Biological Assessment of the Alaska Groundfish Fisheries and NMFS Managed Endangered Species Act Listed Marine Mammals and Sea Turtles

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Executive Summary

The Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.; ESA) provides the primary legal framework for the conservation and recovery of species in danger of or threatened with extinction. The purposes of the ESA include:

> "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species ..." (16 U.S.C. § 1531(b)).

All Federal actions that may affect listed species under the Endangered Species Act (ESA), including management of the Alaska groundfish fisheries, must be reviewed under section 7(a)(2) of the ESA. In doing so, each Federal agency must insure that its actions do not jeopardize the existence of threatened or endangered species or destroy or adversely modify their critical habitat. This biological assessment provides the information necessary to begin a review of the Alaska groundfish fisheries and to determine the potential impacts of the Alaska groundfish fisheries on ESA-listed species and designated critical habitat.

NMFS has determined that reinitiation of the consultation on the groundfish fisheries is appropriate in order to provide a comprehensive review of all relevant information and the numerous project level changes that have been made to the action since the last program level review in 2000. The purpose of the reinitiation would be to assess how these previously reviewed individual actions affect ESA-listed species when taken together as a whole in light of the best scientific and commercial information available. A complete, formal review at the program level will provide an appropriate foundation to consider future project level actions.

The action analyzed is the implementation of the groundfish fisheries as authorized by the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Island Management Area and the Fishery Management Plan for Groundfish of the Gulf of Alaska. The action includes the State parallel groundfish fisheries conducted within waters from 0-3 nm of the shore. The State parallel groundfish fisheries are the pollock, Pacific cod, and Atka mackerel fisheries conducted in the same time and area restrictions and under the same total allowable catch as established for the federal fisheries. The action area is the exclusive economic zone off Alaska.

This biological assessment reviewed the best scientific and commercial information available for all NMFS managed ESA-listed species (except salmon and steelhead) which occur in the action area. These species include Steller sea lions, whales, and sea turtles. Groundfish fisheries can impact ESA-listed marine mammals and turtles through competition for prey, disturbance and incidental take by gear entanglements. The analysis determined if the ESA-listed animals was likely to occur in the action area, and if so, whether the groundfish fisheries were likely to have an adverse effect on the animal. Most of the impacts on ESA-listed marine mammals and turtles from groundfish fisheries were potential incidental take during fishing activities and gear entanglement. Humpback whale, sperm whale, and Steller sea lions also have potential to compete with the groundfish fisheries for prey, though the potential competition is better understood and studied for Steller sea lions. In addition, the potential cumulative effects on these ESA-listed species were addressed in Chapter 4. The analyzed species and the conclusions of the assessment are listed in the Table ES.1.

Table ES.1 Summary of Adverse Affect Determinations for Alaska Groundfish Fisheries

Listed Species	Population or DPS	Scientific Name	Status	Assessment Conclusion	Reason
Blue whale	North Pacific	*Balaenoptera musculus*	Endangered	AK groundfish fisheries are not likely to adversely affect (NLAA).	No evidence of fisheries interaction and rare occurrence
Bowhead whale	Western Arctic	*Balaena mysticetus*	Endangered	AK groundfish fisheries are NLAA.	Bowheads extremely unlikely to occur where groundfish fisheries are prosecuted
Fin whale	Northeast Pacific	*Balaenoptera physalus*	Endangered	AK groundfish fisheries are likely to adversely affect.	Evidence of gear entanglement and whale occurrence in both BSAI and GOA where fisheries prosecuted.
Humpback whale	Western and Central North Pacific	*Megaptera novaeangilae*	Endangered	AK Groundfish Fisheries are likely to adversely affect	Evidence of take for various gear types
Right whale	North Pacific	*Eubalaena japonica*	Endangered	-AK Groundfish fisheries are likely to adversely affect species. -AK groundfish fisheries are NLAA proposed critical habitat.	Buoyed gears are entanglement threats in areas where whales gather. Fishing activities unlikely to affect PCE.
Sei whale	North Pacific	*Balaenoptera borealis*	Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction

Listed Species	Population or DPS	Scientific Name	Status	Assessment Conclusion	Reason
Sperm whale	North Pacific	*Physeter macrocephalus*	Endangered	AK groundfish fisheries are likely to adversely affect	Evidence of interaction and take with GOA longline fisheries
Steller sea lion	Western Alaska DPS	*Eumetopias jubatus*	Endangered	AK groundfish fisheries are likely to adversely affect Steller sea lions and their designated critical habitat.	Competition for prey, removal of prey from critical habitat, incidental take
Steller sea lion	Eastern Alaska DPS	*Eumetopias jubatus*	Threatened	AK groundfish fisheries are likely to adversely affect Steller sea lions and their designated critical habitat.	Competition for prey, removal of prey from critical habitat, incidental take
Olive Ridley turtle	Pacific	*Lepidochelys olivacea*	Threatened/Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Loggerhead turtle	Pacific	*Caretta caretta*	Threatened	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Green turtle	Pacific	*Chelonia mydas*	Threatened/Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Leatherback sea turtle	Pacific	*Dermochelys coriacea*	Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction

1.0 Introduction

The Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.; ESA) provides the primary legal framework for the conservation and recovery of species in danger of or threatened with extinction. The purposes of the ESA include:

> "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species ..." (16 S.C. § 1531(b)).

All Federal actions that may affect listed species under the Endangered Species Act (ESA), including management of the Alaska groundfish fisheries, must be reviewed under section 7(a)(2) of the ESA. In doing so, each Federal agency must insure that its actions do not jeopardize the existence of threatened or endangered species or destroy or adversely modify their critical habitat. This biological assessment provides the information necessary to begin a review of the Alaska groundfish fisheries and to determine the potential impacts of the Alaska groundfish fisheries on ESA-listed species and designated critical habitat.

1.1 Alaska Groundfish Fishery Management Plans

The Fishery Management Plan (FMP) for Groundfish of the Bering Sea and Aleutian Islands (BSAI) Management Area governs the groundfish fisheries (NPFMC 2005a). The geographical extent of the FMP management unit is the United States (U.S.) Exclusive Economic Zone (EEZ) of the Bering Sea, including Bristol Bay and Norton Sound, and that portion of the North Pacific Ocean adjacent to the Aleutian Islands which is between 170° W. longitude and the U.S.-Russian Convention Line of 1867 (Figure 1.1 in NPFMC 2005a). The BSAI groundfish FMP covers fisheries for all stocks of finfish and marine invertebrates except salmonids, shrimps, scallops, snails, king crab, Tanner crab, Dungeness crab, corals, surf clams, horsehair crab, lyre crab, Pacific halibut, and Pacific herring.

The FMP for Groundfish of the GOA governs groundfish fisheries of the GOA (NPFMC 2005b). The geographical extent of the FMP management unit is the U.S. EEZ of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170° W. longitude and Dixon Entrance at 132°40' W. longitude (Figure 1.1). The GOA groundfish FMP covers fisheries for all stocks of finfish except salmon, steelhead, Pacific halibut, Pacific herring, and tuna. In terms of both the fishery and the groundfish resource, the GOA groundfish fishery forms a distinct management unit.

The history of fishery development, target species and species composition of the commercial catch, bathymetry, and oceanography differ between the GOA and the adjacent BSAI management area. Although many species occur over a broader range than the BSAI or GOA management areas, with only a few exceptions (e.g., sablefish), stocks of common species in each management area are believed to be different from those in the other management area. Each FMP contains management policies and measures for the groundfish fisheries occurring in the management area. These policies and measures are explained in detail in section 2.2.2 of this biological assessment (BA).

1.2 Consultation Requirements

Section 7(a)(2) of the ESA requires that each Federal agency shall insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a Federal agency may affect a protected species or its critical habitat, that agency (i.e., the "action" agency) is required to consult with either the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS), depending upon the protected species or critical habitat that may be affected. Section 7(b) of the ESA requires the Services to summarize consultations in biological opinions that detail how actions may affect threatened or endangered species and designated critical habitat.

Federally managed groundfish fisheries in Alaska have been formally consulted on under section 7 at both the fishery management plan level and at the fishery specific project level. The Federal and State parallel groundfish fisheries in Alaska currently operate under the following series of formal section 7 consultations for ESA-listed species and designated critical habitat under NMFS jurisdiction:

- November 2000 Biological Opinion on the fishery management plans and associated regulations for the groundfish fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska (FMP BiOp) (NMFS 2000);
- October 2001 Biological Opinion on the federally managed pollock, Pacific cod, and Atka mackerel fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska and parallel fisheries for pollock, Pacific cod, and Atka mackerel as authorized by the State of Alaska within 3 nm of shore (2001 BiOp) (NMFS 2001); and
- June 2003 Supplement to the October 2001 Biological Opinion on the pollock, Pacific cod, and Atka mackerel fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska (NMFS 2003c).

Regulations at 50 CFR 402.16 describe a series of triggers, which when met, would require the Federal agency to reinitiate consultation under section 7 of the ESA: (a) the amount or extent of taking specified in an incidental take statement is exceeded; (b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in a biological opinion; or (d) a new species is listed or critical habitat designated that may be affected by the identified action.

Since the FMP BiOp, all subsequent modifications to the action were considered at the project level either through informal or formal consultations, and thus have already undergone review under the ESA. However, even if none of the triggers for reinitiation of consultation has been met, an agency still has the discretion to reinitiate consultation on a biological opinion should the agency believe such a review is warranted.

NMFS has determined that reinitiation of the consultation on the groundfish fisheries is appropriate in order to provide a comprehensive review of all relevant information and the numerous project level changes that have been made to the action since the last program level review in 2000. The purpose of the reinitiation would be to assess how these previously reviewed individual actions affect ESA-listed species when taken together as a whole in light of the best scientific and commercial information available. A complete, formal review at the program level will provide an appropriate foundation to consider future project level actions.

1.3 Public Process and Consultation Schedule

The schedule for the ESA consultation process and potential rulemaking for this action is shown in Table 1.1 below. Several activities provide opportunity for public participation. The Steller Sea Lion Mitigation Committee (SSLMC) is being formed by the North Pacific Fishery Management Council (Council) to review current Steller sea lion protection measures and new information regarding Steller sea lions and fisheries interactions. All committee meetings are open to the public. In addition, the draft biological opinion (BiOp) is scheduled for public review on August 15, 2006, and will likely be reviewed by the Council at its October 2006 meeting. Council meetings also are open to the public, and public testimony may be provided. The draft BiOp will be provided to the Council and will be available on the NMFS Alaska Region website at www.fakr.noaa.gov. Based on Council recommendations, changes to the action may require revisions to the draft BiOp which would result in additional Council review in February and April 2007.

Any rulemaking that may change protection measures for the ESA-listed Steller sea lions and their critical habitat would include the public review processes under the Administrative Procedure Act and the Magnuson-Steven Fishery Conservation and Management Act. ESA consultation must be completed on the action before changes to the Steller sea lion protection measures could be implemented.

Table 1.1 Potential timeline for the FMP-level consultation and related Council activities

Time	Activity
April 2006	• Sustainable Fisheries Division (SFD) initiates consultation with Protected Resources Division (PRD) with § 402.14(c) requirements completed for species or their critical habitat likely to be adversely affected. Completes Biological Assessment.
April-August 2006	• Develop draft BiOp (effects of the action, draft conclusions, reasonable and prudent alternative if necessary, develop negligible impact determination(s) and incidental take statement(s) conservation recommendations), and conduct internal review (HQ)
August 15, 2006	• Draft BiOp available for public review
September 1, 2006	• SSLMC review BiOp and develop workplan/comments
October 2006	• Council Review BiOp and SSLMC recommendations
December 2006	• Council initial review of potential changes to the action • Comments due on draft BiOp
February 2007	• Council further review of proposed action
April 2007	• Council takes Final Action on amendment/regulations
August 2007	• Final BiOp completed
January 1, 2008	• Regulations effective

1.4 Contents of the Biological Assessment

This biological assessment is limited to ESA-listed species under NMFS' jurisdiction, excluding ESA-listed salmon and steelhead. A separate consultation for ESA-listed salmon and steelhead is in progress with the NMFS Northwest Region Protected Resources Division (Lohn 2005). ESA-listed seabirds and northern sea otters are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Program and project level section 7 consultations on ESA-listed seabirds and the groundfish fisheries were completed in September 2003 (USFWS 2003a and 2003b). NMFS SFD is currently consulting with the USFWS on the groundfish fishery effects on the southwest Alaska distinct population segment of northern sea otters. ESA-listed species reviewed in this biological assessment are limited to NMFS-managed marine mammals and turtles.

Table 1.2 shows the location of the information contained in this BA.

Table 1.2 Biological Assessment Contents

	Information
Section 1.0 Introduction	• General Action description • ESA consultation requirements • Public process and consultation schedule • BA contents
Section 2.0 Action History and Description	• Overview of groundfish fisheries and scope • FMP and Regulatory amendments • Location of Action
Section 3.0 Description of Species and Critical Habitat and Impact Analysis	• Marine mammals • Turtles • Environmental baseline • Impacts on individual species and critical habitat
Section 4.0 Cumulative Effects	• Non-federal future actions impacts
Section 5.0 Relevant Reports	• Lists all information known that may be relevant to consultation
Section 6.0 Conclusions	• Determinations for each species and critical habitat whether not likely to adversely affect or likely to adversely affect
Section 7.0 References	• Listing of documents used to develop BA

2.0 Action History and Description

To initiate a formal consultation under the ESA, 50 CFR 402.14(c)1 and (2) requires the action agency to provide a description of the action considered and the specific area that may be affected by the action. This section provides a detailed description of the action and locations of the activities under the groundfish FMPs.

2.1 Description of the action

This Biological Assessment of the groundfish fisheries of the Alaskan Exclusive Economic Zone (EEZ) covers the fisheries authorized by the Fishery Management Plans (FMPs) for Groundfish of the Gulf of Alaska and Groundfish of the Bering Sea and Aleutian Islands Management Area. The following is a description of these groundfish fisheries. This action also include the State parallel groundfish fisheries that are implemented within the federal limits, time, area and gear restrictions. Additional information about other groups of species managed under the FMPs is in section 2.5.

The process of authorizing the groundfish fisheries of the North Pacific in the Alaskan EEZ starts with the development of stock assessments for each fished stock of groundfish species. Stock assessment scientists utilize available data on past fisheries including data on age, size, harvest location, amount, and other relevant metrics to develop models or other tools that project the biomass of each species in the Gulf of Alaska or Bering Sea and Aleutian Islands areas, as appropriate. Some biomass projections are made for smaller geographic areas.

The Council has established Plan Teams for the GOA and BSAI FMPs who are responsible for conducting annual stock assessments for managed groundfish stocks. The Plan Teams meet annually to review all of the individual species stock assessments, and then prepare a set of overall stock assessments and recommend potential harvest levels of those stocks. Detailed assessments and current estimates of biomass and acceptable biological catches can be found in the Stock Assessment and Fishery Evaluation (SAFE) reports that are produced annually (or biennially for some stocks) (NMFS 2006b, Appendices A and B). The SAFE reports contain details on fishery statistics, resource assessment surveys, and the analytical techniques applied to the assessment of the various species.

2.1.1 Gulf of Alaska Groundfish Stocks and Fisheries

Table 2.1.1 shows stocks of groundfish and the fisheries they support for 2005 and 2006 (FR Vol 70 No 36 02/24-05), harvested in the Gulf of Alaska. The “X” indicates that a directed fishery for the species is allocated to the gear type indicated. A number of species are on bycatch status and may only be harvested as incidental catch in another directed fishery. Amounts of bycatch species that may be retained are limited by the maximum retainable amounts specified in Table 10 of 50 CFR part 679.

Table 2.1.1 Directed and Bycatch Fisheries in the GOA

Species	Trawl	Hook-and-line	Pot	Jig
Walleye pollock	X			
Pacific cod	X	X	X	X
Deepwater flatfish	X			
Rex sole	X			
Flathead sole	X			
Shallow water flatfish	X			
Arrowtooth flounder	X			
Sablefish	X (bycatch only)	X (IFQ fishery)		
Pacific ocean perch	X			
Shortraker rockfish (bycatch only)				
Rougheye rockfish (bycatch only)				
Other rockfish (bycatch only)				
Northern rockfish	X			
Pelagic shelf rockfish	X			
Thornyhead rockfish (bycatch only)				
Big skates	X			
Longnose skates (W GOA bycatch only)				
Other skates (bycatch only)				
Demersal Shelf rockfish		X		X
Atka mackerel (bycatch only)				
Other species*				

*octopus, squid, shark, and sculpins

Notes on stocks in the Gulf of Alaska

The relative abundance of fishes in the cod family (Gadidae) is different in the GOA compared to the other regions. Pacific hake (*Merluccius productus*), the most abundant of the cod-like fishery off Washington-California, is present only in the southern portion of the GOA and generally not in commercial quantities. Pollock (*Theragra chalcogramma*), the dominant "cod" and largest element in the groundfish biomass of the Bering Sea, is much less abundant in the GOA and becomes progressively scarce to the south until it is practically absent off Oregon. However, the abundance of pollock in the GOA increased by perhaps an order of magnitude during the past decade coincident with a reduction in the abundance of Pacific ocean perch. The abundance of pollock declined to low levels in 1985-87, primarily as the result of poor recruitment from 1980 and 1981 year classes. Pollock currently comprises the largest exploitable biomass within the gadoid community in the GOA. Pacific cod (*Gadus macrocephalus*) may reach its greatest coastwide abundance in the GOA.

Sablefish (*Anoplopoma fimbria*) also is a target groundfish in the GOA. Sablefish, which was depressed as a result of intensive fishing by foreign fleets in the 1960s and 1970s, recovered to high levels of abundance through 1988 due to the strong 1977 year class and have declined each year through 1999. Weak recruitment has led to projections of continued decline. Sablefish are found from California waters northward into the GOA and Bering Sea, but this species reaches its greatest abundance in the GOA.

Many of the flounders present in the GOA also occur in the Bering Sea and Washington-California region; however, the relative abundance of different species varies greatly between areas. In the Bering Sea yellowfin sole (*Limanda aspera*) dominates the flounder community, but is comparatively scarce in the Gulf and absent off Washington-California. Petrale sole (*Eopsetta jordani*) and English sole (*Parophrys vetulus*) are important components of the flounder community off Washington-California, but they are scarce in the GOA and for all practical purposes absent in the Bering Sea. The arrowtooth flounder, or so-called turbot (*Atheresthes stomias*), is widely distributed along the Pacific and Bering Sea coasts of the United States and appears to comprise the largest part of the exploitable biomass of flounders in the GOA. Other abundant flounders in the GOA include Pacific halibut (*Hippoglossus stenolepis*), which reaches its greatest abundance there and off British Columbia (and which is not managed in this FMP); northern rock sole (*Lepidopsette polyxystra*) and southern rocksole (*L. bilineata*); starry flounder (*Platichthys stellatus*); flathead sole (*Hippoglossoides elassodon*); rex sole (Glyptocephalus *zachirus*); and, in deep water, the Dover sole (*Microstomus pacificus*).

The most diverse species in the GOA is the rockfish group (genus Sebastes and Sebastolobus). Two species of Sebastolobus and at least 32 species of Sebastes have been identified in this area. Several species of rockfish are of significant commercial interest, including the Pacific ocean perch (*S. alutus*), shortraker rockfish (*S. borealis*), rougheye rockfish (*S. aleutianus*), dusky rockfish (*S. variabilis*), northern rockfish (*S. polyspinus*), and yelloweye rockfish (*S. ruberrimus*). Pacific ocean perch was the subject of a substantial foreign and domestic trawl fishery from the 1960s through the mid-1980s. For management purposes, rockfish are classified into four distinct assemblages. Thornyhead rockfish are managed independently, and Sebastes rockfish are classified into three assemblages based on their habitat and distribution. These assemblages are:

Slope Assemblage	Demersal Shelf Assemblage	Pelagic Shelf Assemblage
Aurora rockfish (*S. aurora*) Blackgill rockfish (*S. melanostomus*) Boccacio (*S. paucispinus*) Chilipepper rockfish (*S. goodei*) Darkblotch rockfish (*S. crameri*) Greenstriped rockfish (*S. elongatus*) Harlequin rockfish (*S. variegatus*) Northern rockfish (*S. polyspinus*) Pacific Ocean Perch (*S. alutus*) Pygmy rockfish (*S. wilsoni*) Redstripe rockfish (*S. proriger*) Rougheye rockfish (*S. aleutianus*) Sharpchin rockfish (*S. zacentrus*) Shortbelly rockfish (*S. jordani*) Shortraker rockfish (*S. borealis*) Silvergray rockfish (*S. brevispinus*) Splitnose rockfish (*S. diploproa*) Stripetail rockfish (*S. saxicola*) Vermilion rockfish (*S. miniatus*) Yellowmouth rockfish (*S. reedi*)	Canary Rockfish (*S. pinniger*) China Rockfish (*S. nebulosus*) Copper rockfish (*S. caurinus*) Quillback rockfish (*S. maliger*) Redbanded rockfish (*S. babcocki*) Rosethorn rockfish (*S. helvomaculatus*) Tiger Rockfish (*S. nigrocinctus*) Yelloweye rockfish (*S. ruberrimus*)	Dusky rockfish (*S. variabilis*) Dark rockfish (*S. ciliatus*) Widow rockfish (*S. entomelas*) Yellowtail rockfish (*S. flavidus*)

The four most valuable slope species, Pacific ocean perch and shortraker, rougheye, and northern rockfish, have been managed separately from the remainder of the slope assemblage since the early 1990s, to prevent possible overfishing. A rebuilding plan was put into place in 1995 for Pacific ocean perch, to address population declines resulting in a biomass well below historical levels. The population has since increased in abundance and is now at a level above the target biomass level (40 percent of the unfished biomass or B40%).

Atka mackerel, a member of the greenling family (Hexagrammidae), supported a targeted foreign fishery in the Central regulatory area in the 1970s, but abundance of this species has declined to negligible quantities. The decreased abundance of Atka mackerel may be due to westward shift in the distribution of the stocks, to excessive fishing mortality, or to successive years of poor recruitment. Length frequency information suggests that the population consists mostly of large fish. The absence of catches in the Eastern and Central regulatory areas indicates stocks are not sufficiently abundant to support a commercial fishery, although small amounts are caught incidentally during other groundfish fishing activities.

Along the slope of the continental shelf, grenadiers or rattails (Coryphaenoides sp.) are important components of the groundfish community, and are taken incidentally in the sablefish longline fisheries.

Elasmobranchs are represented in the GOA by several species of sharks and skates. Skates (Rajidae) are widely distributed throughout the GOA and are most abundant on the inner shelf. The spiny dogfish shark (*Squalus acanthias*), is much less abundant in the GOA than in waters off British Columbia and the Pacific Northwest where it is an important element within the groundfish community. Ratfish (*Hydrolagus collei*) are present in the GOA but are much less abundant there than in waters to the south. The abundance of all elasmobranchs appears to decrease progressing from east to west in the GOA toward the Alaska Peninsula.

2.1.2 Bering Sea and Aleutian Islands Groundfish Stocks and Fisheries

Table 2.1.2 shows the stocks of groundfish and the fisheries they support for 2005 and 2006 (FR Vol 70 No 36 02/24-05) harvested in the Bering Sea and Aleutian Islands. . The "X" indicates that a directed fishery for the species is allocated to the gear type indicated. A number of species are on bycatch status and may only be harvested as incidental catch in another directed fishery. Amounts of bycatch species that may be retained are limited by the maximum retainable amounts specified in Table 11 of 50 CFR part 679.

Table 2.1.2 Directed and Bycatch Fisheries in the BSAI

Species	Trawl	Hook-and-line	Pot	Jig
Walleye pollock	X			
Pacific cod	X	X	X	X
Greenland turbot	X	X		
Rock sole	X			
Yellowfin sole	X			
Flathead sole	X			
Arrowtooth flounder	X			
Other flatfish	X			
Alaska Plaice	X			
Sablefish	X (bycatch only)	X (IFQ fishery) **	X	
Pacific ocean perch (Bering Sea bycatch only)				
Shortraker rockfish (bycatch only)				
Rougheye rockfish (bycatch only)				
Other rockfish (bycatch only)				
Northern rockfish (bycatch only)				
Atka mackerel	X			
squid				
Other species* (bycatch only)				

*octopus, skates, shark, and sculpins
** individual fishing quota

Notes on stocks of groundfish in the Bering Sea and Aleutian Islands

The Bering Sea supports about 300 species of fishes, the majority of which are found near or on the bottom (Wilimovsky 1974). The fish groups of primary concern in this plan are the bottom or near-bottom dwelling forms – the flatfish, rockfish, sablefish, Pacific cod, pollock, and Atka mackerel., Although they are not largely commercially harvested species, squids (Cephalopoda), sharks, and octopus are also included in the FMP.

There is a general simplification in the diversity of groundfish species in the Bering Sea compared to the more southern regions of the GOA and Washington to California. As a result, certain species inhabiting the Bering Sea are some of the largest groundfish resources found anywhere in the world. Relatively few groundfish species in the eastern Bering Sea and the Aleutian Islands are large enough to attract target fisheries: walleye pollock, Pacific cod, Pacific ocean perch, sablefish, Atka mackerel, several species of rockfish and flatfish. Since the 1960s, pollock catches have accounted for the majority of the Bering Sea groundfish harvest. Yellowfin sole and rock sole currently dominate the flatfish group and have the longest history of intense exploitation by foreign fisheries. Other flatfish species that are known to occur in aggregations large enough to form target species are Greenland turbot, flathead sole, Alaska plaice, and arrowtooth flounder.

The groundfish and squid resources considered in this FMP consist of species that are wide ranging in their general distribution, occurring in the eastern Bering Sea, Aleutian Islands waters, the GOA, and in some cases further south. For the most part, groundfish species are managed as a single stock in the BSAI management area. Chapter 4 of the BSAI groundfish FMP contains a summary of distribution and known stock structure information for the target species (NPFMC 2005a). Further information on species stock structure can be found in the annual Stock Assessment and Fishery Evaluation (SAFE) report; the information in this section is summarized from the 2003 SAFE report (NPFMC 2003).

For pollock, there are currently three stocks identified for management purposes, although there is undoubtedly some degree of exchange between them. The eastern Bering Sea stock is the largest. There is also an Aleutian Island region stock, and a central Bering Sea-Bogoslof Island pollock stock, which is a mixture of pollock that migrate from the U.S. and Russian shelves to the Aleutian Basin.

Pacific cod is distributed widely over the eastern Bering Sea and the Aleutian Islands area, and in the BSAI is managed as a single unit. Tagging studies (e.g., Shimada and Kimura 1994) have demonstrated significant migration both within and between the eastern Bering Sea, Aleutian Islands, and GOA, and genetic studies (e.g., Grant et al. 1987) have failed to show significant evidence of stock structure within these areas.

Adult sablefish live mainly in offshore waters at bottom depths of 200 meters and greater, from northern Mexico to the Bering Sea (Wolotira et al. 1993). Sablefish appear to form two populations, the northern of which inhabits Alaska and northern British Columbia waters. Northern sablefish appear to be highly migratory, with substantial movement between the BSAI and the GOA (Heifitz and Fujioka 1991, Kimura et al. 1998). As a result, sablefish in Alaska waters are assessed as a single population, although for management purposes discrete regions are identified to distribute exploitation throughout their wide geographical range. In the BSAI, the management areas distinguish the eastern Bering Sea and the Aleutian Islands region.

Flatfish in the BSAI are predominately found on the eastern Bering Sea continental shelf and slope, with lower abundance in the Aleutian Islands for those species whose range extends to that area. Each of the flatfish species is assessed as a single unit in the BSAI.

Yellowfin sole is one of the most abundant flatfish species in the eastern Bering Sea. They inhabit the continental shelf, and abundance in the Aleutian Islands region is negligible. Greenland turbot are distributed throughout the BSAI management area. The absence of juveniles in the Aleutian Islands region suggests that the population originates from the eastern Bering Sea or elsewhere, and the annual stock assessment assumes that Greenland turbot in the two regions represent a single stock. Arrowtooth flounder is most abundant in the eastern Bering Sea but which ranges into the Aleutian Islands region.

Although two species of rock sole are known to occur in the North Pacific ocean, the northern rock sole predominates in the BSAI. Flathead sole consist of two species of Hippoglossoides whose ranges overlap in the BSAI (Walters and Wildebuer 1997). Alaska plaice is mainly distributed on the eastern Bering Sea continental shelf, with a summer distribution at depths less than 110 m.

Rockfish are primarily assessed at the BSAI level, although some species are assigned separate harvest quotas in the eastern Bering Sea and the Aleutian Islands region. Many rockfish are not thought to exhibit large-scale movements as adults. Analysis of genetic material from north Pacific rockfish, with a view to determining evidence of stock structure, is an active area of research.

Pacific ocean perch (POP) inhabit the outer continental shelf and upper slope regions of the north Pacific Ocean and Bering Sea. An earlier study of POP in Alaska analyzed differences in biological features (e.g., growth rate) between eastern Bering Sea and Aleutian Islands fish and suggested that each of these areas has its own unique stock (Chikuni 1975). Further research has posed uncertainty as to whether the eastern Bering Sea POP represent a discrete stock (Spencer and Ianelli 2001), and since 2001, POP in the BSAI have been assessed and managed as a single stock.

Northern rockfish are patchily distributed in the BSAI, with the majority of harvest occurring as incidental catch in the Aleutian Islands Atka mackerel fishery. Initial genetic analysis has revealed no evidence of population structure (Gharrett 2003), although sample sizes were small. Shortraker rockfish in the BSAI appear to be a separate stock from those in the GOA. Rougheye rockfish also show evidence of two distinct species, with overlapping ranges in the GOA. The two most abundant species in the ‘other rockfish’ complex are the dusky rockfish and the shortspine thornyhead; however distributions for these species are not well documented.

Atka mackerel center of abundance is the Aleutian Islands region, with a geographical range extending to the waters off Kamchatka, the eastern Bering Sea, and the Gulf of Alaska. Tag capture information from Alaska suggests that Atka mackerel populations are localized and do not travel long distances. Atka mackerel are not targeted in the eastern Bering Sea.

The predominant species of squid in commercial catches in the eastern Bering Sea is believed to be the red squid, *Berryteuthis magister*, while *Onychoteuthis borealijaponicus*, the boreal clubhook squid, is likely the principal species encountered in the Aleutian Islands region. Squid are generally migratory pelagic schooling species, with a lifespan thought to be 1-2 years.

2.2 Introduction to the Fishery Management Plans

2.2.1 Coverage and Date

The Fishery Management Plans (FMPs) govern groundfish fisheries of the Gulf of Alaska and Bering Sea and Aleutian Islands Management Areas. Coverage of species and locations of fisheries under these plans are detailed in section 1.1 of the BSAI and GOA FMPs (NPFMC 2005a and 2005b).

The GOA FMP was implemented on December 1, 1978 (NPFMC 2005b). Since that time, it has been amended over sixty times, and its focus has changed from the regulation of mainly foreign fisheries to the management of fully domestic groundfish fisheries. The BSAI FMP was implemented on January 1, 1982. As of April 2004, it has been amended over seventy times, and its focus has changed from the regulation of mainly foreign fisheries to the management of fully domestic groundfish fisheries.

2.2.2 Council and NOAA Fisheries Management Policy

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary domestic legislation governing management of the nation’s marine fisheries. In 1996, the United States Congress reauthorized the Magnuson-Stevens Act to include, among other things, a new emphasis on the precautionary approach in U.S. fishery management policy. The Magnuson-Stevens Act contains ten national standards, with which all FMPs must conform and which guide fishery management. Besides the Magnuson-Stevens Act, U.S. fisheries management must be consistent with the requirements of other regulations including the Marine Mammal Protection Act, the Endangered Species Act, the Migratory Bird Treaty Act, and several other Federal laws.

Under the Magnuson-Stevens Act, the North Pacific Fishery Management Council (Council) is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, a FMP and any necessary amendments, for each fishery under its authority that requires conservation and management. The Council conducts public hearings so as to allow all interested persons an opportunity to be heard in the development of FMPs and amendments, and reviews and revises, as appropriate, the assessments and specifications with respect to the optimum yield from each fishery (16 U.S.C. 1852(h)).

The Council has developed a management policy and objectives to guide its development of management recommendations to the Secretary of Commerce. This management approach is described below.

Groundfish Fisheries Management Approach

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

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

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

2.2.3 Management Objectives

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

To meet the goals of this overall management approach, the Council and NMFS will use the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004b) as a planning document. To help focus consideration of potential management measures, the Council and NMFS will use a series of objectives as guideposts, to be re-evaluated, as amendments to the FMP are considered over the life of the PSEIS. Those objectives are listed in section 2.2.1 of the BSAI and GOA FMPs and are incorporated herein by reference.

2.3 Summary of Management Measures

2.3.1 Gulf of Alaska

The management measures that govern the Gulf of Alaska groundfish fishery are summarized in Table 2.3.1.

Pursuant to Title II of the Magnuson-Stevens Act, there is no allowable level of foreign fishing for the groundfish fisheries covered by the GOA groundfish FMP. Fishing vessels and fish processors of the U.S. have the capacity to harvest and process up to the level of optimum yield of all species subject to this FMP.

Table 2.3.1 Summary of Management Measures for the GOA Groundfish Fishery

Management Area	U.S. exclusive economic zone (EEZ) of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170° W longitude and Dixon Entrance at 132° 40' W longitude. **Regulatory areas**: Three regulatory areas are defined in the Gulf of Alaska: Eastern, extending from Dixon Entrance to 147° W. longitude; Central, extending between 147° W. and 159° W longitude, and Western, extending between 159° W and 170° W longitude.
Stocks	All finfish, except salmon, steelhead, halibut, herring, and tuna, which are distributed or exploited in the management area, and are listed in Table 3-1. Those stocks and stock complexes that are commercially important and for which an annual TAC is established include: walleye pollock, Pacific cod, sablefish, shallow and deep water flatfish, rex sole, flathead sole, arrowtooth flounder, Pacific ocean perch, shortraker/rougheye rockfish, northern rockfish, “other slope” rockfish, pelagic shelf rockfish, demersal shelf rockfish, thornyhead rockfish, Atka mackerel, and skates.
Optimum Yield (OY) and Maximum Sustainable Yield (MSY)	The OY of the GOA groundfish complex (consisting of stocks listed in the ‘target species’ and ‘other species’ categories, as listed in Table 3-1) is in the range of 116,000 to 800,000 mt. The upper end of the range is derived from historical estimates of MSY.
Procedure to set Total Allowable Catch (TAC)	Based on the annual Stock Assessment and Fishery Evaluation (SAFE) report, the Council will recommend to the Secretary of Commerce TACs and apportionments thereof for each target species. TAC for the “other species” category will be set at 5% of the summed target species TACs. Up to two years of TACs may be established for certain species. **Reserve**: 20% of the TAC for pollock, Pacific cod, flatfish, and the “other species” category is set aside to form the reserve, which may be reapportioned to these fisheries at any time and in any amount by the Regional Administrator.

Apportionment of TAC	Harvest allocations and management are based on the calendar year. TACs are apportioned by regulatory area, and by district for some stocks. Areas or districts may also be managed together. **Pollock**: the Western and Central regulatory areas are combined, and annual TACs are divided into seasonal allowances. 100% of the TAC is allocated to the inshore sector. **Pacific cod**: TAC shall be allocated 90% to the inshore sector and 10% to the offshore sector. **Sablefish**: the Eastern regulatory area is divided into two districts, West Yakutat and Southeast Outside. In the Eastern regulatory area, vessels using hook-and-line gear will be permitted to take up to 95% of the TAC, and vessels using trawl gear up to 5%. In the Western and Central regulatory areas, vessels using hook-and-line gear will be permitted to take up to 80% of the TAC, and vessels using trawl gear up to 20%. **Rockfish**: the Eastern regulatory area is divided into two districts, West Yakutat and Southeast Outside.
Attainment of TAC	The attainment of a TAC for a species will result in the closure of the target fishery for that species. Further retention of that species will be prohibited.
Permit	All vessels participating in the GOA groundfish fisheries, other than fixed gear sablefish and demersal shelf rockfish in Southeast Outside district, require a Federal groundfish license, except for: vessels fishing in State of Alaska waters and vessels less than 26' LOA. Licenses are endorsed with area, gear, and vessel type and length designations. Fishing permits may be authorized, for limited experimental purposes, for the target or incidental harvest of groundfish that would otherwise be prohibited.
Participation Restrictions	**American Fisheries Act** (AFA): Vessels or processors participating in the Bering Sea and Aleutian Islands pollock fishery authorized under the AFA are subject to harvesting and processing sideboard restrictions on GOA groundfish.
Authorized Gear	Gear types authorized by the FMP are trawls, hook-and-line, pots, jigs, and other gear as defined in regulations. **Sablefish**: Legal gear for taking sablefish in the GOA is hook and line and trawl gear.
Time and Area Restrictions	**Fishing Year**: January 1-December 31. **All vessels**: Fishing or anchoring within the Sitka Pinnacles Marine Reserve is prohibited at all times. **All trawl:** Use of trawl gear is prohibited at all times in the Southeast Outside district. **Non-pelagic trawl**: The use of non-pelagic trawl is prohibited in Cook Inlet. Three types of closure areas are designated around Kodiak Island. Type I areas prohibit non-pelagic trawling year-round; Type II prohibit non-pelagic trawl from February 15 to June 15; adjacent areas designated as Type III may be reclassified by the Regional Administrator as Type I or Type II following a recruitment event. **Marine mammal measures**: Regulations implementing the FMP may include conservation measures that temporally and spatially limit fishing effort around areas important to marine mammals. **Gear test area exemption**: Specific gear test areas for use when the fishing grounds are closed to that gear type are established in regulations that implement the FMP.
Prohibited Species	Pacific halibut, Pacific herring, Pacific salmon, steelhead trout, king crab, and Tanner crab are prohibited species and must be returned to the sea with a minimum of injury except when their retention is authorized by other applicable law. Groundfish species and species under this FMP for which the TAC has been achieved shall be treated in the same manner as prohibited species.
Prohibited Species Catch (PSC) Limits	The attainment of a PSC limit for a species will result in the closure of the appropriate fishery. **Pacific halibut**: Halibut mortality PSC limits are established annually in regulation; may be apportioned by season, regulatory area, gear type, and/or target fishery.
Retention and Utilization Requirements	**Pollock**: Roe-stripping is prohibited; see also Improved Retention/Improved Utilization Program (IR/IU). **IR/IU**: All pollock and Pacific cod must be retained and processed.
Bycatch Reduction Programs	**Shallow water Flatfish:** The Council will annually review the GOA fisheries that exceed a discard rate of 5% of shallow water flatfish, and may propose management measures to reduce bycatch in these fisheries.
Fixed Gear Sablefish Fishery	The directed fixed gear sablefish fisheries are managed under an Individual Fishing Quota program. The FMP specifies requirements for the initial allocation of quota share in 1995, as well as transfer, use, ownership, and general provisions. **Annual Allocation**: The ratio of a person's quota share to the quota share pool is multiplied by the fixed gear TAC (adjusted for the community development quota allocation - see below), to arrive at the annual individual fishing quota. **Community Quota Share Purchases**: Specified GOA coastal communities are eligible to hold commercial catcher boat sablefish quota share under the IFQ program.
Delegated Authority	**Demersal shelf rockfish:** Managed by the State of Alaska under Council oversight. The Council retains the responsibility of setting the demersal shelf rockfish harvest level.
Flexible Authority	The Regional Administrator of NMFS is authorized to make inseason adjustments through gear modifications, closures, or fishing area/quota restrictions, for conservation reasons, to protect identified habitat problems, or to increase vessel safety.

Recordkeeping and Reporting	Recordkeeping that is necessary and appropriate to determine catch, production, effort, price, and other information necessary for conservation and management may be required. May include the use of catch and/or product logs, product transfer logs, effort logs, or other records as specified in regulations. **At-sea processor vessels**: Catcher/processor vessels and mothership processors vessels may be required to submit check-in and check-out reports for any Federal statistical areas or the U.S. EEZ.
Observer Program	U.S. fishing vessels that catch groundfish in the EEZ, or receive groundfish caught in the EEZ, and shoreside processors that receive groundfish caught in the EEZ, are required to accommodate NMFS-certified observers as specified in regulations, in order to verify catch composition and quantity, including at-sea discards, and collect biological information on marine resources.
Evaluation and Review of the FMP	The Council will maintain a continuing review of the fisheries managed under this FMP, and all critical components of the FMP will be reviewed periodically. **Management Policy**: Objectives in the management policy statement will be reviewed annually. **Essential Fish Habitat (EFH)**: The Council will conduct a complete review of EFH once every 5 years, and in between will solicit proposals on Habitat Areas of Particular Concern and/or conservation and enhancement measures to minimize potential adverse effects from fishing. Annually, EFH information will be reviewed in the "Ecosystems Considerations" chapter of the SAFE.

2.3.2 Bering Sea and Aleutian Islands

The management measures that govern the Bering Sea and Aleutian Islands groundfish fishery are summarized in Table 2.3.2.

Pursuant to Title II of the Magnuson-Stevens Act, there is no allowable level of foreign fishing for the groundfish fisheries covered by the BSAI groundfish FMP. Fishing vessels and fish processors of the U.S. have the capacity to harvest and process up to the level of optimum yield of all species subject to this FMP.

Table 2.3.2 Summary of Management Measures for the BSAI Groundfish Fishery

Management Area	U.S. Exclusive Economic Zone (EEZ) of the eastern Bering Sea and that portion of the North Pacific Ocean adjacent to the Aleutian Islands which is west of 170 W. up to the U.S.-Russian Convention Line of 1867. **Subareas:** The area is divided into two subareas, the Bering Sea and the Aleutian Islands.
Stocks	All stocks of finfish and marine invertebrates in the management area except salmonids, shrimps, scallops, snails, king crab, Tanner crab, Dungeness crab, corals, surf clams, horsehair crab, lyre crab, Pacific halibut, and Pacific herring. Those stocks and stock complexes that are commercially important and for which an annual TAC is established include: walleye pollock, Pacific cod, sablefish, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, flathead sole, Alaska plaice, "other flatfish", Pacific ocean perch, northern rockfish, shortraker and rougheye rockfish, "other rockfish", Atka mackerel, and squid.
Maximum Sustainable Yield (MSY)	The historical estimate of MSY for the BSAI groundfish complex is in the range of 1.7 to 2.4 million mt.
Optimum Yield (OY)	The OY of the BSAI groundfish complex (consisting of stocks listed in the 'target species' and 'other species' categories, as listed in Table 3-1) is 85% of the historical estimate of MSY, or 1.4 to 2.0 million mt, plus the incidental harvest of nonspecified species.
Procedure to set Total Allowable Catch (TAC)	Based on the annual Stock Assessment and Fishery Evaluation (SAFE) report, the Council will recommend to the Secretary of Commerce TACs and apportionments thereof for each target species and the "other species" category. The Secretary will implement annual TACs which may cover up to 2 fishing years, following public comment and Council recommendations at the December Council meeting. **Reserve**: 15% of the TAC for each target species (except pollock and fixed-gear sablefish) and the "other species" category is set aside to form the reserve, used for correcting operational problems of the fleets, adjusting species TACs for conservation, or apportionments. The reserve is not designated by species or species groups.

Apportionment of TAC	**Pollock**: the amount of pollock that may be taken with non-pelagic trawls may be limited; pollock TAC shall be divided into roe-bearing (“A” season) and non roe-bearing (“B” season) allowances. **Sablefish**: vessels using fixed gear may harvest no more than 50% of the TAC in the Bering Sea and 75% of the TAC in the Aleutian Islands; vessels using trawl gear may harvest no more than 50% of the TAC in the Bering Sea and 25% of the TAC in the Aleutian Islands. **Pacific cod**: TAC shall be allocated 2% to vessels using jig gear, 47% to vessels using trawl gear, and 51% to vessels using hook-and-line or pot gear. The trawl gear allocation is allocated 50% to catcher/processor vessels and 50% to catcher vessels. The allocation to hook-and-line and pot gear is apportioned 80% to hook-and-line catcher/processor vessels, 0.3% to hook-and-line catcher vessels, 3.3% to pot catcher/processor vessels, 15% to pot catcher vessels, and 1.4% to catcher vessels less than 60' LOA. Allocations may be seasonally apportioned. **Atka mackerel**: up to 2% of the eastern Aleutian Islands and Bering Sea TACs will be allocated to vessels using jig gear. **Shortraker and rougheye rockfish**: after subtraction of reserves, the Aleutian Islands TAC will be allocated 70% to vessels using trawl gear and 30% to vessels using non-trawl gear.
Attainment of TAC	The attainment of a TAC for a species will result in the closure of the target fishery for that species. Further retention of that species will be prohibited.
Permit	All vessels participating in the BSAI groundfish fisheries, other than fixed gear sablefish, require a Federal groundfish license, except for: vessels fishing in State of Alaska waters; vessels less than 32' LOA; and jig gear vessels less than 60' LOA that meet specific effort restrictions. Licenses are endorsed with area, gear, and vessel type and length designations. Fixed gear vessels engaged in directed fishing for Pacific cod must qualify for a Pacific cod endorsement. Fishing permits may be authorized, for limited experimental purposes, for the target or incidental harvest of groundfish that would otherwise be prohibited.
Authorized Gear	Gear types authorized by the FMP are trawls, hook-and-line, pots, jigs, and other gear as defined in regulations. **Pollock**: The use of non-pelagic trawl gear in the directed fishery for pollock is prohibited.
Time and Area Restrictions	**All trawl**: Fishing with trawl vessels is not permitted year-round in the Crab and Halibut Protection Zone and the Pribilof Islands Habitat Conservation Area. The Nearshore Bristol Bay Trawl Closure area is also closed year-round except for a subarea that remains open between April 1 and June 15 each year. The Chum Salmon Savings Area is closed to trawling from August 1 through August 31. **Non-pelagic trawl**: The Red King Crab Savings Area is closed to non-pelagic trawling year-round, except for a subarea that may be opened at the discretion of the Council and NMFS when a guideline harvest level for Bristol Bay red king crab has been established. **Directed pollock fishery**: Catcher/processor vessels identified in the American Fisheries Act are prohibited from engaging in directed fishing for pollock in the Catcher Vessel Operational Area during the non-roe (“B”) season unless they are participating in a community development quota fishery. **Marine mammal measures**: Regulations implementing the FMP may include conservation measures that temporally and spatially limit fishing effort around areas important to marine mammals. **Gear test area exemption**: Specific gear test areas for use when the fishing grounds are closed to that gear type are established in regulations that implement the FMP.
Prohibited Species	Pacific halibut, Pacific herring, Pacific salmon and steelhead, king crab, and Tanner crab are prohibited species and must be returned to the sea with a minimum of injury except when their retention is authorized by other applicable law. Groundfish species and species under this FMP for which TAC has been achieved shall be treated in the same manner as prohibited species.
Prohibited Species Catch (PSC) Limits	When a target fishery attains a PSC limit apportionment or seasonal allocation, the bycatch zone or management area to which the PSC limit applies will be closed to that target fishery for the remainder of the year or season. **Red king crab**: Based on the size of the spawning biomass of red king crab, the PSC limit in Zone 1 for trawl fisheries is either 23,000, 97,000 or 197,000 red king crab; attainment closes Zone 1. ***C. bairdi* crab**: Established in regulation for trawl fisheries based on population abundance; attainment closes Zone 1 or Zone 2. ***C. opilio* crab**: Established in regulation for trawl fisheries in the C. opilio Bycatch Limitation Zone based on population abundance, with minimum and maximum limits; attainment closes zone. **Pacific halibut**: Halibut mortality limits established in regulation for trawl and non-trawl fisheries. **Pacific herring**: 1% of the annual biomass of eastern Bering Sea herring, for trawl fisheries; attainment may close the Herring Savings Areas. **Chum salmon**: Attainment of 42,000 fish limit in the Catcher Vessel Operational Area between August 15 and October 14 closes the Chum Salmon Savings Area for the rest of that time period. **Chinook salmon**: Attainment of Chinook PSC limit established in regulation for the Bering Sea or the Aleutian Islands subarea closes the Bering Sea or Aleutian Island Chinook Salmon Savings Area to directed pollock trawl fishing. **Apportionment**: For trawl fisheries, may be apportioned by target fishery and season; for non-trawl fisheries, may be apportioned by target fishery, gear type, area, and season.
Retention and Utilization Requirements	**Pollock**: Roe-stripping is prohibited; see also below. **Improved Retention/Improved Utilization Program**: All pollock and Pacific cod must be retained and processed.

Fixed Gear Sablefish Fishery	The directed fixed gear sablefish fisheries are managed under an Individual Fishing Quota program. The FMP specifies requirements for the initial allocation of quota share in 1995, as well as transfer, use, ownership, and general provisions. **Annual Allocation**: The ratio of a person's quota share to the quota share pool is multiplied by the fixed gear TAC (adjusted for the community development quota allocation - see below), to arrive at the annual individual fishing quota.
Bering Sea Pollock Fishery	Subtitle II of the American Fisheries Act (AFA), incorporated by reference in the FMP, implemented a cooperative program for the pollock fishery. **Access**: Limits pollock fishery access to named vessels and processors; included a buyout of 9 catcher/processor vessels. **Allocation**: After adjustment for the community development quota allocation (see below) and incidental catch of pollock in other fisheries, the pollock TAC is apportioned 50% to vessels harvesting pollock for inshore processing, 40% to vessels harvesting pollock for catcher/processor processing, and 10% to vessels harvesting pollock for mothership processing. **Cooperatives**: Creates standards and limitations for the creation and operation of cooperatives. **Sideboards**: Establishes harvesting and processing restrictions on AFA pollock participants to protect other fisheries. **Catch monitoring**: Increases observer coverage and scale requirements for catcher/processors.
Aleutian Islands Pollock Fishery	The non-CDQ directed pollock fishery in the Aleutian Islands is fully allocated to the Aleut Corporation for the purpose of economic development in Adak, Alaska. **Allocation**: To be funded, to the extent possible in whole or in part, from the difference between the sum of all BSAI groundfish fishery TACs and the 2 million mt OY cap, if the difference is large enough to do so. The remainder of the funding comes from a reduction in the Bering Sea pollock recommended TAC. A mechanism for determining "A" and "B" season allowances is specified.
Community Development Quota (CDQ) Multispecies Fishery	Eligible fishery-dependent communities in western Alaska will receive a percentage of all groundfish species or species group TACs, except squid, and a pro-rata share of PSC species. **Sablefish**: 20% of the fixed gear TAC **Pollock**: 10% of the TAC **Other groundfish species**: 7.5% of the TAC, to come out of the groundfish reserve
Flexible Authority	The Regional Administrator of NMFS is authorized to make inseason adjustments through gear modifications, closures, or fishing area/quota restrictions, for conservation reasons, to protect identified habitat problems, or to increase vessel safety.
Recordkeeping and Reporting	Recordkeeping that is necessary and appropriate to determine catch, production, effort, price, and other information necessary for conservation and management may be required. May include the use of catch and/or product logs, product transfer logs, effort logs, or other records as specified in regulations. **Processors**: Shall report necessary information for the management of the groundfish fisheries as specified in regulations. **At-sea processor vessels**: Must submit a weekly catch/receipt and product transfer report and record cargo transfer and off-loading information in a separate transfer log. Catcher/processors are also required to check in and check out of any fishing area for which TAC is established, as specified in regulations.
Observer Program	U.S. fishing vessels that catch groundfish in the EEZ, or receive groundfish caught in the EEZ, and shoreside processors that receive groundfish caught in the EEZ, are required to accommodate NMFS-certified observers as specified in regulations, in order to verify catch composition and quantity, including at-sea discards, and collect biological information on marine resources.
Evaluation and Review of the FMP	The Council will maintain a continuing review of the fisheries managed under this FMP, and all critical components of the FMP will be reviewed periodically. **Management Policy**: Objectives in the management policy statement will be reviewed annually. **Essential Fish Habitat (EFH)**: The Council will conduct a complete review of EFH once every 5 years, and in between will solicit proposals on Habitat Areas of Particular Concern and/or conservation and enhancement measures to minimize potential adverse effects from fishing. Annually, EFH information will be reviewed in the "Ecosystems Considerations" chapter of the SAFE report.

2.4 National Standards for Fishery Conservation and Management

The Magnuson-Stevens Fishery Conservation and Management Act, as amended, sets out ten national standards for fishery conservation and management (16 U.S.C. § 1851), with which all fishery management plans must be consistent.

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be A) fair and equitable to all such fishermen; B) reasonably calculated to promote conservation; and C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to A) provide for the sustained participation of such communities, and B) to the extent practicable, minimize adverse economic impacts on such communities.
9. Conservation and management measures shall, to the extent practicable, A) minimize bycatch and B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

2.5 Conservation and Management Measures

2.5.1 Gulf of Alaska

The FMP for groundfish of the GOA authorizes the commercial harvest of species listed earlier in this section and as further described in (a) below. Commercial fishing is authorized during the fishing year unless otherwise specified in the FMP. Section (b) describes the procedures for determining harvest levels for the groundfish species. Permits and participation, authorized gear, time and area, and catch restrictions are further described in the FMP or in regulations. Specific management measures for the quota share program in place in the fixed gear sablefish fishery are discussed below, as are measures that allow flexible management authority. Monitoring and reporting requirements for the fisheries and the schedule and procedures for review of the FMP or FMP components are provided in the FMP. The GOA FMP in its entirety is incorporated herein by reference (NPFMC 2005b).

The groundfish resources off Alaska have been harvested and processed entirely by U.S.-flagged vessels since 1991. Conservation and management measures contained in the FMP apply exclusively to domestic fishing activities.

(a) Areas and Stocks Involved

The FMP and its management regime govern fishing in the GOA and for those stocks described below.

1. Management Area

The Gulf of Alaska management area encompasses the U.S. Exclusive Economic Zone (EEZ) of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170˚ W. longitude and Dixon Entrance at 132˚ 40' W. longitude (Figure 2.5.1).

The management area is divided into the following regulatory areas: Western, Central, and Eastern. The Central regulatory area is divided into two districts: Chirikof and Kodiak. The Eastern regulatory area is also divided into two districts: West Yakutat and Southeast Outside. The regulatory areas and districts are illustrated in Figure 2.5.1.

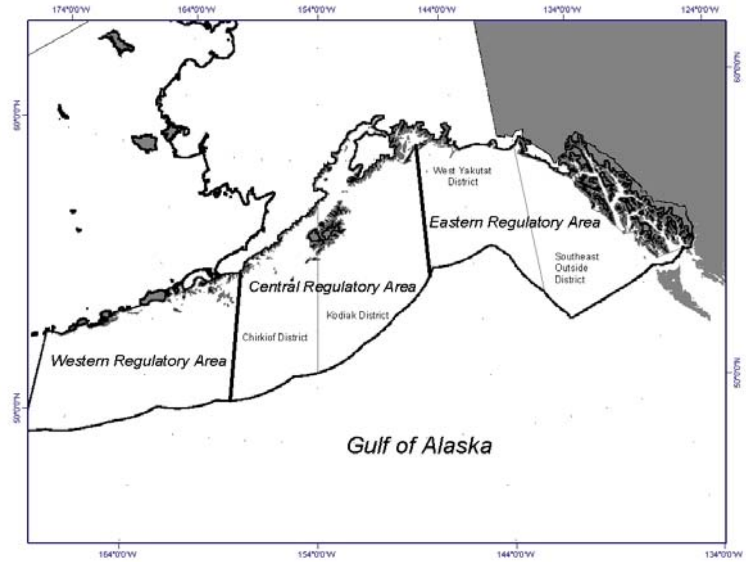


Figure 2.5.1 Regulatory Areas of the Gulf of Alaska

2. Stocks

Stocks governed by the FMP include all finfish, except salmon, steelhead, halibut, herring, and tuna, which are distributed or are exploited in the area described above. Harvest allocations and management are based on the calendar year.

Five categories of species or species groups are likely to be taken in the groundfish fishery. Species may be split or combined within the "target species" category according to procedures set forth in the FMP without amendments to this FMP, notwithstanding the designation listed in the FMP. The optimum yield concept is applied to all except the "prohibited species" category. These categories are tabulated in Table 2.5.1 and are described as follows:

1. Prohibited Species – are those species and species groups the catch of which must be avoided while fishing for groundfish, and which must be immediately returned to sea with a minimum of injury except when their retention is authorized by other applicable law. Groundfish species and species groups under the FMP for which the quotas have been achieved shall be treated in the same manner as prohibited species.
2. Target species – are those species that support a single species or mixed species target fishery, are commercially important, and for which a sufficient data base exists that allows each to be managed on its own biological merits. Accordingly, a specific total allowable catch (TAC) is established annually for each target species. Catch of each species must be recorded and reported. This category includes walleye pollock, Pacific cod, sablefish, shallow and deep water flatfish, rex sole, flathead sole, arrowtooth flounder, Pacific ocean perch, shortraker/rougheye rockfish, northern rockfish, "other slope" rockfish, pelagic shelf rockfish, demersal shelf rockfish, thornyhead rockfish, Atka mackerel, and skates.
3. Other Species – are those species or species groups that currently are of slight economic value and not generally targeted upon. This category, however, contains species with economic potential or which are important ecosystem components, but insufficient data exist to allow separate management. Accordingly, a single TAC applies to this category as a whole. The TAC will be equal to 5 percent of the combined TACs for target species.

Catch of this category as a whole must be recorded and reported. The category includes squid, sculpins, sharks, and octopus.

4. Forage fish species – are those species listed in Table 2.5.1, which are a critical food source for many marine mammal, seabird and fish species. The forage fish species category is established to allow for the management of these species in a manner that prevents the development of a commercial directed fishery for forage fish. Management measures for this species category will be specified in regulations and may include such measures as 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.

5. Nonspecified species – are those species and species groups of no current economic value taken by the groundfish fishery only as an incidental catch in the target fisheries. Virtually no data exist which would allow population assessments. No record of catch is necessary. The allowable catch for this category is the amount that is taken incidentally while fishing for target and other species, whether retained or discarded.

Table 2.5.1 Species included in the FMP species categories

Prohibited Species[1]	Pacific halibut Pacific herring Pacific salmon Steelhead trout King crab Tanner crab
Target Species[2]	Walleye pollock Pacific cod Sablefish Flatfish (shallow-water flatfish, deep-water flatfish, rex sole, flathead sole, arrowtooth flounder) Rockfish (Pacific ocean perch, northern rockfish, shortraker and rougheye rockfish, other slope rockfish, pelagic shelf rockfish, demersal shelf rockfish3, thornyhead rockfish) Atka mackerel Skates (big and longnose skates, other skates)
Other Species[4]	Squid Sculpins Sharks Octopus
Forage Fish Species[5]	Osmeridae family (eulachon, capelin, and other smelts) Myctophidae family (lanternfishes) Bathylagidae family (deep-sea smelts) Ammodytidae family (Pacific sand lance) Trichodontidae family (Pacific sand fish) Pholidae family (gunnels) Stichaeidae family (pricklebacks, warbonnets, eelblennys, cockscombs, and shannys) Gonostomatidae family (bristlemouths, lightfishes, and anglemouths) Order Euphausiacea (krill)

[1]Must be immediately returned to the sea
[2]TAC for each listing
[3]Management delegated to the State of Alaska
[4]Aggregate TAC for group
[5]Management measures for forage fish are established in regulations implementing the FMP

2.5.2 BSAI

The FMP for groundfish of the BSAI authorizes the commercial harvest of species listed earlier in this document and as further described in (a) below. Commercial fishing is authorized during the fishing year unless otherwise specified in the FMP. Section (b) describes the procedures for determining harvest levels for the groundfish species. Permit and participation, authorized gear, time and area, and catch restrictions are further described in the FMP or in regulations. Specific management measures for the fixed gear sablefish quota share program are discussed below as are measures that allow flexible management authority. Monitoring and reporting requirements for the fisheries and the schedule and procedures for review of the FMP or FMP components are provided in the FMP. The BSAI FMP is incorporated herein by reference (NPFMC 2005a).

The groundfish resources off Alaska have been harvested and processed entirely by U.S.-flagged vessels since 1991. Conservation and management measures contained in the FMP apply exclusively to domestic fishing activities. No portion of the annual optimum yield is allocated to foreign harvesters or foreign processors.

(a) Areas and Stocks Involved

The FMP and its management regime govern fishing by United States (U.S.) vessels in the BSAI described below.

1. Management Area

The BSAI management area encompasses the U.S. Exclusive Economic Zone (EEZ) of the eastern Bering Sea and that portion of the North Pacific Ocean adjacent to the Aleutian Islands west of 170˚ W. longitude (Figure 2.5.2). The northern boundary of the Bering Sea is the Bering Strait, defined as a straight line from Cape Prince of Whales to Cape Dezhneva, Russia.

The FMP area is divided into two fishing areas, the Bering Sea subarea and the Aleutian Islands subarea. The Bering Sea subarea includes a defined area known as the Bogoslof District. For the purpose of spatially allocating total allowable catch, the Aleutian Islands subarea is divided into three districts, the eastern district (between 170˚ W and 177˚ W longitude), the central district (between 177˚ W longitude and 177˚ E longitude), and the western district (west of 177˚ E longitude).

The subareas and districts of the BSAI management area are illustrated in Figure 2.5.2.

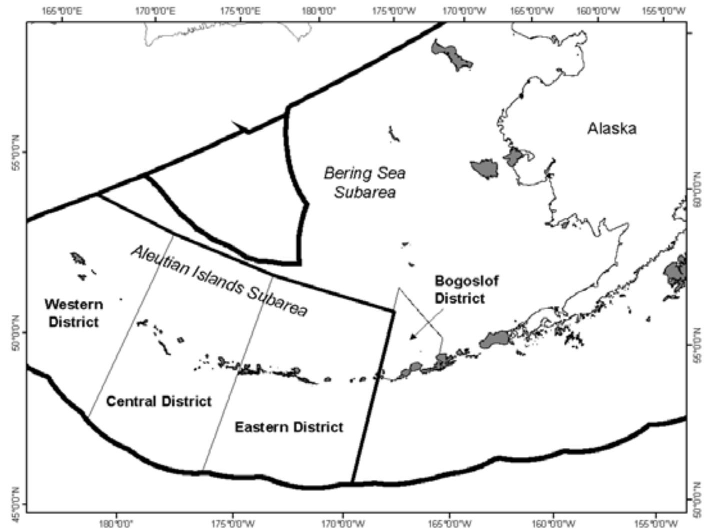


Figure 2.5.2 Subareas and districts of the Bering Sea and Aleutian Islands management area

2. Stocks

Stocks governed by the FMP were listed earlier (also see Table 2.5.2) and include all stocks of finfish and marine invertebrates except salmonids, shrimps, scallops, snails, king crab, Tanner crab, Dungeness crab, corals, surf clams, horsehair crab, lyre crab, Pacific halibut, and Pacific herring.

Five categories of species or species groups are likely to be taken in the groundfish fishery. The optimum yield concept is applied to all except the “prohibited species” category. These categories are tabulated in Table 2.5.2 and are described as follows:

1. Prohibited Species – are those species and species groups the catch of which must be avoided while fishing for groundfish, and which must be returned to sea with a minimum of injury except when their retention is authorized by other applicable law. Groundfish species and species groups under the FMP for which the quotas have been achieved shall be treated in the same manner as prohibited species.

2. Target species – are those species that support either a single species or mixed species target fishery, are commercially important, and for which a sufficient data base exists that allows each to be managed on its own biological merits. Accordingly, a specific TAC is established annually for each target species. Catch of each species must be recorded and reported. This category includes pollock, Pacific cod, sablefish, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, flathead sole, Alaska plaice, “other flatfish”, Pacific ocean perch, northern rockfish, shortraker rockfish, rougheye rockfish, “other rockfish”, Atka mackerel, and squid.

3. Other Species – are those species or species groups that currently are of slight economic value and not generally targeted upon. This category, however, contains species with economic potential or which are important ecosystem components, but insufficient data exist to allow separate management. Accordingly, a single TAC applies to this category as

a whole. Catch of this category as a whole must be recorded and reported. The category includes sculpins, sharks, skates, and octopus.

4. Forage fish species – are those species, listed in Table 2.5.2, which are a critical food source for many marine mammal, seabird and fish species. The forage fish species category is established to allow for the management of these species in a manner that prevents the development of a commercial directed fishery for forage fish. Management measures for this species category will be specified in regulations and may include such measures as 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.

5. Nonspecified species – are those species and species groups of no current economic value taken by the groundfish fishery only as an incidental catch in the target fisheries. Virtually no data exist which would allow population assessments. No record of catch is necessary. The allowable catch for this category is the amount which is taken incidentally while fishing for target and other species, whether retained or discarded.

Table 2.5.2 Species included in the FMP species categories

	Finfish	Marine Invertebrates
Prohibited Species[1]	Pacific halibut Pacific herring Pacific salmon Steelhead	King crab Tanner crab
Target Species[2]	Walleye pollock Pacific cod Sablefish Yellowfin sole Greenland turbot Arrowtooth flounder Rock sole Flathead sole Alaska plaice Other flatfish Pacific ocean perch Northern rockfish Shortraker rockfish Rougheye rockfish Other rockfish Atka mackerel	Squid
Other Species[3]	Sculpins Sharks Skates	Octopus
Forage Fish Species[4]	Osmeridae family (eulachon, capelin, and other smelts) Myctophidae family (lanternfishes) Bathylagidae family (deep-sea smelts) Ammodytidae family (Pacific sand lance) Trichodontidae family (Pacific sand fish) Pholidae family (gunnels) Stichaeidae family (pricklebacks, warbonnets, eelblennys, cockscombs, and shannys) Gonostomatidae family (bristlemouths, lightfishes, and anglemouths)	Order Euphausiacea (krill)

[1]Must be returned to the sea
[2]TAC for each listing
[3]Aggregate TAC for group
[4]Management measures for forage fish are established in regulations implementing the FMP

2.6 Determination of Annual Fishery Quotas

Descriptions of procedures for setting harvest quotas are provided in the GOA and BSAI FMPs and are incorporated herein by reference (NPFMC 2005a and 2005b). This includes a description of Maximum Sustainable Yield (MSY) and Optimum Yield (OY) as they pertain to conservation of target stock biomass and sustainability of the groundfish complex in both regulatory areas (see below). The FMPs also include a definition of Overfishing Level (OFL) which is the maximum allowable rate of fishing that is prescribed through a set of six tiers which are assigned to target species fisheries in order of information availability with which annual stock assessments are made. The Council's Science and Statistical Committee (SSC) will have final authority for determining whether a given item of information is "reliable" for the purpose of this definition, and may use either objective or subjective criteria in making such determinations.

The Secretary, after receiving recommendations from the Council, will determine up to 2 years of TACs and apportionments thereof, and reserves for each stock or stock complex in the "target species" and "other species" categories, by January 1 of the new fishing year, or as soon as practicable thereafter, by means of regulations implementing the FMP. Notwithstanding designated stocks or stock complexes listed by category, the Council may recommend splitting or combining stocks or stock complexes in the "target species" category for purposes of establishing a new TAC if such action is desirable based on commercial importance of a stock or stock complex and whether sufficient biological information is available to manage a stock or stock complex on its own merits.

Prior to making final recommendations to the Secretary, the Council will make available to the public for comment as soon as practicable after its October meeting, proposed specifications of ABC and TAC for each target stock or stock complex and the "other species" category, and apportionments thereof, and reserves.

The Council will provide proposed recommendations for harvest specifications to the Secretary after its October meeting, including detailed information on the development of each proposed specification and any future information that is expected to affect the final specifications. As soon as practicable after the October meeting, the Secretary will publish in the *Federal Register* proposed harvest specifications based on the Council's October recommendations and make available for public review and comment, all information regarding the development of the specifications, identifying specifications that are likely to change, and possible reasons for changes, if known, from the proposed to final specifications. The prior public review and comment period on the published proposed specifications will be a minimum of 15 days.

At its December meeting, the Council will review the final SAFE reports, recommendations from the Groundfish Plan Teams, SSC, AP, and comments received. The Council will then make final harvest specifications recommendations to the Secretary for review, approval, and publication. New final annual specifications will supersede current annual specifications on the effective date of the new annual specifications.

2.6.1 Definition of Terms

Maximum sustainable yield (MSY) is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions.

Optimum yield (OY) is the amount of fish which–

a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;

b) is prescribed as such on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and

c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the MSY in such fishery.

Overfishing level (OFL) is a limit reference point set annually for a stock or stock complex during the assessment process. Overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis. Operationally, overfishing occurs when the harvest exceeds the OFL.

Acceptable biological catch (ABC) is an annual sustainable target harvest (or range of harvests) for a stock or stock complex, determined by the Plan Team and the Scientific and Statistical Committee during the assessment process. It is derived from the status and dynamics of the stock, environmental conditions, and other ecological factors, given the prevailing technological characteristics of the fishery. The target reference point is set below the limit reference point for overfishing.

Total allowable catch is the annual harvest limit for a stock or stock complex, derived from the ABC by considering social and economic factors.

In addition to definitional differences, OY differs from ABC and TAC in two practical respects. First, ABC and TAC are specified for each stock or stock complex within the "target species" and "other species" categories, whereas OY is specified for the groundfish fishery (comprising target species and other species categories) as a whole. Second, ABCs and TACs are specified annually whereas the OY range is constant. The sum of the stock-specific ABCs may fall within or outside of the OY range. If the sum of annual TACs falls outside the OY range, TACs must be adjusted or the FMP amended.

2.6.2 Framework for Setting Total Allowable Catch

A procedure has been developed whereby the Council may set annual harvest levels by specifying a total allowable catch for each groundfish fishery on an annual basis. The procedure is used to determine TACs for every groundfish species and species group managed by the FMP.

Scientists from the Alaska Fisheries Science Center, the Alaska Department of Fish and Game, and other agencies and universities prepare *Stock Assessment and Fishery Evaluation* (SAFE) documents annually (see below). These documents are first reviewed by the Groundfish Plan Team, and then by the Council's SSC and AP, and the Council. Reference point recommendations are made at each level of assessment. Usually, scientists recommend values for ABC and OFL, and the AP recommends values for TAC. The Council has final authority to approve all reference points, but focuses on setting TACs so that OY is achieved and OFLs are not exceeded.

The procedure for setting TAC consists of the following steps:

1. Determine the ABC for each managed species or species group. ABCs are recommended by the Council's SSC based on information presented by the Plan Team.
2. Determine a TAC based on biological and socioeconomic information. The TAC must be lower than or equal to the ABC. The TAC may be lower if bycatch considerations or socioeconomic considerations cause the Council to establish a lower harvest.
3. Sum TACs for "target species" and "other species" to assure that the sum is within the optimum yield range specified for the groundfish complex in the FMP. If the sum falls outside this range the TACs must be adjusted or the FMP amended.

2.6.3 Stock Assessment and Fishery Evaluation

For purposes of supplying scientific information to the Council for use in specifying TACs, SAFE reports are prepared annually.

The SAFE reports will, at a minimum, contain or refer to the following:

1. current status of BSAI and GOA groundfish resources, by major species or species group;
2. estimates of maximum sustainable yield and acceptable biological catch;
3. estimates of groundfish species mortality from nongroundfish fisheries, subsistence fisheries, and recreational fisheries, and difference between groundfish mortality and catch, if possible;
4. fishery statistics (landings and value) for the current year;
5. the projected responses of stocks and fisheries to alternative levels of fishing mortality;
6. any relevant information relating to changes in groundfish markets;
7. information to be used by the Council in establishing prohibited species catch limits for prohibited species with supporting justification and rationale; and
8. any other biological, social, or economic information that may be useful to the Council.

2.6.4 Reserves

(a) GOA

Reserves are set at 20 percent of the TAC of pollock, Pacific cod, flatfish, and "other species". At any time, the Regional Administrator may assess these fisheries and apportion to them any amounts from the reserves that is determined will be harvested.

Any additional in-season allocation from reserves may carry with it an additional prohibited species catch (PSC) limit amount proportional to that reserve release and the respective bycatch rates in the affected fisheries.

(b) BSAI

The groundfish reserve at the beginning of each fishing year shall equal the sum of 15 percent of each target species and the "other species" category TACs, except for pollock and fixed-gear sablefish. When the TACs for the groundfish complex are determined by the Council, 15 percent of the sum of the TACs is set aside as a reserve. This reserve is used for: a) correction of operational problems in the fishing fleets, to promote full and efficient use of groundfish resources, b) adjustments of species TACs according to the condition of stocks during the fishing year, and c) apportionments.

The reserve is not designated by species or species groups and will be apportioned to the fisheries during the fishing year by the Regional Administrator in amounts and by species that s/he determines to be appropriate. The apportionment of the reserve to target species or to the "other species" category must be consistent with the most recent assessments of resource conditions unless the Regional Administrator finds that the socioeconomic considerations listed above or specified fishery operational problems dictate otherwise. Except as provided for in the National Standard Guidelines, the Regional Administrator must also find that the apportionment of reserves will not result in overfishing as defined in the guidelines. The Regional Administrator may withhold reserves for conservation reasons.

2.6.5 Apportionment of TAC

(a) GOA

1. Seasonal Allocations

Harvest allocations and management are based on the calendar year. For the pollock fishery, the annual TAC established for pollock in the combined Western and Central regulatory areas shall be divided into seasonal allowances. Seasonal allowances of the pollock TAC will be established by regulation. The Council will consider the criteria described in the FMP (see section 2.7.1. below) when recommending changes in seasonal allowances. Shortfalls or overages in one seasonal allowance shall be proportionately added to, or subtracted from, subsequent seasonal allowances.

2. Allocations by Geographical Area

TACs are apportioned by regulatory area, and may be further apportioned by district for certain stocks. Some of these districts may be managed together to improve management of these fisheries. For purposes of managing pollock, the Western and Central regulatory areas are combined to allow improved management and better conservation of the pollock resource. The Eastern regulatory area is divided into two districts, West Yakutat and Southeast Outside, for purposes of managing sablefish and rockfish stocks. This division is intended to protect localized sablefish stocks and demersal shelf rockfish stocks and is necessary to prevent overexploitation in the Eastern regulatory area. The Southeast Outside district delineates the primary rockfish fishing ground in this region.

3. Allocations by Gear Type and Sector

a. Sablefish fishery

In the Eastern regulatory area, from 1986 forward, vessels using hook-and-line gear shall be permitted to take up to 95 percent of the TAC for sablefish. Vessels using trawl gear shall be permitted to harvest up to 5 percent of the TAC for sablefish.

In the Central and Western regulatory areas, from 1987 and 1989 forward (respectively), vessels using hook-and-line gear shall be permitted to take up to 80 percent of the sablefish TAC, and vessels using trawl gear shall be permitted to take up to 20 percent of the TAC.

b. Pacific cod and pollock fisheries

The GOA pollock and Pacific cod TACs will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

c. Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in federal regulations.
2. All catcher/processors less than 125 ft LOA that have declared themselves to be "inshore".
3. All motherships or floating processors that have declared themselves to be "inshore".

Offshore is defined as all processors not included in the definition of inshore component.

<u>Inshore endorsements and operating restrictions</u>

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel that intends to process GOA pollock or GOA Pacific cod harvested in an inshore directed fishery for those species must apply for and receive an inshore processing endorsement on its Federal fisheries or Federal processor permit. All shoreside processors are by definition included in the inshore component and are not required to apply for an inshore processing endorsement. Once an inshore processing endorsement is issued it is valid for the duration of the fishing year and cannot be rescinded. Processors that lack an inshore processing endorsement are prohibited from processing GOA pollock or GOA Pacific cod harvested in a directed fishery for processing by the inshore component. Harvesting vessels that do not process pollock or Pacific cod do not need an inshore processing endorsement and may choose to deliver their catch to either or both components.

Catcher/processors that hold an inshore processing endorsement are prohibited from harvesting or processing more than 126 mt (round weight) of pollock or GOA Pacific cod in combination during any fishing week.

Motherships and floating processors that hold an inshore processing endorsement must process all GOA pollock and GOA Pacific cod harvested in a directed fishery for those species in a single geographic location inside the waters of the State of Alaska during a fishing year.

Motherships and floating processors that hold an inshore processing endorsement are prohibited from:

1. operating as catcher/processors in the BSAI during the same fishing year.
2. operating as American Fisheries Act motherships in the BSAI directed pollock fishery during the same fishing year.

Allocations

One hundred percent of the allowed harvest of pollock is allocated to inshore catcher/processors or to harvesting vessels which deliver their catch to the inshore component, with the exception that offshore catcher/processors, and vessels delivering to the offshore component, will be able to take pollock incidentally as bycatch in other directed fisheries. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Ninety percent of the allowed harvest of Pacific cod is allocated to inshore catcher/processors or to harvesting vessels which deliver to the inshore component and to inshore catcher/processors; the remaining ten percent is allocated to offshore catcher/processors and harvesting vessels which deliver to the offshore component. All Pacific cod caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

These allocations shall be made by subarea and period as provided in federal regulations implementing the FMP.

Reapportionment of unused allocations

If during the course of the fishing year it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other components for that year. This shall have no impact upon the allocation formula.

(b) BSAI

When the TAC for each target species and the “other species” category, except for pollock and fixed-gear sablefish, is determined, it is reduced by 15 percent to form the reserve, as described above. The remaining 85 percent of each TAC is then apportioned by the Regional Administrator.

Groundfish species and species groups under the FMP for which TAC has been achieved shall be treated in the same manner as prohibited species; they must be returned to the sea with a minimum of injury.

The following are the specific requirements for gear and seasonal allocations for the BSAI pollock, sablefish, Pacific cod, Atka mackerel, and shortraker and rougheye rockfish fisheries.

1. Pollock

a. Gear Allocation

The Regional Administrator, in consultation with the Council, may limit the amount of pollock that may be taken with trawls other than pelagic trawls. Prior to the Regional Administrator’s determination, the Council will recommend to him or her a limit on the amount of pollock that may be taken with other than pelagic trawl gear. The Regional Administrator shall make the

Council's recommendations available to the public for comment under the annual TAC specification process as described previously.

The following information must be considered by the Council when determining whether a limit will be recommended and what that limit should be:

a. PSC limits;

b. projected prohibited species bycatch levels with and without a limit on the amount of pollock that may be taken with other than pelagic trawl gear;

c. the cost of the limit on the bottom-trawl and pelagic trawl fisheries; and

d. other factors that determine the effects of the limit on the attainment of FMP goals and objectives.

b. Seasonal allocation

The pollock TAC shall be divided into two allowances: roe-bearing ("A" season) and non-roe-bearing ("B" season). Each allowance will be available for harvest during the times specified in the regulations. The proportion of the annual pollock TAC assigned to each allowance will be determined annually during the groundfish specifications process. Proposed and final notices of the seasonal allowances of the pollock TAC will be published in the *Federal Register* with the proposed and final groundfish specifications.

The following factors will be considered when setting seasonal allowances of the pollock TAC:

1. estimated monthly pollock catch and effort in prior years;
2. expected changes in harvesting and processing capacity and associated pollock catch;
3. current estimates of and expected changes in pollock biomass and stock conditions; conditions of marine mammal stocks, and biomass and stock conditions of species taken as bycatch in directed pollock fisheries;
4. potential impacts of expected seasonal fishing for pollock on pollock stocks, marine mammals, and stocks of species taken as bycatch in directed pollock fisheries;
5. the need to obtain fishery-related data during all or part of the fishing year;
6. effects on operating costs and gross revenues;
7. the need to spread fishing effort over the year, minimize gear conflicts, and allow participation by various elements of the groundfish fleet and other fisheries;
8. potential allocative effects among users and indirect effects on coastal communities; and
9. other biological and socioeconomic information that affects the consistency of seasonal pollock harvests with the goals and objectives of the FMP.

2. Sablefish

a. Sablefish in the Bering Sea subarea

Vessels using fixed gear, including hook-and-line and pot gear, shall be permitted to harvest no more than 50 percent of the TAC specified for sablefish. Vessels using trawl gear shall be permitted to harvest no more than 50 percent of the TAC specified for sablefish.

b. Sablefish in the Aleutian Islands subarea

Vessels using fixed gear, including hook-and-line and pot gear, shall be permitted to harvest no more than 75 percent of the TAC specified for sablefish. Vessels using trawl gear shall be permitted to harvest no more than 25 percent of the TAC specified for sablefish.

3. Pacific cod

a. Gear allocations

<u>Among gear groups</u>

The BSAI Pacific cod TAC shall be allocated among gear groups as follows: 2 percent to vessels using jig gear; 51 percent to vessels using hook-and-line or pot gear; and 47 percent to vessels using trawl gear. The trawl apportionment will be divided 50 percent to catcher vessels and 50 percent to catcher processors.

<u>Among vessels using hook-and-line or pot gear</u>

The Regional Administrator annually will estimate the amount of Pacific cod taken as incidental catch in directed fisheries for groundfish other than Pacific cod by vessels using hook-and-line or pot gear and deduct that amount from the portion of Pacific cod TAC annually allocated to hook-and-line or pot gear. The remainder will be further allocated as directed fishing allowances as follows:

a. 80 percent to catcher/processor vessels using hook-and-line gear;

b. 0.3 percent to catcher vessels using hook-and-line gear;

c. 3.3 percent to catcher/processor vessels using pot gear;

d. 15 percent to catcher vessels using pot gear; and

e. 1.4 percent to catcher vessels less than 60 ft length overall that uses either hook-and-line gear or pot gear.

Note that the above allocation percentages are currently being reviewed by the Council and may change in 2006 and be effective for the 2007 fishing season.

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 will be set forth in regulations.

b. Seasonal allocations

The amount of Pacific cod allocated to gear groups above may be seasonally apportioned. Criteria for seasonal apportionments and the seasons authorized to receive separate apportionments are set forth in regulations.

4. Atka mackerel

The Regional Administrator, in consultation with the Council, will annually allocate up to 2 percent of the TAC specified for Atka mackerel in the eastern Aleutian Islands District/Bering Sea subarea to vessels using jig gear in these areas. The jig gear allocation will be specified during the annual groundfish specifications process based on recent annual catches of Atka mackerel by vessels using jig gear and the anticipated harvest of this species by the jig gear fleet during the upcoming fishing year.

5. Shortraker and Rougheye Rockfish

After subtraction of reserves, the Aleutian Islands subarea TAC specified for shortraker and rougheye rockfish will be allocated 70 percent to vessels using trawl gear and 30 percent to vessels using non-trawl gear.

(c) Attainment of Total Allowable Catch

The attainment of a TAC for a species will result in the closure of the target fishery for that species. That is, once the TAC is taken, further retention of that species will be prohibited. Other fisheries targeting on other species could be allowed to continue as long as the non-retainable bycatch of the closed species is found to be non-detrimental to that stock.

2.6.6 Annual Harvest Specifications and Maximum Retainable Amounts.

The amount of harvest during a year for each groundfish species is controlled by the harvest specifications. For 2006 and 2007, the Council made recommendations for TAC for the Alaska groundfish fisheries. These are shown in tables 2.6.6.1 and 2.6.6.2 below. Incidental harvest of groundfish species also is limited by the maximum retainable amounts (MRAs) specified in the regulations. These MRAs are in tables 10 and 11 to 50 CFR part 679 and are included in this document as Tables 2.6.6.3 and 2.6.6.4 below. Note that for Table 2.6.6.3, the other species MRA for the arrowtooth flounder fishery was changed by Amendment 69 to 20 percent, effective April 12, 2006 (71 FR 12626, March 13, 2006).

Table 2.6.6.1 Council recommendations for GOA groundfish 2006 - 2007 OFLs , ABCs and TACs

		2005				2006			2007		
Stock/ Assemblage	Area	OFL	ABC	TAC	Catch*	OFL	ABC	TAC	OFL	ABC	TAC
Pollock	W (61)		30,380	30,380	31,116		29,187	29,187		23,291	23,291
	C (62)		34,404	34,404	27,838		30,775	30,775		24,558	24,558
	C (63)		18,718	18,718	19,348		18,619	18,619		14,858	14,858
	WYAK		1,688	1,688	1,879		1,809	1,809		1,443	1,443
	Subtotal	144,340	85,190	85,190	80,181	110,100	80,390	80,390	89,500	64,150	64,150
	EYAK/SEO	8,690	6,520	6,520	0	8,209	6,157	6,157	8,209	6,157	6,157
	Total	153,030	91,710	91,710	80,181	118,309	86,547	86,547	97,709	70,307	70,307
Pacific Cod	W		20,916	15,687	12,208		26,855	20,141		19,292	14,469
	C		33,117	25,086	21,241		37,873	28,405		27,206	20,405
	E		4,067	3,660	14		4,131	3,718		2,968	2,671
	Total	86,200	58,100	44,433	33,462	95,500	68,859	52,264	59,100	49,466	37,545
Sablefish	W		2,540	2,540	1,892		2,670	2,670		2,360	2,360
	C		7,250	7,250	6,602		6,370	6,370		5,630	5,630
	WYAK		2,580	2,580	1,825		2,280	2,280		2,014	2,014
	SEO		3,570	3,570	3,335		3,520	3,520		3,116	3,116
	Total	19,280	15,940	15,940	13,654	17,880	14,840	14,840	15,800	13,120	13,120
Deep-water flatfish[1]	W		330	330	3		420	420		421	421
	C		3,340	3,340	395		4,139	4,139		4,145	4,145
	WYAK		2,120	2,120	4		2,661	2,661		2,665	2,665
	EYAK/SEO		1,030	1,030	4		1,445	1,445		1,446	1,446
	Total	8,490	6,820	6,820	406	11,008	8,665	8,665	11,022	8,677	8,677
Rex sole	W		1,680	1,680	576		1,159	1,159		1,096	1,096
	C		7,340	7,340	1,576		5,506	5,506		5,207	5,207
	WYAK		1,340	1,340	0		1,049	1,049		992	992
	EYAK/SEO		2,290	2,290	0		1,486	1,486		1,405	1,405
	Total	16,480	12,650	12,650	2,152	12,000	9,200	9,200	11,400	8,700	8,700
Shallow-water flatfish[2]	W		21,580	4,500	108		24,720	4,500		24,720	4,500
	C		27,250	13,000	4,516		24,258	13,000		24,258	13,000
	WYAK		2,030	2,030	0		628	628		628	628
	EYAK/SEO		1,210	1,210	6		1,844	1,844		1,844	1,844
	Total	63,840	52,070	20,740	4,630	62,418	51,450	19,972	62,418	51,450	19,972
Flathead sole	W		11,690	2,000	611		10,548	2,000		10,932	2,000
	C		30,020	5,000	1,904		25,195	5,000		26,111	5,000
	WYAK		3,000	3,000	0		2,022	2,022		2,096	2,096
	EYAK/SEO		390	390	0		55	55		57	57
	Total	56,500	45,100	10,390	2,515	47,003	37,820	9,077	48,763	39,196	9,153
Arrowtooth flounder	W		26,250	8,000	2,531		20,154	8,000		21,011	8,000
	C		168,950	25,000	16,681		134,906	25,000		140,640	25,000
	WYAK		11,790	2,500	23		15,954	2,500		16,632	2,500
	EYAK/SEO		9,910	2,500	29		6,830	2,500		7,120	2,500
	Total	253,900	216,900	38,000	19,264	207,678	177,844	38,000	216,500	185,403	38,000

		2005				2006			2007		
Stock/ Assemblage	Area	OFL	ABC	TAC	Catch*	OFL	ABC	TAC	OFL	ABC	TAC
Other Slope rockfish[3]	W		40	40	93		577	577		577	577
	C		300	300	565		386	386		386	386
	WYAK		130	130	70		317	317		317	317
	EYAK/SEO		3,430	200	36		2,872	200		2,872	200
	Total	5,150	3,900	670	764	5,394	4,152	1,480	5,394	4,152	1,480
Northern rockfish[3]	W		808	808	570		1,483	1,483		1,483	1,483
	C		4,283	4,283	4,208		3,608	3,608		3,608	3,608
	E		0	0	0		0	0		0	0
	Total	6,050	5,091	5,091	4,778	7,673	5,091	5,091	7,618	5,091	5,091
Pacific ocean perch	W	3,076	2,567	2,567	2,340	4,931	4,155	4,155	4,997	4,290	4,290
	C	10,226	8,535	8,535	8,145	8,806	7,418	7,418	8,923	7,660	7,660
	WYAK		841	841	872		1,101	1,101		1,137	1,137
	SEO		1,632	1,632	0		1,587	1,587		1,639	1,639
	E(subtotal)	2,964				3,190	2,688	2,688	3,232	2,776	2,776
	Total	16,266	13,575	13,575	11,357	16,927	14,261	14,261	17,152	14,726	14,726
Shortraker	W		155	155	70		153	153		153	153
	C		324	324	224		353	353		353	353
	E		274	274	203		337	337		337	337
	Total	982	753	753	497	1,124	843	843	1,124	843	843
Rougheye	W		188	188	52		136	136		133	133
	C		557	557	122		608	608		596	596
	E		262	262	122		239	239		235	235
	Total	1,531	1,007	1,007	296	1,180	983	983	1,161	964	964
Pelagic shelf rockfish	W		377	377	120		1,438	1,438		1,463	1,463
	C		3,067	3,067	1,845		3,262	3,262		3,318	3,318
	WYAK		211	211	215		301	301		306	306
	EYAK/SEO		898	898	3		435	435		443	443
	Total	5,680	4,553	4,553	2,183	6,662	5,436	5,436	6,779	5,530	5,530
Demersal rockfish	SEO	640	410	410	289	650	410	410	650	410	410
Thornyhead rockfish	W		410	410	189		513	513		513	513
	C		1,010	1,010	388		989	989		989	989
	E		520	520	134		707	707		707	707
	Total	2,590	1,940	1,940	711	2,945	2,209	2,209	2,945	2,209	2,209
Atka mack.	Total	6,200	600	600	882	6,200	4,700	1,500	6,200	4,700	1,500
Big skate	W		727	727	26		695	695		695	695
	C		2,463	2,463	758		2,250	2,250		2,250	2,250
	E		809	809	60		599	599		599	599
	Total	5,332	3,999	3,999	844	4,726	3,544	3,544	4,726	3,544	3,544
Longnose skate	W		66	66	15		65	65		65	65
	C		1,972	1,972	947		1,969	1,969		1,969	1,969
	E		780	780	135		861	861		861	861
	Total	3,757	2,818	2,818	1,097	3,860	2,895	2,895	3,860	2,895	2,895
Other skates	Total	1,769	1,327	1,327	663	2,156	1,617	1,617	2,156	1,617	1,617
Other species	Total	NA	NA	13,871	2232	NA	NA	13,942		NA	12,266
Total		**713,667**	**539,263**	**291,298**	**182,957**	**631,293**	**501,366**	**292,776**	**582,477**	**473,000**	**258,549**

* Catch through November 6, 2005

[1] "Deep water flatfish" includes Dover sole, Greenland turbot and deepsea sole.

[2] "Shallow water flatfish" includes rock sole, yellowfin sole, butter sole, starry flounder, English sole, Alaska plaice, and sand sole.

[3] The EGOA ABC of 2 mt for northern rockfish has been included in the WYAK ABC for other slope rockfish.

Table 2.6.6.2 Council Recommended ABC, OFL, and 2006 and 2007 TAC Specifications for the BSAI

Species	Area	2005				2006			2007		
		OFL	ABC	TAC	Catch**	OFL	ABC	TAC	OFL	ABC	TAC
Pollock	EBS	2,100,000	1,960,000	1,478,500	1,483,096	2,090,000	1,930,000	1,485,000	1,930,000	1,790,000	1,500,000
	Aleutian Islands	39,100	29,400	19,000	1,621	39,100	29,400	19,000	39,100	29,400	19,000
	Bogoslof District	39,600	2,570	10	0	50,600	5,500	10	50,600	5,500	10
Pacific cod	BSAI	265,000	206,000	206,000	183,020	230,000	194,000	194,000	176,000	148,000	148,000
Sablefish	BS	2,950	2,440	2,440	1,037	3,680	3,060	2,820	3,260	2,700	2,700
	AI	3,170	2,620	2,620	1,480	3,740	3,100	3,000	3,300	2,740	2,740
Yellowfin sole	BSAI	148,000	124,000	90,686	91,684	144,000	121,000	95,701	137,000	116,000	107,641
Greenland turbot	Total	19,200	3,930	3,500	2,530	14,200	2,740	2,740	13,400	2,630	2,630
	BS		2,720	2,700	2,105		1,890	1,890		1,815	1,815
	AI		1,210	800	425		850	850		815	815
Arrowtooth flounder	BSAI	132,000	108,000	12,000	13,888	166,000	136,000	13,000	174,000	142,000	18,000
Rock sole	BSAI	157,000	132,000	41,500	37,237	150,000	126,000	41,500	145,000	122,000	44,000
Flathead sole	BSAI	70,200	58,500	19,500	15,818	71,800	59,800	19,500	67,900	56,600	22,000
Alaska plaice	BSAI	237,000	189,000	8,000	11,183	237,000	188,000	8,000	231,000	183,000	15,000
Other flatfish	BSAI	28,500	21,400	3,500	4,466	24,200	18,100	3,500	24,200	18,100	5,000
Pacific Ocean perch	BSAI	17,300	14,600	12,600	10,360	17,600	14,800	12,600	17,600	14,800	14,800
	BS		2,920	1,400	811		2,960	1,400		2,960	2,960
	AI total		11,680	11,200	9,549		11,840	11,200		11,840	11,840
	WAI		5,305	5,085	4,725		5,372	5,085		5,372	5,372
	CAI		3,165	3,035	2,238		3,212	3,035		3,212	3,212
	EAI		3,210	3,080	2,586		3,256	3,080		3,256	3,256
Northern rockfish	BSAI	9,810	8,260	5,000	3,959	10,100	8,530	4,500	9,890	8,320	5,000
Shortraker rockfish	BSAI	794	596	596	166	774	580	580	774	580	580
Rougheye rockfish	BSAI	298	223	223	92	299	224	224	299	224	224
Other rockfish	BSAI	1,870	1,400	1,050	468	1,870	1,400	1,050	1,870	1,400	1,400
	BS		810	460	188		810	460		810	810
	AI		590	590	280		590	590		590	590
Atka mackerel	Total	147,000	124,000	63,000	61,958	130,000	110,000	63,000	107,000	91,000	63,000
	WAI		46,620	20,000	19,736		41,360	15,500		34,220	17,500
	CAI		52,830	35,500	35,105		46,860	40,000		38,760	38,000
	EAI/BS		24,550	7,500	7,133		21,780	7,500		18,020	7,500
Squid	BSAI	2,620	1,970	1,275	1,183	2,620	1,970	1,275	2,620	1,970	1,275
Other species	BSAI	87,920	53,860	29,000	24,666	89,404	58,882	29,000	89,404	62,950	27,000
Total	BSAI	3,509,332	3,044,769	2,000,000	1,949,912	3,476,987	3,045,586	2,000,000	3,224,217	2,832,414	2,000,000

**2005 catch is through October 29, and includes CDQ. The preferred alternative is Alternative 2. The 2006 and 2007 OFLs, ABCs, and TACs were adopted by the Council in December 2005.

Table 2.6.6.3 Maximum retainable incidental catch amounts (expressed as percentages) for the Gulf of Alaska groundfish fisheries

Table 10 to Part 679—Gulf of Alaska Retainable Percentages

BASIS SPECIES		INCIDENTAL CATCH SPECIES (for DSR caught on catcher vessels in the SEO, see § 679.20 (j)[6])														
Code	Species	Pollock	Pacific cod	DW flat[2]	Rex sole	Flathead sole	SW Flat [3]	Arrowtooth	Sablefish	Aggregated rockfish[8]	SR/RE ERA [1]	DSR SEO (C/Ps only) [6]	Atka mackerel	Aggregated forage fish[10]	Skates [11]	Other species [7]
110	Pacific cod	20	na[9]	20	20	20	20	35	1	5	(1)	10	20	2	20	20
121	Arrowtooth	5	5	0	0	0	0	na[9]	0	0	0	0	0	2	0	0
122	Flathead sole	20	20	20	20	na[9]	20	35	7	15	7	1	20	2	20	20
125	Rex sole	20	20	20	na[9]	20	20	35	7	15	7	1	20	2	20	20
136	Northern rockfish	20	20	20	20	20	20	35	7	15	7	1	20	2	20	20
141	Pacific ocean perch	20	20	20	20	20	20	35	7	15	7	1	20	2	20	20
143	Thornyhead	20	20	20	20	20	20	35	7	15	7	1	20	2	20	20
152/ 151	Shortraker/ rougheye [1]	20	20	20	20	20	20	35	7	15	na[9]	1	20	2	20	20
193	Atka mackerel	20	20	20	20	20	20	35	1	5	(1)	10	na[9]	2	20	20
270	Pollock	na[9]	20	20	20	20	20	35	1	5	(1)	10	20	2	20	20
710	Sablefish	20	20	20	20	20	20	35		15	7	1	20	2	20	20
Flatfish, deep water [2]		20	20	na[9]	20	20	20	35	7	15	7	1	20	2	20	20
Flatfish, shallow water [3]		20	20	20	20	20	na[9]	35	1	5	(1)	10	20	2	20	20
Rockfish, other [4]		20	20	20	20	20	20	35	7	15	7	1	20	2	20	20
Rockfish, pelagic [5]		20	20	20	20	20	20	35	7	15	7	1	20	2	20	20
Rockfish, DSR-SEO [6]		20	20	20	20	20	20	35	7	15	7	na[9]	20	2	20	20
Skates[11]		20	20	20	20	20	20	35	1	5	(1)	10	20	2	na[9]	20
Other species [7]		20	20	20	20	20	20	35	1	5	(1)	10	20	2	20	na[9]
Aggregated amount of non-groundfish species		20	20	20	20	20	20	35	1	5	(1)	10	20	2	20	20

Notes to Table 10 to Part 679				
1	Shortraker/rougheye rockfish			
		SR/RE	shortraker/rougheye rockfish (171)	
			shortraker rockfish (152)	
			rougheye rockfish (151)	
		SR/RE ERA	shortraker/rougheye rockfish in the Eastern Regulatory Area.	
	Where numerical percentage is not indicated, the retainable percentage of SR/RE is included under Aggregated Rockfish			
2	Deep-water flatfish	Dover sole, Greenland turbot, and deep-sea sole		
3	Shallow water flatfish	Flatfish not including deep water flatfish, flathead sole, rex sole, or arrowtooth flounder		
4	Other rockfish	Western Regulatory Area	means slope rockfish and demersal shelf rockfish	
		Central Regulatory Area		
		West Yakutat District		
		Southeast Outside District	means slope rockfish	
		Slope rockfish		
		S. aurora (aurora)	*S. variegatus* (harlequin)	*S. brevispinis* (silvergrey)
		S. melanostomus (blackgill)	*S. wilsoni* (pygmy)	*S. diploproa* (splitnose)
		S. paucispinis (bocaccio)	*S. babcocki* (redbanded)	*S. saxicola* (stripetail)
		S. goodei (chilipepper)	*S. proriger* (redstripe)	*S. miniatus* (vermilion)
		S. crameri (darkblotch)	*S. zacentrus* (sharpchin)	*S. reedi* (yellowmouth)
		S. elongatus (greenstriped)	*S. jordani* (shortbelly)	
	In the Eastern GOA only. Slope rockfish also includes *S. polyspinous*. (Northern)			
5	Pelagic shelf rockfish	*S. ciliatus* (dusky)	*S. entomelas* (widow)	*S. flavidus* (yellowtail)
6	Demersal shelf rockfish (DSR)	*S. pinniger* (canary)	*S. maliger* (quillback)	*S. ruberrimus* (yelloweye)
		S. nebulosus (china)	*S. helvomaculatus* (rosethorn	
		S. caurinus (copper)	*S. nigrocinctus* (tiger)	
		DSR-SEO = Demersal shelf rockfish in the Southeast Outside District **The operator of a catcher vessel that is required to have a Federal fisheries permit, or that harvests IFQ halibut with hook and line or jig gear, must retain and land all DSR that is caught while fishing for groundfish or IFQ halibut in the SEO. Limits on sale and requirements for disposal of DSR are set out at § 679.20 (j).**		
7	Other species	sculpins	octopus	sharks, Squid
8	Aggregated rockfish	Means rockfish of the genera *Sebastes* and *Sebastolobus* defined at § 679.2 except in:		
		Southeast Outside District (SEO)	where DSR is a separate category for those species marked with a numerical percentage	
		Eastern Regulatory Area (ERA)	where SR/RE is a separate category for those species marked with a numerical percentage	

Table 2.6.6.3. Continued.

Notes to Table 10 to Part 679			
9	N/A	not applicable	
10	Aggregated forage fish (all species of the following families)		
		Bristlemouths, lightfishes, and anglemouths (family *Gonostomatidae*)	209
		Capelin smelt (family *Osmeridae*)	516
		Deep-sea smelts (family *Bathylagidae*)	773
		Eulachon smelt (family *Osmeridae*)	511
		Gunnels (family *Pholidae*)	207
		Krill (order *Euphausiacea*)	800
		Laternfishes (family *Myctophidae*)	772
		Pacific herring (family *Clupeidae*)	235
		Pacific Sand fish (family *Trichodontidae*)	206
		Pacific Sand lance (family *Ammodytidae*)	774
		Pricklebacks, war-bonnets, eelblennys, cockscombs and Shannys (family *Stichaeidae*)	208
		Surf smelt (family *Osmeridae*)	515
11	Skates Species and Groups		
		Big Skates	702
		Longnose Skates	701
		Other Skates	700

Table 2.6.6.4 Maximum retainable incidental catch amounts (expressed as percentages) for the BSAI groundfish fisheries

Table 11 to Part 679–BSAI Retainable Percentages *(Updated 10/18/02)*

BASIS SPECIES		INCIDENTAL CATCH SPECIES[1]															
		Pollock	Pacific cod	Atka mackerel	Alaska plaice	Arrow-tooth	Yellow fin sole	Other flatfish[2]	Rock sole	Flathead sole	Green-land turbot	Sable-fish[1]	Short-raker/ rougheye	Aggregated rockfish[6]	Squid	Aggregated forage fish[7]	Other species[4]
110	Pacific cod	20	na[5]	20	20	35	20	20	20	20	1	1	2	5	20	2	20
121	Arrow-tooth	0	0	0	0	na[5]	0	0	0	0	0	0	0	0	0	2	0
122	Flathead sole	20	20	20	35	35	35	35	35	na5	35	15	7	15	20	2	20
123	Rock sole	20	20	20	35	35	35	35	na[5]	35	1	1	2	15	20	2	20
127	Yellowfin sole	20	20	20	35	35	na[5]	35	35	35	1	1	2	5	20	2	20
133	Alaska Plaice	20	20	20	na[5]	35	35	35	35	35	1	1	2	5	20	2	20
134	Greenland turbot	20	20	20	20	35	20	20	20	20	na[5]	15	7	15	20	2	20
136	Northern	20	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
141	Pacific Ocean perch	20	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
152/ 151	Shortraker/ Rougheye	20	20	20	20	35	20	20	20	20	35	15	na[5]	5	20	2	20
193	Atka mackerel	20	20	na[5]	20	35	20	20	20	20	1	1	2	5	20	2	20
270	Pollock	na[5]	20	20	20	35	20	20	20	20	1	1	2	5	20	2	20
710	Sablefish1	20	20	20	20	35	20	20	20	20	35	na[5]	7	15	20	2	20
875	Squid	20	20	20	20	35	20	20	20	20	1	1	2	5	na[5]	2	20
Other flatfish[2]		20	20	20	35	35	35	na[5]	35	35	1	1	2	5	20	2	20
Other rockfish[3]		20	20	20	20	35	20	20	20	20	35	15	7	15	20	2	20
Other species[4]		20	20	20	20	35	20	20	20	20	1	1	2	5	20	2	na[5]
Aggregated amount non-groundfish species		20	20	20	20	35	20	20	20	20	1	1	2	5	20	2	20

NOTES to Table 11	
1	Sablefish: for fixed gear restrictions, see 50 CFR 679.7(f)(3)(ii) and 679.7(f)(11).
2	Other flatfish includes all flatfish species, except for Pacific halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, Alaska plaice, and arrowtooth flounder.
3	Other rockfish includes all *Sebastes* and *Sebastolobus* species except for Pacific ocean perch; and northern, shortraker, and rougheye rockfish. The CDQ reserves for shortraker, rougheye, and northern rockfish will continue to be managed as the "other red rockfish" complex for the BS.
4	**Other species** includes sculpins, sharks, skates and octopus. Forage fish, as defined at Table 2 to this part are not included in the "other species" category.
5	na = not applicable
6	**Aggregated rockfish** includes all of the genera *Sebastes* and *Sebastolobus*, except shortraker and rougheye rockfish.
7	**Forage fish** are defined at Table 2 to this part.

2.6.7 Allocations and Seasonal Apportionments in the 2006 Harvest Specifications.

As required by the Steller sea lion protection measures, the harvest of pollock, Pacific cod and Atka mackerel are allocated among gear types and seasonally apportioned to slow the rates of removal of groundfish that may be important to Steller sea lions for foraging. Atka mackerel directed harvest in the GOA is prohibited pursuant to the Steller sea lion protection measures. The following is the seasonal apportionments and allocations specified by NMFS for the 2006 and, in some cases, the 2007 fishing years (71 FR 10894 and 71 FR 10870, March 3, 2006).

BSAI Pollock

The BSAI pollock fishery is managed under the American Fisheries Act in the Bering Sea and the 2004 Consolidated Appropriations Act in the Aleutian Islands. The pollock is allocated and seasonally apportioned as show in Table 3 below. Approximately 40 percent of the annual allocation of for the directed pollock fishery is available for harvest in the A season in the Bering Sea, and no more than 40 percent of the ABC is available in the A season in the Aleutian Islands. Pollock harvest is also limited in the Steller Sea Lion Conservation Area (SCA) in the first season as noted.

TABLE 3–2006 AND 2007 ALLOCATIONS OF POLLOCK TACS TO THE DIRECTED POLLOCK FISHERIES AND TO THE CDQ DIRECTED FISHING ALLOWANCES (DFA)[1]

[Amounts are in metric tons]

Area and sector	2006 Allocations	2006 A season[1]		2006 B season[1]	2007 Allocations	2007 A season[1]		2007 B season[1]
		A season DFA	SCA harvest limit[2]	B season DFA		A season DFA	SCA harvest limit[2]	B season DFA
Bering Sea subarea	1,491,560	n/a	n/a	n/a	1,500,000	n/a	n/a	n/a
CDQ DFA	149,260	59,704	41,793	89,100	149,156	59,662	41,764	89,494
ICA	44,967	n/a	n/a	n/a	45,253	n/a	n/a	n/a
AFA Inshore	648,666	261,148	181,626	387,518	652,795	261,118	182,783	391,677
AFA Catcher/Processors[3]	518,933	208,918	145,301	310,015	522,236	208,895	146,226	313,342
Catch by C/Ps	474,824	191,160	n/a	283,664	477,846	191,138	n/a	286,708
Catch by CVs[3]	44,109	17,758	n/a	26,351	44,390	17,756	n/a	26,634
Unlisted C/P Limit[4]	2,595	1,045	n/a	1,550	2,611	1,044	n/a	1,567
AFA Motherships	129,733	52,230	36,325	77,504	130,559	52,224	36,557	78,335
Excessive Harvesting Limit[5]	227,033	n/a	n/a	n/a	228,478	n/a	n/a	n/a
Excessive Processing Limit[6]	389,200	n/a	n/a	n/a	391,677	n/a	n/a	n/a
Total Bering Sea DFA	1,446,592	582,000	405,046	864,137	1,454,747	581,899	407,329	872,848
Aleutian Islands subarea[1]	11,300	n/a	n/a	n/a	19,000	n/a	n/a	n/a
CDQ DFA	1,140	n/a	n/a	1,140	1,900	760	n/a	1,140
ICA	1,800	1,200	n/a	600	1,800	1,200	n/a	600
Aleut Corporation	9,500	4,000	n/a	5,500	15,300	9,800	n/a	5,500
Bogoslof District ICA[7]	10	n/a	n/a	n/a	10	n/a	n/a	n/a

[1] Pursuant to § 679.20(a)(5)(i)(A), the Bering Sea subarea pollock, after subtraction for the CDQ DFA - 10 percent and the ICA - 3.35 percent, is allocated as a DFA as follows: inshore component - 50 percent, catcher/processor component - 40 percent, and mothership component - 10 percent. In the Bering Sea subarea, the A season, January 20 - June 10, is allocated 40 percent of the DFA and the B season, June 10 - November 1, is allocated 60 percent of the DFA. Pursuant to § 679.20(a)(5)(iii)(B)(2)(i) and (ii), the annual AI pollock TAC, after subtracting first for the CDQ directed fishing allowance - 10 percent and second the ICA - 1,800 mt, is allocated to the Aleut Corporation for a directed pollock fishery. In the AI subarea, the A season is allocated 40 percent of the ABC and the B season is allocated the remainder of the directed pollock fishery.

[2] In the Bering Sea subarea, no more than 28 percent of each sector's annual DFA may be taken from the SCA before April 1. The remaining 12 percent of the annual DFA allocated to the A season may be taken outside of SCA before April 1 or inside the SCA after April 1. If 28 percent of the annual DFA is not taken inside the SCA before April 1, the remainder is available to be taken inside the SCA after April 1.

[3] Pursuant to § 679.20(a)(5)(i)(A)(4), not less than 8.5 percent of the DFA allocated to listed catcher/processors shall be available for harvest only by eligible catcher vessels delivering to listed catcher/processors.

[4] Pursuant to § 679.20(a)(5)(i)(A)(4)(iii), the AFA unlisted catcher/processors are limited to harvesting not more than 0.5 percent of the catcher/processors sector's allocation of pollock.

[5] Pursuant to § 679.20(a)(5)(i)(A)(6) NMFS establishes an excessive harvesting share limit equal to 17.5 percent of the sum of the pollock DFAs.

[6] Pursuant to § 679.20(a)(5)(i)(A)(7) NMFS establishes an excessive processing share limit equal to 30.0 percent of the sum of the pollock DFAs.

[7] The Bogoslof District is closed by the final harvest specifications to directed fishing for pollock. The amounts specified are for ICA only, and are not apportioned by season or sector.

BSAI Pacific cod

Pacific cod harvest in the BSAI is allocated among several gear types and seasonally apportioned depending on the gear type. Seasons and dates vary. Gear allocations and seasonal apportionments are show in Table 5 below.

TABLE 5–2006 AND 2007 GEAR SHARES AND SEASONAL ALLOWANCES OF THE BSAI PACIFIC COD ITAC

[Amounts are in metric tons]

Gear Sector	Percent	2006 Share of gear sector total	2006 Subtotal percentages for gear sectors	2006 Share of gear sector total	2006 Seasonal apportionment[1]		2007 Share of gear sector total	2007 Subtotal percentages for gear sectors	2007 Share of gear sector total	2007 Seasonal apportionment[1]	
					Date	Amount				Date	Amount
Total hook-and-line/pot gear	51	88,774	n/a	n/a	n/a	n/a	67,724	n/a	n/a	n/a	n/a
Hook-and-line/pot ICA	n/a	n/a	n/a	500	n/a	n/a	n/a	n/a	500	n/a	n/a
Hook-and-line/pot sub-total	n/a	88,274	n/a	n/a	n/a	n/a	67,224	n/a	n/a	n/a	n/a
Hook-and-line C/P	n/a	n/a	80	70,619	Jan 1-Jun 10	42,372	n/a	80	53,780	Jan 1-Jun 10	32,268
					Jun 10-Dec 31	28,248				Jun 10-Dec 31	21,512
Hook-and-line CV	n/a	n/a	0.3	265	Jan 1-Jun 10	159	n/a	0.3	202	Jan 1-Jun 10	121
					Jun 10-Dec 31	106				Jun 10-Dec 31	81
Pot C/P	n/a	n/a	3.3	2,913	Jan 1-Jun 10	1,749	n/a	3.3	2,218	Jan 1-Jun 10	1,331
					Sept 1-Dec 31	1,165				Sept 1-Dec 31	887
Pot CV	n/a	n/a	15	13,241	Jan 1-Jun 10	7,945	n/a	15	10,084	Jan 1-Jun 10	6,050
					Sept 1-Dec 31	5,296				Sept 1-Dec 31	4,033
CV < 60 feet LOA using Hook-and-line or Pot gear	n/a	n/a	1.4	1,236	n/a	n/a	n/a	1.4	941	n/a	n/a
Total Trawl Gear	47	81,811	n/a	n/a	n/a	n/a	62,413	n/a	n/a	n/a	n/a
Trawl CV			50	40,906	Jan 20-Apr 1	28,634		50	31,206	Jan 20-Apr 1	21,844
				n/a	Apr 1-Jun 10	4,091			n/a	Apr 1-Jun 10	3,121
				n/a	Jun 10-Nov 1	8,181			n/a	Jun 10-Nov 1	6,241
Trawl CP			50	40,906	Jan 20-Apr 1	20,453		50	31,206	Jan 20-Apr 1	15,603
				n/a	Apr 1- Jun 10	12,272			n/a	Apr 1- Jun 10	9,362
				n/a	Jun 10-Nov 1	8,181			n/a	Jun 10-Nov 1	6,241
Jig	2	3,481	n/a	n/a	Jan 1-Apr 30	1,393	2,656	n/a	n/a	Jan 1-Apr 30	1,062
			n/a	n/a	Apr 30-Aug 31	696		n/a	n/a	Apr 30-Aug 31	531
			n/a	n/a	Aug 31-Dec 31	1,392		n/a	n/a	Aug 31-Dec 31	1,062
Total	100	174,066	n/a	n/a	n/a	n/a	132,793	n/a	n/a	n/a	n/a

[1] For most non-trawl gear the first season is allocated 60 percent of the ITAC and the second season is allocated 40 percent of the ITAC. For jig gear, the first season and third seasons are each allocated 40 percent of the ITAC and the second season is allocated 20 percent of the ITAC. No seasonal harvest constraints are imposed for the Pacific cod fishery by catcher vessels less than 60 feet (18.3 m) LOA using hook-and-line or pot gear. For trawl gear, the first season is allocated 60 percent of the ITAC and the second and third seasons are each allocated 20 percent of the ITAC. The trawl catcher vessels' allocation is further allocated as 70 percent in the first season, 10 percent in the second season and 20 percent in the third season. The trawl catcher/processors' allocation is allocated 50 percent in the first season, 30 percent in the second season and 20 percent in the third season. Any unused portion of a seasonal Pacific cod allowance will be reapportioned to the next seasonal allowance.

BSAI Atka Mackerel

Atka mackerel is seasonally apportioned evenly between the A and B seasons. Harvest within critical habitat in the Aleutian Islands is managed with a system of grouping vessels to reduce effort in time and space. The grouping system applies to vessels participating in the Atka mackerel fishery in the Harvest limit Area (HLA) which contains critical habitat and other areas important to Steller sea lions.

TABLE 4.–2006 AND 2007 SEASONAL AND SPATIAL ALLOWANCES, GEAR SHARES, AND CDQ RESERVE OF THE BSAI ATKA MACKEREL TAC [1]

[Amounts are in metric tons]

Subarea and component	2006 TAC	2006 CDQ reserve	2006 CDQ reserve HLA limit [4]	2006 ITAC	2006 seasonal allowances [2]			
					A season [3]		B season [3]	
					Total	HLA limit [4]	Total	HLA limit [4]
Western AI District	15,500	1,163	698	14,338	7,169	4,301	7,169	4,301
Central AI District	40,000	3,000	1,800	37,000	18,500	11,100	18,500	11,100
EAI/BS subarea [5]	7,500	563	n/a	6,938	n/a	n/a	n/a	n/a
Jig (1%) [6]	n/a	n/a	n/a	69	n/a	n/a	n/a	n/a
Other gear (99%)	n/a	n/a	n/a	6,868	3,434	n/a	3,434	n/a
Total	63,000	n/a	n/a	n/a	29,103	n/a	29,103	n/a

Subarea and component	2007 TAC	2007 CDQ reserve	2007 CDQ reserve HLA limit [4]	2007 ITAC	2007 Seasonal allowances [2]			
					A season [3]	B season [3]		
						Total	HLA limit [4]	Total
Western AI District	17,500	1,313	788	16,188	8,094	4,856	8,094	4,856
Central AI District	38,000	2,850	1,710	35,150	17,575	10,545	17,575	10,545
EAI/BS subarea [5]	7,500	563	n/a	6,938	n/a	n/a	n/a	n/a
Jig (1%) [6]	n/a	n/a	n/a	69	n/a	n/a	n/a	n/a
Other gear (99%)	n/a	n/a	n/a	6,868	3,434	n/a	3,434	n/a
Total	63,000	n/a	n/a	n/a	29,103	n/a	29,103	n/a

[1] Regulations at §§ 679.20(a)(8)(ii) and 679.22(a) establish temporal and spatial limitations for the Atka mackerel fishery.
[2] The seasonal allowances of Atka mackerel are 50 percent in the A season and 50 percent in the B season.
[3] The A season is January 1 (January 20 for trawl gear) to April 15 and the B season is September 1 to November 1.
[4] Harvest Limit Area (HLA) limit refers to the amount of each seasonal allowance that is available for fishing inside the HLA (see § 679.2). In 2006 and 2007, 60 percent of each seasonal allowance is available for fishing inside the HLA in the Western and Central Aleutian Districts.
[5] Eastern Aleutian District and the Bering Sea subarea.
[6] Regulations at § 679.20 (a)(8)(i) require that up to 2 percent of the Eastern Aleutian District and the Bering Sea subarea ITAC be allocated to jig gear. The amount of this allocation is 1 percent. The jig gear allocation is not apportioned by season.

GOA Pollock

Pollock harvest in the statistical areas of the GOA is seasonally apportioned dependent on the estimated biomass that occurs within each area during a season. Table 5 below shows the seasonal apportionments for pollock in Western and Central regulatory areas.

TABLE 5.—FINAL 2006 DISTRIBUTION OF POLLOCK IN THE CENTRAL AND WESTERN REGULATORY AREAS OF THE GULF OF ALASKA; SEASONAL BIOMASS DISTRIBUTION, AREA APPORTIONMENTS; AND SEASONAL ALLOWANCES OF ANNUAL TAC

[Values are rounded to the nearest metric ton]
[Area apportionments resulting from seasonal distribution of biomass]

Season	Shumagin (area 610)	Chirikof (area 620)	Kodiak (area 630)	Total
A	4,210 (21.63%)	11,192 (57.50%)	4,062 (20.87%)	19,464 (100%)
B	4,210 (21.63%)	13,394 (68.81%)	1,861 (9.56%)	19,465 (100%)
C	10,249 (52.65%)	2,953 (15.17%)	6,263 (32.17%)	19,465 (100%)
D	10,249 (52.65%)	2,953 (15.17%)	6,262 (32.17%)	19,464 (100%)
Annual Total	28,918	30,492	18,448	77,858

GOA Pacific Cod

Pacific cod harvest in the GOA is seasonally apportioned in the western and central regulatory areas between two seasons. Table 7 below shows the seasonal apportionments.

TABLE 7.—FINAL 2006 SEASONAL APPORTIONMENTS AND ALLOCATION OF PACIFIC COD TAC AMOUNTS IN THE GULF OF ALASKA; ALLOCATIONS FOR PROCESSING BY THE INSHORE AND OFFSHORE COMPONENTS

[Values are rounded to the nearest metric ton]

Season	Regulatory area	TAC	Component allocation	
			Inshore (90%)	Offshore (10%)
	Western	20,141	18,127	2,014
A season (60%)		12,085	10,876	1,208
B season (40%)		8,056	7,251	806
	Central	28,405	25,565	2,840
A season (60%)		17,043	15,339	1,704
B season (40%)		11,362	10,226	1,136
	Eastern	3,718	3,346	372
Total		52,264	47,038	5,226

The seasonal apportionment of halibut PSC also affects when Pacific cod can be harvested. Very little halibut PSC is available to the hook-and-line Pacific cod fishery between June 10-September 1 resulting in very little Pacific cod hook-and-line harvest in this time period. See table 9 below.

TABLE 9.—FINAL 2006 AND 2007 PACIFIC HALIBUT PSC LIMITS, ALLOWANCES, AND APPORTIONMENTS

[Values are in metric tons]

Trawl gear		Hook-and-line gear [1]			
		Other than DRS		DSR	
Dates	Amount	Dates	Amount	Dates	Amount
January 20–April 1	550 (27.5%)	January 1–June 10	250 (86%)	January 1–December 31	10 (100%)
April 1—July 1	400 (20%)	June 10–September 1	5 (2%)		
July 1–September 1	600 (30%)	September 1–December 31	35 (12%)		
September 1–October 1	150 (7.5%)				
October 1–December 31	300 (15%)				
Total	2,000 (100%)		290 (100%)		10 (100%)

[1] The Pacific halibut PSC limit for hook-and-line gear is allocated to the demersal shelf rockfish (DSR) fishery and fisheries other than DSR. The hook-and-line sablefish fishery is exempt from halibut PSC limits.

2.7 Permit and Participation Restrictions

Both the GOA and BSAI FMPs prescribe requirements that restrict the participation of individuals and vessels in the groundfish fisheries. These programs include requirements for Federal groundfish fishing licenses, species and/or gear endorsements requirements for these licenses, and harvesting sideboards. These fisheries also may be managed under certain gear or time and area restrictions (provisions of the American Fisheries Act and the 2004 Consolidated Appropriations Act are incorporated herein by reference). The permits can be used to identify those vessels that must comply with certain fisheries management requirement. For instance, all federally permited vessels that are endorsed for Atka mackerel, Pacific cod or pollock fishing on their Federal Groundfish Fishing Permit must use a vessel monitoring system. Additional information regarding permits are in the regulations at 50 CFR 679.4.

2.8 Gear and Time and Area Restrictions

(a) GOA

1. Gear restrictions

Authorized Gear

Gear types authorized by the FMP are trawls, hook-and-line, pots, jigs, and other gear as defined in regulations. Further restrictions on gear that are necessary for conservation and management of fishery resources and which are consistent with the goals and objectives of the FMP are found at 50 CFR part 679. Additional gear limitations by specific target fishery are described below.

Target Fishery Specific - Sablefish

Legal gears for the taking of sablefish in any regulatory area of the GOA are trawls and hook-and-lines.

2. Time and Area Restrictions

Management measures in place in the GOA groundfish fisheries constrain fishing both temporally and spatially. The fishing year is defined and criteria for determining fishing seasons are described below. Area restrictions by gear type are described below. The FMP also authorizes the use of either temporal or spatial restrictions for marine mammal conservation, as detailed in Section 2.9 below. The FMP also prescribes gear testing exemptions to the time and area restrictions in the FMP or its implementing regulations.

Fishing Seasons

The fishing year is defined as January 1 through December 31.

Fishing seasons are defined as periods when harvesting groundfish is permitted. Fishing seasons will normally be within a calendar year, if possible, for statistical purposes, but could span two calendar years if necessary. Changes to fishing seasons can be recommended by the Council at any time. In consultation with the Council, the Secretary will establish all fishing seasons by regulations that implement the FMP, to accomplish the goals and objectives of the FMP, the Magnuson-Stevens Act, and other applicable law. Season openings will remain in effect unless amended by regulations implementing the FMP.

The Council will consider the following criteria when recommending regulatory amendments:

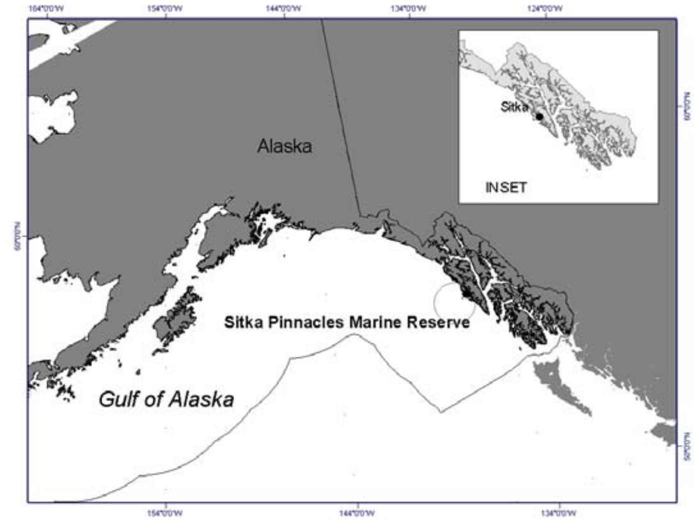
- biological: spawning periods, migration, and other biological factors;
- bycatch: biological and allocative effects of season changes;
- exvessel and wholesale prices: effects of season changes on prices;
- product quality: producing the highest quality product to the consumer;
- safety: potential adverse effects on people, vessels, fishing time, and equipment;
- cost: effects on operating costs incurred by the industry as a result of season changes;
- other fisheries: possible demands on the same harvesting, processing, and transportation systems needed in the groundfish fishery;
- coordinated season timing: the need to spread out fishing effort over the year, minimize gear conflicts, and allow participation by all elements of the groundfish fleet;
- enforcement and management costs: potential benefits of seasons changes relative to agency resources available to enforce and manage new seasons; and
- allocation: potential allocation effects among users and indirect effects on coastal communities.

<u>Area Restrictions</u>

Sitka Pinnacles Marine Reserve – All vessels

The Sitka Pinnacles Marine Reserve encompasses an area totaling 2.5 square nautical miles off Cape Edgecumbe. Vessels holding a Federal fisheries permit are prohibited at all times from fishing for groundfish or anchoring in the Sitka Pinnacles Marine Reserves. The area is illustrated in Figure 2.8.1.

Figure 2.8.1 Sitka Pinnacles Marine Reserve



King Crab Closure Areas around Kodiak Island – Trawl gear only

A time/area closure scheme has been developed to help protect and rebuild the Kodiak king crab resource. The number of red king crab in the waters around Kodiak Island is at a historically low level. Most of these crabs are old and sexually mature. There has been no sign of significant recruitment since 1979. As a result, the Kodiak king crab fishery has been closed since 1983 in an attempt to rebuild the stocks. While the cause for the decline of king crab is not known, most researchers believe that the decline can be attributed to a variety of environmental factors which independently or in combination led to the depressed condition of the resource. The extent to which the king crab decline is due to commercial fishing, either directed or incidental, is unknown.

King crab are known to concentrate in certain areas around Kodiak Island during the year. In the spring they migrate inshore to molt and mate. Approximately 70 percent of the female red king crab stocks are estimated to congregate in two areas, known as the Alitak/Towers and Marmot Flats. The Chirikof Island and Barnabas areas also possess concentrations of king crab but in lesser amounts. Past studies have shown that most king crab around Kodiak molt and mate in the March-May period, although some molting crab can be found during late-January through mid-June. Adult female king crabs must molt to mate and extrude eggs. After molting, their exoskeleton (shell) is soft, and crabs in this stage are known as soft-shell crabs. The new exoskeletons take two to three months to harden fully. During the soft-shell period, the crabs are particularly susceptible to injury and mortality from handling and from encounters with fishing gear. Because many of the present and potential groundfish trawling grounds overlap with the mating grounds of king crab, the potential exists for substantial king crab mortality.

While it is generally assumed that mortality of soft-shelled king crab can be high with any gear type, incidental mortality of hard-shell crab as a result of encounters with fishing gear is not known. Bottom trawl fishing could kill or injure king crab in two ways. First, crabs caught in the net can be crushed during the tow or injured as the catch is unloaded in the fishing vessel. Second, crabs might be struck with parts of the gear (e.g., trawl doors, towing cables, groundlines, roller gear) as the trawl is towed along the bottom.

Areas around Kodiak Island have been established to protect king crab stocks. These areas are designated as Type I, II, or III areas, according to the definitions listed in Table 2.8.1. For purposes of implementing a Type III area, a “recruitment event” is defined as the appearance of female crab in substantially increased numbers. A substantially increased number is defined as occurring when the total number of females estimated for a given district equals the number of females established as a threshold criteria for opening that district to commercial crab fishing. In any given year, a recruitment event may occur in one or more of the Kodiak management districts as indicated by the standardized Kodiak crab survey conducted by the Alaska Department of Fish and Game. A Type III area recruitment event closure will continue until either 1) a commercial crab fishery opens for that district, or 2) the number of crab drops below the threshold level established for that district. Implementation of the Type III area closures would be accomplished by regulatory amendment. The areas are illustrated in the Figure 2.8.2.

Table 2.8.1 Names and definitions of Type I, II, and III king crab closure areas around Kodiak Island

Area Type	Name	Definition
I	• Alitak Flats and Towers Areas • Marmot Flats Area	Type I areas are those king crab stock rebuilding areas where a high level of protection will be provided to the king crab by closing the area year-round to bottom trawling. Fishing with other gear would be allowed.
II	• Chirikof Island Area • Barnabas Area	Type II areas are those areas that are sensitive for king crab populations and in which bottom trawling will be prohibited during the soft-shell season (February 15 - June 15). Fishing with other gear would be allowed and fishing with bottom trawl gear would be allowed from January 1 - February 14 and June 16 - December 31.
III	• Outer Marmot Bay • Barnabas • Horse’s Head • Chirikof	Type III areas are those geographic areas adjacent to a Type I or Type II areas that have been identified as important juvenile king crab rearing or migratory areas. These areas only become operational following a determination that the “recruitment event criteria” have occurred. The NMFS Regional Administrator will classify the expanded area as either Type I or II depending on the information available.

Cook Inlet non-Pelagic Trawl Closure Area

The use of non-pelagic trawl gear is prohibited in Cook Inlet north of a line extending between Cape Douglas and Point Adam. This prohibition is intended to reduce crab bycatch and assist in the rebuilding of crab stocks. The area is illustrated in Figure 2.8.3.

Southeast Outside Trawl Closure

Use of any gear other than non-trawl gear is prohibited at all times in the Southeast Outside district. The area is illustrated in Figure 2.8.4..

Figure 2.8.2   King Crab Closure Areas around Kodiak Island

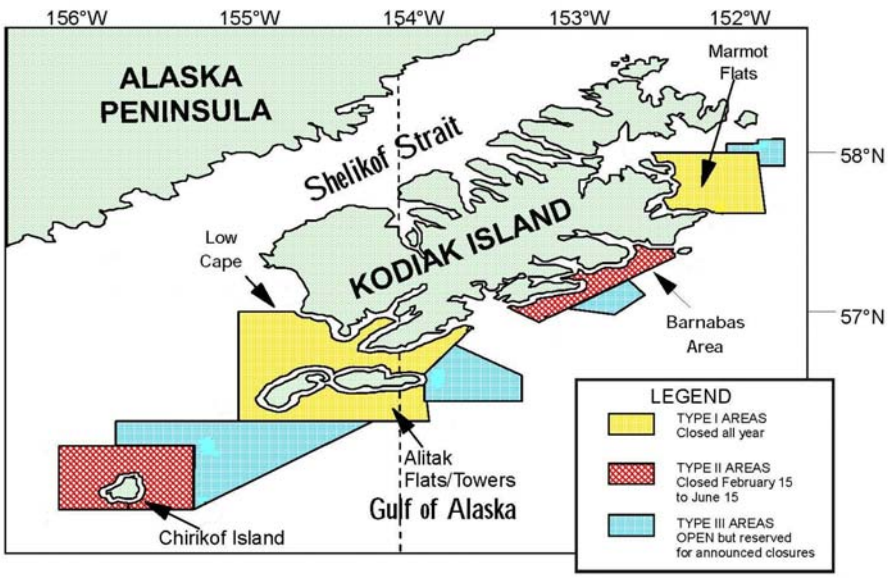


Figure 2.8.3 Cook Inlet non-pelagic trawl closure area

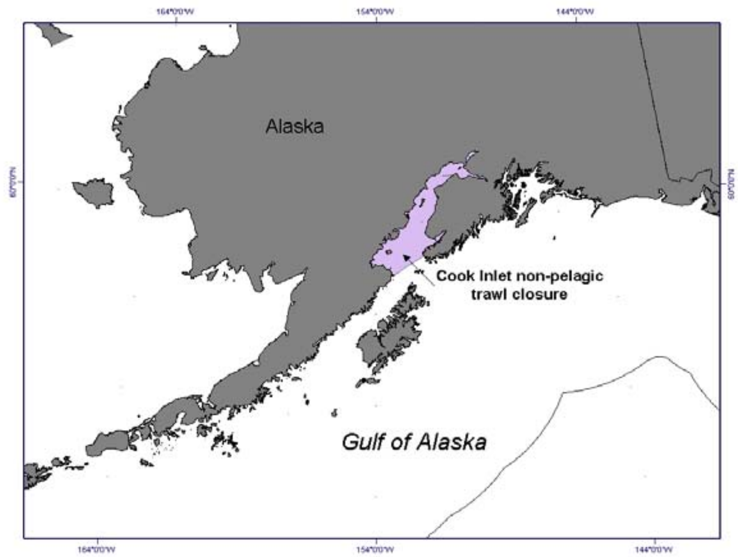
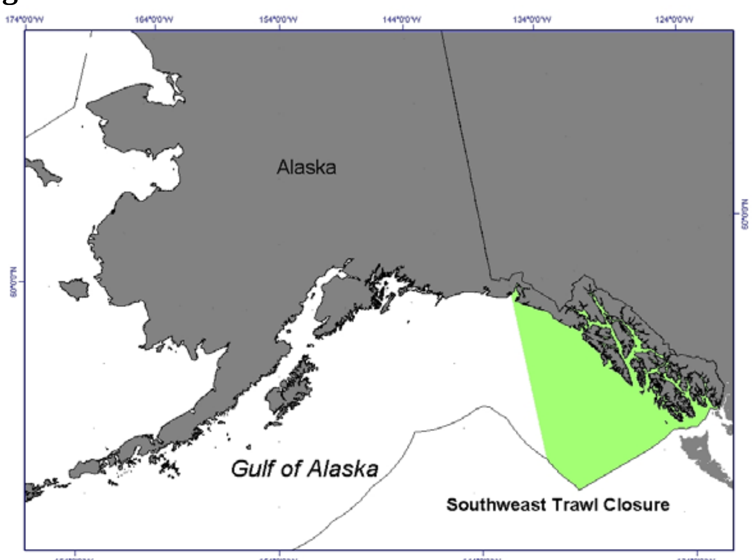


Figure 2.8.4 Southeast Outside trawl closure



(b) BSAI

1. Gear restrictions

Authorized Gear

Gear types authorized by the FMP are trawls, hook-and-line, pots, jigs, and other gear as defined in regulations. Further restrictions on gear which are necessary for conservation and management of fishery resources and which are consistent with the goals and objectives of the FMP are found at 50 CFR part 679. Additional gear limitations by specific target fishery are described below.

Target Fishery-Specific - Pollock

The use of nonpelagic trawl gear in the directed fishery for pollock is prohibited.

2. Time and Area Restrictions

Management measures in place in the BSAI groundfish fisheries constrain fishing both temporally and spatially. Criteria for determining fishing seasons are described below. Area restrictions by gear type also are described below. The FMP also authorizes the use of either temporal or spatial restrictions for marine mammal conservation, as detailed in Section 2.9. The FMP also addresses exemptions to the time and area restrictions in the FMP or its implementing regulations.

Fishing Seasons

Fishing seasons are defined as periods when harvesting groundfish is permitted. Fishing seasons will normally be within a calendar year, if possible, for statistical purposes, but could span two calendar years if necessary. In consultation with the Council, the Secretary will establish all fishing seasons by regulations that implement the FMP, to accomplish the goals and objectives of the FMP, the Magnuson-Stevens Act, and other applicable law. Season openings will remain in effect unless amended by regulations implementing the FMP.

The Council will consider the following criteria when recommending regulatory amendments:

- biological: spawning periods, migration, and other biological factors;
- bycatch: biological and allocative effects of season changes;
- exvessel and wholesale prices: effects of season changes on prices;
- product quality: producing the highest quality product to the consumer;
- safety: potential adverse effects on people, vessels, fishing time, and equipment;
- cost: effects on operating costs incurred by the industry as a result of season changes;

- other fisheries: possible demands on the same harvesting, processing, and transportation systems needed in the groundfish fishery;
- coordinated season timing: the need to spread out fishing effort over the year, minimize gear conflicts, and allow participation by all elements of the groundfish fleet;
- enforcement and management costs: potential benefits of seasons changes relative to agency resources available to enforce and manage new seasons; and
- allocation: potential allocation effects among users and indirect effects on coastal communities.

<u>Area Restrictions</u>

Trawl Gear Only

The following time and area restrictions apply to some or all trawl vessels. Other time and area restrictions that may apply to trawl vessels are triggered by the attainment of a bycatch limit.

Crab and Halibut Protection Zone

The crab and halibut protection zone is closed to all trawling from January 1 to December 31. For the period March 15 to June 15, the western border of the zone extends westward. See Figure 2.8.5.

Pribilof Islands Habitat Conservation Area

The Pribilof Islands Habitat Conservation Area is closed to all trawling from January 1 to December 31. See Figure 2.8.6.

Chum Salmon Savings Area

The Chum Salmon Savings Area is closed to trawling from August 1 through August 31. See Figure 2.8.7. Trawling is also prohibited in this area upon the attainment of an ‘other salmon’ bycatch limit.

Red King Crab Savings Area

The Red King Crab Savings Area is closed to non-pelagic trawling year round, except that when the Regional Administrator of NMFS, in consultation with the Council, determines that a guideline harvest level for Bristol Bay red king crab has been established, he or she may open a subarea of the Red King Crab Savings Area to non-pelagic trawling. See Figure 2.8.8.

Nearshore Bristol Bay Trawl Closure

The Nearshore Bristol Bay area is closed to all trawling on a year round basis, except a subarea that remains open to trawling during the period April 1 to June 15 each year. See Figure 2.8.9.

Catcher Vessel Operational Area

Catcher/processors identified in the American Fisheries Act are prohibited from engaging in directed fishing for pollock in the catcher vessel operational area (CVOA) during the non-roe ("B") season, unless they are participating in a community development quota fishery. See Figure 2.8.10.

Figure 2.8.5 Crab and Halibut Protection Zone

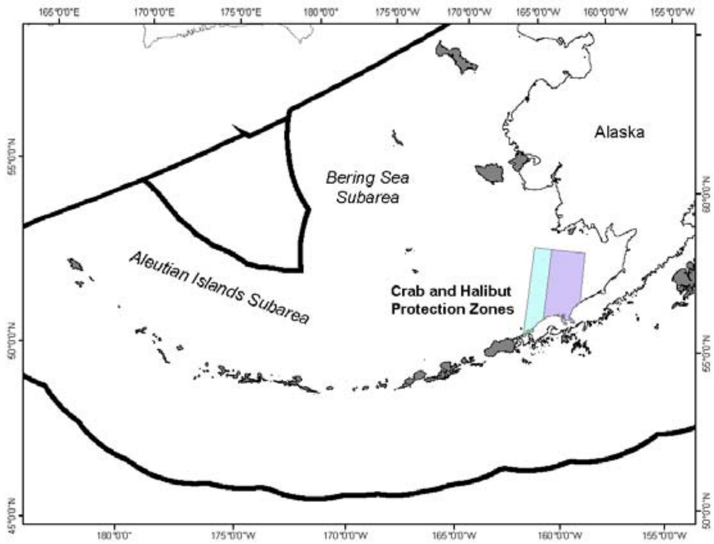
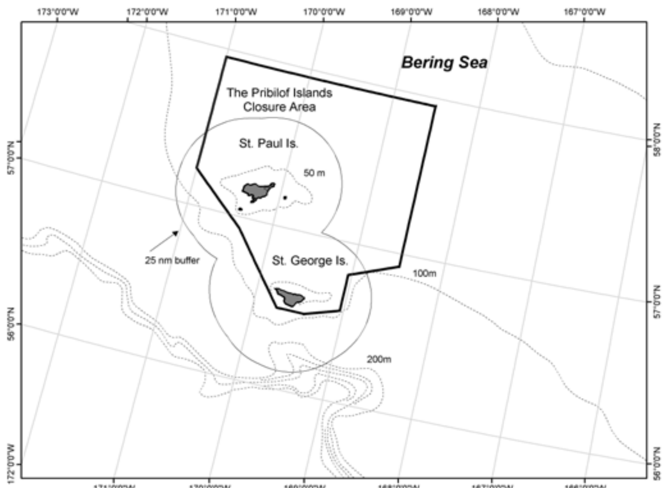


Figure 2.8.6 Pribilof Island Habitat Conservation Area



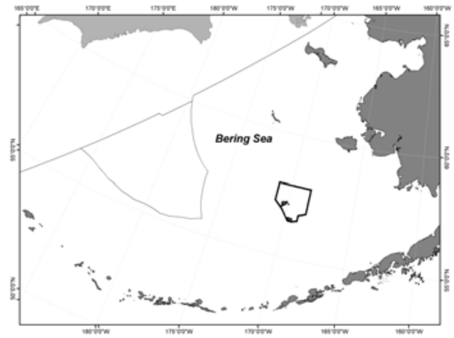


Figure 2.8.7 Chum Salmon Savings Area

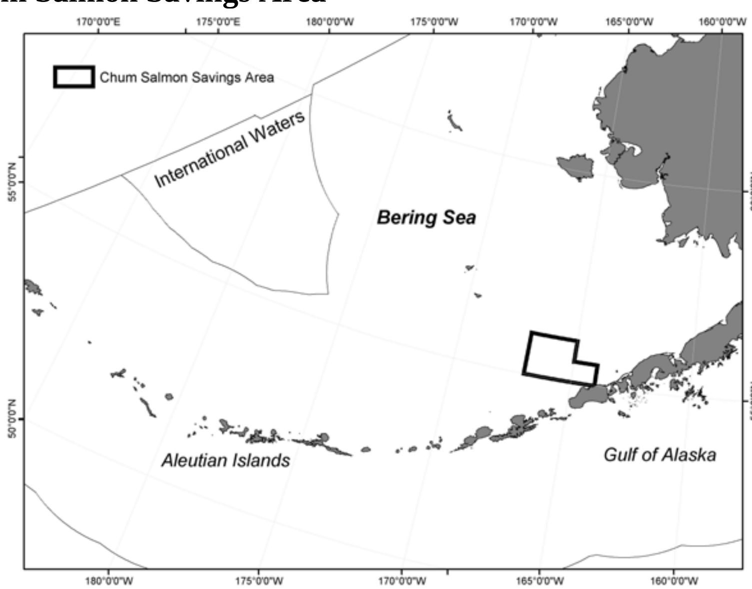


Figure 2.8.8 Red King Crab Savings Area

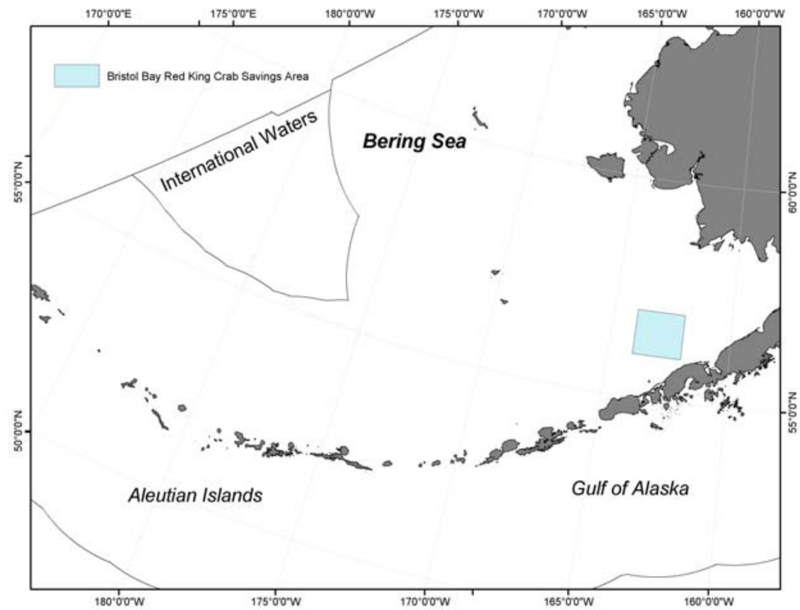


Figure 2.8.9 Nearshore Bristol Bay Trawl Closure

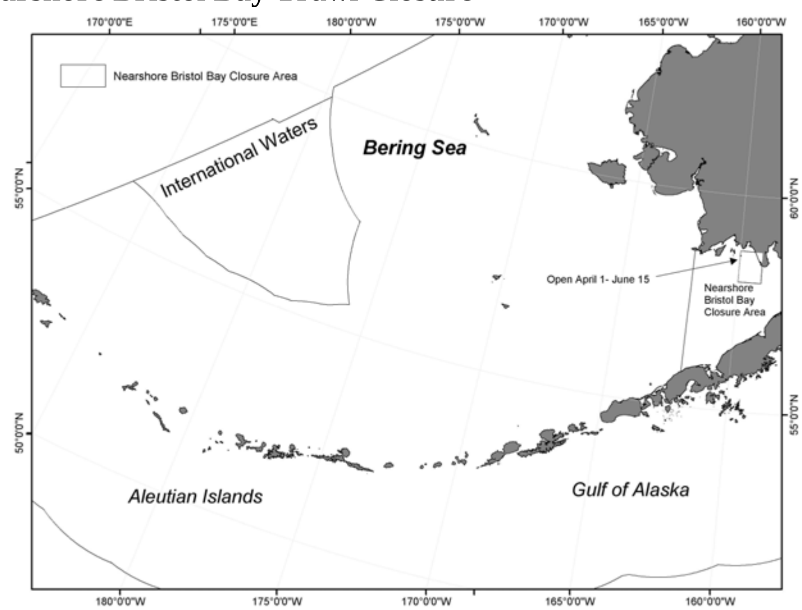
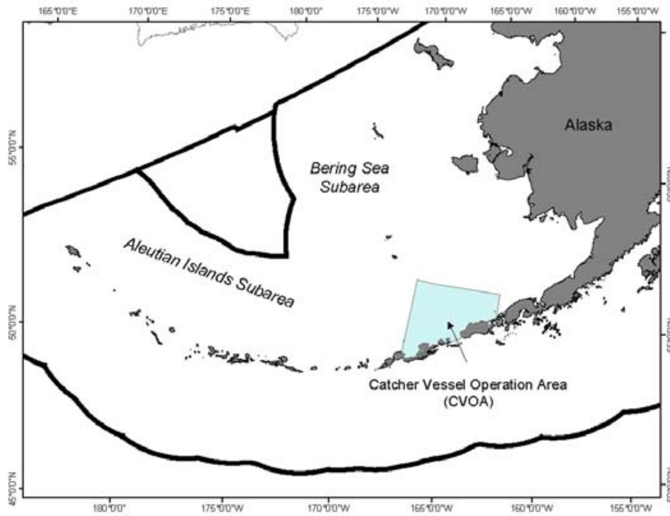


Figure 2.8.10 Catcher Vessel Operational Area



2.9 Marine Mammal and Seabird Conservation Requirements

Both the GOA and BSAI FMPs prescribe specific marine mammal and seabird protection policies which are carried out in implementing regulations.

Regulations implementing the FMP include special groundfish management measures intended to afford species of marine mammal additional protection other than that provided by other legislation. These regulations may be especially necessary when marine mammal species are reduced in abundance. Regulations may be necessary to prevent interactions between commercial fishing operations and marine mammal populations when information indicates that such interactions may adversely affect marine mammals, resulting in reduced abundance and/or reduced use of areas important to marine mammals. These areas include breeding and nursery grounds, haul out sites, and foraging areas that are important to adult and juvenile marine mammals during sensitive life stages.

Regulations intended to protect marine mammals include those that would limit fishing effort, both temporally and spatially, around areas important to marine mammals. Examples of temporal measures are seasonal apportionments of TAC specifications. Examples of spatial measures are closures around areas important to marine mammals. The purpose of limiting fishing effort would be to prevent harvesting excessive amounts of the available TAC or seasonal apportionments of important prey species at any one time or in any one area.

Current regulations that limit harvest or vessel activities to protect Steller sea lion (SSL) (Western distinct population segment (DPS)) and their critical habitat have been implemented since 2003 (68 FR 204, January 2, 2003). Maps summarizing the current SSL protection measures are provided in Appendix A. In the 2000 FMP-level consultation Biological Opinion, NMFS concluded that the GOA and BSAI pollock, Pacific cod, and Atka mackerel jeopardized the continued existence of SSLs and/or adversely modified the designated SSL critical habitat

(NMFS 2000). Working with the Council and its Steller sea lion mitigation committee, new Steller sea lion protection measures were developed for the pollock, Pacific cod and Atka mackerel fisheries. These measures were also consulted on in 2001 (NMFS 2001). Based on the no jeopardy or adverse modification of critical habitat finding for the new SSL protection measures, NMFS implemented the new protection measures by final rule in 2003. Under Court order, NMFS produced a 2003 Supplement to the 2001 biological Opinion that further clarified NMFS' reasoning for its 2001 findings (NMFS 2003). This set of protection measures is provided in Appendix B.

Since the 2000 and 2001 Biological Opinions and the 2003 Supplement, the Council developed and NMFS approved several changes to these protection measures; these changes applied only to the GOA. A summary of those recent changes to the SSL protection measures is provided in Appendix B. Tables 4 through 6 and 12 to 50 CFR that are in Appendix B are based on the latest revisions to the regulations. Appendix B also include results of fishing activities in Aleutian Islands for the 2005 Atka mackerel fishery.

Current regulations require vessels fishing for groundfish in the Alaskan EEZ comply with certain seabird avoidance requirements. These requirements are specified in regulations for certain vessel size classes (50 CFR 679.24(e)). Generally, longline vessels longer than 26 feet but less than or equal to 55 feet LOA must deploy certain deterrent gear to minimize seabird interactions with longline gear. Vessels over 55 feet LOA must deploy a streamer or paired streamers to minimize the interaction between seabirds and the baited longline hooks. In addition, the Alaskan EEZ groundfish fisheries are under an incidental take limit for longline and trawl fisheries for short-tailed albatross.

2.10 Prohibited Species Catch Limits

Both the GOA and BSAI FMPs prescribe limits on certain species of fish or shellfish that are considered prohibited and cannot be retained because of conservation or other purposes.

Prohibited species are Pacific halibut, Pacific herring, Pacific salmon, steelhead trout, king crab, and Tanner crab. Species identified as prohibited must be avoided while fishing groundfish and must be immediately returned to the sea with a minimum of injury when caught and brought aboard, except when their retention is authorized by other applicable law.

Groundfish species and/or species groups for which the TAC has been reached shall be treated in the same manner as prohibited species.

For these PSC species the FMPs prescribe catch limits which are annually set in the process of promulgating annual fishing regulations. There also are time and area geographic or fishery-specific closure requirements when certain PSC catch limits are attained. The FMPs also prescribe certain apportionment and seasonal allocation programs for PSC. These various limits, allocations, and area closure programs are outlined in the GOA and BSAI FMPs and are incorporated herein by reference.

2.11 Retention and Utilization Requirements

1. GOA

(a) Utilization of pollock

Roe-stripping of pollock is prohibited, and the Regional Administrator is authorized to issue regulations to limit this practice to the maximum extent practicable. It is the Council's policy that the pollock harvest shall be utilized to the maximum extent possible for human consumption.

(b) Improved Retention/Improved Utilization Program

Minimum retention requirements

All vessels participating in the GOA groundfish fisheries are required to retain all catch of pollock, Pacific cod, and shallow water flatfish when directed fishing for those species is open, regardless of gear type employed and target fishery. When directed fishing for pollock, Pacific cod, or shallow water flatfish is prohibited, retention of those species is required up to any maximum retainable amount in effect for these species, and these retention requirements are superseded if retention of pollock, Pacific cod, or shallow water flatfish is prohibited by other regulations.

No discarding of whole fish of these species is allowed, either prior to or subsequent to that species being brought on board the vessel, except as permitted in the regulations. At-sea discarding of any processed product from pollock, Pacific cod, or shallow water flatfish is also prohibited, unless required by other regulations.

Minimum utilization requirements

All pollock, Pacific cod, and shallow water flatfish caught in the GOA must be either 1) processed at sea subject to minimum product recovery rates and/or other requirements established by regulations implementing the FMP, or 2) delivered in their entirety to onshore processing plants for which similar processing requirements are implemented by State regulations.

(c) Size Limits

A commercial size limit for a particular species group may be necessary to afford the opportunity for the species to reproduce or to direct fishing toward an optimal size given existing markets and processing capabilities. Should the Council desire a size limit, the FMP will require an amendment specifying a specific length and the supporting rationale for the limit.

2. BSAI

(a) Utilization of pollock

Roe-stripping of pollock is prohibited, and the Regional Administrator is authorized to issue regulations to limit this practice to the maximum extent practicable. It is the Council's policy that the pollock harvest shall be utilized to the maximum extent possible for human consumption.

(b) Improved Retention/Improved Utilization Program

Minimum retention requirements

All vessels participating in the groundfish fisheries are required to retain all catch of Improved Retention/ Improved Utilization Program (IR/IU) species, pollock and Pacific cod, when directed fishing for those species is open, regardless of gear type employed and target fishery. When directed fishing for an IR/IU species is prohibited, retention of that species is required only up to any maximum retainable amount in effect for that species, and these retention requirements are superseded if retention of an IR/IU species is prohibited by other regulations.

No discarding of whole fish of these species is allowed, either prior to or subsequent to that species being brought on board the vessel except as permitted in the regulations. At-sea discarding of any processed product from any IR/IU species is also prohibited, unless required by other regulations.

Minimum utilization requirements

All IR/IU species caught in the BSAI must be either 1) processed at sea subject to minimum product recovery rates and/or other requirements established by regulations implementing the FMP, or 2) delivered in their entirety to onshore processing plants for which similar processing requirements are implemented by State regulations.

2.12 Share-based Programs

Both the GOA and BSAI FMPs prescribe certain share-based programs that limit participation in certain fisheries to promote conservation, safety at sea, economic return from the fisheries, and other objectives. These programs include Individual Fishing Quota (IFQ) programs in the GOA and the BSAI and the American Fisheries Act rationalization of the BSAI pollock fishery, the Aleutian Islands pollock quota allocation to the Aleut Corporation, and the BSAI groundfish fishery Community Development Quota (CDQ) program. These share-based programs each have prescribed allocation, ownership, use, community involvement, and transfer provisions that are outlined in the GOA and BSAI FMPs and are incorporated herein by reference.

2.13 Other Measures in the FMPs

The GOA FMP includes provisions for delegating demersal shelf rockfish fishery management to the State of Alaska.

Both FMPs provide for flexible management that allows certain inseason adjustments to harvest levels if new information becomes available. Such inseason adjustments must be necessary to prevent one of the following occurrences:

a. the overfishing of any species or stock of fish, including those for which PSC limits have been set; and/or
b. the harvest of a TAC for any groundfish, the taking of a PSC limit for any prohibited species, or the closure of any fishery based on a TAC or PSC limit that, on the basis of currently available information, is found by the Secretary to be incorrectly specified.

The types of information that the Regional Administrator will consider in determining whether conditions exist that require an inseason adjustment or action are described in the FMPs.

The FMPs also provide measures for protecting habitat, promoting safety, recordkeeping and reporting requirements, and periodic review of the FMP provisions by the Council and the Secretary. These measures are described in the GOA and BSAI FMPs and are incorporated herein by reference.

The FMPs include habitat descriptions for the GOA and BSAI areas, more specific information on habitat preferences for managed groundfish stocks, and ecosystem considerations in North Pacific groundfish fishery management (climate regime and oceanographic patterns) including descriptions of fishery interactions with changes in ecosystem variables. Essential Fish Habitat (EFH) is described for each stock, and Habitat Areas of Particular Concern that have been identified in the GOA and BSAI are described in the FMPs. Fishing activity for managed stocks is described as well, and information on the socioeconomic effects of the various groundfish fisheries is provided in the FMPs and in the annual SAFE documents.

The Secretary is currently reviewing proposed FMP and regulatory amendments to the groundfish FMPs for the identification and conservation of EFH and Habitat Areas of Particular Concern (71 FR 6031, February 6, 2006 and 71 FR 14470, March 22, 2006). This action would provide for protection of extensive areas of the Gulf of Alaska and the Aleutian Islands subarea from the potential adverse effects of fishing on EFH and HAPCs. The final rule must be approved by August 13, 2006 pursuant to a court order.

2.14 Relationships With Other Federal Laws and With State of Alaska Laws

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary domestic legislation governing management of the U.S. marine fisheries. Other laws and agreements that may affect groundfish fishery management include the following.

1. International conventions

The U.S. is party to many international conventions. Those that directly or indirectly address conservation and management needs of groundfish in the Gulf of Alaska management area include:

- Convention for the Preservation of the Halibut Fishery of the North Pacific Ocean and the Bering Sea (basic instrument for the International Pacific Halibut Commission – IPHC)

This plan has a most significant relationship to the management of the Pacific halibut fishery that continues to be vested in the International Pacific Halibut Commission. Many of the management measures contained in the GOA and BSAI FMPs are to conserve halibut so that this resource continues to be available to a domestic halibut fishery and specifically to reduce trawl fishery (and possibly the sablefish setline fishery) impacts on halibut abundance.

In the Bering Sea, the US is party to another Convention.

- Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (Donut Hole convention)

The development, in the mid to late 1980s, of an extensive pollock fishery in the central Bering Sea (donut hole) area of the Aleutian Basin, beyond the U.S. and Russian 200-mile zones, was of great concern to U.S. and Russian fishing interests. The U.S. closed a domestic fishery as a result of the adverse impact this unregulated fishery, which was being prosecuted mostly by distant-water fishing nations, was having on U.S. pollock stocks. Concern also extended to bycatch problems associated with the fishery. The donut hole fishery was being conducted by trawl vessels from Japan, the Republic of Korea, Poland, the People's Republic of China, and the former Soviet Union. On February 11, 1994, the Parties completed 3 years of negotiations and initialed the Convention on the Conservation and Management of Pollock Resources in the central Bering Sea. Its major principles include: no fishing permitted in the donut hole unless the biomass of the Aleutian Basin stock exceeds a threshold of 1.67 million mt (if the parties cannot agree on an estimate of the biomass, the estimate of the Alaska Fisheries Science Center and its Russian counterpart will be used); allocation procedures; 100 percent observer and satellite transmitter coverage; and prior notification of entry into the donut hole and of transshipment activities. The Convention entered into force in December 1995 (January 1996 for the Republic of Korea).

2. Other North Pacific Fishery Management Plans

The North Pacific Fishery Management Council (Council) has implemented three other FMPs in the Alaska exclusive economic zone (EEZ). These FMPs govern king and tanner crab fishing in the BSAI, and scallop and salmon fishing in the Alaska EEZ.

(a) BSAI King and Tanner Crab FMP

Domestic fishing for crab for the most part predates the domestic groundfish fishery, and since the inception of the BSAI Groundfish FMP the consideration of crab bycatch in the groundfish fisheries has been paramount. The crab species are considered prohibited in the BSAI groundfish fisheries, with any catch required to be returned immediately to the sea with a minimum of injury so as to discourage targeting on those species. Other management measures have also been instituted to minimize the bycatch of crab in the groundfish fisheries, including area closures, gear modifications, and catch limits. Some participants in the BSAI crab fishery also target groundfish. The crab FMP contains sideboard measures constraining AFA pollock fishery participants from increasing their participation in the crab fishery.

(b) Scallop FMP

There is very little interaction between the scallop FMP and the BSAI groundfish FMP. Virtually none of the vessels in the scallop fishery target groundfish. The scallop FMP contains sideboard measures constraining AFA pollock fishery participants from participating in the scallop fishery.

(c) Salmon FMP

Pacific salmon are also a prohibited species in the BSAI groundfish FMP. Salmon fishing in the EEZ is limited to a troll fishery in the Southeast outside district of the GOA. There is no significant overlap of participants or grounds conflicts. The BSAI groundfish FMP includes management measures to reduce the bycatch of salmon in federal waters, including catch limits and area closures.

3. State of Alaska Groundfish Fisheries

The GOA and BSAI FMPs reference the groundfish fisheries of the State of Alaska. Since some of the stocks of groundfish harvested in State waters may be the same stock as is harvested in Federal waters, provisions are made for some groundfish stocks to allow both a fishery in State waters and a fishery in Federal waters.

(a) Bering Sea/Aleutian Islands Area

A parallel groundfish fishery occurs where the State allows the federal species TAC to be harvested in State waters. Parallel fisheries occur for pollock, Pacific cod, and Atka mackerel species, for some or all gear types. In addition, the State also has state-managed fisheries for pollock, Pacific cod and rockfish species. Opening state waters allows the effective harvesting of fishery resources because many fish stocks straddle State and Federal jurisdiction and in some cases a significant portion of the overall federal TAC is harvested within State waters. Although the State cannot require vessels fishing inside state waters during the Federal fishery to hold a Federal permit, it can adopt regulations similar to those in place for the Federal fishery if those regulations are approved by the Board of Fisheries and meet State statute. An example of Federal fishery regulations that were concurrently adopted by the Board of Fisheries are the Steller sea lion protection measures implemented in 2003.

(b) Gulf of Alaska Area

<u>State parallel groundfish fishery</u>

In the Western and Central regulatory areas, a parallel groundfish fishery occurs where the State allows the federal species TAC to be harvested in State waters. Parallel fisheries occur for pollock, Pacific cod, and Atka mackerel species, for some or all gear types. Opening state waters allows the effective harvesting of fishery resources because many fish stocks straddle State and Federal jurisdiction and in some cases a significant portion of the overall federal TAC is harvested within State waters. Although the State cannot require vessels fishing inside state waters during the Federal fishery to hold a Federal permit, it can adopt regulations similar to those in place for the Federal fishery if those regulations are approved by the Board of Fisheries and meet State statute. An example of a Federal fishery regulation that was concurrently adopted by the Board of Fisheries is the Steller sea lion protection measures implemented in 2001.

State managed groundfish fishery

State groundfish fisheries also occur exclusively in GOA state waters for Pacific cod, lingcod, sablefish, and rockfish, and are managed by the State of Alaska Board of Fisheries. For some species, the State conducts an independent stock assessment to determine the annual harvest level, however, for Pacific cod, the annual harvest level is determined based on the federal assessment. The Council and the State of Alaska Board of Fisheries work closely together through a joint protocol committee on issues of mutual importance and usually meet once a year. The Commissioner of the Alaska Department of Fish and Game, or his designee, sits on the Council.

In early 2006, the State implemented a State-managed Pacific cod fishery in the Aleutian Islands until October 7, 2007 (Salveson 2006). With the exception of vessel monitoring requirements and seasonal apportionments, the fishery will be conducted under the same requirements as specified for the federal groundfish fisheries under the STeller sea lion protection measures. In addition, the State also established vessel specific daily harvest limits and possession limits for tender vessels. Compared to the federal regulations, the State's regulations are more conservative for A season trawl harvest and slightly higher amounts of A season harvest for the other gear types which work at a slower rate than trawl. The State also includes seasonal apportionments for gear which is not seasonally apportioned in federal regulations (jig and hook-and-line and pot vessels less than 60 feet). The overall harvest of Pacific cod will not be more than what is currently allowed under the TAC because the State guideline harvest level will be a percentage of the TAC which will be reduced. The Sustainable Fisheries Division determined that reinitiation of consultation was not necessary because any effects were likely insignificant.

2.15 Amendments to the BSAI FMP

The following is the most recent list of FMP amendments and the changes that were implemented.

Amendment 1, implemented January 1, 1984, supersedes Amendments 2 and 4:

1. Established a multi-year, multi-species optimum yield for the groundfish complex.
2. Established a framework procedure for determining and apportioning total allowable catch (TAC), reserves, and domestic annual harvest (DAH).
3. Eliminated the "Misty Moon" grounds south of the Pribilof Islands from the Winter Halibut Savings Area.
4. Allowed experimental year-round domestic trawling in the Winter Halibut Savings Area that will be closely monitored to the extent possible.
5. Allowed year-round domestic trawling in the Bristol Bay Pot Sanctuary and year-round domestic longlining in the Winter Halibut Savings Area.
6. Closed the Petrel Bank area to foreign trawling from July 1 through June 30.
7. Established the Resource Assessment Document as the biological information source for management purposes.

8. Specified that the fishing and FMP year is the calendar year.

Amendment 1a, implemented January 2, 1982:

Set a Chinook salmon prohibited species catch (PSC) limit of 55,250 fish for the foreign trawl fisheries for 1982.

Amendment 2, implemented January 12, 1982:

1. For Yellowfin Sole, increased DAH to 26,000 mt from 2,050 mt, increased joint venture processing (JVP) 25,000 mt from 850 mt, and decreased total allowable level of foreign fishing (TALFF) by 24,150 mt.
2. For Other Flatfish, increased DAH to 4,200 mt from 1,300 mt, increased JVP to 3,000 mt from 100 mt, and decreased TALFF by 2,900 mt.
3. For Pacific Cod, decreased maximum sustainable yield to 55,000 mt from 58,700 mt, increased equilibrium yield to 160,000 mt from 58,700 mt, increased acceptable biological catch to 160,000 mt from 58,700 mt, increased optimum yield to 78,700 mt from 58,700 mt, increased reserves to 3,935 mt from 2,935 mt, increased domestic annual processing (DAP) to 26,000 mt from 7,000 mt, and increased DAH to 43,265 mt from 24,265 mt.

Amendment 3, implemented July 4, 1983, supersedes Amendments 1a and 5:

1. Established procedures for reducing the incidental catch of halibut, salmon, king crab and Tanner crab by the foreign trawl fisheries.
2. Established a Council policy on the domestic groundfish fisheries and their incidental catch of prohibited species.

Amendment 4, implemented May 9, 1983, supersedes Amendment 2:

1. For pollock, increased JVP for Bering Sea to 64,000 mt from 9,050 mt, increased DAH to 74,500 mt from 19,550 mt, and decreased TALFF to 875,500 mt from 930,450 mt.
2. For Yellowfin Sole, increased JVP to 30,000 mt from 25,000 mt, increased DAH to 31,200 mt from 26,200 mt, and decreased TALFF to 79,950 mt from 84,950 mt.
3. For Other Flatfish, increased JVP to 10,000 mt from 3,000 mt, increased DAH to 11,200 mt from 4,200 mt, and decreased TALFF to 46,750 mt from 53,750 mt.
4. For Atka Mackerel, increased JVP to 14,500 mt from 100 mt, increased DAH to 14,500 mt from 100 mt, and decreased TALFF to 9,060 mt from 23,460 mt.
5. For Other Species, increased JVP to 6,000 mt from 200 mt, increased DAH to 7,800 mt from 2,000 mt, and decreased TALFF to 65,648 mt from 68,537 mt. Also corrected acceptable biological catch to 79,714 mt, optimum yield to 77,314 mt, and reserves to 3,866 mt.
6. For Pacific Cod, increased equilibrium yield and acceptable biological catch to 168,000 mt from 160,000 mt, increased optimum yield to

120,000 mt from 78,700 mt, increased reserves to 6,000 mt from 3,935 mt, and increased TALFF to 70,735 mt from 31,500 mt.

7. For Other Rockfish, assigned DAP of 1,100 mt to BSAI area combined. This caused no change in total DAP. (This conformed FMP with federal regulations.)
8. For Pacific Ocean Perch, assigned DAP of 550 mt to Bering Sea and 550 mt to Aleutians but caused no change in total DAP. Also assigned JVP of 830 mt to Bering Sea and 830 mt to Aleutians without changing total JVP. (This conformed FMP with federal regulations.)
9. For Sablefish, assigned JVP of 200 mt to Bering Sea and 200 mt to Aleutians without changing total JVP. (This conformed FMP with federal regulations.) Changed maximum sustainable yield to 11,600 mt in Bering Sea and 1,900 mt in Aleutians to eliminate inconsistencies with annexes.
10. Changed foreign fisheries restrictions to allow trawling outside 3 miles north of the Aleutian Islands between 170˚ 30' W. and 172˚ W longitude, and south of the Aleutian Islands between 170˚ W and 172˚ W longitude; and to allow longlining outside 3 miles west of 170˚ W longitude.

Amendment 5, withdrawn from Secretarial review.

Amendment 6, disapproved by NMFS on December 8, 1983:

Would have established a fishery development zone for exclusive use by U.S. fishing vessels where no foreign directed fishing is permitted.

Amendment 7, implemented August 31, 1983:

Modified the December 1 to May 31 depth restriction on the foreign longline fisheries in the Winter Halibut Savings Area.

Amendment 8, implemented February 24, 1984, supplements Amendment 3:

Established 1984 and 1985 salmon PSCs for the foreign trawl fishery. This amendment was a regulatory amendment which fell within the purview of Amendment 3 and did not require formal Secretarial approval.

Amendment 9, implemented December 1, 1985:

1. Require all catcher/processors that hold their catch for more than two weeks to check in and check out by radio from a regulatory area/district and to provide a written catch report weekly to the NMFS Regional Office.
2. Incorporated habitat protection policy.
3. Established definition for directed fishing as 20 percent or more of the catch.

Amendment 10, implemented March 16, 1987:

1. Established Bycatch Limitation Zones for domestic and foreign fisheries for yellowfin sole and other flatfish (including rock sole); an area closed to all trawling within Zone 1; red king crab, C. bairdi Tanner crab, and Pacific halibut PSC limits for DAH yellowfin sole and other flatfish fisheries; a C. bairdi PSC limit for foreign fisheries; and a red king crab PSC limit and scientific data collection requirement for U.S. vessels fishing for Pacific cod in Zone 1 waters shallower than 25 fathoms.
2. Revised the weekly reporting requirement for catcher/processors and mothership/processors.
3. Established explicit authority for reapportionment between DAP and JVP fisheries.
4. Established inseason management authority.

Amendment 11, implemented December 30, 1987:

1. Established a schedule for seasonal release of joint venture pollock apportionments in 1988 and 1989 (expires December 31, 1989).
2. Revised the definition of prohibited species.
3. Revised the definition of acceptable biological catch and added definitions for threshold and overfishing.

Amendment 11a, implemented April 6, 1988:

Augmented the current domestic catcher/processor and mothership/ processor reporting requirements with at-sea transfer information and modify the weekly reporting requirements.

Amendment 12, implemented May 26, 1989:

1. Revised federal permit requirements to include all vessels harvesting and processing groundfish from the EEZ.
2. Establish a PSC limit procedure for fully utilized groundfish species taken incidentally in JVP and TALFF fisheries.
3. Removed July 1 deadline for Stock Assessment and Fishery Evaluation Report (SAFE).
4. Established rock sole as a target species distinct from the “other flatfish” group.

Amendment 12a, implemented September 3, 1989, replaced Amendment 10:

Established a bycatch control procedure to limit the incidental take of C. bairdi Tanner crab, red king crab, and halibut in groundfish fisheries.

Amendment 13, implemented January 1, 1990:

1. Allocated sablefish in the Bering Sea and the Aleutian Islands Management Subareas.

2. Established a procedure to set fishing seasons on an annual basis by regulatory amendment.
3. Established groundfish fishing closed zones near the Walrus Islands and Cape Peirce.
4. Established a new data reporting system.
5. Established a new observer program.
6. Clarified the Secretary's authority to split or combine species groups within the target species management category by a framework procedure.

Amendment 14, implemented January 1, 1991:

1. Prohibited roe-stripping of pollock; and established Council policy that the pollock harvest is to be used for human consumption to the maximum extent possible;
2. Divided the pollock TAC into two seasonal allowances: roe-bearing ("A" season) and non roe-bearing ("B" season). The percentage of the TAC allocated to each allowance shall be determined annually during the TAC specifications process.

Amendment 15, approved by the Secretary on January 29, 1993, implemented March 15, 1995:

1. Established an Individual Fishing Quota (IFQ) program for directed fixed gear sablefish fisheries in the Bering Sea and Aleutian Islands management areas.
2. Established a Western Alaska Community Development Quota (CDQ) Program.

Amendment 16, implemented January 1, 1991, replaced Amendment 12a:

1. Extended the effective date of Amendment 12a (originally scheduled to expire December 31, 1990) with the following three changes:
    a. PSC apportionments would be established for the DAP rock sole and deep water turbot/arrowtooth flounder fisheries;
    b. PSC limits could be seasonally apportioned; and
    c. An interim incentive program established to encourage vessels to avoid excessive bycatch rates.
2. Established a definition of overfishing;
3. Established procedures for interim TAC specifications; and
4. Provided for fishing gear restrictions to be modified by regulatory amendments.

Amendment 16a implemented July 12, 1991.

1. Established inseason authority to temporarily close statistical areas, or portions thereof, to reduce high prohibited species bycatch rates.
2. Provided authority to the Regional Administrator, in consultation with the Council, to set a limit on the amount of the pollock TACs that may be taken with other than pelagic trawl gear.
3. Established a framework for determining an annual herring PSC limit as 1 percent of the estimated herring biomass, attainment of which triggers trawl closures in three Herring Savings Areas.

Amendment 17 implemented April 24, 1992:

1. Authorize the NMFS Regional Administrator to approve exempted fishing permits after consultation with the Council.
2. Establish a unique Bogoslof District as part of the Bering Sea subarea, for which a pollock harvest quota would be annually specified. Fishing for pollock in the remaining parts of the Bering Sea subarea will be unaffected by any closure of the Bogoslof District.

Amendment 18 implemented June 1, 1992 and revised Amendment 18 on December 18, 1992:

1. The Pollock TAC in the BSAI, after subtraction of the reserve, is allocated between inshore and offshore components during the years 1992 through 1995. The inshore component receives 35 percent of the pollock TAC, and the offshore component receives 65 percent.
2. A Catcher Vessel Operational Area (CVOA) is established to limit access to pollock within the area to catcher vessels delivering to the inshore component. This area is between 163˚ W and 168˚ W longitude, south of 56˚ N latitude, and north of the Aleutian Islands. During the 1992 "B"season, the offshore component will not be allowed to fish within the CVOA.
3. Half of the amount of BSAI pollock assigned to the nonspecific reserve (7.5 percent of the BSAI TAC) is allocated as Western Alaska CDQ program.

Amendment 19 implemented September 23, 1992, supplemented Amendment 16:

1. Revise time and area closure (hotspot) authority in the BSAI to authorize, by regulatory amendment, the establishment of time and area closures to reduce bycatch rates of prohibited species. Any closure of an area would require a determination by the Secretary, in consultation with the Council.
2. Expand the Vessel Incentive Program to include all trawl fisheries in the BSAI.
3. Delay opening of all trawl fisheries in the BSAI until January 20. The opening date for non-trawl fisheries, including hook and line, pot and jigging, will continue to be January 1.

4. Establish, for the 1992 season only, a halibut PSC limit of 5,033 mt for the BSAI trawl fishery. Also, a 750 mt halibut PSC mortality limit for the non-trawl fisheries will be established for one year.
5. Establish new halibut and crab PSC apportionment categories. A trawl fishery category closes when it reaches a PSC bycatch allowance allocated to that category.
6. Establish new fishery definitions. The fishery definitions for both the Vessel Incentive Program and the PSC allowance limits would be the same. The definitions of fisheries for these programs would be as follows:

a. Mid-water pollock if pollock is to 95 percent of the total catch.

b. Other targets determined by the dominate species in terms of retained catch.

c. For the BSAI, a flatfish fishery consisting of rock sole, yellowfin sole, and other flatfish (excluding Greenland turbot and arrowtooth flounder) will be defined and then subdivided into three fisheries. If yellowfin sole accounts for at least 70% of the retained flatfish catch, it is a yellowfin sole fishery. Otherwise, it is a rock sole or other flatfish fishery depending on which is dominant in terms of retained catch.

7. To allow more effective enforcement of directed fishery closures and to further limit trawl bycatch amounts of halibut after a halibut PSC bycatch allowance has been reached, changes to Directed Fishing Standards include:

a. Directed fishing standards would be seven percent of the aggregate amounts of GOA and BSAI groundfish other than pollock that are caught while fishing for pollock with pelagic trawl gear.

b. For purposes of the directed fishing rule, the operator of a vessel is engaged in a single fishing trip, from the date when fishing commences or continues in an area after the effective date of a notice prohibiting directed fishing in that area, until the first date on which at least one of following occurs: 1) a weekly reporting period ends; 2) the vessel enters or leaves a reporting area for which an area specific TAC or directed fishing standard is established; or 3) any fish or fish product is offloaded or transferred from that vessel.

Amendment 20 implemented January 19, 1992:

Prohibit trawling year round in the BSAI within 10 nautical miles of 27 Steller sea lion rookeries. In addition, five of these rookeries will have 20 nautical mile trawl closures during the pollock “A” season. These closures will revert back to 10 nautical miles when the “A” season is over, either on or before April 15.

Amendment 21 implemented March 17, 1993, superseded Amendment 16:

Established FMP authority to specify trawl and non-trawl gear halibut bycatch mortality limits by regulatory amendment.

Amendment 21a implemented January 20, 1995:

Established a Pribilof Islands Habitat Conservation Area.

Amendment 21b implemented November 29, 1995:

Established trawl closure areas called the Chinook Salmon Savings Areas.

Amendment 22 implemented December 22, 1992:

Established trawl test areas for the testing of trawl gear in preparation of the opening of fishing seasons. Fishermen are allowed to test trawl gear when the BSAI would otherwise be closed to trawling.

Amendment 23, implemented August 10, 1995 and effective on September 11, 1995:

Created a moratorium on harvesting vessels entering the BSAI groundfish fisheries other than fixed gear sablefish after January 1, 1996. The vessel moratorium will last until the Council replaces or rescinds the action, but in any case will end on December 31, 1998. The Council extended the moratorium to January 1, 1999 under Amendment 59. The Council may however extend the moratorium up to 2 additional years, if a permanent limited access program is imminent.

Amendment 24 implemented February 28, 1994, and effective through December 31, 1996:

1. Established the following gear allocations of BSAI Pacific cod TAC as follows: 2 percent to vessels using jig gear; 44.1 percent to vessels using hook-and-line or pot gear, and 53.9 percent to vessels using trawl gear.
2. Authorized the seasonal apportionment of the amount of Pacific cod allocated to gear groups. Criteria for seasonal apportionments and the seasons authorized to receive separate apportionments will be set forth in regulations.

Amendment 25 implemented May 20, 1994, superseded Amendment 21:

Eliminated the primary halibut bycatch mortality limit established for the trawl gear fisheries (3,300 mt). The overall bycatch mortality limit established for these fisheries (3,775 mt) remained unchanged.

Amendment 26 implemented July 24, 1996:

Established a Salmon Donation Program that authorizes the voluntary retention and distribution of salmon taken as bycatch in the groundfish trawl fisheries off Alaska to economically disadvantaged individuals.

Amendment 27 implemented October 6, 1994, superseded Amendments 13 and 18, repealed and replaced by Amendment 47:

Implemented language changes to the Fishery Management Plans to indicate that observer requirements under the FMPs are contained in the North Pacific Fisheries Research Plan.

Amendment 28 implemented August 11, 1993, supplemented Amendment 20:

Established three districts in the Aleutian Islands management subarea for purposes of distributing the groundfish TACs spatially.

Amendment 29 not submitted.

Amendment 30 implemented September 23, 1994, revised Amendment 18:

Raised the CDQ allocation limit for qualified applicants from 12 to 33 percent.

Amendment 31 implemented November 7, 1994, revised Amendment 15:

Implemented the Modified Block plan to prevent excessive consolidation of the halibut and sablefish fisheries, and clarifies the transfer process for the IFQ program.

Amendment 32 implemented February 23, 1996, revised Amendment 15:

Established a one-time transfer of halibut and sablefish IFQ for CDQ.

Amendment 33 implemented July 26, 1996, revised Amendment 15:

Allowed freezing of non-IFQ species when fishing sablefish IFQ.

Amendment 34 implemented January 30, 1994:

Allocated Atka mackerel to vessels using jig gear. Annually, up to 2 percent of the TAC specified for this species in the eastern Aleutian Islands District/Bering Sea subarea will be allocated to vessels using jig gear in this area.

Amendment 35 implemented August 1, 1995:

Established a trawl closure area called the Chum Salmon Savings Area.

Amendment 36 implemented April 16, 1998:

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.

Amendment 37 implemented January 1, 1997

Established a non-pelagic trawl closure area called the Red King Crab Savings Area, a trawl closure area called the Nearshore Bristol Bay Trawl Closure, and revised the red king crab PSC limits.

Amendment 38 implemented January 1, 1996, superseded Amendment 18:

Extended provision of Amendment 18, inshore/offshore allocation and modified the Catcher Vessel Operating Area.

Amendment 39, implemented January 1, 1999, except for some parts on January 1, 2000, replaced Amendment 23 and revised Amendment 18:

1. Created a license program for vessels targeting groundfish in the BSAI, other than fixed gear sablefish that is pending regulatory implementation. The license program will replace the vessel moratorium and will last until the Council replaces or rescinds the action.
2. Allocated 7.5 percent of groundfish TACs to the CDQ multispecies fishery.

Amendment 40 implemented January 21, 1998:

Established PSC limits for C. opilio crab in trawl fisheries and a snow crab bycatch limitation zone.

Amendment 41 implemented April 23, 1997, revised Amendment 12a:

Revised the C. bairdi Tanner crab PSC limit in Zones 1 and 2.

Amendment 42 implemented August 16, 1996, revised Amendment 15

Increased sweep-up levels for small quota share blocks for sablefish managed under the sablefish and halibut IFQ program.

Amendment 43 implemented December 20, 1996, revised Amendment 15:

Established sweep-up provisions to consolidate very small quota share blocks for halibut and sablefish.

Amendment 44 implemented January 9, 1997, revised Amendment 16:

Established a more conservative definition of overfishing.

Amendment 45 implemented January 21, 1999, superseded Amendment 38:

Reauthorized the pollock CDQ allocation.

Amendment 46 implemented January 1, 1997, superseded Amendment 24:

Replaced the three year Pacific cod allocation established with Amendment 24, with the following gear allocations in BSAI Pacific cod: 2 percent to vessels using jig gear; 51 percent to vessels using hook-and-line or pot gear; and 47 percent to vessels using trawl gear. The trawl apportionment will be divided 50 percent to catcher vessels and 50 percent to catcher processors. These allocations as well as the seasonal apportionment authority established in Amendment 24 will remain in effect until amended.

Amendment 47 was not submitted.

Amendment 48 was implemented December 8, 2004:

1. Revised the harvest specifications process.
2. Changed the title of the FMP.
3. Update the FMP to reflect current groundfish fisheries.

Amendment 49 implemented January 3, 1998:

Implemented an Increased Retention/Increased Utilization Program for pollock and Pacific cod beginning January 1, 1998 and rock sole and yellowfin sole beginning January 1, 2003.

Amendment 50 implemented July 13, 1998, revised Amendment 26:

Established a Prohibited Species Donation Program that expands the Salmon Donation Program to include halibut taken as bycatch in the groundfish trawl fisheries off Alaska to economically disadvantaged individuals.

Amendment 51 was partially implemented January 20, 1999, superseded Amendment 38:

Replaced the three year inshore/offshore allocation established with Amendment 38, with the following allocations of BSAI pollock after subtraction of reserves: 39 percent inshore; 61 percent offshore. That portion of the Bering Sea inshore “B” season allocation which is equivalent to 2.5 percent of the BSAI pollock TAC, after subtraction of reserves, shall be made available only to vessels under 125 ft length overall for delivery to the inshore sector, prior to the Bering Sea “B” season, starting on or about August 25. Any overages or underages will be subtracted/added as part of the inshore “B” season. The rules and regulations pertaining to the CVOA shall remain the same, except that during the “B” season, operations in the CVOA will be restricted to catcher vessels delivering to the inshore sector. These allocations will remain in effect until December 31, 2001, unless replaced by another management regime approved by the Secretary.

Amendment 52 was not submitted.

Amendment 53 implemented July 22, 1998:

Allocates shortraker and rougheye rockfish TAC 70 percent to trawl fisheries and 30 percent to non-trawl fisheries.

Amendment 54 implemented April 29, 2002, revised Amendment 15:

Revised use and ownership provisions of the sablefish IFQ program.

Amendment 55 implemented April 26, 1999:

Implemented the Essential Fish Habitat (EFH) provisions contained in the Magnuson-Stevens Fishery Conservation and Management Act and 50 CFR 600.815. Amendment 55 describes and identifies EFH fish habitat for BSAI groundfish and describes and identifies fishing and non-fishing threats to BSAI groundfish EFH, research needs, habitat areas of particular concern, and EFH conservation and enhancement recommendations.

Amendment 56 implemented March 8, 1999, revised Amendment 44:

Revised the overfishing definition.

Amendment 57 implemented June 15, 2000, revised Amendment 37 and Amendment 40:

1. Prohibited the use of nonpelagic trawl gear in the directed pollock fishery.
2. Reduced the PSC limit for red king crab by 3,000 animals.

Amendment 58 implemented November 13, 2000, revised Amendment 21b:

Revised Chinook Salmon Savings Areas trawl closure areas.

Amendment 59 implemented January 19, 1999, superseded Amendment 23:

Extended the vessel moratorium through December 31, 1999.

Amendment 60 implemented October 24, 2001 and January 1, 2002; superseded Amendment 59:

1. Required that the vessel would be a specific characteristic of the license and could not be severed from it.
2. Authorized license designations for the type of gear to harvest LLP groundfish as either “trawl” or “non-trawl” gear (or both).
3. Rescinded the requirement that CDQ vessels hold a crab or groundfish license.
4. Added 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.
5. Allowed limited processing (1 mt) for vessels less than 60 ft LOA with catcher vessel designations.

Amendment 61 implemented January 21, 2000, conformed the FMP with the American Fisheries Act (AFA) of 1998 that:

1. Removed excess capacity in the offshore pollock sector through the retirement of 9 factory trawlers.

2. Established U.S. ownership requirements for the harvest sector vessels.
3. Established specific allocations of the BSAI pollock quota as follows - 10 percent to the western Alaska CDQ program, with the remainder allocated 50 percent to the onshore sector, 40 percent to the offshore sector, and 10 percent to the mothership sector.
4. Identified the specific vessels and processors eligible to participate in the BSAI pollock fisheries
5. Established the authority and mechanisms by which the pollock fleet can form fishery cooperatives.
6. Established specific measures to protect the non-AFA (non-pollock) fisheries from adverse impacts resulting from the AFA or pollock fishery cooperatives.

Amendment 62 was approved by the Council in October 2002, revised Amendment 61:

1. Increases the number of times that a Bering Sea stationary floating processor may move to a different inshore location during the fishing year, from one time per year to a total of four times per year. The relocation may not result in more than one recorded landing location in a weekly reporting period.
2. Updates the use restrictions on the Bering Sea Catcher Vessel Operational Area to reflect the changes in the American Fisheries Act.

Amendment 63 is pending.

Amendment 64 implemented September 1, 2000, revised Amendment 46:

Allocated the Pacific cod Total Allowable Catch to the jig gear (2 percent), fixed gear (51 percent), and trawl gear (47 percent) sectors.

Amendment 65 was not submitted.

Amendment 66 implemented April 6, 2002:

Exempted squid from the CDQ program.

Amendment 67 implemented May 15, 2002, revised Amendment 39:

Established participation and harvest requirements to qualify for a BSAI Pacific cod fishery endorsement for fixed gear vessels.

Amendment 68 was not submitted.

Amendment 69 implemented March 13, 2003, revised Amendment 61:

Allows an inshore pollock cooperative to contract with AFA catcher vessels that are qualified for the inshore sector, but outside their cooperative, to harvest the cooperative's pollock allocation.

Amendment 70 was not submitted.

Amendment 71 is pending.
Amendment 72 implemented August 28, 2003, revised Amendment 15:

> Required a verbal departure report instead of a vessel clearance requirement for vessels with IFQ halibut or sablefish leaving the jurisdiction of the Council.

Amendment 73 was not submitted.

Amendment 74 is unassigned.

Amendment 75 was partially approved May 29, 2003, revised Amendment 49:

> Delayed indefinitely the implementation of the flatfish retention and utilization requirements.

Amendment 76 was not submitted.

Amendment 77 implemented January 1, 2004, revised Amendment 64:

> Implemented a Pacific cod fixed gear allocation between hook and line catcher processors (80 percent), hook and line catcher vessels (0.3 percent), pot catcher processors (3.3 percent), pot catcher vessels (15 percent), and catcher vessels (pot or hook and line) less than 60 feet (1.4 percent).

Amendment 78 is pending.

> EFH and HAPC provisions

Amendment 79 was approved by the Council in June 2003:

> Would implement a groundfish retention standard in the non-AFA trawl catcher-processor fleet.

Amendment 80 is pending.

Amendment 81 implemented August 27, 2004:

> Revised the management policy and objectives.

Amendment 82 implemented February 24, 2005:

1. Created separate Chinook Salmon PSC limits for the Bering Sea and Aleutian Islands subareas, and modified the closures when the PSC limits are attained.
2. Allocated the non-CDQ directed pollock fishery in the AI subarea to the Aleut Corporation for the purpose of economic development in Adak, Alaska.

Amendment 83 approved June 13, 2005:

1. Updated the FMP's descriptive sections, technically edited the language, and reorganized the content of the FMP.
2. Required the TAC for a species or species complex to be equal or less than ABC.

Amendment 84a approved by the Council October 2005:

Suspend the Chinook and chum salmon savings areas closures for cooperative pollock vessels, CDQ and trawl cod and flatfish targeting vessels that participate in the voluntary rolling hot spot program.

2.16 Amendments to the GOA FMP

The following is the most recent list of FMP amendments and the changes that were implemented.

Amendment 1 implemented December 1, 1978:

1. Extended optimum yields (OYs), domestic annual harvest (DAH), total allowable level of foreign fishing (TALFF) to October 31, 1979.
2. Changed fishing year to November 1 - October 31.

Amendment 2 implemented January 1, 1979:

Allowed directed foreign longline fishery for Pacific cod west of 157□ W. longitude outside of 12 miles year-round.

Amendment 3 implemented December 1, 1978:

1. Established special joint venture reserve wherein TALFF = 0.8(OY)-DAH, - joint venture processing (JVP).
2. Specified that allocations will be reevaluated on January 1, 1979 and reapportioned if necessary.

Amendment 4 implemented August 16, 1979:

1. Allowed foreign fishing beyond 3 miles between 169˚ W and 170˚ W longitude.
2. Removed prohibition on taking more than 25 percent TALFF during December 1 to May 31.
3. Allowed foreign longlining for sablefish seaward of 400 m from May 1 to September 30 and seaward of 500 m from October 1 to April 30 between 140˚ W and 170˚ W longitude.

4. Allowed directed Pacific cod longline fishery between 140˚ W and 157˚ W longitude beyond 12 miles except as prohibited within 400 m isobath during halibut season.
5. Exempted foreign longliners from nationwide closures upon attaining OY if the OY is not for species targeted by longliners.
6. Increased squid OY to 5,000 mt from 2,000 mt.
7. Increased Atka mackerel OY to 26,800 mt from 24,800 mt.
8. Reduced number of management areas to three from five.
9. Removed domestic one-hour tow restriction on off-bottom trawls from December to May.
10. Provided for the annual review of domestic permits and the reporting of catch within 7 days of landing.

Amendment 5 implemented June 1, 1979:

Established a separate OY for rattails (grenadiers) of 13,200 mt.

Amendment 6 implemented September 22, 1979:

Released unused DAH to TALFF and reapportioned DAH by regulatory areas.

Amendment 7 implemented November 1, 1979:

1. Extended plan year through October 31, 1980.
2. Implemented the processor preference amendment wherein
   DAH = domestic annual processed catch (DAP) + the portion of U.S. harvest discarded + JVP + the amount of non-processed fish harvested;
   Reserve = 20 percent of OY;
   TALFF = OY - DAH, - Reserve
3. Provided for review and reapportionment of Reserve to DAH or TALFF on January 2, March 2, May 2, and July 2.
4. Increased Pacific cod OY to 60,000 mt from 34,800 mt.
5. Increased Atka mackerel OY to 28,700 mt from 26,800 mt.
6. Created separate OY for Sebastolobus species, of 3,750 mt.
7. Provided for new domestic reporting requirements to increase accuracy of forecasting U.S. fishing activity.

Amendment 8 implemented November 1, 1980:

1. Changed FMP year to calendar year and eliminated expiration date.
2. Distributed OYs for squid, ‘Other species’, *Sebastolobus* spp., and ‘Other rockfish’ Gulfwide.
3. Established four species categories: Unallocated, Target, Other, and Non-specified.
4. Divided Eastern regulatory area into Yakutat, Southeast Inside and Southeast Outside for sablefish only.
5. Set a reserve release schedule of 40 percent in April, 40 percent in June, and 20 percent in August.

6. Required biodegradable panels in sablefish pots.

Amendment 9 implemented October 2, 1981:

Established Lechner Line around Kodiak which is closed from two days before king crab season to February 15.

Amendment 10 implemented June 1, 1982:

1. Closed area east of 140˚ W longitude to all foreign fishing.
2. Deleted U.S. sanctuaries east of 140˚ W longitude as not necessary.
3. Permitted foreign mid-water trawling only, year-round between 140˚ W and 147˚ W longitude.
4. For Pacific Ocean perch (POP) in the Eastern regulatory area: reduced ABC to 875 mt from 29,000 mt, changed OY = ABC, DAH = 500 mt, TALFF = 200 mt, and Reserve = 175 mt.

Amendment 11 implemented October 16, 1983:

1. Increased pollock OY in Central Gulf to 143,000 mt from 95,200 mt.
2. Established a new management objective for sablefish: sablefish in the Gulf of Alaska will be managed Gulfwide to benefit the domestic fishery.
3. Divided the Yakutat district into two sablefish management districts: Western Yakutat and Eastern Yakutat.
4. Set sablefish OY equal to ABC. ABC set at 75 percent of equilibrium yield to promote stock rebuilding. Gulfwide OY is 8,230-9,478 mt, of which 500 mt is in State internal waters of Southeast.
5. Specified that DAH will be determined annually based on previous year's domestic catch, plus amounts necessary to accommodate projected needs of the domestic fishery reserves and unneeded DAH can be reapportioned as needed.
6. Granted field order authority for Regional Director to adjust time and/or area restrictions on foreign fisheries for conservation reasons.
7. Placed radio or telephone catch reporting requirements on domestic vessels leaving State waters to land fish outside Alaska.

Amendment 12 was not submitted.

Amendment 13 implemented August 13, 1984:

Combined Western and Central regulatory areas for pollock management and set a combined OY of 400,000 mt (follow up to emergency regulations passed in December 1983 and May 1984).

Amendment 14 implemented November 18, 1985:

1. Established gear and area restrictions and OY apportionments to specific gear types for sablefish.

2. Established a Central Southeast Outside District with a 600 mt OY for demersal shelf rockfish.
3. Reduced pollock OY in the combined Western/Central regulatory area from 400,000 mt to 305,000 mt.
4. Reduced Pacific Ocean perch OY in the Western and Central regulatory areas from 2,700 mt and 7,900 mt to 1,302 mt and 3,906 mt, respectively.
5. Reduced Gulfwide 'Other Rockfish' OY from 7,600 mt to 5,000 mt.
6. Reduced Atka mackerel OY in the Central and Eastern regulatory areas from 20,836 mt and 3,186 mt to bycatch levels only of 500 mt and 100 mt, respectively.
7. Reduced Gulfwide 'Other species' OY to the framework amount of 22,460 mt.
8. Established catcher/processor reporting requirements.
9. Implemented a framework procedure for setting and adjusting halibut prohibited species catch (PSC) limits.
10. Implemented NMFS Habitat Policy.
11. Set season for hook and longline and pot sablefish fishery.

Amendment 15 implemented April 8, 1987:

1. Revised and expanded management goals and objectives.
2. Established a single OY range and an administrative framework procedure for setting annual harvest levels for each species category.
3. Established framework procedures for setting PSCs for fully utilized groundfish species applicable to joint ventures and foreign fisheries.
4. Revised reporting requirements for domestic at-sea processors.
5. Established time and area restrictions on non-pelagic trawling around Kodiak to protect king crab for three years, until December 31, 1989.
6. Established authority for the Regional Director to make inseason adjustments in the fisheries.

Amendment 16 implemented April 7, 1988:

1. Revised definition of "prohibited species" (to include an identical definition as in the BSAI groundfish FMP).
2. Updated the FMP's descriptive sections, reorganized chapters, and incorporated current Council policy.
3. Revised reporting requirements to include maintenance of at-sea transfer logs by catcher/processer vessels.

Amendment 17 implemented May 26, 1989:

Required all processing vessels receiving fish caught in the Exclusive Economic Zone (EEZ) to report to NMFS when fishing for or receiving groundfish will begin or cease, and to submit to NMFS weekly catch/receipt and product transfer reports.

Amendment 18 implemented November 1, 1989:

1. Established a procedure for annually setting fishing seasons using a regulatory amendment for implementation.
2. Established a Shelikof District in the Central regulatory area.
3. Continued the Type I and II trawl closure zones and added a Type III trawl closure zone around Kodiak Island to protect king and Tanner crab. This measure sunsets December 31, 1992.
4. Suspended the halibut PSC framework for 1990 only, substituting 2,000 mt trawl and 750 mt fixed gear halibut PSC caps; the halibut PSC framework, including halibut PSC apportionments by gear type, to be reinstituted January 1, 1991 by regulatory amendment.
5. Implemented an observer program.
6. Implemented a revised recordkeeping and data reporting system.
7. Clarified the Secretary's authority to split or combine species groups within the target species management category by a framework procedure.

Amendment 19 implemented November 15, 1990:

1. Prohibited the practice of pollock roe-stripping (defined as the taking of roe from female pollock and the subsequent discard of the female carcass and all male pollock).
2. Divided the pollock TAC into equal quarterly allowances in the Western and Central regulatory areas.

Amendment 20 approved by the Secretary on January 1, 1991:

Established an Individual Fishing Quota (IFQ) program for directed fixed gear sablefish fisheries in the GOA.

Amendment 21 implemented January 18, 1991:

1. Amended the definition of overfishing.
2. Established interim harvest levels until superseded by publication of final groundfish specifications in the *Federal Register*.
3. Provided limited authority to the State of Alaska to manage the demersal shelf rockfish fishery with Council oversight.
4. Provided for legal fishing gear to be defined by regulatory amendment.
5. Clarified and expanded the existing framework for managing halibut bycatch, including the adoption of an incentive program to impose sanctions on vessels with excessively high halibut bycatch rates. The vessel incentive program originally adopted by the Council was disapproved by the Secretary. The Council adopted a revised incentive program which was submitted on November 30, 1990 to the Secretary for review and approval.

Amendment 22 implemented April 24, 1992:

1. Authorized the NMFS Regional Director to approve experimental fishing permits after consultation with the Council.
2. Rescinded GOA reporting area 68 (East Yakutat Area) and combined it with Area 65 (Southeast Outside).
3. Required groundfish pots to be identified by some form of tag (regulatory amendment).

Amendment 23 implemented June 1, 1992:

Established allocations of pollock and Pacific cod for the inshore and offshore components of the GOA groundfish fishery. 90 percent of the Pacific cod TAC and 100 percent of the pollock TAC for each fishing year, is allocated to the inshore component of the groundfish fishery. Ten percent of the Pacific cod TAC, and an appropriate percentage of the pollock TAC for bycatch purposes, is allocated to the offshore component.

Amendment 24 implemented September 23, 1992:

1. Established hot spot authority in the GOA that parallels a revised hotspot in the BSAI management area.
2. Established time/area closures to reduce bycatch rates of prohibited species.
3. Expanded the Vessel Incentive Program to include all trawl fisheries in the GOA. The new incentive program includes Chinook salmon as well as halibut (regulatory amendment).
4. Delayed opening of all trawl fisheries in the GOA until January 20. The opening date for non-trawl fisheries, including hook-and-line, pot and jigging, continues to be January 1. Delayed the GOA rockfish opening date by six months until the beginning of the third quarter (regulatory amendment).
5. Homogenized the fishery definitions for both the Vessel Incentive Program and the PSC allowance limits. The definitions of fisheries for these programs are: Mid-water pollock if pollock is greater than or equal to 95 percent of the total catch, and other target fisheries would be determined by the dominate species in terms of retained catch (regulatory amendment).

Amendment 25 implemented January 19, 1992:

1. Established three new districts in the combined Western and Central regulatory area for purposes of managing pollock, and rescinded the existing Shelikof Strait management district. The Western/Central regulatory area is divided into three districts by boundaries at 154˚ W and 159˚ W longitudes.
2. Limit the maximum amount of any quarterly pollock TAC allowance that may be carried over to subsequent quarters to 150 percent of the initial quarterly allowance.

3. Prohibit trawling year round in the GOA within 10 nautical miles of 14 Steller sea lion rookeries.

Amendment 26 implemented December 17, 1992:

Reinstate King Crab Protective Zones around Kodiak Island on a permanent basis.

Amendment 27 implemented January 22, 1993:

Establish legal zones for trawl testing when fishing is otherwise prohibited.

Amendment 28 implemented August 10, 1995 and effective on September 11, 1995:

Created a moratorium on harvesting vessels entering the BSAI groundfish fisheries other than fixed gear sablefish, after January 1, 1996. The vessel moratorium is to last until the Council replaces or rescinds the action, but is scheduled to sunset on December 31, 1998, unless the Council extends the moratorium.

Amendment 29 implemented July 24, 1996:

Established a Salmon Donation Program that authorizes the voluntary retention and distribution of salmon taken as bycatch in the groundfish trawl fisheries off Alaska to economically disadvantaged individuals.

Amendment 30 implemented October 6, 1994, superseded Amendment 18:

Implemented language changes to the FMP to indicate that observer requirements under the FMP are contained in the North Pacific Fisheries Research Plan.

Amendment 31 implemented October 18, 1993:

Created a separate target category for Atka mackerel in the FMP.

Amendment 32 implemented March 31, 1994:

Established a procedure for deriving the annual GOA TACs for Pacific Ocean perch. POP stocks are considered to be rebuilt when the total biomass of mature females is equal to, or greater than, BMSY.

Amendment 33 was not submitted.

Amendment 34 implemented September 23, 1994.

Corrected the inadvertent inclusion of the Community Development Quota (CDQ) program in the FMP by removing and reserving Section 4.4.1.1.8 on "Community Development Quotas".

Amendment 35 implemented November 7, 1994, revised Amendment 20:

Implemented the Modified Block plan to prevent excessive consolidation of the halibut and sablefish fisheries, and clarifies the transfer process for the IFQ program.

Amendment 36 implemented February 23, 1996, revised Amendment 20:

Established a one-time transfer of sablefish IFQ for CDQ.

Amendment 37 implemented July 26, 1996, revised Amendment 20:

Allowed freezing of non-IFQ species when fishing sablefish IFQ.

Amendment 38 implemented September 25, 1996, revised Amendment 32:

Revised the rebuilding plan formula for setting TAC for Pacific Ocean perch to allow the Council to recommend a POP TAC at or below the amount dictated by the formula.

Amendment 39 implemented April 16, 1998:

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.

Amendment 40 implemented January 1, 1996, superseded Amendment 23:

Extended provision of Amendment 23, inshore/offshore allocation.

Amendment 41, implemented January 1, 1999, except for some parts on January 1, 2000, replaces Amendment 28:

Created a license program for vessels targeting groundfish in the GOA, other than fixed gear sablefish that is pending regulatory implementation. The license program replaces the vessel moratorium and will last until the Council replaces or rescinds the action.

Amendment 42 implemented August 16, 1996, revised Amendment 20:

Increased sweep-up levels for small quota share blocks for sablefish managed under the sablefish and halibut IFQ program.

Amendment 43 implemented December 20, 1996, revised Amendment 20:

Established sweep-up provisions to consolidate very small quota share blocks for halibut and sablefish.

Amendment 44 implemented January 9, 1997, revised Amendment 21:

Established a more conservative definition of overfishing.

Amendment 45 implemented May 30, 1996:

Authorized the combining of the third and fourth quarter seasonal allowances of pollock TAC for the combined Western/Central regulatory areas.

Amendment 46 implemented April 6, 1998:

Removed black and blue rockfishes from the FMP.

Amendment 47 was not submitted.

Amendment 48 was implemented December 8, 2004:

1. Revised the harvest specifications process.
2. Updated the FMP to reflect the current groundfish fisheries.

Amendment 49 implemented January 3, 1998:

Implemented an Increased Retention/Increased Utilization program for pollock and Pacific cod beginning January 1, 1998 and shallow water flatfish beginning January 1, 2003.

Amendment 50 implemented July 13, 1998, revised Amendment 29:

Established a Prohibited Species Donation Program that expands the Salmon Donation Program to include halibut taken as bycatch in the groundfish trawl fisheries off Alaska to economically disadvantaged individuals.

Amendment 51 was partially implemented on January 20, 1999, superseded Amendment 40:

Extended the inshore/offshore allocation established with Amendment 23.

Amendment 52 was not submitted.

Amendment 53 was not submitted.

Amendment 54 implemented April 29, 2002, revised Amendment 20:

Revised use and ownership provisions of the sablefish IFQ program.

Amendment 55 implemented April 26, 1999:

Implemented the Essential Fish Habitat (EFH) provisions contained in the Magnuson-Stevens Fishery Conservation and Management Act and 50 CFR 600.815. Amendment 55 describes and identifies EFH fish habitat for GOA groundfish and describes and identifies fishing and non-fishing threats to GOA groundfish EFH, research needs, habitat areas of particular concern, and EFH conservation and enhancement recommendations.

Amendment 56 implemented March 8, 1999, revised Amendment 44:

Revised the overfishing definition.

Amendment 57 implemented January 19, 1999, superseded Amendment 28:

Extended the vessel moratorium through December 31, 1999.

Amendment 58 implemented October 24, 2001 and January 1, 2002; superseded Amendment 57:

1. Required that the vessel would be a specific characteristic of the license and could not be severed from it.
2. Authorized license designations for the type of gear to harvest license limitation program (LLP) groundfish as either "trawl" or "non-trawl" gear (or both).
3. Rescinded the requirement that CDQ vessels hold a crab or groundfish license.
4. Added a crab recency requirement that requires one landing during 1/1/96-2/7/98 in addition to the general license and area endorsement qualifications.
5. Allowed limited processing (1 mt) for vessels less than 60 ft LOA with catcher vessel designations.

Amendment 60 implemented December 27, 2002.

Prohibited bottom trawling in Cook Inlet.

Amendment 61 implemented January 21, 2000:

1. Conformed the FMP with the American Fisheries Act (AFA) of 1998 that established sideboard measures to protect non-AFA (non-pollock) fisheries from adverse impacts resulting from AFA.
2. Extended the inshore/offshore allocations for the GOA.

Amendment 62 was approved by the Council in October 2002, revised Amendment 61:

1. Changed single geographic location regulations for AFA stationary floating processors operating in the GOA.
2. Revised inshore/offshore language in light of the American Fisheries Act.
3. Removed the sunset date for inshore/offshore allocations for the GOA.

Amendment 63 implemented May 12, 2004:

Moved skates from the 'other species' category to the 'target species' category.

Amendment 64 implemented in August 28, 2003:

Changed recordkeeping and reporting requirements for the IFQ program.

Amendment 65 was not submitted.

Amendment 66 implemented April 20, 2004:

> Established a community quota share purchase program for the IFQ sablefish fishery.

Amendments 67-68 are not assigned.

Amendment 69 implemented February 13, 2006:

Revised the annual TAC for the "other species" complex to be less than or equal to 5 % of the combined TACs for the GOA.

Amendment 70 was not submitted.

Amendment 71 is unassigned.

Amendment 72 was approved by the Council in April 2003, revised Amendment 49:

1. Removed shallow water flatfish from the improved retention/improved utilization program.
2. Created an annual review for fisheries that exceed a discard rate of 5 percent of shallow water flatfish.

Amendment 73 is pending.

> EFH and HAPC provisions

Amendment 74 implemented August 27, 2004, revised Amendment 15:

> Revised the management policy and objectives.

Amendment 75 implemented June 13, 2005, revised Amendment 16:

1. Updated the FMP's descriptive sections, technically edited the language, and reorganized the content of the FMP.
2. Required the TAC for a species or species complex to be equal or less than ABC.

2.16 Pending Council Actions

Salmon Bycatch Reduction, Amendment 84a and 84b

The analysis for Amendment 84a is available from the Council's website at http://www.fakr.noaa.gov/npfmc/analyses/SalmonBycatch905.pdf. This amendment is in the process of Regional review based on the Council's recommendation in October 2005. In the mid-1990s, the Council and NMFS implemented regulations to control the bycatch of chum salmon and Chinook salmon taken in the BSAI trawl fisheries. These regulations established closure areas in areas and at times when salmon bycatch had been highest based on historical observer data. Information from the fishing fleet indicates that bycatch may have been exacerbated by the current regulatory closure regulations, as much higher salmon bycatch rates were reportedly encountered outside of the closure areas. Some of these bycaught salmon include Chinook and chum stocks of concern in western Alaska. Further, the closure areas impose increased costs on the pollock fleet and processors. To address this immediate problem, the Council will examine and consider other means to control salmon bycatch that have the potential to be more flexible and adaptive, but still meet Council intent to minimize impacts to the salmon in the eastern Bering Sea.

Under the preferred alternative, the catch limits for the Bering Sea subarea trawl Chinook and BSAI trawl chum salmon would be suspended, and would no longer trigger savings area closures. The annual closure of the Chum Salmon Savings Area would also be suspended. The suspension will be in effect so long as the pollock cooperatives and CDQ groups have in place an effective salmon bycatch voluntary rolling "hot spot" (VRHS) closure system to avoid salmon bycatch. Although fishing patterns may change under the alternative, as the pollock fishery is no longer mandatorily forbidden to fish in the established savings areas, the changes due to the alternative are unlikely to result in a significant change in the interaction between the fisheries and threatened or endangered species. To the extent that CPUE for pollock can be diminished under this alternative, by increasing the flexibility of the cooperatives to avoid salmon bycatch, interactions with seabirds and marine mammals should also decrease as vessels spend less time catching their allocations. This action will be part of the action included in the salmon consultation with NMFS NW Region.

Amendment 84b is being developed. This amendment would establish exempt AFA qualified and CDQ vessels participating in the intercooperative VRHS from regulatory Bering Sea salmon bycatch savings areas. Analysis and refinement of the current salmon savings areas may be necessary in the event pollock vessels either surrender or lose their exemption and return to fishing under the regulatory salmon bycatch program. Further, alternatives to the VRHS system and/or the regulatory salmon bycatch program should be developed to assess whether they would be more effective in reducing salmon bycatch.

BSAI Pacific Cod Allocations, Amendment 85

The Council is scheduled to take final action on an amendment to the BSAI FMP that would change how P. cod TAC is allocated to various sectors. It is the Council's general intent to select their preferred alternative based on historic catches by each fishing sector yet remain within the overall intent of SSL protection measures as they pertain to seasonal and sector allocation requirements. A discussion paper for this amendment is available from the Council's website at http://www.fakr.noaa.gov/npfmc/analyses/BSAI_AM85.pdf. It is not possible to determine the potential affect of the action on ESA-listed species and in particular Steller sea lions until the preferred alternatives are chosen. There may be some effects on seasonal harvest and on the allocation of harvest to gear types. The following are the alternatives the Council will evaluate and from which the Council will select its preferred alternative.

The Council's problem statement outlines the necessity for the proposed Amendment 85 to the BSAI FMP:

The BSAI Pacific cod fishery is fully utilized and has been allocated among gear groups and to sectors within gear groups. The current allocations among trawl, jig, and fixed gear were implemented in 1997 (Amendment 46) and the CDQ allocation was implemented in 1998. These allocations are overdue for review. Harvest patterns have varied significantly among the sectors resulting in annual inseason reallocations of TAC. As a result, the current allocations do not correspond with actual dependency and use by sectors.

Participants in the BSAI Pacific cod fishery who have made significant investments and have a long-term dependence on the resource need stability in the allocations to the trawl, jig, fixed gear, and CDQ sectors. To reduce uncertainty and provide stability, allocations should be adjusted to better reflect historic use by sector. The basis for determining sector allocations will be catch history as well as consideration of socio-economic and community factors.

As other fisheries in the BSAI and GOA are incrementally rationalized, historical participants in the BSAI Pacific cod fishery may be put at a disadvantage. Each sector in the BSAI Pacific cod fishery currently has different degrees of license requirements and levels of participation. Allocations to the sector level are a necessary step on the path towards comprehensive rationalization. Prompt action is needed to maintain stability in the BSAI Pacific cod fisheries.

In the event that the BSAI Pacific cod ABC/TAC is apportioned between the BS and the AI management areas, a protocol needs to be established that would continue to maintain the benefits of sector allocations and minimize competition among gear groups; recognize differences in dependence among gear groups and sectors that fish for Pacific cod in the BS and AI; and ensure that the distribution of harvest remains consistent with biomass distribution and associated harvest strategy.

The Council's alternatives are grouped into two parts: sector allocations and area apportionments.

PART I: BSAI PACIFIC COD SECTOR ALLOCATIONS

ALTERNATIVE 1. No Action. BSAI Pacific cod allocations for the jig, trawl, and fixed gear (hook-and-line and pot) sectors would continue as in current regulations.

Allocation of BSAI Pacific Cod to Sectors

Component 1: Sectors for which allocations are established
BSAI Pacific cod allocations will continue to be established in Federal regulations for the following sectors:

- Trawl CPs
- Trawl CVs
- Hook-and-line CPs
- Hook-and-line CVs
- Pot CPs
- Pot CVs
- Hook-and-line and pot CVs <60'
- Jig CVs

Component 2: Sector Allocations
BSAI Pacific cod allocations to the jig, trawl, and fixed gear (hook-and-line and pot) sectors would continue as determined under BSAI Amendments 46 and 77:

- **51% fixed gear**
  (80% hook-and-line catcher processors)
  (0.3% hook-and-line catcher vessels)
  (3.3% pot catcher processors)
  (15.0% pot catcher vessels)
  (1.4% hook-and-line/pot vessels <60' LOA)[1]

- **47% trawl gear**
  (50% trawl catcher vessels)
  (50% trawl catcher processors)

- **2% jig gear**

The BSAI Pacific cod TAC that is allocated to the above sectors is TAC less the CDQ Program reserve. In addition, the annual incidental catch allowance (ICA) for fixed gear is deducted from the aggregate amount of the BSAI Pacific cod TAC allocated to the fixed gear sectors combined. Pacific cod harvested incidentally in the non-Pacific cod directed BSAI fixed gear fisheries is attributed to the ICA. The ICA is determined annually by the NMFS Regional Administrator in the annual specifications process and has typically been 500 mt.

Component 3: Seasonal Apportionments
The seasonal apportionments of each sector's allocation would remain as shown below. Unused seasonal allowances for the trawl, pot, and hook-and-line sectors may be reapportioned to the subsequent seasonal allocation for the respective sectors. Unused

[1]While the <60' fixed gear (hook-and-line and pot) sector receives a separate allocation of BSAI Pacific cod, these vessels fish off the general hook-and-line CV and pot CV allocations, respectively by gear type, when those fisheries are open.

seasonal allowances for the jig sector are considered for reallocation to the <60’ fixed gear CV sector.

Trawl CV:	70%	(Jan. 20 – April 1)
	10%	(April 1 – June 10)
	20%	(June 10 – Nov. 1)
Trawl CP:	50%	(Jan. 20 – April 1)
	30%	(April 1 – June 10)
	20%	(June 10 – Nov. 1)
Hook-and-line	60%	(Jan. 1 – June 10)
gear ≥60’:	40%	(June 10 – Dec. 31)
Pot gear ≥60’:	60%	(Jan. 1 – June 10)
	40%	(Sept. 1 – Dec. 31)
Fixed gear <60’:	No seasonal apportionments	
Jig gear:	40%	(Jan. 1 – April 30)
	20%	(April 30 – Aug. 31)
	40%	(Aug. 31 – Dec. 31)

Component 4: Rollovers between gear sectors

Inseason management would retain flexibility to determine how to reallocate projected unused sector allocations (rollovers), taking into consideration the hierarchy below. NMFS takes into account the intent of the rollover hierarchy and the likelihood of a sector’s capability to harvest reallocated quota.

- Projected unused trawl sector allocations are considered for reallocation to the other trawl sector before being reallocated to the fixed gear sectors.
- Reallocation of TAC from the trawl sectors to fixed gear sectors will be 0.9% to pot CP, 4.1% to pot CV ≥60’, and 95% to hook-and-line CP.
- Projected unused allocation in the jig sector is considered for reallocation to the <60’ fixed gear CV sector on a seasonal basis.
- Projected unused pot sector allocations (CPs and ≥60’ CVs) is considered for reallocation to the other pot sector before being reallocated to the hook-and-line CP sector.
- Projected unused allocation in the <60’ fixed gear CV sector, both pot sectors (CP and ≥60’ CV), and hook-and-line CV ≥60’ is reallocated to the hook-and-line CP sector.

Component 5: CDQ Allocation of BSAI Pacific Cod
The CDQ Program reserve is 7.5% of the BSAI Pacific cod TAC. The reserve is removed from the TAC prior to the allocation to all other sectors.

Apportionment of BSAI PSC to Sectors

Component 6: Apportionment of trawl halibut and crab PSC to the cod fishery group
The total amount of trawl halibut and crab PSC for the non-CDQ fisheries is determined in the annual specifications process and can vary annually. The trawl halibut PSC is typically 3,400 mt, which is apportioned between Pacific cod; yellowfin sole; rocksole/other flatfish/flathead sole; pollock/Atka mackerel/other. Generally, about 1,400 mt is apportioned to the cod trawl fishery group.

The crab PSC for 2005 and 2006 is 182,225 red king crab in Zone 1; 4,494,569 C. opilio in the C. Opilio Bycatch Limitation Zone (COBLZ); and 906,500 C. bairdi in Zone 1 and 2,747,250 C. bairdi in Zone 2. The cod trawl fishery group bycatch allowance (2005–2006) is 26,563 red king crab; 139,331 C. opilio, 183,112 C. bairdi in Zone 1; and 324,176 C. bairdi in Zone 2.

Component 7: Apportionment of the cod trawl fishery group halibut and crab PSC to trawl sectors There is no further apportionment of the cod trawl fishery group halibut and crab PSC to the trawl sectors (trawl CV sector and trawl CP sector).

Component 8: Apportionment of cod non-trawl halibut PSC
The total amount of non-trawl halibut PSC for the non-CDQ fisheries is determined in the annual specifications process and can vary annually. The non-trawl halibut PSC allowance is typically 833 mt, which is apportioned between the Pacific cod and 'other non-trawl' fisheries. Generally, about 775 mt is apportioned to the cod non-trawl fishery group. No further apportionment of the halibut bycatch allowance is made between the hook-and-line CP sector and the hook-and-line CV sector.

ALTERNATIVE 2: Modify the current BSAI Pacific cod allocations among the jig, trawl, and fixed gear (hook-and-line and pot) sectors according to a set of catch history years or other considerations.

Allocation of BSAI Pacific Cod to Sectors

Component 1: Sectors for which allocations will be established
Catch history will be calculated for the following sectors. The Council may choose to establish allocations for combined sectors; however each sector's catch history will be calculated separately.

- AFA Trawl CPs (AFA 20)[2]

[2]Refers to the 20 trawl catcher processors listed in Section 208(e) of the American Fisheries Act (AFA).

Suboption a: Include catch history of the nine trawl CPs whose claims to catch history have been extinguished by Section 209 of the AFA

Suboption b: Exclude catch history of the nine trawl CPs whose claims to catch history have been extinguished by Section 209 of the AFA

- Non-AFA Trawl CPs
- AFA Trawl CVs
- Non-AFA Trawl CVs
- Hook-and-line CPs
- Hook-and-line CVs ≥60’
- Pot CPs
- Pot CVs ≥60’
- Hook-and-line and pot CVs <60’
- Jig CVs

Eligibility criteria for non-AFA trawl catcher vessels to be included in the AFA CV sector for purposes of the Pacific cod allocations:

Option 1.1 The holder of a license that arose from a vessel/history that made a minimum of 100 mt of Pacific cod landings during each of the years 1995–1997.

Component 2: Sector Allocations

For each of the years under consideration, each sector’s annual harvest share will be calculated for that individual year as a percentage of the total retained legal catch by all sectors. For each of the sets of catch history years analyzed, each sector’s harvest percentage will be calculated as the sector’s average of the annual harvest share. For purposes of determining catch history, a sector’s ‘catch’ means all retained legal catch (including rollovers) from both the Federal fishery and parallel fishery in the BSAI (less CDQ). This includes retained legal catch from both LLP and non-LLP vessels.

One set of years will be selected for all sectors. There is a suboption under each set of years to drop one year. Each sector would drop its worst year (smallest annual harvest share percentage for that sector). This results in an aggregate percentage greater than 100% for a set of years for all sectors combined; thus, the result would be scaled back to 100%.

In all options and suboptions, the <60’ fixed gear CV sector will only fish from the direct allocation to that sector.

The BSAI Pacific cod TAC that is allocated to the above sectors is TAC less the CDQ Program reserve. In addition, the annual incidental catch allowance (ICA) for fixed gear is deducted off the top from the aggregate amount of the BSAI Pacific cod TAC allocated to the fixed gear sectors combined. Pacific cod harvested incidentally in the non-Pacific cod directed BSAI fixed gear fisheries is attributed to the ICA. The ICA is determined annually by the NMFS Regional Administrator in the annual specifications process and has typically been 500 mt.

Option 2.1: 1995–2002

Option 2.2: 1997–2000

Option 2.3: 1997–2003

Option 2.4: 1998–2002

Option 2.5: 1999–2003

Option 2.6: 2000–2003

Suboption 1 (applies to Options 2.1–2.6): Drop one year.

Option 2.7: The Council can select percentages for cod allocated to each sector that fall within the range of percentages analyzed.

Option 2.8: Allocations (whether combined or separate) to the <60' fixed gear CV sector and jig sector shall collectively not exceed:

Suboption 1: Actual catch history percentage for jig and <60' fixed gear CVs combined (from the set of years selected for all sectors under Op. 2.1–2.7)

Suboption 2: 2.71% (represents 2% jig allocation plus 0.71% <60' fixed gear CV allocation of non-CDQ BSAI Pacific cod TAC)

Suboption 3: 3% (represents 2% jig allocation plus 1% <60' fixed gear CV allocation of non-CDQ BSAI Pacific cod TAC)

Suboption 4: 4% (represents 2% jig allocation plus 2% <60' fixed gear CV allocation of non-CDQ BSAI Pacific cod TAC)

Component 3: Seasonal Apportionments

Unused seasonal allowances for the trawl, pot, and hook-and-line sectors may be reapportioned to the subsequent seasonal allocation for the respective sectors. Unused seasonal allowances for the jig sector are considered for reallocation to the <60' fixed gear CV sector. Options 3.1, 3.2, and 3.3 are mutually exclusive.

Option 3.1 Status quo. Allocations determined under this amendment would be apportioned seasonally among the gear sectors as in current regulation (see Alternative 1).

Option 3.2 Upon determination of the new overall allocations to the trawl and fixed gear sectors, maintain the current percentage of the ITAC allocated to the A and B seasons for trawl gear and the A season for fixed gear. Provide that any reduction in the overall trawl allocation resulting from the options would be applied only in the C season for trawl gear. Provide that any increase in the overall fixed gear allocation resulting from the options would be applied only in the B season for fixed gear.

Option 3.3 Upon determination of the new overall allocations to the trawl and fixed gear sectors, maintain the current percentage of the ITAC allocated to the A season for trawl gear. Provide that any reduction in the overall trawl allocation resulting from the options would be applied only in the B and C seasons for trawl gear:

Suboption 1: Reduction applied proportionately to B and C seasons

Suboption 2: Reduction applied equally to B and C seasons

Suboption 3: Provide that any reduction in the overall trawl allocation resulting from the options would first be applied in the C season and then in the B season. Any increase in the allocation to fixed gear would be applied in the A season. Any reduction in the trawl allocation in the B or C seasons will be made proportionately between the AFA CP, non-AFA CP, and AFA CV, non-AFA CV sectors based on their new allocation percentages. In the event that this suboption exceeds the 70% - 30% Steller sea lion seasonal apportionment, the hook-and-line CP sector's A season allocation will be adjusted as necessary by shifting A season allocation to the B season.

Option 3.4 Apportion the BSAI Pacific cod jig allocation on a trimester basis as follows:

60% (Jan. 1 – April 30)

20% (April 30 – August 31)

20% (August 31 – December 31)

Component 4: Rollovers between gear sectors

Inseason management would retain flexibility to determine how to reallocate projected unused sector allocations (rollovers), taking into consideration the hierarchy below. NMFS takes into account the intent of the rollover hierarchy and the likelihood of a sector's capability to harvest reallocated quota.

Option 4.1 Modified status quo. The suite of provisions below comprises Option 4.1.

4.1.1 Projected unused trawl sector allocations are considered for reallocation to other trawl sectors (AFA CP; non-AFA CP; AFA CV; non-AFA CV) before being reallocated to the fixed gear sectors (hook-and-line CP; hook-and-line CV ≥60'; pot CP; pot CV ≥60').

4.1.2 Reallocation of TAC from the trawl sectors to fixed gear sectors will be 0.9% to pot CP, 4.1% to pot CV ≥60', and 95% to hook-and-line CP.

Suboption 1: Reallocation of TAC from the trawl sectors to the fixed gear sectors will be proportional to the new fixed gear allocations.

4.1.3 Projected unused allocation in the jig sector is considered for reallocation to the <60’ fixed gear CV sector on a seasonal basis. The third trimester jig rollover should be available to the <60’ fixed gear CV sector on September 1.

4.1.4 Projected unused pot sector allocations (CPs and ≥60’ CVs) are considered for reallocation to the other pot sector before being reallocated to the hook-and-line CP sector.

4.1.5 Projected unused allocations in the <60’ fixed gear CV sector, both pot sectors (CP and ≥60’ CV), and hook-and-line CV ≥60’ are reallocated to the hook-and-line CP sector.

Option 4.2 Projected unused allocations to any sector delivering inshore must be considered for reallocation to other inshore sectors before being considered for reallocation to any offshore sector. The suite of provisions below comprises Option 4.2.

4.2.1 Projected unused allocation in the jig sector is considered for reallocation to the <60’ fixed gear CV sector on a seasonal basis. The third trimester jig rollover should be available to the <60’ fixed gear CV sector on September 1.

4.2.2 Any unused allocation from any inshore sector will first be considered for reallocation to the jig sector and/or <60’ fixed gear CV sector; then to the hook-and-line CV ≥60’ or pot CV ≥60’sector; then to the trawl CV sectors. Any CV allocation that is not likely to be harvested through this hierarchy will be reallocated as per components 4.2.3–4.2.6 below.

4.2.3 Projected unused trawl sector allocations are considered for reallocation to other trawl sectors (AFA CP; non-AFA CP; AFA CV; non-AFA CV) before being reallocated to the fixed gear sectors (hook-and-line CP; hook-and-line CV ≥60’; pot CP; pot CV ≥60’).

4.2.4 Reallocation of TAC from the trawl sectors to fixed gear sectors will be 0.9% to pot CP, 4.1% to pot CV ≥60’, and 95% to hook-and-line CP.

Suboption 1: Reallocation of TAC from the trawl sectors to the fixed gear sectors will be proportional to the new fixed gear allocations.

4.2.5 Projected unused pot sector allocations (CPs and ≥60’ CVs) are considered for reallocation to the other pot sector before being reallocated to the hook-and-line CP sector.

4.2.6 Projected unused allocations in the <60’ fixed gear CV sector, both pot sectors (CP and ≥60’ CV), and hook-and-line CV ≥60’ are reallocated to the hook-and-line CP sector.

Component 5: CDQ Allocation of BSAI Pacific Cod
The CDQ Program reserve for BSAI Pacific cod shall be removed from the TAC prior to the allocation to all other sectors at percentage amounts equal to one of the following options:

Option 5.1 7.5% (status quo)
Option 5.2 10%
Option 5.3 15%

Apportionment of BSAI PSC to Sectors

Component 6: Apportionment of trawl halibut and crab PSC to the cod fishery group
The total amount of trawl halibut PSC for the non-CDQ fisheries is 3,400 mt, which is apportioned between Pacific cod, yellowfin sole, rocksole/other flatfish/flathead sole, pollock/Atka mackerel/other. Generally, 1,400 mt is apportioned to the cod trawl fishery group, but this amount and actual use can vary annually. A significant amount of Pacific cod is taken incidentally in other trawl fisheries so the PSC use associated with that Pacific cod harvest would be attributed to a fishery group other than cod trawl. Amendment 80 will also allocate halibut PSC to the H&G trawl sector so that the amount of halibut PSC available to the remaining trawl sectors will be reduced.

Component 7: Apportionment of the cod trawl fishery group halibut and crab PSC to trawl sectors

Option 7.1: The annual PSC allocation to the trawl Pacific cod fishery will be apportioned to the cod trawl sectors based on the cod allocation percentages determined for each sector under Component 2.

Option 7.2: The annual PSC allocation to the trawl Pacific cod fishery will be apportioned to the cod trawl sectors based on the sector's directed cod fishery harvests during the qualifying period under Component 2.

Component 8: Apportionment of cod non-trawl halibut PSC
The total amount of non-trawl halibut PSC for the non-CDQ fisheries is 833 mt. The 833 mt is normally apportioned between cod hook-and-line sectors and other non-trawl fisheries during the annual specifications process. Generally, 775 mt is apportioned to hook-and-line cod fisheries and 58 mt to other non-trawl. This component would divide the halibut PSC amount apportioned to non-trawl cod between the hook-and-line CP sector and hook-and-line CV sector (for CVs ≥60' and CVs <60' combined).

Option 8.1 In proportion to the BSAI Pacific cod TAC allocated to the sectors
Option 8.2 10 mt for CVs, remainder for CPs

Part II: APPORTIONMENT OF BSAI PACIFIC COD SECTOR ALLOCATIONS TO BS AND AI SUBAREAS

Any of Alternatives 3–6 can be selected in conjunction with Alternatives 1 or 2 from Part I. Alternatives 3–6 are mutually exclusive.

ALTERNATIVE 3: No action. A methodology to apportion the BSAI Pacific cod allocations to the jig, trawl, and fixed gear sectors between the BS and AI subareas would not be selected. (If this alternative was selected, only the approach described under Alternative 5 could be implemented by NMFS without a new regulatory or plan amendment.)

ALTERNATIVE 4: Sector allocations remain as BSAI (with BS and AI TACs)

No allocation to a sector of a specific percentage of a sub-area. Sectors would have a BSAI allocation (in Part I) to fish in either sub-area (BS and AI) if the sub-area is open for directed fishing and TAC is available.

ALTERNATIVE 5: BS and AI sector allocations based on equal percentage from BSAI sector allocations

Allocation to a sector of an equal percentage in both sub-areas. The allocation percentage of BSAI TAC a sector receives in Part I would result in that same percentage being applied to both the BS and AI sub-areas so that a sector would have the same percentage in both sub-areas.

ALTERNATIVE 6: **(Preliminary preferred alternative).** BS and AI sector allocations based on a sector's historic harvest in the AI with remainder of sector's overall BSAI allocation to be caught in the BS. Sector's BSAI allocation is maintained and used in annual calculation.

Option 6.1	1995 – 2002
Option 6.2	1997 – 2003
Option 6.3	2000 – 2003
Option 6.4	2002 – 2003

2.17 Exempted Fishing Permits

Aleutian Islands Pollock EFP

NMFS recently issued an exempted fishing permit (EFP) to allow for feasibility testing of using commercial pollock vessels for acoustic survey of pollock in the Aleutian Islands. Because the activities. The acoustic surveys would be used to determine pollock biomass and distribution in Steller sea lion critical habitat. Exemption from certain pollock fishing closure areas within Steller sea lion critical habitat in the Aleutian Islands subarea is necessary to ensure sufficient quantities of pollock are encountered to conduct the test. The project is intended to improve the Aleutian Islands pollock stock assessment, conservation, and management. A biological opinion on this action was completed (NMFS 2006c) which found that the action was not likely to cause jeopardy or adverse modification or destruction of critical habitat for Steller sea lions. The experiment is currently being conducted and may be conducted for an additional year depending on 2006 results.

Salmon Excluder Device EFP

The United Catcher Boat Association is also conducting an experiment under an EFP issued by NMFS. The project is the testing of a salmon excluder device for pollock trawl and is conducted in the Bering Sea. The EFP included an exemption from the sector closures of the SCA. This was not expected to have an impact on Steller sea lions. The goal of the Steller sea lion protection measures for harvest in the SCA is to prevent the temporal concentration of harvest before April 1. This is accomplished by limiting harvest to 28% of the annual TAC. The SCA has not been closed since 1999 since the AFA allowed for the establishment of pollock cooperatives that monitor their own fishing, generally leaving the SCA before quotas are exceeded. The SCA quota is divided between sectors for catcher vessels equal to and less than 99 ft length overall (LOA) and catcher vessels greater than 99 ft LOA.

In 2004, 15,564 mt of pollock SCA quota was not harvested. The experiment will harvest approximately 1,000 mt of groundfish (mostly pollock) in the SCA during the spring. Catcher vessels over 99 ft (30.2 m) LOA harvested all of the 2003 quota available to its sector. The vessel used for the research may be a catcher vessel greater than 99 ft (30.2 m) LOA, the sector that is likely to be closed out of the SCA based on reaching its quota. Because this sector is likely to take all of their quota and could potentially be restricted from fishing in the SCA, an exemption from the sector specific quota (the research vessel may be a greater than 99 ft LOA catcher vessel) is necessary to ensure sufficient amounts of salmon can be encountered during the experiment. (Large portions of the salmon savings areas overlap with the SCA.) This exemption will only apply as long as the combined amount of pollock taken from the SCA does not exceed the 28 percent annual TAC before April 1, as specified in the Steller sea lion protection measures (§ 679.20(a)(5)(i)(B)). Because this exemption ensures that the temporal harvest of pollock remains dispersed as specified in the Steller sea lion protection measures, this exemption is not expected to have any adverse impacts.

The current permit expires March 31, 2006. The applicant has requested a modification of the permit to allow for an additional year of testing. Effects on ESA-listed species are expected to be the same as those identified in the EA for this action, which anticipated a one year extension on the permit (NMFS 2005c).

Chapter 3 Description of Species and Critical Habitat Likely to be Impacted by the Action, Impact Analysis, and Cumulative Effects

3.1 ESA-listed Species Occurring in Alaska Waters Under NMFS Jurisdiction.

The prosecution of the groundfish fisheries in the GOA and BSAI could affect certain ESA-listed species under management responsibility of the NMFS. Species that are under NMFS jurisdiction and know to occur in Alaskan waters are listed in Table 3.1. These species include seven species of whales, two stocks or distinct population segments (DPS) of Steller sea lion, and four turtle species. The U.S. Fish & Wildlife Service is responsible for management of additional ESA-listed species (five seabirds and the southwest Alaska DPS of northern sea otters) that could be affected by prosecution of the GOA and BSAI groundfish fisheries. ESA-listed seabirds have been subject to formal consultations on the effects of the groundfish FMPs and of the harvest specifications (USFWS 2003a and 2003b). Consultation for ESA-listed sea otters was initiated February 23, 2006 (NMFS 2006a). ESA-listed salmon and steelhead are not part of this consultation but are currently part of a separate consultation with NMFS Northwest Region (NMFS 2005a).

Table 3.1 Species listed under the Endangered Species Act that occur in Alaskan waters that may be affected by prosecution of GOA or BSAI groundfish fisheries and included in this consultation.

Listed Species	Population or DPS	Scientific Name	Status
Blue whale	North Pacific	*Balaenoptera musculus*	Endangered
Bowhead whale	Western Arctic	*Balaena mysticetus*	Endangered
Fin whale	Northeast Pacific	*Balaenoptera physalus*	Endangered
Humpback whale	Western and Central North Pacific	*Megaptera novaeangilae*	Endangered
Right whale	North Pacific	*Eubalaena japonica*	Endangered
Sei whale	North Pacific	*Balaenoptera borealis*	Endangered
Sperm whale	North Pacific	*Physeter macrocephalus*	Endangered
Steller sea lion	Western Alaska DPS	*Eumetopias jubatus*	Endangered
Steller sea lion	Eastern Alaska DPS	*Eumetopias jubatus*	Threatened
Olive Ridley turtle	Pacific	*Lepidochelys olivacea*	Threatened/Endangered

Listed Species	Population or DPS	Scientific Name	Status
Loggerhead turtle	Pacific	*Caretta caretta*	Threatened
Green turtle	Pacific	*Chelonia mydas*	Threatened/Endangered
Leatherback sea turtle	Pacific	*Dermochelys coriacea*	Endangered

3.2 Critical Habitat Occurring in Alaskan Waters

Critical habitat in Alaskan waters has been designated for the western and eastern DPS of Steller sea lions (50 CFR 226.202) and proposed for northern right whales (70 FR 66332, November 2, 2005). Designated critical habitat for northern right whale is expected to be finalized by June 2006.

3.2.1 Steller sea lion

Critical habitat areas, designated by the National Marine Fisheries Service on August 27, 1993, respond to requirements of the Endangered Species Act (50 CFR 226.202). Critical habitat for the western and eastern DPS of Steller sea lion is illustrated in Figures 3.2.1 and 3.2.2. Steller sea lion critical habitat includes a 20 nautical mile buffer around all major haulouts and rookeries, as well as associated terrestrial, air, and aquatic zones, and three large offshore foraging areas.

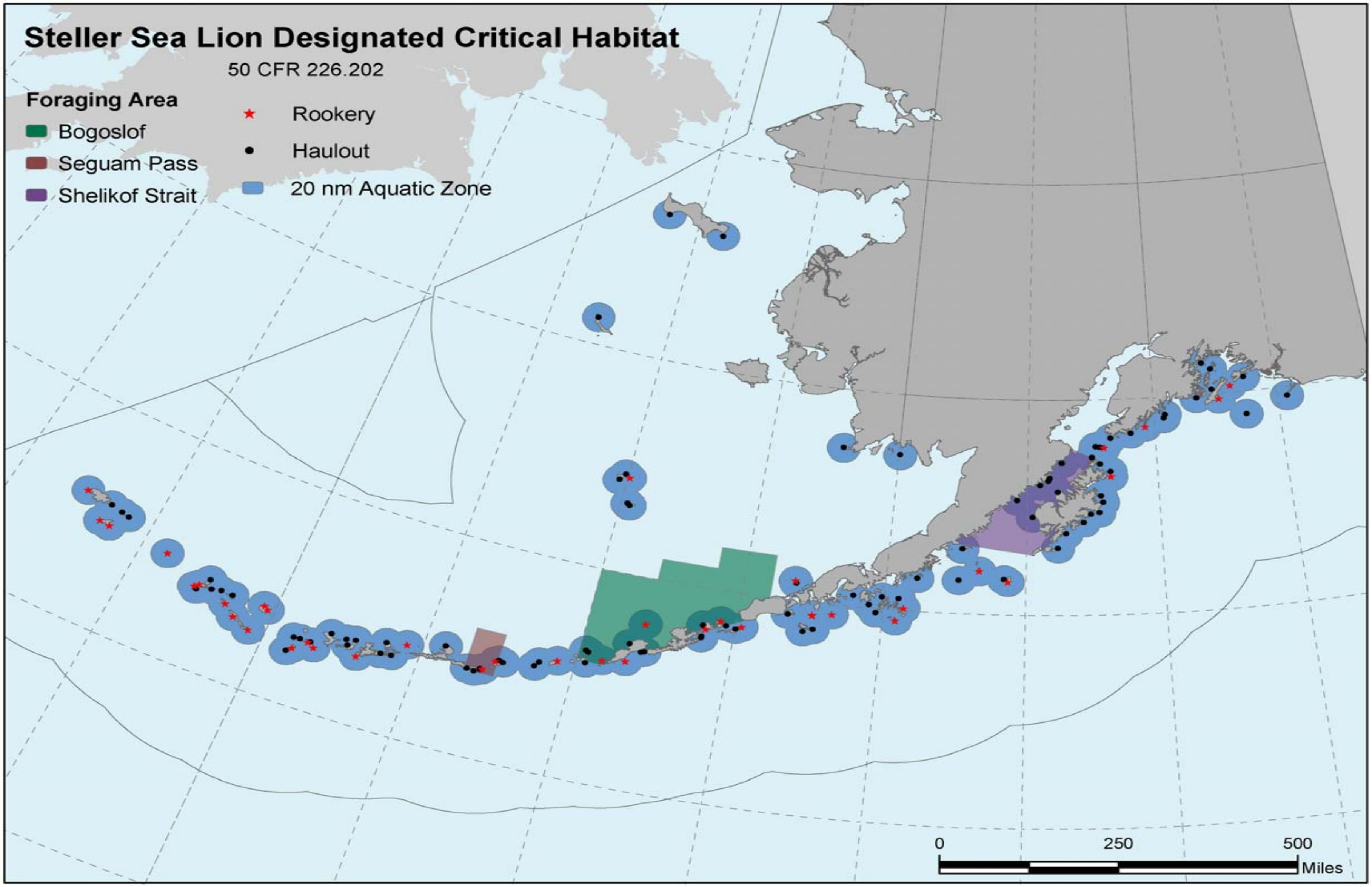


Figure 3.2.1 Steller Sea Lion Designated Critical Habitat

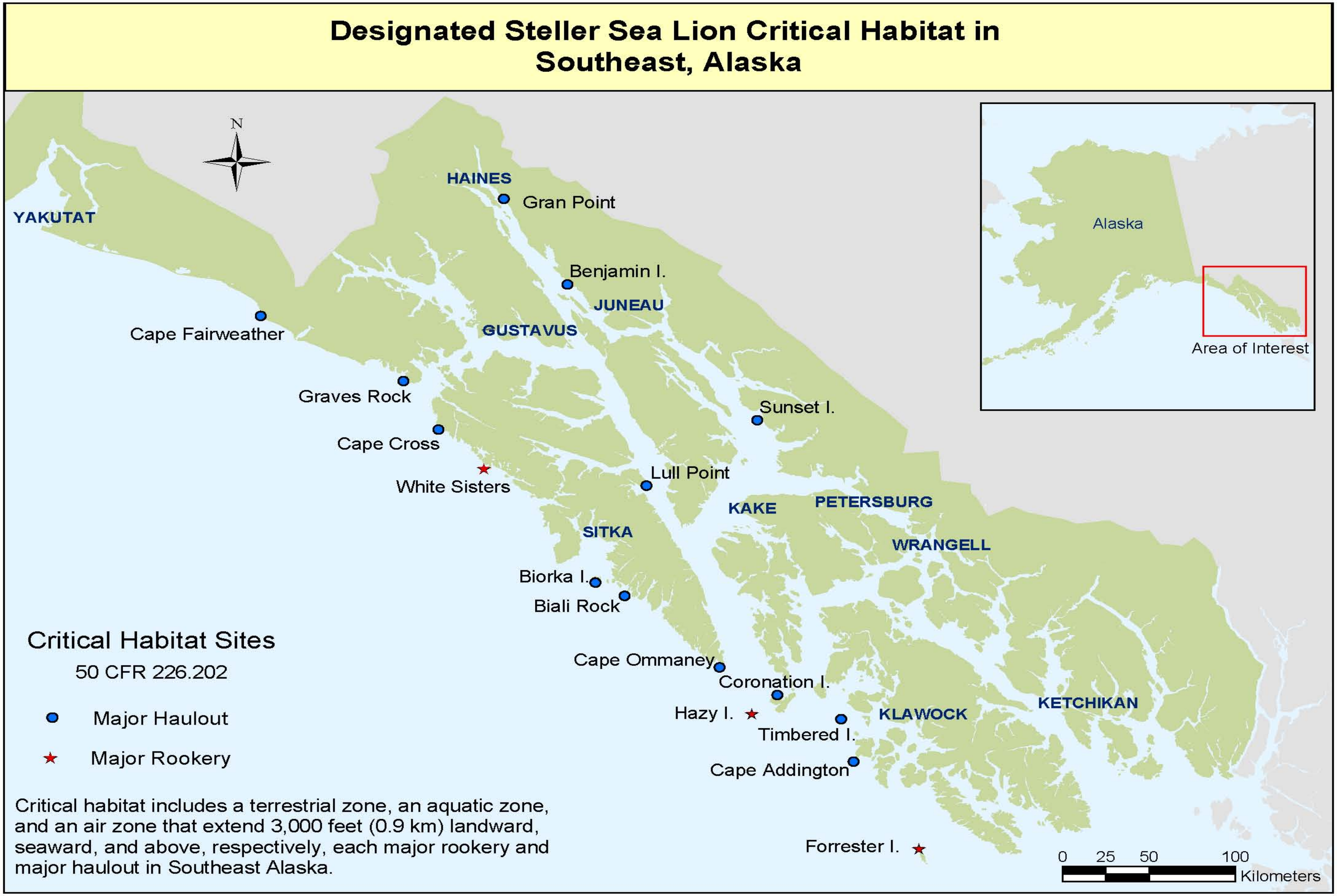


Figure 3.2.2 Designated Steller Sea Lion Critical Habitat in Southeast, Alaska

NMFS has implemented a complex suite of fishery management measures designed to minimize competition between fishing and the endangered population of Steller sea lions in critical habitat areas and other areas recognized as important to Steller sea lions. Those management measures are the Steller sea lion protection measures which are described in detail in Appendix B and are represented in maps in Appendix A.

(a) Alaska rookeries, haulouts, and associated areas.

In Alaska, all major Steller sea lion rookeries identified in Table 1 to 50 CFR part 226 (Table 3.2) and major haulouts identified in Table 2 to 50 CFR part 226 (Table 3.3) and associated terrestrial, aid, and aquatic zones. Critical habitat includes a terrestrial zone that extends 3,000 ft landward from the baseline or base point of each major rookery and major haulout in Alaska, measured vertically from sea level. Critical habitat includes an aquatic zone that extends 3,000 feet (0.9 km) seaward in State and Federally managed waters from the baseline or basepoint of each major rookery and major haulout in Alaska that is east of 144 deg. W. longitude. Critical habitat includes an aquatic zone that extends 20 nm (37 km) seaward in State and Federally managed waters from the baseline or basepoint of each major rookery and major haulout in Alaska that is west of 144 deg. W. longitude.

Table 3. 2 Major Alaska Steller Sea Lion Rookery Sites in Table 1 to Part 226.

Where two sets of coordinates are given, the baseline extends in a clockwise 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.

Region/site	Boundaries to–			
	Latitude	Longitude	Latitude	Longitude
Western Aleutians:				
Agattu I.				
Cape Sabak \1\	52 23.5N	173 43.5E	52 22.0N	173 41.0E
Gillon Point \1\.	52 24.0N	173 21.5E		
Attu I.\1\.	52 54.5N	172 28.5E	52 57.5N	172 31.5E
Buldir I.\1\.	52 20.5N	175 57.0E	52 23.5N.	172 51.0E
Central Aleutians:				
Adak I.\1\.	51 36.5N	176 59.0W	51 38.0N	176.59.5W
Agligadak I.\1\.	52 06.5N	172 54.0W		
Amchitka I.:\1\				
Column Rock \1\	51 32.5N	178 49.5E		
East Cape \1\.	51 22.5N	179 28.0E	51 21.5N	179 25.0E
Ayugadak I.\1\.	51 45.5N	178 24.5E		
Gramp Rock \1\.	51 29.0N	178 20.5W		
Kasatochi I.\1\.	52 10.0N	175 31.5W	52 10.5N	175 29.0W
Kiska I.:				
Lief Cove \1\.	51 57.5N	177 21.0E	51 56.5N	177 20.0E
Cape St. Stephen \1\	51 52.5N	177 13.0E	51 53.5N	177 12.0E
Seguam I./Saddleridge \1\.	52 21.0N	172 35.0W	52 21.0N	172 33.0W
Semisopochnoi I.:				
Pochnoi Pt \1\..	51 58.5N	179 45.5E	51 57.0N	179 46.0E
Petrel Pt \1\	52 01.5N	179 37.5E	52 01.5E	179 39.0E

Region/site	Boundaries to–			
	Latitude	Longitude	Latitude	Longitude
Tag I.\1\.	51 33.5N	178 34.5W		
Ulak I.\1\..	51 20.0N	178 57.0W	51 18.5N	178 59.5W
Yunaska I.\1\	52 42.0N	170 38.5W	52 41.0N	170 34.5W
Eastern Aleutian:				
Adugak I.\1\	52 55.0N	169 10.5W		
Akun I./Billings Head \1\.	54 18.0N	165 32.5W	54 18.0N	165 31.5W
Akutan I./Cape Morgan \1\.	54 03.5N	166 00.0W	54 05.5N	166 05.0W
Bogoslof I.\1\ \2\	53 56.0N	168 02.0W		
Ogchul I.\1\..	53 00.0N	168 24.0W		
Sea Lion Rocks. (Amak) \1\.	55 28.0N	163 12.0W		
Ugamak I.\1\..	54 14.0N	164 48.0W	54 13.0N	164 48.0W
Bering Sea:				
Walrus I.\1\.	57 11.0N	169 56.0W		
Western Gulf of Alaska:				
Atkins I.\1\..	55 03.5N	159 18.5W		
Chernabura I.\1\.	54 47.5N	159 31.0W	54 45.5N	159 33.5W
Clubbing Rocks (N) \1\.	54 43.0N	162 26.5W		
Clubbing Rocks (S) \1\.	54 42.0N	162 26.5W		
Pinnacle Rock \1\	54 46.0N	161 46.0W		
Central Gulf of Alaska:				
Chirikof I.\1\..	55 46.5N	155 39.5W	55 46.5N	155 43.0W
Chowiet I.\1\.	56 00.5N	156 41.5W	56 00.5N	156 42.0W
Marmot I.\1\	58 14.5N	151 47.5W	58 10.0N	151 51.0W
Outer I.\1\.	59 20.5N	150 23.0W	59 21.0N	150 24.5W
Sugarloaf I.\1\...	58 53.0N	152 02.0W		
Eastern Gulf of Alaska:				
Seal Rocks \1\..	60 10.0N	146 50.0W		
Fish I.\1\	59 53.0N	147 20.5W		
Southeast Alaska:				
Forrester I.	54 51.0N	133 32.0W	54 52.5N	133 35.5W
Hazy I.	55 52.0N	134 34.0W	55 51.5N	134 35.0W
White Sisters	57 38.0N	136 15.5W		

\1\ Includes an associated 20 NM aquatic zone.
\2\ Associated 20 NM aquatic zone lies entirely within one of the three special foraging areas.

Table 3.3 Alaska Major Steller Sea Lion Haulout Sites from Table 2 to Part 226

Where two sets of coordinates are given, the baseline extends in a clockwise 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 basepoint.

Region/site	Boundaries to–			
	Latitude	Longitude	Latitude	Longitude
Western Aleutians:				
Alaid I.\1\.	52 45.0N	173 56.5E	52 46.5N	173 51.5E
Attu/Chirikof Pt.\1\	52 30.0N	173 26.7E		
Shemya I.\1\..	52 44.0N	174 09.0E		
Central Aleutians:				
Amatignak I.\1\	51 13.0N	179 08.0E		
Amlia I:				
East \1\	52 05.0N	172 58.5W	52 06.0N	172 57.0W
Sviech. Harbor \1\.	52 02.0N	173 23.0W		
Amukta I. & Rocks \1\.	52 31.5N	171 16.5W	52 26.5N	171 16.5W
Anagaksik I.\1\	51 51.0N	175 53.5W		
Atka I.\1\.	52 23.5N	174 17.0W	52 24.5N	174 07.5W
Bobrof I.\1	51 54.0N	177 27.0W		
Chagulak I.\1\.	52 34.0N	171 10.5W		
Chuginadak I.\1\..	52 46.5N	169 44.5W	52 46.5N	169 42.0W
Great Sitkin I.\1\.	52 06.0N	176 10.5W	52 07.0N	176 08.5W
Kagamil I.\1\..	53 02.5N	169 41.0W		
Kanaga I:				
North Cape \1\.	51 56.5N	177 09.0W		
Ship Rock \1\	51 47.0N	177 22.5W		
Kavalga I.\1\.	51 34.5N	178 51.5W	51 34.5N	178 49.5W
Kiska I./Sirius Pt.\1\.	52 08.5N	177 36.5E		
Kiska I./Sobaka & Vega \1\.	51 50.0N	177 20.0E	51 48.5N	177 20.5E
Little Sitkin I.\1\.	51 59.5N	178 30.0E		
Little Tanaga I.\1\.	51 50.5N	176 13.0W	51 49.0N	176 13.0W
Sagigik I.\1\.	52 00.5N	173 08.0W		
Seguam I:				
South \1\...	52 19.5N	172 18.0W	52 15.0N	172 37.0W
Finch Pt.\1\...	52 23.5N	172 25.5W	52 23.5N	172 24.0W
Segula I.\1\...	52 00.0N	178 06.5E	52 03.5N	178 09.0E
Tanaga I.\1\....	51 55.0N	177 58.5W	51 55.0N	177 57.0W
Tanadak I. (Amlia) \1\.	52 04.5N	172 57.0W		
Tanadak I. (Kiska) \1\..	51 57.0N	177 47.0E		
Ugidak I.\1\.	51 35.0N	178 30.5W		
Uliaga I.\1\.	53 04.0N	169 47.0W	53 05.0N	169 46.0W
Unalga & Dinkum Rocks \1\.	51 34.0N	179 04.0W	51 34.5N	179 03.0W

Region/site	Boundaries to–			
	Latitude	Longitude	Latitude	Longitude
Eastern Aleutians:				
Akutan I./Reef-Lava \1\.	54 10.5N	166 04.5W	54 07.5N	166 06.5W
Amak I.\1\.	55 24.0N	163 07.0W	55 26.0N	163 10.0W
Cape Sedanka & Island \1\.	53 50.5N	166 05.0W		
Emerald I.\1\.	53 17.5N	167 51.5W		
Old Man Rocks \1\.	53 52.0N	166 05.0W.		
Polivnoi Rock \1\	53 16.0N	167 58.0W		
Tanginak I.\1\	54 13.0N	165 19.5W		
Tigalda I.\1\..	54 08.5N	164 58.5W		
Umnak I./Cape Aslik \1\.	53 25.0N	168 24.5W		
Bering Sea:				
Cape Newenham \1\.	58 39.0N	162 10.5W		
Hall I.\1\..	60 37.0N	173 00.0W		
Round I.\1\.	58 36.0N	159 58.0W		
St. Paul I:				
Northeast Point \1\.	57 15.0N	170 06.5W		
Sea Lion Rock \1\.	57 06.0N	170 17.5W		
St. George I:				
S Rookery \1\.	56 33.5N	169 40.0W		
Dalnoi Point \1\..	56 36.0N	169 46.0W		
St. Lawrence I:				
S Punuk I.\1\.	64 04.0N	168 51.0W		
SW Cape \1\	63 18.0N.	171 26.0W		
Western Gulf of Alaska:				
Bird I. \1\.	54 40.5N	163 18.0W		
Castle Rock \1\.	55 17.0N	159 30.0W		
Caton I.\1\.	54 23.5N	162 25.5W		
Jude I.\1\.	55 16.0N	161 06.0W		
Lighthouse Rocks \1\.	55 47.5N	157 24.0W		
Nagai I.\1\.	54 52.5N	160 14.0W	54 56.0N	160 15.0W
Nagai Rocks \1\.	55 50.0N	155 46.0W		
Sea Lion Rocks (Unga) \1\.	55 04.5N	160 31.0W		
South Rock \1\	54 18.0N	162 43.5W		
Spitz I.\1\..	55 47.0N	158 54.0W		
The Whaleback \1\.	55 16.5N	160 06.0W		
Central Gulf of Alaska:				
Cape Barnabas \1\.	57 10.0N	152 55.0W	57 07.5N	152 55.0W
Cape Chiniak \1\	57 35.0N	152 09.0W	57 37.5N	152 09.0W
Cape Gull \1\ \2\	58 13.5N	154 09.5W	58 12.5N	154 10.5W
Cape Ikolik \1\ \2\	57 17.0N	154 47.5W		
Cape Kuliak \1\ \2\	58 08.0N	154 12.5W		
Cape Sitkinak \1\.	56 32.0N	153 52.0W		
Cape Ugat \1\ \2\	57 52.0N	153 51.0W		
Gore Point \1\.	59 12.0N	150 58.0W		

Region/site	Boundaries to–			
	Latitude	Longitude	Latitude	Longitude
Gull Point \1\..	57 21.5N	152 36.5W	57 24.5N	152 39.0W
Latax Rocks \1\	58 42.0N	152 28.5W	58 40.5N	152 30.0W
Long I.\1\	57 45.5N	152 16.0W		
Nagahut Rocks \1\	59 06.0N	151 46.0W		
Puale Bay \1\ \2\	57 41.0N	155 23.0W		
Sea Lion Rocks (Marmot) \1\.	58 21.0N	151 48.5W		
Sea Otter I.\1\	58 31.5N	152 13.0W		
Shakun Rock \1\ \2\	58 33.0N	153 41.5W		
Sud I.\1\.	58 54.0N	152 12.5W		
Sutwik I.\1\..	56 32.0N	157 14.0W	56 32.0N	157 20.0W
Takli I. \1\ \2\	58 03.0N	154 27.5W	58 03.0N	154 30.0W
Two-headed I.\1\	56 54.5N	153 33.0W	56 53.5N	153 35.5W
Ugak I.\1\.	57 23.0N	152 15.5W	57 22.0N	152 19.0W
Ushagat I. \1	58 55.0N	152 22.0W		
Eastern Gulf of Alaska:				
Cape Fairweather	58 47.5N	137 56.3W		
Cape St. Elias \1\.	59 48.0N	144 36.0W		
Chiswell Islands \1\.	59 36.0N	149 34.0W		
Graves Rock	58 14.5N	136 45.5W		
Hook Point \1\	60 20.0N	146 15.5W		
Middleton I.\1\	59 26.5N	146 20.0W		
Perry I.\1\.	60 39.5N	147 56.0W		
Point Eleanor \1\	60 35.0N	147 34.0W		
Point Elrington \1\	59 56.0N	148 13.5W		
Seal Rocks \1\	60 10.0N	146 50.0W		
The Needle \1\	60 07.0N	147 37.0W		
Southeast Alaska:				
Benjamin I	58 33.5N	134 54.5W		
Biali Rock	56 43.0N	135 20.5W		
Biorka I	56 50.0N	135 34.0W		
Cape Addington..	55 26.5N	133 49.5W		
Cape Cross	57 55.0N	136 34.0W		
Cape Ommaney	56 10.5N	134 42.5W		
Coronation I.	55 56.0N	134 17.0W		
Gran Point	59 08.0N	135 14.5W		
Lull Point	57 18.5N	134 48.5W		
Sunset I	57 30.5N	133 35.0W		
Timbered I	55 42.0N	133 48.0W		

\1\ Includes an associated 20 NM aquatic zone.
\2\ Associated 20 nm aquatic zone lies entirely within one of the three special foraging areas.

(b) Three special aquatic foraging areas in Alaska.

Three special aquatic foraging areas in Alaska, including the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area.

(1) Critical habitat includes the Shelikof Strait area in the Gulf of Alaska and consists of the area between the Alaska Peninsula and Tugidak, Sitkinak, Aiaktilik, Kodiak, Raspberry, Afognak and Shuyak Islands (connected by the shortest lines); bounded on the west by a line connecting Cape Kumlik (56 deg.38"/157 deg.27'W) and the southwestern tip of Tugidak Island (56 deg.24'N/154 deg.41'W) and bounded in the east by a line connecting Cape Douglas (58 deg.51'N/153 deg.15'W) and the northernmost tip of Shuyak Island (58 deg.37'N/152 deg.22'W).

(2) Critical habitat includes the Bogoslof area in the Bering Sea shelf and consists of the area between 170 deg.00'W and 164 deg. 00'W, south of straight lines connecting
55 deg. 00'N/170 deg.00'W and
55 deg.00'N/168 deg.00'W;
55 deg.30'N/168 deg.00'W and
55 deg.30'N/166 deg.00'W;
56 deg.00'N/166 deg.00'W and
56 deg.00'N/164 deg.00'W and
north of the Aleutian Islands and straight lines between the islands connecting the following coordinates in the order listed:
52 deg.49.2'N/169 deg.40.4'W
52 deg.49.8'N/169 deg.06.3'W
53 deg.23.8'N/167 deg.50.1'W
53 deg.18.7'N/167 deg.51.4'W
53 deg.59.0'N/166 deg.17.2'W
54 deg.02.9'N/166 deg.03.0'W
54 deg.07.7'N/165 deg.40.6'W
54 deg.08.9'N/165 deg.38.8'W
54 deg.11.9'N/165 deg.23.3'W
54 deg.23.9'N/164 deg.44.0'W

(c) Critical habitat includes the Seguam Pass area and consists of the area between 52 deg.00'N and 53 deg.00'N and between 173 deg.30'W and 172 deg.30'W.

3.2.2 Northern Right Whale Proposed Critical Habitat

A description of proposed critical habitat for the northern right whale (*Eubalaena glacialis*) is in a proposed rule available from http://www.fakr.noaa.gov/protectedresources/whales/nright/rule/proposedrule.pdf (70 FR 66332, November 2, 2005). The proposed rule would revise the current critical habitat for the northern right whale (*Eubalaena glacialis*) by designating additional areas within the North Pacific Ocean. Two specific areas proposed for designation, one in the Gulf of Alaska and another in the Bering Sea, comprise approximately 95,200 square kilometers (36,750 square miles) of marine habitat. Critical habitat for the northern right whale is illustrated in Figure 3.2.3.

Critical habitat is designated in the Bering Sea and the Gulf of Alaska for the northern right whale as described below. The textual descriptions of critical habitat are the definitive source for determining the critical habitat boundaries.

North Pacific Ocean—(1) *Primary Constituent Elements.* The primary constituent elements essential for conservation of the northern right whale are the copepods *Calanus marshallae*, *Neocalanus cristatus*, *N. plumchris*, and *Thysanoessa raschii* in areas of the North Pacific Ocean in which northern right whales are known or believed to feed. These area listed below are proposed as critical habitat

Bering Sea. An area described by a series of straight lines connecting the following coordinates in the order listed:
58°00′ N/168°00′ W
58°00′ N/163°00′ W
56°30′ N/161°45′ W
55°00′ N/166°00′ W
56°00′ N/168°00′ W
58°00′ N/168°00′ W.

Gulf of Alaska. An area described by a series of straight lines connecting the following coordinates in the order listed:
57°03′ N/153°00′ W
57°18′ N/151°30′ W
57°00′ N/151°30′ W
56°45′ N/153°00′ W
57°03′ N/153°00′ W.

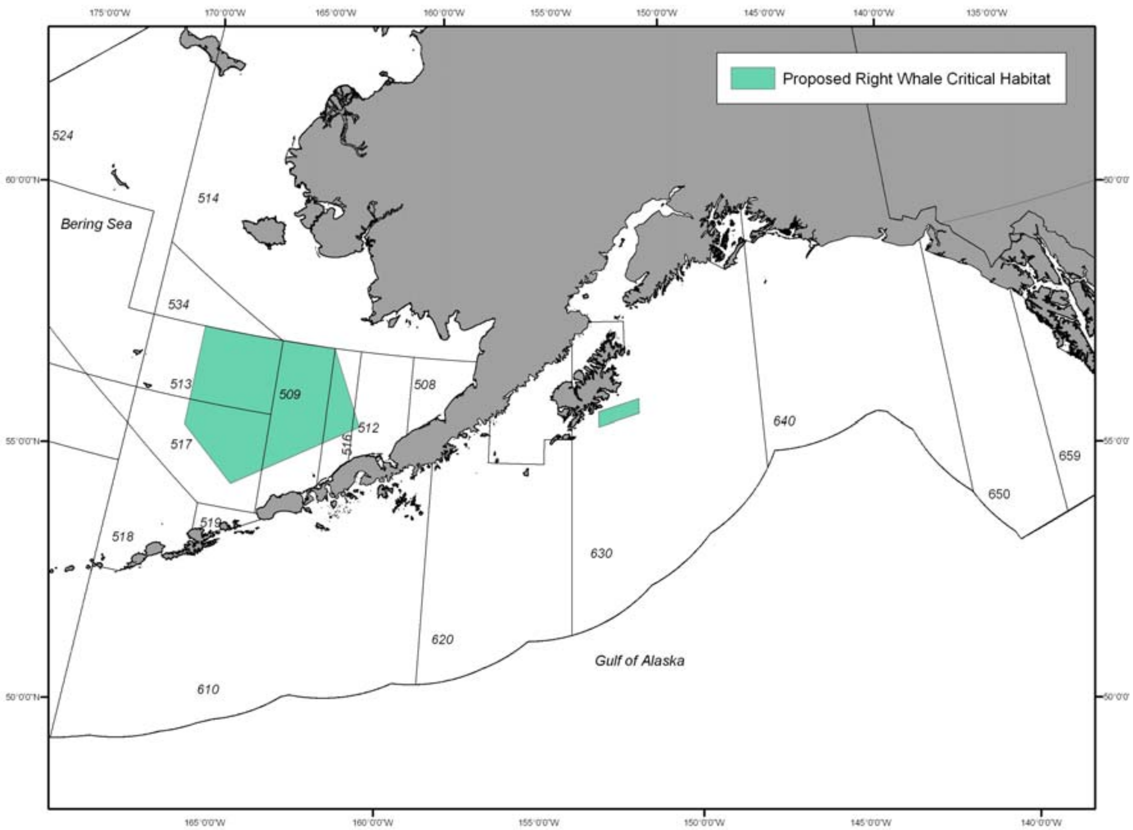


Figure 3.2.3 Proposed Northern Pacific Right Whale Critical Habitat

3.3 Occurrence of ESA-Listed Species in the Action Area and Adverse Affect Determinations.

The March 1998 ESA Section 7 Consultation Handbook provides guidance on determining if an action is not likely to adversely affect (NLAA) an ESA species. If the effect is determined to be discountable, insignificant, or completely beneficial then a NLAA determination is appropriate. Completely beneficial means no adverse effects would occur from the action. A beneficial action that has beneficial and adverse effects is not considered completely beneficial for ESA purposes. Discountable effects are effects that are extremely unlikely to occur. Insignificant effects would not be measurable or detectable and should never result in take. If the action is not completely beneficial, insignificant, or discountable, then a likely to adversely affect determination is required.

The groundfish trawl, longline, pot, and jig fisheries may interact with ESA-listed species through direct take resulting in injury or mortality, or indirectly through removals of important prey items or other disturbances. We have no information that the groundfish fisheries are completely beneficial to any ESA-listed species. Therefore, we need to determine if the effects of the groundfish fisheries on the ESA-listed species are either insignificant or discountable. The following summarizes the best available information on occurrence and potential groundfish fisheries impacts on ESA-listed marine mammals and turtles reviewed in this biological assessment and the determination of whether the action is NLAA.

3.3.1 Marine Mammal Occurrence and Interactions

Information regarding species occurrence and fisheries interactions of ESA listed marine mammals in the action area are in the following sources. Other sources may also be used in this analysis and are indicated in the text below and listed in the references in Chapter 6. Sources listed here are the main sources of information used in the analysis.

- The 2005 Draft Marine Mammal and Stock Assessment Reports developed by the NMFS National Marine Mammal Laboratory (NMML) (Angliss and Outlaw 2006). This document is scheduled for completion in early 2006.
- The List of Fisheries published in the Federal Register on January 4, 2006 (71 FR 247)
- The Compilation of Marine Mammal Take Data from Domestic and Joint Venture Groundfish Fisheries in the U. S. EEZ of the North Pacific, 1989-2001 (Perez 2003)
- The draft Steller sea lion recovery plan. This draft plan was not available at the time of developing this biological assessment. This document should be used during the consultation because is provide the most recent scientific information regarding Steller sea lions and their environment.
- For blue, fin, humpback, sperm, northern right and bowhead whales occurrence data based on acoustic surveys in the western Beaufort Sea, southeast Bering Sea and Gulf of Alaska (Moore et al. 2006)
- Occurrence and potential fisheries interaction data for marine mammals from the NMFS Platform of Opportunity Program.

The quality of information regarding marine mammals needed to be taken into account in the analysis. Several kinds of information are used in this analysis to identify potential locations of occurrence and potential interactions with marine mammal. The NMFS Platform of Opportunity Program (POP) collects information about sightings of whales from vessels. The sightings show where a whale may occur and when. Because it is opportunistic collection of data, the lack of a sighting in a location or at a particular time do not eliminate the possibility that a whale could occur (Sally Mizroch, NMML, personal communication 3/16/06). Appendix A contains maps of ESA-listed whale sightings from the POP in the BSAI and GOA.

The North Pacific Groundfish Observer Program (NPGOP) also provides data on sightings and incidental takes of marine mammals in the groundfish fisheries. Data from the NPGOP are provided by individuals trained in identifying marine mammals and evaluating the condition of the animal if incidentally caught. Location data is based on vessel location information. Because of how this data are collected, the observer data are of high quality.

NMFS strandings data also are opportunistic collections of information from anyone who submits information regarding strandings and entanglements of marine mammals. Some species identification in strandings data may not be confirmed. Fishermen also may self report the take of marine mammals to NMFS during fishing activities. It is likely that self reporting under represents the actual incidental take that is occurring.

For most species, the Marine Mammal stock assessment reports (SARs) produced by the NMML provides the best available scientific information regarding the status of marine mammal stocks and the impacts of commercial fisheries on these stocks. Much of the information below is from the SARs.

3.3.1.1 Bowhead Whale

3.3.1.1.1 Bowhead Whale Stock Structure, Distribution and Abundance

The western Arctic stock of bowhead whales (*Balaena mysticetus*), the only stock found in U.S. waters, is widely distributed in the central and western Bering Sea in winter (November-April) (Angliss and Outlaw 2006). During this season, bowhead whales are generally associated with the marginal ice front and found near the polynyas of Saint Matthew and Saint Lawrence Islands and the Gulf of Anadyr (Moore and Reeves, 1993 and Figure 3.3.1.1.1). From April through June, these whales migrate north and east, following leads in the sea ice in the eastern Chukchi Sea until they pass Point Barrow, where they travel east toward the southeastern Beaufort Sea, where most spend June-September (Shelden and Rugh, 1995). By late October and November they return to the Bering Sea (Kibal'chich et al. 1986; Bessonov et al. 1990), where they remain until the following spring migration. Sightings reported in the POP database (from 1976 to 1995) occurred in March and April in the Bering Sea (Appendix A). In the future, bowhead whales may be limited to waters further north in the winter in the Bering Sea if the ice edge retreats from global warming.

Confirmed Platform of Opportunity Program (POP) sightings of bowhead show bowheads occurring near the Pribilof Islands and as far south as Bristol Bay in the spring (February through May) (Appendix A). Fall and summer sightings have been north of the Bering Sea. No sightings of bowheads in the Bering Sea occurred in the winter.

Although it has been commonly held that these bowheads feed primarily in the Beaufort Sea in summer and only opportunistically while on migration or in the winter (see review in Lowry, 1993), studies of stable isotope ratios in bowhead baleen suggest that the Bering and Chukchi Seas are the preferred feeding habitats (Schell and Saupe, 1993).

Historically, the preponderance of records of harvested whales were from the Bering and Chukchi Seas in summer (Townsend, 1935), possibly of a subpopulation that is now extinct, or nearly so (Bogoslovskaya et al. 1982; Bockstoce, 1986). The western Arctic stock that migrates into the Beaufort Sea increased at a rate of 3.1% from 1978 to 1993 (Raftery et al. 1995), rising from approximately 5,000 to 8,200 animals (IWC, 1997) in that time. That stock has continued to increase to a current estimate of 10,545 whales (Angliss and Outlaw 2006).

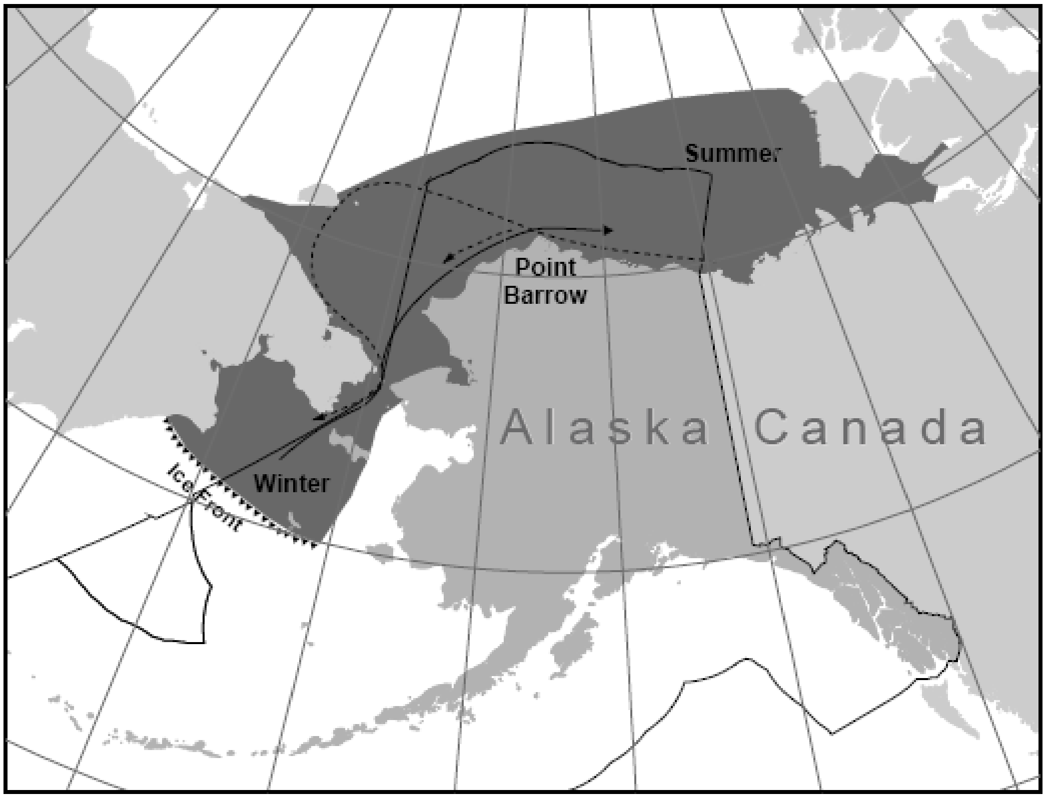


Figure 3.3.1.1.1 Approximate distribution of the Western Arctic stock bowhead whales (shaded area). Winter, summer, and spring/fall distributions are depicted. (Angliss and Outlaw 2006)

3.3.1.1.2 Bowhead Whale Prey Species

Prey species identified from bowhead whale stomach contents have included crustacean zooplankton, particularly euphausiids and copepods, ranging in length from 0.12-1.2 in (3 to 30 mm), and epibenthic organisms, mostly mysids and gammarid amphipods (Angliss and Outlaw 2006). Benthic species were relatively rare in bowhead stomach contents (Lowry, 1993). The total estimated annual food consumption by bowheads in the eastern Bering Sea was calculated to be 20 x 10^3 tons (18.1 x 10^3 mt), which includes a trace amount of fish (Perez, 1990; Perez and McAlister, 1993). However, this assumes that 200 bowheads are present in the eastern Bering Sea from May to October, which is high given the lack of any sightings in this area other than in winter or during the migrations. It is assumed that the entire population (>10,000 whales) enters the Bering Sea each winter.

3.3.1.1.3 Bowhead Whale Human-Caused and Natural Mortality

Few records of bowhead whale injury or mortality incidental to commercial fisheries in Alaska exist (Angliss and Outlaw 2006). There have been several cases of entanglements recorded during the Native subsistence harvest (Philo et al. 1992, 1993). This included three harvested bowheads that had scars attributed to rope entanglements, one bowhead found dead entangled in ropes similar to those used with fishing gear in the Bering Sea, and one bowhead with ropes on it that were attributed to rigging from a commercial offshore fishing pot, most likely a crab pot. Another reported entanglement in pot gear occurred in 1999 (Angliss and Outlaw 2006). There have been reports of bowheads with gear attached or marks that likely were from crab gear[3], and in the 2005 draft bowhead whale stock assessment (http://www.nmfs.noaa.gov/prot_res/readingrm/MMSARS/draft05alaskalargewhales.pdf), a reported reexamination of bowhead harvest records indicates entanglements or scarring attributed to ropes may include over 20 cases between 1978 and 2004 (Craig George personal communication in Angliss and Outlaw 2006). Aerial photographs in some cases have shown ropes trailing from the mouths of bowheads.[4] It is not possible to determine if these rope injuries were from a particular gear type or particular fishery. Entanglement could occur from gear in use or from lost gear.

The POP data show sightings of bowhead whales in areas of substantial pollock and Pacific cod trawling and Pacific cod hook-and-line fishing during February through May (Appendix A). Only five sightings are recorded between 1958 and 1998 west of the Pribilof Islands along the areas 523 and 521 line and in Area 509. Four of the sightings occurred in the 1976 and 1977, all in April and one sighting occurred in March 1995 (Ray Outlaw, NMFS NMML, personal communication, April 2, 2006). Overland and Stabeno (2004) have shown that the ice edge was located further south in the early to mid 1970's compared to the location of the ice edge today. These sightings only confirm that bowheads occurred at these locations during the time period they were observed. The frequency of bowhead occurrence in these areas at this time is unknown. We have no information that indicates that any interaction exists between the pollock or Pacific cod fisheries and bowhead whales at these locations during the spring.

Although incidental take of bowhead whales is apparently rare, there has been one reported entrapment and death of a young bowhead whale in a fishing net in Japan (Nishiwaki and Kasuya, 1970). Between 1976 and 1992, only three ship-strike injuries were documented out of a total of 236 bowhead whales examined from the Alaskan subsistence harvest (George et al. 1994). The locations of the ship strikes are unknown. The estimated bowhead whale annual mortality rate incidental to commercial fisheries is not known to exceed 10 % of the potential biological removal (PBR); and therefore, can be considered insignificant under the Marine Mammal Protection Act (MMPA).

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[3] J.C. George, "Personal Communication," North Slope Borough, P.O. Box 69, Barrow, AK 99723.

[4] D. Rugh, "Personal Communication," National Marine Mammal Laboratory, 7600 Sand Point Way NE, Seattle, WA 98115.

Bowhead whales feed on planktonic organisms and thus their prey would not likely be affected by commercial fishing activities. Some potential exists for disruption of prey by moving fishing vessels through a prey field or causing whale avoidance behavior, but NMFS has no reports of such concerns.

Spills of contaminants from fishing activities are not likely to affect bowhead whales. Fishing related spills are usually in near shore waters in the Aleutian Islands where fishing support activities are likely to occur and not in areas where bowhead whales occur (Whitney 2000).

3.3.1.1.4 Bowhead Whale Status

Since 1931, the bowhead whale has been protected from commercial whaling internationally, first under the League of Nations Convention and since 1949 by the IWC. Eskimos have been taking bowhead whales for at least 2,000 years (Marquette and Bockstoce, 1980; Stoker and Krupnik, 1993). Subsistence takes have been regulated by a quota system under the authority of the IWC since 1977. Alaska Native subsistence hunters take approximately 0.1-0.5% of the population per annum, primarily from nine Alaska communities (Philo et al. 1993). About 1,000 whales have been taken (including struck and lost) between 1973 and 1999 (Rugh et al. in review). Present day subsistence whaling takes place primarily during the spring migration. Canadian Natives are also known to take whales from this stock. Hunters from the western Canadian Arctic community of Aklavik killed one whale in 1991 and one in 1996. The bowhead whale is classified as a strategic stock because it is listed as endangered under the ESA and therefore also is considered depleted under the MMPA. An ESA recovery plan has not been prepared for the species, nor has critical habitat been designated. NMFS intends to develop recovery criteria for large whales in general, including bowheads, to be used in the next 5-year evaluation of stock status (Angliss and Outlaw 2006).

3.3.1.1.5 Bowhead Whale Conclusions

The potential for encountering a bowhead whale is extremely unlikely in the Gulf of Alaska. Bowhead whales occur primarily along the ice edge in the Bering Sea. Bowheads have been rarely observed in the same time and location where Bering Sea groundfish fisheries are conducted. Because there are only 5 recorded sightings of bowhead whales in the southern Bering Sea in 40 years and only one of these occurred in the last 30 years, bowheads in the southern Bering Sea are extremely unlikely to occur. The diet of the bowhead whale does not appear to overlap with the target species of the groundfish fisheries so prey competition is not likely a concern. Even though bowhead whales have been recorded impacted by fishing gear, no direct evidence of groundfish fisheries incidental take or disturbance of bowhead whales exists for Alaska waters.

Because bowhead whales are extremely unlikely to occur in the same locations as groundfish fisheries activities, the potential effects from the groundfish fisheries are discountable. Therefore, the **Alaska groundfish fisheries are not likely to adversely affect bowhead whales.**

3.3.1.2 Blue Whales

3.3.1.2.1 Blue Whales Distribution, Stock Structure and Abundance

In July 2004, NOAA researchers for the first time in 30 years documented the occurrence of blue whales in the Gulf of Alaska (NMFS 2004). Three sightings of blue whale occurred 100 to 150 nautical miles southeast of Prince William Sound from the NOAA research vessel used for the Structure of Populations, Level of Abundance and Status of Humpbacks (SPLASH) research cruises. Because they are so rare, no marine mammal stock assessment is available for blue whales occurring in the Gulf of Alaska.

For purposes of the MMPA, blue whales in the North Pacific have been divided between eastern and western stocks. In studying the eastern north Pacific stock of blue whales off the Washington through California coast, Rice (1992) has concluded that the Gulf of Alaska population is likely a separate population. Whaling catch data indicate that whales feeding along the Aleutian Islands are probably part of a central Pacific stock (Reeves et al. 1998), which may migrate to offshore waters north of Hawaii in winter (Berzin and Rovnin 1966). Blue whales belonging to the western Pacific stock appear to feed in summer southwest of Kamchatka, south of the Aleutians, and in the Gulf of Alaska (Stafford 2003; Watkins et al. 2000), and in winter they migrate to lower latitudes in the western Pacific and less frequently in the central Pacific, including Hawaii (Stafford et al. 2001). The blue whales likely to occur in Alaskan water would be those in the western north Pacific stock

In Appendix A, blue whale sightings in the Gulf of Alaska have been recorded in the Platform of Opportunity program. Six blue whale sightings have occurred, four in area 620 and two in area 630. All sightings were between May and August. Four sightings occurred in the 1960's and 1970s and two sightings were in the 1990's. One blue whale was found floating in the GOA according to the NMFS stranding records, but no additional details are available for this record (Mary Sternfeld, personal communication, March 1, 2006).

Recent acoustic survey work using offshore hydrophones have detected blue whales near the Aleutian Islands leading the authors to believe that the northwest Pacific may provide suitable year round habitat. (Moore et al. 2002b) Whale calls appear to seasonally shift between Kamchatka Peninsula and the seamounts and Aleutian Islands with whale calls more likely near the Aleutian Islands in the summer.

3.3.1.2.2 Blue Whale Prey

Blue whales primarily eat krill in northern feeding areas during the summer months (NMFS 2004). The species *Thysanoëssa inermis*, *Thysanoëssa longipes*, *Thysanoëssa raschii*, and *Nematoscelis megalops* have been listed as prey of blue whales in the North Pacific (Kawamura 1980; Yochem and Leatherwood 1985). Although some stomachs of blue whales have been found to contain a mixture of euphausiids and copepods or amphipods (Nemoto 1957; Nemoto and Kawamura 1977), it is likely that the copepods and amphipods were consumed adventitiously or incidentally. One exception to their near total dependence on euphausiid prey is that blue whales have been observed feeding on pelagic red crabs, *Pleuroncodes planipes*, off Baja California (Rice 1974, 1986a), although these observations have not been confirmed by subsequent observations or other analyses (e.g., fecal analysis). Reports that blue whales feed on small, schooling fish and squid in the western Pacific (Mizue 1951; Sleptsov 1955) have been interpreted as suggesting that the zooplankton blue whales prefer are less available there (Nemoto 1957). Between February and April, blue whales in the Gulf of California, Mexico, have been observed feeding on euphausiid surface swarms (Sears 1990) consisting mainly of *Nyctiphanes simplex* engaged in reproductive activities (Gendron 1990, 1992). Sears (1990) regarded *Nyctiphanes simplex* as the principal prey of blue whales in the region, and results from recent fecal analyses confirmed this assertion (Gendron and Del Angel-Rodriguez 1997). However, this phenomenon appears to be strongly influenced by the occurrence of El Niño Southern Oscillation (ENSO) events (Gendron and Sears 1993).

3.3.1.2.3 Blue Whale Human-Caused and Natural Mortality

The reported take of North Pacific blue whales by commercial whalers totaled 9,500 between 1910 and 1965 (Ohsumi and Wada 1972). Approximately 2,000 were taken off the west coast of North America between 1919 and 1929 (Tonnessen and Johnsen 1982). Partially overlapping with this is Rice's (1992) report of at least 1,378 taken by factory ships off California and Baja California between 1913 and 1937. Between 1947 and 1987, reported takes of blue whales in the North Pacific were approximately 2,400. Shore-based whaling stations in central California took 3 blue whales between 1919 and 1926 (Clapham et al. 1997) and 48 blue whales between 1958 and 1965 (Rice 1974). Blue whales in the North Pacific were given protected status by the IWC in 1966.

There are no records of fisheries interaction with blue whales in Alaska. Ship strikes have been documented for blue whales occurring off California, but no such event has been recorded in Alaskan waters. The increasing levels of anthropogenic noise in the world's oceans have been suggested to be a habitat concern for blue whales (Reeves et al. 1998). No information was found regarding potential noise from fishing activities and the impact it may have on blue whales.

3.3.1.2.4 Blue Whale Status

Previously, blue whales in the entire North Pacific were estimated to be at 33% (1,600 out of 4,900) of historical carrying capacity (Mizroch et al. 1984). The initial abundance has never been estimated separately for the "Alaska" stock, but this stock was almost certainly depleted by whaling. The eastern north Pacific population appears to be growing.

Blue whales are listed as "endangered" under the ESA throughout its range (35 FR 8495, June 2, 1970), and consequently the blue whales occurring in Alaska are likely members of a stock that would be considered as a "depleted" and "strategic" stock under the MMPA. A recovery plan for blue whales was completed in July 1998 (Reeves et al.

1998). This plan describes monitoring and collection of additional information that would allow for a better understanding of stock structure and to minimize potential human impacts.

3.3.1.2.5 Blue Whale Impacts Conclusion

No evidence of fisheries incidental take or disturbance of blue whales exists for Alaska waters. Sightings of blue whales have been confined to the Gulf of Alaska and these sightings are extremely rare. Records of blue whales in the Aleutian Islands area are only based on acoustic data and not sightings. The potential for encountering a blue whale during fishing activities appears to be extremely low. The diet of the blue whale does not appear to overlap with the species harvested in the groundfish fisheries. Based on the rare occurrence of blue whales in Alaska waters, no prey competition and no evidence of potential take or disturbance by Alaska grroundfish fisheries, the potential impacts of the groundfish fisheries on blue whales appear to be extremely unlikely to occur. Because any potential impact of the groundfish fisheries is discountable, t**he Alaska groundfish fisheries are not likely to adversely affect blue whales.**

3.3.1.3 Northern Right Whales

3.3.1.3.1 Northern Right Whales Distribution, Stock Structure and Abundance

Northern right whales occur in the Atlantic and Pacific oceans (70 FR 66223, November 2, 2005). Right whales are generally migratory, with at least a portion of the population moving between summer feeding grounds in temperate or high latitudes and winter calving areas in warmer waters (Kraus et al., 1986; Clapham et al., 2004). In the North Pacific, the feeding range is known to include the Gulf of Alaska, the Aleutian Islands, the Bering Sea and the Sea of Okhotsk. Although a general northward movement is evident in spring and summer, it is unclear whether the entire population undertakes a predictable seasonal migration, and the location of calving grounds remains completely unknown (Scarff, 1986; Scarff, 1991; Brownell et al., 2001; Clapham et al., 2004; Shelden et al., 2005).

NMFS has developed a stock assessment of the eastern North Pacific stock of northern right whales and has identified its distribution, as shown in Figure 3.3.1.3.1 (Angliss and Outlaw 2006). Even though right whales are listed as Northern right whales under the ESA and includes right whales occurring in the Atlantic, this BA focuses on northern right whales that may occur only in the action area, which have been identified as members of the eastern North Pacific stock.

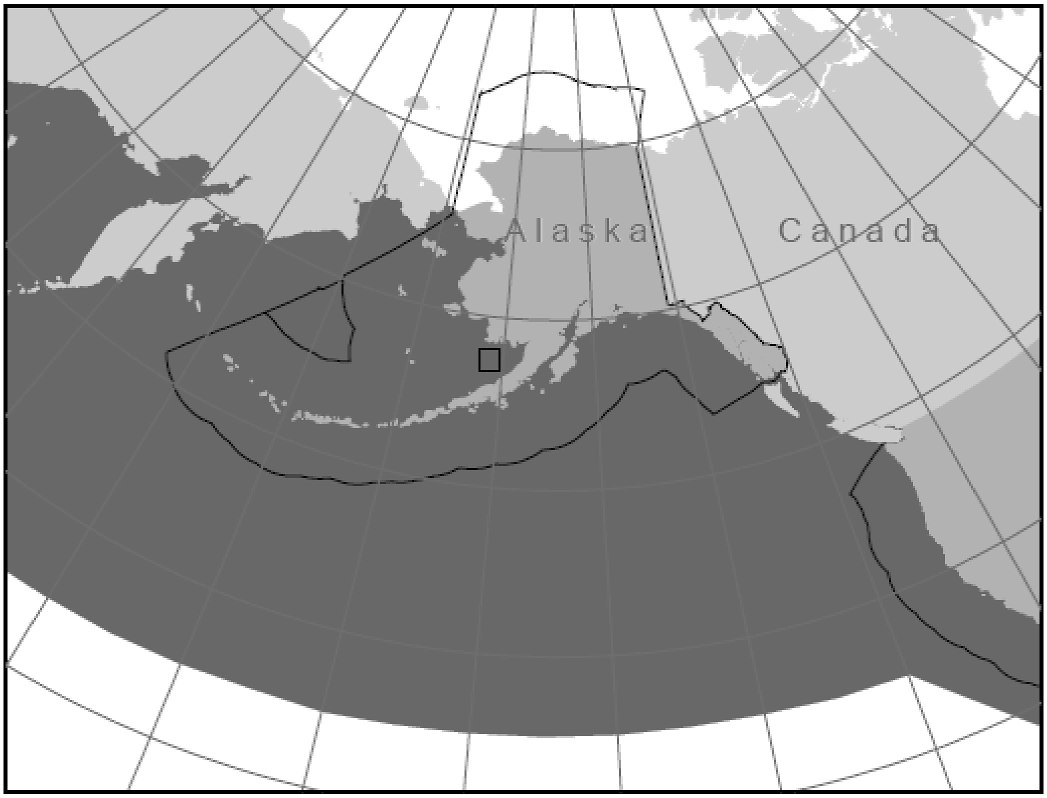

Figure 3.3.1.3.1 Approximate historical distribution of North Pacific right whales in the eastern North Pacific (shaded area).
The box outlines the area in Bristol Bay where intensive aerial and vessel surveys for right whales have occurred from 1999 to 2004 (Angliss and Outlaw 2006).

In the western North Pacific (the Sea of Okhotsk and adjacent areas), current right whale abundance is unknown but is probably in the low to mid-hundreds (Brownell et al., 2001). No estimate of abundance exists for the eastern North Pacific stock (Bering Sea, Aleutian Islands and Gulf of Alaska), and sightings are rare. Most biologists believe the current population is unlikely to exceed 100 individuals, and is probably much smaller (70 FR 66223, November 2, 2005). Prior to the illegal Soviet catches of the 1960s, an average of 25 whales was observed each year in the eastern North Pacific (Brownell et al., 2001); in contrast, the total number of records in the 35 years from 1965 to 1999 was only 82 whales, or 2.3 whales per annum. Since 1996, NMFS and other surveys (directed or otherwise) have detected small numbers of right whales in the southeastern Bering Sea, including an aggregation estimated at 24 animals in the summer of 2004. Photo identification and genetic data have identified 17 individuals from the Bering Sea, and the high inter-annual resighting indicated that this population is small. Right whales also have been sighted in the northern Gulf of Alaska, including a sighting in August 2005. However, the overall number of right whales in the North Pacific using habitats other than the Bering Sea is not known (70 FR 66223, November 2, 2005).

Between 1958 and 1998, the POP has 11 sightings of right whales all within areas 509 and 513 (Appendix A). Nearly all of these sightings occurred in the 1990s and primarily in the July through October time period (Ray Outlaw, NMFS NMML, personal communication, April 2, 2006). Three sightings were in July through August, and two sightings were in March and April. It appears that either the ability to sight right whales may be increasing or the number of whales sighted may be increasing since 1998 compared to the directed NMFS surveys mentioned above.

In the North Pacific, whaling for right whales began in the Gulf of Alaska (known to whalers as the ‘‘Northwest Ground’’) in 1835 (Webb, 1988). Right whales were extensively hunted in the western North Pacific in the latter half of the 19th century, and by 1900 were scarce throughout their range. Right whales were protected worldwide through a 1935 League of Nations agreement. However, because neither Japan nor the former USSR signed this agreement, both nations were theoretically free to continue harvesting right whales until 1949, when the newly created International Whaling Commission endorsed this ban. Following this, a total of 23 northern right whales in the North Pacific were legally killed by Japan and the former USSR under Article VIII of the International Convention for the Regulation of Whaling (1946), which permits the taking of whales for scientific research purposes. However, it is now known that the USSR illegally harvested many right whales in the North Pacific (Doroshenko, 2000; Brownell et al., 2001). In the eastern North Pacific, 372 right whales were killed by the Soviets between 1963 and 1967; of these, 251 were taken in the Gulf of Alaska south of Kodiak, and 121 in the southeastern Bering Sea. These takes devastated a population that, while undoubtedly small, may have been undergoing a slow recovery (Brownell et al., 2001).

3.3.1.3.2 Northern Right Whales Prey Species

Northern right whales feed exclusively on zooplankton and primarily copepods (70 FR 66223, November 2, 2005). Right whales are skimmers; they feed by continuously filtering prey through their baleen while moving, mouth agape, through a patch of zooplankton. The primary constituent elements (PCEs) for North Pacific right whale critical habitat are species of large copepods on which the whales are known or believed to feed. In particular, these include but are not limited to: *Calanus marshallae, Neocalanus cristatus* and *N. plumchris.* In addition*, Thysanoëssa raschii* is a copepod whose very large size, high lipid content and occurrence on the Southeast Bering Sea shelf likely makes it a preferred prey item for right whales (J. Napp, pers. comm.). Right whales fed on the following copepod species in Alaskan waters: *N. plumchrus* in the Gulf of Alaska, *N. cristatus* north of the eastern Aleutian Islands, and *N. plumchrus* and *Metridia* sp. in the Okhotsk Sea (Omura *et al*. 1969; Omura 1986). In 1997, *Calanus marshallae* was the dominant copepod species in zooplankton samples opportunistically collected near right whales on the middle shelf domain of the southeastern Bering Sea, followed by *Pseudocalanus newmani* and *Acartia longiremis* (Tynan 1999; Tynan *et al.* 2001). Similarly, *C. marshallae* dominated two samples collected in July 1999 along a transect where right whales had been seen during aerial surveys (Coyle 2000).

North Atlantic right whales require dense prey aggregations (minimum prey patch concentrations >3000 copepods/m^3) to forage efficiently (Baumgartner and Mate 2003). Mayo (unpublished data) recorded densities exceeding 1,000,000 organisms/m^3 next to feeding right whales in Cape Cod Bay, Massachusetts. Given this aggregation data, and the ecological similarity of right whales worldwide, availability of suitably dense prey may greatly influence the distribution of the small North Pacific population on their feeding grounds in the Southeastern Bering Sea and GOA (Clapham, Shelden, and Wade 2005).

3.3.1.3.3 Northern Right Whales Human Caused and Natural Mortality

Because right whale diet is very specific to zooplankton, prey competition with the groundfish fisheries is extremely unlikely. Groundfish fishing gear is not designed to capture planktonic animals and would not be likely to incidentally catch right whale prey.

Oil spills from fishing vessel activities are likely to affect only near shore waters which have not been identified as critical to right whales in the North Pacific Ocean. Potential threats to the habitat of the North Pacific right whale include the undersea exploration and development of mineral deposits. Offshore oil and gas leasing has occurred in the northern range of the North Pacific right whale, in both the Gulf of Alaska and Bering Sea. No discoveries have been announced, and most leases have proven to be absent of commercially-significant deposits. No oil spills have resulted from oil and gas exploratory activities to date. At present, there are no offshore oil and gas activities planned or underway in the Bering Sea or eastern North Pacific waters. However, national oil policies are determined in part by international events, and it is quite possible that future Outer Continental Shelf oil and gas activities may be directed toward areas within the Pacific Ocean which provide habitat for these whales. It is unknown to what extent these activities may disturb or otherwise affect right whales. In the North Atlantic, it appears that whale behavior and the type of activity in which they are engaged influence right whale sensitivity to, and tendency to avoid, noise disturbance and vessel activity (Watkins 1986; Mayo, Watkins, and Kraus pers. comm. as cited in NMFS 1991b; Kraus and Mayo unpubl. data as cited in NMFS 1991b), but more studies are needed.

Organic chemical contaminants have been regarded to be of less significance for mysticetes than for odontocetes and have not been considered primary factors in slowing the recovery of any populations of large whale species (O'Shea and Brownell 1994). This is especially true for planktivorous baleen whales such as right whales, given their lower accumulated contaminant burdens as compared to other marine mammals. However, assessment of contaminant body burden ignores toxic non-halogenated aromatic hydrocarbons (polynuclear aromatic hydrocarbons: PAH) from crude oil and combusted fossil fuels that do not bioaccumulate. Such compounds are metabolized, induce their effects, and are mostly excreted. Contaminant impact is therefore insufficiently assayed by blubber burden analysis of parent compounds alone. While contaminants are a potential threat to the species, the severity of the threat is unknown.

A close linkage exists between right whale foraging and the physical forcing processes that concentrate prey in the oceanic environment (Kenney *et al*. 2001). Interannual, decadal, and longer-time scale variability in climate can alter the distribution and biomass of prey available to right whales. For example, changes in zooplankton in the North Pacific relate to decadal scale climatic regime shifts (Brodeur and Ware 1992; Francis *et al.* 1998) and major changes in zooplankton biomass and species composition correlate to long-term trends of warming sea-surface temperature in the California Current System (Roemmich and McGowan 1995). Similar changes in the North Pacific and Bering Sea could affect right whale access to suitable prey. While the effects of climate-induced shifts in productivity, biomass and species composition of zooplankton on the foraging success of right whales has received focused attention in the Northwest Atlantic (e.g., Kenny 2001; Kenny *et al.* 2001, 1986; Kenny and Wishner1995) similar studies have not been conducted in the North Pacific or Bering Sea. Intensive research over the last decade focused on the southeastern Bering Sea ecosystem (e.g., Angel and Smith 2002; Dagg and Royer 2002), but none of these studies included a comprehensive assessment of right whale habitat use or prey availability. Tynan *et al.* (2001) suggest that right whales shifted their prey from *Calanus* (now *Neocalanus*) *cristatus* to *C. marshallae,* but based this assertion on very limited sampling. Napp *et al.* (2002) reported that *C. marshallae* was significantly more abundant in the southeastern Bering Sea in 1997 and 1998, so it is not surprising that this copepod species was also sampled near feeding right whales. A comprehensive prey sampling study is required to determine type and availability of prey for right whales in the southeastern Bering Sea, and how prey biomass varies with climate forcing. Shifts in community structure and productivity may alter the distribution and occurrence of foraging right whales in certain habitats, as well as affect their reproductive potential.

Entanglement in fishing gear, including lobster pot and sink gillnet gear, is a significant source of mortality for the North Atlantic right whale stock (Waring et al. 2004). No records of fishery gear interaction with right whales in Alaska waters exist (Angliss and Outlaw 2006). Two right whale deaths were reported in association with the Russian gill net fishery – one in 1983, and the other in October 1989. A right whale which stranded in Kamchatka had a salmon gill net around its tail (Kornev 1994). Entanglements in fishing gear may represent a significant problem for the western management unit of North Pacific right whales (Brownell *et al.* 2001), particularly given the operation since 1991 of a Japanese driftnet fishery inside the Okhotsk Sea and around Kamchatka within the Russian Exclusive Economic Zone (EEZ). This concern is highlighted by an observation in 1992 in the Okhotsk Sea of a right whale entangled in fishing gear (T. Miyashita, in Brownell *et al.* 2001). A disproportionately high number of strandings from the Commander Islands warrants further investigation and future monitoring.

A review of impacts of noise of all types on marine mammals is provided by Richardson *et al.* (1995). Although certain species of large whales exhibit behavioral changes to anthropogenic noise sources in the marine environment, few studies focus specifically on the effects of anthropogenic noise on right whales. In general, the impact of noise from shipping or industrial activities on the communication, behavior and distribution of right whales remains unknown. The level of sensitivity to noise disturbance and vessel activity among right whales appears related to the behavior and activity in which they engage at the time (Watkins 1986; Mayo, Watkins, and Kraus pers. comm. as cited in NMFS 1991b; Kraus and Mayo unpubl. data as cited in NMFS 1991b). In particular, feeding or courting right whales may be relatively unresponsive to loud sounds and, therefore, slow to react to approaching vessels or even oblivious to them. Whether or not increasing noise levels in the oceans are adversely affecting communication and socialization among right whales is uncertain. Right whales may use their high intensity, low-frequency vocalizations during courtship and to locate other members of the species (Gilmore 1978). Ambient noise levels in the oceans may be increasing, although solid evidence is available for only a single site over a 30-year period (Andrew *et al.* 2002). Over the past hundred years, shipping traffic, marine geophysical research, military activities, coastal development and other anthropogenic events clearly increased. Either an increase in ambient noise or increases in these "transient" sounds may interfere with the abilities of the few remaining right whales to locate or communicate with each other over long distances.

The presence of fishing vessel in critical habitat may impact right whales or their prey in several ways:

- vessel strikes
- gear entanglement
- noise
- pollution (oil, contaminants, and debris)
- dispersion of prey aggregations
- disruption of foraging behavior

Whether any of these potential impacts are likely to occur is based on what is known about Atlantic right whale interaction with vessels. Vessel strikes and gear entanglement are important sources of mortality for Atlantic right whales. It is not known if North Pacific right whales would behave similarly to Atlantic right whales, leading to vessel strikes. It also is not known if fishing activities in critical habitat may lead to gear entanglement. Whales may encounter gear that is either used or lost in critical habitat which may lead to entanglement. Mobile fishing gear may pose less of a threat than pots or hook-and-line gear based on Atlantic right whale mortality from pot and sink gill net gear. Also, a higher concentration of fishing gear occurs in the Atlantic than in the North Pacific, and the type of gear is different (lobster pots vs. sablefish or Pacific cod pots) (MCA 2006). However, a recent study of right and humpback whales in the Atlantic concluded that large whales can become entangled in a wide variety of gear types and parts (Johnson et al. 2005). It is not know if an encounter with a Pacific cod pot would pose the same rate of entanglement as an encounter with a lobster pot.

In developing proposed critical habitat for northern right whales (section 3.2.2), NMFS developed an analysis of the location of 2002 through 2004 observed groundfish fisheries and the overlap with proposed critical habitat. Maps by gear type and target species are in Appendix A. Table 3.3.1.3.1 shows the monthly harvest of groundfish by pot gear in

2005 in each statistical area. Very small amounts of pot harvest occur in Alaskan waters in the summer time when right whales are likely to be present in proposed critical habitat. Only a small amount of pot harvest occurred in the BSAI in June through August 2005, all outside of the proposed critical habitat areas. No pot harvest occurred in the GOA between June and August 2005. Table 3.3.1.3.2 shows the 2005 monthly harvest of groundfish by hook-and-line gear in each statistical area. Very little hook-and-line groundfish harvest occurs in the summer in the statistical areas that include proposed critical habitat. A substantial portion of the hook-and-line harvest in the GOA occurs in the summer in area 630 which include the proposed critical habitat in the GOA.

Table 3.3.1.3.1 2005 Alaska Groundfish Harvest by Pot Gear
(Source: NMFS Inseason Management data, March 17, 2006)

Sum of catch	**month**										
area	**1**	**2**	**3**	**4**	**5**	**8**	**9**	**10**	**11**	**12**	**Grand Total**
509	1305.4	2454.4		219.5			231.6	166.7			4377.8
513	249.3	1682.3									1931.6
517	202.5	638.8					279.3				1120.7
519	1246.6	1120.2	463.3	1041.5	156.0		2156.9	653.4	102.5	22.2	6962.6
610	1214.5	4028.5	4826.7	196.2			1039.1	277.2	45.2		11627.4
620	261.1	591.3	728.4	870.8	236.7		247.5				2935.8
630	4166.4	1460.5	602.7				1535.9	662.5	440.9	487.8	9356.6
518				28.9							28.9
541						116.5					116.5
(blank)											
Grand Total	8645.8	11976.0	6621.1	2356.9	392.7	116.5	5490.5	1759.8	588.6	509.9	38457.9
Percent of Total harvest	22.48%	31.14%	17.22%	6.13%	1.02%	0.30%	14.28%	4.58%	1.53%	1.33%	100.00%

Note: Harvest data for some areas and months are not reported because of confidentiality.

Table 3.3.1.3.2 2005 Alaska Groundfish Harvest by Hook-and-Line Gear Table
(Source: NMFS Inseason Management data, March 17, 2006)

Sum of catch	month												
area	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
509	3259.2	1343.7	830.8					772.1	2958.7	1767.7	554.7	414.0	11900.8
513	5446.4	5379.1	491.1				26.6	368.9	1316.2	1878.2	2374.4	2574.5	19855.5
517	1766.6	2275.0	206.2			8.2	62.9	1128.0	2622.8	3667.2	1953.6	765.4	14455.8
518			49.1		7.2	8.0	64.2	9.1	39.2	11.7			188.5
519		261.2	476.4	297.3	6.4	1.1	3.1	4.5	101.4	91.1	239.5	140.2	1622.3
521	11129.8	10887.0	3920.9	594.5		437.5	4176.7	4506.0	4833.3	7573.7	6185.2	4627.6	58872.2
523	347.2						276.7	500.4	67.2	605.0	356.3	259.9	2412.8
524	2561.5	1260.3					120.7	1420.9	1392.0	1671.0	1256.3	1876.8	11559.7
541			705.8	61.2	110.6	33.4	40.2	279.6	558.1	549.9	384.3		2723.0
542			99.0	27.0	134.7	10.7	103.8	41.6					416.8
543								8.5					8.5
610		353.1	388.4	581.7	240.2	349.2	208.5	149.6	332.3	135.5	36.7	152.8	2927.9
620	574.9		111.0	272.5	65.1	107.9	50.0	2.0	61.5	56.3	0.7		1301.9
630	2504.9	38.5	334.2	1561.7	1749.4	477.5	569.5	234.0	1156.5	291.2	56.7	322.9	9296.9
640		10.6	327.3	721.8	511.5	172.0	86.6	31.0	41.0	51.1			1952.8
649			3.6	9.7	11.2	0.9	0.5	27.4					53.2
650	28.5	25.2	630.1	919.4	717.2	365.1	178.8	274.7	289.2	162.5	101.7		3692.3
659		14.4	19.1	66.5	16.0	72.8	84.5	285.8	301.9	141.1	29.7		1031.9
516	1058.4									19.3			1077.7
Grand Total	28677.3	21848.1	8592.9	5113.4	3569.6	2044.2	6053.3	10044.0	16071.4	18672.6	13529.8	11134.0	145350.6
Percent of Total harvest	19.73%	15.03%	5.91%	3.52%	2.46%	1.41%	4.16%	6.91%	11.06%	12.85%	9.31%	7.66%	100.00%

Note: Harvest data for some areas and months are not reported because of confidentiality.

Types of gear which most frequently entangle North Atlantic right whales include pots and gillnets. Gillnet fisheries in the eastern Bering Sea occur in nearshore waters (state waters) not associated and generally not overlapping with known North Pacific right whale distribution. Pot fisheries occur in offshore waters, but are often prosecuted during seasons when right whales are not known to be present (i.e., winter see Table 3.3.1.3.1). The buoy line and floating groundlines from pot gear were the parts most frequently seen on entangled right whales in the Atlantic (Johnson et al. 2005). Groundlines used for hook-and-line gear in Alaska waters lay on the bottom, and pots are not connected with groundlines in the groundfish fisheries except in the Aleutian Islands and in the sablefish fishery in the Bering Sea, except for the month of June (50 CFR 679.24(b)) (NMFS 2005d) (Figure 3.3.1.3.2). Groundlines used in the groundfish fisheries are sinking lines (Rance Morrison, NMFS, personal communication April 4, 2006). It is possible that only the buoy line for either hook-and-line gear or pot gear may pose an entanglement risk for right whales.

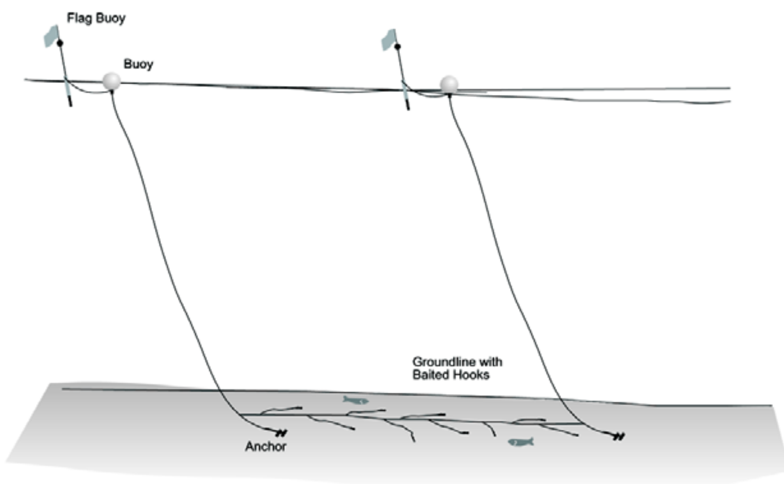

Figure 3.3.1.3.2 Hook-and-line Gear in Alaska Fisheries

Entanglement in stored, lost, or discarded gear is possible. Injuries and entanglements that are not initially lethal may result in a gradual weakening of entangled individuals, making them more vulnerable to some other direct cause of mortality (Kenney and Kraus 1993). Entanglement-related stress may decrease an individual’s reproductive success or reduce its life span, which may in turn depress population growth. Hamilton et al. (1998) estimated 61.6 percent of right whales in the western North Atlantic bear scars and injuries indicating fishing gear entanglement. Studies of scarring rates among North Pacific right whales would be difficult due to the extreme rarity of this species, but may provide significant insight into the extent of this problem in this ocean.

Ship strikes are significant sources of mortality for the North Atlantic stock of right whales, and it is possible that North Pacific right whales also are vulnerable to these sources of mortality. However, due to their rare occurrence and scattered distribution, it is impossible to assess the threat of ship strikes to the North Pacific stock of right whales at this time (Angliss and Outlaw 2006). No evidence exists regarding acoustic effects on right whales from fishing activities. One study determined that Atlantic right whales did not react to vessel noise which may result from not hearing the noise or from being habituated to vessel traffic (Tyack 2005). Pacific right whales may behave in a similar manner, or may not. Whales not reacting to vessel noise would be more susceptible to ship strikes but probably less susceptible to disturbance.

Because the potential for ship strikes and fishing gear entanglement has been documented for this species in the Atlantic, and the occurrence of Pacific right whales overlap in space and time with the groundfish fisheries, these potential impacts cannot be ruled out for the North Pacific stock. The area where right whales have been seen in recent surveys is not in a major vessel traffic lane. However, the proximity of the other known right whale habitats to shipping lanes (e.g. Unimak Pass) suggests that collisions with vessels may represent a potential threat to North Pacific right whales. Because of the rarity of right whales, the impact to the species from even low levels of interaction could be significant.

The following information examines the fishing activities within critical habitat and the potential for disturbance or take of whales that were using critical habitat areas

Bering Sea Fishing Effort in Proposed Critical Habitat

In the Bering Sea, the number of sets was mapped for pot, hook-and-line, bottom trawl, and pelagic trawl gears in the proposed critical habitat area (Appendix A). In 2002 through 2004, a small amount of pot gear effort occurred in proposed critical habitat compared to overall effort in the Bering Sea. Pot fishing occurred in approximately 10 percent of the area with no more than 15 sets per 100 km^2 The majority of pot gear fishing is for Pacific cod with a small amount for sablefish. In 2004, almost no Pacific cod pot fishing occurred in critical habitat. As stated above, no pot fishing occurred in proposed critical habitat in summer 2005. If future pot fishing in proposed critical habitat is similar to 2004 and 2005, North Pacific right whales are not likely to encounter pot gear being used for fishing in this area.

A substantial amount of bottom trawl fishing occurred in proposed critical habitat in 2002 through 2004 (Appendix A). Most of the area had from 1-23 sets per 100 km^2 and approximately 20 percent of the area had 24 to 104 sets per 100 km^2. The majority of the sets in 2004 were in the yellowfin sole fishery and less in the rock sole fishery. Only minor amounts of 2004 bottom trawl sets occurred in the Pacific cod, pollock, sablefish, and Greenland turbot fisheries. Pollock is not allowed to be directly fished by bottom trawl but may have occurred in quantities to be reported as the principal species in hauls targeting other groundfish species. It is not clear that trawl gear poses an entanglement hazard to right whales. Concentrated fishing activities with trawl gear in the proposed critical habitat may disturb foraging animals or prey aggregations.

Over half of the proposed critical habitat area had pelagic trawling during 2002 through 2004 (Appendix A). Most of pelagic trawling is for pollock with effort mostly in 4-19 set per 100 km^2 range and a few areas in the 20-55 sets per 100 km^2 range. The effects described above under bottom trawl are likely the same for pelagic trawl.

In 2002 through 2004, hook-and-line effort in proposed critical habitat appears nearly as extensive as bottom trawl effort (Appendix A). Bottom trawl was concentrated more in the northern portion of critical habitat and hook-and-line activity in the central portion. About 20 percent of the area had 15 to 43 sets of hook-and-line gear per 100 km^2 while the rest of the fished area had 1-14 sets per 100 km^2. Only minor amounts of hook-and-line fishing occurred in summer 2005 in statistical areas that include proposed critical habitat (Table 3.3.1.3.2) but more fishing with this gear type occurred during August, September and October when most of the POP sightings occurred. The potential effects of hook-and-line gear on right whales is likely similar to effects of pot gear with the possibility of whales becoming entangled in the buoyed line. Because of the additional fishing in the summer months, it appears that there may be more potential for right whales to encounter hook-and-line gear being used for harvesting compared to pot gear.

Another fishing activity of concern is the use of a portion of the proposed critical habitat for king crab pot storage. State regulations at 5 AAC 34.827 provide an area where pots may be stored (Figure 3.3.1.3.2). This area is located in proposed critical habitat for right whales. The stored pots include a line and buoy to the surface which may pose an entanglement threat to right whales. Use of the area is not required to be reported and may occur any time outside the king crab fishing season. Pot storage mostly occurs during early October when staging for the crab season opening. Gear is normally stored on the southern edge of the area to be close to the fishing grounds. With crab rationalization, the need to store pot gear within ready access to the fishing grounds may not be necessary because of the end of the "race for the fish." Fishermen are likely to pull the gear from the area before sea ice moves in to protect their gear. Pots are likely to be spaces approximately 100 yards apart. A small amount of storage of pots may occur after May at the end of the crab season, but no data on the amount of gear storage is available (Forrest Bowers, Area Shellfish Biologist, Alaska Department of Fish and Game, personal communication March 20, 2006).

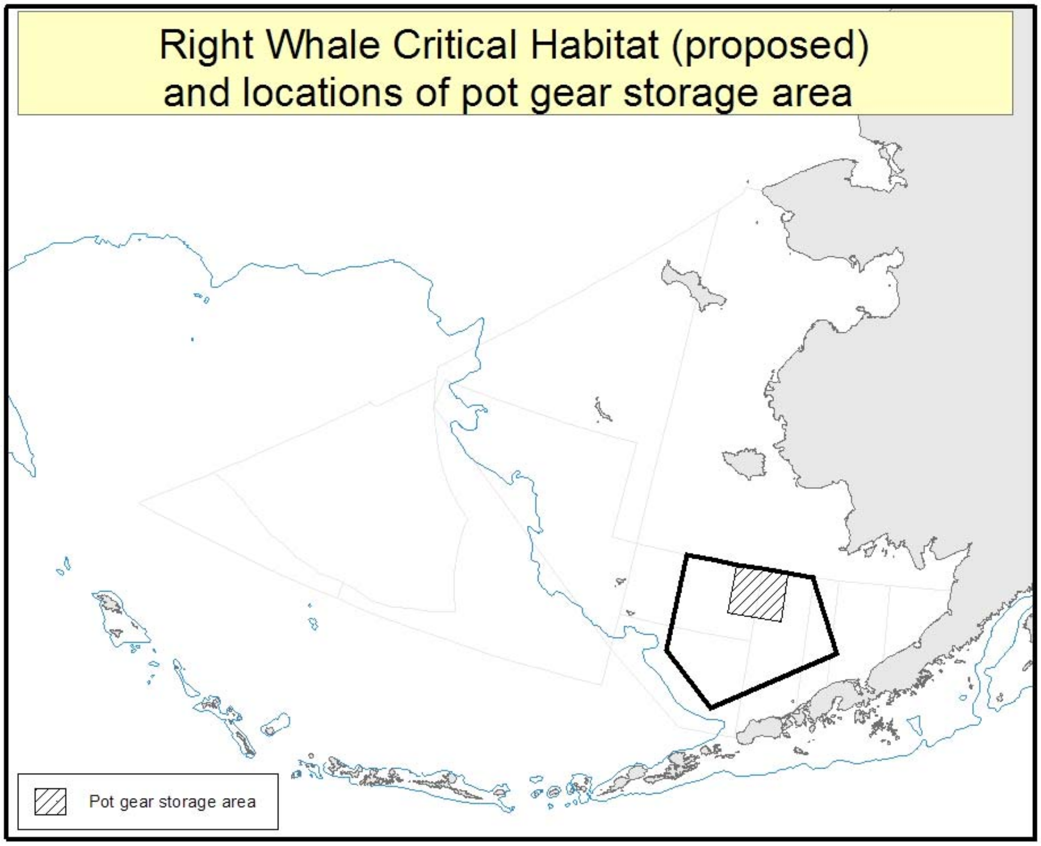

Figure 3.3.1.3.3 King Crab Pot Storage Area within Proposed Critical Habitat

Gulf of Alaska Fishing Effort in Proposed Critical habitat

Fishing effort maps for the Gulf of Alaska proposed critical habitat cover several target fisheries in 2004 (Appendix A). Proposed critical habitat in the GOA occurs in statistical area 630. No Pacific cod hook-and-line and shallow water flatfish trawl fishing occurred in the proposed critical habitat area in 2004. Almost no Pacific cod pot fishing occurred in this area in 2004. Only 4-8 sets per 100 km^2 of pot gear occurred on the northern edge of the proposed critical habitat area during the year. In 2005, no groundfish pot fishing occurred in area 630 in the summer months.

A substantial amount of hook-and-line harvest occurred in area 630 in summer 2005, but it is not known how much of the harvest may have occurred in proposed critical habitat. If fishing in 2005 was similar to fishing in 2004, pot and hook-and-line groundfish fishing and shallow water flatfish fishing are not likely to affect whales using critical habitat because they do not occur in the area.

Pacific cod, pollock and deep water flatfish trawling occurred in approximately 10 percent of the proposed critical habitat and varied in intensity from 1-3 sets per 100 km^2 for pollock bottom trawl to 12-33 sets per 100 km^2 for Pacific cod bottom trawl. Potential impacts on proposed critical habitat are the same as those described above for the Bering Sea trawl fisheries.

3.3.1.3.4 Potential Fisheries Impacts on Proposed Critical Habitat

NMFS has proposed two areas in the North Pacific Ocean as critical habitat for the Northern Right Whale (Figure 3.2.3). The ESA defines critical habitat as areas where found are those specific physical or biological features which are essential to the conservation of the species. NMFS determined these essential features, or PCEs to be those species of copepods used by right whales for foraging activities. Activities that may impact PCEs or may disturb foraging behavior also may adversely affect critical habitat if the impact on the PCEs is of sufficient magnitude to impact the conservation of the species.

The following are questions related to these potential impacts that probably should be considered during the consultation, but we are not aware of information available to answer these questions.

- What may happen to the copepod aggregation if a vessel moves through it?
- Can the disturbed copepods regroup in such concentrations to allow for foraging?

It is not likely that the gear used in the groundfish fisheries would harvest copepods because of the large mesh size and the small size of the copepods. Pot, hook-and-line and jig gear are not likely to take copepods because of the design of the equipment would not capture small planktonic animals. It is not expected that groundfish fishing would have an impact on the PCEs, and therefore, is not likely to adversely affect critical habitat.

3.3.1.3.5 Northern Right Whales Status

Northern right whales were listed in 1970 following passage of the Endangered Species Conservation Act (ESCA) of 1969, and automatically granted endangered status when the ESCA was repealed and replaced by the ESA. Right whales were also protected under the Marine Mammal Protection Act of 1972. NMFS issued a Recovery Plan for the northern right whale in 1991, covering animals in both the North Atlantic and North Pacific (NMFS, 1991b). Brownell et al. (2001) noted that there was no evidence for exchange between the western and eastern Pacific, and that the two populations had different recovery histories; consequently, they argued that these stocks should be treated as separate for the purpose of management, a division which has been duly recognized by NMFS in Stock Assessment Reports (Angliss and Lodge,2004).

NMFS also is conducting a status review to determine if the ESA listing of northern right whale should be divided between species occurring in the Pacific and Atlantic oceans (70 FR 1830, January 11, 2005). The result of the review would be determining if separate species in the two oceans should be listed, if species listings should be endangered or threatened, and if critical habitat should be designated for each species.

3.3.1.3.6 Northern Right Whales Conclusions

Northern right whales do not compete with groundfish fisheries for prey species. The northern right whales exclusively eat prey that is not targeted or harvested in large amounts as bycatch in the groundfish fisheries. Even though effects of fishing activities on the aggregations of copepods in critical habitat may be a possibility, there are no methods available to measure such effects (Brad Smith, NMFS Protected Resources, personal communication March 20, 2006). Because the potential effects on PCEs are not measurable at this time, the potential effects are considered insignificant; and therefore, the **Alaska groundfish fisheries are not likely to adversely affect proposed right whale critical habitat.**

In the summer and fall, groundfish vessels may encounter northern right whales while harvesting in proposed critical habitat and in other areas that may be used by right whales. We do not have enough information to rule out the possibility of whales encountering hook-and-line, pot, and trawl gears and vessels in the summer in the GOA or in the summer and fall in the Bering Sea proposed critical habitat areas. Based on studies of gear entanglements by Johnson et al (2005), all fixed gear could pose an entanglement threat. Entanglement threats were present even after reducing fishing efforts by capping the amount of gear per fisherman, and limiting entry into the fishery (Johnson et al. 2005). The buoy line used in hook-and-line and pot gear may present an entanglement risk in Alaskan waters. Encountering pot fishing vessels and pot gear in the summer appears to be less likely in the GOA proposed critical habitat. Because the possibility of either vessel strikes or gear entanglement cannot be ruled out, the potential take of right whales by the groundfish fisheries could not be described as never to occur. It cannot be assumed that entanglement in gear would be extremely unlikely to occur considering the overlap between the occurrence of the whales and groundfish fisheries which use gear types that have parts which may entangle right whales. For these reasons, the effects are not insignificant or discountable, and therefore, **the Alaska groundfish fisheries are likely to adversely affect northern right whales.**

3.3.1.4 Fin Whale

3.3.1.4.1 Fin Whale Distribution, Stock Structure and Abundance

Within the U.S. Pacific waters, fin whales are found seasonally off the coast of North America and Hawaii, and in the Bering Sea during the summer (Fig.3.3.1.4.1) (Angliss and Outlaw 2006). Information on seasonal fin whale distribution is from the reception of fin whale calls by bottom-mounted, offshore hydrophone arrays along the U.S. Pacific coast, in the central North Pacific, and in the western Aleutian Islands (Moore et. al. 1998; Watkins et al. 2000). Moore et al. (1998) and Watkins et al. (2000) both documented high levels of fin whale call rates along the U.S. Pacific coast beginning in August/September and lasting through February, suggesting that this may be an important feeding area during the winter. While peaks in call rates occurred during fall and winter in the central North Pacific and the Aleutian Islands, a few calls also were recorded during the summer months. While seasonal differences in recorded call rates are generally consistent with the results of aerial surveys which have documented seasonal whale distribution, it is not known whether these differences in call rates reflect true seasonal differences in whale distribution, differences in calling rates, or differences in oceanographic properties (Moore et al. 1998). Deployment of Pacific Marine Environmental Laboratory recorders in the Gulf of Alaska during 1999-2001 detected fin whale pulses year round in the Gulf of Alaska with most calls detected August through February (Moore et al. 2006). During NMFS research cruises in the Central and Eastern Aleutian Islands in 2001 and 2002, one of the 118 fin whales seen was west of Unimak Pass. (Sinclair et al. 2005). One fin whale also was identified through photograph in the Southeast inside waters of the GOA near Juneau in August 2005 (Aleria Jensen, NMFS Protected Resources, personal communication, January 26, 2006).

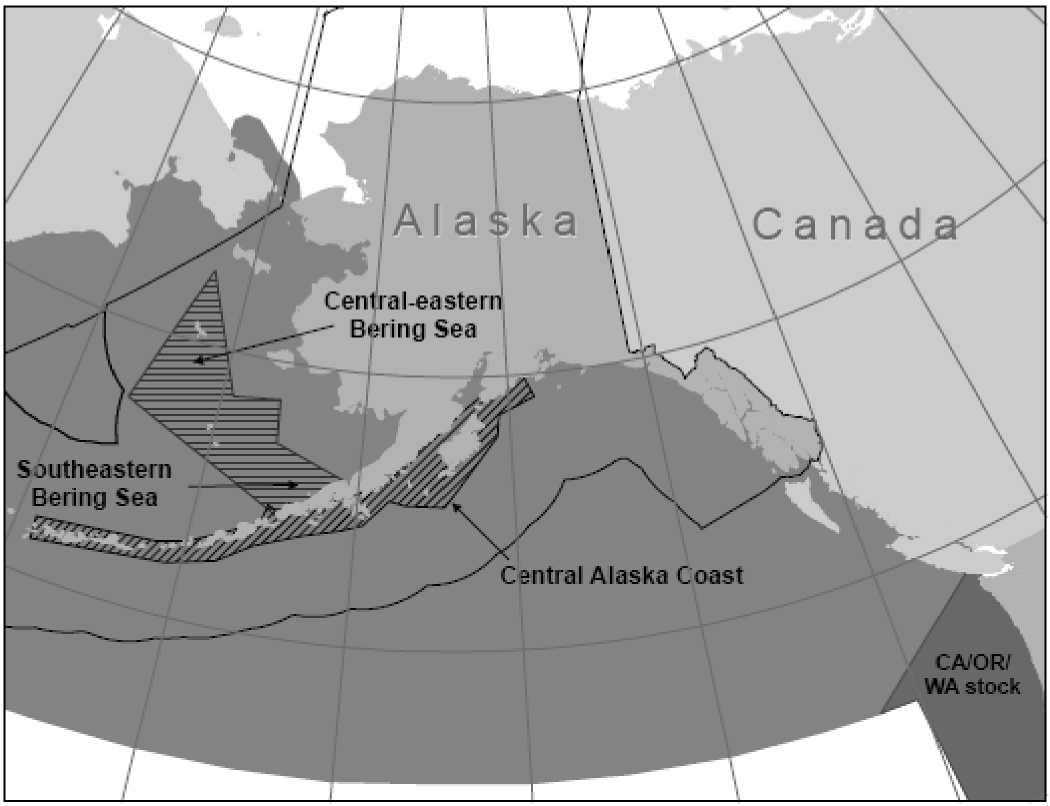

Figure 3.3.1.4.1 Approximate distribution of fin whales in the eastern North Pacific (shaded area).
Enclosed area indicates general location of the pollock surveys from which regional estimates of the fin whale population was made. (Angliss and Outlaw 2006.)

Recent surveys in the central-eastern and southeastern Bering Sea in 1999 and 2000 resulted in new information about the distribution and relative abundance of fin whales in these areas (Moore et al. 2000, 2002a). Fin whale abundance estimates were nearly five times higher in the central-eastern Bering Sea than in the southeastern Bering Sea (Moore et al. 2002a), and most sightings in the central-eastern Bering Sea occurred in a zone of particularly high productivity along the shelf break (Moore et al. 2000).

POP sightings of fin whales are shown in Appendix A. Sightings of fin whales have occurred throughout the BSAI and GOA year round. More sightings of fin whales have occurred in the GOA compared to the BSAI. Less sightings have occurred in the winter season which may be an indication of whale abundance at that time or the lack of observations being made at that time of the year.

Three stocks of fin whales are currently recognized: 1) Alaska (Northeast Pacific), 2) California/Washington/Oregon, and 3) Hawaii. Reliable estimates of current and historical abundance for the entire Northeast Pacific fin whale stock are currently not available. Ranges of population estimates for the entire north Pacific prior to exploitation and in the early 1970s are 42,000 to 45,000 and 14,620 to 18,630, respectively (Ohsumi and Wada 1974). The latter population estimate represents 32% to 44% of the precommercial whaling population size (Braham 1984). These estimates were based on population modeling, which incorporated catch and observation data. These estimates also include whales from the California/Oregon/Washington stock for which a separate abundance estimate is currently available.

Since 1999, information on abundance of fin whales in Alaskan waters has improved considerably. Although the full range of fin whales in Alaskan waters has not been surveyed, a rough estimate of the size of the population west of the Kenai Peninsula could include the sums of the estimates from Moore et al. (2002) and Zerbini et al. (in prep.). Using this approach, an initial estimate of the fin whale population west of the Kenai Peninsula would be 5,703. This is clearly a minimum estimate, as no estimate is available for U.S. waters to the east of the Kenai Peninsula. Reliable information on trends in abundance for the Northeast Pacific stock of fin whales is currently not available. There is no indication whether recovery of this stock has or is taking place (Braham 1992, Perry et al.1999).

3.3.1.4.2 Fin Whale Prey

Fin whales in the North Pacific feed on euphausiids, calanoid copepods, and schooling fish such as herring, pollock, Atka mackerel, and capelin (Calkins 1987; Nemoto 1957, 1970; Kawamura 1982). Euphausiids may be preferred prey, and competition may occur with other baleen whales or other consumers of these prey types. Because fin whales eat pollock and Atka mackerel which are also target species of the commercial groundfish fishery, potential exists for prey competition if the groundfish fisheries are removing prey in the same locations, at the same time, and of the same size as needed by fin whales. State herring fisheries also may compete with fin whales if fishing occurs on the same aggregations of herring that would be eaten by fin whales. At present, no direct evidence has been found of competition between fin whales and commercial fisheries for prey species.

3.3.1.4.3 Fin Whale Human-Caused and Natural Mortality

As early as the mid-seventeenth century, the Japanese were capturing fin, blue, and other large whales using a fairly primitive open-water netting technique (Tønnessen and Johnsen 1982, Cherfas 1989). After blue whales were depleted in most areas, the smaller fin whale became the focus of whaling operations and more than 700,000 fin whales were landed in the twentieth century.

Prior to 1999, there were no observed or reported mortalities of fin whales incidental to commercial fishing operations within the range of this stock. However, in 1999, one fin whale was killed incidental to the Gulf of Alaska pollock trawl fishery. This take occurred in federal waters of statistical area 620, southwest of Kodiak Island (Perez 2003, figure 16). This single mortality results in an estimate of 3 mortalities in 1999, and an average 0.6 (95% CI = 0.20 - 1.55) mortalities over the 5-year period from 1999 to 2003. In the 2005 List of Fisheries (71 FR 247, January 4, 2006) fin whales are not listed as experiencing serious injury or mortality for any Alaska fisheries based on data for 1996, 2001, 2002, 2003, and 2004 (Angliss and Outlaw 2006). All Alaska groundfish fisheries are therefore listed as Category III (annual mortality and serious injury for the stock in a given fishery is less than or equal to 1 percent of the PBR level) in the List of Fisheries regarding fin whales.

Natural sources and rates of mortality are largely unknown, but Aguilar and Lockyer (1987) suggest annual natural mortality rates may range between 0.04 and 0.06 (based on studies of northeast Atlantic fin whales). The occurrence of the nematode, *Crassicauda boopis,* appears to increase the potential for kidney failure in fin whales and may be preventing some fin whale stocks from recovering from whaling (Lambertsen 1992, as cited in Perry et al. 1999). Killer whale or shark attacks may result in serious injury or death in very young and sick whales (Perry et al. 1999).

3.3.1.4.4 Fin Whale Status

In the North Pacific, the IWC began management of commercial whaling for fin whales in 1969; fin whales were fully protected from commercial whaling in 1976 (Allen 1980). In 1973, fin whales were listed as endangered under the ESA. They are also protected by the Convention on International Trade in Endangered Species of wild flora and fauna and the Marine Mammal Protection Act of 1972. Fin whales are listed as endangered on the IUCN Red List of Threatened Animals (Baillie and Groombridge 1996). Critical habitat has not been designated for fin whales.

Because fin whales are listed as endangered under the ESA, they are designated as depleted under the MMPA. As a result, the Northeast Pacific stock is classified as a strategic stock. Reliable estimates of the minimum population size, population trends, and status of the stock relative to its Optimum Sustainable Population size are currently not available. The estimated annual rate of mortality and serious injury incidental to commercial fisheries for this stock (0.6) does not exceed the PBR level for the stock (11.4) (Angliss and Outlaw 2006). Thus, fishery-related mortality levels can be determined to have met a zero mortality and serious injury rate as defined by the MMPA. There are no known habitat issues that are of particular concern for this stock.

3.3.1.4.5 Fin Whale Impacts Conclusions

Fin whales may be impacted by the groundfish fisheries by incidental take and by competition for prey species. The take of one fin whale is documented for the GOA pollock trawl fishery which indicates that either this is a very rare occurrence or the detection of the take is rare. Considering the detection of the take would be likely during the retrieval of the gear and hard to miss, it is more likely the entanglement occurrence is rare. In addition, no direct evidence of prey competition with groundfish fisheries exists. Because of the documented take of a fin whale in the pollock trawl fishery, it cannot be assumed that take by trawl is limited to just this target fishery in only the GOA. There is a large segment of the GOA fleet that is not observed and it is possible that the take of fin whales is more frequent. Anywhere fin whales and trawling occurs, take may also occur. There is substantial overlap between the trawl fisheries and the occurrence of fin whales. Because take by either the BSAI or GOA trawl fisheries cannot be described as never or extremely unlikely to occur, the potential effect is not insignificant or discountable. **Therefore, the Alaska groundfish fisheries are likely to adversely affect fin whales.**

3.3.1.5 Humpback Whale

3.3.1.5.1 Humpback Whales Distribution, Stock Structure and Abundance

Humpback whales are distributed worldwide in all ocean basins, though it is less common in Arctic waters (Angliss and Outlaw 2006). In winter, most humpback whales occur in the temperate and tropical waters of the North and South Hemispheres (from 10E-23E latitude) (Angliss and Outlaw 2006). Recent surveys in the central-eastern and southeastern Bering Sea in 1999 and 2000 resulted in new information about the distribution of humpback whales in these areas (Moore et al. 2002). The only sightings of humpback whales in the central-eastern Bering Sea were southwest of St. Lawrence Island; animals co-occurred with a group of killer whales and a large aggregation of Arctic cod. A few sightings occurred in the southeast Bering Sea, primarily outside Bristol Bay and north of the eastern Aleutian Islands (Moore et al. 2002). These recent sightings clearly demonstrate that the Bering Sea remains an important feeding area.

In a NMFS survey cruise in 2001 and 2002 of the central and eastern Aleutian Islands, humpback whales were most common in the area between Samalga and Unimak Islands (Sinclair et al. 2005). Of the 259 individuals seen, only 3 were west of Samalga.

Two stocks of humpback whales are of concern in Alaska waters, one in the Central North Pacific, and one in the Western North Pacific (Angliss and Outlaw 2006). See figures 3.3.1.5.1 and 3.3.1.5.2 for distribution of each stock in winter and during summer foraging periods. New information from a variety of sources indicates that humpback whales from the western and central North Pacific stocks mix on summer feeding grounds in the central Gulf of Alaska and perhaps the Bering Sea. A major research effort (SPLASH (Structure of Populations, Levels of Abundance and Status of Humpback Whale Stocks)) was initiated in 2002 in order to better delineate stock structure of humpback whales in the North Pacific using a variety of techniques, and it is expected that this effort will assist in resolving stock structure within a few years (Angliss and Outlaw 2006). Additional information on sightings from the POP is also available in Appendix A.

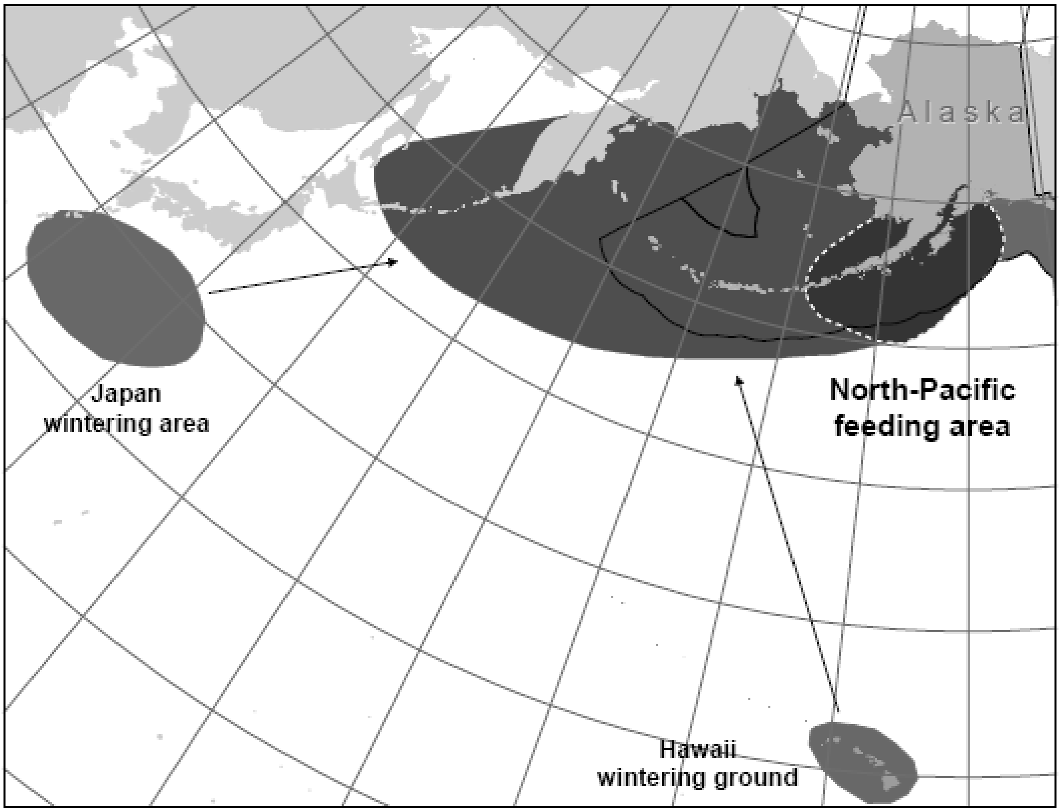

Figure 3.3.1.5.1 **Approximate distribution of Western North Pacific stock of humpback whales in the western North Pacific (shaded area).** Area within the dotted line is known to be an area of overlap with the Central North Pacific stock (Angliss and Outlaw 2006).

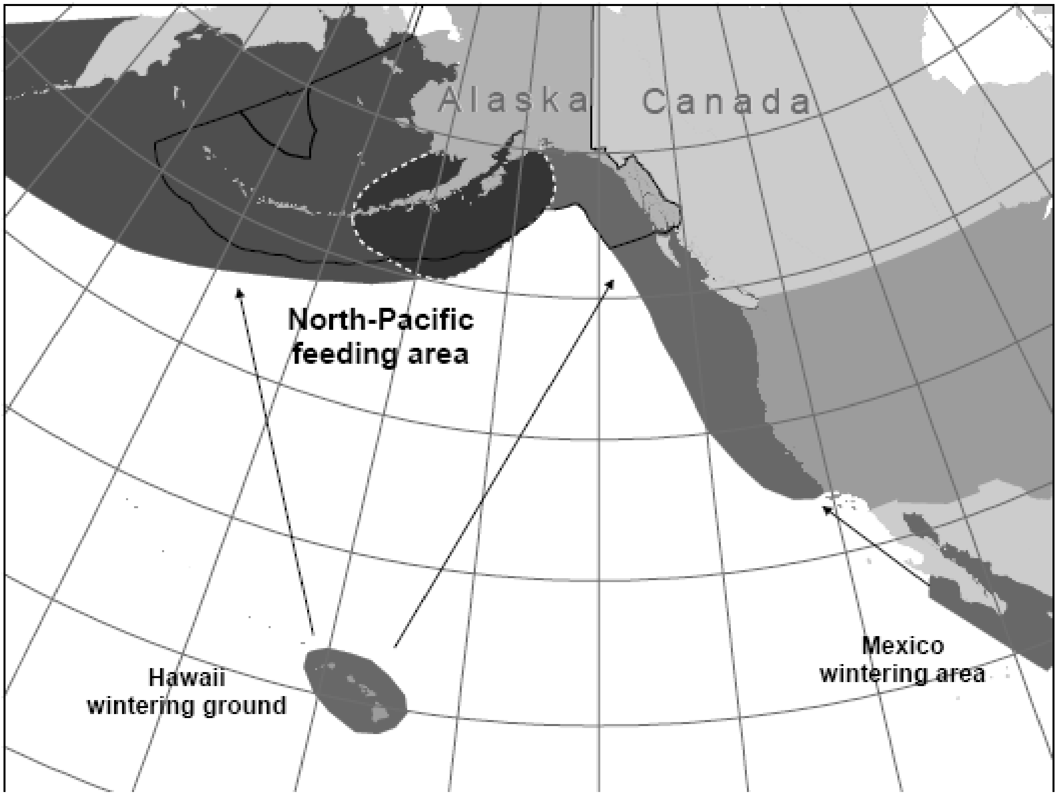

Figure 3.3.1.5.2 Approximate distribution of Central North Pacific stock of humpback whales in the eastern North Pacific (shaded area).
Area within the dotted line is known to be an area of overlap with Western North Pacific stock (Angliss and Outlaw 2006).

Based on photo identification data from the wintering grounds in Japan, the estimated abundance of the Western North Pacific stock of humpback whales is 394 animals (Calambokidis et al. 1997). Base on this estimated number, Angliss and Outlaw 2006 have determined that the minimum population estimate for this stock is 367 animals, which is thought to be conservative. No information is available on the population trend (Angliss and Outlaw 2006).

For the central stock, the minimum population estimate (NMIN) is 3,698 animals (Angliss and Outlaw 2006). Mizroch et al. (2004) calculate an annual population increase rate of 10%.

3.3.1.5.2 Humpback Whales Prey

North Pacific humpback whales are seasonal migrants that feed on zooplankton and small schooling fishes (NMFS 1991a). These schooling fish include Pacific herring, juvenile walleye pollock, capelin and sand lance and large zooplankton such as krill (Wing and Krieger 1983, Krieger and Wing 1986, and Krieger and Wing 1984) The historic feeding range of humpback whales in the North Pacific encompassed coastal and inland waters around the Pacific Rim from Point Conception, California, north to the Gulf of Alaska and the Bering Sea, and west along the Aleutian Islands to the Kamchatka Peninsula and into the Sea of Okhotsk (Nemoto 1957, Tomlin 1967, Johnson and Wolman 1984).

3.3.1.5.3 Humpback Whales Human and Natural Mortality

Between 1999-2003, incidental serious injuries and mortalities occurred for the Western and Central North Pacific humpback whale stocks in the Bering Sea/Aleutian Islands pollock trawl and Bering Sea/Aleutian Islands sablefish pot (Angliss and Outlaw 2006). In 1999 and 1998, one humpback whale was taken by trawl vessels in each year in areas 517 and 509 on the northwest side of Unimak Island (Perez 2003). These takes appear to have occurred in areas with high fishing vessel activity near Unimak Pass.

Five humpback whales have been reported entangled to NMFS Pacific Island Region during the 2005-2006 winter season. One was determined to be a non-life threatening entanglement and did not require assistance. Two were successfully disentangled, and the others were not re-sighted after the initial report of entanglement. (pers. Comm.. D. Schofield, PIRO, to A. Jensen 3/8/06). The details on the two disentanglements are:

- On February 9, the Hawaiian Marine Mammal Consortium working off the Big Island spotted an entangled humpback whale. The animal was entangled in heavy gear (5/8" - at least 3/4" > diameter lines) from the left side of its mouth with gear trailing approximately 24 feet behind, including three buoys. The gear was recovered and is believed to have originated in Kodiak, Alaska.
- Another humpback whale was successfully disentangled on 3/5/06. Rescuers retrieved 357 feet of 1" diameter white line with blue and red tracers with 7-8" long loops of 3 strand combo line spliced into the mainline every 50 ft. No buoys were part of the gear on this entanglement (pers. Comm.. E. Lyman, Hawaiian Islands Humpback Whale National Marine Sanctuary to A. Jensen 3/8/06).

NMFS is currently working to determine more about the nature of these entanglement events and origin of the gear. (pers. Comm.. E. Lyman, Hawaiian Islands Humpback Whale National Marine Sanctuary to A. Jensen 3/8/06).

Based on incidental takes, average annual mortality from observed fisheries was 0.49 humpbacks from the western and central stocks. The mortality is applied to both stocks because stock identification is uncertain, and the mortality may have been attributable to either stock of humpback whales (Angliss and Outlaw 2006). During the period between 1990 and 2002 for the western stock and 1990-1993 for the central stock, NMFS received no fisher self-reports of humpback whale injuries or mortalities from interactions with commercial fishing gear in any Alaska fishery within the presumed range of these stocks.

Strandings of humpback whales entangled in fishing gear or with injuries caused by interactions with gear are another source of mortality data. The only fishery-related humpback stranding in an area thought to be occupied by animals from the western stock was reported by a U. S. Coast Guard vessel in late June 1997 operating near the Bering Strait. The whale was found floating dead, entangled in netting and trailing orange buoys (National Marine Mammal Laboratory, Platforms of Opportunity Program, unpubl. data, 7600 Sand Point Way NE, Seattle, WA 98115). With the given data, it is not possible to determine which fishery (or even which country) caused the mortality. This mortality has been attributed to the Western North Pacific stock, but without a tissue sample (for genetic analysis) or a photograph (for matching to known Japanese animals) it is not possible to be certain if it is from the western or central stock. No strandings or sightings of entangled humpback whales of the western stock were reported between 1999 and 2003; however, observing effort in western Alaska is low (Angliss and Outlaw 2006).

The western stock of humpback whales also may be impacted by takes in other countries' fisheries. Brownell et al. (2000) compiled records of bycatch of humpback whales in Japanese and Korean commercial fisheries between 1993 and 2000. During the period 1995-99, six humpback whales were taken as "bycatch." In addition, two strandings were reported by the Japanese or Korean during this period. Analysis of four samples from meat found in Japanese markets indicated that humpback whales are being sold (Angliss and Outlaw 2006) but whether these animals were taken as bycatch or intentionally is not known.

Ship strikes and other interactions with vessels unrelated to fisheries also have occurred for the central stock of humpback whales (Angliss and Outlaw 2006). Based on observer and stranding data from 1997 to 2001, six ship strikes occurred in Southeast Alaska, and one occurred in the northern portion of this stock's range. It is not known whether the difference in ship strike rates between Southeast Alaska and the northern portion of this stock is due to differences in reporting, amount of vessel traffic, densities of animals, or other factors. Averaged over the 4 year period from 1997-2001, these account for an additional 1.4 humpback whale mortalities per year for the entire stock (Angliss and Outlaw 2006).

The humpback whale population in much of this range was considerably reduced as a result of intensive commercial exploitation during the 20th century (Angliss and Outlaw 2006). The number of humpback whales in the North Pacific may have numbered approximately 15,000 individuals prior to exploitation (Rice 1978). Intensive commercial whaling removed more than 28,000 animals from the North Pacific during the 20th century and may have reduced this population to as few as 1,000 before it was placed under international protection after the 1965 hunting season (Rice 1978). From 1961-1971, 6,793 humpback whales were killed illegally by the USSR. Most animals were taken from the Gulf of Alaska and Bering Sea (Doroshenko 2000).

The central stock is the focus of a large whalewatching industry in its wintering grounds (Hawaii) and a growing whalewatching industry in its summering grounds (Alaska). Regulations concerning minimum distance to keep from whales and how to operate vessels when in the vicinity of whales have been developed for Hawaii waters in an attempt to minimize the impact of whalewatching. In 2001, NMFS issued regulations to prohibit approaches to humpback whales in Alaska within 100 yards (91.4m; (66 FR 29502; May 31, 2001)). The growth of the whalewatching industry, however, is a concern as preferred habitats may be abandoned or foraging behaviors may be compromised if disturbance levels are too high.

Noise pollution from the U. S. Navy's Low Frequency Active Sonar program and other anthropogenic sources (i.e., shipping) is a potential concern for the health for the western and central stocks (Angliss and Outlaw 2006). Noise from the Acoustic Thermometry of Ocean Climate (ATOC) program and other anthropogenic sources (i.e., shipping and whalewatching) in Hawaii waters is a concern for the central stock. Results from experiments in 1996 off Hawaii indicated only subtle responses of humpback whales to ATOC-like transmissions (Frankel and Clark 1998). Frankel and Clark (2002) indicated that there were also slight shifts in humpback whale distribution in response to ATOC. Efforts are underway to evaluate the relative contribution of noise (e.g., experiments with low frequency acoustic sound sources) to Hawaii's marine environment, although reports summarizing the results of recent research are not currently available.

3.3.1.5.4 Humpback Whales Status

The humpback whale is listed as endangered under the Endangered Species Act, and therefore designated as depleted under the MMPA. As a result, the Central and Western North Pacific stocks of humpback whale are classified as strategic stocks. However, the status of the stocks relative to their Optimum Sustainable Population size is unknown (Angliss and Outlaw 2006).
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According to Angliss and Outlaw 2006, for the western stock, the estimated human-related annual mortality rate (0.69) is less than the PBR level for this stock (1.3). The estimated human-related mortality rate is based solely on mortalities that occurred incidental to the BSAI pollock trawl and the BSAI sablefish pot fisheries. The estimated fishery mortality and serious injury rate exceeds 10% of the PBR (0.1). The rate cannot be considered insignificant and approaching zero.

According to Angliss and Outlaw 2006, for the central stock, the estimated annual mortality and serious injury rate for the entire stock (5.0; 4.2 of which was fishery-related) is considered a minimum. It is unclear whether the level of human-caused mortality and serious injury exceeds the PBR level (12.9) for the central stock. The estimated annual mortality and serious injury rate in Southeast Alaska (3.2, of which 2.7 was fishery-related, but not known to be groundfish fishery) is greater than the PBR level if calculated only for the Southeast Alaska portion of the population (3.0). The minimum estimated fishery mortality and serious injury for this stock is not less that 10% of the calculated PBR for either the entire stock or the portion of the stock in Southeast Alaska and, therefore, cannot be considered to be insignificant and approaching a zero mortality and serious injury rate.

3.3.1.5.5 Humpback Whales Impacts Conclusions

Because of the humpback whales' diet of zooplankton and small schooling fish are not targeted or taken in great amounts by the groundfish fisheries, it is not likely the groundfish fisheries would compete with humpback whales for prey species. Serious injury and mortality have been documented by the North Pacific Groundfish Observer Program for the BSAI pollock trawl and sablefish pot fisheries. Entanglement in fishing gear has also occurred in the GOA, but it is not clear whether any of these entanglements involved groundfish fishing gear. The available information only indicates that the entanglement was from fishing gear with line and buoy which could be pot or hook-and-line gear. Fishing vessel strikes and disturbance are possible because of the overlap of where the whales may occur and where fishing takes place in the summer. Because of the documented incidental takes and the potential for any lined and buoyed gear to entangle humpback whales, the potential effects cannot be assumed to never reach the scale where take may occur and cannot be described as extremely unlikely. Because the potential effects are not insignificant or discountable, **the Alaska groundfish fisheries are likely to adversely affect the western and central stocks of humpback whales.**

3.3.1.6 Sei Whale

3.3.1.6.1 Sei Whale Distribution, Stock Structure and Abundance

Very little information is available on the occurrence of sei whales in Alaska waters. In the past, the number of sei whales supported commercial whaling in the GOA and BSAI as further described in section 3.3.1.6.3. This species is very rarely seen in the GOA today with some spotted in the Kodiak area in 1999 or 2000 (Kate Wynne, University of Alaska Fairbanks, personal communication, March 24, 2006). The occurrence of these whales may be dependent on ocean currents aggregating prey. Sei whales can be easily confused with fin whales so all sightings should be confirmed by observing a white right lip for sei whales (Kate Wynne, University of Alaska Fairbanks, personal communication, March 24, 2006).

Because of the rare occurrence of sei whales in Alaska waters, no stock assessment is available for sei whales that may occur in Alaska waters (Dr. Robyn Angliss NMFS NMML, personal communication September 8, 2005). Sei whales occur in offshore waters and are very rarely seen along the California coast. Sei whale population in the California, Oregon and Washington waters to 300 nm is estimated to be 56 animals based in shipboard surveys from 1996 and 2001 (Barlow 2003). Sei whales are also harvested in the western North Pacific by Japan, as further explained below. The International Whaling Commission has not developed an abundance estimate for North Pacific sei whales (available from: http://www.iwcoffice.org/conservation/permits.htm#jarpn). Tillman (1977) estimated prewhaling abundance of North Pacific sei whales as 42,000 animals. His 1974 estimate of abundance ranged from 7,260 to 12,620 animals. Appendix A contains POP data showing sightings of sei whales in Alaska waters. Sei whales have been seen mostly in the GOA in the spring, summer and fall. A few whales have been observed in the BSAI in the spring and fall.

3.3.1.6.2 Sei Whale Prey

Sei whales eat primarily plankton and occasionally krill, shrimp and small fish in the Atlantic ocean (from http://www.dec.state.ny.us/website/dfwmr/wildlife/endspec/sewhfs.html). No information was found regarding diet of sei whales in the Pacific, but it is assumed to be similar to Atlantic sei whales.

3.3.1.6.3 Sei Whale Human Cause and Natural Mortality

Approximately 61,500 sei whales were harvested between 1947 and 1987 in the Pacific. Whaling for sei whales has been banned since 1976 by the International Whaling Commission and banned by the U. S. since 1972 (NMFS 2003). Sei whales were extensively harvested in the GOA and Aleutian Islands and some in the Bering Sea (Figure 3.3.1.6.1)

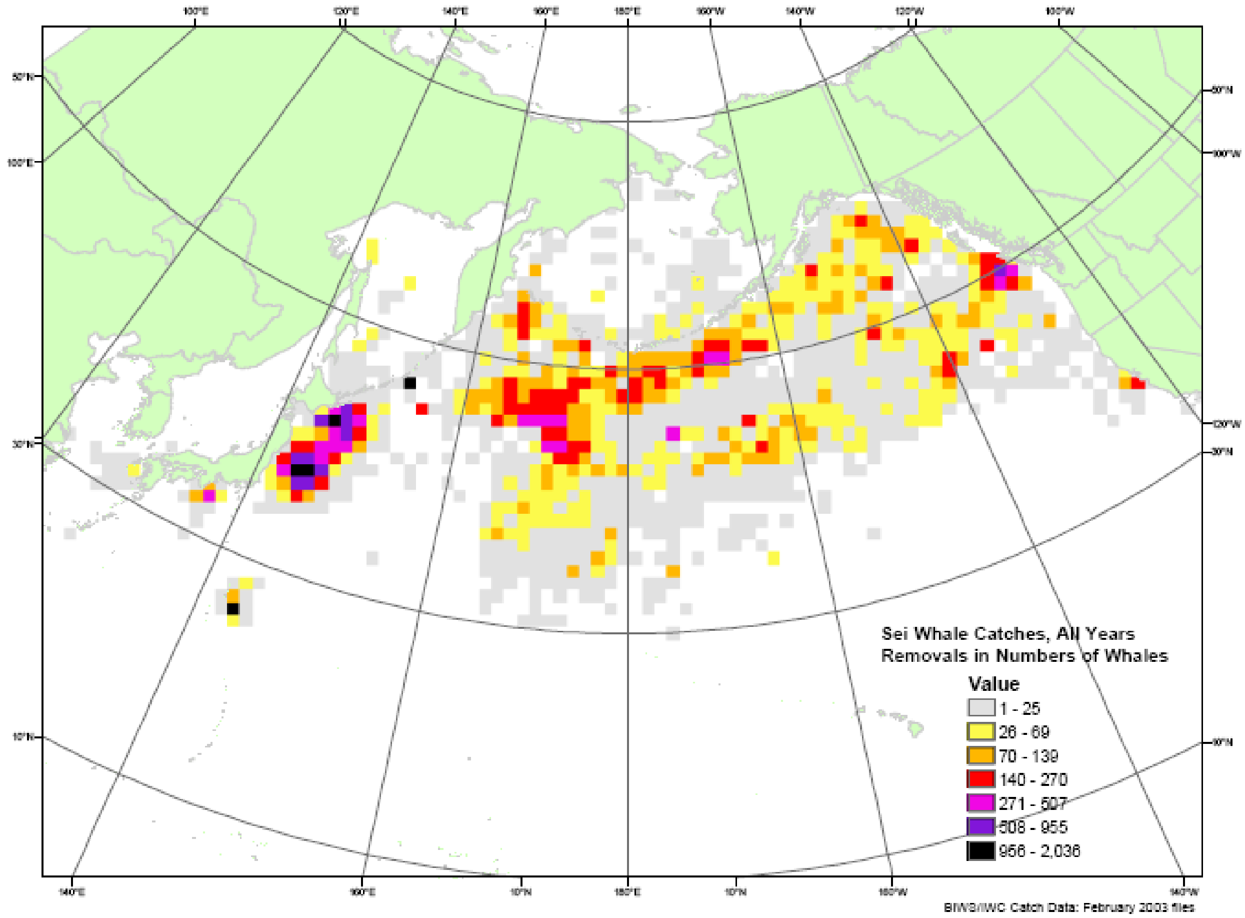


Figure 3.3.1.6.1 Sei Whale catches from commercial whaling (Mizroch and Rice, NMML, in press 2006)

100 sei whales were taken by Japan in 2004 in the western North Pacific Ocean as part of their scientific research on whales (International Whaling Commission, available at http://www.iwcoffice.org/_documents/table_permit.htm). Between 2002 and 2004, Japan harvested from 40 to 100 sei whales each year. It is unknown if these animals are part of a stock that would occur in Alaska waters. Japan proposed to take 100 sei whales for scientific research in 2005 in the North Pacific.

No record of fisheries takes or vessel strikes in the N. Pacific exists for sei whales (NMFS 2003). No stranding records for sei whales in Alaska exist (Mary Sternfeld, personal communication, February 28, 2006).

3.3.1.6.4 Sei Whale Status

Sei whales are listed as endangered under the Endangered Species Act. No stock has been identified that may occur in Alaskan waters.

3.3.1.6.5 Sei Whale Impacts Conclusion

Because sei whales occurrence is so rare, and no records exist of groundfish fisheries and sei whale interaction, it is unlikely that the groundfish fisheries would have any impact on sei whales. Prey overlap between the whales and the groundfish fisheries appears unlikely. Because the groundfish fisheries are not expected to have any sei whale interactions either with vessels or in relation to prey, any potential effects are extremely unlikely to occur. Because potential effects are discountable, **the Alaska groundfish fisheries are not likely to adversely affect sei whales.**

3.3.1.7 Sperm Whale

3.3.1.7.1 Sperm Whales Distribution, Stock Structure and Abundance

Sperm whale distribution is throughout most of Alaskan waters (Figure 3.3.1.7.1) (Angliss and Lodge 2004). The shallow continental shelf apparently bars their movement into the north-eastern Bering Sea and Arctic Ocean (Rice 1989). Females and young sperm whales usually remain in tropical and temperate waters year-round, while males are thought to move north in the summer to feed in the Gulf of Alaska, Bering Sea, and waters around the Aleutian Islands. Seasonal movement of sperm whales in the North Pacific is unclear at this time (Angliss and Lodge 2004).

Based on limited information, and lacking additional data concerning population structure, sperm whales of the eastern North Pacific have been divided into three separate stocks: 1) Alaska (North Pacific stock), 2) California/Oregon/Washington, and 3) Hawaii (Angliss and Lodge 2004).

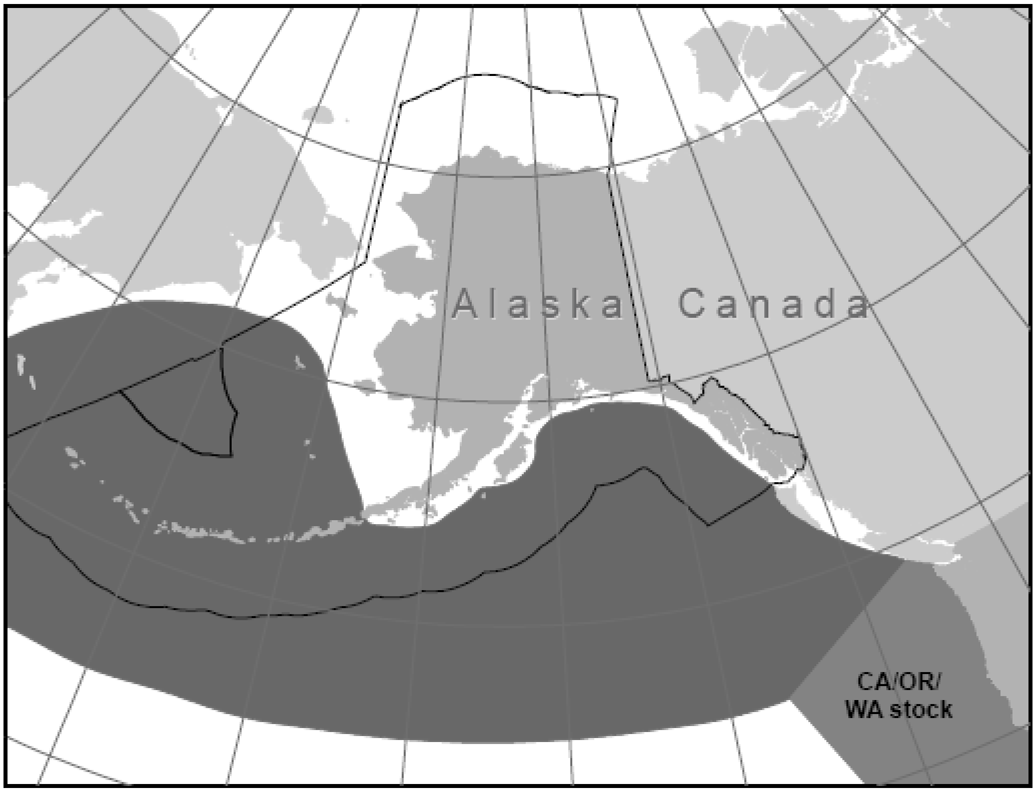


Figure 3.3.1.7.1 Approximate distribution of sperm whales in Alaska waters (shaded area) (Angliss and Lodge 2004).

During 2001 and 2002 research cruises by NMFS in the central and eastern Aleutian Islands, 56 individual sperm whales were seen in waters west of Samalga. (Sinclair et al. 2005).

The International Whaling Commission has not developed an abundance estimate for North Pacific sperm whales (available from: http://www.iwcoffice.org/conservation/permits.htm#jarpn), and no abundance estimate is possible based on the current information (Angliss and Lodge 2004). The number of sperm whales in the eastern North Pacific has been estimated to be 39,200 animals (Barlow and Taylor 1998). The number of sperm whales of the North Pacific occurring within Alaska waters is unknown (Angliss and Lodge 2004). Appendix A contains data from the POP showing sightings of sperm whales.

3.3.1.7.2 Sperm Whales Prey

Sperm whale feed primarily on medium-sized to large-sized, mesopelagic squids but also may feed on large demersal and mesopelagic sharks, skates, octopus, other invertebrates and fishes (Gosho et al. 1984, Tomilin 1967, Tarasevich1968, Berzin 1971). Sperm whales are known for their deep foraging dives (in excess of 3 km). Perez (1990) estimated that their diet in the Bering Sea was 82% cephalopods (mostly squid) and 18% fish. Fish eaten in the North Pacific included salmon, lantern fishes, lancetfish, Pacific cod, pollock, saffron cod, rockfishes, sablefish, Atka mackerel, sculpins, lumpsuckers, lamprey, skates, and rattails (Tomilin 1967, Kawakami 1980, Rice 1986b). Sperm whales taken in the GOA in the 1960s had fed primarily on fish. Daily food consumption rates for sperm whales ranges from 2 - 4% of their total body weight (NMFS 2000, Kawakami 1980).

Male sperm whales are known to take sablefish off longline gear in the GOA (Rozell 2004).

3.3.1.7.3 Sperm Whales Human Caused and Natural Mortality

Male sperm whales are known to be attracted to groundfish fishing activities. In the GOA, sperm whales have been observed feeding off longline gear targeting halibut and sablefish (NMFS 2006b). Approximately 90 male sperm whales are believed to participate in this activity. The interaction with commercial longline gear may have an adverse impact on sperm whales due to entanglement even though no mortalities have been observed. On the contrary, the whales appear to have become more attracted to these vessels in recent years as reliable and easy sources of food. Researchers also have observed that the sperm whales predating on longline gear appear to be able to avoid becoming entangled (Jan Straley, UAF, personal communication, March 13, 2006). Research in the eastern Gulf of Alaska is ongoing to develop deterrents to predation by sperm whales on sablefish longlines (Straley et al. 2005) which may reduce potential for entanglement.

A PBR has not been determined for the sperm whale. In 1997 and 2000, one sperm whale in each year was observed entangled and seriously injured by longline gear in statistical area 640 in the eastern portion of the GOA (Perez 2003). The fishery incidental take for sperm whale is based on observing these single animals, and therefore, the estimated take of sperm whale is very small. Based on the 2004 stock assessment, estimated annual rate of human-caused mortality and serious injury seems minimal for the sperm whale stock (Angliss and Lodge 2004). One dead sperm whale in the GOA was reported in January 2006 to the NMFS Marine Mammal Stranding Program (Aleria Jensen, NMFS Protected Resources Division, personal communication, March 20, 2006). The cause of death was unknown, and there were no signs of human interaction.

The population of sperm whales in the Pacific was likely well below pre-whaling levels before modern whaling for them became especially intense in the late 1940s (Reeves and Whitehead 1997). A total of 258,000 sperm whales were reported to have been taken by commercial whalers operating in the North Pacific between 1947 and 1987 (C. Allison, pers. comm., International Whaling Commission, United Kingdom). This value underestimates the actual kill in the North Pacific as a result of under-reporting by U.S.S.R. pelagic whaling operations, which are estimated to have under-reported catches during 1949-71 by 60% (Brownell et al. 1998). In addition, new information suggests that Japanese land based whaling operations also under-reported sperm whale catches during the post-World War II era (Kasuya 1999). The Japanese officially stopped catching sperm whales in the North Pacific in 1988 (Reeves and Whitehead 1997), but as part of their 2005 research program, they planned to take 10 sperm whale in the western North Pacific (details at the International Whaling Commission website at http://www.iwcoffice.org/conservation/permits.htm). Since 2000, Japan has harvested an average of 6 sperm whales per year in the western North Pacific. It is not known if the sperm whales taken in the western North Pacific may also occur in Alaskan waters.

Potential sources of natural mortality in sperm whales include killer whales and papilloma virus (Lambertson et al. 1987).

3.3.1.7.4 Sperm Whale Status

Sperm whales are listed as endangered under the Endangered Species Act of 1973, and therefore designated as depleted under the MMPA. As a result, this stock is classified as a strategic stock. However, on the basis of total abundance, current distribution, and regulatory measures that are currently in place, it is unlikely that this stock is in danger of extinction or threatened with becoming endangered in the foreseeable future (Braham 1992). Reliable estimates of the minimum population, population trends, PBR, and status of the stock relative to its Optimum Sustainable Population size are currently not available, although the estimated annual rate of human-caused mortality and serious injury seems minimal for this stock (Angliss and Lodge 2004). No known habitat issues exist that are of particular concern for this stock.

3.3.1.7.5 Sperm Whale Impacts Conclusions

Because of the known serious injury due to entanglement with longline gear in the GOA and the predation of sperm whales on longline gear, the potential exists for the GOA longline groundfish fisheries to incidentally take sperm whale. Sperm whales in the GOA are known to feed primarily on fish and may depend on some of the same species as harvested in the groundfish fisheries. The whales have demonstrated their preference for sablefish by predation on sablefish longline sets. Because the longline predation behavior is practiced by male sperm whale, potential takes may not have as large of an impact on the population as predation by both males and females. The potential exists for competition for prey species between sperm whales and the groundfish fisheries, but the effect on the whales foraging success in the GOA from groundfish harvest is unknown. Based on the known potential for incidental take, the effects are not insignificant or discountable. Therefore, **the AK groundfish fisherie may adversely affect sperm whales.**

3.3.1.8 Steller Sea Lion

3.3.1.8.1 Steller Sea Lions Distribution, Stock Structure and Abundance

The latest scientific information regarding Steller sea lions is in the draft recovery plan that is scheduled to be delivered to NMFS by the Recovery Team on March 31, 2006. The information in the recovery plan should be used for purposes of the consultation and is incorporated by reference in this biological assessment. Because the plan was not available at the time of writing this biological assessment, the following information is provided from the latest stock assessment reports for Steller sea lions.

Steller sea lions range along the North Pacific Rim from northern Japan to California (Loughlin et al. 1984), with centers of abundance and distribution in the Gulf of Alaska and Aleutian Islands, respectively. The species is not known to migrate, but individuals disperse widely outside of the breeding season (late May-early July), thus potentially intermixing with animals from other areas. Despite the wide ranging movements of juveniles and adult males in particular, exchange between rookeries by breeding adult females and males (other than between adjoining rookeries) appears low (NMFS 1995). Two separate stocks of Steller sea lions are now recognized within U. S. waters: an eastern U. S. stock, which includes animals east of Cape Suckling, Alaska (144EW) (Fig. 3.3.1.8.1), and a western U. S. stock, which includes animals at and west of Cape Suckling (Loughlin 1997, Fig. 3.3.1.8.2).

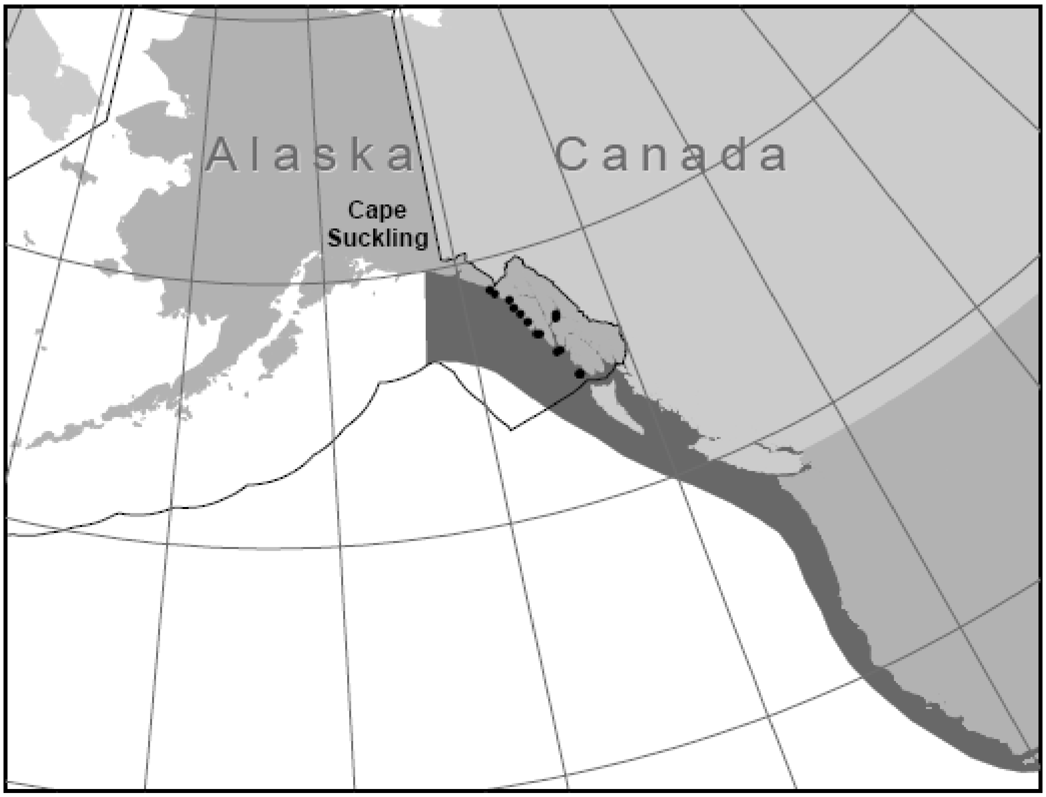


Figure 3.3.1.8.1 Approximate distribution of Steller sea lions in the eastern U.S. stock (shaded area).
Major haulout and rookeries are also depicted (points). Note: Haulouts and rookeries in British Columbia are not shown (Angliss and Outlaw 2006).

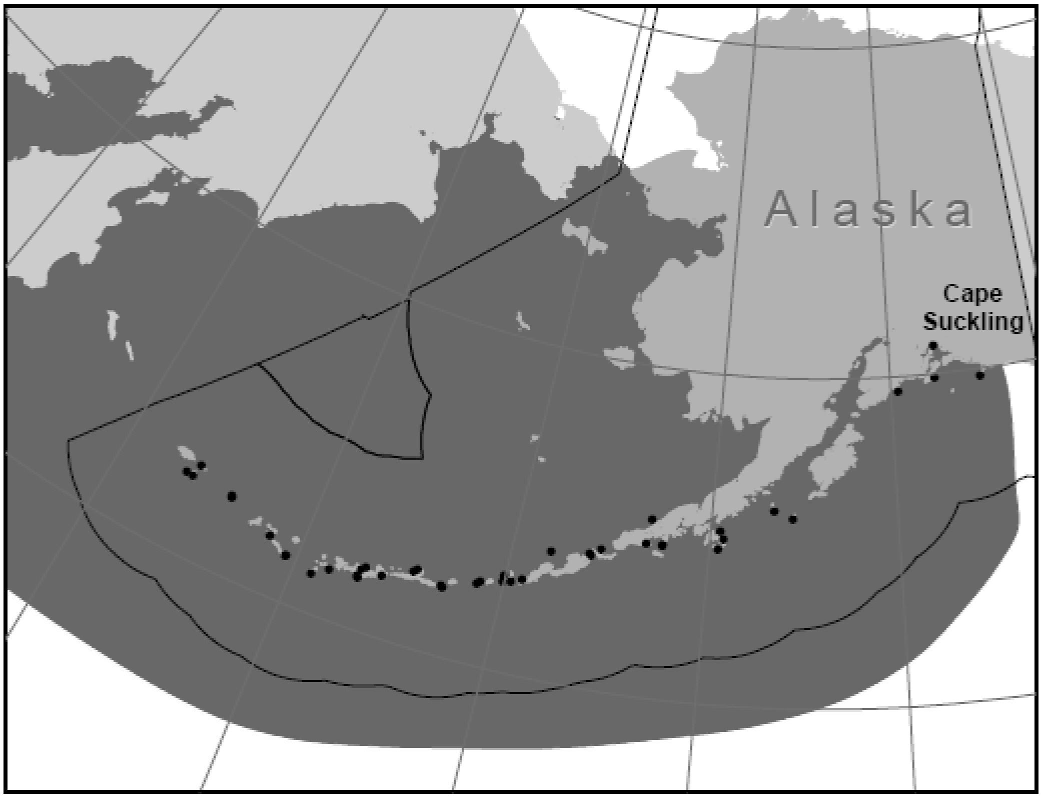


Figure 3.3.1.8.2 Approximate distribution of Steller sea lions in the western North Pacific (shaded area).
Major haulouts and rookeries are also depicted (points) (Angliss and Outlaw 2006).

The most recent comprehensive estimate (pups and non-pups) of abundance of the western stock of Steller sea lions in Alaska is based on aerial surveys of non-pups in June 2004 and ground-based pup counts in June and July of 2001-2004 (NMML, unpublished data). Data from these surveys represent actual counts of pups and non-pups at all rookeries and major haulout sites. During the 2004 aerial survey, a total of 29,037 non-pups were counted at 262 rookeries and haul-out sites; 13,892 in the Gulf of Alaska and 15,145 in the Bering Sea/Aleutian Islands (NMML, unpublished data). A composite pup count for 2001-2004 includes counts from 2 sites in 2001, 14 sites in 2002, 16 sites in 2003, and 18 sites in 2004. There were 4,192 pups counted in the Gulf of Alaska and 5,284 pups counted in the Bering Sea/Aleutian Islands for a total of 9,476 for the stock. Combining the pup count data from 2001-2004 (9,476) and non-pup count data from 2004 (29,037) results in a minimum abundance estimate of 38,513 Steller sea lions in the western U.S. stock in 2001-2004 (Angliss and Outlaw 2006).

The eastern stock of Steller sea lions breeds on rookeries located in southeast Alaska, British Columbia, Oregon, and California; there are no rookeries located in Washington. Counts of pups on rookeries conducted near the end of the birthing season are nearly complete counts of pup production. Calkins and Pitcher (1982) concluded that the total Steller sea lion population could be estimated by multiplying the pup counts by a factor of 4.5, which was based on the birth rate, and the sex and age structure of the western Steller sea lion population in the central

Gulf of Alaska. Using the most recent (2002) pup counts from aerial surveys from across the range of the eastern stock, the total population of the eastern stock of Steller sea lions is estimated to be 44,996. This is based on multiplying the total number of pups counted in southeast Alaska (4,877; Pitcher, ADF&G, unpublished data), British Columbia (3,281; Pitcher, ADF&G, unpublished data), Oregon (1,128; Pitcher, ADF&G, unpublished data), and California (713; Pitcher, ADF&G, unpublished data) by 4.5. This is not a minimum population estimate, since it is extrapolated from pup counts from photographs taken in 2002, and demographic parameters of a stable non-pup population that were estimated for the western Steller sea lion in the mid-1970s (Calkins and Pitcher 1982).

The 4.5 multiplier is used for estimating the size of the eastern stock of Steller sea lions, but not the western stock (Angliss and Outlaw 2006). The 4.5 multiplier is based on a life history table using age-specific fecundity and survival for a stable population. Clearly, because the western stock has declined drastically, the assumption of a stable population is not valid. Because the eastern stock is increasing within most of its range, using the 4.5 multiplier is a reasonable approach to estimating abundance from pup counts.

For the eastern stock, the minimum population estimate is calculated by adding non-pup counts from 2002 (not trend counts) from Southeast Alaska (15,283), 1996 from WA/OR/CA (6,555), Canada counts from 1998 (11,891), and pup counts from throughout the range from 2002 (9,999), which results in 43,728 animals for the eastern U. S. stock of Steller sea lions (Angliss and Outlaw 2006).

Survey data collected since 2000 suggest that the decline has slowed or stopped in most of the range of the western U. S. stock. Many factors have been suggested as causes of the decline, (e.g., overfishing, environmental change, disease, killer whale predation) but it is not clear which single or combination of factors are most important in causing the decline (Angliss and Outlaw 2006). However, nutritional stress related to competition with commercial fisheries is a hypothesis currently receiving serious attention.

The eastern stock of Steller sea lions is stable or increasing throughout the northern portion of its range (Southeast Alaska and British Columbia). The stock has been declining in the southern end of its range, where habitat concerns include reduced prey availability, contaminants, and disease (Sydeman and Allen 1997).

3.3.1.8.2 Steller Sea Lion Prey

A detailed description of Steller sea lion foraging behavior is in section 4.8.6 of the FMP BiOp (NMFS 2000). Tables 4.4, 4.5a and 4.5b of NMFS 2000 show a variety of fish and invertebrate prey based on scat analysis. The most frequently seen groundfish prey includes pollock, Pacific cod, and Atka mackerel. Because of the significant overlap with the prey species harvested by the groundfish fisheries in time and space with foraging Steller sea lions, protection measures were implemented to reduce potential competition (68 FR 204, January 2, 2003).

3.3.1.8.3 Steller Sea Lion Status

The unprecedented decline in the western U. S. stock of Steller sea lion caused a change in the listing status of the western stock from threatened to endangered under the U. S. Endangered Species Act of 1973. The 2000 FMP BiOp determined that the continued prosecution of the pollock, Pacific cod, and Atka mackerel fisheries as described in the Fishery Management Plan for Bering Sea/Aleutian Islands Groundfish and in the Fishery Management Plan for Gulf of Alaska Groundfish is likely to jeopardize the continued existence of the western distinct population segment of Steller sea lion and to adversely modify critical habitat (NMFS 2000). NMFS also identified several other factors that could contribute to the decline of the population, including a shift in a large-scale weather regime and predation. To avoid jeopardy, NMFS identified a Reasonable and Prudent Alternative that included components such as 1) adoption of a more precautionary rule for setting “global” harvest limits, 2) extension of 3 nmi protective zones around rookeries and haulouts not currently protected, 3) closures of many areas around rookeries and haulouts to 20 nmi, 4) establishment of 4 seasonal catch limits inside critical habitat and two seasonal releases outside of critical habitat, and 5) establishment of a procedure for setting limits on removal levels in critical habitat based on the biomass of target species in critical habitat.

In 2001, NMFS developed a supplemental EIS to consider the impacts on the environment of the Steller sea lion protection measures for the pollock, Pacific cod and Atka mackerel fisheries (NMFS 2001). This SEIS includes the 2001 BiOp on the pollock, Pacific cod, and Atka mackerel fisheries effects on Steller sea lions in Appendix A. A committee composed of 21 members from fishing groups, processor groups, Alaska communities, environmental advocacy groups, and NMFS representatives met to recommend conservation measures for Steller sea lions and to develop a "preferred alternative" for the SEIS. Although consensus was not reached, a "preferred alternative" was identified and included in the SEIS. The preferred alternative included complicated, area-specific management measures (e.g., area restrictions and closures) designed to reduce direct and indirect interactions between the groundfish fisheries and Steller sea lions, particularly in waters within 10 nmi of haulouts and rookeries (see section 2.0 of the SEIS for details). The suite of conservation measures implemented in 2002 were developed after working with the: 1) State of Alaska to explore whether there are potential adverse effects of state parallel fisheries on Steller sea lions, and 2) the North Pacific Fishery Management Council to minimize concentration of fisheries in time and space. NMFS completed a biological opinion on these protection measures and found that the pollock, Pacific cod and Atka mackerel fisheries were not likely to cause jeopardy of extinction or adversely modify or destroy designated critical habitat (NMFS 2001, Appendix A).

In addition, the existing recovery plan for Steller sea lions is being revised with a draft available in March 2006. This recovery plan will have the latest scientific information regarding Steller sea lion recovery and should be considered in the consultation. The SSL Recovery Team met in March 2006 for the final time as a group to review and approve recent changes to the draft recovery plan which is scheduled to be delivered to NMFS on March 31, 2006. Key elements such as downlisting and delisting criteria were added and approved. NMFS will put the draft plan out for public review and comment. The Team will continue to exist through the completion of the final recovery plan in the event that the agency needs to seek their advice in responding to the comments received from the public (Kaja Brix, NMFS AK Region Protected Resources, personal communication, March 24, 2006). NMFS also is working towards the development of a comanagement agreement with Alaska Native organizations for subsistence harvest of the western stock of Steller sea lions (Angliss and Outlaw 2006).

The eastern U.S. stock of Steller sea lion is currently listed as threatened under the ESA, and therefore designated as depleted under the MMPA (Angliss and Outlaw 2006). In the FMP BiOp, the Alaska groundfish fisheries were determined to be not likely to cause jeopardy or adverse modification of critical habitat for this stock (NMFS 2000).

3.3.1.8.4 Steller Sea Lion Human and Natural Mortality

Steller sea lions mortalities are documented for the Alaska groundfish fisheries and in the Alaska salmon and halibut fisheries. Between 1999-2003, there were incidental serious injuries and mortalities of western Steller sea lions in the following fisheries: Bering Sea/Aleutian Islands Atka mackerel trawl, Bering Sea/Aleutian Islands flatfish trawl, Bering Sea/Aleutian Islands Pacific cod trawl, Gulf of Alaska Pacific cod trawl , Gulf of Alaska pollock trawl, Bering Sea/Aleutian Islands Pacific cod longline, and Bering Sea/Aleutian Islands pollock trawl (Angliss and Outlaw 2006 and List of Fisheries 71 FR 247, January 4, 2006). The mean annual mortality of the western stock of Steller sea lions for each of these fisheries are in Table 3.3.1.8.1

Table 3.3.1.8.1 Mean Annual Mortality of the western stock of Steller sea lions in Observed Alaska Groundfish Fisheries (Angliss and Outlaw 2006)

Fishery	**Mean Annual Mortality in animals**
Bering Sea/Aleutian Islands Atka mackerel trawl	1.51 (CV = 0.19)
Bering Sea/Aleutian Islands flatfish trawl	3.35 (CV = 0.17)
Bering Sea/Aleutian Islands Pacific cod trawl	1.09 (CV = 0.58)
Gulf of Alaska Pacific cod trawl	0.94 (CV = 0.83)
Gulf of Alaska pollock trawl	2.51 (CV = 0.13)
Bering Sea/Aleutian Islands Pacific cod longline	0.74 (CV = 0.86)
Bering Sea/Aleutian Islands pollock trawl	2.51 (CV = 0.13)

Based on observer data, the mean annual mortality for the western stock of Steller sea lions in the Prince William Sound drift gillnet fishery is approximately 14.5 animals per year (Angliss and Outlaw 2006), significantly more than the mortality observed in the groundfish fisheries.

A summary of self report information on the takes of western stock of Steller sea lions in the other Alaska fisheries (salmon and halibut) is in the Marine Mammal Stock Assessment Report (Angliss and Outlaw 2006). During the period between 1990 and 2003, fisher self-reports from 6 unobserved fisheries resulted in an annual mean of 5.4 mortalities from interactions with commercial fishing gear. However, because logbook records (fisher self-reports required during 1990-94) are most likely negatively biased (Credle et al. 1994), these are considered to be minimum estimates (Angliss and Outlaw 2006).

For the western stock of Steller sea lions, the minimum estimated mortality rate incidental to commercial fisheries is 30.7 sea lions per year, based on observer data (25.1) and self-reported fisheries information (6) or stranding data (0.2) where observer data were not available (Angliss and Outlaw 2006). No observers have been assigned to several fisheries that are known to interact with this stock, making the estimated mortality a minimum estimate.

Steller sea lions also are harvested by Alaska native for subsistence. The great majority (approximately 99%) of the statewide subsistence take was from the western U. S. stock and the majority (79%) of this take was by Aleut hunters in the Aleutian and Pribilof Islands with a total mean subsistence harvest of 187.8 Steller sea lions/year (Angliss and Outlaw 2006).

Illegal shooting of sea lions was thought to be a potentially significant source of mortality prior to the listing of sea lions as threatened under the ESA in 1990. Such shooting has been illegal since the species was listed as threatened. (Note: the 1994 Amendments to the MMPA made intentional lethal take of any marine mammal illegal except for subsistence take by Alaska Natives or where imminently necessary to protect human life). Records from NMFS enforcement indicate that there were 2 cases of illegal shootings of Steller sea lions in the Kodiak area in 1998, both of which were successfully prosecuted (NMFS, Alaska Enforcement Division). There have been no cases of successfully prosecuted illegal shootings between 1999 and 2003 (NMFS, Alaska Enforcement Division).

For the western U. S. stock of Steller sea lions, the PBR is 231 animals (Angliss and Outlaw 2006). The current annual level of incidental mortality for the western stock exceeds 10% of the PBR and, therefore, cannot be considered insignificant and approaching a zero mortality and serious injury rate under the Marina Mammal Protection Act. Based on available data, the estimated annual level of total human-caused mortality and serious injury from fisheries and subsistence (218.7) is below the PBR level for the western stock. Given that the western stock population is declining for unknown reasons that are not explained by the level of direct human-caused mortality, there is no guarantee that limiting those mortalities to the level of the PBR will reverse the decline.

Fishery observers monitored four commercial fisheries during the period from 1990 to 2003 in which Steller sea lions from the eastern stock were taken incidentally: the California (CA)/Oregon (OR) thresher shark and swordfish drift gillnet, WA/OR/CA groundfish trawl, and Northern Washington (WA) marine set gillnet, and Gulf of Alaska sablefish longline fisheries. One Steller sea lion mortality was observed in the Gulf of Alaska sablefish longline in 2000 resulting in an annual mean mortality rate of 1.37 animals per year (Angliss and Outlaw 2006). The minimum estimated mortality rate incidental to commercial fisheries (both U.S. and Canadian) is 4.02 sea lions per year, based on observer data, self-reported fisheries information, and stranding data (Angliss and Outlaw 2006).

Compared to the western stock, very little subsistence harvest of the eastern stock is conducted by Alaska natives. Approximately 4 animals a year were taken between 2000 and 2003. Unknown numbers of animals are taken by Canadian subsistence hunters (Angliss and Outlaw 2006).

As with the western stock, illegal shooting of eastern stock of sea lions have occurred (Angliss and Outlaw 2006). Records from NMFS enforcement indicate that there were 2 cases of illegal shootings of Steller sea lions in Southeast Alaska between 1995 and 1999: the cases involved the illegal shooting of one Steller sea lion near Sitka in 1998, and 3 Steller sea lions in Petersburg. Both cases were successfully prosecuted (NMFS, Alaska Enforcement Division). No records of illegal shooting of Steller sea lions from the eastern stock are listed in the NMFS enforcement records for 1999-2003 (NMFS, unpublished data).

Other potential sources of mortality include the shooting of animals in British Columbia near aquaculture facilities. Shooting of animals near aquaculture facilities has been prohibited since 2004 (P. Olensiuk, personal communication in Angliss and Outlaw 2006). Stranding data includes records of animals entangled in a cargo net, a tire, and other types of ropes or lines that may or may not be fisheries related (Angliss and Outlaw 2006).

For the eastern stock, the PBR is 1,967 animals (Angliss and Outlaw 2006). Based on currently available data, the minimum estimated fishery mortality and serious injury for this stock (5.12) is less than that 10% of the calculated PBR (197) and, therefore, can be considered to be insignificant and approaching a zero mortality and serious injury rate. The estimated annual level of total human-caused mortality and serious injury from fishery interactions, and subsistence harvests, and shootings (9.12) does not exceed the PBR (1,967) for this stock (Angliss and Outlaw 2006).

Sections 4.8.8, 4.8.9, and 4.8.10 of the FMP Biop review natural causes of mortality or stress for Steller sea lions. These natural causes include predation, competition and disease. Predators include killer whales and sharks. Steller sea lions may compete with fur seal and harbor seals for fish but the extent of competition depends on age, the type of prey needed (species and size) and where and when the prey is eaten. Section 4.8.10 of the FMP BiOp lists a number of diseases including parasites, but it is not know if these may be related to the population decline of the western DPS of Steller sea lions.

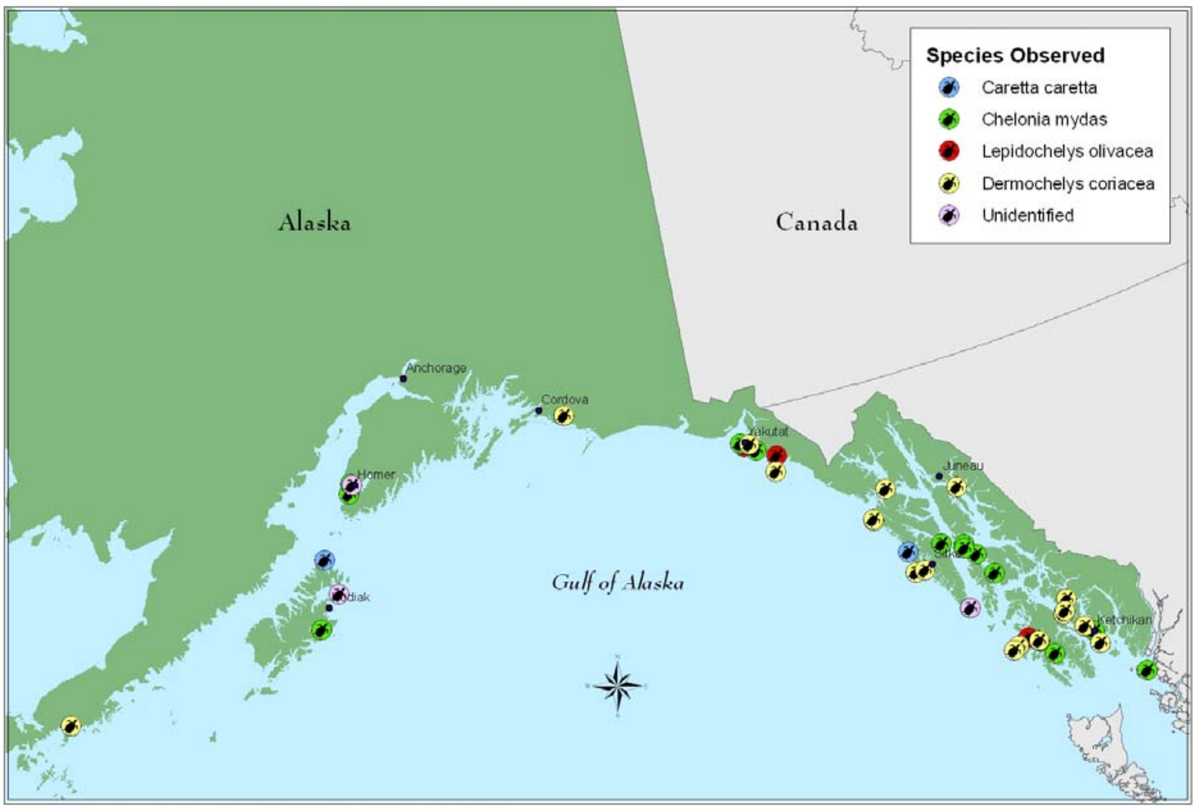
3.3.1.8.5 Steller Sea Lion Conclusions

Because of the overlap of prey harvested in the groundfish fisheries and the prey used by Steller sea lions and because of the potential of take in trawl and hook-and-line fishing gear**, the Alaska groundfish fisheries are likely to adversely affect the western and eastern stocks of Steller sea lions.** The location and pace of removal of important prey species in designated critical habitat is controlled by area restrictions, restrictions on overall harvest, seasonal apportionments of harvest, and limitations on harvest within critical habitat for the Atka mackerel and pollock fisheries (as described in Appendix B). These restrictions prevent the adverse modification of critical habitat, ensuring sufficient prey is available for foraging. Regardless, the groundfish fisheries have adverse effects on critical habitat by the removal of prey species. Because the Alaska groundfish fisheries harvest prey species within critical habitat, the **Alaska groundfish fisheries are likely to adversely affect designated critical habitat for the western or eastern stock of Steller sea lions.**

3.3.2 ESA-Listed Turtle Occurrence and Groundfish Fisheries Interaction

ESA-listed turtles that may occur in Alaskan waters are limited to four species: leatherback, Olive Ridley, loggerhead, and green sea. The best available status, occurrence and fisheries interaction information for ESA-listed turtles is primarily in the 2005 biological opinion for the Hawaii-based pelagic, deep-set, tuna longline fishery (NMFS 2005b) and from recorded sightings of turtles maintained by the NMFS Auke Bay Lab (Bruce Wing, NMFS Auke Bay Lab, personal communication, December 12, 2005). The recorded sightings in Alaska waters are shown in Figure 3.3.2.1. See Table 3.1 for the scientific and common names of the turtles.

Incidental Sightings of Sea Turtles in Alaska, 1963 - 2002



Sightings data collected by Bruce Wing, NOAA Fisheries AKFSC, Auke Bay Lab;
Data converted to geospatial format and mapped by NOAA Fisheries Service, Alaska Region, Protected Resources Division, March 2006

Figure 3.3.2.1 Incidental Sightings of Sea Turtles in Alaska, 1963 - 2002

3.3.2.1 Leatherback Turtle

3.3.2.1.1 Leatherback Turtle Distribution, Stock Structure, Abundance, and Nesting

Leatherback turtles are widely distributed throughout the oceans of the world. Leatherback sea turtles are the largest living turtles and range farther than any other sea turtle species (NMFS 2000). Their large size and tolerance of relatively low temperatures allow them to occur in northern waters (NMFS and USFWS 1995). Adult leatherbacks forage in temperate and subpolar regions from 71° N to 47° S latitude in all oceans and undergo extensive migrations to and from their tropical nesting beaches.

The species is found in four main regions of the world: the Pacific, Atlantic, and Indian Oceans, and the Caribbean Sea (Ernst and Barbour 1972). Leatherbacks also occur in the Mediterranean Sea, although they are not known to nest there. The four main regional areas may further be divided into nesting aggregations. Leatherback turtles are found on the western and eastern coasts of the Pacific Ocean, with nesting aggregations in Mexico and Costa Rica (eastern Pacific) and Malaysia, Indonesia, Australia, Vanuatu, the Solomon Islands, Papua New Guinea, Thailand, and Fiji (western Pacific) (NMFS 2005b). They range as far north as Alaska and the Bering Sea and as far south as Chile and New Zealand. In Alaska, leatherback turtles are found as far north as 60.34 N, 145.38W and as far west as the Aleutian Islands (Hodge 1979, Stinson 1984). Leatherback turtles have been found in the Bering Sea along the coast of Russia (Bannikov et al. 1971). Only 19 sightings of leatherback turtles in Alaska waters have been recorded since 1960, all within the GOA. The last recorded sighting was in 1993 (Bruce Wing, NMFS Auke Bay Lab, personal communication, December 12, 2005).

In 1980, the leatherback population was estimated at approximately 115,000 adult females globally (Pritchard 1982). That number is probably an overestimation as it was based on a particularly good nesting year in 1980 (Pritchard 1996). By 1995, the global population of adult females had declined to 34,500 (Spotila et al. 1996). Since Spotila's 1996 estimate, the eastern Pacific leatherback population has continued to decline, leading some researchers to conclude that the leatherback is now on the verge of extinction in the Pacific Ocean (Spotila et al. 2000).

Current data from genetic research suggest that Pacific leatherback stock structure (natal origins) may vary by region. Due to the fact that leatherback turtles are highly migratory and stocks mix in high seas foraging areas, and based on genetic analyses of samples collected by both Hawaii-based and west coast-based longline observers, leatherback turtles inhabiting the northern and central Pacific Ocean are comprised of individuals originating from nesting assemblages located south of the equator in the western Pacific (e.g. e.g. Indonesia, Papua New Guinea, Solomon Islands, and Vanuatu) and in the eastern Pacific along the Americas (e.g., Mexico, Costa Rica) (Dutton et al. 2000). The origin of leatherback turtles occurring in AK waters is not known. It is likely that they are primarily from the western Pacific nesting population based on the tendency of eastern Pacific nesting leatherbacks to migrate south (Christina Fahy, NMFS SW Region Protected Resources, personal communication March 20, 2006). Genetic sampling would be necessary to determine the origin of the turtles occurring in Alaska (Bruce Wing personal communication March 16, 2006).

Nesting in the Eastern Pacific

Leatherback nesting populations are declining at a rapid rate along the Pacific coast of Mexico and Costa Rica (NMFS 2005b). Three countries which are important to leatherbacks nesting in the eastern Pacific include Costa Rica, which has the highest abundance and density in this area, Mexico, with several important nesting beaches, and Nicaragua, with two important nesting areas. Leatherbacks have been documented nesting as far north as Baja California Sur and as far south as Panama, with few areas of high nesting (Sarti 2002).

Costa Rica
During the 1980s researchers realized that the beaches of Playa Grande, Playa Ventanas and Playa Langosta collectively hosted the largest remaining Pacific leatherback populations in Costa Rica (NMFS 2005b). Since 1988, leatherback turtles have been studied at Playa Grande (in Las Baulas), the fourth largest leatherback nesting colony in the world. During the 1988-89 season (July-June), 1,367 leatherback turtles nested on this beach, and by the 1998-99 season, only 117 leatherback turtles nested (Figure 3.3.2.1.1) (Spotila et al. 2000). The 2003/2004 nesting season showed an increase in nesting abundance from the previous two seasons. An estimated 159 females nested at Playa Grande in 2003/2004 up from 69 and 55 in 2001/2002 and 2002/2003. Scientists speculate that the low turnout during 2002-03 may have been due to the "better than expected season in 2000-01 (397 nesting females) which temporarily depleted the pool of adult females in reproductive condition following the El Niño/La Niña transition" (R. Reina, Drexel University, personal communication, September, 2003).

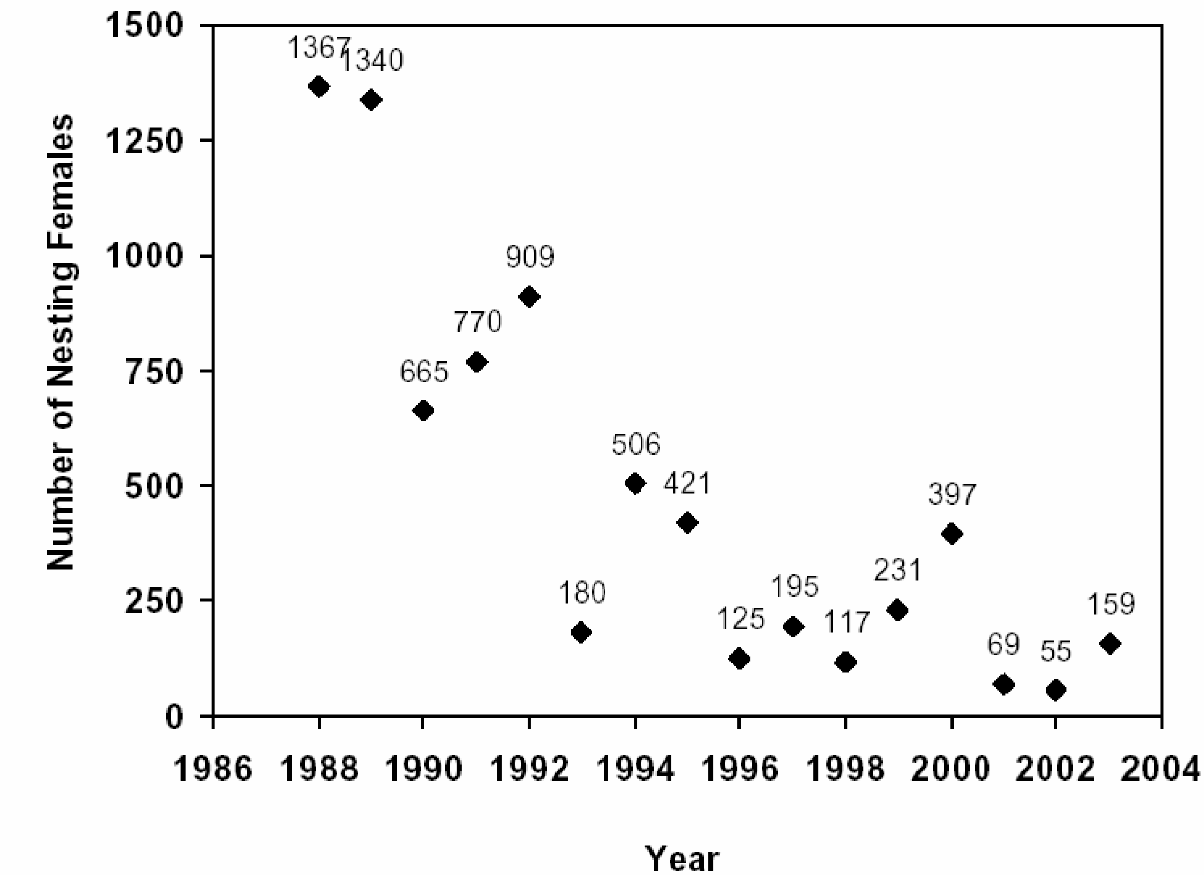


Figure 3.3.2.1.1 **Estimated number of nesting female leatherback turtles at Playa Grande, Costa Rica**
(Spotila et al. 2000; Reina et al. 2002; numbers for the 2002/2003 and 2003/2004 seasons came from http://www.leatherback.org/pages/project/report/report0304.htm and were confirmed by personal communication from R. Reina to C. Fahey). The nesting season occurs over the winter months and hence over two calendar years. Therefore, the year on the x-axis is the earlier calendar year of the census and the season would be denoted year/yaer+1. (Figure Source: Snover 2005)

Researchers began tagging females at Playa Grande in 1994. Since then, tagged leatherbacks have had a low return rate: 16% and 25% in the five or six years following tagging. Spotila et al. (2000) calculated a mean annual mortality rate of 35% for leatherbacks nesting at Las Baulas. Comparatively few leatherback turtles are returning to nest on east Pacific nesting beaches, and it is likely that eastern Pacific leatherback turtles are experiencing abnormally high mortalities during non-nesting years. Since 1993, environmental education and conservation efforts through active law enforcement have greatly reduced egg poaching in Costa Rica (Chaves et al. 1996). During the 1993-94 nesting season, poaching accounted for a loss of only 1.3% of nests on Playa Grande. Other losses were due to predation, tidal effects and failure in egg development or infestation by maggots (Schwandt et al. 1996). Bell et al. (2003) found that while leatherbacks at Playa Grande had a high rate of fertility (mean = 93.3% ± 2.5%), embryonic death was the main cause of low hatchling success in this population. Researchers at Playa Grande have also found that temperature of the sand surrounding the egg will determine the sex of the hatchlings during a critical phase of their embryonic development. At this beach, temperatures above 29.5°C produce female hatchlings, while below 29.5°C, the hatchlings are male (Bell et al. 2003).

Population growth rate parameters were calculated for nesting female leatherbacks at Playa Grande, Costa Rica. These parameters apply only to the portion of the population represented by females in the adult stage. Population growth rate parameters were updated from the 2004 BiOp using the Dennis-Holmes running sum method which corrects for observation error when the entire population in not surveyed (Holmes 2001; Morris and Doak 2002). As evidenced by the trends in the nesting beach census data (Figure 3.3.2.1.1), there is a high probability of quasi- and ultimate extinction of this population of leatherbacks, consistent with Spotila et al. (2000). The mean and upper 95% CI are consistent with near certainty that the population will reach quasi-extinction thresholds within the next 20-25 yr and over the next 50-100 yr, the degree of certainty of quasi-extinction increases (Table 3.3.2.1.1) (Snover 2005). There is a high probability of ultimate extinction over a 50-100 yr time period as well (Table 3.3.2.1.1).

Spotila et al. (2000) estimated that there were 1,690 adult female leatherbacks in the eastern Pacific. Since that time, trends in the major nesting beaches have continued to decline. The 2 yr running sum estimated 124 total adult females as of 2002 for the Playa Grande population and a similar analyses of Mexican nesting beaches indicates 1,100 adult females as of 2001 (NMFS 2005b). Thus, a total of 1,224 total adult females is estimated for the eastern Pacific (Snover 2005).

Table 3.3.2.1.1 Results of the Dennis-Holmes Model for leatherback turtles from Playa Grande, Costa Rica.

Unless otherwise noted, values are reported as means with the lower and upper 95% confidence intervals in brackets. Quasi-extinction is defined as 50 adult females and ultimate extinction is defined as 1 adult female. (Source: Snover 2005).

Demographic Parameter		Estimate (baseline)
Log growth rate (μ)		-0.15 [-0.33, 0.03]
Variance in mean log growth rate (σ^2)		0.02 [0.01, 0.67]
Finite rate of change in population size (λ_A)		0.87 [0.73, 1.43]
Instantaneous rate of change in population size (r_A)		-0.14 [-0.32, 0.36]
Risk of quasi-extinction		
Probability of quasi-extinction ever occurring		1 [0.90, 1]
Median time to quasi-extinction (yr)		8.99
Probability of quasi-extinction in:	25 yr	1 [0.22, 1]
	50 yr	1 [0.61, 1]
	100 yr	1 [0.91, 1]
Risk of ultimate extinction		
Probability of extinction ever occurring		1 [0.67, 1]
Median time to extinction (yr)		35.55
Probability of extinction in:	25 yr	0.02 [0, 0.95]
	50 yr	0.98 [0, 1]
	100 yr	1 [0.04, 1]

Mexico

The decline of leatherback subpopulations is even more dramatic off the Pacific coast of Mexico. Surveys indicate that the eastern Pacific Mexican population of adult female leatherback turtles has declined from 70,000[5] in 1980 (Pritchard 1982b, *in* Spotila et al. 1996) to approximately 60 nesting females during the 2002/03 nesting season, the lowest seen in 20 years (L. Sarti, UNAM, personal communication, June, 2003 in NMFS 2005b).

According to reports from the late 1970s and early 1980s, three beaches located on the Pacific coast of Mexico (Bahiá de Chacahua, Oaxaca, Tierra Colorada, Guerrero and Mexiquillo, Michoacán) sustained a large portion of all global nesting of leatherback turtles, perhaps as much as one-half. Because nearly 100% of the clutches in these areas were poached by local people, a monitoring plan was implemented to evaluate the nesting population and establish measures for the protection of eggs. From aerial surveys, daily beach surveys, and nightly patrols, the

[5] This estimate of 70,000 adult female leatherback turtles comes from a brief aerial survey of beaches by Pritchard (1982), who has commented: "I probably chanced to hit an unusually good nesting year during my 1980 flight along the Mexican Pacific coast, the population estimates derived from which (Pritchard 1982) have possibly been used as baseline data for subsequent estimates to a greater degree than the quality of the data would justify" (Pritchard 1996).

following information has been determined for nesting leatherbacks on the Pacific coast of Mexico:

1. Four main nesting beaches: Mexiquillo, Michoacán; Tierra Colorada, Guerrero; and Cahuitan and Barra de la Cruz, in Oaxaca, comprise from 40-50% of total leatherback nests along the Mexican Pacific;
2. Four secondary nesting beaches: Chacahua, Oaxaca; La Tuza, Oaxaca; Playa Ventura, Guerrero, and Agua Blanca, Baja California Sur;
3. All eight beaches comprise approximately 75-80% of the total annual leatherback nests of the Mexican Pacific (Sarti, personal communication, December, 2003 in NMFS 2005b).

Monitoring of leatherback nesting assemblage at Mexiquillo, Mexico has been continuous since 1982. During the mid-1980s, more than 5,000 nests per season were documented along 4 kilometers of this nesting beach. By the early 1990s (specifically 1993), less than 100 nests were counted along the entire beach (18 kilometers) (Sarti 2002). According to Sarti et al. (1996), nesting declined at this location at an annual rate of over 22 percent from 1984 to 1995.

Censuses of four index beaches in Mexico during the 2000-2001 nesting season showed a slight increase in the numbers of females nesting compared to the all-time lows observed from 1996 through 1999 (Sarti et al. in prep). However, the number of nests during the 2001/2002 and 2002/2003 were the lowest ever recorded, as shown in Table 3.3.2.1.2 Annual number of leatherback nests from 2000-2003 on primary and secondary nesting beaches..

Table 3.3.2.1.2 Annual number of leatherback nests from 2000-2003 on primary and secondary nesting beaches.

Index Beach	2000-2001	2001-2002[1]	2002-2003[2]
Primary Nesting Beach (40-50% of total nesting activity)			
Mexiquillo	624	20	36
Tierra Colorada	535	49	8
Cahuitan	539	52	73
Barra de la Cruz	146	67	3
Secondary Nesting Beaches			
Aqua Blanca	113	No data	No data
Total – all index beaches	1,957	188	120
Total – Mexican Pacific	4,513	658	Not yet available

[1]Sarti, personal communication, March, 2002 – index beaches; Sarti et al. 2002 for totals;
[2]Source: Sarti, personal communication, December, 2003 – index beaches, totals

A summary of total leatherback nests counted and total females estimated to have nested along the Mexican coast from 1995 through 2003 is shown in Table 3.3.2.1.3 Total leatherback nests counted and total number of females estimated to nest along the Mexican Pacific coast per season.. During the 1980s, 30% of the nesting females per season were remigrants, but since the mid-1990s, there has been very little evidence of remigration (Sarti et al. 2000). During the 1999-2000 and 2000-01 nesting seasons, only a small increment in the number of remigrant turtles was observed (Sarti 2002).

Although the causes of the decline in the eastern Pacific nesting populations are not entirely clear, Sarti et al. (1998) surmise that the decline could be a result of intensive egg poaching on the nesting beaches, incidental capture of adults and juveniles in high seas fisheries, and natural fluctuations due to changing environmental conditions. Although leatherback turtles are not generally captured for their meat or skin in Mexico, the slaughter of female leatherback turtles has been detected on beaches such as Piedra de Tiacoyunque, Guerrero (Sarti et al. 2000). Leatherbacks were once harvested off Baja California but their meat is now considered inferior for human consumption (Nichols 2002). There is little information on incidental capture of adults due to coastal fisheries off Mexico, but entanglement in longlines and driftnets probably account for some mortality of leatherback turtles. Eckert (1997) speculates that the swordfish gillnet fisheries in Peru and Chile contributed to the decline of the leatherback in the eastern Pacific. The decline in the nesting population at Mexiquillo, Mexico occurred at the same time that effort doubled in the Chilean driftnet fishery.

Table 3.3.2.1.3 Total leatherback nests counted and total number of females estimated to nest along the Mexican Pacific coast per season.
(Source: Sarti et al. 2000 (1995-1999 data), Sarti et al. 2002 (2001-02 data), Sarti, personal communication, June, 2003 (2002-03 data).

Season	Nests	Females
1995-1996	5,354	1,093
1996-1997	1,097	236
1997-1998	1,596	250
1998-1999[1]	799[1]	67[2]
1999-2000	1,125	225
2000-2001	4,513	991
2001-2002	658	109-120

[1]Value corrected for E1 (error due to track and bodypit aging) and E2 (error due to difficulty of observation from the air) only.
[2]Number of females only includes tagged females at the key beaches.

Most conservation programs aimed at protecting nesting sea turtles in Mexico have continued since the early 1980s, and there is little information on the degree of poaching prior to the establishment of these programs. However, Sarti et al. (1998) estimated that up to 100% of the clutches were taken from the Mexican beaches. Since protective measures have been in place, particularly emergency measures recommended by a joint U.S./Mexico leatherback working group meeting in 1999, there has been greater nest protection and nest success (Table 3.3.2.1.4

Nest protection at index beaches on the Pacific coast of Mexico (Source: Sarti et al., personal communication, December, 2003)).

The most recent results (2000-01) indicate that nearly 58% of clutches laid in key beaches in Mexico were relocated to hatcheries. This is a significant increase since 1996, when only 12% of nests were relocated. Although data are not available, most of the nests that were not moved are believed to have survived in situ in 2000-01, unlike previous years when it is assumed that all nests that are not relocated are taken by poachers. This has been due to successful involvement of community leaders in Cahuitan, the most important leatherback beach in the nest protection program. At this beach 24,797 eggs representing 80% of the nests laid were protected, producing a total of 12,275 hatchlings (L. Sarti, INP Preliminary Report).

Table 3.3.2.1.4 Nest protection at index beaches on the Pacific coast of Mexico (Source: Sarti et al., personal communication, December, 2003)

Nesting Season	Number of clutches laid	Number of clutches protected	Percentage of clutches protected
1996-97	445	86	19.3
1997-98	508	101	19.9
1998-99	442	150	33.9
1999-00	1590	943	58.7
2000-01	1,732	933	57.04
2001-02	171	116	67.9

Nicaragua
In Nicaragua, small numbers of leatherbacks nest on Playa El Mogote, and Playa Chacocente, both beaches within 5 kilometers of one another and located in the Rio Escalante Chacocente Wildlife Refuge (NMFS 2005b). From October through December, 1980, 108 leatherbacks were sighted nesting on Playa Chacocente, while during January, 1981, 100 leatherbacks reportedly nested in a single night on Playa El Mogote (Arauz 2002). Similar to many of the leatherback nesting beaches along the eastern Pacific, the abundance of nesting females has decreased. An aerial survey conducted during the 1998-1999 season estimated a nesting density in Playa El Mogote of only 0.72 turtles per kilometer (Sarti et al. 1999 in Arauz 2002). During the 2000-01 nesting season, community members near Playa El Mogote noted that 210 leatherback nests had been deposited. Of these, 31 nests produced hatchlings, while the rest were poached (85% poaching rate). During the 2001-02 nesting season (monitored from October through March), leatherbacks successfully nested 29 times. Of these, 6 nests were protected in a hatchery and 23 were poached (79.3% poaching rate) (Arauz 2002).

Nesting in the Western Pacific

NMFS 2005b also provides nesting details for leatherbacks in the western Pacific. Leatherback turtles originating from the western Pacific are threatened by poaching of eggs, killing of nesting females, human encroachment (development, beach armoring, beachfront lighting, etc.) on nesting beaches, incidental capture in fishing gear, beach erosion, and egg predation by animals. Little is known about the status of the western Pacific leatherback nesting populations but once major leatherback nesting assemblages are declining along the coasts of Malaysia and Indonesia, and anecdotal information suggest that population declines have also occurred in Papua New Guinea, the Solomon Islands, and Vanuatu. Low density and scattered nesting of leatherback turtles occurs in Fiji, Thailand, and Australia (primarily western and to a lesser extent, eastern).

Research has been conducted in the last several years to more thoroughly identify leatherback nesting beaches and estimate numbers of nesting animals in the western Pacific (Papua Indonesia, Papua New Guinea, Solomon Islands, and Vanuatu) (NMFS 2005b). At the Cooperative Workshop sponsored by the Pacific Islands Fishery Management Council from May 17 -21, 2004, a total of 25 leatherback nesting sites were identified for the western Pacific region, of which 19 were previously unknown or poorly documented (Dutton et al. in press). Annual nesting among these 25 sites is estimated to be at least 2000 females. Spotila et al. (2000) estimated the number of nesting females in the western Pacific at 1,800. Recently reported nesting sites increase this estimate to *c*. 5,000 nesting females in the western Pacific (Dutton et al. in press).While this estimate is higher then that presented by Spotila et al. (2000) there are still indications of a long term decline in leatherback nesting in the western Pacific. Hitipeuw et al. (in press) note that due to the remoteness and lack of consistent monitoring, the status of most leatherback populations in the Pacific is unclear. Dutton et al. (in press) highlight the need to conduct beach monitoring and protection work at key nesting sites in the western Pacific.

In Malaysia, leather back turtle nesting has dramatically declined from 1950's level (NMFS 2005b). With one or two females reportedly nesting each year, this population has essentially been eradicated (P. Dutton, NMFS, personal communication, 2000).

In Indonesia, conservation efforts have reduced the decline in nesting (NMFS 2005b). A Papua New Guinea nesting site is also protected from human harvest, but nesting trend data are reported in NMFS 2005b. Nesting also occurs in the Solomon Islands, Fiji, and Australia, but little details are provided (NMFS 2005b). The trend analysis of one Indonesian nesting beach indicates that it is and has been relatively stable for the past decade; however the numbers of nesting females do not show increasing numbers indicating that they are recovering to historical levels. Because the Indonesian nesting population is stable, increases in adult mortality or decreases in recruitment into the adult population (as from poor hatchling production) can cause the nest numbers to decline and the extinction risks to change rapidly (Snover 2005). The risk of extinction is not as high for the western stock as for the eastern stock (NMFS 2005b).

3.3.2.1.2 Leatherback Turtle Prey

Leatherback sea turtles are predominantly distributed pelagically where they feed on jellyfish such as *Stomolophus, Chryaora,* and *Aurelia* (Rebel 1974). Leatherbacks are deep divers, with recorded dives to depths in excess of 1000 m, but they may come into shallow waters if there is an abundance of jellyfish nearshore (NMFS 2005b).

3.3.2.1.3 Leatherback Turtle Human Caused and Natural Mortality

Human caused mortality includes direct harvest of leatherback turtles and their eggs (section 3.3.2.1.1) and incidental catch in longline fisheries (NMFS 2005b). Of the 19 sightings of leatherback turtles in the GOA, 6 involved net fishing gear. Each of the entanglements occurred in State waters and is likely to correspond with State net fisheries. It is not likely that any of these fisheries interactions included gear from the federal groundfish fisheries. Indirect human mortality may result from destruction of nesting sites for beach development or pollution. Plastic debris that resembles jellyfish such as plastic shopping bags also may present a hazard to the turtles if ingested.

Although quantitative data on human-caused mortality are scarce, the available information suggests that leatherback mortality on many nesting beaches remains at unsustainable levels (Tillman 2000). Based on available information, eastern Pacific leatherback populations appear to be at much lower levels of abundance than western Pacific leatherback populations. Recent information (Dutton et al. in press) reveals that the status of nesting female leatherback populations in the south western Pacific region appears to be better than previously stated in Spotila (2000) or NMFS (2004). Though greater numbers of nesting female leatherbacks have been discovered in the western Pacific region, trend information is not available for these newly described nesting sites (Dutton et al. in press) thus, no statements can be made describing the anticipated outlook for these populations for which we have no trend data. Different nesting aggregations of sea turtles are effectively isolated from one another; female leatherback turtles from other nesting beaches will not re-colonize beaches where nesting activity has become extinct (NMFS 2005b). Therefore, if a nesting aggregation becomes extinct, it will remain extinct.

3.3.2.1.4 Leatherback Turtle Status

The leatherback sea turtle was listed as endangered throughout its global range on June 2, 1970. Published assessments of the extinction risks of leatherback turtles in the Pacific Ocean have concluded that these turtles have a very high risk of disappearing from the Pacific Ocean within one or two human generations (Spotila et al. 1996, 2002).

3.3.2.1.5 Leatherback Turtle Impacts Conclusions

The availability of jellyfish prey for leatherback turtles is not likely to be affected by the bycatch of jellyfish in the groundfish fisheries considering the abundance of jellyfish in Alaska waters. Considering leatherback turtles have not been seen in Alaskan waters since 1993, and there is no record of interaction with the federal groundfish fisheries, it is extremely unlikely that the groundfish fisheries would have an impact on leatherback turtles. The impacts of the groundfish fisheries on leatherback turtles are discountable, and therefore, **the Alaska groundfish fisheries are not likely to adversely affect leatherback turtles.**

3.3.2.2 Green Sea Turtle

3.3.2.2.1 Green Sea Turtle Distribution, Stock Structure, and Abundance

Green turtles are found throughout the world, occurring primarily in tropical, and to a lesser extent, subtropical waters. The species occurs in five major regions: the Pacific Ocean, Atlantic Ocean, Indian Ocean, Caribbean Sea, and Mediterranean Sea. These regions can be further divided into nesting aggregations within the eastern, central, and western Pacific Ocean; the western, northern, and eastern Indian Ocean; Mediterranean Sea; and eastern, southern, and western Atlantic Ocean, including the Caribbean Sea (NMFS 2005b). Molecular genetic techniques have shown that the Pacific nesting assemblages are group into two distinct regional clades: 1) western Pacific and South Pacific islands, and 2) eastern Pacific and central Pacific, including the rookery at French Frigate Shoals, Hawaii. (Dutton 2003).

Since 1960, 17 green sea turtles have been sighted in the GOA (Bruce Wing personal communications, December 12, 2005). None of the sightings included fisheries interactions and all sightings were either beached animals or in State waters.

Table 3.3.2.2.1 shows the abundance estimates of nesting females at several Pacific index sites. Central and Western Pacific clades show increasing trends and eastern Pacific clades are declining or stable (NMFS 2005b). Using a precautionary approach, Seminoff (2004) estimates that the number of nesting female green turtles has declined by 48% to 67% over the last three generations (~ 150 yrs). Causes for this decline include harvest of eggs, subadults and adults; incidental capture by fisheries; loss of habitat; and disease. The degree of population change is not consistent among all index nesting beaches or among all regions. Some nesting populations are stable or increasing. However, because many of the threats that have led to these declines have not yet ceased, it is evident that green turtles face a measurable risk of extinction (Seminoff 2004).

Table 3.3.2.2.1 Description of green turtle population status and trend by region in the Pacific Ocean from Seminoff (2004).

Past and present (current until 2001) abundance estimates are based on nesting female census data from the years listed to the right of the estimate (NMFS 2005b).

Region	Index Site	Status	Trend	Abundance Estimate				
				Past	Years	Present	Years	Percent change[b]
eastern Pacific	Mexico (Colola, Michoacan)	Endangered	Declining[a]	15,000	1970	851[a]	1997-2001	- 96%
	Ecuador (Galapagos Is.)	Threatened	Stable	~1,400	1976-1982	~1,400	1999-2001	0%
central Pacific	U.S. Hawaii (French Frigate Shoals)	Threatened	Increasing	387	1974-1978	574	1999-2000	53%
western Pacific	Australia (southern Great Barrier Reef, Heron Is.)	Threatened	Increasing	~400	1964-1969	562	1993-1999	44%
	Austraila (northern Great Barrier Reef, Raine Is.)	Threatened	Increasing	2,361 females/ night	1974-1979	~18,000 females/ season	2001	56%

[a] There are different values and trends reported in the literature for nesting females at Colola, Michoacan, Mexico in recent years. While Seminoff (2004) describes the stock as declining based on data from Alvarado et al. 2001 and a personal communication reference; Chaloupka et al. (in press) describes this stock as a stable or increasing based on a draft of Seminoff (2002). Seminoff (2004) reports 2001 nesting female abundance to be 851 animals and the 2004 BiOp (NMFS 2004a) reports an updated estimate of 2,100 nesting females in 2001.

[b] Percent change in nesting female abundance since the earliest count listed for each index site (Seminoff 2004).

Despite an overall declining trend globally, green turtle population growth rates are variable among nesting populations and regions and some populations are stable or increasing in abundance (Chaloupka et al. in press, cited in NMFS 2005b)). Changes in subpopulation size were inferred based on actual and extrapolated counts of adult nesting females at 5 index beaches in the Pacific (Seminoff 2004). Index beaches in the eastern Pacific include Colola, Michoacan, Mexico, historically the most important green turtle nesting rookery in the eastern Pacific Ocean; and the current largest nesting congregation in the eastern Pacific, Galapagos Island, Ecuador. French Frigate Shoals, Hawaii, comprised the index beach for the central Pacific and southern Great Barrier Reef (Heron Island) and northern (Raine Island) Great Barrier Reef were the index beaches for western Pacific green turtle populations.

Green turtles that may interact with the Alaska groundfish fisheries could be members of the endangered Mexican (Pacific coast) or threatened Hawaiian (French Frigate Shoals) nesting aggregations. At least one green sea turtle sighted in Alaska was determined to come from the

Mexican nesting stock based on its black color (Bruce Wing, NMFS Auke Bay Lab, personal communication, March 20, 2006). Western Pacific stocks are not likely to occur in Alaska based on the lack of occurrence in the Hawaiian Islands (NMFS 2005b). If the Western Pacific stock have not been detected in Hawaii, it is unlikely they would travel the additional distance and occur in Alaska. Therefore, this section will focus on the status and trends of eastern and central Pacific green turtle populations.

Central Pacific - Hawaii
Green turtles in Hawaii are considered genetically distinct and geographically isolated although a nesting population at Islas Revillagigedos in Mexico appears to share the mtDNA haplotype that commonly occurs in Hawaii. In Hawaii, green turtles nest on six small sand islands at French Frigate Shoals, a crescent-shaped atoll situated in the middle of the Hawaiian Archipelago (Northwestern Hawaiian Islands) (Balazs 1996). Ninety to 95% percent of the nesting and breeding activity occurs at the French Frigate Shoals, and at least 50% of that nesting takes place on East Island, a 12-acre island. Long-term monitoring of the population shows that there is strong island fidelity within the regional rookery.

Researchers monitoring East Island since 1973 have collected information on numbers of females nesting annually and have conducted tagging studies (Balazs 2002). Since the enactment of the ESA in 1973, and following years of exploitation, the nesting population of Hawaiian green turtles has shown a steady increase (Balazs 1996; Balazs and Chaloupka 2004). The number of nesting females at East Island increased from 67 nesting females in 1973 to 467 nesting females in 2002. Nesting abundance increased rapidly at this rookery during the early 1980s, leveled off during the early 1990s before again increasing rapidly during the late 1990s and up to the present. This trend is very similar to the underlying trend in the recovery of the much larger green turtle population that nests at Tortuguero, Costa Rica (Bjorndal et al. 1999). The stepwise increase of the long-term nester trend since the mid-1980s is suggestive, but not conclusive, of a density-dependent adjustment process affecting sea turtle abundance at the foraging grounds (Bjorndal et al. 2000; Balazs and Chaloupka 2004). Balazs and Chaloupka (2004) conclude that the Hawaiian green sea turtle stock is well on the way to recovery following 25 years of protection. This increase can be attributed to increased female survivorship since harvesting of turtles in the foraging grounds was prohibited in the mid-1970s and cessation of habitat damage at the nesting beaches since the early 1950s (Balazs and Chaloupka 2004). Low level nesting also occurs at Laysan Island, Lisianki Island and on Pearl and Hermes Reef (NMFS and USFWS 1998a).

Important resident areas of green turtles have been identified and are being monitored along the coastlines of Oahu, Molokai, Maui, Lanai, Hawaii, and at nesting areas in the reefs surrounding the French Frigate Shoals, Lisianski Island, and Pearl and Hermes Reef (Balazs 1982; Balazs et al. 1987).

Eastern Pacific - Distribution and Abundance of Nesting Females

Analysis using mitochondrial DNA (mtDNA) sequences from three key nesting green turtle populations in the eastern Pacific indicate that they may be considered distinct management units: Michoacán, Mexico; Galapagos Islands, Ecuador, and Islas Revillagigedos, Mexico (Dutton 2003).

The primary green turtle nesting grounds in the eastern Pacific are located in Michoacán, Mexico, and the Galapagos Islands, Ecuador (NMFS and USFWS 1998a). Here, green turtles were widespread and abundant prior to commercial exploitation and uncontrolled subsistence harvest of nesters and eggs. Sporadic nesting occurs on the Pacific coast of Costa Rica.

Mexico

In the Mexican Pacific, the two main nesting beaches for female green turtles occur in Michoacán and include Colola, which is responsible for 70% of total green turtle nesting in Michoacán (Delgado and Alverado 1999), and Maruata. Green turtle populations at these nesting beaches have shown a dramatic decline, with the greatest decline in the early 1980s. From 1982 to 1984 the number of nesting females decreased from 5,585 to 940, a decline of approximately 90% in two years. Since their decline in the 1980s, the number of nesting females arriving at Colola Beach in Mexico has fluctuated widely from a low of 171 to a high of 880, until recently when about 2,100 female turtles returned to nest in 2001 (Figure 3.3.2.2.1 Estimated numbers of nesting green turtles at Colala Beach, Michoacan, Mexico).

Population growth rate parameters were calculated for green turtles using nesting female trend data from Colola Beach, Mexico (Snover 2005). These parameters apply only to the portion of the population represented by females in the adult stage. Population growth rate parameters were updated from the NMFS (2004a) BiOp using the Dennis-Holmes running sum method which corrects for observation error when the entire population in not surveyed (Holmes 2001; Morris and Doak 2002). The running-sum of the nesting female counts results in a more accurate approximation of total population size. These values should be interpreted in a qualitative sense and the uncertainty about long term projections of extinction probabilities should be emphasized. Extinction probabilities extending over 50 and 100 year time periods based on only 25 years of variable trend information should be interpreted with caution. These values provide an indication of the general trend observed for the monitored component of the population and provide an indication of population viability given current population status and observed trends. It also should be noted that while the general trends observed in adult females on the nesting beach may be representative of population trends, in terms of increasing, decreasing, or stable; specific values for λ and r calculated from nesting beach censuses are not likely to represent the population as a whole (Snover 2005). Thus, λ and r are subscripted with an A to indicate that these numbers represent trends in the adult female portion of the population only (Snover 2005).

The mean log growth rate (= -0.01) and the finite rate of population growth (λ_A = 1.02) for this population indicate that this population is close to stable for now (Snover 2005). The mean estimated extinction probabilities indicate very low risks of quasi-extinction over the next 100 years (Table 3.3.2.2.2). However, given the uncertainties in estimates of μ and σ^2 as indicated by the wide confidence intervals (Table 3.3.2.2.2), the possibility of quasi-extinction occurring over a 50 year time frame cannot be eliminated as a probability of almost 1 falls within the upper 95% CI (Snover 2005). Based on the 2-yr running sum, a low estimate of the number of adult females in this nesting aggregation as of 2002 was 3,260. Within the eastern Pacific there is additional nesting in the Galapagos Islands and Ecuador (Delgado and Alvarado 1999, NMFS and USFWS 1998a). If we consider only Michoacan nesting, a conservative estimate of the total number of adult females is 4,238 (Snover 2005).

Table 3.3.2.2.2 Results of the Dennis-Holmes Model for green turtles from Colola Beach, Michoacan, Mexico

Unless otherwise noted, values are reported as means with the lower and upper 95% confidence intervals in brackets. Quasi-extinction is defined as 50 adult females and ultimate extinction is defined as 1 adult female. (Source: Snover, 2005).

Demographic Parameter		Estimate
Log growth rate (μ)		-0.01 [-0.16, 0.14]
Variance in mean log growth rate (σ^2)		0.06 [0.02, 0.32]
Finite rate of change in population size (λ_A)		1.02 [0.87, 1.35]
Instantaneous rate of change in population size (r_A)		0.02 [-0.14, 0.30]
Risk of quasi-extinction		
Probability of quasi-extinction ever occurring		1 [0.03, 1]
Median time to quasi-extinction (yr)		>100
Probability of quasi-extinction in:	25 yr	0 [0, 0.46]
	50 yr	0.02 [0, 1]
	100 yr	0.14 [0, 1]
Risk of ultimate extinction		
Probability of extinction ever occurring		1 [0, 1]
Median time to extinction (yr)		>100
Probability of extinction in:	25 yr	0 [0, 0]
	50 yr	0 [0, 0.46]
	100 yr	0 [0, 1]

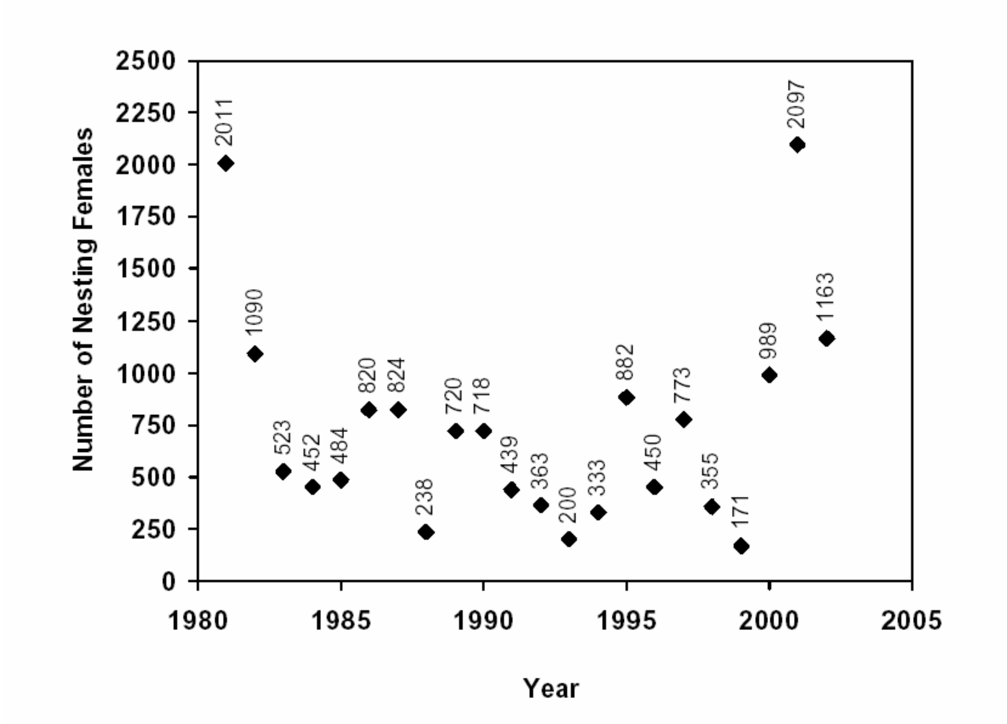


Figure 3.3.2.2.1 **Estimated numbers of nesting green turtles at Colala Beach, Michoacan, Mexico.**
(Data source: NMFS 2004a, pg. 57; figure source: Snover 2005)

Ecuador
There are few historical records of abundance of green turtles from the Galapagos. Investigators documented nesting females during the period 1976-1982 and recorded an annual average of 1,400 nesting females. During that period, only residents were allowed to harvest turtles for subsistence and egg poaching occurred only occasionally (NMFS and USFWS 1998a). The main documented threats registered in the past were: presence of introduced feral pigs (*Sus scrofa*), and a native beetle (*Omorgus suberosus*). Both of these combined to reduce turtle hatchling success during earlier monitoring years (Zárate et al. 2003). After nearly twenty years of limited data, a field study commenced in 2002 to assess the status of green turtles nesting in the main nesting sites of the Galapagos Archipelago. The most important nesting beaches are Quinta Playa and Bahía Barahona, both on Isabela Island, Las Bachas, Santa Cruz Island, Las Salinas, Seymour Island, and Espumilla, Santiago Island. All are protected as national parks or tourist sites, or are under military jurisdiction, etc. Monitoring sites included all of the above-listed nesting beaches except Espumilla. Nesting activity was monitored for nearly 4 months in Las Bachas and approximately 3 months on the remaining sites. During the 2002 season, a total of 2,756 females were tagged, with the highest numbers in Las Bachas (925 females). This total outnumbers the highest values recorded in previous studies (1,961 females tagged in 1982). Researchers observed few feral pigs, and they were only observed in Qunita Playa. There were few documented beetle observations, although feral cats were observed predating on hatchlings as they emerged from the nest (Zárate et al. 2003).

3.3.2.2.2 Green Sea Turtle Prey

Hatchling and young adult green sea turtles eat an omnivorous diet of a variety of marine animals and plant life. Once these turtles reach adult stage, they switch to a totally herbivorous diet feeding on sea grass and algae (USFWS 2006).

3.3.2.2.3 Green Sea Turtle Human Caused and Natural Mortality

Human caused mortality include the harvest of eggs and subadults and adults, destruction of nesting habitat, and incidental take in fisheries, as described in section 3.3.2.2.1. Competition for prey species with the groundfish fisheries in Alaska is not a concern for green sea turtles because their diet is limited to vegetations for adults and varied for hatchling turtles which are not likely to occur in Alaska waters.

No incidental take of green sea turtles in AK groundfish fisheries is recorded (Bruce Wing, NMFS Auke Bay Lab, personal communication, December 12, 2005). In Hawaii, the longline fishery has been more likely to hook green turtles externally than to entangle them or hook them internally (NMFS 2005b). The tendency to be hooked externally may be due to the turtles' diet preferences. Because green turtles primarily feed on benthic, marine algae, they may be less likely to be attracted to the older baited hooks used in the longline fishery. As a result they may be less likely to swallow baited hooks, which would reduce their likelihood of being hooked internally. Further, because of their diet and foraging strategy (green turtles usually forage in water less than 10 meters deep), green turtle interactions with the deep-set fishery are rare (NMFS 2005b).

The green turtle population in the Hawaiian Islands area is afflicted with a tumor disease, fibropapillomatosis, which is of an unknown etiology and often fatal, as well as spirochidiasis, both of which are the major causes of stranding of this species (NMFS 2005b). Green turtles captured off Molokai from 1982-96 showed a massive increase in fibropapillomatosis over this period. Prevalence of fibropapillomatosis peaked at 61% occurrence in 1995 (Balazs et al.1998). Preliminary evidence suggests that there is an association between the distribution of fibropapillomatosis in the Hawaiian Islands and the distribution of toxic benthic dinoflagellates (*Prorocentrum* spp.) known to produce a tumor promoter, okadaic acid (Landsberg et al. 1999). Stranding reports from the Hawaiian Islands from 1982-1999 indicate that the green turtle is the most commonly stranded sea turtle (96.5 percent, compared to other species), averaging around 150 per year (2,689 total/18 years). While the disease is often fatal, a recent study found no apparent effect of fibropapillomatosis on Hawaiian green turtle population-specific somatic growth rates (Balazs and Chaloupka 2004b). Moreover, despite the occurrence of fibropapillomatosis in the Hawaiian Archipelago green turtle stock, nester abundance continues to increase (Aguirre et al. 1998 in Balazs and Chaloupka 2004) and the stock is well on the way to recovery (Balazs and Chaloupka 2004b).

3.3.2.2.4 Green Sea Turtle Status

Green turtles were listed as threatened under the ESA on July 28, 1978, except for breeding populations found in Florida and the Pacific coast of Mexico, which were listed as endangered (NMFS 2005b). Because many of the threats that have led to these declines have not yet ceased, it is evident that green turtles face a measurable risk of extinction (Seminoff 2004).

3.3.2.2.5 Green Sea Turtle Impacts Conclusions

No record of fishery interaction or competition for prey species exists for green sea turtles in Alaska. Based on the rarity and location of sightings, it is extremely unlikely that any interaction between the groundfish fisheries and green sea turtles would occur. Because any effects are discountable, **the Alaska groundfish fisheries are not likely to adversely affect green sea turtles.**

3.3.2.3 Olive Ridley Turtle

3.3.2.3.1 Olive Ridley Turtle Distribution, Stock Structure, and Abundance

Olive ridley turtles occur throughout the world, primarily in tropical and sub-tropical waters (NMFS 2005b). The species is divided into three main populations, with distributions in the Pacific Ocean, Indian Ocean, and Atlantic Ocean. Nesting aggregations in the Pacific Ocean are found in the Marianas Islands, Australia, Indonesia, Malaysia, and Japan (western Pacific), and Mexico, Costa Rica, Guatemala, and South America (eastern Pacific). Recent genetic information analyzed from 44 olive ridleys taken in the Hawaii-based longline fishery indicates that 75% of the turtles (n=33) originated from the eastern Pacific (Mexico and Costa Rica) and 25% of the turtles (n=11) were from the Indian and western Pacific rookeries (P. Dutton, NMFS, personal communication, August 9, 2005), indicating the animals from both sides of the Pacific converge in the north Pacific pelagic environment (NMFS 2005b).

Since 1960, only 3 olive ridley turtles have been sighted in Alaska waters, all carcasses in State waters of the GOA (Bruce Wing, Auke Bay Lab, personal communication December 12, 2005). No record of fisheries interaction exists for these sightings. It is not know from which population these animals came, but the Atlantic Ocean is unlikely due to land mass restrictions.

Olive ridley sea turtles are considered the most abundant sea turtle in the world (NMFS and USFWS 1998e). Declines in olive ridley populations have been documented in Playa Nancite, Costa Rica; however, other nesting populations along the Pacific coast of Mexico and Costa Rica appear to be stable or increasing, after an initial large decline due to harvesting of adults. Historically, an estimated 10 million olive ridleys inhabited the waters in the eastern Pacific off Mexico (Cliffton et al. 1982 *in* NMFS and USFWS 1998e). However, human-induced mortality led to declines in this population. Beginning in the 1960s, and lasting over the next 15 years, several million adult olive ridleys were harvested by Mexico for commercial trade with Europe and Japan. (NMFS and USFWS 1998e). Although olive ridley meat is palatable, it was not widely sought after. Its eggs, however, are considered a delicacy, and egg harvest is considered one of the major causes for its decline. Fisheries for olive ridley turtles were also established in

Ecuador during the 1960s and 1970s to supply Europe with leather (Green and Ortiz-Crespo 1982).

In the Indian Ocean, Gahirmatha supports perhaps the largest nesting population; however, this population continues to be threatened by nearshore trawl fisheries. Direct harvest of adults and eggs, incidental capture in commercial fisheries, and loss of nesting habits are the main threats to the olive ridley's recovery.

Eastern Pacific Ocean
In the eastern Pacific Ocean, nesting occurs all along the Mexican and Central American coast, with large nesting aggregations occurring at a few select beaches located in Mexico and Costa Rica. Few turtles nest as far north as southern Baja California, Mexico (Fritts et al*.* 1982) or as far south as Peru (Brown and Brown 1982). As mentioned previously, where population densities are high enough, nesting takes place in synchronized aggregations known as arribadas. The largest known arribada*s* in the eastern Pacific are off the coast of Costa Rica (~475,000 - 650,000 females estimated nesting annually) and in southern Mexico (~800,000+ nests/year at La Escobilla, in Oaxaca (Millán, 2000).

Mexico
The nationwide ban on commercial harvest of sea turtles in Mexico, enacted in 1990, has improved the situation for the olive ridley (NMFS 2005b). Surveys of important olive ridley nesting beaches in Mexico indicate increasing numbers of nesting females in recent years (Marquez et al.1995; Arenas et al. 2000). Population growth rate parameters were calculated for nesting female olive ridley turtles at Escobilla Beach, Oaxaca, Mexico based on data from Marquez-M. et al. (2002). Estimates of nesting females at Escobilla Beach from the early 1970s to 2000 are shown in Figure 3.3.2.3.1. Trends for the primary nesting beach of olive ridleys in the eastern Pacific are very promising and the conservation efforts that have resulted in the dramatic increases are commendable (Marquez et al. 1996). Annual nesting at the principal beach, Escobilla Beach averaged 138,000 nests prior to the ban, and since the ban on harvest in 1990, annual nesting has increased to an average of 525,000 nests (Salazar et al. 1998). At a smaller olive ridley nesting beach in central Mexico, Playon de Mismalayo, nest and egg protection efforts have resulted in more hatchlings, but the population is still "seriously decremented and is threatened with extinction" (Silva-Batiz et al. 1996 *in* NMFS 2005b). There is discussion in Mexico that the species should be considered recovered (Arenas et al. 2000).

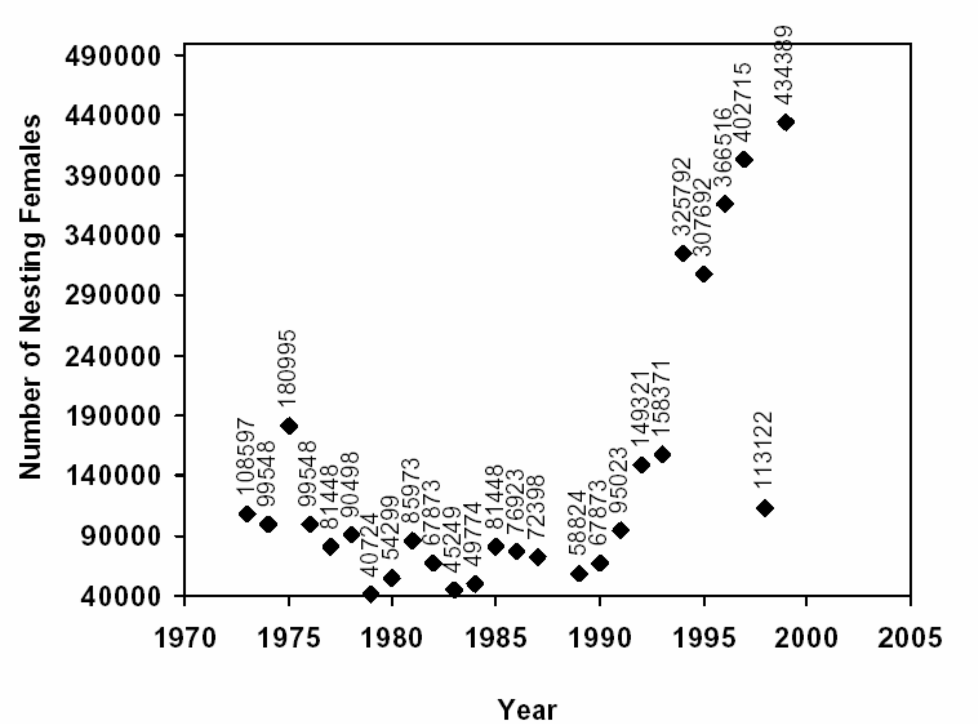


Figure 3.3.2.3.1 **Estimated numbers of nesting olive ridley turtles at Escobilla Beach, Oaxaca, Mexico (Marquez-M et al. 2002).**

Costa Rica

In Costa Rica, 25,000 to 50,000 olive ridleys nest at Playa Nancite and 450,000 to 600,000 turtles nest at Playa Ostional each year (NMFS and USFWS 1998e). In an 11-year review of the nesting at Playa Ostional, (Ballestero et al. 2000) report that the data on numbers of nests deposited is too limited for a statistically valid determination of a trend; however, there does appear to be a six-year decrease in the number of nesting turtles. Under a management plan, the community of Ostional is allowed to harvest a portion of eggs. Between 1988 and 1997, the average egg harvest from January to May ranged between 6.7 and 36%, and from June through December, the average harvest ranged from 5.4 to 20.9% (Ballestero et al. 2000). At Playa Nancite, concern has been raised about the vulnerability of offshore aggregations of reproductive individuals to "trawlers, longliners, turtle fishermen, collisions with boats, and the rapidly developing tourist industry" (Kalb et al. 1996).

The greatest single cause of olive ridley egg loss comes from the nesting activity of conspecifics on *arribada* beaches, where nesting turtles destroy eggs by inadvertently digging up previously laid nests or causing them to become contaminated by bacteria and other pathogens from rotting nests nearby. At a nesting site in Costa Rica, an estimated 0.2 percent of 11.5 million eggs laid during a single *arribada* produced hatchlings (NMFS and USFWS 1998e). Hatching success at both arribada beaches (Playa Ostional and Playa Nancite) is very low. Hatching success rates were estimated to be *c.* 8% per year for Playa Ostional (Arauz and Mo 1994) and as low as 1-4% at Playa Nancite (Cornelius and Robinson 1983). Low natural hatching success rates were used persuasively to permit a limited, legal egg harvest at Ostional (Campbell 1998).

Some female olive ridleys nesting in Costa Rica have also been found afflicted with the fibropapilloma disease (Aguirre et al. 1999).

Guatemala

In Guatemala, the number of nesting olive ridleys nesting along their Pacific coast has declined by 34% between 1981 and 1997. This is only based on two studies conducted 16 years apart, however; in 1981, the estimated production of olive ridley eggs was 6,320,000, while in 1997, only 4,300,000 eggs were estimated laid (Muccio 1998). Villagers also report a decline in sea turtles; where collectors used to collect 2-3 nests per night during the nesting season 15 years prior, now collectors may find only 2-4 nests per year due to fewer turtles and more competition. This decline most certainly can be attributed to the collection of nearly 95% of eggs laid, and the incidental capture of adults in commercial fisheries (Muccio 1998).

Nicaragua

In Nicaragua, there are two primary *arribada* beaches: Playa La Flor and Playa Chacocente, both in the southern Department of Rivas. At Playa La Flor, the second most important nesting beach for olive ridleys on Nicaragua, Ruiz (1994) documented 6 *arribadas* (defined as 50 or more females nesting simultaneously). The main egg predators were domestic dogs and vultures (*Coragyps atratus* and *Cathartes aura*). During the largest *arribada*, 12,960 females nested from October 13-18, 1994 at Playa La Flor (NMFS and USFWS, 1998e). Von Mutius and Berghe (2002) reported that management of this beach includes a six-month open season for egg collection, during a time when the *arribadas* is small. During this time, all eggs are taken by locals, and during the "closed period," approximately 10-20% of eggs are given to the locals to consume or sell. At Playa Chacocente, approximately 5,000 to 20,000 females may nest over the course of five days (Camacho and Cáceres 1994 *in* Arauz 2002). Here, the harvest and commercialization of sea turtle eggs is allowed and somewhat controlled. During a monitoring project conducted on nearby Playa El Mogote from October, 2001 through March, 2002, researchers documented olive ridleys nesting 327 times. Of these, 99.7% of the nests were poached (Arauz 2002).

Indian Ocean

In the eastern Indian Ocean, olive ridleys nest on the east coast of India, Sri Lanka, and Bangladesh.

India

In India, a few thousand olive ridleys nest in northern Tamil Nadu, Andhra Pradesh, and the Andaman and Nicobar Islands (Shanker et al. 2003). However, the largest nesting aggregation of olive ridleys in the world occurs in the Indian Ocean along the northeast coast of India (Orissa). Not surprisingly then, olive ridleys are the most common sea turtle species found along the east coast of India, migrating every winter to nest en-masse at three major rookeries in the state of Orissa: Gahirmatha, Devi River mouth, and Rushikulya (Shanker et al. 2003). Sporadic nesting occurs between these mass nesting beaches.

The Gahirmatha rookery, located along the northern coast of Orissa, hosts the largest known nesting concentration of olive ridleys. Shanker et al. (2003) provide a comprehensive report on the status and trends of olive ridleys nesting in Orissa since monitoring began in 1975. No estimates are available for arribadas at the Devi River mouth and Rushikulya. Current population sizes are estimated to be between 150-200,000 nesting females per year. Based on analyses of the data, while there has been no drastic decline in the nesting population at Gahirmatha in the last 25 years, there are differences in trends between decades. For example, trend analyses suggest stability or increase in the size of the 1980s arribadas, which may be due to enforcement of legislation in the late 1970s, stopping the directed take of turtles. However, the 1990s data show that the population is declining or on the verge of a decline, which may be consistent with the recent increase in fishery related mortality and other threats (see below). No arribadas occurred on this nesting beach in 1997, 1998, and 2002, which is the highest documented incidence of failure since this rookery has been monitored (Shanker et al. 2003).

Uncontrolled mechanized fishing in areas of high sea turtle concentration, primarily illegally operated trawl fisheries, has resulted in large scale mortality of adults during the last two decades. Records of stranded sea turtles have been kept since 1993. Since that time, over 90,000 strandings (mortalities) of olive ridleys have been documented (Shanker et al. 2003), and much of it is believed to be due to illegal gillnet and shrimp trawl fishing in the offshore waters. Fishing in coastal waters off Gahirmatha was restricted in 1993 and completely banned in 1997 with the formation of a marine sanctuary around the rookery. Marine turtles in Orissa are protected by a prohibition of all mechanized fishing within 5 km of the coast and within 20 km of the Gahirmatha coast (~35 km). Despite these rules, mortality due to shrimp trawling reached a record high of 13,575 ridleys during the 1997-98 season, and none of the approximately 3,000 trawlers operating off the Orissa coast use turtle excluder devices in their nets (Pandav and Choudhury 1999), despite mandatory requirements passed in 1997. “Operation Kachhapa” was developed in the late 1990s to protect sea turtles and their habitat by enabling strict enforcement of the 5 km non-mechanized fishing zone limit, as well as putting forward efforts to monitor nestings and educate local inhabitants and fishermen (Shanker and Mohanty 1999). However, shrimp boats continue to fish close to shore within this protected zone and continue to not use turtle excluder devices. Current mortality rates are estimated to be ~15,000 turtles per year (B. Mohanty, personal communication, *in* Shanker et al. 2003). Threats to these sea turtles also include artificial illumination from coastal development and unsuitable beach conditions, including reduction in beach width due to erosion (Pandav and Choudhury 1999).

Genetic studies indicate that olive ridleys originating from the east coast of India are distinct from other ridleys worldwide, increasing the conservation importance of this particular population (Shanker et al. 2000 *in* Shanker et al. 2003).

Western Pacific Ocean

In the western Pacific, olive ridleys are not as well documented as in the eastern Pacific, nor do they appear to be recovering as well. There are a few sightings of olive ridleys from Japan, but no report of egg-laying. Similarly, there are no nesting records from China, Korea, the Philippines, or Taiwan. No information is available from Vietnam or Kampuchea (Eckert 1993).

Indonesia

Indonesia and its associated waters also provides habitat for olive ridleys, and there are some recently documented nesting sites. The main nesting areas are located in Sumatra, Alas Purwo in East Java, Paloh-West Kalimantan and Nusa Tenggara. On Jamursba-Medi beach, on the northern coast of Papua, 77 olive ridley nests were documented from May to October, 1999 (Teguh, 2000 *in* Putrawidjaja, 2000). However, extensive hunting and egg collection, in addition to rapid rural and urban development, have reduced nesting activities in this area. In Jayapura Bay, olive ridleys were often seen feeding, and in June, 1999, an estimated several hundred ridleys were observed nesting on Hamadi beach, despite heavy human population in the nearby area. Locals report daily trading and selling of sea turtles and their eggs in the local fish markets (Putrawidjaja 2000). At Alas Purwo National Park, located at the eastern-most tip of East Java, olive ridley nesting was documented from 1992-96. Recorded nests were as follows: from September, 1993 to August, 1993, 101 nests; between March and October, 1995, 162 nests; and between April and June, 1996, 169 nests. From this limited data, no conclusions could be reached regarding population trends (Suwelo 1999); however, recently, Dermawan (2002) reports that there were up to 250 females nesting at this site in 1996, with an increasing trend.

Malaysia

Olive ridleys nest on the eastern and western coasts of peninsular Malaysia; however, nesting has declined rapidly in the past decade. The highest density of nesting was reported to be in Terrenganu, Malaysia, and at one time yielded 240,000 eggs (2,400 nests, with approximately 100 eggs per nest) (Siow and Moll 1982 *in* Eckert 1993), while only 187 nests were reported from the area in 1990 (Eckert 1993). In eastern Malaysia, olive ridleys nest very rarely in Sabah and in low numbers (Basintal 2002), and only a few records are available from Sarak (Eckert 1993).

Thailand

In Thailand, olive ridleys occur along the southwest coast, on the Surin and Similan islands, and in the Andaman Sea. On Phra Thong Island, on the west coast of Thailand, the number of nesting turtles have declined markedly from 1979 to 1990. During a 1996-97 survey, only six olive ridley nests were recorded, and of these, half were poached, and one was predated by feral dogs. During the 1997-98 survey, only three nests were recorded. The main threats to turtles in Thailand include egg poaching, harvest and subsequent consumption or trade of adults or their parts (i.e. carapace), indirect capture in fishing gear, and loss of nesting beaches through development (Aureggi et al. 1999).

Central Pacific Ocean

There are no records of olive ridley nesting on the unincorporated U.S. territories in the North Pacific. In the central Pacific, a single nesting was reported in September, 1985 on the island of Maui, Hawaii but the eggs did not hatch and the event was most likely an anomaly (Balazs and Hau 1986 *in* NMFS and USFWS 1998e). In October 2002, an olive ridley turtle was reported to have nested on the shores of Hilo Bay, on the Island of Hawaii. This nesting event marks the second recorded nesting of an olive ridley in the main Hawaiian Islands.

Probabilities of extinction risks indicate negligible risks over the next several decades given that current conservation practices are continued (Table 3.3.2.3.1) (Snover 2005). As with all population of marine turtles, these trends can change quickly with changes in conservation efforts.

Table 3.3.2.3.1 Results of the Dennis-Holmes Model for olive ridleys turtles from Escobilla Beach, Oaxaca, Mexico.
Unless otherwise noted, values are reported as means with the lower and upper 95% confidence intervals in brackets. Quasi-extinction is defined as 50 adult females and ultimate extinction is defined as 1 adult female.

Demographic Parameter		Estimate (Baseline)
Log growth rate (μ)		0.06 [-0.11, 0.23]
Variance in mean log growth rate (σ^2)		0.11 [0.06, 0.54]
Finite rate of change in population size (λ_A)		1.12 [0.92, 1.64]
Instantaneous rate of change in population size (r_A)		0.12 [-0.08, 0.50]
Risk of quasi-extinction		
Probability of quasi-extinction ever occurring		0 [0, 1]
Median time to quasi-extinction (yr)		NA
Probability of quasi-extinction in:	25 yr	0 [0,0]
	50 yr	0 [0, 0.05]
	100 yr	0 [0, 0.51]
Risk of ultimate extinction		
Probability of extinction ever occurring		0 [0, 1]
Median time to extinction (yr)		NA
Probability of extinction in:	25 yr	0 [0, 0]
	50 yr	0 [0, 0]
	100 yr	0 [0, 0.12]

3.3.2.3.2 Olive Ridley Turtle Prey

Olive ridley turtles eat crabs, shrimp, rock lobsters, jellyfish, and tunicates. In some parts of the world, algae have been reported as its principal food (USFWS website at http://www.fws.gov/northflorida/SeaTurtles/Turtle%20Factsheets/Olive-Ridley-Sea-Turtle.htm).

3.3.2.3.3 Olive Ridley Turtle Human Caused and Natural Mortality

Human caused mortality to olive ridley turtles include the harvest of eggs and adults, incidental catch in fishing gear, and destruction of habitat. Since the ban on the harvest of turtles in Mexico, the primary threat to the Mexican nesting population has been reduced, and the population appears to be increasing. NMFS 2005b have a detailed description of domestic and foreign fisheries incidental take of olive ridley turtles in the Pacific Ocean. Fisheries occurring outside the action area that are known to incidentally take olive ridley sea turtles as bycatch include the Costa Rican, Hawaiian, and Mexican longline fishery, the Peruvian artisanal longline fishery, the CA/OR drift gillnet fishery, the Mexican halibut set gillnet fishery, and the Central American and northern Australian shrimp trawl fisheries and the Hawaiian slide bait gear and lay net fisheries (NMFS

2005b). No reports exist for Alaska of olive ridley turtle interaction with fishing gear (Bruce Wing, NMFS Auke Bay Lab, personal communication, December 12, 2005).

Olive ridley turtles nesting in Costa Rica also suffer fibropapillomatosis (Aguirre et al. 1999). Impacts of the infections are likely the same as described for green sea turtles above.

3.3.2.3.4 Olive Ridley Turtle Status

The olive ridley turtle is listed as threatened in the Pacific, except for the Mexican nesting population, which is classified as endangered under the ESA (NMFS 2005b). This latter classification was based on the extensive over-harvesting of olive ridleys in Mexico, which caused a severe population decline.

3.3.2.3.5 Olive Ridley Turtle Impacts Conclusions

No record of fishery interaction or competition for prey species exists for olive ridley turtles in Alaska. Based on the rarity and location of sightings, it is extremely unlikely that any interaction between the groundfish fisheries and olive ridley turtles would occur. Because any effects are discountable, **the Alaska groundfish fisheries are not likely to adversely affect olive ridley turtles.**

3.3.2.4 Loggerhead Turtle

3.3.2.4.1 Loggerhead Turtle Distribution, Stock Structure, and Abundance

Loggerhead sea turtles are circumglobal, and are associated with a broad range of habitat types that vary by life stage and region including continental shelves, bays, estuaries, lagoons and oceanic fronts and eddies in temperate, subtropical, and tropical waters (NMFS 2005b). Major nesting grounds are generally located in temperate and subtropical regions, with scattered nesting in the tropics (NMFS and USFWS 1998d).

Loggerheads can be divided into five regions: the Atlantic Ocean, Pacific Ocean, Indian Ocean, Caribbean Sea and Mediterranean Sea. These regions may be further divided into nesting aggregations. In the Pacific Ocean, loggerhead turtles are represented by a northwestern Pacific nesting aggregation (located in Japan) which may be comprised of separate nesting groups (Hatase et al. 2002) and a smaller southwestern nesting aggregation that occurs in Australia (Great Barrier Reef and Queensland), New Caledonia, New Zealand, Indonesia, and Papua New Guinea.

Since 1960, only two loggerhead turtles have been sighted in Alaska waters (Bruce Wing, NMFS Auke Bay Lab, December 12, 2005). No genetic sampling is available from these sightings so the origins are unknown. Of the loggerheads taken in the Hawaii-based longline fishery, all were determined to have originated from Japanese nesting beaches, based on genetic analyses (P. Dutton, NMFS, personal communication, August 9, 2005).

In the western Pacific, the only major nesting beaches are in the central and southern part of Japan (Dodd 1988). Balazs and Wetherall (1991) speculate that 2,000 to 3,000 female loggerheads nested annually in all of Japan. Considering multiple nesting estimates, Kamezaki et al. (2003) estimate that less than approximately 1,000 female loggerheads return to Japanese beaches per nesting season.

In Japan, loggerheads nest on beaches across 13 degrees of latitude (24°N to 37°N), from the mainland island of Honshu south to the Yaeyama Islands, which appear to be the southernmost extent of loggerhead nesting in the western North Pacific. Researchers have separated 42 beaches into five geographic areas: (1) the Nansei Shoto Archipelago (Satsunan Islands and Ryukyu Islands); (2) Kyushu; (3) Shikoku; (4) the Kii Peninsula (Honshu); and (5) east-central Honshu and nearby islands. There are nine "major nesting beaches" (defined as beaches having at least 100 nests in one season within the last decade) and six "submajor nesting beaches" (defined as beaches having 10-100 nests in at least one season within the last decade), which contain approximately 75% of the total clutches deposited by loggerheads in Japan (Kamezaki et al. 2003).

Two of the most important beaches in Japan, Inakahama Beach and Maehama Beach, located on Yakushima Island in the Nansei Shoto Archipelago, account for approximately 30% of all loggerhead nesting in Japan. Monitoring on Inakahama Beach has taken place since 1985. Monitoring on some other nesting beaches has been ongoing since the 1950s, while other more remote beaches have only been monitored since the 1990s. Sea turtle conservation and research is growing in Japan, resulting in more widespread beach summaries; however, there are limited reports describing the trends and status of loggerheads in this country (Kamezaki et al. 2003).

According to the latest status and trend information, as reviewed in Kamezaki et al. (2003):

> "In the 1990s, there has been a consistent decline in annual nesting, especially in Hiwasa Beach (89% decline) and Minabe (74% decline) [both of these are 2 of 9 major nesting beaches]. For most beaches, the lowest nesting numbers recorded have been during the recent period of 1997-1999.
>
> In the 1980s, there were increases in nesting numbers. However, nesting at the beginning of the 1980s was in most instances greater than nesting at the same beach some 20 years later at the end of the 1990s.
>
> There are indications that the 1970s was a period of approximate population stability with respect to breeding numbers.
>
> For the one population with census data extending back to the 1950s (Kamouda Beach) [one of 6 submajor nesting beaches], there is a clear indication that the population has greatly declined."

In general, during the last 50 years, loggerhead nesting populations have declined 50-90% (Figure 3.3.2.4.1) (NMFS 2005b). Recent genetic analyses on female loggerheads nesting in Japan suggest that this "subpopulation" is comprised of genetically distinct nesting aggregations (Hatase et al. 2002) with precise natal homing of individual females. As a result, Hatase et al. (2002) indicate that loss of one of these aggregations would decrease the genetic diversity of Japanese loggerheads; recolonization of the site would not be expected on an ecological time scale.

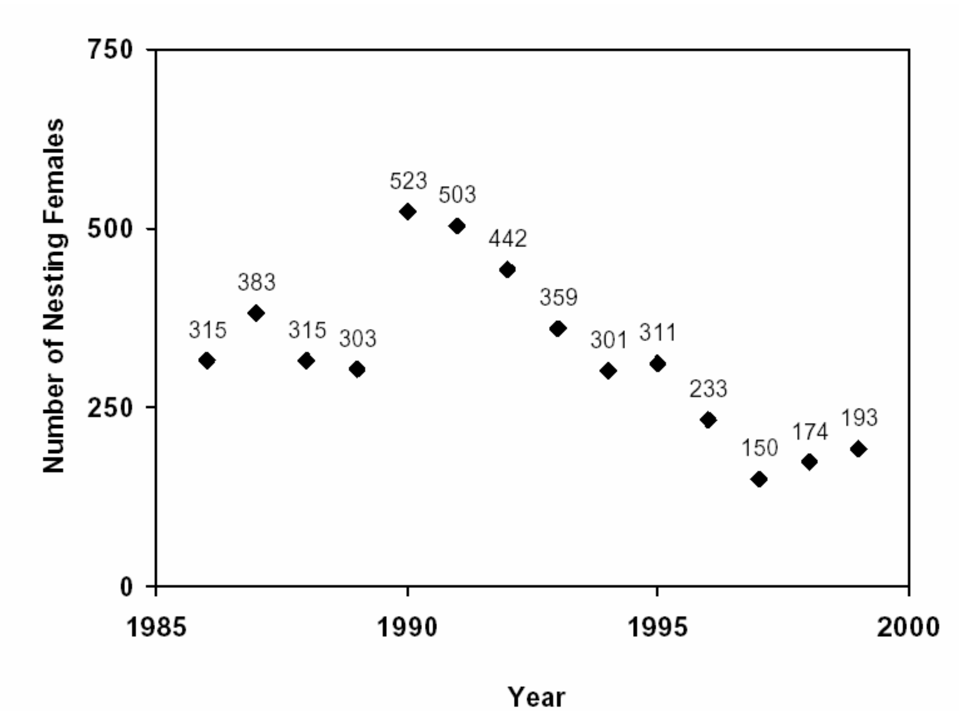


Figure 3.3.2.4.1 **Estimated number of nesting female loggerhead turtles in Japan.**
Shown are the sums of nest counts for Hiwasa, Omaezaki, Minabe Senri, Inakahama, and Miyazaki (Kamezaki et al. 2003). Kamezaki et al. (2003) report nest numbers and these values were divided by 3.49, the average number of clutches per female in a nesting season for loggerheads (van Burskirk and Crowder 1994), to estimate number of females. (Figure Source: Snover 2005 in NMFS 2005b).

Snover (2005) calculated population growth rate parameters for nesting female loggerhead turtles using a sum of the nesting data from 5 of the major nesting sites in Japan: Hiwasa, Omaezaki, Minabe Senri, Inakahama, and Miyazaki provided in Kamezaki et al. (2003). These parameters apply only to the portion of the population represented by females in the adult stage. Similar to other species, the confidence intervals around the extinction estimates are very wide and range from 0 to 1. Mean values, however, indicate increasing risks of both quasi- and ultimate extinction over the next 100 yr, with a high probability of quasi-extinction within 50 years (Table 3.3.2.4.1) (NMFS 2005b). There is enormous variability about the mean log growth rate, yet the estimated time to quasi-extinction is estimated to be approximately 53 years (**Error! Reference source not found.**) (NMFS 2005b).

For the extinction risk calculation the value of 1,500 adult females was used as Kamezaki et al. (2003) estimate that less than 1,000 females nested in Japan annually from 1998-2000. Lewison et al. (2004) used the value of 1,500 adult females in the Japanese rookery as well.

Table 3.3.2.4.1 Results of the Dennis-Holmes Model for loggerhead turtles from Japan.
Unless otherwise noted, values are reported as means with the lower and upper 95% confidence intervals in brackets. Quasi-extinction is defined as 50 adult females and ultimate extinction is defined as 1 adult female. (Source: Snover 2005 in NMFS 2005b).

Demographic Parameter		Estimate (baseline)
Log growth rate (μ)		-0.05 [-0.44, 0.34]
Variance in mean log growth rate (σ^2)		0.10 [0.04, 2.34]
Finite rate of change in population size (λ_A)		1.0 [0.66, 4.51]
Instantaneous rate of change in population size (r_A)		-0.00 [-0.42, 1.51]
Risk of quasi-extinction		
Probability of quasi-extinction ever occurring		1 [0.38, 1]
Median time to quasi-extinction (yr)		53.38
Probability of quasi-extinction in:	25 yr	0.13 [0, 1]
	50 yr	0.46 [0, 1]
	100 yr	0.81 [0, 1]
Risk of ultimate extinction		
Probability of extinction ever occurring		1 [0.12, 1]
Median time to extinction (yr)		>100
Probability of extinction in:	25 yr	0 [0, 0.57]
	50 yr	0.02 [0, 1]
	100 yr	0.30 [0, 1]

3.3.2.4.2 Loggerhead Turtle Prey

Parker et al. (2005) conducted a diet analysis of 52 loggerhead sea turtles (Caretta caretta) collected as bycatch from 1990 to 1992 in the high-seas driftnet fishery operating in the central North Pacific Ocean. The turtles fed predominately at the surface; few deeper water prey items were present in their stomachs. Neustonic species accounted for four of the five most common prey taxa. The most common prey items were Janthina spp. (Gastropoda); Carinaria cithara Benson 1835 (Heteropoda); a chondrophore, Velella velella (Hydrodia); Lepas spp. (Cirripedia), Planes spp. (Decapoda: Grapsidae), and pyrosomas (Pyrosoma spp.).

3.3.2.4.3 Loggerhead Turtle Human Caused and Natural Mortality

Loggerhead turtles are heavily impacted by natural and anthropogenic factors at all phases of their lifecycle (NMFS 2005b). Activities to protect loggerhead nests and hatchlings include: relocating nests from erosion prone areas, keeping people away from nests to prevent crushing, and cooling the nests with water to prevent overheating during incubation.

Anthropogenic threats in the marine environment include oil and gas exploration, coastal development, and transportation; marine pollution; underwater explosions; hopper dredging, offshore artificial lighting; power plant entrainment and/or impingement; entanglement in debris; ingestion of marine debris; marina and dock construction and operation; boat collisions; poaching, and fishery interactions. In the pelagic environment, loggerheads are exposed to a series of offshore fisheries. In the benthic environment in waters off the coastal U.S., loggerheads are exposed to a suite of fisheries in federal and state waters including trawl, purse seine, hook and line, gillnet, pound net, longline, dredge, and trap fisheries (NMFS 2005b).

3.3.2.4.4 Loggerhead Turtle Status

The loggerhead sea turtle was listed as a threatened species throughout its global range on July 28, 1978 (NMFS 2005b). It was listed because of direct take, incidental capture in various fisheries, and the alteration and destruction of its nesting habitat.

3.3.2.4.5 Loggerhead Turtle Impacts Conclusions

Loggerhead turtles are very rare in Alaskan waters with only two sightings since 1960. No evidence of Alaska fisheries interaction or prey competition exists. Because of the rarity and location of sightings, it is extremely unlikely that any interactions between the Alaska groundfish fisheries and loggerhead turtles would occur. Because the potential impacts are discountable, the **Alaska groundfish fisheries are not likely to adversely affect loggerhead turtles.**

3.4 Environmental Baseline

The environmental baseline is the "the past and present effects of all federal, State, or private activities in the action area, the anticipated effects of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the effect of State or private actions which are contemporaneous with the consultation in process" (50 CFR §402.02, definition of "effects of the action"). These factors affect the species' environment or critical habitat in the action area. The factors are described in relation to the action area biological requirements of the species. NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of the species within the action area. When the environmental baseline departs from those biological requirements, the adverse effects of a proposed action on the species or its habitat are more likely to jeopardize the listed species or result in destruction or adverse modification of a critical habitat (NMFS 2006c).

The environmental baseline for ESA-listed species is in a number of references and in other sections of this biological assessment. The description of the fisheries as prosecuted under the FMPs is in section 2.0 and in Appendices A and B. The state fisheries and other non-federal actions that may impact ESA-listed species are further described in section 3.5. For each ESA listed species, the current status, population information and threats to the species are described in sections 3.3.1 and 3.3.2.

Appendix C to the 2006 and 2007 harvest specifications environmental assessment provides detailed ecosystems considerations regarding the current conditions and trends of different ecosystem factors (NMFS 2006b). The marine mammal section of this document includes a section that reviews potential causes of declines of marine mammals including anthropomorphic (fisheries interactions, prey competition) and environmental causes such as climate change and regime shift. The 2005 draft Marine Mammal Stock Assessment Reports should be finalized in early 2006 and provide the latest scientific information on the status of each marine mammal and the human caused mortality and serious injury (Angliss and Outlaw 2006).

For Steller sea lions, an environmental baseline description is in the 2001 BiOp (NMFS 2001). For purposes of this consultation, a more recent description of the environmental baseline will be available in the Steller sea lion recovery plan. The information in the recovery plan should be used to provide an environmental baseline description for Steller sea lions based on the most recent scientific information regarding Steller sea lions and their environment.

4.0 Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Past and present impacts of non-federal actions are part of the environmental baseline discussed in section 3.4 of this document. Loughlin and York (2001) provide recent accounting of the various sources of Steller sea lion mortality, including anthropogenic sources and predation. The sources of mortality they identify are likely to remain as threats to sea lions for the foreseeable future. Those causes of mortality described for marine mammals and turtles above also are likely to continue to the foreseeable future. The cumulative effects of future state, tribal, local, and private actions on ESA-listed marine mammals and sea turtles, including both lethal and nonlethal effects, are considered below.

4.1 Subsistence Harvest of Sea Lions, Whales and Turtles

The subsistence harvest of sea lions and bowhead whales by Alaska Natives results in direct takes that are expected to continue into the foreseeable future. The international support for subsistence harvest of bowhead whales is likely to continue, and the International Whaling Commission are likely to provide harvest quotas to Alaska and Russian natives in the future. Currently, the number of whales taken is 0.1-0.5 percent of the population, as described in section 3.3.1.1.4. The amounts of harvests in relation to biomass are likely to remain the same, and therefore, the cumulative effect of future harvests of bowhead whales is not expected to have a detrimental effect on the sustainability of the population.

Takes of Steller sea lions represent the highest level of known direct mortality from an anthropogenic source (Loughlin and York 2001). ADF&G conducted studies to estimate subsistence use of Steller sea lions statewide from 1992-1999 (Wolfe and Mishler 1997; Wolfe and Hutchinson-Scarborough 1999) and estimated mortality levels from a high of 549 in 1992 to a low of 164 in 1997, with a mean of 353 per year (Loughlin and York 2001). The primary areas of subsistence harvest are the Pribilof Islands, Kodiak Island, and the Aleutian Islands. The overall impact of the subsistence harvest on the western population depends upon the number of animals taken, their sex and age class, and the location where they are taken. As with other sources of mortality, the significance of subsistence harvesting may increase as the western population of sea lions decreases in size unless the harvesting rate is reduced accordingly. The future subsistence harvest may contribute to localized declines of sea lions and/or impede recovery if the harvest is concentrated geographically.

Continued harvest of turtle eggs and adults can pose a population concern for certain nesting populations of certain species, as described in section 3.3.2. This may be particularly important for leatherback and olive ridley turtles were high percentages of eggs were poached on certain beaches and adults and subadults were also harvested. Some conservation efforts to protect nesting beaches for some turtle species are being implemented by several countries which will improve the reproductive opportunity for these species.

4.2 State Managed Commercial Fisheries

Section 4.4.3.3 of the 2001 BiOp discusses the effects on Steller sea lions of commercial fisheries managed by the State of Alaska (NMFS 2001). In summary, state managed fisheries affect sea lions through both direct and indirect mechanisms. Direct impacts include sea lions killed inadvertently in trawls, seines, or gill nets, as well as short term nonlethal effects such as disturbance of sea lion haulouts, vessel noise, entanglement in nets, and preclusion from foraging areas due to active fishing vessels and gear. Indirect impacts include the hypothesis that fisheries may compete with sea lions for common prey. In particular, walleye pollock, Pacific salmon, Pacific cod, and Pacific herring are consumed with relatively high frequency by the western population of sea lions. State managed groundfish harvesting can cause dense schools of fish to scatter, reducing sea lion prey density and decreasing the value of foraging habitat. Similarly, short term intensive fishing effort targeted on spawning aggregations of herring and on high densities of salmon at stream or river outlets may decrease the opportunities for sea lions to forage efficiently. As a result, individual sea lions may have to expend more time and energy to consume the same quantity of fish.

How do the effects of state managed fisheries on Steller sea lions compare to the effects of federally managed fisheries? The size of the state managed groundfish fishery is small when compared to the Federal groundfish fishery and thus could have relatively less impact on sea lions with respect to competition for prey and long term ecosystem effects. The state managed herring and salmon fisheries are short in duration and relatively small in scale. However, despite the smaller scope and scale of these state managed fisheries relative to federally managed fisheries, interactions with state managed fisheries may be a more important factor for Steller sea lions than previously realized. The 2000 BiOp noted that the available information suggested that adult females remain within 20 nm of shore during the breeding season, as well as other seasons if they are nursing a pup (NMFS 2000). However, recent information on sea lion foraging patterns indicates that pups, juveniles, and breeding aged adults spend the majority of their time in areas within 10 nm of shore, suggesting that they may rely more heavily on near shore prey than previously thought (ADF&G and NMFS 2001; Loughlin *et al*. unpublished in NMFS 2001).

Telemetry results through March 2001 indicate that the majority of at-sea observations of sea lions occurred within 10 nm of shore across all the regions examined, yet observations further offshore were more common in winter (ADF&G and NMFS 2001 in NMFS 2001). This general pattern is consistent with the description of sea lion foraging referenced in the 2000 BiOp (Merrick and Loughlin 1997) insofar as the previously available data suggested that foraging around rookeries and haulouts was crucial for adult females with pups, pups, and juveniles, while foraging may occur over much larger areas once sea lions are no longer tied to rookeries and haulouts. However, the more recent telemetry data suggest that sea lions occur most commonly in habitats within 10 nm of shore, as opposed to the 20 nm zone suggested by information available previously

((Alaska Department of Fish and Game (ADF&G) and NMFS 2001; Loughlin *et al*. unpublished in NMFS 2001).

Preferential use of near shore habitat by foraging sea lions implies that they are more susceptible to interactions with state managed fisheries than they appeared to be previously. NMFS expects the existing state managed fisheries to continue into the foreseeable future. Likewise, NMFS expects the direct and indirect effects of state managed fisheries on Steller sea lions to continue into the foreseeable future. It is unclear whether the state will develop new fisheries, such as the recent Pacific cod fishery near Adak (section 2.14). With regard to direct effects, state managed fisheries are likely to continue to account for an annual mortality of approximately 30 Steller sea lions, based on current levels of direct mortality (Ferrero *et al.* 2000). There are no available estimates of the frequency or severity of nonlethal takes in state managed fisheries, but presumably nonlethal takes will continue at current levels.

Regarding indirect effects, NMFS concludes based on available information that state managed fisheries for pollock, cod, herring, and salmon are likely to continue to compete for fish with foraging Steller sea lions (NMFS 2001). Given the importance of near shore habitats to sea lions, this competition for fish may have consequential effects. Specifically, these interactions may contribute to nutritional stress for sea lions, and may reduce the value of the marine portions of designated sea lion critical habitat. State managed fisheries will continue to reduce the abundance of preferred sea lion prey within these marine foraging areas and may alter the distribution of certain prey resources in ways that reduce the foraging effectiveness of sea lions. Therefore, state managed fisheries (particularly for herring, salmon, and groundfish) may reduce the prospects for survival and recovery of the western population of Steller sea lions. However, as noted in the 2001 BiOp with regard to the effects of federal fisheries, and in Loughlin and York (2001), the causes of the decline, and the extent that the contributing factors play in the decline are largely unknown. More data on the foraging habits of Steller sea lions expected over the next few years in combination with further discussions between ADF&G and NMFS scientists will help to better understand the type and extent of interactions between fisheries and sea lions.

State managed fisheries may also impact certain ESA-listed whale species by incidental take and competition for prey species. Humpback and fin whales prey on herring and salmon. Pollock, and Pacific cod are included in sperm whale diet. These species of whale may compete with State managed fisheries for herring, salmon, pollock and Pacific cod if harvesting is conducted in the same time and place as foraging by whales. State managed fishing gear may also present an entanglement risk to any whales in the area of fishing activities or where fishing gear may be present. The 2005 List of Fisheries (71 FR 247, January 4, 2005) shows the following State-managed fisheries taking ESA-listed marine mammals:

- Southeast salmon drift gillnet- - Central Stock Humpback whales
- Southeast salmon purse seine-- Central Stock Humpback whales

The continuation of the State managed fisheries will continue to present potentials for prey competition and for incidental take of humpback, fin and sperm whale species.

Between 1963 and 1979, 6 incidents of leatherback turtle takes occurred in State waters (Bruce Wing NMFS Auke Bay Lab, December 12, 2005). It is not clear which fisheries these animals were netted in. Half of them were released alive. Future State waters fisheries may result in additional takes of leatherback turtles if they occur in the same place and time that leatherback turtles may occur. No records of other species of turtles taken in State waters exist. Future State-managed fisheries appear to present a higher risk of incidental take for leatherback turtles based on the records of turtles taken in nearshore waters.

4.3 State Managed Sport Fisheries

Meeting public demand for recreational fishing opportunities in Alaska while at the same time maintaining and protecting fishery resources have become a significant challenge for ADF&G (Howe et al.1996 in NMFS 2001). Increasing tourism and continued population growth lead to increased pressure on existing sport fisheries and development of new fisheries. At the core of sport fisheries management is the ADF&G onsite creel surveys. ADF&G staff survey fisherman as they return to the docks, requesting information on catch and time fished, as well as collecting biological samples, fish tags, and other information. Additionally, ADF&G conducts surveys through the mail requesting further information from fisherman on the annual harvest. This information is compiled and published in annual sport fishery reports (Howe et al. 1996).

Of the 469,436 anglers who fished in Alaska in 1995, about 51% were Alaska residents and 49% were nonresidents, resulting in about 3 million angler-days fished. This effort resulted in 2,909,979 fish harvested which included 1,299,945 razor clams (*Siliqua patula*) and 52,905 smelt and capelin (*Osmeridae*). Of the remaining 1,657,129 harvested fish, 55% were salmon, 20% were halibut, 7% were rainbow trout, 5% were rockfish, 4% were Dolly Varden and Arctic char, 3% were grayling, and 1% were landlocked salmon. Also harvested, at much lower rates, were lingcod, whitefish, steelhead, and sheefish. Since 1985, the number of anglers fishing in Alaska has increased 35%, about 3% per year. Trends in annual catch rates are most affected by fluctuations in salmon abundance. Abundance of species such as halibut and rockfish has been more consistent over the last 20 years (Howe et al. 1996).

For perspective, the sport fishery harvests about 1% (4,000 mt) of the annual Alaska total fish harvests, while the commercial fisheries accounted for 97% (900,000 mt) of the annual harvest in 1998. Sport fishery harvests would be expected to continue in relatively low amounts in the future. It is likely that increased levels of tourism will also increase the amount of fish taken for sport. However, this additional harvest would likely result in a comparatively small amount of fish taken. The nature of most of the fisheries is slow removal rates and dispersed catch. The most concentrated catches are in the salmon fisheries, however, many of these (such as the Kenai fisheries) take place upriver outside of foraging areas for Steller sea lions or other marine mammals. For these reasons, future state managed sport fisheries will not contribute measurably to the total cumulative effects of state, tribal, local, and private actions on Steller sea lions. Recreational pot fishing could pose an entanglement hazard to humpback whale species, but there are not records to estimate future impacts.

4,4 Subsistence Harvest of Groundfish

Subsistence hunting and fishing are important to the economies of many families and communities in Alaska, and subsistence uses are central to the customs and traditions of many cultural groups, including the Aleut, Athabaskan, Alutiiq, Euroamerican, Haida, Inupiat, Tlingit, Tsimshian, and Yup'ik (NMFS 2001). NMFS expects that this traditional way of securing necessary resources will continue. About 20% of Alaska's population participates in the subsistence harvest (124,367 people in 270 communities in 1998). Most of the harvest is composed of fish (about 60% by weight). For perspective, the subsistence fishery harvests about 2% (8,000 mt) of the annual Alaska total fish harvest, while commercial fisheries accounted for 97% (900,000 mt) of the annual harvest in 1998. Consequently, although subsistence harvests are likely to continue into the future, and possibly grow if population increases, the amount taken for consumptive uses will remain very small compared to the commercial catch of fishery resources (ADFG 1998 "Subsistence in Alaska: 1998 Update") and will not contribute measurably to the total cumulative effects of state, tribal, local, and private actions on Steller sea lions or other marine mammals and turtles.

4.5 Illegal Shooting of Sea Lions

Loughlin and York (2001) speculate that the mortality level from illegal shooting of sea lions is at least 50 animals per year. Despite education and enforcement efforts, NMFS expects this level of mortality to continue for the foreseeable future. Compared to the PBR of 231 animals for the western stock of Steller sea lions, this level of mortality is a significant portion of the PBR and would exceed the estimated mean annual mortality from commercial fishing (30 animals). This illegal activity may impede the potential recovery of the species.

4.6 Oil and Gas Leasing

In 1896, oil claims were staked at Katalla approximately 50 miles south of Cordova. Oil was discovered there in 1902. An on-site refinery near Controller Bay produced oil for over thirty years. The refinery burned down in 1933 and was not replaced. Exploration in Cook Inlet began in 1955 on the Kenai Peninsula in the Swanson River area, and oil was discovered in 1957 which sparked an oil rush in south central Alaska. Today, a number of active fields produce oil in Cook Inlet, all of which is processed at the refinery at Nikiski on the Kenai Peninsula. Estimated oil reserves in Cook Inlet are 72 million barrels of oil. Currently there are additional lease sales planned through 2005 for the Cook Inlet area, but none for areas outside of Cook Inlet that would fall within the action area. Continued oil and gas activities may have an impact on ESA-listed marine mammals that may occur in the area either through potential pollution or noise. The level of impact would depend on the level of pollution and noise and the occurrence of the animals.

During the development of the proposed rule for right whale critical habitat, NMFS became aware that the oil and gas industry has expressed current interest in exploring and developing oil and gas resources in the North Aleutian Basin Outer Continental Shelf Planning Area (70 FR 66332, November 2, 2005). The State of Alaska announced support for this activity. NMFS lacks specific information regarding this potential exploration and development activity and was unable to gather information in the time available to prepare this biological assessment. The potential impact of future oil and gas development on whales that use the area and on the copepods that make up the proposed critical habitat are unknown. Oil and gas activities may also involve seismic work that may produce noise that could disturb cetaceans. This has been recognized as a concern by the International Whaling Commission Scientific Committee (http://www.iwcoffice.org/publications/editorialnew.htm#management).

4.7 Vessel and Aircraft Activity

As discussed in section 4 of the 2001 BiOp, disturbance from vessel and aircraft traffic has variable effects on sea lions ranging from no reaction at all to temporary departure from haulouts and rookeries and even abandonment of haulouts and rookeries (Johnson et al. 1989; Calkins and Pitcher 1982; Thorsteinson and Lensink 1962; Kenyon 1962). These effects stem primarily from noise emanating from cruise ships, ferries, small boats, and aircraft. The consequences of such disturbance to the overall sea lion population are difficult to measure. Disturbance may have contributed to or exacerbated the decline of Steller sea lions, although it likely has not been a major factor in the decline. NMFS expects disturbance from vessels and aircraft to continue in the future at levels comparable to the present or potentially increasing as tourism and population increases.

Vessel traffic in Glacier Bay also has been a concern for Steller sea lions and the Central stock of humpback whales (NMFS 2003b). Increasing tourism in Alaska is likely to lead to increasing pressure to allow more cruise ships into Glacier Bay. Increased vessel traffic in the Bay may disturb Steller sea lions and humpback whales and may increase the risk of vessel strikes for whales.

Vessel activity in the Aleutian Islands subarea is likely to increase with increased economic development. The State of Alaska is developing geographic response strategies for the Aleutian Islands which can be viewed at www.dec.state.ak.us/spar/perp/grs/ai/home.htm. (Figure 4.7.1). These shipping activities are conducted in areas where Steller sea lions and large whales occur. Increased activity my result in potential increases in ship strikes, disturbance and exposure to pollution in the case of oil spills. Tramper operations and fishing vessel activities in near shore waters are likely to result in oil spills based on past history of spills occurring from marine vessels (NMFS 2006d and Whitney 2000). There is little capability to respond to spills in the Aleutian Islands, especially in areas to the west of from Dutch Harbor. More detailed information regarding acute and chronic oil spills and potential impacts on near shore environments is available in NMFS 2006d, the consultation package to the USFWS for northern sea otters.

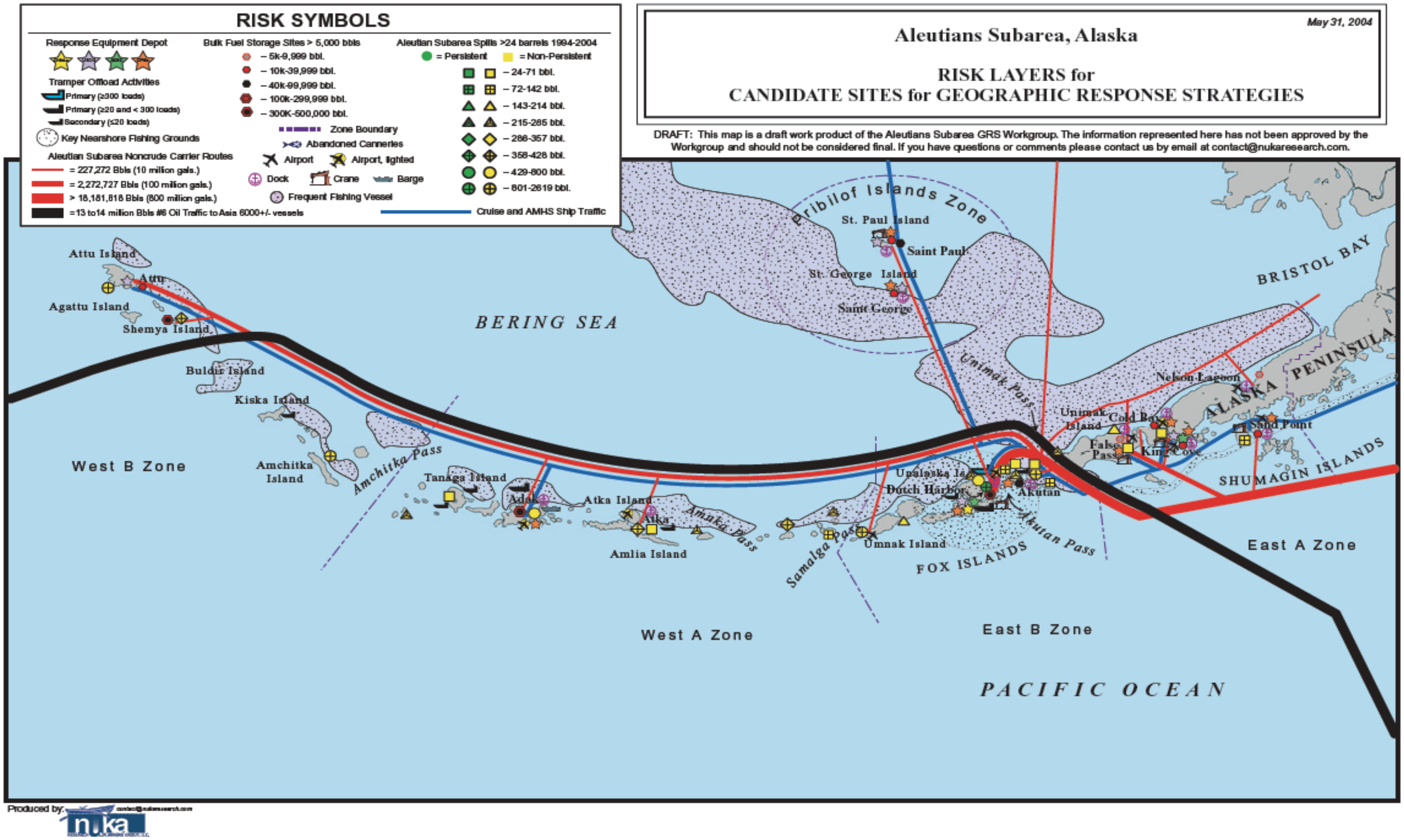


Figure 4.7.1 State of Alaska Geograhic Response Strategies Candidate Sites and Risk Layer.
From http://www.dec.state.ak.us/spar/perp/grs/ai/home.htm .

4.8 Population Growth

The effects of human population growth in Alaska, past and present, were discussed in section 4 of the 2001 BiOp (NMFS 2001). Alaska has the lowest population density of all of the states in the United States. Although Alaska's population has increased by almost 50 percent in the past 20 years, most of that increase has occurred in Anchorage and Fairbanks. Outside of Anchorage, the largest populations occur on the Kenai Peninsula, the Island of Kodiak, Bethel, and in the Valdez - Cordova region. Outside of Anchorage, few of the cities, towns, and villages would be considered urbanized. It is probable that the population in Alaska will continue to expand at a high rate, especially in urban areas.

Rural populations may increase or decrease based on their ability to exploit resources such as fisheries and secure necessities to live in these remote areas. Many rural villages have experienced population declines, mostly in the Aleutians. To bolster these communities, the state has begun to develop local fisheries. For example, the state has implemented a local Adak Pacific cod fishery where vessels fishing under the Federal TAC would be excluded by size in order to allow the local small boat fleet to harvest the TAC in that area (section 2.14). This effectively takes management control away from the Federal government, concentrates catch inside state waters (out to 3 miles), and focuses the dependence of specific coastal communities on fisheries. This system may put severe pressure on fishery managers in the future to enact regulations that provide for near-shore fisheries, leading to conflicts with measures to limit adverse impacts to critical habitat for sea lions. Another example is the Aleut Corporation exclusive right to harvest Aleutian Islands pollock with the intent to promote economic development of Adak, Alaska. Population is likely to increase in Adak based on this fishery and requests will be made to change the current Steller sea lion protection measures to allow small vessels more nearshore fishing locations. Overall, the increased population is likely to lead to more human interaction with ESA-listed mammals that occur in the Aleutian Islands. Whether the increased interaction will lead to adverse effects is not known.

In general, as the size of human communities increases, there is an accompanying increase in habitat alterations and impacts on landscapes and biota. As areas are modified for the construction of housing, roads, commercial facilities, and other infrastructure, native plants and animals are displaced and waste disposal needs increase.

4.9 Whaling

Even though commercial whaling has been banned by the International Whaling Commission since 1982, scientific research whaling by Japan is expected to continue into the future. Several species of whales are targeted by the Japanese in the Western North Pacific for harvest under the scientific whaling permit. These species include ESA-listed sperm whales and sei whales. The Japanese have also been working towards having the moratorium on commercial whaling lifted. It is not know if future harvests will continue to target ESA-listed species. The concern is that the IWC has not developed abundance estimates for the sei and sperm whales so the potential impacts on the stocks from scientific harvesting into the future are unknown. Additional information on the

Scientific permit program is at
http://www.iwcoffice.org/conservation/permits.htm#recent .

4.10 Ecosystem Change

Environmental changes in the marine environment can be expected, but the nature of the changes and impacts on ESA-listed marine mammals and turtles can be hard to predict. Scientists are finding evidence of rising air and sea surface temperatures and retreating sea ice coverage in the Bering Sea (Grebmeier et al. 2006). With these physical changes in the past decade, they have determined that marine mammal population distribution has shifted due to reductions in benthic prey populations and increased pelagic fish abundance. The benthic prey populations depend on colder temperatures and sea ice cover over large areas and long periods. As conditions change, the organisms shift northward. These changes are now evident on the shallow Bering Sea shelf and are expected to affect a broader area of the Arctic Ocean. Shifting of organisms northward or the replacement of sea ice dependent, cold water organisms in the future may have an impact on ESA-listed marine mammals. A review of the conditions necessary for abundant prey stocks should be done to understand which ESA-listed species may be impacted by this warming trend. Bowhead whales feed along the sea ice edge and may be impacted more than whales that are not dependent on the ice edge. It is not know if this warming is also affecting prey species that also may occur in the water column or at the water's surface, such as krill and copepods.

Appendix C to the EA for the 2006 and 2007 Harvest specifications reviews ecosystem considerations of the groundfish fisheries (NMFS 2006b). Most scientists agree that the 1976/77 regime shift dramatically changed environmental conditions in the BSAI and GOA (Benson and Trites 2000). However, there is considerable disagreement on how and to what degree these environmental factors may have affected both fish and marine mammal populations. Some authors suggest that the regime shift changed the composition of the fish community resulting in reduction of prey diversity in marine mammal diets (Sinclair 1988, Sinclair et al. 1994, Piatt and Anderson 1996, Merrick and Calkins 1996). Some suggest the overall biomass of fish was reduced by about 50 percent (Merrick et al. 1995, Piatt and Anderson 1996). Others suggest that the regime shift favored some species over others, in part because of a few years of very large recruitment and overall increased biomass (Beamish 1993, Hollowed and Wooster 1995, Wyllie-Echeverria and Wooster 1998).

Hunt et al. (2002) proposed that the pelagic ecosystem in the southeastern Bering Sea alternates between bottom-up control in cold regimes and top-down control in warm regimes. In their proposed Oscillating Control Hypothesis, Hunt et al. (2002) hypothesized that when cold or warm conditions span decades, the survival and recruitment of piscivorous vs. planktivorous fishes are variably affected (Hunt et al. 2002) along with the capacity of fish populations, (and arguably, apex predator populations) to withstand commercial fishing pressures.

Shima et al. (2000) looked at the GOA and three other ecosystems where pinniped populations, marked environmental oscillations, and extensive commercial fishing activity all occur. Among pinnipeds in the four ecosystems, only GOA Steller sea lions were decreasing in abundance. Shima et al. (2000) hypothesized that the larger size and restricted foraging habitat of Steller sea lions, especially for juveniles that forage mostly in the upper water column close to land, may make them more vulnerable than other pinnipeds to changes in prey availability, and spatial and temporal changes in prey, especially during the critical winter time period.

5.0 Relevant Reports and Consultation History

5.1 Introduction

On November 30, 2000, NMFS issued an FMP level biological opinion (NMFS 2000; herein referred to as the FMP biological opinion) which evaluated all known impacts of authorizing the BSAI and GOA FMPs on listed species as required by Section 7(a)(2) of the ESA. That biological opinion was requested by the Court. However, that biological opinion found that the FMP jeopardized the species and adversely modified critical habitat, and thus that a reasonable and prudent alternative (RPA) must be implemented. The biological opinion provided an RPA which was partially implemented in 2001. In January 2001, an RPA committee was formed that was comprised of members of the fishing community, conservation community, NMFS, State agencies and the Council's Science and Statistical Committee (see section 1.4).

The information presented in the 2001 biological opinion reflects the results of this Committee's work (NMFS 2001). This 2001 biological opinion remains as NMFS' coverage under Section 7(a)(2) at the plan level. The level of detail and type of actions required in the RPA were related more to the project level than to the plan level. In other words, the biological opinion found that the FMPs themselves did not result in jeopardy or adverse modification, yet the interpretation of them and the subsequent regulations allowed a fishery which did result in jeopardy and adverse modification. The Court reviewed the 2001 Biological Opinion and found that it was arbitrary and capricious in several areas, and mandated the Opinion back to NMFS. NMFS complied with that Court order and prepared a Supplement to the 2001 Biological Opinion in 2003 that provided the Court-ordered information.

On July 26, 2001, the Office of Sustainable Fisheries (OSF) initiated consultation with the Office of Protected Resources (OPR) for the western and eastern populations of Steller sea lions. In that memorandum, OSF determined that the proposed changes to the Federal action as requested by the North Pacific Fishery Management Council (Council) would not affect listed species, other than Steller sea lions, in a manner not previously considered. OPR has concurred with that determination. Therefore, consultation for those species was not re-initiated. For the two populations of Steller sea lions and their critical habitat, OSF determined, and OPR concurred, that the proposed action is likely to adversely affect Steller sea lions in a manner not previously considered in the FMP biological opinion. There were two main reasons to re-initiate consultation: (1) new analyses on the distribution of Steller sea lions have revealed a possible greater dependence on nearshore waters than previously understood, and (2) the proposed action, although at the same scope as the RPA in the previous biological opinion, significantly deviates from the specific actions required in that opinion to avoid jeopardy and adverse modification. However, as mentioned above, the FMP level biological opinion remains in effect as NMFS' coverage at the plan level.

5.2 Consultation History

NMFS has conducted multiple internal section 7 consultations on the BSAI and GOA groundfish fisheries. With respect to this opinion, the most recent and relevant consultations are:

• January 26, 1996 Biological Opinions on the FMPs for the BSAI Groundfish Fishery and the GOA Groundfish Fishery, the proposed 1996 TAC Specifications and their effects on Steller Sea Lions. These opinions concluded that the BSAI and GOA FMPs, fisheries, and harvests under the proposed 1996 TAC specifications were not likely to jeopardize the continued existence of Steller sea lions or to result in the destruction or adverse modification of their critical habitat. With respect to these opinions, the agency also concluded that the reasons for the decline of Steller sea lion populations and the possible role of the fisheries in the decline remain poorly understood.

• December 3, 1998 Biological Opinion on authorization of the BSAI Atka mackerel fishery, BSAI pollock fishery, and GOA pollock fishery under their respective FMPs for the period from 1999 to 2002. The opinion concluded that the Atka mackerel fishery was not likely to jeopardize the western population of Steller sea lion or adversely modify its critical habitat, but that the pollock fisheries were likely to cause jeopardy and adverse modification. These conclusions and the reasonable and prudent alternatives (RPAs) developed for the pollock fisheries were challenged in court; the conclusions were upheld, but the RPAs were found arbitrary and capricious for lack of sufficient information. The court ordered preparation of revised final reasonable and prudent alternatives (RFRPAs), which were issued by NMFS on October 15, 1999 and were implemented for the 2000 fisheries.

• December 22, 1998 Biological Opinion on authorization of the BSAI and GOA groundfish fisheries based on TAC specifications recommended by the Council for 1999. The opinion concluded that based on the 1999 TAC specifications, the groundfish fisheries were not likely to cause jeopardy or adverse modification for listed species or their critical habitat. The opinion was also challenged in court and subsequently found to be arbitrary and capricious for failing to include a sufficiently comprehensive analysis of the groundfish fisheries and their individual, combined, and cumulative effects. Based on this finding, the court determined that NMFS was out of compliance with the ESA (Green Peace v. National Marine Fisheries Service, 80 F. Supp. 2d 1137 (WD. Wash. 2000).

• December 23, 1999 Biological Opinion on authorization of the BSAI and GOA groundfish fisheries based on TAC specifications recommended by the Council for 2000, and on authorization of the fisheries based on statutes, regulations, and management measures to implement the American Fisheries Act of 1998 (AFA). The opinion concluded that based on the 2000 TAC specifications and implementation of the AFA, the groundfish fisheries would not cause jeopardy or adverse modification for listed species or their critical habitat. The opinion has not been challenged in court.

• November 30, 2000 Biological Opinion (FMP biological opinion) on authorization of groundfish fisheries in the BSAI under the FMP for the BSAI Groundfish, and the authorization of groundfish fisheries in the GOA under the FMP for Groundfish of the GOA. The opinion was comprehensive in scope and considered the fisheries and the overall management framework established by the respective FMPs to determine whether that framework contained necessary measures to ensure the protection of listed species and their critical habitat. The biological opinion determined that the BSAI or GOA groundfish fisheries, as implemented under the respective FMPs, jeopardized the continued existence of the western population of Steller sea lions and adversely modified their critical habitat. The biological opinion provided an RPA which was partially implemented in 2001. Full implementation of the RPA was scheduled for 2002; however, the action considered in this opinion will take the place of that RPA. The relationship between the November 30, 2000 opinion and this opinion is described above in Section 1.1.

• October 19, 2001 Biological Opinion on Authorization of the BSAI and GOA groundfish fisheries under their respective FMPs, specifically the Pacific cod, pollock, and Atka mackerel fisheries and the parallel fisheries for Pacific cod, pollock, and Atka mackerel as authorized by the State of Alaska within 3 n mi of shore. This opinion is based on an evaluation of both the direct and indirect effects of the action on Steller sea lions and their critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. These effects are considered in the context of an Environmental Baseline and Cumulative Effects. State managed, so-called “parallel fisheries” are also included in this biological opinion in part because of their intricate connection with the federal fisheries being considered, and also due to the State of Alaska’s request to formally include this fishery in the consultation. This was re-iterated by the State in a comment received dated September 12, 2001 (from Frank Rue, Commissioner, Alaska Department of Fish and Game).

• June 19, 2003 Supplement to the 2001 Biological Opinion on Authorization of the BSAI and GOA groundfish fisheries under their respective FMPs, specifically the Pacific cod, pollock, and Atka mackerel fisheries and the parallel fisheries for Pacific cod, pollock, and Atka mackerel as authorized by the State of Alaska within 3 n mi of shore. This document is a supplement to the 2001 BiOp on the pollock, Pacific cod, and Atka mackerel fisheries off Alaska in response to a remand order by the Court. NMFS presented background information on the decision making process in the 2001 BiOp as a requirement of a Court order. These principal issues were the following.

On December 18, 2002, U.S. District Court for the Western District of Washington Judge Zilly granted motion for summary judgment on Greenpeace, American Oceans Campaign, and Sierra Club v. NMFS et al., No. C98-492Z). In his order, Judge Zilly first found that NMFS determination that the near shore zone of critical habitat (3 nm to 10 nm) is 3 times more important to the foraging needs of Steller sea lions than the offshore critical habitat (10 nm to 20 nm) was not supported by the filtered telemetry data cited by NMFS and stated that "the relevant filtered data shows that Steller sea lions use the 3-10 nm and the 10- 20 nm zones almost equally."

Second, Judge Zilly found that NMFS failed to adequately analyze the likely effects of fishing under the Steller sea lion protection measures on Steller sea lions, their prey, and their critical habitat. In this part of the Order, Judge Zilly concluded that even if NMFS had correctly evaluated the differing importance of the zones of critical habitat, the 2001 BiOp failed to evaluate "the differing effect of the current and proposed level of fishing on those zones of critical habitat and Steller sea lions." Without an analysis of how fishing within critical habitat impacts the differing zones of importance, or an explanation in the record of why such an analysis was not required, Judge Zilly found that NMFS failed to articulate a rational connection between the facts found and the choice made for this item in the biological opinion. The 2003 Supplement provided the Court-ordered information.

March 18, 2005 Final Biological Opinion on the Kensington Gold Project. This BiOp covers the proposed mine construction and operation and found no jeopardy or adverse modification of critical habitat relative to the central stock of humpback whales and the eastern stock of Steller sea lions. This document is available from http://www.fakr.noaa.gov/protectedresources/kensington/biop032005.pdf.

5.3 NEPA Documents

Since publication of the FMP-level Biological Opinion in 2000, the following are relevant NEPA analyses conducted since 2000. Information in these documents may be relevant to the consultation process currently being carried out because of the species of fish, location of the activity or type of fishery. All of these analytical documents are available at www.fakr.noaa.gov.

American Fisheries Act

Final EIS for American Fisheries Act Amendments 61/61/13/8, February 1, 2002. This document analyzes the environmental impacts of implementation of the cooperative program for pollock harvest in the BSAI.

Essential Fish Habitat

EA/RIR/IRFA for Amendments 65/65/12/7/8 to the BSAI Groundfish FMP (#65), GOA Groundfish FMP (#65), BSAI Crab FMP (#12), Scallop FMP (#7), and the Salmon FMP (#8) and regulatory amendments to provide Habitat Areas of Particular Concern (HAPCs), October 1, 2005. This document analyzes the effects of conservation measures for HAPCs. Conservation measures restrict certain bottom tending fishing gears from certain locations to protect rare and fragile habitat areas.

Record of Decision: Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska, August 8, 2005

Final EIS for Essential Fish Habitat Identification and Conservation in Alaska April 29, 2005. This document analyzes the effects of identifying and conserving essential fish habitat. Conservation measures restrict bottom tending fishing activities in areas to protect EFH.

Exempted Fishing Permits

EA for the Issuance of an Exempted Fishing Permit for Feasibility Testing of Using Commercial Pollock Fishing Vessels for Acoustic Surveys within Portions of Steller Sea Lion Critical Habitat Areas in the Aleutian Islands Subarea. January 2006. This document analyzes the effects of allowing harvest of pollock within critical habitat during the project.

EA For Issuing an Exempted Fishing Permit for the Purpose of Testing Salmon Excluder Devices in the Eastern Bering Sea Pollock Fishery, April 2005. This document analyzes the effects of issuing exemptions from certain area closures, including the SCA, to allow for testing of a salmon excluder device for pollock trawls. This permit will be modified to extend the experiment into March 2007.

Fur Seals

Ongoing: (see Notice of Intent (70 FR 76780)) Preparation of an Environmental Impact Statement to analyze the environmental impacts of administering grants and issuing permits associated with research on Steller sea lions and northern fur seals.

Final EIS - Setting the Annual Subsistence Harvest of Northern Fur Seals on the Pribilof Islands, May 1, 2005

Groundfish Fishery Management

EA/RIR/IRFA For Proposed Amendment 69 to the Fishery Management Plan for Groundfish of the Gulf of Alaska to modify the Total Allowable Catch Calculation for the "Other Species" Complex, January 2006. The document analyzes the effects of setting the other species TAC at or less than 5 %. This action is not likely to adversely affects any ESA-listed species.

EA/RIR for Amendment 82 to the BSAI Groundfish FMP EA/RIR for Amendment 82 to the BSAI Groundfish FMP and regulatory amendments to allow the allocation of future Aleutian Islands pollock harvest to the Aleut Corporation as required by Public Law 108-199, January 1, 2005. This document analyzes the effects of implementing this exclusive harvest program within the Steller sea lion protection measures. Action is not likely to adversely affect ESA-listed species.

EA/RIR for an Amendment to Regulations Implementing the Fishery Management Plan for Groundfish of the Gulf of Alaska Changes to Gulf of Alaska Steller Sea Lion Protection Measures; FONSI, December 2004; EA/RIR dated October 1, 2004. Minor changes were implemented for the GOA Steller sea lion protection measures to improve

GOA harvest while maintaining protection to Steller sea lions. Action was not likely to adversely affect ESA-listed species.

EA/RIR/IRFA for Amendments 48/48 for the Process by Which Annual Harvest Specifications Are Established for Alaska Groundfish Fisheries Implemented Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the BSAI and GOA, September 1, 2004. A revision to the administrative process for setting harvest specifications with no effects on ESA-listed species.

EA/RIR/FRFA for an Amendment to the Regulations Implementing the FMP for Groundfish in the BSAI Enforcement Interval Change for Pollock Maximum Retainable Amounts (MRA), March 1, 2004 This is an administrative change with no effect on ESA-listed species.

EA/RIR/IRFA for an amendment to provide a two-week trawl closure near Unimak Pass to facilitate an experiment investigating the effects of commercial fishing on local abundance of Pacific cod, November 1, 2003. This experiment was conducted to determine potential effects on trawling on Pacific cod abundance in support of research on Steller sea lion foraging needs.

EA/RIR/IRFA for a Proposed GOA and BSAI Amendment to make changes to the management of the Aleutian Islands pollock fishery and make a proposed exemption of Pacific Cod vessels using pot gear from two haulout protection areas in the GOA, March 1, 2003. This action was taken to make federal regulations parallel to state regulations. No measurable effect on ESA-listed species was found.

EA/RIR/IRFA for a Regulatory Amendment to provide a two-week trawl closure near Unimak Pass (Cape Sarichef) to facilitate an experiment investigating the effects of commercial fishing on local abundance of Pacific Cod, November 1, 2002 . This experiment was conducted to determine potential effects on trawling on Pacific cod abundance in support of Steller sea lion foraging research.

EA/RIR/IRFA for a Regulatory Amendment to Permit an Investigation of the Effect of Commercial Fishing on Walleye Pollock Distribution and Abundance in Localized Areas Off the East Side of Kodiak Island, June 1, 2002 . This action gathered information to understand more about pollock abundance and potential Steller sea lion foraging.

Groundfish Fishery Harvest Specifications

Version 4: BSAI and GOA Harvest Specifications for 2006-2007 Environmental Assessment (EA) and Final Regulatory Flexibility Analysis (FRFA), January 2, 2006

EA/FRFA for the Harvest Specifications for the Years 2005-2006 Alaska Groundfish Fisheries Implemented Under the Authority of the BSAI and GOA Groundfish Fishery Management Plans, FONSI dated February 2005. ER/FRFA dated February 17, 2005

November EA/IRFA for the 2004 Alaska Groundfish Harvest Specifications. (Updated with November plan team recommendations, for December NPFMC review). November 1, 2003

EA/FRFA for 2003 TAC Alaska groundfish fisheries implemented under the authority of the FMPs for the Groundfish Fishery of the BSAI and Groundfish of the GOA, January 1, 2003

EA for 2002 TAC Specifications for the Alaska groundfish fisheries implemented under the groundfish FMPs of the BSAI and GOA, December 1, 2001

EA/RIR for the extension and revision of the Emergency Interim Rule for 2001 Harvest Specifications for the Alaska groundfish fisheries and for Steller Sea Lion Protective Fisheries Management Measures; EA/RIR dated July 4, 2001

Public Law 106-554 excepting 2001 TAC EA, 66 FR 7276: Emergency Interim Rule to implement Steller Sea Lion Protection Measures and 2001 Harvest Specifications, January 22, 2001

Programmatic EIS

This document analyzed policy alternatives for the implementation of the groundfish fisheries in Alaska.

Notice of Availability for the Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (PSEIS), 69 FR 31613, June 4, 2004

Right Whales

Regulatory Impact Review (RIR) and Regulatory Flexibility Act Analysis (RFAA): Impacts of Northern Right Whale Critical Habitat Designation in the North Pacific Ocean, October 27, 2005

5.4 Stock Assessments

The National Standard Guidelines for Fishery Management Plans published by NMFS require that a stock assessment and fishery evaluation (SAFE) report be prepared and reviewed annually for each fishery management plan. The SAFE reports are intended to summarize the best available scientific information concerning the past, present, and possible future condition of the stocks and fisheries under Federal management. Draft SAFE reports are provided to the Council and NMFS prior to setting the annual specifications for these fisheries during the December Council meeting. The SAFE reports are compiled by the Plan Teams for the respective FMPs. These SAFE reports are Appendices to the EA/IRFA of the annual specifications process. The SAFE reports are published in the year prior to their stock assessment coverage. Thus, the November 2000 SAFE provides stock assessment information relevant to prosecution of fisheries on those stocks for the year 2001. The economic SAFE reports provide economic information on the fisheries from two years prior; the economic SAFE published in 2000 provides fishery data for 1998. The following SAFE reports have been completed since the 2000 Biological Opinion.

November 2000. See 2005 example.
November 2001. See 2005 example.
November 2002. See 2005 example.
November 2003. See 2005 example.
November 2004. See 2005 example.

November 2005. Appendix A. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions. Complied by the Plan Team for the Groundfish Fisheries of the Bering Sea and Aleutian Islands.

November 2005. Appendix B. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Gulf of Alaska. Compiled by the Plan Team for the Groundfish Fisheries of the Gulf of Alaska.

November 2005. Appendix C. Ecosystem Considerations for 2006. Reviewed by the Plan Teams for the Groundfish Fisheries of the Bering Sea, Aleutian Islands, and Gulf of Alaska.

November 2005. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Islands Area: Economic Status of the Groundfish Fisheries off Alaska, 2004.

As the assessment is developed for each groundfish species, the authors take into account ESA-listed species concerns that may appear in the ecosystems consideration chapter or may be addressed in regulations. This is particularly true for BSAI and GOA pollock and Pacific cod and for Atka mackerel.

5.5 Fishery Management Plans

After completion of the Programmatic Supplemental Environmental Impact Statement on the Groundfish Fisheries of the GOA and BSAI, the Council approved revised and updated Fishery Management Plans for these fisheries. The following FMPs were revised and updated.

January 2005. Fishery Management Plan for Groundfish of the Gulf of Alaska.

January 2005. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area.

These documents are available from the Council at http://www.fakr.noaa.gov/npfmc/default.htm A description of the contents of these documents is in section 2 of this biological assessment.

5.6 Steller Sea Lion Research Compendium

A compendium of peer-reviewed scientific literature, agency (gray) reports, presentations at scientific conferences and workshops, books, and other related literature has been compiled in a separate volume. This volume, prepared by T.R. Loughlin and J.V. Tagart (April 2006) was prepared under contract to the Council and is intended to supplement the information prepared for this consultation. This compendium provides a master bibliography, annotated with abstracts, of the above literature that has been published from 2000 to the present. The compendium also provides a synthesis of the main findings of these literature sources in the categories of potential threats to Steller sea lions including predation, disease, fishery interactions, climate change, etc.

5.7 Steller Sea Lion Recovery Team

Under the Endangered Species Act (ESA), NMFS is required to develop and maintain recovery plans for all listed species. In 1990, NMFS convened a 10 member recovery team that developed a recovery plan for Steller sea lions which was adopted by the Agency in December 1992. Since that time, a vast amount of data and scientific research has been acquired on both the biology of the species and its conservation, as well as the actions taken to avoid direct and indirect impacts on the species. Further, the course of scientific research has progressed to a point well beyond the outline in the previous plan. In October 2001, NMFS convened a new recovery team consisting of 20 members representing a wide variety of interests and scientific fields. The recovery team's primary objective is to draft a revised recovery plan. After that is completed, NMFS may request the team to continue work on other issues such as reviewing critical habitat.

The Recovery Team has met many times over the past five years, and as of March 2006 has completed its last meeting. During the March 2006 meeting, the Recovery Team worked through the major sections of the draft Recovery Plan (threats assessment, downlisting and delisting criteria, and recovery actions) and achieved a consensus agreement to submit the draft to NMFS. The subcommittee will take the final comments and requested revisions from the team and assemble the draft plan and forward it to NMFS. NMFS will review the draft and prepare the document for public review. NMFS will announce the availability of the draft plan in the federal register. The Council will have an opportunity to review and comment on the draft plan when it is available for public review. Prior to the March meeting the draft Recovery Plan was reviewed by five external peer reviewers, and their comments were discussed at the meeting and recommendations were incorporated into the draft Plan. NMFS will respond to these comments in greater detail and provide the responses in the plan.

NMFS informed the Recovery Team that the agency intends to keep the Recovery Team intact until the public review and comment period is over, and may come back to them if the agency needs further assistance in responding to public comments.

5.8 National Research Council Report

In 2003, the National Research Council completed a report on the decline of Steller sea lions in Alaska and potential causes (NRC 2003). The report reviewed environmental conditions, Steller sea lion biology, fisheries interaction and reviewed various theories on the decline. They hypothesized that the decline may be caused by both bottom-up and top-down mechanisms.

6.0 Conclusions

The action analyzed is the implementation of the groundfish fisheries as authorized by the BSAI and GOA groundfish FMPs. These include the State parallel groundfish fisheries conducted within waters from 0-3 nm of the shore. The State parallel groundfish fisheries are the pollock, Pacific cod, and Atka mackerel fisheries conducted in the same time and area restrictions and under the same total allowable catch as established for the federal fisheries. The action area is the exclusive economic zone off Alaska.

This biological assessment reviewed the best scientific and commercial information available for all NMFS managed ESA-listed species (except salmon and steelhead) which occur in the action area. Groundfish fisheries can impact ESA-listed marine mammals and turtles through competition for prey, disturbance and incidental take by gear entanglements. The analysis determined if the ESA-listed animals was likely to occur in the action area and if so whether the groundfish fisheries were likely to have an adverse effect on the animal. Most of the impacts on ESA-listed marine mammals and turtles from groundfish fisheries were potential incidental take during fishing activities and gear entanglement. Humpback whale, sperm whale and Steller sea lions also have potential to compete with the groundfish fisheries for prey, though the competition is better understood and studied for Steller sea lions. In addition, the potential cumulative effects on these ESA-listed species were addressed in Chapter 4. The analyzed species and the conclusions of the assessment are listed in the Table 6.1.

Table 6.1 Summary of Adverse Affect Determinations for Alaska Groundfish Fisheries

Listed Species	Population or DPS	Scientific Name	Status	Assessment Conclusion	Reason
Blue whale	North Pacific	*Balaenoptera musculus*	Endangered	AK groundfish fisheries are not likely to adversely affect (NLAA).	No evidence of fisheries interaction and rare occurrence
Bowhead whale	Western Arctic	*Balaena mysticetus*	Endangered	AK groundfish fisheries are NLAA.	Bowheads extremely unlikely to occur where groundfish fisheries are prosecuted
Fin whale	Northeast Pacific	*Balaenoptera physalus*	Endangered	AK groundfish fisheries are likely to adversely affect.	Evidence of gear entanglement and whale occurrence in both BSAI and GOA where fisheries prosecuted.
Humpback whale	Western and Central North Pacific	*Megaptera novaeangilae*	Endangered	AK Groundfish Fisheries are likely to adversely affect	Evidence of take for various gear types
Right whale	North Pacific	*Eubalaena japonica*	Endangered	-AK Groundfish fisheries are likely to adversely affect species. -AK groundfish fisheries are NLAA proposed critical habitat.	Buoyed gears are entanglement threats in areas where whales gather. Fishing activities unlikely to affect PCE.
Sei whale	North Pacific	*Balaenoptera borealis*	Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction

Listed Species	Population or DPS	Scientific Name	Status	Assessment Conclusion	Reason
Sperm whale	North Pacific	*Physeter macrocephalus*	Endangered	AK groundfish fisheries are likely to adversely affect	Evidence of interaction and take with GOA longline fisheries
Steller sea lion	Western Alaska DPS	*Eumetopias jubatus*	Endangered	AK groundfish fisheries are likely to adversely affect Steller sea lions and their designated critical habitat.	Competition for prey, removal of prey from critical habitat, incidental take
Steller sea lion	Eastern Alaska DPS	*Eumetopias jubatus*	Threatened	AK groundfish fisheries are likely to adversely affect Steller sea lions and their designated critical habitat.	Competition for prey, removal of prey from critical habitat, incidental take
Olive Ridley turtle	Pacific	*Lepidochelys olivacea*	Threatened/Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Loggerhead turtle	Pacific	*Caretta caretta*	Threatened	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Green turtle	Pacific	*Chelonia mydas*	Threatened/Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction
Leatherback sea turtle	Pacific	*Dermochelys coriacea*	Endangered	AK Groundfish fisheries are NLAA.	Very rare occurrence and no evidence of fisheries interaction

7.0 References

Alaska Department of Fish and Game. 1998. "The Subsistence Harvest of Harbor Seal and Sea Lion by Alaska Natives in 1994." ADF&G Technical Paper, *246*, Alaska Department of Fish and Game: Prepared for NMFS: Juneau.

Allen, K.R. 1980. Conservation and management of whales. Univ. of Washington Press, Seattle.

Aguilar, A., and C. Lockyer. 1987. Growth, physical maturity, and mortality of fin whales (Balaenoptera physalus) inhabiting the temperate waters of the northeast Atlantic. Can. J. Zool.18 65:253-264.

Aguirre, A.A., J.S. Reif and G.A. Antonelis. 1999. Hawaiian monk seal epidemiology plan: Health assessment and disease status studies. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-280. National Marine Fisheries Service, Honolulu Laboratory; Honolulu, Hawaii.

Andrew, R.K., B.M. Howe, J.A. Mercer, and M.A. Dzieciuch. 2002. Ocean ambient sound; comparing the 1960s with the 1990s for a receiver off the California coast. Acous. Res. Let. Online, April 2002: 65-70.

Angel, M.V. and R.I. Smith (eds.). 2002. Variability in the Bering Sea ecosystem. Progress in Oceanography 55 (1-2), 261 pp.

Angliss, R. P. and R. Outlaw 2006 Draft Alaska Marine Mammal Stock Assessment, 2005. Available from http://www.nmfs.noaa.gov/prot_res/readingrm/MMSARS/draft05alaskareportall.pdf

Angliss, R. P. and K. L. Lodge. 2004. Alaska Marine Mammal Stock Assessment, 2003. U. S. Dep. Commer. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

Arauz, R. 2002. Sea turtle nesting activity and conservation of leatherback sea turtles in Playa El Mogote, Río Escalante Chacocente Wildlife Refuge, Nicaragua. September 2002.

Arauz, M. and C. Mo. 1994. Hatching rates of olive ridleys in a managed arribada beach, Ostional, Costa Rica. In: Proceedings of the Fourteenth Annual Symposium on Sea Turtle Biology and Conservation, compiled by K.A. Bjornadal, A.B. Bolten, D.A. Johnson & P.J. Eliazar. NOAA Technical Memorandum NMFS-SEFSC-351.

Arenas, P., L. Sarti and P. Ulloa. 2000. Conservation and management of sea turtles in Mexico, pp. 6-7. In: Proceedings of the 18th International Sea Turtle Symposium, March 3-7, 1998, Mazatlán, Sinaloa, Mexico.

Aureggi, M., G. Gerosa, and S. Chantrapornsyl. 1999. Marine turtle survey at Phra Thong Island, South Thailand. Marine Turtle Newsletter. No. 85: 4-5.

Baillie, J., and G. Groombridge (eds.). 1996. 1996 IUCN red list of threatened animals. IUCN, Gland, Switzerland. 368 pp.

Balazs, G.H. 1982. Status of sea turtles in the central Pacific Ocean, pp. 243-252. In: Bjorndal, K.A. (ed.), Biology and conservation of sea turtles. Smithsonian Institute Press, Washington, D.C.

Balazs, G.H. 1996. Behavioral changes within the recovering Hawaiian green turtle population, pp. 16. In: 15th Annual Symposium on Sea Turtle Biology and Conservation, February 20-25, 1995, Hilton Head, South Carolina.

Balazs, G.H. 2002. Conservation and research of sea turtles in the Hawaiian Islands: An Overview, pp. 27-29. In: Kinan, I. (ed.), Proceedings of the Western Pacific Sea Turtle Cooperative Research and Management Workshop, February 5-8, 2002, Honolulu, Hawaii.

Balazs, G. and M. Chaloupka. 2004. Thirty year recovery trend in the once depleted Hawaiian green turtle stock. Biological Conservation.117:491-498.

Balazs, G. and M. Chaloupka. 2004b. Spatial and temporal variability in somatic growth of green sea turtles (Chelonia mydas) resident in the Hawaiian Archipelago. Marine Biology: 145:1043-1059.

Balazs, G.H., W. Puleloa, E. Medeiros, S.K.K. Murakawa and D.M. Ellis. 1998. Growth rates and incidence of fibropapillomatosis in Hawaiian green turtles utilizing coastal foraging pastures at Palaau, Molokai. NOAA Technical Memorandum NOAA-TM-NMFS-SEFSC-415. National Marine Fisheries Service, Honolulu Laboratory; Honolulu, Hawaii.

Balazs, G.H., R. Forsyth and A. Kam. 1987. Preliminary assessment of habitat utilization by Hawaii green turtles in their resident foraging pastures. NOAA Technical Memorandum. NOAA-TM-NMFS-SWFC-71. National Marine Fisheries Service, Honolulu Laboratory; Honolulu, Hawaii.

Balazs, G.H. and J.A. Wetherall. 1991. Assessing impacts of North Pacific high-seas driftnet fisheries on marine turtles: Progress and problems. Unpublished paper prepared for the North Pacific Driftnet Scientific Review Meeting, Sidney, British Columbia, Canada, June 11-14, 1991.

Ballestero, J., R.M. Arauz and R. Rojas. 2000. Management, conservation, and sustained use of olive ridley sea turtle eggs (Lepidochelys olivacea) in the Ostional Wildlife Refuge, Costa Rica: An 11 year review, pp. 4-5. In: Proceedings of the 18th

International Sea Turtle Symposium, March, 3-7, 1998, Mazatlán, Sinaloa, Mexico.

Bannikov, A.G., I.S. Darevsky, and A.K. Rustamov. 1971. Zemnovodni i presmikaushchienya USSR. Izdatelistvo “Misl, “ Moscow. 304 pp.

Barlow, J. 2003. Preliminary estimates of the abundance of cetaceans along the U.S. west coast: 1991-2001. Southwest Fisheries Science Center Administrative Report LJ-03-03. Available from SWFSC, 8604 La Jolla Shores Dr., La Jolla CA 92037. 31p.

Barlow, J. and B. L. Taylor. 1998. Preliminary abundance of sperm whales in the northeastern temperate Pacific estimated from a conbined visual and acoustic survey. Unpubl. Report submitted to Int. Whal. Comm. (SC/50/CAWS/20). 19 p.

Basintal, P. 2002. Conservation at the Sabah’s Turtle Islands Park, Malaysia, pp. 151-160. In: Kinan, I. (ed.), Proceedings of the Western Pacific Sea Turtle Cooperative Research and Management Workshop, February 5-8, 2002, Honolulu, Hawaii.

Baumgartner, M.F. & Mate, B.R. (2003) Summertime foraging ecology of North Atlantic right whales. Marine Ecology Progress Series, 264, 123-135.

Beamish, R. J. 1993. Climate and exceptional fish production off the west coast of North America. Canadian Journal of Fisheries and Aquatic Science 50:2270-2291.

Bell, B.A., J.R. Spotila, F.V. Paladino and R.D. Reina. 2003. Low reproductive success of leatherback turtles, Dermochelys coriacea, is due to high embryonic mortality. Biological Conservation 115:131-138.

Benson, A. J. and A. W. Trites. 2000. A review of the effects of regime shifts on the production domains in the eastern North Pacific Ocean. Unpublished report, Marine Mammal Research Unit, Fisheries Centre, University of British Columbia, 2204 Main Mall, Vancouver, BC V6T 1Z4.

Berzin, A.A. 1971. Kashalot. [The sperm whale.] [In Russian.] Izd. “Pishchevaya Promyshlennost,” Moscow, 367 pp. (Transl. by Israel Program Sci. Transl., 1972, 394 pp.) Available Natl. Tech. Inf. Serv., Springfield , VA, as TT71-50152/50160.

Berzin, A. A. and A. A. Rovnin. 1966. Distribution and migration of whales in the northeastern part of the Pacific Ocean, Bering and Chukchi Seas. Izv. Tikhookean. Nauchno-issled, Inst. Rybn. Khoz. Okeanogr. (TINRO) 58:179-207. {In Russian}. (Translated by U.S. Dep. Inter., Bur. Commer. Fish., Seattle, Washington, 1966, pp. 103-106 In: Panin, K. I. (ed) Soviet Research on marine mammals of the Far East).

Bessonov, B., Mel'nikov, V.V., and Bobkov, V.A. 1990. "Distribution and migration of cetaceans in the Soviet Chukchi Sea." Conference Proceedings, Third Information Transfer Meeting, U.S. Minerals Management Service, Alaska OCS Reg., pp.25-31.

Bjorndal, K.A., A.B. Bolten and B. Riewald. 1999. Development and use of satellite telemetry to estimate post-hooking mortality of marine turtles in the pelagic longline fisheries. Southwest Fisheries Science Center Administrative Report H-99-03C. Honolulu Laboratory, Hawaii.

Bjorndal, K.A., A.B. Bolten, and M.Y. Chaloupka. 2000. Green turtle somatic growth model: evidence for density dependence. Ecological Applications. 10:269-282.

Bockstoce, J.R. 1986. Whales, ice and men: the history of whaling in the western Arctic, University of Washington Press, Seattle, WA. 400 pp.

Bogoslovskaya, L.S., Votrogov, L.M., and Krupnik, I.I. 1982. "The bowhead whale off Chukotka: migrations and aboriginal whaling." Report of the International Whaling Commission, 32, pp.391-399.

Braham, H. 1984. The status of endangered whales: an overview. Mar. Fish. Rev. 46(4):2-6.

Braham, H. 1992. Endangered whales: Status update. Working document presented at a Workshop on the Status of California Cetacean Stocks (SOCCS/14). 35 pp. + tables. (available upon request - Alaska Fisheries Science Center, 7600 Sand Point Way, NE, Seattle, WA 98115).

Brodeur, R.D., and D.M. Ware. 1992. Interannual and interdecadal changes in zooplankton biomass in the subarctic Pacific Ocean. Fish. Oceanogr. 1:32-38.

Brown, C.H. and W.M. Brown. 1982. Status of sea turtles in the Southeastern Pacific: Emphasis on Peru, pp. 235-240. In: Bjorndal, K.A. (ed.), Biology and Conservation of Sea Turtles (First edition). Smithsonian Institution Press, Washington, D.C.

Brownell, R. L., T. Kasuya, W. P. Perrin, C. S. Baker, F. Cipriano, J. Urban R., D. P. DeMaster, M. R. Brown, and P. J. Clapham. 2000. Unknown status of the western North Pacific humpback whale population: a new conservation concern. Unpublished report to the International Whaling Commission. 5p.

Brownell, R.L. Jr, Clapham, P.J., Miyashita, T. & Kasuya, T. 2001 Conservation status of North Pacific right whales. Journal of Cetacean Research and Management, 2, 269–286.

Calambokidis, J., G. H. Steiger, J. M. Straley, T. Quinn, L. M. Herman, S. Cerchio, D. R. Salden, M. Yamaguchi, F. Sato, J. R. Urban, J. Jacobson, O. Von Zeigesar, K. C. Balcomb, C. M. Gabriele, M. E. Dahlheim, N. Higashi, S. Uchida, J. K. B. Ford, Y. Miyamura, P. Ladrón de Guevara, S. A. Mizroch, L. Schlender, and K. Rasmussen. 1997. Abundance and population structure of humpback whales in the North Pacific basin.Final Contract Report 50ABNF500113 to Southwest Fisheries Science Center, P.O. Box 271, La Jolla, CA 92038. 72 pp.

Calkins, D.G. 1987. Marine Mammals. In The Gulf of Alaska: physical environment and biological resources. D. W. Hood, S. T. Zimmerman (eds.), pp. 527-560. Alaska Office, Ocean Assessments Division, National Oceanic and Atmospheric Administration, U.S. Dep. Of Commer., and the Alaska OCS Region Office, Minerals Management Service, U.S. Department of the Interior. Washington, DC.

Calkins, D. G., and K. W. Pitcher. 1982. Population assessment, ecology and trophic relationships of Steller sea lions in the gulf of Alaska. Environmental Assessment of the Alaskan Continental Shelf. Final reports 19:455-546.

Campbell, L.M. 1998. Use them or lose them? Conservation and the consumptive use of marine turtle eggs at Ostional, Costa Rica. Environmental Conservation 25(4):305-319.

Chaves, A., G. Serrano, G. Marin, E. Arguedas, A. Jimenez and J.R. Spotila. 1996. Biology and Conservation of Leatherback Turtles, Dermochelys coriacea, at Playa Langosta, Costa Rica. Chelonian Conservation and Biology 2(2): 184-189.

Cherfas, J. 1989. The Hunting of the Whale. Viking Penguin Inc., New York, New York. 248 p.

Chikuni, S. 1975. Biological study on the population of the Pacific ocean perch in the North Pacific. Bull. Far Seas Fish. Res. Lab. (Shimizu) 12:1-119.

Clapham, P., K. Shelden, and P. Wade. 2005. Review of Information Relating to Possible Critical Habitat for Eastern North Pacific Right Whales. National Marine Mammal Laboratory. August 2005. Available from http://www.fakr.noaa.gov/protectedresources/whales/nright/rule/rwcrithabinfo0805.pdf.

Clapham, P., Good, C., Quinn, S., Reeves, R.R., Scarff, J.E. & Brownell, R.L. Jr. 2004. Distribution of North Pacific right whales (Eubalaena japonica) as shown by 19th and 20th century whaling catch and sighting records. Journal of Cetacean Research and Management, 6, 1–6.

Cornelius, S.E. and D.C. Robinson. 1982. Coast Rica; Project 3085. Olive Ridley sea turtles. Cambridge, UK: World Conservation Monitoring Centre.

Coyle, K.O. 2000. Zooplankton densities in right whale feeding areas of Cape Newenham, southeastern Bering Sea: report on the results of analysis of seven MOCNESS tows taken in the whale foraging area. Final Report to NMFS/NMML, 13 pp.

Credle, V. R., D. P. DeMaster, M. M. Merklein, M. B. Hanson, W. A. Karp, and S. M. Fitzgerald (eds.). 1994. NMFS observer programs: minutes and recommendations from a workshop held in Galveston, Texas, November 10-11, 1993. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-94-1, 96 pp.

Dagg, M. and Royer, T.C. 2002. Ecology of the Southeastern Bering Sea. Deep-Sea Research, Part II, 49(26): 5813-6168.

Delgado, C. and J. Alvarado. 1999. Recovery of the black sea turtle (Chelonia agassizi) of Michoacan, Mexico. Final report 1998-1999, submitted to U.S. Fish and Wildlife Service.

Dermawan, A. 2002. Marine turtle management and conservation in Indonesia, pp. 67-75. In: Kinan, I. (ed.), Proceedings of the Western Pacific Sea Turtle Cooperative Research and Management Workshop, February 5-8, 2002, Honolulu, Hawaii.

Dodd, C.K., Jr. 1988. Synopsis of the biological data on the loggerhead sea turtle Caretta caretta. (Linnaeus 1758). U.S. Fish and Wildlife Service Biological Report 88(14).

Doroshenko, N. V. 2000. Soviet catches of humpback whales (Megaptera novaeangliae) in the North Pacific. In: A. V. Yablokov and V. A. Zemsky (eds.), Soviet whaling data (1949-1979)., Center for Russian Environmental Policy, Marine Mammal Council, Moscow, 96-103.

Dutton, P. 2003. Molecular ecology of Chelonia mydas in the eastern Pacific Ocean. In: Proceedings of the 22nd Annual Symposium on Sea Turtle Biology and Conservation, April 4-7, 2002, Miami, Florida.

Dutton, P.H., E.Bixby, R. LeRoux and G. Balazs. 2000. Genetic stock origin of sea turtles caught in the Hawaii-based longline fishery, pp. 120-121. In: Proceedings of the 19th Annual Symposium on Sea Turtle Conservation and Biology, March 2-6, 1999, South Padre Island, Texas.

Eckert, S.A. 1997. Distant fisheries implicated in the loss of the world's largest leatherback nesting.

Eckert, K.L. 1993. The biology and population status of marine turtles in the North Pacific Ocean. Final Report to National Marine Fisheries Service, Southwest Fisheries Science Center, Honolulu, Hawaii.

Ernst, C.H. and R. W. Barbour. 1989. Turtles of the World. Smithsoniam Inst. Press, Washington, D.C. 313 pp.

Ferrero, R. C., DeMaster, D. P., Hill, P. S., Muto, M. M., and Lopez, A. L. 2000. "Alaska marine mammal stock assessments, 2000." NOAA Technical Memorandum, *NMFS-AFSC-119*, U.S. Department of Commerce, NOAA. p. 191.-43.

Francis, R.C., S.R. Hare, A.B. Hollowed, and W.S. Wooster. 1998. Effects of interdecadal climate variability on the oceanic ecosystems of the NE Pacific. Fish. Oceanogr. 7(1): 1-21.

Frankel, A. S., and C. W. Clark. 1998. Results of low-frequency playback of M-sequence noise to humpback whales, Megaptera novaeangliae, in Hawai'i. Can. J. Zool. 76:521-535.

Frankel, A.S. and C. W. Clark. 2002. ATOC and other factors affecting the distribution and abundance of humpback whales (Megaptera novaeangliae) off the North Shore of Hawaii. Mar. Mam. Sci. 18(3):644-662.

Fritts, T., M. Stinson and R. Marquez. 1982. Status of sea turtle nesting in southern Baja California, Mexico. Bulletin of the Southern California Academy of Science 81: 51-60.

Gendron, D. 1990. Relación entre la abundancia de eufausidos y de ballenas azules (Balaenoptera musculus) en el Golfo de California. M.S. Thesis, Centro Interdisciplinario de Ciencias Marinas, La Paz, Mexico. 64 pp.

Gendron, D. 1992. Population structure of daytime surface swarms of Nyctiphanes simplex (Crustacea: Euphausiacea) in the Gulf of California, Mexico. Mar. Ecol. Prog. Ser. 87:1-6.

Gendron, D. and R. Sears. 1993. Blue whales and Nyctiphanes simplex surface swarms: a close relationship in the southwest Gulf of California, Mexico. Pp 52 In Proceedings of the 10th Bienniel Conf on Marine Mammal Biology, Galveston, Texas, December 1993.

Gendron, D. and V. Zavala-Hernandez. 1995. Blue whales of Baja California: a summary of their distribution and preliminary reproductive data based on photoidentification. Pp 43 In Proceedings of the 11th Bienniel Conference on the Biology of Marine Mammals, Orlando, Florida, December 1995.

Gendron, D., and J. Del Angel-Rodriguez. 1997. Diet, spatial and temporal distribution of fin whales (Balaenoptera physalus) and blue whales (B. musculus) in Bahìa de La Paz, Baja California Sur, Mexico. p. 21. In: Proceedings of the XXII Reunión Internacional para el Estudio de los Mamìferos Marinos, Nuevo Vallarta, Nayarit (abstract). Sociedad Mexicana para el Estudio de los Mamìferos Marinos.

George, J. C., J. Zeh, R. Suydam, and C. Clark. 2004. Abundance and population trend (1978-2001) of western Arctic bowhead whales surveyed near Barrow, Alaska. Marine Mammal Science. 20(4):755-773.

Gharrett, A. J. 2003. Population structure of rougheye, shortraker, and northern rockfish based on analysis of mitochondrial DNA variation and microsatellites: completion. Juneau Center of Fisheries and Ocean Sciences, University of Alaska-Fairbanks.
136 pp.

Gilmore, R.M. 1978. Right whale. Pp. 62-69. In: Marine mammals of eastern North Pacific and Arctic waters. D. Haley (ed.). Pacific Search Pres., Seattle, WA.

Gosho, M. E., D. W. Rice, and J. M. Breiwick. 1984. The sperm whale, Physeter macrocephalus. Mar. Fish. Rev. 46(4):54-64.

Grant, W. S., C. I. Zhang, and T. Kobayashi. 1987. Lack of genetic stock discretion in Pacific cod (*Gadus macrocephalus*). Can. J. Fish. Aquat. Sci. 44:490-498.

Grebmeier, J. M., J. E. Overland, S. E. Moore, E. V Farley, E. C. Carmack, L. W. Cooper, K. E. Frey, and J. H. Helle. 2006. A Major Ecosystem Shift in the Northern Bering Sea. Science. March 10, 2006. Vol. 311(5766) pp 1461-1464.

Green, D. and F. Ortiz-Crespo. 1982. Status of sea turtle populations in the central eastern Pacific. In: Bjorndal, K.A. (ed.), Biology and conservation of sea turtles. Smithsonian Institution Press, Washington, D.C.

Hamilton, P.K., M.K. Marx, and S.D. Kraus. 1998. Scarification analysis of North Atlantic right whales (Eubalaena glacialis) as a method of assessing human impacts. Final report to NMFS Northeast Fisheries Science Center, contract No. 4EANF-6-0004.

Hatase, H., M. Kinoshita, T. Bando, N. Kamezaki, K. Sato, Y. Matsuzawa, K. Goto, K. Omuta,Y. Nakashima, H. Takeshita, and W. Sakamoto. 2002. Population structure of loggerhead turtles, Caretta caretta, nesting in Japan: Bottlenecks on the Pacific population. Marine Biology 141: 299-305.

Heifetz, J. and J. T. Fujioka. 1991. Movement dynamics of tagged sablefish in the northeastern Pacific Ocean. Fish. Res., 11:355-374.

Hodge, R. P. 1979. Dermochelys coriacea schlegeli (Pacific leatherback), U.S.A. Alaska. Herpetol. Review 10(3): 102.

Hollowed, A. B., and W. S. Wooster. 1995. Decadal-scale variations in the eastern Subarctic Pacific: II. Response of Northeast Pacific fish stocks, p. 373-385. *In*

Climate Change and Northern Fish Populations. Canadian Special Publication of Fisheries and Aquatic Sciences 121.

Holmes, E.E. 2001. Estimating risks in declining populations with poor data. Proceedings of the National Academy of Science. 98:5072-5077.

Howe, A. L., G. Fidler, A. E. Bingham, and M. J. Mills. 1996. Harvest, catch, and participation in Alaska sport fisheries during 1995. Alaska Department of Fish and Game, Fishery Data Series No. 96-32, Anchorage.

Hunt, G. L. Jr., P. J. Stabeno, G. Walters, E. Sinclair, R.D. Brodeur, J. M. Napp, and N. A. Bond. 2002. Climate change and control of the southeastern Bering Sea pelagic ecosystem. Deep-Sea Research II 49:5821-5853.

International Whaling Commission. 1997. Report of the Sub-committee on Aboriginal Subsistence Whaling. Rep. Int. Whal. Comm. 47:153-162.

Johnson, A., G. Salvador, J. Kenney, J. Robbins, S. Kraus, S. Landry, and P. Clapham. 2005. Fishing Gear Involved In Entanglements Of Right And Humpback Whales. Marine Mammal Science: Vol. 21, No. 4, pp. 635–645.

Johnson, J. H., and A. A. Wolman. 1984. The humpback whale, Megaptera novaeangliae. Mar. Fish. Rev. 46(4):30-37.

Johnson, S.R., J.J. Burns, C.I. Malme, and R.A. Davis. 1989. Synthesis of information on the effects of noise and disturbance on major haulout concentrations of Bering Sea pinnipeds. Rep. to U.S. Minerals Management Service, Anchorage, AK. No. MMS 88-0092.

Kalb, H.J., J.A. Kureen, P.A. Mayor, J. Peskin, R.L. Phyliky. 1996. Conservation concerns for the Nancite Olive Ridleys. Pg.141, 15th Annual Symposium Sea Turtle Biology and Conservation, Feb. 20-25, 1995, Hilton Head, South Carolina.

Kamezaki, N., Y. Matsuzawa, O. Abe, H. Asakawa, T. Fujii, K. Goto, S. Hagino, M. Hayami, M. Ishii, T. Iwamoto, T. Kamata, H. Kato, J. Kodama, Y. Kondo, I. Miyawaki, K. Mizobuchi, Y. Nakamura, Y. Nakashima, H. Naruse, K. Omuta, M. Samejima, H. Suganuma, H. Takeshita, T. Tanaka, T. Toji, M. Uematsu, A. Yamamoto, T. Yamato, and I. Wakabayashi. 2003. Loggerhead Turtles Nesting in Japan. In Loggerhead Sea Turtles. Edited by A.B. Bolten and B.E. Witherington. Smithsonian Institution.

Kasuya, T. 1999. Examination of the reliability of catch statistics in the Japanese coastal sperm whale fishery. J. Cetacean Res. Manage. 1: 109-122.

Kawakami, T. 1980. A review of sperm whale food. Scientific Report of the Whales Research Institute Tokyo 32:199-218.

Kawamura, A. 1982. Food habits and prey distributions of three rorqual species in the North Pacific Ocean. Sci. Rep. Whales Res. Inst. 34:59-91.

Kawamura, A. 1980. A review of food of balaenopterid whales. Sci. Rep. Whales Res. Inst. 32:155-197.

Kenney, R.D. 2001. Anomalous 1992 spring and summer right whale (Eubalaena glacialis) distribution in the Gulf of Maine. J. Cetacean Res. and Management, (Special Issue) 2: 209-224.

Kenney, R.D. and S. Kraus. 1993. Right whale mortality - a correction and update. Mar Mammal Sci. 9(4): 445-6.

Kenny, R.D. and K.F. Wishner (eds.). 1995. The South Channel Ocean Productivity Experiment: SCOPEX. Cont. Shelf. Res. 15(4/5): 373-611.

Kenny, R.D., M.A.M. Hyman, R.E. Owwne, G.P. Scott and H.E. Winn. 1986. Estimation of prey densities required by western North Atlantic right whales. Mar. Mamm. Sci.2(1): 1-13.

Kenny, R.D., C.A. Mayo and H.E. Winn. 2001. Migration and foraging strategies at varying spatial scales in western North Atlantic right whales. J. Cetacean Res. Manage. (Special Issue) 2: 251-260.

Kibal'chich, A.A., Dzhamanov, G.A., and Ivashin, M.V. 1986. "Records of bowhead and gray whales in the early winter in the Bering Sea." Report of the International Whaling Commission, 36, pp.291-292.

Kimura, D. K., A. M. Shimada, and F. R. Shaw. 1998. Stock structure and movement of tagged sablefish, *Anoplopoma fimbria*, in offshore northeast Pacific waters and the effects of El Niño-Southern Oscillation on migration and growth. Fish. Bull. 96:462-481.

Kornev, S.I. 1994. A note on the death of a right whale (Eubalaena glacialis) off Cape Lopakta (Kamchatka). Rep. int. Whal. Comm. Special issue 15:443-444.

Kraus, S.D. 1990. Rates and potential causes of mortality in North Atlantic right whales (Eubalaena glacialis). Mar. Mamm. Sci. 6(4): 278-291.

Kraus, S.D., Prescott, J.H., Knowlton, A.R. & Stone, G.S. 1986. Migration and calving of right whales (Eubalaena Glacialis) in the western North Atlantic. Report of the International Whaling Commission, 10, 139–144.

Krieger, K. and B. L. Wing. 1986. Hydroacoustic monitoring of prey to determine humpback whale movements. NOAA Tech. Memo. NMFS F/N/NWC-98, 62 pp.

Krieger, K. and B. L. Wing. 1984. Humpback whale prey studies in southeastern Alaska, summer 1983. Report to the Northwest and Alaska Fisheries Center Auke Bay Laboratory, National Marine Fisheries Service, NOAA, P. O. Box 155. Auke Bay, Alaska 99821, 42 pp.

Lambertsen, R. H. B. A. Kohn, J. P. Sundberg, and C. D. Buergelt. 1987. Genital papillomatosis in sperm whale bulls. J. Wildlife Diseases. 23(3):361-367.

Lambertsen, R. H. 1992. Crassicaudosis: a parasitic disease threatening the health and population recovery of large baleen whales. Rev. sci. tech. Off. int. Epiz. 11(4):1131-1141.

Landsberg, J.H., G.H. Balazs, K.A. Steidinger, D.G. Baden, T.M. Work and D.J. Russell. 1999. The potential role of natural tumor promoters in marine turtle fibropapillomatosis. Journal of Aquatic Animal Health 11: 199-210.

Lewison, R.L., S.A. Freeman, and L.B. Crowder. 2004. Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles.

Lohn , D. R. 2005. Memorandum to Ron Berg regarding Request for Reinitiation ESA Section 7 Consultation Regarding the Bering Sea and Aleutian Islands Groundfish Fishery. NMFS Northwest Region, 7600 Sand Point Way N. E. Bldg. 1 Seattle, WA 98115

Loughlin, T. R. 1997. Using the phylogeographic method to identify Steller sea lion stocks. Pp. 329-341, In A. Dizon, S. J. Chivers, and W. Perrin (eds.), Molecular genetics of marine mammals, incorporating the proceedings of a workshop on the analysis of genetic data to address problems of stock identity as related to management of marine mammals. Soc. Mar. Mammal., Spec. Rep. No. 3.

Loughlin, T. R., D. J. Rugh, and C. H. Fiscus. 1984. Northern sea lion distribution and abundance: 1956-1980. J. Wildl. Manage. 48:729-740.

Loughlin, T.R., and A.E. York. 2001. Rethinking Alaskan fishery impacts on Steller sea lion mortality. Unpublished NMFS white paper.

Lowry, L.F. (1993). “Foods and feeding ecology.” In The Bowhead Whale, J.J. Burns, J.J. Montague, and C.J.Cowles (eds.), The Society for Marine Mammalogy, pp.1-787.

Marine Conservation Alliance. 2006. Letter to Kaja Brix regarding Right Whale Critical Habitat Proposed Rule. January 3, 2006. Available from NMFS Alaska Region P. O. Box 21688, Juneau, AK 99802.

Marquette, W. M., and J. R. Bockstoce. 1980. Historical shore-based catch of bowhead whales in the Bering, Chukchi, and Beaufort Seas. Mar. Fish. Rev. 42(9-10):5-19.

Márquez-M., M.A. Carrasco-A., and M. del C. Jimenez. 2002. The marine turtles of Mexico: an update. In: I. Kinan (Ed.) Proceedings of the Western Pacific Sea Turtle Cooperative Research and Management Workshop. February, 2002, Honolulu, HI: Western Pacific Fishery Management Council. 300 pp.

Márquez, M.R., C.S. Peñaflores, A.O. Villanueva, and J.F. Diaz. 1995. A model for diagnosis of populations of olive ridleys and green turtles of west Pacific tropical coasts. In Biology and Conservation of Sea Turtles (revised edition). Edited by K. A. Bjorndal.

Merrick, R. L., and D. G. Calkins. 1996. Importance of juvenile walleye pollock, *Theragra chalcogramma*, in the diet of Gulf of Alaska Steller sea lions, *Eumetopias jubatus*. NOAA Technical Memorandum, *126*, U.S. Department of Commerce, NOAA. pp. 153-166.

Merrick, R.L., and T.R. Loughlin. 1997. Foraging behavior of adult female and young-of-the-year Steller sea lions (*Eumetopias jubatus*) in Alaskan waters. Can. J. of Zool. 75 (5):776-786.

Merrick, R. L., R. Brown, D. G. Calkins, and T. R. Loughlin. 1995. A comparison of Steller sea lion, *Eumetopias jubatus*, pup masses between rookeries with increasing and decreasing populations. Fishery Bulletin 93:753-758.

Millán, R.M. 2000. The ridley sea turtle populations in Mexico. Page 19 in Proceedings of the Eighteenth International Sea Turtle Symposium, 3-7 March, 1998, Mazatlán, Sinaloa Mexico.

Mizroch, S. A., L. M. Herman, J. M. Straley, D. Glockner-Ferrari, C. Jurasz, J. Darling, S. Cerchio, C. Gabriele, D .Salden, O. von Ziegesar. 2004. Estimating the adult survival rate of central North Pacific humpback whales. J. Mammal. 85(5).

Mizroch, S. A., D. W. Rice, and J. M. Breiwick. 1984. The blue whale, Balaenoptera musculus. Mar. Fish. Rev. 46:15-19.

Mizue, K. 1951. Food of whales (in the adjacent waters of Japan). Sci. Rep. Whales Res. Inst. 5:81-90.

Moore, S. E. and R. R. Reeves. 1993. Distribution and movement. Pp. 313-386, In J. J. Burns, J. J. Montague, and C. J. Cowles (eds.), The bowhead whale. Soc. Mar. Mammalogy, Spec. Publl. No. 2.

Moore, S. E., K. M. Stafford, M. E. Dahlheim, C. G. Fox, H. W. Braham, J. J. Polovina, and D. E. Bain. 1998. Seasonal variation in reception of fin whale calls at five geographic areas in the North Pacific. Mar. Mamm. Sci. 14(3):617-627.

Moore, S. E., J. M. Waite, L. L. Mazzuca, and R. C. Hobbs. 2000. Provisional estimates of mysticete whale abundance on the central Bering Sea shelf. J. Cetacean Res. Manag. 2(3):227-234.

Moore, S. E., J. M. Waite, N. A. Friday and T. Honkalehto. 2002a. Distribution and comparative estimates of cetacean abundance on the central and south-eastern Bering Sea shelf with observations on bathymetric and prey associations. Progr. Oceanogr. 55(1-2):249-262.

Moore, S. E., W. A. Watkins, M. A. Daher, J. R. Davies, and M. E. Dahlheim. 2002b. Blue whale habitat associations in the northwest Pacific: analysis of remotely-sensed data using a Geographic Information System. Oceanography 15(3): 20-25.

Moore, S. E., K. M. Stafford, D. K. Mellinger, and J. A. Hildebrand. 2006. Listening for large whales in the offshore waters of Alaska. January 2006. Bioscience 56(1): 49-55.

Morris, W. F., and D. F. Doak. 2002. Quantitative conservation biology. Theory and practice of population viability analysis. Sunderland, Massachusetts, Sinauer Associates, Inc. Publishers.

Muccio, C. 1998. National sea turtle conservation report for Guatemala. August, 1998.

Napp, J.M., C.T. Baier, R.D. Brodeur, K.O. Coyle, N. Shiga and K. Mier. 2002. Interannual and decadal variability in zooplankton communities of the southeast Bering Sea shelf. Deep-Sea Research II 49 (26): 5991-6008.

National Marine Fisheries Service (NMFS). 2006a. Memorandum from Robert D. Mecum to Anne Rappaport of the US. Fish and Wildlife Service Requesting ESA Section 7 Consultation for the Alaska Fisheries, February 23, 2006.

NMFS. 2006b. Environmental Assessment/Final Regulatory Flexibility Analysis for the BSAI and GOA Harvest Specifications for 2006-2007, February 2006. NMFS Alaska Region P. O. Box 21688, Juneau, AK 99802.

NMFS. 2006c. Endangered Species Act Section 7 Consultation Biological Opinion for Exempted Fishing Permit Number 06-01. March 9, 2006. NMFS Alaska Region P. O. Box 21688, Juneau, AK 99802.

NMFS. 2006d. Letter from Robert D. Mecum, NMFS Alaska Region Acting Regional Administrator to Ann Rappoport of USFWS regarding Endanger Species Act

Section 7 Consultation for Alaska Fisheries and Northern Sea Otters. February 23, 2006. Available from NMFS Alaska Region P. O. Box 21688, Juneau, AK 99802.

NMFS. 2005a. Memorandum from D. Robert Lohn to Ron Berg regarding Request for Reinitiated ESA Section 7 Consultation Regarding the Bering Sea and Aleutian Islands Groundfish Fishery, July 27, 2005. Available from NMFS Alaska Region P. O. Box 21688, Juneau, AK 99802.

NMFS. 2005b. Endangered Species Act Section 7 Consultation Biological Opinion and Incidental Take Statement for Continued authorization of the Hawaii-based Pelagic, Deep-Set, Tuna Longline Fishery based on the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region. October 4, 2005, NMFS Pacific Island Region.

NMFS. 2005c. Environmental Assessment For Issuing an Exempted Fishing Permit for the Purpose of Testing Salmon Excluder Devices in the Eastern Bering Sea Pollock Fishery. April 2005. Available from http://www.fakr.noaa.gov/analyses/groundfish/salmonefpEA2005.pdf.

NMFS. 2005d. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendments 65/65/12/7/8 to the BSAI Groundfish FMP, GOA Groundfish FMP, BSAI Crab FMP, Scallop FMP and Salmon FMP and regulatory amendment to provide Habitat Areas of Particular Concern. October 2005. Available from: http://www.fakr.noaa.gov/analyses/efh/HAPCea102005.pdf.

NMFS. 2004. NOAA Alaska Region News Release NOAA-04-R160, July 27, 2004. Available from www.fakr.noaa.gov.

NMFS. 2004a. Biological opinion on proposed regulatory amendments to the fisheries management plan for the Pelagic Fisheries of the Western Pacific Region. February 23, 2004.

NMFS. 2004b. Final Programmatic Supplemental Environmental Impact Statement for the Alaska Groundfish Fisheries. NMFS Alaska Region, P.O.Box 21668, Juneau, Alaska 99802-1668. pp.7000.

NMFS 2003. Sei Whale, Eastern North Pacific Stock Marine Mammal Stock Assessment. December 15, 2003. Available from http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/Cetaceans/Sei_Whale_(ENP)/PacSar2003%20-%20Sei%20whale%20ENP.pdf.

NMFS. 2003b. Endangered Species Act Section 7 Consultation Biological Opinion for Vessel Quota and Operational Requirements for Glacier Bay National Park and

Preserve. August 5, 2003. NMFS, Alaska Region P.O. Box 21668, Juneau, AK 99801.

NMFS. 2003c. Supplemental to the October 2001 Biological Opinion on the Alaska Groundfish Fisheries and Steller Sea Lions. NMFS, Alaska Region P.O. Box 21668, Juneau, AK 99801.

NMFS. 2001. Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement. Implemented under the Fishery Management Plans for the Groundfish of the GOA and the Groundfish of the BSAI. 2001. NMFS, Alaska Region P.O. Box 21668, Juneau, AK 99801. November 2001. Available at http://www.fakr.noaa.gov/sustainablefisheries/seis/sslpm/default.htm.

NMFS 2000 Endangered Species Act Section 7 Consultation Biological Opinion and Incidental Take Statement for Continued authorization of the Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish and the Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska. November 2000, NMFS Protected Resources Division. Alaska Region, available from http://www.fakr.noaa.gov/protectedresources/stellers/plb/default.htm.

NMFS. 1995. Status review of the United States Steller sea lion (Eumetopias jubatus) population. Prepared by the National Marine Mammal Laboratory, AFSC, NMFS, NOAA, 7600 Sand Point Way NE, Seattle, WA 98115. 61 pp.

NMFS 1991a. Recovery plan for the humpback whale (Megaptera novaeangliae). Prepared by the humpback recovery team for the National Marine Fisheries Service, Silver Spring, Maryland. 105 pp.

NMFS. 1991b. Final Recovery Plan for the Northern Right Whale, Eubalaena glacialis. U.S. Department of Commerce, national Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources. 86 pp.

NMFS and U.S. Fish and Wildlife Service. 1995. Status reviews for sea turtles listed under the Endangered Species Act of 1973. National Marine Fisheries Service, Silver Spring, Md.

NMFS and U.S. Fish and Wildlife Service. 1998a. Recovery Plan for U.S. Pacific Populations of the Green Turtle. Prepared by the Pacific Sea Turtle Recovery Team. National Marine Fisheries Service and U.S. Fish and Wildlife Service; Silver Spring, Maryland, and Arlington, Virginia.

NMFS and U.S. Fish and Wildlife Service. 1998d. Recovery Plan for U.S. Pacific Populations of the Loggerhead Turtle. Prepared by the Pacific Sea Turtle Recovery Team.

NMFS and U.S. Fish and Wildlife Service. 1998e. Recovery Plan for U.S. Pacific Populations of the Olive Ridley Turtle. Prepared by the Pacific Sea Turtle Recovery Team.

National Research Council. 2003. Decline of the Steller sea lion in Alaska waters, Untangling food webs and fishing nets. The National Academies Press, 500 Fifth St. NW, Lockbox 285, Washington D. C. 204 pp.

Nemoto, T. 1957. Foods of baleen whales in the northern Pacific. Sci. Rep. Whales Res. Inst. 12:33-89.

Nemoto, T., and A. Kawamura. 1977. Characteristics of food habits and distribution of baleen whales with special reference to the abundance of North Pacific sei and Bryde's whales. Rep. Int. Whal.Comm., Special Issue 1:80-87.

Nichols, W.J. 2002. Biology and conservation of sea turtles in Baja California, Mexico. Unpublished doctoral dissertation. School of renewable natural resources, University of Arizona, Arizona.

Nishiwaki, M., and T. Kasuya. 1970. A Greenland right whale caught at Osaka Bay. Sci. Rep. Whales Res. Inst., Tokyo 22:45-62.

North Pacific Fishery Management Council (NPFMC). 2005a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. Available from http://www.fakr.noaa.gov/npfmc/default.htm.

NPFMC. 2005b. Fishery Management Plan for Groundfish of the Gulf of Alaska. . Available from http://www.fakr.noaa.gov/npfmc/default.htm.

NPFMC. 2005c. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea and Aleutian Islands Regions. Compiled by the Plan Team for the Groundfish Fisheries of the Bering Sea and Aleutian Islands. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, Alaska, 99501. November 2005. Available from http://www.fakr.noaa.gov/npfmc/default.htm.

NPFMC. 2005d. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Gulf of Alaska. Compiled by the Plan Team for the Groundfish Fisheries of the Bering Sea and Aleutian Islands. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, Alaska, 99501. November 2005. Available from http://www.fakr.noaa.gov/npfmc/default.htm.

NPFMC, 2003. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea and Aleutian Islands Regions. Compiled by the Plan Team for the Groundfish Fisheries of the Bering Sea and Aleutian Islands. North

Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, Alaska, 99501. November 2003. pp. 888.

Ohsumi, S., and S. Wada. 1974. Status of whale stocks in the North Pacific. 1972. Rep. Int. Whal. Comm. 24:114-126.

Omura, H., S. Ohsumi, T. Nemoto, K. Nasu and T. Kasuya. 1969. Black right whales in the North Pacific. Sci. Rep. Whales Res. Inst. Japan 21: 1-78, +18 plates.

Omura, H. 1986. History of right whale catches in the waters around Japan. Rep. int. Whal. Comm. Special issue 10:35-41.

O'Shea, T.J., and R.L. Brownell. 1994. Organochlorine and metal contaminants in baleen whales: a review and evaluation of conservation implications. Sci. Tot. Env. 4:179-200.

Overland, J. E. and P. J. Stabeno. 2004. Is the Climate of the Bering Sea Warming and Affecting the Ecosystem? August 17, 2004. EOS, 85(33): 309-316.

Pandav, B. and B.C. Choudhury. 1999. An update on the mortality of olive ridley sea turtles in Orissa, India. Marine Turtle Newsletter 83:10-12.

Parker, D. M., W. J. Cooke, and G. H. Balazs. 2005. Diet of oceanic loggerhead sea turtles in the central North Pacific. January 2005. Fishery Bulletin. Available from: http://www.findarticles.com/p/articles/mi_m0FDG/is_1_103/ai_n13592264.

Philo, L. M., E. B. Shotts, and J. C. George. 1993. Morbidity and mortality. Pp. 275-312, In J. J. Burns, J. J. Montague, and C. J. Cowles (eds.), The bowhead whale. Soc. Mar. Mammalogy, Spec. Publ. No. 2.

Philo, L.M., J.C. George, and T.F. Albert. 1992. Rope entanglement of bowhead whales (Balaena mysticetus). Marine Mammal Science 8(3):306-311.

Perez, M. A. 2003. Compilation of marine mammal incidental take data from the domestic and joint venture groundfish fisheries in the U. S. EEZ of the North Pacific, 1989-2001. U. S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-138, 145 p.

Perez, M.A. 1990. “Review of marine mammal population and prey information for Bering Sea ecosystem studies.” NOAA Technical Memorandum, NMFS F/NWC-186, U.S. DOC, NOAA. pp.81.

Perez, M.A., and McAlister, B. 1993. “Estimates of food consumption by marine mammals in the eastern Bering Sea.” NOAA Technical Memorandum, NMFS-AFSC-14, U.S.DOC, NOAA.pp.36.

Perry, S. L., D. P. DeMaster, and G. K. Silber. 1999. The Great Whales: History and Status of Six Species Listed as Endangered under the U.S. Endangered Species Act of 1973. Mar. Fish. Rev. 61(1)

Piatt, J. F., and P. Anderson. 1996. p.720-737 *In* Rice, S. D., Spies, R. B., and Wolfe, D. A., and B.A. Wright (Eds.). 1996. *Exxon Valdez* Oil Spill Symposium Proceedings. American Fisheries Symposium No.18.

Pritchard, P.C.H. 1982. Nesting of the leatherback turtle (Dermochelys coriacea) in Pacific Mexico, with a new estimate of the world population status. Copeia 1982: 741-747.

Pritchard, P.C.H. 1996. Are leatherbacks really threatened with extinction? Chelonian Conservation and Biology, Vol. 2, No. 2: 303-305.

Putrawidjaja, M. 2000. Marine turtles in Irian Jaya, Indonesia. Marine Turtle Newsletter 90:8-10.

Raftery, A., J. Zeh, and G. Givens. 1995. Revised estimate of bowhead rate of increase. Rep. Int. Whal. Comm. 45:158.

Rebel, T.P. 1974. Sea turtles and the turtle industry of the West Indies, Florida and the Gulf of Mexico. Univ of Miami Press, Miami, Florida. 250 pp.

Reeves, R. R., P. J. Clapham, R. L. Brownell, Jr., and G. K. Silber. 1998. Recovery plan for the blue whale (Balaenoptera musculus). Office of Protected Resources, NMFS, NOAA, Silver Spring, Maryland. 30 pp.

Reeves, R. R., and H. Whitehead. 1997. Status of the sperm whale, Physeter macrocephalus, in Canada. Can. Field Naturalist 111(2):293-307.

Rice, D. W. 1992. The blue whales of the southeastern North Pacific Ocean. pp. 1-3 In. Alaska Fisheries Science Center, Quart. Rept. Oct.-Dec.

Rice, D. W. 1989. Sperm whale, Physeter macrocephalus. Pp. 177-233, In S. H. Ridgway and R. Harrison (eds.), Handbook of Marine Mammals. vol 4. River Dolphins and the Larger Toothed Whales. Academic Press, New York.

Rice, D.W. 1986a. Blue whale. Pp. 4-45 in D. Haley (ed.), Marine Mammals of the Eastern North Pacific and Arctic waters. Second edition, Pacific Search Press.

Rice, D.W. 1986b. Sperm whales. Pp. 94-101 in D. Haley (ed.), Marine Mammals of the Eastern North pacific and Arctic Waters, 2nd ed. Pacific Search Press, Seattle, WA.

Rice, D. W. 1978. The humpback whale in the North Pacific: distribution, exploitation and numbers. Appendix 4. Pp. 29-44, In K. S. Norris and R.R. Reeves (eds.), Report on a workshop on problems related to humpback whales (Megaptera novaeangliae) in Hawaii. U.S. Dep. Commer., Nat. Tech. Info. Serv. PB-280 794. Springfield, VA.

Rice, D.W. 1974. Whales and whale research in the eastern North Pacific . Pp. 170-195 in Schevill, W.E. (ed.), The Whale Problem: A Status Report. Harvard University Press, Cambridge, MA. 419 pp.

Richardson, W.J., C.R. Greene, Jr., C.I. Malme, and D.H. Thomson. 1995. Marine Mammals and Noise. Academic Press, San Diego. 576 pp.

Roemmich, D., and J. McGowan. 1995. Climate warming and the decline of zooplankton in the California Current. Science 267:1324-1326.

Rozell, N. 2004. Searching for a solution to fish-snatching whales. Article 1718. September 30, 2004. Geophysical Institute, University of Alaska. Available from http://www.gi.alaska.edu/ScienceForum/ASF17/1718.html.

Rugh, D., D. DeMaster, A. Rooney, J. Breiwick, K. Shelden, and S. Moore. 2003. A review of bowhead whale (Balaena mysticetus) stock identity. Journal of Cetacean Research and Management 5(3): 267-279.

Ruiz, G.A. 1994. Sea turtle nesting population at Playa la Flor, Nicaragua: An Olive Ridley "Arribada" Beach. Pg.129-130, 14th Annual Symposium, Sea Turtle Biology and Conservation, March 1-5, 1994, Hilton Head, South Carolina.

Salazar, C.P., J.F. Prez, E.A. Padilla, and R. Marquez-Millan. 1998. Nesting of olive ridley sea turtle Lepidochelys olivacea during twenty four years at La Escobilla Beach, Oaxaca, Mexico. In Proc. 18th International Symposium on Biology and Conservation of Sea Turtles, Mazatlan, Mexico, March. 1998.

Salveson, S. 2006. Memorandum to the Record regarding Determination not to Reinitiate Consultation on the Federal Groundfish Fisheries as a Result of the Alaska Board of Fisheries Action to Establish a State Water Pacific Cod Fishery in the Aleutian Islands Area. March 6, 2006. NMFS, Alaska Region P.O. Box 21668, Juneau, AK 99801.

Sarti, L. 2002. Current population status of Dermochelys coriacea in the Mexican Pacific Coast. Presented at the Western Pacific Sea Turtle Cooperative Research and Management Workshop, Honolulu, Hawaii, February 5-8, 2002.

Sarti, L., S.Eckert, P.Dutton, A. Barragán and N. García. 2000. The current situation of the leatherback population on the Pacific coast of Mexico and central America, abundance and distribution of the nestings: An update, pp. 85-87. In: Proceedings of the 19th Annual Symposium on Sea Turtle Conservation and Biology, March 2-6, 1999, South Padre Island, Texas.

Sarti M., L., A. Barragán, P. Huerta, F. Vargas, A. Tavera, E. Ocampo, A. Escudero, O. Pérez, M.A. Licea, M. Morisson, D. Vasconcelos, M.A. Angeles and P. Dutton. 2002. Distriución y estimación del tama□o de la población anidadora de la tortuga laúd Dermochelys coriacea en el Pacífico Mexicano y centroamericano. Temporada 2001-2002. Informe final de investigación. DGVS-SEMARNAT, NMFS, CI-México, US Geological Survey.

Sarti, L., S.A. Eckert and N.T. Garcia. 1998. Estimation of the nesting population size of the leatherback sea turtle, Dermochelys coriacea, in the Mexican Pacific during the 1997-98 nesting season. Final Contract Report to National Marine Fisheries Service, Southwest Fisheries Science Center; La Jolla, California.

Sarti, L.M., S.A. Eckert, N.T. Garcia and A.R. Barragan. 1996. Decline of the world's largest nesting assemblage of leatherback turtles. Marine Turtle Newsletter, No. 74. July 1996

Scarff, J.E. 1986. Historic and present distribution of the right whale (Eubalaena glacialis) in the eastern North Pacific south of 50∞N and east of 180∞W. Report of the International Whaling Commission, 10, 43–63.

Scarff, J.E. 1991. Historic distribution and abundance of the right whale (Eubalaena glacialis) in the North Pacific, Bering Sea, Sea of Okhotsk and Sea of Japan from the Maury Whale Charts. Report of the International Whaling Commission, 41, 467–489.

Schell, D. M., and S. M. Saupe. 1993. Feeding and growth as indicated by stable isotopes. In J. J. Burns, J. J. Montague, and C. J. Cowles (Editors), The bowhead whale, p. 491-509. Soc. Mar. Mamm. Spec. Publ. 2.

Schwandt, A.J., K.L. Williams, A.C. Steyermark, J.R. Spotila, F.V. Paladino. 1996. Hatching success of the Leatherback turtle (Dermochelys coriacea) in natural nests at Playa Grande, Costa Rica. Pg.290, 15th Ann. Symp. Sea Turtle Biol. and Conserv, Feb. 20-25, 1995, Hilton Head, South Carolina.

Sears, R. 1990. The Cortez Blues. Whalewatcher 24(2): 12-15 2.

Seminoff, J.A., 2004. Marine Turtle Specialist Group Review: 2004 Global Status Assessment, Green Turtle (Chelonia mydas). Marine Turtle Specialist Group, The World Conservation Union (IUCN), Species Survival Commission Red List Programme. Accessed June 26, 2005 at: http://www.iucn-mtsg.org/red_list/cm/MTSG_Chelonia_mydas_assessment_expanded-format.pdf.

Shanker, K. B. Pandav, B.C. Choudhury. 2003. An assessment of the olive ridley turtle (Lepidochelys olivacea) nesting population in Orissa, India. Biological Conservation 115: 149-160.

Shankar, K. and B. Mohanty. 1999. Guest editorial: Operation Kachhapa: In search for a solution for the olive ridleys at Orissa. Marine Turtle Newsletter 86:1-3.

Shelden, K.E.W., Moore, S.E., Waite, J.M, Wade, P.R. and Rugh, D.J. 2005. Historic and current habitat use by North Pacific right whales Eubalaena japonica in the Bering Sea and Gulf of Alaska. Mammal Rev. 35: 129-155.

Shelden, K. E. W., and D. J. Rugh. 1995. The bowhead whale (Balaena mysticetus): status review. Mar. Fish. Rev. 57(3-4):1-20.

Shima, M., A. G. Hollowed, and G. R. Van Blaricom. 2000. Response of pinniped populations to directed harvest, climate variability, and commercial fishery activity: a comparative analysis. Reviews in Fish Science 8:89-124.

Shimada, A. M., and D. K. Kimura. 1994. Seasonal movements of Pacific cod (*Gadus macrocephalus*) in the eastern Bering Sea and adjacent waters based on tag-recapture data. U.S. Natl. Mar. Fish. Serv., Fish. Bull. 92:800-816.

Sinclair, E.H. , Moore, S.E. , Friday, N.A. , Zeppelin, T.K. and Waite, J.M. 2005. Do patterns of Steller sea lion (Eumetopias jubatus) diet, population trend and cetacean occurence reflect oceanographic domains from the Alaska Peninsula to the central Aleutian Islands. Fish. Oceanogr. 14 (Suppl. 1):223–242.

Sinclair, E. H. 1988. Feeding habits of northern fur seals (*Callorhinus ursinus*) in the eastern Bering Sea. MSc thesis, Oregon State University, Corvallis, Oregon. 94 pp.

Sinclair, E. H., T. Loughlin, and W. Pearcy. 1994. Prey selection by northern fur seals (Callorhinus ursinus) in the eastern Bering Sea. Fishery Bulletin 92(1):144-156.

Sleptsov, M.M. 1955. Biology of whales and the whaling fishery in Far Eastern seas. ‘Pishch. Prom.’,Moscow [In Russian] (Transl. with comments and conclusions only by Fish. Res. Board Can., Transl. Ser. 118, 6 pp.)

Snover, M. 2005. Population trends and viability analyses for Pacific Marine Turtles. Pacific Islands Fishery Science Center Internal Report IR-05-008. June 6, 2005.

Spencer, P.D., and J.N. Ianelli. 2001. The implementation of an AD Modelbulder catch at age model for Bering Sea/Aleutian Islands Pacific ocean perch. In Stock assessment and fishery evaluation report for the groundfish resources of the Bering Sea/Aleutian Islands region (September 2001),36 pp. North Pacific Fishery Management Council, P.O. Box 103136, Anchorage, AK 99510.

Spotila, J. R., R. D. Reina, A. C. Steyermark, P. T. Plotkin, and F. V. Paladino. 2000. Pacific leatherback turtles face extinction. Nature 405:529-530.

Spotila, J.R., A.E. Dunham, A.J. Leslie, A.C. Steyermark, P.T. Plotkin and F.V. Paladino. 1996. Worldwide population decline of Dermochelys coriacea: Are leatherback turtles going extinct? Chelonian Conservation and Biology 2(2): 209-222.

Stafford. K.M. 2003. Two types of blue whale calls recorded in the Gulf of Alaska. Mar. Mamm. Sci. 19:682-693.

Stafford, K.M., S. L. Nieukirk, and G.G. Fox. 2001. Geographic and seasonal variation of blue whale calls in the North Pacific. J. Cetacean Res. Manage. 3(1):65-76.

Stinson, M.S. 1984. Biology of sea turtles in San Diego Bay, California, and in the northeastern Pacific Ocean. MS Thesis, San Diego State University, 576 pp.

Stoker, S. W., and I. I. Krupnik. 1993. Subsistence whaling. Pp. 579-629, In J. J. Burns, J. J. Montague, and C. J. Cowles (eds.), The bowhead whale. Soc. Mar. Mammalogy, Spec. Publ. No. 2.

Straley, J., V. O'connell, L. Behnken, A. Thode, and L. Mesnick. 2005. Using Longline Fishing Vessels as Research Platforms to Assess the Population Structure, Acoustic Behavior and Feeding Ecology of Sperm Whales in the Gulf of Alaska. Presentation at the 16th Biennial Conference on the Biology of Marine Mammals. December 12-16, 2005. San Diego, CA.

Suwelo, I.S. 1999. Olive ridley turtle records from South Banyuwangi, East Java. Marine Turtle Newsletter 85:9.

Sydeman, W. J., and S. G. Allen. 1997. Trends and oceanographic correlates of pinniped populations in the Gulf of the Farallones, California. U.S. Dep. Commer., Southwest Fish. Sci. Cent., Admin. Rep. LJ-97-02C, 28 pp.

Tarasevich, M.N. 1968. Pishchevye svyazi kasholotov v severnoi chasti Tikhogo Okeana. [Food connections of the sperm whales of the Northern Pacific.] [In Russian.] Zool. Zhur. 47:595-601. (Transl. by K. Coyle, univ. Alaska, Fairbanks, 1982, 11 pp.).

Thorsteinson, F.V., and C.J. Lensink. 1962. Biological observations of Steller sea lions taken during an experimental harvest. J. Wildl. Management 26:353-359

Tillman, M. 2000. Internal memorandum, dated July 18, 2000, from M. Tillman (NMFS-Southwest Fisheries Science Center) to R. McInnis (NMFS - Southwest regional office).

Tomilin, A.G. 1967. Mammals of the USSR and adjacent countries. Vol. 9, Cetacea. Israel Program Sci. Transl. No. 124, natl. Tech. Inf. Serv. TT 65-50086. Springfield, VA 717 pp. (Translation of Russian text published in 1957).

Tønnessen, J.N. and O. Johnsen 1982. The history of modern whaling. University of California Press;13 Berkeley, California.

Townsend, C.H. 1935. The distribution of certain whales as shown by logbook records of American whaleships. Zoologica, 19(1): 1-50.

Tyack, P. 2005 Reducing the Risk of Ship Collision. Woods Hole Oceanographic Institute. Ocean Life Forum. Available from http://www.whoi.edu/institutes/oli/activities/rwforum_tyack.html.

Tynan, C.T. 1999. Redistributions of cetaceans in the southeast Bering Sea relative to anomalous oceanographic conditions during the 1997 El Nino. Proceedings of the 1998 Science Board Symposium on the Impacts of the 1997/98 El Nino Event on the North Pacific Ocean and its Marginal Seas. PICES Scientific Report 10:115-117.

Tynan , C.T., D.P. DeMaster, and W.T. Peterson. 2001. Endangered right whales on the southeastern Bering Sea shelf. Science. 294:1894.

Walters, G. E., and T. K. Wilderbuer. 1997. Flathead sole. In Stock Assessment and Fishery Evaluation Document for Groundfish Resources in the Bering Sea/Aleutian Islands Region as Projected for 1998, p.271-295. North Pacific Fishery Management Council, P.O. Box 103136, Anchorage Alaska 99510.

Watkins, W. A., J. E. George, M. A. Daher, K. Mullin, D. L. Martin, S. H. Haga, and N. A. DiMarzio. 2000. Whale call data for the North Pacific November 1995 through July 1999: Occurrence of calling whales and source locations from SOSUS and other acoustic systems. Technical Report WHOI_00_02 available from Woods Hole Oceanographic Institution. 160pp.

Wilimovsky, N.J., 1974. Fishes of the Bering Sea: the state of existing knowledge and requirements for future effective effort. In D. W. Hood and E. J. Kelly (eds.). Oceanography of the Bering Sea. Univ. Alaska, Inst. Mar. Sci., pp. 243-256.

Wolfe, R.J., and C. Mishler. 1997. The subsistence harvest of harbor seal and sea lion by Alaska natives in 1996. Final report for year five, subsistence study and monitor system (no. 50ABNF400080). Prepared for the NMFS by Alaska Dept. Fish and Game, Juneau, Alaska.

Wolfe, R.J., and L.B. Hutchinson-Scarbrough. 1999. The subsistence harvest of harbor seal and sea lion by Alaska natives in 1998. Final report for year seven, subsistence study and monitor system (no. 50ABNF400080). Prepared for the NMFS by Alaska Dept. Fish and Game, Juneau, Alaska, 72 pp. + appendices.

Wolotira, R. J. J., T. M. Sample, S. F. Noel, and C. R. Iten. 1993. Geographic and bathymetric distributions for many commercially important fishes and shellfishes off the west coast of North America, based on research survey and commercial catch data, 1912-1984. NOAA Tech. Memo. NMFS-AFSC-6. 184 pp.

U. S. Fish and Wildlife Service. 2006. From website at http://www.fws.gov/northflorida/SeaTurtles/turtle-facts-index.htm

USFWS. 2003a. "Programmatic Biological Opinion on the effects of the Fishery Management Plans (FMPs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries on the endangered short-tailed albatross (Phoebastria albatrus) and threatened Steller's eider (Polysticta stelleri)". Anchorage Fish and Wildlife Field Office. Available from NMFS website: http://www.fakr.noaa.gov/protectedresources/seabirds.html.

USFWS. 2003b. "Biological Opinion on the Effects of the Total Allowable Catch (TAC)-Setting Process for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) Groundfish Fisheries to the Endangered Short-tailed Albatross (Phoebastria albatrus) and Threatened Steller's Eider (Polysticta stelleri)". Anchorage Fish and Wildlife Field Office. Available from NMFS website: http://www.fakr.noaa.gov/protectedresources/seabirds.html.

US Humane Society. 2006. From website at http://www.hsus.org/wildlife/a_closer_look_at_wildlife/turtles_and_tortoises/green_sea_turtles.html .

von Mutius, A. and E. P. van den Bergue. 2002. Hatching success of olive ridley sea turtles in La Flor, Nicaragua. Page 291 in Proceedings of the Twentieth Annual Symposium on Sea Turtle Biology and Conservation, February 29-March 4, 2000, Orlando, Florida.

Waring, G. T., P. M. Richard, J. M. Quinta, C. P. Fairfield, and K. Maze-Foley. (Eds.) 2004. U. S. Atlantic and Gulf of Mexico marine mammal stock assessments - 2003. NOAA Tech. Memo. NMFS-NE-182, 300 pp.

Watkins, W.A. 1986. Whale reactions to human activities in Cape Cod waters. Mar. Mamm. Sci. 2(4):251-262.

Watkins, W. A., M. A. Daher, G. M. Reppucci, J. E. George, D. L. Martin, N. A. DiMarzio, and D. P. Gannon. 2000. Seasonality and distribution of whale calls in the North Pacific. Oceanography. 13(1):62-67.

Webb, R.L. 1988. On the Northwest, Commercial Whaling in the Pacific Northwest 1790–1967. University British Columbia Press, Vancouver, Canada.

Whitney, J. 2000. The Aleutian Islands and Lower Alaska Peninsula: Oceanographic conditions and NOAA's Oil Spill Response History during 1981-1999. HAZMAT Report 2000-3. September 2000. Office of Response and Restoration, National Ocean Service, NOAA, Anchorage, AK.

Wyllie-Echeverria, T., and W. S. Wooster. 1998. Year-to-year variations in Bering Sea ice cover and some consequences for fish distribution. Fisheries Oceanography 7:159-170.

Wing, B. L. and K. Krieger. 1983. Humpback whale prey studies in southeastern Alaska, summer 1982. Report to the Northwest and Alaska Fisheries Center Auke Bay Laboratory, National Marine Fisheries Service, NOAA, P. O. Box 155. Auke Bay, Alaska 99821, 60 pp.

Yochem, P.K., and S. Leatherwood. 1985. Blue whale Balaenoptera musculus (Linnaeus, 1758). Pp.193-240 in Ridgway, S.H. and R. Harrison (eds.), Handbook of Marine Mammals, vol. 3: The Sirenians and Baleen Whales. Academic Press, London. 362 pp.

Zarate, P., A. Fernie and P. Dutton. 2003. First results of the East Pacific green turtle, Chelonia mydas, nesting population assessment in the Galapagos Islands. In: Proceedings of the 22nd Annual Symposium on Sea Turtle Biology and Conservation, April 4-7, 2002, Miami, Florida.

Zerbini, A. N., P. R. Wade, J. M. Waite, and J. L. Laake. In prep. Abundance, trends and distribution of baleen whales in western Alaska and the central Aleutian Islands.

Appendix A Maps

Appendix B

Appendix A Maps

Density maps of catch distribution within the 2003 and 2004 fisheries.

Figures A.20 through A.58 depict the distribution of catch in fisheries targeting pollock, Pacific cod, and Atka mackerel in the eastern Bering Sea (EBS), Aleutian Islands (AI), and Gulf of Alaska (GOA). Side-by-side comparisons of 2003 and 2004 catch distributions show the change in the concentration of fishing removals under the post 2002 Steller sea lion management measures.

Catch distributions were plotted over the 2002 Steller sea lion Protection Measure closure areas and Steller sea lion critical habitat boundaries. Catch distributions are represented as within 10 x 10 km2 areas (metric tons of catch per 100 km_2) to show location of the fisheries as well as the relative concentration of removals.

The source of the catch data was the groundfish fishery observer database. Observed catches are associated with a haul retrieval latitude and longitude which served as the spatial reference of the catch distributions. Total observed catch was extrapolated up to the total reported catch for each fishery (courtesy of NOAA Fisheries Alaska Region 'Blend' catch accounting system). Total reported catch was divided by total observed catch to obtain an expansion factor for each fishery. Catch from each observed haul was multiplied by the appropriate expansion factor to proportionally allocate unobserved catch to the observed fishing distribution based on the assumption that the observed fishing distribution reflected the unobserved fishing distribution.

Figures A.20 through A.58 were generated in ArcGIS. The expanded catch was summed over a 10km2 radius and results were reported as catch (mt) /100 km^2. Catch densities were classified into bins using natural breaks (Jenks optimization), hauls with zero catch were not represented. Seasonal representation of fishing effort was calculated from the 2004 season.

Platform of Opportunity Maps

These maps were provided by the NMML, Platform of Opportunity Program. They show confirmed sightings of marine mammals from 1958 through 1998 and include some seasonal information. The dates used to sort sightings by seasons are:

Fall - 9/1-10/31
Winter - 11/1-1/31
Spring - 2/1-5/30
Summer - 6/1-8/31

Sightings indicate the presence of an animal in an area at a particular time. The lack of sighting of an animal in an area does not indicate that the animal does not range into an area. Therefore, this information is only used to confirm occurrence of a marine mammal in an area at a particular time.

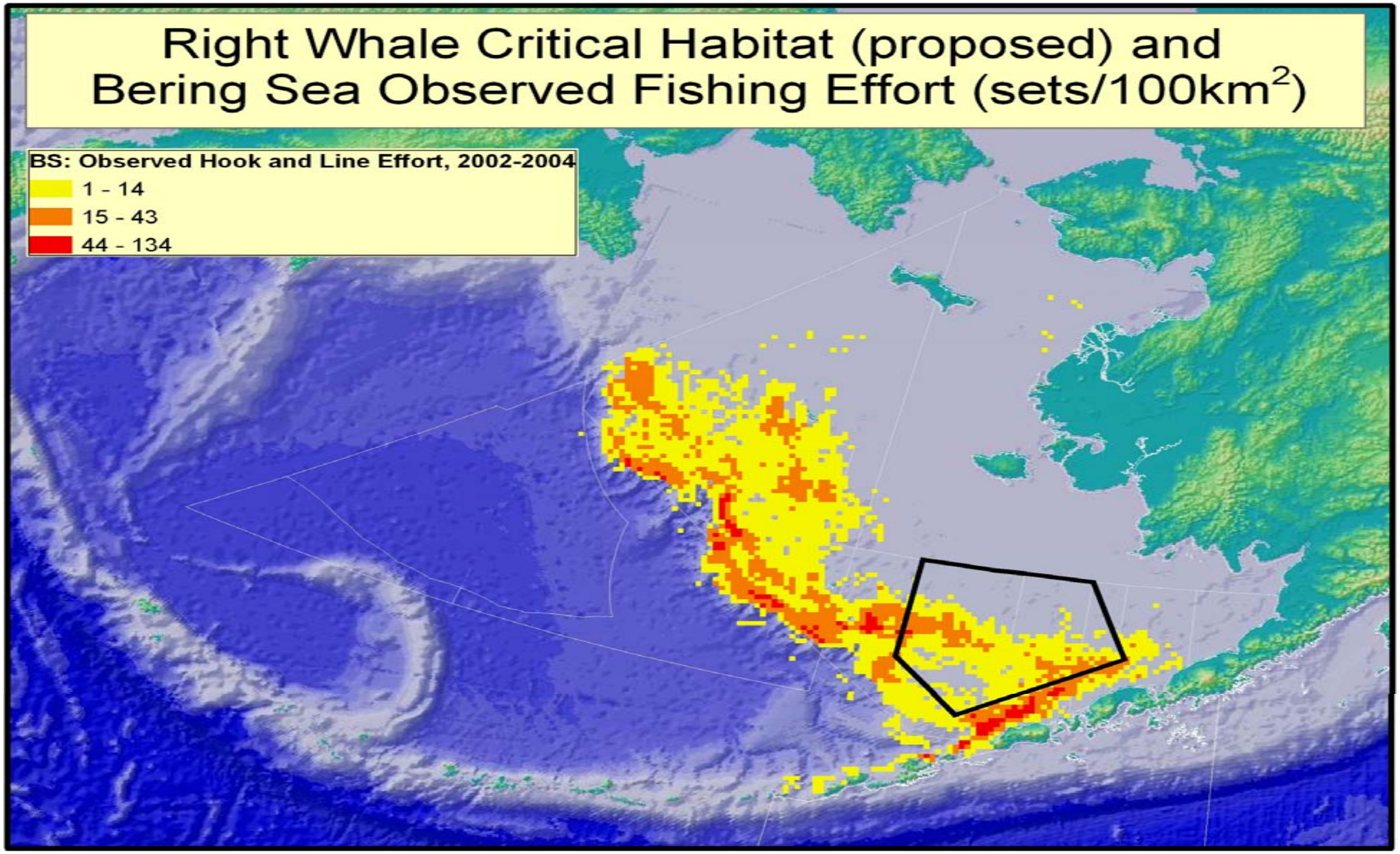


Figure A.1 **Hook-and-line Fishing Effort in BS Proposed Right Whale Critical Habitat 2002-2004. (Source: Cathy Coon, NPFMC 2006)**

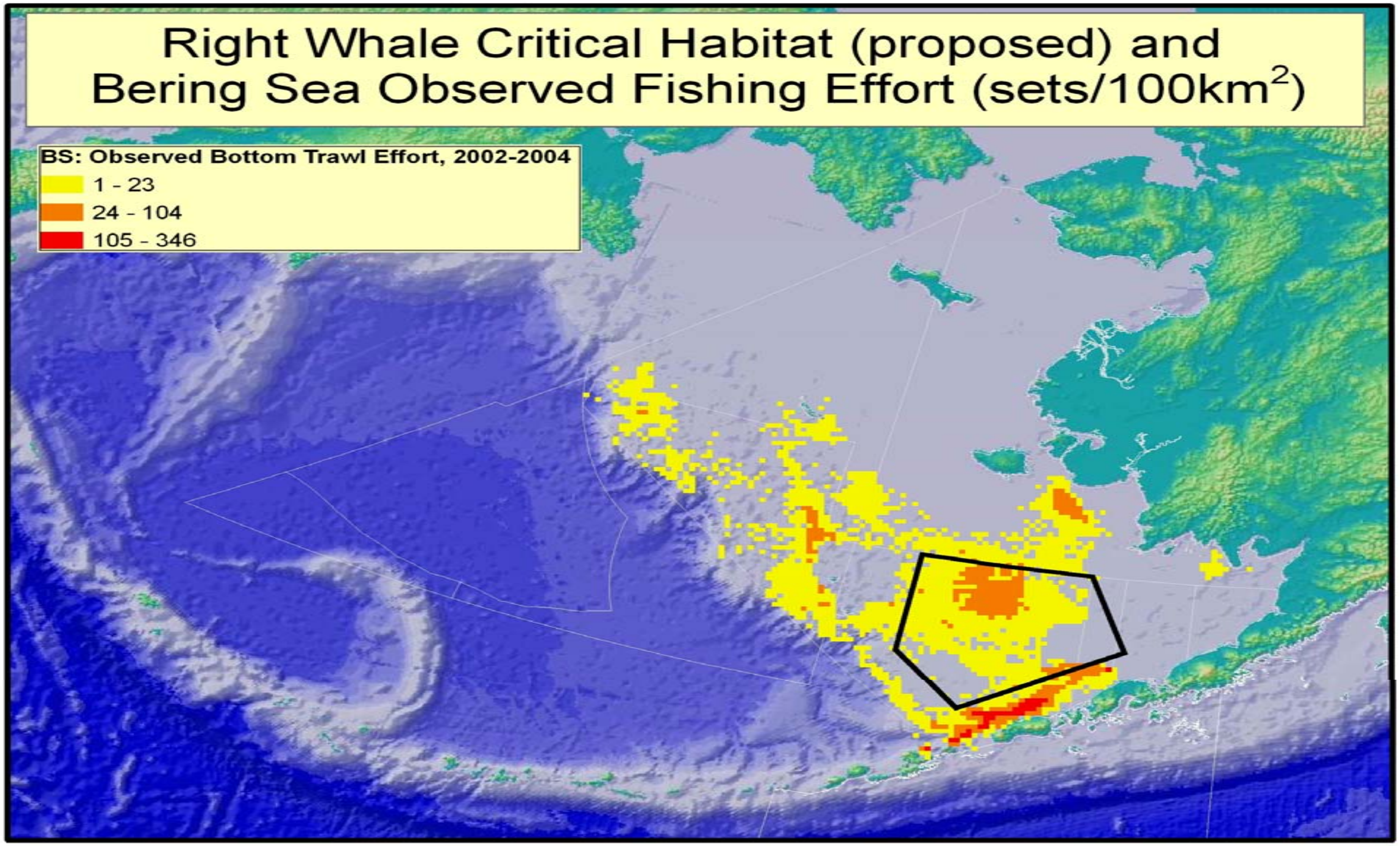


Figure A.2 **Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2002-2004.**
(Source: Cathy Coon, NPFMC 2006)

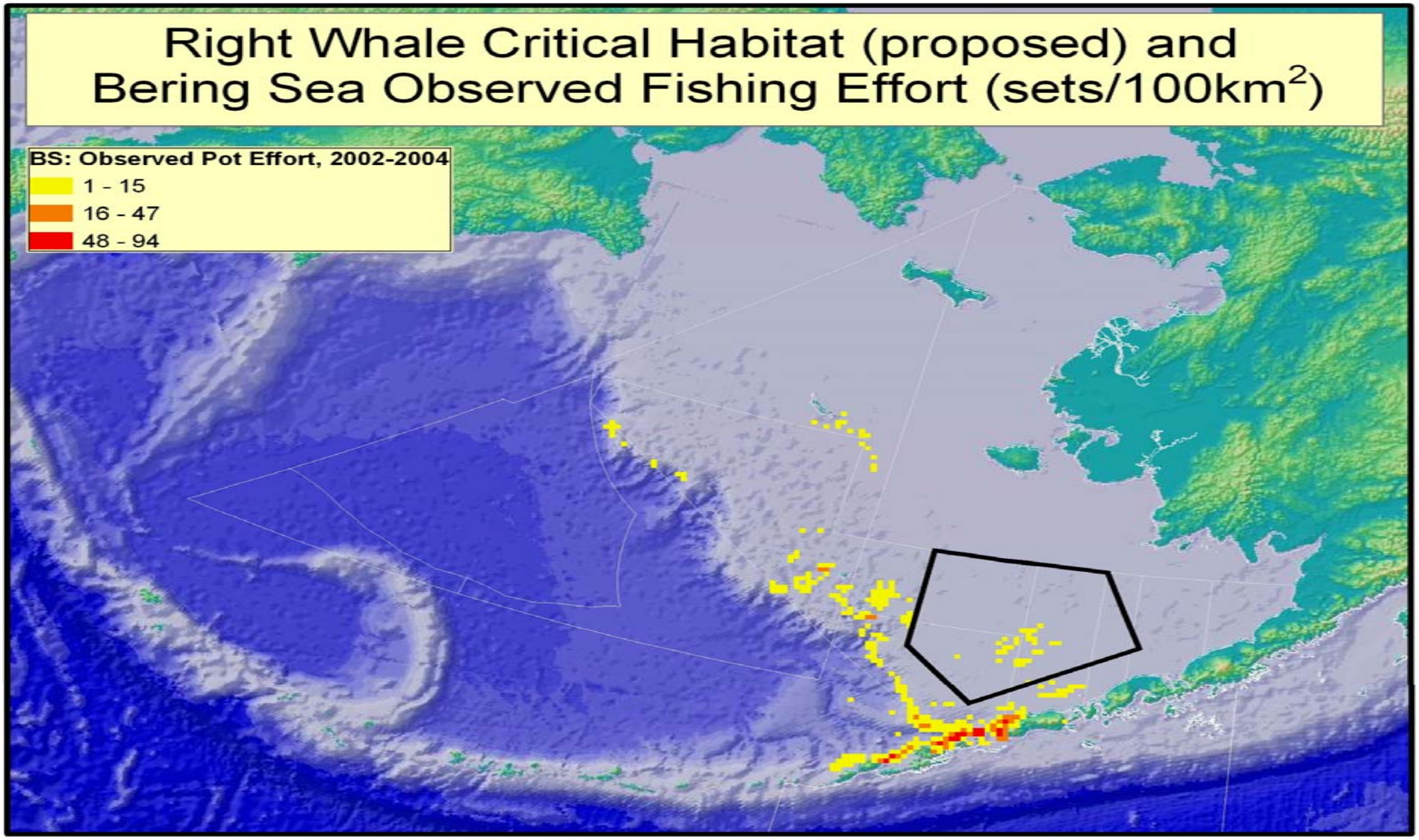


Figure A.3 **Pot Effort in BS Proposed Right Whale Critical Habitat 2002-2004.**
(Source: Cathy Coon, NPFMC 2006)

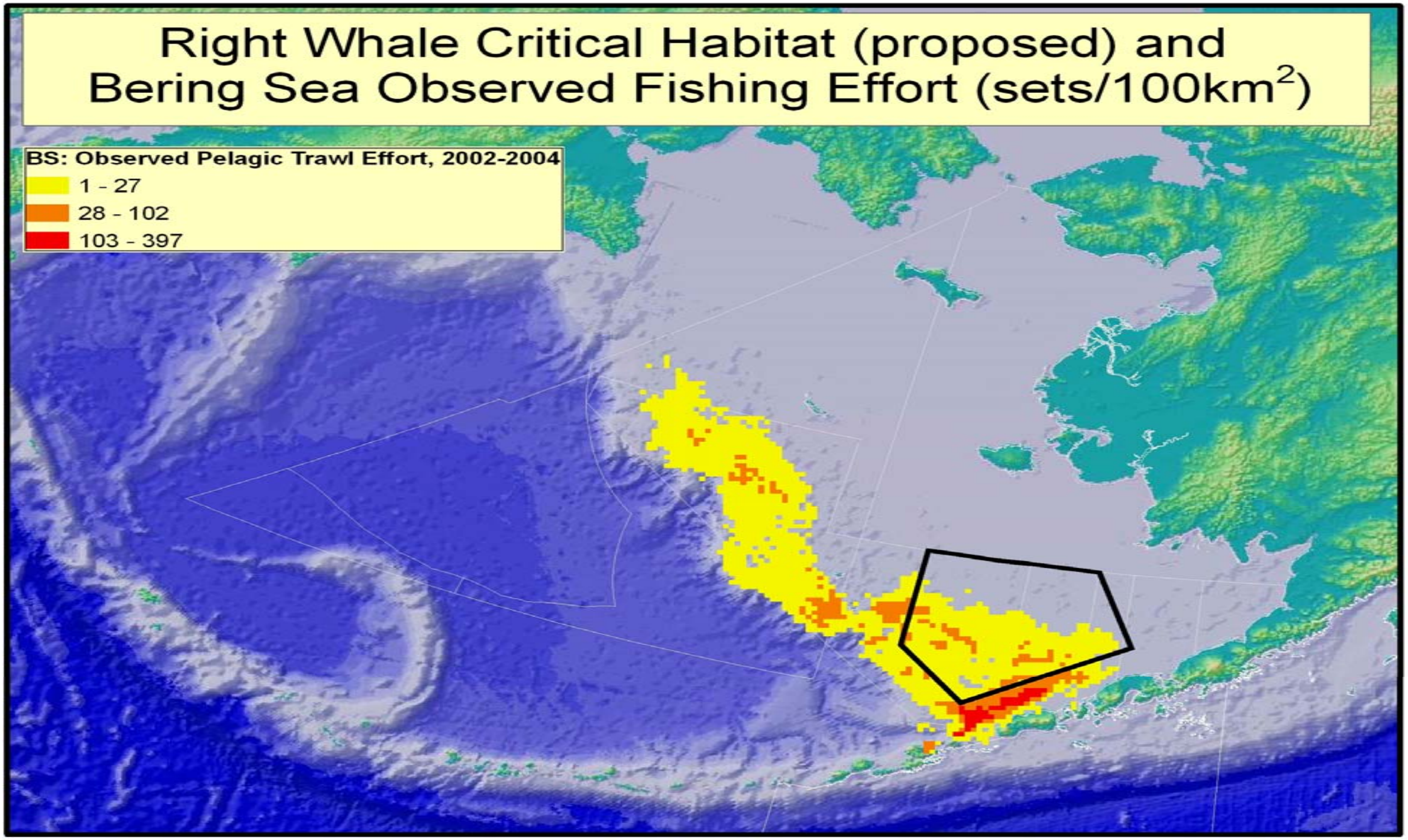


Figure A.4 **Pelagic Trawl Effort in BS Proposed Right Whale Critical Habitat 2002-2004**
(Source: Cathy Coon, NPFMC 2006)

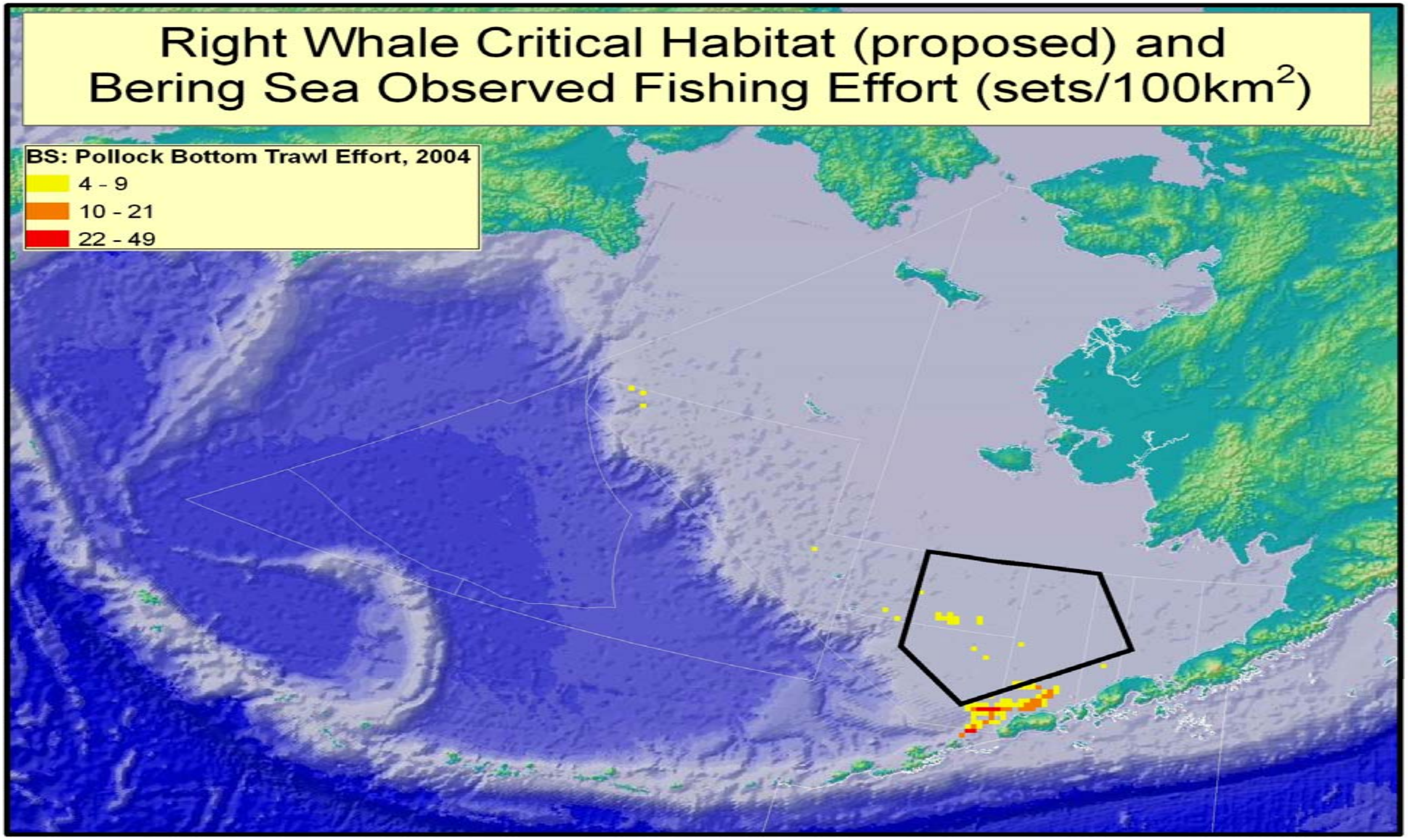


Figure A.5 **Pollock Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2004**
(Source: Cathy Coon, NPFMC 2006)

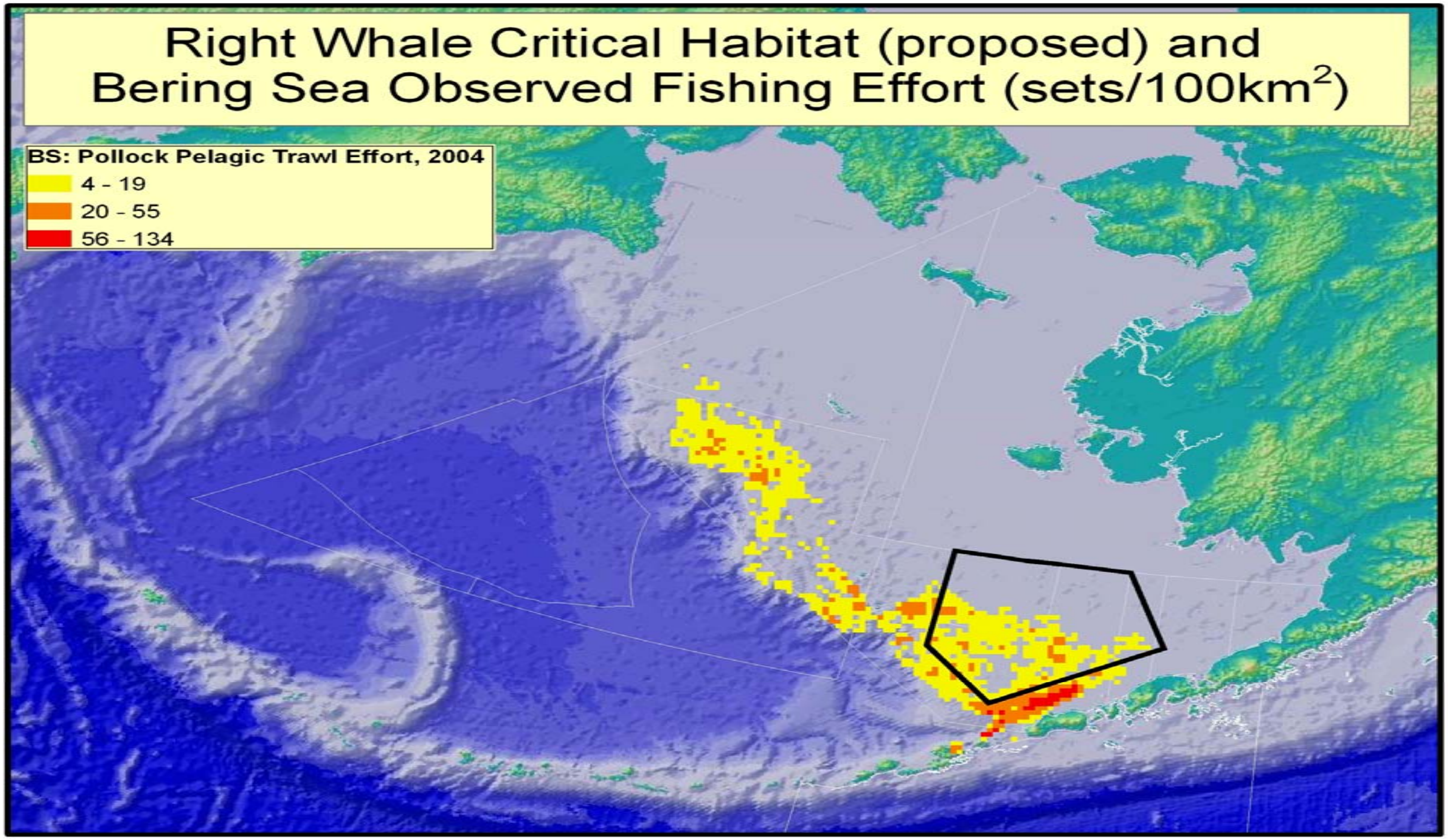


Figure A.6 **Pollock Pelagic Trawl Effort in BS Proposed Right Whale Critical Habitat 2004**
(Source: Cathy Coon, NPFMC 2006)

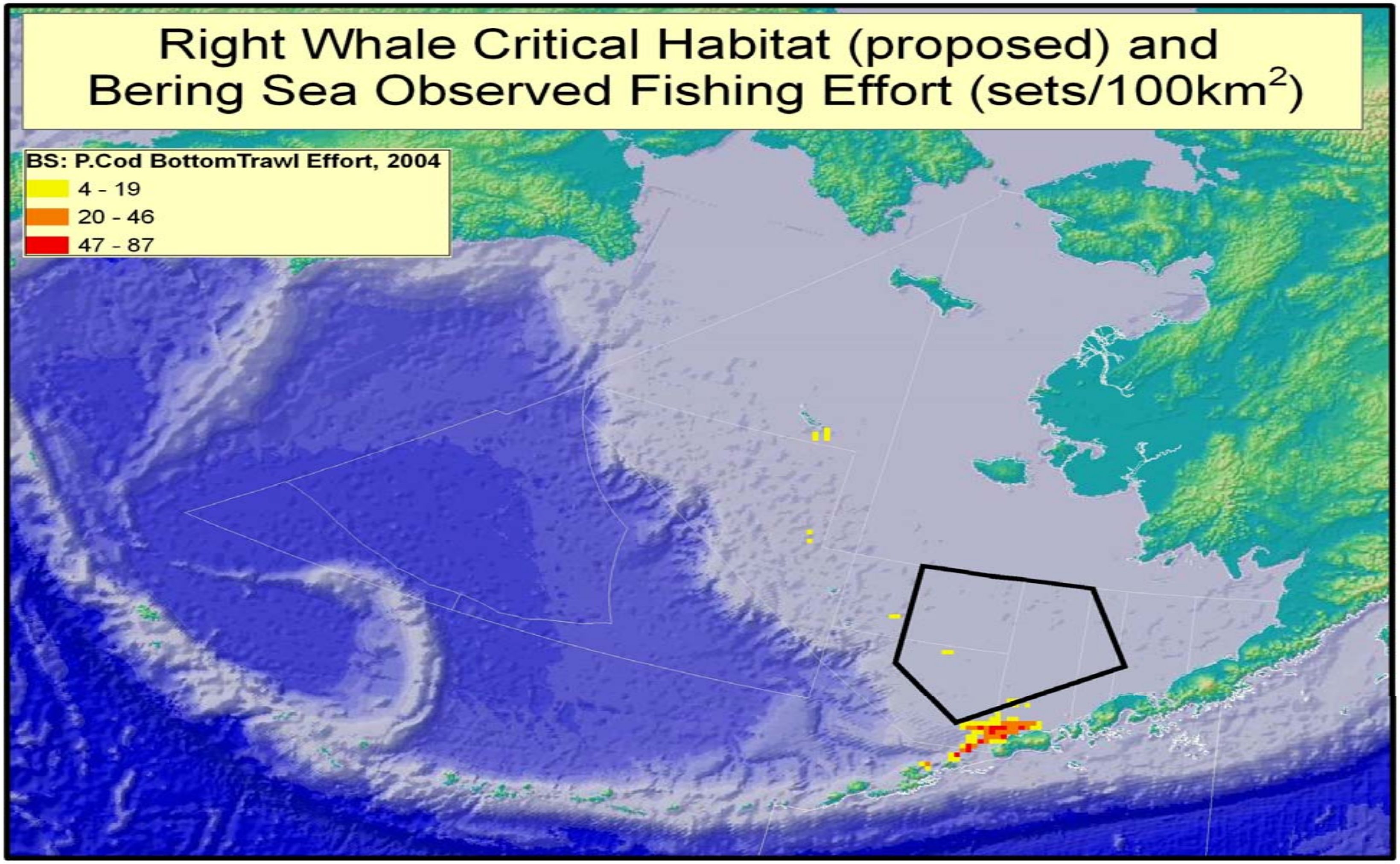


Figure A.7 **Pacific Cod Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2004**
(Source: Cathy Coon, NPFMC 2006)

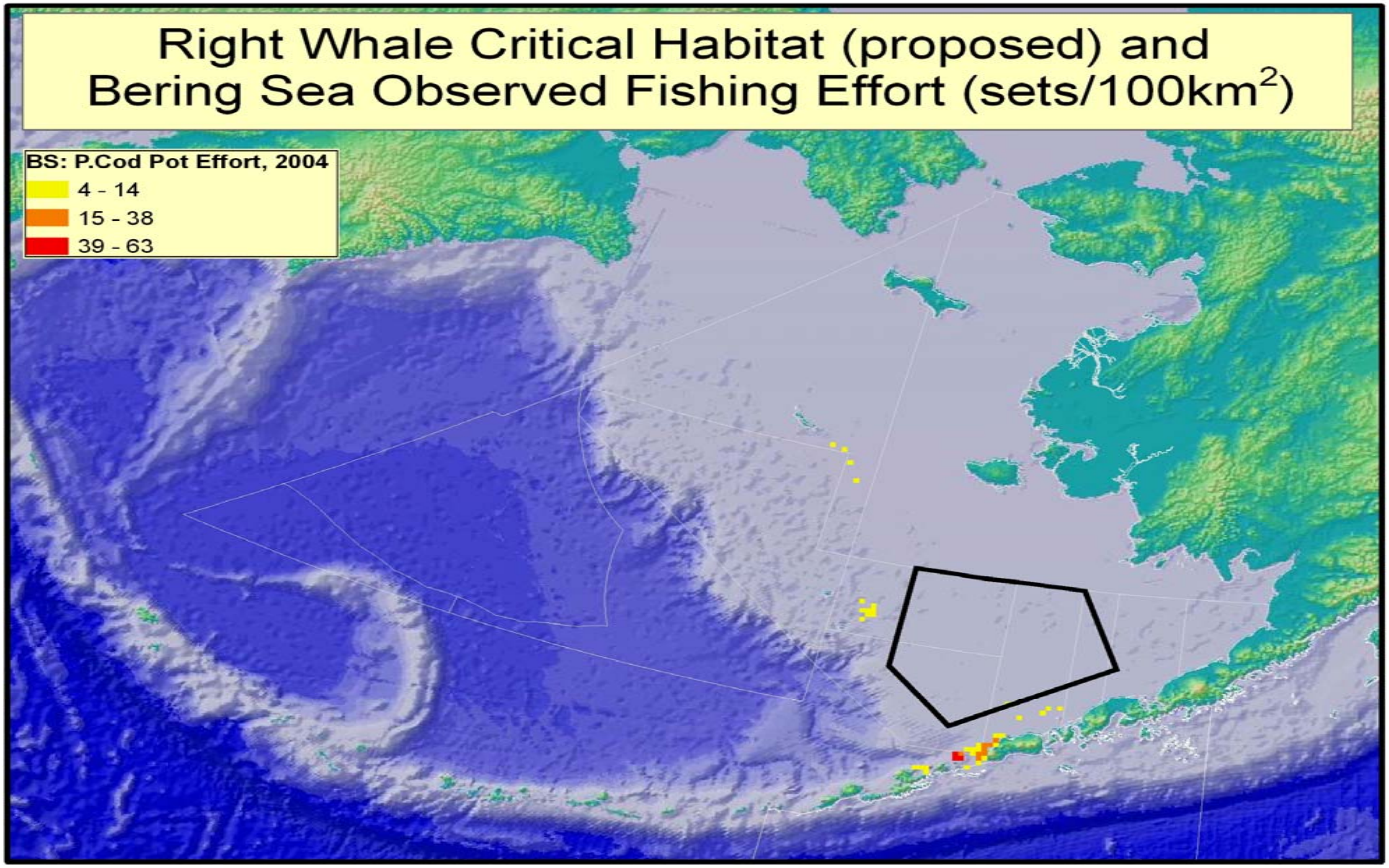


Figure A.8 **Pacific Cod Pot Effort in BS Proposed Right Whale Critical Habitat 2004**
(Source: Cathy Coon, NPFMC 2006)

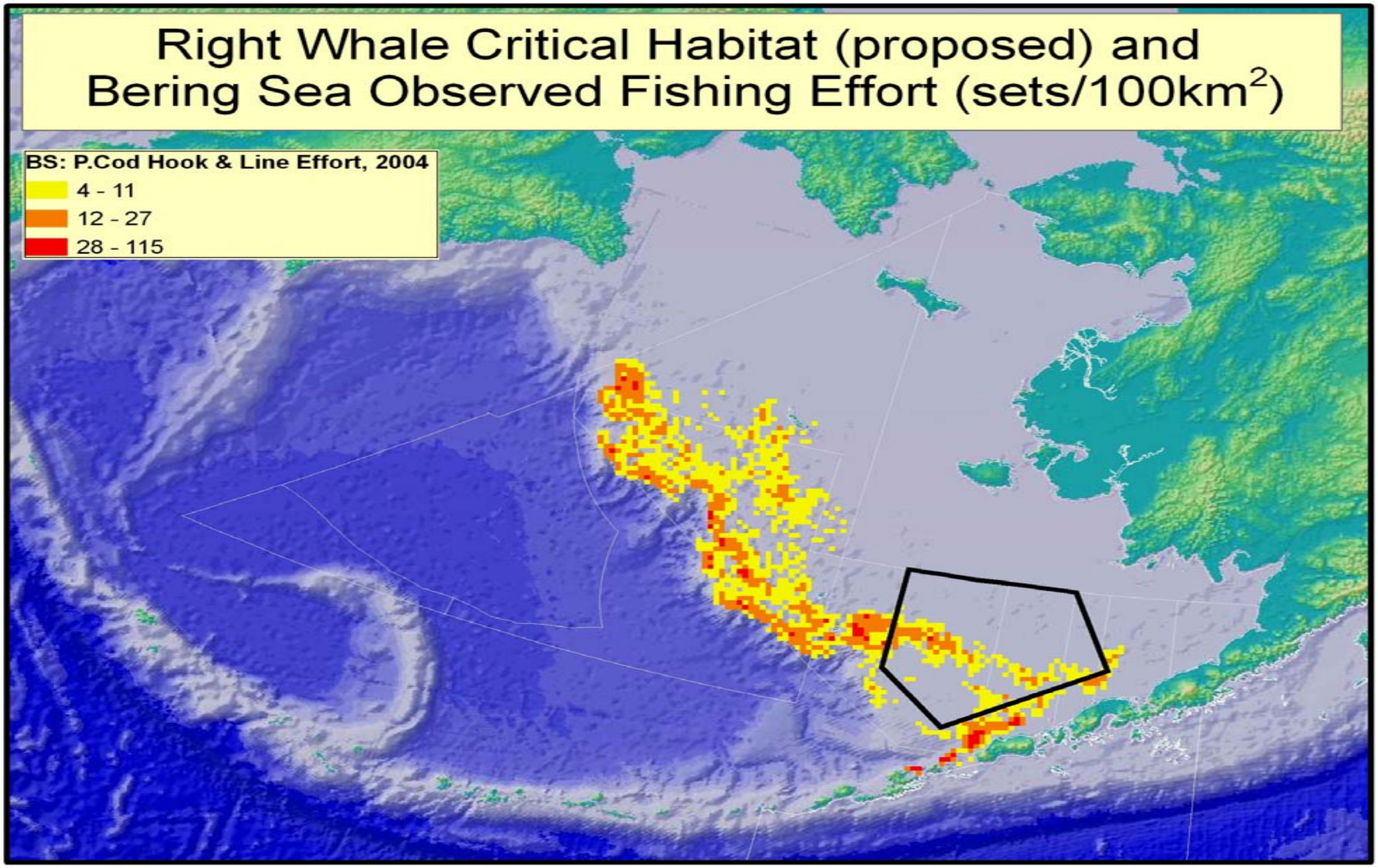


Figure A.9 **Pacific Cod Hook-and-line Effort in BS Proposed Right Whale Critical Habitat 2004** (Source: Cathy Coon, NPFMC 2006)

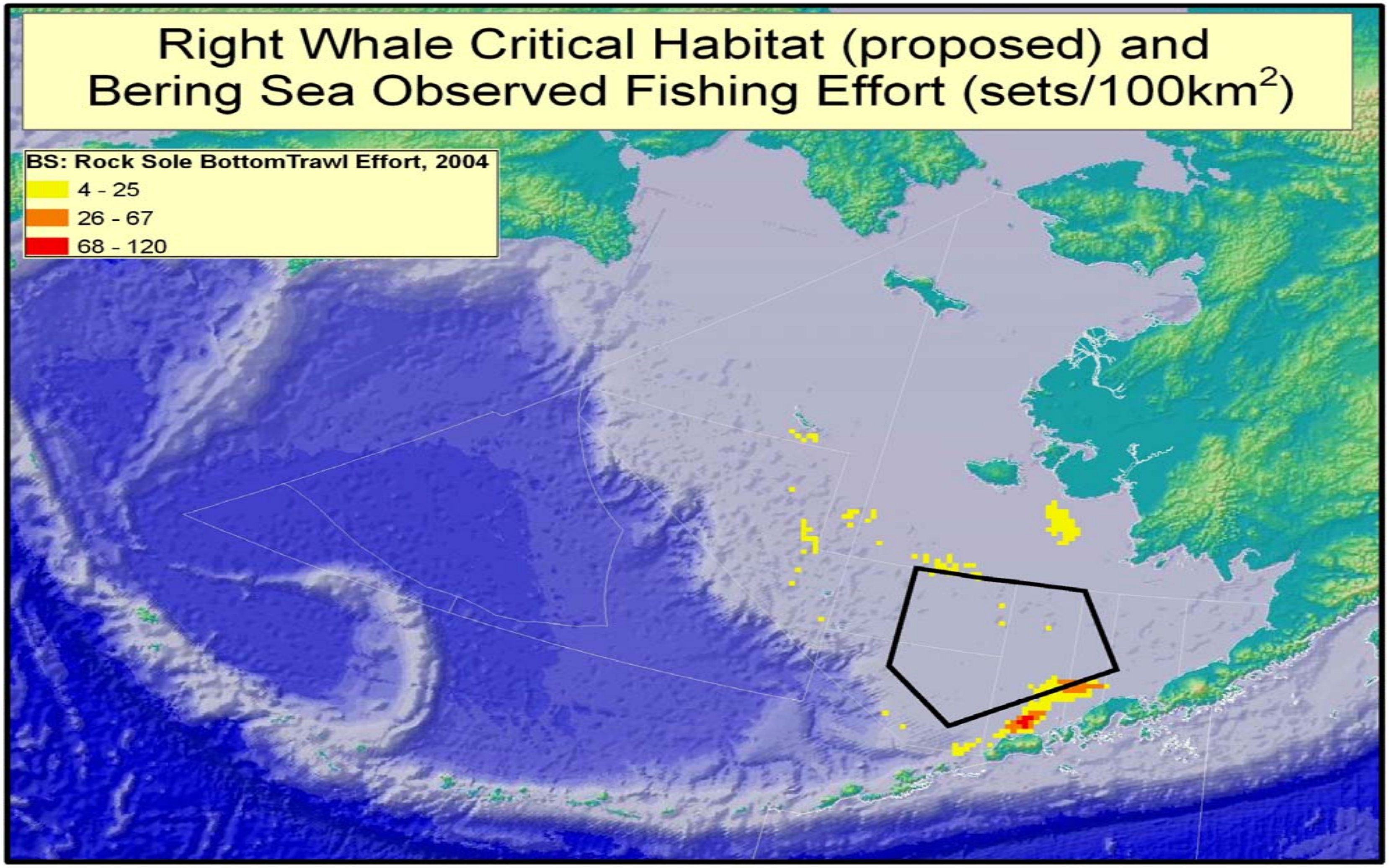


Figure A.10 Rock Sole Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2004
(Source: Cathy Coon, NPFMC 2006)

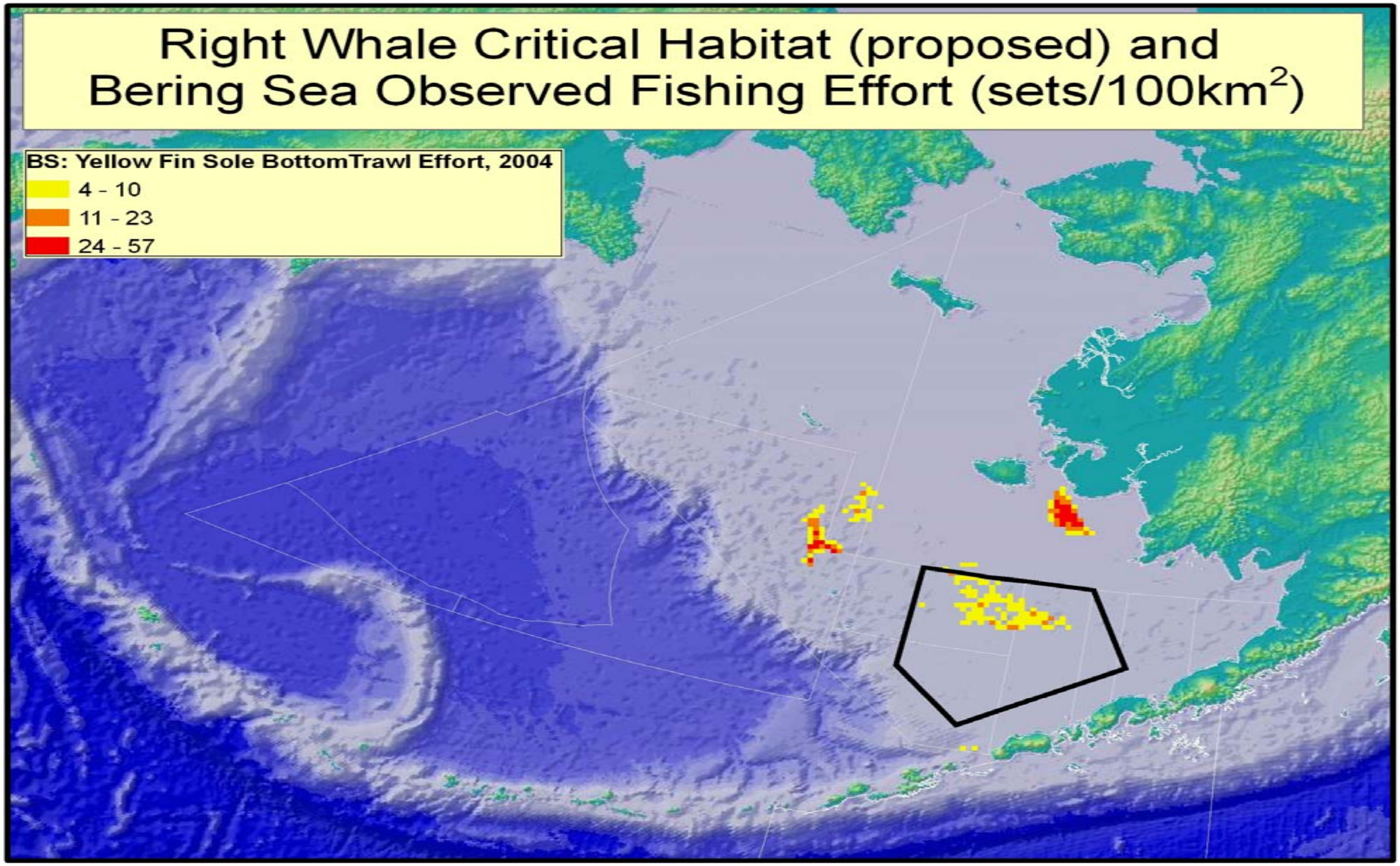


Figure A.11 **Yellowfin Sole Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2004** (Source: Cathy Coon, NPFMC 2006)

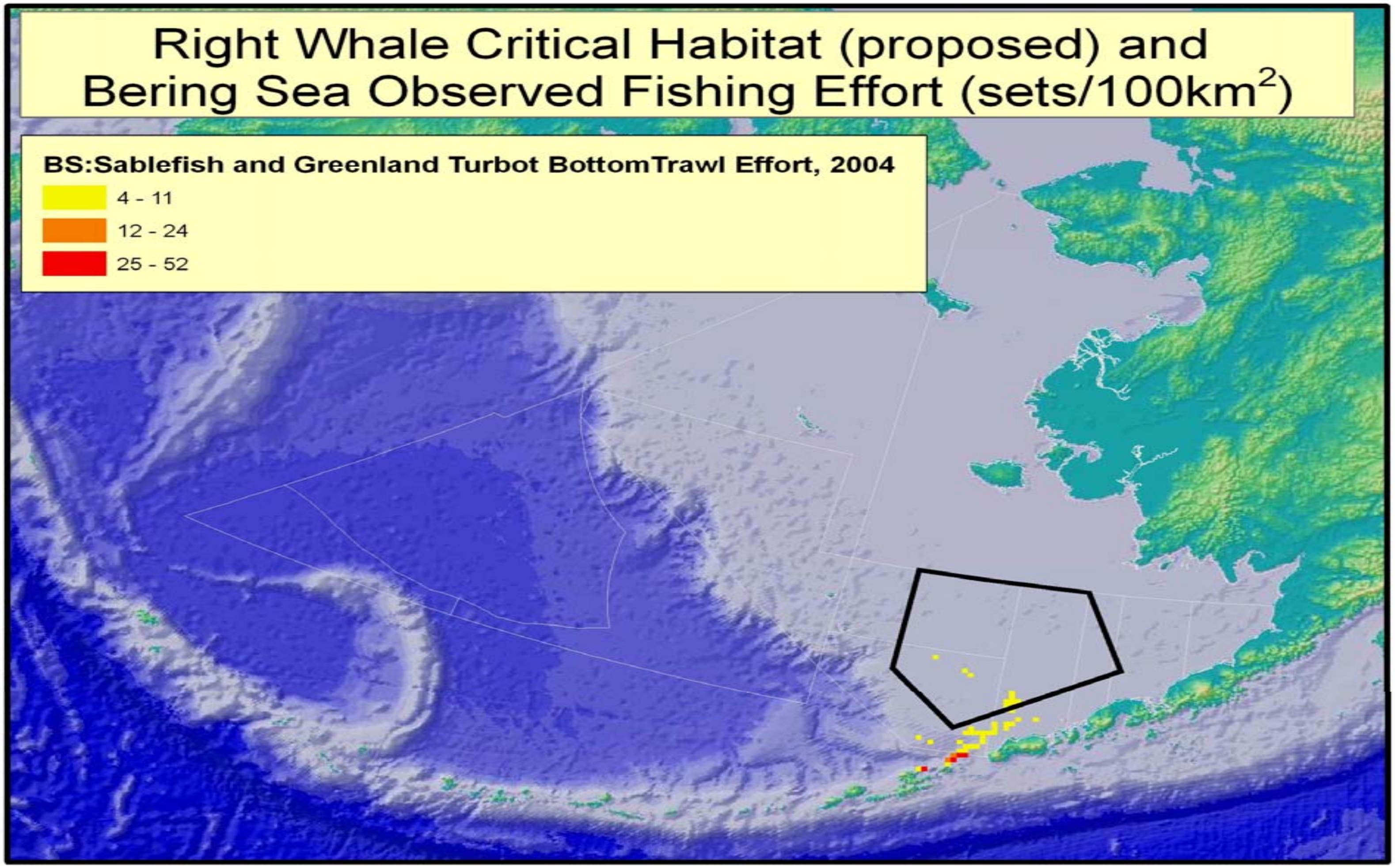


Figure A. 12 **Sablefish and Greenland Turbot Bottom Trawl Effort in BS Proposed Right Whale Critical Habitat 2004**
(Source: Cathy Coon, NPFMC 2006)

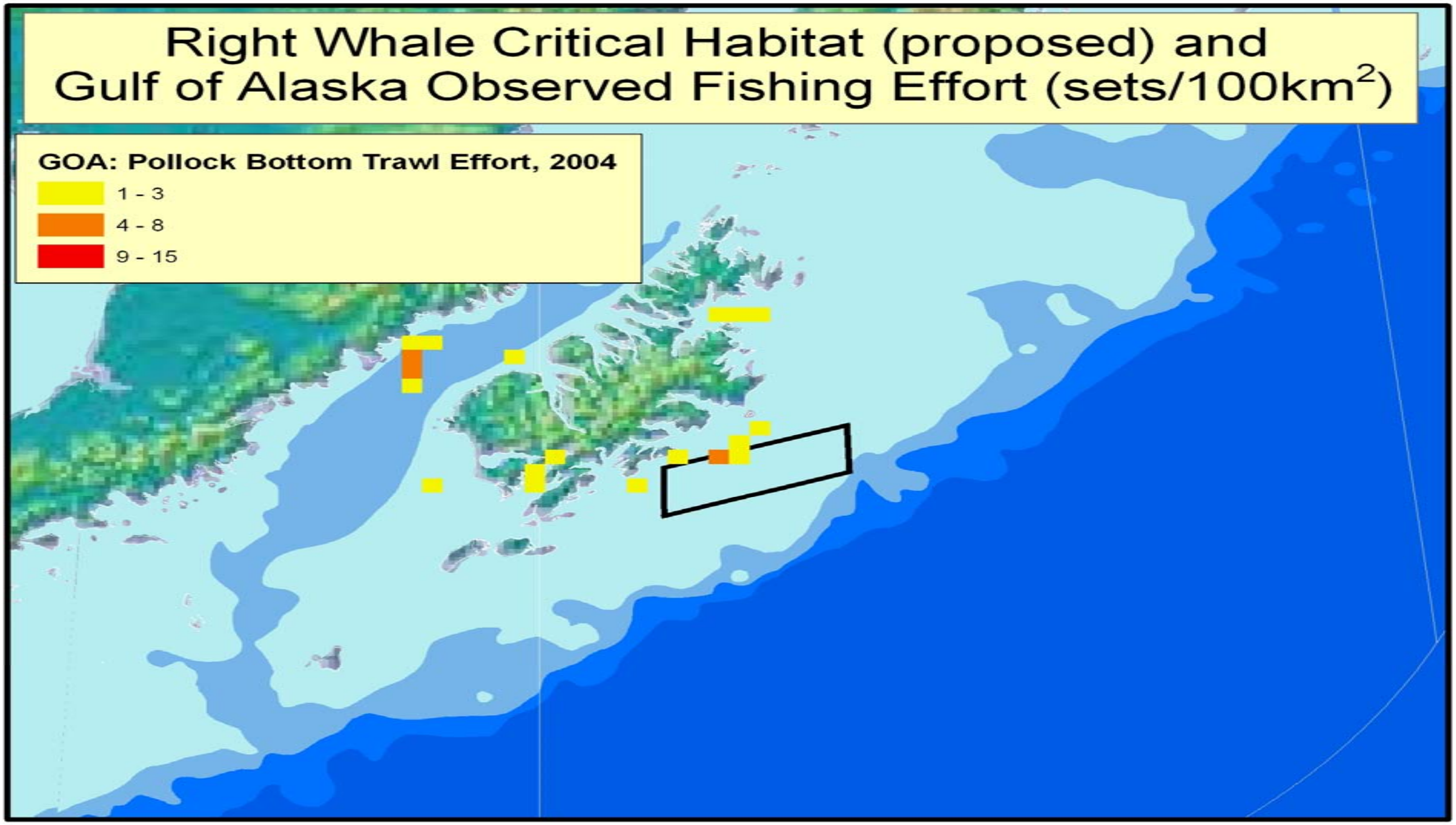


Figure A.13 **Pollock Bottom Trawl Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

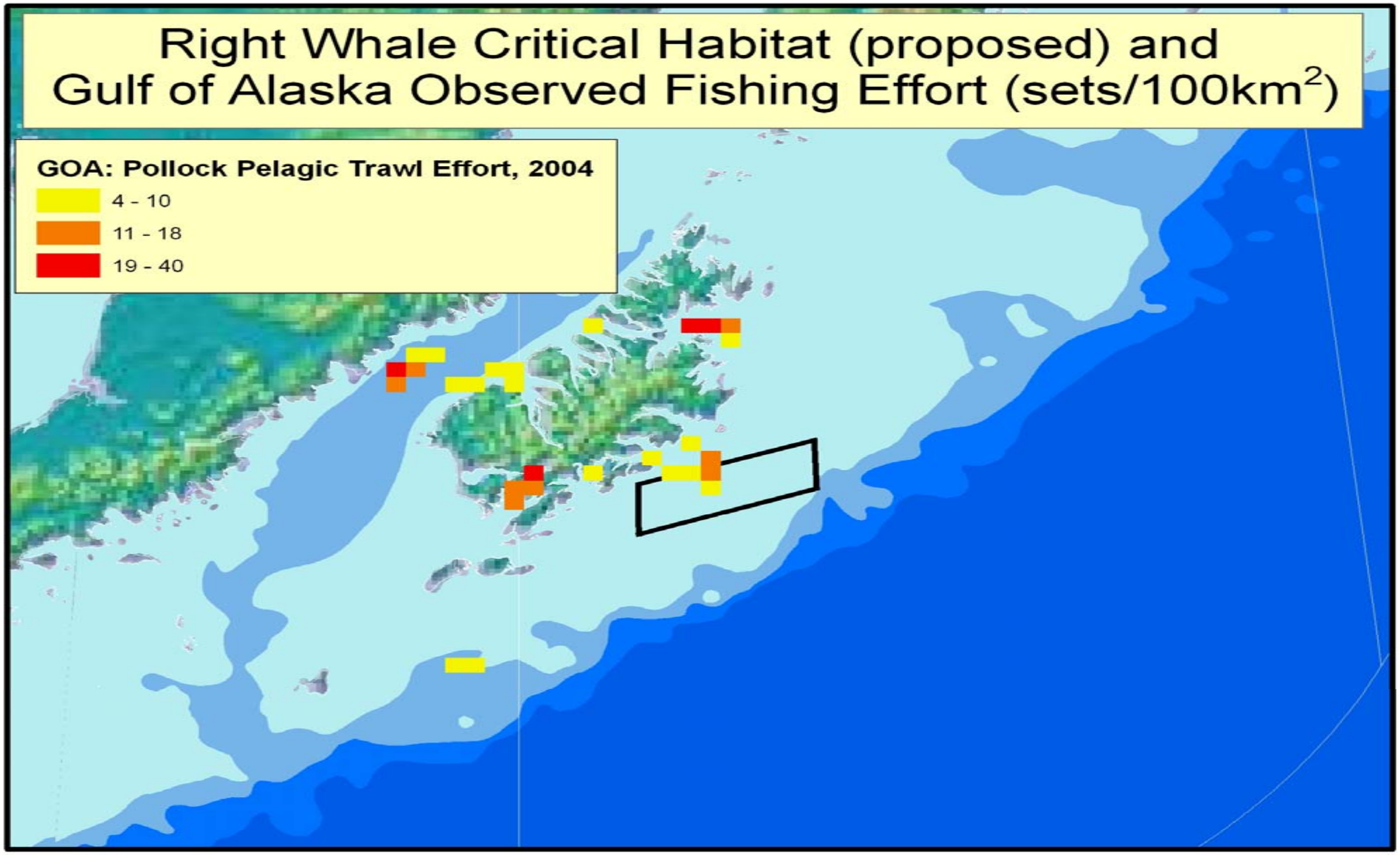


Figure A.14 **Pollock Pelagic Trawl Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

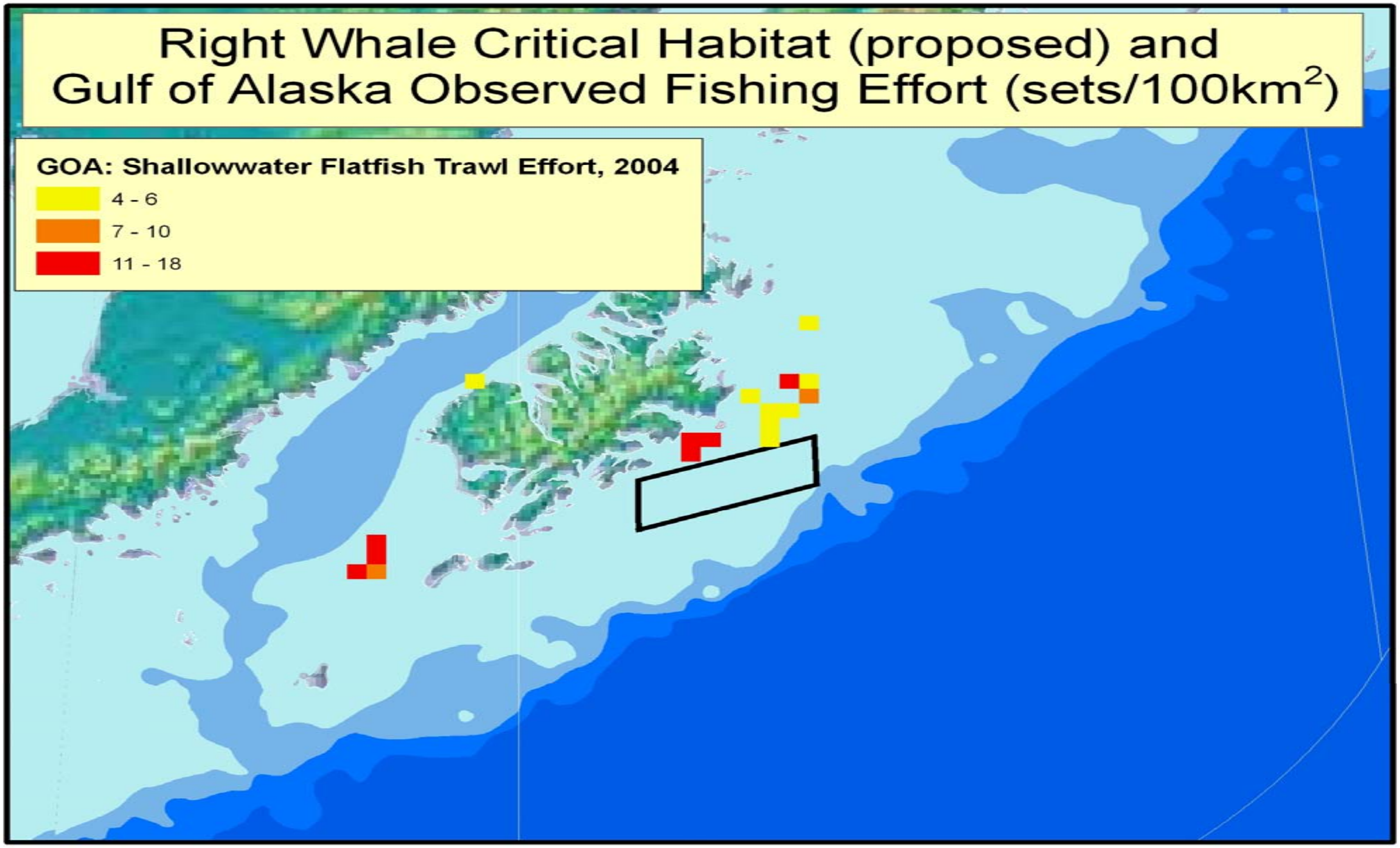


Figure A.15 **Shallow-water Flatfish Trawl Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

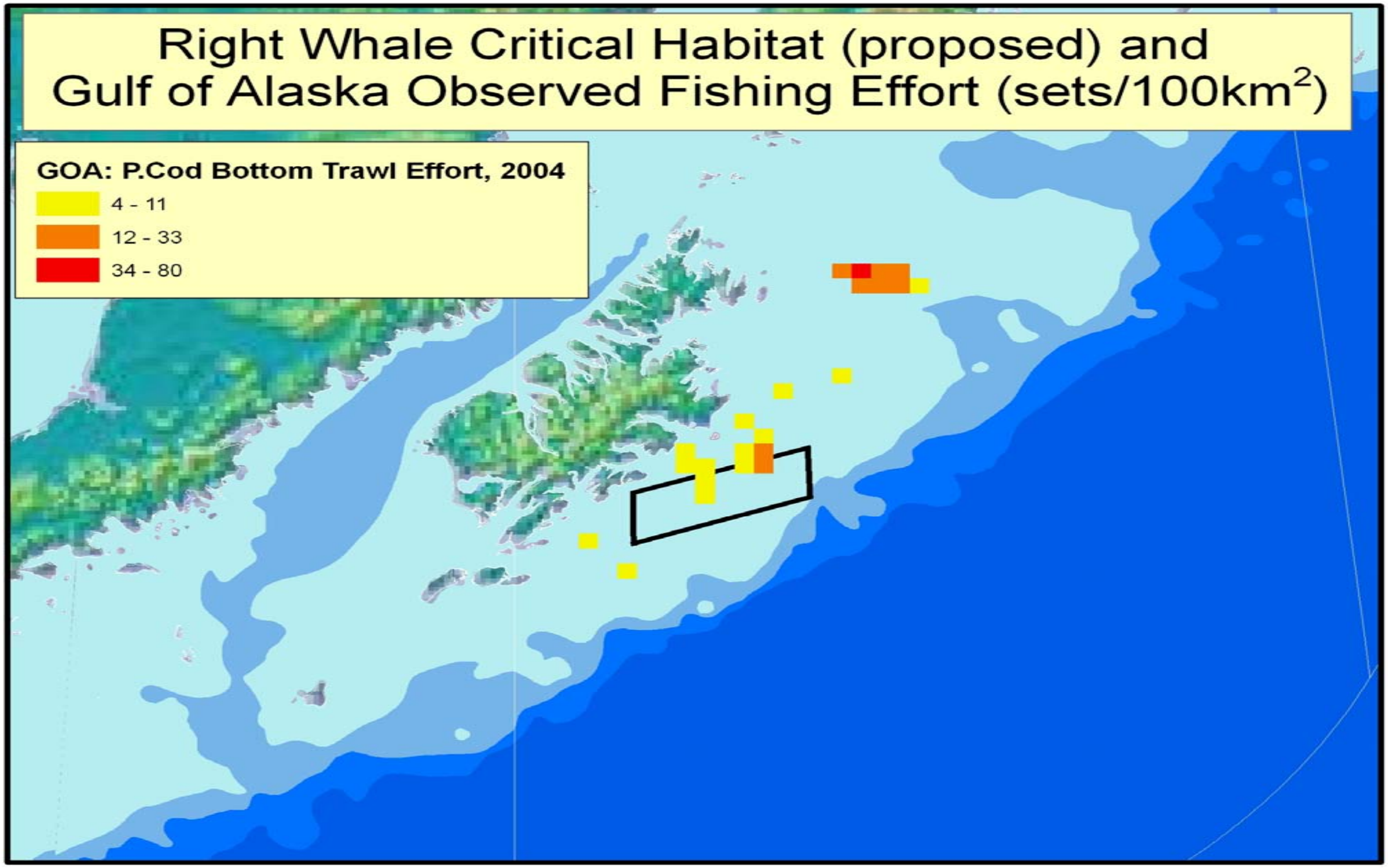


Figure A.16 **Pacific Cod Bottom Trawl Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

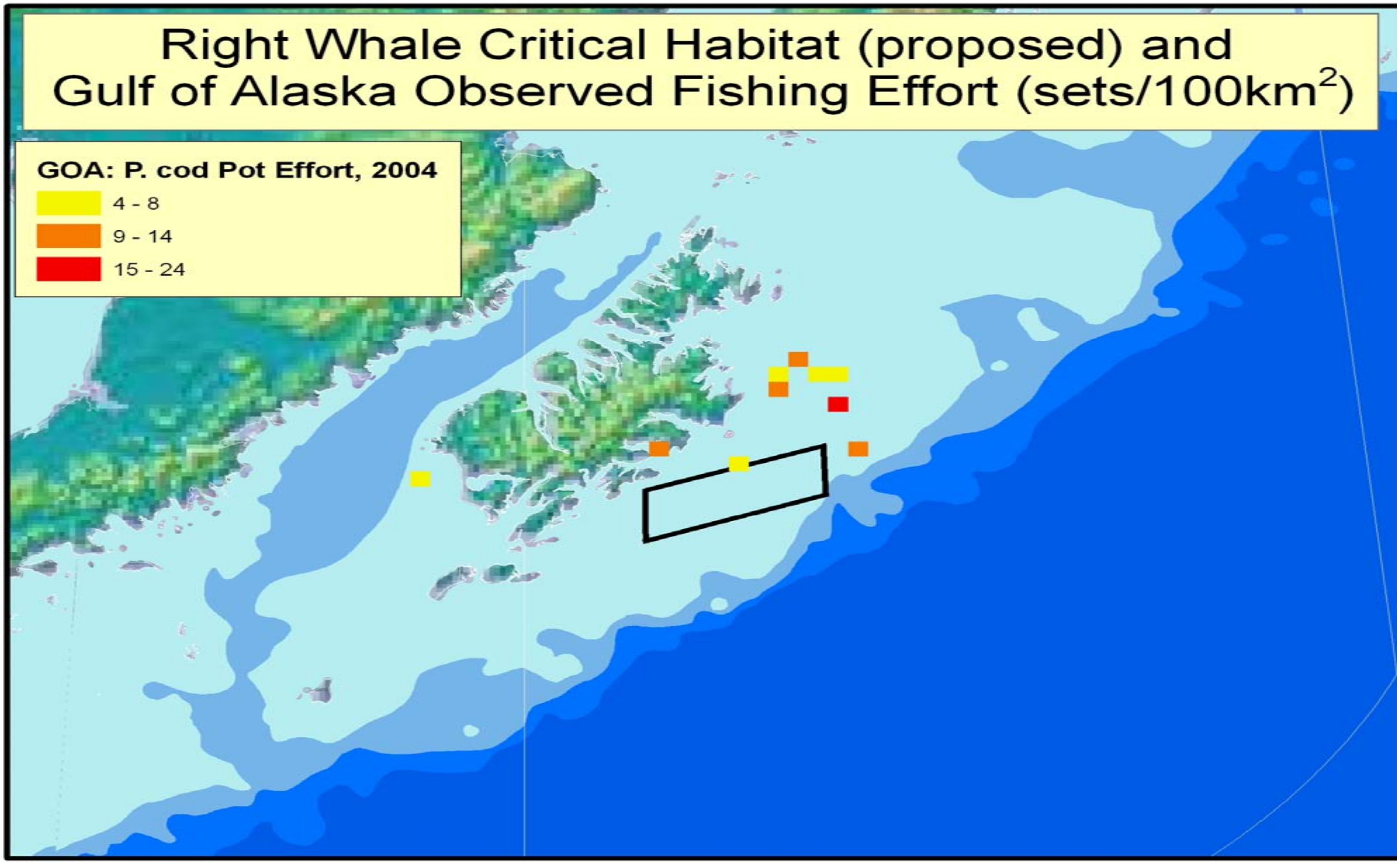


Figure A.17 **Pacific Cod Pot Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

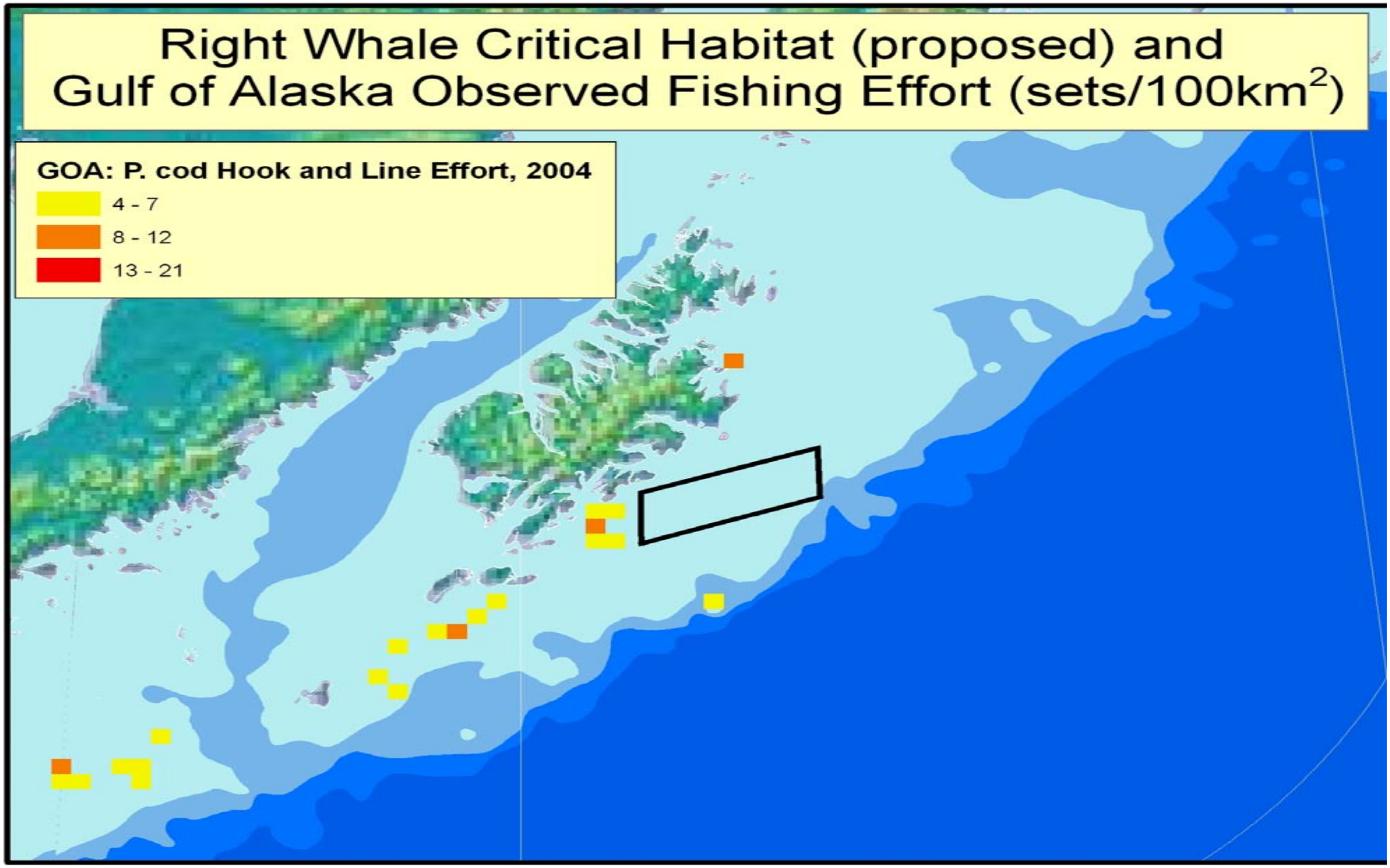


Figure A.18 **Pacific Cod Hook-and-line Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

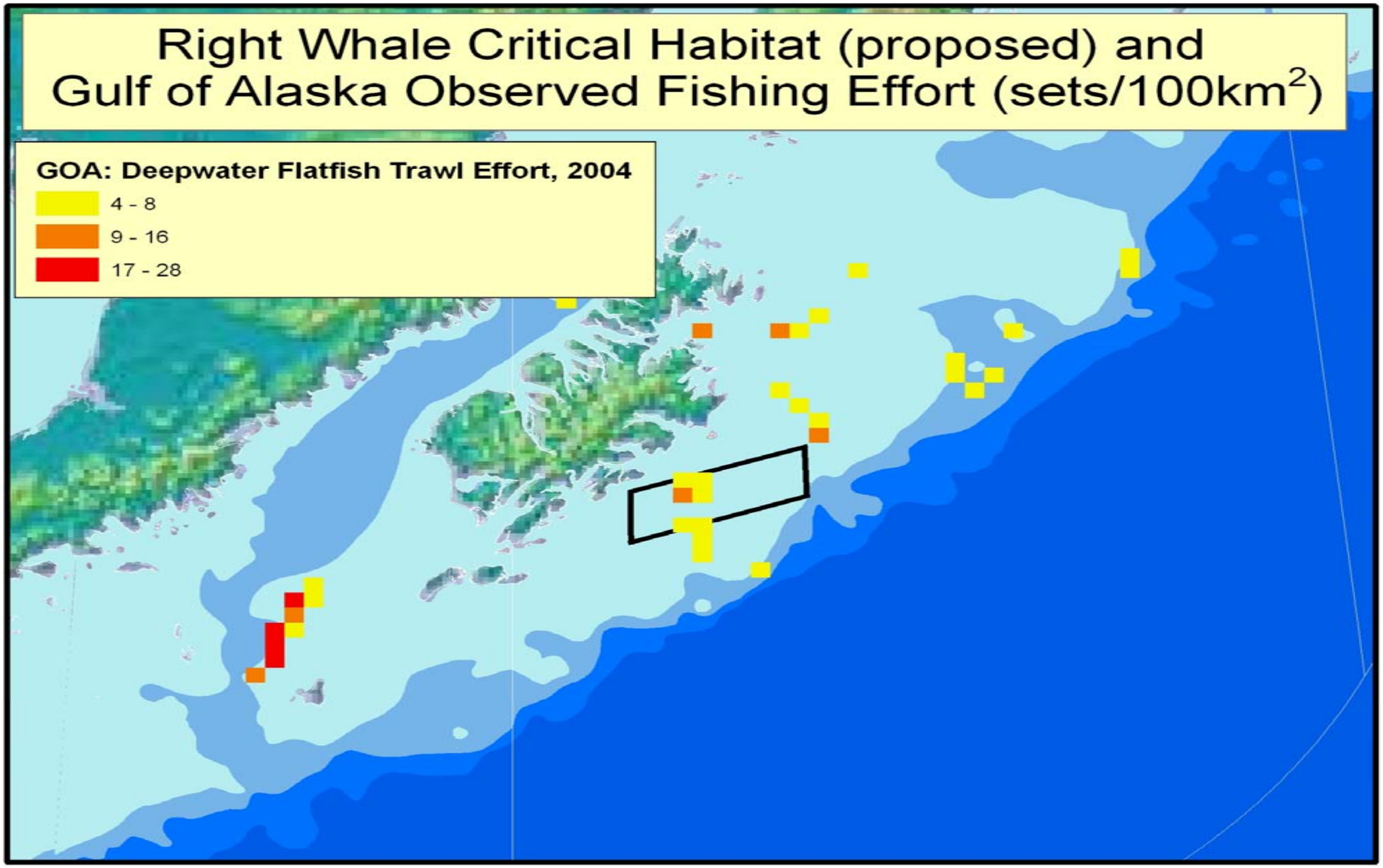


Figure A.19 **Deepwater Flatfish Trawl Effort in GOA Proposed Right Whale Critical Habitat, 2004**
(Source: Cathy Coon, NPFMC 2006)

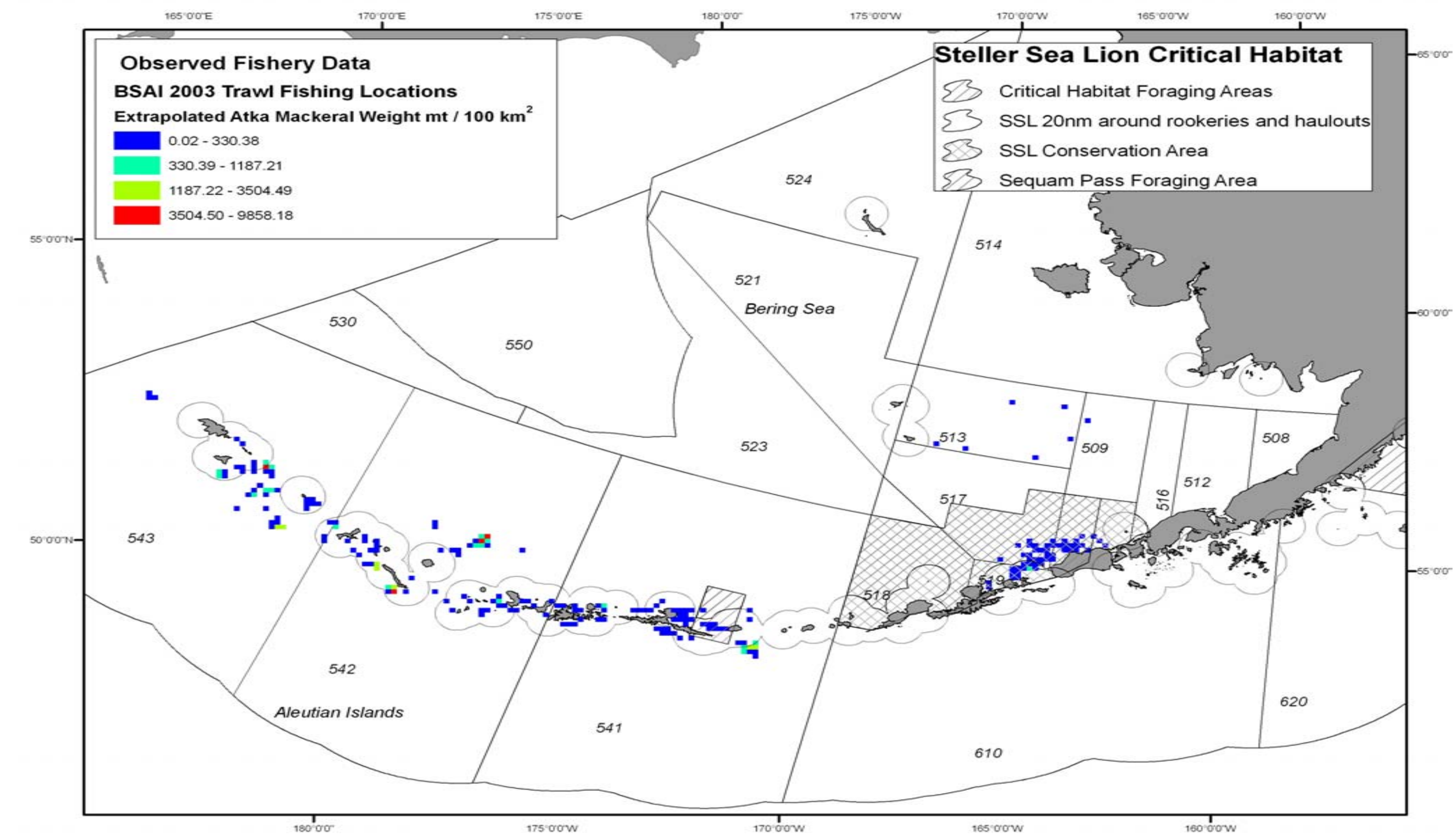


Figure A.20 **BSAI Atka Mackerel Trawl Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

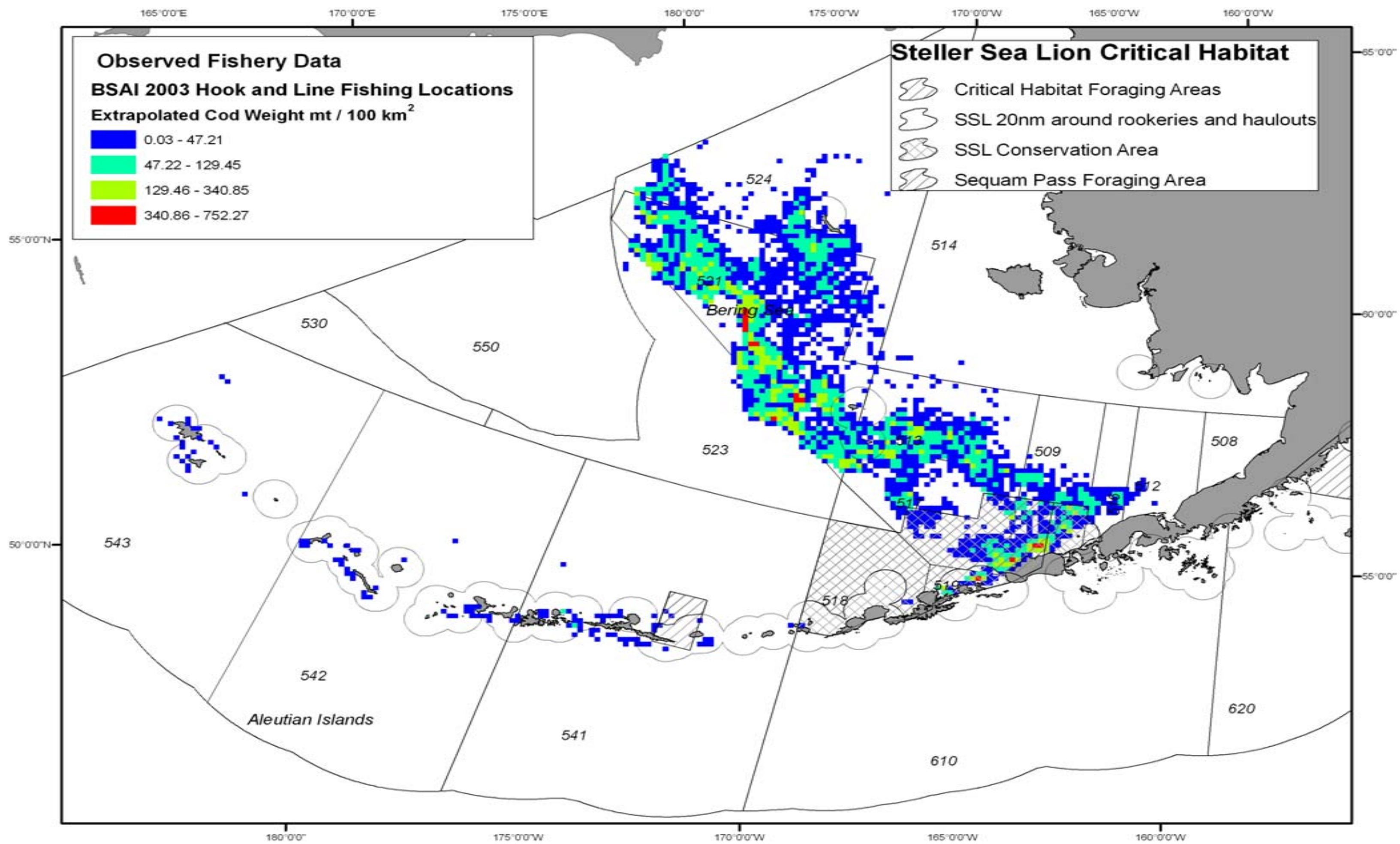


Figure A.21 **BSAI Pacific Cod Hook-and-line Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

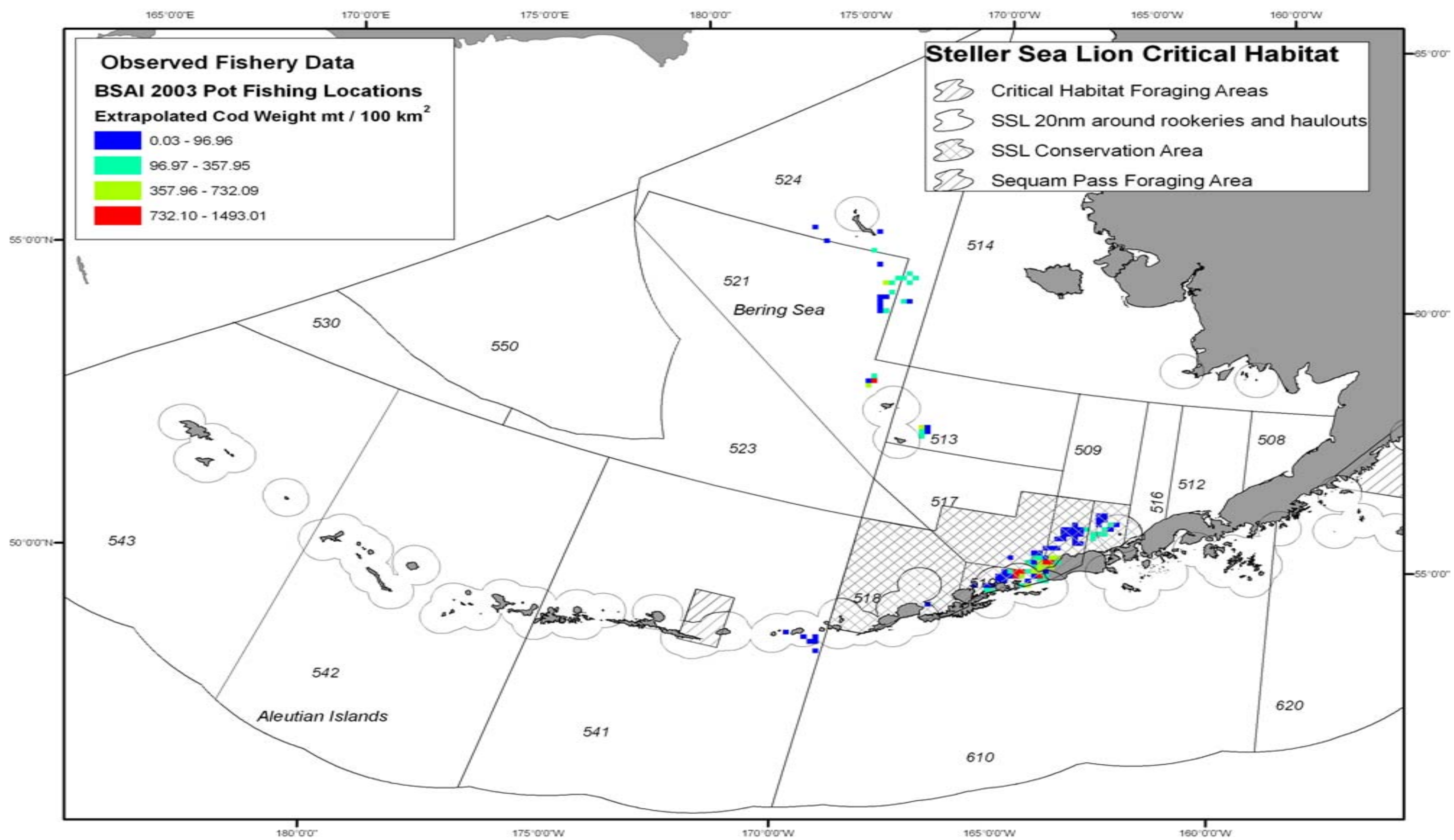


Figure A.22 **BSAI Pacific Cod Pot Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

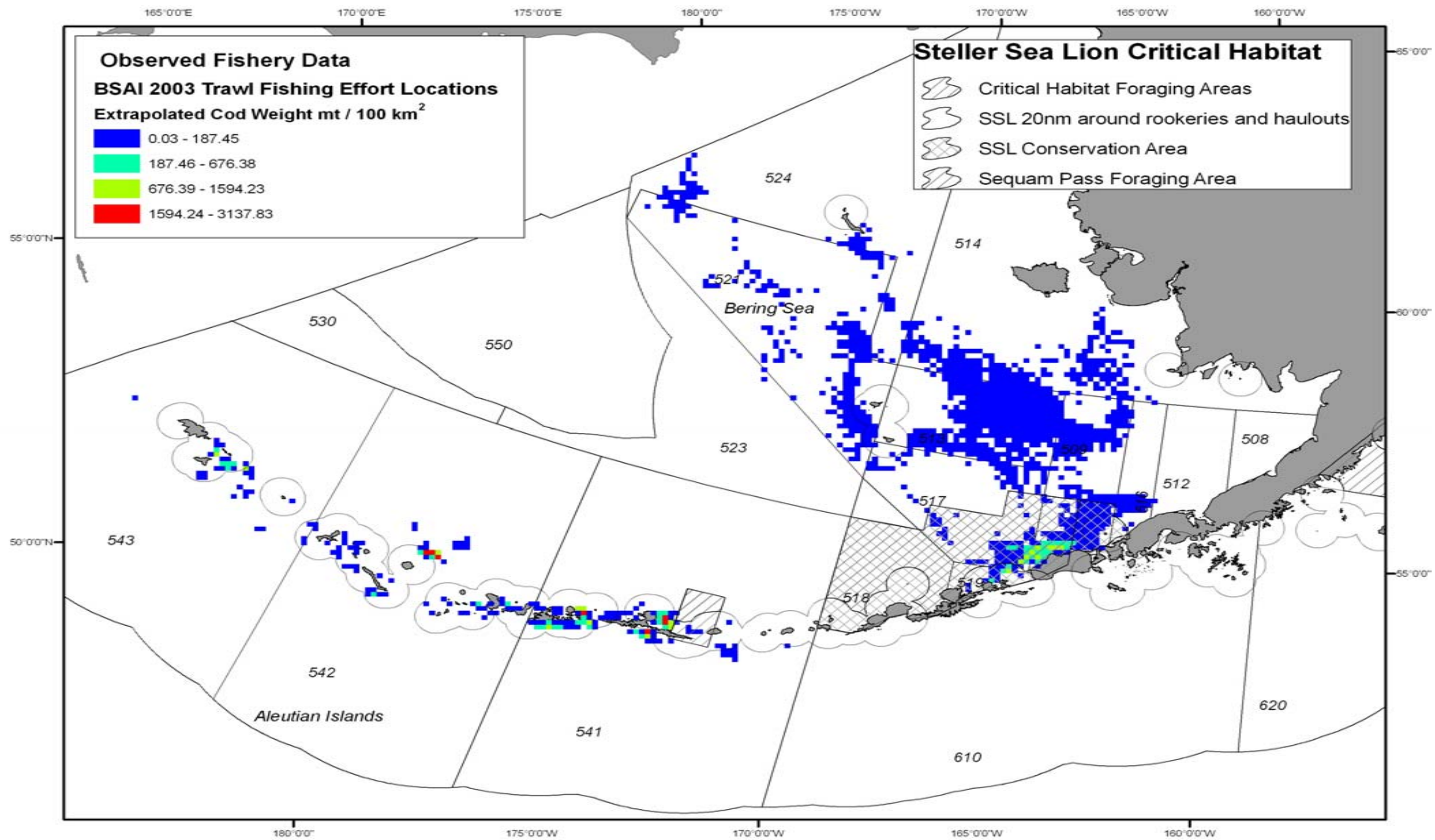


Figure A.23 **BSAI Pacific Cod Trawl Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

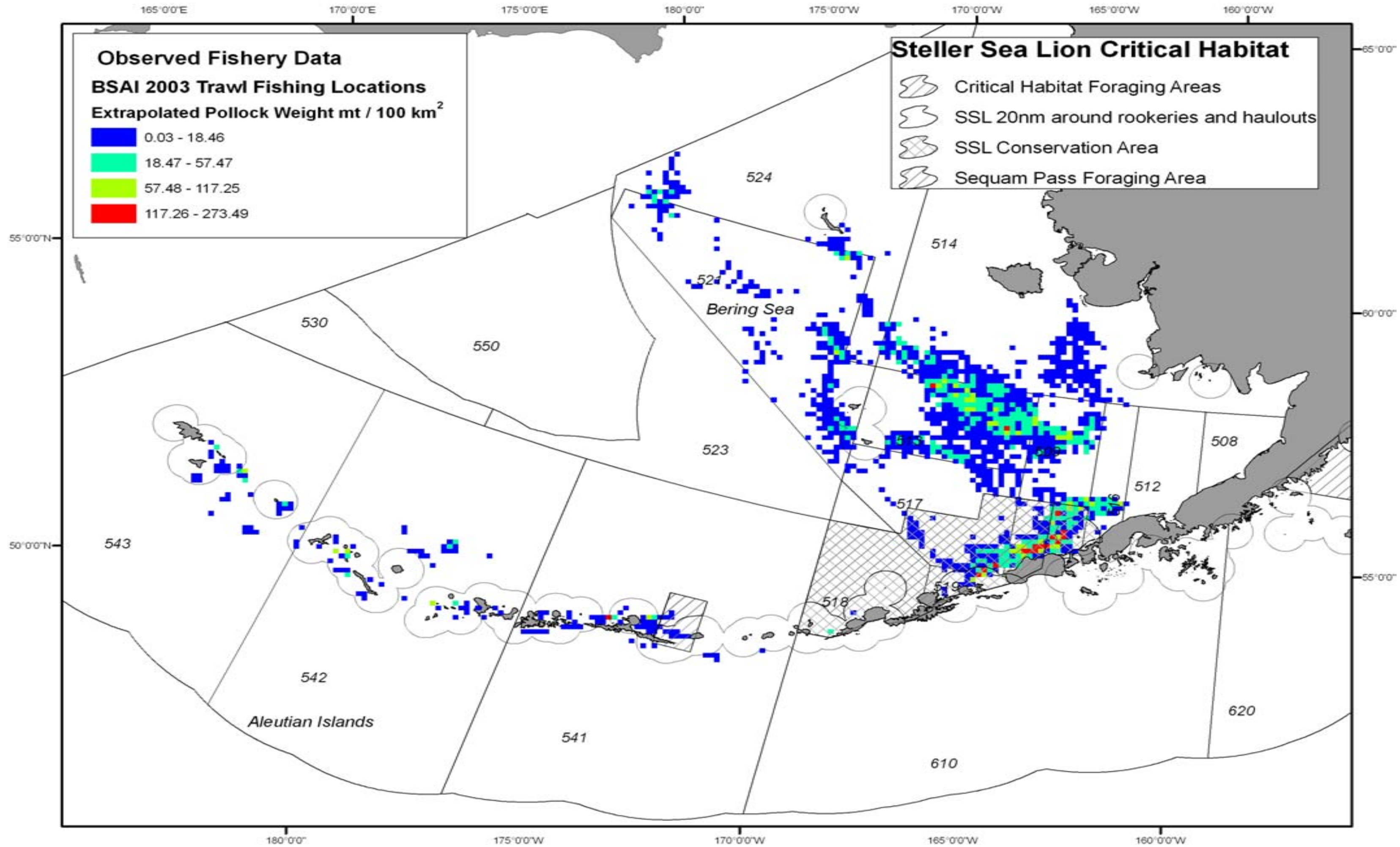


Figure A.24 **BSAI Pollock Trawl Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

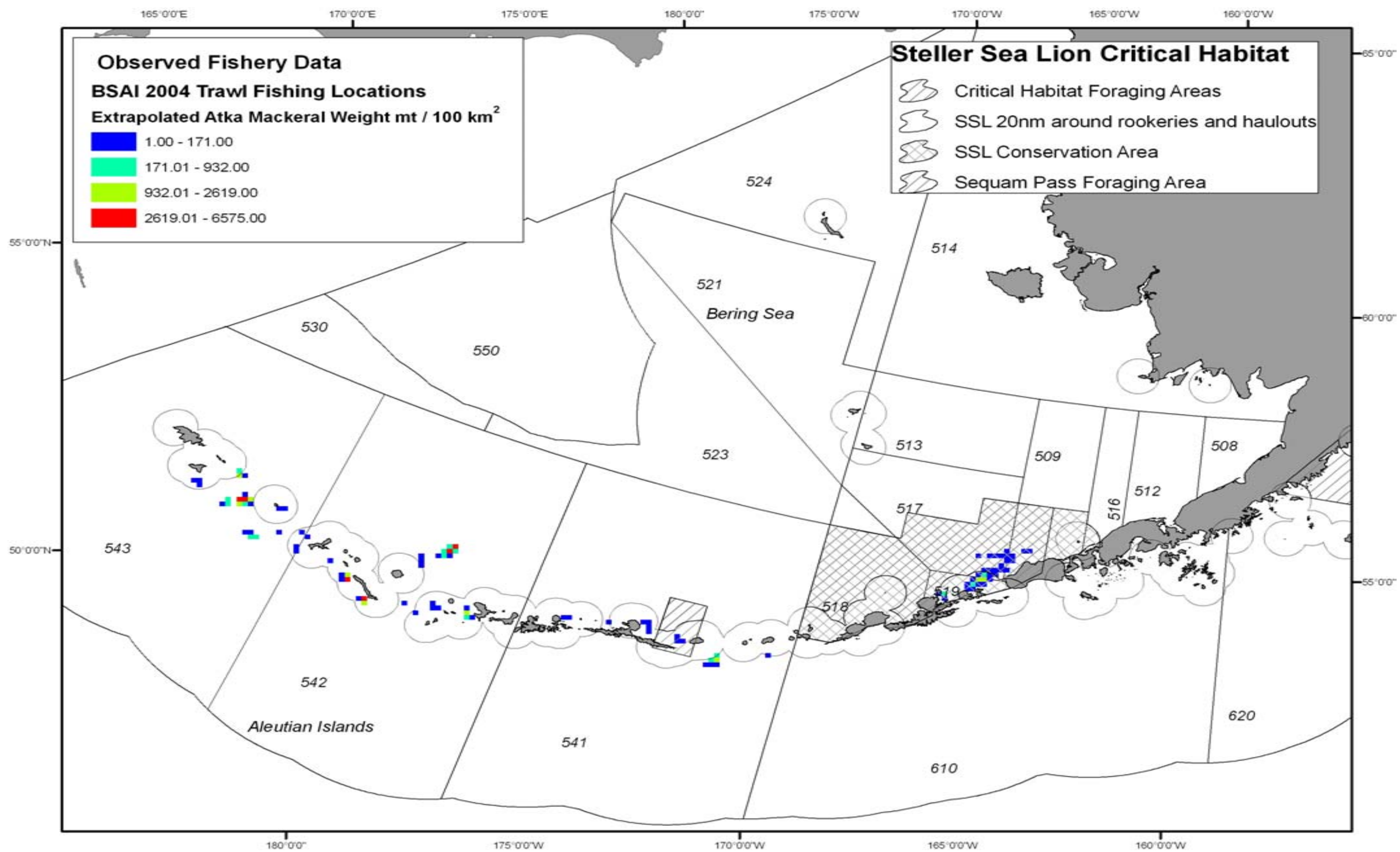


Figure A.25 **BSAI Atka Mackerel Trawl Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

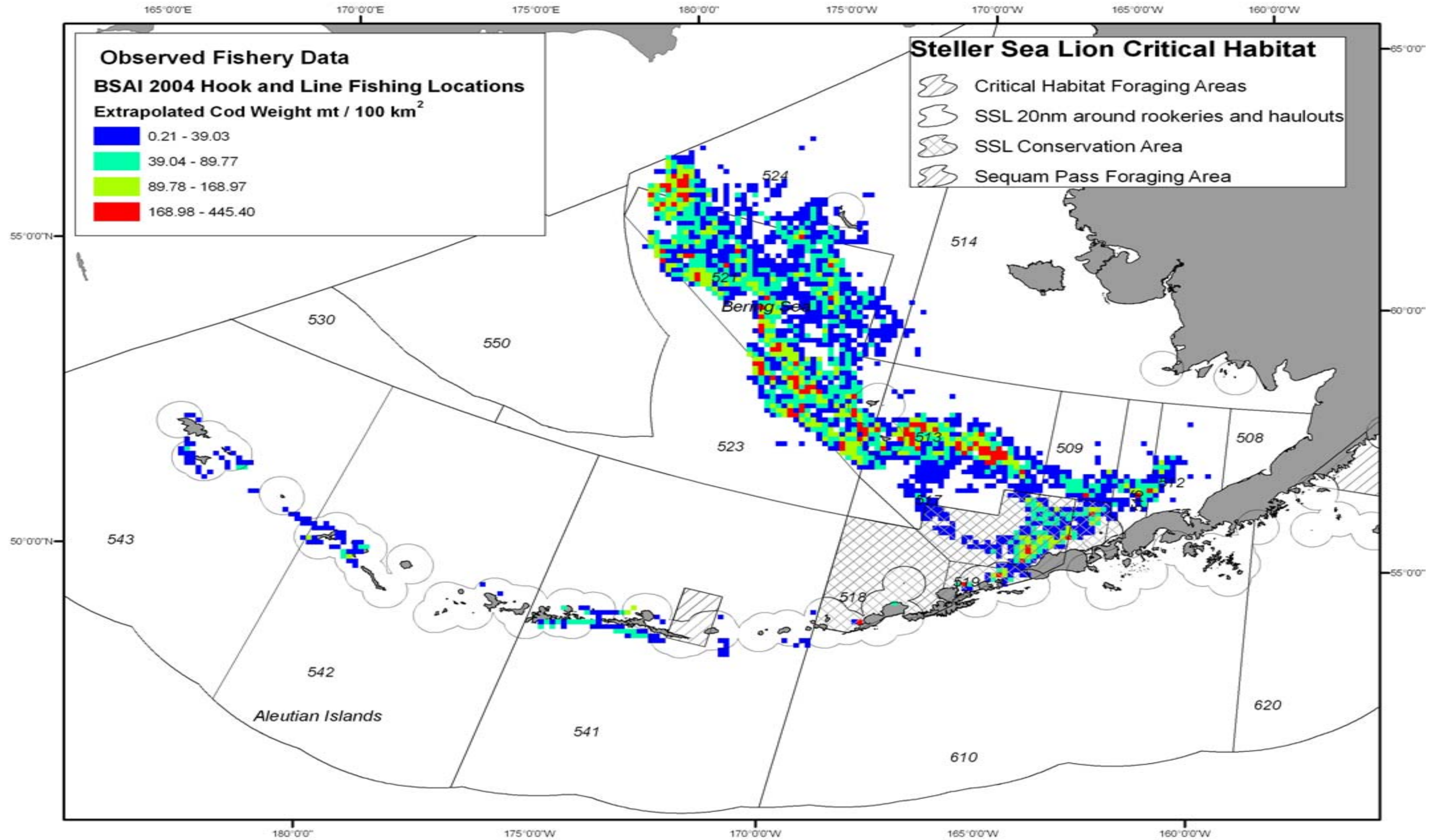


Figure A.26 **BSAI Pacific Cod Hook-and-line Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

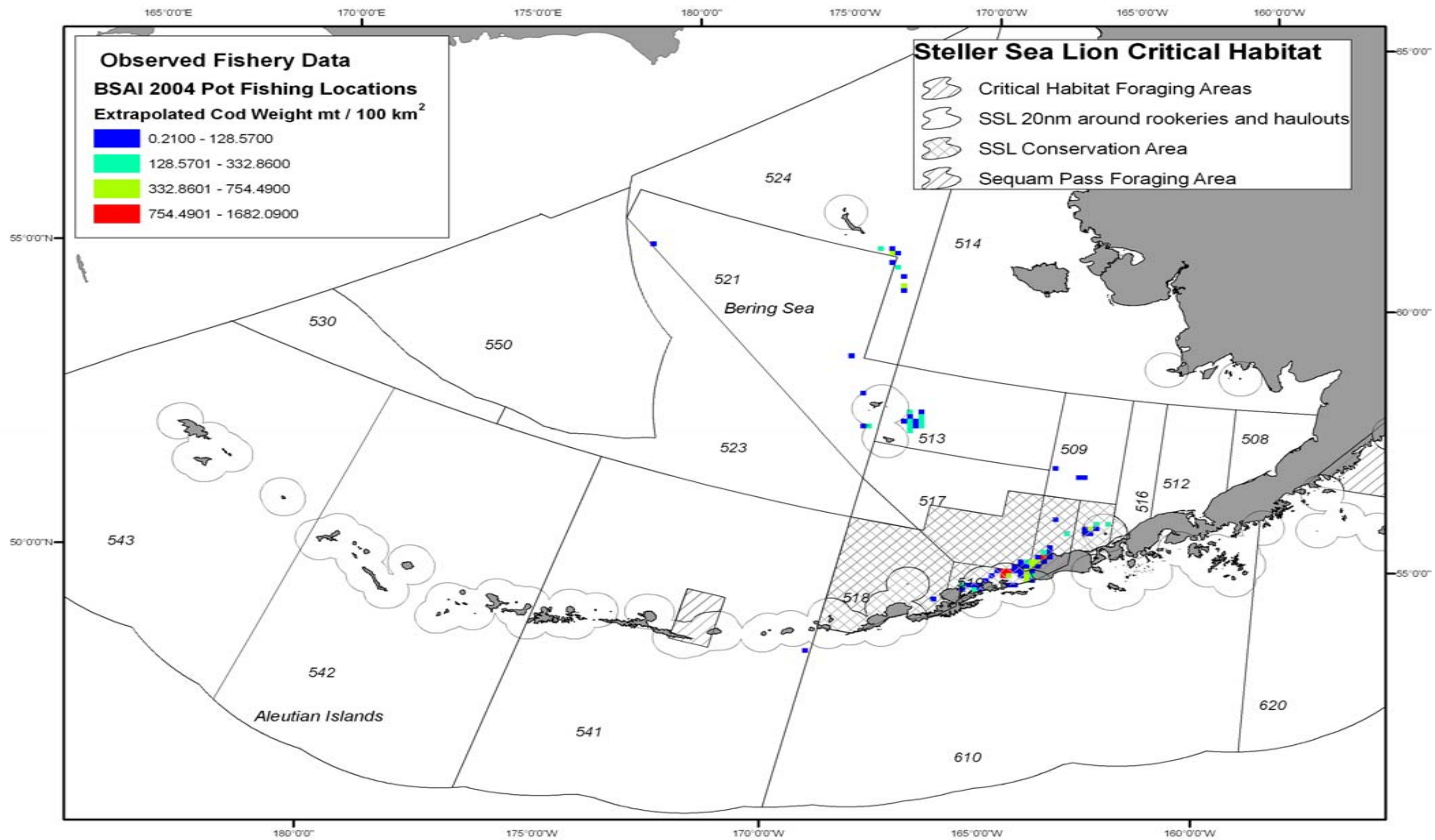


Figure A.27 **BSAI Pacific Cod Pot Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

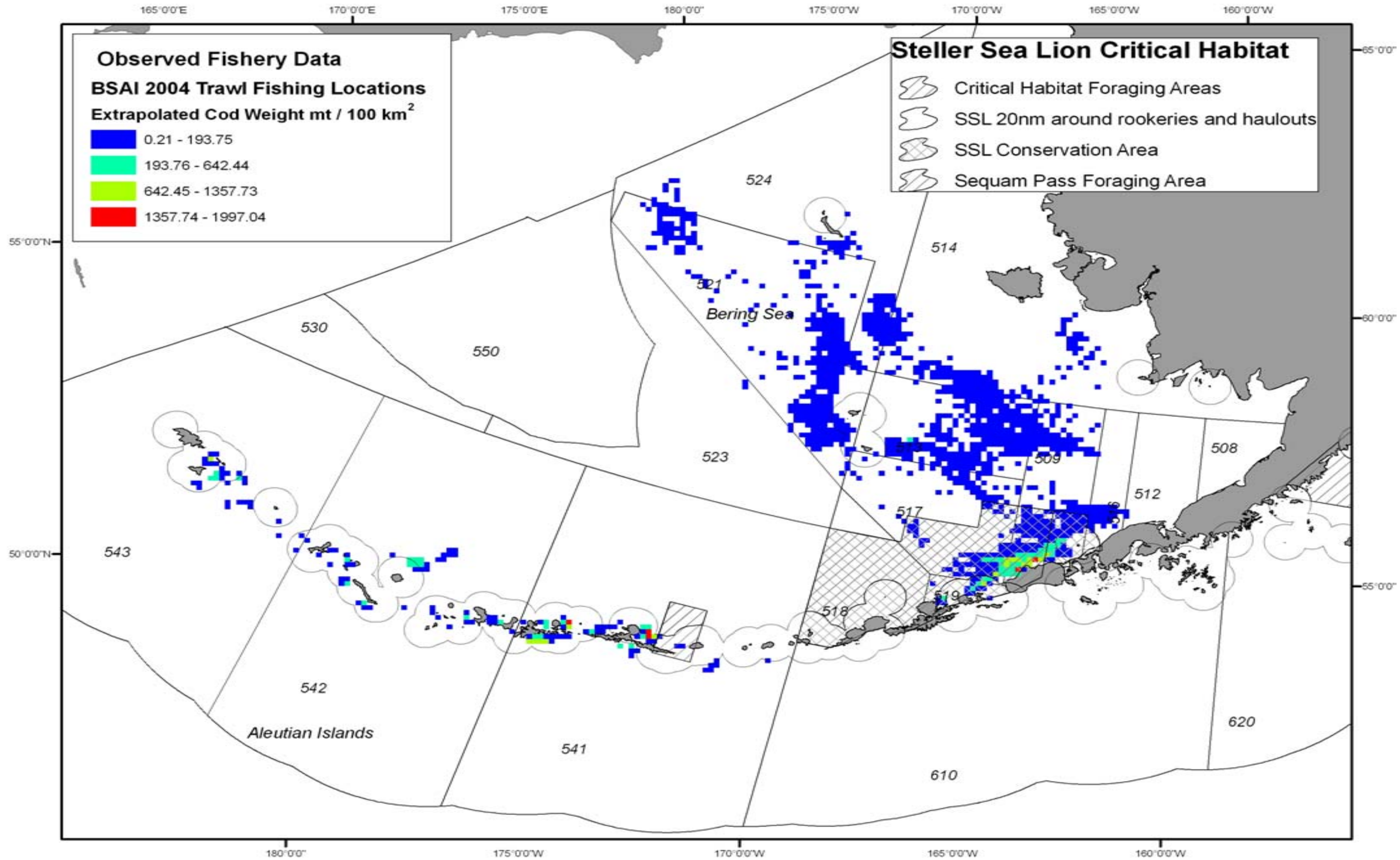


Figure A.28 **BSAI Pacific Cod Trawl Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

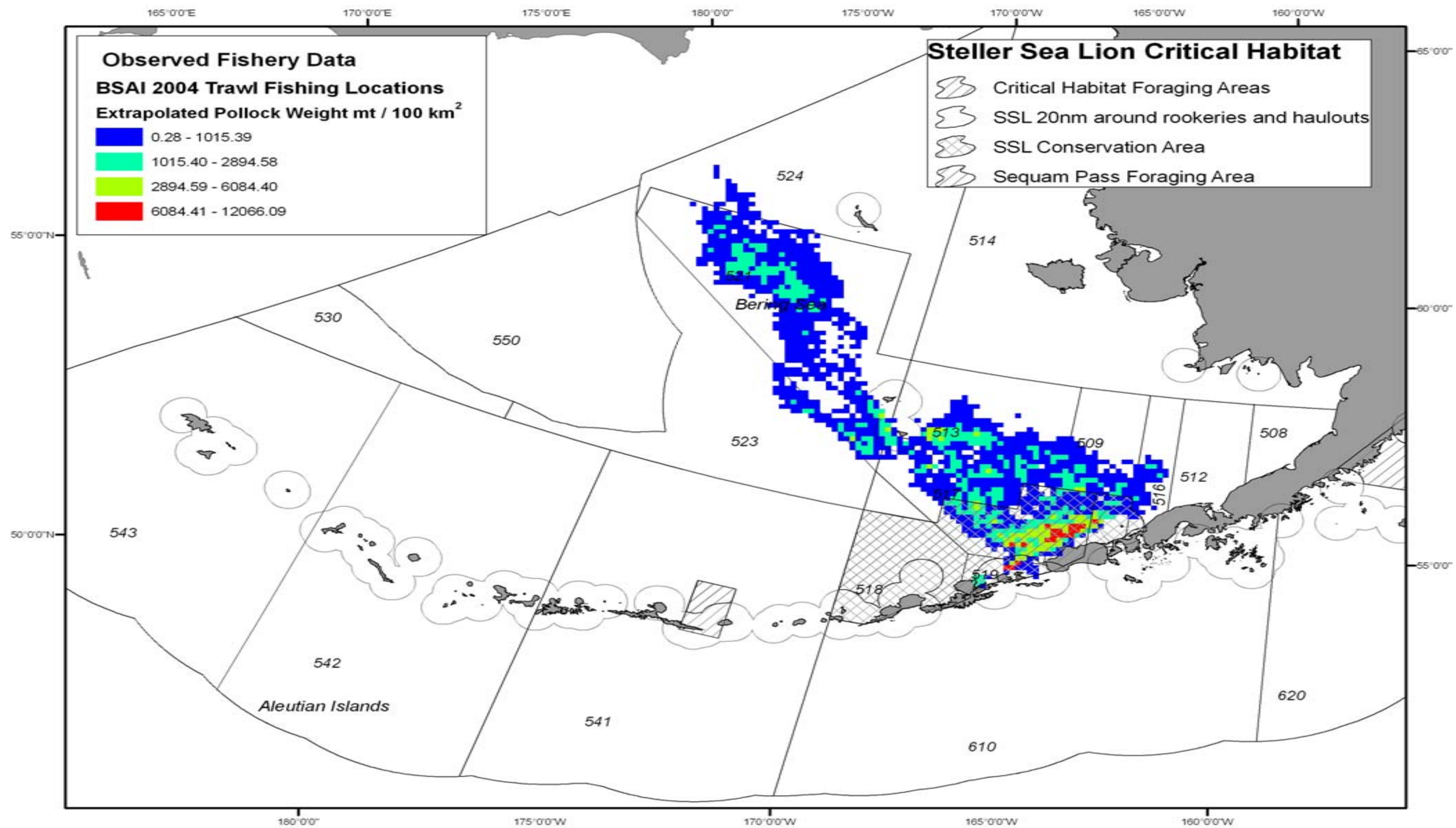


Figure A.29 **BSAI Pollock Trawl Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

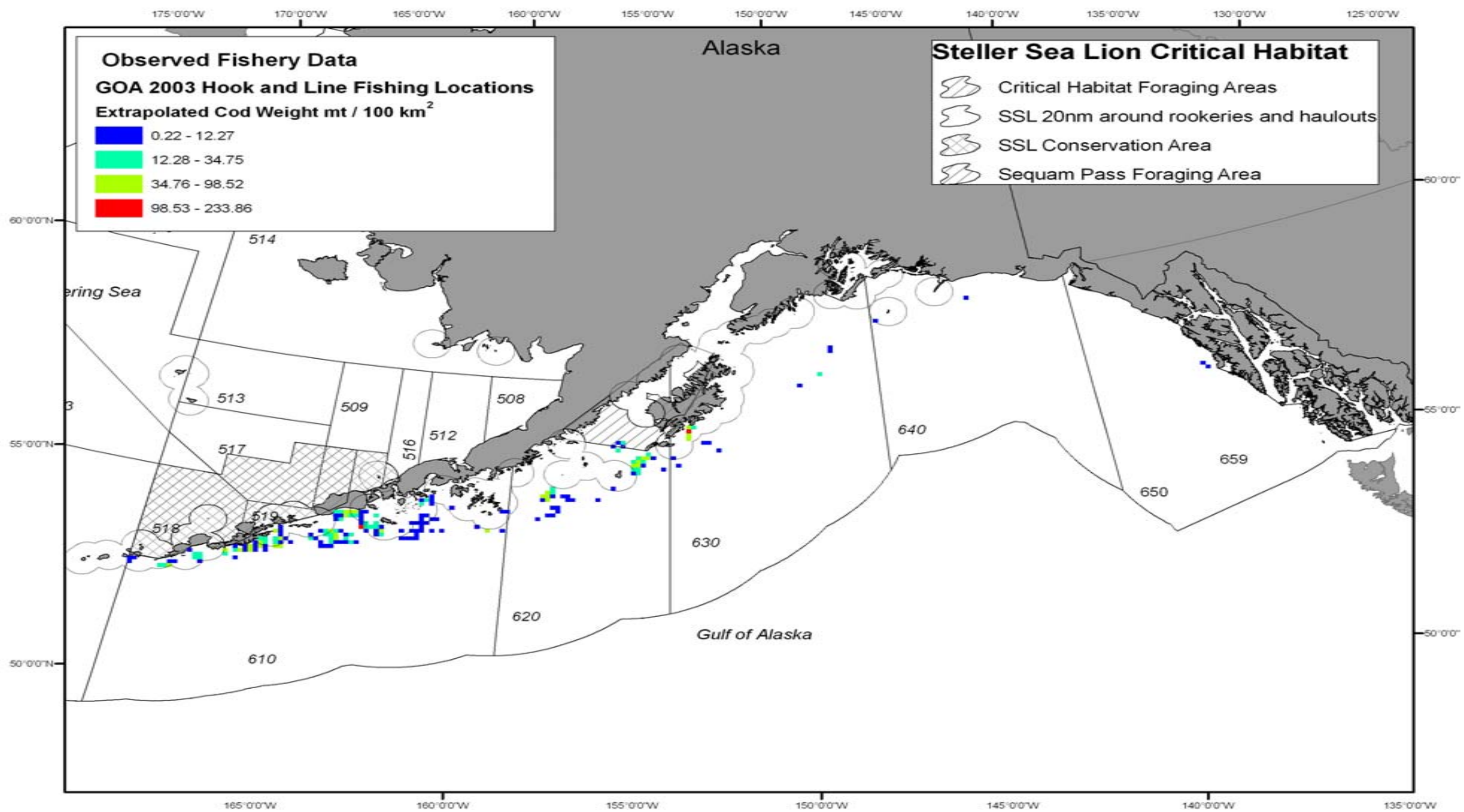


Figure A.30 **GOA Pacific Cod Hook-and-line Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

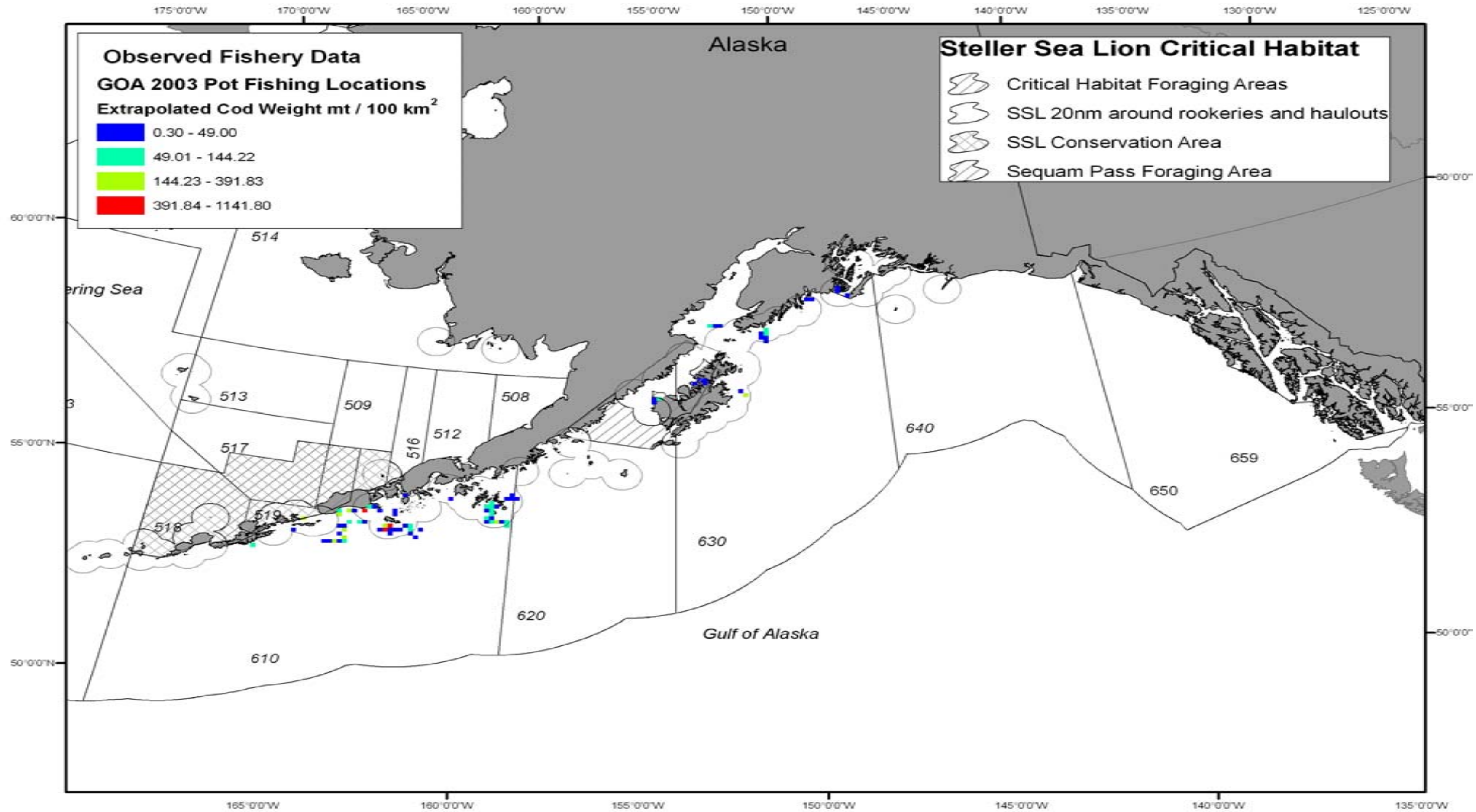


Figure A.31 **GOA Pacific Cod Pot Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

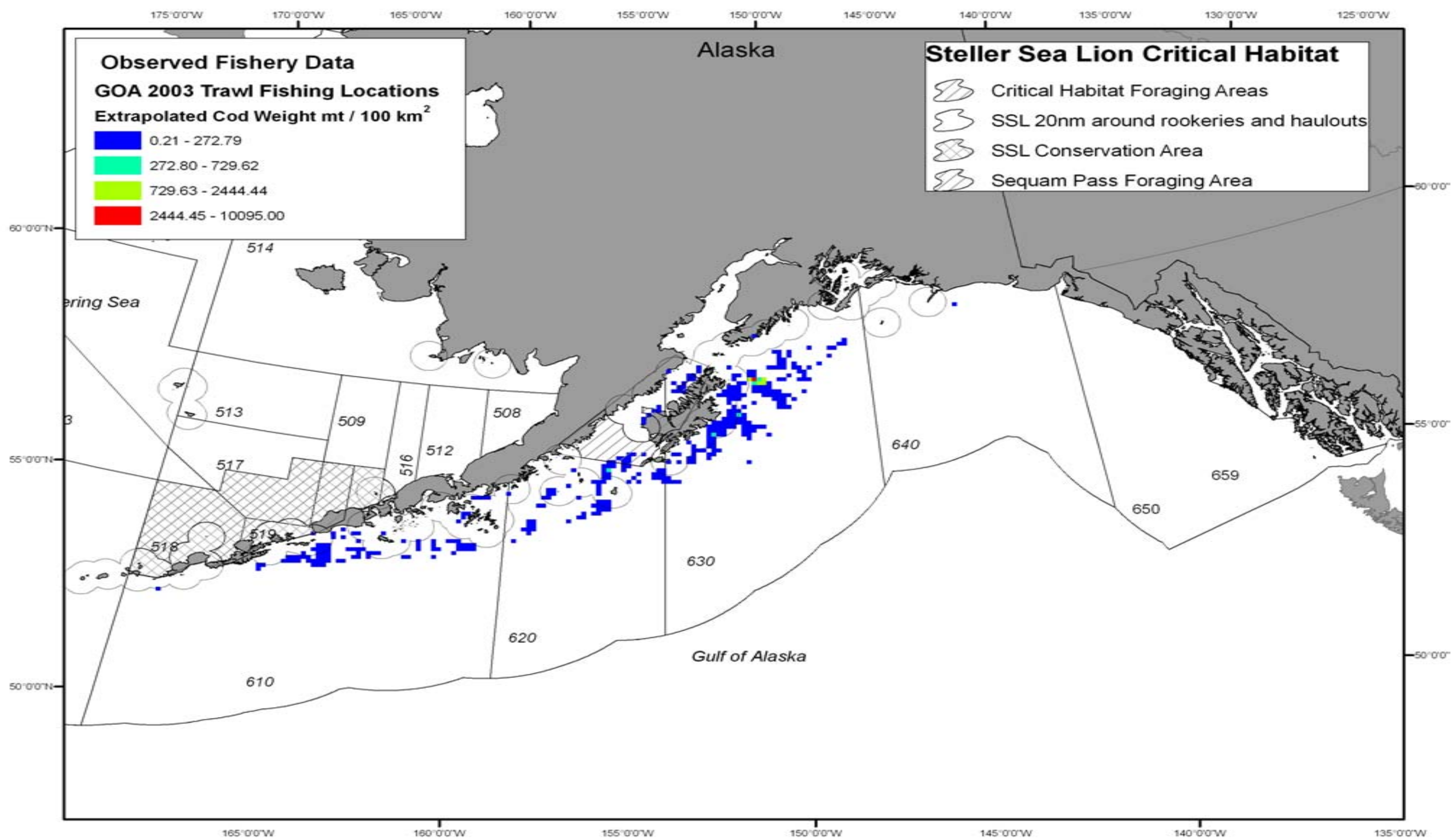


Figure A.32 **GOA Pacific Cod Trawl Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

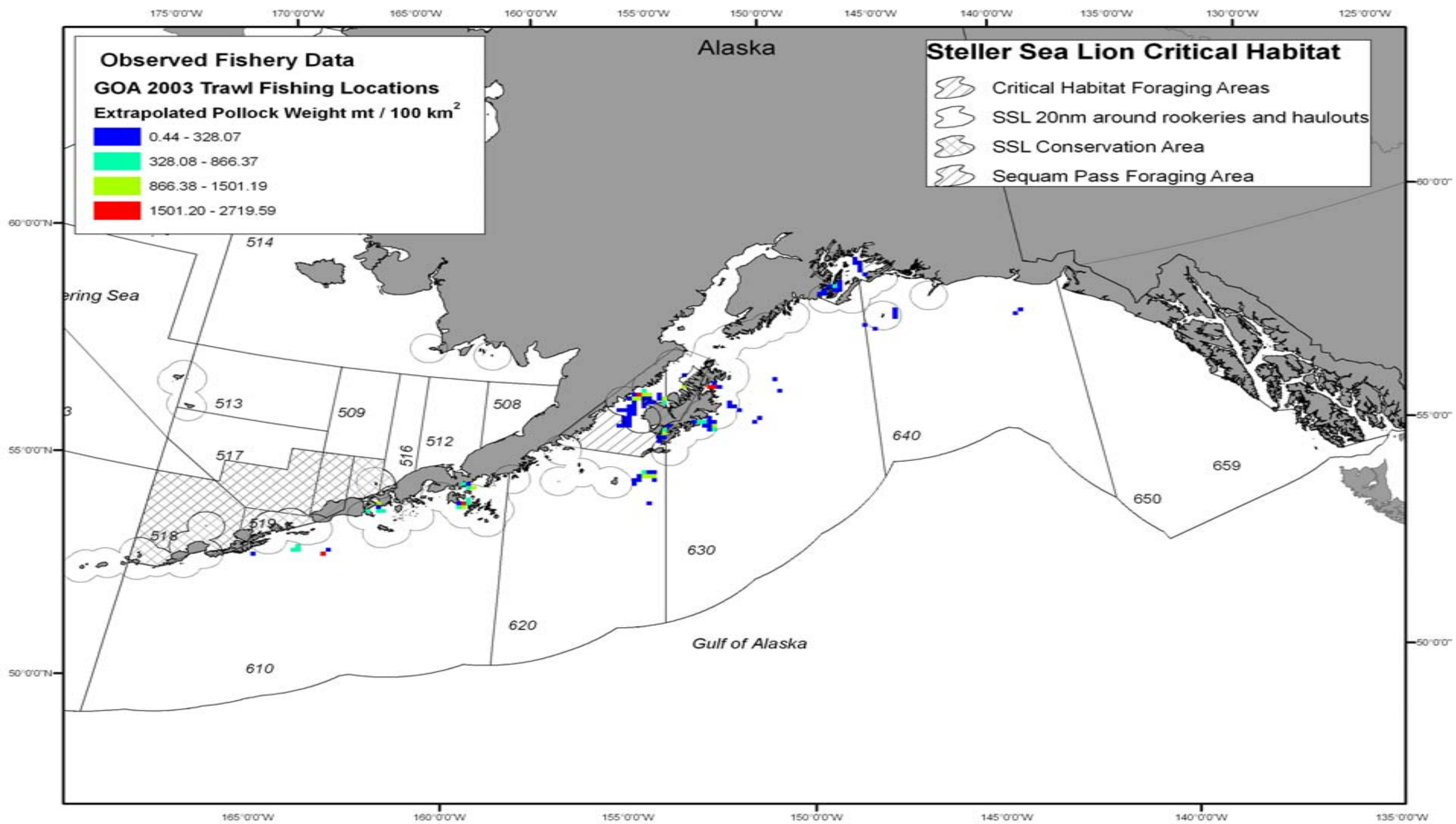


Figure A.33 **GOA Pollock Trawl Fishing Effort, 2003**
(Source: Cathy Coon, NPFMC 2006)

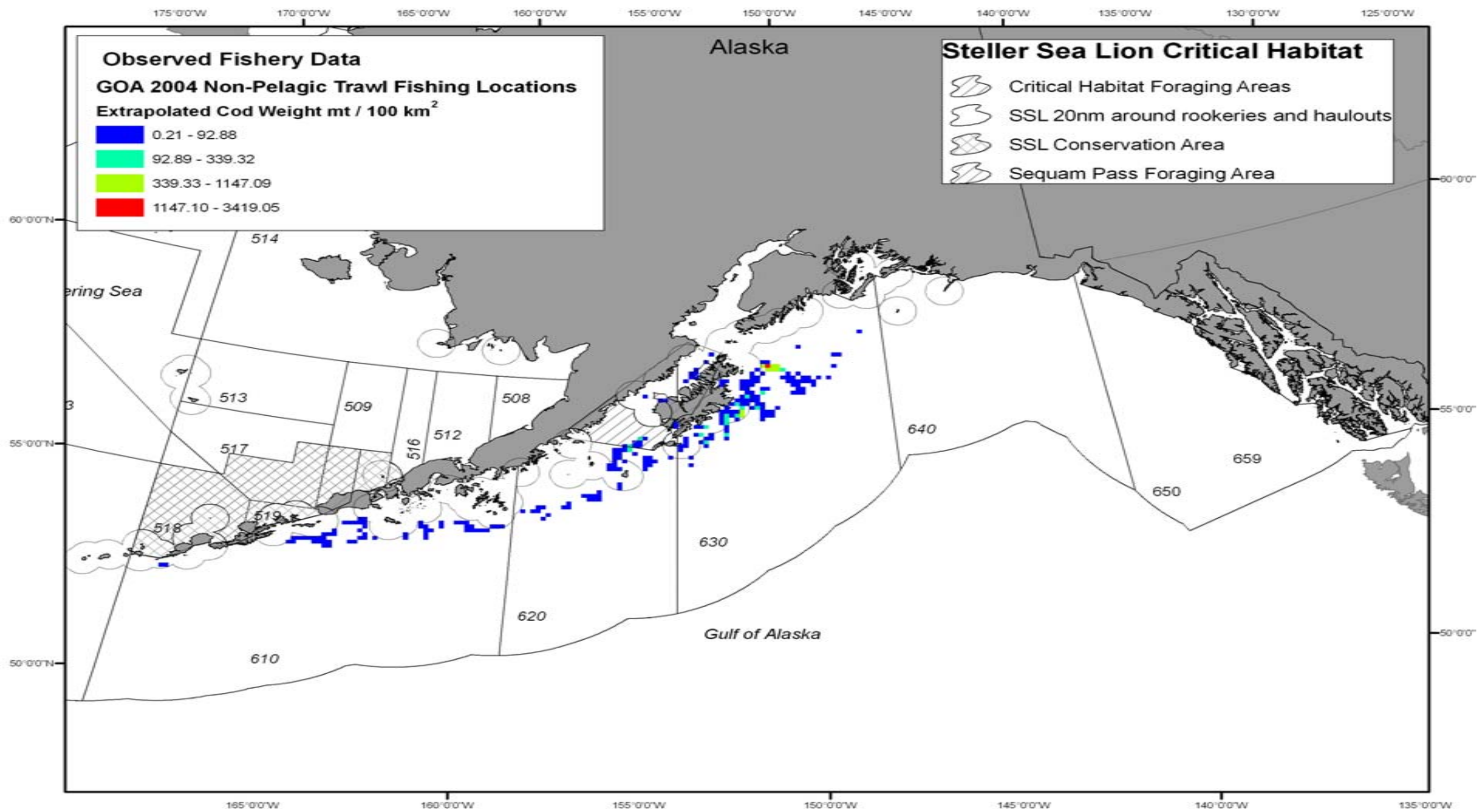


Figure A.34 **GOA Pacific cod Nonpelagic Trawl Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

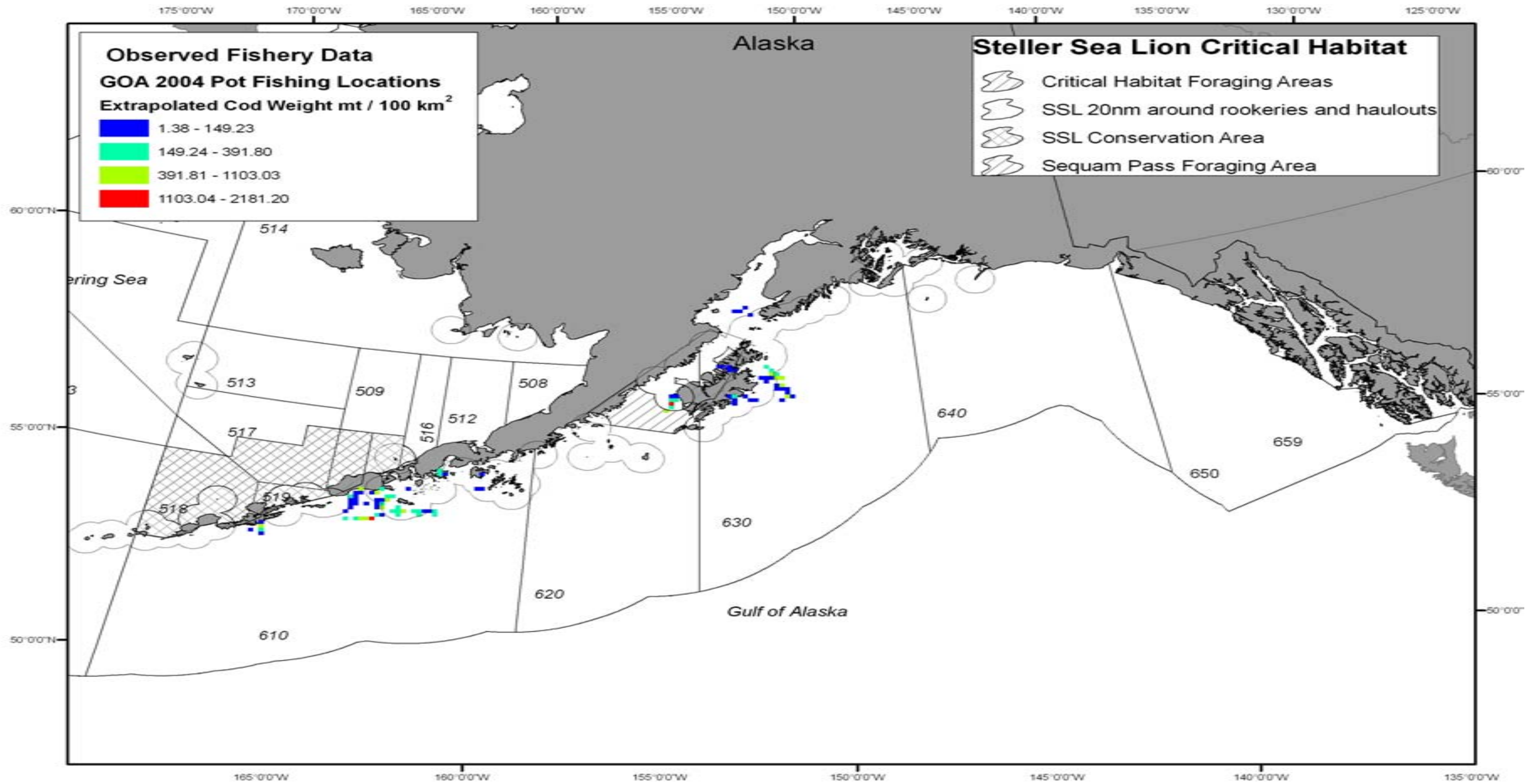


Figure A.35 **GOA Pacific cod Pot Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

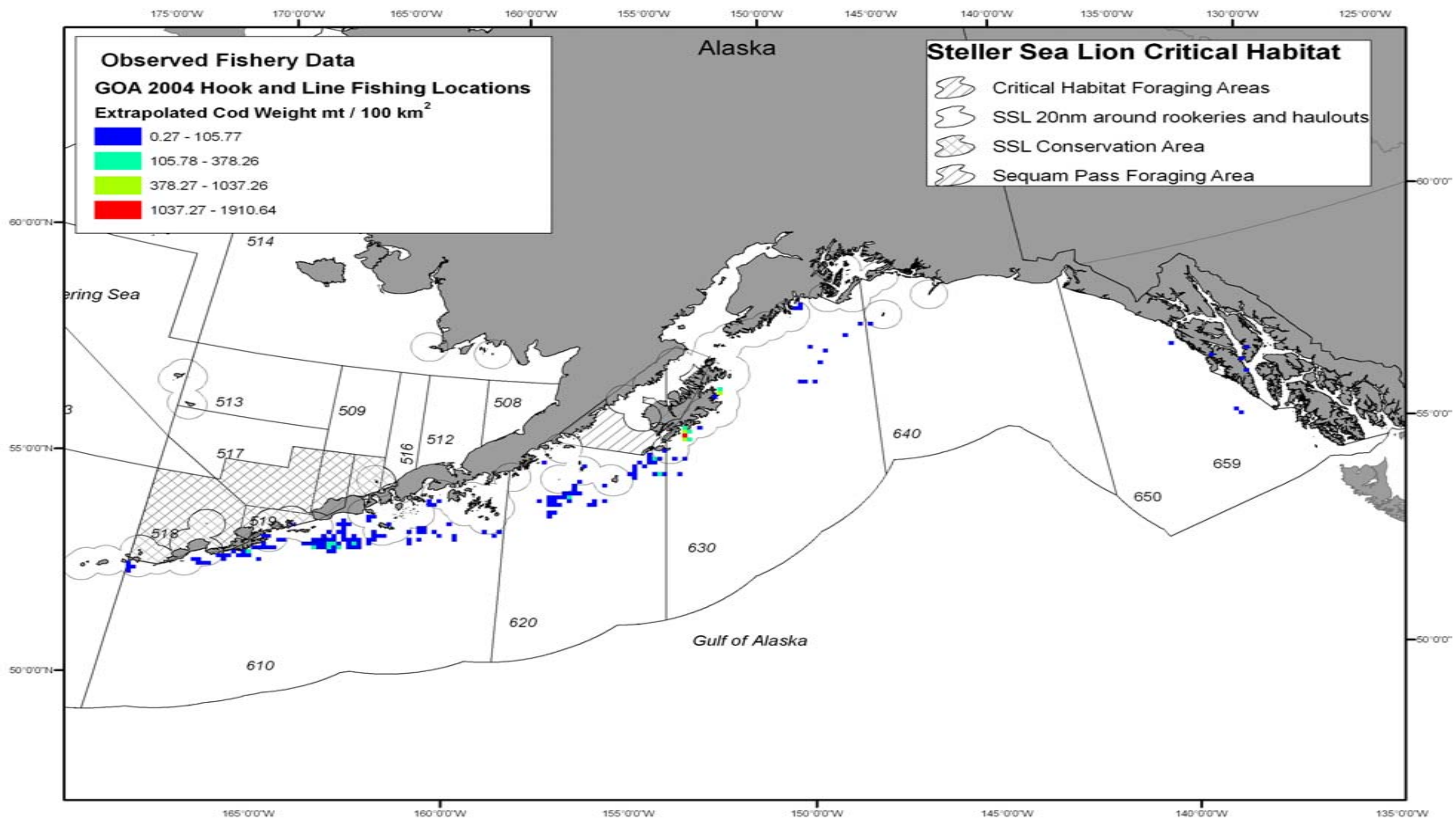


Figure A.36 **GOA Pacific cod Hook-and-line Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

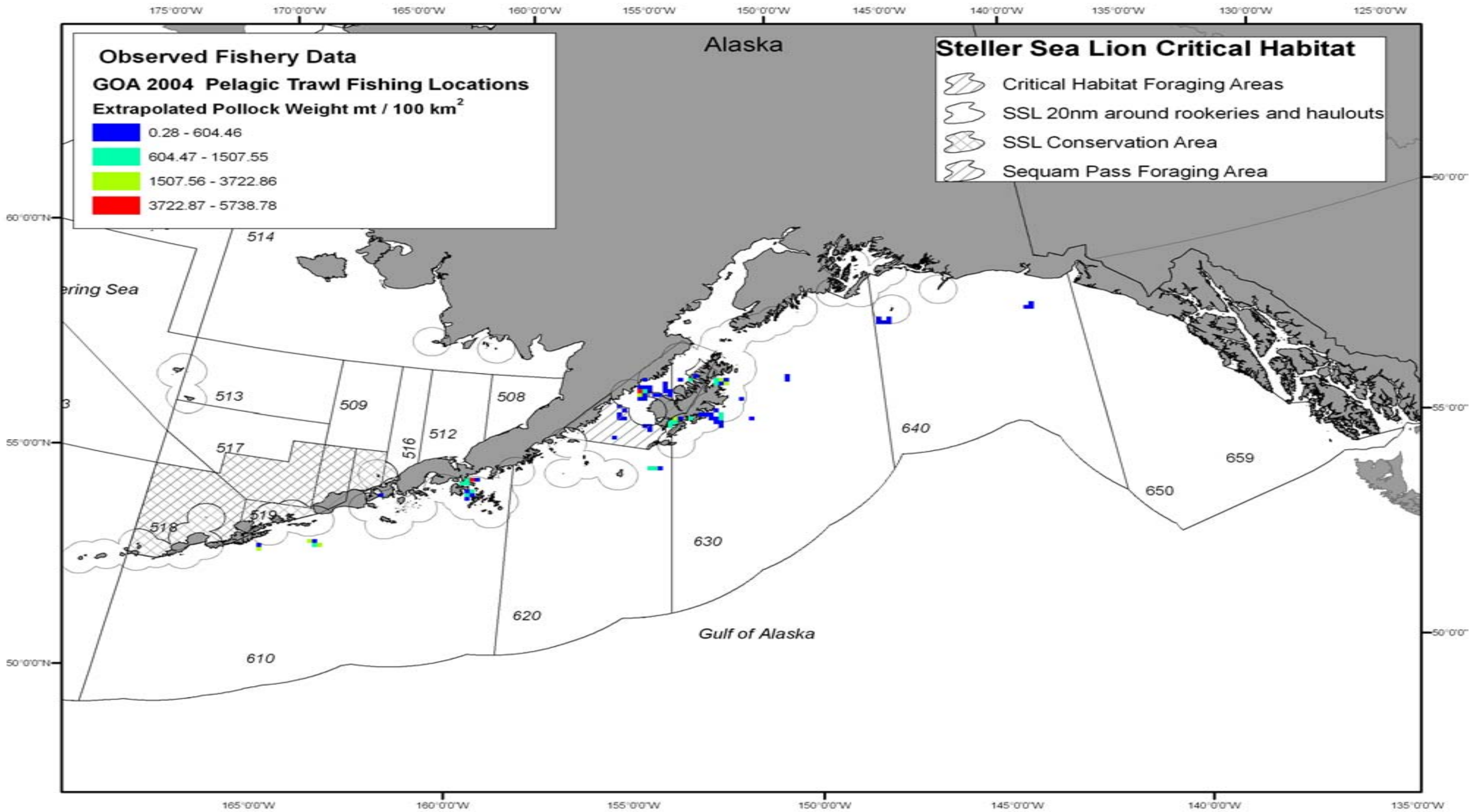


Figure A.37 **GOA Pollock Trawl Fishing Effort, 2004**
(Source: Cathy Coon, NPFMC 2006)

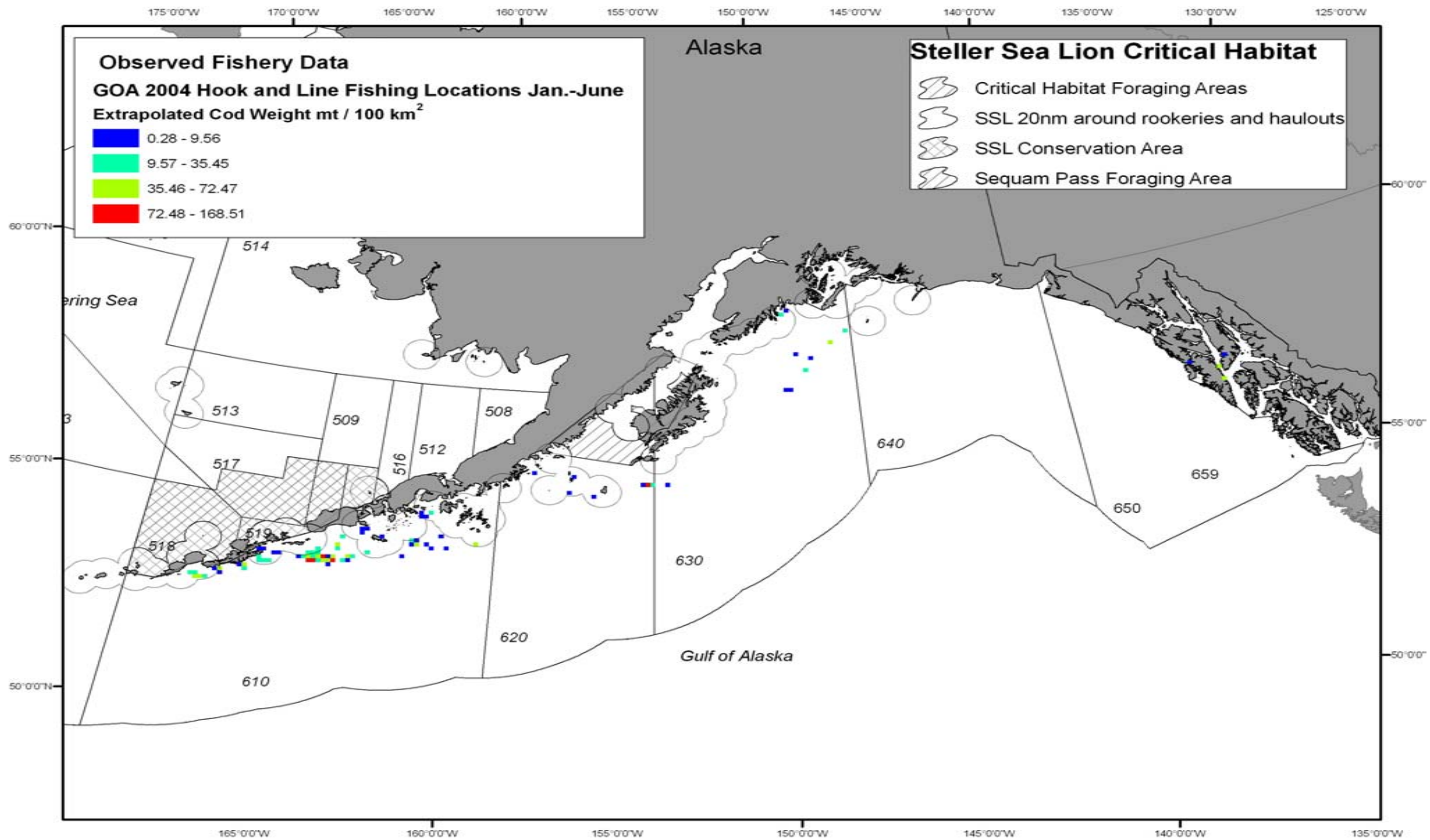


Figure A.38 **GOA Pacific cod Hook-and-line Fishing Effort, 2004 A season**
(Source: Cathy Coon, NPFMC 2006)

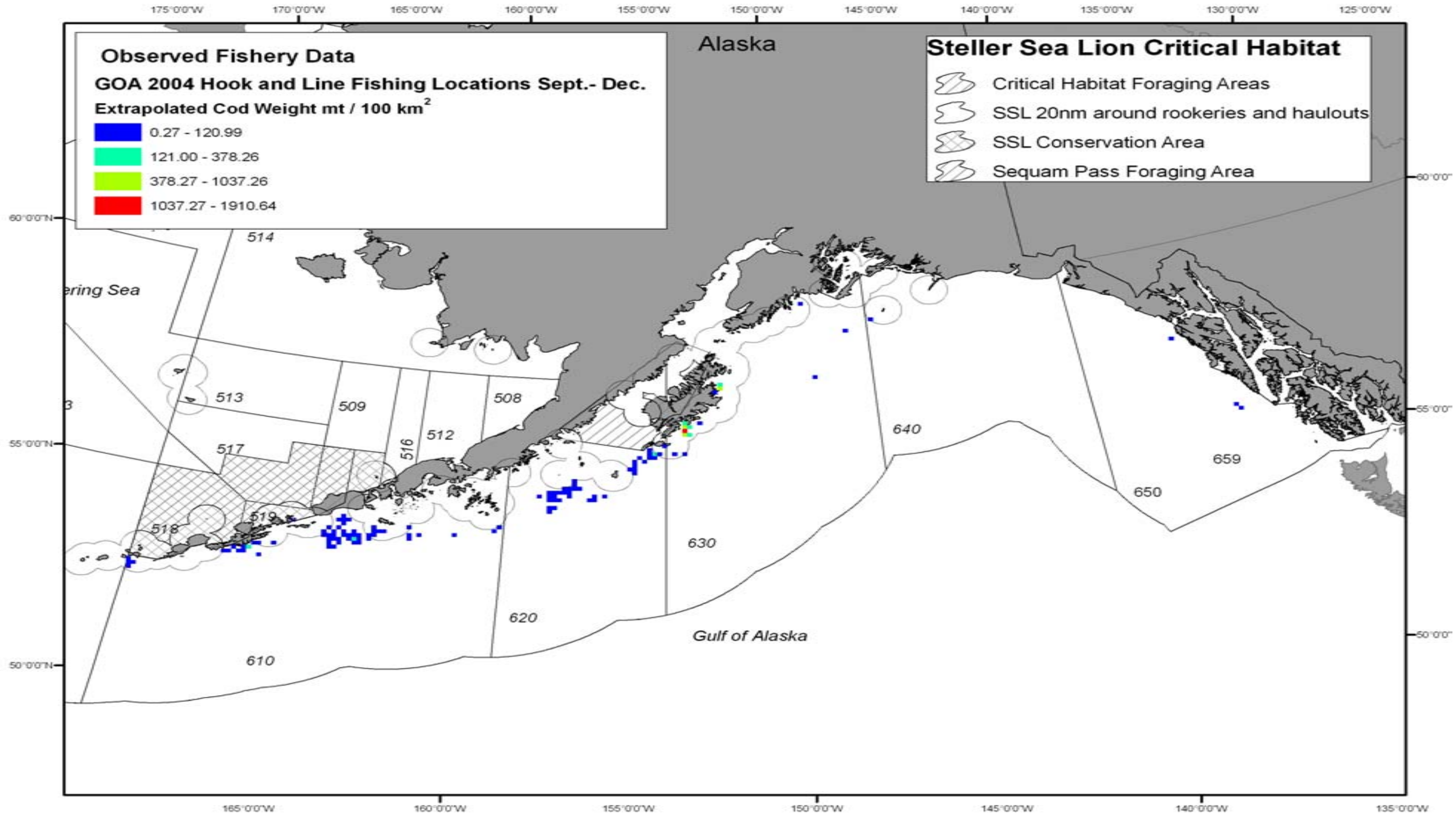


Figure A.39 **GOA Pacific cod Hook-and-line Fishing Effort, 2004 B season**
(Source: Cathy Coon, NPFMC 2006)

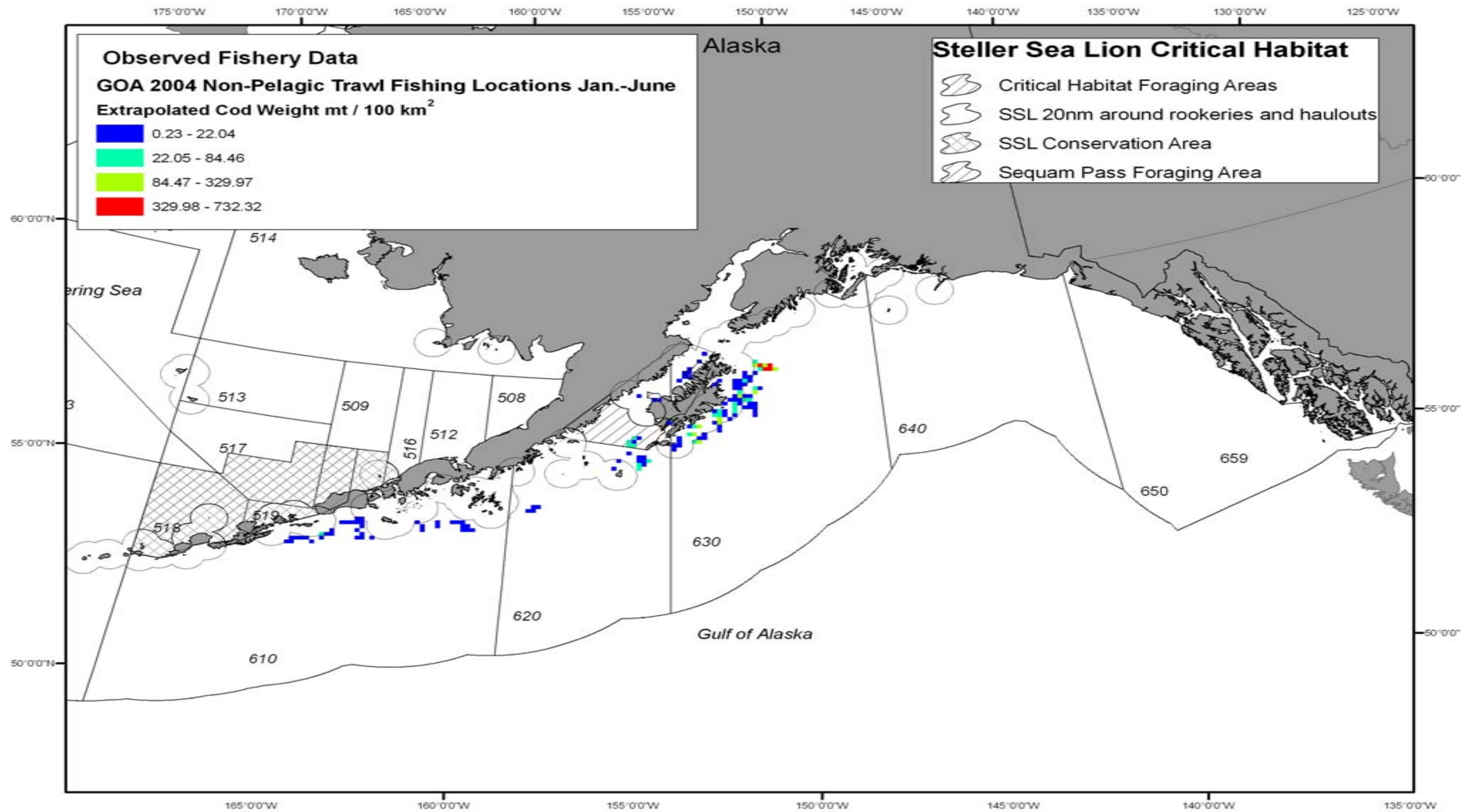


Figure A.40 **GOA Pacific cod Nonpelagic Trawl Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

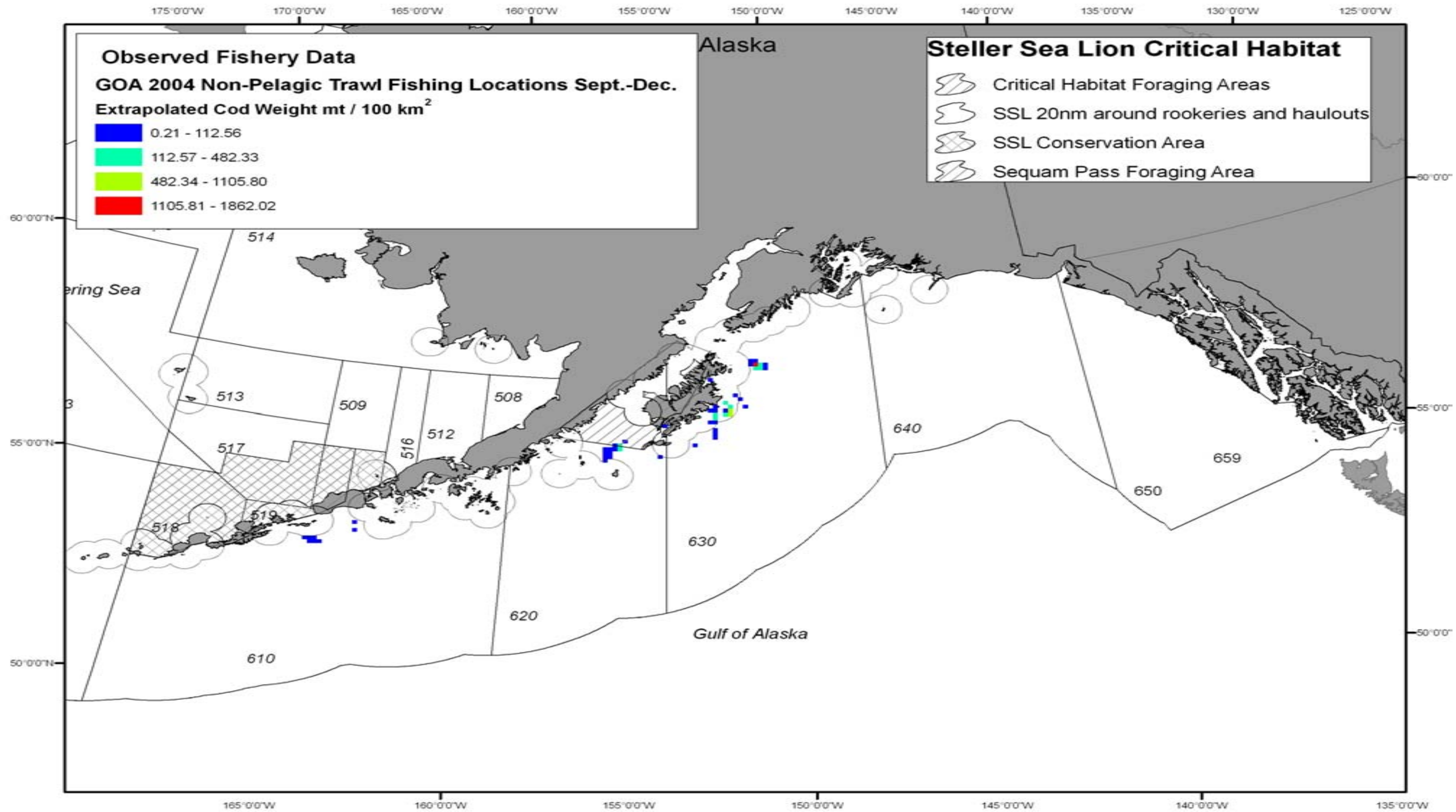


Figure A.41 **GOA Pacific cod Nonpelagic Trawl Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

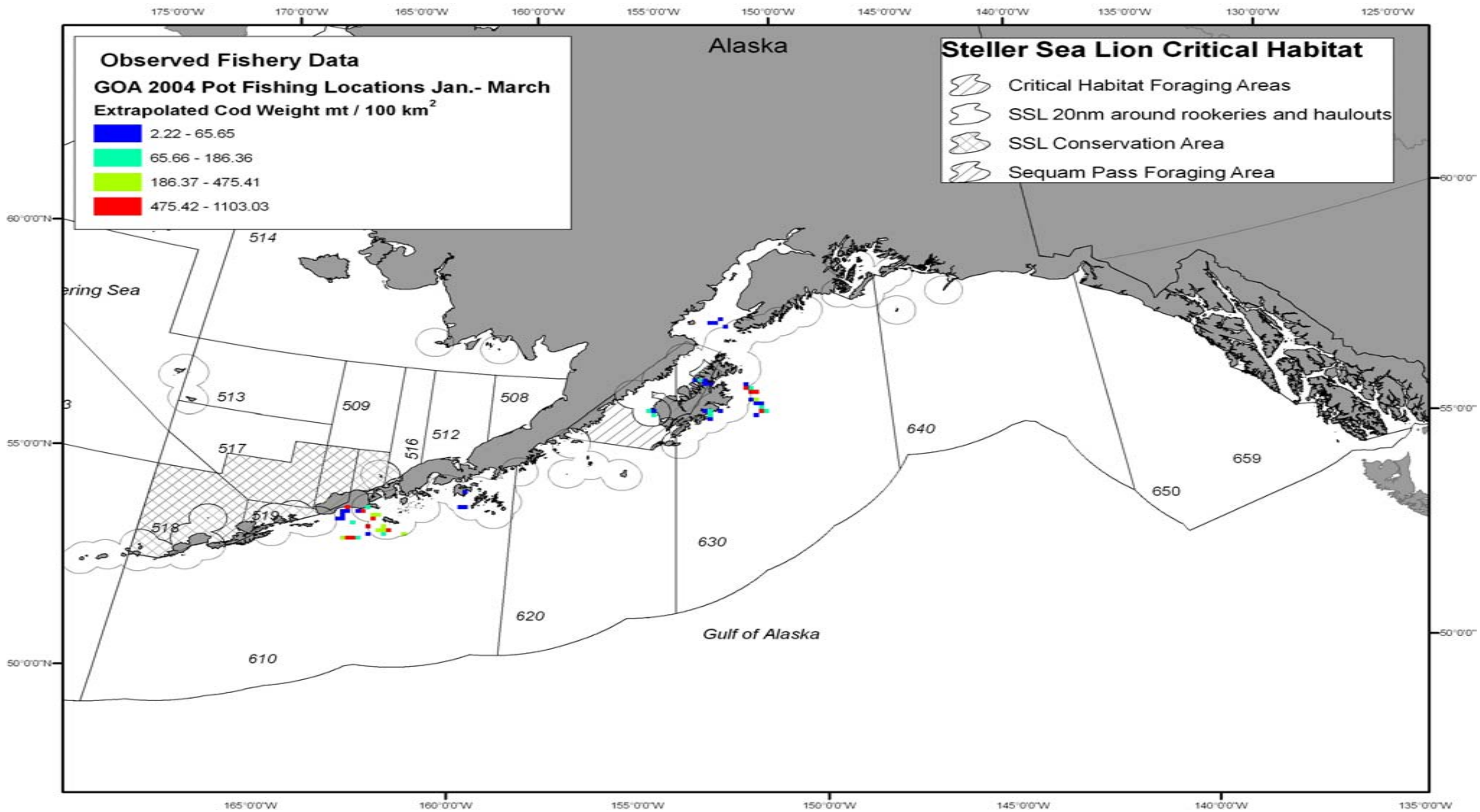


Figure A.42 **GOA Pacific cod Pot Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

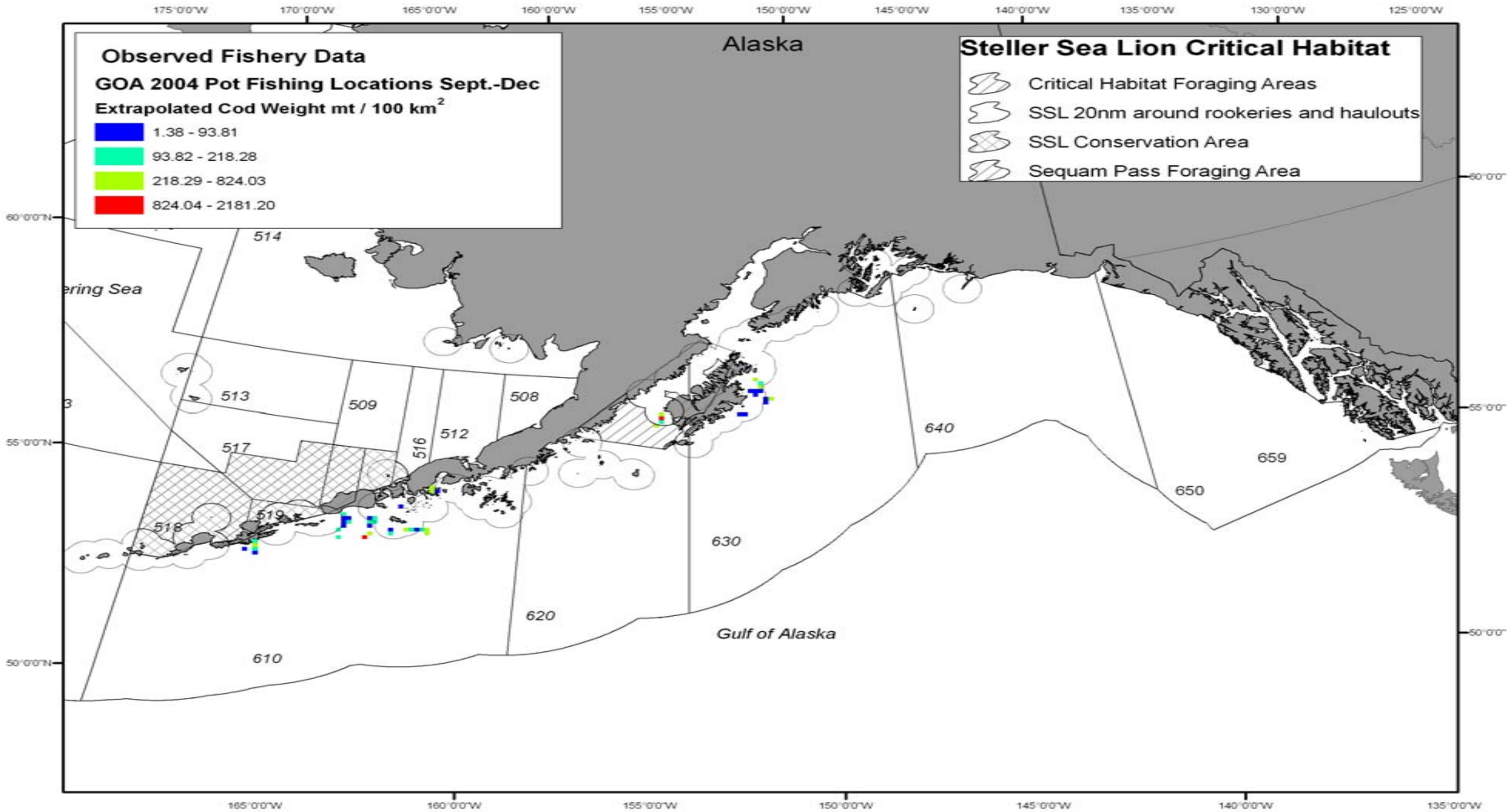


Figure A.43 **GOA Pacific cod Pot Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

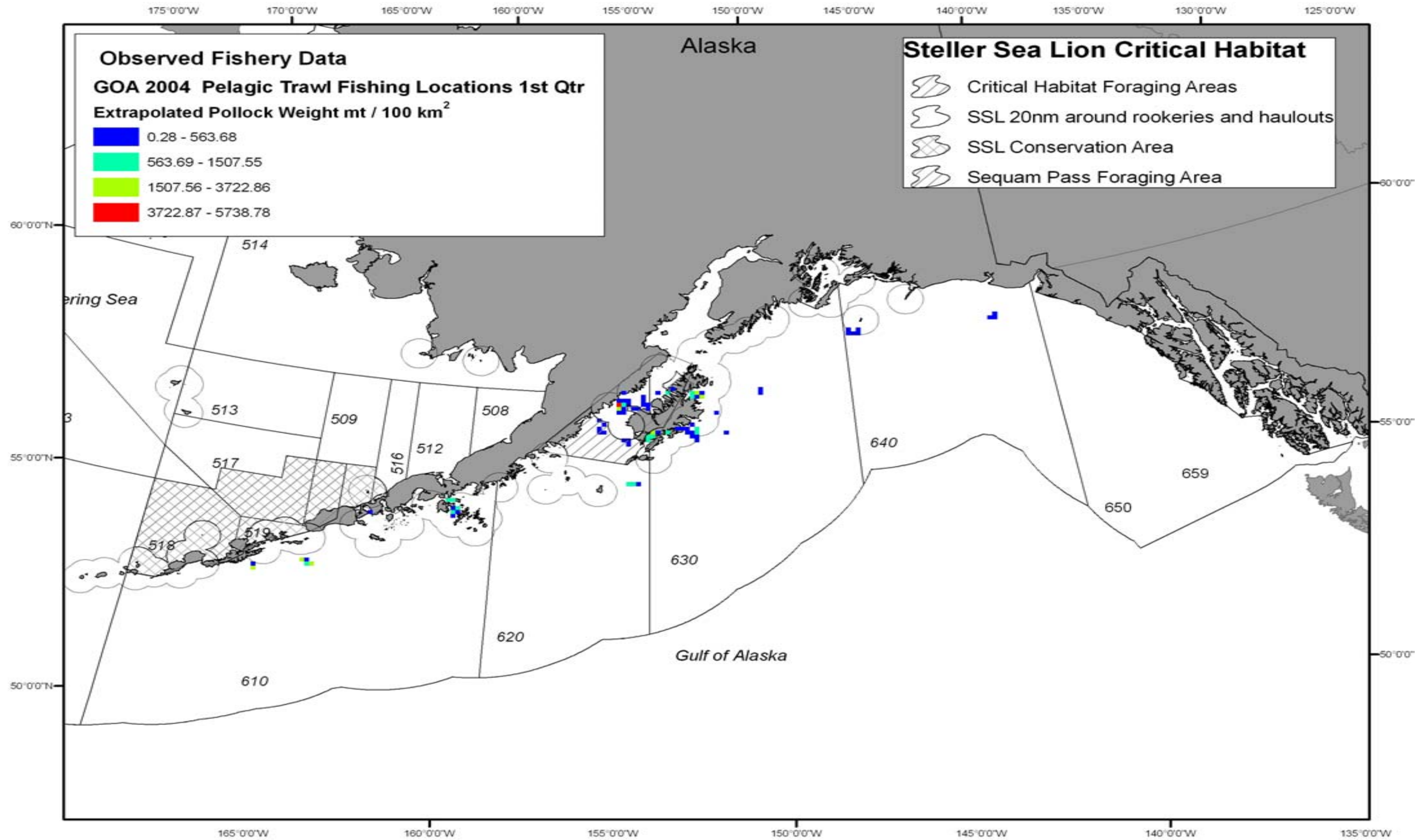


Figure A.44 **GOA Pollock Fishing Effort, 2004 First Quarter**
(Source: Cathy Coon, NPFMC 2006)

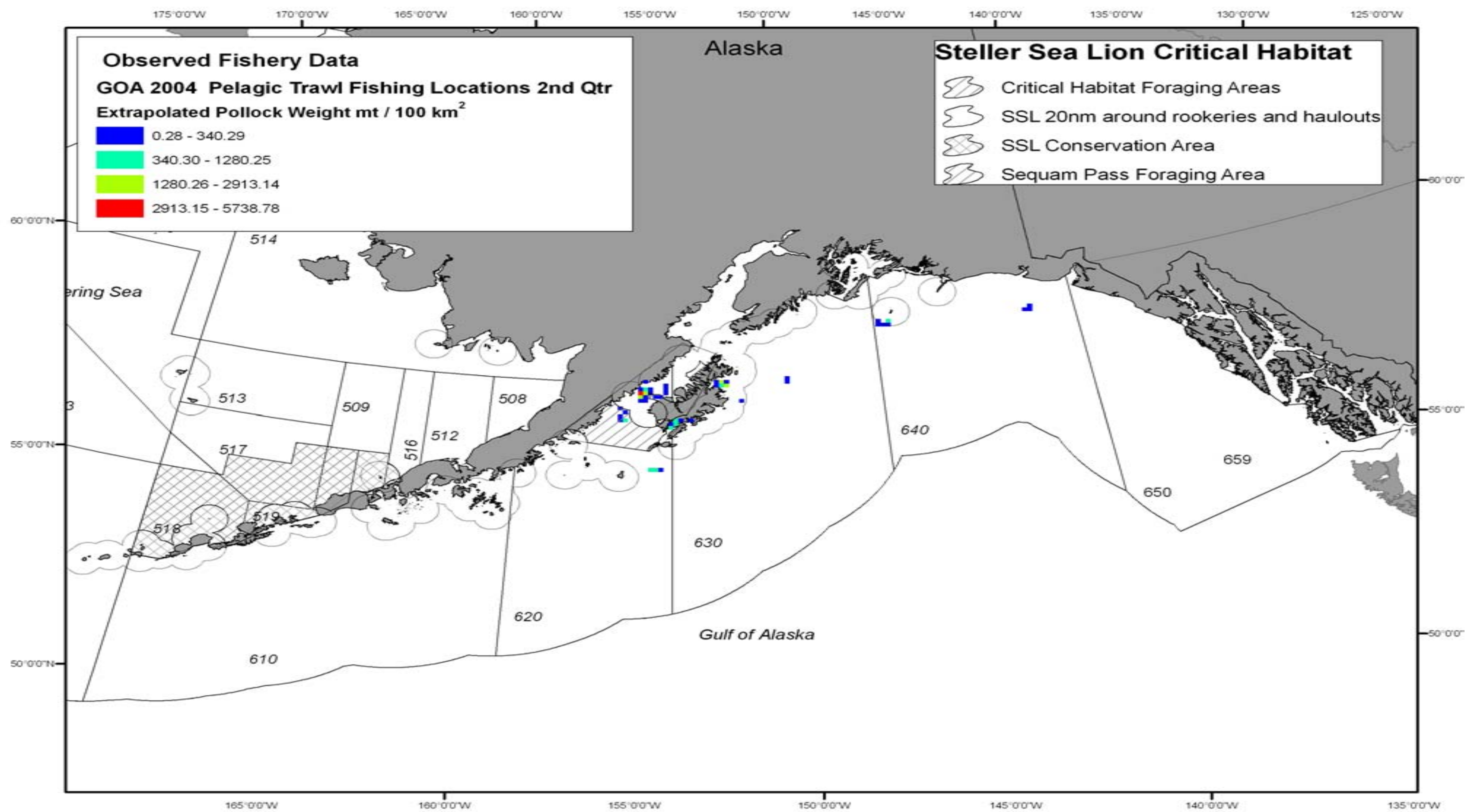


Figure A.45 **GOA Pollock Fishing Effort, 2004 Second Quarter**
(Source: Cathy Coon, NPFMC 2006)

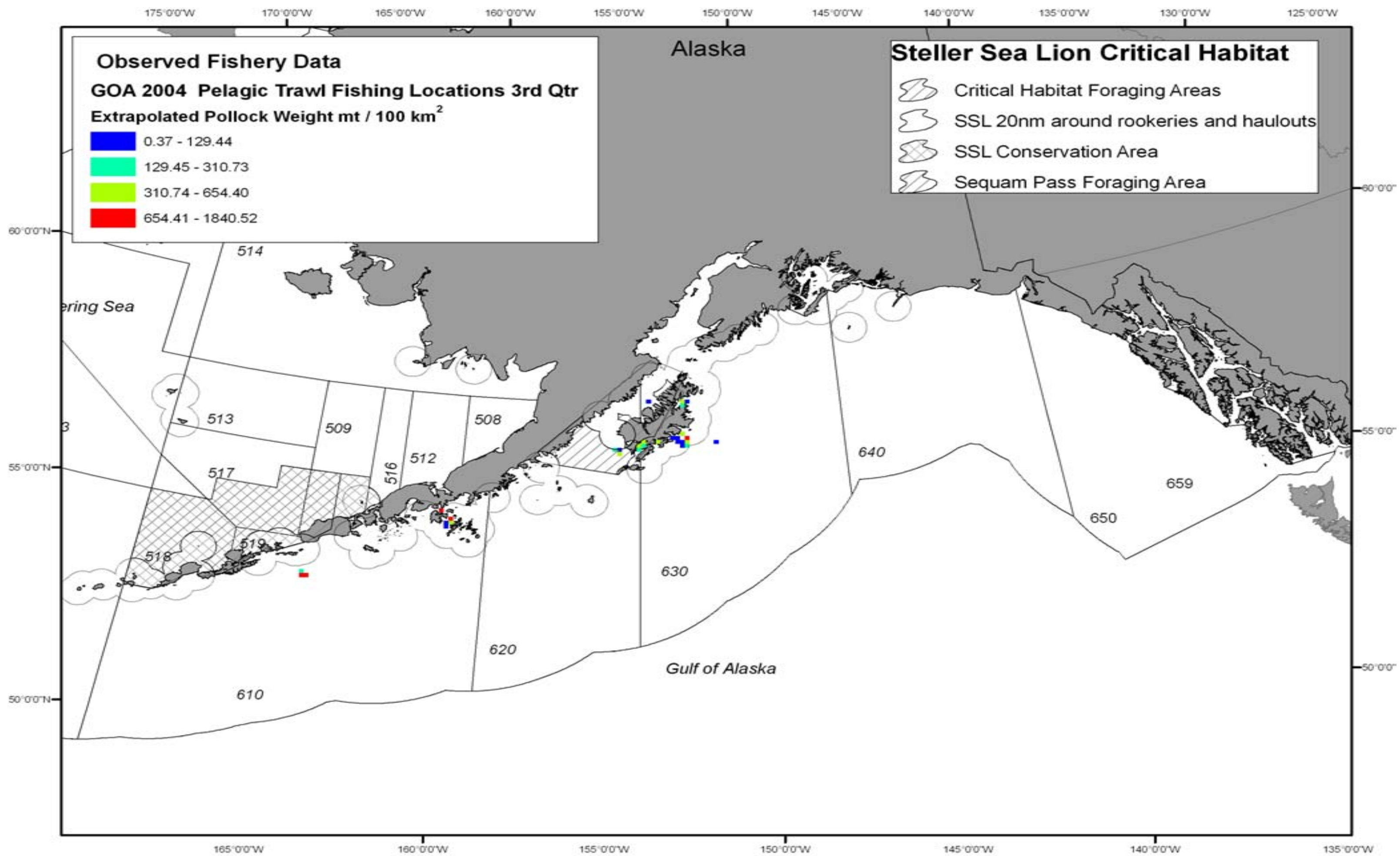


Figure A.46 **GOA Pollock Fishing Effort, 2004 Third Quarter**
(Source: Cathy Coon, NPFMC 2006)

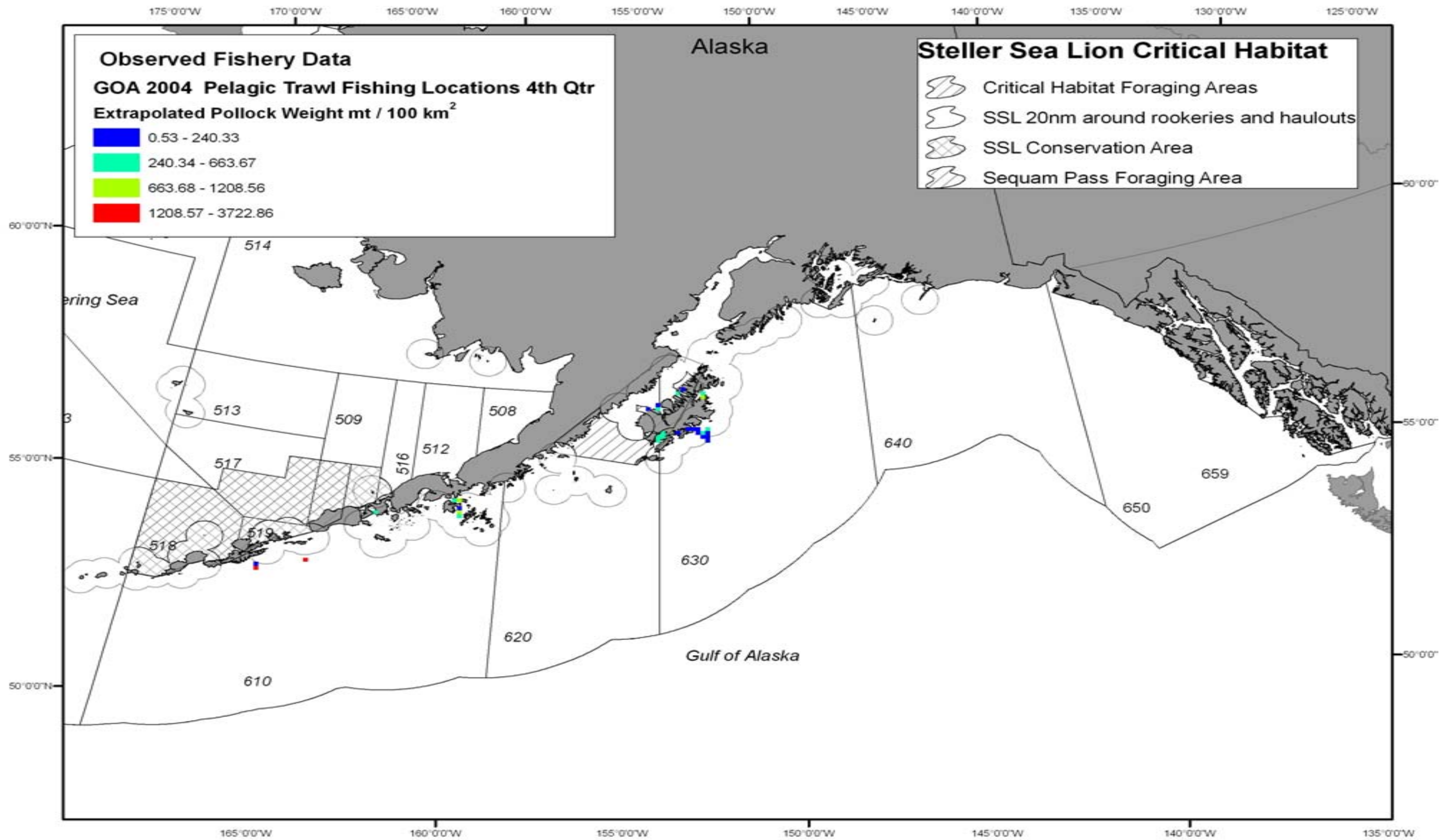


Figure A.47 **GOA Pollock Fishing Effort, 2004 Fourth Quarter**
(Source: Cathy Coon, NPFMC 2006)

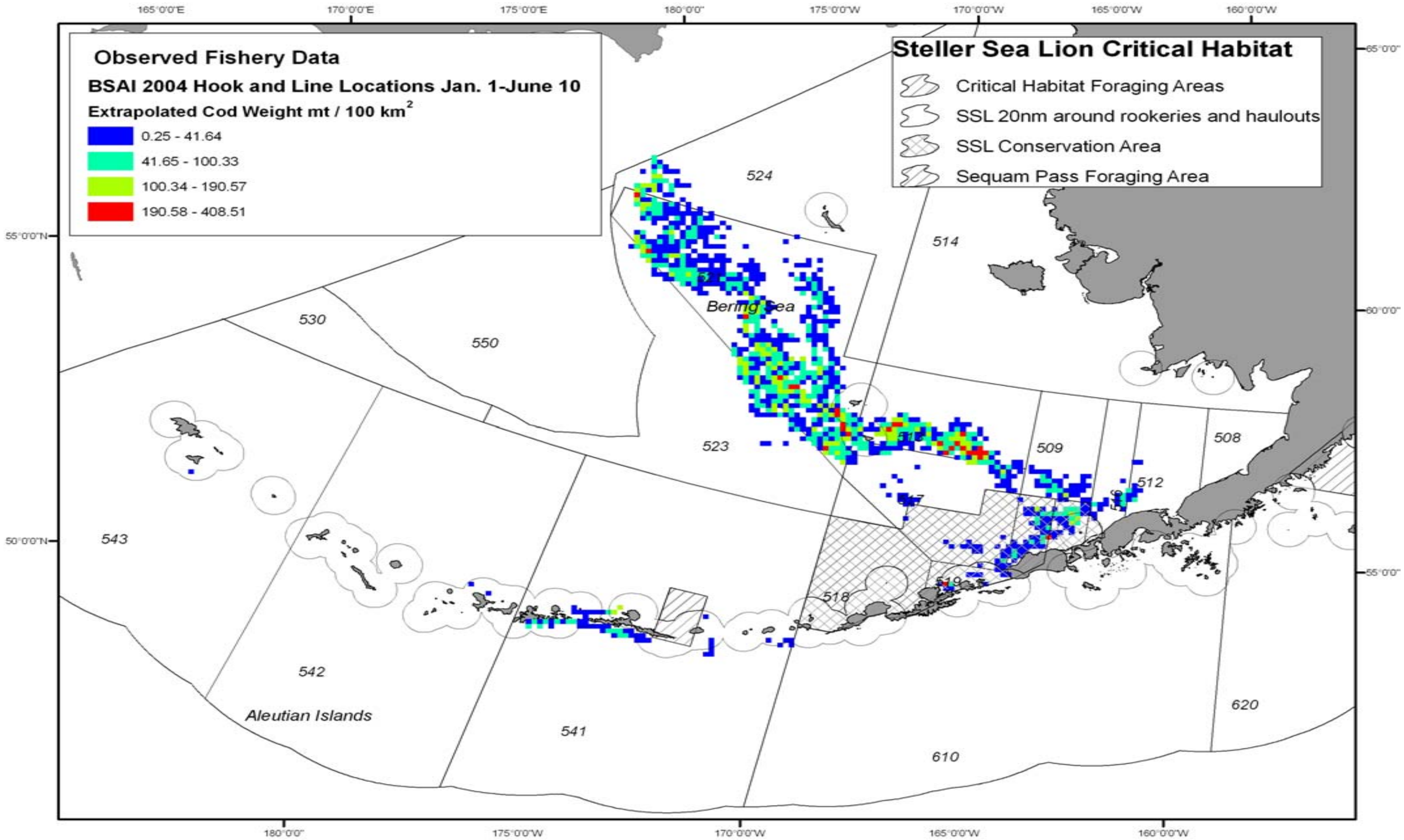


Figure A.48 **BSAI Pacific Cod Hook-and-line Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

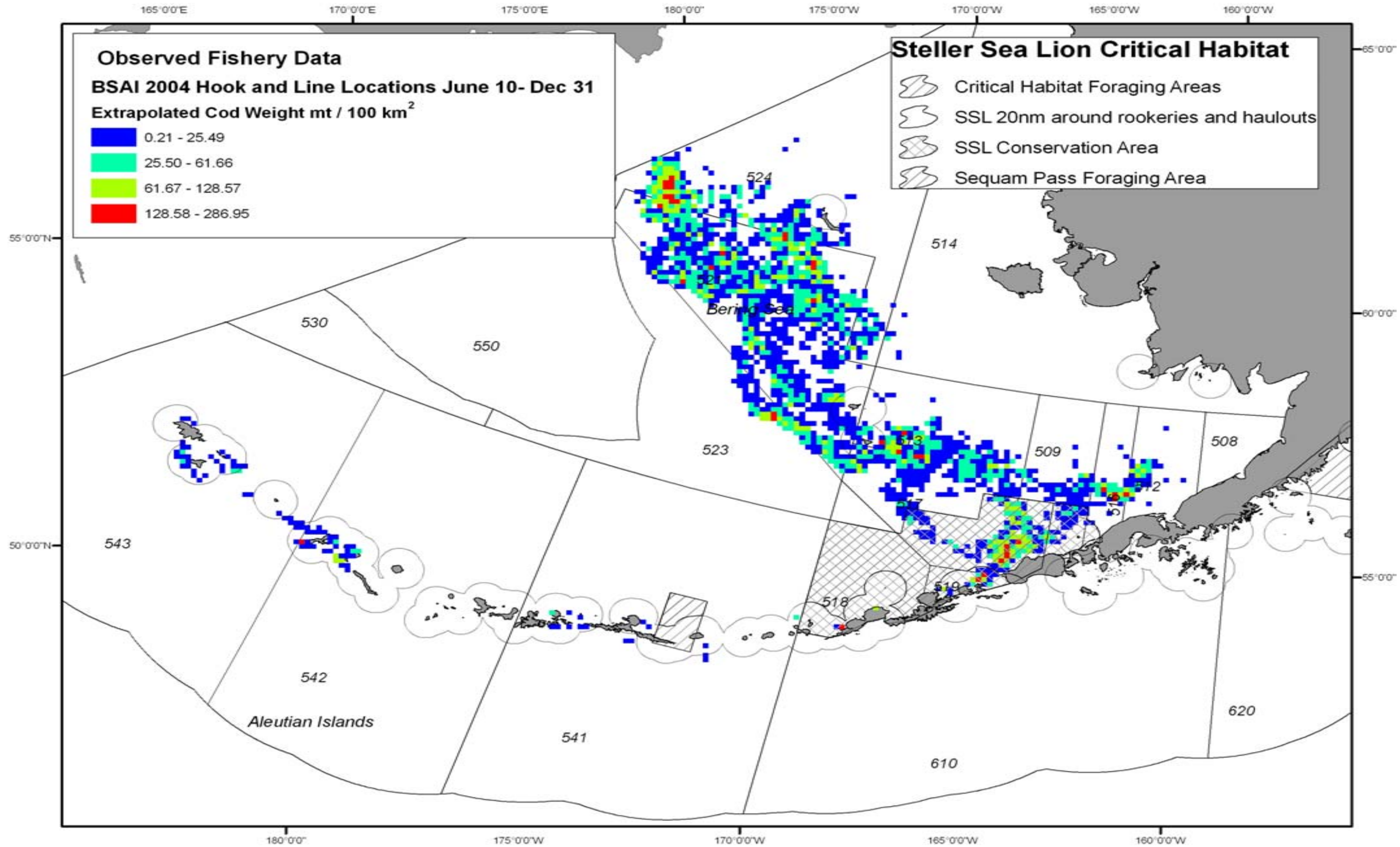


Figure A.49 **BSAI Pacific Cod Hook-and-line Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

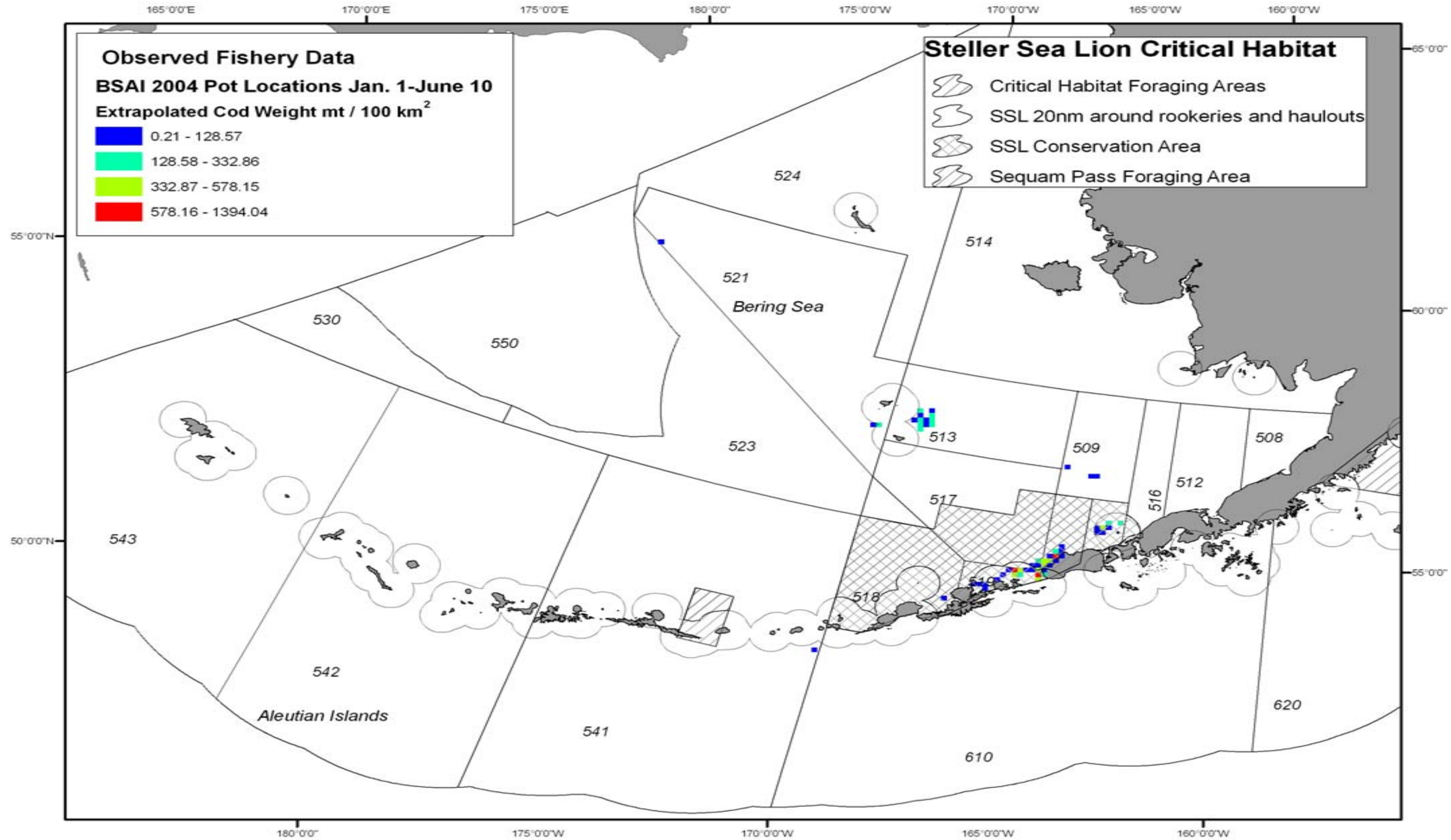


Figure A.50 BSAI Pacific Cod Pot Fishing Effort, 2004 A Season
(Source: Cathy Coon, NPFMC 2006)

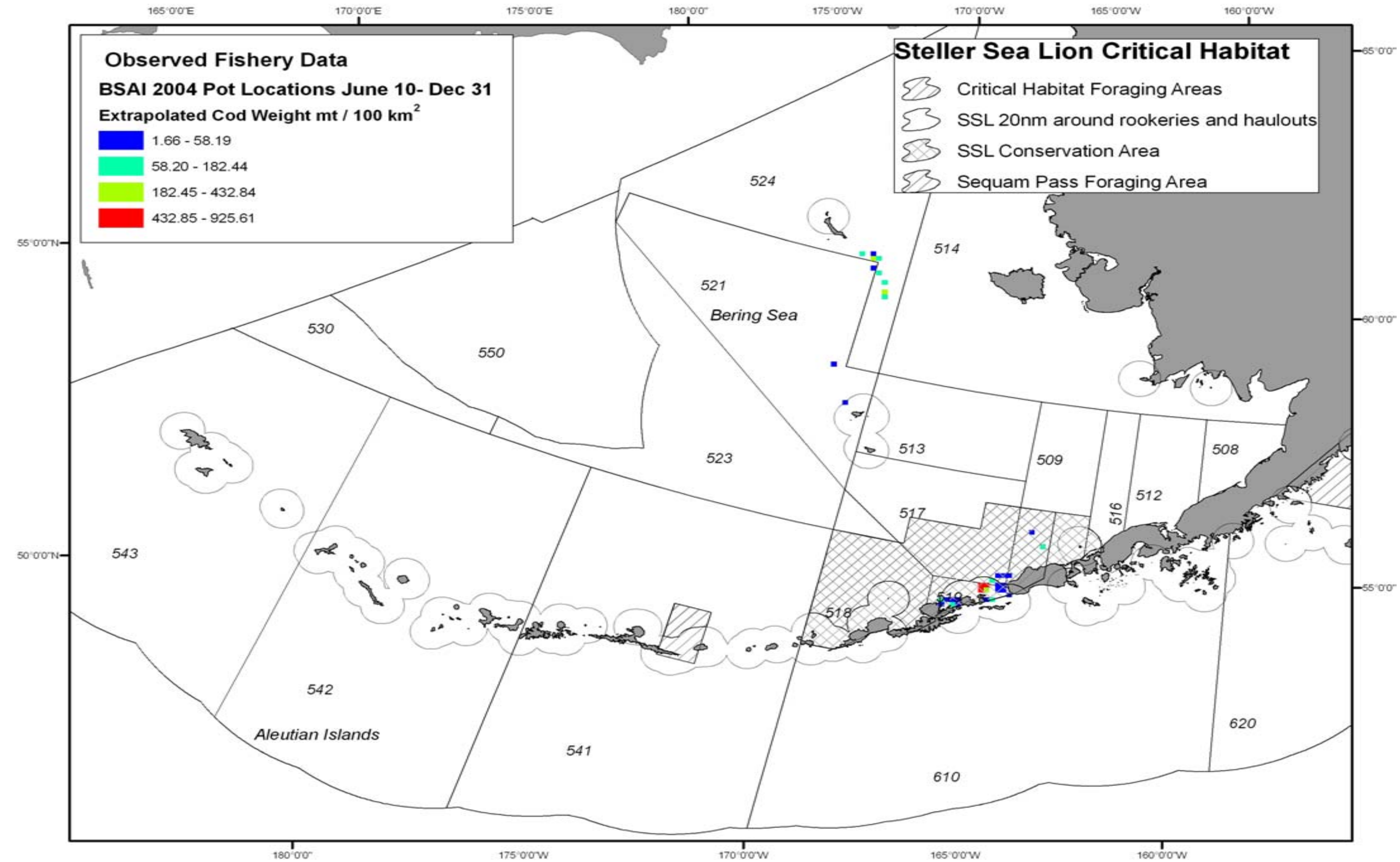


Figure A.51 **BSAI Pacific Cod Pot Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

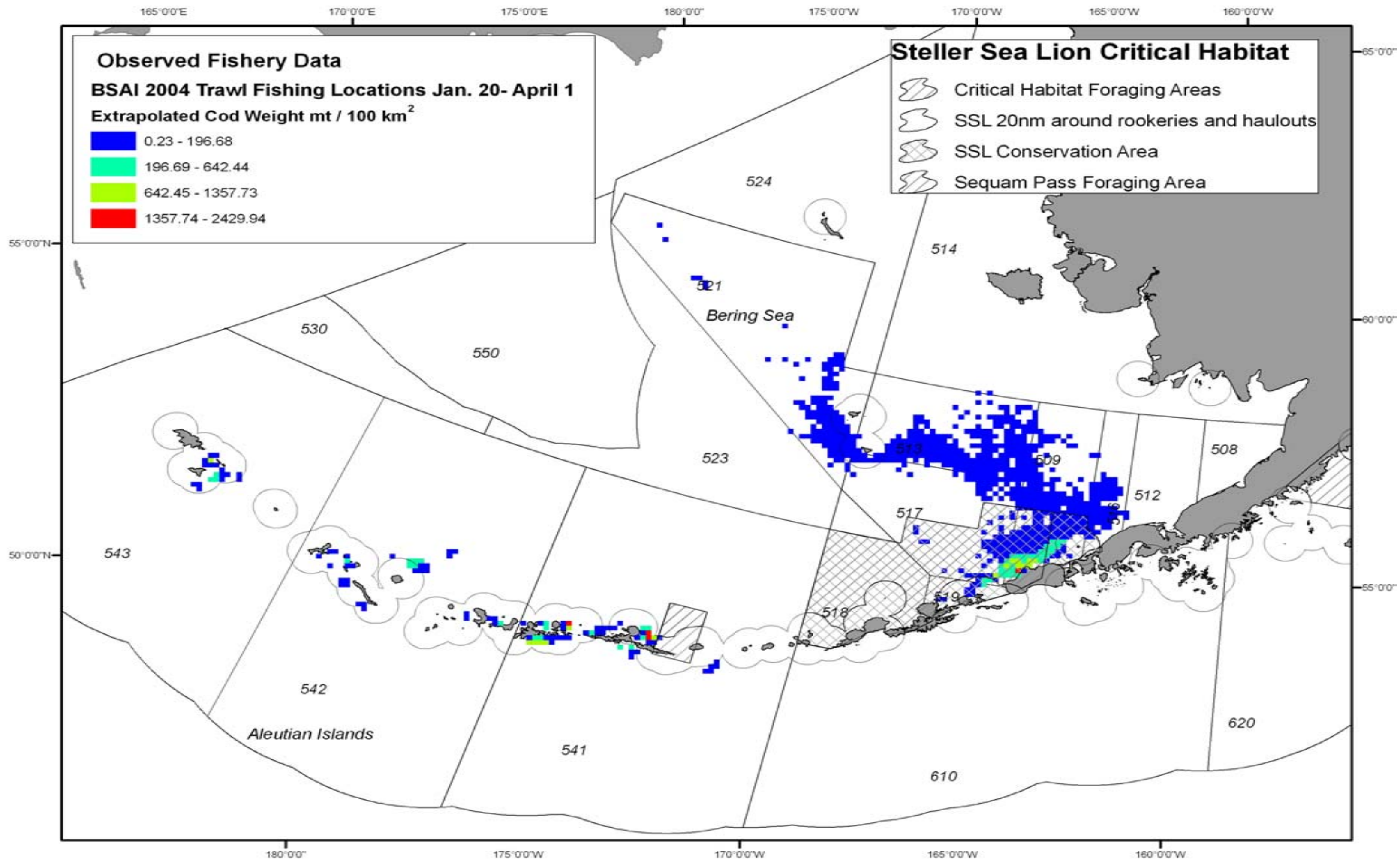


Figure A.52 **BSAI Pacific Cod Trawl Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

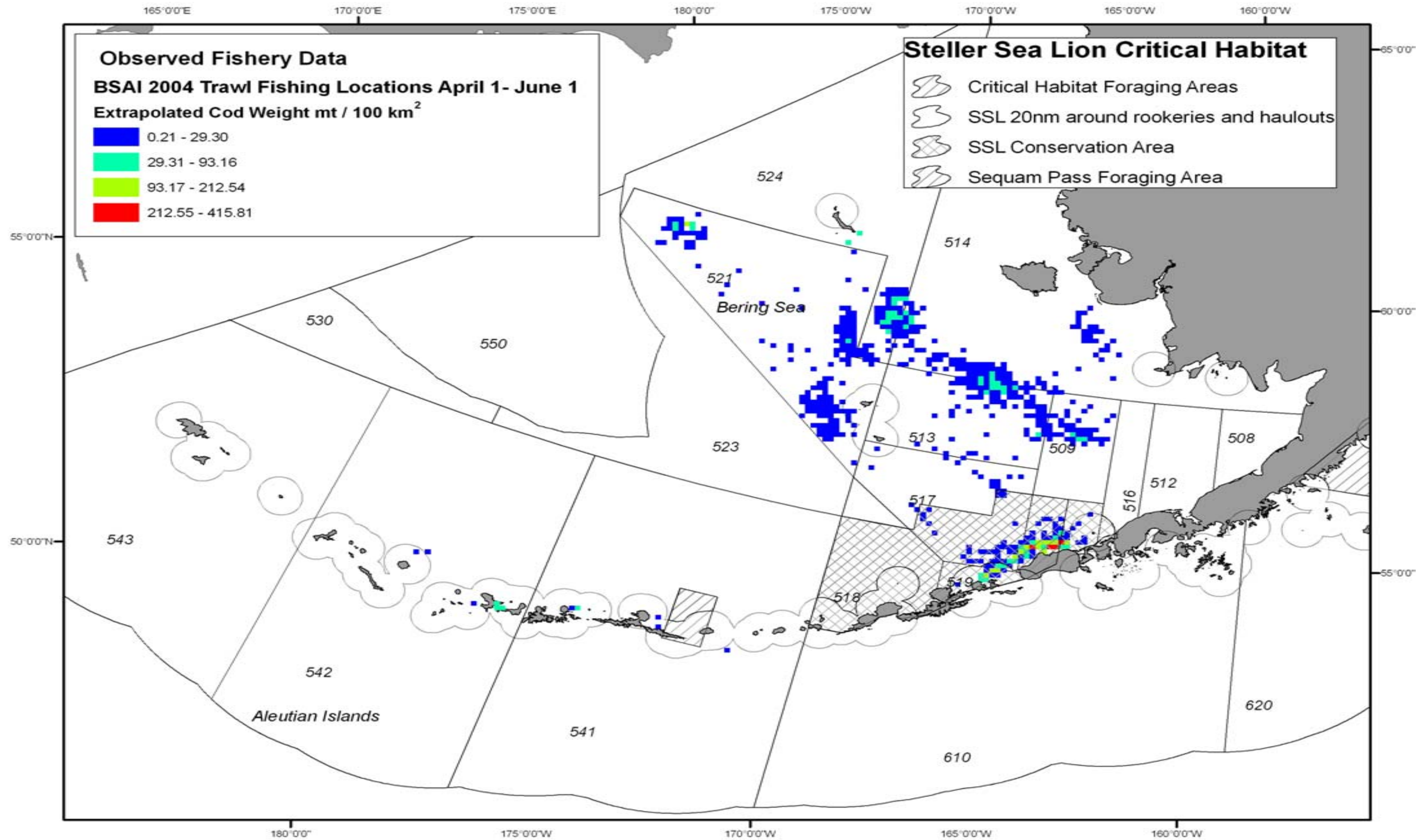


Figure A.53 **BSAI Pacific Cod Trawl Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

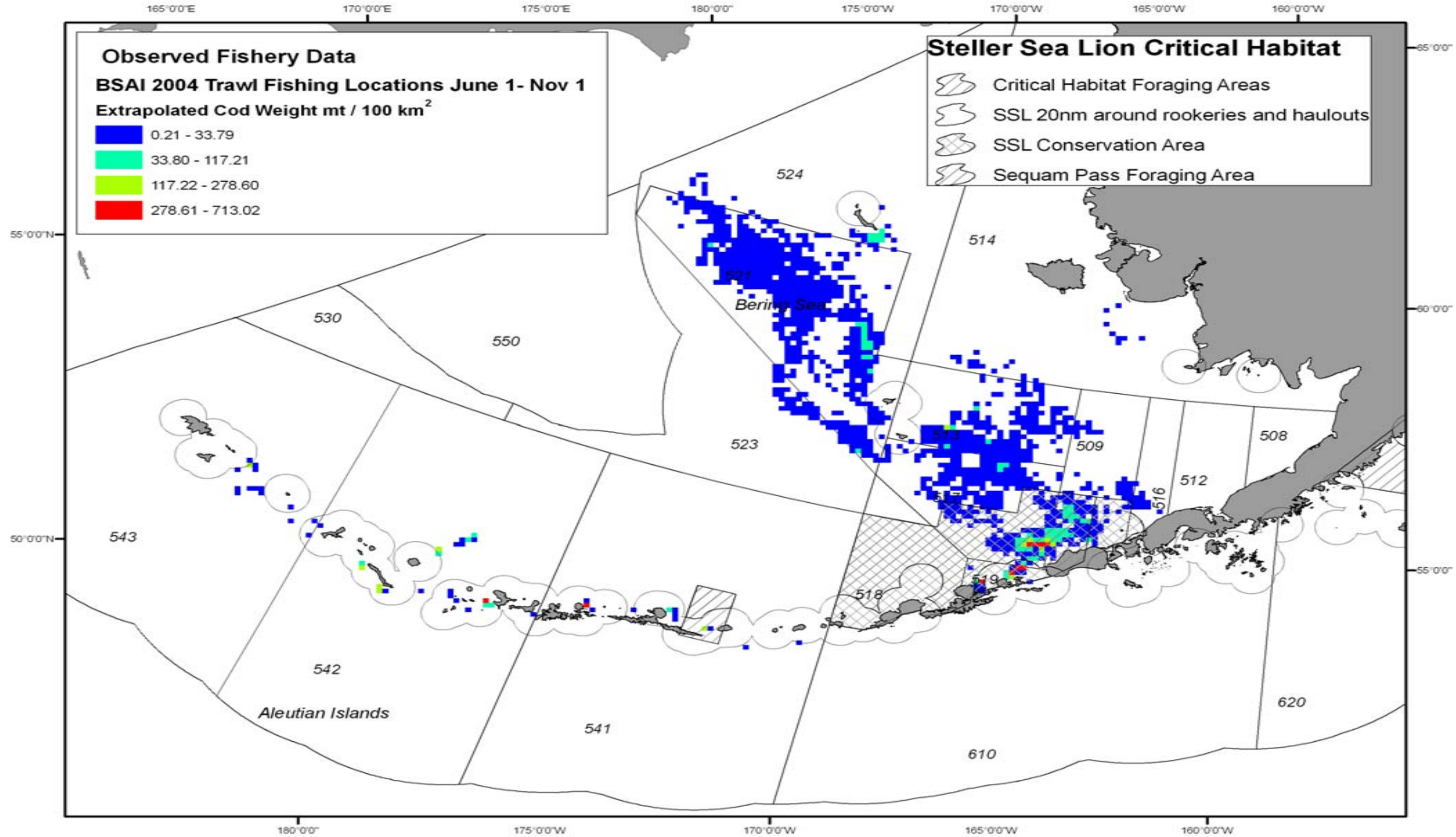


Figure A.54 **BSAI Pacific Cod Trawl Fishing Effort, 2004 C Season**
(Source: Cathy Coon, NPFMC 2006)

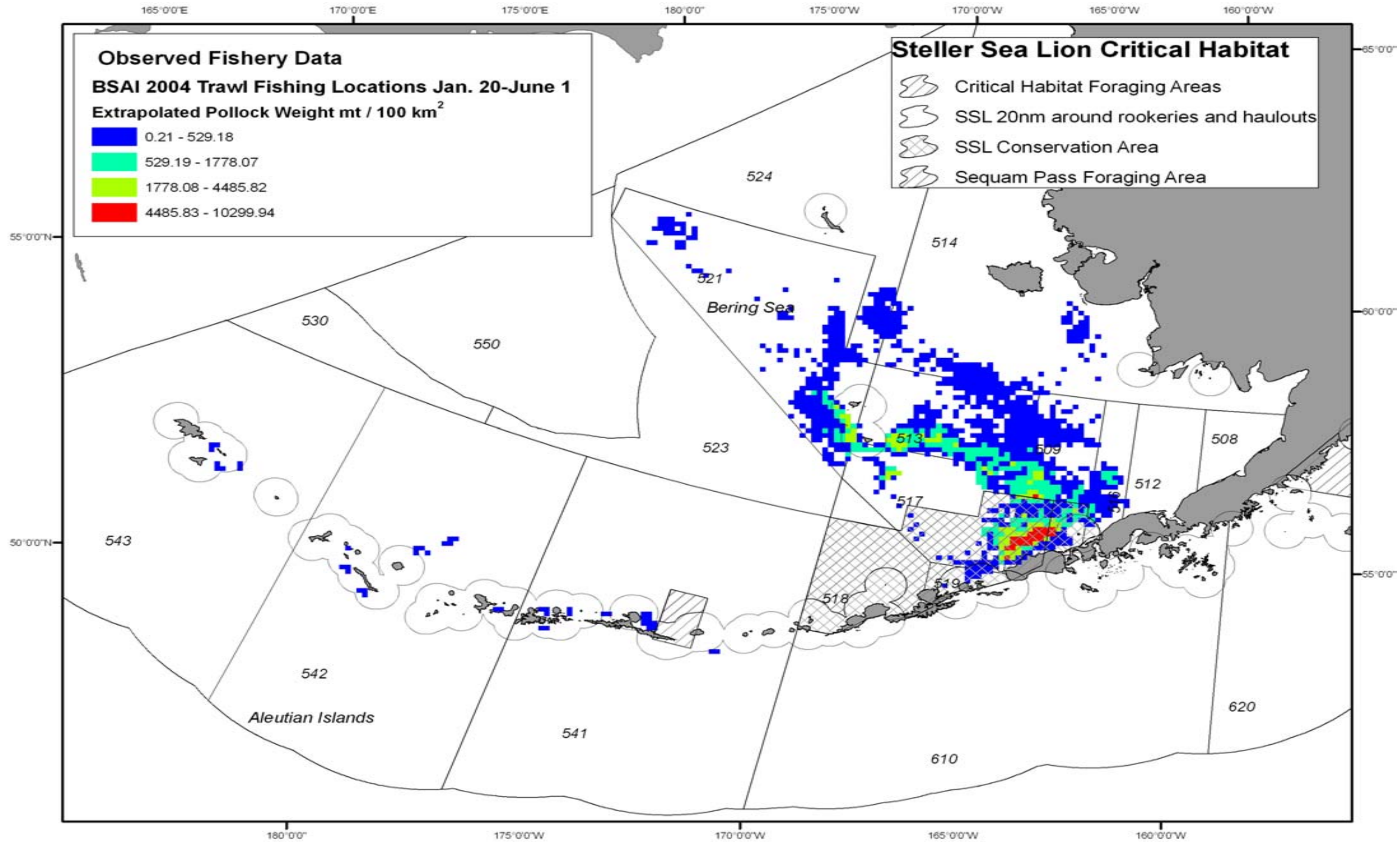


Figure A.55 **BSAI Pollock Trawl Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

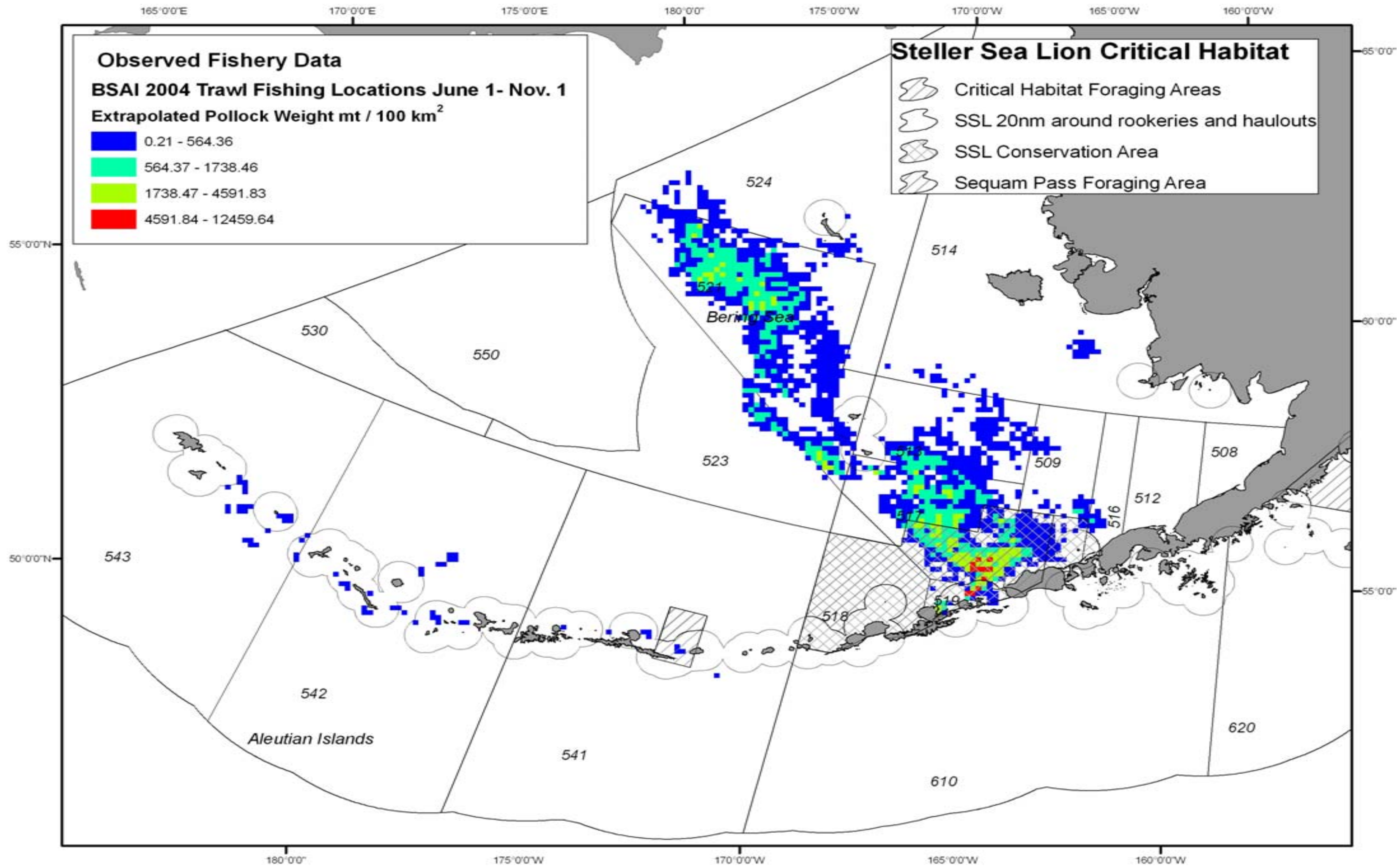


Figure A.56 **BSAI Pollock Trawl Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

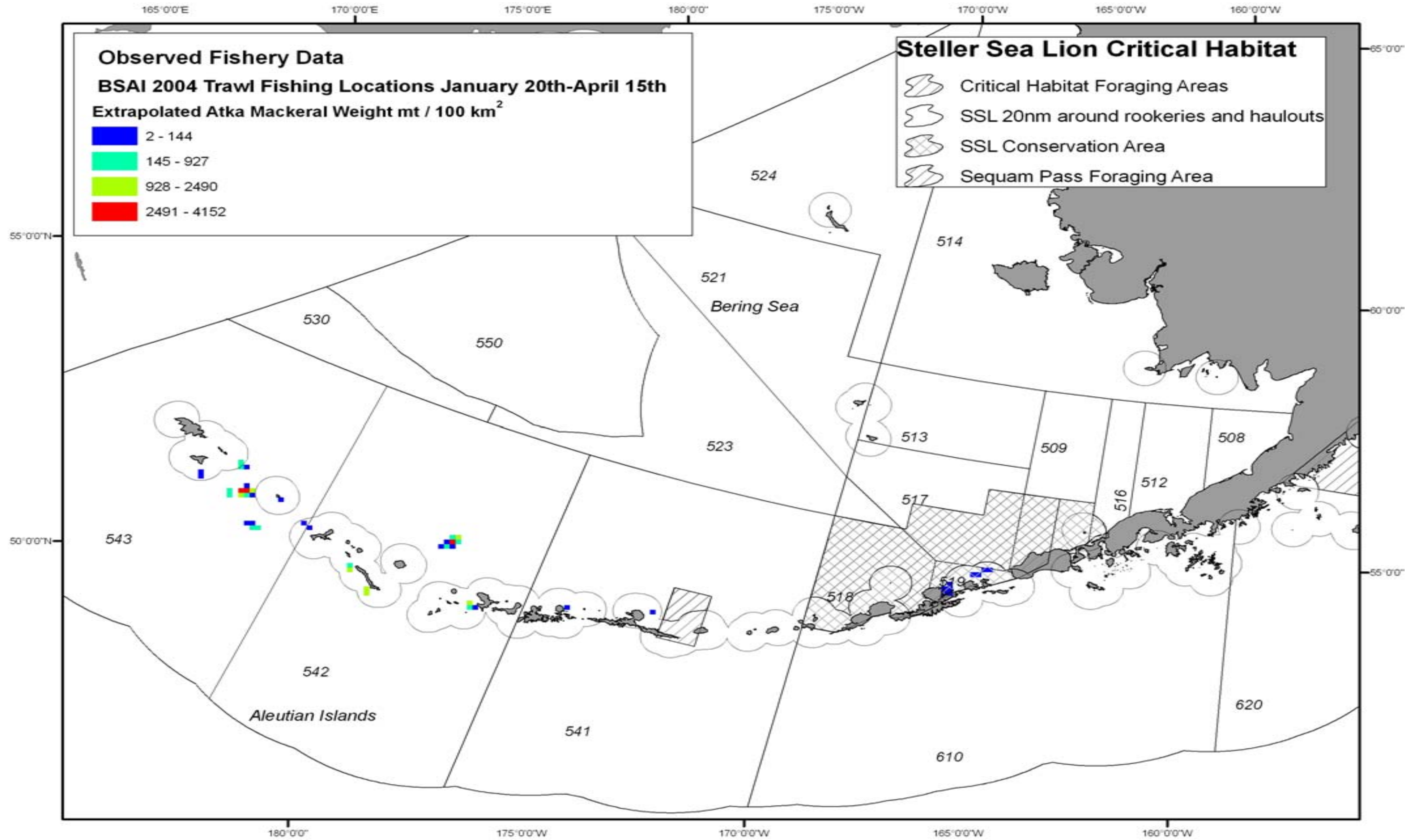


Figure A.57 **BSAI Atka Mackerel Trawl Fishing Effort, 2004 A Season**
(Source: Cathy Coon, NPFMC 2006)

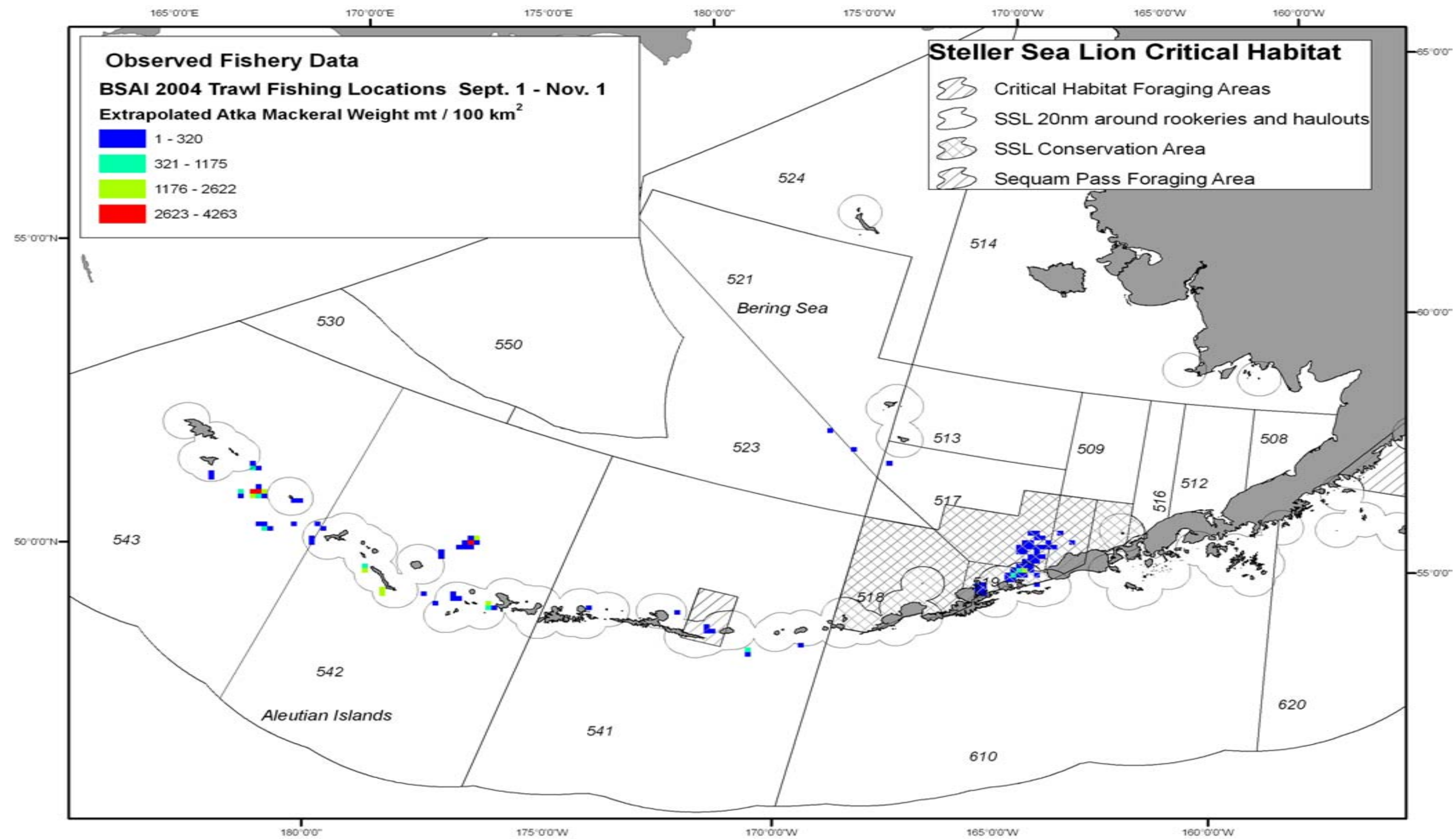


Figure A.58 **BSAI Atka Mackerel Trawl Fishing Effort, 2004 B Season**
(Source: Cathy Coon, NPFMC 2006)

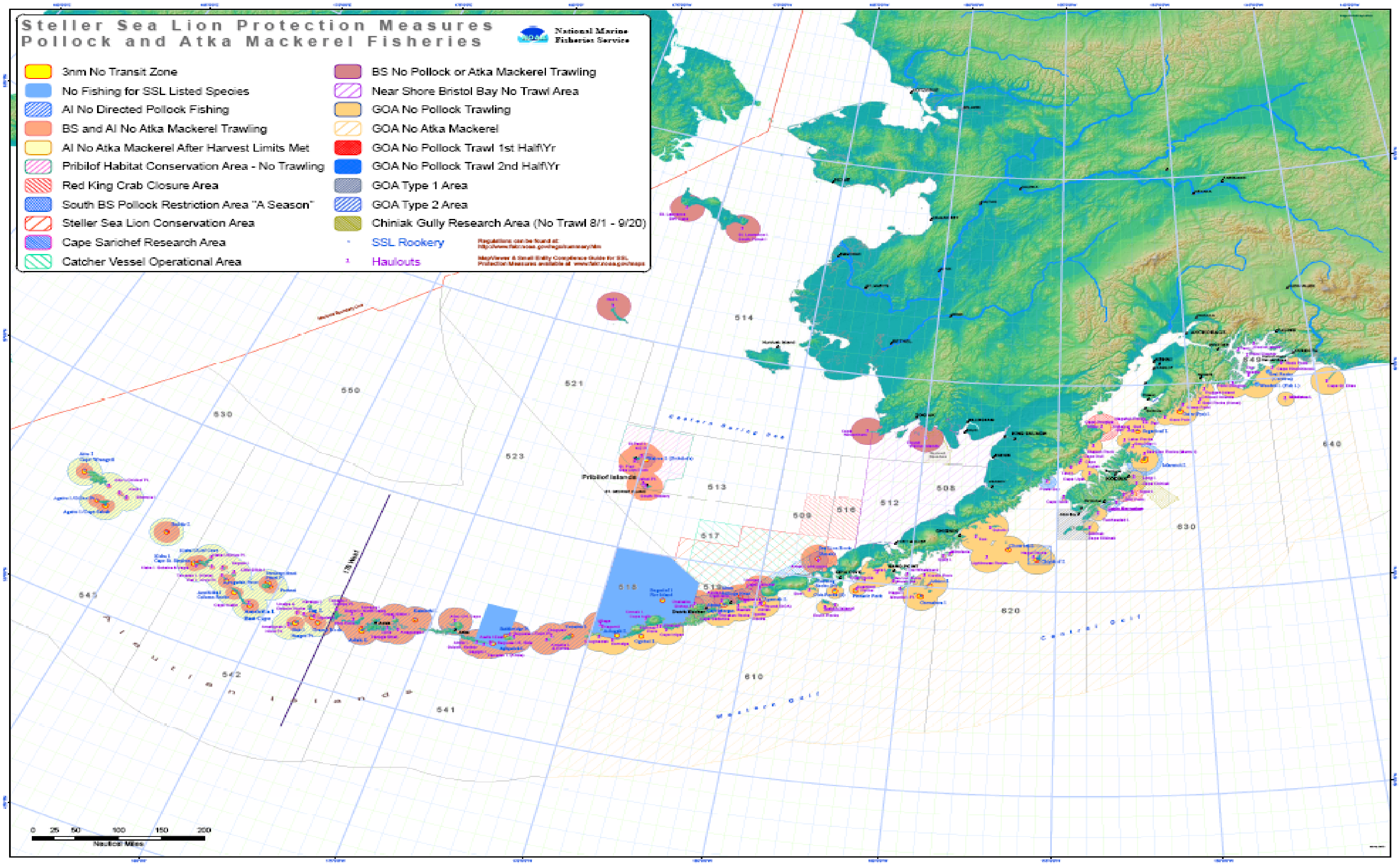


Figure A.59 **Steller Sea Lion Protection Measures for the Pollock and Atka Mackerel Fisheries**
(Source: http://www.fakr.noaa.gov/protectedresources/stellers/maps/Pollock_Atka0105.pdf)

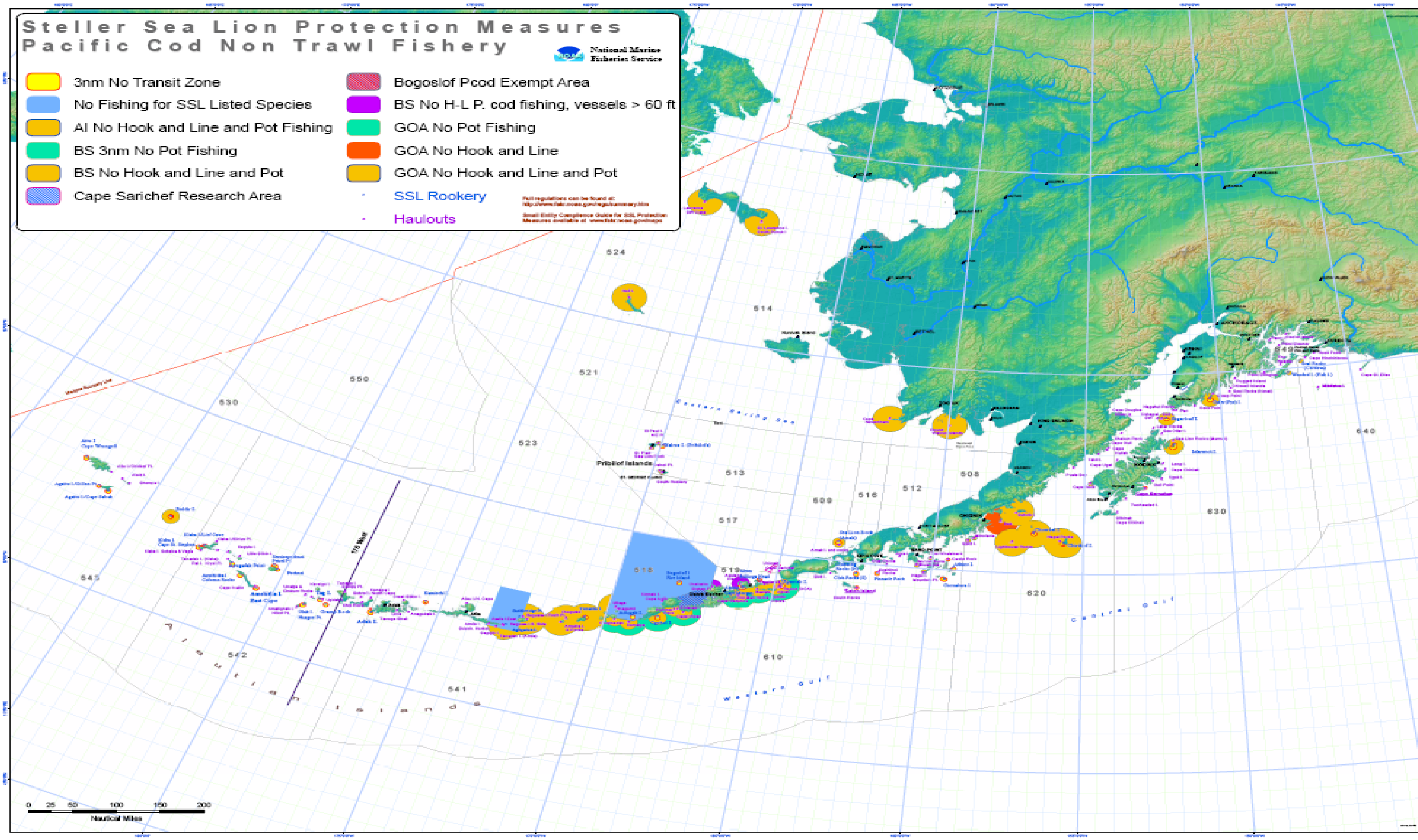


Figure A.60 **Steller Sea Lion Protection Measures for the Pacific Cod NonTrawl Fishery**
(Source: http://www.fakr.noaa.gov/protectedresources/stellers/maps/NonTrawl _0105.pdf)

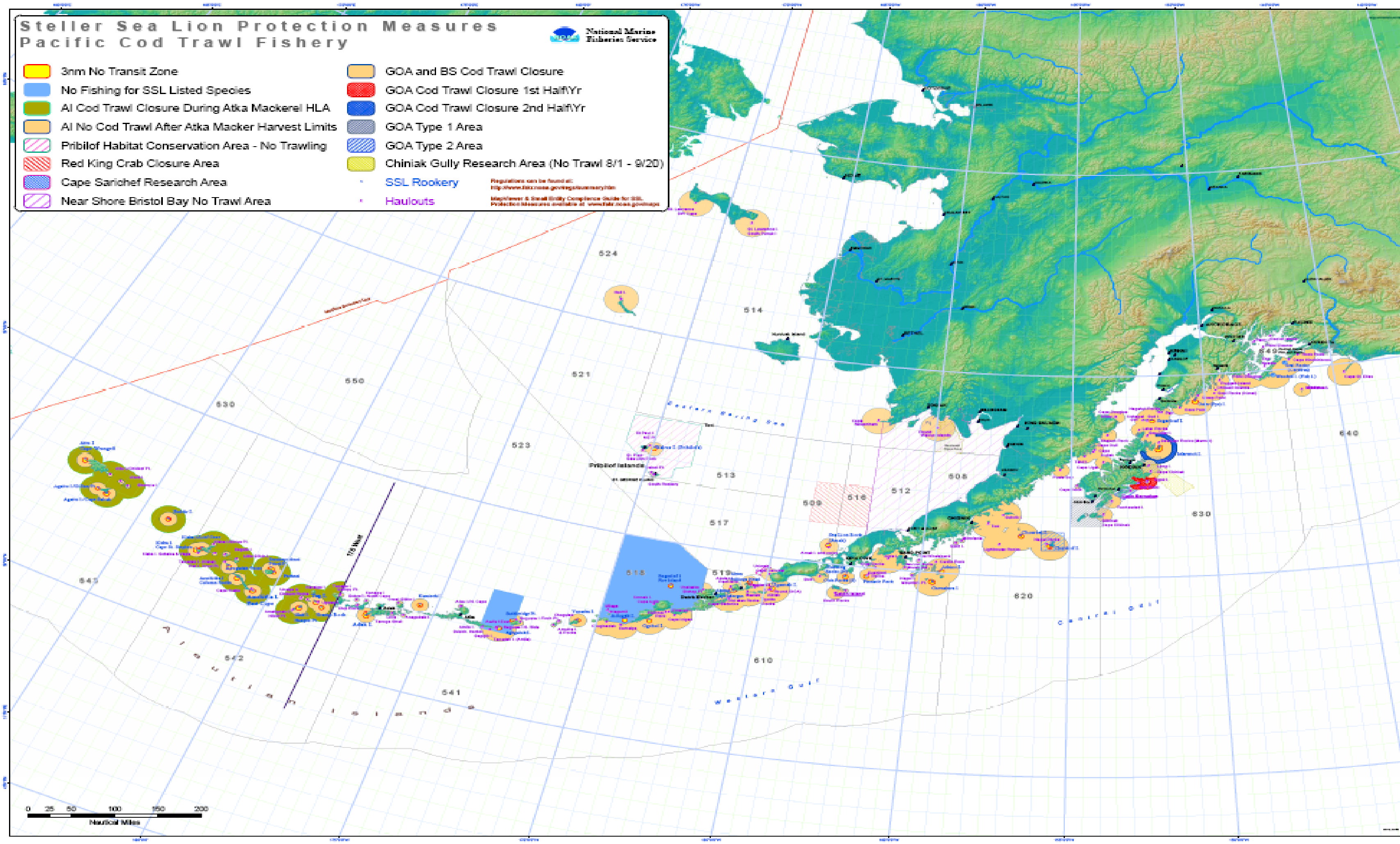


Figure A.61 **Steller Sea Lion Protection Measures for the Pacific Cod Trawl Fishery**
(Source: http://www.fakr.noaa.gov/protectedresources/stellers/maps/Cod_Trawl0105.pdf)

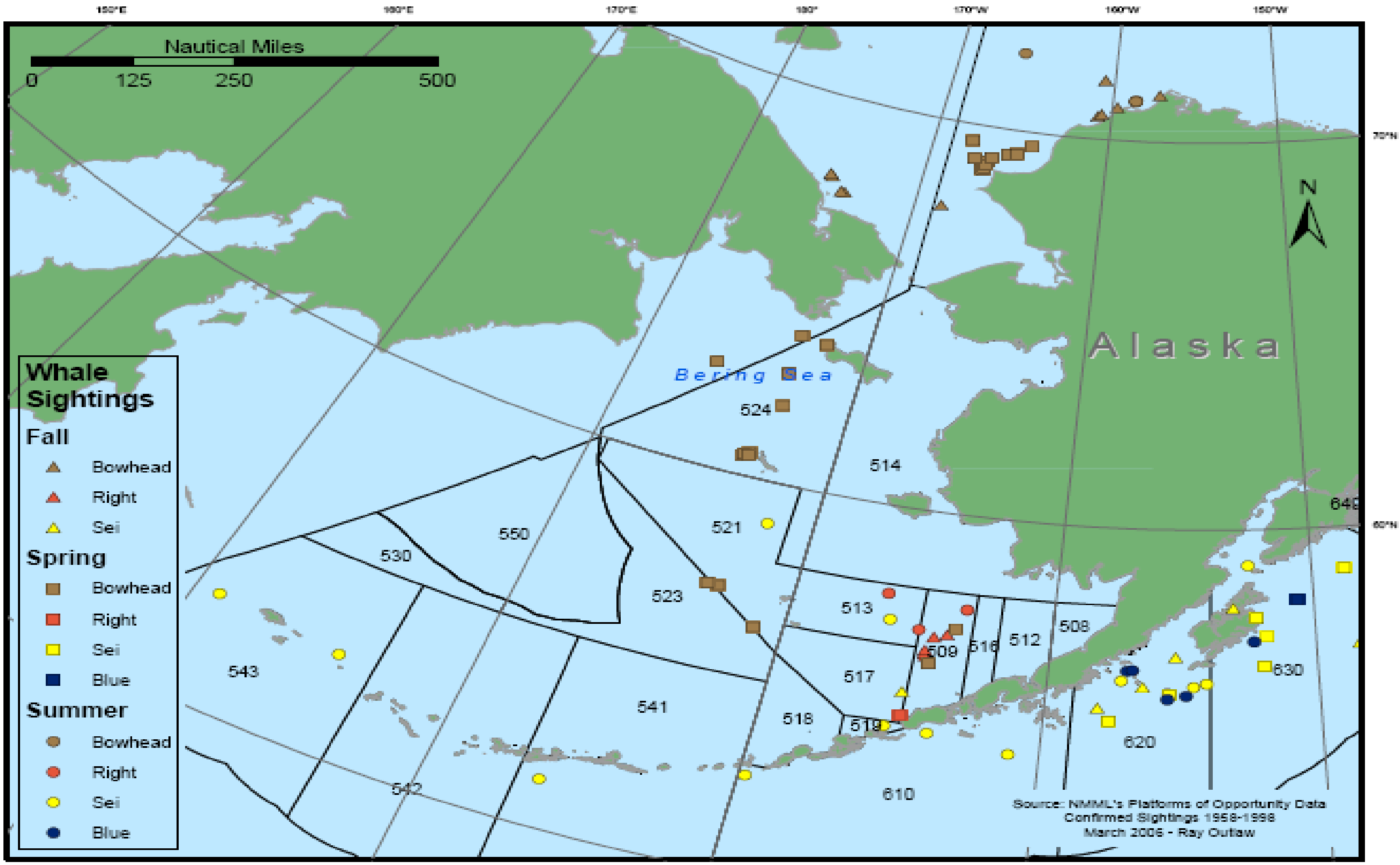


Figure A.62 **Platform of Opportunity Program Sightings for Bowhead, Right, Sei, and Blue Whales in the BSAI, 1958-1998**

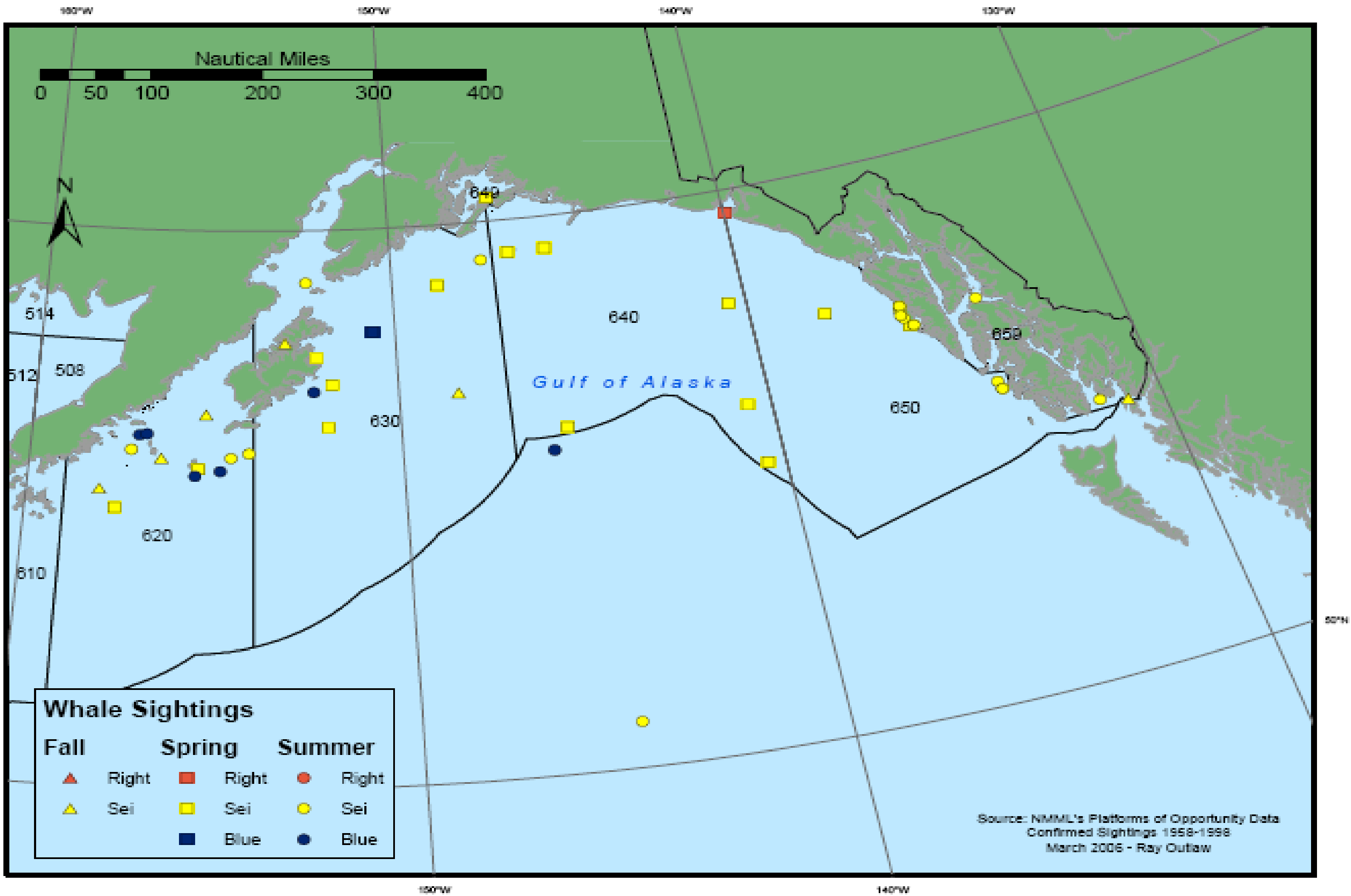


Figure A.63 **Platform of Opportunity Program Sightings for Bowhead, Right, Sei, and Blue Whales in the GOA, 1958-1998**

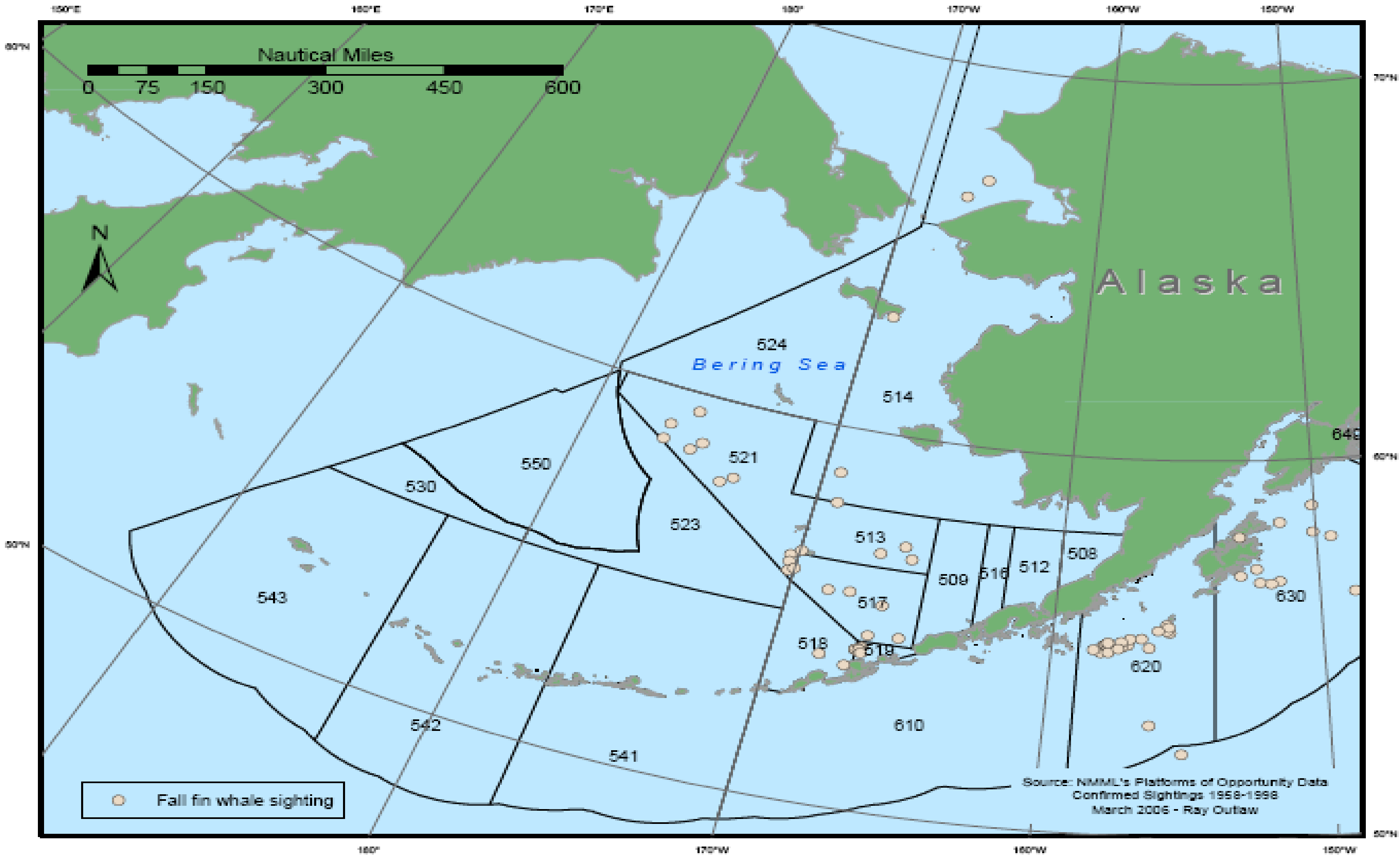


Figure A.64 Platform of Opportunity Program Fall Sightings for Fin Whales in the BSAI, 1958-1998

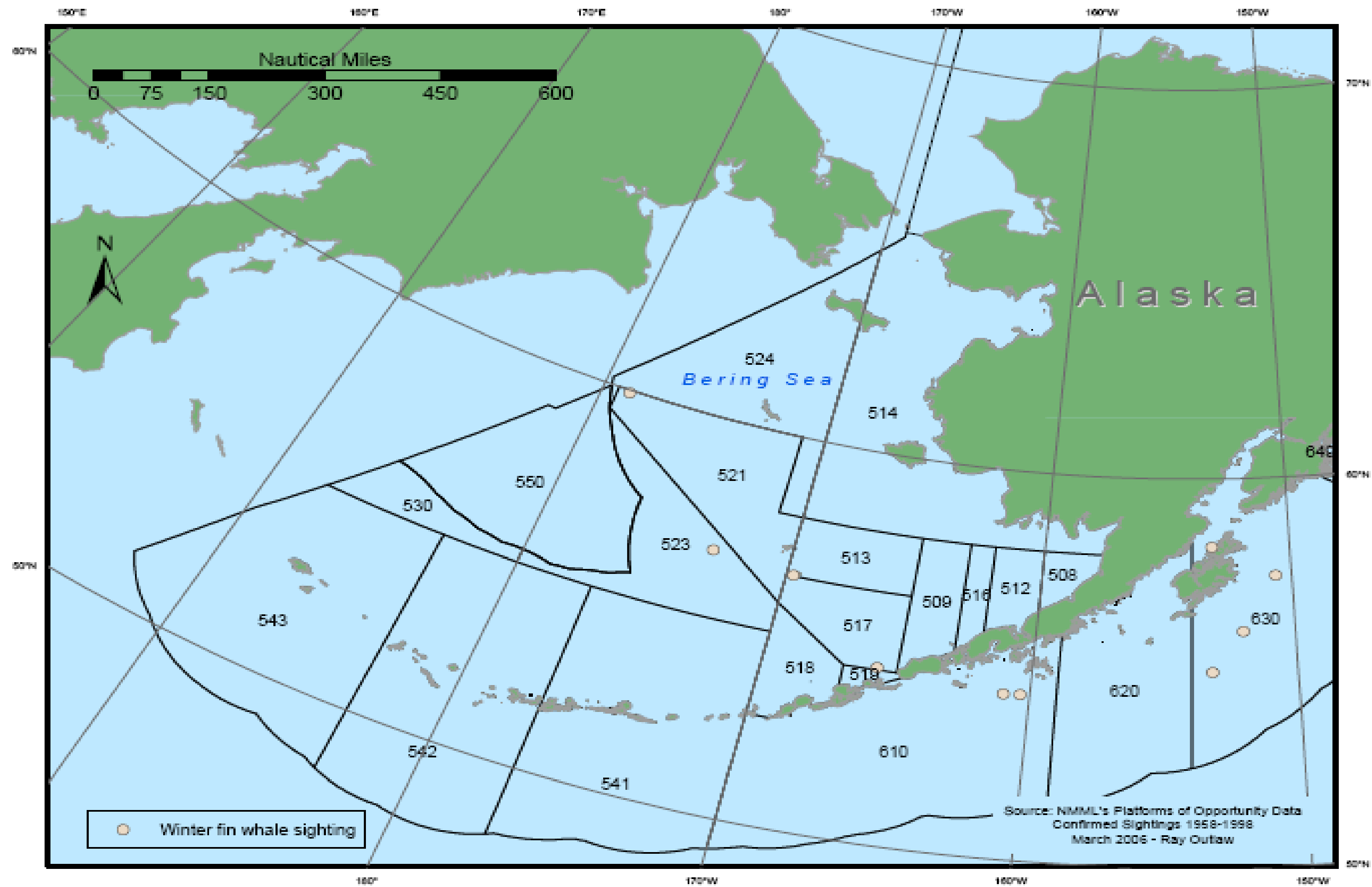


Figure A.65 **Platform of Opportunity Program Winter Sightings for Fin Whales in the BSAI, 1958-1998**

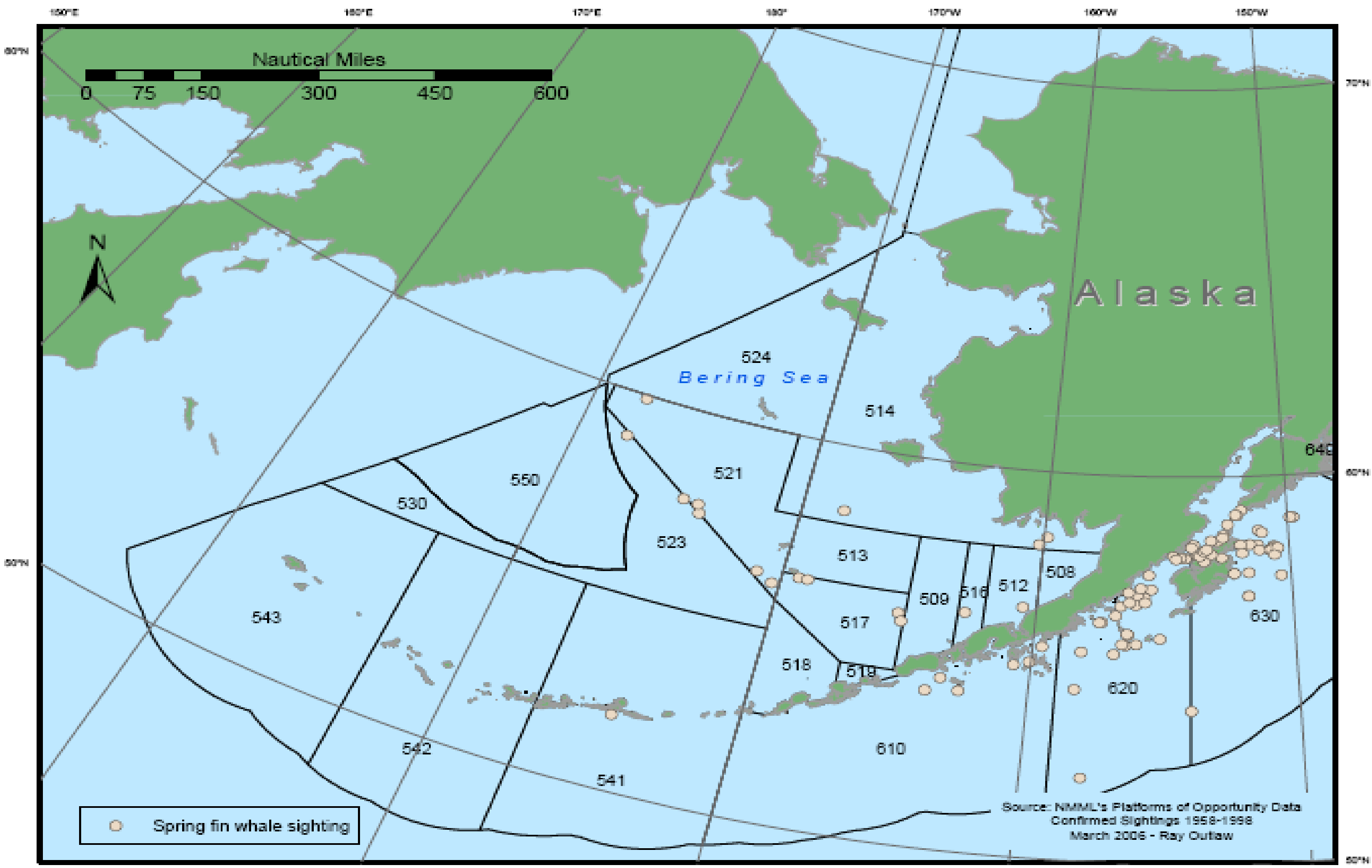


Figure A.66 **Platform of Opportunity Program Spring Sightings for Fin Whales in the BSAI, 1958-1998**

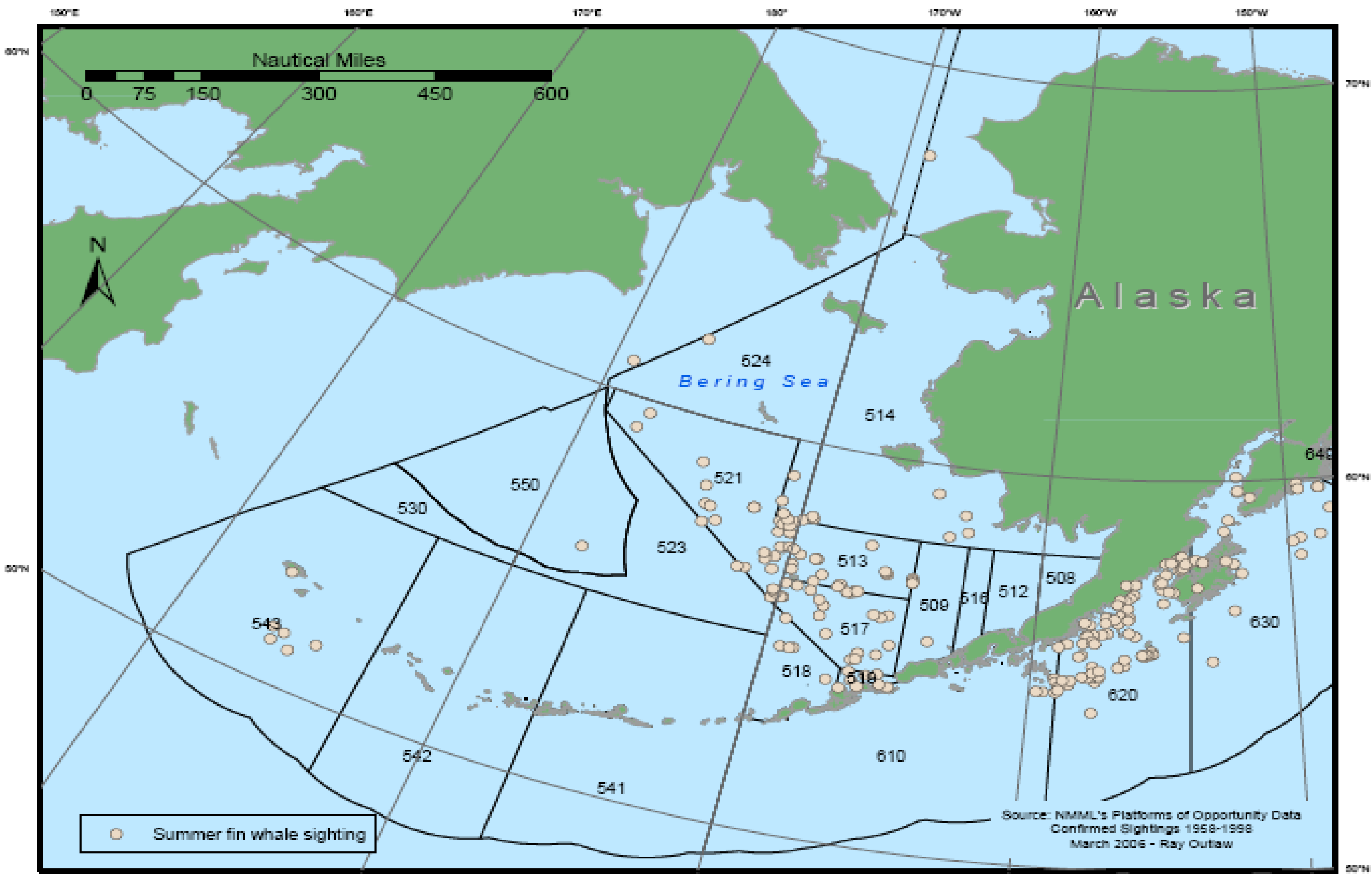


Figure A.67 **Platform of Opportunity Program Summer Sightings for Fin Whales in the BSAI, 1958-1998**

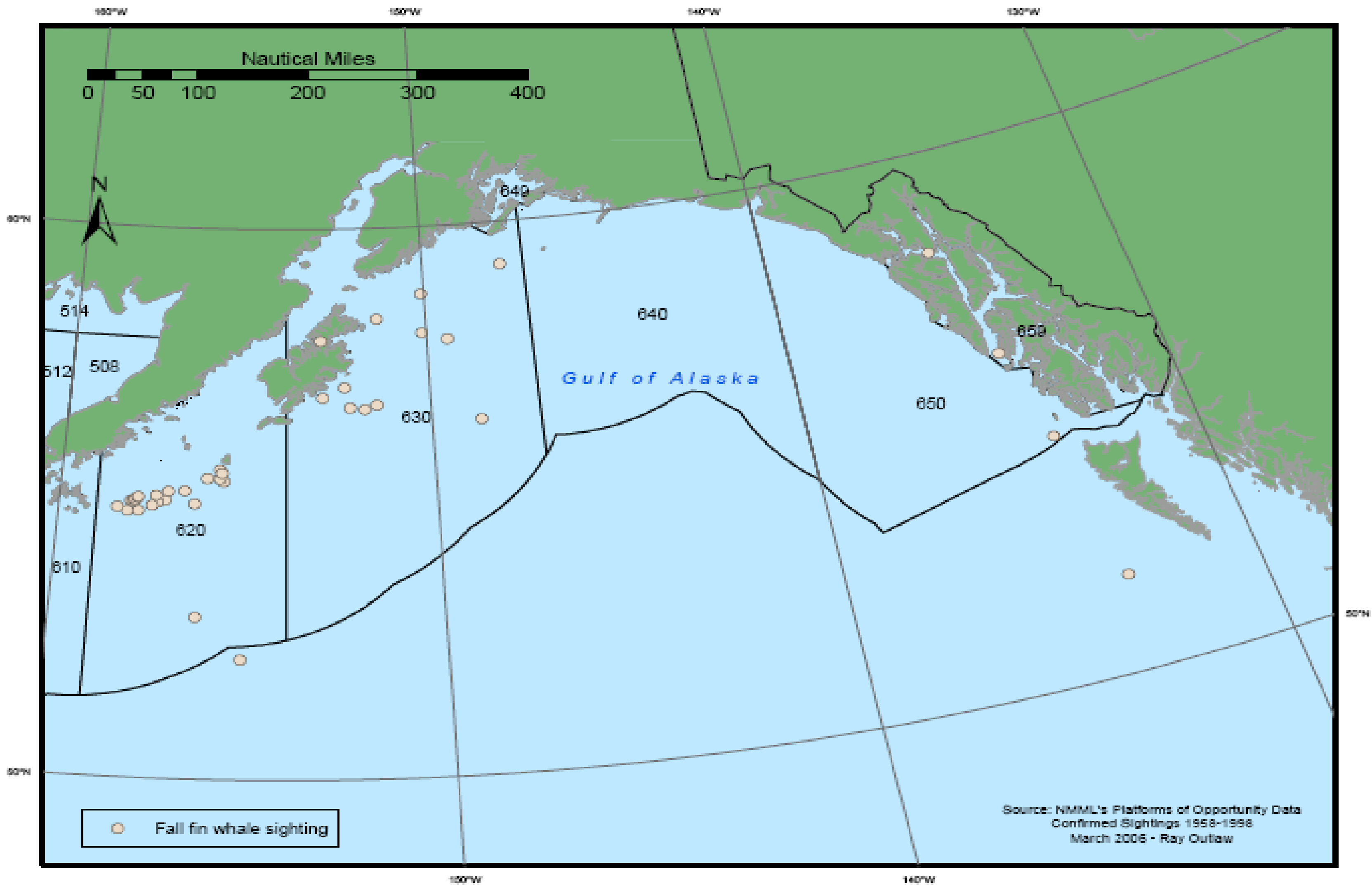


Figure A.68 **Platform of Opportunity Program Fall Sightings for Fin Whales in the GOA, 1958-1998**

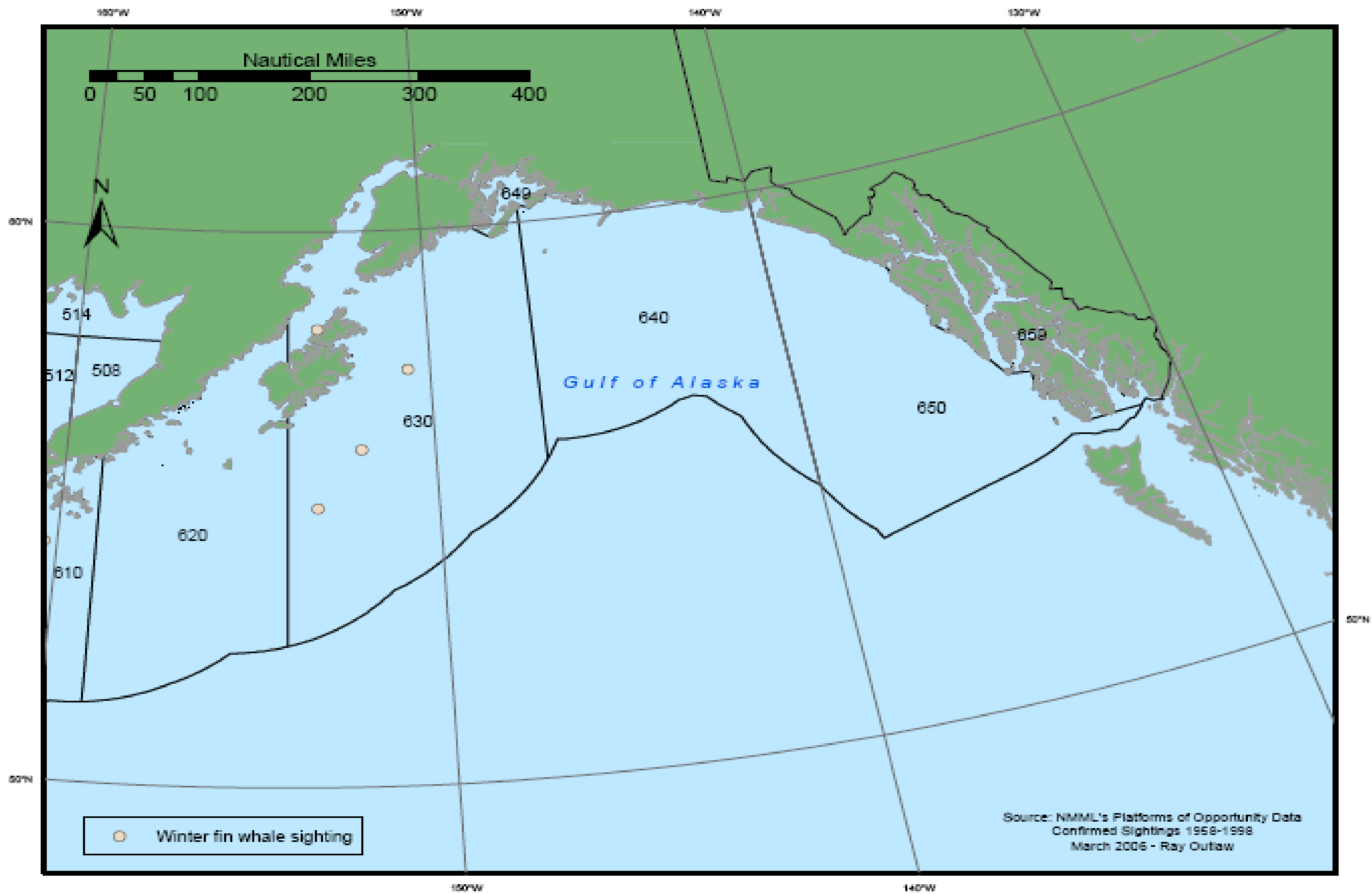


Figure A.69 **Platform of Opportunity Program Winter Sightings for Fin Whales in the GOA, 1958-1998**

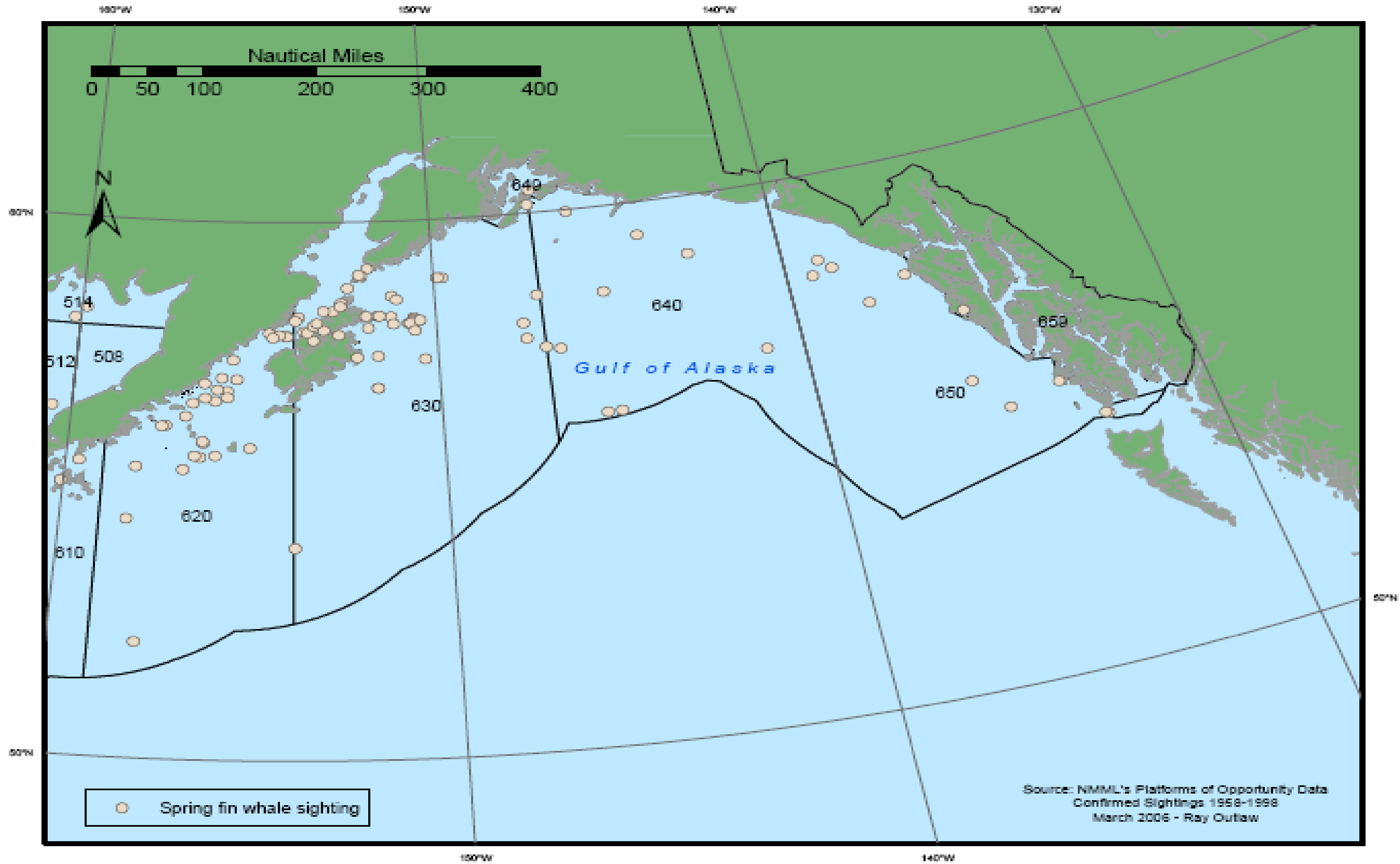


Figure A.70 **Platform of Opportunity Program Spring Sightings for Fin Whales in the GOA, 1958-1998**

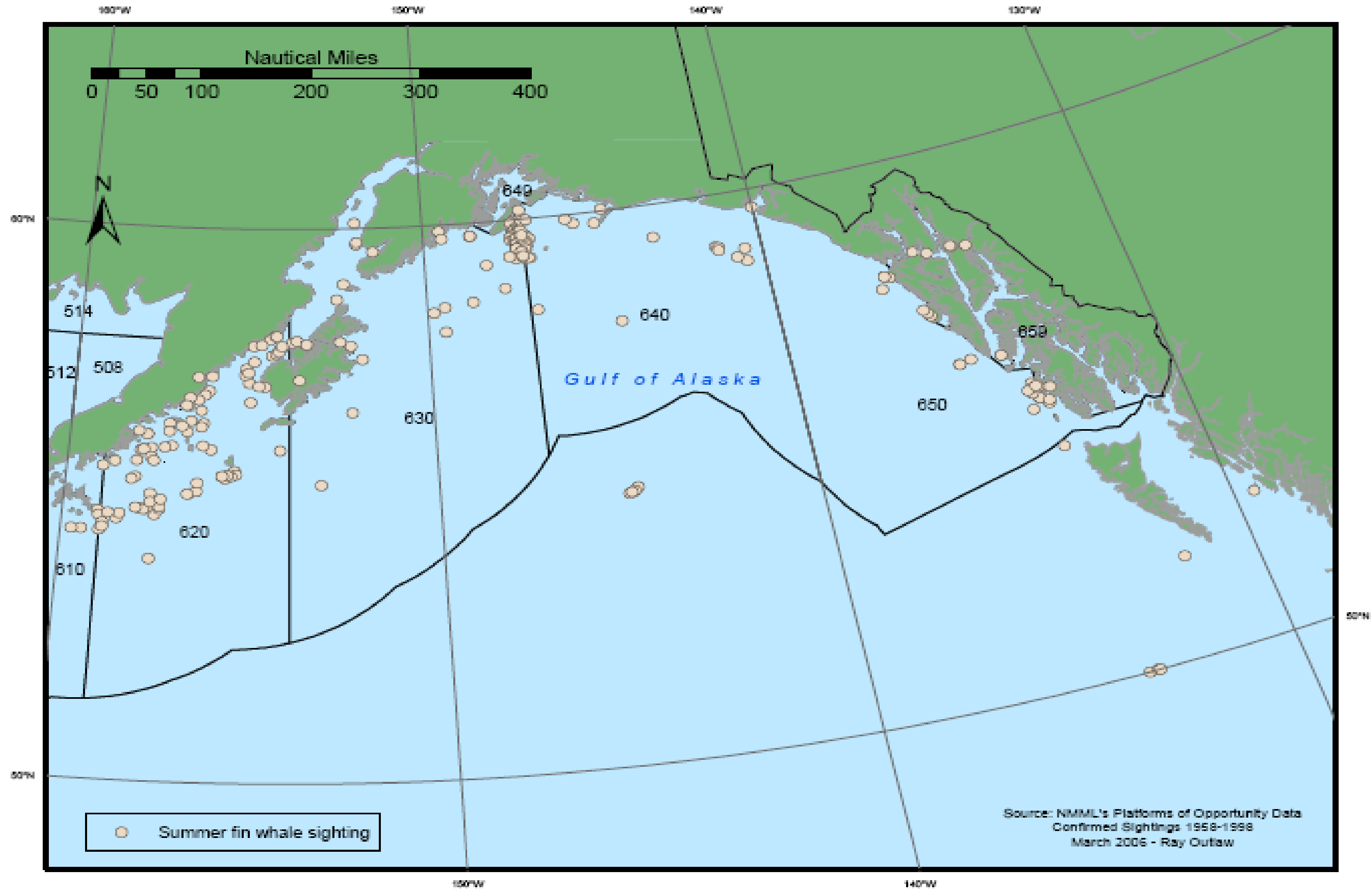


Figure A.71 **Platform of Opportunity Program Summer Sightings for Fin Whales in the GOA, 1958-1998**

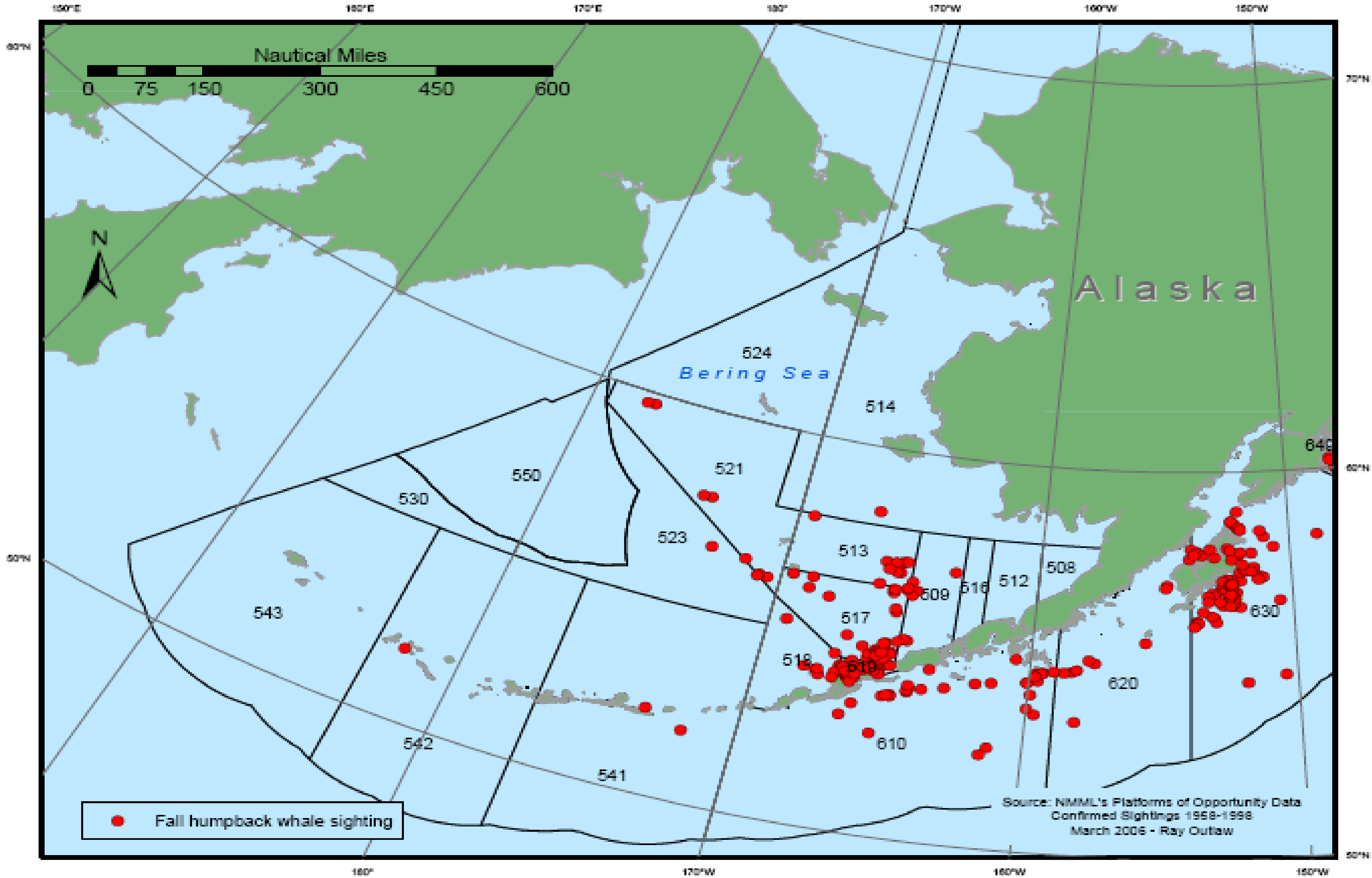


Figure A.72 **Platform of Opportunity Program Fall Sightings for Humpback Whales in the BSAI, 1958-1998**

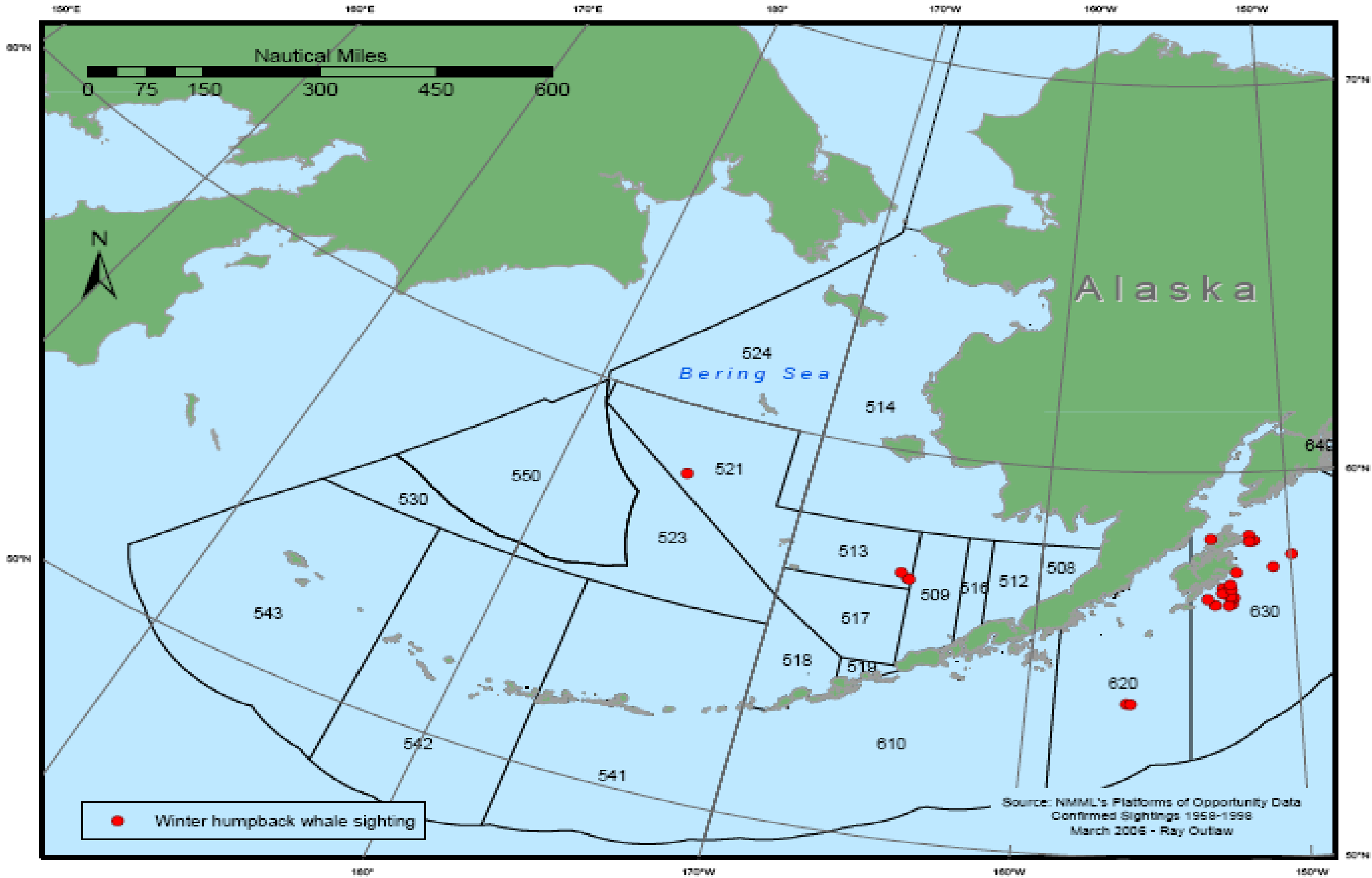


Figure A.73 **Platform of Opportunity Program Winter Sightings for Humpback Whales in the BSAI, 1958-1998**

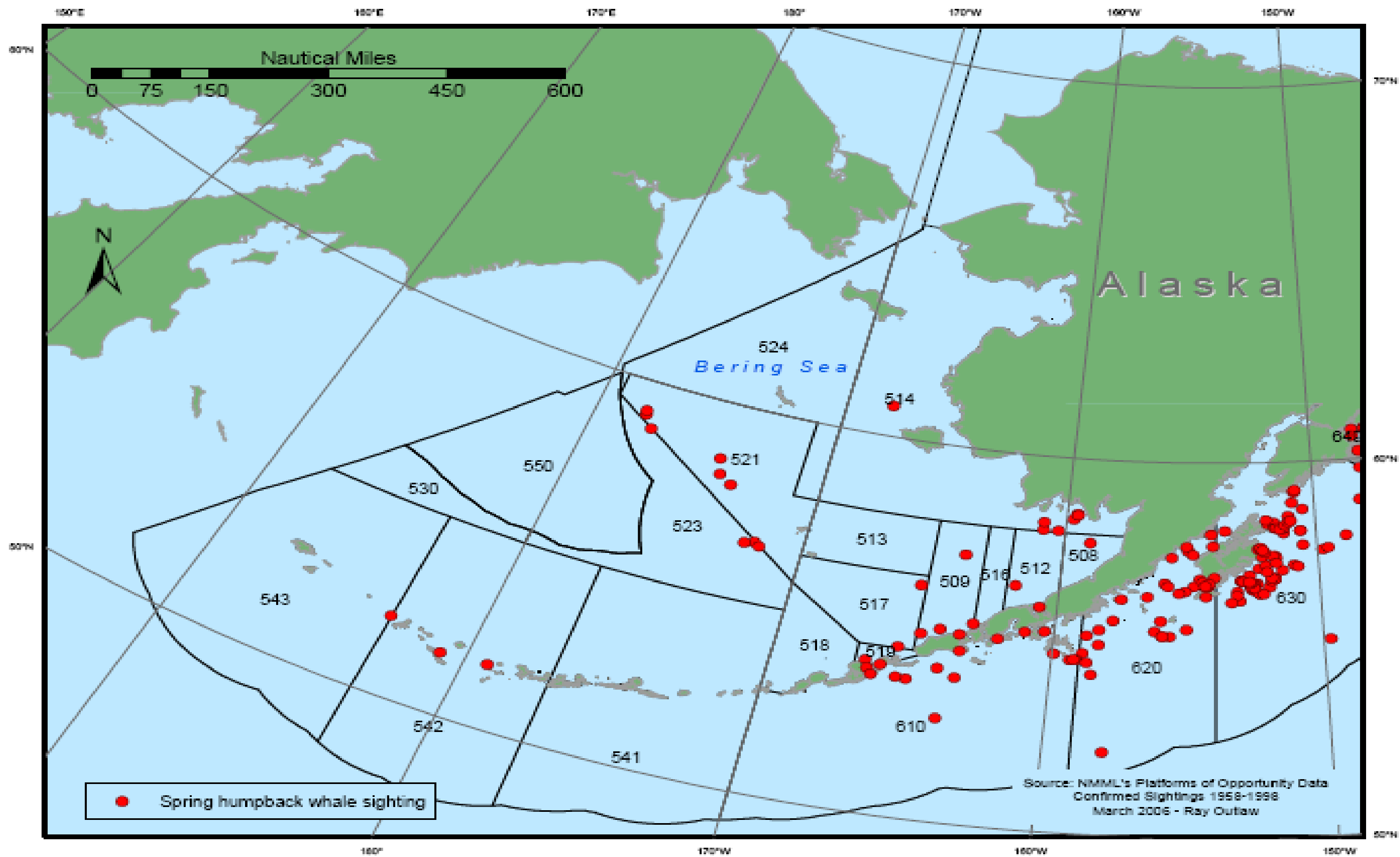


Figure A.74 **Platform of Opportunity Program Spring Sightings for Humpback Whales in the BSAI, 1958-1998**

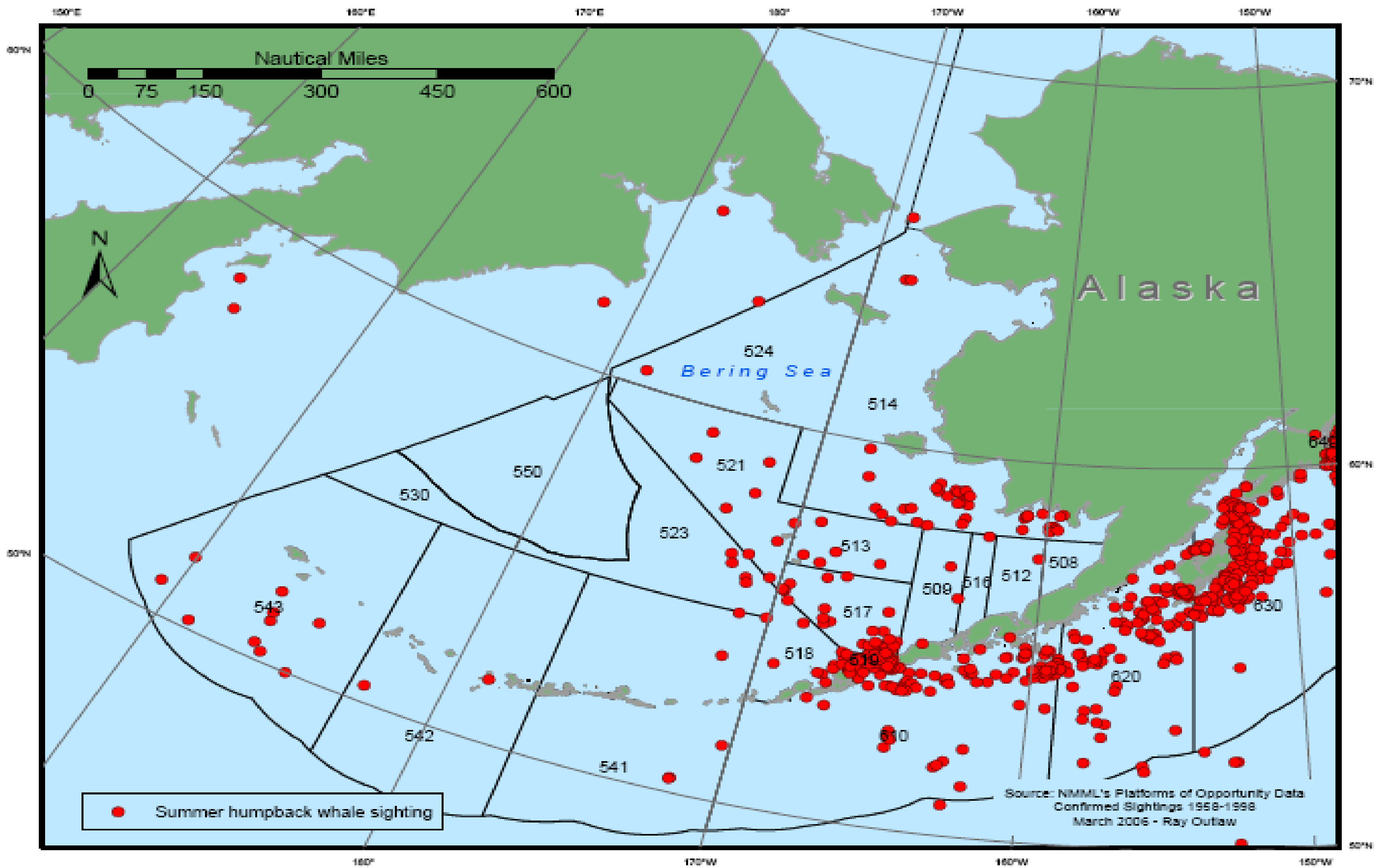


Figure A.75 **Platform of Opportunity Program Summer Sightings for Humpback Whales in the BSAI, 1958-1998**

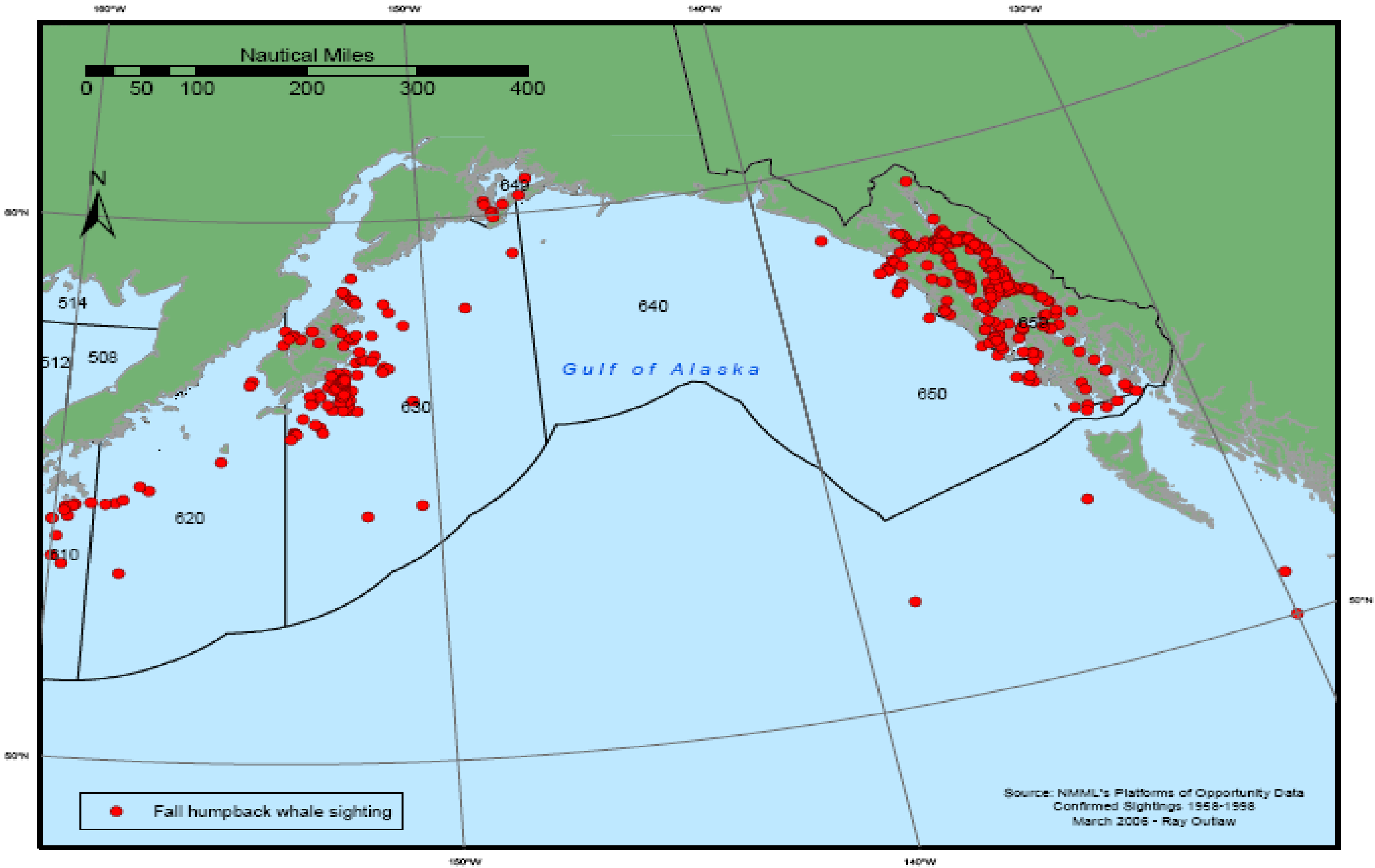


Figure A.76 **Platform of Opportunity Program Fall Sightings for Humpback Whales in the GOA, 1958-1998**

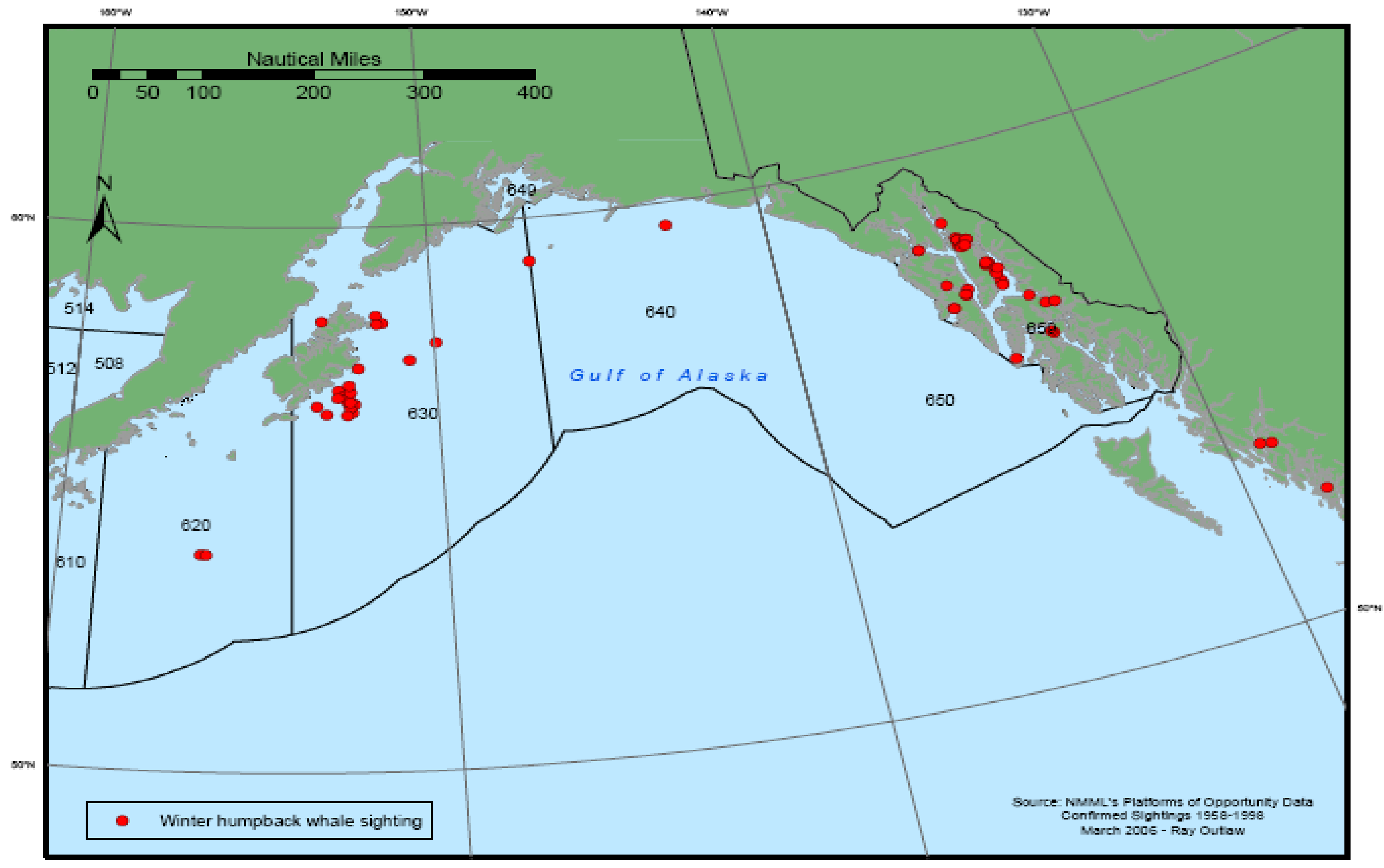


Figure A.77 Platform of Opportunity Program Winter Sightings for Humpback Whales in the GOA, 1958-1998

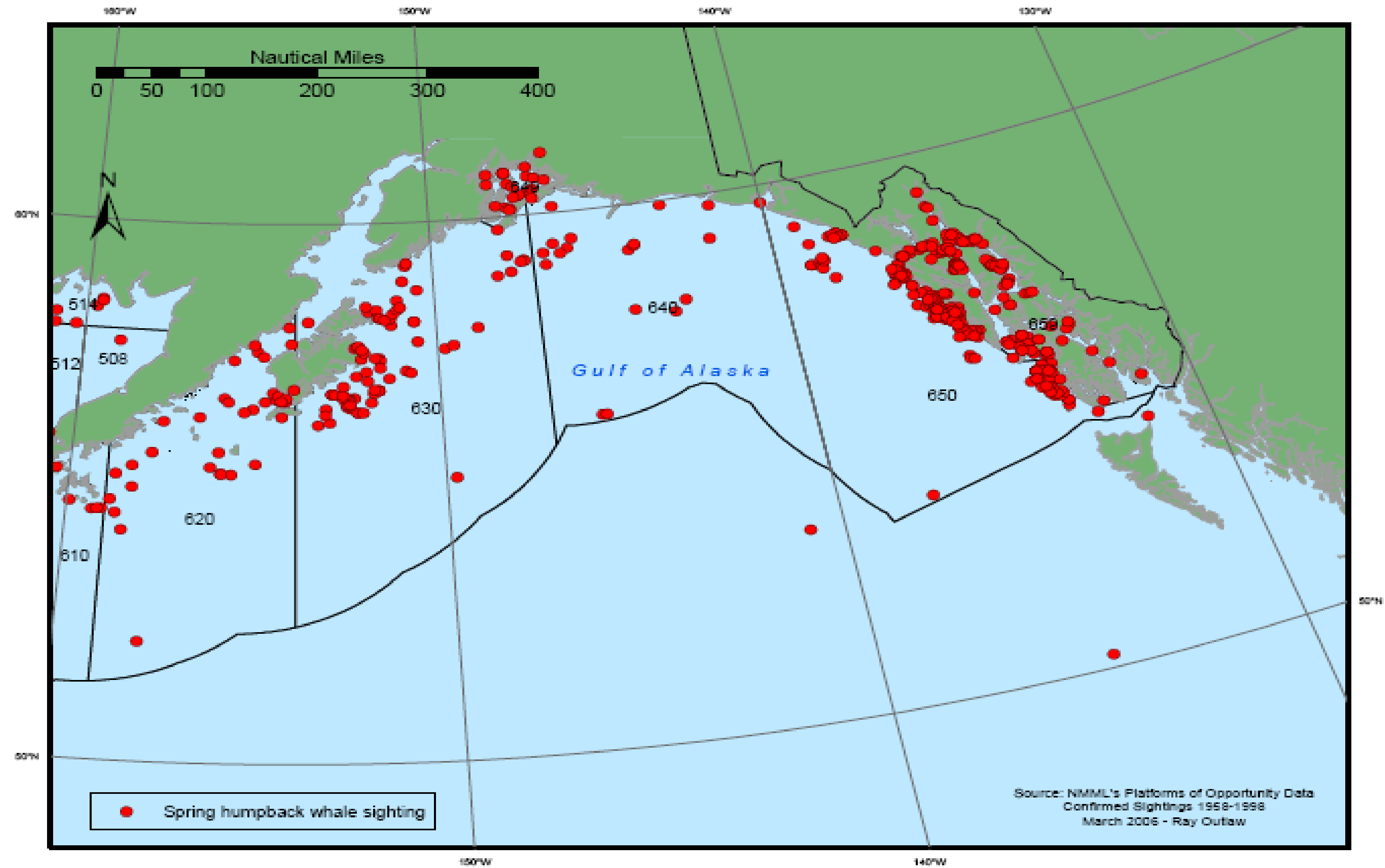


Figure A.78 Platform of Opportunity Program Spring Sightings for Humpback Whales in the GOA, 1958-1998

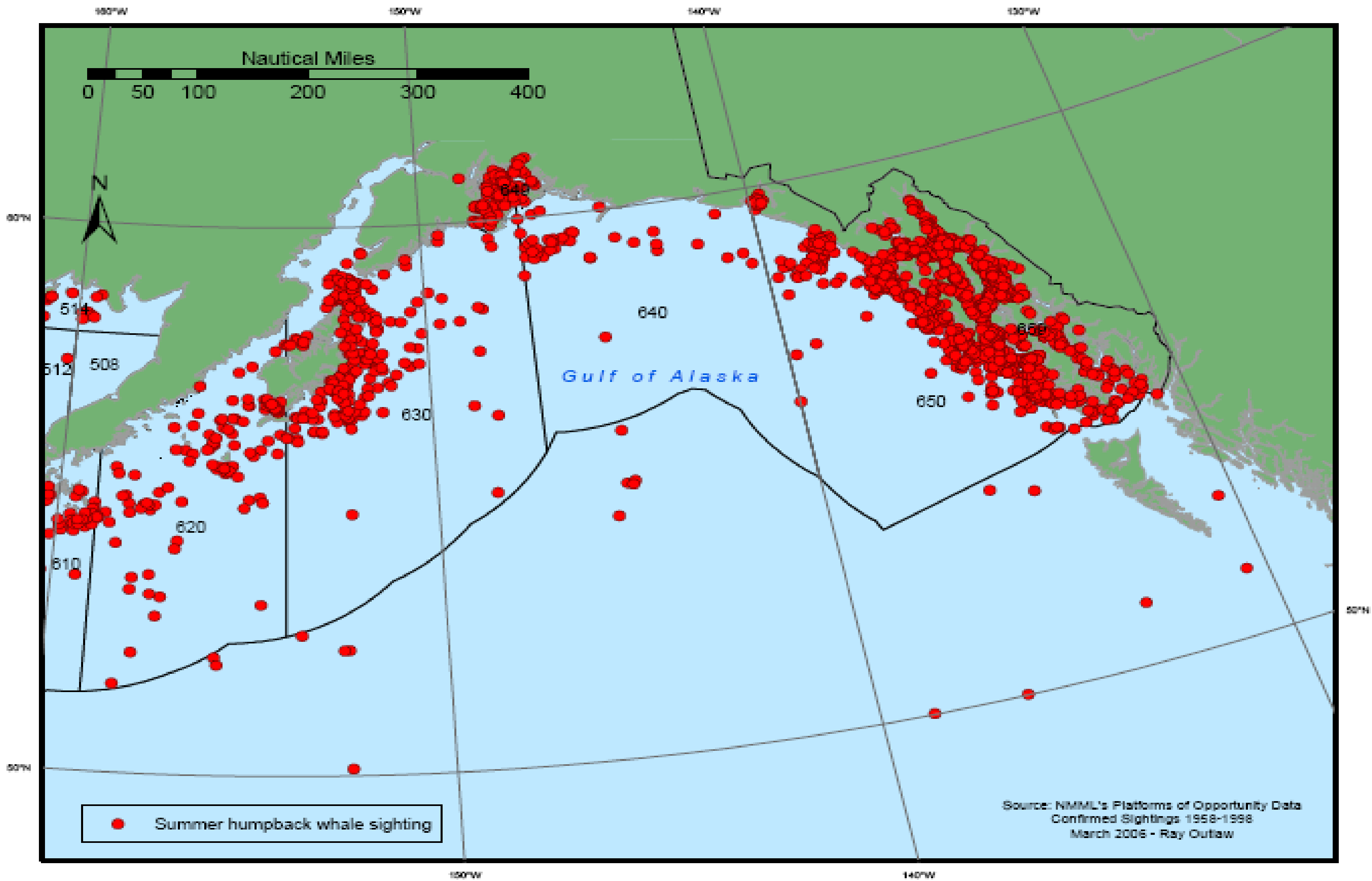


Figure A.79 **Platform of Opportunity Program Summer Sightings for Humpback Whales in the GOA, 1958-1998**

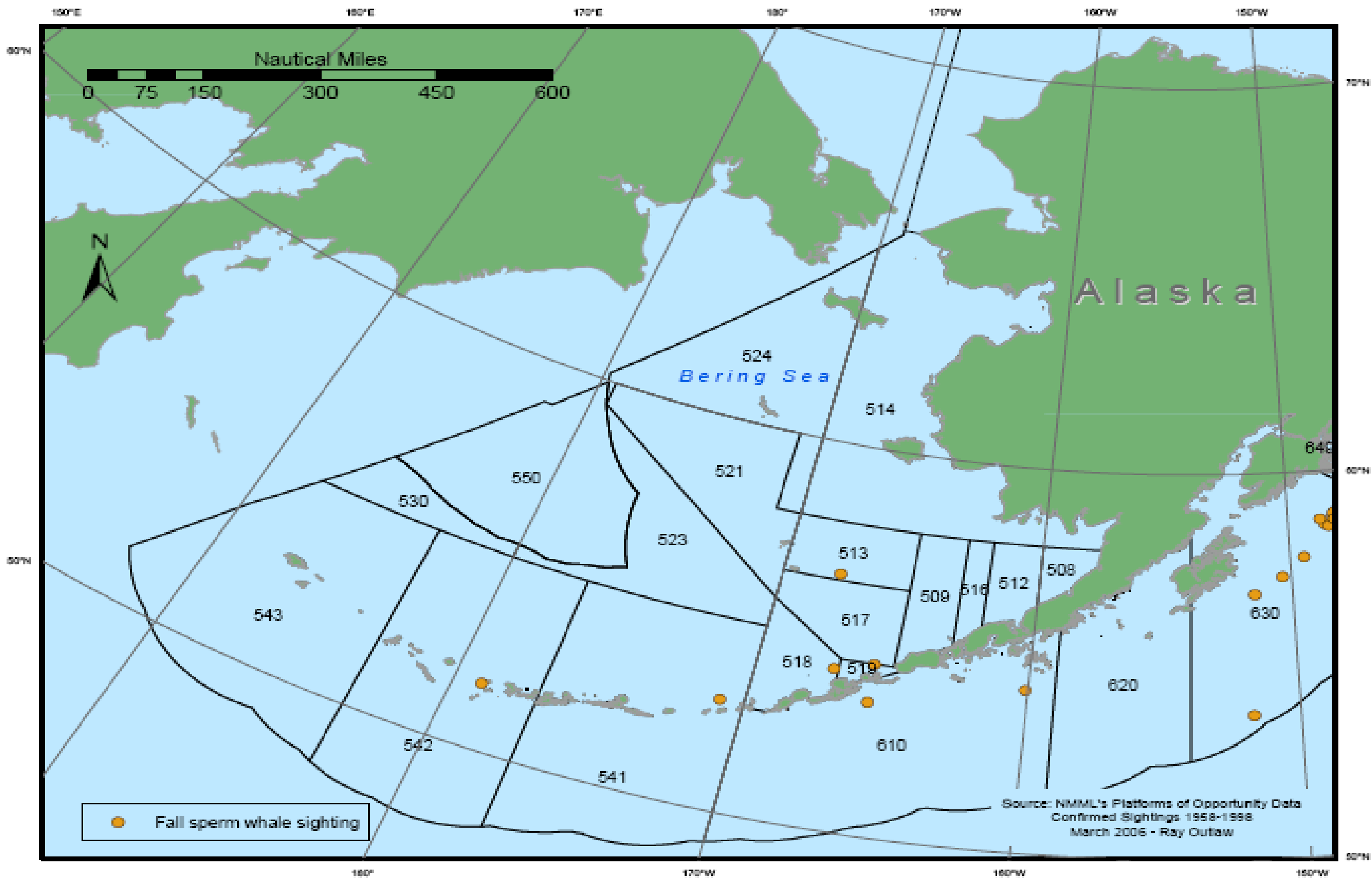


Figure A.80 Platform of Opportunity Program Fall Sightings for Sperm Whales in the BSAI, 1958-1998

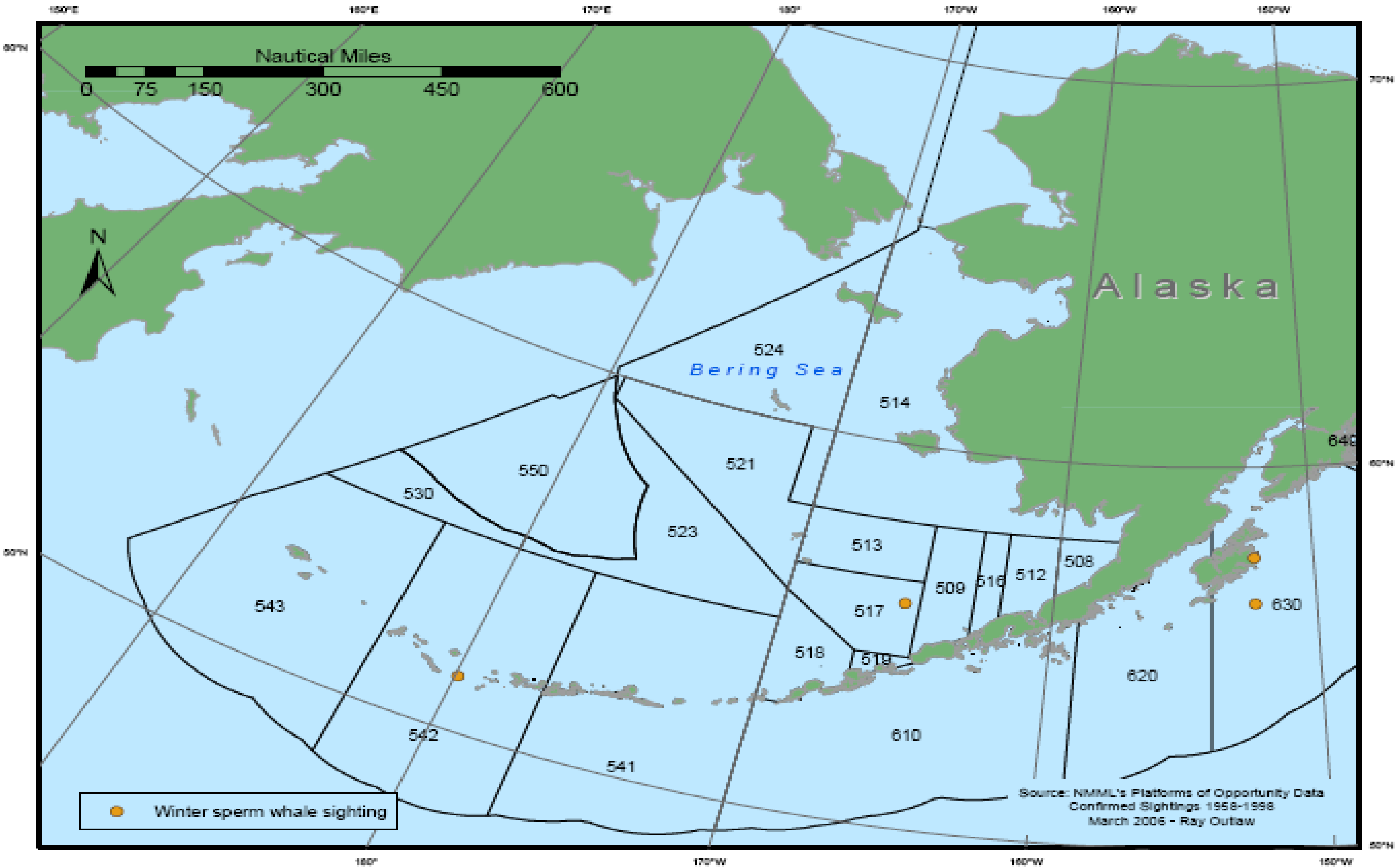


Figure A.81 **Platform of Opportunity Program Winter Sightings for Sperm Whales in the BSAI, 1958-1998**

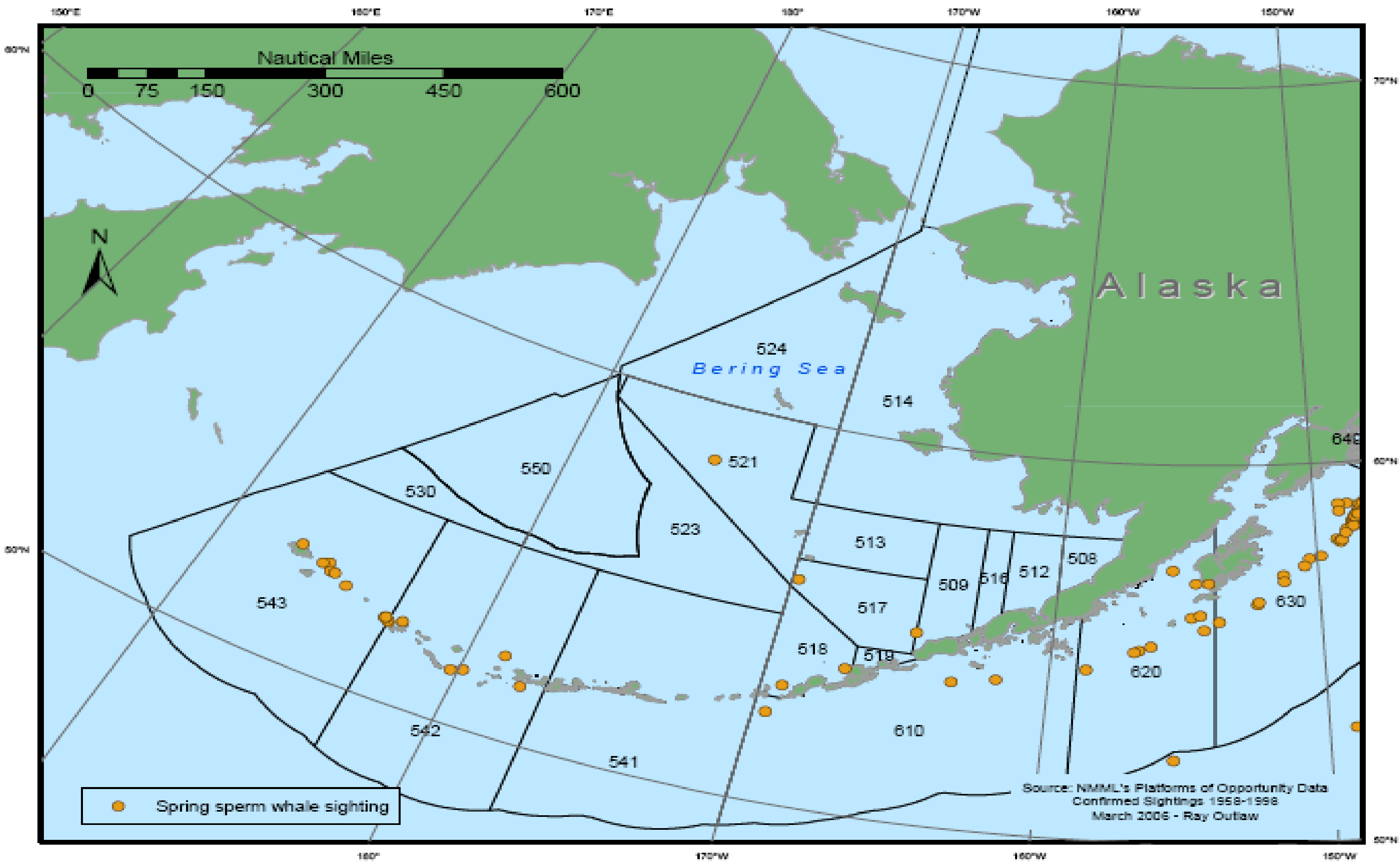


Figure A.82 **Platform of Opportunity Program Spring Sightings for Sperm Whales in the BSAI, 1958-1998**

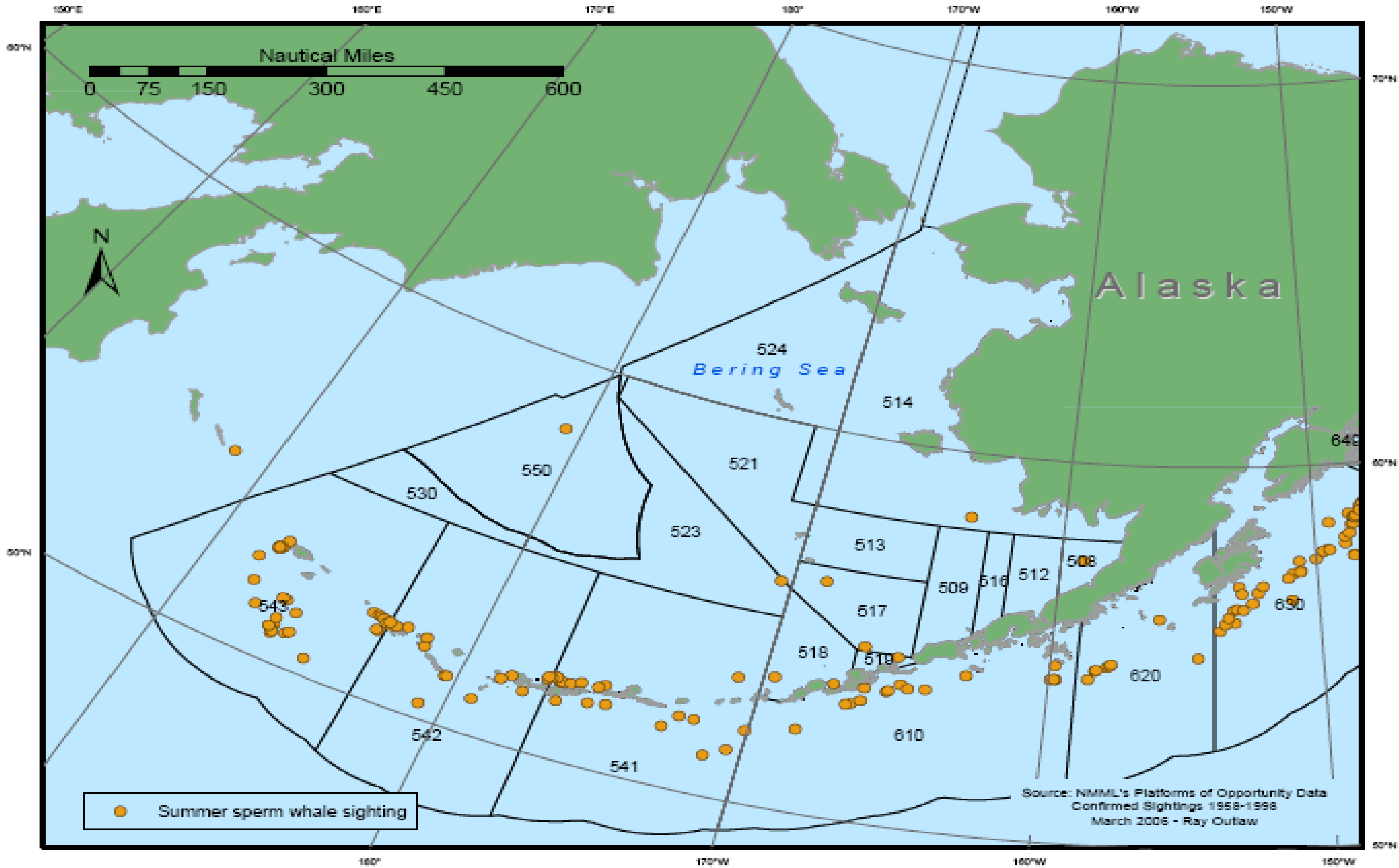


Figure A.83 **Platform of Opportunity Program Summer Sightings for Sperm Whales in the BSAI, 1958-1998**

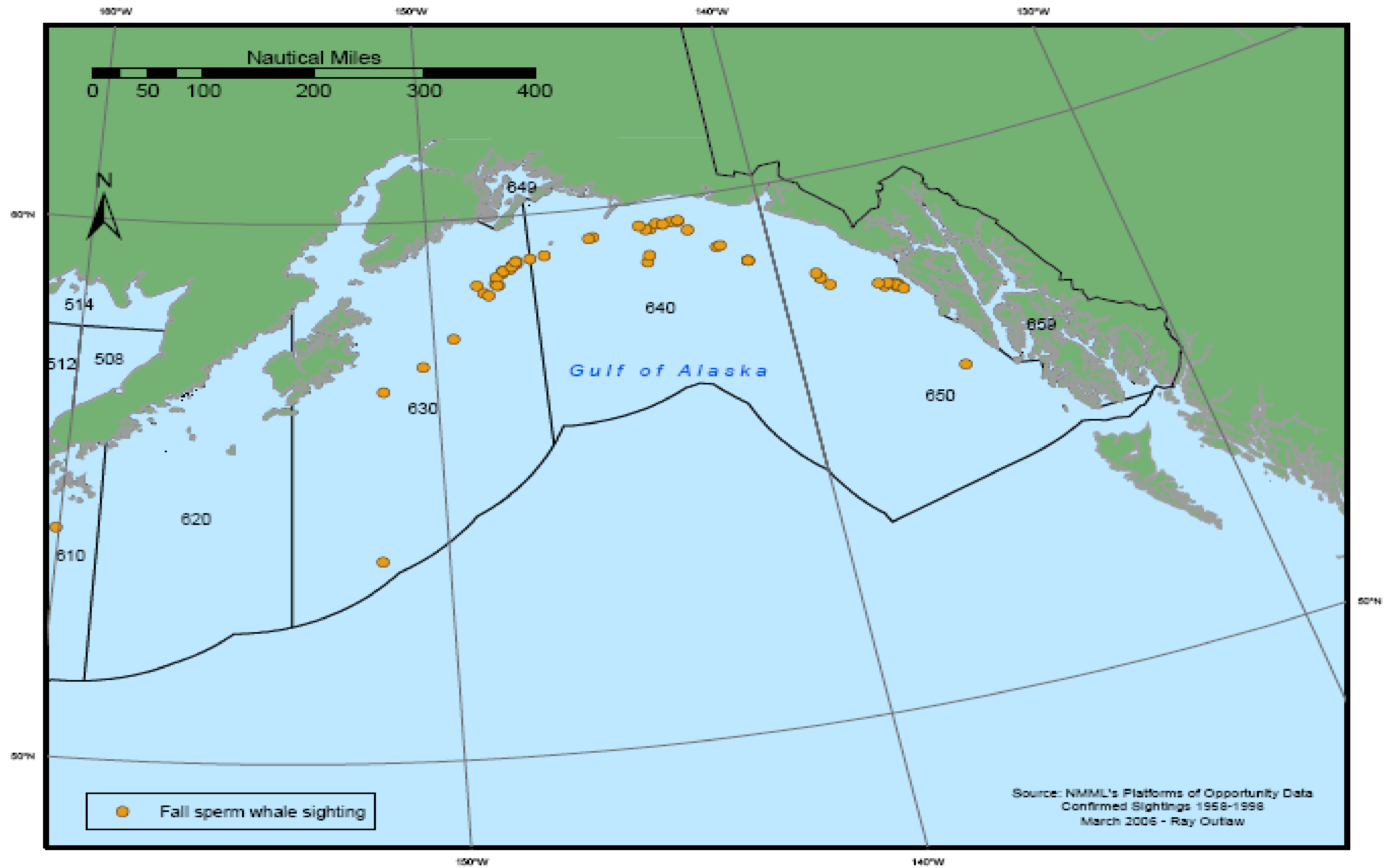


Figure A.84 **Platform of Opportunity Program Fall Sightings for Sperm Whales in the GOA, 1958-1998**

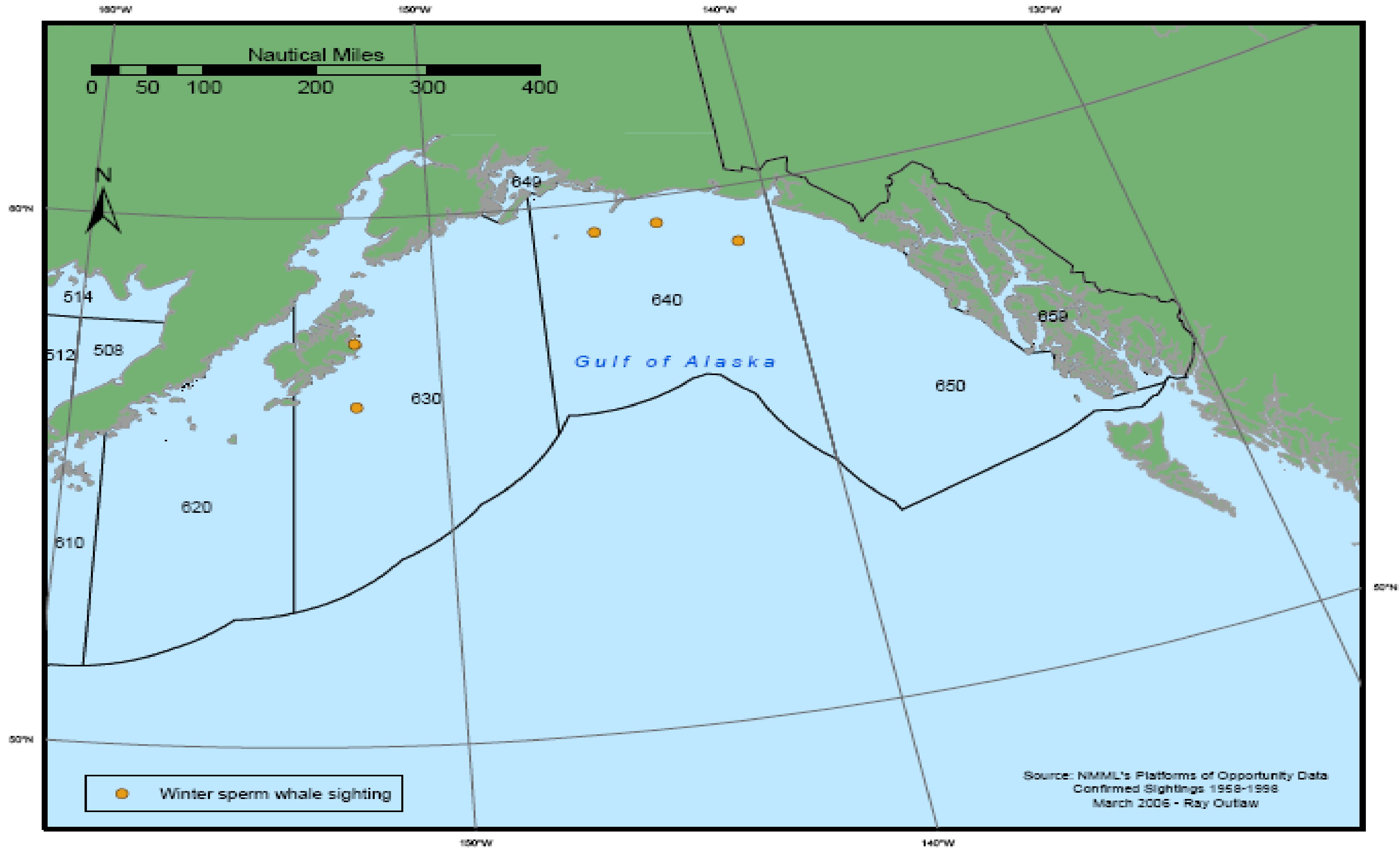


Figure A.85 **Platform of Opportunity Program Winter Sightings for Sperm Whales in the GOA, 1958-1998**

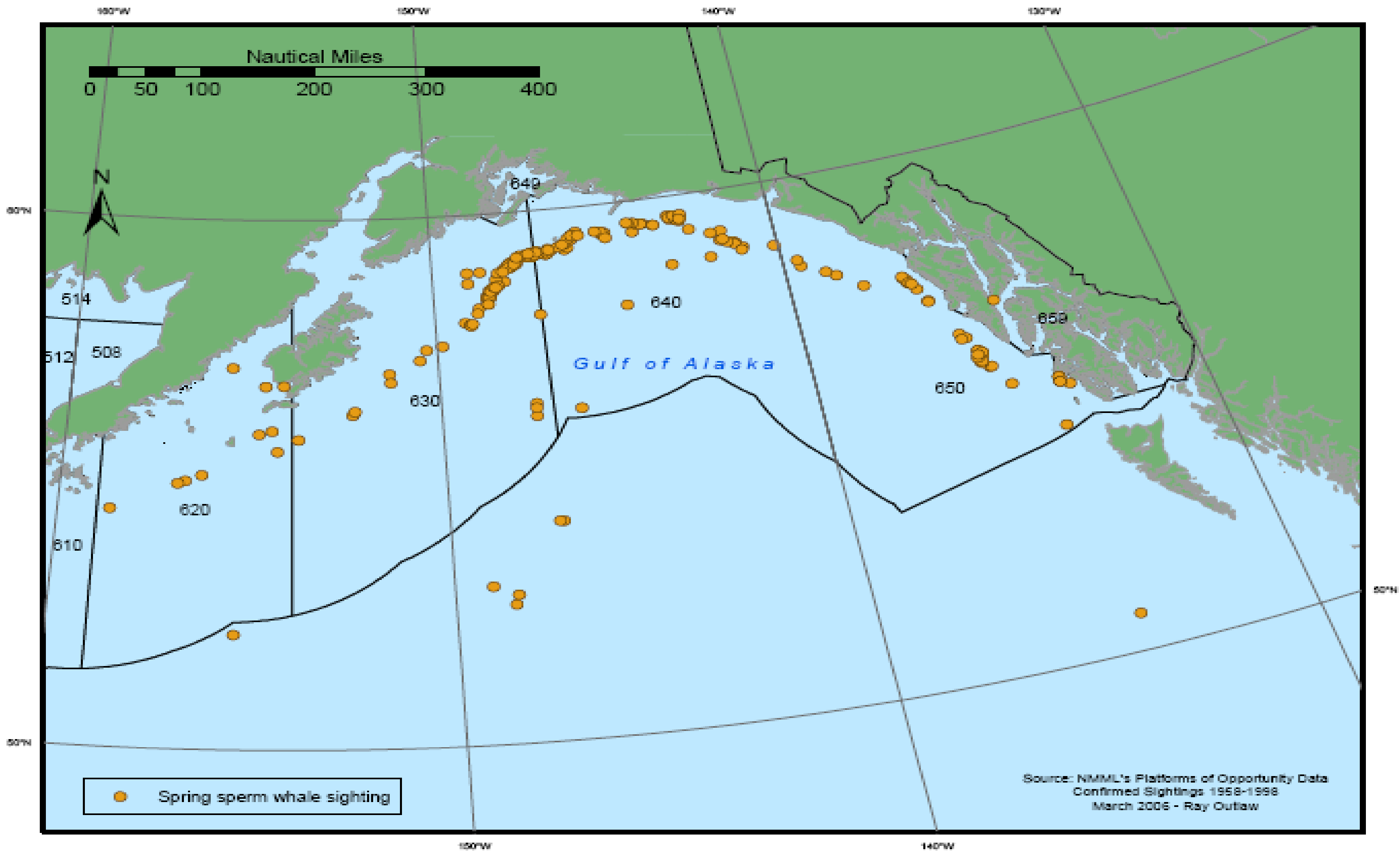


Figure A.86 **Platform of Opportunity Program Spring Sightings for Sperm Whales in the GOA, 1958-1998**

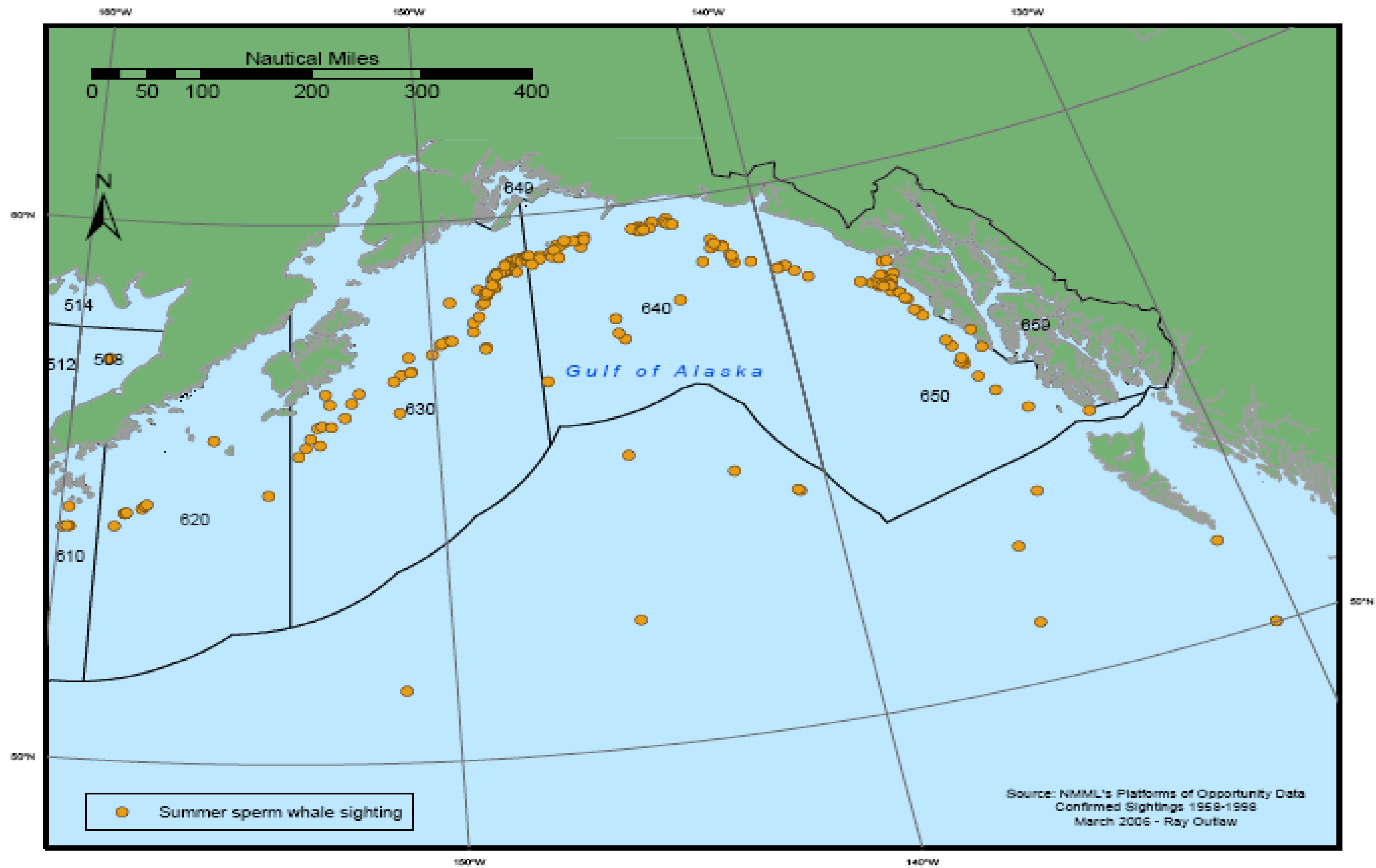


Figure A.87 **Platform of Opportunity Program Summer Sightings for Sperm Whales in the GOA, 1958-1998**

Appendix B

Steller Sea Lion Protection Measures

In June 2001, the Council reviewed and adopted for analysis the RPA Committee recommendations on Steller sea lion protection measures for 2002 and beyond. These measures included temporal and spatial allocation of pollock, Pacific cod and Atka mackerel fishing, protection of rookeries and haulout areas used by Steller sea lions, and critical habitat harvest limits. The RPA Committee developed their recommendations based on the FMP biological opinion (NMFS 2000) and information contained in the white papers described in Section 1 of this document. The proposed Steller sea lion protection measures for purposes of reinitiating consultation are the RPA committee's recommendations with seasonal and allocation changes to the GOA pollock fishery in the Western and Central Regulatory Areas as recommended by the Council in June 2001. The Steller sea lion protection measures were originally identified as Amendments 70/70 to the BSAI and GOA FMPs but were implemented by regulatory amendment only. The protection measures are summarized below for the Aleutian Islands subarea, the Bering Sea subarea, and the Gulf of Alaska and are described in detail in Chapter 2 of the SEIS prepared with the 2001 BiOp (NMFS 2001). In all areas, all rookeries are surrounded by a 3 nm no transit/no groundfish fishing zone and haulouts are surrounded by a 3 nm no groundfish fishing zone with some exceptions. Tables 4-6 and 12 of 50 CFR Part 679 lists rookeries and haulouts subject to fishing restrictions.

The setting of TAC for the pollock, Pacific cod and Atka mackerel fisheries is based on a global control rule which is modified from the one detailed in the FMP biological opinion. The allowable biological catch (ABC) for pollock, Pacific cod, and Atka mackerel in the BSAI and GOA would be reduced when the spawning biomass is estimated to be less than 40% of the projected unfished biomass. The reduction would continue at the present rate established under the tiers described in the groundfish FMPs, but when the spawning biomass is estimated to be less than 20% of the projected unfished biomass, directed fishing for a species would be prohibited.

Since the 2000 FMP BiOp, regulations were changed in 2003 to allow pot fishing within 0-3 n mi at Cape Barnabas and Caton Island, and further changed in 2005 implementing several additional measures in the GOA. Those measures are incorporated into the tables below. Thus, the following tables and text reflect the current status of groundfish fishery regulations that relate to SSL protection measures in the GOA and BSAI.

Note that in the past several years, additional regulations were implemented in the BSAI and GOA groundfish fisheries to facilitate research on the interaction between groundfish fishing activities and SSLs. These measures included temporary and season-specific closures of some areas to allow research to continue – e.g. near Unimak Island for P. cod research and Chiniak Gully for pollock studies. Currently, the Chiniak Gully closure is being proposed for the period 2006-2010 (71 FR 15152, March 27, 2006). Additional information can be found in regulations at 50 CFR 679.22.

Current Regulations – Atka Mackerel, Pollock, and Pacific Cod Fisheries

The Steller sea lion protection measures closures are located in 50 CFR 679.22 and in 50 CFR Tables 4-6 and Table 12. Individual haulouts and rookeries and their associated closures are identified for each fishery on the tables. Detailed maps of the closures are in Appendix A and also available from www.fakr.noaa.gov.

Gulf of Alaska Fisheries

Steller sea lion protection measures for the GOA include area closures to pollock and Pacifc cod fishing as shown in Tables 4-6 and 12 to 50 CFR part 679. Table 12 contains groundfish fishing closures within 3 nm of rookeries. Vessels using jig gear are exempt from all GOA area closures, except the 0-3 nm no transit closures around rookeries under 50 CFR 223.202 and 0-3 nm no groundfish fishing zones around rookeries. Directed pollock fishing and directed fishing for Pacific cod using trawl gear in general are prohibited within 20 nm of most rookeries and within 10 nm of most haulouts. Pacific cod fishing with hook-and-line gear and pot gear is less restrictive in the GOA with many haulout areas open to the shore and only the haulouts near Chignik closed to 20 nm.

Bering Sea and Aleutian Islands Fisheries

Steller sea lion protection measures for the BSAI include area closures to Atka mackerel, pollock, and Pacifc cod fishing as shown in Tables 4-6 and 12 to 50 CFR part 679. Table 12 contains groundfish fishing closures within 3 nm of rookeries. Vessels using jig gear are exempt from all BSAI area closures, except the 0-3 nm no transit closures around rookeries under 50 CFR 223.202 and 0-3 nm no groundfish fishing zones around rookeries. Directed pollock fishing is prohibited within 20 nm of all haulouts and rookeries in the Aleutian Islands and all rookeries in the Bering Sea. Pollock fishing is also prohibited within either 10 nm or 20 nm of haulouts in the Bering Sea. Directed fishing for Pacific cod using trawl gear in general are prohibited within 20 nm of most rookeries and within 10 nm of most haulouts. Pacific cod fishing with hook-and-line gear and pot gear is less restrictive in the GOA with many haulout areas open to the shore and only the haulouts near Chignik closed to 20 nm.

Table 4 to 50 CFR Part 679 Steller Sea Lion Protection Areas Pollock Fisheries Restrictions

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
St. Lawrence I./S Punuk I.	Bering Sea	63 04.00 N	168 51.00 W			20
St. Lawrence I./SW Cape	Bering Sea	63 18.00 N	171 26.00 W			20
Hall I.	Bering Sea	60 37.00 N	173 00.00 W			20
St. Paul I./Sea Lion Rock	Bering Sea	57 06.00 N	170 17.50 W			3
St. Paul I./NE Pt.	Bering Sea	57 15.00 N	170 06.50 W			3
Walrus I. (Pribilofs)	Bering Sea	57 11.00 N	169 56.00 W			10
St. George I./Dalnoi Pt.	Bering Sea	56 36.00 N	169 46.00 W			3
St. George I./S Rookery	Bering Sea	56 33.50 N	169 40.00 W			3
Cape Newenham	Bering Sea	58 39.00 N	162 10.50 W			20
Round (Walrus Islands)	Bering Sea	58 36.00 N	159 58.00 W			20
Attu I./Cape Wrangell	Aleutian I.	52 54.60 N	172 27.90 E	52 55.40 N	172 27.20 E	20
Agattu I./Gillon Pt.	Aleutian I.	52 24.13 N	173 21.31 E			20
Attu I./Chirikof Pt.	Aleutian I.	52 49.75 N	173 26.00 E			20
Agattu I./Cape Sabak	Aleutian I.	52 22.50 N	173 43.30 E	52 21.80 N	173 41.40 E	20
Alaid I.	Aleutian I.	52 46.50 N	173 51.50 E	52 45.00 N	173 56.50 E	20
Shemya I.	Aleutian I.	52 44.00 N	174 08.70 E			20
Buldir I.	Aleutian I.	52 20.25 N	175 54.03 E	52 20.38 N	175 53.85 E	20
Kiska I./Cape St. Stephen	Aleutian I.	51 52.50 N	177 12.70 E	51 53.50 N	177 12.00 E	20
Kiska I./Sobaka & Vega	Aleutian I.	51 49.50 N	177 19.00 E	51 48.50 N	177 20.50 E	20
Kiska I./Lief Cove	Aleutian I.	51 57.16 N	177 20.41 E	51 57.24 N	177 20.53 E	20
Kiska I./Sirius Pt.	Aleutian I.	52 08.50 N	177 36.50 E			20
Tanadak I. (Kiska)	Aleutian I.	51 56.80 N	177 46.80 E			20
Segula I.	Aleutian I.	51 59.90 N	178 05.80 E	52 03.06 N	178 08.80 E	20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Ayugadak Point	Aleutian I.	51 45.36 N	178 24.30 E			20
Rat I./Krysi Pt.	Aleutian I.	51 49.98 N	178 12.35 E			20
Little Sitkin I.	Aleutian I.	51 59.30 N	178 29.80 E			20
Amchitka I./Column Rocks	Aleutian I.	51 32.32 N	178 49.28 E			20
Amchitka I./East Cape	Aleutian I.	51 22.26 N	179 27.93 E	51 22.00 N	179 27.00 E	20
Amchitka I./Cape Ivakin	Aleutian I.	51 24.46 N	179 24.21 E			20
Semisopochnoi/Petrel Pt.	Aleutian I.	52 01.40 N	179 36.90 E	52 01.50 N	179 39.00 E	20
Semisopochnoi I./Pochnoi Pt.	Aleutian I.	51 57.30 N	179 46.00 E			20
Amatignak I. Nitrof Pt.	Aleutian I.	51 13.00 N	179 07.80 W			20
Unalga & Dinkum Rocks	Aleutian I.	51 33.67 N	179 04.25 W	51 35.09 N	179 03.66 W	20
Ulak I./Hasgox Pt.	Aleutian I.	51 18.90 N	178 58.90 W	51 18.70 N	178 59.60 W	20
Kavalga I.	Aleutian I.	51 34.50 N	178 51.73 W	51 34.50 N	178 49.50 W	20
Tag I.	Aleutian I.	51 33.50 N	178 34.50 W			20
Ugidak I.	Aleutian I.	51 34.95 N	178 30.45 W			20
Gramp Rock	Aleutian I.	51 28.87 N	178 20.58 W			20
Tanaga I./Bumpy Pt.	Aleutian I.	51 55.00 N	177 58.50 W	51 55.00 N	177 57.10 W	20
Bobrof I.	Aleutian I.	51 54.00 N	177 27.00 W			20
Kanaga I./Ship Rock	Aleutian I.	51 46.70 N	177 20.72 W			20
Kanaga I./North Cape	Aleutian I.	51 56.50 N	177 09.00 W			20
Adak I.	Aleutian I.	51 35.50 N	176 57.10 W	51 37.40 N	176 59.60 W	20
Little Tanaga Strait	Aleutian I.	51 49.09 N	176 13.90 W			20
Great Sitkin I.	Aleutian I.	52 06.00 N	176 10.50 W	52 06.60 N	176 07.00 W	20
Anagaksik I.	Aleutian I.	51 50.86 N	175 53.00 W			20
Kasatochi I.	Aleutian I.	52 11.11 N	175 31.00 W			20
Atka I./North Cape	Aleutian I.	52 24.20 N	174 17.80 W			20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Amlia I./Sviech. Harbor[11]	Aleutian I.	52 01.80 N	173 23.90 W			20
Sagigik I.[11]	Aleutian I.	52 00.50 N	173 09.30 W			20
Amlia I./East[11]	Aleutian I.	52 05.70 N	172 59.00 W	52 05.75 N	172 57.50 W	20
Tanadak I. (Amlia[11])	Aleutian I.	52 04.20 N	172 57.60 W			20
Agligadak I.[11]	Aleutian I.	52 06.09 N	172 54.23 W			20
Seguam I./Saddleridge Pt.[11]	Aleutian I.	52 21.05 N	172 34.40 W	52 21.02 N	172 33.60 W	20
Seguam I./Finch Pt.	Aleutian I.	52 23.40 N	172 27.70 W	52 23.25 N	172 24.30 W	20
Seguam I./South Side	Aleutian I.	52 21.60 N	172 19.30 W	52 15.55 N	172 31.22 W	20
Amukta I. & Rocks	Aleutian I.	52 27.25 N	171 17.90 W			20
Chagulak I.	Aleutian I.	52 34.00 N	171 10.50 W			20
Yunaska I.	Aleutian I.	52 41.40 N	170 36.35 W			20
Uliaga[3]	Bering Sea	53 04.00 N	169 47.00 W	53 05.00 N	169 46.00 W	20,10
Chuginadak	Gulf of Alaska	52 46.70 N	169 41.90 W			20
Kagamil[3]	Bering Sea	53 02.10 N	169 41.00 W			20,10
Samalga	Gulf of Alaska	52 46.00 N	169 15.00 W			20
Adugak I.[3]	Bering Sea	52 54.70 N	169 10.50 W			10
Umnak I./Cape Aslik[3]	Bering Sea	53 25.00 N	168 24.50 W			BA
Ogchul I.	Gulf of Alaska	52 59.71 N	168 24.24 W			20
Bogoslof I./Fire I.[3]	Bering Sea	53 55.69 N	168 02.05 W			BA
Polivnoi Rock	Gulf of Alaska	53 15.96 N	167 57.99 W			20
Emerald I.	Gulf of Alaska	53 17.50 N	167 51.50 W			20
Unalaska/Cape Izigan	Gulf of Alaska	53 13.64 N	167 39.37 W			20
Unalaska/Bishop Pt.[9]	Bering Sea	53 58.40 N	166 57.50 W			10
Akutan I./Reef-lava[9]	Bering Sea	54 08.10 N	166 06.19 W	54 09.10 N	166 05.50 W	10
Unalaska I./Cape Sedanka[6]	Gulf of Alaska	53 50.50 N	166 05.00 W			20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Old Man Rocks[6]	Gulf of Alaska	53 52.20 N	166 04.90 W			20
Akutan I./Cape Morgan[6]	Gulf of Alaska	54 03.39 N	165 59.65 W	54 03.70 N	166 03.68 W	20
Akun I./Billings Head[9]	Bering Sea	54 17.62 N	165 32.06 W	54 17.57 N	165 31.71 W	10
Rootok[6]	Gulf of Alaska	54 03.90 N	165 31.90 W	54 02.90 N	165 29.50 W	20
Tanginak I.[6]	Gulf of Alaska	54 12.00 N	165 19.40 W			20
Tigalda/Rocks NE[6]	Gulf of Alaska	54 09.60 N	164 59.00 W	54 09.12 N	164 57.18 W	20
Unimak/Cape Sarichef[9]	Bering Sea	54 34.30 N	164 56.80 W			10
Aiktak[6]	Gulf of Alaska	54 10.99 N	164 51.15 W			20
Ugamak I.[6]	Gulf of Alaska	54 13.50 N	164 47.50 W	54 12.80 N	164 47.50 W	20
Round (GOA)[6]	Gulf of Alaska	54 12.05 N	164 46.60 W			20
Sea Lion Rock (Amak)[9]	Bering Sea	55 27.82 N	163 12.10 W			10
Amak I. And rocks[9]	Bering Sea	55 24.20 N	163 09.60 W	55 26.15 N	163 08.50 W	10
Bird I.	Gulf of Alaska	54 40.00 N	163 17.2 W			10
Caton I.	Gulf of Alaska	54 22.70 N	162 21.30 W			3
South Rocks	Gulf of Alaska	54 18.14 N	162 41.3 W			10
Clubbing Rocks (S)	Gulf of Alaska	54 41.98 N	162 26.7 W			10
Clubbing Rocks (N)	Gulf of Alaska	54 42.75 N	162 26.7 W			10
Pinnacle Rock	Gulf of Alaska	54 46.06 N	161 45.85 W			3
Sushilnoi Rocks	Gulf of Alaska	54 49.30 N	161 42.73 W			10
Olga Rocks	Gulf of Alaska	55 00.45 N	161 29.81 W	54 59.09 N	161 30.89 W	10
Jude I.	Gulf of Alaska	55 15.75 N	161 06.27 W			20
Sea Lion Rocks (Shumagins)	Gulf of Alaska	55 04.70 N	160 31.04 W			3
Nagai I./Mountain Pt.	Gulf of Alaska	54 54.20 N	160 15.40 W	54 56.00 N	160 15.00 W	3
The Whaleback	Gulf of Alaska	55 16.82 N	160 05.04 W			3
Chernabura I.	Gulf of Alaska	54 45.18 N	159 32.99 W	54 45.87 N	159 35.74 W	20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Castle Rock	Gulf of Alaska	55 16.47 N	159 29.77 W			3
Atkins I.	Gulf of Alaska	55 03.20 N	159 17.40 W			20
Spitz I.	Gulf of Alaska	55 46.60 N	158 53.90 W			3
Mitrofania	Gulf of Alaska	55 50.20 N	158 41.90 W			3
Kak	Gulf of Alaska	56 17.30 N	157 50.10 W			20
Lighthouse Rocks	Gulf of Alaska	55 46.79 N	157 24.89 W			20
Sutwik I.	Gulf of Alaska	56 31.05 N	157 20.47 W	56 32.00 N	157 21.00 W	20
Chowiet I.	Gulf of Alaska	56 00.54 N	156 41.42 W	55 00.30 N	156 41.60 W	20
Nagai Rocks	Gulf of Alaska	55 49.80 N	155 47.50 W			20
Chirikof I.	Gulf of Alaska	55 46.50 N	155 39.50 W	55 46.44 N	155 43.46 W	20
Puale Bay[12]	Gulf of Alaska	57 40.60 N	155 23.10 W			3,10
Kodiak/Cape Ikolik	Gulf of Alaska	57 17.20 N	154 47.50 W			3
Takli I.	Gulf of Alaska	58 01.75 N	154 31.25 W			10
Cape Kuliak	Gulf of Alaska	58 08.00 N	154 12.50 W			10
Cape Gull	Gulf of Alaska	58 11.50 N	154 09.60 W	58 12.50 N	154 10.50 W	10
Kodiak/Cape Ugat	Gulf of Alaska	57 52.41 N	153 50.97 W			10
Sitkinak/Cape Sitkinak	Gulf of Alaska	56 34.30 N	153 50.96 W			10
Shakun Rock	Gulf of Alaska	58 32.80 N	153 41.50 W			10
Twoheaded I.	Gulf of Alaska	56 54.50 N	153 32.75 W	56 53.90 N	153 33.74 W	10
Cape Douglas (Shaw I.)[12]	Gulf of Alaska	59 00.00 N	153 22.50 W			20,10
Kodiak/Cape Barnabas	Gulf of Alaska	57 10.20 N	152 53.05 W			3
Kodiak/Gull Point[4]	Gulf of Alaska	57 21.45 N	152 36.30 W			10, 3
Latax Rocks	Gulf of Alaska	58 40.10 N	152 31.30 W			10
Ushagat I./SW	Gulf of Alaska	58 54.75 N	152 22.20 W			10
Ugak I.[4]	Gulf of Alaska	57 23.60 N	152 17.50 W	57 21.90 N	152 17.40 W	10, 3

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Sea Otter I.	Gulf of Alaska	58 31.15 N	152 13.30 W			10
Long I.	Gulf of Alaska	57 46.82 N	152 12.90 W			10
Sud I.	Gulf of Alaska	58 54.00 N	152 12.50 W			10
Kodiak/Cape Chiniak	Gulf of Alaska	57 37.90 N	152 08.25 W			10
Sugarloaf I.	Gulf of Alaska	58 53.25 N	152 02.40 W			20
Sea Lion Rocks (Marmot)	Gulf of Alaska	58 20.53 N	151 48.83 W			10
Marmot I.[5]	Gulf of Alaska	58 13.65 N	151 47.75 W	58 09.90 N	151 52.06 W	15, 20
Nagahut Rocks	Gulf of Alaska	59 06.00 N	151 46.30 W			10
Perl	Gulf of Alaska	59 05.75 N	151 39.75 W			10
Gore Point	Gulf of Alaska	59 12.00 N	150 58.00 W			10
Outer (Pye) I.	Gulf of Alaska	59 20.50 N	150 23.00 W	59 21.00 N	150 24.50 W	20
Steep Point	Gulf of Alaska	59 29.05 N	150 15.40 W			10
Seal Rocks (Kenai)	Gulf of Alaska	59 31.20 N	149 37.50 W			10
Chiswell Islands	Gulf of Alaska	59 36.00 N	149 34.00 W			10
Rugged Island	Gulf of Alaska	59 50.00 N	149 23.10 W	59 51.00 N	149 24.70 W	10
Point Elrington[7, 10]	Gulf of Alaska	59 56.00 N	148 15.20 W			20
Perry I.[7]	Gulf of Alaska	60 44.00 N	147 54.60 W			
The Needle[7]	Gulf of Alaska	60 06.64 N	147 36.17 W			
Point Eleanor[7]	Gulf of Alaska	60 35.00 N	147 34.00 W			
Wooded I. (Fish I.)	Gulf of Alaska	59 52.90 N	147 20.65 W			20
Glacier Island[7]	Gulf of Alaska	60 51.30 N	147 14.50 W			
Seal Rocks (Cordova)[10]	Gulf of Alaska	60 09.78 N	146 50.30 W			20
Cape Hinchinbrook[10]	Gulf of Alaska	60 14.00 N	146 38.50 W			20
Middleton I.	Gulf of Alaska	59 28.30 N	146 18.80 W			10
Hook Point[10]	Gulf of Alaska	60 20.00 N	146 15.60 W			20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pollock No-fishing Zones for Trawl Gear [2,8](nm)
		Latitude	Longitude	Latitude	Longitude	
Cape St. Elias	Gulf of Alaska	59 47.50 N	144 36.20 W			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] Closures as stated in 50 CFR 679.22(a)(7)(iv), (a)(8)(ii) and (b)(2)(ii).

[3] This site lies within the Bogoslof area (BA). The BA consists of all waters of area 518 as described in Figure 1 of this part south of a straight line connecting 55°00' N/170°00' W, and 55°00' N/168°11'4.75" W. Closure to directed fishing for pollock around Uliaga and Kagamil is 20 nm for waters west of 170°W long. and 10 nm for waters east of 170°W long.

[4] The trawl closure between 0 nm to 10 nm is effective from January 20 through May 31. Trawl closure between 0 nm to 3 nm is effective from August 25 through November 1.

[5] Trawl closure between 0 nm to 15 nm is effective from January 20 through May 31. Trawl closure between 0 nm to 20 nm is effective from August 25 to November 1.

[6] Restriction area includes only waters of the Gulf of Alaska Area.

[7] Contact the Alaska Department of Fish and Game for fishery restrictions at these sites.

[8] No-fishing zones are the waters between 0 nm and the nm specified in column 7 around each site and within the BA.

[9] This site is located in the Bering Sea Pollock Restriction Area, closed to pollock trawling during the A season. This area consists of all waters of the Bering Sea subarea south of a line connecting the points 163°0'00" W long./55°46'30" N lat., 165°08'00" W long./54°42'9" N lat., 165°40'00" long./54°26'30" N lat., 166°12'00" W long./54°18'40" N lat., and 167°0'00" W long./54°8'50" N lat.

[10] The 20 nm closure around this site is effective in federal waters outside of State of Alaska waters of Prince William Sound.

[11] Some or all of the restricted area is located in the Seguam Foraging area (SFA) which is closed to all gears types. The SFA is established as all waters within the area between 52°N lat. and 53°N lat. and between 173°30' W long. and 172°30' W long.

[12] The 3 nm trawl closure around Puale Bay and the 20 nm trawl closure around Cape Douglas/Shaw I. are effective January 20 through May 31. The 10 nm trawl closure around Puale Bay and the 10 nm trawl closure around Cape Douglas/Shaw I. are effective August 25 through November 1.

Table 5 to 50 CFR Part 679 Steller Sea Lion Protection Areas Pacific Cod Fisheries Restrictions

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
St. Lawrence I./S Punuk I.	BS	63 04.00 N	168 51.00 W			20	20	20
St. Lawrence I./SW Cape	BS	63 18.00 N	171 26.00 W			20	20	20
Hall I.	BS	60 37.00 N	173 00.00 W			20	20	20
St. Paul I./Sea Lion Rock	BS	57 06.00 N	170 17.50 W			3	3	3
St. Paul I./NE Pt.	BS	57 15.00 N	170 06.50 W			3	3	3
Walrus I. (Pribilofs)	BS	57 11.00 N	169 56.00 W			10	3	3
St George I./Dalnoi Pt.	BS	56 36.00 N	169 46.00 W			3	3	3
St. George I./S. Rookery	BS	56 33.50 N	169 40.00 W			3	3	3
Cape Newenham	BS	58 39.00 N	162 10.50 W			20	20	20
Round (Walrus Islands)	BS	58 36.00 N	159 58.00 W			20	20	20
Attu I./Cape Wrangell[11]	AI	52 54.60 N	172 27.90 E	52 55.40 N	172 27.20 E	20, 10	3	3
Agattu I./Gillon Pt.[11]	AI	52 24.13 N	173 21.31 E			20, 10	3	3
Attu I./Chirikof Pt.[11]	AI	52 49.75 N	173 26.00 E			20, 3		
Agattu I./Cape Sabak[11]	AI	52 22.50 N	173 43.30 E	52 21.80 N	173 41.40 E	20, 10	3	3
Alaid I.[11]	AI	52 46.50 N	173 51.50 E	52 45.00 N	173 56.50 E	20, 3		
Shemya I.[11]	AI	52 44.00 N	174 08.70 E			20, 3		
Buldir I.[11]	AI	52 20.25 N	175 54.03 E	52 20.38 N	175 53.85 E	20, 10	10	10
Kiska I./Cape St. Stephen[11]	AI	51 52.50 N	177 12.70 E	51 53.50 N	177 12.00 E	20, 10	3	3
Kiska I. Sobaka & Vega[11]	AI	51 49.50 N	177 19.00 E	51 48.50 N	177 20.50 E	20, 3		
Kiska I./Lief Cove[11]	AI	51 57.16 N	177 20.41 E	51 57.24 N	177 20.53 E	20, 10	3	3
Kiska I./Sirius Pt.[11]	AI	52 08.50 N	177 36.50 E			20, 3		
Tanadak I. (Kiska)[11]	AI	51 56.80 N	177 46.80 E			20, 3		

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
Segula I.[11]	AI	51 59.90 N	178 05.80 E	52 03.06 N	178 08.80 E	20, 3		
Ayugadak Point[11]	AI	51 45.36 N	178 24.30 E			20, 10	3	3
Rat I./Krysi Pt.[11]	AI	51 49.98 N	178 12.35 E			20, 3		
Little Sitkin I.[11]	AI	51 59.30 N	178 29.80 E			20, 3		
Amchitka I./Column[11]	AI	51 32.32 N	178 49.28 E			20, 10	3	3
Amchitka I./East Cape[11]	AI	51 22.26 N	179 27.93 E	51 22.00 N	179 27.00 E	20,10	3	3
Amchitka I./Cape Ivakin[11]	AI	51 24.46 N	179 24.21 E			20, 3		
Semisopochnoi/Petrel Pt.[11]	AI	52 01.40 N	179 36.90 E	52 01.50 N	179 39.00 E	20, 10	3	3
Semisopochnoi I./Pochnoi Pt.[11]	AI	51 57.30 N	179 46.00 E			20, 10	3	3
Amatignak I./Nitrof Pt.[11]	AI	51 13.00 N	179 07.80 W			20, 3		
Unalga & Dinkum Rocks[11]	AI	51 33.67 N	179 04.25 W	51 35.09 N	179 03.66 W	20, 3		
Ulak I./Hasgox Pt.[11]	AI	51 18.90 N	178 58.90 W	51 18.70 N	178 59.60 W	20, 10	3	3
Kavalga I.[11]	AI	51 34.50 N	178 51.73 W	51 34.50 N	178 49.50 W	20, 3		
Tag I.[11]	AI	51 33.50 N	178 34.50 W			20, 10	3	3
Ugidak I.[11]	AI	51 34.95 N	178 30.45 W			20, 3		
Gramp Rock[11]	AI	51 28.87 N	178 20.58 W			20, 10	3	3
Tanaga I./Bumpy Pt.[11]	AI	51 55.00 N	177 58.50 W	51 55.00 N	177 57.10 W	20,3		
Bobrof I.	AI	51 54.00 N	177 27.00 W			3		
Kanaga I./Ship Rock	AI	51 46.70 N	177 20.72 W			3		
Kanaga I./North Cape	AI	51 56.50 N	177 09.00 W			3		
Adak I.	AI	51 35.50 N	176 57.10 W	51 37.40 N	176 59.60 W	10	3	3
Little Tanaga Strait	AI	51 49.09 N	176 13.90 W			3		
Great Sitkin I.	AI	52 06.00 N	176 10.50 W	52 06.60 N	176 07.00 W	3		
Anagaksik I.	AI	51 50.86 N	175 53.00 W			3		
Kasatochi I.	AI	52 11.11 N	175 31.00 W			10	3	3

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
Atka I./N. Cape	AI	52 24.20 N	174 17.80 W			3		
Amlia I./Sviech. Harbor[4]	AI	52 01.80 N	173 23.90 W			3		
Sagigik I.[4]	AI	52 00.50 N	173 09.30 W			3		
Amlia I./East[4]	AI	52 05.70 N	172 59.00 W	52 05.75 N	172 57.50 W	3	20	20
Tanadak I. (Amlia)[4]	AI	52 04.20 N	172 57.60 W			3	20	20
Agligadak I.[4]	AI	52 06.09 N	172 54.23 W			20	20	20
Seguam I./Saddleridge Pt.[4]	AI	52 21.05 N	172 34.40 W	52 21.02 N	172 33.60 W	10	20	20
Seguam I./Finch Pt.	AI	52 23.40 N	172 27.70 W	52 23.25 N	172 24.30 W	3	20	20
Seguam I./South Side	AI	52 21.60 N	172 19.30 W	52 15.55 N	172 31.22 W	3	20	20
Amukta I. & Rocks	AI	52 27.25 N	171 17.90 W			3	20	20
Chagulak I.	AI	52 34.00 N	171 10.50 W			3	20	20
Yunaska I.	AI	52 41.40 N	170 36.35 W			10	20	20
Uliaga[5, 14]	BS	53 04.00 N	169 47.00 W	53 05.00 N	169 46.00 W	10	20	20
Chuginadak[14]	GOA	52 46.70 N	169 41.90 W			20	20,10	20
Kagamil[5, 14]	BS	53 02.10 N	169 41.00 W			10	20	20
Samalga	GOA	52 46.00 N	169 15.00 W			20	10	20
Adugak I.[5]	BS	52 54.70 N	169 10.50 W			10	BA	BA
Umnak I./Cape Aslik[5]	BS	53 25.00 N	168 24.50 W			BA	BA	BA
Ogchul I.	GOA	52 59.71 N	168 24.24 W			20	10	20
Bogoslof I./Fire I.[5]	BS	53 55.69 N	168 02.05 W			BA	BA	BA
Polivnoi Rock[9]	GOA	53 15.96 N	167 57.99 W			20	10	20
Emerald I.[13, 9]	GOA	53 17.50 N	167 51.50 W			20	10	20
Unalaska/Cape Izigan[9]	GOA	53 13.64 N	167 39.37 W			20	10	20
Unalaska/Bishop Pt.[6, 13]	BS	53 58.40 N	166 57.50 W			10	10	3
Akutan I./Reef-lava[6]	BS	54 08.10 N	166 06.19 W	54 09.10 N	166 05.50 W	10	10	3

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
Unalaska I./Cape Sedanka[9]	GOA	53 50.50 N	166 05.00 W			20	10	20
Old Man Rocks[9]	GOA	53 52.20 N	166 04.90 W			20	10	20
Akutan I./Cape Morgan[9]	GOA	54 03.39 N	165 59.65 W	54 03.70 N	166 03.68 W	20	10	20
Akun I./Billings Head	BS	54 17.62 N	165 32.06 W	54 17.57 N	165 31.71 W	10	3	3
Rootok[9]	GOA	54 03.90 N	165 31.90 W	54 02.90 N	165 29.50 W	20	10	20
Tanginak I.[9]	GOA	54 12.00 N	165 19.40 W			20	10	20
Tigalda/Rocks NE[9]	GOA	54 09.60 N	164 59.00 W	54 09.12 N	164 57.18 W	20	10	20
Unimak/Cape Sarichef	BS	54 34.30 N	164 56.80 W			10	3	3
Aiktak[9]	GOA	54 10.99 N	164 51.15 W			20	10	20
Ugamak I.[9]	GOA	54 13.50 N	164 47.50 W	54 12.80 N	164 47.50 W	20	10	20
Round (GOA)[9]	GOA	54 12.05 N	164 46.60 W			20	10	20
Sea Lion Rock (Amak)	BS	55 27.82 N	163 12.10 W			10	7	7
Amak I. And rocks	BS	55 24.20 N	163 09.60 W	55 26.15 N	163 08.50 W	10	3	3
Bird I.	GOA	54 40.00 N	163 17.2 W			10		
Caton I.	GOA	54 22.70 N	162 21.30 W			3	3	
South Rocks	GOA	54 18.14 N	162 41.3 W			10		
Clubbing Rocks (S)	GOA	54 41.98 N	162 26.7 W			10	3	3
Clubbing Rocks (N)	GOA	54 42.75 N	162 26.7 W			10	3	3
Pinnacle Rock	GOA	54 46.06 N	161 45.85 W			3	3	3
Sushilnoi Rocks	GOA	54 49.30 N	161 42.73 W			10		
Olga Rocks	GOA	55 00.45 N	161 29.81 W	54 59.09 N	161 30.89 W	10		
Jude I.	GOA	55 15.75 N	161 06.27 W			20		
Sea Lion Rocks (Shumagins)	GOA	55 04.70 N	160 31.04 W			3	3	3
Nagai I./Mountain Pt.	GOA	54 54.20 N	160 15.40 W	54.56.00 N	160.15.00 W	3	3	3
The Whaleback	GOA	55 16.82 N	160 05.04 W			3	3	3

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
Chernabura I.	GOA	54 45.18 N	159 32.99 W	54 45.87 N	159 35.74 W	20	3	3
Castle Rock	GOA	55 16.47 N	159 29.77 W			3	3	
Atkins I.	GOA	55 03.20 N	159 17.40 W			20	3	3
Spitz I.	GOA	55 46.60 N	158 53.90 W			3	3	3
Mitrofania	GOA	55 50.20 N	158 41.90 W			3	3	3
Kak	GOA	56 17.30 N	157 50.10 W			20	20	3
Lighthouse Rocks	GOA	55 46.79 N	157 24.89 W			20	20	20
Sutwik I.	GOA	56 31.05 N	157 20.47 W	56 32.00 N	157 21.00 W	20	20	20
Chowiet I.	GOA	56 00.54 N	156 41.42 W	56 00.30 N	156 41.60 W	20	20	20
Nagai Rocks	GOA	55 49.80 N	155 47.50 W			20	20	20
Chirikof I.	GOA	55 46.50 N	155 39.50 W	55 46.44 N	155 43.46 W	20	20	20
Puale Bay	GOA	57 40.60 N	155 23.10 W			10		
Kodiak/Cape Ikolik	GOA	57 17.20 N	154 47.50 W			3	3	3
Takli I.	GOA	58 01.75 N	154 31.25 W			10		
Cape Kuliak	GOA	58 08.00 N	154 12.50 W			10		
Cape Gull	GOA	58 11.50 N	154 09.60 W	58 12.50 N	154 10.50 W	10		
Kodiak/Cape Ugat	GOA	57 52.41 N	153 50.97 W			10		
Sitkinak/Cape Sitkinak	GOA	56 34.30 N	153 50.96 W			10		
Shakun Rock	GOA	58 32.80 N	153 41.50 W			10		
Twoheaded I.	GOA	56 54.50 N	153 32.75 W	56 53.90 N	153 33.74 W	10		
Cape Douglas (Shaw I.)	GOA	59 00.00 N	153 22.50 W			10		
Kodiak/Cape Barnabas	GOA	57 10.20 N	152 53.05 W			3	3	
Kodiak/Gull Point[7]	GOA	57 21.45 N	152 36.30 W			10, 3		
Latax Rocks	GOA	58 40.10 N	152 31.30 W			10		
Ushagat I./SW	GOA	58 54.75	152 22.20 W			10		
Ugak I.[7]	GOA	57 23.60 N	152 17.50 W	57 21.90 N	152 17.40 W	10, 3		

Column Number 1	2	3	4	5	6	7	8	9
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Pacific Cod No-fishing Zones for Trawl Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Hook-and-Line Gear[2,3] (nm)	Pacific Cod No-fishing Zone for Pot Gear[2,3] (nm)
		Latitude	Longitude	Latitude	Longitude			
Sea Otter I.	GOA	58 31.15 N	152 13.30 W			10		
Long I.	GOA	57 46.82 N	152 12.90 W			10		
Sud I.	GOA	58 54.00 N	152 12.50 W			10		
Kodiak/Cape Chiniak	GOA	57 37.90 N	152 08.25 W			10		
Sugarloaf I.	GOA	58 53.25 N	152 02.40 W			20	10	10
Sea Lion Rocks (Marmot)	GOA	58 20.53 N	151 48.83 W			10		
Marmot I.[8]	GOA	58 13.65 N	151 47.75 W	58 09.90 N	151 52.06 W	15, 20	10	10
Nagahut Rocks	GOA	59 06.00 N	151 46.30 W			10		
Perl	GOA	59 05.75 N	151 39.75 W			10		
Gore Point	GOA	59 12.00 N	150 58.00 W			10		
Outer (Pye) I.	GOA	59 20.50 N	150 23.00 W	59 21.00 N	150 24.50 W	20	10	10
Steep Point	GOA	59 29.05 N	150 15.40 W			10		
Seal Rocks (Kenai)	GOA	59 31.20 N	149 37.50 W			10		
Chiswell Islands	GOA	59 36.00 N	149 34.00 W			10		
Rugged Island	GOA	59 50.00 N	149 23.10 W			10		
Point Elrington[10, 12]	GOA	59 56.00 N	148 15.20 W			20		
Perry I.[10]	GOA	60 44.00 N	147 54.60 W					
The Needle[10]	GOA	60 06.64 N	147 36.17 W					
Point Eleanor[10]	GOA	60 35.00 N	147 34.00 W					
Wooded I. (Fish I.)	GOA	59 52.90 N	147 20.65 W			20	3	3
Glacier Island[10]	GOA	60 51.30 N	147 14.50 W					
Seal Rocks (Cordova)[12]	GOA	60 09.78 N	146 50.30 W			20	3	3
Cape Hinchinbrook[12]	GOA	60 14.00 N	146 38.50 W			20		
Middleton I.	GOA	59 28.30 N	146 18.80 W			10		
Hook Point[12]	GOA	60 20.00 N	146 15.60 W			20		
Cape St. Elias	GOA	59 47.50 N	144 36.20 W			20		

BS = Bering Sea, AI = Aleutian Islands, GOA = Gulf of Alaska

[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] Closures as stated in 50 CFR 679.22(a)(7)(v), (a)(8)(iv) and (b)(2)(iii).

[3] No-fishing zones are the waters between 0 nm and the nm specified in columns 7, 8, and 9 around each site and within the Bogoslof area (BA) and the Seguam Foraging Area (SFA).

[4] Some or all of the restricted area is located in the SFA which is closed to all gears types. The SFA is established as all waters within the area between 52°N lat. and 53°N lat. and between 173°30' W long. and 172°30' W long. Amlia I./East, and Tanadak I. (Amlia) haulouts 20 nm hook-and-line and pot closures apply only to waters located east of 173°W longitude.

[5]This site lies within the BA which is closed to all gear types. The BA consists of all waters of area 518 as described in Figure 1 of this part south of a straight line connecting 55°00'N/170°00'W, and 55°00' N/168°11'4.75" W.

[6]Hook-and-line no-fishing zones apply only to vessels greater than or equal to 60 feet LOA in waters east of 167°W long. For Bishop Point the 10 nm closure west of 167°W. long. applies to all hook and line and jig vessels.

[7]The trawl closure between 0 nm to 10 nm is effective from January 20 through June 10. Trawl closure between 0 nm to 3 nm is effective from September 1 through November 1.

[8] The trawl closure between 0 nm to 15 nm is effective from January 20 through June 10. Trawl closure between 0 nm to 20 nm is effective from September 1 through November 1.

[9]Restriction area includes only waters of the Gulf of Alaska Area.

[10]Contact the Alaska Department of Fish and Game for fishery restrictions at these sites.

[11]Directed fishing for Pacific cod using trawl gear is prohibited in the harvest limit area (HLA) as defined at § 679.2 until the HLA Atka mackerel directed fishery in the A or B seasons is completed. The 20 nm closure around Gramp Rock and Tanaga I./Bumpy Pt. applies only to waters west of 178°W long. and only during the HLA directed fishery. After closure of the Atka mackerel HLA directed fishery, directed fishing for Pacific cod using trawl gear is prohibited in the HLA between 0 nm to 10 nm of rookeries and between 0 nm to 3 nm of haulouts. Directed fishing for Pacific cod using trawl gear is prohibited between 0-3 nm of Tanaga I./Bumpy Pt.

[12] The 20 nm closure around this site is effective only in waters outside of the State of Alaska waters of Prince William Sound.

[13] See 50 CFR 679.22(a)(7)(i)(C) for exemptions for catcher vessels less than 60 feet (18.3 m) LOA using jig or hook-and-line gear between Bishop Point and Emerald Island closure areas.

[14]Trawl closure around this site is limited to waters east of 170°00'00" W long. Closure to hook-and-line fishing around Chuginadak is 20 nm for waters west of 170°W long. and 10 nm for waters east of 170°W long.

Table 6 to 50 CFR Part 679 Steller Sea Lion Protection Areas Atka Mackerel Fisheries Restrictions

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Atka mackerel No-fishing Zones for Trawl Gear [2,3] (nm)
		Latitude	Longitude	Latitude	Longitude	
St. Lawrence I./S Punuk I.	Bering Sea	63 04.00 N	168 51.00 W			20
St. Lawrence I./SW Cape	Bering Sea	63 18.00 N	171 26.00 W			20
Hall I.	Bering Sea	60 37.00 N	173 00.00 W			20
St. Paul I./Sea Lion Rock	Bering Sea	57 06.00 N	170 17.50 W			20
St. Paul I./NE Pt.	Bering Sea	57 15.00 N	170 06.50 W			20
Walrus I. (Pribilofs)	Bering Sea	57 11.00 N	169 56.00 W			20
St. George I./Dalnoi Pt.	Bering Sea	56 36.00 N	169 46.00 W			20
St. George I./S Rookery	Bering Sea	56 33.50 N	169 40.00 W			20
Cape Newenham	Bering Sea	58 39.00 N	162 10.50 W			20
Round (Walrus Islands)	Bering Sea	58 36.00 N	159 58.00 W			20
Attu I./Cape Wrangell	Aleutian Islands	52 54.60 N	172 27.90 E	52 55.40 N	172 27.20 E	10
Agattu I./Gillon Pt.	Aleutian Islands	52 24.13 N	173 21.31 E			10
Attu I./Chirikof Pt.	Aleutian Islands	52 49.75 N	173 26.00 E			3
Agattu I./Cape Sabak	Aleutian Islands	52 22.50 N	173 43.30 E	52 21.80 N	173 41.40 E	10
Alaid I.	Aleutian Islands	52 46.50 N	173 51.50 E	52 45.00 N	173 56.50 E	3
Shemya I.	Aleutian Islands	52 44.00 N	174 08.70 E			3
Buldir I.	Aleutian Islands	52 20.25 N	175 54.03 E	52 20.38 N	175 53.85 E	15
Kiska I./Cape St. Stephen	Aleutian Islands	51 52.50 N	177 12.70 E	51 53.50 N	177 12.00 E	10
Kiska I./Sobaka & Vega	Aleutian Islands	51 49.50 N	177 19.00 E	51 48.50 N	177 20.50 E	3
Kiska I./Lief Cove	Aleutian Islands	51 57.16 N	177 20.41 E	51 57.24 N	177 20.53 E	10
Kiska I./Sirius Pt.	Aleutian Islands	52 08.50 N	177 36.50 E			3
Tanadak I. (Kiska)	Aleutian Islands	51 56.80 N	177 46.80 E			3

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Atka mackerel No-fishing Zones for Trawl Gear [2,3](nm)
		Latitude	Longitude	Latitude	Longitude	
Segula I.	Aleutian Islands	51 59.90 N	178 05.80 E	52 03.06 N	178 08.80 E	3
Ayugadak Point	Aleutian Islands	51 45.36 N	178 24.30 E			10
Rat I./Krysi Pt.	Aleutian Islands	51 49.98 N	178 12.35 E			3
Little Sitkin I.	Aleutian Islands	51 59.30 N	178 29.80 E			3
Amchitka I./Column Rocks	Aleutian Islands	51 32.32 N	178 49.28 E			10
Amchitka I./East Cape	Aleutian Islands	51 22.26 N	179 27.93 E	51 22.00 N	179 27.00 E	10
Amchitka I./Cape Ivakin	Aleutian Islands	51 24.46 N	179 24.21 E			3
Semisopochnoi/Petrel Pt.	Aleutian Islands	52 01.40 N	179 36.90 E	52 01.50 N	179 39.00 E	10
Semisopochnoi I./Pochnoi Pt.	Aleutian Islands	51 57.30 N	179 46.00 E			10
Amatignak I. Nitrof Pt.	Aleutian Islands	51 13.00 N	179 07.80 W			3
Unalga & Dinkum Rocks	Aleutian Islands	51 33.67 N	179 04.25 W	51 35.09 N	179 03.66 W	3
Ulak I./Hasgox Pt.	Aleutian Islands	51 18.90 N	178 58.90 W	51 18.70 N	178 59.60 W	10
Kavalga I.	Aleutian Islands	51 34.50 N	178 51.73 W	51 34.50 N	178 49.50 W	3
Tag I.	Aleutian Islands	51 33.50 N	178 34.50 W			10
Ugidak I.	Aleutian Islands	51 34.95 N	178 30.45 W			3
Gramp Rock[7]	Aleutian Islands	51 28.87 N	178 20.58 W			10, 20
Tanaga I./Bumpy Pt.	Aleutian Islands	51 55.00 N	177 58.50 W	51 55.00 N	177 57.10 W	20
Bobrof I.	Aleutian Islands	51 54.00 N	177 27.00 W			20
Kanaga I./Ship Rock	Aleutian Islands	51 46.70 N	177 20.72 W			20
Kanaga I./North Cape	Aleutian Islands	51 56.50 N	177 09.00 W			20
Adak I.	Aleutian Islands	51 35.50 N	176 57.10 W	51 37.40 N	176 59.60 W	20
Little Tanaga Strait	Aleutian Islands	51 49.09 N	176 13.90 W			20
Great Sitkin I.	Aleutian Islands	52 06.00 N	176 10.50 W	52 06.60 N	176 07.00 W	20
Anagaksik I.	Aleutian Islands	51 50.86 N	175 53.00 W			20

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		Atka mackerel No-fishing Zones for Trawl Gear [2,3] (nm)
		Latitude	Longitude	Latitude	Longitude	
Kasatochi I.	Aleutian Islands	52 11.11 N	175 31.00 W			20
Atka I./North Cape	Aleutian Islands	52 24.20 N	174 17.80 W			20
Amlia I./Sviech. Harbor[5]	Aleutian Islands	52 01.80 N	173 23.90 W			20
Sagigik I.[5]	Aleutian Islands	52 00.50 N	173 09.30 W			20
Amlia I./East[5]	Aleutian Islands	52 05.70 N	172 59.00 W	52 05.75 N	172 57.50 W	20
Tanadak I. (Amlia)[5]	Aleutian Islands	52 04.20 N	172 57.60 W			20
Agligadak I.[5]	Aleutian Islands	52 06.09 N	172 54.23 W			20
Seguam I./Saddleridge Pt.[5]	Aleutian Islands	52 21.05 N	172 34.40 W	52 21.02 N	172 33.60 W	20
Seguam I./Finch Pt.[5]	Aleutian Islands	52 23.40 N	172 27.70 W	52 23.25 N	172 24.30 W	20
Seguam I./South Side[5]	Aleutian Islands	52 21.60 N	172 19.30 W	52 15.55 N	172 31.22 W	20
Amukta I. & Rocks	Aleutian Islands	52 27.25 N	171 17.90 W			20
Chagulak I.	Aleutian Islands	52 34.00 N	171 10.50 W			20
Yunaska I.	Aleutian Islands	52 41.40 N	170 36.35 W			20
Uliaga[6]	Bering Sea	53 04.00 N	169 47.00 W	53 05.00 N	169 46.00 W	20
Kagamil[6]	Bering Sea	53 02.10 N	169 41.00 W			20
Adugak I.[6]	Bering Sea	52 54.70 N	169 10.50 W			20
Umnak I./Cape Aslik[6]	Bering Sea	53 25.00 N	168 24.50 W			BA
Bogoslof I./Fire I.[6]	Bering Sea	53 55.69 N	168 02.05 W			BA
Unalaska/Bishop Pt.	Bering Sea	53 58.40 N	166 57.50 W			20
Akutan I./Reef-lava	Bering Sea	54 08.10 N	166 06.19 W	54 09.10 N	166 05.50 W	20
Akun I./Billings Head	Bering Sea	54 17.62 N	165 32.06 W	54 17.57 N	165 31.71 W	20
Unimak/Cape Sarichef	Bering Sea	54 34.30 N	164 56.80 W			20
Sea Lion Rock (Amak)	Bering Sea	55 27.82 N	163 12.10 W			20
Amak I. And rocks	Bering Sea	55 24.20 N	163 09.60 W	55 26.15 N	163 08.50 W	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.
[2] Closures as stated in 50 CFR 679.22 (a)(7)(vi) and (a)(8)(v).
[3] No-fishing zones are the waters between 0 nm and the nm specified in column 7 around each site and within the Bogoslof area (BA).
[4] The 20 nm Atka mackerel fishery closure around the Tanaga I./Bumpy Pt. Rookery is established only for that portion of the area east of 178° W longitude.
[5] Some or all of the restricted area is located in the Seguam Foraging Area (SFA) which is closed to all gears types. The SFA is established as all waters within the area between 52° N lat. and 53° N lat. and between 173°30' W long. and 172°30' W long.
[6] This site lies in the BA, closed to all gear types. The BA consists of all waters of Area 518 described in Figure 1 of this part south of a straight line connecting 55°00'N/170°00'W and 55°00'N/168°11'4.75" W.
[7]Directed fishing for Atka mackerel by vessels using trawl gear is prohibited in waters located 0-20 nm seaward of Gramp Rock and east of 178°W long.

Table 12 to 50 CFR Part 679 Steller Sea Lion Protection Areas 3nm No Groundfish Fishing Sites

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		No transit[2]
		Latitude	Longitude	Latitude	Longitude	3 nm
Walrus I. (Pribilofs)	Bering Sea	57 11.00 N	169 56.00 W			Y
Attu I./Cape Wrangell	Aleutian I.	52 54.60 N	172 27.90 E	52 55.40 N	172 27.20 E	Y
Agattu I./Gillon Pt.	Aleutian I.	52 24.13 N	173 21.31 E			Y
Agattu I./Cape Sabak	Aleutian I.	52 22.50 N	173 43.30 E	52 21.80 N	173 41.40 E	Y
Buldir I.	Aleutian I.	52 20.25 N	175 54.03 E	52 20.38 N	175 53.85 E	Y
Kiska I./Cape St. Stephen	Aleutian I.	51 52.50 N	177 12.70 E	51 53.50 N	177 12.00 E	Y
Kiska I./Lief Cove	Aleutian I.	51 57.16 N	177 20.41 E	51 57.24 N	177 20.53 E	Y
Ayugadak Point	Aleutian I.	51 45.36 N	178 24.30 E			Y
Amchitka I./Column Rocks	Aleutian I.	51 32.32 N	178 49.28 E			Y
Amchitka I./East Cape	Aleutian I.	51 22.26 N	179 27.93 E	51 22.00 N	179 27.00 E	Y
Semisopochnoi/Petrel Pt.	Aleutian I.	52 01.40 N	179 36.90 E	52 01.50 N	179 39.00 E	Y
Semisopochnoi I./Pochnoi Pt.	Aleutian I.	51 57.30 N	179 46.00 E			Y
Ulak I./Hasgox Pt.	Aleutian I.	51 18.90 N	178 58.90 W	51 18.70 N	178 59.60 W	Y
Tag I.	Aleutian I.	51 33.50 N	178 34.50 W			Y
Gramp Rock	Aleutian I.	51 28.87 N	178 20.58 W			Y
Adak I.	Aleutian I.	51 35.50 N	176 57.10 W	51 37.40 N	176 59.60 W	Y
Kasatochi I.	Aleutian I.	52 11.11 N	175 31.00 W			Y
Agligadak I.	Aleutian I.	52 06.09 N	172 54.23 W			Y
Seguam I./Saddleridge Pt.	Aleutian I.	52 21.05 N	172 34.40 W	52 21.02 N	172 33.60 W	Y
Yunaska I.	Aleutian I.	52 41.40 N	170 36.35 W			Y
Adugak I.	Bering Sea	52 54.70 N	169 10.50 W			Y
Ogchul I.	Gulf of Alaska	52 59.71 N	168 24.24 W			Y
Bogoslof I./Fire I.	Bering Sea	53 55.69 N	168 02.05 W			Y
Akutan I./Cape Morgan	Gulf of Alaska	54 03.39 N	165 59.65 W	54 03.70 N	166 03.68 W	Y

Column Number 1	2	3	4	5	6	7
Site Name	Area or Subarea	Boundaries from		Boundaries to[1]		No transit[2]
		Latitude	Longitude	Latitude	Longitude	3 nm
Akun I./Billings Head	Bering Sea	54 17.62 N	165 32.06 W	54 17.57 N	165 31.71 W	Y
Ugamak I.	Gulf of Alaska	54 13.50 N	164 47.50 W	54 12.80 N	164 47.50 W	Y
Sea Lion Rock (Amak)	Bering Sea	55 27.82 N	163 12.10 W			Y
Clubbing Rocks (S)	Gulf of Alaska	54 41.98 N	162 26.7 W			Y
Clubbing Rocks (N)	Gulf of Alaska	54 42.75 N	162 26.7 W			Y
Pinnacle Rock	Gulf of Alaska	54 46.06 N	161 45.85 W			Y
Chernabura I.	Gulf of Alaska	54 45.18 N	159 32.99 W	54 45.87 N	159 35.74 W	Y
Atkins I.	Gulf of Alaska	55 03.20 N	159 17.40 W			Y
Chowiet I.	Gulf of Alaska	56 00.54 N	156 41.42 W	55 00.30 N	156 41.60 W	Y
Chirikof I.	Gulf of Alaska	55 46.50 N	155 39.50 W	55 46.44 N	155 43.46 W	Y
Sugarloaf I.	Gulf of Alaska	58 53.25 N	152 02.40 W			Y
Marmot I.	Gulf of Alaska	58 13.65 N	151 47.75 W	58 09.90 N	151 52.06 W	Y
Outer (Pye) I.	Gulf of Alaska	59 20.50 N	150 23.00 W	59 21.00 N	150 24.50 W	Y
Wooded I. (Fish I.)	Gulf of Alaska	59 52.90 N	147 20.65 W			
Seal Rocks (Cordova)	Gulf of Alaska	60 09.78 N	146 50.30 W			

[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] See 50 CFR 223.202(a)(2)(i) for regulations regarding 3 nm no transit zones.
Note: No groundfish fishing zones are the waters between 0 nm to 3 nm surrounding each site.

Pollock

In the GOA, pollock is apportioned by season and area, and is further allocated for processing by inshore and offshore components. Pursuant to § 679.20(a)(5)(iii)(B), the annual pollock TAC specified for the Western and Central Regulatory Areas of the GOA is apportioned into four equal seasonal allowances of 25 percent. As established by § 679.23(d)(2)(i) through (iv), the A, B, C, and D season allowances are available from January 20 through March 10, from March 10 through May 31, from August 25 through October 1, and from October 1 through November 1, respectively.

Pollock TACs in the Western and Central Regulatory Areas of the GOA in the A and B seasons are apportioned among Statistical Areas 610, 620, and 630 in proportion to the distribution of pollock biomass based on a composite of NMFS winter surveys and in the C and D seasons in proportion to the distribution of pollock biomass based on the four most recent NMFS summer surveys. Currently, the Council has recommended averaging the winter and summer distribution of pollock in the Central Regulatory Area for the A season to better reflect the distribution of pollock and the performance of the fishery in the area during the A season for the 2006 and 2007 fishing years (Table 5 in section 2.6.7). Within any fishing year, the underage or overage of a seasonal allowance may be added to, or subtracted from, subsequent seasonal allowances in a manner to be determined by the Regional Administrator. The rollover amount of unharvested pollock is limited to 20 percent of the seasonal apportionment for the statistical area. Any unharvested pollock above the 20 percent limit could be further distributed to the other statistical areas, in proportion to the estimated biomass in the subsequent season in those statistical areas (§ 679.20(a)(5)(iii)(B)). The WYK and SEO District pollock TACs are not allocated by season.

Section 679.20(a)(6)(i) requires the allocation of 100 percent of the pollock TAC in all regulatory areas and all seasonal allowances to vessels catching pollock for processing by the inshore component after subtraction of amounts that are projected by the Regional Administrator to be caught by, or delivered to, the offshore component incidental to directed fishing for other groundfish species. The amount of pollock available for harvest by vessels harvesting pollock for processing by the offshore component is that amount actually taken as incidental catch during directed fishing for groundfish species other than pollock, up to the maximum retainable amounts allowed by § 679.20(e) and (f). These incidental catch amounts are determined during the fishing year.

Pacific Cod

Pacific cod fishing is divided into two seasons in the Western and Central Regulatory Areas of the GOA. For hook-and-line, pot, and jig gear, the A season begins on January 1 and ends on June 10, and the B season begins on September 1 and ends on December 31. For trawl gear, the A season begins on January 20 and ends on June 10, and the B season begins on September 1 and ends on November 1 (§ 679.23(d)(3)). After subtraction of incidental catch needs by the inshore and offshore components in other directed fisheries through the A season ending June 10, 60 percent of the annual TAC will be available as a directed fishing allowance during the A season for the inshore and offshore components. The remaining 40 percent of the annual TAC will be available for harvest during the B season and will be apportioned between the inshore and offshore components (§ 679.20(a)(6)(ii)). Any amount of the A season apportionment of Pacific cod TAC under or over harvested will be added to or subtracted from the B season apportionment of Pacific cod TAC (§ 679.20(a)(11)(ii)). The dates for the A season and the B season for the Pacific cod fishery differ from those of the A, B, C, and D seasons for the pollock fisheries.

Section 679.20(a)(6)(ii) requires the allocation of the Pacific cod TAC apportionment in all regulatory areas between vessels catching Pacific cod for processing by the inshore and offshore components. Ninety percent of the Pacific cod TAC in each regulatory area is allocated to vessels catching Pacific cod for processing by the inshore component. The remaining 10 percent of the TAC is allocated to vessels catching Pacific cod for processing by the offshore component. These seasonal apportionments and allocations of the Pacific cod TACs are shown in Table A.

Table A Pacific cod allocations by season and area in the GOA.

Area	Gear	Season	TAC Apportionment	Inshore	Offshore
W and C Regulatory Areas	H&L Pot Jig	Jan 1 – June 10	60	90	10
		Sept 1 – Dec 31	40	90	10
W and C Regulatory Areas	Trawl	Jan 20 – June 10	60	90	10
		Sept 1 – Nov 1	40	90	10
E Regulatory Area	All	Jan 1 – Dec 31	100	90	10

Bering Sea/Aleutian Islands Fisheries

Protection measures in the BSAI are more complicated than in the GOA because of additional types of areas that require protection beyond those listed in Tables 4 through 6 and 12 to 50 CFR part 679. All closures in the BSAI are in 50 CFR 679.22. Table B below gives a general overview of closures.

Table B General SSL protection area closures in BSAI.

Area	Restriction	Season	Exceptions
Rookeries	No groundfish fishing and no vessel transit 0-3 n mi	All year	See below in table
Haulouts	No directed fishing for pollock or P. cod 0-3 n mi	All year	Jig vessels; also see below in table
Rookeries & haulouts	No directed trawl fishing for P. cod or pollock 0-10 n mi	All year	Jig vessels, Pribilof Is. Haulouts (see below)

Area	Restriction	Season	Exceptions
Pribilof Is. haulouts	No directed trawl fishing for P. cod or pollock 0-3 n mi	All year	
East of 178˚ W, trawl gear	Rookeries closed 0-10 n mi; haulouts closed 0-3 n mi	All year	Agligadak closed 0-20 n mi
West of 178˚ W, trawl gear	Rookeries & haulouts closed 0-20 n mi until Atka mackerel fishery inside SSL CH is closed (applies to A & B seasons), then P cod trawling closed 0-3 n mi of haulouts and 0-10 n mi of rookeries	All year	
Pot, H&L gear in Aleutian Islands	Closed in SSL CH east of 173˚ W to 170˚ W; Buldir rookery closed 0-10 n mi; Agligadak rookery closed 0-20 n mi	All year	
Seguam foraging area	Closed	All year	
Bogoslof foraging area	Closed to Atka mackerel, P. cod, and pollock directed fishing	All year	H&L and jig vessels < 60' targeting P. cod allowed S of line extending from a point 3 n mi N of Bishop Point to Cape Tanak
St. Lawrence & Hall Is., Cape Newenham, Round Is. haulouts	Closed 0-20 n mi	All year	
Bishop Point & Lava Reef haulouts	No directed H&L C/P fishing for P. cod 0-10 n mi	All year	Vessels <60'
Amak rookery	No directed H&L or pot fishing for P. cod 0-7 n mi	All year	
Steller Sea Lion Conservation Area (SCA)	No directed fishing for pollock	A season	
Catcher Vessel Operating Area (CVOA)	No directed trawl C/P fishing for pollock	B season	

Pacific cod

Pursuant to § 679.20(a)(7)(i)(A), 2 percent of the Pacific cod ITAC is allocated to vessels using jig gear, 51 percent to vessels using hook-and-line or pot gear, and 47 percent to vessels using trawl gear. Section 679.20(a)(7)(i)(B) further allocates the portion of the Pacific cod ITAC allocated to trawl gear as 50 percent to catcher vessels and 50 percent to catcher/processors. Section 679.20(a)(7)(i)(C)(*1*) sets aside a portion of the Pacific cod ITAC allocated to hook-and-line or pot gear as an ICA of Pacific cod in directed fisheries for groundfish using these gear types. Based on anticipated incidental catch in these fisheries, the Regional Administrator currently specifies an ICA of 500 mt. The remainder of Pacific cod ITAC is further allocated to vessels using hook-and-line or pot gear as the following DFAs: 80 percent to hook-and-line catcher/ processors, 0.3 percent to hook-and-line catcher vessels, 3.3 percent to pot catcher/processors, 15 percent to pot catcher vessels, and 1.4 percent to catcher vessels under 60 feet (18.3 m) length overall (LOA) using hook-and-line or pot gear.

Due to concerns about the potential impact of the Pacific cod fishery on Steller sea lions and their critical habitat, the apportionment of the ITAC disperses the Pacific cod fisheries into two seasonal allowances (see §§ 679.20(a)(7)(iii)(A) and 679.23(e)(5)). For pot and most hook-and-line gear, the first seasonal allowance of 60 percent of the ITAC is made available for directed fishing from January 1 to June 10, and the second seasonal allowance of 40 percent of the ITAC is made available from June 10 (September 1 for pot gear) to December 31. No seasonal harvest constraints are imposed for the Pacific cod fishery by catcher vessels less than 60 feet (18.3 m) LOA using hook-and-line or pot gear. For trawl gear, the first season is January 20 to April 1 and is allocated 60 percent of the ITAC. The second season, April 1 to June 10, and the third season, June 10 to November 1, are each allocated 20 percent of the ITAC. The trawl catcher vessel allocation is further allocated as 70 percent in the first season, 10 percent in the second season and 20 percent in the third season. The trawl catcher/ processor allocation is allocated 50 percent in the first season, 30 percent in the second season, and 20 percent in the third season. For jig gear, the first season and third seasons are each allocated 40 percent of the ITAC and the second season is allocated 20 percent of the ITAC. Table C lists the allocations and seasonal apportionments of the Pacific cod ITAC. In accordance with § 679.20(a)(7)(ii)(D) and (iii)(B), any unused portion of a seasonal Pacific cod allowance will become available at the beginning of the next seasonal allowance.

Table C **Pacific cod allocations by season and area in the BSAI.**

Gear	TAC	Vessel Size	Season	TAC Split	Sector Apportionment	
H & L Pot	51 %	≥ 60’	Jan 1 – June 10	60		
			June 10 – Dec 31	40		
		< 60’	No Restrictions			
Trawl	47 %		Jan 20 – Apr 1	60	C/V	70
					C/P	50
			Apr 1 – June 10	20	C/V	10
					C/P	30
			June 10 – Nov 1	20	C/V	20
					C/P	20
Jig	2 %		Jan 1 – Apr 30	40		
			Apr 30 – Aug 31	20		
			Aug 31 – Dec 31	20		

Pollock

Section 679.20(a)(5)(i)(A) requires that the pollock TAC apportioned to the Bering Sea subarea, after subtraction of the 10 percent for the Community Development Quota (CDQ) program and the 3.35 percent for the ICA, will be allocated as a directed fishing allowance (DFA) as follows: 50 percent to the inshore component, 40 percent to the catcher/processor component, and 10 percent to the mothership component. In the Bering Sea subarea, the A season (January 20–June 10) is allocated 40 percent of the DFA and the B season (June 10–November 1) is allocated 60 percent of the DFA. The AI directed pollock fishery allocation to the Aleut Corporation is the amount of pollock remaining in the AI subarea after subtracting 1,900 mt for the CDQ DFA (10 percent) and 1,800 mt for the ICA. In the AI subarea, 40 percent of the ABC is allocated to the A season and the remainder of the directed pollock fishery is allocated to the B season.

Section 679.20(a)(5)(i)(A)(4) also includes several specific requirements regarding pollock and pollock allocations. First, 8.5 percent of the pollock allocated to the catcher/ processor sector will be available for harvest by AFA catcher vessels with catcher/processor sector endorsements, unless the Regional Administrator receives a cooperative contract that provides for the distribution of harvest among AFA catcher/processors and AFA catcher vessels in a manner agreed to by all members. Second, AFA catcher/processors not listed in the AFA are limited to harvesting not more than 0.5 percent of the pollock allocated to the catcher/processor sector.

Table D lists seasonal apportionments of pollock and harvest limits within the Steller Sea Lion Conservation Area (SCA). The harvest within the SCA, as defined at § 679.22(a)(7)(vii), is limited to 28 percent of the annual directed fishing allowance (DFA) until April 1. The remaining 12 percent of the 40 percent of the annual DFA allocated to the A season may be taken outside the SCA before April 1 or inside the SCA after April 1. If the 28 percent of the annual DFA is not taken inside the SCA before April 1, the remainder is available to be taken inside the SCA after April 1. The A season pollock SCA harvest limit will be apportioned to each sector in proportion to each sector's allocated percentage of the DFA. Table D summarizes the apportionments of pollock in the BSAI Area.

Table D Pollock allocations by season and area in the BSAI.

Area	DFA	Season	DFA Allocation	Restriction
Bering Sea	Inshore 50 % C/P 40 % Mothership 10 %	Jan 20 – June 10	40 %	No more than 28 % from the SCA before Apr 1
		June 10 – Nov 1	60 %	
Aleutian Islands	Aleut Corp 100 %	Jan 20 – June 10	40 %	
		June 10 – Nov 1	60 %	
Bogoslov		Closed		

Atka Mackerel

Pursuant to § 679.20(a)(8)(i), up to 2 percent of the Eastern Aleutian District and the Bering Sea subarea Atka mackerel ITAC may be allocated to jig gear. The amount of this allocation is determined annually by the Council based on several criteria, including the anticipated harvest capacity of the jig gear fleet. Currently there is a 1 percent allocation of the Atka mackerel ITAC in the Eastern Aleutian District and the Bering Sea subarea to the jig gear.

Section § 679.20(a)(8)(ii)(A) apportions the Atka mackerel ITAC into two equal seasonal allowances. After subtraction of the jig gear allocation, the first seasonal allowance is made available for directed fishing from January 1 (January 20 for trawl gear) to April 15 (A season), and the second seasonal allowance is made available from September 1 to November 1 (B season) (see Table E).

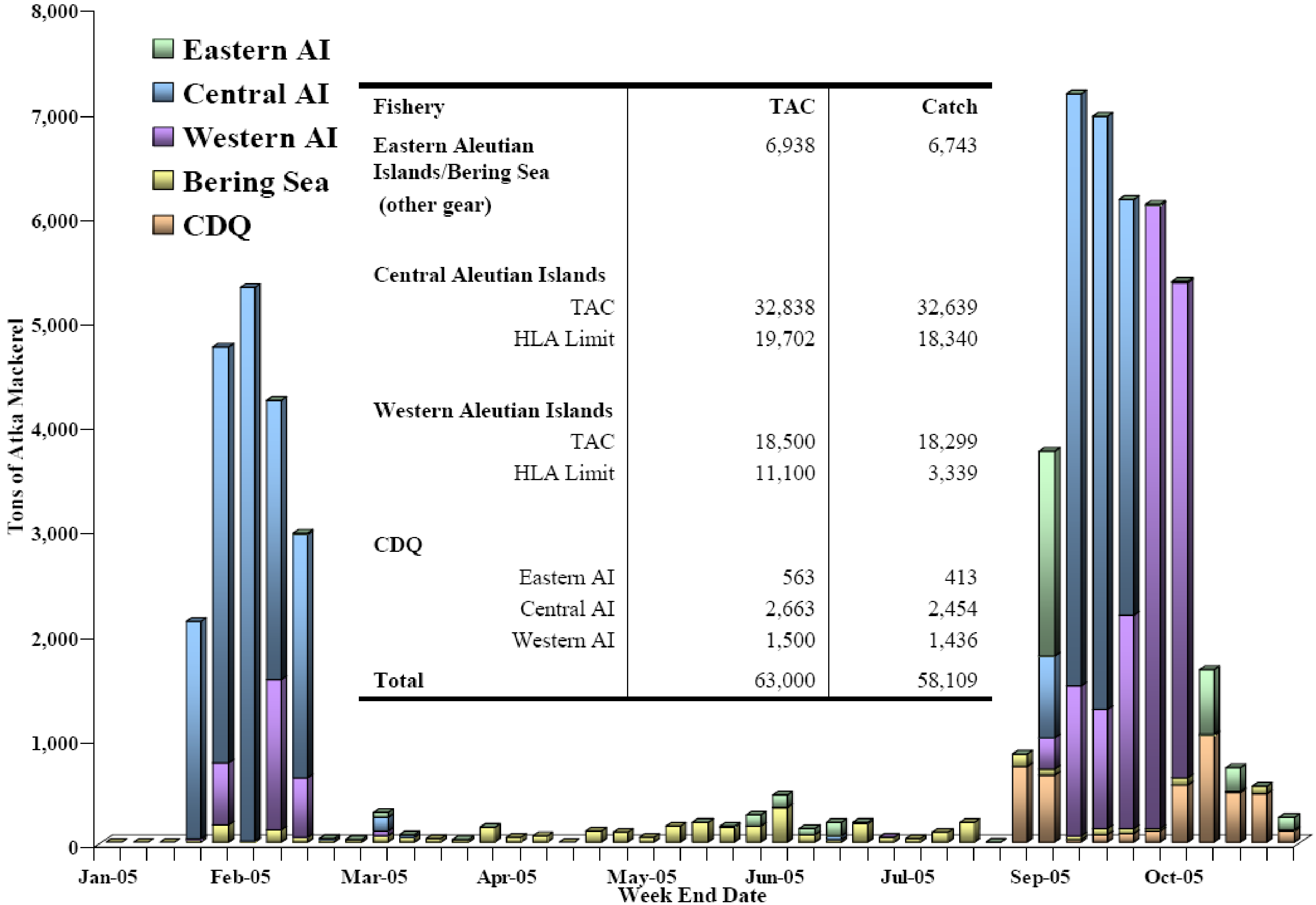
Pursuant to § 679.20(a)(8)(ii)(C)(*1*), the Regional Administrator will establish a harvest limit area (HLA) limit of no more than 60 percent of the seasonal TAC for the Western and Central Aleutian Districts. A lottery system is used for the HLA Atka mackerel directed fisheries to reduce the amount of daily catch in the HLA by about half and to disperse the fishery over two districts (see § 679.20(a)(8)(iii)).

Table E Atka mackerel allocations by season and area in the BSAI.

Gear	ITAC Split	Area	Seasonal ITAC Split	Season	Seasonal Allocation	Restrictions
Jig	~2 %			Jan 1 – Dec 31		
Other gear	~98 %	W & C Regulatory Areas	~60 %	Jan 1 (20-trawl) – Apr 15	50 %	Each season's harvest occurs in W & C HLAs (see regulations)
				Sept 1 – Nov 1	50 %	
		E Reg Area & Bering Sea	~40 %	Jan 1 (20-trawl) – Apr 15	50 %	
				Sept 1 – Nov 1	50 %	

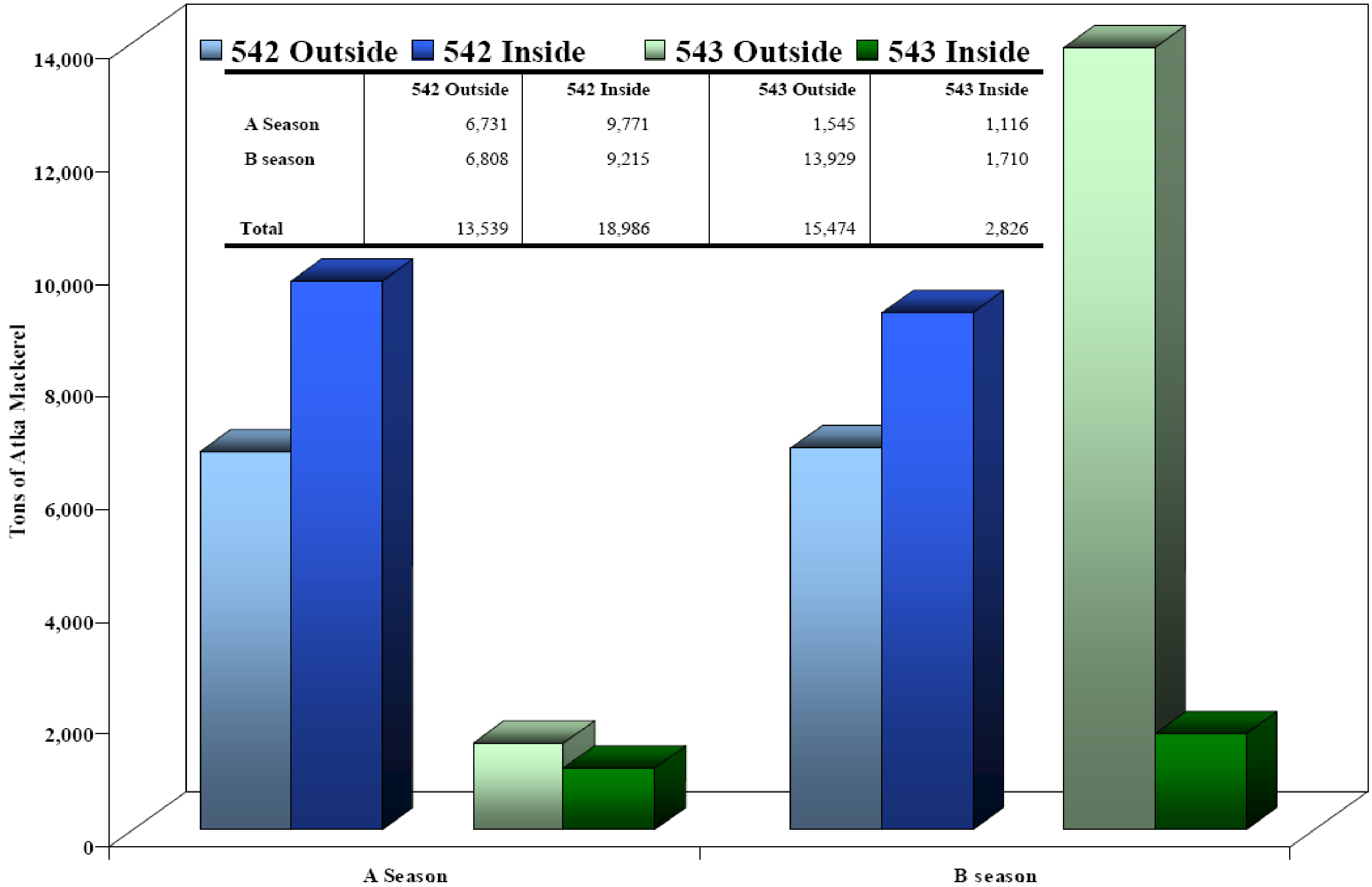
In 2005, the Atka mackerel fishery had varied success in harvesting inside and outside of the HLA, as shown in the figures below. (NMFS inseason management). The fleet had difficulty finding Atka mackerel in the HLA in area 543 in both seasons, resulting in most of the harvest being taken outside of the HLA. Regardless they were able to harvest nearly all the TAC in both 542 and 543.

2005 Atka Mackerel Catch by Week and Area



Fishery	TAC	Catch
Eastern Aleutian Islands/Bering Sea (other gear)	6,938	6,743
Central Aleutian Islands		
TAC	32,838	32,639
HLA Limit	19,702	18,340
Western Aleutian Islands		
TAC	18,500	18,299
HLA Limit	11,100	3,339
CDQ		
Eastern AI	563	413
Central AI	2,663	2,454
Western AI	1,500	1,436
Total	63,000	58,109

2005 Inside/Outside HLA Atka Mackerel Catch



	542 Outside	542 Inside	543 Outside	543 Inside
A Season	6,731	9,771	1,545	1,116
B season	6,808	9,215	13,929	1,710
Total	13,539	18,986	15,474	2,826