# ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW
# INITIAL REGULATORY FLEXIBILITY ANALYSIS

For Regulatory Amendment to Permit an Investigation of the Effect of Commercial Fishing on Walleye Pollock Distribution and Abundance in Localized Areas off the East Side of Kodiak Island

Implemented Under The Authority Of The
Fishery Management Plans
For The
Groundfish Fishery of the Gulf Of Alaska

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Abstract: This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) provides an analysis of a proposed regulatory amendment. Approval of the regulatory amendment would impose a seasonal ban on all trawl fishing in the Chiniak Gully region on the east side of Kodiak Island. These fishing regulations would be in effect during the period of August 1st to a period no later than September 20th in the years 2003 - 2004. The changes in fishing regulations are needed to permit NMFS to conduct experiments on the effects of fishing on pollock distribution and abundance, as part of a comprehensive research program on sea lion/fishery interactions. The EA/RIR/IRFA provides an analysis of the expected impacts of proposed regulations on groundfish target species stock status, higher and lower trophic level species, and the physical and socioeconomic environment.

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## EXECUTIVE SUMMARY

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) reviews the potential impacts of a regulatory amendment to permit a sea lion fishery interaction experiment off the east side of Kodiak Island. This amendment was proposed in July 2000 (65 FR 41044) and withdrawn due to Steller sea lion litigation in October 2000 (65 FR 58727, October 2, 2000). The experiment described in this document has been implemented by emergency interim rule in 2001 (66 FR 7276, January 22, 2001) and in 2002 (67 FR 956, January 8, 2002). Progress reports have been provided to the North Pacific Fishery Management Council at the February 2001 and 2002 meetings. A proposed and final rulemaking to implement Steller sea lion protection measures will include this experiment and is scheduled to be completed by January 1, 2003. The regulatory amendment for this experiment will expire after 2004.

The goal of this experiment is to identify and quantify the effects of commercial trawl fishing on the availability of potential prey (i.e. pollock) to Steller sea lions within a finite area off the east side of Kodiak Island. A more detailed description of the proposed study is set out in appendix A to the EA. The experiment is designed to provide information bearing on the following questions:

1. Whether measurable changes exist in the distribution and abundance of pollock during the duration of the experiment?

2. Whether commercial pollock fisheries cause short-term (days to weeks) changes in the pollock school dynamics?

3. Whether pollock fisheries cause reductions in the availability of sea lion forage (i.e. pollock) in localized regions off the east side of Kodiak Island?

NMFS chose the study location because the areas fished on the east side of Kodiak offered generally discrete concentrations of fish separated by topographical features. The concentration of fishing effort in the Gulf of Alaska enables the designation of comparable treatment (fished) and control (unfished) sites, which are essential to the study design.

The purpose of this EA/RIR/IRFA is to assess the impacts of establishing a ban on all trawl fishing in the Chiniak Gully region off the east side of Kodiak Island. NMFS expected that this action will be in effect from August 1st to a date no later than September 20th during the years 2001 to 2004. This EA addresses potential impacts of changes in the distribution of groundfish harvest on target groundfish species, higher trophic level species, Endangered Species Act (ESA) listed species, marine habitat, other predators and prey. In aggregate these impacts constitute an evaluation of the environmental impacts of the proposed regulatory amendment. This RIR/IRFA will also discuss potential socioeconomic impacts of the proposed action.

For purposes of background information, this EA relies on the impact analysis of the broader action of groundfish fishing under various levels of TAC specifications that was documented in a supplemental environmental impact statement (SEIS) (NMFS 1998a) prepared to supplement the original Environmental Impact Statements (EISs) for the Fishery Management Plan (FMP) for the Gulf of Alaska (GOA) (NPFMC 1994). This EA also relies on the recently completed EA for the final total allowable catch specifications for the year 2002 Alaska groundfish fisheries on the 2002 total allowable catch (NMFS 2001c) and the draft programmatic supplemental environmental impact statement for the groundfish fisheries (NMFS 2001a). These previous EAs address the impacts of various harvest

strategies and amounts for the Gulf of Alaska (GOA) groundfish fisheries as well as provide background information on the impacts of fishing activity under the proposed action. Although the proposed action considered under this present EA would not affect allowable groundfish harvest amounts, trawl fishing patterns could change off the east side of Kodiak Island during the months of August and September.

Species listed under the ESA are present in the action area and some may be negatively affected by the proposed research. Therefore NMFS has completed formal consultation under section 7 of the Endangered Species Act (ESA) on the Steller sea lion protection measures which included the Chiniak Gully trawl restriction for this research project. Re-initiated consultations under Section 7 of the ESA were completed for ESA listed marine mammals and Pacific salmon using information specific to the year 2002 TAC specifications, and extended for the endangered short-tailed albatross using the TAC specifications established for calendar year 2002 (NMFS 2001e). These extended consultations concluded with determinations of no jeopardy to listed species or adverse impacts to critical habitat.

## 1.0 PURPOSE AND NEED FOR ACTION

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives will be in Sections 1.1 and 1.2. Section 3 and 4 contain a discussion of the environmental impacts including impacts on threatened and endangered species and marine mammals. Sections 5 and 6 provide the RIR/IRFA. The list of preparers is in Section 7.

### 1.1 Overview of Groundfish FMP and Need for Action

The groundfish fisheries in the Exclusive Economic Zone (3 to 200 miles offshore) of the Gulf of Alaska (GOA) are managed under an FMP (NPFMC 1999). The GOA FMP was developed by the North Pacific Fishery Management Council (Council) under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), P. L. 94-265, 16 U.S.C. 1801 (MSFCMA). The GOA FMP was approved by the Secretary of Commerce (Secretary) and became effective in 1978 and updated July 6, 1999. In response to NMFS stewardship responsibilities identified in the MSFCMA, the ESA and the Marine Mammal Protection Act (MMPA), fishery regulations were changed to ensure that the BSAI and GOA groundfish fisheries neither jeopardize the continued existence of the western distinct population segment (DPS) of endangered Steller sea lions nor adversely modify its critical habitat.

Currently the information available to evaluate alternative methods for protecting Steller sea lions and their habitat is very limited. This can result in the use of less effective and less efficient management measures. NMFS has proposed a controlled experiment off Kodiak Island in order to improve the information available to assess further management actions to protect Steller sea lions and their habitat (See Appendix A for full project description). This study is an integral part of a NMFS comprehensive research program designed to evaluate effects of fishing on the foraging behavior of Steller sea lions.

The goal of the experiment is to identify and quantify the effects of commercial trawl fishing on the availability of potential prey (i.e. pollock) to Steller sea lions within a finite area. Specifically, the experiment is designed to provide information bearing on the following questions.

1. Whether measurable changes exist in the distribution and abundance of pollock during the duration of the experiment?

2. Whether commercial fisheries for pollock cause short-term (days to weeks) changes in the pollock school dynamics?

3. Whether pollock fisheries cause reductions in the availability of sea lion forage (i.e. pollock) in localized regions off the east side of Kodiak Island?

NMFS proposes to conduct an echo integration trawl (EIT) survey before, during and after the 'C' season commercial pollock fishery off the east side of Kodiak Island in the years 2001 - 2004. An EIT survey typically involves systematic survey vessel track lines over which acoustic and research trawl data are collected and used to generate estimates of abundances and distribution patterns of targeted species. The 'C' season currently opens on August 25 (§ 679.23(d)(3)(iii)). The experimental design proposes a feasibility study in the first year and three full implementation experiments in 2001 - 2004. A feasibility study is necessary because NMFS never has conducted EIT surveys in the GOA during summer months and uncertainty exists whether survey conditions will be suitable for identifying abundance and distribution patterns of pollock. The feasibility study was completed in 2001 by emergency interim rule

(66 FR 37167, July 17, 2001). Questions also exist about conducting an EIT survey in a small geographic area during the same time period that commercial fisheries are operating.

The research proposal identifies two treatment (fishing areas) areas at Barnabas Gully and Marmot Canyon where directed fishing for pollock typically occurs. A control site (no fishing) also is proposed in the Chiniak Gully area where trawl fishing will be prohibited in federal waters. The prohibition on trawling in the control site is necessary to provide a basis for comparing pollock school dynamics in a fished and unfished condition (addressing question 2 above). These study locations are proposed because they encompass historical fishing areas for pollock that are separated by topographical features with generally discrete concentrations of fish. The concentration of fishing effort in the Gulf of Alaska enables the designation of comparable treatment and control sites, which are essential to the study design.

In 2002 - 2004, NMFS anticipates that the EIT research surveys will be conducted in the same areas as the feasibility study in 2001, with additional sampling after the fishing season has ended. The consistency in area and season (August - September) will enable researchers to obtain a time series of data and evaluate the effects of interannual variation. Based on information from the feasibility survey in 2001, the National Marine Mammal Laboratory, NMFS, would increase its land-based marine mammal behavioral and food habits studies near the study area. The analytical products provided from the proposed research could provide researchers with better information on pollock movements and potential impacts of commercial pollock harvest on foraging behavior of Steller sea lions.

Current regulations prohibit directed fishing for pollock within 10 nautical miles (nm) of specified Steller sea lion haulout sites in the GOA. Fishing with trawl gear in the Chiniak Gully area also is authorized consistent with other regulations. A regulatory amendment is required to support the proposed experimental design by allowing fishing in all of the treatment site, including within 10 nm of two haulout sites and prohibiting trawl fishing in the control site (Chiniak Gully). The proposed regulatory amendment would prohibit trawl fishing in the Chiniak Gully region off the east side of Kodiak Island from August 1$^{st}$ to a date no later than September 20$^{th}$ for two years (2003 and 2004).

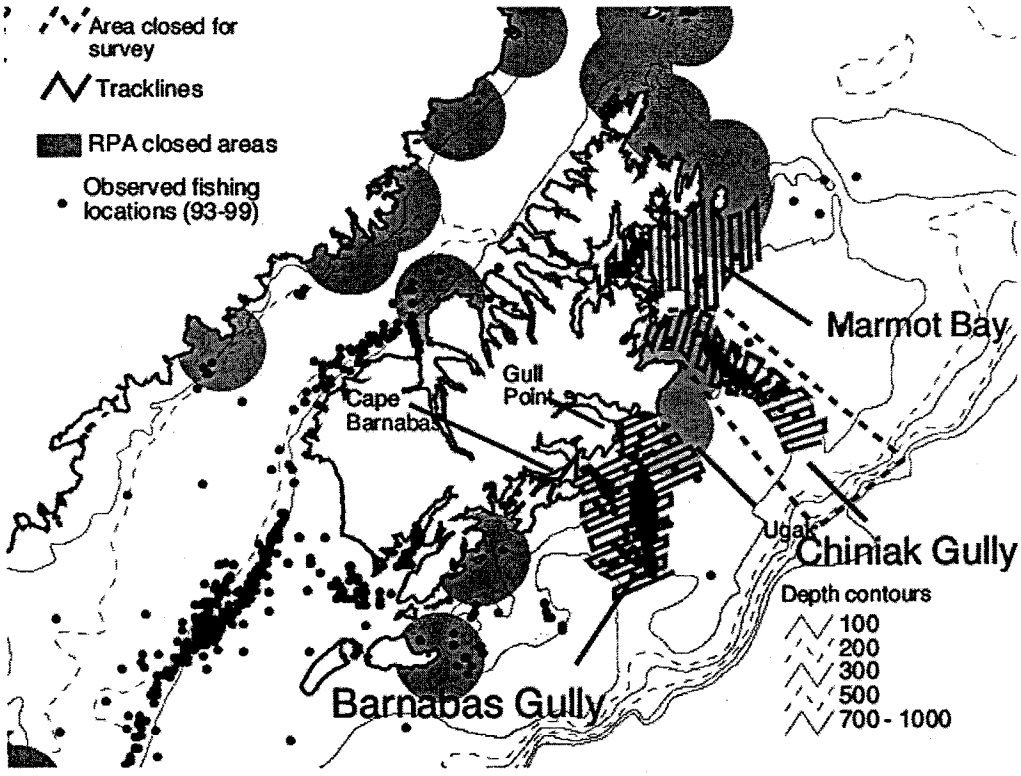
This EA/RIR/IRFA analyzes the impacts of the proposed regulatory amendment. An EA/RIR/IRFA is prepared pursuant to NEPA to determine whether a proposed action will result in significant effects on the human environment. If the environmental effects of the action are determined not to be significant based on an analysis of relevant considerations, the EA/RIR/IRFA and resulting finding of no significant impact are the final environmental documents required by NEPA. If this analysis concludes that the proposal is a major Federal action significantly affecting the human environment, an environmental impact statement must be prepared.

## 1.2 Alternatives Considered

**Alternative 1: Status quo.** No regulatory changes would be implemented to allow the proposed controlled experiment.

**Alternative 2:** Adopt regulations to prohibit all trawl fishing in the Chiniak Gully region off the eastside of Kodiak Island from August 1st to a date no later than September 20th in two years (2003 and 2004). The affected areas are depicted in Figure 1. The RPA closures identifies in Figure 1 are not included in the Steller sea lion protection measures implemented in 2001 and 2002. The inseason opening of waters around Gull Point and Cape Barnabas which were described and analyzed in the July 2000 draft EA/RIR/IRFA are not included in this document because these areas are open to fishing outside of 3 nm in the currently proposed Steller sea lion protection measures. The proposed no trawl zone identified as Chiniak Gully is bounded by lines intersecting the following coordinates: 152.37 W Longitude, 57.81 N Latitude, 151.85 W Longitude, 57.81 N Latitude, 150.64 W Longitude, 57.22 N Latitude, 150.64 W Longitude, 57.22 N Latitude, 151.27 W Longitude, 56.98 N Latitude, 151.27 W Longitude, 56.98 N Latitude, 152.16 W Longitude, 57.62 N Latitude.

Figure 1 Survey trackline for control and treatment sites.



## 2.0 ENVIRONMENTAL STATUS REVIEW

The GOA groundfish fisheries occur in the North Pacific Ocean in the U.S. EEZ. The proposed experiment will affect groundfish fishing off the east side of Kodiak Island (Figure 1). The most recent descriptions of the affected environment are given in the draft programmatic SEIS (NMFS 2001a). Features of the physical environment are described in section 3.1. Fishing gear effects on substrate and benthic communities are described in section 3.2. Groundfish resources are in section 3.3, marine mammals in Section 3.4, seabirds in Section 3.5, other species in Section 3.6, prohibited species in Section 3.7, contaminants in Section 3.8, interactions between climate, commercial fishing and the ecosystem in Section 3.9 and the socioeconomic environment in Section 3.10. The draft PSEIS (NMFS 2001a) is available for public review and comment through the NMFS Alaska Region home page at http://www.fakr.noaa.gov. Additionally, the status of each target species category, biomass estimates, and acceptable biological catch specifications are presented both in summary and in detail in the annual GOA stock assessment and fishery evaluation (SAFE) reports (NPFMC 2001a). The economic status of the groundfish fisheries off Alaska are updated in NPFMC (2001b). Ecosystem considerations relevant to the GOA were presented in NPFMC 2001c. An assessment of impacts to essential fish habitat is contained in NMFS (2001c).

The environmental impacts generally associated with fishery management actions are effects resulting from: 1) harvest of fish stocks that may result in changes in food availability to predators, changes in population structure of target fish stocks, and changes in community structure; 2) changes in the physical and biological structure of the benthic environment as a result of fishing practices (e.g., gear effects and fish processing discards); 3) entanglement/entrapment of non-target organisms in active or inactive fishing gear; and 4) major shifts in the abundance and composition of the marine community as a result of disproportionate fishing pressure on a small set of species (also known as "cascading effects," National Research Council, 1996). The SEIS (NMFS 1998) comprehensively analyzes these effects. Only information that is new since preparation of the SEIS is presented in this EA.

The most recent information on the impact of the groundfish fisheries on Steller sea lions is contained in the November 2001 SEIS on Steller sea lion protection measures (NMFS 2001b). This document includes in Appendix A the biological opinion on the effects of the pollock, Pacific cod and Atka mackerel fisheries on Steller sea lions and other ESA listed species.

### 2.1 Overview of Groundfish Status

The status of each target species or species group category, biomass estimates, and ABC specification are presented both in summary and in detail in the GOA SAFE reports (NPFMC 2001a). This EA relies on information about target species stock status as it was known in 1999.

Designated target species and species groups in the GOA are walleye pollock, Pacific cod, deep water flatfish, rex sole, shallow water flatfish, flathead sole, arrowtooth flounder, sablefish, other slope rockfish, northern rockfish, Pacific Ocean perch, shortraker and rougheye rockfish, pelagic shelf rockfish, demersal shelf rockfish, Atka mackerel, thornyhead rockfish, and other species. TACs, and catch in 2001, along with final 2002 specifications of OFLs, ABCs, and TACS for the GOA area are discussed in the EA for the 2002 TAC Specifications (NMFS 2001c) and shown in Tables 1 and 2. This information is presented to provide an overview of the status of GOA groundfish and a perspective on potential impacts associated with the redistribution of groundfish harvest associated with the proposed action. For detailed life history, ecology, and fishery management information regarding groundfish stocks in the GOA see Section 3.3 of the draft programmatic SEIS (NMFS 2001a).

**Table 1.** 2002 ABCs, TACs, and Overfishing Levels of Groundfish for the Western/Central/West Yakutat (W/C/WYK), Western (W), Central (C), Eastern (E) Regulatory Areas, and in the West Yakutat (WYK), Southeast Outside (SEO), and Gulf-Wide (GW) Districts of the Gulf of Alaska. [Values are in metric tons]

| Species | Area[1] | ABC | TAC | Overfishing |
|---|---|---|---|---|
| Pollock[2] | | | | |
| Shumagin | (610) | 17,730 | 17,730 | |
| Chirikof | (620) | 23,045 | 23,045 | |
| Kodiak | (630) | 9,850 | 9,850 | |
| WYK | (640) | 1,165 | 1,165 | |
| Subtotal | W/C/WYK | 51,790 | 51,790 | 75,480 |
| SEO | (650) | 6,460 | 6,460 | 8,610 |
| Total | | 58,250 | 58,250 | 84,090 |
| Pacific cod[3] | | | | |
| | W | 22,465 | 16,849 | |
| | C | 31,680 | 24,790 | |
| | E | 3,455 | 2,591 | |
| Total | | 57,600 | 44,230 | 77,100 |
| Flatfish[4] (deep-water) | W | 180 | 180 | |
| | C | 2,220 | 2,220 | |
| | WYK | 1,330 | 1,330 | |
| | SEO | 1,150 | 1,150 | |
| Total | | 4,880 | 4,880 | 6,430 |
| Rex sole[4] | W | 1,280 | 1,280 | |
| | C | 5,540 | 5,540 | |
| | WYK | 1,600 | 1,600 | |
| | SEO | 1,050 | 1,050 | |
| Total | | 9,470 | 9,470 | 12,320 |
| Flathead sole | W | 9,000 | 2,000 | |
| | C | 11,410 | 5,000 | |
| | WYK | 1,590 | 1,590 | |
| | SEO | 690 | 690 | |
| Total | | 22,690 | 9,280 | 29,530 |
| Flatfish[5] (shallow-water) | W | 23,550 | 4,500 | |
| | C | 23,080 | 13,000 | |
| | WYK | 1,180 | 1,180 | |
| | SEO | 1,740 | 1,740 | |
| Total | | 49,550 | 20,420 | 61,810 |

Table 1. (continued)

| Species | Area[1] | ABC | TAC | Overfishing |
|---|---|---|---|---|
| Arrowtooth flounder | W | 16,960 | 8,000 | |
| | C | 106,580 | 25,000 | |
| | WYK | 17,150 | 2,500 | |
| | SEO | 5,570 | 2,500 | |
| Total | | 146,260 | 38,000 | 171,060 |
| Sablefish[6] | W | 2,240 | 2,240 | |
| | C | 5,430 | 5,430 | |
| | WYK | 1,940 | 1,940 | |
| | SEO | 3,210 | 3,210 | |
| Subtotal | E | 5,150 | 5,150 | |
| Total | | 12,820 | 12,820 | 19,350 |
| Pacific[7] ocean perch | W | 2,610 | 2,610 | 3,110 |
| | C | 8,220 | 8,220 | 9,760 |
| | WYK | 780 | 780 | |
| | SEO | 1,580 | 1,580 | |
| Subtotal | E | | | 2,800 |
| Total | | 13,190 | 13,190 | 15,670 |
| Short raker/ rougheye[8] | W | 220 | 220 | |
| | C | 840 | 840 | |
| | E | 560 | 560 | |
| Total | | 1,620 | 1,620 | 2,340 |
| Other rockfish[9,10] | W | 90 | 90 | |
| | C | 550 | 550 | |
| | WYK | 260 | 150 | |
| | SEO | 4,140 | 200 | |
| Total | | 5,040 | 990 | 6,610 |
| Northern Rockfish[10,12] | W | 810 | 600 | |
| | C | 4,170 | 4,170 | |
| | E | N/A | N/A | |
| Total | | 4,980 | 4,980 | 5,910 |
| Pelagic shelf rockfish[13] | W | 510 | 510 | |
| | C | 3,480 | 3,480 | |
| | WYK | 640 | 640 | |
| | SEO | 860 | 860 | |
| Total | | 5,490 | 5,490 | 8,220 |
| Thornyhead rockfish | W | 360 | 360 | |
| | C | 840 | 840 | |
| | E | 790 | 790 | |
| Total | | 1,990 | 1,990 | 2,330 |
| Demersal shelf rockfish[11] | SEO | 350 | 350 | 480 |
| Atka mackerel | GW | 600 | 600 | 6,200 |
| Other[14] species | GW | N/A[15] | 11,330 | N/A |

| | | | |
|---|---|---|---|
| TOTAL[16] | 394,780 | 237,890 | 509,450 |

1. Regulatory areas and districts are defined at § 679.2.
2. Pollock is apportioned in the Western/Central Regulatory areas among three statistical areas. During the A and B seasons the apportionment is based on the relative distribution of pollock biomass at 23 percent, 68 percent, and 9 percent in Statistical Areas 610, 620, and 630, respectively. During the C and D seasons pollock is apportioned based on the relative distribution of pollock biomass at 47 percent, 23 percent, and 30 percent in Statistical Areas 610, 620, and 630 respectively. These seasonal apportionments are shown in Table 21. In the West Yakutat and the Southeast Outside Districts of the Eastern Regulatory Area the annual pollock TAC is not divided into seasonal allowances.
3. The annual Pacific cod TAC is apportioned 60 percent to an A season and 40 percent to a B season in the Western and Central Regulatory Areas of the GOA. Pacific cod is allocated 90 percent for processing by the inshore component and 10 percent for processing by the offshore component. Seasonal apportionments and component allocations of TAC are shown in Table 22.
4. "Deep water flatfish" means Dover sole, Greenland turbot, and deepsea sole.
5. "Shallow water flatfish" means flatfish not including "deep water flatfish," flathead sole, rex sole, or arrowtooth flounder.
6. Sablefish is allocated to trawl and hook-and-line gears (Table 20).
7. "Pacific ocean perch" means Sebastes alutus.
8. "Shortraker/rougheye rockfish" means Sebastes borealis (shortraker) and S. aleutianus (rougheye).
9. "Other rockfish" in the Western and Central Regulatory Areas and in the West Yakutat District means slope rockfish and demersal shelf rockfish. The category "other rockfish" in the Southeast Outside District means Slope rockfish.
10. "Slope rockfish" means Sebastes aurora (aurora), S. melanostomus (blackgill), S. paucispinis (bocaccio), S. goodei (chilipepper), S. crameri (darkblotch), S. elongatus (greenstriped), S. variegatus (harlequin), S. wilsoni (pygmy), S. babcocki (redbanded), S. proriger (redstripe), S. zacentrus (sharpchin), S. jordani (shortbelly), S. brevispinis (silvergrey), S. diploproa (splitnose), S. saxicola (stripetail), S. miniatus (vermilion), and S. reedi (yellowmouth). In the Eastern GOA only, "slope rockfish" also includes northern rockfish, S. polyspinous.
11. "Demersal shelf rockfish" means Sebastes pinniger (canary), S. nebulosus (china), S. caurinus (copper), S. maliger (quillback), S. helvomaculatus (rosethorn), S. nigrocinctus (tiger), and S. ruberrimus (yelloweye).
12. "Northern rockfish" means Sebastes polyspinis.
13. "Pelagic shelf rockfish" means Sebastes ciliatus (dusky), S. entomelas (widow), and S. flavidus (yellowtail).
14. "Other species" means sculpins, sharks, skates, squid, and octopus. The TAC for "other species" equals 5 percent of the TACs of assessed target species.
15. N/A means not applicable.
16. The total ABC is the sum of the ABCs for assessed target species.

**Table 2** 2001 GULF OF ALASKA GROUNDFISH QUOTAS
AND PRELIMINARY CATCH IN ROUND METRIC TONS
Data are from Weekly Production and Observer Reports through 12/31/01
Quotas are based on Final Specifications

| | TOTAL CATCH | QUOTA | REMAINING QUOTA | % TAKEN |
|---|---|---|---|---|
| WEST,CENT PLCK | | | | |
| Pollock 610 | 30,471 | 31,056 | 585 | 98 |
| Pollock 620 | 1,742 | 8,059 | 6,317 | 22 |
| Pollock 630 | 17,026 | 23,583 | 6,557 | 72 |
| Pollock - Shelikof | 18,895 | 18,619 | -276 | 101 |
| WESTERN GULF | | | | |
| Arrowtooth Flounder | 6,120 | 8,000 | 1,880 | 77 |
| Deep Water Flatfish | 18 | 280 | 262 | 6 |
| Shallow Water Flatfish | 207 | 4,500 | 4,293 | 5 |
| Flathead Sole | 600 | 2,000 | 1,400 | 30 |
| Rex Sole | 434 | 1,230 | 796 | 35 |
| Pacific Ocean Perch | 944 | 1,280 | 336 | 74 |
| Shortraker/Rougheye | 126 | 210 | 84 | 60 |
| Pelagic Shelf Rockfish | 121 | 550 | 429 | 22 |
| Northern Rockfish | 539 | 600 | 61 | 90 |
| Other Rockfish | 25 | 20 | -5 | 125 |
| Pacific Cod - Inshore | 12,461 | 16,470 | 4,009 | 76 |
| Pacific Cod - Offshore | 1,700 | 1,830 | 130 | 93 |
| Sablefish (Hook & Line) | 1,450 | 1,608 | 158 | 90 |
| Sablefish (Trawl) | 139 | 402 | 263 | 35 |
| Thornyhead | 276 | 420 | 144 | 66 |
| CENTRAL GULF | | | | |
| Arrowtooth Flounder | 13,441 | 25,000 | 11,559 | 54 |
| Deep Water Flatfish | 667 | 2,710 | 2,043 | 25 |
| Shallow Water Flatfish | 5,955 | 12,950 | 6,995 | 46 |
| Flathead Sole | 1,311 | 5,000 | 3,689 | 26 |
| Rex Sole | 2,506 | 5,660 | 3,154 | 44 |
| Pacific Ocean Perch | 9,249 | 9,610 | 361 | 96 |
| Shortraker/Rougheye | 998 | 930 | -68 | 107 |
| Pelagic Shelf Rockfish | 2,436 | 4,080 | 1,644 | 60 |
| Northern rockfish | 2,588 | 4,280 | 1,692 | 60 |
| Other Rockfish | 318 | 740 | 422 | 43 |
| Pacific Cod - Inshore | 25,255 | 27,225 | 1,970 | 93 |
| Pacific Cod - Offshore | 2,066 | 3,025 | 959 | 68 |
| Sablefish (Hook & Line) | 4,434 | 4,328 | -106 | 102 |

| | | | | |
|---|---|---|---|---|
| Sablefish (Trawl) | 1,084 | 1,082 | -2 | 100 |
| Thornyhead | 523 | 970 | 447 | 54 |
| EASTERN GULF | | | | |
| Shortraker/Rougheye | 852 | 590 | -262 | 144 |
| Pacific Cod - Inshore | 1323 | ,204 | 3,072 | 4 |
| Pacific Cod - Offshore | 0 | 356 | 356 | 0 |
| Thornyhead | 540 | 920 | 380 | 59 |
| WEST YAKUTAT | | | | |
| Arrowtooth Flounder | 195 | 2,500 | 2,305 | 8 |
| Deep Water Flatfish | 116 | 1,240 | 1,124 | 9 |
| Shallow Water Flatfish | 0 | 790 | 790 | 0 |
| Flathead Sole | 0 | 1,440 | 1,440 | 0 |
| Rex Sole | 0 | 1,540 | 1,540 | 0 |
| Pacific Ocean Perch | 623 | 870 | 247 | 72 |
| Other Rockfish | 82 | 150 | 68 | 55 |
| Pelagic Shelf Rockfish | 439 | 580 | 141 | 76 |
| Pollock | 2,351 | 2,235 | -116 | 105 |
| Sablefish (Hook & Line) | 1,569 | 1,789 | 220 | 88 |
| Sablefish (Trawl) | 168 | 271 | 103 | 62 |
| SOUTHEAST | | | | |
| Arrowtooth Flounder | 208 | 2,500 | 2,292 | 8 |
| Deep Water Flatfish | 3 | 1,070 | 1,067 | 0 |
| Shallow Water Flatfish | 0 | 1,160 | 1,160 | 0 |
| Flathead Sole | 0 | 620 | 620 | 0 |
| Rex Sole | 0 | 1,010 | 1,010 | 0 |
| Pacific Ocean Perch | 1 | 1,750 | 1,749 | 0 |
| Other Rockfish | 134 | 100 | -34 | 134 |
| Pelagic Shelf Rockfish | 12 | 770 | 758 | 2 |
| Pollock | 0 | 6,460 | 6,460 | 0 |
| Demersal Shelf Rockfish | 301 | 330 | 29 | 91 |
| Sablefish (Hook & Line) | 3,283 | 3,360 | 77 | 98 |
| ENTIRE GOA | | | | |
| Other Species | 4,801 | 13,619 | 8,818 | 35 |
| Atka Mackerel | 76 | 600 | 524 | 13 |
| TOTALS: | 182,011 | 280,131 | 98,120 | 65 |

## 2.2 Status of Affected Prohibited Species

Prohibited species taken incidentally in groundfish fisheries include: Pacific salmon (chinook, coho, sockeye, chum, and pink), steelhead trout, Pacific halibut, Pacific herring, and Alaska king, and Tanner crab. The Council recommends prohibited species catch (PSC) limits to control its bycatch of prohibited species in the groundfish fisheries. During haul sorting, these species or species groups are to be returned to the sea with a minimum of injury except when their retention is required by other applicable law. The status of the different prohibited species are summarized as follows:

Pacific salmon are managed by the State of Alaska. A detailed description of its management, production history, and life history are contained in Section 3.7.3 of the draft programmatic SEIS (NMFS 2001a). Salmon run sizes off Alaska have exhibited wide variations throughout its known history and have generally been strongly correlated to environmental factors.

In 1999, salmon harvests in Alaska are estimated at nearly 208 million fish, making it the second largest commercial catch in the State's history. The statewide pink salmon harvest of 140 million fish set a new record high for that species. Southeast Alaska's harvest of nearly 75 million pinks far exceeds the region's previous record of 64 million in 1966. Prince William Sound's harvest of over 40 million pinks is close to the region's record harvest of 44 million achieved in 1990. The overall harvests of nearly 20 million chum salmon also ranks among the three historical largest. Harvests of coho salmon were down in all areas except Southeast Alaska. Of particular concern are poor returns to the Kuskokwim area which reached only 10 percent of expectations. The statewide harvest of 350,000 king salmon is down by nearly a third from 1998.

In the GOA, while PSC limits have not been established for salmon, in previous years the timing of seasonal openings for pollock in the Central and Western GOA have been adjusted to avoid periods of high chinook and chum salmon bycatch. In 2001, the groundfish trawl fisheries of the GOA had a bycatch of 15,104 chinook and 6,063 "other" salmon.

Pacific halibut fisheries are managed by a Treaty between the United States and Canada through recommendations of the International Pacific Halibut Commission (IPHC). Pacific halibut is considered to be one large interrelated stock, but is regulated by subareas through catch quotas. The commercial and recreational fishery has a long tradition dating back to the late 1800s . Further details on the management, production history, and life history of Pacific halibut are described in section 3.7.2 of the draft programmatic SEIS (NMFS 2001a).

The halibut resource is considered to be healthy, with total catch near record levels. The current estimate of exploitable halibut biomass for 1999 is estimated to be 227,366 mt. The exploitable biomass of the Pacific halibut stock apparently peaked at 326,520 mt in 1988 (Sullivan, 1998). The long-term average reproductive biomass for the Pacific halibut resource was estimated at 118,000 mt (Parma, 1998). Long-term average yield was estimated at 26,980 mt, round weight (Parma, 1998). The species is fully utilized. Recent average catches (1994-96) were 33,580 mt for the U.S. and 6,410 mt for Canada, for a combined total of 39,990 mt for the entire Pacific halibut resource. This catch was 48 percent higher than long-term potential yield, which reflects the good condition of the Pacific halibut resource. At its January 1999 annual meeting, the IPHC recommended commercial catch limits totaling 35,314 mt (round weight equivalents) for Alaska in 1999, up from 32,580 mt in 1998. Through November 10,

1999 commercial hook-and line harvests of halibut in Alaska totaled 33,377 mt (round weight equivalents).

Fixed PSC mortality limits have been set for the Alaska groundfish fisheries. Each year the IPHC evaluates the performance of the groundfish fisheries and recommends mortality rates for halibut bycatch in each groundfish fishery. PSC amounts for Pacific halibut mortality are actually deducted from the available fishery yields for the directed Pacific Halibut fishery by the IPHC. Therefore, the allowable commercial catch of halibut is reduced on account of halibut bycatch mortality in the groundfish fisheries. The Council uses the best estimate of halibut bycatch mortality rates each year and the groundfish TAC apportionments to project halibut bycatch mortality allowances for each gear and target fishery group. NMFS monitors halibut bycatch performance throughout the fishing season, including the extrapolation of data to unobserved vessels, and closes fishing by gear group before bycatch mortality limits are reached.

In the GOA, the PSC mortality limit for halibut is 2,300 mt (allocated as 2,000 mt for the trawl fisheries and 300 mt to the hook & line fisheries). Since 1996 pot gear and jig gear targeting groundfish, and hook-and-line gear targeting sablefish have been exempted from PSC caps due to relatively low bycatch by these gear types and because the sablefish and halibut IFQ program requires quota share holders to retain halibut. The 2,000 mt of halibut mortality allocated to trawl gear is further apportioned by season throughout the fishing year and to two target fishery complexes; the shallow water complex (consisting of pollock, pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and "other species") and the deep-water complex (consisting of sablefish, rockfish, deep-water flatfish, rex sole, and arrowtooth flounder). In 2001, the 2000 mt mortality limit for the trawl fisheries was exceeded by 9 % (2,197 mt).

Pacific herring fisheries are managed by the State of Alaska. A detailed description of its management, production history, and life history are contained in Section 3.7.4 of the draft programmatic SEIS (NMFS 2001a). The fisheries occur in specific areas in the Gulf of Alaska when the stocks come inshore to spawn. In the Gulf of Alaska, spawning concentrations occur mainly off southeastern Alaska, in Prince William Sound, and around the Kodiak Island-Cook Inlet area. From catch records, it is evident that herring biomass fluctuates widely due to influences of strong and weak year-classes. The Gulf of Alaska stocks are currently at moderate to high levels and in relatively stable condition, with the exception of Prince William Sound and Cook inlet. Stock assessments indicated that the herring biomass in Prince William Sound and Cook Inlet were below the minimum threshold needed to conduct a harvest so these fisheries were closed for 1999. Statewide harvests of herring in 2001 were estimated at 40,848 mt; recent statewide harvests have averaged 46,300 mt.

Alaska king, Tanner and Dungeness crab fisheries in the GOA are managed by the State of Alaska. A detailed description of crab management, production history, and life history are contained in Section 3.7.1 of the draft programmatic SEIS (NMFS 2001a).

### 2.3 Status of Forage Species

Forage fish species are abundant fishes that are preyed upon by marine mammals, seabirds and other commercially important groundfish species. Forage fish perform a critical role in the complex ecosystem functions of the Gulf of Alaska by providing the transfer of energy from the primary or secondary producers to higher trophic levels. Because of their importance to so many ecosystem components, a new management assemblage for forage fish was established in 1998 in Amendment 39 to the GOA FMP (63 FR 13009, March 17, 1998). Although ABC and TAC amounts are not specified for species in the

forage fish category, the amendments provide protection for forage fish by preventing the development of commercial fisheries for these species. Directed fishing for forage fish species is restricted year-round with a maximum retainable bycatch of 2 percent. This Amendment also established mandatory reporting categories for forage fish species that took effect during 1998.

The following forage species are included in the new forage fish category established in 1998: Osmeridae (which includes capelin and eulachon), Myctophidae, Bathylagidae, Ammodytidae, Trichodontidae, Pholidae, Stichaeidae, Gonostomatidae, and the Order Euphausiacea. For further detailed discussion of forage fish species, see section 3.3.3.13 of the draft programmatic SEIS (MNFS 2001a).

### 2.4 Status of Marine Habitat

Inclusively all the marine waters and benthic substrates in the management areas comprise the habitat of the target species. Additionally the adjacent marine waters outside the EEZ, adjacent State waters inside the EEZ, shoreline, freshwater inflows, and atmosphere above the waters, constitutes habitat for prey species, other life stages, and species that move in and out of, or interact with, the target species in the management areas. Distinctive aspects of the habitat include water depth, substrate composition, substrate infauna, light penetration, water chemistry (salinity, temperature, nutrients, sediment load, color, etc.), currents, tidal action, plankton and zooplankton production, associated species, natural disturbance regimes, and the seasonal variability of each aspect. Substrate types include bedrock, cobble, sand, shale, mud, silt, and various combinations of organic material and invertebrates which may be termed biological substrate. Biological substrates present in these management areas include corals, tunicates, mussel beds, and tube worms. Biological substrate has the aspect of ecological state (from pioneer to climax) in addition to the organic and inorganic components. Ecological state is heavily dependant on natural and anthropogenic disturbance regimes. The FMPs (NPFMC 1999) contain descriptions of habitat preferences of the target species.

The environmental assessment prepared for the 2002 GOA harvest specifications (NMFS 2001c) contains an assessment of impacts to essential fish habitat as required by amendments to the Magnuson-Stevens Fishery Conservation and Management Act of 1996. This assessment addresses the effects of the authorization of the proposed and final specifications on EFH pursuant to the requirements of 50 CFR 600.920(h) and in coordination with the review procedures required under the National Environmental Policy Act.

The assessment of the impacts on EFH (NMFS 2001c) concludes that fishing actions may have substantial adverse impacts on fish habitat essential to the spawning, breeding, feeding and growth to maturity of managed and un-managed species. In formal response to the assessment dated December 14, 2001, the NMFS Habitat Conservation Division, Alaska Region (HCD) concurred in the assessment that fishing may have adverse impacts on EFH for managed species but concluded that any adverse effects have been minimized to the extent practicable (NMFS 2001d). The actions authorized by the year 2002 harvest specifications have been mitigated, and are continually being mitigated, as a result of protective measures implemented under the Magnuson-Stevens Act. NMFS has already designated areas of essential habitat or has curtailed fishing in a season or location as a result of previous, and ongoing actions, or has taken measures to protect critical habitat for the Steller sea lion that also benefits EFH for managed species in those areas. The NMFS HCD affirmed that these mitigative measures have minimized any substantial impacts on EFH of this Federal action to the extent practicable, and offered no additional EFH recommendations.

Given that an EFH assessment has been completed with the mandatory requirements and components of an EFH assessment as specified in 50 CFR 600.920 (g)(2), and given that 50 CFR Section 600.920(h)(3) states that once a Federal agency has submitted to NMFS an EFH assessment completed in accordance with paragraph (g) of this section that the Federal agency has fulfilled its consultation requirement under paragraph (a), NMFS affirms that the consultation requirements as required under the statute have been fulfilled.

For further information about the habitat and ongoing habitat studies in the fisheries management area, see Section 3.1 and 3.6 of the draft programmatic SEIS (NMFS 2001a), and the Ecosystems Considerations Chapter for 2002 (NPFMC 2001c).

## 2.5 Status of Marine Mammal Species

### 2.5.1 Whales

Beluga whales
Beluga whales were concentrated in a few dense groups in shallow areas near river mouths in the northern portion of upper Cook Inlet. Very few belugas occurred elsewhere. Over the past three decades, there have been decreases in sightings of beluga whales both in offshore areas and in lower Cook Inlet. Since 1995, there have been no sightings in our surveys south of the upper inlet. An isolated stock of beluga whales is located in Cook Inlet, Alaska.

### 2.5.2. Pinnipeds

The draft programmatic SEIS (NMFS 2001a) contains a detailed analysis on the ecology, population trends, and the impacts of an array of alternative TAC specifications on marine mammals. For further information see Section 3.4 and 4.2 of the draft programmatic SEIS , and the section on marine mammals in the ecosystems chapter of the 2001 SAFE (NPFMC 2001a). New information on population status and current management concerns for selected marine mammals was summarized in the EA for 2002 groundfish TAC specifications in the following manner (NMFS 2001c).

Steller Sea Lions
Recent reviews of Steller sea lion population status in Alaska are contained in the Section 7 Biological Opinions on ESA listed species (NMFS 1998b, 1998c, and 2001b.) Recent survey data used to monitor population status from 1999 are summarized below :

NMFS and ADF&G conducted surveys of Steller sea lion pups and non-pups during June and July of 1998 from southeast Alaska to the western Aleutian Islands. Numbers of sea lions counted during a "winter" or "non-breeding season" survey conducted in March 1999 are still being analyzed. In general, numbers of non-pups in the western stock (west of 144°W) continued to decline in 1998 (Table 3). In the Kenai to Kiska area, non-pup numbers at trend sites declined by 12.8 percent from 1994 to 1998 (18,713 to 16,315) and 8.9 percent (17,900 to 16,315) from 1996 to 1998. This compares to a Kenai to Kiska decline of 4.6 percent from 1994 to 1996. The Aleutian Islands as a whole declined by 7.3 percent from 1996 to 1998, as compared to a marginal increase (1.1 percent) from 1994 to 1996. Combined, the western and central Gulf of Alaska declined 12.4 percent from 1996 to 1998, and 4.0 percent from 1997 to 1998. The central Aleutian Islands (Islands of Four Mountains to Kiska) was the one area that did show a marginal increase (4.2 percent) from 1996 to 1998.

Although the numbers for southeast Alaska show a decline, only 18 sites were surveyed in 1998, and other indications, particularly pup count results (below) suggest that the population in this area is stable. Survey coverage in the eastern Gulf of Alaska was too incomplete to provide a reliable trend for non-pups.

NMFS and ADF&G conducted counts of Steller sea lion pups at all rookeries in Alaska, from the Forrester Complex in southeast Alaska to Attu Island in the western Aleutian Islands during 19 June to 5 July 1998. Since 1994, the last range-wide pup count, pup numbers decreased by 10.8 percent (from 14,198 pups to 12,670) at all rookeries (Table 4). For the western stock (reflected by the counts from Kenai to Kiska) the decline was 19.1 percent over 4 years. In general, pup numbers were up slightly in parts of the central Aleutian Islands (8 rookeries from Seguam Island to the Delarof Islands), but down elsewhere. Rookeries in the western Aleutian Islands (particularly those in the Near Islands: 3 rookeries at Attu and Agattu Islands) were counted completely for the first time in 1997. Pup numbers at these three rookeries declined by 18.0 percent in one year (979 pups to 803 pups). The 2 rookeries in the eastern Gulf of Alaska declined 23.7 percent from 1994 to 1998, but increased 13 percent from 1997 (610 pups to 689). Pup numbers in southeast Alaska have increased 12.3 percent from 1994, but showed little change from 1997 to 1998.

Table 3--Counts of Non-pup Steller Sea Lions at Trend Sites (Rookeries and Haulouts) During Aerial Surveys in Alaska, 1994 to 1998.

| | Non-pup counts at Trend Sites | | | Percent change | |
|---|---|---|---|---|---|
| Region | 1994 | 1996 | 1998 | 1994-98 | 1996-98 |
| Western Aleutian Islands | 2,037 | 2,190 | 1,913 | - 6.1 | -12.6 |
| Central Aleutian Islands | 5,790 | 5,528 | 5,761 | < 1 | 4.2 |
| Eastern Aleutian Islands | 4,421 | 4,716 | 3,847 | -13.0 | -18.4 |
| Western Gulf of Alaska | 3,982 | 3,741 | 3,361 | -15.6 | -10.2 |
| Central Gulf of Alaska | 4,520 | 3,915 | 3,346 | -26.0 | -14.5 |
| Kenai to Kiska subtotal (Central Gulf of Alaska through central Aleutian Islands) | 18,713 | 17,900 | 16,315 | -12.8 | - 8.9 |

Table 4--Counts of Steller Sea Lion Pups in Alaska, 1994 to 1998.

| | Number of | | | | Percent change | |
|---|---|---|---|---|---|---|
| Region | rookeries | 1994 | 1997 | 1998 | 94-98 | 97-98 |
| Western Aleutian Islands | 4 | | 979 | 803 | | -18.0 |
| Central Aleutian Islands | 16 | 3,162 | | 2,862 | -9.5 | |
| Eastern Aleutian Islands | 6 | 1,870 | | 1,516 | -18.9 | |
| Western Gulf of Alaska | 4 | 1,662 | | 1,493 | -10.2 | |
| Central Gulf of Alaska | 5 | 2,831 | | 1,876 | -33.7 | |
| Eastern Gulf of Alaska | 2 | 903 | 610 | 689 | -23.7 | 13 |
| Western Stock subtotal (Kiska to Seal Rocks) | 33 | 10,428 | | 8,436 | -19.1 | |
| Southeast Alaska | 3 | 3,770 | 4,160 | 4,234 | 12.3 | 1.8 |

Harbor seals

The NMFS National Marine Mammal Laboratory (NMML) conducted aerial assessment surveys for harbor seals in the southern portion of southeast Alaska, from Frederick Sound to the US/Canadian border in 1998. The northern portion of southeast Alaska was surveyed in 1997. Two observers worked out of Petersburg and five observers used Ketchikan as their base of operations. From 18 to 28 August, the entire coastline was surveyed from small, single-engine aircraft equipped with floats, at an altitude of 200-250 m (700-800 ft.). Observers estimated the number of seals hauled out and took photographs of all seal haulouts. Results from the two surveys will be combined to produce an overall estimate for southeast Alaska.

When seals are censussed from the air, an unknown number of seals are in the water and not present at the haulout sites. A companion project to the assessment surveys is development of a correction factor for each haulout type (rocky, sandy, and ice) to account for seals not present at the time of the census surveys. This is accomplished by capturing 20-40 seals and attaching a small VHF radio transmitter to the left rear flipper. The proportion of radio-tagged seals hauled during subsequent surveys should be representative of all seals at the haulout. The resulting correction factor is then applied to the population estimates derived in the assessment analysis. The estimates are then adjusted upwards to account for those seals not present during the aerial census surveys.

Correction factors have been developed previously for seals hauling out on rocky and sandy substrates. Little is known about the seals hauling out on glacial ice since no one has been able to successfully capture one. The NMML developed new capture techniques using a variety of net materials and types and net deployment methods. In early August, the NMML successfully captured and radio-tagged 19 seals at Aialik and Peterson Glaciers in the Kenai Fiords National Park near Seward, Alaska. Their movements were tracked from aircraft (22 August to 2 September) and remote data collection computers (19 August to about 8 October). Results from the assessment and correction factor surveys are currently being analyzed and will be used to estimate the number of harbor seals in Alaska and determine key components used in the NMFS annual stock assessment report.

Harbor porpoise and Dall's porpoise

Researchers from the NMML conducted line transect aerial surveys for harbor porpoise and Dall's porpoise from 27 May to 28 July 1998 in the Gulf of Alaska (offshore waters from Cape Suckling to Unimak Pass), Prince William Sound, and Shelikof Strait. The survey aircraft was a Twin Otter flown at an altitude of 500 ft and an airspeed of 100 knots. Sawtooth lines covered the offshore waters from Cape Suckling to Unimak Pass (offshore of Kodiak Island) from about 15 nm seaward to the 1,000 fathom line. A series of zigzag lines covered Shelikof Strait, between the Alaska Peninsula and Kodiak Island. Larger inlets and bays were also included in the survey. The survey in Prince William Sound consisted of two lines: one covering the central waters and one along the coast with extensions into selected inlets. Two primary observers surveyed from bubble windows on each side of the aircraft. A third observer, viewing directly beneath the aircraft from a belly window, recorded porpoises missed on the trackline by the primary observers.

Poor weather restricted the completion of the entire planned survey. Survey lines were completed in Prince William Sound and an adequate number of survey miles were completed offshore from Cape Suckling west along the Kenai Peninsula, offshore of Kodiak Island, west to Sutwik Island (Alaska Peninsula), and in Shelikof Strait. A total of 5,722 nm were flown, with sightings of 83 harbor porpoise, 69 Dall's porpoise, 13 killer whales, 47 humpback whales, 24 fin whales, 1 Cuvier's beaked whale, 1 northern right whale, 25 harbor seals, 20 Steller sea lions, and 1 northern fur seal. These data are used to

estimate annual abundance of harbor porpoise and Dall's porpoise, one of the key pieces of information needed to manage marine mammal-fishery interactions.

### 2.6 Seabird Species Population Status

Seabirds spend the majority of their life at sea rather than on land. Alaska's extensive estuaries and offshore waters provide breeding, feeding, and migrating habitat for approximately 100 million seabirds. Thirty-four species breed in the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA) regions and number 36 million and 12 million individuals, respectively. Another 6 species breed at other locations in Alaska. In addition, up to 50 million shearwaters and 3 albatross species feed in Alaskan waters during the summer months but breed farther south. Detailed seabird information on species population status, life history, ecology, and bycatch is contained in section 3.5 of the SEIS (NMFS 1998a) and in the draft SEIS (NMFS 2001a). The only new information on seabirds since publication of the 1998 SEIS concerns the taking of short-tailed albatross and subsequent Section 7 consultations on that species. It is summarized below:

On 22 October 1998, NMFS reported the incidental take of 2 endangered short-tailed albatrosses in the hook-and-line groundfish fishery of the BSAI. The first bird was taken on 21 September 1998, at 57 30'N, 173 57'W. The bird had identifying leg bands from its natal breeding colony in Japan. It was 8 years old. In a separate incident, one short-tailed albatross was observed taken on 28 September 1998, at 58 27'N, 175 16'W, but the specimen was not retained for further analysis. Identification of the bird was confirmed by USFWS seabird experts. The confirmation was based upon the observer's description of key characteristics that matched that of a subadult short-tailed albatross to the exclusion of all other species. A second albatross was also taken on 28 September 1998, but the species could not be confirmed (3 species of albatross occur in the North Pacific). Both vessels were using seabird avoidance measures when the birds were hooked.

The current world population of short-tailed albatross is approximately 1200 individuals. Because it is listed as endangered under the ESA, actions such as these fisheries, which may effect the species, are subject to section 7 consultations. Under terms of the 1999 biological opinion, incidental take statement, a take of up to 4 birds is allowed during the 2-year period of 1999 and 2000 for the BSAI and GOA hook-and-line groundfish fisheries (USFWS 1999). If the anticipated level of incidental take is exceeded, NMFS must immediately reinitiate formal consultation with the USFWS to review the need for possible modification of the reasonable and prudent measures established to minimize the impacts of the incidental take.

NMFS Regional Office, NMFS Groundfish Observer Program, and the USFWS Offices of Ecological Services and Migratory Bird Management are actively coordinating efforts and communicating with each other in response to the 1998 take incidents and are complying to the fullest extent with ESA requirements to protect this species. Regulations at 50 CFR Parts 679.24(e) and 679.42(b)(2) contain specifics regarding seabird avoidance measures. In February 1999, NMFS presented an analysis on seabird mitigation measures to the Council that investigated possible revisions to the currently required seabird avoidance methods that could be employed by the long-line fleet to further reduce the take of seabirds.

The Council took final action at its April 1999 meeting to revise the existing requirements for seabird avoidance measures. The Council's preferred alternative would: 1) Explicitly specify that weights must be added to the groundline. (Currently, the requirement is that baited hooks must sink as soon as they

enter the water. It is assumed that fishermen are weighting the groundlines to achieve this performance standard.); 2) The offal discharge regulation would be amended by requiring that prior to any offal discharge, embedded hooks must be removed; 3) Streamer lines, towed buoy bags and float devices could both qualify as bird scaring lines. (Specific instructions are provided for proper placement and deployment of bird scaring lines.); 4) Towed boards and sticks would no longer qualify as seabird avoidance measures; 5) The use of bird scaring lines would be required in conjunction with using a lining tube; and 5) Night-setting would continue to be an option and would not require the concurrent use of a bird scaring line.

NMFS initiated two section 7 consultations with USFWS in 2000. The first FMP-level consultation is on the effects of the BSAI and GOA FMPs in their entirety on the listed species (and any designated critical habitat) under the jurisdiction of the USFWS. The second consultation is action-specific and is on the effects of the 2001 to 2004 TAC specifications for the BSAI and GOA groundfish fisheries on the listed species (and any critical habitat) under the jurisdiction of the USFWS. This action-specific consultation will incorporate the alternatives proposed in this SSL PM SEIS for the 2002 groundfish fisheries. The most recent Biological Opinion on the effects of the groundfish fisheries on listed seabird species expired December 31, 2000. NMFS requested and was granted an extension of that Biological Opinion and its accompanying Incidental Take Statement. USFWS intends to issue a Biological Opinion in late 2002. This will allow for the consideration of new information: recommendations by Washington Sea Grant Program on suggested regulatory changes to seabird avoidance measures based on a two-year research program as well as Council and NMFS action on the proposed alternatives in the Steller sea lion Protection Measures SEIS (NMFS 2001b).

The USFWS published final rules designating critical habitat for the spectacled eider (66 FR 9146; February 6, 2001) and the Steller's eider (66 FR 8850; February 2, 2001). The marine areas designated as critical habitat are reduced from the areas that were proposed and discussed in sections 2.9.5.2 and 2.9.5.3 of the draft programmatic SEIS (NMFS, 2001a).

### 2.7 Impacts on Endangered or Threatened Species

The Endangered Species Act of 1973 as amended (16 U.S.C. 1531 *et seq*; ESA), provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by the NMFS for most marine mammal species, marine and anadromous fish species, and marine plants species, and by the USFWS for bird species, and terrestrial and freshwater wildlife and plant species.

Twenty-three species occurring in the GOA groundfish management areas are currently listed as endangered or threatened under the ESA (Table 5). The group includes great whales, pinnipeds, Pacific salmon and steelhead, and seabirds.

Table 5. **ESA listed and candidate species that range into the BSAI or GOA groundfish management areas and whether Reinitiation of Section 7 Consultation is occurring**

| Common Name | Scientific Name | ESA Status | Whether Reinitiation of ESA Consultation is occurring |
|---|---|---|---|
| Blue Whale | *Balaenoptera musculus* | Endangered | No |
| Bowhead Whale | *Balaena mysticetus* | Endangered | No |
| Fin Whale | *Balaenoptera physalus* | Endangered | No |
| Humpback Whale | *Megaptera novaeangliae* | Endangered | No |
| Right Whale | *Balaena glacialis* | Endangered | No |
| Sei Whale | *Balaenoptera borealis* | Endangered | No |
| Sperm Whale | *Physeter macrocephalus* | Endangered | No |
| Steller Sea Lion (WesternPopulation) | *Eumetopias jubatus* | Endangered | No |
| Steller Sea Lion (Eastern Population) | *Eumetopias jubatus* | Threatened | No |
| Chinook Salmon (Puget Sound) | *Oncorhynchus tshawytscha* | Threatened | No |
| Chinook Salmon (Lower Columbia R.) | *Oncorhynchus tshawytscha* | Threatened | No |
| Chinook Salmon (Upper Columbia R. Spring) | *Oncorhynchus tshawytscha* | Endangered | No |
| Chinook Salmon (Upper Willamette .) | *Oncorhynchus tshawytscha* | Threatened | No |
| Chinook Salmon (Snake River Spring/Summer) | *Oncorhynchus tshawytscha* | Threatened | No |
| Chinook Salmon (Snake River Fall) | *Oncorhynchus tshawytscha* | Threatened | No |
| Sockeye Salmon (Snake River) | *Oncorhynchus nerka* | Endangered | No |
| Steelhead (Upper Columbia River) | *Onchorynchus mykiss* | Endangered | No |
| Steelhead (Middle Columbia River) | *Onchorynchus mykiss* | Threatened | No |
| Steelhead (Lower Columbia River) | *Onchorynchus mykiss* | Threatened | No |
| Steelhead (Upper Willamette River) | *Onchorynchus mykiss* | Threatened | No |
| Steelhead (Snake River Basin) | *Onchorynchus mykiss* | Threatened | No |
| Steller's Eider [1] | *Polysticta stelleri* | Threatened | Ongoing |
| Short-tailed Albatross [1] | *Phoebaotria albatrus* | Endangered | Ongoing |
| Spectacled Eider[1] | *Somateria fishcheri* | Threatened | Ongoing |
| Northern Sea Otter[1] | *Enhydra lutris* | Candidate | No |

[1]The Steller's eider, short-tailed albatross, spectacled eider, and Northern sea otter are species under the jurisdiction of the U.S. Fish and Wildlife Service. For the bird species, critical habitat has been proposed only for the Steller's eider (65 FR 13262). The northern sea otter has been proposed by USFWS as a candidate species (November 9, 2000; 65 FR 67343).

Of the species listed under the ESA, the proposed action is likely to impact only the Steller sea lion. NMFS is the expert agency for ESA listed marine mammals and anadromous fish species.

Section 7 consultations with respect to actions of the federal groundfish fisheries have been done for all the species listed in Table 5, either individually or in groups.

Steller sea lions and other ESA listed marine mammals.

A Biological Opinion for the action authorizing the pollock and Atka mackerel fisheries for the years 1999 through 2002 was issued December 3, 1998, and for the pollock, Atka mackerel and Pacific cod fisheries for 2002 by the Office of Protected Resources of NMFS (NMFS 1998b and NMFS 2001b,

appendix A). The scope of the 1999 consultation was the Atka mackerel fishery of the BSAI, and the pollock fisheries in the BSAI and the GOA. The conclusions were: 1) the Atka mackerel fishery was not likely to jeopardize the continued existence of the western population of Steller sea lions or adversely modify its critical habitat, and 2) the GOA and BSAI pollock fisheries, as they had been proposed in 1998, were likely to cause jeopardy to Steller sea lions and adverse modification of designated Steller sea lion critical habitat. This determination was based primarily on the premise that the two pollock fisheries would compete with Steller sea lions by removing prey items from important foraging areas at crucial times of the year.

To avoid the likelihood of causing jeopardy and adverse modification, NMFS developed a framework of reasonable and prudent alternatives (RPAs) based on three objectives: 1) temporally disperse fishing effort, 2) spatially disperse fishing effort, and 3) provide sufficient protection from fisheries competition in waters adjacent to rookeries and important haulouts. The RPAs contained guidelines for management measures which would achieve these principles. The Council initially provided recommendations for management measures at its December 1998 meeting. NMFS evaluated those recommendations and incorporated them into the RPAs on December 16, 1998. The RPAs were implemented by emergency interim rule for the first half of 1999, published on January 22, 1999 (64 FR 3437), amended on February 17, 1999 (64 FR 7814) and February 25, 1999 (64 FR 9375). The Council met again in February, April, and June 1999, to consider recommendations for extending the emergency rule for the second half of 1999, and at its June meeting, voted to extend the emergency rule (with modifications to the Bering Sea B and C seasons) until December 31, 1999 (July 21, 1999, 64 FR 39087; technical amendment August 10, 1999, 64 FR 43297).

The December 3, 1998, Biological Opinion was challenged in the United States District Court for the Western District of Washington by Greenpeace, the American Oceans Campaign, and the Sierra Club. On July 9, 1999, (amended July 13, 1999), the Court upheld the no-jeopardy conclusion for the Atka mackerel fishery and the jeopardy conclusion for the pollock fisheries. However, the Court also found that "the Reasonable and Prudent Alternatives . . . were arbitrary and capricious . . . because they were not justified under the prevailing legal standards and because the record does not support a finding that they were reasonably likely to avoid jeopardy." On August 6, 1999, the Court remanded the Biological Opinion back to NMFS for further analysis and explanation.

To comply with the Court's Order, NMFS conducted additional analyses and developed Revised Final Reasonable and Prudent Alternatives (RFRPAs) (October 1999). NMFS issued an emergency interim rule implementing these measures effective January 20, 2000 (65 FR 3892, January 25, 2000) and has initiated rulemaking to implement these conservation measures for the remainder of the year 2000 and beyond. Although the subject of separate rulemaking, NMFS considers implementation of these conservation measures a necessary part of this proposed action, because without these mitigating measures in place, this proposed action cannot proceed.

A second Biological Opinion on the action of authorization of the BSAI and GOA groundfish fisheries (other than pollock and Atka mackerel) year 1999 TAC specifications was issued December 24, 1998, by the Office of Protected Resources of NMFS (NMFS 1998c). That Biological Opinion examined the year 1999 proposed TAC specifications for the BSAI and GOA and the effect of that action on ESA listed marine mammal species and critical habitat. The conclusion was that mitigation measures recommended by the Council and modified by NMFS, for the BSAI and GOA pollock fisheries and the BSAI Atka mackerel fisheries, were sufficient to avoid jeopardizing the continued existence of the western population of Steller sea lions and avoid adverse modification to its critical habitat.

The December 24, 1998, biological opinion (NMFS 1998c) was also the subject of a Court challenge leading to a reinitiated consultation including preparation of a programmatic consultation to be completed in conjunction with the programmatic SEIS, as well as consultation on the year 2000 TAC specifications. The consultation on the year 2000 TAC specifications was issued December 23, 1999, and contained a determination of no jeopardy and no adverse modification to critical habitat for Steller sea lions. The Biological Opinion examined three actions: 1) authorization of the BSAI groundfish fisheries based on the year 2000 interim and final TAC specifications recommended by the Council, 2) authorization of the GOA groundfish fisheries based on year 2000 interim and final TAC specifications recommended by the Council, and 3) authorization of BSAI and GOA groundfish fisheries based on implementation of the American Fisheries Act of 1998. The opinion considered the potential effect of these three actions on protected species that occur in the corresponding action areas. The protected species include northern right whales, blue whales, fin whales, sei whales, humpback whales, sperm whales, the eastern population of Steller sea lions, and the western population of Steller sea lions. The opinion concluded that the three actions were not likely to jeopardize the continued existence of protected species in the action areas, or destroy or adversely modify designated critical habitat for the Steller sea lion (the only relevant protected species for which critical habitat has been designated in the action areas). The conclusions were based, in part, on implementation of conservation measures originating from the Revised Final Reasonable and Prudent Alternatives (RFRPAs) issued by NMFS on October 15, 1999, for the pollock fisheries, and conservation measures for the Atka mackerel fishery recommended by the Council in June of 1998 and being implemented over the period from 1999 to 2002. The opinion also identified important areas for further analysis of potential conflicts between the western population of Steller sea lions and the Pacific cod fisheries in the BSAI and GOA regions, and required that those areas be addressed again in the programmatic consultation to be conducted by NMFS in the year 2000, or in a separate consultation on the cod fisheries in the year 2000. The opinion also included conservation recommendations urging more extensive survey effort to understand the distribution of fished stocks throughout the year, rather than in summer months only, and greater effort to determine the relative importance of various target species to the diet of Steller sea lions. The opinion was accompanied by an Incidental Take Statement setting limits on the number of individuals of each protected species that could be taken before consultation would be reinitiated.

In 2001, the RFRPA were modified by a committee processes supported by the Council. The resulting Steller sea lion protection measures were approved by NMFS and implemented by emergency interim rule for 2002. The protection measures included the implementation of the Chiniak Gully experiment. Consultations were conducted for the Steller sea lion protection measures (NMFS 2001b, appendix A) and for the harvest specifications for 2002, as implemented by emergency interim rule (67 FR 956, January 8, 2002). These consultations found no likelihood of jeopardy or adverse modification of habitat for any endangered species with the actions.

## 3.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An EA is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in a significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

**Alternative 1: No action.**

The major impact associated with the no action alternative is the loss of opportunity to obtain scientific information and understanding regarding the potential mechanisms through which commercial fishing could impact the recovery of Steller sea lion. The proposed experiment has the potential for improving our understanding of sea lion/fisheries competition and the effects of fisheries on sea lion prey. The establishment of buffer zones is predicated on the assumption that commercial fishing activity near rookeries/haulouts will negatively impact Steller sea lions; therefore it is imperative that we increase our understanding of the effects of fishing so that current buffer zone parameters can be evaluated. Such an experiment would increase management's ability to avoid jeopardy for Steller sea lions and adverse modification of their critical habitat in the future.

**Alternative 2: Adopt Regulatory Amendment.**

This alternative would require a displacement of commercial fishing from Chiniak Gully during a specified period in August and September from 2003 through 2004. The potential impact of these actions are discussed separately.

The expected total groundfish removals for the feasibility year are shown in the Table 6, below. These values are expected to be similar to removals in 2002 through 2004.

Table 6. Expected total removals of groundfish in Barnabas, Marmot and Chiniak Gullies from August 1st to a date no later than September 20th in the year 2000

| Species | Expected Year 2000 Catch (mt) |
|---|---|
| Walleye pollock | 9008.00 |
| Pacific cod | 72.62 |
| Arrowtooth flounder | 360.69 |
| Flathead sole | 59.28 |
| Rex sole | 16.98 |
| Shallow water flatfish | 218.03 |
| Deep water flatfish | 12.72 |
| Rockfish | 70.57 |
| Sablefish | 31.89 |
| Atka mackerel | 0.01 |

The primary impact of the proposed regulatory amendment (alternative 2) would be a redistribution of catch along the east side of Kodiak Island. Major changes in expected total removals are not anticipated. The impact of expected total removals within the GOA were addressed in the EA analysis for final 2002 TAC specifications (NMFS 2001c).

## 3.1 Impacts of Trawl Closures

### 3.1.1 Federally Managed Fisheries in Central GOA

The proposed trawl closure is not expected to impact on the distribution of groundfish bottom trawl harvest off the east side of Kodiak Island because of the 3rd seasonal allowance (July 4 to September 30) of halibut would typically be attained in early August. The fisheries that are likely to be operating during the experiment are the mid-water pollock fishery, the sablefish IFQ fisheries using hook-and-line gear, and the year round pot and jig groundfish fisheries that principally target Pacific cod and rockfish. Of the fisheries likely to be open, the fixed gear fisheries will be exempted from the proposed action. Specific impacts of the proposed action on FMP groundfish are described below.

**Groundfish Trawl** - Groundfish trawl fisheries are typically closed during large portions of August and September because the 3rd seasonal allowance (July 4 to September 30) of halibut mortality has been reached. Groundfish trawl fisheries are managed as a deep-water and shallow-water complex. The shallow-water complex consists of pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and "other species". The deep-water complex consists of sablefish, rockfish, deep-water flatfish, rex sole, and arrowtooth flounder. The shallow-water complex halibut closure exempts vessels using pelagic trawl gear targeting pollock. Closure dates for deep-water and shallow-water complexes since 1996 were as follows:

2001 deep-water complex closed July 23 to Sept 30
shallow-water complex closed August 4 to Sept 30
2000 deep-water complex closed August 23 to Sept 30
shallow-water complex closed August 11 to Sept 30
1999 deep-water complex closed July 21 to Sept 30
shallow-water complex closed July 4 to Sept 30
1998 deep-water complex closed July 28 to Sept 30
shallow-water complex closed August 3 to Sept 30
1997 deep-water complex closed July 20 to Sept 30
shallow-water complex closed August 11 to Sept 30
1996 deep-water complex closed August 7 to Sept 30
shallow-water complex closed August 5 to Sept 30

Part of the Chiniak Gully control site is already closed to non-pelagic trawl gear at the time of the August survey. Crab habitat along the east side of Kodiak Island is protected from non-pelagic trawl gear on a year-long (Type 1) or seasonal (Type II) basis (NPFMC 1999d). In addition, some areas adjacent to Type I and II areas have been identified as important juvenile king crab rearing or migratory areas (designated as Type III). Type III areas only become operational following a determination that a "recruitment event" has occurred. Once operational, the Regional Director will then proceed to classify the Type III area as either Type I or II, depending on the information available. The protective crab regulations affect the benthic trawl fisheries (e.g. flatfish). A nearshore section of our closed control site is found within a Type I closure area, which would prohibit non-pelagic trawling all year.

**Flatfish**

If the halibut allowance did not prohibit flatfish trawl fisheries in August and September for the years 2003 and 2004, the major impact of Alternative 2 would be a displacement of flatfish fishing effort away from Chiniak Gully. This shift in flatfish fishing effort is unlikely to result in adverse impacts to flatfish since the TACs for these species have been, and likely to remain, well below the recommended ABC levels. Furthermore, the amount of flatfish potentially harvested in the study area is about 670 mt (Table

5). This amount is about 2.5 percent of the aggregated TAC for GOA flatfish. Any redistribution of 2.5 percent of the flatfish TAC that might occur under the proposed action would not be expected to result in any significant localized effects on these stocks.

**Pacific Cod**

Directed trawl fishing for Pacific cod typically ends in March off the east side of Kodiak. Therefore, the proposed trawl closure would not impact expected catch from this gear sector of the Pacific cod fishing fleet.

**Walleye pollock**

The mid-water pollock fishery is the only sector of the shallow water fishery complex that is exempted from the shallow water complex closure. Vessel displacement resulting from the establishment of a no trawl zone is likely to be minor. Historical observer and fish ticket data from the months of August and September revealed that in years when vessels operated in both Chiniak and Barnabas gullies, approximately 10% of the effort occurred in Chiniak Gully. These data suggest that the shift of fishing effort to Barnabas Gully, if it occurred, would be on the order of a 10% increase (Table 7). The potential redistribution of mid-water pollock fishing effort due to the Chiniak Gully closure is likely to be minor and would not be sufficient to cause a significant impact on other groundfish. Pollock are capable of broad scale movements well beyond the localized region of Chiniak Gully. At the recommended harvest level for the region, small shifts in the geographic distribution of catch are not likely to significantly impact predator prey or reproductive success of pollock or other groundfish stocks in the region.

Table 7. Summary of pollock fishery in area 630 based on NMFS observer data summarized for August/September*.

| Description | 1996 | 1997 | 1998 | 1999 | Predicted 2000 |
|---|---|---|---|---|---|
| TAC (630, Sept. 1 season) | 6,840 | 12,274 | 19,655 | 7,630 | 9,008 |
| Observed pollock catch in 630 tons | 1,370 | 3,144 | 3,475 | 2,650 | |
| Observed pollock catch in buffer zones tons | 99 | 50 | 838 | 0 | |
| Proportion observed catch within buffer zones | 0.07 | 0.02 | 0.24 | 0.00 | 0.08 |
| Observed pollock catch in Chiniak Gully closure tons | 0 | 22 | 339 | 785 | |
| Proportion observed catch within closure | 0.00 | 0.01 | 0.10 | 0.30 | 0.10 |
| Daily catch rate | 1,552 | 1,215 | 1,078 | 1,601 | |

* Observer data must be evaluated with caution because only 30% coverage is required for vessels over 65 ft and less than 125 ft. Most of the vessels participating in fisheries off the east side of Kodiak Island fall into the 30% coverage size category.

**Hook-and-line Groundfish** - The principal groundfish targeted by hook-line gear in the Central GOA are sablefish and Pacific cod. Provided that some Pacific cod TAC remains in the area and that hook-and-line have not reached their halibut PSC limit, NMFS may open Pacific cod for a brief clean up fishery in the fall. This clean up fishery could be scheduled as early as September 1. In the previous two years hook-and-line cod fisheries exhausted their halibut mortality allowance early in the year (see specific closure dates below).

2001 hook-and-line closed February 26 with a clean-up fishery September 1to September 4
2000 hook-and-line closed March 8 to Dec 31
1999 hook-and-line closed May 18 to Dec 31
1998 hook-and-line closed May 26 to Dec 31
1997 hook-and-line open throughout year
1996 hook-and-line open throughout year

It is likely that the halibut mortality allowance would be exhausted early in the year in 2003 and 2004. Halibut mortality rates have increased since 1996 (12 % in 1996 and 1997, 14 % in 1998, 16 % in 1999, 17% in 2000, 14% in 2001 and 2002) without any reduction in bycatch rates.

Hook and line groundfish fisheries are exempted from the proposed no trawl zone in Chiniak Gully. Therefore, the Chiniak Gully closure is not expected to impact the distribution of hook and line catch.

**Pot and Jig Groundfish** - Pot and jig fisheries for groundfish are open year round. These fisheries would be exempted from the proposed no trawl zone in Chiniak Gully. The principal species targeted by pot and jig fisheries would be Pacific cod and rockfish. It is likely that Pacific cod fisheries would be closed due to halibut caps (see above) thus inactive. Jig gear may also target rockfish open to directed fishing. The proposed action would not influence species taken in these fisheries.

### 3.1.2 State of Alaska Managed Fisheries in Central GOA

Under State of Alaska policy, the trawl closure proposed under Alternative 2 would have the effect of seasonally closing the use of pelagic trawl gear in state waters adjacent to EEZ waters in the Chiniak Gully control area for the duration of the federal action. Under existing State of Alaska statute, 5 ACC 39.164 (b)(1)(C)and (D) state waters are currently closed year round to the use of non-pelagic trawl gear in both the proposed treatment and control areas. These closures are not affected under Alternative 2 and would remain in effect. Each year by emergency order (most recently Emergency Order No. 4-GF-01-02 issued December 31, 2001 and effective January 1 through December 31, 2002) ADF&G modifies groundfish fishing seasons in adjacent state waters to be concurrent with federally managed groundfish open and closed seasons unless otherwise specified in the Kodiak area. Thus, any fishery closures or openings authorized for federal water fisheries under the proposed action would be extended to state waters as well.

The following types of fisheries are likely to be operating within state waters during the experiment.

Salmon - Catches (volume) peak in July. In August and September salmon fishermen target pink, red, and silver salmon. Only purse seine and set nets (gillnets) are used in the Kodiak area. The fisheries occur entirely in state waters. Frequent openings and closures occur based on escapement to spawning habitat.

Crab- Tanner and King crab fisheries are closed in the Kodiak area and not likely to reopen any time soon, due to low abundance.. The Dungeness crab fishing season is open during the period proposed under Alternative 2. Although EEZ waters are open most of the Dungeness fishing occurs in shallow state waters from Cape Gravel (57 35 30 N, 152 09 30 W) to Narrow Cape (57 25 30 N, 152 20 00 W). Pot gear is used. Existing regulations protect near shore crab habitat from bottom trawling on a year round basis. Imposition of the no trawl zone in Chiniak Gully would extend the no trawl zone beyond current boundaries. Thus, adopting Alternative 2 would provide more protection to crab in the region of

the control site.

Pacific cod - Open in state waters. Only jigging and pot gear may be used so this fishery would not be affected by the proposed closure to trawl gear under Alternative 2.

Scallops - Closed during the period proposed under Alternative 2 north of the latitude of Cape Chiniak. Open south of the latitude of Cape Chiniak (58 degrees 31 min N), although the area has closed during the period proposed under Alternative 2 in previous years due to crab bycatch restrictions . Usually two 16 foot wide dredges are towed hard on the bottom. Most fishing occurs at depths of approximately 40 fathoms, outside state waters.

Herring, sea cucumbers and urchins - These fisheries are closed by state statute during the period proposed under Alternative 2 and would not be affected.

### 3.1.3 Effects on Species Prohibited in Groundfish Fisheries Harvest

Alternative 1 would not change the expected catch of prohibited species. Fishing at the level established by the final 2002 harvest specifications for groundfish in the GOA (67 FR 956, January 8, 2002) is not expected to adversely affect stocks of fish or invertebrates prohibited in groundfish fisheries harvest. Catches of Pacific halibut in the GOA are controlled by PSC limits. Section 4.3.5 of the draft programmatic SEIS (NMFS 2001a) describes the possible impacts on prohibited species. New information presented in section 3.2 and the EA for final TAC specifications for 2002 (NMFS 2001c) does not demonstrate any impacts that NMFS considers to be significant or that were not already analyzed in the SEIS.

Alternative 2 would not substantially change the expected bycatch of prohibited species from the status quo alternative assessed in the draft programmatic SEIS and EA prepared for the 2002 TACs. It is possible that implementation of the no trawl zone could reduce the bycatch of prohibited species if groundfish catch is not redistributed elsewhere. However, it should be noted that any redistribution of groundfish catch involves small amounts of fish and the bycatch of prohibited species associated with this catch would not be significant.

### 3.1.4 Effects on Essential Fish Habitat

The management areas where the fisheries take place are identified as essential fish habitat (EFH) for all the managed species listed in the fishery management plans. NMFS prepared an assessment of impacts to essential fish habitat (NMFS 2001c) and received a letter of consultation in reply (NMFS 2001d). In that letter NMFS stated it concurs in the assessment that fishing may have adverse impacts on EFH for managed species but concluded that any adverse effects have been minimized to the extent practicable. No EFH recommendations were offered. See Section 2.4 for a summary of the consultation.

The potential shifts in trawl effort caused by the temporary no trawl zone in Chiniak Gully is not expected to have a significant impact on essential fish habitat. The proposed regulatory amendment will primarily impact the distribution of the mid-water pollock trawl fishery which has little impact on the benthos. Most bottom trawl fisheries will be closed during the time of this experiment (Section 3.1.1). If bottom trawl fisheries remained open, the displacement of bottom trawl effort due to the no trawl zone in Chiniak Gully would be minor. For example, if the halibut allowance did not prohibit flatfish trawl fisheries in 2003 and 2004, and flatfish fisheries were displaced away from Chiniak Gully, Alternative 2

would decrease the probability of benthic disturbance in Chiniak Gully, and would increase the probability of benthic disturbance in regions outside of the Gully. However, review of historical catch data (1996-1999) shows that in the months of July - September, approximately 4% of catches in area 630 occurred in Chiniak Gully. Historical data also showed that only a small fraction of the flatfish quota (0.5%) was harvested along the east side of Kodiak Island in August. These minor shifts in the geographic distribution of flatfish trawl effort are not likely to have significant adverse impacts on essential fish habitat.

### 3.1.5 Effects on Marine Mammals and ESA Listed Species

Beluga whales

An isolated stock of beluga whales is located in Cook Inlet, Alaska. The region impacted by the proposed action is not an area commonly utilized by Beluga whales and no adverse impacts are anticipated.

ESA listed species

NMFS completed formal consultation under section 7 of the Endangered Species Act (ESA) on the Steller sea lion protection measures, including the Chiniak Gully research in this proposed action. The consultation concluded that there is no likelihood of jeopardy or adverse modification of critical habitat for ESA listed species (NMFS 2001b, Appendix A).

## 4.0 REGULATORY IMPACT REVIEW

The Regulatory Impact Review (RIR) is designed to respond to the requirements of Executive Order (E.O.) 12866. This includes providing information to determine whether the proposed regulation is likely to be economically significant.

The objective of the proposed action is discussed in Sections 1.0 and 1.1 and the two alternatives are described in Section 1.2 The expected differences in economic effects between the two alternatives are discussed below.

### 4.1 Impact of the Alternatives

Alternative 1 would prevent NMFS from conducting a controlled experiment off Kodiak Island and, therefore, prevent NMFS from obtaining information that can be used to assess further management actions to protect Steller sea lions and their habitat. Alternative 2 would allow NMFS to conduct the controlled experiment and improve the information available for such assessments. This would be expected to result in the use of more effective and efficient methods to protect Steller sea lions. The other differences between the economic impacts of the two alternatives will be due to differences in the following: 1) the spatial and temporal distributions of catch; 2) the levels of catch and bycatch mortality; and 3) the distribution of catch among the competing fishing operations. Those differences would occur during the 4-year period in which the proposed regulatory amendment would be in effect.

### 4.1.1 Improved Information

The proposed action could provide improved information that could substantially benefit NMFS's ability

to implement effective measures to protect Steller sea lions. Better information upon which to base these measures could decrease the costs to NMFS and the industry of providing a given level of protection. For example, agency costs associated with the process of justifying and defending protection measures could be reduced to the extent less uncertainty exists about the scientific data and other information upon which these measures are based. Conversely, better information could provide the justification to implement adequate protection measures that are less costly to industry. These benefits could be substantial given the size and value of the pollock fisheries.

The recipients of these benefits include persons who enjoy subsistence and non-consumptive uses of Steller sea lions. They also include the participants in the groundfish fisheries and others who benefit from the pollock fisheries. This is because providing timely and effective protection for Steller sea lions can prevent the need for more dramatic and costly controls on the pollock fishery and other groundfish fisheries in the future.

Similarly, those with subsistence and non-consumptive uses of Steller sea lions and participants in the pollock fishery would benefit from the use of more efficient methods of protecting Steller sea lions. The more efficient methods would allow a higher level of protection but at a lower cost to participants in the pollock fishery.

### 4.1.2 Changes in the Distribution and Magnitude of Catch and Bycatch

The proposed changes to groundfish fishery closures would apply only to trawl gear. Almost all of the groundfish trawl catch that has occurred in the time and area of the proposed Chiniak Gully closure was taken by catcher vessels with an observer coverage requirement of only 30%. Therefore, groundfish fish ticket catch data by ADF&G statistical area were used to estimate the historical catch during the proposed seasonal closure. Catch data from the following five statistical areas were used: 505700, 515700, 515730, 525732, and 525733. There are three reasons why the historical catch from these five areas exceeds the catch reduction that would be expected to occur in the Chiniak Gully area during late summer if the proposed closure is implemented (see Fig 2). First, the five statistical areas include substantially more area than would be closed. Second, most of the parts of areas 525732 and 525733 that are in the proposed closure would have been closed by the pollock trawl closures that have been in place since 1999. Third, the proposed Federal regulations would not directly affect fishing in the statistical area that is in State waters (area 525733). However, that statistical area is included because the State of Alaska will be asked to close it to assist with the experiment.

Observer data were used to investigate the first source of the upward bias (i.e., using fish ticket data for a five-statistical area which is larger than the proposed closure). Data from sampled hauls in August and September were used to estimate the percent of the groundfish trawl catch from each statistical area that was within the proposed closure. This was done by year and species or species group. The observer data indicate that the percent of catch of the five statistical areas accounted for by the areas within the proposed closure increased annually from 17% in 1996 to 99% in 1999 (Table 8). Therefore, in 1999, the bias was very small.

The second source of the upward bias (i.e., including catch from areas within Chiniak Gully that would have been closed anyway to pollock trawlers) exists only for the pre-1999 data because those closures were in effect in 1999.

The third source of an upward bias (i.e., including catch from a statistical area within state waters) was

not a problem for the 1997-99 data because there was no catch reported from that statistical area in those years.

Table 8 Groundfish trawl catch from the statistical areas associated with the proposed closure and estimated catch from the portions of those areas that would be closed, 1996-99.

| Year | Catch from the 4 areas | | Catch from the 5 areas | |
|---|---|---|---|---|
| | All | Chin.G | All | Chin.G |
| 1996 | 2,086 | 353 | 2,112 | 356 |
| 1997 | 338 | 251 | 338 | 251 |
| 1998 | 1,736 | 1,579 | 1,736 | 1,579 |
| 1999 | 4,043 | 4,017 | 4,043 | 4,017 |

Notes: All is the groundfish trawl catch reported on fish tickets for all of the relevant statistical areas. Chin. G is the corresponding catch just from the portions of the statistical areas that would be closed.

The vessel-specific estimates of the percent of total groundfish ex-vessel value that was accounted for by August and September trawl catch from the area that would be closed were adjusted downward from the estimated for all portions of the five statistical areas to just the relevant portions. This was done using observer data for the trawl fleet as a whole by year and species or species group. Because most of the catch from the five statistical areas in 1998 and 1999 was from the portions of the five statistical areas that would be closed, the adjustments were very small for those two years.

The use of catch data for August 1 through September 30 may also introduce an upward bias. But this additional bias is offset, at least in part, by the fact that the late summer pollock fishery is expected to open August 25 beginning this year as opposed to September 1, the opening date in 1996-99.

During 1996 to 1999, groundfish catch in the five statistical areas during August and September accounted for from 1.3% to 22.8% of August and September catch reported on fish tickets for the Central Gulf as a whole and for 0.3% to 4.4% of the corresponding annual catch for the Central Gulf. The expectation is that most of the catch that otherwise would occur in the Chiniak Gully area during August and September would occur elsewhere in the Central Gulf as the result of the proposed regulations. That redistribution of catch is not expected to affect significantly either catch or bycatch in the Central Gulf.

Although approximately 200 fishing vessels are expected to participate in the GOA trawl groundfish fishery in each of the next few years, the number of vessels directly affected by the proposed regulations is substantially less. During 1996 to 1999, the number of groundfish trawlers that fished in the five statistical areas in August and September ranged from 9 in 1997 to 26 in 1999. The majority of the vessels are between 80 and 100 feet in length (Fig. 3).

For these vessels as a group, catch in the five statistical areas during August and September accounted

for between 1.2% and 6.5% of the ex-vessel value of their annual groundfish catch. For individual vessels the corresponding statistic typically ranged from less than 0.5% to less than 20% (Fig. 4). However, in 1999 there was one outlier that is not included in Fig. 4. For that vessel, catch in the 5 statistical areas during August and September accounted for almost 57% of its annual ex-vessel earnings from groundfish. In making these comparisons, 1997 ex-vessel prices were used for 1997-99 because 1998 and 1999 ex-vessel prices are not available. The data presented in Fig.4 provide upper bound estimates of the percent reduction in groundfish ex-vessel value that would have occurred to individual vessels had the proposed closure been in place in 1996-99. Had the proposed closure been in place, most of the reduction in ex-vessel value from Chiniak Gully in August and September would have been offset by increased catch and value from other areas in the Central Gulf. However, costs would be incurred by being forced to forego fishing in what had been a preferred location. The increased cost would be due in part to the greater distance from Kodiak to the alternative fishing areas.

Given that the proposed action is expected to have a minimal effect on total catch and bycatch in the Central Gulf, the effects on other entities, such as processors and fishing communities, are expected to be minimal.

A fishery independent echo integration mid-water trawl (EIT) survey will be used. Therefore, the survey is expected to have minimal ecological effects. The annual cost of the survey is estimated be $375,000, much of which is accounted for by the operating cost of the survey vessel.

The proposed regulations are not expected to be economically significant.

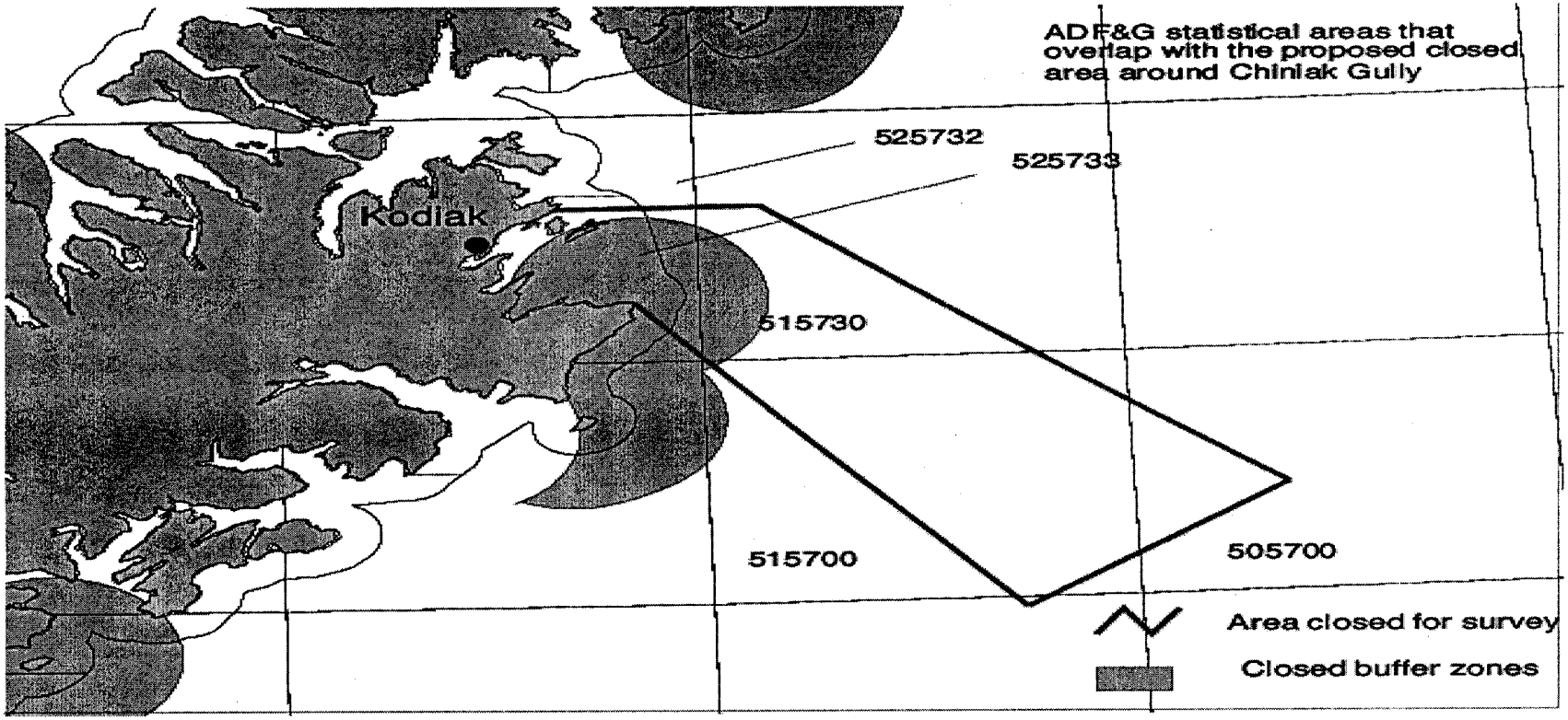
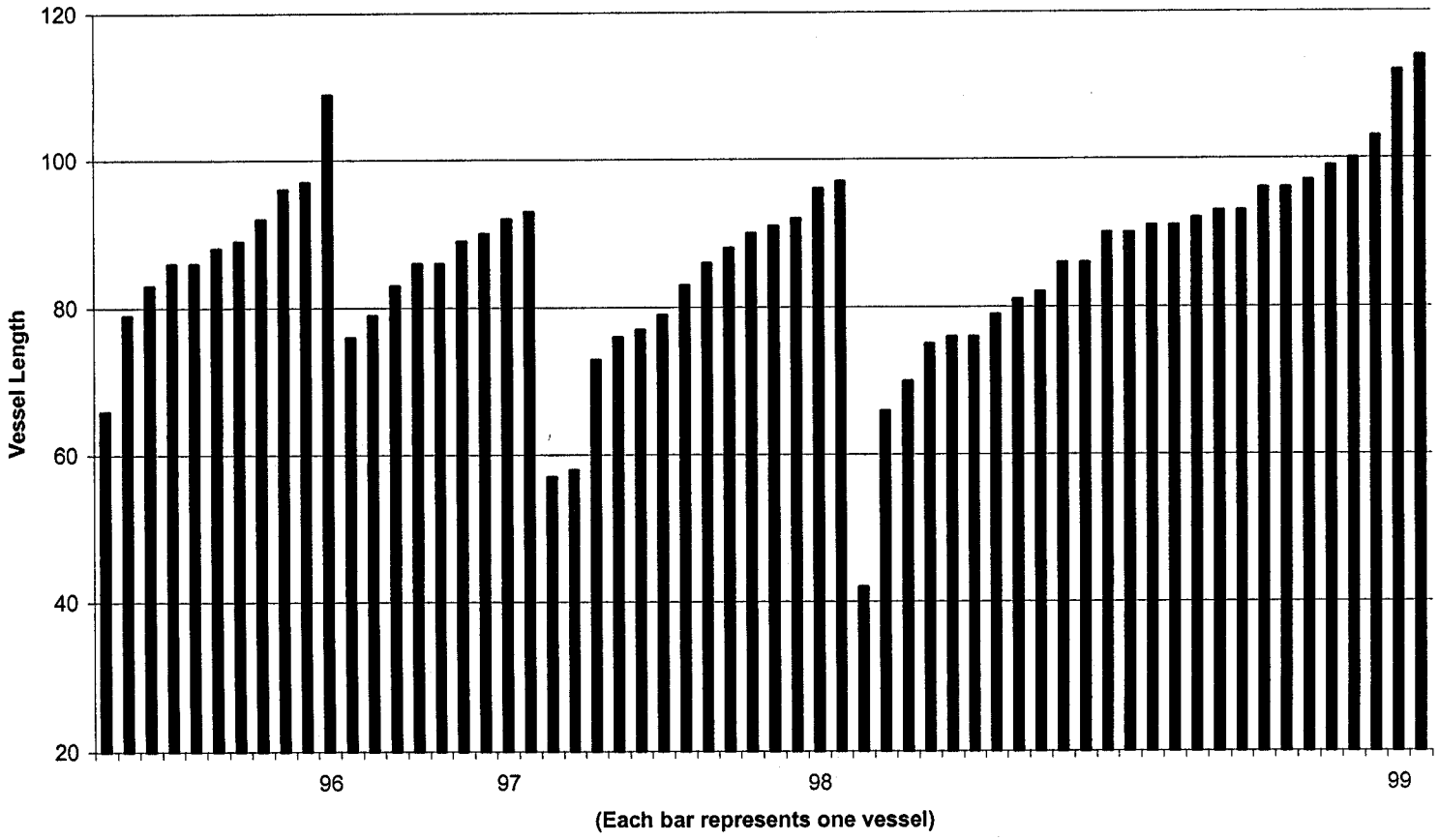



Figure 2 Chiniak Gully area and associated stat areas.

Figure 3 Lengths of vessels with groundfish trawl catch from the Chiniak Gully area during August and September, 1996-99.



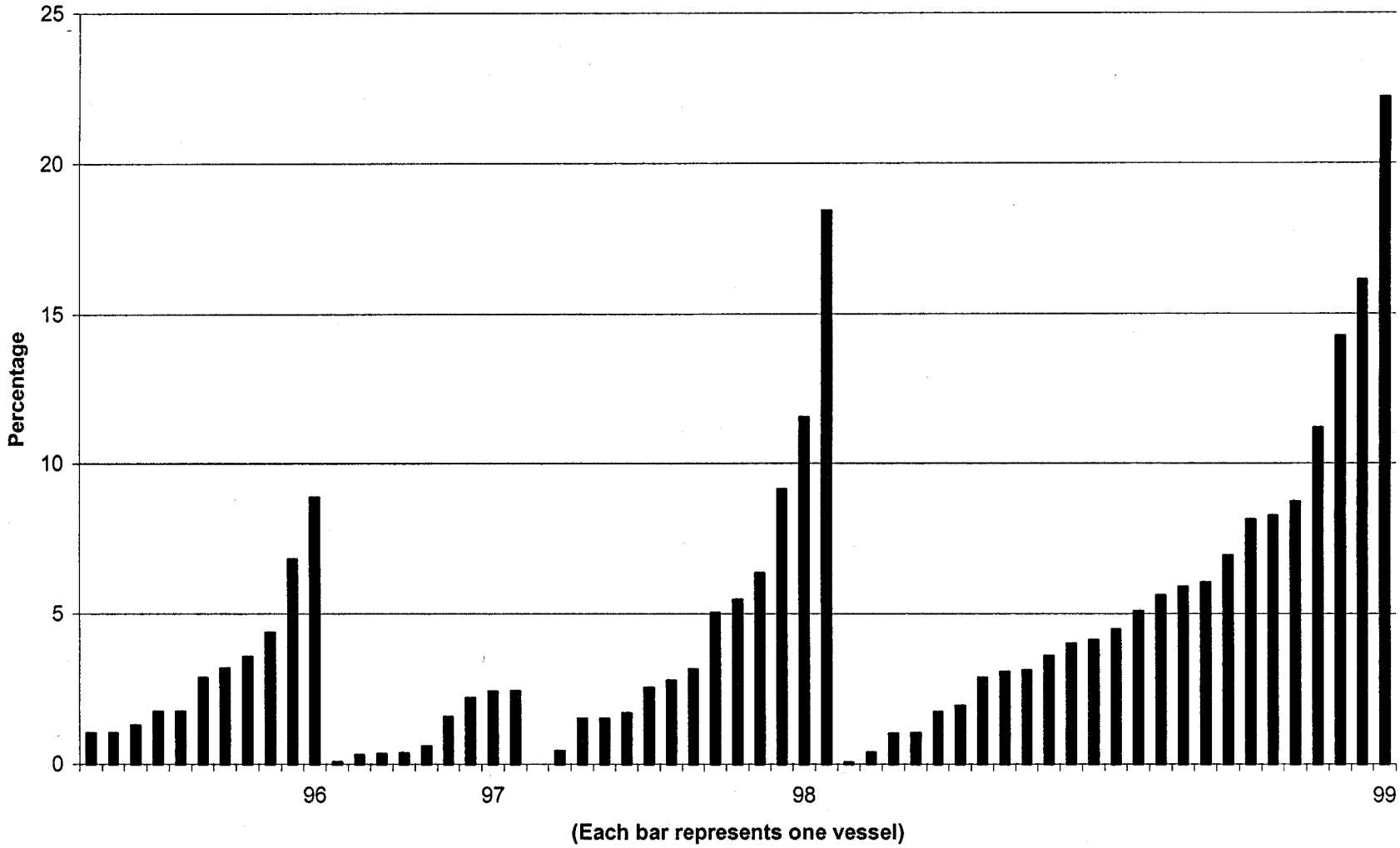



Figure 4 Percent of each vessel's Alaska groundfish ex-vessel value accounted for by trawl catch from the Chiniak Gully area during August and September, 1996-99.

## 5.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

### 5.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) evaluates a proposed regulatory action that would permit a Steller sea lion fishery interaction experiment in 2003 and 2004. The goal of this experiment is to identify and quantify the effects of commercial trawl fishing on the availability of potential prey (i.e. pollock) to Steller sea lions within a finite area. The experimental design requires a ban on all trawl fishing in the Chiniak Gully region off the east side of Kodiak Island. The preferred action implements that ban. The experiment discussed here was implemented in 2001 and 2002 by emergency interim rule.

### 5.2 The purpose of an IRFA

The Regulatory Flexibility Act (RFA), first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in an IRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in "significant adverse impacts on a substantial number of small entities" (as those terms are defined under RFA). Because, based on all available information, it is not possible to 'certify' this outcome, should the proposed action be adopted, a formal IRFA has been prepared and is included in this package for Secretarial review.

### 5.3 What is required in an IRFA?

Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant adverse economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

    1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;

    2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;

    3. The use of performance rather than design standards;

    4. An exemption from coverage of the rule, or any part thereof, for such small entities.

### 5.4 What is a small entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) and small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the US including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is

independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $3.5 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3.5 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established "principles of affiliation" to determine whether a business concern is "independently owned and operated." In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor or subcontractor is treated as a participant in a joint venture if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations The RFA defines "small organizations" as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of less than 50,000.

## 5.5 What is this action?

A detailed description of the preferred alternative may be found in Section 1.2 of this EA/RIR/IRFA. This action is a proposed rule that would make regulatory changes necessary to allow the experiment to proceed in 2003 and 2004. The preferred alternative is to adopt regulations to: 1) prohibit all trawl fishing in the Chiniak Gully region off the eastside of Kodiak Island from August 1st to a date no later than September 20th in two years (2003 and 2004) and 2) authorize inseason action to reopen directed fishing for pollock within 10 nautical miles of the haulouts located at Gull Point and Cape Barnabas during the same periods pending survey results showing commercial concentrations of pollock in the Barnabas Gully area. Note that this action would make possible the final two years of a four-year experiment. The necessary regulatory changes for 2001 and 2002 were adopted by emergency interim rules.

## 5.6 Reason for considering the proposed action

The reason for this action is discussed at length in Section 1.1 of this EA/RIR/IRFA. This action is being considered to assist NMFS in evaluating the efficacy of current fishery management practices as they relate to stewardship responsibilities toward the western distinct population segment (DPS) of Steller sea lions, listed as endangered under the Endangered Species Act. This action, which authorizes a controlled experiment off Kodiak Island in order to improve the information available to assess further management actions to protect Steller sea lions and their habitat, is considered an integral part of a NMFS comprehensive research program designed to evaluate the effects of fishing on the foraging behavior of Steller sea lions.

## 5.7 Objectives of, and legal basis for, the proposed action

The objectives and legal basis for this action are fully described in Section 1.1 of this EA/RIR/IRFA. The objective of this action is to permit the final two years of a four year experiment. The experiment is designed to provide information bearing on the following questions:

- Whether measurable changes exist in the distribution and abundance of pollock during the duration of the experiment;
- Whether commercial fisheries for pollock cause short-term (days to weeks) changes in the pollock school dynamics; and
- Whether pollock fisheries cause reductions in the availability of Steller sea lion forage (i.e., pollock) in localized regions off the east side of Kodiak Island.

This action is recommended by the North Pacific Fishery Management Council under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. This action is being taken to fulfill the stewardship responsibilities of NMFS for Steller sea lions as required by the Endangered Species Act and the Marine Mammal Protection Act.

## 5.8 Number and description of small entities affected by the proposed action

***What are the directly regulated entities?***

The regulated entities are those entities that would be precluded from groundfish trawling in the Chiniak Gully in August and September by the restrictive regulations associated with this action. In a broad sense, the regulated entities are the fishing vessels, with the capability or potential capability to trawl, that may participate in the GOA trawl groundfish fisheries, since any of these may have trawled for groundfish in the Chiniak Gully area. In a narrow sense, the regulated entities are the fishing vessels that have actually participated in the Chiniak Gully groundfish trawl fishery in August and September in recent years.

***Number of small regulated entities***

In 2000, 145 vessels trawled for groundfish in the GOA. Most of these, 127, were catcher vessels, and some, 18, were catcher/processors. All of the catcher vessels are estimated to be small as defined by the SBA (gross revenues under $3.5 million), while four of the catcher/processors were small.[1]

The number of these vessels that have actually been active within the Chiniak Gully is much smaller than this. Section 4.1.2 of this EA/RIR/IRFA provides a more detailed discussion of this issue. However, in the five years from 1996 through 1999 the number of groundfish trawlers operating in the area affected by the preferred alternative in August and September ranged from 9 in 1997 to 26 in 1999.

In 2000, 24 vessels harvested groundfish with trawl gear in the five State of Alaska statistical areas within which the Chiniak Gully falls. Twenty-two of these were catcher vessels and two were catcher/processors. The catcher vessels are all considered small entities, while the catcher/processors may have been small.

***Description of small regulated entities***

A more detailed description of the regulated entities may be found in Section 4.1.2 of this EA/RIR/IRFA. For the GOA as a whole, average gross revenues for the 127 catcher vessels trawling in 2000 were $270,000, while average gross revenues for the small catcher/processors were $1.43 million.[2] Almost all of the harvest that was taken from the Chiniak Gully area from 1996 through 1999 was taken by catcher vessels. A majority of these vessels were between 80 and 100 feet long. As noted above, all catcher vessels active in the GOA trawl groundfish fisheries are believed to be small entities under SBA guidelines. For these vessels, the groundfish catch in the Chiniak Gully area in August and September accounted for about 1.2% to 6.5% of the average annual ex-vessel value of their groundfish catch. For individual vessels these percentages typically ranged between 0.5% and less than 20%. However, one vessel, in 1999, earned about 57% of its annual groundfish revenues in the Chiniak Gully. (This discussion of vessels operating in the Chiniak Gully is abstracted from Section 4.1.2 of this EA/RIR/IRFA).

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[1]These large and small estimates were supplied by Terry Hiatt of the Alaska Fisheries Science Center in a personal communication dated February 28, 2002. The estimates probably overestimate the number of small entities. First, they are based on revenues from groundfish fishing and do not reflect the revenues these entities might have earned in other activities. Many of these entities may have been involved in other Alaskan fisheries such as salmon, herring, and crab. Second, these estimates are for vessels, and do not reflect potential affiliations that might exist between vessels. For example, a single person or firm may own multiple vessels, or a vessel may be involved in some sort of joint venture with a fish processor.

[2]Hiatt, ibid.

In 2000, on average the 22 catcher vessels earned 1.64% of their total Alaska groundfish revenues from trawling in the Chiniak Gully. The percentages earned from the Gully ranged from .07% to 4.0% for individual vessels. These percentages overstate the revenues associated with the Chiniak Gully somewhat since they ignore revenues these catcher vessels may have earned in other fisheries in Alaska. However, these vessels were not active in many other Alaskan fisheries. Comprehensive revenue data across fisheries is not currently (May 2002) available for 2000. Data from 1999 suggest that these vessels had significant non-groundfish fishing activity only in the Alaska halibut fishery, and that this was probably relatively small compared to their groundfish activity. The two catcher/processors were not significantly dependent on Chiniak Gully groundfish harvests.[3]

### 5.9 Adverse economic impacts on regulated small entities

***Is there an impact on cash flow or profitability?***[4]

As noted in Section 4.1.2 of this EA/RIR/IRFA, other fishing areas are available to these vessels, and the loss of revenues to the regulated vessels from the proposed closure should be offset by increased activity by these vessels in other trawling activity in the Central Gulf. Thus there should be little change in gross revenues attributable to the proposed action. However, it is likely that these vessels would face an increase in operating costs. Most of the affected vessels are home-ported in and operate out of the city of Kodiak, adjacent to the proposed closure area. Although vessels will be able to harvest elsewhere, they would be expected to incur some additional costs as a result of traveling greater distances to alternative fishing areas, or as a result of reduced catch per unit effort (otherwise, they would be fishing these alternative areas and patterns voluntarily). These costs would not be expected to be significant and would end in 2005, in any case.

***Does the preferred alternative impose a disproportionate burden on regulated small entities***

The small regulated entities considered here participate in groundfish fisheries in which both large and small entities participate. The Chiniak Gully experiment regulation is being implemented in a fishery that is largely prosecuted by small entities. Thus it seems likely that the burden of the regulation would fall relatively more heavily on the small entities in the GOA.

### 5.10 Recordkeeping and reporting requirements

The IRFA should include "a description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record..."

This regulation does not impose new recordkeeping or reporting requirements on the regulated small entities.

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[3]Data on the catcher/processors cannot be provided due to confidentiality restrictions.

[4]This discussion is qualitative since there is no available cost information for these vessels.

## 5.11 Federal rules that may duplicate, overlap, or conflict with proposed action

An IRFA should include "An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule..."

This analysis did not reveal any Federal rules that duplicate, overlap or conflict with the proposed action.

## 5.12 Description of significant alternatives

An IRFA should include "A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson-Stevens Act and any other applicable statutes and that would minimize any significant economic impact of the proposed rule on small entities."

Alternative 1, no regulatory change, would have no impact. However it would prevent NMFS from completing the last two years of a four year controlled experiment and prevent NMFS from obtaining information that could be used to assess further management actions to protect Steller sea lions and their habitat. It would thus not meet the objectives of this action.

An alternative that would exempt small entities from the proposed time/area closure was considered by NMFS but not analyzed. Most of the fishing entities in this area are small. A small entity exemption would undermine the intent of the action to allow a controlled experiment to assess the effects of trawl fishing on the availability of prey for Steller sea lions. It would thus not meet the objectives of this action.

## 6.0 CONCLUSIONS

To determine the significance of impacts of the action analyzed in this EA, NMFS is required by NEPA and 50 CFR § 1508.27 to consider the following:

*Context*: The setting of the proposed action is the trawl groundfish fisheries of the GOA on the east side of Kodiak Island. Any effects of the action are limited to this area. The effect on society within this area is isolated to the individuals who may participate in trawl fisheries in the Chiniak Gully. This action has no impacts on society as a whole or regionally.

*Intensity:* A listing of considerations to determine intensity of the impacts are in 50 CFR § 1508.27 (b). Each consideration is addressed below in order as it appears in the regulation.

1. Beneficial and adverse impacts are required to be considered in this action. Effects of the proposed action are in section 3.0 of this EA/RIR/IRFA. The result of the action is the potential redistribution of trawl fishing effort on the east side of Kodiak Island from August 1 to September 20. The potential redistribution of mid-water pollock fishing effort due to the Chiniak Gully closure is likely to be minor and would not be sufficient to cause a significant impact on other groundfish fisheries. Much of the trawl fishery does not operate in this time period because the halibut PSC limit is usually reached by early August. There should be no overall change in the amount of bycatch taken. The potential shifts in trawl effort is not expected to have an impact on essential fish habitat, marine mammal, or ESA listed species. The action may have a beneficial effect of providing information about pollock abundance and distribution that could be used in pollock fishery management and Steller sea lion protection.

2. Public Health and Safety are not impacted by this action due to the limited duration and coverage of this action.

3. No geographic consideration is with this action because no activities are required by this action that may affect a geographic area.

4. No comments were received during the public notice of the proposed regulations (65 FR 41044 July 3, 2000). This action is not controversial.

5. No known risks to the human environment will occur by taking this action. In two years that the experiment has been conducted by emergency interim rule, no risks were identified.

6. Because the taking of this action results in no impacts, it is unlikely future actions may result in significant impacts. The experiment is scheduled to end at the end of 2004 and no extension of the experiment is planned at this time.

7. Cumulatively significant impacts are not anticipated with this action because no impacts have been identified. Because of the short duration and the limited area were the experiment is conducted, this action has no long term, effect on the fishing practices in the GOA. The results of the experiment may lead to modifications in management of pollock fisheries but the significance of any modification is unknown at this time. This action has no known relation to other actions that may be taken to conserve and manage other groundfish fisheries in the GOA.

8. This action will have no effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, or historical resources. This consideration is not applicable to this action.

9. This action will have no effect on ESA listed species in the GOA because the experiment requires the prohibition of trawling, reducing the likelihood of interaction of the trawl fishery with ESA listed species where the experiment is conducted.

10. This action poses no known violation of Federal, State, or local laws or requirements for the protection of the environment.

11. This action poses no known possibility of the introduction of non-indigenous species because it does not affect the activities of vessels that may introduce such organisms into the marine environment.

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## 9.0 LITERATURE CITED


National Marine Fisheries Service (NMFS.) 2001a. Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement. DOC, NOAA, National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2001b. Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement. November 2001. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS 2001c. Environmental Assessment for the Interim and Final Total Allowable Catch Specifications for the Year 2002 Alaska Groundfish Fisheries, Dec. 2001. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2001d. Memorandum from the Assistant Regional Administrator for the Office of Habitat Conservation (Alaska Region) to the Assistant Regional Administrator for the Office of Sustainable Fisheries (Alaska Region) Regard Essential Fish Habitat Consultation for year 2002 TAC specifications. December 14, 2001. NMFS Alaska Region, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 2001e. Memorandum from the Assistant Regional Administrator for the Office of Protected Resources (Alaska Region) to the Assistant Regional Administrator for the Office of Sustainable Fisheries (Alaska Region) Regarding Endangered Species Act Section 7 Consultation for authorization of the 2002 Groundfish Fisheries as implemented by the annual harvest specifications under the Fishery Management Plans for the Bering Sea and Aleutian Islands and the Gulf of Alaska. December 11, 2001. NMFS Alaska Region, P.O. Box 21668, Juneau, Alaska 99802.

NMFS. 1999c. Endangered Species Act Section 7 Consultation - Biological Opinion: Authorization of TAC specification for the year 2000 groundfish fishery under the BSAI and GOA groundfish FMPs (Marine mammals including Steller sea lion). December 23, 1999. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, AK 99802. pp + Tables and Figures.

NMFS. 1999d. Endangered Species Act Section 7 Consultation, Biological Opinion for Take of Listed Salmon in Groundfish Fisheries Conducted under the BSAI and GOA FMPs. December 22, 1999. Available from NMFS, Alaska Regional Office, P.O. Box 21668, Juneau, AK 99802. 61 pp +figures.

NMFS. 1998a. Final Supplemental Environmental Impact Statement: Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska. December 1998. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802. 692 pp + Appendices and Comments.

NMFS. 1998b. Endangered Species Act Section 7 Consultation - Biological Opinion: Authorization of an Atka mackerel fishery under the BSAI groundfish FMP between 1999 and 2002; Authorization of a walleye pollock fishery under the BSAI groundfish FMP between 1999 and 2002; and Authorization of a walleye pollock fishery under the GOA groundfish FMP between 1999 and 2002 (Marine mammals including Steller sea lion). December 3, 1998. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, AK 99802. 139 pp + Tables and Figures.

NMFS. 1998c. Endangered Species Act. Section 7 Biological Opinion–Fishery Management Plan for the Bering Sea and Aleutian Islands and Gulf of Alaska Groundfish Fisheries and the 1999 Total Allowable Catch Specification and its effects to Steller Sea lions. December, 24, 1998. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, AK 99802.

North Pacific Fisheries Management Council (NPFMC). 1999. Fishery Management Plan for the Gulf of Alaska Groundfish Fishery. North Pacific Fishery Management Council, 605 W 4th Avenue, Suite 306, Anchorage, AK 99501

NPFMC. 2001a. Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510

NPFMC. 2001b. Economic status of groundfish resources off Alaska. *In* Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510.

NPFMC. 2001c. Ecosystem considerations. *In* Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510.

NPFMC. 2001a. Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510.

NPFMC. 2001b. Economic status of groundfish resources off Alaska. *In* Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510.

NPFMC. 2001c. Ecosystem considerations. *In* Stock assessment and fishery evaluation report for groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, P.O Box 103136, Anchorage, AK 99510.

NPFMC. 1999d. "Environmental Assessment for Amendment 55 to the Fishery Management Plan for Groundfish of the Gulf of Alaska. Essential Fish Habitat." January 20, 1999, in North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK 99501.

National Research Council. 1996. *The Bering Sea Ecosystem.* (National Academy Press, Washington, DC) 307 p.

Sullivan, P. J., and Parma, A. M. 1998. Population assessments, 1997. In: *International Pacific Halibut Commission Report of Assessment and Research Activities, 1997* International Pacific Halibut Commission, P.O. Box 95009, Seattle, WA 98145. pp. 81-107.

USFWS. 1999. Endangered Species Act Formal Section 7 Consultation for 1999-2000 Hook-and-Line Groundfish Fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands Area (Short-tailed Albatross.) Issued March 19, 1999. U.S. Department of the Interior, Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503-6199. 36pp + Tables and Figures.

# APPENDIX A. STUDY TO ASSESS THE EFFECT OF COMMERCIAL FISHING ON WALLEYE POLLOCK DISTRIBUTION AND ABUNDANCE

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Justification:
There is considerable scientific uncertainty regarding how commercial fishing activity affects the availability of walleye pollock (*Theragra chalcogramma*) to Steller sea lions (*Eumetopias jubatus*). The work proposed here will investigate whether pollock commercial fishing activities cause reductions in the availability or distribution of sea lion prey that could be detrimental to sea lions. This experiment will also examine whether pollock fisheries cause localized depletions in the sea lion forage base.

The goal of this project is to identify and quantify the effects of commercial fishing within a finite area of interest. The study location was chosen because the areas fished on the eastside of Kodiak offered generally discrete concentrations of fish separated by topographical features. The concentration of fishing effort in the Gulf of Alaska enables the designation of comparable treatment and control sites, which are essential to the study design.

Methods:
We propose to conduct a fishery independent echo integration trawl (EIT) survey before, during, and after the August commercial fishing season in the Kodiak region of the Gulf of Alaska (GOA). The proposed work will include a pilot study the first year, followed by 3 years of more comprehensive fieldwork. The pilot study will not include fieldwork following the fishing season. It is designed to evaluate the feasibility of using the methods described herein to collect the information necessary to determine the impact of fishing activity on Steller sea lion prey during August in the GOA. Results from the pilot study will be critical in the planning and final design of the more comprehensive fieldwork proposed for 2001-2002. Ship time for the R/V Miller Freeman has been obtained to conduct the pilot study in FY2000.

Five Kodiak locations to conduct this work were considered based on past commercial fishing activity, as documented in the NMFS observer database and interviews with numerous industry representatives. Because there has never been a fishery for pollock in August, observer data from August, September, and October were combined for 1993-99 to determine the most appropriate locations for the work off Kodiak. Based on these findings, we selected Chiniak Gully as the control site and will assign either Barnabas Gully or Marmot Bay as the treatment site (Fig. 1). The treatment site will be determined based on a reconnaissance survey (discussed below, Fig. 2) during the pilot study. August is an opportune time to conduct this survey as the Steller sea lions appear to exhibit spatially restricted foraging trips and site fidelity to rookeries, which offers the opportunity to monitor individual responses over several years.

It is anticipated that the comprehensive research surveys will be conducted in the same areas and in the same season as the pilot survey, with additional sampling after the fishing season has ended. The consistency in area and season will enable us to obtain a time series of data and evaluate the effects of interannual variation. Based on information from the pilot study, the NMML will also increase its land-based Steller sea lion work to coordinate with our survey.

Except for the reconnaissance work (explained below), all EIT surveys will consist of a uniformly-spaced (2 nmi) parallel transect pattern because this design will provide better spatial descriptions of pollock abundance and variance than the zig-zag pattern, although the latter covers greater area per unit time (MacLennan and Simmonds, 1992). Trawling during all EIT surveys will also be required to confirm the species composition of the echosign and collect biological samples needed to estimate abundance and distribution patterns. The survey would only be conducted during the daylight hours (about 14 hours/day

in August) because backscattering from other species during darkness may confound identification of pollock echosign (J. Stinson, Alaska Draggers Association, pers. comm.). Estimates of pollock abundance and distribution patterns within the study area will be described using standard MACE EIT-trawl survey methodologies (Traynor et al., 1990).

The general distribution pattern of pollock along the eastside of Kodiak at the beginning of the survey will be determined by conducting a reconnaissance EIT survey before the fishery starts. This knowledge will be used to select either Barnabas Gully or Marmot Bay as the most appropriate treatment site. The reconnaissance survey will follow a zig-zag (due to the large area to be covered during a short time period) trackline and require about five days to complete.

After the reconnaissance survey is complete, we will conduct EIT surveys of the control and treatment sites using the uniformly-spaced parallel transect pattern. During the pilot study, the treatment and control sites will each be surveyed twice; once before the fishing season and once during the fishing season. Approximately one week will elapse between surveys. The time to complete the EIT survey for the treatment area will be about 5 days and for the control site of Chiniak Gully, about 4 days.

We anticipate that the subsequent 3 years of comprehensive surveys will follow the same general survey design with added sampling after the fishing season has ended. However, parameters are subject to change depending on information gathered during the pilot study (e.g. transect spacing or size of survey area may be modified). If the R/V Miller Freeman is not available, the after fishery survey will be conducted by a chartered commercial vessel with the appropriate acoustic equipment and trawling capabilities.

It is possible that fish may exhibit avoidance reactions to commercial fishing activities, but may recover to their undisturbed distribution patterns before the EIT survey to describe their "disturbed" distribution patterns is completed. A free-drifting acoustic buoy will be repeatedly deployed for short durations (e.g., 4-12 h) during each field season to investigate whether these types of smaller spatio-temporal fish avoidance reactions occur in response to commercial vessel and trawl noise. In addition, fishing vessels within the area will exhibit vessel-specific underwater-radiated noise signatures. Work with the buoy targeting different vessels will enable us to investigate whether particular avoidance response patterns are associated with vessels having particular noise characteristics. One would hypothesize that "noisier" vessels would initiate a greater fish avoidance response in space and time.

Project Products and Coordination:

Results of the survey in the form of presentations/papers on the distribution and modeling efforts will be presented at annual meetings as well as in peer-reviewed literature. A preliminary report will be presented at the North Pacific Fisheries Management Council in December 2000. Preliminary results should be available by January 2001 followed by more comprehensive results in April-June 2001

The data collected during the pilot study will complement several other initiatives currently being conducted at the NMFS. Several of these projects may be conducted simultaneously to enhance final products. The NMML will coordinate marine mammal behavioral and food habits studies in the same location (PIs: T. Loughlin, K. Wynne). The analysis products provided from this survey can be used to develop algorithms to describe pollock movements in IBM modeling (PIs: S. Hinckley, M. Dorn, and A. York).

Fig. 1 Reconnaissance survey trackline.

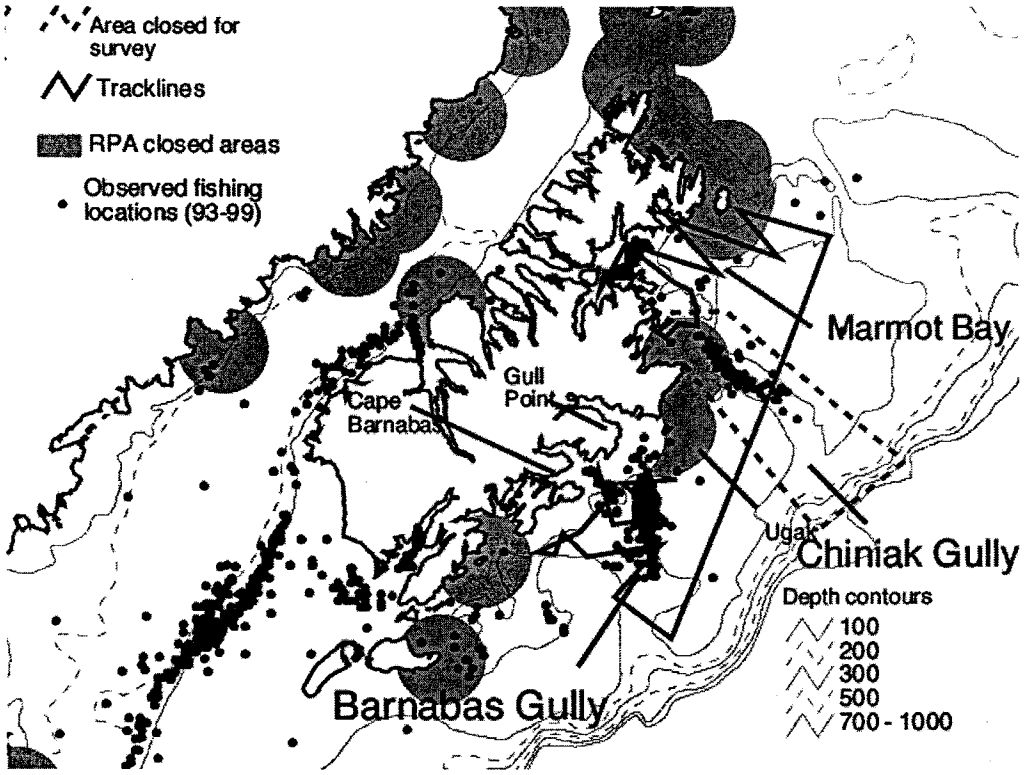
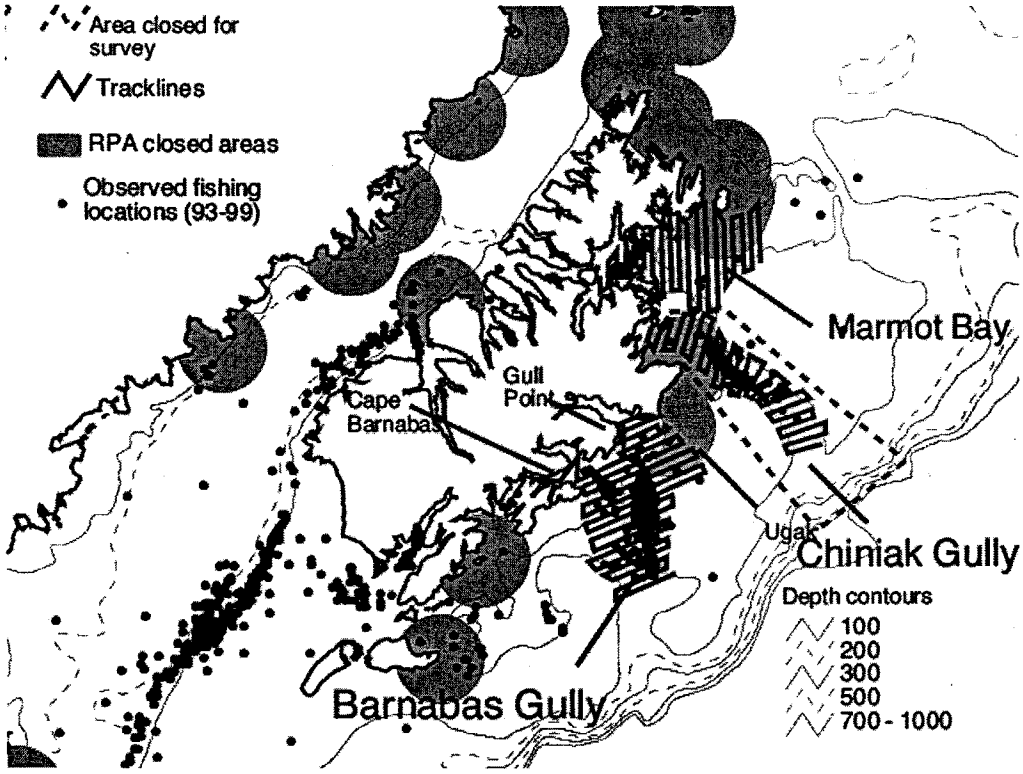


Fig. 2 Survey trackline for control and treatment sites.



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