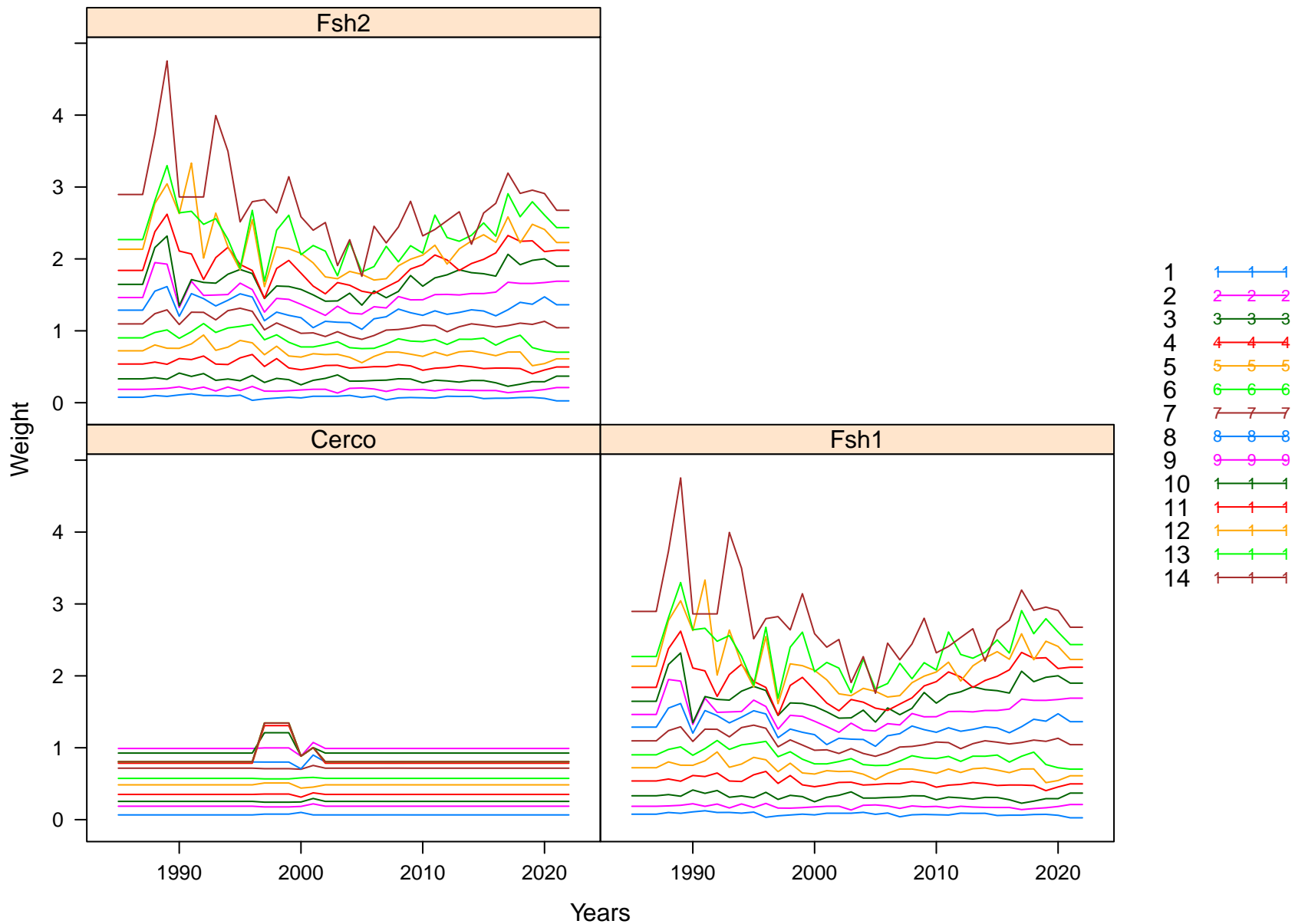


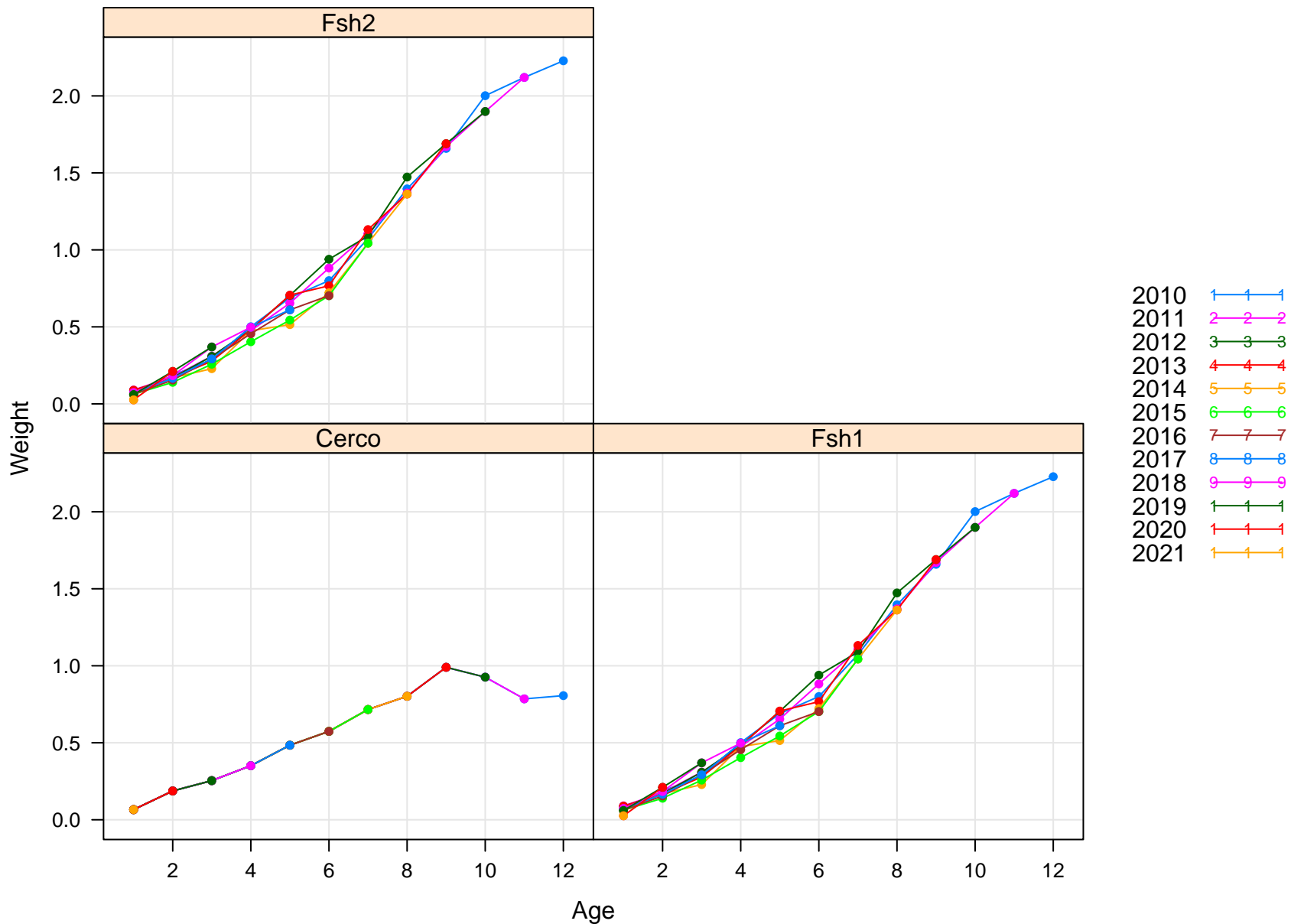
# Weight at age in the fishery



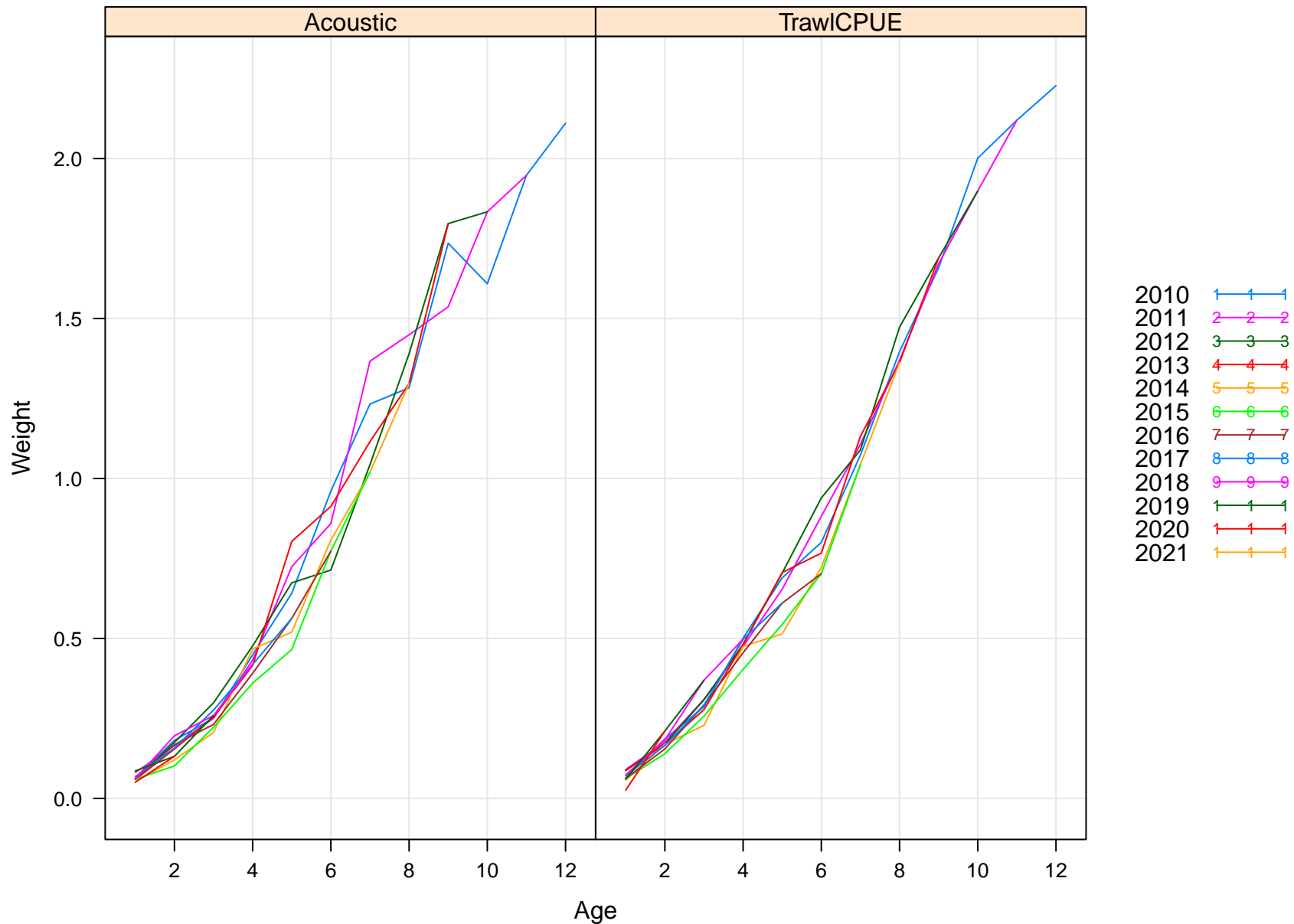
# Weight at age in the survey



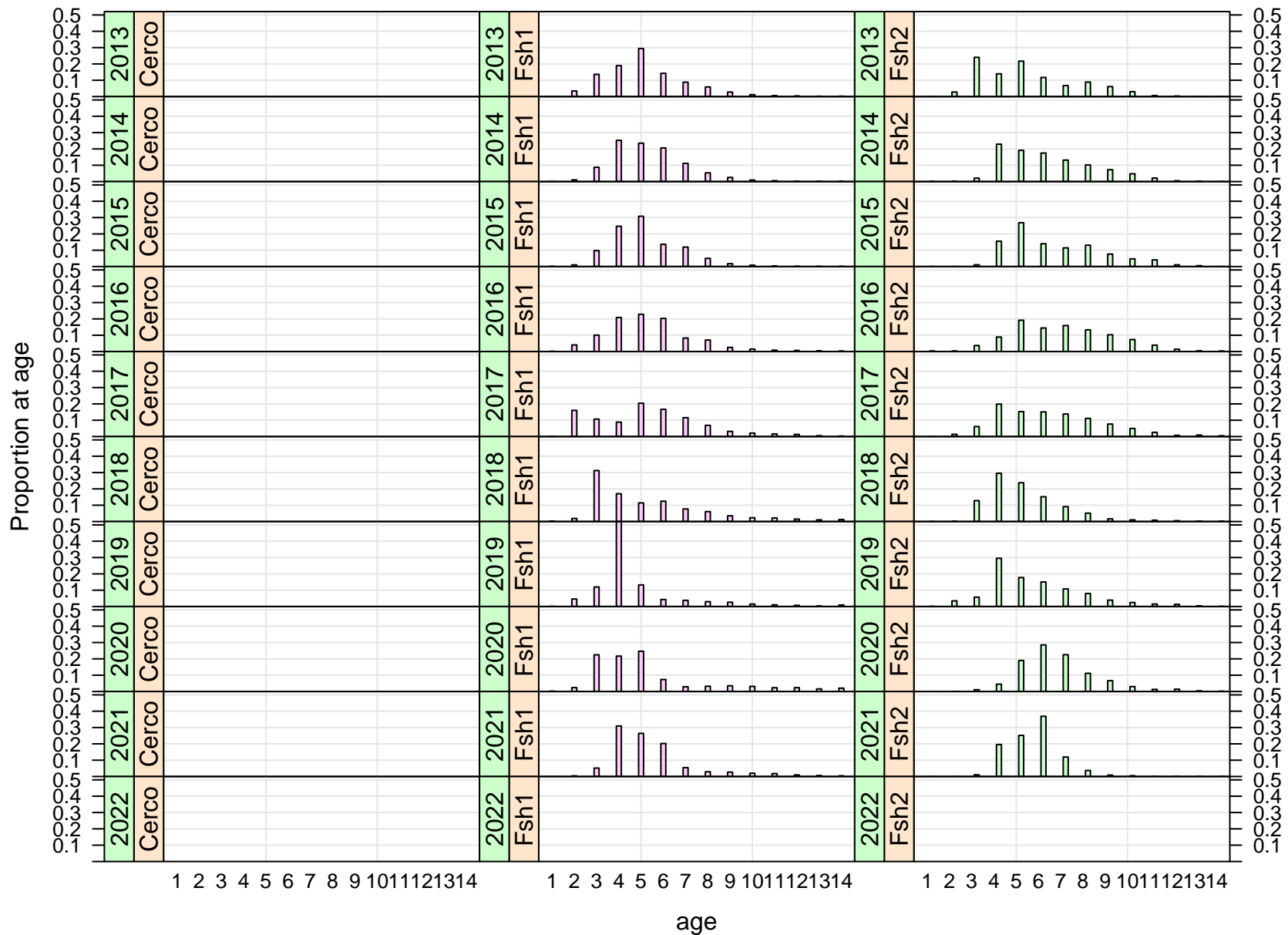
## Weight at age by cohort in the fleet



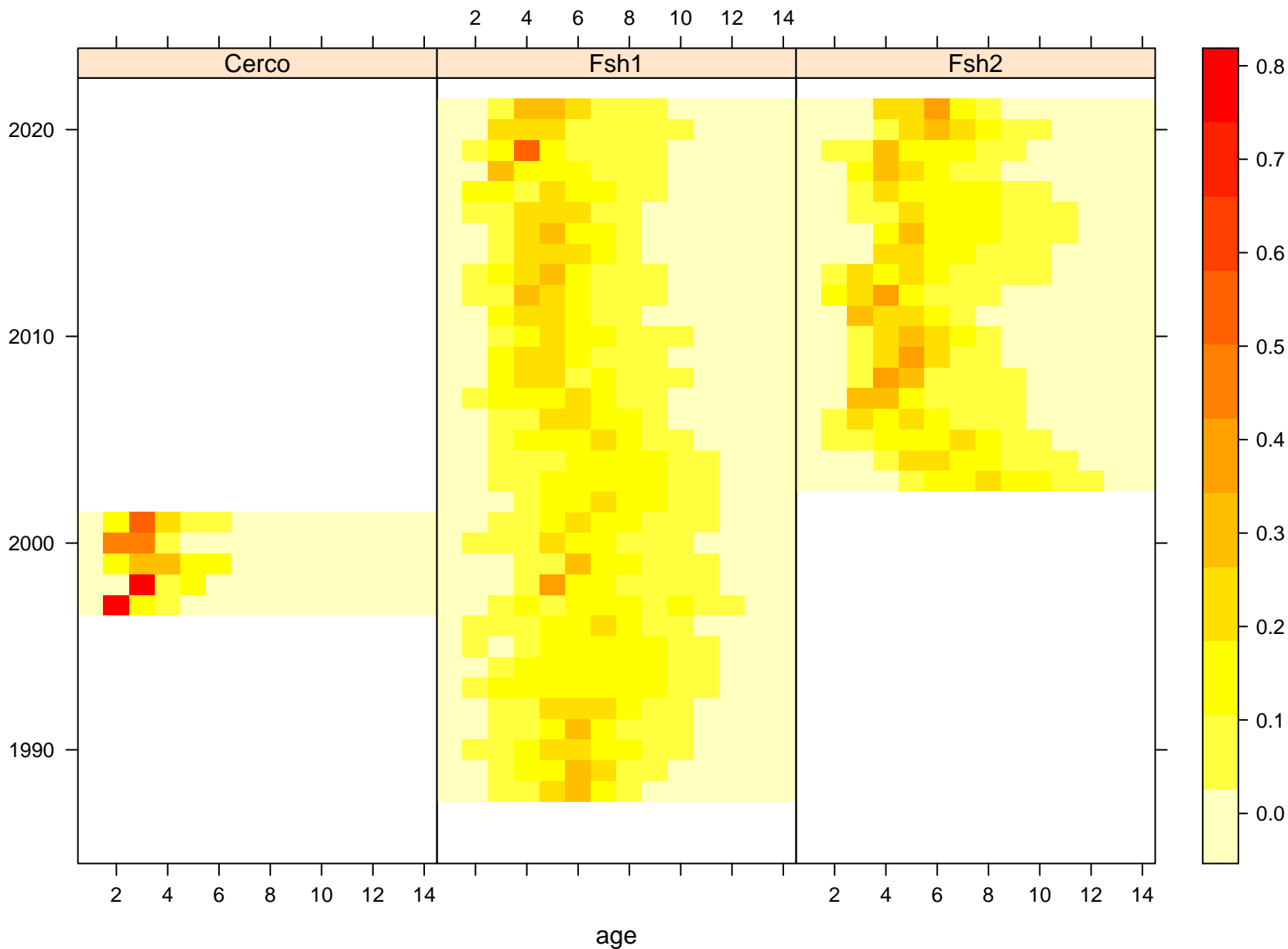
## Weight at age by cohort in the survey



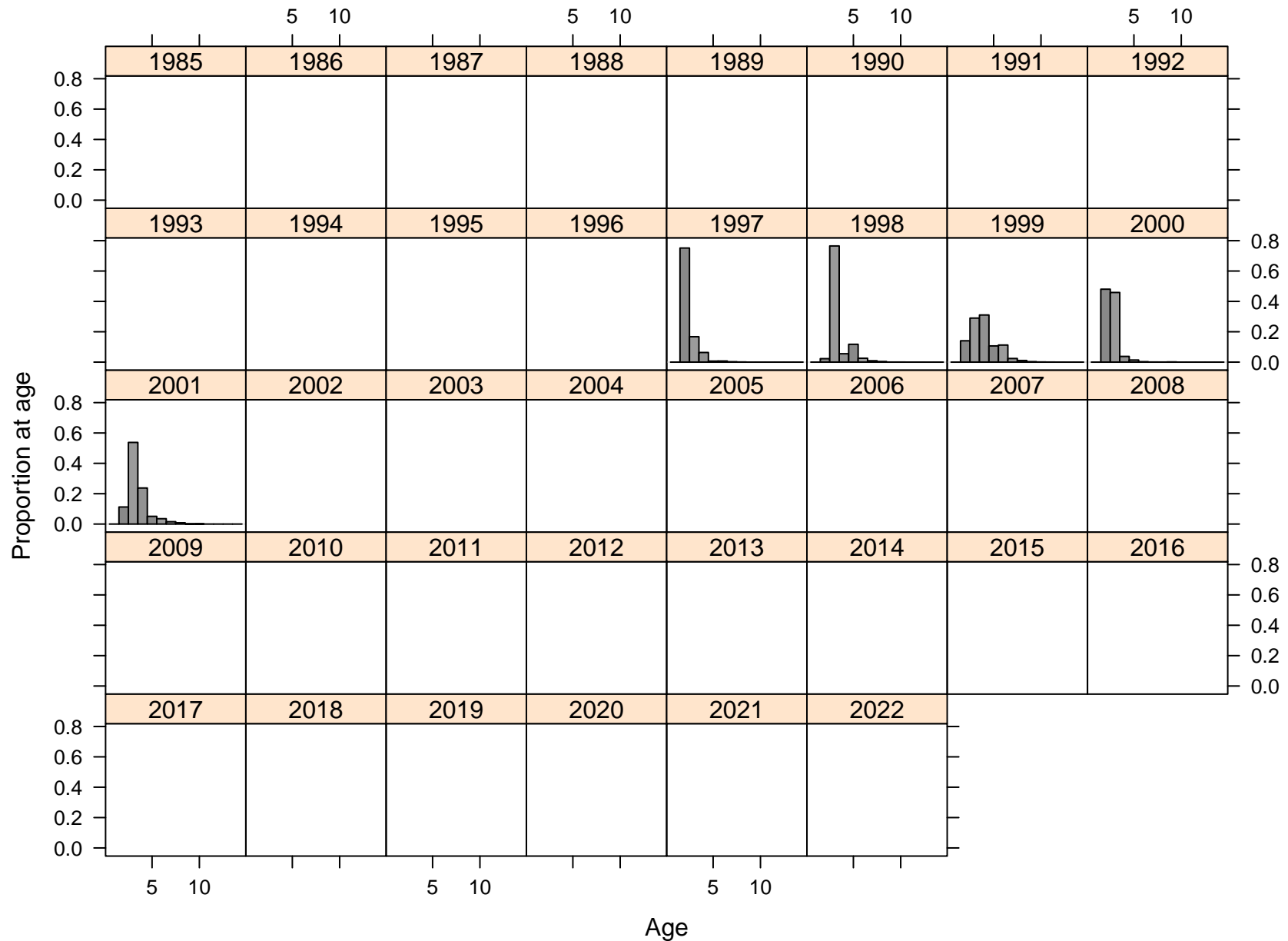
## Age composition in fleets



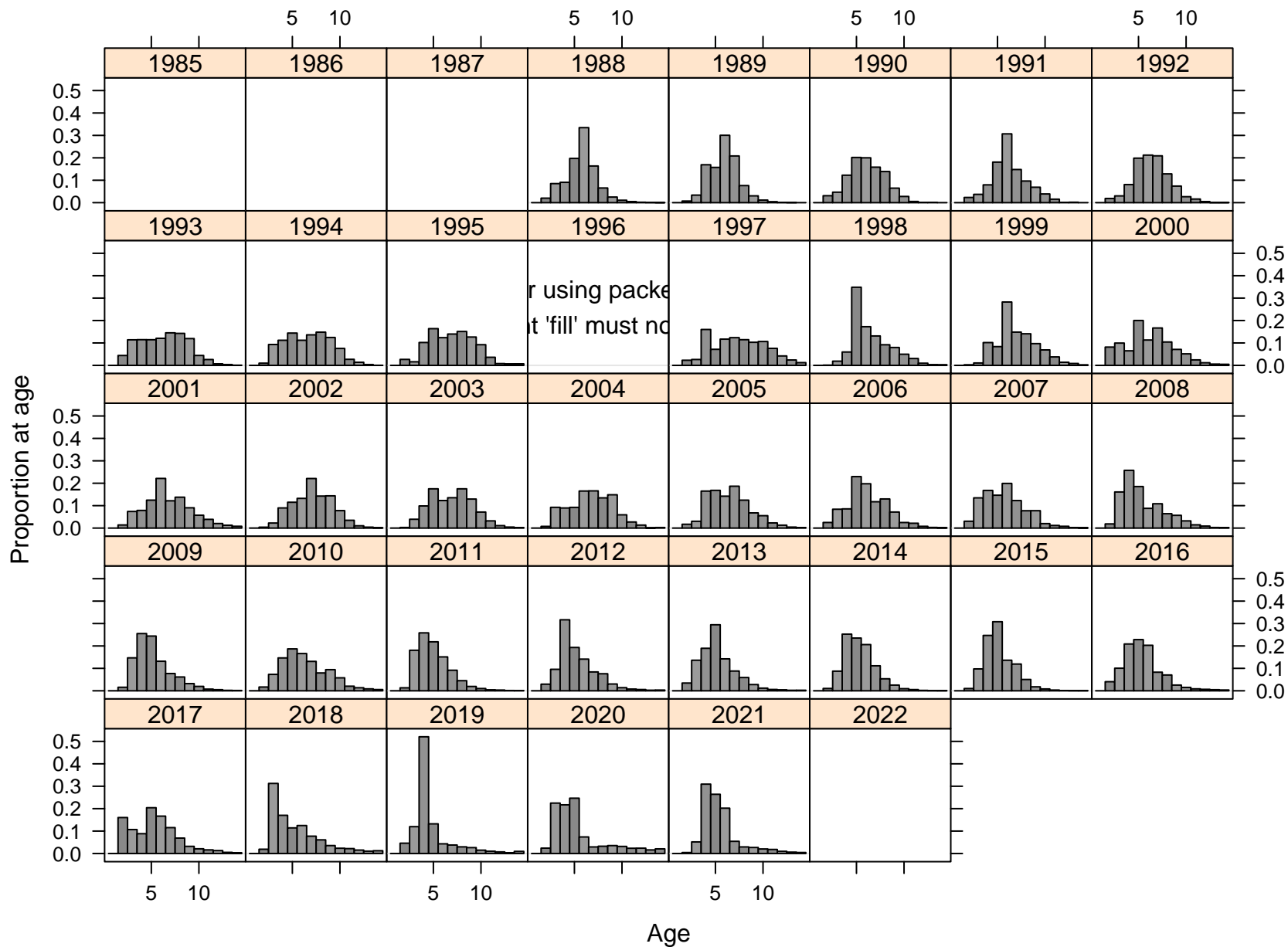
# Age composition in fleets



## Age composition in fleets Cerco

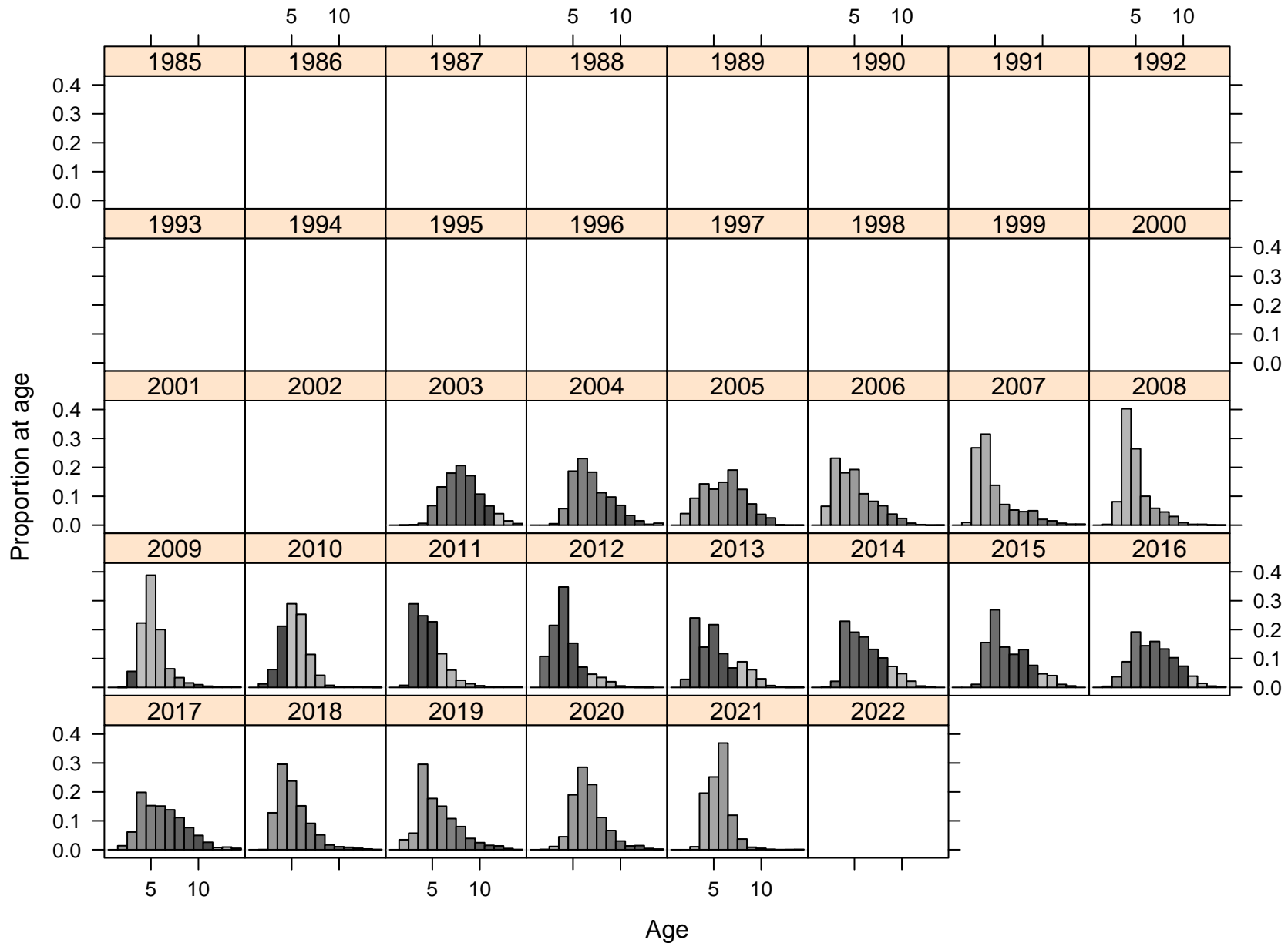


# Age composition in fleets Fsh1

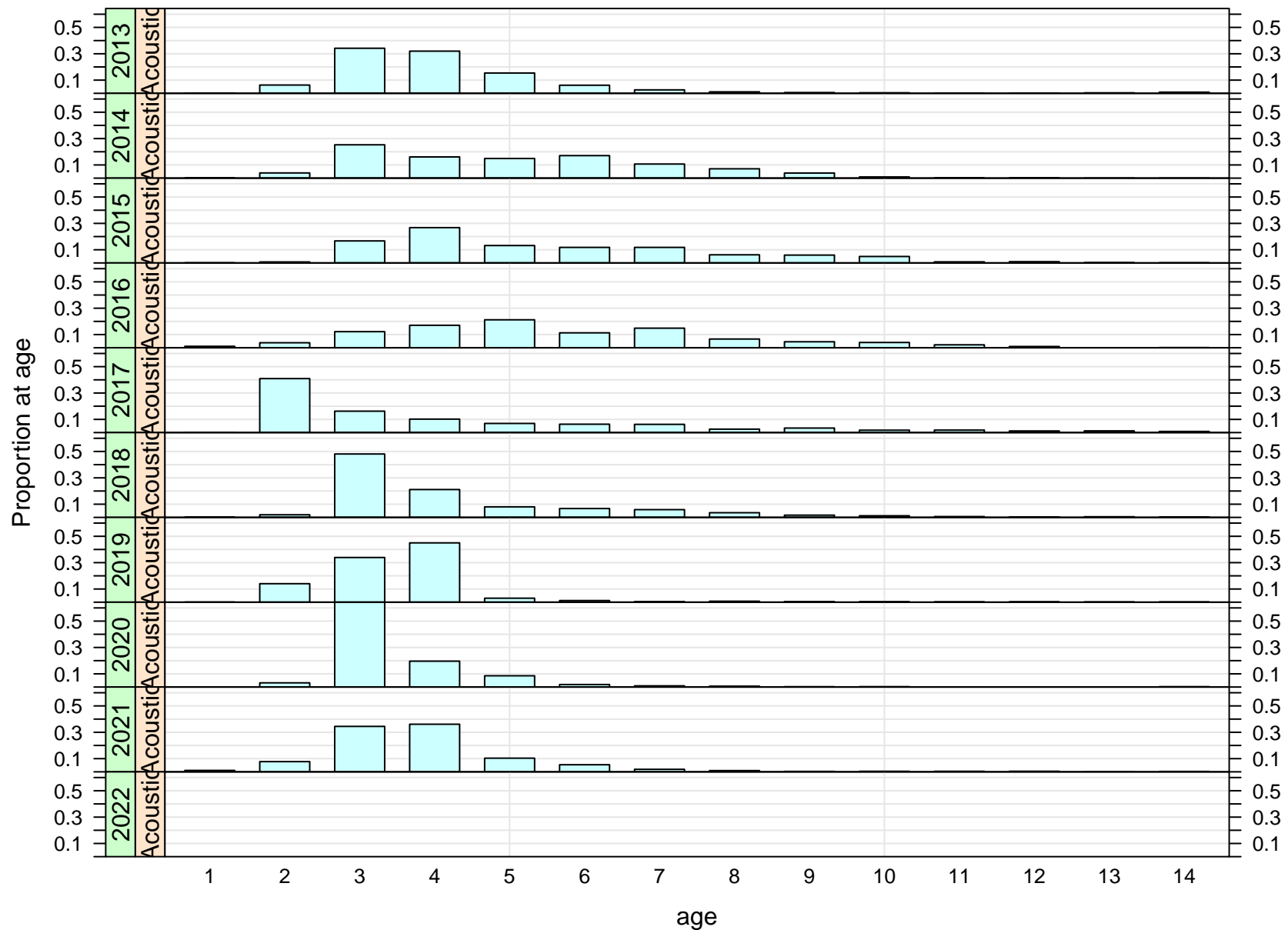




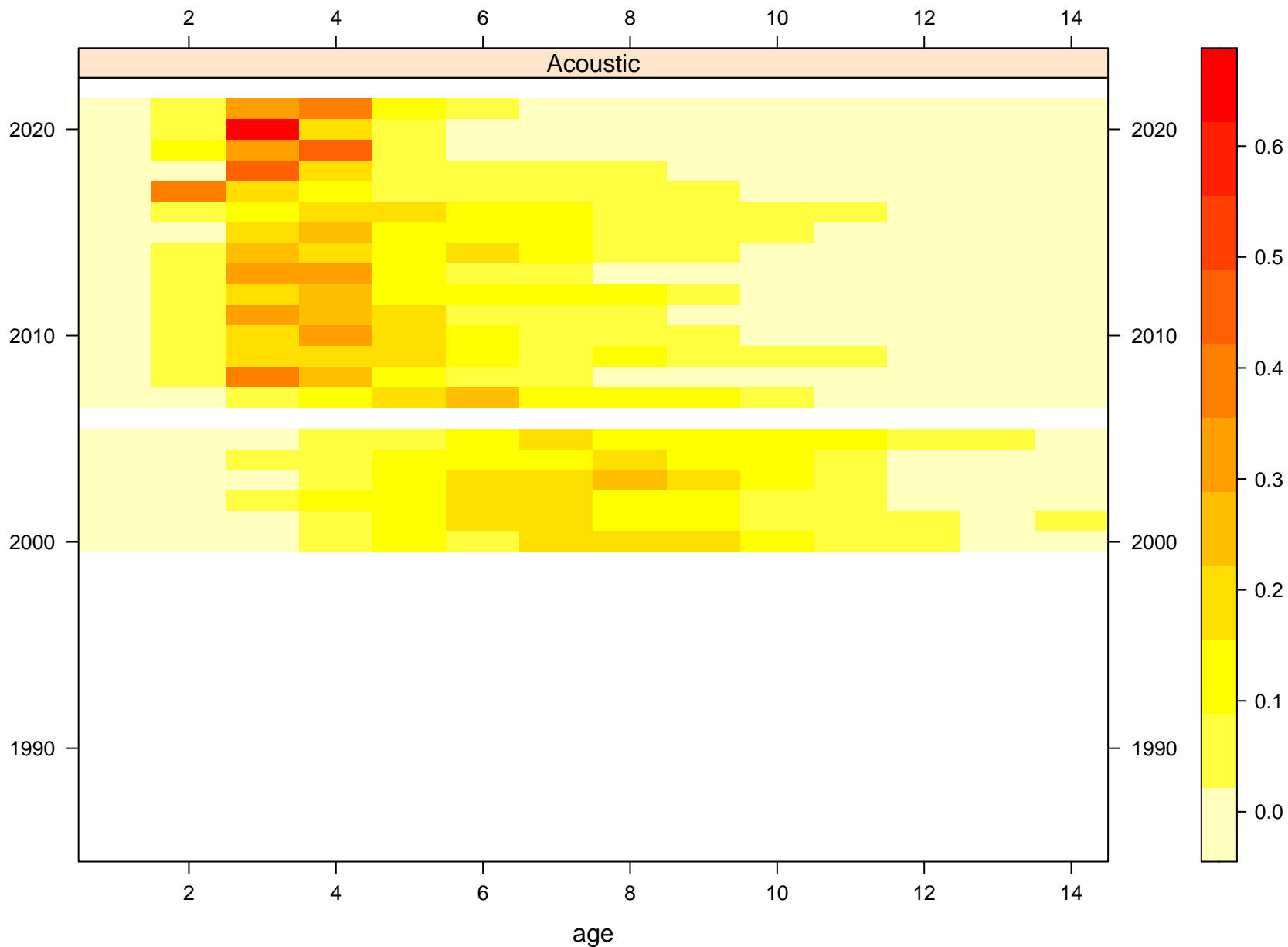
# Age composition in fleets Fsh2



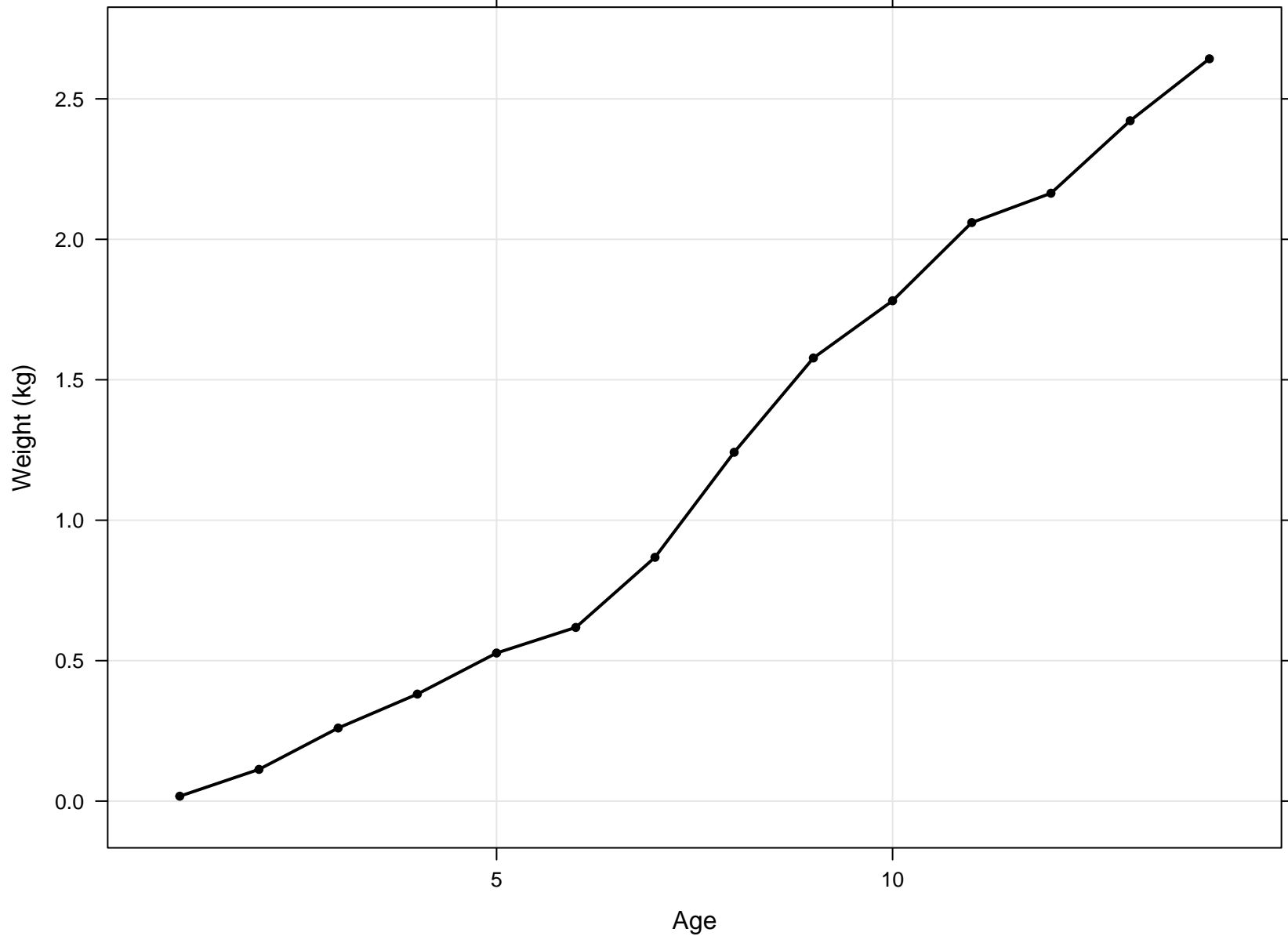
## Age composition in surveys



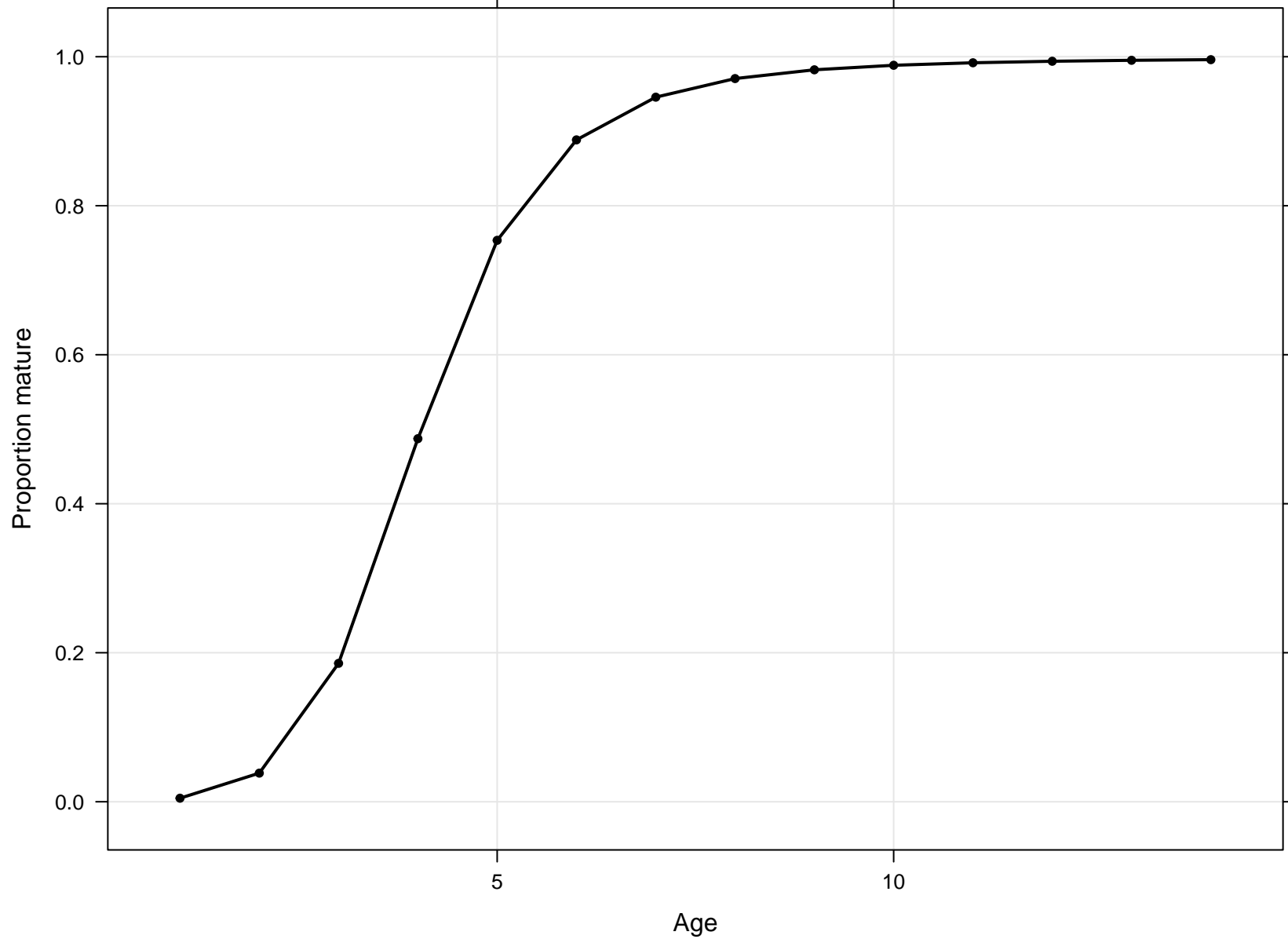
# Age composition in surveys



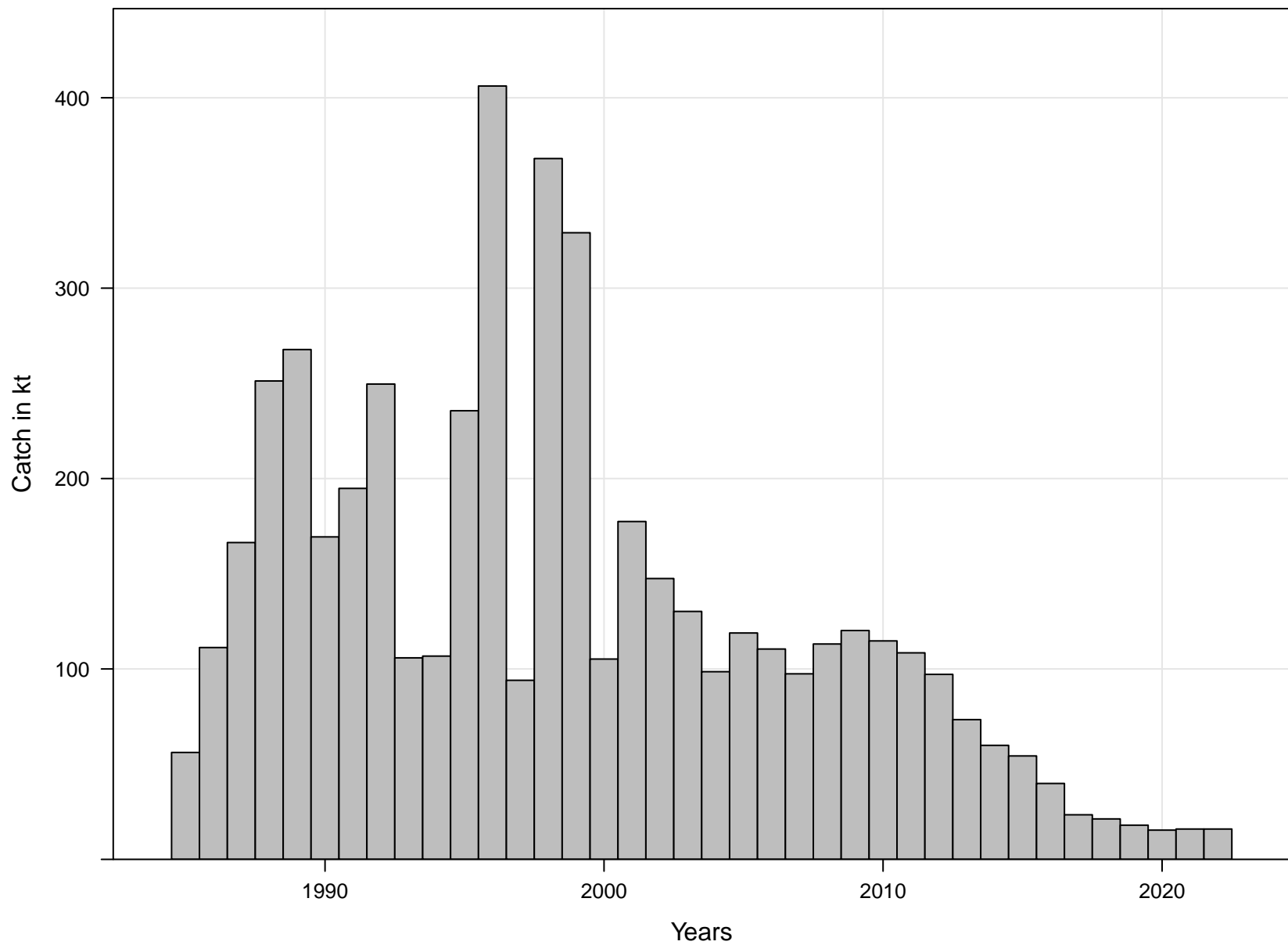
Weight in the stock



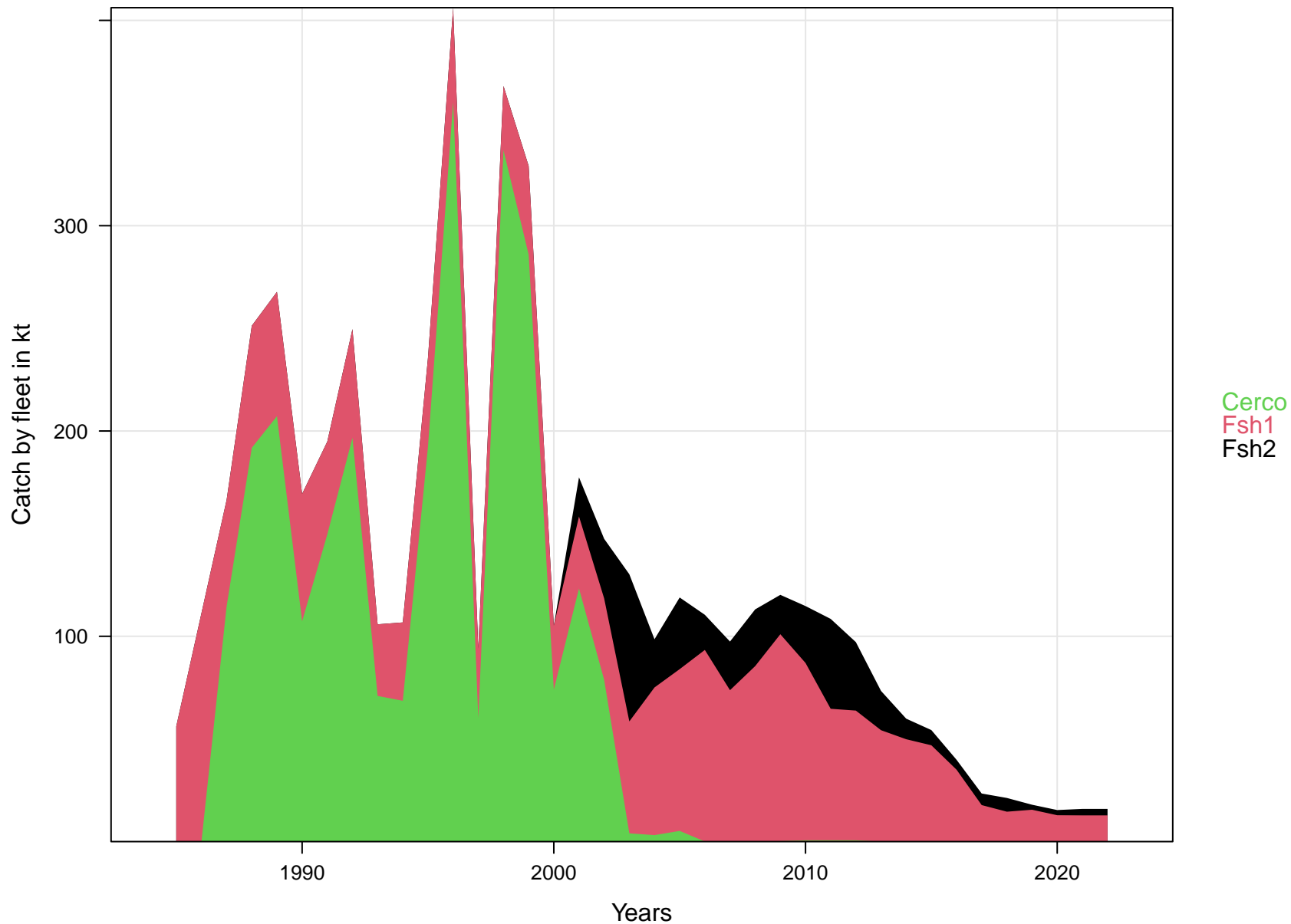
**Maturity in the stock**



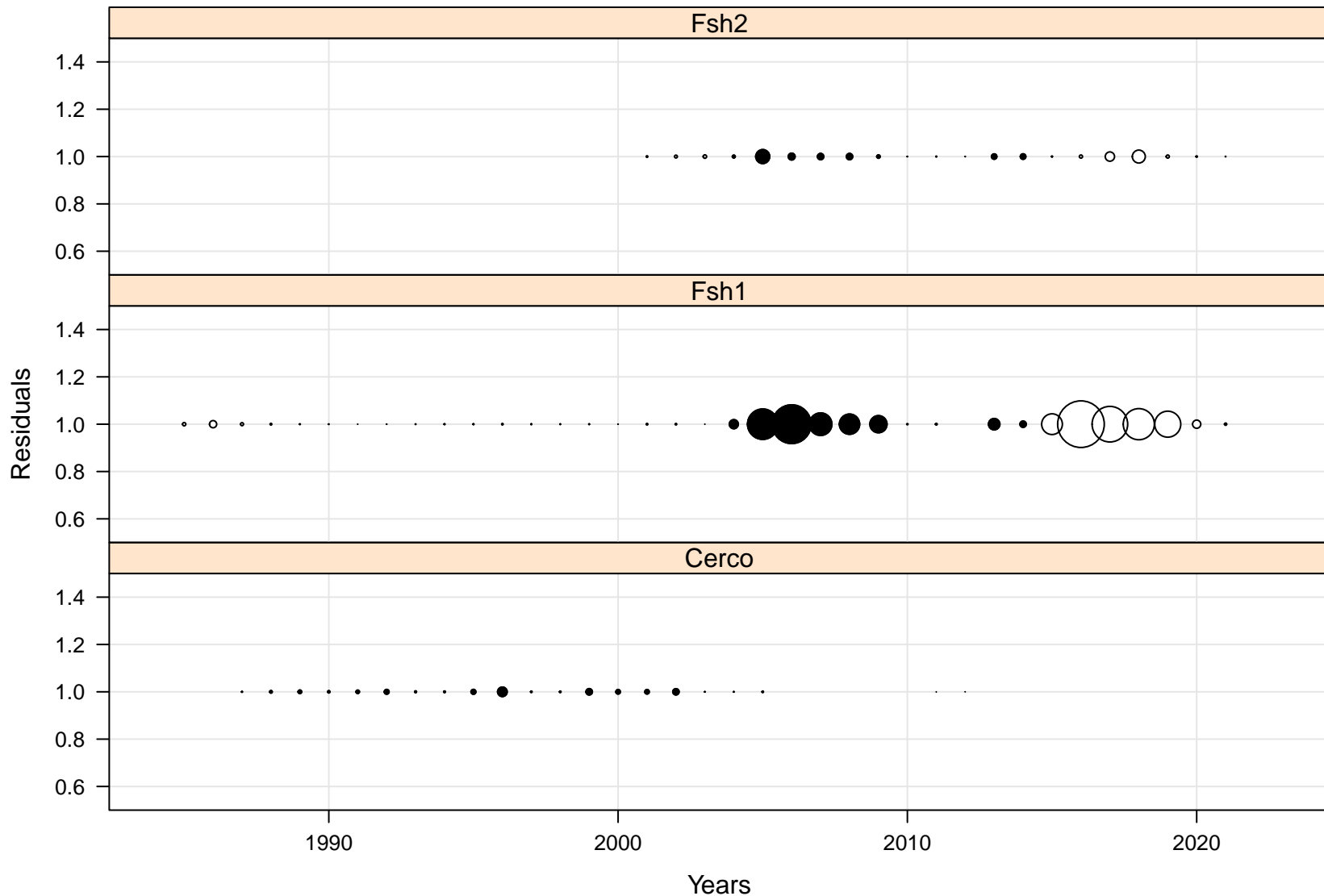
**Total catch**



Total catch by fleet



# Catch residuals by fleet





1990 2000 2010 2020

Fsh2

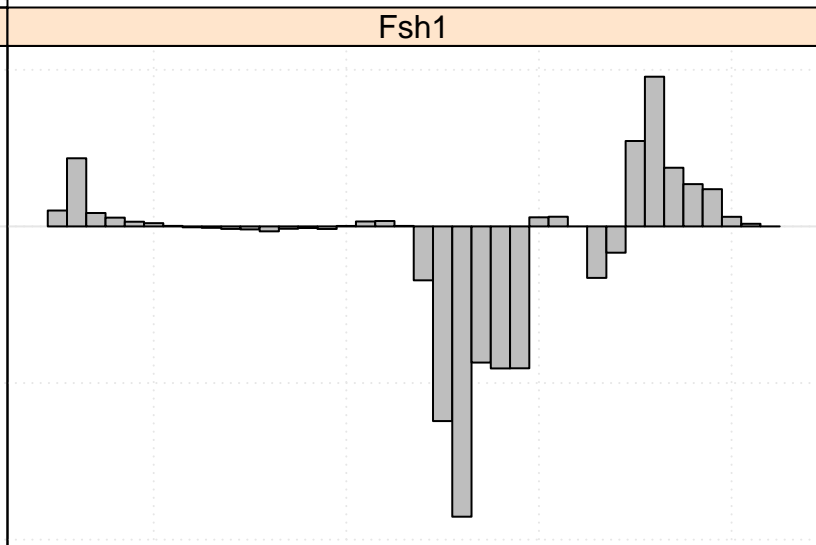
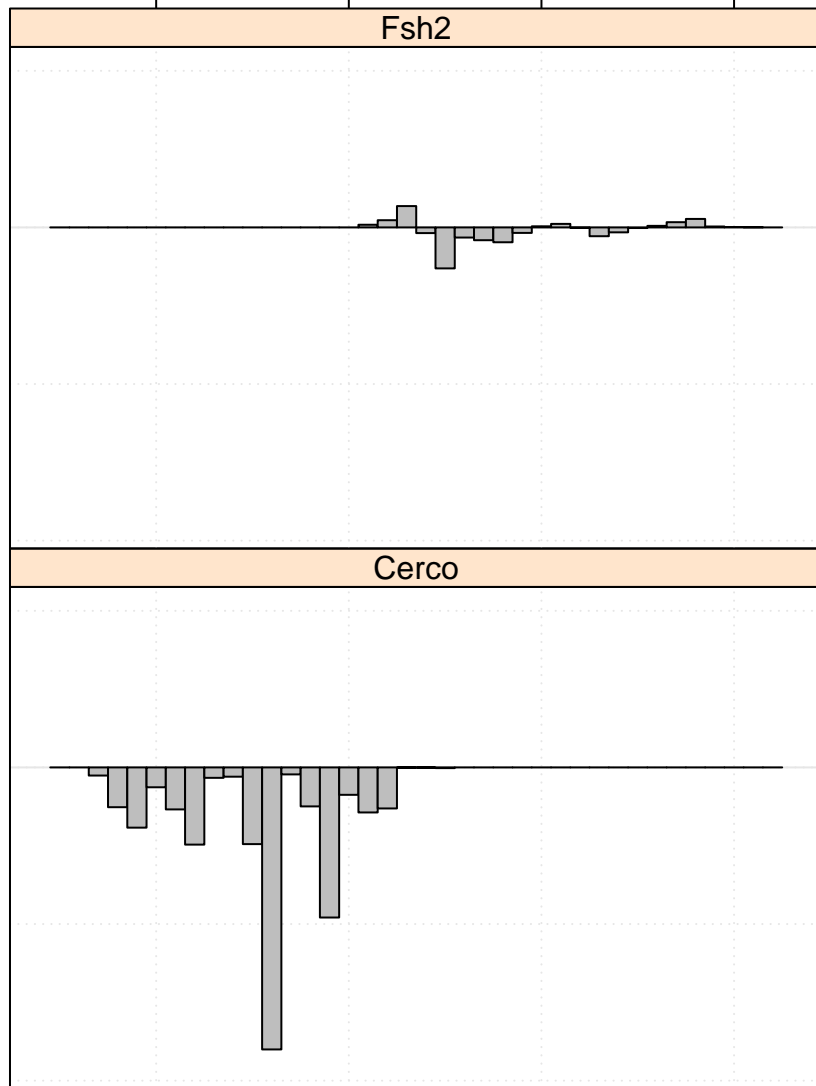
model - obs

Cerco

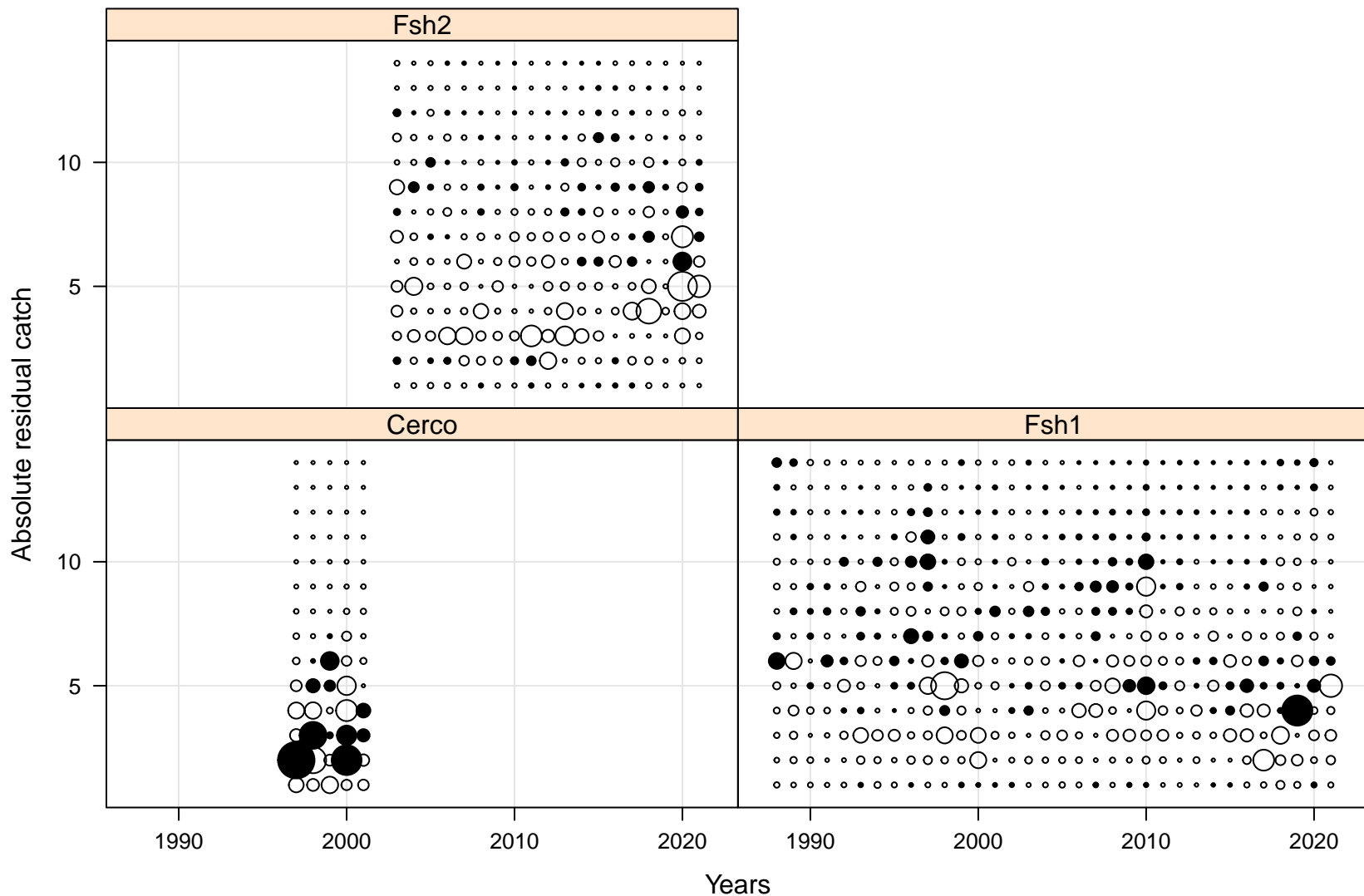
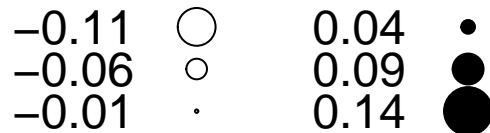
Fsh1

1990 2000 2010 2020

year



# Absolute residual catch by fleet

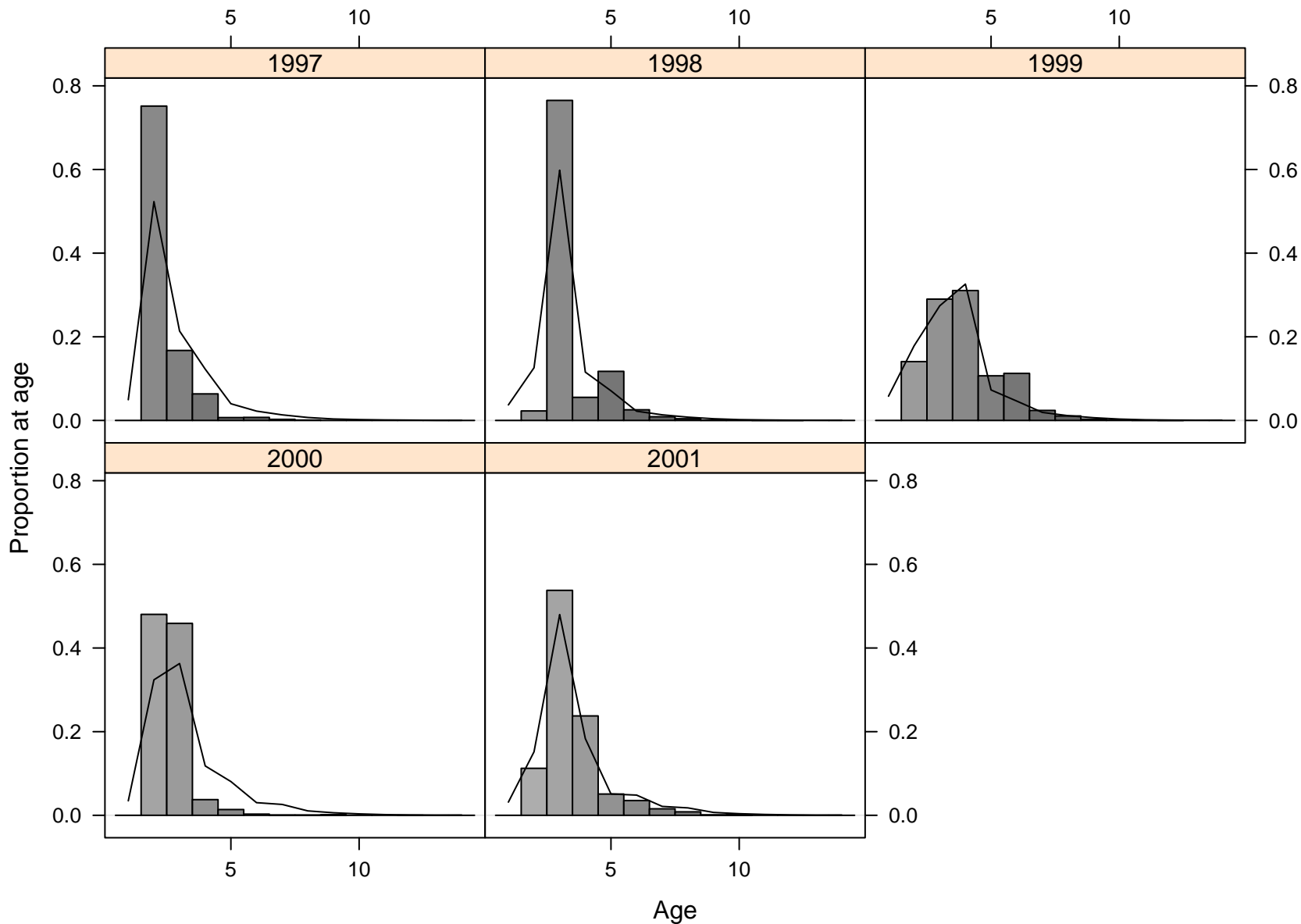


# Age fits Cerco

Observed



Predicted

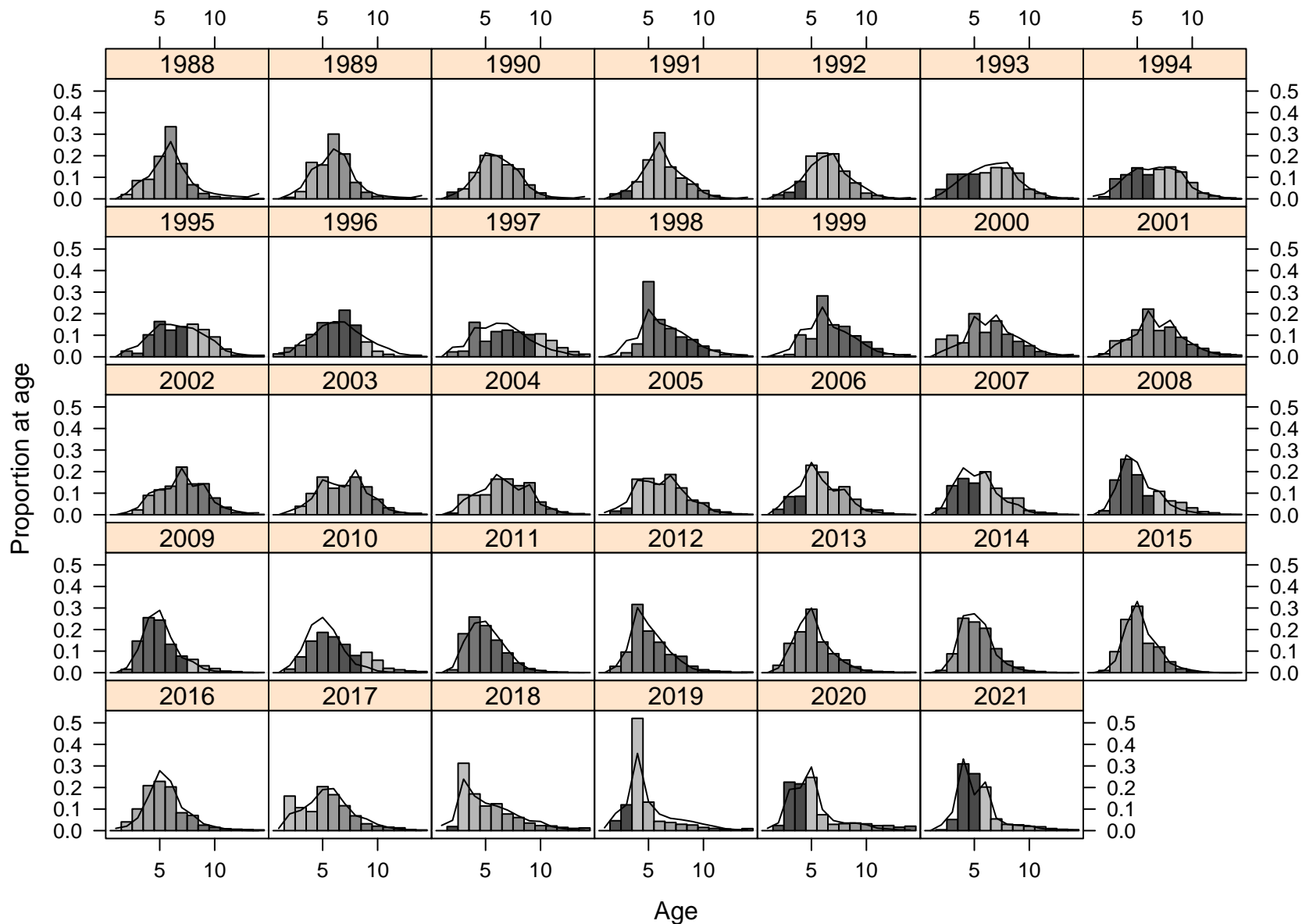


# Age fits Fsh1

Observed



Predicted

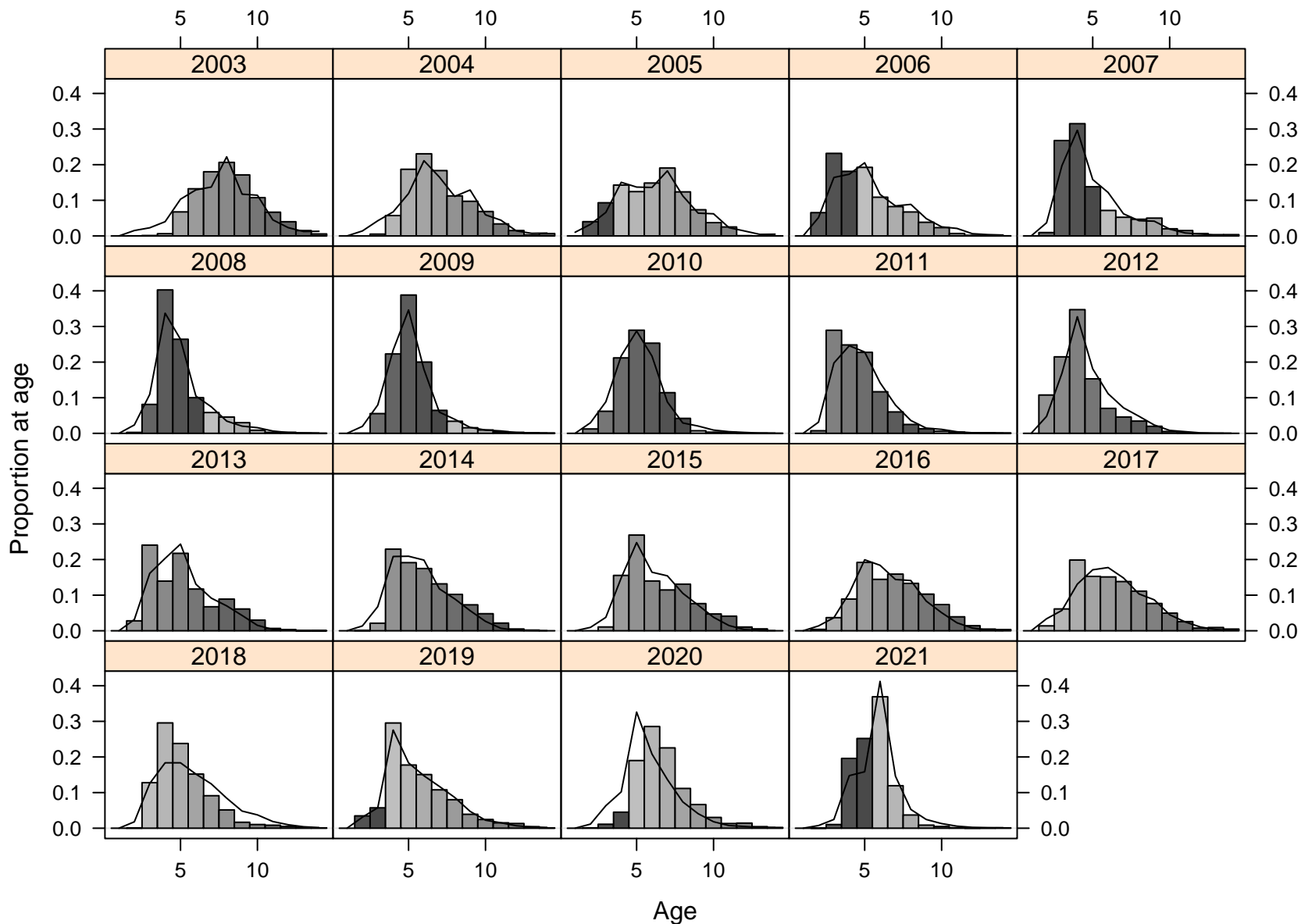


# Age fits Fsh2

Observed



Predicted

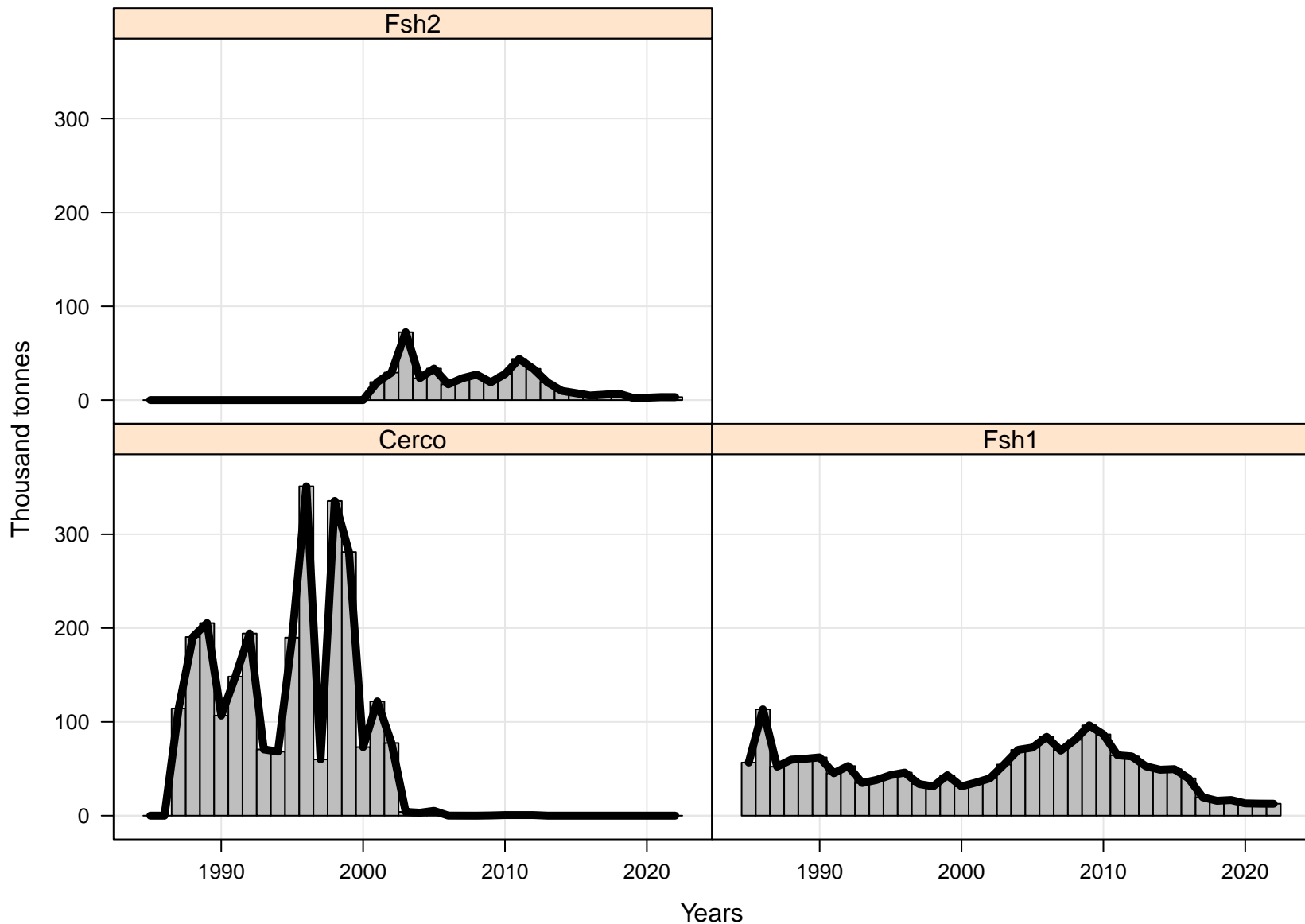


Predicted and observed catches by fleet

Observed



Predicted



# Predicted and observed indices

Observed



Predicted



1990

2000

2010

2020

1990

2000

2010

2020

Acoustic

TrawlCPUE

1990

2000

2010

2020

1990

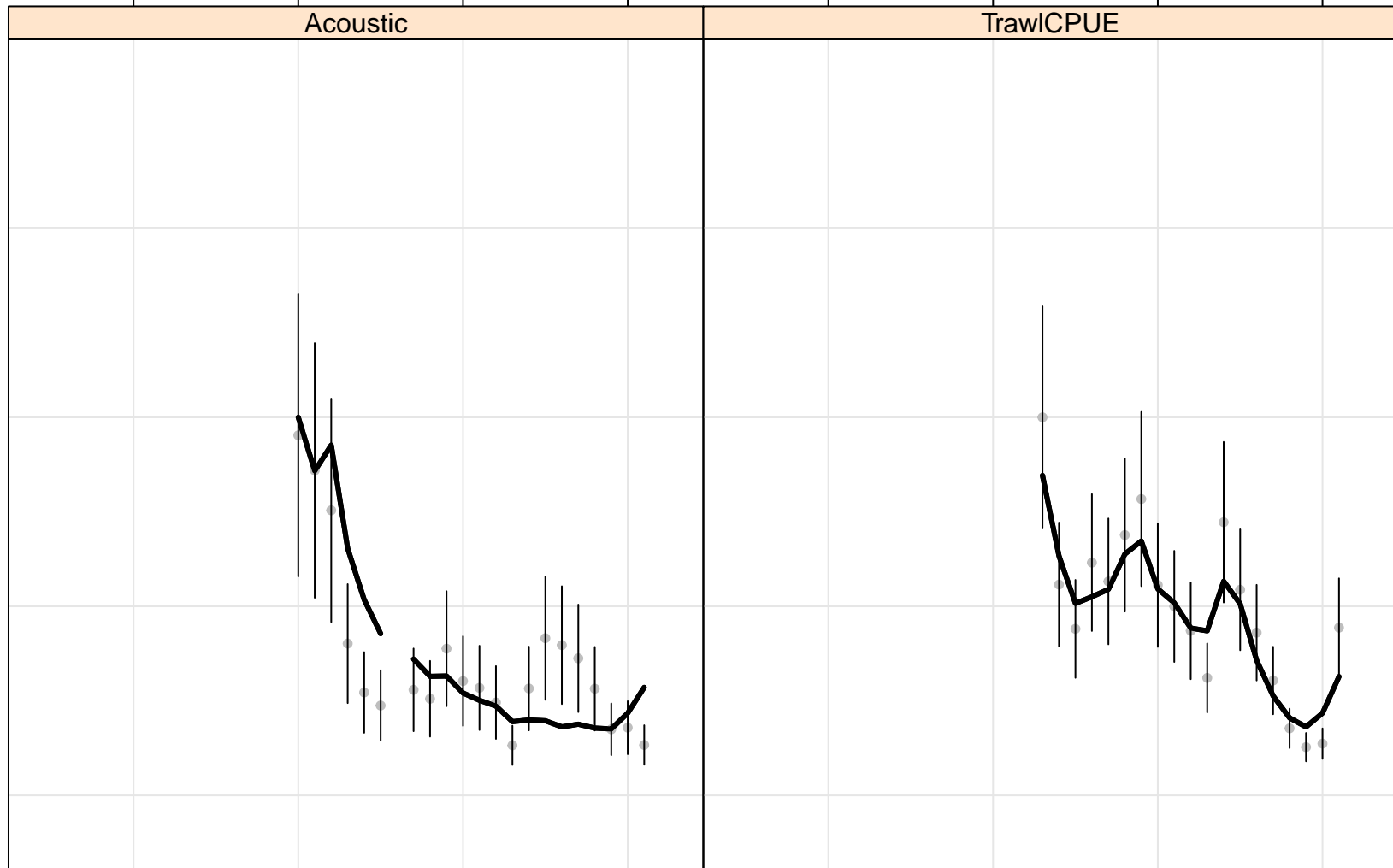
2000

2010

2020

Normalized index value

Years

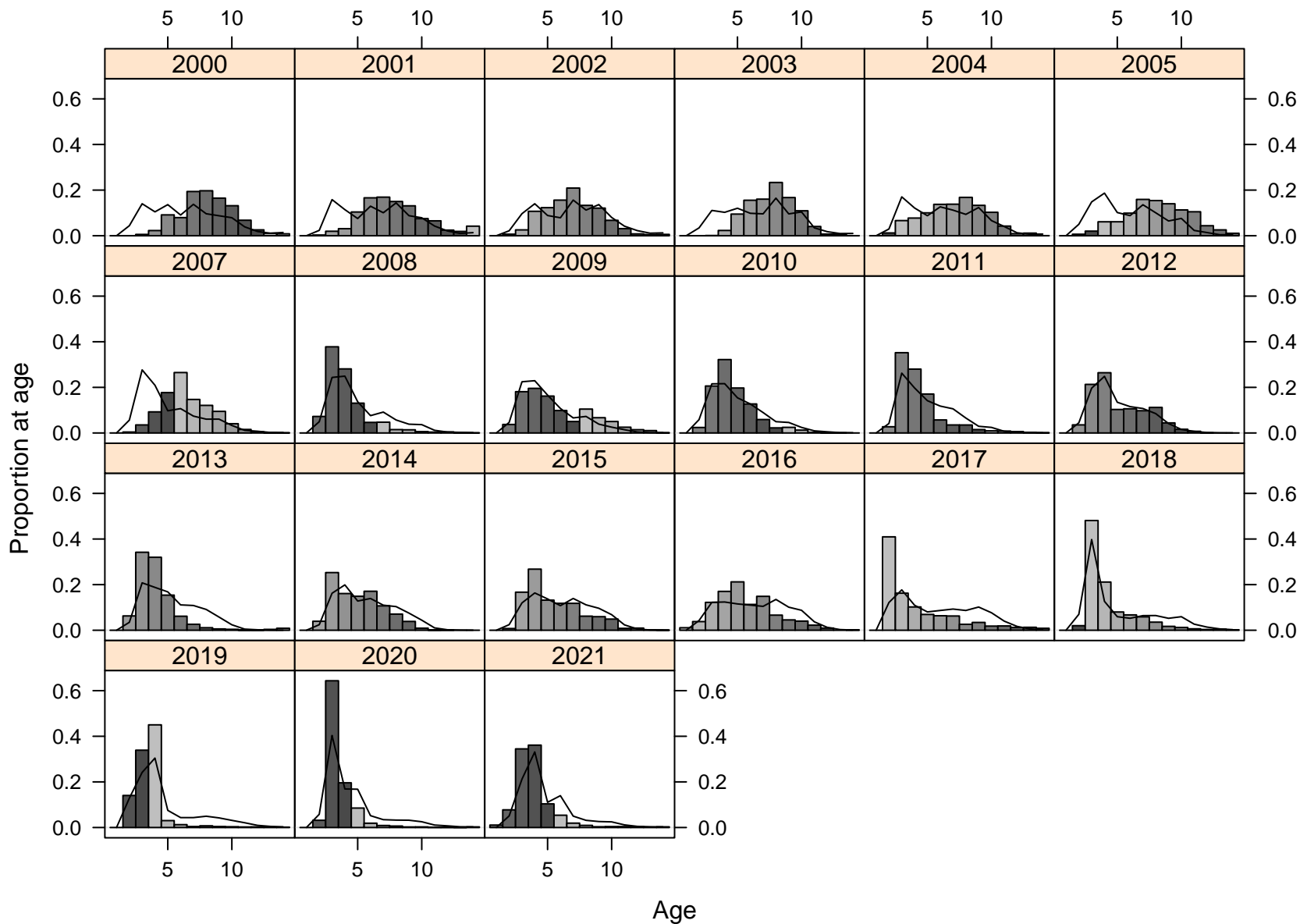


# Age fits Acoustic

Observed



Predicted



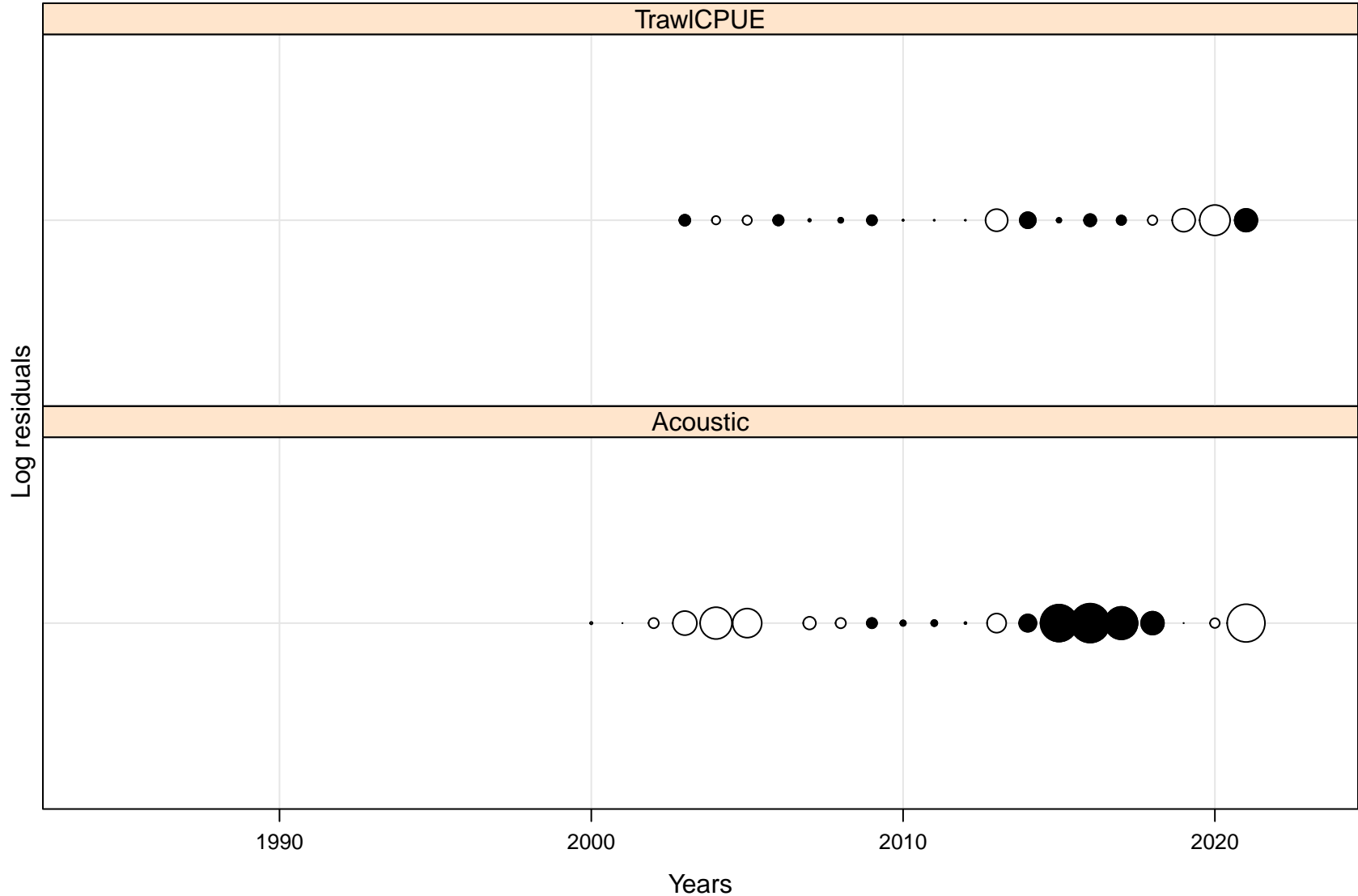


# Standardized survey residuals

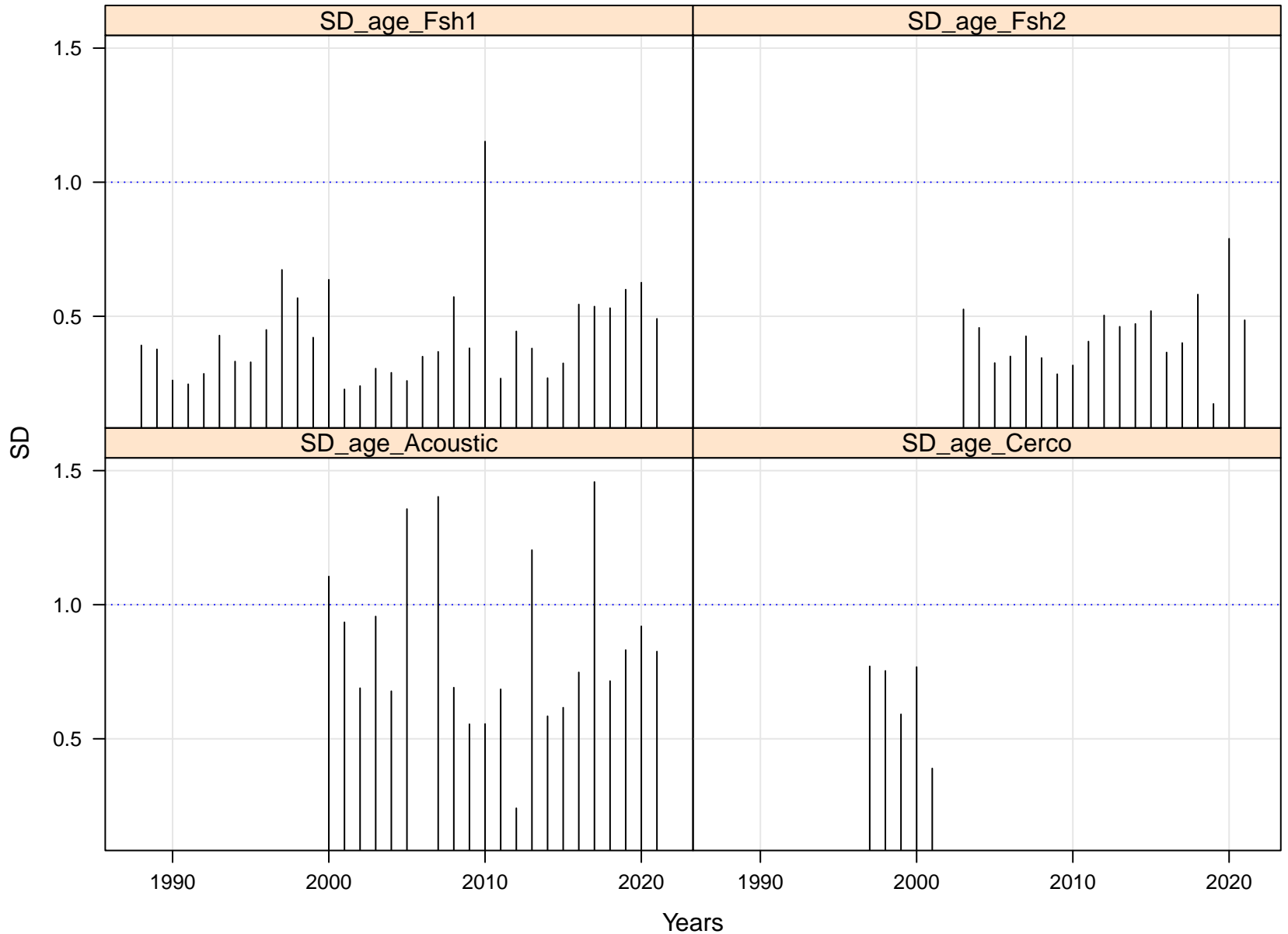
-3.85  
-2.29  
-0.73



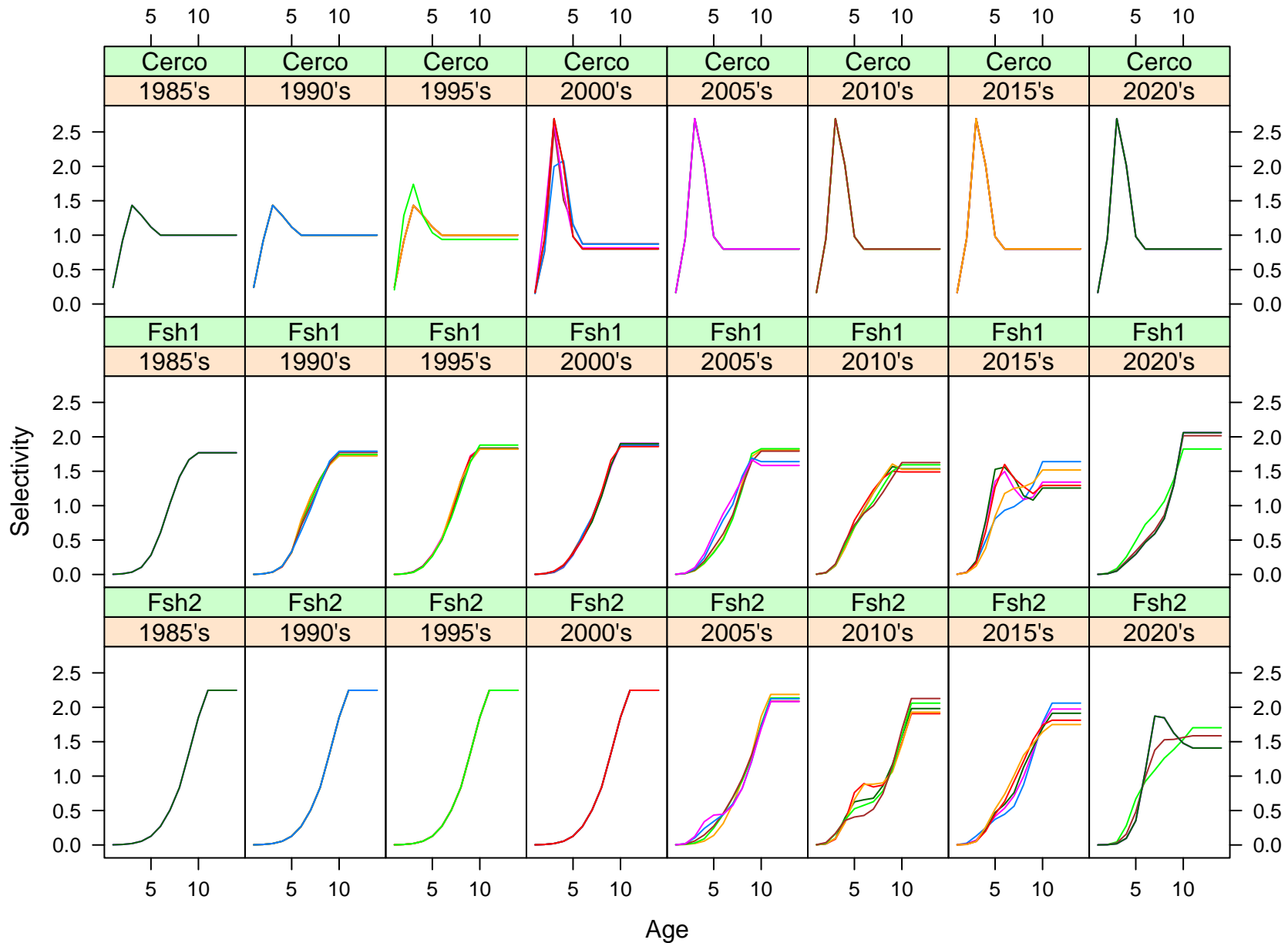
0.84  
2.4  
3.96



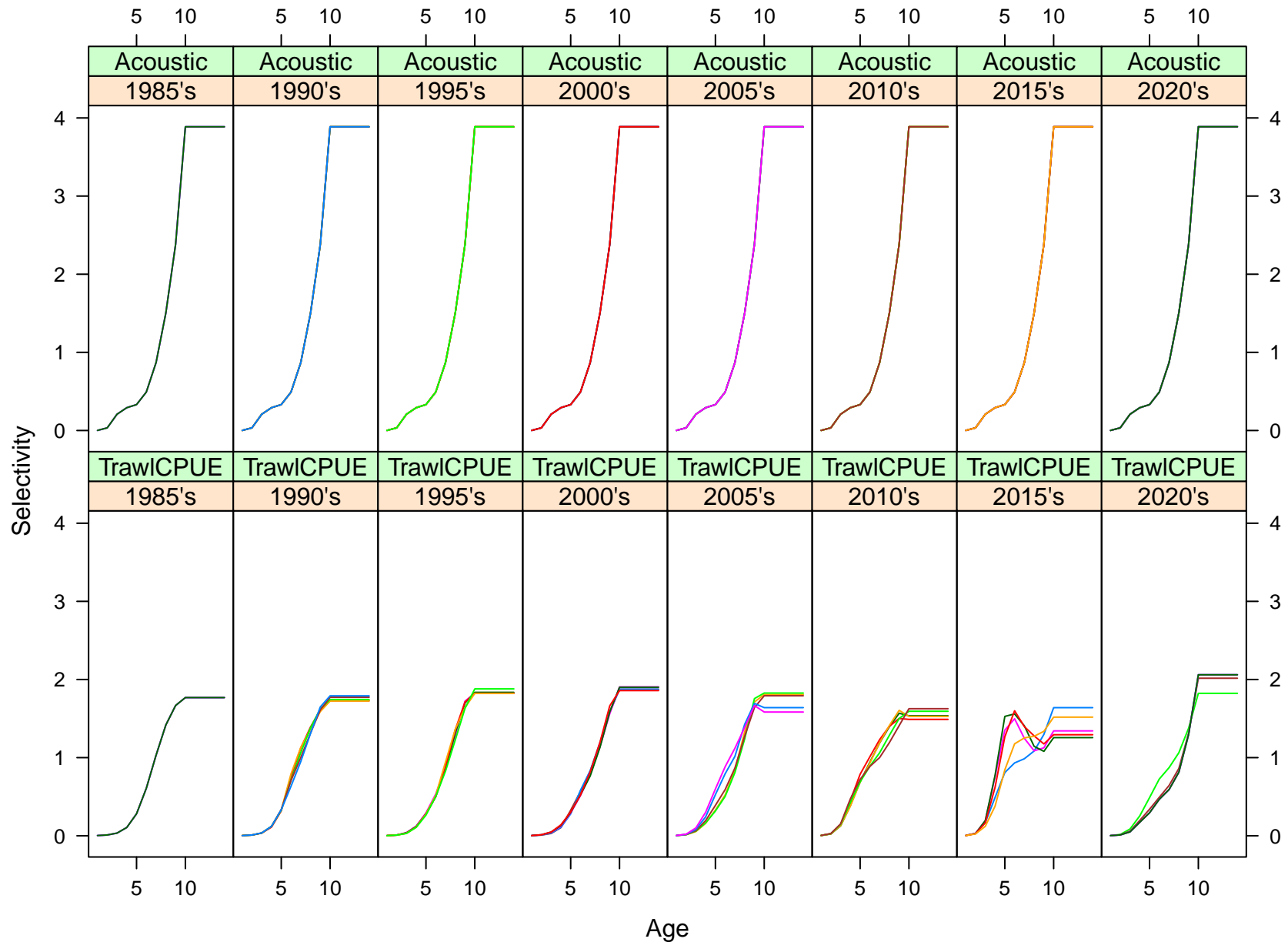
# SD per input series



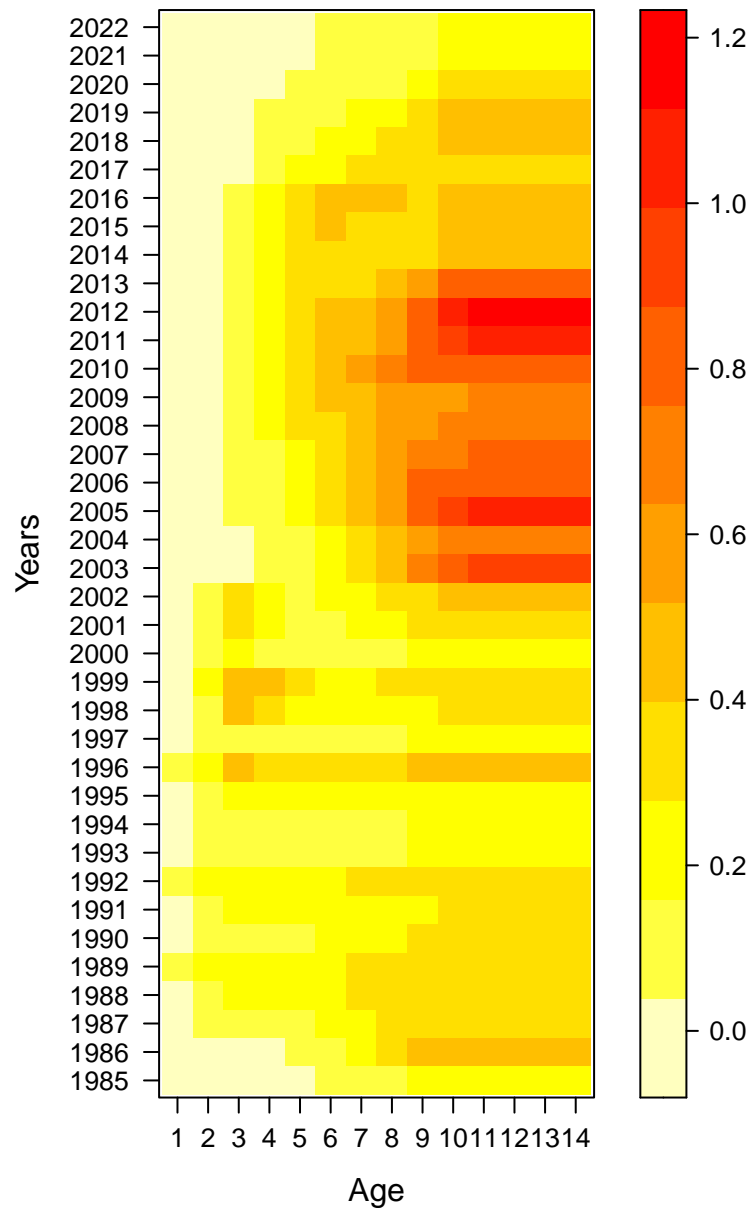
# Selectivity of the Fishery by Pentad



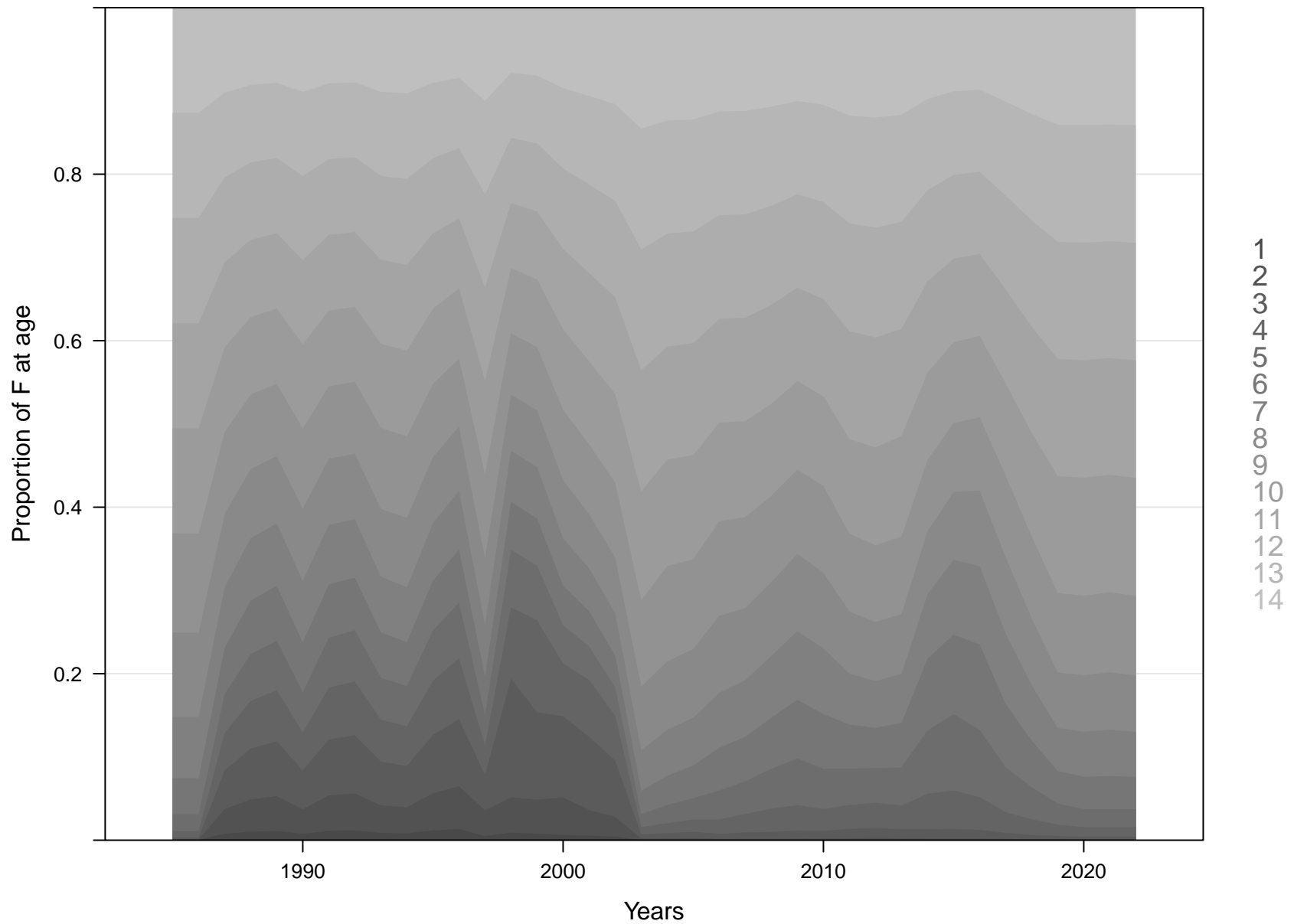
# Selectivity of the survey by Pentad



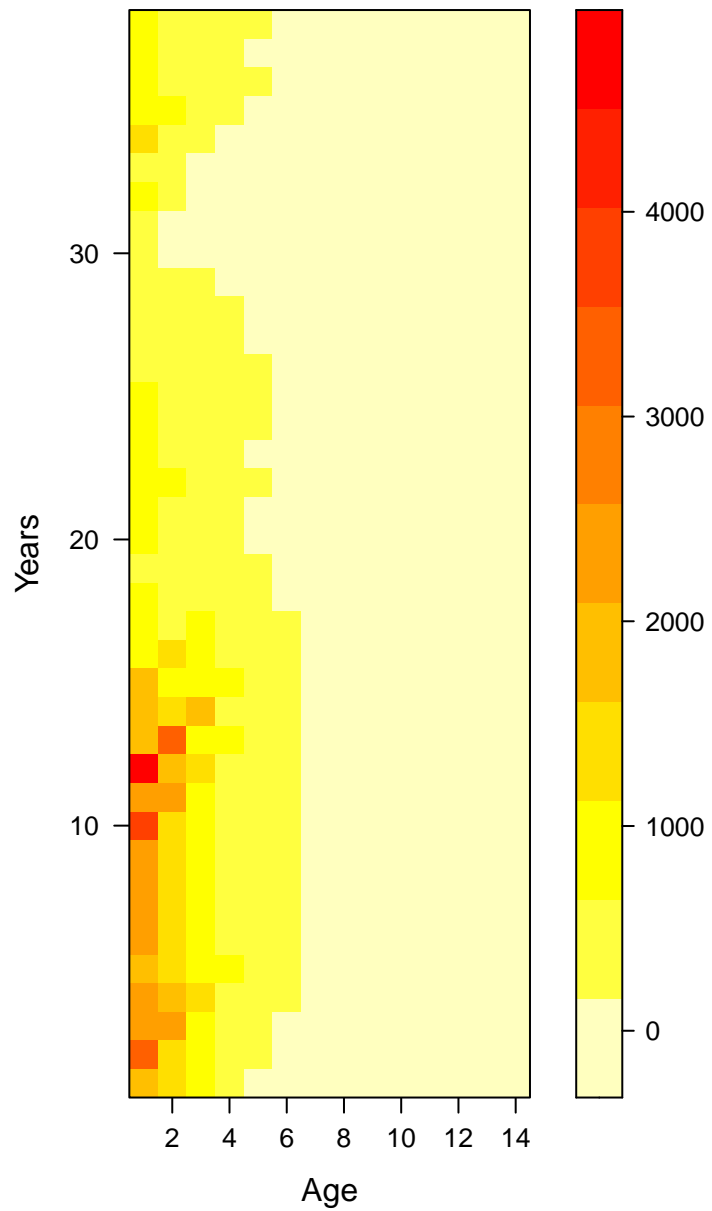
**F at age**



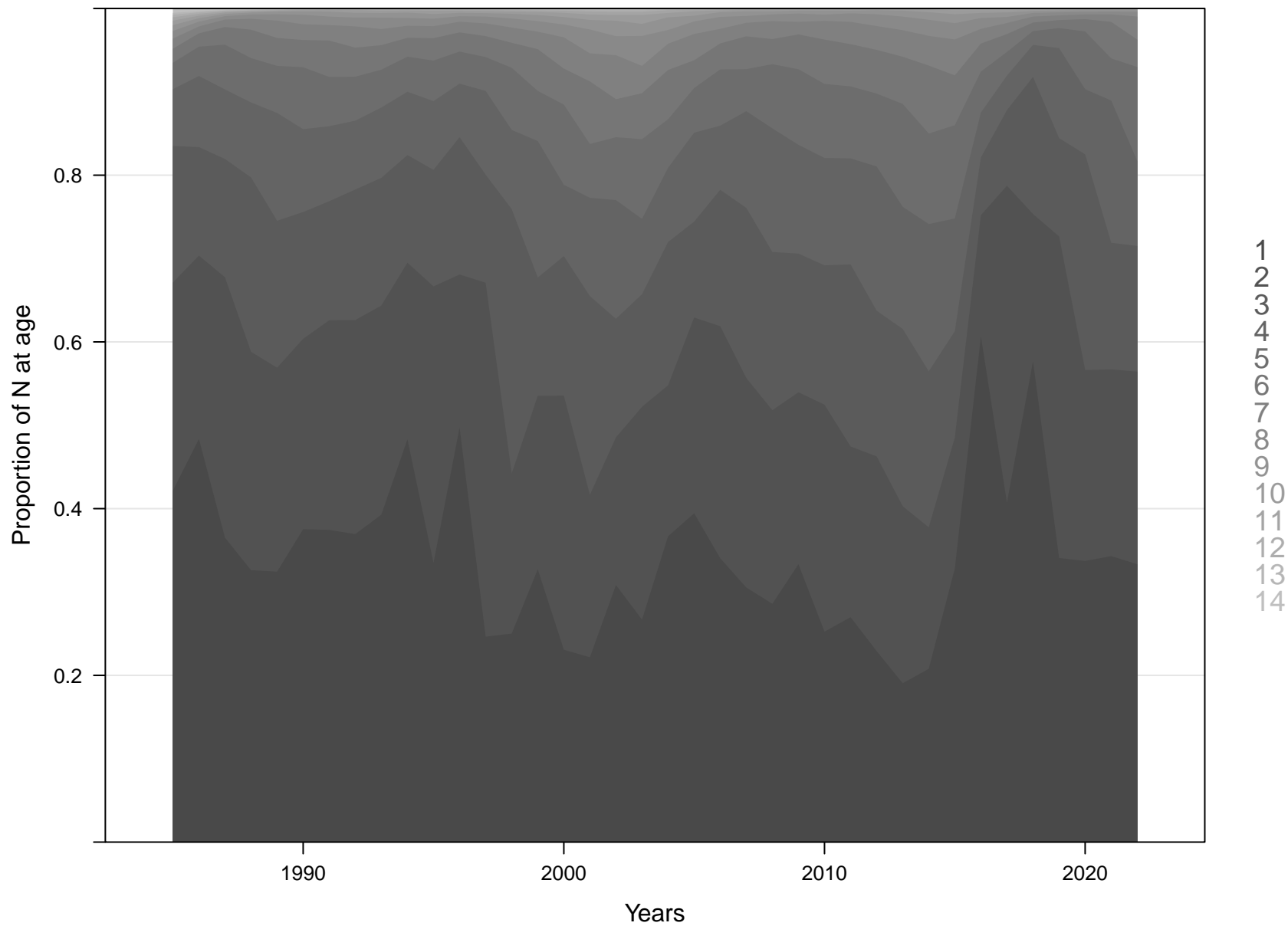
**F proportion at age**



**N at age**



Proportion at age



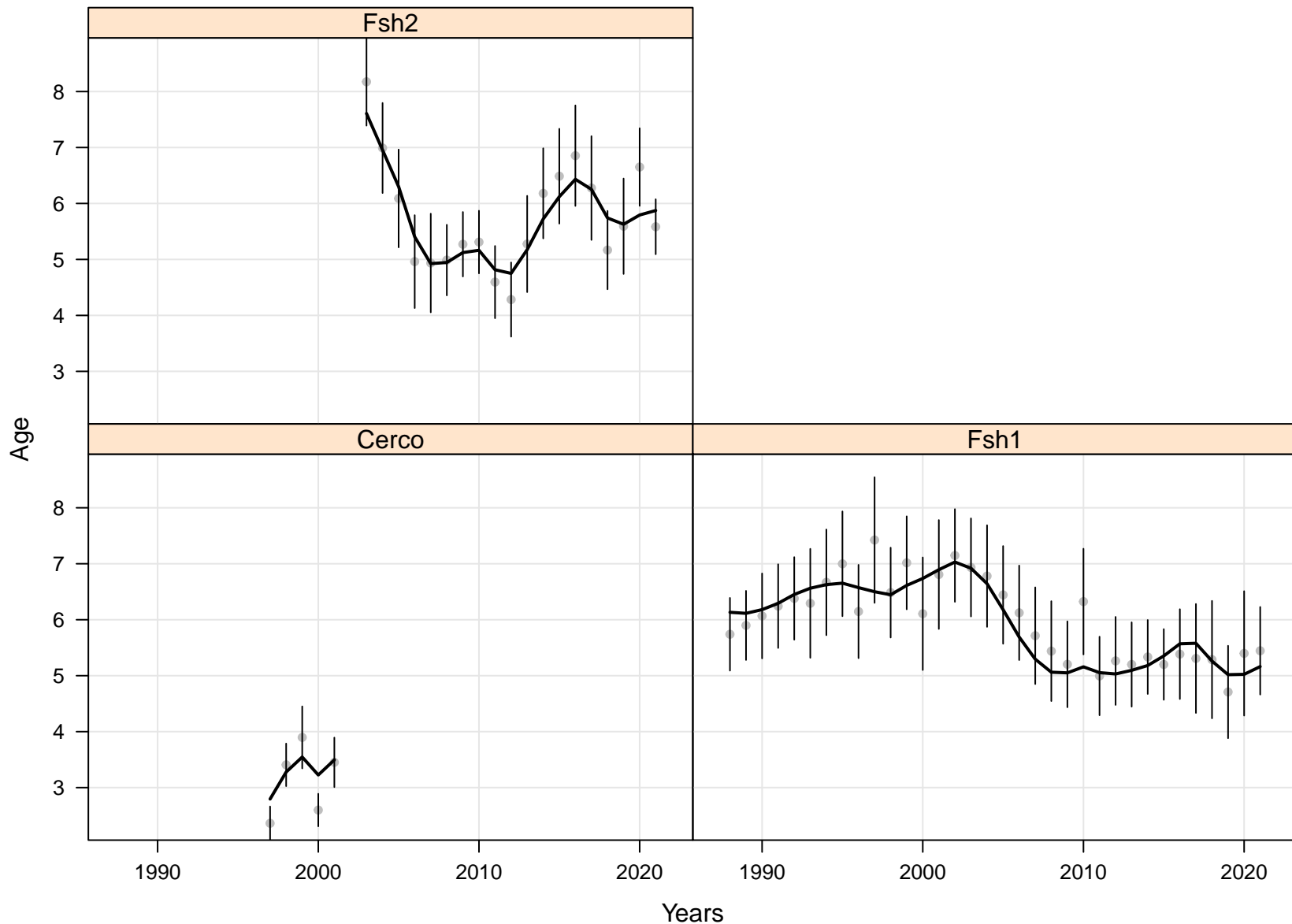


# Fishery mean age

Observed



Modelled

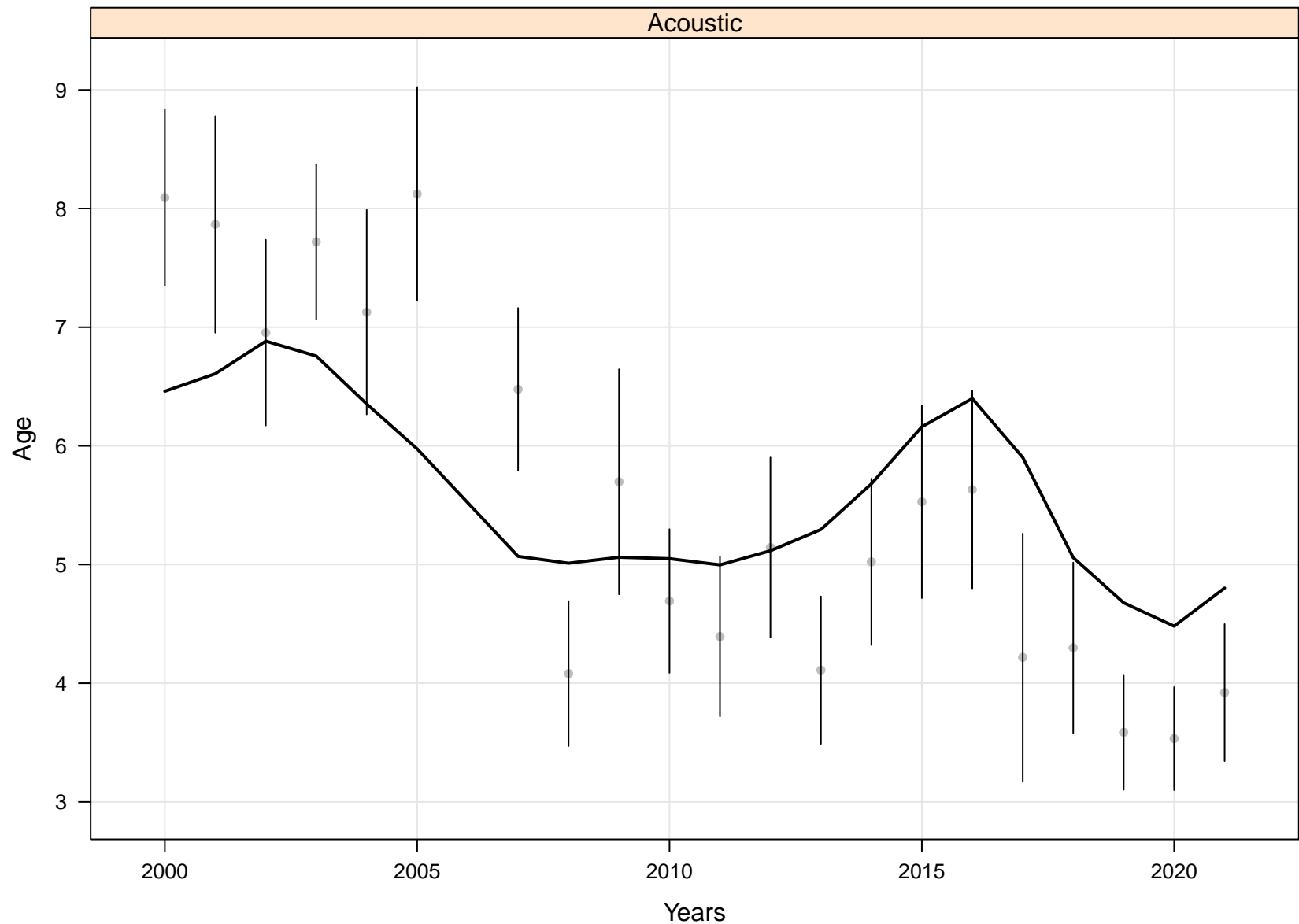


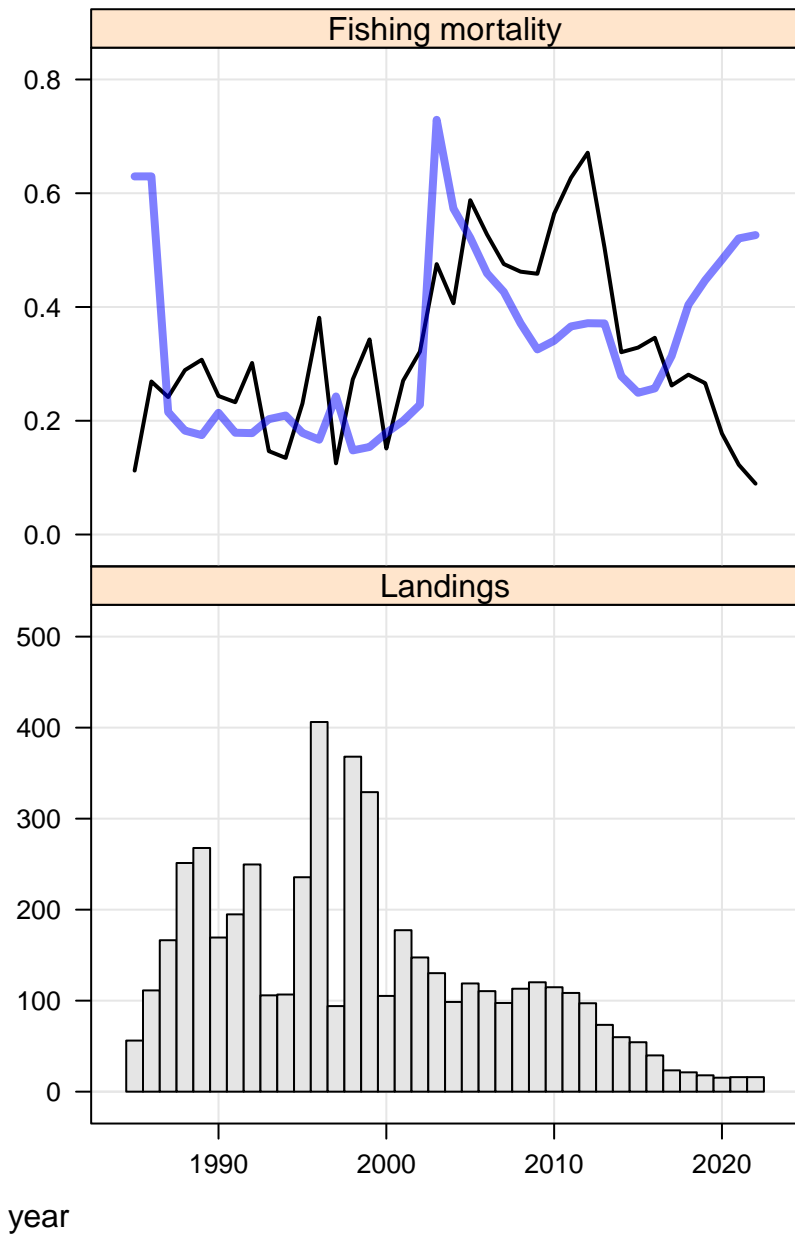
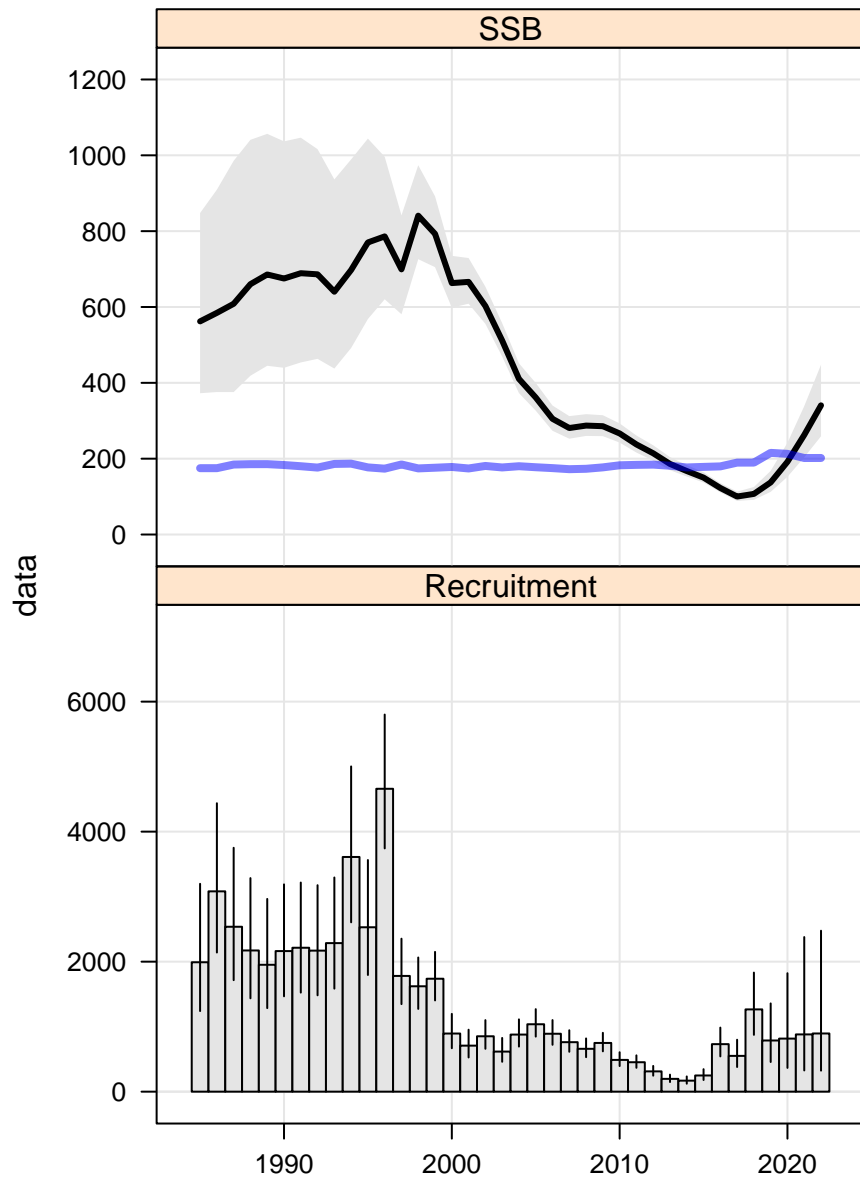
# Survey mean age

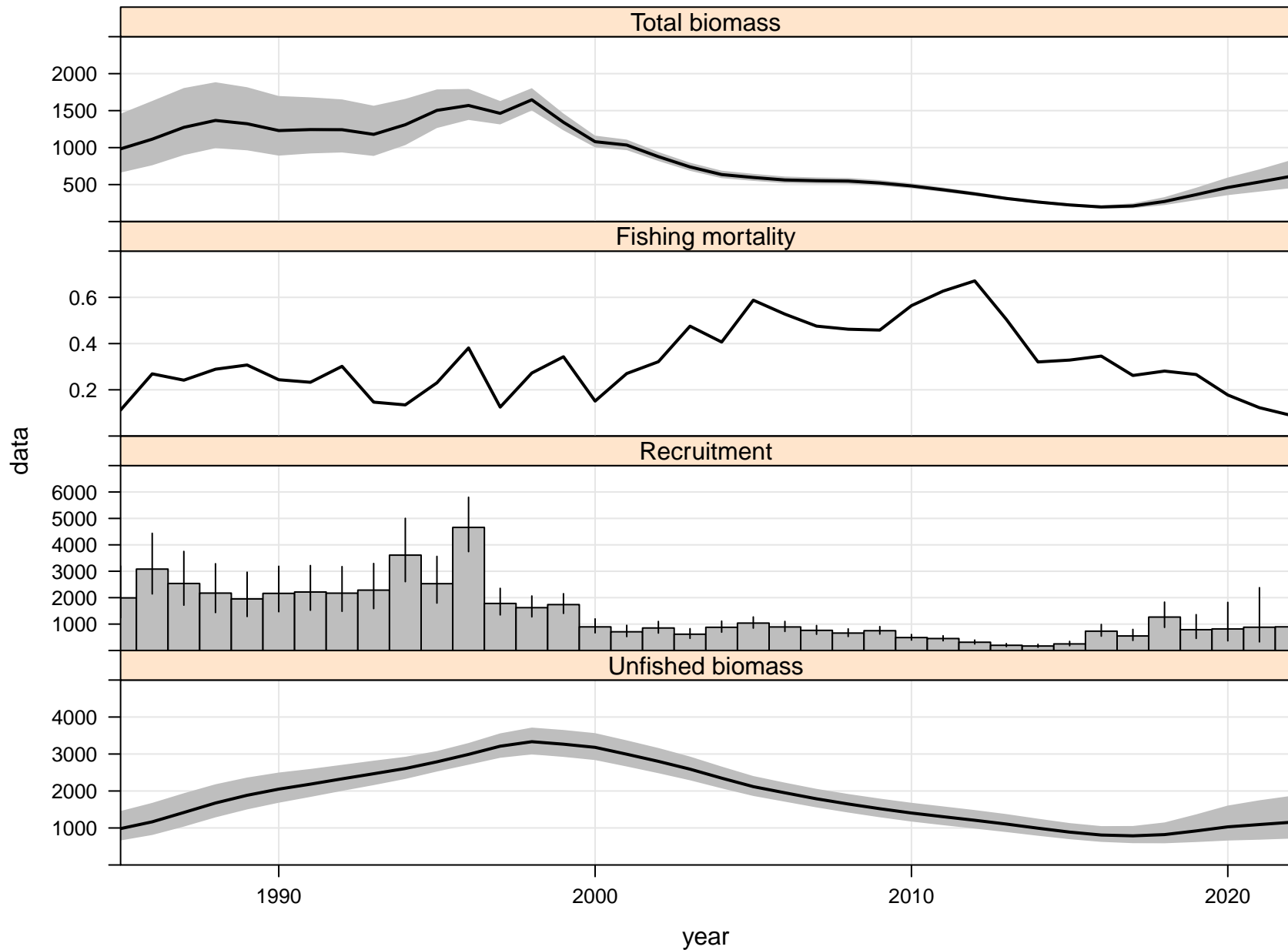
Observed



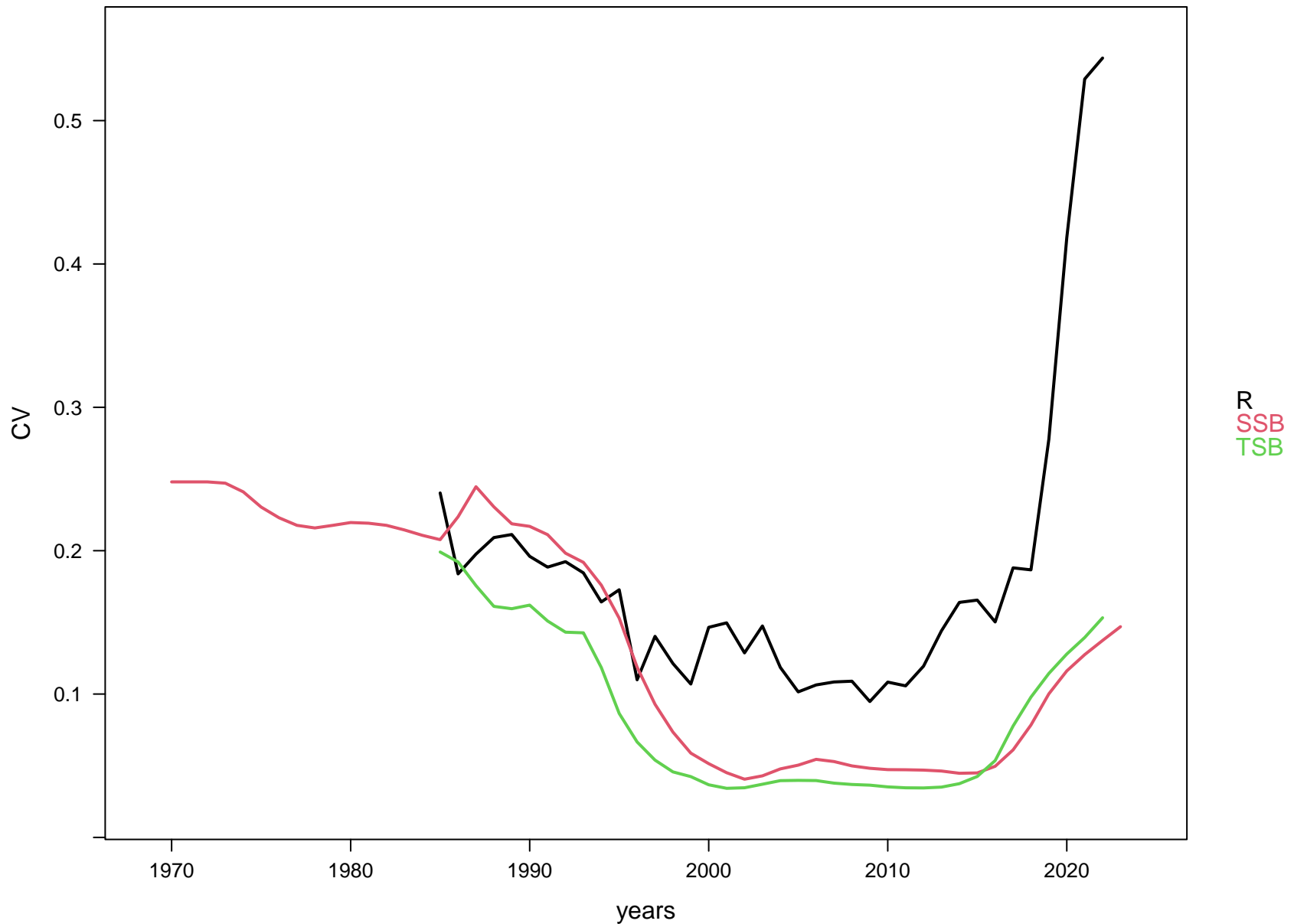
Modelled



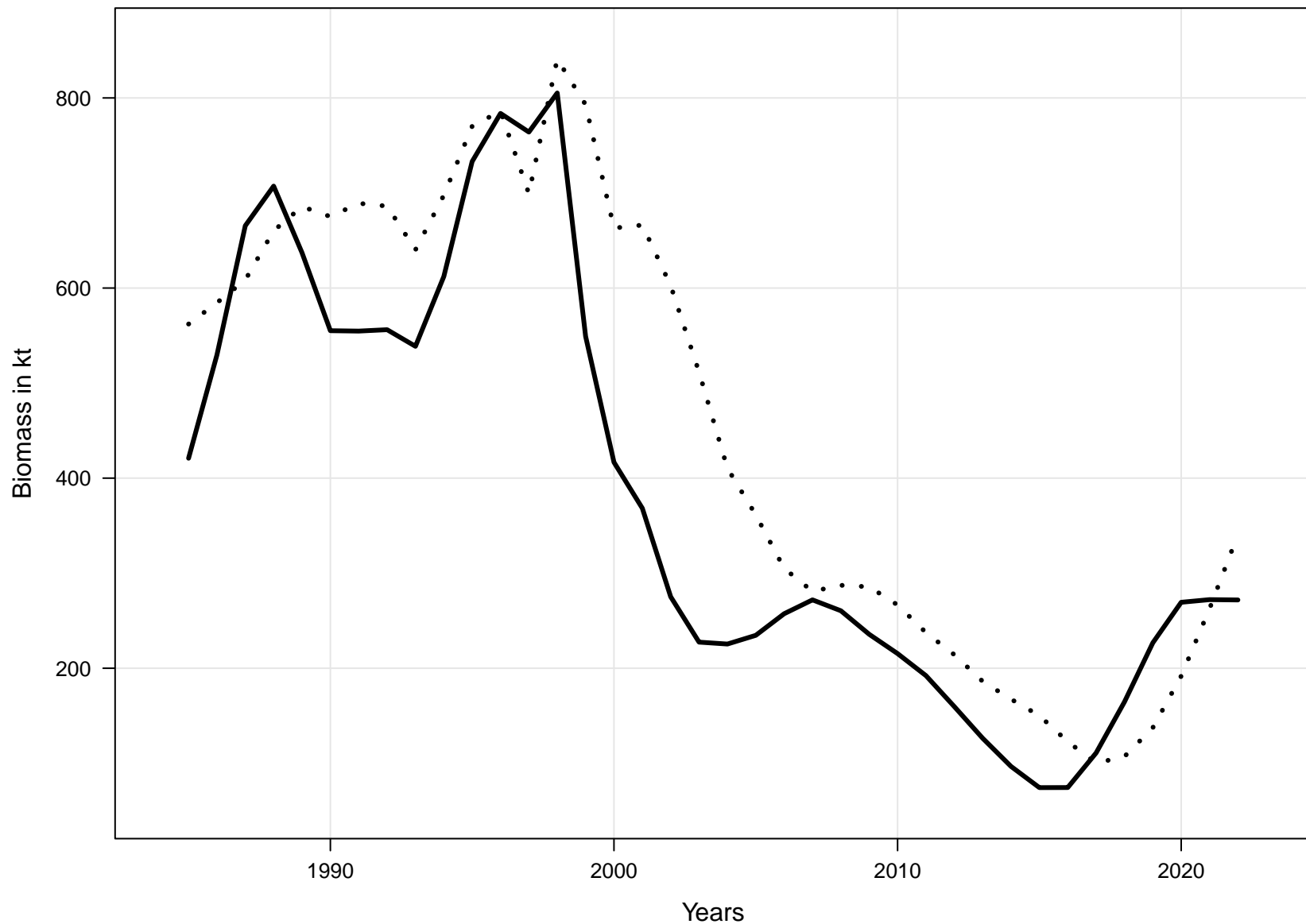




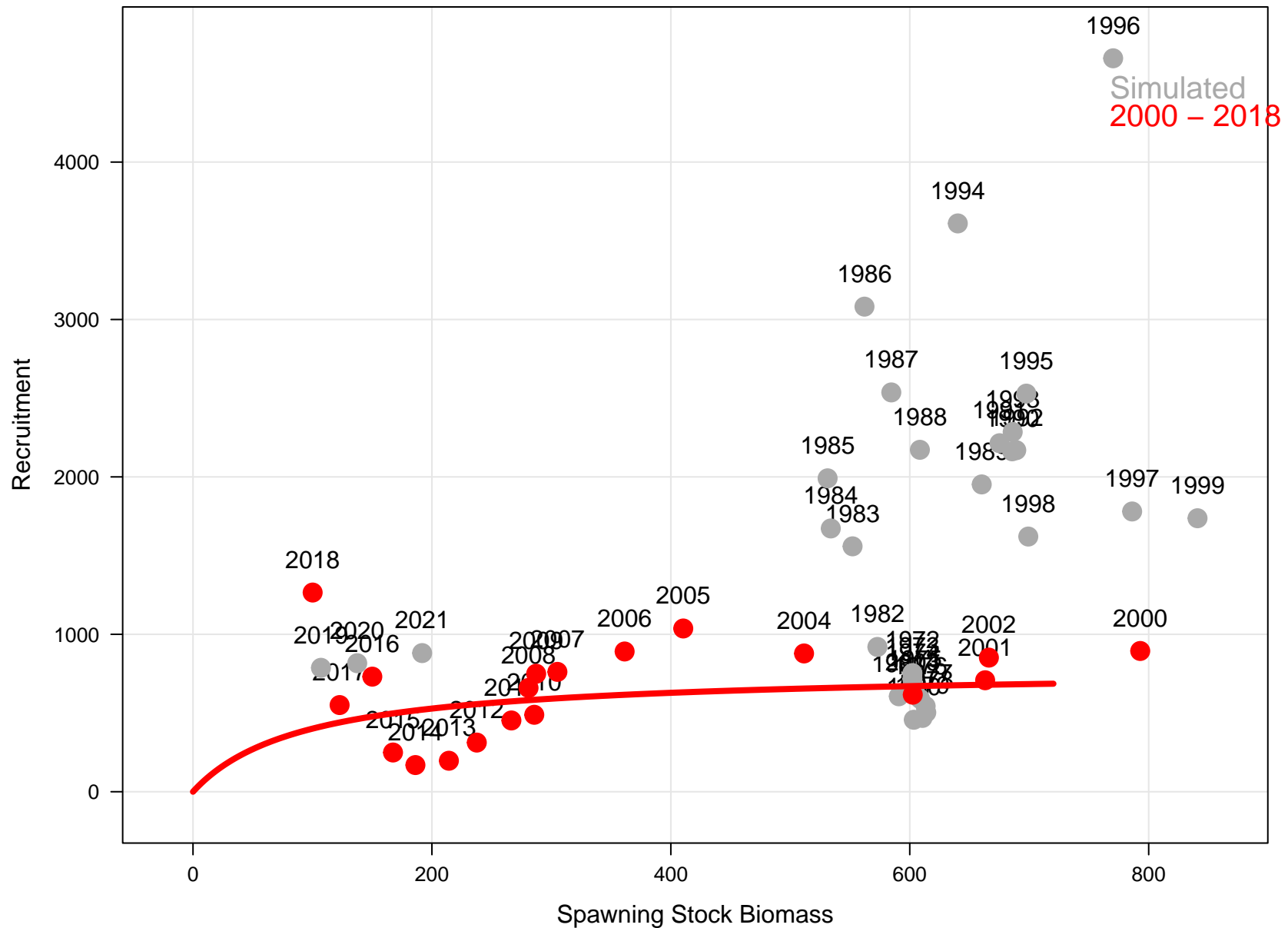
# Uncertainty of key parameters



Mature – Immature fish  
Mature ..... Immature —

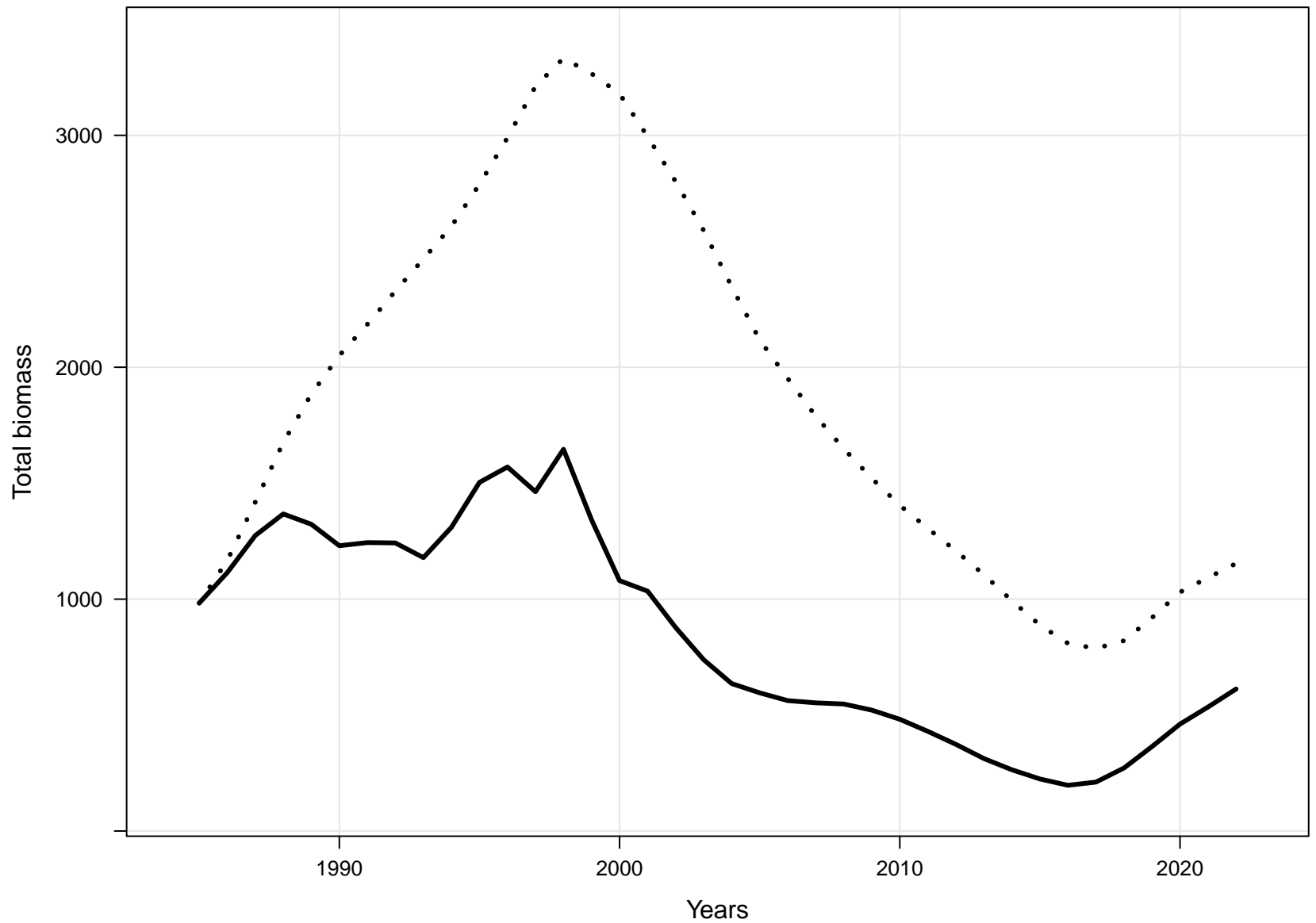


# Stock Recruitment



# Comparing fished with unfished biomass

Fished — Unfished .....





## SSB prediction

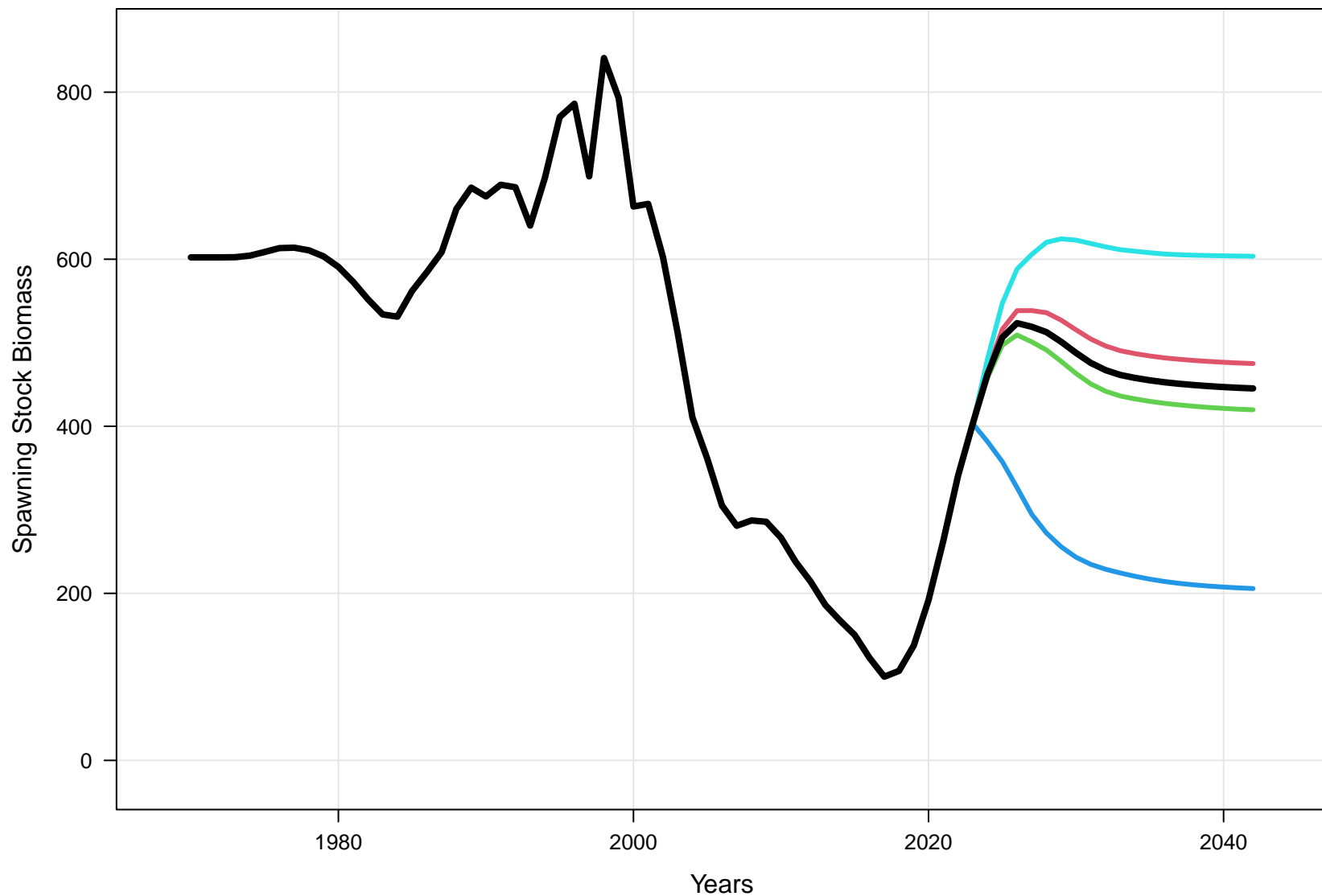
F2022 SQ

F2022 0.75x

F2022 1.25x

FMSY

F2022 0x



# Catch prediction

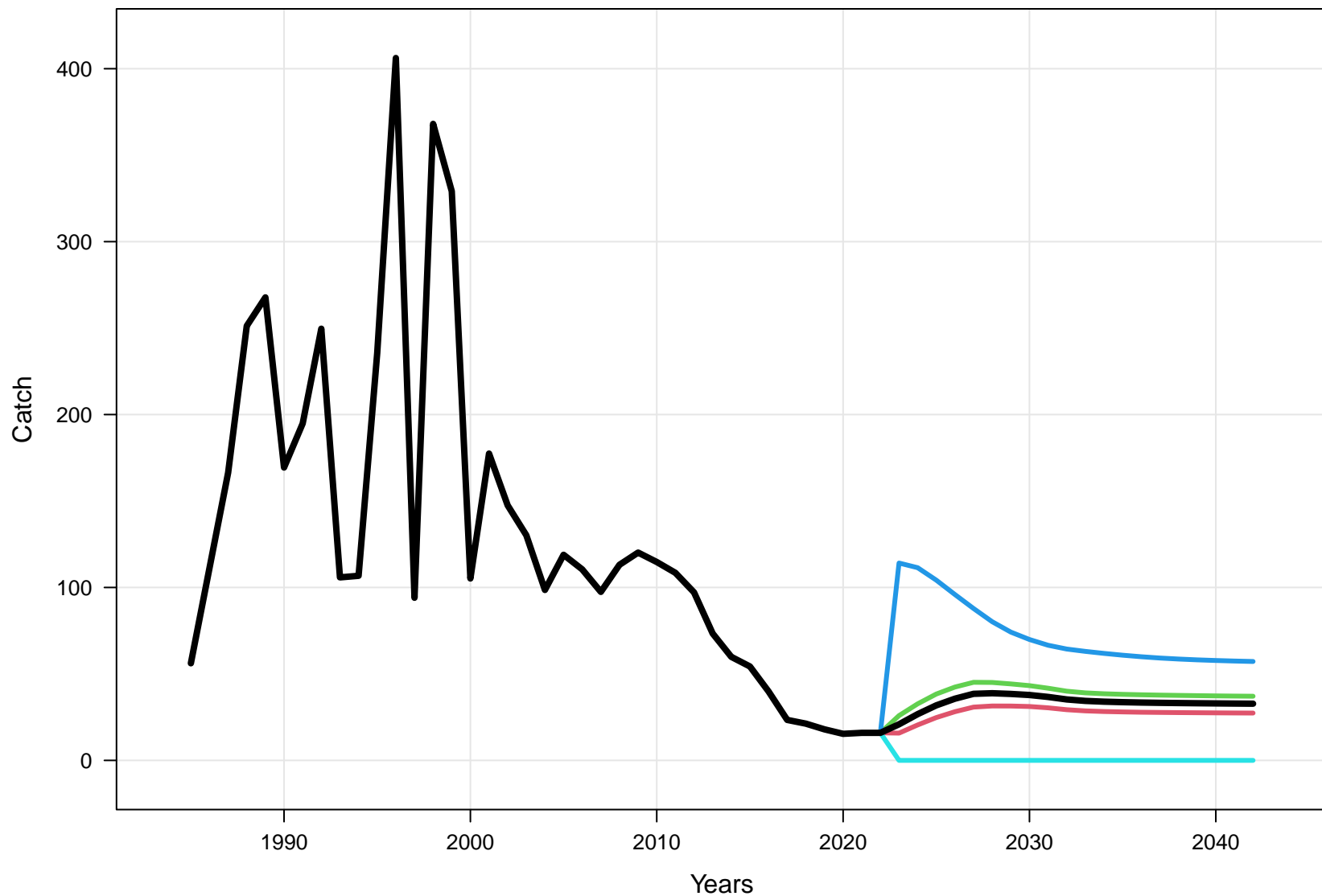
F2022 SQ

F2022 0.75x

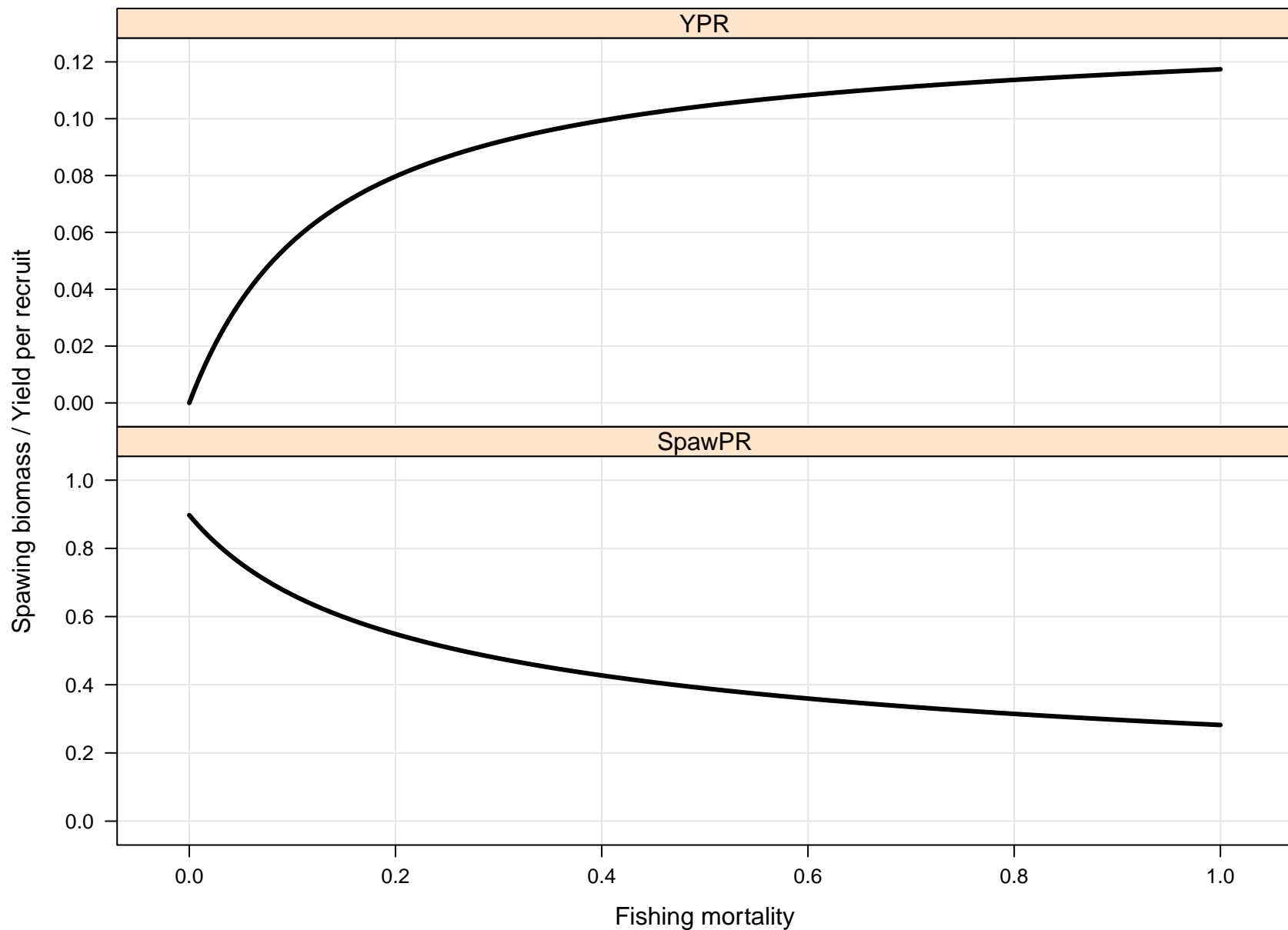
F2022 1.25x

FMSY

F2022 0x



# Yield and spawning stock biomass per recruit



Kobe plot

