

Science, Service, Stewardship



Aleutian Islands walleye pollock assessment 2020

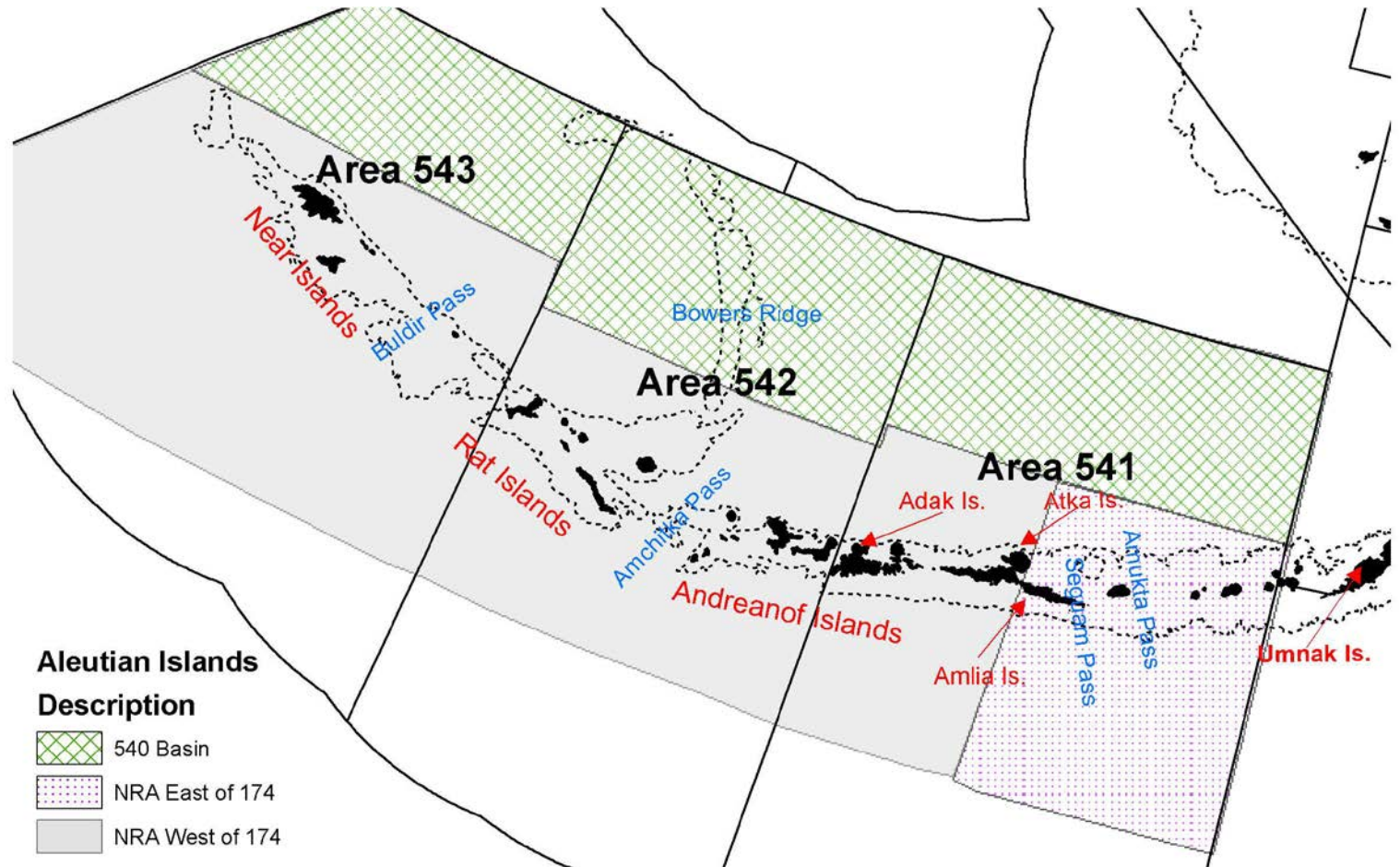
Steve Barbeaux, James Ianelli, Wayne
Palsson, and Stephanie Zador



**NOAA
FISHERIES
SERVICE**



AI pollock area



Aleutian Islands

Description

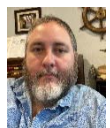
-  540 Basin
-  NRA East of 174
-  NRA West of 174





Data sources

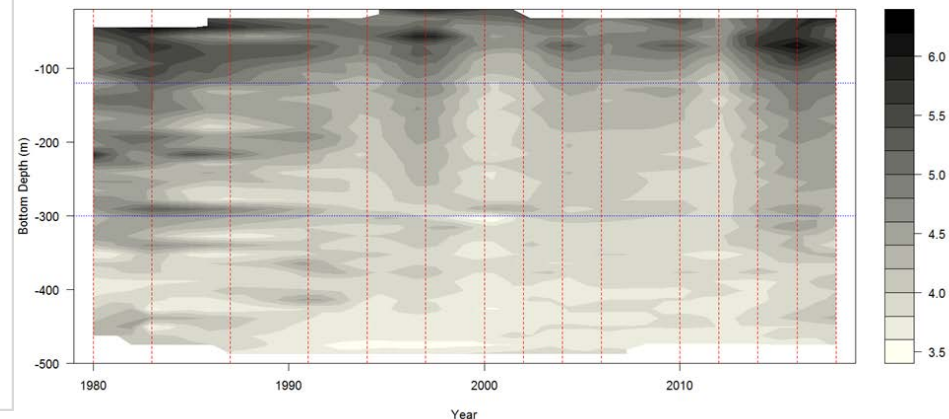
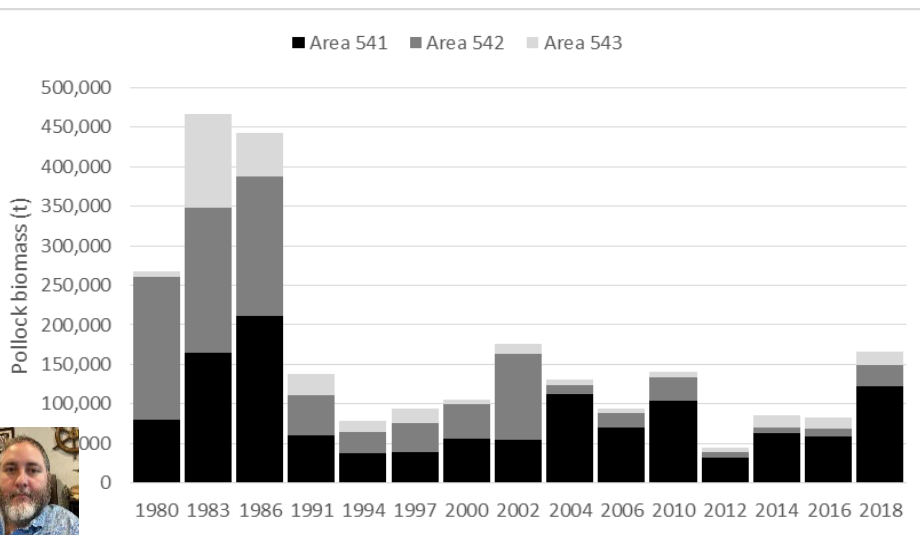
- Aleutian Islands bottom trawl survey
 - Triennial
 - 1980-2000
 - Biennial
 - 2000-2018 (missing 2008 and 2020)
- Aggregated fishery observer data for all gear types
 - 1977-2020
 - Total catch
 - Age composition
 - 1978-1987, 1994-1996, 1998, 2006-2008, **2018**





2018 Bottom trawl survey

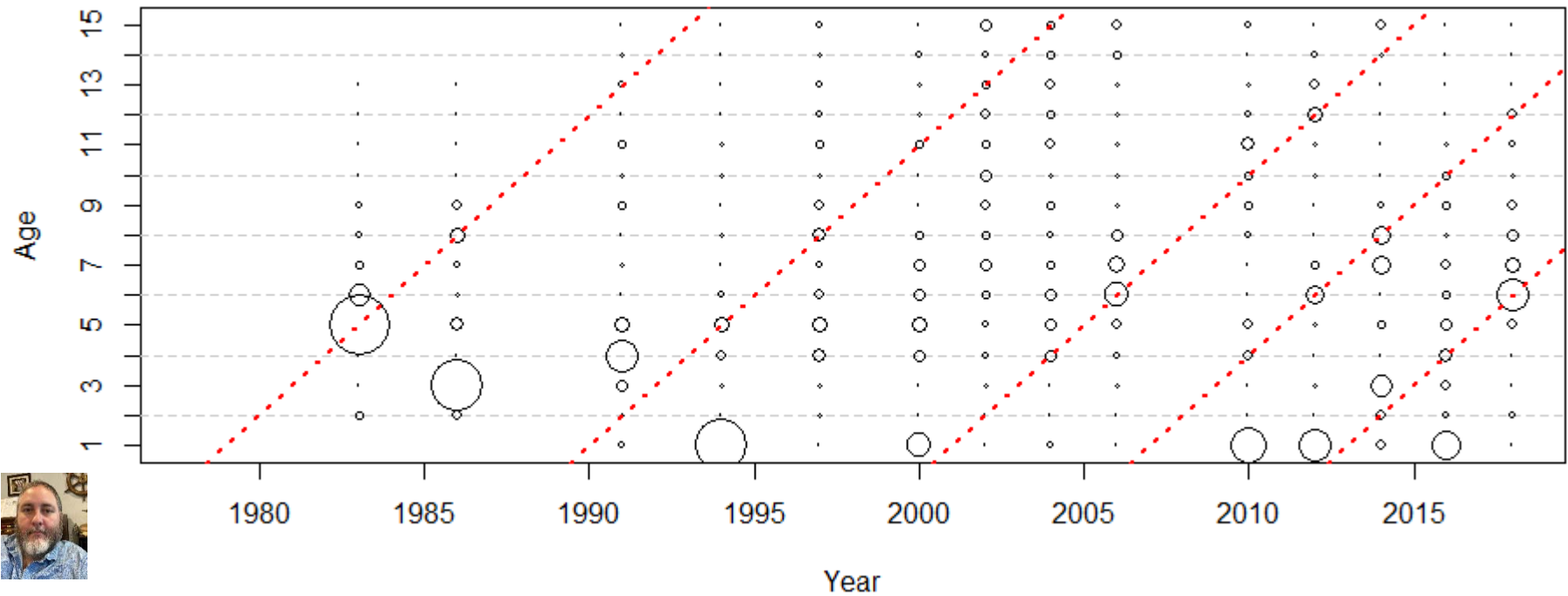
- No new survey in 2020 due to COVID restrictions
- 165,747 **↑ 99.5%** from 2016
- Distribution approximately the same
- Continued warm bottom temps.





Survey age composition

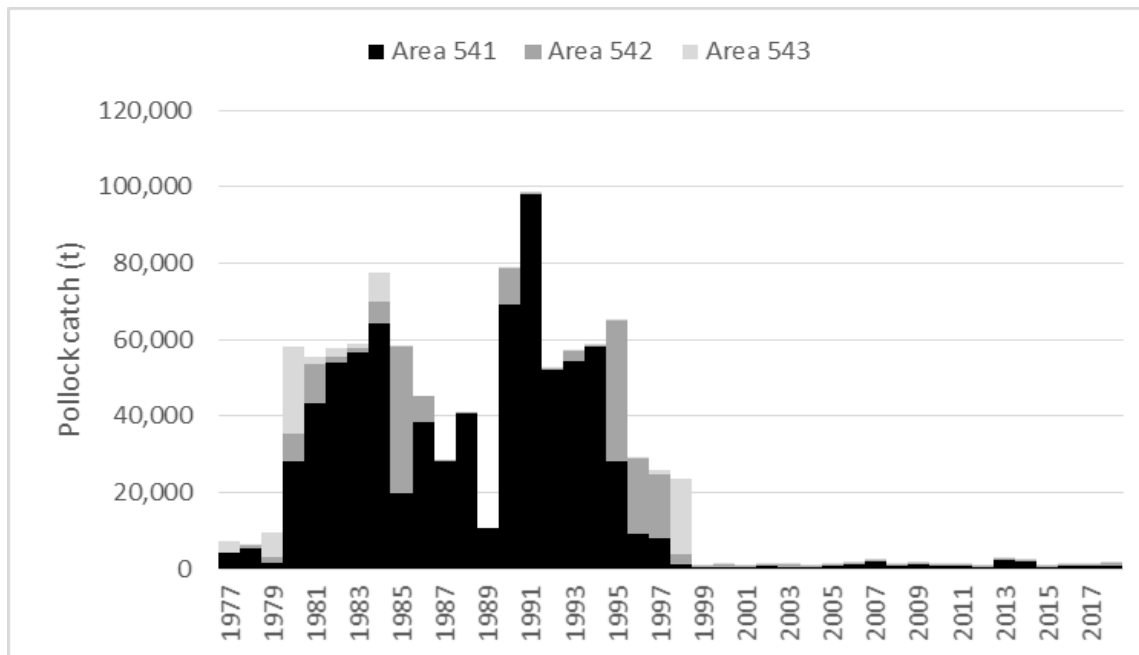
- 2011 year class strong in 2012 and 2014
- 2012 and 2015 year classes strong in 2016
- 2012 year class remains strong in 2018





AI pollock fishery

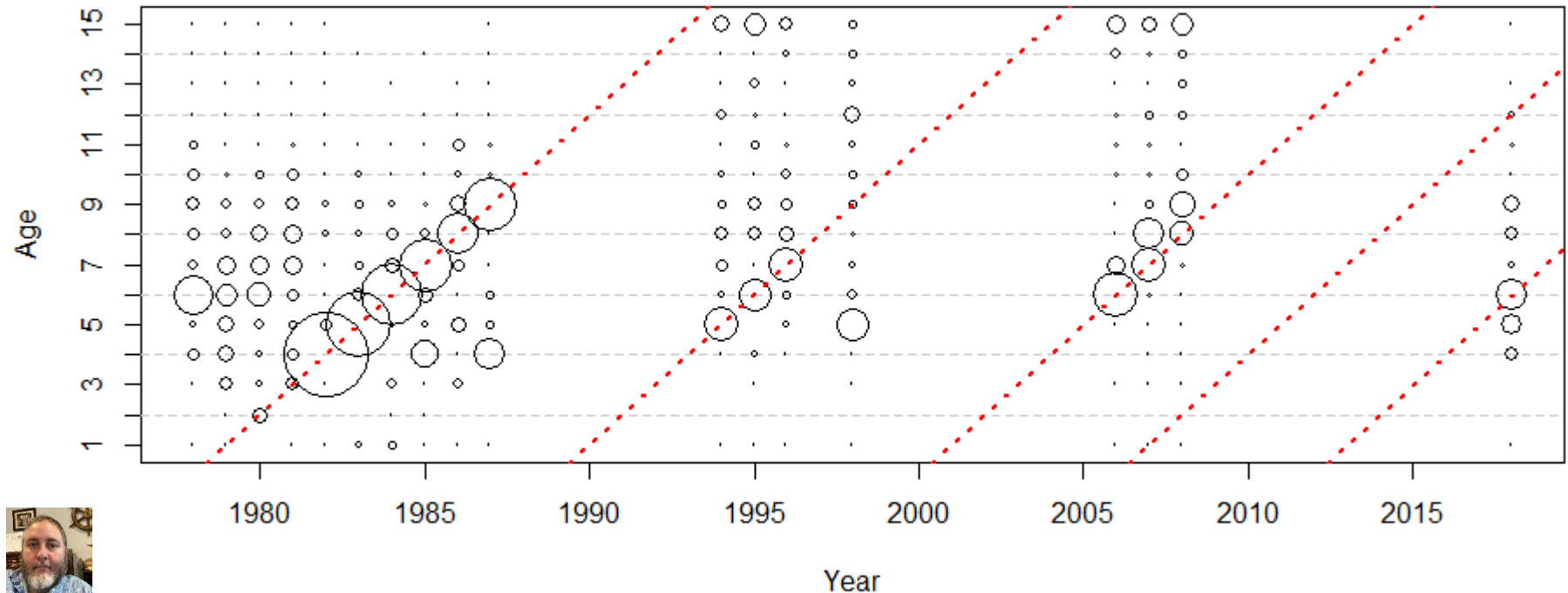
- EFP initiated in 2019 increasing directed fishery
- Total of 1,663 t in 2019
- Total of 2,486 t in 2020, as of October 5





Fishery age composition

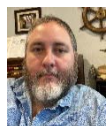
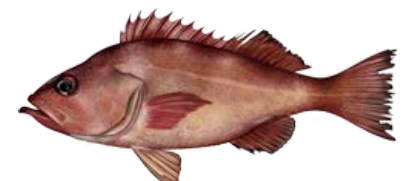
- Strong 2012 year class in 2018 fishery age
- Strong 1978, 1989, 2000 cohorts





Aleut Corporation Exempted Fishing Permit 2019-2020

- Exemption from 5% MRA for POP
- Exempted from halibut PSC for POP fishery
- 500 t cap on total POP bycatch in pollock fishery
 - Split 450 t in Area 541 and 50 t for Area 542
- Maximum of 10,361 t of pollock harvest
- 100% observer coverage, full retention of catch
- Supplementary captain's logbook to collect additional data per haul





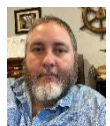
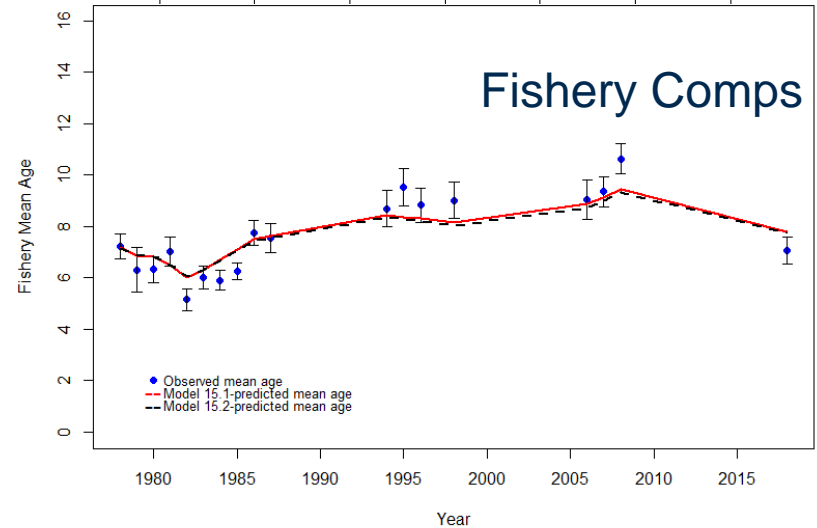
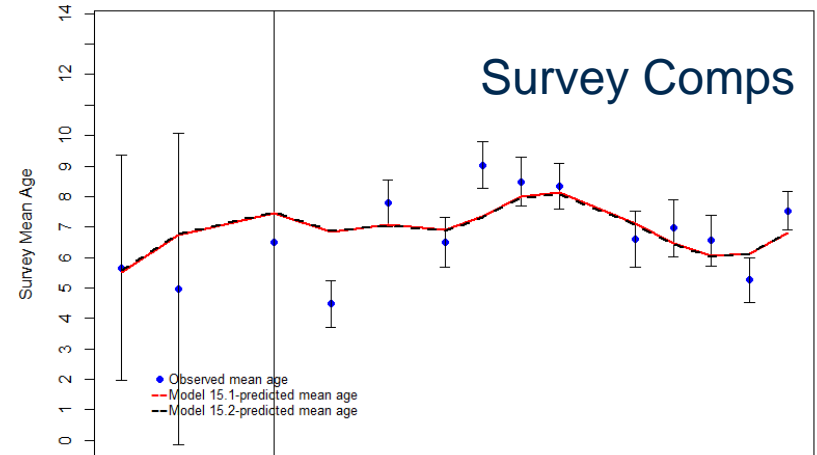
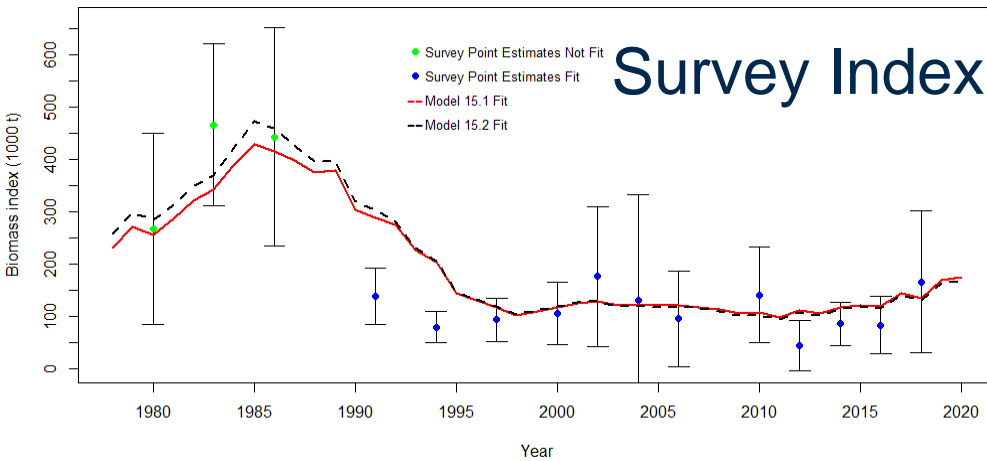
2020 Assessment models

- Same as 2015 models –Tier 3
 - Model 15.1
 - AMAK age-structured model with block selectivity on single fishery
 - Beverton-Holt stock recruitment relationship
 - M estimated in the model prior of 0.2 and CV=0.2
 - Survey Catchability (Q) = 1.0
 - Penalized nonparametric selectivity model
 - Single curve for survey
 - Time block selectivity for fishery
 - Model 15.2
 - Model 15.1 with age specific natural mortality



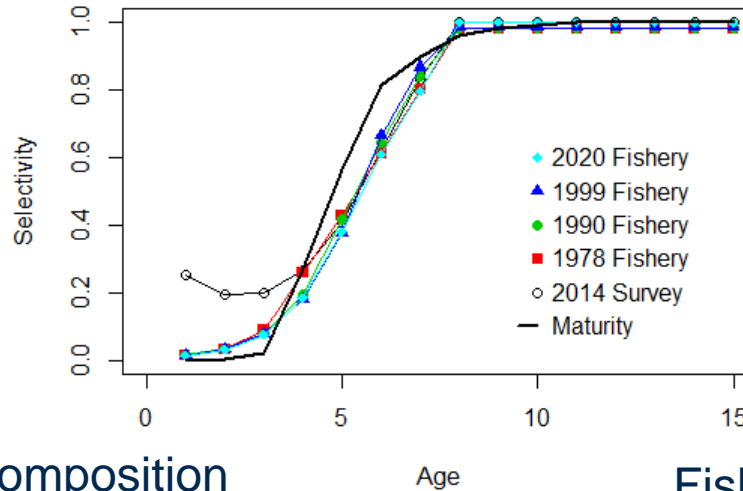


Fit to survey index and comps

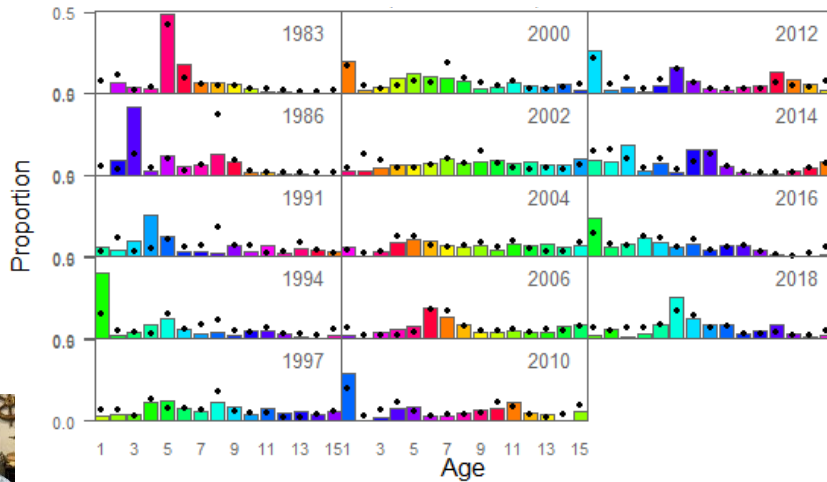




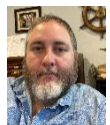
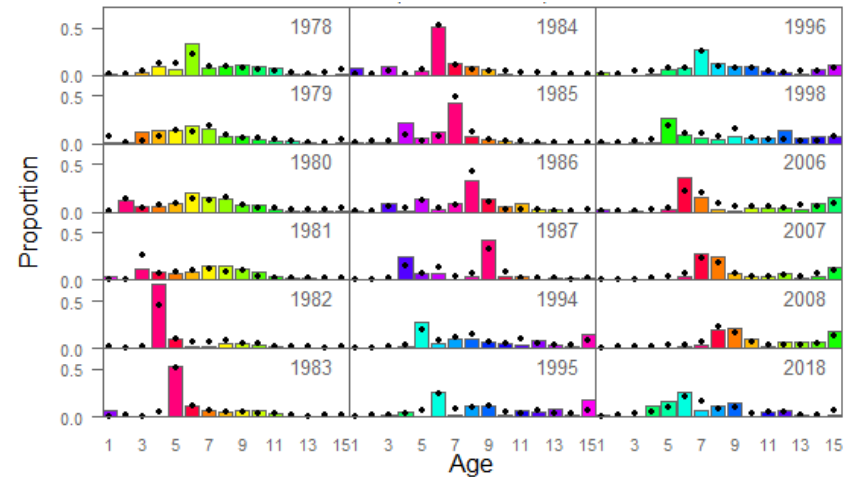
Selectivity and fits to age composition

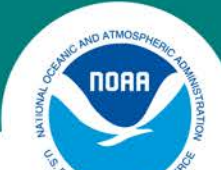


Survey age composition

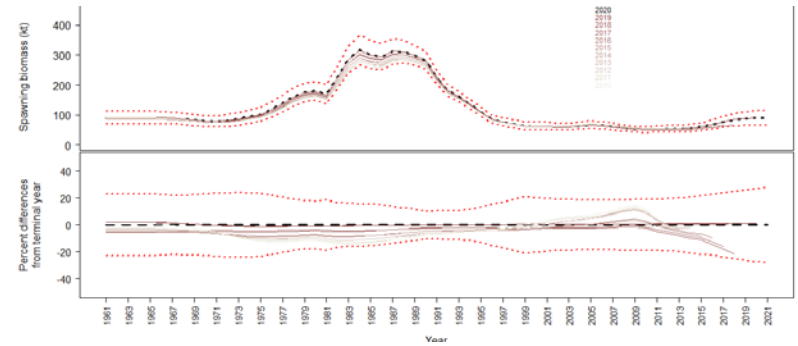
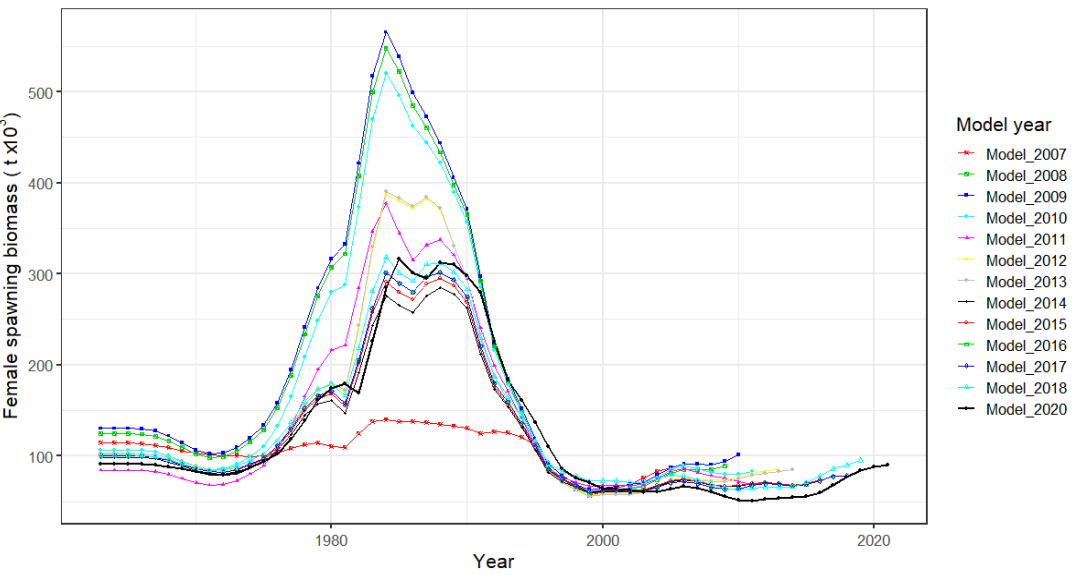
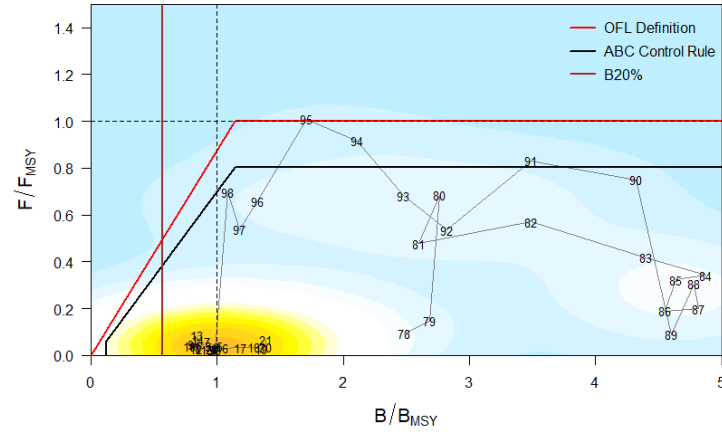
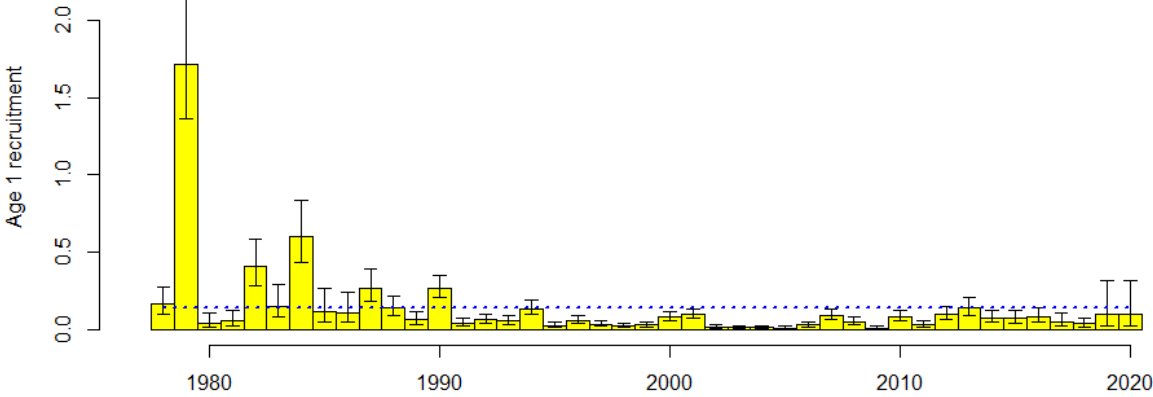


Fishery age composition





Model 15.1 Results



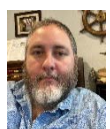
Mohn's $\rho = 0.03$
Woods Hole $\rho = -0.04$



Recommendations

- Tier 3a at $SSB_{48\%}$
- 19,000t cap

| Quantity | As estimated or specified last year for: | | As estimated or recommended this year for: | |
|------------------------------|--|---------|--|---------|
| | 2020 | 2021 | 2021 | 2022* |
| M (natural mortality rate) | 0.20 | | 0.21 | |
| Tier | 3a | | 3a | |
| Total (age 1+) biomass (t) | 340,680 | 340,680 | 292,967 | 308,671 |
| Female spawning biomass (t) | | | | |
| Projected | 98,172 | 98,172 | 89,906 | 85,785 |
| $B_{100\%}$ | 203,279 | | 185,475 | |
| $B_{40\%}$ | 81,312 | | 74,190 | |
| $B_{35\%}$ | 71,147 | | 64,916 | |
| F_{OFL} | 0.415 | 0.415 | 0.390 | 0.390 |
| $maxF_{ABC}$ | 0.331 | 0.331 | 0.313 | 0.313 |
| F_{ABC} | 0.331 | 0.331 | 0.313 | 0.313 |
| OFL (t) | 66,973 | 66,973 | 61,856 | 61,308 |
| maxABC (t) | 55,120 | 55,120 | 51,241 | 50,789 |
| ABC (t) | 55,120 | 55,120 | 51,241 | 50,789 |





Risk Table

| Assessment-related considerations | Population dynamics considerations | Environmental/ecosystem considerations | Fishery Performance |
|-----------------------------------|------------------------------------|--|---------------------|
| Level 1: Normal | Level 1: Normal | Level 1: Normal | Level 1: Normal |

- Mixed signals in the environment
 - Indicators for zooplanktivorous prey of pollock in the AI appear to be largely positive
 - Recent condition indices (2014 onwards, even years) taken during surveys have been lower than the long-term survey mean.
 - Both the western and central Aleutians have shown decreased survey biomass estimates of pollock not observed in the eastern Aleutians.
 - Some fishery-related evidence might be the increased bycatch of pollock in rockfish fisheries.
 - No large changes in predation pressure on AI pollock.

