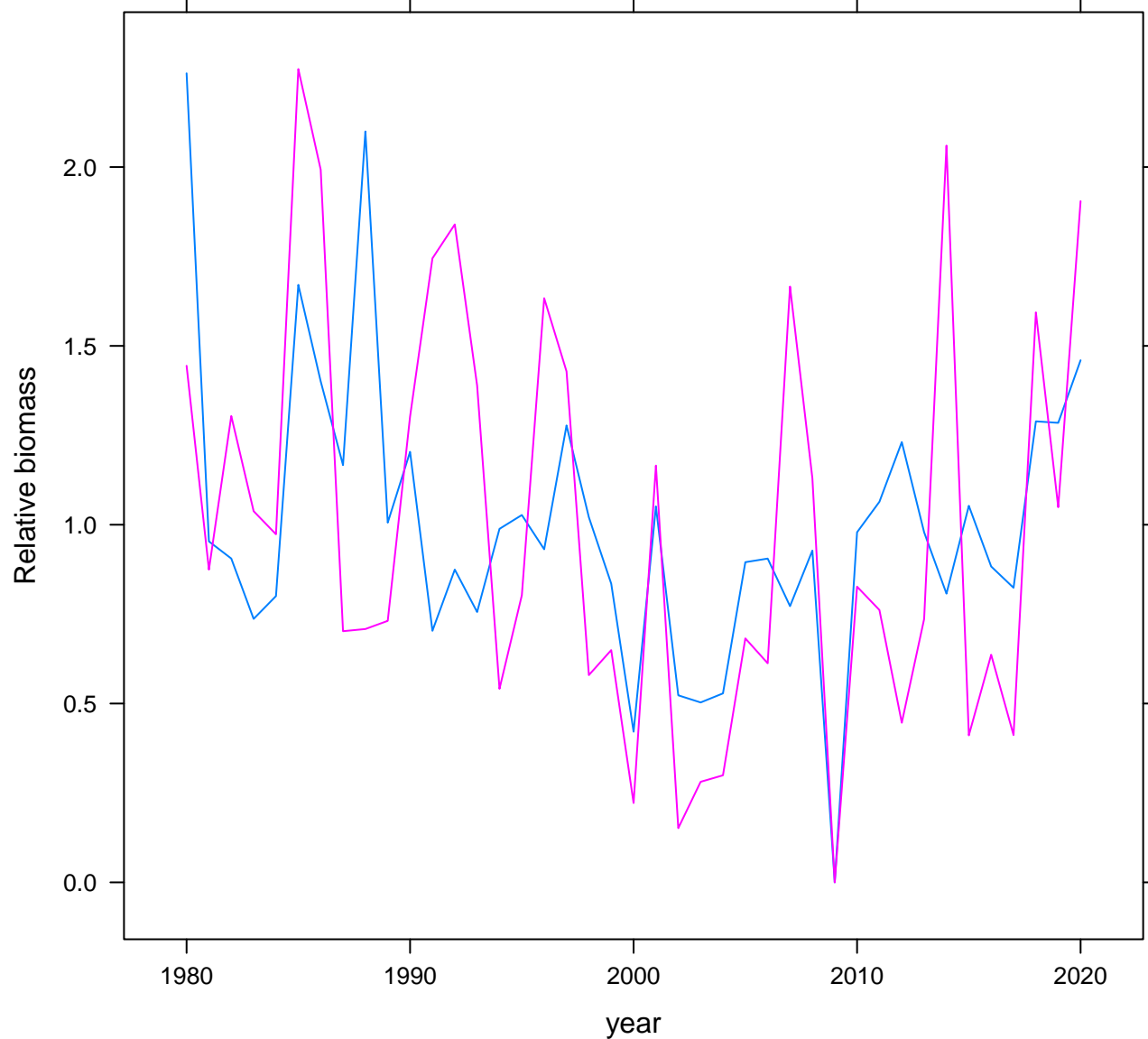
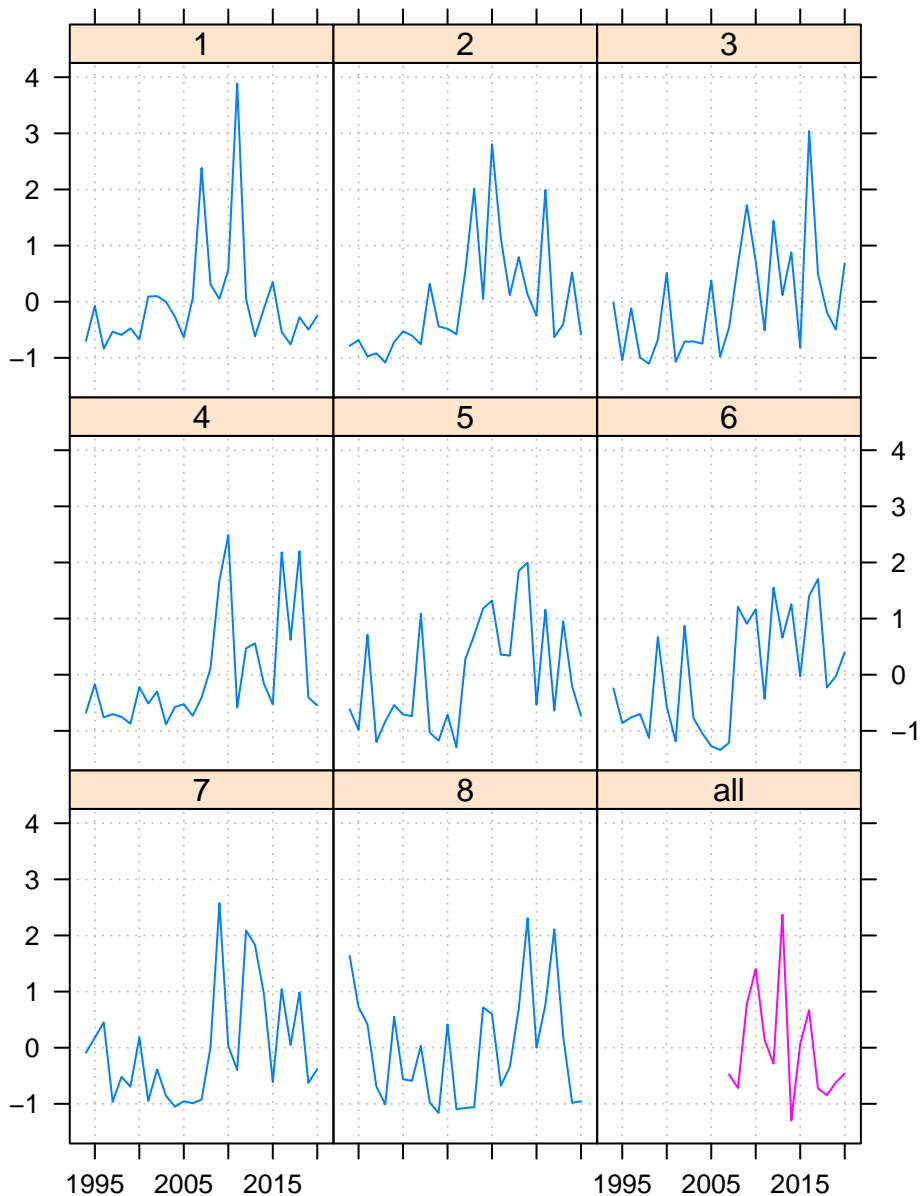


# Mature – Immature biomass ratio

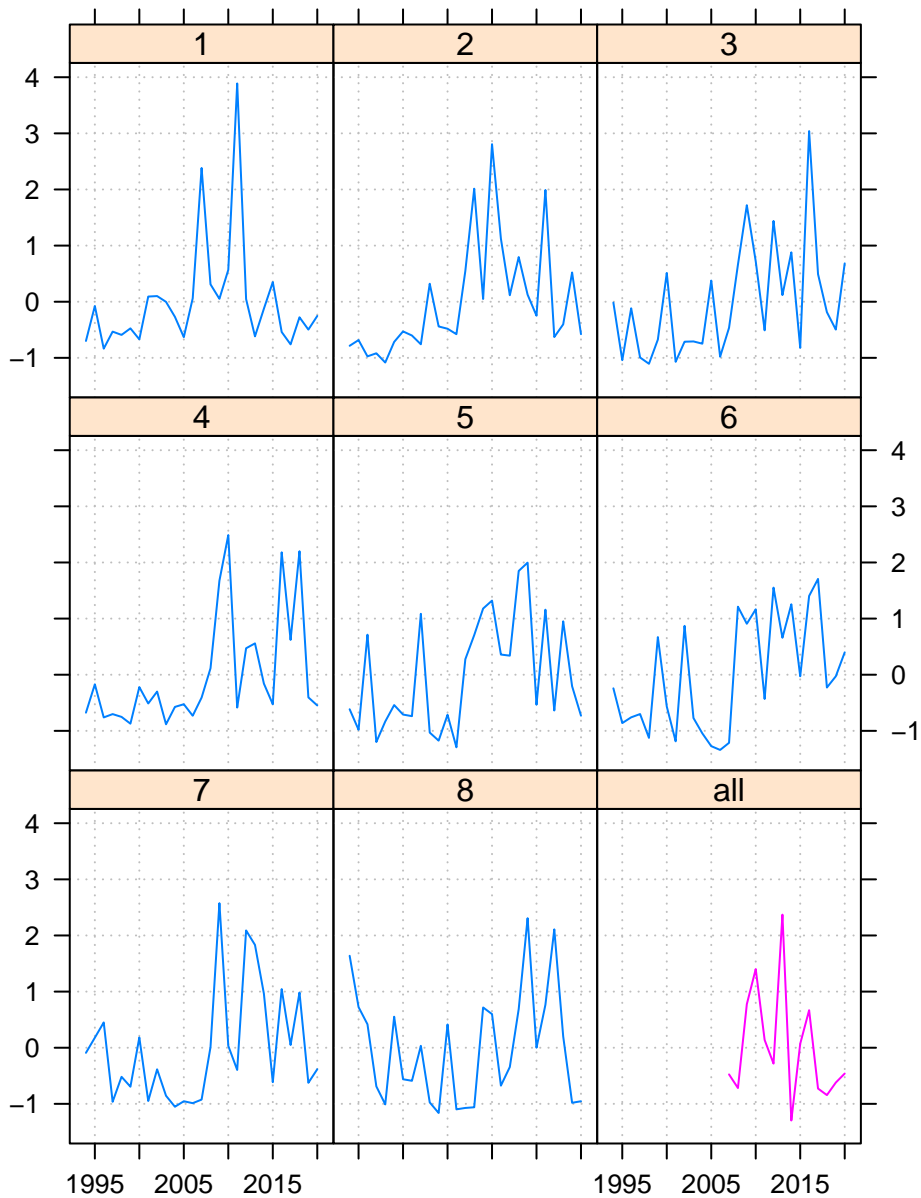
Mature  
Immature



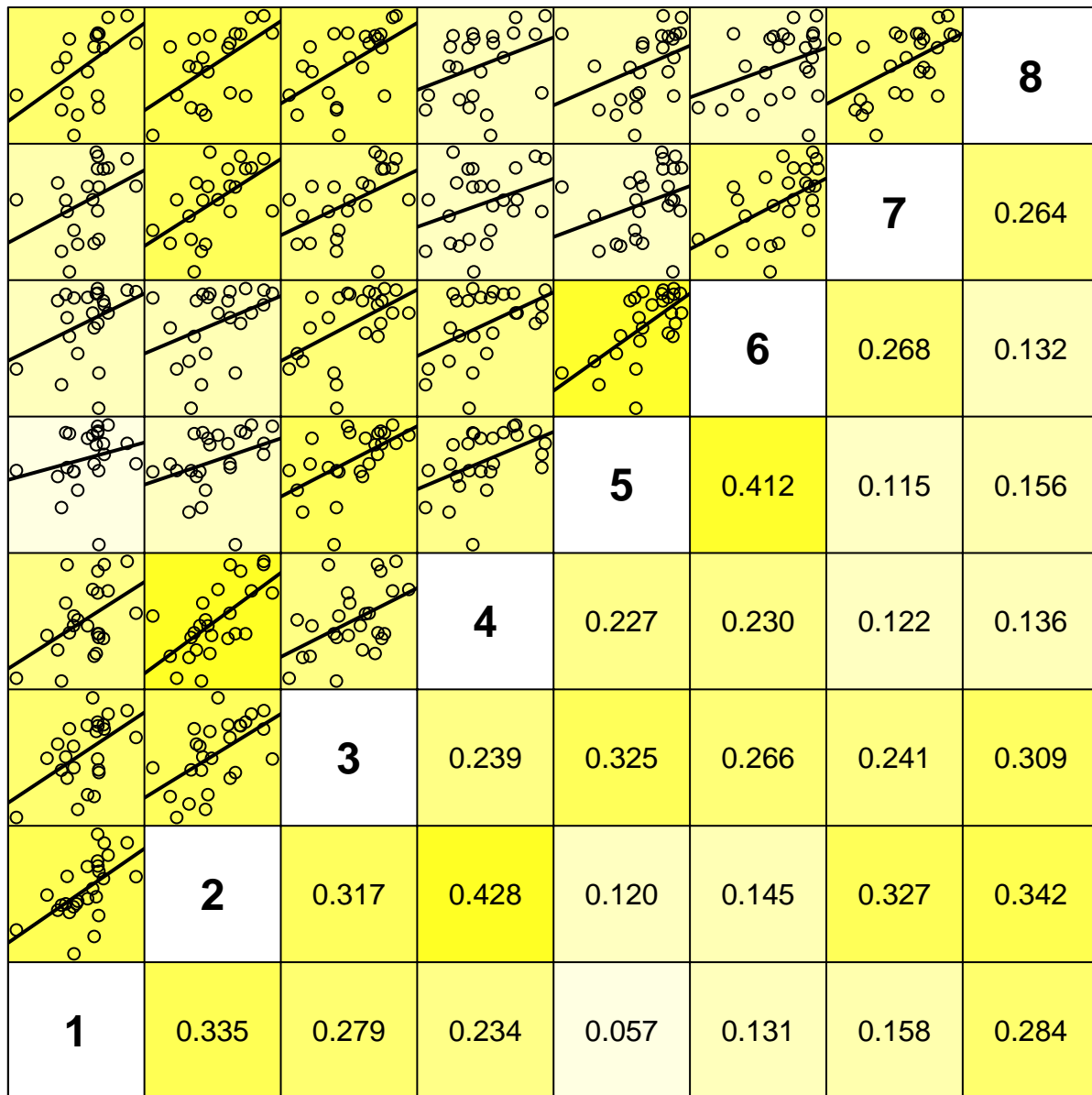
1995 2005 2015



1995 2005 2015



Log<sub>10</sub> (Index Value)

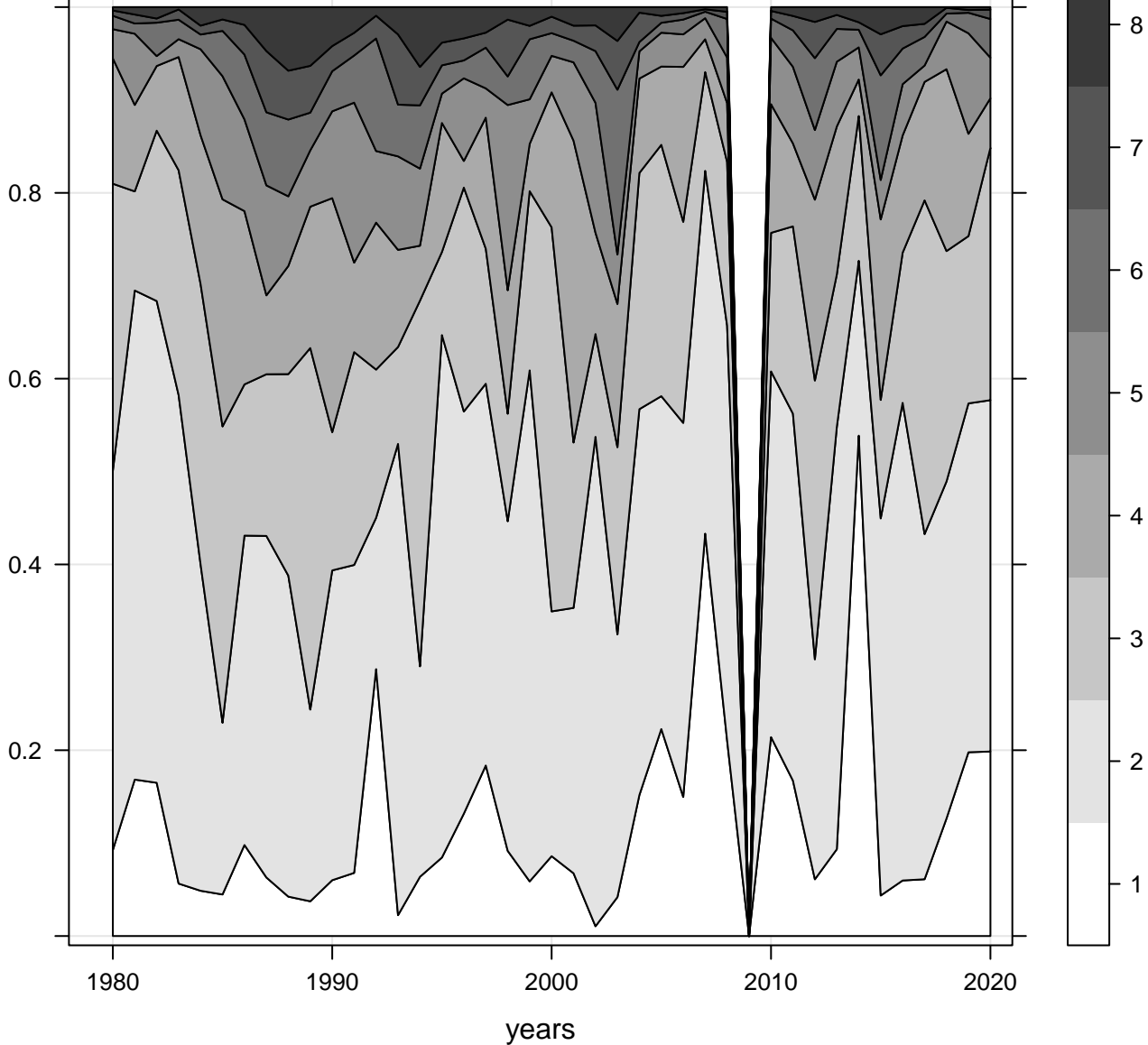


Log<sub>10</sub> (Index Value)

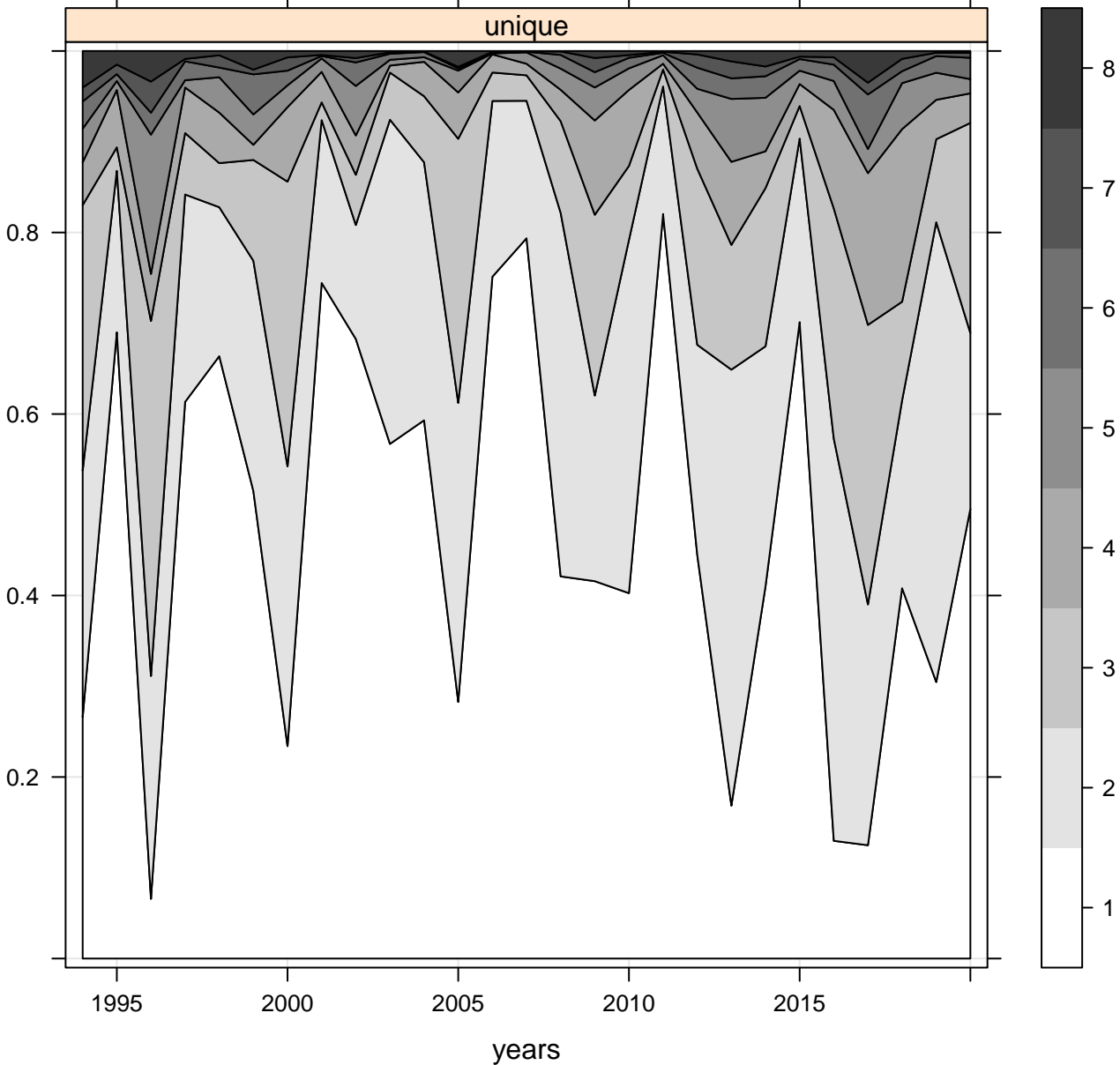
Lower right panels show the Coefficient of Determination ( $r^2$ )

# Proportion of Catch numbers at age

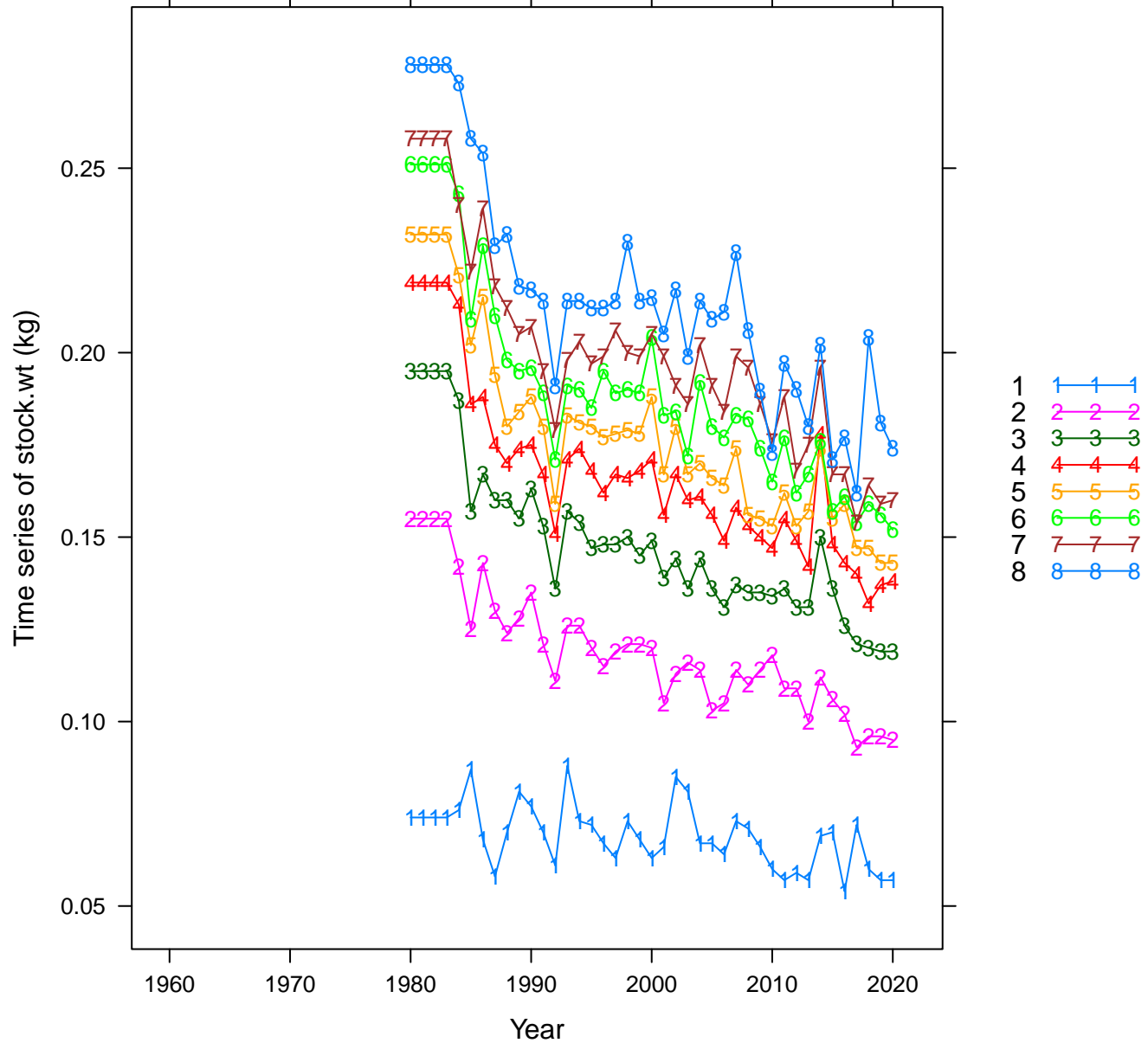
unique



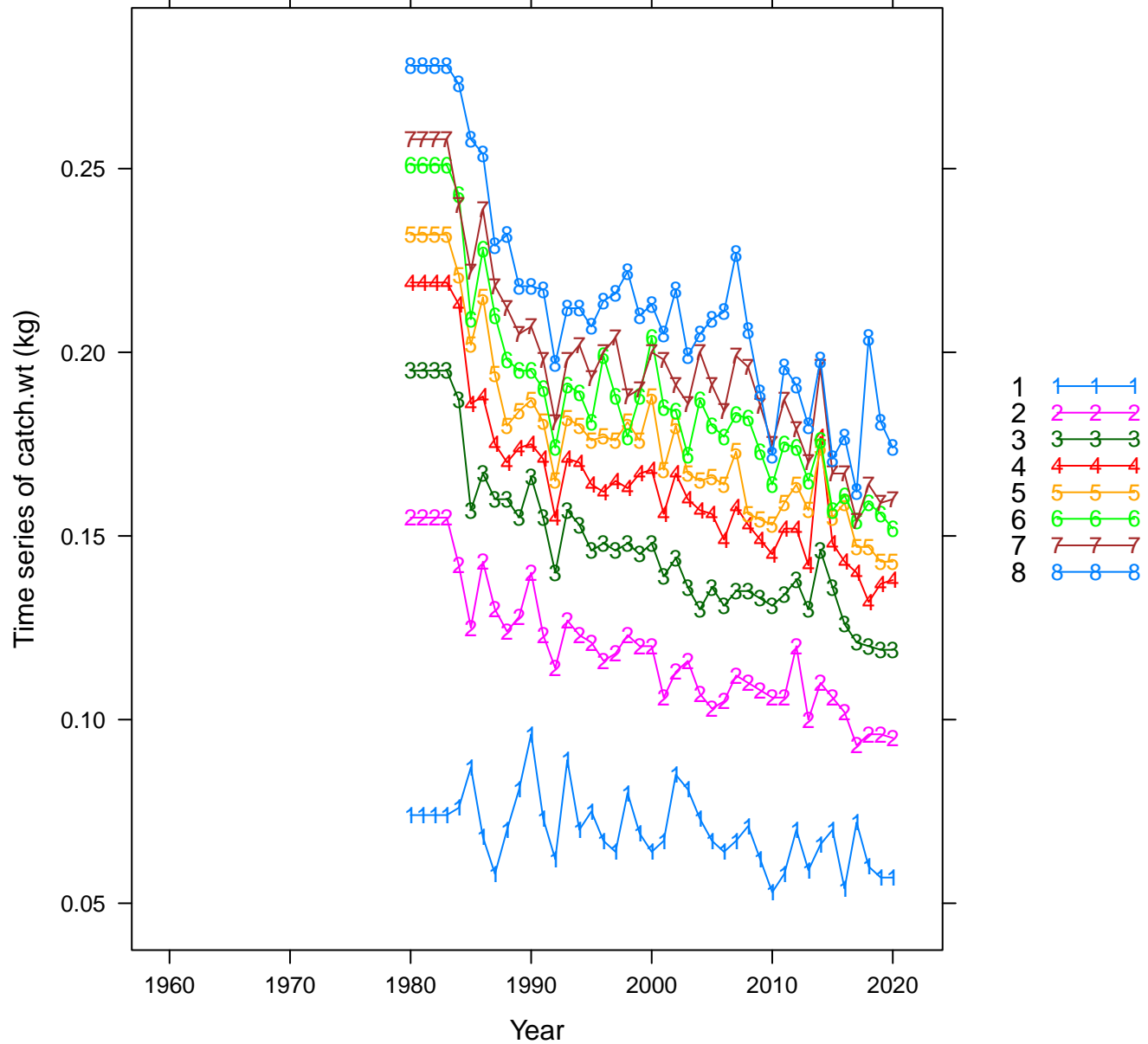
# Proportion of Acoustic index at age



# Irish Sea herring timeseries of stock.wt

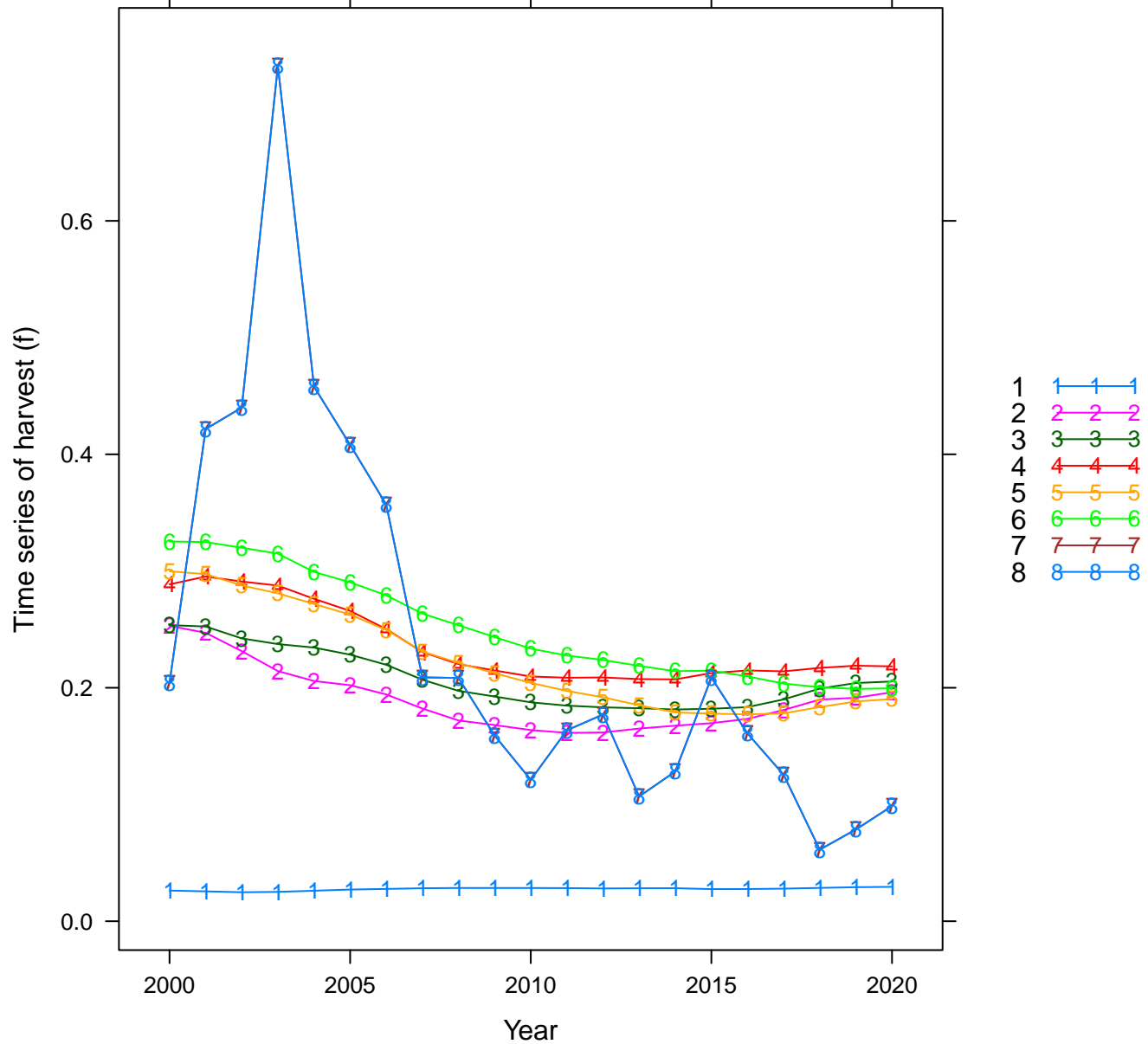


# Irish Sea herring timeseries of catch.wt

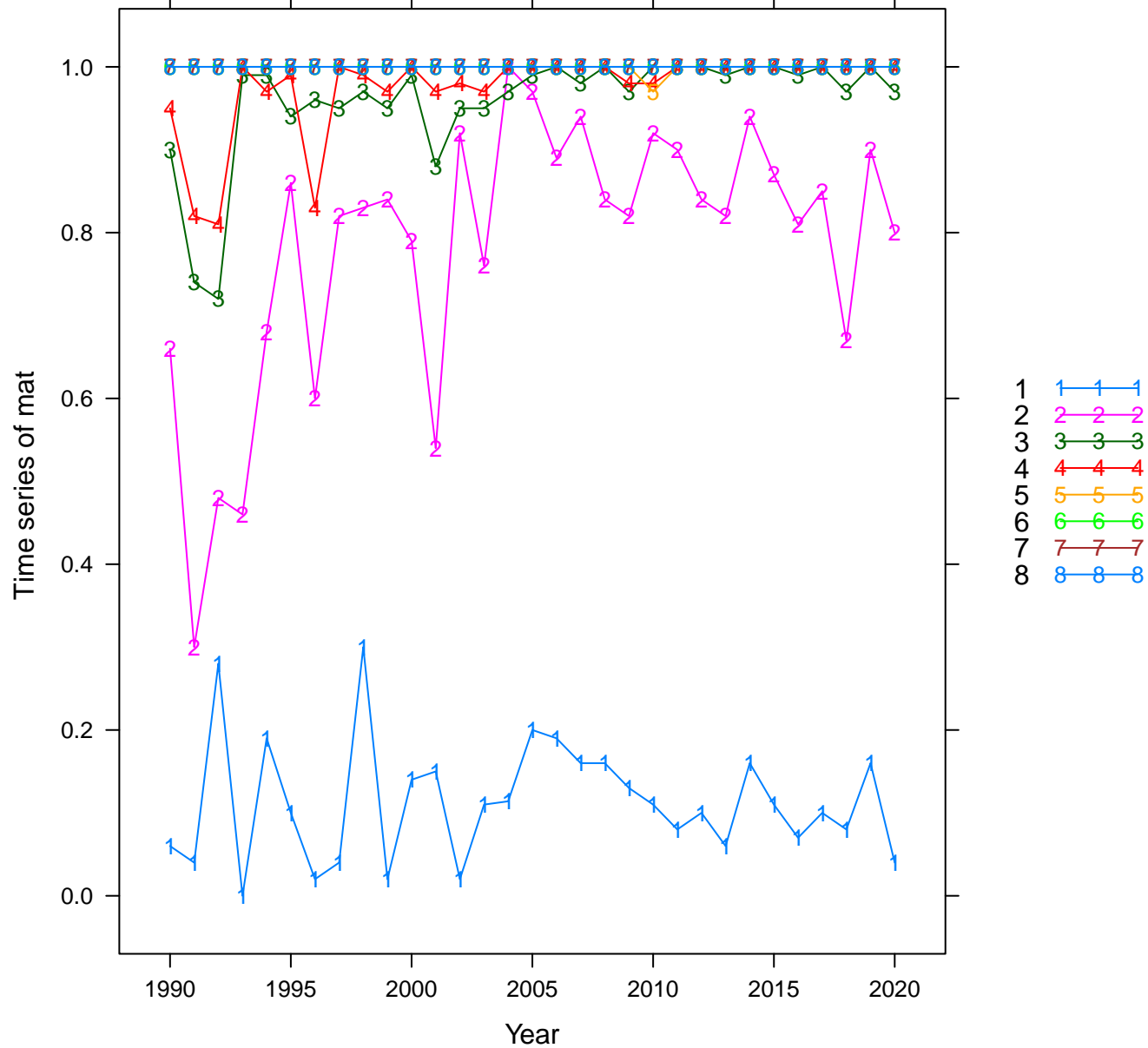




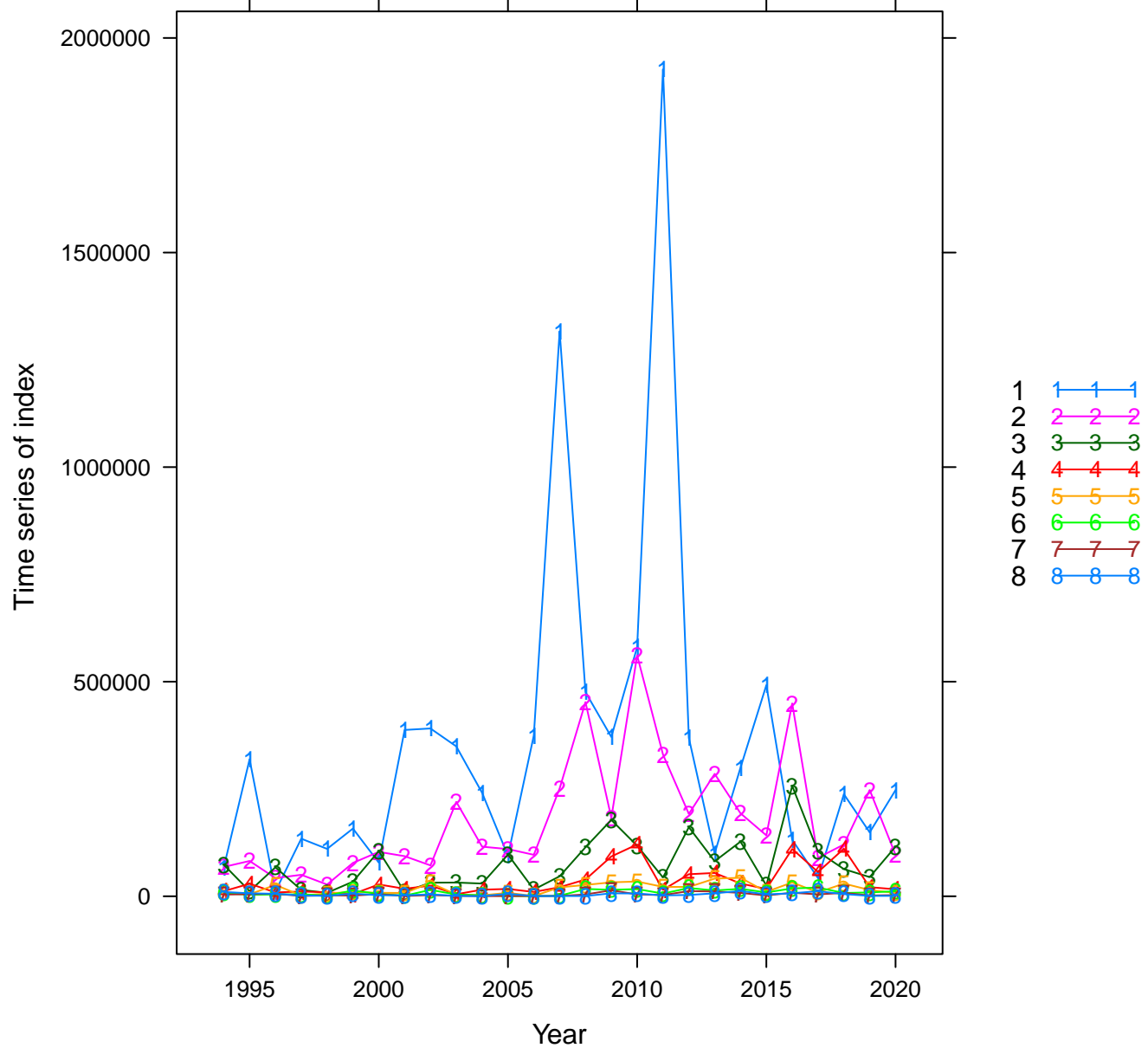
# Irish Sea herring timeseries of harvest



# Irish Sea herring timeseries of mat

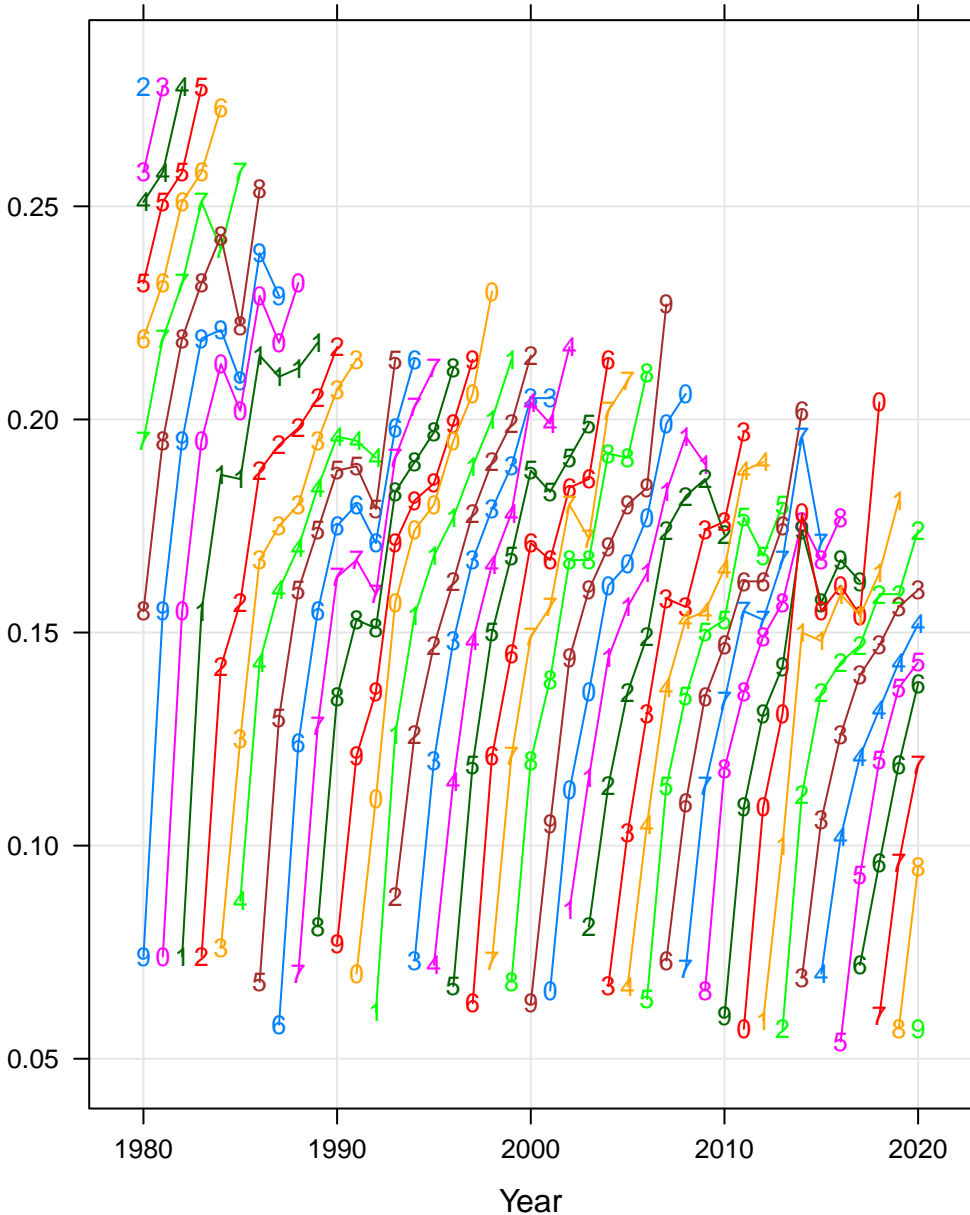


AC(VIIaN) timeseries of index



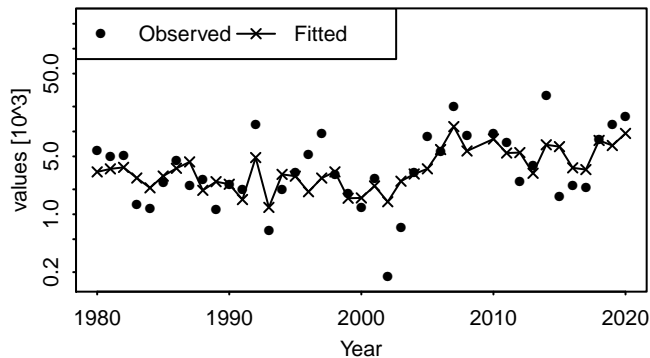
# Irish Sea herring Weight in the stock by cohort

Weight in the stock (kg)

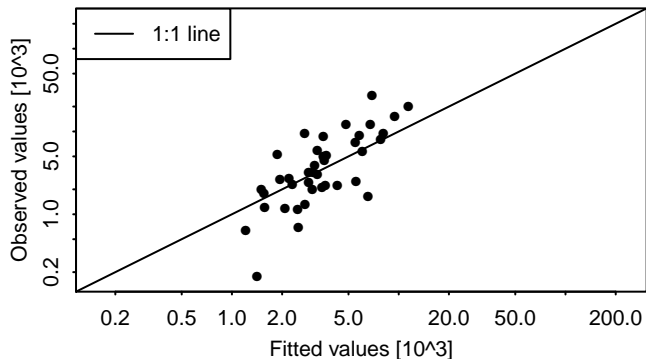


1974 4-4-4  
1975 5-5-5  
1976 6-6-6  
1977 7-7-7  
1978 8-8-8  
1979 9-9-9  
1980 0-0-0  
1981 1-1-1  
1982 2-2-2  
1983 3-3-3  
1984 4-4-4  
1985 5-5-5  
1986 6-6-6  
1987 7-7-7  
1988 8-8-8  
1989 9-9-9  
1990 0-0-0  
1991 1-1-1  
1992 2-2-2  
1993 3-3-3  
1994 4-4-4  
1995 5-5-5  
1996 6-6-6  
1997 7-7-7  
1998 8-8-8  
1999 9-9-9  
2000 0-0-0  
2001 1-1-1  
2002 2-2-2  
2003 3-3-3  
2004 4-4-4  
2005 5-5-5  
2006 6-6-6  
2007 7-7-7  
2008 8-8-8  
2009 9-9-9  
2010 0-0-0  
2011 1-1-1  
2012 2-2-2  
2013 3-3-3  
2014 4-4-4  
2015 5-5-5  
2016 6-6-6  
2017 7-7-7

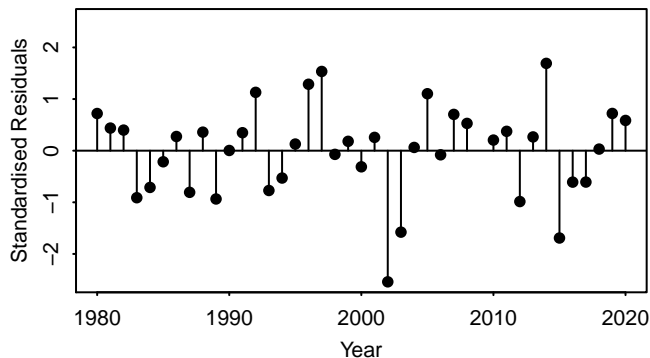
a) Observed and fitted values time series



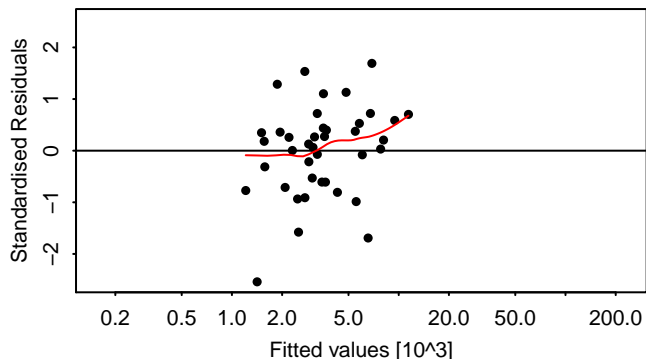
b) Observed vs fitted values



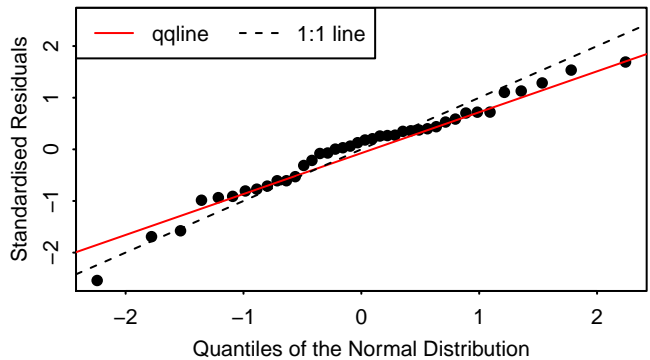
c) Standardised residuals over time



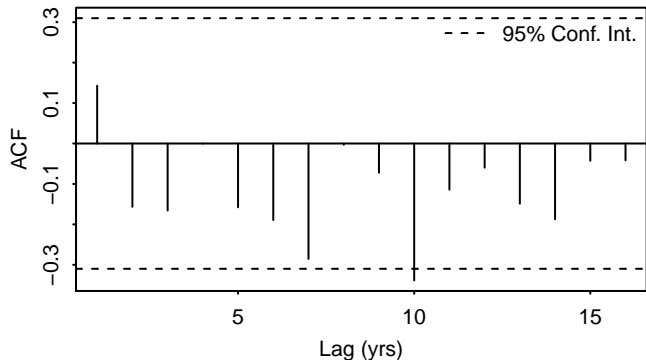
d) Tukey–Anscombe plot



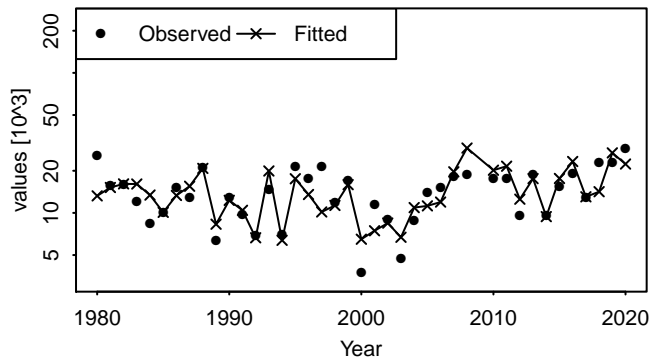
e) Normal Q–Q plot



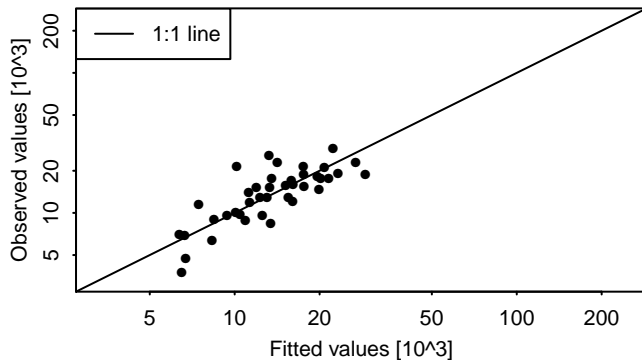
f) Autocorrelation of Residuals



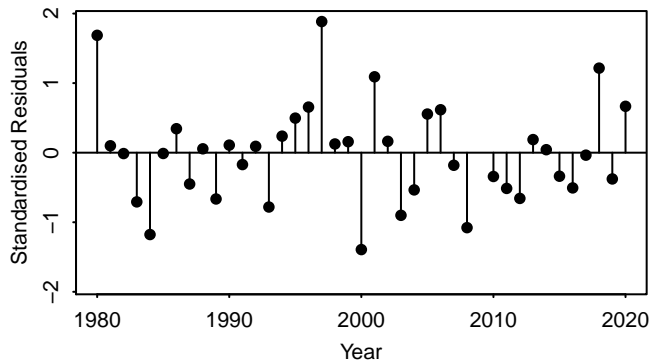
a) Observed and fitted values time series



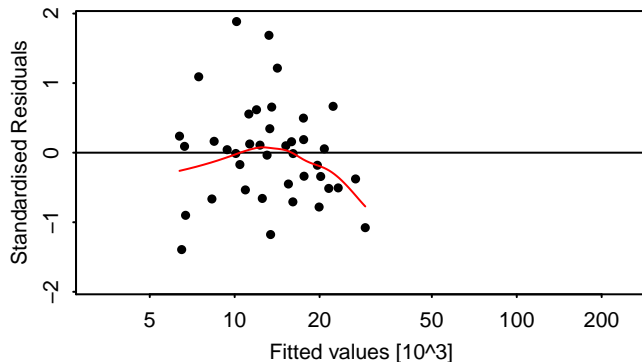
b) Observed vs fitted values



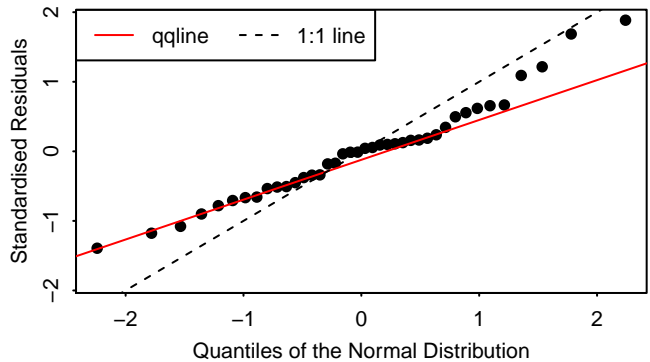
c) Standardised residuals over time



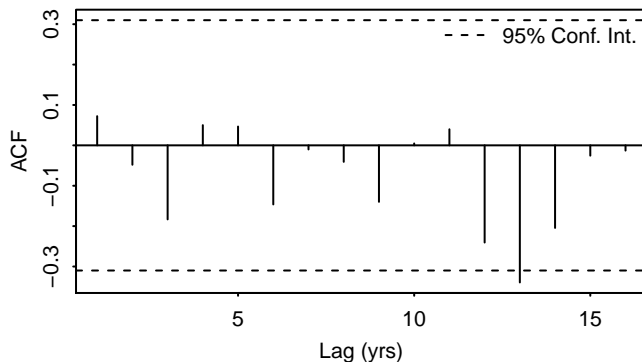
d) Tukey–Anscombe plot



e) Normal Q–Q plot

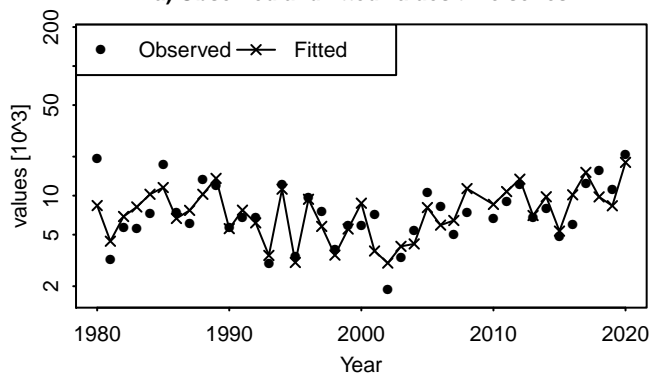


f) Autocorrelation of Residuals

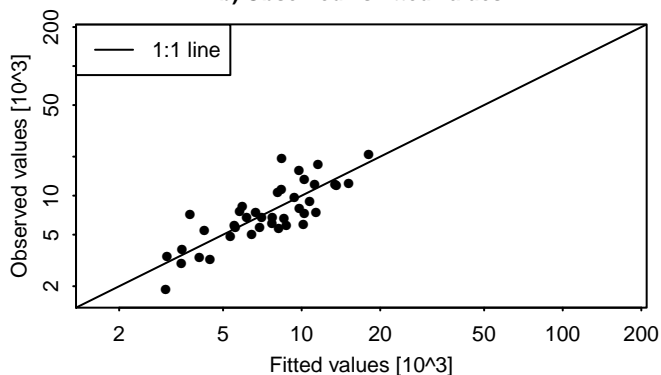


# ISH\_assessment 2021 Diagnostics – Fleet 1, age 3

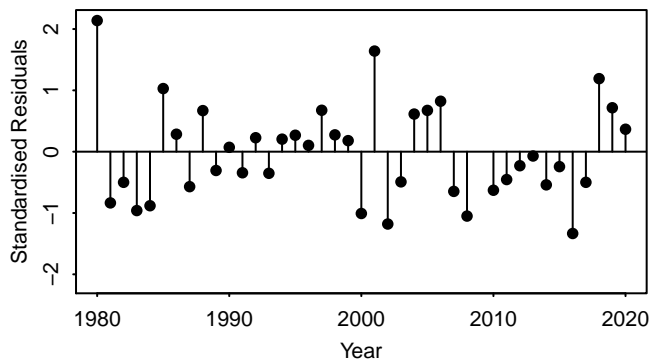
a) Observed and fitted values time series



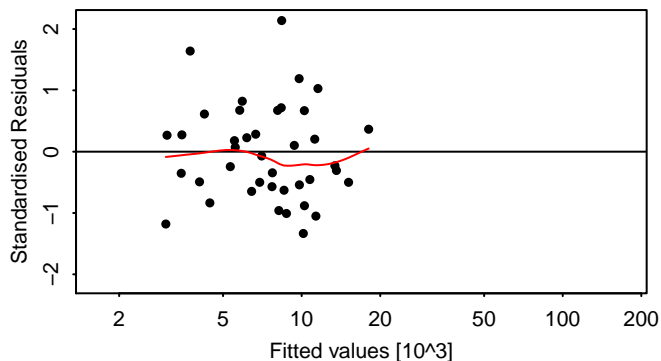
b) Observed vs fitted values



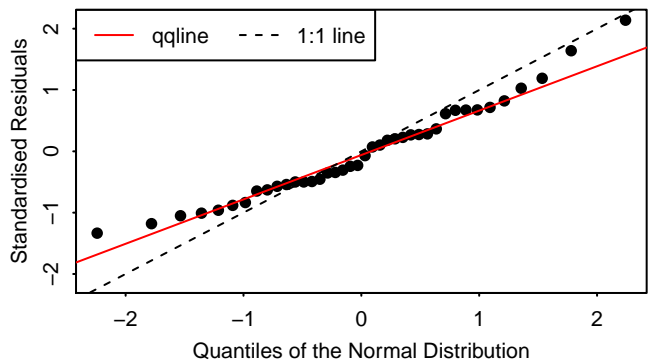
c) Standardised residuals over time



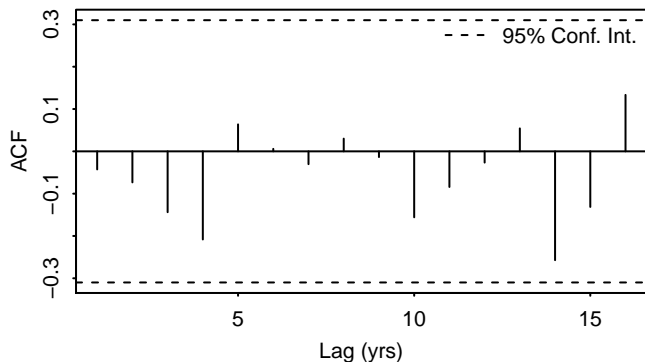
d) Tukey–Anscombe plot



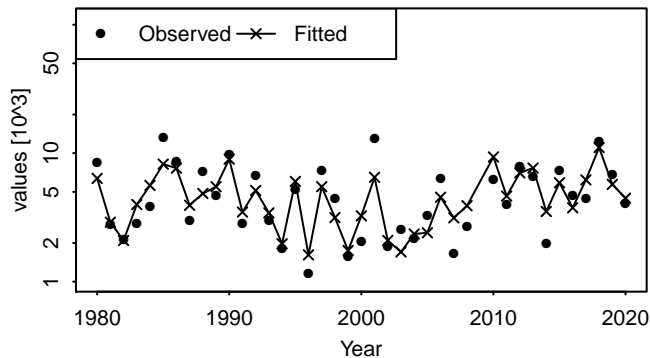
e) Normal Q–Q plot



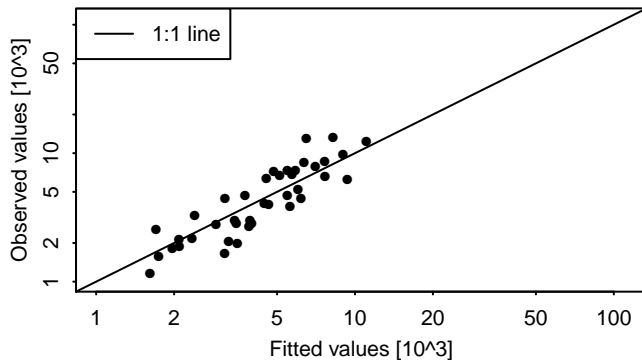
f) Autocorrelation of Residuals



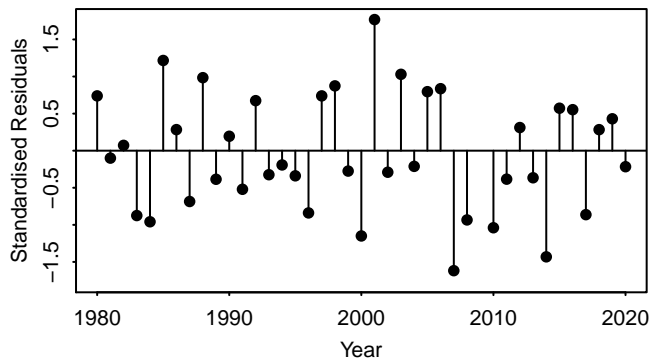
a) Observed and fitted values time series



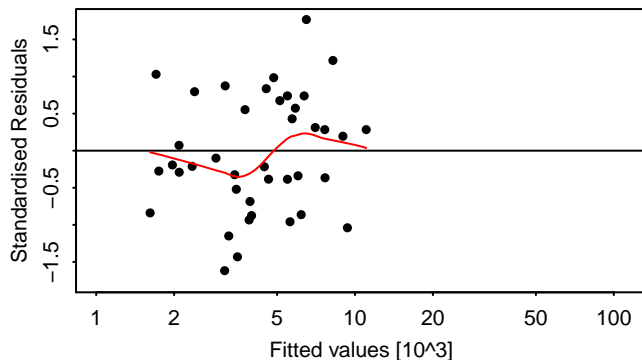
b) Observed vs fitted values



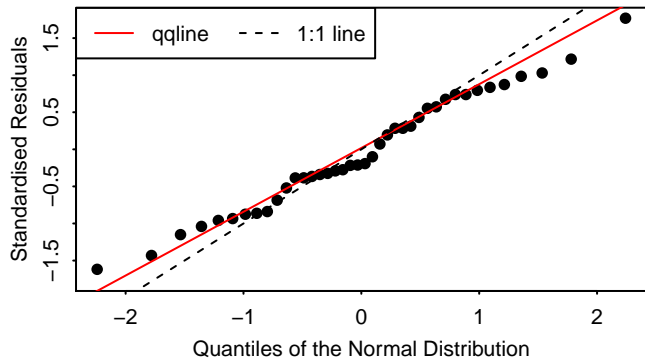
c) Standardised residuals over time



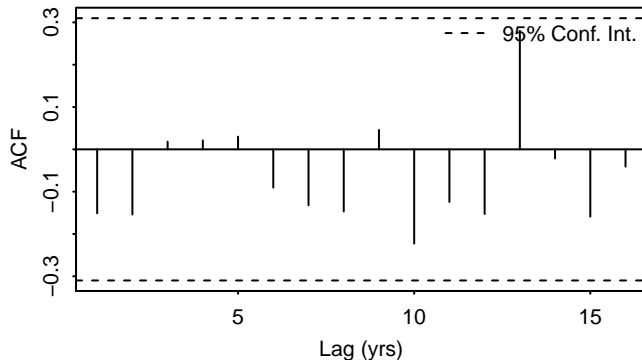
d) Tukey–Anscombe plot



e) Normal Q–Q plot

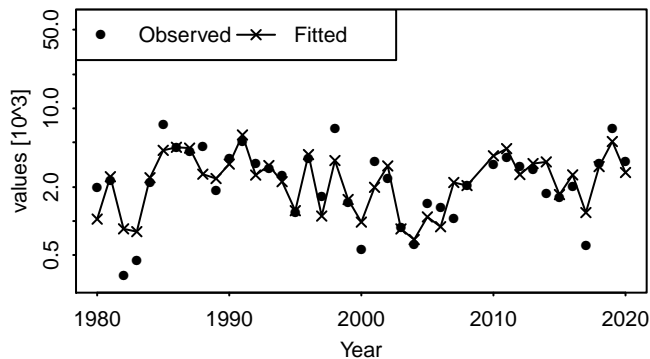


f) Autocorrelation of Residuals

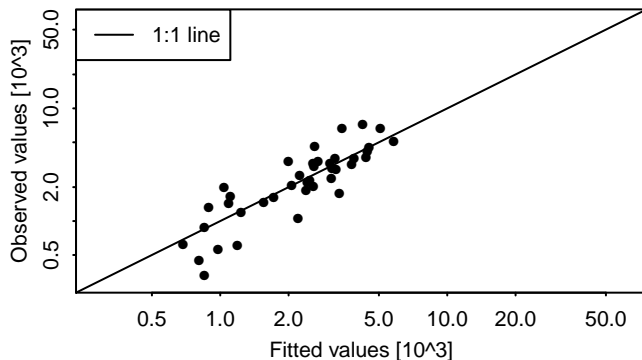




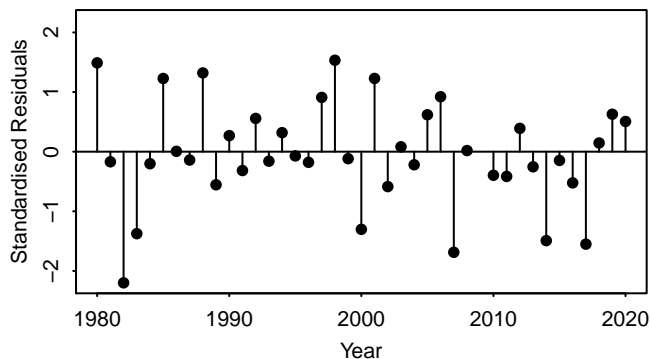
a) Observed and fitted values time series



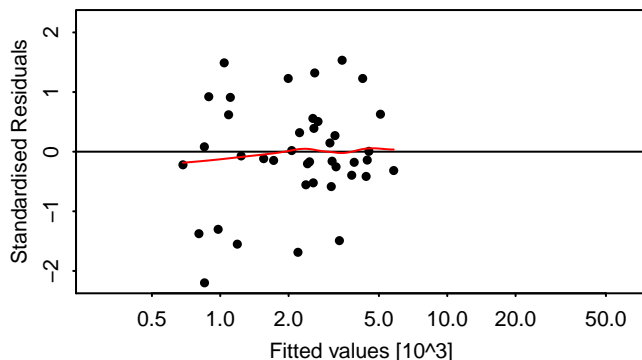
b) Observed vs fitted values



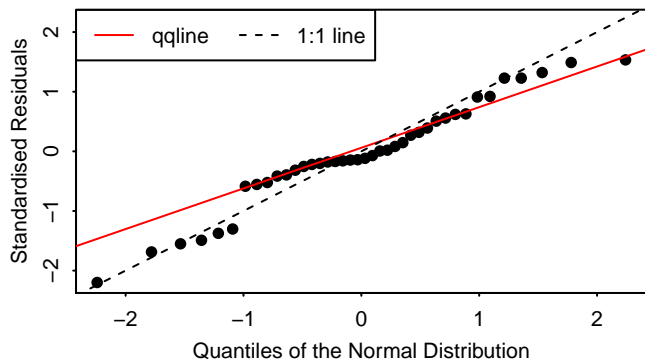
c) Standardised residuals over time



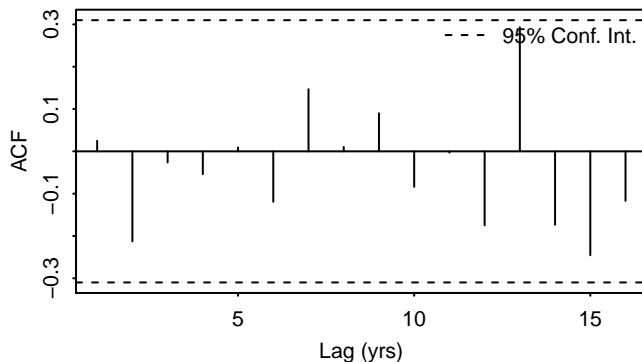
d) Tukey–Anscombe plot



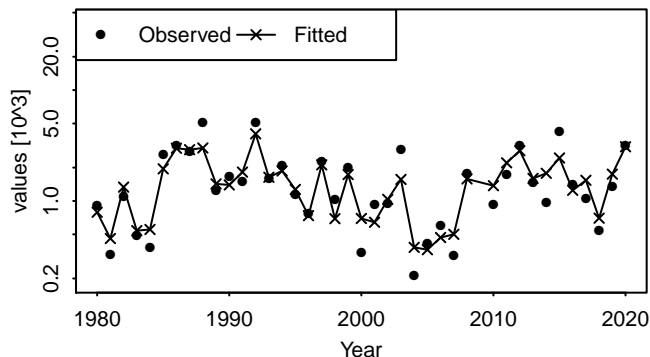
e) Normal Q–Q plot



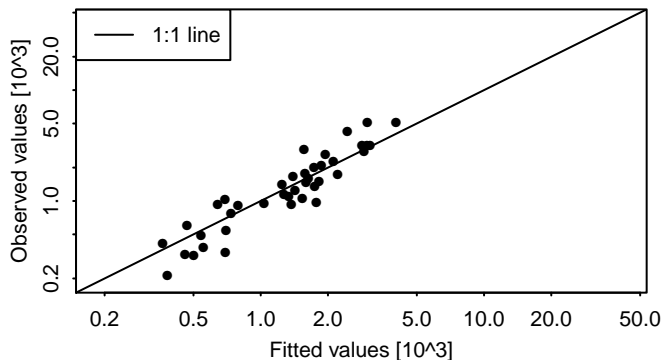
f) Autocorrelation of Residuals



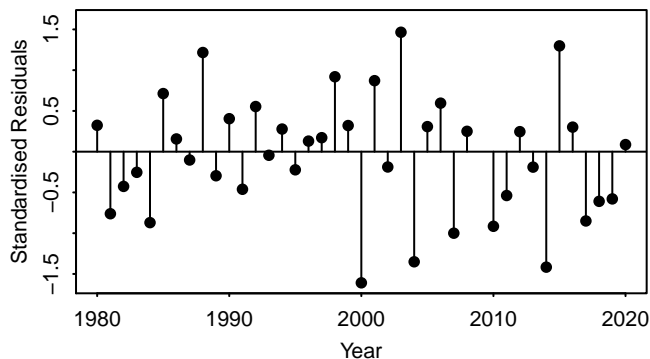
a) Observed and fitted values time series



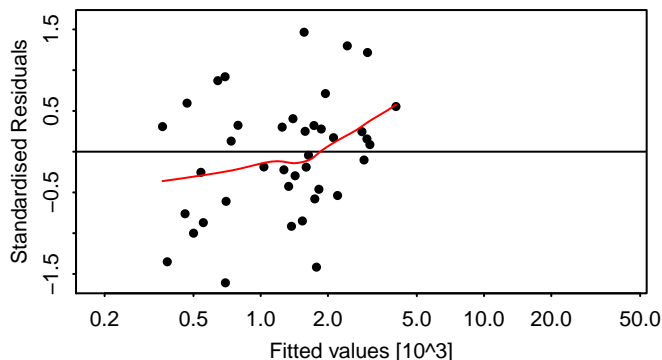
b) Observed vs fitted values



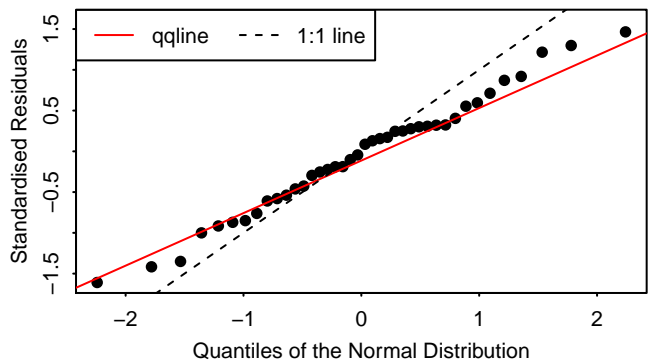
c) Standardised residuals over time



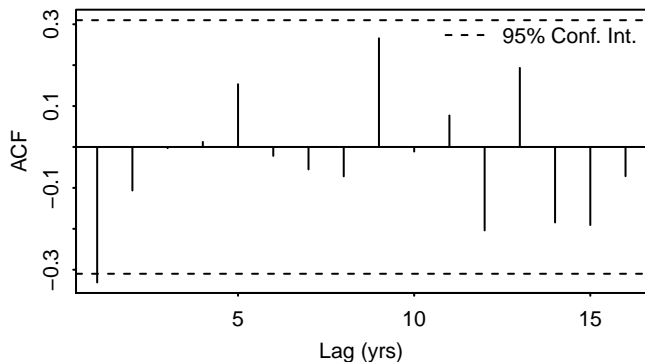
d) Tukey–Anscombe plot



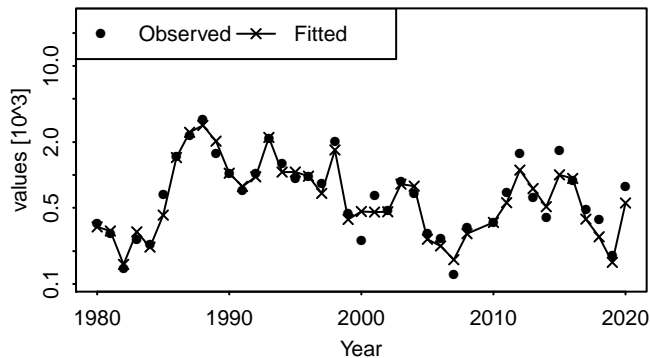
e) Normal Q–Q plot



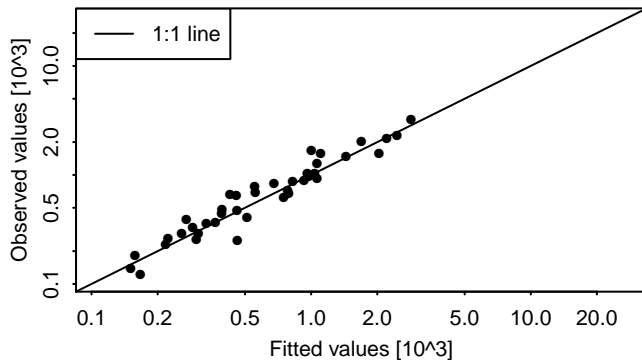
f) Autocorrelation of Residuals



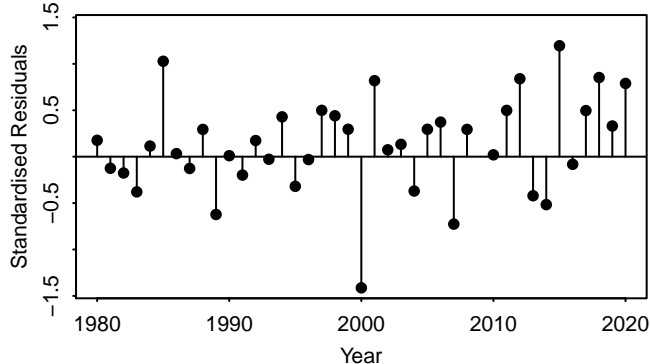
a) Observed and fitted values time series



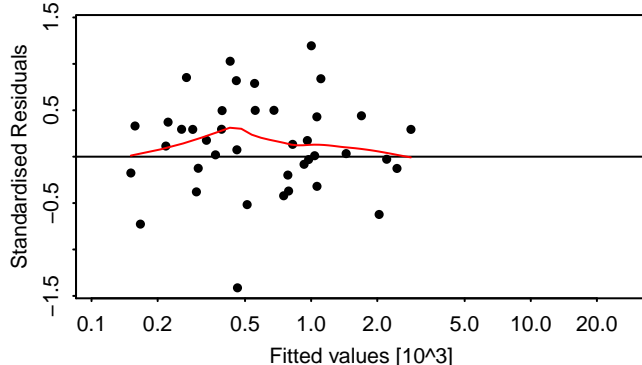
b) Observed vs fitted values



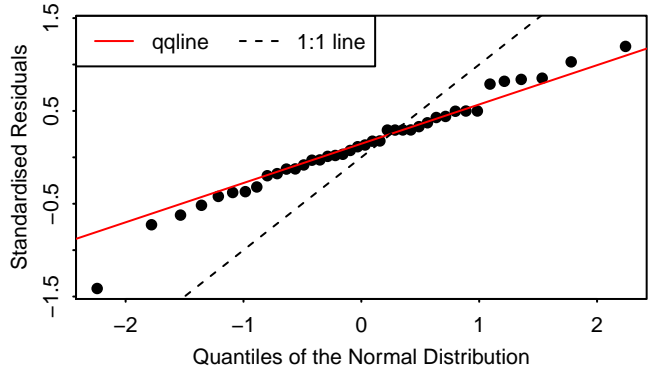
c) Standardised residuals over time



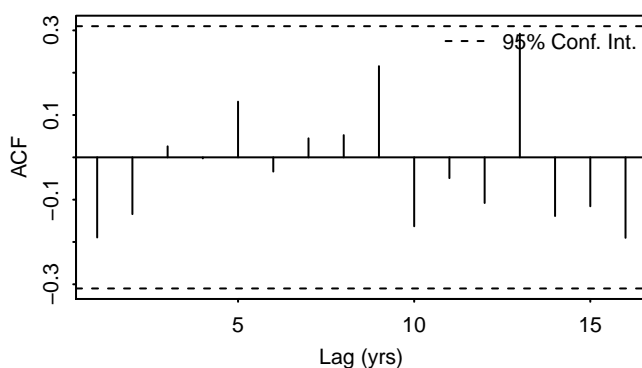
d) Tukey–Anscombe plot



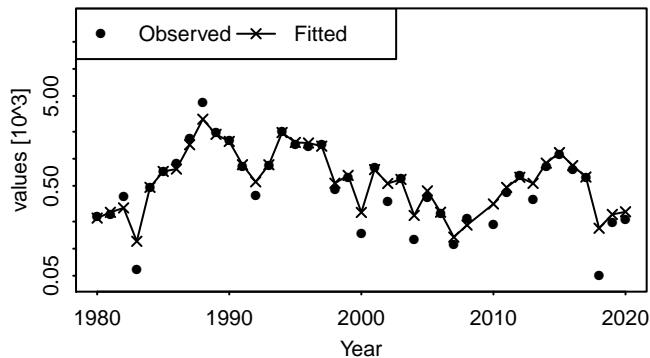
e) Normal Q–Q plot



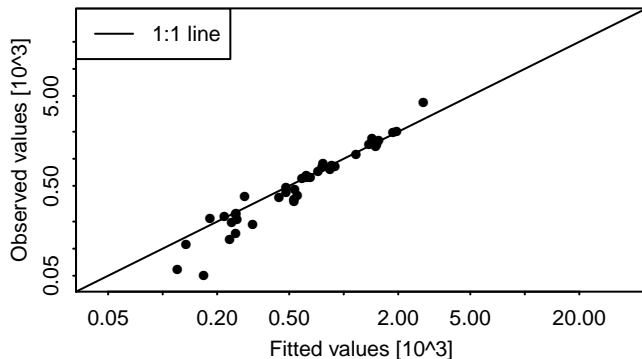
f) Autocorrelation of Residuals



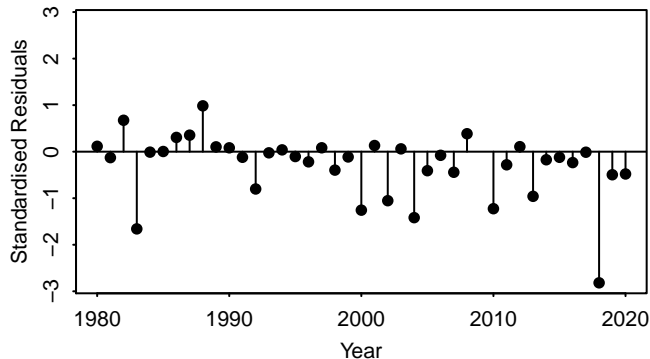
a) Observed and fitted values time series



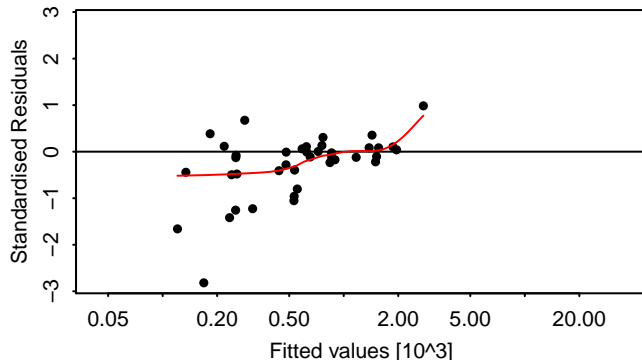
b) Observed vs fitted values



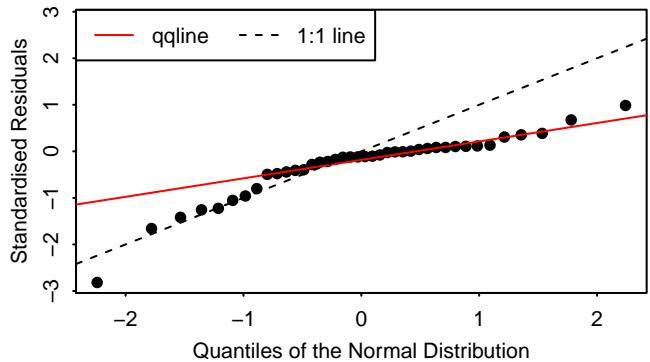
c) Standardised residuals over time



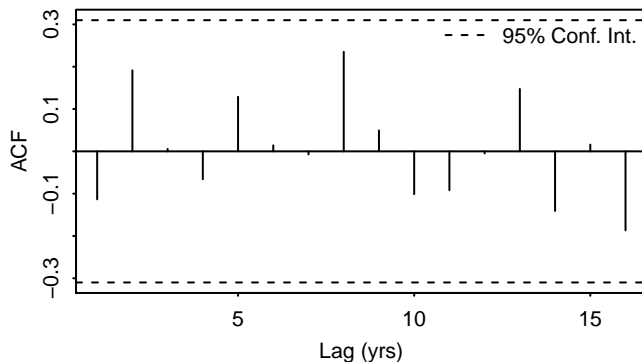
d) Tukey–Anscombe plot



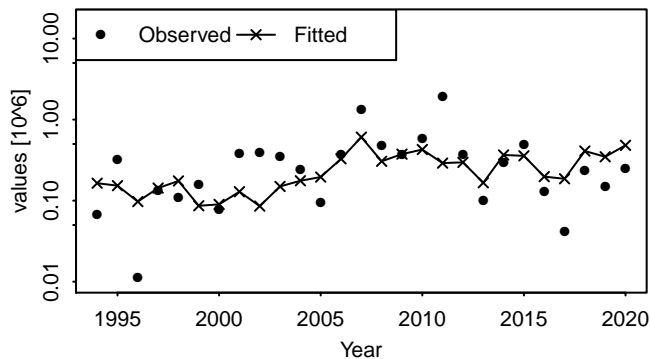
e) Normal Q–Q plot



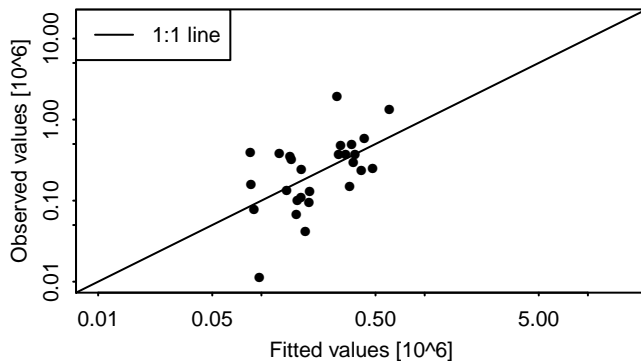
f) Autocorrelation of Residuals



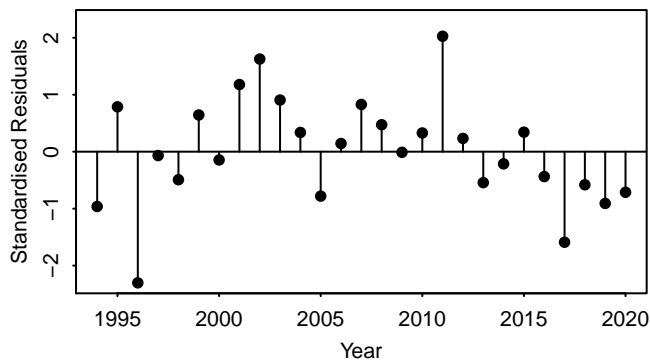
a) Observed and fitted values time series



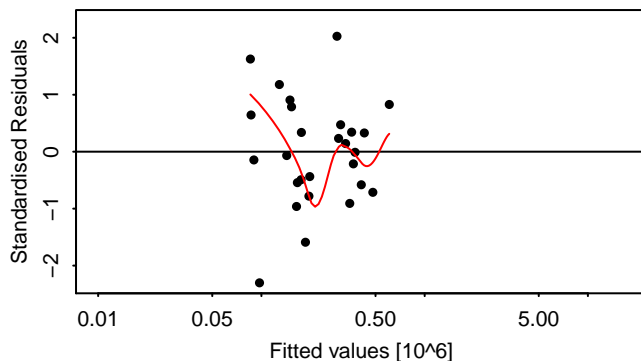
b) Observed vs fitted values



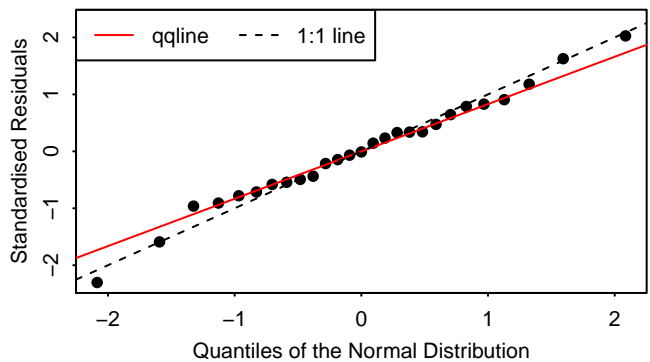
c) Standardised residuals over time



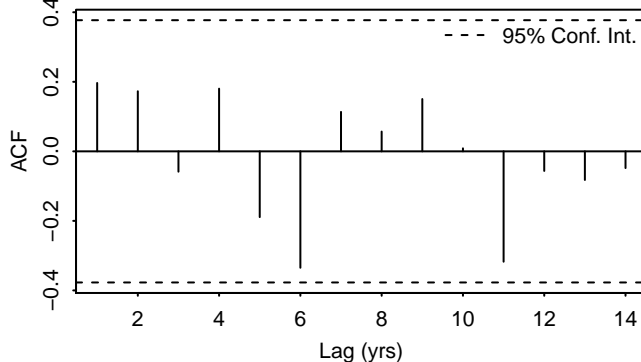
d) Tukey–Anscombe plot



e) Normal Q–Q plot

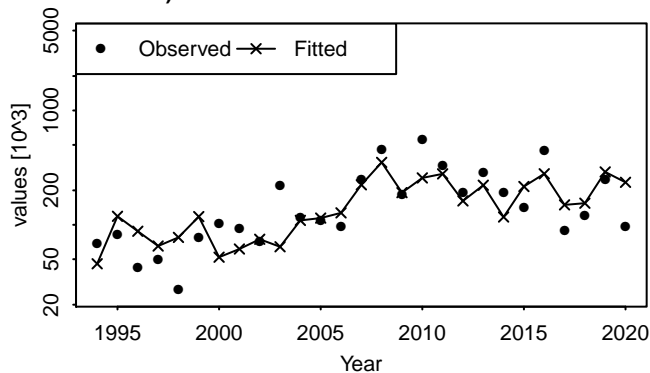


f) Autocorrelation of Residuals

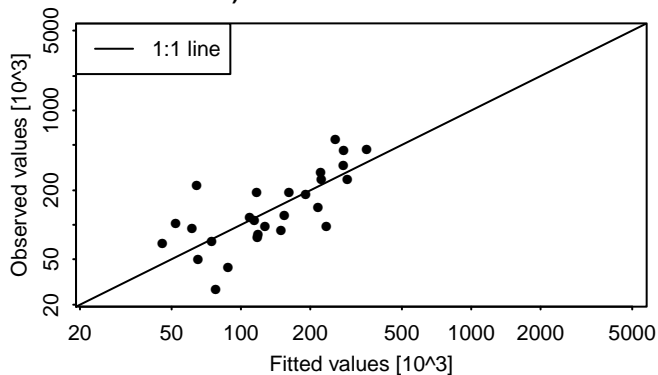


# ISH\_assessment 2021 Diagnostics – Fleet 2, age 2

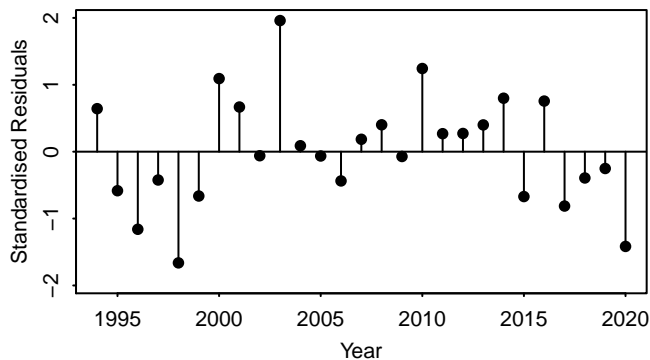
a) Observed and fitted values time series



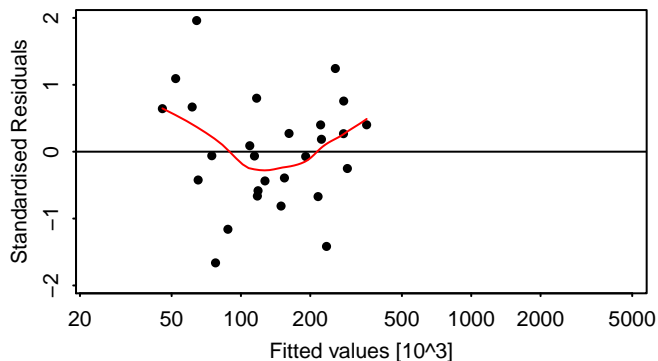
b) Observed vs fitted values



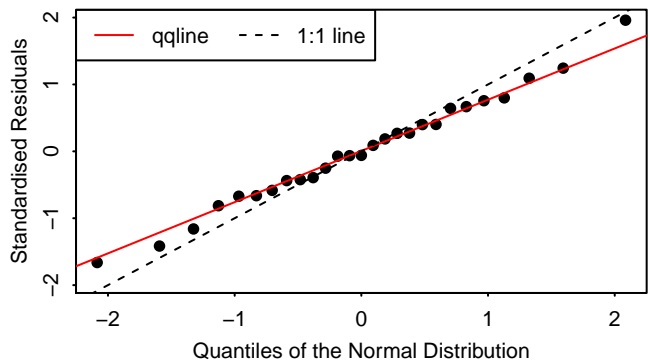
c) Standardised residuals over time



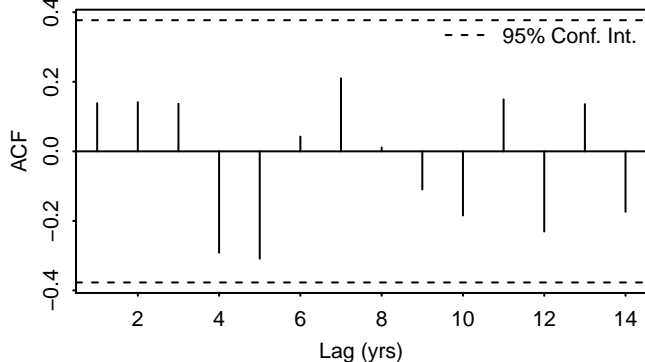
d) Tukey–Anscombe plot



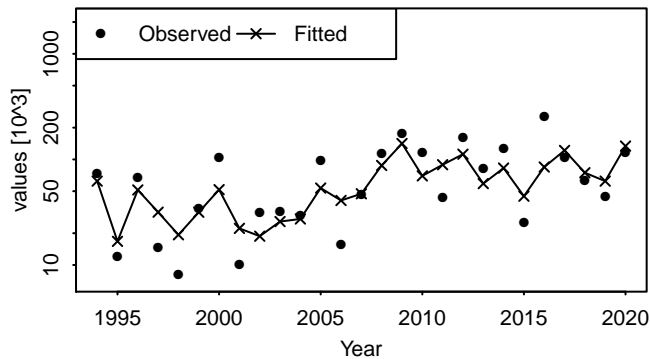
e) Normal Q–Q plot



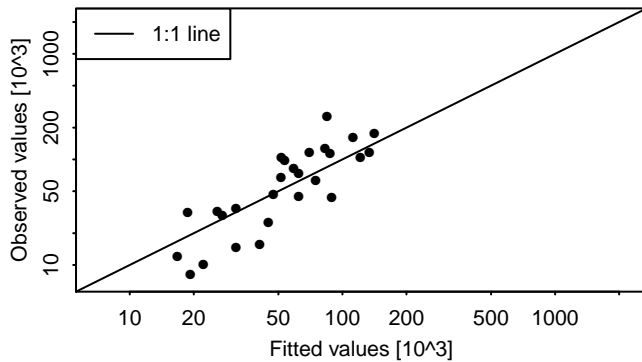
f) Autocorrelation of Residuals



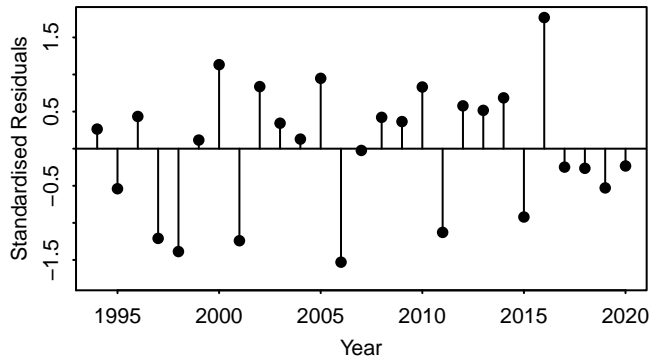
a) Observed and fitted values time series



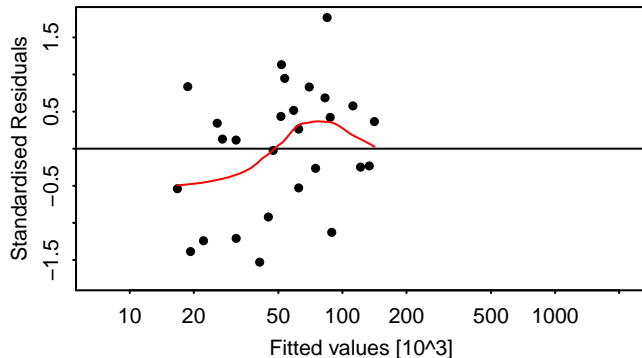
b) Observed vs fitted values



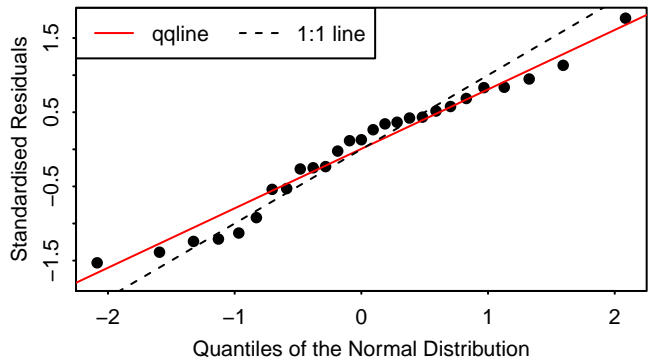
c) Standardised residuals over time



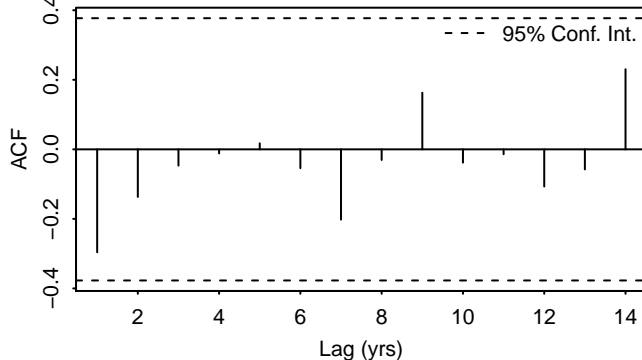
d) Tukey–Anscombe plot



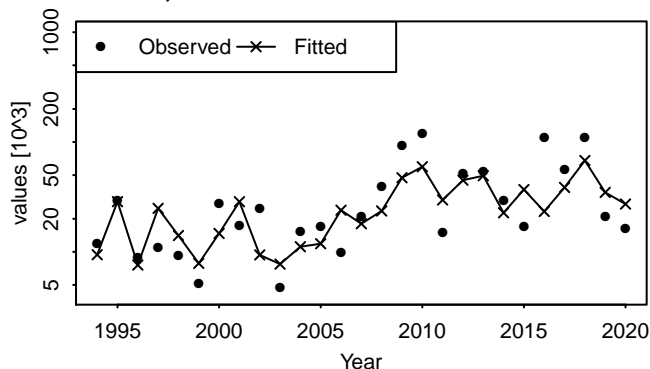
e) Normal Q–Q plot



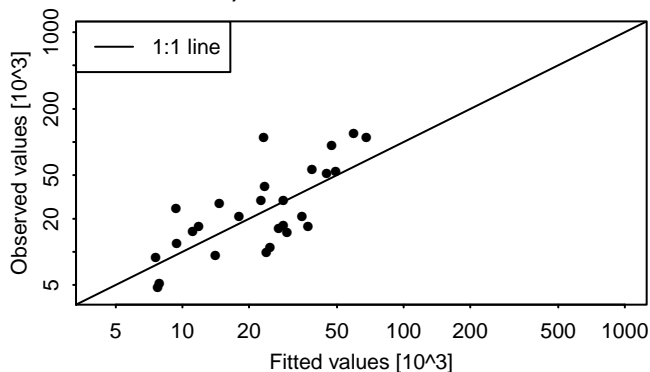
f) Autocorrelation of Residuals



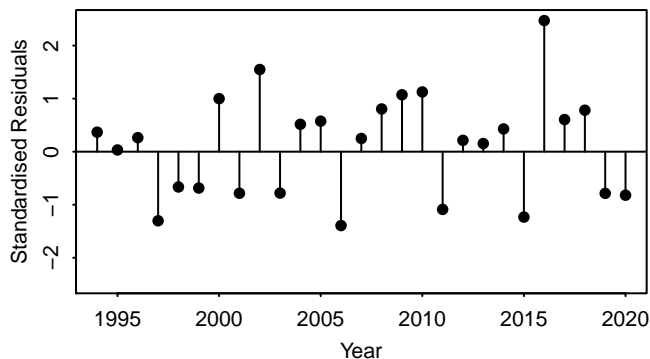
a) Observed and fitted values time series



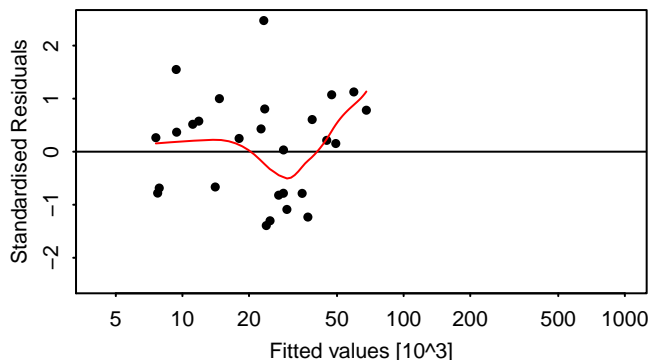
b) Observed vs fitted values



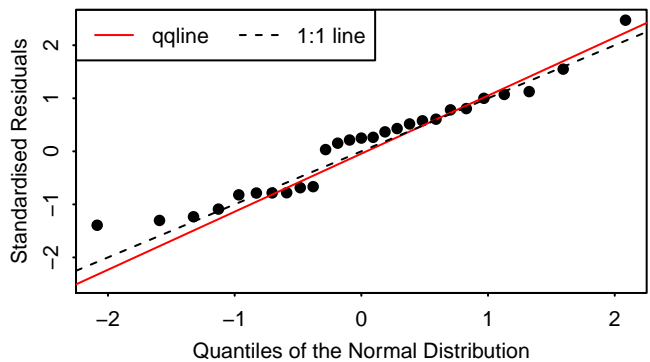
c) Standardised residuals over time



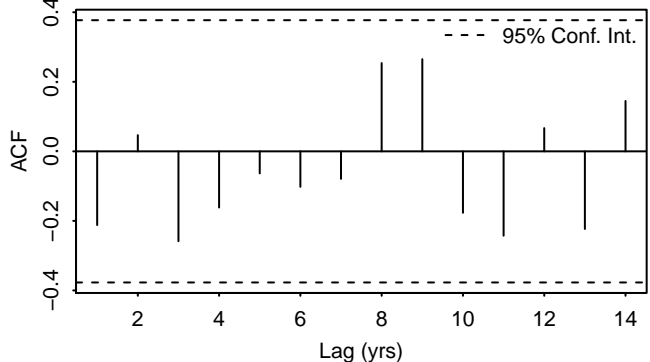
d) Tukey–Anscombe plot



e) Normal Q–Q plot

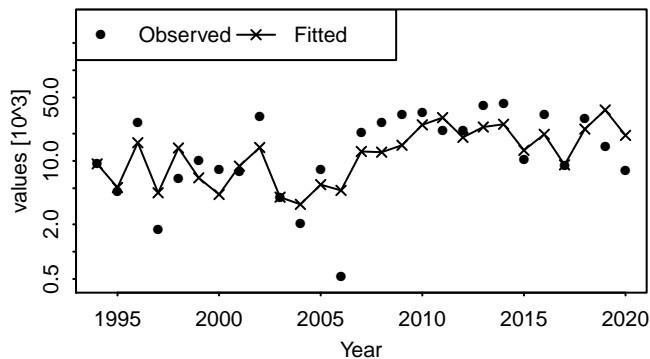


f) Autocorrelation of Residuals

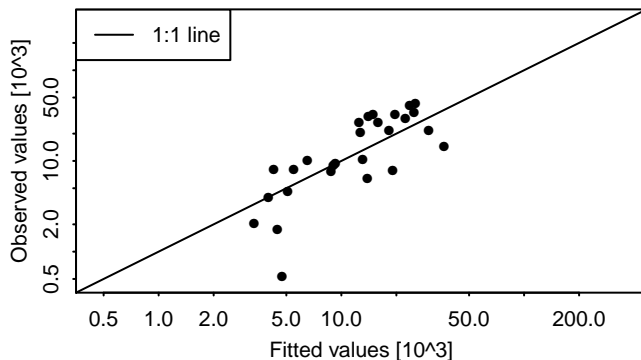




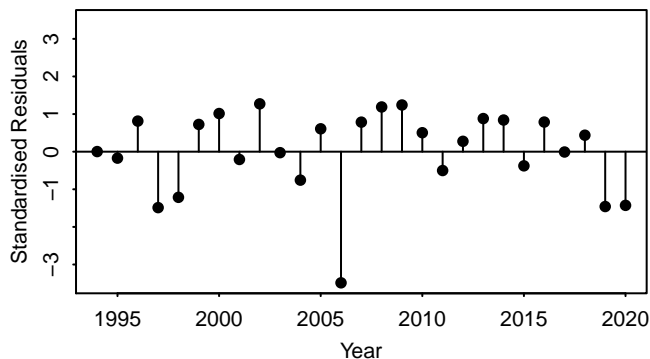
a) Observed and fitted values time series



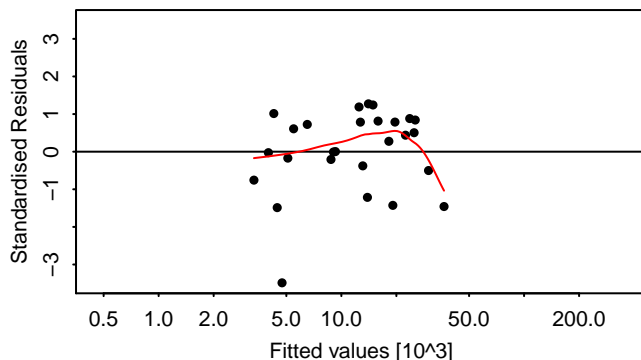
b) Observed vs fitted values



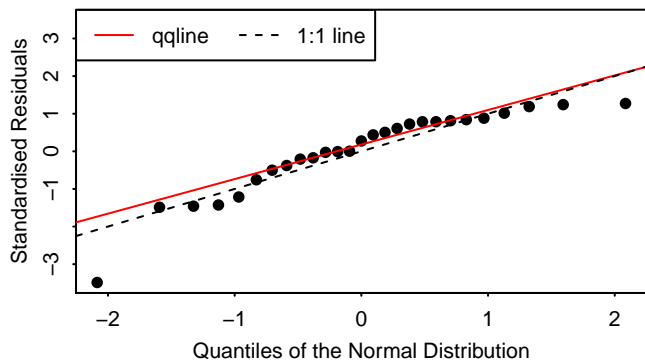
c) Standardised residuals over time



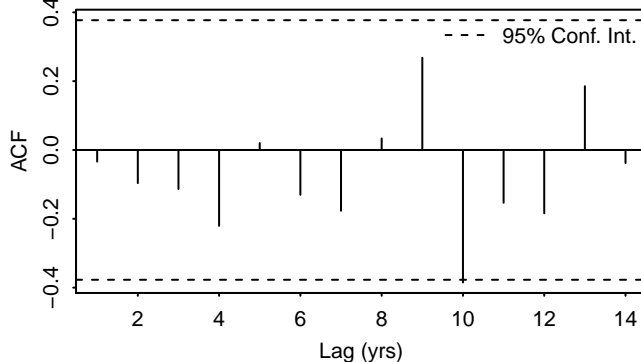
d) Tukey–Anscombe plot



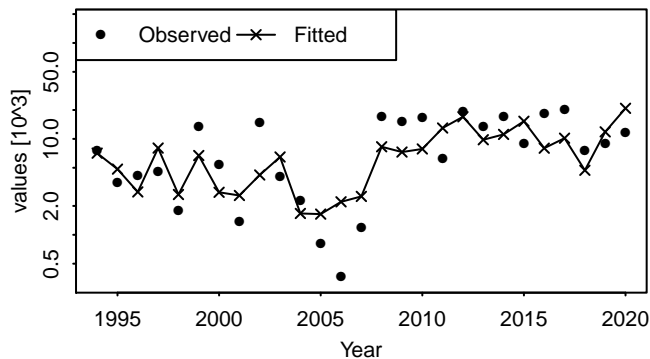
e) Normal Q–Q plot



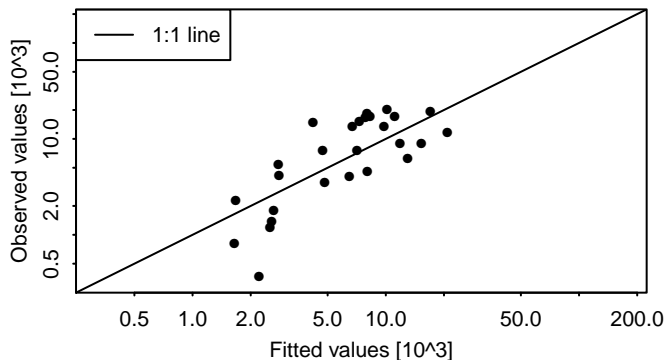
f) Autocorrelation of Residuals



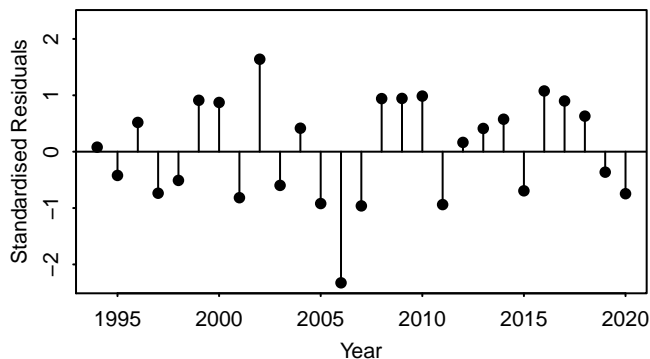
a) Observed and fitted values time series



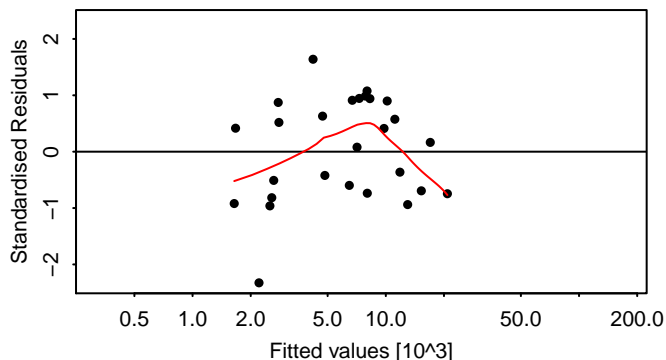
b) Observed vs fitted values



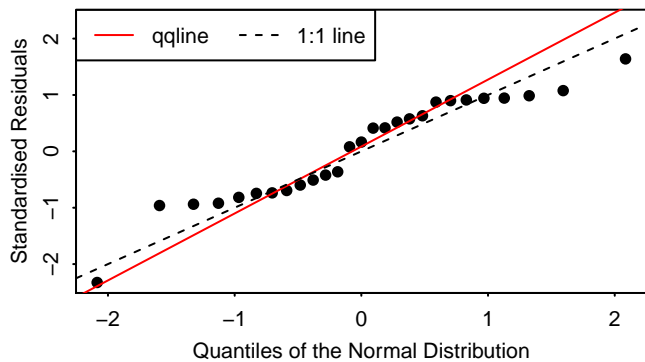
c) Standardised residuals over time



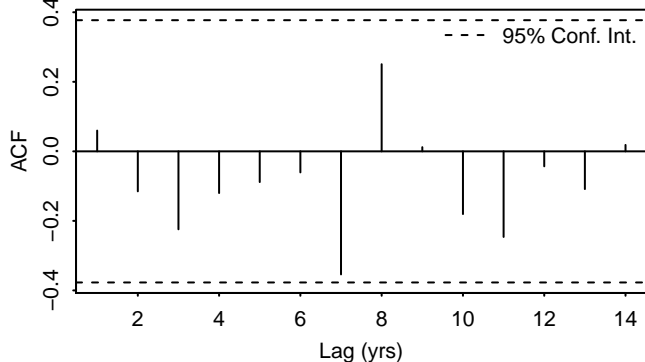
d) Tukey–Anscombe plot



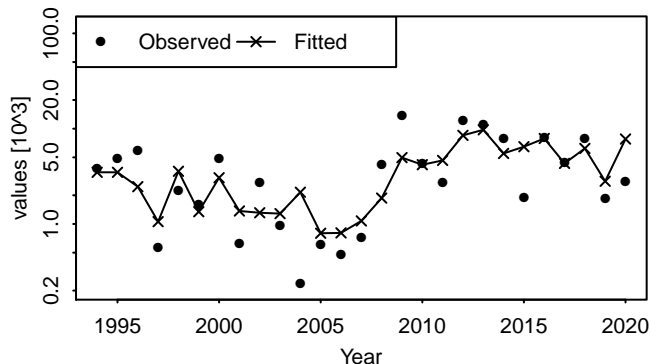
e) Normal Q–Q plot



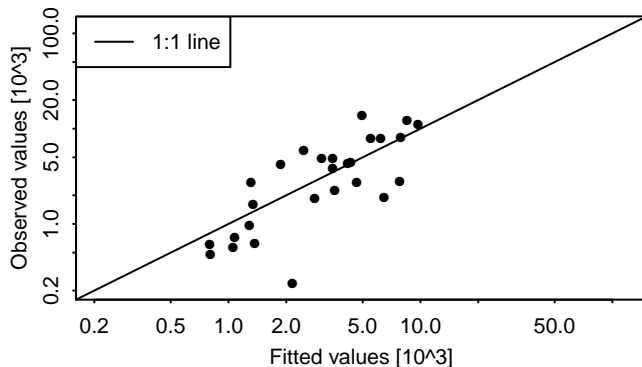
f) Autocorrelation of Residuals



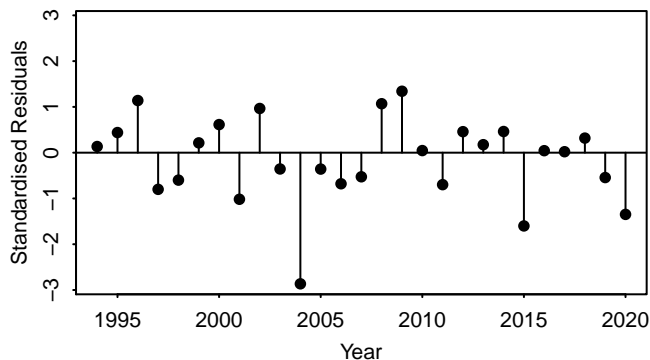
a) Observed and fitted values time series



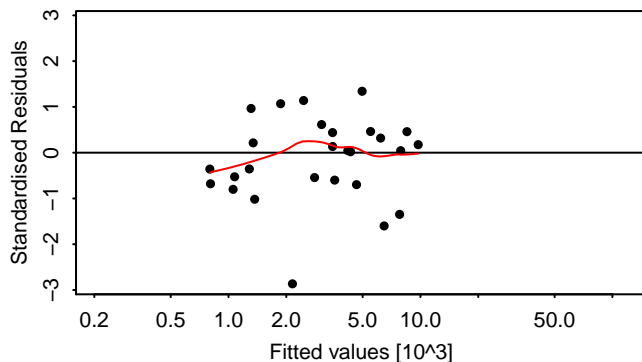
b) Observed vs fitted values



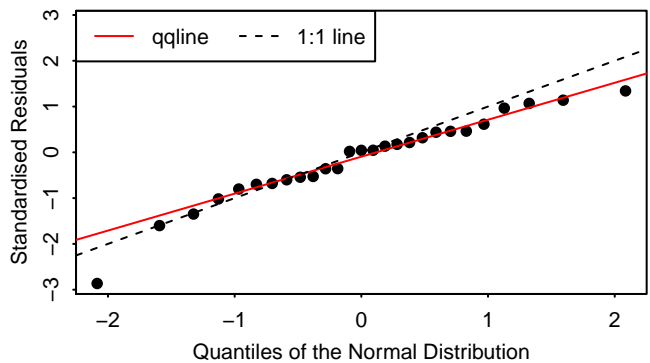
c) Standardised residuals over time



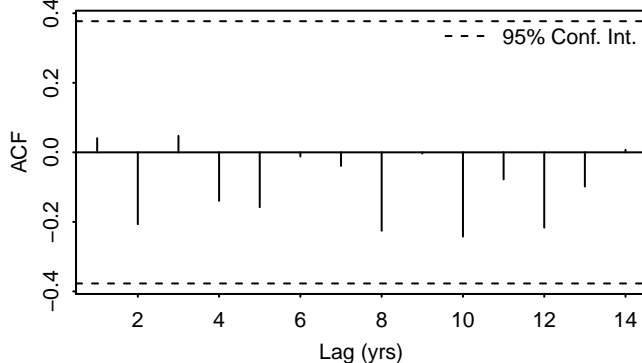
d) Tukey–Anscombe plot



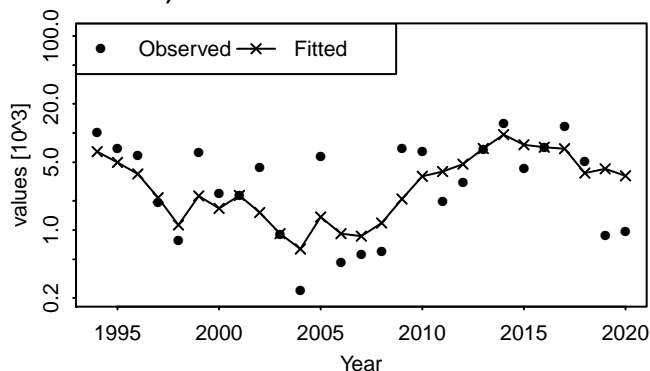
e) Normal Q–Q plot



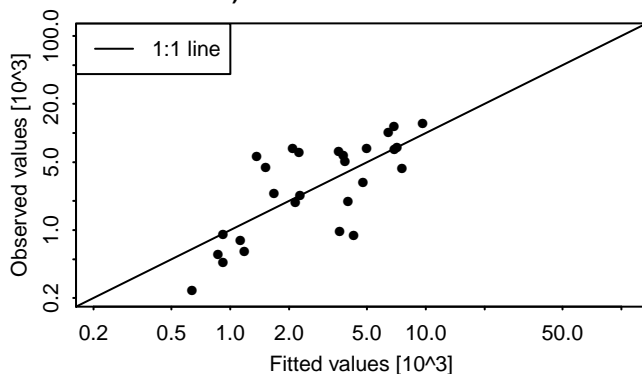
f) Autocorrelation of Residuals



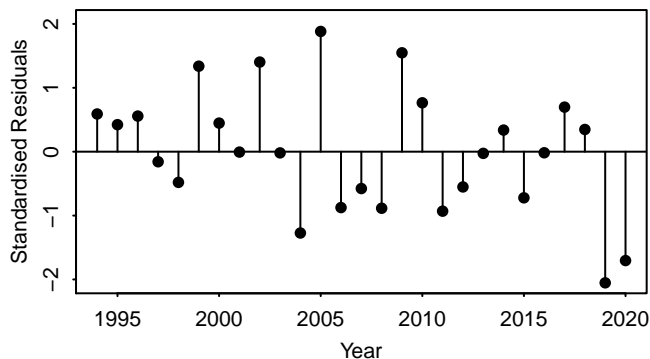
a) Observed and fitted values time series



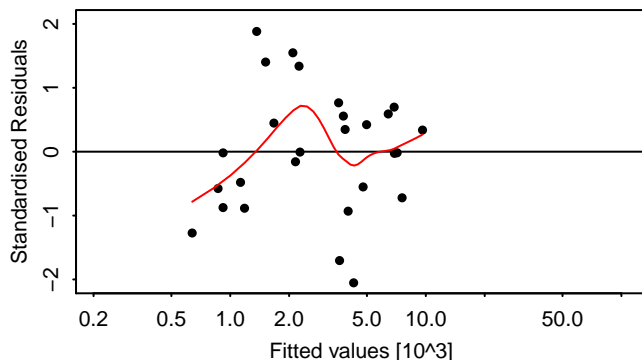
b) Observed vs fitted values



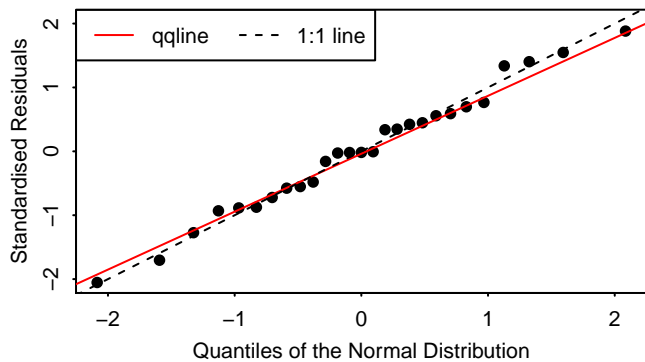
c) Standardised residuals over time



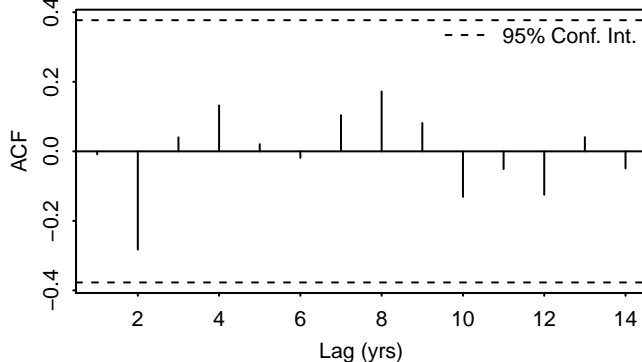
d) Tukey–Anscombe plot



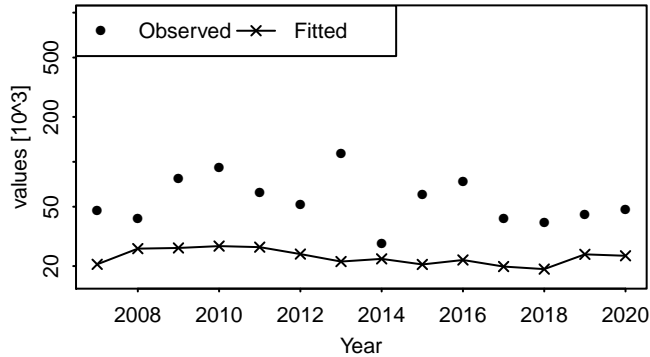
e) Normal Q–Q plot



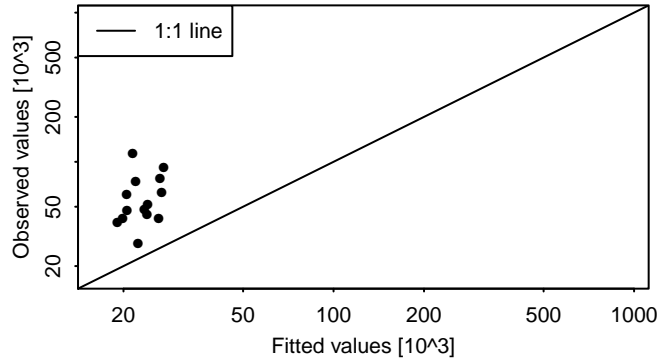
f) Autocorrelation of Residuals



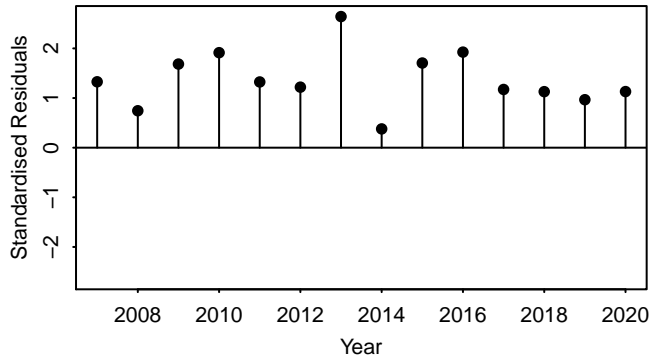
a) Observed and fitted values time series



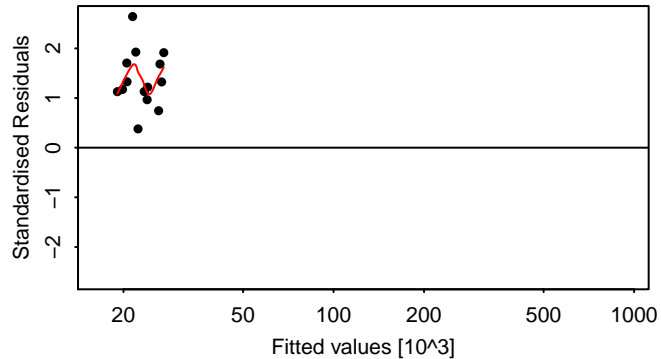
b) Observed vs fitted values



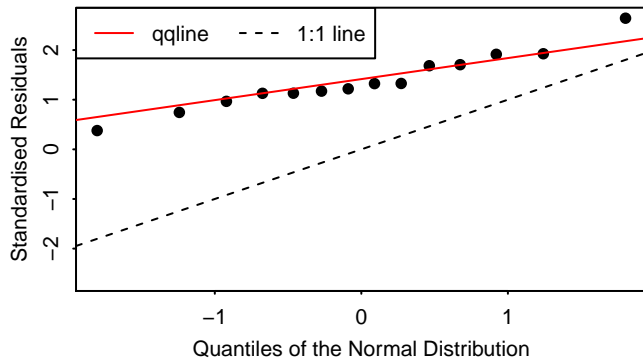
c) Standardised residuals over time



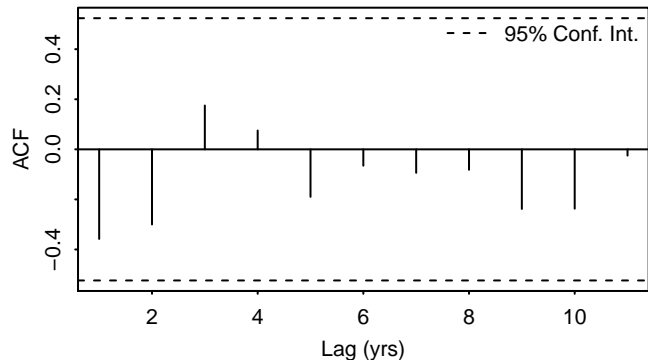
d) Tukey–Anscombe plot



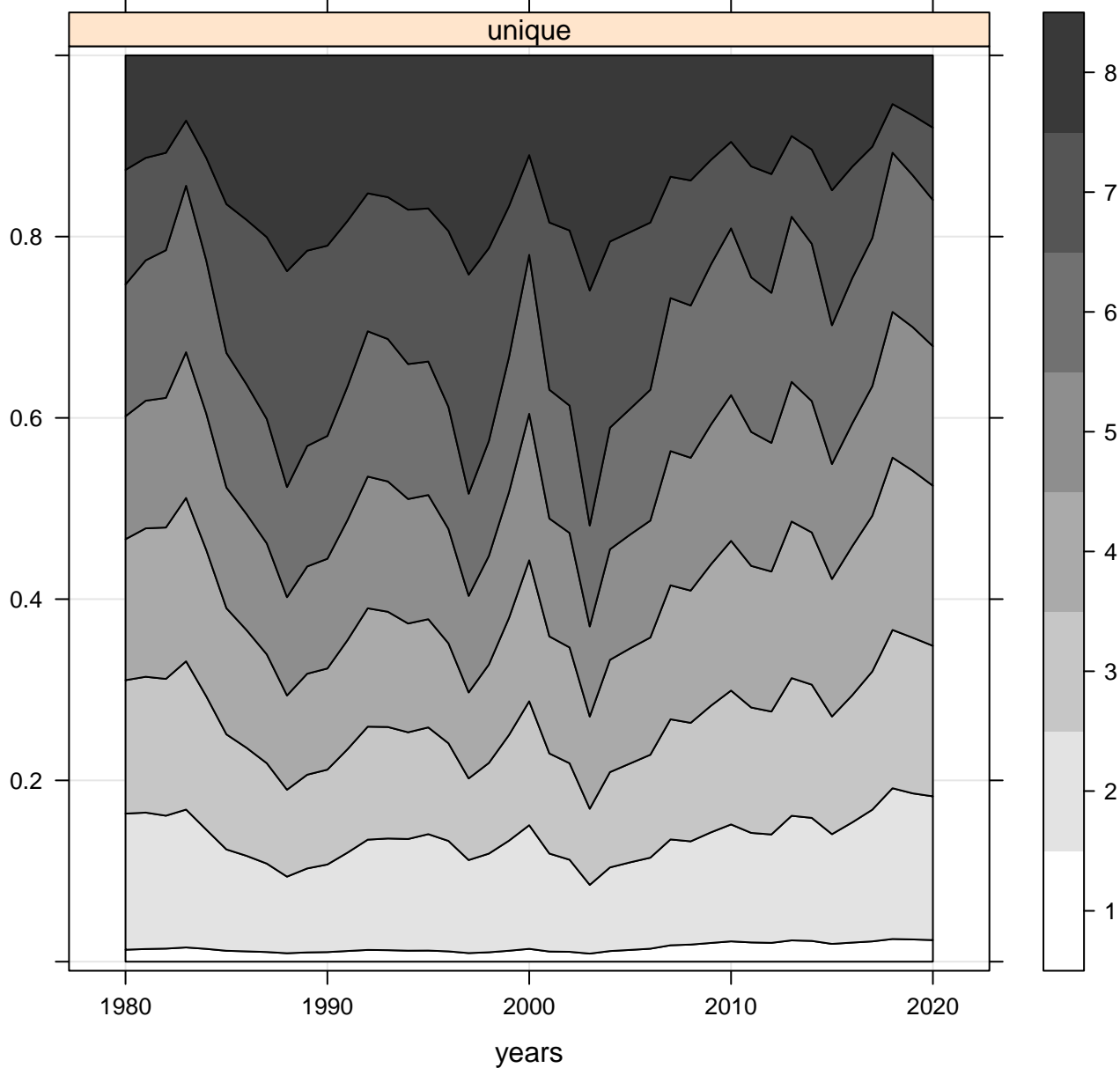
e) Normal Q–Q plot



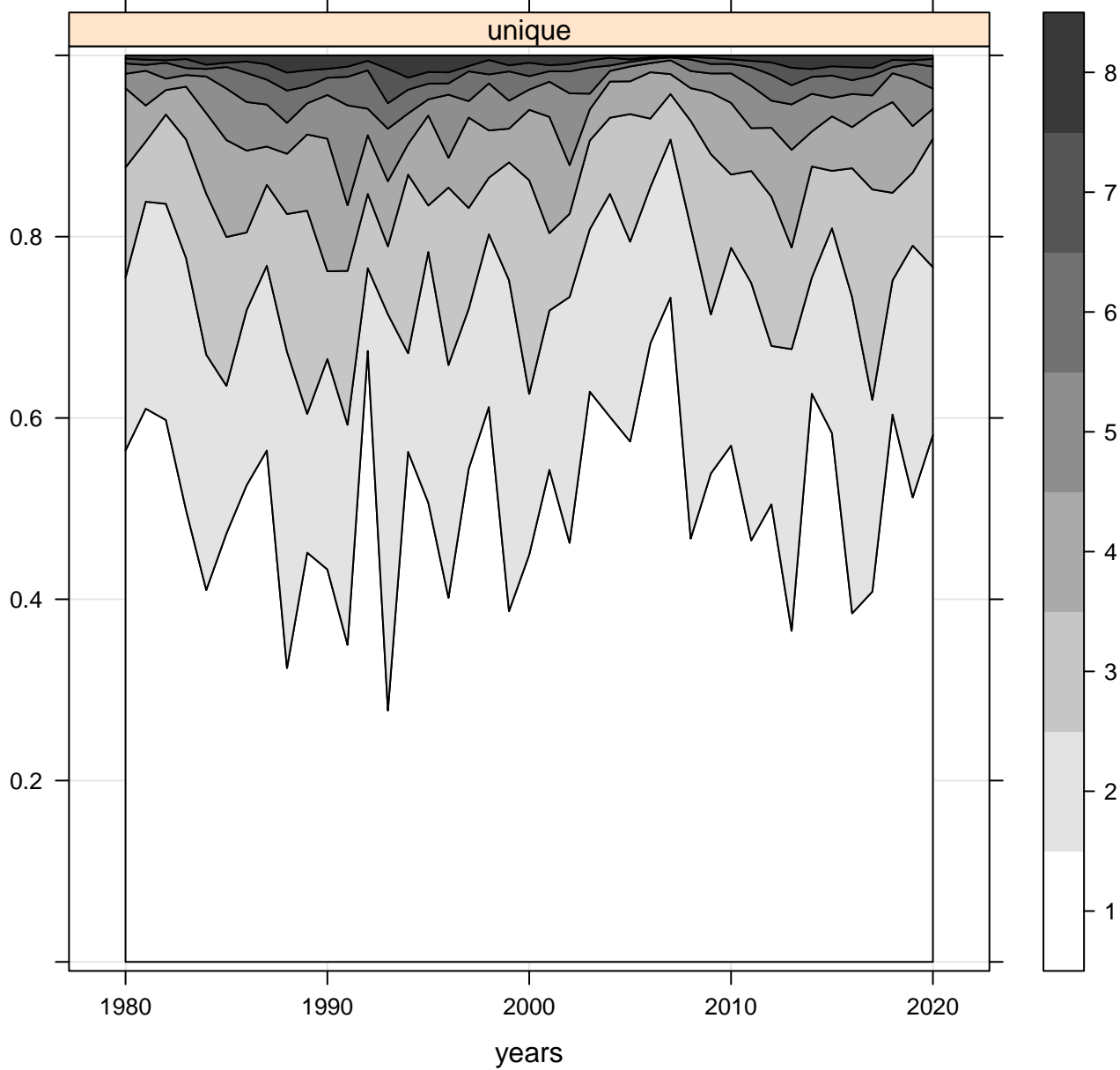
f) Autocorrelation of Residuals



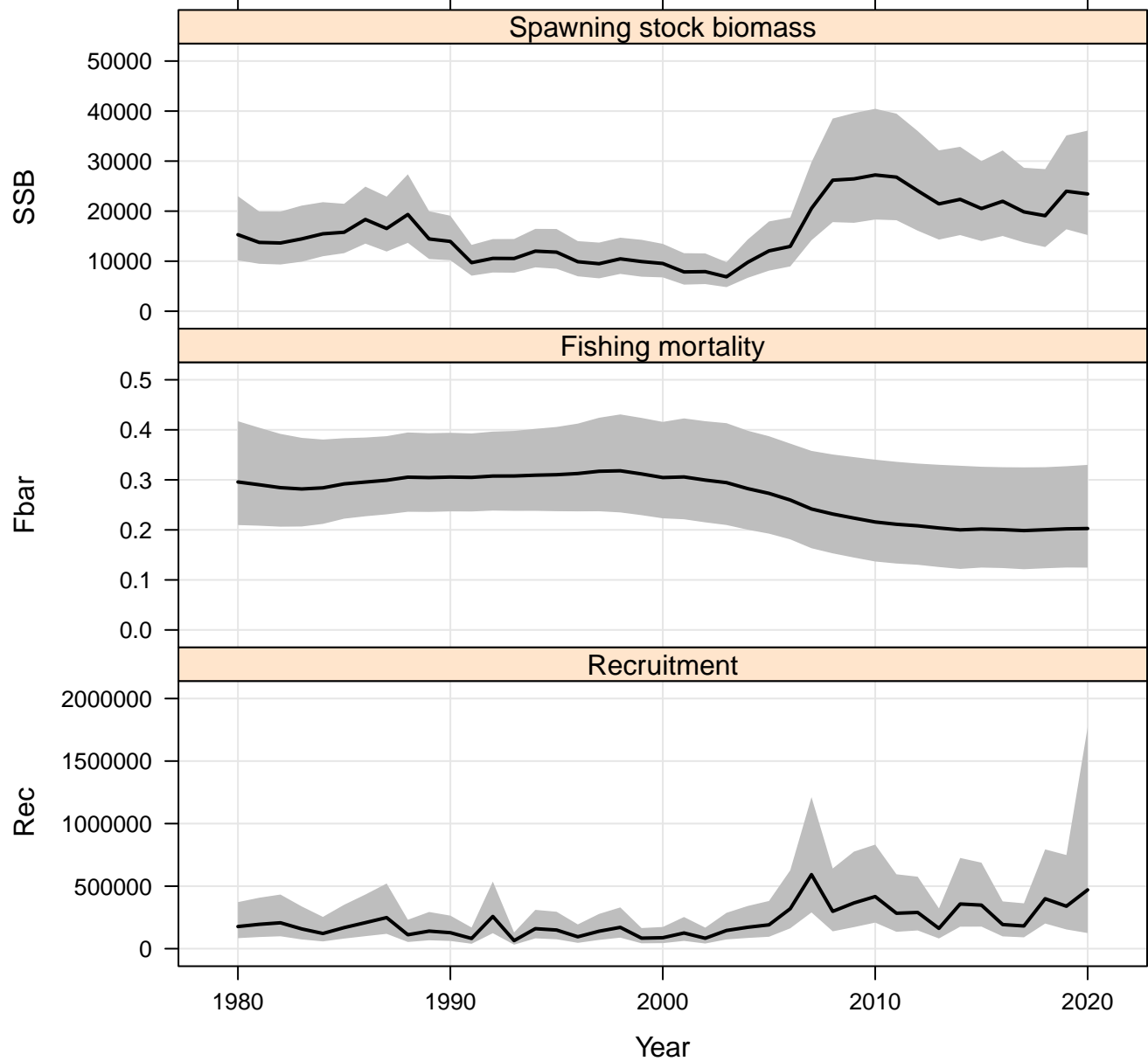
# Proportion of harvest pressure at age



# Proportion of Stock numbers at age

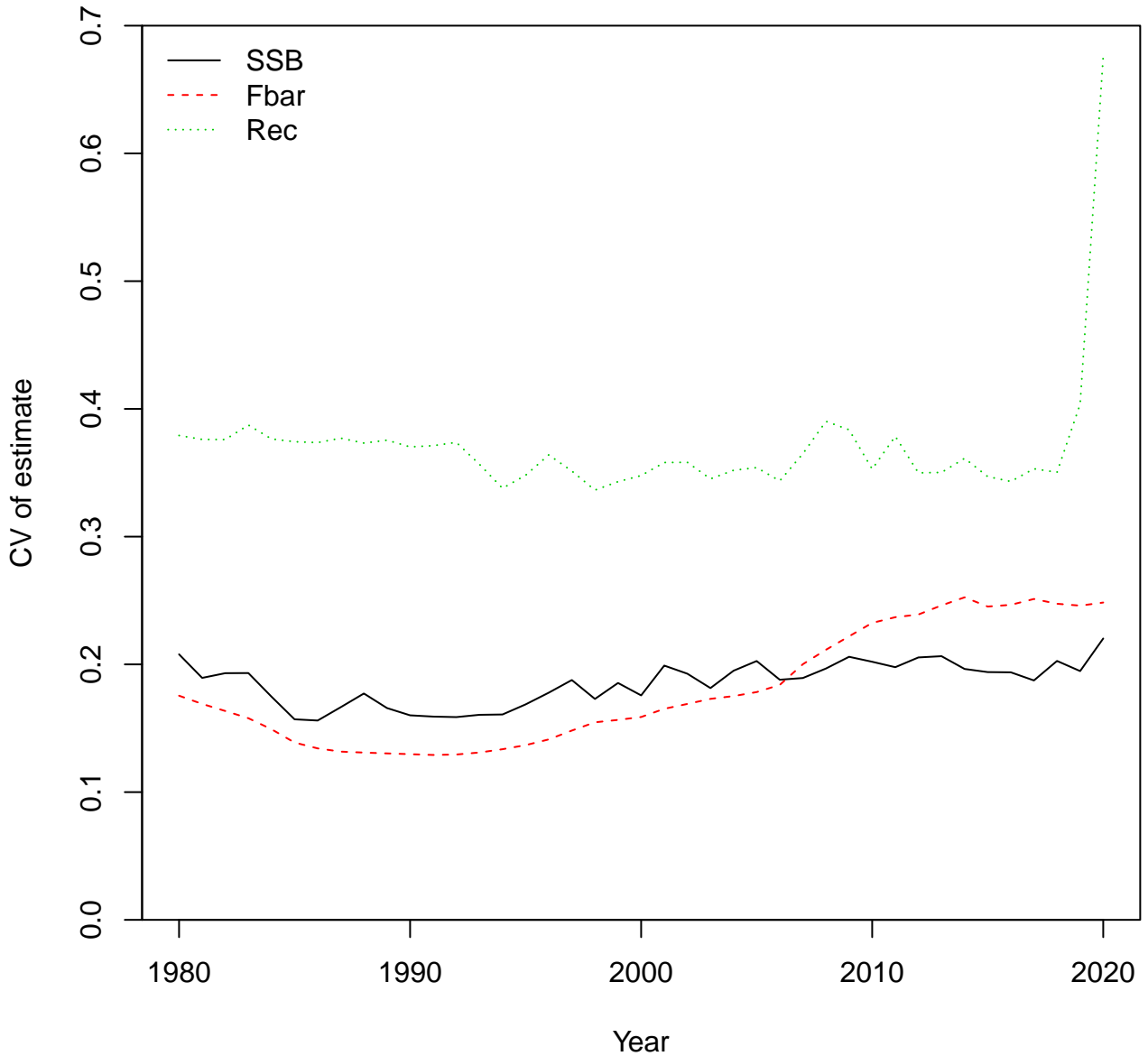


# ISH\_assessment 2021

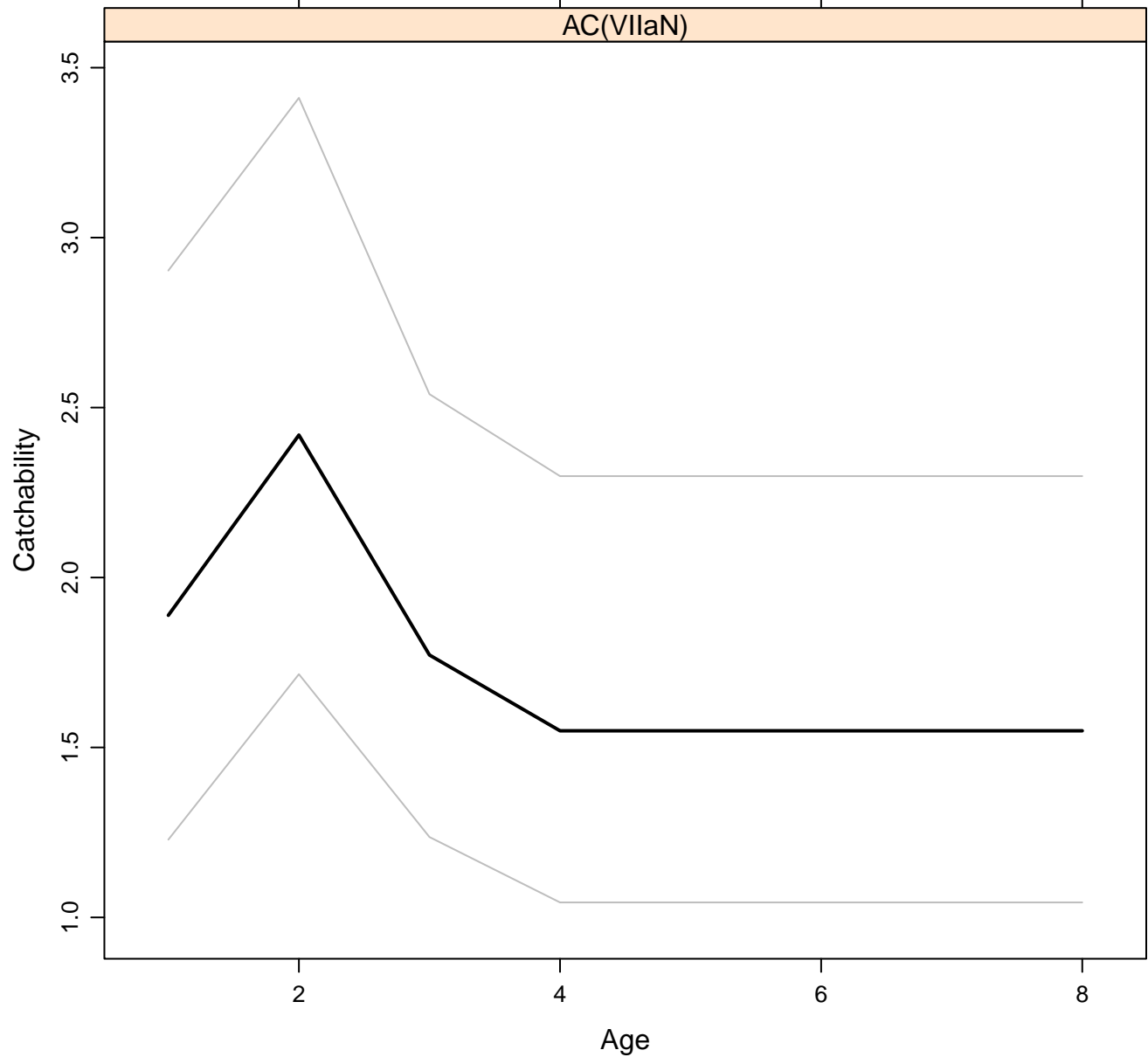




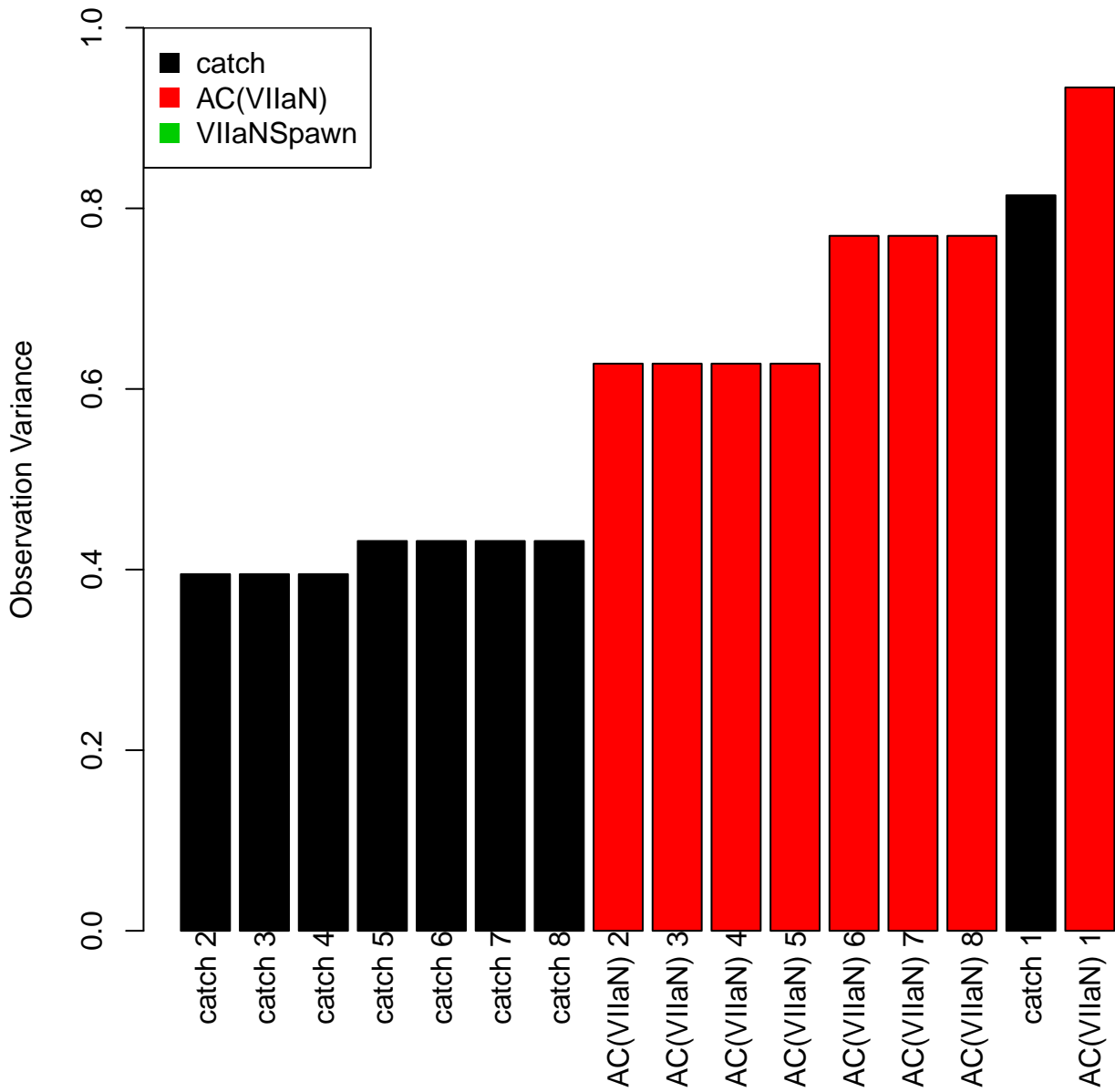
## Uncertainties of key parameters



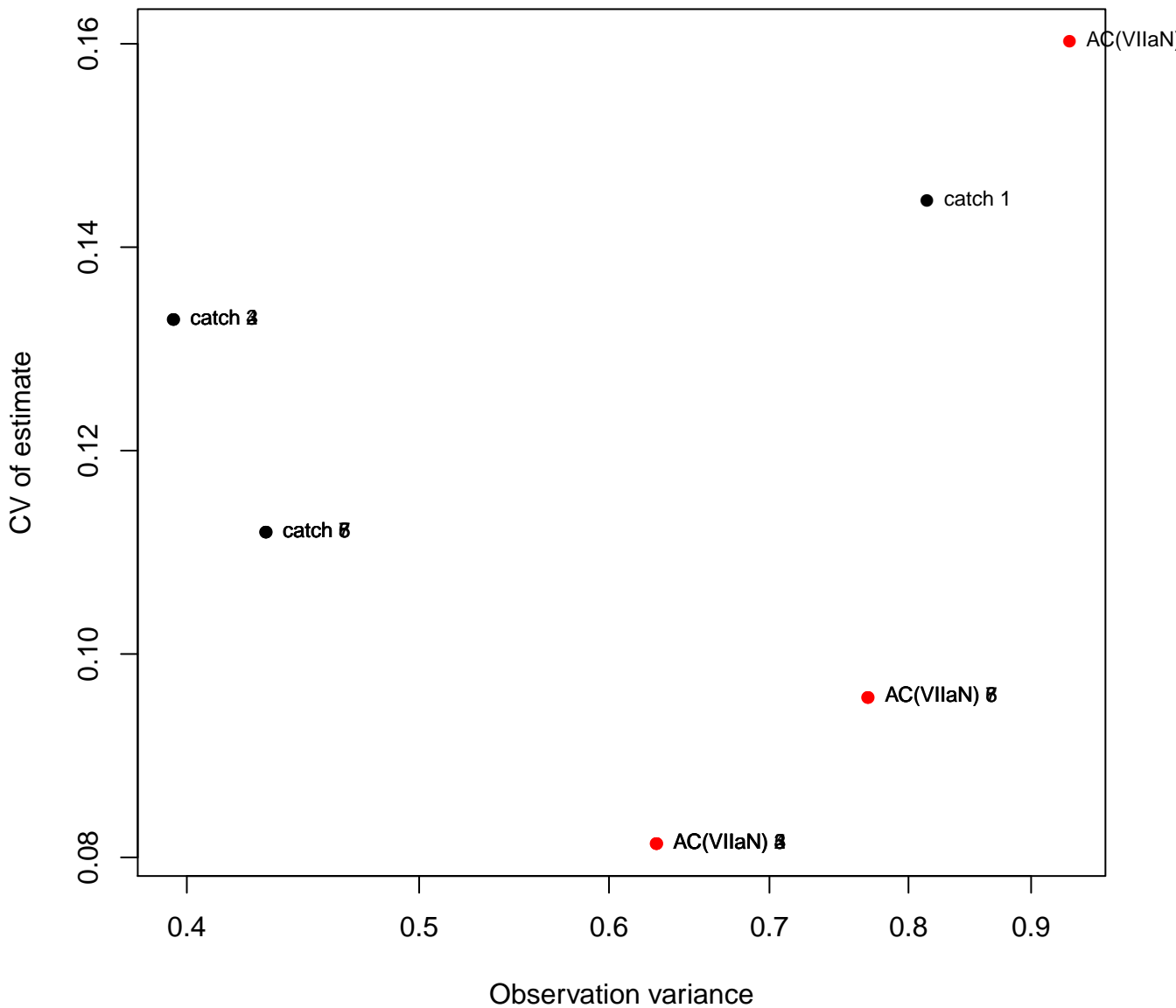
# Survey catchability parameters



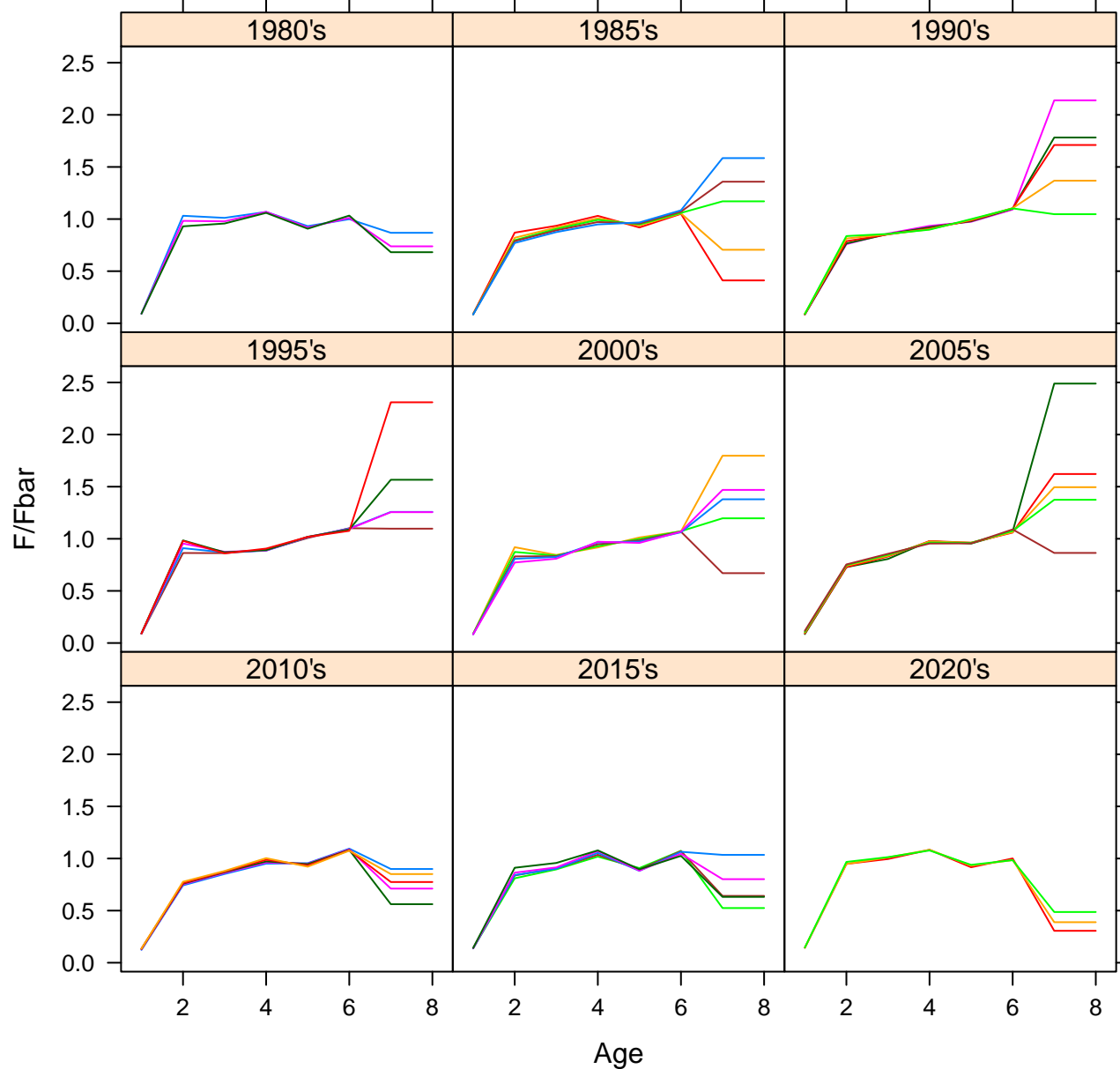
Observation variances by data source



## Observation variance vs uncertainty



# Selectivity of the Fishery by Pentad



# ISH\_assessment 2021

