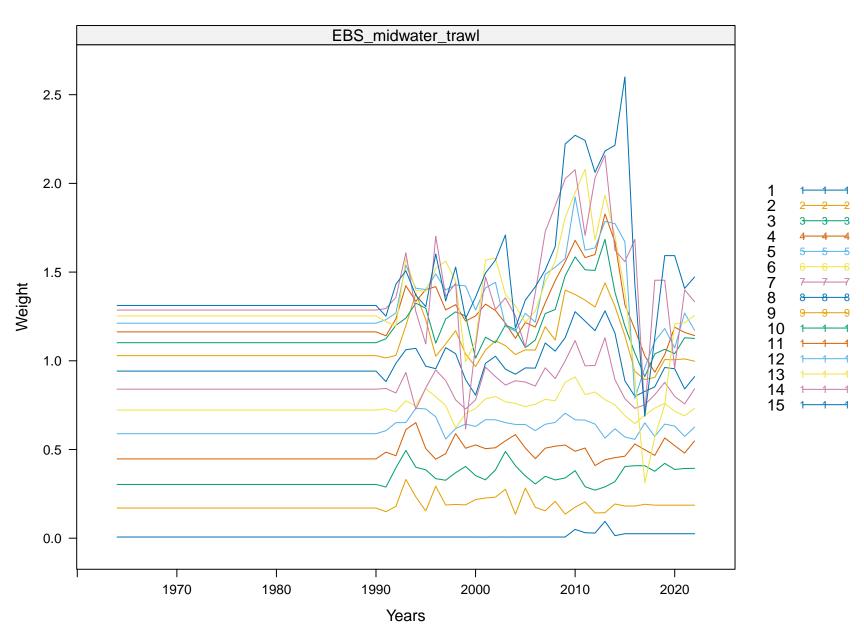
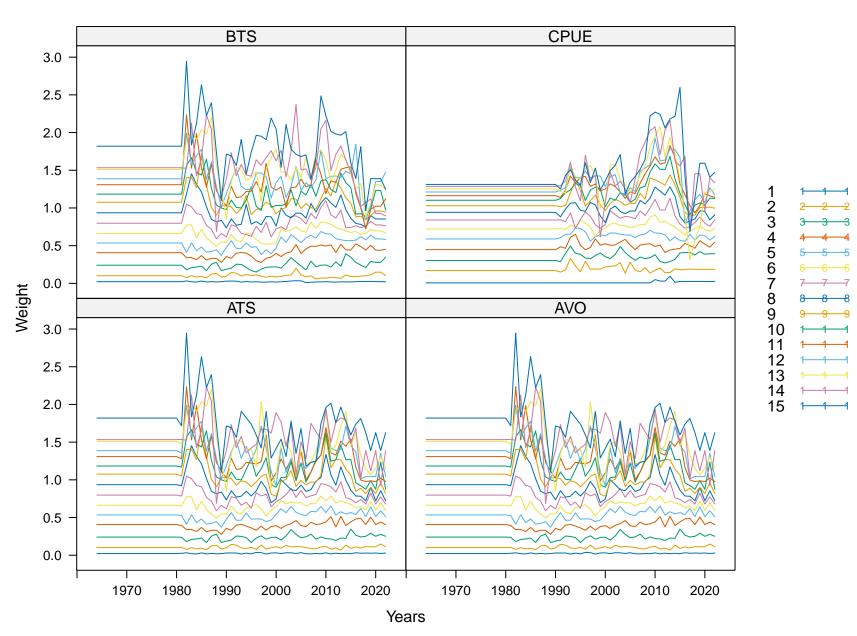
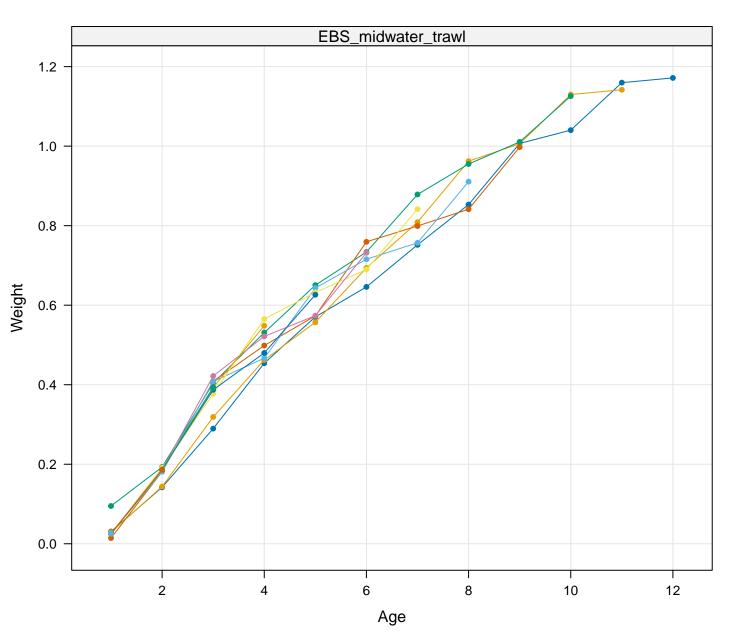
Weight at age in the fishery



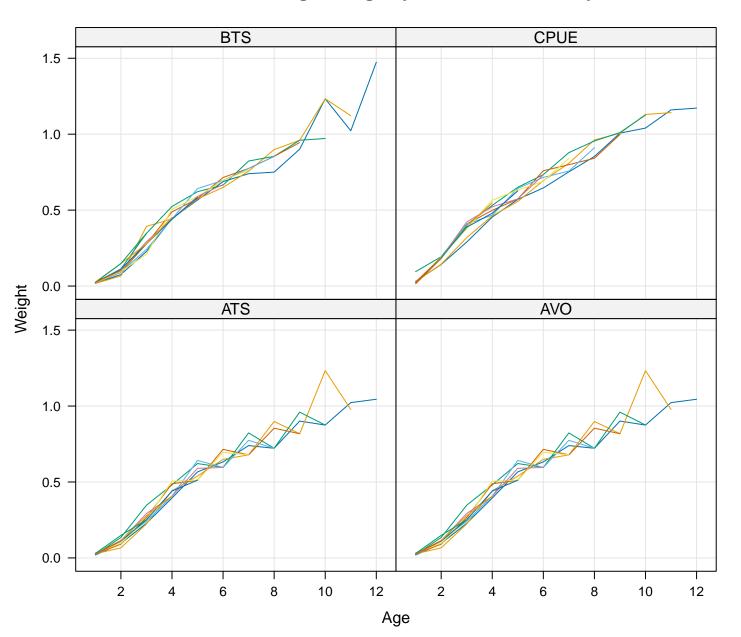
Weight at age in the survey



Weight at age by cohort in the fleet

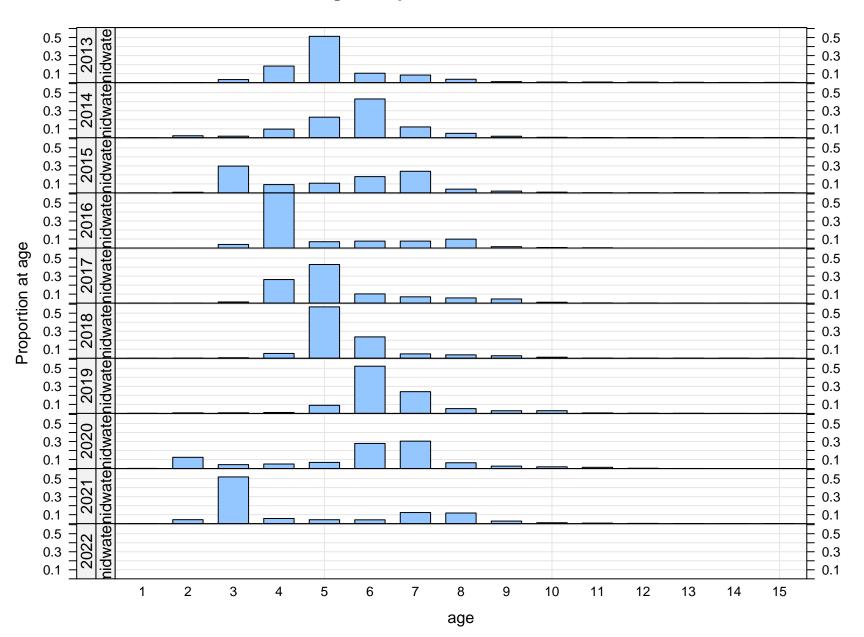


Weight at age by cohort in the survey

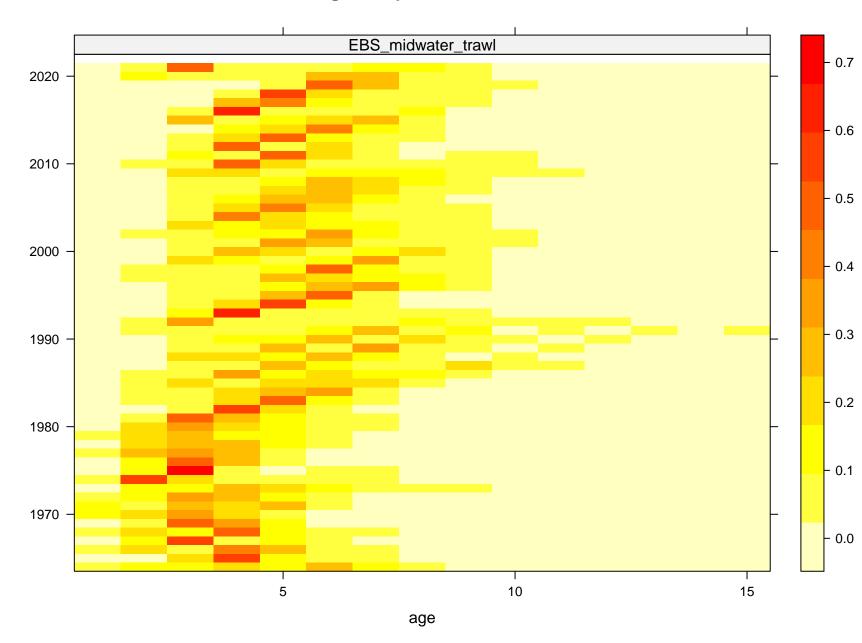




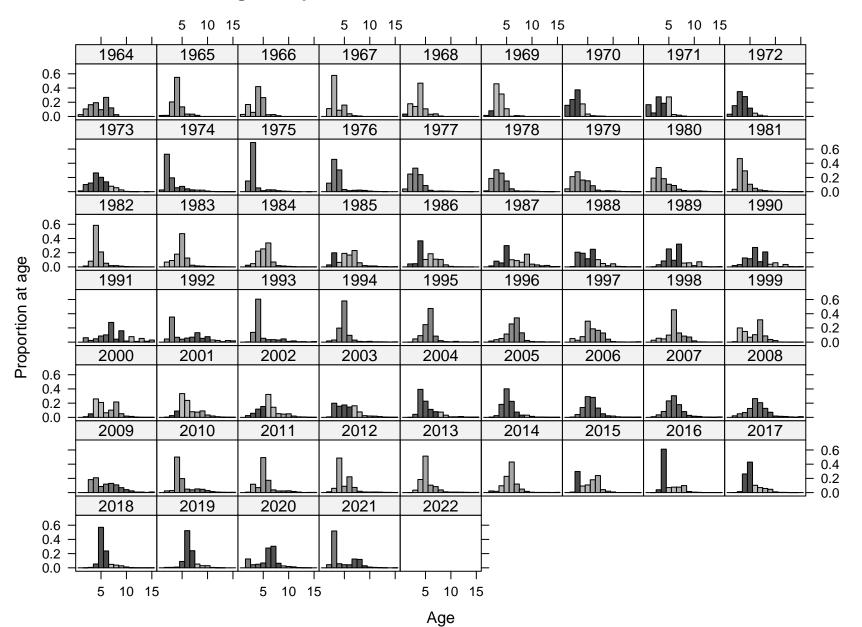
Age composition in fleets



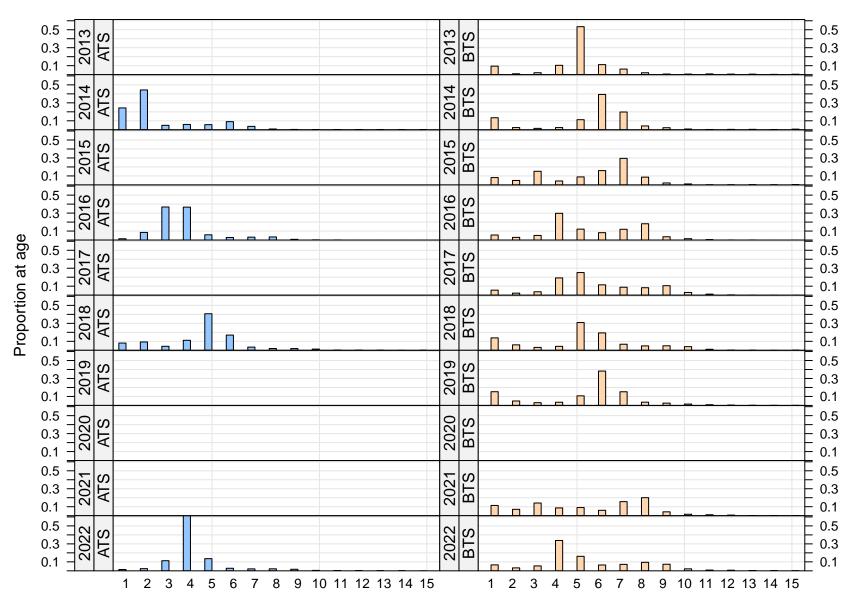
Age composition in fleets



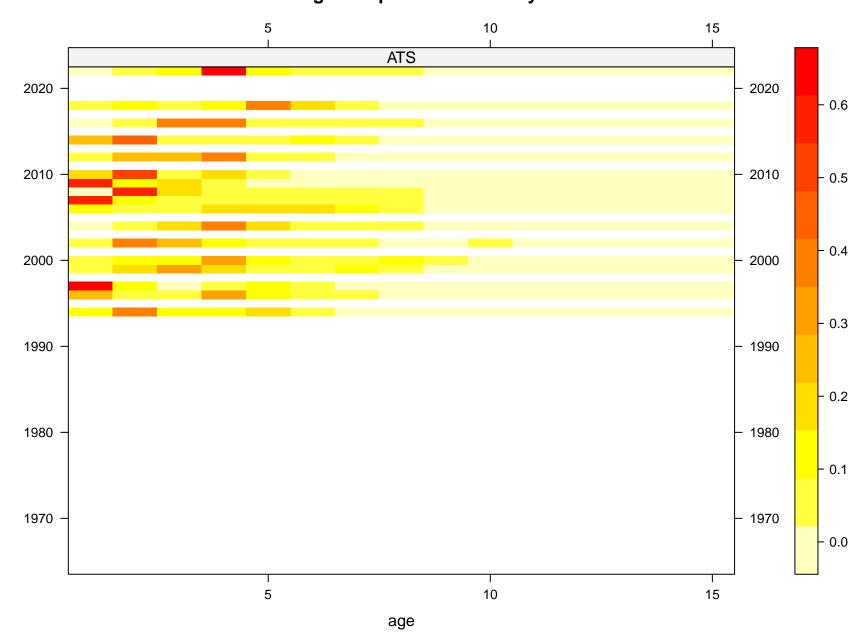
Age composition in fleets EBS_midwater_trawl



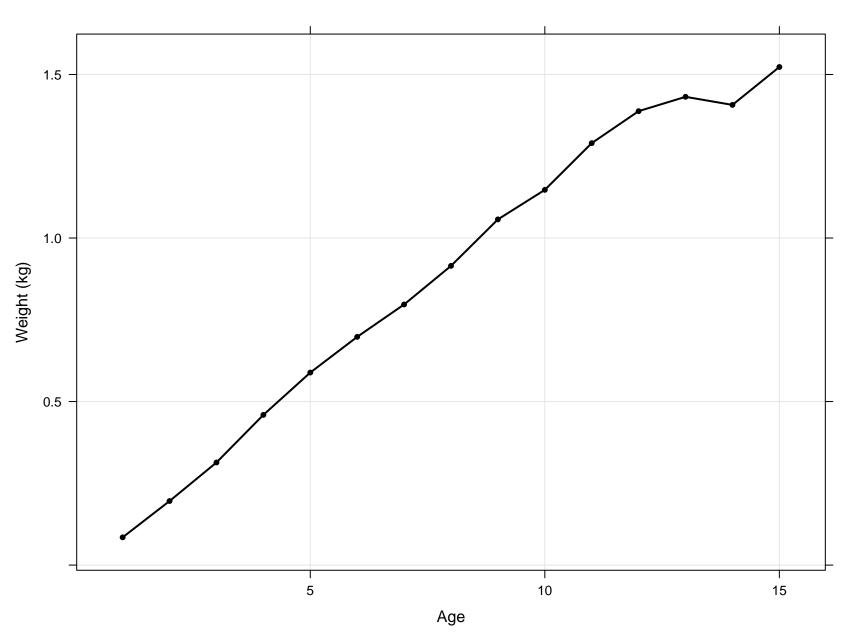
Age composition in surveys



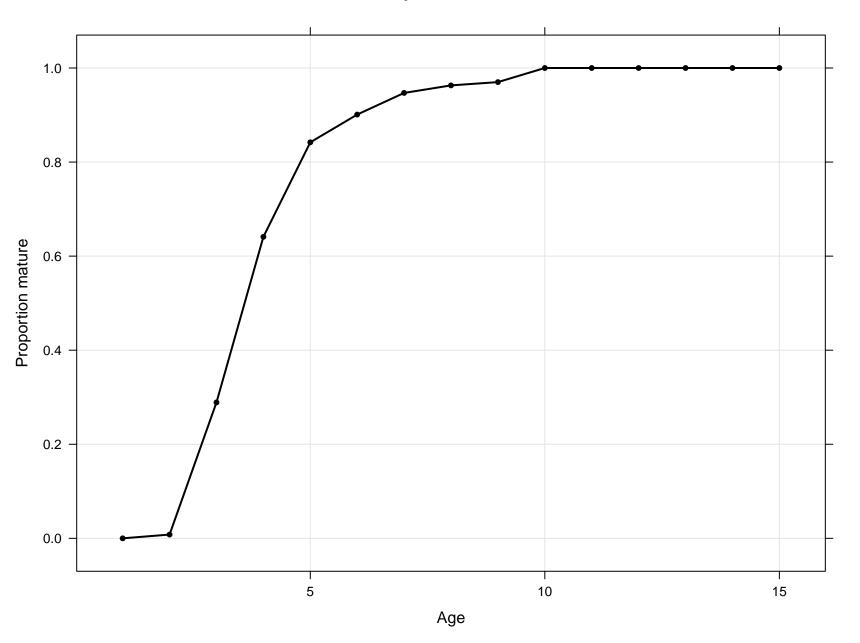
Age composition in surveys



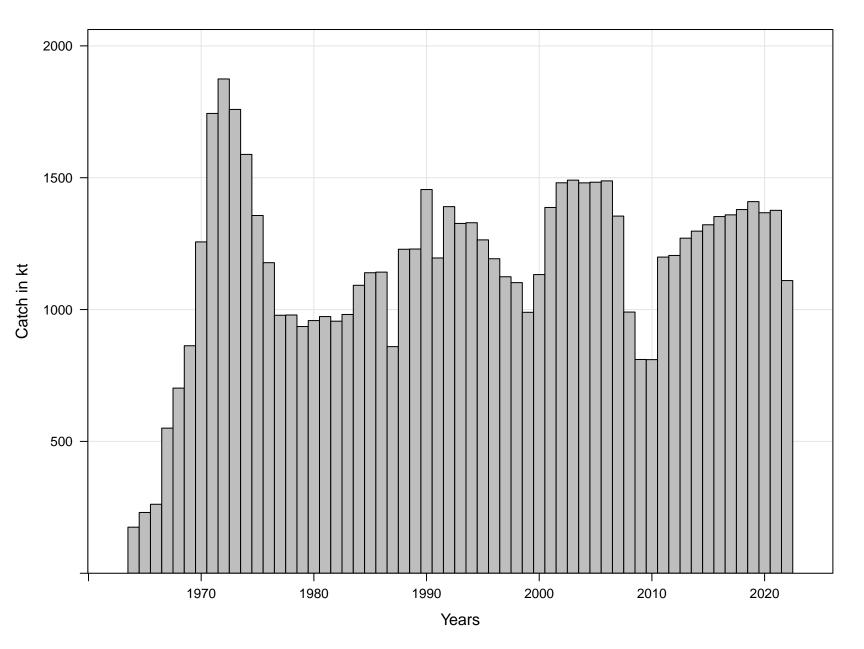
Weight in the stock



Maturity in the stock

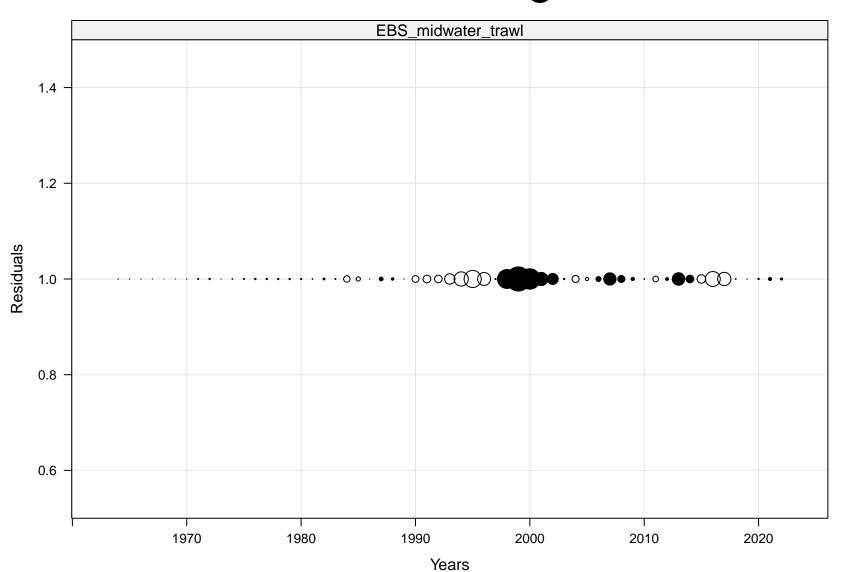


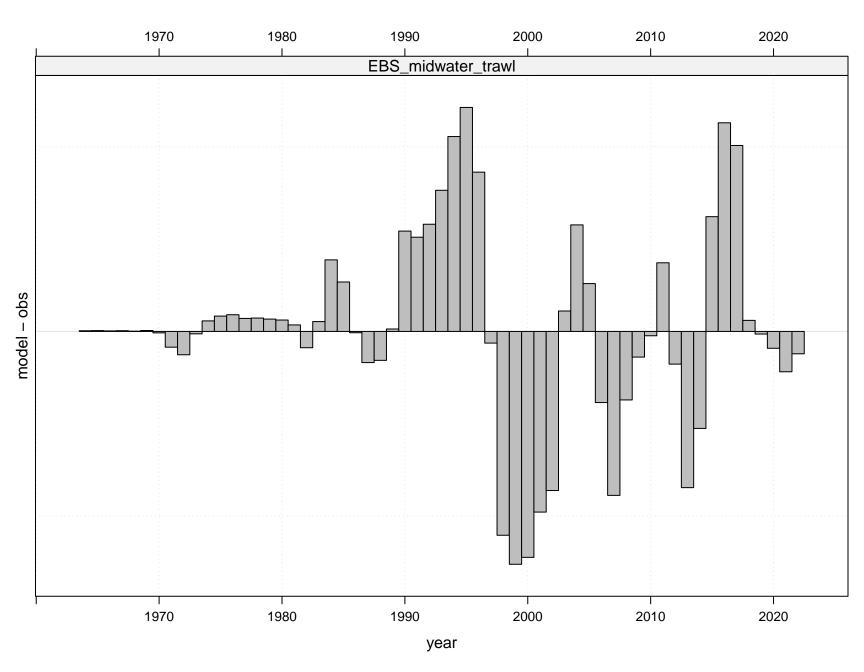
Total catch



Catch residuals by fleet



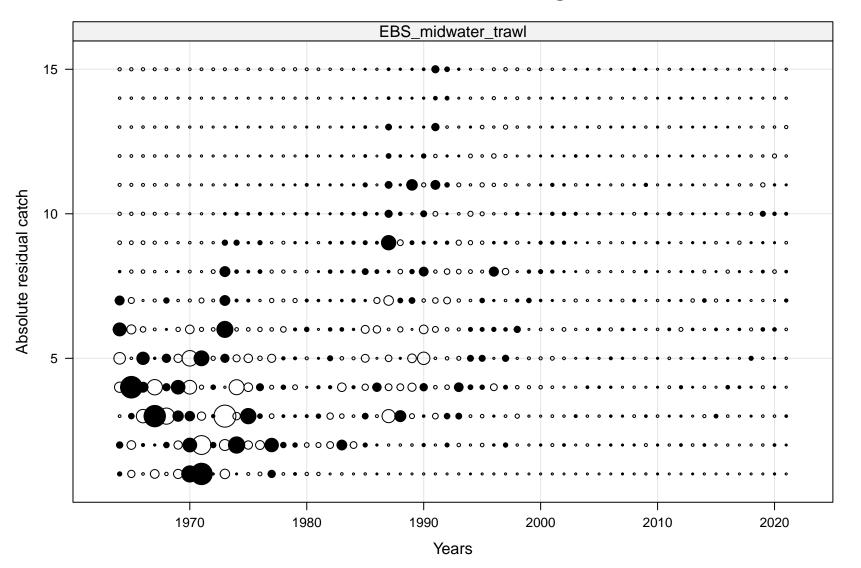




Absolute residual catch by fleet

-0.10.02 0.06 -0.06

-0.02



Observed **Predicted** 10 15 10 15 5 10 15 10 15 10 15 10 15 10 15 5 15 5 5 10 15 5 5 5 1969 1972 1964 1965 1966 1967 1968 1970 1971 0.6 0.6 0.4 0.4 0.2 0.2 Mr 0.0 0.0 1973 1974 1975 1976 1977 1978 1979 1980 1981 0.6 0.6 0.4 0.4 0.2 0.0 **4**11 0.2 0.0 1982 1983 1985 1987 1989 1984 1986 1988 1990 0.6 0.6 0.4 0.4 0.2 0.2 MIL Proportion at age 0.0 0.0 1991 1992 1993 1994 1996 1998 1995 1997 1999 0.6 0.6 0.4 0.4 0.2 0.2 0.0 0.0 2002 2003 2004 2005 2006 2007 2000 2001 2008 0.6 0.6 0.4 0.4 0.2 0.2 0.0 0.0 2009 2010 2011 2012 2013 2014 2015 2016 2017 0.6 0.6 0.4 0.4 0.2 0.2 0.0 0.0 2018 2019 2020 2021 0.6 0.6 0.4 -0.2 -0.0 -0.4 0.2 0.0

Age fits EBS_midwater_trawl

10 15

5

5 10 15

10 15

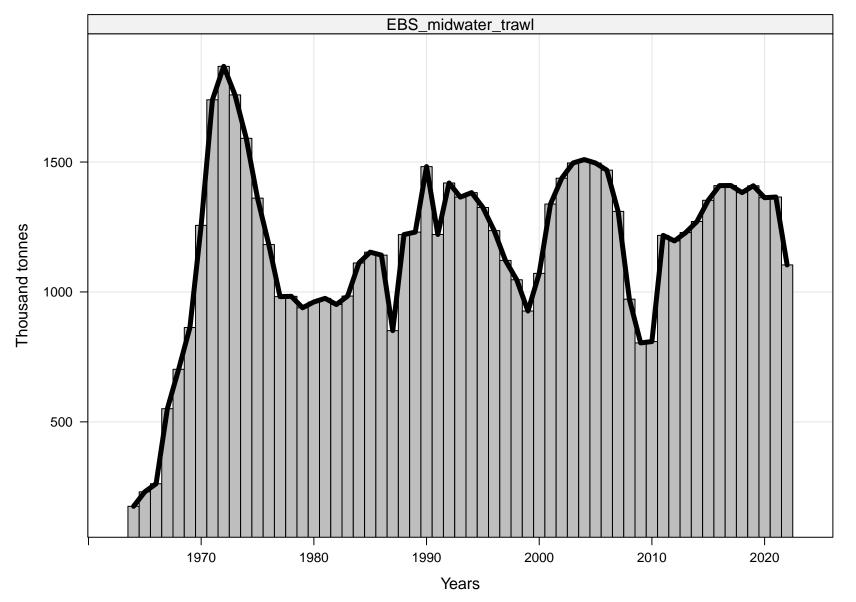
5

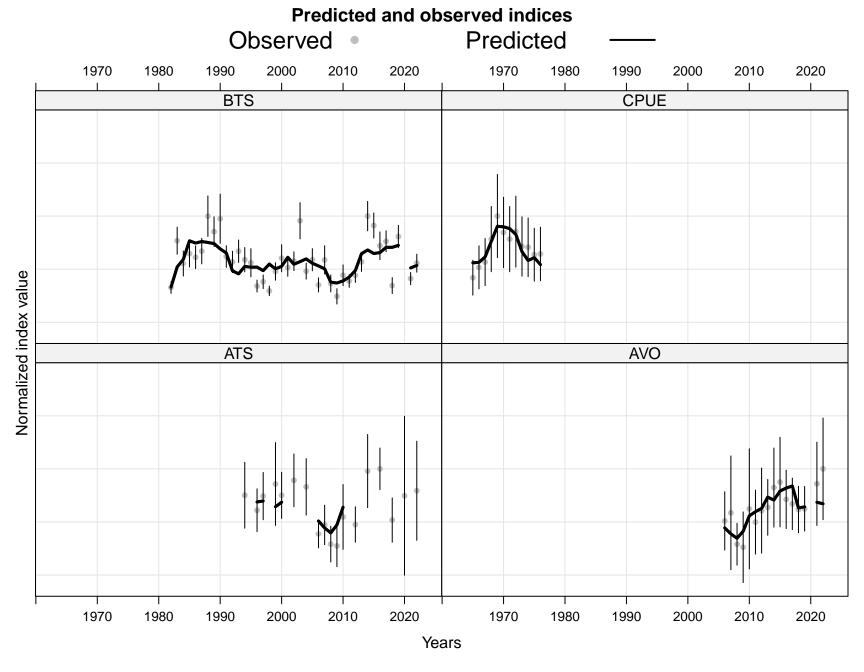
5

15

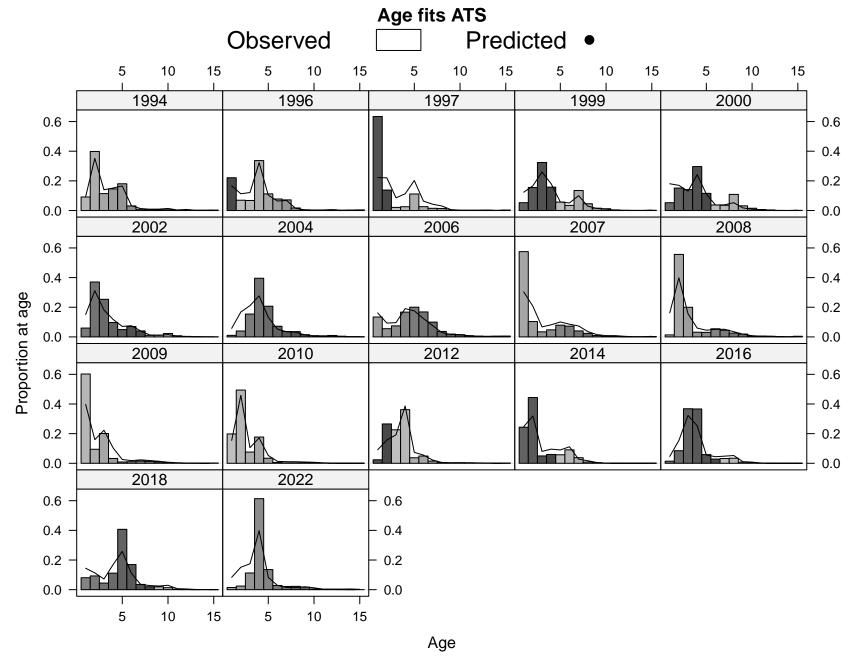
10

Predicted and observed catches by fleet
Observed Predicted ——



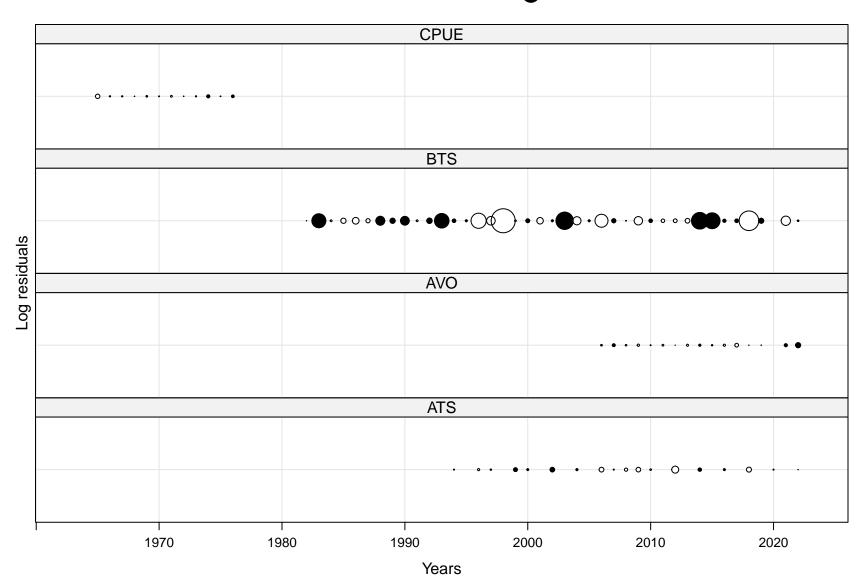


Age fits BTS Predicted Observed 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 Proportion at age 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 0.5 0.4 0.3 0.2 0.1 0.0 Age

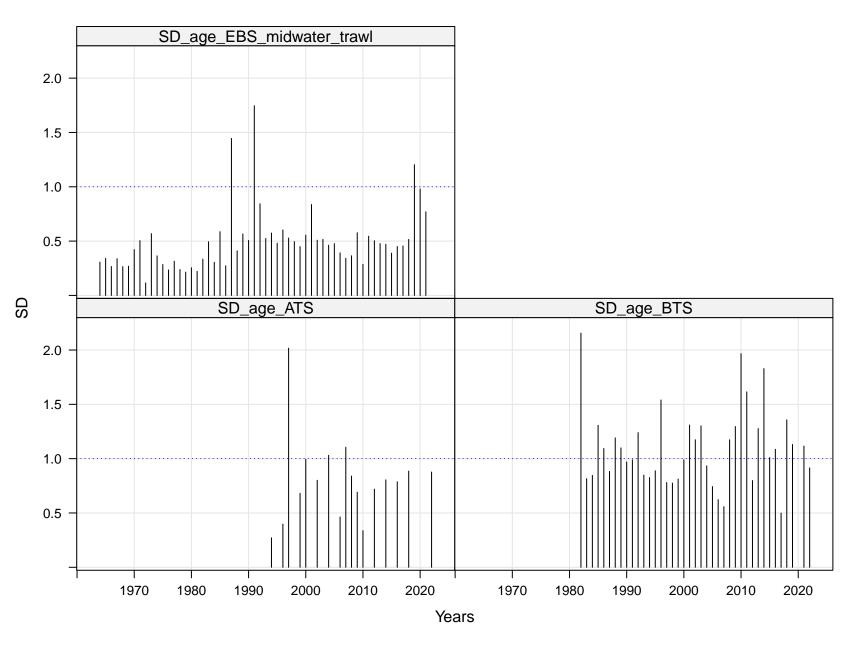


Standardized survey residuals

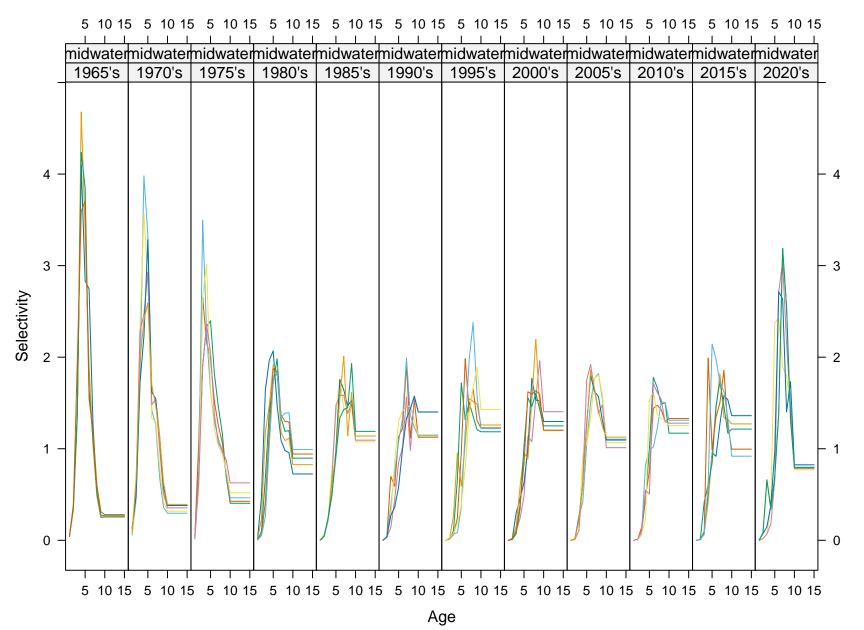
-7.92 0.23 -5.2 2.95 -2.49 0 5.67



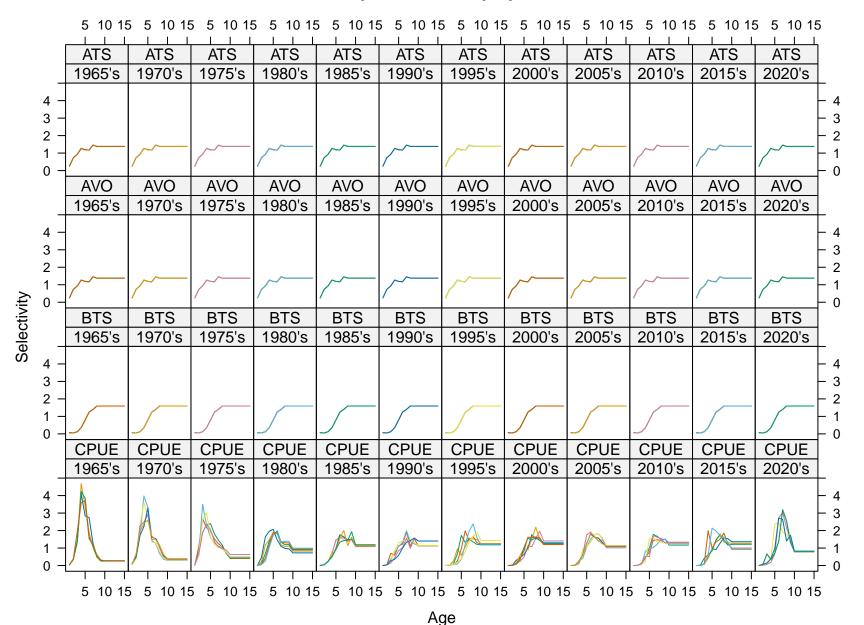
SD per input series



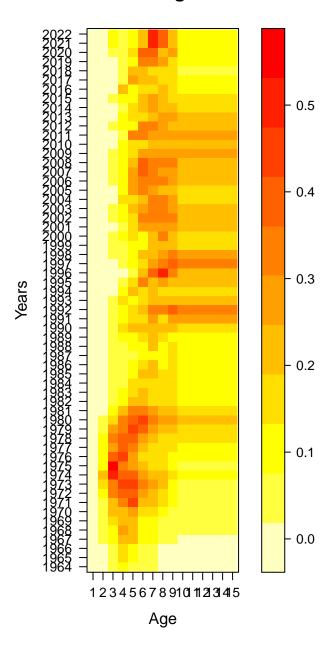
Selectivity of the Fishery by Pentad



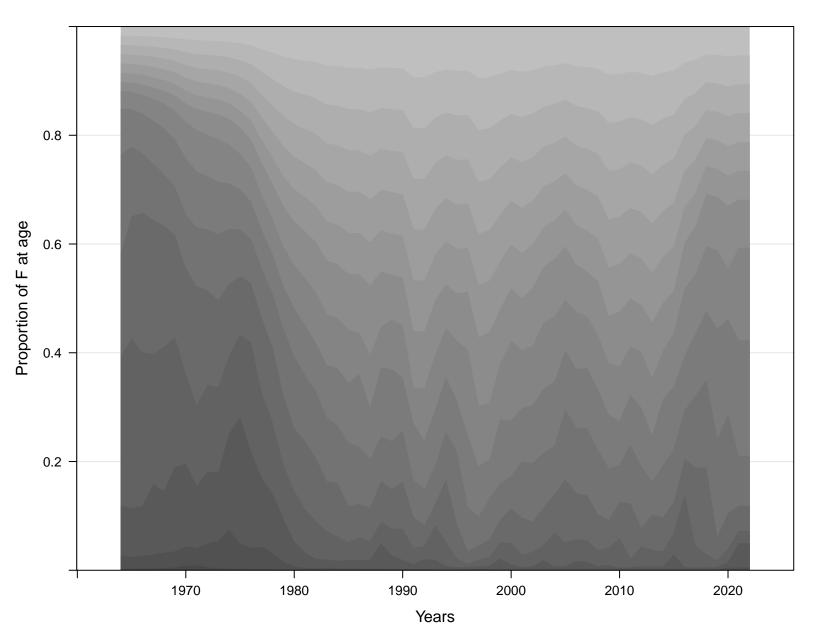
Selectivity of the survey by Pentad



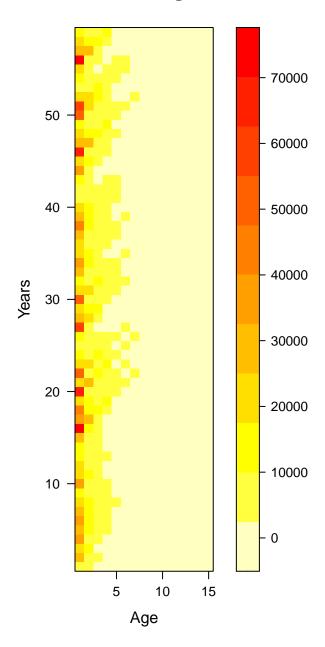
F at age



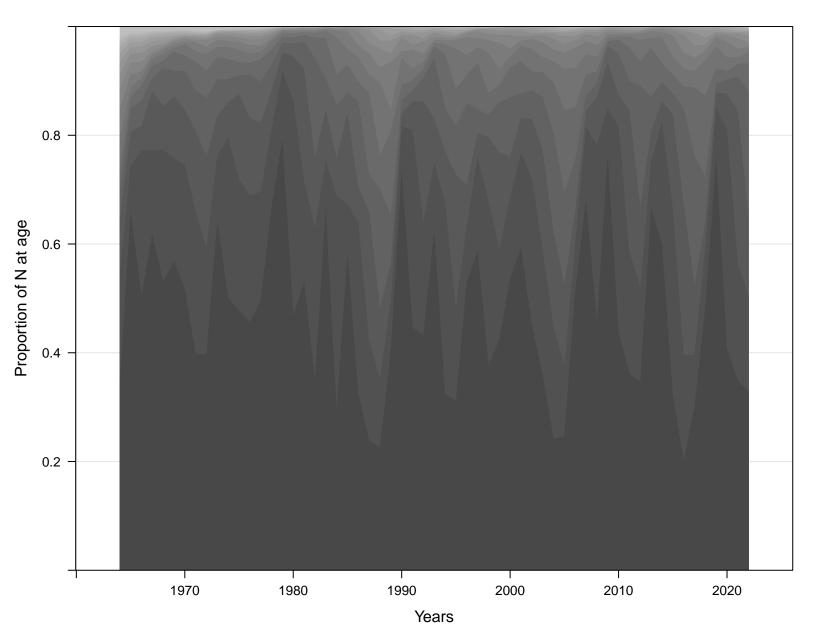
F proportion at age





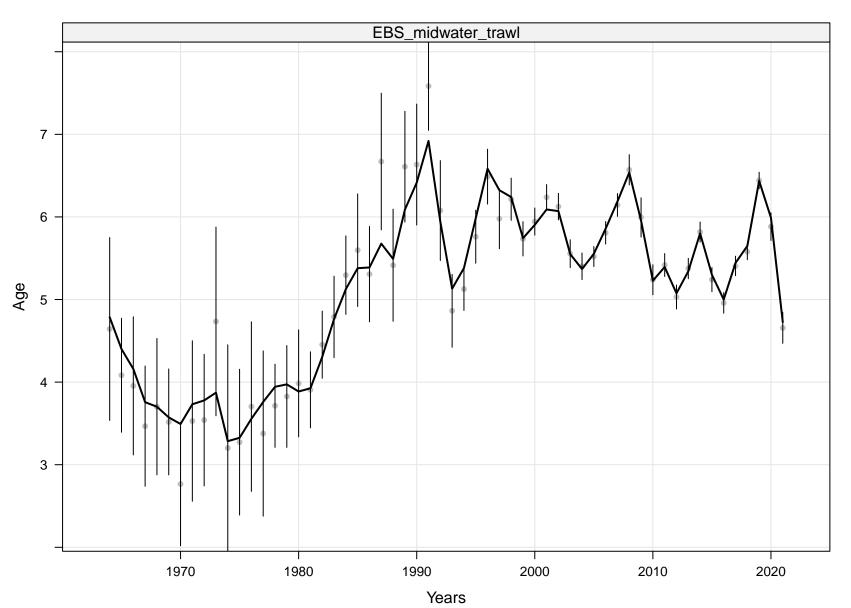


Proportion at age



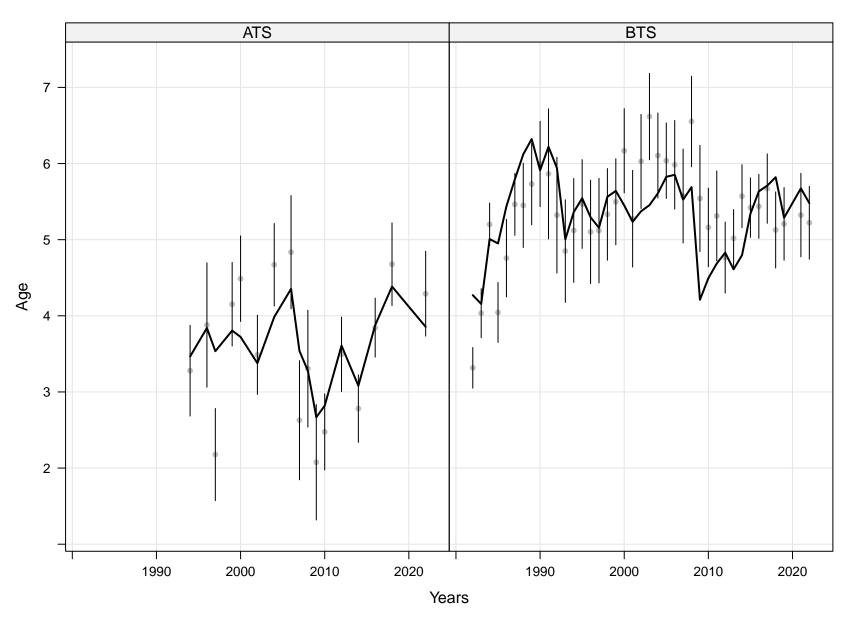
 Fishery mean age

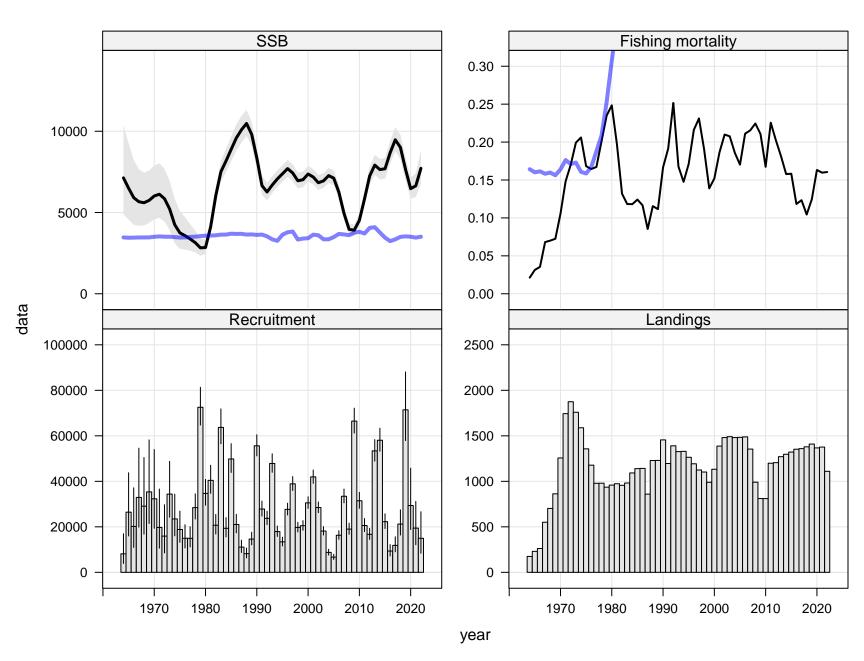
Observed • Modelled

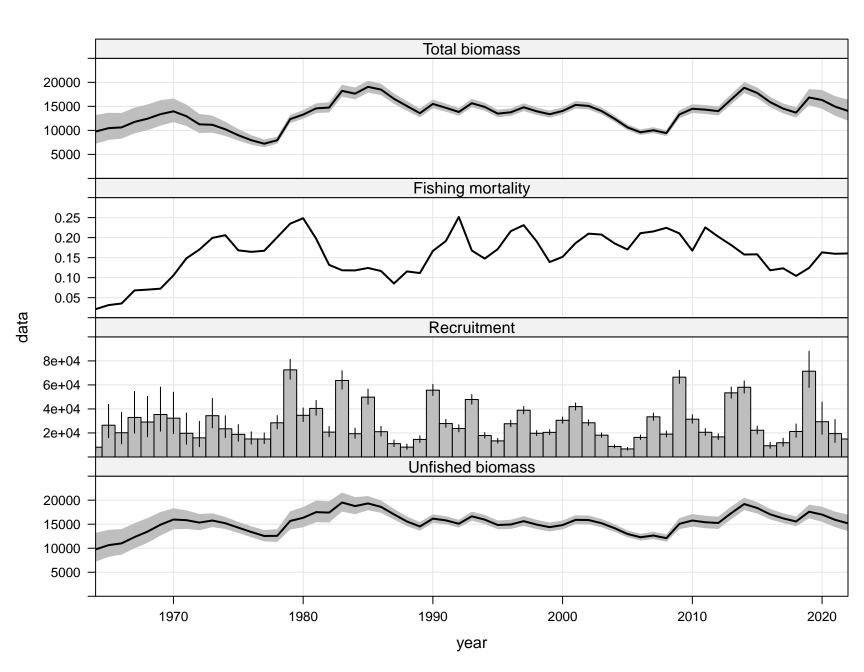


Survey mean age

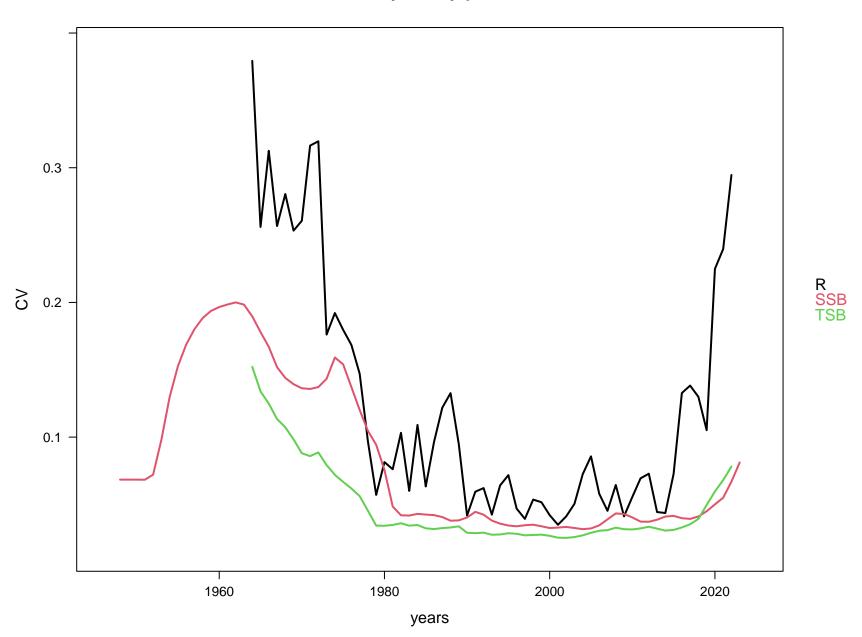








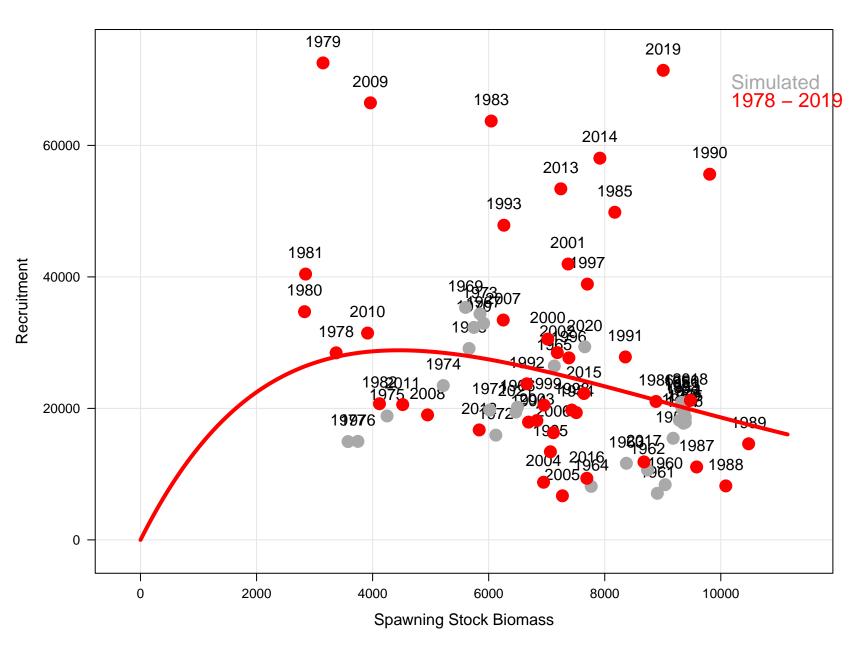
Uncertainty of key parameters



Mature - Immature fish Mature · · · · **Immature** 10000 -8000 -Biomass in kt 6000 4000 -1970 1980 1990 2000 2020 2010

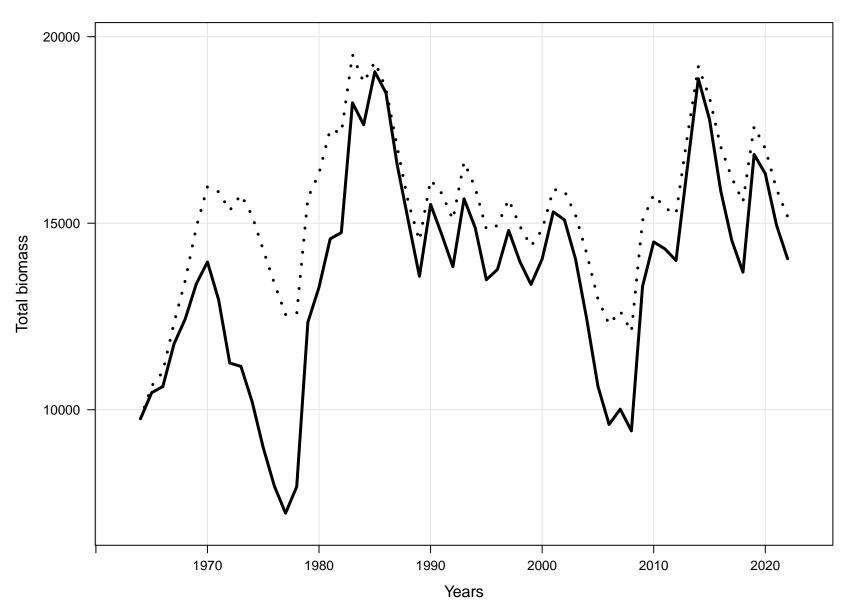
Years

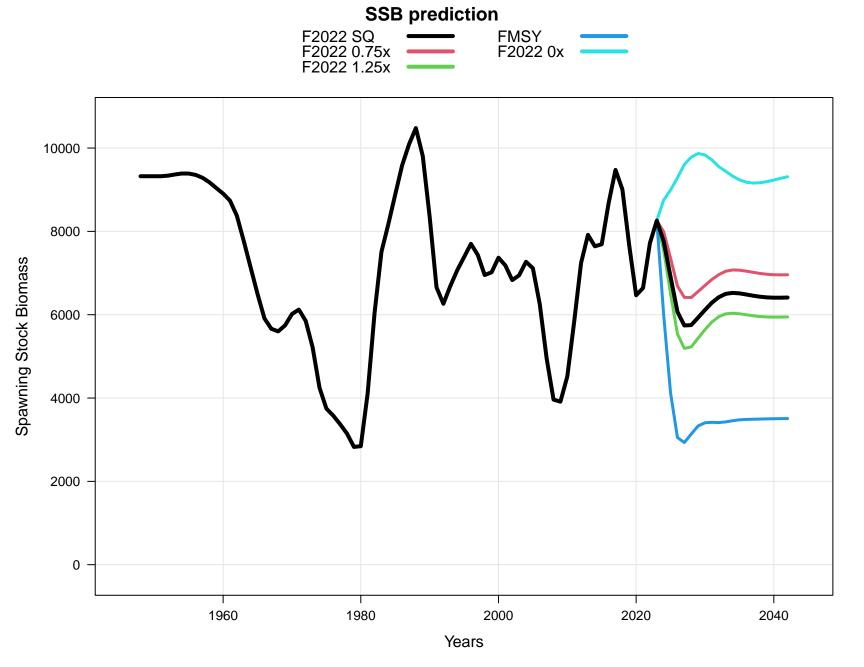
Stock Recruitment



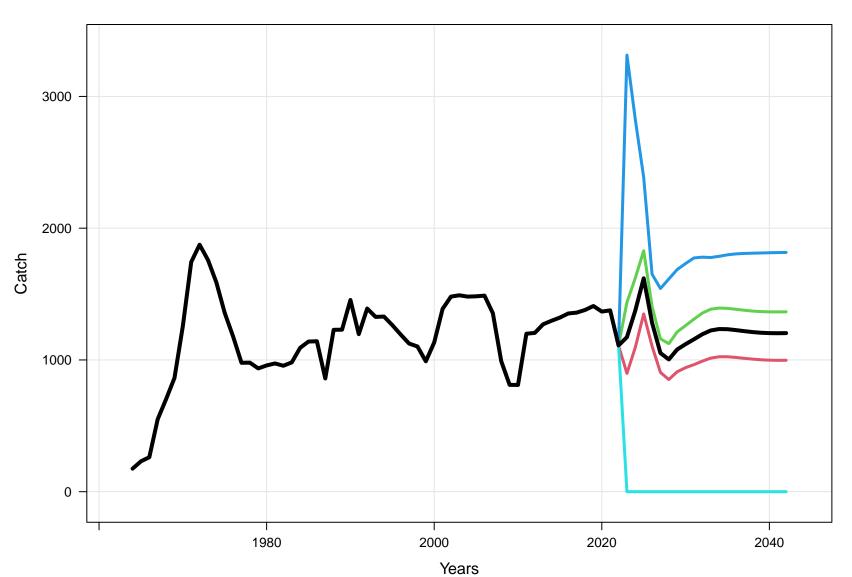
Comparing fished with unfished biomass

Fished — Unfished ·····

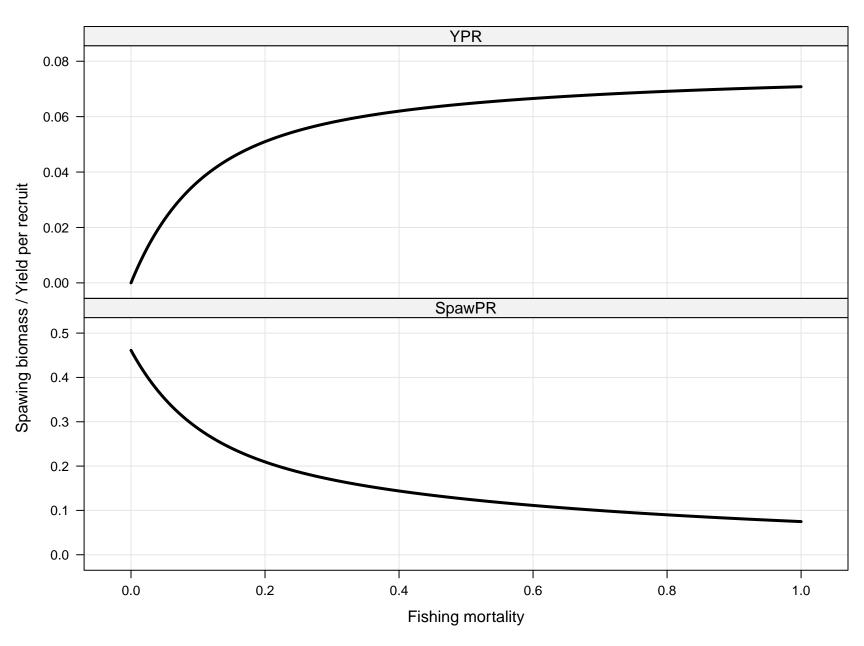




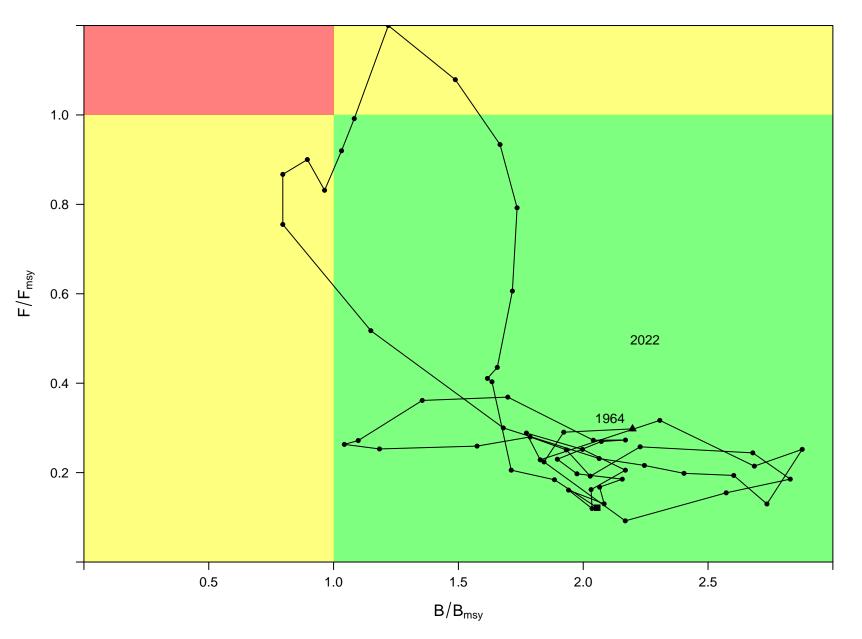


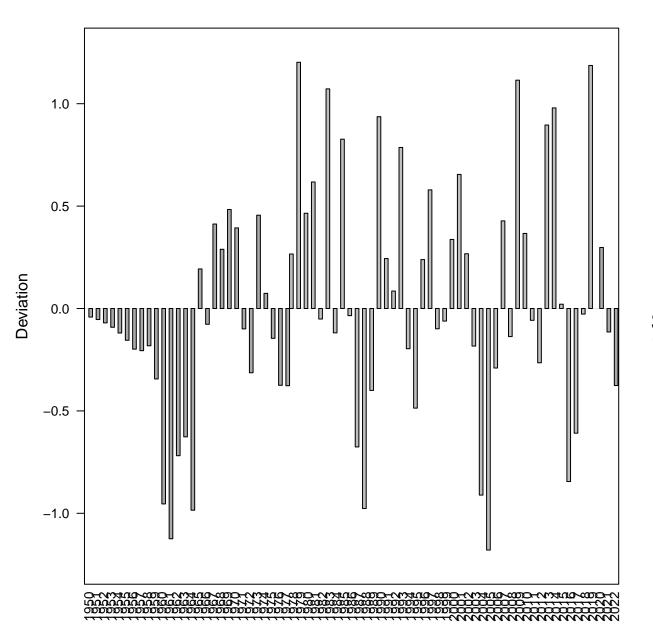


Yield and spawing stock biomass per recruit



Kobe plot





Simulated 1978 – 2019

