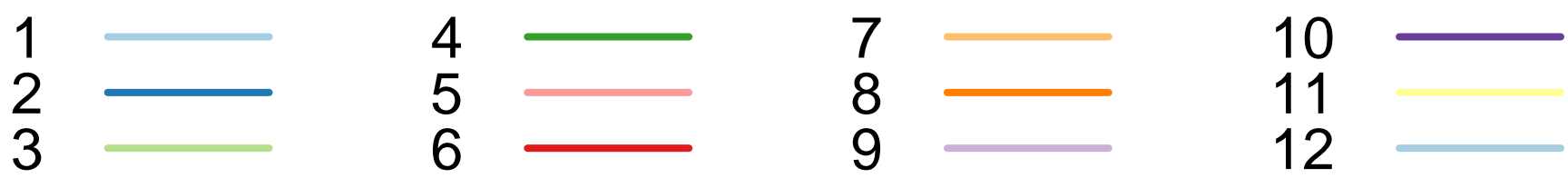


Input data

Weight at age in the fishery

Ages



1970 1980 1990 2000 2010

FarNorth

Offshore_Trawl

N_Chile

SC_Chile_PS

Weight

3

2

1

0

1970 1980 1990 2000 2010

Years

3

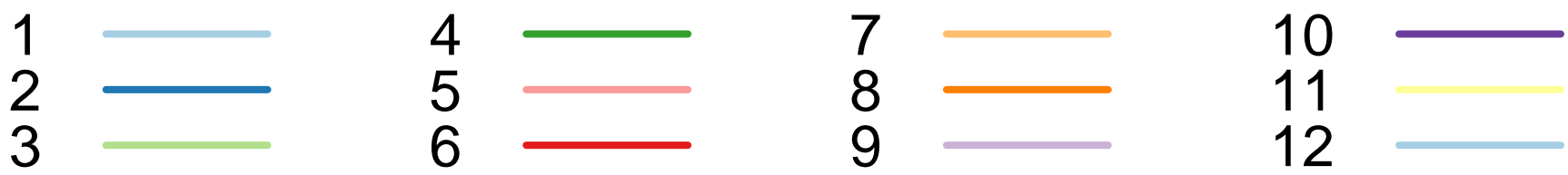
2

1

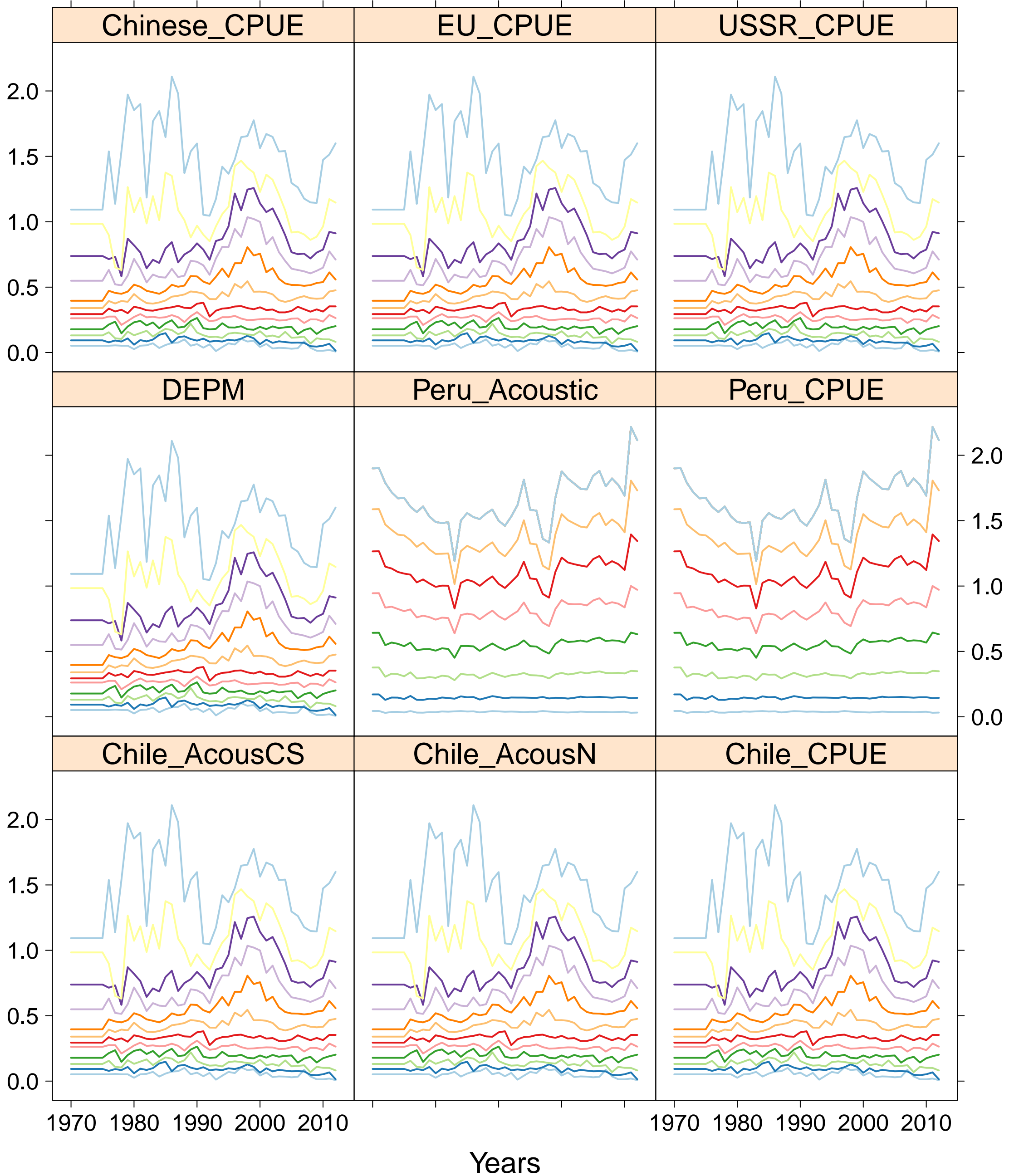
0

Weight at age in the survey

Ages

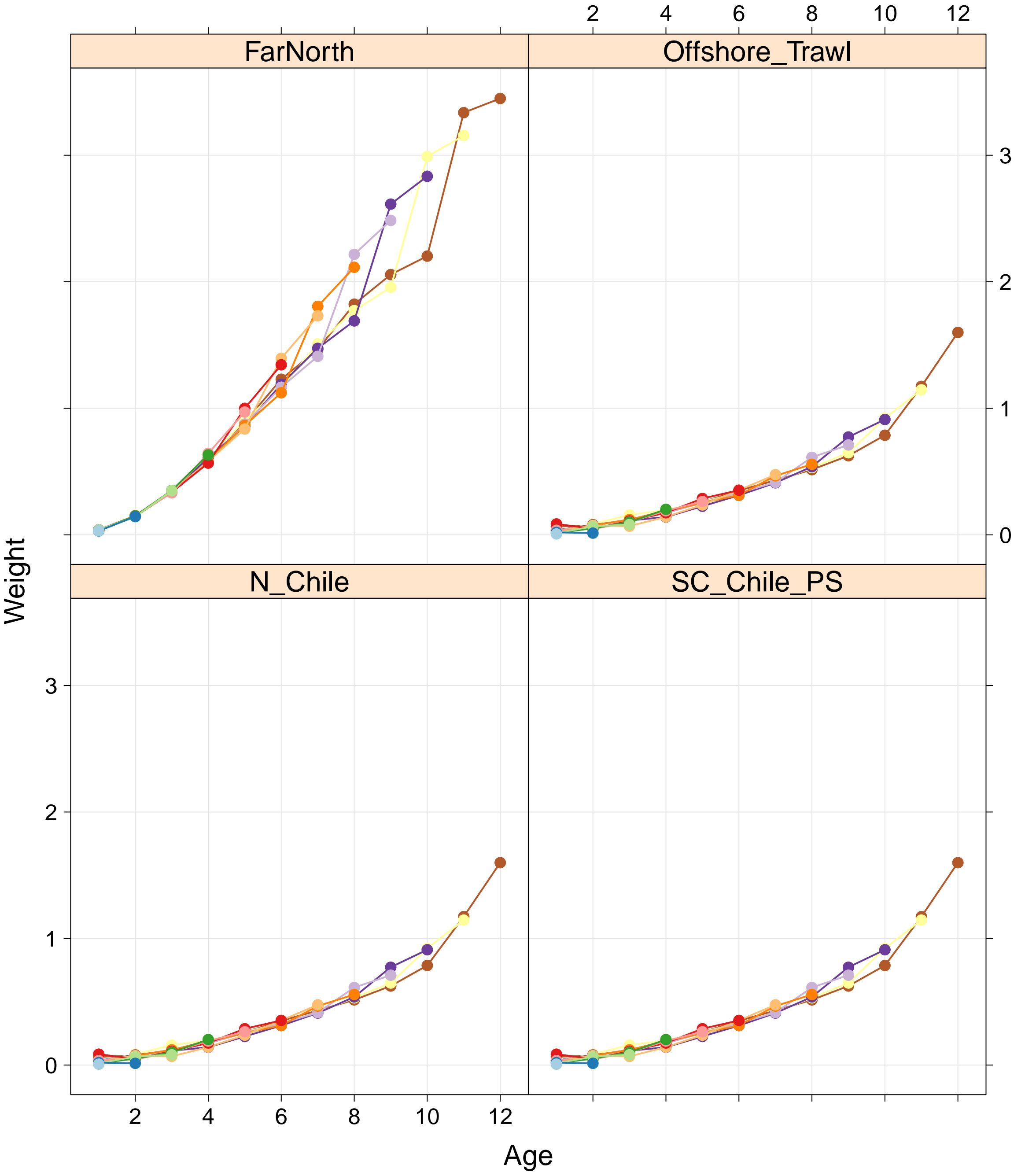


1970 1980 1990 2000 2010



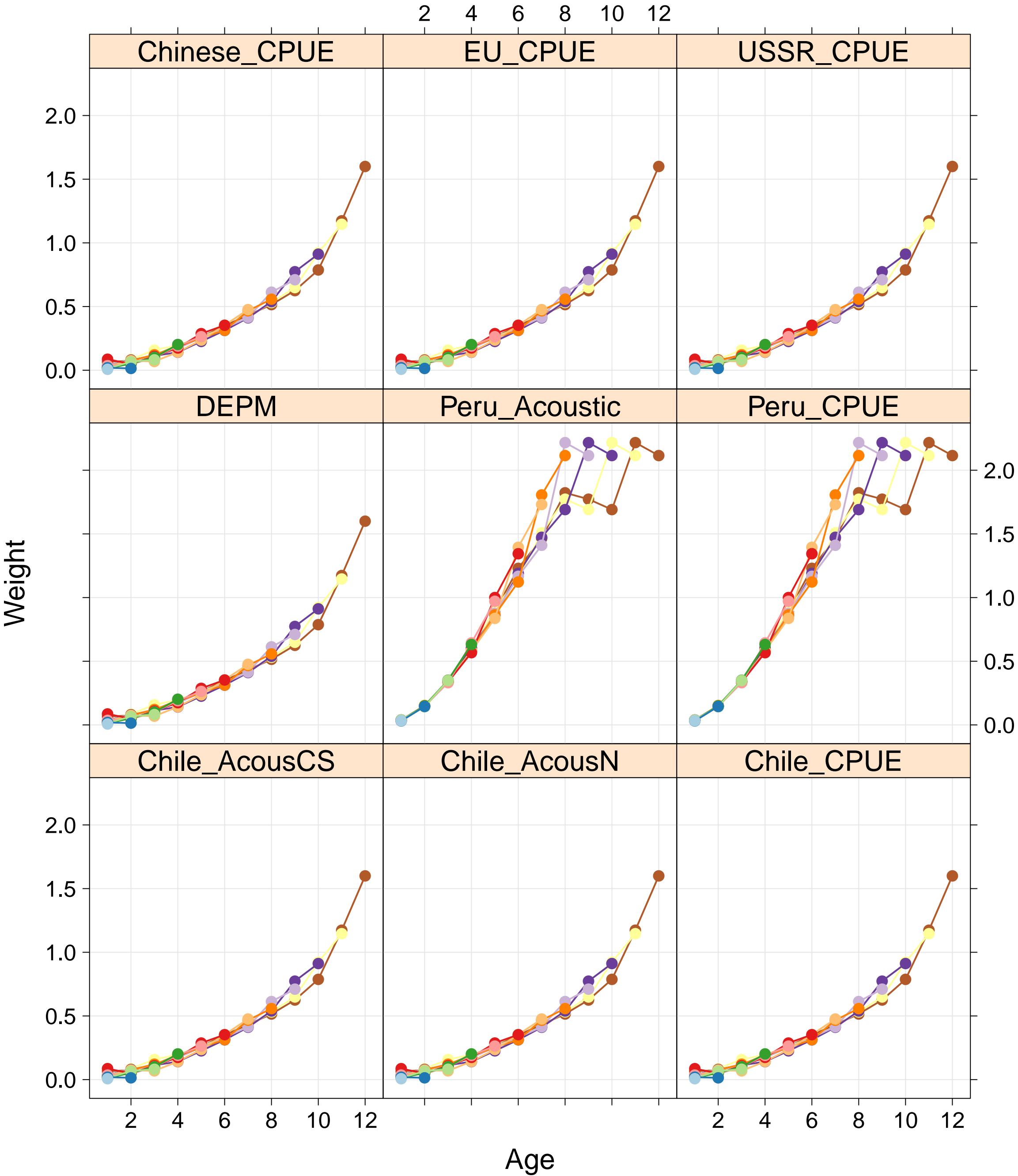
Weight at age by cohort in the fleet

Cohort



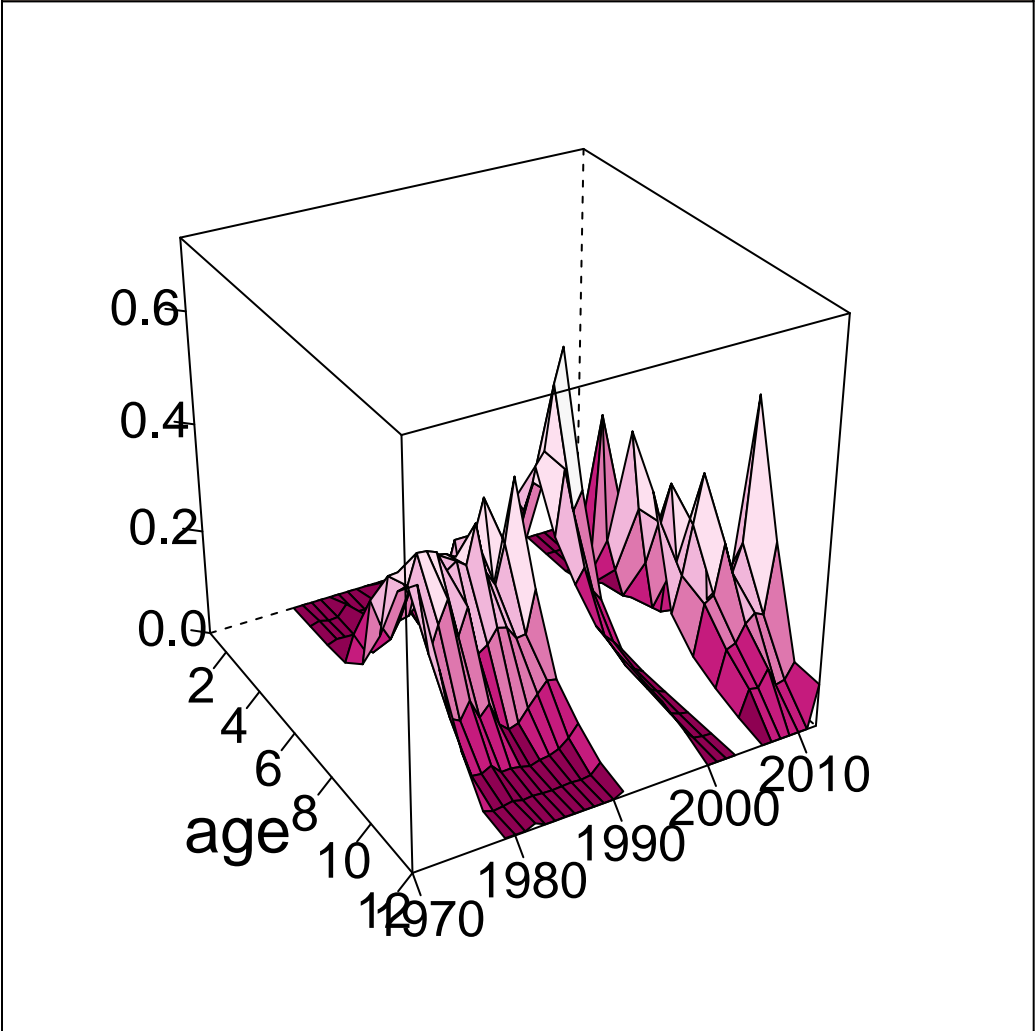
Weight at age by cohort in the survey

Cohort

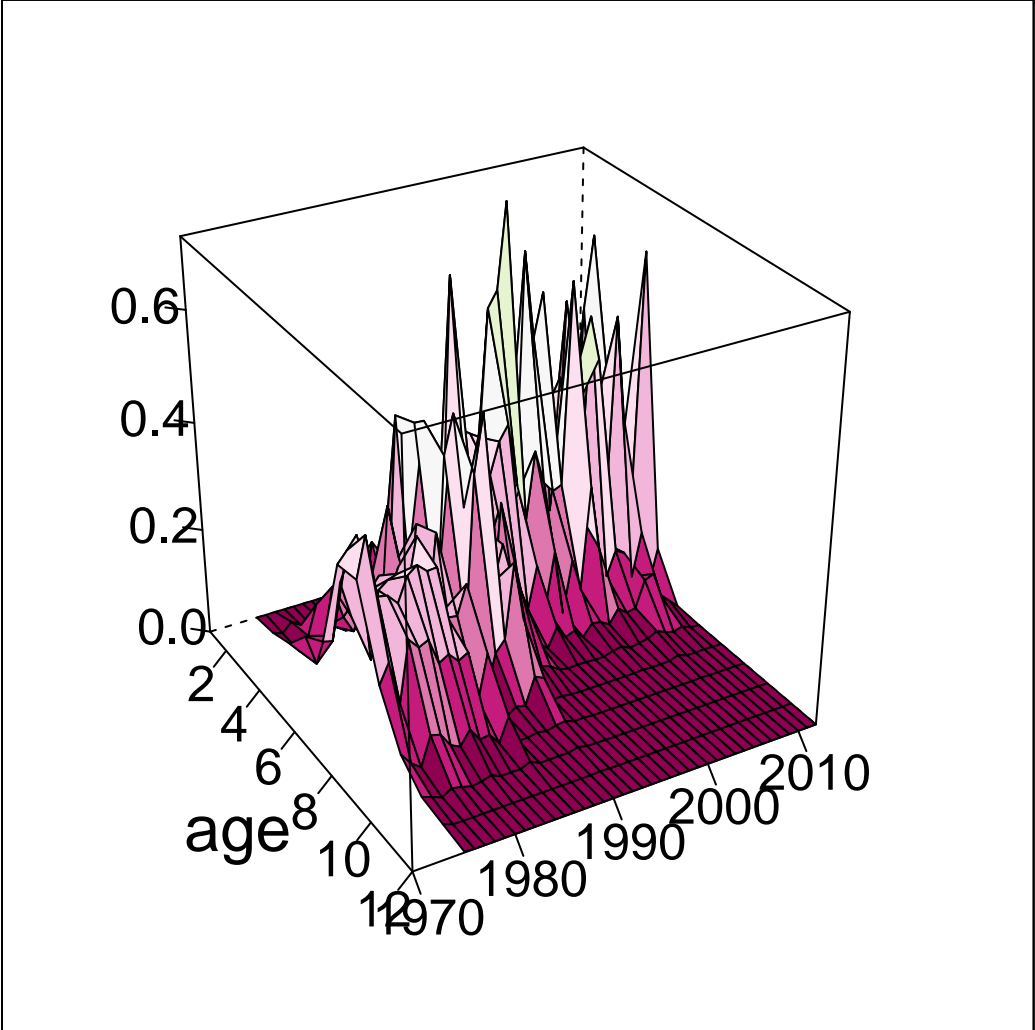


Age composition in fleets

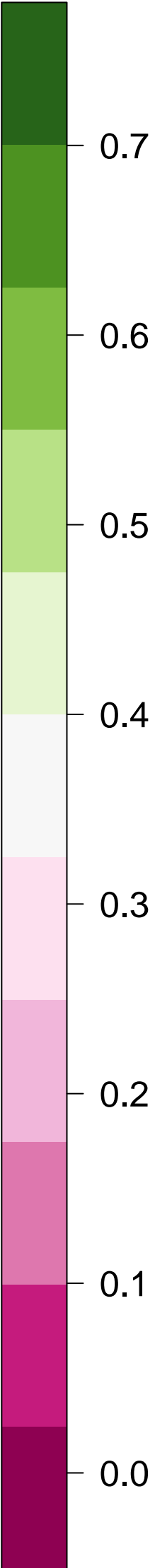
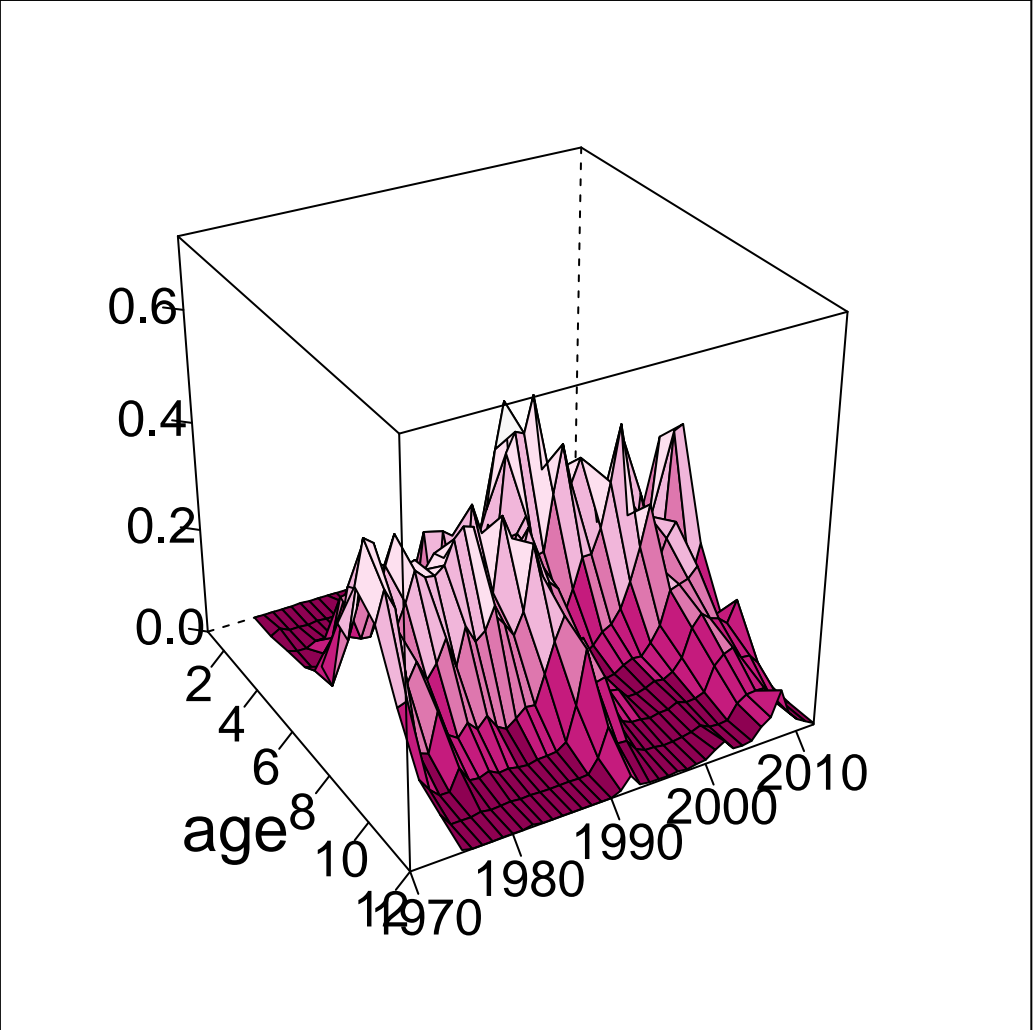
Offshore_Trawl



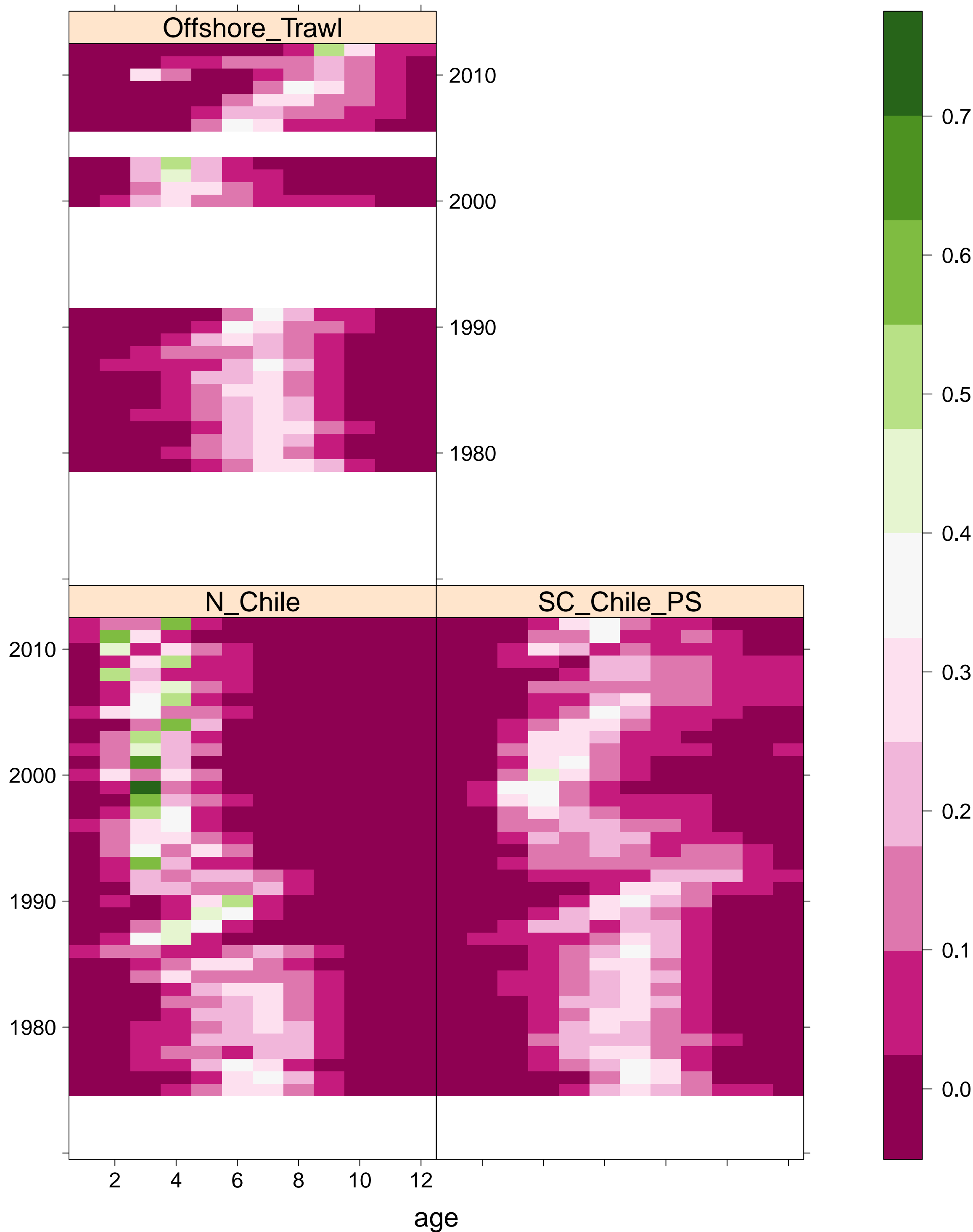
N_Chile



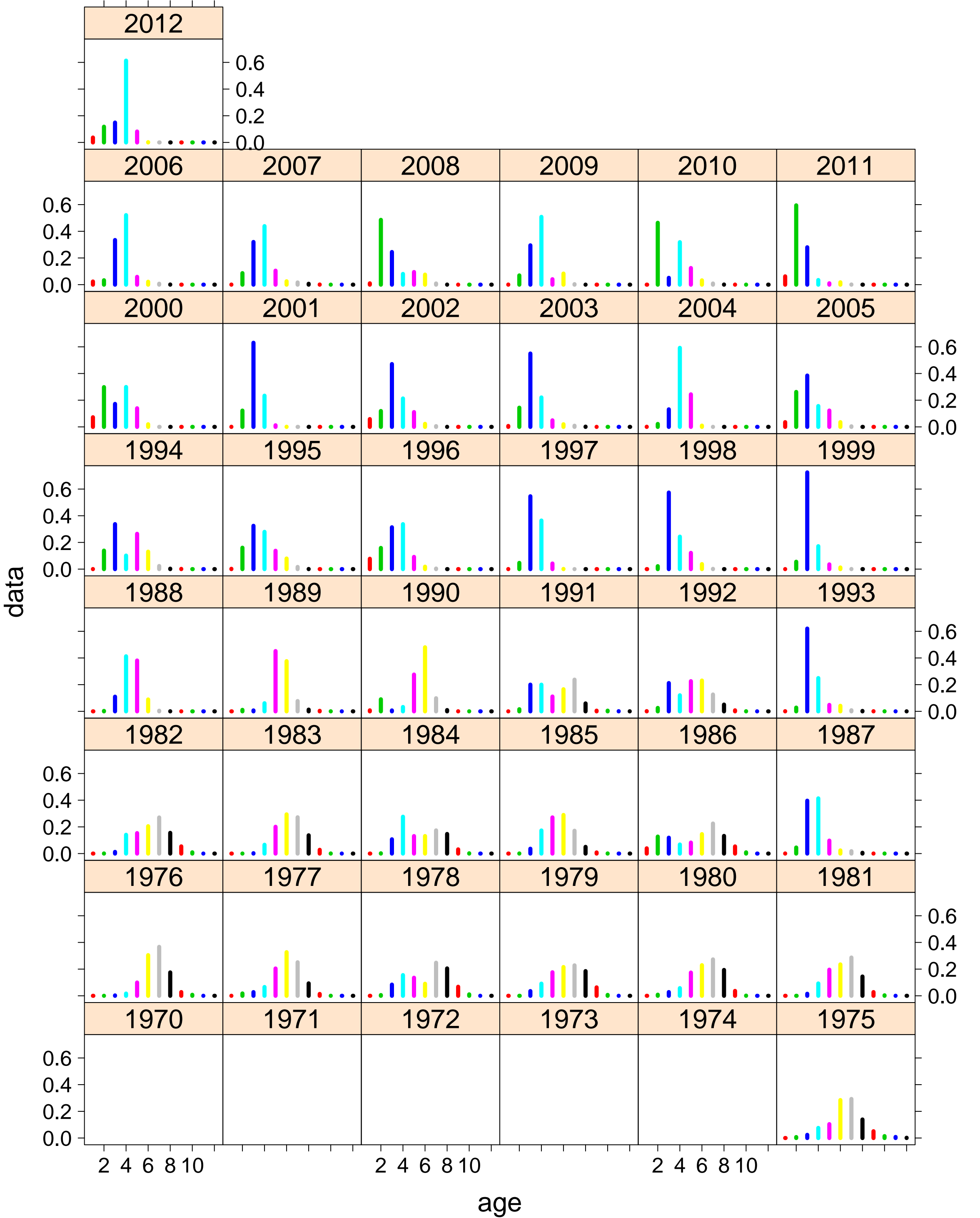
SC_Chile_PS



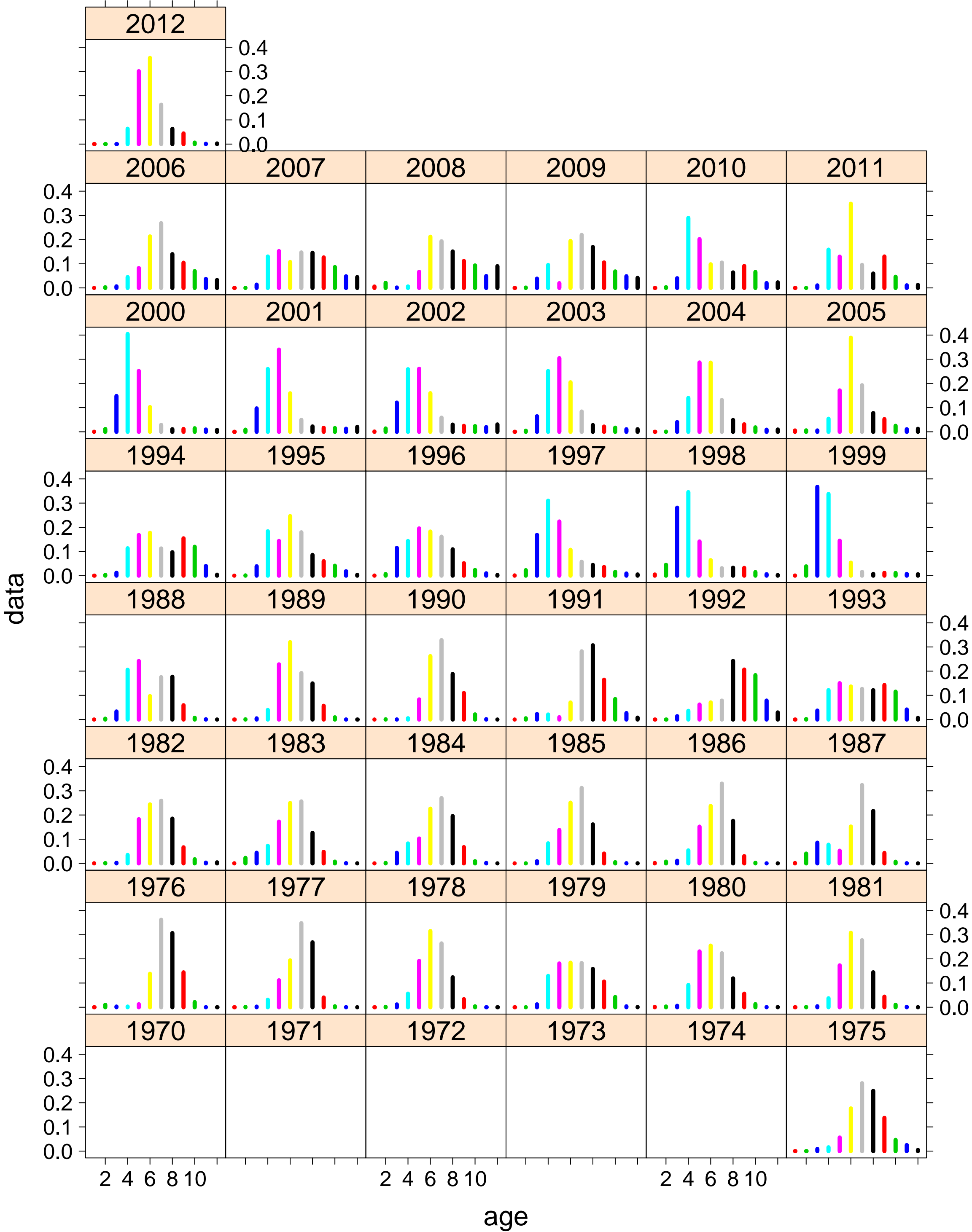
Age composition in fleets



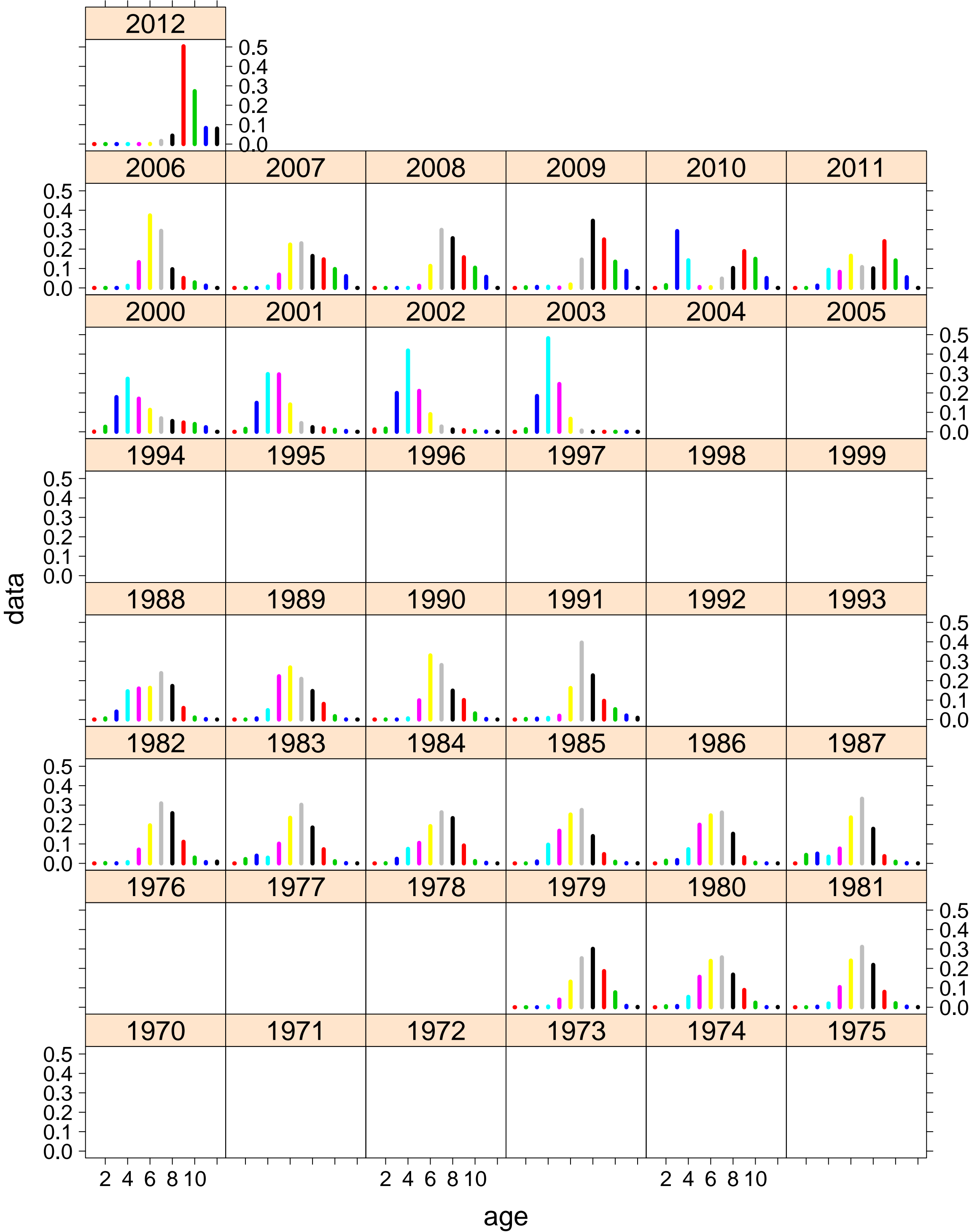
Age composition in fleet N_Chile



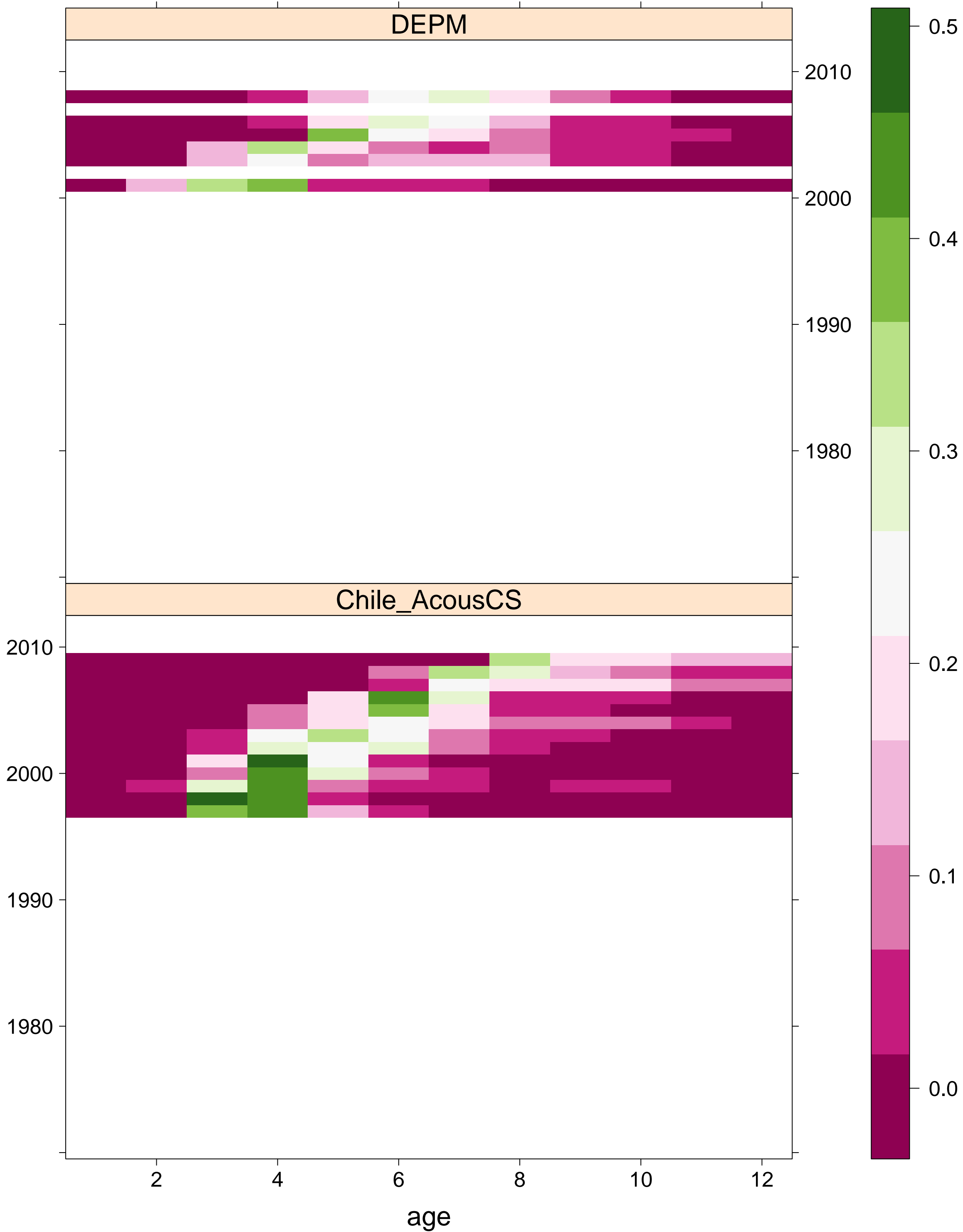
Age composition in fleet SC_Chile_PS



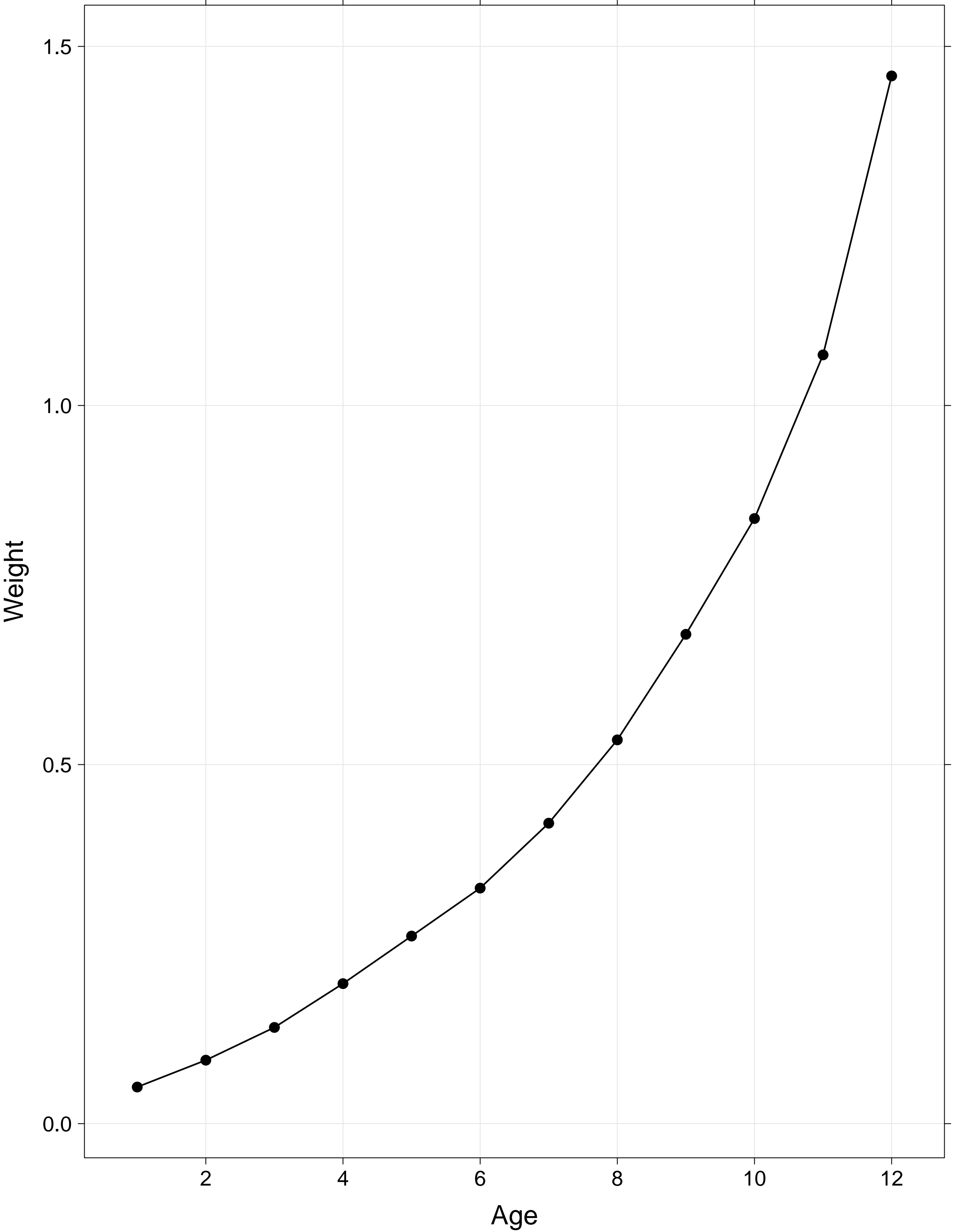
Age composition in fleet Offshore_Trawl



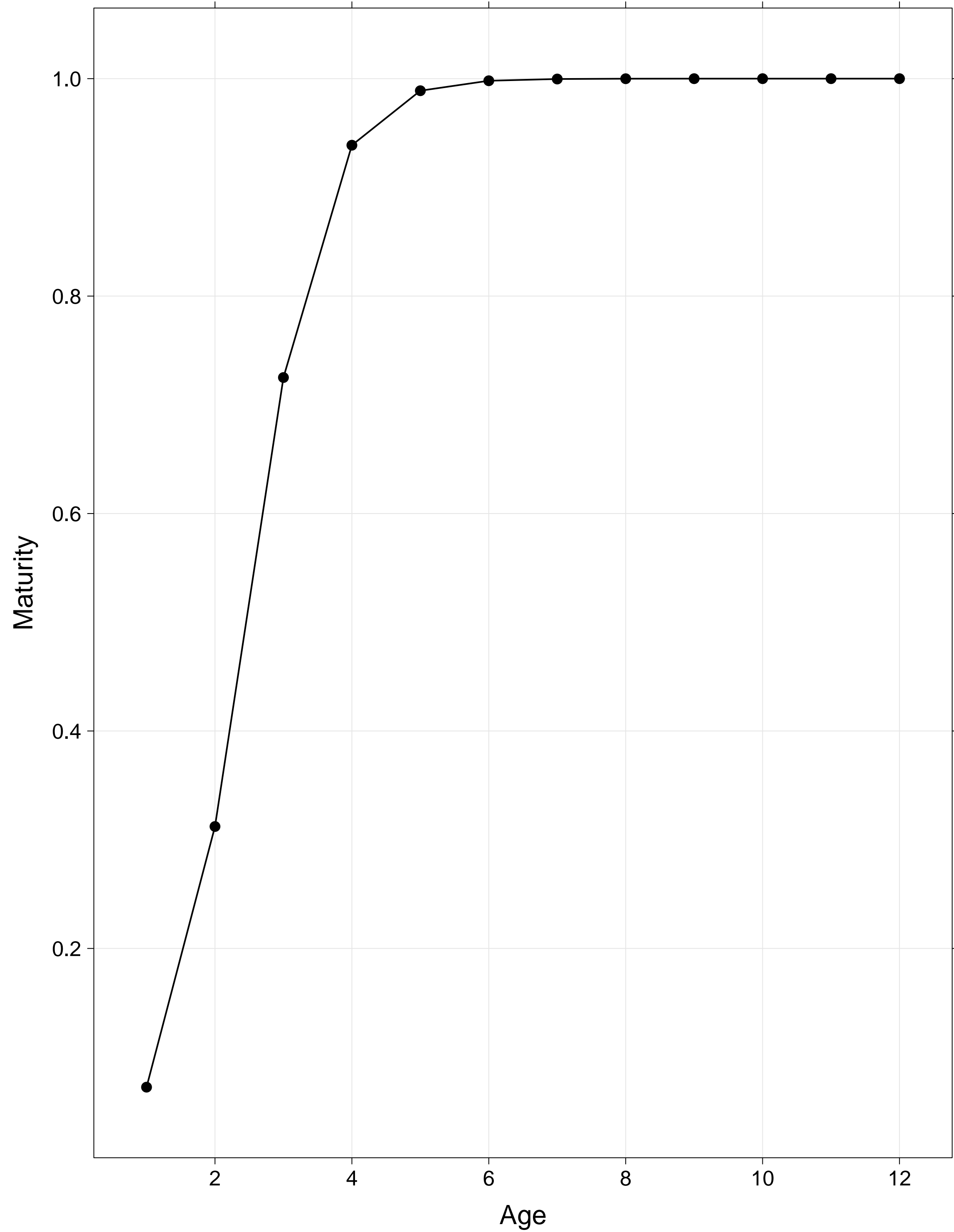
Age composition in surveys



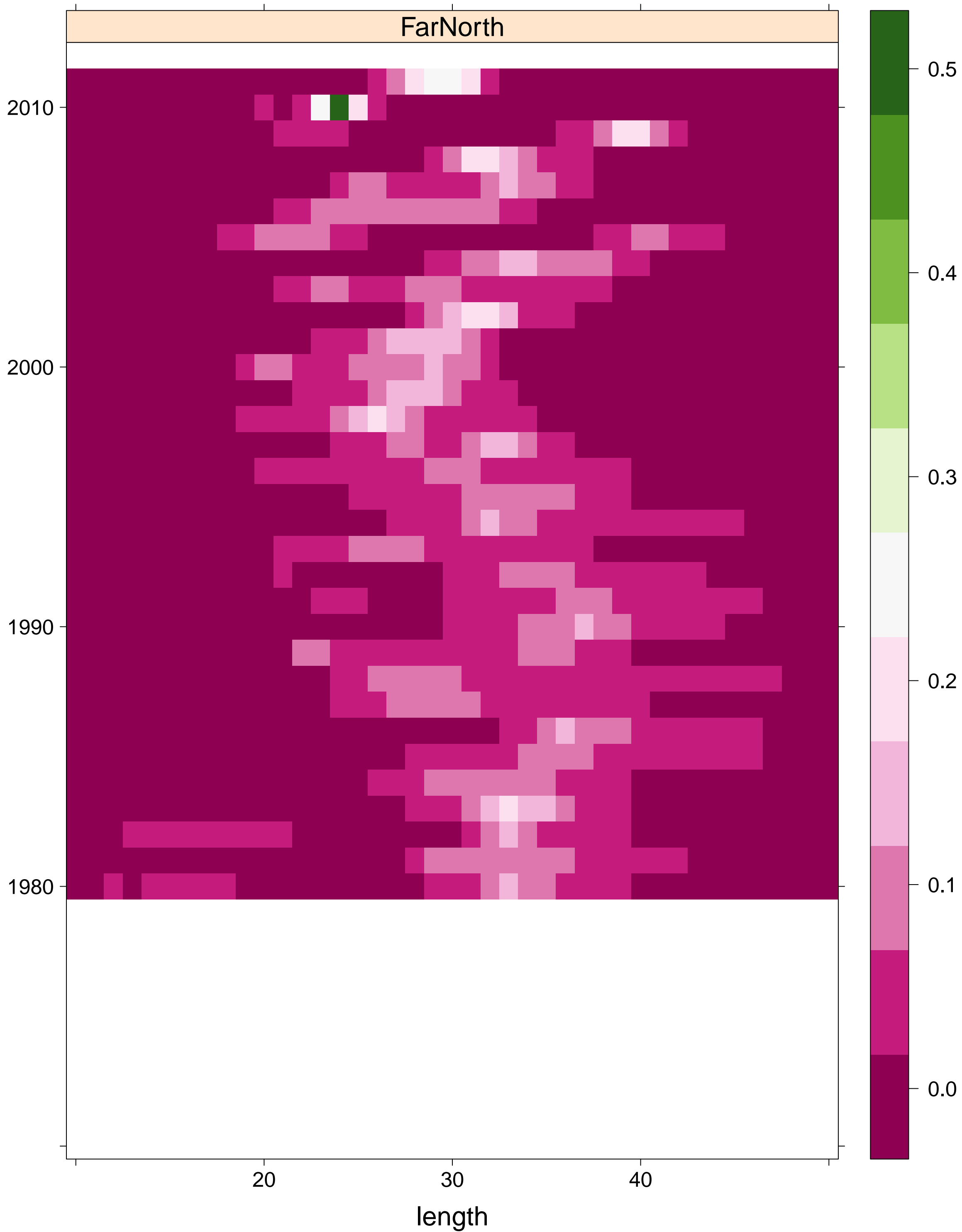
Weight in the stock



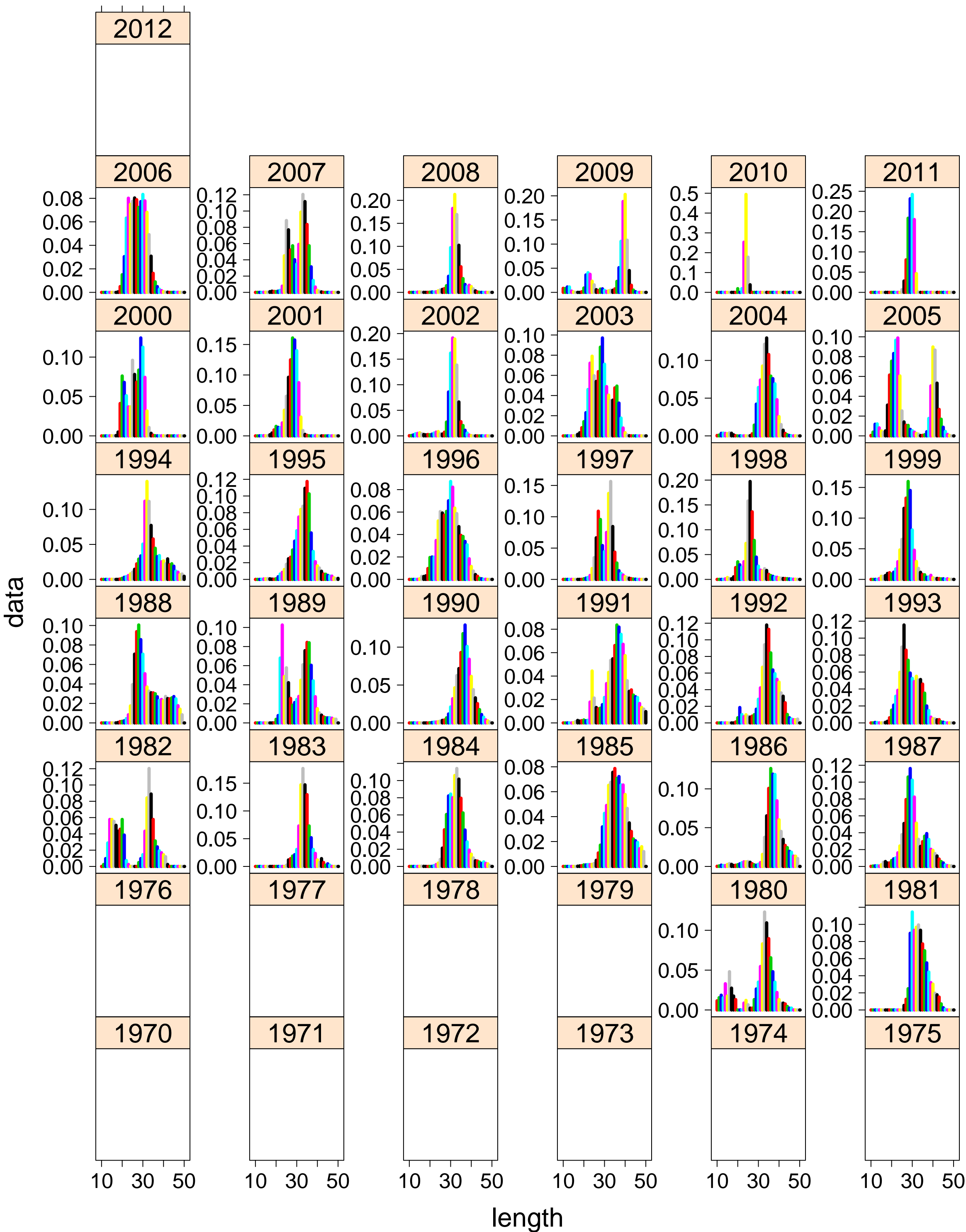
Maturity in the stock



Length composition in surveys FarNorth

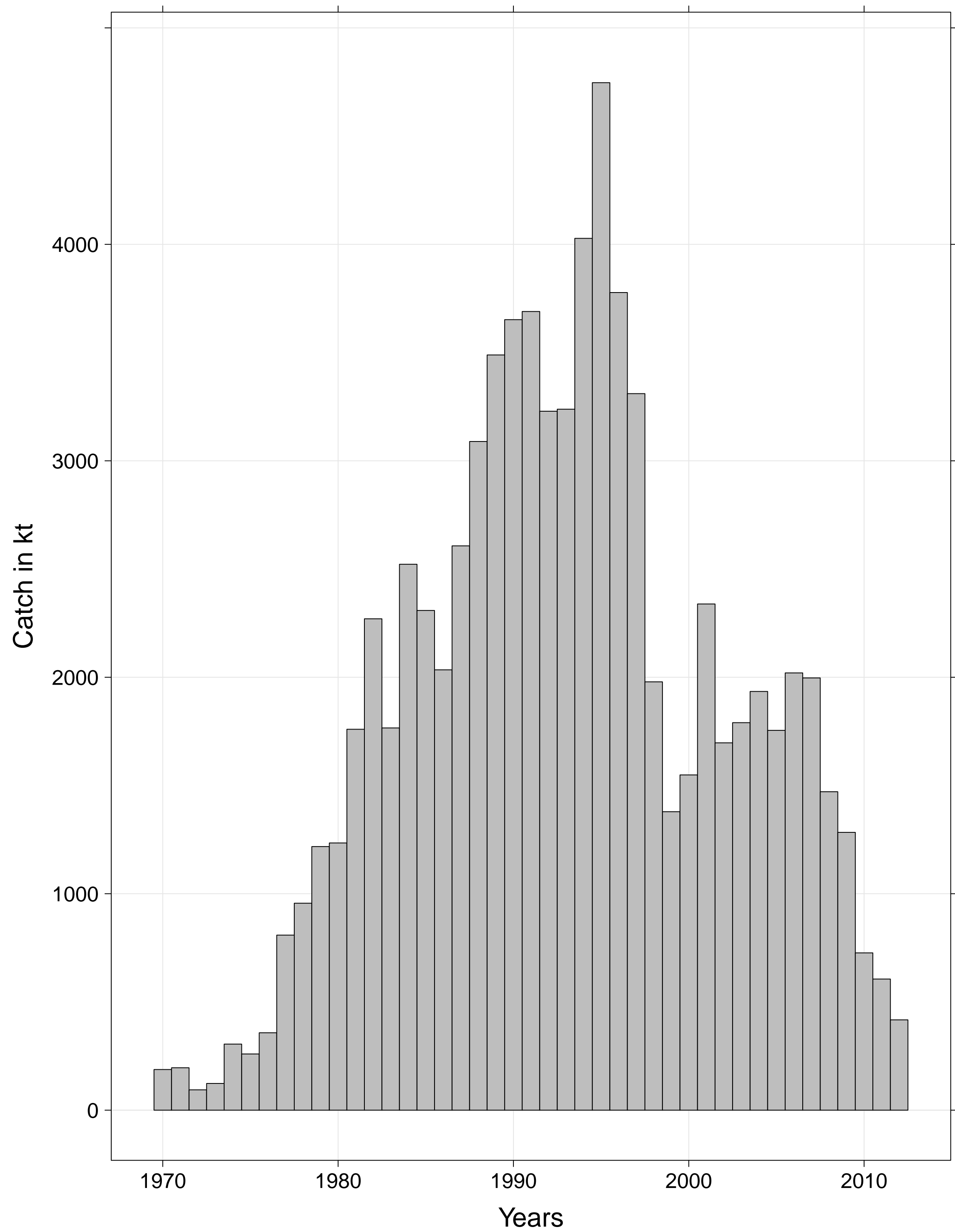


Length composition in survey FarNorth



Fit of catch data

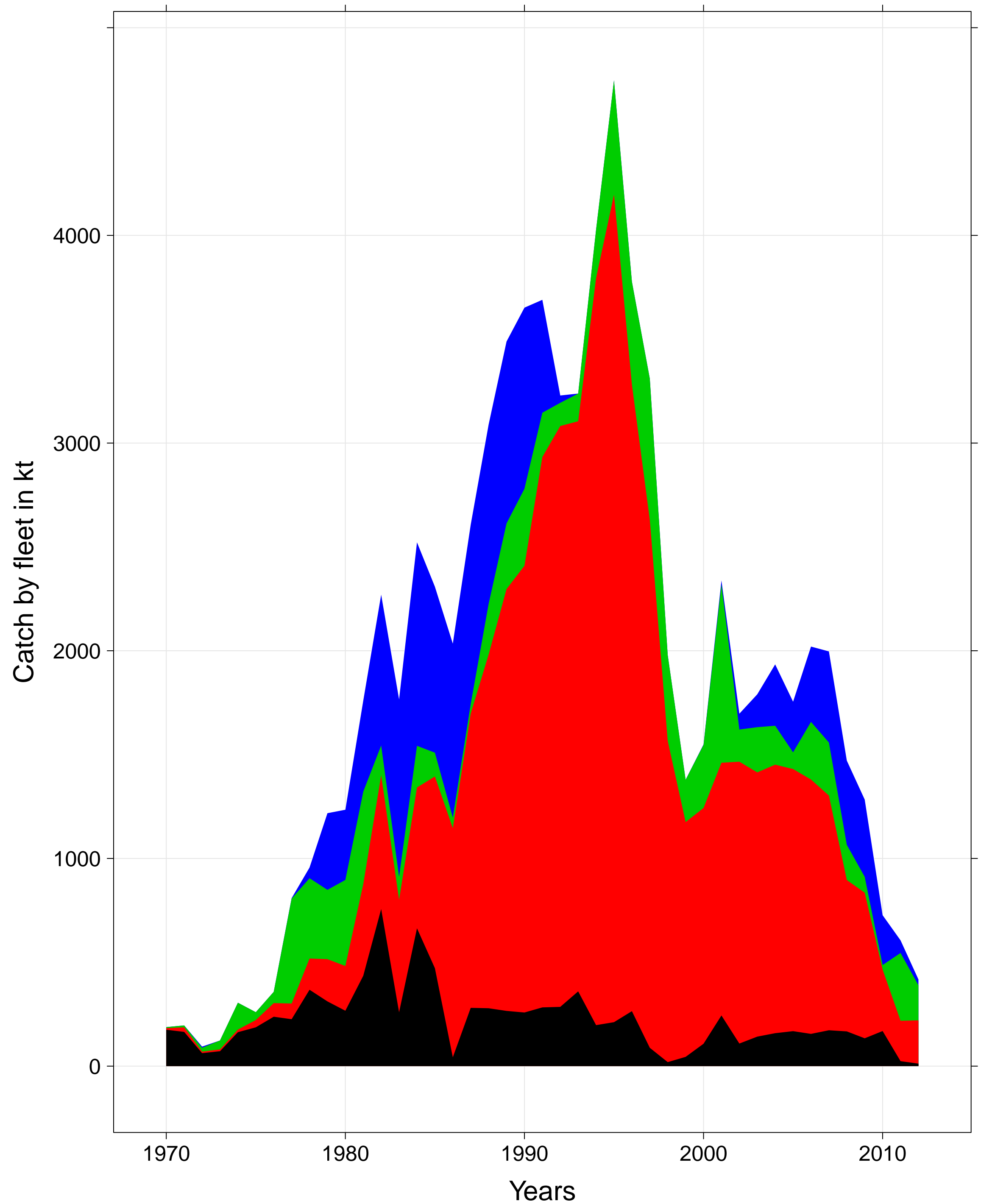
Total catch



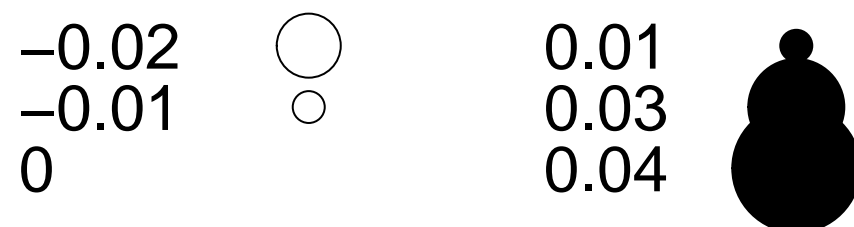
Total catch by fleet

N_Chile
SC_Chile_PS

FarNorth
Offshore_Trawl



Catch residuals by fleet



Offshore_Trawl

FarNorth

SC_Chile_PS

N_Chile

1970

1980

1990

2000

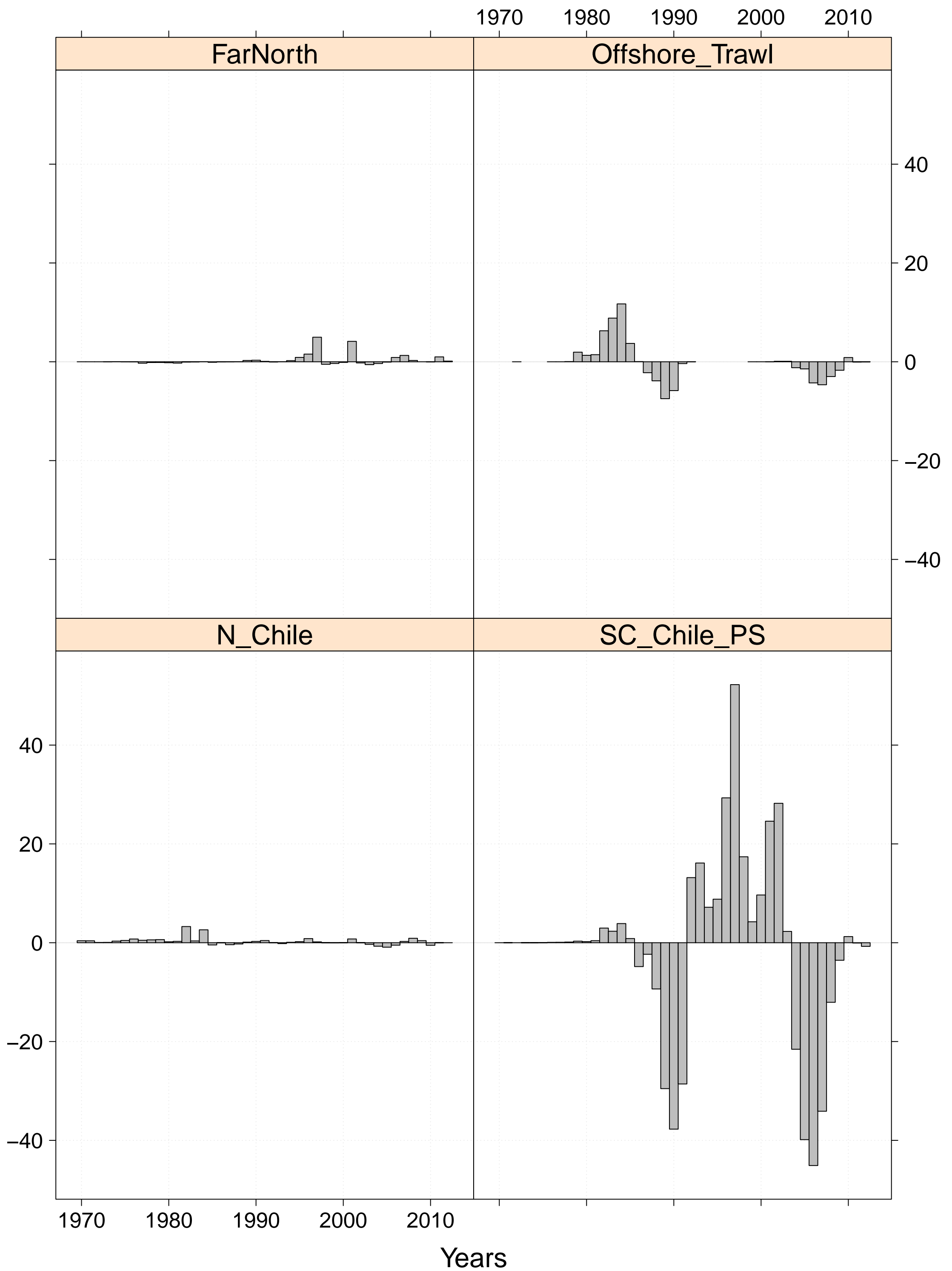
2010

Years

Residuals

Absolute residual catch by fleet

Absolute residual catch

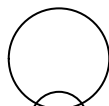


Residuals catch-at-age by fleet

-0.25

-0.14

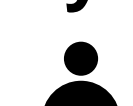
-0.03



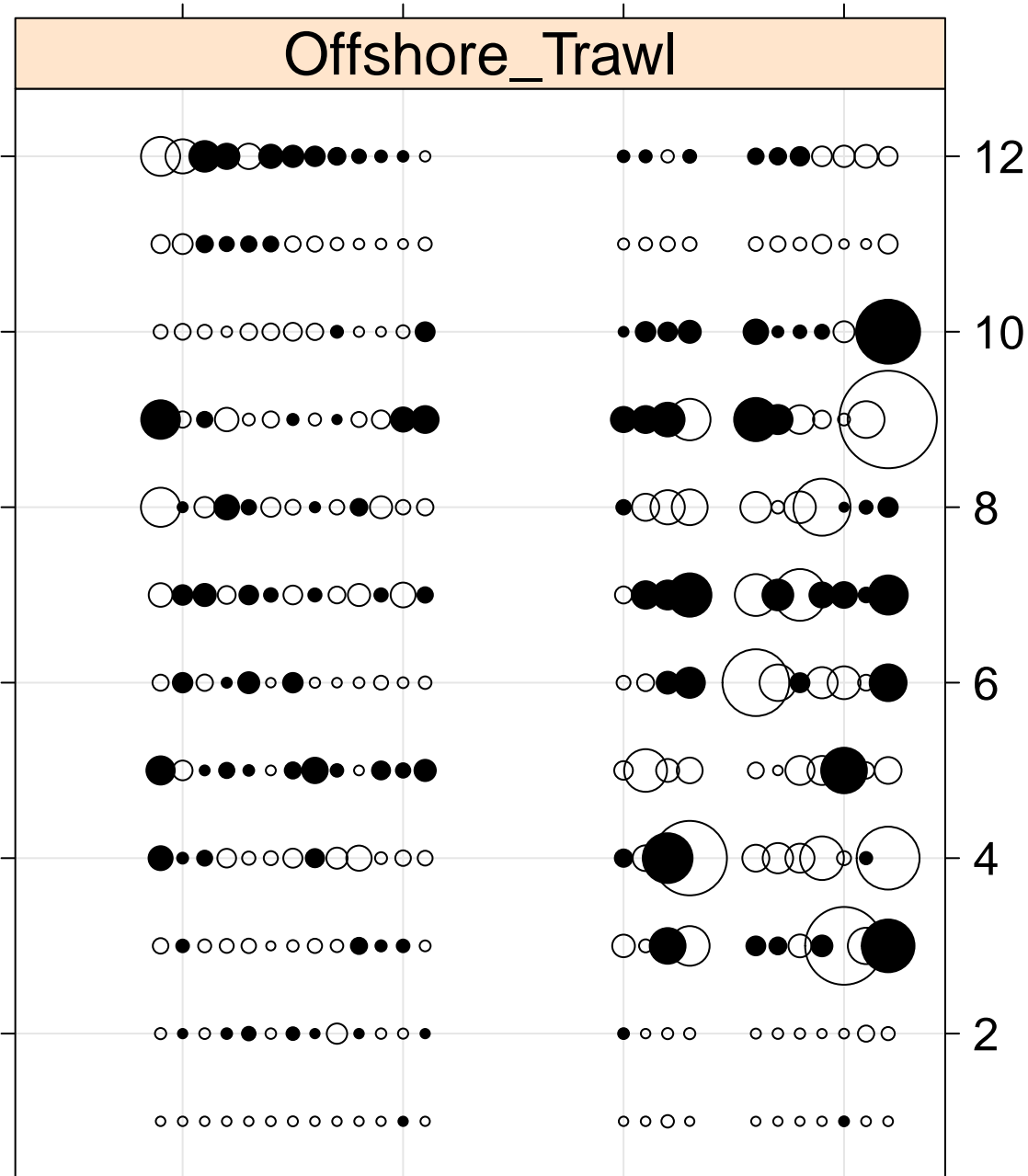
0.08

0.19

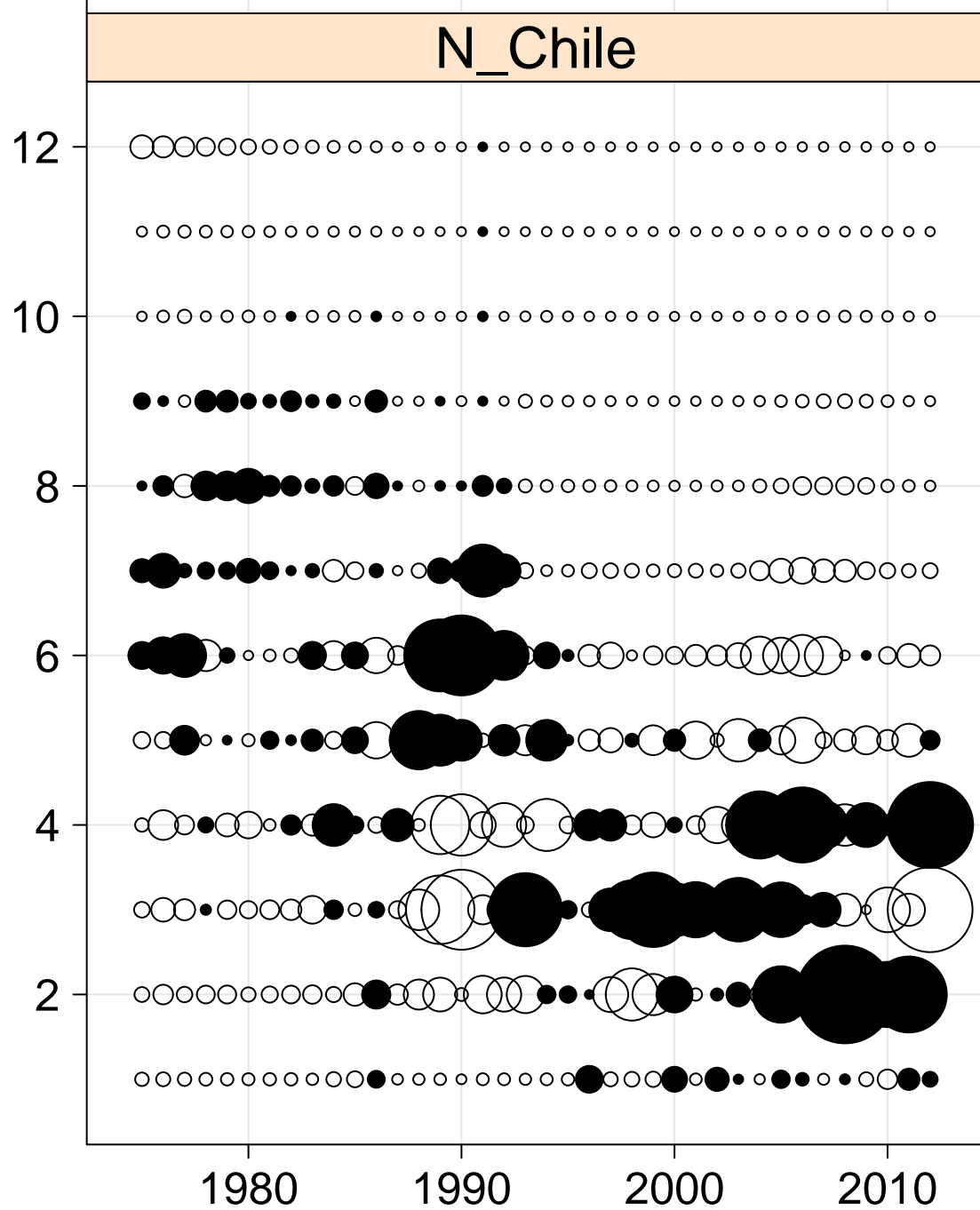
0.3



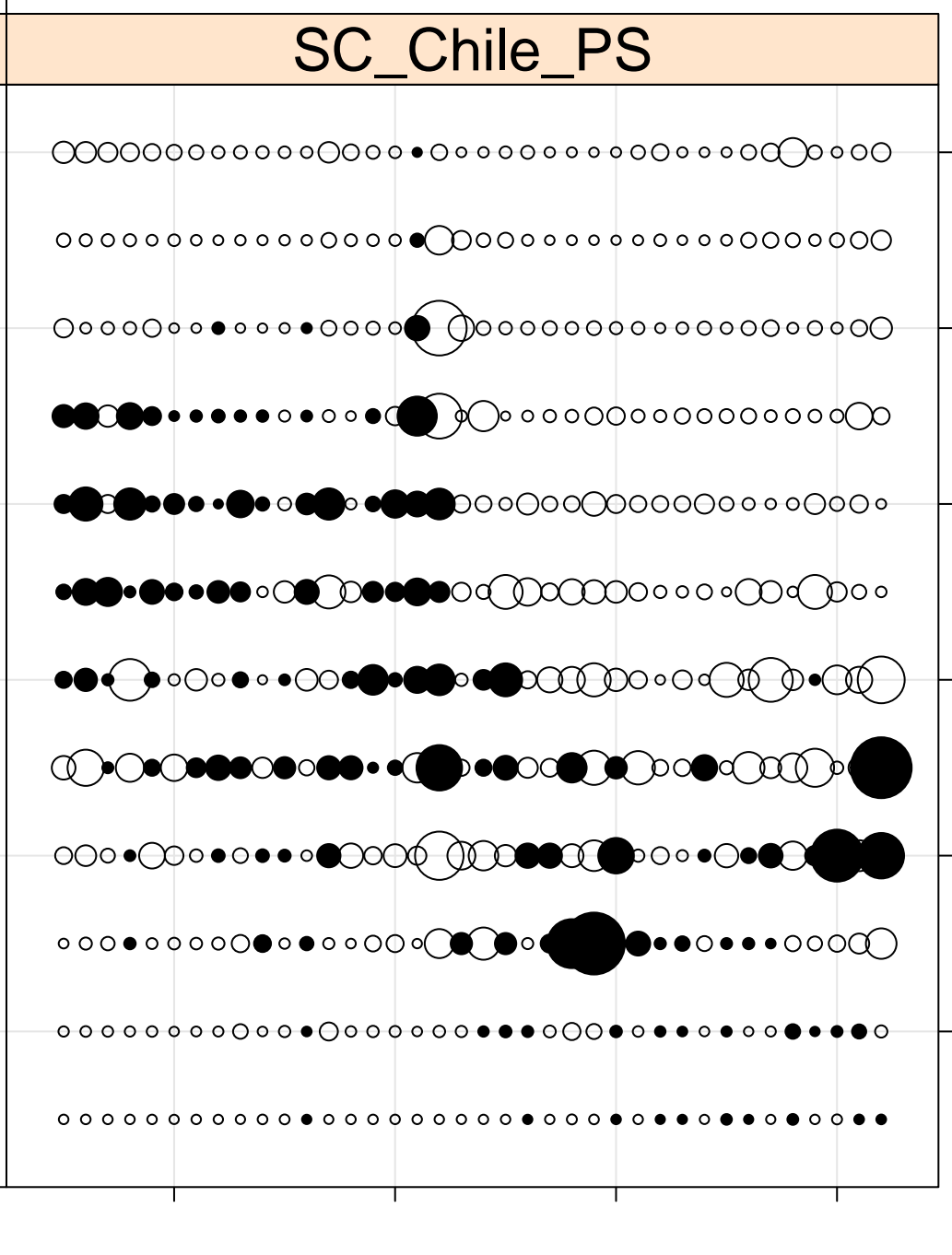
Offshore_Trawl



N_Chile

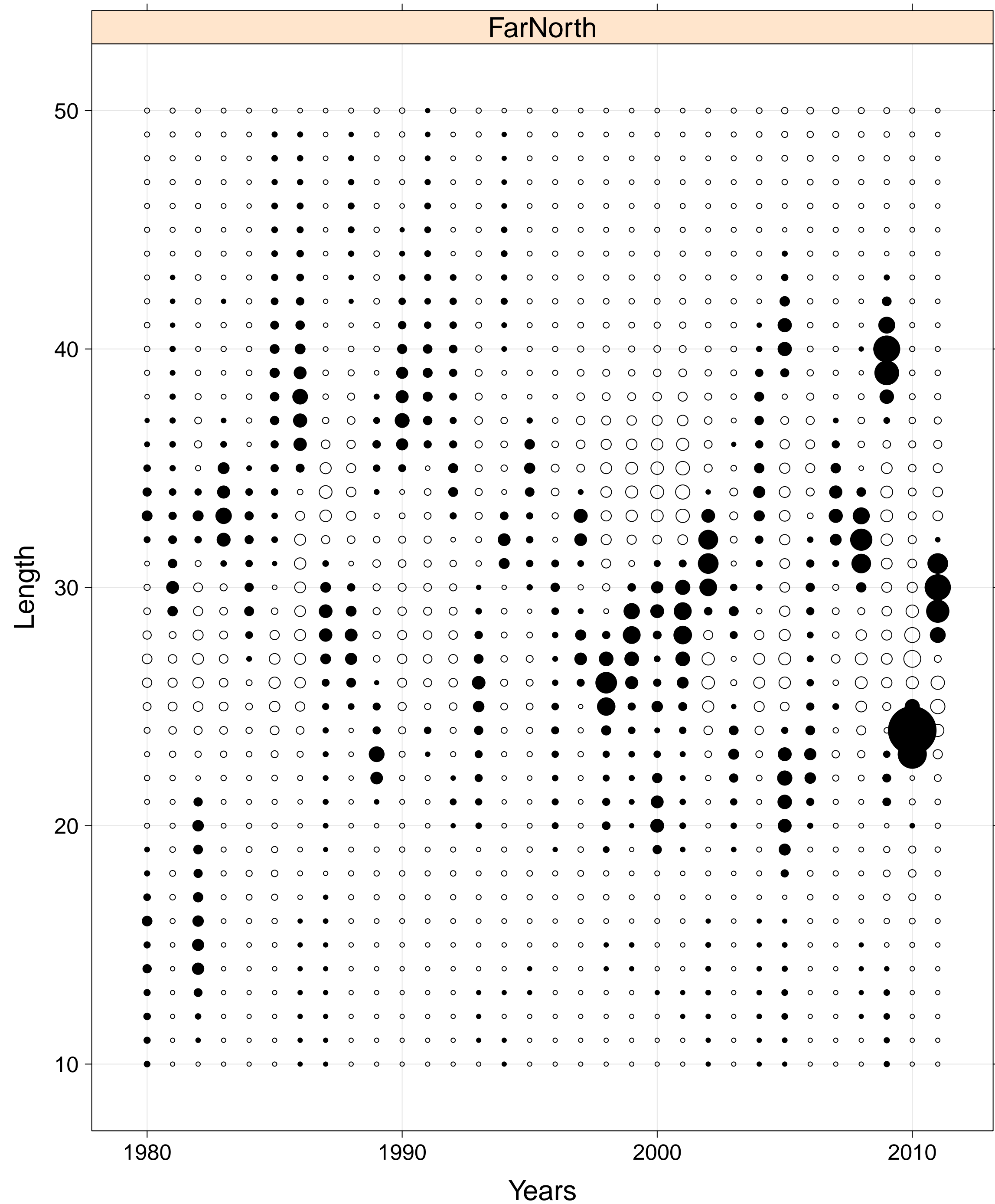


SC_Chile_PS



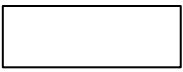
Years

Residuals catch-at-length by fleet



Age fits N_Chile

Observed



Predicted



2 4 6 8 10

2 4 6 8 10

2 4 6 8 10

1975

1976

1977

1978

1979

1980

0.6
0.4
0.2
0.0

1981

1982

1983

1984

1985

1986

0.6
0.4
0.2
0.0

1987

1988

1989

1990

1991

1992

0.6
0.4
0.2
0.0

1993

1994

1995

1996

1997

1998

0.6
0.4
0.2
0.0

1999

2000

2001

2002

2003

2004

0.6
0.4
0.2
0.0

2005

2006

2007

2008

2009

2010

0.6
0.4
0.2
0.0

2011

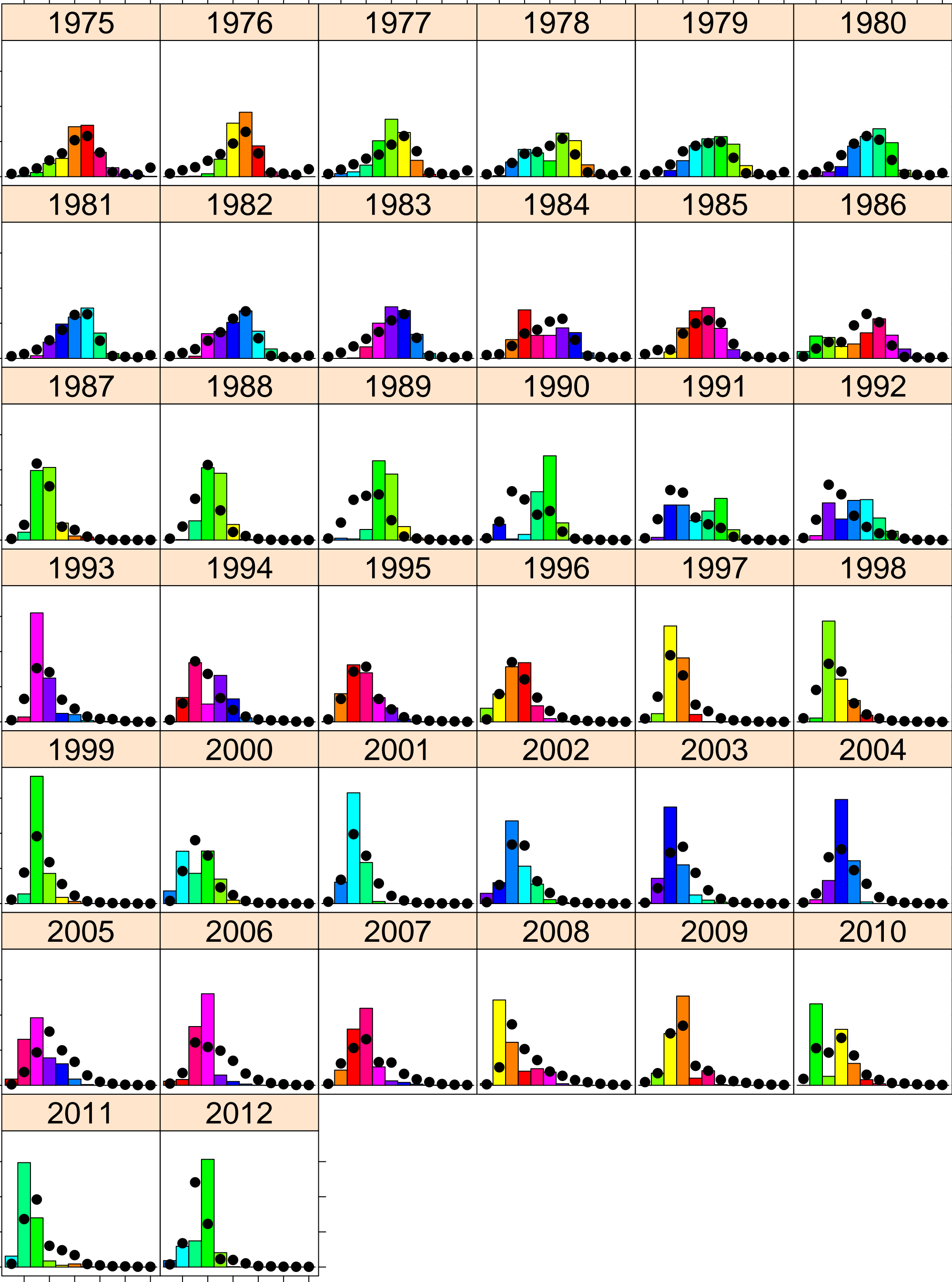
2012

0.6
0.4
0.2
0.0

2 4 6 8 10

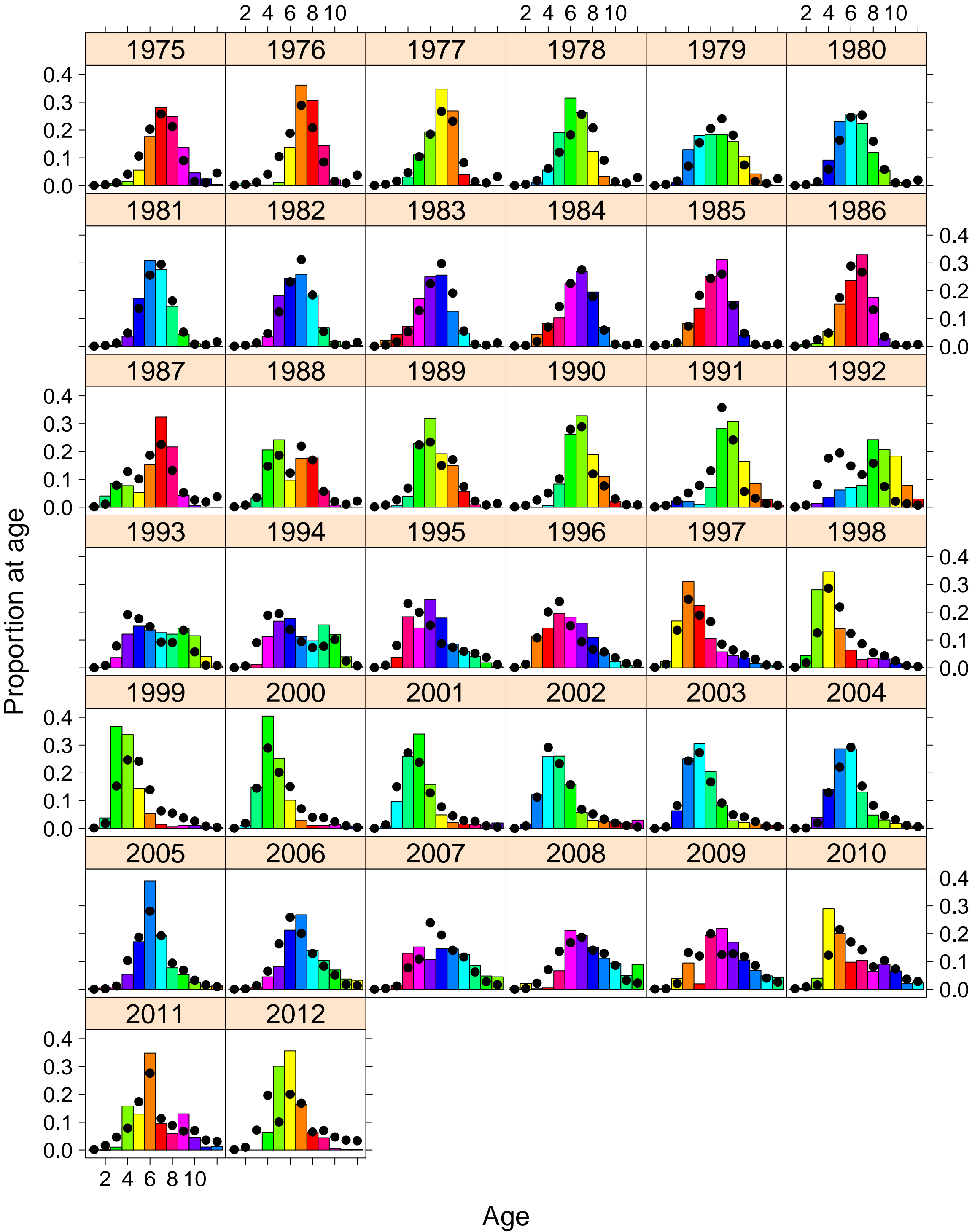
Age

Proportion at age



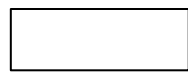
Age fits SC_Chile_PS

Observed Predicted



Age fits Offshore_Trawl

Observed

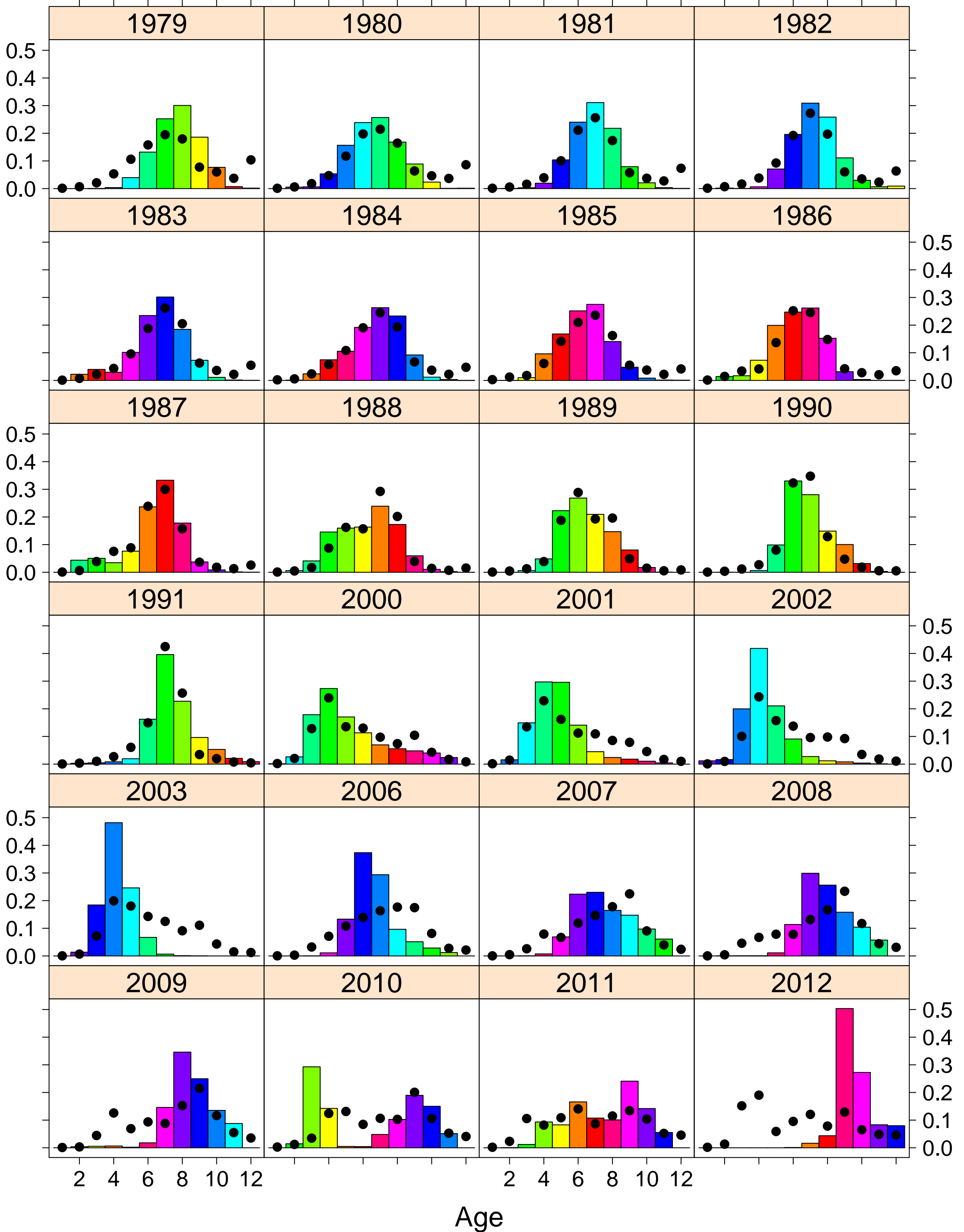


Predicted



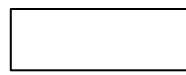
2 4 6 8 10 12

2 4 6 8 10 12



Length fits FarNorth

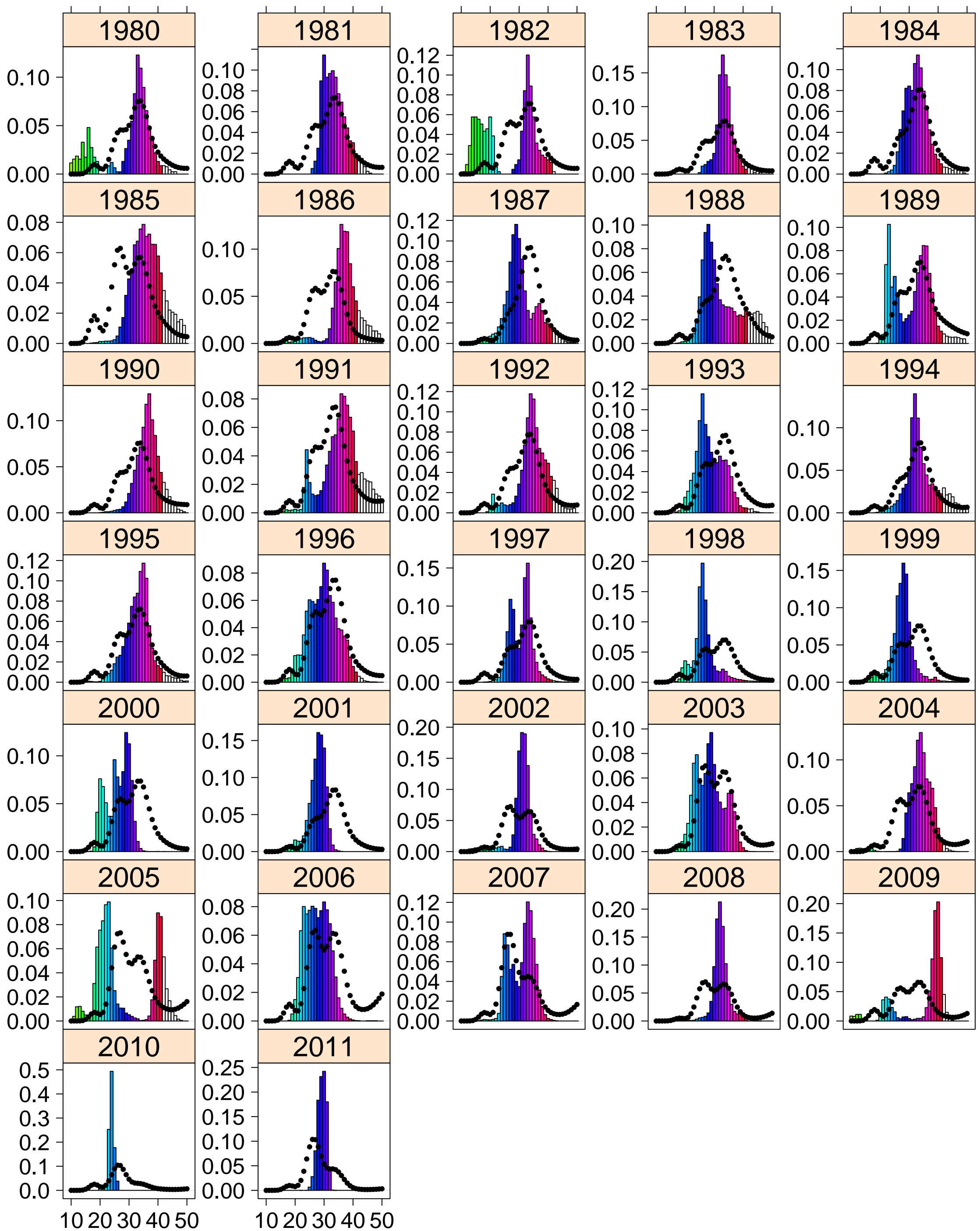
Observed



Predicted



Proportion at length



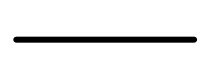
Length

Predicted and observed catches by fleet

Observed



Predicted



1970

1980

1990

2000

2010

Offshore_Trawl

SC_Chile_PS

4000

3000

2000

1000

0

FarNorth

N_Chile

4000

3000

2000

1000

0

1970

1980

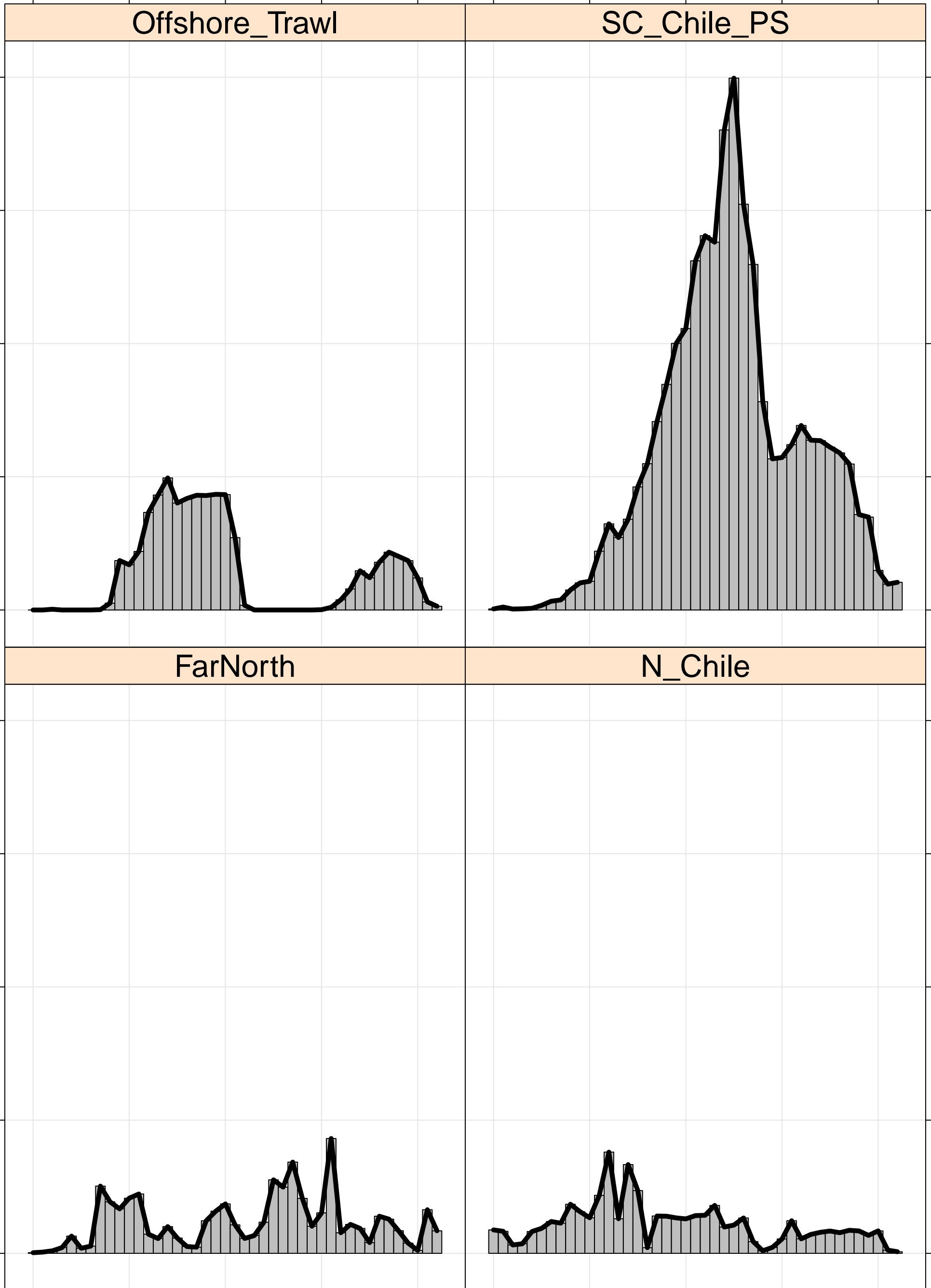
1990

2000

2010

Years

Thousand tonnes



Fit of survey data

Fit of survey data

Predicted and observed indices

Observed



Predicted



1970 1980 1990 2000 2010

Chinese_CPUE

EU_CPUE

USSR_CPUE

1.5

1.0

0.5

DEPM

Peru_Acoustic

Peru_CPUE

1.5

1.0

0.5

Chile_AcoustCS

Chile_AcoustN

Chile_CPUE

1.5

1.0

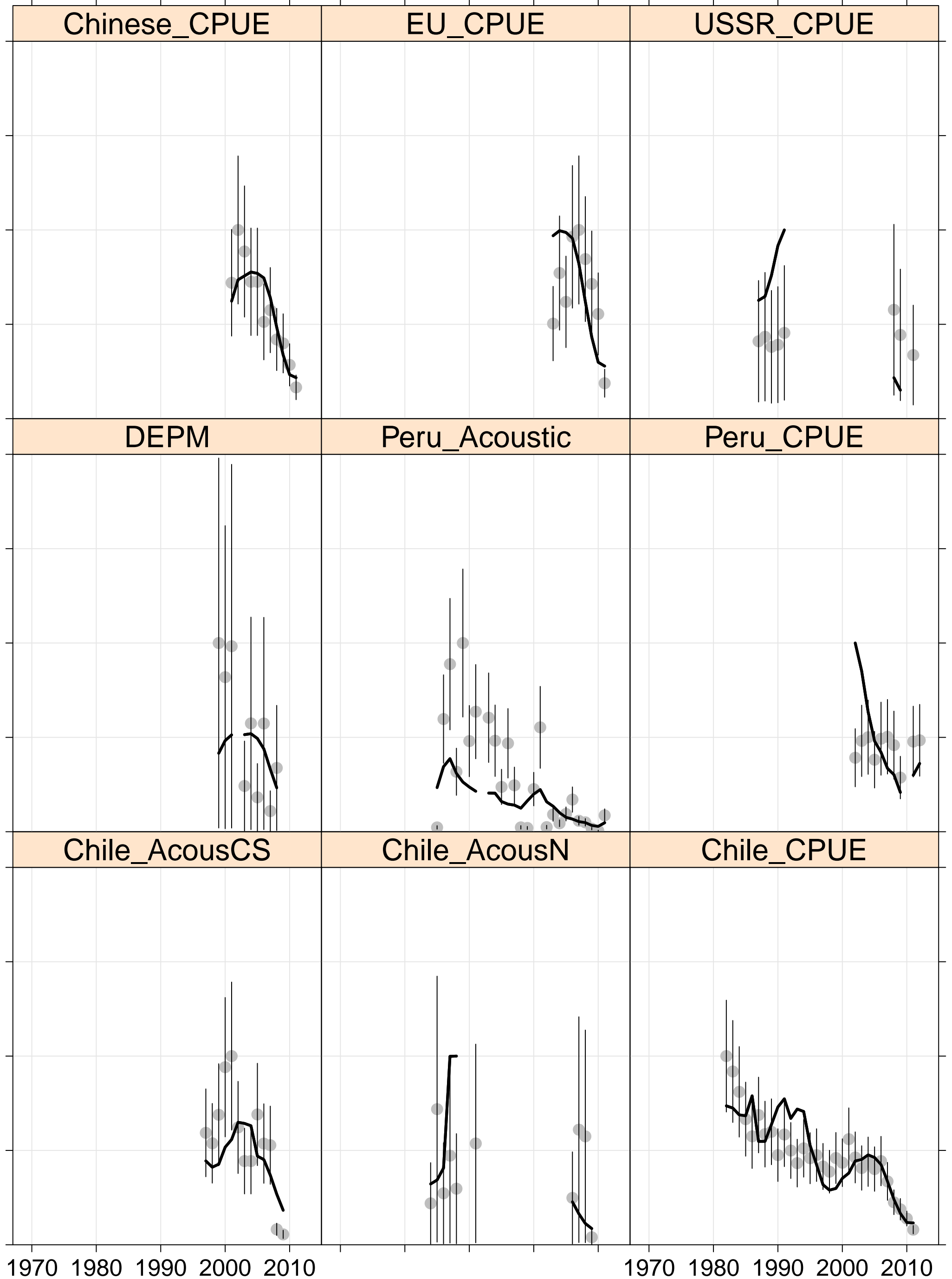
0.5

1970 1980 1990 2000 2010

1970 1980 1990 2000 2010

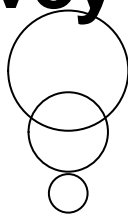
Years

Index value



Survey residuals

-2.33
-1.54
-0.75



0.04
0.82
1.61



USSR_CPUE

EU_CPUE

Chinese_CPUE

Peru_CPUE

Peru_Acoustic

DEPM

Chile_CPUE

Chile_AcousN

Chile_AcousCS

Residuals

1970

1980

1990

2000

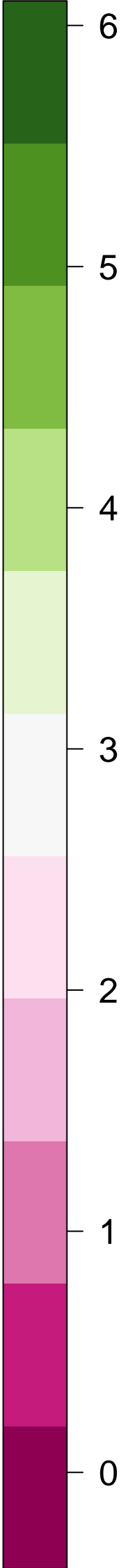
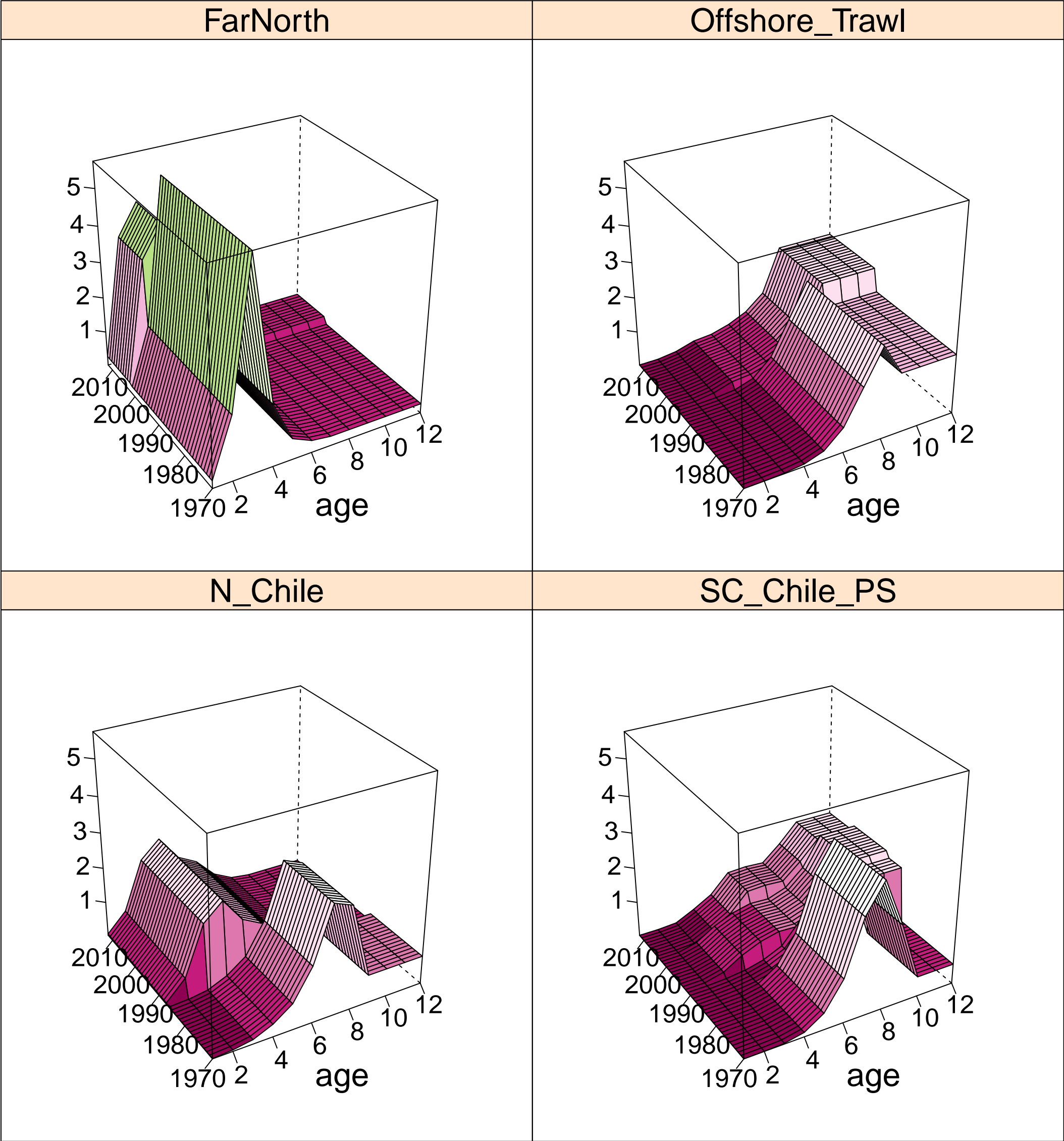
2010

Years

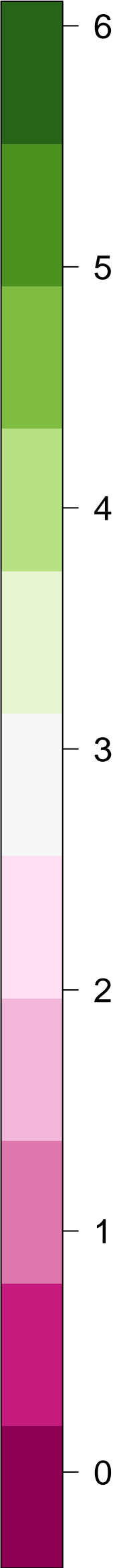
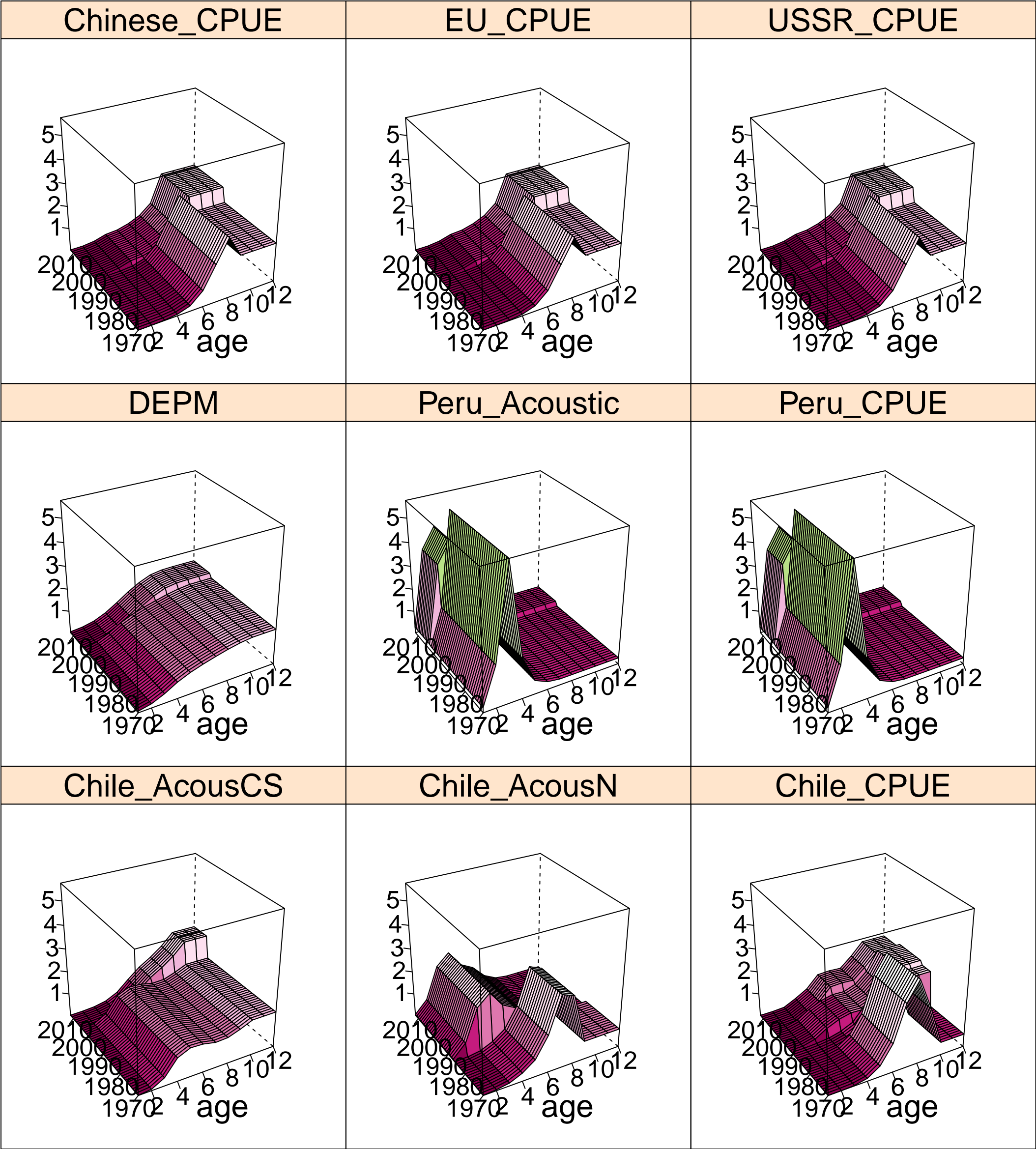
Fleet & Survey sel & F

Fleet & Survey sel & F

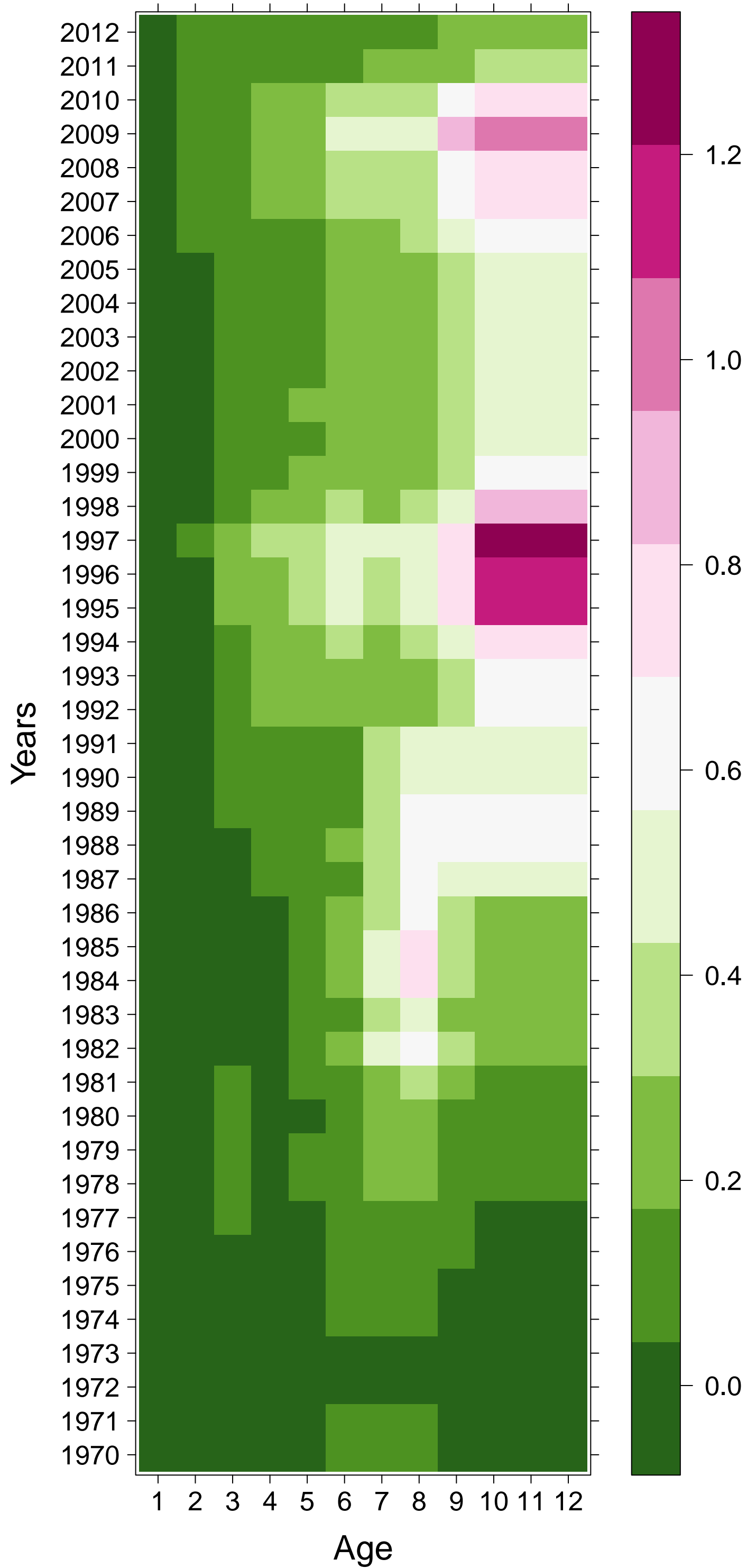
Selectivity at age in fleets



Selectivity at age in surveys



F at age



Fishery mean age

Observed



Modelled



SC_Chile_PS

10

8

6

4

2

N_Chile

Offshore_Trawl

10

8

6

4

2

Years

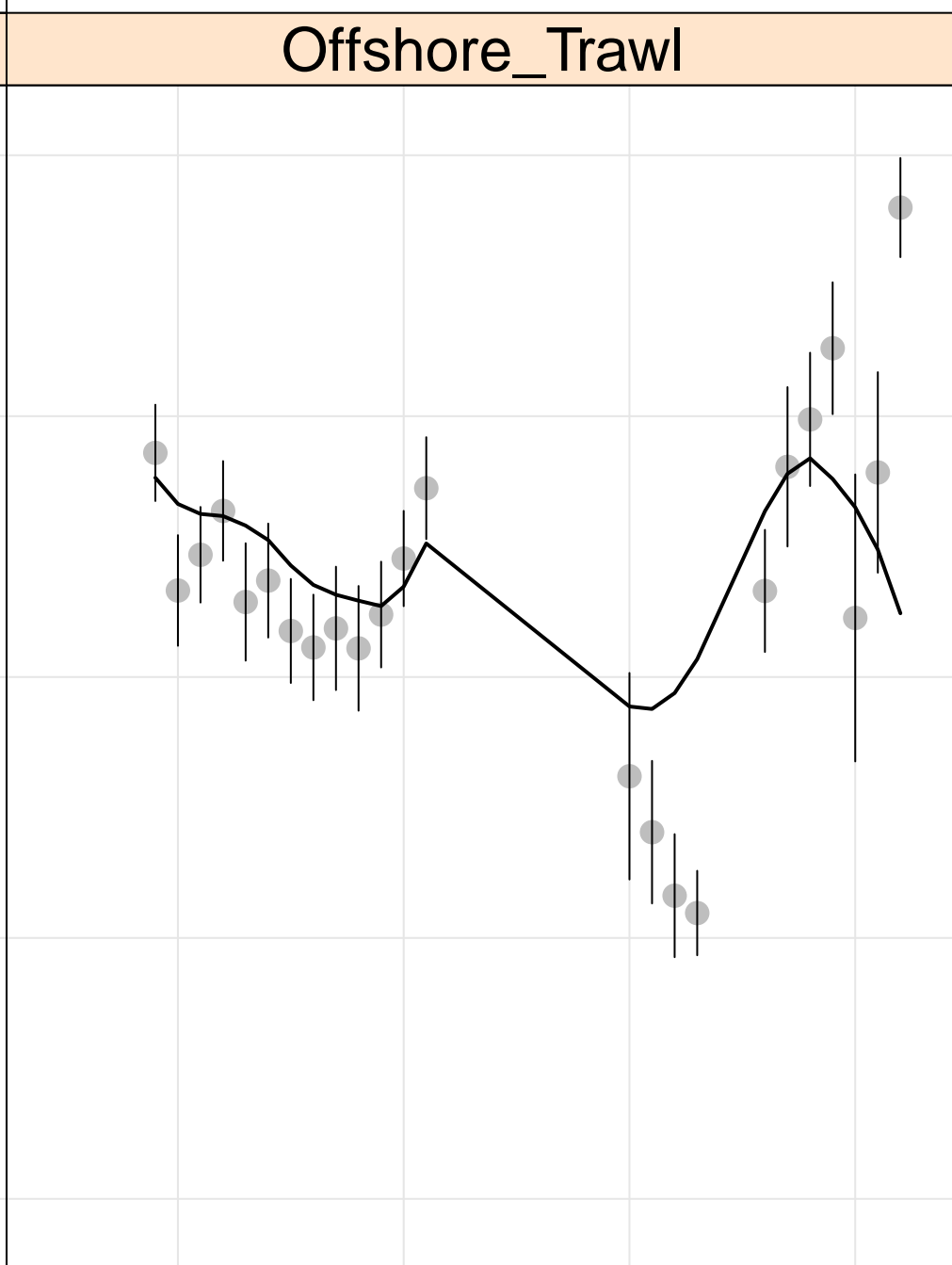
1980

1990

2000

2010

Age

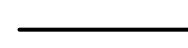


Survey mean age

Observed



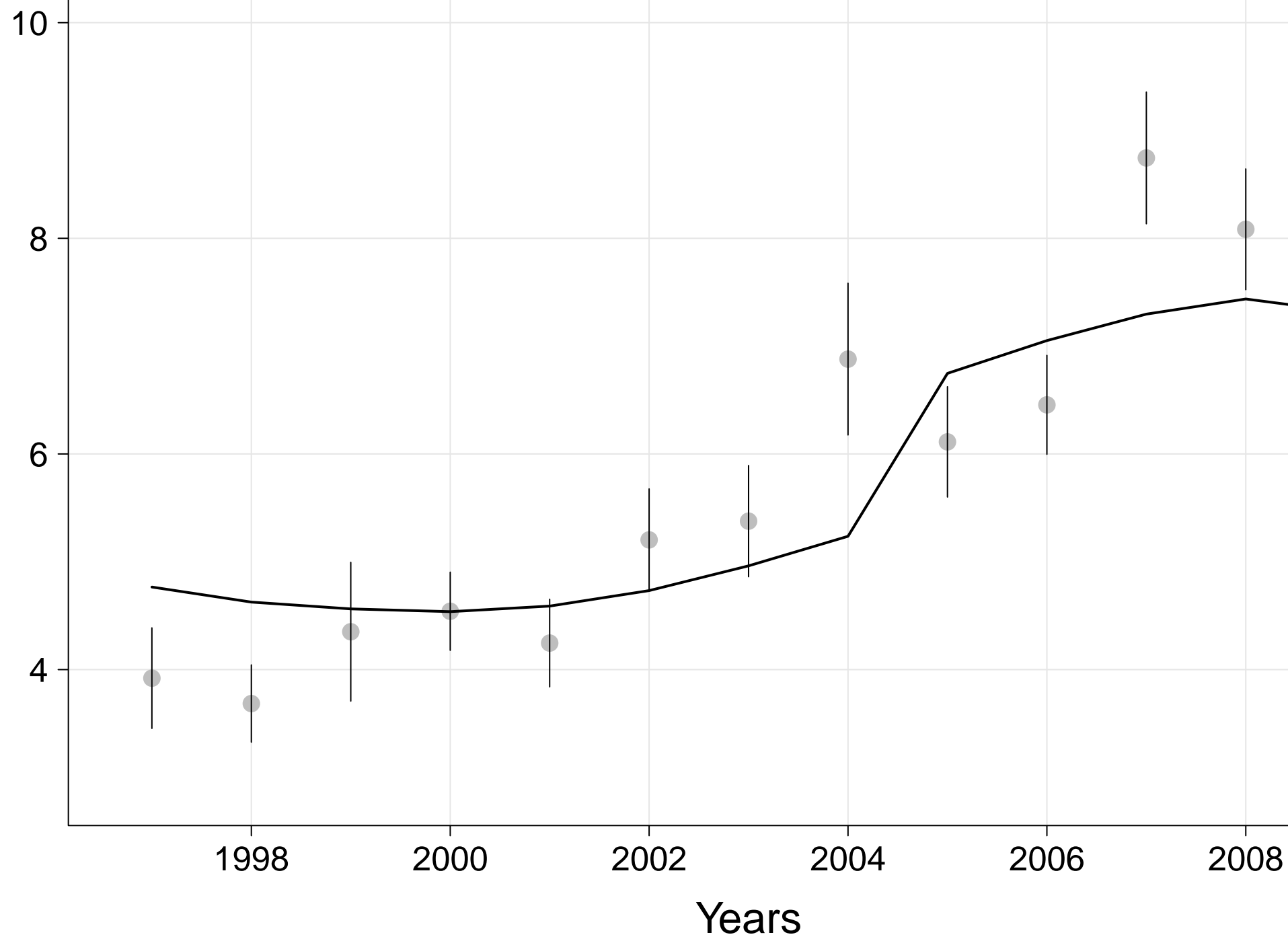
Modelled



DEPM

Chile_AcousCS

Age



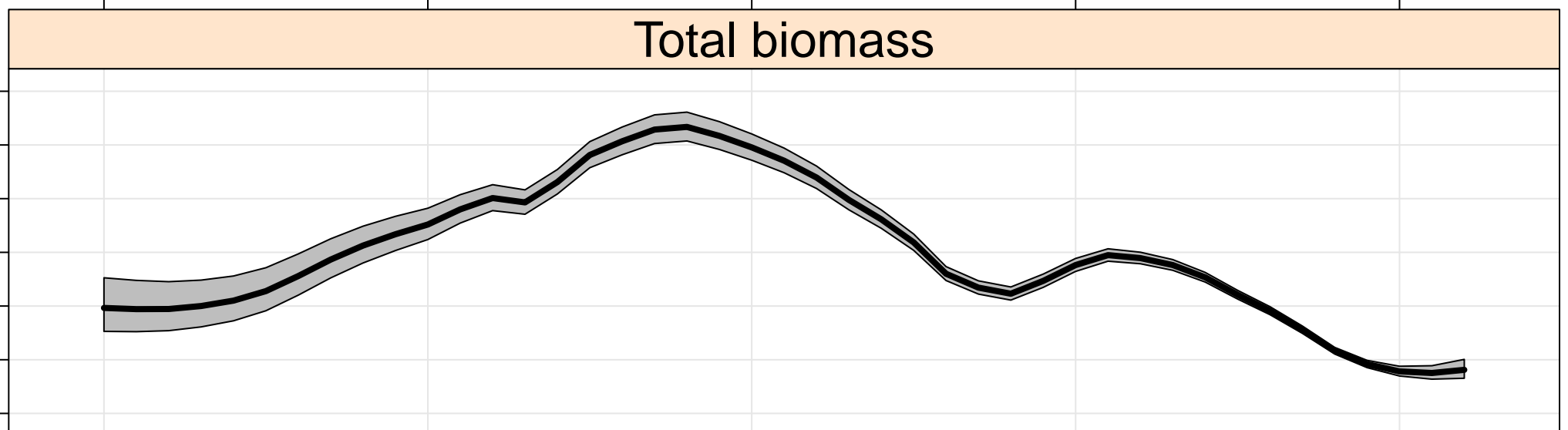
Stock summary

Stock summary

Summary sheet

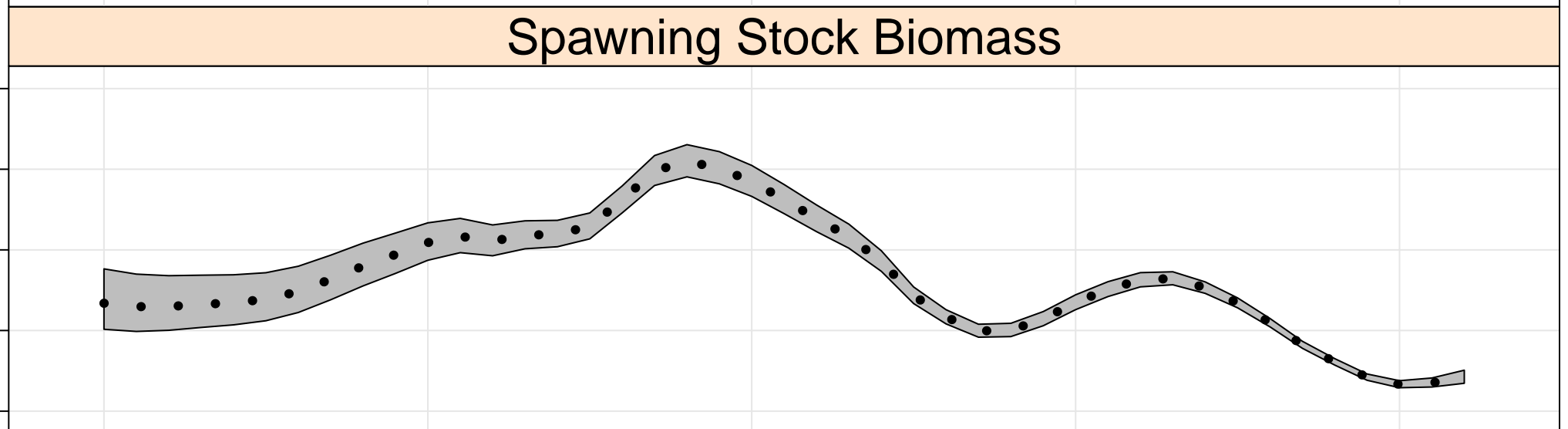
Total biomass

30000
25000
20000
15000
10000
5000
0



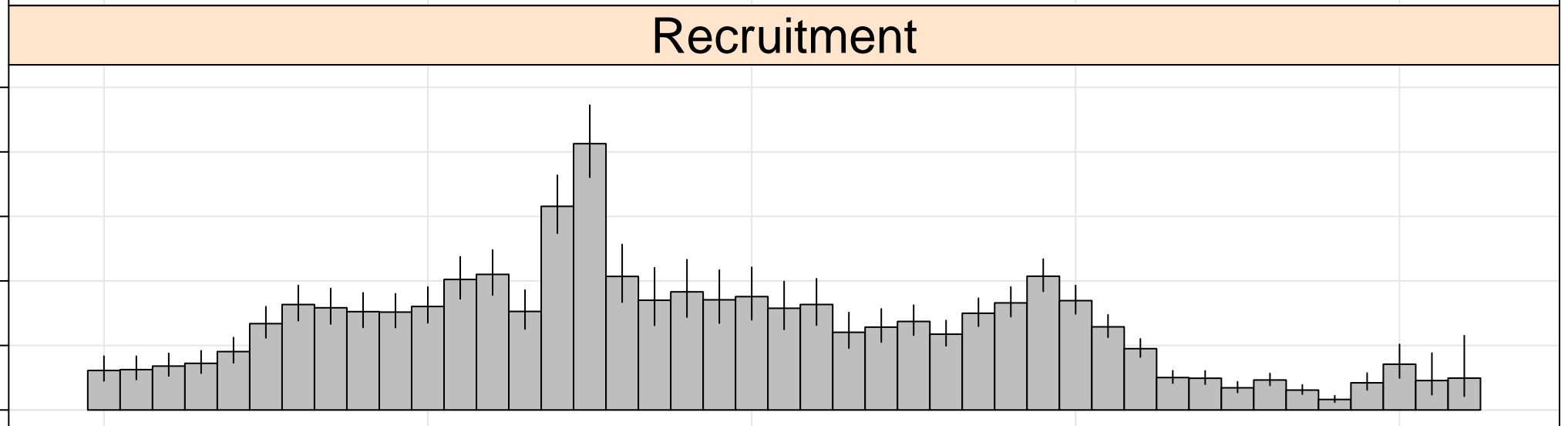
Spawning Stock Biomass

20000
15000
10000
5000
0



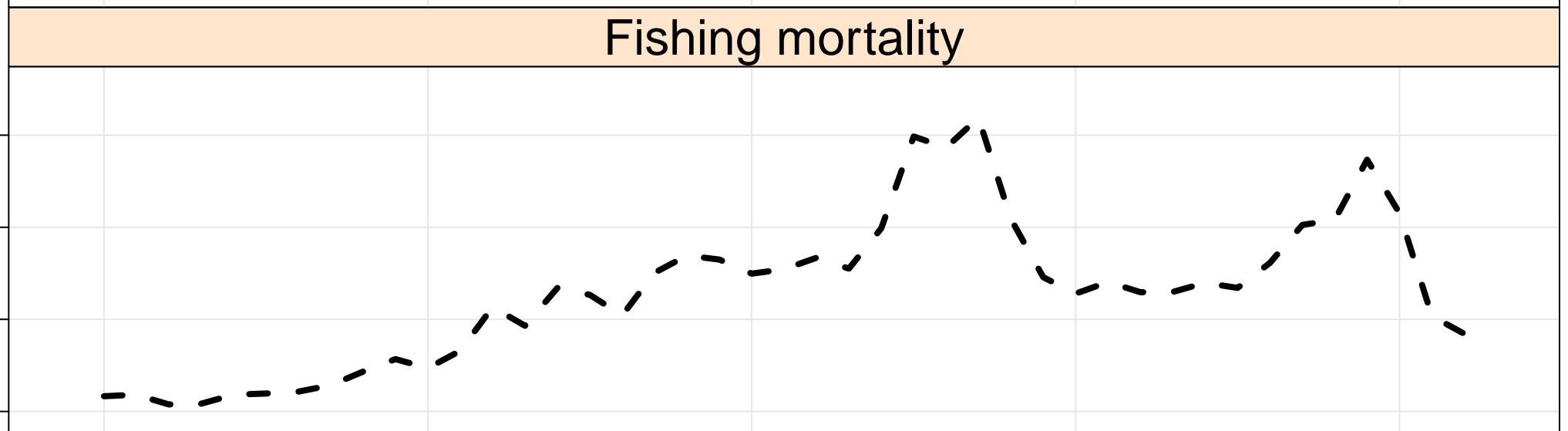
Recruitment

100000
80000
60000
40000
20000
0



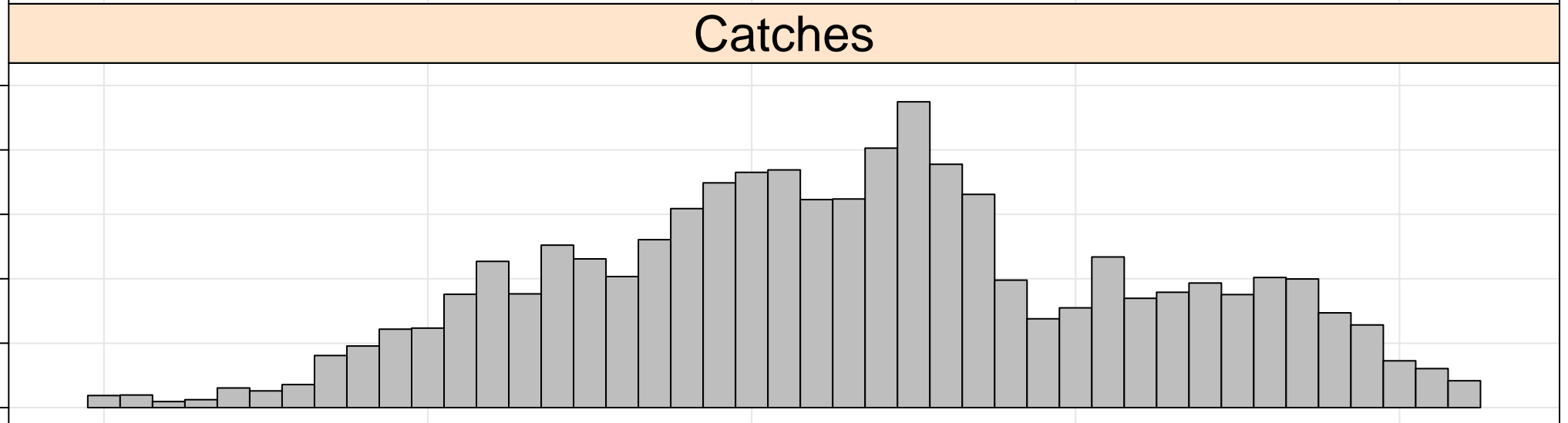
Fishing mortality

0.6
0.4
0.2
0.0



Catches

5000
4000
3000
2000
1000
0



1970

1980

1990

2000

2010

year

data

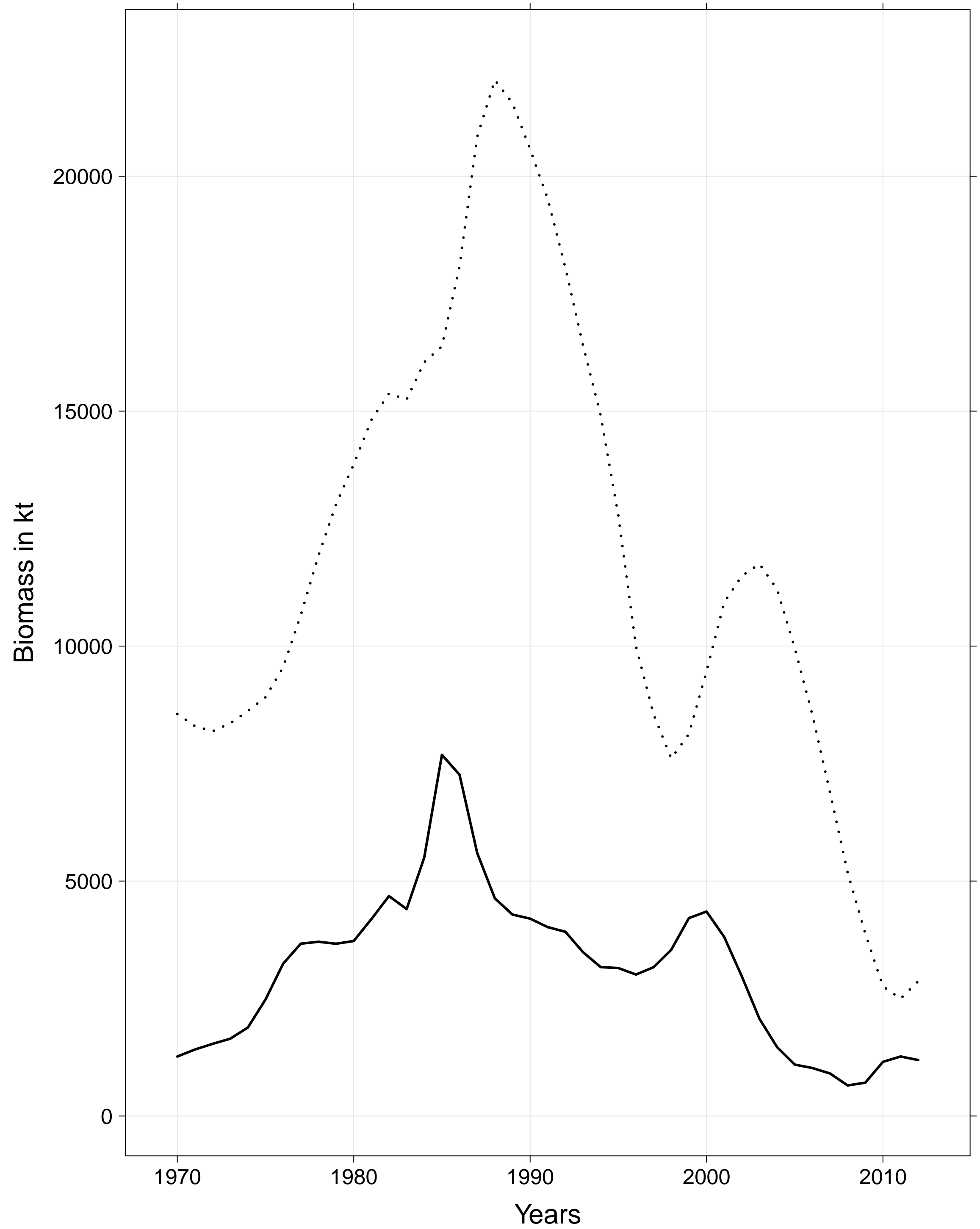
Mature – Immature fish

Mature

.....

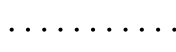
Immature

———

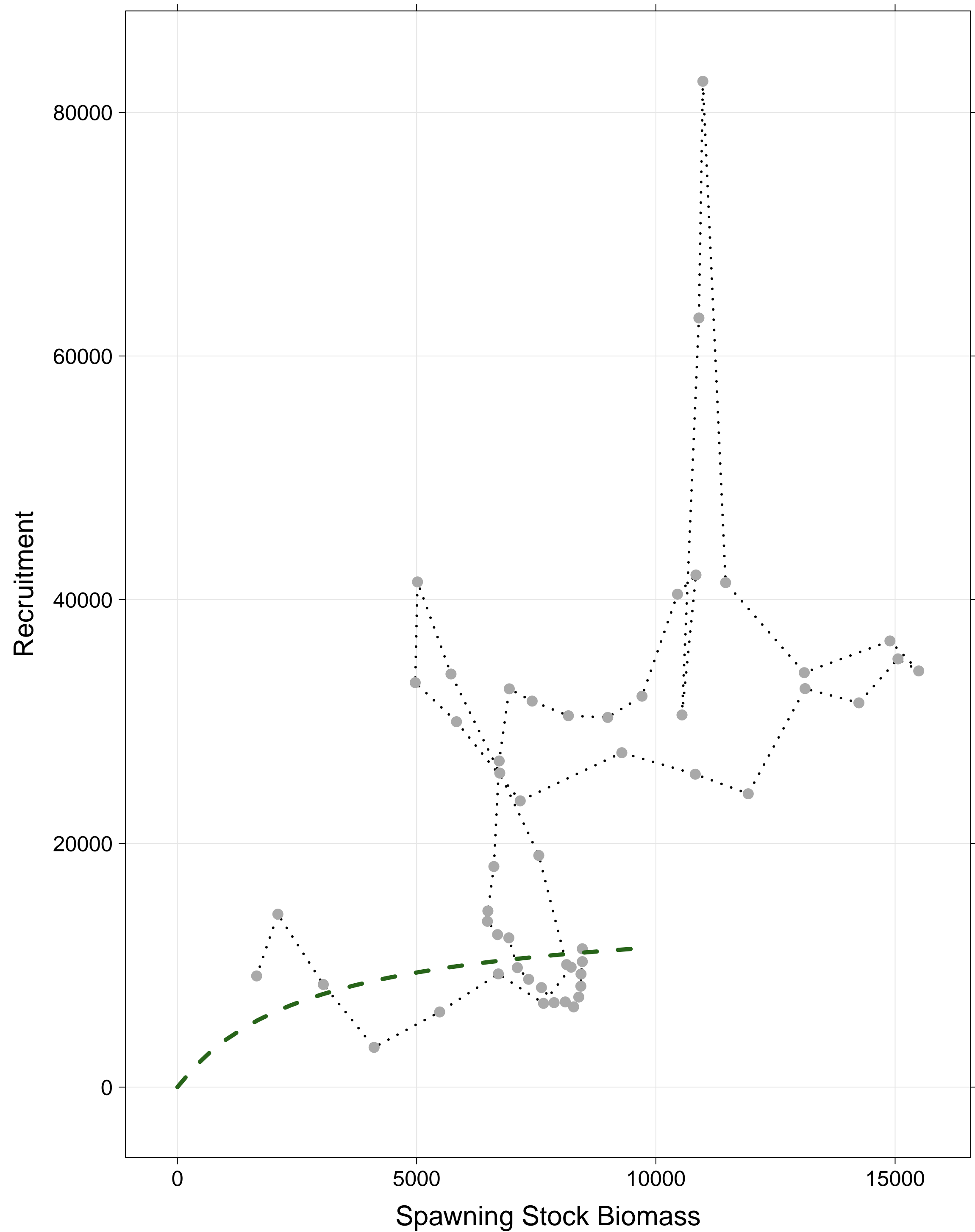


Stock Recruitment

Observed



Modelled



Fished vs. unfished biomass

Fished



Unfished

