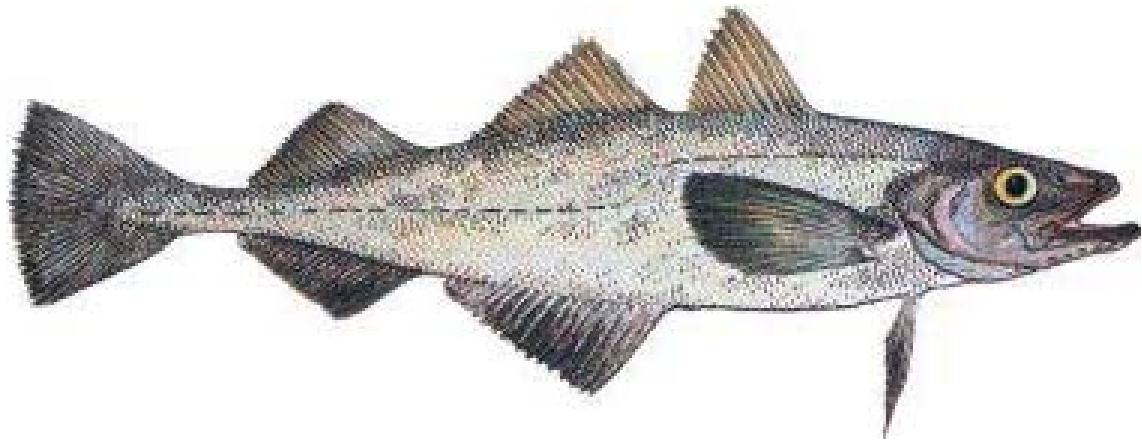


Information for Discussions
at the
Scientific and Technical Committee
submitted by the
United States Party to the
16th Annual Conference of the Parties to the Convention on the Conservation
and Management of Pollock Resources in the Central Bering Sea



August 2011
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Table 1. All-nation historical catch of pollock from the Bering Sea, in metric tons, 1977-2011

Year	Olyotorskiy-Karagin (W of 170W)	Navarin Region (E of 170W)	Donut Hole	Bogoslof	Aleutian Region	Eastern Bering Sea	Total Bering Sea
1977	265,000				7,625	978,370	1,250,995
1978	417,000				6,282	979,431	1,402,713
1979	546,000				9,504	935,714	1,491,218
1980	825,000				58,156	958,280	1,841,436
1981	1,133,000				55,516	973,502	2,162,018
1982	976,000				57,978	955,964	1,989,942
1983	1,006,000				59,026	981,450	2,046,476
1984	252,000	503,000	181,200		81,834	1,092,055	2,110,089
1985	134,000	488,000	363,400		58,730	1,139,676	2,183,806
1986	297,000	570,000	1,039,800		46,641	1,141,993	3,095,434
1987	349,000	463,000	1,326,300	377,436	28,720	859,416	3,403,872
1988	475,000	852,000	1,395,900	87,813	30,000	1,228,721	4,069,434
1989	345,000	684,000	1,447,600	36,073	15,531	1,229,600	3,757,804
1990	582,000	232,000	917,400	151,672	79,025	1,455,193	3,417,290
1991	326,000	178,000	293,400	264,760	78,649	1,217,301	2,358,110
1992	282,000	315,000	10,000	160	48,745	1,164,440	1,820,345
1993	288,000	389,000	1,957	885	54,074	1,198,790	1,932,706
1994	204,000	288,900	NA	556	53,224	1,197,224	1,743,904
1995	79,000	427,300	Trace	264	60,184	1,169,614	1,736,362
1996	34,000	753,000	Trace	389	26,597	1,102,579	1,916,565
1997	30,000	735,000	Trace	163	24,721	1,036,789	1,826,673
1998	25,000	719,000	Trace	8	22,053	1,058,288	1,824,349
1999	46,000	639,000	Trace	1	965	889,561	1,575,527
2000	15,000	507,000	Trace	29	1,174	1,019,067	1,542,270
2001	25,000	526,000	0	61	788	1,247,305	1,799,154
2002	8,000	370,000	0	22	1,134	1,331,416	1,710,572
2003	14,600	411,200	0	24	1,653	1,491,356	1,918,833
2004	6,200	424,500	0	0	1,150	1,493,394	1,925,244
2005	4,400	446,800	0	0	1,622	1,483,398	1,936,220
2006	3,900	462,500	0	0	1,736	1,486,414	1,954,550
2007	62,600	587,900	0	0	2,519	1,354,091	2,007,110
2008	50,632	504,487	0	9	1,277	990,314	1,546,719
2009	26,052	323,517	0	46	1,729	810,821	1,162,165
2010	43,352	315,532	0	176	1,285	810,195	1,170,540
2011**	8,972	80,552	0	140	788	749,651	840,103

Sources of Data

Reported by the Parties to the Convention

* US data through 21 July 2011; Russian Federation data through 22 July 2011

Table 2. Estimated Biomass (mt) of Pollock in the Aleutian Basin region of the Convention Area based on assumption that the Bogoslof Survey biomass represents sixty percent of the Aleutian Basin biomass.

Year	Bogoslof Biomass from Surveys, mt	Basin Biomass (Extrapolated Biomass)	Catch mt	Exploitation Rate (%)
1984			181,200	?
1985			363,400	?
1986			1,039,800	?
1987			1,326,300	?
1988	2,396,000	3,993,333	1,395,900	35
1989	2,084,000	3,473,333	1,447,600	42
1990			917,400	?
1991	1,283,000	2,138,333	293,400	14
1992	888,000	1,480,000	10,000	1
1993	631,000	1,051,667	1,957	0
1994	490,000	816,667	0	0
1995	1,020,000	1,700,000	0	0
1996	582,000	970,000	0	0
1997	342,000	570,000	0	0
1998	432,000	720,000	0	0
1999	393,000	655,000	0	0
2000	270,000	450,000	0	0
2001	208,000	346,667	0	0
2002	227,000	378,333	0	0
2003	198,000	330,000	0	0
2004	No survey		0	0
2005	253,000	421,667	0	0
2006	240,000	400,000	0	0
2007	292,000	486,667	0	0
2008	No survey	No estimate	0	0
2009	110,000	183,333	0	0
2010	No Survey	No estimate	0	0
2011	No survey	No estimate	0	0

Table 3. Summary of Trial Fisheries on Pollock in the Central Bering Sea Donut Hole Area

Year	Dates	Nation	No. Vessels	Vessel Name	Vessel Days	No. hauls	Data Source (Annual Conference Report)	Pollock Catch (KG)	Catch Number
2008-2010				No vessel participated					
2007		Korea	2	???	20	40	S&T, Appendix 3, 13th		2
2006	Jul 31-Aug 5	Korea	1	Oriental Angel (Keuk Dong Co)			12th	0.0	0
2006	Jul 31-Aug 8	Korea	1	Nambuk Ho (Nambuk Fish Co)			12th	0.0	0
2006	Jul 31-Aug 8	Korea	1	Joosung Ho (Hansung Enterprise Co)			12th	0.7	1
2003	Mar 12-26	Korea	2	Man Jeck No. 21, O Yang Ho - 2	27		9th	2.6	2
2003	Oct - Nov	Korea	1	O-Ryong 503	15		9th	0.0	2
2003	Nov 15-27	Russia	1	Pioner Nikolayeva	13		9th	1.6	1
2001	Nov 11-14	China	2	Ming Zhu, Kai Feng	8		7th	0.0	0
2001	Jun 7 - Jul 14	China	1	Kai Tuo	38		6th	<i>~24.0</i>	16
2000	Jan 12 - Feb 3	Korea	1	Oriental Discoverer	23		5th	0.0	0
2000	May 11-20	Korea	1	Oriental Angel	10		5th	0.0	0
2000	May 20 - Jun 28	China	1	Kai Chuang	40		5th	<i>~64.5</i>	43
1999	Aug 17-30	Poland	1	Homar	14	10	5th	2.3	2
1999	Apr 29 - May 3	Poland	1	Acamar	5	5	4th	2.9	2
1998	Sep 3-8	Poland	1	Acamar	6	5	4th	3.3	2
1997	Oct 12-15	Poland	1	Acamar	4	3	STC, Sep. 1998	0.0	0
1997	Aug 16-19	Russia	1	?	4		2nd	0.0	0
1997	Jun & Aug	China	2	?	8		2nd	<i>< 900.0</i>	<i>< 600</i>
1996	?	China	1	?	?		2nd	?	?
1996	Sep 1-11	Poland	1	Acamar	11	11	2nd	244.2	184
1995	Oct 18 - Nov 12	Poland	1	Acamar	25	16	1st	40.3	31
1995	Oct 13 - Nov 10	Poland	1	Homar	29	6		15.6	12
1993	Jul 2 - Sep 4	Poland	1	Adm. Arciszewski	63	69	Bull. SFI. 2(138) 1996	627,500	570,454
1993	Jun 6-14	Japan	1	?	9		unpub ms	?	?
1993	Jul 13-22	Japan	1	?	10		unpub ms	?	?
1993	Nov 12-17	Japan	1	?	6		unpub ms	?	?
1993	Dec 8-17	Japan	1	?	6		unpub ms	?	?

? indicates unknown

Italics indicate non-reported estimated numbers

Table 4. United States Pollock Catches in metric tons, 1993-2011

Year	E. Bering Sea	Aleutians	Bogoslof	Gulf of Alaska
1993	1,198,790	54,074	885	108,066
1994	1,197,224	53,224	556	110,890
1995	1,169,614	60,184	264	73,248
1996	1,102,579	26,597	389	37,106
1997	1,036,789	24,721	163	89,893
1998	1,058,288	22,053	8	123,805
1999	889,561	965	1	93,422
2000	1,019,067	1,174	29	23,643
2001	1,247,305	788	61	70,485
2002	1,331,416	1,134	22	50,712
2003	1,491,356	1,653	24	48,573
2004	1,493,394	1,150	50	60,929
2005	1,483,398	1,622	0	80,040
2006	1,486,414	1,736	0	68,950
2007	1,354,091	2,519	0	60,928
2008	990,314	1,277	9	50,697
2009	810,821	1,729	46	41,168
2010	810,195	1,285	176	73,530
Through 21 July 2011	749,651	788	140	42,936
Catch Quota for 2011	1,252,000	19,000	50	84,745
Remaining Quota	502,349	18,212	-90	41,809

Note: (Data from <http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm>)

Table 5. Pollock assessment numbers determined for management of the U.S. 2008-11 pollock fisheries

Year = 2008	OFL	ABC	TAC	TAC/ABC
<i>Eastern Bering Sea</i>	1,440,000	1,000,000	1,000,000	1.00
<i>Aleutians Region</i>	34,000	29,400	19,000	0.65
<i>Bogoslof</i>	58,400	7,970	10	0.00
<i>Gulf of Alaska</i>	72,110	51,940	51,940	1.00

Year = 2009	OFL	ABC	TAC	TAC/ABC
<i>Eastern Bering Sea</i>	977,000	815,000	815,000	1.00
<i>Aleutians Region</i>	32,600	26,900	19,000	0.71
<i>Bogoslof</i>	58,400	7,970	50	0.01
<i>Gulf of Alaska</i>	58,590	41,620	41,620	1.00

Year = 2010	OFL	ABC	TAC	TAC/ABC
<i>Eastern Bering Sea</i>	918,000	813,000	813,000	1.00
<i>Aleutians Region</i>	40,000	33,100	19,000	0.57
<i>Bogoslof</i>	22,000	156	50	0.32
<i>Gulf of Alaska</i>	115,526	84,745	84,745	1.00

Year = 2011	OFL	ABC	TAC	TAC/ABC
<i>Eastern Bering Sea</i>	2,450,000	1,270,000	1,252,000	0.99
<i>Aleutians Region</i>	44,500	36,700	19,000	0.52
<i>Bogoslof</i>	22,000	156	150	0.96
<i>Gulf of Alaska</i>	<i>not available</i>	84,631	84,631	1.00

Notations: OFL = Overfishing Level, ABC = Acceptable Biological Catch, TAC = Total Allowable Catch

**Update on Status of Pollock Resources in the eastern Bering Sea,
Aleutian Islands, and the Bogoslof Island Regions through 2011**

The standard time period for updating the status of Pollock resources for meeting the schedule of the North Pacific Fishery Management Council is in November of each year when the Groundfish Plan Teams of the Council meet. The last update was conducted in November 2010.

The full assessments of pollock stocks in the 3 management areas of the Bering Sea are located in the following web-links:

Eastern Bering Sea -- <http://www.afsc.noaa.gov/REFM/docs/2010/EBSpollock.pdf>

Aleutians Islands Area -- <http://www.afsc.noaa.gov/REFM/docs/2010/AIpollock.pdf>

Bogoslof Island Area -- <http://www.afsc.noaa.gov/REFM/docs/2010/BOGpollock.pdf>

The assessment for the Gulf of Alaska is located at:

<http://www.afsc.noaa.gov/REFM/docs/2010/GOApollock.pdf>

Pollock Stock Status Summaries

Status and catch specifications (t) of walleye pollock in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2011 and 2012 are those recommended by the Plan Team. Catch data are current through November 6, 2010.

Area	Year	Age 3+ Biomass	Overfishing Level	Acceptable Biological Catch	Total Allowable Catch	Catch
Eastern Bering Sea	2009	6,240,000	977,000	815,000	815,000	810,821
	2010	4,620,000	918,000	813,000	813,000	810,195
	2011	9,620,000	2,450,000	1,270,000	1,252,000	749,641
Aleutian Islands	2009	197,000	34,000	28,200	19,000	1,729
	2010	307,000	40,000	33,100	19,000	1,285
	2011	242,000	44,500	36,700	19,000	788
Bogoslof	2009	292,000	58,400	7,970	10	46
	2010	110,000	22,000	156	50	176
	2011	110,000	22,000	156	150	140

Footnote: Catch data for 2011 is through 21 July 2011

Eastern Bering Sea Pollock

Spawning biomass and stock status trends

Generally speaking, estimates of biomass from this year's assessment are higher than those from last year's assessment, particularly for the most recent part of the time series. For example, estimates of age 3+ biomass from this year's assessment are within 3 percent of those from last year's assessment for the period 2000-2003 and within 9 percent for the period 2004-2008, but they are 31 percent and 43 percent higher for 2009 and 2010, respectively.

Spawning biomass for 2008 was the lowest since 1980, but has increased steadily since then, with a further increase of 30 percent projected from 2010 to 2011. The 2008 low was the result of extremely poor recruitments from the 2002-2005 year classes. Recent and projected increases are fueled by strong recruitments from the 2006 and 2008 year classes (it should be noted, however, that the strength of the 2008 year class is still highly uncertain). Spawning biomass is estimated to be 4 percent below B_{MSY} in 2010, and projected to be 25 percent above B_{MSY} in 2011.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that EBS pollock qualifies for management under tier 1 because there are reliable estimates of B_{MSY} and the probability density function for F_{MSY} . The Plan Team concurs with the assessment authors' conclusion that the tier 1 reference points continue to be reliably estimated, although the Plan Team would like to see more explicit criteria established for making this determination.

The updated estimate of B_{MSY} from the present assessment is 1.95 million t. Projected spawning biomass for 2011 is 2.44 million t, placing EBS walleye pollock in sub-tier "a" of tier 1. As in recent assessments, the maximum permissible ABC harvest rate was based on the ratio between MSY and the equilibrium biomass corresponding to MSY. The harmonic mean of this ratio from the present assessment is 0.564, up 51 percent from last year's value of 0.373. The harvest ratio of 0.564 is multiplied by the geometric mean of the projected fishable biomass for 2011 (3.82 million t) to obtain the maximum permissible ABC for 2011, which is 2.15 million t, up 164 percent from the 2010 ABC and up 94 percent from the 2011 ABC projected in last year's assessment.

The authors recommend setting ABCs for 2011 and 2012 below the maximum permissible level, specifically, at values corresponding to the average harvest rate over the most recent five complete years (0.33). Projected harvests at this rate results in ABCs for 2011 and 2012 equal to 1.27 million t and 1.60 million t, respectively. The Plan Team agreed with the authors' recommended ABCs well below the maximum permissible is the large gap in the age structure created by poor recruitments from the 2002-2005 year classes. While the Plan Team has recommended ABCs in excess of 2 million t in previous years when biomass was very high, the stock contained multiple large cohorts in those years, whereas about half of next year's catch is likely to come from a single year cohort (2006). Because recruitment is largely driven by environmental conditions, the Plan Team also felt that it would be advisable to not take full advantage of the present large biomass as a hedge against the possibility that the environment might return to the conditions that produced poor recruitment during the 2002-2005 period.

The OFL harvest ratio under tier 1a is 0.640, the arithmetic mean of the ratio between MSY and the equilibrium fishable biomass corresponding to MSY. The product of this ratio and the geometric mean of the projected fishable biomass for 2011 gives the OFL for 2011, which is 2.45 million t. The current projection for OFL in 2012 given a 2011 catch of 1.27 million t is 3.17 million t.

Status determination

The walleye pollock stock in the EBS is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

Ecosystem considerations

Multiple sources of information indicate that EBS pollock biomass is increasing. Relative abundance of euphausiids, a key item in the diet of pollock, increased for several years through 2009. This indicates that pollock prey is generally abundant, while the slight downturn in euphausiid abundance observed in 2010 should be monitored to determine if top-down control resulting from increased pollock abundance may be occurring.

The current draft of the Steller sea lion Biological Opinion does not indicate that reductions in the EBS pollock ABC are necessary to avoid jeopardizing the recovery of species listed under the ESA.

Aleutian Islands

Spawning biomass and stock status trends

This year's assessment estimates that spawning biomass reached a minimum level of about $B_{22\%}$ in 1999, then increased steadily through 2006 to a level around $B_{33\%}$, and remained fairly close to that level through the present. The increase in spawning biomass since 1999 has resulted more from a dramatic decrease in harvest than from good recruitment, as there have been no above-average year classes spawned since 1989, and the 2000 year class was the first to exceed the median level since the 1993 year class. Spawning biomass for 2011 is projected to be 80,900 t.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that this stock qualifies for management under tier 3. The Plan Team concurs and supports continued use of the reference model with the addition of an ageing error matrix (Model A1_AE) for evaluating stock status and recommending ABC. The reference model estimates $B_{40\%}$ at a value of 108,000 t, placing the AI pollock stock in sub-tier "b" of tier 3. Under tier 3b, with $F_{40\%}=0.35$, the maximum permissible ABC is 36,700 t for 2011. The Plan Team recommends setting 2011 ABC at this level. Following the tier 3b formula with $F_{35\%}=0.44$, OFL for 2011 is 44,500 t. Given a 2011 catch of 19,000 t, the maximum permissible ABC is 35,600 for 2012 and the projected OFL is 43,300 t. If the 2011 catch is only 1,090 t (i.e., equal to the five year average), the 2012 maximum permissible ABC would be 41,600 and the 2012 OFL would be 50,400 t. The Plan Team recommends setting 2012 ABC at this level.

Status determination

The walleye pollock stock in the Aleutian Islands is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

Bogoslof

Spawning biomass and stock status trends

Survey biomass estimates since 2000 have all been lower than estimates prior to 2000, ranging from a low of 110,000 t in 2009 to a high of 301,000 t in 2000.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that this stock qualifies for management under tier 5. Traditionally, the ABC for this stock has been set using a formula similar to the tier 3 formula, but substituting a reference biomass level of 2 million t for $B_{40\%}$. The Plan Team concurs with the authors' recommendation to continue this practice. Given $F_{40\%}=0.27$, this results in $F_{ABC}=0.0014$ and a 2011 ABC of 156 t. The projected ABC for 2012 is the same. Following the tier 5 formula with $M=0.20$, OFL for 2011 is 22,000 t. The OFL for 2012 is the same.

Status determination

The walleye pollock stock in the Bogoslof district is not being subjected to overfishing. As a Tier 5 stock, it is not possible to determine whether Bogoslof pollock is overfished or is approaching an overfished condition.