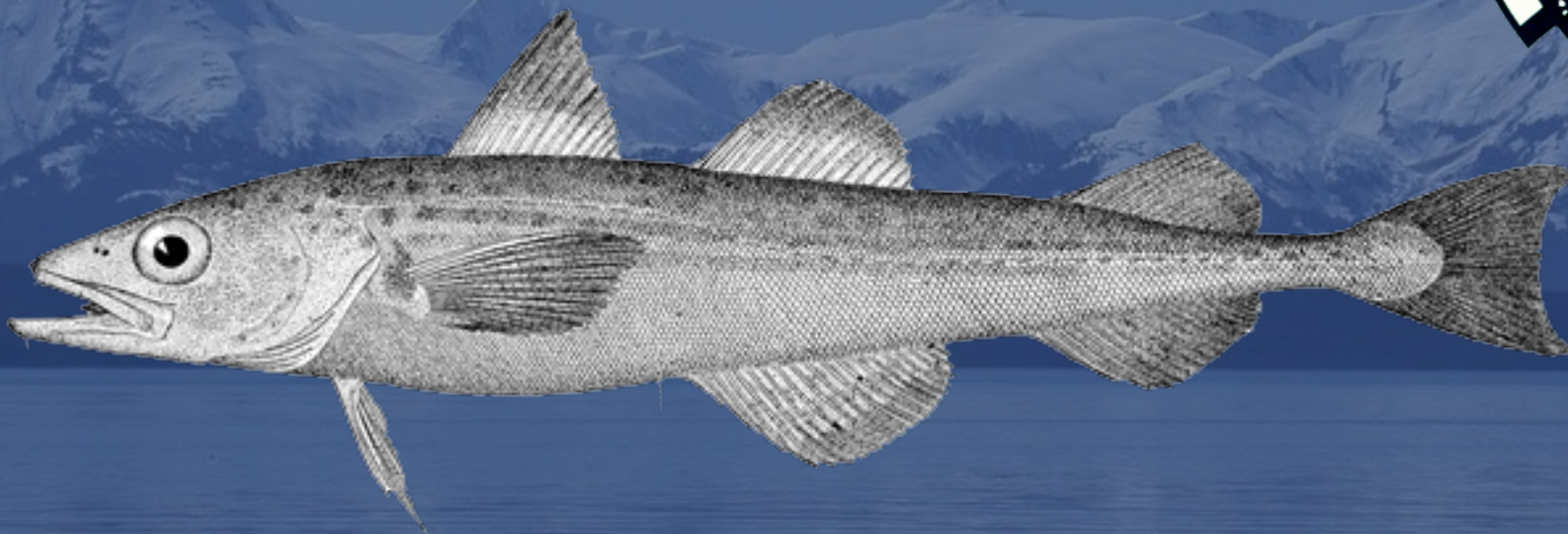


AI Pollock BSAI Groundfish Plan Team

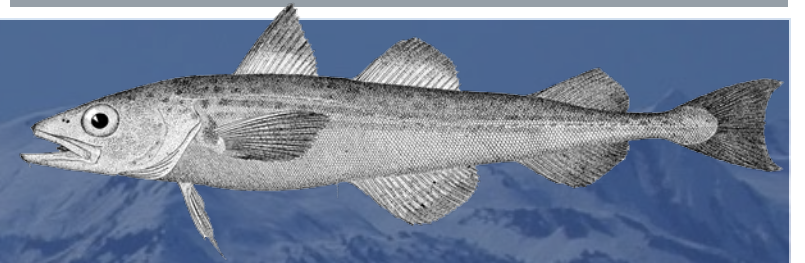
Steven J. Barbeaux, Jim Ianelli, Ivonne Ortiz, Ned Laman



November, 2022



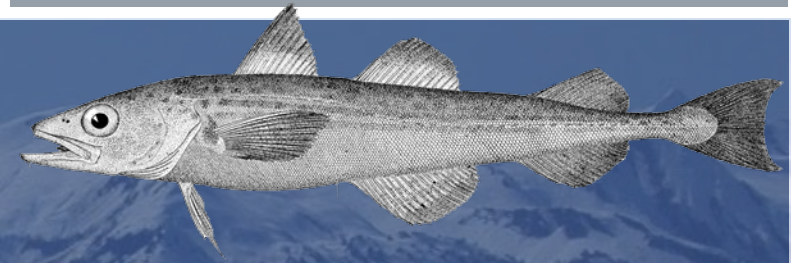
Model



- Same as 2020 models
 - Model 15.1 – same as 2020 management model
 - AMAK age-structured model with block selectivity on single fishery
 - Model 15.2 – same as last year's alternative model
 - Model 15.1 with age specific natural mortality
 - Presented for contrast only



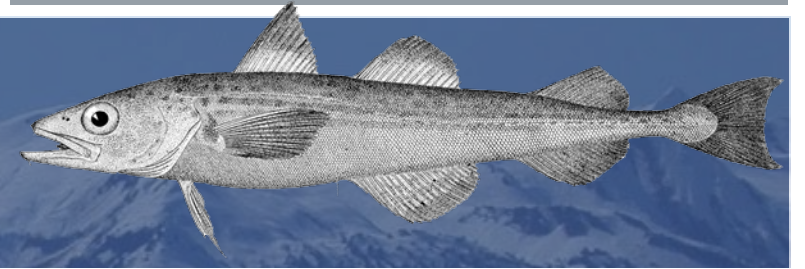
Data Summary




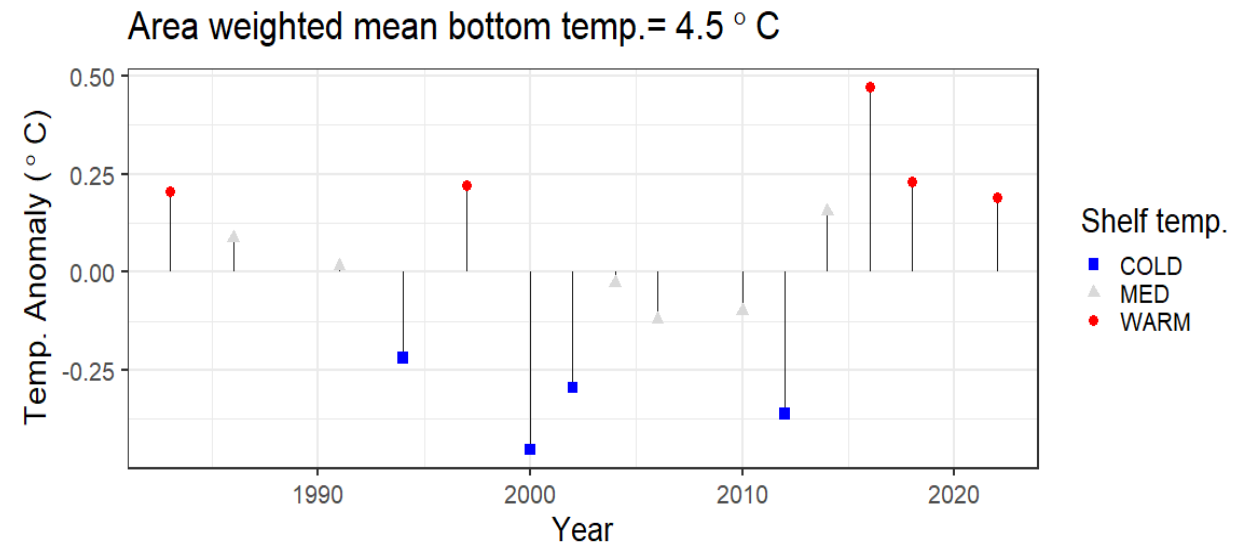
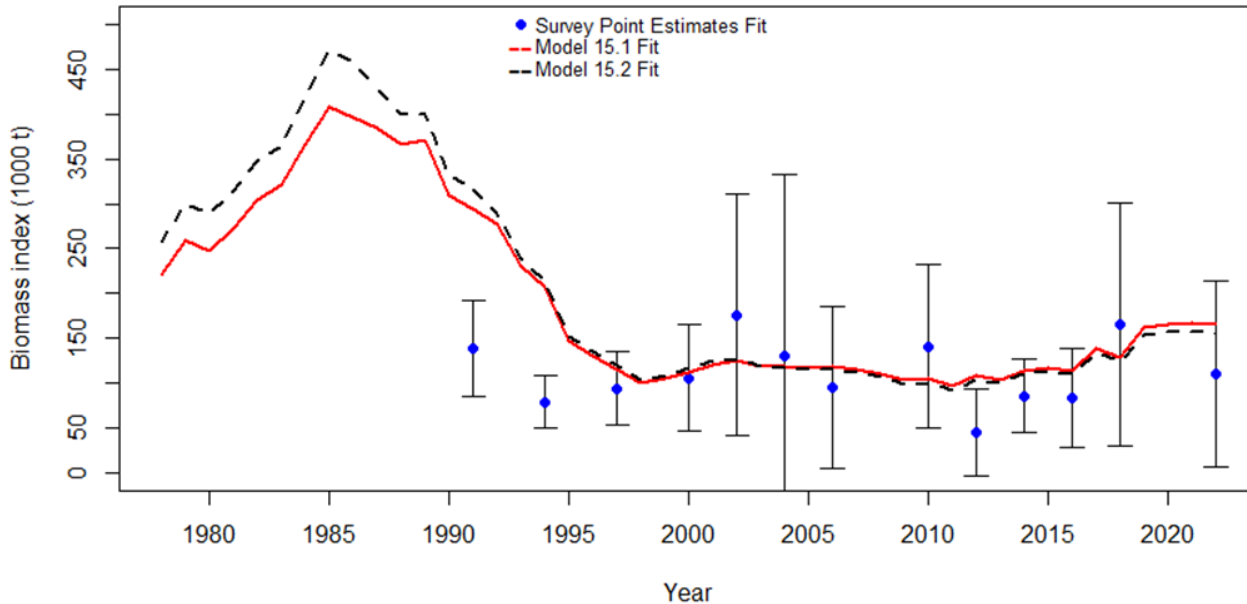
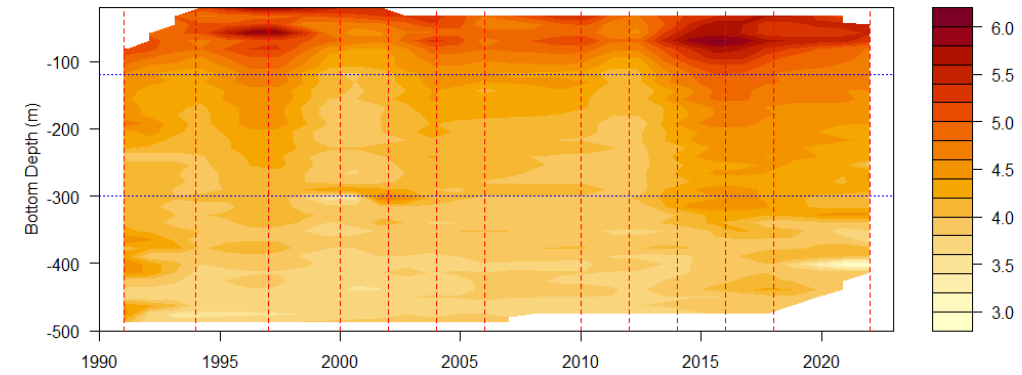
Source	Data	Years
NMFS AI Bottom Trawl Survey	Survey Biomass	1991, 1994, 1997, 2000, 2002, 2004, 2006, 2010, 2012, 2014, 2016, 2018, 2022
NMFS AI Bottom Trawl Survey	Survey Age Data	1991, 1994, 1997, 2000, 2002, 2004, 2006, 2010, 2012, 2014, 2016, 2018
AKFIN Domestic Blend	Total Catch	1991-2022
Ianelli et al. 2001	Total Catch	1978-1990
Observer Program	Fishery Age Data	1978-1987, 1994-1996, 1998, 2018
AICASS	Fishery Age Data	2006 - 2008



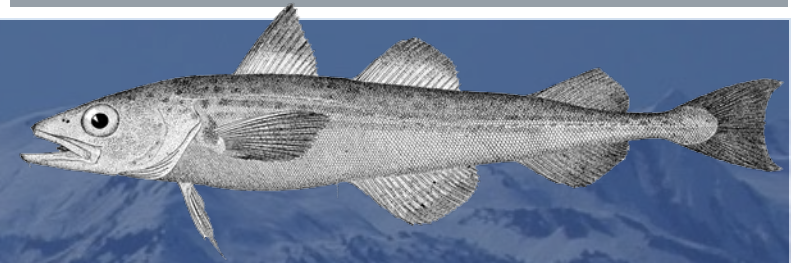
Survey Index – Aleutian Islands Bottom Trawl



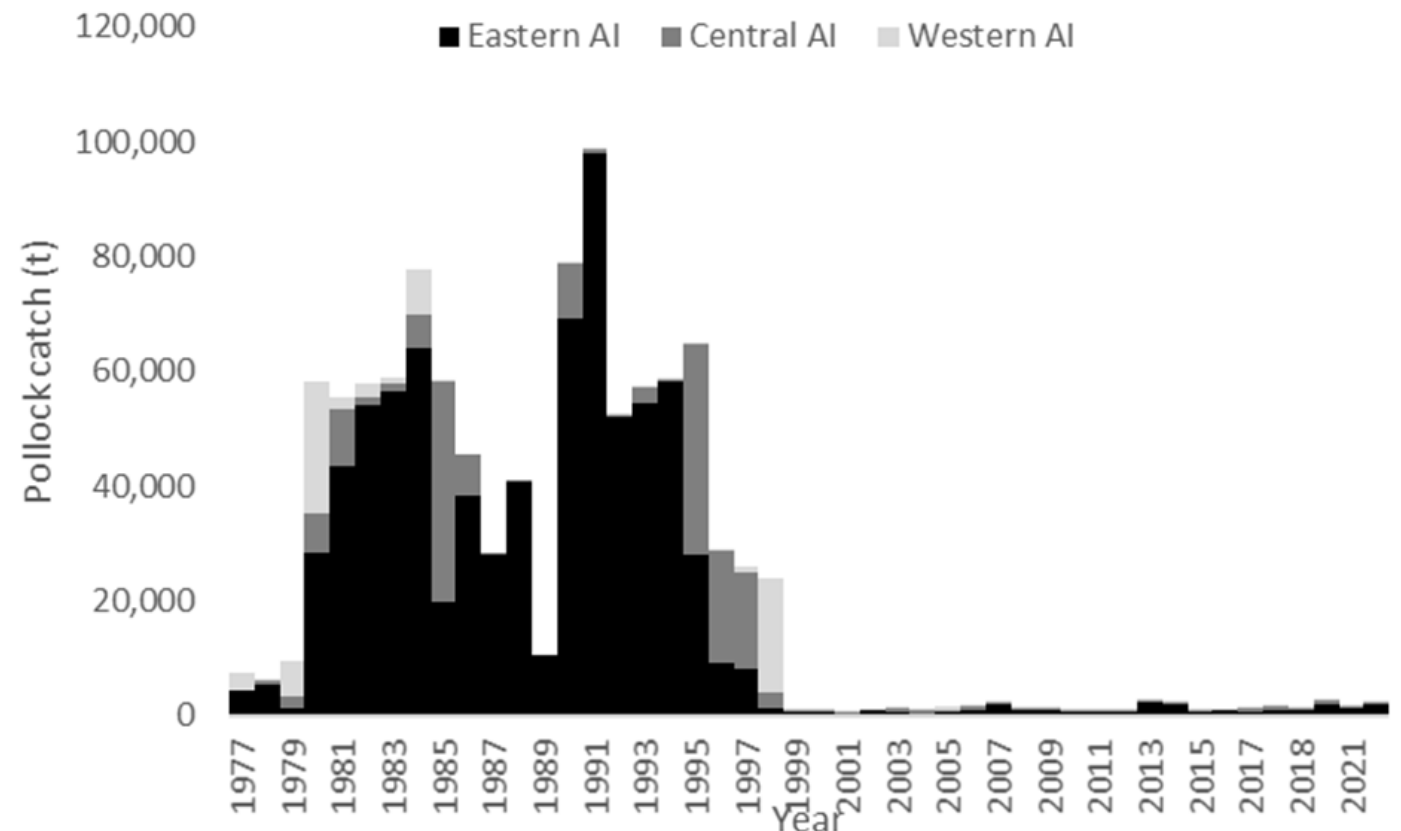
- 2022 survey biomass 34%  drop since 2018
- Continued warm conditions



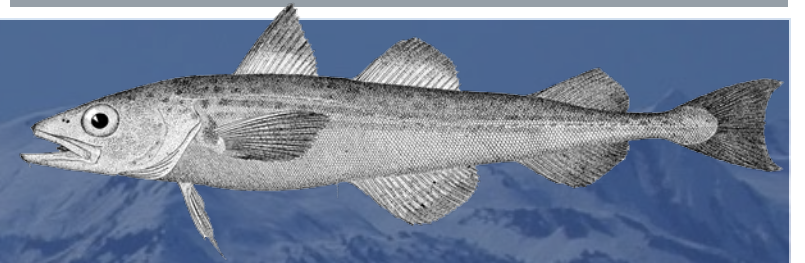
Catch – Fishery Sector



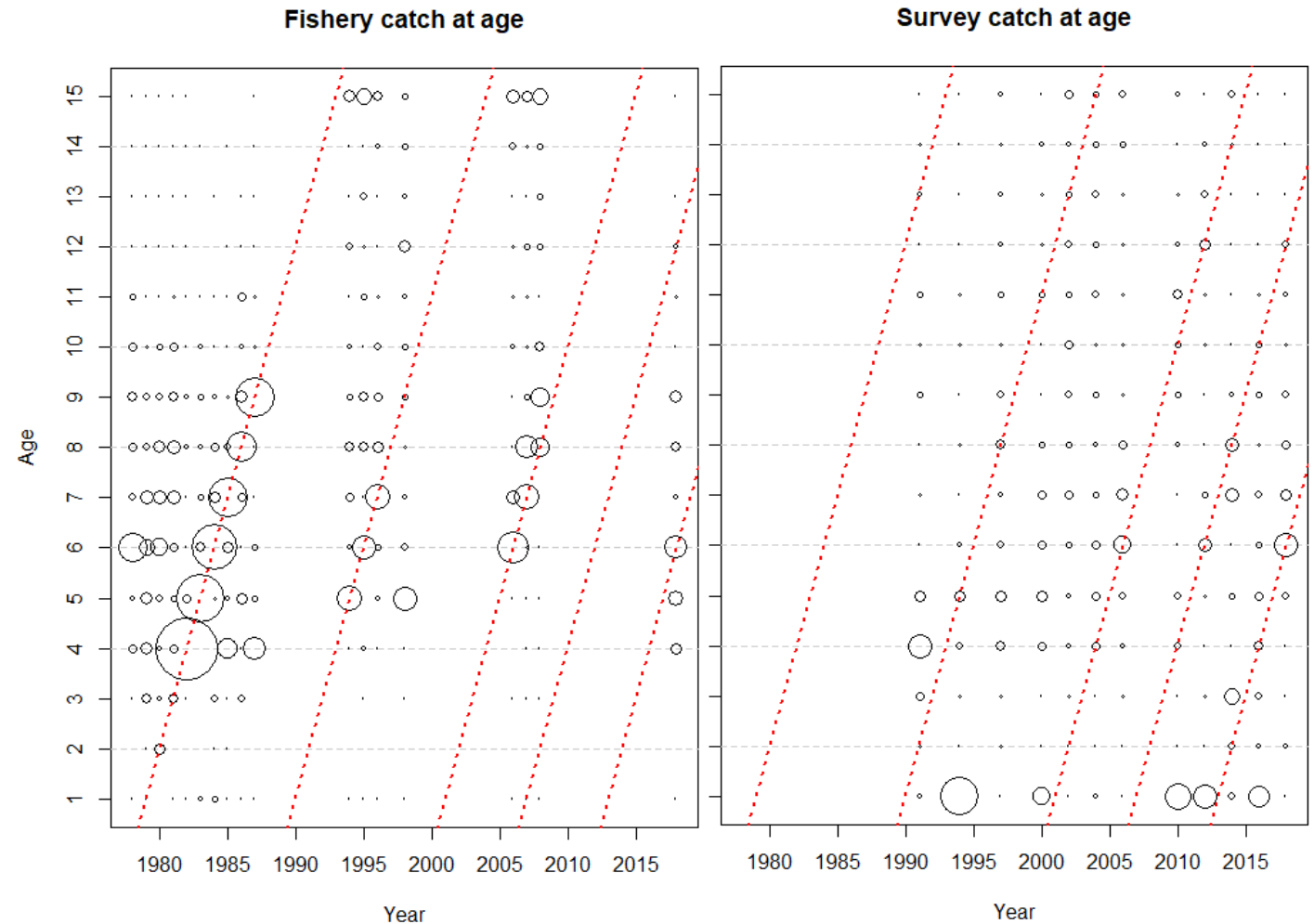
- Continued low catch
 - < 3200 t annually since 1999
- 2,726 t in 2022
- 1,840 t in 2021



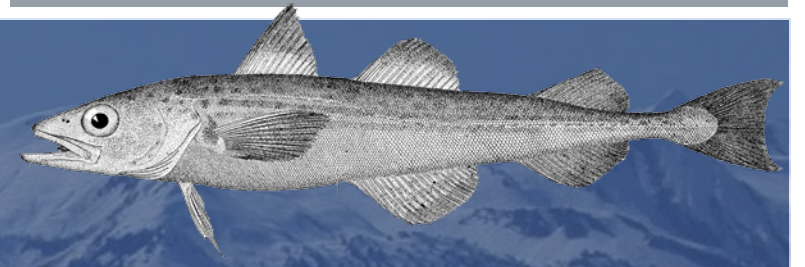
Age composition data



- No new age data since 2018

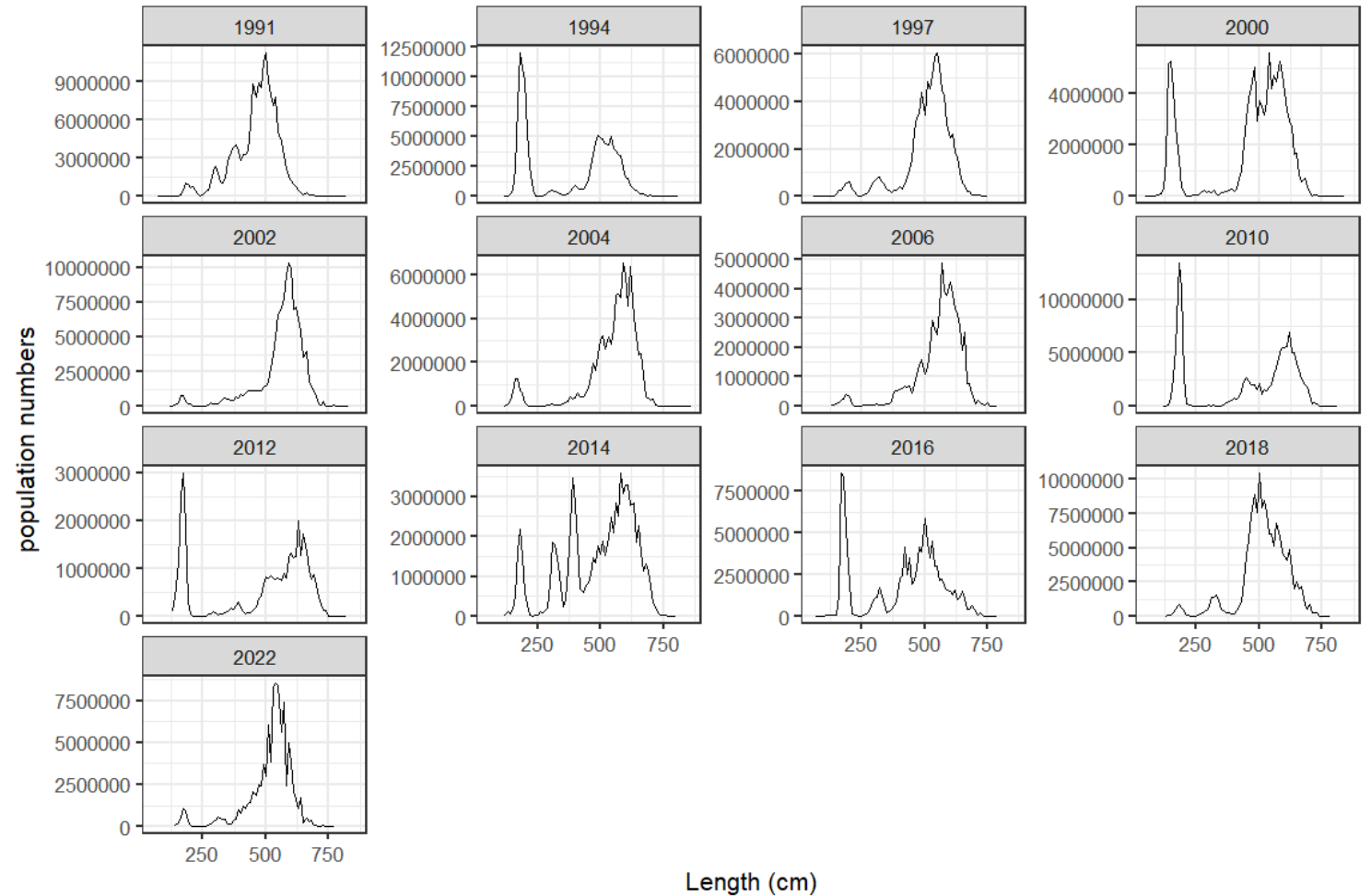


Survey size composition

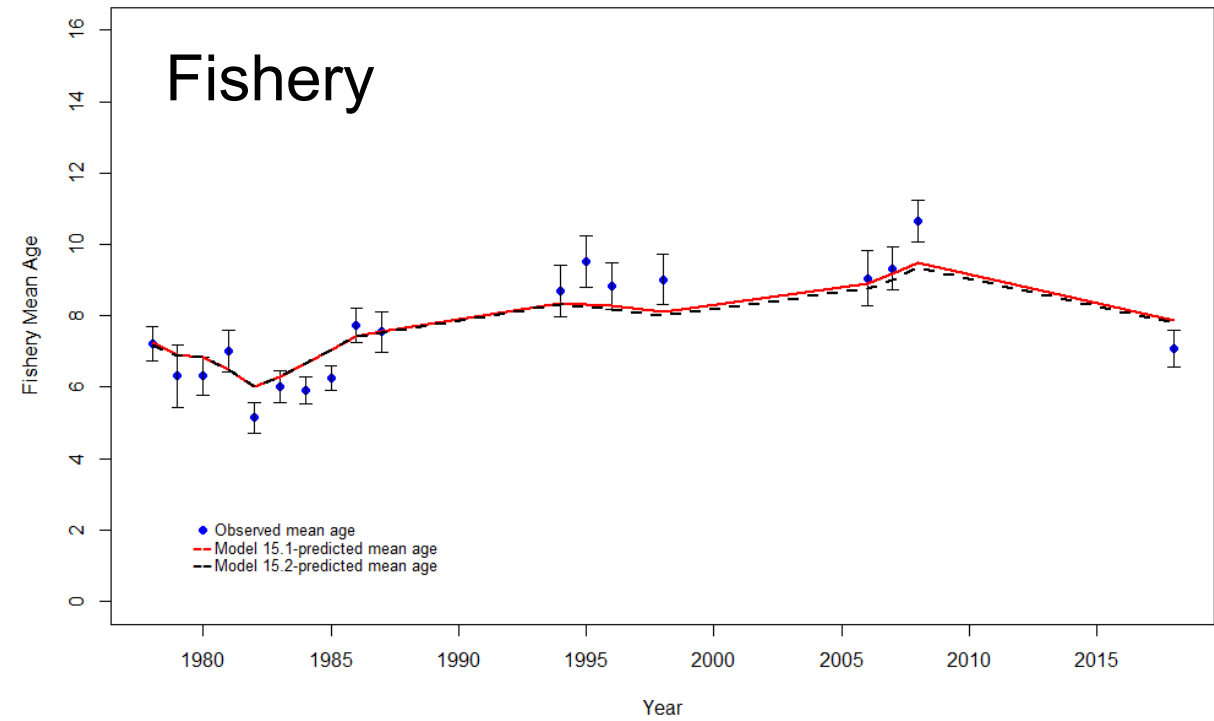
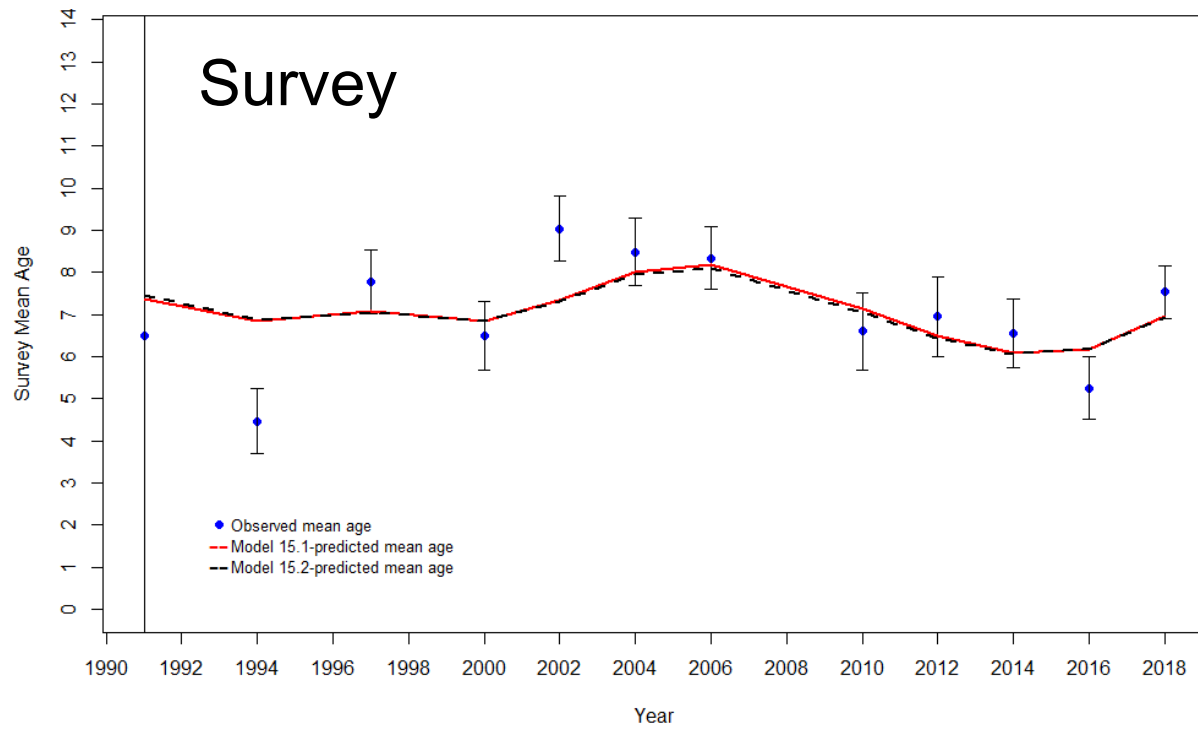
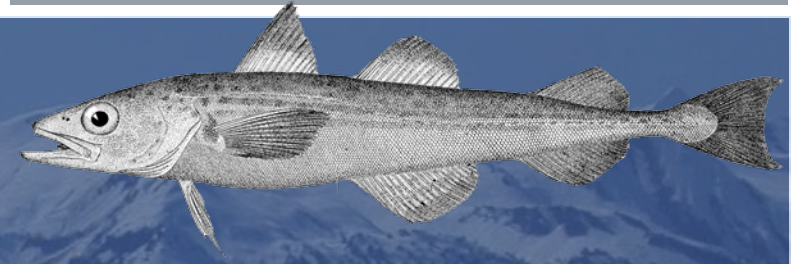


- Few small fish in 2018 and 2022
- Very similar size composition for 2018 and 2022

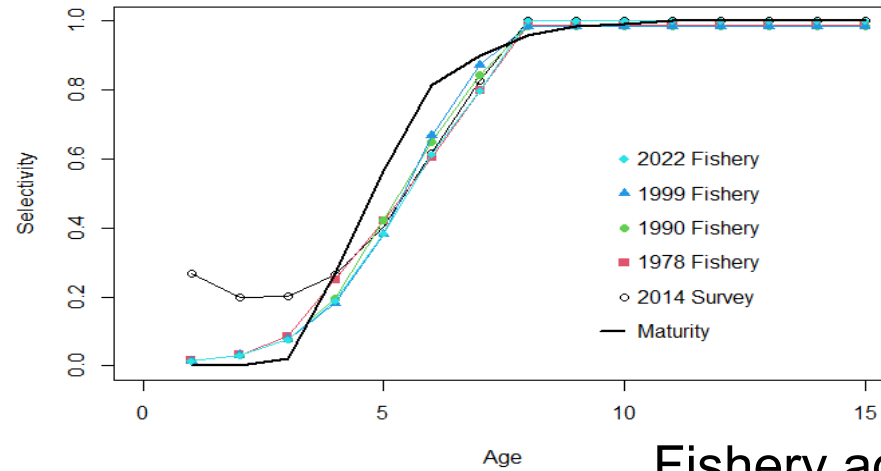
Survey length compositions



Fit to age composition data



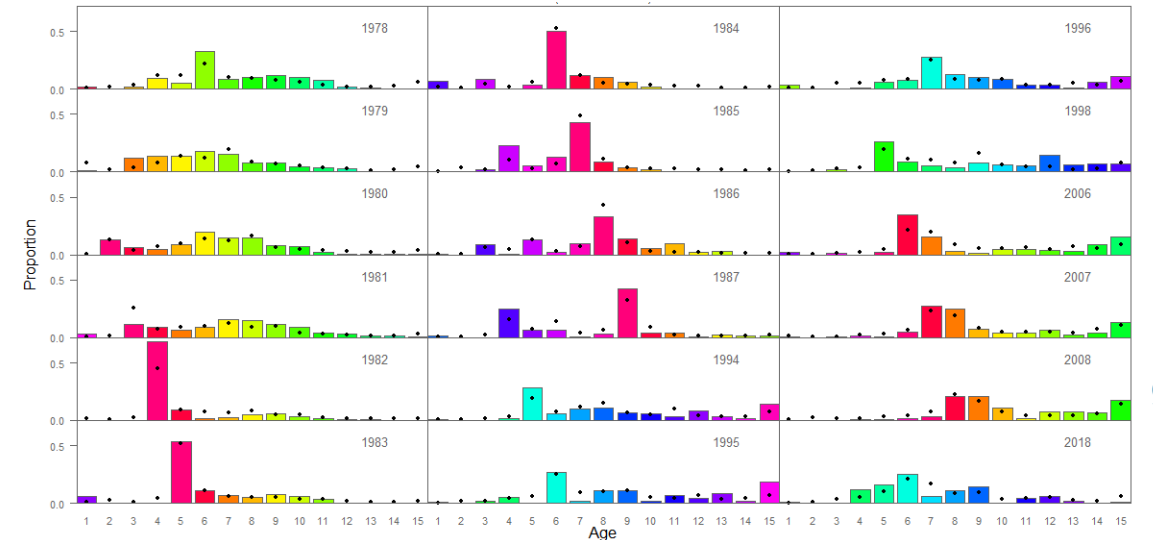
Selectivity and Fits to age composition data



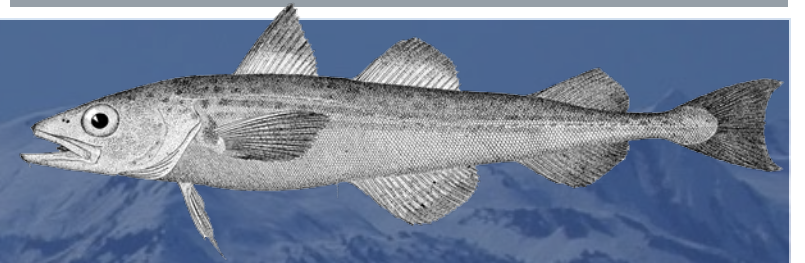
Survey age composition



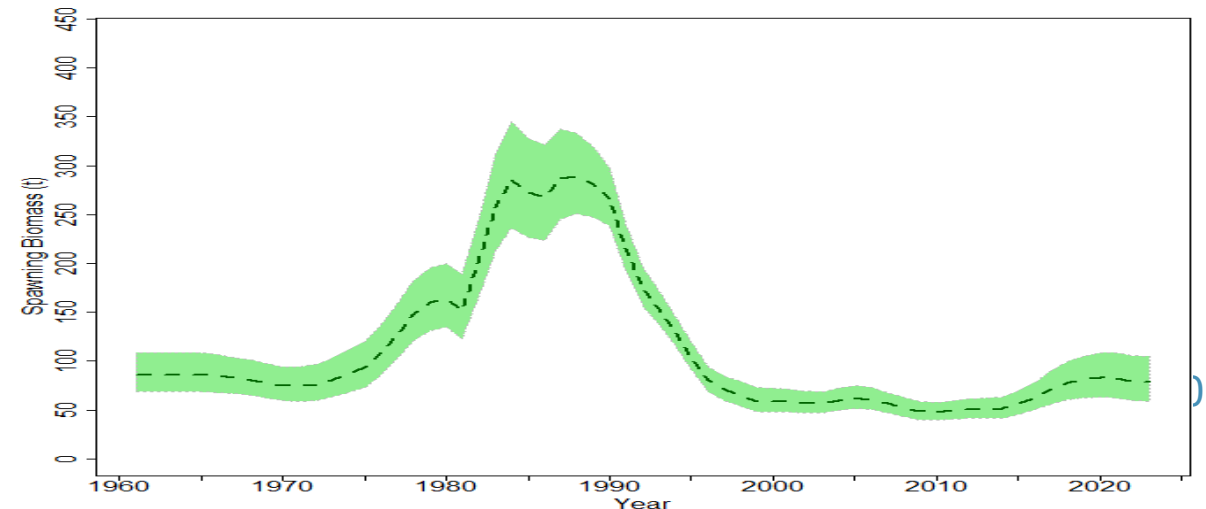
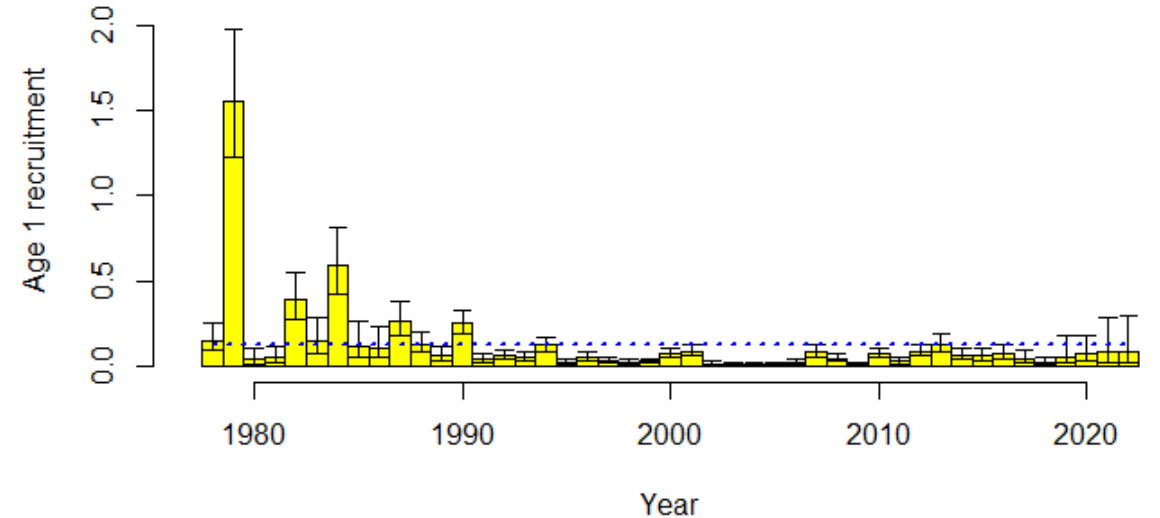
Fishery age composition



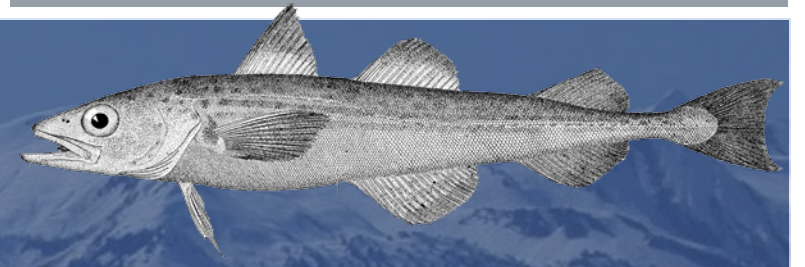
Model 15.1 Time Series



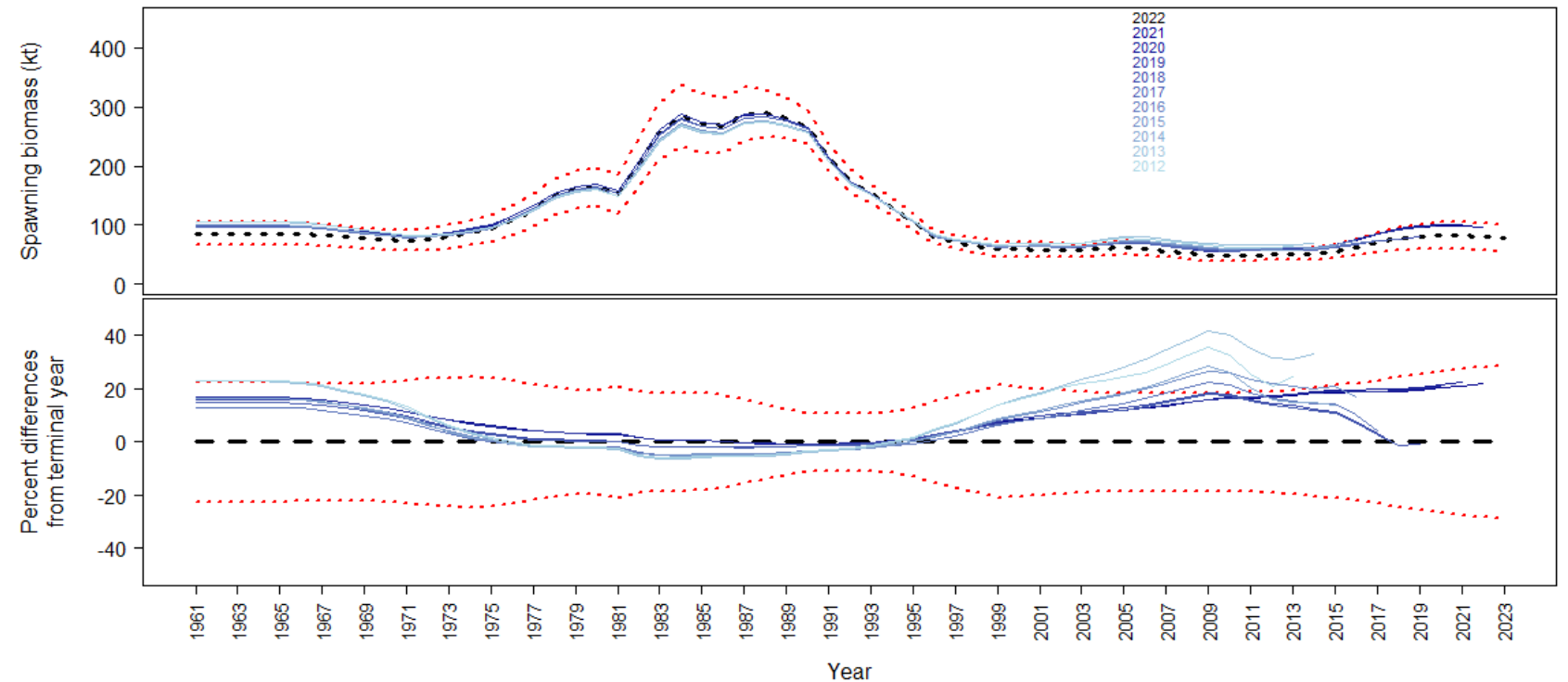
- Continued low recruitment
- Continued low spawning biomass with relatively flat trajectory over last 3 years.



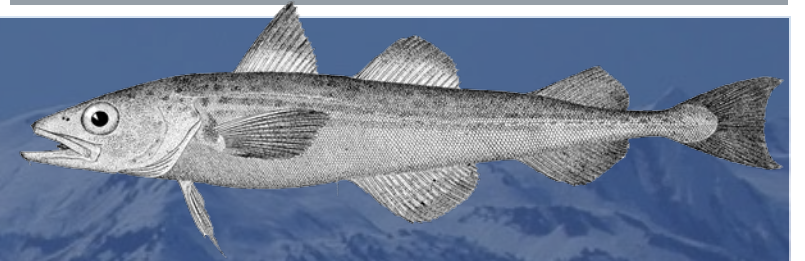
Model 15.1 – Retrospective analysis



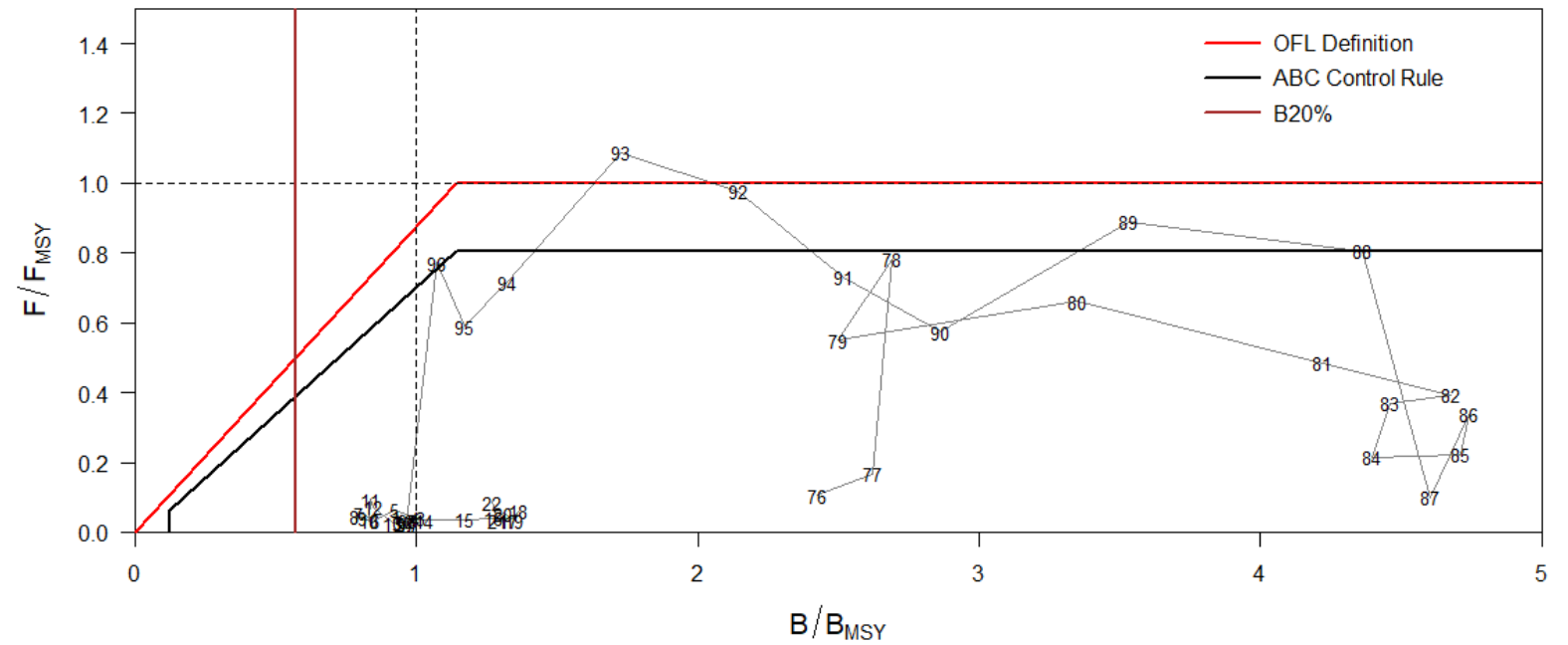
- Consistently low positive bias on Mohn's ρ for SSB
- Mohn's $\rho = 0.156$



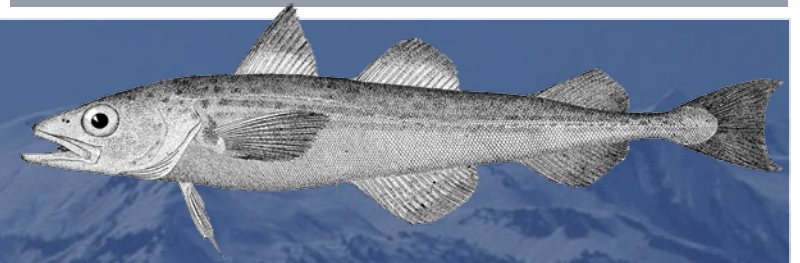
Phase Plane



- Very low exploitation for the previous 23 years.
- Continued low abundance and biomass

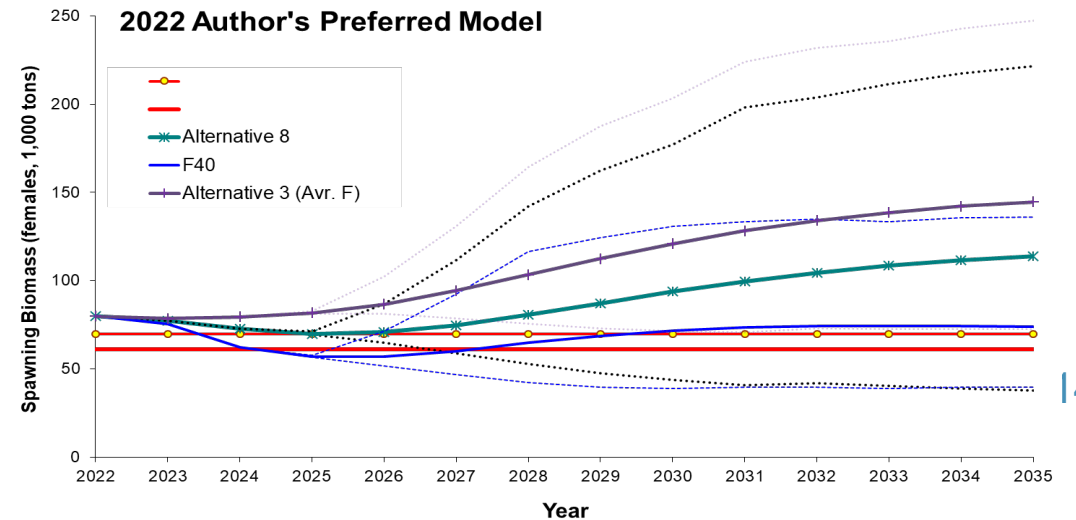
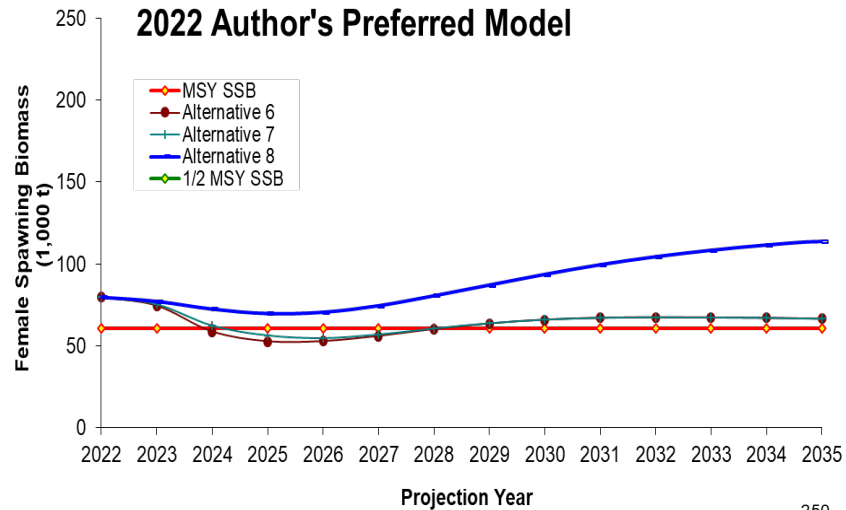


New Series ensemble – Projection scenarios

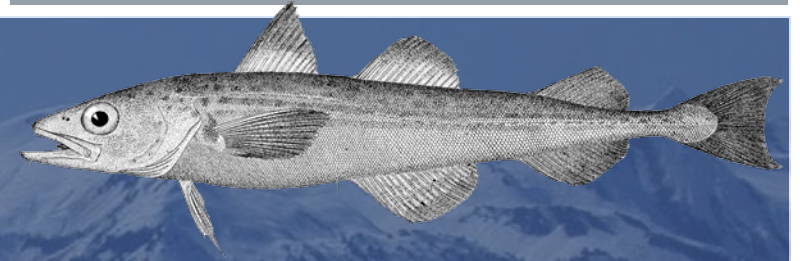


- Not overfishing
- Not overfished
- Not approaching an overfished condition

- With average recruitment projected decline through 2026



Harvest Recommendation



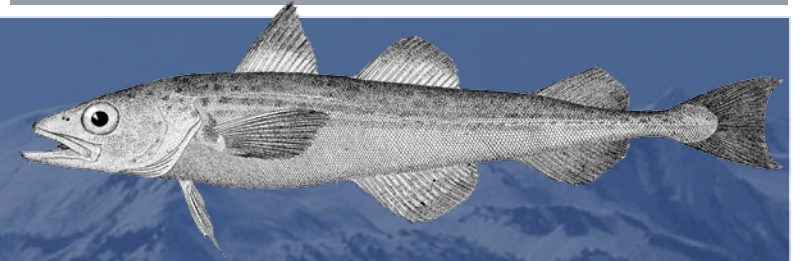
- maxABC is well above the 19,000 t cap

Summary of Results

Quantity	As estimated or specified last year for:		As estimated or recommended this year for:	
	2022	2023	2023	2024*
M (natural mortality rate)	0.21		0.21	
Tier	3a		3a	
Total (age 1+) biomass (t)	308,525	330,375	264,173	281,618
Female spawning biomass (t)				
Projected	89,516	87,650	78,628	80,432
$B_{100\%}$	185,475		174,218	
$B_{40\%}$	74,190		69,687	
$B_{35\%}$	64,916		60,976	
F_{OFL}	0.390	0.390	0.380	0.380
$\underline{\text{max}F_{ABC}}$	0.313	0.313	0.305	0.305
F_{ABC}	0.313	0.313	0.305	0.305
OFL (t)	61,264	61,379	52,383	52,043
$\underline{\text{maxABC}}$ (t)	50,752	50,825	43,413	43,092
ABC (t)	50,752	50,825	43,413	43,092
Status	As determined <i>this</i> year for:		As determined <i>this</i> year for:	
	2020	2021	2021	2022
Overfishing	no	no	no	n/a
Overfished	n/a	n/a	n/a	no
Approaching overfished	n/a	n/a	n/a	no

* Projection based on estimated catches of 3,000 t for 2022 and 1,670 t for 2023, the five-year average F (2017-2021) of 0.026, used in place of maximum permissible ABC .

Risk Table



<i>Assessment-related considerations</i>	<i>Population dynamics considerations</i>	<i>Environmental/ ecosystem considerations</i>	<i>Fishery Performance considerations</i>
Level 1: Normal	Level 1: Normal	Level 1: Normal	Level 1: Normal

Assessment : No heightened concerns

Pop. Dynamics: All concerns captured within the models and ensemble.

Environment/Ecosystem: No heightened concerns except continued heatwave similar to 2018.

Fishery Performance: No heightened concerns.



QUESTIONS?

