

Economic Impacts of Reducing BSAI Halibut PSC Limits

Presentation to

North Pacific Fishery Management Council

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February 7, 2015



Presentation Outline

- **Summarize the Functioning of the Iterated Multi-year Simulation Model—the IMS Model**
- **Summarize the existing conditions in the groundfish and halibut fisheries**
- **Summarize the projected impacts of the Options to Reduce PSC Limits**

Why Develop the IMS Model

- **Halibut PSC in groundfish fisheries has been relatively variable from 2008–2013.**
- **Simply assuming an average level of PSC based on historic levels will misrepresent the uncertainty and variability of the outcomes.**
- **The IPHC algorithm for estimating impacts of changes of PSC on FCEYs is a multi-year process with lagged impacts**
 - Changes in O26 PSC in Year 1 will directly affect same area TCEYs and FCEYs in Year 2 and in Year 3.
 - Changes in U26 PSC in Year 1 will affect TCEYs and FCEY over all areas coastwide TCEYs and FCEY in years 2–10 or more years.
 - ◆ These U26 impacts have not been directly included in the IMS Model.

The Iterated Multi-Year Simulation Model

- **Forward projection of impacts of the reduction options out 10-years into the future, 2014–2023**
- **Assumes that groundfish fisheries from 2008–2013 repeat themselves in the future.**
 - Basis Years are drawn randomly to provide groundfish harvests, wholesale revenues, and PSC.
- **Halibut Total Constant Exploitation Yields (TCEYs) are held constant at Imputed 2014 levels**
 - Removals due to subsistence, recreation, and unreported mortality in commercial halibut fishery are held constant
- **Same area fishery CEYs vary in future years with changes in O26 PSC in groundfish fisheries.**
- **All changes under the options are measured against the estimated the “Status Quo” (SQ) over the 10 future years**

IMS Model Results—For Groundfish Fisheries

- Changes are reported for each affected sector
- Changes in the average annual PSC taken in the 10-year future period
- Changes in the net present value (NPV) of wholesale revenue summed over the 10-year future period
- Changes in the percentage of revenue generated in primary target fisheries are also reported
- Histograms showing the range of variation estimated over 10,000 iterations of the IMS Model for PSC taken, and for change in NPV of wholesale revenues are provided

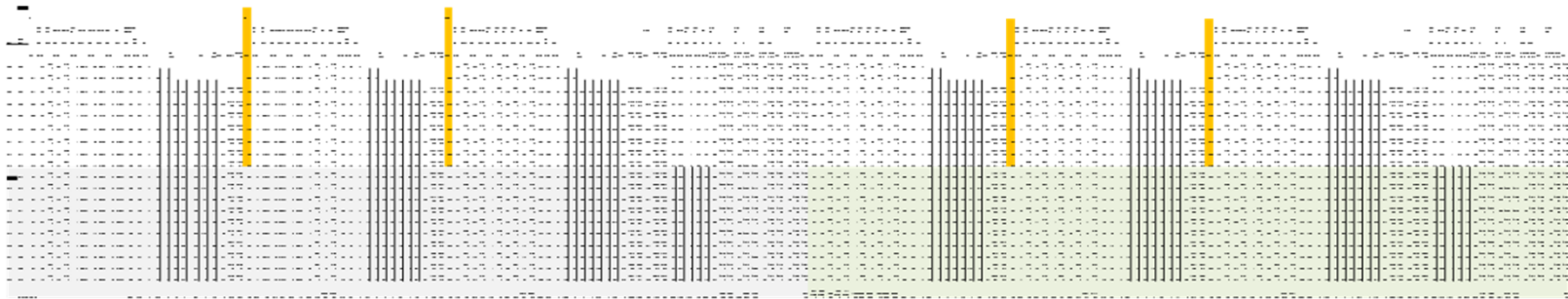
IMS Model Results—For Commercial Halibut

- **Changes in average annual catch over the 10-year future period**
- **Changes in the NPV of wholesale revenue summed over the 10-year future period**
- **All changes are reported for each IPHC subarea (4A, 4B, 4CDE) and for Area 4 as a whole**
- **Histograms showing the range of variation estimated in the IMS Model for halibut harvests and NPV of wholesale revenue are provided.**

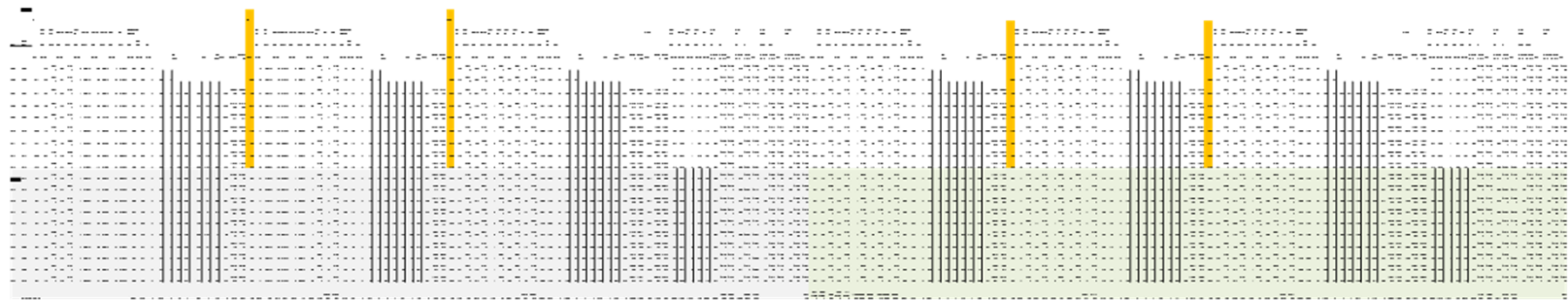
Questions?

Overview of Workings of the IMS Model

■ A representation of the IMS Model

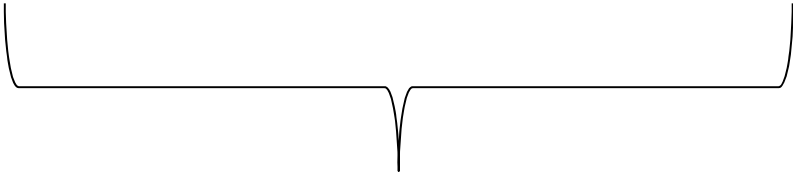
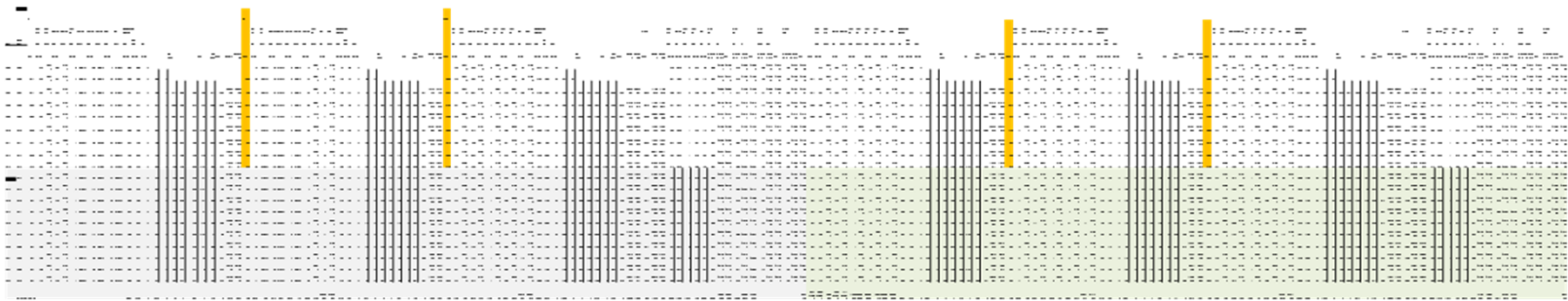


This section of the IMS Model is for the Status Quo (SQ)



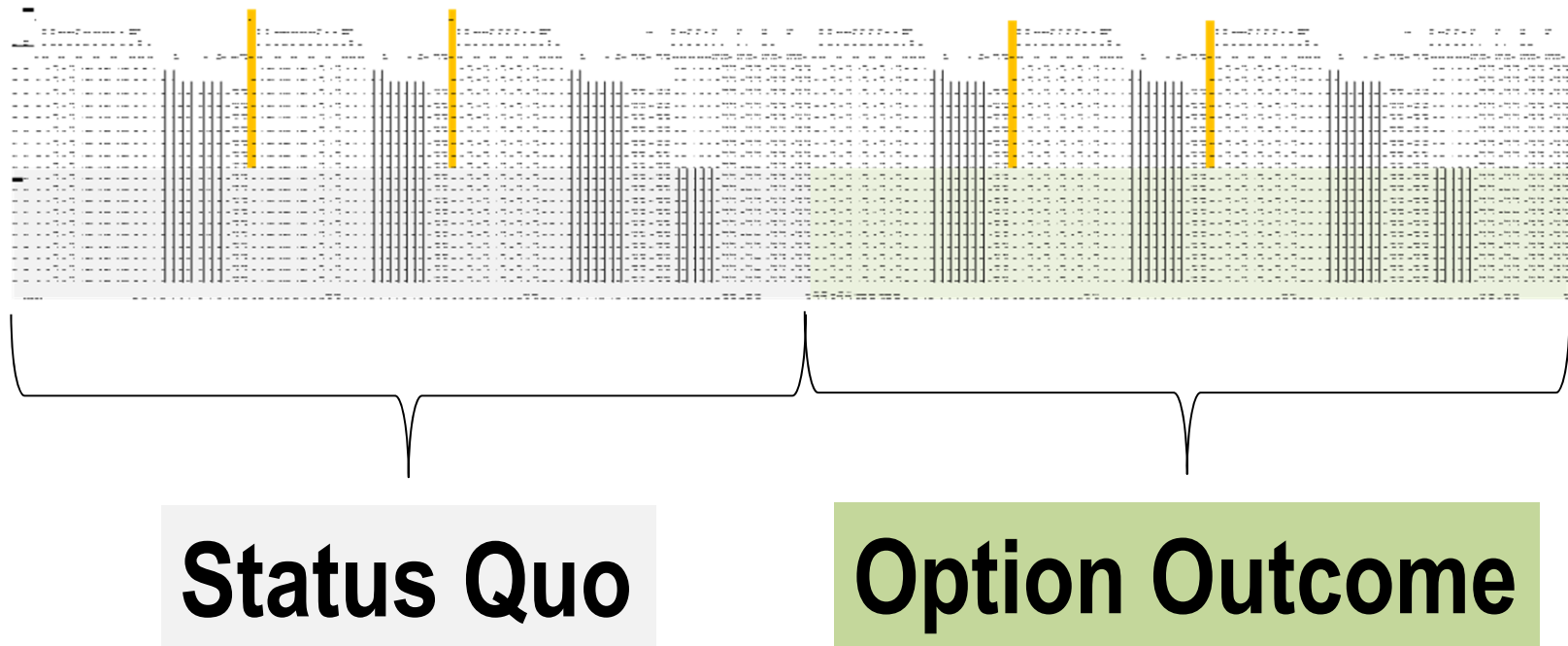
Status Quo

This section is for the Outcomes under the Option



Option Outcome

This represents one iteration of the IMS Model



Example SQ Calculations for Groundfish

Year	Basis Year	BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		PSC Round Weight MT					Wholesale Revenue Millions				
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68

Separate Calculations for Each Sector

Year	Basis Year	PSC					Wholesale Revenue						
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		Round Weight MT					Millions						
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PSC (Mortality) are reported in Round Weight MT

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Wholesale Revenues are reported in \$Millions

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Future Years run from 2014–2023, and ...

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2014											
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2023											

... are represented by randomly drawn basis years

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Here are SQ estimates of PSC and Revenue

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For model year 2015...

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2009 of course is already in the model...

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...with its PSCs & Revenues Generated

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... and in this iteration, they are duplicated for 2015 & 2016

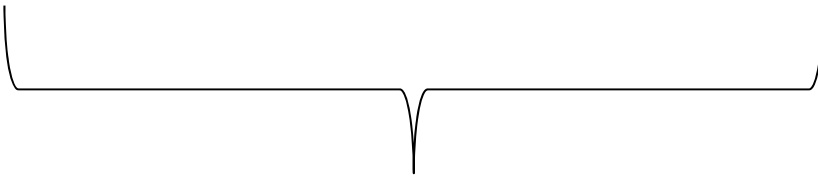
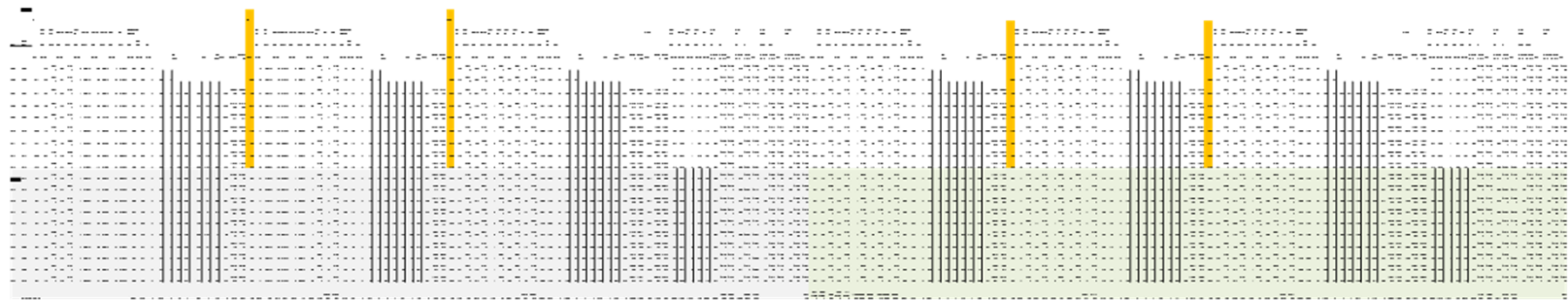
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2017	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68		
2018	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67		
2019	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32		
2020	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67		
2021	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87		
2022	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84		
2023	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68		

Future values of wholesale revenue are discounted using a 5% discount annual rate

Year	Basis Year	PSC					Wholesale Revenue				
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	Millions (\$2013)			
		Round Weight MT									
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68
2014	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2015	2009	726	2,074	3	556	151	\$1,077.98	\$270.54	\$0.93	\$124.39	\$158.12
2016	2009	726	2,074	3	556	151	\$1,024.08	\$257.01	\$0.88	\$118.17	\$150.22
2017	2013	683	2,168	3	458	265	\$1,011.58	\$247.82	\$1.12	\$113.60	\$156.63
2018	2008	735	1,969	5	564	214	\$1,201.58	\$261.17	\$2.14	\$155.94	\$196.84
2019	2010	484	2,254	2	489	159	\$838.76	\$250.63	\$0.44	\$96.88	\$129.47
2020	2008	735	1,969	5	564	214	\$1,084.42	\$235.70	\$1.93	\$140.73	\$177.65
2021	2011	637	1,810	1	477	223	\$952.24	\$249.52	\$0.60	\$123.41	\$153.54
2022	2012	936	1,945	2	550	252	\$928.27	\$249.16	\$0.85	\$123.10	\$147.84
2023	2013	683	2,168	3	458	265	\$743.60	\$182.17	\$0.82	\$83.50	\$115.14



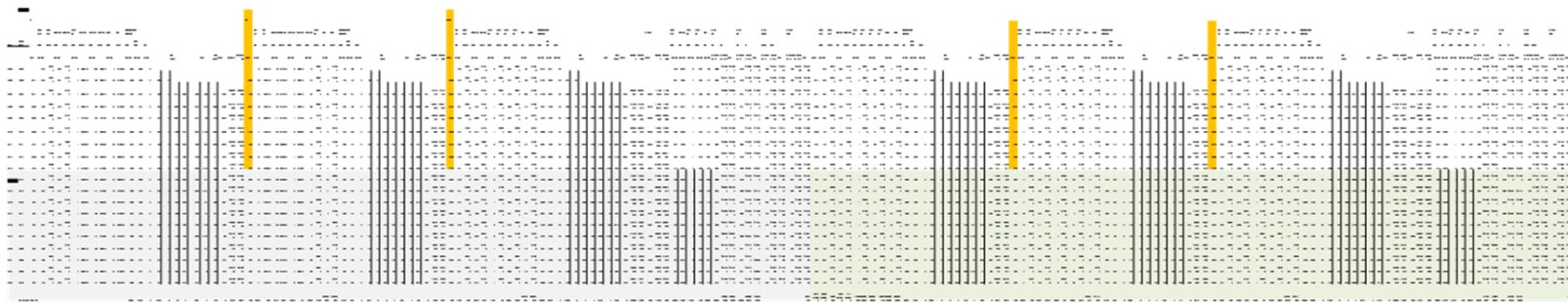
That was a summary of calculations for one iteration of the SQ for Groundfish



Status Quo

Questions?

Next we will look at Outcomes for Groundfish under one of the PSC limit reduction options



Option Outcome

How do we analyze PSC reductions for Groundfish?

- **PSC is reduced in each basis year in each sector based on “scenario specific” protocols that capture a range of outcomes.**
 - Scenario A generates “smaller” monetary impact
 - Scenario B generates “larger” monetary impacts
- **In a race-for-fish situation, we use a “standard” protocol, similar to previous bycatch analyses**
 - We determine when the fishery have closed under the reduced PSC limit, and the last fish caught are the first fish cut.
- **For rationalized sectors, we assume behavioral changes that reduce the monetary impact of reductions and generate smaller impacts relative to a “last-caught first-cut” scenario**
- **We do not include assumptions about behavioral changes that reduce PSC encounters, or reduce discard mortality rates.**

Scenarios A and B for the BSAI TLA

- **The “last-caught first-cut” PSC reduction protocol are applied to BSAI Trawl Limited Access (TLA) for both Scenarios**
- **BSAI TLA has four target fishery specific PSC Limits**
 - 1) Pollock | Atka Mackerel Other species, 2) Pacific cod, 3) Yellowfin sole, and 4) Rockfish
- **Different target specific PSC apportionment setting options create different Scenarios (A and B).**
- **The primary difference is the treatment of the pollock fishery**
 - Pollock is unconstrained by PSC Limits—if the PSC limit is exceeded, mid-water pollock remains open, but Atka Mackerel and “Other Species” are closed

Scenarios A and B for the BSAI TLA

Target fishery PSC Apportionment	2014 Limits	Scenario A	Scenario B
Yellowfin Sole	227.0	204.3	195.2
Rockfish	5.0	4.5	4.3
Pollock Atka Mackerel Other	250.0	225.0	250.0
Pacific Cod	393.0	353.7	338.0

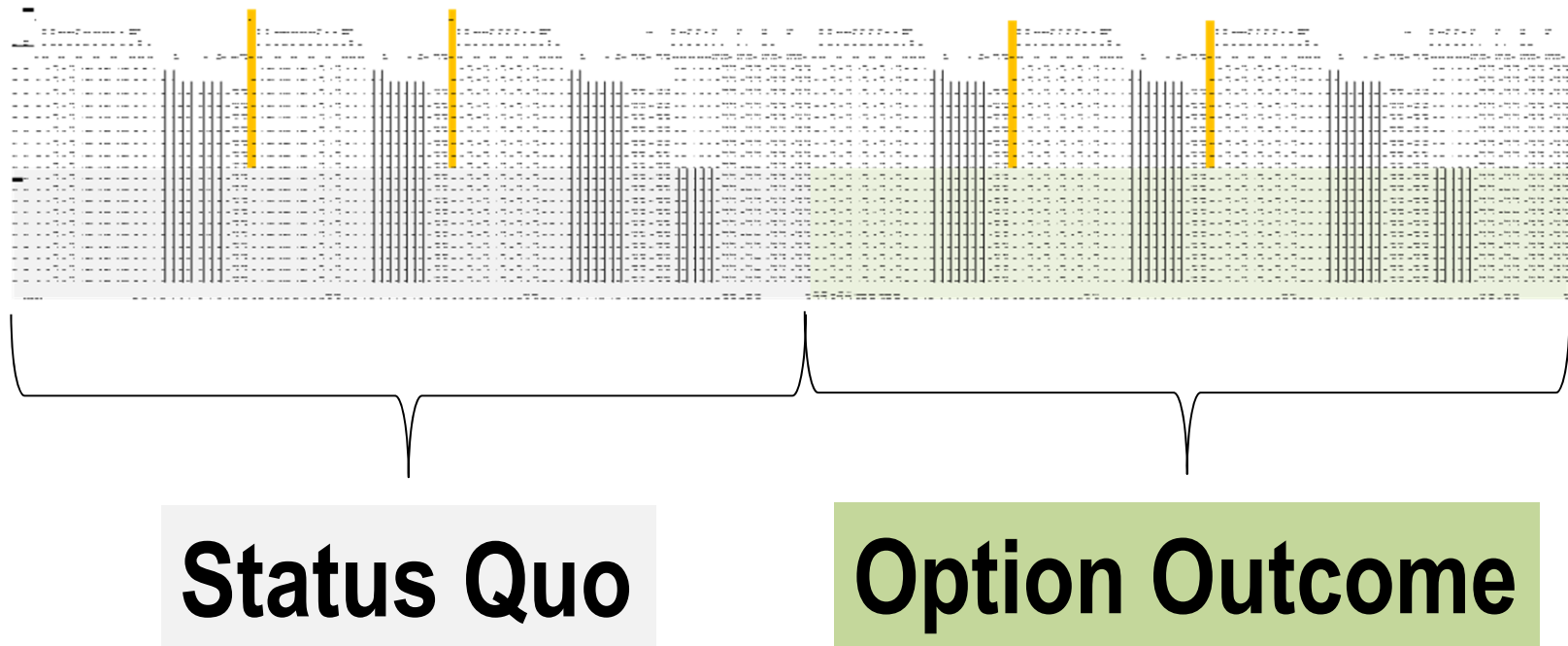
- **Scenario A** assumes that all four target fishery PSC apportionments are reduced by the “reduction” percentage.
- **Scenario B** assumes that the PSC apportionment for pollock is not reduced, and that the remaining three are reduced by greater percentages to accomplish the PSC limit reduction.
- **Important to note** that all PSC limit and apportionments are assumed to be strictly enforced—no rollovers allowed.

Scenarios for “Rationalized” Sectors

- **By virtue of sector-wide cooperative structures, the Amendment 80 CP sector (A80-CP) and the longline CP sector (LGL-CP) are deemed to be “rationalized”**
- **Scenario A assumes that cooperatives determine the least efficient target-area-month combinations and mandate there will be no fishing in those target-area-months**
 - “Efficiency” is measured as wholesale revenue ÷ halibut PSC mortality in the target-area-month. (Note that areas are defined using NMFS Management Zones, e.g. 514, 521, etc.)
- **Scenario B assumes each company has its own PSC Limit**
 - Trading occurs to match limits to needs. But trading is “sticky” and no company trades below a 5% buffer.
 - After all trades, each company reduces activity of its least efficient vessel on a “last-caught first-cut basis”.

Questions?

Back to the Model



Example Option Outcome—35% PSC Reduction under Scenario A

Year	Basis Year	PSC					Wholesale Revenue				
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV
		Round Weight MT					Millions (\$2013)				
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68
2014	2010	484	1511	2	500	159	\$1,082.27	\$280.71	\$0.57	\$125.20	\$167.32
2015	2009	726	1508	3	499	151	\$1,077.98	\$235.68	\$0.93	\$117.41	\$158.12
2016	2009	726	1508	3	499	151	\$1,024.08	\$223.90	\$0.88	\$111.54	\$150.22
2017	2013	600	1510	3	459	255	\$991.76	\$219.42	\$1.12	\$113.60	\$155.23
2018	2008	682	1508	5	483	214	\$1,199.38	\$242.32	\$2.14	\$149.56	\$196.84
2019	2010	484	1511	2	500	159	\$837.44	\$217.20	\$0.44	\$96.88	\$129.47
2020	2008	682	1508	5	483	214	\$1,082.44	\$218.69	\$1.93	\$134.98	\$177.65
2021	2011	634	1482	1	481	223	\$950.67	\$236.47	\$0.60	\$123.41	\$153.54
2022	2012	743	1510	2	499	252	\$906.12	\$231.22	\$0.85	\$118.44	\$147.84
2023	2013	600	1510	3	459	255	\$729.03	\$161.29	\$0.82	\$83.50	\$114.11

PSC from Basis Years are repeated in future years...

Year	Basis Year	PSC					Wholesale Revenue						
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		Round Weight MT					Millions (\$2013)						
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67		
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45		
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32		
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87		
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84		
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68		
2014	2010	484	1511	2	500	159	\$1,082.27	\$280.71	\$0.57	\$125.20	\$167.32		
2015	2009	726	1508	3	499	151	\$1,077.98	\$235.68	\$0.93	\$117.41	\$158.12		
2016	2009	726	1508	3	499	151	\$1,024.08	\$223.90	\$0.88	\$111.54	\$150.22		
2017	2013	600	1510	3	459	255	\$991.76	\$219.42	\$1.12	\$113.60	\$155.23		
2018	2008	682	1508	5	483	214	\$1,199.38	\$242.32	\$2.14	\$149.56	\$196.84		
2019	2010	484	1511	2	500	159	\$837.44	\$217.20	\$0.44	\$96.88	\$129.47		
2020	2008	682	1508	5	483	214	\$1,082.44	\$218.69	\$1.93	\$134.98	\$177.65		
2021	2011	634	1482	1	481	223	\$950.67	\$236.47	\$0.60	\$123.41	\$153.54		
2022	2012	743	1510	2	499	252	\$906.12	\$231.22	\$0.85	\$118.44	\$147.84		
2023	2013	600	1510	3	459	255	\$729.03	\$161.29	\$0.82	\$83.50	\$114.11		

...but are reduced based on PSC reduction scenarios set for each Sector and PSC in that year

Year	Basis Year	PSC					Wholesale Revenue						
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		Round Weight MT					Millions (\$2013)						
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67		
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45		
2010	2010	484	2,254	2	499	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32		
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87		
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84		
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68		
2014	2010	484	1511	2	500	159	\$1,082.27	\$280.71	\$0.57	\$125.20	\$167.32		
2015	2009	726	1508	3	499	151	\$1,077.98	\$235.68	\$0.93	\$117.41	\$158.12		
2016	2009	726	1508	3	499	151	\$1,024.08	\$223.90	\$0.88	\$111.54	\$150.22		
2017	2013	600	1510	3	459	255	\$991.76	\$219.42	\$1.12	\$113.60	\$155.23		
2018	2008	682	1508	5	483	214	\$1,199.38	\$242.32	\$2.14	\$149.56	\$196.84		
2019	2010	484	1511	2	500	159	\$837.44	\$217.20	\$0.44	\$96.88	\$129.47		
2020	2008	682	1508	5	483	214	\$1,082.44	\$218.69	\$1.93	\$134.98	\$177.65		
2021	2011	634	1482	1	481	223	\$950.67	\$236.47	\$0.60	\$123.41	\$153.54		
2022	2012	743	1510	2	499	252	\$906.12	\$231.22	\$0.85	\$118.44	\$147.84		
2023	2013	600	1510	3	459	255	\$729.03	\$161.29	\$0.82	\$83.50	\$114.11		

PSC for other sectors are not reduced, because of low levels of “non-exempt PSC” in the selected basis year

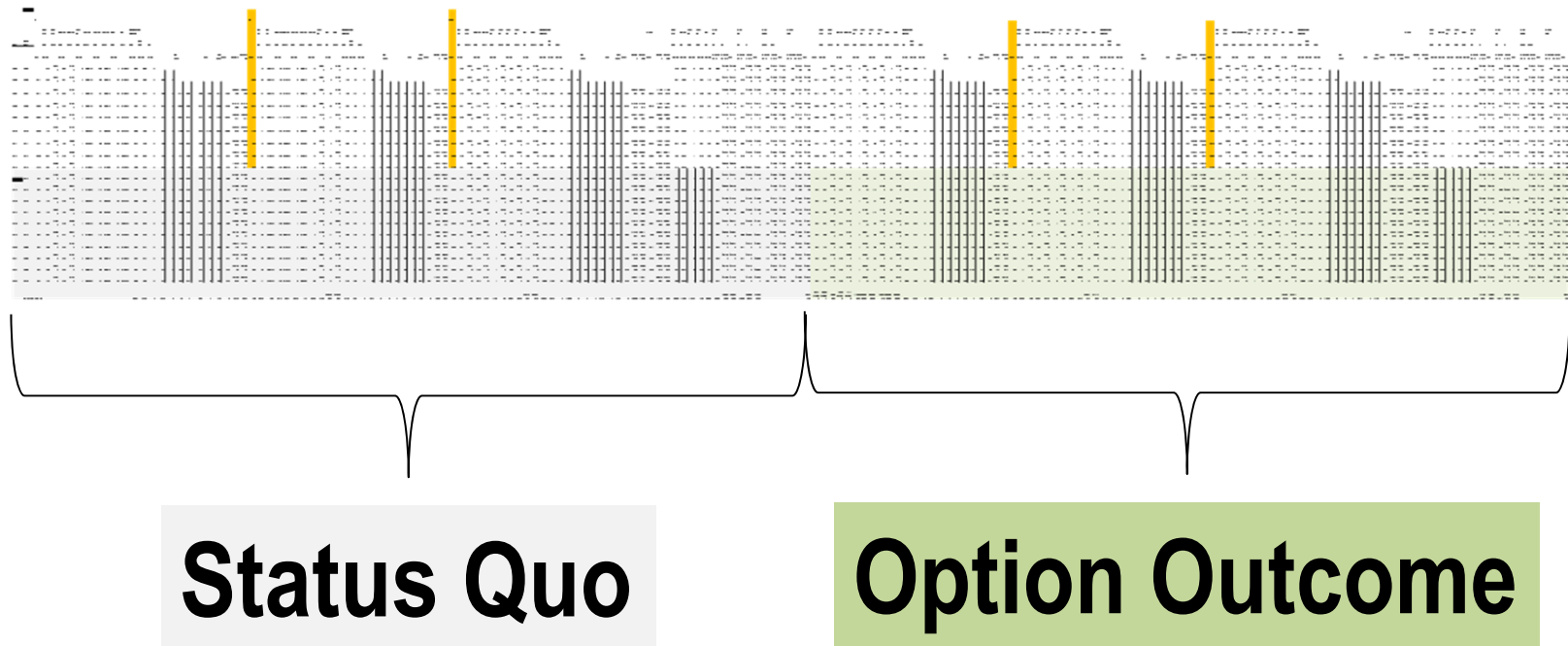
Year	Basis Year	PSC					Wholesale Revenue				
		BSAITLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAITLA	A80-CP	LGL-CV	LGL-CP	CDQ
		Round Weight MT					Millions (\$2013)				
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68
2014	2010	484	1511	2	500	159	\$1,082.27	\$280.71	\$0.57	\$125.20	\$167.32
2015	2009	726	1508	3	499	151	\$1,077.98	\$235.68	\$0.93	\$117.41	\$158.12
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2017	2013	600	1510	3	459	255	\$991.76	\$219.42	\$1.12	\$113.60	\$155.23
2018	2008	682	1508	5	483	214	\$1,199.38	\$242.32	\$2.14	\$149.56	\$196.84
2019	2010	484	1511	2	500	159	\$837.44	\$217.20	\$0.44	\$96.88	\$129.47
2020	2008	682	1508	5	483	214	\$1,082.44	\$218.69	\$1.93	\$134.98	\$177.65
2021	2011	634	1482	1	481	223	\$950.67	\$236.47	\$0.60	\$123.41	\$153.54
2022	2012	743	1510	2	499	252	\$906.12	\$231.22	\$0.85	\$118.44	\$147.84
2023	2013	600	1510	3	459	255	\$729.03	\$161.29	\$0.82	\$83.50	\$114.11

Revenues are reduced because of bycatch limits, and also vary because of discounting

Year	Basis Year	PSC					Wholesale Revenue				
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV
		Round Weight MT					Millions (\$2013)				
2008	2008	735	1,969	5	564	214	\$1,475.22	\$320.65	\$2.63	\$191.45	\$241.67
2009	2009	726	2,074	3	556	151	\$1,134.72	\$284.78	\$0.98	\$130.93	\$166.45
2010	2010	484	2,254	2	489	159	\$1,083.98	\$323.90	\$0.57	\$125.20	\$167.32
2011	2011	637	1,810	1	477	223	\$1,363.58	\$357.31	\$0.86	\$176.72	\$219.87
2012	2012	936	1,945	2	550	252	\$1,399.22	\$375.56	\$1.29	\$185.55	\$222.84
2013	2013	683	2,168	3	458	265	\$1,179.86	\$289.04	\$1.31	\$132.50	\$182.68
2014	2010	484	1511	2	500	159	\$1,082.27	\$280.71	\$0.57	\$125.20	\$167.32
2015	2009	726	1508	3	499	151	\$1,077.98	\$235.68	\$0.93	\$117.41	\$158.12
2016	2009	726	1508	3	499	151	\$1,024.08	\$223.90	\$0.88	\$111.54	\$150.22
2017	2013	600	1510	3	459	255	\$991.76	\$219.42	\$1.12	\$113.60	\$155.23
2018	2008	682	1508	5	483	214	\$1,199.38	\$242.32	\$2.14	\$149.56	\$196.84
2019	2010	484	1511	2	500	159	\$837.44	\$217.20	\$0.44	\$96.88	\$129.47
2020	2008	682	1508	5	483	214	\$1,082.44	\$218.69	\$1.93	\$134.98	\$177.65
2021	2011	634	1482	1	481	223	\$950.67	\$236.47	\$0.60	\$123.41	\$153.54
2022	2012	743	1510	2	499	252	\$906.12	\$231.22	\$0.85	\$118.44	\$147.84
2023	2013	600	1510	3	459	255	\$729.03	\$161.29	\$0.82	\$83.50	\$114.11

Questions?

Groundfish Impact Calculations



$$\text{Option Outcome} - \text{Status Quo} = \text{Impact}$$

Calculated Impacts of 35% PSC Reduction under Scenario A

Year	Basis Year	BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		PSC Round Weight MT					Wholesale Revenue Millions (\$2013)				
2008	2008	-	-	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-	-	-
2010	2010	-	-	-	-	-	-	-	-	-	-
2011	2011	-	-	-	-	-	-	-	-	-	-
2012	2012	-	-	-	-	-	-	-	-	-	-
2013	2013	-	-	-	-	-	-	-	-	-	-
2014	2010	-0	-743	-	11	-	(\$1.70)	(\$43.20)	-	-	-
2015	2009	-	-566	-	-57	-	-	(\$34.86)	-	(\$6.98)	-
2016	2009	-	-566	-	-57	-	-	(\$33.12)	-	(\$6.63)	-
2017	2013	-83	-658	-	-	-10	(\$19.82)	(\$28.40)	-	-	(\$1.40)
2018	2008	-53	-461	-	-81	-	(\$2.20)	(\$18.85)	-	(\$6.38)	-
2019	2010	-0	-743	-	11	-	(\$1.32)	(\$33.43)	-	-	-
2020	2008	-53	-461	-	-81	-	(\$1.99)	(\$17.02)	-	(\$5.76)	-
2021	2011	-3	-328	-	-	-	(\$1.56)	(\$13.05)	-	-	-
2022	2012	-193	-435	-	-51	-	(\$22.15)	(\$17.93)	-	(\$4.65)	-
2023	2013	-83	-658	-	-	-10	(\$14.57)	(\$20.88)	-	-	(\$1.03)

Average annual PSC reductions over 10-year period, and discounted NPV of change in wholesale revenues

Year	Basis Year	PSC					Wholesale Revenue				
		BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI TLA	A80-CP	LGL-CV	LGL-CP	CDQ
		Round Weight MT					Millions (\$2013)				
2008	2008	-	-	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-	-	
2010	2010	-	-	-	-	-	-	-	-	-	
2011	2011	-	-	-	-	-	-	-	-	-	
2012	2012	-	-	-	-	-	-	-	-	-	
2013	2013	-	-	-	-	-	-	-	-	-	
2014	2010	-0	-743	-	11	-	(\$1.70)	(\$43.20)	-	-	-
2015	2009	-	-566	-	-57	-	-	(\$34.86)	-	(\$6.98)	-
2016	2009	-	-566	-	-57	-	-	(\$33.12)	-	(\$6.63)	-
2017	2013	-83	-658	-	-	-10	(\$19.82)	(\$28.40)	-	-	(\$1.40)
2018	2008	-53	-461	-	-81	-	(\$2.20)	(\$18.85)	-	(\$6.38)	-
2019	2010	-0	-743	-	11	-	(\$1.32)	(\$33.43)	-	-	-
2020	2008	-53	-461	-	-81	-	(\$1.99)	(\$17.02)	-	(\$5.76)	-
2021	2011	-3	-328	-	-	-	(\$1.56)	(\$13.05)	-	-	-
2022	2012	-193	-435	-	-51	-	(\$22.15)	(\$17.93)	-	(\$4.65)	-
2023	2013	-83	-658	-	-	-10	(\$14.57)	(\$20.88)	-	-	(\$1.03)
Change in Avg. PSC & Total NPV		-47	-562	-	-31	-2	(\$65.31)	(\$260.73)	-	(\$30.40)	(\$2.43)

Total reductions in PSC in this iteration equal 642 round weight mt

Year	Basis Year	PSC					Wholesale Revenue					
		BSAI	TLA	A80-CP	LGL-CV	LGL-CP	CDQ	BSAI	TLA	A80-CP	LGL-CV	LGL-CP
		Round Weight MT					Millions (\$2013)					
2008	2008	-	-	-	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-	-	-	-
2010	2010	-	-	-	-	-	-	-	-	-	-	-
2011	2011	-	-	-	-	-	-	-	-	-	-	-
2012	2012	-	-	-	-	-	-	-	-	-	-	-
2013	2013	-	-	-	-	-	-	-	-	-	-	-
2014	2010	-0	-743	-	11	-	(\$1.70)	(\$43.20)	-	-	-	-
2015	2009	-	-566	-	-57	-	-	(\$34.86)	-	(\$6.98)	-	-
2016	2009	-	-566	-	-57	-	-	(\$33.12)	-	(\$6.63)	-	-
2017	2013	-83	-658	-	-	-10	(\$19.82)	(\$28.40)	-	-	-	(\$1.40)
2018	2008	-53	-461	-	-81	-	(\$2.20)	(\$18.85)	-	(\$6.38)	-	-
2019	2010	-0	-743	-	11	-	(\$1.32)	(\$33.43)	-	-	-	-
2020	2008	-53	-461	-	-81	-	(\$1.99)	(\$17.02)	-	(\$5.76)	-	-
2021	2011	-3	-328	-	-	-	(\$1.56)	(\$13.05)	-	-	-	-
2022	2012	-193	-435	-	-51	-	(\$22.15)	(\$17.93)	-	(\$4.65)	-	-
2023	2013	-83	-658	-	-	-10	(\$14.57)	(\$20.88)	-	-	-	(\$1.03)
Change in Avg. PSC & Total NPV		-47	-562	-	-31	-2	(\$65.31)	(\$260.73)	-	(\$30.40)	-	(\$2.43)

Total Reductions in this iteration = 642 round weight mt



Questions?

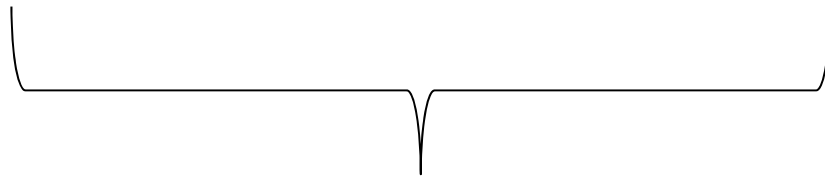
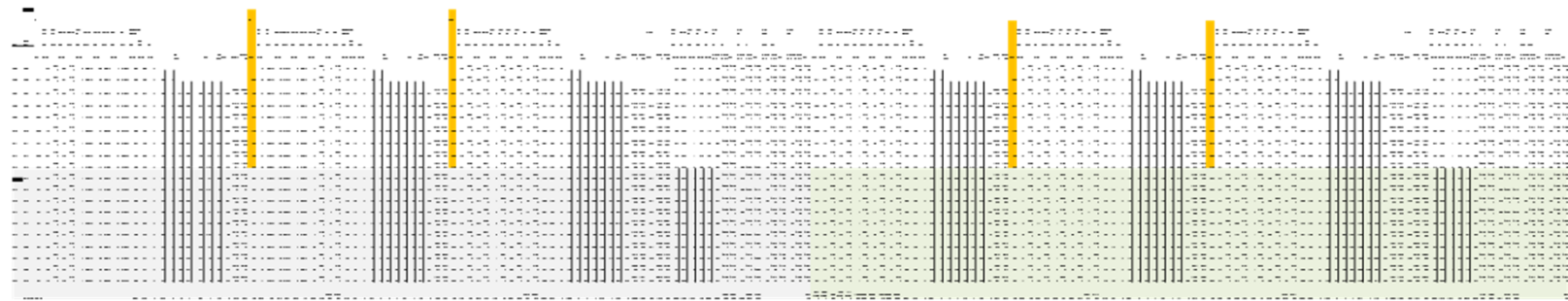
Commercial Halibut Fishery Model Discussion

Review of Commercial Halibut Modelling Assumptions

- **Imputed Total Constant Exploitation Yield (TCEY) from 2014 held constant for 2015–2023, based on 2014 FCEYs adopted by the IPHC.**
- **Recreation, Subsistence, and unreported mortality from commercial fishery held constant**
- **FCEYs are calculated based on the algorithm used by IPHC for O26 PSC and changes in O26 PSC.**
 - U26 impacts are not currently included in the IMS Model
- **Catch as a percent of FCEY is assumed constant at historical average $\approx 95\%$**

Questions?

Back to IMS Model—Commercial Halibut Fishery



Status Quo

Start with 2008–2013 TCEYs and Commercial Halibut Harvests

Year	Basis Year	Imputed Total CEY				Combined IFQ and CDQ Harvests			
		4A	4B	4CDE	Area 4 Total	4A	4B	4CDE	Area 4 Total
Net Weight MT									
2008	2008	1,885	1,025	3,103	6,013	1,336	802	3,814	5,951
2009	2009	1,405	923	2,700	5,028	1,099	806	3,396	5,300
2010	2010	1,656	1,158	2,804	5,617	1,004	931	3,478	5,412
2011	2011	1,231	949	2,914	5,094	1,039	752	3,393	5,183
2012	2012	1,036	968	2,000	4,004	675	805	2,543	4,023
2013	2013	1,223	874	2,156	4,253	573	625	2,052	3,250

TCEYs for 2014 are Imputed from 2014 FCEYs

Year	Basis Year	Imputed Total CEY				Combined IFQ and CDQ Harvests			
		4A	4B	4CDE	Area 4 Total	4A	4B	4CDE	Area 4 Total
Net Weight MT									
2008	2008	1,885	1,025	3,103	6,013	1,336	802	3,814	5,951
2009	2009	1,405	923	2,700	5,028	1,099	806	3,396	5,300
2010	2010	1,656	1,158	2,804	5,617	1,004	931	3,478	5,412
2011	2011	1,231	949	2,914	5,094	1,039	752	3,393	5,183
2012	2012	1,036	968	2,000	4,004	675	805	2,543	4,023
2013	2013	1,223	874	2,156	4,253	573	625	2,052	3,250
2014	2010	591	607	1,899	3,097	366	491	1,411	2,269
2015	2009	691	507	1,899	3,097	322	406	1,326	2,053
2016	2009	691	507	1,899	3,097	95	249	1,145	1,490
2017	2013	691	507	1,899	3,097	521	364	1,465	2,350
2018	2008	691	507	1,899	3,097	50	354	1,057	1,461
2019	2010	691	507	1,899	3,097	217	283	1,266	1,766
2020	2008	691	507	1,899	3,097	212	315	1,235	1,762
2021	2011	691	507	1,899	3,097	204	378	1,173	1,755
2022	2012	691	507	1,899	3,097	451	415	1,445	2,310
2023	2013	691	507	1,899	3,097	404	298	1,375	2,077

... and have been reduced by “other removals”

Year	Basis Year	Imputed Total CEY				Combined IFQ and CDQ Harvests			
		4A	4B	4CDE	Area 4 Total	4A	4B	4CDE	Area 4 Total
Net Weight MT									
2008	2008	1,885	1,025	3,103	6,013	1,336	802	3,814	5,951
2009	2009	1,405	923	2,700	5,028	1,099	806	3,396	5,300
2010	2010	1,656	1,158	2,804	5,617	1,004	931	3,478	5,412
2011	2011	1,231	949	2,914	5,094	1,039	752	3,393	5,183
2012	2012	1,036	968	2,000	4,004	675	805	2,543	4,023
2013	2013	1,223	874	2,156	4,253	573	625	2,052	3,250
2014	2010	591	607	1,899	3,097	366	491	1,411	2,269
2015	2009	691	507	1,899	3,097	322	406	1,326	2,053
2016	2009	691	507	1,899	3,097	95	249	1,145	1,490
2017	2013	691	507	1,899	3,097	521	364	1,465	2,350
2018	2008	691	507	1,899	3,097	50	354	1,057	1,461
2019	2010	691	507	1,899	3,097	217	283	1,266	1,766
2020	2008	691	507	1,899	3,097	212	315	1,235	1,762
2021	2011	691	507	1,899	3,097	204	378	1,173	1,755
2022	2012	691	507	1,899	3,097	451	415	1,445	2,310
2023	2013	691	507	1,899	3,097	404	298	1,375	2,077

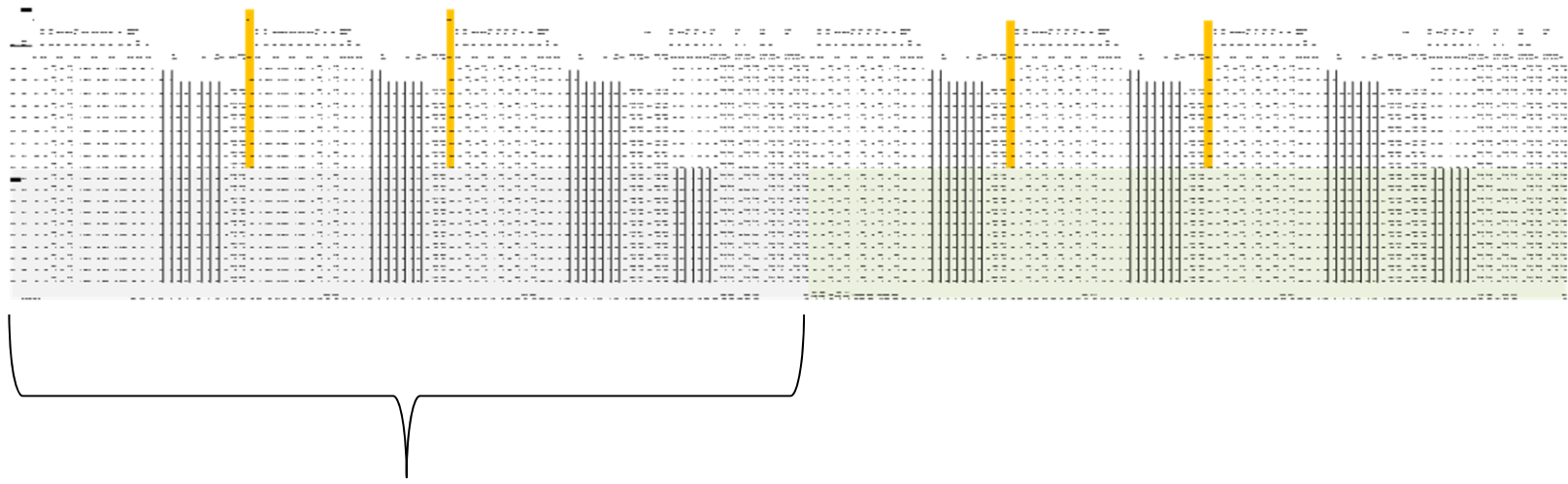
... harvests assume 95% historical FCEY exploitation rate

Year	Basis Year	Area 4				Area 4			
		4A	4B	4CDE	Total	4A	4B	4CDE	Total
		Imputed Total CEY				Combined IFQ and CDQ Harvests			
Net Weight MT									
2008	2008	1,885	1,025	3,103	6,013	1,336	802	3,814	5,951
2009	2009	1,405	923	2,700	5,028	1,099	806	3,396	5,300
2010	2010	1,656	1,158	2,804	5,617	1,004	931	3,478	5,412
2011	2011	1,231	949	2,914	5,094	1,039	752	3,393	5,183
2012	2012	1,036	968	2,000	4,004	675	805	2,543	4,023
2013	2013	1,223	874	2,156	4,253	573	625	2,052	3,250
2014	2010	591	607	1,899	3,097	366	491	1,411	2,269
2015	2009	691	507	1,899	3,097	322	406	1,326	2,053
2016	2009	691	507	1,899	3,097	95	249	1,145	1,490
2017	2013	691	507	1,899	3,097	521	364	1,465	2,350
2018	2008	691	507	1,899	3,097	50	354	1,057	1,461
2019	2010	691	507	1,899	3,097	217	283	1,266	1,766
2020	2008	691	507	1,899	3,097	212	315	1,235	1,762
2021	2011	691	507	1,899	3,097	204	378	1,173	1,755
2022	2012	691	507	1,899	3,097	451	415	1,445	2,310
2023	2013	691	507	1,899	3,097	404	298	1,375	2,077

Wholesale values per net weight ton from the Basis Years, are multiplied by harvests and then discounted

Year	Basis Year	Wholesale Value per Net Weight MT	Area 4				Area 4			
			4A	4B	4CDE	Total	4A	4B	4CDE	Total
			Unadjusted Wholesale Value				Discounted Wholesale Value			
			\$ Millions				\$2013 Millions			
2008	2008	\$30,857	\$58.17	\$31.63	\$95.73	\$185.54	\$58.17	\$31.63	\$95.73	\$185.54
2009	2009	\$22,383	\$31.45	\$20.66	\$60.43	\$112.53	\$31.45	\$20.66	\$60.43	\$112.53
2010	2010	\$35,650	\$59.04	\$41.28	\$99.94	\$200.26	\$59.04	\$41.28	\$99.94	\$200.26
2011	2011	\$34,863	\$42.92	\$33.09	\$101.58	\$177.58	\$42.92	\$33.09	\$101.58	\$177.58
2012	2012	\$34,179	\$35.40	\$33.10	\$68.37	\$136.86	\$35.40	\$33.10	\$68.37	\$136.86
2013	2013	\$20,203	\$24.70	\$17.65	\$43.56	\$85.91	\$24.70	\$17.65	\$43.56	\$85.91
2014	2010	\$30,821	\$18.21	\$18.72	\$58.52	\$95.45	\$18.21	\$18.72	\$58.52	\$95.45
2015	2009	\$22,383	\$15.46	\$11.36	\$42.50	\$69.32	\$14.69	\$10.79	\$40.37	\$65.85
2016	2009	\$22,383	\$15.46	\$11.36	\$42.50	\$69.32	\$13.95	\$10.25	\$38.35	\$62.56
2017	2013	\$20,203	\$13.95	\$10.25	\$38.36	\$62.57	\$11.96	\$8.79	\$32.89	\$53.64
2018	2008	\$30,857	\$21.31	\$15.66	\$58.59	\$95.56	\$17.36	\$12.75	\$47.72	\$77.83
2019	2010	\$35,650	\$24.62	\$18.09	\$67.69	\$110.40	\$19.05	\$14.00	\$52.38	\$85.43
2020	2008	\$30,857	\$21.31	\$15.66	\$58.59	\$95.56	\$15.67	\$11.51	\$43.07	\$70.24
2021	2011	\$34,863	\$24.08	\$17.69	\$66.19	\$107.97	\$16.82	\$12.35	\$46.23	\$75.40
2022	2012	\$34,179	\$23.61	\$17.34	\$64.90	\$105.85	\$15.66	\$11.51	\$43.05	\$70.22
2023	2013	\$20,203	\$13.95	\$10.25	\$38.36	\$62.57	\$8.79	\$6.46	\$24.18	\$39.43

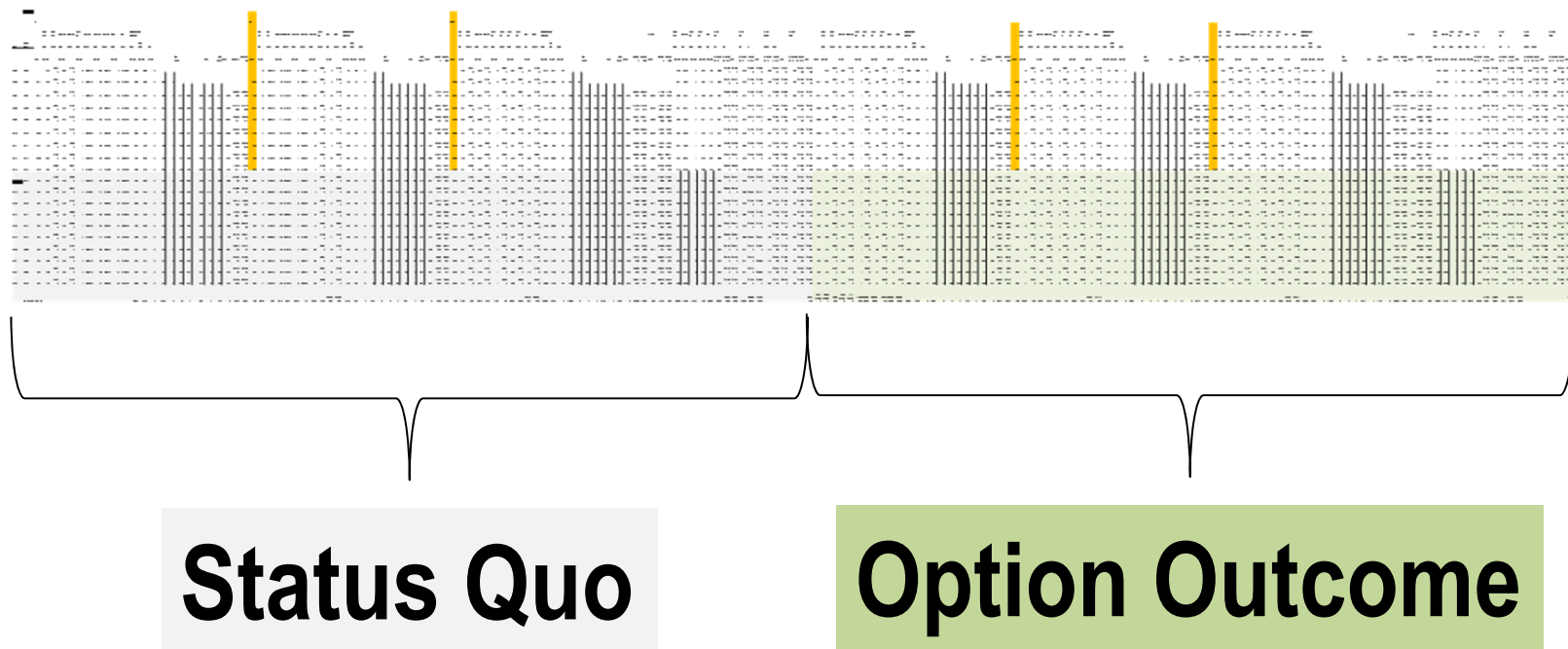
That completes the Status Quo Calculations



Status Quo

Questions?

Then we move to project outcomes under the Options to reduce PSC Limits



Start with 2008–2013 Outcomes

Year	Basis Year	Discounted Wholesale Value per Net Weight MT	Area 4 Combined IFQ and CDQ Harvests				Area 4 Discounted Wholesale Value			
			4A	4B	4CDE	Total	4A	4B	4CDE	Total
			Net Weight MT				\$2013 Millions			
2008	2008	\$30,857	1,336	802	3,814	5,951	\$41.22	\$24.73	\$117.68	\$183.63
2009	2009	\$22,383	1,099	806	3,396	5,300	\$24.59	\$18.04	\$76.00	\$118.63
2010	2010	\$35,650	1,004	931	3,478	5,412	\$35.79	\$33.18	\$123.97	\$192.95
2011	2011	\$34,863	1,039	752	3,393	5,183	\$36.21	\$26.20	\$118.29	\$180.70
2012	2012	\$34,179	675	805	2,543	4,023	\$23.08	\$27.53	\$86.91	\$137.52
2013	2013	\$20,203	573	625	2,052	3,250	\$11.58	\$12.62	\$41.45	\$65.66

... and add Future Years using Basis Years and discounted wholesale values per net weight MT

Year	Basis Year	Discounted Wholesale Value per Net Weight MT	Area 4				Area 4			
			4A	4B	4CDE	Total	4A	4B	4CDE	Total
			Combined IFQ and CDQ Harvests				Discounted Wholesale Value			
			Net Weight MT				\$2013 Millions			
2008	2008	\$30,857	1,336	802	3,814	5,951	\$41.22	\$24.73	\$117.68	\$183.63
2009	2009	\$22,383	1,099	806	3,396	5,300	\$24.59	\$18.04	\$76.00	\$118.63
2010	2010	\$35,650	1,004	931	3,478	5,412	\$35.79	\$33.18	\$123.97	\$192.95
2011	2011	\$34,863	1,039	752	3,393	5,183	\$36.21	\$26.20	\$118.29	\$180.70
2012	2012	\$34,179	675	805	2,543	4,023	\$23.08	\$27.53	\$86.91	\$137.52
2013	2013	\$20,203	573	625	2,052	3,250	\$11.58	\$12.62	\$41.45	\$65.66
2014	2010	\$30,821								
2015	2009	\$21,263								
2016	2009	\$20,200								
2017	2013	\$17,322								
2018	2008	\$25,133								
2019	2010	\$27,585								
2020	2008	\$22,683								
2021	2011	\$24,346								
2022	2012	\$22,675								
2023	2013	\$12,733								

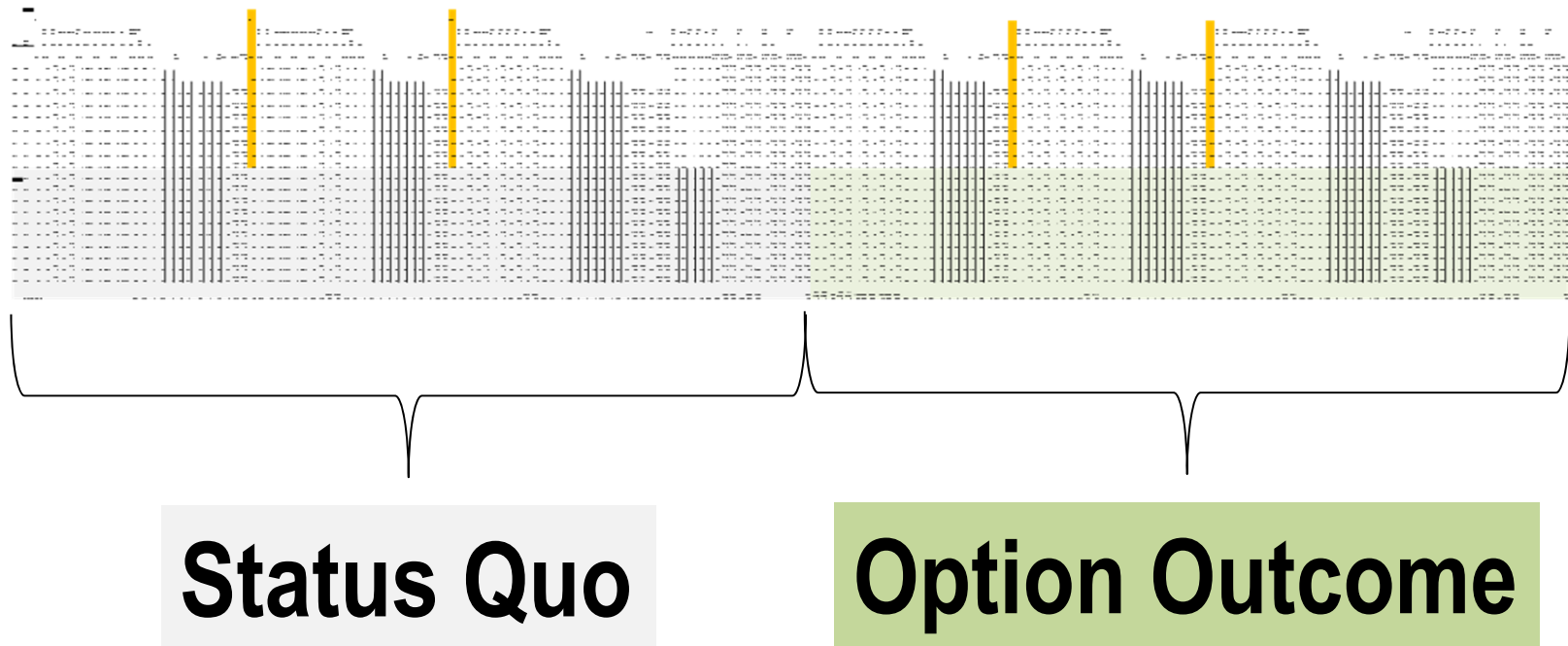
Estimate harvests using the IPHC algorithm and the reduced O26 PSCs from the groundfish fishery

Year	Basis Year	Discounted Wholesale Value per Net Weight MT	Area 4				Area 4			
			4A	4B	4CDE	Total	4A	4B	4CDE	Total
			Combined IFQ and CDQ Harvests				Discounted Wholesale Value			
			Net Weight MT				\$2013 Millions			
2008	2008	\$30,857	1,336	802	3,814	5,951	\$41.22	\$24.73	\$117.68	\$183.63
2009	2009	\$22,383	1,099	806	3,396	5,300	\$24.59	\$18.04	\$76.00	\$118.63
2010	2010	\$35,650	1,004	931	3,478	5,412	\$35.79	\$33.18	\$123.97	\$192.95
2011	2011	\$34,863	1,039	752	3,393	5,183	\$36.21	\$26.20	\$118.29	\$180.70
2012	2012	\$34,179	675	805	2,543	4,023	\$23.08	\$27.53	\$86.91	\$137.52
2013	2013	\$20,203	573	625	2,052	3,250	\$11.58	\$12.62	\$41.45	\$65.66
2014	2010	\$30,821	366	491	1,411	2,269				
2015	2009	\$21,263	430	484	1,787	2,701				
2016	2009	\$20,200	222	271	1,237	1,731				
2017	2013	\$17,322	611	394	1,626	2,632				
2018	2008	\$25,133	37	364	1,447	1,849				
2019	2010	\$27,585	203	280	1,473	1,956				
2020	2008	\$22,683	308	385	1,455	2,147				
2021	2011	\$24,346	175	356	1,425	1,956				
2022	2012	\$22,675	450	407	1,456	2,312				
2023	2013	\$12,733	543	332	1,669	2,544				

... then multiply harvests by Discounted wholesale value per net weight MT

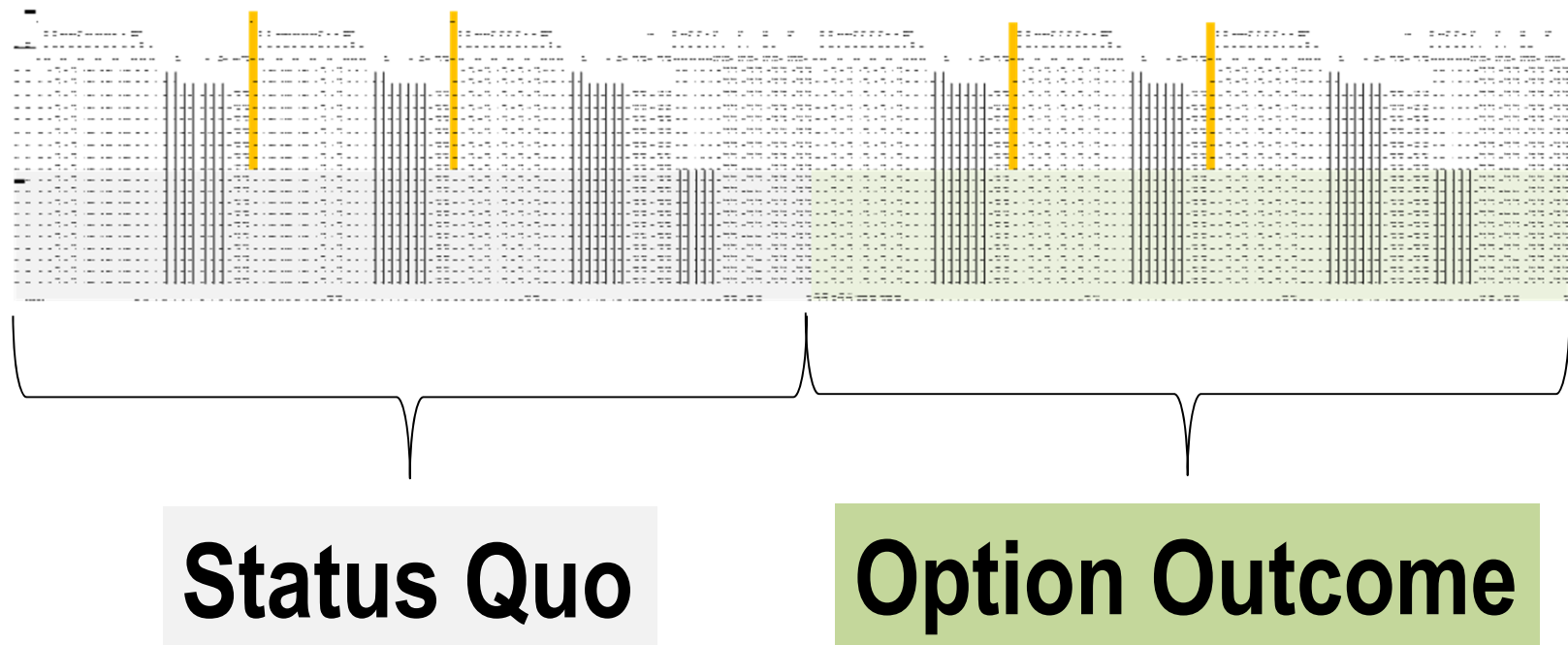
Year	Basis Year	Discounted Wholesale Value per Net Weight MT	Area 4				Area 4			
			4A	4B	4CDE	Total	4A	4B	4CDE	Total
			Combined IFQ and CDQ Harvests				Discounted Wholesale Value			
			Net Weight MT				\$2013 Millions			
2008	2008	\$30,857	1,336	802	3,814	5,951	\$41.22	\$24.73	\$117.68	\$183.63
2009	2009	\$22,383	1,099	806	3,396	5,300	\$24.59	\$18.04	\$76.00	\$118.63
2010	2010	\$35,650	1,004	931	3,478	5,412	\$35.79	\$33.18	\$123.97	\$192.95
2011	2011	\$34,863	1,039	752	3,393	5,183	\$36.21	\$26.20	\$118.29	\$180.70
2012	2012	\$34,179	675	805	2,543	4,023	\$23.08	\$27.53	\$86.91	\$137.52
2013	2013	\$20,203	573	625	2,052	3,250	\$11.58	\$12.62	\$41.45	\$65.66
2014	2010	\$30,821	366	491	1,411	2,269	\$11.29	\$15.14	\$43.50	\$69.93
2015	2009	\$21,263	430	484	1,787	2,701	\$9.15	\$10.30	\$38.00	\$57.44
2016	2009	\$20,200	222	271	1,237	1,731	\$4.49	\$5.48	\$24.99	\$34.96
2017	2013	\$17,322	611	394	1,626	2,632	\$10.59	\$6.83	\$28.17	\$45.59
2018	2008	\$25,133	37	364	1,447	1,849	\$0.94	\$9.15	\$36.38	\$46.47
2019	2010	\$27,585	203	280	1,473	1,956	\$5.60	\$7.73	\$40.62	\$53.95
2020	2008	\$22,683	308	385	1,455	2,147	\$6.98	\$8.73	\$32.99	\$48.71
2021	2011	\$24,346	175	356	1,425	1,956	\$4.27	\$8.67	\$34.68	\$47.62
2022	2012	\$22,675	450	407	1,456	2,312	\$10.20	\$9.24	\$33.00	\$52.44
2023	2013	\$12,733	543	332	1,669	2,544	\$6.91	\$4.23	\$21.25	\$32.39

We've now estimated future outcomes under both SQ and the Reduction Option



Questions?

... and now we calculate the impact of the Option



$$\text{Option Outcome} - \text{Status Quo} = \text{Impact}$$

Estimate the halibut fishery future year impacts of a 35% reduction of PSC limits under Scenario A

Year	Basis Year	Area 4 Total				Area 4 Total			
		Combined IFQ and CDQ Harvests Net Weight Tons				Discounted Wholesale Value \$2013 Millions			
		4A	4B	4CDE		4A	4B	4CDE	
2008	2008	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-
2010	2010	-	-	-	-	-	-	-	-
2011	2011	-	-	-	-	-	-	-	-
2012	2012	-	-	-	-	-	-	-	-
2013	2013	-	-	-	-	-	-	-	-
2014	2010	-	-	-	-	-	-	-	-
2015	2009	108	78	461	648	\$2.30	\$1.67	\$9.81	\$13.77
2016	2009	127	22	92	241	\$2.56	\$0.44	\$1.86	\$4.87
2017	2013	90	31	161	282	\$1.57	\$0.53	\$2.79	\$4.89
2018	2008	-12	10	390	388	(\$0.31)	\$0.25	\$9.80	\$9.74
2019	2010	-14	-3	207	190	(\$0.37)	(\$0.09)	\$5.71	\$5.24
2020	2008	95	70	220	385	\$2.17	\$1.59	\$4.99	\$8.74
2021	2011	-29	-22	252	201	(\$0.69)	(\$0.54)	\$6.13	\$4.90
2022	2012	-1	-7	10	2	(\$0.02)	(\$0.17)	\$0.24	\$0.05
2023	2013	139	34	293	466	\$1.77	\$0.43	\$3.74	\$5.94

... and then calculate the average annual catch and the NPV of wholesale revenue

Year	Basis Year	Area 4 Total				Area 4 Total			
		Combined IFQ and CDQ Harvests Net Weight Tons				Discounted Wholesale Value \$2013 Millions			
		4A	4B	4CDE		4A	4B	4CDE	
2008	2008	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-
2010	2010	-	-	-	-	-	-	-	-
2011	2011	-	-	-	-	-	-	-	-
2012	2012	-	-	-	-	-	-	-	-
2013	2013	-	-	-	-	-	-	-	-
2014	2010	-	-	-	-	-	-	-	-
2015	2009	108	78	461	648	\$2.30	\$1.67	\$9.81	\$13.77
2016	2009	127	22	92	241	\$2.56	\$0.44	\$1.86	\$4.87
2017	2013	90	31	161	282	\$1.57	\$0.53	\$2.79	\$4.89
2018	2008	-12	10	390	388	(\$0.31)	\$0.25	\$9.80	\$9.74
2019	2010	-14	-3	207	190	(\$0.37)	(\$0.09)	\$5.71	\$5.24
2020	2008	95	70	220	385	\$2.17	\$1.59	\$4.99	\$8.74
2021	2011	-29	-22	252	201	(\$0.69)	(\$0.54)	\$6.13	\$4.90
2022	2012	-1	-7	10	2	(\$0.02)	(\$0.17)	\$0.24	\$0.05
2023	2013	139	34	293	466	\$1.77	\$0.43	\$3.74	\$5.94
Change in Avg. Catch & Total NPV		50	21	209	280	\$8.97	\$4.10	\$45.07	\$58.14

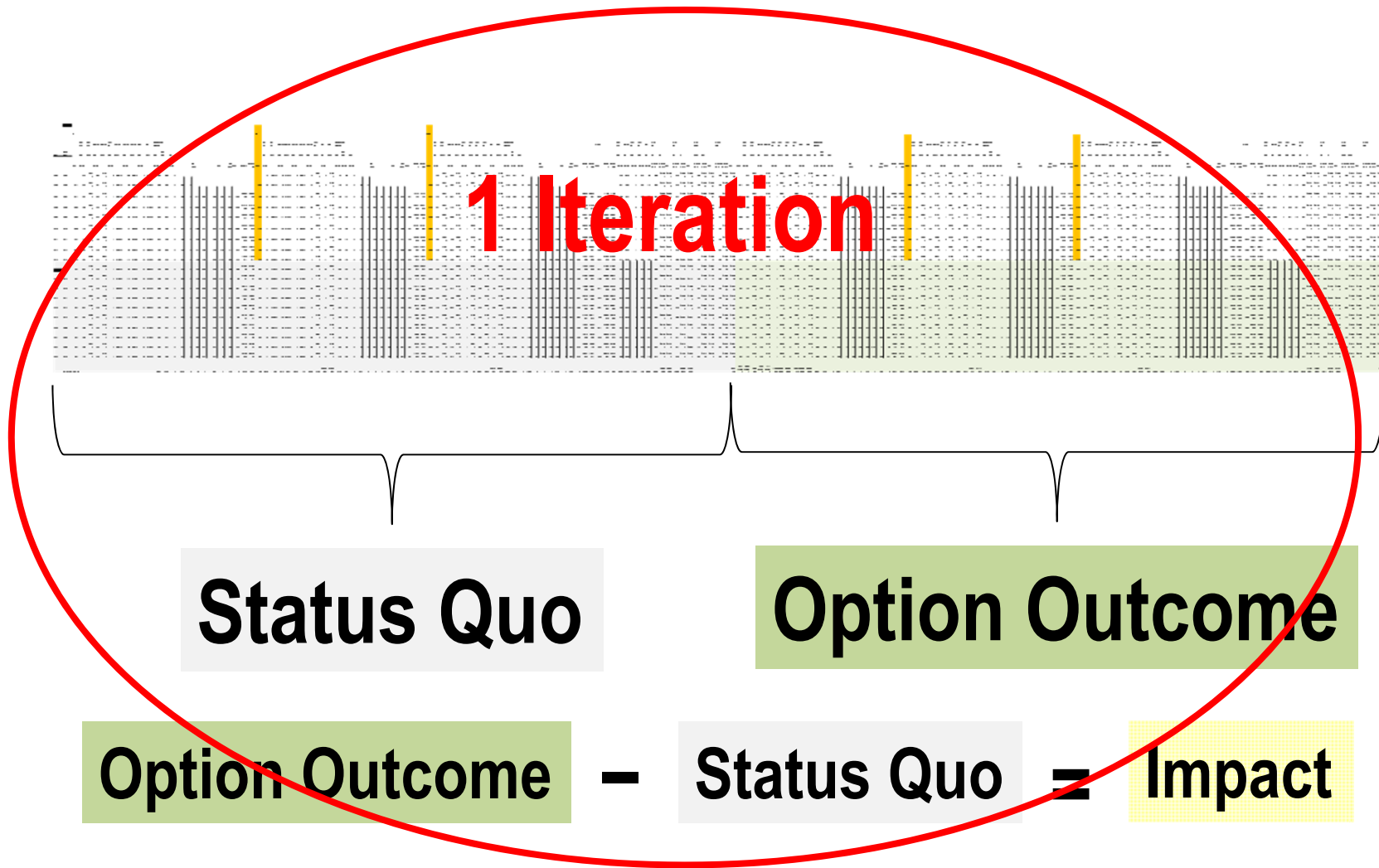
The 280 net weight mt increase is approximately 44% of round weight PSC reductions—O26 only

Year	Basis Year	Area 4 Combined IFQ and CDQ Harvests Net Weight Tons				Area 4 Discounted Wholesale Value \$2013 Millions			
		4A	4B	4CDE	Total	4A	4B	4CDE	Total
2008	2008	-	-	-	-	-	-	-	-
2009	2009	-	-	-	-	-	-	-	-
2010	2010	-	-	-	-	-	-	-	-
2011	2011	-	-	-	-	-	-	-	-
2012	2012	-	-	-	-	-	-	-	-
2013	2013	-	-	-	-	-	-	-	-
2014	2010	-	-	-	-	-	-	-	-
2015	2009	108	78	461	648	\$2.30	\$1.67	\$9.81	\$13.77
2016	2009	127	22	92	241	\$2.56	\$0.44	\$1.86	\$4.87
2017	2013	90	31	161	282	\$1.57	\$0.53	\$2.79	\$4.89
2018	2008	-12	10	390	388	(\$0.31)	\$0.25	\$9.80	\$9.74
2019	2010	-14	-3	207	190	(\$0.37)	(\$0.09)	\$5.71	\$5.24
2020	2008	95	70	220	385	\$2.17	\$1.59	\$4.99	\$8.74
2021	2011	-29	-22	252	201	(\$0.69)	(\$0.54)	\$6.13	\$4.90
2022	2012	-1	-7	10	2	(\$0.02)	(\$0.17)	\$0.24	\$0.05
2023	2013	139	34	293	466	\$1.77	\$0.43	\$3.74	\$5.94
Change in Avg. Catch & Total NPV		50	21	209	280	\$8.97	\$4.10	\$45.07	\$58.14

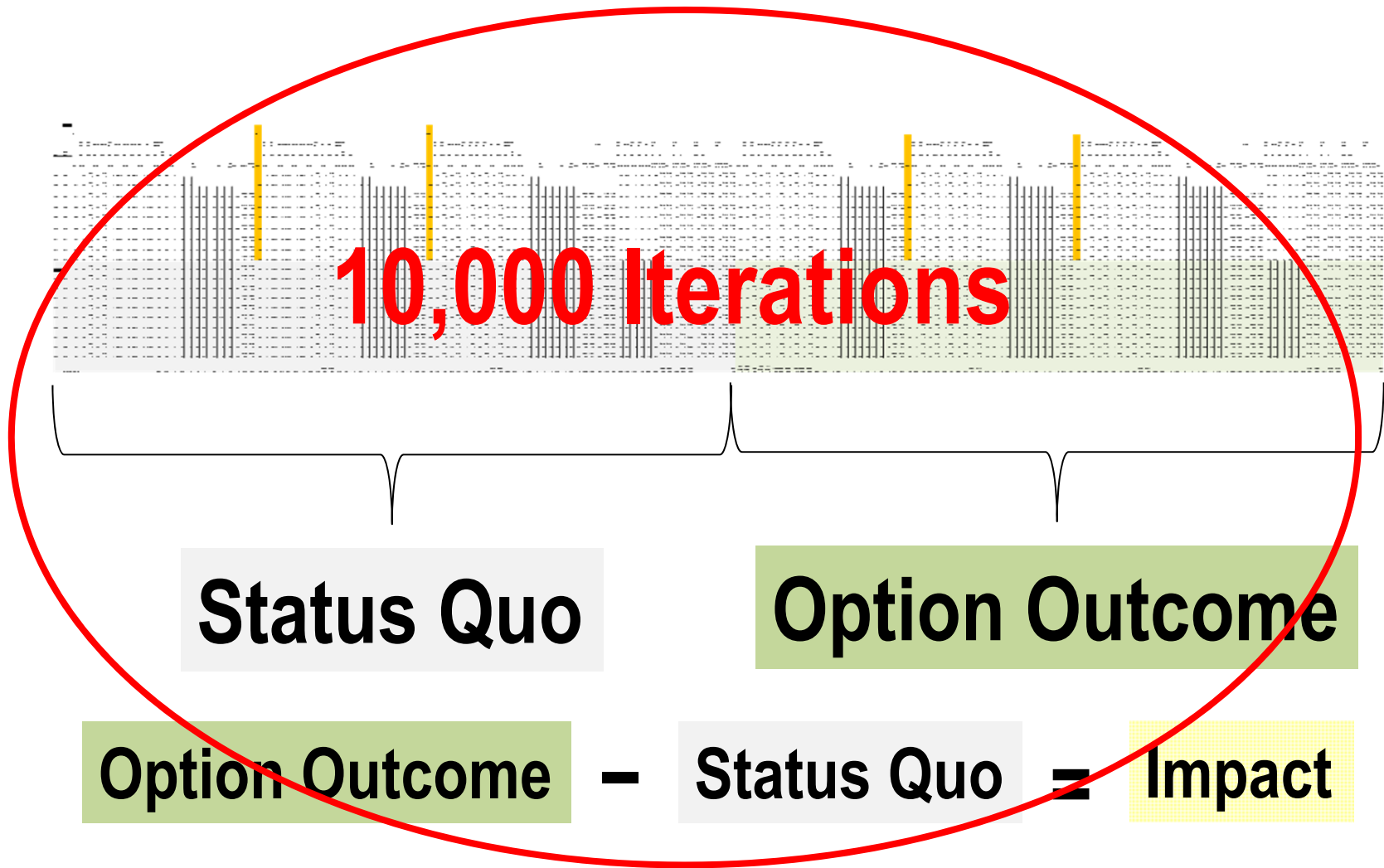


Questions?

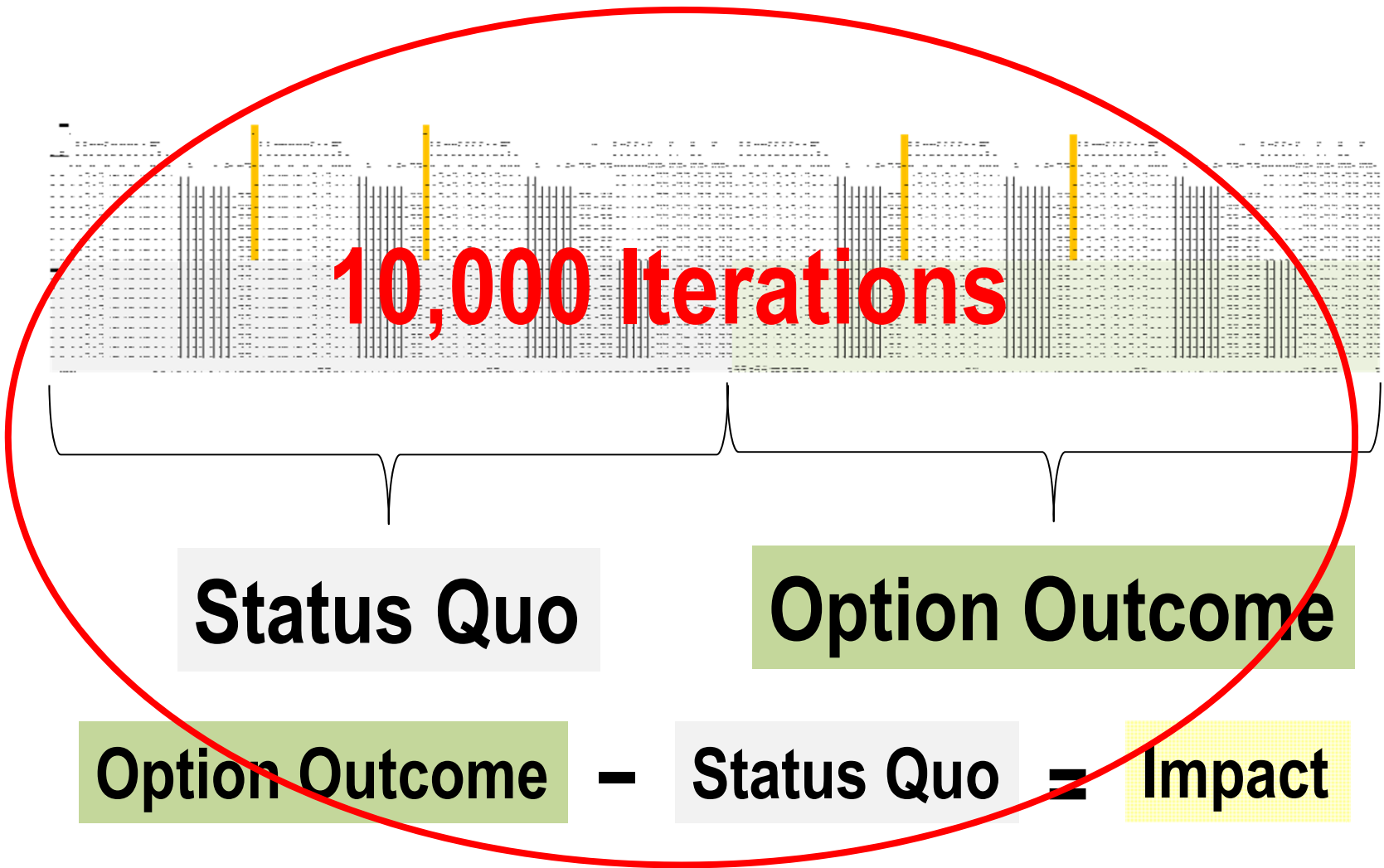
We have now completed 1 iteration of the IMS Model for one option under one scenario



We then repeat the process for 10,000 iterations...



... with each iteration getting a new random draw of Basis Years



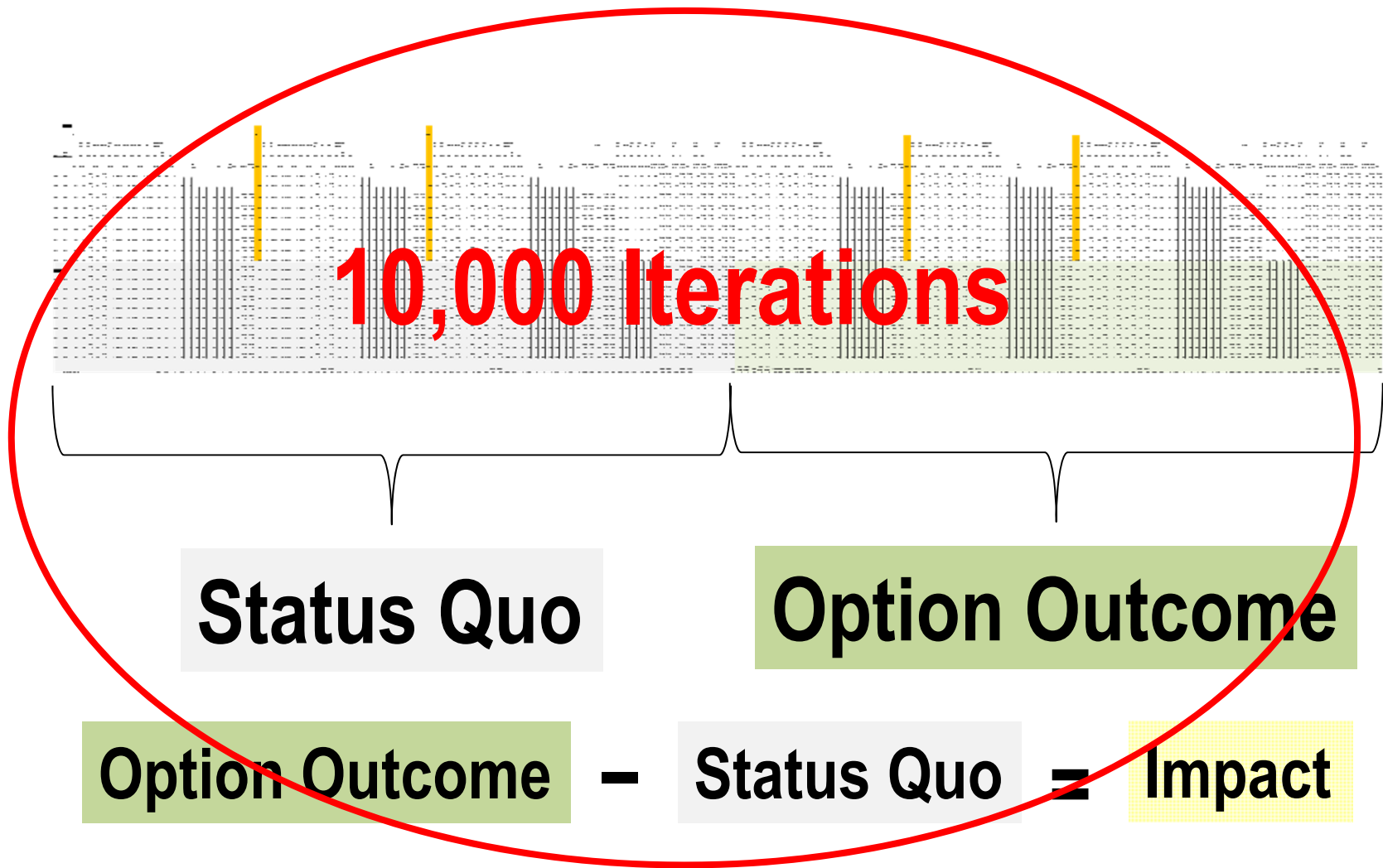
10,000 Iterations

Status Quo

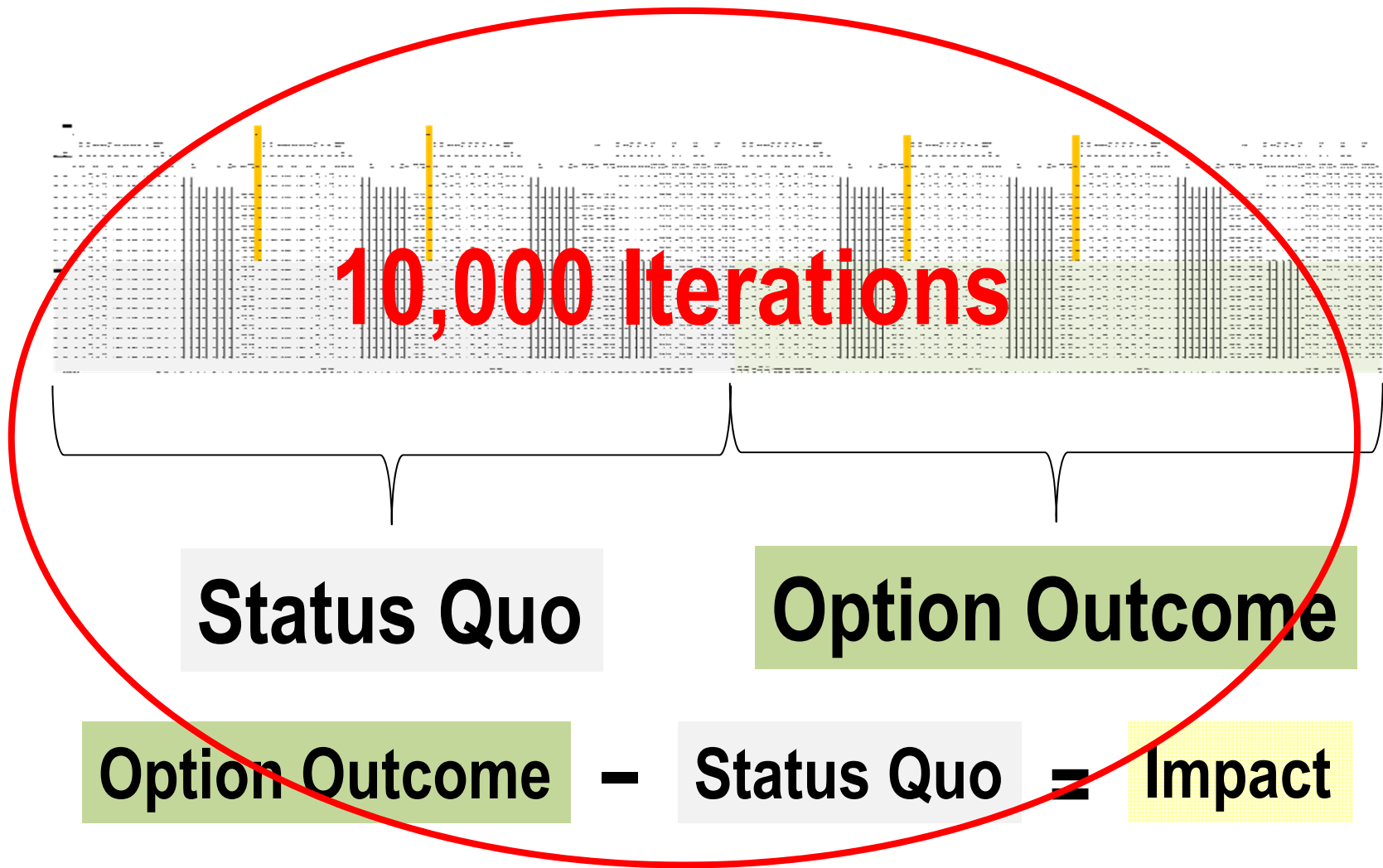
Option Outcome

Option Outcome - Status Quo = Impact

We then repeat the entire process for Scenario B



... and then repeat again for each of the other three reduction options



Questions?

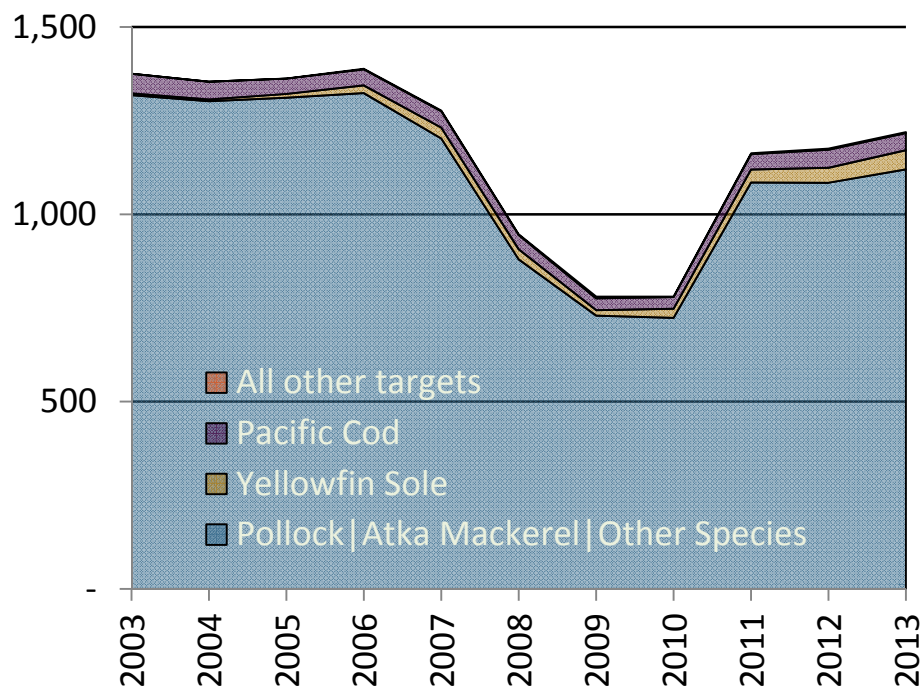
Overview of Existing Conditions in the Groundfish Fisheries

- **BSAI TLA**
- **A80-CPs**
- **Longline CVs (LGL-CV)**
- **Longline CPs (LGL-CPs)**
- **Groundfish CDQ fisheries**

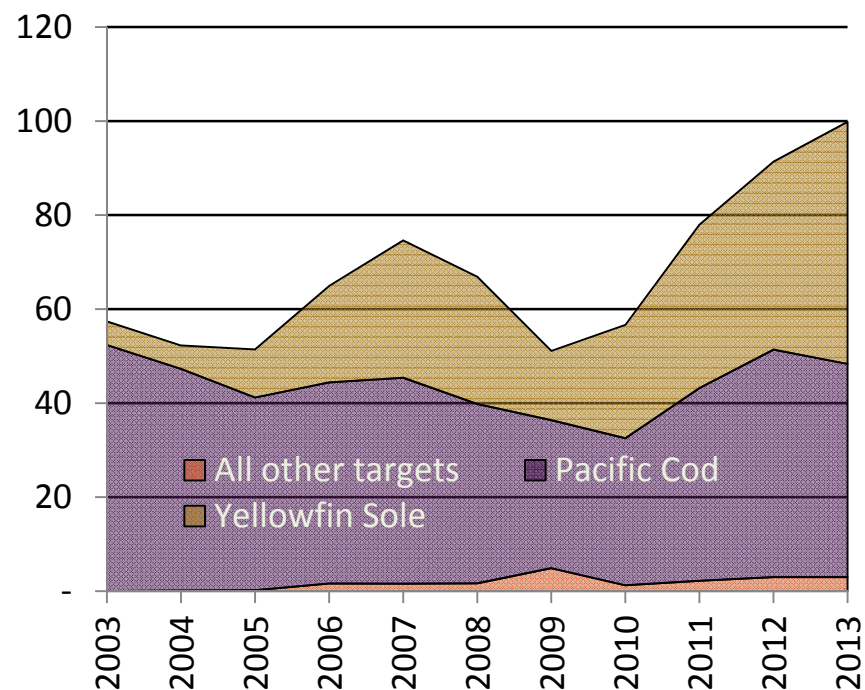
Bering Sea Trawl Limited Access

■ Groundfish harvests, 2003-2013

Including Pollock (mt)



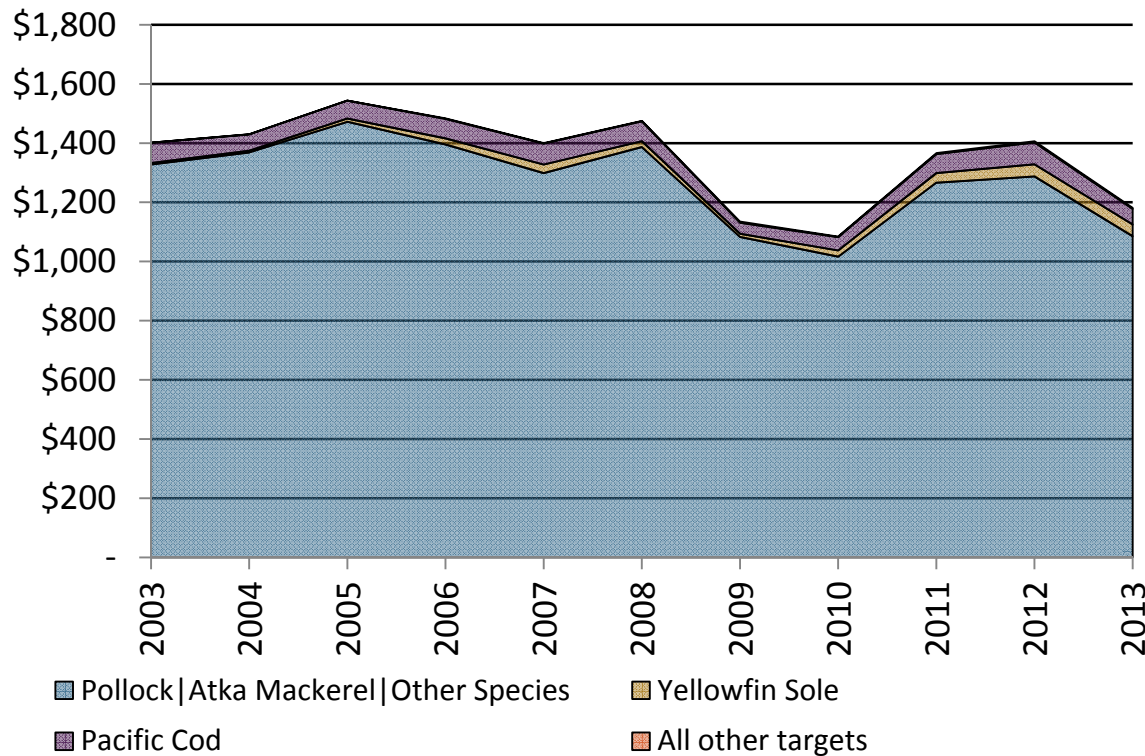
Excluding pollock (mt)



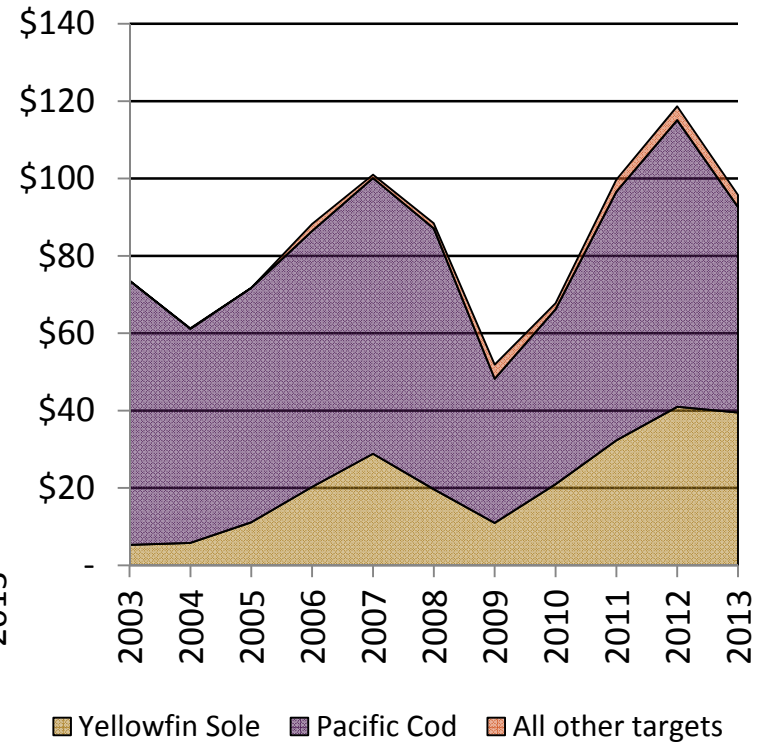
Bering Sea Trawl Limited Access

Wholesale Revenue, 2003-2013, (\$ millions 2013)

Including Pollock



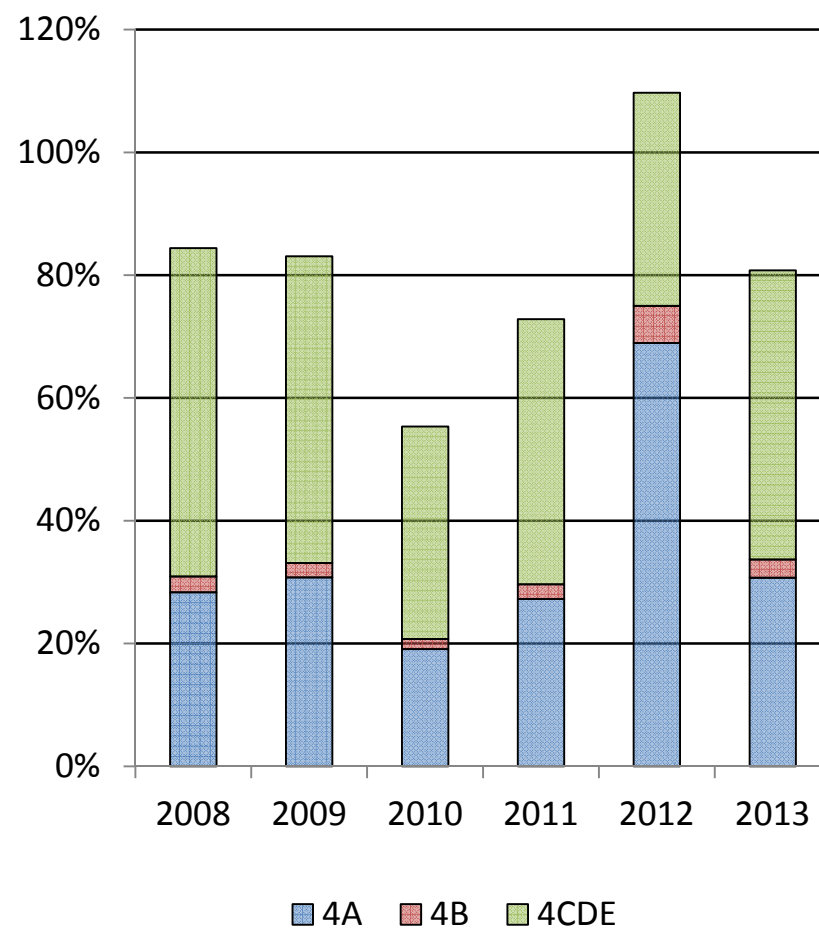
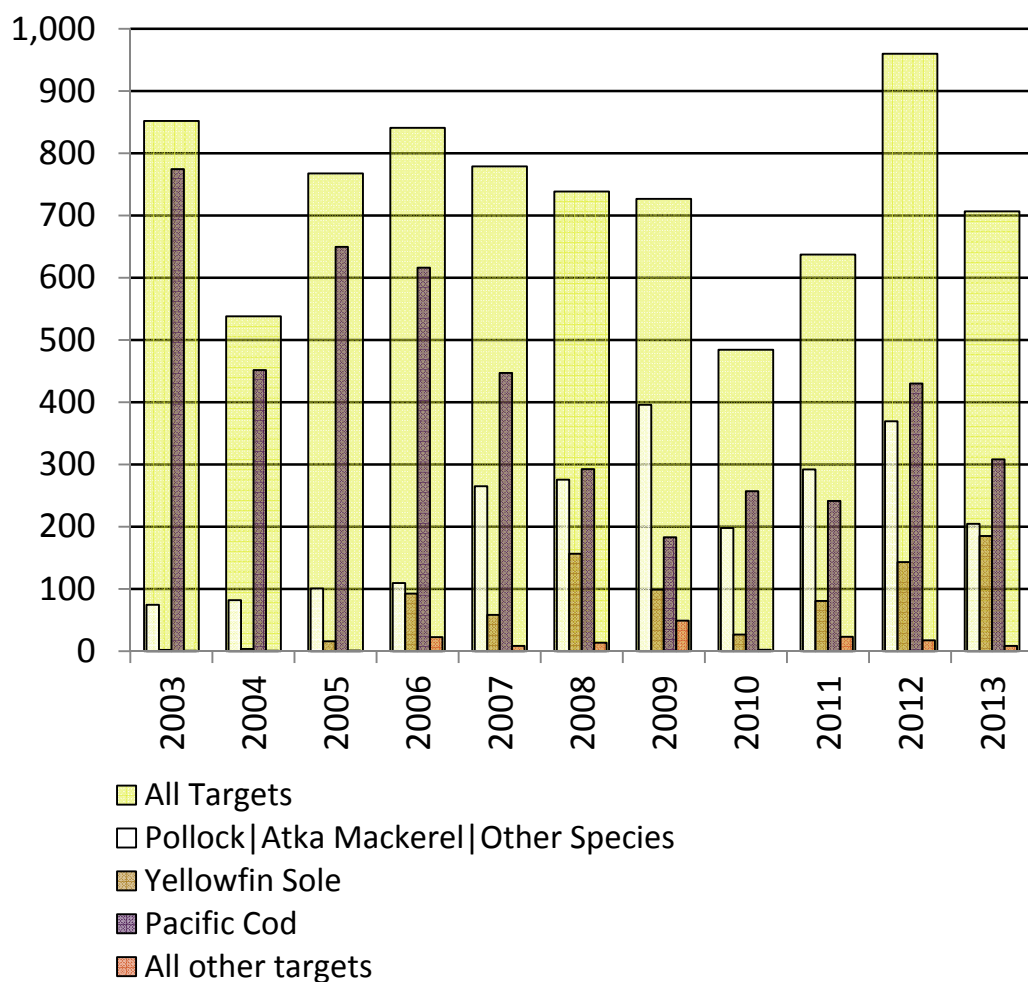
Excluding pollock



Halibut Mortality in BSAI TLA Fisheries

By target fishery (mt)

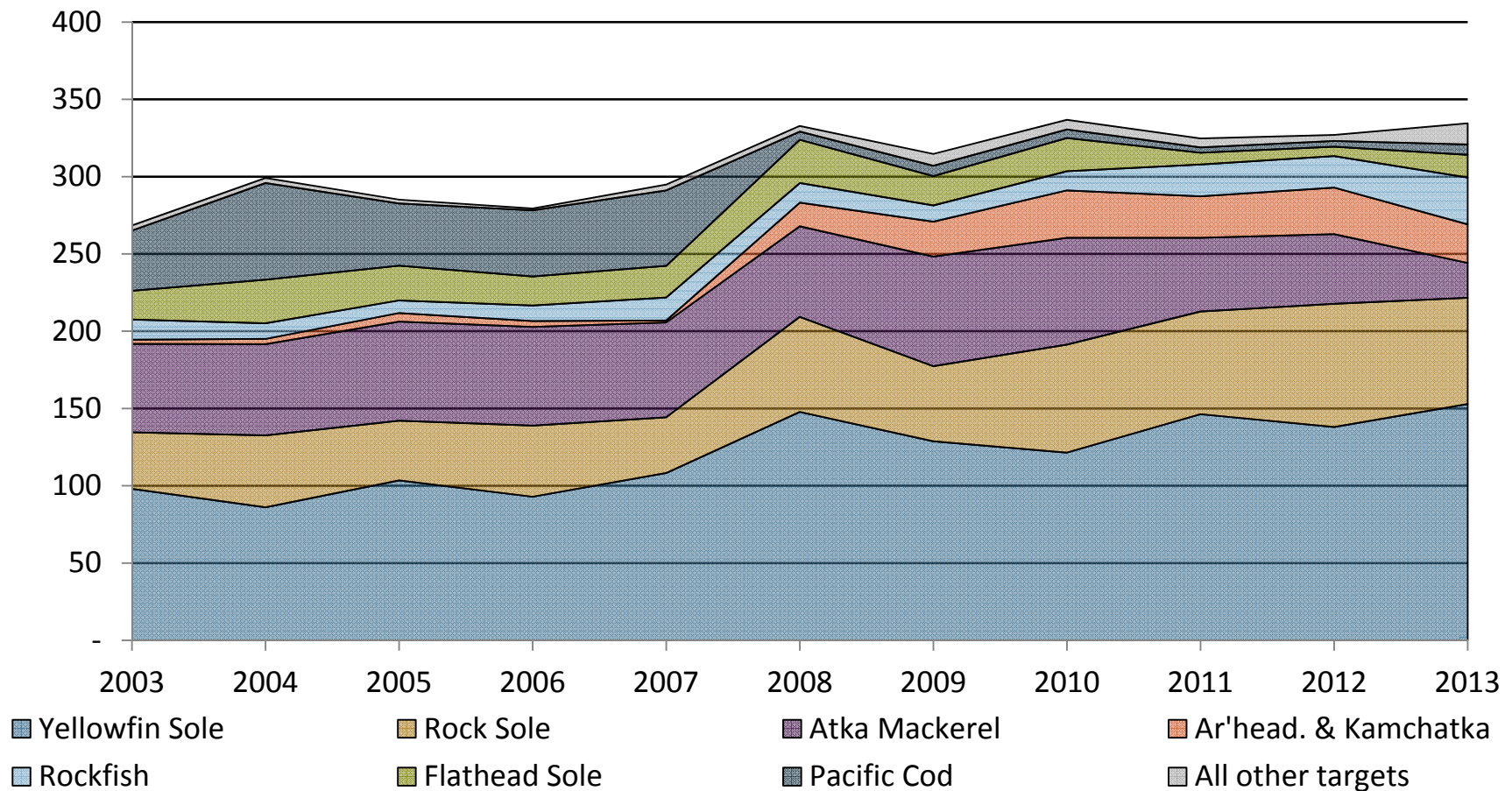
Percent of 2014 PSC Limit



Questions?

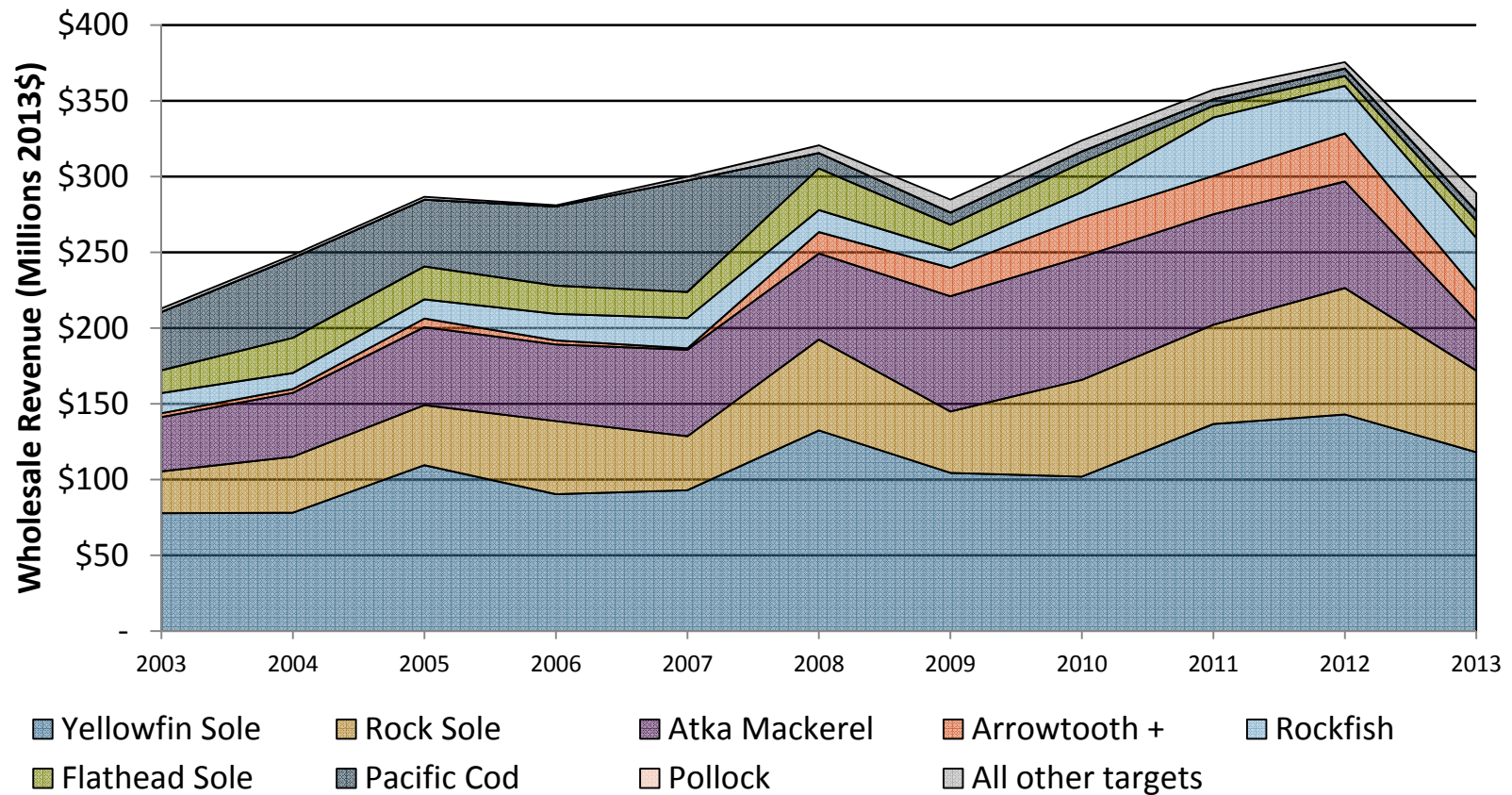
Amendment 80 Catcher Processors

■ Groundfish harvests, 2003-2013 (mt)



Summary of Activities of A80-CPs

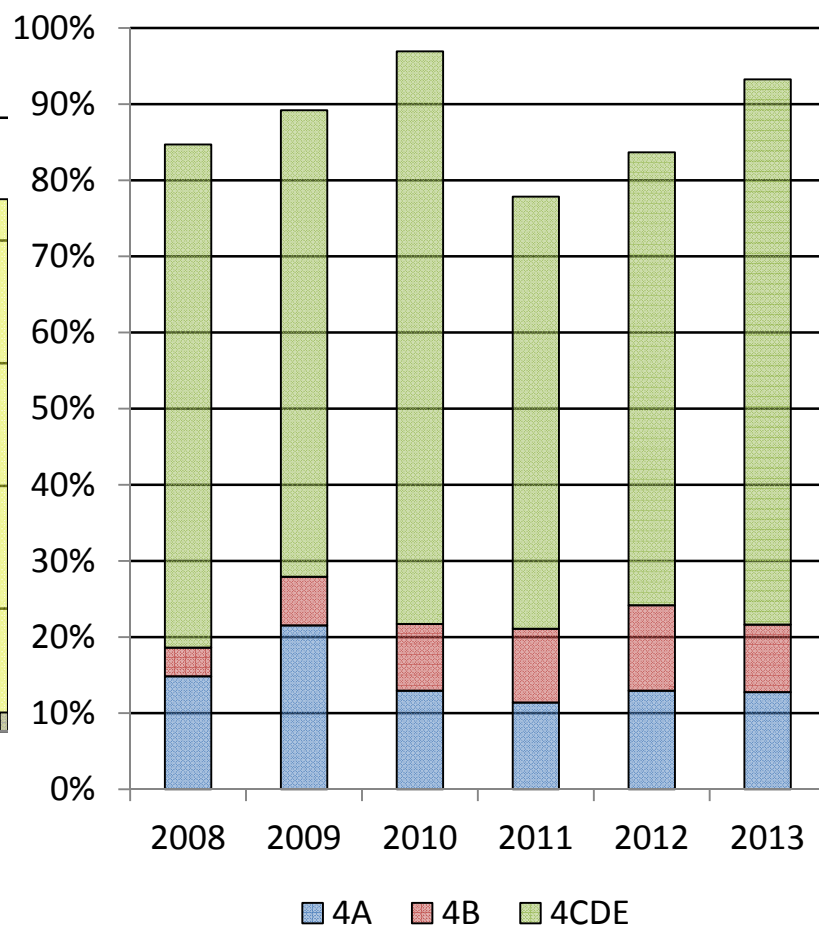
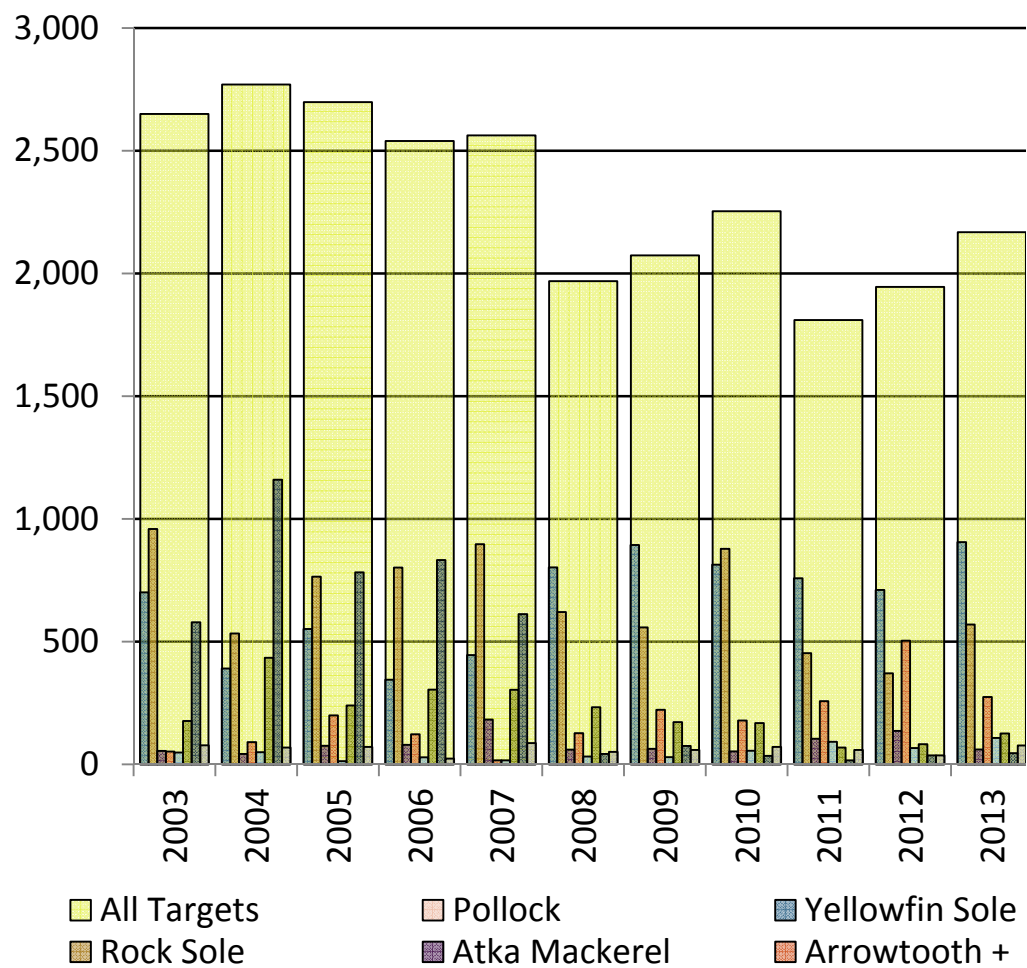
Wholesale revenues, 2003-2013 (\$ millions 2013)



Halibut Mortality of A80 CPs

By target fishery (mt)

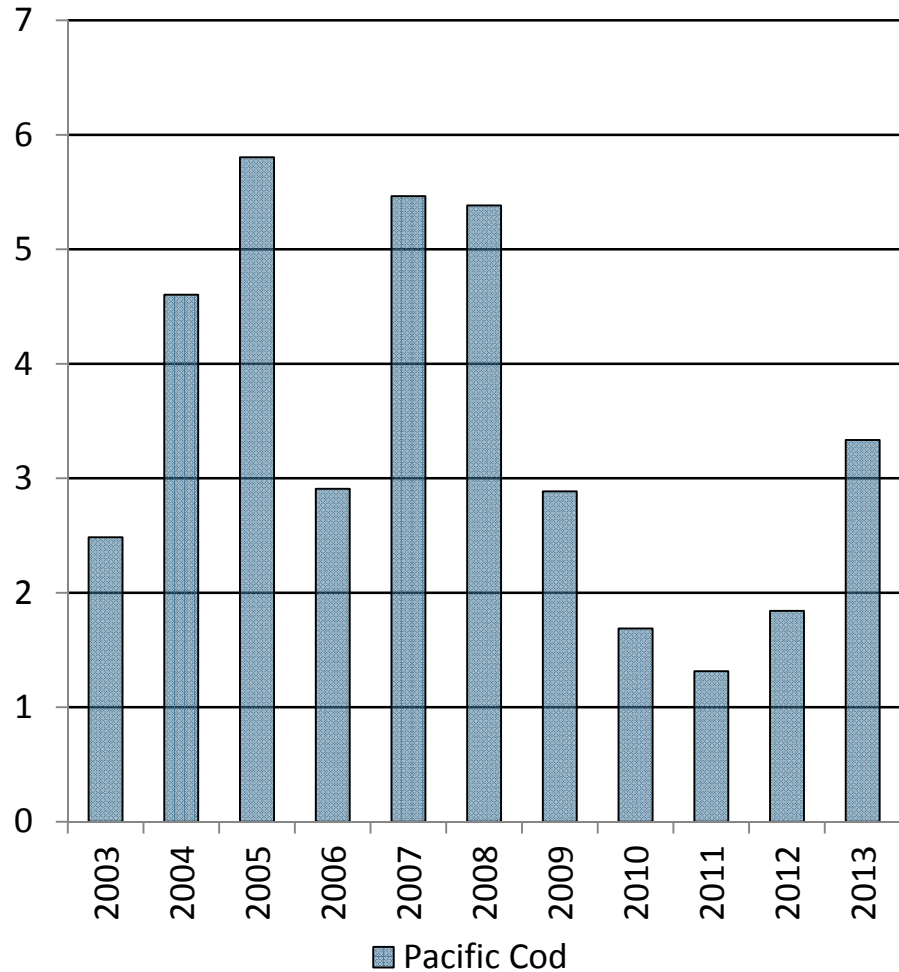
Percent of 2014 PSC Limit



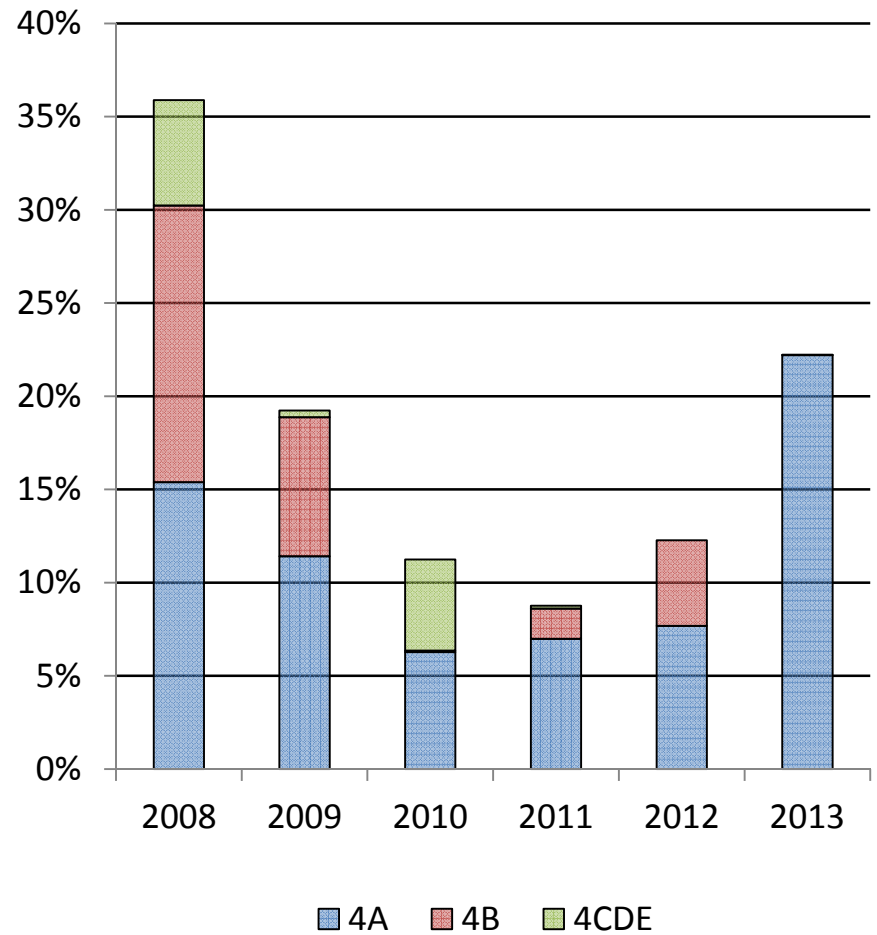
Questions?

Halibut Mortality of Longline Catcher Vessels

By target fishery (mt)

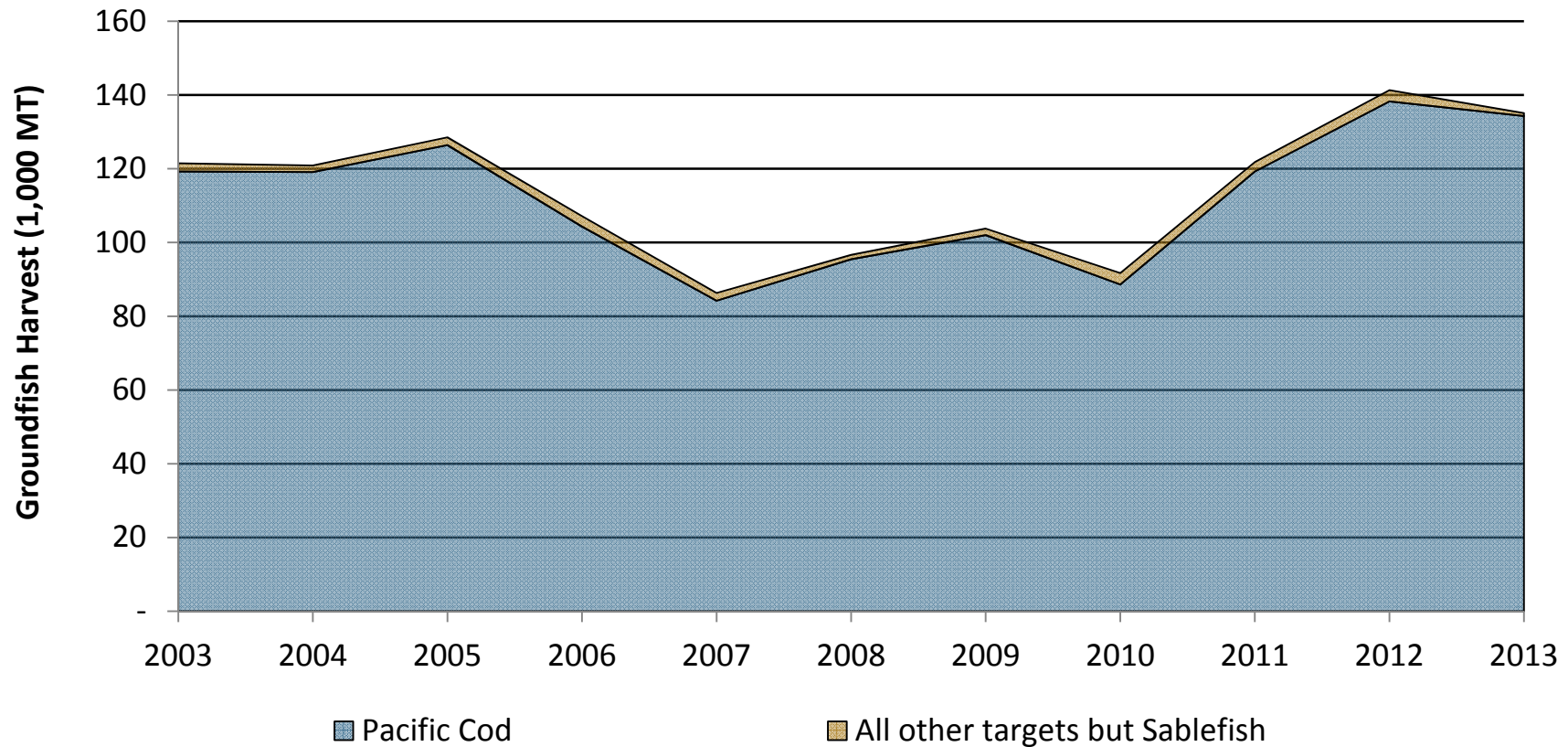


Percent of 2014 PSC Limit



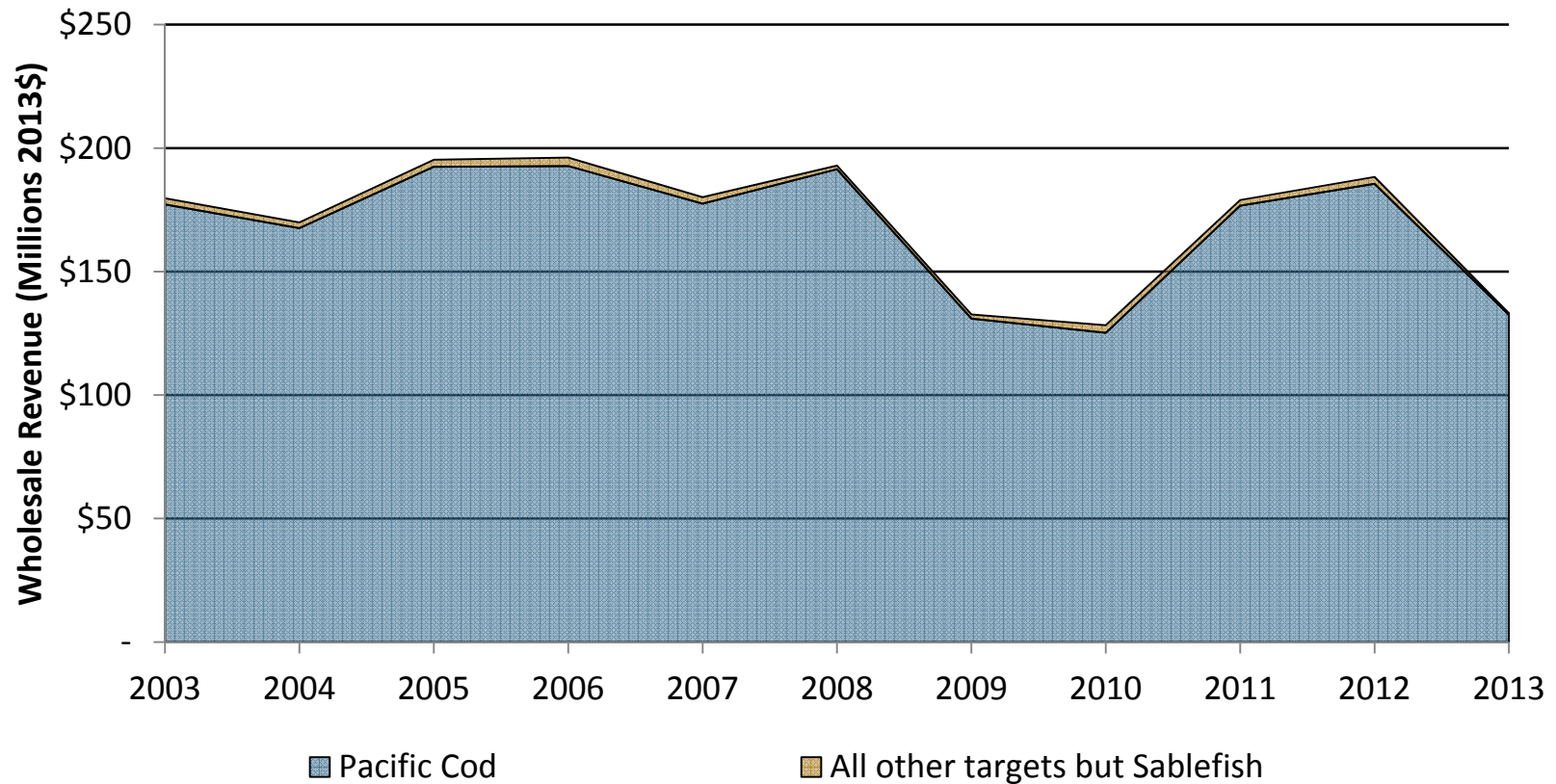
Longline Catcher Processors

■ Groundfish harvests, 2003-2013



Summary of Activities of LGL-CPs

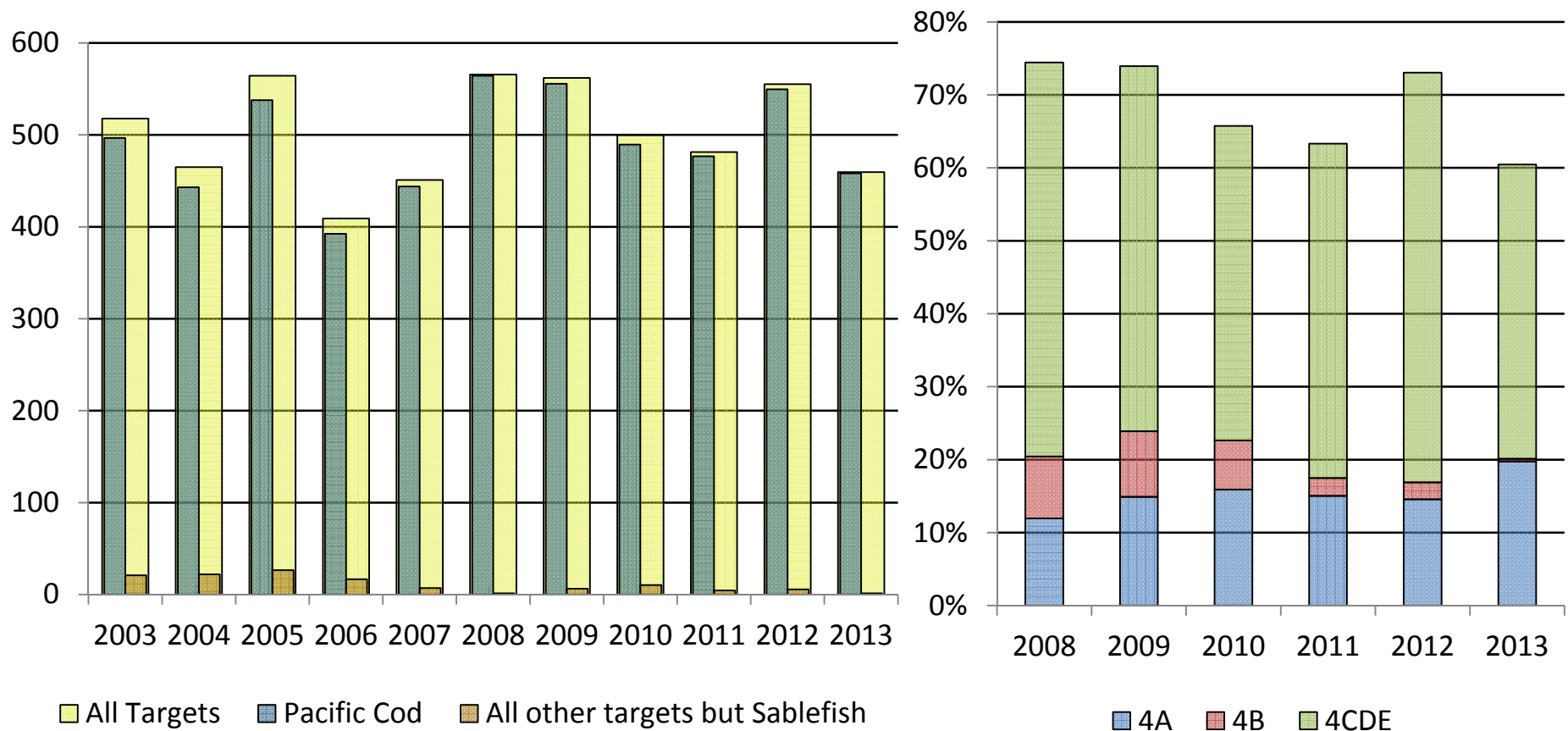
■ Wholesale revenues, 2003-2013 (\$ millions 2013)



Halibut Mortality of Longline Catcher Processors

By target fishery (mt)

Percent of 2014 PSC Limit

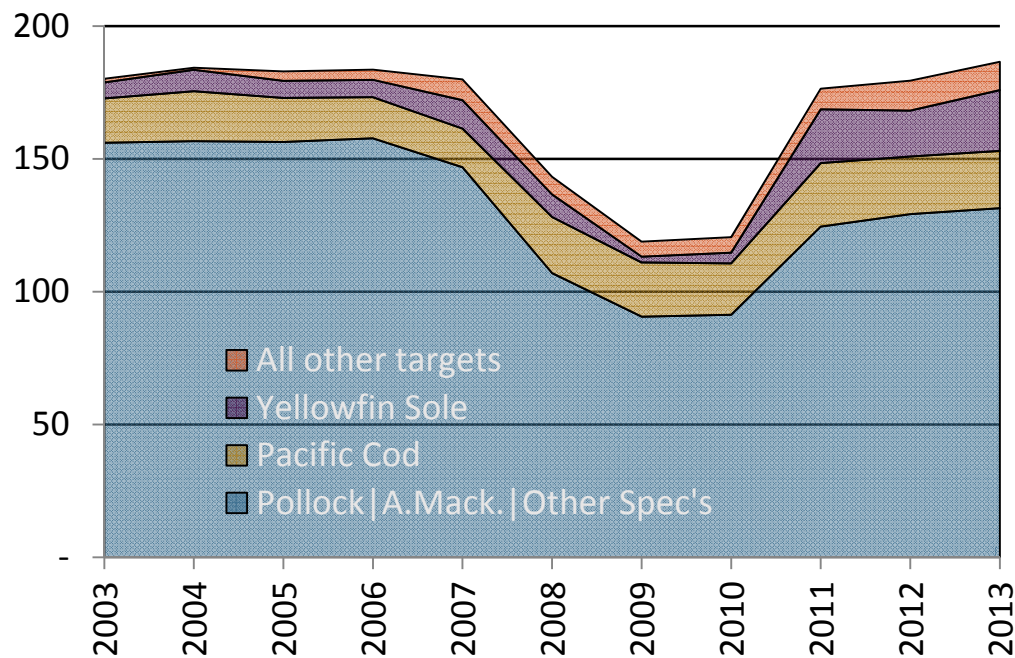


Questions?

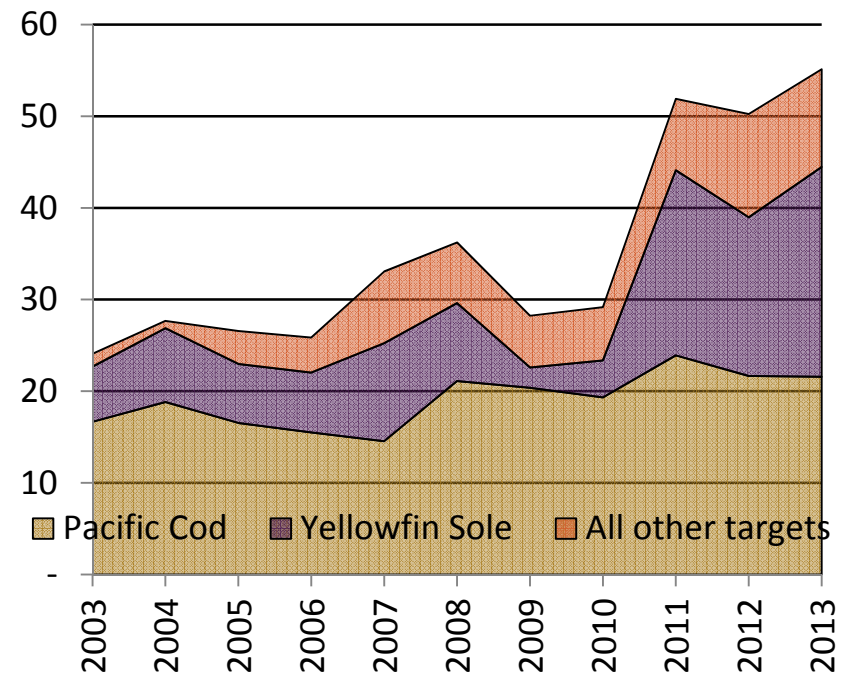
CDQ Fisheries

■ Groundfish harvests, 2003-2013 (MT)

Including Pollock



Excluding pollock

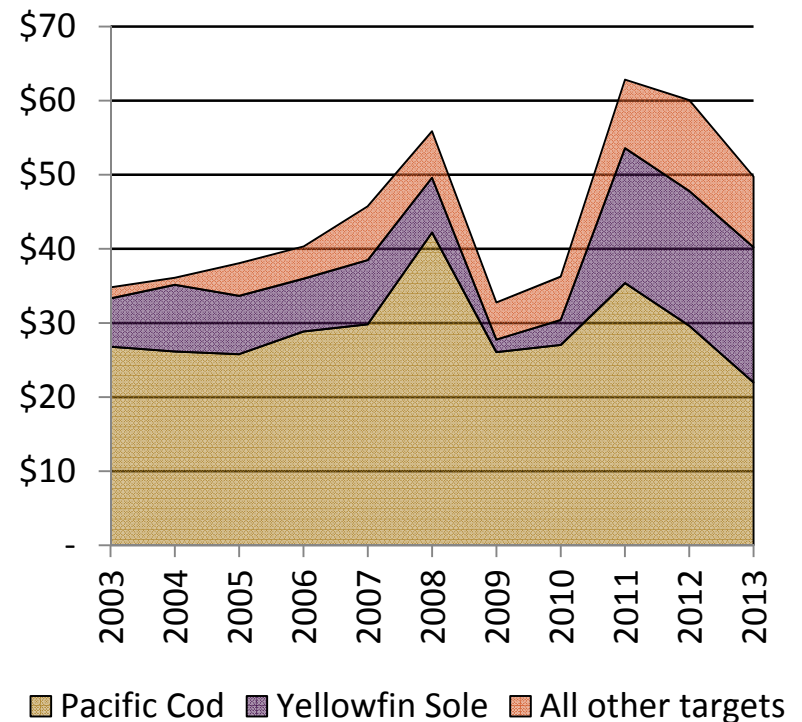
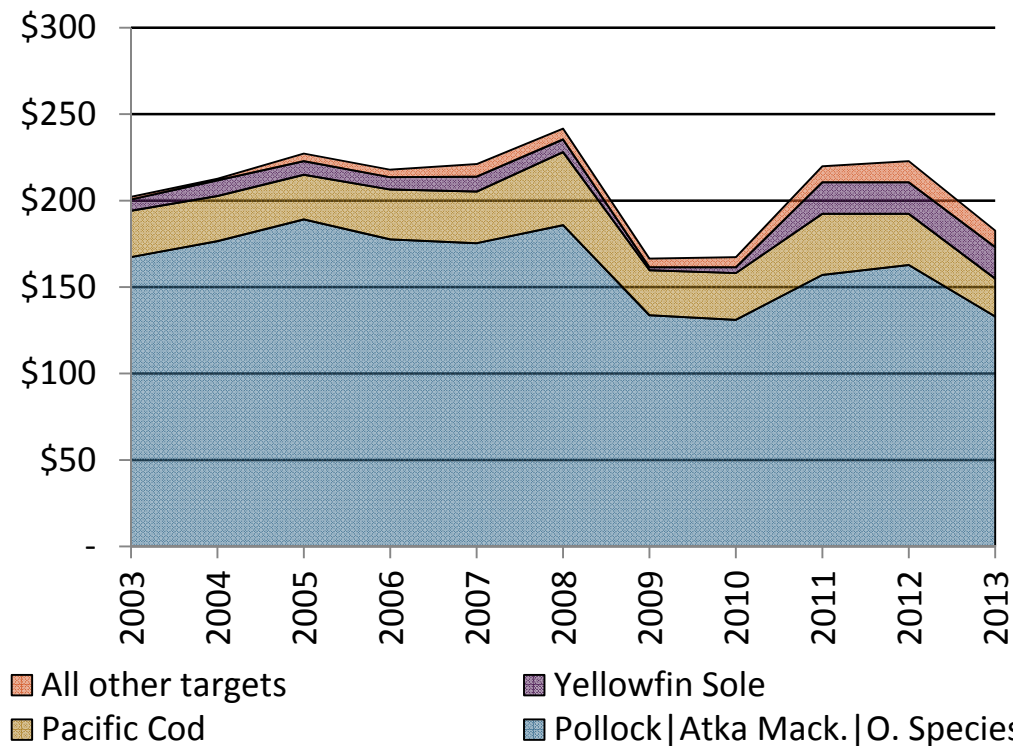


CDQ Fisheries

■ Wholesale revenues, 2003-2013 (\$ millions 2013)

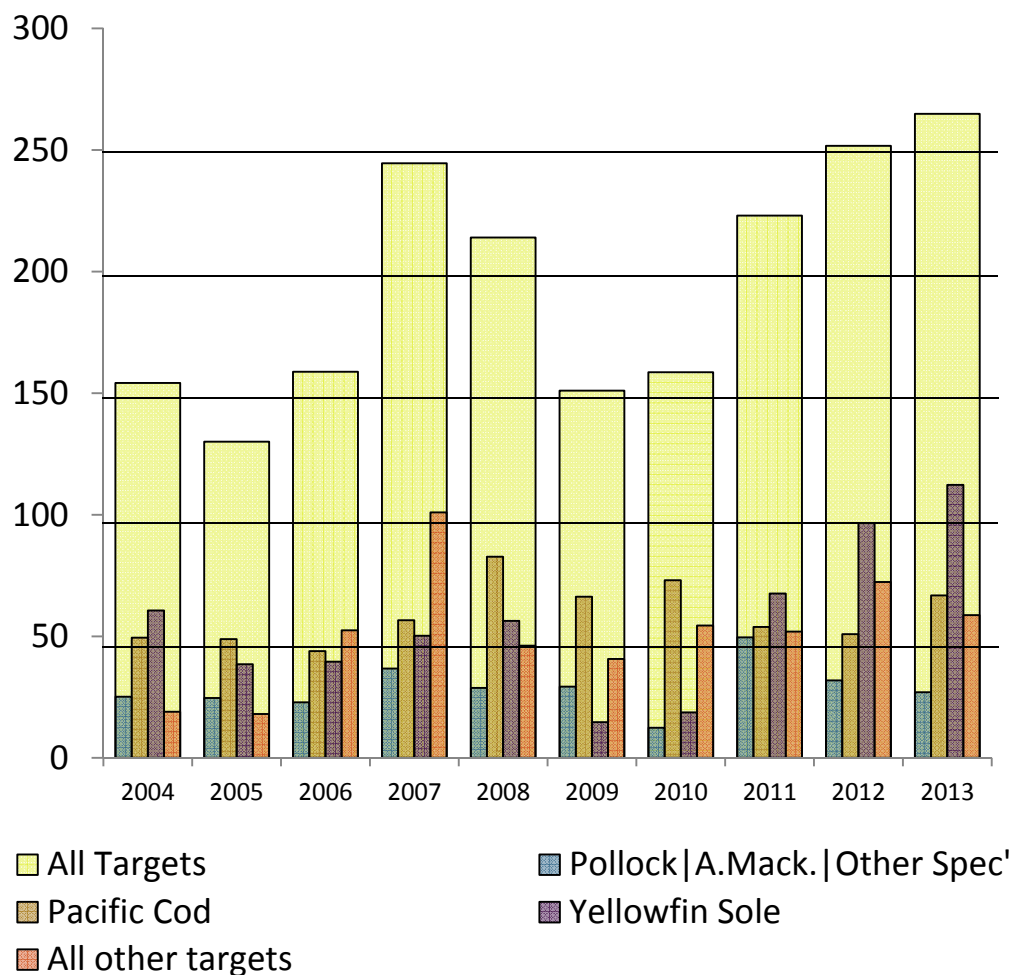
Including Pollock

Excluding pollock

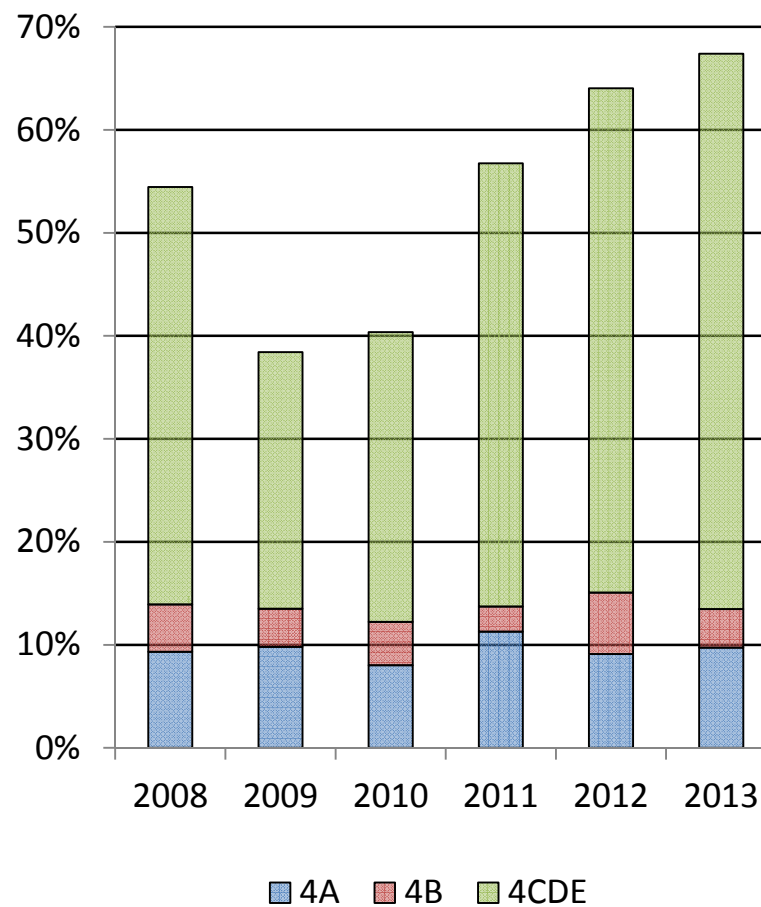


Halibut Mortality in CDQ Fisheries

By target fishery (MT)



Percent of 2014 Limit



Questions?

Overview of the Area 4 Halibut Fishery

IFQ and CDQ Harvests of Halibut in the BSAI (Table 5-74)

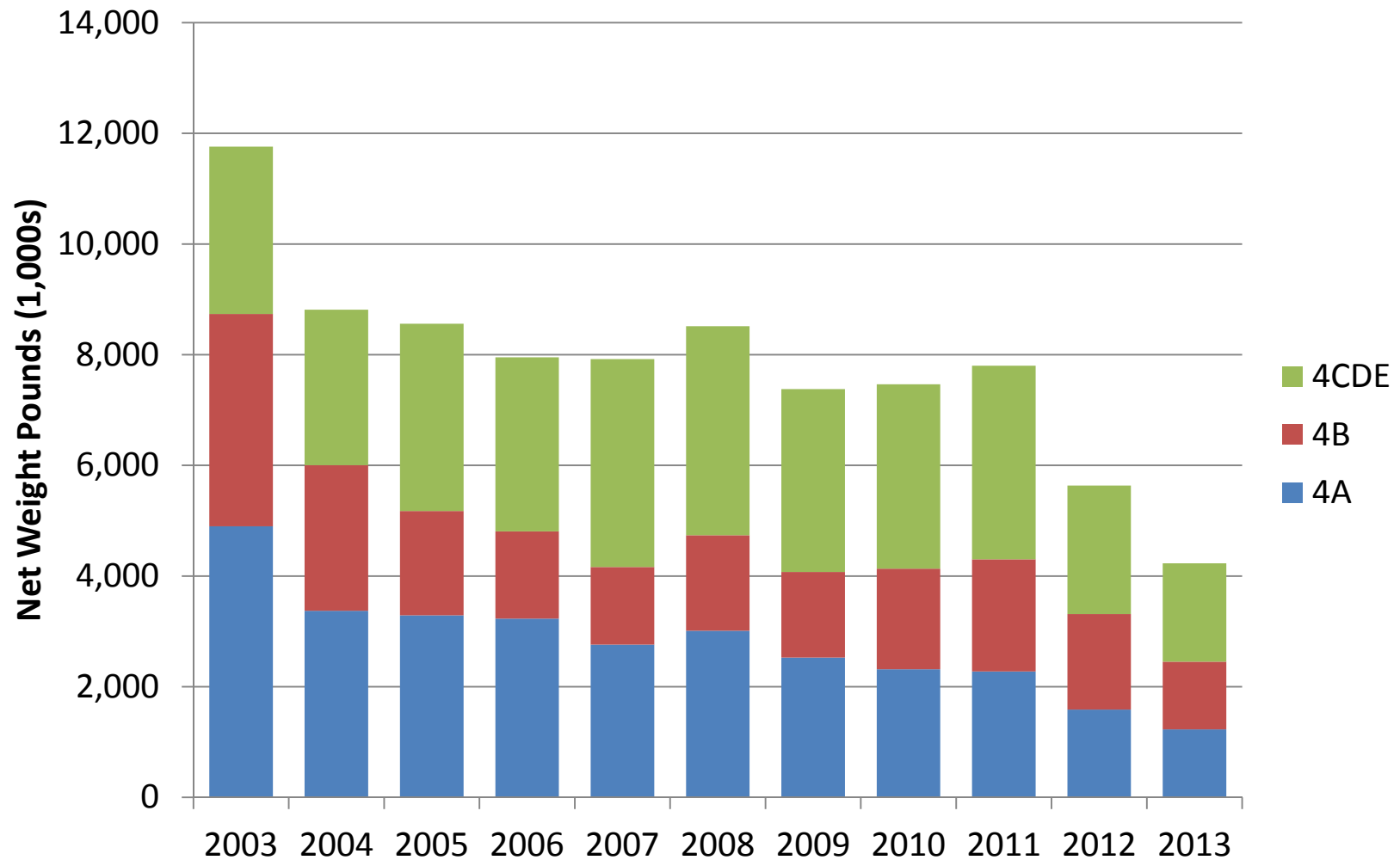
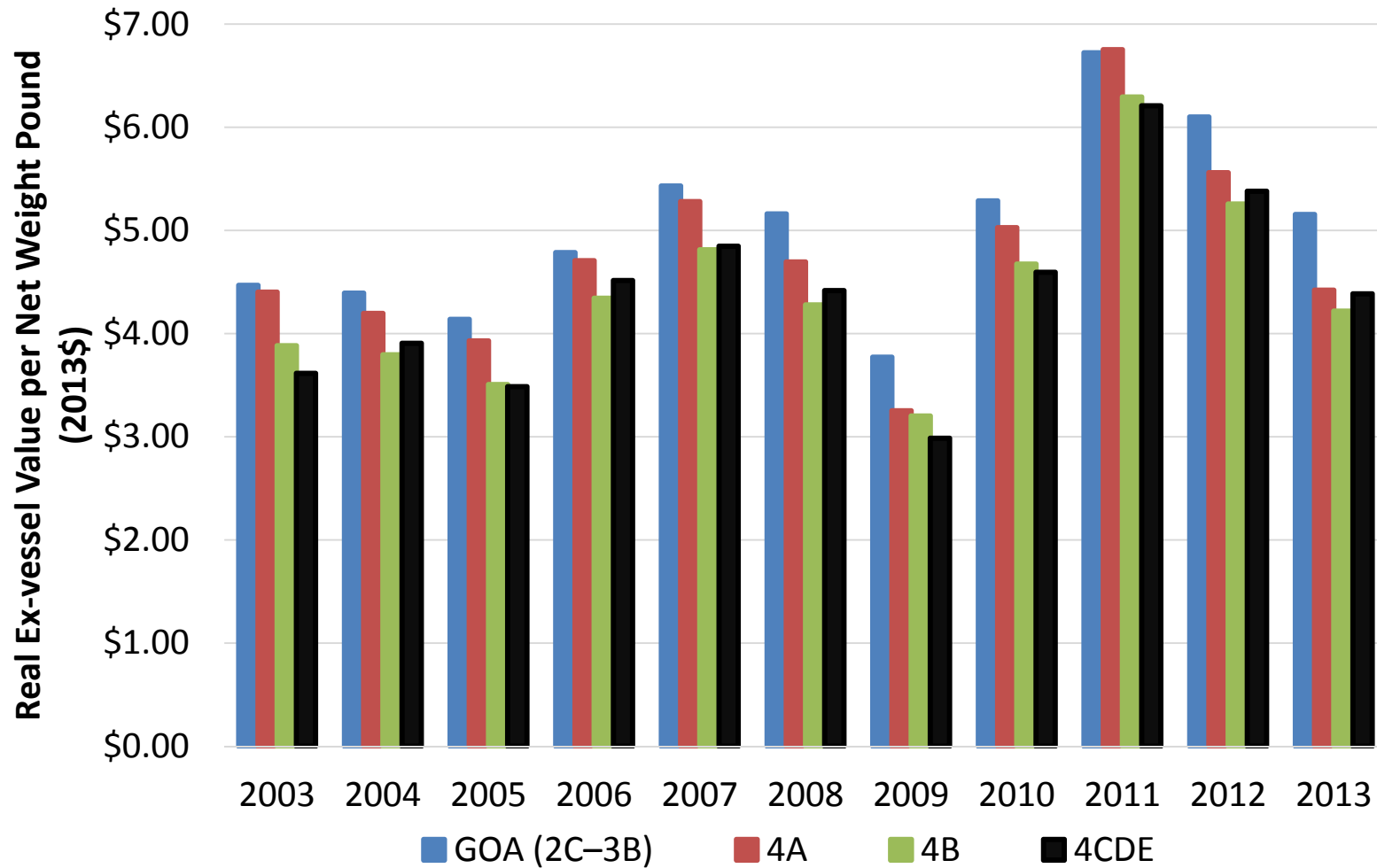


Figure 5-50. Estimated Real Ex-Vessel Value per Net Weight Pound Harvested



Estimated Real Ex-vessel Revenue Area 4 Halibut Harvests (See Table 5-77)

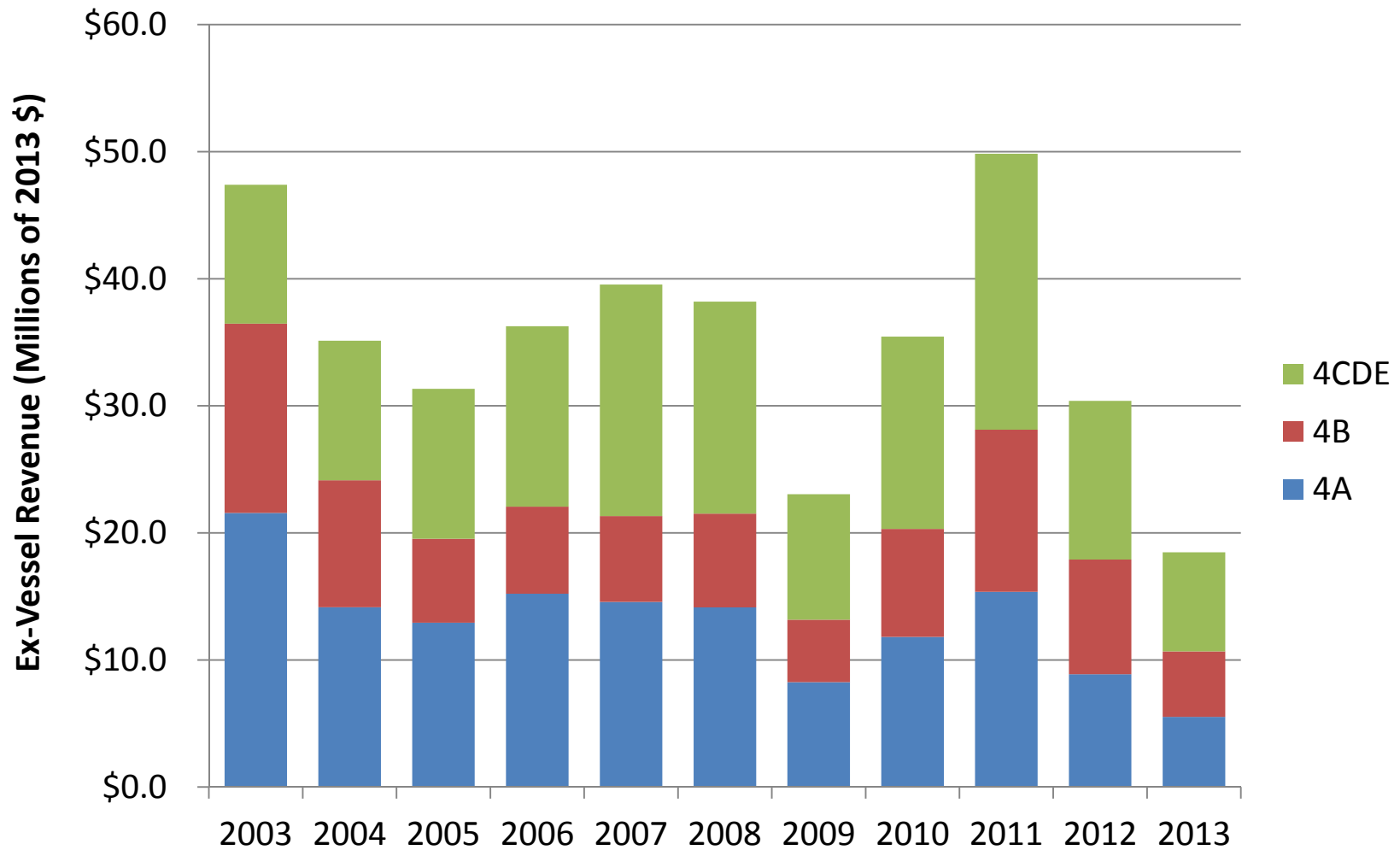
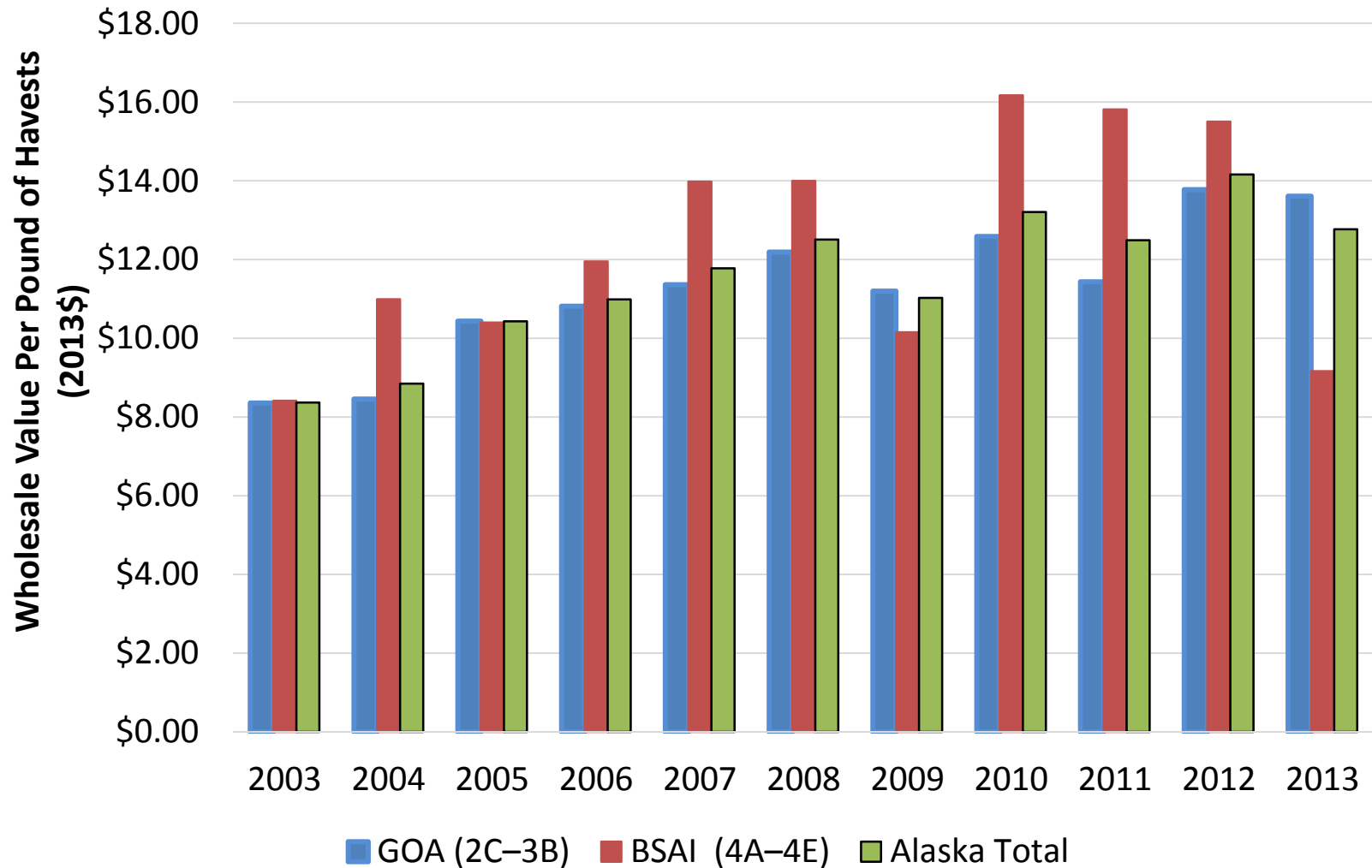
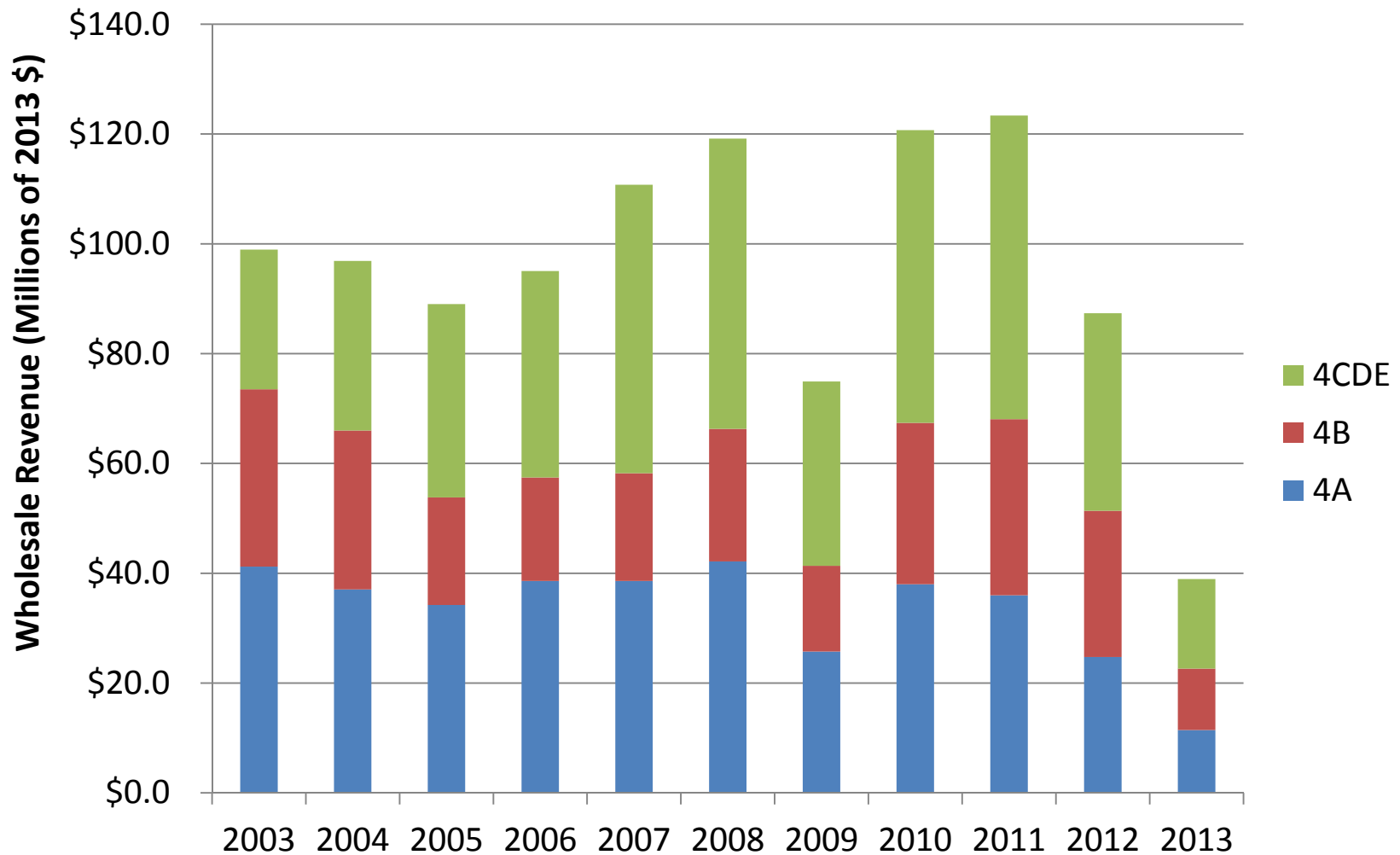


Figure 5-51. Estimated Real Wholesale Value per Net Weight Pound Harvested

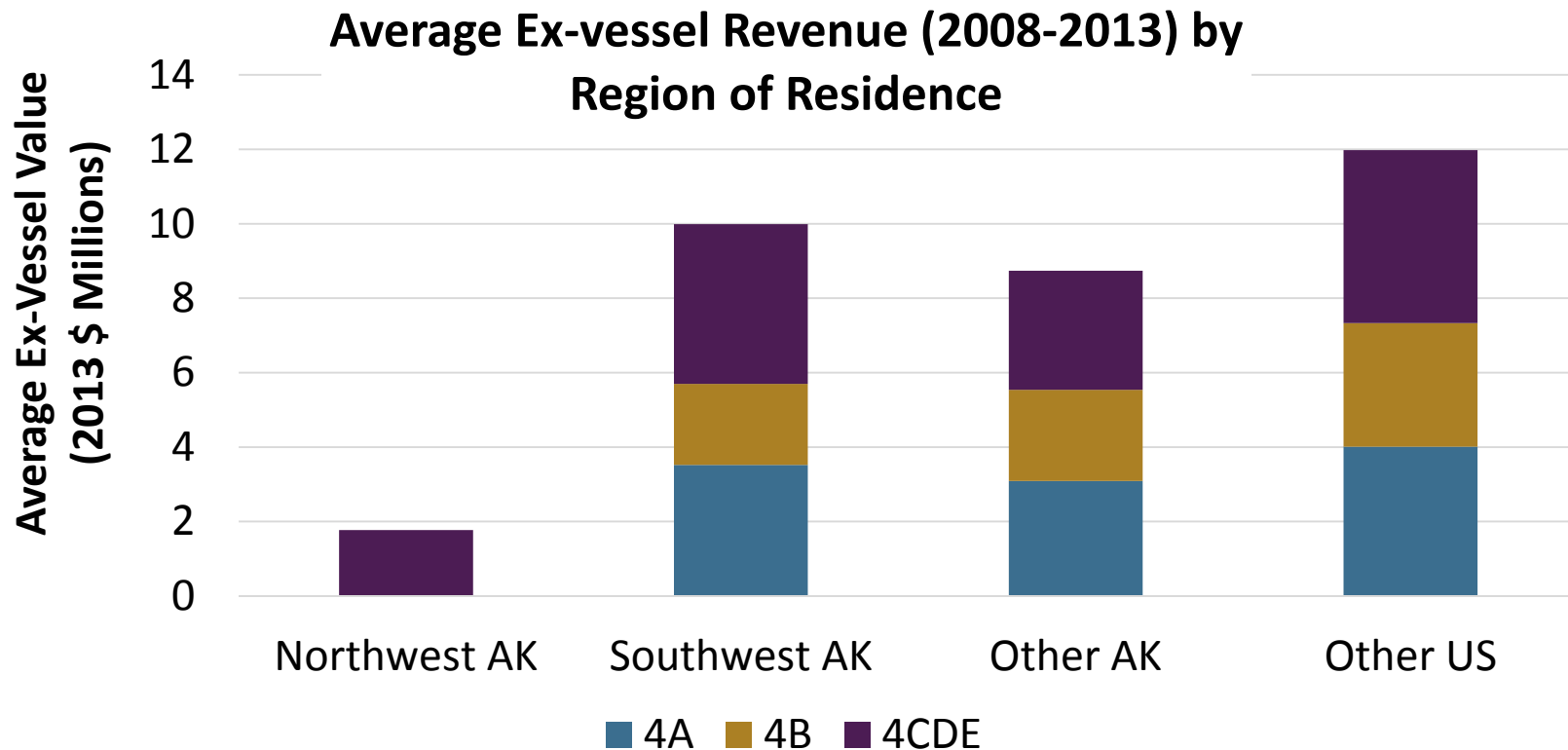


Estimated Real Wholesale Revenue of Area 4 Halibut Harvest (See Table 5-79)

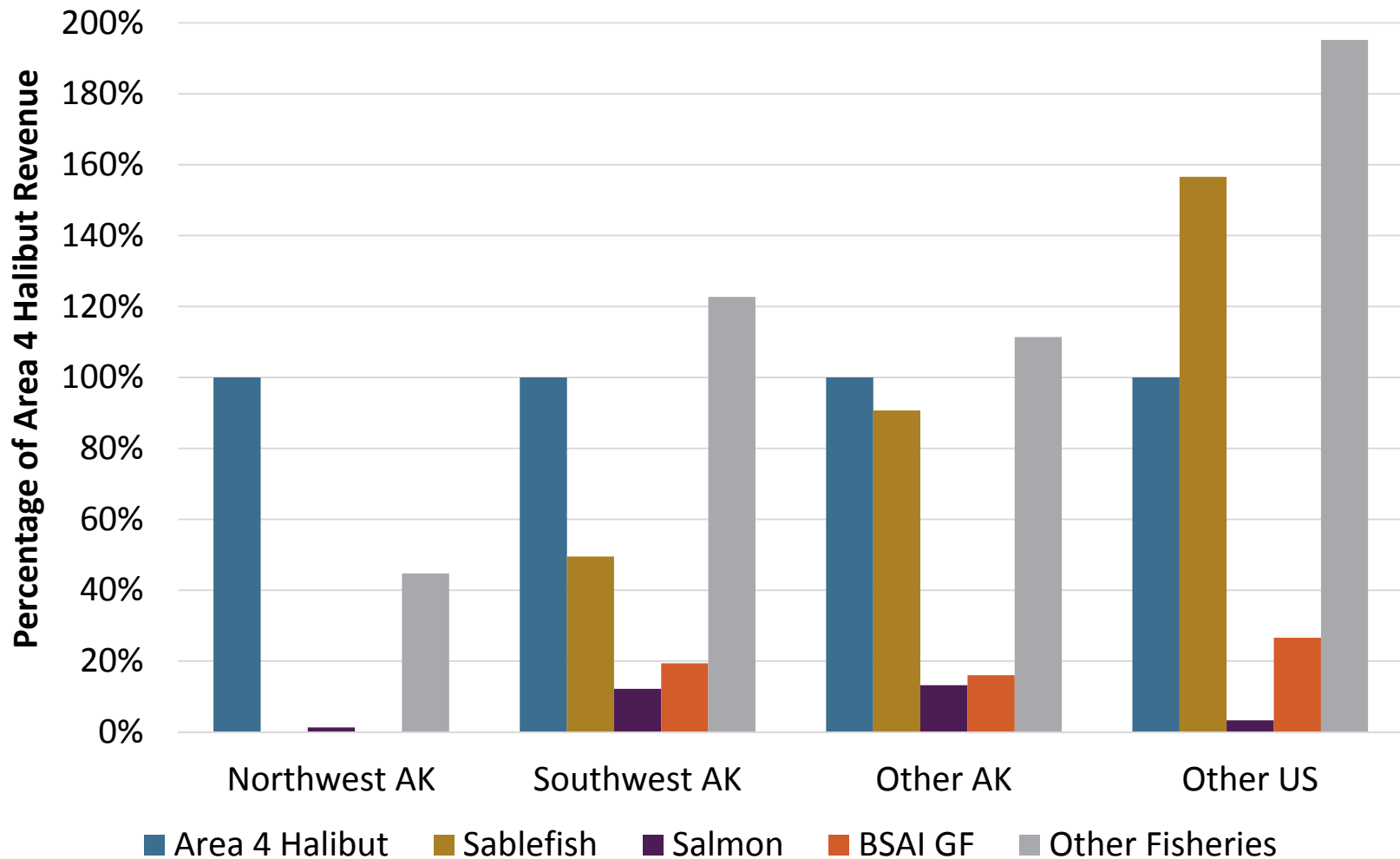


Halibut Harvest by Region of Residence

- Analysis includes several tables and figures summarizing landings and revenue by owner region of residence.
- In the figure below (see Table 5-81) Southwest AK includes Kodiak – Bristol Bay including the Pribilofs



Relative Dependence on Area 4 Halibut of Active Participants by Region, 2008–2013 (See Table 5-85)

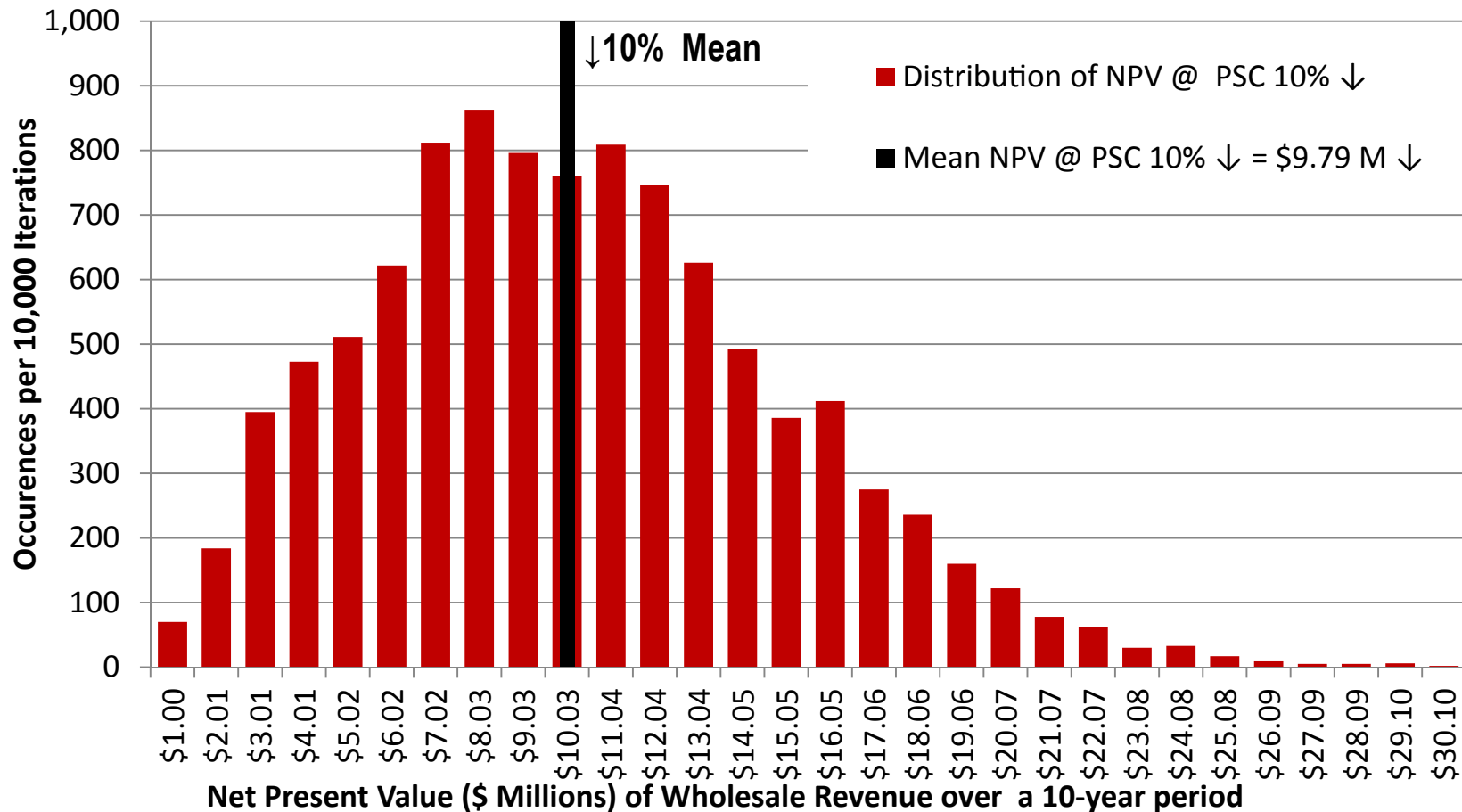


Questions?

Impacts of Options to Reduce PSC Limits for BSAI Trawl Limited Access

Impacts to BSAI TLA Vessels under Scenario A

Figure 5-57 Impacts to BSAI TLA Vessels under Option 2.1—10% Reductions in Halibut PSC Limits

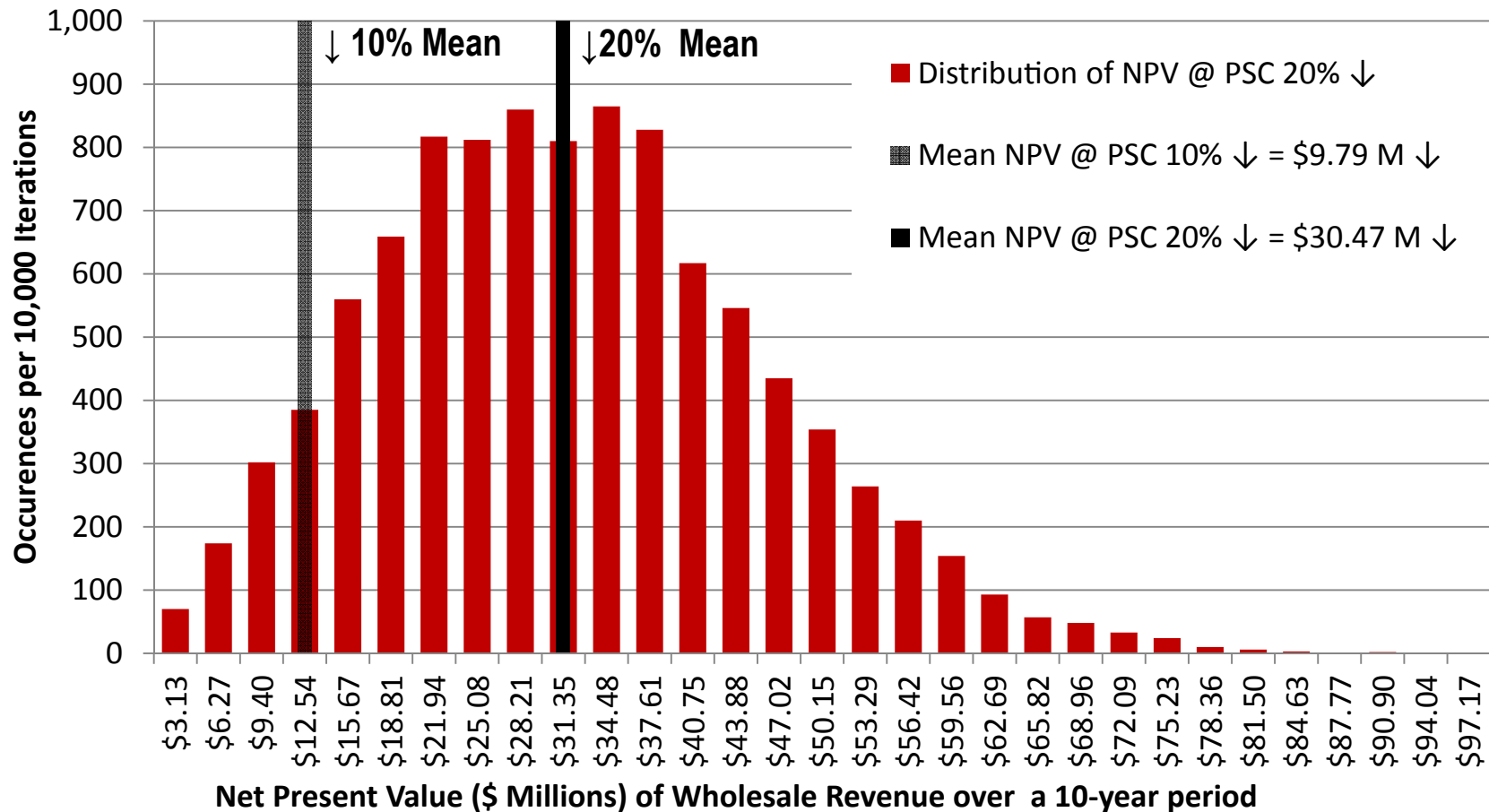


Note: Bin sizes differ from figures shown in report.



Impacts to BSAI TLA Vessels under Scenario A

Figure 5-59 Impacts to BSAI TLA Vessels under Option 2.2—20% Reductions in Halibut PSC Limits

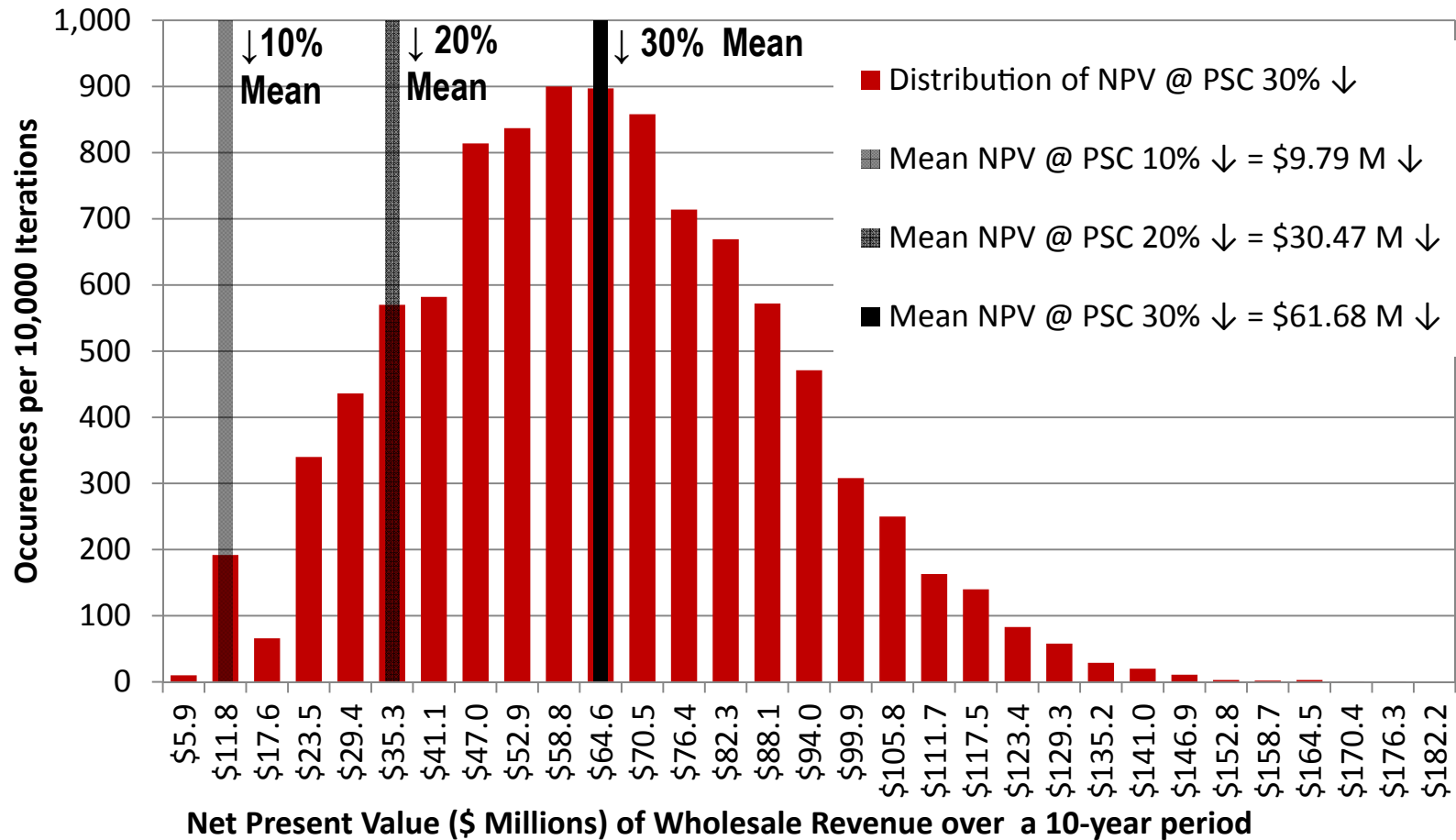


Note: Bin sizes differ from figures shown in report.



Impacts to BSAI TLA Vessels under Scenario A

Figure 5-61 Impacts to BSAI TLA Vessels under Option 2.3—30% Reductions in Halibut PSC Limits

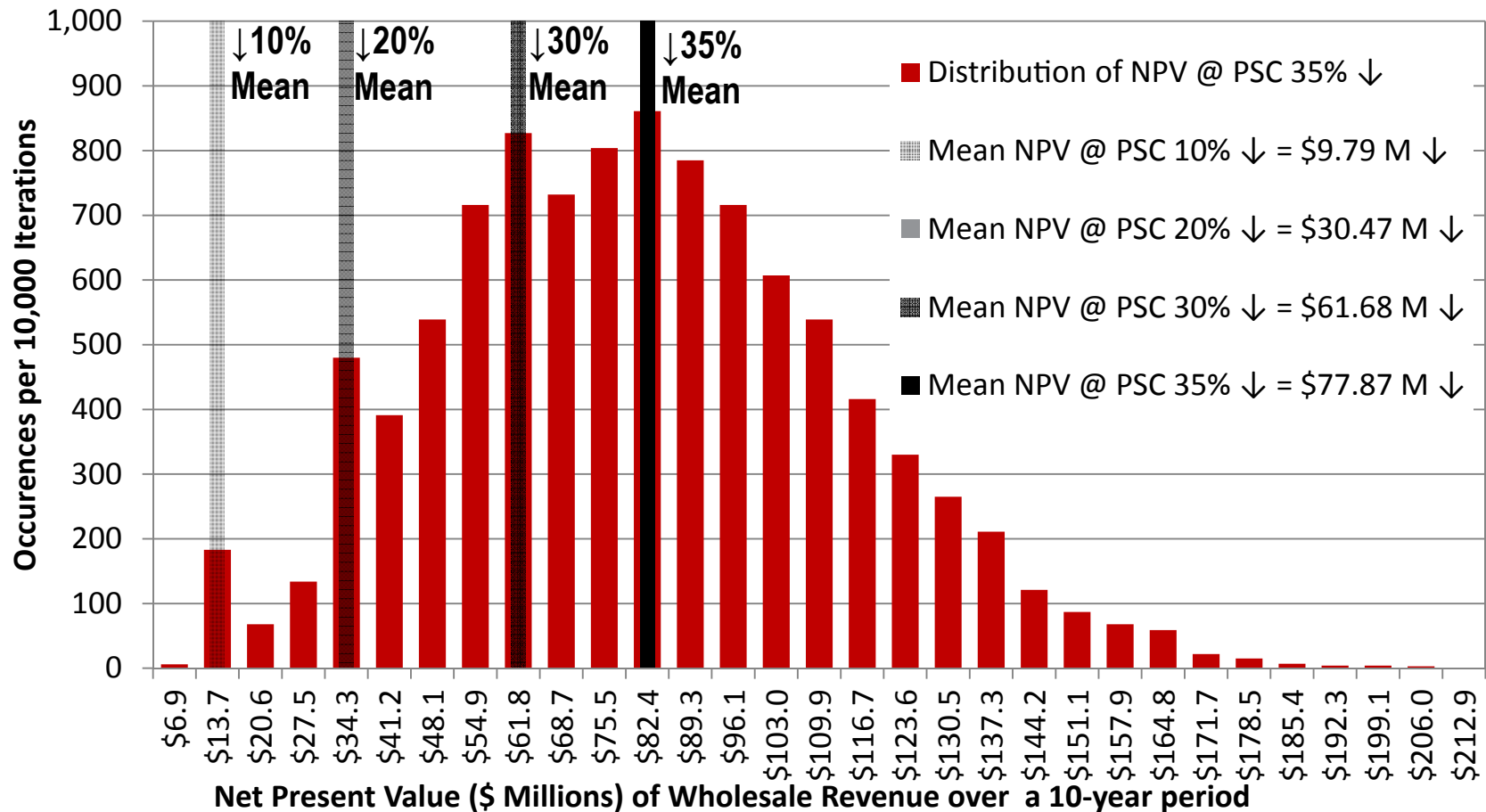


Note: Bin sizes differ from figures shown in report.



Impacts to BSAI TLA Vessels under Scenario A

Figure 5-63 Impacts to BSAI TLA Vessels under Option 2.4—35% Reductions in Halibut PSC Limits

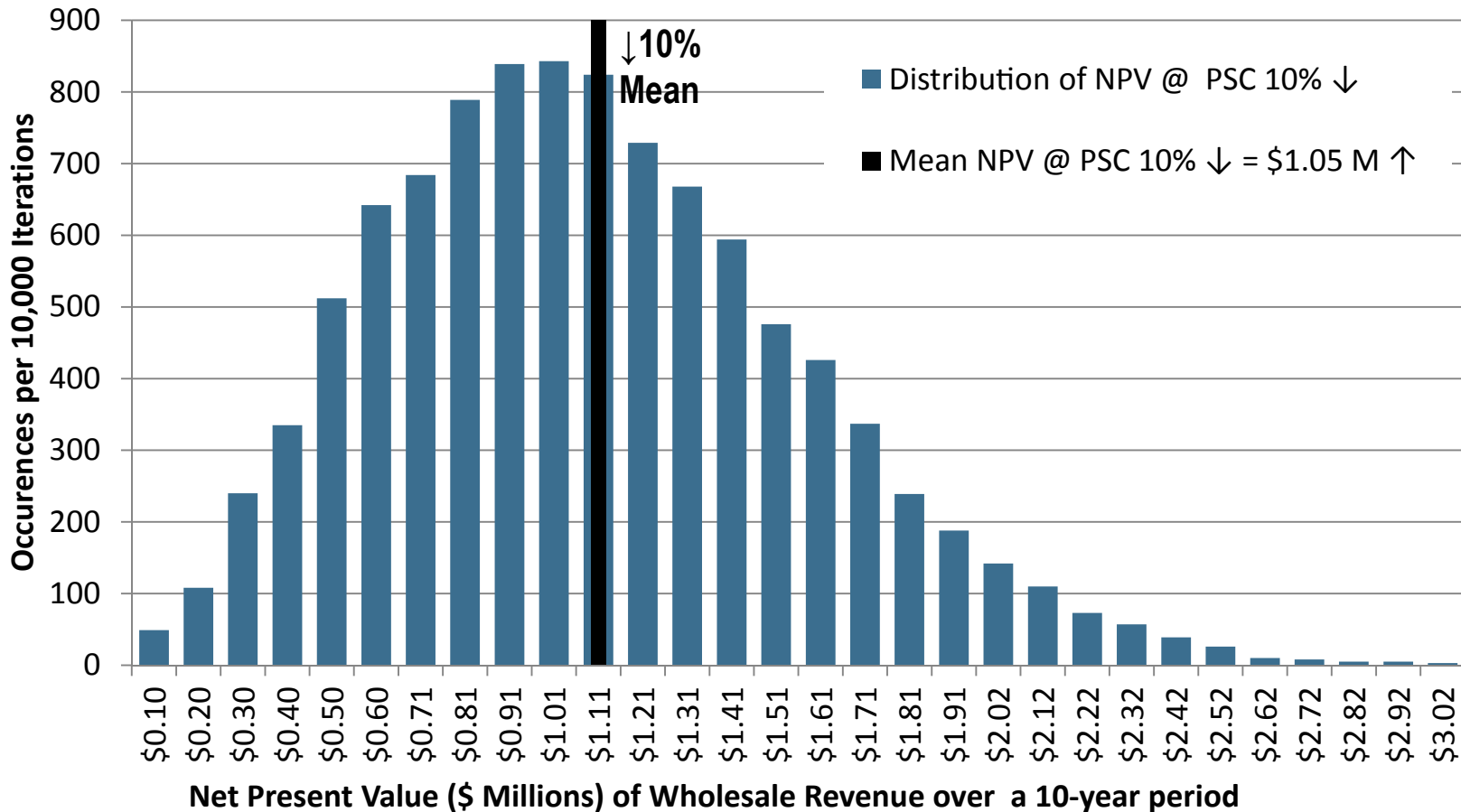


Note: Bin sizes differ from figures shown in report.



Halibut Fishery Net Present Values – BSAI TLA Reductions under Scenario A

Figure 5-58 10-year Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 2.1

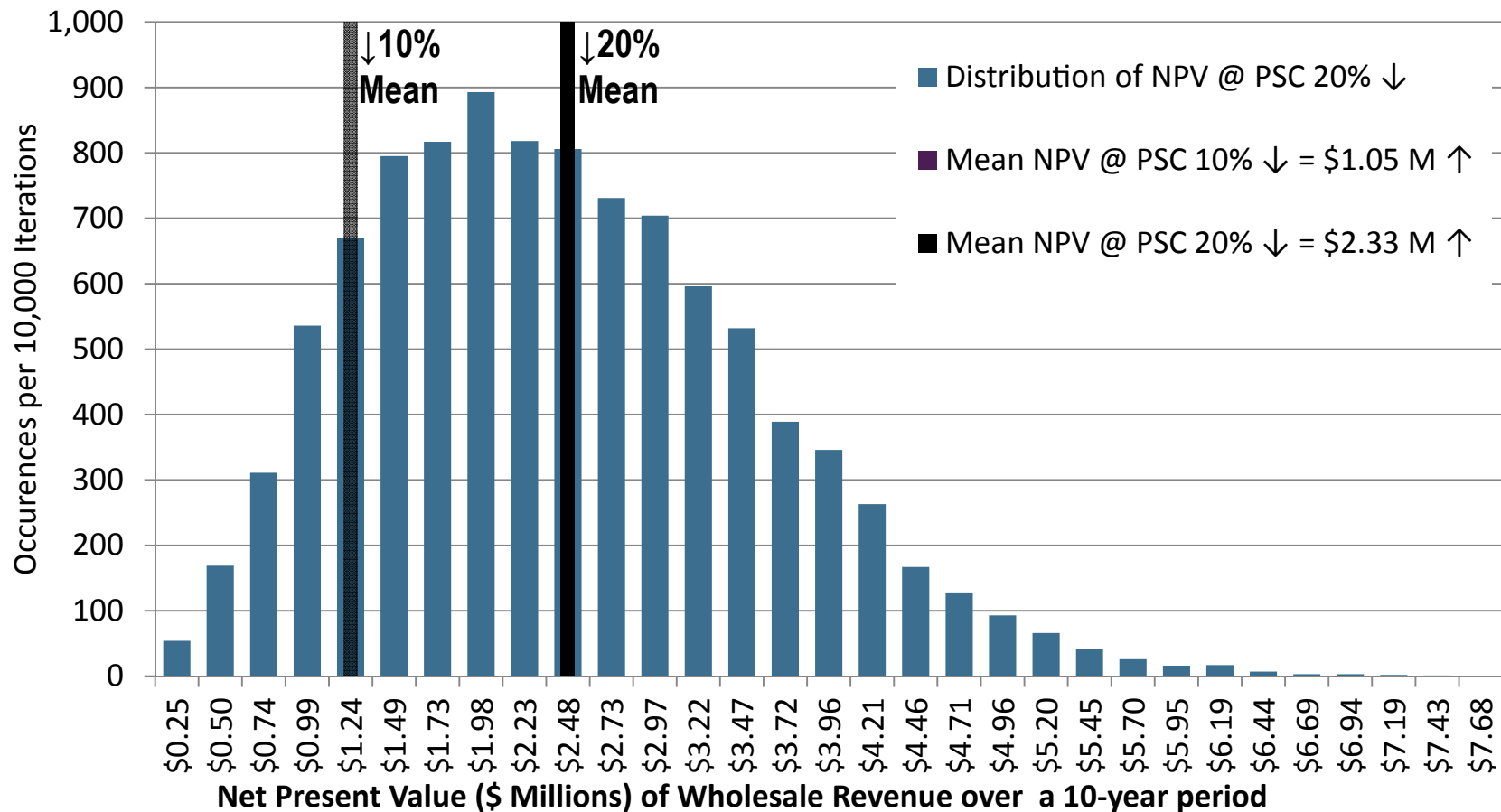


Note: Bin sizes differ from figures shown in report.



Halibut Fishery Net Present Values – BSAI TLA Reductions under Scenario A

Figure 5-60 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 2.2

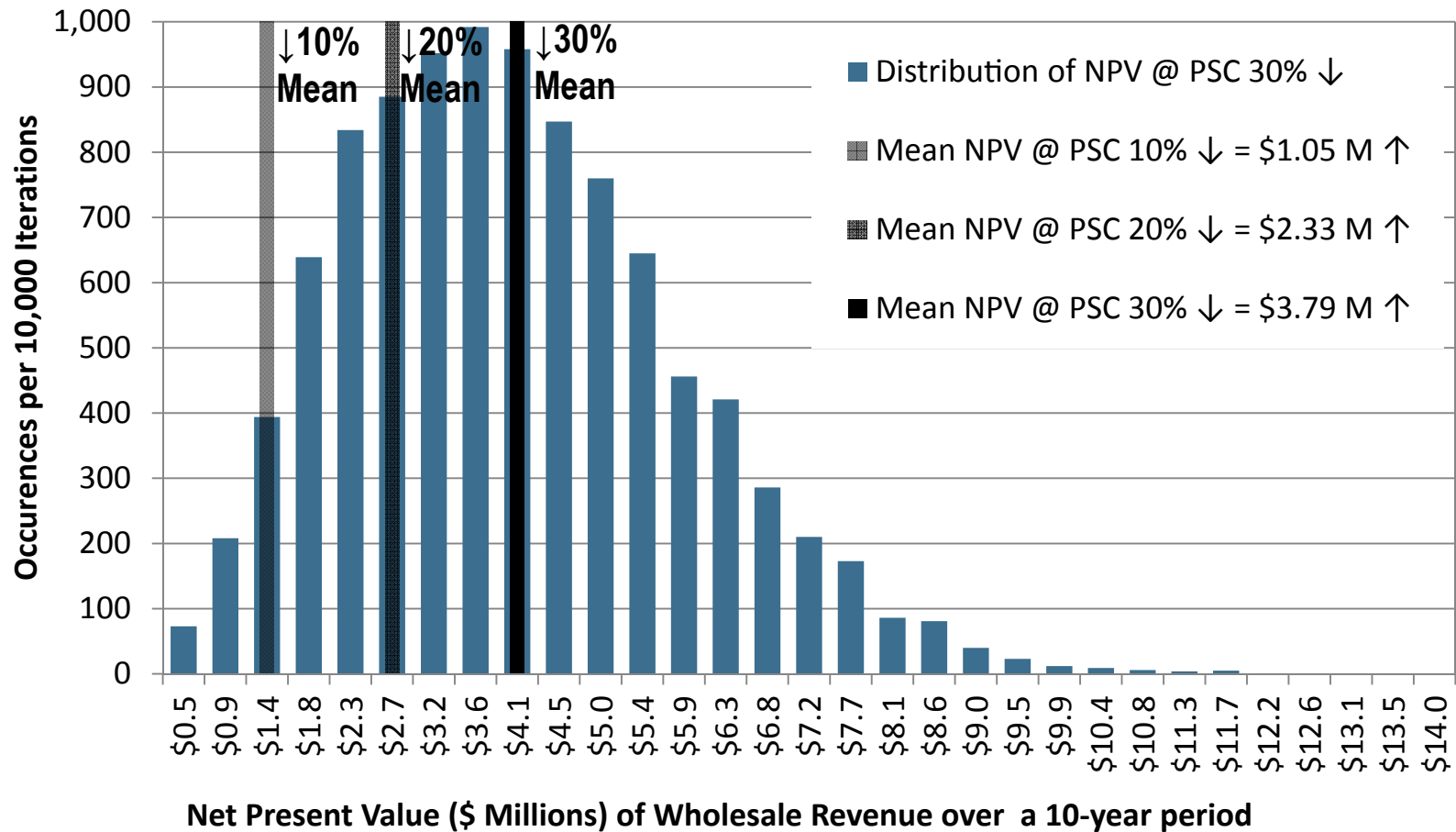


Note: Bin sizes differ from figures shown in report.



Halibut Fishery Net Present Values – BSAI TLA Reductions under Scenario A

Figure 5-62 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 2.3

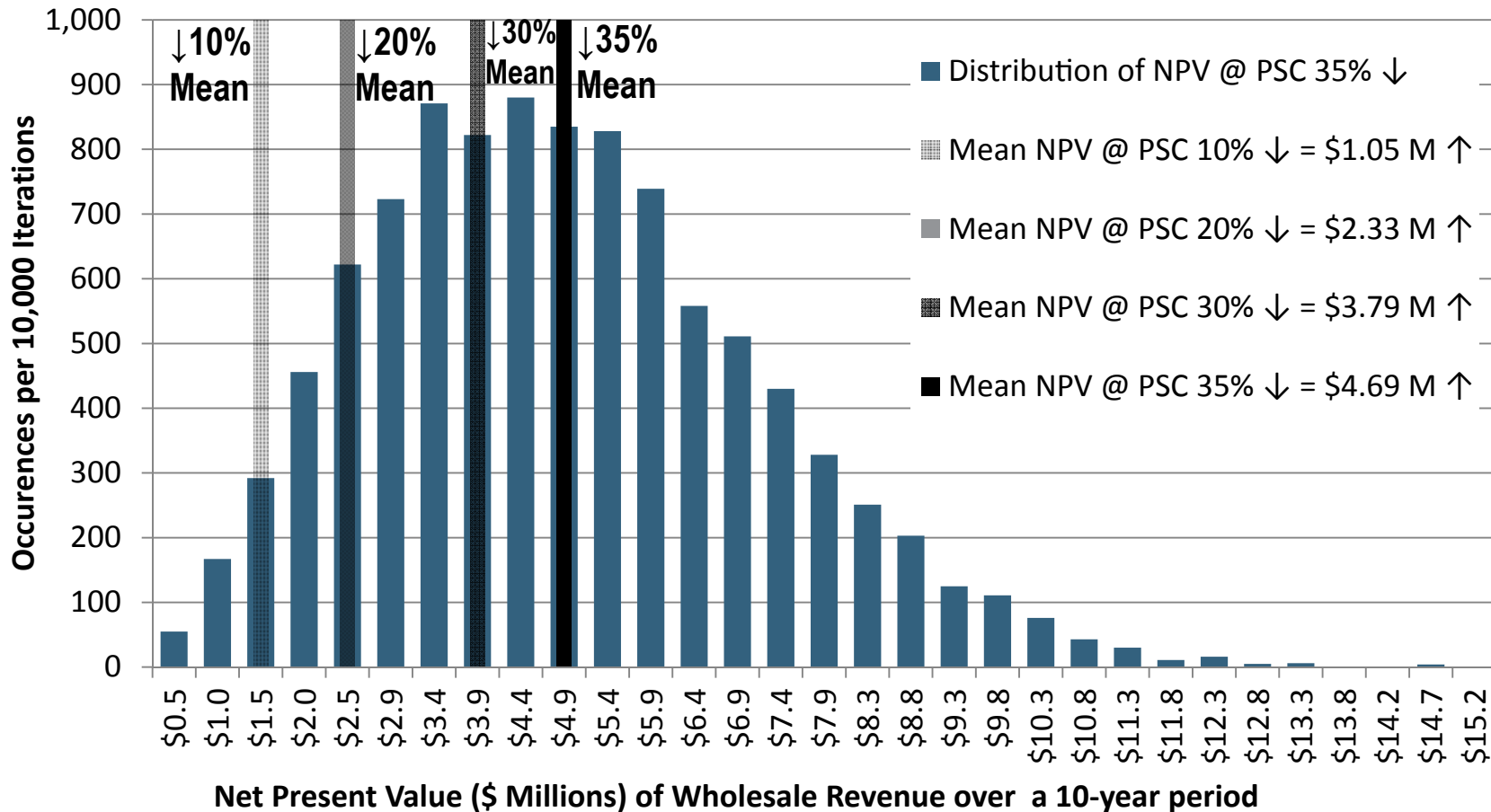


Note: Bin sizes differ from figures shown in report.



Halibut Fishery Net Present Values – BSAI TLA Reductions under Scenario A

Figure 5-64 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 2.4

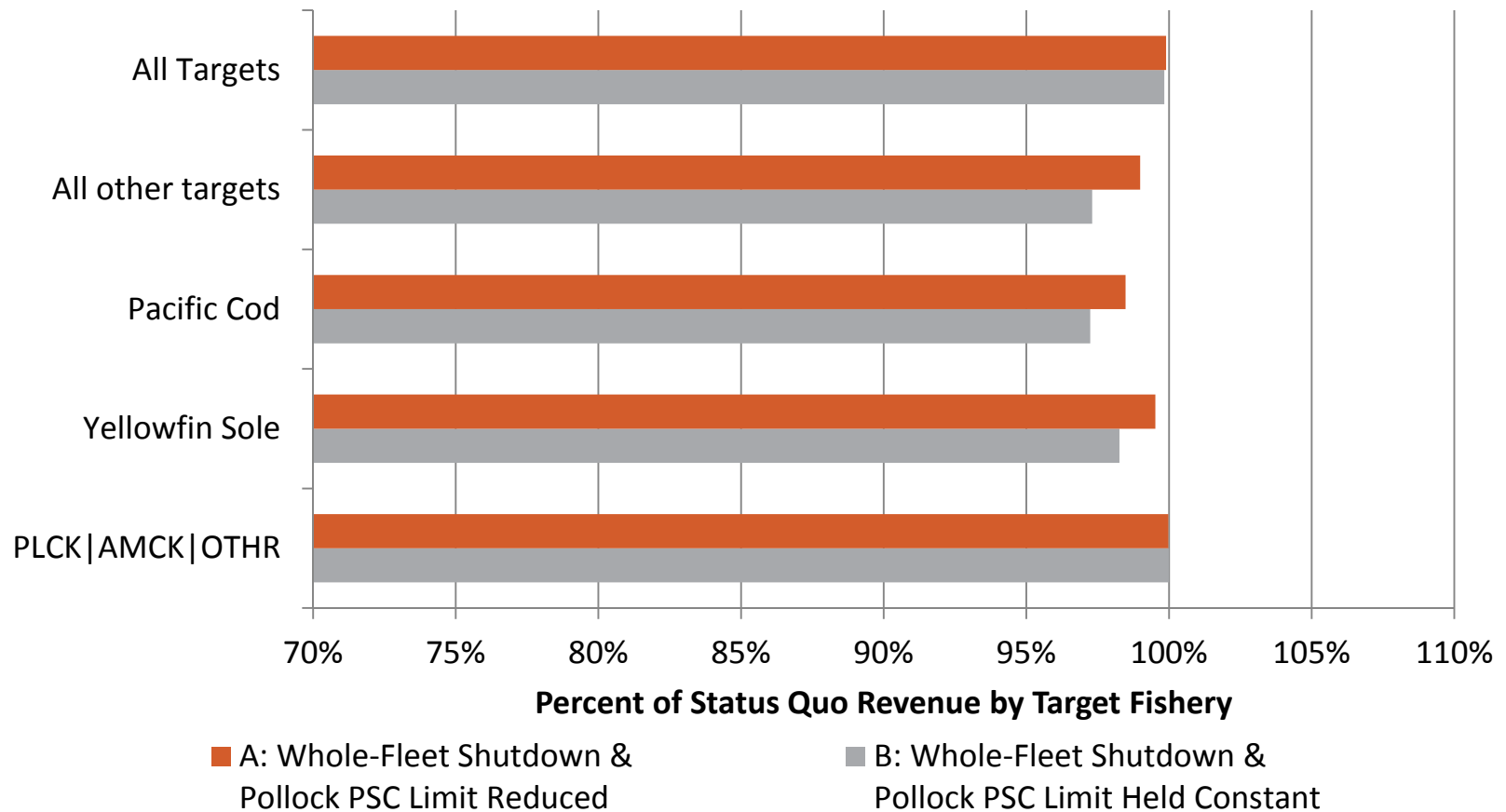


Note: Bin sizes differ from figures shown in report.



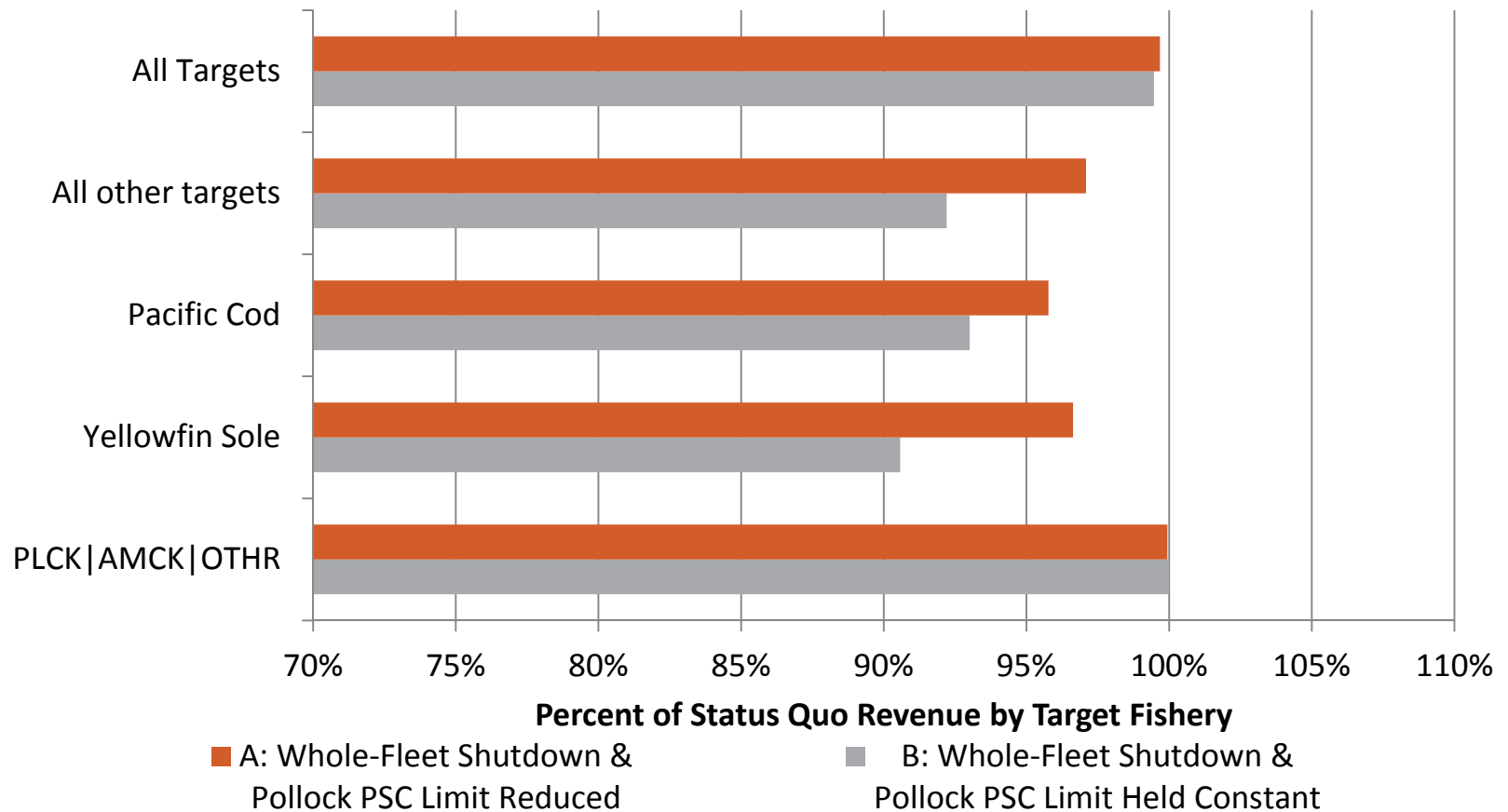
Changes in BSAI TLA Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-57 Impacts to BSAI TLA Vessels under Option 2.1—10% Reductions in Halibut PSC Limits



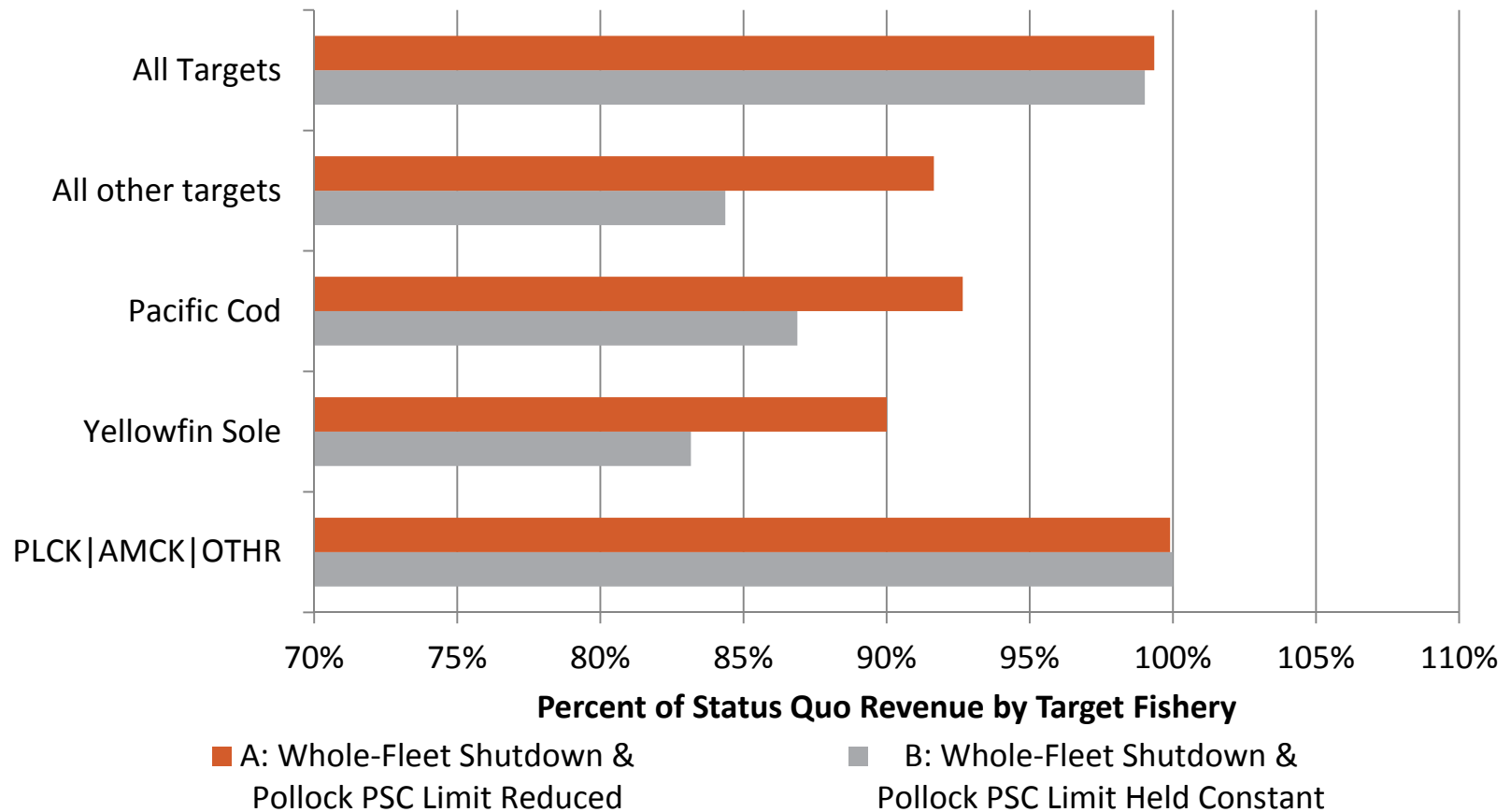
Changes in BSAI TLA Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-59 Impacts to BSAI TLA Vessels under Option 2.2—20% Reductions in Halibut PSC Limits



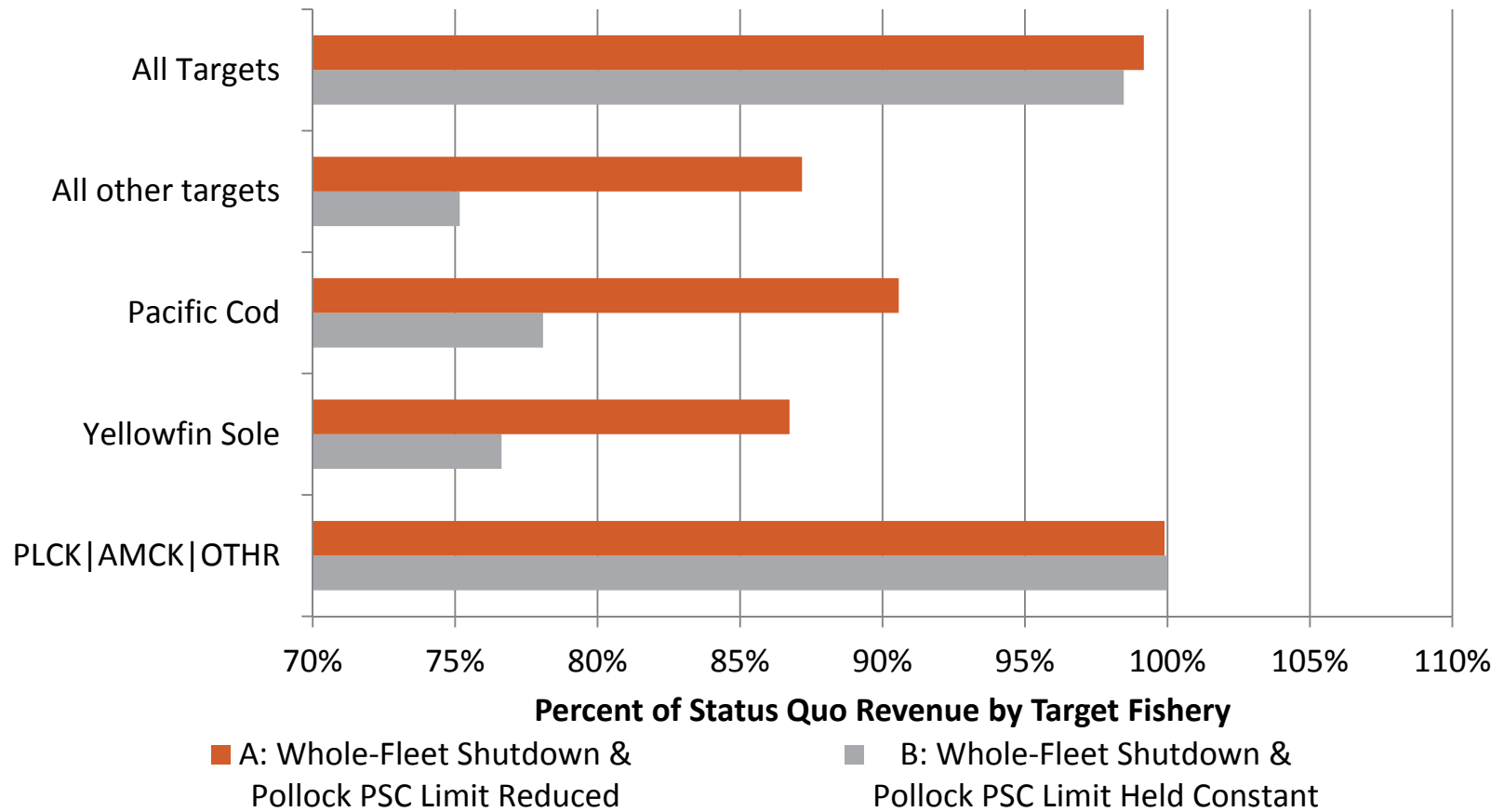
Changes in BSAI TLA Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-61 Impacts to BSAI TLA Vessels under Option 2.3—30% Reductions in Halibut PSC Limits



Changes in BSAI TLA Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-63 Impacts to BSAI TLA Vessels under Option 2.4—35% Reductions in Halibut PSC Limits



Questions?

Overall Results Table in the Executive Summary

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million
					4A	4B	4CDE		
Halibut Mortality (round mt)				net weight pounds (1,000s)					
Options Affecting BSAI TLA									
2.1 @ 10%	875	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4
2.2 @ 20%		700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3
2.3 @ 30%		613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6
2.4 @ 35%		569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8
Options Affecting A80-CPs									
3.1 @ 10%	2,325	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6
3.2 @ 20%		1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%		1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46
3.4 @ 35%		1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58
Options Affecting LGL-CVs									
All options	15	3	10–14	There are no material impacts under any of the options					
Options Affecting LGL-CPs									
5.1 @ 10%	760	684		There are no material impacts under this option					
5.2 @ 20%		521	608	There are no material impacts under this option					
5.3 @ 30%		532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%		494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs									
6.1 @ 10%	393	354		There are no material impacts under this option					
6.2 @ 20%		210	314	There are no material impacts under this option					
6.3 @ 30%		275		There are no material impacts under this option					
6.4 @ 35%		255	2 – 2	\$0.5 – \$2	0.5 – 1.2	0.0 – 0.0	1.7 – 0.3	0.3 – 0.2	\$0.23 – \$0.16
Options Affecting Hook and Line for Other Targets									
All options	58	5	38–52	There are no material impacts under any of the options					

Results Categorized by Sector/Suboption

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
	Halibut Mortality (round mt)				4A	4B	4CDE			net weight pounds (1,000s)
Options Affecting BSAI TLA										
2.1 @ 10%	875	700	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4
2.2 @ 20%			700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3
2.3 @ 30%			613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6
2.4 @ 35%			569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2,037	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6
3.2 @ 20%			1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%			1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46
3.4 @ 35%			1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	521	684	There are no material impacts under this option						
5.2 @ 20%			608	There are no material impacts under this option						
5.3 @ 30%			532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%			494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs										

Reductions in BSAI PSC, and Savings to Halibut Fishery by area

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
					4A	4B	4CDE			
Halibut Mortality (round mt)			net weight pounds (1,000s)							
Options Affecting BSAI TLA										
2.1 @ 10%	875	700	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4
2.2 @ 20%			700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3
2.3 @ 30%			613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6
2.4 @ 35%			569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2,037	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6
3.2 @ 20%			1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%			1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46
3.4 @ 35%			1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	521	684	There are no material impacts under this option						
5.2 @ 20%			608	There are no material impacts under this option						
5.3 @ 30%			532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%			494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs										

The first number in the range represents Scenario A

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
					4A	4B	4CDE			
Halibut Mortality (round mt)				net weight pounds (1,000s)						
Options Affecting BSAI TLA										
2.1 @ 10%	875	700	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4
2.2 @ 20%			700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3
2.3 @ 30%			613	44 – 70	\$62 – \$92	5.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6
2.4 @ 35%			569	55 – 99	\$78 – \$145	17.4 – 37.2	1.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2,037	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6
3.2 @ 20%			1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%			1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46
3.4 @ 35%			1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	521	684	There are no material impacts under this option						
5.2 @ 20%			608	There are no material impacts under this option						
5.3 @ 30%			532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%			494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs										

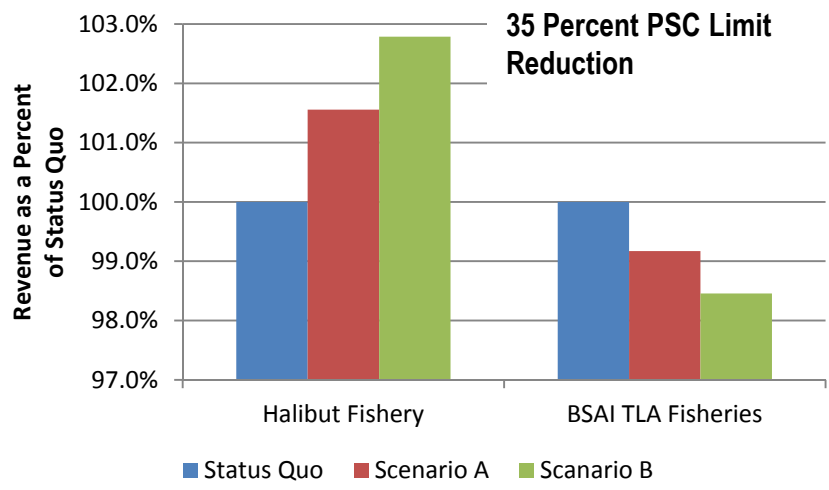
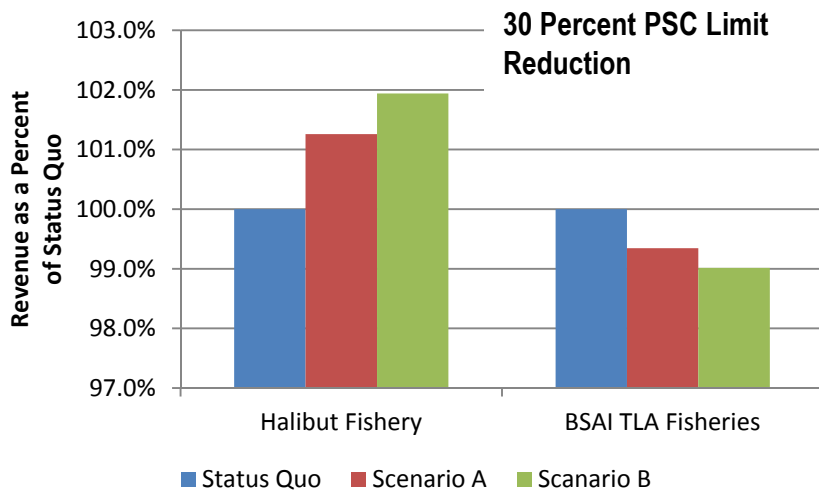
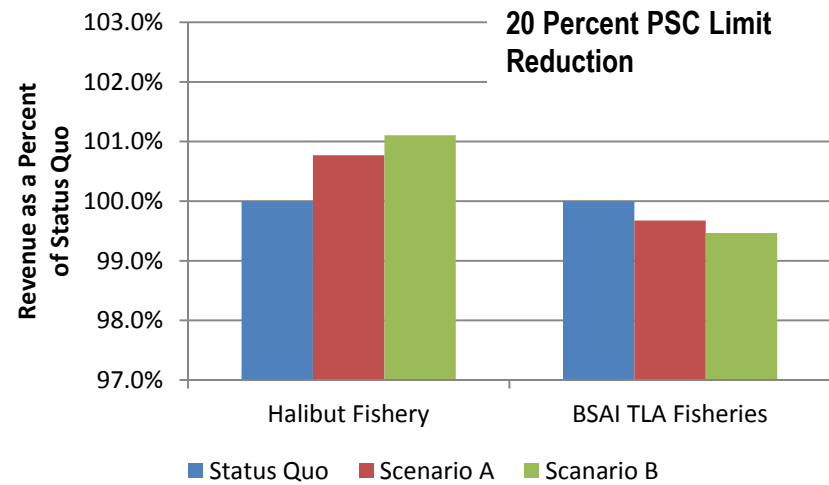
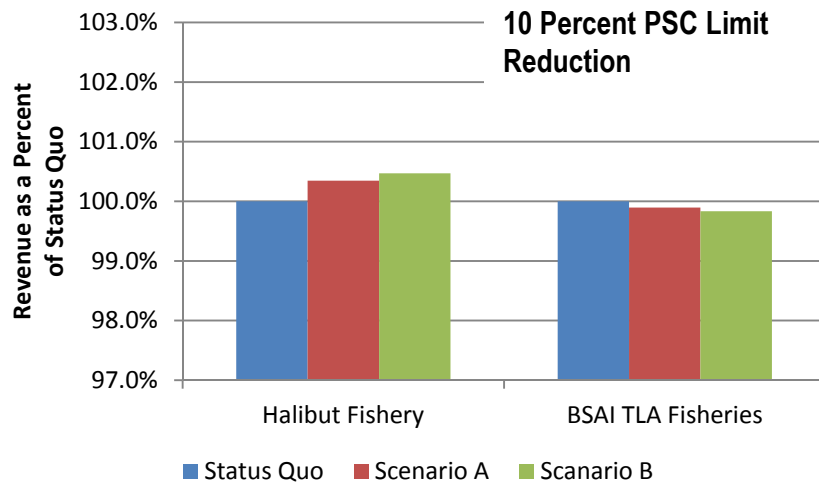
Histograms of revenue for both Scenario A & Scenario B are summarized here

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV	
				2013\$ Million	4A	4B	4CDE		net weight pounds (1,000s)	2013\$ Million
Halibut Mortality (round mt)										
Options Affecting BSAI TLA										
2.1 @ 10%	875	700	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4
2.2 @ 20%			700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3
2.3 @ 30%			613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6
2.4 @ 35%			569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2,037	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6
3.2 @ 20%			1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%			1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46
3.4 @ 35%			1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	521	684	There are no material impacts under this option						
5.2 @ 20%			608	There are no material impacts under this option						
5.3 @ 30%			532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%			494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs										

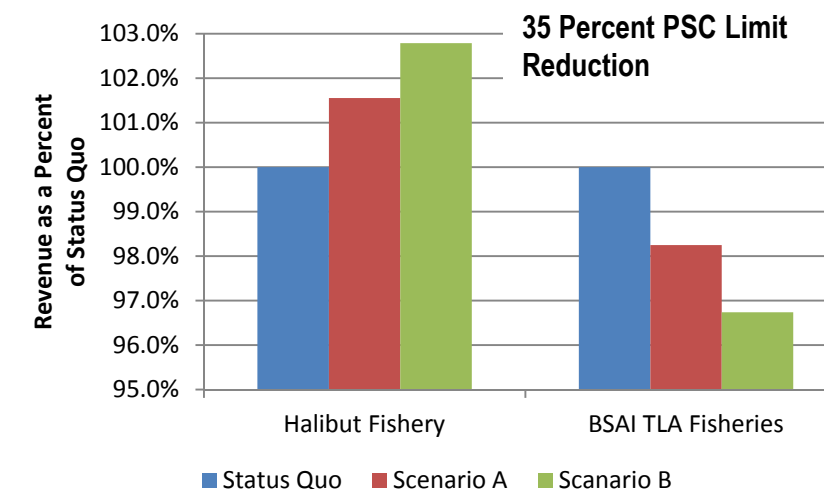
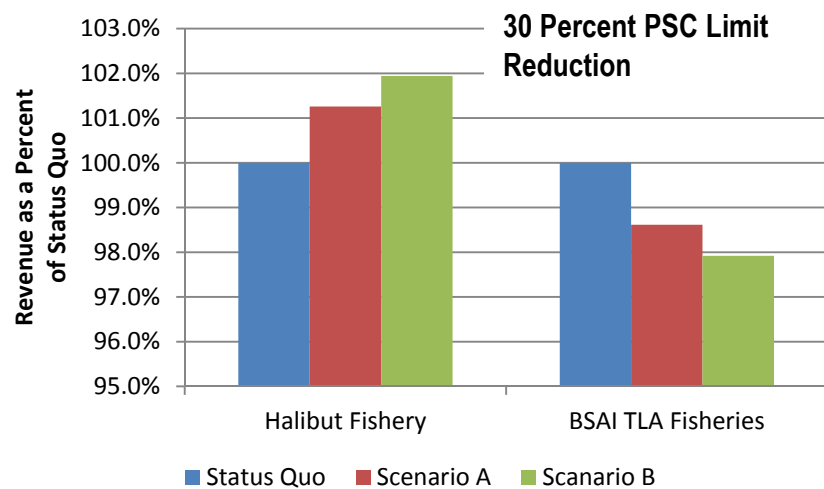
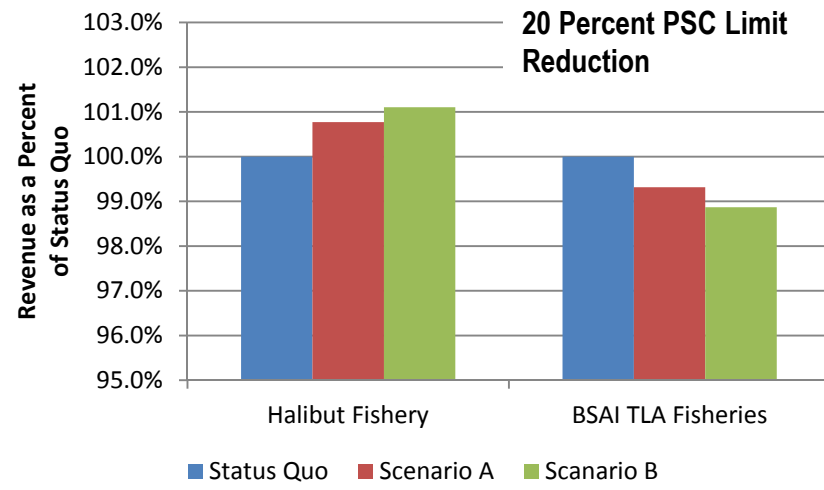
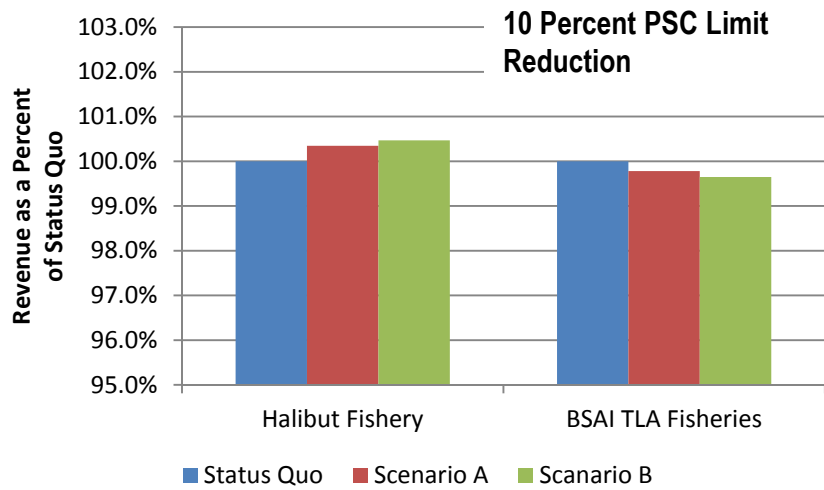
Not in model, but additional Area 4 halibut fishery yield from U26 halibut PSC estimated

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
	Halibut Mortality (round mt)				4A	4B	4CDE			net weight pounds (1,000s)
Options Affecting BSAI TLA										
2.1 @ 10%	875	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4	
2.2 @ 20%		700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3	
2.3 @ 30%		613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6	
2.4 @ 35%		569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8	
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6	
3.2 @ 20%		2,037	1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%		1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46	
3.4 @ 35%		1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58	
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	684	There are no material impacts under this option							
5.2 @ 20%		521	608	There are no material impacts under this option						
5.3 @ 30%		532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5	
5.4 @ 35%		494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6	
Options Affecting CDQs										

Impact Percentages for BSAI TLA PSC Limit Reductions



Impact Percentages for BSAI TLA PSC Limit Reductions—Excluding Pollock Only Vessels

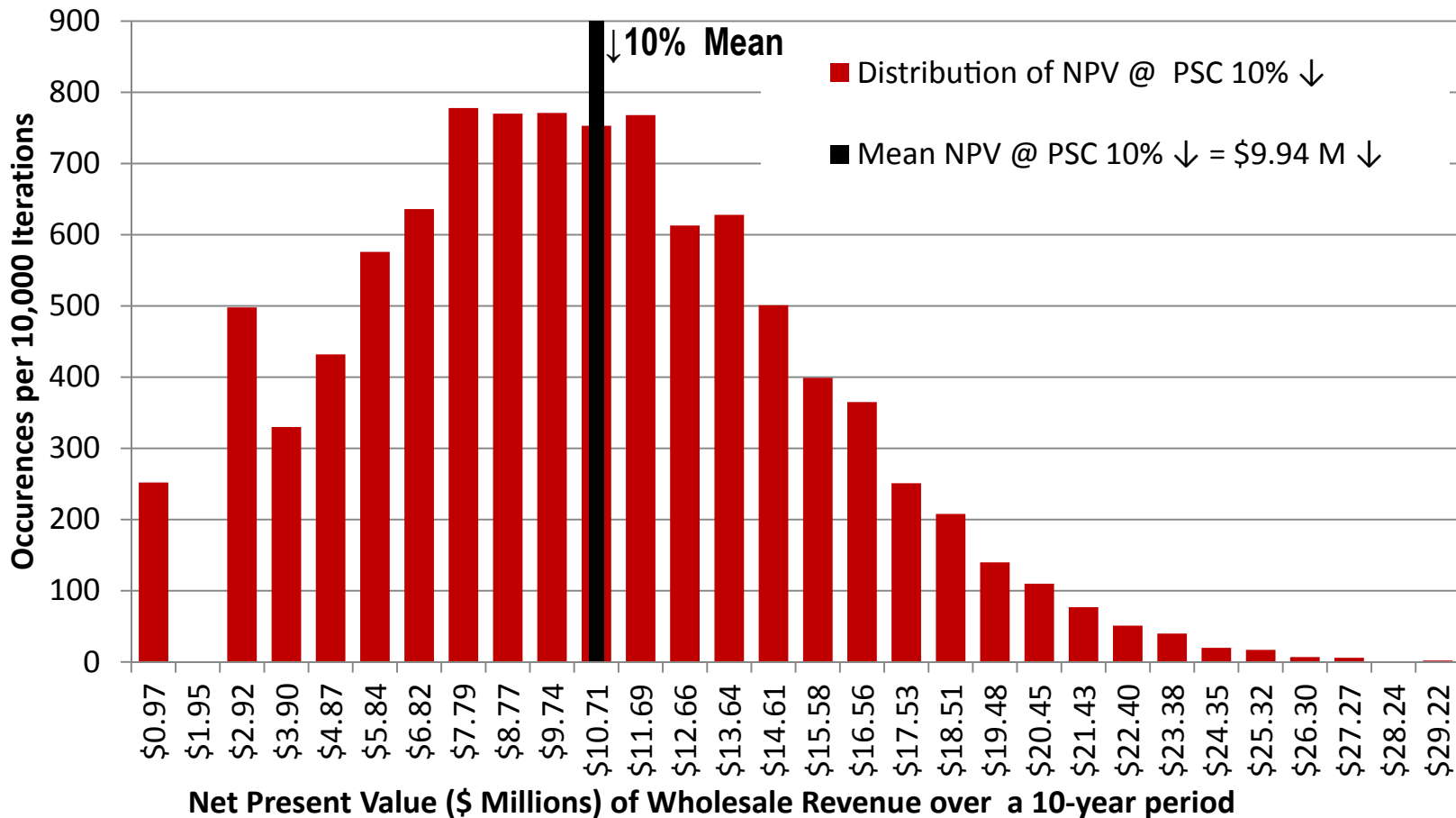


Questions?

Impacts of Options to Reduce PSC Limits for Amendment 80 CPs

Impacts to A80-CPs under Scenario A

Figure 5-65 Impacts to A80-CPs under Option 3.1—10% Reductions in Halibut PSC Limits

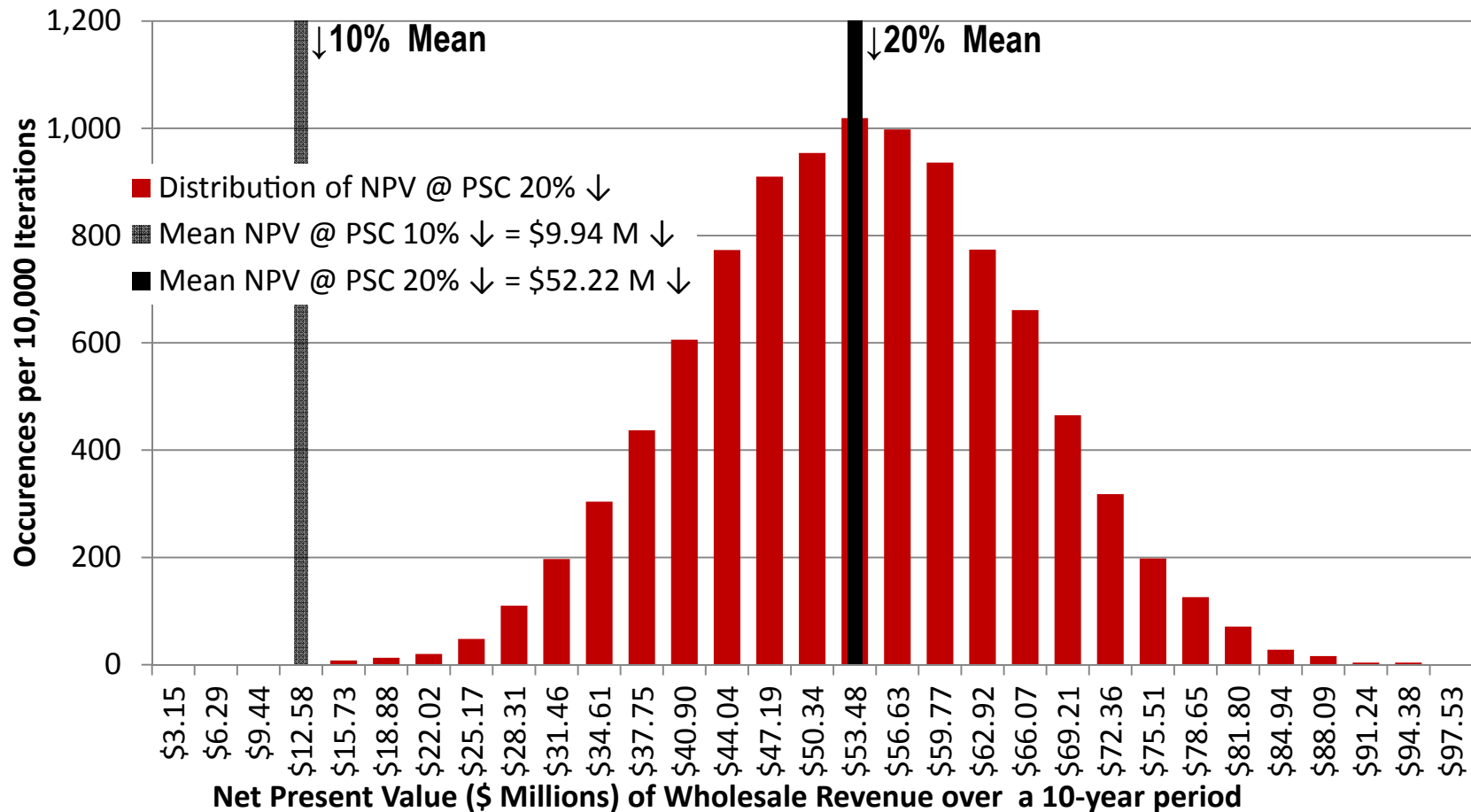


Note: Bin sizes differ from figures shown in report.



Impacts to A80-CPs under Scenario A

Figure 5-67 Impacts to A80-CPs under Option 3.2—20% Reductions in Halibut PSC Limits

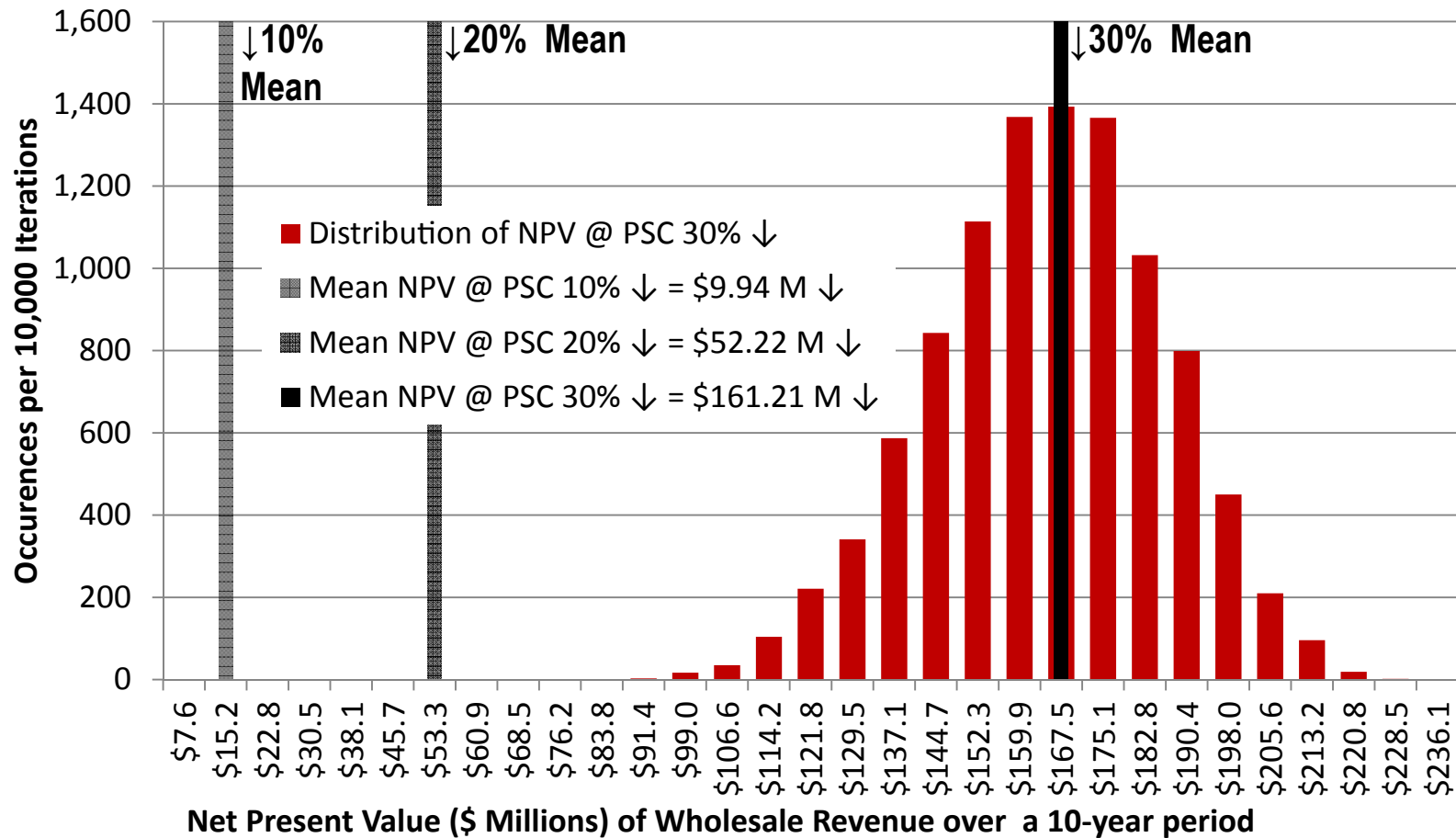


Note: Bin sizes differ from figures shown in report.



Impacts to A80-CPs under Scenario A

Figure 5-69 Impacts to A80-CPs under Option 3.3—30% Reductions in Halibut PSC Limits

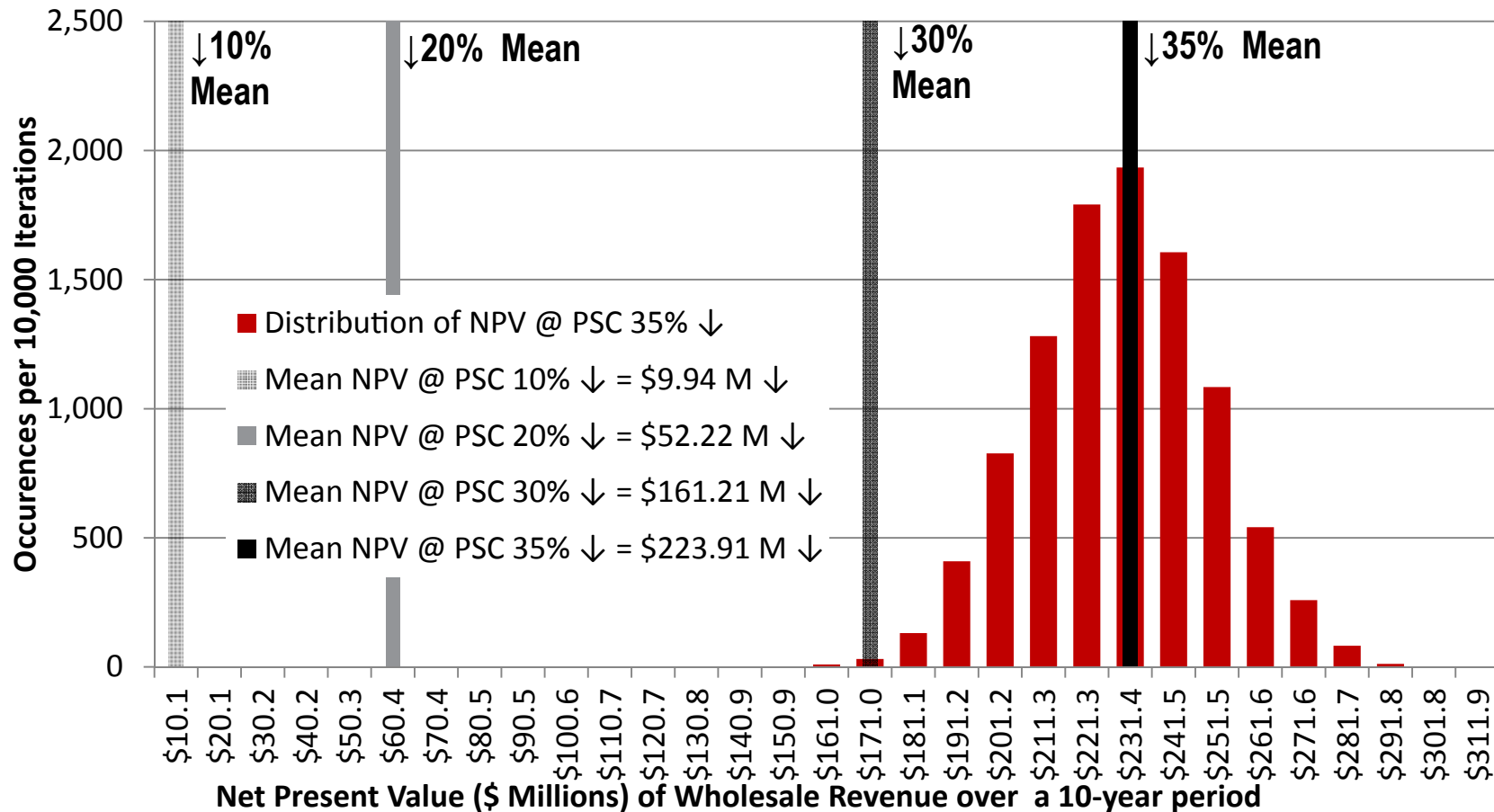


Note: Bin sizes differ from figures shown in report.



Impacts to A80-CPs under Scenario A

Figure 5-71 Impacts to A80-CPs under Option 3.4—35% Reductions in Halibut PSC Limits

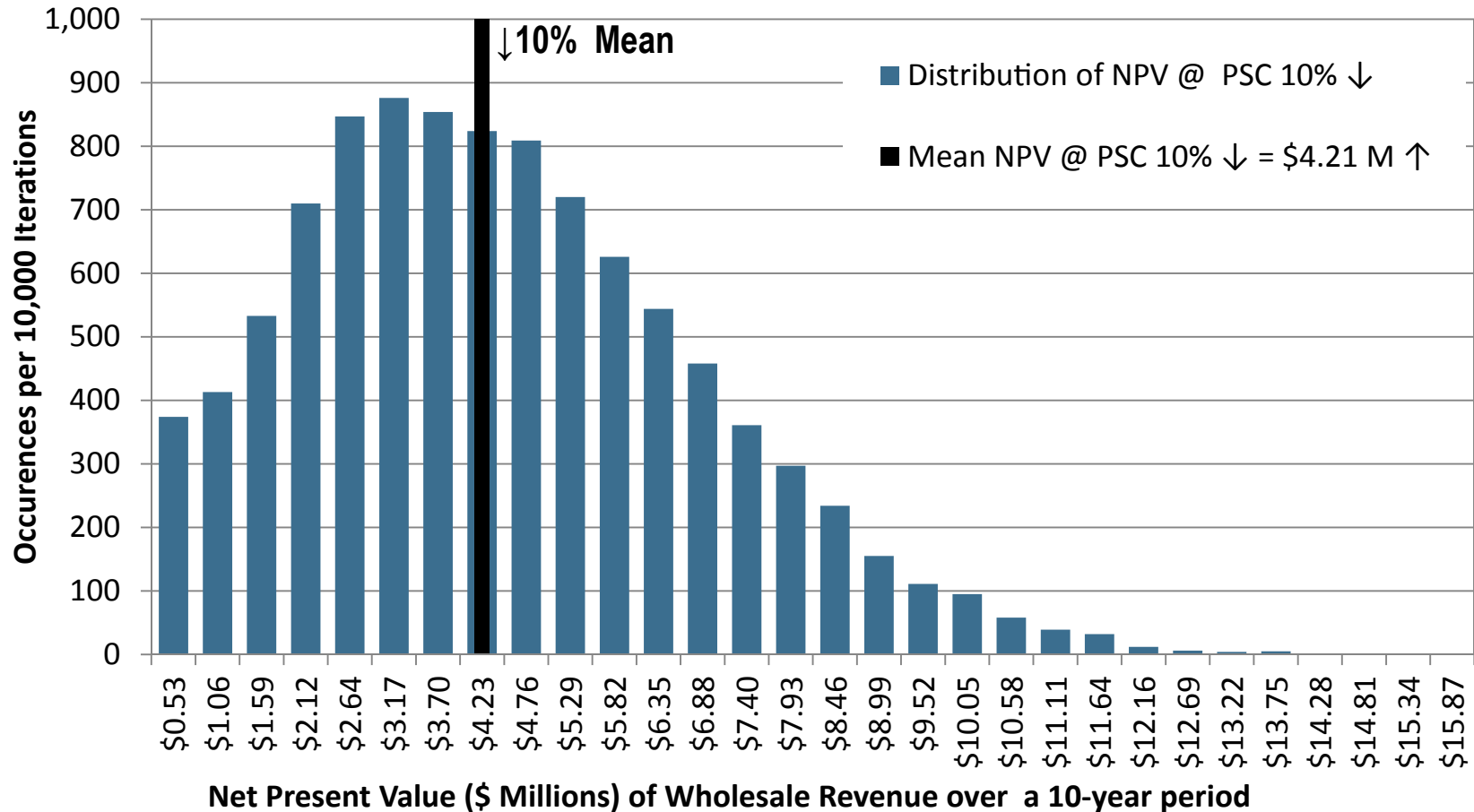


Note: Bin sizes differ from figures shown in report.



Halibut Fishery NPVs – A80-CPS PSC Reductions under Scenario A

Figure 5-66 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 3.1

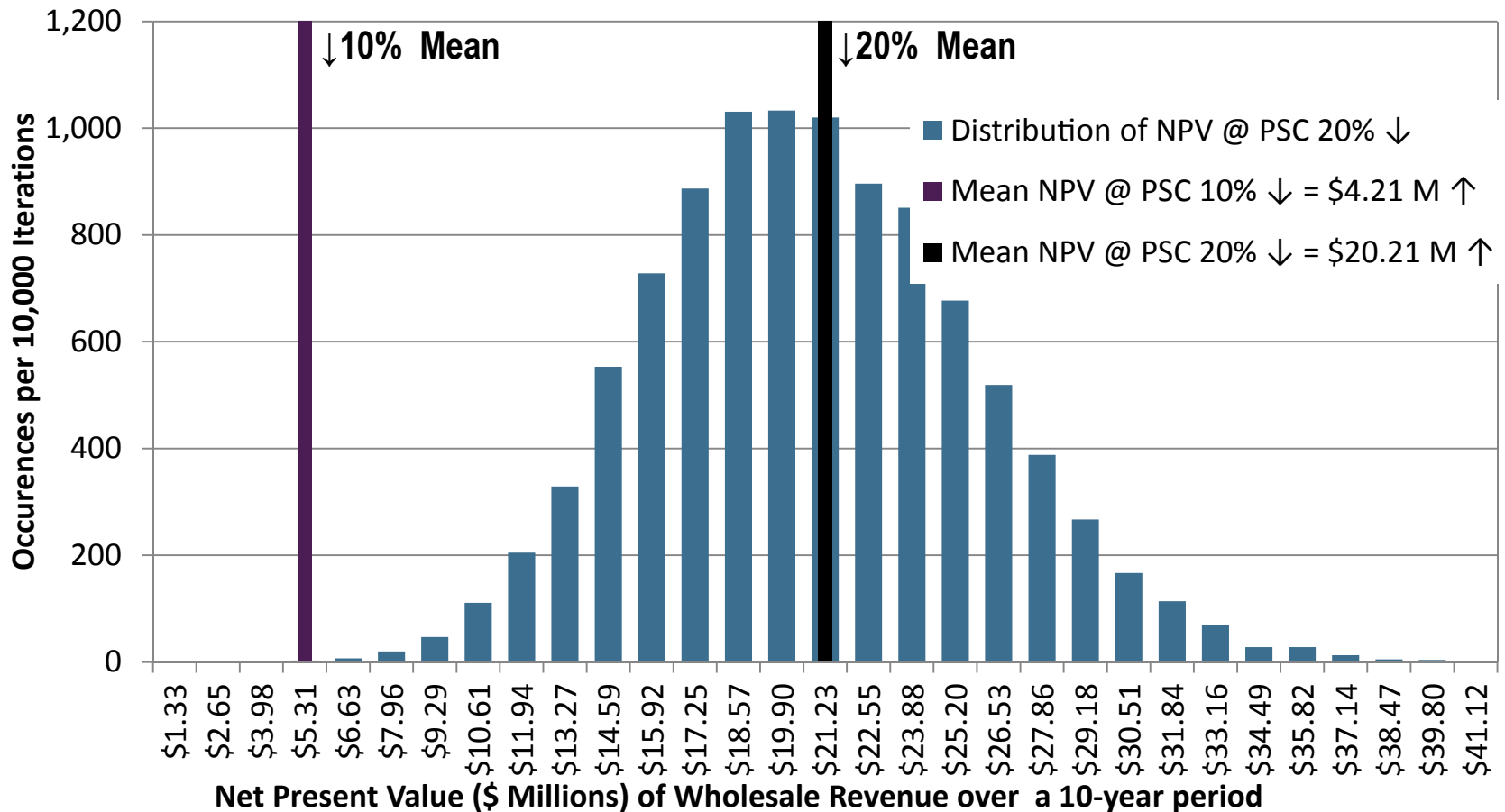


Note: Bin sizes differ from figures shown in report.



Halibut Fishery NPVs – With A80-CPS PSC Reductions under Scenario A

Figure 5-68 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 3.2

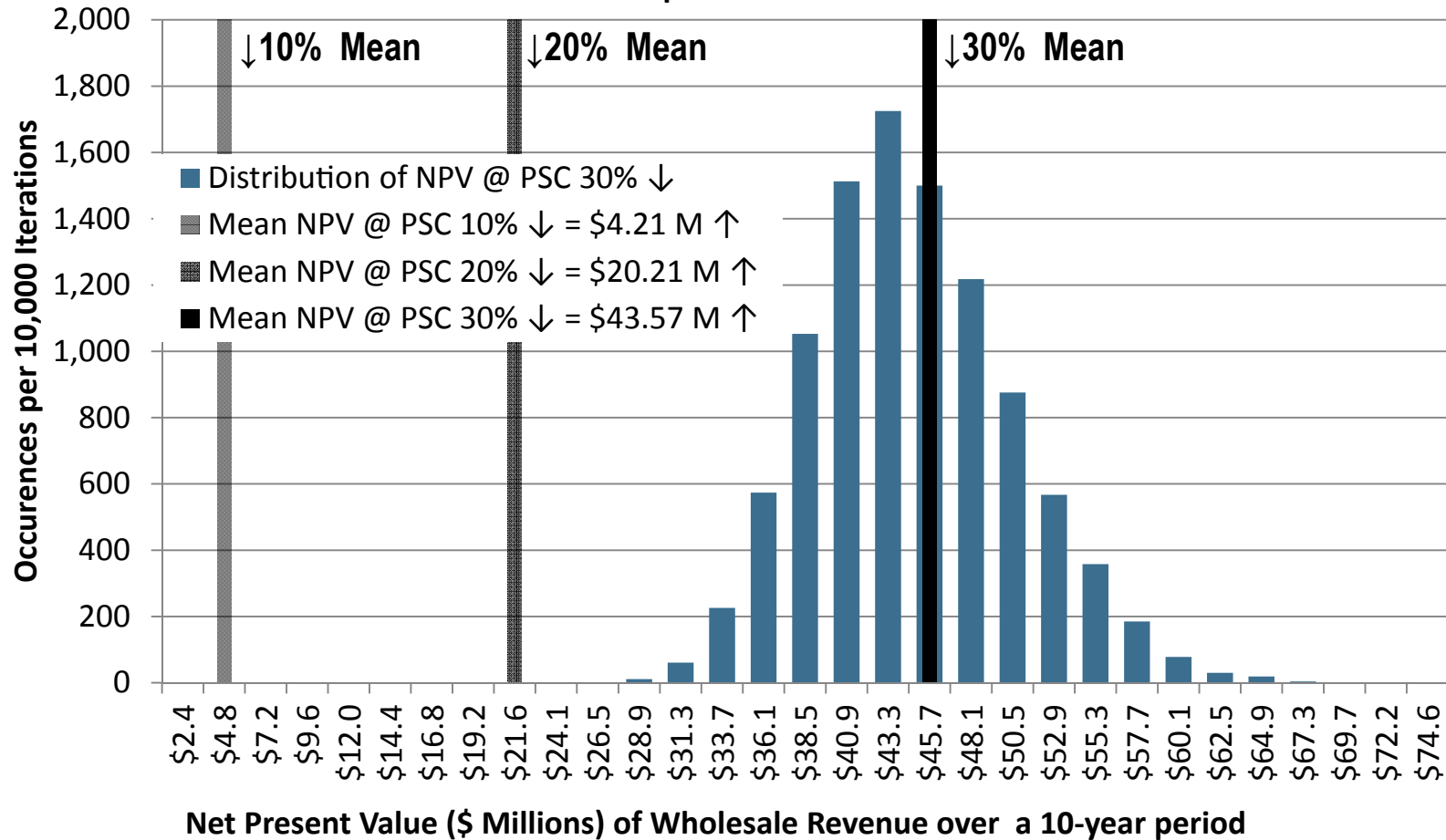


Note: Bin sizes differ from figures shown in report.



Halibut Fishery NPVs – With A80-CPS PSC Reductions under Scenario A

Figure 5-70 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 3.3

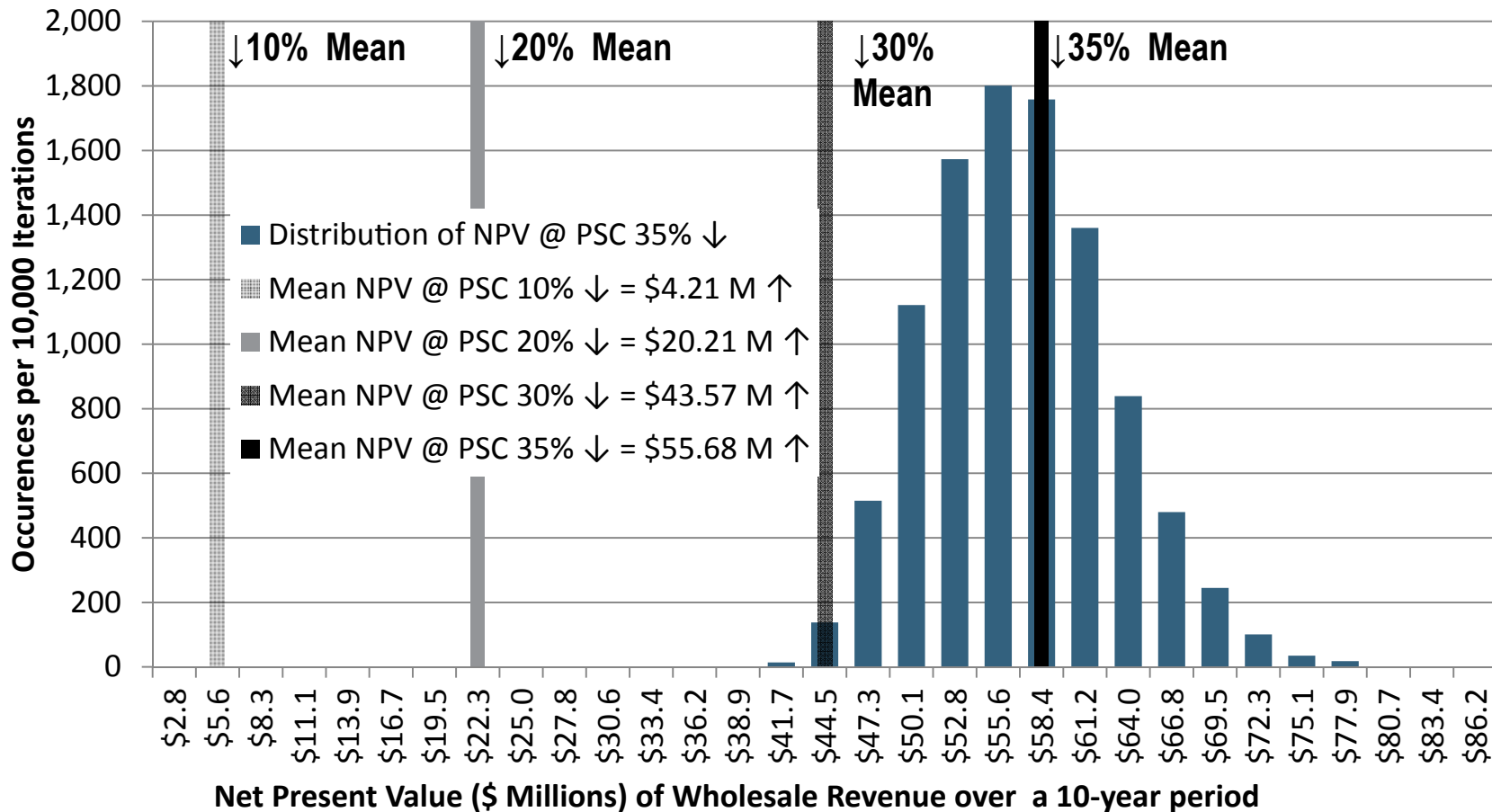


Note: Bin sizes differ from figures shown in report.



Halibut Fishery NPVs – With A80-CPS PSC Reductions under Scenario A

Figure 5-70 Net Present Value of Revenue Impacts to Commercial Halibut Fisheries of Option 3.4

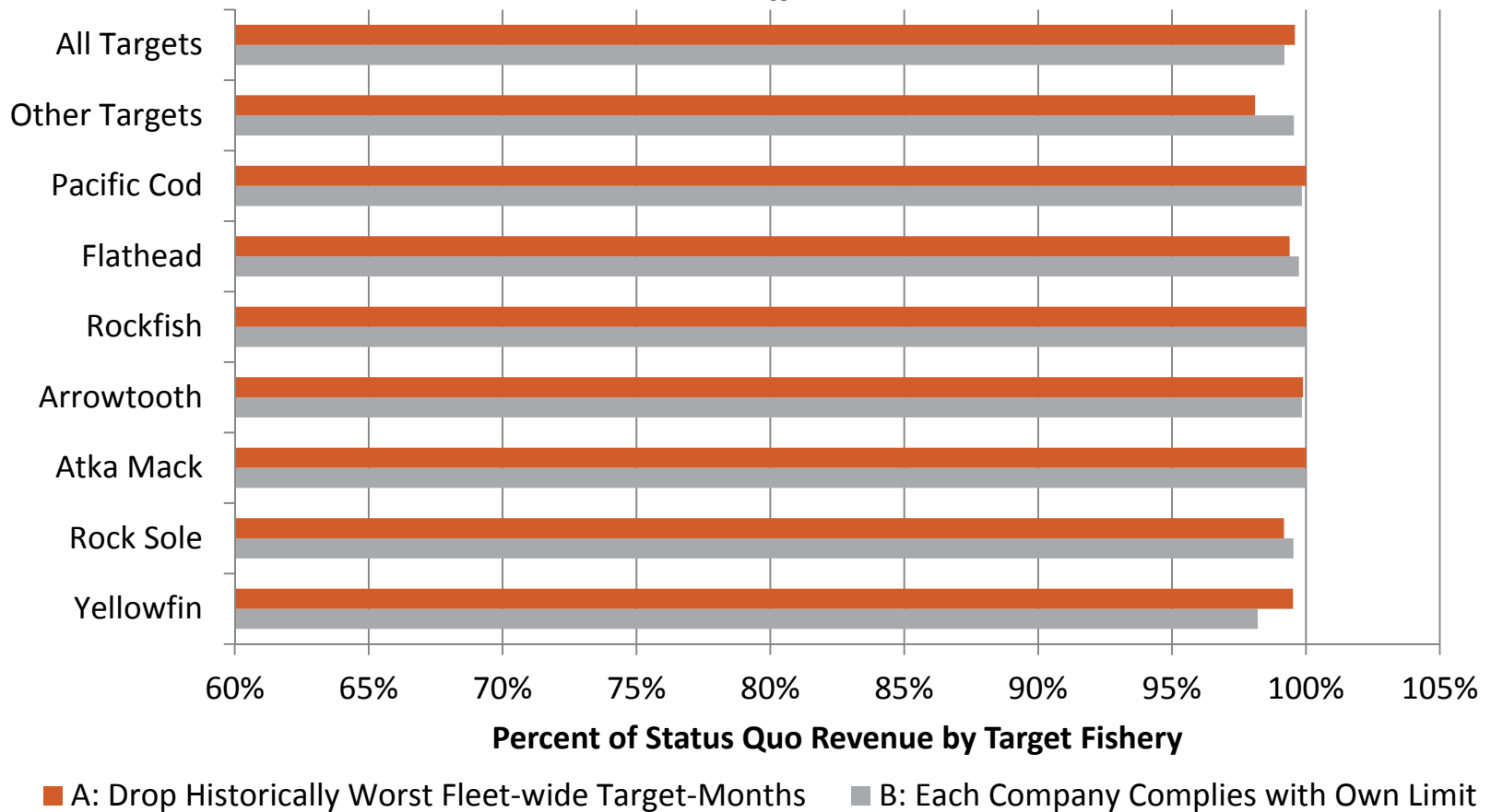


Note: Bin sizes differ from figures shown in report.



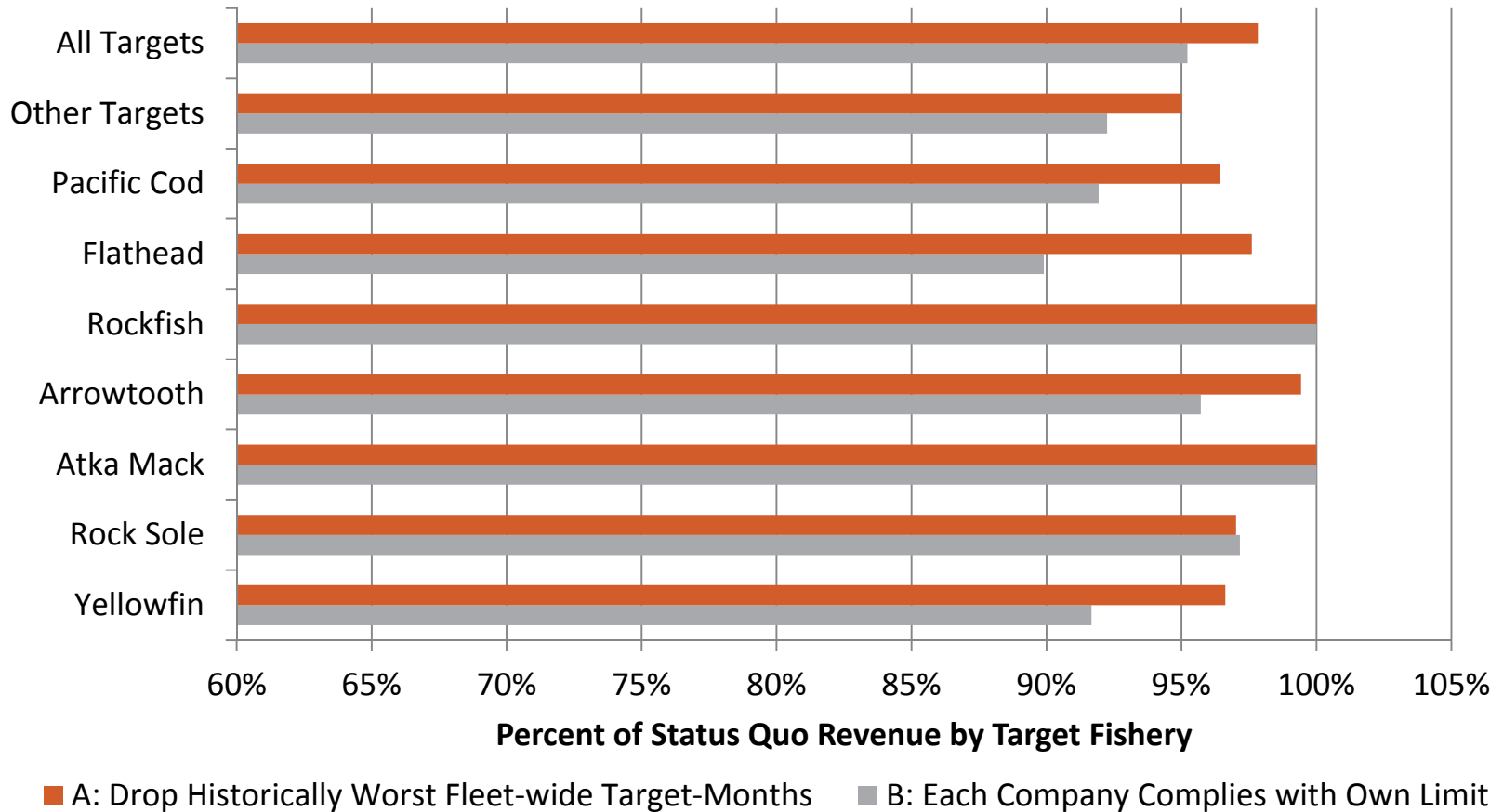
Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-65 Impacts to A80-CPs under Option 3.1—10% Reductions in Halibut PSC Limits



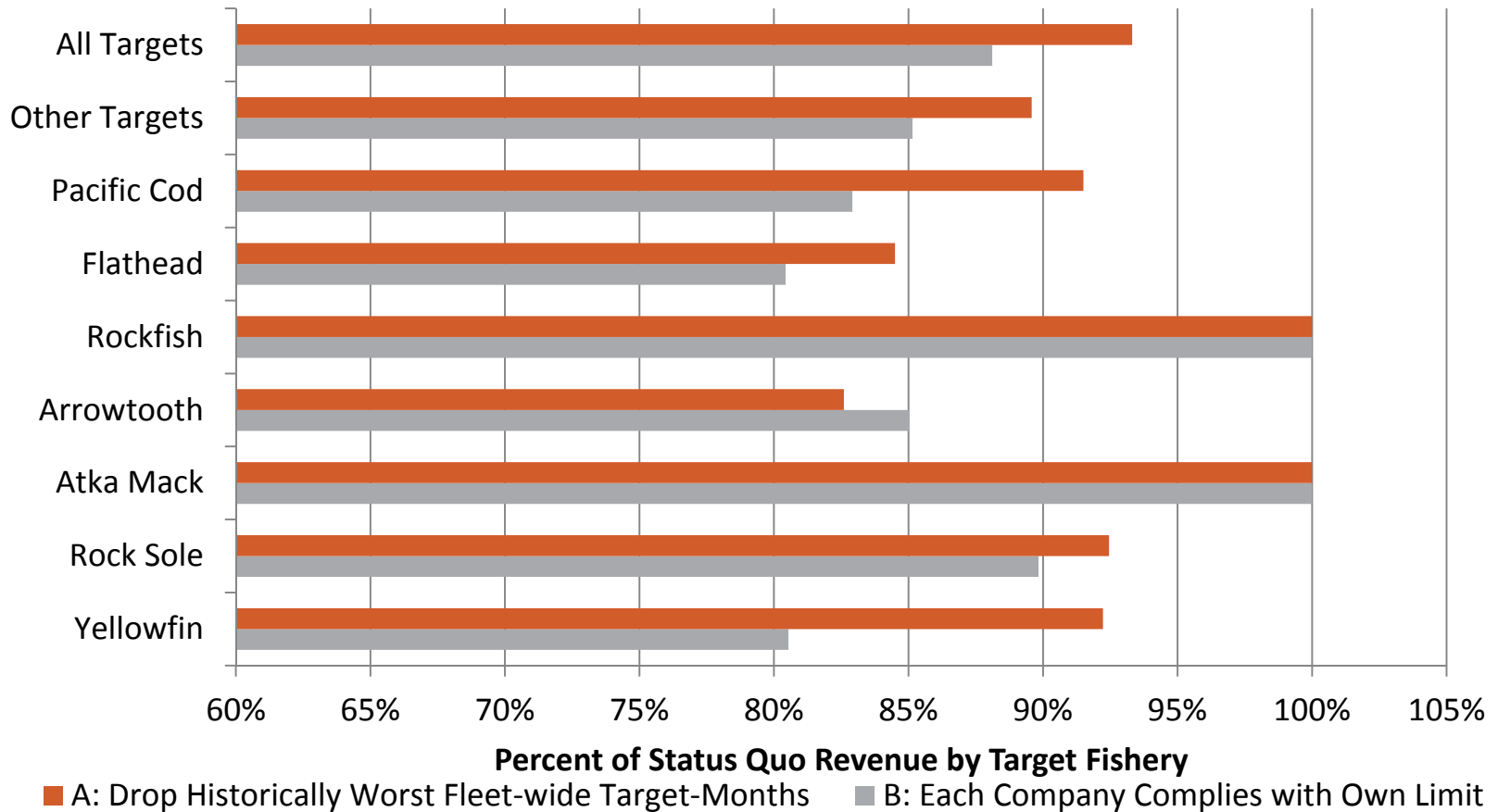
Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-67 Impacts to A80-CPs under Option 3.2—20% Reductions in Halibut PSC Limits



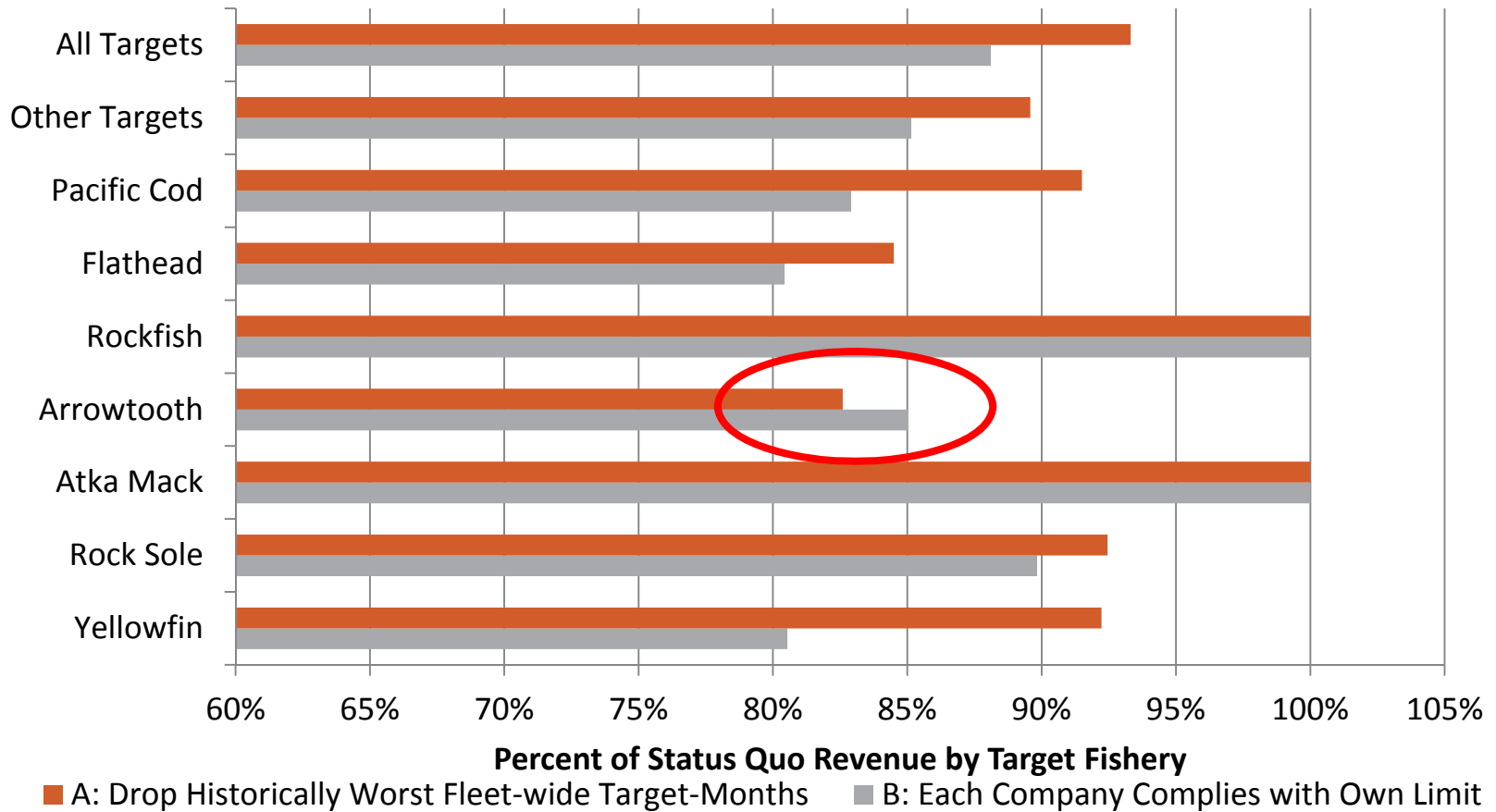
Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-69 Impacts to A80-CPs under Option 3.3—30% Reductions in Halibut PSC Limits



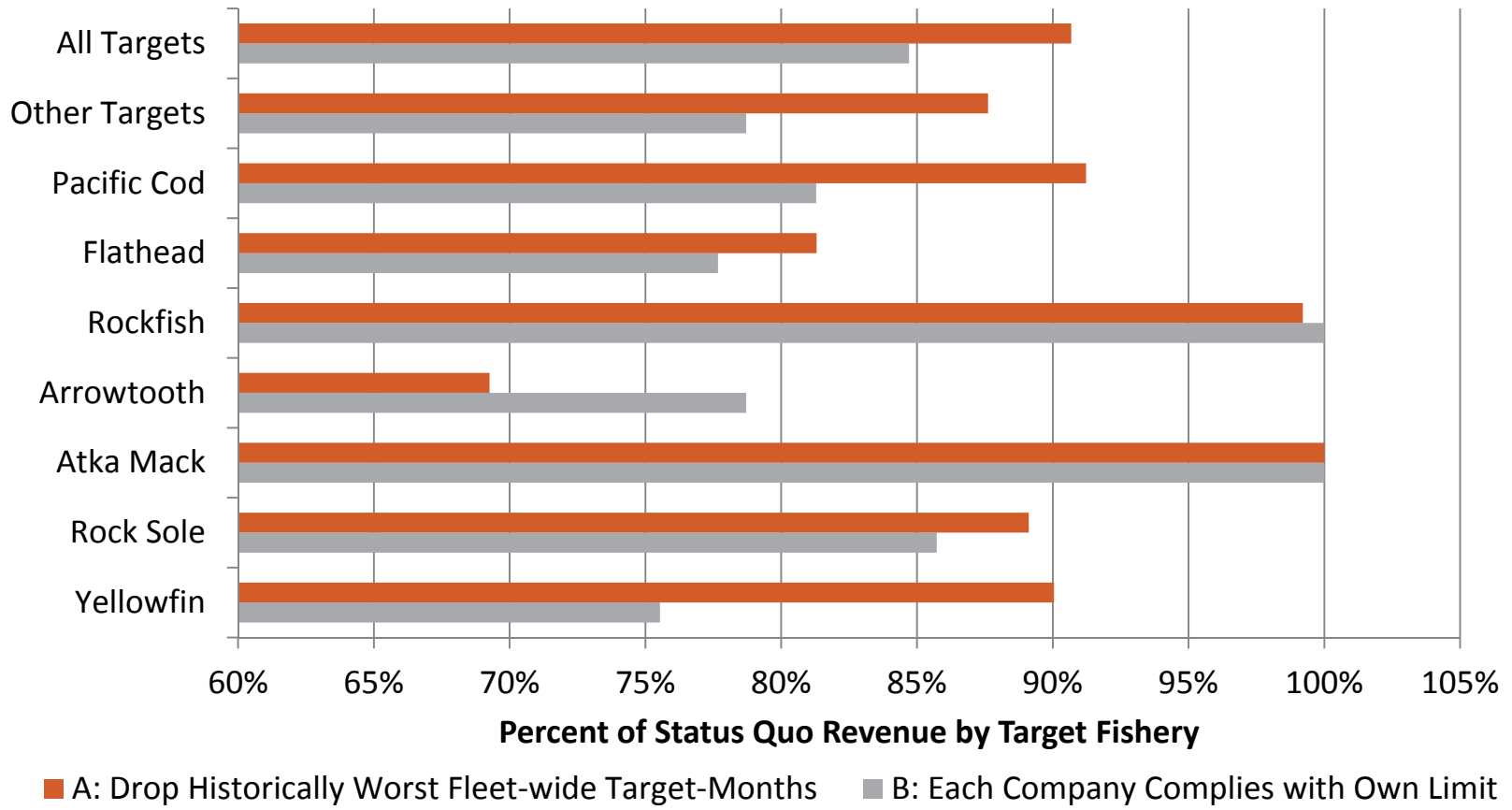
Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-69 Impacts to A80-CPs under Option 3.3—30% Reductions in Halibut PSC Limits



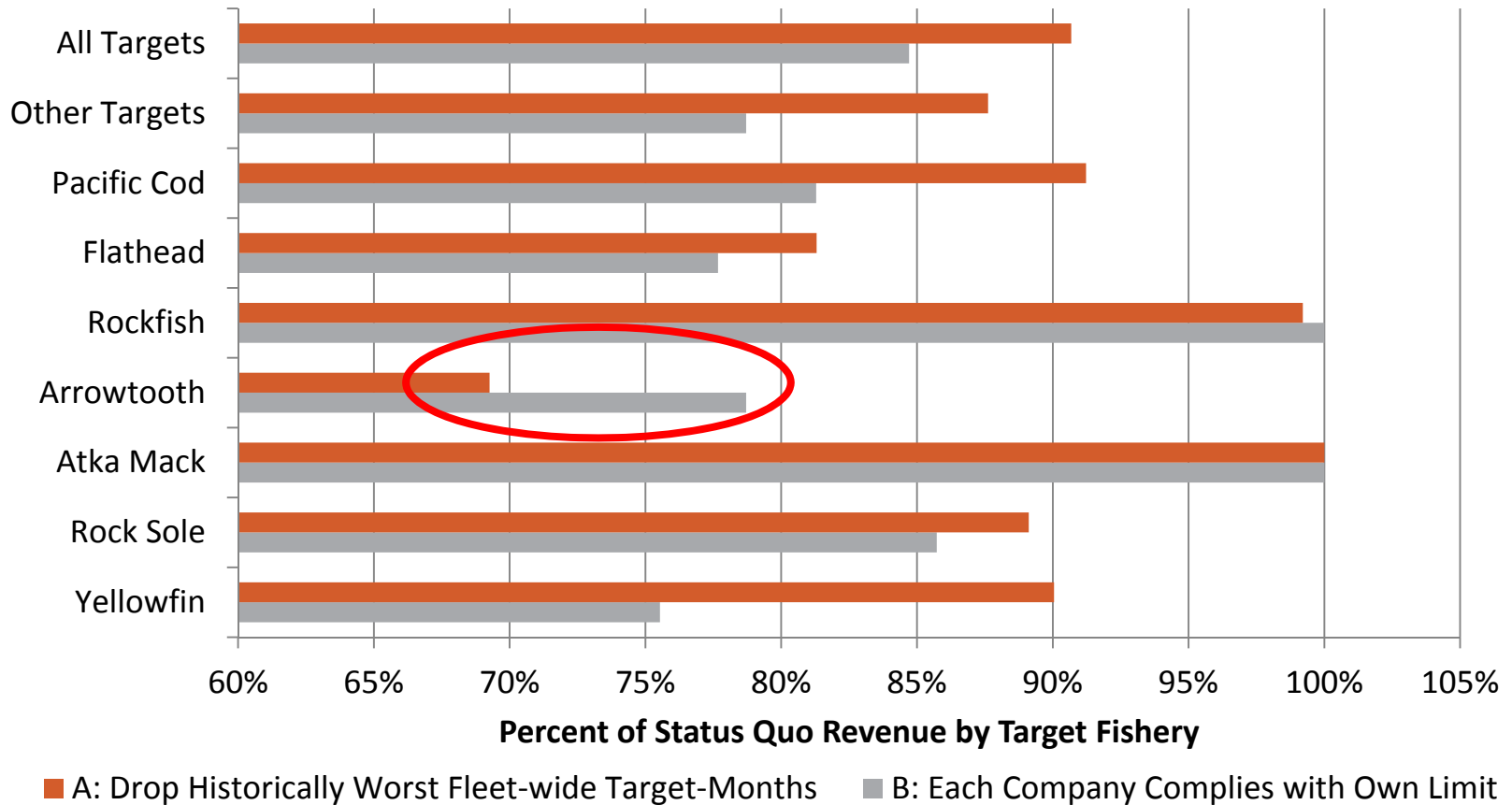
Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-71 Impacts to A80-CPs under Option 3.4—35% Reductions in Halibut PSC Limits



Changes to A80-CP Target Fishery Revenues under Scenarios A and B, Compared to Status Quo

Figure 5-71 Impacts to A80-CPs under Option 3.4—35% Reductions in Halibut PSC Limits

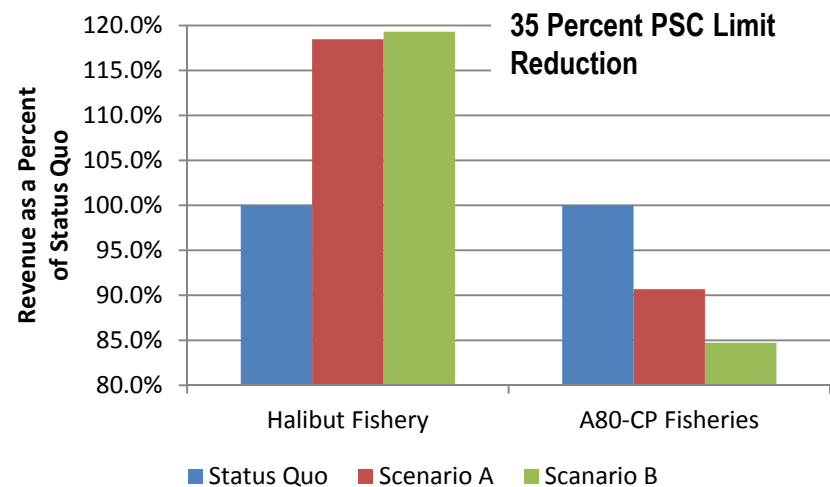
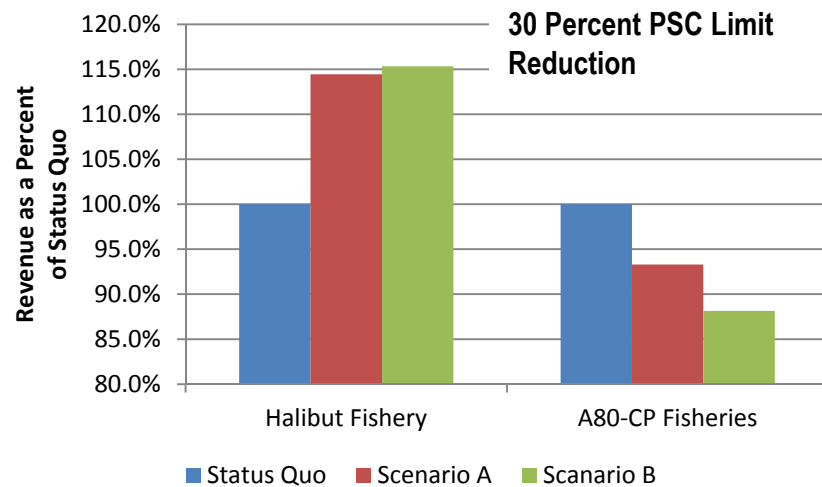
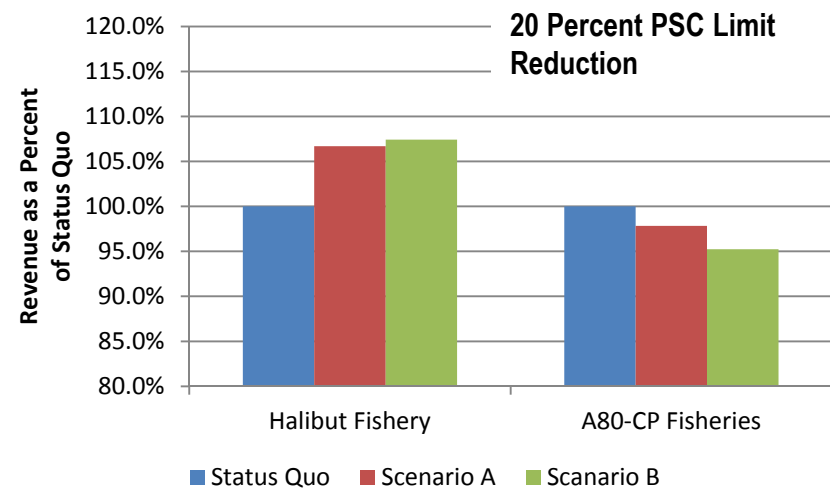
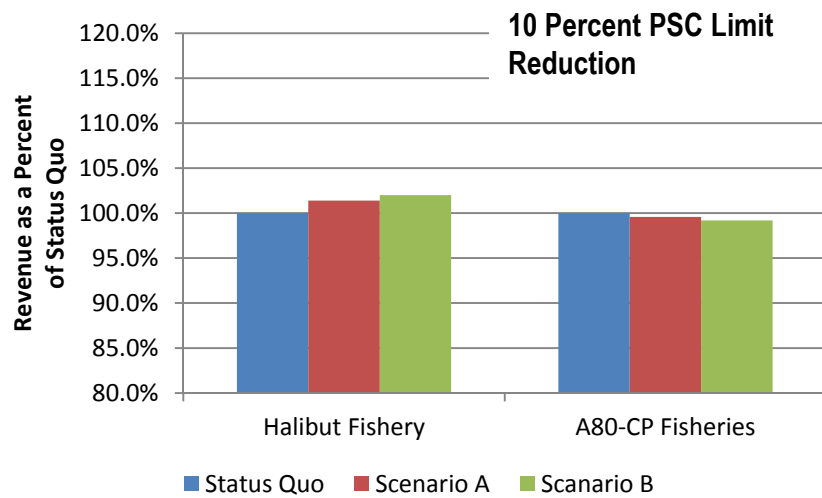


Questions?

Amendment 80 Options Summary

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
					4A	4B	4CDE			
Halibut Mortality (round mt)				net weight pounds (1,000s)						
Options Affecting BSAI TLA										
2.1 @ 10%	875	788	12 – 17	\$10 – \$16	4.0 – 6.4	0.4 – 0.5	5.3 – 6.3	1.6 – 2.1	\$1 – \$1.4	
2.2 @ 20%		700	27 – 39	\$30 – \$50	8.9 – 11.9	1.6 – 2.4	11.1 – 16.7	3.5 – 5.0	\$2 – \$3	
2.3 @ 30%		613	44 – 70	\$62 – \$92	15.0 – 24.8	3.4 – 4.0	17.0 – 25.6	5.7 – 8.8	\$4 – \$6	
2.4 @ 35%		569	55 – 99	\$78 – \$145	17.4 – 37.2	4.2 – 5.2	22.0 – 35.9	7.1 – 12.7	\$5 – \$8	
Options Affecting A80-CPs										
3.1 @ 10%	2,325	2093	40 – 57	\$10 – \$19	3.0 – 1.6	0.1 – 0.0	36.2 – 54.3	5.0 – 7.1	\$4 – \$6	
3.2 @ 20%		2,037	1860	191 – 212	\$52 – \$115	25.7 – 23.9	0.1 – 0.0	162.6 – 184.6	23.8 – 26.3	\$20 – \$22
3.3 @ 30%		1628	414 – 441	\$161 – \$285	59.3 – 66.6	18.7 – 11.6	327.5 – 352.8	51.2 – 54.4	\$44 – \$46	
3.4 @ 35%		1511	531 – 555	\$224 – \$368	79.6 – 87.9	32.4 – 14.2	406.5 – 439.6	65.5 – 68.5	\$56 – \$58	
Options Affecting LGL-CVs										
All options	15	3	10–14	There are no material impacts under any of the options						
Options Affecting LGL-CPs										
5.1 @ 10%	760	684	There are no material impacts under this option							
5.2 @ 20%		521	608	There are no material impacts under this option						
5.3 @ 30%		532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5	
5.4 @ 35%		494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6	
Options Affecting CDQs										

Impact Percentages for A80-CP PSC Limit Reductions



Questions?

Impacts of Options to Reduce PSC Limits for Longline CVs

- PSC limit reduction options have no material effect on longline CVs

Impacts of Options to Reduce PSC Limits for Longline CPs

Impacts of Options to Reduce PSC Limits for Longline CPs

- Longline CPs are not materially affected by options that would reduce PSC Limits by 10% or by 20%
- These options would limit significant increases in PSC by Longline CPs

Bottom Half of the Summary Table

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery net weight pounds (1,000s)			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million	
					4A	4B	4CDE			
Options Affecting LGL-CPs										
5.1 @ 10%	760	521	684		There are no material impacts under this option					
5.2 @ 20%			608		There are no material impacts under this option					
5.3 @ 30%			532	13 – 30	\$10 – \$24	2.0 – 5.4	0.7 – 4.1	11.5 – 22.9	1.8 – 4.1	\$1.5 – \$3.5
5.4 @ 35%			494	34 – 51	\$27 – \$50	3.3 – 8.5	5.9 – 6.5	26.8 – 40.2	4.6 – 7.0	\$4 – \$6
Options Affecting CDQs										
6.1 @ 10%	393	210	354		There are no material impacts under this option					
6.2 @ 20%			314		There are no material impacts under this option					
6.3 @ 30%			275		There are no material impacts under this option					
6.4 @ 35%			255	2 – 2	\$0.5 – \$2	0.5 – 1.2	0.0 – 0.0	1.7 – 0.3	0.3 – 0.2	\$0.23 – \$0.16
Options Affecting Hook and Line for Other Targets										
All options	58	5	38–52		There are no material impacts under any of the options					

Questions?

Impact Percentages for LGL-CP PSC Limit Reductions

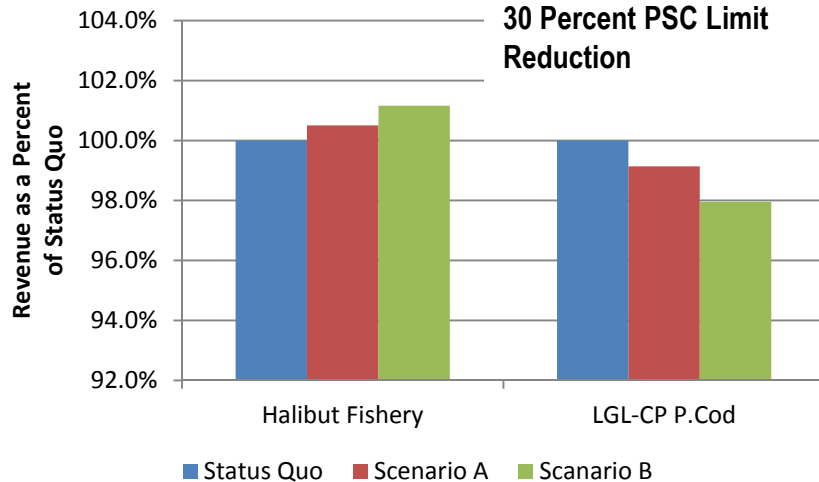
10 Percent PSC Limit Reduction

No Material Impact

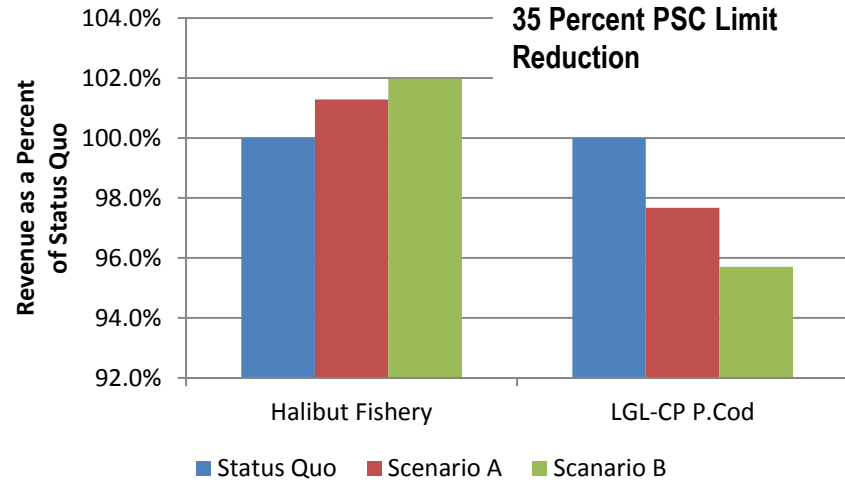
20 Percent PSC Limit Reduction

No Material Impact

30 Percent PSC Limit Reduction



35 Percent PSC Limit Reduction



Impacts of Options to Reduce PSC Limits for CDQ Groundfish Fisheries

Impacts of Options to Reduce PSC Limits for CDQ Groundfish Fisheries

- The CDQ Groundfish fisheries are not materially affected options that would reduce PSC Limits by 10%, 20%, or by 30%
- CDQ Groundfish fisheries (particularly for flatfish species) have not been fully utilized
- These options could limit increases in groundfish harvests and PSC in CDQ fisheries.

Bottom Half of the Summary Table

Current HMT Limit	Mean HMT Used	New PSC Limit	Reductions	Groundfish Fishery Foregone NPV 2013\$ Million	Savings to Commercial Halibut Fishery net weight pounds (1,000s)			Potential U26 Savings	Halibut Fishery gain of NPV 2013\$ Million
					4A	4B	4CDE		
Halibut Mortality (round mt)									
Options Affecting LGL-CPs									
5.1 @ 10%		684			There are no material impacts under this option				
5.2 @ 20%		608			There are no material impacts under this option				
5.3 @ 30%	760	521	13 - 30	\$10 - \$24	2.0 - 5.4	0.7 - 4.1	11.5 - 22.9	1.8 - 4.1	\$1.5 - \$3.5
5.4 @ 35%		494	34 - 51	\$27 - \$50	3.3 - 8.5	5.9 - 6.5	26.8 - 40.2	4.6 - 7.0	\$4 - \$6
Options Affecting CDQs									
6.1 @ 10%		354			There are no material impacts under this option				
6.2 @ 20%		314			There are no material impacts under this option				
6.3 @ 30%	393	210			There are no material impacts under this option				
6.4 @ 35%		255	2 - 2	\$0.5 - \$2	0.5 - 1.2	0.0 - 0.0	1.7 - 0.3	0.3 - 0.2	\$0.23 - \$0.16
Options Affecting Hook and Line for Other Targets									
All options	58	5	38-52		There are no material impacts under any of the options				

Impact Percentages for CDQ PSC Limit Reductions

10 Percent PSC Limit Reduction

No Material Impact

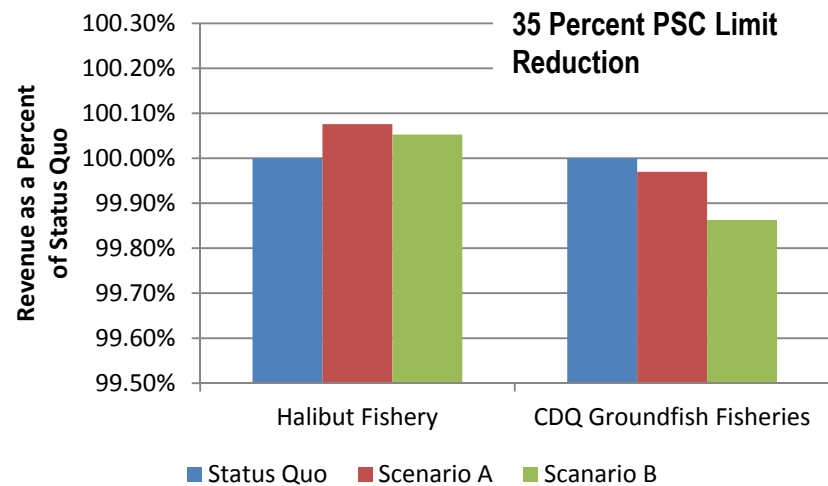
20 Percent PSC Limit Reduction

No Material Impact

30 Percent PSC Limit Reduction

No Material Impact

35 Percent PSC Limit Reduction



Economic Impacts of Reducing BSAI Halibut PSC Limits

Questions?

Marcus L. Hartley

February 7, 2015

