Revised 10/09/2014

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

STOCK DEFINITION AND GEOGRAPHIC RANGE

Steller sea lions range along the North Pacific Rim from northern Japan to California (Loughlin et al. 1984), with centers of abundance and distribution in the Gulf of Alaska and Aleutian Islands (Fig. 1). Large numbers of individuals disperse widely outside of the breeding season (late May-early July), probably to access seasonally important prey resources. This results in marked seasonal patterns of abundance in some parts of the range and potential for intermixing in foraging areas of animals that were born in different areas (Sease and York 2003). Despite the wide-ranging movements of juveniles and adult males in particular, exchange between rookeries by breeding adult females and males (other than between adjoining rookeries) is low (NMFS 1995, Trujillo et al. 2004, Hoffman et al. 2006). A northward shift in the overall breeding distribution has occurred, with a contraction of the range in southern California and new rookeries established in southeastern Alaska (Pitcher et al. 2007).

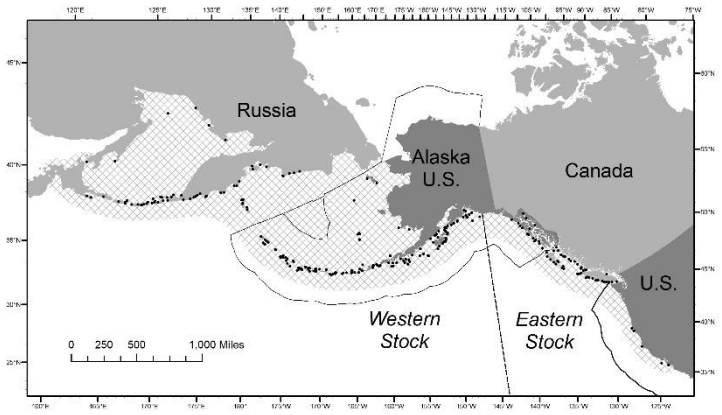

Figure 1. Generalized distribution (crosshatched area) of Steller sea lions in the North Pacific and major U.S. haulouts and rookeries (50 CFR 226.202, 27 August 1993), as well as active Asian and Canadian (British Columbia) haulouts and rookeries (points: Burkanov and Loughlin 2005; S. Majewski, Fisheries and Oceans Canada, personal communication). Black dashed line (144°W) indicates stock boundary (Loughlin 1997) and solid black line delineates U.S. Exclusive Economic Zone.

Loughlin (1997) and Phillips et al. (2009) considered the following information when classifying stock structure based upon the phylogeographic approach of Dizon et al. (1992): 1) Distributional data: geographic distribution continuous, yet a high degree of natal site fidelity and low (<10%) exchange rate of breeding animals between rookeries; 2) Population response data: substantial differences in population dynamics (York et al. 1996); 3) Phenotypic data: skull morphology (Phillips et al. 2009); and 4) Genotypic data: substantial differences in mitochondrial DNA (Bickham et al. 1996). Based on this information, two separate stocks of Steller sea lions were recognized within U.S. waters: an eastern U.S. stock, which includes animals born east of Cape Suckling, Alaska (144°W), and a western U.S. stock, which includes animals born at and west of Cape Suckling (Loughlin 1997; Fig. 1).

All genetic analyses confirm a strong separation between western and eastern stocks and there may be sufficient morphological differentiation to support elevating the two recognized stocks to subspecies (Phillips et al. 2009) despite the observation that western stock haplotypes are present in substantial numbers at two northern southeast Alaska rookeries (Gelatt et al. 2007).

In 1998, a single Steller sea lion pup was observed on Graves Rock just north of Cross Sound in Southeast Alaska, and within 15 years (2013), pup counts had increased to 551 (DeMaster 2014). Mitochondrial and microsatellite analysis of pup tissue samples collected in 2002 revealed that approximately 70% of the pups had mtDNA haplotypes that were consistent with those found in the western stock (Gelatt et al. 2007). Similarly, a rookery to the south on the White Sisters Islands where pups were first noted in 1990 was also sampled in 2002 and approximately 45% of those pups had western stock haplotypes. Collectively, this information demonstrates that these two most recently established rookeries in northern southeast Alaska have been partially to predominately established by western stock females. Movements of animals marked as pups in both stocks support these genetic results (Jemison et al. 2013).

Overall, however, the observations of marked sea lion movements corroborate the extensive genetics research findings for a strong separation between the two currently recognized stocks. Although recent colonization events in the northern part of the eastern DPS indicate movement of western sea lions into this area, the mixed part of the range remains small (Jemison et al. 2013), and the overall discreteness of the eastern from the western stock

remains distinct. Hybridization among subspecies and species along a contact zone such as now occurs near the stock boundary is not unexpected as the ability to interbreed is a primitive condition whereas reproductive isolation would be derived. In fact as stated by NMFS and FWS in a 1996 response to a previous comment regarding stock discreteness policy (61 FR 47222), "*The Services do not consider it appropriate to require absolute reproductive isolation as a prerequisite to recognizing a distinct population segment*" or stock. The fundamental concept overlying this distinctiveness is the collection of morphological, ecological and behavioral, and genetic evidence for stock differences initially described by Bickham et al. (1996) and Loughlin (1997), and supported by Baker et al. (2005), Harlin-Cognato et al. (2006), Hoffman et al. (2006, 2009), O'Corry-Crowe et al. (2006), and Phillips et al. (2009, 2011).

POPULATION SIZE

The eastern stock of Steller sea lions breeds on rookeries located in southeast Alaska, British Columbia, Oregon, and California; there are no rookeries located in Washington. Counts of pups on rookeries conducted near the end of the birthing season are nearly complete counts of pup production. Calkins and Pitcher (1982) and Pitcher et al. (2007) concluded that the total Steller sea lion population abundance could be estimated by multiplying pup counts by a factor based on the birth rate, sex and age structure, and growth rate of the population. The most recent total eastern stock pup count is 14,317 and includes counts made between 2009 and 2013 (Table 1; DeMaster 2014; NMFS, Fisheries and Oceans Canada, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, unpublished data). Using pup multipliers of either 4.2 or 5.2 (Pitcher et al. 2007), the population is estimated to be within the range of 60,131 (14,317 × 4.2) and 74,448 (14,317 × 5.2). These are not minimum population estimates, since they are extrapolated from pup counts from photographs taken between 2009 and 2013, and demographic parameters estimated for an increasing (at 3.1% per year) population. The extrapolation factor varied depending on the vital rate parameter that resulted in the growth rate: as low as 4.2 if it was due to high fecundity, and as high as 5.2 if it was due to low juvenile mortality (Pitcher et al. 2007).

Minimum Population Estimate

The minimum population estimate was calculated by adding the most recent non-pup and pup counts from all sites surveyed (Table 1).

Table 1. Non-pup and pup counts from rookery and haulout sites of eastern Steller sea lions, by region. The most recent counts for each site were used to calculate the minimum population estimate (N_{MIN}) for the entire eastern stock, and for the U.S. portion.

Region	Year	Non-pups	Pups	Total count
Southeast Alaska (USA)	2013	19,101	6,741	25,842
British Columbia (Canada)	2010	17,932	5,485	23,417
Washington (USA)	2011	1,749	--	1,749
Oregon (USA)	2013	4,761	--	4,761
Oregon (USA)	2009	--	1,418	1,418
California (USA)	2011	2,108	673	2,781
Eastern stock, total		45,651	14,317	59,968
Eastern stock, U.S. portion only		27,719	8,832	36,551

This results in an N_{MIN} for the eastern U.S. (only) stock of Steller sea lions of 36,551 based on counts as old as 2009 for Oregon pup counts (NMFS, unpublished data) to as recent as 2013 for Oregon and southeast Alaska. Including counts in British Columbia (Canada) yields an N_{MIN} for the entire eastern stock of 59,968. These counts are considered minimum estimates of population size because they have not been corrected for animals at sea.

Current Population Trend

The best available information indicates the eastern stock of Steller sea lion increased at a rate of 4.18% per year (90% confidence bounds of 3.71 - 4.62% per year) between 1979 and 2010 based on an analysis of pup counts in California, Oregon, British Columbia and Southeast Alaska (NMFS 2013). A similar analysis of non-pup counts in the same regions plus Washington yielded an estimate of population increase of 2.99% per year (2.62-3.31% per year; NMFS 2013). Pitcher et al. (2007) reported that the eastern U.S. stock increased at a rate of 3.1% per year during a 25-year time period from 1977 to 2002; however, they used a slightly different method to estimate

population growth than the methods reported in NMFS (2013). The eastern U.S. stock increase has been driven by growth in pup counts in all regions (NMFS 2013).

Steller sea lion numbers in California, especially in southern and central California, have declined from historic numbers. Non-pup counts in California ranged between 4,000 and 6,000 with no apparent trend from 1927 and 1947, but have subsequently declined by over 50%, and were between 1,500 and 2,000 in the period 1980-2011. At Año Nuevo Island off central California, a steady decline in abundance began in 1970, and there was an 85% reduction in the breeding population by 1987 (LeBoeuf et al. 1991). Counts of non-pups in California have been relatively stable, while those in Oregon and Washington have been increasing since 1990. Non-pup counts in southeast Alaska and British Columbia increased steadily between 1990 and 2013, and comprise ~80% of the total eastern stock count (Table 2; Fig. 2).

Fritz et al. (2013) estimated the magnitude of cross-boundary movement of Steller sea lions between the western and eastern stocks using transition probabilities of individually marked sea lions by sex, age and region estimated by Jemison et al. (2013); survival rates by age, sex and region estimated by Hastings et al. (2011) and Fritz et al. (2014); and pup production by region based on aerial surveys conducted in 2009. There was an estimated average net annual movement of only ~200 sea lions from southeast Alaska (eastern stock) to the western stock during the breeding season. Given that only approximately 60% of sea lions are hauled out and available to be counted during breeding season aerial surveys (see summary of sightability by age and sex in Holmes et al. 2007), an average net movement of this magnitude represents a very small (<0.5%) percentage of the total count of sea lions in the western stock or southeast Alaska, and would have a negligible impact on non-pup trend estimates in either area. However, there were significant differences by sex and age in the cross-boundary movement, with a net increase of ~400 females in southeast Alaska (eastern stock) and a net increase of ~600 males in the western stock. The pattern of movement is supported by mitochondrial DNA evidence that indicated that the newest rookeries in northern southeast Alaska (eastern stock) were colonized in part by western females (Gelatt et al. 2007).

Table 2. Counts of adult and juvenile Steller sea lions observed at consistently surveyed rookery and haulout (trend) sites by year and region for the eastern U.S. stock from 1990 through 2013*. California (CA) includes Año Nuevo, Farallon Islands, and St. George Reef. Oregon (OR) includes counts at all sites. Washington (WA) includes Split Rock Complex, Sea Lion Rock/Carroll Island, Bodelteh/Cape Alava/Guano Rock, and Tatoosh. British Columbia (BC) includes counts from all sites. Southeast Alaska (SEAK) includes counts from 24 trend sites.

Region	1990	1991	1992	1994	1996	1998	2000	2002	2006	2008	2009	2010	2011	2013
CA	1,329	1,163	969	1,046	1,369	1,277[1]	1,215	1,096			1,236		935	
OR	2,414		3,581	3,293	3,205	3,971	2,927	4,169	4,506	4,090				4,761
WA	89[2]	274	278	384	595	470	681	650	714	1,198	1,343	1,421	1,749	
BC	6,122[3]	--	7,378	8,104	--	9,818	--	12,122	15,721	15,061		17,932	--	
SEAK	9,149	9,294		11,524	10,778	11,117	12,412	15,138	--	13,902	16,635	15,431	--	18,595
Total	19,103		21,500[4]	24,351		26,653		33,176		35,414[5]		40,174[6]		

*Data sources for counts of adult and juvenile Steller sea lions: Merrick et al. 1992; NMFS 1995; Strick et al. 1997; Sease et al. 1999; Sease and Loughlin 1999; Sease et al. 2001; Olesiuk 2003, 2004, 2008; Brown et al. 2002; NMFS 2008, 2013; ODF&W, unpubl. data, 7118 NE Vandenberg Ave., Corvallis, OR 97330; WDF&W, unpubl. data, Marine Mammal Investigations, 7801 Phillips Road SW, Lakewood WA 98498; Point Reyes Bird Observatory, unpubl. data, 4990 Shoreline Hwy., Stinson Beach, CA 94970; NMFS, unpublished data (M. Lowry, SWFSC); DeMaster 2009, 2014.

[1] This count was conducted in 1999.
[2] This count was conducted in 1989.
[3] This count was conducted in 1987.
[4] Total includes 1991 SEAK count.
[5] Total includes 2004 CA count of 1,163.
[6] Total includes 2008 OR and 2009 CA count.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

There are no estimates of maximum net productivity rates for Steller sea lions. Pitcher et al. (2007) observed a rate of population increase of 3.1% per year for the eastern stock, but concluded this rate did not represent a maximum rate of increase. NMFS (2013) estimated that the eastern stock increased at rates of 4.18% per year using pup counts, and 2.99% per year using non-pup counts between 1979 and 2009. Hence, until additional data become available, it is recommended that the pinniped maximum theoretical net productivity rate (R_{MAX}) of 12% be used for this stock (Wade and Angliss 1997).

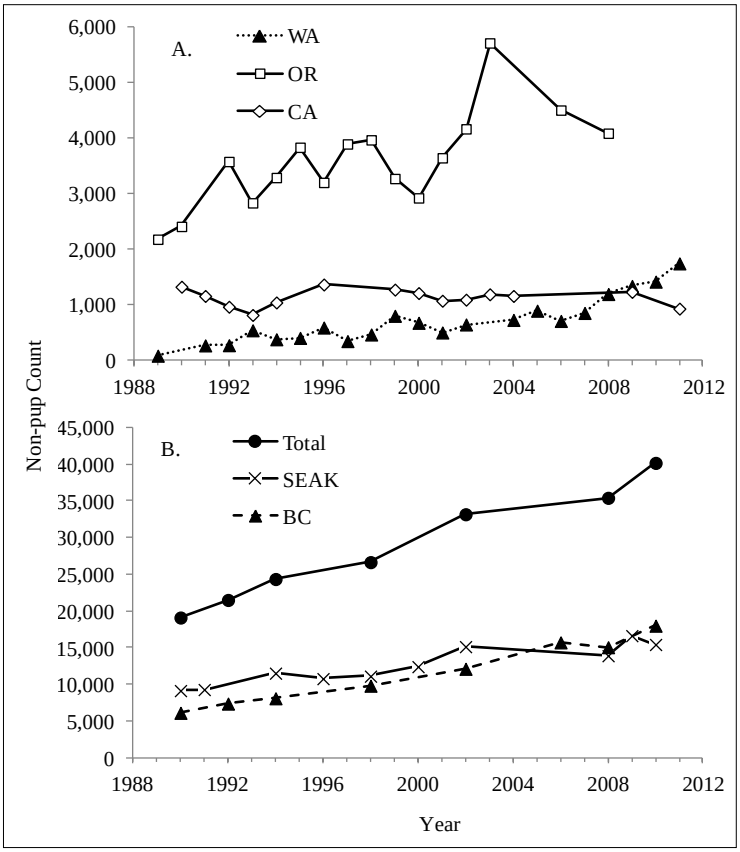

Figure 2. Counts of adult and juvenile Steller sea lions at rookery and haulout trend sites by region throughout the range of the eastern U.S. stock, 1990-2013. Data from Oregon and British Columbia include all sites. Region abbreviations and data are in Table 2. (A.) CA, OR, and WA. (B.) BC, SEAK, and Total Eastern stock.

POTENTIAL BIOLOGICAL REMOVAL

Under the 1994 reauthorized Marine Mammal Protection Act (MMPA), the potential biological removal (PBR) is defined as the product of the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor: $PBR = N_{MIN} \times 0.5R_{MAX} \times F_R$. On 4 December 2013, the eastern stock of Steller sea lion was removed from the list of 'threatened' species under the Endangered Species Act (ESA; 78 FR 66140). NMFS's decision to delist this species was based on the information presented in the Status Review (NMFS 2013), the factors for delisting in section 4(a)(1) of the ESA, the biological and threats-based recovery criteria in the 2008 Recovery Plan (NMFS 2008), the continuing efforts to protect the species, and information received during public comment and peer review. NMFS's consideration of this information led to a determination that the eastern population has recovered and no longer meets the definition of a threatened species under the ESA. Per the 2013 SAR, NMFS for now will continue, under the MMPA, to consider the stock depleted; the recovery factor of 0.75 is maintained and PBR = 1,645 (36,551 × 0.06 × 0.75).

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

New Serious Injury Guidelines

NMFS updated its serious injury designation and reporting process, which uses guidance from previous serious injury workshops, expert opinion, and analysis of historic injury cases to develop new criteria for distinguishing serious from non-serious injury (Angliss and DeMaster 1998, Andersen et al. 2008, NOAA 2012). NMFS defines serious injury as an "*injury that is more likely than not to result in mortality*." Injury determinations for stock assessments revised in 2013 or later incorporate the new serious injury guidelines, based on the most recent 5-year period for which data are available.

Fisheries Information

Between 2008 and 2012, there were no incidental serious injuries and mortalities of eastern Steller sea lions observed in the 22 federally regulated commercial fisheries in Alaska monitored for incidental mortality by fisheries observers.

Fishery observers monitored four commercial fisheries during the period from 1990 to 2005 in which Steller sea lions from this stock were taken incidentally: the California (CA)/Oregon (OR) thresher shark and swordfish drift gillnet, WA/OR/CA groundfish trawl, northern Washington (WA) marine set gillnet, and Gulf of Alaska sablefish longline fisheries. The best data available on the rates of serious injury and mortality incidental to these fisheries is presented in Table 3. There have been no observed serious injuries or mortalities incidental to the CA/OR thresher shark and swordfish drift gillnet fishery since the 1990s (Carretta 2002; Carretta and Chivers 2003, 2004). In the WA/OR/CA groundfish trawl (Pacific whiting component only) one Steller sea lion was observed killed in each year in 2000-2003. No data are available after 1998 for the northern Washington marine set gillnet fishery. Between 2005 and 2009, several Steller sea lion mortalities occurred in WA/OR/CA groundfish fisheries, including the limited trawl sector, California halibut trawl, and the at-sea hake sector, with a mean annual mortality in these fisheries of 5.71 (Jannot et al. 2011). There have been no observer reported mortalities in the Gulf of Alaska sablefish longline fishery since 2000 (Perez, unpubl. ms.; Breiwick 2013). During the 4-year period from 2007 to 2010, a total of 45 Steller sea lions mortalities occurred in fisheries operating south of 49°N latitude (2007 = 14 mortalities, 2008 = 6 mortalities, 2009 = 0 mortalities, 2010 = 25 mortalities), with an average annual take of 11.25 animals. These takes were reported as animals killed by gear; however, they could not be assigned to a particular fishery. The total mean annual mortality rate from all fisheries is 17.0 Steller sea lions (Breiwick 2013). No mortalities were reported by fishery observers monitoring drift gillnet and set gillnet fisheries in Washington and Oregon this decade; though, mortalities have been reported in the past.

Table 3. Summary of incidental mortality of Steller sea lions (eastern U.S. stock) due to commercial fisheries from 2005 to 2009 and calculation of the mean annual mortality rate. The most recent 5 years of available data are used in the mortality calculation when more than 5 years of data are provided for a particular fishery. N/A indicates that data are not available. Data for observer coverage, observed mortality and estimated mortality not in parentheses are values from non-breeding season (Aug-Apr), those in parentheses are from breeding season (May-Jul). Details of how percent observer coverage is measured are included in Appendix 6.

Fishery name	Years	Data type	Observer coverage	Observed mortality (in given yrs.)	Estimated mortality (in given yrs.)	Mean annual mortality
WA/OR/CA groundfish (limited entry trawl sector)	2005 2006 2007 2008 2009	obs data	22 (5) 21 (5) 18 (4) 20 (5) 26 (5)	0 (0) 0 (0) 0 (0) 0 (0) 3 (1)	0 (0) 0 (0) 0 (0) 0 (0) 11.56 (--)	2.51 (CV = 0.47)
WA/OR/CA California halibut trawl	2005 2006 2007 2008 2009	obs data	10 13 12 37 N/A	0 0 1 1 N/A	0 0 -- 2.68 N/A	0.74 (CV = 0.63)
WA/OR/CA groundfish (at-sea hake sector)	2005 2006 2007 2008 2009	obs data	100 98 99 99 100	0 (2) 0 (3) 0 (3) 1 (0) 0 (0)	0 (2.99) 0 (3.78) 0 (4.22) 1.3 (0) 0 (0)	2.46 (CV = 0.17)
Observer program total						5.71 (CV = 0.23)

[1] A "--" indicates bycatch estimate is not provided due to the high coefficient of variation for that estimate.

Strandings of Steller sea lions provide additional information on fishery-related mortality. Estimates of fishery-related mortality from stranding data are considered minimum estimates because not all entangled animals strand, and not all stranded animals are found or reported. An average annual mortality and serious injury of 30.6 sea lions with flashers, or salmon troll lures, hanging from their mouth were observed in Southeast Alaska and

northern British Columbia between 2008 and 2012. It is not clear whether entanglements with hooks and flashers involved the recreational or commercial component of the salmon troll fishery. Based on guidelines presented in 77FR3233, 23 January 2012, these fishery interactions are considered "serious injuries". The average minimum annual serious injury and mortality attributed to entanglement in fishing gear, ingestion of gear other than troll gear, or other fishery-related injury and mortality between 2008 and 2012 was 34.6. These estimates are based on opportunistic reports, and actual levels of occurrence are likely higher.

Table 4. Summary of eastern Steller sea lion mortalities and serious injuries by year and type reported to the NMFS Alaska Regional Office, marine mammal stranding database, and ADF&G for the 2008-2012 period (Allen et al. 2014, Helker et al. 2015).

Cause of Injury	2008	2009	2010	2011	2012	Mean Annual Mortality
Dependent animal with seriously injured mother	4	1	3	1	1	2.0
Entanglement (foreign high seas gillnet)	0	0	1	0	0	0.2
Entanglement (halibut gangion line)	0	0	0	1	0	0.2
Entanglement (troll gear)	1	0	0	0	0	0.2
Entanglement (unknown marine debris/gear)	1	0	0	0	0	0.2
Entanglement (unknown pot fishery gear)	1	0	0	0	0	0.2
Neck entanglement (fishing line)	1	0	1	1	0	0.6
Neck entanglement (longline gear)	0	0	0	1	0	0.2
Neck entanglement (packing band)	5	2	4	7	5	4.6
Neck entanglement (rope)	1	0	0	0	2	0.6
Neck entanglement (rubber band)	1	1	1	1	0	0.8
Neck entanglement (unknown marine debris/gear)	25	15	19	24	17	20
Vessel strike (unknown vessel)	0	1	0	0	0	0.2
Gunshot	0	1	2	0	15	3.0
Swallowed troll gear	38	15	42	30	28	30.6
Swallowed unknown fishing gear	0	0	1	0	0	0.2
Swallowed unknown marine debris/gear	1	0	0	0	0	0.2
Minimum total annual mortality						64.0*

*Total excludes gunshot animals from Alaska since these animals are likely already accounted for in the "struck and lost" from the Alaska Native harvest estimates.

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

The minimum estimated mortality rate incidental to commercial and recreational fisheries (both U.S. and Canadian) is 51.6 sea lions per year, based on fisheries observer data (17.0), opportunistic observations, and stranding data (34.6).

Subsistence/Native Harvest Information

The subsistence harvest of Steller sea lions during 2004-2008 is summarized in Wolfe et al. (2009b). During each year, data were collected through systematic interviews with hunters and users of marine mammals in approximately 2,100 households in about 60 coastal communities within the geographic range of the Steller sea lion in Alaska. Approximately 16 of the interviewed communities lie within the range of the eastern U.S. stock. As of 2009, data on community subsistence harvests are no longer being consistently collected. Therefore, the most recent

5-years of data (2005-2008 and 2012) will be used for estimating an annual mortality estimate. The average number of animals harvested and struck but lost is 11 animals/year (Table 5). No monitoring occurred in 2010 and 2011. In 2012, one animal was landed and 8 animals were struck and lost.

An unknown number of Steller sea lions from this stock are harvested by subsistence hunters in Canada. The magnitude of the Canadian subsistence harvest is believed to be small (Fisheries and Oceans Canada 2010). Alaska Native subsistence hunters have initiated discussions with Canadian hunters to quantify their respective subsistence harvests, and to identify any effect these harvests may have on management of the stock.

Table 5. Summary of the subsistence harvest data for the eastern stock of Steller sea lions, 2005-2008 and 2012. As of 2009, data on community subsistence harvests are no longer being consistently collected at a statewide level. Therefore, the most recent 5-years of data (2005-2008 and 2012) will be retained and used for estimating an annual mortality estimate.

Year	Estimated total number taken	Number harvested	Number struck and lost
2005	19[1]	0	19
2006	12.6[2]	2.5	10.1
2007	6.1[3]	0	6.1
2008	9.7[4]	1.7	8.0
2012	9	1	8
Mean annual take (2004-2008)	11.3	1.0	10.2

[1]Wolfe et al. 2006; [2]Wolfe et al. 2008; [3]Wolfe et al. 2009a; [4]Wolfe et al. 2009b.

Other Mortality

Illegal shooting of sea lions in U.S. waters was thought to be a potentially significant source of mortality prior to the listing of sea lions as threatened under the ESA in 1990. (Note: the 1994 amendments to the MMPA made intentional lethal take of any marine mammal illegal except for subsistence hunting by Alaska Natives or where imminently necessary to protect human life).

Steller sea lions were taken in British Columbia during commercial salmon farming operations. Preliminary figures from the British Columbia Aquaculture Predator Control Program indicated a mean annual mortality of 45.8 Steller sea lions from this stock over the period from 1999 to 2003 (Olesiuk 2004). Starting in 2004, aquaculture facilities were no longer permitted to shoot Steller sea lions (P. Olesiuk, Pacific Biological Station, Canada, pers. comm.). However, Fisheries and Oceans Canada (2010) summarized that "illegal and undocumented killing of Steller Sea Lions is likely to occur in B.C." and reported "[s]everal cases of illegal kills have been documented (DFO unpublished data), and mortality may also occur outside of the legal parameters assigned to permit holders (e.g. for predator control or subsistence harvest)" but "…data on these activities are currently lacking."

Strandings of Steller sea lions with gunshot wounds do occur, along with strandings of animals entangled in material that is not fishery-related. During the period from 2008 to 2012, there was 1 reported stranding of an animal from this stock with gunshot wounds in Oregon and Washington in 2010, resulting in an estimated annual mortality of 0.2 Steller sea lions. This estimate is considered a minimum because not all stranded animals are found, reported, or cause of death determined (via necropsy by trained personnel). Eighteen mortalities from gunshots were reported in Alaska (1 in 2009, 2 in 2010, and 15 in 2012). Although it is likely that illegal shooting does occur in Alaska, Steller sea lions reported in the Alaska stranding database as shot are not included in this estimate unless it was confirmed that the death was due to illegal shooting and not already accounted for in the estimate of animals struck and lost in the Alaska Native subsistence harvest. In addition, human-related stranding data are not available for British Columbia. One Steller sea lion death attributed to vessel collision was reported to the Alaska stranding network (0.2 mean annual mortality). Other sources of non-fishery human-related serious injury and mortality include ingestion of unknown marine debris/gear (0.4), entanglement in unknown marine debris/gear (26.2), and dependent of a seriously injured or dead mother (2.0) (Table 4).

Mortalities may occasionally occur incidental to marine mammal research activities authorized under MMPA permits issued to a variety of government, academic, and other research organizations. Between 2006 and 2010, there was 1 incidental mortality (2010) resulting from research on the eastern stock of Steller sea lions, which results in an annual average of 0.2 mortalities per year from this stock (T. Adams, pers. comm., Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver

Spring, MD 20910; 11 January 2012). Two Steller sea lions died in 2008 in traps at Bonneville Dam, part of the lethal take program targeting California sea lions, averaging 0.4 mortalities per year.

The mean average human-caused mortality and serious injury of eastern Steller sea lions for 2008-2012 from sources other than fisheries and Alaska Native harvest is 29.4.

STATUS OF STOCK

Based on currently available data, the minimum estimated U.S. commercial fishery-related mortality and serious injury for this stock (17.0) is less than 10% of the calculated PBR (10% of PBR = 164) and, therefore, can be considered to be insignificant and approaching a zero mortality and serious injury rate. The estimated annual level of total human-caused mortality and serious injury (51.6 (commercial and recreational fisheries) + 11.3 (subsistence) + 29.4 (other human-caused mortality) = 92.3) does not exceed the PBR (1,645) for this stock. The eastern U.S. stock of Steller sea lion is currently not listed under the ESA but is considered "depleted" under the MMPA; therefore, this stock is classified as a strategic stock. Because the counts of eastern Steller sea lions have steadily increased over a 30+ year period, this stock is likely within its OSP; however, no determination of its status relative to OSP has been made.

Habitat Concerns

Unlike the western U.S. stock of Steller sea lion, there has been a sustained and robust increase in abundance of the eastern U.S. stock throughout most of its breeding range. The eastern U.S. stock is increasing throughout the northern portion of its range (Southeast Alaska and British Columbia), and is stable or increasing slowly in the central portion (Oregon through central California). In the southern end of its range (Channel Islands in southern California), it has declined considerably since the late 1930s, and several rookeries and haulouts south of Año Nuevo Island have been abandoned. Changes in the ocean environment, particularly warmer temperatures, may be factors that have favored California sea lions over Steller sea lions in the southern portion of the Steller's range (NMFS 2008).

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