Table 1.1. Consultation history on BSAI Groundfish Fishery Management Plan and GOA Groundfish Fishery Management Plans as they pertain to Steller sea lions and other protected species.

Region	Year	Date	Consultation	ACTION	CONCLUSION
BSAI					
	1999	23-Dec	Formal	2000 TAC and AFA	No jeopardy
	1998	22-Dec	Formal	1999 TAC	No jeopardy
	1998	3-Dec	Formal	1999 pollock, Atka mackerel fisheries	Jeopardy and adverse modification by pollock fishery
	1998	26-Feb	Informal	1998 TAC	Reinitiation not triggered
	1997	17-Jan	Informal	1997 TAC	No adverse affects not already considered, reinitiation not necessary
	1996	26-Jan	Formal	1996 TAC and BSAI FMP	No jeopardy
	1995	26-Sep	Informal	Effect of I/O (38/40) on SSL	No adverse affects not already considered, reinitiation not necessary
	1995	25-Aug	Informal	Amendments 38/40, other species	No adverse affects not already considered, reinitiation not necessary
	1995	3-Feb	Informal	1995 TAC	No adverse affects not already considered, reinitiation not necessary
	1994	2-Feb	Informal	1994 TAC	No adverse affects not already considered, reinitiation not necessary
	1993	28-Apr	Formal	Delay of pollock "B" season	No jeopardy
	1993	20-Jan	Informal	1993 TAC	No adverse affects not already considered, reinitiation not necessary
	1992	9-Oct	Informal	Amendments 20/25	No adverse affects not already considered, reinitiation not necessary
	1992	11-Jun	Informal	IFQ fishery	No adverse affects likely, therefore further consultation not required
	1992	4-Mar	Formal	Amendment 18 inshore/offshore	No jeopardy
	1992	21-Jan	Formal	1992 TAC	No jeopardy
	1991	22-Oct	Informal	Amendments 17/22 & 20/25	No adverse affects not already considered, reinitiation not necessary
	1991	19-Apr	Formal	BSAI FMP	No jeopardy
	1990	30-Oct	Formal	Bering Sea snail fishery	No jeopardy
	1990	24-Oct	Formal	BSAI crab FMP	No jeopardy
	1989	5-Jul	Formal	Issue of MMPA exemptions	No jeopardy
	1979	14-Dec	Formal	BSAI FMP	No jeopardy (only whales listed under ESA at this time)

Table 1.1 cont.

Region	Year	Date	Consultation	ACTION	CONCLUSION
GOA					
	1999	23-Dec	Formal	2000 TAC and AFA	No jeopardy
	1998	22-Dec	Formal	1999 TAC	No jeopardy
	1998	3-Dec	Formal	1999 pollock fishery	Jeopardy and adverse modification
	1998	2-Mar	Formal	1998 TAC	No jeopardy
	1997	10-Sep	Informal	Amendment 46	Action will not adversely affect listed species
	1997	17-Jan	Informal	1997 TACs	No adverse affects not already considered, reinitiation not necessary
	1996	26-Jan	Formal	1996 TAC and GOA FMP	No jeopardy
	1995	26-Sep	Informal	Effect of I/O (38/40) on SSL	No adverse affects not already considered, reinitiation not necessary
	1995	25-Aug	Informal	Amendments 38/40, other species	No adverse affects not already considered, reinitiation not necessary
	1995	3-Feb	Informal	1995 TAC	No adverse affects not already considered, reinitiation not necessary
	1994	31-Jan	Informal	1994 TAC	No adverse affects not already considered, reinitiation not necessary
	1993	6-Jul	Informal	Amendment 31	No adverse affects not already considered, reinitiation not necessary
	1993	16-Feb	Informal	Season 2nd quarter delay	No adverse affects not already considered, reinitiation not necessary
	1993	27-Jan	Informal	1993 TAC	No adverse affects not already considered, reinitiation not necessary
	1993	6-Jan	Informal	EFP	Action will not adversely affect listed species
	1992	11-Jun	Informal	IFQ fishery	No adverse affects likely, therefore further consultation not required
	1992	4-Mar	Informal	Season 2nd quarter delay	Action will not adversely affect listed species
	1991	23-Dec	Informal	1992 TAC	No adverse affects not already considered, reinitiation not necessary
	1991	12-Nov	Informal	Amendment 23	No adverse affects not already considered, reinitiation not necessary
	1991	22-Oct	Informal	Amendments 17/22 & 20/25	No adverse affects not already considered, reinitiation not necessary
	1991	20-Sep	Formal	4th quarter pollock fishery	No jeopardy
	1991	5-Jun	Formal	1991 pollock TAC	No jeopardy
	1991	19-Apr	Formal	GOA FMP	No jeopardy

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
1	The amendment included the following measures: 1. Established a multi-year, multi-species optimum yield for BSAI groundfish complex (1.4 million to 2.0 million mt); 2. Established a framework procedure for the determination and apportionment of amounts of groundfish specified for total allowable catch (TAC), domestic annual harvest (DAH), reserves, and total allowable level of foreign fishing (TALFF); 3. Allowed year-round domestic trawling and longlining in the Winter Halibut Savings Area and Bristol Bay Pot Sanctuary; 4. Modified seasonal foreign trawl restrictions in the Petrel Bank area to be based on crab opening dates; 5. Updated appendices and annexes to the FMP; added Annex I (description of SAFE document); and 6. Eliminated "Misty Moon" grounds south of the Pribilofs from the winter halibut savings area.
1a	Amendment 1a established foreign chinook salmon PSC limits as follows: During any fishing year, that portion of fishing Area 1 lying between 55° N and 57°N latitude and 165° W and 170° W longitude and all of fishing Area 2 may be closed for the remainder of the periods January 1 through March 31, and October 1 through December 31 to trawl vessels of any nation. This closure will occur when vessels of a nation have intercepted that nation's portion of the PSC of chinook salmon. A nation's initial portion of the chinook salmon PSC for a fishing year was determined by multiplying 55,250 (the total PSC for chinook salmon) by the ratio of that nation's initial groundfish allocation to the total initial TALFF plus reserves for groundfish.
2	The amendment changed the specifications for yellowfin sole, other flatfish, and Pacific cod as follows: Yellowfin sole: DAH increased from 2,050 mt to 26,200 mt. JVP increased from 850 mt to 25,000 mt. TALFF decreased by 24,150 mt. Other flatfish: DAH increased from 1,300 mt to 4,200 mt. JVP increased from 100 mt to 3,000 mt. TALFF decreased by 2,900 mt. Pacific cod: MSY decreased from 58,700 mt to 55,000 mt. EY increased from 58,700 to 160,000 mt. ABC increased from 58,700 mt to 160,000 mt. OY increased from 58,700 mt to 78,700 mt. Reserve increased from 2,935 mt to 3,935 mt. DAP increased from 7,000 mt to 26,000 mt. DAH increased from 24,265 mt to 43,265 mt.
3	Amendment 3 reduced bycatch of prohibited species in foreign groundfish fisheries. Essentially, total PSC allocations for (cont.) foreign nations were based on bycatch rates multiplied by the nations TALFF allocation. Bycatch rate reductions to be met by 1986 from status quo base years (1977-80) were as follows: halibut, 50%; king and Tanner crab 25%; salmon 75%. The target level of salmon bycatch

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	was 17,473 fish. If bycatch apportionments for any PSC species were met or exceeded, that nation's fleet was prohibited from fishing in the entire BSAI area, unless exempted by the NMFS Regional Director.
4	Amendment 4 allowed foreign trawling outside 3 miles north of the Aleutians between 170°30 W and 170°W and south of the Aleutians between 170°W and 172°W, and allowed foreign longlining outside 3 miles west of 170°W longitude. Amendment 4 also changed the specifications for yellowfin sole, other flatfish, and Pacific cod as follows: Pollock: DAH increased from 19,550 mt to 74,500 mt, JVP increased from 9,050 mt to 64,000 mt. TALFF decreased from 930,450 mt to 875,500 mt. Yellowfin sole: DAH increased from 26,200 mt to 31,200 mt, JVP increased from 25,000 mt to 30,000 mt. TALFF decreased from 84,950 mt to 79,950 mt. Other flatfish: DAH increased from 4,200 mt to 11,200 mt, JVP increased from 3,000 mt to 10,000 mt. TALFF decreased from 53,750 mt to 46,750 mt. Atka mackerel: DAH increased from 100 mt to 14,500 mt, JVP increased from 100 mt to 14,500 mt TALFF decreased from 23,460 mt to 9,060 mt. Other species: DAH increased from 2,000 mt to 7,800 mt, JVP increased from 200 mt to 6,000 mt. TALFF decreased from 68,537 mt to 65,648 mt. ABC corrected to be 79,714 mt, OY to 77,314 mt, and reserves to 3,566 mt. Other rockfish: DAP set at 1,100 mt for BSAI area combined. POP: DAP set at 550 mt for Bering Sea and 550 mt for Aleutians. JVP set at 830 mt for Bering Sea and 830 mt for Aleutians. Sablefish: JVP set at 200 mt for Bering Sea and 200 mt for Aleutians. MSY set at 11,600 mt for Bering Sea and 1,900 mt for Aleutians. Pacific cod: EY and ABC increased from 160,000 mt to 168,000 mt, OY increased from 78,700 mt to 120,000 mt. Reserve increased from 3,935 mt to 6,000 mt, TALFF increased from 31,500 mt to 70,735 mt.
5	The amendment was withdrawn when it was superceded by implementation of Amendment 3.
6	Amendment 6 would have established a fishery development zone (FDZ). The proposed FDZ was located north and west of Unimak Pass and was bounded by the following coordinates: 55°16' N Latitude, 166°10' W Longitude; (cont.) 54°00' N Latitude, 166°10' W Longitude; 54°35' N Latitude, 164°55'42'' W Longitude; The FDZ would have been reserved for use by domestic fishing vessels – including those delivering to shore-based processors, U.S.

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	catcher/processors, and foreign processing vessels involved in U.S. joint venture operations. All foreign harvest operations would have been excluded year-round from the FDZ.
7	Amendment 7 allowed the foreign longline fleet to fish in the shallow waters of the WHSA so as to allow them to catch their allocation of Pacific cod. However, the depth restriction would be reimposed if the foreign longline fleet in the entire BSAI caught 105 metric tons of halibut as bycatch during the 12 month period of June 1 through May 31. Thus, if the incidental catch of Pacific halibut by foreign longline vessels in the BSAI reached 105 mt between June 1 and November 30, the WHSA would be closed to foreign longlining landward of the 500 meter depth contour for the 6-month period December 1 through May 31. If the incidental catch limit of 105 mt was reached from December 1 though May 31, the restriction would be reimposed for whatever remained of that 6-month period.
8	Amendments 3 and 8 reduced bycatch of prohibited species in foreign groundfish fisheries. Amendment 3 set a goal of total salmon bycatch of 17,473 fish by 1986, which was a 75% reduction from the 1981 salmon PSC of 69,893 and a 78% reduction from the average salmon bycatch of 80,000 fish for the years 1977-80. Amendment 8 implemented a salmon PSC limit of 38,441 fish for 1984 and 27,957 fish for 1985. The 1986 limit remained at the 17,473 fish PSC envisioned in Amendment 3.
9	Three parts of Amendment 9 were approved: (7) incorporate catcher/processor and mothership vessel reporting requirements to provide NMFS with more timely catch information necessary for adequate in-season management (weekly processor report with check-in/check-out reporting). A reporting system for catch held aboard for 14 days or more by the expanding domestic fleet was established. Permit holders must identify vessels as: (a) harvesting/processing, (b) mothership processing; (c) harvesting only; or (d) support only. (8) incorporate the NMFS habitat protection policy into the FMP in response to NMFS' Habitat Conservation Policy which advocates consideration of habitat concerns in developing or amending FMPs; and (9) incorporate a definition of directed fishing. One action associated with habitat consideration in the FMP, to prohibit the discard of fishing gear and marine debris, was reserved until the required analysis was prepared. A measure to reduce bycatch of fully utilized species by closing an area within 20 miles of the Aleutian Islands to foreign trawling was disapproved.
10	The final regulations contained the following four parts: (cont.) 1) Closed the area north of the Alaska Peninsula, south of 58° N. latitude, west of 160° W longitude, and east of 162° W longitude to all trawling year-round and established the following PSC limits and bycatch limitation zones: Applicable to all domestic vessels in directed fisheries for yellowfin sole and other flatfish in the specified zone: a) 80,000 C. bairdi in bycatch limitation Zone 1 b) 135,000 red king crab in Zone 1 c) 326,000 C. bairdi in Zone 2; Applicable to foreign directed fishing for yellowfin sole and other flatfish: 64,000 *C. bairdi* in Zones 1 and 2 combined;

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	Applicable to domestic vessels in directed fisheries for yellowfin sole and other flatfish and delivering to foreign processing vessels (i.e. joint ventures): 828,000 halibut in the entire BSAI. 2) Required written weekly catch reports from all catcher/processors and motherships regardless of when the catch is landed (BSAI Amendment 9 implemented the same requirement for catcher/processors holding their catch for more than 2 weeks); 3) Provided authority to the Secretary to make inseason changes to gear regulations, season, and harvest quotas; and 4) Provided the Secretary with inseason authority to reapportion surplus groundfish within the domestic allowable harvest.
11	The regulations implemented the following three provisions: 1) Established an apportionment of the pollock TAC allocated to joint venture operations of 40% in the first season (January 1-April 15) and 60% in the second season (April 16-December 31). The measure was effective only in 1988 and 1989; 2) Revised the definition of acceptable biological catch (ABC) to conform with that used by the Pacific Council and includes definitions for "threshold" and "overfishing;" 3) Revised the definition of prohibited species to specifically name the species to be prohibited in the catches of foreign and domestic fishermen. Steelhead and Pacific salmon were added to the prohibited species list of halibut, herring, and king and Tanner crab for domestic and foreign fisheries; all salmonids are prohibited for foreign fishermen. The final rule for Amendment 11 also clarified that the definition of directed fishing (20% or more of the harvest) applied to domestic fisheries as well as foreign fisheries. This was inadvertently omitted from the proposed and final rule for BSAI Amendment 10.
11a	The regulations implemented the following provisions to the BSAI FMP: 1) Augmented the current catcher/processor and mothership reporting requirements with at-sea transfer information, specifically, a Cargo Transfer/Off-Loading Log and Product Transfer Report; 2) Revised the definition of prohibited species to include Pacific salmonids, Pacific herring, Pacific halibut, king crab, Tanner crab, and steelhead trout. Respecified the other three categories: (cont.) a) Target species–pollock, Pacific cod, flounders, rockfish, and sablefish b) Other species–Atka mackerel, squid, sculpins, sharks, skates, eulachon, smelts, capelin, and octopus c) Non-specified species–those species taken incidentally in the groundfish fisheries but are not managed by the FMP. No catch records are required; 3) Required the public comment period for proposed annual specifications and prohibited species catch limits to be 30 days following the date of filing of the notice for public inspection with the Office of the Federal Register.
12	Amendment 12 required: (1) All vessels receiving groundfish harvested in the EEZ to hold a federal permit and comply with federal reporting requirements;

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	(2) established PSC limit framework for groundfish species in the joint venture and foreign fisheries; (3) established rock sole as a target species separate from the "other flatfish" category; (4) removed the July 1 deadline for resource assessment document.
12a	The PSC limits set in regulation under Amendment 12a are listed at right.
13	Amendment 13 to the groundfish FMPs authorized a comprehensive domestic fishery observer program. The 1990 and 1991 Observer Plans required specific levels of observer coverage which varied with size of fishing vessel and quantity of fish processed. The Observer Plans required that owners and operators of vessels and shoreside processing facilities participating in the groundfish fishery arrange for and pay for the cost of placing observers aboard their vessels and at their shoreside processing facilities beginning in January 1990. Each vessel or processor required to have observer coverage is responsible for the cost of obtaining the required observers from a certified contractor. Amendment 13 also: (1) allocated sablefish: 50/50 percent to fixed and trawl gear in the BS and 75/25 percent to fixed and trawl gear in the AI; (2) closed waters seaward of 3 miles out to 12 miles surrounding the Walrus Islands (Round Island and the Twins) and Cape Peirce from April 1 through September 30 to groundfish fishing; (3) deleted fishing season dates from the FMPs but retained them in regulation; (4) clarified authority to recommend TACs for additional or fewer target species within the "target species" category.
14	The amendment implemented rules that regulated the practice of stripping roe (eggs) from female pollock and discarding female and male pollock carcasses without further processing, and seasonally allocated the TAC of pollock. Season opening dates were established as follows for the GOA: January 1, April, July, and October, and for the BSAI: January 1 and June 1. To get at the issue of roe stripping, product recovery rate standards were established, which if exceeded would constitute a violation. The recovery rate (cont.) standard established was 10 percent of the total round-weight equivalent of pollock and other pollock products onboard a vessel at any time during a fishing trip. To extrapolate round weight equivalents, the rule established product recovery rates as follows: fillet (18%), surimi (15%), mince (17%), meal (17%), and head & gut (50%).
15	The IFQ Program was approved for the Pacific halibut and sablefish fixed gear fisheries in the Federal waters of the BSAI and GOA, and these fisheries have been managed under the program since 1995. The regulations outline several key provisions of the program: initial allocation of quota shares; vessel categories; transfer provisions; use and ownership provisions; the annual process for allocating quota shares (QS); and the establishment of Community Development Quotas. The regulations state that legal landings of halibut or sablefish harvested with fixed gear had to occur at any time during 1988-1990 to qualify for an initial allocation of quota share. Generally, if a vessel owner or lessee is qualified, their initial quota share would be based on their highest total landing of halibut for any 5 years of the 7-year base period 1984-1990. For sablefish, the initial quota share would be based on the highest total landing of sablefish for any 5 years of the 6-year base period 1985-1990. Each person eligible to receive quota share would have it assigned to one of four vessel

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	categories: "A"-freezer vessels of any length; "B"- catcher vessels greater than 60'; "C"- catcher vessels less than or equal to 60' for sablefish, or between 35'-60' for halibut; "D"- catcher vessels less than or equal to 35' for halibut. Initial quota share would be assigned to the vessel category that a person's most recent fixed gear landings of groundfish or halibut were caught by that vessel. Various restrictions on transfer and ownership are designed to maintain the owner/operator characteristics of the fleet, and to prevent consolidation of QS in the hands of a few participants.
16	The Amendment contained 8 approved management measures as follows: 1. Modified PSC limits and bycatch limitation zones for halibut, bairdi crab, and red king crab in the BSAI; 2. Apportioned PSC limits into bycatch allowances for trawl fishery categories; 3. Allowed separate apportionment of halibut PSC to hook and line and pot gear in the GOA; 4. Allowed seasonal allocation of halibut and crab PSC; 5. Established procedures for interim TAC specifications 6. Established fishing gear restrictions (definition of pelagic trawl, biodegradable panels & halibut excluders on pot gear); 7. Modified authorization language that allows demersal shelf rockfish in SE Alaska to be managed by the State; and 8. Established definitions of overfishing. Later revisions to the amendment included addition of a vessel incentive program, which would issue civil penalties (fines) to vessels that exceeded seasonal fixed bycatch rate standards for halibut and crab taken in specified target fisheries.
16a	Amendment 16a established prohibited species bycatch limits for Pacific herring taken as bycatch in trawl fisheries. The annual PSC limit was set at 1% of the annual biomass of eastern Bering Sea herring, and is apportioned among trawl fishery categories. Attainment of any apportionment triggers closure of herring savings areas to that fishery. The Herring Savings Areas are described as (cont.) follows: (1) Summer Herring Savings Area 1 means the part of the Bering Sea subarea that is south of 57° N. latitude and between 162° and 164° W longitude from 12:00 noon Alaska Local Time (ALT) June 15 through 12:00 noon ALT July 1 of a fishing year. (2) Summer Herring Savings Area 2 means the part of the Bering Sea subarea that is south of 56°30' N. latitude and between 164° and 167° W. longitude from 12:00 noon ALT July 1 through 12:00 noon ALT August 15 of a fishing year. (3) Winter Herring Savings Area means that part of the Bering Sea subarea that is between 58° and 60° N. latitudes and between 172° and 175° W. longitudes from 12:00 noon ALT September 1 through 12:00 noon ALT March 1 of the succeeding fishing year. The Regional Director may promulgate an inseason closure of an area (for up to 60 days) to reduce prohibited species bycatch rates. A

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	number of factors must be considered when implementing any 'hot spot' closure. Also, Amendment 16a allows the Regional Director, in consultation with the Council, to limit the amount of pollock that may be taken with trawls other than pelagic trawls. The Council's recommendations are to be available to the public for comment under the annual TAC specification process.
17	Amendment 17 prohibits all vessels federally permitted to fish for groundfish from entering the walrus haulout closure areas from April 1 through September 30. These areas include the EEZ within 12 miles of islands named Round Island and The Twins, and around Cape Peirce. Amendment 17 allows the NMFS Regional Director, after consulting with the Director of the Alaska Fishery Science Center and with the Council, to authorize for limited experimental purposes, the target or incidental harvest of groundfish that would otherwise be prohibited. The amendment also combined statistical area 68 with statistical area 65, established the Bogoslof Area, and requires pot gear to be identified as such when groundfish fishing.
18	The alternative adopted and approved defined the inshore and offshore components of the fisheries. BSAI Amendment 18 was only partially approved, allocating 35% of the 1992 non-roe pollock season TAC to the inshore component, and the remaining 65% to the offshore component. The portion that was not approved would have further allocated pollock through 1995: (the inshore allocation would have increased to 40% in 1993 and 45% in both 1994 and 1995). A NMFS economic review indicating a large net loss to the Nation as a result of this action provided the rationale for disapproval by the Secretary of Commerce. (Analysis of adjoining GOA Amendment 23 indicated a net benefit; therefore, that amendment was approved in full. The GOA inshore component was allocated 90% of the Pacific cod TAC and 100% of the pollock TAC for each fishing year.) While catcher/processors from the offshore component would not be able to conduct directed pollock fishing in the GOA, they would be allowed appropriate bycatch amounts. Amendment 18 also established the CVOA south of 56° N. latitude and between 163° and 168° W. longitudes and the Community Development Quota program. As a result of the CDQ program, 7.5 percent of the BSAI pollock TAC was reserved for CDQ (cont.) fisheries (a nonspecific reserve) at the beginning of the year, and that amount would be reduced as allocations are made to community development projects.
19	Amendments 19/24 established three FMP amendment management measures. These are as follows: 1) For 1992, reduce the Pacific halibut prohibited species catch (PSC) limit established for BSAI trawl gear from 5,333 metric tons (mt) to 5,033 mt, but retain the primary halibut PSC limit at 4,400 mt; 2) For 1992, establish a 750 mt Pacific halibut bycatch mortality limit for BSAI fixed gear; and 3) Establish FMP authority to develop and implement regulatory amendments that allow for time/area closures to reduce prohibited species bycatch rates (revised "hotspot authority"). In addition to the above FMP amendments, the following amendments to current regulations were adopted: (1) Revise BSAI fishery definitions for purposes of monitoring fishery specific bycatch allowances and assigning vessels to fisheries for purposes of the vessel incentive program; (2) Revise the management of BSAI trawl fishery categories for PSC accounting; (3) Expand the vessel incentive program to address halibut bycatch rates in all trawl fisheries; (4) Delay the season opening date of the BSAI and GOA groundfish trawl fisheries to January 20 of each fishing year to reduce salmon

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	and halibut bycatch rates; (5) Further delay the season opening date of the GOA trawl rockfish fishery to the Monday closest to July 1 to reduce halibut and chinook salmon bycatch rates; and (6) Change directed fishing standards to further limit halibut bycatch associated with bottom trawl fisheries.
20	Regulations authorized by Amendment 20 implemented the following measures: 5) Areas are closed year-round to fishing by vessels using trawl gear within 10 nautical miles of key Steller sea lion rookeries located in the GOA and BSAI management areas. 6) Areas are closed within 20 nm of five sea lion rookeries to directed pollock fisheries during the "A" season. These rookeries are Sea Lion Rocks, Akun Island, Akutan Island, Seguam Island, and Agligadak Island 7) In the GOA, the specified total allowable catch for pollock in the combined western/central area is further divided among three pollock management districts: Area 61 (170º-159º W. longitudes), Area 62 (159º-154º W. longitudes), and Area 63 (154º-147º W. longitudes). The Shelikof Strait district was eliminated. To prevent excessive accumulation of unharvested portions in any quarterly allowance of the pollock TAC, a limit of 150 percent of the initial quarterly allowance in each pollock management district was established.
21	Amendment 21 implemented the following measures: 1. Establish halibut bycatch limits in terms of halibut mortality rather than halibut bycatch; 2. Establish halibut bycatch mortality limits for trawl and non trawl fisheries in regulations rather than in the FMP to allow (cont.) for changes in bycatch mortality limits through a regulatory amendment process rather than an FMP amendment; and 3. Establish FMP authority to annually apportion the non-trawl halibut bycatch mortality limit among fisheries and seasons as bycatch allowances. This authority would be similar to FMP provisions for annual specification of bycatch allowances of prohibited species catch limits among trawl fisheries. Consistent with this amendment, regulations established a 3,775 mt halibut bycatch mortality limit for trawl gear fisheries and a 900 mt halibut bycatch mortality limit for non-trawl fisheries.
21a	All trawling is prohibited at all times in the EEZ within the area bounded by a straight line connecting the following pairs of coordinates in the following order: (57° 57.0', 168° 30.0') (56° 55.2', 168° 30.0') (56° 48.0', 169° 2.4') (56° 34.2', 169° 2.4') (56° 30.0', 169° 25.2') (56° 30.0', 169° 44.1')

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	(56° 55.8', 170° 21.6') (57° 13.8', 171° 0.0') (57° 57.0', 171° 0.0') (57° 57.0', 168° 30.0')
21b	Amendment 21b established measures to control the amount of chinook salmon taken as bycatch in BSAI trawl fisheries. Specifically, the alternative adopted would close three areas in the BSAI to all trawling when 48,000 chinook salmon were taken as bycatch. The chinook salmon savings areas are shown in the adjacent figure. A closure will remain in effect from the time the trigger is reached until April 16, when the areas would reopen to trawling for the remainder of the year.
22	Amendment 22 allows the Secretary to promulgate regulations establishing areas where specific types of fishing gear may be tested, to be available for use when the fishing grounds are closed to that gear type. Specific gear test areas contained in regulations that implement the FMP were allowed by regulatory amendment. These gear test areas would be established in order to provide fishermen the opportunity to ensure that their gear is in proper working order prior to a directed fishery opening. The test areas must conform to the following conditions: (1) Depth and bottom type must be suitable for testing the particular gear type. (cont.) (2) Must be outside State waters. (3) Must be in areas not normally closed to fishing with that gear type. (4) Must be in areas that are not usually fished heavily by that gear type. (5) Must not be within a designated Steller sea lion protection area at any time of the year. The rule implementing this amendment established three trawl test areas: Dutch Harbor (54 º40' to 55º 00' N; 166º 00' to 167º 00' W), Sand Point (54 º35' to 54º 50' N; 160º 30' to 161º 00' W), and Kodiak (57 º23' to 57º 37'N; 151º 25' to 152º 02'W). The regulation further required that the trawl cod end must be left unzipped so as not to retain fish, that groundfish may not be onboard, and that the time used to test gear would not contribute to observer coverage requirements.
23	After several proposed moratoriums, the final rule required a moratorium permit for vessels within specific vessel categories that harvest groundfish and BSAI crab resources off Alaska. Generally, a vessel qualified for a moratorium permit if it made a legal landing of any moratorium species during the qualifying period of January 1, 1988 through February 9, 1992. In addition, a vessel that made a legal landing during the qualifying period, in either a groundfish or crab fishery, but not both, can cross over as a new vessel in the fishery in which it did not made a legal landing in the qualifying period provided: 1) it uses the same gear type in the new fishery as it used to qualify for the moratorium in the other fishery; or 2) it made a legal landing in the crossover fishery during the qualifying period and it uses only the same gear type it used in that period.
24	Amendment 24 was proposed to authorize the explicit allocation of BSAI Pacific cod among vessels using trawl, hook-and-line or pot

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	gear, and jig gear through 1996. The alternative adopted and approved allocated the BSAI Pacific cod TAC to the jig gear (2%), hook-and-line or pot gear (44%) and trawl gear (54%) fleets. The action also authorized the seasonal apportionment of the Pacific cod TAC for hook-and-line and pot gear, creating three four-month seasons. In addition, the regulation allowed for the reallocation of Pacific cod from the trawl sector to the longline and pot sectors, and vice versa, if NMFS determines that one gear group or the other will not be able to harvest its full allocation.
25	The alternative adopted and approved eliminated the primary PSC limit, but did not affect the overall halibut bycatch mortality limit (3,775 mt) for the BSAI trawl fisheries. The action also implemented regulatory amendments which 1) prohibited discards of salmon taken as bycatch in the BSAI groundfish trawl fisheries until a NMFS-certified observer determines the number of salmon and collects any necessary data; and 2) established the authority to release to the public vessel-specific observer data on bycatch of prohibited species in the BSAI and GOA groundfish fisheries.
26	The Salmon Donation Program authorizes the distribution of Pacific Salmon taken as bycatch in the groundfish trawl fisheries in the groundfish fisheries off Alaska to economically disadvantaged individuals through NMFS authorized distributor selected by the Regional Director in accordance with federal regulations implemented under the FMP.
27	The Magnuson-Stevens Act authorized the Council and the Secretary to establish a North Pacific Fisheries Research Plan which: (1) requires that observers be stationed on fishing vessels and at fish processing facilities, and (2) establishes a system of fees to pay for the cost of implementing the research plan. The Research Plan, as adopted under this amendment, contained four objectives and elements that included observer employment and contracts, observer duties, data collection and transmission, annual determination of coverage levels by fishery, in-season changes to coverage levels, establishment of an observer oversight committee, coordination between the NMFS groundfish and ADF&G shellfish observer programs, a fee assessment (up to 2% of ex-vessel value of harvested fish), and details on fee collection and contingency plans in case of funding shortfalls.
28	Under Amendment 28, the Aleutian Islands region was split into three management districts at 177° W longitude and 177° E longitude. The eastern, central, and western AI districts are shown in the adjacent figure and are denoted as statistical areas 541, 542, and 543.
29	The amendment was never adopted and the vessel incentive portion was never implemented. NMFS expressed reservations about obtaining statistically valid estimates of salmon bycatch amounts for use in enforcing a vessel incentive program. Additionally, there were concerns raised about establishing a haul by haul vessel incentive program because the possibility of a vessel randomly encountering large numbers of salmon in a single haul, as well as vessels that deliver unsorted cod ends to shoreside operations. In both cases, violators would be unable to take action to avoid a violation. Notwithstanding these issues, it was felt that significant staff resources would need to be shifted to monitor salmon bycatch, enforce, and prosecute salmon bycatch violators. Given the difficulties presented in establishing a regulatory solution to individual vessel bycatch accounting, amendment development was put on hold while industry representatives developed their own voluntary program named the Salmon Foundation. Participants

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	assessed themselves a $20 fee per chinook and raised a total of $120,000 in 1994. The purpose of the Foundation was to use income generated from salmon bycatch assessment payments to develop a salmon bycatch avoidance program for the BSAI trawl fisheries and to fund research on stock origin of salmon taken as bycatch. After the Council adopted the time area closures in April 1995, the industry stopped the bycatch assessment fees, so the research monies were spent and the Foundation dissolved.
30	The alternative adopted and approved raised the sablefish Community Development Quota allocation limit for qualified applicants from 12% to 33% in order to allow total allocation of the sablefish CDQ reserve; removed the inadvertent inclusion of the CDQ program in the FMP for the GOA; and expanded the types of evidence that may be used to verify vessel leases for the halibut and sablefish individual fishing quota program. It was emphasized that this action did not change the amount of sablefish available for harvest by persons participating in the Pacific halibut and sablefish IFQ program.
31	The Modified Block Proposal provided that initial allocations of QS that represent less than 20,000 lb of IFQ in the implementation year will be issued as a block, 2) QS that represents 20,000 lb or more of IFQ in the implementation year will be "unblocked", and 3) QS in a block cannot be separated and must be transferred as a block. Fishermen can own up to two blocks of halibut and two blocks of (cont.) sablefish QS in each area, but persons holding any amount of unblocked QS are limited to one block of QS per area. A sweep-up provision allowed fishermen to combine small amounts into fishable amounts: halibut blocks can be combined to a sum of less than 1,000 lbs and sablefish blocks can be combined until the sum reaches 3,000 lbs. The amendment also clarified that blocked and unblocked quota share would be transferable subject to the approval of the NMFS Regional Director. Because the Modified Block Proposal created the potential that some QS would become non-transferable because the size would exceed the quota share use limits established in prior regulations (50 CFR 676.22 (e)(f)); the alternative also allowed for the transfer of a quota share block exceeding the use limits by providing that one block could be divided into two blocks.
32	The amendment exempted some CDQ compensation QS from the block provision and allowed for a one year period of relief (one-time transfer) from the restriction against transferring CDQ compensation QS across vessel length categories. Regulations state that if a person is issued CDQ compensation QS for an area where the person already has regular QS, then their CDQ compensation QS is combined with their existing QS and is either "blocked" or "unblocked" depending on the sum total of their QS (this makes much of the CDQ compensation QS unidentifiable after issuance). If a person is issued CDQ compensation QS for an area in which the person doesn't have other QS, the QS is left unblocked. The exemption does not include Category "A" vessels (vessels of any length authorized to process IFQ species).
33	The alternative adopted and approved authorized the processing of fish other than IFQ halibut or IFQ sablefish on board the harvesting vessel by persons authorized to harvest IFQ sablefish based on an annual allocation of IFQ assigned to vessel categories B or C. This authorization is not extended to persons authorized to harvest IFQ halibut, due to the fact that halibut is characteristically prosecuted by local vessels that do not have onboard processing capabilities. Several modifications were also made to the regulations implementing the IFQ program in order to accommodate the new provision. In addition, while non-IFQ species could be frozen onboard, the freezing of IFQ sablefish caught with catcher vessel quota share on a freezer vessel would continue to be prohibited.

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
34	The Council adopted Amendment 34 to the FMP at its June 1997 meeting in response to concerns about the fast-paced nature of the Atka mackerel trawl fishery and the resulting preemption of the small-scale jig gear fishery. The Council's action would allocate up to 2 percent of the Atka mackerel TAC specified for the Eastern AI/BS to vessels using jig gear. The Council also voted to specify the jig gear allocation annually during the groundfish specifications process based on recent and anticipated harvests. This action was taken in consideration of the small amount of Atka mackerel annually harvested in recent years and to respond to trawl industry concerns about allocating more Atka mackerel to the jig gear fleet than could be harvested. Amendment 34 allowed for a ramp up provision, such that 1-percent of the Eastern AI/BS Atka mackerel TAC would be allocated to vessels using jig gear to begin the program. Once the jig gear fleet proved it could harvest that amount of TAC, the allocation could be increased to 2%.
35	Amendment 35 established measures to control the amount of chum salmon taken as bycatch in BSAI trawl fisheries. Specifically, the alternative adopted would close an area in the BSAI to all trawling from August 1 though August 31 (the time of year when (cont.) bycatch is highest). In addition, the area would remain closed or re-close after September 1, upon the attainment of a bycatch limit of 42,000 "other" salmon taken within the catcher vessel operational area (CVOA), through October 14. The chum salmon savings areas is the area bounded by a straight line connecting the following pairs of coordinates in the order listed: 56°00'N., 167°00'W.; 56°00'N., 165°00'W.; 55°30'N., 165°00'W.; 55°30'N., 164°00'W.; 55°00'N., 164°00'W.; 55°00'N., 167°00'W.; 56°00'N., 167°00'W.
36	Amendment 36 defined a forage fish species category and authorized that the management of this species category be specified in regulations in a manner that prevents the development of a commercial directed fishery for forage fish which are a critical food source for many marine mammal, seabird and fish species. Forage fish species are not included in a target species category. Management measures for the forage fish category will be specified in regulations and may include prohibitions on directed fishing, limitations on allowable bycatch retention amounts, or limitations on the sale, barter, trade or any other commercial exchange, as well as the processing of forage fish in a commercial processing facility. The forage fish species category would include all species of the following families: Osmeridae (eulachon, capelin and other smelts), Myctophidae (lanternfishes), Bathylagidae (deep-sea smelts), Ammodytidae (Pacific sand lance),

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	Trichodontidae (Pacific sand fish), Pholidae (gunnels), Stichaeidae (pricklebacks, warbonnets, eelblennys, cockscombs and shannys), Gonostomatidae (bristlemouths, lightfishes, and anglemouths), and the Order Euphausiacea (krill).
37	Amendment 37 implemented the following measures: (1) A year round bottom trawl closure in the Bristol Bay Red king Crab Savings Area to directed fishing for groundfish by (cont.) vessels using non-pelagic trawl gear. The southern edge of the Savings Area between 56° and 56°10 N. lat., however, would open if a guideline harvest level for Bristol Bay red king crab is established. A portion of the annual PSC limit would be specified for the subarea; (2) A year round closure to all trawling in the nearshore waters of Bristol Bay, with the exception that a portion of this area- between 159° and 160°W. long. and between 58° and 58°43' N. lat. - would remain open to trawling during the period April 1 to June 15 each year; (3) Increased observer coverage on all vessels, including vessels using pot, jig, and longline gear fishing for groundfish in the Savings Area and on trawl vessels fishing in the seasonal open area of the Bristol Bay nearshore waters closure; and (4) Adjustments to the Zone 1 PSC limit for red king crab taken in trawl fisheries. The PSC limit would be specified annually based on the abundance and biomass of Bristol Bay red king crab, as shown in the adjacent table.
38	The provisions of BSAI Amendment 18 became the basis of Amendment 38, and the provisions of GOA Amendment 23 became the basis for Amendment 40. Thus, in the BSAI the apportionments of pollock in each subarea and season would be allocated 35% for processing by the inshore sector and 65% by the offshore sector. In the GOA, the apportionment of pollock would be allocated entirely for processing by the inshore sector, and the apportionment of Pacific cod would be allocated 90% for the inshore sector, 10% for the offshore sector. The amendments also reauthorized the CDQ pollock program with a few minor changes to the regulations. The only two substantive changes from the original plan amendments were: 1) movement of the western CVOA boundary 30 minutes to the east, and 2) allowing catcher/processors to use the CVOA if the pollock quota for processing by the inshore sector had already been harvested for the year.
39	The final rule limited access to the commercial groundfish fisheries in the BSAI and GOA and commercial crab fisheries in the BSAI, except for demersal shelf rockfish east of 140° W. longitude and sablefish managed under the IFQ program. The rule provided for the following: issuance of a single type of groundfish license; LLP is not applicable to waters of the State of Alaska; licenses would be issued to current owners (as of 6/17/95) of qualified vessels; licenses would be designated as catcher vessel or catcher/processor and with one of three vessel length classes; the crab and groundfish base qualifying period is 1/1/88-6/27/92 and the groundfish area endorsement qualifying period is 1/1/92-6/17/95; endorsement areas are defined as Aleutian Islands, Bering Sea, Western Gulf, Central Gulf, and Southeast Outside, or state waters shoreward of those endorsement areas; landing requirements for general license and area endorsement qualifications by vessel class; and additional provisions addressing crossover vessels, transfers, and vessel linkages. The rule also

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	included in CDQ allocations 7.5% of the TAC of groundfish and crab in the BSAI that was not originally included in the CDQ programs for pollock, halibut, and sablefish.
40	Under Amendment 40 of the BSAI Groundfish FMP, PSC limits for snow crab (*C. opilio*) taken in groundfish fisheries are based on total abundance of *opilio* crab as indicated by the NMFS standard trawl survey (NPFMC 1996). The snow crab PSC cap is set at 0.1133% of the Bering Sea snow crab abundance index, with a minimum PSC of 4.5 million snow crab and a maximum of 13 (cont.) million snow crab. Snow crab taken within the "C. Opilio Bycatch Limitation Zone" (COBLZ) accrue towards the PSC limits established for individual trawl fisheries. Upon attainment of a snow crab PSC limit apportioned to a particular trawl target fishery, the COBLZ would be closed to directed fishing for species in that trawl fishery category, except for pollock with nonpelagic trawl gear. The COBLZ within the EEZ is an area defined as that portion of the Bering Sea Subarea north of 56°30' N. latitude that are west of a line connecting the following coordinates in the order listed: 56°30' N. lat., 165°00' W. long. 58°00' N. lat., 165°00' W. long. 59°30' N. lat., 170°00' W. long. and north along 170°00' W. longitude to its intersection with the U.S.-Russian Boundary.
41	The alternative adopted and approved under Amendment 41 provides for the annual specification of the revised PSC limits based on the total estimated abundance of *C. bairdi* as shown in the adjacent table. *C. bairdi* taken as bycatch within the zones accrue towards the PSC limits established for individual trawl fisheries. Upon attainment of a PSC limit apportioned to a particular trawl target fishery, that fishery is prohibited from fishing within the specified zone. Note that in 1998, the Council adopted a provision to reduce opilio crab bycatch by an additional 50,000 *C. bairdi* crab as part of the regulation prohibiting the use of bottom trawl gear for pollock fisheries.
42	Amendment 42 and a regulatory amendment to the IFQ Program for fixed gear Pacific halibut and sablefish fisheries in and off Alaska allowed QS initially assigned to a larger vessel category to be used on smaller vessels, while continuing to prohibit the use of QS or its associated IFQ assigned to smaller vessel categories on larger vessels. QS will continue to be assigned to vessel categories by existing criteria at Sec. 679.40(a)(5) (i) through (vi) and will retain original vessel category assignments. However, halibut and sablefish QS and their associated IFQ assigned to vessel Category B, can be used on vessels of any size and halibut QS assigned to vessel Category C likewise can be used on vessels of categories C and D. The regulations continue to prohibit the use of QS and IFQ on vessels larger than the maximum length on average (LOA) of the category to which the QS was originally assigned. It does not apply to halibut in IFQ regulatory areas 2C or to sablefish east of 140°. W. long. Halibut QS assigned to vessel Category B in IFQ regulatory areas 2C and sablefish QS east of 140° W. long. are prohibited from use on vessels less than or equal to 60 ft (18.3 m) LOA except in QS blocks equivalent to less than 5,000 lb (2.3 mt) based on the 1996 Total Allowable Catch (TAC).
43	Amendment 43 increased the sweep-up levels for small QS blocks for Pacific halibut and sablefish from a 1,000 lb (0.45 mt) maximum for Pacific halibut and 3,000 lb (1.4 mt) maximum for sablefish to a 3,000 lb (1.4 mt) maximum and a 5,000 lb (2.3 mt) maximum, respectively. Two other changes were recommended to accompany these increases:

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	8) The base year TAC for determining the pounds would be the 1996, rather than 1994, TAC which was used for the first sweep-up levels; 9) Once QS levels are established for the appropriate regulatory areas based on the 1996 TAC, those QS levels would be fixed (cont.) and codified. This would eliminate any confusion as to the appropriate sweep-up level in pounds, which would fluctuate with changes in the annual TAC. The maximum number of QS units that may be consolidated into a single QS block in each IFQ regulatory area is shown in the above table.
44	Amendments 44/44 provided for more conservative definitions of ABC and OFL. The fishing mortality rate used to calculate ABC was capped by the overfishing rate. The maximum allowable fishing rates were prescribed through a set of 6 tiers which are listed in descending order of preference, corresponding to descending information availability. These tiers are shown in the adjacent table. Harvest rates used to establish ABCs are reduced at low stock size levels, thereby allowing rebuilding of depleted stocks. If the biomass of any stock falls below Bmsy or $B_{40\%}$ (the long-term average biomass that would be expected under average recruitment and $F=F_{40\%}$), the fishing mortality is reduced relative to stock status. This serves as an implicit rebuilding plan should a stock fall below a reasonable abundance level.
45	Ten percent of pollock and 7.5% of all other groundfish and crab TACs are set aside for the Western Alaska CDQ program.
46	1) <u>BSAI Pacific cod TAC Apportionments</u>: Trawl sector: 47% (The trawl apportionment will be split between catcher vessels and catcher processors 50/50.) Fixed gear sector: 51% Jig gear sector: 2% 2) <u>Roll-overs</u>: On September 15 of each year, the Regional Director shall reallocate 100% of any projected unused amount of the Pacific cod allocated to jig vessels to the fixed gear vessels. If, during a fishing year, the Regional Director determines that vessels using trawl gear or hook-and-line or pot gear will not be able to harvest the entire amount of Pacific cod allocated to those vessels, then NMFS shall reallocate the projected unused amount of Pacific cod to vessels using the other gear type(s). 3) <u>Halibut PSC Mortality Caps</u>: The trawl halibut PSC mortality cap for Pacific cod will be no greater than 1,600 mt. The hook-and-line gear halibut PSC mortality cap for Pacific cod will be no greater than 900 mt. 4. <u>Review</u>: No sunset provision, but the Council will review this agreement in four years following the date of implementation.
47	WITHDRAWN - At the December 1997 meeting the Council was scheduled to take action approving an alternative observer program

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	structure - a Joint Partnership Agreement (JPA) between NMFS and the Pacific States Marine Fisheries Commission (PSMFC), (cont.) which would have established PSMFC as a third party procurement point for observers. This was being considered as a replacement for the repealed Research Plan (Amendment 30), in an effort to address conflict of interest and other issues in the existing pay-as-you-go program structure. Due to legal concerns of PSMFC this amendment was not approved by the Council and was never forwarded for Secretarial review. Instead, the existing pay-as-you-go program was extended for an additional time period, through year 2000. Currently, NMFS and Council staff are working on revised program structure alternatives, including a fee-based plan, and the current program will be extended through 2002.
48	This amendment was not formally submitted to the Secretary and no regulations have been implemented.
49	Amendment 49 required all vessels fishing for groundfish in the BSAI to retain all pollock and Pacific cod beginning January 1, 1998, and all rock sole and yellowfin sole beginning January 1, 2003. It established a 15-percent minimum utilization standard for all at-sea processors.
50	This action authorized the voluntary donation of Pacific halibut taken as bycatch in specified groundfish trawl fisheries off Alaska to economically disadvantaged individuals. Under the prohibited species donation program, NMFS expanded the existing salmon donation program to also authorize distributions by tax-exempt organizations through a NMFS-authorized distributor. The program is limited to dead halibut landed by trawl catcher vessels to shoreside processors.
51	As adopted by the Council in June 1998, the BSAI amendment contemplated four changes to the current inshore/offshore allocation regime. In light of the AFA, the BSAI inshore/offshore pollock allocations were disapproved, and the only change (partially) approved related to the Catcher Vessel Operational Area (CVOA). The original Amendment 51 would have changed the existing CVOA rules by excluding from the CVOA all catcher vessels that deliver pollock to the offshore component (catcher/processors and motherships). Motherships had previously been allowed to operate within the CVOA, receiving and processing pollock harvested by catcher vessels. Catcher/processor vessels had not been allowed to harvest pollock in the CVOA during the B season. In recommending the CVOA portion of Amendment 51, the Council attempted to create parity between motherships and catcher/processor vessels. NMFS approved all of the proposed amendment maintaining the CVOA with the exception of that component. This is because the AFA specifies separate allocations of the pollock TACs for the mothership and catcher/processor sectors, thereby achieving the parity intended by the Council. Hence, the exclusion of catcher vessels from the CVOA that deliver to the offshore component was an unnecessary duplication of an AFA provision, and as such, was inconsistent with National Standard 7. Note that although the approved CVOA provisions are effectively the same as they were for 1996-98, further restrictions on fishing in the CVOA were implemented in 1999 to mitigate the effects of pollock fishing on Steller sea lions and their critical habitat, within which much of the CVOA lies.
52	Under a vessel registration program, NMFS would establish criteria to determine which fisheries would require registration. Based on these criteria, NMFS would create a roster of "registration fisheries" that would be announced at the beginning of each year and (cont.) supplemented as necessary on an inseason basis throughout the year. Criteria for establishing a registration requirement for a fishery

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	could include: 1) the size of the TAC amount or PSC limit specified for the fishery relative to the degree of interest in that fishery, (2) a fishery for which the TAC or PSC limit was exceeded by a significant amount in the previous year and the current year's quota and expected effort are similar, (3) a fishery for which the above two criteria may not apply but an expanded interest has developed inseason, and (4) a "mop-up" fishery. Vessel operators would be required to register with NMFS a certain number of days before beginning directed fishing in a registration fishery and penalties would be established for non-compliance.
53	At its February 1998 meeting, the Council approved Amendment 53 to the FMP. After subtraction of reserves, this amendment would allocate 30 percent of the remaining SR/RE TAC to non-trawl gear and 70 percent of the remaining SR/RE TAC to trawl gear.
54	Regulations have not yet been drafted.
55	The alternative adopted and approved defined EFH as all habitat within a general distribution for a species life stage, for all information levels and under all stock conditions. A general distribution area is a subset of a species range. For any species listed under the Endangered Species Act, EFH includes all areas identified as "critical habitat". EFH was described in text, tables, and maps. Habitat areas of particular concern were identified as living substrates in shallow and deep waters, and freshwater habitats used by anadromous fish.
56	Amendment 56 revised the ABC and overfishing definitions set under Amendment 44 to be more precautionary. Like Amendment 44, the maximum allowable rates are prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. For most tiers, ABC is based on $F_{40\%}$, which is the fishing mortality rate associated with an equilibrium level of spawning per recruit (SPR) equal to *40%* of the equilibrium level of spawning per recruit in the absence of any fishing. To further minimize the possibility of catches jeopardizing a stock's long term productivity, there is a buffer established between ABC and OFL. Amendment 56 modified the OFL definition from $F_{30\%}$ to $F_{35\%}$ for stocks having tiers 2-4 information.
57	Amendment 57 prohibited the use of non-pelagic trawl gear when participating in the BSAI pollock fisheries. The definition of a pelagic trawl is relatively complex, whereas non-pelagic trawls are all other trawls not meeting the pelagic trawl definition. Regulations that define pelagic trawl gear are listed in the accompanying table. In addition, regulations prohibit any vessel engaged in directed (cont.) pollock fishing from having 20 crabs larger than 1.5 inches carapace width onboard the vessel at any time. Crabs were chosen for the standard because they inhabit the seabed, and if caught, provide proof that a trawl has been in contact with the bottom. Vessels fishing for CDQ pollock were exempted from the non-pelagic trawl gear prohibition.

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

Amendment	Summary
	Amendment 57 also reduced the bycatch limits for halibut and crab due to the bottom trawl prohibition. Halibut bycatch mortality was reduced by 100 mt, and the PSC allowance for red king crabs was reduced by 3,000 animals, for *C. bairdi* crabs by 50,000 animals, and for *C. opilio* crabs by 150,000 animals. For *C bairdi* crabs, the limit was lowered by 20,000 in Zone 1 and by 30,000 in Zone 2.
58	Amendment 58 reduced the amount of chinook salmon allowed to be taken as bycatch in BSAI trawl fisheries. Specifically, the alternative adopted did the following (1) reduced the chinook salmon PSC bycatch limit from 48,000 to 29,000 chinook salmon over a 4-year period, (2) implemented year-round accounting of chinook salmon bycatch in the pollock fishery, beginning on January 1 of each year, (3) revised the boundaries of the Chinook Salmon Savings Areas, and (4) set new closure dates. In the event the limit is triggered before April 15, the Chinook Salmon Savings Area closes immediately. The closure would be removed on April 16, but would be reinitiated September 1 and continue through the end of the year. If the limit were reached after April 15, but before September 1, then the areas would close on September 1. If the limit were reached after September 1, the areas would close immediately through the end of the year.
59	The final rule simply extended the Vessel Moratorium Program and the existing moratorium permits through December 31, 1999. The regulation also provided that no person could apply for a new moratorium permit after the original moratorium program expiration date of December 31, 1998, unless the application was based on a moratorium qualification that was used as a basis for obtaining a moratorium permit issued on or before that date.
60	Five changes were adopted and approved under these amendments: 1) a requirement that the vessel itself would be a specific characteristic of the license and could not be severed (i.e., the license could not be used on any other vessel); 2) license designations for the type of gear authorized to harvest LLP groundfish as either "trawl" or "non-trawl" gear (or both); 3) rescission of the Community Development Quota (CDQ) exemption and thus the requirement that CDQ vessels hold a crab or groundfish license; 4) the addition of a crab recency requirement which requires one landing during 1/1/96-2/7/98 in addition to the general license and area endorsement qualifications; and 5) allowance of limited processing (1 mt) for vessels <60' LOA with catcher vessel designations. The most significant addition under these amendments was the recent participation requirement of at least one landing in the king and Tanner crab fisheries between January 1, 1996 and February 7, 1998, which applied only to the base qualifying period under the crab LLP.
61	Regulations establish the sector allocations of pollock, define the eligible vessels and processors, define the vessel/processor co-op linkages (which vessels are eligible for which co-ops), make allocations of the pollock TAC among each of the co-ops, and define the sideboard amounts of crab and non-pollock groundfish (based on historical share) that can be harvested and processed by the (cont.) AFA operators, in both the BSAI and the GOA.
64	Specific provisions for the accounting of these directed fishing allowances and the transfer of unharvested amounts of these allowances to other vessels using hook-and-line or pot gear would be set forth in the implementing regulations. As proposed, Amendment 64 would expire December 31, 2003, based on the reasoning that three years is sufficient time to address the issue of increasing competition in the BSAI cod fishery before reconsidering the issue in light of other proposed impending changes, including proposed BSAI Pacific cod

Table 2.1. Amendments to the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish.

<table>
<tr><th>Amendment</th><th>Summary</th></tr>
<tr><td></td><td>fixed gear and species endorsements on permits issued under the license limitation program (see BSAI Amendment 67).</td></tr>
<tr><td>65</td><td>At the February 2000 meeting, the Council reviewed an initial draft of a proposed amendment that would consider identifying additional HAPC, and two management measures to protect HAPC from fishing effects. The first measure considered would potentially prohibit directed fishing for certain HAPC biota (corals, sponges, kelp [including rockweed] and mussels). The second measure would establish several marine protected areas where Gorgonian corals are found in abundance. Gorgonian corals have been shown to be important shelter for rockfish and other fish species, are very long lived, easily damaged by fishing gear, and slow to recover from damage. Based on public testimony, and input from its advisory committees, the Council voted to split the amendment and associated analysis into two parts. Part one, which the Council took final action on in April, would allow for control on the harvest of HAPC biota, based on the following problem statement.

The Council recognizes that some invertebrates (corals, sponges, mussels, rockweed and kelp), which provide important habitat for fish have the potential to be developed into large-scale commercial fisheries. The Council currently has little or no controls on the harvesting of these invertebrates. Adopting management measures as a precautionary approach would allow the Council to control any commercial fishery that might develop.</td></tr>
<tr><td>67</td><td>The preferred alternative identified by the Council consists of different qualification criteria for freezer longliners, longline catcher vessels, pot catcher processors, and pot catcher vessels, as outlined below. Additional provisions addressing the combining of catch histories, hardships, multiple endorsements, and bait landings will be detailed in the proposed rule upon Secretarial approval.

<table>
<tr><th>Vessel Type</th><th>Participation Years</th><th>Harvest Requirement</th></tr>
<tr><td>Freezer longline vessels</td><td>Any one year 1996-1999</td><td>270 mt in any one year</td></tr>
<tr><td>Longline catcher vessels</td><td>No action for vessels <60 feet LOA</td><td></td></tr>
<tr><td></td><td>Vessels >60 feet: any one year 1995-1999</td><td>7.5 mt in any one year*</td></tr>
<tr><td>Pot catcher processors</td><td>Any two years 1995-1998</td><td>300,000 lbs in each two years</td></tr>
<tr><td>Pot catcher vessels</td><td>No action for vessels <60 feet LOA</td><td></td></tr>
<tr><td></td><td>Vessels >60 feet: any two years 1995-1999</td><td>>100,000 lbs in each two years (cont.)</td></tr>
</table>
*Jig landings of cod (by vessels of any length) count towards qualification for the endorsement as if they had been made with longline gear.</td></tr>
</table>

Table 2.2. Amendments to the Fishery Management Plan for Groundfish of the Gulf of Alaska.

Amendment	Summary
1	The regulation revised the original FMP only slightly, extending the measures through October 31, 1979, to coincide with a fishing season start of November 1.
2	The regulation increased the amount of pollock held in reserve to 133,800 mt, with appropriate increases in the reserves of species taken incidental to fishing for pollock, and established the special joint reserve and stipulated the method for calculating the foreign allowance, wherein: TALFF = (0.8 OY) - domestic annual harvest - special joint venture reserve. The regulation also provided for 25% of the initial reserve to be allocated to the TALFF every two months, unless it was determined that the U.S. fleet could harvest all of the remaining reserve in the fishing year. That determination would be based on: 1) reported U.S. catch and effort by species and area; 2) projected U.S. catch and effort by species and area; and 3) projected and utilized processing capacity of U.S. fish processors. The regulation also stipulated that if part of the scheduled 25% apportionment to the TALFFs was withheld and the U.S. fleet failed to achieve the anticipated harvest levels in the next period, the amount of fish previously withheld would be made available to the TALFFs on the next bimonthly date.
3	The implementing regulations allowed for the foreign longline fleet to take the entire Chirikof TALFF for Pacific cod (1,500 mt), and any apportioned reserves in that fishing area, in the Chirikof fishing area west of 157° W. longitude.
4	The regulations implemented the following provisions: 1) Reduce the number of fishing areas in the GOA from five to three (Western, Central, Eastern), to reduce the regulatory burden on the fisheries while still preventing localized depletion. 2) Allow foreign fishing within the 3-12 mile zone between 169° and 170° W longitude to correct an omission in the FMP. 3) Remove the restriction which allowed only 25% of the total allowable level of foreign fishing (TALFF) to be taken from December 1 to May 31. The restriction was proved unnecessary since foreign trawl operations use pelagic trawls in the winter. 4) Allow foreign longlining for sablefish seaward of 400 meters (instead of 500 meters) from May 1 to September 30 in the area between 140° and 170° W longitude. Because incidental halibut catch by longliners is low during the summer, this change increased areas for foreign nations to catch sablefish while adequately protecting halibut stocks. 5) Permit a directed longline fishery for Pacific cod between 140° and 157° W longitude seaward of 12 miles, except during the U.S. halibut season. By encouraging longlining instead of trawling for Pacific cod, the incidental mortality of halibut would be reduced. 6) Exempt foreign vessels from the requirement that fishing by all vessels of a nation in a fishing area cease when the allocation for any species has been taken. The exemption does not apply if the allocation reached is for a target species of the longliners. This was to prevent the foreign longline fishery from being closed by the foreign trawl fishery. 7) Increase the squid optimum yield to 5,000 mt (from 2,000 mt) to allow a sufficient incidental catch for foreign nations. 8) Increase the Atka mackerel optimum yield to 26,800 mt (from 24,800 mt), based on new data indicating higher historical catches. 9) Remove the domestic one-hour tow restriction. This was deemed unnecessary protection for halibut given the separate incidental catch quota on halibut for domestic fisheries. (cont.) 10) Remove the domestic requirement for the use of off-bottom trawls from December 1- May 1. This measure was also considered unnecessary for halibut protection.

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	11) Require domestic permits to be renewed annually and domestic reporting (fish tickets) to be submitted within 7 days (instead of 3 days). This would make the Federal and State regulations consistent.
5	Amendment 5 created a new species category specifically for grenadiers with a separate domestic annual harvest, total allowable level of foreign fishing, and MSY/OY of 13,200 mt. The MSY/OY was based on the recorded average grenadier catch for the previous twelve years. Since the grenadier population was not considered in the development of the OY for the "Other Species" category, that category's OY remained the same. The deletion of grenadiers from the "Other Species" category was published in a separate rule on June 29, 1979 (44 FR 37937).
6	The regulations lowered the estimates of domestic annual harvest and reallocated the surplus to the TALFF, increasing the 1978 TALFF by 27,700 mt for all species of groundfish combined. Specifications by species are provided in the table below.
7	The regulations implemented the following six provisions: 1) Extend the FMP through October 31, 1980; 2) Implement the provisions of the Processor Preference Amendment (PL 95-354), which would establish a mechanism to periodically review and reassess the domestic annual harvest and the reserve to TALFF; 3) Increase the Pacific cod OY from 34,800 mt to 60,000 mt and increase the Atka mackerel OY from 26,800 mt to 28,700 mt; 4) Create a new category and a Gulf-wide OY of 3,750 mt for thornyhead rockfish; 5) Establish that the Council will consider, on a case-by-case basis, the possibility of time and area closures to joint venture operations to allow a domestic processor to process the catch; (note: this provision was disapproved by the Secretary) 6) Create new domestic reporting requirements to facilitate better estimates of domestic annual harvesting and processing capabilities.
8	The amendment included six measures: 1. Change plan management year to January 1-December 31 and remove plan expiration date; 2. Set Gulfwide OY for squid, thornyhead rockfish, other rockfish, and other species; 3. Establish four species categories: target species, other species, unallocated species, and nonspecified species; 4. Establish three regulatory districts for sablefish management- Yakutat, Southeast Outside, and Southeast Inside; 5. Adjust reserve release schedule to 40% in April, 40% in June, 20% in August; allow transfer of domestic allocations to foreign Total Allowable Level of Foreign Fishing (TALFF); and 6. Require biodegradable panels on sablefish pots. A seventh measure which would have authorized the Regional Director to issue field orders to resolve gear conflicts between foreign and domestic fishermen, was disapproved by NMFS for lack of specificity on January 11, 1982.
9	The amendment replaced six small fixed gear areas around Kodiak with a larger, single closed area to prevent gear conflicts between foreign trawlers and U.S. crab fishermen and to prevent preemption of crab grounds during the crab season by foreign trawlers. It remained closed from 2 days ahead of the Kodiak king crab season, normally September 15th through February 15th.

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	The Kodiak Gear Area (a.k.a. Lechener Line) is bounded as indicated at right.
10	The amendment reduced the acceptable biological catch for POP from 29,000 mt in the Eastern Regulatory Area, to 875 mt, the OY from 14,400 mt to 875 mt, and allowed domestic and foreign fisheries 500 mt and 200 mt, respectively, for bycatch purposes. Federal waters east of 140° W were closed to all foreign fishing, and only pelagic trawling with recording net-sonde devices was allowed in waters between 140° and 147° W all year. All domestic fishing sanctuaries east of 140°W were consequently deleted as they were no longer necessary.
11	The amendment made the following changes: 1. Increased OY for pollock in the Central Area of the Gulf from 95,200 mt to 143,000 mt; 2. Divided the Yakutat district into east Yakutat (137°-140° W) and West Yakutat (140°-147° W) for sablefish management; 3. Reduced OY for sablefish from 12,300 mt to a range of 7,730-8,900 mt and apportioned it among the regulatory areas and districts; 4. Established a framework procedure for Regional Administrator to annually determine domestic (DAP) and joint venture (JVP) components of domestic annual harvest (DAH) for each species OY; 5. Eliminated the domestic non-processed (bait and personal consumption) component of DAH, combining it within the purely domestic component, DAP; 6. Increased flexibility of Regional Administrator to reapportion reserves and surplus DAH to foreign fishing (TALFF); 7. Authorized Regional Administrator to impose time-area closures on foreign nations to conserve resources; and 8. Imposed radio/telephone catch reporting requirements on domestic vessels leaving State waters to land fish outside Alaska.
12	Amendment 12 prohibited the use of pot longline gear for sablefish between 140°W longitude and Cape Addington.
13	The final regulations contained the following two actions: 1) Adjusted the management of the pollock resource by combining the Western and Central Regulatory Areas of the Gulf of Alaska for managing the pollock fisheries only; and 2) Increased the optimum yield for the combined area from 200,000 mt to 400,000 mt.
14	The amendment made the following changes: 1. Established gear/area restrictions and OY apportionments to gear types for sablefish; 2. Established a Central Southeast Outside District with 600 mt OY for demersal shelf rockfish; (cont.) 3. Changed OYs for pollock, Pacific ocean perch, other rockfish, Atka mackerel, and other species; 4. Established catcher/processor reporting requirements; 5. Implemented framework procedure for setting and revising halibut PSC limits; 6. Implemented NMFS habitat policy; and 7. Set seasons for hook and longline and pot sablefish fisheries.

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15	Regulations designated: (1) a multispecies OY as a Gulf-wide range of 116,000-800,000 mt, set a framework procedure to set target quotas for each species category, and set administrative procedures for setting PSC limits in the Gulf fishery; (2) revised recordkeeping and reporting requirements such that at-sea catcher/processor and mothership vessels must submit weekly catch reports regardless of how long their catch was retained before landing; (3) Type I, Type II and Type III areas for special bottom trawl restrictions to protect king crab. Type I areas have very high king crab concentrations and, to promote rebuilding of the crab stocks, are closed all year to all trawling except with pelagic gear. Type II areas have lower crab concentrations and are only closed to non-pelagic gear from February 15 through June 15. Type III areas are adjacent to Type I and II areas and have been identified as important juvenile king crab rearing or migratory areas. Type III areas become operational following a determination that a "recruitment event" has occurred. The Regional Administrator will classify the expanded Type III area as either Type I or II, depending on the information available. A "recruitment event" is defined as the appearance of female king crab in substantially increased numbers (when the total number of females estimated for a given district equals the number of females established as a threshold criterion for opening that district to commercial crab fishing). A recruitment event closure will continue until a commercial crab fishery opens for that district or the number of crabs drops below the threshold level for that district. The Alitak Flats/Towers and Marmot Flats areas are Type I areas, closed to non-pelagic trawls all year. Chirikof Island and Barnabas are Type II areas, closed to non-pelagic trawls from February 15 to June 15. These areas encompass 80% to 90% of the known female king crab stocks. When necessary, Type III areas will be closed by regulatory amendment; the Regional Administrator will specify which of the Type III areas are closed and whether the closure is for an entire year or only a portion of a year; (4) authority by the RD to open and close fisheries using the best available data **(Check with FR)**.
16	The regulations implemented the following provisions to the both the GOA and BSAI FMPs: 1) Augmented the current catcher/processor and mothership reporting requirements with at-sea transfer information, specifically, a Cargo Transfer/Off-Loading Log and Product Transfer Report; (cont.) 2) Revised the definition of prohibited species to include Pacific salmonids, Pacific herring, Pacific halibut, king crab, Tanner crab, and steelhead trout. Respecified the other three categories: a) Target species–pollock, Pacific cod, flounders, rockfish, and sablefish b) Other species–Atka mackerel, squid, sculpins, sharks, skates, eulachon, smelts, capelin, and octopus c) Non-specified species–those species taken incidentally in the groundfish fisheries but are not managed by the FMP. No catch records are required; 3) Required the public comment period for proposed annual specifications and prohibited species catch limits to be 30 days following the date of filing of the notice for public inspection with the Office of the Federal Register.

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	In addition, several minor regulatory changes were included that apply only to the GOA FMP: 1) the term "target quotas" for groundfish was changed to "total allowable catches"; 2) general reorganization and editing; 3) the addition of a vessel safety section; and 4) removal of the reserve category for some species of groundfish.
17	Amendment 17 required that all vessels of the U.S. receiving EEZ-caught fish would have to hold a Federal permit and thus would have to comply with the weekly reporting requirements.
18	Amendment 18 to the groundfish FMPs authorized a comprehensive domestic fishery observer program. The 1990 and 1991 Observer Plans required specific levels of observer coverage which varied with size of fishing vessel and quantity of fish processed by floating and shoreside processors. These requirements were established because it was recognized that living marine resources could not be effectively managed without the types of information that were either available only or most efficiently through an observer program. The Observer Plans required that owners and operators of vessels and shoreside processing facilities participating in the groundfish fishery arrange for and pay for the cost of placing observers aboard their vessels and at their shoreside processing facilities beginning in January, 1990. Each vessel or processor required to have observer coverage is responsible for the cost of obtaining the required observers from a certified contractor. The cost averaged between $5,800 and $7,100 per observer month in 1991. Amendment 18 also: (1) established Shelikof Strait area as a management district; (2) closed areas around Kodiak Island to bottom trawl gear; (3) established for one year, interim Pacific halibut PSC limits for fixed gear (750 mt) and trawl gear (2,000 mt); (4) deleted fishing season dates from the FMPs but retained them in regulation; and (5) clarified authority to recommend TACs for additional or fewer target species within the "target species" category.
19	The amendment implemented rules that regulated the practice of stripping roe (eggs) from female pollock and discarding female (cont.) and male pollock carcasses without further processing, and seasonally allocated the TAC of pollock. Season opening dates established were as follows for the GOA: January 1, April, July, and October, and for the BSAI: January 1 and June 1. To get at the issue of roe stripping, product recovery rate standards were established, which if exceeded would constitute a violation. The recovery rate standard established was 10 percent of the total round-weight equivalent of pollock and other pollock products onboard a vessel at any time during a fishing trip. To extrapolate round weight equivalents, the rule established product recovery rates as follows: fillet (18%), surimi (15%), mince (17%), meal (17%), and head&gut (50%).
20	The IFQ Program was approved for the Pacific halibut (via regulatory amendment) and sablefish fixed gear fisheries in the Federal waters of the BSAI and GOA, and these fisheries have been managed under the program since 1995. The regulations outline several key provisions of the program: initial allocation of quota shares (QS); vessel categories; transfer provisions; use and ownership provisions; the annual process for allocating quota shares; and the establishment of Community Development Quotas. The regulations state that legal landings of halibut or sablefish harvested with fixed gear had to occur at any time during 1988-1990 to qualify for an initial allocation of quota share. Generally, if a vessel owner or lessee is qualified, their initial quota share would be based on their highest total landing of

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	halibut for any 5 years of the 7-year base period 1984-1990. For sablefish, the initial quota share would be based on the highest total landing of sablefish for any 5 years of the 6-year base period 1985-1990. Each person eligible to receive quota share would have it assigned to one of four vessel categories: "A"-freezer vessels of any length; "B"- catcher vessels greater than 60'; "C"- catcher vessels less than or equal to 60' for sablefish, or between 35'-60' for halibut; "D"- catcher vessels less than or equal to 35' for halibut. Initial quota share would be assigned to the vessel category that a person's most recent fixed gear landings of groundfish or halibut were caught by that vessel.
21	The amendment contained 8 approved management measures; those pertaining to the GOA follow: (6) Apportioned PSC limits into bycatch allowances for trawl fishery categories; (7) Allowed separate apportionment of halibut PSC to hook and line and pot gear in the GOA; (8) Allowed seasonal allocation of halibut and crab PSC; (9) Established procedures for interim TAC specifications; (10) Established fishing gear restrictions (definition of pelagic trawl, biodegradable panels & halibut excluders on pot gear); (11) Modified authorization language that allows demersal shelf rockfish in SE Alaska to be managed by the State; (12) Established definitions of overfishing. (13) Modified PSC limits and bycatch limitation zones for halibut, bairdi crab, and red king crab in the BSAI Later revisions to the amendment included addition of a vessel incentive program, which would issue civil penalties (fines) to vessels that exceeded seasonal fixed bycatch rate standards for halibut and crab taken in specified target fisheries.
22	This amendment allows the NMFS Regional Director, after consulting with the Director of the Alaska Fishery Science Center and with the Council to authorize for limited experimental purposes, the target or incidental harvest of groundfish that would otherwise be (cont.) prohibited. The amendment also combined statistical area 68 with statistical area 65.
23	The alternative adopted and approved defined the inshore and offshore components of the fisheries. BSAI Amendment 18 was only partially approved, allocating 35% of the 1992 non-roe pollock season TAC to the inshore component, and the remaining 65% to the offshore component. The portion that was not approved would have further allocated pollock through 1995: the inshore allocation would have increased to 40% in 1993 and 45% in both 1994 and 1995. A NMFS economic review indicating a large net loss to the Nation as a result of this action provided the rationale for disapproval by the Secretary of Commerce. The GOA inshore component was allocated 90% of the Pacific cod TAC and 100% of the pollock TAC for each fishing year. While catcher/processors from the offshore component would not be able to conduct directed pollock fishing in the GOA, they would be allowed appropriate bycatch amounts.
24	Amendments 19/24 established three FMP amendment management measures. One pertained to the GOA FMP and its implementing regulations: (1) Delay the season opening date of the GOA groundfish trawl fisheries to January 20 of each fishing year to reduce salmon and halibut bycatch rates; (2) Further delay the season opening date of the GOA trawl rockfish fishery to the Monday closest to July 1 to reduce halibut and

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	chinook salmon bycatch rates; (3) Change directed fishing standards to further limit halibut bycatch associated with bottom trawl fisheries: (4) Expand the vessel incentive program to address halibut bycatch rates in all trawl fisheries.
25	Regulations authorized by this amendment implemented the following measures: (1) Areas are closed year-round to fishing by vessels using trawl gear within 10 nautical miles of key Steller sea lion rookeries located in the GOA and BSAI management areas; (2) Areas are closed within 20 nm of five sea lion rookeries to directed pollock fisheries during the "A" season. These rookeries are Sea Lion Rocks, Akun Island, Akutan Island, Seguam Island, and Agligadak Island; (3) In the GOA, the specified total allowable catch for pollock in the combined western/central area is further divided among three pollock management districts: Area 61 (170°-159° W. longitudes), Area 62 (159°-154° W. longitudes), and Area 63 (154°-147° W. longitudes). The Shelikof Strait district was eliminated. To prevent excessive accumulation of unharvested portions in any quarterly allowance of the pollock TAC, a limit of 150 percent of the initial quarterly allowance in each pollock management district was established.
26	The regulation simply made the provisions of Amendment 18 permanent. The Council designated Type I, Type II and Type III areas for special bottom trawl restrictions to protect king crab. Type I areas have very high king crab concentrations and, to promote rebuilding of the crab stocks, are closed all year to all trawling except with pelagic gear. Type II areas have lower crab concentrations and are only closed to non-pelagic gear from February 15 through June 15. Type III areas are adjacent to Type I and II areas and have been identified as important juvenile king crab rearing or migratory areas. Type III areas become operational following a (cont.) determination that a "recruitment event" has occurred. The Regional Administrator will classify the expanded Type III area as either Type I or II, depending on the information available. A "recruitment event" is defined as the appearance of female king crab in substantially increased numbers (when the total number of females estimated for a given district equals the number of females established as a threshold criterion for opening that district to commercial crab fishing). A recruitment event closure will continue until a commercial crab fishery opens for that district or the number of crabs drops below the threshold level for that district. The Alitak Flats/Towers and Marmot Flats areas are Type I areas, closed to non-pelagic trawls all year. Chirikof Island and Barnabas are Type II areas, closed to non-pelagic trawls from February 15 to June 15. These areas encompass 80% to 90% of the known female king crab stocks. When Type III areas are closed by regulatory amendment, the Regional Administrator will specify which of the Type III areas are closed and whether the closure is for an entire year or only a portion of a year.
27	This amendment allows the Secretary to promulgate regulations establishing areas where specific types of fishing gear may be tested, to be available for use when the fishing grounds are closed to that gear type. Specific gear test areas contained in regulations that implement the FMP, and changes to the regulations, will be done by regulatory amendment. These gear test areas would be established in order to provide fishermen the opportunity to ensure that their gear is in proper working order prior to a directed fishery opening. The test areas

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	must conform to the following conditions: (1) Depth and bottom type must be suitable for testing the particular gear type; (2) Must be outside State waters; (3) Must be in areas not normally closed to fishing with that gear type; (4) Must be in areas that are not usually fished heavily by that gear type; and (5) Must not be within a designated Steller sea lion protection area at any time of the year. The rule implementing this amendment established three trawl test areas: Dutch Harbor (54 º40' to 55º 00'N; 166º 00' to 167º 00W'), Sand Point (54 º35' to 54º 50'N; 160º 30' to 161º 00'W), and Kodiak (57 º23' to 57º 37'N; 151º 25' to 152º 02'W). The regulation further required that the trawl codend must be left unzipped so as not to retain fish, that groundfish may not be onboard, and that the time used to test gear would not contribute to observer coverage requirements.
28	After several proposed moratoriums and revisions, the final rule required a moratorium permit for vessels within specific vessel categories that harvest groundfish and BSAI Area crab resources off Alaska. Generally, a vessel qualified for a moratorium permit if it made a legal landing of any moratorium species during the qualifying period of January 1, 1988 through February 9, 1992. In addition, a vessel that made a legal landing during the qualifying period, in either a groundfish or crab fishery, but not both, could cross over as a new vessel in the fishery in which it did not made a legal landing in the qualifying period provided: 1) it uses the same gear type in the new fishery as it used to qualify for the moratorium in the other fishery; or 2) it made a legal landing in the crossover fishery (cont.) during the qualifying period and it uses only the same gear type it used in that period.
29	The Salmon Donation Program authorizes the distribution of Pacific Salmon taken as bycatch in the groundfish trawl fisheries in the groundfish fisheries off Alaska to economically disadvantaged individuals through NMFS authorized distributor selected by the Regional Director in accordance with federal regulations implemented under the FMP.
30	The Magnuson-Stevens Act authorized the Council and the Secretary to establish a North Pacific Fisheries Research Plan which: (1) requires that observers be stationed on fishing vessels and at fish processing facilities, and (2) establishes a system of fees to pay for the cost of implementing the Research Plan. The Research Plan, as adopted under this amendment, contained four objectives and elements that included observer employment and contracts, observer duties, data collection and transmission, annual determination on coverage level, inseason changes to coverage levels, establishment of an observer oversight committee, coordination between the NMFS groundfish and ADF&G shellfish observer programs, a fee assessment (up to 2% of ex-vessel value of harvested fish), and details on fee collection and contingency plans in case of funding shortfalls.
31	Amendment 31 created a separate target category for Atka mackerel in the GOA groundfish FMP. This meant that harvest levels of Atka mackerel would be based on biological stock assessments. Although the catch would primarily occur in the Western Gulf, TAC's for Atka mackerel would be set Gulfwide to avoid waste and discarding of the small amount caught in the other subareas. The species composition of the other species category would remain the same, with the exception of Atka mackerel. TACs for other species in the GOA would increase to include 5% of the TAC for Atka mackerel.

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32	The alternative chosen was projected in modeling simulations to rebuild POP biomass to a target level (B_{MSY}) in about 14 years by harvesting POP at a fishing mortality rate lower than the optimum rate. The target biomass B_{MSY} is the total biomass of mature females that would produce the maximum sustainable yield, on average; this number is currently estimated at 150,000 mt. The optimal fishing mortality rate is the rate that maximizes expected biological and economic yields over a range of plausible stock-recruitment relationships. Amendment 32 establishes the procedure for deriving the annual GOA TACs for POP. POP stocks are considered to be rebuilt when the total biomass of mature females is equal to, or greater than, B_{MSY}. Annual TACs will be established as follows: 4) determine the current biomass, B_{MSY}, and the optimal fishing mortality rate; 5) determine the fishing mortality rate halfway between the optimal fishing mortality rate and the fishing mortality rate estimated to be sufficient to supply unavoidable bycatch of POP based on 1992 bycatch rates; 6) when the current biomass of mature females is less than B_{MSY}, adjust the resultant fishing mortality rate in (b) by the ratio of current biomass to B_{MSY}. When B_{MSY} is attained, the fishing mortality rate will be the optimal fishing mortality rate; 7) the GOA TAC of POP is the amount of fish resulting from the adjusted fishing mortality rate in (c); and 8) the TAC is apportioned among regulatory areas in proportion to POP biomass distribution.
33	None listed
34	The alternative adopted and approved raised the sablefish Community Development Quota allocation limit for qualified applicants from 12% to 33% in order to allow total allocation of the sablefish CDQ reserve; removed the inadvertent inclusion of the CDQ program in the FMP for the GOA; and expanded the types of evidence that may be used to verify vessel leases for the halibut and sablefish individual fishing quota program. It was emphasized that this action did not change the amount of sablefish available for harvest by persons participating in the Pacific halibut and sablefish IFQ program.
35	The alternative adopted and approved provided that initial allocations of quota share that represent less than 20,000 lb of IFQ in the implementation year will be issued as a block, 2) quota share that represents 20,000 lb or more of IFQ in the implementation year will be "unblocked" quota share, and 3) quota share in a block cannot be separated and will have to be transferred as a block. Fishermen could own two blocks of halibut and two blocks of sablefish quota share in each area, but persons holding any amount of unblocked quota share are limited to one block of quota share per area. A sweep up provision allowed fishermen to combine small amounts into fishable amounts: halibut blocks can be combined to a sum of less than 1,000 lbs and sablefish blocks can be combined until the sum reaches 3,000 lbs. The amendment also clarified that blocked and unblocked quota share would be transferable subject to the approval of the NMFS Regional Director and the regulations. The Modified Block Proposal created the potential that some quota share would become non-transferable because the size would exceed the quota share use limits established in 50 CFR 676.22 (e) and (f); the alternative adopted solved the issue of nontransferability by allowing the transfer of a quota share block exceeding the use limits by dividing the block into two blocks.
36	The amendment exempted some CDQ compensation QS from the block provision and allowed for a one year period of relief (one-time transfer) from the restriction against transferring CDQ compensation QS across vessel length categories. Regulations state that if a

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	person is issued CDQ compensation QS for an area where the person already has regular QS, then their CDQ compensation QS is combined with their existing QS and is either "blocked" or "unblocked" depending on the sum total of their QS (this makes much of the CDQ compensation QS unidentifiable after issuance). If a person is issued CDQ compensation QS for an area in which the person doesn't have other QS, the QS is left unblocked. The exemption does not include Category "A" vessels–vessels of any length authorized to process IFQ species.
37	The alternative adopted and approved authorized the processing of fish other than IFQ halibut or IFQ sablefish on board the harvesting vessel by persons authorized to harvest IFQ sablefish based on an annual allocation of IFQ assigned to vessel categories B or C. This authorization is not extended to persons authorized to harvest IFQ halibut, due to the fact that halibut is characteristically prosecuted by local vessels that do not have onboard processing capabilities. Several modifications were also made to the regulations implementing the IFQ program in order to accommodate the new provision. In addition, while non-IFQ species could be frozen onboard, the freezing of IFQ sablefish caught with catcher vessel quota share on a freezer vessel would continue to be prohibited.
38	The alternative adopted and approved allowed the Council to recommend a POP total allowable catch at or below the amount (cont.) dictated by the formula in the Rebuilding Plan. The regulations specify that any downward adjustments would be based on biological or resource conservation concerns about the POP stock or associated with the POP fishery that are not accounted for in the Rebuilding Plan or the annual stock assessment reports. The amendment only gives the Council the alternative of recommending a lower POP TAC based on resource conservation concerns, and not socioeconomic concerns. Under Amendment 38, the formula in the Rebuilding Plan would be considered the upper bound limit for the POP TAC.
39	This amendment defined a forage fish species category and authorized that the management of this species category be specified in regulations in a manner that prevents the development of a commercial directed fishery for forage fish which are a critical food source for many marine mammal, seabird and fish species. Forage fish species are not included in a target species category. Management measures for the forage fish category will be specified in regulations and may include prohibitions on directed fishing, limitations on allowable bycatch retention amounts, or limitations on the sale, barter, trade or any other commercial exchange, as well as the processing of forage fish in a commercial processing facility. The forage fish species category would include all species of the following families: Osmeridae (eulachon, capelin and other smelts), Myctophidae (lanternfishes), Bathylagidae (deep-sea smelts), Ammodytidae (Pacific sand lance), Trichodontidae (Pacific sand fish), Pholidae (gunnels), Stichaeidae (pricklebacks, warbonnets, eelblennys, cockscombs and shannys), Gonostomatidae (bristlemouths, lightfishes, and anglemouths), and the Order Euphausiacea (krill).

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40	The provisions of BSAI Amendment 18 became the basis of Amendment 38, and the provisions of GOA Amendment 23 became the basis for Amendment 40. Thus, in the BSAI the apportionments of pollock in each subarea and season would be allocated 35% for processing by the inshore sector and 65% by the offshore sector. In the GOA, the apportionment of pollock would be allocated entirely for processing by the inshore sector, and the apportionment of Pacific cod would be allocated 90% for the inshore sector, 10% for the offshore sector.
41	The final rule limited access to the commercial groundfish fisheries in the BSAI and GOA and commercial crab fisheries in the BSAI, except for demersal shelf rockfish east of 140° W. longitude and sablefish managed under the IFQ program. The rule provided for the following: issuance of a single type of groundfish license; LLP is not applicable to waters of the State of Alaska; licenses would be issued to current owners (as of 6/17/95) of qualified vessels; licenses would be designated as catcher vessel or catcher/processor and with one of three vessel length classes; the crab and groundfish base qualifying period is 1/1/88-6/27/92 and the groundfish area (cont.) endorsement qualifying period is 1/1/92-6/17/95; endorsement areas are defined as Aleutian Islands, Bering Sea,Western Gulf Central Gulf, and Southeast Outside, or state waters shoreward of those endorsement areas; landing requirements for general license and area endorsement qualifications by vessel class; and additional provisions addressing crossover vessels, transfers, and vessel linkages. The rule also included in CDQ allocations 7.5% of the TAC of groundfish and crab in the BSAI that was not originally included in the CDQ programs for pollock, halibut, and sablefish.
42	Amendment 42 and a regulatory amendment to the IFQ Program for fixed gear Pacific halibut and sablefish fisheries in and off Alaska allowed QS initially assigned to a larger vessel category to be used on smaller vessels, while continuing to prohibit the use of QS or its associated IFQ assigned to smaller vessel categories on larger vessels. QS will continue to be assigned to vessel categories by existing criteria and will retain original vessel category assignments. However, halibut and sablefish QS and their associated IFQ assigned to vessel Category B can be used on vessels of any size and halibut QS assigned to vessel Category C likewise can be used on vessels of categories C and D. The regulations continue to prohibit the use of QS and IFQ on vessels larger than the maximum length on average (LOA) of the category to which the QS was originally assigned. It does not apply to halibut in IFQ regulatory areas 2C or to sablefish east of 140 °. W. long. Halibut QS assigned to vessel Category B in IFQ regulatory areas 2C and sablefish QS east of 140°W. long. are prohibited from use on vessels less than or equal to 60 ft (18.3 m) LOA except in QS blocks equivalent to less than 5,000 lb (2.3 mt) based on the 1996 Total Allowable Catch (TAC).
43	Amendment 43 would increase the sweep-up levels for small QS blocks for Pacific halibut and sablefish from the current 1,000 lb (0.45 mt) maximum for Pacific halibut and 3,000 lb (1.4 mt) maximum for sablefish to a 3,000 lb (1.4 mt) maximum and a 5,000 lb (2.3 mt) maximum, respectively. Two other changes were recommended to accompany these increases: 9) The base year TAC for determining the pounds would be the 1996, rather than 1994, TAC which was used for the first sweep-up levels; 10) Once QS levels are established for the appropriate regulatory areas based on the 1996 TAC, those QS levels would be fixed and codified. This would eliminate any confusion as to the appropriate sweep-up level in pounds, which would fluctuate with changes in the annual TAC.

Table 2.2. Amendments to the Fishery Management Plan for Groundfish of the Gulf of Alaska.

44	Amendment 44 provided for more conservative definitions of ABC and OFL. The fishing mortality rate used to calculate ABC was capped by the overfishing rate. The maximum allowable fishing rates were prescribed through a set of 6 tiers which are listed in descending order of preference, corresponding to descending information availability. These tiers are shown in the adjacent table. Harvest rates used to establish ABCs are reduced at low stock size levels, thereby allowing rebuilding of depleted stocks. If the biomass of any stock falls below Bmsy or $B_{40\%}$ (the long-term average biomass that would be expected under average recruitment and $F=F_{40\%}$), the fishing mortality is reduced relative to stock status. This serves as an implicit rebuilding plan should a stock fall below a reasonable abundance level.
45	Amendment 45 authorized seasonal allowances of pollock total allowable catch (TAC) to be specified for the combined (cont.) Western/Central (W/C) Regulatory Areas of the Gulf of Alaska. The third and fourth quarterly allowances of pollock TAC were combined in the W/C areas into a single seasonal allowance that would be available on September 1. Therefore, the pollock TACs were divided into three seasonal allowances: 25% of TAC available on January 1, 25% of TAC available on June 1, and 50% of TAC available on September 1. This action complemented a regulatory amendment to delay the start of the Bering Sea pollock "B" season from August 15 to September 1 starting in 1996.
46	Amendment 46 removed black and blue rockfishes from the FMP. No additional regulations were promulgated.
47	Withdrawn
48	This amendment was not formally submitted to the Secretary and no regulations have been implemented.
49	Amendment 49 requires all vessels fishing for groundfish in the Gulf of Alaska to retain all pollock and Pacific cod beginning January 1, 1998, and all shallow water flatfish beginning January 1, 2003. It established a 15-percent minimum utilization standard for all at-sea processors.
50	This action authorized the voluntary donation of Pacific halibut taken as bycatch in specified groundfish trawl fisheries off Alaska to economically disadvantaged individuals. Under the prohibited species donation program, NMFS expanded the existing salmon donation program to also authorize distribution by tax-exempt organizations through a NMFS-authorized distributor. The program is limited to dead halibut by trawl catcher vessels and delivered to shoreside processors.
51	As adopted by the Council in June 1998, this amendment reestablishes, without change, the current inshore/offshore allocation regime in the GOA through December 31, 2001. The amendment maintains the current allocation: 100% of the pollock TAC to the inshore component, and 90% of the Pacific cod TAC to the inshore component and 10% to the offshore component.
52	Under a vessel registration program, NMFS would establish criteria to determine which fisheries would require registration. Based on these criteria, NMFS would create a roster of "registration fisheries" that would be announced at the beginning of each year and supplemented as necessary on an inseason basis throughout the year. Criteria for establishing a registration requirement for a fishery could include:

Table 2.2. Amendments to the Fishery Management Plan for Groundfish of the Gulf of Alaska.

	1) the size of the TAC amount or PSC limit specified for the fishery relative to the degree of interest in that fishery, (2) a fishery for which the TAC or PSC limit was exceeded by a significant amount in the previous year and the current year's quota and expected effort are similar, (3) a fishery for which the above two criteria may not apply but an expanded interest has developed inseason, and (4) a "mop-up" fishery. Vessel operators would be required to register with NMFS a certain number of days before beginning directed fishing in a (cont.) registration fishery and penalties would be established for non-compliance.
53	Regulations have not yet been drafted. They will require full retention of DSR in the fixed gear fisheries in GOA Regulatory Area 650: (1) eliminate the maximum retainable bycatch (MRB) limit for DSR; (2) require that all DSR caught by Federally-permitted vessels using fixed gear in the Southeast Outside District be retained, landed, weighed and reported; (3) limit the amount of DSR that may be sold to an amount that is no more than 10 percent of other retained catch; and (4) fishermen may do one or all of the following with amounts of DSR that are in excess of the amount that may be sold: 1. voluntarily surrender to the State of Alaska amounts of DSR that are in excess of the amount that may be sold; 2. retain amounts of DSR that are in excess of the amount that may be sold for personal use; or 3. donate amounts of DSR that are in excess of the amount that may be sold to a state-recognized charity that provides meals for the homeless, the needy, the sick or infirm, or the elderly.
54	Regulations have not yet been drafted.
55	The alternative adopted and approved defined EFH as all habitat within a general distribution for a species life stage, for all information levels and under all stock conditions. A general distribution area is a subset of a species range. For any species listed under the Endangered Species Act, EFH includes all areas identified as "critical habitat". EFH was described in text, tables, and maps. Habitat areas of particular concern were identified as living substrates in shallow and deep waters, and freshwater habitats used by anadromous fish.
56	Amendment 56 revised the ABC and overfishing definitions set under Amendment 44 to be more precautionary. Like Amendment 44, the maximum allowable rates are prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. For most tiers, ABC is based on $F_{40\%}$, which is the fishing mortality rate associated with an equilibrium level of spawning per recruit (SPR) equal to *40%* of the equilibrium level of spawning per recruit in the absence of any fishing. To further minimize the possibility of catches jeopardizing a stock's long term productivity, there is a buffer established between ABC and OFL. Amendment 56 modified the OFL definition from $F_{30\%}$ to $F_{35\%}$ for stocks having tiers 2-4 information.
57	The final rule simply extended the Vessel Moratorium Program and the existing moratorium permits through December 31, 1999. The regulation also provided that no person could apply for a new moratorium permit after the original moratorium program expiration date of

Table 2.2. Amendments to the Fishery Management Plan for Groundfish of the Gulf of Alaska.

	December 31, 1998, unless the application was based on a moratorium qualification that was used as a basis for obtaining a moratorium permit issued on or before that date.
58	Five changes were adopted and approved under these amendments: 1) a requirement that the vessel itself would be a specific characteristic of the license and could not be severed (i.e., the license could not be used on any other vessel); 2) license (cont.) designations for the type of gear authorized to harvest LLP groundfish as either "trawl" or "non-trawl" gear (or both); 3) recision of the Community Development Quota (CDQ) exemption and thus the requirement that CDQ vessels hold a crab or groundfish license; 4) the addition of a crab recency requirement which requires one landing during 1/1/96-2/7/98 in addition to the general license and area endorsement qualifications; and 5) allowance of limited processing (1 mt) for vessels <60' LOA with catcher vessel designations. The most significant addition under these amendments was the recent participation requirement of at least one landing in the king and Tanner crab fisheries between January 1, 1996 and February 7, 1998, which applied only to the base qualifying period under the crab LLP.
59	Amendment 59 would prohibit fishing in an area containing important fish habitat, totaling 3.1 square nautical miles, off Cape Edgecumbe near Sitka, Alaska. This closure would apply to commercial, sport, charter, bycatch and subsistence fisheries for all species of bottomfish and halibut, and boat anchoring to prevent habitat degradation, and to create a groundfish refuge. The area is defined by a square, with lines connecting the following points in a clockwise manner: 56°55.5' N L following, 135°54' N L clockwise 56°57' N Latitude.,135°54' N Longitude; 56°57' N Latitude,135°57' N Longitude; 56°55.5' N Latitude, 135°57' N Longitude.
61	Regulations establish the sector allocations of pollock, define the eligible vessels and processors, define the vessel/processor co-op linkages (which vessels are eligible for which co-ops), make allocations of the pollock TAC among each of the co-ops, and define the sideboard amounts of crab and non-pollock groundfish (based on historical share) that can be harvested and processed by the AFA operators, in both the BSAI and the GOA. Additionally, the regulations extend the GOA inshore/offshore allocations under Amendment 51 through 2004.
65	At the April 2000 meeting, the Council took final action on Harvest Control measures of HAPC Part 1. The Council adopted alternative 2 of the analysis which will add corals and sponges to the prohibited species category. This action will essentially split prohibited species into two types: the first type will continue to allow no retention for halibut, salmon, and crab species, and the second type would include only corals and sponges as prohibited species whose management would be specified in the regulations. The HAPC prohibited species will allow retention, but will prohibit the sale, barter, trade or processing of corals and sponges. Kelp (including rockweed), and mussels would not be subject to any management actions at this time. This action will apply to both the Bering Sea and Gulf of Alaska groundfish fisheries in the EEZ; other fisheries may be considered for HAPC biota protection in the future. The Council will relay concerns to the Alaska Board of Fisheries regarding protection of HAPC biota in state waters.

Table 2.3. Species categories listed in the BSAI FMP.

Target	Prohibited	Other	Forage fish	Nonspecified	
Finfishes					
Pollock	Pacific halibut	Sculpins	Osmeridae (eulachon, capelin, and other smelts)	Eelpouts (Zoarcidae)	
Pacific cod	Pacific herring	Sharks	Myctophidae (lanternfishes)	Poachers (Agonidae) and alligator fish	
Atka mackerel	Pacific salmon	Skates	Bathylagidae (deep-sea smelts)	Snailfish, lumpfishes, lumpsuckers (Cyclopteridae)	
Sablefish	Steelhead		Ammodytidae (Pacific sand lance)	Rattails (Macrounidae)	
Pacific ocean perch	Other rockfishes		Trichodontidae (Pacific sand fish)	Ronquils, searchers (Bathymasteridae)	
Capelin			Pholidae (gunnels)	Lancetfish (Alepisanvidae)	
Yellowfin sole			Stichaeidae (pricklebacks, warbonnets, eelblennys, cockscombs, and shannys)	Prowfish	
Turbots			Gonostomatidae (bristlemouths, lightfishes, and anglemouths)	Hagfish	
Other flatfishes				Lampreys	
Invertebrates					
King crab	Squids	Octopus	Krill (Euphausiacea)	Anemones	Jellyfish
Tanner crab				Starfishes	Tunicates
				Egg cases	Sea cucumber
				Sea mouse	Sea pen
				Sea slug	Isopods
				Sea potato	Barnacles
				Sand dollar	Polychaetes
				Hermit crab	Crinoids
				Mussels	Crab - unidentified
				Sea urchins	Sponge - unidentified

Table 2.4. Final TAC specifications for 1999 and 2000 BSAI groundfish fisheries.

Species	Area	2000 Biomass	2000 OFL	2000 ABC	2000 TAC	1999 TAC	1999 Catch
Pollock	EBS	7,700,000	1,680,000	1,139,000	1,139,000	992,000	884,133
	A+B seasons					40%	
	C+D seasons					60%	
	AI	106,000	31,700	23,800	2,000	2,000	1,003
	Bogoslof	475,000	30,400	22,300	1,000	1,000	21
Pacific cod	BS/AI	1,300,000	240,000	193,000	193,000	177,000	160,084
Yellowfin sole	BS/AI	2,820,000	226,000	191,000	123,262	207,980	67,392
Greenland turbot	BS/AI	233,000	42,000	9,300	9,300	9,000	
	BS			67%	67%	67%	5,315
	AI			33%	33%	33%	461
Arrowtooth	BS/AI	785,000	160,000	131,000	131,000	134,354	10,679
Rock sole	BS/AI	2,070,000	273,000	230,000	134,760	120,000	40,362
Flathead sole	BS/AI	611,000	90,000	73,500	52,652	77,300	17,777
Other flatfish	BS/AI	829,000	141,000	117,000	83,813	154,000	15,184
Sablefish	EBS	18,000	1,750	1,470	1,470	1,340	628
	AI	33,000	3,090	2,430	2,430	1,380	529
POP complex							
True POP	EBS	47,700	3,100	2,600	2,600	1,400	376
Other POP	EBS	8,200	259	194	194	267	217
True POP	AI	192,000	14,400	12,300	12,300	13,500	
	Eastern			3,120	3,120	3,430	2,416
	Central			3,510	3,510	3,850	2,815
	Western			5,670	5,670	6,220	6,545
Sharp/Northern	AI	115,000	6,870	5,150	5,150	4,230	5,181
Short/Rougheye	AI	41,500	1,180	885	885	965	474
Other rockfish	EBS	7,030	492	369	369	369	137
	AI	13,000	913	685	685	685	632
Atka mackerel	AI	565,000	119,000	70,800	70,800	66,400	
	Eastern			16,400	16,400	17,000	15,893
	Central			24,700	24,700	22,400	21,443
	Western			29,700	29,700	27,000	15,626
Squid	BS/AI	n/a	2,620	1,970	1,970	1,970	413
Other species	BS/AI	611,000	71,500	31,360	31,360	32,860	18,396
BS/AI TOTAL		**18,580,430**	**3,203,874**	**2,260,113**	**2,000,000**	**2,000,000**	**1,223,618**

EBS = eastern Bering Sea
BS/AI = Bering Sea & Aleutians
BS = Bering Sea
AI = Aleutian Islands

OFL = Overfishing Level
ABC = Acceptable Biological Level
TAC = Total Allowable Catch

* (A/B):(C/D) season split for CDQ is 45%:55%
** AI pollock TAC is for bycatch only

Table 2.5. Species categories listed in the GOA FMP. A fifth category exists for foreign prohibited species, consisting of all of the listed species and other unallocated species.

Target	Prohibited Domestic	Other	Forage fish
Pollock	Pacific halibut	Squid	Osmeridae family (eulachon, capelin, and other smelts)
Pacific cod	Pacific herring	Sculpins	Myctophidae family (lanternfishes)
Atka mackerel	Pacific salmon	Sharks	Bathylagidae family (deep-sea smelts)
Rockfish	Steelhead trout	Skates	Ammodytidae family (Pacific sand lance)
- Other slope	King crab	Octopus	Trichodontidae family (Pacific sand fish)
- Demersal shelf	Tanner crab		Pholidae family (gunnels)
- Pelagic shelf			Stichaeidae family (pricklebacks, warbonnets, eelblennys, cockscombs and shannys)
- Northern rockfish			Gonostomatidae family (bristlemouths, lightfishes, and anglemouths)
- Thornyhead rockfish			Order Euphausiacea (krill)
- Shortraker/rougheye			
- Pacific ocean perch			
Flatfish			
- Deep water			
- Shallow water			
- Flathead sole			
- Rex sole			
- Arrowtooth			
Sablefish			

Table 2.6. Final TAC specifications for 1999 and 2000 GOA groundfish fisheries.

Species	Area	2000 Biomass	2000 OFL	2000 ABC	2000 TAC	1999 TAC	1999 Catch
Pollock	W (61)			38,350	38,350	23,120	23,387
	C (62)	588,000	130,760	22,820	22,820	38,840	38,135
	C (63)		(EYAK/SEO)	30,030	30,030	30,520	30,095
	WYAK	28,710		2,340	2,340	2,110	1,759
	EYAK/SEO		8,610	6,460	6,460	6,330	4
	Total	616,710	139,370	100,000	100,000	100,920	93,380
Pacific Cod	W			27,500	20,625	23,630	23,154
	C			43,550	35,165	42,935	44,559
	E			5,350	4,010	1,270	857
	Total	567,000	102,000	76,400	59,800	67,835	68,570
Flatfish, Deep Water	W			280	280	240	22
	C			2,710	2,710	2,740	1,865
	WYAK			1,240	1,240	1,720	389
	EYAK/SEO			1,070	1,070	1,350	9
	Total	74,370	6,980	5,300	5,300	6,050	2,285
Rex Sole	W			1,230	1,230	1,190	603
	C			5,660	5,660	5,490	2,391
	WYAK			1,540	1,540	850	41
	EYAK/SEO			1,010	1,010	1,620	22
	Total	74,600	12,300	9,440	9,440	9,150	3,057
Shallow water flatfish	W			19,510	4,500	4,500	252
	C			16,400	12,950	12,950	2,282
	WYAK			790	790	250	6
	EYAK/SEO			1,160	1,160	1,070	5
	Total	299,100	45,330	37,860	19,400	18,770	2,545
Flathead Sole	W			8,490	2,000	2,000	184
	C			15,720	5,000	5,000	680
	WYAK			1,440	1,440	1,270	16
	EYAK/SEO			620	620	770	11
	Total	207,520	34,210	26,270	9,060	9,040	891
Arrowtooth	W			16,160	5,000	5,000	3,656
	C			97,710	25,000	25,000	11,787
	WYAK			23,770	2,500	2,500	383
	EYAK/SEO			7,720	2,500	2,500	236
	Total	1,571,670	173,910	145,360	35,000	35,000	16,062
Sablefish	W			1,840	1,840	1,820	1,487
	C			5,730	5,730	5,590	5,828
	E/WYAK			5,760	2,207	2,090	1,704
	EYAK/SEO				3,553	3,200	3,080
	Total	169,000	16,660	13,300	13,300	12,700	12,099
Other slope rockfish	W			20	20	20	40
	C			740	740	650	615
	WYAK			250	250	470	122
	EYAK/SEO			3,890	3,890	4,130	12
	Total	102,510	6,390	4,900	4,900	5,270	789
Northern rockfish	W			630	630	840	573
	C			4,490	4,490	4,150	4,825
	E			0	0	0	0
	Total	85,360	7,510	5,120	5,120	4,990	5,398
Pacific Ocean Perch	W		1,460	1,240	1,240	1,850	1,935
	C		10,930	9,240	9,240	6,760	7,914
	WYAK			840	840	820	627
	EYAK/SEO		3,000	1,700	1,700	3,160	0
	Total	200,310	15,390	13,020	13,020	12,590	10,476

Table 2.6. cont.

Species	Area	2000 Biomass	2000 OFL	2000 ABC	2000 TAC	1999 TAC	1999 Catch
Shortraker/Rougheye	W			210	210	160	194
	C			930	930	970	577
	E			590	590	460	531
	Total	70,880	2,510	1,730	1,730	1,590	1,302
Pelagic shelf rockfish	W			550	550	530	130
	C			4,080	4,080	3,370	3,835
	WYAK			580	580	740	672
	EYAK/SEO			770	770	240	20
	Total	66,440	9,040	5,980	5,980	4,880	4,657
Demersal shelf rockfish		15,100	420	340	340	560	262
Atka Mackerel	Gulfwide	unknown	6,200	600	600	600	262
Thornyhead	W			430	430	260	282
	C			990	990	700	582
	E			940	940	1,030	410
	Total	52,950	2,820	2,360	2,360	1,990	1,274
Other Species	Gulfwide	NA	NA	NA	14,270	14,600	3,735
GULF OF ALASKA	**TOTAL**	4,173,520	581,040	431,410	299,650	306,535	227,044

WYAK = Western Yakutat
EYAK = Eastern Yakutat
SEO = Southeast Outside

OFL = Overfishing Level
ABC = Acceptable Biological Catch
TAC = Total Allowable Catch

1999 Catch as of 11/6/99

Table 2.7. Survey CVs by species/species groups. (EBS = eastern Bering Sea, AI = Aleutian Islands.)

Species or species group	FMP/Area	Survey type	Survey CV	Assessment method	ABC/OFL tier
Alaska Plaice	BSAI	Bottom trawl	12%	AD model builder	3a
Arrowtooth flounder	BSAI	Bottom trawl	12%	Stock synthesis	3a
Arrowtooth flounder	GOA	Bottom trawl	9%	AD model builder	3a
Atka mackerel	BSAI	Bottom trawl	38%	Stock synthesis	3a
Deepwater flatfish	GOA	Bottom trawl	9%	Survey index	--
Flathead sole	GOA	Bottom trawl	12%	AD model builder	5
Flathead sole	BSAI	Bottom trawl	11%	Stock synthesis	3a
Greenland turbot	BSAI	Bottom trawl	31%	Stock synthesis	3a
Northern rockfish	GOA	Bottom trawl	41%	Survey index	4
Octopus	GOA	Bottom trawl	48%	Survey index	5
Other red rockfish	EBS	Bottom trawl	33%	Survey index	5
Other rockfish	AI	Bottom trawl	18%	Survey index	5
Other rockfish	EBS	Bottom trawl	15%	Survey index	5
Other slope rockfish	GOA	Bottom trawl	21%	Survey index	--
Other flatfish	BSAI	Bottom trawl	26%	Survey index	3a
Pacific ocean perch	BSAI	Bottom trawl	35%	Stock synthesis	3b
Pacific ocean perch	GOA	Bottom trawl	30%	Stock synthesis	3b
Pacific cod	BSAI	Bottom trawl	9%	Stock synthesis	3b
Pacific cod	GOA	Bottom trawl	15%	Stock synthesis	3a
Pacific ocean perch	BSAI	Bottom trawl	21%	Stock synthesis	3b
Pelagic rockfish	GOA	Bottom trawl	39%	Survey index	4
Pollock	AI	Bottom trawl	19%	Survey index	5
Pollock	GOA	Bottom trawl/EIT	19%	AD model builder	3b
Pollock	Southeast	Bottom trawl	33%	Survey index	--
Pollock	EBS	Bottom trawl/EIT	23%	AD model builder	1a
Rex sole	GOA	Bottom trawl	9%	Survey index	5
Rock sole	BSAI	Bottom trawl	8%	AD model builder	3a
Sablefish	GOA	Longline	10%	AD model builder	3b
Sculpins	GOA	Bottom trawl	15%	Survey index	5
Shallow flatfish	GOA	Bottom trawl	15%	Survey index	5
Sharks	GOA	Bottom trawl	26%	Survey index	5
Sharpchin/Northern	BSAI	Bottom trawl	28%	Survey index	5
Shortraker/Rougheye	GOA	Bottom trawl	15%	Survey index	--
Shortraker/Rougheye	BSAI	Bottom trawl	32%	Survey index	5
Shortspine thornyhead	GOA	Bottom trawl	13%	Survey index	3a
Skates	GOA	Bottom trawl	13%	Survey index	5
Smelts	GOA	Bottom trawl	14%	Survey index	5
Squid	GOA	Bottom trawl	17%	Survey index	6
Yellowfin sole	BSAI	Bottom trawl	10%	AD model builder	3a

Table 2.8. Maximum retainable incidental catch amounts (expressed as percentages) for the BSAI. (na = not applicable)

Target species	Incidental catch species														
	Pollock	**Pacific cod**	**Atka mackerel**	**Arrow-tooth**	**Yellowfin sole**	**Other flatfish**	**Rock-sole**	**Flathead Sole**	**Greenland turbot**	**Sable-fish**	**Raker/ rougheye (AI)**	**Aggregated rockfish**	**Squid**	**Forage fish**	**Other species**
Pollock	na	20	20	35	20	20	20	20	1	1	2	5	20	2	20
Pacific cod	20	na	20	35	20	20	20	20	1	1	2	5	20	2	20
Atka mackerel	20	20	na	35	20	20	20	20	1	1	2	5	20	2	20
Arrowtooth	0	0	0	na	0	0	0	0	0	0	0	0	0	2	0
Yellowfin sole	20	20	20	35	na	35	35	35	1	1	2	5	20	2	20
Other flatfish	20	20	20	35	35	na	35	35	1	1	2	5	20	2	20
Rocksole	20	20	20	35	35	35	na	35	1	1	2	5	20	2	20
Flathead sole	20	20	20	35	35	35	35	na	35	15	7	15	20	2	20
Greenland turbot	20	20	20	35	20	20	20	20	na	15	7	15	20	2	20
Sablefish	20	20	20	35	20	20	20	20	35	na	7	15	20	2	20
Other rockfish	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
Other red rockfish BS	20	20	20	35	20	20	20	20	35	15	na	15	20	2	20
Pacific Ocean perch	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
Sharpchin/Northern-AI	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
Shortraker/Rougheye-AI	20	20	20	35	20	20	20	20	35	15	na	15	20	2	20
Squid	20	20	20	35	20	20	20	20	1	1	2	5	na	2	20
Other species	20	20	20	35	20	20	20	20	1	1	2	5	20	2	na
Aggregated amount	20	20	20	35	20	20	20	20	1	1	2	5	20	2	20

Table 2.9. Maximum retainable incidental catch amounts (expressed as percentages) for the GOA. (na = not applicable)

Target species	Incidental catch species													
	Pollock	**Pacific cod**	**Deep flatfish**	**Rex sole**	**Flathead sole**	**Shallow flatfish**	**Arrow-tooth**	**Sable-fish**	**Aggregated rockfish**	**Raker/ rougheye, eastern GOA**	**Demersal shelf rockfish/ SEO**	**Atka mackerel**	**Aggregated forage fish**	**Other species**
Pollock	na	20	20	20	20	20	35	1	5	(7)	10	20	2	20
Pacific cod	20	na	20	20	20	20	35	1	5	(7)	10	20	2	20
Deep flatfish	20	20	na	20	20	20	35	7	15	7	1	20	2	20
Rex sole	20	20	20	na	20	20	35	7	15	7	1	20	2	20
Flathead sole	20	20	20	20	na	20	35	7	15	7	1	20	2	20
Shallow flatfish	20	20	20	20	20	na	35	1	5	(7)	10	20	2	20
Arrowtooth	5	5	0	0	0	0	na	0	0	0	0	0	2	0
Sablefish	20	20	20	20	20	20	35		15	7	1	20	2	20
Pacific ocean perch	20	20	20	20	20	20	35	7	15	7	1	20	2	20
Shortraker/rougheye	20	20	20	20	20	20	35	7	15	na	1	20	2	20
Other rockfish	20	20	20	20	20	20	35	7	15	7	1	20	2	20
Northern rockfish	20	20	20	20	20	20	35	7	15	7	1	20	2	20
Pelagic rockfish	20	20	20	20	20	20	35	7	15	7	1	20	2	20
DSR-SEO	20	20	20	20	20	20	35	7	15	7	na	20	2	20
Thornyhead	20	20	20	20	20	20	35	7	15	7	1	20	2	20
Atka mackerel	20	20	20	20	20	20	35	1	5	(7)	10	na	2	20
Other species	20	20	20	20	20	20	35	1	5	(7)	10	20	2	na
Aggregated amount of non-groundfish species	20	20	20	20	20	20	35	1	5	(7)	10	20	2	20

Table 2.10. Regulatory allocations of 2000 TAC specifications in the BSAI.

Species[1]	Gear	Season	Other Allocations and Reserves
Pollock[2]	None	Season dates (outside SCA) %TAC A season: 1/20 to 4/1 30% B season: 4/1 to 6/10 10% C season: 6/10 to 8/20 30% D season: 8/20 to Nov 1 30%	CDQ 10% Incidental bycatch 5% Of the remaining TAC: Inshore 50% Mothership 10% Catcher/proc. 40%
Pacific cod	Jig 2% Hook-&-line/pot 51% Trawl 47%	1/1 to 4/30–-First allowance [71%][3] 5/1 to 8/31--Second allowance [0%] 9/1 to 12/31--Third allowance [29%] (hook-and-line/pot allocation only) Proportion recommended annually by Council	Trawl allocation is split: Catcher vessels 50% Catcher/processors 50% 7.5% of TAC to CDQ reserve
Sablefish	Bering Sea Hook&line/pot[4] 50% Trawl 50% Aleutian Islands Hook&line/pot[4] 75% Trawl 25%	1/20 to 12/31--for trawl gear 1/1 to 12/31--for non-trawl gear4	20% of hook-&-line/pot allocation to CDQ reserve 7.5% of trawl allocation to CDQ reserve
Atka mackerel	Jig gear - up to 2% of eastern AI and Bering Sea TAC. Amount recommended annually by Council	Season dates Trawl A season: 1/20 to 4/15 Trawl B season: 9/1 to 11/1 1/1 to 12/31--for non-trawl gear	Trawl allocation split A season 50% B season 50% 7.5% of TAC to CDQ reserve
Greenland turbot	None	5/1 to 12/31	7.5% of TAC to CDQ reserve
All other Species	None	1/20 to 12/31--for trawl gear 1/1 to 12/31--for non-trawl gear	7.5% of TAC to CDQ reserve

Notes: 1 = Except for pollock and sablefish, 25 % of each initial TAC (TAC minus reserves) is made available January 1 under interim specifications. The remainder is made available when the final specifications supercede the interim specifications, generally in February or March.

2 = AFA Allocations.

A. Pollock CDQ - effective January 1, 1999, 10 percent of the total allowable catch of pollock in the Bering Sea and Aleutian Islands Management Area shall be allocated as a directed fishing allowance to the western Alaska CDQ program .

B. Inshore/Offshore. - effective January 1, 1999, the remainder of the pollock total allowable catch in the Bering Sea and Aleutian Islands Management Area, after the subtraction of the allocation under subsection (a) and the subtraction of allowances for the incidental catch of pollock by vessels harvesting other groundfish species (including under the western Alaska community development quota program) shall be allocated as directed fishing allowances as follows.

(1) 50% to catcher vessels for processing by the inshore component;

(2) 40% to catcher/processors and catcher vessels for processing by catcher/processors in the offshore component; and

(3) 10% to catcher vessels for processing by motherships in the offshore component.

3 = Percentages in brackets [xx%] are 2000 examples; these percentages may vary from year to year.

4 = None of the hook-&-line/pot allocation of sablefish is made available under the interim specifications. Thus, hook-&-line/pot sablefish may not open until the final specifications are filed.

Table 2.11. Regulatory allocations of 2000 TAC specifications in the GOA.

Species	Gear	Season	Other Allocations and Reserves
Pollock	None	Western and central GOA: 1/20 to 3/1--1st allowance 30% 3/15 to 5/31--2nd allowance 15% 8/20 to 9/15--3rd allowance... 30% 10/1 to 11/1--4th allowance.. 25% Eastern GOA: 100% 1/1 to 12/31	Inshore component 100% Offshore (bycatch) 20% of TAC to initial reserve
Sablefish	Eastern Area[1] Trawl gear 5% --for trawl gear Hook-&-line gear 95% --for non-trawl gear Central and Western Area Trawl gear 20% Hook-&-line gear 80%	1/20 to 12/31 § 679.23(c) 1/1 to 12/31 § 679.23(a)	None
Pacific cod	--Trawl gear --Non-trawl gear	1/20 to 12/31 1/1 to 12/31	Inshore component 90% Offshore component 10% 20% of TAC to initial reserve
Flatfish and "other" species[2]	--Trawl gear --Non-trawl gear	1/20 to 12/31 1/1 to 12/31	20% of TAC to initial reserve
Rockfish[3]	--Trawl gear --Non-trawl gear	7/1 to 12/31 1/1 to 12/31	None
All other species	--Trawl gear --Non-trawl gear	1/20 to 12/31) 1/1 to 12/31	None

Notes: 1 = The trawl allocation of sablefish in the eastern regulatory area may be used only for bycatch purposes.
2 = Flatfish includes Dover sole, deep sea sole, sand sole, Alaska plaice, English sole, starry flounder, butter sole, and rex sole.
3 = Rockfish are any species of Sebastes or Sebastolobus except the black rockfish and the blue rockfish.

Table 2.12a. Steller sea lion protection areas in the Bering Sea subarea **.**

Bering Sea Subarea Management Area/Island/Site	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Directed fishing for pollock prohibited within. . .(nm)		Trawling prohibited within (nm)	
	Latitude (N)	Longitude (W)					Nov. 1 - Jun. 1	Jun. 1 - Nov. 1	Jan. 1 - Apr. 15	Year-round
St. Lawrence I./S Punuk I.	63 04.00 N	168 51.00 W	H			20				
Hall I.	60 37.00 N	173 00.00 W	H			20				
St Paul I./Sea Lion Rock	57 06.00 N	170 17.50 W	H			20				
St Paul I./NE Pt.	57 15.00 N	170 06.50 W	H			20				
Walrus I.	57 11.00 N	169 56.00 W	R	Whole Island	3	20	20	20		10
St. George I./Dalnoi Pt.	56 36.00 N	169 46.00 W	H			20				
St. George I./S Rookery	56 33.50 N	169 40.00 W	H			20				
Cape Newenham	58 39.00 N	162 10.50 W	H			20				
Uliaga	53 04.00 N 53 05.00 N	169 47.00 W 169 46.00 W						20		
Chuginadak	52 46.70 N	169 41.90 W	H			20		20		
Kagamil	53 02.10 N	169 41.00 W	H			20		20		
Samalga	52 46.00 N	169 15.00 W						20		
Adugak I.	52 54.70 N	169 10.50 W	R	Whole Island	3	20	20	20		10
Umnak I./Cape Aslik	53 25.00 N	168 24.50 W	H			20	20	20		
Ogchul I.	52 59.71 N	168 24.24 W	R	Whole Island	3	20	20	20		10
Bogoslof I./Fire Island	53 55.69 N	168 02.05 W	R	Whole Island	3	20	20	20		10
Emerald I.	53 17.50 N	167 51.50 W	H			20		20		
Unalaska/Cape Izigan	53 13.64 N	167 39.37 W					20	20		
Unalaska/Bishop Pt	53 58.40 N	166 57.50 W					20	20		
Unalaska I./Cape Sedanka	53 50.50 N	166 05.00 W	H			20				
Akutan I./Reef-lava	54 08.10 N 54 09.10 N	166 06.19 W 166 05.50 W	H			20	20	20		
Old Man Rocks	53 52.20 N	166 04.90 W	H			20	20	20		
Akutan I./Cape Morgan	54 03.39 N 54 03.70 N	165 59.65 W 166 03.68 W	R	SW corner, Cape Morgan	3	20	20	20	20	10

Table 2.12a. (cont.)

Bering Sea Subarea Management Area/Island/Site	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Directed fishing for pollock prohibited within. . .(nm)		Trawling prohibited within (nm)	
	Latitude (N)	Longitude (W)					Nov. 1 - Jun. 1	Jun. 1 - Nov. 1	Jan. 1 - Apr. 15	Year-round
Akun I./Billings Head	54 17.62 N 54 17.57 N	165 32.06 W 165 31.71 W	R	Billings Head Bight.	3	20	20	20	20	10
Rootok	54 03.90 N 54 02.90 N	165 31.90 W 165 29.50 W						20		
Tanginak I.	54 12.00 N	165 19.40 W	H			20	20			
Tigalda/Rocks NE	54 09.60 N 54 09.12 N	164 59.00 W 164 57.18 W	H			20	20	20		
Unimak/Cape Sarichef	54 34.30 N	164 56.80 W					20	20		
Aiktak	54 10.99 N	164 51.15 W					20			
Ugamak I.	54 13.50 N 54 12.80 N	164 47.50 W 164 47.50 W	R	Eastern End	3	20	20	20	20	10
Round I.	54 12.05 N	164 46.60 W	H			20		20		
Sea Lion Rock (Amak)	55 27.82 N	163 12.10 W	R	Whole Island	3	20	20	20	20	10
Amak I. and rocks	55 24.20 N 55 26.15 N	163 09.60 W 163 08.50 W	H			20	20	20		

[1] Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates. Where only one set of coordinates is listed, that location is the base point.

[2] Listed rookery and haulout sites under the ESA designated in this table are defined at 50 CFR 226.202. Three nm no transit zones and other protections for listed rookery sites listed in this table are defined at 50 CFR 223.202. Sites in this table that do not have an R or H description have not been listed under the ESA as a rookery or haulout with the appropriate crtical habitat designation. However, these sites are used as haulouts by Steller sea lions and have been determined by NMFS to be of special importance to the endangered western population of Steller sea lions.

Table 2.12b. Steller sea lion protection areas in the Aleutian Islands subarea.

Aleutian Islands Area Management Area/Island/Site	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Trawling prohibited within. . . (nm)
	Latitude (N)	Longitude (W,E)					Year-round
Attu I./Cape Wrangell	52 54.60 N	172 27.90 E	R	S. Quadrant	3	20	10
	52 55.40 N	172 27.20 E					
Agattu I./Gillon Pt	52 24.13 N	173 21.31 E	R	Gillion Point	3	20	10
Attu I./Chirikof Pt.	52 49.75 N	173 26.00 E	H			20	
Agattu I./Cape Sabek	52 22.50 N	173 43.30 E	R	Cape Sabek	3	20	10
	52 21.80 N	173 41.40 E					
Alaid I.	52 46.50 N	173 51.50 E	H			20	
	52 45.00 N	173 56.50 E					
Shemya I.	52 44.00 N	174 08.70 E	H			20	
Buldir I.	52 20.25 N	175 54.03 E	R	SE side of Island	3	20	10
	52 20.38 N	175 53.85 E					
Kiska I./Cape St. Stephen	51 52.50 N	177 12.70 E	R	Cape St. Stephen	3	20	10
	51 53.50 N	177 12.00 E					
Kiska I./Sobaka & Vega	51 49.50 N	177 19.00 E	H			20	
	51 48.50 N	177 20.50 E					
Kiska I./Lief Cove	51 57.16 N	177 20.41 E	R	W. central, Lief Cove	3	20	10
	51 57.24 N	177 20.53 E					
Kiska I./Sirius Pt.	52 08.50 N	177 36.50 E	H			20	
Tanadak I. (Kiska)	51 56.80 N	177 46.80 E	H			20	
Segula I.	51 59.90 N	178 05.80 E	H			20	
	52 03.06 N	178 08.80 E					
Ayugadak Point	51 45.36 N	178 24.30 E	R	SE coast of Rat Island	3	20	10
Little Sitkin I.	51 59.30 N	178 29.80 E	H			20	
Amchitka I./Column Rocks	51 32.32 N	178 49.28 E	R	Column Rocks	3	20	10
Amchitka I./East Cape	51 22.26 N	179 27.93 E	R	East Cape	3	20	10
	51 22.00 N	179 27.00 E					
Semisopochnoi/Petrel Pt.	52 01.40 N	179 36.90 E	R	N quadrant, Petrel Point	3	20	10
	52 01.50 N	179 39.00 E					
Semisopochnoi I./Pochnoi Pt.	51 57.30 N	179 46.00 E	R	E quadrant, Pochnoi Pt.	3	20	10
Amatignak I.	51 13.00 N	179 07.80 W	H	Nitrof Point		20	
Unalga & Dinkum Rocks	51 33.67 N	179 04.25 W	H			20	
	51 35.09 N	179 03.66 W					
Ulak I.	51 18.90 N	178 58.90 W	R	SE corner, Hasgox Point	3	20	10
	51 18.70 N	178 59.60 W					
Kavalga I.	51 34.50 N	178 51.73 W	H			20	
	51 34.50 N	178 49.50 W					

Table 2.12b. (cont.)

Aleutian Islands Area Management Area/Island/Site	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Trawling prohibited within. . . (nm)
	Latitude (N)	Longitude (W,E)					Year-round
Tag I.	51 33.50 N	178 34.50 W	R	Whole Island	3	20	10
Ugidak I.	51 34.95 N	178 30.45 W	H			20	
Gramp Rock	51 28.87 N	178 20.58 W	R	Whole Island	3	20	10
Tanaga I.	51 55.00 N	177 58.50 W	H	Bumpy Point		20	
	51 55.00 N	177 57.10 W					
Bobrof I.	51 54.00 N	177 27.00 W	H			20	
Kanaga I./Ship Rock	51 46.70 N	177 20.72 W	H			20	
Kanaga I./North Cape	51 56.50 N	177 09.00 W	H			20	
Adak I.	51 35.50 N	176 57.10 W	R	Cape Yakak-Lake Point	3	20	10
	51 37.40 N	176 59.60 W					
Little Tanaga Strait	51 49.09 N	176 13.90 W	H			20	
Great Sitkin I.	52 06.00 N	176 10.50 W	H			20	
	52 07.00 N	176 07.00 W					
Anagaksik I.	51 50.86 N	175 53.00 W	H			20	
Kasatochi I.	52 11.11 N	175 31.00 W	R	North half of Island	3	20	10
Atka I.	52 24.20 N	174 17.80 W	H	North Cape		20	
Amlia I./Sviech. Harbor	52 01.80 N	173 23.90 W	H			20	
Sagigik I.	52 00.50 N	173 09.30 W	H			20	
Amlia I./East	52 05.70 N	172 59.00 W	H			20	
	52 05.75 N	172 57.50 W					
Tanadak I. (Amlia)	52 04.20 N	172 57.60 W	H			20	
Agligadak I.	52 06.09 N	172 54.23 W	R	Whole Island	3	20	20
Seguam I./Saddleridge	52 21.05 N	172 34.40 W	R	N coast, Saddleridge Point	3	20	20
	52 21.02 N	172 33.60 W					
Seguam I./Finch Pt.	52 23.40 N	172 27.70 W	H			20	
	52 23.25 N	172 24.30 W					
Seguam I./South Side	52 21.60 N	172 19.30 W	H	Wharf Pt. to Turf Pt.		20	
	52 15.55 N	172 31.22 W					
Amukta I. & Rocks	52 27.25 N	171 17.90 W	H			20	
Chagulak I.	52 34.00 N	171 10.50 W	H			20	
Yunaska I.	52 41.40 N	170 36.35 W	R	NE end	3	20	10

[1] Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates. Where only one set of coordinates is listed, that location is the base point.

[2] Listed rookery and haulout sites under the ESA designated in this table are defined at 50 CFR 226.202. Three nm no transit zones and other protections for listed rookery sites listed in this table are defined at 50 CFR 223.202. Sites in this table that do not have an R or H description have not been listed under the ESA as a rookery or haulout with the appropriate crtical habitat designation. However, these sites are used as haulouts by Steller sea lions and have been determined by NMFS to be of special importance to the endangered western population of Steller sea lions.

Table 2.12c. Steller sea lion protection areas in the Gulf of Alaska.

Gulf of Alaska Management Area/Island/Site[1]	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Directed fishing for pollock prohibited within. . .(nm)		Trawling prohibited within ...(nm) Year-round
	Latitude (N)	Longitude (W)					Nov. 1 - Jun. 1	Jun. 1 - Nov. 1	
Bird I.	54 40.00 N	163 17.15 W	H			20	10	10	
South Rocks	54 18.14 N	162 41.25 W	H			20	10	10	
Clubbing Rocks (S)	54 41.98 N	162 26.74 W	R	Whole Island	3	20	10	10	10
Clubbing Rocks (N)	54 42.75 N	162 26.72 W	R	Whole Island	3	20	10	10	10
Caton I.	54 22.70 N	162 21.30 W	H			20			
Pinnacle Rock	54 46.06 N	161 45.85 W	R	Whole Island	3	20	10	10	10
Sushilnoi Rocks	54 49.30 N	161 42.73 W						10	
Olga Rocks	55 00.45 N 54 59.09 N	161 29.81 W 161 30.89 W					10	10	
Jude I.	55 15.75 N	161 06.27 W	H			20	10	10	
Sea Lion Rocks (Shumagins)[3]	55 04.70 N	160 31.04 W	H			20	10	10	
Nagai/Mountain Pt.	54 54.20 N 54 56.00 N	160 15.40 W 160 15.00 W	H			20			
The Whaleback	55 16.82 N	160 05.04 W	H			20	10	10	
Chernabura I.	54 45.18 N 54 45.86 N	159 32.99 W 159 35.74 W	R	SE corner	3	20	10	10	10
Castle Rock	55 16.47 N	159 29.77 W	H			20		10	
Atkins I.	55 03.20 N	159 17.40 W	R	Whole Island	3	20	10	10	10
Spitz I.	55 46.60 N	158 53.90 W	H			20		10	
Mitrofania	55 50.20 N	158 41.90 W					10	10	
Kak	56 17.30 N	157 50.10 W						10	
Lighthouse Rocks	55 46.79 N	157 24.89 W	H			20	10	10	
Sutwik I.	56 31.05 N 56 32.00 N	157 20.47 W 157 21.00 W	H			20		10	
Chowiet I.	56 00.54 N 56 00.30 N	156 41.42 W 156 41.60 W	R	S quadrant	3	20	10	10	10
Nagai Rocks	55 49.80 N	155 47.50 W	H			20	10	10	
Chirikof I.	55 46.50 N 55 46.44 N	155 39.50 W 155 43.46 W	R	S quadrant	3	20	10	10	10
Puale Bay	57 40.60 N	155 23.10 W	H			20	10	10	

Table 2.12c. (cont.)

Gulf of Alaska Management Area/Island/Site[1]	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Directed fishing for pollock prohibited within. . .(nm)		Trawling prohibited within ...(nm) Year-round
	Latitude (N)	Longitude (W)					Nov. 1 - Jun. 1	Jun. 1 - Nov. 1	
Kodiak/Cape Ikolik	57 17.20 N	154 47.50 W	H			20	10		
Takli I.	58 01.75 N	154 31.25 W	H			20		10	
Cape Kuliak	58 08.00 N	154 12.50 W	H			20			
Cape Gull	58 11.50 N	154 09.60 W	H			20		10	
	58 12.50 N	154 10.50 W							
Kodiak/Cape Ugat	57 52.41 N	153 50.97 W	H			20	10	10	
Sitkinak/Cape Sitkinak	56 34.30 N	153 50.96 W	H			20	10	10	
Shakun Rock	58 32.80 N	153 41.50 W	H			20	10	10	
Twoheaded I.	56 54.50 N	153 32.75 W	H			20	10	10	
	56 53.90 N	153 33.74 W							
Cape Douglas (Shaw I.)	59 00.00 N	153 22.50 W						10	
Kodiak/Cape Barnabas	57 10.20 N	152 53.05 W	H			20	10	10	
Kodiak/Gull Point	57 21.45 N	152 36.30 W	H			20	10	10	
Latax Rocks	58 40.10 N	152 31.30 W	H			20	10	10	
Ushagat I./SW	58 54.75 N	152 22.20 W	H			20		10	
Ugak I.	57 23.60 N	152 17.50 W	H			20		10	
	57 21.90 N	152 17.40 W							
Sea Otter I.	58 31.15 N	152 13.30 W	H			20	10	10	
Long I.	57 46.82 N	152 12.90 W	H			20	10		
Sud I.	58 54.00 N	152 12.50 W	H			20			
Kodiak/Cape Chiniak	57 37.90 N	152 08.25 W	H			20	10	10	
Sugarloaf I.	58 53.25 N	152 02.40 W	R	Whole Island	3	20	10	10	10
Sea Lion Rocks (Marmot)	58 20.53 N	151 48.83 W	H			20	10	10	
Marmot I.	58 13.65 N	151 47.75 W	R	SE quadrant	3	20	10	10	10
	58 09.90 N	151 52.06 W							
Nagahut Rocks	59 06.00 N	151 46.30 W	H			20			
Perl	59 05.75 N	151 39.75 W					10	10	

Table 2.12c. (cont.)

Gulf of Alaska Management Area/Island/Site[1]	Boundaries[1]		ESA Listed Rookery (R) or Haulout (H)[2]	Notes	No transit zone (nm)[2]	Critical habitat area (nm)[2]	Directed fishing for pollock prohibited within. . .(nm)		Trawling prohibited within ...(nm) Year-round
	Latitude (N)	Longitude (W)					Nov. 1 - Jun. 1	Jun. 1 - Nov. 1	
Gore Poiint	59 12.00 N	150 58.00 W	H			20			
Outer (Pye) I.	59 20.50 N 59 21.00 N	150 23.00 W 150 24.50 W	R	S quadrant	3	20	10	10	10
Steep Point	59 29.05 N	150 15.40 W						10	
Chiswell Islands	59 36.00 N	149 34.00 W	H			20	10	10	
Rugged Island	59 49.80 N 59 51.00 N	149 23.30 W 149 25.30 W					10		
Point Elrington[4]	59 56.00 N	148 15.20 W	H			20			
Perry I.	60 44.00 N	147 54.60 W	H			20			
The Needle[4]	60 06.64 N	147 36.17 W	H			20			
Point Eleanor	60 35.00 N	147 34.00 W	H			20			
Wooded I. (Fish I.)	59 52.90 N	147 20.65 W	R		([5])	20	10	10	
Glacier Island	60 51.30 N	147 14.50 W					10	10	
Seal Rocks	60 09.78 N	146 50.30 W	R,H		3	20	10	10	
Cape Hinchinbrook	60 14.00 N	146 38.50 W						10	
Middleton I.	59 28.30 N	146 18.80 W	H			20			
Hook Point	60 20.00 N	146 15.60 W	H			20		10	
Cape St. Elias	59 47.50 N	144 36.20 W	H			20	10	10	
Cape Fairweather[6]	58 47.50 N	137 56.30 W	H						
Graves Rock[6]	58 14.30 N	136 45.40 W	H						

[1] Where two sets of coordinates are given, the baseline extends in a clock-wise direction from the first set of geographic coordinates along the shoreline at mean lower-low water to the second set of coordinates. Where only one set of coordinates is listed, that location is the base point.

[2] Listed rookery and haulout sites under the ESA designated in this table are defined at 50 CFR 226.202. Three nm no transit zones and other protections for listed rookery sites listed in this table are defined at 50 CFR 223.202. Sites in this table that do not have an R or H description have not been listed under the ESA as a rookery or haulout with the appropriate crtical habitat designation. However, these sites are used as haulouts by Steller sea lions and have been determined by NMFS to be of special importance to the endangered western population of Steller sea lions.

[3] Vessels less than or equal to 60 ft (18.3 m) LOA are exempt from the 10 nm closure at Sea Lion Rocks (Shumagins).

[4] Restrictions at Point Elrington and The Needle will be considered by the Alaska Board of Fisheries because these areas fall completely within the State of Alaska management area of Prince William Sound.

[5] Wooded Island does not have a 3 nm no trawl zone described under 50 CFR 223.202, but is listed as a major rookery under 50 CFR part 226.202.

[6] Cape Fairweather and Graves Rock are east of 144 degrees west longitude and therefore does not include a 20 nm aquatic critical habitat zone (50 CFR part 226.202(a)).

Table 4.1. Life history table for Steller sea lions based on Calkins and Pitcher (1982) and York (1994). (From York 1994.)

Ages			Calkins-Pitcher life table			York life table		
From	To	Fecundity	Cum. survival	Annual survival	Percent at age	Cum. survival	Annual survival	Percent at age
0	1	0.000	1.000	0.776	16.676	1.000	0.782	16.251
1	2	0.000	0.776	0.776	12.546	0.782	0.782	12.709
2	3	0.000	0.603	0.776	9.438	0.612	0.782	9.938
3	4	0.105	0.468	0.868	7.100	0.478	0.930	7.772
4	5	0.267	0.406	0.879	6.163	0.445	0.909	7.228
5	6	0.286	0.357	0.888	5.417	0.404	0.895	6.570
6	7	0.315	0.317	0.893	4.811	0.362	0.884	5.880
7	8	0.315	0.283	0.898	4.296	0.320	0.875	5.198
8	9	0.315	0.254	0.874	3.857	0.280	0.867	4.548
9	10	0.315	0.222	0.899	3.372	0.242	0.859	3.943
10	11	0.315	0.200	0.893	3.031	0.208	0.853	3.338
11	12	0.315	0.178	0.896	2.707	0.178	0.847	2.889
12	13	0.315	0.160	0.895	2.425	0.150	0.841	2.447
13	31	0.315	0.160	0.895	15.99	0.150	p(x)d	11.239

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
1901-1958: AK,BC, and OR, Summer/Winter, (n=19). Reports a range of fish and cephalopods for 12 time/area studies from AK,BC, and OR. For his BC study: (in order of FO) included squid, herring, rockfish, octopus, salmon, skate, and hake. For other studies in his table: rockfish, perch, herring, skate, shark, squid, octopus, lamprey, salmon, "cod", "bass", mussels, clam, crab, dogfish, flatfish, and sardines. Pike (1958)	**1946:** CGOA, Summer, (n=7). 3 Collected from Barren Is. Contained pollock, starry flounder, tom cod, arrowtooth flounder, halibut, and octopus. 2 from Chiswell Is. Contained 100% salmon and 2 from Kodiak Is. Contained pollock and arrowtooth flounder(Imler & Sarber 1947)
1946: SEAK, Summer, (n=15). 8 sampled in SEAK; 7 fed principally on pollock, and 1 contained a skate and an octopus (Imler & Sarber 1947)	**1950:** Kuril Islands, Russia. Observation only: a sea lion feeding on octopus. (Sleptsov 1950 in Spalding 1964)
1956-1963: BC, Winter-Fall; feed primarily at night (n=269 or 393 sampled). Suggests animals prey mainly on one item per feeding period. Some seen feeding at surface on lingcod, rockfish, salmon, or halibut (n=8). Consumption of herring and salmon by sea lions, fur seals, and harbor seals estimated about 2% to 4% of commercial catch. Prey (in order of FO): octopus, rockfish, herring, whiting, salmon, dogfish, squid, hake, flatfish, clam, ratfish, shrimp, sandlance, graycod, lingcod, and single occurrences of lamprey, skate, eulachon, halibut, and mackereljack. (Spalding 1964)	**1949, 1951:** EBS, St. Paul, Summer, (n=3) 1 sea lion stomach: primarily sandlance, starry flounder; 1 stomach: halibut, cod, pollock, and flounders; 1 stomach: a large cephalopod beak. (Wilke and Kenyon 1952)
	1958: WGOA, Summer, (n=94); 14 yearlings, 42 adult females, 18 terr. males, 20 nonterr. males. Prey (in order of FO): squid/octopus, bivalves, smelts, greenlings shrimp/crabs, rockfish, sculpins, isopods, unclassified crustaceans, segmented worms, and single occurrences of lamprey, salmon, sandlance, sand dollar, and coelenterate. (Mathisen et al. 1962)
	1959: WGOA, CGOA, EAI, Summer, (n=56); primarily adult males. Prey (in order of FO): squid/octopus, clam/mussel/snail, sandlance, rockfish, crab, greenling, sculpins, flatfish, and single occurrences of halibut and lumpfish. (Thorsteinson and Lensink 1962)
	1962: EBS, Winter-Spring, (n=unknown); Large numbers of sea lions in the southeastern Bering Sea, winter/spring of 1962. Suggests herring “staple food” of sea lions during this period. Suggests sea lion distribution was influenced by the distribution of herring. Tikhomirov (1964)

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	**WESTERN STOCK - 1950s through 1990s**
1958-1963: CA and OR, Summer, (n=1); Animals were adult and mixed age females. Prey (in order of FO): salmon (100%), rockfish (100%). Winter, (n=5); Mixed age females. Prey (in order of FO): rockfish (80%); arrowtooth flounder (20%), sanddab (20 %), herring (20%), flatfish (20%). Fiscus and Baines (1966)	**1958-1963:** GOA, AI, BS Summer,(n=16); Animals (mixed sexes and ages) taken in Alaskan waters fed mainly on small, schooling fishes. Near Unimak Pass in 1962, capelin was the major food species. A Steller sea lion taken in EGOA in May 1958 had eaten three salmon. Most of the food species (capelin, sandlance, sculpins, rockfishes and flatfishes) found in the stomachs of Steller sea lions suggest that they feed near land or in relatively shallow water (<100 fm, 180 m). Sea lions seen at distances of 70-85 miles from land by Fiscus and Kenyon in 1960 (Kenyon and Rice 1961). Fiscus and Baines (1966)
1968-1973: CA, (n=9); 9 stomachs with fish, and 7 with squid and octopus. Grouped 127 identified fishes according to schooling (open-water), bottom-dwelling (rocky), and inshore-schooling species; suggested sea lions feed mainly on bottom-dwelling fishes. Jones (1981)	**1966 - 1969:** Kuril Islands, Russia. (n = 71 w/food) Important prey by FO: pollock (n=45, 63.4%), greenlings (n=7, 9.9%), smooth lumpsucker (n=1, 1.4%), octopus (n=18, 25.4%), Gonatus squids (n=23, 32.4%), other squid (n=7, 9.9%), mollusk shells (n=4, 5.6%). Perlov (1975)
1973-1976: OR, Observations (84) of Steller sea lions (n=unknown # animals) feeding at surface, Rogue River, OR. Prey: 73 lampreys, 2 salmonids, 9 unidentified. Jameson and Kenyon (1977)	**1974-1975:** St. Paul, Summer, Observations (163) of Steller sea lions (n=unknown) taking 163 fur seal pups at St. George Island (Pribilof Is.) Estimated such predation may result in the mortality of about 3% to 7% of fur seal pups born at St. George Island. Gentry and Johnson (1981)

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
	1975-1978: GOA, All seasons, (n=153). Stomach contents 95.7% fishes by volume, with 14 species of fish in 11 families. Gadids comprised 59.7% of total contents and occurred in 82.4% of stomachs with food. Walleye pollock comprised 58.3% of the total volume and occurred in 66.7% of stomachs with food. Cephalopods occurred in 36.6% of stomachs with contents but made up only 4.2% of total volume. Predation on salmon and capelin appeared to be largely limited to spring and summer. Prey (by combination rank index) included pollock, squids, herring, capelin, cod, salmon, octopus, sculpins, flatfishes, rockfishes. Herring and squids were extensively used in Prince William Sound but appeared to be relatively unimportant in other areas. Results for sea lions similar to results for harbor seals. Mean fork length (pollock otoliths, n=2030) was 29.8 cm (range 5.6 to 62.9 cm, SD = 11.6 cm). Pitcher (1981)
	1975-1978: GOA, All seasons, (n=153). NOTE: redundancy with previous results of Pitcher 1981. Fishes comprised 72.8%, cephalopods (octopus and Gonatid squids) 21.5%, decapod crustaceans (shrimps, tanner and spider crabs), 4.2% gastropods (marine snails) 0.8%, and mammals 0.4% of the prey occurrences. Fishes included minimum of 14 species of 11 families. Gadids composed nearly half of total occurrences and nearly 60% of total volume. Harbor seal remains were found in two stomachs (see Pitcher and Fay 1982). Seven top-ranked prey (in order of modified Index of Relative Importance) were pollock, herring, squids, capelin, salmon, Pacific cod, and sculpins. Pollock was dominant prey accounting for about 39% of all occurrences and 58% of the total volume. Pollock was top-ranked prey in all areas except Kodiak, where it was ranked second below capelin. Herring and squid were used extensively in Prince William Sound, but not in other areas. Predation on salmon and capelin was largely limited to spring and summer. Geographic differences in use of salmon and capelin may have been due to sampling at different - sites and seasons. Comparison with previous studies (Imler and Sarber 1947, Mathisen et al. 1962, Thorsteinson and Lensink 1962, and Fiscus and Baines 1966) which had more invertebrates, no herring, but included sandlance. Noted differences in sampling for this study (throughout year at wide range of locations) versus earlier studies (near rookeries during breeding season). Four of the five top-ranked prey were off-bottom schooling species. Calkins and Pitcher (1982)

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
	1976: EBS, Pribilofs, March, (n=4). Prey (in order of FO): pollock, squids, and single occurrences of octopus, flatfish, lamprey, and prickleback. Based on otoliths, pollock consumed ranged from 34 cm to 57 cm in length. Also mentions the following prey items from a preliminary examination of 111 stomach samples collected in the central and western Bering Sea (in no particular order): pollock, cod, Gonatid squids, herring, octopus, and sculpins. Lowry et al. 1982
	1975-81: AI, March-October, (n=90; not stated how many had contents). Most pollock consumed (76%) were 20 cm or longer. Younger sea lions (≤4 yr, all males)) collected in 1981 ate significantly smaller fish (mean=26.9 cm, n=51). Animals collected in 1976 and 1979 (both near the Pribilofs) ate pollock averaging 46.9 cm in length (range 18.4-61.4 cm), while those collected in 1981 to the west ate substantially smaller pollock averaging 25.2 cm in length (range 8.3-64.2 cm). In 1981 sea lions collected in the central Bering Sea ate larger pollock than those off the Kamchatka Peninsula (mean=26.8 cm vs 23.5 cm) "It is unknown whether the consumption patterns described above are a result of actual size selection of prey or if they result from coincidental distribution of predators and prey size classes." ".....the size range of pollock eaten by both young and old sea lions was similar." Frost and Lowry 1986

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
1985-1986: SEAK, Winter/Summer, (n=14). Fishes comprised 98% of volume, mostly Pacific cod (57%) and pollock (32%). Most frequently occurring were pollock (57%) and flatfishes (21%). Other prey observed were squid and octopus. Mean fork length (80 pollock otoliths from 8 sea lions) was 25.5 cm (range 4.8 to 55.7 cm, SD=10.4 cm). Calkins and Goodwin (1988)	**1985-1986:** CGOA, Winter/Summer, (n=74). Most important by volume were pollock (42%), octopus (26%), and flatfish (25%). Other prey: were fishes, squid, decapod crustaceans, and clams. Prey rank (based on combined rank index [Pitcher 1981]) in Kodiak area were pollock, octopus, flatfishes, sandlance, Pacific cod, and salmon. Mean fork length (1064 otoliths from 43 sea lions) in Kodiak area was 25.4 cm (range 7.9 to 54.2 cm, SD = 12.4 cm). Pollock was the most important prey item in both 1975-1978 collection (39% by FO in the Kodiak area) and 1985-1986 collection (58%). Capelin was most important in Kodiak area in 1975-1978. Suggest difference in capelin may be due to seasonal differences when animals were collected (spring-summer 1975-1978 vs. spring-autumn/early winter 1985-1986). Thus, comparisons may be compromised by potential seasonal bias. Octopus ranked second in 1985-1986 collection near Kodiak, but fifth in 1975-1978. Suggest difference may be due to collection site. Thus comparisons may be compromised by potential location bias. Sandlance occurred in 26% of sea lions from GOA in 1960s (Mathisen et al. 1962, Thorsteinson and Lensink 1962, Fiscus and Baines 1966), were not found in 1975-1978 sample, but were fourth in 1985-1986 sample. Calkins and Goodwin (1988)

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
1992: CA, Summer, (n=1 observation). Observation of a territorial male Steller sea lion attack, kill, and consume what appeared to be a yearling California sea lion. Byrnes and Hood (1994)	**1975-1978, 1985-1986:** GOA, (note redundancy with Pitcher 1981, Calkins and Pitcher 1982, and Calkins and Goodwin 1988) Prey consumption based on FO. Most stomachs contained prey of only one kind. Pollock most common prey of juvenile (≤ 4 years old) and adult sea lions in virtually all seasons and areas during these two periods. Juvenile pollock were a major part of the diet in both periods. Juvenile sea lions ate smaller and relatively more juvenile pollock. Small forage fish were consumed on a seasonal basis. Temporal comparisons were possible only in the Kodiak region. The proportion of sea lions eating pollock increased from 49% in 1975-1978 to 69% in 1985-1986 in the Kodiak area. Small forage fish were the second most common prey in the 1970s, and flatfish were second in the 1980s. Of the fish consumed, 73% were ≤30 cm, but they accounted for only 26.8% of the biomass consumed. Half (50.7%) of the pollock mass consumed by juvenile sea lions came from fish ≤30 cm, while only 21% of the pollock mass consumed by adult sea lions came from juvenile pollock. Seasonal differences were observed in the consumption of all prey taxa, but differences were not found in the 1980s. Between the 1970s and the 1980s, the proportion consuming pollock and cephalopods increased significantly and the proportion consuming small forage fish and other demersal fish decreased. The increase in pollock consumed was only evident in summer months (all ages combined), but was evident in all seasons for juveniles. Note that sampling was not consistent with respect to seasons or specific locations between the two sampling periods, which weakens the basis for comparisons. Merrick and Calkins (1996)

Table 4.2. Comparison of eastern and western stock Steller sea lion (*Eumetopias jubatus*) stomach collection study results from the 1950s through the 1990s.

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
	1981: EBS, Spring, (n = 92). Males (ages1-16 yrs) collected along the seasonal ice front in Bering sea. between March 24 and April 11, 1981. 37 collected in central Bering sea, "likely that most of the sea lions taken in this area originated at rookeries in the Aleutian Islands". 73 collected in Russian far east waters near Olyutorskiy Gulf (no. of Kamchatka peninsula) Stomach contents calculated by full wt. - empty wt. = total wt. of contents. Less than 0.25 kg considered trace amounts. Prey identifications based primarily on fish otoliths, subopercle bones, and cephalopod mandibles. Importance of prey was compared by ranking, taking into account mass (wt.) and frequency of occurrence, using combined ranked index (CRI). Otolith measurements used to calculate fork lengths using regression analysis of otolith length and fish length (Frost & Lowry 1981). Pollock most important prey item in both study areas and occurred in 89% of stomachs with contents (322.1 kg; 67% by wt.) Pollock occurred in central Bering sea stomachs (100%); pollock in Russian Far east stomachs (83%). Mean size of pollock consumed in Bering sea stomachs was 25.2 cm (range = 6.2 - 64.2, SD= 7.9) based on measurement of 1299 otoliths. "Pollock consumed by sea lions in the Bering Sea were similar in size to those consumed in the Gulf of Alaska in the 1980s but were smaller than those consumed in the Gulf of Alaska in the 1970s." Older (larger) sea lions (≥5 yrs.) ate larger pollock, mean = 25.8 cm. Younger sea lions (≤4 yrs.) consumed smaller pollock, mean = 22.1 cm. Pacific cod second most important prey item in both study areas occurring in 38% of all stomachs (28.1% in C. Bering Sea; 43.3% in Russian Far East) Other prey items: squid and octopus, herring, sculpins, phocid seals, flatfishes, cartilaginous fishes, crabs, and snails.
	"Sea lions were not found concentrated along the ice edge in any locations other than the two collection areas. It seems likely that they moved to and concentrated in these areas to take advantage of the pollock resources similar to the fishing fleets that were also present there at the time." Most of the study area in the Central Bering Sea waters fell within the northern portion of the area known as the "doughnut". Calkins (1998)

EASTERN STOCK - 1950s through 1990s	WESTERN STOCK - 1950s through 1990s
	1982 - 1984: CGOA, Shelikof Straits, Jan.-April, (n=36). Sea lion stomachs collected during Shelikof joint venture pollock fishery in Jan.-April. Both males (mean age 4.8 yrs.; 75% subadult or newly mature and probably not territorial) and females (age range 1-25 yrs, mean=6.43 yrs; 79% mature) were caught in during the trawl fishery. Prey from 1983 (n=19) stomachs: primarily pollock (range 34-49 cm, mean=39.3 cm, n=68). Sizes of pollock caught in the same net as sea lions ranged from 34-54 cm, mean=40 cm. Prey from 1984 (n=17) stomachs: primarily pollock (range 30-52 cm, mean=42.13 cm, n=93). Sizes of pollock caught in the same net as sea lions ranged from 31-54 cm (mean=43.5 cm, n=372). Loughlin and Nelson (1986)
	1985-1986: EBS, St. Paul, August, September and October, (n=11stomachs, 2 colons). Collected samples from dead animals along shore of St. Paul Island. Age and sex groups : males 85%, females 15%. Otoliths (256) recovered from 7 stomachs (67%), octopus beaks from 3 (27%), crab from 2 (18%). Most common prey (from otoliths) was yellowfin sole (54% from 6 stomachs). Prey species (from otoliths): Yellowfin sole (149 of 256 otoliths or 58%), Pacific cod (5 stomachs, 41 of 256 otoliths or 16%), pollock (2.7%) and halibut (1 otolith recovered). Octopus beaks (4 individuals) were recovered in 3 stomachs. Gearin (unpublished) .
	1994 - 1996: Hokkaido, Japan, Jan.-March, (n=62) Stomachs collected off coast of Rausu, Hokkaido, Japan. Sex of sea lions collected: 12 males, 24 females, but no ages given.. Prey identifications based on fish bones, otoliths and beaks. Important prey by FO: pollock (n=55, 88.7%), Pacific cod (n=47, 75.8%), Saffron cod (n=25, 40.3%), flatfish (n=15, 24.2%), other fish (n=24, 38.7%), squids (n=43, 69.4%), octopus (n=7, 11.3%). Prey size consumed: pollock 40 -50 cm (30.36 ± 3.04 (SD) in 1994 and 42.33 ± 2.84 (SD) cm in 1995). Noted that "this is almost the same size as that caught by the commercial fishery". When sea lions were grouped by sex and age (≤4 yrs and ≥4 yrs old) there was no significant difference in the size of pollock consumed between the two age groups or between sexes. Goto and Shimazaki (1997)

Table 4.3. Locations of instrumented Steller sea lions inside and outside of critical habitat based on satellite data.

Breeding	Number of Locations Within Critical Habitat	Number of Locations Outside Critical Habitat	Percentage	Number of Locations Total	# of Animals (n)	Locations Per animal
Jan-Mar	260.00	5.00	1.89	265.00	5.00	53.00
Apr-June	101.00	22.00	17.89	123.00	4.00	30.75
July-Sept	401.00	0.00	0.00	401.00	13.00	30.85
Oct-Dec	4.00	5.00	55.56	9.00	2.00	4.50
Non-Breeding						
Jan-Mar	1210.00	10.00	0.82	1220.00	20.00	61.00
Apr-June	1110.00	66.00	5.61	1176.00	13.00	90.46
July-Sept	71.00	0.00	0.00	71.00	2.00	35.50
Oct-Dec	264.00	24.00	8.33	288.00	9.00	32.00

Table 4.4. Percent frequency of of occurrence of all taxa identified in stomach samples collected from 1956 to 1986 throughout the range of Steller sea lions. Values are shown for the entire range in all years and for the Eastern and Western stocks during two time periods; from the 1950-70's and the 1980's.

	All Years	1950's - 1970's		1980's	
	RANGE	EASTERN	WESTERN	EASTERN	WESTERN
	n=781	n=196	n=394	n=14	n=177
Species	% Frequency of Occurrence				
Pollock	**39.2**	**9.2**	**38.6**	**57.1**	**72.3**
Octopus sp.	16.5	23.0	9.9	7.1	24.9
Pacific Cod	**8.6**	**1.0**	**4.8**	**7.1**	**25.4**
Cephalopods	7.8	0.0	15.5	0.0	0.0
Clamshell	7.4	3.6	11.9	0.0	2.3
Rockfish unident.	6.7	16.3	4.8	0.0	0.6
Pacific herring	**6.5**	**9.7**	**4.1**	**14.3**	**7.9**
Gonatid squid	4.5	0.0	8.9	0.0	0.0
Sandlance	3.5	1.5	4.8	0.0	2.8
Squid	3.5	5.6	0.8	14.3	6.2
Fish unident.	3.2	0.0	4.8	14.3	2.3
Capelin	3.2	0.0	6.3	0.0	0.0
Righteye flounder unident.	3.1	0.0	2.8	21.4	5.6
Sculpin unident.	2.8	0.0	3.0	0.0	5.6
Greenling unident.	2.7	0.0	5.3	0.0	0.0
Salmon	**2.7**	**5.6**	**1.8**	**7.1**	**1.1**
Gonatus magister	2.6	0.0	5.1	0.0	0.0
Flatfishes	1.9	3.6	0.3	0.0	4.0
Milk	1.8	6.6	0.3	0.0	0.0
Dogfish	1.7	6.6	0.0	0.0	0.0
Smelt unident.	1.7	0.0	3.3	0.0	0.0
Shrimps	1.7	1.5	2.0	0.0	1.1
Pacific Hake	1.4	5.6	0.0	0.0	0.0
Crustaceans	1.4	0.0	2.8	0.0	0.0
Stones and gravel	1.3	0.0	2.5	0.0	0.0
Sculpin unident.	1.2	0.0	1.5	0.0	1.7
Crab unident.	1.0	0.0	1.3	0.0	1.7
Yellowfin sole	0.9	0.5	0.0	0.0	3.4
Ommatostrephidae	0.8	0.0	1.5	0.0	0.0
Ratfish	0.6	2.6	0.0	0.0	0.0
Tanner Crab	0.6	0.0	0.5	0.0	1.7
Teliost fish unident.	0.5	0.0	0.0	0.0	2.3
Cartilaginous fish unident.	0.5	0.0	0.0	0.0	2.3
Pacific halibut	0.5	0.5	0.3	0.0	1.1
Gadidae	0.5	0.0	0.5	0.0	1.1
Shell fragments	0.4	0.0	0.0	0.0	1.7
Lamprey	0.4	0.5	0.5	0.0	0.0
Isopods	0.4	0.0	0.8	0.0	0.0
Buccinum sp.	0.4	0.0	0.0	0.0	1.7
Spotted seal	0.3	0.0	0.3	0.0	0.6
Skate unident.	0.3	0.5	0.3	0.0	0.0

Table 4.5a. Percent frequency of occurrence of prey items recovered from Steller sea lion scat collected in winter (December-April, 1990-1998; NMFS unpublished data).

Region Sample size Species	RANGE n=1685	CGOA n=358	WGOA n=491	EAI n=714	CAI n=122	WAI no data
	% Frequency of Occurrence					
POLLOCK	**62.4**	**52.8**	**83.9**	**62.7**	**1.6**	
PACIFIC COD	**27.2**	**28.8**	**37.1**	**21.4**	**17.2**	
ATKA MACKEREL	**16.5**	**5.0**	**4.3**	**21.7**	**68.9**	
SALMON	**13.4**	**10.6**	**9.8**	**17.5**	**11.5**	
IRISH LORD SP	11.7	13.1	9.2	12.6	12.3	
SNAILFISH SP	9.0	10.6	4.7	10.4	13.9	
ARROWTOOTH FL	8.8	20.4	9.4	3.5	3.3	
SAND FISH	8.3	5.6	1.8	15.4	0.8	
SAND LANCE	7.1	16.8	8.6	2.4	0.0	
UNID. FLATFISH	6.8	7.0	6.1	8.0	1.6	
HERRING	**5.9**	**21.2**	**3.9**	**0.6**	**0.0**	
ROCK SOLE	5.8	11.2	5.9	3.5	2.5	
UNID GADID	5.6	11.5	4.1	4.5	1.6	
CEPHALOPODS	5.1	7.5	2.6	4.2	13.1	
ROCKFISH SP	4.3	3.6	3.9	5.3	2.5	
POLYCHAETE UNID	2.7	2.0	2.6	2.2	8.2	
GREENLING SPP	2.5	0.6	2.0	3.5	4.1	
SM. LUMPSUCKER	2.4	0.0	0.6	4.8	3.3	
ROCK GREENLING	2.4	0.0	0.0	1.1	26.2	
SCULPIN	2.1	3.1	0.6	2.8	0.8	
HALIBUT	1.6	0.8	0.6	2.8	0.8	
GUNNELS	1.3	1.7	1.2	1.1	1.6	
KELP GREENLING	1.3	0.0	0.0	3.1	0.0	
STARRY FLOUNDER	0.8	2.0	0.2	0.8	0.0	
POACHER SP	0.8	0.8	1.2	0.6	0.0	
RED IRISH LORD	0.8	0.3	1.0	0.7	1.6	
SKATE	0.7	1.7	0.0	0.6	1.6	
SMELT SPP	0.7	0.8	0.8	0.7	0.0	
BIRD or MAMMAL	0.5	0.0	0.0	1.3	0.0	
MYCTOPHID SP	0.5	0.6	0.2	0.3	2.5	
CAPELIN	0.4	1.1	0.0	0.3	0.0	
GYMNOCANTHUS SP	0.4	0.8	0.4	0.1	0.0	
RONQUIL SP	0.4	0.0	0.4	0.6	0.0	
STICHAEIDAE SP	0.4	0.6	0.4	0.3	0.0	
EULACHON	0.3	0.6	0.4	0.1	0.0	
CARTILAG. FISH	0.2	0.3	0.0	0.3	0.0	
SMOOTHTONGUE	0.2	0.0	0.4	0.1	0.0	
TUBESNOUT	0.2	0.6	0.2	0.0	0.0	
STICKELBACK SP	0.1	0.3	0.0	0.1	0.0	
scats containing unid. prey	*134*	*40*	*33*	*50*	*11*	

Table 4.5b. Percent frequency of occurrence of prey items recovered from Steller sea lion scat collected in summer (May-September, 1990-1998; NMFS unpublished data).

Region Sample size Species	RANGE n=2168	CGOA n=245	WGOA n=282	EAI n=408	CAI n=884	WAI n=349
	% Frequency of Occurrence					
ATKA MACKEREL	**58.9**	**0.0**	**1.8**	**30.6**	**92.3**	**95.1**
POLLOCK	**32.5**	**64.5**	**80.1**	**50.5**	**11.9**	**2.9**
SALMON	**25.5**	**40.4**	**45.7**	**34.1**	**18.8**	**5.4**
CEPHALOPODS	12.4	4.1	0.7	6.4	21.8	10.6
HERRING	**7.5**	**6.9**	**3.2**	**33.1**	**0.1**	**0.0**
PACIFIC COD	**7.1**	**4.9**	**9.9**	**7.4**	**6.6**	**7.2**
ARROWTOOTH FL	6.2	35.1	11.0	2.9	0.6	0.0
SAND LANCE	5.5	9.4	18.4	8.1	0.9	1.1
IRISH LORD SP	4.6	0.4	5.7	6.4	2.9	8.6
UNID GADID	3.6	5.7	6.7	4.4	2.3	2.0
ROCK SOLE	2.3	0.8	1.4	9.6	0.6	0.0
POLYCAETE UNID	2.2	1.2	2.5	2.0	2.8	1.4
ROCKFISH SP	2.0	1.2	3.5	1.5	2.4	1.1
SKATE	1.5	1.2	0.4	3.7	1.5	0.3
SMOOTHTONGUE	1.5	0.0	0.0	3.4	2.0	0.0
FLATFISH SP	1.3	2.0	1.4	2.7	0.7	0.9
SAND FISH	1.2	1.2	0.7	4.7	0.2	0.0
SMELT SPP	1.1	7.3	1.1	0.5	0.0	0.0
CAPELIN	0.8	2.9	0.7	2.2	0.0	0.0
GREENLING SPP	0.8	0.0	1.4	1.5	0.5	0.9
HALIBUT	0.8	1.6	0.7	2.5	0.1	0.0
STURGEON POACHER	0.8	0.0	0.0	4.2	0.0	0.0
ROCK GREENLING	0.7	0.0	0.0	2.7	0.5	0.3
BIRD or MAMMAL	0.6	0.0	0.7	0.2	0.6	1.4
SM. LUMPSUCKER	0.6	0.0	0.0	0.0	1.4	0.0
SCULPIN	0.5	0.0	0.4	1.5	0.3	0.3
MYCTOPHID SP	0.5	0.4	0.0	0.0	1.0	0.0
HAKE	0.4	1.2	1.1	0.2	0.2	0.0
LAMPREY SPP	0.4	0.0	0.7	1.0	0.3	0.0
POACHER SP	0.4	0.0	0.0	2.0	0.1	0.0
SABLEFISH	0.4	2.4	0.4	0.5	0.0	0.0
SNAILFISH SP	0.4	0.4	0.4	0.0	0.7	0.3
YELLOWFIN SOLE	0.3	0.0	0.0	1.5	0.0	0.0
STARRY FLOUNDER	0.2	0.0	0.4	1.0	0.0	0.0
YELLOW IRISH LORD	0.2	0.0	0.4	0.2	0.0	0.9
GUNNELS	0.2	0.0	0.7	0.5	0.0	0.0
KELP GREENLING	0.2	0.0	0.0	0.5	0.1	0.3
PENPOINT GUNNEL	0.2	0.0	0.0	1.0	0.0	0.0
RED IRISH LORD	0.2	0.0	0.4	0.0	0.1	0.6
EULACHON	0.1	0.8	0.4	0.0	0.0	0.0
scats containing unid prey	*127*	*22*	*20*	*38*	*28*	*19*

Table 4.6. Counts of adult and juvenile (non-pup) Steller sea lions at rookery and haulout trend sites by region (NMFS unpubl., Sease 2000). For the GOA, the eastern sector includes rookeries from Seal Rocks in Prince William Sound to Outer Island; the central sector extends from Sugarloaf and Marmot Islands to Chowiet Island; and the western sector extends from Atkins Island to Clubbing Rocks. For the Aleutian Islands, the eastern sector includes rookeries from Sea Lion Rock (near Amak Island) to Adugak Island; the central sector extends from Yunaska Island to Kiska Island; and the western sector extends from Buldir Island to Attu Island.

Year	Gulf of Alaska			Aleutian Islands			Southeast Alaska
	Eastern	Central	Western	Eastern	Central	Western	
1975				19,769			
1976	7,053	24,678	8,311	19,743			
1977				19,195			
1979					36,632	14,011	6,376
1982							6,898
1985		19,002	6,275	7,505	23,042		
1989	7,241	8,552	3,800	3,032	7,572		8,471
1990	5,444	7,050	3,915	3,801	7,988	2,327	7,629
1991	4,596	6,273	3,734	4,231	7,499	3,085	7,715
1992	3,738	5,721	3,720	4,839	6,399	2,869	7,558
1994	3,369	4,520	3,982	4,421	5,790	2,037	8,826
1996	2,133	3,915	3,741	4,716	5,528	2,190	8,231
1997		3,352	3,633				
1998		3,346	3,361	3,847	5,761	1,913	8,693
1999	1,952						
2000	1,894	3,117	2,842	3,842	5,427	1,071	

Table 5.1. Groundfish and Squid Catches (metric tons) in the Eastern Bering Sea, 1964-1985 (NMFS 1999).

	Catches of Pollock (in metric tons) and Percentages							Total Groundfish Catch (in metric tons)				
Year	Bering Sea	%	Aleutian Islands	%	Gulf of Alaska	%	Total	Bering Sea	Aleutian Islands	Gulf of Alaska	Total	%
1964	174,792	0.4438			1,126	0.0045	175,918	393,891		248,192	642,083	0.2740
1965	230,551	0.6695			2,749	0.0076	233,300	344,369		360,131	704,500	0.3312
1966	261,678	0.5788			8,932	0.0404	270,610	452,081		221,172	673,253	0.4019
1967	550,362	0.6581			6,276	0.0451	556,638	836,308		139,206	975,514	0.5706
1968	702,181	0.7261			6,164	0.0490	708,345	967,083		125,822	1,092,905	0.6481
1969	862,789	0.7238			17,553	0.1549	880,342	1,192,020		113,333	1,305,353	0.6744
1970	1,256,565	0.7885			9,343	0.1099	1,265,908	1,593,649		84,983	1,678,632	0.7541
1971	1,743,763	0.8159			9,458	0.0817	1,753,221	2,137,326		115,758	2,253,084	0.7781
1972	1,874,534	0.8722			34,081	0.2147	1,908,615	2,149,092		158,768	2,307,860	0.8270
1973	1,758,919	0.8520			36,836	0.2550	1,795,755	2,064,444		144,478	2,208,922	0.8130
1974	1,588,390	0.8360			61,880	0.4041	1,650,270	1,900,092		153,143	2,053,235	0.8037
1975	1,356,736	0.8246			59,512	0.4191	1,416,248	1,645,232		142,015	1,787,247	0.7924
1976	1,177,822	0.8245			86,527	0.4971	1,264,349	1,428,565		174,081	1,602,646	0.7889
1977	978,370	0.8375	7,625	0.1132	112,089	0.5726	1,098,084	1,168,144	67,348	195,768	1,431,260	0.7672
1978	979,431	0.7520	6,282	0.1028	90,822	0.5647	1,076,535	1,302,509	61,092	160,830	1,524,431	0.7062
1979	913,881	0.7881	9,504	0.1264	98,508	0.6056	1,021,893	1,159,547	75,195	162,675	1,397,417	0.7313
1980	958,279	0.7842	58,156	0.5358	110,100	0.5439	1,126,535	1,221,944	108,531	202,426	1,532,901	0.7349
1981	973,505	0.7728	55,516	0.5328	139,168	0.5811	1,168,189	1,259,666	104,199	239,476	1,603,341	0.7286
1982	955,964	0.7891	57,978	0.5902	168,693	0.7209	1,182,635	1,211,483	98,233	234,001	1,543,717	0.7661
1983	982,363	0.7673	59,026	0.6238	215,567	0.7258	1,256,956	1,280,285	94,617	296,988	1,671,890	0.7518
1984	1,098,783	0.7535	81,834	0.5566	307,400	0.8619	1,488,017	1,458,299	147,022	356,659	1,961,980	0.7584
1985	1,179,759	0.7154	58,730	0.5183	284,823	0.8883	1,523,312	1,649,109	113,310	320,656	2,083,075	0.7313

Notes:
a = Arrowtooth flounder included in Greenland turbot catch statistics.
b = Includes POP shortraker, rougheye, northern and sharpchin.
c = Rocksole prior to 1991 is included in other flatfish catch statistics.
d = Through December 31, 1998.
e = Through Dec 31,1999 compiled from NMFS Region website.
Numbers don't include fish taken for research.

Table 5.2. Major fish prey from stomachs of Steller sea lions collected in Southeast Alaska, Kodiak Island, and the Gulf of Alaska during 1975-1993. Ranks are determined from the frequency of occurrence of prey in stomachs with contents (shown as percentage). The rank of stomach contents from Kodiak Island during 1990-1993 was determined from the percent frequency of occurrence of prey in scats with contents. The sizes of the various samples are shown below the location and sampling period.

Rank	Gulf of Alaska 1975-1978 n = 178	Kodiak 1975 - 1978 n = 63	Kodiak 1985-1986 n = 67	Kodiak 1990-1993 n = 54	SE Alaska 1986 n = 14
1	walleye pollock 69.1%	walleye pollock 49.2%	walleye pollock 68.7%	walleye pollock 64.8%	walleye pollock 64.3%
2	capelin 13.4%	capelin 28.1%	flatfish 13.4%	salmon 24.1%	flatfish 28.6%
3	Pacific cod 12.8%	Pacific cod 14.1%	Pacific cod 10.3%	Atka mackerel 16.7%	Pacific herring 14.3%
4	Pacific herring 8.9%	flatfish and salmon 7.9%	sand lance 7..4%	flatfish 14.8%	-
5	flatfish 5.1%	-	-	sand lance 7.4%	-

Table 5.3 Summary of estimates of Steller sea lion (SSL) mortality caused by killer whale (KW) predation. In alternatives 1-4, it was assumed that the SSL population was fixed at 42,000 animals and the crude death rate was 20% excluding killer whale predation. In alternative 5, the SSL population was fixed at 100,000. All models used an underlying decline of 5% per year for SSLs in estimating the percent mortality due to killer whale predation.

	Alternative Models				
Input parameters for model	***1***	***2***	***3***	***4***	***5***
Amount Consumed by KW (kg/day)	74	74	74	74	74
Number of Days Feeding	365	365	365	365	365
Number of Killer Whales	125	125	125	125	125
Weight Per SSL (kg)	160	160	160	160	160
Percent of SSL in KW Diet	12.5%	10%	15%	5%	12.5%
Estimates regarding predation by killer whales					
Number of SSLs Eaten Per Year	2638	2110	6330	5275	5275
Mortality Rate = (# SSL eaten) /(total # of SSL)	6%	5%	8%	2.5%	3%
Total Mortality Rate Due to Killer Whales	**24%**	**20%**	**27%**	**11%**	**12%**

Table 5.4 Census information for selected communities in the Bering Sea, Aleutian Islands, and Gulf of Alaska.

Area	1980s	1990s	1999
Alaska	401,851	550,043	619,500
Aleutians East Borough	1,643	2,464	2,179
Aleutians West Borough	6,125	9,478	3,913
Anchorage Borough	174,431	226,338	257,808
Bethel Census Area	10,999	13,656	16,215
Bristol Bay Borough	1,094	1,410	1,061
Dillingham Census Area	3,232	4,012	4,565
Kenai Peninsula Borough	25,282	40,802	48,993
Kodiak Island Borough	9,939	13,309	14,350
Lake and Peninsula Borough	1,384	1,668	1,748
Valdez - Cordova Census Area	8,348	9,952	10,229

Table 5.5. Number of fin whales killed in the North Pacific prior to the whaling ban (from Tilman 1977)

Year	No. Whales Taken	Year	No. Whales Taken	Year	No. Whales Taken
1963	2503	1967	2272	1971	802
1964	3991	1968	1942	1972	758
1965	3165	1969	1276	1973	455
1966	2885	1970	1012	1974	413

Table 5.6. Number of sei whales killed in the North Pacific prior to the whaling ban (from Tilman 1977)

Year	No. Whales Taken	Year	No. Whales Taken	Year	No. Whales Taken
1963	2590	1967	6053	1971	2993
1964	3642	1968	5740	1972	2327
1965	3172	1969	5157	1973	1856
1966	4406	1970	4503	1974	1280

Table 5.7 Estimate of Steller Sea lion baseline mortality due to take for 1959-1999 in the action area[1]

Description of Take	Dates	Rate of Take	Total Estimated Take
Entanglement in Marine Debris	(1970-1990) 1985	100 per year 0.07%	2,000 no estimate
Commercial Harvests	(1959) (1963-1972)		630 males 45,178 pups
Subsistence Harvests	1959-1991 (1992-1995) (1996-1999)	no estimate 448/ year (est) 178/year (est)	2,000 600
Incidental Catch	1959-1966 1966-1977 1978-1988 1989-1999	no estimate 1,000-2,000/yr 100-2,000/yr <50/yr	no estimate 14,000-16,000 5,700-7,400 no estimate
Research	1975/78 1985/86 1989	62/yr 89/yr 16	250 178 16
Intentional Fisheries Take	(1956-1990)		52,000
Total Estimated Take	1970-1999		**123,000 – 126,000**

[1] Based on the following reviews: Entanglement (Calkins 1985; Loughlin et al. 1986), Commercial Harvest (Merrick et al. 1987), Subsistence Harvest (Wolfe and Mishler [all 4 pubs]), Incidental catch (Perez and Loughlin 1991), Research (Calkins and Goodwin 1988; Calkins et al. 1994), and Intentional take (Trites and Larkin 1992)

Table 5.8 Groundfish and Squid Catches in the eastern Bering Sea from 1954 to 1999 (in metric tons).

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot	Arrow-Tooth Flounder	Other Flatfish	Rock Sole	Atka Mackerel	Squid	Other Species	Total
1954						12,562								12,562
1955						14,690								14,690
1956						24,697								24,697
1957						24,145								24,145
1958	6,924	171	6			44,153							147	51,401
1959	32,793	2,864	289			185,321							380	221,647
1960			1,861	6,100		456,103	36,843	a						500,907
1961			15,627	47,000		553,742	57,348	a						673,717
1962			25,989	19,900		420,703	58,226	a						524,818
1963			13,706	24,500		85,810	31,565	a	35,643					191,224
1964	174,792	13,408	3,545	25,900		111,177	33,729	a	30,604				736	393,891
1965	230,551	14,719	4,838	16,800		53,810	9,747	a	11,686				2,218	344,369
1966	261,678	18,200	9,505	20,200		102,353	13,042	a	24,864				2,239	452,081
1967	550,362	32,064	11,698	19,600		162,228	23,869	a	32,109				4,378	836,308
1968	702,181	57,902	4,374	31,500		84,189	35,232	a	29,647				22,058	967,083
1969	862,789	50,351	16,009	14,500		167,134	36,029	a	34,749				10,459	1,192,020
1970	1,256,565	70,094	11,737	9,900		133,079	19,691	12,598	64,690				15,295	1,593,649
1971	1,743,763	43,054	15,106	9,800		160,399	40,464	18,792	92,452				13,496	2,137,326
1972	1,874,534	42,905	12,758	5,700		47,856	64,510	13,123	76,813				10,893	2,149,092
1973	1,758,919	53,386	5,957	3,700		78,240	55,280	9,217	43,919				55,826	2,064,444
1974	1,588,390	62,462	4,258	14,000		42,235	69,654	21,473	37,357				60,263	1,900,092
1975	1,356,736	51,551	2,766	8,600		64,690	64,819	20,832	20,393				54,845	1,645,232
1976	1,177,822	50,481	2,923	14,900		56,221	60,523	17,806	21,746				26,143	1,428,565
1977	978,370	33,335	2,718	2,654	311	58,373	27,708	9,454	14,393			4,926	35,902	1,168,144
1978	979,431	42,543	1,192	2,221	2,614	138,433	37,423	8,358	21,040		831	6,886	61,537	1,302,509
1979	913,881	33,761	1,376	1,723	2,108	99,017	34,998	7,921	19,724		1,985	4,286	38,767	1,159,547
1980	958,279	45,861	2,206	1,097	459	87,391	48,856	13,761	20,406		4,955	4,040	34,633	1,221,944
1981	973,505	51,996	2,604	1,222	356	97,301	52,921	13,473	23,428		3,027	4,182	35,651	1,259,666

Table 5.8 Groundfish and Squid Catches in the eastern Bering Sea from 1954 to 1999 (in metric tons).

Year	Pollock	Pacific Cod	Sable Fish	Pacific Ocean Perch Complex	Other Rock Fish	Yellow Fin Sole	Greenland Turbot	Arrow-Tooth Flounder	Other Flatfish	Rock Sole	Atka Mackerel	Squid	Other Species	Total
1982	955,964	55,040	3,184	224	276	95,712	45,805	9,103	23,809		328	3,838	18,200	1,211,483
1983	982,363	83,212	2,695	221	220	108,385	43,443	10,216	30,454		141	3,470	15,465	1,280,285
1984	1,098,783	110,944	2,329	1,569	176	159,526	21,317	7,980	44,286		57	2,824	8,508	1,458,299
1985	1,179,759	132,736	2,348	784	92	227,107	14,698	7,288	71,179		4	1,611	11,503	1,649,109
1986	1,188,449	130,555	3,518	560	102	208,597	7,710	6,761	76,328		12	848	10,471	1,633,911
1987	1,237,597	144,539	4,178	930	474	181,429	6,533	4,380	50,372		12	108	8,569	1,639,121
1988	1,228,000	192,726	3,193	1,047	341	223,156	6,064	5,477	137,418		428	414	12,206	1,810,470
1989	1,230,000	164,800	1,252	2,017	192	153,165	4,061	3,024	63,452		3,126	300	4,993	1,630,382
1990	1,353,000	162,927	2,329	5,639	384	80,584	7,267	2,773	22,568		480	460	5,698	1,644,109
1991	1,268,360	165,444	1,128	4,744	396	94,755	3,704	12,748	30,401	46,681	2,265	544	16,285	1,647,455
1992	1,384,376	163,240	558	3,309	675	146,942	1,875	11,080	34,757	51,720	2,610	819	29,993	1,831,954
1993	1,301,574	133,156	669	3,763	190	105,809	6,330	7,950	28,812	63,942	201	597	21,413	1,674,406
1994	1,362,694	174,151	699	1,907	261	144,544	7,211	13,043	29,720	60,276	190	502	23,430	1,818,628
1995	1,264,578	228,496	929	1,210	629	124,746	5,855	8,282	34,861	54,672	340	364	20,928	1,745,890
1996	1,189,296	209,201	629	2,635	364	129,509	4,699	13,280	35,390	46,775	780	1,080	19,717	1,653,355
1997	1,115,268	209,475	547	1,060	161	166,681	6,589	8,580	42,374	67,249	171	1,438	20,997	1,640,590
1998/d	1,101,428	160,681	586	1,134	203	101,310	8,303	14,985	39,940	33,221	901	891	23,156	1,486,739
1999/e	998,703	147,281	677	653	141	69,265	5,206	10,628	34,389	40,505	1,165	392	18,973	1,327,978

Notes:
a = Arrowtooth flounder included in Greenland turbot catch statistics.
b = Includes POP shortraker, rougheye, northern and sharpchin.
c = Rocksole prior to 1991 is included in other flatfish catch statistics.
d = Through December 31, 1998.
e = Through Dec 31,1999 compiled from NMFS Region website.
Numbers don't include fish taken for research.

Table 5.9a Groundfish catch in the BSAI groundfish fisheries and associated bycatch of chinook salmon and "other" salmon (Source: NMFS, Alaska Region, Juneau, AK).

Year	Gear Type	Groundfish (metric tons)	Chinook (#'s)	Other Salmon (#'s)
1999*	Trawl	1,113,572	13,533	49,752
	Hook-and-line	91,141	3	31
	Pot Gear	15,788	9	0
	Jig	137	0	0
	Total	1,220,637	13,545	49,783
1998	Trawl	1,476,210	58,967	69,242
	Hook-and-line	130,359	4	62
	Pot Gear	14,155	0	0
	Jig	196	0	0
	Total	1,620,920	58,971	69,305
1997	Trawl	1,653,841	50,519	66,916
	Hook-and-line	153,853	11	79
	Pot Gear	22,658	0	0
	Jig	201	0	0
	Total	1,830,553	50,530	66,994
1996	Trawl	1,698,562	63,179	77,991
	Hook-and-line	116,169	26	69
	Pot Gear	33,639	0	0
	Jig	273	0	0
	Total	1,848,643	63,205	78,060
1995	Trawl	1,781,965	22,691	21,817
	Hook-and-line	126,069	745	57
	Pot Gear	21,101	0	1
	Jig	616	0	0
	Total	1,929,751	23,436	21,875

* Amounts calculated on October 1999.

Table 5.9b Groundfish catch in the GOA groundfish fisheries and associated bycatch of chinook salmon and other salmon (Source: NMFS, Alaska Region, Juneau, AK)

Year	Gear Type	Groundfish (metric tons)	Chinook (#'s)	Other Salmon (#'s)
1999*	Trawl	155,541	18,214	7,031
	Hook-and-line	25,686	0	0
	Pot Gear	18,125	0	0
	Jig	75	0	0
	Total	199,427	18,214	7,031
1998	Trawl	208,761	16,941	13,539
	Hook-and-line	25,467	0	0
	Pot Gear	10,806	0	0
	Jig	79	0	0
	Total	245,114	16,941	13,539
1997	Trawl	195,261	15,230	3,014
	Hook-and-line	25,937	0	0
	Pot Gear	9,417	0	0
	Jig	340	0	0
	Total	230,955	15,230	3,014
1996	Trawl	161,895	15,761	4,176
	Hook-and-line	27,261	0	0
	Pot Gear	12,296	0	0
	Jig	604	0	0
	Total	202,055	15,761	4,176
1995	Trawl	167,172	14,646	64,510
	Hook-and-line	31,863	6	179
	Pot Gear	16,251	0	0
	Jig	600	0	0
	Total	215,886	14,652	64,688

* Amounts calculated on October 1999.

Table 5.10. Breakdown of "other" salmon bycatch in BSAI and GOA groundfish fisheries (Source: NMFS, Alaska Fisheries Science Center; from the Observer Database)

			Percent of "Other" Salmon Category				
Area	**Year**	**Gear Type**	**Chum Salmon**	**Coho**	**Sockeye**	**Pink**	**Steelhead**
BSAI	1999	Trawl	96.891	2.912	0.004	0.193	0.000
		Hook-and-line	100.000	0.000	0.000	0.000	0.000
	1998	Trawl	99.704	0.220	0.016	0.060	0.000
		Hook-and-line	81.061	18.939	0.000	0.000	0.000
	1997	Trawl	99.738	0.160	0.098	0.004	0.000
		Hook-and-line	100.000	0.000	0.000	0.000	0.000
	1996	Trawl	99.707	0.289	0.002	0.002	0.000
		Hook-and-line	79.289	13.971	0.000	6.740	0.000
	1995	Trawl	95.917	3.985	0.000	0.098	0.000
		Hook-and-line	100.000	0.000	0.000	0.000	0.000
	Average	Trawl	98.391	1.513	0.024	0.071	0.000
		Hook-and-line	92.070	6.582	0.000	1.348	0.000
GOA	1999	Trawl	75.923	20.526	1.761	1.790	0.000
		Hook-and-line	15.686	84.314	0.000	0.000	0.000
	1998	Trawl	71.723	22.035	1.490	4.752	0.000
		Hook-and-line	12.800	53.600	25.600	8.000	0.000
	1997	Trawl	98.095	0.939	0.234	0.732	0.000
		Hook-and-line	60.561	39.439	0.000	0.000	0.000
	1996	Trawl	95.902	3.947	0.060	0.091	0.000
		Hook-and-line	38.327	50.348	0.000	11.325	0.000
	1995	Trawl	99.060	0.862	0.064	0.014	0.000
		Hook-and-line	20.109	75.043	0.000	4.848	0.000
	Average	Trawl	88.141	9.662	0.722	1.476	0.000
		Hook-and-line	29.497	60.549	5.120	4.835	0.000

Table 5.11. Alaska OCS oil and gas lease sales.

Planning Area	Sale Number	Sale Date	No. leases issued	Disposition
Aleutian Basin [North]	Sale 92	Oct 1988	23	all leases have been relinquished
Cook Inlet	Sale 60	Sep 1981	13	all leases have expired
Cook Inlet	Sale CI	Oct 1987	87	all leases have expired
Cook Inlet	Sale 149	Oct 1997	87	sale area has two active leases
Gulf of Alaska	Sale 39	Apr 1976	76	all leases have expired
Gulf of Alaska	Sale 55	Oct 1980	35	all leases have expired
Navarin Basin	Sale 83	Apr 1984	163	all leases have been relinquished
Norton Basin	Sale 57	Mar 1983	59	all leases have been relinquished
St. George Basin	Sale 70	Apr 1983	96	all leases have been relinquished

Table 6.1. Analysis of recruitment of various groundfish species in the EBS, AI, and GOA. The Dickey-Fuller test takes as the null hypothesis that the variable is nonstationary. A statistically significant number for that test means that the null hypothesis is rejected and the series is stationary. The KPSS test (Kwiatowski et al. 1992) takes as the null hypothesis that the variable is stationary. A significant positive number indicates that the null hypothesis is rejected and the series is nonstationary. The last column indicates if there are autoregressive terms, order 0 means no significant autoregressive terms, order 1 means a first order autoregressive process. Where results of the stationary tests are contradictory, the residuals were also tested after running the model.

Management unit	Dickey-Fuller	KPSS	Autoregressive order
EBS pollock	?	?	0
EBS Pacific cod	N	N	0
EBS yellowfin sole *residuals*	N S	S S	1
EBS Greenland turbot *residuals*	S S	N S	1 0
EBS arrowtooth flounder	N	S	0
EBS rock sole *residuals*	N S	S S	1
EBS flathead sole	N	?	1
EBS Alaska plaice	N	N	1
Sablefish	N	S	0
AI POP	N	N	0
EBS POP	S	S	1
AI Atka mackerel	N	S	0
GOA pollock *residuals*	S S	N S	1
GOA Pacific cod	N	N	0
GOA arrowtooth flounder *residuals*	N N	S S	1
GOA POP	N	S	0
GOA thornyhead rockfish *residuals*	N S	N S	1

Table 6.2. Summary of the possible effects of harvesting groundfish in the BSAI and GOA with various gear types.

	Trawl	Hook-and-line	Pot	Jig
Percentage of total catch in 1999	BSAI = 86% GOA = 73%	BSAI = 12% GOA = 14%	BSAI = 2% GOA = 13%	BSAI = 0.02% GOA = 0.1%
Maximum rate of removal (mt/week in 1999)	BSAI = 96,072 GOA = 18,357	BSAI = 10,155 GOA = 4,336	BSAI = 5,753 GOA = 4,087	BSAI = 47 GOA = 34
Number of vessels in 1998	BSAI = 166 GOA = 198	BSAI = 115 GOA = 876	BSAI = 79 GOA = 178	
Bycatch of prohibited species	salmon herring halibut crab	halibut some crab	crab	
Effects on habitat	Bottom trawl disturbance of benthic habitat, modification of hard substrate. Long term ecological effects are likely to reduce biodiversity. Incidental catch of living substrates (corals, anemones, sponges, and sea whips) and modification to non-living substrates.	Some disturbance with similar effects as bottom trawl (although on a smaller scale). Incidental catch of living substrates (mostly anemones and sponges) and modification to non-living substrates.		Significant negative impacts to benthic habitat is unlikely.

Table 6.3. Portion of the catch of BSAI and GOA groundfish in Steller sea lion critical habitat by gear type (average from 1995-1999).

Catch of groundfish in Steller sea lion critical habitat				
Area	**All gear**	**Trawl**	**Pot**	**Hook-and-line**
BSAI inside critical habitat around rookeries and haulouts only	14%	13%	63%	18%
BSAI inside critical habitat around rookeries and haulouts plus special foraging areas	49%	50%	81%	27%
GOA inside critical habitat around rookeries and haulouts only	48%	51%	60%	25%
GOA inside critical habitat around rookeries and haulouts plus special foraging areas	54%	58%	71%	25%

Table 6.4. Amounts of groundfish harvested on observed vessels and in hauls sampled by observers compared with amounts estimated using the "blend" catch estimation procedure. Recall from chapter 2 that the "blend" approach consists of a set of rules for determining whether total catch is estimated from observer data or from the fishing vessel records. HAL = hook-and-line gear, POT = pot gear, TRW = trawl gear.

FMP	Gear	Target	Blend estimate (mt)[1]	Catch on observed vessels (mt)[2]	Catch on observed vessels / blend estimate of total[3]	Catch in hauls observed (mt)[4]	Catch in hauls observed / blend estimate of total[5]
BSAI							
	HAL	Pac. Cod	144,912	135,694	94%	95,827	66%
	HAL	Sablefish	2,549	1,041	41%	473	19%
	HAL	Turbot	4,909	5,387	110%*	2,703	55%
	POT	Pac. Cod	22,639	7,359	33%	5,511	24%
	TRW	Atka Mack.	72,379	73,385	101%*	51,599	71%
	TRW	Pac. Cod	137,930	126,581	92%	89,175	65%
	TRW	O. Flats	3,938	4,199	107%*	2,406	61%
	TRW	Rockfish	12,283	11,989	98%	9,023	73%
	TRW	Flathead	19,671	14,182	72%	8,010	41%
	TRW	Pollock	1,008,898	876,911	87%	634,683	63%
	TRW	Rock Sole	57,928	59,342	102%*	31,742	55%
	TRW	Yellowfin	248,865	237,625	95%	145,362	58%
		Totals	1,736,901	1,553,695	89%	1,076,514	62%
GOA							
	HAL	Pac. Cod	11,511	1,667	14%	984	9%
	HAL	Rockfish	526	19	4%	15	3%
	HAL	Sablefish	14,963	3,139	21%	1,244	8%
	POT	Pac. Cod	9,419	355	4%	257	3%
	TRW	Pac. Cod	53,128	11,020	21%	8,844	17%
	TRW	Deep Flat	7,157	3,225	45%	1,540	22%
	TRW	Shallow Flat	10,068	2,523	25%	1,706	17%
	TRW	Rockfish	20,051	16,369	82%	9,599	48%
	TRW	Flathead	4,137	1,980	48%	1,065	26%
	TRW	Other Spp.	857	61	7%	47	5%
	TRW	Pollock	87,999	31,295	36%	27,829	32%
	TRW	Rex Sole	8,574	5,493	64%	2,956	34%
		Totals	228,390	77,146	34%	56,086	26%

[1] Groundfish metric tons from the blend database.

[2] Groundfish metric tons from observer official total catch -- all hauls/sets while the observer is onboard, includes observer transcription of skipper estimates for hauls not independently estimated by the observer.

[3] Percent of observer official total catch compared to blend total catch estimate. This indicates the proportion of groundfish harvested on observed vessels.

[4] Groundfish metric tons from hauls actually sampled by the observer. On trawl vessels, a single observer can typically sample 40-60 percent of the hauls. These are the weights of the haul/set from which a sample was taken, not the weight of the sample.

[5] Percentage of weight of sampled hauls compared to the blend total catch estimate.

* Indicates that the catch estimate from the observer exceeded the catch estimated using the blend approach.

Table 6.5. Summary of the spawning and total biomass in 1999 of a fished stock relative to an unfished stock

Species or species group	1999 spawning biomass/unfished stock	1999 total biomass/unfished stock
EBS Pollock	43%	51%
EBS Pacific cod	50%	50%
EBS Atka Mackerel	66%	56%
All EBS Species	54%	58%
GOA Pollock and Pcod	59%	46%
All GOA and EBS Combined	54%	58%

Table 6.6. Scores based on answers to questions about competitive interactions between target fisheries and the western stock of Steller sea lions in the Bering Sea/Aleutian Islands and Gulf of Alaska fishery management areas.

Fished Species or Target Fishery	Bering Sea/ Aleutian Islands	Gulf of Alaska
Pollock	**8**	**8**
Pacific cod	**8**	**8**
Sablefish	0	0
Atka mackerel	**8**	0
Yellowfin sole	0	1
Rock sole	1	1
Greenland turbot	1	1
Arrowtooth flounder	2	2
Flathead sole	0	1
Other flatfish	1	1
Pacific ocean perch	1	1
Other red rockfish	1	n/a
Sharpchin/northern rockfish	1	1
Shortraker/rougheye rockfish	1	0
Squid	2	n/a
Other species	1	1
Flatfish, Deep	n/a	0
Flatfish, Shallow	n/a	1
Rex sole	n/a	0
Rockfish, other slope	n/a	0
Rockfish, pelagic shelf	n/a	1
Rockfish, demersal shelf	n/a	1
Thornyhead	n/a	0
Forage fish	2	2

n/a = not applicable; this target fishery definition is not applicable in this fishery management area.

Table 6.7. Permitted seafood processing facilities in the action area. Data from the Alaska Division of Environmental Health (available through www.state.ak.us).

Location of Facility	Canneries	Land-based	Vessel	Direct-Marketing
Adak		1		
Anchorage		20	5	5
Chignik	1			
Cordova	4	5	1	2
Dillingham	2	2		
Egegik	1	1	1	
Kenai - Homer	1	22	2	4
King Cove	1		1	
King Salmon	1	5		2
Kodiak	4	12	8	1
Larsen Bay	1			
Ninilchik	1			
Seward	2	3		2
Unalaska		6	2	
Valdez	1	3	1	3
Totals	20	80	21	19

Table 9.1. Area (in km^2) of CH-RFRPA areas, their status relative to being closed or open to regulated pollock, Pacific cod, and Atka mackerel fisheries, and the fishery management region or 3-digit area they are within. Percent of total CH-RFRPA area (including CH foraging areas and the SCA) closed and open are also shown

Fishery	CH-RFRPA	Status			Percent	
Region/Area	Area	Closed	Open	Total	Closed	Open
EBS	7	166	20,579	20,746	1%	99%
	8	54,390		54,390	100%	0%
	9	37,287		37,287	100%	0%
EBS Total		91,844	20,579	112,423	82%	18%
541	12	1,407	37,530	38,937	4%	96%
542	13	40,587		40,587	100%	0%
543	13	20,576		20,576	100%	0%
AI Total		62,570	37,530	100,100	63%	37%
610	5	662	14,310	14,971	4%	96%
	6	13,854		13,854	100%	0%
	10	7,362		7,362	100%	0%
	11	8,491		8,491	100%	0%
610 Total		30,368	14,310	44,677	68%	32%
620	3	395	21,623	22,018	2%	98%
	4	17,261		17,261	100%	0%
	5	174	3,663	3,837	5%	95%
620 Total		17,830	25,286	43,116	41%	59%
630	1	501	3,536	4,037	12%	88%
	2	31,364		31,364	100%	0%
	3	457	7,599	8,056	6%	94%
630 Total		32,322	11,135	43,457	74%	26%
640	1	406	11,781	12,187	3%	97%
GOA Total		80,926	62,512	143,437	56%	44%
Grand Total		235,339	120,620	355,960	66%	34%

Table 9.2. Description of CH-RFRPA areas 1-13 shown in Figures 10-1, 10-2, and 10-3.

Area	Description
1	All waters 20 nm seaward of sites in area 1 west to 148°°45'W and outside of statistical areas 639 and 649
2	All waters 20 nm seaward of sites in area 2 east to 148°45'W, in the Shelikof Strait critical habitat foraging area east of 154°W, and on the east side of Kodiak Island south to a line connecting the following 2 points: 57°31'3" N 152°17'48"W 57°24'36"N 151°40'29"W
3	All waters 20 nm seaward of sites in area 3 north on the east side of Kodiak Island to a line connecting the above 2 points, and in the Shelikof Strait critical habitat foraging area west of 154°W
4	All waters 20 nm seaward of sites in area 4 north to the southern boundary of the Shelikof Strait critical habitat foraging area
5	All waters 20 nm seaward of sites in area 5 west to 161°15'W
6	All waters 20 nm seaward of sites in area 6 east to 161°15'W
7	All waters 20 nm seaward of sites in area 7 and in the Sea Lion Conservation Area west to a line connecting the following 2 points: 55°30'N 166°W 54°51'N 164°33'33"W
8	All waters within the southeastern Bering Sea critical habitat foraging area east of management area 518 and west to a line connecting the above 2 points
9	All waters within both management area 518 (Bogoslof) and the southeastern Bering Sea critical habitat foraging area
10	All waters 20 nm seaward of sites in area 10 in management area 610
11	All waters 20 nm seaward of sites in area 11 in management area 610
12	All waters 20 nm seaward of sites in area 12, in the Seguam Pass critical habitat foraging area, and in statistical area 541
13	All waters 20 nm seaward of sites in area 13 and in statistical areas 542 and 543

Table 9.3 CH-RFRPA sites in the Gulf of Alaska (GOA), eastern Bering Sea (EBS), and Aleutian Islands (AI). CH-RFRPA areas (1-13) and their status relative to constrained fishing for pollock, Pacific cod, and Atka mackerel (open or closed) are listed and shown in Figures 10-1, 10-2 and 10-3. Each sites' status relative to critical habitat (Y), rookery, haulout (H), and the RFRPA/BO (Y) is shown. Sites listed in fishery management area EBS/GOA are located inside the EBS, but near the border with the GOA. Similarly, sites listed as GOA/EBS are located in the GOA, but near the border with the EBS.

CH/RFRP Area	Open (O) or Closed (C)	Site Name	Rookery or Haulout (H)	Critical Habitat	RFRPA	Fishery Mgt. Area
1	O	CAPE ST. ELIAS	H	Y	Y	GOA
1	O	HOOK POINT	H	Y	Y	GOA
1	O	MIDDLETON ISLAND	H	Y		GOA
1	O	CAPE HINCHINBROOK	H		Y	GOA
1	O	SEAL ROCKS	Rookery	Y	Y	GOA
1	O	GLACIER ISLAND	H		Y	GOA
1	O	WOODED ISLAND (FISH)	Rookery	Y	Y	GOA
1	O	POINT ELEANOR	H	Y		GOA
1	O	THE NEEDLES	H	Y	Y	GOA
1	O	PERRY ISLAND	H	Y		GOA
1	O	POINT ELRINGTON	H	Y	Y	GOA
2	C	RUGGED ISLAND	H		Y	GOA
2	C	CHISWELL ISLANDS	H	Y	Y	GOA
2	C	SEAL ROCKS (KENAI)	H	Y		GOA
2	C	STEEP POINT	H		Y	GOA
2	C	OUTER (PYE) ISLAND	Rookery	Y	Y	GOA
2	C	GORE POINT	H	Y		GOA
2	C	PERL	H		Y	GOA
2	C	NAGAHUT ROCKS	H	Y		GOA
2	C	MARMOT	Rookery	Y	Y	GOA
2	C	SEA LION ROCKS	H	Y	Y	GOA
2	C	SUGARLOAF	Rookery	Y	Y	GOA
2	C	KODIAK/CAPE CHINIAK	H	Y	Y	GOA
2	C	SUD/SUD ISLAND	H	Y		GOA
2	C	LONG	H	Y	Y	GOA
2	C	SEA OTTER ISLAND	H	Y	Y	GOA
2	C	USHAGAT/SW	H	Y	Y	GOA
2	C	LATAX ROCKS	H	Y	Y	GOA
2	C	CAPE DOUGLAS	H		Y	GOA
2	C	SHAKUN ROCK	H	Y	Y	GOA
2	C	KODIAK/CAPE UGAT	H	Y	Y	GOA
3	O	UGAK	H	Y	Y	GOA
3	O	KODIAK/GULL POINT	H	Y	Y	GOA
3	O	KODIAK/CAPE BARNABAS	H	Y	Y	GOA
3	O	TWO HEADED ISLAND	H	Y	Y	GOA
3	O	SITKINAK/C. SITKINAK	H	Y	Y	GOA
3	O	CAPE GULL	H	Y	Y	GOA
3	O	CAPE KULIAK	H	Y		GOA
3	O	TAKLI	H	Y	Y	GOA
3	O	KODIAK/CAPE IKOLIK	H	Y	Y	GOA
3	O	PUALE BAY	H	Y	Y	GOA
4	C	CHIRIKOF	Rookery	Y	Y	GOA
4	C	NAGAI ROCKS	H	Y	Y	GOA
4	C	CHOWIET	Rookery	Y	Y	GOA
4	C	SUTWIK	H	Y	Y	GOA

CH/RFRP Area	Open (O) or Closed (C)	Site Name	Rookery or Haulout (H)	Critical Habitat	RFRPA	Fishery Mgt. Area
4	C	LIGHTHOUSE ROCKS	H	Y	Y	GOA
4	C	KAK	H		Y	GOA
5	O	MITROFANIA	H		Y	GOA
5	O	SPITZ	H	Y	Y	GOA
5	O	ATKINS	Rookery	Y	Y	GOA
5	O	CASTLE ROCK	H	Y	Y	GOA
5	O	CHERNABURA	Rookery	Y	Y	GOA
5	O	THE WHALEBACK	H	Y	Y	GOA
5	O	NAGAI	H	Y		GOA
5	O	SEA LION ROCKS	H	Y	Y	GOA
5	O	JUDE	H	Y	Y	GOA
6	C	OLGA ROCKS	H		Y	GOA
6	C	SUSHILNOI ROCKS	H		Y	GOA
6	C	PINNACLE ROCK	Rookery	Y	Y	GOA
6	C	CATON	H	Y		GOA
6	C	CLUBBING ROCKS	Rookery	Y	Y	GOA
6	C	SOUTH ROCKS	H	Y	Y	GOA
6	C	BIRD	H	Y	Y	GOA
7	O	AMAK+ROCKS	H	Y	Y	EBS
7	O	SEA LION ROCK (AMAK)	Rookery	Y	Y	EBS
8	C	UNIMAK/CAPE SARICHEF	H		Y	EBS/GOA
8	C	AKUN/BILLINGS HEAD	Rookery	Y	Y	EBS/GOA
8	C	AKUTAN/REEF-LAVA	H	Y	Y	EBS/GOA
8	C	UNALASKA/BISHOP PT	H		Y	EBS
8	C	CAPENEWENHAM	H	Y		EBS
8	C	ST.LAWRENCE-SWCAPE	H	Y		EBS
8	C	ST. LAWRENCE-S.PUNUK	H	Y		EBS
8	C	ST. GEORGE-DALNOI PT	H	Y		EBS
8	C	ST. GEORGE-S. ROOKRY	H	Y		EBS
8	C	ST. PAUL-SEA LION RK	H	Y		EBS
8	C	ST. PAUL-NE POINT	H	Y		EBS
8	C	ROUND (WALRUS IS)	H	Y		EBS
8	C	HALL	H	Y		EBS
8	C	WALRUS	Rookery	Y	Y	EBS
9	C	BOGOSLOF/FIRE ISLAND	Rookery	Y	Y	EBS
9	C	UMNAK/CAPE ASLIK	H	Y	Y	EBS
9	C	ADUGAK	Rookery	Y	Y	EBS/GOA
9	C	KAGAMIL	H	Y	Y	EBS/GOA
9	C	ULIAGA	H	Y	Y	EBS/GOA
10	C	ROUND	H		Y	GOA/EBS
10	C	UGAMAK	Rookery	Y	Y	GOA/EBS
10	C	AIKTAK	H		Y	GOA/EBS
10	C	TIGALDA/ROCKS NE	H	Y	Y	GOA/EBS
10	C	TANGINAK	H	Y	Y	GOA/EBS
10	C	ROOTOK	H		Y	GOA/EBS
10	C	AKUTAN/CAPE MORGAN	Rookery	Y	Y	GOA/EBS
10	C	OLD MAN ROCKS	H	Y	Y	GOA/EBS
10	C	UNALASKA/CAPE	H	Y		GOA/EBS
11	C	UNALASKA/CAPE IZIGAN	H		Y	GOA/EBS
11	C	EMERALD	H	Y	Y	GOA/EBS
11	C	POLIVNOI ROCK	H	Y		GOA/EBS

CH/RFRP Area	Open (O) or Closed (C)	Site Name	Rookery or Haulout (H)	Critical Habitat	RFRPA	Fishery Mgt. Area
11	C	OGCHUL	Rookery	Y	Y	GOA/EBS
11	C	SAMALGA	H		Y	GOA/EBS
11	C	CHUGINADAK	H	Y	Y	GOA/EBS
12	O	YUNASKA	Rookery	Y	Y	AI
12	O	CHAGULAK	H	Y	Y	AI
12	O	AMUKTA AND ROCKS	H	Y	Y	AI
12	O	SEGUAM/OTHER	H	Y	Y	AI
12	O	SEGUAM/FINCH POINT	H	Y		AI
12	O	SEGUAM/SADDLERIDGE	Rookery	Y	Y	AI
12	O	AGLIGADAK	Rookery	Y	Y	AI
12	O	AMLIA/EAST	H	Y	Y	AI
12	O	TANADAK (AMLIA)	H	Y	Y	AI
12	O	SAGIGIK	H	Y	Y	AI
12	O	AMLIA/SVIECH. HARBOR	H	Y	Y	AI
12	O	ATKA/N. CAPE-C.KOROVIN	H	Y	Y	AI
12	O	KASATOCHI	Rookery	Y	Y	AI
12	O	ANAGAKSIK	H	Y	Y	AI
12	O	GREAT SITKIN	H	Y		AI
12	O	LITTLE TANAGA STRAIT	H	Y	Y	AI
12	O	ADAK/C.YAKAK-LAKE PT	Rookery	Y	Y	AI
13	C	KANAGA/N CAPE	H	Y	Y	AI
13	C	KANAGA/SHIP ROCK	H	Y	Y	AI
13	C	BOBROF	H	Y	Y	AI
13	C	TANAGA/BUMPY POINT	H	Y	Y	AI
13	C	GRAMP ROCK	Rookery	Y	Y	AI
13	C	UGIDAK	H	Y	Y	AI
13	C	TAG	Rookery	Y	Y	AI
13	C	KAVALGA	H	Y		AI
13	C	ULAK	Rookery	Y	Y	AI
13	C	UNALGA & DINKUM RKS	H	Y	Y	AI
13	C	AMATIGNAK/NITROF PT.	H	Y	Y	AI
13	C	SEMISOPOCHNOI/POCHNO	Rookery	Y	Y	AI
13	C	SEMISOPOCHNOI/PETREL	Rookery	Y	Y	AI
13	C	AMCHITKA/EAST CAPE	Rookery	Y	Y	AI
13	C	AMCHITKA/C. IVAKIN	H		Y	AI
13	C	AMCHITKA/COLUMN	Rookery	Y	Y	AI
13	C	LITTLE SITKIN	H	Y	Y	AI
13	C	AYUGADAK	Rookery	Y	Y	AI
13	C	RAT	H		Y	AI
13	C	SEGULA/GULA POINT	H	Y	Y	AI
13	C	SEGULA/CHUGUL POINT	H	Y		AI
13	C	TANADAK (KISKA)	H	Y	Y	AI
13	C	KISKA/SIRIUS POINT	H	Y	Y	AI
13	C	KISKA/SOBAKA & VEGA	H	Y	Y	AI
13	C	KISKA/LIEF COVE	Rookery	Y	Y	AI
13	C	KISKA/CAPE ST STEPHN	Rookery	Y	Y	AI
13	C	BULDIR	Rookery	Y	Y	AI
13	C	SHEMYA	H	Y	Y	AI
13	C	ALAID	H	Y	Y	AI
13	C	AGATTU/CAPE SABAK	Rookery	Y	Y	AI
13	C	ATTU/CHIRIKOF POINT	H	Y	Y	AI
13	C	AGATTU/GILLON PT.	Rookery	Y	Y	AI
13	C	ATTU/CAPE WRANGELL	Rookery	Y	Y	AI

Table 9.4. Seasonal fraction of the biomass of pollock, Pacific cod, and Atka mackerel in critical habitat in the Steller sea lion management area which is open for fishing (see figure 9.1). These fractions are then multiplied by the seasonal apportionment of TAC by management area to get the TAC limit for the specified area.

	Seasonal fraction of biomass inside open CH-RFRPA areas			
Area	**A**	**B**	**C**	**D**
Eastern Bering Sea (area 7)				
Pollock	.364	.231	.029	.046
Pacific cod	.344	.065	.083	.200
Gulf of Alaska				
Pacific cod				
Area 610 (SSL area 5)	.238	.008	.006	.010
Area 620/630 (SSL areas 1,3,5)	.636	.172	.195	.201
Pollock				
Area 610 (SSL area 5)	.048	.048	.021	.021
Area 620 (SSL area 3&5)	.107	.107	.046	.046
Area 630 (SSL area 1&3)	.001	.001	.022	.022
Area 640 (SSL area	.002	.002	.003	.003
Aleutian Islands (area 12)				
Atka mackerel	.110	.110	.110	.110
Pollock	.042	.049	.058	.054
Pacific cod	.687	.371	.142	.324

Table 9.5. Summary statistics of Steller sea lion count data by area. Data are from the NMFS 2000 Steller sea lion survey.

Block	Area	Non-pups	Non-pup sites	Pups	Pup sites
I	1	2314	9	689	2
	2	2935	21	1458	3
	3	779	9	0	0
	4	1262	8	418	2
	5	2033	12	406	2
	6	2398	7	1087	2
II	7	1204	2	134	1
	8	624	6	56	1
	9	884	6	355	2
	10	1105	7	1063	2
	11	1316	9	42	1
III	12	4925	39	1240	5
	13	3588	23	2425	14

Table 9.6. Summary statistics of the number of Steller sea lion non-pups and pups by block and open/closed areas. Data are from the NMFS 2000 Steller sea lion survey.

Block	Status for Fishing	Non-pup	Pup
I	open	4946	1095
	closed	6595	2963
	% open	43	27
II	open	1204	134
	closed	3929	1516
	% open	23	8
III	open	4925	1240
	closed	3588	2425
	% open	58	34
Total (pooled)	open	11075	2469
	closed	14112	6904
	% open	44	26

Table 9.7. Summary of Steller sea lion non-pup count data in the 13 areas. Count data are from 1991 to 2000 (pers. comm. John Sease, National Marine Mammal Laboratory, Alaska Fisheries Science Center, Seattle, WA).

Area	1991	1992	1994	1996	1998	2000	Trend (r)
1	4276	3956	3344	2302	1790	2134	-0.10
2	5002	4951	4812	3941	2977	2935	-0.07
3	1197	923	1165	822	943	779	-0.04
4	2385	2246	1744	1579	1647	1262	-0.06
5	2524	2417	2727	2523	2814	2033	-0.01
6	2474	2850	2702	2884	2669	2398	-0.01
7	910	1198	1160	1570	1390	1204	0.03
8	303	532	778	659	836	624	0.07
9	1127	1067	921	879	736	884	-0.04
10	1419	1363	1437	1361	1349	1105	-0.02
11	1757	1734	1686	1608	1654	1316	-0.03
12	6049	5254	4877	4620	4969	4925	-0.02
13	7599	7396	6000	5847	5439	3588	-0.07
Total	37022	35887	33353	30595	29213	25187	-0.04

Table 9.8. Summary of Steller sea lion non-pup trend data in the three blocks. Count data are from 1991 to 2000 (pers. comm. John Sease, National Marine Mammal Laboratory, Alaska Fisheries Science Center, Seattle, WA).

Block	Status	Trends (r)	Lower CI	Upper CI
I	open	-0.05	-0.07	-0.03
	closed	-0.05	-0.06	-0.04
II	open	-0.01	-0.03	0.01
	closed	0.0	-0.04	0.05
III	open	-0.02	-0.05	0.01
	closed	-0.07	-0.11	-0.04

Table 9.9. Catch estimates (mt) of pollock, Pacific cod, and Atka mackerel by each target fishery (all gear types) in 1998 and 1999 in the open and closed portions of each block.

		Pollock		Pacific cod		Atka mackerel		Total	
Block	**Status**	**1998**	**1999**	**1998**	**1999**	**1998**	**1999**	**1998**	**1999**
I	Open	82,434	63,964	12,912	11,423			95,346	75,387
	Closed	21,620	13,841	17,045	16,581			38,665	30,421
II	Open	308,467	237,433	18,680	18,247			327,147	255,679
	Closed	358,525	114,460	31,503	28,864	605	1,944	390,028	143,323
III	Open	1,509	27	16,766	18,561	5,523	12,226	18,275	18,588
	Closed	15,712	140	7,795	5,314	38,973	15,318	23,506	5,454

Table 9.10. Possible outcomes of jointly examining whether trends in closed and open areas have improved after implementation of conservation measures.

Outcome	Evidence	Possible conclusions		Supporting evidence
1	Open better Closed better	Fishery contributed to decline of sea lions	Conservation measures in open areas are adequate	Indication that more fish are available in critical habitat in both closed and open areas
2	Open not better Closed better	Fishery contributed to decline of sea lions	Conservation measures in open areas are not adequate	Indication that more fish are available in critical habitat in only closed areas
3	Open not better Closed not better	Fishery did not contribute to decline of sea lions	Fishery has no effect on sea lions	Indication that more fish are available in critical habitat in both closed and open areas
4	Open better Closed not better	Fishery did not contribute to decline of sea lions	Fishery helps sea lions	

Table 9.11. Statistical power to detect an improvement in the population trend before and after conservation measures are implemented, by block, for 4-8 years of annual counts of non-pups. The improvement in population trend was set at 0.04. The future precision of the abundance estimates was assumed to be the same as observed previously, estimated by the standard error of the Y variable, SE(Y), from the regression on log abundance from 1991 to 2000. This represents the coefficient of variation of the abundance estimates. The significance level was set to 0.10.

Block	Status	SE(Y) (1991-2000)	4 years	5 years	6 years	7 years	8 years
I	Open	0.053	0.41	0.68	0.84	0.92	0.97
	Closed	0.036	0.80	0.95	0.98	1.00	1.00
II	Open	0.056	0.68	0.83	0.91	0.96	0.99
	Closed	0.123	0.42	0.47	0.59	0.64	0.71
III	Open	0.078	0.20	0.33	0.50	0.64	0.78
	Closed	0.106	0.41	0.54	0.63	0.71	0.73

Table 9.12. Probability of making a correct decision after 5 additional annual counts of non-pup are performed (6 years of data), using a significance test. The probability of a correct outcome is, for example, the probability that concludes outcome 1 has occurred when it truly has occurred (e.g., one concludes both the closed and open areas have trends that have improved when they both actually have improved). The probability of not making a major error is, for Outcome 1 and 2, the probability of concluding either 1 or 2, and, for Outcome 3 and 4, the probability of concluding either 3 or 4.

Block	Outcome	Probability of correct outcome	Probability of not making a major error
I	1	0.82	.99
	2	0.91	.98
	3	0.80	.85
	4	0.67	.83
II	1	0.54	.59
	2	0.48	.57
	3	0.64	.82
	4	0.74	.82
III	1	0.33	.63
	2	0.61	.65
	3	0.78	.81
	4	0.41	.80

Table 9.13. Relative loss values for a decision analysis, showing the possible combinations of true conditions (columns) and decision options (rows).

		True condition			
		Fishery contributes to decline of sea lions		Fishery does not contribute to decline of sea lions	
Decision options		**Both better**	**Closed better Open not better**	**Both not better**	**Closed not better, open better**
Both better		0	1	3	3
Closed better	**Open not better**	1	0	3	3
Both not better		3	3	0	1
Closed not better	**Open better**	3	3	1	0

Table 9.14. Probability of making a correct decision after 5 additional annual counts of non-pup are performed (6 years of data), using a decision analysis approach with the loss functions specified in Table 9.12.

Block	Outcome	Probability of correct outcome	Probability of not making a major error
I	1	0.96	1.00
	2	0.77	1.00
	3	0.57	0.72
	4	0.69	0.72
II	1	0.90	0.92
	2	0.47	0.92
	3	0.19	0.39
	4	0.38	0.39
III	1	0.79	0.94
	2	0.74	0.94
	3	0.31	0.39
	4	0.34	0.39