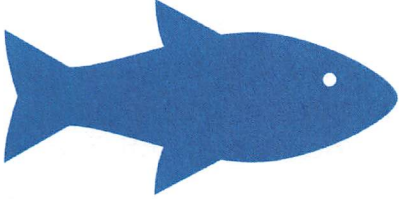
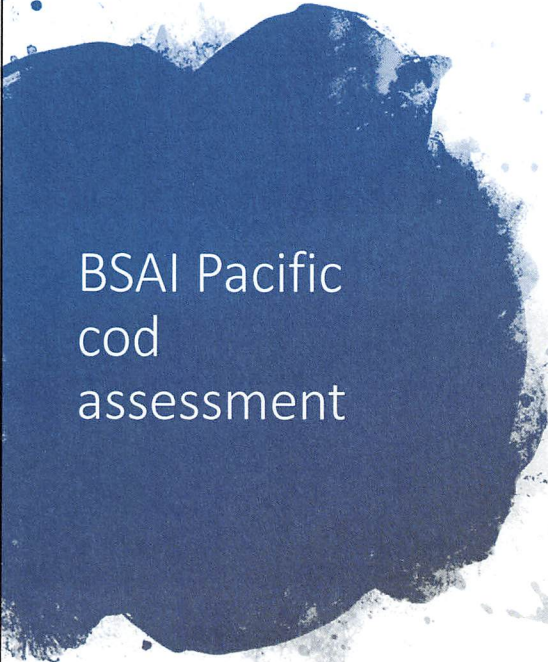


RC 16



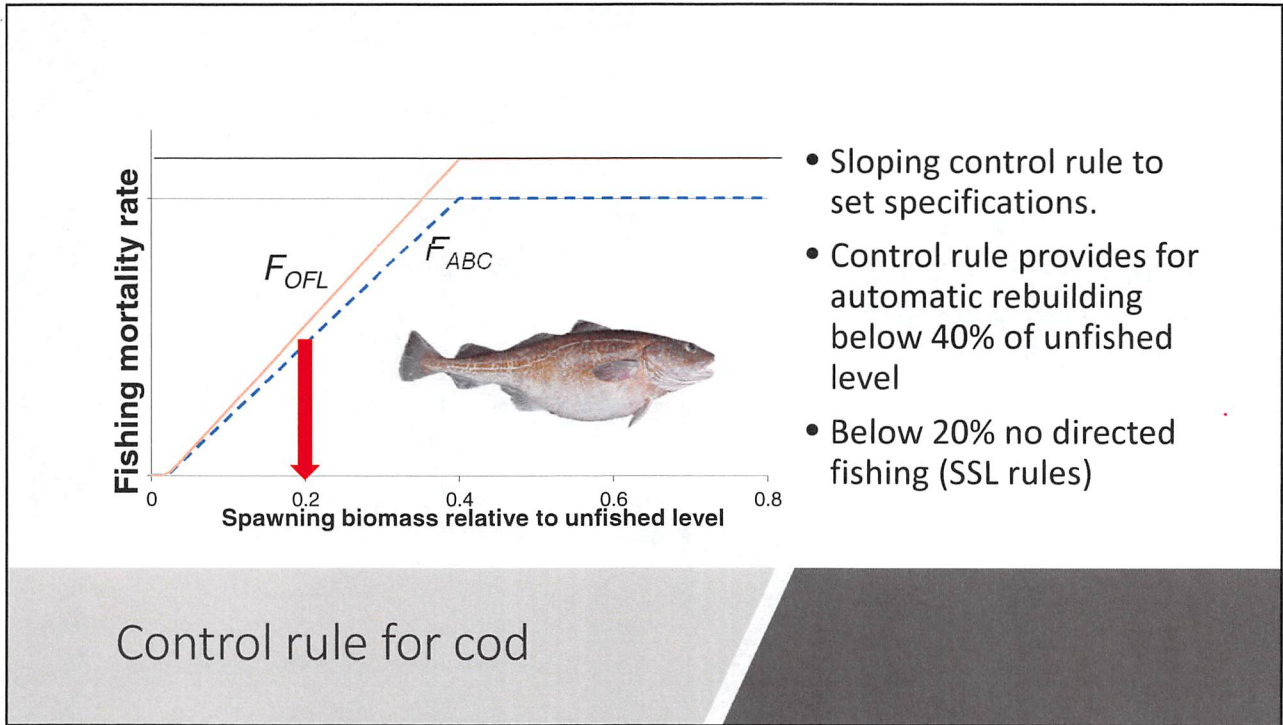
Bering Sea
Aleutian Island
cod assessment
and management

Diana Stram and Jon McCracken
NPFMC
Joint Protocol Committee
October 17, 2018

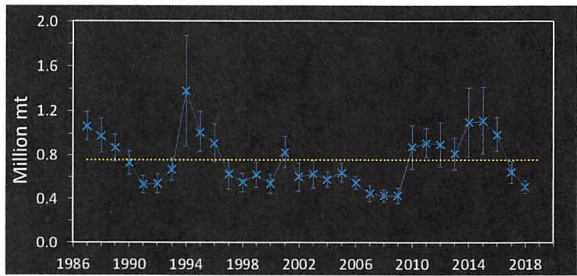


BSAI Pacific
cod
assessment

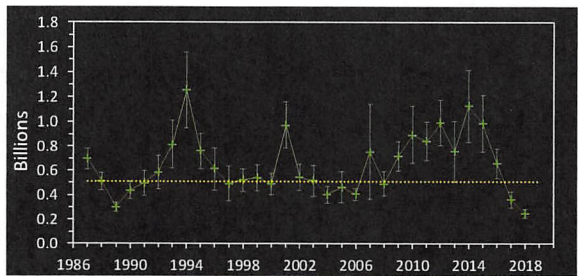
- Managed as a single unit stock from 1977-2013
 - Tagging studies show migration within and between EBS, AI, GOA
- Research indicated discrete stocks between EBS and AI (Canino et al., 2005, Cunningham et al. 2009, Canino et al, 2010, Spies 2012)
- 2014-on separate harvest specifications by area (EBS and AI)



2018 Bering Sea survey

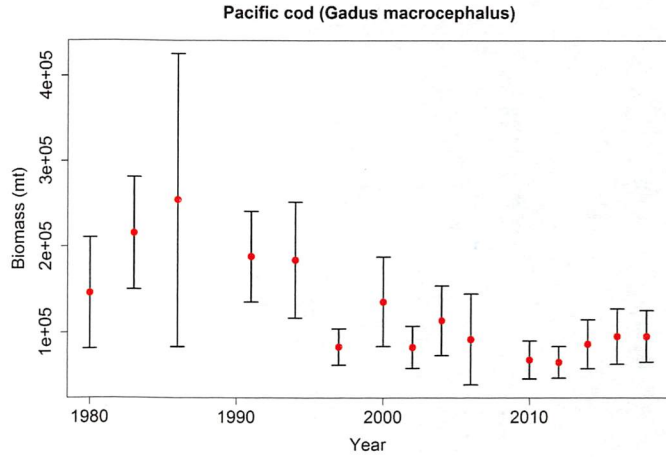


Biomass in millions MT

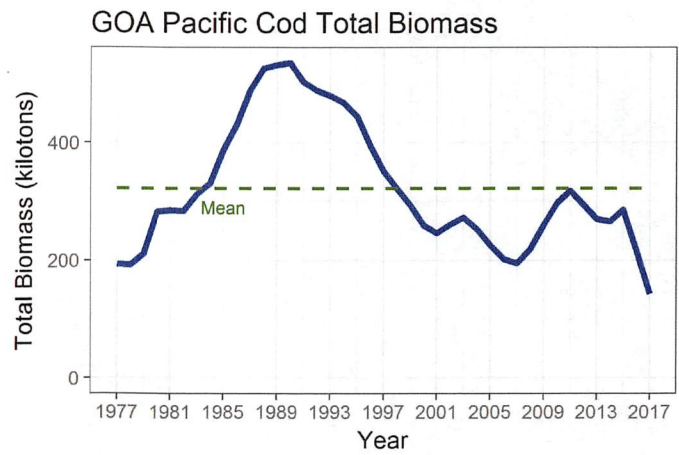


Abundance in billions of fish

Aleutian Islands survey biomass



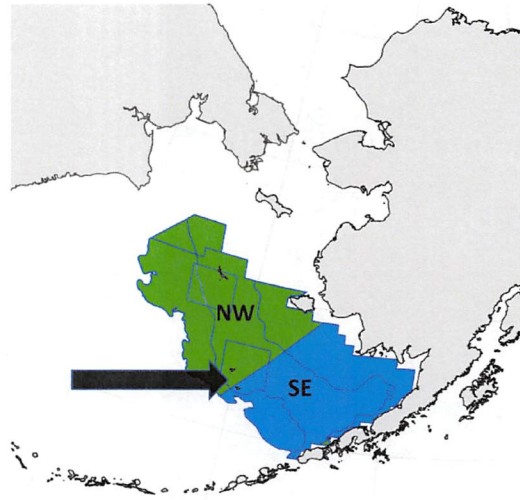
Gulf of Alaska cod



Lowest survey estimate historically
80% drop in ABC in 2018
 $B_{21\%}$

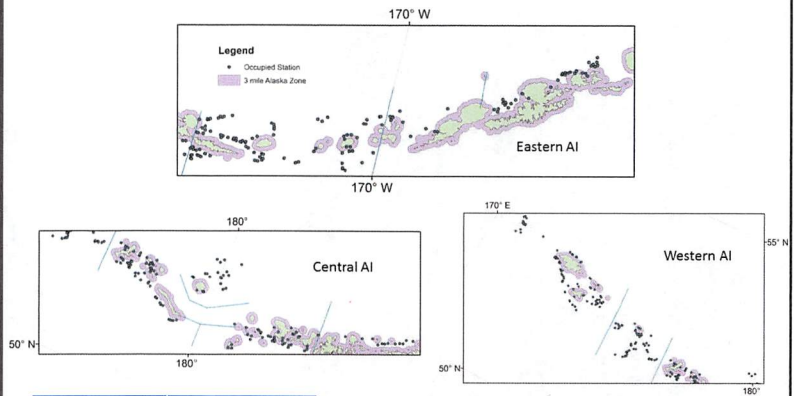
Relative abundance of cod in state waters: EBS survey

EBS survey annual
 Only 3 of 376 stations in State waters
 All 3 near Pribilof Islands
 Since 1982 have comprised between 0.3 – 4.0% of total cod in survey
 One additional station in eastern Bristol Bay has partial tow frequently in State waters



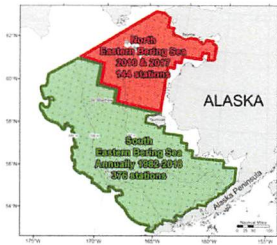
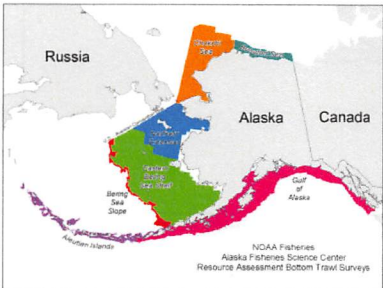
Relative abundance of cod in state waters: AI survey

- AI survey biennial (2018 most recent)
- Numerous stations within State waters in AI survey



AI Survey Year	% catch in State waters
2010	20.2
2012	26.0
2014	17.9
2016	13.0
2018	13.2

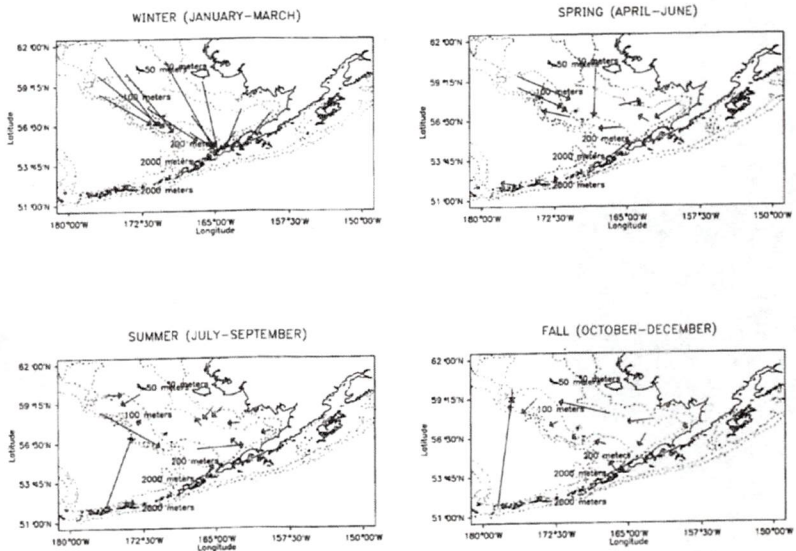
2018 Bottom Trawl Survey Stations

Trends in cod across Bering Sea areas

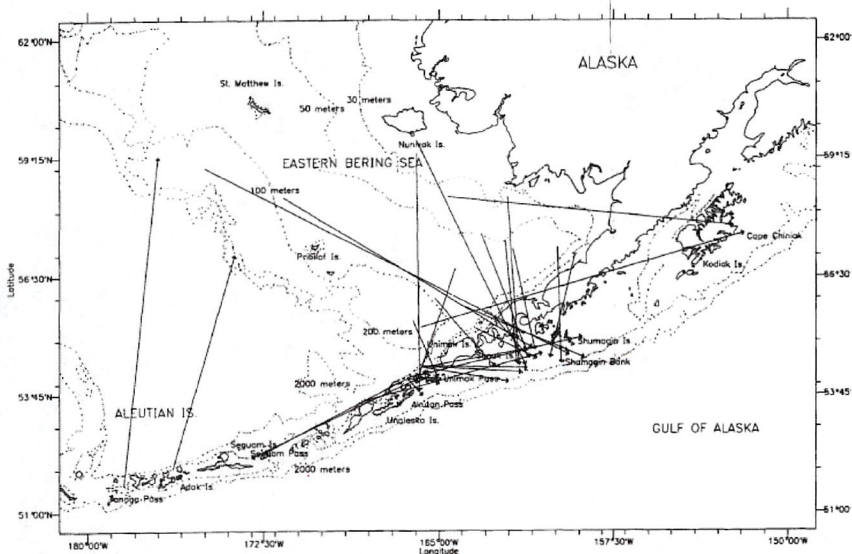
- Pacific cod in the NBS increased from 28,425 t to 286,310 t between 2010 and 2017
 - Genetic information indicates this population is similar to the EBS
- Decreased in the EBS by 37% since 2016, to 598,260t.
- Similar results in 2018: Plans for addressing NBS population contribution in 2018 Assessment

Migrations of tagged cod (Shimada and Kimura, 1994)



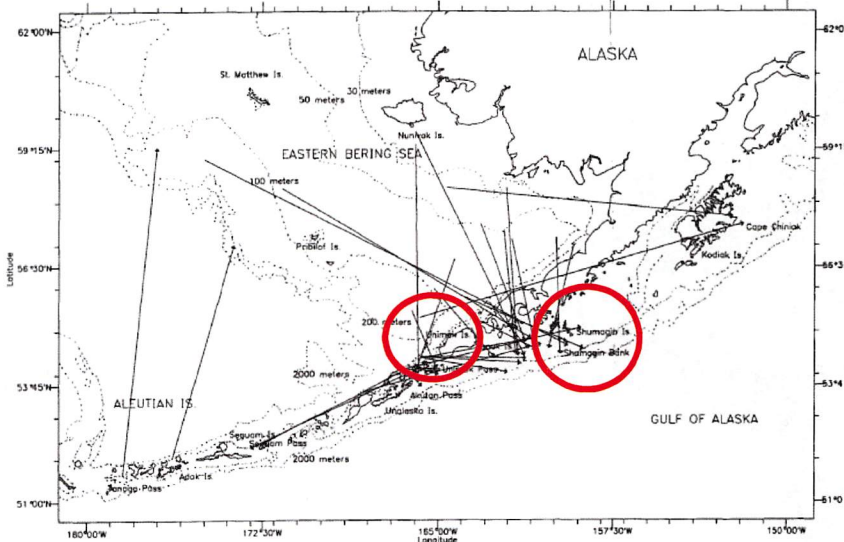
Strong seasonal movement within EBS

Tag recoveries suggest that 15-17% of the total EBS population may migrate to GOA in winter



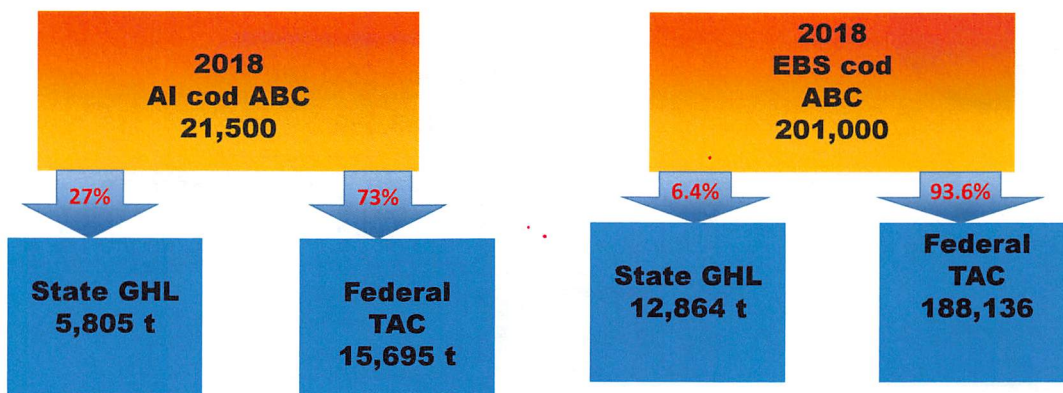
Migration from Eastern Bering Sea to Gulf of Alaska

Spawning population association



Likely strong association between Shumagin and Unimak populations

How is the ABC reduced prior to TAC-setting?



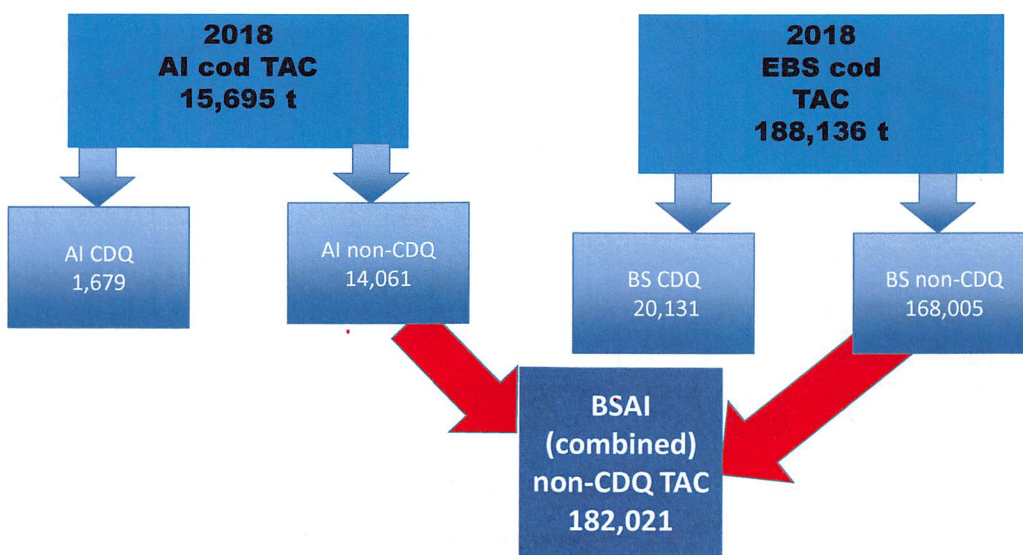
AI:

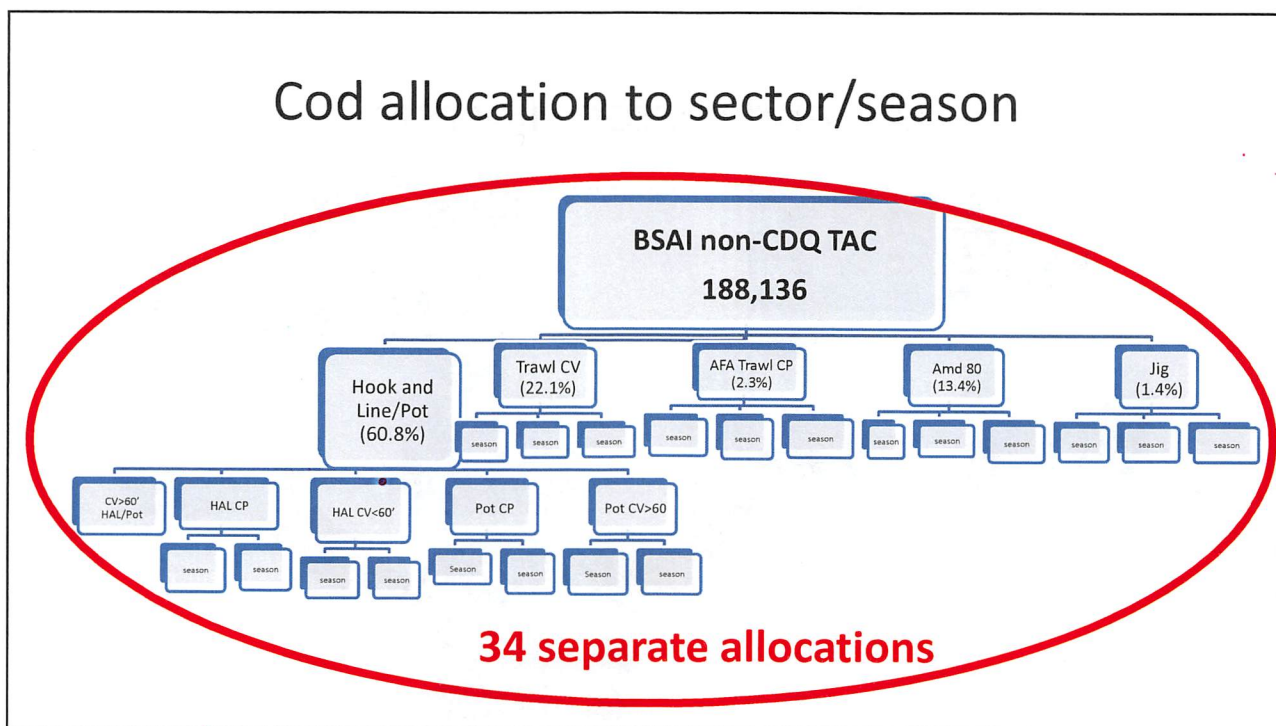
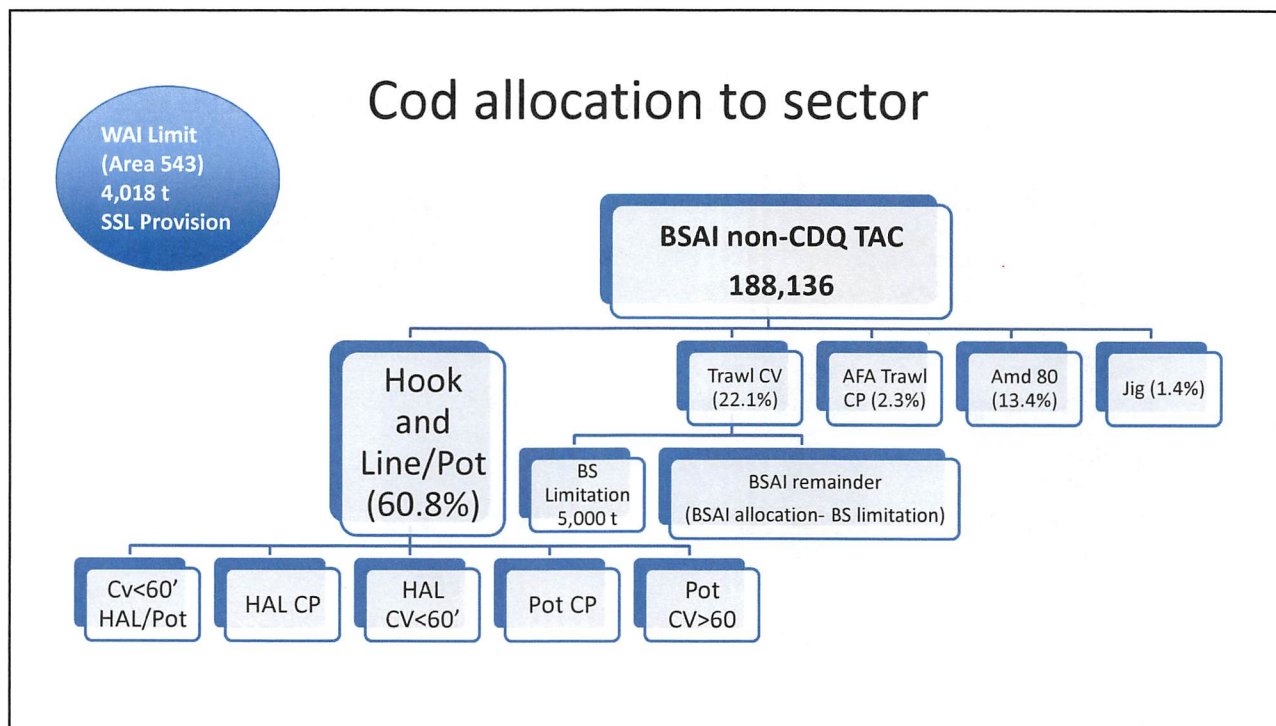
- Annual step-up provisions: 31%,35%,39%
- Maximum 15 million pounds (6,804 mt)

EBS:

- No step-up provisions
- No maximum

TAC and sector allocations





Catch by sector 2017-2018

BSAI Sector	Catch 2018*	# vessels	Catch 2017	# vessels
CDQ	17,776	92	25,359	95
Hook-and-line C/P	66,643	25	108,748	28
Pot C/P	2,810	5	4,942	4
Pot CV >= 60 ft	13,125	33	13,725	34
Hook-and-line/Pot CVs < 60 ft	6,280	25	9,958	24
Jig	56	<3	13	<3
Trawl CV	37,787	103	44,160	100
AFA C/P	4,028	16	4,712	16
Amendment 80 C/P	21,127	19	23,203	19
Total	169,630	318	234,822	320

* Catch through 10/08/18

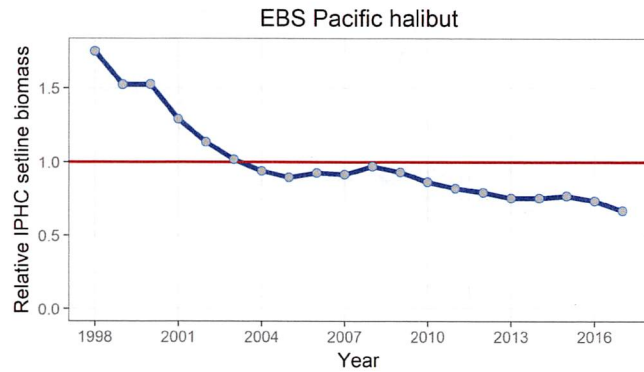
BSAI Cod Observer Coverage

- Majority of fleet is in 100% coverage
- Small percentage in partial coverage.
 - BSAI Observer partial coverage in 2017
 - Hook-and-line: 13.8% / 10.1%
 - Pot-no Tender: 10.8% / 6.6%
 - Pot-Tender: 5.3%
 - Trawl: 20.5%
- BSAI Observer coverage in 2018 and 2019
 - 15% for all gear types + Optimization of remaining funds to PSC-limited fisheries
- In 2017, Pacific cod contributed to 45% of all observer fees collected in the BSAI region and 8% of the fee coastwide.



Halibut implications

- Declining BSAI halibut stock
- Current BSAI halibut limits by sector (A80, TLAS, CDQ, longline)
- No halibut limits for pot
- Pot bycatch discard mortality rate of 19% in 2019
- Mortality accrues (only) toward total mortality for purposes of IPHC



Potential implications

1. Observer coverage
 - Decrease in fees
 - Halibut mortality
2. Smaller allocations for all sectors
 - Shorter seasons
 - Constraint on fisheries for which cod is limiting
3. If increased GHL cannot be fully utilized then cod stranded in State waters (i.e. cannot be rolled to federal TAC)