AGENDA B-7
APRIL 2010

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
1 HOUR

DATE: March 30, 2010

SUBJECT: Protected Resources Report

ACTION REQUIRED

Receive report on Protected Resources issues and take action as necessary.

BACKGROUND

A. Cook Inlet Beluga Whales

The public comment period on the proposed critical habitat designation for Cook Inlet beluga whales closed on March 3, 2010, after being extended one month to allow NMFS to hold public hearings at four locations in Alaska. NMFS has identified more than one third of Cook Inlet as critical habitat for the approximately 300 endangered Cook Inlet beluga whales. NMFS is now in the process of reviewing the submitted comments and preparing a response to the comments. In addition, NMFS announced its intent to prepare a recovery plan for Cook Inlet belugas. The recovery plan will include: 1) a description of management actions necessary for the conservation and survival of Cook Inlet belugas, 2) objective and measurable criteria for delisting, and 3) estimates of the time and cost to carry out these measures and meet the plan's goal. The Recovery Team is composed of two advisory groups: a Scientific Panel and a Stakeholder Panel, and meetings of the Recovery Team will begin in March 2010. NMFS hopes to have a draft Recovery Plan written in approximately 18 months, at which time the public will have an opportunity to review and comment on the draft plan.

B. Seabirds

Short-tailed Albatross Update

At its February meeting, the Council received a presentation from Dr. Rob Suryan of Oregon State University, who provided the Council with an update on short-tailed albatross population status and recovery efforts (i.e., new colony establishment). Later in February, Dr. Suryan relayed some unfortunate news. Following heavy rains, a landslide was triggered on Torishima that buried a number of chicks on the largest breeding colony on the island. This unfortunate event highlighted the need to continue efforts to translocate chicks to Mukojima and to establish additional breeding colonies.

Compliance with Seabird Avoidance Measures

NMFS Alaska Region recently requested that the AFSC provide annual summaries of compliance with seabird avoidance measures on observed longline vessels. The summaries for the 2007 and 2008 fishing seasons are attached as Item B-7(a). Currently, all vessels carrying an observer are required to comply with seabird avoidance regulations and deploy paired streamer lines, except under conditions of high winds. The compliance rates have been very high; the number of affidavits filed for non-compliance decreased from 13 in 2006, to 6 in 2007, to only 2 in 2008.

C. Loggerhead Sea Turtles

NMFS issued its 12-month finding on a petition to reclassify loggerhead turtles from threatened to endangered and to identify Distinct Population Segments (DPS). The finding identified nine Distinct Population Segments, and proposed to list the North Pacific DPS as endangered. The range of the North Pacific Ocean DPS includes the area north of the equator and south of 60° N. Loggerheads in the North Pacific Ocean are found in coastal and pelagic waters through the North Pacific, but are primarily found in tropical and temperate waters. There have only been two reported sightings of loggerheads in Alaska.

In the North Pacific, loggerhead nesting is essentially restricted to Japan, where in recent years there were an estimated 7,000 to 8,000 nests. Threats to the North Pacific DPS include degradation of nesting habitat in Japan, illegal harvests, and fishery bycatch in coastal fisheries off Japan and Baja California, and in pelagic fisheries in tropical and temperate waters throughout the Pacific Ocean. Comments on the 12-month finding must be submitted to NMFS by June 14, 2010. If NMFS determines that listing the North Pacific DPS as threatened or endangered is warranted, the agency will begin the process of designating critical habitat.

D. Steller Sea Lions and the Upcoming BiOp

The 2009 Alaska marine mammal stock assessments were released in February 2010. The stock assessment reports for the Western and Eastern stocks of Steller sea lions are attached as Item B-7(b) and Item B-7(c). The full set of stock assessment reports may be found at this link:

http://www.nmfs.noaa.gov/pr/sars/species.htm

The status of the upcoming draft Biological Opinion will be discussed under agenda item C-1.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Alaska Fisheries Science Center
7600 Sand Point Way N.E.
Bldg. 4, F/AKC
Seattle, Washington 98115-0070

FEB 26 2010

MEMORANDUM TO: Doug Mecum, Acting Administrator,
Alaska Region (AKR)

FROM: Douglas P. DeMaster, Science and Research Director,
Alaska Region (AKC)

SUBJECT: Use of seabird avoidance measures on observed groundfish longline vessels during 2007 and 2008

In response to a non-discretionary requirement under the short-tailed albatross (*Phoebastria albatrus*) biological opinion, your staff requested that the AFSC provide annual summaries of seabird avoidance measures used on observed longline (hook-and-line) vessels. Attached are the summaries for the 2007 and 2008 fishing seasons. Currently, all vessels carrying an observer are required to meet regulations requiring vessels to deploy paired streamer lines except under conditions of high winds (see table footnote).

As other priorities and required duties allow, North Pacific Groundfish Observers spot-check as many longline sets as possible while they are on board. Observers record whether paired, single, or no streamer lines were deployed. If they feel the vessel is not in compliance with regulations, they note the circumstances and fill out an affidavit upon their return. Observers are directed to first work with the vessel captain to address apparent lapses in compliance whenever possible. All affidavits are forwarded to the NMFS Alaska Enforcement Division for processing. There were six affidavits filed for non-compliance with required seabird avoidance measures in 2007 and two in 2008. A previous report indicated there were 13 affidavits filed in 2006 on lack of seabird mitigation gear. Continuing work with observer logbooks after that memo was written has changed this number to 16 for 2006.

The attached table describes the results of observer spot-checks for required seabird avoidance measures. Please contact Shannon Fitzgerald of my staff at (206) 526-4553, if you have any questions.

cc: Balogh – USFWS
Rivera – F/AKR
Heltzel – North Pacific Fisheries Management Council
Adams – Alaska Enforcement Division
Lagerway – Alaska Enforcement Division
Hardesty-Norrris – American Bird Conservancy
Melvin – Washington Sea Grant Program
Fitzgerald – F/AKC
Loefflad – F/AKC

Summary of seabird avoidance measures used in 2007 and 2008 by demersal groundfish longline catcher-processor (CP) and catcher (CV) vessels in the Bering Sea and Aleutian Islands (BSAI), and Gulf of Alaska (GOA) Regions of Alaskan waters[1]. Information was collected by NMFS-Certified groundfish observers while on board vessels[2]. Observers spot-checked for avoidance gear during sets but did not monitor the entire setting process.

2007						Use of Streamer Lines in Examined Sets			
Region	Vessel Type	Total Sets	Sets not checked	Sets Checked	% sets checked	Paired Steamer	Single Streamers	No Streamers	% Paired or Single
BSAI	CV	29	7	22	75.9	16	6	0	100
BSAI	CP	10,287	3,665	6,622	64.4	6,199	347	76	98.9
GOA	CV	927	195	732	79.0	597	105	30	95.9
GOA	CP	1,469	586	883	60.1	856	18	9	99.0
Total		12,712	4,453	8,259	65.0	7,668	476	115	98.6

2008						Use of Streamer Lines in Examined Sets			
Region	Vessel Type	Total Sets	Sets not checked	Sets Checked	% sets checked	Paired Steamer	Single Streamers	No Streamers	% Paired or Single
BSAI	CV	61	6	55	90.2	55	0	0	100
BSAI	CP	13,649	4,231	9,418	69.0	8,850	205	363	96.1
GOA	CV	907	167	740	81.6	579	143	18	97.6
GOA	CP	1,197	509	688	57.5	646	20	22	96.8
Total		15,814	4,913	10,901	68.9	10,130	368	403	96.3

[1] Current regulations require all demersal longline vessels greater than 55 feet length overall to deploy a paired streamer line in wind speeds up to 30 knots. A single streamer line can be used in wind speeds in excess of 30 knots and no streamer lines are required when wind speeds exceed 45 knots.

[2] Groundfish demersal longline vessels from 60 to 124 feet length overall must carry an observer for 30% of fishing days within each calendar quarter; greater than 124 feet must have an observer on board for 100% of fishing days. Vessels less than 60 feet have no observer requirements. Some groundfish vessels which participate in the Community Development Quota Program carry 2 observers.

Revised 11/25/2008

STELLER SEA LION (*Eumetopias jubatus*): Western U. S. Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

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).

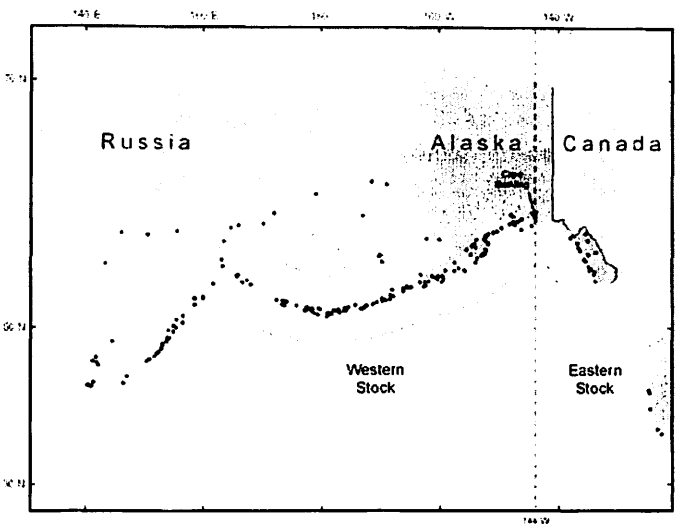

Figure 1. Approximate distribution of Steller sea lions in the North Pacific. Major U.S. haulouts and rookeries (50 CFR 226.202, 27 August 1993) and active Asian haulouts and rookeries (Burkanov and Loughlin, 2005) are depicted (points). Black dashed line (144° W) indicates stock boundary (Loughlin 1997). Note: Haulouts and rookeries in British Columbia are not shown.

Loughlin (1997) considered the following information when classifying stock structure based on the phylogeographic approach of Dizon et al. (1992): 1) Distributional data: geographic distribution continuous, yet a high degree of natal site fidelity and low (<10%) exchange rate of breeding animals between rookeries; 2) Population response data: substantial differences in population dynamics (York et al. 1996); 3) Phenotypic data: unknown; and 4) Genotypic data: substantial differences in mitochondrial DNA (Bickham et al. 1996). Based on this information, two separate stocks of Steller sea lions were recognized within U. S. waters: an eastern U. S. stock, which includes animals east of Cape Suckling, Alaska (144°W), and a western U. S. stock, which includes animals at and west of Cape Suckling (Loughlin 1997, Fig. 1).

Steller sea lions that breed in Asia have been considered part of the western stock. While Steller sea lions seasonally inhabit coastal waters of Japan in the winter, breeding rookeries are currently only located in Russia (Burkanov and Loughlin, 2005). Analyses of genetic data differ in their interpretation of separation between Asian and Alaskan sea lions. Based on analysis of mitochondrial DNA, Baker et al. (2005) concluded that there was evidence for an additional Asian stock and that Commander Island (Russia) was genetically within the western U.S. stock. However, Hoffman et al. (2006) did not support an Asian/western stock split based on their analysis of nuclear microsatellite markers, which indicated high rates of male gene flow. The Baker et al. (2005) and Hoffman et al. (2006) results are consistent with a social structure in which there is stronger breeding site fidelity for females compared to males (Hoffman et al. 2006). In addition, Hoffman et al. (2006) concluded that "the three Asian regions are closely related and form a branch separate from all other populations."

POPULATION SIZE

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-July 2008 (Fritz et al. 2008a) and aerial and ground-based pup counts in June and July of 2004 and 2005 (Fritz et al. 2008b). Data from these surveys represent actual counts of pups and non-pups at all rookeries and major haulout sites. During the 2008 aerial survey, a total of 31,246 non-pups were counted at 275 rookeries and haulout sites; 6,522 in the Gulf of Alaska and 14,724 in the Bering Sea/Aleutian Islands (Fritz et al. 2008b). A composite pup count for 2004 and 2005 includes counts from 2 sites in 2004, and 57 sites in 2005. There were 4,518 pups counted in the Gulf of Alaska and 5,433 pups counted in the Bering Sea/Aleutian Islands for a total of 9,951 for the stock in Alaska. Combining the pup count data from

2004-2005 (9,951) and non-pup count data from 2008 (31,246) results in a minimum abundance estimate of 41,197 Steller sea lions in the western U.S. stock in 2004-2008.

An estimate of the total population size of western Steller sea lion in Alaska may be obtained by multiplying the best estimate of total pup production (9,951) by 4.5 (Calkins and Pitcher 1982), which equals 44,780. This would not be a minimum abundance estimate since it is based on extrapolating total population size from pup counts based on survival and fecundity estimates in a life table. The 4.5 multiplier used for estimating the size of the eastern stock of Steller sea lions may not be appropriate for use in estimating the abundance of the western stock, as it is based on a life history table using age-specific fecundity and survival for the stable, mid-1970s population. The demographics of central Gulf of Alaska populations suggest that these rates have changed considerably since the mid-1970s (Holmes and York 2003; Holmes et al. 2007).

Holmes and York (2003) and Holmes et al. (2007) estimated changes in adult and juvenile survival and natality (females only for all vital rates) that were consistent with time series of pup and non-pup counts, and changes in the juvenile proportion of the population in the central Gulf of Alaska. The analysts found that the rapid decline of the central Gulf sea lion population in the 1980s was associated with a large drop in juvenile survival and smaller drops in adult survival and natality. As the rate of population decline lessened in the 1990s, rates of juvenile and adult survival increased, followed by a return to pre-decline levels in the 1998-2004 period. Rates of natality, however, continued to decline throughout the 1990s and into the 21st century. Thus, the authors conclude, factors that caused the population decline (those contributing to less juvenile survival) are likely quite different from those that may affect recovery (those contributing to lower reproductive rates of adult females).

Methods used to survey Steller sea lions in Russia differ from those used in Alaska, with less use of aerial photography and more use of skiff surveys and ground counts. Burkanov and Loughlin (2005) estimated the current (2005) population (pups and non-pups) of Steller sea lions breeding in Russia at about 16,000. This includes approximately 1,000 animals (674 non-pups and 236 pups counted in 2004) on the Commander Islands that are likely members of the same genetic stock as those breeding west of 144°W in Alaska (Baker et al. 2005).

Minimum Population Estimate

The 2008 count of non-pups (31,246) plus the number of pups in 2004-2005 (9,951) is 41,197, which will be used as the minimum population estimate (N_{MIN}) for the U.S. portion of the western stock of Steller sea lion (Wade and Angliss 1997). This is considered a minimum estimate because it has not been corrected to account for animals that were at sea during the surveys.

Current Population Trend

The first reported trend counts (an index to examine population trends) of Steller sea lions in Alaska were made in 1956-60. Those counts indicated that there were at least 140,000 (no correction factors applied) sea lions in the Gulf of Alaska and Aleutian Islands (Merrick et al. 1987). Subsequent surveys indicated a major population decrease, first detected in the eastern Aleutian Islands in the mid-1970s (Braham et al. 1980). Counts from 1976 to 1979 indicated about 110,000 sea lions (no correction factors applied, Table 1). The decline appears to have spread eastward to the Kodiak Island area during the late 1970s and early 1980s, and then westward to the central and western Aleutian Islands during the early and mid-1980s (Merrick et al. 1987, Byrd 1989). The greatest declines since the 1970s occurred in the eastern Aleutian Islands and western Gulf of Alaska, but declines also occurred in the central Gulf of Alaska and central Aleutian Islands. Counts of Steller sea lions at trend sites for the western U. S. stock decreased 40% from 1991 to 2000 (Table 1), an average annual decline of 5.4% (Loughlin and York 2000).

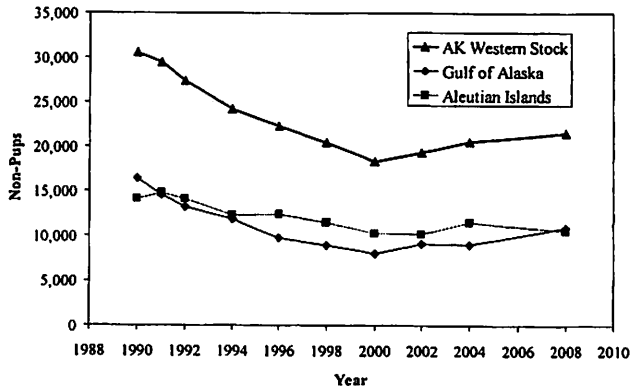

Figure 2. Counts of adult and juvenile Steller sea lions at rookery and haulout trend sites throughout the range of the western U.S. stock in Alaska, 1990-2008. Correction factor applied to 2004 and 2008 counts for film format differences (Fritz and Stinchcomb 2005).

Recently, counts of non-pup Steller sea lions at trend sites for the western U.S. stock increased 5.5% from 2000 to 2002, and at a similar rate between 2002 and 2004 (Table 1, Fig. 2). These were the first region-wide increases for

the western stock since standardized surveys began in the 1970s. Aerial surveys for non-pup Steller sea lions were conducted in 2006 and 2007, but were incomplete due to a court-ordered cessation of research that caused a delay to the start of the survey in 2006, and loss of survey days due to bad weather and aircraft maintenance requirements in both years. Although some trend sites were unsurveyed in both 2006 and 2007, available data indicated that the size of the adult and juvenile portion of the western Steller sea lion population throughout much of its range (Cape St. Elias to Tanaga Island, 145°-178° W) in Alaska remained largely unchanged between 2004 (N=23,107) and 2007 (N=23,118) (Fritz et al. 2008a). Results of the aerial survey conducted in 2008 (Fritz et al. 2008b) confirmed that the recent (2004-2008) overall trend in the western population of adult and juvenile Steller sea lions in Alaska is stable or possibly declining slightly. There continues to be considerable regional variability in recent (2004-2008) trends (percentages listed below are % change between years):

- the population in the eastern Aleutian Islands is the only one that has consistently increased from 2004-2008 (+7%);
- the populations in the central and western Aleutian Islands, which together comprised over 30% of the population in 2004 but less than 25% in 2008, declined at relatively high rates (-30% and -16%, respectively);
- the populations in the central and western Gulf of Alaska increased between 2004 and 2007, but declined slightly between 2007 and 2008; and
- the population in the eastern Gulf of Alaska increased by 35%, but likely because of movement of animals from Southeast Alaska.

Counts in the area from the central Gulf of Alaska through the western Aleutian Islands (85% of the 2008 population) declined slightly (-1%) between 2004 and 2008, indicating that the overall increase observed between 2004 and 2008 (3%) was entirely in the eastern Gulf of Alaska. The increase in the eastern Gulf of Alaska may be explained by movement of animals from the eastern stock, since counts at index sites in Southeast Alaska were approximately 1,200 lower in 2008 than in 2002, despite the overall 3% per year increase in the Steller sea lion population observed in Southeast Alaska through 2005 (NMFS 2008).

Table 1. Counts of adult and juvenile Steller sea lions observed at rookery and haulout trend sites by year and geographical area for the western U. S. stock from the late 1970s through 2008 (NMFS 1995, Sease et al. 2001, Fritz et al. 2008b, NMFS 2008). Counts from 1976 to 1979 (NMFS 1995) were combined to produce complete regional counts that are comparable to the 1990-2008 data. Data from 2004 and 2008 reflect a 3.64% reduction from actual counts to account for improvements in survey protocol in 2004 relative to previous years (Fritz and Stinchcomb 2005).

Area	late 1970s	1990	1991	1992	1994	1996	1998	2000	2002	2004	2008
Gulf of Alaska	65,296	16,409	14,598	13,193	11,862	9,784	8,937[1]	7,995	9,087	8,993	10,931
Bering Sea/Aleutians	44,584	14,116	14,807	14,106	12,274	12.426	11,501	10,330	10,253	11,507	10,559
Total	109,880	30,525	29,405	27,299	24,136	22,210	20,438[1]	18,325	19,340	20,500	21,489

[1] Identifies 637 non-pups counted at six trend sites in 1999 in the eastern Gulf of Alaska which were not surveyed in 1998.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

There are no estimates of maximum net productivity rate for Steller sea lions. Hence, until additional data become available, it is recommended that the theoretical maximum net productivity rate (R_{MAX}) for pinnipeds of 12% be employed for this stock (Wade and Angliss 1997).

POTENTIAL BIOLOGICAL REMOVAL

Under the 1994 reauthorized Marine Mammal Protection Act (MMPA), the potential biological removal (PBR) is defined as the product of the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor: $PBR = N_{MIN} \times 0.5R_{MAX} \times F_R$. The recovery factor ($F_R$) for this stock is 0.1, the default value for stocks listed as "endangered" under the Endangered Species Act (Wade and Angliss 1997). Thus, for the U.S. portion of the western stock of Steller sea lions, PBR = 247 animals (41,197 × 0.06 × 0.1). When Steller sea lions on the Commander Islands are included, PBR = 253 animals (42,197 × 0.06 × 0.1).

The PBR levels for some stocks of marine mammals in the U.S. have been called "undetermined" (e.g., PBR levels for Cook Inlet beluga whales, Hawaiian monk seals); this has not been proposed for the western stock of Steller sea lions. The PBR management approach was developed with the assumption that direct human-related mortalities would be the primary reason for observed declines in abundance for marine mammal stocks in U. S. waters. For at least this stock, this assumption seems unwarranted. Because direct human-related mortalities are at

a low level and are unlikely to either be responsible for the decline or to contribute substantially towards extinction risk, calling the PBR level "undetermined" is unnecessarily conservative for this population of over 40,000 animals.

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fisheries Information

Until 2003, there were six different federally regulated commercial fisheries in Alaska that could have interacted with Steller sea lions. These fisheries were monitored for incidental mortality by fishery observers. As of 2003, changes in fishery definitions in the List of Fisheries have resulted in separating these 6 fisheries into 22 fisheries (69 FR 70094, 2 December 2004). This change does not represent a change in fishing effort, but provides managers with better information on the component of each fishery that is responsible for the incidental serious injury or mortality of marine mammal stocks in Alaska. Between 2002-2006, 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, Bering Sea/Aleutian Islands pollock trawl, Gulf of Alaska Pacific cod trawl, Gulf of Alaska pollock trawl, and Bering Sea/Aleutian Islands Pacific cod longline (Table 2). Estimates of marine mammal serious injury/mortality in each of these observed fisheries are provided in Perez (2006) and Perez (unpubl. ms.). More current data on estimated fishery-related serious injury and mortality are being analyzed and will be available for inclusion in the 2010 SARs.

Observers also monitored the Prince William Sound salmon drift gillnet fishery in 1990 and 1991, recording 2 mortalities in 1991, extrapolated to 29 (95% CI: 1-108) kills for the entire fishery (Wynne et al. 1992). No mortalities were observed during 1990 for this fishery (Wynne et al. 1991), resulting in a mean kill rate of 14.5 (CV = 1.0) animals per year for 1990 and 1991. In 1990, observers boarded 300 (57.3%) of the 524 vessels that fished in the Prince William Sound salmon drift gillnet fishery, monitoring a total of 3,166 sets, or roughly 4% of the estimated number of sets made by the fleet. In 1991, observers boarded 531 (86.9%) of the 611 registered vessels and monitored a total of 5,875 sets, or roughly 5% of the estimated sets made by the fleet (Wynne et al. 1992). The Alaska Peninsula and Aleutian Islands salmon drift gillnet fishery was also monitored during 1990 (roughly 4% observer coverage) and no Steller sea lion mortalities were observed. It is not known whether these incidental mortality levels are representative of the current incidental mortality levels in these fisheries.

An observer program for the Cook Inlet salmon set and drift gillnet fisheries was implemented in 1999 and 2000 in response to the concern that there may be significant numbers of marine mammal injuries and mortalities that occur incidental to these fisheries. Observer coverage in the Cook Inlet drift gillnet fishery was 1.75% and 3.73% in 1999 and 2000, respectively. The observer coverage in the Cook Inlet set gillnet fishery was 7.3% and 8.3% in 1999 and 2000, respectively (Manly in review). There were no mortalities of Steller sea lions observed in the set or drift gillnet fisheries in either 1999 or 2000 (Manly in review). An observer program conducted for a portion of the Kodiak drift gillnet fishery in 2002 did not observe any serious injuries or mortalities of Steller sea lions, although Steller sea lions were frequently observed in the vicinity of the gear (Manly et al. 2003).

Combining the mortality estimates from the Bering Sea and Gulf of Alaska groundfish trawl and Gulf of Alaska longline fisheries presented above (11.3) with the mortality estimate from the Prince William Sound salmon drift gillnet fishery (14.5) results in an estimated mean annual mortality rate in the observed fisheries of 25.8 (CV = 0.60) sea lions per year from this stock (Table 2).

Table 2. Summary of incidental mortality of Steller sea lions (western U. S. stock) due to fisheries from 2002 through 2006 (or most recent data available) and calculation of the mean annual mortality rate. Mean annual mortality in brackets represents a minimum estimate from stranding data. The most recent 5 years of available data are used in the mortality calculation when more than 5 years of data are provided for a particular fishery. N/A indicates that data are not available. Details of how percent observer coverage is measured is included in Appendix 6.

Fishery name	Years	Data type	Observer coverage	Observed mortality (in given yrs.)	Estimated mortality (in given yrs.)	Mean annual mortality
Bering Sea/Aleutian Is. Atka mackerel trawl	2002 2003 2004 2005 2006	obs data	98.3 95.3 95.6 97.8 96.7	0 1 0 0 0	0 1.2 0 0 0	0.25 (CV = 0.44)
Bering Sea/Aleutian Is. flatfish trawl	2002 2003 2004 2005 2006	obs data	58.4 64.1 64.3 68.3 67.8	1 2 2 0 4	1.6 2.7 3.1 0 7.6	3.01 (CV = 0.23)
Bering Sea/Aleutian Is. Pacific cod trawl	2002 2003 2004 2005 2006	obs data	47.4 49.9 50.4 52.8 50.4	0 2 0 0 0	0 4.3 0 0 0	0.85 (CV = 0.73)
Bering Sea/Aleutian Is. pollock trawl	2002 2003 2004 2005 2006	obs data	80.0 82.2 81.2 77.3 73.0	3 0 1 4 7	3.4 0 1 5.2 9.5	3.83 (CV = 0.13)
Gulf of Alaska Pacific cod trawl	2002 2003 2004 2005 2006	obs data	23.2 27.3 27.0 21.4 22.8	0 0 0 0 0	0 0 0 0 0	0
Gulf of Alaska pollock trawl	2002 2003 2004 2005 2006	obs data	26.0 31.2 27.4 24.2 26.5	0 1 0 1 0	0 2.4 0 4.2 0	1.33 (CV = 0.66)
Bering Sea/Aleutian Is. Pacific cod longline	2002 2003 2004 2005 2006	obs data	29.6 29.9 23.8 24.6 23.9	1 0 0 0 1	3.7 0 0 0 6.2	1.98 (CV = 0.66)
Prince William Sound salmon drift gillnet	1990-1991	obs data	4-5%	0 2	0 29	14.5 (CV = 1.0)
Prince William Sound salmon set gillnet	1990	obs data	3%	0	0	0
Alaska Peninsula/Aleutian Islands salmon drift gillnet	1990	obs data	4%	0	0	0
Cook Inlet salmon set gillnet[1]	1999-2000	obs data	2-5%	0 0	0, 0	0
Cook Inlet salmon drift gillnet[1]	1999-2000	obs data	2-5%	0 0	0, 0	0

Fishery name	Years	Data type	Observer coverage	Observed mortality (in given yrs.)	Estimated mortality (in given yrs.)	Mean annual mortality
Kodiak Island salmon set gillnet	2002	obs data	6.0%	0	0	0
Observer program total						25.8 (CV = 0.60)
				Reported mortalities		
Alaska sport salmon troll (non-commercial)	1993-2005	strand	N/A	0, 0, 0, 0, 0, 1, N/A, N/A, N/A, 1, N/A, N/A, N/A	N/A	[0.2]
Miscellaneous fishing gear	2001-2005	strand	N/A	N/A, N/A, 1, N/A, N/A	N/A	[0.2]
Minimum total annual mortality						26.2 (CV = 0.60)

[1] Data from the 1999 Cook Inlet observer program are preliminary.

Reports from the NMFS stranding database of Steller sea lions entangled in fishing gear or with injuries caused by interactions with gear are another source of mortality data. During the 5-year period from 2001 to 2005, there was only one confirmed fishery-related Steller sea lion stranding in the range of the western stock. This sighting involved an animal at Round Island with netting or rope around its neck; no more specific information is available on the type of fishing gear involved. In addition to this incident, a Steller sea lion was entangled in a large flasher/spoon in 1998. It is likely that this injury occurred as a result of a sport fishery, not a commercial fishery (Table 2). There are sport fisheries for both salmon and shark in this area; there is no way to distinguish between them since both fisheries use a similar type of gear (J. Gauvin, Groundfish Forum, Inc., pers. comm.). Fishery-related strandings during 2001-2005 result in an estimated annual mortality of 0.4 animals from this stock. This estimate is considered a minimum because not all entangled animals strand and not all stranded animals are found or reported. Steller sea lions reported in the stranding database as shot are not included in this estimate, as they may result from animals struck and lost in the Alaska Native subsistence harvest.

NMFS studies using satellite tracking devices attached to Steller sea lions suggest that they rarely go beyond the U.S. Exclusive Economic Zone into international waters. Given that the high-seas gillnet fisheries have been prohibited and other net fisheries in international waters are minimal, the probability that Steller sea lions are taken incidentally in commercial fisheries in international waters is very low. NMFS concludes that the number of Steller sea lions taken incidental to commercial fisheries in international waters is insignificant.

The minimum estimated mortality rate incidental to U. S. commercial fisheries is 26.2 sea lions per year, based on observer data (25.8) and stranding data (0.4) where observer data were not available. No observers have been assigned to several fisheries that are known to interact with this stock making the estimated mortality a minimum estimate.

Subsistence/Native Harvest Information

Information on the subsistence harvest of Steller sea lions comes via two sources: the Alaska Department of Fish and Game (ADFG) and the Ecosystem Conservation Office (ECO) of the Aleut Community of St. Paul. The ADFG conducts systematic interviews with hunters and users of marine mammals in approximately 2,100 households in about 60 coastal communities within the range of the Steller sea lion in Alaska (Wolfe et al. 2004). The interviews are conducted once per year in the winter (January to March), and cover hunter activities for the previous calendar year. The ECO collects data on the harvest in near real-time on St. Paul Island, and records hunter activities within 36 hours of the harvest (Zavadil et al. 2004). Information on subsistence harvest levels is provided in Table 3a; data from ECO (e.g., Zavadil et al. 2004) are relied upon as the source of data for St. Paul Island and all other data are from the ADFG (e.g., Wolfe et al. 2004).

The mean annual subsistence take from this stock over the 5-year period from 2003 through 2007 was 206 Steller sea lions/year (Table 3a).

Table 3a. Summary of the subsistence harvest data for the western U. S. stock of Steller sea lions, 2003-2007.

	All areas except St. Paul Island			St. Paul Island	
Year	Number harvested	Number struck and lost	Total	Number harvested + struck and lost	Total take
2003	149.7	36.9	186.6[1]	18[6]	205
2004	136.8	49.1	185.9[2]	18[7]	204
2005	153.2	27.6	180.8[3]	22[8]	203
2006	114.3	33.1	147.4[4]	26[9]	173
2007	165.7	45.2	210.9[5]	34[10]	245
Mean annual take (2003-2007)	143.9	38.4	182.3	24	206

[1]Wolfe et al. 2004; [2]Wolfe et al. 2005; [3]Wolfe et al. 2006; [4]Wolfe et al. 2008; [5]J. Fall, pers. comm., ADFG, 13 Jan 2009; [6]Zavadil et al. 2004; [7]Zavadil et al. 2005; [8]Lestenkof and Zavadil 2006; [9]Lestenkof et al. 2007; [10]Lestenkof et al. 2008.

Other Mortality

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 U.S. Endangered Species Act (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 two 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).

Mortalities may occasionally occur incidental to marine mammal research activities authorized under MMPA permits issued to a variety of government, academic, and other research organizations. Between 2003-2007, there was a total of 3 mortalities resulting from research on the western stock of Steller sea lions, which results in an average of 0.6 mortalities per year from this stock (Tammy Adams, Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910).

STATUS OF STOCK

The current annual level of incidental U. S. commercial fishery-related mortality (26.2) exceeds 10% of the PBR (24) and, therefore, cannot be considered insignificant and approaching a zero mortality and serious injury rate. Based on available data, the estimated annual level of total human-caused mortality and serious injury (26.2 + 206 + 0.6 = 232.8) is below the PBR level (247) for this stock. The western U. S. stock of Steller sea lion is currently listed as "endangered" under the ESA, and therefore designated as "depleted" under the MMPA. As a result, the stock is classified as a strategic stock. However, given that the population has declined 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, if in fact the population is still declining.

The slight increase in the population estimate and PBR level should be interpreted and applied with caution. The summer 2008 aerial survey of nonpups may be attributable to an increase in numbers of eastern Steller sea lions hauled out in the eastern Gulf of Alaska at the time the aerial survey was conducted. A concurrent decrease in numbers in the eastern Steller sea lion stock counts occurred and NMFS is currently investigating the possibility that the increase in counts in the eastern Gulf of Alaska was due to seasonal movements of eastern Steller sea lion stock animals rather than recruitment into the stock.

Habitat Concerns

The unprecedented decline in the western U. S. stock of Steller sea lion caused a change in the listing status of the stock in 1997 from "threatened" to" endangered" under the U. S. Endangered Species Act of 1973. Survey data collected since 2000 suggest that the decline has slowed or stopped in some portions of the range of the western U. S. stock, but continues in others. Many factors have been suggested as causes of the steep decline observed in the 1980s, (e.g., competitive effects of fishing, environmental change, disease, killer whale predation, incidental take, illegal and legal shooting). Decreases in rates of survival, particularly for juveniles, were associated with the steep 1980s declines (Holmes et al. 2007). Factors causing direct mortality were likely the most important. The slowing

of the decline in the 1990s, and the periods of increase and stability observed between 2000 and 2008 were associated with increases in survival of both adults and juveniles, but also with continuation of a chronic decline in reproductive rate that may have been initiated in the early 1980s (Pitcher et al. 1998, Holmes et al. 2007). Nutritional stress related to competition with commercial fisheries or environmental change, along with predation by killer whales, have been identified as potentially high threats to recovery (NMFS 2008). Additional potential threats to Steller sea lion recovery can be found in Table 3b.

Table 3b. Potential threats and impacts to Steller sea lion recovery and associated references. Threats and impact to recovery as described by the Draft Steller Sea Lion Recovery Plan (NMFS 2008). Reference examples identify research related to corresponding threats and may or may not support the underlying hypotheses.

Threat	Impact on Recovery	Reference Examples
Environmental variability	Potentially high	Fritz and Hinckley 2005, Trites and Donnelly 2003
Competition with fisheries	Potentially high	Dillingham et al. 2006, Fritz and Brown 2005, Hennen 2004, Fritz and Ferrero 1998
Predation by killer whales	Potentially high	DeMaster et al. 2006, Trites et al. 2007, Williams et al. 2004, Springer et al. 2003
Toxic substances	Medium	Albers and Loughlin 2003, Lee et al. 1996, Calkins et al. 1994
Incidental take by fisheries	Low	Perez 2006, Nikulin and Burkanov 2000, Wynne et al. 1992
Subsistence harvest	Low	Wolfe et al. 2005, Loughlin and York 2000, Haynes and Mishler 1991
Illegal shooting	Low	NMFS 2001, Loughlin and York 2000
Entanglement in marine debris	Low	Calkins 1985
Disease and parasitism	Low	Burek et al. 2005
Disturbance from vessel traffic and tourism	Low	Kucey and Trites 2006
Disturbance or mortality due to research activities	Low	Atkinson et al. 2008, Kucey and Trites 2006, Kucey 2005, Loughlin and York 2000, Calkins and Pitcher 1982

A number of management actions were implemented between 1990 and 1998 to promote the recovery of the western U. S. stock of Steller sea lions, including 3 nautical mile (nmi) no-entry zones around rookeries, prohibition of groundfish trawling within 10-20 nmi of certain rookeries, and spatial and temporal allocation of Gulf of Alaska pollock and Aleutian Island Atka mackerel total allowable catch. In 2000, NMFS issued a Biological Opinion (BO) on effects of the groundfish fisheries in the Bering Sea/Aleutian Islands and Gulf of Alaska regions on listed species. In this BO, NMFS determined that the continued prosecution of the groundfish 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 was likely to jeopardize the continued existence of the western population of Steller sea lion and to adversely modify critical habitat. 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 and area catch limits, and 5) establishment of a procedure ("fishing in proportion to biomass") for setting seasonal catch limits on removal levels in critical habitat based on the biomass of the target species residing in critical habitat.

In 2001, NMFS developed a programmatic SEIS to consider the impacts on Steller sea lions of different management regimes for the Alaska groundfish fisheries. 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 Atka mackerel, pollock, and Pacific cod fisheries and

Steller sea lions, particularly in waters within 10 nmi of haulouts and rookeries. The suite of conservation measures, which were implemented in 2002, were developed after working with the: 1) State of Alaska to explore whether there are potential adverse effects of state fisheries on Steller sea lions, and 2) the North Pacific Fishery Management Council (Council) to further minimize overcapitalization of fisheries and concentration of fisheries in time and space. The 2002 suite of conservation measures also removed the broad prohibition of fishing with trawl gear within 10 (or 20) nmi of rookeries in the western stock in U.S. waters, and did not apply the "fishing in proportion to biomass" procedure for regulating seasonal catch for the three Steller sea lion prey species in the same manner as was initially applied in the 2000 BO. All Steller sea lion-fishery management measures will be reviewed in a programmatic, status quo ESA Biological Opinion on the effects of groundfish fisheries on listed species scheduled for release and review in summer 2009.

NMFS reconstituted the Steller Sea Lion Recovery Team in 2002 to write a revised recovery plan for the eastern and western U.S. stocks. The Team's draft plan was reviewed by five independent reviewers in February 2006, prior to its delivery to NMFS, who then released the Plan for public review in May 2006. NMFS addressed the peer and public review comments and released the second draft Plan for another round of public and independent peer (one by the Council of Independent Experts and another commissioned by the Council) review in May 2007. NMFS released the final recovery plan in March 2008 (NMFS 2008). The de-listing criteria approved by NMFS for the western stock of Steller sea lion are:

1. The population for the U.S. region of this [stock] has increased (statistically significant) for 30 years (at an average annual growth rate of 3%), based on counts of non-pups (i.e., juveniles and adults). Based on an estimated population size of about 42,500 animals in 2000, this would represent approximately 103,000 animals in 2030.
2. The trends in non-pups in at least 5 of the 7 sub-regions are stable or increasing, consistent with the trend observed under criterion #1. The population trend in any two adjacent sub-regions can not be declining significantly. The population trend in any subregion cannot have declined by more than 50%. The 7 sub-regions are:
    a. Eastern Gulf of Alaska (US)
    b. Central Gulf of Alaska (US)
    c. Western Gulf of Alaska (US)
    d. Eastern Aleutian Islands (including the eastern Bering Sea) (US)
    e. Central Aleutian Islands (US)
    f. Western Aleutian Islands (US)
    g. Russia/Asia
3. The ESA listing factor criteria are met.

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STELLER SEA LION (*Eumetopias jubatus*): Eastern U. S. Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

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, although males have a higher tendency to disperse than females (NMFS 1995, Trujillo et al. 2004, Hoffman et al. 2006). A northward shift in the overall breeding distribution has occurred, with a contraction of the range in southern California and new rookeries established in southeastern Alaska (Pitcher et al. 2007).

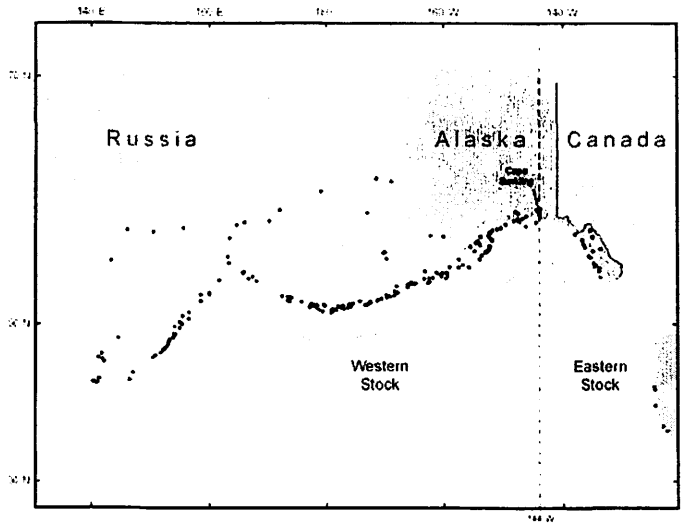

Figure 3. Approximate distribution of Steller sea lions in the North Pacific. Major U.S. haulouts and rookeries (50 CFR 226.202, 27 August 1993) and active Asian haulouts and rookeries (Burkanov and Loughlin, 2005) are depicted (points). Black dashed line (144° W) indicates stock boundary (Loughlin 1997). Note: Haulouts and rookeries in British Columbia are not shown.

Loughlin (1997) considered the following information when classifying stock structure based upon the phylogeographic approach of Dizon et al. (1992): 1) Distributional data: geographic distribution continuous, yet a high degree of natal site fidelity and low (<10%) exchange rate of breeding animals between rookeries; 2) Population response data: substantial differences in population dynamics (York et al. 1996); 3) Phenotypic data: unknown; and 4) Genotypic data: substantial differences in mitochondrial DNA (Bickham et al. 1996). Based on this information, two separate stocks of Steller sea lions were recognized within U. S. waters: an eastern U. S. stock, which includes animals east of Cape Suckling, Alaska (144°W), and a western U. S. stock, which includes animals at and west of Cape Suckling (Loughlin 1997, Fig. 3).

Steller sea lions that breed in Asia have been considered part of the western stock since the two stocks were first delineated in 1997. Since then, analyses of genetic data differ in their interpretation of separation between Asian and Alaskan sea lions. In Asian waters, Steller sea lions seasonally inhabit coastal waters of Japan in the winter, but breeding rookeries are currently only located in Russia (Burkanov and Loughlin, 2005). Based on analysis of mitochondrial DNA, Baker et al. (2005) found evidence of a genetic split that includes Commander Island (Russia) within the western U.S. stock. However, Hoffman et al. (2006) did not support this split based on analysis of nuclear microsatellite markers indicating high rates of male gene flow. While all genetic analyses confirm a strong separation between western and eastern stocks, recent work indicates that western stock haplotypes are present in southeast Alaska rookeries (Gelatt et al. 2007).

POPULATION SIZE

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) and Pitcher el al. (2007) concluded that the total Steller sea lion population could be estimated by multiplying pup counts by a factor based on the birth rate, sex and age structure, and growth rate of the Steller sea lion population. Using the

most recent 2002-2005 pup counts available by region from aerial surveys across the range of the eastern stock (total N=10,737), the total population of the eastern stock of Steller sea lions is estimated to be within the range of 45,095 to 55,832. This range is based on multiplying the total number of pups counted in southeast Alaska (5,510 in 2005; NMFS 2008), British Columbia (3,281 in 2002; Olesiuk and Trites 2003), Oregon (1,128 in 2002; NMFS, 2008), and California (818 in 2004; NMFS 2008) by either 4.2 or 5.2 (Pitcher et al. 2007). Using these pup multipliers, the population estimate is estimated to be within the range of 45,095 (10,737 × 4.2) and 55,832 (10,737 × 5.2). These are not minimum population estimates, since they are extrapolated from pup counts from photographs taken in 2002-2005, and demographic parameters estimated for an increasing (at 3.1% per year) eastern Steller sea lion population in equilibrium. The extrapolation factor varied depending on the vital rate parameter that resulted in the increased growth rate: as low as 4.2 if it were due to increased fecundity, and as high as 5.2 if it were due to decreased juvenile mortality. Pitcher et al. (2007) estimated the eastern stock of Steller sea lion to number between 46,000 and 58,000 in 2002 using this same method, but estimated a slightly higher population range because they estimated true fecundity by accounting for pup mortality between birth and when counts were made at approximately 1 month of age.

Minimum Population Estimate

The minimum population estimate was calculated by adding the most recent non-pup and pup counts from each trend site listed in Table 3c.

Table 3c. Non-pup and pup counts from rookery and haulout trend sites of eastern U.S. Steller sea lions. The most recent counts for each site were used to calculate the minimum population estimate.

Trend site	Year	Non-pups	Pups	Total count per site
Southeast Alaska	2005	15,283	5,510	20,793
British Columbia	2002	12,121	3,281	15,402
Washington (Pitcher et al., 2007)	2001	516	--	516
Oregon	2002	4,169	1,128	5,297
California	2004	1,578	818	2,396
Minimum population estimate				44,404

This results in an N_{MIN} for the eastern U. S. stock of Steller sea lions of 44,404. This count has not been corrected for animals which were at sea. Pitcher et al. (2007) counted 45,378 sea lions during the 2002 survey, which represents a minimum population size because not every site was surveyed and animals missing from rookeries and haulout sites were not counted. More recent counts from Southeast Alaska and California sites were used in place of the Pitcher et al. (2007) counts to calculate N_{MIN}.

Current Population Trend

Trend counts (an index to examine population trends) for Steller sea lions in Oregon were relatively stable in the 1980s, with uncorrected counts in the range of 2,000-3,000 sea lions (NMFS 1992). Counts in Oregon have shown a gradual increase since 1976, as the adult and juvenile state-wide count for that year was 1,486 compared to 4,169 in 2002 (NMFS 2008).

Steller sea lion numbers in California, especially in southern and central California, have declined from historic numbers. Counts in California between 1927 and 1947 ranged between 4,000 and 6,000 non-pups with no apparent trend, but have subsequently declined by over 50%, remaining between 1,500 and 2,000 non-pups between 1980 and 2004. At Año Nuevo Island off central California, a steady decline in ground counts started around 1970, resulting in an 85% reduction in the breeding population by 1987 (LeBoeuf et al. 1991). Overall, counts of non-pups at trend sites in California and Oregon have been relatively stable or increasing slowly since the 1980s (Table 4, Fig. 4).

Table 4. Counts of adult and juvenile Steller sea lions observed at rookery and haulout trend sites by year and geographical area for the eastern U. S. stock from 1982 through 2002 (NMFS 1995; Strick et al. 1997; Sease et al. 1999; Sease and Loughlin 1999; Sease et al. 2001; Olesiuk 2003; Brown et al. 2002; NMFS 2008; ODF&W unpubl. data, 7118 NE Vandenberg Ave., Corvallis, OR 97330; Point Reyes Bird Observatory, unpubl. data, 4990 Shoreline Hwy., Stinson Beach, CA 94970). Central California data include only Año Nuevo and Farallon Islands. Trend site counts in northern California/Oregon include St. George, Rogue, and Orford Reefs. British Columbia data include counts from all sites.

Area	1982	1990	1991	1992	1994	1996	1998	2000	2002
Central CA	511[1]	655	537	276	508	382	564[3]	349	380
Northern CA/OR	3,094	3,088	3,180	4,274	3,831	4,192	4,464	3,793	4,885
British Columbia	4,713	6,109[2]	--	7,376	8,091	--	9,818	--	12,121
Southeast Alaska	6,898	7,629	8,621	7,555	9,001	8,231	8,693	9,892	9,951
Total	15,216	17,481	--	19,481	21,431	--	23,539	--	27,337

[1] This count includes a 1983 count from Año Nuevo.
[2] This count was conducted in 1987.
[3] This count was conducted in 1999.

In Southeast Alaska, counts of non-pups at trend sites increased by 56% from 1979 to 2002 from 6,376 to 9,951 (Merrick et al. 1992; Sease et al. 2001; NMFS 2008). NMFS conducted an aerial survey of Southeast Alaska in early June 2008 and counted only 8,748 non-pups on trend sites (Fritz et al. 2008). It is thought that the lower than expected count in Southeast Alaska may have been due to movement of animals early in the survey period (early June to early July) to the Prince William Sound region, since counts of non-pups there were over 1,300 more than in 2007. During 1979-2005, counts of pups on the three largest rookeries in Southeast Alaska increased a total of 148%. In British Columbia, counts of non-pups throughout the Province increased at a rate of 3.2% annually from 1971 through 2002 (Olesiuk and Trites 2003). Counts of non-pups at trend sites throughout the range of the eastern Steller sea lion stock are shown in Figure 4. Since the 1970s the average annual population growth rate of Eastern Steller sea lions is 3.1% (Pitcher et al. 2007).

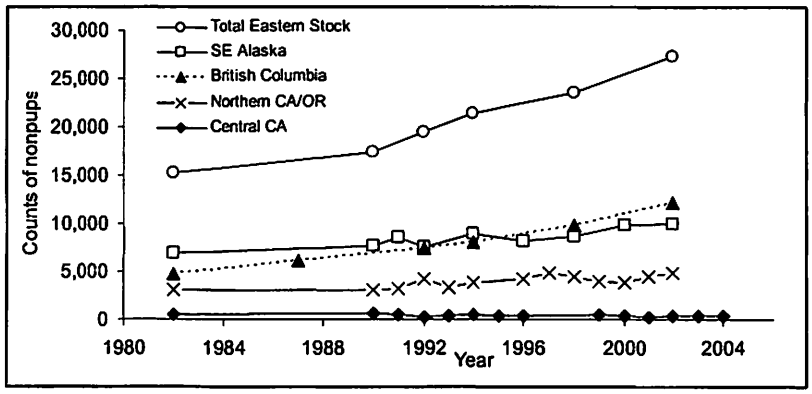

Figure 4. Counts of adult and juvenile Steller sea lions at rookery and haulout trend sites throughout the range of the eastern U.S. stock, 1982-2004. Data from British Columbia include all sites.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

There are no estimates of maximum net productivity rates for Steller sea lions. Pitcher et al. (2007) observed a rate of population increase of 3.1% per year for the eastern stock of Steller sea lions, but concluded this rate did not represent a maximum rate of increase. Thus in the absence of published data to the contrary, NMFS will continue to use the default value. Hence, until additional data become available, it is recommended that the pinniped maximum theoretical net productivity rate (R_{MAX}) of 12% be employed for this stock (Wade and Angliss 1997).

POTENTIAL BIOLOGICAL REMOVAL

Under the 1994 reauthorized Marine Mammal Protection Act (MMPA), the potential biological removal (PBR) is defined as the product of the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor: $PBR = N_{MIN} \times 0.5R_{MAX} \times F_R$. The default recovery factor (F_R) for stocks listed as "threatened" under the Endangered Species Act (ESA) is 0.5 (Wade and Angliss 1997). However, as total population estimates for the eastern U. S. stock have remained stable or increased over the last 20 years, the recovery factor is set at 0.75; midway between 0.5 (recovery factor for a "threatened" stock) and 1.0 (recovery factor for a stock within its optimal sustainable population level). This approach is consistent with recommendations of

the Alaska Scientific Review Group. Thus, for the eastern U. S. stock of Steller sea lions, PBR = 1,998 animals (44,404 × 0.06 × 0.75).

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fisheries Information

Until 2003, there were six different federally regulated commercial fisheries in Alaska that could have interacted with Steller sea lions and were monitored for incidental mortality by fishery observers. As of 2003, changes in fishery definitions in the List of Fisheries have resulted in separating these 6 fisheries into 22 fisheries (69 FR 70094, 2 December 2004). This change does not represent a change in fishing effort, but provides managers with better information on the component of each fishery that is responsible for the incidental serious injury or mortality of marine mammal stocks in Alaska.

Fishery observers monitored four commercial fisheries during the period from 1990 to 2005 in which Steller sea lions from this stock were taken incidentally: the California (CA)/Oregon (OR) thresher shark and swordfish drift gillnet, WA/OR/CA groundfish trawl, Northern Washington (WA) marine set gillnet, and Gulf of Alaska sablefish longline fisheries. The best data available on the rates of serious injury and mortality incidental to these fisheries is presented in Table 5. There have been no observed serious injuries or mortalities incidental to the CA/OR thresher shark and swordfish drift gillnet fishery in recent years (Carretta 2002, Carretta and Chivers 2003, Carretta and Chivers 2004). In the WA/OR/CA groundfish trawl (Pacific whiting component only) one Steller sea lion was observed killed in each year in 2001-03; these observed takes in combination with a mortality that occurred in an unmonitored haul resulted in a mean estimated annual mortality level of 0.8 (Table 5). No data are available after 1998 for the northern Washington marine set gillnet fishery. There have been no observer reported mortalities in the Gulf of Alaska sablefish longline since 2000 (Perez unpubl. ms.). These mortalities result in a mean annual mortality rate of 0.8 (CV = 0.02) Steller sea lions. No mortalities were reported by fishery observers monitoring drift gillnet and set gillnet fisheries in Washington and Oregon this decade; though, mortalities have been reported in the past.

Table 5. Summary of incidental mortality of Steller sea lions (eastern U. S. stock) due to commercial fisheries from 2001 to 2005 (or most recent data available) and calculation of the mean annual mortality rate. Mean annual mortality in brackets represents a minimum estimate from stranding data. The most recent 5 years of available data are used in the mortality calculation when more than 5 years of data are provided for a particular fishery. N/A indicates that data are not available. Details of how percent observer coverage is measured is included in Appendix 6.

Fishery name	Years	Data type	Observer coverage	Observed mortality (in given yrs.)	Estimated mortality (in given yrs.)	Mean annual mortality
WA/OR/CA groundfish trawl (Pacific whiting component)	2000 2001 2002 2003 2004	Obs data	80.3 96.2 66.8 85.5 91.5	0 1 1 1 0	1[1] 1 1 1 0	0.8 (CV = 0.02)
Observer program total						0.8 (CV = 0.02)
				Reported mortalities		
Alaska salmon troll	1992-2005	Strand data	N/A	0, 0, 0, 1, 0, 0, N/A, N/A, 1, 1, N/A, N/A, 2, N/A	N/A	[0.6]
British Columbia aquaculture predator control program	2001 2002 2003 2004 2005	Permit reports	N/A	27 15 N/A[2] N/A[2] N/A[2]	N/A	0

Fishery name	Years	Data type	Observer coverage	Observed mortality (in given yrs.)	Estimated mortality (in given yrs.)	Mean annual mortality
Minimum total annual mortality						1.4 (CV = 0.58)

[1] A mortality was seen by an observer, but during an unmonitored haul; because the haul was not monitored, an estimated annual mortality cannot be extrapolated.
[2] Aquaculture facilities are no longer permitted to shoot Steller sea lions.

Strandings of Steller sea lions provide additional information on the level of fishery-related mortality. Estimates of fishery-related mortality from stranding data are considered minimum estimates because not all entangled animals strand, and not all stranded animals are found or reported. In Alaska, during the 5-year period from 2001-2005, there were three situations where a flasher was seen in a Steller sea lion's mouth (NMFS Alaska Region, unpublished data). It is not clear whether entanglements with "flashers" involved the recreational or commercial component of the salmon troll fishery. Based on Angliss and DeMaster (1998), it is appropriate to call these entanglements "serious injuries". Based on Alaska stranding records, this information indicates a rate of incidental mortality of at least 0.6/year from the troll fishery. There were no fishery-related strandings of Steller sea lions in Washington, Oregon, or California between 2001 and 2005.

Due to limited observer program coverage, no data exist on the mortality of marine mammals incidental to Canadian commercial fisheries (i.e., those similar to U.S. fisheries known to take Steller sea lions). As a result, the number of Steller sea lions taken in Canadian waters is not known.

The minimum estimated mortality rate incidental to commercial fisheries (both U.S. and Canadian) is 1.4 sea lions per year, based on observer data (0.8) and stranding data (0.6).

Subsistence/Native Harvest Information

The subsistence harvest of Steller sea lions during 2003-2007 is summarized in Wolfe et al. (2008). During each year, data were collected through systematic interviews with hunters and users of marine mammals in approximately 2,100 households in about 60 coastal communities within the geographic range of the Steller sea lion in Alaska. Approximately 16 of the interviewed communities lie within the range of the eastern U.S. stock. The average number of animals harvested and struck but lost is 11 animals/year (Table 6).

An unknown number of Steller sea lions from this stock are harvested by subsistence hunters in Canada. The magnitude of the Canadian subsistence harvest is believed to be small. Alaska Native subsistence hunters have initiated discussions with Canadian hunters to quantify their respective subsistence harvests, and to identify any effect these harvests may have on the cooperative management process.

Table 6. Summary of the subsistence harvest data for the eastern stock of Steller sea lions, 2003-2007.

Year	Estimated total number taken	Number harvested	Number struck and lost
2003	7[1]	2	5
2004	12[2]	5	7
2005	19[3]	0	19
2006	12.6[4]	2.5	10.1
2007	6.1[5]	0	6.1
Mean annual take (2003-2007)	11.3	1.9	9.4

[1] Wolfe et al. 2004; [2] Wolfe et al. 2005; [3] Wolfe et al. 2006; [4] Wolfe et al. 2008; [5] J. Fall pers. comm., ADFG, 13 Jan 2009.

Other Mortality

Illegal shooting of sea lions in U.S. waters 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 hunting by Alaska Natives or where imminently necessary to protect human life). Records from NMFS enforcement indicate that there were two 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, and three Steller sea lions in Petersburg. Both cases were successfully prosecuted (NMFS, Alaska

Enforcement Division). There are no records of illegal shooting of Steller sea lions from the eastern stock listed in the NMFS enforcement records for 1999-2003 (NMFS, unpublished data).

Steller sea lions were taken in British Columbia during commercial salmon farming operations (Table 5). Preliminary figures from the British Columbia Aquaculture Predator Control Program indicated a mean annual mortality of 45.75 Steller sea lions from this stock over the period from 1999 to 2003 (Olesiuk 2004). As of 2004, aquaculture facilities are no longer permitted to shoot Steller sea lions (P. Olesiuk, Pacific Biological Station, Canada, pers. comm.).

Strandings of Steller sea lions with gunshot wounds do occur, along with strandings of animals entangled in material that is not fishery-related. During the period from 2001 to 2005 strandings of animals with gunshot wounds from this stock occurred in Oregon and Washington (one in 2004 and three in 2005) resulting in an estimated annual mortality of 0.8 Steller sea lions from this stock. This estimate is considered a minimum because not all stranded animals are found, reported, or cause of death determined (via necropsy by trained personnel). In addition, human-related stranding data are not available for British Columbia. Reports of stranded animals in Alaska with gunshot wounds have not been included in the above estimates because it is not possible to tell whether the animal was illegally shot or if the animal was struck and lost by subsistence hunters (in which case the mortality would have been legal and accounted for in the subsistence harvest estimate).

Stranding data may also provide information on additional sources of potential human-related mortality. Between 2001 and 2005 there were three reported non-fishery related serious injuries or mortalities to Steller sea lions in Washington and Oregon: one with a head injury (2001), one with a piece of cargo net around its neck (2003), and one mortality due to blunt trauma (2004). If the number of interactions (3) is averaged over 5 years, the "other" interaction rate would be a minimum of 0.6 animals per year.

Mortalities may occasionally occur incidental to marine mammal research activities authorized under MMPA permits issued to a variety of government, academic, and other research organizations. Between 2003-2007, there were a total of 9 incidental mortalities resulting from research on the eastern stock of Steller sea lions, which results in an annual average of 1.8 mortalities per year from this stock (Tammy Adams, Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910).

STATUS OF STOCK

Based on currently available data, the minimum estimated U. S. commercial fishery-related mortality and serious injury for this stock (0.8 + 0.6 = 1.4) is less than that 10% of the calculated PBR (200) 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 (1.4 + 11 + 0.8 + 0.6 + 1.8 = 15.6) does not exceed the PBR (1998) for this stock. 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. As a result, this stock is classified as a strategic stock. The eastern stock of Steller sea lion has been proposed as a candidate for removal from listing under the ESA by the Steller sea lion recovery team and NMFS (NMFS 2008), based on its annual rate of increase of approximately 3% since the mid-1970s. Although the stock size has increased, the status of this stock relative to its Optimum Sustainable Population size is unknown. The overall annual rate of increase of 3.1% throughout most of the range (Oregon to southeastern Alaska) of the eastern U. S. stock has been consistent and long-term, and may indicate that this stock is reaching OSP size (Pitcher et al. 2007).

Habitat Concerns

Unlike the observed decline in the western U. S. stock of Steller sea lion there has not been a concomitant decline in the eastern U. S. stock. The eastern U. S. stock is increasing throughout the northern portion of its range (Southeast Alaska and British Columbia), and is stable or increasing slowly in the central (Oregon through central California). In the southern end of its range (Channel Islands in southern California), it has declined considerably since the late 1930s, and several rookeries and haulouts south of Año Nuevo Island have been abandoned. Changes in the ocean environment, particularly warmer temperatures, may be possible factors that have favored California sea lions over Steller sea lions in the southern portion of the Steller's range (NMFS 2008). A Revised Recovery Plan reviewing current threats to the eastern and western U.S. stocks and proposing actions and guidelines for recovery was released by NMFS in March 2008 (NMFS 2008).

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PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: B- Reports

	NAME *(PLEASE PRINT)*	TESTIFYING ON BEHALF OF:
1	Stephen Taufen	Groundswell Fisheries Movement
2	Linda Behnken	ALFA
3	Kenny Down	Freezer Longline Coalition
4	GERRY MERRIGAN	SELF
5	Michael LAKE	AOI -
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.