

Groundfish Forum Comments on Abundance Based Management

North Pacific Fishery Management Council (April 2018)

Agenda Item D-1

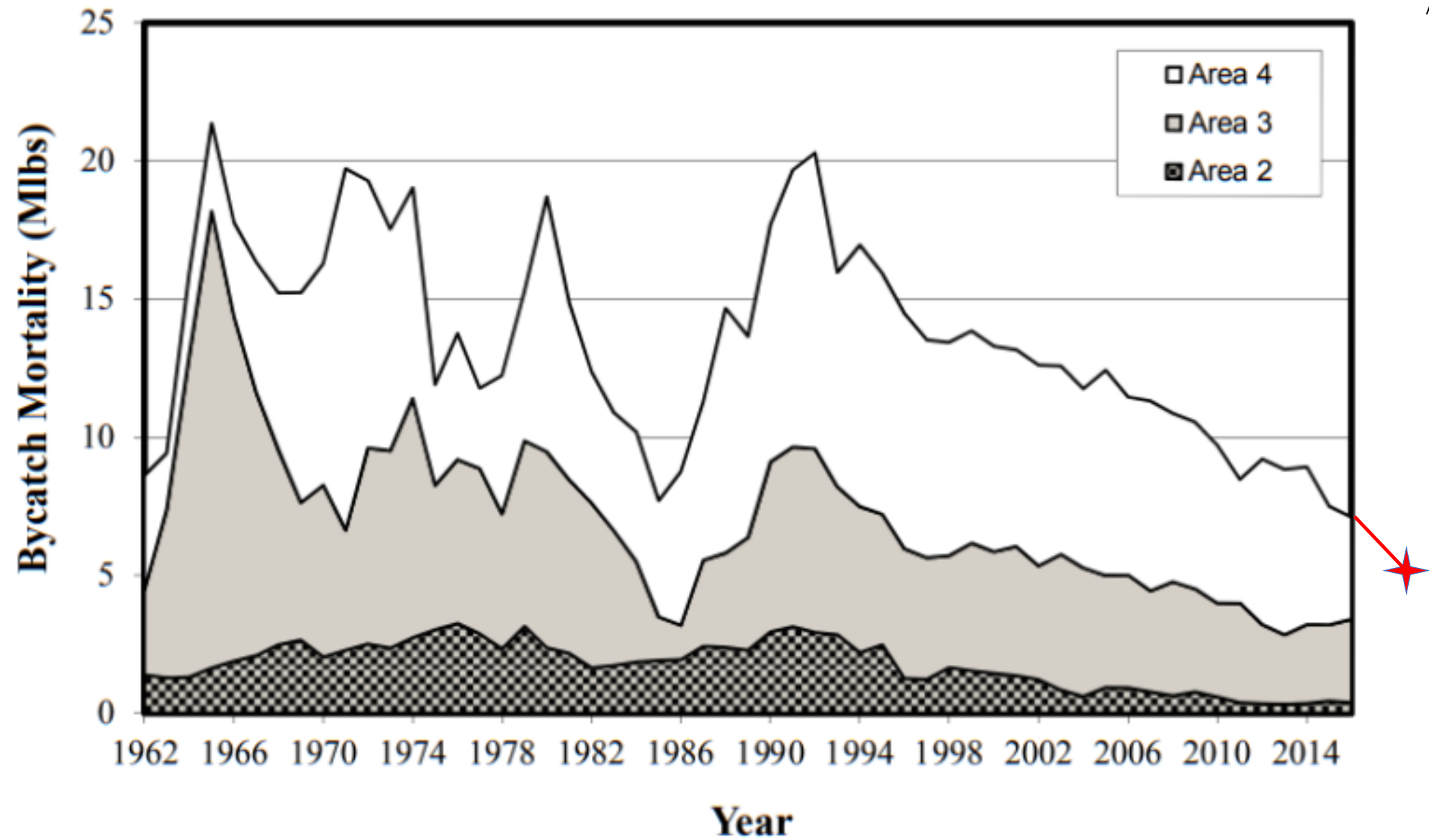
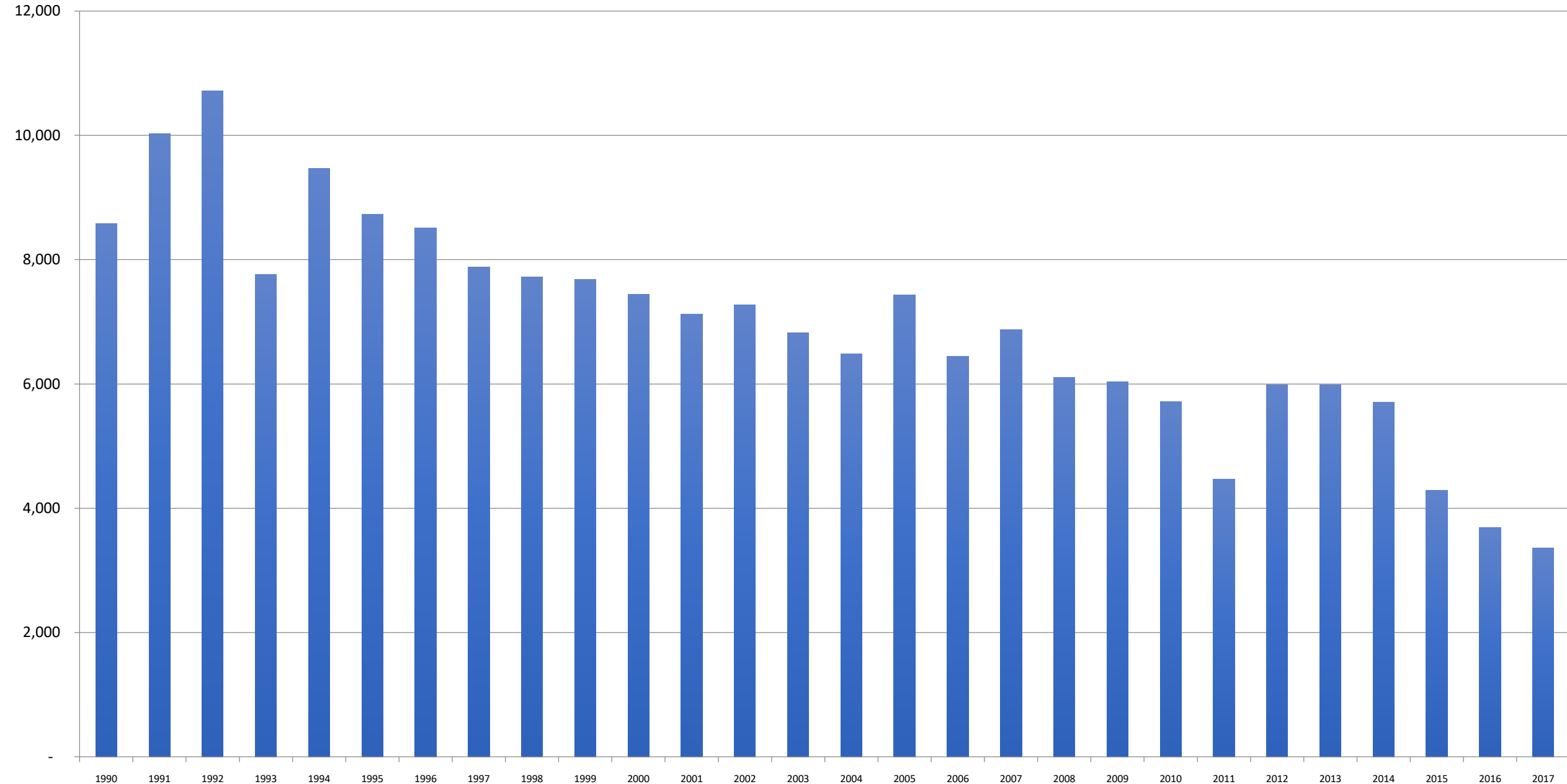


Figure 3. Bycatch mortality estimates of Pacific halibut by IPHC regulatory area (millions of pounds, net weight), 1990-2016.

Area 4 Halibut Bycatch Mortality 1990-2017

All Gears

D1 In Meeting Public Comment
April 2018



2017 BSAI Reduction in Halibut Mortality Compared to 5 year Average

B3 BSAI Inseason Management Public Comment
DECEMBER 2017

Sector	2012-2016 Average (mt)	2017 (mt)	% Change (mt)	2012-2016 Rate*	2017 Rate*	% Change in Rate
Hook-and-line						
Catcher/Processors	380	164	-57%	2.68	1.26	-53%
Catcher Vessels	3	< 1	-	2.71	-	-
Total	382	165	-57%	2.68	1.26	-53%
Non-Pelagic Trawl						
Amendment 80 Catcher/Processors	1,867	1,140	-39%	5.78	3.90	-32%
AFA Catcher/Processors	119	57	-52%	4.40	3.21	-27%
Catcher Vessels	381	337	-11%	6.44	5.07	-21%
Total	2,367	1,534	-35%	5.79	4.08	-30%
Pelagic Trawl						
AFA Catcher/Processors	113	57	-49%	0.25	0.12	-52%
AFA Catcher Vessels	61	17	-72%	0.09	0.02	-74%
Total	173	74	-57%	0.15	0.06	-60%
CDQ						
Hook-and-line Vessels	40	13	-68%	1.95	0.64	-67%
Non-pelagic Trawl Vessels	165	129	-22%	4.36	3.27	-25%
Pelagic Trawl Vessels	12	6	-49%	0.10	0.05	-52%
Total	217	148	-32%	1.15	0.75	-35%
<i>* Rate is kg of halibut / mt of groundfish</i> TOTAL	3,140	1,920	-39%	1.68	1.01	-40%

A80 Alternative for Abundance Based Management

The A80 sector supports the analysis of ABM3 (average of EBS Trawl Survey for years 2008-2017) with the following indices and control rules as part of an iterative, preliminary analysis the Abundance Based Management of Halibut PSC:

Element 1: PSC Limit Responsiveness to abundance changes

Option 2: PSC Limit varies proportionally with change in abundance index (1:1): slope = 1

Sub-Option 1: 3 year rolling average

Sub-Option 2: Annual increase / decrease not to exceed 5%

Sub-Option 3: Annual increase / decrease not to exceed 10%

Element 2: Starting Point for PSC Limit

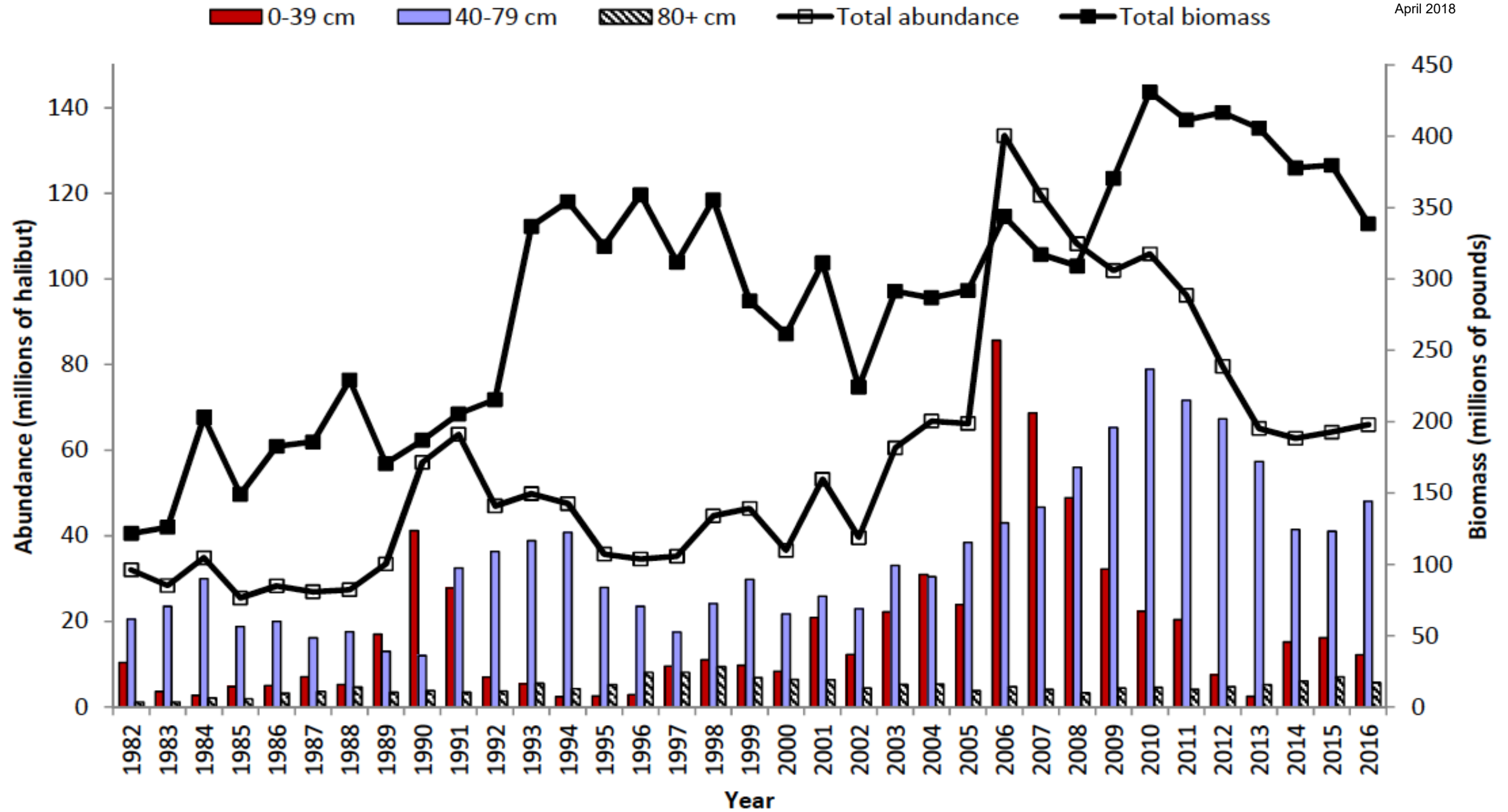
Option 3: 2016 PSC Limit (3,515MT): (1,745MT for A80 Sector)

Element 3: Maximum PSC Limit (Ceiling)

Option 4: 10% above 2015 PSC Limit (4,870): (2,558MT for A80 Sector)

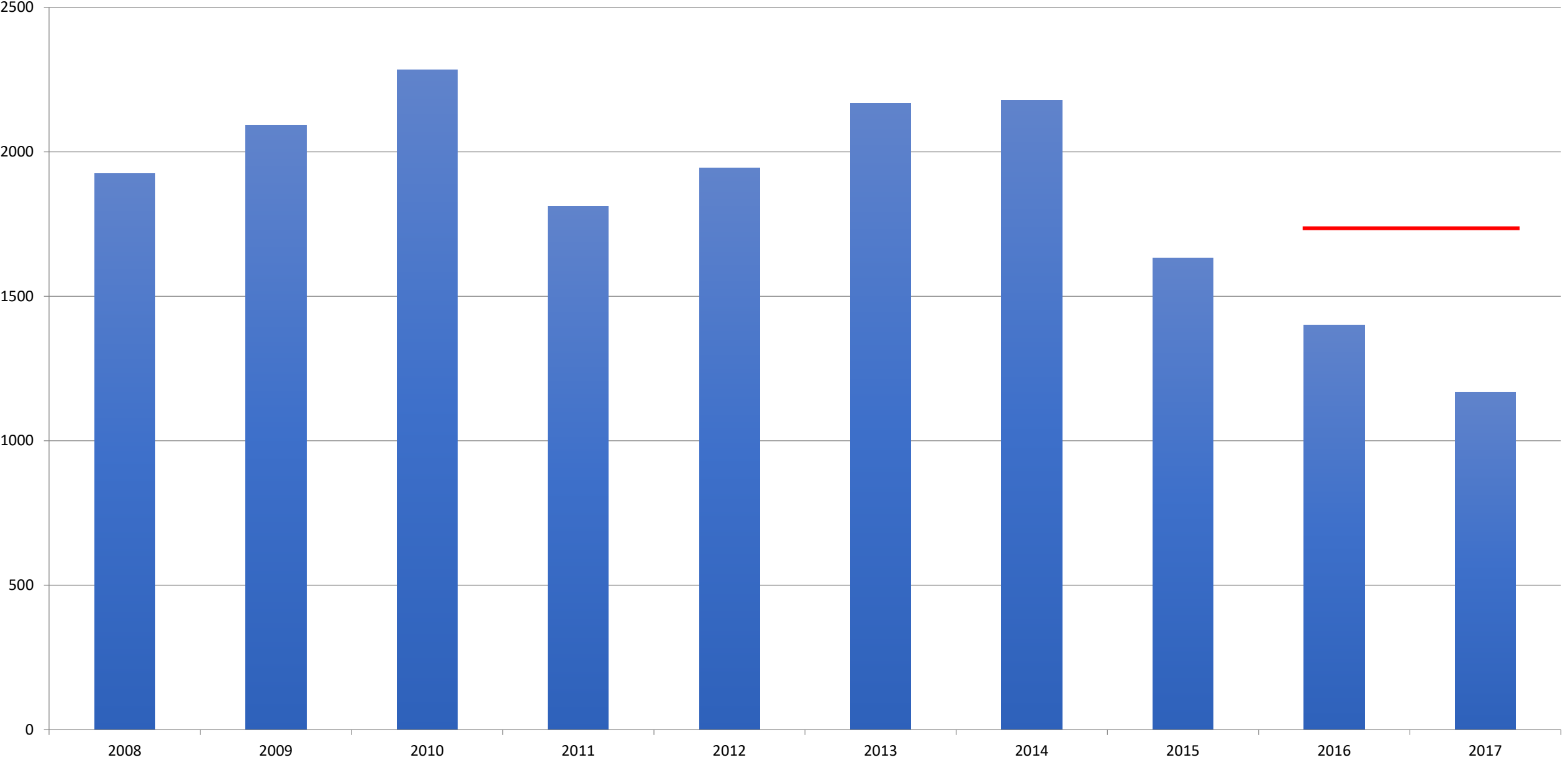
Element 4: Minimum PSC Limit (Floor)

Option 3: Additional Value Specific to A80: (1,500MT for A80 Sector)



A80 Halibut Bycatch Mortality BSAI (2008-2017)

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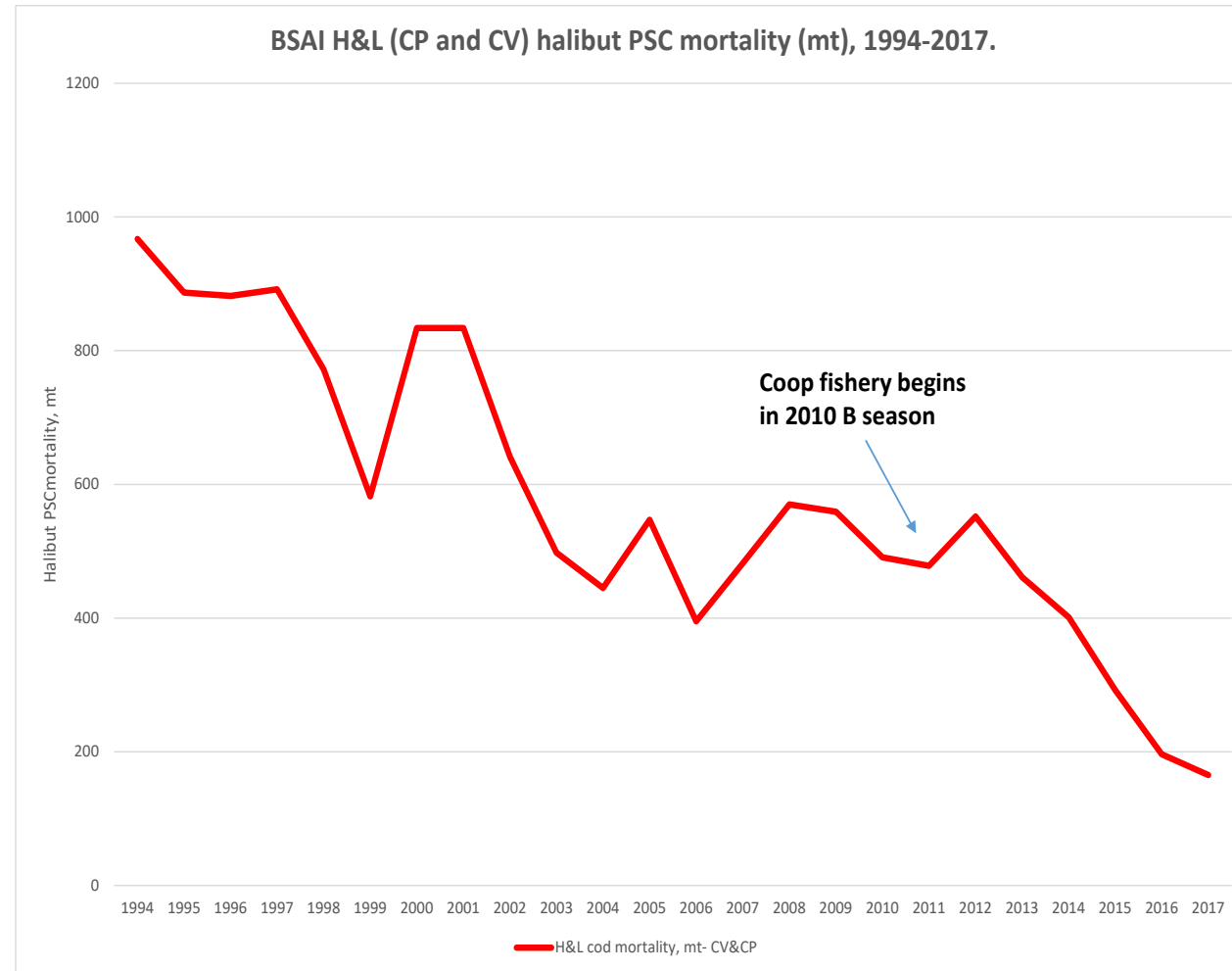




D-1: Halibut ABM, Council April 2018 NPFMC

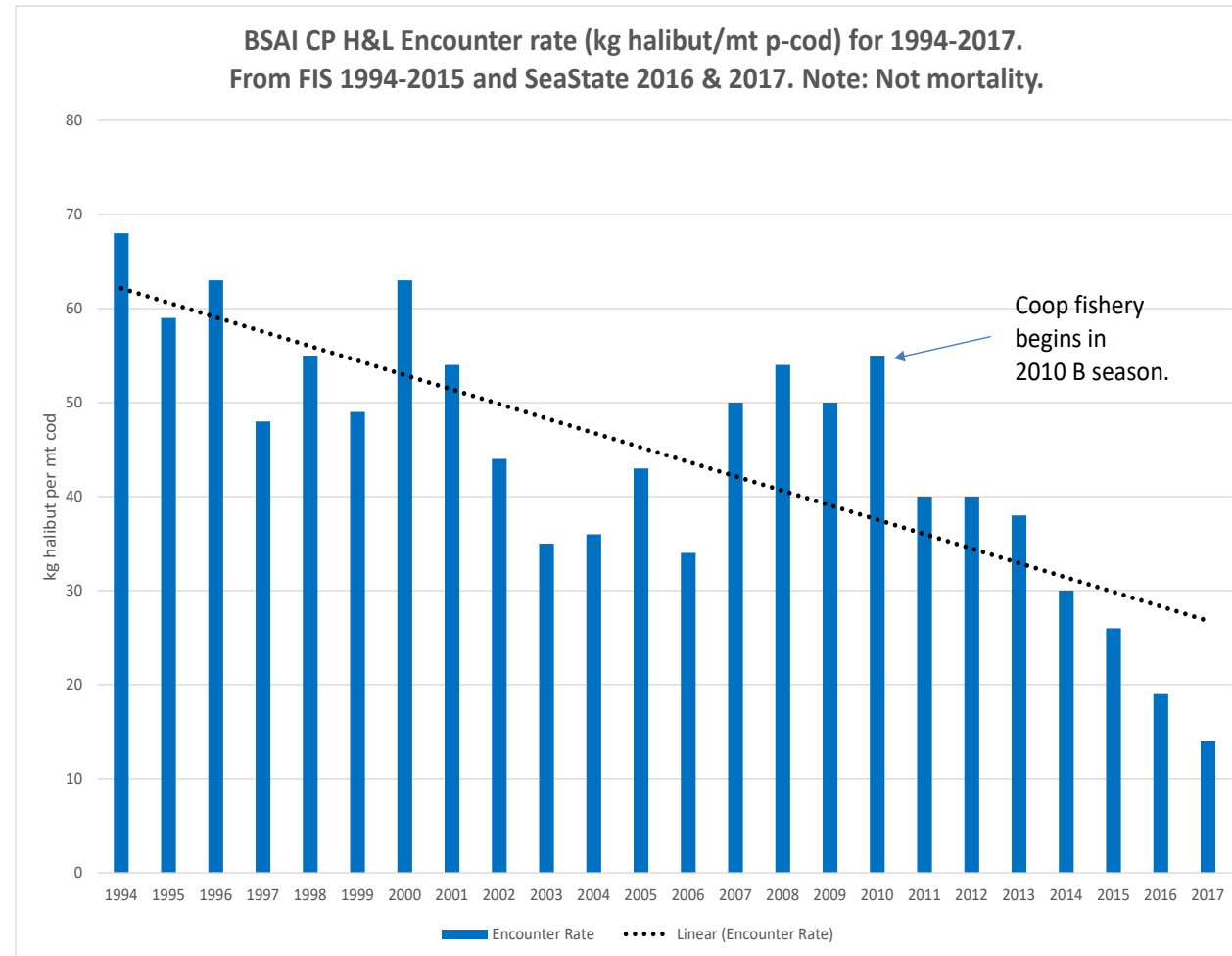
BSAI CP H&L Halibut PSC mortality (mt), 1994-2017.

2018 PSC use (as of 3/31) is -28% less than 2017 (as of same week).

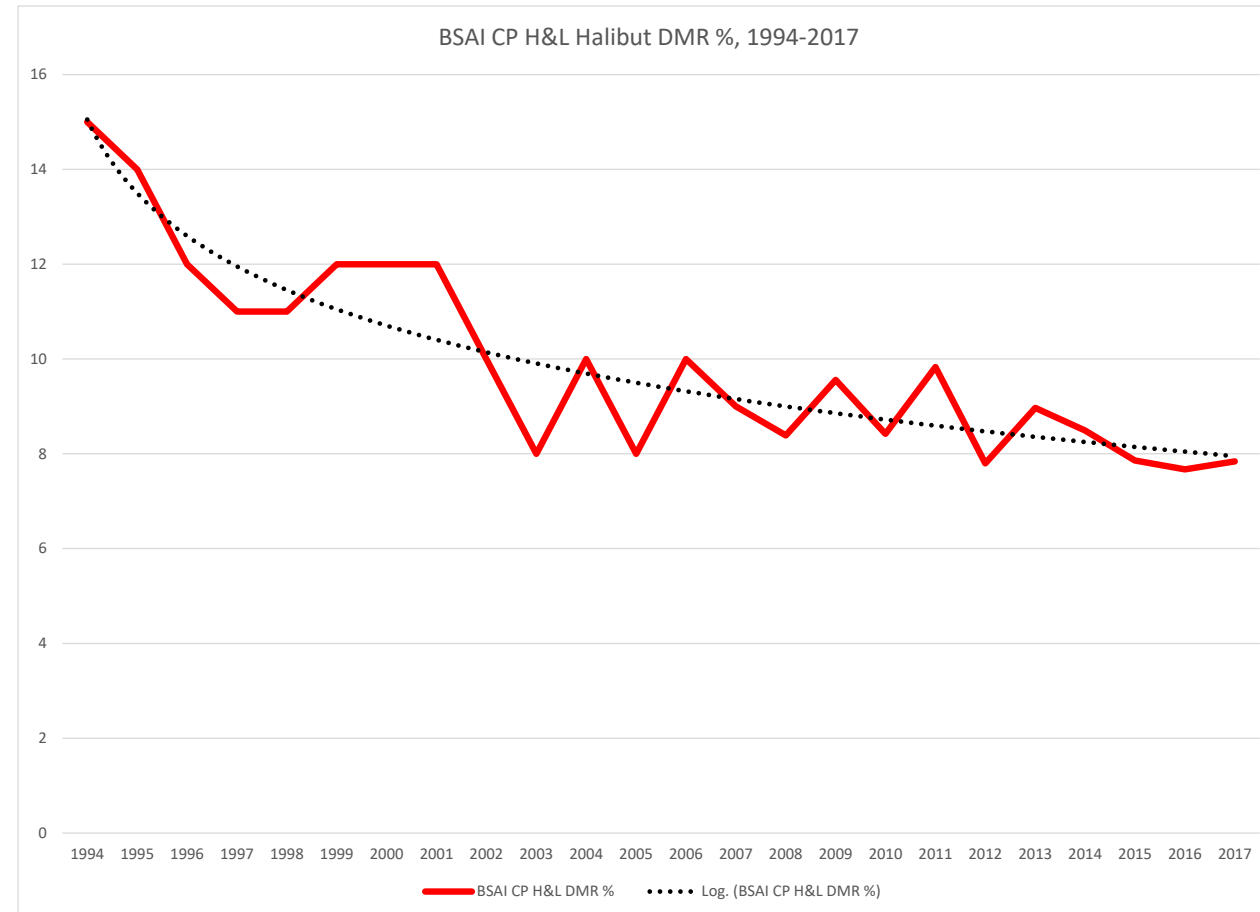


BSAI CP H&L encounter rate (kg/mt), 1994-2017.

Cumulative 2018 rate (as of 3/31) is -20% lower than 2017 (as of same week)



BSAI CP H&L actual DMR, 1994-2017. From FIS and Sea State. Incremental reductions are of diminishing magnitude. Note: 3.5% is the lowest possible value.



FLC Track Record - Halibut Bycatch

Summary: BSAI CP H&L reductions in PSC use are due to changes in halibut abundance/distribution and in part, improvement in performance (DMR and encounter rate) particularly since coop fishery began in 2010 B season.

- **1994-2017:** Total PSC mortality has declined **-81%**
- **2017** mortality is **-57%** less than the previous 5 year average
- **1994-2017:** DMR rate has been reduced **-48%**
- **1994-2017:** Encounter rate has been reduced **-79%**
- **2017** mortality rate = **1.26 kg/mt** (**-53%** less than the previous 5 year avg.)
- **2017** mortality rate = one 10 net lb halibut for every 5 mt p-cod
- **1994:** CP H&L was **17%** of all gear BSAI halibut PSC use
- **2017:** CP H&L was **8.8%** of all gear BSAI halibut PSC use
- **2017:** CP H&L was **3.75%** of total halibut removals in IPHC Area 4
- **2017:** CP H&L (GOA+BSAI PSC) was **1.22%** of total AK halibut removals

Principles for abundance-based management (p. 65, October 2017 discussion paper). Easy to understand, transparent (not a model)

ABM Index Principles:

1. Independent of management decisions.
2. Parsimonious, easy to understand, and easy to implement in a timely manner.
3. Free of as many assumptions as possible.
4. Reflect halibut abundance in the Bering Sea.
5. Reflect groundfish fishery encounters in the Bering Sea.

Where's the Fit? It's Complicated

**U26/O26 Size composition (in N, numbers of fish, 2008-2016 avg),
from Oct 2017 discussion paper, Table 6, p. 37.**

Survey/Sector	%U26	% O26	%O32
EBS shelf trawl	80%	20%	6%
IPHC survey	10%	89%	55%
NPT groundfish	87%	13%	3%
PT groundfish	85%	15%	3%
H&L groundfish	57%	43%	10%

Fixed Gear (Groundfish) Strawman ABM Alternative

Starting point = 604 mt (15% < 2016 limit, 30% < 2015 limit); **Ceiling = 710 mt** (2016 limit); **Floor = 355 mt** (50% < 2016 cap); 2002-2016 survey avg = 1.0 (each survey). Either survey (or coastwide B30) can trigger move to floor. Either survey can trigger move to the ceiling.

Fixed Gear ABM Decision Table

	IPHC Area 4 O26 survey (272 net lbs/skate = 1.0)		EBS shelf survey (340 M lbs = 1.0)	PSC limit
PSC ceiling	> = 1.1 (>300 lbs/skate)	OR	> = 1.1 (>374 M lbs)	710 mt
PSC middle	<1.1 but > = 0.5	AND	<1.1 but <=0.5	604 mt (-15%)
PSC floor	<0.5 (<121 lbs/skate)	OR (Coastwide B30) OR	<0.5 (<170 M lbs)	355 mt (-50%)

FLC Recommendations

I-T-E-R-A-T-I-V-E!

- SSC minutes: *“The SSC therefore recommends that the Council follow an **iterative** process for determining the final set of alternatives for evaluation in an EIS.”*

Support AP motion on D-1, Halibut ABM – “the kitchen sink”

- Fixed gear (groundfish) ABM alternative
- **Additional considerations:**
 - Analysis of revised time windows for indices
 - 10 yrs: 2007-2016
 - 15 yrs: 2002-2016
 - Facilitate selection of separate alternatives, options by gear types
 - Include strawman ABM 4
 - Range of static PSC limits for comparison



D-1: Halibut ABM: April 2018: Survey WPUE for Area 4CDE; 4A; and 4B

From IPHC 2010 through 2017 RARAs

G. Merrigan *-Public T.*

Area 4CDE O32 WPUE	2017	2016	2015	2014	2013	2012	2011	2010
1998	20.2	21.2	30	26.7	40.7	44.5	45	45
1999	20.2	20.6	27.6	24.4	36.3	42.1	42	42
2000	21.7	21.4	26.4	23.5	26.4	31.5	32	32
2001	20.9	20.6	26	23.5	26.5	31.3	31	31
2002	18.2	18	26.2	24.1	26.6	31.1	31	31
2003	16.8	16.6	23.4	21.4	24.7	29	29	29
2004	15.1	14.9	22.5	20.4	21.1	23.2	23	23
2005	12.3	12.2	14	13	13.2	17.4	18	18
2006	13.6	13.4	14.4	14.1	14.2	17	17	17
2007	11.8	11.6	14	12	12.9	13.1	13	13
2008	11.8	11.7	11.5	10.7	11.1	12.1	13	13
2009	12.5	12.4	14.1	12.9	13	14.5	15	15
2010	12.1	11.9	12	11	11.1	13.1	13	13
2011	11.4	11.2	10.7	9.3	9.3	10.1	10	
2012	12.1	11.8	12.7	10.5	10.8	11.2		
2013	12	11.8	10.4	9.1	9.1			
2014	13.4	13.1	12	10.2				
2015	14.6	14.2	15.2					
2016	14.2	14.1						
2017	13.5							

Area 4A O32 WPUE	2017	2016	2015	2014	2013	2012	2011	2010
1998	391	411.6	343.6	343.6	307.3	299	299	299
1999	358.7	366.4	332.3	332.3	291.1	290.3	290	290
2000	354.5	365.8	314.6	314.6	281.4	275.8	276	276
2001	276.3	284.3	228	228	203.9	198.8	199	199
2002	246.4	250.9	193	193	172.7	168.4	168	168
2003	209.7	214.9	176.4	176.4	157.8	154.1	154	154
2004	181.9	183.9	157.7	157.7	141.1	137.4	137	137
2005	160	161.9	122.6	122.6	109.7	106.8	107	107
2006	134.2	134.1	97.6	97.6	87.3	84.9	85	85
2007	119.1	118.8	76.5	76.5	68.4	66.5	67	67
2008	128	129.3	95.5	95.5	85.4	84.1	84	84
2009	118	117.2	96.3	96.3	86.1	84.1	84	84
2010	99.8	97.2	83.6	83.6	74.7	73	73	73
2011	92.7	91.9	66.3	66.3	59.3	58.4	58	
2012	91.9	92.1	73.2	73.2	65.5	63.6		
2013	74.6	74.2	48.1	48.1	43			
2014	79.2	77.9	62.2	62.2				
2015	78.8	74.3	56.1					
2016	73.5	68.8						
2017	72.6							

D-1: Halibut ABM: April 2018: Survey WPUE for Area 4CDE; 4A; and 4B

From IPHC 2010 through 2017 RARAs

G. Merrigan

Area 4B O32

WPUE

	2017	2016	2015	2014	2013	2012	2011	2010
1998	254.2	258.3	216.6	216.6	216.6	215.6	216	216
1999	208.8	213.8	203.3	203.3	203.3	203.1	203	203
2000	186.5	192	216.5	216.5	216.5	216.3	216	216
2001	137.6	143.5	171.4	171.4	171.4	171.3	171	171
2002	105.4	108.4	119.3	119.3	119.3	119.1	119	119
2003	85.8	89.7	104.1	104.1	104.1	104.1	104	104
2004	78	80	73.4	73.4	73.4	73.3	73	73
2005	74.2	77	86.3	86.3	86.3	86.2	86	86
2006	81.9	85.1	95.5	95.5	95.5	95.5	96	96
2007	96	100.1	87.4	87.4	87.4	87.2	87	87
2008	98.2	103.1	103.5	103.5	103.5	103.3	103	103
2009	81.9	85.3	106.8	106.8	106.8	106.8	107	107
2010	71.8	74.7	68.4	68.4	68.4	68.4	68	68
2011	72.7	74.6	68.1	68.1	68.1	67.9	68	
2012	60.1	62.4	48.5	48.5	48.5	48.3		
2013	64.7	65.8	57.3	57.3	57.3			
2014	56.3	56.6	49.9	49.9				
2015	58.3	56.8	56.3					
2016	57	55.9						
2017	53.5							