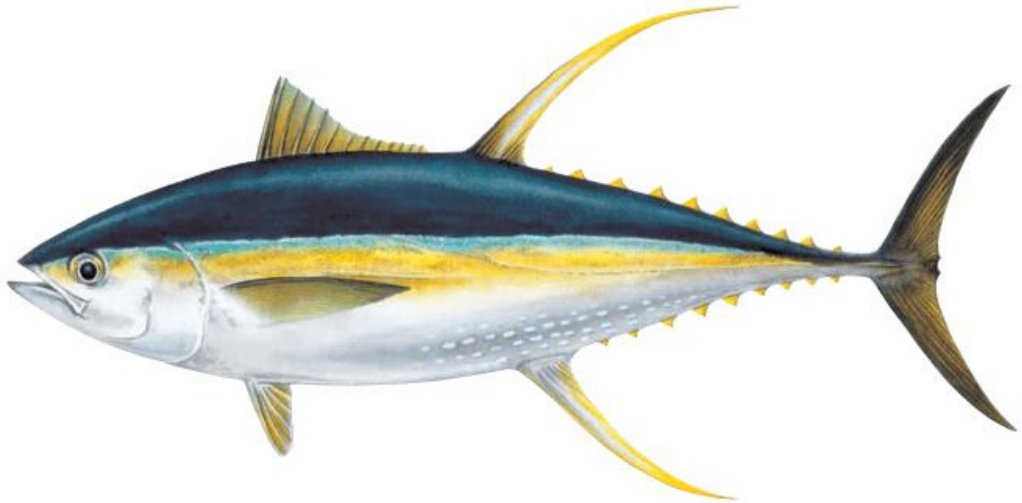
Pacific Community
Communauté du Pacifique

Previous Yellowfin Tuna Assessment Summary

P1 – Arni Magnusson



Model

MULTIFAN-CL

Length-based, Age-structured, 9 regions

Fitting to: CPUE, Length comps, Weight comps, Tags, Otoliths

Quarterly time steps 1952 -2018

32 extraction fisheries, 9 index fisheries (LL)

New Features

Growth curve estimated from otoliths, internally or externally, or based on modal pregression

Spatio-temporal analysis of CPUE indices, incorporated into MFCL as Index fisheries

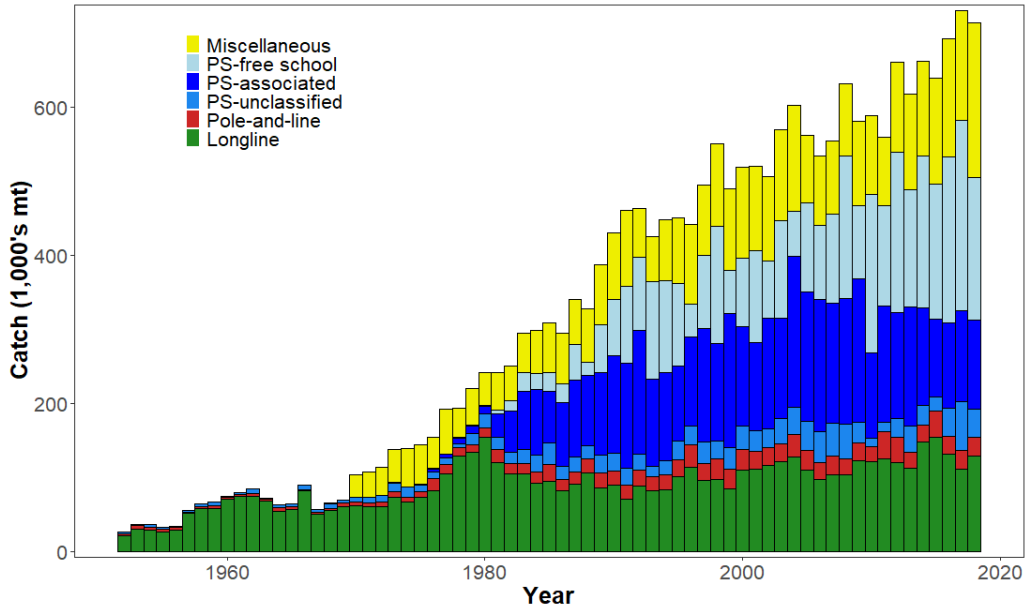
Tag mixing enforced to be 182 days

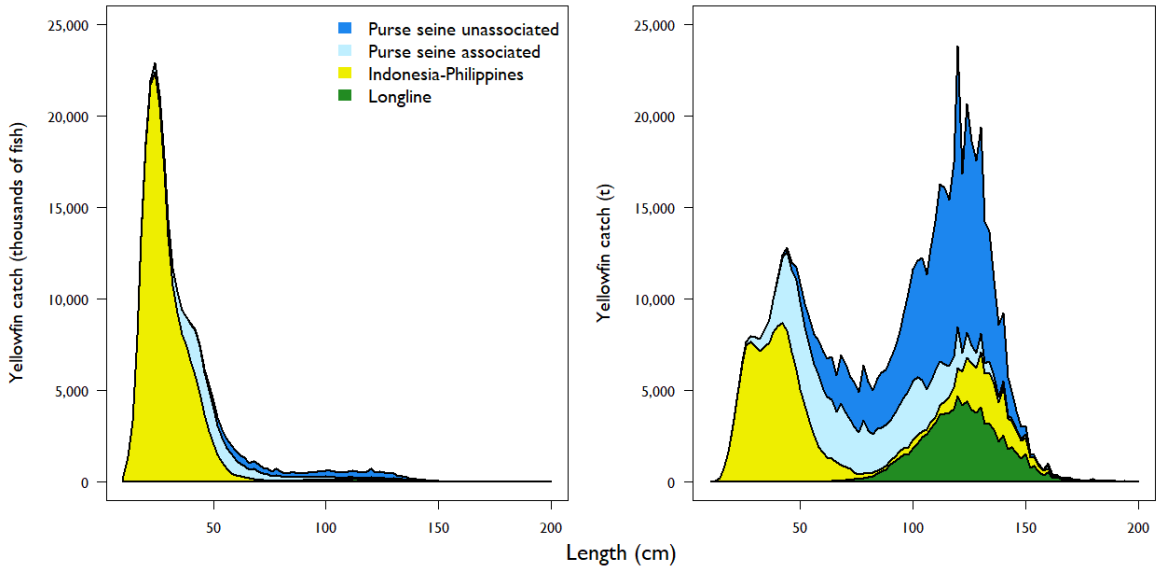
New tagging data from the Japanese Tagging Program (JPTP)

Maturity at age calculated from maturity at length, spawning fraction no longer used

Plus group at 10 yrs

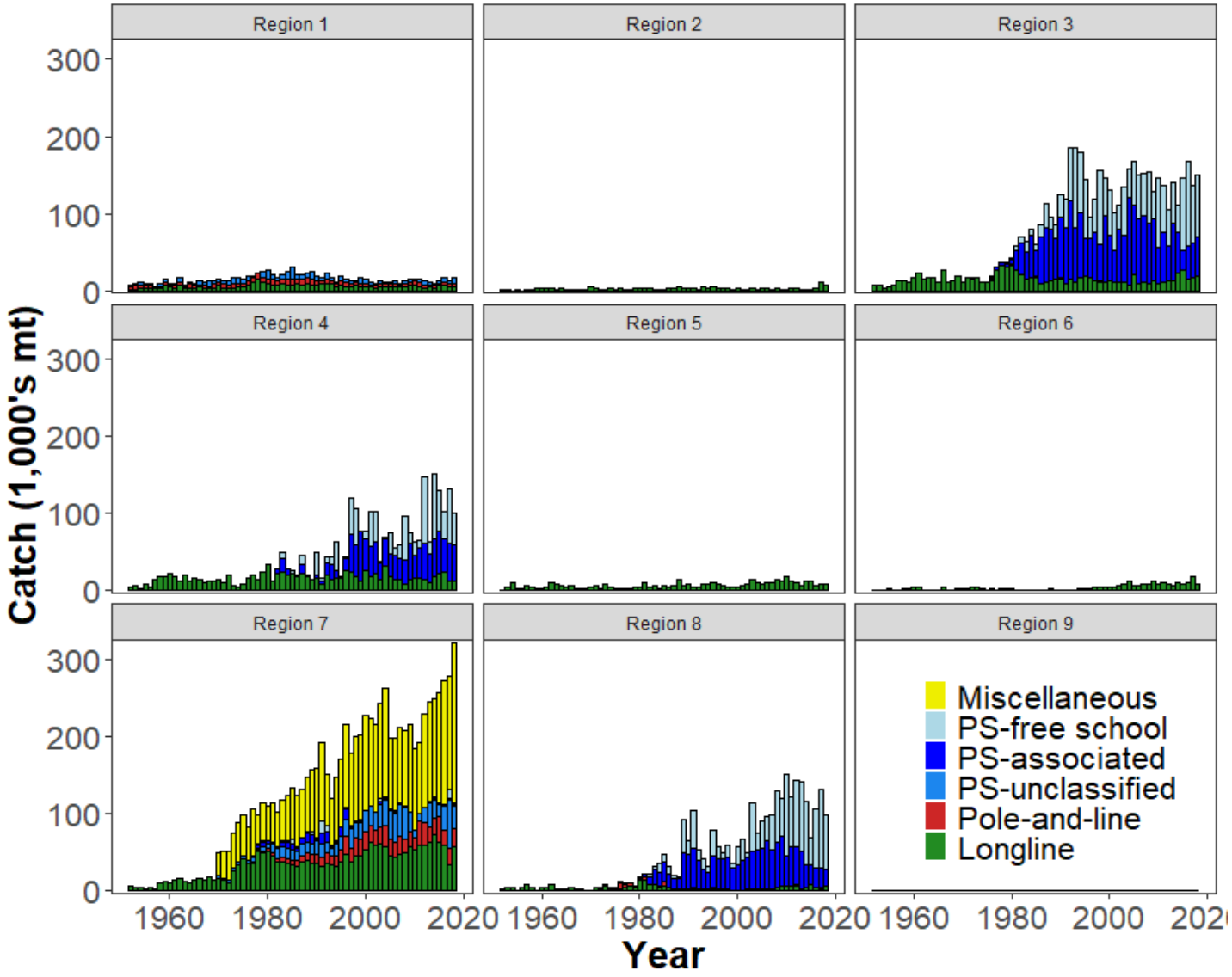
Catches





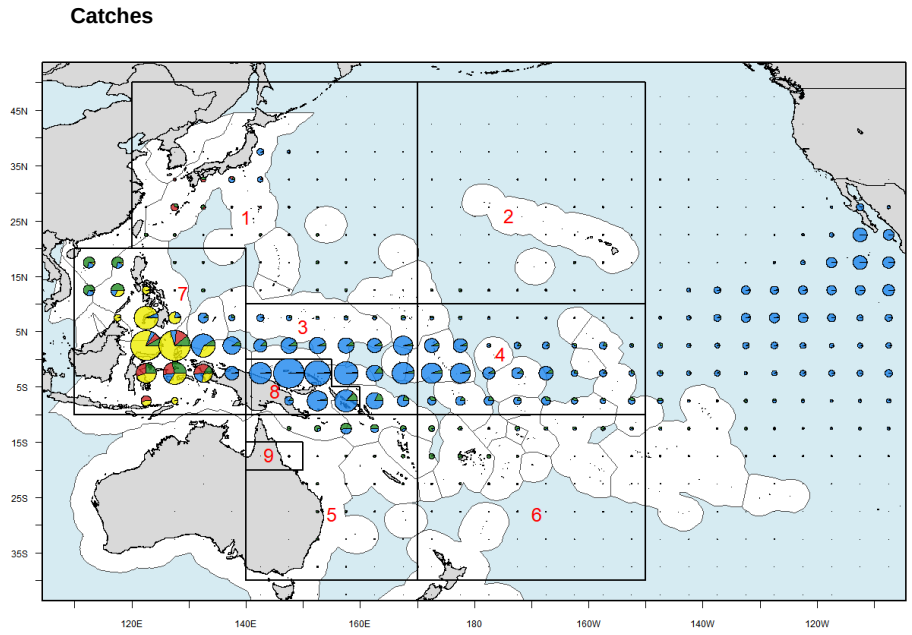
The smallest fish are caught especially in the Indonesian - Philippine fisheries

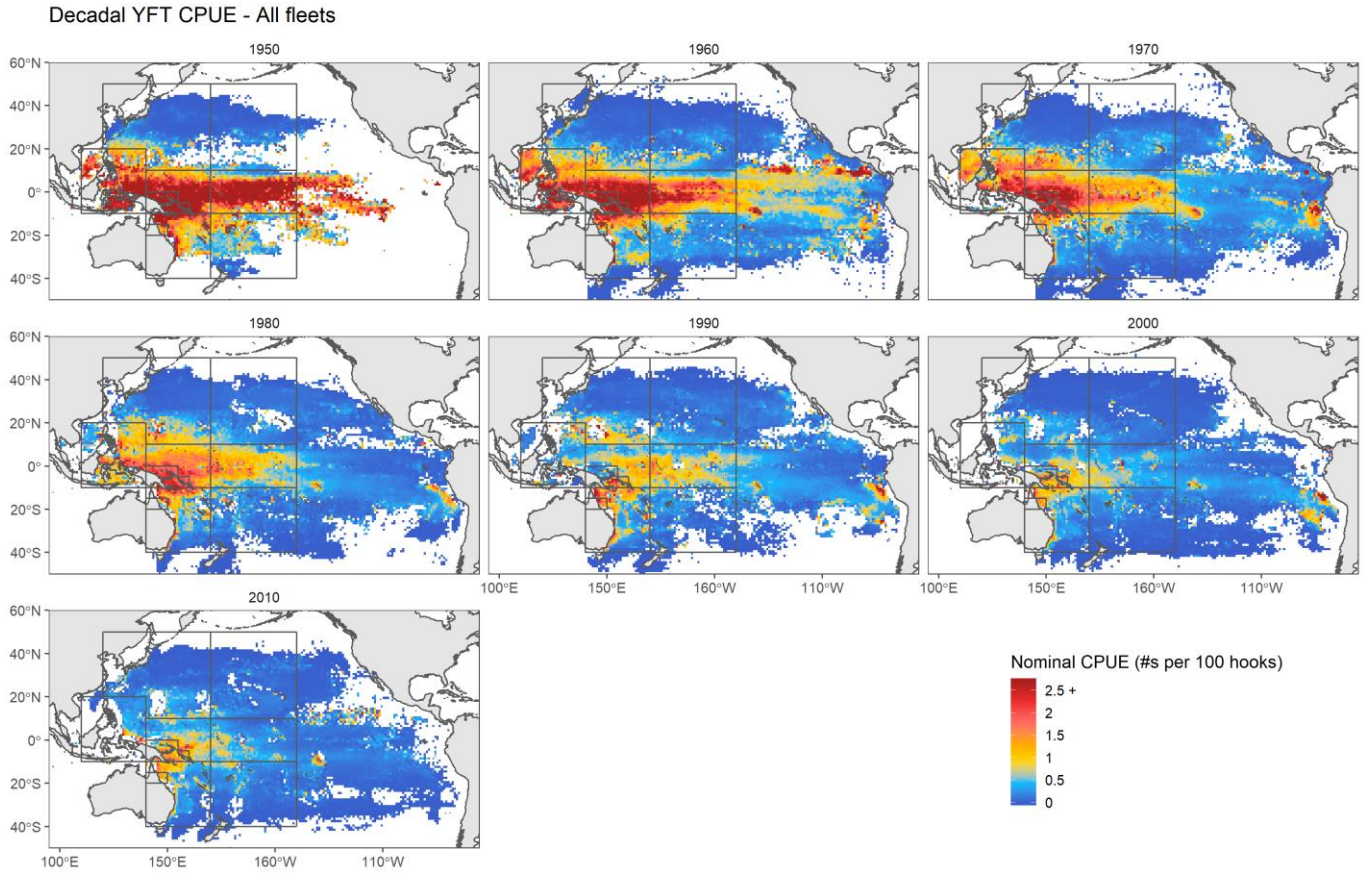
Catches



The vast majority of catches are caught in the Equatorial regions (3, 4, 7, and 8)

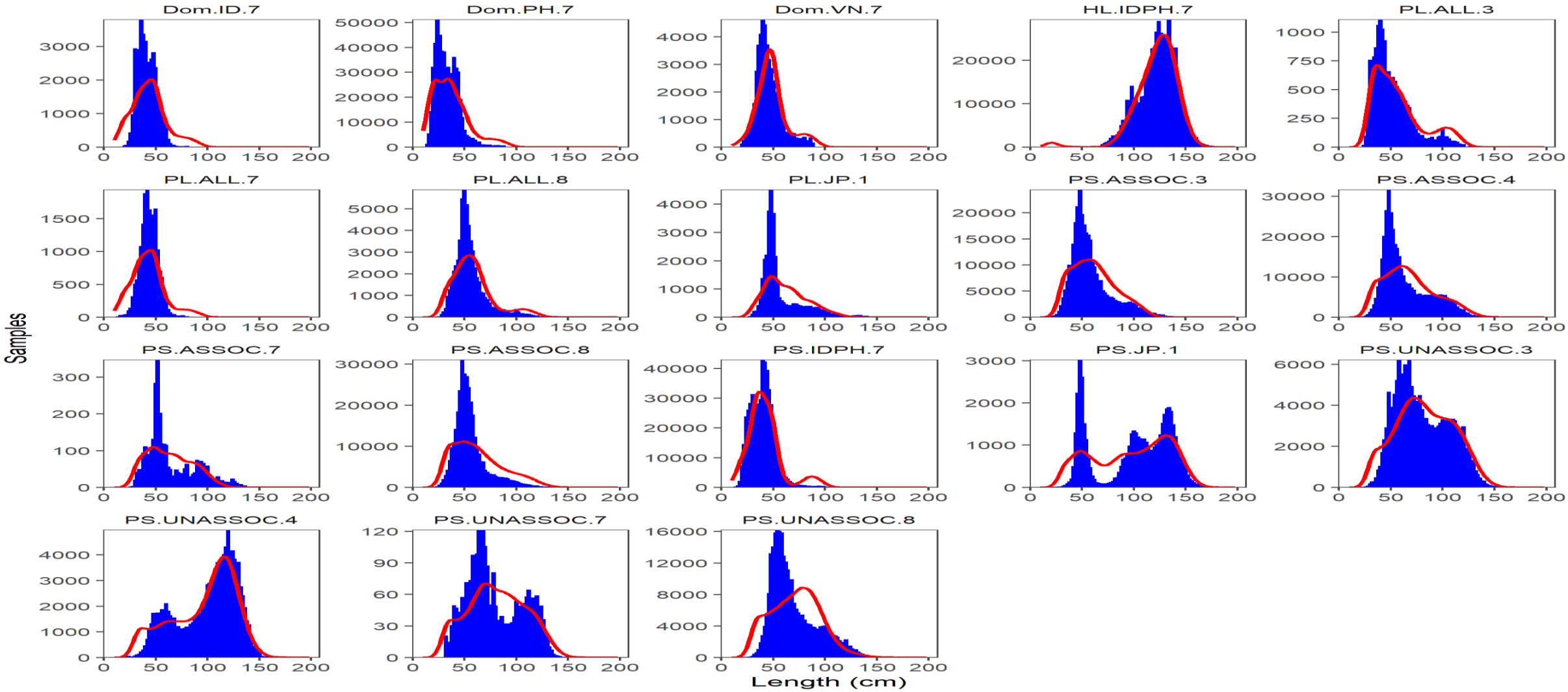
Spatial Distribution



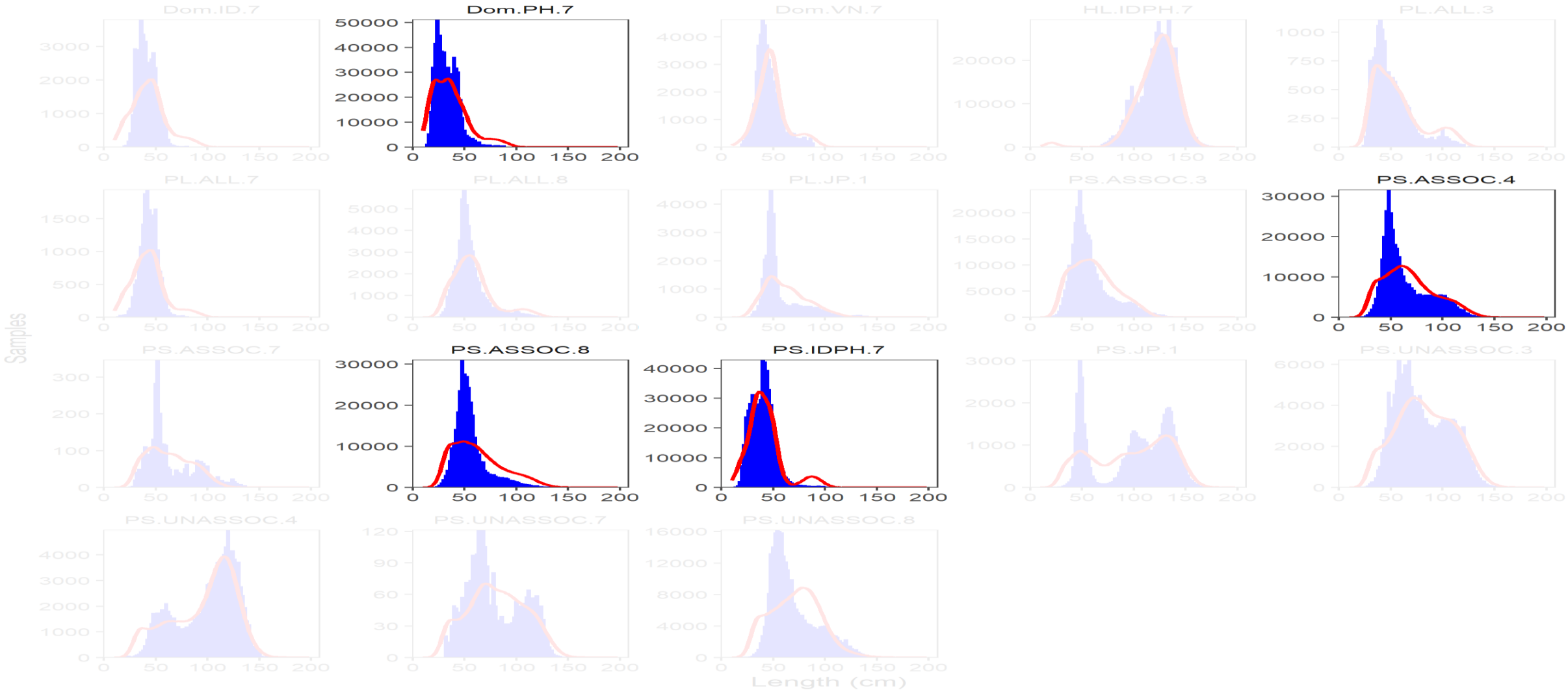


Catch and CPUE data indicate that around 80% are in the Tropical regions, and around 20% are in the Northern & Southern regions

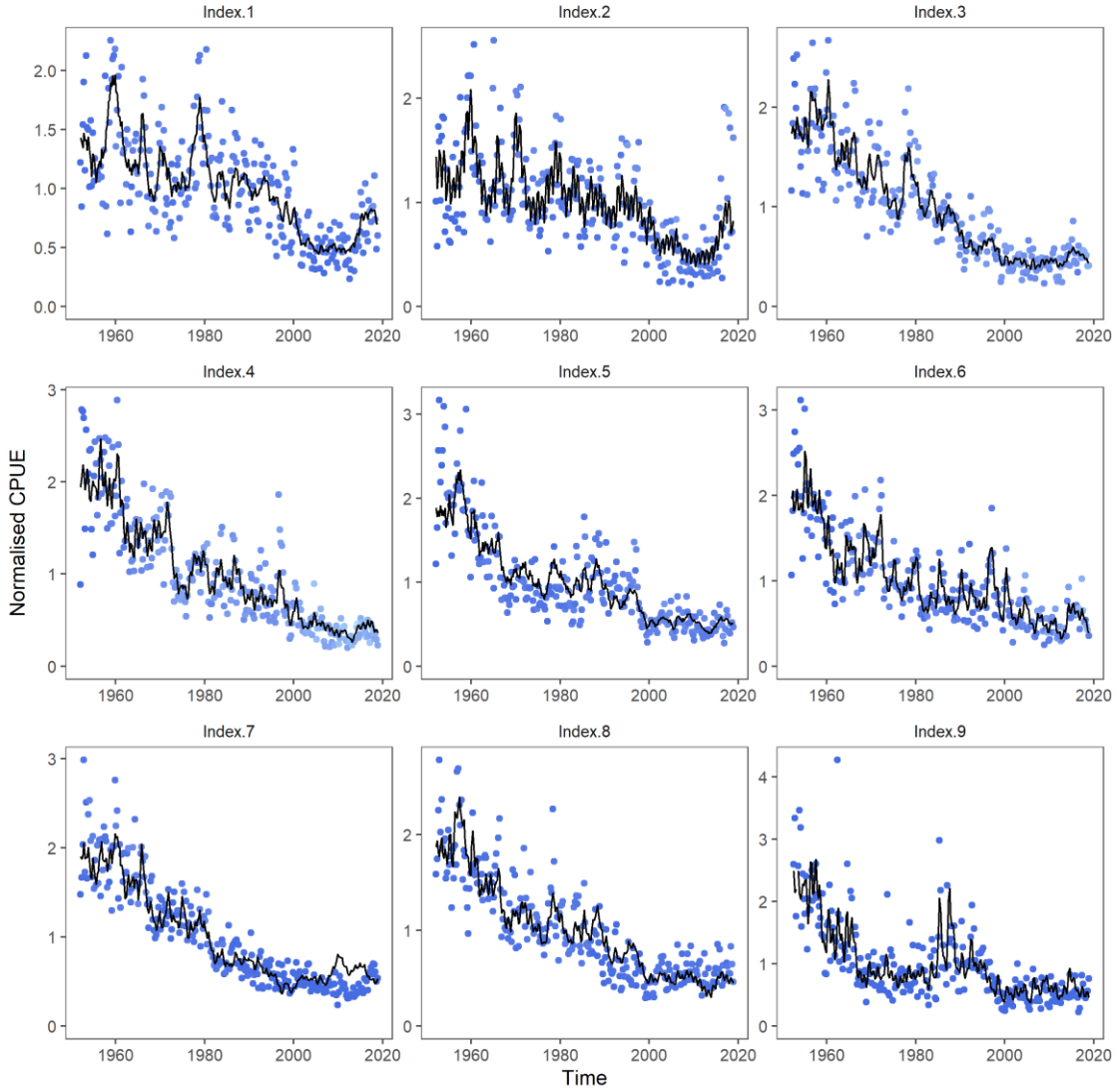
Fit to Length Comps



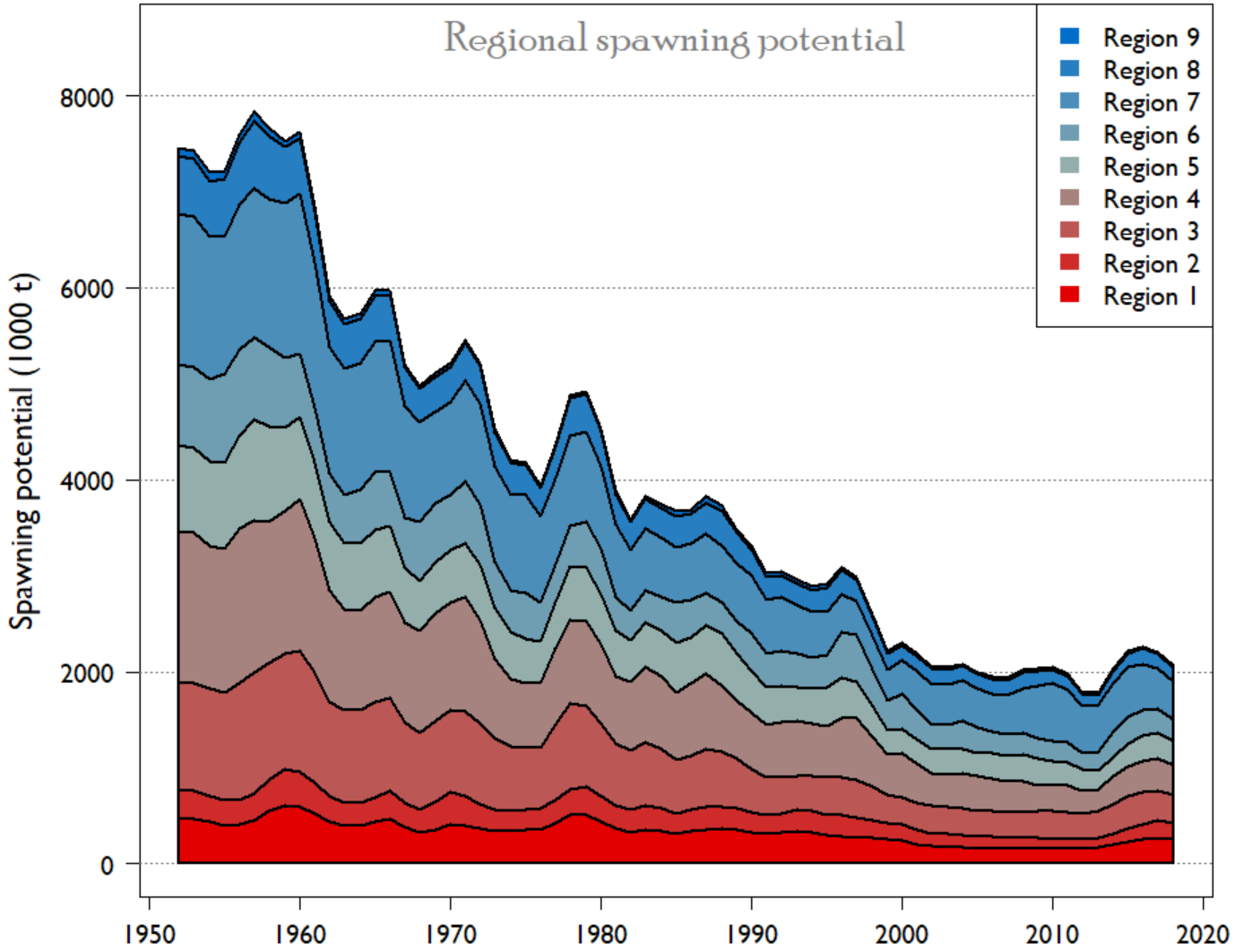
Fit to Length Comps



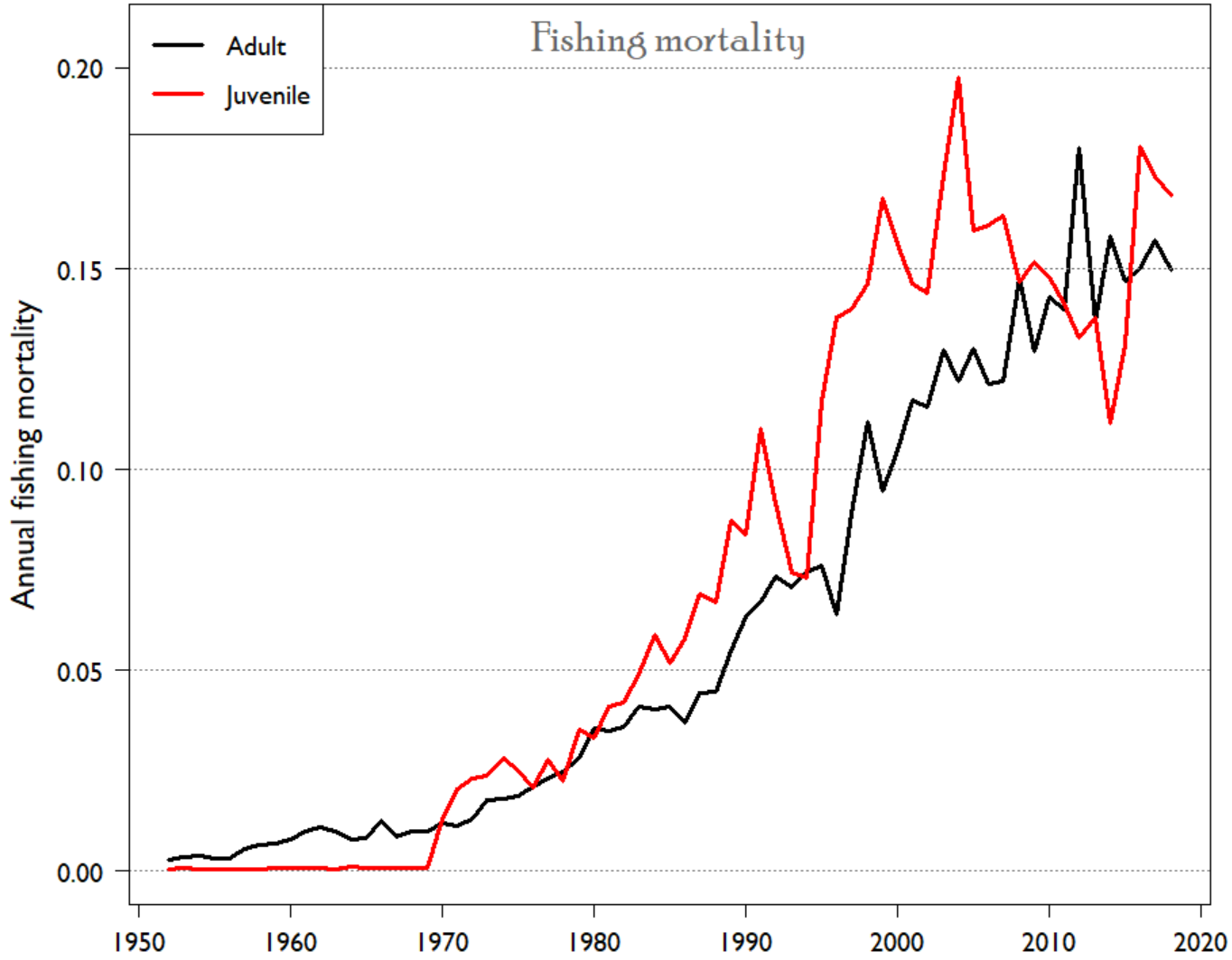
Fit to CPUE


Index.1
Index.2
Index.3
Index.4
Index.5
Index.6
Index.7
Index.8
Index.9
Normalised CPUE
Time
1960
1980
2000
2020

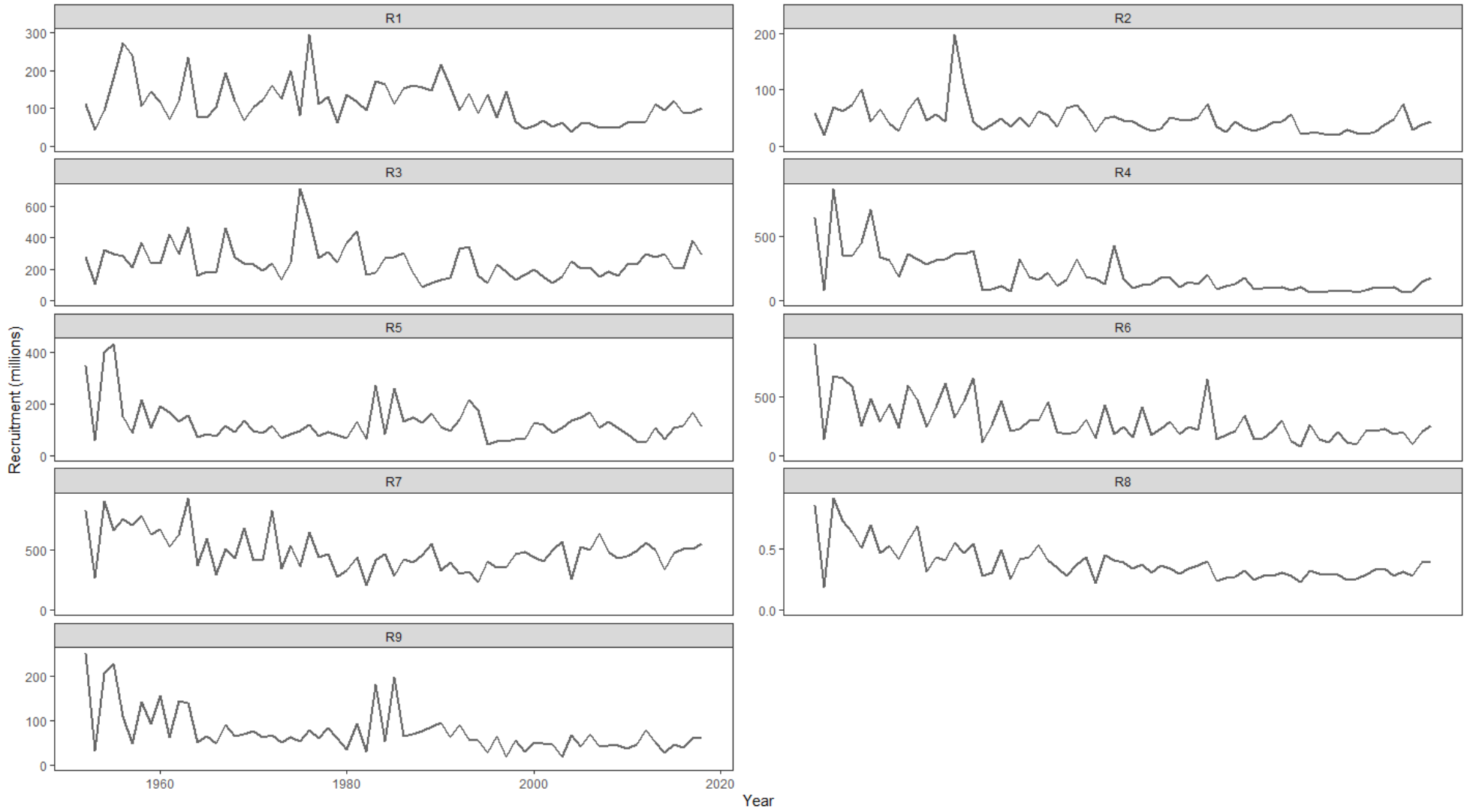
Biomass


Regional spawning potential
Region 9
Region 8
Region 7
Region 6
Region 5
Region 4
Region 3
Region 2
Region 1
Spawning potential (1000 t)
8000
6000
4000
2000
0
1950
1960
1970
1980
1990
2000
2010
2020

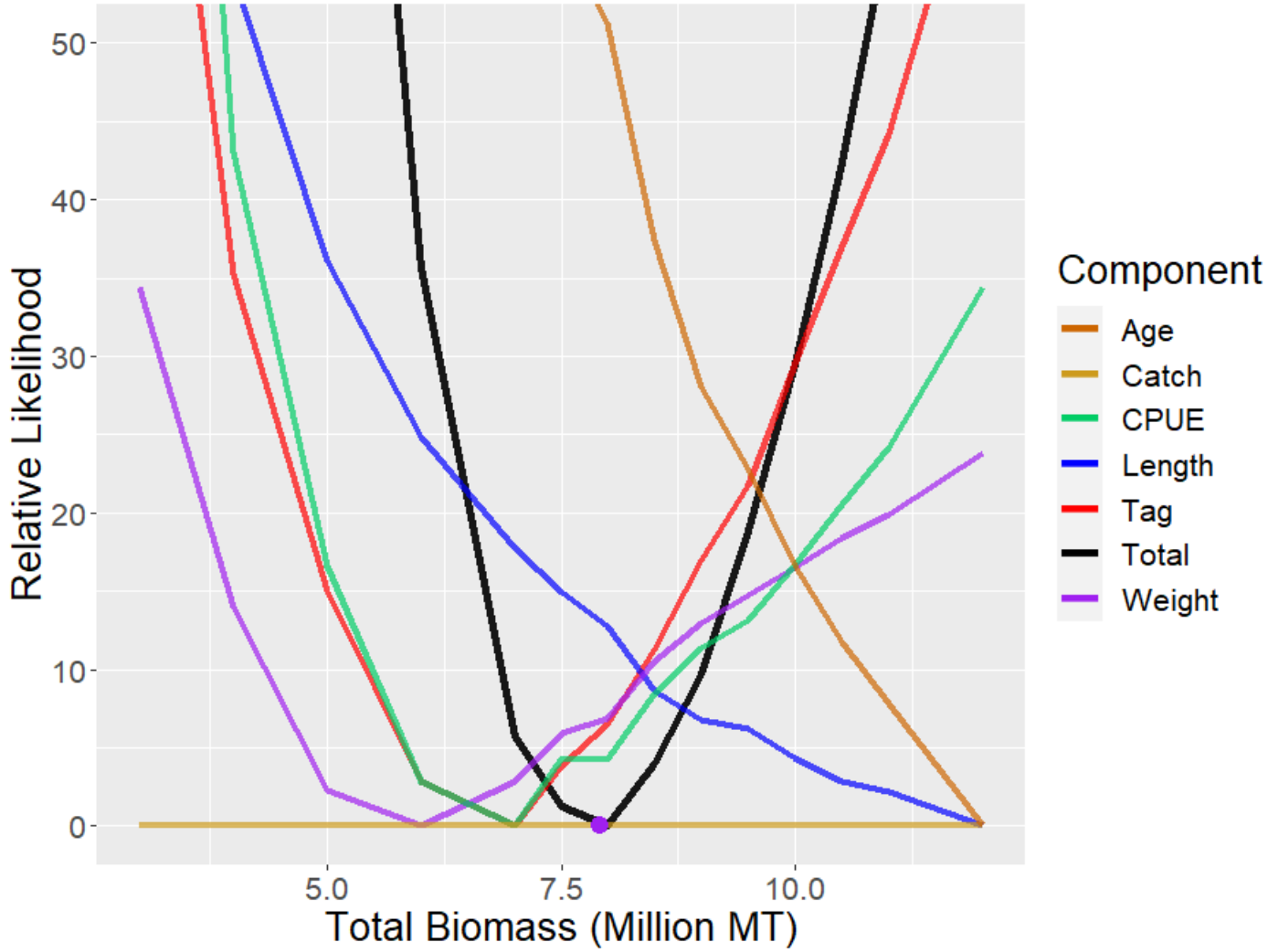
Fishing Mortality



Recruitment

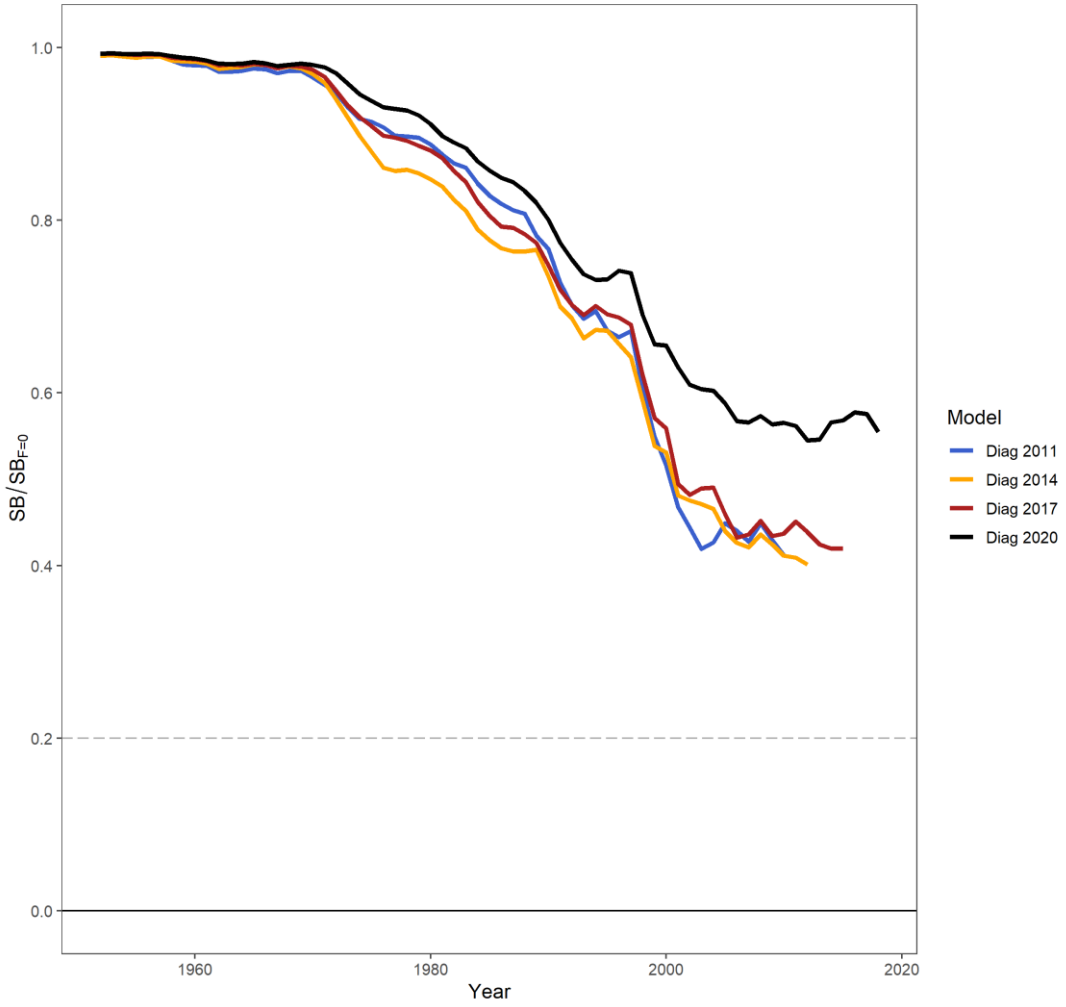


Likelihood Profile

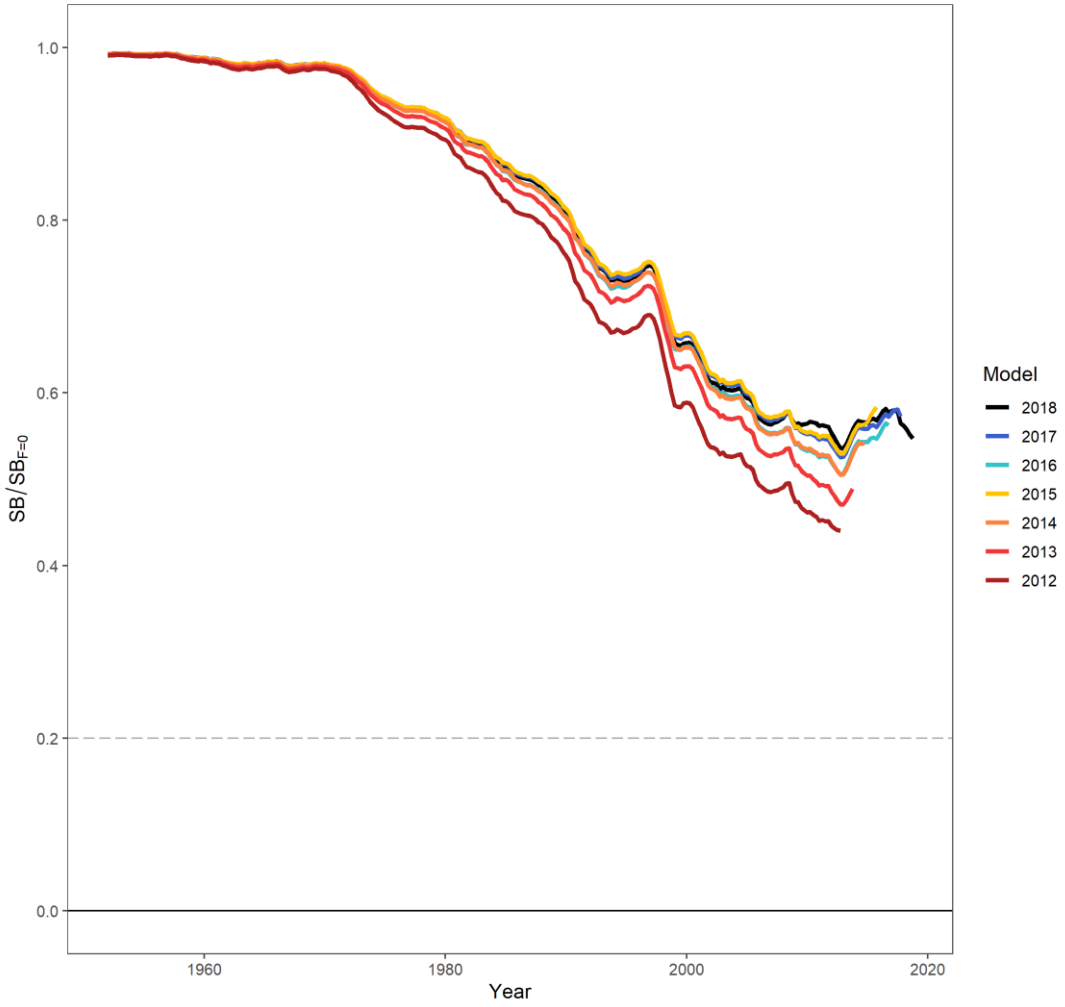


Retrospectives

Assessments



Data peels



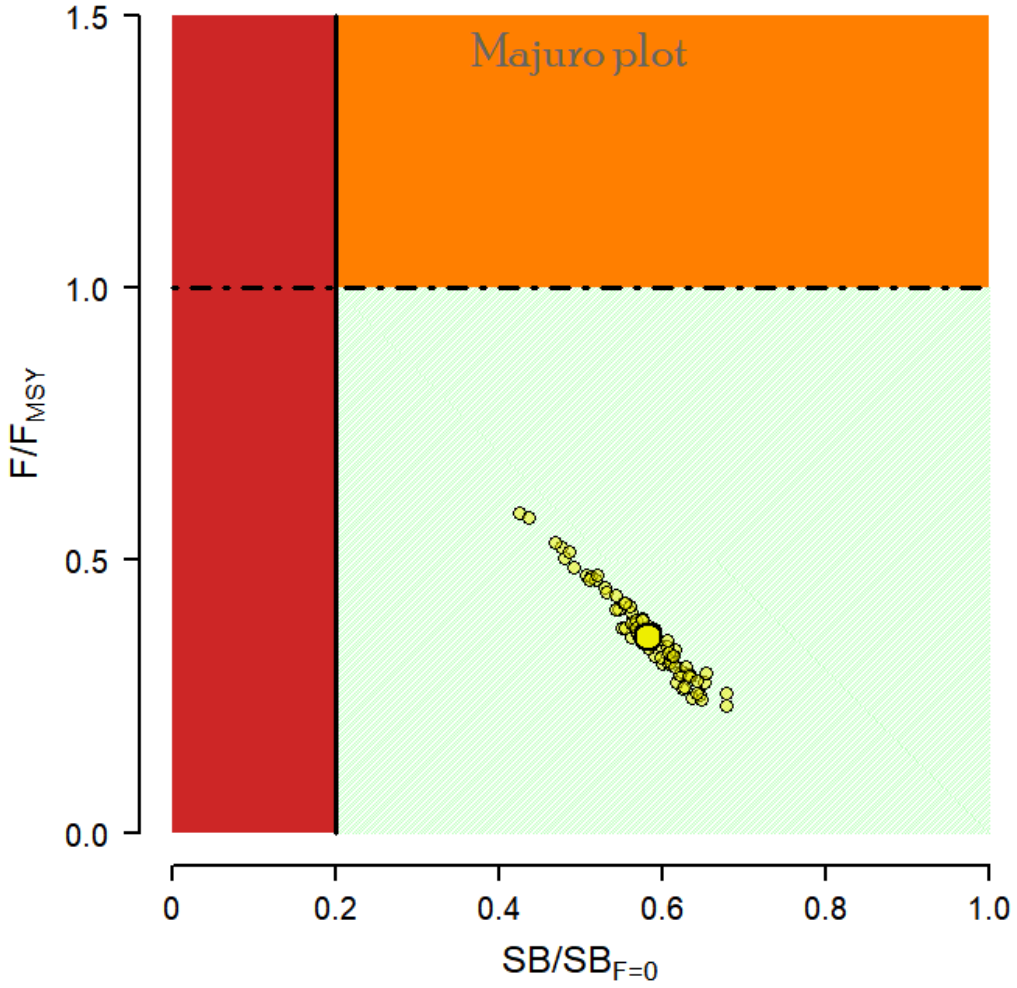
Uncertainty Grid

Axis	Value 1	Value 2	Value 3	Value 4
Growth	Modal	CondAge*	Otolith	
Steepness	0.65	0.8*	0.95	
Size Scalar	20	60*	200	500
Mixing Period	1 quarter	2 quarters*		

72 models (3 x 3 x 4 x 2)

Most important uncertainties were growth, mixing period, steepness

Stock Status



Median

$SB_{recent} / SB_{F=0} = 0.583$

$F_{recent} / F_{MSY} = 0.357$