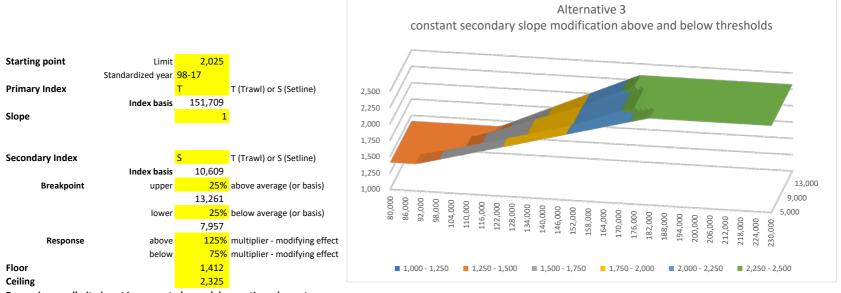


### Agenda Item: <u>P3</u> Halibut ABM Stakeholder Conte **PUBLIC TESTIMONY SIGN-UP SHEET**

		Check the boxes have a PowerF	below if y Point or H	andout
	NAME ( <u>Please Print</u> )	TESTIFYING ON BEHALF OF:	Handout	РРТ
X	Ruth Christiansen	UCB		
X	Mark Ena			$\times$
×	Bob Alverson	FUOA-Seattle		
X	CHRIS WOODLEY	FUDA-Seattle GNOUNDFISH FORUM		$\times$
5	Chad See	FLC		
K	Heather McCarty	CBSTA		$\times$
X	Sime on Swetzer/Mates Paz-Jolda	in City of St Paul		
8	RICARDO MERCULIEF	SELF		
×	Linda Behnken	ALFA		
70	Arne Fuglvog			
11				
12				
13				
14				
15		*		
16				
17				
18			N.V.	
19				
20				
21				
22				
23	~			
24				
25				
any rega	person " to knowingly and willfully submit to a Council, the Secr rding the capacity and extent to which a United State fish proce	Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Managem etary, or the Governor of a State false information (including, but not limited to ssor, on an annual basis, will process a portion of the optimum yield of a fisher ter that the Council, Secretary, or Governor is considering in the course of carry	, false info that will b	rmation e



Reponsiveness limit - is not incorporated - graph has no time element

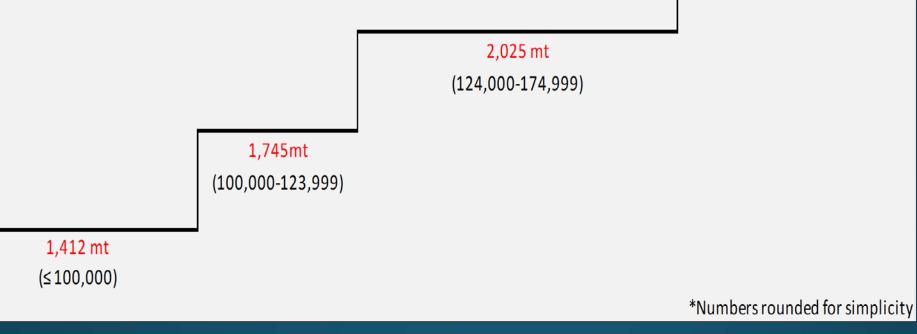
Fast up/down and slow up/down - not incorporated - graph has no time element

Limits Table - no limit on response

# A80 Proposal for ABM

Chris Woodley Groundfish Forum



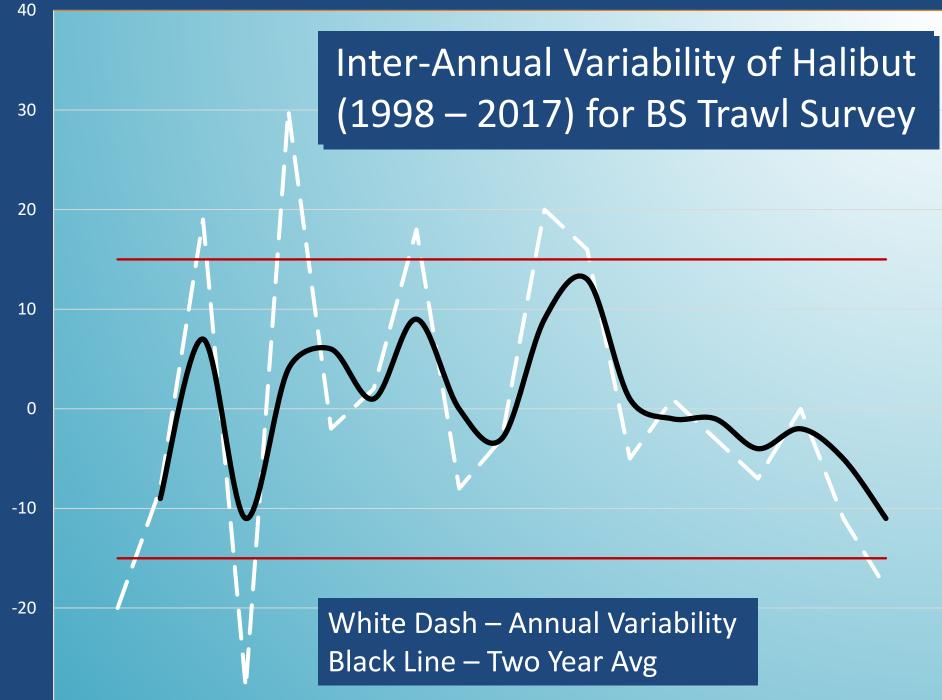


- Stair step approach based upon abundance
- Similar to stair step approach used for crab PSC



Index: (Alternative 2, Option 1) NMFS EBS Trawl Survey Starting Point: (Element 1, Option 1) 2016 PSC Limit Ceiling : (Element 2, Option 2) 2015 PSC Limit Floor: (Element 3, Option 1) 2016 PSC Use PSC Limit Responsiveness: (Element 6, Option 2)

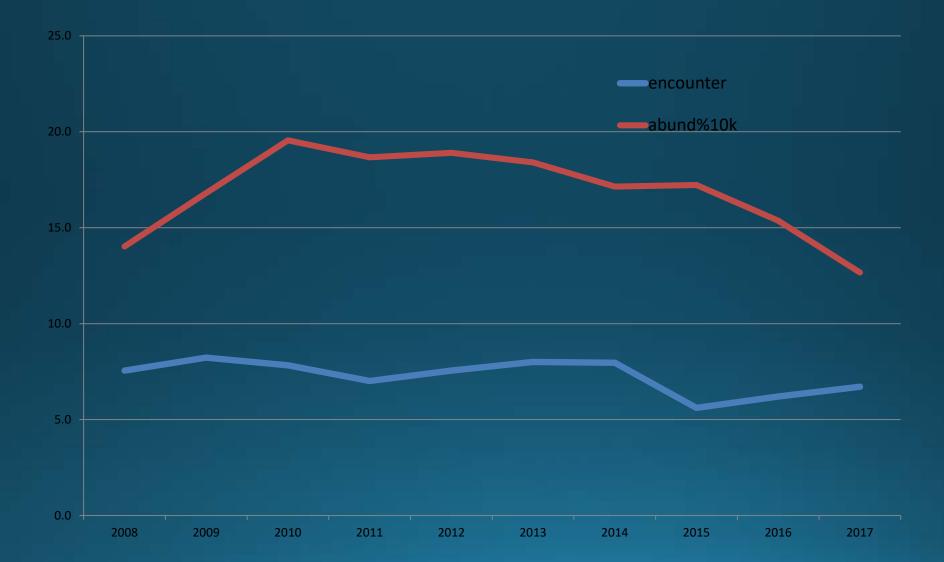
\* Varies no more than 15% (Based on 2 year avg)



## Questions?



### Encounter vs. Abundance



#### **Directed Fishery ABM Scenario**

- Area 4 Setline Survey as the Primary Index, EBS Trawl Survey as the Secondary Index
- <u>Starting Point 1,958 mt (2017 PSC Use)</u>
- <u>Ceiling 3,515 mt</u>
- <u>Floor 1,000 mt</u>
- Primary Index, Secondary Index, and Starting Point all reflect 2017 values
- Area 4CDE Directed Fishery share of removals is restored to historical share

Low Threshold     1.00       High Threshold     1.00       Low Multiplier on Slope     0.35       High Multiplier on Slope     0.35	3,515 1,000 2017 7,250 1.0 20,684 1.00 0.35 Multiplier 0.35 tline Standardi Standardi	Setline Surve Trawl Survey <u>Bycatch Area</u> % of BSAI By % of 4CDE By eed to 2017	a <u>&amp; Size Composi</u> catch Mortality in ycatch that is O2d ero slow the rate	0% 0% tion: n 4CDE 6	82.1% 65.0%	-         -           -         -	A80 TLAS Longline CDQ Total Area 4CDI TCEY O26 Bycat U26 Bycat	Starting PSC Limit (mt) 972 415 395 1.75 1,958 i, M lbs. net weight ch Mortality ch Mortality scard Mortality	972 415 395 175 1,958	0.00% 0.00% 0.00% 0.00% 0.00% Low TCEY 3.22 1.44 0.78	95% 95% 40% 90% 83% % Change 0% 0%	923 394 158 158 1,634 Starting High TCEY 4.49	Average Use (2016-2018) 1,290 498 161 157 2,106 High TCEY % Change 4.49 0% 1.44 0% 0,78 0%	Use of Limit 74% 67% 23% 50%
Ceiling         3,515           Ceiling         3,515           Coor         1,000           Primary Index - Area 4 Setline Survey         Standardized Year           Orimary Index Reference         7,250           Primary Index Rate Change         1.0           Secondary Index Reference         126,684           Jigh Threshold         1.00           Jigh Multiplier on Slope         0.35           Jigh Multiplier on Slope         0.35           Vear         Index           Index         1998           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,403	3,515 1,000 2017 7,250 1.0 20,684 1.00 0.35 Multiplier 0.35 tline Standardi Standardi	Setline Surve Trawl Survey <u>Bycatch Area</u> % of BSAI By % of 4CDE By eed to 2017	ero slow the rate	0% 0% tion: n 4CDE 6			A80 TLAS Longline CDQ Total Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	972 415 395 1,75 1,958 c, M lbs. net weight ch Mortality ch Mortality scard Mortality	972 415 395 175 1,958 Starting Low TCEY 3.22 1.44 0.78	0.00% 0.00% 0.00% 0.00% 0.00% Low TCEY 3.22 1.44 0.78	95% 95% 40% 90% 83% % Change 0% 0%	923 394 158 158 1,634 Starting High TCEY 4.49 1.44	1,290 498 161 157 2,106 High TCEY % Change 4.49 0% 1.44 0%	74% 67% 23% 50% 60%
Year         Settine           Year         2017           Year         1,000           Primary Index Reference         7,250           Primary Index Rate Change         1.0           Secondary Index Reference         126,684           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Settline           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,897           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2010         9,146           2011         8,669	1,000 vey 2017 7,250 1.0 20,584 1.00 0.35 Multiplier 0.35 tline Standardized to Standardized to 5 5 5 5 5 5 5 5 5 5 5 5 5	Trawl Survey Bycatch Area % of BSAI By, % of 4CDE By end to 2017 plier values closer to z dardized Trawl Index	a <u>&amp; Size Composi</u> catch Mortality in ycatch that is O2d ero slow the rate	<b>0%</b> t <u>ion:</u> n 4CDE 6			TLAS Longline CDQ Total Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	415 395 175 1,958 , M lbs. net weight ch Mortality ch Mortality scard Mortality	415 395 175 1,958 Starting Low TCEY 3.22 1.44 0.78	0.00% 0.00% 0.00% 0.00% Low TCEY 3.22 1.44 0.78	95% 40% 90% 83% % Change 0% 0%	394 158 158 1,634 Starting High TCEY 4.49 1.44	498 161 157 2,106 High TCEY % Change 4.49 0% 1.44 0%	67% 23% 50% 60%
Year         Settine           Year         126,684           Low Multiplier on Slope         0.35           Year         Settine           Year         Settine           Year         Settine           Year         1.00           Secondary Index Reference         126,684           Low Threshold         1.00           Low Multiplier on Slope         0.35           Multiplier on Slope         0.35           Year         Settine           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	vey 2017 7,250 1.0 20,584 1.00 1.00 0.35 Multiplier 0.35 tline Standardi	Bycatch Area % of BSAI By % of 4CDE By eed to 2017 plier values closer to z	a & Size Composi catch Mortality ir ycatch that is O20 ero slow the rate	<u>tion:</u> n 4CDE 6			Longline CDQ Total Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	395 175 1,958 ;, M lbs. net weight ch Mortality ch Mortality scard Mortality	395 175 1,958 Starting Low TCEY 3.22 1.44 0.78	0.00% 0.00% 0.00% Low TCEY 3.22 1.44 0.78	40% 90% 83% % Change 0% 0% 0%	158 158 1,634 Starting High TCEY 4.49 1.44	161 157 2,106 High TCEY % Change 4.49 0% 1.44 0%	23% 50% 60%
Standardized Year         2017           Primary Index Reference         7,250           Primary Index Rate Change         1.0           Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         0.05           Low Multiplier on Slope         0.35           High Multiplier on Slope         1.6201           Year         Setline           Index         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2001         10,264           2003         10,264           2004         9,834           2005         9,550           2006         9,832           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669	2017 7,250 1.0 26,684 1.00 0.35 0.35 Multiplier 0.35	% of BSAI By % of 4CDE By eed to 2017 plier values closer to zo dardized	catch Mortality ir ycatch that is O20 ero slow the rate	n 4CDE 6			CDQ Total Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	175 1,958 5, M lbs. net weight ch Mortality ch Mortality scard Mortality	175 1,958 Starting Low TCEY 3.22 1.44 0.78	0.00% 0.00% Low TCEY 3.22 1.44 0.78	90% 83% % Change 0% 0% 0%	158 1,634 Starting High TCEY 4.49 1.44	157           2,106           High TCEY         % Change           4.49         0%           1.44         0%	50% 60%
Standardized Year         2017           Primary Index Reference         7,250           Primary Index Rate Change         1.0           Secondary Index Reference         126,684           Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         0.35           High Multiplier on Slope         0.35           Year         Setline           Index         16,201           2000         16,203           2001         13,780           2002         12,104           2003         9,987           2005         9,550           2006         9,802           2007         9,673           2009         9,834           2010         9,834           2010         9,166           2001         9,834           2005         9,834           2010         9,166           2001         9,834           2010         9,166           2011         8,669	2017 7,250 1.0 26,684 1.00 0.35 0.35 Multiplier 0.35	% of BSAI By % of 4CDE By eed to 2017 plier values closer to zo dardized	catch Mortality ir ycatch that is O20 ero slow the rate	n 4CDE 6			Total Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	1,958 ;, M lbs. net weight ch Mortality ch Mortality scard Mortality	<b>1,958</b> Starting Low TCEY 3.22 1.44 0.78	0.00% Low TCEY 3.22 1.44 0.78	83% <u>% Change</u> 0% 0% 0%	1,634 Starting High TCEY 4.49 1.44	2,106 High TCEY % Change 4.49 0% 1.44 0%	60%
Primary Index Reference         7,250           Primary Index Rate Change         1.0           Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Index           1998         18,502           1999         16,203           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	7,250 1.0 22,684 1.00 1.00 0.35 Multiplier 0.35 tline Standardi	% of 4CDE By red to 2017 plier values closer to zo dardized Trawl Index	ero slow the rate	6			Area 4CDI TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	c, M lbs. net weight ch Mortality ch Mortality scard Mortality	Starting Low TCEY 3.22 1.44 0.78	Low TCEY 3.22 1.44 0.78	% Change 0% 0%	Starting High TCEY 4.49 1.44	High TCEY         % Change           4.49         0%           1.44         0%	-
Year         Settine           100         1.00           Secondary Index - EBS Trawl Survey, Stand         1.00           Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         1.00           Jow Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Settline           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	1.0 22, Standardized to 26,684 1.00 0.35 0.35 Multiplier 0.35	plier values closer to z	ero slow the rate		03.076		TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	ch Mortality ch Mortality scard Mortality	3.22 1.44 0.78	3.22 1.44 0.78	0% 0% 0%	4.49 1.44	4.49 0% 1.44 0%	
Secondary Index - EBS Trawl Survey, Stand           Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Setline           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	ey, Standardized to 26,684 1.00 0.35 Multiplier 0.35 tline Standardi dex Setline	plier values closer to z	Standardized	e of change			TCEY O26 Bycat U26 Bycat Comm. Di Subsisten	ch Mortality ch Mortality scard Mortality	3.22 1.44 0.78	3.22 1.44 0.78	0% 0% 0%	4.49 1.44	4.49 0% 1.44 0%	
Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Setline           Index         1           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	1.00 1.00 0.35 0.35 tline Standardi dex Setline	plier values closer to z	Standardized	e of change			O26 Bycat U26 Bycat Comm. Di Subsisten	ch Mortality scard Mortality	1.44 0.78	1.44 0.78	0% 0%	1.44	1.44 0%	
Secondary Index Reference         126,684           Low Threshold         1.00           High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Setline           Index         1           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	1.00 1.00 0.35 0.35 tline Standardi dex Setline	plier values closer to z	Standardized	e of change			U26 Bycat Comm. Di Subsisten	ch Mortality scard Mortality	0.78	0.78	0%			
Low Threshold         1.00           High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         Setline Index           1998         18,502           1999         16,203           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	1.00 1.00 0.35 Uline Standardi dex Setline	dardized	Standardized	e of change			Comm. Di Subsisten	scard Mortality						
High Threshold         1.00           Low Multiplier on Slope         0.35           High Multiplier on Slope         0.35           High Multiplier on Slope         0.35           Year         0.35           1998         18,502           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	1.00 0.35 0.35 Multiplier 1.00 Standardi dex	dardized	Standardized	e of change			Subsisten	,		0.05	0%	0.05	0.05 0%	
Low Multiplier on Slope         0.35         0.	0.35 Multiplier 0.35 International Content of Content o	dardized	Standardized	e of change					0.06	0.06	0%		0.06 0%	
High Multiplier on Slope         0.35           Year         Setline Index           1998         18,502           1999         16,201           2000         16,201           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	0.35 tline Standardi dex Setline	dardized	Standardized						1.67	1.67	0%		2.94 0%	-
Year         Setline Index           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	tline Standardi dex Setline	Trawl Index	Standardized						1.07	1.07	0,0	2.54		
Year         Index           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	dex Setline	Trawl Index	Standardized						N .			US-L TOPY		
Year         Index           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	dex Setline	Trawl Index	Standardized					Low TCE	Y			High TCEY		
Year         Index           1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	dex Setline	Trawl Index	Standaraizea	Slope	ABM PSC	Without								
1998         18,502           1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403		stine	Trawl	Modifier	Limit	Secondary								
1999         16,201           2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	LX 502   2	2.552 161,256		0.10	3,515	3,515							32%	
2000         16,203           2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403		2.235 129,116		0.10	3,515	3,515			450/					
2001         13,780           2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403		2.235 118,677		-0.02	3,515	3,515			45%					
2002         12,104           2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	,	1.901 141,219		0.04	3,515	3,515		52%						
2003         10,866           2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	.,	1.670 101,706		-0.07	3.134	3,269								
2004         9,987           2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	,	1.499 132,151		0.02	2,964	2,935					66%		∟1%	
2005         9,550           2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	.,	1.378 130,075		0.01	2,716	2,697							1%	
2006         9,802           2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	,	1.317 132,518		0.02	2,611	2,579		2%	-1%					
2007         9,673           2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	,	1.352 155.964		0.08	2,806	2,647	- 01			Discoul Mar		Sector Se		
2008         10,264           2009         9,834           2010         9,146           2011         8,669           2012         8,403	.,	1.334 143,903		0.05	2,706	2,612	- 0	26 Bycatch Mort	ality Com	n. Discard Mo		subsistence	FLEY	
2009         9,834           2010         9,146           2011         8,669           2012         8,403		1.416 140,247		0.04	2,845	2,772								
2010         9,146           2011         8,669           2012         8,403	,	1.356 168,102		0.11	2,880	2,656								
2011         8,669           2012         8,403	,	1.262 195,535		0.11	2,800	2,470	In the Sce	nario Results box above	vou can see the effec	t of a chanae in abun	dance from 2017	7 on the PSC Limit and	d on the directed fishery h	arvest in Area
2012 8,403	.,	1.196 186.666		0.15	2,666	2,341		the % change in abunda			-			
	.,	1.159 189,000		0.17	2,606	2,269	-	and High TCEY values re					-	
2013 7,505	.,	1.102 183.989		0.16	2,468	2,158	2010 1 021	,						
2014 7.995	/ 989 1	1.102 183,583		0.10	2,400	2,159								
		1.121 172,237		0.12	2,401	2,195								
	7,995 1.	1.079 153.704		0.13	2,442	2,130								
	7,995 1. 8,130 1.	1.000 126.684		0.07	1,958	1,958								
	7,995 1. 8,130 1. 7,826 1.	0.985 NA	NA	NA NA	NA	1,929								
Mean 10.444	7,995     1       8,130     1       7,826     1       7,250     1	1.440 151,709		0.07	2.956	2,820								
Scenario 7,250	7,995       1.         8,130       1.         7,826       1.         7,250       1.         7,141       0.9		1.20	0.07	/	1,958								

#### Directed Fishery ABM Scenario – DEFAULT

	-								
Inputs:								1	
Starting	Point	1,958		Scenario - C	hange in Abung	dance from 2017:			
Ceiling		3,515		Setline Surv	ey	0%			
Floor		1,000		Trawl Surve	У	0%			
Brimany	Index - Area 4 Setline	Survoy		Bycatch Ara	a & Size Compo	sition		·	
	lized Year	2017			/catch Mortalit		82.19	/	
· ·	Index Reference	7,250		% of 4CDE E	ycatch that is C	J26	65.09	ío.	
Primary I	Index Rate Change	1.0							
Seconda	ry Index - EBS Trawl	Survey, Stan	dardized	to 2017					
	ry Index Reference	126,684							
Low Thre	•	1.00							
High Thre		1.00							
Ŭ	tiplier on Slope		Multinli	er values closer to :	zero slow the r	ate of change			
	Itiplier on Slope	0.35	manaph			ate of change			
riigii iviu		0.55						1	
Scenario I	Results:							Average Use	Average %
Sector	Starting PSC Limit (mt	) ABM PSC Li	mit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality (mt)		(2016-2018)	Use of Limit
A80	972	2	972	0.00%	95%	923	_	1,290	74%
TLAS	415	5	415	0.00%	95%	394		498	67%
Longline	395	5	395	0.00%	<b>40%</b>	158		161	. 23%
CDQ	175	5	175	0.00%	90%	158		157	50%
Total	1,958	3	1,958	0.00%	83%	1,634		2,106	60%
		I						o / <b>o</b> l	
	E, M lbs. net weight	Starting Lov		Low TCEY	% Change	Starting High TCEY		-	<del>.</del>
TCEY			3.22	3.22	0%		4.49	0%	
	tch Mortality		1.44	1.44	0%		1.44 0.78	0%	
	tch Mortality		0.78	0.78	0%			0%	
Subsisten	iscard Mortality		0.05 0.06	0.05	0% 0%		0.05 0.06	0% 0%	
Subsisten	LE		0.06	0.00	0%	0.06	0.06	0%	_

23%

50%

60%

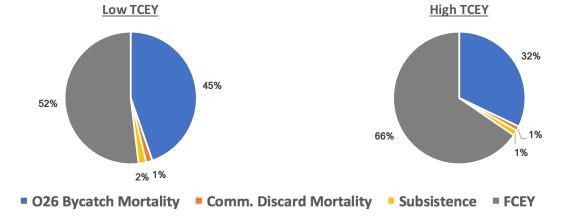
0%

2.94

2.94

FCEY

1.67



1.67

0%

#### Directed Fishery ABM Scenario – Increased Starting Point of 2,354 MT

Inputs:								
Starting I	Point		2,354		Scenario - Chan	ge in Abundanc	e from 2017:	
Ceiling			3,515		Setline Survey		0%	
Floor			1,000		Trawl Survey		0%	
Primary I	ndex - Area 4 Setlir	ne Su	irvev		Bycatch Area &	Size Compositio	n.	
	ized Year		<u>2017</u>			ch Mortality in 4		82.19
Primary I	ndex Reference		7,250		% of 4CDE Byca	•		65.09
•	ndex Rate Change		1.0					,
, , ,								
Secondar	ry Index - EBS Traw	l Surv	vey, Stan	dardized to	<u>o 2017</u>			
Secondary Index Reference		-	126,684					
Low Thre	shold		1.00					
High Thre	eshold		1.00					
Low Mult	tiplier on Slope		0.35	Multiplier	values closer to zero	slow the rate o	of change	
High Mul	tiplier on Slope		0.35					
	_						-	
<u>Scenario</u>	<u>Results:</u>	1			1	I	1	
Sector	Starting PSC Limit (	mt)	ABM PSO	C Limit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality	(mt)
A80	1,	169		1,169	0.00%	95%	1,	110
TLAS		499		499	0.00%	95%		474
Longline		475		475	0.00%	40%		190
CDO		211		211	0.00%	90%		190

An increased starting point allows for higher PSC Mortality and decreases the proportional share of removals for the directed fishery

Scenario I	<u>Results:</u>		I	I	1		Average Use	Average %
Sector	Starting PSC Limit (mt)	ABM PSC Limit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality (mt)	_	(2016-2018)	Use of Limit
A80	1,169	1,169	0.00%	95%	1,110		1,290	74%
TLAS	499	499	0.00%	95%	474		498	67%
Longline	475	475	0.00%	<b>40%</b>	190		161	23%
CDQ	211	211	0.00%	90%	190	_	157	50%
Total	2,354	2,354	0.00%	83%	1,964		2,106	60%
	E, M lbs. net weight			% Change	Starting High TCEY			-
TCEY		3.22	3.22	0%		4.49	0%	
O26 Bycat	tch Mortality	1.73	1.73	0%	1.73	1.73	0%	
	tch Mortality	0.93	0.93	0%		0.93	0%	
	iscard Mortality	0.05	0.05	0%		0.05	0%	
Subsisten	се	0.06	0.06	0%		0.06	0%	-
FCEY		1.38	1.38	0%	2.65	2.65	0%	
	43%	<u>CEY</u> 54%		599	High TCE		19%	
	O26 Bycatch Mo	ortality Cor	nm. Discard N	lortality	Subsistence	<b>FCE</b>	Y	

#### Directed Fishery ABM Scenario – Increased Floor of 1,777 MT is hit at a 10% decline in abundance

Inputs:									
Starting I	Point	1,958		Scenario - Chan	Scenario - Change in Abundance from 2017:				
Ceiling		3,515		Setline Survey		-10%			
Floor		1,777		Trawl Survey		0%			
Primary Index - Area 4 Setline Survey Bycatch Area & Size Composition:									
Standard	lized Year	2017		% of BSAI Bycate	ch Mortality in 4	1CDE	82.1%		
Primary I	ndex Reference	7,250		% of 4CDE Bycat	ch that is O26		65.0%		
Primary I	ndex Rate Change	1.0							
Secondary Index - EBS Trawl Survey, Standardized to 2017									
Secondar	ry Index Reference	126,684							
Low Thre	eshold	1.00							
High Thre	eshold	1.00							
Low Mult	tiplier on Slope	0.35	Multiplier	values closer to zero	slow the rate o	f change			
High Mul	tiplier on Slope	0.35							
Scenario	Results:								
Sector	Starting PSC Limit (r	mt) ABM PS	C Limit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality	(mt)		
A80	9	972	882	-9.24%	95%		838		

A Floor of 1,777 mt is hit with just a 10% reduction in abundance identified by the primary index

Scenario F			1	1	I		0	Average %		
Sector	Starting PSC Limit (mt)	ABM PSC Limit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality (mt)		(2016-2018)	Use of Limit		
A80	972	882	-9.24%	95%	838		1,290	749		
TLAS	415	377	-9.24%	95%	358		498	679		
Longline	395	359	-9.24%	<b>40%</b>	144		161	239		
CDQ	175	159	-9.24%	90%	143		157	50%		
Total	1,958	1,777	-9.24%	83%	1,483		2,106	609		
Area 4CDE	E, M lbs. net weight	Starting Low TCEY	Low TCEY	% Change	Starting High TCEY	High TCEY	% Change			
TCEY		3.22	2.90	-10%	4.49	4.04	-10%	•		
O26 Bycat	ch Mortality	1.44	1.31	-9%	1.44	1.31	-9%			
U26 Bycat	ch Mortality	0.78	0.70	-9%	0.78	0.70	-9%			
Comm. Dis	scard Mortality	0.05	0.05	0%	0.05	0.05	0%			
Subsistend	ce	0.06	0.06	0%	0.06	0.06	0%	-		
FCEY		1.67	1.48	-11%	2.94	2.62	-11%			
FCEY 1.67 1.48 -11% 2.94 2.62 -11% Low TCEY 51% 45% 65% -1%										
	O26 Bycatch	2% <sup>2%</sup> Mortality	Comm. Disca	rd Mortalit	y <mark>-</mark> Subsiste	nce 🔳	FCEY			

#### Directed Fishery ABM Scenario – Increased Floor of 1,777 MT at a 20% decline in abundance

82.1%

65.0%

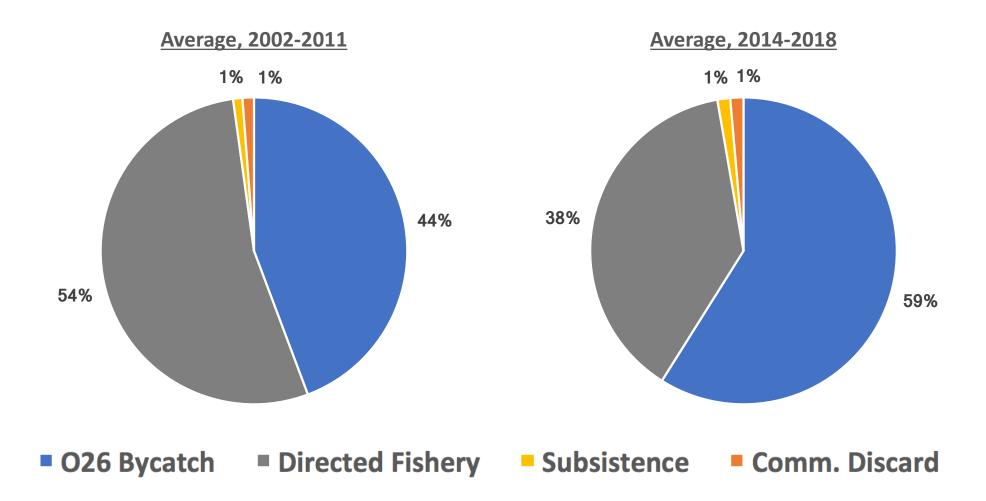
Inputs:										
Starting Point	1,958	Scenario - Change in Abunda	nce from 2017:							
Ceiling	3,515	Setline Survey	-20%							
Floor	1,777	Trawl Survey	0%							
Primary Index - Area 4 Setline Survey Bycatch Area & Size Composition:										
Standardized Year <b>2017</b> % of BSAI Bycatch Mortality in 4CDE										
Primary Index Reference 7,250 % of 4CDE Bycatch that is O26										
Primary Index Rate Change <b>1.0</b>										
Secondary Index - EBS Traw	Survey, Stan	dardized to 2017								
Secondary Index Reference	126,684									
Low Threshold	1.00									
High Threshold	1.00									
Low Multiplier on Slope	0.35	Multiplier values closer to zero slow the rate	e of change							
High Multiplier on Slope	0.35									

Further declines in abundance beyond 10% result in the directed fishery bearing the burden of conservation

### FCEY is reduced from 52% to 45%

Scenario I	Results:						Average Use	Average %
Sector	Starting PSC Limit (mt)	ABM PSC Limit (mt)	Change in PSC Limit	Use - % of Limit	PSC Mortality (mt)		(2016-2018)	Use of Limit
A80	972	882	-9.24%	95%	838	_	1,290	749
TLAS	415	377	-9.24%	95%	358		498	679
Longline	395	359	-9.24%	<b>40%</b>	144		161	239
CDQ	175	159	-9.24%	90%	143	_	157	50%
Total	1,958	1,777	-9.24%	83%	1,483		2,106	609
Area 4CDI	E, M lbs. net weight	Starting Low TCEY	Low TCEY	% Change	Starting High TCEY	High TCEY	% Change	_
TCEY		3.22	2.58	-20%	4.49	3.59	-20%	
O26 Bycat	tch Mortality	1.44	1.31	-9%	1.44	1.31	-9%	
	tch Mortality	0.78	0.70	-9%	0.78	0.70	-9%	
	iscard Mortality	0.05	0.05	0%	0.05	0.05	0%	
Subsisten	ce	0.06	0.06	0%	0.06	0.06	0%	-
FCEY 1.67 1.16 -31% 2.94 2.17 -26%								
= (	2% / 2% 026 Bycatch Mo		nm. Discard M	lortality	Subsistence	2% <b>■ FCE</b>	Y	

#### **Comparison of O26 Halibut Removals in Area 4CDE**



• 2019 Catch Limit of 2.04M lbs is 51% of total O26 Removals, 2018 O26 Bycatch projected forward is 47% of total