

Attachment 1

**Biological Assessment for Reinitiation of Consultation
for Amendments 61/61 and 70/70**

Prepared by NMFS
Sustainable Fisheries Division
Alaska Region

July 2001

PROPOSED ACTION

The proposed action is the implementation of proposed amendments to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and the Fishery Management Plan for Groundfish of the Gulf of Alaska (groundfish FMPs) that would establish Steller sea lion protection measures for 2002 and beyond (Amendments 70/70) and implement provisions of the American Fisheries Act (AFA) (Amendments 61/61).

BACKGROUND

As explained in a May 30, 2001, memorandum from William Hogarth, Acting Assistant Administrator for Fisheries, NMFS is assessing a new process for implementing Steller sea lion actions by 2002 that more closely integrates the mandates of the ESA, National Environmental Policy Act (NEPA) and the Magnuson-Stevens Fishery Management and Conservation Act. As part of this process, the NEPA document(s) prepared on controversial Steller sea lion protection measures will be expanded to ensure that the North Pacific Fishery Management Council (Council) and the public are engaged in the decision-making process and to ensure that concerns of the Office of Protected Resources are addressed. The current strategy under this new process requires the release of a draft Biological Opinion as an attachment to a draft supplemental environment impact statement (SEIS) in August 2001. This consultation should tier off of the November 30, 2000, comprehensive biological opinion prepared on the Alaska groundfish fisheries and should focus on the pollock, Pacific cod and Atka mackerel fisheries. These fisheries were identified in the 2000 BiOp as fisheries of concern relative to potentially adverse impacts on Steller sea lions and their critical habitat.. This consultation should assess these fisheries and attendant modifications to them under proposed Amendments 70/70 and 61/61 to the groundfish FMPs. The draft Biological Opinion and draft SEIS will provide the Council an opportunity to consider possible effects of management measures under consideration and alternatives before making a final recommendation on a proposed action at the October 2001 Council meeting. The information provided in this biological assessment will be supplemented and expanded with the completion of the draft NEPA documents^{1,2} being prepared for Amendments 61/61 and 70/70.

The following information provides a summary of the proposed actions, a description of the action area, a description of listed species and potential effects of the proposed actions on those species, and a list of relevant reports or other information.

¹ Draft Environmental Impact Statement for American Fisheries Act Amendments. National Marine fisheries Service, Alaska Region. August 2001.

² Draft Supplemental Environmental Impact Statement on Steller Sea Lion Protection Measures in the Federal Groundfish Fisheries Off Alaska. National Marine Fisheries Service, Alaska Region. August 2001.

Steller Sea lion protection measures

In 1990, the Steller sea lion was listed as threatened under the ESA throughout its range (55 FR 12645, 55 FR 13488, 55 FR 49204, 55 FR 50005). Justification was based on evidence of a major decline in their abundance throughout most of their range, but most acutely in the core region from the Kenai Peninsula to Kiska Island. On May 5, 1997, NMFS reclassified Steller sea lions into two distinct population segments under the ESA (62 FR 24345). The reclassification was based on biological information collected since the species was listed as threatened in 1990. The Steller sea lion population segment west of 144°W longitude (near Cape Suckling, Alaska) was reclassified and listed as endangered; the remainder of the U.S. Steller sea lion population remains listed as threatened.

A complete summary of actions taken in the Alaska groundfish fisheries since the Steller sea lion was listed is presented in Chapter 2 of the draft SEIS prepared for Amendments 70/70. Most recently, November 30, 2000, NMFS released a comprehensive Biological Opinion on the groundfish fisheries of the BSAI and GOA, pursuant to section 7 of the Endangered Species Act (NMFS, 2000a). The Biological Opinion concluded the following:

After analyzing the cumulative, direct and indirect effects of the Alaska groundfish fisheries on listed species, NMFS concludes that the fisheries do not jeopardize any listed species other than Steller sea lions. The 2000 Biological Opinion concludes that the fisheries do jeopardize Steller sea lions and adversely modify their critical habitat due to competition for prey and modification of their prey field. The three main species with which Steller sea lions compete for prey are pollock, Pacific cod, and Atka mackerel.

To mitigate this situation, the Biological Opinion included a set of sea lion protective measures (termed the Reasonable and Prudent Alternative, RPA), which included closure areas, limitations on the amount of pollock, Pacific cod, or Atka mackerel that could be harvested, establishment of seasonal harvest limitations, and a long-term experimental monitoring program.

A one-year phase-in of these measures was imposed by Senator Ted Steven's rider to the fiscal year 2000 appropriations bill (Pub.L. 106-554). In essence, Pub. L 106-554 at § 209(c)(2) legislated that while the 2001 BSAI and GOA groundfish fisheries will be managed in a manner consistent with the RPA contained in the Biological Opinion and as modified by other provisions of section 209, the provisions of the RPA will be phased in during the 2001 fishing year. It further legislated that the RPA contained in the Biological Opinion will become effective in its entirety on January 1, 2002, unless revised as necessary and appropriate based on independent scientific review or other new information. In accordance with Pub. L. 106-554, and starting on January 1, 2001, the 2001 BSAI and GOA groundfish fisheries were initially managed in accordance with the fishery management plans and federal regulations in effect for such fisheries prior to July 15, 2000. This initial management regime was subsequently replaced via an emergency rule issued by NMFS January 22, 2001, under the Magnuson-Stevens Act and effective on January 18, 2001 (66 FR 7276). The emergency rule contained a suite of management measures that phased-in certain provisions of the RPA. This emergency rule was extended and modified by NMFS on July 17, 2001 (66 FR 37167).

The primary purpose of amendments 70/70 is to modify the BSAI and GOA pollock, Pacific cod and Atka mackerel fisheries such that the reconfigured fisheries do not jeopardize the continued existence of Steller sea lions or adversely modify their critical habitat. The need for this federal action stems from several sources. First, the Council and NMFS have a responsibility to insure that fishing activities

authorized under the FMPs and implementing regulation do not jeopardize the continued existence of any listed species or adversely modify its critical habitat. Second, in order for the pollock, Pacific cod, and Atka mackerel fisheries to commence on January 1, 2002, NMFS must implement a suite of Steeler sea lion protection measures, be it the November 30, 2000 RPA or some other alternative, because the emergency rules governing BSAI pollock, Pacific cod, and Atka mackerel fishing expire on December 31, 2001. Without any action by NMFS, important Steller sea lion protection measures regulation the pollock, Pacific cod, and Atka mackerel fisheries will cease to exist. Finally, new information about Steller sea lion movements based on telemetry studies and new analysis of Steller sea lion scat samples have become available since the issuance of the 2000 Biological Opinion. An examination of that information as it relates to necessary protection measures is warranted.

To facilitate review and modification of Steller sea lion protection measures, the Council appointed an RPA committee to develop recommendations for Steller sea lion protection measures for 2002 and beyond. The RPA committee recommended to the Council at its June 2001 meeting, Steller sea lion protection measures for 2002 and beyond. The Council adopted for analysis the RPA committee's recommendation, including several options, and requested NMFS to analyze these protection measures relative to standards established under NEPA, the ESA, and other applicable law.

The Council also recommended a number of alternatives to be analyzed in the draft SEIS for the 2002 Steller sea lion protection measures, including the RPA Committee's 2002 recommendations and options (Alternative 4). To facilitate the Council's decision making and to provide opportunity for public review of a draft biological opinion, Sustainable Fisheries Division has chosen the Council recommended Alternative 4, *including options 1 and 2* from the June 9, 2001, Final Motion on Steller Sea Lions as the proposed action for purposes of this consultation. This proposed action is described below and is subject to further consideration and/or modification that may result from the Biological Opinion, the draft SEIS, and Council recommendations on a final action in October 2001.

Amendments 61/61

On October 21, 1998, the President signed into law the AFA, which mandated sweeping changes to the conservation and management program for the pollock fishery of the BSAI and to a lesser extent, affected the management programs for the other groundfish fisheries of the BSAI, the groundfish fisheries of the GOA, the king and Tanner crab fisheries of the BSAI, and the scallop fishery off Alaska. Since then, the Council and NMFS have developed a complex FMP amendment package to incorporate the provisions of the AFA into the FMPs and their implementing regulations while at the same time implementing many provisions of the AFA through emergency interim rules to meet the statutory deadlines contained in the AFA. Amendments 61/61 to the groundfish FMPs, Amendment 13 to the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crab, and Amendment 8 to the Fishery Management Plan for the Alaska Scallop Fishery would supersede these previous emergency interim rules and implement AFA-related regulations that would remain in effect for the duration of the AFA (until December 31, 2004). A "no effects" memorandum dated July 6, 2001

(Attachment 1.1), determined that the AFA Amendments 13/8 have no known biological effects on listed species; therefore, these amendments are not included in this request for consultation.

Details of the proposed rule to implement Amendments 61/61/13/8 are described below. The Sustainable Fisheries Division has preliminarily determined that Amendments 61/61 may have a beneficial effect on the western population of Steller sea lions because of the AFA's impact on the management of the pollock fishery. As mentioned above, this fishery has been determined to pose jeopardy and adverse modification concerns for endangered Steller sea lions.

Re-initiation of Consultation

Section 402.16(c) requires re-initiation of consultation on an action "if the identified action is subsequently modified in a manner that caused an effect to the listed species or critical habitat that was not considered in the biological opinion..." The 2000 BiOp was a comprehensive analysis of the BSAI and GOA groundfish fisheries and for all species listed as endangered or threatened. Proposed Steller sea lion protection measures for 2002 and beyond contain modifications to management measures for pollock, Pacific cod and Atka mackerel fisheries which previously were analyzed in the 2000 BiOp and that were designed specifically to protect Steller sea lions. Because these modifications were not considered in the 2000 BiOp, a re-initiation of consultation is required.

Section 402.16(b) also requires re-initiation of formal consultation "if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered...". NMFS and the Alaska Department of Fish and Game have produced a number of technical discussion papers since the 2000 BiOp, including new information regarding Steller sea lion telemetry foraging, diet and mortality studies. This biological assessment also provides a description of new information currently available since the 2000 BiOp.

DESCRIPTION OF THE PROPOSED ACTIONS

Amendment 61/61 --The American Fisheries Act (AFA) Provisions

Background on the AFA

On October 21, 1998, the President signed into law the AFA (Div. C, Title II, Pub. L. No. 105-277, 112 Stat. 2681 (1998)). The AFA is divided into two subtitles addressing the requirements for fishery endorsements for all U.S. fishing vessels, and providing for the reorganization and rationalization of the BSAI pollock fishery, respectively.

Subtitle I--Fisheries Endorsements established a 25 percent foreign ownership and control limit for all U.S. documented fishing vessels over 100 ft registered length. Subtitle I also limits new U.S. documented fishing vessels to no more than 165 ft registered length, no more than 3,000 lbs shaft horsepower, and no more than 750 gross registered tons. The provisions of this subtitle apply to all U.S. documented fishing vessels fishing anywhere in the U.S. EEZ and are being implemented by the

Maritime Administration (MARAD) and the U.S. Coast Guard.

Subtitle II–Bering Sea Pollock Fishery mandated sweeping changes to the BSAI pollock fishery and to a lesser extent, affected the management of the other groundfish, crab, and scallop fisheries off Alaska. The purpose of Amendments 61/61/13/8 is to implement the management program required by Subtitle II of the AFA.

Congress identified two primary objectives in passing the AFA. The first objective was to complete the process begun in 1976 to give U.S. interests a priority in the harvest of U.S. fishery resources. This objective was accomplished through the restrictions on foreign ownership and control that are set out in Subtitle I of the AFA. The second objective addressed by Subtitle II of the AFA was to significantly decapitalize the Bering Sea pollock fishery. Under the council system established by the Magnuson-Stevens Act, Congressional action is generally not needed to address fishery conservation and management issues in specific fisheries. However, Congress believed that the overcapacity in the BSAI pollock fishery prior to the AFA was due, in part, to mistakes in, and misinterpretations of, the 1987 Commercial Fishery Industry Vessel Anti-Reflagging Act (Anti-Reflagging Act). In passing the AFA, Congress noted that the Anti-Reflagging Act had allowed a flood of foreign-rebuilt catcher/processors into the BSAI pollock fishery and did not limit foreign control of such vessels in the manner in which Congress had intended. Without an Act of Congress, the Council and NMFS did not have authority to provide funds under the Federal Credit Reform Act to buyout and retire vessels from the BSAI pollock fishery, to strengthen U.S. controlling interest standards for fishing vessels, or to implement the inshore cooperative program contained in the AFA.

Subtitle 2 of the AFA contains numerous provisions that affect the management of the groundfish and crab fisheries off Alaska. Key provisions include:

- The buyout of nine pollock catcher/processors and the subsequent scrapping of eight of these vessels through a combination of \$20 million in Federal appropriations and \$75 million in direct loan obligations;
- A new allocation scheme for BSAI pollock that allocates 10 percent of the BSAI pollock total allowable catch (TAC) to the CDQ program, and after allowance for incidental catch of pollock in other fisheries, allocates the remaining TAC as follows: 50 percent to vessels harvesting pollock for processing by inshore processors, 40 percent to vessels harvesting pollock for processing by catcher/processors, and 10 percent to vessels harvesting pollock for processing by motherships;
- A fee of six-tenths (0.6) of one cent for each pound round weight of pollock harvested by catcher vessels delivering to inshore processors for the purpose of repaying the \$75 million direct loan obligation.
- A prohibition on entry of new vessels and processors into the BSAI pollock fishery. The AFA lists by name vessels and processors and/or provides qualifying criteria for those vessels and processors eligible to participate in the non-CDQ portion of the BSAI pollock fishery;
- New observer coverage and scale requirements for AFA catcher/processors;
- New standards and limitations to guide the creation and operation of fishery cooperatives in the BSAI pollock fishery;
- An individual fishing quota program for inshore catcher vessel cooperatives under which NMFS grants individual allocations of the inshore BSAI pollock TAC to inshore catcher vessel cooperatives that form around a specific inshore processor and agree to deliver at least 90 percent

- of their pollock catch to that processor;
- The establishment of harvesting and processing limits known as "sideboards" on AFA pollock vessels and processors to protect the interests of fishermen and processors in other fisheries from spillover effects resulting from the rationalization of the BSAI pollock fishery,
- A 17.5 percent excessive share harvesting cap for BSAI pollock and a requirement that the Council develop excessive share caps for BSAI pollock processing and for the harvesting and processing of other groundfish.

Some of the above provisions of the AFA already have been implemented by NMFS and other agencies. The buyout and scrapping of the nine ineligible factory trawlers were completed by NMFS in 1999 under the schedule mandated by the AFA. This action was accomplished by contract with the vessel owners rather than regulation. The inshore pollock fee program required by the AFA was implemented by NMFS through final regulations published February 3, 2000 (65 FR 5278). MARAD has implemented the new U.S. ownership requirements and size restrictions for U.S. fishing vessels through final regulations published July 19, 2000 (65 FR 44860). MARAD's regulations also set out procedures for review of compliance with excessive share harvesting limits contained in this proposed rule.

Council Development of Amendments 61/61/13/8

Since the passage of the AFA in October 1998, NMFS and the Council have undertaken an extensive public process to incorporate the AFA into the FMPs and their implementing regulations. This management program has been submitted under proposed under Amendments 61/61/13/8 to the FMPs for the groundfish fisheries of the BSAI and GOA FMPs for the crab and scallop fisheries off Alaska. Amendments 61/61/13/8 were developed and revised during the course of twelve Council meetings over the past two years and have been the subject of numerous additional public meetings held by the Council and NMFS to address specific aspects of the AFA. While the permanent management program proposed under Amendments 61/61/13/8 was under analysis and development by the Council and NMFS, the statutory deadlines in the AFA were met on an interim basis through several emergency interim rules, and was extended through the end of 2001 by Pub. L. No. 106-554 which mandated that all management measures in effect as of July 2000 would be extended through the end of 2001.

The proposed rule to implement Amendments 61/61/13/8 is one of the most complex regulations ever produced by the Alaska Region and is not summarized in its entirety here. However, the proposed measures are specifically described in the draft environmental impact statement prepared for this action and fall into four general categories:

- Regulations limiting access to the BSAI pollock fishery. Participants in all fishing and processing sectors of the BSAI pollock fishery are limited to those vessels and processors specifically named in the AFA or that meet qualifying criteria set out in the AFA. The BSAI pollock TAC would be allocated among these industry sectors according to the formula set out in the AFA which allocates 10 percent of the TAC to the Community Development Quota program and, after subtraction of the projected incidental catch of pollock in other fisheries, allocates the remaining TAC 50 percent to the inshore sector, 40 percent to the catcher/processor sector, and 10 percent to the mothership sector.
- Regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery. The AFA specifically authorizes the formation of fishery cooperatives in the BSAI

pollock fishery. The proposed rule contains guidelines and requirements for the formation of fishery cooperatives in different sectors of the BSAI pollock fishery and contains regulations governing their operation. These regulations include such measures as restrictions on membership in inshore sector cooperatives, recordkeeping and reporting requirements, requirements that cooperatives constrain the activities of member vessels in other fisheries, and annual reporting requirements.

- Regulations to protect other fisheries from spillover effects from the AFA (Sideboards). The AFA requires that the Council and NMFS develop protection measures to prevent negative effects of the AFA from affecting participants in other groundfish, crab, and scallop fisheries. Under Amendments 61/61/13/8 the Council has developed a complex suite of sideboard measures designed to protect vessels and processors from spillover effects of the AFA. These sideboard measures generally take two forms: (1) restrictions on the entry of AFA vessels into other fisheries, and (2) harvest restrictions on AFA vessels that do participate in other fisheries.
- Regulations governing catch measurement and monitoring in the BSAI pollock fishery. The AFA also contains new catch measurement and observer coverage requirements for AFA vessels and processors. Under the proposed rule, all AFA catcher/processors and motherships would be required to weigh all groundfish on NMFS certified flow scales and would be required to carry 2 NMFS-certified observers at all times. AFA inshore processors would have new catch monitoring requirements and would be required to have 2 observers as well whenever BSAI pollock is being received or processed. Finally, all AFA catcher vessels and catcher/processors would be required to deploy NMFS-approved vessel monitoring system (VMS) units so that vessel locations may be tracked via satellite.

Amendments 70/70-- Steller Sea Lion Protection Measures

In June 2001, the Council reviewed and adopted for analysis the RPA Committee recommendations on Steller sea lion protection measures for 2002 and beyond. These measures included temporal and spatial allocation of pollock, Pacific cod and Atka mackerel fishing, protection of rookeries and haulout areas used by Steller sea lions, and critical habitat harvest limits. The RPA Committee developed their recommendations based on the 2000 BiOp and information included in the list of new information contained at the end of this biological assessment. The proposed Steller sea lion protection measures for purposes of reinitiating consultation are the RPA committee's recommendations with seasonal and allocation changes to the GOA pollock fishery in the Western and Central Regulatory Areas as recommended by the Council in June 2001. Pending approval by NMFS, the Steller sea lion protection measures would be Amendments 70/70 to the BSAI and GOA FMPs. The proposed actions are summarized below for the Aleutian Islands subarea, the Bering sea subarea, and the Gulf of Alaska and are described detail in Chapter 2 of the draft SEIS prepared for this action. In all areas, all rookeries are surrounded by a 3 nm no transit/no groundfish fishing zone and haulouts are surrounded by a 3 nm no groundfish fishing zone with some exceptions. Table 21 of 50 CFR Part 679 lists rookeries and haulouts subject to fishing restrictions.

The setting of TAC for the pollock, Pacific cod and Atka mackerel fisheries would be based on a global control rule which is modified from the one detailed in the 2000 BiOp. The allowable biological catch (ABC) for pollock, Pacific cod, and Atka mackerel in the BSAI and GOA would be reduced when the spawning biomass is estimated to be less than 40% of the projected unfished biomass. The reduction would continue at the present rate established under the tiers described in the groundfish FMPs, but when

the spawning biomass is estimated to be less than 20% of the projected unfished biomass, directed fishing for a species would be prohibited.

Aleutian Islands Fisheries

Atka Mackerel:

The Atka Mackerel fishery will be prosecuted in the A and B seasons with half the TAC allocated to each season. The A season starts January 20 and ends April 15, and the B season begins September 1 and ends November 1.

The Atka mackerel fishery will be managed as platoons in Areas 542 and 543. Vessels fishing in the A or B season fishery would be required to register with NMFS to be randomly assigned to one of two teams. The teams are assigned to start fishing in either 542 or 543 and may not switch to the other area until the other team has harvested the critical habitat harvest allocation assigned to their area. Once registered for an opening, vessels would be required to participate, otherwise they would be prohibited from fishing in any other fishery during the 14 day period following the Atka mackerel season opening date. The seasonal apportionment would be divided equally between platoons, except if an odd number of vessels register to fish a seasonal apportionment. In that case, the seasonal apportionment would be divided proportional to the number of vessels in each platoon.

No Atka mackerel fishing is allowed in the Seguam foraging area. All critical habitat areas east of 178°W longitude are closed to Atka mackerel fishing. All rookeries west of 178°W longitude are closed to Atka mackerel fishing to 10 nm, except Buldir is closed to 15 nm. All haulouts are closed to 3nm to Atka mackerel fishing.

Harvest of Atka mackerel will be limited to 70 percent of the seasonal TAC inside critical habitat and 30 percent outside.

Pacific cod

The Pacific cod TAC would continue to be established as a single TAC for the BSAI management area. In both the Aleutian Islands and Bering Sea subareas, the Pacific cod fishery would generally be divided into two seasons. The seasons are dependent on the gear and fishery. See Table 1 for the seasons and TAC allocations.

Table 1. Aleutian Islands Subarea Pacific Cod Seasons and TAC Allocations

Gear	A season and allocation	B season and allocation
Trawl	January 20 - June 10 (80%),	June 11 - October 31 (20%)
hook-and-line, jig	January 1 - June 10 (60%)	June 11 - December 31 (40%)
pot	January 1 - June 10 (60%)	September 1 - December 31 (40%)
CDQ* pot	January 1 - December 31	

*Community Development Quota program. CDQ vessels fishing with non-pot gear are governed by the gear specific seasonal restrictions listed in Table 1.

The harvest of Pacific cod by vessels less than 60 feet LOA using pot gear would account towards the 1.4% quota for vessels less than 60 feet LOA using pot gear when fishing by vessels equal to or greater than 60 feet LOA using pot gear is closed. 50 CFR part 679.20(a)(7) lists the nontrawl sector allocations of BSAI Pacific cod. When fishing by the pot vessels greater than or equal to 60 feet LOA is open, the harvest from the pot vessels less than 60 feet LOA using pot gear would be counted towards the 18.3 % quota for the larger pot vessels.

The Pacific cod fishery area restrictions would be dependent on the location and gear. The Segum foraging area would closed to all gear types fishing for Pacific cod. See Table 2 for a description.

Table 2 Aleutian Islands Subarea Pacific Cod Fisheries Area Restrictions.

Gear	
Trawl	<p>East of 178° west longitude Rookeries closed to 0-10 nm, except 0-20 nm around Agligadak, Haulouts are closed 0-3 nm.</p> <p>West of 178° west longitude Haulouts and rookeries are closed 0-10 nm until the Atka mackerel fishery inside critical habitat in the A or B season, respectively, is completed, at which time trawling for cod is prohibited 0-3 nm of haulouts and 0-10 nm of rookeries.</p> <p>Segum foraging area is closed.</p>
Pot and Hook-and-line	<p>No fishing in critical habitat east of 173° West long. to the western boundary of Area 9 (170°W long.), Buldir rookery is closed 0-10 nm, Agligadak rookery is closed 0-20 nm.</p> <p>Segum foraging area is closed</p>

Pollock

Pollock fishery is restricted to one season opening January 20 and closing November 1. Pollock fishing is prohibited inside critical habitat. The allocations of pollock will be done according to the AFA requirements, similar to the Bering Sea.

Bering Sea Fisheries

Area Closures

Area closures in the Bering sea depend upon the location and the type of fishery. See Table 3 for details

Table 3 Bering Sea Steller Sea Lion Protection Area Closures

Area	restriction	Season	Exceptions
rookeries	no groundfish fishing 0-3 nm *	all year	none
haulouts	no directed fishing for pollock or P. cod 0-3 nm	all year	jig vessels
St. Lawrence, Hall Island, Cape Newenham, and Round Island haulouts	No groundfish fishing 0-20 nm	All year	none
Rookeries and Haulouts	No directed fishing for pollock or P. cod by trawl vessels 0-10 nm	All year	Jig vessels, Pribilofs Islands haulouts, see below
Pribilof Islands Haulouts	No directed fishing for pollock or P. cod trawling 0-3 nm	All year	none
Amak Rookery	No directed fishing for Pacific cod with hook-and-line or pot gear 0-7 nm	All year	none
Area 9 Bogoslof	no directed fishing for pollock, Atka mackerel, or P. cod in area	all year	vessels < 60 feet using fixed gear allowed in area within 10 nm of Cape Cheerful to Umnak Pass (Option 2, Fig. 3)
South Bering Sea Pollock Restriction Area (See fig. 1)	no directed fishing for pollock within area	A season	none
Catcher Vessel Operational Area (See fig. 2)	No directed fishing for pollock by Catcher Processors	June 10-Nov. 1 (B season)	none

*0-3 nm no transit restrictions around rookeries are implemented under ESA regulations at 50 CFR 223.202 and are not modified under the proposed action.

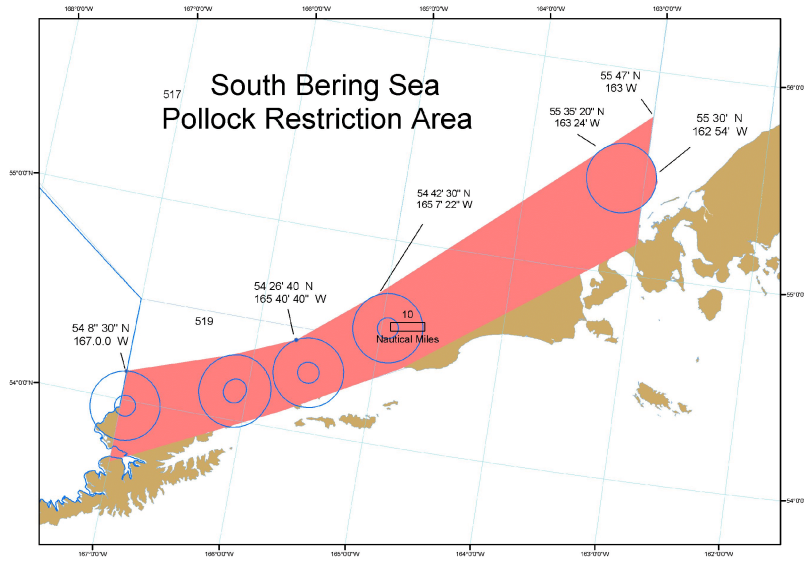


Figure 1 South Bering Sea Pollock Restriction Area

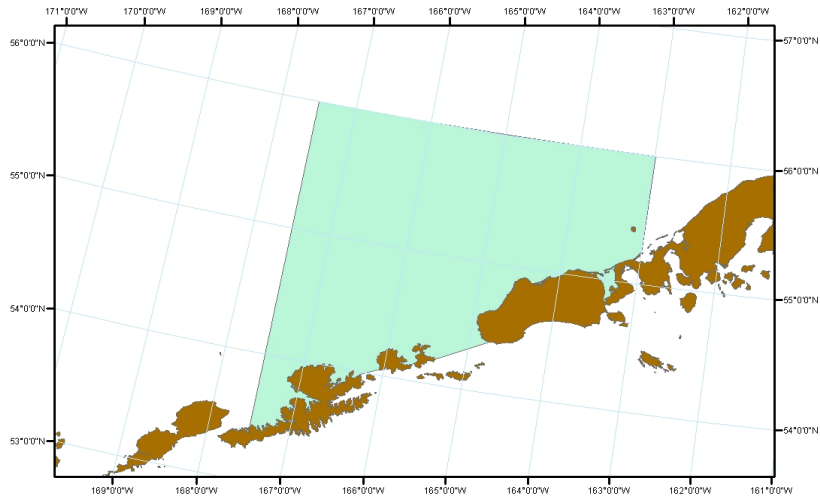


Figure 2 CVOA

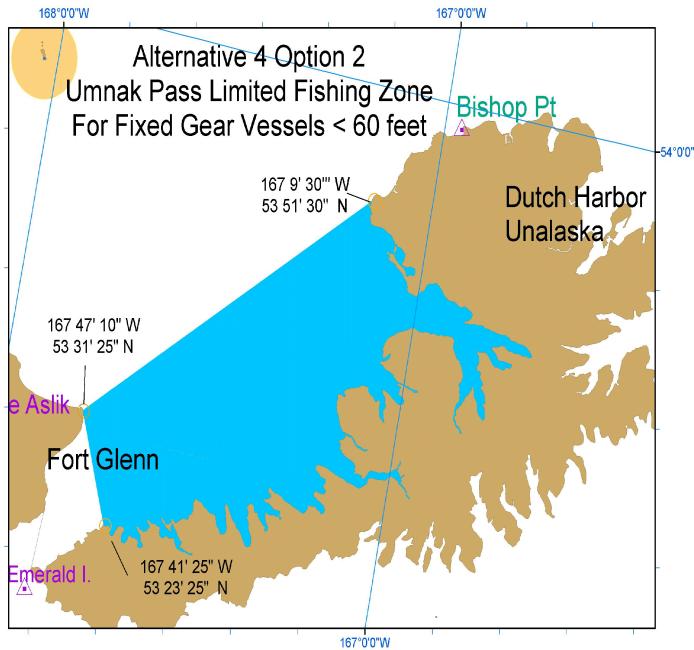


Figure 3 - Umnak Pass exemption area for small vessels using nontrawl gear (option 2)

The fishing seasons for Bering Sea pollock and Pacific cod and TAC allocations are shown in Table 4.

Table 4 Pollock and Pacific Cod Fishing Seasons and Allocations in the Bering Sea

Target Species	Gear	A season	
Pollock	trawl	January 20 - June 10 (40%)	June 10 - October 31 (60%).
Pacific Cod	Trawl	January 20 - June 10 (80%),	June 10 - October 31 (20%)
	hook-and-line and jig	January 1 - June 10 (60%)	June 10 - December 31 (40%)
	pot	January 1 - June 10 (60%)	September 1 - December 31 (40%)
	pot CDQ*	January 1-December 31	

*Community Development Quota program. CDQ vessels fishing with non-pot gear are governed by the gear specific seasonal restrictions listed in Table 4.

The harvest of Pacific cod by vessels less than 60 feet LOA using pot gear will continue to account

towards the 1.4% quota for vessels less than 60 feet LOA using pot gear when fishing by vessels equal to or greater than 60 feet LOA using pot gear is closed. When fishing by the vessels greater than or equal to 60 feet LOA using pot gear is open, the harvest from vessels less than 60 feet LOA using pot gear is counted towards the 18.3 % quota for the larger pot vessels.

A critical habitat harvest limit would exist for the Steller sea lion conservation area (SCA) in the A season for pollock. No more than 30 percent of the annual TAC can be harvested in the SCA prior to April 1 each year. An additional 10% of the annual TAC may be harvested outside of the SCA before April 1 or inside SCA after April 1. If the 30 percent was not taken in the SCA prior to April 1, the remainder can be rolled over to be taken inside after April 1.

Rollover provisions for BSAI cod and pollock?

GOA Fisheries

Steller sea lion protection measures for the GOA include area closures as shown in Table 5. The geographic location of the areas referred to in Table 5 are shown in Figure 9.1 of the 2000 BiOp. Vessels using jig gear are exempt from all GOA area closures, except the 0-3 nm no transit closures around rookeries under 50 CFR 223.202 and 0-3 nm no groundfish fishing zones around rookeries.

Table 5 GOA Steller Sea Lion Area Restrictions.

Area	Restriction	
1	Directed fishing for Pacific cod and pollock with trawl gear is prohibited 0-20 nm of rookeries and haulouts. (Does not include State waters in Prince William Sound)	Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-10 nm of Middleton Island.
2	Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-10 nm of haulouts and 0-20 nm of rookeries Directed fishing for Pacific cod using pot and hook-and-line gear is prohibited 0-10 nm around rookeries.	Marmot Island rookery is closed to directed fishing for Pacific cod and pollock using trawl gear 0-15 nm during January 20 through June 10

Table 5 (Cont.)		
3	<p>Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-10 nm of haulouts.</p> <p>Directed fishing for Pacific cod using pot and hook-and-line gear is prohibited 0-3 nm at Cape Barnabus and Cape Ikolik.</p>	<p>Directed fishing for Pollock and P. cod using trawl gear is prohibited 0-3 nm at Cape Barnabus and Cape Ikolik.</p> <p>During the pollock C&D season and the Pacific cod B season, directed fishing for Pacific cod and pollock using trawl gear at Gull Point and Ugak Island is prohibited 0-3nm.</p>
4	<p>Directed fishing for Pollock, Atka mackerel, and Pacific cod is prohibited 0-20 nm of haulouts and rookeries</p>	<p>Vessels < 60 feet using fixed gear may fish in an area 10 nm from Castle Cape to Foggy Cape. (Option 1, Fig. 4)</p>
5	<p>Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-20 nm of haulouts and rookeries.</p> <p>Directed fishing for Pacific cod using pot and hook-and-line gear is prohibited 0-3 nm at all rookeries and Mitrofanina/Spitz, Whaleback, Sea Lion Rocks, Mountain Point and Castle Rock,</p>	<p>Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-3 nm of Mitrofanina/Spitz, Whaleback, Sea Lion Rocks, Mountain Point, and Castle Rock .</p>
6	<p>Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-10 nm of rookeries and haulouts.</p> <p>Pacific cod pot and hook-and-line fishing prohibited 0-3 nm at Caton and the Pinnacles.</p>	<p>Directed fishing for Pacific cod and pollock using trawl gear is prohibited 0-3 nm of Caton and the Pinnacles.</p>
10 and 11	<p>Pollock and Pacific cod trawling and pot fishing prohibited 0-20 nm of haulouts and rookeries.</p> <p>Hook-and-line fishing for Pacific cod prohibited 0-10 nm of all haulouts and rookeries.</p>	

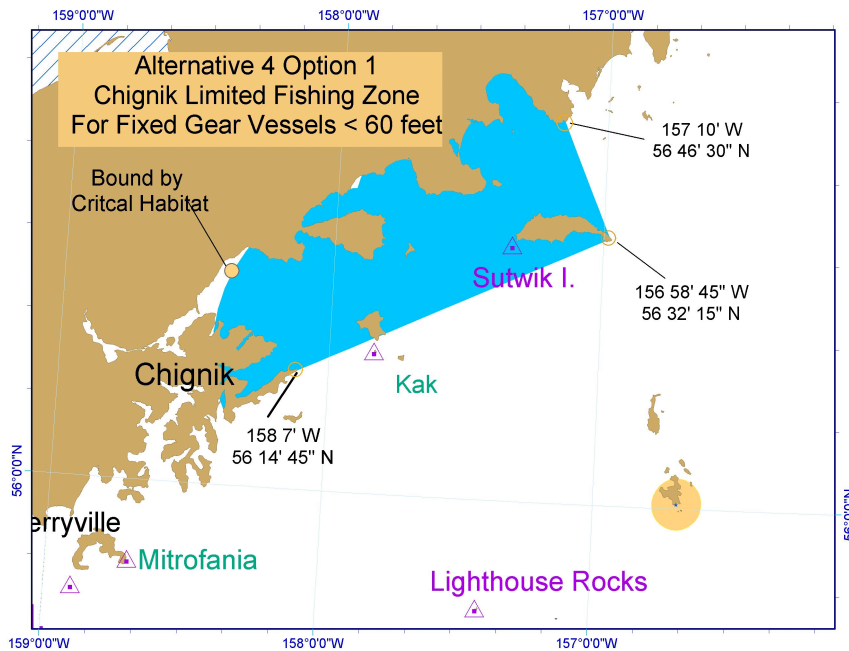


Figure 4 Small non trawl vessel exemption area under option 1

Pacific cod and pollock fisheries in the GOA are seasonally allocated as shown in Table 6.

Table 6 GOA Pollock and Pacific Cod Fishing Seasons and TAC apportionments.

Target Species	Season and apportionment	
Pacific Cod	A-season = 60% of TAC	January 1-June 10-- nontrawl January 20-June 10-- trawl
	B-season = 40% of TAC	September 1 -Nov. 1 -- trawl September 1-Dec. 31-- nontrawl
Pollock	A season = 25 % of TAC	January 20 - February 25
	B season 25 % of TAC.	March 10 - May 31
	C season = 25% of TAC	September 1- September 15
	D season = 25% of TAC	October 1 - November 1

Rollovers of a seasonal pollock allocation from one quarter to the next may be done provided that no rollover is more than 30% of the annual TAC.

ACTION AREA

The action area means “all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action” (50 CFR 402.02(d)). As such the action area for the Federally managed BSAI groundfish fisheries effectively covers all of the Bering Sea under U.S. jurisdiction, extending southward to include the waters south of the Aleutian Islands west of 170°W long. to the border of the U.S. EEZ (BSAI FMP, p. 20; Fig. 2.4). The GOA FMP applies to “the U.S. Exclusive Economic Zone of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170°W longitude and Dixon Entrance at 132°40' W longitude ...”. These regions encompass those areas directly affected by fishing, and those that are likely affected indirectly by the removal of fish at nearby sites. The action area would also, necessarily, include state waters as they are areas that will be affected indirectly by the federal action of authorizing the EEZ fisheries pursuant to the FMP.

The action area, as described, includes the Alaska range of both the western (endangered) and eastern (threatened) populations of the Steller sea lion. However, the effects of the Federal FMPs on the Steller sea lions, generally occur within the range of the western population of that species. Therefore, for purposes of the re-initiated consultation, the action area is further defined as those areas (as described in the above paragraph), but which occur west of 144° W long. (the defined boundary of the western population of Steller sea lions). A review of areas fished by the groundfish fisheries (Fritz et al. 1998) suggests that virtually the entire Bering Sea and the GOA (from the continental slope shoreward) is utilized by one fishery or another; therefore, the action area for this consultation includes the entire Bering Sea. Of those fisheries identified in the FMPs, and which occur in the defined action area, several have been identified as likely to compete with Steller sea lions for available forage. These include the Atka mackerel fishery, the pollock fishery and the Pacific cod fishery. Additionally, state managed fisheries for salmon and herring have been identified in previous biological opinions (and discussed in Section 7.0 of the 2000 Biop) as fisheries that also likely interact with Steller sea lions.

Atka Mackerel Fishery Area

The component of the action area that encompasses the Atka mackerel fishery extends from the eastern border of management area 541, which runs through the Islands of the Four Mountains, to the western border of area 543, just west of Stalemate Bank, or midway between Attu Island (U.S.) and Medney Island (Russia). The north and south borders of these management areas are 55°N lat. and the boundary of the EEZ south of the Aleutian Islands, respectively. Twenty Steller sea lion rookeries and 28 haulouts are located in this region. Virtually all of the fishery occurs within these limits. Seventy percent or more of the fishery in 1995 through 1997 occurred within Steller sea lion critical habitat (i.e., within 20 nautical miles of these rookeries and haulouts or within the Segum Pass foraging area designated as critical habitat). However, the potential impacts of the fishery may extend beyond management areas 541, 542, and 543. First, sea lions may forage over relatively wide ranges (Merrick and Loughlin 1997), and sea lions from rookeries or haulouts adjacent to the management areas may, therefore, be affected if prey is reduced within their foraging range. Second, the Atka mackerel stock also may range beyond the areas fished. Lowe and Fritz (1997) suggest that Atka mackerel in the more western regions may constitute, at least to some degree, a source population for Atka mackerel found further east. If that is the case, then fishing may affect stock abundance in areas outside the three management areas.

Pollock Fishery Area

The component of the action area that encompasses the pollock fishery includes both the BSAI and the western and central GOA. The action area for the BSAI pollock fishery can be estimated using: a) the

observed distribution of the fishery (Fritz 1993, Fritz *et al.* 1998) from the 1970s to the present; b) the estimated distribution of pollock stocks in the Bering Sea; and, c) the distribution of Steller sea lions that forage in areas where pollock stocks are fished or where pollock biomass is affected by fishing in other locations. The observed distribution of the fishery effectively encompasses the entire Bering Sea from about 62°N lat. to the shelf break south of the Aleutian Islands, from the eastern areas of Bristol Bay to the Aleutian Basin and Donut Hole, and along the Aleutian Islands at least as far west as the Semichi Islands. Areas of concentrated effort include the Eastern Bering Sea (EBS) shelf, along the shelf break from the Aleutian Islands to the U.S./Russian boundary, north of Umnak Island in the waters around Bogoslof Island. The distribution of pollock in the BSAI region varies seasonally with spawning aggregations in the EBS and vicinity of Bogoslof Island, and then dispersion northward and westward to cover the Bering Sea and Aleutian Basin.

Currently, twenty Steller sea lion rookeries and 82 haulouts occur in the pollock fishery in the EBS and GOA regions (50 CFR part 679 Table 21). With the proposed action an additional 19 rookeries and 31 haulouts in the Aleutian Islands will be part of the regions included in pollock directed fishing. Thus, Steller sea lions that may be affected by the pollock fishery near rookeries and haulouts within the entire BSAI and GOA. Hill and DeMaster (1999) suggest a 1996 western Steller sea lion population of 39,500 animals, of which about 56%, or just over 22,000 animals, occurred in the BSAI region. The extent to which sea lions from Russian territories (along the eastern shore of the Kamchatka peninsula) are affected by the pollock fishery is uncertain. With the exception of no pollock fishing zones, the distribution of the pollock fishery and the distribution of foraging sea lions overlap extensively.

The action area for the GOA pollock fishery extends to the shelf break from the area south of Prince William Sound to west of Umnak Island in the Aleutian Islands. The fishery is divided into eastern, central, and western regions. The boundary between the eastern and central regions is at 147°W long., and essentially overlays the easternmost rookery and haulouts of the western population. The management areas of primary concern are, therefore, the central and western regions. The central and western regions are divided into three management areas, all of which extend from the 3-mile state boundary to the EEZ limit. Area 630 is delimited on the east by 147°W long. and on the west by 154°W long. Area 620 extends from 630 further west to 159°W long. and area 610 extends from 620 to 170°W long. Within these three management areas, fishing is concentrated south of Unimak Pass and Island (Davidson Bank), southeast and southwest of the Shumagin Islands, along the 200-fathom isobath running from the shelf break northeastward to Shelikof Strait, Shelikof Strait, and the canyon regions east of Kodiak Island.

Pacific Cod Fishery Area

The principle concern with the Pacific cod fishery in the BSAI and GOA is the possible competitive interaction with the endangered western population of Steller sea lions. Over the last 20 years, there has been a significant increase in the amount and relative percentage of Pacific cod removed by the fishery from the action area designated as critical habitat for the western population of Steller sea lions. This has been previously noted in two prior biological opinions on the groundfish fisheries (NMFS 1998 and 1999). In the BSAI, the harvest has occurred primarily in the winter period, and is especially true in the Aleutian Islands (AI). For the Bering Sea, between 42 and 46% of the annual catch is taken inside critical habitat. Of this about 35 to 36% has been taken in the winter period inside critical habitat, with little being taken in each of the other seasons. In the AI, between 80 and 95% of the catch is taken in critical habitat, of which about 60 to 75% is harvested inside critical habitat in the winter. In the GOA, over the last four years, between 40 and 70% of the annual catch has been taken in critical habitat. Of this about 47 to 68% has been taken in the winter period inside critical habitat. There is very little directed effort for cod outside the winter seasons.

State Managed Fisheries Area

Commercial groundfish fisheries that are managed by the State of Alaska in the action area are introduced in the *Environmental Baseline* section of the 2000 BiOp. We expect those fisheries and their effects to continue in the action area and into the future. The State manages fisheries for herring, salmon, GOA Pacific cod and pollock. The State GOA Pacific cod fishery is managed as a percentage of the federal ABC. State managed fisheries species are found year-round in the diet of Steller sea lions. The Federal Pacific cod TACs in the GOA have been reduced since 1998 to account for the Pacific cod fishery managed in state waters by the State of Alaska. In 1998 and 1999, the State cod fishery occurred mostly in the winter and of that about 95% of the catch was in critical habitat. That is not surprising since the State fishery is limited to within 3 nm of land and critical habitat is extended to 20 nm from rookeries and haulouts. For species such as salmon and herring, they occur much more frequently in the summer as determined by analyses of scat samples from 1990-1998.

Critical Habitat in the Action Area

The proposed rule for establishment of critical habitat for the Steller sea lion was published on 1 April 1993 (58 FR 17181), and the final rule was published on 27 August 1993 (58 FR 45269). The following areas have been designated as critical habitat in the action area.

(a) *Alaska rookeries, haulouts, and associated areas.* In Alaska, all major Steller sea lion rookeries identified in 50 CFR, part 226.12, Table 1, and major haulouts identified in 50 CFR, part 226.12, Table 2, and associated terrestrial, air, and aquatic zones, have been designated as critical habitat for the Steller sea lion. Critical habitat includes a terrestrial zone that extends 3,000 feet (0.9 km) landward from the baseline or base point of each major rookery and major haulout in Alaska. Critical habitat includes an air zone that extends 3000 feet (0.9 km) above the terrestrial zone of each major rookery and major haulout in Alaska, measured vertically from sea level. Critical habitat includes an aquatic zone that extends 3,000 feet (0.9 km) seaward in State and Federally managed waters from the baseline or basepoint of each major haulout in Alaska that is east of 144° W long. Critical habitat includes an aquatic zone that extends 20 nm (37 km) seaward in State and Federally managed waters from the baseline or basepoint of each major rookery and major haulout in Alaska that is west of 144° W long.

(c) *RPA sites.* In addition to haulouts designated as critical habitat the 2000 BiOp also included as critical habitat an additional 19 haulouts not listed in 50 CFR part 226.12, but are used by Steller sea lions based on the following criteria (65 FR 3893, January 25, 2000):

Summer Haulouts have greater than 200 sea lions in a summer survey since 1979, and less than 75 sea lions in winter survey since 1979

Winter Haulouts have greater than 200 sea lions in a winter survey since 1979, and less than 75 sea lions in summer survey since 1979

Year Round Haulouts have greater than 200 sea lions in a summer survey since 1979 and greater than 75 sea lions in a winter survey since 1979.

(b) *Three special aquatic foraging areas in Alaska,* including the Shelikof Strait area, the Bogoslof area, and the Segum Pass area.

(1) Critical habitat includes the Shelikof Strait area in the GOA which . . . consists of the area between the Alaska Peninsula and Tugidak, Sitkinak, Aiaktulik, Kodiak, Raspberry, Afognak and Shuyak Islands (connected by the shortest lines): bounded on the west by a

line connecting Cape Kumlik ($56^{\circ} 38' / 157^{\circ} 26' W$) and the southwestern tip of Tugidak Island ($56^{\circ} 24' N / 154^{\circ} 41' W$) and bounded in the east by a line connecting Cape Douglas ($58^{\circ} 51' N / 153^{\circ} 15' W$) and the northernmost tip of Shuyak Island ($58^{\circ} 37' N / 152^{\circ} 22' W$).

(2) Critical habitat includes the Bogoslof area in the Bering Sea shelf which . . . consists of the area between $170^{\circ} 00' W$ and $164^{\circ} 00' W$, south of straight lines connecting $55^{\circ} 00' N / 170^{\circ} 00' W$ and $55^{\circ} 00' N / 168^{\circ} 00' W$; $55^{\circ} 30' N / 168^{\circ} 00' W$ and $55^{\circ} 30' N / 166^{\circ} 00' W$; $56^{\circ} 00' N / 166^{\circ} 00' W$ and $56^{\circ} 00' N / 164^{\circ} 00' W$ and north of the Aleutian Islands and straight lines between the islands connecting the following coordinates in the order listed:

$52^{\circ} 49.2' N / 169^{\circ} 40.4' W$; $52^{\circ} 49.8' N / 169^{\circ} 06.3' W$; $53^{\circ} 23.8' N / 167^{\circ} 50.1' W$;
 $53^{\circ} 18.7' N / 167^{\circ} 51.4' W$; $53^{\circ} 59.0' N / 166^{\circ} 17.2' W$; $54^{\circ} 02.9' N / 163^{\circ} 03.0' W$;
 $54^{\circ} 07.7' N / 165^{\circ} 40.6' W$; $54^{\circ} 08.9' N / 165^{\circ} 38.8' W$; $54^{\circ} 11.9' N / 165^{\circ} 23.3' W$;
 $54^{\circ} 23.9' N / 164^{\circ} 44.0' W$

(3) Critical habitat includes the Seguam Pass area which . . . consists of the area between $52^{\circ} 00' N$ and $53^{\circ} 00' N$ and between $173^{\circ} 30' W$ and $172^{\circ} 30' W$.

(4) Steller sea lion conservation area (SCA) included as a special foraging area in the 1999 BiOp. This area is an expansion of the Bogoslof foraging area and has the following boundaries: Area between $170^{\circ} 00' W$ long. and $163^{\circ} 00' W$ long., south of straight lines connecting the following points in the order listed:

$55^{\circ} 00' N$. lat. $170^{\circ} 00' W$ long.;
 $55^{\circ} 00' N$ lat. $168^{\circ} 00'$ long.;
 $55^{\circ} 30' N$ lat. $168^{\circ} 00' W$ long.;
 $55^{\circ} 30' N$ lat $166^{\circ} 00' W$ long.
 $56^{\circ} 00' N$. lat. $166^{\circ} 00' W$ long.;
 $56^{\circ} 00' N$. lat. $163^{\circ} 00' W$ long.;

Prey resources are the most important feature of marine critical habitat. Marine areas may be used for a variety of other reasons (e.g., social interaction, rafting or resting), but foraging is the most important sea lion activity that occurs when the animals are at sea. Two kinds of marine habitat were designated as critical. First, areas around rookeries and haulouts were chosen based on evidence that many foraging trips by lactating adult females in summer may be relatively short (20 km or less; Merrick and Loughlin 1997). Also, mean distances for young-of-the-year in winter may be relatively short (about 30 km; Merrick and Loughlin 1997). New telemetry data reported by the Alaska Department of Fish and Game (See New Information in this biological assessment) also indicate that the great majority of at-sea locations for the lactating females, juveniles, and pups that were tagged were very close to shore, with 60 to 75 percent occurrences within 2 miles of the shore and 85-92 percent occurrences within 10 miles of the shore. Although the data cannot specify whether the animals were foraging, the extremely high percentage of “hits” so close to shore must include most foraging trips. The availability of prey in the vicinity of rookeries and haulouts must be crucial to their transition to independent feeding after weaning. Similarly, areas around rookeries are likely to be important for juveniles. While the foraging patterns of juveniles have not been studied in the BSAI region, it is possible that they depend considerably on resources close to haulouts. Therefore, the areas around rookeries and haulouts must contain essential prey resources for at least lactating adult females, young-of-the-year, and juveniles, and

those areas were deemed essential to protect.

Second, three areas were chosen based on 1) at-sea observations indicating that sea lions commonly used these areas for foraging, 2) records of animals killed incidentally in fisheries in the 1980s, 3) knowledge of sea lion prey and their life histories and distributions, and 4) foraging studies. In 1980, Shelikof Strait was identified as a site of extensive spawning aggregations of pollock in winter months. Records of incidental take of sea lions in the pollock fishery in this region provide evidence that Shelikof Strait is an important foraging site (Loughlin and Nelson 1986, Perez and Loughlin 1991). The southeastern Bering Sea north of the Aleutian Islands from Unimak Island past Bogoslof Island to the Islands of Four Mountains is also considered a site that has historically supported a large aggregation of spawning pollock, and is also an area where sighting information and incidental take records support the notion that this is an important foraging area for sea lions (Fiscus and Baines 1966, Kajimura and Loughlin 1988). Finally, large aggregations of Atka mackerel are found in the area around Seguam Pass. These aggregations have supported a fishery since the 1970s, and are in close proximity to a major sea lion rookery on Seguam Island and a smaller rookery on Agligadak Island. Atka mackerel are an important prey of sea lions in the central and western Aleutian Islands. Records of incidental take in fisheries also indicate that the Seguam area is an important for sea lion foraging (Perez and Loughlin 1991).

Prey resources are not only the primary feature of Steller sea lion marine critical habitat, but they also appear to determine the carrying capacity of the environment for Steller sea lions. The term “environmental carrying capacity” is generally defined as the number of individuals that can be supported by the resources available. Therefore, the concepts of critical habitat and environmental carrying capacity are closely linked: critical habitat reflects the geographical extent of the environment needed to recover and conserve the species.

DESCRIPTION OF LISTED SPECIES

The most recent, detailed information regarding the status of the following species³ and critical habitat that have been provided protection under the ESA of 1973 (16 U.S.C. 1531 *et seq.*) in the BSAI and GOA is in section 4 of the November 30, 2000 Biological Opinion (2000 BiOp) and is not repeated here. Table 7 lists the species that are considered either, threatened, endangered or a candidate for listing.

Table 7 ESA listed and candidate species in the BSAI and GOA.

³ In its definition of species, the ESA of 1973, as amended, includes the traditional biological species concept of the biological sciences and “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature” (16 USC 1532). NMFS uses the term *evolutionarily significant unit* as synonymous with *distinct population segment* and lists Pacific salmon accordingly. For the purposes of section 7 consultations, these are all “species.”

Common Name	Scientific Name	ESA Status
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Bowhead Whale	<i>Balaena mysticetus</i>	Endangered
Fin Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Right Whale	<i>Balaena glacialis</i>	Endangered
Sei Whale	<i>Balaenoptera borealis</i>	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered
Steller Sea Lion (Western Population)	<i>Eumetopias jubatus</i>	Endangered
Steller Sea Lion (Eastern Population)	<i>Eumetopias jubatus</i>	Threatened
Chinook Salmon (Puget Sound)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Lower Columbia River)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Upper Columbia River Spring)	<i>Oncorhynchus tshawytscha</i>	Endangered
Chinook Salmon (Upper Willamette River)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Snake River Spring/Summer)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Snake River Fall)	<i>Oncorhynchus tshawytscha</i>	Threatened
Sockeye Salmon (Snake River)	<i>Oncorhynchus nerka</i>	Endangered
Steelhead (Upper Columbia River)	<i>Onchorynchus mykiss</i>	Endangered
Steelhead (Middle Columbia River)	<i>Onchorynchus mykiss</i>	Threatened
Steelhead (Lower Columbia River)	<i>Onchorynchus mykiss</i>	Threatened
Steelhead (Upper Willamette River)	<i>Onchorynchus mykiss</i>	Threatened
Steelhead (Snake River Basin)	<i>Onchorynchus mykiss</i>	Threatened
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered
Steller's Eider ⁴	<i>Polysticta stelleri</i>	Threatened
Short-tailed Albatross*	<i>Phoebastria albatrus</i>	Endangered
Spectacled Eider*	<i>Somateria fishcheri</i>	Threatened
Northern Sea Otter*	<i>Enhydra lutris</i>	Candidate
Designated critical habitat		
Steller's Eider*		
Steller sea lion		

The short-tailed albatross, spectacled eider, and Steller's eider are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). NMFS recently reinitiated two section 7 consultations with the USFWS on the effects of (1) the BSAI and GOA groundfish FMPs (FMP-level consultation), and (2) the 2001 to 2004 Total Allowable Catch Specifications (TACs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Island (BSAI) groundfish fisheries, on the listed species (and any designated critical habitat) under the jurisdiction of the USFWS. The USFWS acknowledged the FMP-level consultation was started on September 19, 2000 and the TAC consultation was started on October 2, 2000. On January 4, 2001, NMFS requested that the 1999-2000 Biological Opinion and its accompanying Incidental Take Statement be extended for the duration of NMFS' emergency regulations to implement measures to avoid jeopardy to Steller sea lions or adverse modification of its critical habitat (a 180-day period beginning January 20, 2001). USFWS responded on January 10, 2001 that they would extend the

^{4*} The short-tailed albatross, spectacled eider, and Steller's eider are under the jurisdiction of the U.S. Fish and Wildlife Service. For these three 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).

opinion and incidental take statement until superceded by an opinion for the 2001-2004 Total Allowable Catch Specifications for the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Fisheries.

POTENTIAL EFFECTS OF THE ACTION

The effects on ESA listed species generally associated with fishery management actions result 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) entanglement/entrapment of non-target organisms in active or inactive fishing gear; and 3) major shifts in the abundance and composition of the marine community as a result of disproportionate fishing pressure on a small set of species.

With the exception of Steller sea lions, the Alaska groundfish fisheries as modified under the proposed actions are not expected to have effects on other listed species not previously considered under previous consultations. In assessing the potential effects of the proposed actions as well as new information available since the completion of the 2000 BiOp, the Sustainable Fisheries Division, Alaska Region, has determined that the pollock, Atka mackerel and Pacific cod fisheries may adversely effect Steller sea lions or their critical habitat and that formal consultation is a prudent and precautionary approach that must be initiated to more fully assess: new information that challenges the scope of principles established in the 2000 BiOp concerning requirements for spatial and temporal distribution of these fisheries; the continued potential for takes of Steller sea lions and competition for prey in these fisheries; and the lack of rigorous assessment of new information that formed the basis of the proposed Steller lion protection measures for 2002 and beyond. The best available scientific information on the effects of these fisheries on Steller sea lion and their critical habitat will be included in the draft NEPA documents prepared for the proposed actions. These documents are in the final stage of being drafted and collated and will be available soon. However, we must initiate formal consultation at this time to comply with agency policy and meet expectations for the scheduling of action by the North Pacific Fishery Management Council and NMFS based on the best available information.

RELEVANT INFORMATION

As mentioned above NMFS currently is preparing NEPA documents for Amendments 70/70 and for Amendments 61/61 to the groundfish FMPs. Drafts of these documents should be available for public review by September 2001. Other documents relevant to the proposed action include:

Alaska Department of Fish and Game and North Pacific Fishery Management Council. 1998. Draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis fo a proposal to Minimize Chinook Salmon Bycatch in Groundfish Trawl Fisheries of the Bering Sea and Aleutian Islands. September 14, 1998. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, AK 99501

National Marine Fisheries Service. 2001a. Draft Programmatic Supplemental Environmental Impact Statement For Alaska Groundfish Fisheries Implemented Under the Authority of The Fishery

Management Plans for the Groundfish Fishery of the Gulf of Alaska and the Groundfish of the Bering Sea and Aleutian Islands Area. January 2001. National Marine Fisheries Service, P.O. Box 21668, Juneau, Alaska 99802.

- NMFS. 2001b. Environmental Assessment/Regulatory Impact Review for the Extension and Revision of the Emergency Interim Rule for 2001 Harvest Specifications for the Alaska Groundfish Fisheries and for Steller Sea Lion Protective Fisheries Management Measures. July 4, 2001. National Marine Fisheries Service P. O. Box 21668, Juneau, Alaska 99802.
- NMFS. 2000a. Draft Environmental Assessment: Interactions Between the Pacific Cod Fisheries in the Bering Sea, Aleutian Islands, and the Gulf of Alaska and Steller Sea Lions. August 23, 2000. NMFS Alaska Region, P. O. Box 21668, Juneau, Alaska 99802.
- NMFS 2000b. Alaska marine mammal stock assessments 2000. NOAA Technical Memorandum NMFS-AFSC 119. Alaska Fisheries Science Center, National Marine Mammal Laboratory, 7600 Sand Point Way N. E. Bin Ci5700, Seattle, WA 98115. Also available at http://www.fakr.noaa.gov/protectedresources/mmsa_00.pdf.
- NMFS 2000c. ESA Section 7 Consultation Biological Opinion and Incidental Take Statement. Activities Considered: Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish and Authorization of the Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska. November 30, 2000. NMFS Alaska Region, P. O. Box 21668, Juneau, Alaska 99802. Also available at http://www.nmfs.noaa.gov/steller/fmp_sec07-NOV30_2000_FINAL.pdf.
- NMFS. 1999. Biological Opinion on the Take of Listed Salmon in Groundfish Fisheries Conducted under the Bering Sea and Aleutian Islands and Gulf of Alaska Fishery Management Plans. December 22, 1999. NMFS P. O. Box 21668, Juneau, AK 99802.
- NMFS. 1994. "Endangered Species Act Section 7 Biological Opinion--Pacific Salmon. Reinitiation of Consultation on the Effects of the Groundfish Fisheries Conducted under the Bering Sea and Aleutian Islands and Gulf of Alaska Fishery Management Plans of the North Pacific Fishery Management Council.", DOC, NOAA, National Marine Fisheries Service, Northwest Region, 7600 Sand Point Way NE, Seattle, WA 98115.

NEW INFORMATION

Several new papers have become available since the 2000 Biop. This section contains a synopsis of each paper available. Subjects include Steller sea lion mortality, diet, foraging behavior, telemetry data, a review of the 2000 Biop, and proceedings from scientific meetings regarding the decline of Steller sea lions. Additional information that should be available in fall of 2001 include ADFG's Preliminary Review of SSL Foraging Behavior and a National Marine Mammal Laboratory paper on Modeling SSL Population Trends. Approximately 140 Steller sea lion research projects are currently being conducted by state, federal, university and private organizations. Some of this information was also used by the RPA Committee in developing their recommendations for 2002 Steller sea lion protection measures. The new information provided in the papers summarized below is related to Steller sea lions and the groundfish fisheries and this new information makes it necessary for NMFS to reinitiate consultation under

50 CFR 402.16(b).

“Night-time Predation by Steller sea lions.” in Nature. Vol. 411. June 28, 2001 pg. 1013 by Thomas, G. L. and R. E. Thorne.. The feeding behavior of Steller sea lions in Prince William Sound is examined by the authors. They found that the Steller sea lions were feeding primarily at night on herring and little foraging on pollock was occurring.

Review of the November 2000 Biological Opinion and Incidental Take Statement with respect to the Western Stock of the Steller sea lion

W.D. Bowden, J. Harwood, D. Goodman, and G.L. Swartzman

This paper is an interim report prepared by a panel of reviewers tasked by the North Pacific Fishery Management Council to review and assess the science, assumptions, and hypotheses presented in the November 2000 Biological Opinion relative to three FMPs which were determined by NMFS to likely jeopardize the continued existence of endangered Steller sea lions (SSL). The reviewers identified additional information needed to analyze the interactions between commercial fisheries and SSL. They also proposed alternate analyses that could be performed with existing data and experimental designs for obtaining adequate data for understanding the impacts of fishing on SSL’s prey base and foraging behavior.

The reviewers make the following general arguments in their evaluation of the science, assumptions, and hypotheses put forth in the November 30, 2000 Biological Opinion:

1. There are no data to determine the effects of fishing on SSL; evidence for competition with fisheries is circumstantial.
 - a. There are no data on the size of pollock eaten by SSL.
 - b. The foraging depths used by SSL have not been well described.
 - c. It is impossible to draw conclusions on interference competition using POP database observations of SSL and the Observer databases because they are equivocal.
2. Different causes were responsible for the decline in SSL numbers in decades prior to the 1990s than are responsible for the current decline.
 - a. Prior to the 1990s, directed and incidental take of SSL were common occurrences associated with commercial fisheries but are thought to be minor factors now.
 - b. Data that implicate food limitation as a factor for the decline were collected in the 1970s and 1980s and do not reflect the conditions of the current ocean environment or fishing activities.
3. Scats are not a reliable tool for monitoring seasonal trends in predators’ diets and they do not provide information on foraging patterns.
 - a. The age and sex of the source animal is not precisely known, thus, there is no way to know how well the sample represents the population.
 - b. Diets are reconstructed based on the split sample frequency of occurrence (FO) of prey items in scat samples. The statistical properties of FO estimates are not well understood. More sophisticated methods for reconstructing diets have been developed but require otoliths which are frequently completely digested in the gut of SSL, excluding these

methods as an option.

c. Scat samples are not representative of the SSL at-sea diet for long foraging trips..

4. More tests are needed to determine the importance of diet diversity as a determinant of SSL growth and foraging success.

a. There were no studies done to test the diet diversity hypothesis in the range of the declining population of SSL.

5. Captive feeding studies are useful for understanding energetic requirements of SSL, however, free-ranging studies have failed to provide insights into the cause of the decline of SSL.

a. Free-ranging studies have been conducted during first 30-60 d of lactation when the females and pups can easily be sampled and are not representative of mid - late lactation when energy demands have increased.

6. Currently, there are no signs of nutritional stress in the western stock of SSL.

a. Rea et al. (1998) sampled free-ranging pups in the GOA, AI, and Southeast Alaska and found no indication of nutritional stress in the declining populations.

b. Girth, length, and blood chemistry parameters of lactating females were measured from both the increasing and declining populations in 1993 and 1997. Individuals in the western population were rounder, longer, and heavier than individuals in the eastern population.

7. Poor foraging success within the endangered stock of SSL may be due to environmental change and cannot be attributed to fisheries without additional information to determine if climate, fisheries, or a combination of the two are the causal factor.

Included in this report were suggestions for rethinking retrospective analyses and experimental design considerations for testing the effectiveness of fishery area closures and collecting data to examine interactions between fisheries and SSL.

- The reviewers suggested developing spatially explicit models of existing pup and non-pup count data on the level of individual rookeries or haul-outs. Exploring how demography has changed in different areas over the course of the decline may provide insight into or evidence for a shift in causal factors from the 1970s -80s to the 1990s.
- More in-depth analysis of SSL movements and diving behavior are needed based on data obtained from animals instrumented with satellite transmitters and data loggers. The reviewers state that the summaries of satellite data in the 2000 Biological Opinion do not permit critical evaluation of how the analyses were done. They recommend linking data on SSL dive depth with bathymetry to estimate the fraction of benthic habitat available to different age and sex classes and collecting data in the winter.
- In addition to captive feeding studies and the limited study that has been done on free-ranging feeding, the reviewers suggest studying females and pups in the mid to late lactation stage when energetic requirements are high although access to animals is difficult.
- The reviewers urge managers to use areas closed to fishing under the proposed RPAs as an experimental control and to use the open areas as a treatment to determine if fishing is a significant factor affecting sea lion numbers. They state that tagging studies will have

to be done in conjunction with the large-scale fishery experiment to determine the percentage of closed area used by the SSL.

- There is skepticism among the reviewers that uncertainties will be resolved by monitoring the response of the western population of SSL to implementation of the RPAs. Therefore, it is recommended that studies focus on the time and space believed to be the bottleneck in the SSL population.
- According to the reviewers, the 2000 Biological Opinion made little use of data from other SSL populations or from other pinniped species in the action area and recommend comparing population trends of adjacent, Russian SSL populations or other pinnipeds (e.g. fur seals) in the action area for analogies with the western population of SSL.

Summary Statement from “Is it Food II?” Workshop Participants, May 30-31, 2001

Douglas DeMaster

Twenty-four scientists participated in a two-day workshop at the Alaska SeaLife Center on 30-31 May 2001. The workshop was convened by the Alaska SeaLife Center, the National Marine Fisheries Service, and the Alaska SeaGrant Office and co-chaired by Drs. Shannon Atkinson and Douglas DeMaster. A series of talks was presented by workshop participants, followed by a discussion regarding the existing evidence for and against various hypotheses concerning factors that could be contributing to the current decline of the western population of Steller sea lion.

Participants generally agreed on the following conclusions:

- The western population of Steller sea lions declined at a greater rate in the 1980s than in the 1990s and the declines are likely attributable to different causes in the different eras.
- There were reductions in recruitment and reproductive rates in the 1970s and 1980s which resulted from nutritional stress.
- Few data from the 1990s support the nutritional stress hypothesis. Current results indicate that the condition of animals from the declining western stock of Steller sea lions is better on average than the condition of animals in the increasing eastern stock which does not support the nutritional stress hypothesis.
- Research is needed to develop condition indices for individual sea lions to predict the likelihood that an animal will survive to be recruited to the adult, reproductive population.
- Steller sea lion diets differ by region and season. Regional diet differences are highly correlated with differences in the regional dynamics of subpopulations of Steller sea lions.
- The groundfish biomass in the Bering Sea, generally increased throughout the 1980s and remained relatively stable in the 1990s. Due to the concentration of fishing effort, local removal levels are likely to be considerably higher than the targeted global removal rate.
- The species composition in the Gulf of Alaska has dramatically changed since the 1970s and seems to be driven by long-term environmental regime shifts that have occurred repeatedly over thousands of years.
- The impact of killer whale predation on the population dynamics of Steller sea lions cannot be fully evaluated until more data are available to: 1) estimate the size of the killer

- whale population in the western GOA and Bering Sea, 2) understand killer whale foraging behavior, 3) determine the age and size of sea lions targeted as prey by killer whales.
- More data are also needed to evaluate the impact of shark predation on the population dynamics of Steller sea lions. Sleeper shark abundance has increased in the GOA over the past 5 years and data are needed to fill the same information gaps that exist for killer whales regarding shark predation on Steller sea lions.

Nineteen (79%) of the participants concurred with the statement that “inadequate recruitment is the leading hypothesis regarding the current decline of abundance of the western stock of Steller sea lions.” Twenty (83%) of the participants rejected the hypothesis that competition with fisheries is the leading cause of the current decline of the western stock of Steller sea lions and 96% refuted killer whale predation as being the leading hypothesis. Participants were divided on whether a regime shift alone could explain the observed decline in sea lion abundance with 42% believing that it could and 58% believing that it could not.

An Accounting of the Sources of Steller Sea Lion Mortality

Thomas L. Loughlin and Anne E. York

The magnitudes of specific sources of Steller sea lion mortality were estimated to approximate the number of animals lost each year to each of the possible sources. Possible sources of mortality that were considered include: subsistence harvest, incidental take, entanglement in debris, shooting, and predation. Potential mortalities resulting from disease and contaminants, indirect effects of commercial fishing, lack of prey due to environmental variability, and the commercial harvest of adults or pups were not included due to lack of data or irrelevance (in the last case). Mortality sources were characterized as being “natural” (mortality that would occur if the population was stable) or “additional” (losses that are in excess of replacement and result in a declining population). Anthropogenic sources were characterized as being “additional” all others were considered “natural”, though a portion of predation was determined to be unnatural as activities linked to fisheries may increase the susceptibility of Steller sea lions to predation by killer whales.

From 1991 – 2000, the western stock of Steller sea lions declined at a rate of 5.2% yr⁻¹. The greatest declines occurred in the eastern and central Gulf of Alaska regions and the western Aleutian Islands region. The current population of the western stock was estimated to be about 33,000 animals. Total annual mortality for a stable population of 33,000 animals was estimated to be 4,710 Steller sea lions in 2001. To account for the 5.2% rate of annual decline, “additional” mortality was estimated to be 1,715 animals. Thus, total mortality for the western stock in 2001 was estimated to be about 6,425 Steller sea lions. The number of “additional” losses was apportioned to each of the sources based on available information (subsistence harvest, incidental take in fisheries, and research fatalities); approximated levels of predation (killer whales and sharks); and a best guess (illegal shootings). Loughlin and York summarized these estimates in Table 4.

Source	Estimated Mortality ^a	Estimated Mortality ^b	As percent estimated mortality above replacement
Subsistence Harvest	353	353	20.6
Incidental to Fishing	30	30	1.7
Illegal Shooting	50	50	2.9
Research	3	3	0.2
Predation by killer whales	0	309	0.0/18.0
Predation by sharks	0	34	0.0/2.0
Total	438	779	25.4/45.4

Table 4. Estimates and source of Steller sea lion mortality during 2001 and that mortality expressed as a percentage of all estimated mortality above replacement (1,715).

^a Assumes all predation is in the natural category.

^b Assumes some portion of the predation is “additional” to natural.

Estimated “additional” mortality that can be accounted for totals 436 and 779 (or 25% and 45%) for identified anthropogenic sources where all killer whale and shark predation is considered natural vs. the scenario where a portion of the killer whale and shark predation is considered “additional” to natural mortality. Given the two predation scenarios and the estimated “additional” mortality for 2001 of 1,715 animals, 1,279 or 936 Steller sea lions may die from an unknown sources which may be attributable to environmental changes, the indirect effects of fisheries, or other factors yet to be recognized.

Loughlin and York state that aerial surveys conducted to monitor Steller sea lion population status and trends will have to be redesigned to detect improvements in the population trajectory over the next 5 to 10 years. They argue that because the rates of decline are not uniform in the western stock, the probability of detecting an improvement in Stellar sea lion trends would be greater in regions where the decline is stronger and the population larger; thus, they suggest the central Gulf of Alaska, followed by the eastern Gulf of Alaska, and the western Aleutian Islands as areas where improvements in population trajectories are most likely to be detected.

Loughlin and York are puzzled by the fact that the population in Southeast Alaska continues to increase, though it probably experiences similar types of removals from the same causes as the western stock.

Seasonal Diet Trends among the Western Stock of Steller Sea Lions (*Eumetopias jubatus*)

E.H. Sinclair and T.K. Zeppelin

ABSTRACT: Prey remains identified from 3,762 scats (feces) collected 1990-1998, on summer and winter island sites across the range of the U.S. western stock of Steller sea lions depict walleye pollock (*Theragra chalcogramma*) and Atka mackerel (*Pleurogrammus monopterygius*) as the two dominant prey species, followed by Pacific salmon (Salmonidae) and Pacific cod (*Gadus macrocephalus*). Other primary prey species included Arrowtooth flounder (*Atheresthes stomias*), Pacific herring (*Clupea pallasii*), Pacific sandlance (*Ammodytes hexapterus*), Irish lord (*Hemilepidotus sp.*), and cephalopods (squids and octopus). Species that occurred among the top

three prey items on select islands included: snailfish (Liparididae), rock greenling (*Hexagrammos lagocephalus*), kelp greenling (*Hexagrammos decadgrammus*), sandfish (*Trichodon trichodon*), rock sole (*Lepidopsetta bilineata*), northern smoothtongue (*Leuoroglossus schmidti*), skate (Rajidae), and smelt (Osmeridae). Capelin (*Mallotus villosus*) occurred in very low frequencies in this study despite their predominance in Steller sea lion diet prior to the 1980s (Fiscus and Baines 1966; Pitcher 1982).

Regions of diet similarity as defined by Principal Components and Agglomerative Hierarchical Cluster Analyses suggest area specific foraging strategies, with significantly strong seasonal patterns in consumption of most species based on Chi square analysis. An exception is walleye pollock which is a staple in Steller sea lion diet both winter and summer from the Gulf of Alaska up to the central Aleutian Islands area.

The seasonal and regional patterns in prey consumption, as well as known geographic distributions and estimated body size of their primary prey, indicate that Steller sea lions target prey when they are densely schooled in spawning or migratory aggregations nearshore (over or near the continental shelf) or along oceanographic boundary zones. This is true in summer when collected scats are primarily from adult females, and in winter when scats are presumably from some increased proportion of juveniles and adult males as well as females. Based on the close parallel of these data with those of metapopulation patterns of decline (York et. al 1996) and the tendency for site tenacity among the Otariidae (Kenyon and Wilke 1953; Roppel 1963; Baker et al. 1995) we suggest that regional diet patterns among the western stock reflect regional foraging strategies learned at or near the natal rookery site on seasonally dense prey patches characteristic of that area.

Immature Steller sea lion Foraging Behavior

Thomas R. Loughlin, Jeremy T. Sterling, Richard L. Merrick, and John L. Sease

This paper summarizes information received from 13 pup and 12 yearling Steller sea lions equipped with SDRs in the Gulf of Alaska/Aleutian Islands (n=18) and Washington (n=7) from 1994 - 2000. This study sought to augment and improve upon previous Steller sea lion time-depth recorder and satellite-linked time-depth recorder studies by deploying SDRs over a broader geographical range with a greater sampling frequency. The objectives of this study were to provide a more comprehensive picture of young Steller sea lion foraging ecology for the western stock of Steller sea lions and to compare the results with previous studies of adult, female foraging ecology studies from Merrick and Loughlin (1997). Inferences about foraging behavior are made by measuring dive behavior of Steller sea lions. Loughlin et al. state that “understanding the ontogenetic relationship between Steller sea lions and their foraging habitat is key to understanding their relationship to available prey and ultimately their survival.” This paper also summarizes the use of designated critical habitat by foraging Steller sea lions.

Male and female Steller sea lions ranging in age from 6 to 22 months were captured at rookeries and haul-out sites and equipped with a SLTDR (prior to 1996) or a SDR (post 1996). Most of the animals (22) were caught from October to March and the remaining 3 animals were caught from May - July. Dive depth and duration are recorded in bins by the SLTDR/SDR and

transmitted as histograms. A total of 1,413 days ($\bar{x} = 56.8$ d) of transmission provided information on 222,073 dives.

The mean dive depth of all dives was 18.4 m. Alaskan animals dove significantly shallower ($\bar{x} = 10.3$ m) than those from Shilshole, WA ($\bar{x} = 39.1$ m). Maximum and mean-maximum dive depths were also greater for young sea lions from Washington who dove to 253 m mean-maximum depth versus 89 m for Alaskan sea lions. There was a positive correlation between dive depth and dive duration, thus animals from Shilshole, WA dove longer on average than animals from Alaska. Loughlin et al. noted ontogenetical trends with an increase in dive depth and duration beginning about 11 months of age for both Alaskan and Washington sea lions. However, the overall mean dive duration and depth was greater for the Washington animals than for the Alaskan sea lions.

Three categories of movements based on the dive data were: long-range trips (>15 km and > 20 h), short-range trips (<15 km and <20 h), and transits to other sites. Transits from one land site to another began as early as 7 months of age but occurred more often at 9 months of age. Transit trips represented 6% of all trips to sea and had a mean distance of 66.6 km. Long-range trips were foraging trips and started around 9 months of age. These trips had a mean distance of 48.7 km and occurred most frequently at the time of weaning, they represented 6% of all trips to sea. The most numerous trips (87%) were short-range foraging trips ($\bar{x} = 3.6$ km) which happened almost daily.

Loughlin et al. examined all of the Argos location data from the entire Steller sea lion SLTDR and SDR database, including animals tagged in prior studies, to determine Steller sea lion use of designated critical habitat. 93.8% of all locations for pre-breeding aged sea lions were within 0-10 nm of rookeries or haul-outs and 2.2% were in the 10-20 nm zone. For animals of breeding age, 93.8% were within the 0-10 nm zone and only 1.5% were in the 10-20 nm zone. Only 4% and 10% of all locations were outside critical habitat (beyond 20 nm) for the younger age classes and breeding females, respectively.

Evaluating the Impact of Reasonable and Prudent Alternatives for the Management of the BSAI and GOA Groundfish Fisheries on the Western Stock of Steller Sea Lion

Douglas DeMaster

To evaluate whether groundfish fisheries, as managed under the RPA described in the November 30, 2000 Biological Opinion, would jeopardize the continued existence of the western stock of Steller sea lion, NMFS developed a population trajectory model that was used to predict the response of the sea lion population to the implementation of the RPA. The population trajectory model resulted in a metric which provided an index of the area-specific effect of the RPA. This paper described in detail, the method used to develop the area-specific effect index in the 30 November 2000 Biological Opinion and applied this same methodology to the set of conservation measures proposed by the NPFMC's RPA committee (Witherell 2001). The purpose of this analysis was to compare the conservation measures outlined in the November 2000 Biological Opinion (BiOp) with the conservation measures outlined by the RPA committee to determine 1) if a proposed alternative would remove jeopardy to the Steller sea lion, and 2) which of the two area-specific management effects were more conservative for Steller sea lions.

The November 2000 BiOp RPA established 13 management areas from Prince William Sound west to the end of the Aleutian Chain to which conservation measures were to be applied. In the BiOp, the 13 areas were to be managed with an “area-specific” adaptive management approach, where a subset of the areas were opened and a subset of the areas were closed to directed fishing for pollock, Pacific cod, and Atka mackerel. Rather than lumping pollock, Pacific cod, and Atka mackerel fisheries into one management scheme, the RPA committee developed a “fishery-specific” management approach for each of the 13 areas.

The population trend of the western stock of Steller sea lions was determined to be declining at a rate of 4% yr⁻¹ based on non-pup survey data from 1991 through 2000. The BiOp made the “worse-case” assumption, that 100% of the decline was attributable to competition with fisheries (impacts of state fisheries were not considered in this analysis). Based on this assumption, areas closed to fishing were expected to improve at a rate exactly equal to 4% yr⁻¹ (or 0.04). Population trends were projected for 8 years (the amount of time expected to detect a trend of 1% or greater, given the reported level of precision in the non-pup count data).

Due to the differences in management schemes, the RPA committee population trajectory was area-specific based on the premise that sea lions appear to spend approximately 75% of their time at-sea within 10 nm of rookeries and haulouts. Therefore, it was assumed that closing directed fishing for pollock, Pacific cod and Atka mackerel within 10 nm of rookeries and haulouts in a given area would result in a maximum increase of 75% in the population trend (i.e. 0.03). Area effects of the RPA committee’s conservation measures were compared against a “base-case” of 0.03. DeMaster described the proposed conservation measure for each area and increased or decreased the 0.03 area-effect index depending on expected impact of each measure. DeMaster compared the area-specific management effects for the two RPAs in Table 1.

The average abundance trends under the two management scenarios were calculated to be -0.77% yr⁻¹ and -0.41 yr⁻¹ for the RPA in the November 2000 BiOp and the RPA proposed by the RPA committee, respectively. Projected losses based on these abundance trends were 2000 and 1000 animals per year based on the BiOp and the RPA committee conservation measures. NMFS concluded that the RPA described in the November 2000 BiOp would result in a no-jeopardy determination based on the consideration that these projections are thought to be a “worse-case” and estimates by Wade (1998) suggest that trends of this magnitude would retard recovery of listed pinniped species by less than 10%. Based on this same logic, it is assumed conservation measures proposed by the RPA committee would also result in a no-jeopardy determination by NMFS. However, it was recognized that the trajectories were based on limited data and assumptions that could not be tested. Therefore, DeMaster states that the approach described in this paper should be viewed as a technique for ranking the expected effects of alternative sets of conservation measures.

The approach described in this paper indicated that the RPA proposed by the RPA committee was likely to be equal to or more conservative regarding the resulting impacts of the groundfish fishery in Alaska on the western stock of Steller sea lion than the RPA reported in BiOp 3. The primary differences between the two approaches are that 1) the former places restrictions on fishing for pollock, Pacific cod, and Atka mackerel within 10 nm of all rookeries and haulouts while the latter protects about 56% of critical habitat used by non-pup Steller sea lions and 74%

of critical habitat used by pups, 2) the former places less emphasis on protected critical habitat associated with special foraging areas than the latter, and 3) the former places less emphasis on seasonal and areal restrictions than the latter, other than those imposed as part of the closure system.

<i>Area</i>	<i>Abundance (2000)</i>	<i>Management Effect (30 Nov BiOp)</i>	<i>Management Effect (RPA Comm.)</i>
1	2134	0.00	0.03
2	2935	0.04	0.02
3	779	0.00	0.02
4	1262	0.04	0.04
5	2033	0.00	0.03
6	2398	0.04	0.0275
7	1204	0	0.015
8	624	0.04	0.015
9	884	0.04	0.04
10	1105	0.04	0.0325
11	1316	0.04	0.0325
12	4925	0.00	0.025
13	3588	0.04	0.0275
Total	25187		

Table 1. Area-specific management effects for two RPAs: 1) RPA described in the 30 November 2000 Biological Opinion, and 2) RPA recommended by the NPFMC's RPA Committee. The effect of management is scaled in units based on an exponential population model. In all cases, the management effects were greater than or equal to zero.

g:\fmgroup\stellers\2002 ER\BA-2002 ER.wpd
mnbrown 7/6/01
REVISED Ssalveson 7-23-01