguration minimizes the economic and social costs that will be imposed on the commercial fishing industry and associated coastal communities.

**Overview - Volume 1**

- ◆ Reviewer Letter
- ◆ Chapter 1- Purpose and Need
- ◆ Chapter 2- Alternatives Including the Proposed Action
- ◆ Chapter 3- Affected Environment
- ◆ Chapter 4- Environmental Consequences
- ◆ Chapter 5- List of Preparers
- ◆ Chapter 6- List of Agencies, Orgs, and Persons
- ◆ Chapter 7- Literature Cited

## Areas of Controversy

- ◆ Proportional causes of decline in SSL population
- ◆ Unknowns related to the life history of the SSL
  - population structure and dynamics
  - magnitude of additional mortality or reduced reproduction as cause of decline
  - diet and foraging strategies
  - interspecies and intraspecies competition
- ◆ Effectiveness of fisheries management measures

Dave Witherell

Description of Alternatives

## Alternatives Examined - Chapter 2

- ◆ Alternative 1: No action.
- ◆ Alternative 2: Low and Slow Approach.
- ◆ Alternative 3: Restricted and Closed Area Approach.
- ◆ Alternative 4: Area and Fishery Specific Approach.
  - Option 1: Chignik area <60' fixed gear exemption.
  - Option 2: Unalaska area <60' fixed gear exemption.
  - Option 3: Gear specific zones for GOA Pacific cod fisheries.
- ◆ Alternative 5: Critical Habitat Catch Limit Approach.

## Alternative 1 - No Action section 2.3.1 (p. 2-8); map 2.3.1

- ◆ All emergency rules to protect sea lions would expire.
- ◆ Measures still in place would include:
  - 3 nm no transit zones around rookeries.
  - 10-20 nm trawl closures around rookeries.
  - Atka mackerel fishery: 2 seasons, CH catch limits, and VMS requirements.
- ◆ This alternative is presumed to violate ESA.

## Alternative 2 - Low and Slow Approach section 2.3.2 (p. 2-12); map 2.3.2

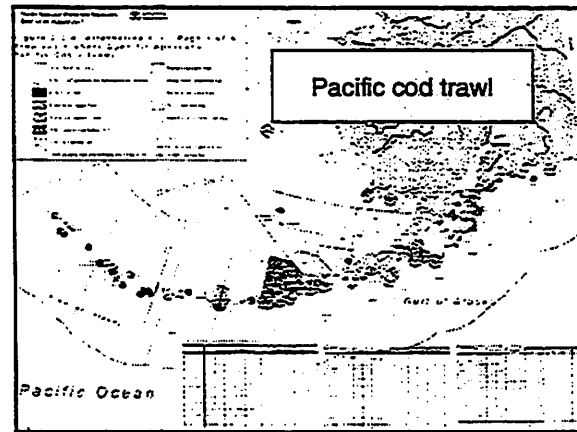
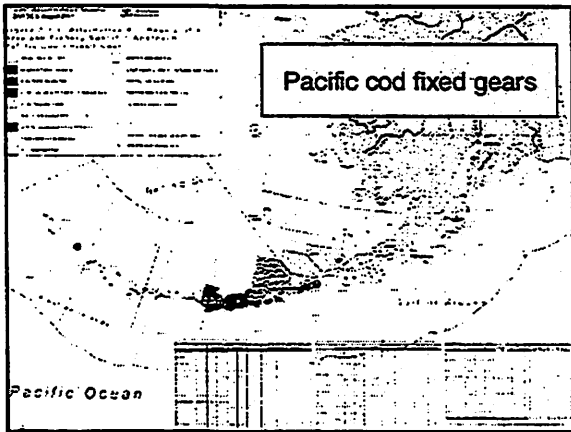
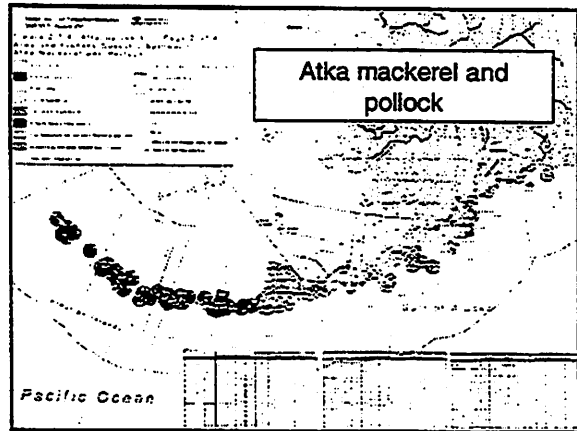
- ◆ Originally proposed by Leape and Cline (based on PSEIS), major measures would include:
  - Reduced TACs, set as a % of ABC.
  - Four seasons, with equal TAC apportionment.
  - No trawling (for any species) in SSL critical habitat.
  - Foraging area cod catch limits.
  - Seasonal exclusive area registration.
  - Maximum daily catch limits.
  - VMS coverage on fixed gear cod.
  - Zonal approach for cod fisheries around rookeries and haulouts.
  - No pollock fishing in the Aleutian Islands.

## Alternative 3 - Restricted and Closed Area Approach section 2.3.3 (p. 2-20); map 2.3.3

- ◆ Originally the BiOp3 RPA, major measures include:
  - 3 nm no transit zones around rookeries
  - 3 nm no groundfish fishing zones around haulouts.
  - No cod, pollock, or mackerel fishing 11/1-1/20 inside CH.
  - Large closure areas for cod, pollock, and mackerel fishing.
  - Two seasons outside of CH. Four seasons inside CH, with catch limits established inside CH based on the biomass available within the areas designated as open to fishing.
  - BSAI Pacific Cod TAC split into BS and AI components.
  - Global Control Rule. Stops fishing when biomass <20% of unfished biomass, and reduces fishing when biomass <40%.

**Alternative 4 - Area and Fishery Specific Approach**  
**section 2.3.4 (p. 2-26); maps 2.3.4-2.3.6**

- ◆ Originally proposed by RPA Committee, major measures include:
  - > 3 nm no transit zones around rookeries.
  - > 20 nm no groundfish zones around northern BS haulouts.
  - > All pollock, cod, and mackerel fishing prohibited in Seguram foraging area, Area 9 (Bogostof), and Area 4 (Chignik).
  - > Fishery specific seasons, TAC apportionments, and area closures within each of the regions (BS, AI, GOA).
  - > Modified Global Control Rule. Stops fishing when biomass <20% of unfished biomass, and reduces fishing when biomass <40%.
- ◆ Identified by NMFS as the preferred alternative.

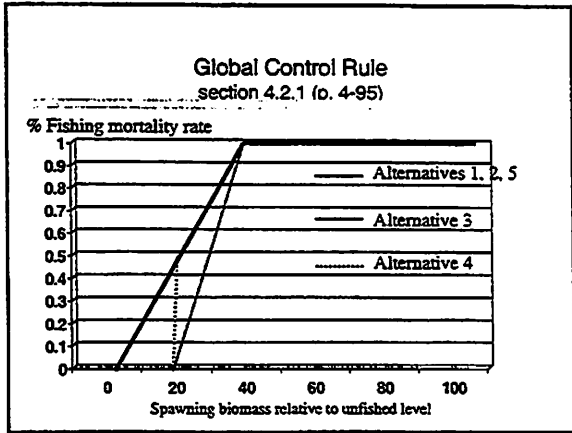


**Options for Alternative 4**  
**sections 2.3.4, 4.14 (p. 2-30, 4-550); map 2.3.7**

- ◆ **Option 1.** Establish a limited fishing zone in the Chignik area (area 4) for fixed gear out to ten (10) miles from Castle Cape to Foggy Cape for vessels under 60 ft.
- ◆ **Option 2.** Establish a limited fishing zone in the Dutch Harbor area (area 9) for fixed gear out to ten (10) miles from Cape Cheerful to Umnak Pass for vessels under 60 ft.
- ◆ **Option 3.** Establish a zonal approach for GOA Pacific cod. Buffers zones (0-3 nm, 3-12 nm, 12-20 nm, and +20 nm) would be established as measured from land. Fixed gear would be allowed in bands < 20 nm, with band specific gear and vessel size limits. Trawl gear would be prohibited < 20 nm.

**Alternative 5 - Critical Habitat Catch Limit Approach**  
**section 2.3.5 (p. 2-34); map 2.3.8**

- ◆ Developed from 2000 RPA measures for pollock and mackerel, (cod fisheries added), major measures would include:
  - > 3 nm no transit zones around rookeries.
  - > 10-20 nm trawl closures around rookeries.
  - > 10-20 nm closures around haulouts to pollock fishing.
  - > Catch distributed over seasons: 4 for pollock, 2 for mackerel, 2 for cod.
  - > Catch limits established in critical habitat based on biomass estimates.
  - > No pollock fishing in the Aleutian Islands.



**Analytical Approach**  
*Tamra Faris*

- Effects of the Action (Alternatives)**
- ◆ Direct and indirect effects addressed for:
    - marine mammals
    - target fish species
    - non-specified species
    - forage species
    - prohibited species
    - ESA listed Pacific salmon
    - seabirds
    - marine habitat
    - ecosystem
    - State of Alaska managed fisheries
    - management and enforcement
    - social and economic issues
  - ◆ Cumulative effects for same 12 topics

**Reference Points - Resource Issues**

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- Typical Analytical Approach for Each Topic**
- 1 Key effects question(s) identified
  - 2 Criteria developed for determining the significance of the effects in relation to a "reference point"
  - 3 Information assembled and predictions developed for the effects question(s)
  - 4 Significance criteria applied
  - 5 Summary table assembled on the significance of the effects of each alternative

**NEPA - Significance Determinations**

### Significance Determinations

- ◆ S+ Significant Beneficial
- ◆ CS+ Conditionally Significant Beneficial
- ◆ I Insignificant
- ◆ CS- Conditionally Significant Adverse
- ◆ S- Significant Adverse
  
- ◆ U Unknown

Tom Loughlin

Marine Mammals

### Marine Mammal Evaluations - types of effects (questions)

- 1 Is the action consistent with efforts to avoid direct interactions (incidental take and entanglement)?
- 2 Does the action result in fisheries harvests on prey species of importance to marine mammals, at levels that could compromise foraging success (harvest of prey species)?
- 3 Does the action result in temporal or spatial concentration of fishing effort in areas used for foraging (spatial and temporal concentration)?
- 4 Does the action modify marine mammal or forage behavior to the extent that population level impacts could occur (disturbance)?

### Marine Mammal analysis comprised of three tiers

- a Effects on seven species or species groups
  - Steller Sea Lion
  - ESA listed Great Whales
  - Other Cetaceans
  - Northern Fur Seals
  - Harbor Seals
  - Other Pinnipeds
  - Sea Otters
- b Each alternative is addressed for each species or species group
- c Each question (type of effect) is addressed for each alternative within each species or species group

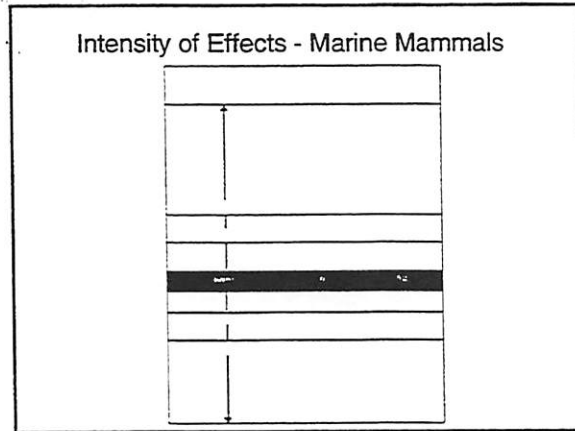
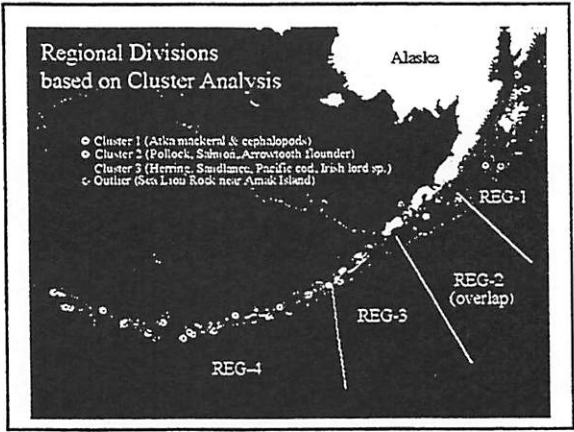
### Criteria for Significance - Pinnipeds, Sea Otter



### Criteria for Significance - Pinnipeds, Sea Otter

Western Alaska Stock

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**Rationale for Effects Ratings SSL**  
question 1

- ◆ Incidental take/entanglement in marine debris
  - ratings of Insignificant all 5 alternatives
  - actual data demonstrate very low levels (10 to 17 per year) in relation to total population size

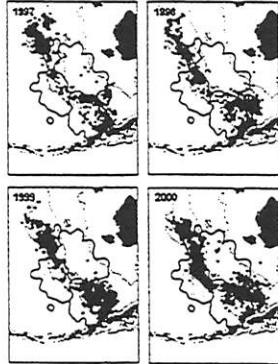
Question 2

- ◆ Harvest of prey species
  - TAC levels predicted for pollock, Pacific cod, and Atka mackerel using simulation model
  - ratings based on % changes in TAC levels
  - greatest reduction in TAC levels for Alt 2, hence CS+
  - least reduction in TAC levels for Alt 1, 4, and 5, hence CS-

Question 3

- ◆ Spatial/temporal concentration of fishery
  - basis was relative criteria of more or less temporal and spatial concentration in some to all key areas
  - considered influence on population trends for the SSL
  - CS+ for Alt. 2 and Insignificant for Alt. 4

Figure 4.1-3 Location of trawls summer-fall EBS pollock



Question 4

- ◆ Disturbance
  - basis was relative to 1998
  - ratings of insignificant for all alternatives

Table 4.1-5 Summary of effects on Steller sea lion

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**Prohibited Species**

*Galen Tromble*

**Steller Sea Lion Protection Measures**

**Draft SEIS**

**Prohibited Species Effects**

**Prohibited Species**

- Halibut – Prohibited species caps in BSAI and GOA.
- Tanner Crab – PSC limits in BS Zones 1 & 2.
- Opilio Crab – PSC limits in BS COBLZ.
- Chinook Salmon – PSC limit in BSAI, closes Chinook Salmon Savings Area.
- Chum Salmon – PSC limit in CVOA, Aug. 15 – Oct. 14. Closes Chum Salmon Savings Area.
- Red King crab – PSC limit in BSAI Zone 1.
- Pacific Herring – PSC limit in BSAI, closes seasonal Herring Savings Areas.

### Catch by Vessel Database

Includes groundfish observer data, ADF&G fishticket data and NMFS weekly production report data.

Screened to eliminate duplicate data.

Internally consistent units (weights and codes) and data resolution (ADF&G stat area).

Groundfish species catch for each vessel landing, 1995 – 1999 (does not include at-sea discards for CV or 30% CP)

### PSC Estimation Data

Observer species composition data on the amount of PSC in observed samples was divided into two groups -- inside critical habitat or outside critical habitat (1998-1999 average)

Groundfish catch from the CBV database was apportioned into two groups -- inside and outside critical habitat (1997-1999 average).

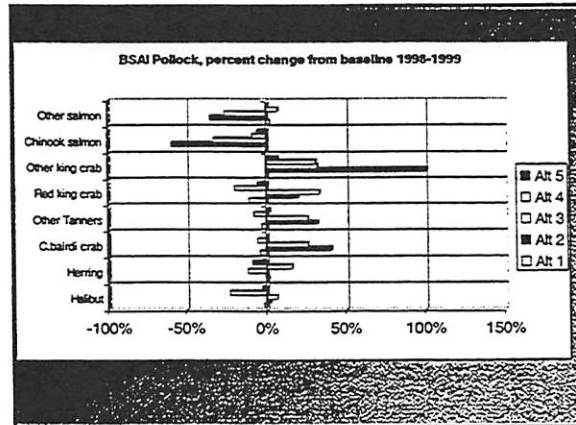
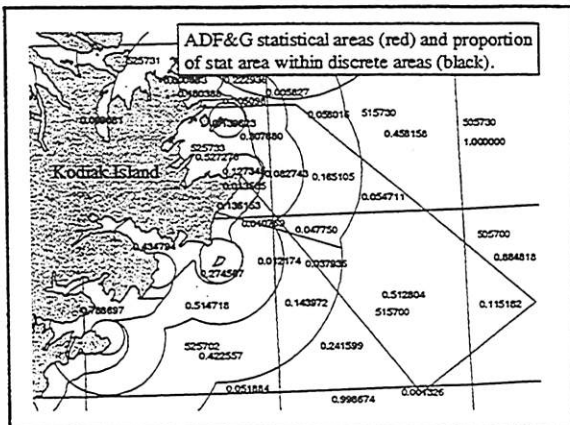
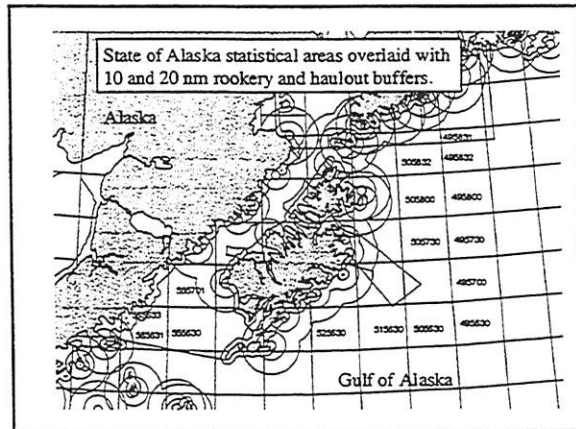
Ambiguous statistical areas (overlapping alternative specific restricted area boundaries) were apportioned based on area percentage.

### PSC Estimation by Alternative

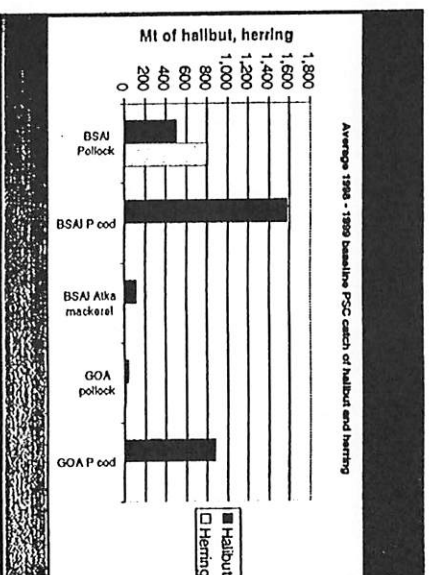
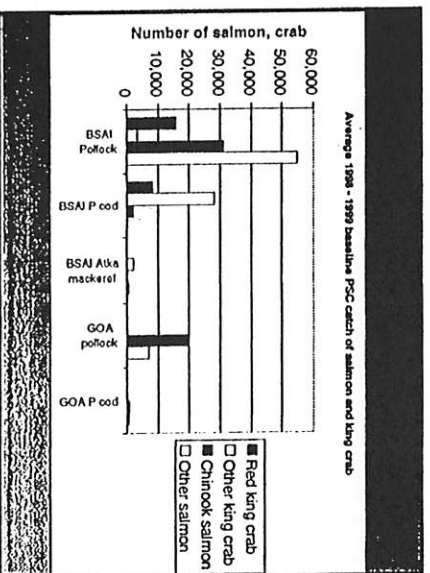
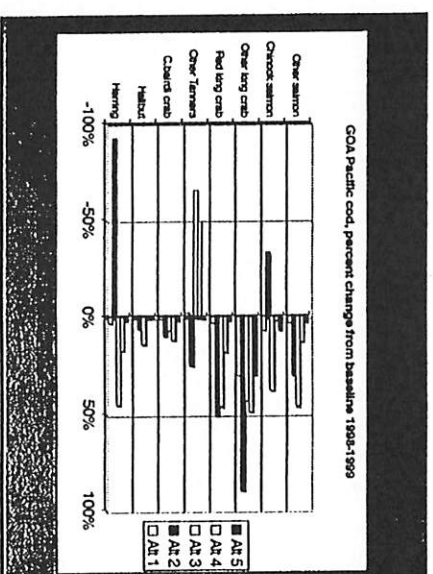
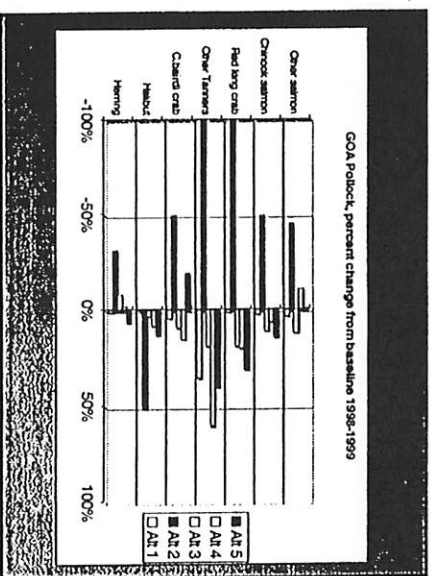
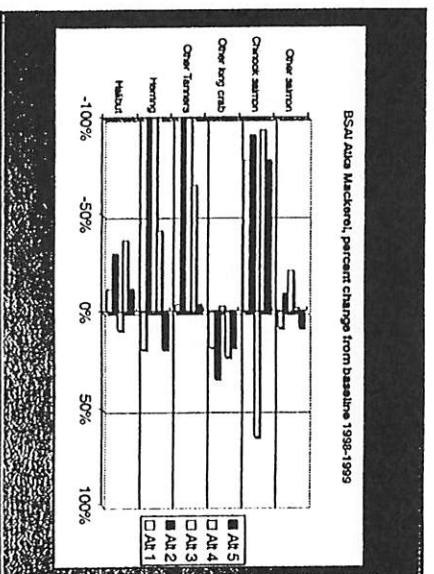
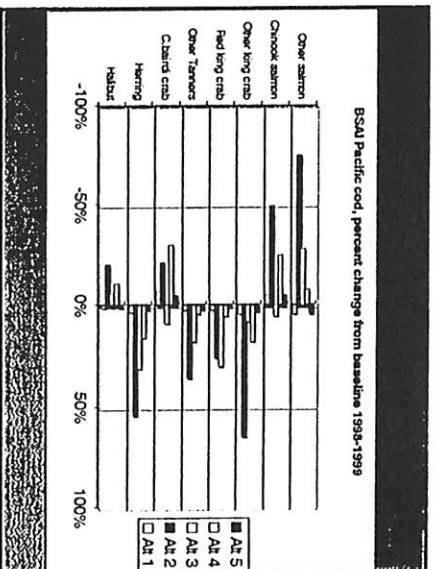
Baseline PSC data were generated for 1998-1999

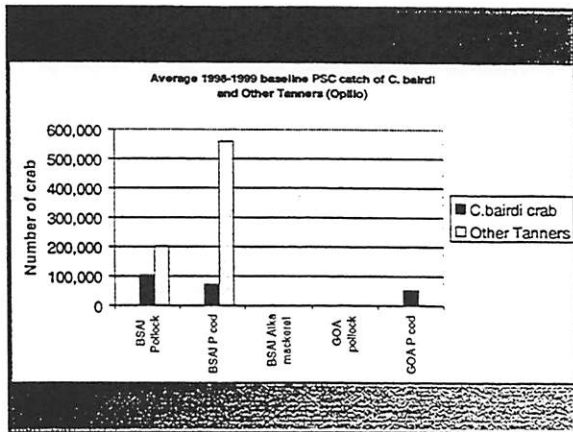
PSC inside and outside of closed areas under each of the alternatives was calculated using appropriate rules (e.g. vessel size, gear, distance restrictions) based on the groundfish fishery and observer data.

PSC rates for each alternative were compared to the baseline rate (1998-1999 average)









Average 1998-1999 Baseline PSC amounts

| PSC                   | Fishery      |            |                    |             |           |
|-----------------------|--------------|------------|--------------------|-------------|-----------|
|                       | BSAI Pollock | BSAI P cod | BSAI Atka mackerel | GOA pollock | GOA P cod |
| Halibut               | 5011         | 1,579      | 117                | 37          | 878       |
| Herring               | 804          | 1          | 0                  | 15          | 0         |
| <i>C. bairdi</i> crab | 105,227      | 73,554     | 0                  | 1,967       | 52,517    |
| Other Tanners         | 202,469      | 560,826    | 31                 | 4           | 1,642     |
| Red king crab         | 15,787       | 8,261      | 0                  | 11          | 14        |
| Other king crab       | 3,512        | 28,052     | 2,250              | 0           | 40        |
| Chinook salmon        | 31,007       | 2,222      | 256                | 20,013      | 778       |
| Other salmon          | 54,804       | 122        | 532                | 7,036       | 597       |

Summary: Alternatives with notable amounts and percentage changes from baseline.

- BSAI pollock – 59% decrease in chinook salmon under Alternative 2.
- BSAI Pacific cod – 65% increase in other king crab under Alternative 2.

**Other Biological Impacts**

David Witherell

**Other Biological Impacts**

- ◆ Target Groundfish
- ◆ Non-specified species
- ◆ Forage fish
- ◆ ESA listed Pacific salmon
- ◆ Seabirds
- ◆ Habitat
- ◆ Ecosystem

**Target Species**  
sections 3.2, 4.2 (p. 3-97, 4-93)

|                                      | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|--------------------------------------|-------|-------|-------|-------|-------|
| Fishing mortality                    | I/U   | I/U   | I/U   | I/U   | I/U   |
| Spatial/temporal catch concentration | I/U   | I/U   | I/U   | I/U   | I/U   |
| Change in prey availability          | I/U   | I/U   | I/U   | I/U   | I/U   |
| Habitat suitability                  | I     | I     | I     | I     | I     |

Notes: S=significant, CS=conditionally significant, I=insignificant, U=unknown. The two ratings reflect the range of stock dependent assessments.

**Non-specified Fish Species**  
sections 3.3, 4.3 (p. 3-123, 4-180)

|                       | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|-----------------------|-------|-------|-------|-------|-------|
| Grenadiers            | I/U   | I/U   | I/U   | I/U   | I/U   |
| Other non-specified   | I/U   | U/CS+ | I/U   | I/U   | I/U   |
| Jellyfish             | I/U   | U/CS+ | U/CS+ | I/U   | I/U   |
| Sessile invertebrates | I/U   | U/CS+ | I/U   | I/U   | I/U   |
| Motile invertebrates  | I/U   | U/CS+ | I/U   | I/U   | I/U   |

**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown. The first rating is for population effects, the second on likelihood of change in incidental catch.

**Forage Fish Species**  
sections 3.4, 4.4 (p. 3-124, 4-185)

|                     | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|---------------------|-------|-------|-------|-------|-------|
| Smelt - BSAI        | I/I   | I/CS+ | I/I   | I/I   | I/I   |
| Other forage - BSAI | I/I   | I/I   | I/I   | I/I   | I/I   |
| Smelt - GOA         | I/I   | I/CS+ | I/S+  | I/I   | I/I   |
| Other forage - GOA  | I/I   | I/I   | I/I   | I/I   | I/I   |

**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown. The first rating is for population effects, the second on likelihood of change in incidental catch.

**ESA Listed Pacific Salmon**  
sections 3.6, 4.6 (p. 3-145, 4-202)

|  | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|--|-------|-------|-------|-------|-------|
| Bycatch - BSAI                                   | I     | CS+   | I     | I     | I     |
| Bycatch - GOA                                    | I     | CS+   | I     | I     | I     |
| Spatial/temporal concentration of bycatch - BSAI | I     | I     | I     | I     | I     |
| Spatial/ temporal concentration of bycatch - GOA | I     | CS+   | I     | I     | I     |
| Prey Competition                                 | I     | I     | I     | I     | I     |

**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown. The first rating is for population effects, the second on likelihood of change in incidental catch.

**Seabirds**  
sections 3.7, 4.7 (p. 3-150, 4-215)

|                          | Alt 1   | Alt 2 | Alt 3   | Alt 4   | Alt 5   |
|--------------------------|---------|-------|---------|---------|---------|
| Incidental take          | I,U,CS- | I     | I,U,CS- | I,U,CS- | I,U,CS- |
| Prey availability        | I,U     | I,U   | I,U     | I,U     | I,U     |
| Benthic habitat          | I       | I     | I       | I       | I       |
| Processing waste and oil | I,CS+   | I     | I,CS+   | I,CS+   | I,CS+   |

**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown. For most, the effects were insignificant. The CS+ ratings were for increased oil benefiting northern fulmars, and the CS- rating was for the incidental take of short-tailed albatross.

**Habitat**  
sections 3.8, 4.8 (p. 3-154, 4-241)

|  | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|--|-------|-------|-------|-------|-------|
| Removal/damage to HAPC biota   |       |       |       |       |       |
| a) by bottom trawl gear  | CS-   | S+    | CS+   | CS-   | CS-   |
| b) by fixed gear   | CS-   | CS+   | I     | CS-   | CS-   |
| Modification of nonliving substrates, damage to epifauna and infauna |       |       |       |       |       |
| a) by trawl gear   | CS-   | CS+   | CS+   | CS-   | CS-   |
| b) by fixed gear   | I     | I     | I     | I     | I     |
| Changes to species mix   | CS-   | CS+   | CS+   | CS-   | CS-   |

**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown.

**Ecosystem**  
sections 3.9, 4.9 (p. 3-159, 4-251)

|   | Alt 1 | Alt 2 | Alt 3 | Alt 4 | Alt 5 |
|---|-------|-------|-------|-------|-------|
| Forage Availability                                     | S+    | S+    | S+    | S+    | S+    |
| Spatial and Temporal Concentration of Fishery on Forage | CS-   | CS+   | CS+   | CS+   | CS+   |
| Removal top Predators                                   | I     | I     | I     | I     | I     |
| Introduction of Nonnative Species                       | CS-   | I     | I     | I     | I     |
| Energy Redirection (Discards)                           | I     | I     | I     | I     | I     |
| Energy Removal (Catch)                                  | I     | I     | I     | I     | I     |
| Species Diversity                                       | CS-   | CS+   | CS+   | CS+   | CS+   |
| Functional Diversity                                    | I     | I     | I     | I     | I     |

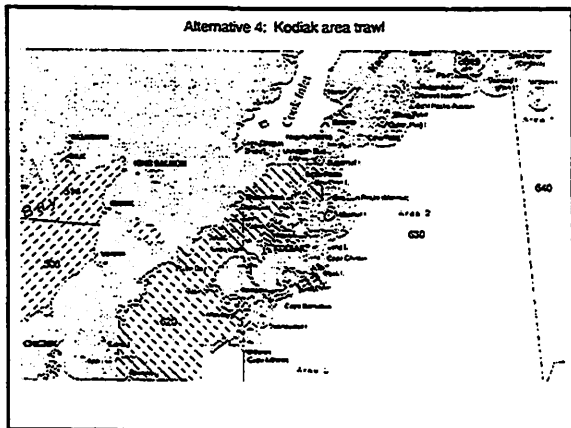
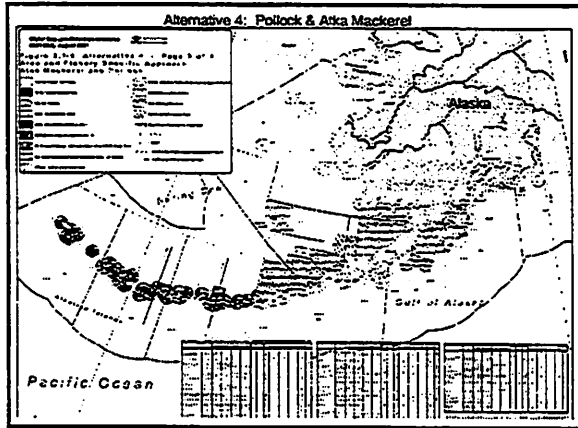
**Notes:** S=significant, CS=conditionally significant, I=insignificant, U=unknown.

**Management & Enforcement**  
Galen Tromble

**Steller Sea Lion Protection Measures  
Draft SEIS**  
  
**Management & Enforcement  
Issues**

- Management & Enforcement  
Issues**
- ◆ Complexity of Area Boundaries
  - ◆ Number and Complexity of Directed Fishing Closures
  - ◆ Complexity of Quota Management
    - Increasing Number of Quotas
    - Decreasing Size of Quotas

- Complexity of Area Boundaries**
- ◆ Many boundaries are intersecting circular arcs.
  - ◆ Different area boundaries relevant for different fisheries or gears.
  - ◆ Compliance with complex boundaries is difficult for the industry.
  - ◆ Monitoring complex boundaries is difficult for the agency.
  - ◆ Areas are small relative to vessels' mobility.



### Directed Fishing Closures

- ◆ Directed Fishing is more difficult to enforce than closure to fishing or to entry.
- ◆ Determining if a vessel is Directed Fishing in an area requires assessment of the composition of retained catch from that area at any time during the fishing trip.
- ◆ Enforcement of gear and fishery-specific Directed Fishing closures requires information on vessel location, retained catch composition, and gear.

### Complexity of Quota Management

- ◆ Management of each quota requires monitoring activity and preparation and processing of inseason regulatory actions for publication in the Federal Register.
- ◆ As quotas decrease in size, managers have more difficulty in managing the fishery to prevent significant quota underages or overages. Some quotas become too small to allow directed fisheries.
- ◆ The combination of increasing numbers of quotas and decreasing quota size multiplies the difficulty of managing quotas.
- ◆ Catch Limits inside critical habitat require additional information and new management strategies.

### Alternative 1

- ◆ Least complex closures to manage
- ◆ Closure of areas 10 to 20 nm around rookeries to all trawling for groundfish
- ◆ Aleutian Island Atka mackerel critical habitat limits
- ◆ 27 total quota categories

### Alternative 2

- ◆ Closure of all critical habitat to trawling is relatively easy to enforce.
- ◆ "Zonal approach" for non-trawl Pacific cod fishery
  - > Relatively complex to monitor and enforce
  - > Requires information on vessel size, gear type and quantity used, retained catch composition, and vessel location.
- ◆ 30 percent observer coverage on fixed gear vessels less than 60' LOA fishing for Pacific cod inside 20 nm.
- ◆ Daily Catch Limits.
- ◆ Seasonal Exclusive Area Registrations.
- ◆ 78 total quota categories, 51 more than Alternative 1.

### Alternative 3

- ◆ Directed fishing closed for pollock, Pacific cod and Atka mackerel in areas 2,4,6,8,9,10,11 and 13.
- ◆ Critical habitat catch limits for pollock, Pacific cod and Atka mackerel.
- ◆ Large number of sector and fishery-specific directed fishing closures.
- ◆ 76 total quota categories, 49 more than Alternative 1.

### Alternative 4

- ◆ Complicated suite of fishery-specific area closures.
- ◆ Atka mackerel "platoon" system is administratively and operationally complex.
- ◆ Option to implement a "Zonal approach" with similar issues as that in Alternative 2.
- ◆ 46 total quota categories, 20 more than Alternative 1

### Alternative 5

- ◆ Area and fishery specific directed fishing closures are less complex than those proposed in Alternatives 2, 3 and 4.
- ◆ 52 total quota categories, 25 more than Alternative 1.

### Vessel Monitoring System

- ◆ Key Characteristics
  - > Accurate determination of position and time
  - > Automated operation
  - > Data available to management & enforcement in near real-time
  - > Highly tamper-resistant
  - > Secure data
- ◆ National VMS Standards published March 31, 1994 (59 FR 15180)

### Applicability of VMS

- ◆ Monitoring restricted areas
  - > no transit
  - > no fishing
  - > gear closures
  - > no directed fishing
- ◆ Monitoring critical habitat catch limits -- in conjunction with catch data.

### Applicability of VMS -- Monitoring Restricted Areas

- ◆ VMS provides frequent, accurate data on vessel location in near real-time.
- ◆ These data are critical for effective enforcement of restricted areas.
  - > Efficient tracking of large numbers of vessels
  - > Enables monitoring compliance with complex area boundaries.
  - > Enables timely deployment of other enforcement assets.

### Applicability of VMS -- Critical Habitat Catch Limits

- ◆ CH catch limit accounting
  - > Observed vessels by individual haul or set.
  - > Unobserved vessels by trip
- ◆ VMS data verify vessel location and activity pattern during the fishing period

### Electronic Position Log

- ◆ Records frequent GPS positions into a computer database file on an on-board computer.
- ◆ Files can be transmitted using email messaging or copied to portable media.
- ◆ May not meet all VMS standards for security, automated operation, and timeliness of data.
- ◆ Could provide data suitable for use in critical habitat catch limit accounting. EPL data would have to be available simultaneously with the catch data (observer haul data or trip delivery data).
- ◆ 'insurance' system to document vessel position in the event of a VMS system failure.

### Comparison of the Alternatives

- ◆ Table ES-2 summarizes all effects ratings for direct and indirect effects
- ◆ Trade-off analysis (comparisons of the differences in ratings for each alternatives) was applied to the ratings in Table ES-2
- ◆ Alternatives 1, 3, and 5 can be set aside due to ESA noncompliance concerns, lesser interest by the Council and public, and consideration of purpose and need
- ◆ Alternatives 2 and 4 compared based on results of trade-off analysis, ESA compliance, specific socio-economic data (Table ES-3), and cumulative effects

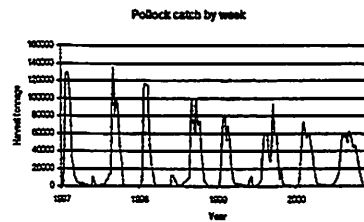
### Effects of AFA

Chris Oliver

### Effects of AFA on SSL Protection section 4.11.4 (p. 4-289)

- ◆ The American Fisheries Act (AFA) of late 1998, limited the number of vessels allowed in the BSAI pollock fishery to 21 c/p's and 120 catcher vessels.
- ◆ The cooperative structure allows for allocation of shares of the fishery to participants, thus ending the race for fish.
- ◆ This resulted in: fewer vessels participating, longer seasons, reduced catch per day, more spatially dispersed harvest, increased production efficiencies, improved compliance with TAC monitoring.

### Effects of AFA on SSL Protection section 4.11.4 (p. 4-293)



### State Managed Fisheries

Sue Salvesson

### Effects on State Water Groundfish Fisheries

- ◆ 3 types of groundfish fisheries
  - State managed under a GHL
  - Fed. Managed beyond 3 nm
  - Parallel fishery under Fed. TAC within 3 nm
- ◆ Proposed action does not assume changes to the State-managed fisheries—only the federal water and parallel fisheries

### State water effects - continued

- ◆ SEIS and BiOp analyses of Alternative 4 (preferred alternative) assumed that the parallel fishery management reflects RPA/Council recommendation that waters around rookeries & haulouts would be closed within State waters to specified vessels directed fishing for pollock, Pacific cod, or Atka mackerel
- ◆ NMFS must rely on State regulations to close State waters or otherwise regulate fishing vessel activities during the parallel fishery unless NMFS initiates preemptive action under the ESA or MMPA

### State Process for Changing Regs. Governing Parallel Fishery

- ◆ Only after the BOF takes action would ADF&G and the Dept of Law initiate rulemaking
- ◆ At an Oct 11-13, 2001 work session, ADF&G could request that the BOF consider SSL protection measures during its Nov 8-11 meeting
- ◆ Alaska State regs. provide BOF discretion to change its schedule for consideration of regulatory changes necessary for coordination of state regulatory action with federal fishery agencies, programs or laws (5 AAC 39.999(b))

### Issues of Timing and Uncertainty

- ◆ BOF action may not be known at time of final Council action
- ◆ If BOF takes action other than that assessed in the BiOp, NMFS may need to reinstate consultation and identify additional measures to mitigate effects on SSL
- ◆ NMFS's ability to open federal groundfish fishery Jan. 1, 2002, could be compromised if agency response to BOF action in November is required

### Cumulative Impacts

David Witherell

### Cumulative Impacts section 4.13 (p. 4-369)

- ◆ Cumulative effects are linked to incremental policy changes that may be small individually, but may have additive or synergistic effects with past, present, or future actions.
- ◆ Methodology was to list the direct and indirect impacts of the fishery, and see how these interact with these external effects:
  - > **Human controlled events:** effects from other fisheries, historical fisheries, subsistence harvests, and effects from non-fishing activities (e.g., pollution, shipping, introduction of non-native species)
  - > **Natural events:** climate effects, life cycle effects, trophic interactions.

### Cumulative Impacts section 4.13

|                                    | Section | Page  |
|------------------------------------|---------|-------|
| ◆ Marine Mammals                   | 4.13.2  | 4-373 |
| ◆ Target Fish Species              | 4.13.3  | 4-420 |
| ◆ Non-specified Fish               | 4.13.4  | 4-452 |
| ◆ Forage Fish                      | 4.13.5  | 4-453 |
| ◆ Prohibited Species (by species)  | 4.13.6  | 4-453 |
| ◆ ESA Listed Pacific Salmon        | 4.13.7  | 4-476 |
| ◆ Seabirds                         | 4.13.8  | 4-477 |
| ◆ Benthic Habitat                  | 4.13.9  | 4-487 |
| ◆ Ecosystem                        | 4.13.10 | 4-497 |
| ◆ State Managed Fisheries          | 4.13.11 | 4-512 |
| ◆ Management and Enforcement       | 4.13.12 | 4-512 |
| ◆ Socioeconomic Cumulative Effects | 4.13.13 | 4-512 |



**Cumulative Impacts - Steller Sea Lions**  
 section 4.13.2.2 (p. 4-375)

For each alternative, the analysis first reviews the direct and indirect impacts, and asks if external effects interact, as shown for Alternative 1 in the table below.

| Effect                  | Sig. | Human Controlled  |                 |                      |
|-------------------------|------|-------------------|-----------------|----------------------|
|                         |      | Foreign Fisheries | Other Fisheries | Subsistence Harvests |
| Incidental take (I)     | -    | -                 | -               | -                    |
| Prey availability (CS-) | -    | -                 | -               | 0                    |
| Spatial/temporal (CS-)  | -    | -                 | -               | 0                    |
| Disturbance (I)         | -    | -                 | -               | 0                    |

Note: '-' means negative external effect, '0' means no external effect.

**Cumulative Impacts - Steller Sea Lions**  
 section 4.13.2.2 (p. 4-375)

For each alternative, the analysis first reviews the direct and indirect impacts, and asks if external effects interact, as shown for Alternative 1 in the table below.

| Effect                  | Sig. | Natural Events     |                   |              |
|-------------------------|------|--------------------|-------------------|--------------|
|                         |      | Short-term Climate | Long-term Climate | Regime Shift |
| Incidental take (I)     | 0    | 0                  | 0                 | 0            |
| Prey availability (CS-) | 0    | 0                  | +/-               | +/-          |
| Spatial/temporal (CS-)  | 0    | 0                  | 0                 | 0            |
| Disturbance (I)         | 0    | 0                  | 0                 | 0            |

Note: '-' means negative external effect, '+' means positive effect, '0' means no effect.

**Cumulative Impacts - Steller Sea Lions**  
 section 4.13.2.2 (p. 4-375)

◆ For each alternative, the analysis finally asks if cumulative effects are conditionally significant, as shown in the table below.

| Effect            | Alternative |   |   |   |   |
|-------------------|-------------|---|---|---|---|
|                   | 1           | 2 | 3 | 4 | 5 |
| Incidental take   | N           | N | N | N | N |
| Prey availability | Y           | Y | Y | Y | Y |
| Spatial/temporal  | Y           | N | Y | Y | Y |
| Disturbance       | N           | N | N | N | N |

**Social and Economic Consequences:**

*Economic Impacts*  
*Socioeconomic impacts*

*Low Quierolo, Ben Muse, Mike Taylor, Mike Downs*

**Steller Sea Lion Protection Measures**  
**Draft RIR**

Dr. Lewis Quierolo and Dr. Ben Muse  
 Alaska Region  
 National Marine Fisheries Service

**RIR Overview**

- ◆ Description of the effected fisheries (Section 1.2)
- ◆ A two-part analytical approach
  - > Benefit-cost analysis (Section 1.3)
  - > Distributional analysis (Section 1.4)

## Benefit and Cost Analysis

National Accounting Perspective

"Net National Benefit"

## The "Benefits" side of the equation

- ◆ Benefits
  - Non-use
  - Non-consumptive use
  - Non-market use

## Non-use benefits

- ◆ Existence (and Bequest) Value: Section 1.3.2.1 (page C-30)
- ◆ Individuals "value" Steller sea lions, though they'll never even see one
- ◆ They also "value" preserving Steller's for future generations

## Non-consumptive use benefits

- ◆ Eco-tourism: Section 1.3.2.2 (Page C-32)
- ◆ Individuals "value" opportunities to interact with Steller sea lions (e.g., observing, photographing)
- ◆ Commercial firms benefit by supplying these opportunities

## Non-market use benefits

- ◆ Subsistence use: Section 1.3.2.2 (page C-32)
- ◆ Alaska Natives "value" Steller sea lions for cultural and subsistence uses
  - Potential for increased subsistence harvest
  - Higher CPUE; reduced harvesting costs

## The "Costs" side of the equation

- ◆ Costs
  - Impact on industry
  - Impact on consumers
  - Management and enforcement costs

### Aggregate output and revenue effects

- ◆ Lower harvests imply lower revenues
- ◆ Offset somewhat by higher prices
- ◆ Gross Product Value Effects
- ◆ Global Market Implications Section 1.3.3.1 (page C-35)

### Product quality and revenue

- ◆ Fishing further from processors
- ◆ Fishing on stocks of sub-optimal condition (e.g., post-spawn, dispersed)
- ◆ Reduced recovery rates and value (e.g., product mix changes) Section 1.3.3.2 (page C-49)

### Operating cost impacts

- ◆ Fishermen must operate on unfamiliar grounds
- ◆ Increased costs of traveling further from port
- ◆ Changes in CPUE
- ◆ Impacts of changes in by-catch rates; including other protected species Section 1.3.3.3 (page C-52)

### Safety

- ◆ Heightened risk of damage, loss, injury and death as fishermen are displaced from their "usual and accustomed" fishing patterns
- ◆ Effects of reduced profitability Section 1.3.3.4 (page C-70)

### Impacts on related fisheries

- ◆ Among the potential impacts:
  - > Increases in non-target catches of P.cod and pollock; w/ IR/IU implications
  - > Effects of displacing capacity
  - > Increased cost of gearing up
  - > Topping off behavior
  - > Increased bait costs in crab fisheries Section 1.3.3.5 (page C-75)

### Costs to Consumers

- ◆ Reduced availability of U.S. produced seafood (e.g., export and domestic market implications)
- ◆ Losses in consumer surplus
  - > Higher prices; restricted supply; lower quality; narrowing of product variety
  - > Substitution in consumption; source
  - > Structural changes in markets Section 1.3.4 (page C-81)

### Management and enforcement costs

- ◆ Increased enforcement costs
- ◆ Increased costs and complexity for in-season management Section 1.3.5 (page C-82)

### In summary:

- ◆ Ordinal ranking of alternatives on benefit - cost criterion
- ◆ Summarizes what we think we know
  - For each benefit and cost category
  - And each alternative Section 1.3.6 (page C-83)

### Distributional Analysis

### Limitations of cost-benefit analysis

- ◆ B/C focuses on "aggregate" net benefit to the nation, as a whole
- ◆ Different groups may be impacted differently and unequally
- ◆ Customary to supplement a cost-benefit analysis with a "distributional analysis"

### Distributional analysis

- ◆ Distributional analysis Section 1.4 (page C-88)
- ◆ Catcherboat ex-vessel dependency
- ◆ Gross product value impacts
- ◆ Impacts on dependent communities - including CDQ effects

### Catcherboat ex-vessel dependency

- ◆ By gear type, length, area, and target species, annual percent of gross from
  - Target species
  - Other species groupings Section 1.4.1 (page C-88)

### Gross revenue impacts

- ◆ Different parts of the groundfish fishing industry will be affected in different ways
- ◆ Dr. Ben Muse will discuss one such measure (e.g., gross product value impacts)  
Section 1.4.2 (page C-128)

### Impacts on dependent communities

- ◆ Overview of economic impacts on "principal" groundfish communities
- ◆ Differential effects on CDQ groups
- ◆ Regional fishery dependence profiles Section 1.4.3 (page C-139)

## **Steller Sea Lion Protection Measures Draft RIR**

### **Part II: -Gross Product Value-**

#### Topics:

- ◆ What did we estimate?
- ◆ How were our estimates made?
- ◆ How did the alternatives differ?
- ◆ Were the results uniform across the fleets?
- ◆ How meaningful are the estimates?

What did we estimate?

#### Gross product value

- ◆ Estimated changes in gross product value
- ◆ Across five alternatives (and one option for Alt. 4)
- ◆ Gross product value is the gross value at the first wholesale level

### TACs and critical habitat

- ◆ Three classes of impacts
  - Changes in TACs
  - Prohibitions on fishing within closed critical habitat
  - Special limits on harvests from restricted critical habitat

### TAC value and value "at risk"

- ◆ Value of the TAC (valuation of the total TAC should it be caught)
- ◆ Gross product value "at risk"
  - Fish formerly caught in closed critical habitat
  - And restricted critical habitat
  - That may be "made up" by fishing elsewhere

### How were the estimates made?

### TAC and TAC allocation

- ◆ Start with the 2001 TACs implied in the different alternatives
- ◆ Allocate them to the first and second halves of the year
- ◆ Allocate again within each half of the year to each of the defined fleet sectors

### Inside and outside critical habitat

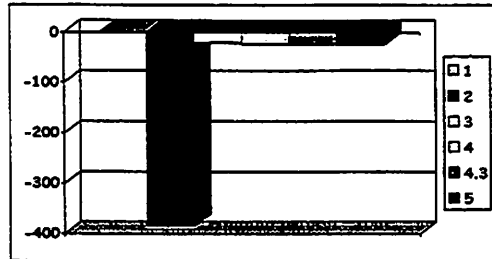
- ◆ For each fleet sector in each half
- ◆ determine the percentage of fish that would have been taken in closed and restricted critical habitat
- ◆ If the alternative had been in place in 1999
- ◆ Apply this percentage to the 2001 TACs

### Valuation

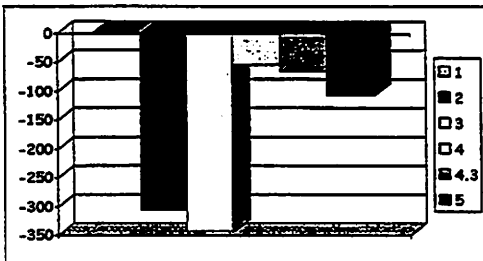
- ◆ The last step gives estimates of the amounts of fish "at risk" in open and restricted critical habitat
- ◆ 2000 first wholesale prices were used to "monetize" the TACS and the amounts of fish "at risk"
- ◆ Giving an estimate the "gross product value"

How did the alternatives differ?

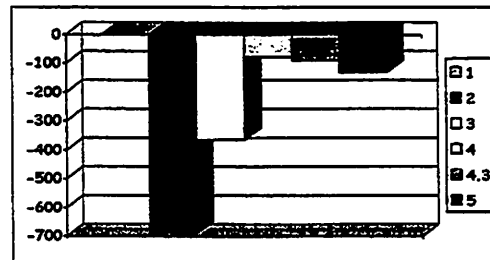
Changes in TAC values compared to Alt 1 (in millions \$)



Changes in values "at risk" compared to Alt 1 (in millions \$)



Joint impacts of TAC value and "at risk" changes (in millions \$)



Were the results uniform across the fleets?

### Results not uniform

- ◆ The impacts on fleets varied depending on the alternative
- ◆ Detailed summary tables may be found in RIR section 1.4.2
- ◆ Here there is only time to briefly review one example
- ◆ Alt 1 vs. Alt 4.

### TAC values

- ◆ TAC values
  - No change for Atka mackerel
  - Little change for Pacific cod
  - Overall reduction for pollock (-\$24 million)

### "At risk" values

- ◆ "At risk" estimates
  - About \$6 million for Atka mackerel
  - About \$16.5 million for Pacific cod
  - About \$30 million for pollock

### How meaningful are the estimates?

### Costs, behavior and prices

- ◆ They do not say anything about changes in fishing costs
- ◆ No model to predict how behavior will change in response to the alternatives.
- ◆ Price impacts of quantity changes not considered – Dr. Mike Taylor will have more to say on this

### "At risk" and TAC biases

- ◆ Actual losses may be less as fishermen substitute other areas, times, and species
- ◆ They don't take account of the possibility that small TACs may force some closures for management reasons

### How meaningful are the numbers:

- ◆ The actual numbers should be treated as only very rough approximations
- ◆ The estimates provide rough orders of magnitude
- ◆ And a relative ranking



### Note:

- ◆ An error found after the document was distributed leads to an overestimate of the TAC for BSAI Pacific cod fishermen under AIt.s 4 and 4.3.
- ◆ Errata sheets are supplied with the slide handouts.

### Sources:

- ◆ RIR gross product value information can be found in the following places:
- ◆ Overall changes:
  - > Section 1.3.3.1 from page C-45 to C-47
- ◆ Changes by fishing sector
  - > Section 1.4.2
- ◆ Procedures
  - > Section 1.3.3.1 from page C-37 to C-44

### **Market Analysis of Alaska Groundfish Fisheries: Alaska Pollock, Pacific Cod, and Atka Mackerel**

**Northwest Economic Associates  
with assistance from  
Gunnar Knapp, U of AK, Anchorage**

### Overview

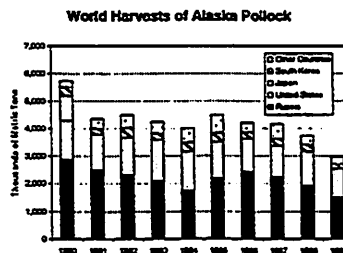
- ◆ Purpose and Scope
- ◆ Market and Industry Structure, Recent and Future Trends
  - > Alaska Pollock
  - > Pacific Cod
  - > Atka Mackerel
- ◆ Econometric Models
- ◆ Impacts of Protective Measures

### Alaska Pollock

- ◆ Harvests
  - > Importance of Russian Stocks
- ◆ Primary Product Forms
  - > Surimi
  - > Roe
  - > Fillets
- ◆ Recent and Future Trends

### Harvests of Alaska Pollock

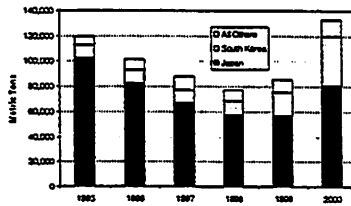
- ◆ Averaged 1.1 million MT in recent years, but more than 1.2 million MT in 2000
- ◆ Foreign and U.S. harvests compete internationally
- ◆ Russian stocks account for half of worldwide harvests....
- ◆ However, harvests from Russian waters are declining



## Surimi

- ◆ 51% of product volume and 50% of product value
- ◆ Mostly exported to Japan, but some to South Korea and Europe
- ◆ Gradually declining demand for surimi in Japan....
- ◆ However, U.S. is increasing market share

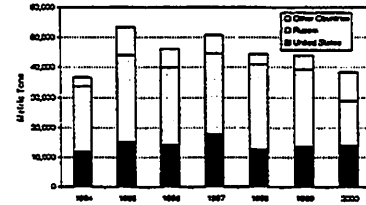
U.S. Exports of Alaska Pollock Surimi



## Roe

- ◆ 5% of product volume and 22% of product value
- ◆ Nearly all roe are exported to Japan
- ◆ Decline in Russian supplies have led to gains in market share by the U.S.

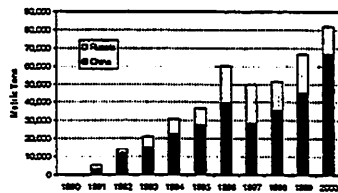
Japanese Roe Imports by Country



## Fillets

- ◆ 19% of product volume and 22% of product value
- ◆ Regular, casual restaurants, frozen and breaded
- ◆ "Deep-dish" dominant whitefish for "quick service" restaurants
- ◆ Primarily domestic market
- ◆ Importance of "twice-frozen" imports from China

U.S. Imports of Frozen Fillets and Blocks from Russia and China



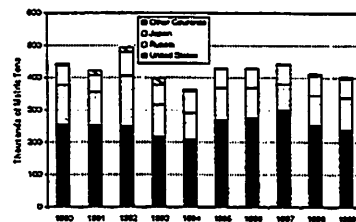
## Pacific Cod

- ◆ Harvests
- ◆ Primary Product Forms
  - > Headed and Gutted (H&G)
  - > Fillets
- ◆ Recent and Future Trends

## Pacific Cod

- ◆ Product forms are varied, and enter both domestic and international markets
- ◆ H&G exported to Japan, Europe, and S. Korea, or retained in the U.S.
- ◆ Fillets are primarily used in the U.S.
- ◆ U.S. is a net importer of fillets

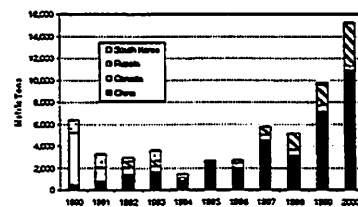
World Harvests of Pacific Cod



## Pacific Cod

- ◆ Atlantic cod has declined in availability – an opportunity for Pacific cod?
- ◆ They are substitutes, but only to a degree
- ◆ Imports of "twice-frozen" cod fillets from China have grown annually
- ◆ Aquaculture-grown whitefish are also increasing

U.S. Imports of Pacific Cod Fillets



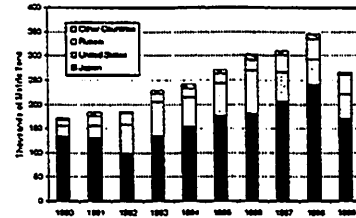
## Atka Mackerel

- ◆ Harvests
- ◆ Product Forms
- ◆ Recent and Future Trends

## Atka Mackerel

- ◆ Harvests peaked at 88,000 MT in 1996; only 42,000 MT in 2000
- ◆ Exported to Japan and South Korea
- ◆ World harvests dominated by Japan
- ◆ Declines in Japanese harvest provide market share opportunity for U.S.

World Harvests of Atka Mackerel



## Econometric Models

- ◆ Purpose
  - > To quantitatively measure impacts of policy changes on the market
- ◆ What economic theory suggests
- ◆ Models for Alaska pollock product forms
- ◆ Preliminary findings and limitations
- ◆ Modeling considerations for Pacific cod and Atka mackerel

## Economic Theory and Pollock Markets

- ◆ Numerous past groundfish economic models, but few that are relevant
- ◆ Recent institutional changes (such as the AFA) make prediction of future impacts difficult
- ◆ International market demand and supply are essential elements
- ◆ Complex product mix decisions and market channels
- ◆ Surimi and fillets should be modeled jointly

## Surimi and Fillets Model

- ◆ Simultaneous Equations Econometric Model:
  - > 7 equations, 2 identities
  - > Monthly data for the period 1994 through 2000
  - > Estimates price and quantity of surimi exports, price and quantity of fillets produced, and quantity of pollock "twice-frozen" fillet imports
  - > Incorporates variables for:
    - landings, prices of substitutes, inventories, AFA, household income, foreign exchange rates, population, Japanese consumption patterns

## Surimi and Fillets Model

- ◆ Preliminary Findings:
  - > Model explains product flows fairly well
  - > Predictive ability is good for fillets, less so for surimi
  - > Nearly all variables were consistent with theory
- ◆ Model Limitations:
  - > U.S. export and Japanese import data inconsistent
  - > Domestic fillet consumption statistics not available
  - > Separation of market segments for fillets needed
- ◆ Model Needs:
  - > Incorporation of more Japanese data
  - > Better definition of fillet disappearance

### Impacts of Protective Measures

- ◆ Qualitative Impacts and Use of the Economic Models
- ◆ Categories of Market Impacts Considered
  - Product Mix and Quantity of Products Supplied
  - Balance of Trade
  - Prices
  - Market Share

### Product Mix and Quantity Supplied

- ◆ Alternative 2:
  - Reduced supply of Alaska pollock product forms
  - Shift in product mix from fillets to surimi
  - Roe harvest reduced as much as 50%
  - Permanent loss in revenue could cause the fishery to cease
  - Weakened supply of Pacific cod fillets to domestic and international market
  - Probable cessation of the Atka mackerel fishery

### Product Mix and Quantity Supplied

- ◆ Alternative 4:
  - Small reduction in supply of Alaska pollock products
  - No noticeable change in product mix
  - Reduced supply of pollock fillets is not likely to be felt by U.S. consumers
  - Negligible effect on supply of Pacific cod fillets
  - Slight reduction in supply of Atka mackerel products; no change in product mix

### Balance of Trade

- ◆ Alternative 2:
  - Significant impact on balance of trade due to lost exports of surimi and roe
  - Substantial losses if the pollock fishery is abandoned
  - Fewer exports, more imports of cod or substitutes
  - Loss of export revenue from Atka mackerel
- ◆ Alternative 4:
  - Some loss of export revenues from pollock surimi and roe, and Atka mackerel products

### Prices

- ◆ Alternative 2:
  - Surimi prices will increase, affecting relatively new markets
  - Large increase in roe prices
  - Some price effect on both pollock and Pacific cod fillets; substitution to other products is likely
  - Atka mackerel prices will increase
- ◆ Alternative 4:
  - Roe prices will increase; prices for other products will remain virtually unchanged

### Market Share

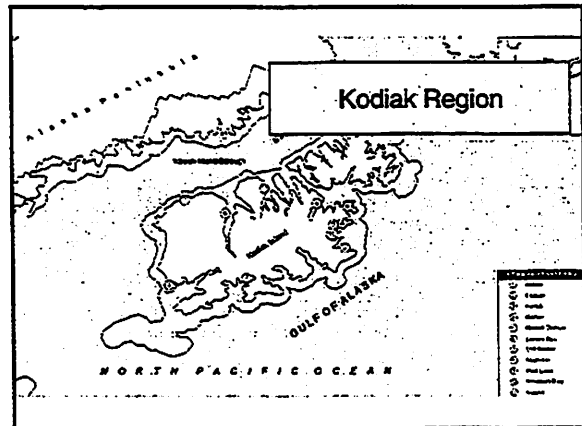
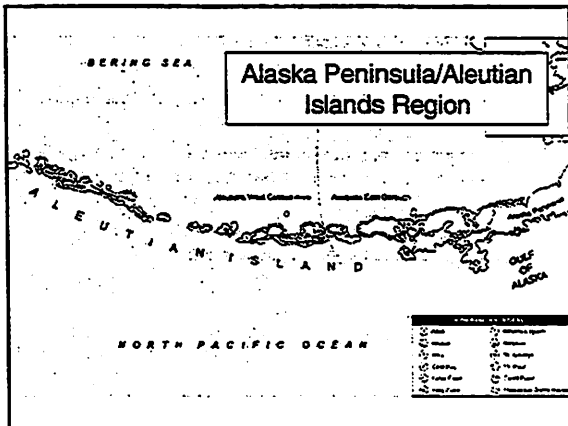
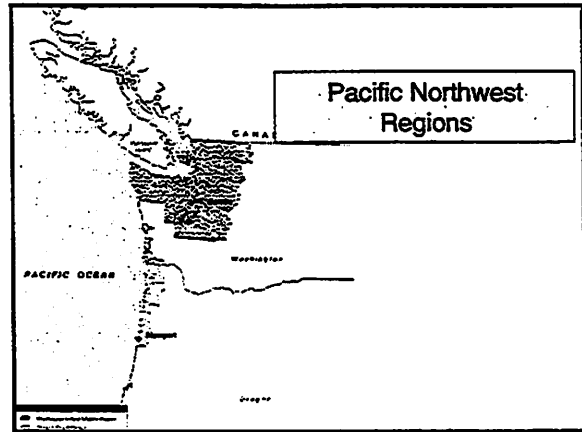
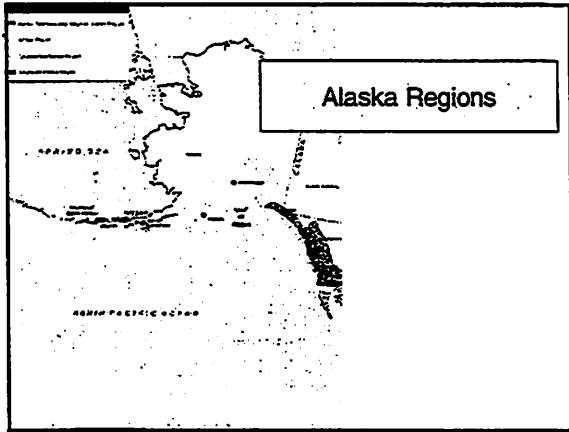
- ◆ Alternative 2:
  - Loss of market share for pollock fillets will be substantial; less so for surimi and roe
  - Substantial loss of market share for Pacific cod
  - Potential full loss of market share for Atka mackerel
- ◆ Alternative 4:
  - No change in market share

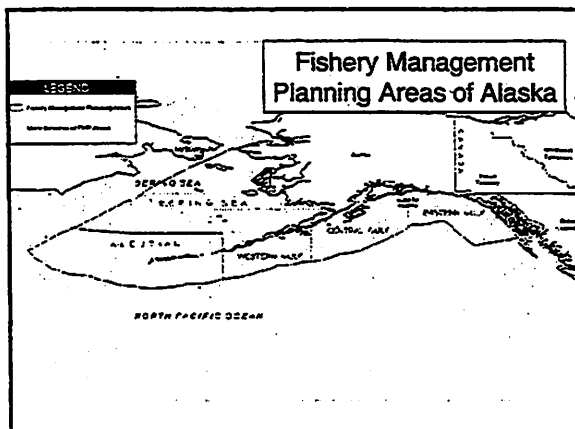
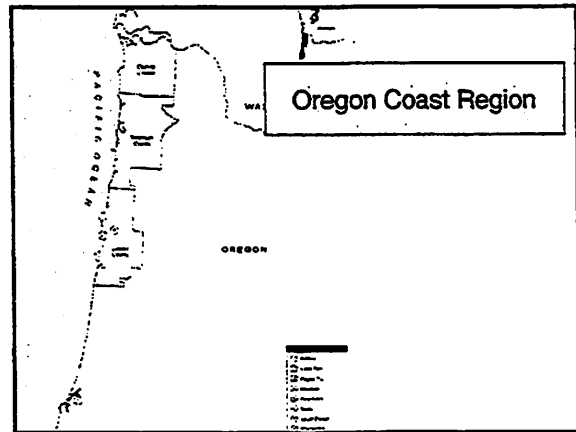
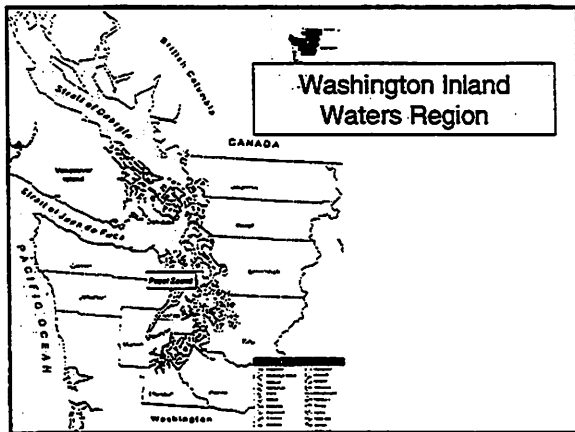
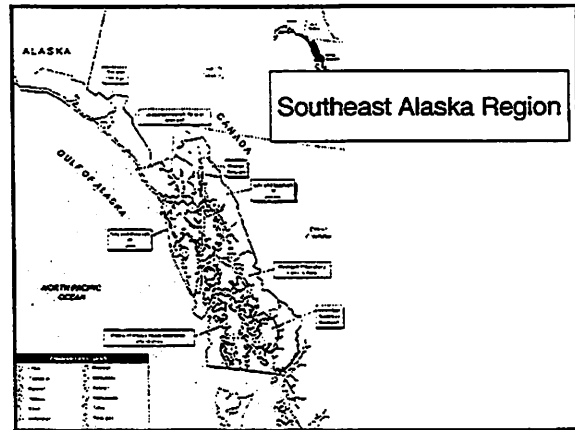
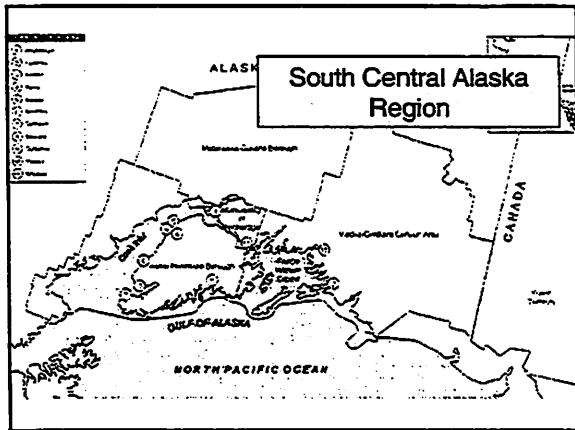
**Mike Downs EDAW**

**Existing Social Conditions**  
section 3.12.2

**Study Region and Their Acronyms**

|        |   |
|--------|---|
| AKAPAI | Alaska Peninsula and Aleutian Islands Region. Includes the Aleutians East Borough and the Aleutians West Census Area.   |
| AKSC   | Southeast Alaska Region. Includes Valdez-Cordova Census Area, Kenai Peninsula Borough, Matanuska-Susitna Borough, and Municipality of Anchorage.  |
| AKKO   | Kodiak Region. Includes the Kodiak Island Borough and other parts of the Kodiak archipelago.  |
| AKSE   | Southeast Alaska Region. Includes Yakutat Borough, Skagway-Hoonah-Angoon Borough, Haines Borough, City and Borough of Juneau, City and Borough of Sitka, Wrangell-Petersburg Census Area, Prince of Wales-Outer Ketchikan Census Area, and Ketchikan Gateway Borough. |
| WAW    | Washington Inland Waters Region. All counties bordering Puget Sound and the Strait of Juan de Fuca, including Clallam, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom.  |
| ORCO   | Oregon Coast Region. Counties bordering the northern Oregon coast including Lincoln, Tillamook, and Clatsop.  |





- ◆ **General Socioeconomic Context**
- > **Population.** Wide ranges of communities and regions.
  - > **Employment and Income.** Provides insight into types and levels of economic engagement with the fishery.
  - > **Tax and Revenue.** Perspective on the role of groundfish fishery in the local economy.

◆ Fishery Attributes

- > **Inshore Processing.** Analysis of volume and value of landings in the region.
- > **Processor Ownership.** Flow of economic benefits.
- > **Catcher Vessel Ownership and Activity.** Links between harvesting and particular regions.

◆ Fisheries Context

- > **Harvest Diversity.** How groundfish fit into the annual cycle for harvesters.
- > **Processor Diversity.** Relative role of groundfish in processing operations.

◆ Other Considerations

- > **Subsistence.** Role of groundfish as a subsistence resource and level of subsistence utilization of Steller sea lions.

Selected North Pacific Groundfish Participation Measures by Region, 1999

| Selected North Pacific Groundfish Participation Measures by Region, 1999 | Region |        |       |       |       |      | Total  |
|--|--------|--------|-------|-------|-------|------|--------|
|  | AKAPAI | AKSO   | AKSC  | AKSE  | WAW   | ORCO |        |
| Processor Management and Payments to Labor                               | 2,764  | 744    | 174   | 172   | 2,764 | 0    | 7,080  |
| Processor Cost (P-Cost)  | 113    | 29.24  | 15.31 | 12.4  | 29.24 | 0    | 217.19 |
| Processor to Labor Ratio   |        |        |       |       |       |      |        |
| Processor Management by Regional Fisheries Groups                        | 264    | 114.71 | 16.83 | 4.79  | 264   | 0    | 693.27 |
| Processor of (Ownership)   | 127    | 21.71  | 6.04  | 0.89  | 127   | 0    | 223.54 |
| Processor Labor (Employment)   | 426    | 11.17  | 4.01  | 0.24  | 426   | 0    | 1,071  |
| Processor Value (Revenue)  | 254.3  | 51.7   | 29.17 | 23.81 | 254.3 | 0    | 437.81 |
| Processor Cost (Revenue)   | 26.2   | 6.11   | 3.12  | 0.88  | 26.2  | 0    | 53.99  |
| Processor to Labor Ratio   |        |        |       |       |       |      |        |
| Processor of (Ownership)   | 127    | 21.71  | 6.04  | 0.89  | 127   | 0    | 223.54 |
| Processor Labor (Employment)   | 426    | 11.17  | 4.01  | 0.24  | 426   | 0    | 1,071  |
| Processor Value (Revenue)  | 254.3  | 51.7   | 29.17 | 23.81 | 254.3 | 0    | 437.81 |
| Processor Cost (Revenue)   | 26.2   | 6.11   | 3.12  | 0.88  | 26.2  | 0    | 53.99  |
| Processor to Labor Ratio   |        |        |       |       |       |      |        |
| Processor of (Ownership)   | 127    | 21.71  | 6.04  | 0.89  | 127   | 0    | 223.54 |
| Processor Labor (Employment)   | 426    | 11.17  | 4.01  | 0.24  | 426   | 0    | 1,071  |
| Processor Value (Revenue)  | 254.3  | 51.7   | 29.17 | 23.81 | 254.3 | 0    | 437.81 |
| Processor Cost (Revenue)   | 26.2   | 6.11   | 3.12  | 0.88  | 26.2  | 0    | 53.99  |
| Processor to Labor Ratio   |        |        |       |       |       |      |        |

1) Includes all employment of all processors handling the segment of all processors (including factory) owned by processors. It includes the segment of all processors handling the segment of all processors owned by processors.

2) All payments to labor from direct processor (including harvest) are reported by the owner region. Owner reports to labor from other parties are reported to the region in which the plant is located.

Source: For processing information, NMFS Stand Data and WPR Data, June 2001 and Northern Economics Industry related data. For harvest information, AKASO Fish Report and NMFS Observer Data, June 2001. Court information does not include "ghost" areas.

Groundfish Harvests Delivered to Inshore Plants by Species, 1999

| Region | Thousands of Tons |       |        |        |        |       | Millions of \$ |         |        |        |        |       |
|--------|-------------------|-------|--------|--------|--------|-------|----------------|---------|--------|--------|--------|-------|
|        | AKSO              | AKSE  | P Cost | Yield  | AKSO   | AKSE  | P Cost         | Yield   | AKSO   | AKSE   | P Cost | Yield |
| AKAPAI | 8.41              | 5     | 36.11  | 274.4  | 543.92 | 5.36  | 1.21           | 61.87   | 267.80 | 316.31 |        |       |
| AKSO   | 11.09             | 12.05 | 53.19  | 59.75  | 112.71 | 1.1   | 2.24           | 212.28  | 23.24  | 61.43  |        |       |
| AKSC   | 4.54              | 0.87  | 3.34   | 2.03   | 10.82  | 20.81 | 0.27           | 6.13    | 2.41   | 59.77  |        |       |
| AKSE   | 4.76              | 0.23  | 0.12   | 0      | 4.92   | 28.32 | 0              | 0.19    | 0      | 28.81  |        |       |
| WAW    | NA                | NA    | NA     | NA     | NA     | NA    | NA             | NA      | NA     | NA     | NA     | NA    |
| ORCO   | NA                | NA    | NA     | NA     | NA     | NA    | NA             | NA      | NA     | NA     | NA     | NA    |
| Total  | 29.03             | 18.2  | 94.77  | 338.18 | 676.2  | 63.81 | 4.72           | 1,044.3 | 320.52 | 577.84 |        |       |

Source: NMFS Stand Data and WPR Data, June 2001.

Groundfish Wholesale Value (\$Millions) of Regionally Owned Processors by Processor Class, 1999

| Processor Class     | Region |      |       |       |        |      | Total  |
|---------------------|--------|------|-------|-------|--------|------|--------|
|                     | AKAPAI | AKSO | AKSC  | AKSE  | WAW    | ORCO |        |
| Catchers-Processors | 0.03   | 23   | 2.04  | 10.94 | 571.07 | 0    | 607.13 |
| Motherships         | 0      | 0    | 0     | 0     | 57.82  | 0    | 57.82  |
| Shoreplants         | 0.42   | 1.72 | 31.26 | 7.16  | 430.81 | 0    | 531.77 |

Source: Dashed tables, Northern Economics (based on NMFS Stand Data and WPR Data, June 2001)

**Groundfish Retained Harvest by Catcher Vessels Owned by Residents of Various Regions by FMP Subarea, 1999**

| Groundfish Retained Harvest by Catcher Vessels Owned by Residents |             |               |              |              |              |               |
|---|-------------|---------------|--------------|--------------|--------------|---------------|
|   | AI          | BS            | WG           | CG           | EG           | Total         |
| <b>Total Ex-Vessel Value (\$Millions)</b>                         |             |               |              |              |              |               |
| AKAPAI  | 0           | 0.4           | 8.65         | 0.77         | *            | 10.12         |
| AKKO  | 0.79        | 4.83          | 0.78         | 22.98        | 0.66         | 30.04         |
| AKSC  | 0.34        | 0.36          | 1.01         | 8.19         | 0.4          | 10.31         |
| AKSE  | 0.15        | 0.16          | 0.7          | 4.07         | 12.59        | 17.67         |
| WAW   | 4.98        | 106.18        | 7.68         | 13.76        | 7.36         | 139.97        |
| ORCO  | 0           | 13.16         | 0.34         | 9.05         | *            | 22.78         |
| <b>Total</b>  | <b>6.26</b> | <b>125.09</b> | <b>19.17</b> | <b>58.82</b> | <b>21.01</b> | <b>230.89</b> |

\* Due to the confidentiality of the data presented, this value has been suppressed.

Source: ADF&G Fish Tickets and NMFS Observer Data, June 2001

**Number of Boats and Retained Catch by Weight and Value by Species Group by Catcher Vessel Ownership by Region, 1999**

| Number of Boats and Retained Catch by Weight and Value by Species Group by Catcher Vessel Ownership by Region, 1999 |        |       |       |       |        |       |
|---|--------|-------|-------|-------|--------|-------|
| Region  | AKAPAI | AKKO  | AKSC  | AKSE  | WAW    | ORCO  |
| <b>Number of Boats</b>  |        |       |       |       |        |       |
| No. of Catcher Vessels  | 30     | 10    | 458   | 2224  | 303    | 37    |
| Retained Tons (Thousands)   | 0.11   | 3.1   | 1.3   | 4.3   | 6.1    | 1.2   |
| Ex-Vessel Value (\$Millions)  | 0.42   | 4.48  | 3.71  | 16.48 | 16.34  | 1.24  |
| <b>Value</b>  |        |       |       |       |        |       |
| No. of Catcher Vessels  | 12     | 33    | 1     | 13    | 101    | 23    |
| Retained Tons (Thousands)   | 0      | 2.2   | 0.2   | 0.1   | 3.4    | 1.7   |
| Ex-Vessel Value (\$Millions)  | 0      | 0.34  | 0.08  | 0.02  | 6.3    | 0.23  |
| <b>Pollock</b>  |        |       |       |       |        |       |
| No. of Catcher Vessels  | 67     | 130   | 131   | 1071  | 101    | 31    |
| Retained Tons (Thousands)   | 14.5   | 27.3  | 8.1   | 1.9   | 43.8   | 18.3  |
| Ex-Vessel Value (\$Millions)  | 7.34   | 17.67 | 5.91  | 1.15  | 21.81  | 10.23 |
| <b>Other</b>  |        |       |       |       |        |       |
| No. of Catcher Vessels  | 18     | 62    | 31    | 124   | 108    | 27    |
| Retained Tons (Thousands)   | 0.6    | 24.3  | 2.8   | 0     | 48.6   | 33    |
| Ex-Vessel Value (\$Millions)  | 2.15   | 7.29  | 0.61  | 0.01  | 101.01 | 10.82 |
| <b>All Other Species</b>  |        |       |       |       |        |       |
| Total No. of Catcher Vessels  | 67     | 130   | 170   | 2235  | 303    | 37    |
| Total Retained Tons (Thousands)   | 24.5   | 68.3  | 17.2  | 6.3   | 247.1  | 24.7  |
| Total Ex-Vessel Value (\$Millions)  | 10.15  | 20.01 | 10.21 | 17.67 | 124.01 | 22.29 |

Source: ADF&G Fish Tickets and NMFS Observer Data, June 2001. Cover information does not include "prior" areas, while weight information includes "prior" areas in order to minimize retention where data can not be reported due to NMFS confidentiality.

**Retained Harvests by FMP Area and Species of Regional Catcher Vessels, 1999**

| Region of CV Owner         | Alaska Waters |       | Gulf of Alaska |        | Bering Sea |       | Chukchi Sea |       | Arctic Ocean |       | Total  |
|----------------------------|---------------|-------|----------------|--------|------------|-------|-------------|-------|--------------|-------|--------|
|                            | Pollock       | Other | Pollock        | Other  | Pollock    | Other | Pollock     | Other | Pollock      | Other |        |
| AKAPAI                     | 0             | 0.04  | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| AKKO                       | 1.14          | 0.81  | 0.7            | 14.87  | 4.25       | 3.3   | 1.4         | 10.79 | 0.1          | 0.28  | 63.74  |
| AKSC                       | 0.28          | 0     | 1.48           | 0.73   | 0.24       | 0.28  | 0.28        | 1.1   | 0.04         | 0.04  | 10.13  |
| AKSE                       | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.12  | 1.14        | 0.04  | 0.04         | 0.04  | 1.24   |
| WAW                        | 8.24          | 0.04  | 21.61          | 442.61 | 0.04       | 10.81 | 10.12       | 16.84 | 0.04         | 1.18  | 677.07 |
| ORCO                       | 1.04          | 0.04  | 0.23           | 20.11  | 0.23       | 3.23  | 0.23        | 10.23 | 0.04         | 0.3   | 71.07  |
| <b>Subtotal (Regional)</b> |               |       |                |        |            |       |             |       |              |       |        |
| AKAPAI                     | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| AKKO                       | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| AKSC                       | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| AKSE                       | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| WAW                        | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |
| ORCO                       | 0.04          | 0     | 0.04           | 0.04   | 0.04       | 0.04  | 0.04        | 0.04  | 0.04         | 0.04  | 0.04   |

Source: Summarized from National Estimates based on ADF&G Fish Tickets and NMFS Observer Data, June 2001

**Extended Community Profiles Provided for Regionally Important Groundfish Communities**

- > Unalaska/Dutch Harbor
- > Akutan
- > King Cove
- > Sand Point
- > Kodiak
- > Seattle

**Social Impact Assessment section 4.12.2**

- ◆ 21 socioeconomic indicators tracked by region (for pollock, Pacific cod, and Atka mackerel, plus total)
- ◆ Baseline calculated for Alternative 1
- ◆ Changes from the Baseline (Alt 1) calculated for Alternatives 2 and 4

**21 Socioeconomic Indicators**

- > Total Regionally Owned CV Harvest (Tons)
- > Total Ex-Vessel Value (\$)
- > Total Catcher Vessel Payments to Labor (\$)
- > Total CV Employment (FTE)
- > Total Ex-Vessel Value Paid by Shorebased Processors in the Region (\$)
- > Total Regionally Owned At-Sea Processing (Round-Weight Tons)



◆ 21 Socioeconomic Indicators (continued)

- Total Shore Based Processing in the Region (Round-Weight Tons)
- Total Regionally Owned Processing—At-Sea or shore Based (Round-Weight Tons)
- Total Regionally Owned At-Sea Processing At-Sea Processed Value (\$)
- Total Shore Based Processed Value in the Region (\$)
- Total Regionally Owned Processing Value—At-Sea or Shore Based (\$)

◆ 21 Socioeconomic Indicators (continued)

- Total Regionally Owned At-Sea Processing Payments to Labor (\$)
- Total Shore Based Processing Payments to Labor in the Region (\$)
- Total Administrative Payments to Labor of All Regionally Owned Processors (\$)
- Total Processing Payments to Labor Accruing to the Region (\$)
- Total Regionally Owned At-Sea Processing Employment (FTE)

◆ 21 Socioeconomic Indicators (continued)

- Total Shore Based Processing Employment of All Regionally Owned Processors (FTE)
- Total Administrative Employment of All Regionally Owned Processors (FTE)
- Total Processing Employment Accruing to the Region (FTE)
- Total Harvesting and Processing Payments to Labor Accruing to the Region (\$)
- Total Harvesting and Processing Employment Accruing to the Region (FTE)

◆ Discussion Focused on Five Key Indicators

- **Total regionally owned catcher vessel harvest volume.** This provides a gross indication of direct participation by regional residents in the harvest sector.
- **Total ex-vessel value paid by shorebased processors in the region.** This figure provides a good indication of the relative value of the relevant groundfish species coming ashore in the region, and provides a good indicator of the level and changes in level of the local fisheries related tax base.

◆ Discussion Focused on Five Key Indicators (continued)

- **Total shorebased processing volume in the region.** This provides an indication of the level of activity taking place on shore in the region.
- **Total harvesting and processing payments to labor accruing to the region.** This indicator illustrates the value of the fishery employment to the residents of the region.
- **Total harvesting and processing employment accruing to the region.** This indicator provides a means to track changes in the total groundfish fisheries employment in the region.

◆ High and Low Estimates

- A high estimate and a low estimate are provided for each alternative.
- The high estimate is based on the assumption that all of the available TACs of pollock, Pacific cod and Atka mackerel are harvested, including portions of the TACs that are directly affected by the Alternative.
- The high estimate in this sense represents a "best-case" scenario for the alternative.

◆ High and low Estimates (continued)

- > The low estimate is based on the assumption that none of the portions of the available TACs that are directly affected by the Alternative are harvested-the low estimate eliminates all "at-risk" harvests.
- > The low estimate is based on the assumption that none of the portions of the available TACs that are directly affected by the Alternative are harvested-the low estimate eliminates all "at-risk" harvests.
- > The low estimate may not necessarily represent a "worst case" scenario, because other outside factors could influence the outcome.

◆ High and low Estimates (continued)

- > Because fishers have shown a great deal of adaptability in the past, it is unlikely that the harvest and processing levels associated with the low estimate will occur.
- > It is most likely that the actual outcome will fall somewhere between the high estimate and the low estimate.

◆ Comparison and Results

- > For each of the regions, the analysis compares the high estimates of Alternative 2 and 4 to the high estimate under the baseline as depicted by Alternative 1.
- > Comparisons show the difference in the alternative calculated by subtracting the results of Alternative 1 from the results of the alternative being analyzed (Difference = Alt2-Alt.1)
- > Percentage differences are estimated by dividing the difference by the outcome under the alternative.   
Percentage Difference=(Difference divided by Alt.1)
- > Similar comparisons are made between the low estimates of the baseline (Alternative 1) and of Alternatives 2 and 4.

◆ Example of Alternative 1 Baseline Table

Alternative 1 AK APAI Region Groundfish Fishery Socioeconomic Indicators

◆ Display of Results

- > Three tables are presented for each alternative for each region.
- > The first table is an absolute value for the alternative for each of the 21 socioeconomic indicators.
- > The second table is the calculated difference from the baseline (Alternative 1)
- > The third table is the percentage difference from the baseline (Alternative 1)

Summary of Results

Comparisons of Alternatives 1,2 and 4 using four socioeconomic indicators.

| Indicator   | Alternative 1 (Baseline) |        | Alternative 2 |        | Alternative 4 |        |
|-------------|--------------------------|--------|---------------|--------|---------------|--------|
|             | Value                    | Change | Value         | Change | Value         | Change |
| Total Catch | 210,000                  | 0      | 210,000       | 0      | 210,000       | 0      |
| Total Value | 1,200,000                | 0      | 1,200,000     | 0      | 1,200,000     | 0      |
| Employment  | 100                      | 0      | 100           | 0      | 100           | 0      |
| Income      | 200,000,000              | 0      | 200,000,000   | 0      | 200,000,000   | 0      |

◆ **Effects Analysis, by Alternative: Alaska Peninsula/Aleutian Islands Region**

**Alternative 2: Catcher Vessels**

- High-case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels declines by about 54% (55 for pollock and 52 for cod).
- Low-case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels would decline by about 80% (90 for pollock and 67 for cod).
- Given that in recent years groundfish accounted for roughly half of the total harvest diversity of these vessels, and pollock and Pacific cod accounted for over 99% of volume and 96% of value of the groundfish harvest of these vessels in 1999, these are very substantial declines.

◆ **Effects Analysis, by Alternative: APAI Region (continued)**

**Alternative 2: Processors**

- High case: Total ex-vessel paid by shore based processors in the region is projected to decrease 34% for combined pollock and Pacific cod (30% for pollock and 48% for cod). Shore based processing of combined pollock and Pacific cod is also projected to decrease by about the same amount (32% in general, 30% for pollock, and 48% for cod).

◆ **Effects Analysis, by Alternative: APAI Region (continued)**

**Alternative 2: Processors**

- Low case: Total ex-vessel value paid by shore based processors in the region is projected to decrease 60% for combined pollock and Pacific cod-57% for pollock and 72% for cod. Shore based processing of combined pollock and Pacific cod is also projected to decrease by about the same amount (59% in general, 57% for pollock, and 73% for cod)

◆ **Effects Analysis, by Alternative: APAI Region (continued)**

**Alternative 2: Processors**

- Given that for the larger shoreplants in the region, groundfish in recent years accounted for about 50% of volume and 60% of value overall, and that Pacific cod and pollock combined accounted for 98% of volume and product value reported for groundfish for 1999, these are again very substantial declines.

◆ **Effects Analysis, by Alternative: APAI Region (continued)**

**Alternative 2: Summary**

- Given the relative dependency upon the groundfish fishery in general, and the pollock and Pacific cod components of the fishery in particular, this would result in significant impacts to those communities in the region engaged in the fishery.
- This would have profound effects upon local communities with large groundfish processing plants -Unalaska, Akutan, King Cove, and Sand Point.

◆ **Effects Analysis, by Alternative: APAI Region (continued)**

**Alternative 4: Summary**

- Alternative 4 would have some effects upon Alaska Peninsula/Aleutian Islands participation in the fishery and upon local communities.
- For the most part such effects would be expected to be no worse than those experienced from "normal" fluctuations in the fishery.

◆ Effects Analysis, by Alternative: Kodiak Region (cont.)

Alternative 2: Processors

- > High case: Total ex-vessel value paid for by shore based processors in the region is projected to decrease 50% for combined pollock and Pacific cod (55% for pollock and 46% for cod). Shore based processing of combined pollock and Pacific cod is also projected to decrease by about the same amount (52% in general, 55% for pollock, and 46% for cod).
- > Low case: Total ex-vessel value paid by shore based processors in the region is projected to decrease 71% for combined pollock and Pacific cod (93% for pollock and 54% for cod). Shore based processing of pollock and Pacific cod combined is projected to decrease by a greater percentage (82% in general, 93% for pollock, and 55% for cod).

◆ Effects Analysis, by Alternative: Kodiak Region (cont.)

Alternative 2: Processors

- > Given that groundfish in recent years has been approaching half of the overall value at these plants, and that Pacific cod and pollock combined represented 81% of volume and 85% of total groundfish product value in 1999, these are also substantial declines.

◆ Effects Analysis, by Alternative: Kodiak Region (cont.)

Alternative 2: Summary

- > Depending on the socioeconomic variable chosen, Alternative 2 is projected to reduce Kodiak participation in the groundfish fishery by 41 to 93% for pollock and by 41 to 58% for Pacific cod, or about 41 to 82% combined.
- > This would have significant socioeconomic effects upon the region, and especially the community of Kodiak, given the local engagement in, and dependency upon the groundfish fishery.

◆ Effects Analysis, by Alternative: Kodiak Region (cont.)

Alternative 4: Summary

- > Alternative 4 would have some effects upon Kodiak regional participation in the fishery and upon local communities.
- > Such effects may be comparable to those experienced from "normal" fluctuations in the fishery.

◆ Effects Analysis, by Alternative: Washington Inland Waters Region

Alternative 2: Catcher Vessels

- > High case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels declines by about 41% (41 for both pollock and cod)
- > Low case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels declines by about 67% (71 for pollock and 58 for cod).
- > Given that in recent years groundfish accounted for somewhat less than half of the ex-vessel value to these vessels, and that pollock and Pacific cod accounted for 89% of the volume and 83% of the value of all groundfish to these vessels in 1999, this is a substantial decline.

◆ Effects Analysis, by Alternative: Washington Inland Waters Region

Alternative 2: Catcher Vessels

- > High case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels declines by about 28% (27 for pollock, 49% for cod-Atka mackerel also declines but in absolute terms is an insignificant portion of the total).
- > Low case: Total combined pollock and Pacific cod harvested by regionally owned catcher vessels declines by about 53% (52% for pollock, 72 for cod).
- > Given that in recent years groundfish accounted for roughly 60% of the total harvest diversity ex-vessel value for these vessels, and that pollock and Pacific cod and that in 1999 pollock and cod accounted for 98% of volume and 88% of the ex-vessel value of all groundfish for these vessels, this is a substantial decline.

◆ **Effects Analysis, by Alternative: Washington Inland Waters Region (cont.)**

**Alternative 2: Summary**

- > Depending on the socioeconomic variable chosen, Alternative 2 is projected to reduce Washington Inland Waters participation in the groundfish fishery by 19 to 59% for pollock and by 17 to 72% for Pacific cod, or about 20 to 54% combined.
- > This would have significant effects upon the Alaska groundfish fishing sectors present in the region.
- > Given the scale of the metropolitan Seattle area (where these sectors tend to be based) and the size of the regional economy, however, evaluation of specific community or otherwise geographically localized impacts resulting from these declines is problematic.

◆ **Effects Analysis, by Alternative: Washington Inland Waters Region (cont.)**

**Alternative 2: Summary**

- > Taken as a whole, greater Seattle's engagement in, and dependency upon, the North Pacific groundfish fishery is a relatively minor component of the socioeconomic structure of the community, in sharp contrast to some of the smaller Alaskan communities.
- > On the other hand, in absolute term, the declines accruing to this region are much greater than those for any other region under this alternative.

◆ **Effects Analysis, by Alternative: Washington Inland Waters Region (cont.)**

**Alternative 4: Summary**

- > The primary effects of Alternative 4 on the Washington Inland Waters region would be upon region would be upon regional owner of catcher vessels.
- > While processors may be affected in a relatively small degree, such effects may be comparable to those experienced from "normal" fluctuations in the fishery.

**Summary of SEIS**

*Tamara Paris*

**Preferred Alternative**

- ◆ Based upon the balanced consideration of direct, indirect, and cumulative effects of the five alternatives; compliance with the ESA; and socio-economic consequences, Alternative 4 has been identified as the preferred alternative
- ◆ Between draft and final the alternative designated as preferred may change

**Remaining Needs for the EIS**

- ◆ Consistency review of the entire analysis
- ◆ Receive comments, respond to comments, incorporate necessary changes
- ◆ Final Section 7 Biological Opinion
- ◆ Resolve remaining issues:
  - 1 State of Alaska managed fisheries
  - 2 Monitoring program under incidental take permit

## Time Schedule

- ◆ August 31 - Notice of Availability of Draft SEIS  
day 1 of 45 day public comment period
- ◆ October 15 - Last day public comment period
- ◆ October 15-November 9 - Review comments,  
respond to comments, and prepare Final SEIS
- ◆ November 30 - Notice of Availability of Final SEIS
- ◆ No later than December 31 - Record of Decision
- ◆ January 1 - Emergency Rule in place for Federal  
Groundfish Fisheries

## Steller Sea Lion Protection Measures Draft Supplemental Environmental Impact Statement



National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Alaska Region  
August 2001

### Volume II Contents

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**August 2001**

## **DRAFT Biological Opinion**

**On Amendments 61/61 and 70/70**

**AFA and Steller sea lion  
protection measures**

## Overview

- ◆ Reviewer Letter
- ◆ Chapter 1- Objectives and Background Info.
- ◆ Chapter 2- Description of the Proposed Action
- ◆ Chapter 3- Status of Species and Critical Habitat
- ◆ Chapter 4- Environmental Baseline
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- ◆ Chapter 6- Cumulative Effects
- ◆ Chapter 7- Conclusions
- ◆ Chapter 8- Incidental Take Statement
- ◆ Chapter 9- Conservation Recommendations
- ◆ Chapter 10- Literature Cited
- ◆ Unpublished papers
- ◆ Errata Sheet on the Web

## Reviewer Letter

- ◆ DRAFT Biological Opinion
- ◆ Comment deadline: September 21
- ◆ Request comments specific to the need for spatial  
and temporal dispersion measures

## Chapter 1 - Objectives and Background Info.

- ◆ Evaluates Amendments 61/61 and 70/70 (BSA and GOA)
- ◆ Biological Assessment provided by SF
- ◆ Consultation on Steller sea lions only (2 pops.)  
All other listed species determined to have no effect  
not previously considered in the Nov. 2000 FMP  
Biological Opinion (BA)
- ◆ Action specific biological opinion, the FMP Biological  
Opinion remains (RPA would not be necessary)
- ◆ Supporting documents and unpublished white papers were  
not appended, available via NMFS website
- ◆ Standards for Jeopardy and Adverse Modification

## Chapter 2 - Description of the Proposed Action

- ◆ Objectives:
  - Avoid Jeopardy and Adverse Modification of Critical Habitat
- ◆ Biological Assessment provides the background information
- ◆ Action Area – BSAI and GOA
- ◆ Description of the Proposed Action
- ◆ BiOp did not consider Council options for Alt. 4
  - ESA Section 7 consultations examine an action as it is most likely to be implemented, and generally does not evaluate a range of options

## Chapter 3 - Status of Species and Critical Habitat

- ◆ Western and Eastern Stocks of Steller Sea Lions
- ◆ Overview of Critical Habitat (CH) designation
  - Additional 19 haulout sites which are treated as if they were listed as critical habitat
- ◆ Population dynamics and foraging requirements (SEIS 3.1.1)
- ◆ Current and future sea lion research programs

## Chapter 4 – Environmental Baseline

- ◆ Biological requirements in the action area (4.2)
- ◆ Overview of the decline of Steller sea lions (4.3)
  - Phases of the Decline (Fig. 4.2; section 4.3.1)
    - Two phases with possibly different causes
  - Possible factors contributing to the current decline (4.3.2)
    - As much as 75% of the decline is unexplained
    - Predation
      - Nutritional stress through natural environmental changes or human induced changes
    - Disturbance, Subsistence
    - Other unknown causes

## Chapter 4 - continued

- ◆ Factors affecting species' environment (4.4)
  - Environmental change (the regime shift) (4.4.1)
  - Predation by killer whales and sharks (4.4.2)
  - Effects of commercial fisheries (4.4.3)
    - Direct and Indirect
    - Both Federal and State managed
  - Intentional takes of sea lions (4.4.4)
  - Population growth and development (4.4.5)
  - Synthesis of effects (4.5)
    - Between 2.8-3.9% of the 5.2% decline may be unaccounted for
- ◆ Comparison to other pinnipeds around the world (4.5.3)

## Chapter 5 – Effects of the Action

- ◆ Approach to the jeopardy assessment: 3 steps (5.1)
  1. Identify probable direct and indirect effects
  2. Determine if the above effects are likely to cause reductions in reproduction, numbers, or distribution
  3. If any reductions above, then will there be a reduction in survival and recovery
- ◆ Approach to the assessment for adverse modification of CH
  - Qualitative look at the effects by zone in critical habitat
- ◆ Decision making error – conservative approach (5.1.1)

- ◆ Steller sea lion movement patterns using satellite telemetry (5.2)
- ◆ Recent information on sea lion at-sea distribution:
  - Loughlin et al. unpublished (NMML data, pups and juveniles)
  - ADF&G and NMFS 2001 – an overview of the current status of telemetry research, the information presented to the RPA committee (Spring 2001), and further discussion on the merits and caveats of using telemetry data to infer foraging patterns

### Summary of Available Telemetry Information

sections 5.2.1.1 – 5.2.1.4

- ◆ Deployment background and history (5.2.1.1)
- ◆ Previous use of telemetry information (FMP BiOp) (5.2.1.2)  
FMP BiOp – course analysis; in/out of 20 nm
- ◆ Data presented to RPA committee (Spring 2001) (5.2.1.3)  
Analysis based on distance from land  
About 75% of observations 0-10 nm from shore  
Loughlin et al. 93.8% of juvenile locations within 10 nm of shore  
Observations may not indicate foraging

### ◆ Discussion on Satellite Telemetry Information (5.2.1.4)

- Change in scale:  
Previously all critical habitat was managed as a single area  
Given new information, areas close to shore are likely to be more important to foraging sea lions  
Management should reflect zonal approach based on sea lion needs
- Table 5.1 displays at-sea locations by zone for 2 different foraging models (NMML database)  
5.1a – At-sea locations by zone  
5.1b – Reduction of 0-2 nm zone by 90% to simulate alternative approaches to limiting biases

Table 5.1

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Table 5.1a reflects the entire database of NMML deployments from 1990-2000. In Table 5.1b 90 percent of the observations between 0-2 nm were deleted to show one method for approaching potential biases in the data.

Table 5.2

| Zone                               | Level of Concern |
|------------------------------------|------------------|
| 0-3 nm                             | High             |
| 3-10 nm                            | High             |
| 10-20 nm                           | Low to moderate  |
| Beyond 20 nm                       | Low              |
| Spatial dispersion (beyond 10 nm)  | Low              |
| Temporal dispersion (beyond 10 nm) | Low to moderate  |
| Global fishing effects             | Moderate         |

### ◆ Zonal interpretation of the telemetry information (5.2.1.5)

### ◆ Direct and indirect effects of fisheries on sea lions (5.3)

Table 5.3

| Alaska BSA     | 0-3nm | 3-10nm | 10-20nm | 20nm+ | Spatial | Temporal |
|----------------|-------|--------|---------|-------|---------|----------|
|                |       |        |         |       |         |          |
| Spring Sea     | 0-3nm | 3-10nm | 10-20nm | 20nm+ | Spatial | Temporal |
|                |       |        |         |       |         |          |
| Gulf of Alaska | 0-3nm | 3-10nm | 10-20nm | 20nm+ | Spatial | Temporal |
|                |       |        |         |       |         |          |

### Evaluation of Possible Fishery Effects by Zone

(5.3.2)

- Zone 0-3 nm
- Zone 3-10 nm
- Zone 10-20 nm
- Zone beyond 20 nm
- Zone spatial dispersion (beyond 10 nm)
- Zone temporal dispersion (beyond 10 nm)
- Zone global control of fishing effort



◆ Comparison of the proposed action to the RPA (5.3.2.8)

➤ Qualitative model – DeMaster 2001

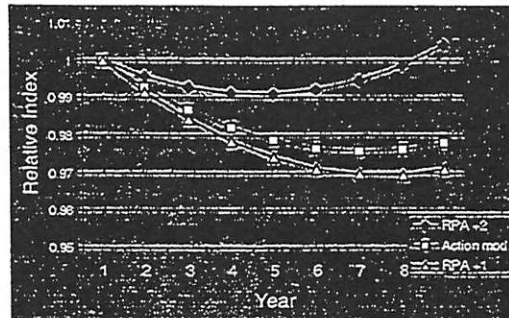
➤ Assumption:

Conservation efforts from 0-10 nm were weighted three times as much as from 10-20 nm

Proposed action is as conservative as "worst case" scenario under the RPA, but not as conservative as a "best case" scenario

Proposed action is moderately between the two

Comparison of Relative Trend Indices for Sea Lions (NEW)



Estimated Trajectories for Various Fishery Regimes

| Action                         | Expected Trajectory |
|--------------------------------|---------------------|
| RPA (FMP BiOp)                 | (-0.77%)            |
| RPA with plus 1 for open areas | (-0.37%)            |
| RPA with plus 2 for open areas | 0.05%               |
| Proposed action                | (-0.41%)            |
| Modified Proposed action (NEW) | (-0.28%)            |

◆ Analysis for Jeopardy and Adverse Modification of Critical Habitat (5.4)

Definitions for Jeopardy and Adverse Modification

➤ Jeopardy

Step 2: will sea lions experience reductions

Step 3: will reduction result in an appreciable reduction in survival and recovery

◆ Jeopardy Analysis: Step 2 (5.4.1.1)

We will determine if we would reasonably expect the western or eastern populations of Steller sea lions to experience reductions in reproduction, numbers, or distribution in response to these effects

**Response:** it is reasonably likely that the western population will experience reductions in numbers in response to the proposed action and those effects outlined in the baseline.

**Rationale:** lack of strong evidence for nutritional stress, natural environmental change, predation, and limited fishery interactions

◆ Jeopardy Analysis: Step 3 (5.4.1.2)

We will determine if any reductions in a species' reproduction, numbers, or distribution (identified in the second step of our analysis) can be expected to appreciably reduce a listed species' likelihood of surviving and recovering in the wild.

**Response:** the effects from are not likely to appreciably reduce their likelihood for survival and recovery in the wild.

**Rationale:** the proposed action will effectively minimize adverse interactions with sea lions, continued moderate decline is possible due to a variety of natural causes not yet understood

◆ **Adverse modification of critical habitat** (5.4.2)

➢ Forage ratio method (5.4.2.1)

➢ Qualitative/zonal approach (5.4.2.2)

Adequate protection in the 5 zones of critical habitat (0-3, 3-10, 10-20, Temporal, and Spatial dispersion)

The proposed action is not likely to reduce the abundance of prey within local foraging areas and alter the distribution of groundfish prey in way that could reasonably be expected to reduce the foraging success of sea lions, and therefore, it would not reduce their likelihood for survival and recovery in the wild.

### Chapter 6 – Cumulative Effects

- ◆ Include the effects of future State, tribal or private actions in the action area
- ◆ Direct and indirect effects of Alaska State commercial fisheries, sport fisheries, and subsistence fisheries
  - State managed fisheries may compete with Steller sea lions for prey resources in the 0-3 nm zone, which may contribute to the continued decline
- ◆ Alaska State oil and gas leasing

### Chapter 7 – Conclusions

◆ **Western population of Steller sea lions:**

After reviewing the current status of critical habitat that has been designated for the western population of Steller sea lions, the environmental baseline for the action area, the proposed action for Alaska Groundfish in the Bering Sea and Aleutian Islands and Gulf of Alaska, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of, or adversely modify its designated critical habitat.

◆ **Eastern population of Steller sea lions:**

After reviewing the current status of critical habitat that has been designated for the eastern population of Steller sea lions, the environmental baseline for the action area, the proposed action for Alaska Groundfish in the Bering Sea and Aleutian Islands and Gulf of Alaska, and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of, or adversely modify its designated critical habitat.

### Chapter 8 – Incidental Take Statement

- ◆ Authorizes limited takes of Steller sea lions in the proposed fishery

### Chapter 9 – Conservation Recommendations

- ◆ Conservation programs for State managed fisheries
- ◆ Explore programs to minimize the "race for fish"
- ◆ Recovery Plan
- ◆ Develop co-management agreements with Alaska Native Organizations

### Additional Information for Parallel Fishery Catch History in State Waters (0-3 nm)

- ◆ Proposed action includes closures during the parallel fishery within 0-3 nm of shore
- ◆ Draft conclusions of the opinion assume these closures will be effective
- ◆ Roughly 30-35% of GOA P. cod and pollock are harvested within 0-3 nm, about 5% in the BSAI