Gulf of Alaska Pollock D-Season Redistribution
North Pacific Fishery Management Council
February 2012

Abstract

In June 2011, the North Pacific Fishery Management Council (NPFMC) limited Chinook salmon prohibited species catch (PSC) to 25,000 Chinook for the western and central Gulf Of Alaska (GOA) pollock fisheries. The Council also requested a discussion on the potential to redistribute GOA D-season pollock quota to the A-, B-, and C-seasons to reduce fleet exposure to Chinook PSC. In October, 2011 the Council asked staff to expand the paper to incorporate data from satellite-tagged sea lions and investigate alternative apportionment schemes for GOA pollock TAC. Satellite data show that Steller sea lions are present, and presumed to be feeding, in the area, although data from the D-season are lacking. Steller sea lion protection measures in the GOA disperse fishing effort temporally into four seasons with 25% of the Total Allowable Catch allocated to each season. It may be possible to combine the C- and D-seasons (TAC distribution 25%, 25%, 50%) or reduce the number of seasons to three (TAC distribution 33%, 33%, 33%). Based on the most recent completed biological opinion, current harvest restrictions decrease the likelihood of disturbance, incidental take, and competition for prey to ensure the groundfish fisheries do not jeopardize the continued existence or modify the designated critical habitat of the western Distinct Population Segment of Steller sea lions. Any changes to these restrictions on the GOA pollock fishery are likely to require formal consultation under Section 7 of the U.S. Endangered Species Act.

Introduction

As a part of its program to reduce Chinook salmon bycatch in the Gulf of Alaska (GOA) groundfish fisheries, at the June, 2011 meeting the Council took action on management measures to limit Chinook salmon bycatch in the Western and Central GOA pollock fisheries. The Council adopted a prohibited species catch (PSC) limit of 25,000 Chinook salmon for the western and Central GOA, with regional caps of 18,316 Chinook salmon in the Central GOA and 6,684 Chinook salmon in the Western GOA. The pollock fishery will close in each area once the PSC limit is reached.

At the June, 2011 Council meeting, the Council asked staff to prepare a discussion paper on the potential to redistribute the GOA pollock D-season quota into the A-, B-, and C-seasons to reduce the exposure to Chinook salmon prohibited species catch. It was recognized at the Council meeting that such an action may be prohibited by Steller sea lion protection measures currently in place in the GOA. At the October, 2011 Council meeting, staff was asked to expand on the existing paper, incorporating the latest data from Steller sea lions tagged with satellite linked transmitters, and investigating alternative allocation schemes for pollock TAC in the GOA.

Description of GOA Commercial Pollock Fishery

The GOA commercial pollock fishery is described in detail in the May, 2011 Chinook salmon EA/RIR/IRFA, and summarized here. The GOA pollock fishery is entirely inshore[1], and approximately 90% of the catch is taken with pelagic trawls. Fishing in winter primarily targets pre-spawning aggregations in Shelikof Strait and near the Shumigan Islands, while summer fishing is less predictable, but primarily occurs near Kodiak Island and in nearshore waters along the Alaska Peninsula.

[1] Inshore refers to processing plants that are located onshore or floating processors that operate within State waters in a single geographic location or vessels that are less than 125 feet length overall (LOA) that process less than 126 mt per week. (see 679.2 definition of "inshore component in the GOA").

Since 1992 the GOA pollock Total Allowable Catch (TAC) has been apportioned spatially and temporally to reduce potential impacts to Steller sea lions. The objective of the apportionment scheme has been to allocate TAC to management areas based on the distribution of surveyed biomass, and to establish three or four seasons between mid-January and autumn. In 2001, four seasons were implemented in the Central and Western GOA, and 25% of the TAC was allocated to each season. The current GOA pollock trawling seasons are:

A season : January 20 – March 10
B season : March 10 – May 31
C season : August 25 – October 1
D season : October 1 – November 1.

Pollock TACs in the Western and Central Regulatory Areas of the GOA are apportioned among Statistical Areas 610, 620, and 630, pursuant to §679.20(a)(5). In the A and B seasons, the apportionments are in proportion to the distribution of estimated pollock biomass based on the four most recent NMFS winter surveys. In the C and D seasons, the apportionments are in proportion to the distribution of the pollock biomass based on the four most recent NMFS summer surveys. Within any fishing year, any seasonal allocation which is under- or over-harvested may be added to or subtracted from other seasonal apportionments. The rollover amount is limited to 20 percent of the seasonal apportionment for the statistical area.

Table 1 lists the seasonal biomass distribution of pollock in the Western and Central Regulatory Areas, area apportionments, and seasonal allowances for 2012.

Table 1. Final 2012 distribution of pollock in the Central, and Western Regulatory Areas of the GOA, seasonal biomass distribution, area apportionments, and seasonal allowances of annual TAC. [Values are rounded to the nearest metric ton]

Season [1]	Shumagin (Area 610)		Chirikof (Area 620)		Kodiak (Area 630)		Total [2]
A (Jan 20–Mar 10)	6,186	(22.62%)	15,374	(56.22%)	5,783	(21.15%)	27,345
B (Mar 10–May 31)	6,185	(22.62%)	18,393	(67.26%)	2,765	(10.11%)	27,345
C (Aug 25–Oct 1)	11,280	(41.25%)	7,262	(26.55%)	8,803	(32.19%)	27,345
D (Oct 1–Nov 1)	11,280	(41.25%)	7,262	(26.55%)	8,803	(32.19%)	27,345
Annual Total [3]	34,932	.....	48,293	.....	26,155	.....	109,380

[1] As established by §679.23(d)(2)(i) through (iv)
[2] The West Yakutat and Southeast Outside districts pollock TACs are not allocated by season and are not included in the total pollock TAC shown in this table.
[3] Seasonal apportionments may not total precisely due to rounding.
From http://www.alaskafisheries.noaa.gov/sustainablefisheries/specs11_12/goa_table6.pdf

Harvesting Vessels

The Central and Western GOA fisheries are generally characterized by vessels of different lengths. From 2003 to 2011, the majority of vessels participating in the Central GOA fishery were ≥ 60 ft length overall (LOA), while the Western GOA fishery was dominated by vessels < 60 ft LOA (see Table 5 in GOA Chinook Salmon EIS/RIR/IRFA). During that time, only vessels ≥ 60 ft LOA carried observers in the GOA pollock fishery, and not all hauls were observed. Therefore, salmon bycatch numbers and rates reported here are estimates based on extrapolation from observed vessels and hauls. Beginning in 2013, vessels < 60 ft LOA will be required to carry observers for at least part of their pollock fishing.

Prohibited species catch of Chinook salmon in the GOA pollock fisheries

The 1991-2011 average of Chinook salmon PSC in the GOA groundfish trawl fisheries is 22,011 salmon, and has ranged from fewer than 10,000 in 2009, to more than 50,000 in 2010 (Table 2). The pollock

target fishery accounts for approximately 75% of the Chinook salmon PSC in the GOA. It is assumed that all salmon caught in the groundfish fisheries have a 100% mortality rate. Recent action by the Council established a hard cap of 25,000 PSC Chinook for the central and western GOA pollock fishery, apportioned by area. The central GOA cap is 18,316 Chinook, the western GOA cap is 6,684 Chinook.

Table 2. Prohibited Species Catch of Chinook salmon in Gulf of Alaska groundfish trawl fisheries, 1990-2011.

		GOA Pollock Fisheries					Other Fisheries
Year	Annual Total	First Q	Second Q	Third Q	Fourth Q	Annual	Annual
1991	38,894	3,239	538	1,799	2,862	8,439	30,455
1992	16,787	2,289	2,663	1,457	1,801	8,210	8,578
1993	19,260	6,499	157	2,730	4,192	13,578	5,682
1994	13,615	3,685	88	1,973	1,474	7,219	6,396
1995	14,652	1,408	32	2,342	1,136	4,917	9,735
1996	15,761	4,802	57	6,421	100	11,380	4,381
1997	15,230	4,622	48	4,742	30	9,443	5,787
1998	16,984	1,672	1	8,550	4,005	14,228	2,755
1999	30,600	10,408	35	5,981	10,003	26,428	4,173
2000	26,729	4,298	2,313	9,744	2,058	18,413	8,317
2001	15,104	4,204	3,107	754	1,466	9,531	5,573
2002	12,920	1,505	640	553	2,463	5,161	7,758
2003	15,399	765	390	949	2,299	4,403	10,996
2004	17,779	3,632	2,177	2,207	5,137	13,153	4,626
2005	31,271	11,100	5,123	1,076	10,629	27,927	3,344
2006	19,005	2,919	4,292	4,859	3,875	15,945	3,060
2007	40,539	1,487	28,424	1,309	3,958	35,177	5,362
2008	16,170	579	7,633	389	2,049	10,650	5,520
2009	8,480	704	1,424	656	412	3,196	5,285
2010	54,561	4,964	2,045	4,842	32,930	44,781	9,780
2011	22,492	1,755	1,499	1,807	10,842	15,903	6,589

1991 – 2002: Blend data. Week end date was used to determine quarters. Week end dates to not always match quarter dates.
2003 – Current: Catch Accounting System. Data updated 11/4/2011
Due to changes in regulatory pollock season dates from 1991 to 2001 and to match current pollock season dates, data were grouped by quarter.

First Quarter:	Jan 1 – Feb 28
Second Quarter:	Mar 1 – May 31
Third Quarter:	Jun 1 – Sep 30
Fourth Quarter:	Oct 1 – Dec 31

The number of Chinook salmon caught in the Central and Western GOA pollock fishery and the rate at which they are caught varies annually (Tables 2, 3). In the Central GOA, the year of highest bycatch was 2007 (31,647 Chinook), which was also the year of highest bycatch rate (0.98 Chinook/ mt pollock). However, while 2009 was the lowest year of overall Chinook bycatch (2,123 Chinook), 1994, 1995, and 2002 all had lower bycatch rates (0.08 vs. 0.09 Chinook / mt pollock). Overall Chinook bycatch was higher for those years because of the higher pollock catch. In the Western GOA, the year of highest overall bycatch and bycatch rate was 2010 (31,581 Chinook, 1.23 Chinook / mt pollock). The lowest bycatch occurred in 1997 (524 Chinook), and 1996 and 1997 shared the lowest bycatch rate (0.02 Chinook / mt pollock).

Table 3. Chinook salmon prohibited species catch (PSC) and pollock catch in the Central and Western Gulf of Alaska pollock fishery, 1994-2011. Adapted from Chinook salmon Bycatch in GOA Pollock Fishery, May 2011.

Area	Year	Chinook PSC	Pollock Harvest (mt)	Chinook/mt pollock	% of CG/WG Chinook PSC	% of CG/WG pollock harvest
Central Gulf	1994	6,589	84,130	0.08	92	81
	1995	3,051	38,894	0.08	67	56
	1996	10,598	26,450	0.40	95	52
	1997	8,800	57,865	0.15	94	69
	1998	10,464	88,136	0.12	75	75
	1999	23,758	68,275	0.35	91	74
	2000	15,907	47,691	0.33	87	68
	2001	8,234	37,663	0.22	87	55
	2002	2,487	31,437	0.08	49	64
	2003	3,557	31,290	0.11	83	66
	2004	10,655	38,311	0.28	82	62
	2005	21,429	46,802	0.46	78	60
	2006	11,138	42,299	0.26	71	63
	2007	31,647	32,205	0.98	90	65
	2008	7,971	30,769	0.26	79	67
	2009	2,123	22,700	0.09	83	62
	2010	12,334	44,033	0.28	28	63
	2011	10,005	56,779	0.18	73	73
Western Gulf	1994	591	19,894	0.03	8	19
	1995	1,506	30,958	0.05	33	44
	1996	565	24,200	0.02	5	48
	1997	524	26,141	0.02	6	31
	1998	3,448	29,301	0.12	25	25
	1999	2,307	23,384	0.10	9	26
	2000	2,472	22,074	0.11	13	32
	2001	1,237	30,471	0.04	13	45
	2002	2,548	17,455	0.15	51	36
	2003	738	15,970	0.05	17	34
	2004	2,327	23,124	0.10	18	38
	2005	5,951	30,756	0.19	22	40
	2006	4,529	24,427	0.19	29	37
	2007	3,359	17,303	0.19	10	35
	2008	2,116	14,828	0.14	21	33
	2009	441	14,010	0.03	17	38
	2010	31,581	25,766	1.23	72	37
	2011	3,760	21,200	0.17	27	27

The number and rate of Chinook salmon bycatch also varies within years. The GOA pollock fishery is divided into four seasons, with 25% of the total pollock TAC allocated to each season. Despite these nearly equal seasons, there are substantial differences in the amount of pollock caught and number of Chinook salmon that are caught incidental to pollock fishing (Table 4). Fishery management provisions that allow rollover of TAC between seasons contribute to the seasonal differences in pollock catch. Since 2003 pollock and Chinook salmon catch have been recorded for each week, making comparisons between

seasons possible. Table 4 shows the variation in estimated number and rate at which Chinook salmon are caught in the pollock fishery by season. In both the Central and Western GOA, the bycatch rate (Chinook/mt pollock) is highest in the D season, although the difference is most pronounced in the Western GOA.

It appears from Table 4 that the bycatch rate in the Western GOA is drastically higher in the D-season than the A-, B-, or C-seasons. However, bycatch in the Western GOA D-season was dominated by a single week in 2010 when an estimated 21,064 Chinook were caught. Without that bycatch event (i.e., using data from 2003 – 2009, 2011) the differences in bycatch rate are not as great, although the majority of Chinook salmon PSC still occurred in the D-season (Table 5).

The pollock fishery in the Gulf of Alaska is episodic throughout the seasons, and the number of weeks in the year that fishing occurs is unpredictable. For example, in 2007 directed pollock fishing occurred in the Western GOA on 17 weeks. However in 2003 and 2009, fishing only occurred on 7 weeks. Because of the unpredictable variations in the number of weeks and timing of fishing throughout the year and the Chinook PSC rate, it is difficult to predict whether shifting quota from one season to others would significantly affect the rate at which Chinook salmon are caught, or the total number of Chinook salmon that are caught.

Table 4. Metric tons of pollock, and number of Chinook salmon caught in the pollock fishery in the Central and Western GOA from 2003 to 2010.

Central Gulf												
	Pollock (mt)				**Chinook (no.)**				**Bycatch rate (Chinook / pollock mt)**			
Season	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
2003	7,287	12,348	5,770	5,885	688	254	397	2,218	0.094	0.021	0.069	0.377
2004	7,992	16,820	7,367	6,131	3,366	1,586	2,122	3,581	0.421	0.094	0.288	0.584
2005	17,770	17,587	3,760	7,685	10,955	3,781	690	6,004	0.616	0.215	0.184	0.781
2006	11,204	17,374	7,813	5,908	1,501	3,315	4,406	1,917	0.134	0.191	0.564	0.324
2007	4,118	18,492	4,484	5,110	421	27,647	1,124	2,455	0.102	1.495	0.251	0.480
2008	5,529	14,176	3,517	7,547	606	5,853	92	1,420	0.110	0.413	0.026	0.188
2009	1,057	13,689	19	7,934	226	1,146	0	751	0.213	0.084	0.000	0.095
2010	11,499	14,269	8,504	9,761	3,949	806	2,824	4,755	0.343	0.056	0.332	0.487
2011	10,861	23,390	9,728	12,800	1,584	783	497	7,141	0.146	0.033	0.051	0.558
03-11	77,317	14,8145	50,962	68,761	23,296	45,171	12,152	30,242	0.301	0.305	0.238	0.440
Western Gulf												
Season	**Pollock (mt)**				**Chinook (no.)**				**Bycatch rate (Chinook / pollock mt)**			
2003	4,174	1,247	5,903	4,645	72	35	551	80	0.017	0.028	0.093	0.017
2004	3,938	3,868	7,561	7,758	237	449	85	1,556	0.060	0.116	0.011	0.201
2005	7,311	2,204	9,111	12,130	329	613	385	4,624	0.045	0.278	0.042	0.381
2006	4,206	7,812	6,245	6,164	1,818	300	453	1,958	0.432	0.038	0.073	0.318
2007	3,327	5,344	1,946	6,686	1,212	459	169	1,518	0.364	0.086	0.087	0.227
2008	73	3,995	4,944	5,816	12	1,182	297	625	0.161	0.296	0.060	0.107
2009	123	5,899	3,098	4,891	15	201	47	177	0.126	0.034	0.015	0.036
2010	4,881	4,859	8,816	7,210	950	810	1,799	28,022	0.195	0.167	0.204	3.887
2011	1,704	6,995	7,225	5,276	89	373	886	2,412	0.053	0.053	0.123	0.457
03-11	29,737	42,223	54,849	60,576	4,734	4,422	4,672	40,972	0.159	0.150	0.085	0.676

Table 5. Metric tons of pollock, number of Chinook salmon caught, and rate of Chinook salmon bycatch in the pollock fishery in the Central and Western GOA from 2003-2011 **excluding 2010**.

Season	**A**	**B**	**C**	**D**	**Total**
Central Gulf					
Pollock	65,818	133,876	45,458	59,000	301,125
Chinook	19,347	44,365	9,328	25,487	98,527
Chinook/mt pollock	0.294	0.331	0.220	0.432	0.327
Western Gulf					
Pollock	24,856	37,364	46,033	53,366	187,385
Chinook	3,784	3,412	2,873	12,950	54,800
Chinook/mt pollock	0.152	0.097	0.062	0.243	0.292

Marine Mammals in the GOA

The GOA supports one of the richest assemblages of marine mammals in the world. Twenty-two species are present from the orders Pinnipedia (seals and sea lions), Carnivora (sea otters), and Cetacea (whales, dolphins, and porpoises). Some marine mammal species are resident throughout the year, while others migrate into or out of Alaska fisheries management areas. Marine mammals occur in diverse habitats, including deep oceanic waters, the continental slope, and the continental shelf (Lowry et al. 1982).

A number of concerns about the potential impacts of commercial fisheries to marine mammals have been raised. For individual species, these concerns include:

- direct mortality incidental to fisheries
- intentional mortality or harassment
- direct competition for resources
- indirect effects of fisheries competition.

Marine mammals have been given various levels of protection under the current Fishery Management Plans (FMPs) of the Council. Research and monitoring continue to better our understanding of the nature and extent of fisheries impacts on marine mammals. The Alaska groundfish harvest specification environmental impact statement (NMFS 2007) provides the most recent information regarding fisheries interactions with marine mammals. The most recent marine mammal stock status information is available in the 2010 Marine Mammal Stock Assessment Reports (Allen and Angliss 2011).

Steller sea lion

The Steller sea lion inhabits many of the shoreline areas of the GOA, using these habitats as seasonal rookeries and year-round haulouts. The Steller sea lion has been listed as threatened under the ESA since 1990. In 1997, two Distinct Population Segments (DPSs) were recognized, based on genetic and demographic dissimilarities; the Eastern (east of 144° W longitude) and Western (west of 144° W) stocks. Because of a pattern of continued decline in the Western DPS, it was listed as endangered on May 5, 1997 (62 FR 30772), while the eastern DPS remains listed as threatened. The NMFS is currently considering delisting the Eastern DPS (75 FR 77602, December 13, 2010).

In 2000, a Biological Opinion (BiOp) concluded that the FMPs for the Bering Sea and Aleutian Islands and Gulf of Alaska groundfish were likely to jeopardize the continued existence, or adversely modify the designated critical habitat of the Western Distinct Population Segment (DPS) of Steller sea lions, but were not likely to cause Jeopardy or Adverse Modification (JAM) to any other listed species. In 2001, a BiOp was released that provided protection measures for Steller sea lions that prevented JAM for the Western DPS; that BiOp was supplemented in 2003.

In 2006, the NMFS reinitiated a FMP-level Section 7 consultation on the impacts of Bering Sea/Aleutian Islands (BSAI) and GOA groundfish fisheries on Steller sea lions, humpback whales, and sperm whales to consider new information on those species, and their interactions with federally authorized fisheries (NMFS 2006a). A draft BiOp was released in July 2010 (NMFS 2010a), which concluded that the federally authorized groundfish fisheries in the BSAI did cause JAM to the western DPS of Steller sea lions, but did not cause JAM for humpback whales or sperm whales. Because the BiOP determined that the current FMP resulted in JAM for the Western DPS of Steller sea lions, a reasonable and prudent alternative (RPA) was developed to mitigate those impacts on the western Aleutian portion of the Western DPS. The final BiOp that included some revisions to the RPA to address concerns from the Council and others was released in November, 2010 (NMFS 2010b), and NMFS implemented the Steller sea lion protection measures by interim final rule. No changes were made to the Steller sea lion protection measures in the GOA. This BiOp has been challenged in U.S. District Court by the State of Alaska and representatives of affected fisheries. A decision on that challenge is expected early in 2012.

A detailed discussion of Steller sea lion population trends in the GOA is included in the most recent Biological Opinion (NMFS 2010b) and is summarized here. Based on non-pup counts of Steller sea lions on trend sites through the range of the Western DPS in the GOA and Aleutian Islands, the overall population for the western DPS is stable. The number of non-pups counted increased 12% between 2000 and 2008, but only increased 1% between 2004 and 2008 (DeMaster 2009). Population trends differ across the range of the Western DPS. Populations continue to decline precipitously in the western Aleutians (Area 543), but are stable or slightly increasing from the central Aleutians to the eastern Aleutians. The central GOA population is stable and the eastern GOA population is estimated to be increasing at approximately 5% per year (NMFS 2010b)

Pups have been counted less frequently than non-pups, but the overall trends since the late 1970s are similar to counts of non-pups. Between 2001-2002 and 2009, pup production in the western DPS declined 43% in the western and 7% in the central Aleutian Islands, but increased 47% in the eastern Aleutian Islands and increased 23%, 6%, and 57% in the western, central, and eastern GOA, respectively.

Generally, the Western DPS continues to show significant improvement in pup production, and either stable or slowly increasing non-pup counts in the core of its range, the eastern Aleutians and western Gulf of Alaska (Kenai to Kiska).

Seasonal SSL Diet

In the Western GOA, salmon and pollock both make up important parts of the Steller sea lion diets (NMFS 2010b). Sinclair and Zeppelin (2002) summarized the diet of Western DPS Steller sea lions from scats collected from 1990 – 1998. In the summer, salmon were among the three most commonly occurring prey items for all sites sampled between Flat and Clubbing Rocks, and pollock were among the three most common food items for seven of eight sites. In winter, pollock were among the three most common food items for all sites sampled, and salmon were among the top three food items for four of the 14 sampled sites (Sinclair and Zeppelin, 2002). Other species were present in Steller sea lion diets and varied by season and site.

Movements and Habitat Use in the Western and Central GOA

The most recent BiOp (NMFS 2010b) is the latest summary of Steller sea lion movements in the western and central GOA. Analyses of Steller sea lion at-sea locations have used data obtained from satellite telemetry deployments since 2000, and pooled among individuals. NMFS (2010b) analyzed satellite telemetry data from 116 tag deployments from the National Marine Mammal Laboratory (NMML) from 2000-2003 and the Alaska Department of Fish and Game (ADFG) from 2000-2005. These deployments are the latest for which data are available.

Satellite-linked dive recorders (SLDRs) were deployed on juvenile Steller sea lions as described in Loughlin et al. (2003), Raum-Suryan et al. (2004), Fadely et al. (2005) and Pitcher et al. (2005). Methods used for location processing, filtering, and combining with dive data were described in NMFS (2003) and the May 2006 update and are briefly summarized here. NMFS (2010b) used locations filtered from Service-Argos calculated position fixes obtained from SLDRs deployed on 116 Steller sea lions during 2000-2005 by NMML and ADFG. These locations were error-checked and combined with dive behavior data collected and summarized into 6-hr periods by the SLDRs. After error-checking location and dive records, further processing associated the 6-hr binned diving data to related at-sea locations. Because it is not possible to definitively determine which locations were associated with foraging, a metric of diving to depths >4m was chosen as a conservative index that would also deemphasize aggregations of position fixes near shore associated with travel in and out of hauling sites. A total of 65,150 locations from all 116 animals were extracted from the database for processing. Of those initial locations, 50,709 locations were

removed because of low data reliability (large satellite error), not fitting the dive >4m criteria, or other data concerns. The remaining 14,441 locations were considered by individual sea lion.

The Western and Central GOA fisheries management areas (610, 620, 630) correspond roughly to zones 6 and 7 (Western), and 8 and 9 (Central) in the analysis of at-sea location distribution from NMFS (2010b). A total of 72 sea lions were tagged in those areas between 2000 and 2005, all in either Zone 6 or 9 (Fig. 1). Although no animals were tagged in zones 7 or 8, some juvenile Steller sea lions did swim through the area. Appendix A identifies 20 animals that dove to at least 4 m (indicating foraging dives) in Zone 6, 26 in Zone 7, 11 in Zone 8, and 45 in Zone 9 (Fig. 1). Because no animals were tagged in Zones 7 or 8, any individuals that were tracked in either of these Zones must have originated in other Zones.

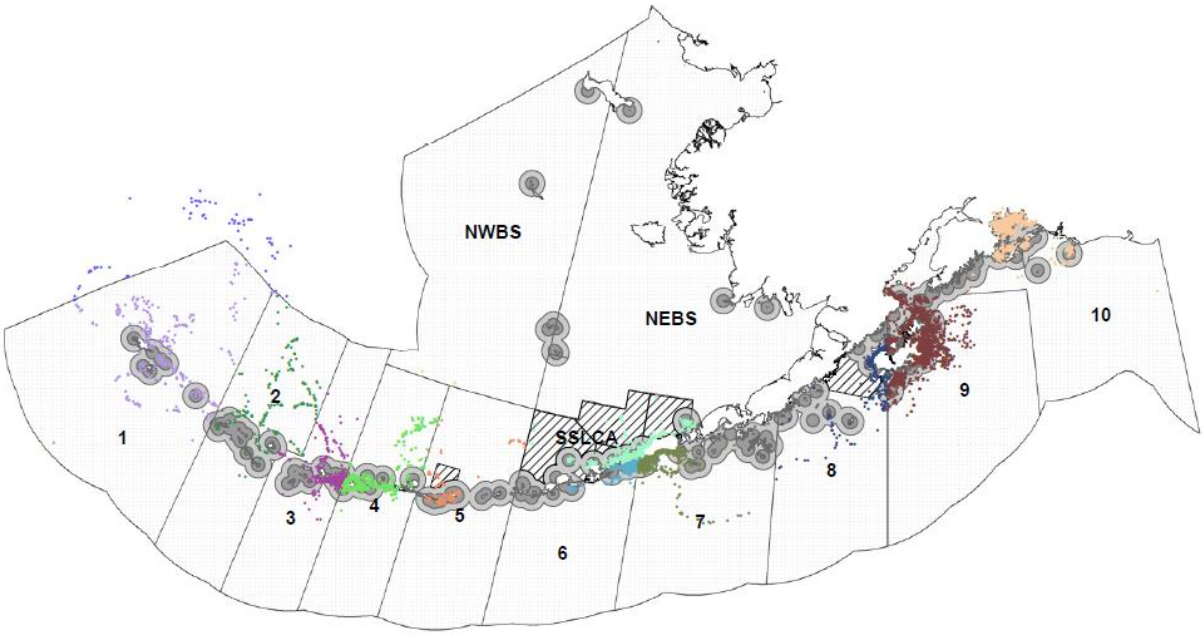

Figure 1. Telemetry locations associated with diving to >4 m by 116 Steller sea lions during 2000-2005, shown with analytical zone boundaries (NWBS = Northwest Bering Sea; NEBS = Northeast Bering Sea, SSLCA = Steller Sea Lion Conservation Area) and SSL critical habitat. Colors indicate SSL locations within each analytical zone. From NMFS (2010b).

Appendix A identifies the 72 animals that were tracked in or through Zones 6-9, and identifies which of those animals travels through multiple zones and exhibited behavior indicative of foraging and also shows the date of deployment for the satellite tags. Nearly all of the tags were deployed in spring or summer; very few were deployed in fall (November – December). Steller sea lions molt in September and October, at which point any tags that were deployed earlier in the year would fall off, which severely limits Steller sea lion location and movement data from the D-season.

These data show that Steller sea lions are present in the Western and Central GOA, and presumed to be feeding in the area. However, these data do not provide any information about the potential impacts of moving pollock TAC from the D-season to the other seasons. It remains likely that any modifications to seasonal apportionments of Pollock TAC would require formal consultation under Section 7 of the U.S. ESA.

Protection Measures for Steller sea lions in the GOA

Throughout the 1990s, particularly after critical habitat was designated, various closures of areas around SSL rookeries, haulouts, and some offshore foraging areas were designated. These closures affect commercial harvests of pollock, Pacific cod, and Atka mackerel, which are important components of the western DPS diet. In the GOA, extensive closures are in place for Steller sea lions including no transit zones and closures of critical habitat around rookeries and haulouts (NMFS 2001).

Pollock is an important prey species for Steller sea lions (NMFS 2010b). The harvest of pollock in the GOA is temporally dispersed into 4 seasons, with 25% of the Total Allowable Catch allocated to each season (NMFS 2001). The GOA pollock trawling seasons are:

A season : January 20 – March 10
B season : March 10 – May 31
C season : August 25 – October 1
D season : October 1 – November 1

Pollock TAC in the Western and Central GOA are also apportioned in proportion to estimated pollock biomass. In the A and B seasons, the apportionments are in proportion to the distribution of estimated pollock biomass based on the four most recent NMFS winter surveys. In the C and D seasons, the apportionments are in proportion to the distribution of the pollock biomass based on the four most recent NMFS summer surveys.

Based on the most recent completed biological opinion, existing harvest restrictions on the pollock fishery decrease the likelihood of disturbance, incidental take, and competition for prey to ensure the groundfish fisheries do not jeopardize the continued existence or adversely modify the designated critical habitat of Steller sea lions (NMFS 2000, NMFS 2001, NMFS 2010b). Because the numbers of Steller sea lions in the eastern Aleutian Islands and GOA appear to be increasing, the protection measures in place for these areas were not changed in the last BiOp (NMFS 2010). It has been suggested that any changes to these restrictions in the GOA are likely to require formal consultation under Section 7 of the U.S. Endangered Species Act (D. Seagars, Pers. Comm. 2011).

Potential changes to apportionments

Current pollock seasons in the GOA are designed to distribute the pollock effort to prevent localized depletions of the SSL prey field. The A- and B-seasons are apportioned based on the four most recent winter surveys, and the C- and D-seasons apportioned based on the four most recent summer surveys. Given that the C- and D-seasons are apportioned based on the same set of surveys, it is possible that the D-season apportionment could be eliminated and the entire C- and D-season TAC apportioned to the C-season (Table 6). If seasons were left unchanged, this would create a longer stand-down period between the end of the C-season and the beginning of the A-season, which would increase the period of time that SSLs would not potentially compete with the pollock fleets for resources. The concentrated effort in the C season, however, could have the competing effect of reducing available prey during that period. These potential effects would need to be examined, if the Council elected to advance an action to modify the seasonal apportionments.

Another option could be to apportion the TAC equally among the A-, B-, and C-seasons. This distribution would have the benefit of putting less strain on the resource during a single time period, instead redistributing the effort over multiple periods.

Table 6. Potential changes to seasonal apportionment scheme in the GOA pollock trawl fisheries.

Options	Percent of TAC allocated to Seasons			
	A	B	C	D
No-Change	25	25	25	25
Option 1	25	25	50	0
Option 2	33	33	33	0

Additional guidance from the Council regarding objectives and alternatives for redistributing GOA pollock D-season TAC, and suggestions for reapportionment should be developed for consideration and analysis if the Council elects to advance an action to modify the seasonal apportionments.

Impacts of TAC Reallocation

Impacts to Chinook salmon bycatch

Although intra-annual and inter-annual variability in Chinook salmon bycatch rates in the GOA pollock fishery preclude bycatch predictions, it is possible that reallocating pollock TAC in the Western GOA from the D-season to the other seasons may reduce overall Chinook bycatch over a long time span. The combined A-, B-, and C- season western GOA pollock catch was 108,253 mt from 2002 to 2011, excluding the high bycatch year in 2010. Total Chinook bycatch during that time was 10,269 for a bycatch rate of 0.095 Chinook/mt pollock. If the 53,366 mt pollock caught in the D- season from 2002 – 2011 (without 2010) were caught with the 0.095 Chinook/mt pollock bycatch rate, then total Chinook bycatch would have been 5,070, a savings of 7,880 Chinook salmon compared with the 12,950 Chinook estimated to have been caught in the fishery during the D-season (Table 4). However, high bycatch periods also occurred during the A-, B-, and C- seasons so it is also entirely possible that any "bycatch savings" that might accrue as a result of shifting TAC from the D- season would be negated by a large bycatch event in the A-, B-, or C-seasons.

Impacts to GOA Pollock fishery

Reallocating TAC from the D- to the A-, B-, and C-seasons may lengthen the other seasons by extending the time spent harvesting the TAC. Because catcher-vessels must return to shore-based processors, it is unlikely that the vessels would be able to increase the volume of fish they capture during each trip, but would instead take additional trips during the season. If the D season TAC is redistributed entirely to the C season, (as under Option 1 in Table 6), the A- and B-seasons would remain unchanged, but the C-season might be lengthened considerably. Vessels may choose to begin fishing earlier than they typically do now, or would finish fishing later, potentially with some extension of fishing into the D season. Under the second option, with the D-season TAC redistributed equally to the A-, B-, and C- seasons, each of those seasons would likely be lengthened. The A- and B- season extensions would likely be the shortest, as those seasons have the most concentrated effort and relatively high catch rates as a result of spawning aggregations. The C-season extension would likely be longer, since that season has the less concentrated effort. These potential effects would need to be examined, if the Council elected to advance an action to modify the seasonal apportionments.

Expanding the TAC available for harvest in the A-, B-, and C- seasons or eliminating the D-season would have also impacts to vessels and processors. These impacts would be analyzed to the extent feasible, should the Council elect to advance an action modifying seasonal apportionments.

Impacts to Steller Sea Lions

The impacts to Steller sea lions of reallocating Western GOA pollock catch from the D-season to the A-, B-, and C-seasons are also difficult to predict. Pollock were among the top three identified prey items for

all sampled sites in the western GOA from 1990 – 1998 (Sinclair and Zeppelin 2002). Reduced fishing pressure on pollock may result in increased prey availability to Steller sea lions, although data regarding local prey availability are lacking, especially in winter. Additionally, some researchers have suggested that juvenile Steller sea lions may not be able to maintain body condition on a diet of pollock (Rosen and Trites 2004), although in recent feeding trials, temporarily captive free-ranging juvenile (1 to 2 years) Steller sea lions gained both mass and body fat percentage when fed a diet consisting only of pollock (Calkins et al. 2005). Cessation of pollock fishing in the D-season may also increase the availability of Chinook salmon to Steller sea lions, although again data regarding local distribution of Chinook salmon are lacking in winter. If vessels that would normally be fishing pollock in the D-season instead target other species, it is possible that the redirected fishing effort could affect prey abundance for Steller sea lions. Again, it is difficult to predict the impacts to Steller sea lions from any such change.

Shifting fishing effort from the D-season to the A-, B-, and C-seasons could also, potentially, have impacts to Steller sea lions during the other seasons. Increasing pollock catch may further affect the prey field for Steller sea lions, potentially making it more difficult for Steller sea lions to find and obtain prey. This potential disturbance of the Steller sea lion prey field was the motivation behind the temporal and spatial distribution of fishing effort. Again, limited data on the prey field for Steller sea lions makes it difficult to predict impacts.

Conclusions

At the June, 2011 North Pacific Fishery Management Council meeting, the Council asked staff to prepare a discussion paper investigating the possibility of shifting pollock TAC from the D-season to the A-, B-, and C-seasons, and specifically tasked staff with investigating whether such a shift would require consultation under Section 7 of the U.S. Endangered Species Act. The purpose of the TAC reapportionment would be to reduce the exposure of the GOA directed pollock fishery to Chinook salmon PSC. At the October, 2011 meeting, the Council asked staff to expand on the paper, including data from sea lions tagged with satellite linked time-depth recorders, and to discuss alternate schemes to allocate pollock between the A-, B-, and C-seasons.

Satellite tagging data show that Steller sea lions are present in the Western and Central GOA and presumed to be feeding. However, no sea lions were tagged in large parts of the area, and data from the D-season are limited because Steller sea lions molt in September and October at which point they shed their tags. However, these data do not provide any information about the potential impacts to Steller sea lions of reapportioning pollock TAC from the D-season to other seasons.

The overall Chinook salmon PSC rate for the Western GOA is higher late in the C-season and early in the D-season, compared to the A- and B-seasons, so it is possible that shifting pollock TAC from the D-season to the A-, B-, and C-seasons would result in lower Chinook salmon PSC, but that is far from a certain outcome.

In addition to extensive closures that were established in critical habitat around Steller sea lion rookeries and haulouts in the GOA, the Steller sea lion protection measures enacted in 2001 established four seasons for pollock trawling, and allocated 25% of the total TAC to each season in order to temporally disperse fishing effort. It may be possible to adjust pollock seasons by either combining the C- and D-seasons, or by redefining the annual season to three (A, B, and C), and apportioning 33% of the annual TAC to these seasons. Season dates and whether a stand down season exists between the C- and A-seasons would be determined by the Council.

Since the closures and seasons were established, the Western DPS of Steller sea lions appears to have stabilized, although some areas are still declining (NMFS 2010). The population growth seen in the

Western DPS from 2004 to 2008 was entirely due to the increase in SSL numbers in the GOA (NMFS 2010b), and more recent counts suggest that SSL numbers in the GOA are stable or increasing. Any proposed changes to an FMP would likely be scrutinized to ensure that they do not negatively affect the population growth of SSLs in the GOA (D. Seagars, Pers. Comm. 2011).

It is, therefore, likely that any proposal to reallocate D-season pollock TAC to the A-, B-, and C-seasons would require formal consultation under Section 7 of the U.S. Endangered Species Act.

Literature Cited

Allen, B.M., and R.P. Angliss. 2011. Alaska marine mammal stock assessments, 2010. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-223, 292 p.

Calkins, D., J-A. Mellish, S. Atkinson, and D. Hennen. 2005. Does consuming pollock truly have negative impacts on free ranging Steller sea lions? Abstract *in* 16th Biennial Conference on the Biology of Marine Mammals, San Diego, CA.

DeMaster, D. 2009. Memorandum to Doug Mecum regarding Aerial Survey of Steller sea lions in Alaska, June-July 2009 and Update on the Status of the Western Stock in Alaska. December 2, 2009. Alaska Fisheries Science Center, National Marine Mammal Laboratory (NMML), 7600 Sand Point Way NE, Seattle, Washington 98115. Available at http://www.afsc.noaa.gov/nmml.PDF/SSL-Survey-09-memo-11-30-09-pdf.

Fadely, B.S., B.W. Robson, J.T. Sterling, A. Greig, K.A. Call. 2005. Immature Steller sea lion (*Eumetopias jubatus*) dive activity in relation to habitat features of th4e eastern Aleutian Islands. Fisheries Oceanography 14(suppl):243-258.

Loughlin, T.R., J.T. Sterling, R.L. Merrick, J.L. Sease, A.E. York. 2003. Diving behavior or immature Steller sea lions (*Eumetopias jubatus*). Fishery Bulletin 101(3):566-582.

Lowry, L.F., K.J. Frost, D.G. Calkins, G.L. Swartzman, and S. Hills. 1982. Feeding habits, food requirements, and status of Bering Sea marine Mammals. Document Nos. 19 and 19A, NPFMC, Anchorage, AK

National Marine Fisheries Service (NMFS). 2000. Section 7 consultation of the authorization of the Berin Sea and Aleutian Islands groundfish fishery under the BSAI FMP and the authorization of the Gulf of Alaska groundfish fishery under the GOA FMP. Office of Protected Resources, NMFS. November 30, 2000. 352 p.

NMFS. 2001. Steller sea lion Protection Measures Final Supplemental Environmental Impact Statement. Implemented under the Fishery Management Plans for the Groundfish of the GOA and the Groundfish of the BSAI. 2001. October 2001 Section 7 Biological Opinion in Appendix A. NMFS, Alaska Region, P.O. Box 21668, Juneau, Alaska 99802-1668.

NMFS. 2006. Biological assessment of the Alaska Groundfish Fisheries and NMFS managed Endangered Species Act listed marine mammals and sea turtles. NNFS Alaska Regional Office. P.O. Box 21668, Juneau, Alaska, 99802-1668. Available at http://www.alaskafisheries.noaa.gov/sustainablefisheries/sslmc/agency_documents/BA4-6-06.pdf.

NMFS. 2007. Environmental Impact Statement for the Alaska groundfish harvest specifications. January 2007. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, Alaska 99802-1668. Available at http://www.alaskafisheries.noaa.gov/index/analyses/analyses.asp.

NMFS. 2010a. Draft ESA Section 7 Biological Opinion on the Alaska Groundfish Fishries. July 2010. NMFS Alaska Region, P.O. Box 21668, Juneau, Alaska, 99802-1668.

NMFS. 2010b. ESA Section 7 Biological Opinion on the Alaska Groundfish Fishreis. November 2010. NMFS Alaska Region, Po.O. Box 21668, Juneau, Alaska 99802-1668. http://alaskafisheries.noaa.gov/protectedresources/stellers/section7.htm

NMFS. 2011. Environmental Assessment/ Regulatory Impact Review/ Initial Regulatory Flexibility Analysis for Amendment 90 to the Fishery Management Plan for Groundfish of the Gulf of Alaska. Chinook Salmon Bycatch in the Gulf of Alaska Pollock Fishery.

Pitcher, K.W., M.J. Rehbert, G.W. Pendleton, K.L. Raum-Suryan, T.S. Gelatt, U.G. Swain, M.F. Sigler. 2005. Ontogeny of dive performance in pup and juvenile Steller sea lions in Alaska. Canadian Journal of Zoology. 83:1214-1231.

Raum-Suryan, K.L., M.J. Rehberg, G.W. Pendleton, K.W. Pitcher, T.S. Gelatt. 2004. Development of dispersal, movement patterns, and haul-out use by pup and juvenile Steller sea lions (*Eumetopias jutabus*) in Alaska. Marine Mammal Science 20(4):823-850.

Rosen, D.A.S., and A.W. Trites. 2004. Satiation and compensation for short-term changes in food quality and availability in young Steller sea lions (*Eumetopias jubatus*). Canadian Journal of Zoology 82:1061-1069.

Sinclair, E.H., and T.K. Zeppelin. 2002. Seasonal and spatial differences in diet in the western stock of Steller sea lions. Journal of Mammalogy 83(4):973-990.

Appendix A

List of Steller sea lions tagged with Satellite-Linked Time Depth Recorders in the Gulf of Alaska and Aleutian Islands from 2000-2005

Table 1. Distribution of 14,441 Steller sea lion telemetry positions associated with diving to >4 m by 116 individuals among analytical zones (as shown in Figure 1; SSLCA = Steller Sea Lion Conservation Area, NEBS = North Eastern Bering Sea, Out = outside of any zone). Shaded cell indicates zone in which sea lion was captured.

					Analytical Zone												
ID	Deploy date	Sex	Capture age (mo)	Capture location	1	2	3	4	5	6	SSLCA	7	8	9	10	NEBS	Out
6115	9-Mar-01	M	9	Sea Otter									1	146			
6124	2-Aug-01	F	14	Cape Chiniak, Kodiak										109			
6283	6-Mar-01	M	9	Long Island, Kodiak										55	31		
6284	6-Mar-01	F	9	Long Island, Kodiak										4			
6285	7-Mar-01	F	9	Long Island, Kodiak										110			
6286	9-Mar-01	M	9	Sea Otter										245			
6287	9-Mar-01	M	9	Sea Otter										198			
6288	10-Mar-01	M	9	Sea Otter										329			
6289	12-Mar-01	M	9	Long Island, Kodiak										202			
6290	12-Mar-01	M	9	Long Island, Kodiak										86			
6291	12-Mar-01	M	9	Long Island, Kodiak										150			
6292	12-Mar-01	M	9	Long Island, Kodiak										169			
6293	13-Mar-01	F	9	Long Island, Kodiak									2	261			
6294	13-Mar-01	M	9	Long Island, Kodiak										349			
6295	29-Feb-00	F	9	Turf Pt. Seguam Is.					50								
6296	29-Feb-00	F	9	Turf Pt. Seguam Is.					36								
6297	29-Feb-00	F	9	Turf Pt. Seguam Is.					44								
6298	29-Feb-00	M	9	Turf Pt. Seguam Isl.				51	67								
6299	9-Mar-00	F	9	Aiktak						6		26					
6300	9-Mar-00	M	9	Aiktak							86	17					
6301	12-Mar-00	M	21	Long Island, Kodiak										165			
6302	12-Mar-00	M	9	Long Island, Kodiak										104			
6303	26-Feb-01	M	21	Reef Bite							20						
6304	1-Mar-01	F	9	Aiktak								76					
6305	1-Mar-01	F	9	Ugamak								136					
6306	3-Mar-01	F	21	Rocks off Tigalda						3	27	6					
6307	3-Mar-01	M	9	Rocks off Tigalda						16	24	78					
6308	3-Mar-01	F	9	Aiktak					5	36	67	56					

Table 1, continued.

ID	Deploy date	Sex	Capture age (mo)	Capture location	Analytical Zone												
					1	2	3	4	5	6	SSLCA	7	8	9	10	NEBS	Out
6309	3-Mar-01	F	9	Aiktak						2	3	69					
6310	3-Mar-01	F	9	Aiktak						13	21	141					
6311	4-Mar-01	F	21	Billingshead, Akun						1	29						
6312	4-Mar-01	F	9	Billingshead, Akun							3						
6466	13-Nov-01	F	5	Ugamak								19					
6475	12-Mar-02	M	9	Aiktak						13	72	105					
6647	5-Mar-02	M	9	Two Headed Rock, Kodiak										30			
6966	7-Aug-01	M	14	Two Headed Rock, Kodiak									2	34			
6967	8-Aug-01	F	14	Two Headed Rock, Kodiak										57			
7467	28-Feb-02	M	9	Cape Chiniak, Kodiak									27	217			
7468	2-Mar-02	M	9	Long Island, Kodiak									68	352			
7469	2-Mar-02	M	9	Long Island, Kodiak							3	2	2	92			
7471	3-Mar-02	M	9	Long Island, Kodiak										115			
7473	3-Mar-02	F	9	Long Island, Kodiak										75			
7474	4-Mar-02	F	9	Long Island, Kodiak										194			
7476	5-Mar-02	F	24	Two Headed Rock, Kodiak									2	41			
7478	5-Mar-02	M	9	Two Headed Rock, Kodiak										13			
7479	5-Mar-02	M	9	Two Headed Rock, Kodiak										62			
7481	10-Mar-02	F	9	Basalt Rock						4		96					
7482	11-Mar-02	F	9	Aiktak							2	125					
7483	11-Mar-02	M	9	Aiktak						80	75	144				1	
7484	11-Mar-02	M	9	Aiktak						8	2	134					
7485	11-Mar-02	M	9	Aiktak							6	96					
7486	11-Mar-02	M	9	Aiktak						3	2	130					
7487	11-Mar-02	F	9	Aiktak						2	45	10					
7488	12-Mar-02	M	9	Aiktak						16	7	153					
7489	12-Mar-02	F	9	Aiktak						2	6	107					
7576	17-Sep-01	F	3	Cape Morgan, Akutan						4	4						
7578	17-Sep-01	F	3	Cape Morgan, Akutan							5						
7585	6-Nov-01	F	5	Bull Head, Glacier Is.											43		
7586	6-Nov-01	M	17	Bull Head, Glacier Is.											232		
7589	7-Nov-01	F	17	Bull Head, Glacier Is.											183		

Table 1, continued.

ID	Deploy date	Sex	Capture age (mo)	Capture location	Analytical Zone												
					1	2	3	4	5	6	SSLCA	7	8	9	10	NEBS	Out
7592	8-Nov-01	F	5	NE Haulout, Perry Is.											492		
7593	8-Nov-01	M	17	NE Haulout, Perry Is.											428		
7594	8-Nov-01	F	17	NE Haulout, Perry Is.											311		
7595	8-Nov-01	M	17	NE Haulout, Perry Is.											407		
7600	9-Nov-01	M	5	NE Haulout, Perry Is.											169		
7602	11-Nov-01	F	5	NE Haulout, Perry Is.											165		
7603	11-Nov-01	F	5	NE Haulout, Perry Is.											523		
7620	7-Apr-02	M	9	Bay of Waterfalls, Adak Is.	151	29	12	2									17
7621	7-Apr-02	M	9	Bay of Waterfalls, Adak Is.	23	16	17	13									47
7823	26-Jul-02	F	24	Cape Chiniak, Kodiak										61			
7824	26-Jul-02	M	12	Cape Chiniak, Kodiak										183			
7825	29-Jul-02	M	12	Two Headed Rock, Kodiak										34			
7827	29-Jul-02	M	12	Two Headed Rock, Kodiak										32			
7829	30-Jul-02	M	24	Two Headed Rock, Kodiak										53			
7830	1-Aug-02	F	12	Marmot Is.										156			
7831	2-Aug-02	F	24	Marmot Is.										25			
7832	2-Aug-02	M	24	Marmot Is.										24			
8237	3-Nov-01	M	17	Two Headed Rock, Kodiak									40	156			
8238	13-Nov-01	F	5	Ugamak						3	1	94					
8239	14-Nov-01	F	17	Aiktak						2	32	36			1		
8243	25-Feb-03	F	9	Long Island, Kodiak										260			
8244	27-Feb-03	M	9	Long Island, Kodiak										291			
8246	27-Feb-03	M	9	Long Island, Kodiak						2		49	24	238			
8247	27-Feb-03	M	9	Long Island, Kodiak										287			
8248	1-Mar-03	F	9	Cape Ugat, Kodiak									1	50			
8249	2-Mar-03	F	9	Cape Ugat, Kodiak									3	239			
8251	6-Mar-03	M	9	Rocks off Tigalda						29		134					
8253	7-Mar-03	M	9	Aiktak								133		1			
11210	23-Aug-00	M	14	The Needle, PWS											7		
11211	24-Aug-00	F	26	The Needle, PWS											8		
11212	23-Apr-00	F	10.5	Glacier Island, PWS											7		

Table 1, continued.

ID	Deploy date	Sex	Capture age (mo)	Capture location	Analytical Zone												
					1	2	3	4	5	6	SSLCA	7	8	9	10	NEBS	Out
11214	24-Apr-00	M	10.5	Glacier Island, PWS											8		
11215	24-Apr-00	F	10.5	Glacier Island, PWS											4		
11216	25-Apr-00	F	10.5	Glacier Island, PWS											22		
11217	25-Apr-00	M	10.5	Glacier Island, PWS											2		
11218	25-Apr-00	M	10.5	Glacier Island, PWS											4		
11219	25-Apr-00	F	10.5	Glacier Island, PWS											2		
11220	26-Apr-00	F	22.5	The Needle, PWS											22		
11221	28-Apr-00	F	22.5	Point Elrington, PWS											23		
11222	22-Aug-00	F	14	Glacier Island, PWS											10		
11223	23-Aug-00	F	14	The Needle, PWS										5			
11246	19-Apr-05	F	10	Silak Is.				117	1								
11247	19-Apr-05	F	10	Silak Is.				52									
11248	20-Apr-05	M	10	Little Tanaga Is.				39									
11249	22-Apr-05	M	10	Lake Point, Adak			10	94									
11250	22-Apr-05	M	10	Lake Point, Adak			5	38									
11251	22-Apr-05	M	10	Lake Point, Adak			8	154									
11252	22-Apr-05	M	10	Lake Point, Adak			14	22									
11253	22-Apr-05	F	10	Lake Point, Adak			86	31									
11255	24-Apr-05	F	10	Ship Rock, Kanaga			27										
11256	25-Apr-05	M	10	Ship Rock, Kanaga			196										
11257	25-Apr-05	M	10	Ogalala Pt., Kagalaska	1		2	54									
11258	25-Apr-05	F	10	Ogalala Pt., Kagalaska				37									
11260	2-May-05	M	11	Lake Point, Adak	1		2	239									
11261	2-May-05	M	11	Lake Point, Adak	88	104	76	39									
11262	2-May-05	F	11	Lake Point, Adak			27	2									
				Total locations with diving to >4 m:	264	149	482	984	203	245	542	2172	172	6059	3104	1	64
				Sea lions with diving to >4 m in zone:	5	3	13	16	6	20	23	26	11	45	24	1	2
				Sea lions tagged in zone:	0	0	2	15	4	29	0	0	0	43	23		