



United States Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Alaska Fisheries Science Center  
National Marine Mammal Laboratory  
7600 Sand Point Way NE  
Seattle WA 98115  
206-526-4246      FAX: 206-526-6615  
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Memorandum For:                    The Record

From:                                    Lowell Fritz and Tom Gelatt, NMML  
    Morgan Lynn and Wayne Perryman, SWFSC

Subject:                                 Survey of Adult and Juvenile Steller Sea Lions, June 2006

An aerial survey to assess trends in numbers of western stock (wDPS) adult and juvenile Steller sea lions in Alaska (from Cape St. Elias at 145°W to Attu Island at 172°E) was conducted by NMFS from 14-30 June 2006. As in 2004 ([Fritz and Stinchcomb 2005](#)), the 2006 survey was conducted using medium format, vertical photogrammetric techniques by NMFS Southwest Fisheries Science Center. Aerial surveys for non-pups are conducted in mid-late June, when the greatest proportion of adults is onshore to give birth and breed. The 2006 survey, however, did not result in a complete assessment of numbers at trend sites across the Alaskan range of the wDPS of Steller sea lion (Tables 1, 2, and 3). Trend sites are those that have been consistently surveyed since the mid-1970s (70s Trend Sites) or 1990 (90s Trend Sites). In 2006, we were able to survey only 53 of 87 70s Trend Sites, and only 106 of 161 90s Trend Sites because: 1) the start of the survey was delayed because of a court-ordered cessation (beginning 26 May 2006) of all Steller sea lion research authorized by permits issued by NMFS, and 2) bad weather (e.g., low clouds, fog) reduced the number of days on which it was possible to conduct a survey. Between 2000 and 2004, counts of non-pups at wDPS trend sites in Alaska increased 11-12%, and this was the first increase observed across 3 surveys (2000, 2002, and 2004) since the late 1970s. Because of the incomplete nature of the 2006 aerial survey, there is no new information to update the non-pup abundance trend for the entire western stock of Steller sea lions in Alaska.

Although not all wDPS 90s trend sites in Alaska were surveyed in 2006, all 90s trend sites were surveyed in two of the six Alaskan sub-areas:

- eastern Gulf of Alaska (E GULF: 145°-150°W; N=13) and
- eastern Aleutian Islands (E ALEU: 163°-169°W; N=27) (Tables 1 and 3).

All 90s trend sites except one were surveyed in two other sub-areas:

- western Gulf of Alaska (W GULF: 157°-163°W; N=19 of 20) and
- western Aleutian Islands (W ALEU: 172°-176° E; N=9 of 10) (Tables 1 and 3).

These complete or nearly complete sub-area surveys in 2006 convey some information about local trends (Figure 1). Counts of non-pup sea lions on 90s trend sites in the E GULF, E ALEU, and W GULF were essentially unchanged between 2004 and 2006. For

each of these 3 sub-areas, counts had increased considerably (20-43%) between 2000 and 2004. Thus, the 2006 count indicates that the population of adult and juvenile Steller sea lions in these areas may have stabilized. In the W ALEU, non-pup counts on the 9 trend sites surveyed in 2006 declined 19% from 2004, suggesting that the decline observed in the W ALEU sub-area may be continuing.

#### Literature Cited

[Fritz, L. W., and C. Stinchcomb. 2005. Aerial, ship, and land-based surveys of Steller sea lions \(\*Eumetopias jubatus\*\) in the western stock in Alaska, June and July 2003 and 2004. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-153, 56 p.](#)

Table 1. Counts of adult and juvenile (non-pup Steller sea lions) at TREND ROOKERIES AND HAUL-OUTS from medium-format aerial photos taken in June 2004 and June 2006. Trend Sites surveyed regularly since the 1970s, 1990s, and those that are rookeries are noted. Rookeries labelled Y\* are 'new' rookeries; originally not included as rookeries but have had 50 pups since 1975. Rookeries labelled N\* are listed as critical habitat rookeries, but no record of 50 pups since 1975.

SITENAME	REGION	70s	90s	Rookery	2004	2006
		TREND	TREND			
CAPE ST. ELIAS	E GULF	X	X		318	414
CAPE HINCHINBROOK	E GULF		X		496	237
SEAL ROCKS	E GULF	X	X	Y	841	1,119
WOODED (FISH)	E GULF	X	X	Y	523	619
GLACIER	E GULF	X	X		620	466
THE NEEDLE	E GULF	X	X		123	127
POINT ELRINGTON	E GULF	X	X		132	58
CAPE PUGET	E GULF		X		0	0
CAPE FAIRFIELD	E GULF		X		0	0
RUGGED	E GULF	X	X		0	0
AIALIK CAPE	E GULF		X		1	0
CHISWELL ISLANDS	E GULF	X	X	Y*	72	71
SEAL ROCKS (KENAI)	E GULF	X	X		3	4
OUTER (PYE)	C GULF		X	Y	222	251
GORE POINT	C GULF		X		0	0
EAST CHUGACH	C GULF		X		0	
PERL	C GULF		X		49	
NAGAHUT ROCKS	C GULF		X		1	
ELIZABETH/CAPE ELIZABETH	C GULF		X		28	
SUGARLOAF	C GULF	X	X	Y	667	733
USHAGAT/NW	C GULF	X	X		3	0
USHAGAT/SW	C GULF	X	X	Y*	101	141
USHAGAT/ROCKS SOUTH	C GULF	X	X		8	9
LATAK ROCKS	C GULF	X	X		56	
SEA OTTER	C GULF		X		127	
RK NEAR SEA OTTER	C GULF		X		10	
AFOGNAK/TONKI CAPE	C GULF		X		0	
SEA LION ROCKS (MARMOT)	C GULF	X	X		2	
MARMOT	C GULF	X	X	Y	703	686
LONG ISLAND	C GULF	X	X		32	
KODIAK/CAPE CHINIAK	C GULF	X	X		87	
UGAK	C GULF		X		0	
KODIAK/GULL POINT	C GULF		X		109	
KODIAK/CAPE BARNABAS	C GULF	X	X		0	
TWOHEADED	C GULF	X	X		266	
SITKINAK/CAPE SITKINAK	C GULF	X	X		80	
KODIAK/CAPE UGAT	C GULF		X		2	167
KODIAK/STEEP CAPE	C GULF		X		0	14
SHAKUN ROCKS	C GULF		X		104	67

<b>Table 1 (continued)</b>		<b>70s</b>	<b>90s</b>			
<b>SITENAME</b>	<b>REGION</b>	<b>TREND</b>	<b>TREND</b>	<b>Rookery</b>	<b>2004</b>	<b>2006</b>
TAKLI	C GULF		X		85	157
PUALE BAY	C GULF		X		58	2
UGAIUSHAK	C GULF	X	X		0	0
SUTWIK	C GULF	X	X		206	114
CHOWIET	C GULF	X	X	Y	541	
CHIRIKOF	C GULF	X	X	Y	303	
NAGAI ROCKS	C GULF		X		330	
CHERNABURA	W GULF	X	X	Y	828	
LIGHTHOUSE ROCKS	W GULF		X	Y*	111	153
KAK	W GULF		X		17	24
MITROFANIA	W GULF		X		182	103
SPITZ	W GULF	X	X		1	0
KUPREANOF POINT	W GULF		X		53	116
CASTLE ROCK	W GULF	X	X		70	15
ATKINS	W GULF	X	X	Y	651	663
THE HAYSTACKS	W GULF		X		38	1
THE WHALEBACK	W GULF		X		102	99
NAGAI/MOUNTAIN POINT	W GULF	X	X		80	56
SEA LION ROCKS (SHUMAGINS)	W GULF	X	X		36	142
UNGA/ACHEREDIN POINT	W GULF		X		264	152
JUDE	W GULF		X	Y*	474	338
PINNACLE ROCK	W GULF	X	X	Y	1,011	1,167
CLUBBING ROCKS	W GULF	X	X	Y	911	1,037
CHERNI	W GULF		X		0	0
SOUTH ROCKS	W GULF		X		528	320
BIRD ROCK	W GULF	X	X		57	62
	W GULF		X		17	0
UNIMAK/CAPE SARICHEF	E ALEU		X		250	6
AMAK+ROCKS	E ALEU	X	X		733	410
SEA LION ROCK (AMAK)	E ALEU	X	X	Y	456	447
UGAMAK COMPLEX	E ALEU	X	X	Y	1,304	1,319
AIKTAK	E ALEU		X		101	111
TIGALDA/ROCKS NE	E ALEU		X		141	202
TIGALDA/SOUTH SIDE	E ALEU		X		46	83
ROOTOK	E ALEU		X		96	96
TANGINAK	E ALEU		X		4	6
AKUN/BILLINGS HEAD	E ALEU	X	X	Y	307	338
AKUTAN/REEF-LAVA	E ALEU	X	X		119	103
AKUTAN/CAPE MORGAN	E ALEU	X	X	Y	1,021	1,249
OLD MAN ROCKS	E ALEU		X		71	112
EGG	E ALEU		X		5	0
OUTER SIGNAL	E ALEU		X		0	0
UNALASKA/CAPE SEDANKA	E ALEU		X		0	0
UNALASKA/BISHOP POINT	E ALEU		X		265	285
UNALASKA/MAKUSHIN BAY	E ALEU		X		20	28
UNALASKA/SPRAY CAPE	E ALEU		X		0	0

<b>Table 1 (continued)</b>		<b>70s</b>	<b>90s</b>			
<b>SITENAME</b>	<b>REGION</b>	<b>TREND</b>	<b>TREND</b>	<b>Rookery</b>	<b>2004</b>	<b>2006</b>
UNALASKA/CAPE IZIGAN	E ALEU		X		238	329
BOGOSLOF/FIRE ISLAND	E ALEU	X	X	Y	380	358
UMNAK/CAPE ASLIK	E ALEU	X	X		119	73
POLIVNOI ROCK	E ALEU		X		91	42
THE PILLARS	E ALEU		X		4	0
OGCHUL	E ALEU	X	X	Y	139	132
VSEVIDOF	E ALEU	X	X		48	41
ADUGAK	E ALEU	X	X	Y	259	429
ULIAGA	C ALEU		X		0	99
KAGAMIL	C ALEU	X	X		1	0
CHUGINADAK	C ALEU	X	X		129	79
CARLISLE	C ALEU	X	X		0	0
HERBERT	C ALEU	X	X		38	66
YUNASKA	C ALEU	X	X	Y	260	255
CHAGULAK	C ALEU	X	X		0	13
AMUKTA+ROCKS	C ALEU	X	X		2	18
SEGUAM/FINCH POINT	C ALEU	X	X		2	
SEGUAM/SW RIP	C ALEU	X	X		40	
SEGUAM/SADDLERIDGE	C ALEU	X	X	Y	923	
SEGUAM/TURF POINT	C ALEU	X	X		58	
SEGUAM/LAVA COVE	C ALEU	X	X		0	
SEGUAM/LAVA POINT	C ALEU	X	X		5	
SEGUAM/WHARF POINT	C ALEU	X	X		90	
AGLIGADAK	C ALEU	X	X	N*	61	
AMLIA/EAST CAPE	C ALEU	X	X		34	
AMLIA/SVIECH. HARBOR	C ALEU		X		144	
TANADAK (AMLIA)	C ALEU	X	X		1	
SAGIGIK	C ALEU	X	X		30	
ATKA/NORTH CAPE	C ALEU	X	X		383	279
ATKA/CAPE KOROVIN	C ALEU	X	X		4	0
SALT	C ALEU	X	X		0	
KASATOCHI/NORTH POINT	C ALEU	X	X	Y	667	610
OGLODAK	C ALEU		X		86	111
IKIGINAK	C ALEU	X	X		0	8
FENIMORE	C ALEU		X		30	10
ANAGAKSIK	C ALEU	X	X		2	52
GREAT SITKIN	C ALEU		X		0	0
LITTLE TANAGA STRAIT	C ALEU	X	X		49	
KAGALASKA	C ALEU		X		48	0
ADAK	C ALEU	X	X	Y	1,008	
KANAGA/N CAPE	C ALEU		X		7	13
KANAGA/CAPE MIGA	C ALEU		X		0	0
KANAGA/SHIP ROCK	C ALEU		X	Y*	229	
TANAGA/BUMPY POINT	C ALEU		X		33	
TANAGA/CAPE SASMIK	C ALEU		X		122	
GRAMP ROCK	C ALEU	X	X	Y	679	
UGIDAK	C ALEU	X	X		25	

<b>Table 1 (continued)</b>		<b>70s</b>	<b>90s</b>			
<b>SITENAME</b>	<b>REGION</b>	<b>TREND</b>	<b>TREND</b>	<b>Rookery</b>	<b>2004</b>	<b>2006</b>
TAG	C ALEU	X	X	Y	242	
KAVALGA	C ALEU	X	X		56	
UNALGA+DINKUM ROCKS	C ALEU	X	X		19	
ULAK/HASGOX POINT	C ALEU	X	X	Y	531	
AMATIGNAK/KNOB POINT	C ALEU		X		1	
AMATIGNAK/NITROF POINT	C ALEU	X	X		76	38
SEMISOPOCHNOI/POCHNOI	C ALEU		X	N*	55	41
AMCHITKA/CAPE IVAKIN	C ALEU	X	X		0	0
AMCHITKA/EAST CAPE	C ALEU	X	X	N*	178	103
AMCHITKA/ST. MAKARIUS	C ALEU		X		0	0
AMCHITKA/COLUMN ROCK	C ALEU		X	Y	85	
AYUGADAK	C ALEU	X	X	Y	152	
RAT	C ALEU		X		45	
SEA LION ROCK (KISKA)	C ALEU		X		0	
TANADAK (KISKA)	C ALEU		X		34	
KISKA/SOBAKA-VEGA	C ALEU		X		101	
KISKA/CAPE ST STEPHEN	C ALEU	X	X	Y	210	
KISKA/LIEF COVE	C ALEU	X	X	Y	170	
KISKA/PILLAR ROCK	C ALEU		X		0	
BULDIR	W ALEU	X	X	Y	108	
SHEMYA	W ALEU		X		17	18
AL Aid	W ALEU	X	X		125	86
AGATTU/CAPE SABAK	W ALEU	X	X	Y	325	282
AGATTU/GILLON POINT	W ALEU	X	X	Y	374	308
ATTU/MASSACRE BAY	W ALEU		X		0	0
ATTU/CHIRIKOF POINT	W ALEU		X		75	30
ATTU/CHICHAGOF POINT	W ALEU		X		54	13
ATTU/KRESTA POINT	W ALEU		X		0	0
ATTU/CAPE WRANGELL	W ALEU		X	Y	257	260
<b>90s Trend Site Counts</b>					<b>27,437</b>	<b>18,895</b>
<b>Other Site Counts (Table 2)</b>					<b>1,600</b>	<b>2,394</b>
<b>Total Count</b>					<b>29,037</b>	<b>21,289</b>

Table 2. Counts of adult and juvenile (non-pup Steller sea lions) at NON-TREND HAUL-OUTS from medium-format aerial photos taken in June 2004 and June 2006.

<b>A. Gulf of Alaska</b>			<b>B. Aleutian Islands</b>		
<b>EASTERN GULF OF ALASKA</b>			<b>EASTERN ALEUTIAN ISLANDS</b>		
<b>SITENAME</b>	<b>2004</b>	<b>2006</b>	<b>SITENAME</b>	<b>2004</b>	<b>2006</b>
HOOK POINT	96	101	UNIMAK/CAPE LAZAREF	0	
STEEP POINT	1	11	UNIMAK/CAPE LUTKE	0	0
MIDDLETON	4	0	UNIMAK/SCOTCH CAP	0	0
POINT ELEANOR		0	UNIMAK/S OF SARICHEF		19
PERRY		218	KALIGAGAN	1	0
PLEIADES		0	UNIMAK/SENNETT POINT	0	1
POINT LaTOUCHE	0	0	BASALT ROCK	1	4
DANGER	12	10	AKUN/AKUN BAY	0	0
PROCESSION ROCKS	36	67	AKUN/JACKASS POINT	0	0
CAPE JUNKEN	0	0	AKUN/AKUN HEAD	0	0
CAPE RESURRECTION	3	0	AKUTAN/BATTERY POINT	0	0
GRANITE CAPE	1	89	AVATANAK		15
RABBIT	0	0	BABY	0	4
NEAR AIALIK CAPE		103	INNER SIGNAL	38	0
HOOF POINT		52	UNALASKA/PRIEST ROCK	0	1
<b>CENTRAL GULF OF ALASKA</b>			UNALASKA/WHALEBONE CAPE	0	0
FLAT	4		UNALASKA/CAPE WISLOW	0	0
SHAW	81	162	UNALASKA/CAPE STARICHKOF	0	0
NUKA POINT	0	0	UNALASKA/KOVRIZHKA	0	0
PERL ROCKS	0		UNALASKA/RK NEAR MAKUSHIN		60
WEST AMATULI	0	0	UMNAK/CAPE IDAK		0
SUD	0	0	EMERALD	0	
KODIAK/CAPE PARAMANOF	0	0	UMNAK/REINDEER POINT		0
CAPE DOUGLAS	0	0	UMNAK/CAPE CHAGAK		0
KODIAK/MALINA POINT	0	0	UMNAK/AGULIUK POINT		0
NOISY	0	0	SAMALGA	1	0
KODIAK/CAPE KULIUK	0	0	<b>CENTRAL ALEUTIAN ISLANDS</b>		
CAPE NUKSHAK	0	0	TAGALAK	91	134
CAPE UGYAK	0	0	SILAK	38	32
KODIAK/SUNDSTROM	0	0	ADAK/CAPE MOFFET	0	0
CAPE GULL	0	0	ADAK/ARGONNE POINT	35	12
CAPE KULIAK		0	BOBROF	49	21
KODIAK/CAPE ALITAK	0		SEMISOPOCHNOI/PETREL	0	43
KODIAK/CAPE UYAK		0	SEMISOPOCHNOI/SW KNOB	17	0
KODIAK/STURGEON HEAD		0	SEMISOPOCHNOI/TUMAN POINT	0	0
KODIAK/CAPE IKOLIK	108	52	SEGULA/GULA POINT		1
KODIAK/TOMBSTONE ROCKS	0	0	AMLIA/CAPE MISTY	21	
KILOKAK ROCKS	85	144	KONIUIJ/NORTH POINT	0	0
AIUGNAK COLUMNS	1	24	CHUGUL	39	69
AGHIYUK	27	5	IGITKIN/SW POINT	0	0
<b>WESTERN GULF OF ALASKA</b>			ADAK/CRONE ISLAND	0	
OLGA ROCKS NE	11	28	KANAGA/CAPE CHUNU	9	
OLGA ROCKS SW	117	102	ILAK	45	
SUSHILNOI ROCKS	290	327	SKAGUL/S. POINT	1	
CATON	109	368	OGLIUGA	49	
ATKULIK	0	0	AMCHITKA/OMEGA POINT	0	0
CHANKLIUT	0	0	AMCHITKA/CHITKA POINT	0	
SEAL CAPE	0	0	AMCHITKA/BIRD	0	
BIG KONIUJI	0	0	TWIN ROCKS (KISKA)	13	
TWINS	0	0	KISKA/SOUTH HEAD	0	0
NAGAI/RK W OF CAPE WEDGE	0	0	KISKA/WITCHCRAFT POINT	0	
EGG (SAND POINT)	0	0	KISKA/GERTRUDE-BUKHTI	0	0
UNGA/CAPE UNGA	0	0	<b>WESTERN ALEUTIAN ISLANDS</b>		
OMEGA	0	1	INGENSTREM ROCKS	0	1
WOSNESENSKI	166	113	NIZKI	0	0
HUNT	0	0	DAN'S ROCKS	0	0
HAGUE ROCK	0	0			
SOZAVARIKA	0	0	<b>TOTAL OTHER SITES</b>	<b>1,600</b>	<b>2,394</b>
SANAK	0	0			
UMGA	0	0			

Table 3. Summary of TREND SITES surveyed (A& B) and counts of adult and juvenile (non-pup) Steller sea lions at 1990s Trend Sites (C & D) from medium-format aerial photos taken in June 2004 and June 2006. Counts are unadjusted counts from medium format photographs.

<b>A. Number of 70s Trend Sites Surveyed</b>			<b>C. Counts of Non-Pup Steller Sea Lions</b>		
<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>	Only Completely Surveyed Sub-Areas		
<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>	<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>
E GULF	9	9	E GULF	3,129	3,115
C GULF	16	7	C GULF	4,180	
W GULF	9	8	W GULF	5,431	
E ALEU	11	11	E ALEU	6,217	6,199
C ALEU	38	15	C ALEU	7,145	
W ALEU	4	3	W ALEU	1,335	
<b>Total</b>	<b>87</b>	<b>53</b>	<b>Total</b>	<b>27,437</b>	

<b>B. Number of 90s Trend Sites Surveyed</b>			<b>D. Counts of Non-Pup Steller Sea Lions</b>		
<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>	Sub-Areas Missing Only 1 Trend Site (removed from both years)		
<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>	<b>Sub-Area</b>	<b>2004</b>	<b>2006</b>
E GULF	13	13	W GULF	4,603	4,448
C GULF	33	14	W ALEU	1,227	997
W GULF	20	19			
E ALEU	27	27			
C ALEU	58	24			
W ALEU	10	9			
<b>Total</b>	<b>161</b>	<b>106</b>			



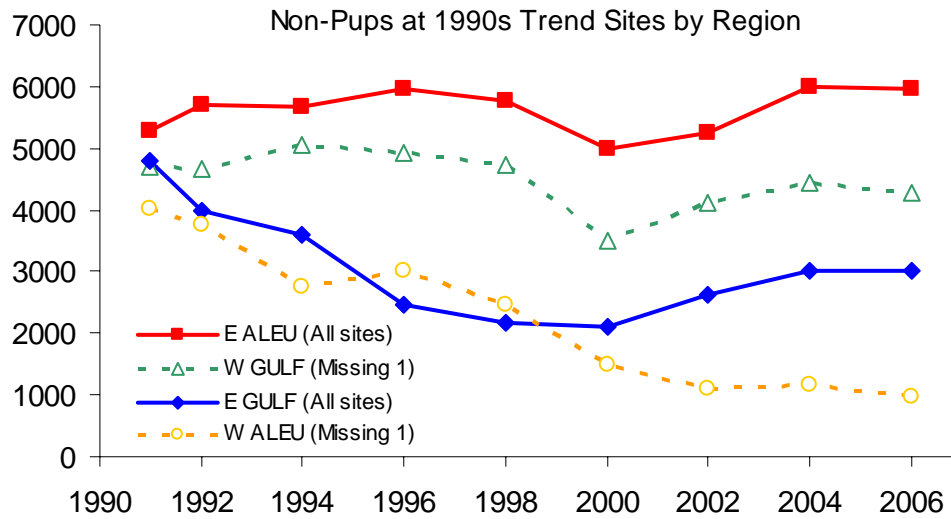


Figure 1. Counts of adult and juvenile (non-pup) Steller sea lions at 1990s Trend Sites (Table 1) by region (=sub-area) in the range of the western stock in Alaska. Only those regions with complete (eastern Aleutian Islands=E ALEU and eastern Gulf of Alaska=E GULF) or nearly complete (missing only 1 trend site: western Gulf of Alaska=W GULF and western Aleutian Islands=W ALEU) surveys of trend sites are shown. Sea lions in 2004 and 2006 were counted on medium format photographs taken vertically over trend sites; sea lions in all other years were counted on 35 mm slides shot obliquely from side windows of aircraft. Region totals for 2004 and 2006 reflect a reduction of 3.64% from the actual medium format count to account for the higher resolution and higher counts available from medium format vs. 35 mm film (Fritz and Stinchcomb 2005).