PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: ALL B REPORTS

	NAME *(PLEASE PRINT)*	TESTIFYING ON BEHALF OF:
1	Steve Marvik	END OF B REPORTS
2	Kenny Down	Freezer Longline Coalition
3	~~Karin Holser~~	~~Duty B-8~~
4	Linda Behnken	AREA / IN / COAST GUARD Report
5		
6	Dan Warrendut / Jim Ayers	Oceana
7	~~Dave Benton~~ Donna Parker	MCA
8	Eric Olson (C-1)	
9	Ben Klampit (C-1)	
10	Mark Thomas (C-1)	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

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.

Kenny Down
B-8

gray water, cooling water, refrigeration condensate, freshwater pressure relief water, clean-up water, and scrubber water.

B. Unauthorized discharges

1. The discharge of pollutants not specifically set out in this Part are not authorized under this Permit.

2. This general NPDES permit does not authorize any discharges from facilities that (1) have not submitted a Notice of Intent and received written authorization to discharge under this Permit from EPA or (2) have not been notified in writing by EPA that they are covered under this Permit as provided for in the 40 CFR 122.28(b)(2)(vi).

3. The discharge of petroleum (e.g., diesel, kerosene, and gasoline) or hazardous substances into or upon the navigable waters of the U.S., adjoining shorelines, into or upon the waters of the contiguous zone which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the U.S., is prohibited under 33 U.S.C.A. 1321(b)(3). Any person in charge of an offshore vessel must, as soon as (s)he has knowledge of any discharge of oil or a hazardous substances from such vessel, immediately notify the U.S. Coast Guard's Command Center (1-800-478-5555).

III. AREAS EXCLUDED FROM AUTHORIZATION UNDER THIS GENERAL NPDES PERMIT

This Permit does not authorize the discharge of pollutants in the following circumstances:

A. Protected water resources, critical habitats and special areas

This Permit does not authorize the discharge of pollutants into the protected water resources, critical habitats and special areas as listed below. A sample list and location maps are included in Appendices A and B.

1. Within 1 NM of a National Park, Preserve or Monument.

2. Within 1 NM of a National Wildlife Refuge.

3. Within 1 NM of a National Wilderness Area.

4. Within 1 NM of a State Game Sanctuary, State Game Refuge, State Park, State Marine Park or State Critical Habitat Area.

5. Within 3 NM of a rookery or major haul-out area of the Steller sea lion which has been designated as "critical habitat" by the National Marine Fisheries Service (NMFS) and within fishing areas closed by NMFS as critical Steller sea lion habitat.

6. Waters within one (1) nautical mile of designated critical habitat for the Steller's eider or spectacled eider, including nesting, molting and wintering units. During breeding

season (May through August) Steller's and spectacled eider nesting critical habitat units are located on the Yukon-Kuskokwim Delta and North Slope. Molting habitat (July through October) for Steller's eiders includes Izembek Lagoon, Nelson Lagoon and Seal Islands. Molting habitat for spectacled eider includes Ledyard Bay and Norton Sound. Wintering habitat (October through March) for Steller's eider includes Nelson Lagoon, Izembek Lagoon, Cold Bay, Chignik Lagoon and several other locations along the Aleutian Islands. Wintering habitat for spectacled eider is in the Bering Sea between St. Lawrence and St. Matthews Islands. For complete lists and maps of Steller's eider and spectacled eider critical habitat see Appendices A and B.

7. "Living substrates", such as submerged aquatic vegetation, kelp and eelgrass in shallow coastal waters (generally less than minus 60 ft depth MLLW).

B. At-risk water resources and waterbodies

This Permit does not authorize the discharge of pollutants in the following at-risk water resources and waterbodies.

1. A discharge to less than 60 feet MLLW, with inadequate flushing.

   Areas with poor or inadequate flushing may include but are not limited to sheltered waterbodies such as bays, harbors, inlets, coves, lagoons and semi-enclosed water basins bordered by sills. For the purposes of this section, "poor flushing" means average currents of less than 0.33 of a knot at any point in the receiving water within 300 feet of the outfall. It is the responsibility of the permitee to prove adequate flushing in all cases where the discharge is less than 60 feet MLLW.

C. Areas covered by other NPDES permits

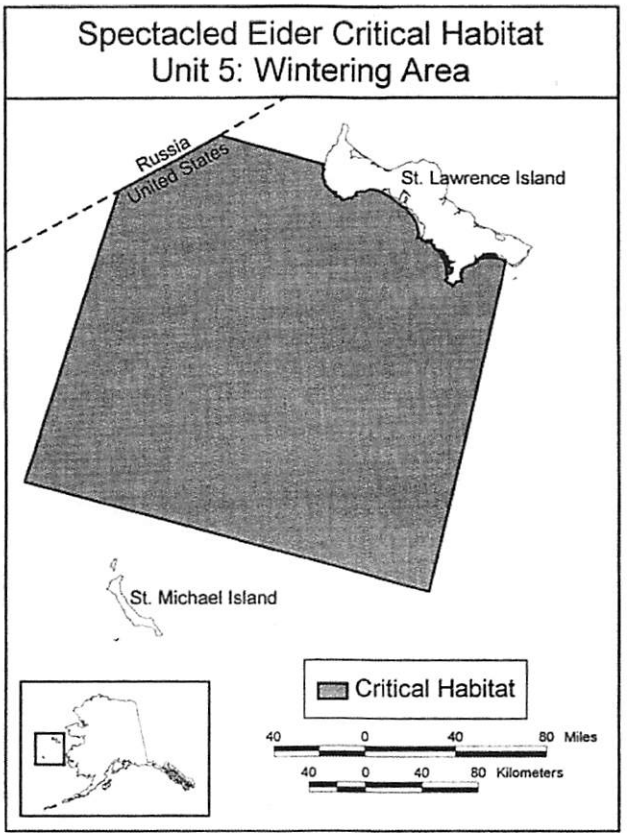
1. This Permit does not authorize the discharge of pollutants to receiving waters covered by other general or individual NPDES seafood permits.

IV. APPLICATION TO BE PERMITTED UNDER THIS GENERAL NPDES PERMIT

In order to be authorized to discharge any of the pollutants set out in Part II to waters of the United States under this general NPDES permit, a facility must apply for coverage under this Permit. This general NPDES permit does not authorize any discharges from facilities that have not received authorization from EPA to discharge under this Permit.

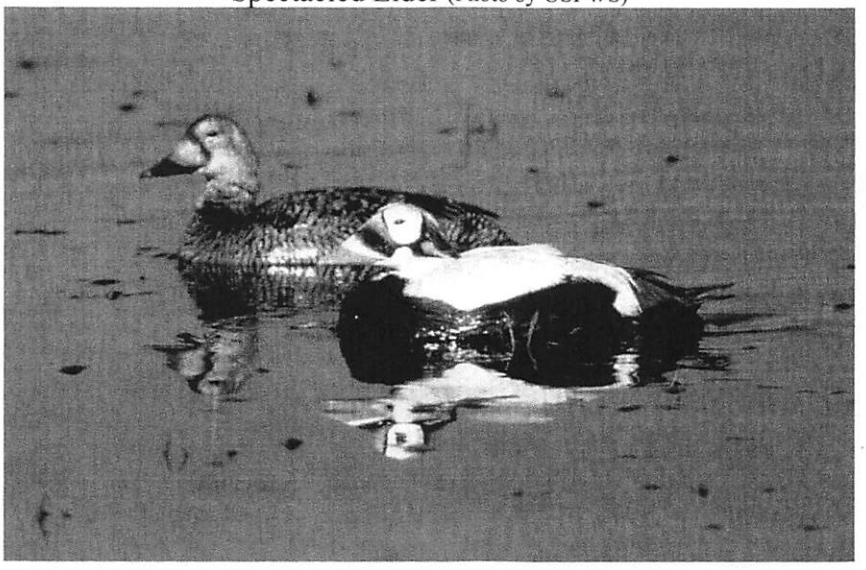
A. Submittal of a Notice of Intent to be covered under this general NPDES permit

An applicant wishing authorization to discharge under this Permit must submit a timely and complete Notice of Intent (NOI), or equivalent form to EPA in accordance with the requirements listed herein. [See Attachment A for NOI.] The current NOI or an equivalent form containing all information required must be used. Please note previous versions of Notice of Intents will be considered incomplete. A qualified applicant will be authorized to discharge under this Permit upon its certified receipt from EPA of written notification of inclusion and the assignment of an NPDES permit number.



Map from FR.Vol.66, No. 25, February 6, 2001, pg.9184

Spectacled Eider (Photo by USFWS)



AGENDA B-8
FEBRUARY 2010

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
1 HOUR

DATE: February 1, 2010

SUBJECT: Protected Resources Report

ACTION REQUIRED

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

BACKGROUND

A. Cook Inlet Beluga Whales

National Marine Fisheries Service announced on December 1, 2009 their proposal to designate critical habitat for Cook Inlet beluga whales. As published in the Federal Register, NMFS has identified more than one third of Cook Inlet as critical habitat for the approximately 300 endangered Cook Inlet beluga whales. The public comment period on the critical habitat designation was originally scheduled to end on February 1, 2010, but in January, NMFS announced that the public comment period would be extended by 30 days to March 3, 2010.

B. Pacific Walrus

The US Fish & Wildlife Service announced on December 30, 2009 the release of the final stock assessment report (SAR) for Pacific walrus (attached as Item B-8(a)). The final SAR was revised based on public comments received following the release of the draft SAR in June 2009. A summary of comments received is contained in the Federal Register Notice announcing the release of the final SAR, attached as Item B-8(b). The report estimates a minimum population size of 129,000 Pacific walrus. The final results of the joint U.S.-Russia range-wide survey of Pacific walrus conducted in 2006 will soon be available in the form of a technical manuscript submitted for publication to a peer-reviewed journal, and will be provided to the Council when available. The 2006 survey did not cover all of the areas occupied by walrus, and the method used to estimate abundance was different from any used previously. Thus, direct comparisons with past population estimates are not possible. The SAR includes preliminary results from the 2006 range-wide survey, a discussion of the survey methodology used in 2006, a comparison with survey methodologies used in the past, and a summary of Pacific walrus population estimates based on surveys conducted from 1975 to 2006.

C. Polar Bear

The US Fish & Wildlife Service announced on December 30, 2009 the release of final stock assessment reports (SARs) for the two polar bear stocks in Alaska: the southern Beaufort Sea polar bear stock and the Chukchi/Bering Sea polar bear stock (attached as Items B-8(c) and B-8(d)) The final SARs were revised based on public comments received following the release of the draft SARs in June 2009 (see Item B-7(b) for a summary of comments received). The reports estimate a minimum population size of 1,397 polar bears in the southern Beaufort Sea population and 2,000 polar bears in the Chukchi/Bering Sea population. As reported to the Council previously, the USFWS announced on October 22, 2009 their proposal to designate three units of critical habitat for the polar bear – sea ice critical habitat, denning critical habitat, and the barrier island critical habitat. Note that sea ice CH covers the area of the Council's new Arctic FMP and also areas of the northern Bering Sea.

D. Steller Sea Lions and the Upcoming BiOp

NMFS indicates that the draft *status quo* BiOp is still scheduled to be released on March 1, 2010. The Council's SSL Mitigation Committee met January 26-28 at the Alaska Fisheries Science Center in Seattle to receive presentations of recent scientific findings on SSLs in preparation for the BiOp review. Minutes from the committee meeting will be provided to the Council as a supplement to this report. The committee plans to meet again on March 9-11 (possibly continuing on March 12th) in Juneau at the NMFS Alaska Region offices following the release of the draft BiOp. At that meeting, NMFS staff will give the SSL Mitigation Committee an in-depth presentation on the draft BiOp.

At its February meeting, the Council may wish to discuss the potential need for an additional Council meeting if the draft BiOp contains a Jeopardy or Adverse Modification conclusion. The Council could discuss tentative dates when such a meeting could occur (and a possible location). The SSL Mitigation Committee would likely need to schedule additional, follow-up meetings after its March 9-11 meeting in Juneau. At this point, NMFS has indicated that a discussion on schedules for the preparation of analytical documents and rulemaking to implement any necessary changes to the fishery might best be delayed until April after the draft BiOp is released, when the nature and scope of possible analyses and rulemaking can be better assessed.

E. Seabirds

Trawl bycatch of seabirds

Ed Melvin of the University of Washington will present the Council with an overview of a recent report on potential interactions between Alaska trawl fisheries and North Pacific albatrosses. A copy of the report was provided to the Council about a year ago. An electronic copy of the report may be found at the link below. Studies elsewhere indicate that collisions with trawl third wire and warp cables can result in significant mortality of large-winged seabirds such as albatrosses. One objective of the report was to provide NMFS with estimates of warp and third-wire effort by target fishery, geographic region, and vessel type for Alaska trawl fisheries. A second objective was to provide information that will guide future investigations of the extent and significance of seabird cable strikes in the Alaska fisheries and inform the development of mitigation technologies and practices, should they be necessary.

Dietrich, K.S. and E.F. Melvin. 2008. Alaska Trawl Fisheries: Potential Interactions with North Pacific Albatrosses. WSG-TR-01, Washington Sea Grant, Seattle, WA.
Link: http://wsg.washington.edu/communications/online/TrawlAlbaInterLR.pdf

Update on Short-tailed Albatross

Dr. Rob Suryan of Oregon State University will provide the Council with an update on short-tailed albatross population status, population distribution from at-sea satellite tracking efforts, and recovery efforts (i.e., new colony establishment). The Council last received an update on short-tailed albatross from Dr. Suryan in 2007. In 2009, the second year of short-tailed albatross chick translocations was completed, with 15 chicks translocated to Mukojima. In addition, post-fledgling tracking studies were initiated. Finally, during field observations of the decoy colony, two visiting short-tailed albatross were observed multiple times at Mukojima, interacting with each other and with the translocated chicks.

PACIFIC WALRUS (*Odobenus rosmarus divergens*): Alaska Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The family Odobenidae is represented by a single modern species, *Odobenus rosmarus,* of which two subspecies are generally recognized: the Atlantic walrus (*O. r. rosmarus*) and the Pacific walrus (*O. r. divergens*). The two subspecies occur in geographically isolated populations. The Pacific walrus is the only stock occurring in U.S. waters and considered in this account.

Pacific walrus range throughout the continental shelf waters of the Bering and Chukchi seas, occasionally moving into the East Siberian Sea and the Beaufort Sea (Figure 1). During the summer months most of the population migrates into the Chukchi Sea; however, several thousand animals, primarily adult males, aggregate near coastal haulouts in the Gulf of Anadyr, Bering Strait region, and in Bristol Bay. During the late winter breeding season walrus are found in two major concentration areas of the Bering Sea where open leads, polynyas, or thin ice occur (Fay *et al.* 1984). While the specific location of these groups varies annually and seasonally depending upon the extent of the sea ice, generally one group ranges from the Gulf of Anadyr into a region southwest of St. Lawrence Island, and a second group is found in the southeastern Bering Sea from south of Nunivak Island into northwestern Bristol Bay.

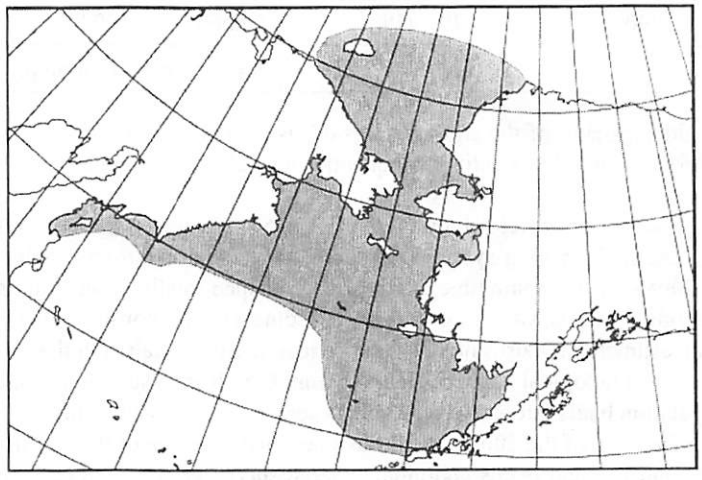


Figure 1. Approximate distribution of Pacific walrus in U.S. and Russian territorial waters (shaded area). The combined summer and winter distributions are depicted.

Pacific walrus are currently managed as a single panmictic population; however, stock structure has not been thoroughly investigated. Scribner *et al.* (1997) found no difference in mitochondrial and nuclear DNA among walrus sampled shortly after the breeding season from four areas of the Bering Sea (Gulf of Anadyr, Koryak Coast, southeast Bering Sea, and St. Lawrence Island). More recently, Jay *et al.* (2008) found indications of stock structure based on differences in the ratio of trace elements in the teeth of walruses sampled in January and February from two breeding areas (southeast Bering Sea and St. Lawrence Island). Further research on stock structure of Pacific walruses is needed.

POPULATION SIZE

The size of the Pacific walrus population has never been known with certainty. Based on large sustained harvests in the 18th and 19th centuries, Fay (1982) speculated that the pre-exploitation population was represented by a minimum of 200,000 animals. Since that time, population size is believed to have fluctuated markedly in response to varying levels of human exploitation (Fay *et al.* 1989). Large-scale commercial harvests reduced the population to an estimated 50,000-100,000 animals in the mid-1950s (Fay *et al.* 1997). The population is believed to have increased rapidly in size during the 1960s and 1970s in response to reductions in hunting pressure (Fay *et al.* 1989).

Between 1975 and 1990, visual aerial surveys were carried out by the United States and Russia at 5-year intervals, producing population estimates ranging from 201,039 to 234,020 animals (Table 1). The estimates generated from these surveys are considered minimum values that are not suitable for detecting trends in population size (Hills and Gilbert 1994, Gilbert *et al.* 1992). Efforts to survey the Pacific walrus population were suspended after 1990 due to unresolved problems with survey methods that produced population estimates with unknown bias and unknown or large variances that severely limited their utility (Gilbert *et al.* 1992, Gilbert 1999).

An international workshop on walrus survey methods, hosted by the U.S. Fish and Wildlife Service (USFWS) and U.S. Geological Survey (USGS) in 2000, concluded that it would not be possible to obtain a population estimate with adequate precision for tracking trends using the existing visual methodology and any feasible amount of survey effort (Garlich-Miller and Jay 2000). Workshop participants recommended investing in research on walrus distribution and haul-out patterns, and exploring new survey tools, including remote sensing systems and development of satellite transmitters, prior to conducting another aerial survey. Remote sensing systems were viewed as having great potential

Table 1. Estimates of Pacific walrus population size, 1975-2006. Estimates are highly variable and not directly comparable among years (Fay *et al.* 1997, Gilbert 1999) because of differences in survey methodologies, timing of surveys, segments of the population surveyed, and incomplete coverage of areas where walrus may have been present. Therefore, these estimates do not provide a definitive basis for inference with respect to population trends.

Year	Population Estimate	References
1975	221,350	Gol'tsev 1976, Estes and Gilbert 1978, Estes and Gol'tsev 1984
1980	246,360	Johnson *et al.* 1982, Fedoseev 1984
1985	234,020	Gilbert 1986, 1989a, 1989b; Fedoseev and Razlivalov 1986
1990	201,039	Gilbert *et al.* 1992
2006	129,000	Speckman *et al.* in prep.

to address many of the shortcomings of visual aerial surveys by sampling larger areas per unit of time (Burn *et al.* 2006), objectively detecting and quantifying walruses (Udevitz *et al.* 2001), and reducing observer error (Burn *et al.* 2006).

Four years of field study by the USFWS and Russian partners led to the development of a survey method that uses thermal imaging systems to reliably detect walrus groups hauled out on sea ice (Burn *et al.* 2006, Udevitz *et al.* 2008). At the same time, the USGS developed satellite transmitters that record information on haul-out status of individual walrus, which can be used to estimate the proportion of the population in the water. This allows correction of an estimate of walrus numbers on ice to account for walrus in the water that cannot be detected in thermal imagery. These technological advances led to a joint U.S.-Russia survey in March and April of 2006, when the Pacific walrus population hauls out on sea ice habitats across the continental shelf of the Bering Sea.

The goal of the 2006 survey was to estimate the size of the Pacific walrus population (Speckman *et al.* in prep.). U.S. and Russian teams coordinated aerial survey efforts on their respective sides of the international border. The Bering Sea was partitioned into survey blocks, and a systematic random sample of transects within a subset of the blocks was surveyed with airborne thermal scanners using standard strip-transect methodology. An independent set of scanned walrus groups was aerially photographed. Counts of walrus in photographed groups were used to model the relation between thermal signatures and the number of walrus in groups, which was used to estimate the number of walrus in groups that were detected by the scanner but not photographed. The probability of thermally detecting various-sized walrus groups was modeled to estimate the number of walrus in groups undetected by the scanner. Thermal imagery detects walrus that are hauled out on sea ice, but is unable to detect walrus swimming in water. Therefore, data from walrus tagged with satellite transmitters were used to adjust on-ice estimates to account for walrus in the water during the survey.

The estimated area of available walrus sea ice habitat in 2006 averaged 668,000 km^2, and the area of surveyed blocks was 318,204 km^2. The number of Pacific walrus within the surveyed area was estimated at 129,000 with 95% confidence limits of 55,000 to 507,000 individuals (Speckman *et al.* in prep.). As this estimate does not account for areas that were not surveyed, some of which are known to have had walrus present, it is negatively biased to an unknown degree.

Minimum Population Estimate

An estimate of minimum population size (N_{MIN}) can be calculated using Equation 1 from the PBR Guidelines (Wade and Angliss 1997): $N_{MIN} = N/\exp(0.842 * [\ln(1+[CV(N)^2]^{1/2})$. However, the 2006 estimate of Pacific walrus population size is known to be negatively biased (Speckman *et al.* in prep.), which provides assurance that walrus population size was greater than the estimate (NMFS 2005). The 2006 estimate of 129,000 walruses within the surveyed area is, therefore, also the best estimate of N_{MIN}.

Current Population Trend

The 2006 estimate is lower than other estimates of Pacific walrus population size to date (Table 1). However, estimates of population size from 1975 to 2006 (Table 1) are highly variable and not directly comparable among years (Fay *et al.* 1997, Gilbert 1999) because of differences in survey methodologies, timing of surveys, and segments of the population surveyed, as well as incomplete coverage of areas where walrus may have been present. Therefore, these estimates do not provide a definitive basis for inference with respect to population trends.

A decline in Pacific walrus population size from its peak in the late 1970s and 1980s would not be unexpected. Walrus researchers in the 1970s and 1980s were concerned that the population had reached or exceeded carrying capacity, and predicted that density-dependent mechanisms would begin to cause a decrease in population size (Fay and Stoker 1982b, Fay *et al.* 1986, Sease 1986, Fay *et al.* 1989). Estimates of demographic parameters from the late 1970s and 1980s support the idea that population growth was slowing (Fay and Stoker 1982a, Fay *et al.* 1986, Fay *et al.* 1989). Garlich-Miller *et al.* (2006) found that the median age of reproduction for female walrus decreased in the 1990s, which is consistent with reduction in density-dependent pressures. However, data are not available to allow conclusion of whether changes in walrus life-history parameters might have been mediated by changes in walrus abundance, or by changes in the carrying capacity of the environment.

The estimate for 2006 of about 129,000 walruses is biased low because some areas known to be important to walrus were not surveyed due to poor weather conditions. The area south of Nunivak Island was not surveyed, an area where walrus are known to aggregate (Krogman *et al.* 1979), and where several thousand walrus were sighted after the 2006 survey was completed (USFWS unpublished data). Additional unsurveyed areas were located to the southwest of St. Lawrence Island and to the south of Cape Navarin, where aggregations of walrus have been documented during April in other years (Fay 1957, Fedoseev 1979, Fay 1982, Braham *et al.* 1984, Fay *et al.* 1984, Fedoseev *et al.* 1988, Burn *et al.* 2006, Burn *et al.* 2009). However, earlier estimates of walrus population size are also likely to be negatively biased since they did not adjust for walrus in the water, a proportion of the population that may be as high as 0.65 – 0.87 (Born and Knutsen 1997, Gjertz *et al.* 2001, Jay *et al.* 2001, Born *et al.* 2005, Acquarone *et al.* 2006, Lydersen *et al.* 2008). In summary, as noted above, the estimates in Table 1 are not directly comparable and cannot be used to identify current population trends; more surveys will be required to verify any trends in population size and to quantify such changes.

MAXIMUM NET PRODUCTIVITY RATES

Estimates of net productivity rates for walrus populations have ranged from 3-13% per year with most estimates falling between 5-10% (Chapskii 1936, Mansfield 1959, Krylov 1965, 1968, Fedoseev and Gol'tsev 1969, Sease 1986, DeMaster 1984, Sease and Chapman 1988, Fay *et al.* 1997).

Chivers (1999) developed an individual age-based model of the Pacific walrus population using published estimates of survival and reproduction. The model yielded a maximum population growth rate (R_{MAX}) of 8%. This estimate remains theoretical because age-specific survival rates for free ranging walrus are poorly known.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) of a marine mammal stock is defined in the Marine Mammal Protection Act (MMPA) as the product of the minimum population estimate (N_{MIN}), one-half the maximum theoretical net productivity rate (R_{MAX}), and a recovery factor (F_R): $PBR = N_{MIN} \times 0.5\ R_{MAX} \times F_R$. The recovery factor ($F_R$) for the Pacific walrus is 0.50 (NMFS 2005) as the population has unknown status (Speckman *et al.* in prep.). R_{MAX} is estimated as 0.08 (Chivers 1999). Therefore, for the Pacific walrus population, PBR = 2,580 walrus (129,000 x 0.5 (0.08) x 0.50).

ANNUAL HUMAN CAUSED MORTALITY AND SERIOUS INJURY

Fisheries Information

A complete list of fisheries and marine mammal interactions is published annually by NOAA-Fisheries, the most recent of which was published on December 1, 2008 (73 FR 73032). Pacific walrus occasionally interact with trawl and longline gear of groundfish fisheries. No data are available on incidental catch of walrus in fisheries operating in Russian waters, although trawl and longline fisheries are known to operate there. In Alaska each year, fishery observers monitor a percentage of commercial fisheries and report injury and mortality to marine mammals incidental to these operations. Overall, 13 observed fisheries operate in Alaska within the range of the Pacific walrus in the Bering Sea, and could potentially interact with them. Incidental mortality during the 5-year period 2002-2006 was recorded only for one fishery, the Bering Sea/Aleutian Island flatfish trawl fishery (non-pelagic; Table 2), which according to NOAA-Fisheries' List of Fisheries is a Category II Commercial Fishery with an estimated 34 vessels and/or persons participating in the fishery. No incidental injury was recorded during this time period; therefore, annual serious injury is estimated to be zero. Observer coverage for this fishery averaged 64.7% during 2002-2006. The mean number of observed mortalities was 1.8 walrus per year, with a range of 0 to 3 (Table 2). The total estimated

Table 2. Summary of incidental mortality of Pacific walrus due to commercial fisheries from 2002-2006 and estimated mean annual mortality. All mortalities occurred in the Bering Sea/Aleutian Islands flatfish trawl fishery. Fisheries observer data provided by NMFS. NE = no estimate made because no take was recorded.

Fishery	Year	Data type	Observer coverage (%)	Observed mortality (in given years)	Estimated mortality (in given years)	95% CI
Bering Sea/ Aleutian Islands flatfish trawl	2002	obs data	58.4	2	3.3	1.4 – 7.5
	2003		64.1	0	NE	NE
	2004		64.3	2	3.1	1.4 – 6.8
	2005		68.3	3	4.1	2.3 – 7.31
	2006		67.8	2	2.8	1.4 – 5.9
Mean	2002-2006	obs data	64.7	1.8	2.66 CV = 0.39	1.83 – 3.86

annual fishery-related incidental mortality in Alaska was 2.66 walrus per year (CV = 0.39). We consider fishery mortality insignificant.

Subsistence Harvest

Over the past 47 years the Pacific walrus population has sustained estimated annual harvest removals ranging from 3,184 to 16,127 animals per year (mean: 6,713; Figure 2). Recent harvest levels are lower than the long-term average over this period. It is not known whether recent reductions in harvest levels reflect changes in walrus abundance or hunting effort. Factors affecting harvest levels include: 1) the cessation of Russian commercial walrus harvests after 1991; 2) changes in political, economic, and social conditions of subsistence hunters in Alaska and Chukotka; and 3) the effects of variable weather and ice conditions on hunting success.

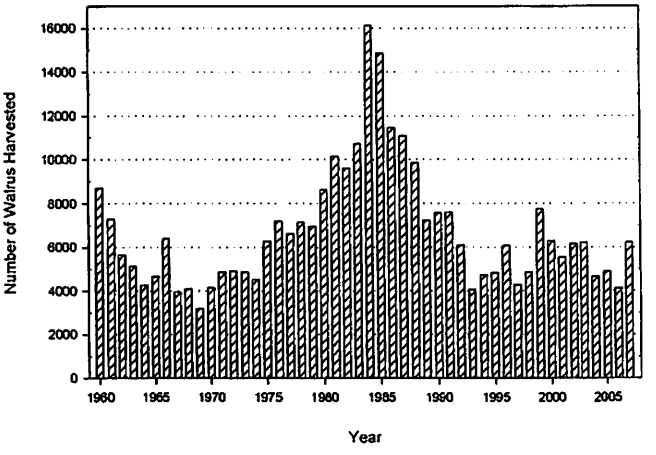


Figure 2. Estimated subsistence harvest of Pacific walrus in the U.S.and Russia, 1960-2007.

The USFWS uses the average annual harvest over the past five years as a representative estimate of current harvest levels in the U.S. and Russia. Total U.S. annual harvest is estimated using data collected by direct observation in selected communities and through the statewide regulatory Marking, Tagging, and Reporting Program (MTRP). The two sources of data are combined to calculate annual reporting compliance and to correct for any unreported harvest. Total U.S. subsistence harvest is estimated as the sum of reported and estimated unreported harvests. Harvest estimates in Russia were collected through both an observer program and a reporting program instituted by the Russian government.

The estimated number harvested is multiplied by 1.72 to adjust for walruses wounded but not retrieved (struck and lost; Fay *et al.* 1994), yielding the estimated total number taken. Fay *et al.* (1994) estimated the proportion of targeted walrus that were struck and lost at 42% using data collected between 1952 and 1972. Current accuracy of this estimate is unknown. Based on the same study, all walruses that have been shot with a firearm are assumed to be mortally wounded (Fay *et al.* 1994).

Table 3. Estimated harvest of Pacific walrus, 2003-2007. Russian harvest information was provided by ChukotTINRO and the Russian Agricultural Department. U.S. harvest information was collected by the U.S. Fish and Wildlife Service, and adjusted for unreported walrus using the Mark Recapture method, which yields upper and lower harvest estimates. Number struck and lost is estimated using a 42% struck and lost rate from Fay *et al.* (1994).

Year	Estimated Total Number Taken	Number Harvested, U.S.	Number Harvested, Russia	Number Struck and Lost
2003	5,909 – 6,551	2,002 – 2,375	1,425	2,482 – 2,751
2004	4,429 – 4,858	1,451 – 1,700	1,118	1,860 – 2,040
2005	4,762 -5,037	1,292 – 1,451	1,470	2,000 – 2,115
2006	3,907 – 4,262	1,219 – 1,425	1,047	1,641 – 1,790
2007	5,789 – 6,571	2,185 – 2,638	1,173	2,432 – 2,760
Mean	4,960 – 5,457	1,630 – 1,918	1,247	2,083 – 2,292

Harvest mortality levels from 2003-2007 are estimated at 4,960 – 5,457 walrus per year (Table 3). The sex-ratio of the reported U.S. walrus harvest over this time period was 1.55:1 males to females. The sex-ratio of the reported Russian walrus harvest was 3.76:1 males to females based on harvest information collected by ChukotTINRO in 2003 and 2005 only.

Other Removals

Between 2003 and 2007, satellite transmitters were affixed by crossbow to 143 walrus (annual mean: 28.6), and collections of skin and blubber biopsy samples were attempted from 214 walrus (annual mean: 42.8). No mortalities or serious injuries were associated with these research activities. Four orphaned walrus calves were rescued from the wild and placed on public display between 2003 and 2007. Based on this information, an estimated 0.8 walrus per year were removed from the wild due to other human activities.

Total Estimated Human-Caused Mortality and Serious Injury

The total estimated annual human-caused mortality or removal is calculated to be 4,963 - 5,460 walrus per year (2.66 attributed to fisheries interactions, 4,960 to 5,457 due to harvest, and 0.8 due to other human activities). There is insufficient information to accurately estimate human-caused serious injury, but there is no evidence that levels of human-caused serious injury are significant.

STATUS OF STOCK

Pacific walrus are not designated as depleted under the MMPA, and are not listed as threatened or endangered under the Endangered Species Act of 1973 (ESA), as amended. In February 2008, the USFWS received a petition to list the Pacific walrus under the ESA. The 90-day finding on this petition was published in the Federal Register on September 10, 2009 (74 FR 46548), and found that there was substantial information in the petition to indicate that listing the Pacific walrus under the ESA may be warranted. A status review of the Pacific walrus under the ESA was initiated on October 1, 2009, and a 12-month finding will be published in the Federal Register on or before September 10, 2010. Based on the best available data, the estimated incidental mortality and serious injury related to commercial fisheries (2.66 walrus per year) is less than 10% of the calculated PBR and therefore can be considered insignificant and approaching a zero mortality and serious injury rate. However, the total human-caused removals exceed estimated PBR. Therefore, the Pacific walrus stock is classified as strategic.

Conservation Issues and Habitat Concerns

Oil and Gas Exploration

In 2008, the Minerals Management Service held an oil and gas lease sale for offshore blocks in the eastern Chukchi Sea. A significant proportion of the Pacific walrus population migrates into the Chukchi Sea region each summer, and the shallow, productive, ice covered waters of the eastern Chukchi Sea are considered particularly important habitat for female walrus and their dependent young. The USFWS works to monitor and mitigate potential impacts of oil and gas activities on walrus and polar bears through incidental take regulations (ITR) as authorized under the

MMPA. Activities operating under these regulations must adopt measures to: ensure that impacts to walruses remain negligible; minimize impacts to their habitat; and ensure no unmitigable adverse impact on their availability for Alaska Native subsistence use. ITR also specify monitoring requirements that provide a basis for evaluating potential impacts of current and future activities on marine mammals.

Climate Change

Impacts to walrus of changes in arctic and subarctic ice dynamics are not well understood. Walrus are dependent on sea ice as a substrate for birthing, nursing, and resting between foraging trips. Annual winter ice in the Bering Sea is predicted to decrease in extent by 40% by the year 2050 (Overland and Wang 2007). Summer sea-ice extent in the Chukchi Sea has decreased rapidly in recent years (Meier et al. 2007, Stroeve et al. 2008), retreating off the shallow continental shelf and over deep Arctic Ocean waters where walruses presumably can not feed. Declines in sea-ice extent, duration, and thickness are expected to continue (Overpeck et al. 2005, Maslanik et al. 2007, Stroeve et al. 2007).

Some impacts of the loss of summer sea ice on walrus have been documented. Over the past decade, the number of walrus coming to shore along the coastline of the Chukchi Sea in Russia has increased (Kavry et al. 2008). Female and young walrus are arriving earlier and staying longer at coastal haulouts as summer ice disappears. Numbers in the tens of thousands have been reported anecdotally from some haulouts in Chukotka (Kavry *et al.* 2008, A.A. Kochnev personal communication). In fall of 2007 and 2009, large walrus aggregations were also observed along the Alaska coast. The ability of the food supply within foraging range of coastal haulouts to support large numbers of walruses over the long term is unknown. Thin walrus that appear to be physiologically stressed have also been reported from Chukotka (Ovsyanikov *et al.* 2008, A.A. Kochnev personal communication). Walrus at dense coastal haulouts are vulnerable to disturbance, which can result in increased mortality from stampedes (Ovsyanikov 1994, Kavry *et al.* 2008). The USFWS will review all available information on the impacts of climate change on the Pacific walrus population when it considers the petition to list them under the ESA.

Subsistence Harvest

Impacts of climate change on subsistence harvests of walrus are also difficult to predict. Changes in walrus distribution, abundance, individual health, ice type, length and timing of the hunting season, and weather and sea state during the hunting season, can all influence hunting success. Recent harvest levels are lower than historical levels but it is not clear if this represents reduced hunting effort. Harvest levels must be assessed within the context of the best available information on walrus population size, weather and climate, and political, economic, and social conditions of subsistence hunters in Alaska and Chukotka.

Cooperative Agreements have been developed annually between the USFWS and the Eskimo Walrus Commission since 1997 to facilitate the participation of subsistence hunters in activities related to the conservation and management of walrus stocks in Alaska. This co-management process is on-going. Ensuring that harvest levels remain sustainable is a goal shared by subsistence hunters and resource managers in the U.S. and Russia. Achieving this management goal will require continued investments in co-management relationships, harvest monitoring programs, international coordination, and research.

CITATIONS

Acquarone, M., E.W. Born, and J.R. Speakman. 2006. Field metabolic rates of walrus (*Odobenus rosmarus*) measured by doubly labeled water method. Aquatic Mammals 32: 363-369.

Born, E. W., M. Acquarone, L.Ø. Knutsen, and L. Toudal. 2005. Homing behaviour in an Atlantic walrus (*Odobenus rosmarus rosmarus*). Aquatic Mammals 31: 23-33.

Born, E.W. and L.Ø. Knutsen. 1997. Haul-out and diving activity of male Atlantic walruses (*Odobenus rosmarus rosmarus*) in NE Greenland. Journal of Zoology 243: 381-396.

Braham H.W., J.J. Burns, G.A. Fedoseev, and B.D. Krogman. 1984. Habitat partitioning by ice-associated pinnipeds: distribution and density of seals and walruses in the Bering sea, April 1976. Pages 25-47 in F.H. Fay, G.A. Fedoseev, eds. Soviet-American Cooperative Research on Marine Mammals. Vol. 1. Pinnipeds. NOAA Technical Report. NMFS 12.

Burn, D.M., M.A. Webber, and M.S. Udevitz. 2006. Application of airborne thermal imagery to surveys of Pacific walrus. Wildlife Society Bulletin 34(1):51-58.

Burn, D., M.S. Udevitz, S.G. Speckman, and R.B. Benter. 2009. An improved procedure for detection and enumeration of walrus signatures in airborne thermal imagery. International Journal of Applied Earth Observation and Geoinformation 11:324-333.

Chapskii, K.K. 1936. The walrus of the Kara Sea. Results of an investigation of the life history, geographical distribution, and stock of walruses in the Kara Sea. Transactions of the Arctic Institute 67:1-124.

Chivers, S.J. 1999. Biological indices for monitoring population status of walrus evaluated with an individual-based model. Pages 239-247, *In* Garner, G.W., S.C. Amstrup, J.L. Laake, B.F.J. Manly, L.L. McDonald, and D.G. Robertson (eds.), Marine Mammal Survey and Assessment Methods. A. A. Balkema, Rotterdam, 287 pp.

DeMaster, D.P. 1984. An analysis of a hypothetical population of walruses. Pages 77-80, *In* F.H. Fay and G.A. Fedoseev (eds.), Soviet American Cooperative Research on Marine Mammals, vol. 1, Pinnipeds. NOAA Technical Report, NMFS 12, 104 pp.

Estes, J.A., and J.R. Gilbert. 1978. Evaluation of an aerial survey of Pacific walruses (*Odobenus rosmarus divergens*). Journal of the Fisheries Research Board of Canada 35:1130 1140.

Estes, J.A., and V.N. Gol'tsev. 1984. Abundance and distribution of the Pacific walrus (*Odobenus rosmarus divergens*): results of the first Soviet American joint aerial survey, autumn 1975. Pages 67-76, *In* F.H. Fay and G.A. Fedoseev (eds.), Soviet American Cooperative Research on Marine Mammals, vol. 1, Pinnipeds. NOAA Technical Report, NMFS 12, 104 pp.

Fay, F.H. 1957. History and present status of the Pacific walrus population. Transactions of the North American Wildlife Conference 22:431-445.

Fay, F.H. 1982. Ecology and Biology of the Pacific Walrus (*Odobenus rosmarus divergens*). North American Fauna 74. U.S. Fish and Wildlife Service, Washington, DC., 279 pp.

Fay, F.H., B.P. Kelly, P.H. Gehnrich, J.L. Sease, and A.A. Hoover. 1984. Modern populations, migrations, demography, trophics, and historical status of the Pacific walrus. Final Report R.U. #611. NOAA Outer Continental Shelf Environmental Assessment Program, Anchorage AK., 142 pp.

Fay, F.H., B.P Kelly, P.H. Gehnrich, J.L. Sease, and A.A. Hoover. 1986. Modern populations, migrations, demography, trophics, and historical status of the Pacific walrus. U.S. Department of Commerce, NOAA, Outer Continental Shelf Environmental Impact Assessment Program, Final Reports of Principal Investigators 37: 231-376. NOAA, National Ocean Service, Anchorage, Alaska.

Fay, F.H., B.P. Kelly, and J.L. Sease. 1989. Managing the exploitation of Pacific walruses: a tragedy of delayed response and poor communication. Marine Mammal Science 5:1-16.

Fay, F.H., J.J. Burns, S.W. Stoker, and J.S. Grundy. 1994. The struck-and-lost factor in Alaskan walrus harvests. Arctic 47(4):368-373.

Fay, F.H., L.L. Eberhardt, B.P. Kelly, J.J. Burns, and L.T. Quakenbush. 1997. Status of the Pacific walrus Population, 1950-1989. Marine Mammal Science 13(4):537-565.

Fay, F.H. and S.W. Stoker. 1982a. Analysis of reproductive organs and stomach contents from walruses taken in the Alaskan native harvest, spring 1980. Final Report contract 14-16-0007-81-5216. U.S. Fish and Wildlife Service, Anchorage, Alaska. 86pp.

Fay, F.H. and S.W. Stoker. 1982b. Reproductive success and feeding habits of walruses taken in the 1982 spring harvest, with comparisons from previous years. Eskimo Walrus Commission, Nome, AK. 91pp.

Fedoseev, G.A. 1979. Material on aerovisual observations on distribution and abundance of ice forms of seals, walruses, and migrating whales in the ice of the Bering Sea in spring 1979. Pages 17-44 in Scientific Investigations of Marine Mammals in the Northern Part of the Pacific Ocean in 1978 and 1979. All-Union Scientific Investigational Institute of Marine Fisheries and Oceanography (VNIRO), Moscow. In Russian.

Fedoseev, G.A. 1984. Present status of the population of walruses (*Odobenus rosmarus*) in the eastern Arctic and Bering Sea. Pages 73-85, *In* V.E. Rodin, A.S. Perlov, A.A. Berzin, G.M. Gavrilov, A.I. Shevchenko, N.S. Fadeev, and E.B. Kucheriavenko (eds.), Marine Mammals of the Far East. TINRO, Vladivostok.

Fedoseev, G.A., and V.N. Gol'tsev. 1969. Age-sex structure and reproductive capacity of the Pacific walrus population. Zoological Journal 48:407-413.

Fedoseev, G.A., and E.V. Razlivalov. 1986. The distribution and abundance of walruses in the eastern Arctic and Bering Sea in autumn 1985. VNIRO, Magadan Branch. Mimeo report, 7 pp.

Fedoseev, G.A., E.V. Razlivalov, and G.G. Bobrova. 1988. Distribution and abundance of ice forms of pinnipeds on ice of the Bering Sea in April and May 1987. Pages 44-70 in Scientific Investigations of Marine Mammals in the Northern Part of the Pacific Ocean in 1986 and 1987. All-Union Scientific Investigational Institute of Marine Fisheries and Oceanography (VNIRO), Moscow. In Russian.

Garlich-Miller, J., and C.V. Jay. 2000. Proceedings of a workshop concerning walrus survey methods. USFWS R7/MMM Technical Report 00-2, 92 pp.

Garlich-Miller, J.L., L.T. Quakenbush, and J.F. Bromaghin. 2006. Trends in age structure and productivity of Pacific walruses harvested in the Bering Strait region of Alaska, 1952-2002. Marine Mammal Science 22:880-896.

Gilbert, J.R. 1986. Aerial survey of Pacific walrus in the Chukchi Sea, 1985. Mimeo report, 43 pp.

Gilbert, J.R. 1989a. Aerial census of Pacific walruses in the Chukchi Sea, 1985. Marine Mammal Science 5(1):17-28.

Gilbert, J.R. 1989b. Errata: Correction to the variance of products, estimates of Pacific walrus populations. Marine Mammal Science 5(4):411-412.

Gilbert, J.R. 1999. Review of previous Pacific walrus surveys to develop improved survey designs. Pages 75-84, *In* Garner, G.W., S.C. Amstrup, J.L. Laake, B.F.J. Manly, L.L. McDonald, and D.G. Robertson (eds.), Marine Mammal Survey and Assessment Methods. A. A. Balkema, Rotterdam, 287 pp.

Gilbert, J.R., G.A. Fedoseev, D. Seagars, E. Razlivalov, and A. LaChugin. 1992. Aerial census of Pacific walrus, 1990. USFWS R7/MMM Technical Report 92-1, 33 pp.

Gol'tsev, V.N. 1976. Aerial surveys of Pacific walrus in the Soviet sector during fall 1975. Procedural Report TINRO, Magadan, USSR. 22 pp. Translated by J.J. Burns and the U.S. State Department.

Gjertz, I., D. Griffiths, B.A. Krafft, C. Lydersen, and Ø Wiig. 2001. Diving and haul-out patterns of walruses *Odobenus rosmarus* on Svalbard. Polar Biology 24: 314-319.

Hills, S., and J.R. Gilbert. 1994. Detecting Pacific walrus population trends with aerial survey—a review. Transactions North American Wildlife and Natural Resource Conference.

Jay, C.V., S.D. Farley, and G.W. Garner. 2001. Summer diving behavior of male walruses in Bristol Bay, Alaska. Marine Mammal Science 17:617-631.

Jay, C.V., P.M. Outridge, and J.L. Garlich-Miller. 2008. Indication of two Pacific walrus stocks from whole tooth elemental analysis. Polar Biology 31:933–943.

Johnson, A., J. Burns, W. Dusenberry, and R. Jones. 1982. Aerial survey of Pacific walrus, 1980. U.S. Fish and Wildlife Service, Anchorage, AK. Mimeo report, 32 pp.

Kavry, V.I., A.N. Boltunov, and V.V. Nikiforov. 2008. New coastal haulouts of walruses (*Odobenus rosmarus*) – response to the climate changes. Pages 248-251, *In* Collection of Scientific Papers from the Marine Mammals of the Holarctic V conference, Odessa, Ukraine, 14-18 October 2008.

Kochnev, A.A. Personal Communication. Head of Laboratory of Marine Mammals Study, ChukotTINRO, Pacific Research Institute of Fisheries and Oceanography, P.O. Box 29, Anadyr, Chukotka, 689000, Russia.

Kochnev, A.A., N.V. Kryukova, A.A. Pereverzev, and D.I. Ivanov. 2008. Coastal haulouts of the Pacific walruses (*Odobenus rosmarus divergens*) in Anadyr Gulf (Bering Sea), 2007. Pages 267-272, *In* Collection of Scientific Papers from the Marine Mammals of the Holarctic V conference, Odessa, Ukraine, 14-18 October 2008.

Krogman, B.D., H.W. Braham, R.M. Sontag, and R.G. Punsley. 1979. Early spring distribution, density, and abundance of the Pacific walrus (*Odobenus rosmarus divergens).* Final Report, Contract No. R7120804, NOAA Outer Continental Shelf, Environmental Assessment Program, Juneau Project Office, Juneau, AK. 47 pp.

Krylov, V.I. 1965. Determination of age, rate of growth, and analysis of the age structure of the catch of the Pacific walrus. Pages 210-211, *In* E.N. Pavlovskii, B.A. Zenkovich, S.E. Kleinenber, and K.K. Chapskii (eds.), Morskie Mlekopitaiushchie. Nauka, Moscow.

Krylov, V.I. 1968. On the present status of stocks of the Pacific walrus and prospects of their rational exploitation. Pages 189-204, *In* V.A. Arsen'ev and K.I. Panin (eds.), Lastonogie Severnoi Chasti Tikhogo Okeana. Pischevaya Promyshlennost', Moscow.

Lydersen, C., J. Aars, and K.M. Kovacs. 2008. Estimating the number of walruses in Svalbard from aerial surveys and behavioral data from satellite telemetry. Arctic 61:119-128.

Mansfield, A.W. 1959. The walrus in the Canadian Arctic. Fisheries Research Board Canada, Circular 2, 13 pp.

Maslanik, J.A., C. Fowler, J. Stroeve, S. Drobot, J. Zwally, D. Yi, & W. Emery. 2007. A younger, thinner Arctic ice cover: Increased potential for rapid, extensive sea-ice loss. Geophysical Research Letters 34, L24501.

Meier, W., J. Stroeve, and F. Fetterer. 2007. Whither Arctic sea ice? A clear signal of decline regionally, seasonally and extending beyond the satellite record. Annals of Glaciology 46:428-434.

NMFS. 2005. Revisions to Guidelines for Assessing Marine Mammals Stocks. 24 pp. Available at: *http://www.nmfs.noaa.gov/pr/pdfs/sars/gamms2005.pdf*

Overland, J.E., and M. Wang. 2007. Future regional Arctic sea ice declines. Geophysical Research Letters 34:L17705, doi: 17710.11029/12007GL03808.

Overpeck, J.T., M. Sturm, J.A. Francis, D.K. Perovich, M.C. Serreze, R. Benner, E.C. Carmack, F.S. Chapin III, S.C. Gerlach, L.C. Hamilton, L.D. Hinzman, M. Holland, H.P. Huntington, J.R. Key, A.H. Lloyd, G.M. MacDonald, J. McFadden, D. Noone, T.D. Prowse, P. Schlosser, and C. Vörösmarty. 2005. Arctic system on trajectory to new, seasonally ice-free state. EOS Transactions 86(34):309-316.

Ovsyanikov, N.G., L.L. Bove, and A.A. Kochnev. 1994. Causes of mass mortality of walruses on coastal haulouts. Zoologichesky Zhurnal 73:80-87.

Ovsyanikov, N.G., I.E. Menyushina, and A.V. Bezrukov. 2008. Unusual Pacific walrus mortality at Wrangel Island in 2007. Pages 413-416, *In* Collection of Scientific Papers from the Marine Mammals of the Holarctic V conference, Odessa, Ukraine, 14-18 October 2008.

Scribner, K.T., S. Hills, S.R. Fain, and M.A. Cronin. 1997. Population genetics studies of the walrus (*Odobenus rosmarus*): a summary and interpretation of results and research needs. *In* A.E. Dizon, S.J. Chivers, and W.F. Perrin (eds.), Molecular Genetics of Marine Mammals. Marine Mammal Science, Special publication 3:173-184.

Sease, J.L. 1986. Historical status and population dynamics of the Pacific walrus. Univ. Alaska, Fairbanks. Thesis, 213 pp.

Sease, J.L., and D.G. Chapman. 1988. Pacific walrus (*Odobenus rosmarus divergens*). Pages 17-38, *In* J.W. Lentfer (eds.), Selected Marine Mammals of Alaska: species accounts with research and management recommendations. Marine Mammal Commission, Washington, D.C. NTIS PB88-178462.

Speckman, S.G., V.I. Chernook, D.M. Burn, M.S. Udevitz, A.A. Kochnev, A. Vasilev, C.V. Jay, A. Lisovsky, R.B. Benter, and A.S. Fischbach. In prep. Estimated size of the Pacific walrus population, 2006.

Stroeve, J., M.M. Holland, W. Meier, T. Scambos, and M. Serreze. 2007. Arctic sea ice decline: Faster than forecast. Geophysical Research Letters 34.

Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M.M. Holland, J. Maslanik, W. Meier, and T. Scambos. 2008. Arctic sea ice extent plummets in 2007. EOS Transactions, AGU 89:13-20.

Udevitz, M.S., J.R. Gilbert, and G.A. Fedoseev. 2001. Comparison of method used to estimate numbers of walruses on sea ice. Marine Mammal Science 17:601-616.

Udevitz, M.S., D.M. Burn, and M.A. Webber. 2008. Estimation of walrus populations on sea ice with infrared imagery and aerial photography. Marine Mammal Science 24(1):57-70.

Wade, P.R., and R. Angliss. 1997. Guidelines for assessing marine mammal stocks: report of the GAMMS workshop April 3-5, 1996, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-12, 93 pp.

Response: The Service acknowledges that there may be limitations on the available fisheries data because some takings could occur and may not be observed or reported. However, protocols for necropsies and assigning probable cause of death categories are reviewed thoroughly. Table 1 of this SAR shows watercraft as the only human related deaths. The only possible evidence for commercial fisheries interaction would be within the 34 percent undetermined cause of death (COD) category. Undetermined COD means that assessment of a natural or human related cause was negative (no evidence that COD can be assigned to any of the available categories, either natural or human related). In addition, we believe that manatees injured by commercial fisheries interactions would most likely present signs of the activity and every necropsy includes a specific evaluation of human interactions. From 1990–2008, only one manatee had COD related to commercial fisheries interaction. In 2006, one freshly dead manatee was found with its right flipper entangled in monofilament and still this COD was deemed undetermined. In accordance with the previous statements and the presence of current bans and restrictions prohibiting the use of nets in coastal Puerto Rican waters, the Service believes that incidental mortality and serious injury related to commercial fisheries in Puerto Rico and the U.S. Virgin Islands should be considered minimal or approaching zero.

Comment 7: The SAR should provide at least some summary information to indicate the type(s) of habitat degradation adversely affecting manatees.

Response: We have revised the SAR to include examples of habitat degradation.

Comment 8: The commenter recommended that the Puerto Rico manatee stock be considered separately from the Florida manatees in terms of recommendation for down-listing.

Response: The Service acknowledges the comment made; however, the SAR is conducted according to the MMPA and does not address issues under Section 4 of the ESA.

Comment 9: The commenter opposed any efforts to down-list the status of manatees from endangered to threatened.

Response: The Service acknowledges the comment made; however, the SAR is conducted according to the MMPA and does not address issues under Section 4 of the ESA.

Comment 10: The commenter is concerned about the lack of reliable data on abundance and mortality.

Response: The Service acknowledges the commenter's concern and is currently evaluating aerial census methods to establish more reliable population estimates. We do not believe that mortality records lack reliability. As provided in our response to Comment 5 above, CSN had been documenting manatee mortalities in Puerto Rico since 1990. Although the DNER MMSP took over these duties in 2006, the program is implemented with assistance from the CSN, the Puerto Rico Zoo, and commonwealth law enforcement officials. We believe that the manatee death reports provided by the DNER MMSP, with all assistance of these partners, are a consistent and reliable manner to gather mortality data.

Comment 11: The commenter asked why so many released manatees have died in Puerto Rico.

Response: After reviewing the data received by the CSN, we recognized there was an error and have revised the SAR accordingly. From 1990 to 2005, a total of 23 manatees were rescued by the CSN. Of these, two were rehabilitated and released, two were released immediately after rescue, 17 died in rehabilitation, one died in transport, and one is currently in rehabilitation. Of the four manatees that were released, one died one year after its release.

Additional References Cited

West Indian Manatee in Puerto Rico

Kellogg, M.E. 2008. Sirenian Conservation Genetics and Florida Manatee (*Trichechus manatus latirostris*) cytogenetics. Doctoral dissertation, University of Florida, Gainesville, FL. 159 pp.

Sloan, D.H., J.P. Reid, R.K. Bonde, S.M. Butler, and B.M. Stith. 2006. Summary of the West Indian manatee (*Trichechus manatus*) tracking by USGS–FISC Sirenia Project in Puerto Rico. Report Prepared for the U.S. Fish and Wildlife Service. 9 pp.

Authority: The authority for this action is the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et al.*).

Dated: December 14, 2009.

Sam Hamilton,

Director, Fish and Wildlife Service.

[FR Doc. E9–30900 Filed 12–29–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R9–FHC–2009–N234; 71490–1351–0000–M2–FY10]

Marine Mammal Protection Act; Stock Assessment Report

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of availability of final 2009 revised marine mammal stock assessment reports for the Pacific walrus stock and two stocks of polar bears; response to comments.

SUMMARY: In accordance with the Marine Mammal Protection Act of 1972, as amended (MMPA), and its implementing regulations, we, the U.S. Fish and Wildlife Service (Service), announce that we have revised our stock assessment reports (SARs) for the Pacific walrus (*Odobenus rosmarus divergens*) stock and for each of the two polar bear (*Ursus maritimus*) stocks in Alaska: The Southern Beaufort Sea polar bear stock and the Chukchi/Bering Seas polar bear stock, including incorporation of public comments. We now make these three final 2009 revised SARs available to the public.

ADDRESSES: To obtain the SARs for the Pacific walrus or either polar bear stock, see Document Availability under **SUPPLEMENTARY INFORMATION.**

FOR FURTHER INFORMATION CONTACT: Rosa Meehan, Marine Mammals Management Office, (800) 362–5148 (telephone) or *r7_mmm_comment@fws.gov* (e-mail).

SUPPLEMENTARY INFORMATION:

Background

Under the MMPA (16 U.S.C. 1361 *et seq.*) and its implementing regulations in the Code of Federal Regulations (CFR) at 50 CFR part 18, we regulate the taking, transportation, purchasing, selling, offering for sale, exporting, and importing of marine mammals. One of the MMPA's goals is to ensure that stocks of marine mammals occurring in waters under U.S. jurisdiction do not experience a level of human-caused mortality and serious injury that is likely to cause the stock to be reduced below its *optimum sustainable population level* (OSP). OSP is defined as "the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element."

To help accomplish the goal of maintaining marine mammal stocks at

their OSPs, section 117 of the MMPA requires us and the National Marine Fisheries Service (NMFS) to prepare a SAR for each marine mammal stock that occurs in waters under U.S. jurisdiction. A SAR must be based on the best scientific information available; therefore, we prepare it in consultation with established regional scientific review groups. Each SAR must include: (1) A description of the stock and its geographic range; (2) a minimum population estimate, maximum net productivity rate, and current population trend; (3) an estimate of human-caused mortality and serious injury; (4) a description of commercial fishery interactions; (5) a categorization of the status of the stock; and (6) an estimate of the *potential biological removal* (PBR) level. The PBR is defined as "the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its OSP." The PBR is the product of the minimum population estimate of the stock (N_{min}); one-half the maximum theoretical or estimated net productivity rate of the stock at a small population size (R_{max}); and a recovery factor (F_r) of between 0.1 and 1.0, which is intended to compensate for uncertainty and unknown estimation errors.

Section 117 of the MMPA also requires us and NMFS to review the SARs (a) at least annually for stocks that are specified as strategic stocks, (b) at least annually for stocks for which significant new information is available, and (c) at least once every 3 years for all other stocks.

A *strategic stock* is defined in the MMPA as a marine mammal stock (a) for which the level of direct human-caused mortality exceeds the PBR; (b) which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.; ESA), within the foreseeable future; or (c) which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.

Before releasing our draft SARs for public review and comment, we submitted them for technical review internally and also for scientific review by the Alaska Regional Scientific Review Group, which was established under the MMPA. In a June 18, 2009 (74 FR 28946), **Federal Register** notice, we made available our draft SARs for the MMPA-required 90-day public review and comment period. Following the close of the comment period, we revised the SARs based on public comments we received (*see* below) and prepared the final 2009 revised SARs. Between publication of the draft and final SAR for the Pacific walrus, the estimate of walrus population size resulting from the 2006 survey was completed, and we revised the SAR using the new information. We have not revised the status of the Pacific walrus stock itself (*i.e.*, strategic). However, as a result of the new analyses, we estimate the size of the Pacific walrus population as 129,000 individuals within the surveyed area. This estimate does not account for areas not surveyed, and is therefore negatively biased to an unknown degree. To compensate for this bias, we are using our estimate of population size, 129,000, as N_{min}. In response to a comment, we revised F_r to 0.50. Therefore, the updated estimate of PBR is 2,580. We addressed other concerns identified in the public comments in the following section or by adding text to the SAR for clarity. Between publication of the draft and final SARs for both polar bear stocks, we also have not revised the status for either, *i.e.*, both are strategic. We addressed the public comments received in the following section or by adding text to the SAR for clarity.

The following table summarizes the final 2009 revised SARs for the Pacific walrus, the Southern Beaufort Sea polar bear, and the Chukchi/Bering Seas polar bear stocks, listing each stock's N_{min}, R_{max}, F_r, PBR, annual estimated human-caused mortality and serious injury, and status.

TABLE 1—SUMMARY: FINAL REVISED STOCK ASSESSMENT REPORTS FOR THE PACIFIC WALRUS, SOUTHERN BEAUFORT SEA POLAR BEAR, AND CHUKCHI/BERING SEAS POLAR BEAR

Stock	N_{min}	R_{max}	F_r	PBR	Annual estimated average human-caused mortality and serious injury	Stock status
Pacific Walrus	129,000	0.08	0.5	2,580	4,963–5,460	Strategic.
Southern Beaufort Sea Polar Bear	1,397	0.0603	0.5	22	33 (Alaska) 21 (Canada)	Strategic.
Chukchi/Bering Seas Polar Bear	2,000	0.0603	0.5	30	37 (Alaska) —(Russia)	Strategic.

Document Availability

Final Revised SARs for Pacific Walrus, Southern Beaufort Sea Polar Bear, and Chukchi/Bering Seas Polar Bear

You may obtain copies by any one of the following methods:

- *Internet: http://alaska.fws.gov/fisheries/mmm/walrus/reports.htm* (for the walrus stock) and *http://alaska.fws.gov/fisheries/mmm/polarbear/reports.htm* (for both polar bear stocks).
- Write to or visit (during normal business hours from 8 a.m. to 4:30 p.m. Monday through Friday) the Chief, U.S. Fish and Wildlife Service, Marine Mammals Management Office, 1011 East Tudor Road, Anchorage, AK 99503; telephone: (800) 362–3800.

Responding to Public Comments

Pacific Walrus

We received five sets of comments on the draft Pacific walrus SAR (74 FR 28946). We present issues raised in those comments, along with our responses, below.

Comment 1: The Service should complete analysis of the 2006 walrus survey data as soon as possible, and use a final estimate of Pacific walrus population size for the stock assessment report.

Response: The estimate of walrus population size resulting from the 2006 survey has been completed, and the stock assessment report has been revised using the new information.

Comment 2: The population estimate will not be meaningful without accounting for the numbers of walrus in areas not surveyed, hauled out on land, and in the water, and the SAR should state that the estimate "is negatively biased to an unknown degree," and that the bias is most likely quite large.

Response: The estimate of walrus population size resulting from the 2006 survey accounts for individuals in the water. During April, when the aerial survey took place, virtually the entire population of Pacific walrus uses sea ice habitats, and few if any haul out on land

at that time. The 2006 estimate does not account for areas not surveyed, and the Service therefore recognizes that the estimate is negatively biased to an unknown degree. This is stated in the stock assessment report.

Comment 3: If a final estimate of population size resulting from a complete analysis of the 2006 survey data is not available, the "Minimum Population Estimate" section should read as follows: "A reliable minimum population estimate (N_{min}) for this stock can not presently be determined because current reliable estimates of abundance are not available."

Response: Results of the 2006 survey are now available. An estimated 129,000 Pacific walrus were found within the surveyed area. This estimate does not account for areas not surveyed, and is therefore negatively biased to an unknown degree. To counterbalance this bias, we are using our estimate of population size, 129,000, as N_{min} for the Pacific walrus stock assessment report. This provides reasonable assurance that the stock size is equal to or greater than the estimate.

Comment 4: The use of a recovery factor of 1.0 is too high, and assumes the stock is stable; a recovery factor of 0.50 for unknown status should be used instead.

Response: Results of the 2006 walrus survey, in combination with other estimates of walrus population size and sources of information on walrus, do not provide a definitive basis for determining Pacific walrus population status. We agree that status of the population should be considered "unknown," and have reduced the recovery factor to 0.50.

Comment 5: If a final estimate of population size resulting from a complete analysis of the 2006 survey data is not available, the "Potential Biological Removal" section should read as follows: "However, because a reliable estimate of minimum abundance (N_{min}) is currently not available, the PBR for this stock is unknown."

Response: The Service used the 2006 estimate of population size of 129,000 for N_{min}. This provides reasonable assurance that the stock size is equal to or greater than the estimate, and is therefore a reasonable basis for estimating PBR.

Comment 6: The draft report contained a population estimate that was only a snapshot of walrus population size in a certain area in a certain period of time, and does not support determination of PBR.

Response: The Service acknowledges the shortcomings of the 2006 estimate of Pacific walrus population size. However, the 2006 estimate remains the best scientific information available at this time, as specified under Section 117 of the MMPA.

Comment 7: The PBR value of 607 is so low in relation to harvested numbers that it cannot be correct, or there would be no walrus remaining.

Response: We recalculated an estimate for PBR using the revised N_{min} of 129,000 and revised F_r of 0.50. The estimate of R_{max} remained the same at 0.08. These revisions yielded an estimated PBR of 2,580, which is greater than the preliminary estimate in the draft stock assessment report. Estimated total human-caused removals of 4,963–5,460 walrus per year are higher than estimated PBR. However, estimated PBR is not the appropriate mechanism for assessing the sustainability of the subsistence harvest.

Comment 8: Take is above PBR, so the Service should promptly begin a status review of the Pacific walrus under 16 U.S.C. 1383b(a) to determine whether the stock may warrant listing as "depleted," and whether rulemaking pursuant to 16 U.S.C. 1371(b) is warranted.

Response: In February 2008, the Service received a petition to list the Pacific walrus as threatened or endangered under the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*). The 90-day finding on this petition was published in the **Federal Register** on September 10, 2009 (74 FR 46548), and found that there was substantial information in the petition to indicate that listing the Pacific walrus under the ESA may be warranted. The Service has initiated a status review of the Pacific walrus to determine whether the stock should be listed under the ESA. If the species is listed under the ESA, it is considered depleted under the MMPA. The finding on the merits of the listing petition will be published in the **Federal Register** on or before September 10, 2010.

Comment 9: The Pacific walrus should not be declared a "strategic" stock until a final estimate of walrus population size is completed.

Response: The estimate of walrus population size resulting from the 2006 survey has been completed, and we revised the stock assessment report using the new information. PBR was re-estimated using the revised N_{min} of 129,000; the revised F_r of 0.50; and the same estimate of R_{max}, 0.08. The revisions yielded an estimated PBR of 2,580. The estimated level of total direct human-caused mortality is 4,963–5,460 walrus per year, which exceeds the estimated PBR level. Therefore, the Pacific walrus is classified as strategic as defined under the MMPA.

Comment 10: Information provided in Garlich-Miller *et al.* (2006) regarding the use of population information derived from harvested walruses (*e.g.*, age at harvest, fecundity, age at first reproduction) to evaluate population status should be included in the assessment of population status.

Response: Information provided in Garlich-Miller *et al.* 2006 is equivocal regarding population status, and text has been updated in the stock assessment to make this clearer.

Comment 11: The Service should state the variances and biases of all walrus surveys from 1975 through 1990 in the SAR.

Response: Many scientific articles have been published on estimating walrus population size, including survey methods, sources of variation, and sources of bias. Surveys from 1975, 1980, 1985, and 1990 do not have estimates of variance associated with the total population estimate, because part of each estimate was derived from highest counts of walruses using terrestrial haulouts, for which variance cannot be estimated. Biases for most surveys are simply unknown. For the interested reader, Table 1 in the SAR cites the original sources of literature for each U.S.-Russia joint estimate of walrus population size. Other summary works are cited in the "Population Size" section of the SAR.

Comment 12: How many walrus were not counted in the unsurveyed areas?

Response: To date, the Service has not attempted to estimate the number of walrus in areas that were not surveyed in 2006. However, the Service is considering how this might be done. Once completed, this analysis would be used to update future Pacific walrus SARs.

Comment 13: The new method used to count walrus and make an estimate is no better than the method used before.

Response: The 2006 walrus survey covered more area than earlier surveys, more accurately estimated numbers of walrus in groups, accounted for the probability of detecting groups of different sizes, accounted for the proportion of the population that was in the water, and fully quantified the uncertainty associated with the estimation process. It produced the most accurate estimation of Pacific walrus population size to date. However, other longstanding issues were still problematic, such as the extreme spatial and temporal aggregation of this species on ice, the vast ice-covered area it inhabits, and severity of weather.

Discussions of methods for future efforts to estimate Pacific walrus population size are ongoing.

Comment 14: Destruction of walrus by the U.S. Navy is not being regulated.

Response: The Service is not aware of any cases of walrus destruction by the U.S. Navy.

Comment 15: The estimates of take by commercial fisheries identified in the SAR are inaccurate by at least 50 percent because we do not receive reports from Russian commercial fisheries.

Response: In accordance with the MMPA, NMFS is required to place all U.S. commercial fisheries into one of three categories based on the level of serious injury and mortality of marine mammals that occur incidental to that fishery. Any vessel owner or operator or gear owner or operator participating under these categories must report to NMFS all incidental injuries and mortalities that occur during commercial fishing operations. The Service used information from these reports, which are provided to us by NMFS, to estimate take by commercial fisheries in the preparation of the SAR for the Alaska stock of Pacific walrus. We acknowledge the limitations of the data; however, this constitutes the best available scientific information. A complete list of fisheries and marine mammal interactions is published annually by NMFS, the most recent of which was published on December 1, 2008 (73 FR 73032).

Comment 16: The Service should explain the calculations for estimating the total number harvested in more detail.

Response: Information about the subsistence harvest is collected through several observer programs. We have added information to the SAR to clarify this point.

Comment 17: The Service should state that Fay *et al.* (1994) used data collected between 1952 and 1972, and that changes may have occurred over the last 35 years that would result in the need to re-evaluate the struck and lost rate of 42 percent.

Response: We agree with this comment, and the stock assessment text has been revised accordingly. However, we continue to use the value of 42 percent estimated by Fay *et al.* (1994) because it is the only estimate available and, therefore, the best available scientific information for preparation of the SAR.

Polar Bear

We received four sets of comments on the draft polar bear SARs (74 FR 28946). We present issues raised in those comments, along with our responses, below.

Southern Beaufort Sea Polar Bear

Comment 1: The Service should reassess all relevant data on polar bear distribution and movements to determine the eastern boundary of the Southern Beaufort Sea stock in the most scientifically credible manner and then reassess the minimum population estimate to account for the new stock boundary.

Response: A new population estimate could be determined once the new eastern boundary for the Southern Beaufort Sea is determined and agreed upon by the Board of Commissioners for the Inuvialuit/Inupiat Agreement. However, this decision has not been made and given the current staffing and previous commitments by the polar bear program of U.S. Geological Survey, Alaska Science Center, a new analysis cannot be done in a timely manner. In addition, boundaries for many of the polar bear populations may be changing in response to changes in the sea ice habitat. Thus we chose to use the old boundary for the Southern Beaufort Sea SAR at this time.

Comment 2: The Service should revise downward its estimate of maximum net productivity rate for this population to reflect ongoing and predicted changes in polar bear habitat that will prevent polar bear stock from achieving growth rates that might be expected in a favorable environment.

Response: Currently there is not enough data to estimate maximum net productivity rate (R_{max}) based on ongoing and predicted changes in the sea ice habitat. Thus we used the best scientific information available for R_{max}.

Comment 3: The Service should work with the North Slope Borough, the Inuvialuit Game Council, and the Canadian authorities to review whether the current harvest limits for this population are sustainable and consider whether they should be reduced.

Our Response: We have made recommendations that the current harvest limits should be reduced.

Comment 4: The second paragraph states that the boundaries delineated by Bethke et al. (1996) will continue to be used for the Southern Beaufort Sea SAR. However, prior to that statement there is substantial information presented pertinent to boundary considerations, yet Bethke *et al.* is not mentioned.

Response: We corrected the citation from Bethke *et al.* (1996) to Amstrup *et al.* (2000) and added a sentence referring to the southern boundary, which was based on Bethke *et al.* (1996).

Comment 5: For the Southern Beaufort Sea stock, revise the last sentence such that the estimate from Regehr et al. 2006 is recognized as the most current and valid estimate of abundance to use in calculating N_{min}.

Response: We revised the sentence accordingly. The discussion of N_{min} in the last paragraph in the "Population Size" section of the SAR clearly states that the population estimate of 1,526 was used in the calculation.

Comment 6: The last sentence in the Chukchi/Bering Seas SAR states that "Harvest levels are not limited at this time." If this also applies to the Southern Beaufort Sea stock, it should be included; if it does not, the means by which the harvest is limited should be presented.

Response: The harvest for the Southern Beaufort Sea has been actively managed since the passage of the Polar Bear Agreement for the Southern Beaufort Sea between the Inuvialuit of Canada and the Inupiat in the United States (Alaska) in 1988. Using Maximum Sustained Yield Method (Taylor *et al.* 1987) and a two-to-one male-to-female sex ratio in the harvest, a sustainable yield was calculated for the Southern Beaufort Sea population. The average annual harvest level since 1988 (56.9) has been well below the sustainable harvest of 80 bears (40 for the United States and 40 for Canada) since 1988. To minimize confusion with the discussion of PBR, we did not include this information in the SAR.

Comment 7: The recent harvest levels are above PBR, and thus the Service should discuss the effects of the harvest on the population and the potential for recovery in the section *Conservation Issues and Concerns—Subsistence Harvest.* The Service should mention the management agreements that are in place to determine sustainable harvest levels if PBR is not used.

Response: We added a paragraph at the end of this section to clarify the concern of overharvest with a declining population and how the quota is managed relative to PBR. The estimated PBR is not the appropriate mechanism for assessing the sustainability of the subsistence harvest.

Chukchi/Bering Seas Polar Bear

Comment 8: The Service should give its highest priority to reaching an agreement with Russia on a joint strategy to determine the status of this stock, identify current levels of productivity in major denning areas, and establish a management and research program to monitor this stock.

Response: The first meeting of the commissioners for the U.S/Russia

Bilateral Agreement for the conservation of the polar bears occurred in Moscow, Russia in September, 2009. The Scientific Working Group, which is established under this Bilateral Agreement, will make recommendations on management and research needs to the four commissioners.

Comment 9: The Service should provide an explanation as to why it believes that 2,000 can be used as the best population estimate as well as the minimum population size.

Response: The population estimate of 2,000 is based on extrapolated den data and is over 10 years old. Although this number is not considered reliable for management purposes, it is currently the best scientific information available for these calculations.

Comment 10: The Service should revise downward its estimate of the maximum net productivity rate for this population to reflect ongoing and predicted changes in polar bear habitat that will prevent polar bear stocks from achieving growth rates that might be expected in a favorable environment.

Response: See response to Comment 2 for the Southern Beaufort Sea SAR.

Comment 11: The Service should use the first meeting of the United States–Russia Polar Bear Commission to address the over harvest of this stock.

Response: This is one of the action items assigned to the Scientific Working Group, which will make recommendations to the Bilateral Commission in 2010.

Comment 12: The Service should mention that since the stock is now considered depleted under the MMPA, the Federal Government now has authority to regulate harvest levels.

Response: Although we concur with the above statement, the Service would rather work through the U.S. Russia Bilateral Agreement for the Conservation of Polar Bears to develop management and research priorities, including guidelines for determining appropriate harvest levels for this population stock. We believe that working cooperatively with our Russian colleagues will result in a more effective management strategy for this population.

Additional References Cited

Pacific Walrus

Acquarone, M., E.W. Born, and J.R. Speakman. 2006. Field metabolic rates of walrus (*Odobenus rosmarus*) measured by doubly labeled water method. Aquatic Mammals 32: 363–369.

Born, E. W., M. Acquarone, L.Ø. Knutsen, and L. Toudal. 2005. Homing behaviour in an Atlantic walrus (*Odobenus rosmarus rosmarus*). Aquatic Mammals 31: 23–33.

Born, E.W. and L.Ø. Knutsen. 1997. Haul-out and diving activity of male Atlantic walruses (*Odobenus rosmarus rosmarus*) in NE Greenland. Journal of Zoology 243: 381–396.

Braham H.W., J.J. Burns, G.A. Fedoseev, and B.D. Krogman. 1984. Habitat partitioning by ice-associated pinnipeds: distribution and density of seals and walruses in the Bering sea, April 1976. Pages 25–47 in F.H. Fay, G.A. Fedoseev, eds. Soviet-American Cooperative Research on Marine Mammals. Vol. 1. Pinnipeds. NOAA Technical Report. NMFS 12.

Burn, D., M.S. Udevitz, S.G. Speckman, and R.B. Benter. 2009. An improved procedure for detection and enumeration of walrus signatures in airborne thermal imagery. International Journal of Applied Earth Observation and Geoinformation 11:324–333.

Fay, F.H. 1957. History and present status of the Pacific walrus population. Transactions of the North American Wildlife Conference 22:431–445.

Fay, F.H., B.P Kelly, P.H. Gehnrich, J.L. Sease, and A.A. Hoover. 1986. Modern populations, migrations, demography, trophics, and historical status of the Pacific walrus. U.S. Department of Commerce, NOAA, Outer Continental Shelf Environmental Impact Assessment Program, Final Reports of Principal Investigators 37: 231–376. NOAA, National Ocean Service, Anchorage, Alaska.

Fay, F.H. and S.W. Stoker. 1982a. Analysis of reproductive organs and stomach contents from walruses taken in the Alaskan native harvest, spring 1980. Final Report contract 14–16–0007–81–5216. U.S. Fish and Wildlife Service, Anchorage, Alaska. 86pp.

Fay, F.H. and S.W. Stoker. 1982b. Reproductive success and feeding habits of walruses taken in the 1982 spring harvest, with comparisons from previous years. Eskimo Walrus Commission, Nome, AK. 91pp.

Fedoseev, G.A. 1979. Material on aerovisual observations on distribution and abundance of ice forms of seals, walruses, and migrating whales in the ice of the Bering Sea in spring 1979. Pages 17–44 in Scientific Investigations of Marine Mammals in the Northern Part of the Pacific Ocean in 1978 and 1979. All-Union Scientific Investigational Institute of Marine Fisheries and Oceanography (VNIRO), Moscow. In Russian.

Fedoseev, G.A., E.V. Razlivalov, and G.G. Bobrova. 1988. Distribution and abundance of ice forms of pinnipeds on ice of the Bering Sea in April and May 1987. Pages 44–70 in Scientific Investigations of Marine Mammals in the Northern Part of the Pacific Ocean in 1986 and 1987. All-Union Scientific Investigational Institute of Marine Fisheries and Oceanography (VNIRO), Moscow. In Russian.

Garlich-Miller, J.L., L.T. Quakenbush, and J.F. Bromaghin. 2006. Trends in age structure and productivity of Pacific walruses harvested in the Bering Strait region of Alaska, 1952–2002. Marine Mammal Science 22:880–896.

Gol'tsev, V.N. 1976. Aerial surveys of Pacific walrus in the Soviet sector during fall 1975. Procedural Report TINRO, Magadan, USSR. 22 pp. Translated by J.J. Burns and the U.S. State Department.

Gjertz, I., D. Griffiths, B.A. Krafft, C. Lydersen, and Ø Wiig. 2001. Diving and haul-out patterns of walruses *Odobenus rosmarus* on Svalbard. Polar Biology 24: 314–319.

Jay, C.V., S.D. Farley, and G.W. Garner. 2001. Summer diving behavior of male walruses in Bristol Bay, Alaska. Marine Mammal Science 17:617–631.

Krogman, B.D., H.W. Braham, R.M. Sontag, and R.G. Punsley. 1979. Early spring distribution, density, and abundance of the Pacific walrus (*Odobenus rosmarus divergens*). Final Report, Contract No. R7120804, NOAA Outer Continental Shelf, Environmental Assessment Program, Juneau Project Office, Juneau, AK. 47 pp.

Lydersen, C., J. Aars, and K.M. Kovacs. 2008. Estimating the number of walruses in Svalbard from aerial surveys and behavioral data from satellite telemetry. Arctic 61:119–128.

NMFS. 2005. Revisions to Guidelines for Assessing Marine Mammals Stocks. 24 pp. Available at: *http://www.nmfs.noaa.gov/pr/pdfs/sars/gamms2005.pdf.*

Ovsyanikov, N.G., L.L. Bove, and A.A. Kochnev. 1994. Causes of mass mortality of walruses on coastal haulouts. Zoologichesky Zhurnal 73:80–87.

Speckman, S.G., V.I. Chernook, D.M. Burn, M.S. Udevitz, A.A. Kochnev, A. Vasilev, C.V. Jay, A. Lisovsky, R.B. Benter, and A.S. Fischbach. In prep. Estimated size of the Pacific walrus population, 2006.

Authority: The authority for this action is the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et al.*).

Dated: December 14, 2009.

Sam Hamilton,

Director, Fish and Wildlife Service.

[FR Doc. E9–30908 Filed 12–29–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLMTB07900 09 L10100000.PH0000 LXAMANMS0000]

Notice of Public Meeting, Western Montana Resource Advisory Council Meeting

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of public meeting.

SUMMARY: In accordance with the Federal Land Policy and Management Act (FLPMA) and the Federal Advisory Committee Act of 1972 (FACA), the U.S. Department of the Interior, Bureau of

POLAR BEAR (*Ursus maritimus*): Chukchi/Bering Seas Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Polar bears are circumpolar in their distribution in the northern hemisphere. They occur in several largely discrete stocks or populations (Harington 1968). Polar bear movements are extensive and individual activity areas are enormous (Garner *et al.* 1990, Amstrup *et al.* 2000). The parameters used by Dizon *et al.* (1992) to classify stocks based on the phylogeographic approach were considered in the determination of stock separation in Alaska. Several polar bear stocks are known to be shared between countries (Amstrup *et al.* 1986, Amstrup and DeMaster 1988). Lentfer hypothesized that in Alaska two stocks exist, the Southern Beaufort Sea (SBS) and the Chukchi/Bering seas (CBS), based upon: (a) variations in levels of heavy metal contaminants of organ tissues (Lentfer 1976, Lentfer and Galster 1987); (b) morphological characteristics (Manning 1971, Lentfer 1974, Wilson 1976); (c) physical oceanographic features which segregate the Chukchi Sea and Bering Sea stock from the Beaufort Sea stock (Lentfer 1974); and (d) movement information collected from mark and recapture studies of adult female bears (Lentfer 1974, 1983) (Figure 1). Information on contaminants (Woshner *et al.* 2001, Evans 2004a, Evans 2004b, Kannan *et al.* 2005, Smithwick *et al.* 2005, Verreault *et al.* 2005, Muir *et al.* 2006, Smithwick *et al.* 2006, Kannan *et al.* 2007, Rush *et al.* 2008) and movement data using satellite collars (Amstrup *et al.* 2004, Amstrup *et al.* 2005) continue to support the presence of these two stocks.

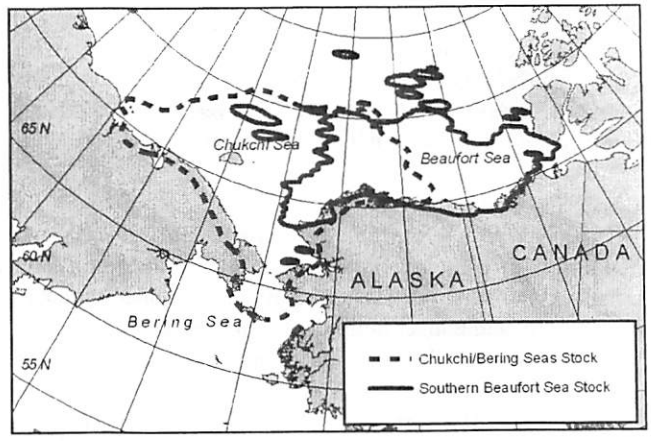


Figure 1. Map of the Southern Beaufort Sea and the Chukchi/ Bering seas polar bear stocks.

The CBS population is widely distributed on the pack ice in the Chukchi Sea and northern Bering Sea and adjacent coastal areas in Alaska and Russia. The northeastern boundary of the Chukchi/Bering seas stock is near the Colville Delta in the central Beaufort Sea (Garner *et al.*1990, Amstrup 1995, Amstrup *et al.* 2005) and the western boundary is near Chauniskaya Bay in the Eastern Siberian Sea. The boundary between the Eastern Siberian Sea stock and the Chukchi Sea stock is designated based on movements of adult female polar bears captured in the Bering and Chukchi seas region. Female polar bears initially captured and radio collared on Wrangel Island exhibited no movement into the Eastern Siberian Sea, while female polar bears captured and radio collared in the Eastern Siberian Sea, exhibited only limited short term movement into the western Chukchi Sea (Garner *et al.* 1990). The Chukchi/Bering seas stock extends into the Bering Sea and its southern boundary is determined by the annual extent of pack ice (Garner *et al.* 1990). Adult female polar bears captured from the Southern Beaufort Sea stock may make seasonal movements into the Chukchi Sea in an area of overlap located between Point Hope and Colville Delta, centered near Point Lay (Garner *et al.* 1990, Garner *et al.* 1994, Amstrup 1995, Amstrup *et al.* 2002, Amstrup *et al.* 2005). Probabilistic distribution information for zones of overlap between the Chukchi/Bering seas and the Southern Beaufort Sea population exist (Amstrup *et al.* 2004, Amstrup *et al.* 2005). Telemetry data indicate that these bears, marked in the Beaufort Sea, spend about 25% of their time in the northeastern Chukchi Sea, whereas females captured in the Chukchi Sea spend only 6% of their time in the Beaufort Sea (Amstrup 1995). Average activity areas of females in the Chukchi/Bering seas from 1986–1988 (244,463 km^2, range 144,659–351,369 km^2) (Garner *et al.* 1990) were more extensive than the Beaufort Sea from 1983– 1985 (96,924 km^2, range 9,739–269,622 km^2) (Amstrup 1986) or from 1985–1995 (166,694 km^2, range 14,440–616,800 km^2) (Amstrup *et al.* 2000). Radio collared adult females spent a greater proportion of their time in the Russian region than in the American region (Garner *et al.* 1990). Historically polar bears ranged as far south as St. Matthew Island (Hanna 1920) and the Pribilof Islands (Ray 1971) in the Bering Sea.

Analysis of mitochondrial DNA indicates little differentiation of the Alaska polar bear stocks (Cronin *et al.* 1991, Scribner *et al.* 1997, Cronin *et al.* 2006). Using 16 highly variable micro-satellite loci, Paetkau *et al.* (1999) determined that polar bears throughout the arctic (19 populations) are genetically similar. Genetically, polar bears in the southern Beaufort Sea differed more from polar bears in the Chukchi/Bering seas than from polar bears in the northern Beaufort Sea (Paetkau *et al.* 1999).

While genetically similar, demographic and movement data of the CBS population, indicates a high degree of site fidelity, suggesting that the stocks should be managed separately (Amstrup 2000, Amstrup *et al.* 2000, Amstrup *et al.* 2001a, Amstrup *et al.* 2002, Amstrup *et al.* 2004, Amstrup *et al.* 2005).

Past management has consistently distinguished between the southern Beaufort Sea and the Chukchi/Bering seas stocks. The Inuvialuit of the Inuvialuit Game Council (IGC), Northwest Territories, and the Inupiat of the North Slope Borough (NSB), Alaska, polar bear management agreement for the Southern Beaufort Sea stock was based on stock boundaries described previously (Brower *et al.* 2002, Nageak *et al.* 1991, Treseder and Carpenter 1989) and reaffirmed by the information in this stock assessment report.

POPULATION SIZE

Polar bears typically occur at low densities throughout their circumpolar range (DeMaster and Stirling 1981). It has been difficult to obtain a reliable population estimate for this population due to the vast and inaccessible nature of the habitat, movement of bears across international boundaries, logistical constraints of conducting studies in Russian territory, and budget limitations (Amstrup and DeMaster 1988, Garner *et al.* 1992, Garner *et al.* 1998, Evans *et al.* 2003). The Chukchi Sea population is estimated to comprise 2,000 animals, based on extrapolation of aerial den surveys (Lunn *et al.* 2002). Estimates of the population have been derived from observations of dens and aerial surveys (Chelintsev 1977, Stishov 1991a, Stishov 1991b, Stishov *et al.* 1991); however, these estimates (see below) have wide confidence intervals and are considered to be of little value for management and cannot be used to evaluate status and trends for this population.

Minimum Population Estimate

A reliable population estimate for the Chukchi/Bering seas stock currently does not exist. Lentfer, in the Administrative Law Judge (ALJ) proceeding to waive the Marine Mammal Protection Act of 1972 (MMPA) moratorium on taking and return management to the State of Alaska (ALJ 1977), estimated the size of the Chukchi/Bering seas population stock (Wrangel Island to western Alaska) at 7,000, and Chapman estimated the Alaska population (both stocks) at 5,550 to 5,700 (ALJ 1977). Lentfer and Chapman's estimates (ALJ 1977), however, were not based on rigorous statistical analysis of population data and variance estimates could not be calculated. Amstrup *et al.* (1986) estimated densities (1976–129 km^2/bear, 1981–211 km^2/bear) based on mark and recapture of 266 polar bears near Cape Lisburne on the Chukchi Sea, but a population estimate for the Chukchi Sea was not developed at that time. An August 2000 aerial survey of polar bears in the Eastern Chukchi Sea resulted in density estimates of (0.00748 bear/km^2, or 147 km^2/bear, C.V. = 0.38) (Evans *et al.* 2003). A population estimate was not derived from this density since the study area included only a portion of the total area used by the population.

Amstrup and DeMaster (1988) estimated the Alaska population (both stocks) at 3,000 to 5,000 animals based on densities calculated previously by Amstrup *et al.* (1986). The area that the estimate applied to and the variance associated with the estimate were not provided for in the 1988 population estimate (Amstrup and DeMaster 1988). A crude population estimate for the Chukchi/Bering seas stock of 1,200 to 3,200 animals was derived by subtracting the Beaufort Sea population estimate of 1,800 animals (Amstrup 1995) from the total Alaska statewide estimate of 3,000 to 5,000 (Amstrup and DeMaster 1988). The IUCN Polar Bear Specialist Group (IUCN 2006) estimated this population to be approximately 2,000 animals based on extrapolation of multiple years of denning data for Wrangel Island, assuming that 10% of the population dens annually as adult females. However, confidence in this estimate is low due to the lack of current denning estimates and reliable data with measurable levels of precision (IUCN 2006). Nonetheless, an N_{MIN} of 2,000 is the best available information we have at this time.

Current Population Trend

Prior to the 20th century, when Alaska's polar bears were hunted primarily by Alaskan Natives, both stocks probably existed at near carrying capacity (K). The size of the Beaufort Sea stock declined substantially in the late 1960's and early 1970's (Amstrup *et al.* 1986) due to excessive sport harvest. Similar declines could have occurred in the Chukchi Sea, although there are no population data to support this assumption. Since passage of the MMPA, the southern Beaufort Sea population grew during the late 1970's and 1980's and then stabilized during the 1990's (Amstrup *et al.* 2001b). Based on demographic data 2001 to 2006, the overall population growth rate in the Southern Beaufort Sea population declined approximately 0.3% per year (Hunter *et al.* 2007). Until 1992 it is likely that the Chukchi/Bering seas stock mimicked the growth pattern and later stability of Southern Beaufort Sea stock, since both

stocks experienced similar management and harvest histories. However, since 1992 the CBS population has faced different stressors than the SBS population. These include increased harvest in Russia (150 – 250 bears/yr) (Kochnev 2006, Ovsyanikov 2006, Eduard Zdor personal communication) and greater loss of summer sea ice habitat from global warming (Overland and Wang 2007), which suggest that using the growth rate for the Southern Beaufort Sea may not be applicable. The status of the Chukchi/Bering seas stock was listed as data deficient (Aars *et al.* 2006) due to the lack of abundance estimates with measurable levels of precision. The population is believed to be declining and the status relative to historical levels is believed to be reduced based on harvest levels that were demonstrated to be unsustainable in the past.

MAXIMUM NET PRODUCTIVITY RATES

Polar bears are long lived, mature at a relatively old age, have an extended breeding interval, and have small litters (Lentfer *et al.* 1980, DeMaster and Stirling 1981). Population/stock specific data to estimate R_{MAX} are not available for the Chukchi/Bering seas polar bear stock. The Southern Beaufort Sea is one of four polar bear populations with long-term data sets and as it overlaps with the Chukchi/Bering seas stock using the default value for R_{MAX} for the Southern Beaufort Sea seems reasonable as it is based on empirical data. Survival rates for the Southern Beaufort Sea stock (Regehr *et al.* 2006), which can be used in a Leslie matrix model, suggest that under optimal conditions and in the absence of human perturbations the population could increase at a rate of between 4 and 6%. Amstrup (1995) projected an annual intrinsic growth rate (including natural mortality but not human-caused mortality) of 6.03% for the Southern Beaufort Sea stock using a Leslie type matrix of recapture data. Since the Chukchi/Bering seas area is one of the most productive areas in the Arctic using the 6.03% for the Chukchi/Bering seas polar bear stock seems reasonable.

POTENTIAL BIOLOGICAL REMOVAL (PBR)

Under the 1994 reauthorized MMPA, the potential biological removal (PBR) level is defined as the product of the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor: PBR = $(N_{MIN})(½\ R_{MAX})(F_R)$. Wade and Angliss (1997) recommend a default recovery factor (F_R) of 0.5 for a threatened population or when the status of a population is unknown. We used 0.5 as the recovery factor since reliable population estimates to assess population trends are not available. In the following calculation: $(N_{MIN})(½\ R_{MAX})(F_r)$ = PBR (Wade and Angliss 1997) the minimum population estimate, N_{MIN} was 2,000; the maximum rate of increase R_{MAX} was 6.03%; and the recovery factor F_R was 0.50. Therefore, the PBR level for the Chukchi/Bering seas stock is 30 bears per year. However, confidence in these numbers is low due to dated and extrapolated population information and, therefore, the PBR value has little utility for management purposes.

ANNUAL HUMAN CAUSED MORTALITY AND SERIOUS INJURY

Fisheries Information

Polar bear stocks in Alaska have no direct interaction with commercial fisheries activities. Consequently, the total fishery mortality and serious injury rate for the Chukchi/Bering seas stock is zero.

Alaska Native Subsistence Harvest

Historically, polar bears have been killed for subsistence, handicrafts, and recreation. Based on records of skins shipped from Alaska for 1925–53, the estimated annual statewide harvest averaged 120 bears, taken primarily by Native hunters. Recreational hunting by non-native sports hunters using aircraft was common from 1951–72, increasing statewide annual harvest to 150 during 1951–60 and to 260 during 1960–72 (Amstrup *et al.* 1986, Schliebe *et al.* 1995). Hunting by non-Natives has been prohibited since 1973 when provisions of the MMPA went into effect. This reduced the mean annual statewide harvest for both populations to 98 during 1980–2007 (SD=40; range 48–242) (USFWS unpublished data). The annual harvest from the Chukchi/Bering seas stock was 92/year in the 1980s, 49/year in the 1990s, and 43/year in the 2000s. More recently, the 2003–2007 average Alaska harvest for the Chukchi/Bering seas stock in Alaska was 37 and the sex ratio was 66M:34F.

Under the MMPA, an exemption was made for Alaska Natives living in coastal communities to allow them to hunt polar bears for subsistence and making of handicrafts provided that the hunt was not done in a wasteful manner. Recently, harvest levels by Alaska Natives from the Chukchi/Bering seas stock have been declining (Figure 2). The sex ratio of known-sex bears harvested since 1980 has remained relatively consistent at 66% males and 34% females (Schliebe *et al.* 2006).

The number of unreported kills in Alaska since 1980 to the present time is approximately 7% based on: (a) tagging information; (b) interviews with local hunters; and (c) law enforcement investigations. No user agreement, similar to that between the Inuvialuit and Inupiat for the Beaufort Sea stock, exists for the Bering/Chukchi stock. Harvest levels are not limited at this time.

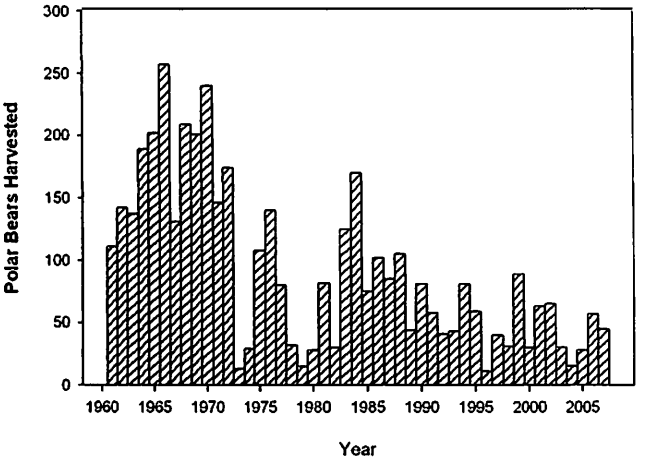


Figure 2. Annual Alaska polar bear harvest from the Chukchi/Bering Seas stock. 1961-2007.

Other Removals

Russia prohibited all hunting of polar bears in 1956 in response to perceived population declines caused by over-harvest. In Russia, only a small number of animals, less than 3–5 per year, were removed for placement in zoos prior to 1986 (Uspenski 1986) and a few were killed in defense of life. No bears were taken for zoos or circuses from 1993 to 1995 (Belikov 1998). The occurrence of increased takes of problem bears in Chukotka was acknowledged in 1992, and Belikov (1993) estimated that up to 10 problem bears were killed annually in all of the Russian Arctic. Increased illegal hunting of polar bears in the Russian Arctic was also recognized to have begun in 1992. While the magnitude of the illegal harvest in Russia from the Chukchi/Bering seas stock is unquantified, reports indicate that a substantial number of bears, 150–250/yr (Kochnev 2006), or alternatively 120–150/yr (Eduard Zdor pers. comm.), are being harvested. Combining the reported Chukotka harvest with the documented Alaska harvest indicates that up to 200 bears may have been harvested from this population in many years. Harvest levels similar to these are believed to have caused population depletion by the early 1970s. Belikov *et al.* (2006) indicated that the current level of poaching in Russia poses a serious threat to the population. No serious injuries, other than the mortalities discussed here, have been reported for the Chukchi/Bering seas stock.

No orphaned cubs from the Alaskan Chukchi/Bering seas stock were placed in zoos since 2002. Illegal harvest has not been detected in Alaska. Oil and gas exploration in the Bering/Chukchi region of Alaska, began again in 2006, primarily during the open water season has resulted in minimal interaction with polar bears; there was no evidence of mortality or serious injury.

STATUS OF STOCK

Polar bears in the Chukchi/Bering seas stock are currently classified as depleted under the MMPA and listed as threatened under the U.S. Endangered Species Act of 1973 (ESA) as amended. Reliable estimates of the minimum population, PBR level, and human-caused mortality or serious injury in Chukotka are currently not available

The ongoing level of the subsistence hunting in western Alaska and Chukotka is a concern. There is no incidental mortality or serious injury of polar bear in any U.S. commercial fishery. The primary concerns for this population are habitat loss resulting from climate change, potential over-harvest, human activities including industrial activities occurring within the near-shore environment, and potential effects of contaminants on nutritionally stressed populations. The Chukchi/Bering seas polar bear stock is designated as a strategic stock because the population is listed as threatened under the ESA.

Conservation Issues and Habitat Concerns

Oil and Gas Exploration

In 2008, the Minerals Management Service held an oil and gas lease sale for offshore blocks in the eastern Chukchi Sea. Polar bears from Chukchi/Bering seas stock seasonally use the shallow, productive, ice-covered waters of the eastern Chukchi Sea for feeding, breeding, and movements. The Fish and Wildlife Service (USFWS) works to monitor and mitigate potential impacts of oil and gas activities on polar bears through incidental take regulations (ITR) as authorized under the Marine Mammal Protection Act. Activities operating under these regulations must adopt measures to: ensure that the total of such incidental taking of polar bears remains negligible; minimize impacts to their habitat; and ensure no unmitigable adverse impact on their availability for Alaska Native subsistence use. ITR also

specify monitoring requirements that provide a basis for evaluating potential impacts of current and future activities on marine mammals.

Climate Change

Polar bears evolved over thousands of years to life in a sea ice environment. They depend on the sea ice-dominated ecosystem to support essential life functions. Sea ice provides a platform for hunting and feeding, for seeking mates and breeding, for movement to terrestrial maternity denning areas and occasionally for maternity denning, for resting, and for long-distance movements. The sea ice ecosystem supports ringed seals, the primary prey for polar bears, and other marine mammals that are also part of their prey base.

Sea ice is rapidly diminishing throughout the Arctic and large declines in optimal polar bear habitat have occurred in the Southern Beaufort and Chukchi Seas between the two time periods, 1985–1995 and 1996–2006 (Durner et al 2009). In addition, it is predicted that the greatest declines in 21st century optimal polar bear habitat will occur in Chukchi and Southern Beaufort Seas (Durner *et al.* 2009a). Patterns of increased temperatures, earlier onset of and longer melting periods, later onset of freeze-up, increased rain-on-snow events, and potential reductions in snowfall are occurring. In addition, positive feedback systems (i.e., the sea-ice albedo feedback mechanism) and naturally occurring events, such as warm water intrusion into the Arctic and changing atmospheric wind patterns, can operate to amplify the effects of these phenomena. As a result, there is fragmentation of sea ice, a dramatic increase in the extent of open water areas seasonally, reduction in the extent and area of sea ice in all seasons, retraction of sea ice away from productive continental shelf areas throughout the polar basin, reduction of the amount of heavier and more stable multi-year ice, and declining thickness and quality of shore-fast ice (Parkinson et al 1999, Rothrock *et al.* 1999, Comiso 2003, Fowler *et al.* 2004, Lindsay and Zhang 2005, Holland *et al.* 2006, Comiso 2006, Serreze *et al.* 2007, Stroeve *et al.* 2008).

The Chukchi/Bering seas and the Southern Beaufort Sea population stocks are currently experiencing the initial effects of changes in sea ice conditions (Rode *et al.* 2007, Regehr *et al.* 2007, Hunter *et al.* 2007). These populations are vulnerable to large-scale dramatic seasonal fluctuations in ice movements, decreased abundance and access to prey, and increased energetic costs of hunting. The USFWS is working on measures to protect polar bears and their habitat.

Subsistence Harvest

Past differences in management regimes between the United States and Russia have made coordination of studies on the shared Alaska-Chukotka polar bear population difficult. In the former Soviet Union, hunting of polar bears was banned nationwide in 1956. Recently, Russia's ability to enforce that ban has been difficult due to logistical and financial constraints. In Alaska, subsistence hunting of polar bears by Alaska Natives is currently unrestricted under section 101(b) of the MMPA provided that the take is for subsistence purposes or creating authentic articles of Alaska Native handicrafts and conducted in a non-wasteful manner. While several joint research and management projects have been successfully undertaken in the past between the United States and Russia, today comparable efforts are either no longer occurring or are unilateral in scope.

The bilateral "Agreement between the United States and the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population (Agreement)" was signed by the governments of the United States and the Russian Federation on October 16, 2000, with subsequent advice and consent provided by the U.S. Senate. Among other provisions the Agreement recognizes the needs of Native people to harvest polar bears for subsistence purposes and includes provisions for developing sustainable harvest limits, allocation of the harvest between jurisdictions, and compliance and enforcement. Each jurisdiction is entitled to up to one-half of a harvest limit to be determined by a future the joint Commission. The Agreement reiterates requirements of the 1973 multi-lateral agreement and includes restrictions on harvesting denning bears, females with cubs, or cubs less than one year old, and prohibitions on the use of aircraft, large motorized vessels, and snares or poison for hunting polar bears.

On January 12, 2007, President Bush signed into law H.R. 5946, the "Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006." This Act includes Title X implementing the Agreement. This action allows for the establishment of the commission and development of enforceable harvest management agreements. The Russian Federation and the United States have completed documents necessary to implement the Agreement within Russia and the United States. The USFWS is currently developing recommendations for the Bilateral Commission that will direct research and establish sustainable and enforceable harvest limits needed to address current potential population declines due to over-harvest of the population.

CITATIONS

Aars, J., N.J. Lunn, and A.E. Derocher. eds. 2006. Polar bears: proceedings of the 14th working meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June, Seattle, Washington, USA. IUCN, Gland. Switzerland. 189 pp.

Administrative Law Judge. 1977. Environmental Impact Statement: Consideration of a waiver of the moratorium and return of management of certain marine mammals to the State of Alaska. 2 Volumes.

Amstrup, S.C. 1986. Research on polar bears in Alaska, 1983-1985. pp. 85-115. In Proceedings of the Ninth Working Meeting of the IUCN/SSC Polar Bear Specialist Group, Edmonton, Canada. IUCN, Gland, Switzerland, and Cambridge, U.K. 152 pp.

Amstrup, S.C. 1995. Movements, distribution, and population dynamics of polar bears in the Beaufort Sea. Ph.D. Dissertation. University of Alaska Fairbanks. Fairbanks, Alaska, 299 pp.

Amstrup, S.C. 2000. Polar Bear. In The Natural History of an Oil Field: Development and Biota. Edited by J.C. Truett and S.R. Johnson. Academic Press, Inc., New York, New York, USA pp. 133-157.

Amstrup, S.C., and D.P. DeMaster. 1988. Polar bear, *Ursus maritimus*. Pages 39-45 in J.W. Lentfer, ed. Selected Marine Mammals of Alaska: Species Accounts with Research and Management Recommendations. Marine Mammal Commission, Washington, D.C.

Amstrup, S.C., I. Stirling, and J.W. Lentfer. 1986. Past and present status of polar bears in Alaska. Wildlife Society Bulletin. 14:241-254.

Amstrup, S.C., G. Durner, I. Stirling, N.J. Lunn, and F. Messier. 2000. Movements and distribution of polar bears in the Beaufort Sea. Canadian Journal of Zoology. 78:948-966.

Amstrup, S.C., G.M. Durner, T.L. McDonald, D.M. Mulcahy, and G.W. Garner. 2001a. Comparing movement patterns of satellite-tagged male and female polar bears. Canadian Journal of Zoology. 79:2147-2158.

Amstrup, S.C., T.L. McDonald, and I. Stirling. 2001b. Polar bears in the Beaufort Sea: A 30-year mark-recapture case history. Journal of Agricultural, Biological, and Environmental Statistics Vol.(2): 221-234.

Amstrup, S.C., G. M. Durner, A. S. Fischbach, K. Simac, and G. Weston-York. 2002. Polar Bear Research in the Beaufort Sea. pp. 109-125. In N. Lunn, E. W. Born, and S. Schliebe (eds). Proceedings of the Thirteenth Working Meeting of the IUCN/SSC Polar Bear Specialist Group, Nuuk, Greenland. IUCN, Gland, Switzerland, and Cambridge, U.K. vii + 153 pp.

Amstrup, S.C., T.L. McDonald, and G.M. Durner. 2004. Using satellite radiotelemetry data to delineate and manage wildlife populations. Wildlife Society Bulletin. 32:661-679.

Amstrup, S.C., G.M. Durner, I. Stirling, and T.L. McDonald. 2005. Allocating harvests among polar bear stocks in the Beaufort Sea. Arctic. 58:247-259.

Belikov, S.E. 1993. Status of polar bear populations in the Russian Arctic 1993. pp. 115-121. In Ø. Wiig, G.W. Garner (eds.), Proceedings of the Eleventh Working Meeting of the IUCN/SSC Polar Bear Specialist Group. IUCN, Gland, Switzerland, and Cambridge, U.K. v + 192 pp.

Belikov, S.E. 1998. Research and management of polar bear populations in the Russian Arctic. pp. 113-114. In A.E. Derocher, G. Garner, N. Lunn, and Ø. Wiig (eds). Proceedings of the Twelfth Working Meeting of the IUCN/SSC Polar Bear Specialist Group. 3-7 February, 1997. Oslo, Norway. IUCN, Gland, Switzerland, and Cambridge, U.K. v + 159 pp.

Belikov, S.E., A.N. Boltunov, N.G. Ovsianikov, G.I. Belchanskiy, and A.A. Kochnev. 2006. Polar bear management and research in Russia 2000-2004. pp. 153-155. In J. Aars, N.J. Lunn, and A.E. Derocher (eds.), Proceeding of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June 2005, Seattle, Washington, U.S.A. IUCN, Gland, Switzerland, and Cambridge, U.K.

Brower, C.D., A. Carpenter, M. Branigan, W. Calvert, T. Evans, A.S. Fischbach, J. Nagy, S. Schliebe, and I. Stirling. 2002. The polar bear management agreement for the Southern Beaufort Sea: An evaluation of the first ten years of a unique conservation agreement. Arctic 56:362-372.

Chelintsev, N.G. 1977. Determination of the absolute number of dens based on the selective counts. Pp. 66-85, In Uspenski, S.M. (ed.). The polar bear and its conservation in the Soviet Arctic. Moscow, Central Laboratory on Nature Conservation. (in Russian with English summary).

Comiso, J.C. 2003. Warming trends in the Arctic from clear sky satellite observations. Journal of Climate 16:3498-3510.

Comiso, J.C. 2006. Arctic warming signals from satellite observations, Weather 61(3):70-76.

Cronin, M.A., S.C. Amstrup, G.W. Garner, and E.R. Vyse. 1991. Interspecific and intraspecific mitochondrial DNA variation in North American bears (Ursus). Canadian Journal of Zoology. 69:12:2985-2992.

Cronin, M.A., S.C. Amstrup, K.T. Scribner. 2006. Microsatellite DNA and mitochondrial DNA variation in polar bears (*Ursus maritimus*) in the Beaufort and Chukchi seas, Alaska. Canadian Journal of Zoology 84:655-660.

DeMaster, D.P., and I. Stirling. 1981. *Ursus maritimus*. Mammalian Species: 1-7.

Dizon, A.E., C. Lockyer, W.F. Perrin, D.P. DeMaster, and J. Sisson. 1992. Rethinking the stock concept: a phylogeographic approach. Conservation Biology 6:24-36.

Durner, G.M., D.C. Douglas, R.M. Nielson, S.C. Amstrup, T.L. McDonald, I. Stirling, M. Mauritzen, E.W. Born, Ø. Wiig, E. DeWeaver. M.C. Serreze, S.E. Belikov, M.M. Holland, J. Maslanik, J. Aars, D.C. Bailey, and A.E. Derocher. 2009. Predicting 21st century polar bear habitat distribution from global climate models. Ecological Monographs 79(1): 25-58.

Evans, T.J. 2004a. Concentrations of selected essential and non-essential elements in adult male polar bears (*Ursus maritimus*) from Alaska. U.S. Fish and Wildlife Service Technical Report. MMM 04-02. 68pp.

Evans, T. J. 2004b. PCBs and chlorinated pesticides in adult male polar bears (*Ursus maritimus*) from Alaska. U.S. Fish and Wildlife Service Technical Report. MMM 04-01. 61pp

Evans, T.F., A.S. Fischbach, S. Schliebe, B. Manley, S. Kalxdorff, and G. York. 2003. Polar bear aerial survey in the Eastern Chukchi Sea: A Pilot Study. Arctic 56(4):359-366.

Fowler, C., W.J. Emery and J. Maslanik. 2004. Satellite-derived evolution of Arctic sea ice age: October 1978 to March 2003. Geoscience and Remote Sensing Letters, IEEE, Volume 1, Issue 2, April 2004. pp.71–74.

Garner, G.W., S.T. Knick, and D.C. Douglas. 1990. Seasonal movements of adult female polar bears in the Bering and Chukchi seas. International Conference on Bear Research and Management 8:219-226.

Garner, G.W., L.L. McDonald, D.S. Robson, D.P. Young Jr., and S.M. Arthur. 1992. Literature review: population estimation methodologies applicable to the estimation of abundance of polar bears. Internal Report, U.S.F.W.S. 102 pp.

Garner, G.W., S.E. Belikov, M.S. Stishov, V.G. Barnes, and S.A. Arthur. 1994. Dispersal patterns of maternal polar bears from the denning concentration on Wrangel Island. International Conference on Bear Research and Management 9(1):401-410.

Garner, G.W., M.S. Stishov, Ø. Wiig, A. Boltunov, G.I. Belchansky, D.C. Douglas, L.L. McDonald, D.M. Mulcahy, and S. Schliebe. 1998. Polar bear research in western Alaska, eastern and western Russia 1993-1996. pp. 125-129. In A.E. Derocher, G. Garner, N. Lunn, and Ø. Wiig (eds.), Proceedings of the Twelfth Working Meeting of the IUCN/SSC Polar Bear Specialist Group. 3-7 February, 1997. Oslo, Norway. IUCN, Gland, Switzerland, and Cambridge, U.K. v + 159 pp.

Hanna, G.D. 1920. Mammals of the St. Matthew Islands, Bering sea. Journal of Mammalogy 1:118-122.

Harington, C.R. 1968. Denning habits of the polar bear (*Ursus maritimus* Phipps). Canadian Wildlife Service Report, Series 5. 33 pp.

Holland, M., C.M. Bitz, and B. Tremblay. 2006. Future abrupt reductions in summer Arctic sea ice. Geophysical Research Letters 33 L25503: doi 10.1029/200661028024: 1-5.

Hunter, C.M., H. Caswell, M.C. Runge, E.V. Regehr, S.A. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea II: Demography and population growth in relation to sea ice conditions. U.S. Geological Survey, Alaska Science Center, Administrative Report. 46 pp.

IUCN. 2006. Status of the polar bear. pp. 33-56 in J. Aars J., N.J. Lunn, and A.E. Derocher (eds.), Proceedings of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, Seattle, United States. IUCN, Gland, Switzerland, and Cambridge, U.K.

Kannan, K., S.H. Yun, and T.J. Evans. 2005. Chlorinated, brominated, and perfluorinated contaminants in livers of polar bears from Alaska. Environmental Science and Technology. 39:9057-9063.

Kannan, K., T. Agusa, T.J. Evans, and S. Tanabe. 2007. Trace element concentrations in livers of polar bears from tow population in northern and western Alaska. Archives of Environmental Contaminants and Toxicology 53:473-482.

Kochnev, A.A. 2006. Research on polar bear autumn aggregations on Chukotka, 1989-2004. pp. 157-166. In J. Aars, N.J. Lunn, and A.E. Derocher (eds.) Proceeding of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June 2005, Seattle, Washington, U.S.A. IUCN, Gland, Switzerland, and Cambridge, U.K.

Lentfer, J.W. 1974. Discreteness of Alaskan polar bear populations. Proceedings of the International Congress of Game Biologists 11:323-329.

Lentfer, J.W. 1976. Environmental contaminants and parasites in polar bears. Alaska Department of Fish and Game, Pittman-Robertson Project Report. W-17-4 and W-17-5. 22 pp.

Lentfer, J.W. 1983. Alaskan polar bear movements from mark and recovery. Arctic 36:282-288.

Lentfer, J.W., and W.A. Galster. 1987. Mercury in polar bears from Alaska. Journal of Wildlife Diseases 23:338-341.
Lentfer, J.W., R.J. Hensel, J.R. Gilbert, and F.E. Sorensen. 1980. Population characteristics of Alaskan polar bears. International Conference on Bear Research and Management 3: 109-115.
Lindsay, R.W., and J. Zhang. 2005. The thinning of the Arctic sea ice, 1988-2003: have we passed a tipping point? J. Climate 18:4879-4894.
Lunn, N.J., S. Schliebe, and E.W. Born, eds. 2002. Polar bears: Proceedings of the 13th working meeting of the IUCN/ SSC Polar Bear Specialist Group. IUCN, Gland, Switzerland, and Cambridge, U.K. vii +153pp.
Manning, T.H. 1971. Geographical variation in the polar bear *Ursus maritimus* Phipps. Canadian Wildlife Service Report Series No. 13. 27 pp.
Muir, D.C.G., S. Backus, A.E. Derocher, R. Dietz, T.J. Evans, G.W. Gabrielsen, J. Nagy, R.J. Norstrom, C. Sonne, I. Stirling, M.K. Taylor, and R.J. Letcher. 2006. Brominated flame retardants in polar bears (*Ursus maritimus*) from Alaska, the Canadian Arctic, East Greenland and Svalbard. Environmental Science and Technology 40(2):449-455.
Nageak, B.P., C.D.N. Brower, and S.L. Schliebe. 1991. Polar bear management in the southern Beaufort Sea: An Agreement between the Inuvialuit Game Council and the North Slope Borough Fish and Game Committee. In Transactions of North American Wildlife and Natural Resources Conference 56:337-343.
Ovsyanikov, N.G. 2006. Research and conservation of polar bears on Wrangel Island. Pp. 167-171, In J. Aars, N.J. Lunn, and A.E. Derocher (eds.), Proceeding of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June 2005, Seattle, Washington, U.S.A. IUCN, Gland, Switzerland, and Cambridge, U.K.
Overland, J.E., and M. Wang. 2007. Future regional Arctic sea ice declines. Geophysical Research Letters 34: L17705.
Paetkau, D., S.C. Amstrup, E.W. Born, W. Calvert, A.E. Derocher, G.W. Garner, F. Messier, I. Stirling, M.K. Taylor, Ø. Wiig, and C. Strobeck. 1999. Genetic Structure of the world's polar bear populations. Molecular Ecology 8:1571-1584.
Parkinson, C.L., D.J. Cavalieri, P. Gloersen, H.J. Zwally, and J.C. Comiso. 1999. Arctic sea ice extents, areas, and trends, 1978-1996. Journal of Geophysical Research 104(C9):20837-20856.
Ray, C.E. 1971. Polar bear and mammoth on the Pribilof Islands. Arctic 24:9-19.
Regehr, E.V., S.C. Amstrup, and I. Stirling. 2006. Polar bear population status in the Southern Beaufort Sea. Report Series 2006-1337, U.S. Department of the Interior, U.S. Geological Survey, Anchorage, Alaska. 55 pp.
Regehr, E.V., C.M. Hunter, H. Caswell, S.C. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea I: Survival and breeding in relation to sea ice conditions, 2001-2006. U.S. Geological Survey, Alaska Science Center, Administrative Report. 45 pp.
Rode, K.D., S.C. Amstrup, and E.V. Regehr. 2007. Polar Bears in the southern Beaufort Sea III: stature, mass, and cub recruitment in relationship to time and sea ice extent between 1982 and 2006. U.S. Dept. of the Interior, U.S. Geological Survey Administrative Report, Reston, Virginia. 28 pp.
Rothrock, D.A., Y. Yu, and G.A. Maykut. 1999. Thinning of the Arctic sea-ice cover, Geophysical Research Letters 26:3469-3472.
Rush, S.A., K. Borga, R. Dietz, E.W. Born, C. Sonne, T. Evans, D.C.G. Muir, R.L. Letcher, R.J. Norstrom, and A.T. Fisk. 2008. Geographic Distribution of selected elements in the livers of polar bears from Greenland, Canada, and the United States. Environmental Pollution 153 (3): 618-626.
Schliebe, S.L., S.C. Amstrup, and G.W. Garner. 1995. The status of polar bear in Alaska, 1993. Pp. 125-139, In Ø. Wiig, G.W. Garner (eds.), Proceedings of the Eleventh Working Meeting of the IUCN/SSC Polar Bear Specialist Group, Copenhagen, Denmark. IUCN, Gland, Switzerland, and Cambridge, UK. v + 192 pp.
Schliebe, S., T.J. Evans, S. Miller, C. Perham, J. Wilder, and L.J. Lierheimer. 2006. Polar bear management in Alaska 2000-2004. Pp. 63-76, In J. Aars, N.J. Lunn, and A.E. Derocher (eds.), Proceeding of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June 2005, Seattle, Washington, U.S.A. IUCN, Gland, Switzerland, and Cambridge, U.K.
Scribner, K.T., G.W. Garner, S.C. Amstrup, and M.A. Cronin. 1997. Population genetic studies of the polar bear (*Ursus maritimus*): a summary of available data and interpretation of results. Pp. 185-196, In 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. Spec. Pub. #3 of the Society of Marine Mammalogy.
Serreze, M.C., M.M. Holland, and J. Stroeve. 2007. Perspectives on the Arctic's shrinking sea-ice cover. Science 315: 1533-1536.

Smithwick, M., J.W. Martin, S.A. Mabury, K. Solomon, C. Sonne, E.W. Born, R. Dietz, A.E. Derocher, R.L. Letcher, T.J. Evans, G.W. Gabrielsonm, J. Nagy, I. Stirling, and D.C.G. Muir. 2005. A circumpolar study of perfluoroalkyl contaminants in polar bears (*Ursus maritimus*). Environmental Science and Technology 39(15):5517-5523.

Smithwick, M.J., R.J. Norstrom, S.A. Maybury, K. Solomon, T.J. Evans, I. Stirling, M.K. Taylor, and D.C.G. Muir. 2006. Temporal trends of perfluoroalkyl contaminants in polar bears (*Ursus maritimus*) from two locations in the North American Arctic, 1972 -2002. Environmental Science and Technology. 40(4):1139-1143.

Stishov, M.S. 1991a. Results of aerial counts of the polar bear dens on the arctic coast of the extreme Northern Asia. Pp. 90-92, In Amstrup, S.C., and Wiig, Ø. (eds.), Polar Bears: Proceedings of the Tenth Working Meeting of the IUCN/SSC Polar Bear Specialist Group. IUCN, Gland, Switzerland, and Cambridge, U.K.

Stishov, M.S. 1991b. Distribution and number of polar bear maternity dens on Wrangel and Herald islands, in 1985-1989, pp. 91-115 in Amerirkhavov, A.M. (ed.), Population and Communities of Mammals on Wrangel Island. Moscow, CNIL Glavokhhoty RSFSR. (in Russian).

Stishov, M.S., G.W. Garner, S.M. Arthur, and V.G.B. Barnes Jr. 1991. Distribution and relative abundance of maternal polar bear dens in the Chukotka Peninsula region, U.S.S.R. p. 67 in Abstracts, Ninth Biennial Conference on the Biology of the Marine Mammals, 5-9 December 1991, Chicago, Illinois, U.S.A.

Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M. Holland, J. Maslanik, W. Meier, and T. Scambos. 2008. Arctic Sea Ice Extent Plummets in 2007. EOS, Transactions, American Geophysical Union 89(2):13-14.

Treseder, L., and A. Carpenter. 1989. Polar bear management in the Southern Beaufort Sea. Info. N. 15(4):2-4.

USFWS. Unpublished data (polar bear harvest information). Available from: USFWS Marine Mammals Office, 1011 East Tudor Road, Anchorage, AK 99503.

Uspenski, S.M. 1986. Research and management of polar bear populations in the USSR, 1981-85. Pages 133-136 in Proceedings of the Ninth Working Meeting of the IUCN/SSC Polar Bear Specialist Group, IUCN, Gland, Switzerland, and Cambridge, U.K.

Verrault, J., D.C.G. Muir, R.J. Norstrom, I. Stirling, A.T. Fisk, G.W. Gabrielsen, A.E. Derocher, T.J. Evans, R. Dietz, C. Sonne, G.M. Sandala, W. Gebbink, F.F. Riget, E.W. Born, M.K. Taylor, J. Nagy, and R.J. Letcher. 2005. Chlorinated hydrocarbon contaminants and metabolites in polar bears (*Ursus maritimus*) from Alaska, Canada, East Greenland, and Svalbard: 1996-2002. The Science of the Total Environment 351-352:369-390.

Wade, P.R., and R. Angliss. 1997. Guidelines for assessing marine mammal stocks: Report in the GAMMS Workshop, April 3-5, 1996, Seattle, WA. 93 pp.

Wilson, D.E. 1976. Cranial variation in polar bears. International Conference Bear Research and Management 3:447-453.

Woshner, V.M., T.M. O'Hara, G.R. Bratton, and V.R. Beasley. 2001. Concentrations and interactions of selected essential and non-essential elements in ringed seals and polar bears of Arctic Alaska. Journal of Wildlife Diseases. (37):711-721.

Zdor, Eduard. Personal Communication. Executive Director, Association of Traditional Marine Mammal Hunters of Chukotka.

Revised: 01/01/2010

POLAR BEAR (*Ursus maritimus*): Southern Beaufort Sea Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Polar bears are circumpolar in their distribution in the northern hemisphere. They occur in several largely discrete stocks or populations (Harington 1968). Polar bear movements are extensive and individual activity areas are enormous (Garner et al. 1990, Amstrup et al. 2000). The parameters used by Dizon et al. (1992) to classify stocks based on the phylogeographic approach were considered in the determination of stock separation in Alaska. Several polar bear stocks are known to be shared between countries (Amstrup et al. 1986, Amstrup and Demaster 1988). Lentfer hypothesized that two Alaska stocks exist, the Southern Beaufort Sea, and the Chukchi/Bering Seas, based upon: (a) variations in levels of heavy metal contaminants of organ tissues (Lentfer 1976, Lentfer and Galster 1987); (b) morphological characteristics (Manning 1971; Lentfer 1974; Wilson 1976); (c) physical oceanographic features which segregate stocks (Lentfer 1974) and; (d) movement information collected from mark and recapture studies of adult female bears (Lentfer 1983) (Figure 1). Information on contaminants (Woshner et al. 2001, Evans 2004a, Evans 2004b, Kannan et al. 2005, Smithwick et al. 2005, Verreault et al. 2005, Muir et al. 2006, Smithwick et al. 2006, Kannan et al. 2007, Rush et al. 2008) and movement data using satellite collars (Amstrup et al. 2004, Amstrup et al. 2005) continue to support the existence of these two stocks.

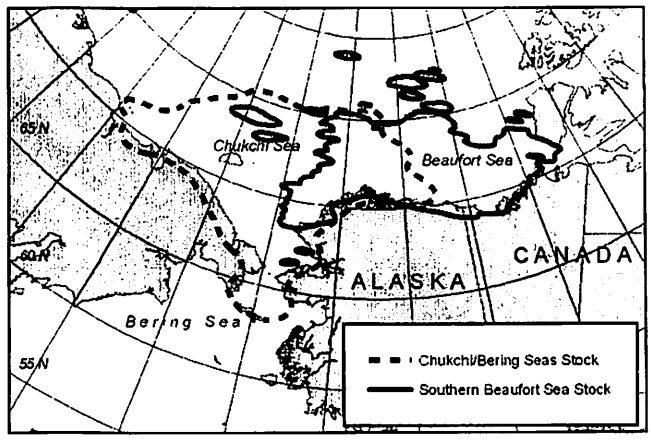


Figure 1. Map of the Southern Beaufort Sea and the Chukchi/ Bering seas polar bear stocks.

Amstrup et al. (2000) demonstrated that the eastern boundary of the Southern Beaufort Sea stock occurs south of Banks Island and east of the Baillie Islands, Canada. The bears in the Northern Beaufort Sea and Southern Beaufort Sea populations spend the summer on pack ice and move toward the coast during fall, winter, and spring (Durner et al. 2004). The range of the two populations previously overlapped extensively in the vicinity of the Baille Islands, Canada (Amstrup 2000) but recent data no longer support this degree of overlap (Amstrup et al. 2005). Recent analysis of polar bear movements using satellite telemetry from 2000 to 2006 (Amstrup et al. 2004, Amstrup et al. 2005), capture and recapture data (Regehr et al. 2006, Stirling et al. 2007), and harvest information suggest that the eastern population boundary has shifted westward to near the village of Tuktoyaktuk, Canada. The assignment of this new boundary could be adjusted somewhat based on local management considerations; however, it will probably necessitate a downward readjustment of the population size of the Southern Beaufort Sea stock to correspond with the smaller geographic area. The proposed boundary change is under consideration and has not been accepted by the parties to the Polar Bear Management Agreement for the Southern Beaufort Sea between the Inuvialuit Game Council of Canada and the North Slope Borough of Alaska. For the purposes of this report, we continue to use the previously published boundaries for the Southern Beaufort Sea population delineated by Amstrup et al. (2000). The western boundary is near Point Hope. An extensive area of overlap between the Southern Beaufort Sea stock and the Chukchi/Bering seas stock occurs between Point Barrow and Point Hope, centered near Point Lay (Garner et al. 1990, Garner et al. 1994, Amstrup et al. 2000). The southern boundary of the Northern Beaufort Sea stock in the Canadian Arctic was delineated by Bethke et al. (1996). Telemetry data indicates that adult female polar bears marked in the Southern Beaufort Sea spend about 25% of their time in the northeastern Chukchi Sea, whereas females captured in the Chukchi Sea spend only 6% of their time in the Southern Beaufort Sea (Amstrup 1995). However, polar bears are not dispersed evenly throughout their range. To access ringed and bearded seals, polar bears in the Southern Beaufort Sea concentrate in shallow waters less that 300 m deep over the continental shelf and in areas with >50% ice cover (Stirling et al. 1999, Durner et al. 2004, Durner et al. 2006a, Durner et al. 2009). Polar bears from this population have historically denned on both the sea ice and land. Thinning of the sea ice in recent years has caused a decline in the number of polar bears denning on the sea ice. Fischbach et al. (2007) found that the proportion of dens on the pack ice declined from 62% from 1985—1994 to 37% in 1998-2004. The main terrestrial denning areas for the Southern Beaufort Sea population in Alaska occur on the barrier islands from Barrow to Kaktovik and along coastal areas up

to 25 miles inland including the Arctic National Wildlife Refuge to Peard Bay, west of Barrow (Amstrup and Gardner 1994, Amstrup 2000, Durner et al. 2001, Durner et al. 2006b).

In response to changes in the sea ice characteristics and declines in sea ice habitat over the continental shelf during the summer and late fall, some polar bears have changed distribution to search for seals and to access the remains of subsistence harvested bowhead whales (Schliebe et al. 2008). It is expected that changes in the distribution and movements may occur with increasing frequency in the future (Durner et al. 2009, Schliebe et al. 2008) Polar bears may also become more nutritionally stressed due to global climate changes in the Arctic (Stirling and Parkinson 2006) and, thus, continued monitoring is required to document these changes.

Analysis of mitochondrial DNA and microsatellite DNA loci indicates little differentiation of the Alaska polar bear stocks (Cronin et al. 1991, Scribner et al. 1997, Cronin et al. 2006). Using 16 highly variable micro satellite loci, Paetkau et al. (1999) determined that polar bears throughout the arctic (19 populations) were genetically very similar. Genetically, polar bears in the Southern Beaufort Sea differed more from polar bears in the Chukchi/Bering Seas than from polar bears in the Northern Beaufort Sea (Paetkau et al. 1999, Thiemann et al. 2008). While genetically similar, demographic and movement data indicates a high degree of site fidelity, suggesting that the stocks should be managed separately (Amstrup 2000, Amstrup et al. 2000, Amstrup et al. 2001a, Amstrup et al. 2002, Amstrup et al. 2004, Amstrup et al. 2005).

POPULATION SIZE

Polar bears occur at low densities throughout their circumpolar range (DeMaster and Stirling 1981). They are long lived, mature late, have an extended breeding interval, and have small litters (Lentfer et al. 1980, DeMaster and Stirling 1981, Amstrup 2003). Accurate population estimates for the Alaskan populations have been difficult to obtain because of low population densities, inaccessibility of the habitat, movement of bears across international boundaries, and budget limitations (Amstrup and DeMaster 1988, Garner et al. 1992). Research on the Southern Beaufort Sea population began in 1967 and is one of only four polar bear populations with long term (>20 yrs) data.

Amstrup et al. (1986) estimated the Southern Beaufort Sea stock at 1,778 (S.D. $\pm$ 803; C.V. = 0.45) during the 1972-83 period. Amstrup (1995) estimated the Southern Beaufort Sea stock near 1,480 animals in 1992. Amstrup (USGS unpublished data) using data for the 1986-98 period (excluding 4 unsampled years), estimated the population at 2,272 in 2001. This total population estimate was based on as estimate of 1,250 females (C.V. = 0.17) and a sex ratio of 55% females (Amstrup et al. 2001b). The population estimate of 1,526 (95% CI =1211−1841; C.V. = 0.106) (Regehr et al. 2006), which is based on open population capture-recapture data collected from 2001 to 2006, is considered the most current and valid population estimate.

Minimum Population Estimate

N_{MINn} is calculated as follows $N/\exp(0.842 * (\ln(1+CV(N)^2))^{1/2})$ and is 1,397 bears for population size of 1,526 and C.V. of 0.106. This population estimate applies to an area that extends from Pt. Barrow in the west, east to the Baillie Islands in Canada.

Current Population Trend

Prior to the 20th century, when Alaska's polar bears were hunted primarily by Natives, both the Chukchi/Bering seas and Southern Beaufort Sea stocks probably existed near carrying capacity (K). Once harvest by non-Natives became common in the Southern Beaufort Sea in the early 1960s, the size of these stocks declined substantially (Amstrup et al. 1986, Amstrup 1995). Since passage of the Marine Mammal Protection Act (MMPA) in 1972, both Alaska polar bear stocks seem to have increased; this is based on: (a) mark and recapture data; (b) observations by Natives and residents of coastal Alaska and Russia; (c) catch per unit effort indices (USGS unpublished data); (d) reports from Russian scientists (Uspenski and Belikov 1991); and (e) harvest statistics on the age structure of the population. Recapture data from the stock indicated a population growth rate of 2.4% from 1981 to 1992 (Amstrup 1995).

The Southern Beaufort Sea stock experienced little or no growth during the 1990's (Amstrup et al. 2001b). Declining survival, recruitment, and body size (Regehr et al. 2006, Regehr et al. 2007), and low growth rates (λ) during years of reduced sea ice during the summer and fall (2004 and 2005), and an overall declining growth rate of 3% per year from 2001-2005 (Hunter et al. 2007) indicates that the Southern Beaufort Sea population is now declining.

MAXIMUM NET PRODUCTIVITY RATES

Population/stock specific data to estimate R_{MAX} are not available for the stock. Taylor et al. (1987) estimated the sustainable yield of the female component of the population at < 1.6% per annum. The following information is used to understand the R_{MAX} determination. From 1981-92, when the population was increasing, vital rates of polar bears in the Southern Beaufort Sea were as follows: average age of sexual maturity (females) was 6 years; average COY litter size was 1.67; average reproductive interval was 3.68 years; and average annual natural mortality (nM), which varies by age class, ranged from 1-3% for adults (Amstrup 1995).

Amstrup (1995) projected an annual intrinsic growth rate (including natural mortality but not human-caused mortality) of 6.03% for the Southern Beaufort Sea stock using a Leslie type matrix of recapture data. This analysis mimics a life history scenario where environmental resistance is low and survival high.

POTENTIAL BIOLOGICAL REMOVAL (PBR)

Under the 1994 reauthorized MMPA, the potential biological removal (PBR) level is defined as the product of the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor: PBR = $(N_{MIN})(\frac{1}{2} R_{MAX})(F_R)$. Wade and Angliss (1997) recommend a default recovery factor (F_R) of 0.5 for a threatened population or when the status of a population is unknown. In the following calculation: $(N_{MIN})(\frac{1}{2} R_{MAX})(F_r)$ = PBR (Wade and Angliss 1997) the minimum population estimate, N_{MIN} was 1,397; the maximum rate of increase R_{MAX} was 6.03%; and the recovery factor F_R was 0.5. Therefore, the PBR level for the Southern Beaufort Sea stock is 22 bears per year.

ANNUAL HUMAN CAUSED MORTALITY AND SERIOUS INJURY

Fisheries Information

Polar bear stocks in Alaska have no direct interaction with commercial fisheries activities. Consequently, the total fishery mortality and serious injury rate for the Southern Beaufort Sea stock is zero.

Alaska Native Subsistence Harvest

Historically, polar bears have been killed for subsistence, handicrafts, and recreation (sport hunting). Based upon records of skins shipped from Alaska, the estimated annual statewide harvest (both stocks) for 1925–53 averaged 120 bears taken primarily by Native hunters. Sport hunting using aircraft was common from 1951–72, increasing annual harvest in Alaska to 150 during 1951-60 and to 260 during 1960–72 (Amstrup et al. 1986; Schliebe et al.1995). The annual harvest for the Southern Beaufort Sea stock was 81/year from 1960–1972. Although polar bear hunting was prohibited by the MMPA, an exemption was made for Alaska Natives living in coastal communities to allow them to hunt polar bears for subsistence and making of handicrafts provided that the hunt was not done in a wasteful manner. The cessation of sport hunting in 1972 reduced the mean annual combined harvest for both Alaskan stocks to 98 during 1980–2007 (SD=40; range 48–242) (USFWS unpublished data). The annual harvest from the Southern Beaufort Sea was 39/year in the 1980s, 33/year in the 1990s, and 32/year in the 2000s. More recently, the 2003–2007 average Alaska harvest for the Southern Beaufort Sea in Alaska was 33 and the sex ratio was 67M:33F. During the same time period the average Canadian harvest for the Southern Beaufort Sea was 21.0 and the sex ratio was 45M:55F. The combined average annual Alaska and Canada harvest during the past five years was 53.6. Figure 2 illustrates the annual Alaska polar bear harvest and trend for the Southern Beaufort Sea stock from 1961–2007. No serious injuries, other than the mortalities discussed here, have been reported for the Southern Beaufort Sea stock.

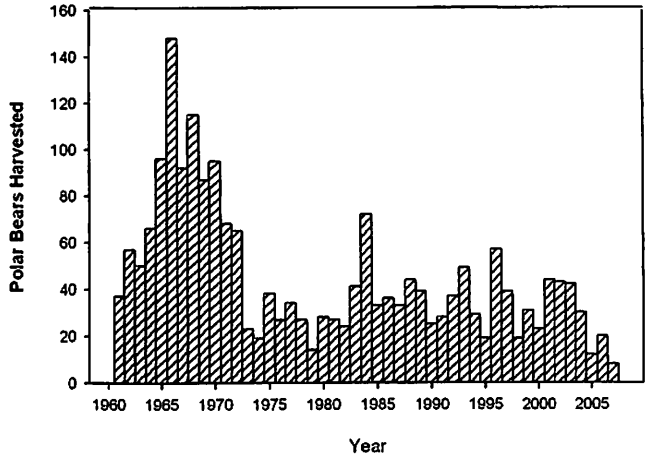


Figure 2. Annual Alaska polar bear harvest from the Southern Beaufort Sea stock, 1961-2007.

During the 1980–2007 period the Alaska harvest from the Southern Beaufort Sea accounted for 34% of the total Alaska kill (annual mean=33 bears) with the remaining 66% occurring in the Chukchi Sea. The sex ratio of the harvest from 1980–2007 in the Southern Beaufort Sea was 69M:31F.

Other Removals

Orphaned cubs are occasionally removed from the wild and placed in zoos; no cubs were placed into public display facilities during the past five years. One bear died as a result of research mortality and two bears were euthanized during the last five years. Activities operating under "incidental take" regulations, associated with the oil and gas industry, have the potential to impact polar bears and their habitat. During the past five years no lethal takes related to industrial activities of polar bears have occurred. Three lethal takes related to oil and gas activities have been documented in the Southern Beaufort Sea: one at an offshore drilling site in the Canadian Beaufort Sea (1968); one bear at the Stinson site in the Alaska Beaufort Sea (1990); and one bear that ingested ethylene glycol stored at an offshore island in the Alaska Beaufort Sea (1988). In 1993, a polar bear was killed at the Oliktok remote radar defense site when it broke into a residence and severely mauled a worker.

STATUS OF STOCK

The Southern Beaufort Sea Stock is currently classified as depleted under the MMPA and listed as threatened under the U.S. Endangered Species Act of 1973 (ESA), as amended. The primary concerns for this population are loss of the sea ice habitat due in part to climate changes in the Arctic, potential overharvest, and current and proposed human activities including industrial activities occurring in the nearshore and offshore environment. Recent data on the vital rates, population estimate, and growth rates for the Southern Beaufort Sea suggests that this population stock is declining. Because of its status as a threatened species under the ESA, the Southern Beaufort Sea population is designated as a strategic stock.

Conservation Issues and Habitat Concerns

Oil and Gas Exploration

The Minerals Management Service (MMS) (2004) estimated an 11 percent chance of a marine spill greater than 1,000 barrels in the Beaufort Sea from the Beaufort Sea Multiple Lease Sale in Alaska. Amstrup et al. (2006) evaluated the potential effects of a hypothetical 5,912-barrel oil spill (the largest spill thought possible from a pipeline spill) on polar bears from the Northstar offshore oil production facility in the southern Beaufort Sea, and found that there is a low probability that a large number of bears (i.e., 25–60) might be affected by such a spill. For the purposes of this scenario, it was assumed that a polar bear would die if it came in contact with the oil. Amstrup et al. (2006) found that 0–27 bears could potentially be oiled during the open water conditions in September; and from 0–74 bears in mixed ice conditions during October. If such a spill occurred, particularly during the broken ice period, the impact of the spill could be significant to the Southern Beaufort Sea polar bear population (Amstrup et al. 2006, 65 FR 16828; March 30, 2000). At the time that Amstrup did this analysis, the sustainable harvest yield per year for the Southern Beaufort Sea polar bear population, based on a stable population size of 1,800 bears, was estimated to be 81.1 bears (1999–2000 to 2003–2004) (Lunn et al. 2005). For the same time period, the average harvest was 58.2 bears, leaving an additional buffer of 23 bears that could have been removed from the population. Therefore, an oil spill that resulted in the death of greater than 23 bears, which was possible based on the range of oil spill-related mortalities from the previous analysis, could have had population level effects for polar bears in the southern Beaufort Sea. However, the harvest figure of 81 bears may no longer be sustainable for the Southern Beaufort Sea population so, given the average harvest rate cited above, fewer than 23 oil spill-related mortalities could result in a population decline or increase the time required for recovery.

The Fish and Wildlife Service (USFWS) works to monitor and mitigate potential impacts of oil and gas activities on polar bears through incidental take regulations (ITR) as authorized under the Marine Mammal Protection Act. Activities operating under these regulations must adopt measures to: ensure that the total taking of polar bears remains negligible; minimize impacts to their habitat; and ensure no unmitigable adverse impact on their availability for Alaska Native subsistence use. ITR also specify monitoring requirements that provide a basis for evaluating potential impacts of current and future activities on marine mammals.

Climate Change

Polar bears evolved over thousands of years to life in a sea ice environment. They depend on the sea ice-dominated ecosystem to support essential life functions. Sea ice provides a platform for hunting and feeding, for seeking mates

and breeding, for movement to terrestrial maternity denning areas and occasionally for maternity denning, for resting, and for long-distance movements. The sea ice ecosystem supports ringed seals, the primary prey for polar bears, and other marine mammals that are also part of their prey base.

Sea ice is rapidly diminishing throughout the Arctic and large declines in optimal polar bear habitat have occurred in the Southern Beaufort and Chukchi Seas between the two time periods, 1985–1995 and 1996–2006 (Durner et al. 2009). In addition, it is predicted that the greatest declines in 21st century optimal polar bear habitat will occur in Chukchi and Southern Beaufort Seas (Durner et al. 2009). Patterns of increased temperatures, earlier onset of and longer melting periods, later onset of freeze-up, increased rain-on-snow events, and potential reductions in snowfall are occurring. In addition, positive feedback systems (i.e., the sea-ice albedo feedback mechanism) and naturally occurring events, such as warm water intrusion into the Arctic and changing atmospheric wind patterns, can operate to amplify the effects of these phenomena. As a result, there is fragmentation of sea ice, a dramatic increase in the extent of open water areas seasonally, reduction in the extent and area of sea ice in all seasons, retraction of sea ice away from productive continental shelf areas throughout the polar basin, reduction of the amount of heavier and more stable multi-year ice, and declining thickness and quality of shore-fast ice (Parkinson et al 1999, Rothrock et al. 1999, Comiso 2003, Fowler et al. 2004, Lindsay and Zhang 2005, Holland et al. 2006, Comiso 2006, Serreze et al. 2007, Stroeve et al. 2008).

The Chukchi/Bering Seas and the Southern Beaufort Sea population stocks are currently experiencing the initial effects of changes in sea ice conditions (Rode et al. 2007, Regehr et al. 2007, Hunter et al. 2007). These populations are vulnerable to large-scale dramatic seasonal fluctuations in ice movements, decreased abundance and access to prey, and increased energetic costs of hunting. The USFWS is working on measures to protect polar bears and their habitat.

Subsistence Harvest

Recognition that the polar bears in the southern Beaufort Sea were shared between Canada and the Alaska led to the development of the Polar Bear Management Agreement for the Southern Beaufort Sea between the Inuvialuit of the Inuvialuit Game Council (IGC), Canada and the Inupiat of the North Slope Borough (NSB) Alaska in 1988 (Nageak et al. 1991, Treseder and Carpenter 1989, Prestrud and Stirling 1994, Brower et al. 2002). Since initiation of this local user agreement in 1988, the combined Alaska/Canada mean harvest from this stock has been 56.9 bears per year (1988-2007). The harvest in Canada is limited primarily to Native hunters and is regulated by a quota system (Prestrud and Stirling 1994, Brower et al. 2002). Canada has a well regulated and controlled harvest, which has resulted in accurate harvest reporting, strict controls on the harvest, and efficient monitoring and enforcement. The harvest management system in Alaska is voluntary and is less efficient overall than the Canadian system (Brower et al 2002).

The calculation of a PBR level for the Southern Beaufort Sea stock is required by the MMPA even though the subsistence harvest quota is managed under the authority of the Polar Bear Agreement between the NSB and the IGC. Accordingly, the quota from the Board of Commissioners for the Polar Bear Agreement takes precedence over the PBR estimate for the purposes of managing the Alaska Native subsistence harvest from this stock. The Southern Beaufort Sea population is currently thought to be declining; therefore, overharvest could hasten the decline or prevent and/or slow the recovery. Analysis is currently underway to evaluate the effects of different harvest levels on the population dynamics of the Southern Beaufort Sea population.

CITATIONS

Amstrup, S.C. 1995. Movements, distribution, and population dynamics of polar bears in the Beaufort Sea. Ph.D. Dissertation. University of Alaska-Fairbanks, Fairbanks, Alaska, 299 pp.

Amstrup, S.C., 2000. Polar Bear. In The Natural History of an Oil Field: Development and Biota. Edited by J.C. Truett and S.R. Johnson. Academic Press, Inc., New York, New York, USA pp. 133-157.

Amstrup, S.C. 2003. Polar Bear (Ursus maritimus). Pages 587-610 in Feldhammer, G.A., B.C. Thompson, and J.A. Chapman, eds., Wild Mammals of North America — Biology, Management, and Conservation. John Hopkins University Press. Baltimore, Maryland. pp. 587-610.

Amstrup, S.C., and D.P. DeMaster. 1988. Polar bear, Ursus maritimus. Pages 39-45 in J.W. Lentfer, ed., Selected Marine Mammals of Alaska: Species Accounts with Research and Management Recommendations. Marine Mammal Commission, Washington, D.C.

Amstrup, S., and C. Gardner. 1994. Polar bear maternity denning in the Beaufort Sea. Journal of Wildlife Management 58(1):1-10.

Amstrup, S.C., I. Stirling, and J.W. Lentfer. 1986. Past and present status of polar bears in Alaska. Wildlife Society Bulletin. 14:241-254.

Amstrup, S.C., G. Durner, I. Stirling, N.J. Lunn, and F. Messier. 2000. Movements and distribution of polar bears in the Beaufort Sea. Canadian Journal of Zoology. 78:948-966.

Amstrup, S.C., G.M. Durner, T.L. McDonald, D.M. Mulcahy, and G.W. Garner. 2001a. Comparing movement patterns of satellite-tagged male and female polar bears. Canadian Journal of Zoology. 79:2147-2158.

Amstrup, S.C., T.L. McDonald, and I. Stirling. 2001b. Polar bears in the Beaufort Sea: A 30-year mark-recapture case history. Journal of Agricultural, Biological, and Environmental Statistics, Vol. 6(2): 221-234.

Amstrup, S.C., G. M. Durner, A. S. Fischbach, K. Simac, and G. Weston-York. 2002. Polar Bear Research in the Beaufort Sea. in N. Lunn, E. W. Born, and S. Schliebe (eds.), Proceedings of the Thirteenth Working Meeting of the IUCN/SSC Polar Bear Specialist Group. 23-28 June, 2001, Nuuk, Greenland. IUCN, Gland, Switzerland, and Cambridge, UK. vii + 153 pp.

Amstrup, S.C., T.L. McDonald, and G. Durner. 2004. Using satellite radiotelemetry data to delineate and manage wildlife populations. Wildlife Society Bulletin. 32(3):661-679.

Amstrup, S.C., G.M. Durner, I. Stirling, and T.L. McDonald. 2005. Allocating harvests among polar bear stocks in the Beaufort Sea. Arctic. 58:247-259.

Amstrup, S.C., G.M. Durner, T.L. McDonald, and W.R. Johnson. 2006. Estimating potential effects of hypothetical oil spills on polar bears. Unpublished Report. U.S. Geological Survey, Alaska Science Center, Anchorage, Alaska. 56 pp.

Bethke, R., M. Taylor, S. Amstrup, and F. Messier. 1996. Population delineation of polar bears using satellite collar data. Ecological Applications 6(1):311-317.

Brower, C. D., A. Carpenter, M. Branigan, W. Calvert, T. Evans, A. Fischbach, J. Nagy, S. Schliebe, and I. Stirling. 2002. The polar bear management agreement for the southern Beaufort Sea: An evaluation of the first ten years of a unique conservation agreement. Submitted to: Arctic 56:362-372.

Comiso, J.C. 2003. Warming trends in the Arctic from clear sky satellite observations. Journal of Climate 16:3498-3510.

Comiso, J.C. 2006. Arctic warming signals from satellite observations, Weather 61(3):70-76.

Cronin, M.A., S.C. Amstrup, G.W. Garner, and E.R. Vyse. 1991. Interspecific and intraspecific mitochondrial DNA variation in North American bears (Ursus). Canadian Journal of Zoology. 69:12:2985-2992.

Cronin, M.A., S.C. Amstrup, and K.T. Scribner. 2006. Microsatellite DNA and mitochondrial DNA variation in polar bears (Ursus maritimus) in the Beaufort and Chukchi seas, Alaska. Canadian Journal of Zoology 84:655-660.

DeMaster, D.P., and I. Stirling. 1981. Ursus maritimus. Mammalian Species:1-7.

Dizon, A.E., C. Lockyer, W.F. Perrin, D.P. DeMaster, and J. Sisson. 1992. Rethinking the stock concept: a phylogeographic approach. Conservation Biology. 6:24-36.

Durner, G.M., S.C. Amstrup, and K.J. Ambrosius. 2001. Remote identification of polar bear maternal den habitat in Northern Alaska. Arctic 54(2):115-121.

Durner, G.M., S.C. Amstrup, R. Nielson, and T. McDonald. 2004. The use of sea ice habitat by female polar bears in the Beaufort Sea. U.S. Geological Survey, Alaska Science Center, Anchorage, Alaska. OCS study, MMS 2004-014. 41 pp.

Durner, G.M., D.C. Douglas, R.M. Nielson, and S.C. Amstrup. 2006a. A model for autumn pelagic distribution of adult female polar bears in the Chukchi Sea, 1987-1994. USGS Science Center, Anchorage, Alaska. Contract Completion Report 70181-5-N240. 67 pp.

Durner, G.M., S.C. Amstrup, and K.J. Ambrosius. 2006b. Polar bear maternal den habitat in the Arctic national Wildlife refuge, Alaska. Arctic 59(1):31-36.

Durner, G.M., D.C. Douglas, R.M. Nielson, S.C. Amstrup, T.L. McDonald, I Stirling, M. Mauritzen, E.W. Born, Ø. Wiig, E. DeWeaver, M.C. Serreze, S.E. Belikov, M.M. Holland, J. Maslanik, J. Aars, D.C. Bailey, and A.E. Derocher. 2009. Predicting 21st century polar bear habitat distribution from global climate models. Ecological Monographs 79(1): 25-58.

Evans, T. J. 2004a. Concentrations of selected essential and non-essential elements in adult male polar bears (Ursus maritimus) from Alaska. U.S. Fish and Wildlife Service Technical Report. MMM 04-02. 68pp.

Evans, T. J. 2004b. PCBs and chlorinated pesticides in adult male polar bears (Ursus maritimus) from Alaska. U.S. Fish and Wildlife Service Technical Report. MMM 04-01. 61pp.

Fischbach, A.S., S.C. Amstrup, and D.C. Douglas. 2007. Landward and eastward shift of Alaskan polar bear denning associated with recent sea ice changes. Polar Biology 30:1395-1405: doi.1007/s00300-007-0300-4.

Fowler, C., W.J. Emery, and J. Maslanik. 2004. Satellite-derived evolution of Arctic sea ice age: October 1978 to March 2003. Geoscience and Remote Sensing Letters, IEEE, Volume 1, Issue 2, April 2004 pp.71–74.

Garner, G.W., S.T. Knick, and D.C. Douglas. 1990. Seasonal movements of adult female polar bears in the Bering and Chukchi seas. International Conference on Bear Research and Management 8:219-226.

Garner, G.W., L.L. McDonald, D.S. Robson, D.P. Young Jr., and S.M. Arthur. 1992. Literature review: population estimation methodologies applicable to the estimation of abundance of polar bears. Internal Report, U.S.FWS. 102pp.

Garner, G.W., L.L. McDonald, S.M. Arthur, and T.L. Olson. 1994. Operating procedures: Pilot polar bear survey Beaufort Sea: 1994. Internal Report, U.S.FWS, 39 pp.

Harington, C.R. 1968. Denning habits of the polar bear (Ursus maritimus Phipps). Canadian Wildlife Service Report, Series 5. 33 pp.

Holland, M., C.M. Bitz, and B. Tremblay. 2006. Future abrupt reductions in summer Arctic sea ice. Geophysical Research Letters 33 L25503: doi 10.1029/200661028024: 1-5.

Hunter, C.M., H. Caswell, M.C. Runge, E.V. Regehr, S.C. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea II: Demography and population growth in relation to sea ice conditions. U.S. Geological Survey, Alaska Science Center, Administrative Report. 46 pp.

Kannan, K., S.H. Yun, and T.J. Evans. 2005. Chlorinated, brominated, and perfluorinated contaminants in livers of polar bears from Alaska. Environmental Science and Technology. 39:9057-9063.

Kannan, K., T. Agusa, T.J. Evans, and S. Tanabe. 2007. Trace element concentrations in livers of polar bears from tow population in northern and western Alaska. Archives of Environmental Contaminants and Toxicology 53:473-482.

Lentfer, J.W. 1974. Discreteness of Alaskan polar bear populations. Proceedings of the International Congress of Game Biologists 11:323-329.

Lentfer, J.W. 1976. Environmental contaminants and parasites in polar bears. Alaska Department of Fish and Game, Pittman-Robertson Project Report. W-17-4 and W-17-5. 22 pp.

Lentfer, J.W. 1983. Alaskan polar bear movements from mark and recovery. Arctic 36:282-288.

Lentfer, J.W., R.J. Hensel, J.R. Gilbert, and F.E. Sorensen. 1980. Population characteristics of Alaskan polar bears. International Conference on Bear Research and Management 3: 109-115.

Lentfer, J.W., and W.A. Galster. 1987. Mercury in polar bears from Alaska. J. Wildlife Diseases 23:338-341.

Lindsay, R.W., and J. Zhang. 2005. The thinning of the Arctic sea ice, 1988-2003: have we passed a tipping point? J. Climate 18: 4879-4894.

Lunn, N.J., M. Branigan, L. Carpenter, K. Chaulk, B. Doidge, J. Galipeau, D. Hedman, M. Huot, R. Maraj, M. Obbard, R. Otto, I. Stirling, M. Taylor, and S. Woodley. 2005. Polar bear management in Canada 2001-2004. Pages 101-116 in Jon Aars, N.J. Lunn, and A.E. Derocher (eds). Proceedings of the 14th working meeting of the IUCN/SSC Polar Bear Specialist Group, June 2005, Seattle, Washington, U.S.A. 22pp.

Manning, T.H. 1971. Geographical variation in the polar bear Ursus maritimus Phipps. Canadian Wildlife Service Report Series No. 13. 27 pp.

Minerals Management Service (MMS). 2004. Proposed oil and gas lease sale 195, Beaufort Sea Planning Area Environmental Assessment. U.S. Department of the Interior, MMS, Anchorage, Alaska, USA. 101 pp. + Appendices.

Muir, D.C.G., S. Backus, A.E. Derocher, R. Dietz, T.J. Evans, G.W. Gabrielsen, J. Nagy, R.J. Norstrom, C. Sonne, I. Stirling, M.K. Taylor, and R.J. Letcher. 2006. Brominated flame retardants in polar bears (Ursus maritimus) from Alaska, the Canadian Arctic, East Greenland and Svalbard. Environmental Science and Technology 40(2):449-455.

Nageak, B.P., C.D.N. Brower, and S.L. Schliebe. 1991. Polar bear management in the southern Beaufort Sea: An Agreement between the Inuvialuit Game Council and the North Slope Borough Fish and Game Committee. In Transactions of North American Wildlife and Natural Resources Conference. 56:337-343.

Paetkau, D., S.C. Amstrup, E.W. Born, W. Calvert, A.E. Derocher, G.W. Garner, F. Messier, I. Stirling, M.K. Taylor, Ø. Wiig, and C. Strobeck. 1999. Genetic Structure of the world's polar bear populations. Molecular Ecology. 8:1571-1584.

Parkinson, C.L., D.J. Cavalieri, P. Gloersen, H.J. Zwally, and J.C. Comiso. 1999. Arctic sea ice extents, areas, and trends, 1978-1996. Journal of Geophysical Research 104(C9):20837-20856.

Prestrud, P., and I. Stirling. 1994. The international polar bear agreement and the current status of polar bear conservation. Aquatic Mammals 20:113-124.

Regehr, E.V., S.C. Amstrup, and I. Stirling. 2006. Polar bear population status in the southern Beaufort Sea. U.S. Geological Survey Open File Report 2006-1337. 20 pp.

Regehr, E.V., C.M. Hunter, H. Caswell, S.C. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea I: Survival and breeding in relation to sea ice conditions, 2001-2006. U.S. Geological Survey, Alaska Science Center, Administrative Report. 45 pp.

Rode, K.D., S.C. Amstrup, and E.V. Regehr. 2007. Polar Bears in the southern Beaufort Sea III: stature, mass, and cub recruitment in relationship to time and sea ice extent between 1982 and 2006. U.S. Dept. of the Interior, U.S. Geological Survey Administrative Report, Reston, Virginia. 28 pp.

Rothrock, D.A., Y. Yu, and G.A. Maykut. 1999. Thinning of the Arctic sea-ice cover, Geophysical Research Letters 26: 3469-3472.

Rush, S.A., K. Borga, R. Dietz, E.W. Born, C. Sonne, T. Evans, D.C.G. Muir, R.L. Letcher, R.J. Norstrom, and A.T. Fisk. 2008. Geographic Distribution of selected elements in the livers of polar bears from Greenland, Canada, and the United States. Environmental Pollution 153 (3): 618-626.

Schliebe, S., K.D. Rode, J.S. Gleason, J. Wilder, K. Proffitt, T.J. Evans, and S. Miller. 2008. Effects of sea ice extent and food availability on spatial and temporal distribution of polar bears during the fall open-water period in the Southern Beaufort Sea. Polar Biology. 12 pp.

Schliebe, S.L., S.C. Amstrup, and G.W. Garner. 1995. The status of polar bear in Alaska, 1993. In Ø. Wiig, G.W. Garner (eds.), Proceedings of the Eleventh Working Meeting of the IUCN/SSC Polar Bear Specialist Group. IUCN, Gland, Switzerland, and Cambridge, UK. v + 192 pp.

Scribner, K.T., G.W. Garner, S.C. Amstrup, and M.A. Cronin. 1997. Population genetic studies of the Polar Bear (Ursus maritimus): a summary of available data and interpretation of results. Pp. 185-196, In 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. Spec. Pub. #3 of the Society of Marine Mammalogy.

Serreze, M.C., M.M. Holland, and J. Stroeve. 2007. Perspectives on the Arctic's shrinking sea-ice cover. Science 315: 1533-1536.

Smithwick, M., J.W. Martin, S.A. Mabury, K. Solomon, C. Sonne, E.W. Born, R. Dietz, A.E. Derocher, R.L. Letcher, T.J. Evans, G.W. Gabrielsonm, J. Nagy, I. Stirling, and D.C.G. Muir. 2005. A circumpolar study of perfluoroalkyl contaminants in polar bears (Ursus maritimus). Environmental Science and Technology 39 (15): 5517-5523.

Smithwick, M. J., R. J. Norstrom, S.A. Maybury, K. Solomon, T.J. Evans, I. Stirling, M.K. Taylor, and D.C.G. Muir. 2006. Temporal trends of perfluoroalkyl contaminants in polar bears (Ursus maritimus) from two locations in the North American Arctic, 1972 -2002. Environmental Science and Technology. 40 (4): 1139-1143.

Stirling, I., and C.L. Parkinson. 2006. Possible effects of climate warming on selected populations of polar bears (Ursus maritimus) in the Canadian Arctic. Arctic 99(3): 261-275.

Stirling, I., N.J. Lunn, and J. Iacozza. 1999. long-term trends in the population ecology of polar bears in western Hudson Bay in relation to climate change. Arctic 52:294306.

Stirling, I, T.L. McDonald, E.S. Richardson, and E.V. Regehr. 2007. Polar bear population status in the Northern Beaufort Sea. U.S. Geological Survey, Alaska Science Center, Administrative Report. 31 pp.

Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M. Holland, J. Maslanik, W. Meier, and T. Scambos. 2008. Arctic Sea Ice Extent Plummets in 2007. EOS, Transactions, American Geophysical Union 89(2):13-14.

Taylor, M.K., D.P. DeMaster, F.L. Bunnell, and R.E. Schweinsburg. 1987. Modeling the sustainable harvest of female polar bears. J. of Wildlife Management. 51:811-820.

Thiemann, G.W., A.E. Derocher, and I. Stirling. 2008. Polar bear Ursus maritimus conservation in Canada: an ecological basis for identifying designatable units. Oryx. 42(4): 504-515

Treseder, L., and A. Carpenter. 1989. Polar bear management in the Southern Beaufort Sea. Info. N. 15(4):2-4.

USFWS. Unpublished data (polar bear harvest information). Available from: USFWS Marine Mammals Office, 1011 East Tudor Road, Anchorage, AK 99503.

USGS (U.S. Geological Service) Unpublished data (research data). Available from: USGS/Alaska Science Center, 4210 University Drive, Anchorage, AK 99508.

Uspenski, S.M., and S.E. Belikov. 1991. Polar bear populations in the Arctic: Current state, studies, and management (1985-87). In S.C. Amstrup and Ø. Wiig (eds.), Proceedings of the Tenth Working Meeting of the IUCN/SSC Polar Bear Specialist Group, IUCN, Gland, Switzerland, and Cambridge, U.K.

Verrault, J., D.C.G. Muir, R.J. Norstrom, I. Stirling, A.T. Fisk, G.W. Gabrielsen, A.E. Derocher, T.J. Evans, R. Dietz, C. Sonne, G.M. Sandala, W. Gebbink, F.F. Riget, E.W. Born, M.K. Taylor, J. Nagy, and R. J. Letcher. 2005. Chlorinated hydrocarbon contaminants and metabolites in polar bears (Ursus maritimus) from Alaska, Canada, East Greenland, and Svalbard: 1996-2002. The Science of the Total Environment 351-352:369-390.

Wade, P.R., and R. Angliss. 1997. Guidelines for assessing marine mammal stocks: Report in the GAMMS Workshop. April 3-5, 1996, Seattle, WA. 93pp.

Wilson, D.E. 1976. Cranial variation in polar bears. International Conference Bear Research and Management 3:447-453.

Woshner, V.M., T.M. O'Hara, G.R. Bratton, and V.R. Beasley. 2001. Concentrations and interactions of selected essential and non-essential elements in ringed seals and polar bears of Arctic Alaska. Journal of Wildlife Diseases. (37):711-721.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

AGENDA B-8
Supplemental
February 2010

January 25, 2010

MEMORANDUM FOR: Kaja Brix
Assistant Regional Administrator
for Protected Resources

FROM: Susan Salveson
Assistant Regional Administrator
for Sustainable Fisheries

SUBJECT: Revision to the Action for the Reinitiation of Endangered Species Act (ESA) Section 7 Consultation for the Alaska Groundfish Fisheries

The NMFS Alaska Region Sustainable Fisheries Division has determined that the description of the action in our April 2006 memorandum (attachment) should be changed with respect to the State of Alaska parallel groundfish fisheries. The State of Alaska (State) manages groundfish harvest in two ways, either under a State determined harvest level (guideline harvest limit or GHL) or under the federal total allowable catch amounts (TAC). The State-managed groundfish fisheries managed under the federal TAC inside State waters are managed consistent with the federal fisheries management for the same groundfish in the adjacent exclusive economic zone. These State-managed fisheries are called parallel fisheries. These parallel fisheries are managed through an emergency order issued each year by the Alaska Department of Fish and Game (example attached). Except for sector allocations, the State management of the parallel fisheries applies the same requirements as used for federal fisheries management, including applying State water harvests against the federal TACs, federal seasons, bycatch limits, allowable gear types, and closure areas for Steller sea lion and habitat protection.

The current description of the action in the draft biological opinion for the Alaska groundfish fisheries limits consideration of the State parallel fisheries to pollock, Pacific cod, and Atka mackerel. Because the action is the program-wide management of the federal groundfish fisheries, it is important to include all of the State parallel groundfish fisheries. The biological opinion should include analysis of the effects of the entire State parallel groundfish fisheries, ensuring these fisheries are included in the Section 7 consultation as part of the entire Alaska groundfish fisheries program.

Tables are attached showing the metric tons (mt) and species harvested in the 2008 and 2009 State waters groundfish fisheries in the Bering Sea and Aleutian Islands management area (BSAI) and in the Gulf of Alaska (GOA). We are not able to separate

out the parallel fisheries from the Community Development Quota fisheries and the State-managed GHL fisheries at this time. The amounts of harvest in the State parallel fisheries for species, other than pollock, Pacific cod, and Atka mackerel, are relatively small in comparison to the total harvest in the federal fisheries in the BSAI (generally less than 100 mt, except for Pacific ocean perch with up to 590 mt). Harvests in the GOA are also generally less than 100 mt, except for arrowtooth flounder, shallow water flatfish, flathead sole, sablefish, big and longnose skates, and other species. These species are harvested in the range of approximately 200 mt for big skate and flathead sole to up to approximately 1,000 mt for sablefish and arrowtooth flounder.

Because of the limited amount of harvest relative to the BSAI and GOA, interaction with marine mammals during fishing operations in State waters is not expected to be frequent in comparison to the federal waters fisheries, except for those animals that primarily occur in the same time and space as the parallel fisheries. The amounts of harvest in the parallel fisheries and the types of species are not likely to result in localized depletion and competition for prey resources for Steller sea lions as these fisheries have not been identified as harvesting principal prey species and the harvest amounts are distributed over the entire BSAI and GOA areas State waters. Because the potential exists for takes in these parallel fisheries in the form of incidental takes by flatfish trawl and sablefish hook-and-line fisheries (List of Fisheries for 2010, 74 FR 58859, November 16, 2009), it is important to ensure that these parallel groundfish fisheries are covered under the incidental take statement for the Alaska groundfish fisheries.

Attachments (3)

April 19, 2006 memorandum
State of Alaska Emergency Order
Harvest tables for the State waters groundfish fisheries.

Groundfish from State waters (includes parallel, State waters GHL, and CDQ fisheries)

BSAI Species	2008 S	2008 CP/M	2009 S	2009 CP/M	2008 Total	2009 Total	2008 TAC	2008 % of TAC	2009 Total TAC	2009 % of TAC
Alaska plaice	0	0	0	0	0	0	50,000	0%	50,000	0%
Arrowtooth flounder	16	23	45	28	39	73	75,000	0%	75,000	0%
Other flatfish	33	4	29	2	37	31	21,600	0%	17,400	0%
Flathead sole	11	1	6	0	12	6	50,000	0%	60,000	0%
Greenland turbot	0	3	0	3	3	3	2,540	0%	7,380	0%
Northern rockfish	3	24	1	49	27	50	8,180	0%	7,160	1%
Other species	45	169	22	48	213	70	50,000	0%	50,000	0%
Pacific ocean perch	59	532	4	517	590	522	19,198	3%	18,800	3%
Rougheye rockfish	1	6	1	9	7	10	172	4%	539	2%
Other rockfish	5	8	10	6	14	16	849	2%	1,040	2%
Rock sole	26	16	11	48	42	60	75,000	0%	90,000	0%
Sablefish	36	12	71	16	48	87	5,300	1%	4,920	2%
Squid	4	1	2	0	5	3	1,675	0%	1,970	0%
Shortraker rockfish	1	2	1	10	3	10	360	1%	387	3%
Yellowfin sole	1	12	0	1	13	1	225,000	0%	210,000	0%
Total	241	812	204	737	1,053	941	584,874	0%	594,596	0%

GOA Species	2008 S	2008 CP/M	2009 S	2009 CP/M	2008 Total	2009 Total	2008 TAC	2008 % of TAC	2009 TAC	2009 % of TAC
Arrowtooth flounder	812	3	371	0	814	372	43,000	2%	43,000	1%
Big skate	96	0	198	0	96	198	3,330	3%	3,330	6%
Demersal shelf rockfish	74		58		74	58	382	19%	362	16%
Deep water flatfish	3		1		3	1	8,903	0%	9,168	0%
Flathead sole	228	0	148	0	229	148	11,054	2%	11,181	1%
Longnose skate	73	0	171	0	73	171	2,887	3%	2,887	6%
Northern rockfish	6	0	0	0	6	0	4,549	0%	4,362	0%
Other species	299	4	279	0	303	279	2,104	14%	4,500	6%
Pelagic shelf rockfish	19	0	8	0	19	8	5,227	0%	4,781	0%
Pacific ocean perch	1	0	0	0	1	0	14,999	0%	15,111	0%
Rex sole	13		9		13	9	9,132	0%	8,996	0%
Rougheye rockfish	38	0	32	0	38	32	1,286	3%	1,284	3%
Other rockfish	42	0	42	0	42	42	1,730	2%	1,730	2%
Sablefish	1,181		969		1,181	969	12,730	9%	11,160	9%
Shallow water flatfish	248	0	60	0	248	60	22,256	1%	22,256	0%
Shortraker rockfish	57	0	51	0	57	51	898	6%	898	6%
Thornyhead rockfish	52		49		52	49	1,910	3%	1,910	3%
Other skates	34	10	37	7	44	44	2,104	2%	2,104	2%
Total	3,277	18	2,485	8	3,294	2,493	148,481	2%	149,020	2%

BSAI Species	2008 S	2008 CP/M	2009 S	2009 CP/M	2008 Total	2009 Total	2008 TAC	2008 % of TAC	2009 TAC	2009 % of TAC
Atka mackerel	2	352	0	188	354	188	60,700	1%	76,400	0%
Pacific cod	5,965	1,483	2,224	570	7,448	2,794	176,000	4%	182,000	2%
Pollock	2,578	64	7,693	73	2,642	7,765	1,019,010	0%	834,050	1%
Total	8,545	1,899	9,916	831	10,444	10,748	1,255,710	1%	1,092,450	1%

Note: The ABC instead of the TAC is listed for Pacific cod since the catch includes the State waters GHL fishery.

GOA Species	2008 S	2008 CP/M	2009 S	2009 CP/M	2008 Total	2009 Total	2008 TAC	2008 % of TAC	2009 TAC	2009 % of TAC
Atka mackerel	0	0	0	0	0	0	1,500	0%	2,000	0%
Pacific cod	21,823	64	21,820	30	21,887	21,850	50,269	44%	55,300	40%
Pollock	17,046	0	21,163	0	17,046	21,163	66,493	26%	41,620	51%
Total	38,869	64	42,984	30	38,933	43,014	118,262	33%	98,920	43%

Note: The ABC instead of the TAC is listed for Pacific cod since the catch includes the State waters GHL fishery.

For shoreside (S) catch used eLandings data and ADF&G statistical areas (akfish_v_ellr_slog_product)
For catcher/processors and motherships (CP/M) catch used observer data
TAC means total allowable catch
GHL means guideline harvest level
ABC means acceptable biological catch

COMMERCIAL FISHERIES

Emergency Order

ALASKA DEPARTMENT OF FISH & GAME

Under Authority of AS 16.05.060

EMERGENCY ORDER No. 4-GF-01-10

Issued at: Kodiak, Alaska
December 31, 2009

EFFECTIVE DATE: 12:01 a.m.
Friday, January 1, 2010

Expiration Date: December 31, 2010
unless superseded by subsequent
emergency order

EXPLANATION: This emergency order defines commercial parallel groundfish fishing seasons in the Kodiak, Chignik, South Alaska Peninsula, Bering Sea-Aleutian Islands and Chukchi-Beaufort Areas. For these areas, except for the fisheries listed in 1-5 below, this emergency order adopts the groundfish seasons, bycatch limits, and allowable gear types that apply in the adjacent exclusive economic zone (EEZ).

Sector allocations in the EEZ, based on processing activity, will not be recognized in state waters. Adjacent federal waters opened to a gear type, whether to both catcher processor vessels and catcher vessels, or only one of those, will be considered open in state waters to both catcher vessels and catcher processor vessels until closed to all vessels using the designated gear type.

Inseason adjustments to federal seasons, bycatch limits, and allowable gear types will also apply in the parallel fisheries. Fishing seasons or bycatch limits may be modified from those published in the federal register by subsequent emergency order to ensure resource conservation or resource management consistent with the interest of the economy and general well being of the state.

Fishermen should take note of Steller sea lion protection areas in the parallel fisheries, including areas around sea lion haulouts and rookeries. Sea lion protection areas are set forth in federal regulations and are adopted for state waters as set forth in this emergency order. As a result, waters of Alaska that are described in the federal regulations implementing the Steller sea lion protection measures as closed to fishing or closed to gear types are so closed to all vessels, regardless of whether the vessel has a federal fishery permit.

The federal regulations implementing Steller sea lion protection measures for 2010 are posted on the National Marine Fisheries Service (NMFS) web site at http://www.fakr.noaa.gov/sustainablefisheries/2003hrvstspecssl.htm or available from NMFS offices in Alaska.

Fishermen should take note of vessel monitoring system requirements set forth in 5 AAC 28.087 Management Measures In Parallel Groundfish Fisheries For Protection Of Steller Sea Lions (c).

Commercial fishing gear is prohibited in certain areas to protect essential fish habitat (EFH). State-waters surrounded by EFH areas are closed by 5 AAC 39.167 Commercial Fishing Gear Prohibited In Waters Of Alaska Surrounding Essential Fish Habitat Areas. EFH areas are described in federal regulation at 50 C.F.R. 679.22, revised as of August 25, 2008.

Fishermen should also take note of seabird avoidance requirements set forth in 5 AAC 28.055 Seabird Avoidance Measures In Groundfish Fisheries. The state has adopted the federal seabird avoidance regulations, 50 C.F.R. 679.24 revised as of January 17, 2008, into state waters for longline vessels greater than 26 feet in length. The federal regulations are posted on the NMFS web site at http://www.fakr.noaa.gov/protectedresources/seabirds/guide.htm

Except as expressly stated, this emergency order does not supersede other groundfish provisions in Chapter 28 of the Alaska Administrative Code.

The following groundfish fisheries are not managed under parallel regulations. For the fisheries listed in 1 – 5 below, no parallel season is adopted because seasons and bycatch limits are established in this emergency order or will be established in a later emergency order.

1. The lingcod fishery;
2. The black and blue rockfish fishery in the Kodiak, Chignik, South Alaska Peninsula areas, and state waters of the Bering Sea-Aleutian Islands Area;
3. The dark rockfish fishery;
4. The state-waters season Pacific cod fishery in the Kodiak, Chignik, and South Alaska Peninsula areas, and the Aleutian Islands District of the Bering Sea-Aleutian Islands Area;
5. The state-waters sablefish fishery.

REGULATORY TEXT: Regulations 5 AAC 28.410, 5 AAC 28.510, 5 AAC 28.560, 5 AAC 28.610, 5 AAC 28.650 and 5 AAC 28.710 are superseded as follows, and 5 AAC 28 is amended by adding new sections and subsections, 5 AAC 28.450(e), 5 AAC 28.550, 5 AAC 28.590, and 5 AAC 28.750 to read as follows:

5 AAC 28.410. Fishing Seasons For Kodiak Area. (a) In 2010, except as otherwise provided in this section, groundfish may be taken in waters of the Kodiak Area only during federal fishing seasons

applicable to waters of the Exclusive Economic Zone (EEZ) adjacent to the waters of the Kodiak Area. All federally allowed gear types, bycatch limits and inseason adjustments of allowable gear types, bycatch limits and seasons as announced by the Regional Administrator, National Marine Fisheries Service, and published in the Federal Register, that are applicable to fishing in the adjacent EEZ also apply to fishing in the waters of the Kodiak Area, except that sector allocations in the EEZ based on processing activity will not be recognized in state waters. Adjacent federal waters opened to a gear type, whether to both catcher processor vessels and catcher vessels, or only one of those, will be considered open in state waters to both catcher vessels and catcher processor vessels until closed to all vessels using the designated gear type. This section does not supersede the nonpelagic trawl gear restrictions in 5 AAC 39.164.

(b) Lingcod may be taken, in a directed fishery or as bycatch, only from July 1 through December 31.

(c) Lingcod may only be taken as bycatch, not to exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel.

(d) Black and blue rockfish may be taken, in a directed fishery or as bycatch from January 1 through December 31.

(e) Black and blue rockfish taken as bycatch may not exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel, unless the vessel operator is operating in accordance with 5 AAC 28.406 (e) and 5 AAC 28.472 (b) .

(f) Dark rockfish may only be taken as bycatch. Bycatch of dark rockfish may not exceed 20% by weight of the directed groundfish species and directed halibut on board the vessel.

(g) Sablefish may only be taken as bycatch, not to exceed 1% by weight of the directed groundfish species and directed halibut on board the vessel.

(h) Unless otherwise specified, the maximum bycatch limit for any species of groundfish is 20% by weight of the directed groundfish species and directed halibut on board the vessel. This subsection does not supercede the mandatory retention rules for walleye pollock and Pacific cod as provided in 5 AAC 28.070 (e).

(i) Pacific cod may be taken during a state-waters season as provided in 5 AAC 28.467.

(j) Groundfish may be taken with non-pelagic trawl gear in the waters of king crab registration area K, described in 5 AAC 34.400, that are not closed under 5 AAC 39.164 (b) only from

(1) January 20 through April 30; and
(2) October 1 through November 30.

5 AAC 28.450 Closed Waters In The Kodiak Area (e) Waters of the Kodiak Area that are described in the federal regulations implementing the Steller sea lion protection measures as closed to fishing or closed to gear types are so closed to all vessels, regardless of whether the vessel has a federal fishing permit. In this section, "the federal regulations" means 50 CFR 679.22 and Tables 4,5,6 and 12 in 50 CFR, Part 679, as amended through December 31, 2006. The federal regulations are posted on the National Marine Fisheries Service web site at http://www.fakr.noaa.gov/sustainablefisheries/2003hrvstspecssl.htm or available from NMFS offices in Alaska.

5 AAC 28.510. Fishing Seasons For Chignik Area (a) In 2010, except as otherwise provided in this section, groundfish may be taken in waters of the Chignik Area only during federal fishing seasons applicable to waters of the Exclusive Economic Zone (EEZ) adjacent to the waters of the Chignik Area. All federally allowed gear types, bycatch limits, and inseason adjustments of allowable gear types, bycatch limits, and seasons as announced by the Regional Administrator, National Marine Fisheries Service, and published in the Federal Register, that are applicable to fishing in the adjacent EEZ also apply to fishing in the waters of the Chignik Area, except that sector allocations in the EEZ based on processing activity will not be recognized in state waters. Adjacent federal waters opened to a gear type, whether to both catcher processor vessels and catcher vessels, or only one of those, will be considered open in state waters to both catcher vessels and catcher processor vessels until closed to all vessels using the designated gear type. This section does not supersede the nonpelagic trawl gear restrictions in 5 AAC 39.164.

(b) Lingcod may be taken in a directed fishery or as bycatch, only from July 1 through December 31.
(c) Black and blue rockfish may be taken, in a directed fishery or as bycatch, from January 1 through December 31.
(d) Black and blue rockfish taken as bycatch may not exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel.
(e) Dark rockfish may only be taken as bycatch. Bycatch of dark rockfish may not exceed 20% by weight of the directed groundfish species and directed halibut on board the vessel.
(f) Sablefish may only be taken as bycatch, not to exceed 1% by weight of the directed groundfish species and directed halibut on board the vessel.
(g) Unless otherwise specified, the maximum bycatch limit for any species of groundfish is 20% by weight of the directed groundfish species and directed halibut on board the vessel. This subsection does not supercede the mandatory retention rules for walleye pollock and Pacific cod as provided in 5 AAC 28.070 (e).
(h) Pacific cod may be taken during a state waters season as provided in 5 AAC 28.537.

Chapter 28 is amended by adding a new section: 5 AAC 28.550 Closed Waters In The Chignik Area (a) Waters of the Chignik Area that are described in the federal regulations implementing the Steller sea lion protection measures as closed to fishing or closed to gear types are so closed to all vessels, regardless of whether the vessel has a federal fishing permit. In this section, "the federal regulations" means 50 CFR 679.22 and Tables 4,5,6 and 12 in 50 CFR, Part 679, as amended through December 31, 2006. The federal regulations are posted on the National Marine Fisheries Service web site at http://www.fakr.noaa.gov/sustainablefisheries/2003hrvstspecssl.htm or available from NMFS offices in Alaska.

5 AAC 28.560. Fishing Seasons For South Alaska Peninsula Area. (a) In 2010, except as otherwise provided in this section, groundfish may be taken in waters of the South Alaska Peninsula Area only during federal fishing seasons applicable to waters of the Exclusive Economic Zone (EEZ) adjacent to the waters of the South Alaska Peninsula Area. All federally allowed gear types, bycatch limits, and inseason adjustments of allowable gear types, bycatch limits, and seasons as announced by the Regional Administrator, National Marine Fisheries Service, and published in the Federal Register, that are applicable to fishing in the adjacent EEZ also apply to fishing in the waters of the South

Alaska Peninsula Area, except that sector allocations in the EEZ based on processing activity will not be recognized in state waters. Adjacent federal waters opened to a gear type, whether to both catcher processor vessels and catcher vessels, or only one of those, will be considered open in state waters to both catcher vessels and catcher processor vessels until closed to all vessels using the designated gear type. This section does not supercede the nonpelagic trawl restrictions in 5 AAC 39.164.

(b) Lingcod may be taken in a directed fishery or as bycatch, only from January 1 through December 31.
(c) Black and blue rockfish may be taken, in a directed fishery or as bycatch, from January 1 through December 31.
(d) Black and blue rockfish taken as bycatch may not exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel.
(e) Dark rockfish may only be taken as bycatch. Bycatch of dark rockfish may not exceed 20% by weight of the directed groundfish species and directed halibut on board the vessel.
(f) Sablefish may be taken in state-waters of the Western District of the South Alaska Peninsula Area, from 12:00 noon May 15 through November 15, unless closed earlier by emergency order. Sablefish bycatch is not allowed prior to or after the directed fishery.
(g) Sablefish may only be taken as bycatch, in state-waters of the Eastern District of the South Alaska Peninsula Area, not to exceed 1% by weight of the directed groundfish species and directed halibut on board the vessel.
(h) Unless otherwise specified, the maximum bycatch limit for any species of groundfish is 20% by weight of the directed groundfish species and directed halibut on board the vessel. This subsection does not supercede the mandatory retention rules for walleye pollock and Pacific cod as provided in 5 AAC 28.070 (e).
(i) Pacific cod may be taken during a state-waters season as provided in 5 AAC 28.577.

Chapter 28 is amended by adding a new section: 5 AAC 28.590 Closed Waters In The South Alaska Peninsula Area (a) Waters of the South Alaska Peninsula Area that are described in the federal regulations implementing the Steller sea lion protection measures as closed to fishing or closed to gear types are so closed to all vessels, regardless of whether the vessel has a federal fishing permit. In this section, "the federal regulations" means 50 CFR 679.22 and Tables 4,5,6 and 12 in 50 CFR, Part 679, as amended through December 31, 2006. The federal regulations are posted on the National Marine Fisheries Service web site at http://www.fakr.noaa.gov/sustainablefisheries/2003hrvstspecssl.htm or available from NMFS offices in Alaska.

5 AAC 28.610. Fishing Seasons For Bering Sea-Aleutian Islands Area. (a) In 2010, except as otherwise provided in this section, groundfish may be taken in waters of the Bering Sea-Aleutian Islands Area only during federal fishing seasons applicable to waters of the Exclusive Economic Zone (EEZ) adjacent to the waters of the Bering Sea-Aleutian Islands Area. All federally allowed gear types, bycatch limits, and inseason adjustments of allowable gear types, bycatch limits and fishing seasons as announced by the Regional Administrator, National Marine Fisheries Service, and published in the Federal Register, that are applicable to fishing in the adjacent EEZ also apply

to fishing in the waters of the Bering Sea-Aleutian Islands Area, except that sector allocations in the EEZ based on processing activity will not be recognized in state waters. Adjacent federal waters opened to a gear type, whether to both catcher processor vessels and catcher vessels, or only one of those, will be considered open in state waters to both catcher vessels and catcher processor vessels until closed to all vessels using the designated gear type. This section does not supercede the non-pelagic trawl gear restrictions in 5 AAC 39.164.

(b) Lingcod may be taken only as bycatch, from January 1 through December 31.
(c) Black and blue rockfish may be taken in state-waters of the Aleutian Islands District of the Bering Sea–Aleutian Islands Area in a directed fishery or as bycatch, from January 1 through December 31.
(d) Black and blue rockfish taken as bycatch may not exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel.
(e) Dark rockfish may only be taken as bycatch. Bycatch of dark rockfish may not exceed 5% by weight of the directed groundfish species and directed halibut on board the vessel.
(f) Sablefish in state-waters of the Aleutian Islands District of the Bering Sea–Aleutian Islands Area may be taken from 12:00 noon May 15 through November 15, unless closed earlier by emergency order. Sablefish bycatch is not allowed prior to or after the directed fishery. In the Bering Sea District of the Bering Sea–Aleutian Islands Area there is no open season for directed sablefish fishing.
(g) Pacific cod may be taken during a state-waters season as provided in 5 AAC 28.647.
(h) Pacific cod and rockfish may be taken during the parallel fishery season in state-waters of Sitkin Sound of Adak Island as described in 5 AAC 28.690 (a) only as specified in 5 AAC 28.629 (d).
(i) Pacific cod and rockfish may be taken during the parallel fishery season from May 1 until September 15 in state-waters of Adak Island as described in 5 AAC 28.690 (b) only as specified in 5 AAC 28.629 (e).
(j) Pacific cod may not be taken during the parallel Pacific cod fishery by vessels longer than 58 feet in length.
(k) Unless otherwise specified, the maximum bycatch limit for any species of groundfish is 20% by weight of the directed groundfish species and directed halibut on board the vessel. This subsection does not supercede the mandatory retention rules for walleye pollock and Pacific cod as provided in 5 AAC 28.070 (e).

5 AAC 28.650 Closed Waters In The Bering Sea-Aleutian Islands Area (b) Waters of Bering Sea-Aleutian Islands Area that are described in the federal regulations implementing the Steller sea lion protection measures as closed to fishing or closed to gear types are so closed to all vessels, regardless of whether the vessel has a federal fishing permit. In this section, "the federal regulations" means 50 CFR 679.22 and Tables 4,5,6 and 12 in 50 CFR, Part 679, as amended through December 31, 2006. The federal regulations are posted on the National Marine Fisheries Service web site at http://www.fakr.noaa.gov/sustainablefisheries/2003hrvstspecssl.htm or available from NMFS offices in Alaska.

5 AAC 28.710. Fishing Seasons For Chukcki-Beaufort Area. (a) In 2010, there is no open groundfish season.

Chapter 28 is amended by adding a new section: 5 AAC 28.750 Closed Waters In The Chukchi-Beaufort Area

(a) Waters of the Chukchi-Beaufort Area are closed to all commercial groundfish fishing.

Denby Lloyd, Commissioner
Alaska Department of Fish and Game

by Delegation to: _____
Wayne Donaldson
Regional Groundfish Management Biologist

JUSTIFICATION: The Alaska Board of Fisheries has established fisheries for a limited number of groundfish species, and has authorized the commissioner of the Alaska Department of Fish and Game (ADF&G) to open seasons by emergency order, during which bycatch limits, area closures, and gear restrictions may be specified; see, *e.g.*, 5 AAC 28.070, .087, .467. The ADF&G does not have independent programs currently in place to ensure sustained-yield management for all groundfish species in Alaska's territorial waters of the Kodiak, Chignik, South Alaska Peninsula, Bering Sea-Aleutian Islands and Chukchi-Beaufort areas. Groundfish fisheries in these areas often target the same stocks harvested under federal regulations in adjacent waters of the Exclusive Economic Zone (EEZ).

To ensure conservation of the groundfish resources located in territorial waters, the ADF&G generally depends on the fishing season regulations established for the adjacent waters of the EEZ and administered by the National Marine Fisheries Service. The federal regulations allow for inseason adjustments of fishing seasons, closed waters, bycatch and gear to conserve the affected stocks.

To ensure compatible management of the stocks not independently managed by the state, ADF&G would need to issue emergency orders to correspond to all changes made by the federal managers. It is not practical for the department to issue corresponding emergency orders, in a timely manner, to ensure that compatible management is maintained. This would lead to confusion within the fishing industry.

To ensure sustained yield management of groundfish stocks, promote an orderly fishery, and facilitate enforcement of regulations, this emergency order modifies fishing seasons, allowable gear types, closed waters and bycatch limits in the territorial waters of the Kodiak, Chignik, South Alaska Peninsula, Bering Sea-Aleutian Islands and Chukchi-Beaufort Areas to correspond with federal fishery seasons, allowable gear types, closed waters and bycatch limits or inseason adjustments set for the adjacent waters of the EEZ, except for those fisheries independently managed by the state. However, based on the Alaska Supreme Court's decision in Grunert, Alaska Board of Fisheries and the ADF&G may not recognize federal sectors in state waters during parallel groundfish fisheries based on processing type.

The state has also adopted protection measures for Steller sea lions in the parallel Pacific cod, Atka mackerel and walleye pollock fisheries as provided for in 5 AAC 28.087.

Through subsequent emergency orders the department may still specify different seasons for groundfish species within these areas to ensure resource conservation or management consistent with the economy and general well being of the state.

Existing federal regulations do not include management measures for lingcod and dark rockfish or black and blue rockfish in the Gulf of Alaska and territorial waters of the Aleutian Islands and Bering Sea. State regulations will apply for these species in all waters of Alaska's territorial sea and the specified adjacent waters of the EEZ, as provided in 5 AAC 28.010 Application of groundfish regulations.

Lingcod bycatch is restricted to 5% in the Kodiak Area because of the potential for large lingcod bycatch associated with trawl landings. The rockfish and sablefish bycatch limits will coincide with the bycatch limit allowed by the Regional Administrator, National Marine Fisheries Service, except for the Aleutian Islands state-waters sablefish fishery.

The Chukchi-Beaufort Management Area is closed to all commercial fishing for groundfish because there is a lack of information on groundfish resources in this area. NMFS has closed all waters of the EEZ adjacent to the Chukchi-Beaufort Management Area to all commercial groundfish fishing under the Arctic Fishery Management Plan.

DISTRIBUTION: This emergency order was distributed to those individuals and organizations maintained on a list in the Westward Region shellfish office, 211 Mission Road, Kodiak, Alaska.

-end-

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

April 19, 2006

MEMORANDUM FOR: Kaja Brix
Assistant Regional Administrator
For Protected Resources

FROM: Susan Salveson
Assistant Regional Administrator
For Sustainable Fisheries

SUBJECT: Reinitiation of Endangered Species Act (ESA) Section 7 Consultation for the Alaska Groundfish Fishery Management Plans (FMPs).

I request reinitiation of ESA Section 7 formal consultation on the effects of the federal groundfish fisheries on ESA-listed cetaceans, sea turtles, Steller sea lions and proposed and designated critical habitats. The section 7 consultation for Pacific salmon currently is being conducted by the NMFS Northwest Region which maintains the expertise on ESA-listed salmon species. The action being consulted on includes the State of Alaska parallel groundfish fisheries (see Attachment 1) and the Federal groundfish fisheries as authorized under the following FMPs:

- FMP for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI), January 2005
- FMP for Groundfish of the Gulf of Alaska (GOA), January 2005

We consider this consultation to be a mid-term evaluation of fishery effects on listed species for which we already have an FMP-level biological opinion in place that was completed in November 2000 (FMP BiOp) and supplemented in 2001 with a biological opinion evaluating fishery effects on the western distinct population segment (DPS) of Steller sea lions and their critical habitat (2001 BiOp). Since the conclusion of the FMP BiOp and the 2001 BiOp, all subsequent modifications to the action have been considered through additional consultations, and thus have already undergone review under the ESA. These consultations have concluded that the current federal and parallel groundfish fisheries are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species during the time period that the new FMP-level consultation is conducted.

On October 18, 2005, the Council requested that NMFS reinitiate consultation on the FMP BiOp and evaluate all new information that has developed since the previous consultations. New

information would be useful as the Council considers potential changes to the Steller sea lion protection measures implemented in the fisheries. Based on the Council's request, reinitiation of formal consultation is prudent to allow consideration of the latest information as the Council reexamines the Steller sea lion protection measures and their effectiveness.

The attached biological assessment (BA) provides the information necessary to initiate consultation. Each element required by 50 CFR 402.14(c) is addressed in parts of the BA as identified below.

- A description of the action: Section 1.0, Section 2.0., Appendices A and B
- A description of the action area: Section 2.0
- A description of ESA-listed species and critical habitat affected by the action: Section 3.0
- A description of the manner in which the action may affect ESA-listed species and critical habitat: Section 3.0
- Cumulative Effects: Section 4.0
- Relevant reports: Section 5.0 and Section 7.0

In response to your March 13, 2006, memorandum requesting assistance for the consultation, we included several items in the BA as follows:

- Updated maps of fisheries management areas: Section 2.5 and Appendix A
- Updated harvest specifications tables: Section 2.6
- Updated maximum retainable bycatch tables: Section 2.6
- Updated regulatory allocations of total allowable catch by season, gear, sector, and area: Section 2.6
- Updated maps of Steller sea lion protection areas: Appendix A
- Description of temporal dispersion of the Atka mackerel fishery by season: Appendix B

The four remaining items in your memorandum requested from Sustainable Fisheries will be provided before May 15, 2006.

Section 3 of the attached BA provides our determinations on whether the Alaska groundfish fisheries are likely to adversely affect listed species or their critical habitat. These determinations are based on evidence of historical interaction or the potential for interaction between listed species and the groundfish fisheries. We understand that our determinations will be assessed as part of the consultation process and that your expert review of the available information and data may lead to modified conclusions.

Attachments (2)

Attachment 1

STATE OF ALASKA

FRANK H. MURKOWSKI
GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 115526
JUNEAU, AK 99811-5526
PHONE: (907) 465-4100
FAX: (907) 465-2332

March 31, 2006

Mr. Doug Mecum, Acting Regional Administrator
National Marine Fisheries Service
NOAA, U.S. Department of Commerce
P.O. Box 21668
Juneau, AK 99802-1668

Dear ~~Mr. Mecum~~ DOUG:

Thank you for your recent letter regarding the Endangered Species Act (ESA) Section 7 consultation on the effects of Alaska groundfish fisheries on ESA-listed marine mammals and sea turtles. The State of Alaska accepts the invitation to participate in the Section 7 consultation for the Bering Sea and Aleutian Islands Management Area and the Gulf of Alaska groundfish fishery management plans (FMP) with regard to the state-managed parallel groundfish fisheries. The parallel groundfish (Pacific cod, Atka mackerel, and pollock) fisheries are those fisheries managed by the state using the same harvest limits, seasons, and area restrictions as the federal fisheries.

Staff from the Alaska Department of Fish & Game will be available to work with National Marine Fisheries Service during the consultation process. We also plan to update the October 2000 overview document that described the effects of all state-managed fisheries on Steller sea lions. We look forward to participating in the FMP-level review of Alaska's groundfish fisheries.

Sincerely,

Mckie Campbell
Commissioner

North Pacific Fishery Management Coun

Eric A. Olson, Chairman
Chris Oliver, Executive Director

Telephone (907) 271-2809

605 W. 4th Avenue, Suite [illegible]
Anchorage, AK 99501-2252

Fax (907) 271-2817

Visit our website: http://www.fakr.noaa.gov/npfmc

December 23, 2009

Mr. Douglas Mecum
Acting Regional Administrator
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

Dear Mr. Mecum:

At their December 2009 meeting, the North Pacific Fishery Management Council received briefings on the schedule for the upcoming draft *status quo* Biological Opinion and the results of the 2009 SSL pup surveys. During those briefings, several issues came to light for which the Council would appreciate additional clarification, or which prompted specific requests by the Council. The Council would appreciate receiving a response prior to the January 26-28, 2010 meeting of its Steller Sea Lion Mitigation Committee.

1. The Council is requesting that NMFS provide the Council and its SSLMC with an opportunity to review the draft terms of reference for the Center for Independent Experts (CIE) review of the BiOp at the February 2010 meeting (and the SSLMC's January 26-28 meeting). The Council is interested in further discussions with NMFS regarding the CIE contract, as the Council believes it is imperative that the CIE have not only the guidance from the science reported in the BiOp in its review of the BiOp conclusions, but also other potentially competing hypotheses for the current status of the SSL population in the North Pacific (see No. 2 below).

2. The Council further requests that the BiOp review schedule allow for public, SSLMC, SSC and Council review prior to the CIE review. Under this scenario, the CIE would have the full spectrum of scientific information and critique to utilize in its evaluation of the BiOp. The Council believes that this would be a more robust and transparent process and strengthen the CIE evaluation of the scientific basis of the BiOp, even if it requires alteration of the current schedule.

   The Council makes this recommendation because it is concerned about the process outlined by NMFS for preparation of the BiOp, the CIE review, and review by the Council. We believe that the CIE review would be stronger if all of the information were presented to this panel instead of just selected information as was described by NMFS at the Council's December 2009 briefing. As is recognized in the SSL Recovery Plan, there is considerable scientific debate about the effects of predation, environmental change, and other factors identified in the recovery plan that may affect recovery. From the presentation we received, it appeared that NMFS may only be providing the scientific information used by NMFS in the BiOp to support its analysis and conclusions, excluding reports and scientific information that does not support NMFS' analysis and conclusions.

3. In conducting the analysis for the BiOp, NMFS has indicated that it will consider the recovery criteria in the SSL Recovery Plan. Will the Agency be using the downlisting criteria as the guidance for the analysis?

4. In response to questions from the Council, it was unclear what years the National Marine Fisheries Service will be using to measure performance of the current SSL protection measures. The Council understands that this BiOp is to look at the status quo, and thus evaluate the effects of the current mitigation measures on the SSL population in the North Pacific Ocean. The Council believes that the BiOp analysis must be based on the 2000 to 2008/2009 SSL nonpup and pup trends for the western Distinct Population Segment (wSSL). This is consistent with the SSL Recovery Plan (2008) which uses 2000 as the base year from which to measure performance with recovery criteria. Is this the approach the Agency is taking in the BiOp analysis?

5. With respect to trends in wSSL nonpup abundance, NMFS reported at the Council's February 2009 meeting that the trends across the range were an overall 14% increase over the period 2000 to 2008, or an annual increase of 1.7%. At that time, NMFS posed an hypothesis that the counts in the eastern portion of the wSSL range were inflated due to animals from the eSSL moving west to Kayak Island or other nearby areas. Partial counts were done in the summer 2009, and NMFS is now reporting that the overall increase in the wSSL population may be around 12% or a 1.4% annual rate of increase. NMFS further reported that genetics or tagging work is needed to confirm the hypothesis. Since the 1.4% number is linked to a hypothesis, will the 1.7% increase measured last year be used in the BiOp?

   Also, how will the wSSL animals (as determined by genetics and brand/resight data) found in the eSSL region be accounted for in wSSL trends used in the BiOp? For example, there are two rookeries (Graves and White Sisters) in the eSSL range where genetic samples and observations of branded animals indicate that 60% and 40%, respectively, of these animals and their pups are of wSSL origin. Are these females and their pups accounted for in the 1.7% annual rate of increase for pups and nonpups in the wSSL population?

6. The 2008 SSL Recovery Plan reported the total U.S. nonpup wSSL population at 42,500 animals. How was this calculated *vis a vis* the issues described in No. 5 above? What would this total U.S. nonpup wSSL population number be today if calculated using this methodology.

7. The Council's SSLMC has requested updated fishery catch data presented as updated tables from the 2003 BiOp Supplement showing catch inside and outside critical habitat before and after implementation of SSL protection measures. These tables would be updated with fishery data through 2008 or 2009, whichever is currently available. The Council is concerned that these data are not readily available to the public in at least a basic form. Please provide to the Council and its SSLMC fishery data for inside and outside critical habitat at 0-3, 3-10, 10-20, and outside 20 (in foraging areas) nautical miles which reflect the zonal approach taken by the Agency in development of the last BiOp. Please provide these data for each of the SSL prey species, Atka mackerel, pollock, and Pacific cod, by region and by year and in aggregate.

   The Council continues to be concerned why these data are not readily available. The Council is particularly concerned that these data have not been reported to the Council in previous years if the Agency held concerns about the quantities of SSL prey species removals from critical habitat. The Council requests information from NMFS regarding when the levels or locations of prey removals under the existing SSL protection measures became a concern.

8. NMFS reported on its plans for future SSL survey and other research. It appears that NMFS is planning to devote the majority of its resources to continued investigations in the Northern Gulf of Alaska including branding and genetics work. The Council requests that, instead of continuing to focus on this region, that emphasis be placed on filling the gaps in the western and central Aleutian Islands where surveys have not been completed in several years. In addition, SSL natality studies in areas such as the eastern Aleutian Islands would be useful; these data could be used to compare natality rates with other areas of the wSSL in an attempt to better understand the dynamics of pup production and survival.

The Council greatly appreciates the work conducted by NMFS to annually survey the SSL population. The above information, and scheduling accommodations, will assist the Council immeasurably as it prepares to receive the upcoming draft status quo BiOp. Please contact me or the Council's Executive Director if you have any questions regarding these requests. We believe that accommodation of our requests is critical to appropriate review of the BiOp.

Sincerely,

Eric Olson
Chairman

CC: Dr. James Balsiger
Dr. Douglas DeMaster
Ms. Kaja Brix

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

January 22, 2010

Eric Olson
Chair, North Pacific Fishery Management Council
605 W 4th Ave Suite 306
Anchorage, AK 99501-2252

Dear Mr. Olson:

Thank you for your letter requesting additional information from the National Marine Fisheries Service (NMFS) in regard to the upcoming groundfish status quo Biological Opinion (BiOp). We address below the points raised by your letter as you enumerated them (in italics, with responses in regular type).

1. *The Council requested input to the draft Terms of Reference (TOR) for the Center for Independent Experts (CIE) review of the BiOp.* NMFS is attaching the TOR for your review and comment. As you are aware, NMFS intends to have the CIE review the rationale and information used to support the conclusion in the BiOp, but not the conclusion itself.

2. *The Council requested that the BiOp schedule allow for public and Council review prior to the CIE review.* NMFS can accommodate this request by releasing the BiOp to the public and the Council prior to the CIE review. We can charge the CIE with review of the information contained in the BiOp and additional information, recognizing that this format may delay the finalization of the BiOp and implementation of any changes that may need to be made to the fisheries. NMFS is using all of the best available information in the analyses conducted in the BiOp.

3. *Will the Agency be using the downlisting criteria as guidance for the analysis in the consultation?* NMFS will use the Recovery Plan and the downlisting criteria contained within that plan as a general framework for assessing the capacity of the population, and the habitat that supports that population, recover.

4. *The Council asked the Agency to provide the years we will use to measure performance of the current SSL protection measures i.e., are we using the base year of 2000 to measure SSL trends.* The trend in abundance of SSL is based on data collected over approximately 30 years. It is this overall trend that provides indication as to the trajectory of the population. A subset of years may be informative for some purposes but will not be the sole basis by which the population is measured.

5. *With respect to trends in wSSL non-pup abundance, NMFS reported at the Council's February 2009 meeting that the trends across the range were an overall 14% increase over the period 2000 to 2008, or an annual increase of 1.7%. At that time, NMFS posed a hypothesis that the counts in the eastern portion of the wSSL range were inflated due to animals from the eSSL moving west to Kayak Island or other nearby areas. Partial counts were done in the summer 2009, and NMFS is now reporting that the overall increase in the wSSL population may be around 12% or a 1.4% annual rate of increase. NMFS further reported that genetics or tagging work is needed to confirm the hypothesis. Since the 1.4% number is linked to a hypothesis, will the 1.7% increase measured last year be used in the BiOp?*

The results of the summer 2009 non-pup survey in the northern Gulf of Alaska supported the hypothesis that there was an early summer movement of sea lions between SE Alaska (eastern stock) and the Prince William Sound area (western stock) in 2008 that affected trend analyses in both stocks. The analysis used in the new Biological Opinion will use the most up to date information available. The trend will be calculated through 2008, but will use the information obtained in 2009 on seasonal movements between stocks that resulted in the 12% overall increase between 2000 and 2008. However, it should be noted that both of the estimated annual rates of population change between 2000 and 2008 (1.4% per year using the 2009 information to adjust the 2008 counts, and 1.7% per year using the unadjusted 2008 data) are not significantly different from 0 and as such do not meet the recovery criteria noted in the 2008 Steller Sea Lion Recovery Plan.

Also, how will the wSSL animals (as determined by genetics and brand/resight data) found in the eSSL region be accounted for in wSSL trends used in the BiOp? For example, there are two rookeries (Graves and White Sisters) in the eSSL range where genetic samples and observations of branded animals indicate that 60% and 40%, respectively, of these animals and their pups are of wSSL origin. Are these females and their pups accounted for in the 1.7% annual rate of increase for pups and non-pups in the wSSL population?

NMFS will determine SSL stock trends based on counts of pups and non-pups on terrestrial sites during the breeding season within the designated ranges of the eastern and western stocks (E and W of 144°W, respectively), as modified by any information on seasonal movement across stock boundaries. The survey counts report the number of Steller sea lions (pups and non-pups) counted in aerial photos taken of particular rookeries and haulouts. The rookeries and haulouts are grouped by region and ultimately by stock. The genetic makeup of the animals at the time they are photographed is unknown and has never been included in these counts.

6. The 2008 SSL Recovery Plan reported the total U.S. non-pup wSSL population at 42,500 animals. How was this calculated considering the issues described in No. 5 above? What would this total U.S. non-pup wSSL population number be today if calculated using this methodology.

The number reported in the 2008 SSL Recovery Plan is 45,000. This is an estimate of the total western Steller sea lion population (pup and non-pup) in Alaska in 2005. It was based on the number of pups counted in aerial photographs in 2005 (9,950) multiplied by 4.5 (rounded to the nearest 1000). Using the 2009 pup production estimate (11,120) and the same methodology, the total western SSL population in Alaska is estimated to be 50,000 in 2009. The issues described in No. 5 do not affect these total population estimates because they are based on pup counts not non-pup counts, which are the subject of No. 5. The 4.5 multiplier on pup production comes from a life table of a stable equilibrium Steller sea lion population derived by Calkins and Pitcher (1982). It is the total number of sea lions (pups and non-pups) divided by the number of pups. Any pup multiplier based on a life table is only valid for use in estimating total population size if the underlying vital rates (survival and natality) that form the basis of the life table are known. In the case of the western SSL population in AK, the vital rates within each region are not known. It is for this reason that NMFS determines wSSL status by monitoring trends in pups and non-pups at key sites across the range rather than by estimating changes in total population size.

7. *The Council requested the fishery catch data as used in the BiOp.* Those tables are available and will be provided to the Council electronically with submission of this letter. NMFS began to look at these catch data in response to the Council's request to reinitiate consultation on the federal groundfish fisheries.

8. *NMFS reported on its plans for future SSL survey and other research. It appears that NMFS is planning to devote the majority of its resources to continued investigations in the Northern Gulf of Alaska including branding and genetics work. The Council requests that, instead of continuing to focus on this region, that emphasis be placed on filling the gaps in the western and central Aleutian Islands where surveys have not been completed in several years. In addition, SSL natality studies in areas such as the eastern Aleutian Islands would be useful; these data could be used to compare natality rates with other areas of the wSSL in an attempt to better understand the dynamics of pup production and survival.*

NMFS agrees that the Western and Central Aleutian Islands require the most attention as they are the areas showing the greatest and most rapid population declines. NMFS will continue to conduct annual aerial surveys of the entire western stock including the areas in question. The inability to complete these surveys in these areas in recent years has not been due to research focus. Rather, logistical difficulties such as weather delays, mechanical breakdowns,

and most recently the closure of the Shemya airstrip have limited the survey extent.

NMFS is continuing to study vital rates, including natality, of Steller sea lions in the eastern Aleutian Islands (as well as in the central and eastern Gulf of Alaska) as part of a brand-resighting program. Permanent marking of pups was reinitiated in the western stock in 2000 in the central Gulf of Alaska, and in 2001 in the eastern Aleutians and eastern Gulf. Therefore, the oldest marked sea lion currently alive in the eastern Aleutians is only 8 years old. Female Steller sea lions can become sexually mature at 3 years old (at the earliest) and first give birth at age 4, but only a small fraction (<10%) develop this quickly. Prime breeding ages for Steller sea lion females occur between 6 and 20 years old. Consequently, any study of sea lion natality rates in the western stock has just begun, since marked females are just now entering their prime breeding ages. NMFS has not had the opportunity to capture adult females for study over the last several years because of permitting issues, but is now actively developing new capture and analytic methods to directly measure female sea lion condition and reproductive status. NMFS hopes to test these techniques during the next several field seasons within the range of the wSSL. However, it is not expected that these new methods and capture techniques will provide significant new information for at least the next several years due to limited sample sizes. It is for this reason that continued study of the large number of permanently marked animals is critical.

Sincerely,

Robert D. Mecum

Robert D. Mecum
Acting Administrator, Alaska Region

Attachments:
TOR for CIE review
Fishery Catch Tables- electronically

cc: Jim Balsiger
Sam Rauch
Jim Balsiger
Kaja Brix
Sue Salveson
John Lepore

Statement of Work

(Subtask T007-04, 11 December 2009)

External Independent Peer Review by the Center for Independent Experts

Review of the 2010 Draft National Marine Fisheries (NMFS) Biological Opinion on the Effects of the Bering Sea/Aleutian Islands and Gulf of Alaska Federal Groundfish Fisheries and the State of Alaska Parallel Fisheries on ESA Listed Species and Designated Critical Habitats, Including Steller Sea Lions and Their Designated Critical Habitat

Scope of Work and CIE Process: The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract to provide external expertise through the Center for Independent Experts (CIE) to conduct impartial and independent peer reviews of NMFS scientific projects. This Statement of Work (SoW) described herein was established by the NMFS Contracting Officer's Technical Representative (COTR) and CIE based on the peer review requirements submitted by NMFS Project Contact. CIE reviewers are selected by the CIE Coordination Team and Steering Committee to conduct the peer review of NMFS science with project specific Terms of Reference (ToRs). Each CIE reviewer shall produce a CIE independent peer review report with specific format and content requirements (**Annex 1**). This SoW describes the work tasks and deliverables of the CIE reviewers for conducting an independent peer review of the following NMFS project.

Project Description: Under Section 7 of the ESA, NMFS Alaska Region is preparing a draft programmatic Biological Opinion. A Biological Opinion is the summary document produced by NMFS that includes (1) the opinion of the agency as to whether or not the Federal action is likely to jeopardize the continued existence of a listed species, or result in adverse modification of designated critical habitat; (2) a summary of the information on which that opinion is based; and (3) a detailed discussion of the effects of the action on listed species and designated critical habitat.

In this opinion, NMFS PRD has evaluated the effects of three actions:

- Authorization of groundfish fisheries under the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area;
- Authorization of groundfish fisheries under the Fishery Management Plan for Groundfish of the Gulf of Alaska; and
- State of Alaska parallel groundfish fisheries for pollock, Pacific cod, and Atka mackerel

The objective of the evaluation in this biological opinion is to determine if the aforementioned groundfish fisheries, as implemented under their respective FMPs and State management plans, are likely to jeopardize the continued existence of listed species and/or are likely to destroy or adversely modify designated critical habitat. Based on the directives of the ESA and implementing regulations, as well as Court findings with respect to previous opinions, the scope of this consultation and resulting opinion is comprehensive. Through the consultation which has

6. The 2008 SSL Recovery Plan reported the total U.S. non-pup wSSL population at 42,500 animals. How was this calculated considering the issues described in No. 5 above? What would this total U.S. non-pup wSSL population number be today if calculated using this methodology.

The number reported in the 2008 SSL Recovery Plan is 45,000. This is an estimate of the total western Steller sea lion population (pup and non-pup) in Alaska in 2005. It was based on the number of pups counted in aerial photographs in 2005 (9,950) multiplied by 4.5 (rounded to the nearest 1000). Using the 2009 pup production estimate (11,120) and the same methodology, the total western SSL population in Alaska is estimated to be 50,000 in 2009. The issues described in No. 5 do not affect these total population estimates because they are based on pup counts not non-pup counts, which are the subject of No. 5. The 4.5 multiplier on pup production comes from a life table of a stable equilibrium Steller sea lion population derived by Calkins and Pitcher (1982). It is the total number of sea lions (pups and non-pups) divided by the number of pups. Any pup multiplier based on a life table is only valid for use in estimating total population size if the underlying vital rates (survival and natality) that form the basis of the life table are known. In the case of the western SSL population in AK, the vital rates within each region are not known. It is for this reason that NMFS determines wSSL status by monitoring trends in pups and non-pups at key sites across the range rather than by estimating changes in total population size.

7. *The Council requested the fishery catch data as used in the BiOp.* Those tables are available and will be provided to the Council electronically with submission of this letter. NMFS began to look at these catch data in response to the Council's request to reinitiate consultation on the federal groundfish fisheries.

8. *NMFS reported on its plans for future SSL survey and other research. It appears that NMFS is planning to devote the majority of its resources to continued investigations in the Northern Gulf of Alaska including branding and genetics work. The Council requests that, instead of continuing to focus on this region, that emphasis be placed on filling the gaps in the western and central Aleutian Islands where surveys have not been completed in several years. In addition, SSL natality studies in areas such as the eastern Aleutian Islands would be useful; these data could be used to compare natality rates with other areas of the wSSL in an attempt to better understand the dynamics of pup production and survival.*

NMFS agrees that the Western and Central Aleutian Islands require the most attention as they are the areas showing the greatest and most rapid population declines. NMFS will continue to conduct annual aerial surveys of the entire western stock including the areas in question. The inability to complete these surveys in these areas in recent years has not been due to research focus. Rather, logistical difficulties such as weather delays, mechanical breakdowns,

led to this Biological Opinion, NMFS has considered not only the effects of the fisheries themselves, but also the overall management framework as established under the respective FMPs. It is NMFS' intent to determine if that management framework includes sufficient conservation and management measures to insure the protection of listed species and their critical habitat.

The main listed species of concern is the endangered western distinct population segment of the Steller sea lion. The designated critical habitat of concern is critical habitat designated for Steller sea lions. The document also evaluates the effects of the action on the threatened eastern distinct population segment of Steller sea lion and the effects on two species of ESA-listed whales: humpback whales and sperm whales.

The draft biological opinion that is the subject of this review is the result of a reinitiated Section 7 consultation. Thus, NMFS has previously consulted on the effect of the Bering Sea/Aleutian Islands groundfish fisheries, the Gulf of Alaska groundfish fisheries, and the State of Alaska parallel groundfish fisheries.

On November 30, 2000, NMFS issued a FMP level biological opinion that evaluated the effects of authorization of the BSAI and GOA FMPs on ESA-listed species, as required by section 7(a)(2) of the ESA. Through that consultation and the resulting biological opinion, NMFS found that the FMPs, as proposed, would jeopardize both the western and eastern distinct population segments (DPSs) of Steller sea lion and adversely modified their designated critical habitat. As a result, a reasonable and prudent alternative (RPA) was provided and partially implemented in 2001.

In January 2001, an RPA committee, comprised of members of the fishing community, the conservation community, NMFS, State agencies and the Council's Science and Statistical Committee, was formed to develop an alternative RPA. In July of 2001, the action agency (SFD) proposed this alternative RPA to replace the components of the original FMP action that had resulted in the jeopardy and adverse modification finding in the 2000 FMP-level consultation. In 2001, NMFS prepared a project level biological opinion which reviewed the revised action and determined that it was not likely to jeopardize or adversely modify critical habitat. The Court reviewed the 2001 Biological Opinion and found that it was arbitrary and capricious and remanded the opinion back to NMFS for revision. In response to the Court order, NMFS prepared a supplement (NMFS 2003) to the 2001 biological opinion (NMFS 2001), which affirmed NMFS's conclusions that the revised FMP actions were not likely to jeopardize ESA-listed species or adversely modify critical habitat. In the 2001 Biological Opinion (2001:8) NMFS specified that:

> "...the FMP level biological opinion will remain in effect as NMFS' coverage at the plan level, and this opinion" (the 2001 opinion) will address the project level effects on listed species that would be likely to occur if the Council's preferred action were implemented."

Since the conclusion of the 2000 and the 2001 consultations and the completion of the resulting biological opinions and supplement, all subsequent modifications and proposed modifications to

the action have been considered through informal consultations except for a March 9, 2006 Biological Opinion on the issuance of an exempted fishing permit (EFP) to support a feasibility study using commercial fishing vessels for acoustic surveys of pollock in the Aleutian Islands subarea.

On October 18, 2005, the North Pacific Fishery Management Council (Council) requested that NMFS SFD reinitiate consultation on the BSAI and GOA FMPs. The Council's request was based on the recognition that a substantial amount of new research on Steller sea lions has been published since NMFS completed the 2000 Biological Opinion, such that an evaluation of the FMPs in light of that new information would be prudent. The consultation was formally reinitiated in April of 2006.

Thus, the basis for the reinitiation of consultation is the new information available to the agency as a result of approximately 10 years of intensive research on SSL in Alaska. The new information pertains to the status of the species, the trend and abundance, and the impacts of the existing conservation measures as well as the prosecution of the federal fisheries and the State of Alaska parallel groundfish fisheries. Additionally, since NMFS wrote the last Programmatic Biological opinion in 2000, the subsequent project level biological opinion in 2001, and the 2003 supplement, a considerable amount of information has been collected on topics of relevance to understanding the effects of this action. For example, there is considerable new information on the ways in which fisheries might have effects on various populations and the ecosystems in which they are occur, the potential effects that global warming and natural environmental variability might have on the marine ecosystems of the North Pacific; and other topics that are relevant to understanding ways in which listed species and designated critical habitats might be affects by these fisheries.

The subject of review would be the **scientific information** contained in the Biological Opinion **and not the conclusions of the Opinion as per the ESA thresholds**. The reviewers would be asked to comment on the adequacy of the best available science and of the appropriate use of that science to reach the conclusions about potential effects of the actions on listed species and designated critical habitats. The reviewers would be asked to critically evaluate whether NMFS has used the best available science appropriately to considered not only the effects of the fisheries themselves, but also the overall management framework as established under the respective FMPs. As it is NMFS' intent to determine if that management framework includes sufficient conservation and management measures to insure the protection of listed species and their critical habitat, the review should evaluate whether NMFS has appropriately and sufficiently evaluated this question.

The Terms of Reference (ToRs) of the peer review are attached in **Annex 2**.

Requirements for CIE Reviewers:

Three CIE reviewers shall conduct an impartial and independent peer review in accordance with the SoW and ToRs herein. Each CIE reviewer's duties shall not exceed a maximum of 10 days (this may need to be longer) to complete all work tasks of the peer review described herein. CIE reviewers shall have the expertise, background, and experience to complete an independent

scientific peer review in accordance with the SoW and ToRs herein. CIE combined reviewer expertise shall include: fishery science; fishery effects on ecosystems and/or ecosystem management of fisheries; marine mammal biology and ecology, with emphasis on otariids, if possible; and familiarity with the standards of the Endangered Species Act Section 7 in relation to conservation biology.

The CIE reviewers shall have the expertise necessary to complete an impartial peer review and produce the deliverables in accordance with the SoW and ToR as stated herein.

Location of Peer Review:

Each reviewer shall conduct the peer review as desk review, therefore no travel is required.

Statement of Tasks:

Each CIE reviewer shall conduct necessary preparations prior to the peer review, conduct the peer review, and complete the deliverables in accordance with the SoW and milestone dates as specified in the Schedule section.

Prior to the Peer Review: Upon completion of the CIE reviewer selection by the CIE Steering committee, the CIE shall provide the CIE reviewer information (name, affiliation, and contact details) to the COTR, who forwards this information to the NMFS Project Contact no later the date specified in the Schedule of Milestones and Deliverables. The CIE is responsible for providing the SoW and ToRs to the CIE reviewers. The NMFS Project Contact is responsible for providing the CIE reviewers with the background documents, reports, foreign national security clearance, and information concerning other pertinent meeting arrangements.

Pre-review Background Documents: Approximately two weeks before the peer review, the NMFS Project Contact will send all necessary background information and reports for the peer review to the CIE reviewers by electronic mail, shall make this information and these reports available at an FTP site available to the CIE reviewers, or shall provide electronic links to all background documents. In the case where the documents need to be mailed, the NMFS Project Contact will consult with the CIE on where to send documents. The CIE reviewers shall read all documents in preparation for the peer review.

Below is a tentative list of pre-review documents to be sent to the CIE reviewers as background information of the peer review:

1. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Areas. North Pacific Fishery Management Council. April 2009. http://alaskafisheries.noaa.gov/npfmc/fmp/bsai/bsai.htm

2. Fishery Management Plan for Groundfish of the Gulf of Alaska. North Pacific Fishery Management Council. April 2009. Available at: http://alaskafisheries.noaa.gov/npfmc/fmp/goa/goa.htm

3. Aleutian Islands Fishery Ecosystem Plan. North Pacific Fishery Management Council. December 2007. Available at: http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/AIFEPbrochure1207.pdf

4. 2000 Endangered Species Act Section 7 Consultation Biological and Incidental take Statement. Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish; and Authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska. November 2000. National Marine Fisheries Service. 2000. Available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

5. 2001 Biological Opinion and Incidental Take Statement. October 2001. Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish as modified by amendments 61 and 70; and Authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska as modified by amendments 61 and 70. Parallel fisheries for pollock, Pacific cod, and Atka mackerel, as authorized by the State of Alaska within 3 nm of shore, plus selected supporting documents. National Marine Fisheries Service. 2001. available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

6. 2003 Supplement to the Endangered Species Action Section 7 Biological Opinion and Incidental take statement of October 2001, plus appendices. National Marine Fisheries Service. 2003. available at: http://fakr.noaa.gov/protectedresources/stellers/section7.htm

7. Judge Zilly's Order Remanding some aspects of the 2001 biological opinion to NMFS for further action. United States District Court, Western District of Washington at Seattle. December 18, 2002. Available at: http://fakr.noaa.gov/protectedresources/stellers/biop2002/final.htm

8. Background information on the ESA and NMFS' responsibilities for implementing the ESA is available from the NMFS Office of Protected Resources web site at: Available at: http://www.nmfs.noaa.gov/pr/laws/esa.htm.

These documents and other background material (or links to them) will be provided to the CIE reviewers by the Project Contact according to the schedule herein.

Documents 1 through 9 are available for pre-review by February 14, 2010 (may need to modify this date). This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process. Furthermore, the CIE reviewers are responsible for

only the pre-review documents that are delivered to them in accordance to the SoW scheduled deadlines specified herein.

Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process, including a SoW modification to the schedule of milestones and deliverables. Furthermore, the CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the SoW scheduled deadlines specified herein.

Desk Peer Review: The primary role of the CIE reviewers is to conduct an impartial peer review in accordance with the SoW and ToRs to ensure that the best available science is utilized for NMFS evaluations of the potential effects of actions on endangered species and designated critical habitat under Section 7 of the Endangered Species Act. **Modifications to the SoW and ToRs can not be made during the peer review, and any SoW or ToRs modifications prior to the peer review shall be approved by the COTR and CIE Lead Coordinator.**

Contract Deliverables - Independent CIE Peer Review Reports: Each CIE reviewer shall complete an independent peer review report in accordance with the SoW. Each CIE reviewer shall complete the independent peer review according to the required format and content as described in Annex 1. Each CIE reviewer shall complete the independent peer review addressing each ToR as described in Annex 2.

Specific Tasks for CIE Reviewers: The following chronological list of tasks shall be completed by each CIE reviewer in a timely manner as specified in the **Schedule of Milestones and Deliverables**.

1) Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review;
2) Conduct an independent peer review in accordance with the ToRs (Annex 2);
3) No later than REPORT SUBMISSION DATE, each CIE reviewer shall submit an independent peer review report addressed to the "Center for Independent Experts," and sent to Mr. Manoj Shivlani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and CIE Regional Coordinator, via email to *{CIE will insert email}*. Each CIE report shall be written using the format and content requirements specified in Annex 1, and address each ToR in Annex 2;
4) CIE reviewers shall address changes as required by the CIE review in accordance with the schedule of milestones and deliverables.

Schedule of Milestones and Deliverables: CIE shall complete the tasks and deliverables described in this SoW in accordance with the following schedule.

Draft Schedule:

1 March 2010	NMFS Project Contact sends the CIE Reviewers the report and background documents TENTATIVE DATE

1-12 March 2010	Each reviewer conducts an independent peer review as a desk review
26 March 2010	CIE reviewers submit CIE independent peer review reports to the CIE Lead Coordinator and CIE Regional Coordinator
2 April 2010	CIE submits CIE independent peer review reports to the COTR
5 April 20109	The COTR distributes the final CIE reports to the NMFS Project Contact and Regional Administrator

Modifications to the Statement of Work: Requests to modify this SoW must be made through the Contracting Officer's Technical Representative (COTR) who submits the modification for approval to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the CIE within 10 working days after receipt of all required information of the decision on substitutions. The COTR can approve changes to the milestone dates, list of pre-review documents, and Terms of Reference (ToR) of the SoW as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToRs and deliverable schedule are not adversely impacted. The SoW and ToRs cannot be changed once the peer review has begun.

Acceptance of Deliverables: Upon review and acceptance of the CIE independent peer review reports by the CIE Lead Coordinator, Regional Coordinator, and Steering Committee, these reports shall be sent to the COTR for final approval as contract deliverables based on compliance with the SoW. As specified in the Schedule of Milestones and Deliverables, the CIE shall send via e-mail the contract deliverables (the CIE independent peer review reports) to the COTR (William Michaels, via William.Michaels@noaa.gov).

Applicable Performance Standards: The contract is successfully completed when the COTR provides final approval of the contract deliverables. The acceptance of the contract deliverables shall be based on three performance standards: (1) each CIE report shall have the format and content in accordance with Annex 1, (2) each CIE report shall address each ToR as specified in Annex 2, (3) the CIE reports shall be delivered in a timely manner as specified in the schedule of milestones and deliverables.

Distribution of Approved Deliverables: Upon notification of acceptance by the COTR, the CIE Lead Coordinator shall send via e-mail the final CIE reports in *.PDF format to the COTR. The COTR will distribute the approved CIE reports to the NMFS Project Contact and regional Center Director.

Key Personnel:

William Michaels, Contracting Officer's Technical Representative (COTR)
NMFS Office of Science and Technology
1315 East West Hwy, SSMC3, F/ST4, Silver Spring, MD 20910

William.Michaels@noaa.gov Phone: 301-713-2363 ext 136

Manoj Shivlani, CIE Lead Coordinator
Northern Taiga Ventures, Inc.
10600 SW 131st Court, Miami, FL 33186
shivlanim@bellsouth.net Phone: 305-383-4229

NMFS Project Contact:

Kaja Brix,
Protected Resources Director
NMFS, Alaska Region, 709 W.9th St., Juneau AK, 99802-1668
Kaja.Brix@noaa.gov, Phone: 907-586-7824

Annex 1: Format and Contents of CIE Independent Peer Review Report

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations.

2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer's Role in the Review Activities, Summary of Findings for each ToR, and Conclusions and Recommendations in accordance with the Terms of Reference (ToRs).

   a. Reviewers should discuss their independent views of findings, conclusions, and recommendations for each ToRs.

   b. The CIE independent report shall be a stand-alone document as an independent peer review.

3. The reviewer report shall include as separate appendices as follows:

   Appendix 1: Bibliography of materials provided for review
   Appendix 2: A copy of the CIE Statement of Work

Annex 2: Terms of Reference

1. Read and assess the March 1, 2010 draft Biological Opinion on the BSAI and GOA groundfish fisheries; and state waters parallel fisheries for pollock, Atka mackerel, and Pacific cod.

2. Make an assessment as to whether the scientific information constitutes a reasonable rationale for the conclusion in accordance with the requirements of section 7 and implementing regulations under the Endangered Species Act. A Biological Opinion under section 7 of the ESA does not require proof that a federal action jeopardizes the continued existence of a listed species or destroys or adversely modifies critical habitat. The ESA requires that an action agency ensure that the federal action does not jeopardize or adversely modify or destroy critical habitat.

3. CIE reviewers are requested to specifically focus on and address the following questions in their review reports:

- Does the Biological Opinion thoroughly describe what is known about the status of the listed species.
- Does the Biological Opinion thoroughly describe the effects (direct and indirect) of the action on the listed species and its critical habitat.
- Can you identify any additional literature that should be brought to bear on this Opinion.
- Can you identify any additional assessment/analysis that should contribute to a conclusion in this Opinion.
- In accordance with section 7 of the ESA does the Biological Opinion draw a reasonable conclusion based on the evidence with respect to the standard of "jeopardy" for the listed species and with respect to the standard of "adverse modification" as defined by the ESA and implementing regulations for critical habitat. Note that the regulatory definition for adverse modification was struck down by the courts. NMFS is working under the definition as contained in the Act and a guidance memo issued by the agency on November 7, 2005 (attached).

DRAFT

North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
January 26-28, 2010
Alaska Fisheries Science Center, Seattle, WA

Minutes

The Steller Sea Lion Mitigation Committee (SSLMC) convened in Seattle at the Alaska Fisheries Science Center on January 26-28, 2010. Committee members present were: Larry Cotter (Chairman), Jerry Bongen, Julie Bonney, Kenny Down, John Gauvin, Pat Hardina, Max Malavansky, Frank Kelty, Stephanie Madsen, Steve MacLean, Glenn Reed, and Beth Stewart. Also present were Jeannie Heltzel and Bill Wilson (Council staff); Dr. Dan Hennen (NMFS, and SSLMC advisor); Dr. John Bengston, Dr. Tom Gelatt, and Lowell Fritz (NMFS AFSC); Sue Salveson and Melanie Brown (NMFS AK Region staff); John Lepore (NOAA General Counsel AKR); and other agency staff and members of the public. Several agency staff and members of the public also participated in the meeting through a web conference.

Chairman Cotter introduced staff and asked for a round of self introductions. Mr. Cotter informed the SSLMC that Jeannie Heltzel is the new Protected Resources Coordinator for the Council and will be the staff person for the SSLMC in the future; Bill Wilson will continue to also support the SSLMC under contract to the Council, at least through the BiOp review.

Mr. Wilson and Ms. Heltzel reviewed the agenda and the handouts provided to the committee, and provided an update on the status of the upcoming BiOp. The BiOp is scheduled to be released on March 1st. The SSLMC will meet the following week in Juneau on March 9-11 (and possibly the 12th) at the NMFS Alaska Region offices to receive a presentation of the BiOp from NMFS staff and develop comments for the Council.

Mr. Cotter noted that the primary purpose of this meeting was to receive presentations by staff from AFSC, ADFG, ASLC, UAF, and others on recent research findings relevant to Steller sea lions, and by NOAA General Counsel staff on legal issues. Other items included discussing NMFS's response to the Council's December 2009 letter on the BiOp and the CIE review process, and providing comments to the Council on the CIE terms of reference.

Presentations

Mr. John Lepore (NOAA General Counsel-AKR) gave a presentation reviewing key components of the ESA, including: the criteria for listing a species, the definition of critical habitat, and the definition of conservation; regulatory requirements for Section 7 consultations; and the role of Biological Assessments in the consultation process. Federal agencies are required to insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize a listed species or adversely modify critical habitat. In the case of Steller sea lions, the Federal groundfish fisheries are the action triggering the Section 7 consultation. Federal actions are first screened with a Biological Assessment to determine whether the action is 'likely' to adversely affect a listed species or its designated critical habitat. If the BA determines that the action is 'likely' to have adverse effects, formal consultation is required and a Biological Opinion is prepared. A Biological Opinion is a written statement describing how the action affects the species or its critical habitat. Several questions were asked regarding the definition of 'likely'. Mr. Lepore noted that the common definition of likely is applied. Mr. Wilson noted that in past assessments, 'likely' has been a relatively easy trigger. For example, in 2006 NMFS prepared a BA which determined that the pollock fishery near St. George/Dalnoi Point was likely to adversely affect SSLs.

Mr. Lepore also provided the committee with a review of recent litigation concerning the adverse modification standard. The U.S. Ninth Circuit Court's 2004 decision in Gifford Pinchot vs. USFWS invalidated the regulatory definition of adverse modification of critical habitat, noting that the definition 'gives too little protection to designated critical habitat' and is inconsistent with other statutory requirements of the ESA which require protection of critical habitat essential to the conservation of a species. Mr. Gauvin asked if this is the most recent court decision on the adverse modification standard, and if there have been any conflicting court opinions. Mr. Lepore responded that the Gifford Pinchot case has not been challenged, and the resulting memo from NMFS (the Hogarth memo) on November 2005 formulated the agency's national policy on the adverse modification standard. Biological Opinions of NMFS now rely on statutory requirements of the ESA and not the regulatory definition for "destruction or adverse modification."

There were several questions for Mr. Lepore following his presentation. Mr. Cotter asked about designation of critical habitat (CH). When CH is defined now, the agency identifies Primary Constituent Elements (PCEs). If PCEs were not identified in the initial CH designation, the agency uses the physical and biological features that are essential to the survival and recovery of a species when determining impacts to CH.

Mr. Down asked whether the State waters fisheries are being considered in the upcoming BiOp. Mr. Lepore said that NMFS isn't consulting on the State-managed groundfish fisheries, because they aren't a Federal action. However, NMFS is considering the effects of the State parallel waters fisheries as part of the BiOp.

Mr. Henderschedt asked whether the SSL Recovery Plan can be modified in response to new information. Mr. Lepore replied that the current Recovery Plan downlisting and delisting criteria have not changed from the original plan, and if new information becomes available indicating that the current plan is insufficient, the RP would be revised again.

Mr. Lowell Fritz (AFSC) presented recent SSL pup and non-pup count data for the W DPS in Alaska and the E DPS, as well as a summary of changes in vital rates since the 1970s. Some of this information, particularly the results of the 2009 aerial survey, was also presented to the Council at its December 2009 meeting. Overall, counts of adult and juvenile (non-pup) SSLs in the W DPS increased by either 1.4% or 1.7% per year from 2000 to 2008 (depending on how the issue of seasonal movement between SE Alaska and the E GOA is treated). Pup production on W DPS rookeries increased by 1.7% per year from 2001 through 2009. All of these rates are not statistically different from zero. Dr. Dan Hennen noted that in order for these trends to be significant, more years of survey data or a steeper rate of increase is needed.

Mr. Fritz noted that there is considerable regional variation in W DPS SSL population trends in Alaska. Pup production and non-pup counts have declined at all rookeries W of 178°W in the Aleutian Islands (the W Aleutians and the western half of the C Aleutians). Both pup production and non-pup counts have increased in the E Aleutians, and E and W GOA. He noted that both sets of trend counts are largely stable in the eastern portion of the C Aleutians and in the C GOA. Non-pup and pup counts in the E DPS (in SE Alaska, British Columbia, Oregon, and California) continue to increase, indicating that this stock is recovering or has recovered.

Regarding the issue of seasonal (late spring) movement between the E and W DPSs, brand-resight data (n=38) collected at Kayak Island (the easternmost haulout in the W DPS) in early June 2009 indicated that an estimated 25% of the 800 to 900 SSLs observed there were from the E DPS. Mr. Gauvin asked why the trend data presented did not include the 2006 and 2007 surveys. Mr. Fritz

said that surveys were conducted during both years, but were truncated early in 2006 due to litigation. New survey equipment, poor weather conditions, and other logistical issues prevented the completion of the 2007 survey. Consequently, the 2006 and 2007 data were not included in the trend summaries presented but are available in other reports.

Mr. Fritz reported that increases in non-pup counts on rookeries within most W DPS regions in Alaska since 2000 indicate good recruitment to the adult breeding population, which reflects relatively high adult and juvenile survival in recent years. He noted that non-pup counts at haulouts in these same regions have decreased or remained stable, indicating low recruitment to the largely juvenile population at these sites. In regions with increasing populations (E Aleutians, W and E GOA), non-pup counts on rookeries are increasing faster than pup counts (while the opposite is true in SE AK). Pup-to-nonpup ratios are, on average, lower at rookeries within the W DPS than they are in SE Alaska. Mr. Fritz noted that these patterns are consistent with the hypothesis that birth rates have declined in the W DPS, and that they are, on average, lower in the W DPS than in SE Alaska (E DPS).

Mr. Fritz also noted that comparison of empirical measurements of survival (from resights of animals branded as pups) during different periods and in different areas, and demographic modeling of the C GOA population (Holmes et al. 2007) revealed that the W DPS population decline in the 1980s was associated primarily with a steep decline in juvenile survival, but was also accompanied by the start of a three decade long drop in natality, at least in the C GOA. Juvenile survivorship in the 2000s (as measured by sightings of marked animals) has rebounded to rates similar to those estimated for the 1970s prior to the decline, at least in the C GOA and E Aleutian Islands, with a smaller (though statistically significant) increase observed in the E GOA. The current estimates from marked animal resights in the E GOA are similar to those estimated from the life history transmitter satellite tags deployed by Dr. Markus Horning (OSU) and Dr. Jo-Ann Mellish (UAF/Alaska SeaLife Center). Current (2000s) estimates of female SSL survival in the W DPS are slightly higher than in SE Alaska (based on animals branded as pups in the mid-1990s).

Finally, Mr. Fritz summarized results from two recent food habits studies. In the Central AI, pollock is an important component of the SSL diet when and where it is aggregated in winter, but on an annual basis, pollock may only comprise <10%of the SSL diet in this area. In other areas, such as the GOA and E BS pollock is important year-round. At Dalnoi Point on St. George (EBS), scat samples collected in June 2009 found 80% frequency of occurrence of pollock, all >40 cm in length (commercial size).

Dr. Vladimir Burkanov (Natural Resources Consultants and NMML) reported on recent research on the Russian population of SSLs. Over a 20-year period from 1989 to 2009, nearly 7,000 pups have been branded, of which 2,600 (37%) have been resighted at least once. Most resightings occurred during the breeding season in June and July (72%). Based on the brand-resight data, the average and maximum distance traveled from each rookery was calculated. One animal from the Medny rookery in the Commander Islands was resighted at Chiswell Island in Alaska, over 3,000 km from the branding site.

Across rookeries, an average of 28% of animals are immigrants (were not born at that rookery). The rate of juvenile immigration was higher (41% males, 35% females) than the rate of adult immigration (20% males, 24% females). However, no animals moved to the Commander Islands from the Asian population. In the Asian population, total SSL abundance increased from 2000-2008, mostly due to an increase in the Kuril Islands. The Western stock, found in the Commander Islands, did not increase during this time period. The population trend in the Commander Islands is not likely correlated with large-scale commercial fishing activity, because there is a 30-mile no-

fishing zone around the Commander Islands. Dr. Burkanov noted that small-scale illegal fishing is likely occurring in the closed area.

Dr. Brian Fadely (NMML) presented an analysis of telemetry data on SSLs. The analysis only included data collected from 2000-2005. Since 2005, only a small amount of telemetry data has been collected by ADFG in Glacier Bay, but these data have not yet been analyzed. Satellite tags were placed on 116 juveniles SSLs aged 3 to 26 months by NMML and ADFG (the majority were 9-12 months old). Tags recorded location, dive depth and duration, and proportion of time at depth. The original analysis determined whether dive locations were 0-10 nm, 10-20 nm, or >20 nm from the nearest listed haul-out or rookery, or outside of critical habitat. In 2006 the SSL Mitigation Committee suggested exploring distance distributions by individual, rather than by 'cookie-cutter' bins. The purpose of the analysis was to determine to what extent critical habitat encompassed potential juvenile sea lion foraging locations.

Data were filtered to include only locations associated with dives to greater than 4m in depth and to remove duplicates. The results of the new analysis were generally consistent with the 2006 analysis in that most animals had at least 75% of their dive locations within 10 and 20 nm of a listed site and that proportions varied with age, season and region. Older animals (>10 months old) tended to forage farther from listed sites, particularly in winter. Juveniles in the central and western Aleutian Island areas had larger proportions of locations outside of critical habitat compared to other areas. Some animals were observed foraging beyond areas that are commercially fished.

There is a very limited amount of telemetry data in the NMML database available on a small number of wDPS adult females (n=28) marked from 1990-1993. Finally, Dr. Fadely noted that when compared with existing telemetry data the Platforms of Opportunity (POP) data shows broader spatial distributions. The POP data cover a much broader geographic area, and illustrate the limitations of current telemetry data.

Dr. Paul Wade (NMML) provided an update on recent killer whale research. Transient killer whales feed on a wide range of marine mammals, including various whale species, Dall's porpoise, harbor seals, sea otters, and SSLs. Surveys from 2001 to 2003 found an estimated 345 (95% CI: 255 to 487) transient killer whales from the C GOA to the C Aleutians (Durban et al. in press). Based on these abundance estimates and observations of predation events, it is estimated that killer whale predation could account for 40% to 80% of the natural mortality of SSLs in the W DPS. Similar estimates have been made for SE Alaska, where SSL numbers have been increasing. Killer whales would not be expected to cause declines in SSL populations under these assumptions, but more work needs to be done to understand the impacts of killer whale predation. Based on field observations of feeding events, and stable isotope measurements of skin samples, an estimated 7% of the diet of transient killer whales in the AI is comprised of SSLs.

Dr. Andrew Trites (University of British Columbia) reviewed a wide range of recent SSL research projects conducted by researchers at the North Pacific Universities Marine Mammal Research Consortium. One project modeled the combined effects of killer whale predation, commercial fishing, competitive interactions with arrowtooth flounder, and ocean climate on SSL populations in the Aleutians. The results showed that killer whale predation could be an important factor limiting population growth when the SSL population is low, but not when the population is relatively high. In another project, SSL skulls were measured to test the hypothesis that if food resources have declined over time, average skull sizes should also have declined. No evidence was found of a decline in average skull size over time at Alaska rookeries. Instead, the data indicate that young sea lions became larger after the population decline. Dr. Trites has documented variability in sea lion counts at several rookeries and haulouts. At one rookery, counts varied from 25 to over

200 individuals depending on the tide, time of day, and recent disturbance. Finally, Dr. Trites summarized the results of several recent lab studies on diet composition, energetics of diving, effects of season on nutritional stress, and SSL growth rates.

Dr. Lorrie Rea (ADFG) presented results from a wide range of recent field studies. Top research priorities were to assess age-specific survival rates, reproductive rates, movement patterns, and weaning rates in the W DPS. ADFG branded approximately 2,000 pups on rookeries from 2001-2005, and an additional 500 young of the year and juveniles that were dive-captured during 2001-2009. Observations of resighted females were used to calculate the proportion of breeding age females on rookeries with pups. This proportion was compared across females of different ages and at different rookeries. Overall, more than 50% of females on rookeries were observed to have pups accompanying them, with the peak at age 9, when approximately 65% of females had pups. Notable differences were observed across rookeries.

Brand-resight data were used to track short-term and long-term movements of animals across the E-W stock boundary. Most movements across the stock boundary were by younger SSLs, but in part this was a reflection of the age of branded animals (the oldest branded animals were 8 to 9 years old). Cross-boundary movements varied by sex and natal stock: 100 eastern-born SSLs moved west, and only 2 were females; 76 western-born SSLs moved east, and nearly half were females. Some W stock females were seen within the E stock annually since a young age, with 7 of these females eventually pupping in the E stock. However, one of these females returned to the west to pup in a subsequent year, making it hard to determine if this represents permanent emigration.

Finally, Dr. Rea presented data collected from 382 SSLs that were dive captured as pups (2-11 months old) between 1998 and 2005 in 4 regions (SE, PWS, GOA, AI). Extensive data were collected to assess body condition, diet, disease, and contaminant exposure. Mean body mass and percent lipid content in W stock pups was higher than in SE Alaska pups. Compared to other otariid species, there was no evidence of poor body condition or starvation in SSL pups in the first year of development. Concentrations of haptoglobin (an indicator of inflammation or disease) were higher in SE Alaska and PWS young of the year than in the AI or GOA. There was evidence of higher mercury concentrations in the hair of pups in the W stock as compared with pups in SE Alaska.

Dr. Ian Boyd (University of St. Andrews, Scotland) reanalyzed NMFS SSL count data through 2008. The objectives of his study were to define SSL abundances at all sites throughout their range, build data on the rate of change of the population distributions, and examine future population scenarios to test the hypothesis that the SSL is endangered. The analysis accounted for the effect of counting error, the incomplete nature of surveys, and the problems associated with using 'trend sites' to assess population status so that all data about the population is included in assessments. Dr. Boyd noted that both pup and non-pup numbers declined throughout the 1980s, but have been stable in recent years. This period of stability coincides with the period in which survey efforts have been the highest and conservation measures were established. In recent years, the pup to non-pup ratio has been approximately 0.25, which suggests that current productivity is close to or above the long-term mean, considering the period from 1990 to the present. The ratio is similar in the W and E stocks, and is consistent with fecundity rates in other pinniped species. Current population levels may be close to the long-term mean, depending on which years are used to calculate the average population level. Long-term stability in the population of the W DPS suggests that the stock may be close to carrying capacity. Dr. Boyd projected future population levels of both the Western and Eastern stocks. He noted that when recent trend data are included in the model, the results for the Western stock suggest increasing viability and that the probability of extinction has been extremely small for at least the past 10 years. For both the Eastern and Western DPS, the

predicted population trajectory indicated that conservation objectives have been met in every year since 1997.

Dr. Markus Horning (Oregon State University) presented recent research on satellite-tagging of juvenile Steller sea lions conducted in collaboration with the Alaska SeaLife Center. Since 2005, life-history (LHX) tags have been implanted into 27 juveniles 12-24 months old. All of the tagged animals were from the PWS-KF area. The tags have a life span of at least 10 years, and record body temperature and other data for each animal. Data stored through the life of the animal are uplinked via satellite only after the host animal has died and the LHX tags have been released from the decomposing or dismembered carcass. There have been 8 detected mortalities to date. Detection probability is estimated at >97%. In seven of the mortalities, the temperature profile data show a sudden drop in temperature from normal body core to ambient. This suggests that deaths occurred at sea due to sudden massive trauma, such as predation by killer whales or sharks. Mortalities that result from disease or starvation would be expected to show a more gradual decrease in body temperature. Data from the eighth mortality is incomplete, and no inferences concerning the cause of death were drawn. None of the LHX mortalities occurred near rookeries or during the summer months (June-September). In contrast, most direct observations by field researchers of SSL mortalities occur in summer months near rookeries, when researchers are monitoring breeding season activity.

Dr. Horning used a single vector, birth-pulse Leslie Population Matrix parameterized with annual survival rates adjusted from published data and LHX tag data and seeded with pup counts for PWS based on recent NMFS surveys. Mortality from predation was adjusted from the LHX tag data and added to the matrix. Using published estimates of adjustments to Steller sea lion vital rates the minimum natality was estimated from the matrix under stable or increasing conditions for the eastern portion of the W DPS. The estimated natality was >0.6 for the PWS region only. Dr. Horning also noted that using current predation data and the modeling exercise described, around 50% of females born in this region are consumed by predators before primiparity (at age of 4 years). Dr. Horning concluded that these data and modeling suggest predation on juvenile SSLs rather than low natality may be the primary impediment to SSL recovery in the PWS area.

John Maniscalco (Alaska SeaLife Center) reported on recent findings at Chiswell Island. Remote cameras installed in 1998 around the island provide full coverage of the rookery, and allow for year-round, real-time observations. In addition, more than 200 SSLs were marked, which represents about 30% of the pups born from 2000-2009. Counts of SSLs ≥1 year old conducted in July-August have increased by approximately 4% per year since 1999 on Chiswell. Pup production has remained stable.

Natality rates were estimated based on extensive behavioral observations of breeding-aged females (≥5 years old) on the rookery. The natality rate is defined as the proportion of females who give birth, assessed based on late-term pregnancy status, and includes stillbirths. The natality rate on Chiswell was estimated to be 69% (± 2.5%) from 2003-2009. This was consistent with pre-decline SSL natality rates and contrasted with the estimated C GOA natality rate of 43% in Holmes et al. (2007). The Holmes et al. estimate is based on population modeling using aerial photos rather than direct field observations.

There was no indication that adult females on Chiswell were nutritionally stressed. Females that gave birth in a given year had a higher probability of giving birth in the following year than females not giving birth. In a nutritionally stressed population, females that give birth in a given year would be expected to have a lower probability of giving birth the following year compared to females who that did not give birth in the previous year.

Finally, data on the cause of pup mortalities was collected. The source of mortality depended on the age of the pups, and differed greatly across years. During the first two weeks, abandonment and surf caused the majority of pup mortalities. During August and September, when juveniles began to enter the water to forage, killer whale predation was a common cause of mortality. Mr. Maniscalco noted that on most rookeries, field researchers are typically present during the breeding season (June-July) and may miss the peak occurrence of killer whale predation events in August and September.

Dr. Russ Andrews (Alaska SeaLife Center) reported on recent technological innovations in SSL research developed specifically to study the foraging ecology of adult females. New instruments include a stomach temperature sensor, an accelerometer to detect 'strikes' at prey, and head-mounted satellite tags. The head-mounted satellite tags were deployed on 3 adult females in Russia in 2005, and collected up to 11 months of data. Tags were attached using a newly-developed surgical technique so that they remained on the animals beyond the annual molt. Finally, a head-mounted digital camera was developed and deployed to record high-resolution images of foraging trips near rookeries.

Dr. Andrews reported on field work conducted at 10 rookeries in Russia. Currently, the Recovery Plan considers the entire population of SSLs in Russia/Asia to be part of the Western stock. A publication distinguishing the Asian stock (Kuril Islands, Sea of Okhotsk and Sakhalin Islands) from the Western stock (Eastern Kamchatka, Commander Islands and Western Bering Sea) will be available soon. SSL abundance in the Asian stock is increasing, but the W stock is not recovering.

Research priorities were to promote cooperative pup brand/resight programs in Russia, deploy instruments to obtain fine-scale data on SSL foraging habitat, study energetic costs of foraging, and assess SSL response to changes in prey availability. Studies were conducted on several rookeries with increasing trends and several with decreasing trends. Dr. Burkanov reported earlier on the brand/resight work. Dr. Andrews presented results from research on the length of maternal foraging trips, dive duration, diet composition, and foraging behavior. Head-mounted digital video cameras were mounted on 9 SSLs, and high-resolution images of foraging trips were recorded. SSLs primarily fed on Atka mackerel on the bottom; some salmon and pollock were taken in the water column. All video work was conducted at Lovushki Island, where SSL numbers are increasing (and commercial fishing occurs).

Dr. Andrews would like to extend this study and look at foraging success in the Commander Islands, where commercial fishing isn't occurring. This work is especially relevant since the Commanders are part of W stock, and SSLs have been declining. This would allow a comparison of the Commander Islands to the Kuril Islands, and provide data on foraging range of animals and success rate in an environment similar to the Aleutians. Predation by killer whales may be affecting SSL populations in the Commanders.

Dr. Libby Logerwell (AFSC) presented recent work by the Fisheries Interaction Team (FIT). Two studies examined the effects of fisheries on localized depletion of SSL prey species. A study in the Kodiak area examined localized depletion of walleye pollock due to fishing. Acoustic surveys were conducted before and after the August commercial fishing season in sites open (Barnabus) and closed (Chiniak) to fishing. Pollock abundance estimates for Barnabas in 2001 exhibited high variability, but not in response to fishing. In 2004, pollock abundance decreased between the pre-fishing and post-fishing periods. During the last set of surveys in 2006, pollock abundance did not decrease after fishing, but fishery removals were substantially lower than in 2001 and 2004.

Another study in the Cape Sarichef area examined localized depletion of Pacific cod in response to fishing. Surveys were conducted before (January) and after (March) the most intense period of commercial fishing. Areas inside and outside the trawl exclusion zone at Cape Sarichef were surveyed. The study was initiated in 2001, and pilot studies were conducted in 2002 and 2003; the experiment was fully successful in 2004 and 2005. Pacific cod abundance increased between January and March in both fished and unfished areas. Possible explanations for these results: fishery removals were not large enough to affect local abundance; fish disperse and repopulate fished areas quickly; the spatial scale of the experiment was too small to detect an effect; or a combination of these effects. This work was published in 2008. Ongoing Pacific cod tagging studies at Unimak pass have found that most tagged fish are recovered within 100 nm of where they were tagged, but some fish made longer movements. A new NPRB-funded project will estimate movements of Pacific cod in the BS from summer feeding areas to winter spawning distributions.

Dr. Logerwell summarized the results of an Atka mackerel tagging project conducted in the Aleutians from 2000-2006. The objective of the study was to measure abundance of Atka mackerel inside and outside of four trawl exclusion zones, and to determine whether fish move from inside to outside of the exclusion zones. Fish were tagged and released in June-July and recaptured in September-October. The efficacy of the trawl exclusion zones at mitigating competition between sea lions and commercial fisheries varies geographically. There is a small movement of fish from inside to outside the exclusion zones at Seguam, Tanaga and Kiska, and a large movement at Amchitka. In addition, the biomass of Atka mackerel at Amchitka is relatively small. The other exclusion zones (Seguam, Tanaga, Kiska) have a relatively large biomass of Atka mackerel. Based on food web modeling, it appears that Atka mackerel abundance at Seguam, Tanaga, and Kiska is sufficient to support SSLs at their current abundance, but not at Amchitka. Model results suggest that Atka mackerel abundance is sufficient only at Seguam to support SSLs at their 1977 abundance estimates. This work is currently being prepared for publication and has been provided to PR for consideration for the BiOp.

In 2008, another study examined potential interactions between SSLs and fisheries in the Central Aleutians, focusing on pollock. The goal of the study was to determine whether cooperative biomass assessments and surveys could be an effective way to manage fisheries at the local scales that are important to predators such as SSLs. SSL distributions at haulouts in the Central AI were not strongly correlated with the spatial distribution of pollock, but the diets of Steller sea lions on haulouts near areas where high densities of pollock were observed showed high frequency of occurrence of pollock. The study concluded that although pollock abundance in the Central AI is relatively low, local pollock aggregations are an important food resource for SSLs during winter, and interactions with fisheries are possible.

Finally, Dr. Logerwell reported on preliminary results of models examining relationships between groundfish harvest rates and SSL non-pup counts. There appears to be a negative relationship between Atka mackerel harvest rates and non-pup trends in some Aleutian Islands areas in model runs using data back to 1991, but no such relationship for the 2000-2008 period covering the SSL protection measures currently in place. The relationship would suggest that as estimated harvest rates increased, non-pup counts decreased. The opposite trend appeared to exist for the Pacific cod and pollock fisheries, with a positive association between Pacific cod and pollock harvest rates and non-pup counts in the BSAI and GOA. However, the regressions used to model these relationships generally had relatively high P-values (<0.25) and these associations are inconclusive. Dr. Logerwell also examined relationships between oceanographic conditions and SSL non-pup counts in the Aleutians, and found that some indicators, such as chlorophyll counts, decrease farther west in the Aleutians.

Kate Wynne (UAF-Kodiak) reported on recent work by the Gulf Apex Predator (GAP) study around Kodiak. The objectives of the study are to examine what the trophic-level effects of past baleen whale removals may have been relative to SSLs, and what effect whale recovery might have on SSL carrying capacity. Ship-based Russian whalers operating from the 1948-1972 period removed a huge number of whales from the GOA. For example, logbook data show that as recently as 1965, 2 whaling ships operating near Kodiak removed 873 fin whales, 566 humpback whales, and 1821 sperm whales, as well as smaller numbers of other whale species. The GAP study hypothesizes that such removals affected the GOA trophic system. Baleen whales primarily feed on zooplankton and forage fish, and removing whales from the system may have had bottom-up effects on the GOA ecosystem by making these resources available to other predators.

In recent years, humpback and fin whale populations in the north Pacific have been increasing by 6% and 4.7% per year, respectively. As a result, the prey base is now being shared by more consumers, and there is the potential for competition among species with overlapping diets, and a reduction in carrying capacity for SSLs. The study is focusing on two areas: diet of humpback and fin whales in the Central GOA and their population abundance, seasonal distribution, reproductive rates, and stock structure.

Committee Discussion

Data Tables from BiOp

Ms. Melanie Brown (NMFS) gave a brief overview of the tables and figures provided to the committee by NMFS PR that show the amount of groundfish catch inside critical habitat. The committee was disappointed that PR wasn't available to answer questions and provide more information on the tables.

There were numerous questions about the tables and concerns about the presentation of the data:

(1) It was not clear why arrowtooth flounder was a focus of the tables, in addition to the 3 SSL prey species.

(2) The figure showing the RCAs would be much more useful if it showed latitude and longitude delineations for the boundaries of the 10 areas; it is difficult to see where the boundaries are from the maps provided.

(3) NMFS indicated that the tables are based on extrapolated observer data. There is more than one way to extrapolate observer data, and additional information is needed understand the significance of these data, particularly a comparison of the catch estimates to the TACs and biomass estimates for each fishery.

(4) Why was 1999 chosen as the base year for comparing later years (2005, 2006, 2007, and 2008)? Are the results different if another year (e.g., 1998, 2000) is used as the base year?

(5) The seasonal catch data are reported in a misleading way in the figures showing quarterly catch in each fishery. The figures report catch (mt) on a seasonal (quarterly) basis, which gives the impression that in some fisheries seasonal apportionments (e.g., GOA Pcod 60/40 A/B split) are not being adhered to by inseason management. It is important to show how these aspects of the SSL protection measures have worked.

(6) Catch in the 0-3 nm zones appears to be underrepresented, particularly in the GOA, and is higher than expected for some fisheries in some areas (e.g., Atka mackerel in the Aleutians).

(7) Are the State waters groundfish fisheries included in the tables?

(8) How were the amounts of catch around rookeries and haulouts calculated in cases where these zones may overlap?

(9) The tables comparing the percentage of catch in CH among years should account for differences in the relative abundance of the species (i.e., TACs and biomass estimates) among years.

(10) The SSLMC is especially concerned that the tables do not appear to include an evaluation of all of the SSL management measures and their effect on the prosecution of the groundfish fisheries. For example, current measures were intended to reduce catch rates by day, week, or season (e.g., Atka mackerel and Pacific cod) and not data were presented to evaluate whether these objectives were achieved).

All of these combined data issues raise red flags to the Committee. Given these omissions, errors, and lack of breadth in the data tables, the SSLMC is concerned over the use of such information in the upcoming BiOp.

BiOp Schedule

NMFS staff informed the committee that the internal NMFS BiOp review process begins on February 1, and the draft BiOp is still scheduled to be released on March 1. The SSLMC asked whether NMFS Sustainable Fisheries can reject the draft BiOp during the internal review process, and whether NMFS is still compelled to release the BiOp. Mr. Lepore informed the committee that the document currently being prepared is only the draft BiOp prepared by NMFS Protected Resources; when the BiOp is final it will be NMFS' document.

CIE Terms of Reference

The SSLMC is concerned that the reviewers have been given an unrealistic amount of background reading material for a 10-day assignment. In addition to the extensive list of background documents (BSAI and GOA FMPs, etc.) that the reviewers have been assigned to read, will the CIE also review the SSLMC and NPFMC comments on the BiOp, and NMFS' response to these comments?

NMFS letter to the Council

The SSLMC strongly believes that the BiOp should compare SSL survey data from 2000 to 2008/9 to evaluate the effectiveness of the SSL protection measures. The committee is concerned that item (4) in the NMFS letter indicates that the agency will use a 30-year trend to assess the population, yet none of the presentations by NMML staff on the trend counts have used a 30-year period.

The SSLMC suggests that reexamination of the boundary between the E DPS and the W DPS is warranted *vis a vis* the genetic composition, and recent use of, rookeries at White Sisters and Graves Rock. The SSLMC understands that both SSL sites have been occupied only very recently (an estimated 20 years), and the genetic composition of these animals includes haplotypes (mitochondrial DNA sequences) that were commonly found in the western stock, but had not been seen in the eastern stock. Gelatt et al. (2007) found that both Graves Rock and White Sisters rookeries contained haplotypes that were commonly found in the western stock, but had not been

seen in the eastern stock. At Graves Rock and White Sisters, approximately 55% and 30% of the sampled pups, respectively, showed western stock haplotypes. It seemed to the committee that inclusion of these animals in the E DPS may be inappropriate if they are indeed W DPS animals, regardless of how these counts have been classified in the past. If new genetics and movement information is available that clarifies this issue, the agency should consider this in this BiOp.

Legal issues

The Adverse Modification standard is not clearly defined or interpreted in case law, and the SSLMC believes this poses a potential problem given the apparent inclusion of a firm recovery standard (the SSL population must increase annually for a 30-year period) based on the recovery plan, which is only a "guidance document" and not law. The SSLMC is also concerned over the lack of a clear definition of "conservation" as it applies to the Adverse Mod standard.

Recent scientific findings

The SSLMC thanks the presenters who provided new scientific information on SSL populations, diet, vital rates, predation, and movements in Alaska and Russia over the past three days. The quality and scope of these presentations was excellent, and new information is greatly helping the public understand the status of the SSL population in the north Pacific and interactions with fisheries. The killer whale ecology information was particularly informative, especially Dr. Wade's new data on killer whale abundance, movements, and diet, and Dr. Horning's work on SSL predation based on new life history (LHX) tagging work. The SSLMC requests that NMML provide as soon as possible the brand-resight information for all SSL sites where this work has been done in graphic and numerical form similar to the format of the data provided by Dr. Burkanov for the Russian SSL sites.

The SSLMC notes that the Holmes et al. (2007) natality information is only potentially relevant to the specific subarea (Central GOA) examined in the paper, and cannot be extrapolated to other areas in the range of the W DPS. New work on natality in the eastern part of the W DPS clearly shows much higher natality estimates than those estimated in Holmes et al (2007). The SSLMC also notes that Dr. Boyd's analysis indicates that current levels of pup productivity are similar for both the Eastern DPS and Western DPS, and may be close to the long term mean for the population overall.

When using pup to nonpup ratios to estimate SSL abundance trends, the SSLMC notes that where known emigration or immigration occurs in such areas as the western Aleutians (evidenced by Russian brand/resight data for nearby areas), these ratios may not be comparable to ratios calculated in other subareas given the potentially large amount of movement of individuals into or out of these subareas, confounding the efficacy of calculating, much less comparing, these ratios.

The committee expressed concern about assumptions that may be made when rookery counts decline in one area, absent movement information derived from marked animals. For example, movements among rookeries could explain declines at rookeries in one area and increases in another area. Pooling rookeries within a given subarea may provide a snapshot of the trend in that subarea, but subarea groupings are arbitrary and do not account for movements among subareas. Again, the brand-resight data requested from NMML above would provide insight into these movement patterns.

Mercury contamination may be a potentially large issue in the health of SSLs in portions of their range, particularly in the west. The SSLMC believe greater emphasis should be placed on

evaluation of contaminants and disease in all subareas of the SSL – these factors could be important in regulating SSL abundance, and recovery, in some areas.

Severe weather and some oceanographic parameters (chlorophyll, sea surface temperature) may be impacting SSL abundance in some subareas in ways that are not understood; but some new work indicates potentially strong negative correlations between stormy subareas and SSL trends in abundance. More work is needed to evaluate correlations between these oceanographic indicators and SSL abundance trends in areas of the W DPS.

The SSLMC is greatly concerned over the recent AFSC research correlating SSL non-pup abundance trends to harvest rates in certain groundfish fisheries and areas; new information from the FIT group presented to the SSLMC showed some very weak to non existent relationships with P-values of 0.25, and are thus insignificant and very preliminary at this time. The SSLMC believes that this kind of analysis should not be used in the upcoming BiOp. However, if it is contemplated that this analysis should be incorporated into the draft BiOp, it should be fully vetted and peer reviewed prior to such use.

New information showing the potential for competition between humpbacks and other large whales with SSLs was of particular interest to the SSLMC. The trophic-level analysis from blubber and data on whale abundances and distributions may shed light on the potential reduction in carrying capacity for SSLs as a result of increased in whale populations.

Future research

The SSLMC strongly encourages NMFS and NMML to place high priority on SSL monitoring and research, including brand resight work, and killer whale predation, in the C and W Aleutians. The SSLMC recognizes the permitting issues. However, Russian studies of SSLs in fished and unfished areas (reported on by Dr. Burkanov and Dr. Andrews) show some interesting and potentially informative correlations, and lack of correlations, between fishing and SSL trends. The SSLMC recommends that the Council ask that a commitment be made for long-term research and monitoring in this area and to prioritize funding this work in future years.

The meeting adjourned at 4pm on January 28.

DRAFT

North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
January 26-28, 2010

Alaska Fisheries Science Center, Seattle

Purpose: Receive databases, reports, and other updated information requested by the Committee to prepare for review of the upcoming draft *status quo* Biological Opinion; identify other information relevant to the BiOp review; discuss BiOp review process

AGENDA

January 26 - 8:30 AM – 5:00 PM

1. Introductions and Opening Remarks, Announcements, Agenda Approval (Cotter)

2. Minutes of Last Meeting (Heltzel)

3. Update on draft *status quo* BiOp (Heltzel, Wilson)

4. Receive Updated Information on SSL-related research (see attached schedule of presentations)

January 27 – 8:30 AM – 5:00 PM

5. Continue Review of Updated Information

January 28 – 8:30 AM – 5:00 PM - **AFSC**

6. Continue Review of Updated Information

7. Define Additional Data Needs

8. Discuss BiOp Review Process and Committee Meeting Schedule

9. Action Items, Closing Remarks, Adjourn (Cotter)

Public comment periods will be provided during the meeting.

Contact Jeannie Heltzel or Bill Wilson at the Council offices if you have questions: 907-271-2809 or jeannie.heltzel@noaa.gov or bill.wilson@noaa.gov