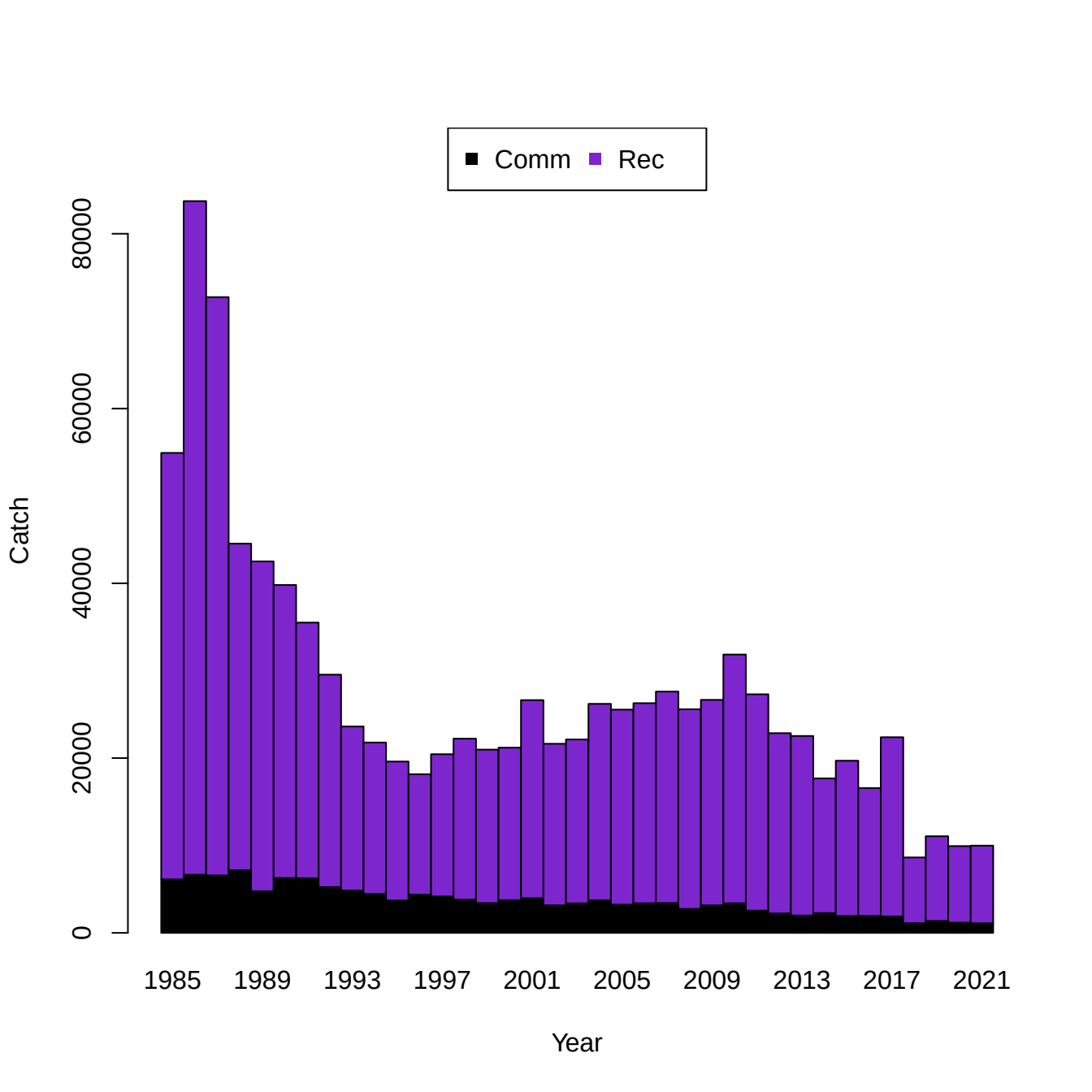
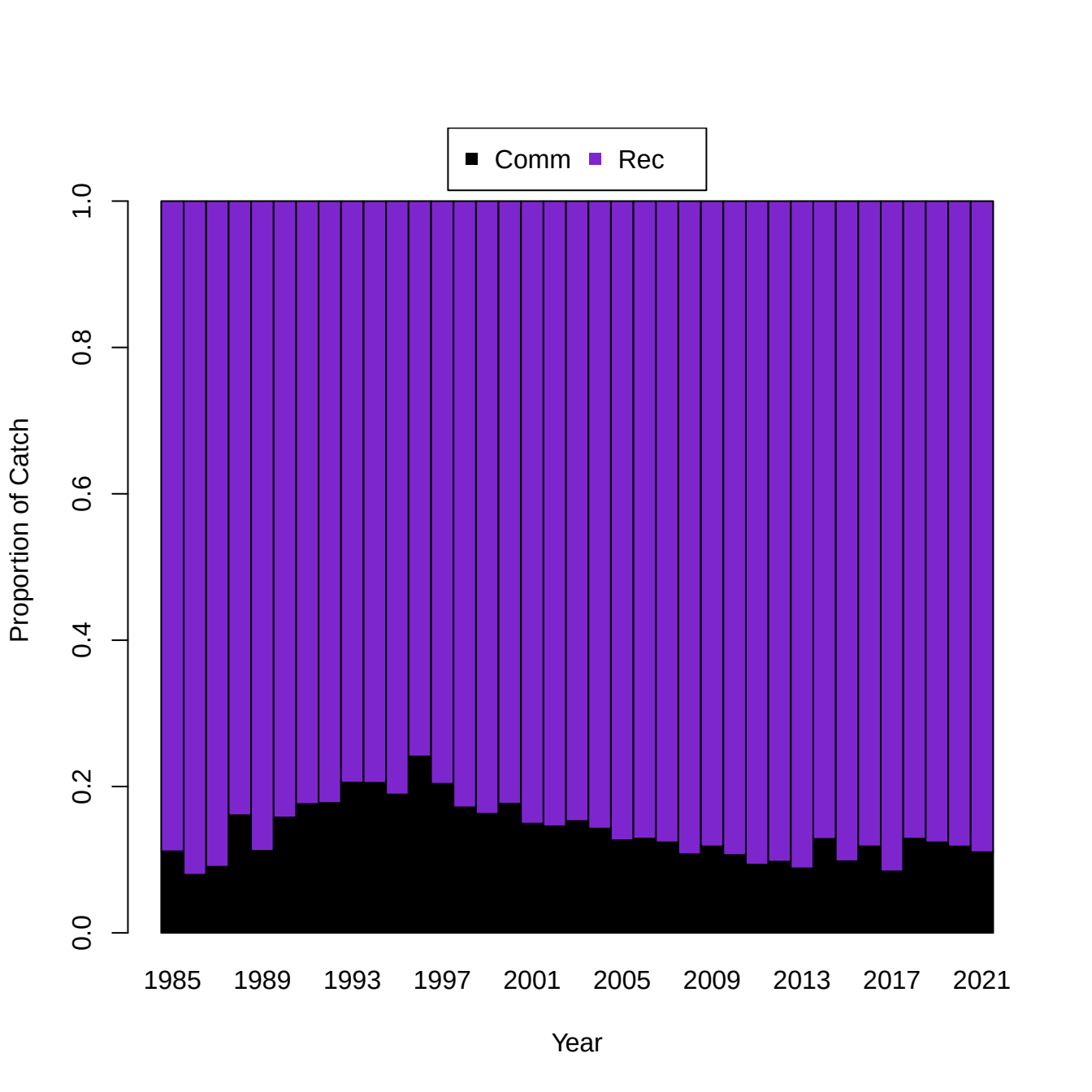
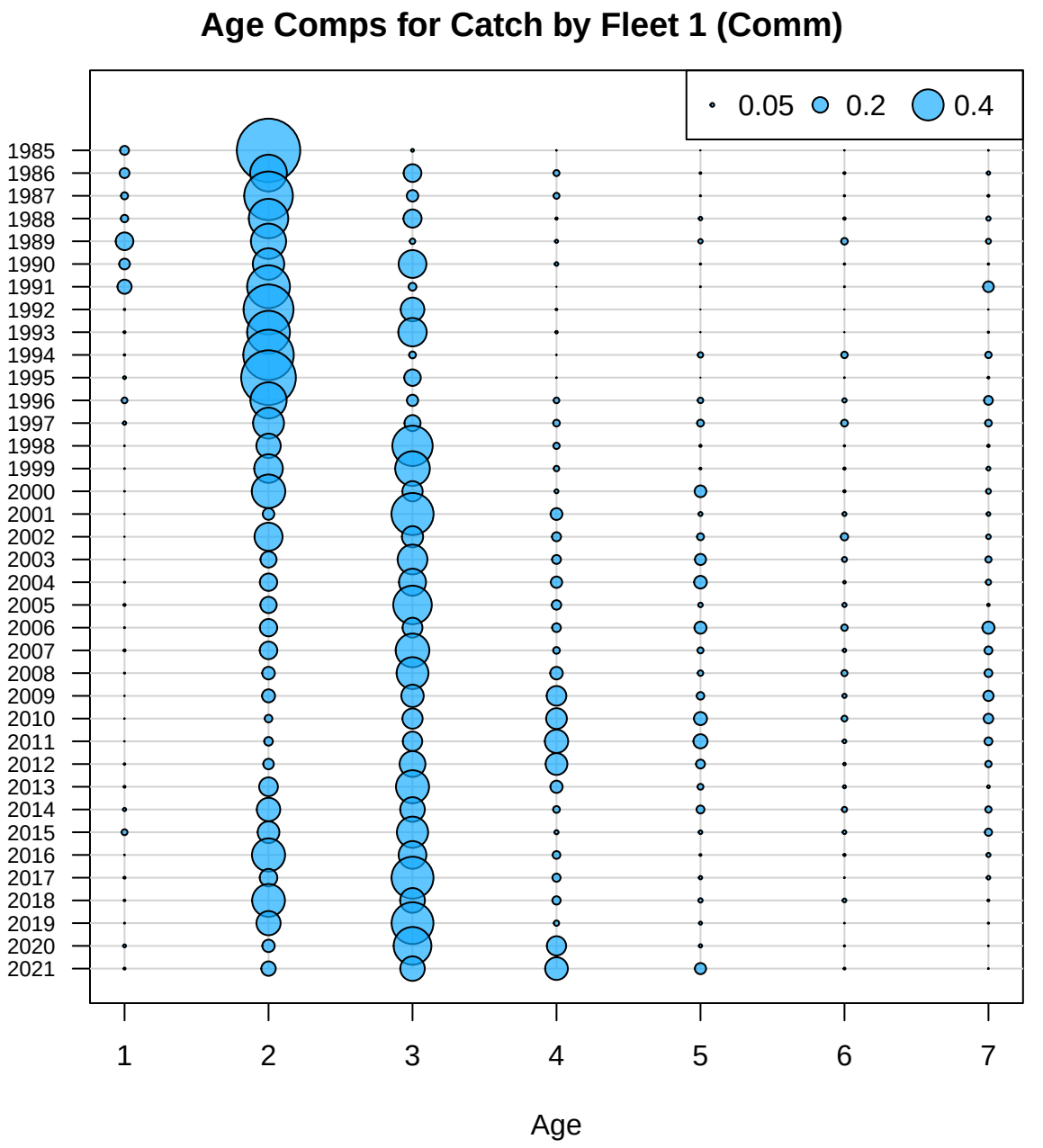
BF07

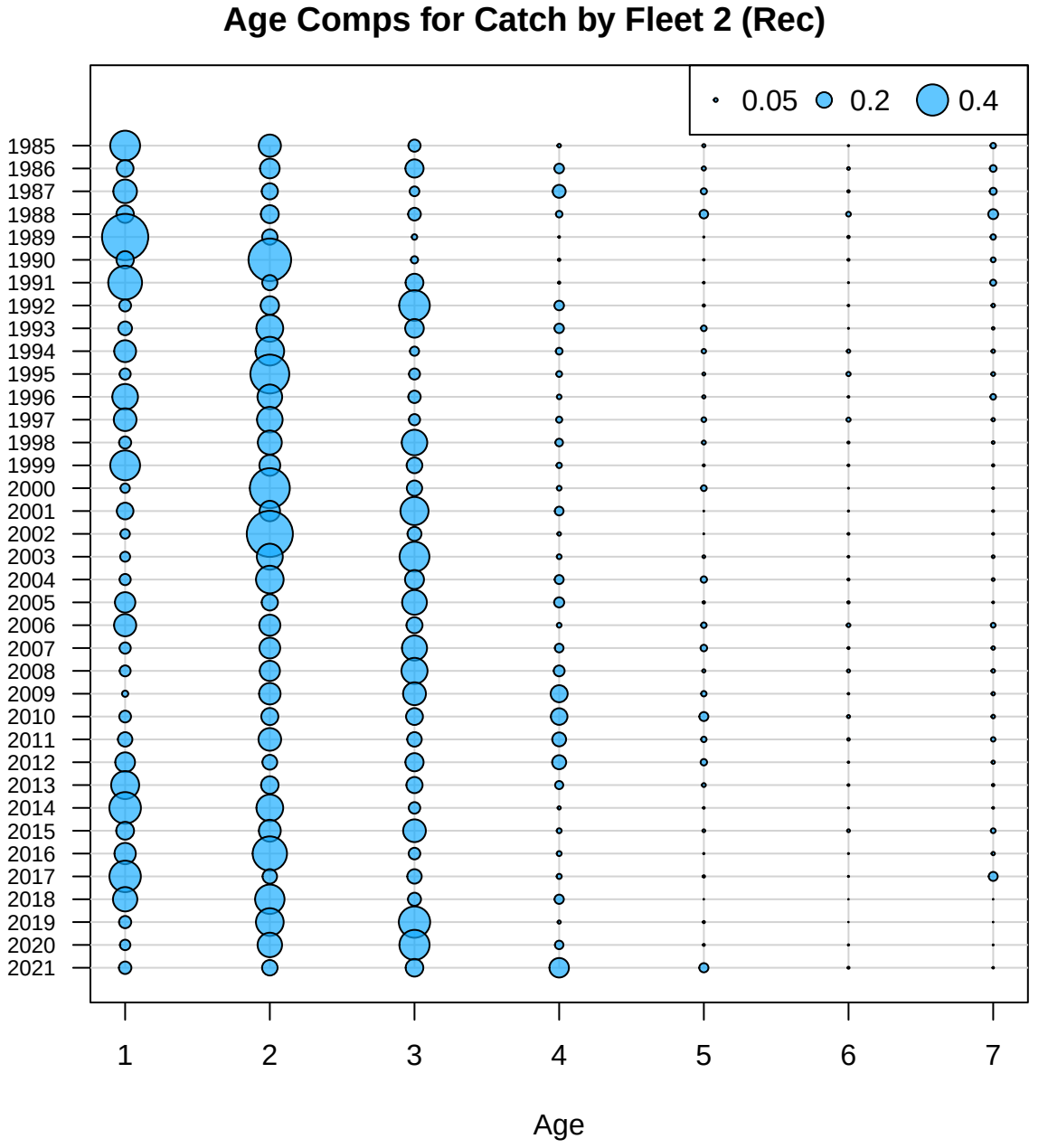
Update all fishery data, new L-W parameters, new recreational discard mortality, add commercial discards

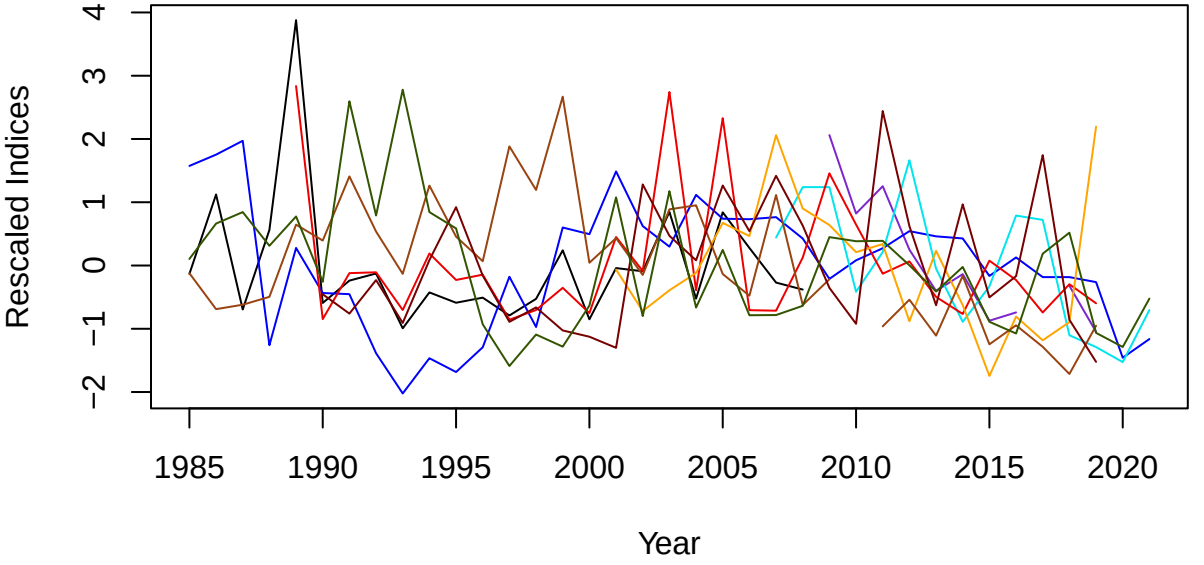
DATA PLOTS

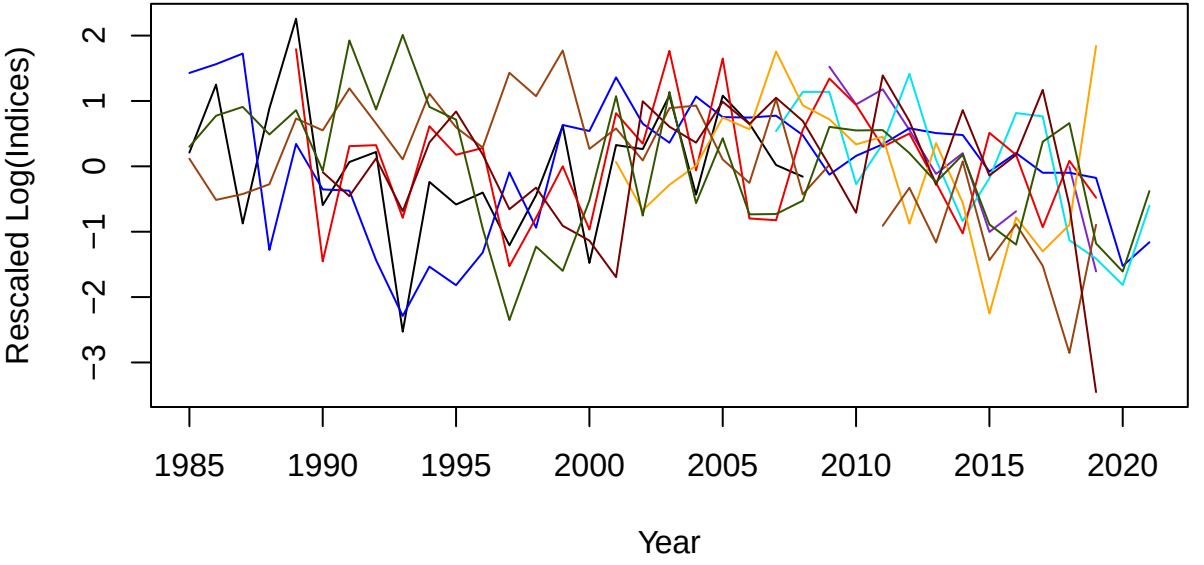

Comm
Rec
Catch
0
20000
40000
60000
80000
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Year

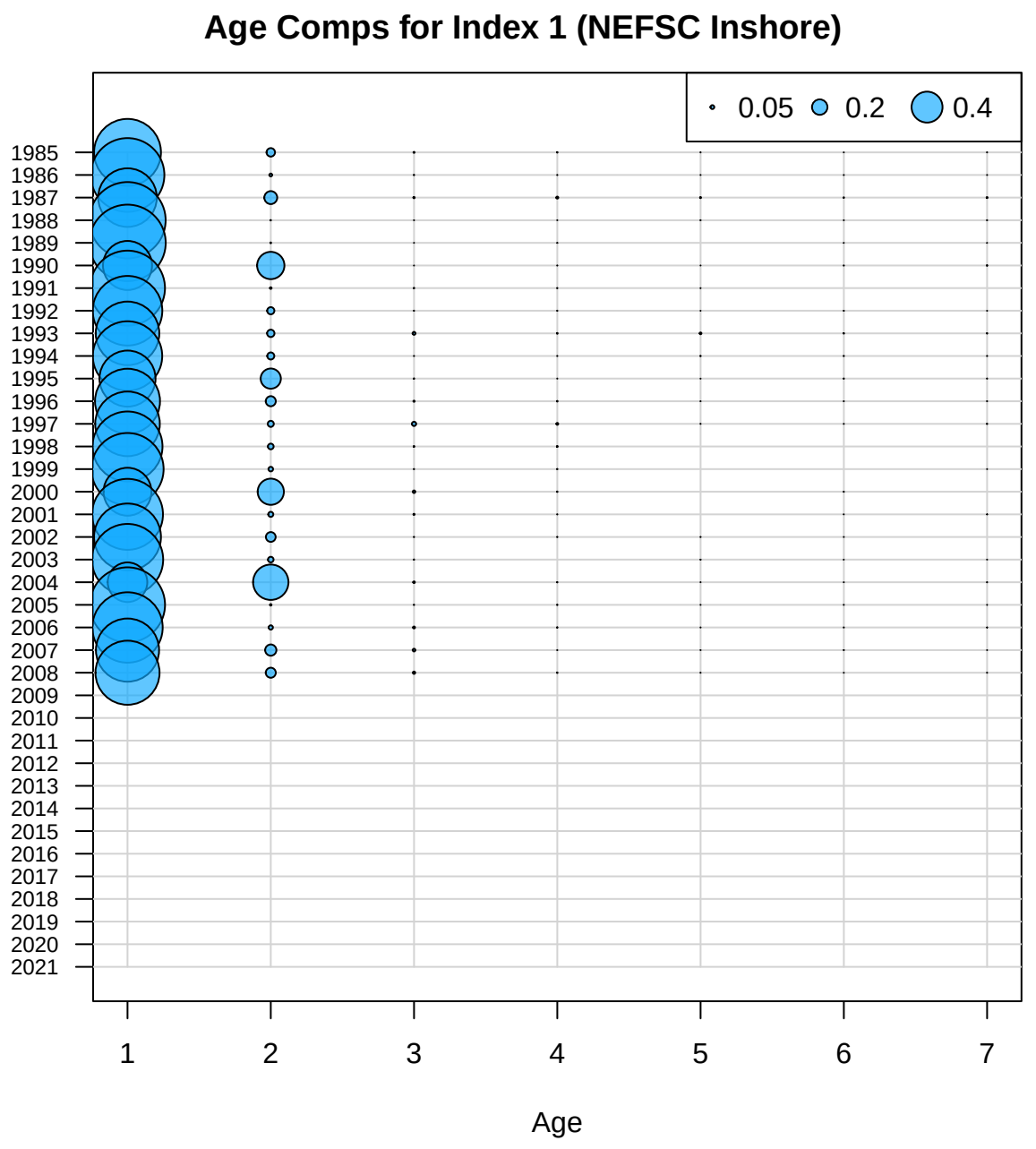

Comm
Rec
Proportion of Catch
0.0
0.2
0.4
0.6
0.8
1.0
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Year

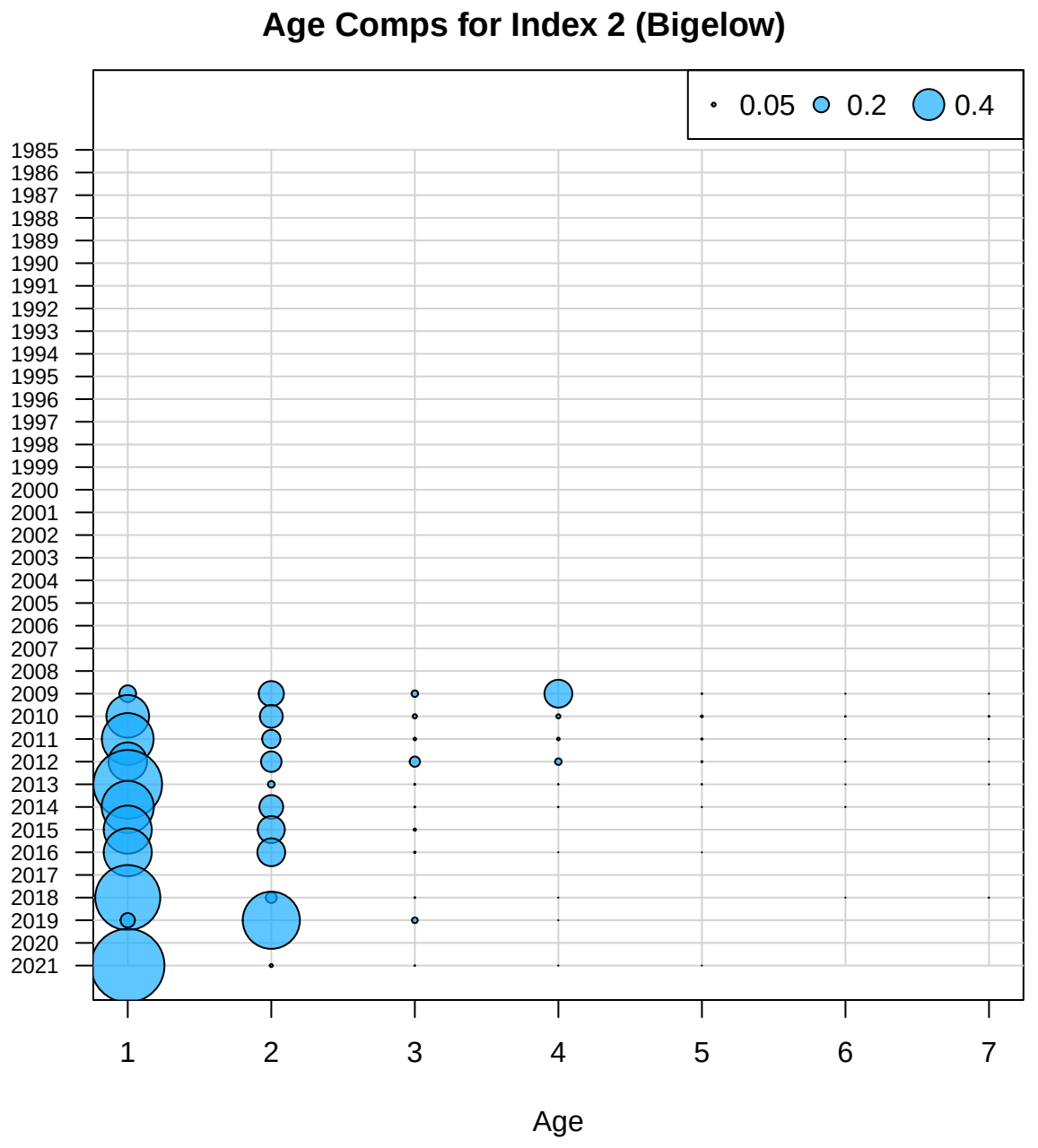

Age Comps for Catch by Fleet 1 (Comm)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

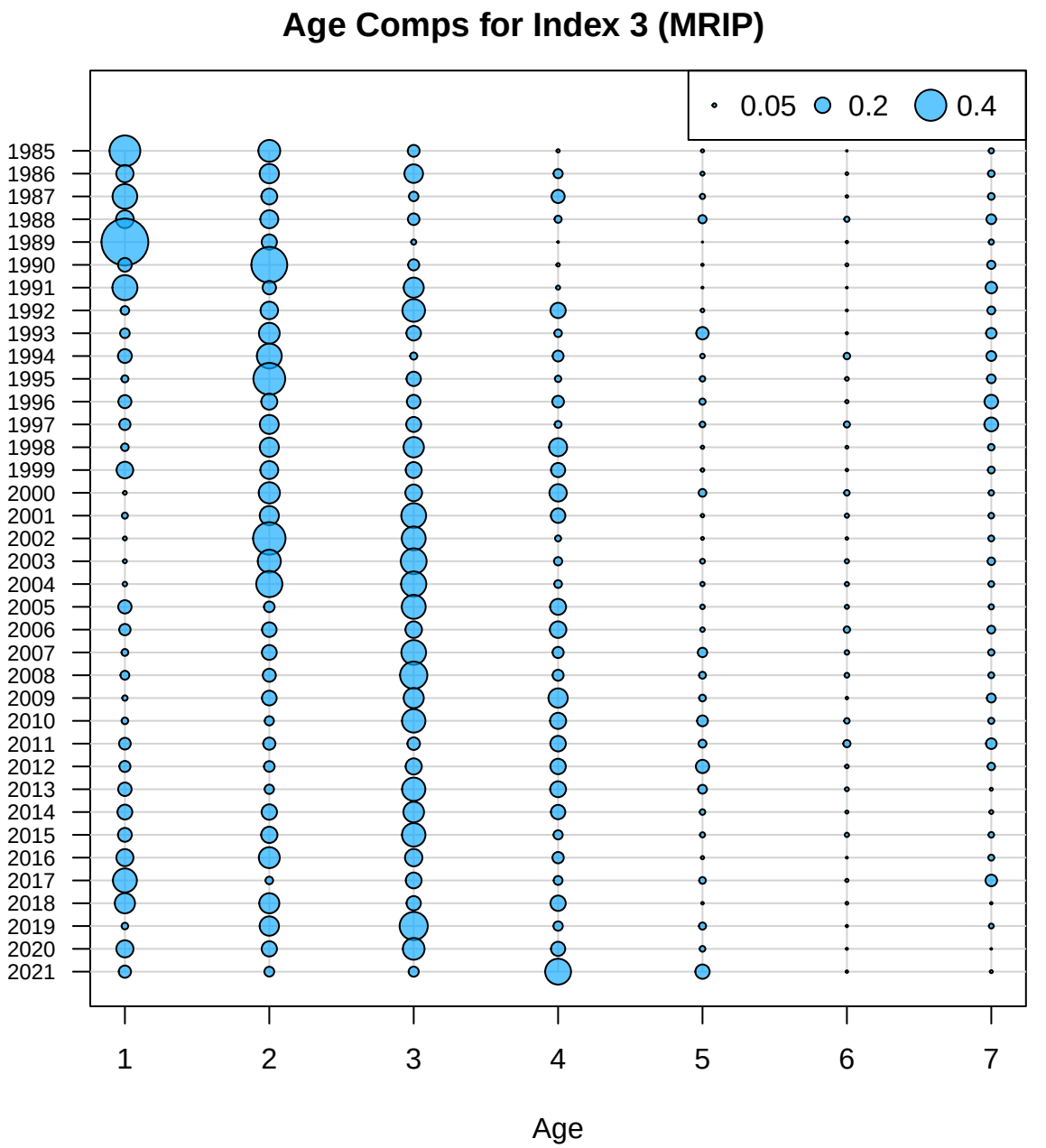

Age Comps for Catch by Fleet 2 (Rec)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

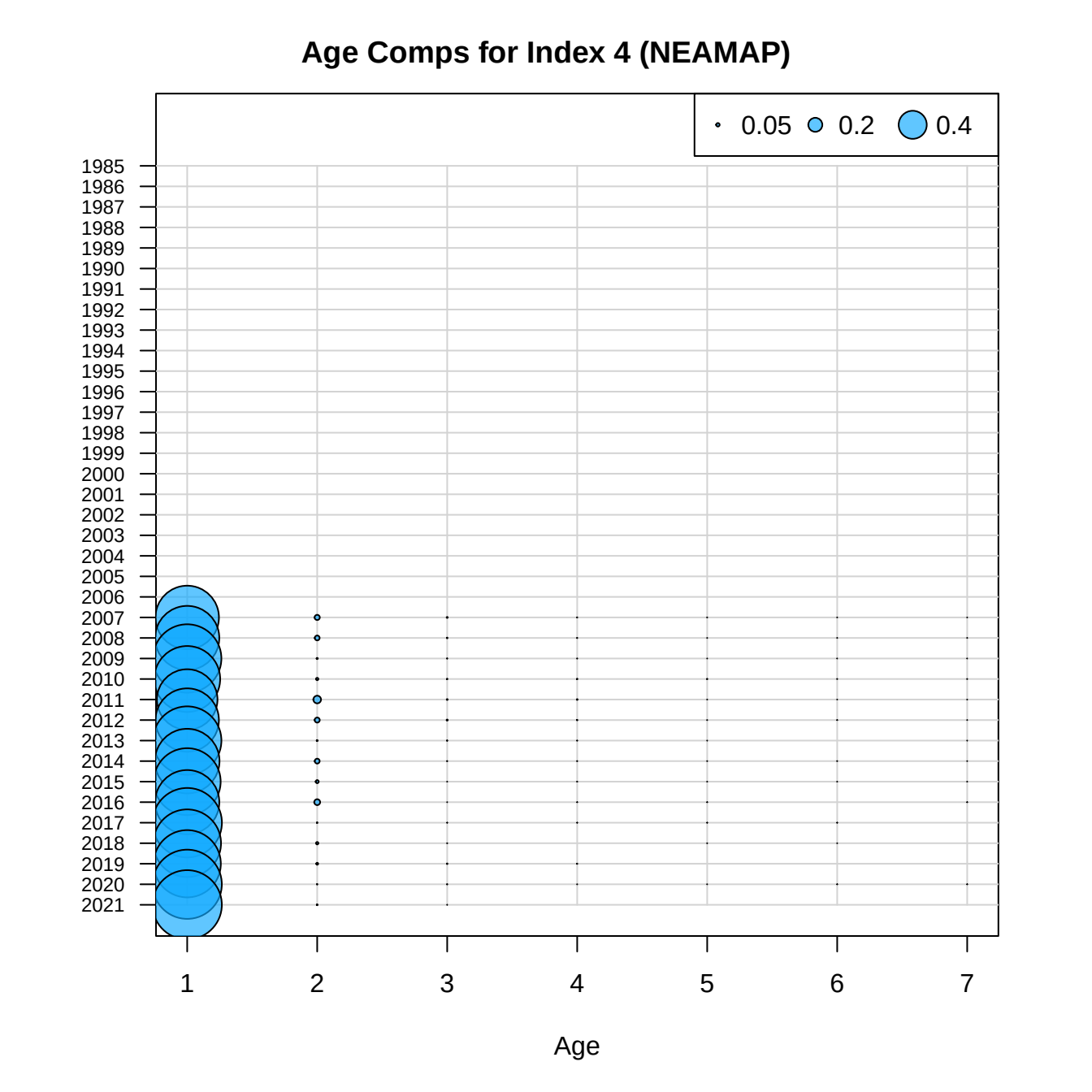

Rescaled Indices
4
3
2
1
0
−1
−2
1985
1990
1995
2000
2005
2010
2015
2020
Year

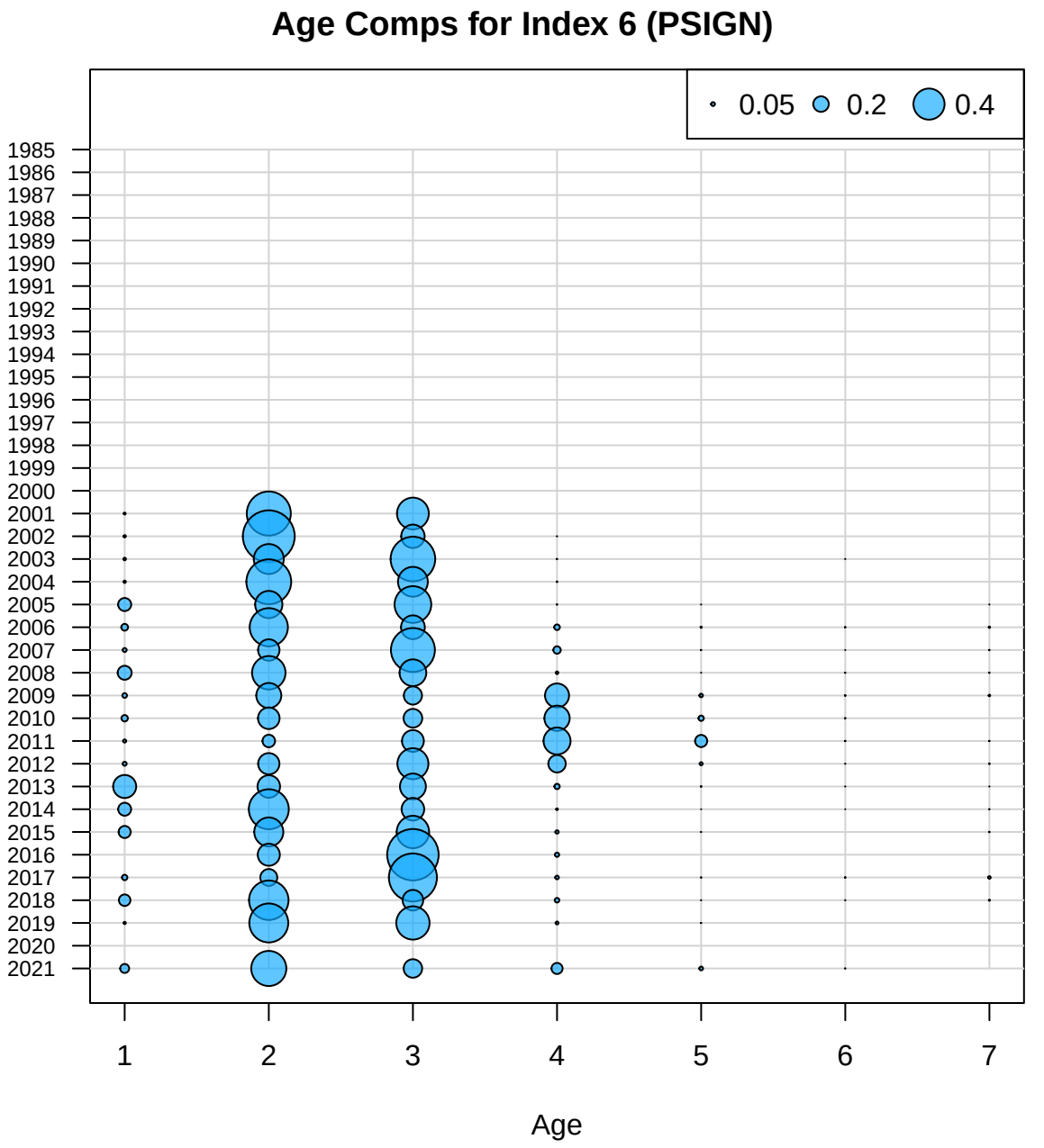

Rescaled Log(Indices)
2
1
0
−1
−2
−3
1985
1990
1995
2000
2005
2010
2015
2020
Year

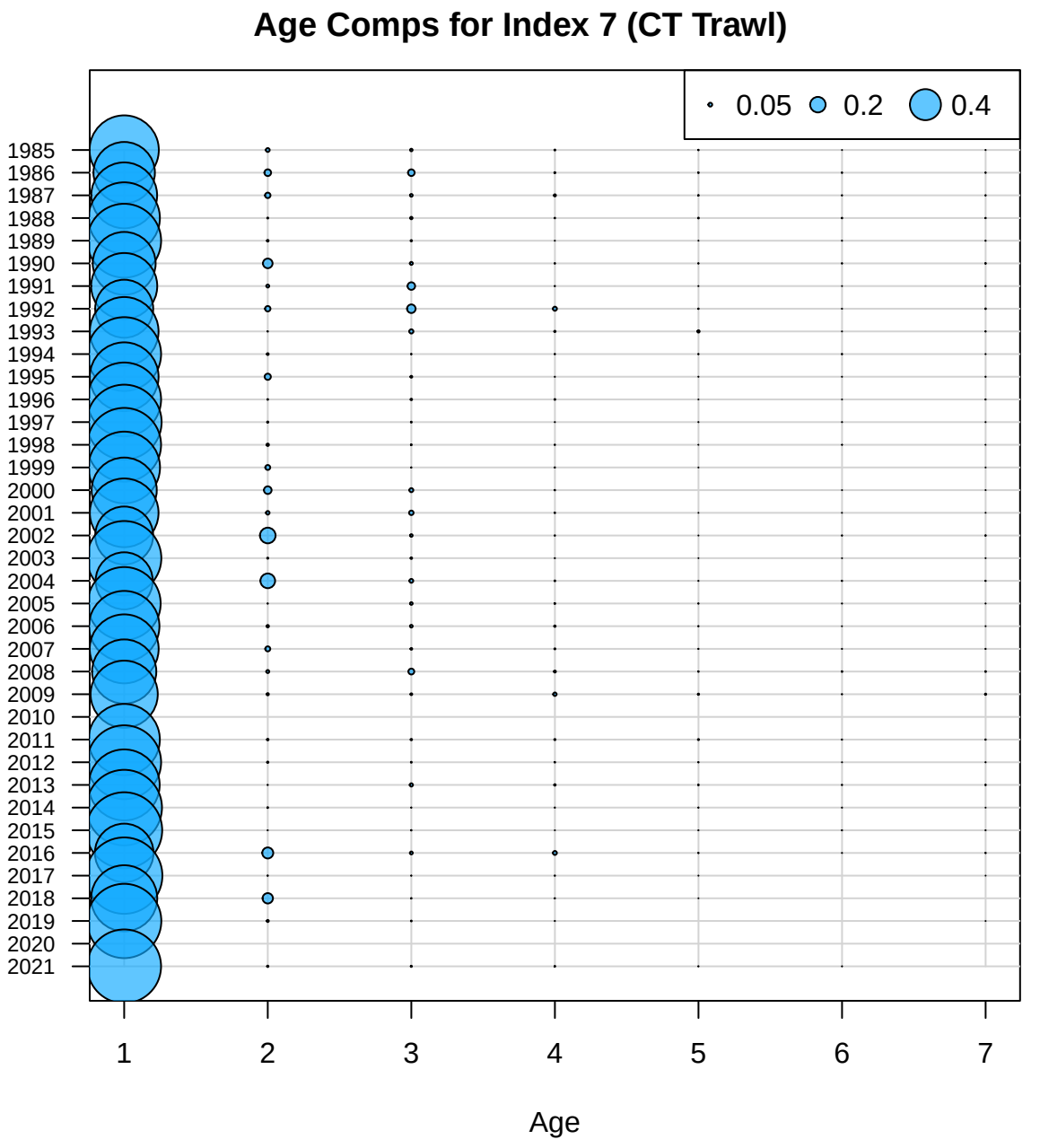

Age Comps for Index 1 (NEFSC Inshore)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

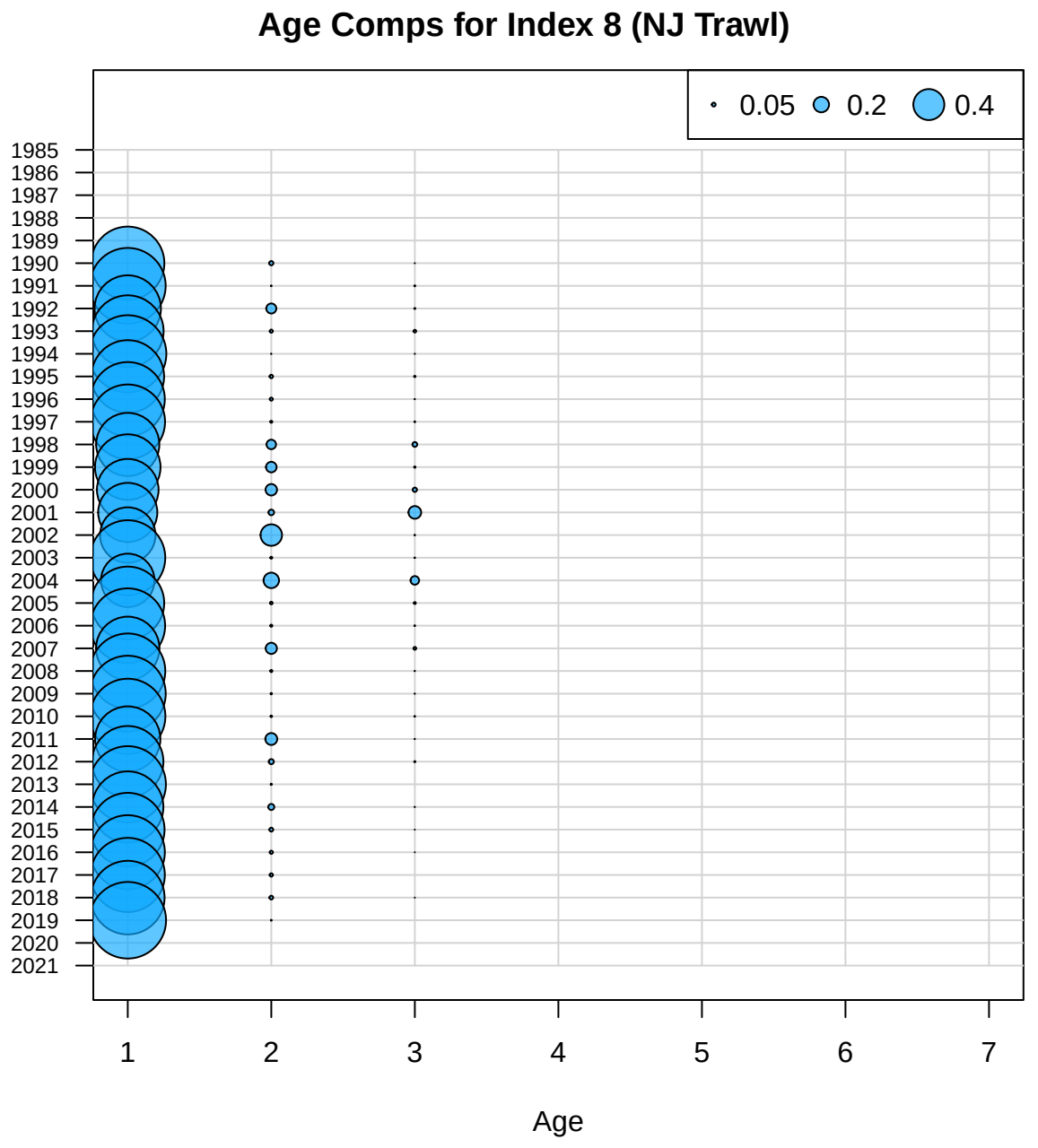

Age Comps for Index 2 (Bigelow)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

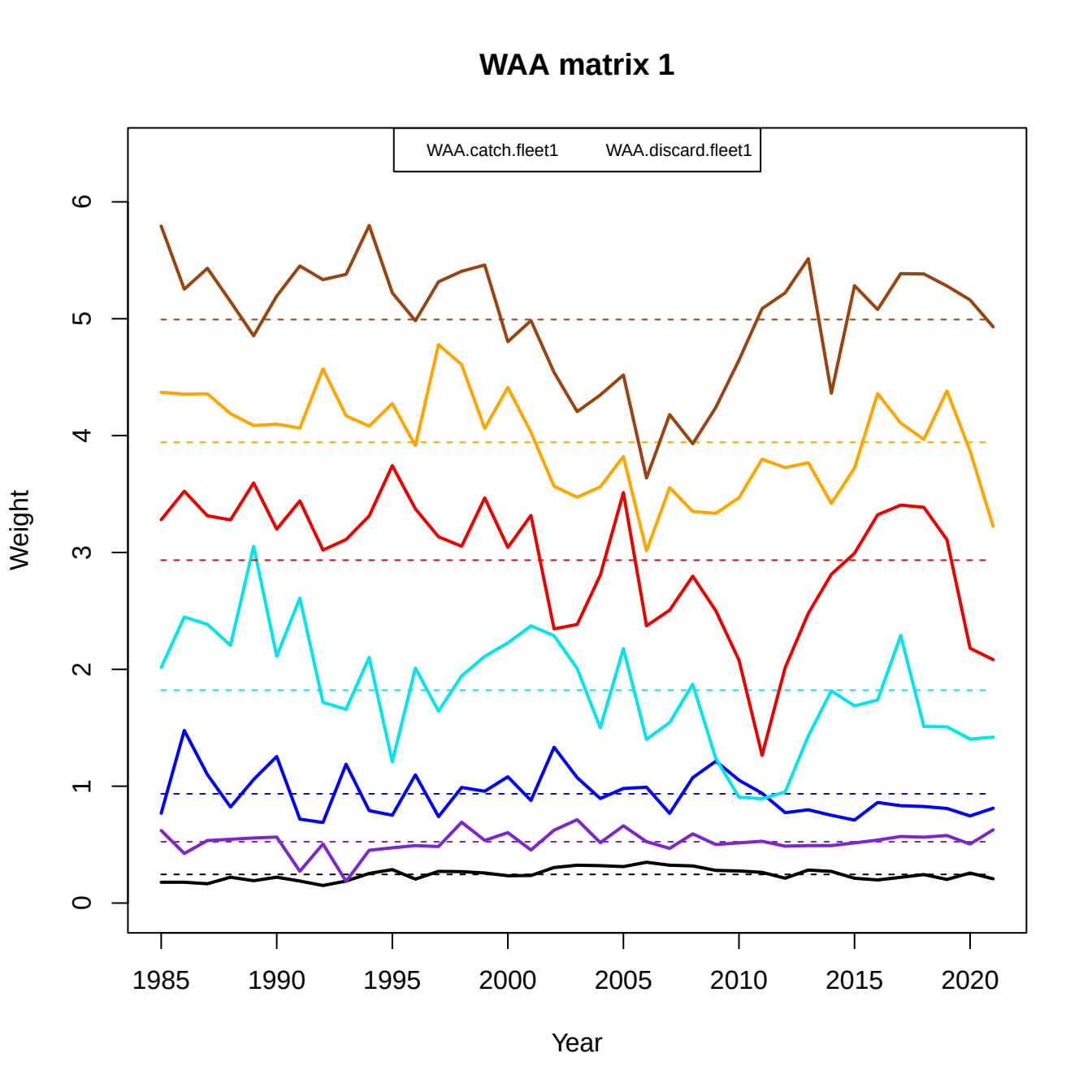

Age Comps for Index 3 (MRIP)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

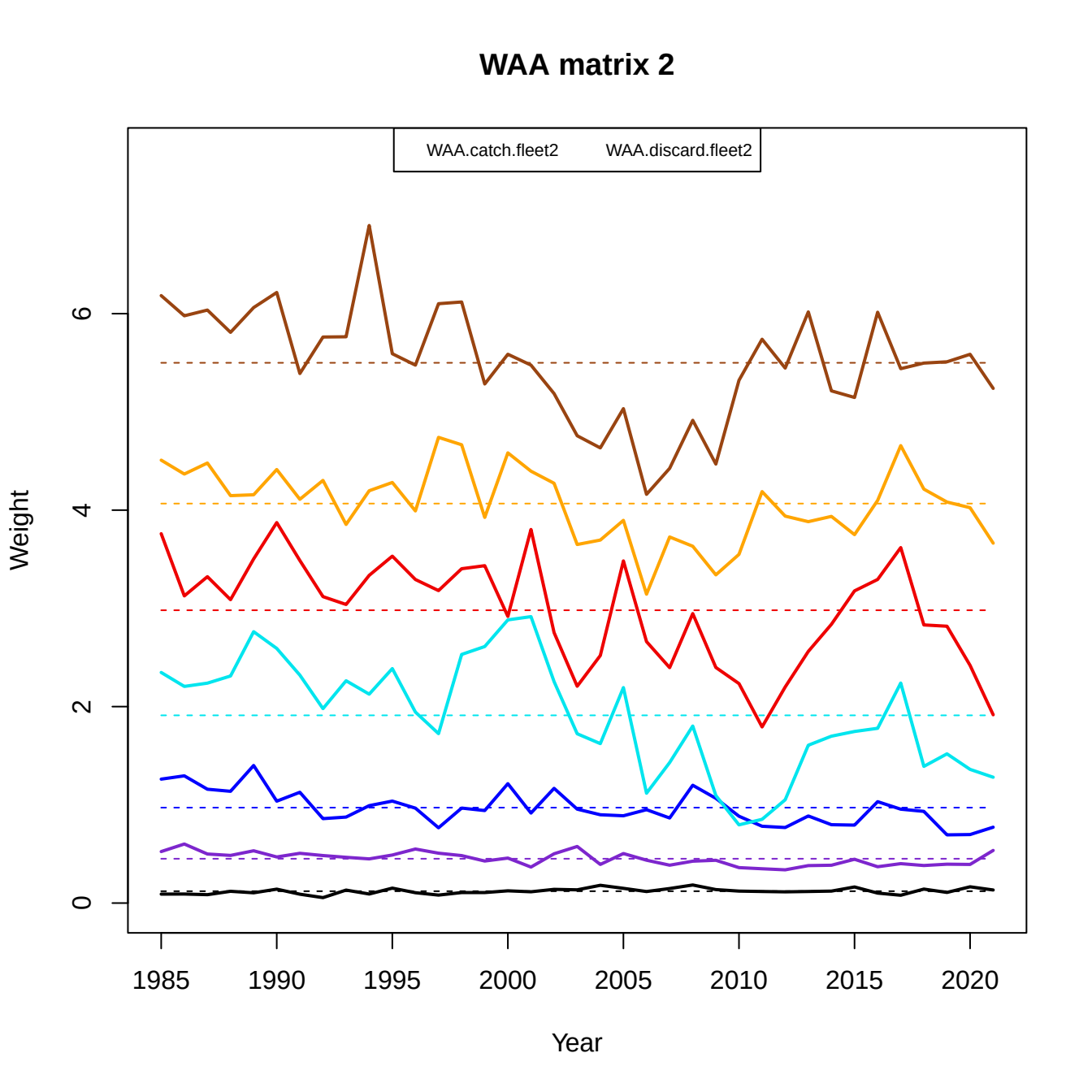

Age Comps for Index 4 (NEAMAP)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

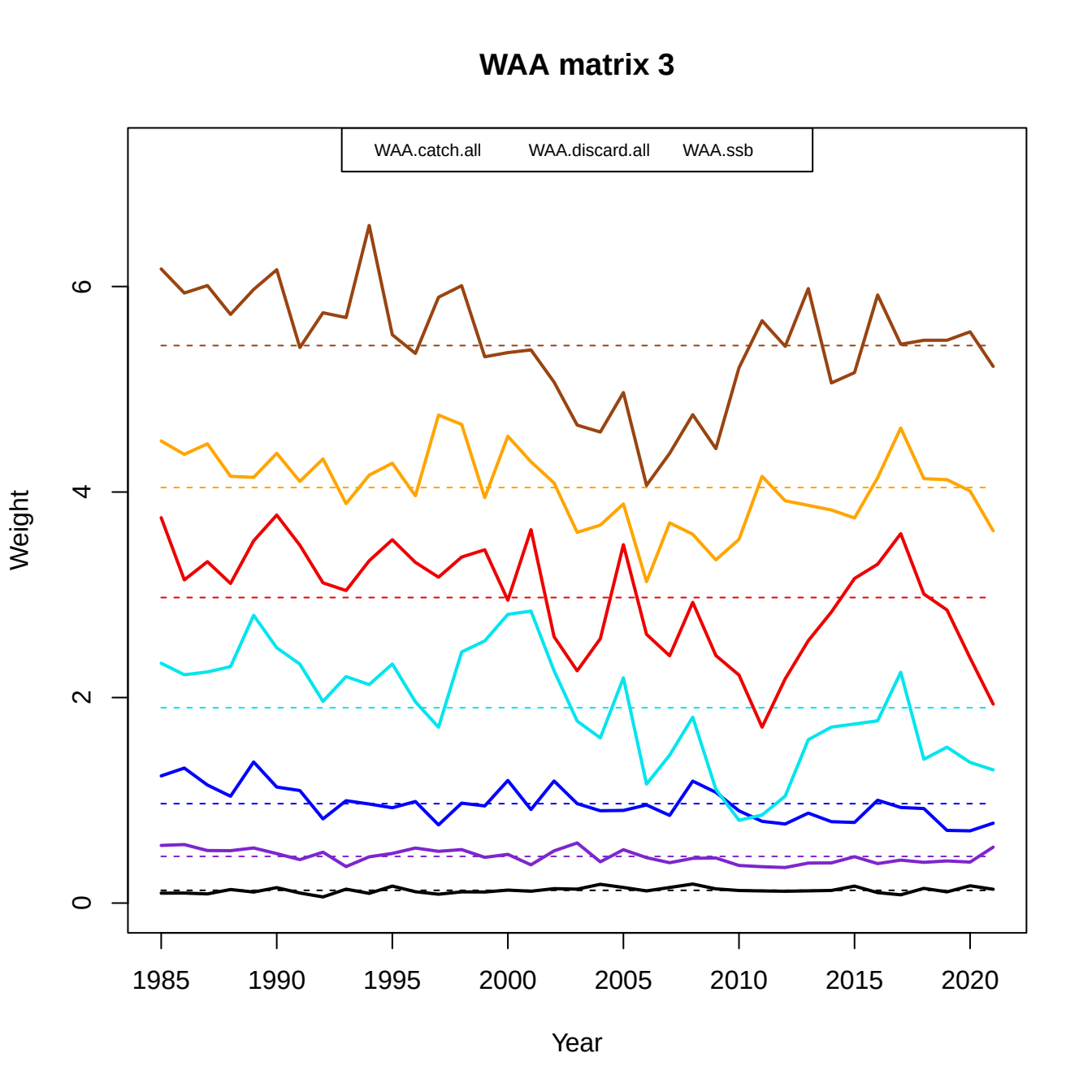

Age Comps for Index 6 (PSIGN)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

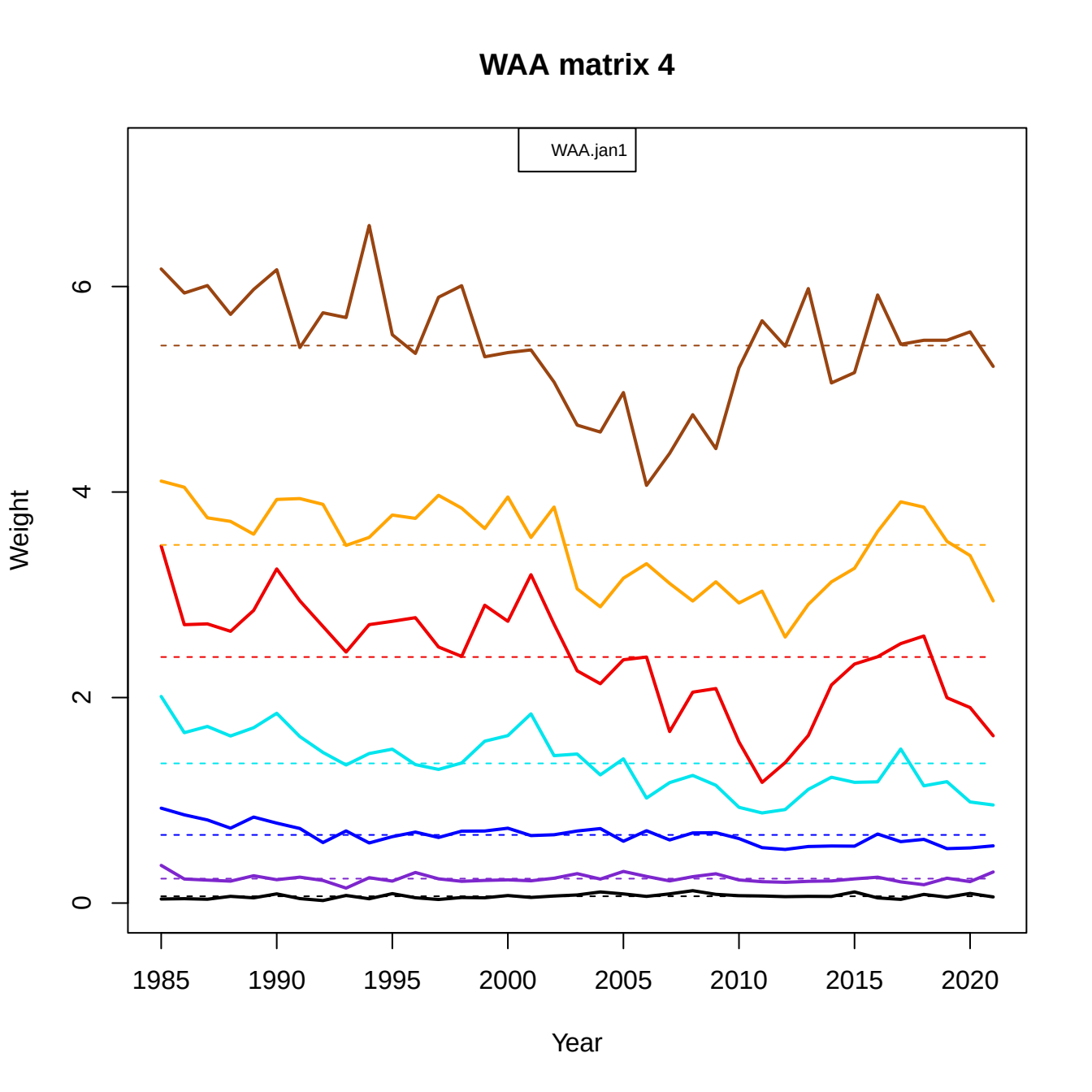

Age Comps for Index 7 (CT Trawl)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

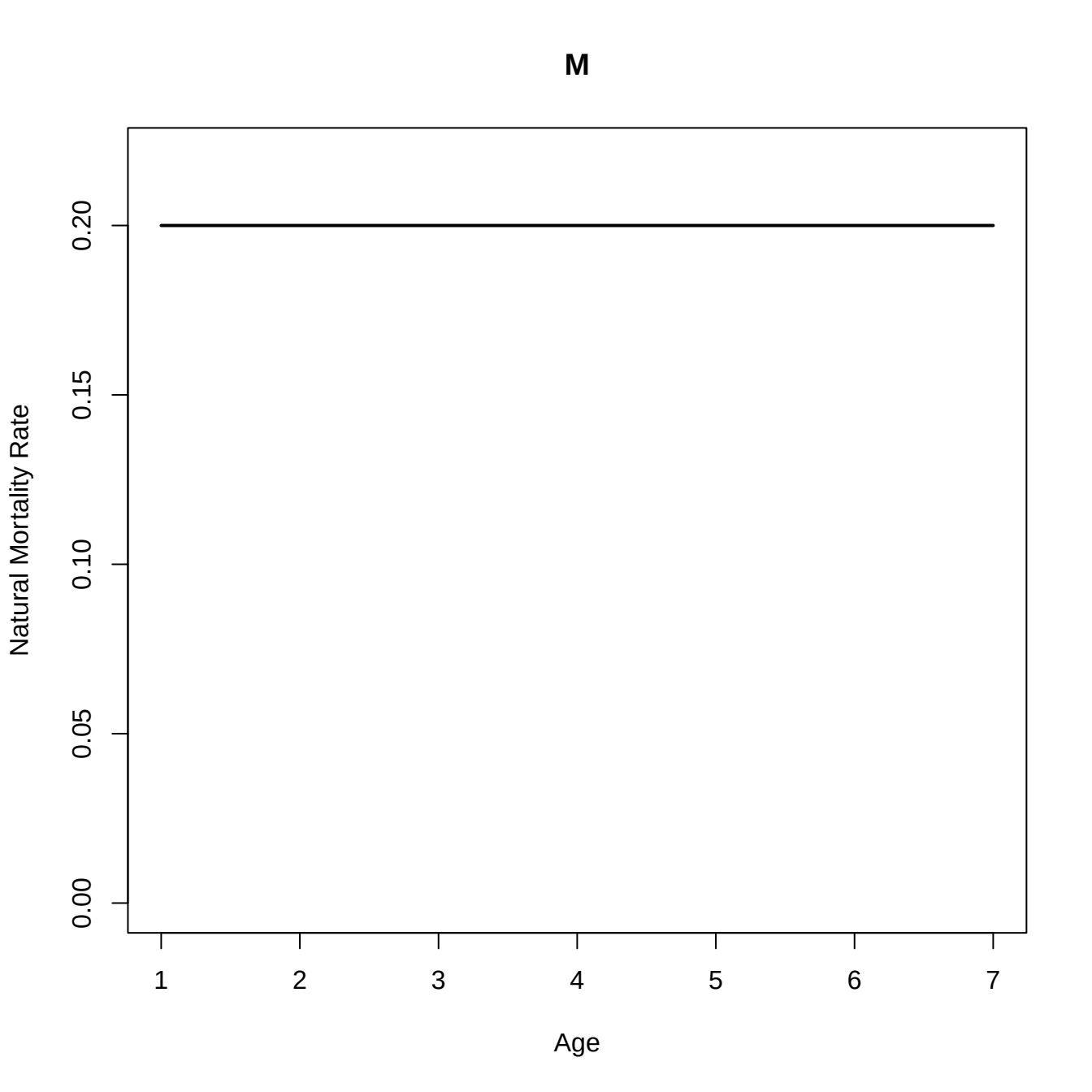

Age Comps for Index 8 (NJ Trawl)
0.05
0.2
0.4
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age

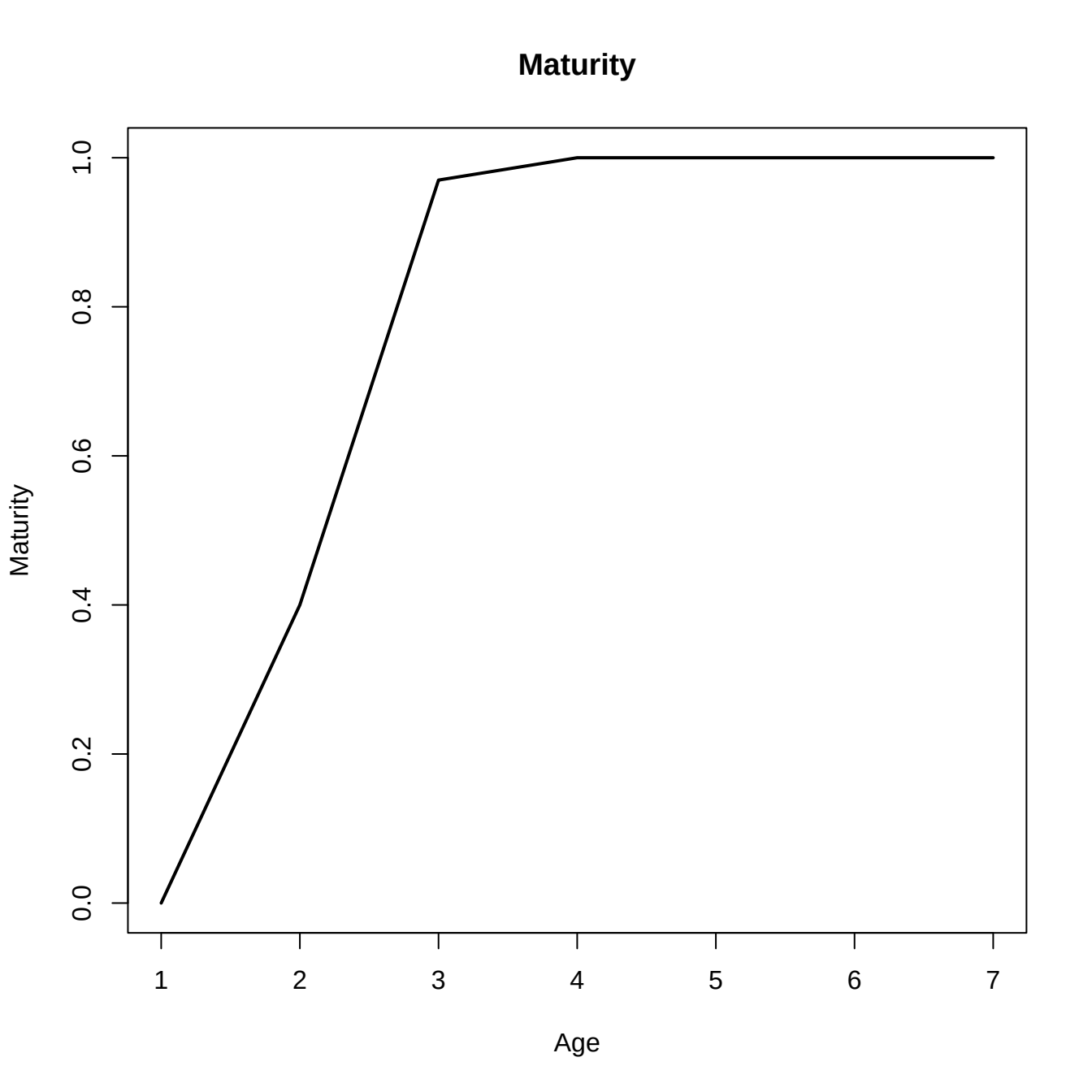

WAA matrix 1
WAA.catch.fleet1
WAA.discard.fleet1
Weight
0
1
2
3
4
5
6
1985
1990
1995
2000
2005
2010
2015
2020
Year


WAA matrix 2
WAA.catch.fleet2
WAA.discard.fleet2
Weight
0
2
4
6
1985
1990
1995
2000
2005
2010
2015
2020
Year


WAA matrix 3
WAA.catch.all
WAA.discard.all
WAA.ssb
Weight
0
2
4
6
1985
1990
1995
2000
2005
2010
2015
2020
Year


WAA matrix 4
WAA.jan1
Weight
0
2
4
6
1985
1990
1995
2000
2005
2010
2015
2020
Year

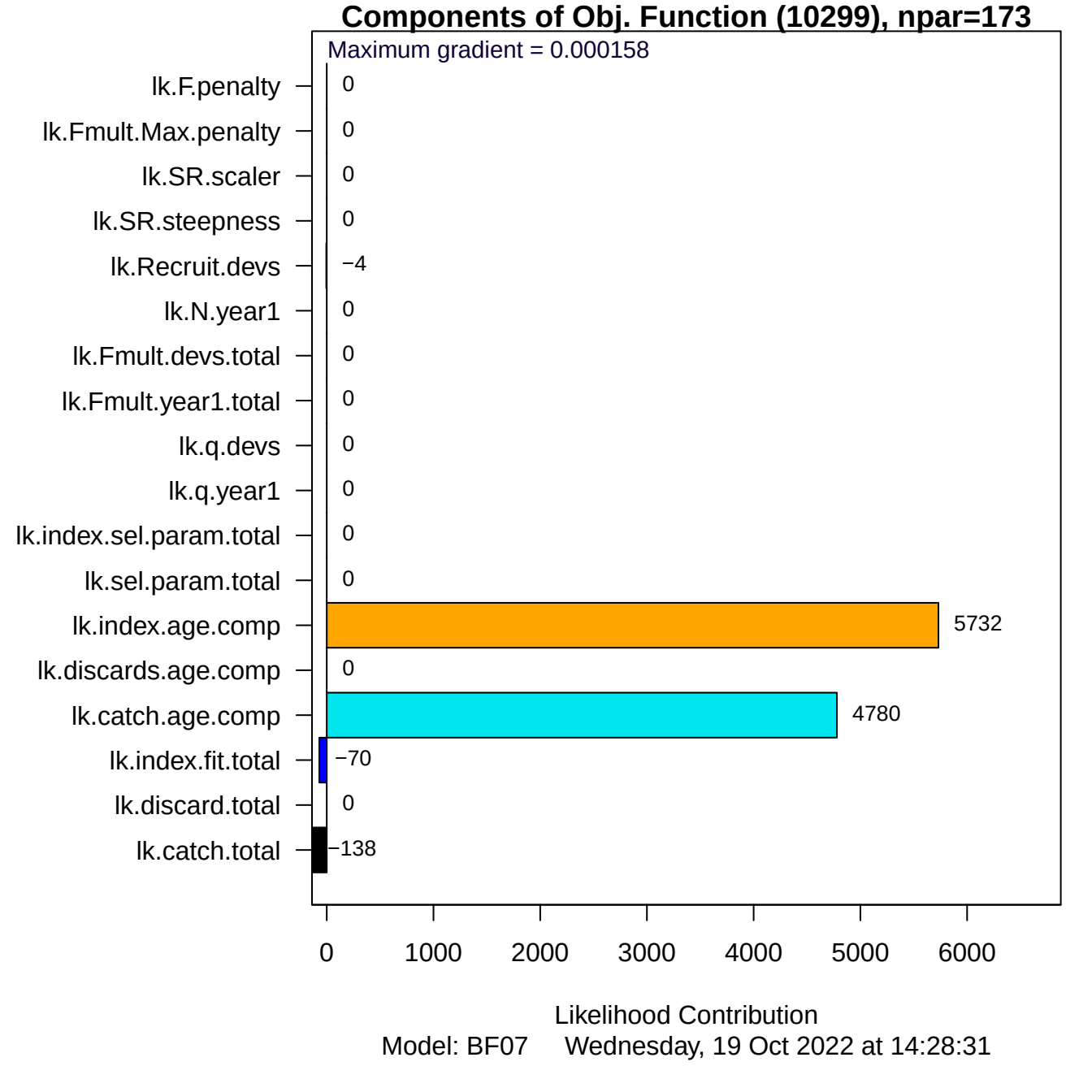

M
Natural Mortality Rate
0.00
0.05
0.10
0.15
0.20
1
2
3
4
5
6
7
Age

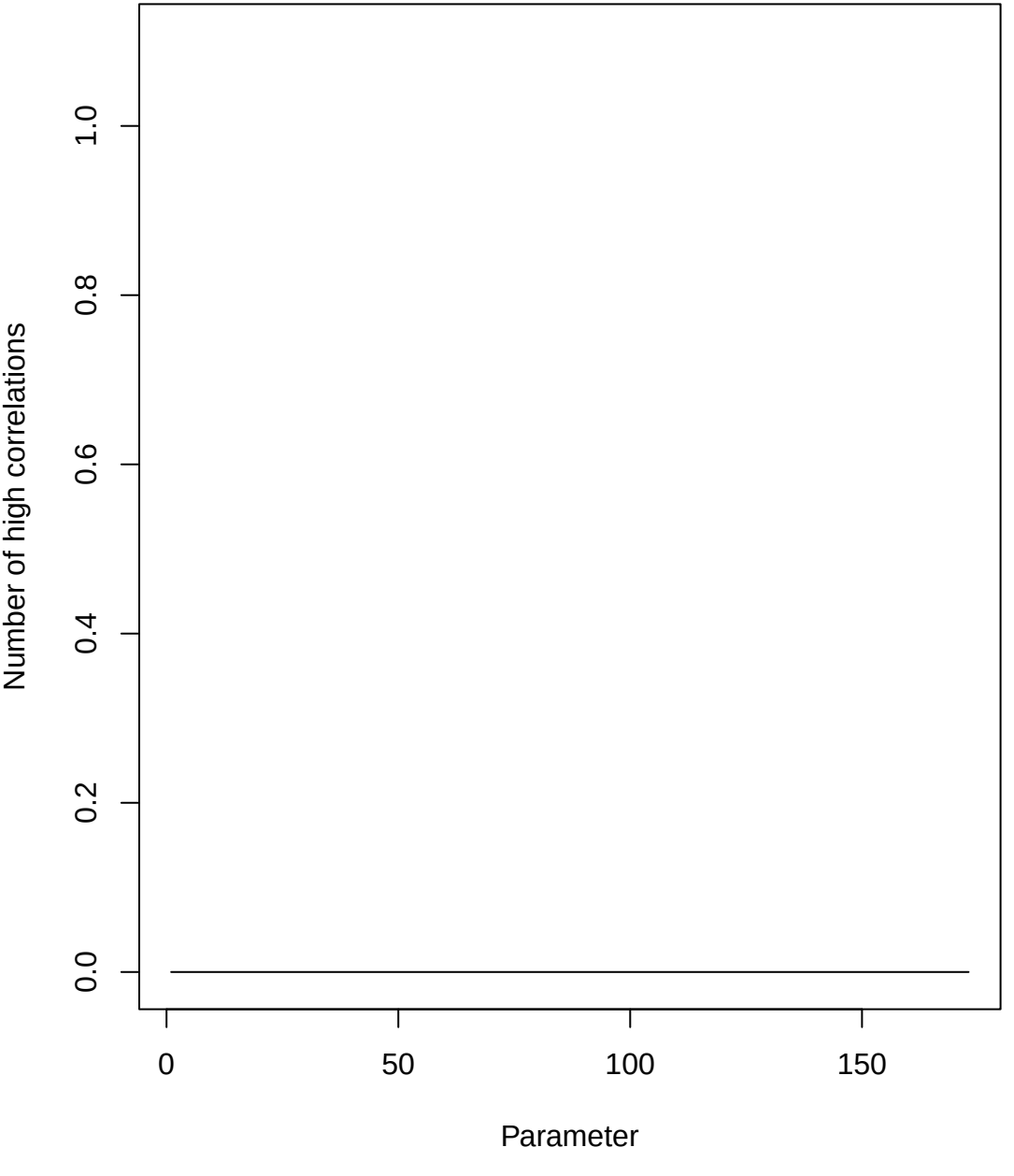

Maturity
Maturity
0.0
0.2
0.4
0.6
0.8
1.0
1
2
3
4
5
6
7
Age

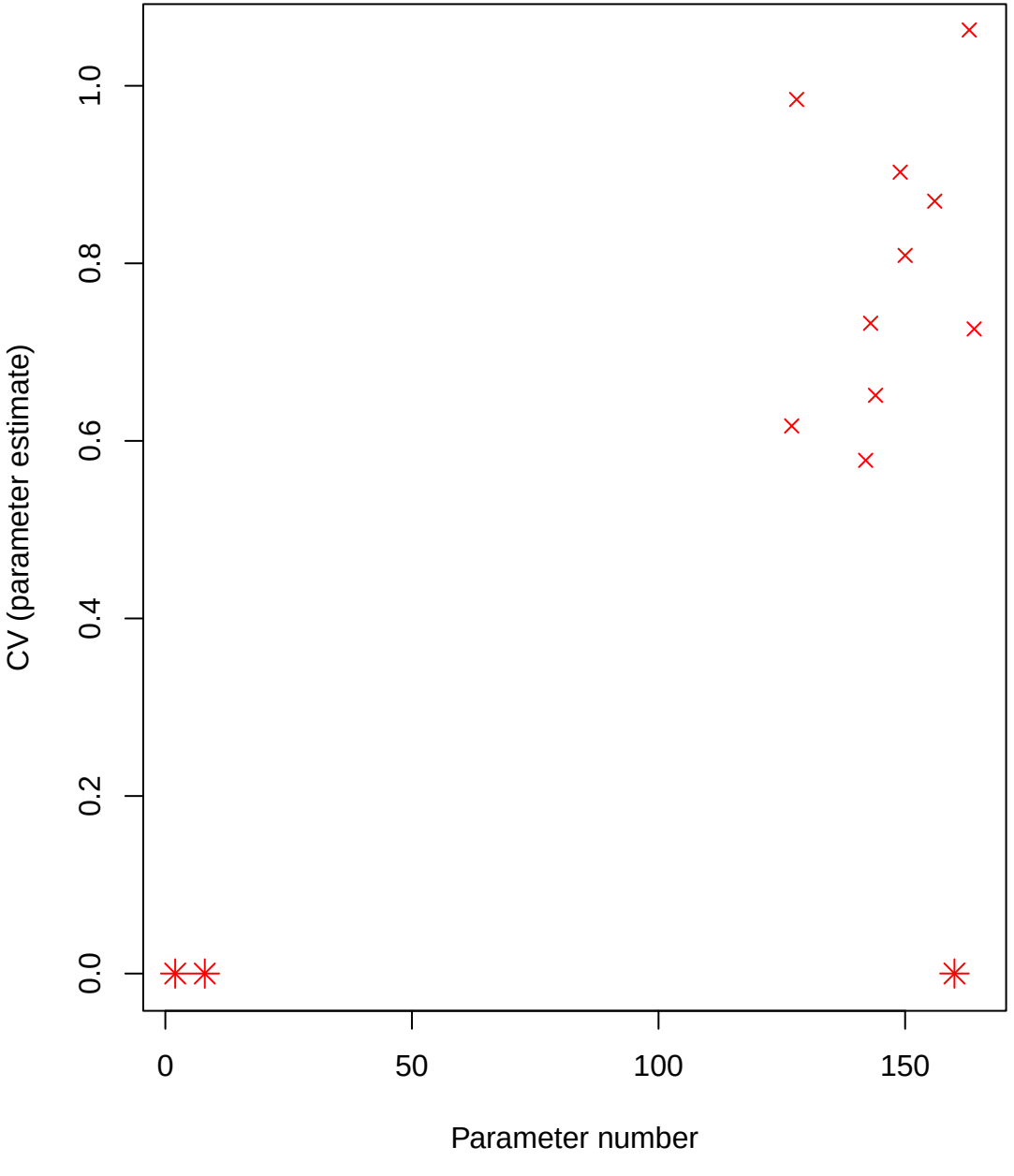
BF07

Update all fishery data, new L-W parameters, new recreational discard mortality, add commercial discards

DIAGNOSTIC PLOTS

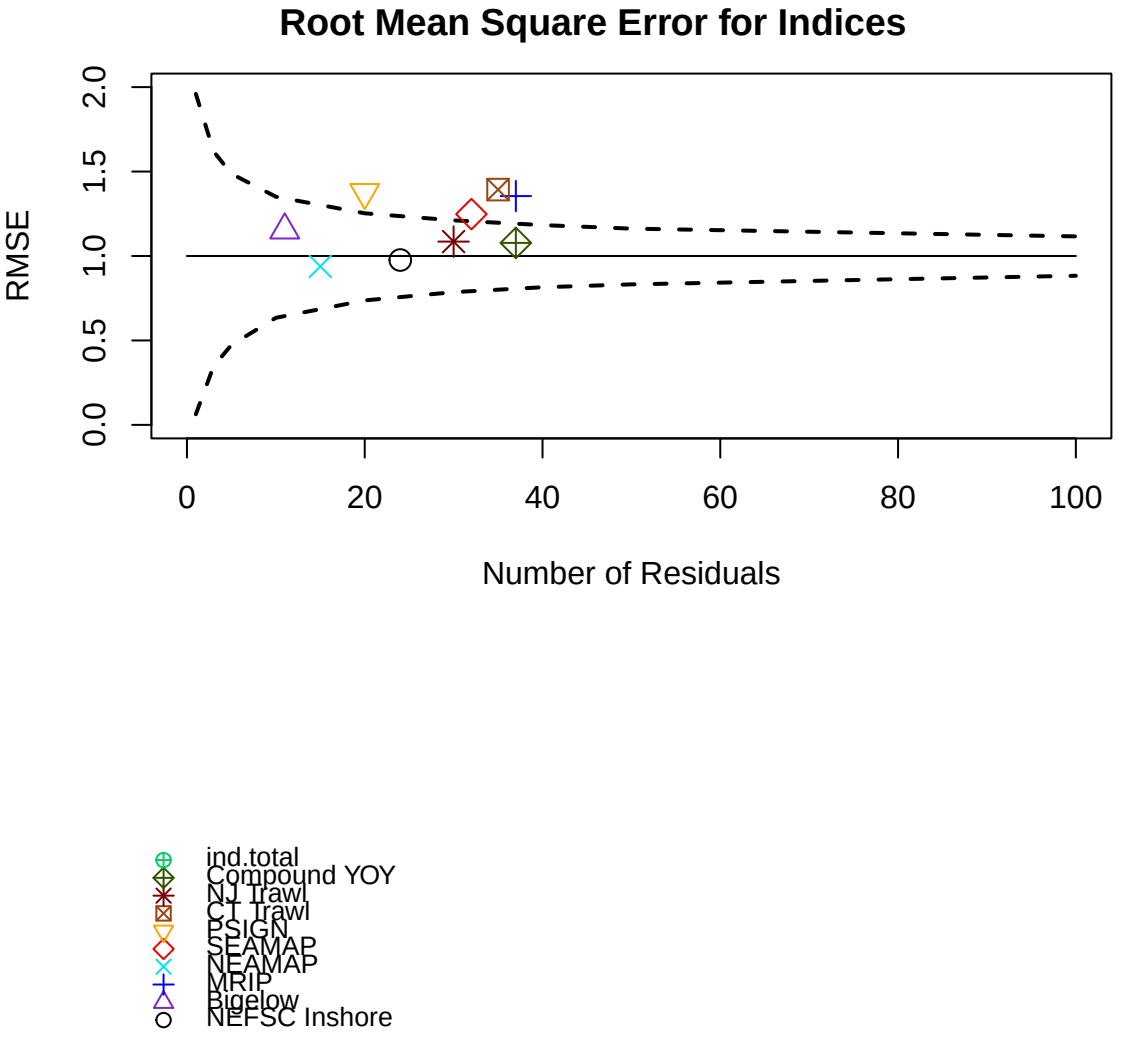

Components of Obj. Function (10299), npar=173
Maximum gradient = 0.000158
lk.F.penalty
lk.Fmult.Max.penalty
lk.SR.scaler
lk.SR.steepness
lk.Recruit.devs
lk.N.year1
lk.Fmult.devs.total
lk.Fmult.year1.total
lk.q.devs
lk.q.year1
lk.index.sel.param.total
lk.sel.param.total
lk.index.age.comp
lk.discards.age.comp
lk.catch.age.comp
lk.index.fit.total
lk.discard.total
lk.catch.total
0
0
0
0
−4
0
0
0
0
0
0
0
5732
0
4780
−70
0
−138
0
1000
2000
3000
4000
5000
6000
Likelihood Contribution
Model: BF07 Wednesday, 19 Oct 2022 at 14:28:31

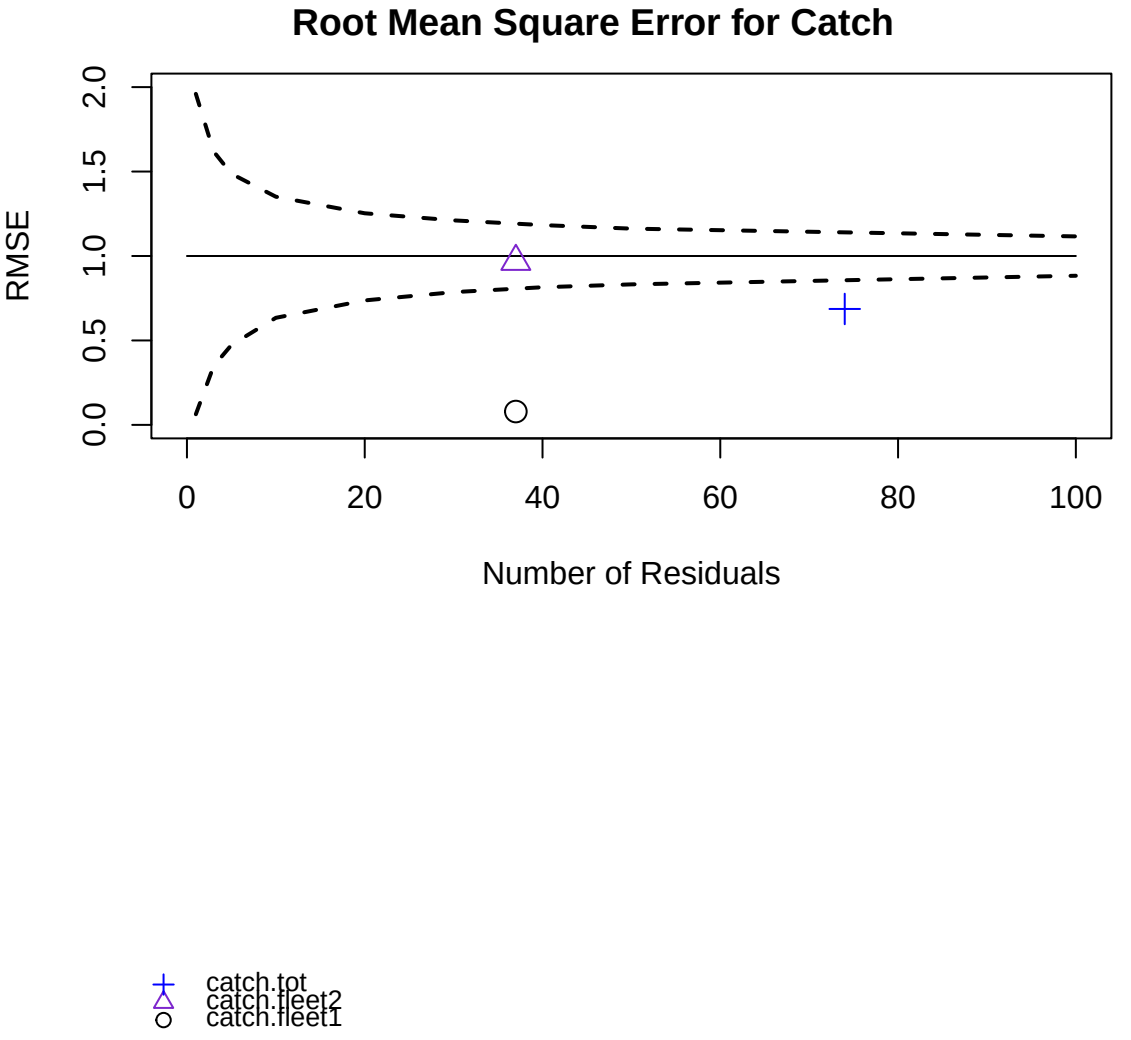

Number of high correlations
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
Parameter

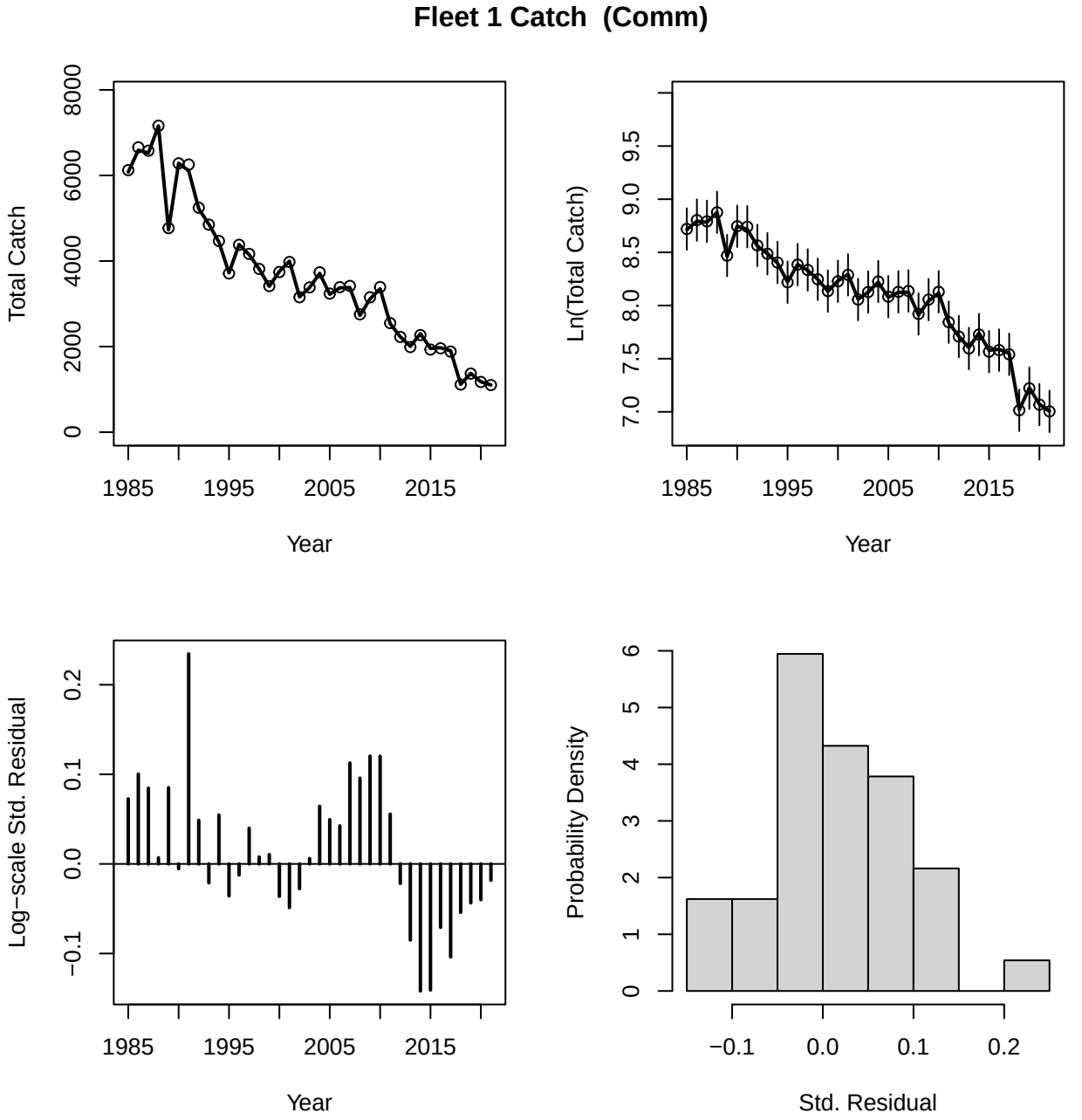

CV (parameter estimate)
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
Parameter number

Root Mean Square Error computed from Standardized Residuals

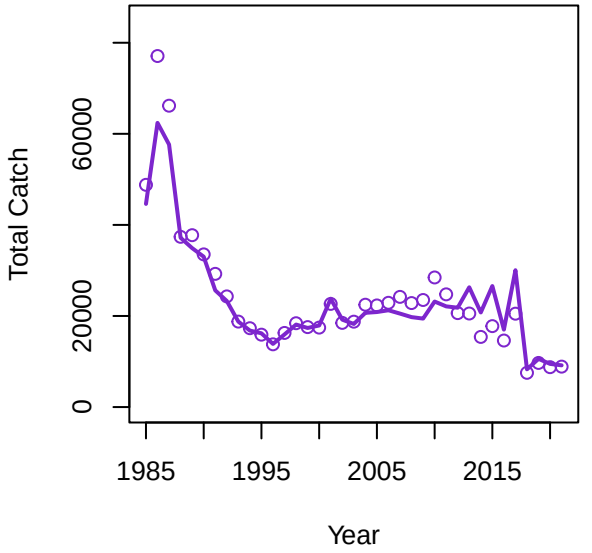
Component	# resids	RMSE
catch.fleet1	37	0.0789
catch.fleet2	37	0.967
catch.tot	74	0.686
discard.fleet1	0	0
discard.fleet2	0	0
discard.tot	0	0
ind01	24	0.976
ind02	11	1.15
ind03	37	1.35
ind04	15	0.938
ind05	32	1.25
ind06	20	1.38
ind07	35	1.39
ind08	30	1.09
ind09	37	1.08
ind.total	241	1.21
N.year1	0	0
Fmult.year1	0	0
Fmult.devs.fleet1	0	0
Fmult.devs.fleet2	0	0
Fmult.devs.total	0	0
recruit.devs	37	0.372
fleet.sel.params	0	0
index.sel.params	0	0
q.year1	0	0
q.devs	0	0
SR.steepness	0	0
SR.scaler	0	0

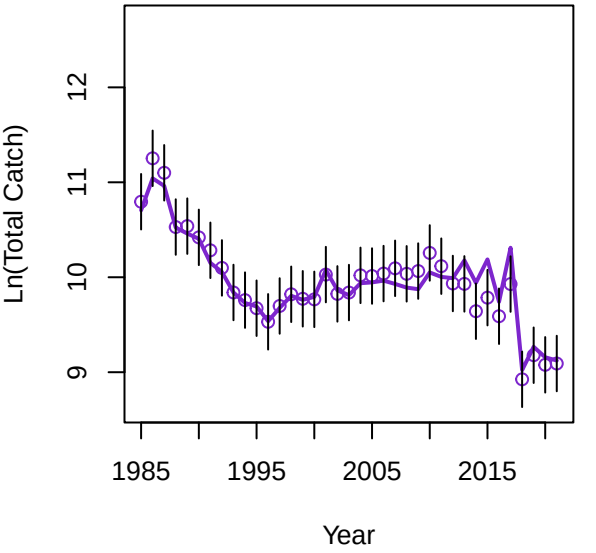

Root Mean Square Error for Indices
RMSE
0.0
0.5
1.0
1.5
2.0
0
20
40
60
80
100
Number of Residuals
ind.total
Compound YOY
NJ Trawl
CT Trawl
PSIGN
SEAMAP
NEAMAP
MRIP
Bigelow
NEFSC Inshore

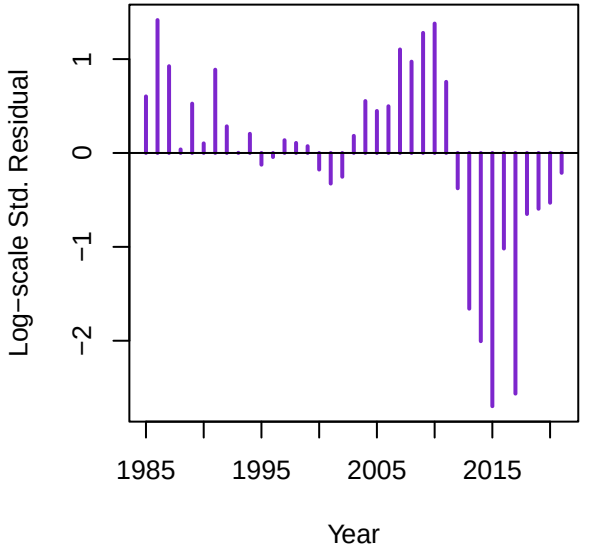

Root Mean Square Error for Catch
RMSE
0.0
0.5
1.0
1.5
2.0
0
20
40
60
80
100
Number of Residuals
catch.tot
catch.fleet2
catch.fleet1

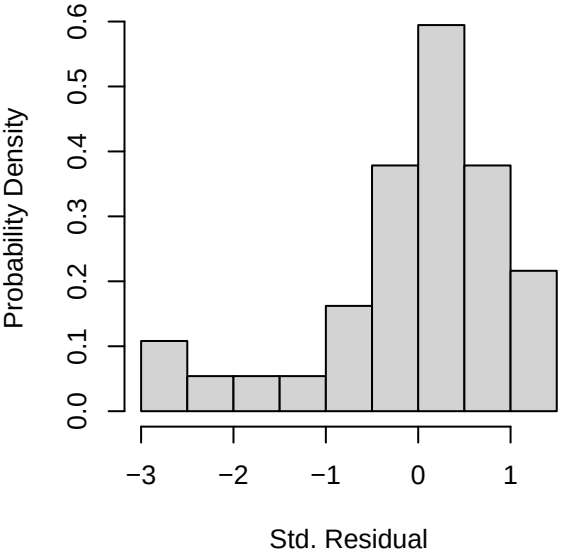

Fleet 1 Catch (Comm)
Total Catch
0
2000
4000
6000
8000
1985
1995
2005
2015
Year
Ln(Total Catch)
7.0
7.5
8.0
8.5
9.0
9.5
1985
1995
2005
2015
Year
Log−scale Std. Residual
−0.1
0.0
0.1
0.2
1985
1995
2005
2015
Year
Probability Density
0
1
2
3
4
5
6
−0.1
0.0
0.1
0.2
Std. Residual

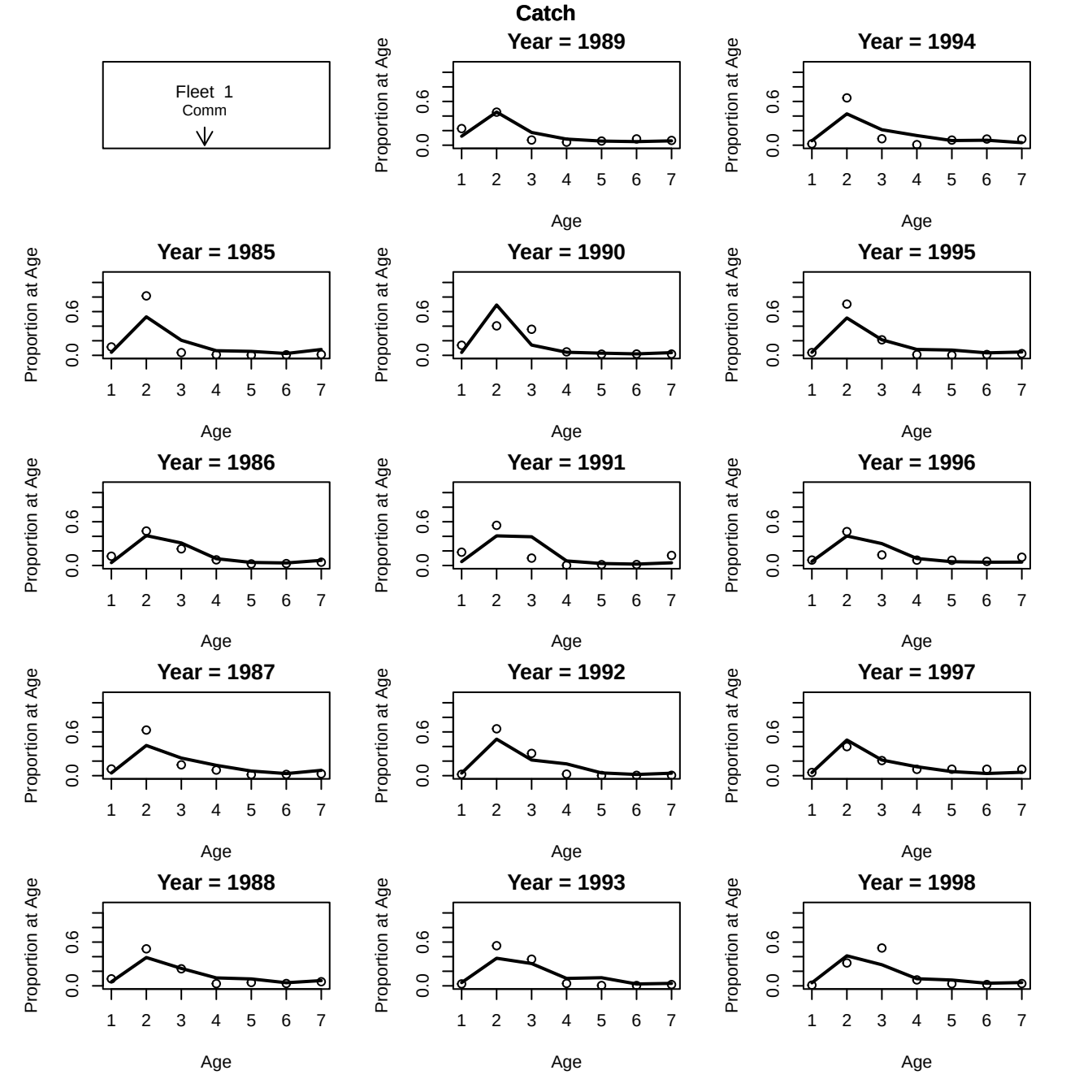
Fleet 2 Catch (Rec)

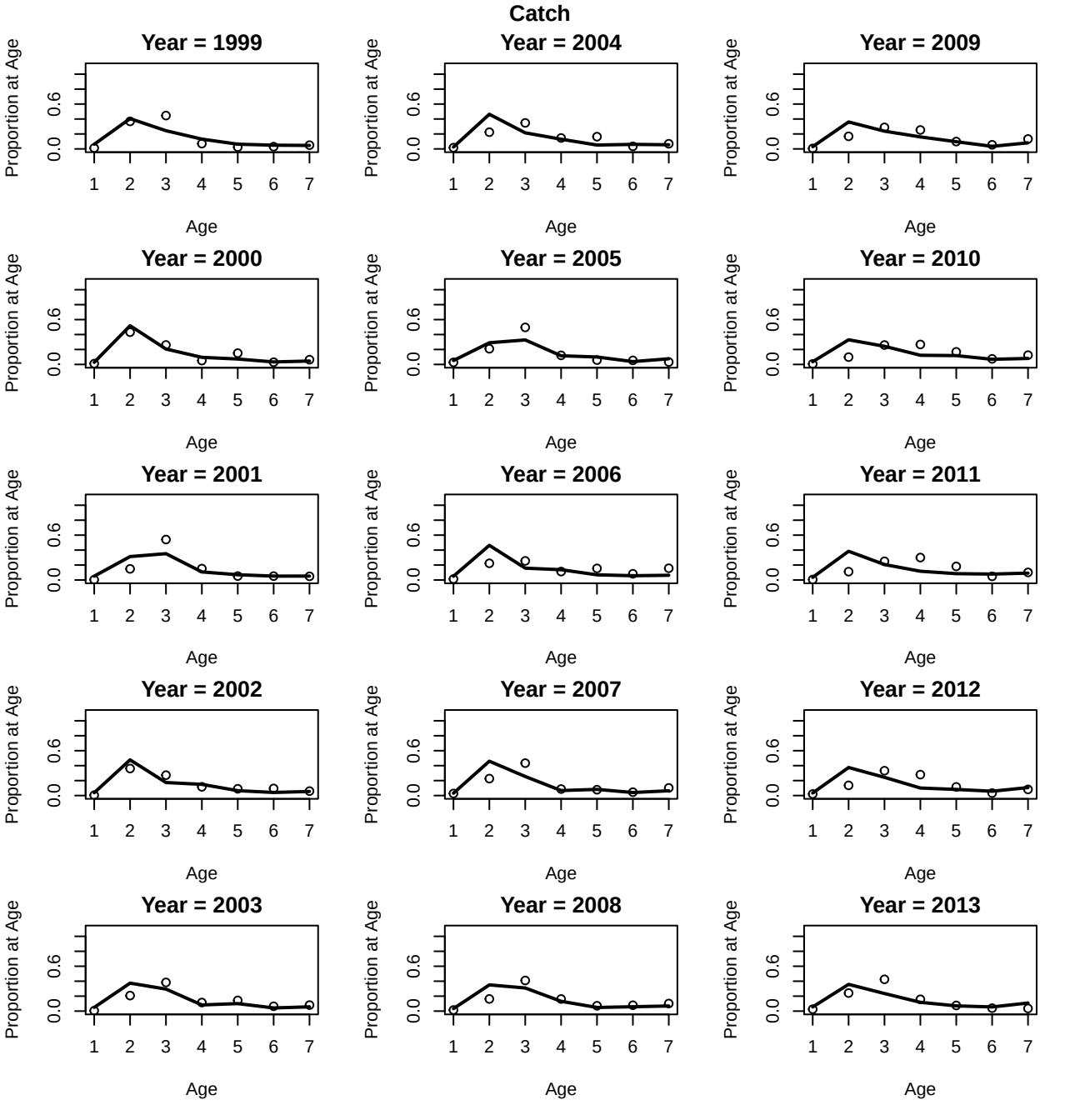


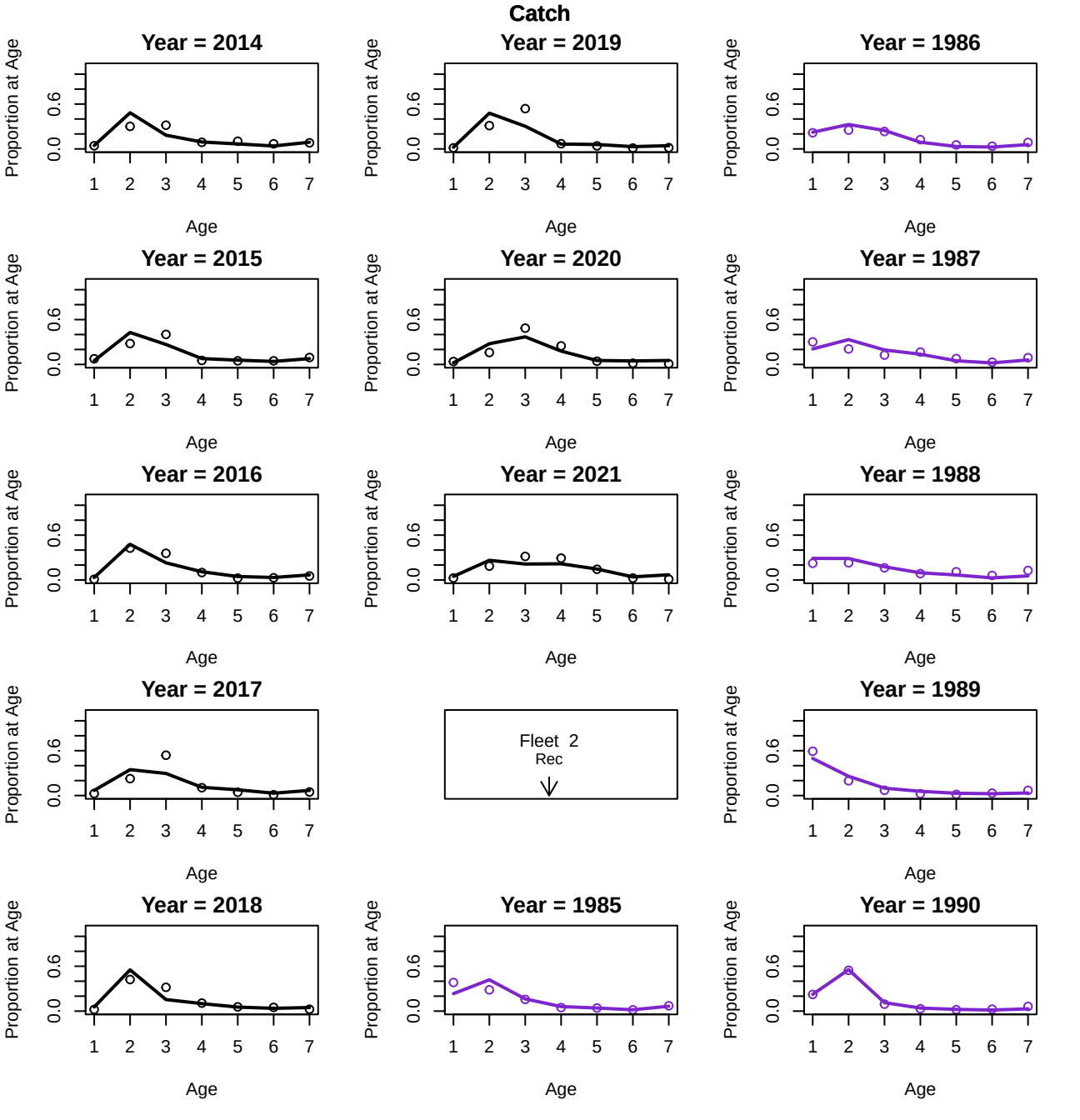


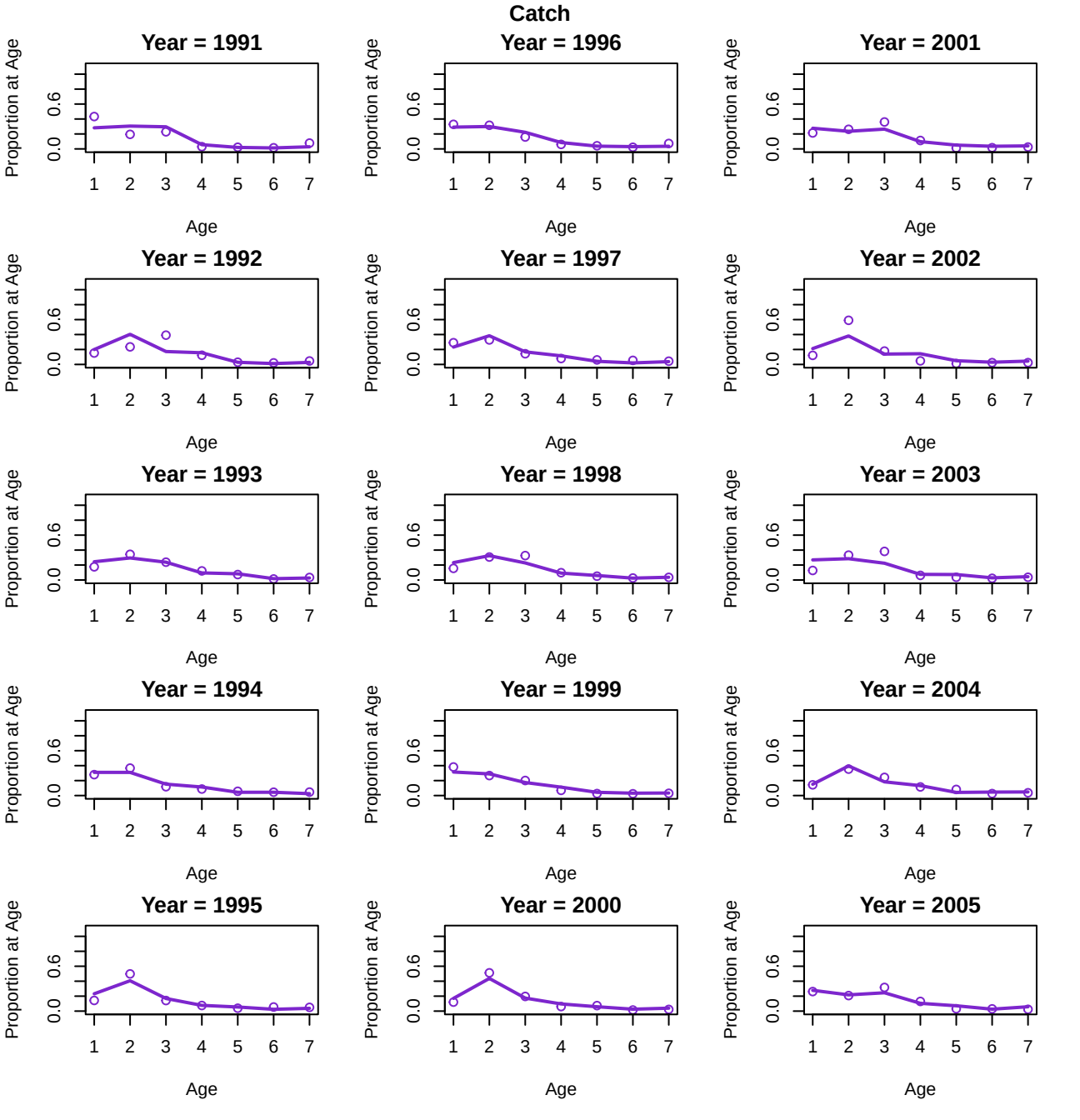


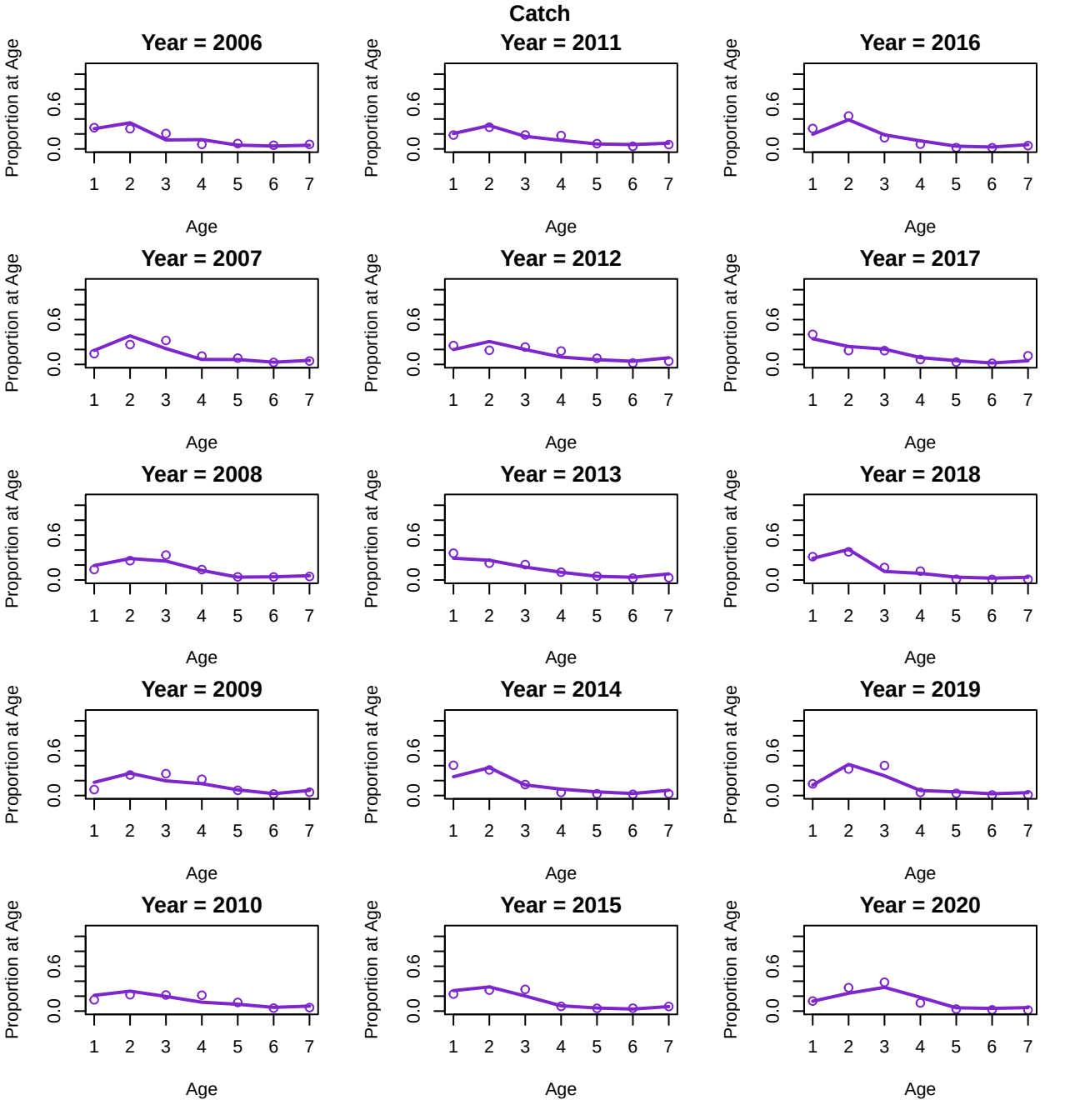


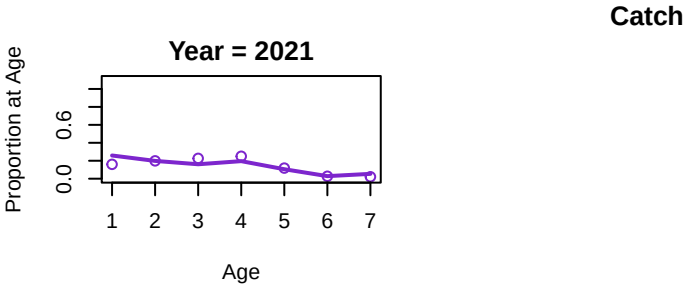

Catch
Fleet 1
Comm
Year = 1989
Year = 1994
Year = 1985
Year = 1990
Year = 1995
Year = 1986
Year = 1991
Year = 1996
Year = 1987
Year = 1992
Year = 1997
Year = 1988
Year = 1993
Year = 1998
Proportion at Age
Age
0.0
0.6
1
2
3
4
5
6
7

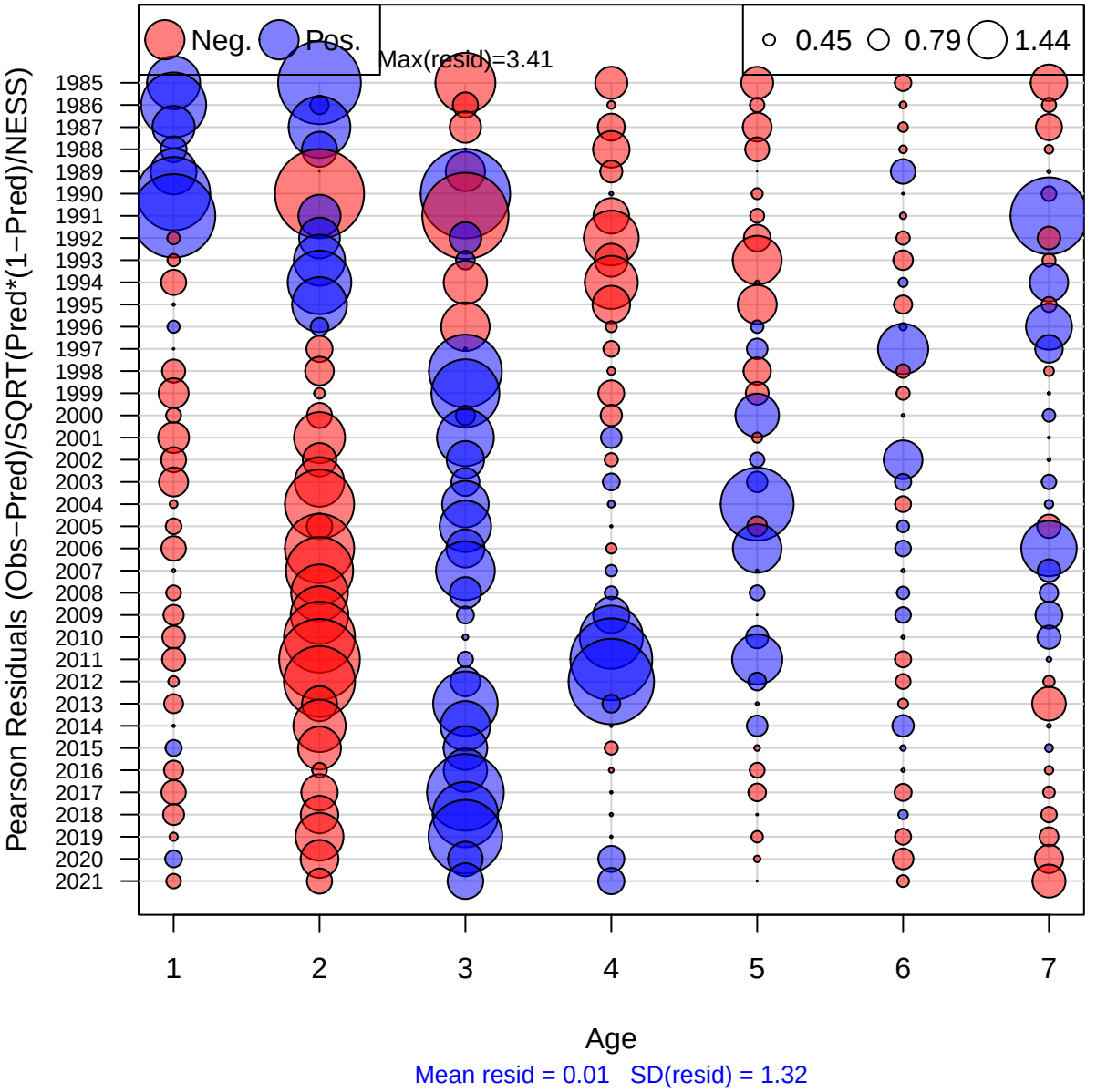

Catch
Year = 1999
Year = 2004
Year = 2009
Year = 2000
Year = 2005
Year = 2010
Year = 2001
Year = 2006
Year = 2011
Year = 2002
Year = 2007
Year = 2012
Year = 2003
Year = 2008
Year = 2013
Proportion at Age
0.0
0.6
1 2 3 4 5 6 7
Age

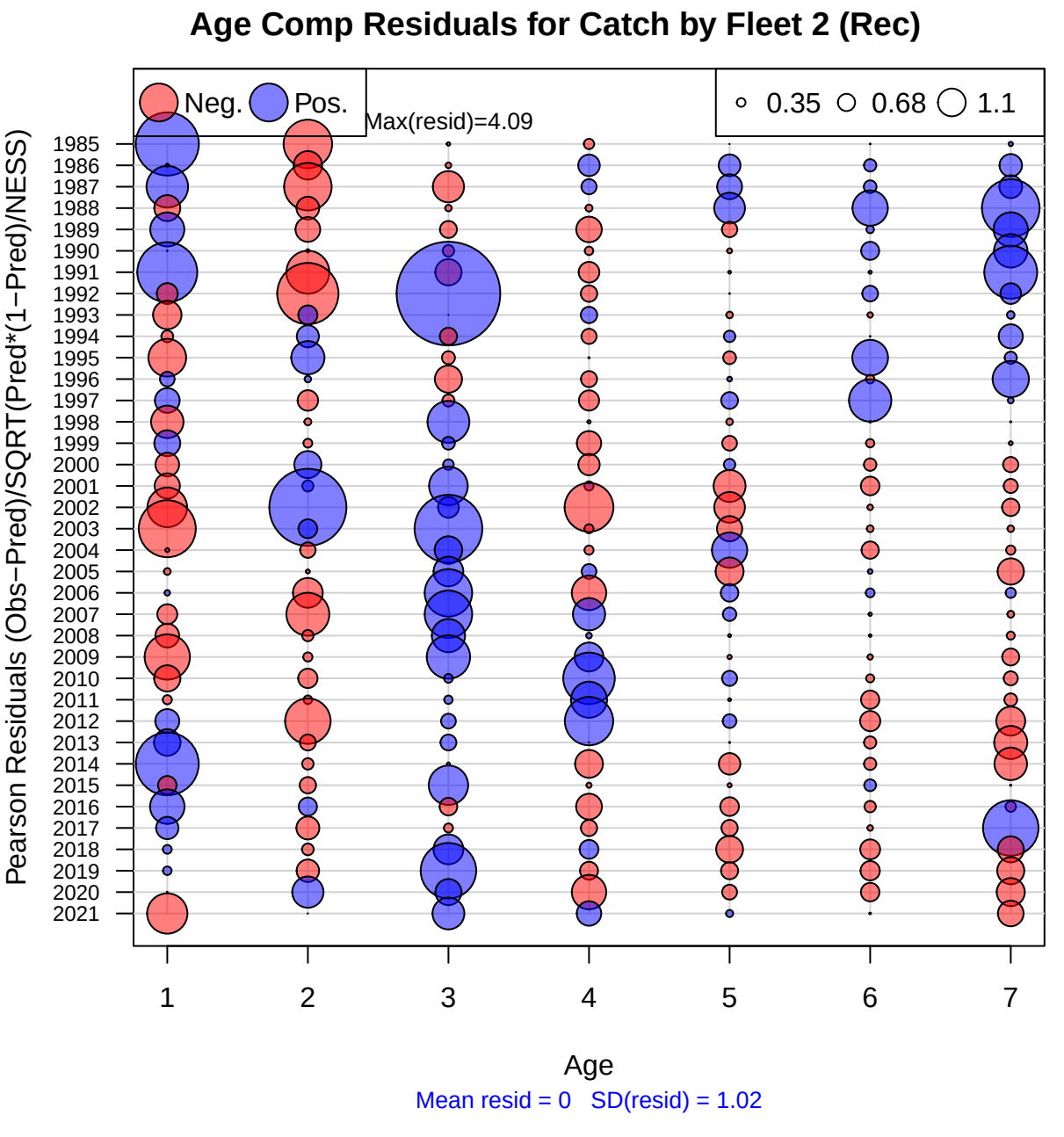

Catch
Year = 2014
Year = 2019
Year = 1986
Year = 2015
Year = 2020
Year = 1987
Year = 2016
Year = 2021
Year = 1988
Year = 2017
Fleet 2
Rec
Year = 1989
Year = 2018
Year = 1985
Year = 1990
Proportion at Age
Age
0.0
0.6
1
2
3
4
5
6
7

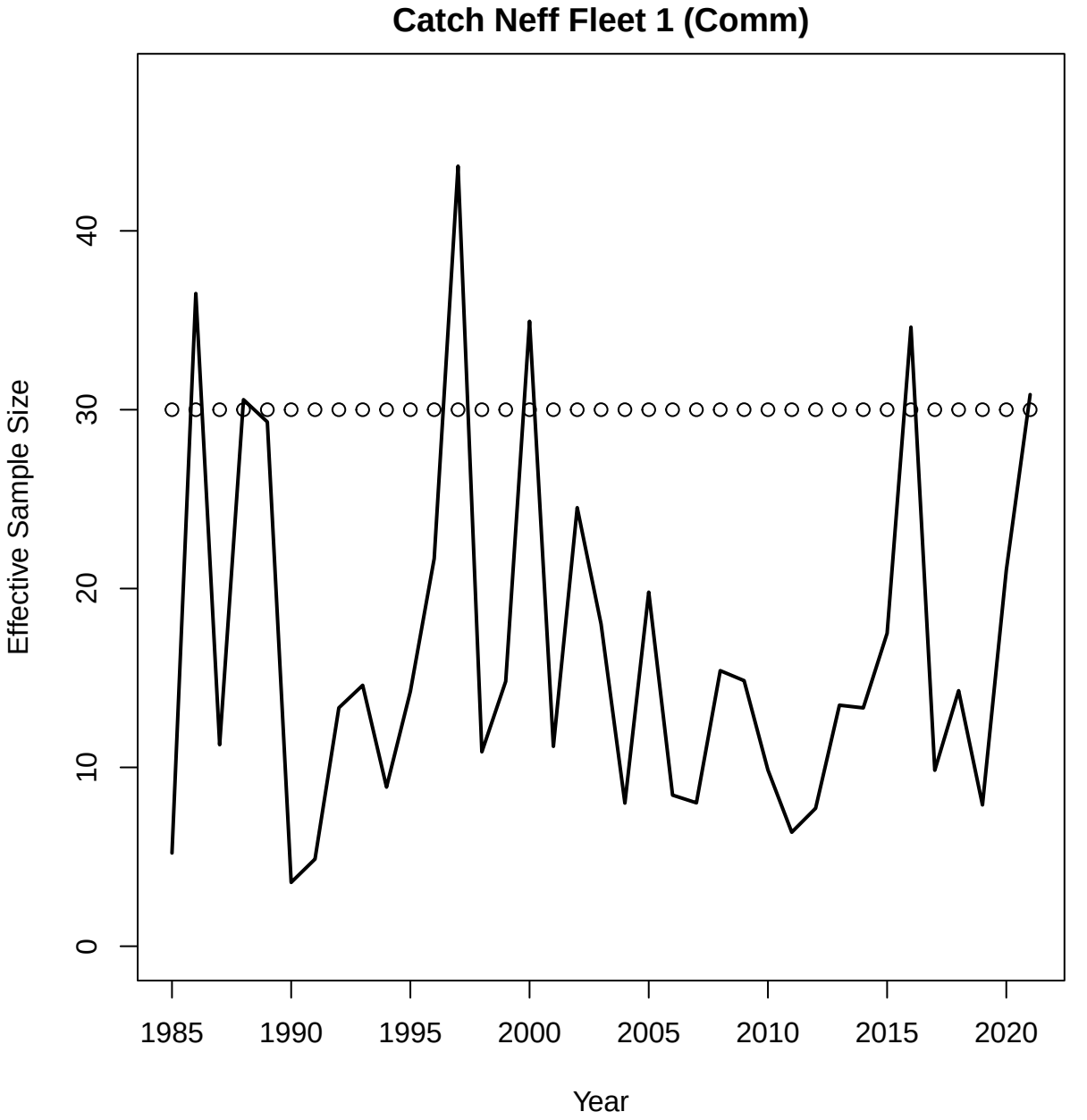

Catch
Year = 1991
Year = 1996
Year = 2001
Year = 1992
Year = 1997
Year = 2002
Year = 1993
Year = 1998
Year = 2003
Year = 1994
Year = 1999
Year = 2004
Year = 1995
Year = 2000
Year = 2005
Proportion at Age
Age
0.0
0.6
1
2
3
4
5
6
7

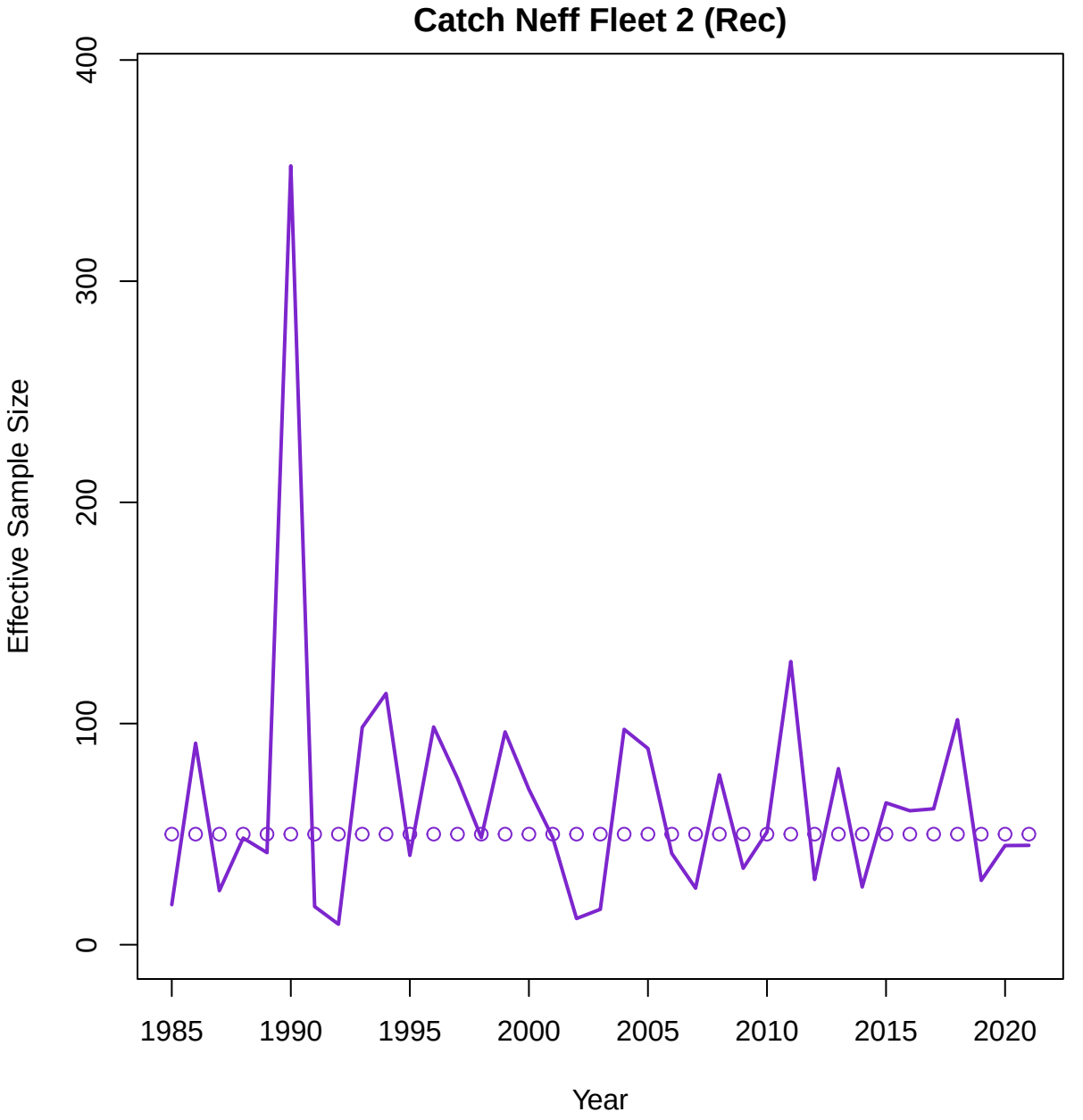

Catch
Year = 2006
Year = 2011
Year = 2016
Year = 2007
Year = 2012
Year = 2017
Year = 2008
Year = 2013
Year = 2018
Year = 2009
Year = 2014
Year = 2019
Year = 2010
Year = 2015
Year = 2020
Proportion at Age
Age
0.0
0.6
1
2
3
4
5
6
7

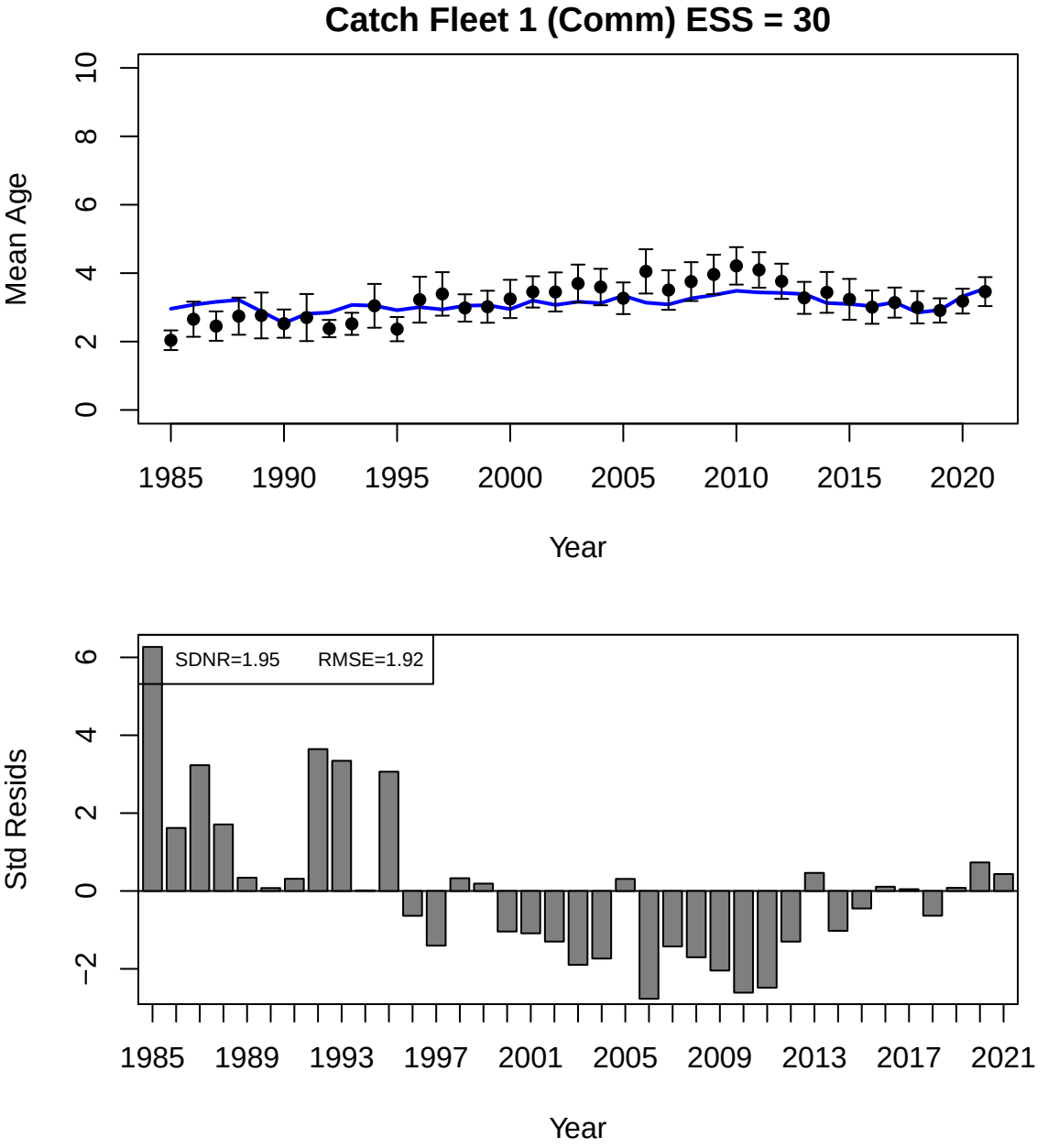

Catch
Year = 2021
Proportion at Age
0.0
0.6
1
2
3
4
5
6
7
Age

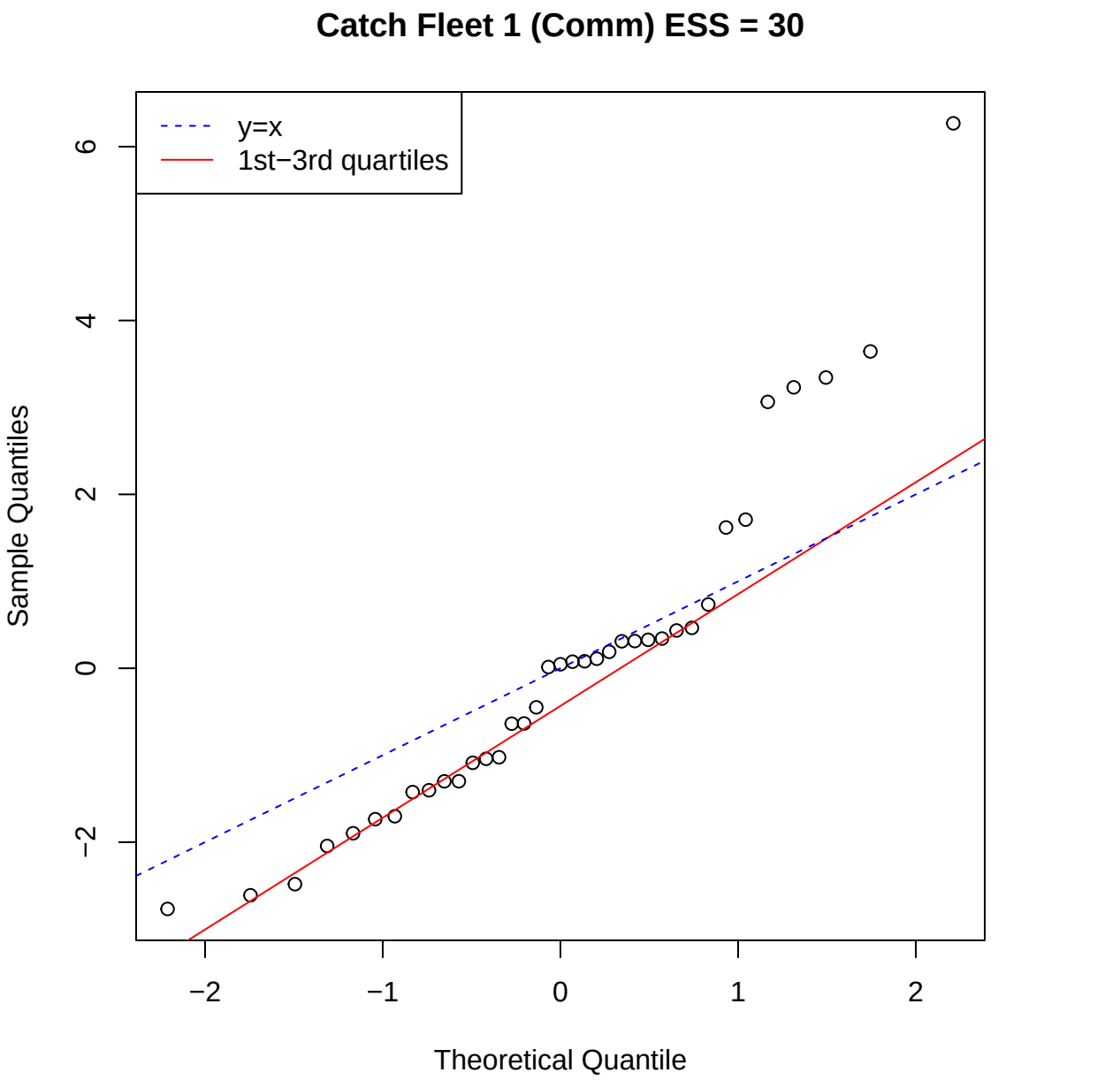

Age Comp Residuals for Catch by Fleet 1 (Comm)
Neg.
Pos.
Max(resid)=3.41
0.45
0.79
1.44
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0.01 SD(resid) = 1.32

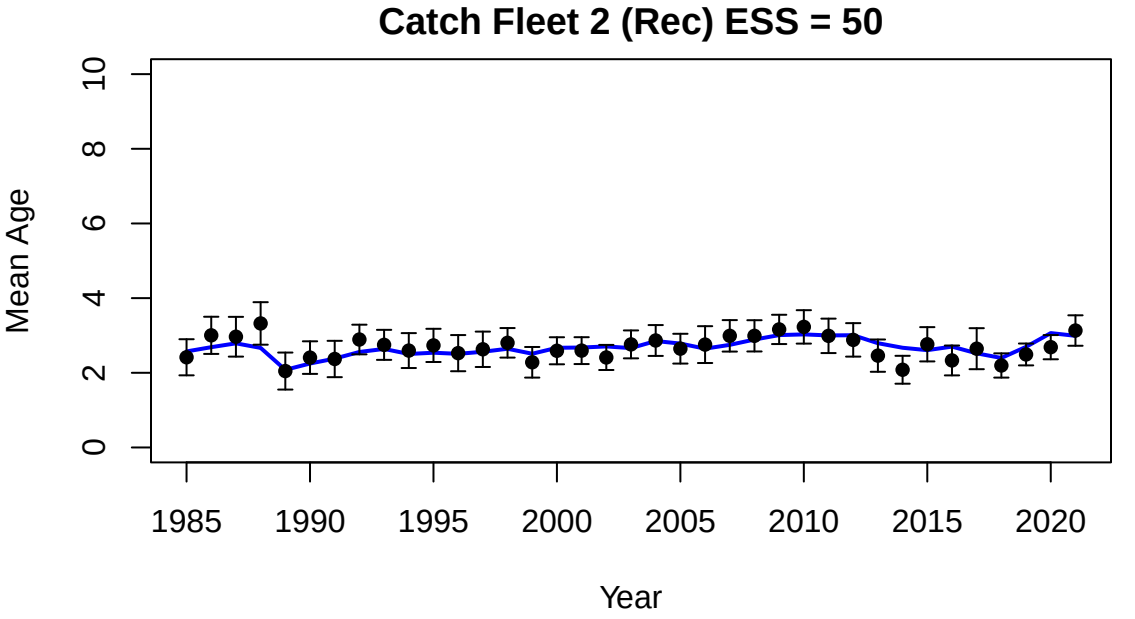

Age Comp Residuals for Catch by Fleet 2 (Rec)
Neg.
Pos.
Max(resid)=4.09
0.35
0.68
1.1
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0 SD(resid) = 1.02

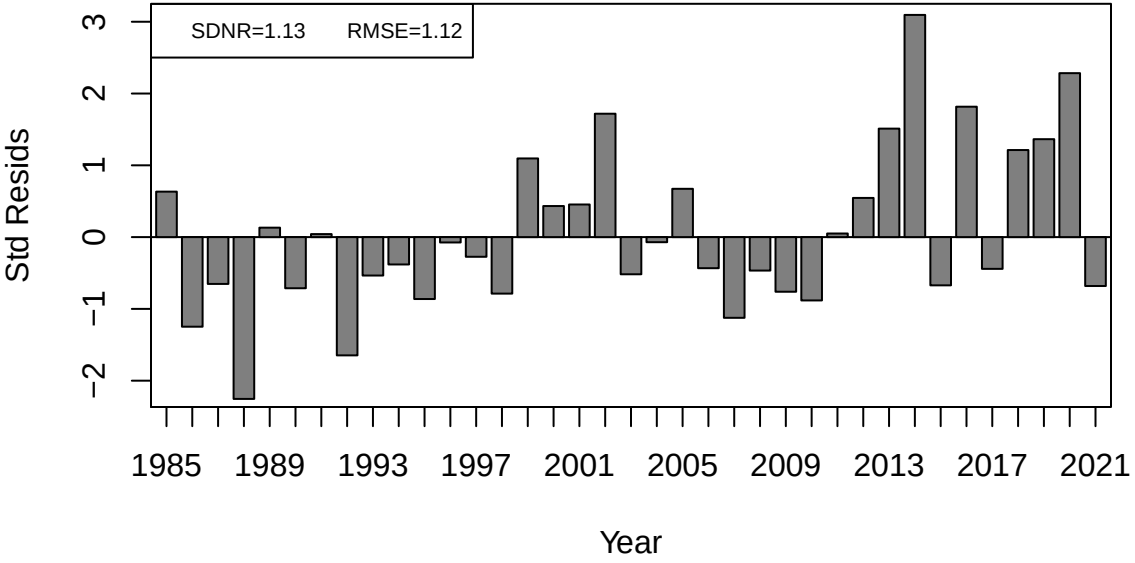

Catch Neff Fleet 1 (Comm)
Effective Sample Size
0
10
20
30
40
1985
1990
1995
2000
2005
2010
2015
2020
Year

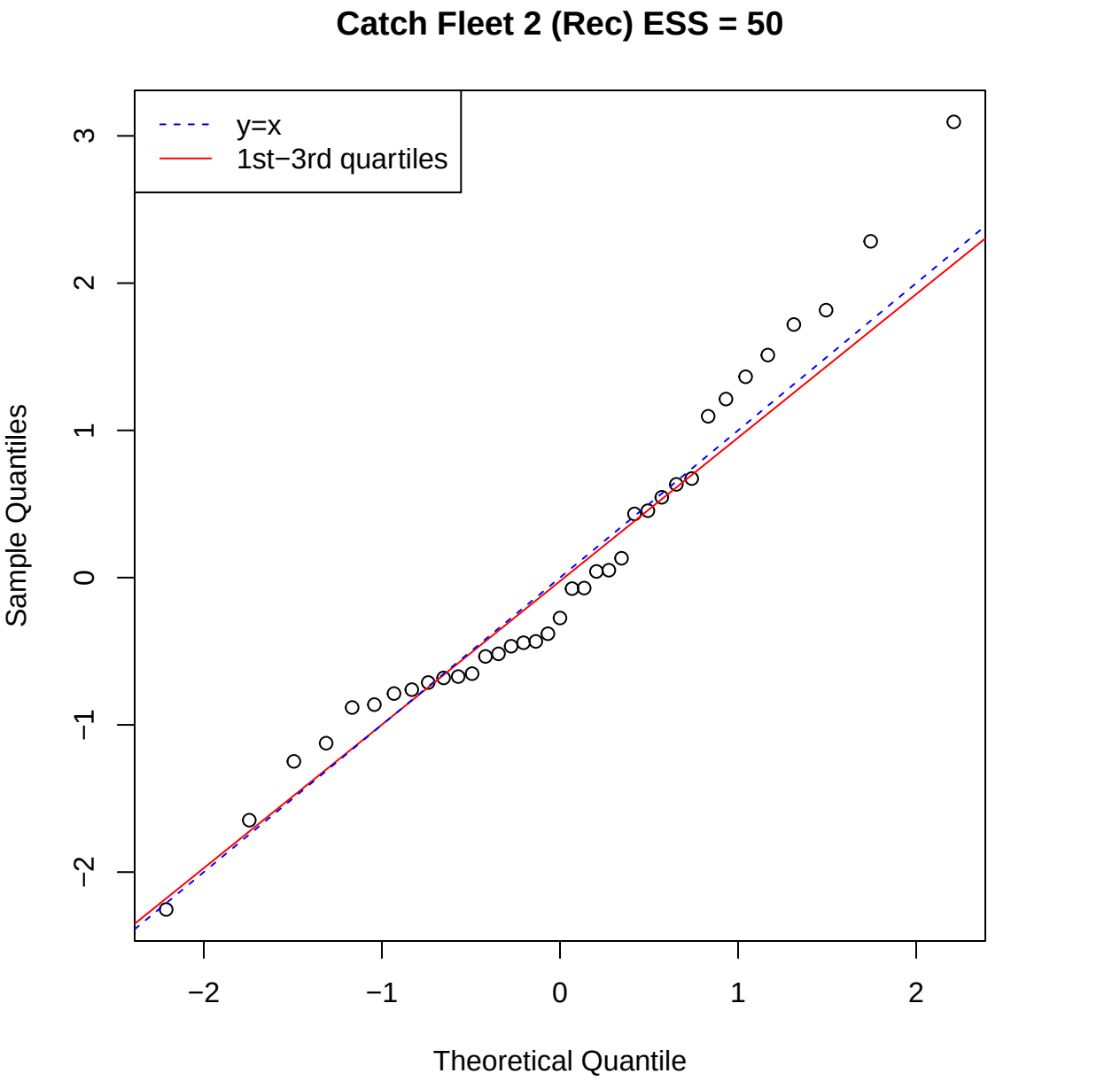

Catch Neff Fleet 2 (Rec)
Effective Sample Size
0
100
200
300
400
1985
1990
1995
2000
2005
2010
2015
2020
Year


Catch Fleet 1 (Comm) ESS = 30
Mean Age
0
2
4
6
8
10
1985
1990
1995
2000
2005
2010
2015
2020
Year
SDNR=1.95
RMSE=1.92
Std Resids
−2
0
2
4
6
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Year

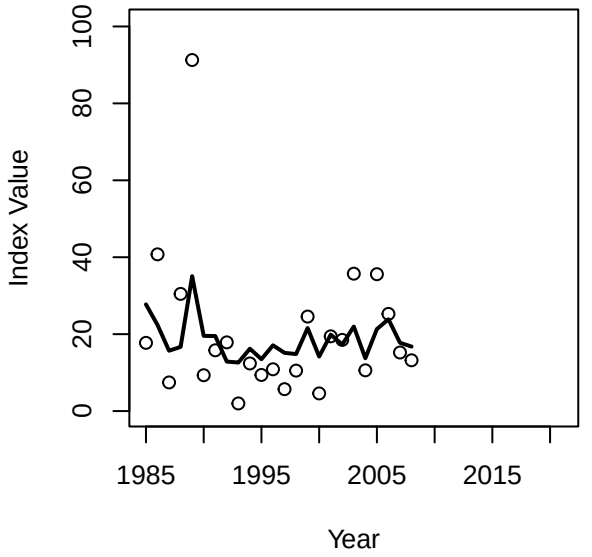

Catch Fleet 1 (Comm) ESS = 30
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
6
4
2
0
−2
−2
−1
0
1
2

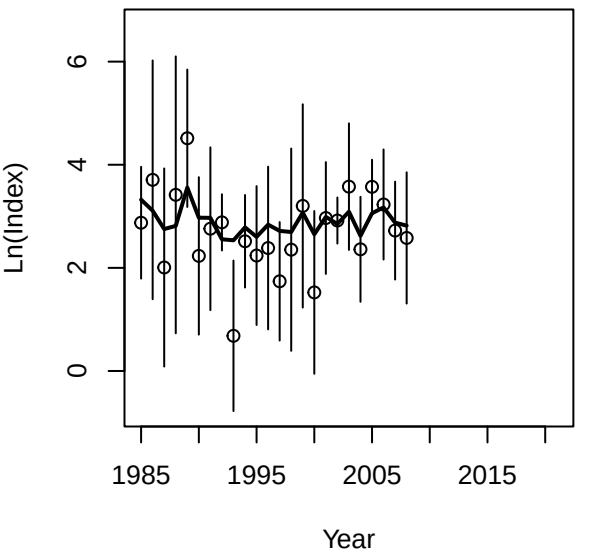

Catch Fleet 2 (Rec) ESS = 50
Mean Age
0
2
4
6
8
10
1985
1990
1995
2000
2005
2010
2015
2020
Year

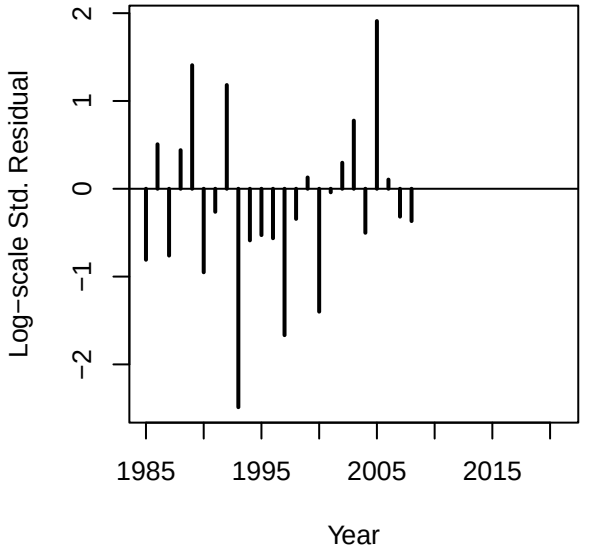

SDNR=1.13
RMSE=1.12
Std Resids
−2
−1
0
1
2
3
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Year

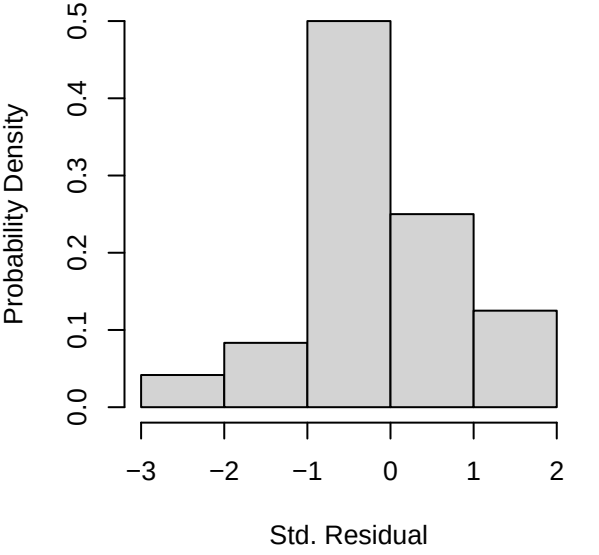

Catch Fleet 2 (Rec) ESS = 50
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−2
−1
0
1
2
3

Index 1 (NEFSC Inshore)

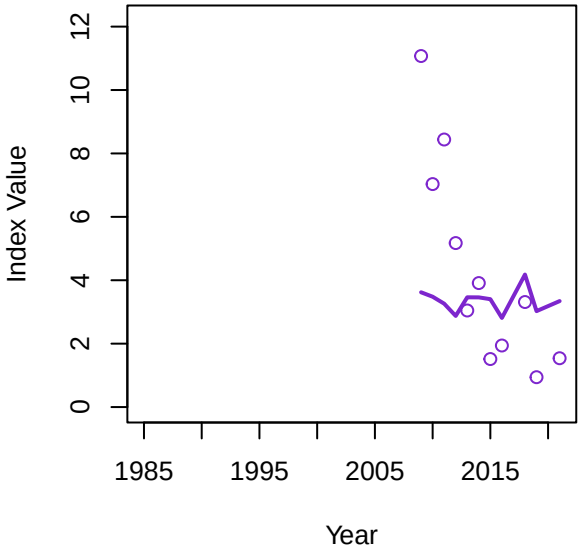


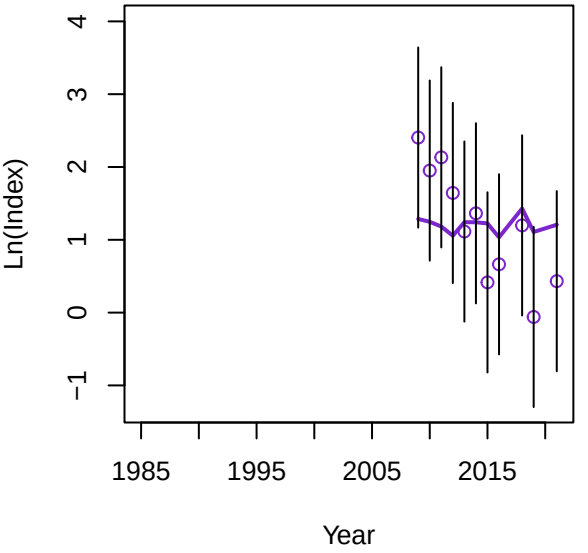


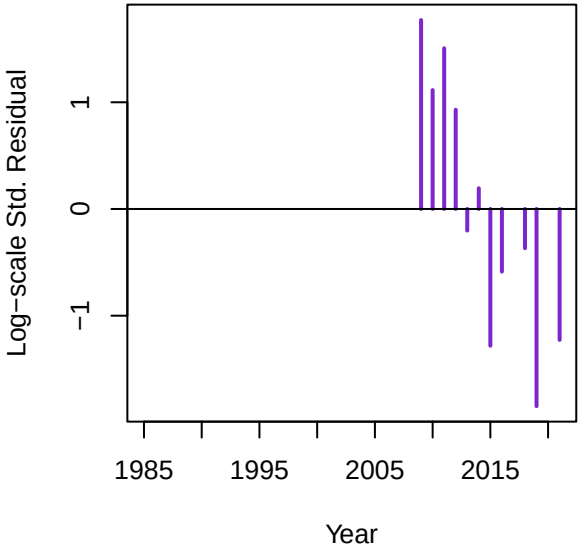


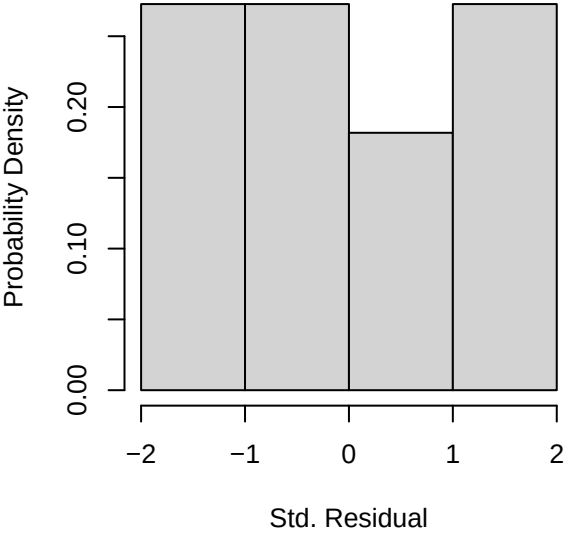


Index 2 (Bigelow)

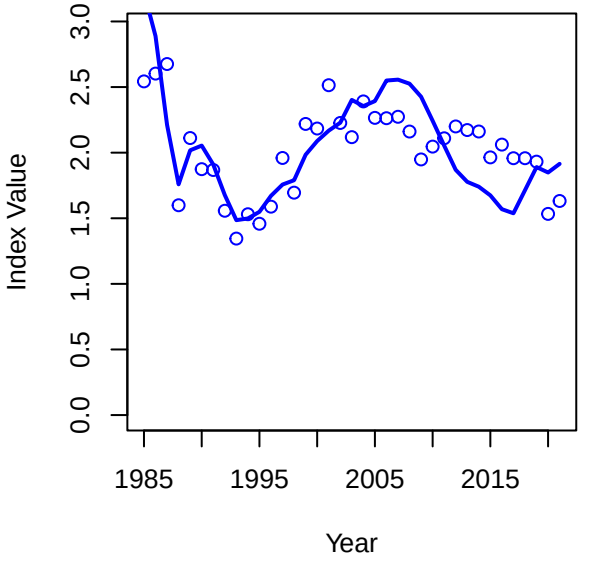


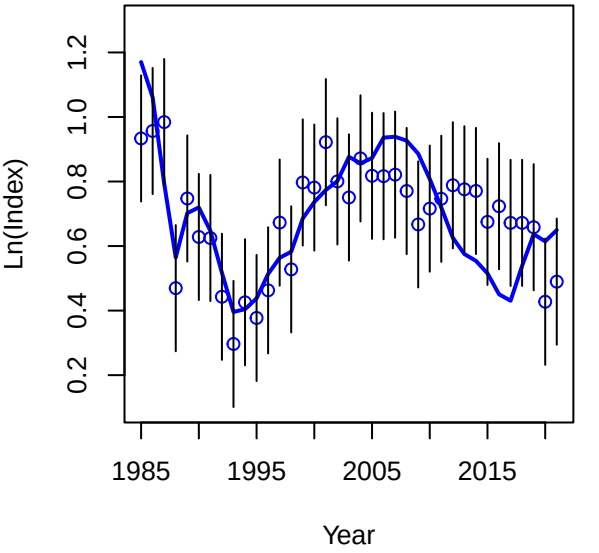


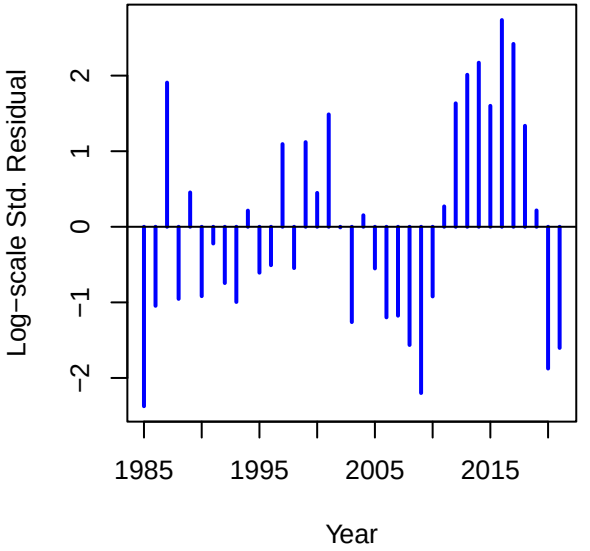


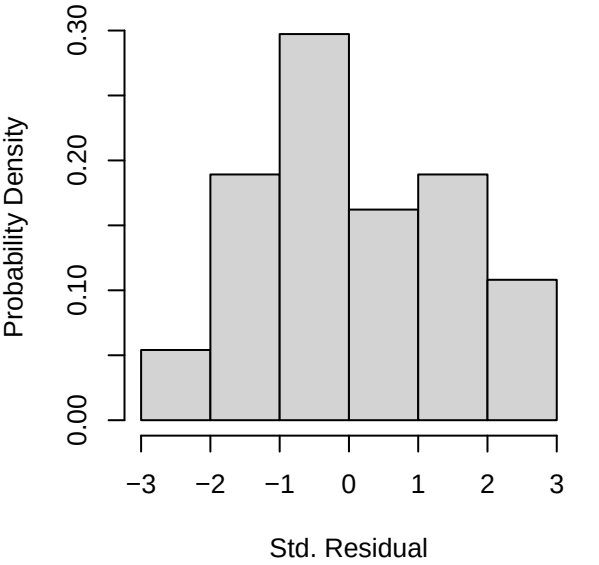


Index 3 (MRIP)

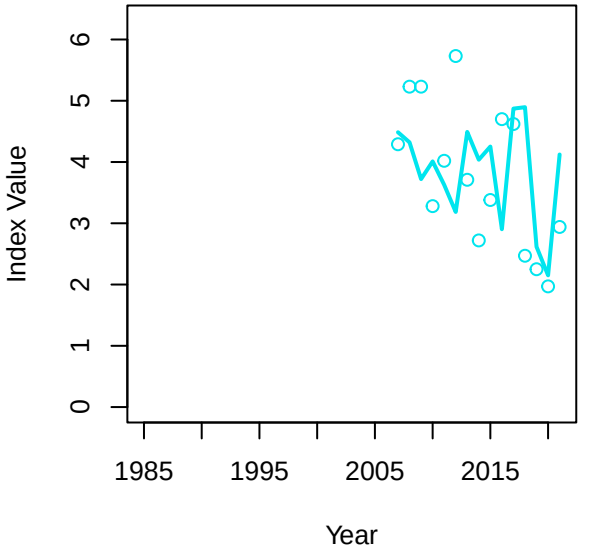

Index Value
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1985
1995
2005
2015
Year

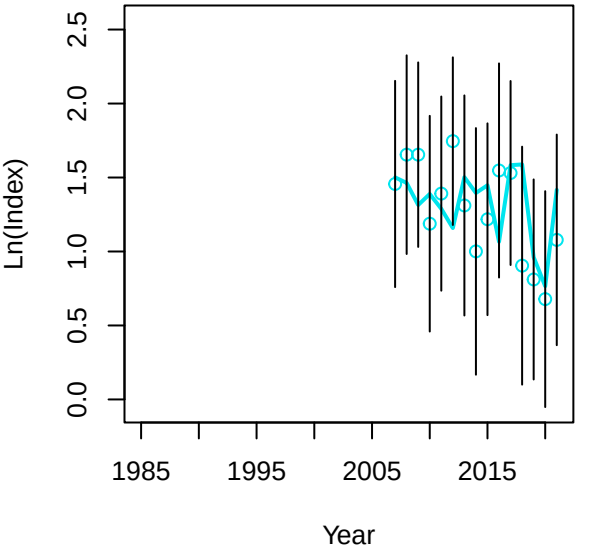

Ln(Index)
0.2
0.4
0.6
0.8
1.0
1.2
1985
1995
2005
2015
Year

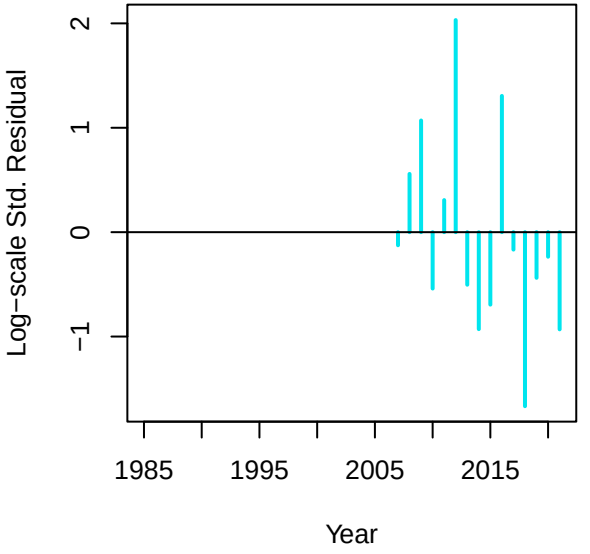

Log−scale Std. Residual
−2
−1
0
1
2
1985
1995
2005
2015
Year

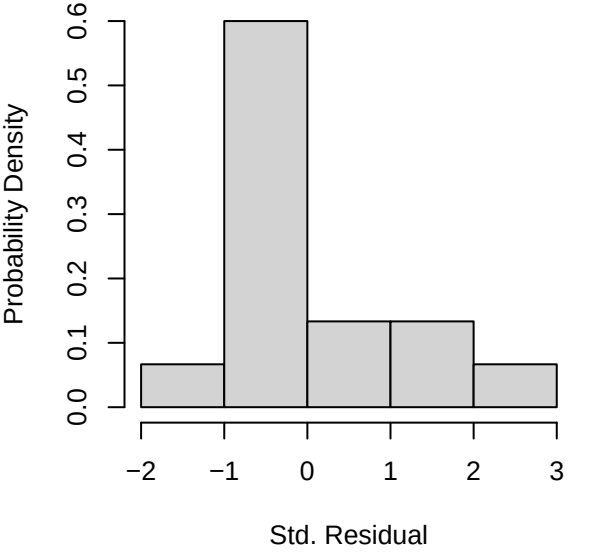

Probability Density
0.00
0.10
0.20
0.30
−3
−2
−1
0
1
2
3
Std. Residual

Index 4 (NEAMAP)

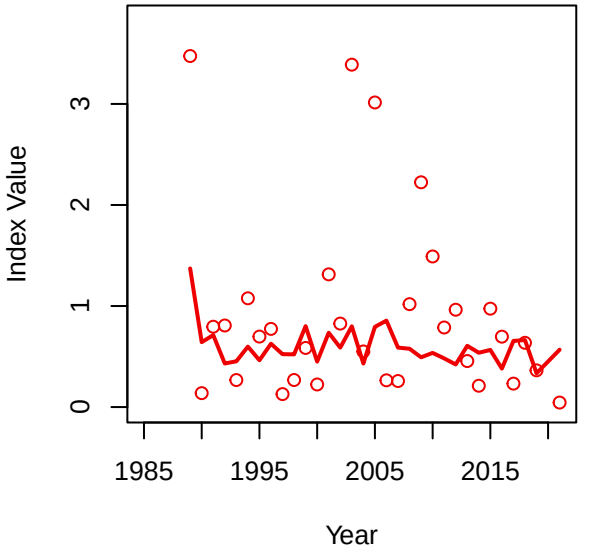


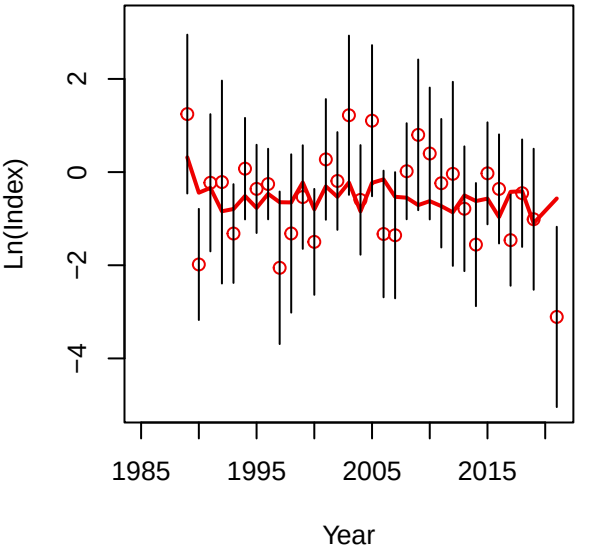


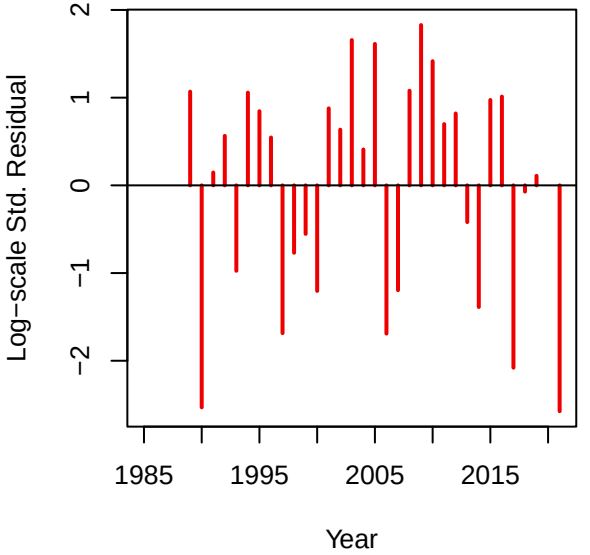


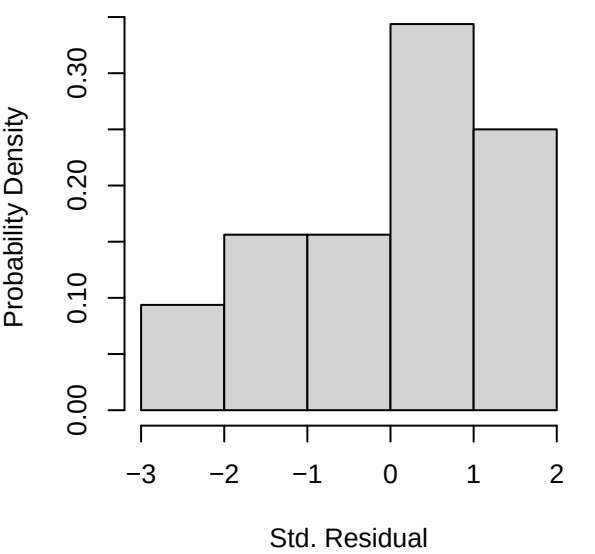


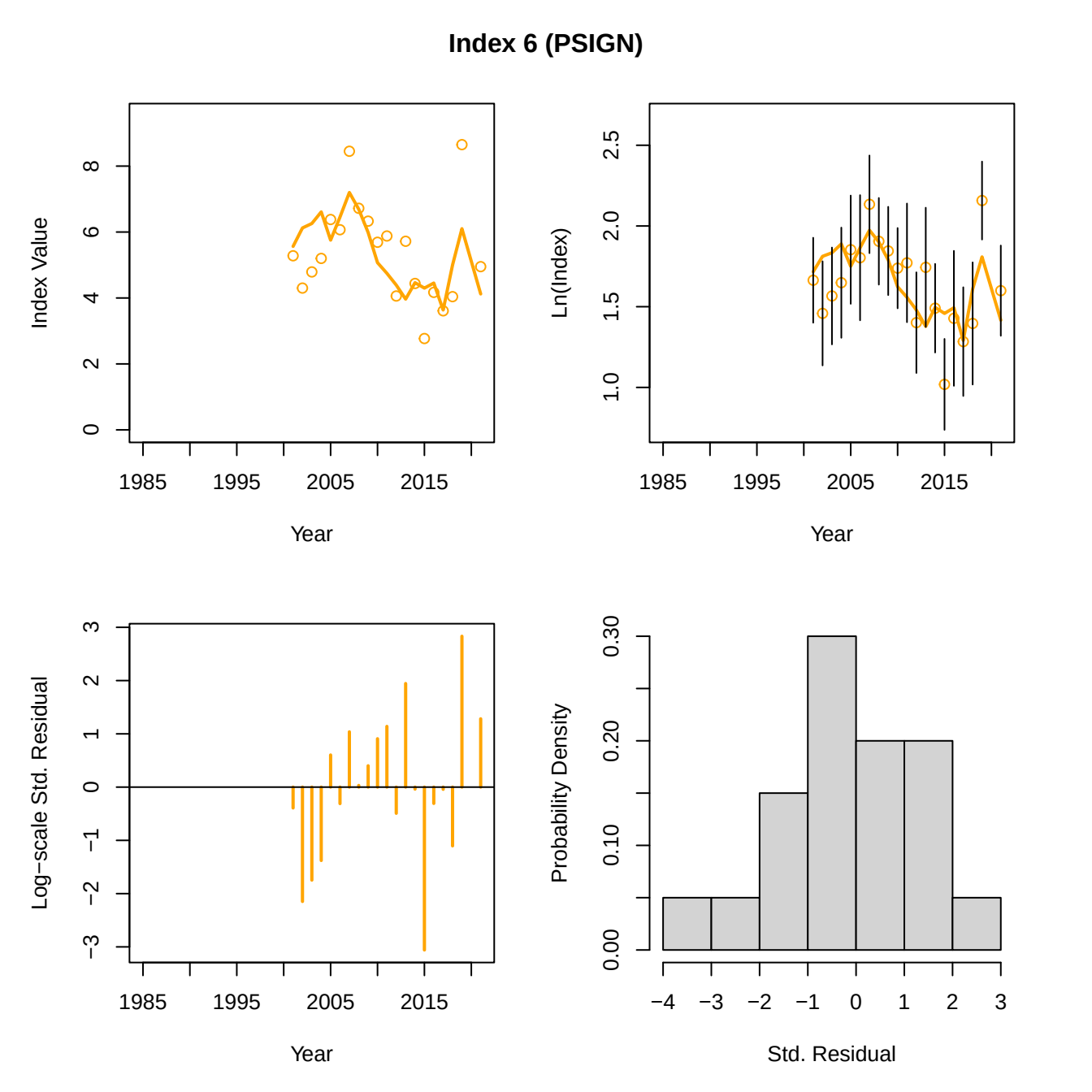
Index 5 (SEAMAP)

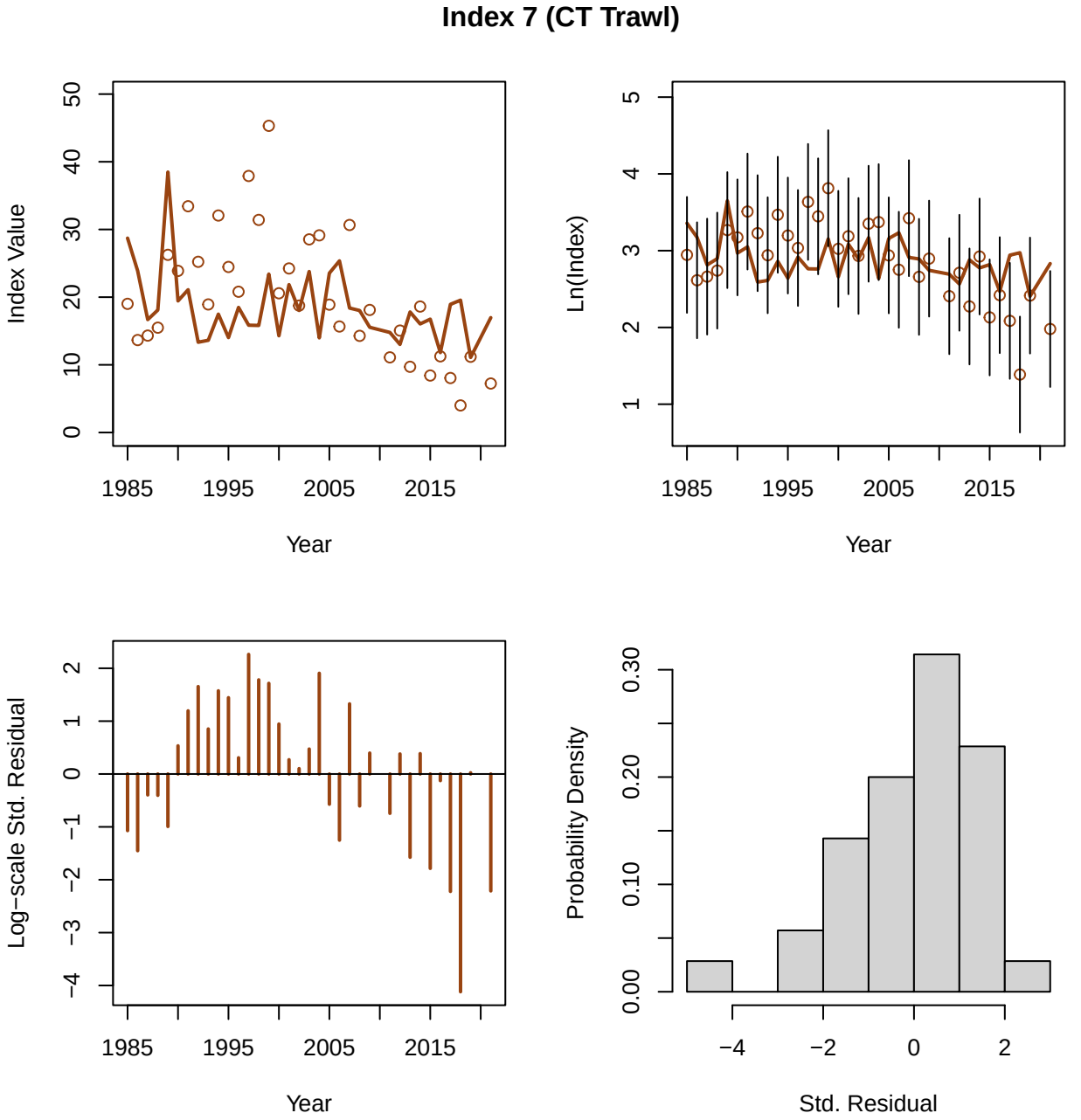


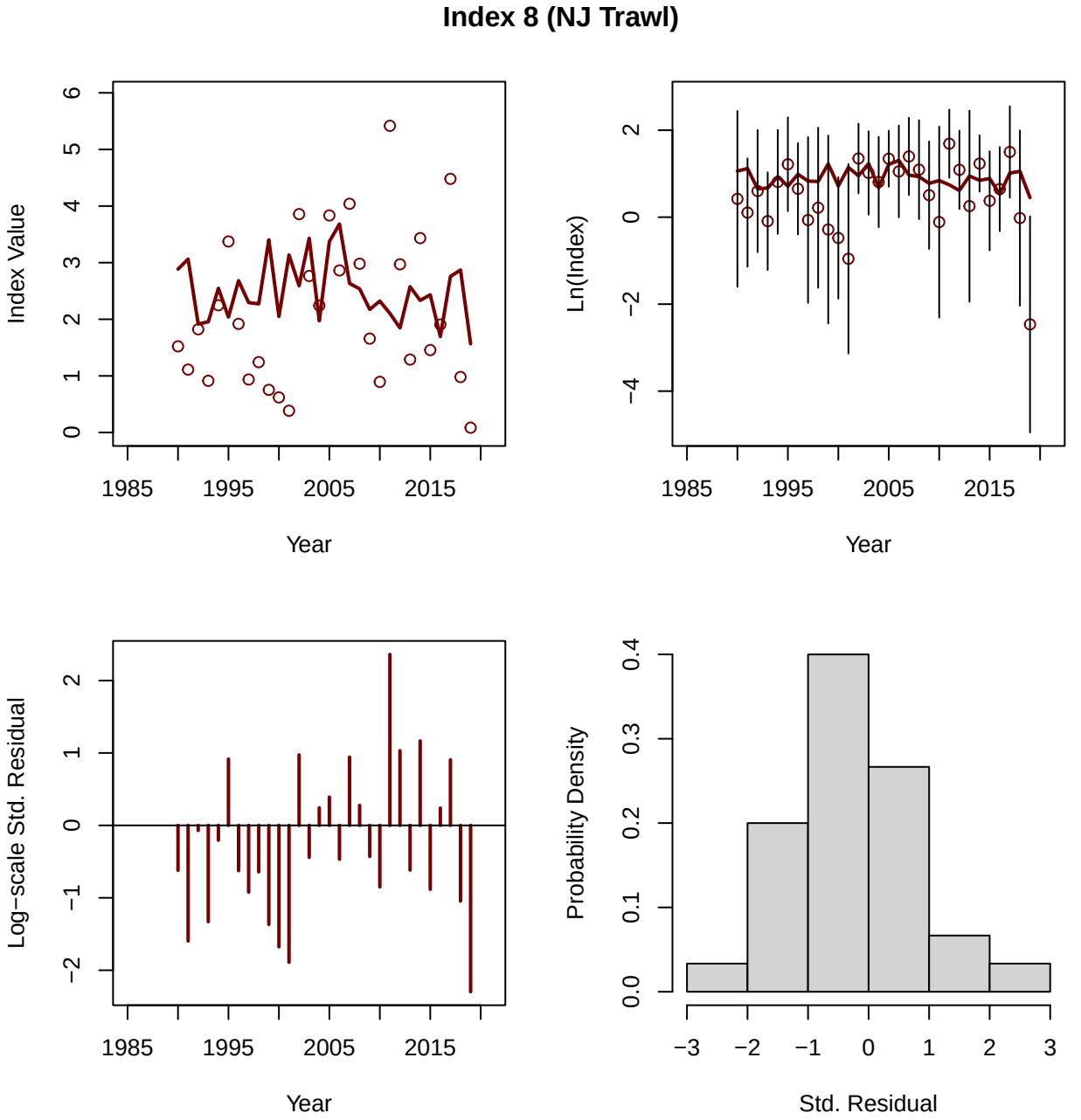


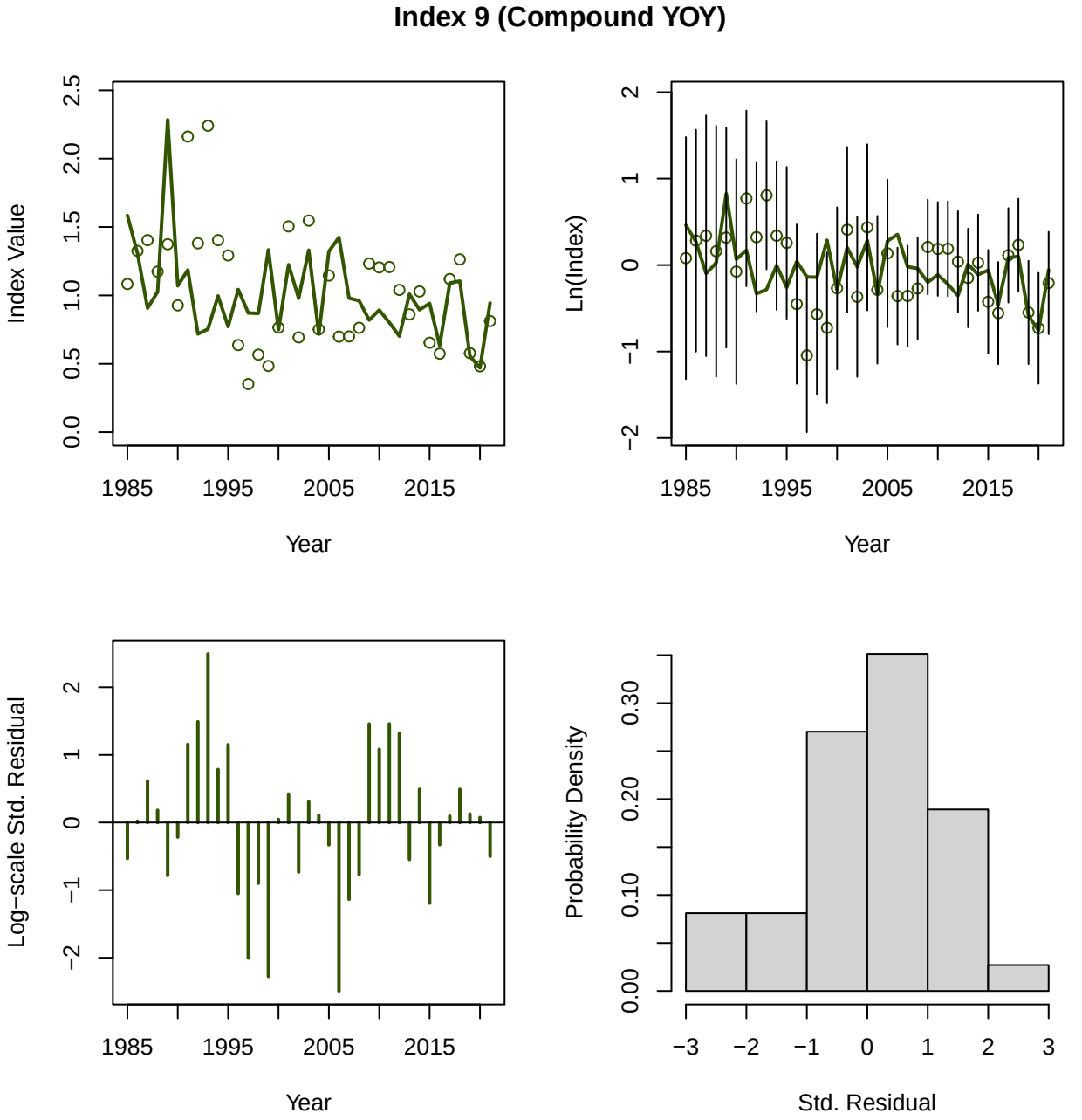


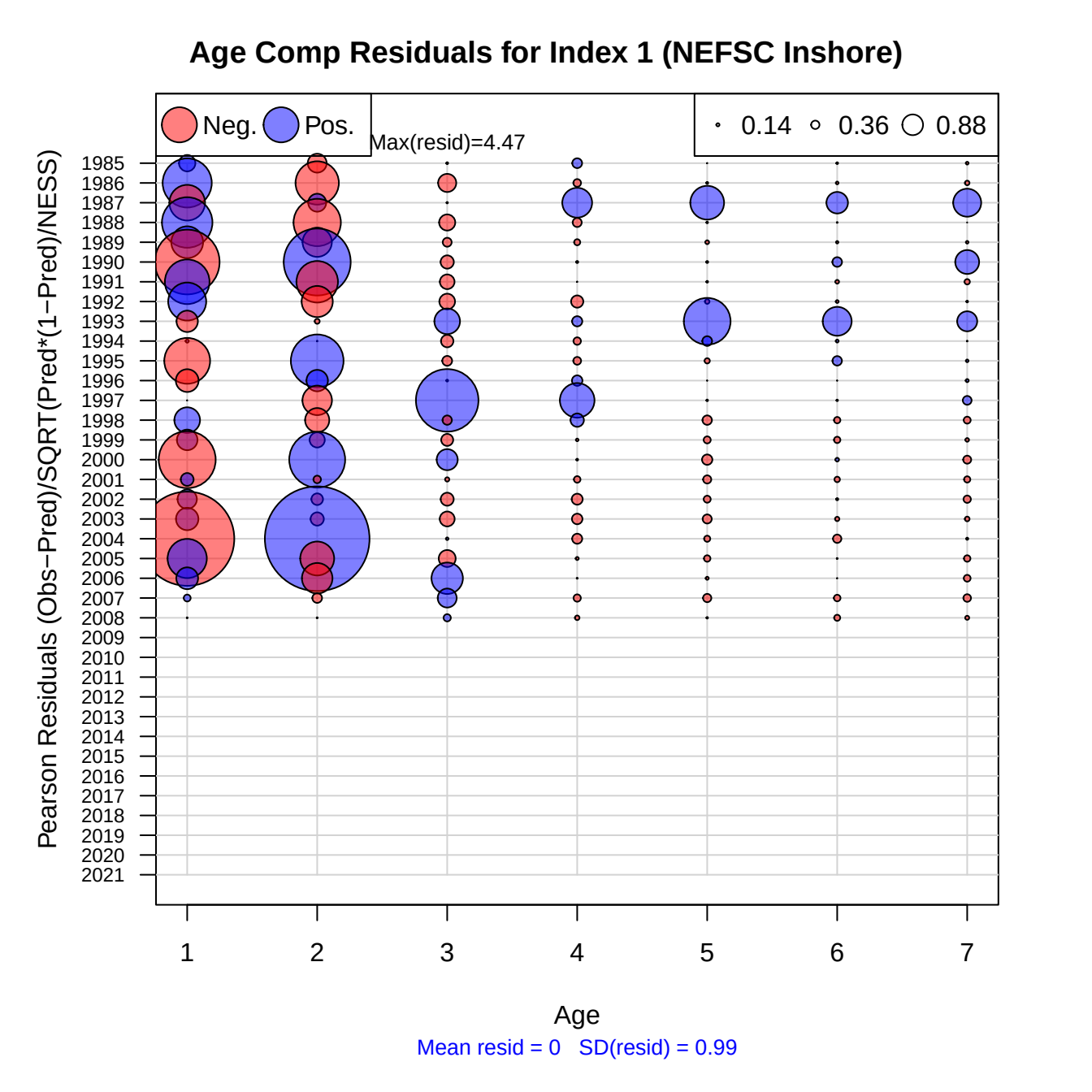


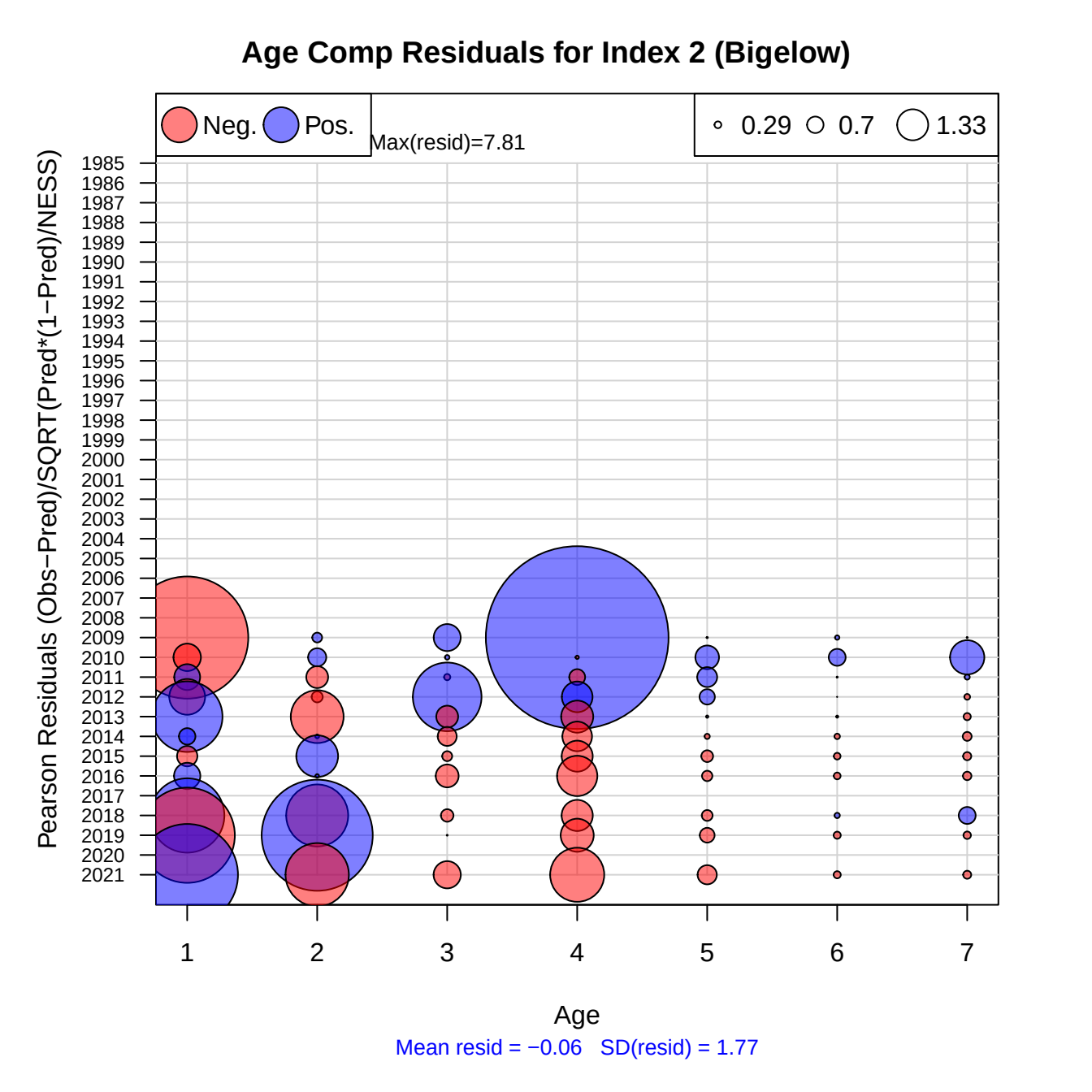

Index 6 (PSIGN)
Index Value
0
2
4
6
8
1985
1995
2005
2015
Year
Ln(Index)
1.0
1.5
2.0
2.5
1985
1995
2005
2015
Year
Log−scale Std. Residual
−3
−2
−1
0
1
2
3
1985
1995
2005
2015
Year
Probability Density
0.00
0.10
0.20
0.30
−4
−3
−2
−1
0
1
2
3
Std. Residual

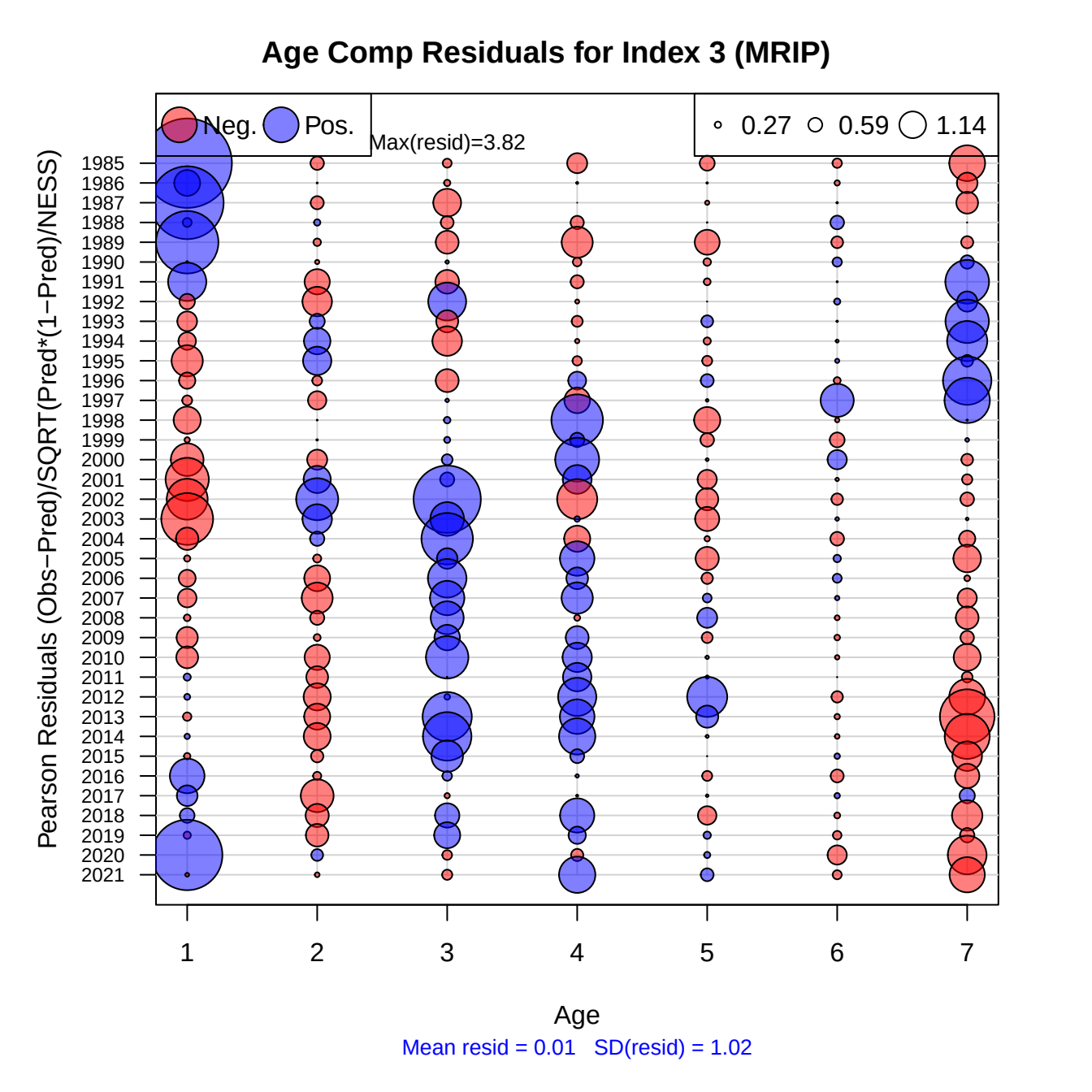

Index 7 (CT Trawl)
Index Value
0
10
20
30
40
50
1985
1995
2005
2015
Year
Ln(Index)
1
2
3
4
5
1985
1995
2005
2015
Year
Log−scale Std. Residual
−4
−3
−2
−1
0
1
2
1985
1995
2005
2015
Year
Probability Density
0.00
0.10
0.20
0.30
−4
−2
0
2
Std. Residual

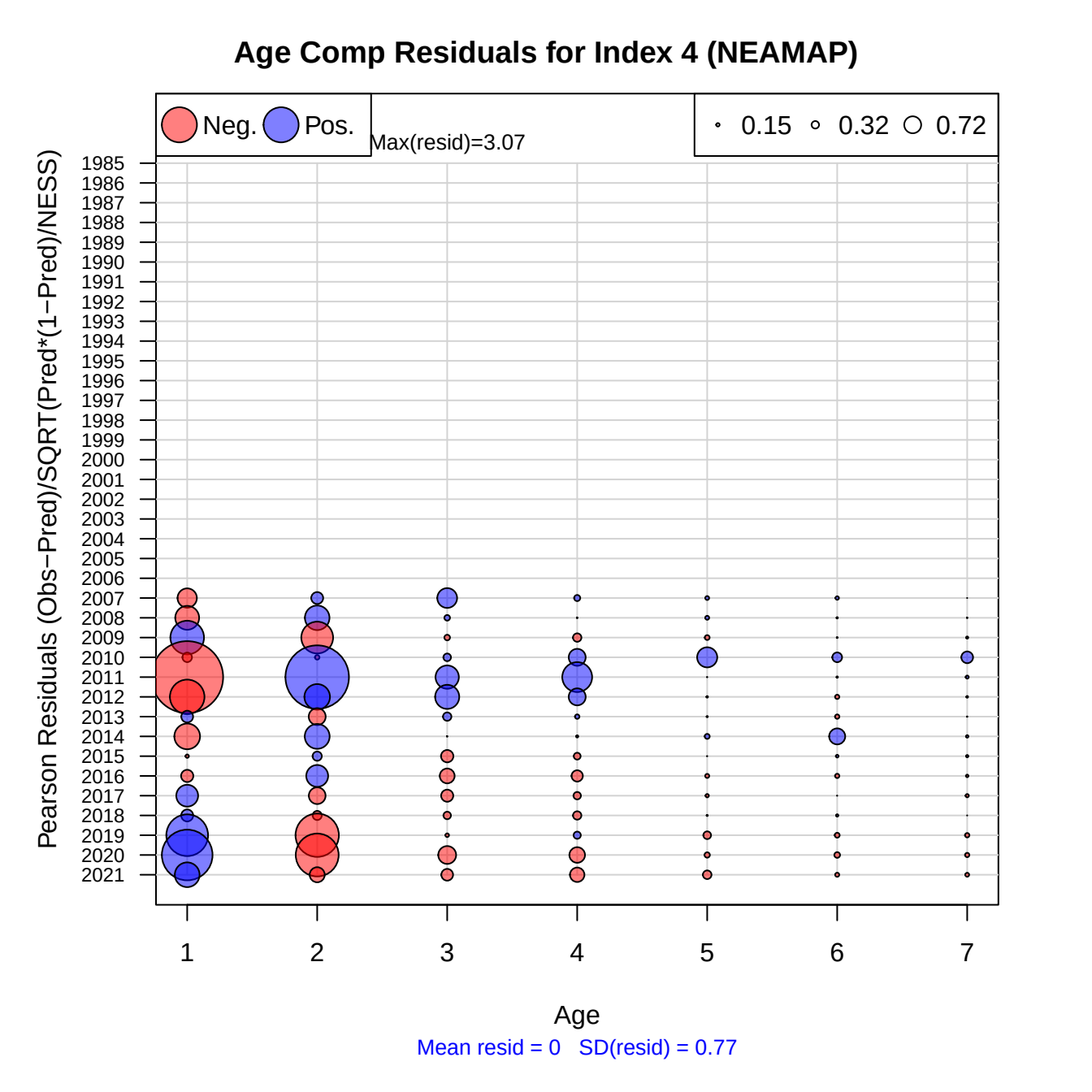

Index 8 (NJ Trawl)
Index Value
0
1
2
3
4
5
6
1985
1995
2005
2015
Year
Ln(Index)
−4
−2
0
2
1985
1995
2005
2015
Year
Log−scale Std. Residual
−2
−1
0
1
2
1985
1995
2005
2015
Year
Probability Density
0.0
0.1
0.2
0.3
0.4
−3
−2
−1
0
1
2
3
Std. Residual

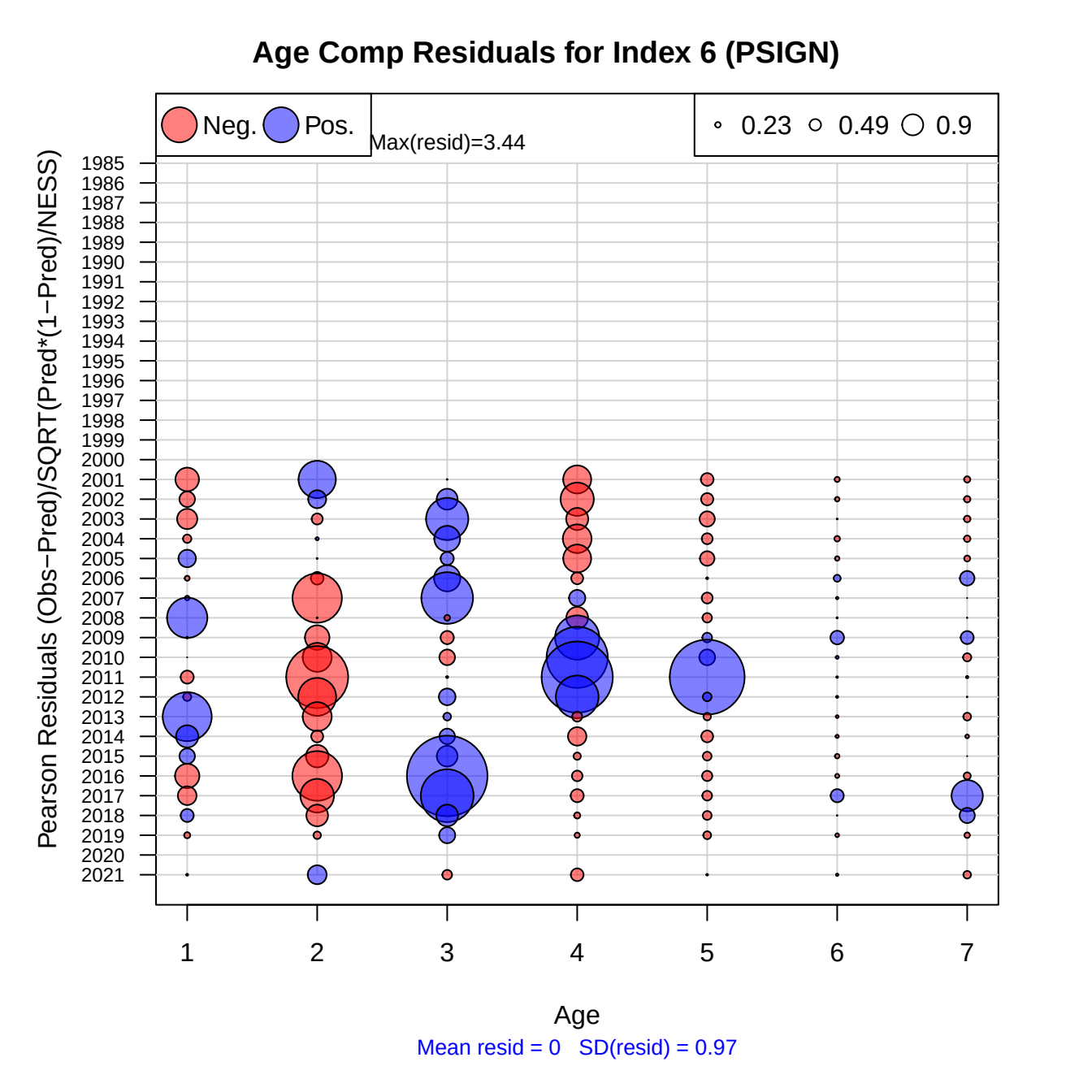

Index 9 (Compound YOY)
Index Value
0.0
0.5
1.0
1.5
2.0
2.5
1985
1995
2005
2015
Year
Ln(Index)
−2
−1
0
1
2
1985
1995
2005
2015
Year
Log−scale Std. Residual
−2
−1
0
1
2
1985
1995
2005
2015
Year
Probability Density
0.00
0.10
0.20
0.30
−3
−2
−1
0
1
2
3
Std. Residual

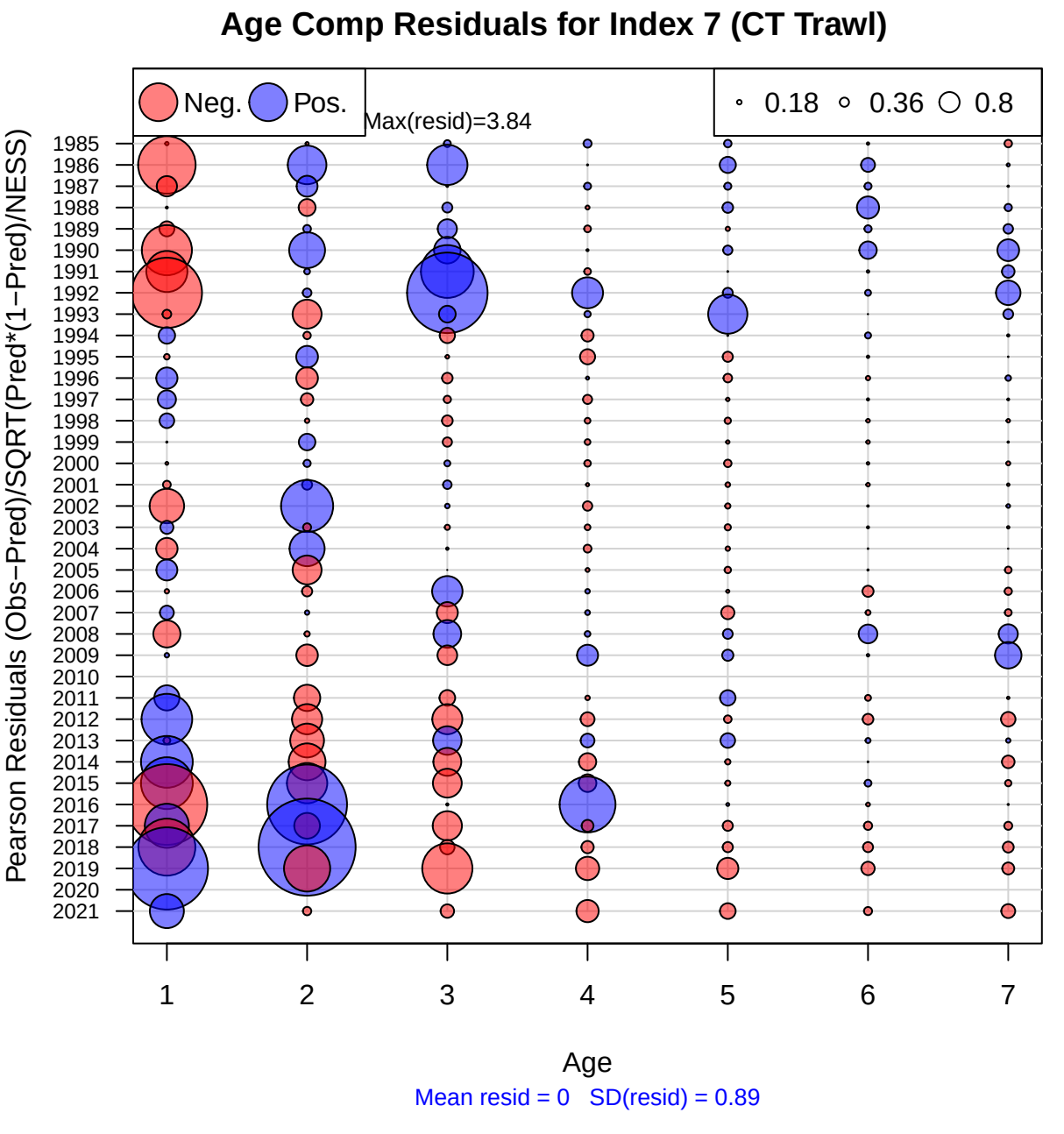

Age Comp Residuals for Index 1 (NEFSC Inshore)
Neg.
Pos.
Max(resid)=4.47
0.14
0.36
0.88
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0 SD(resid) = 0.99

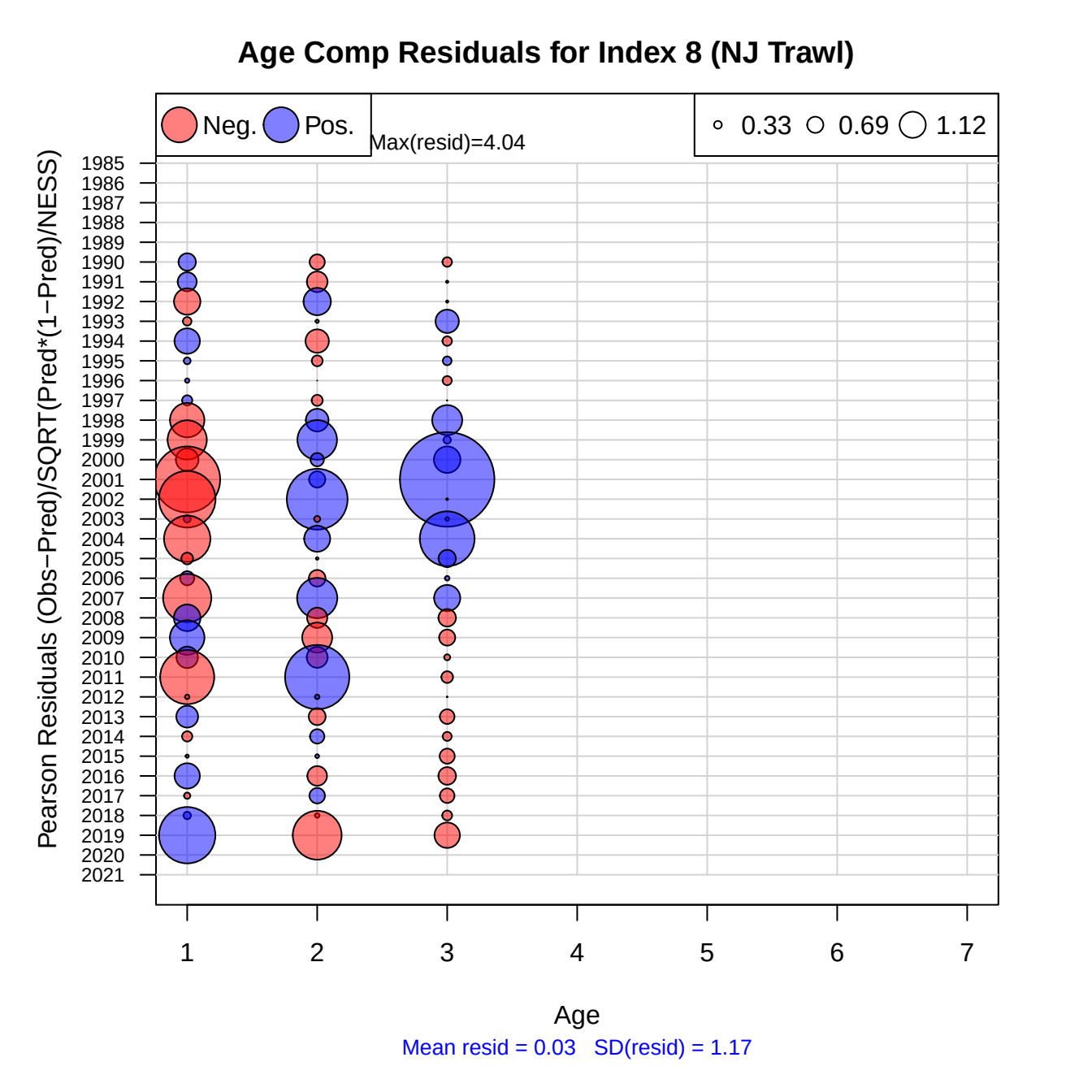

Age Comp Residuals for Index 2 (Bigelow)
Neg.
Pos.
Max(resid)=7.81
0.29
0.7
1.33
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = −0.06 SD(resid) = 1.77

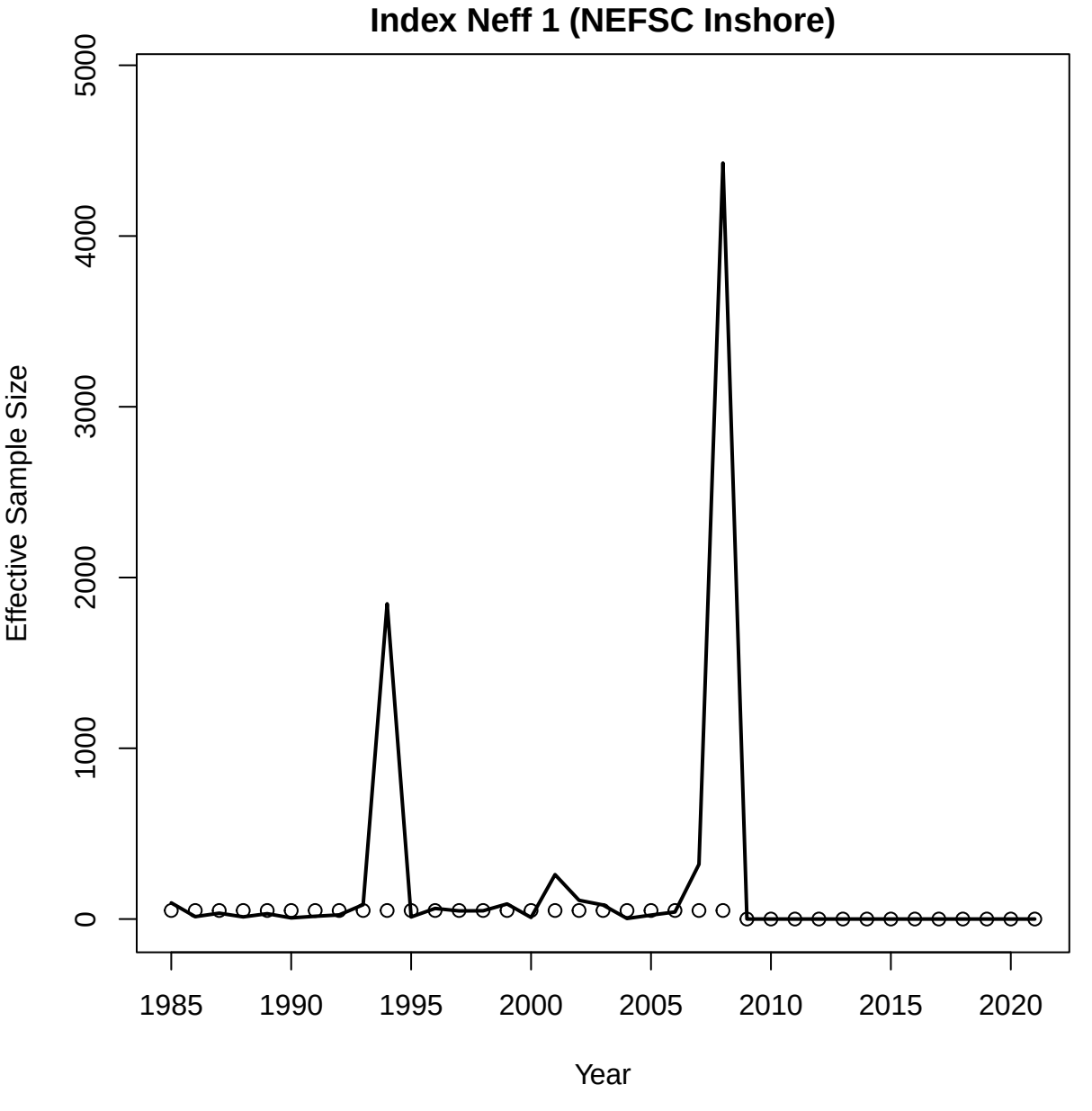

Age Comp Residuals for Index 3 (MRIP)
Neg.
Pos.
Max(resid)=3.82
0.27
0.59
1.14
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0.01 SD(resid) = 1.02

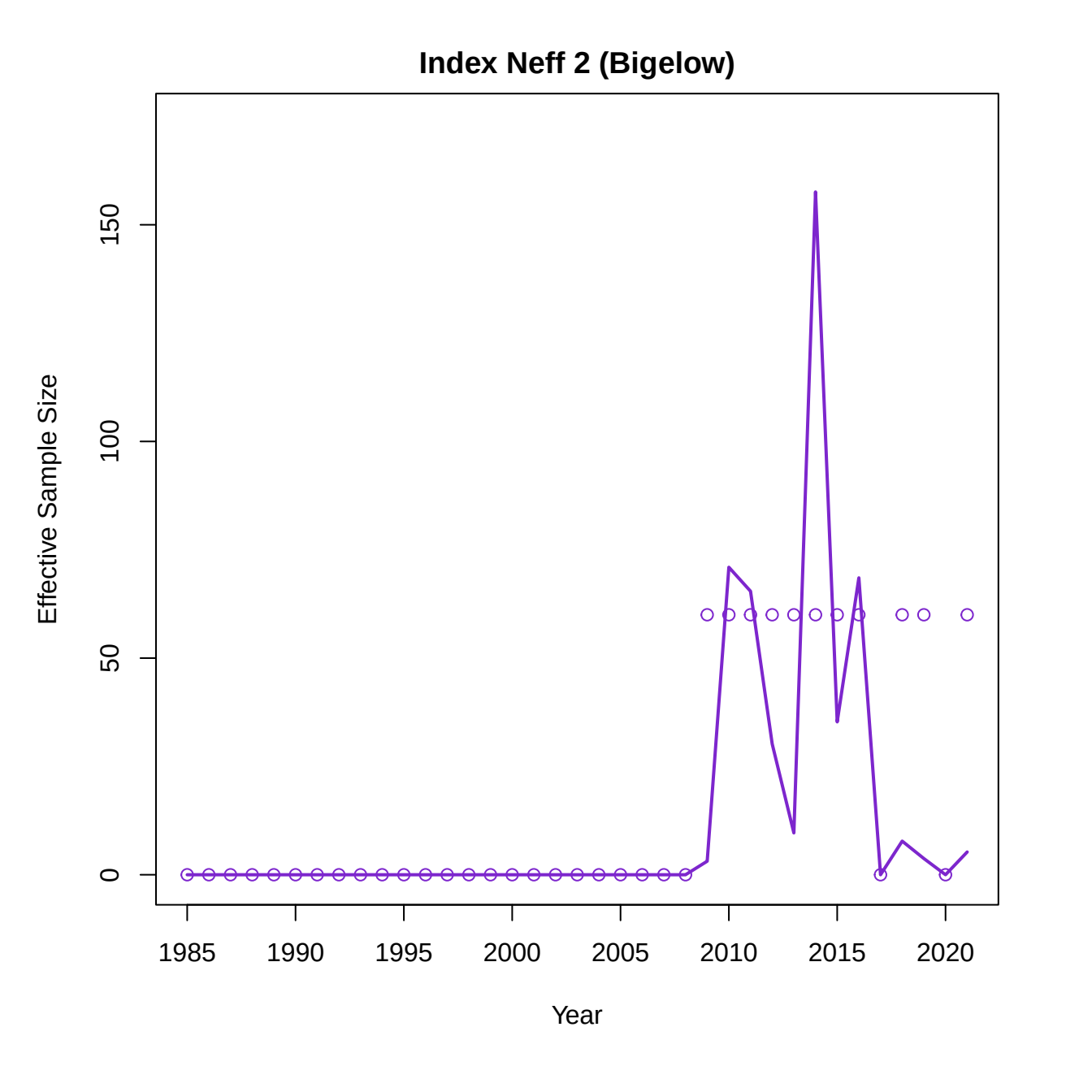

Age Comp Residuals for Index 4 (NEAMAP)
Neg.
Pos.
Max(resid)=3.07
0.15
0.32
0.72
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0 SD(resid) = 0.77

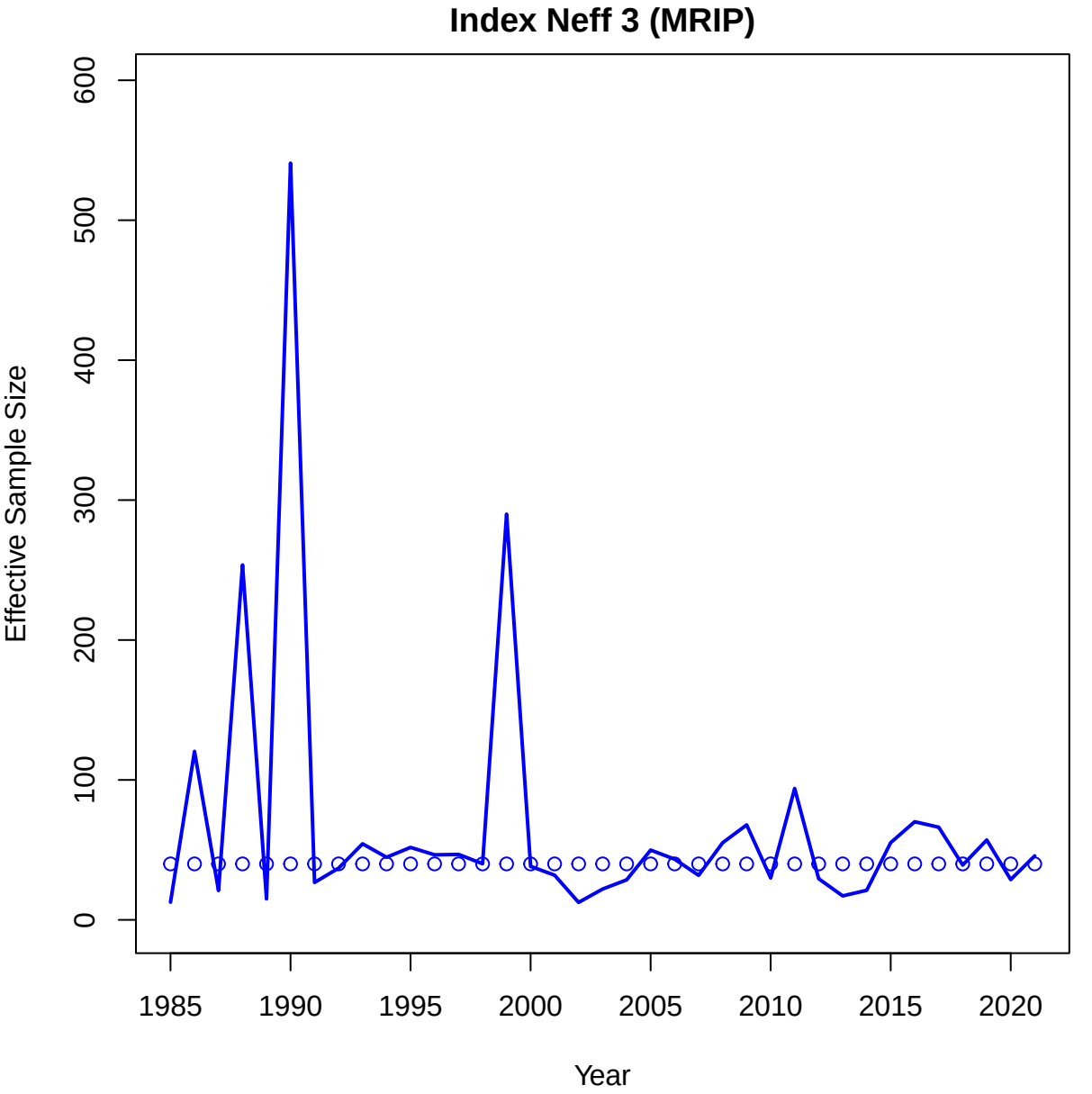

Age Comp Residuals for Index 6 (PSIGN)
Neg.
Pos.
Max(resid)=3.44
0.23
0.49
0.9
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0 SD(resid) = 0.97

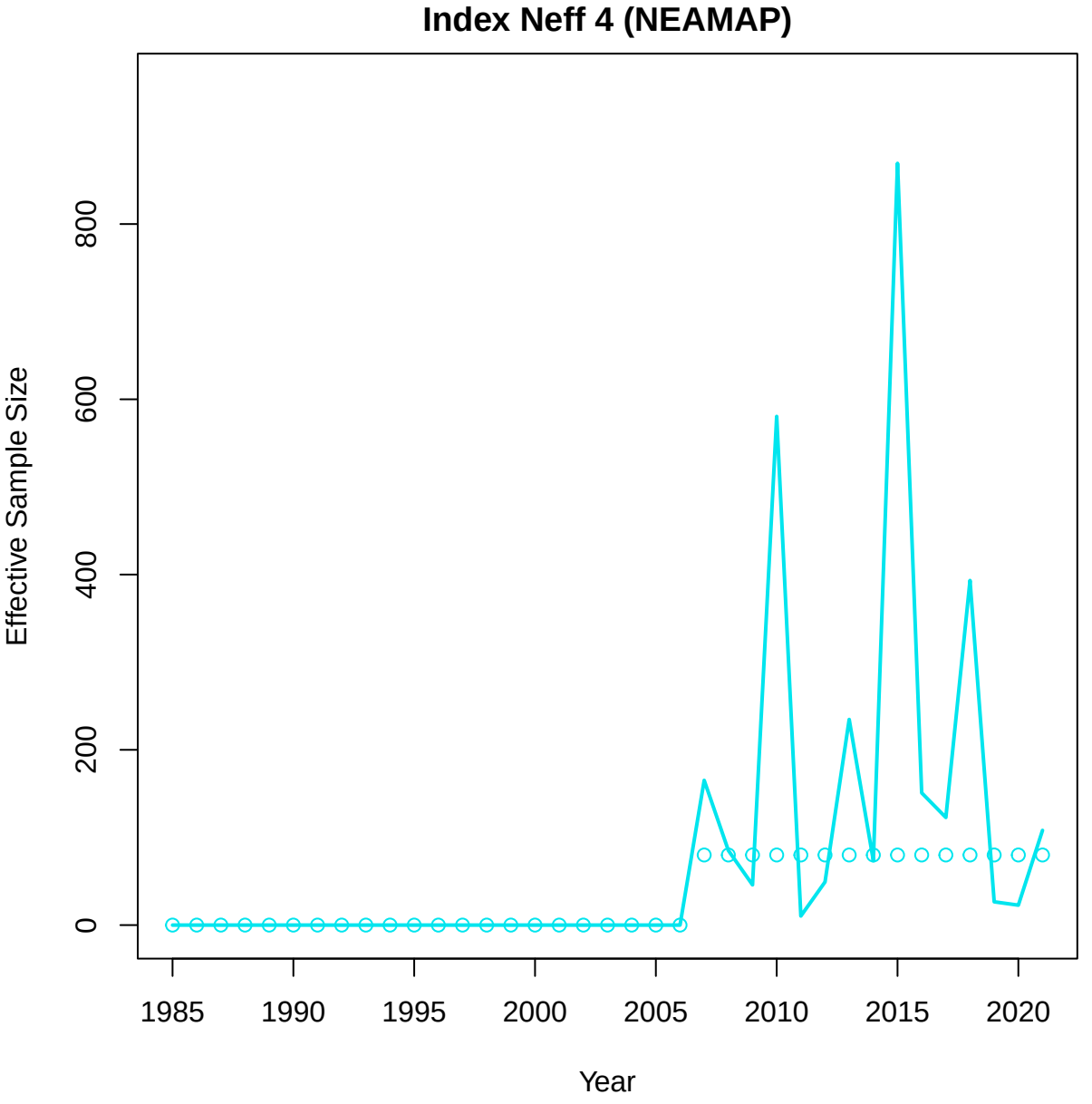

Age Comp Residuals for Index 7 (CT Trawl)
Neg.
Pos.
Max(resid)=3.84
0.18
0.36
0.8
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0 SD(resid) = 0.89

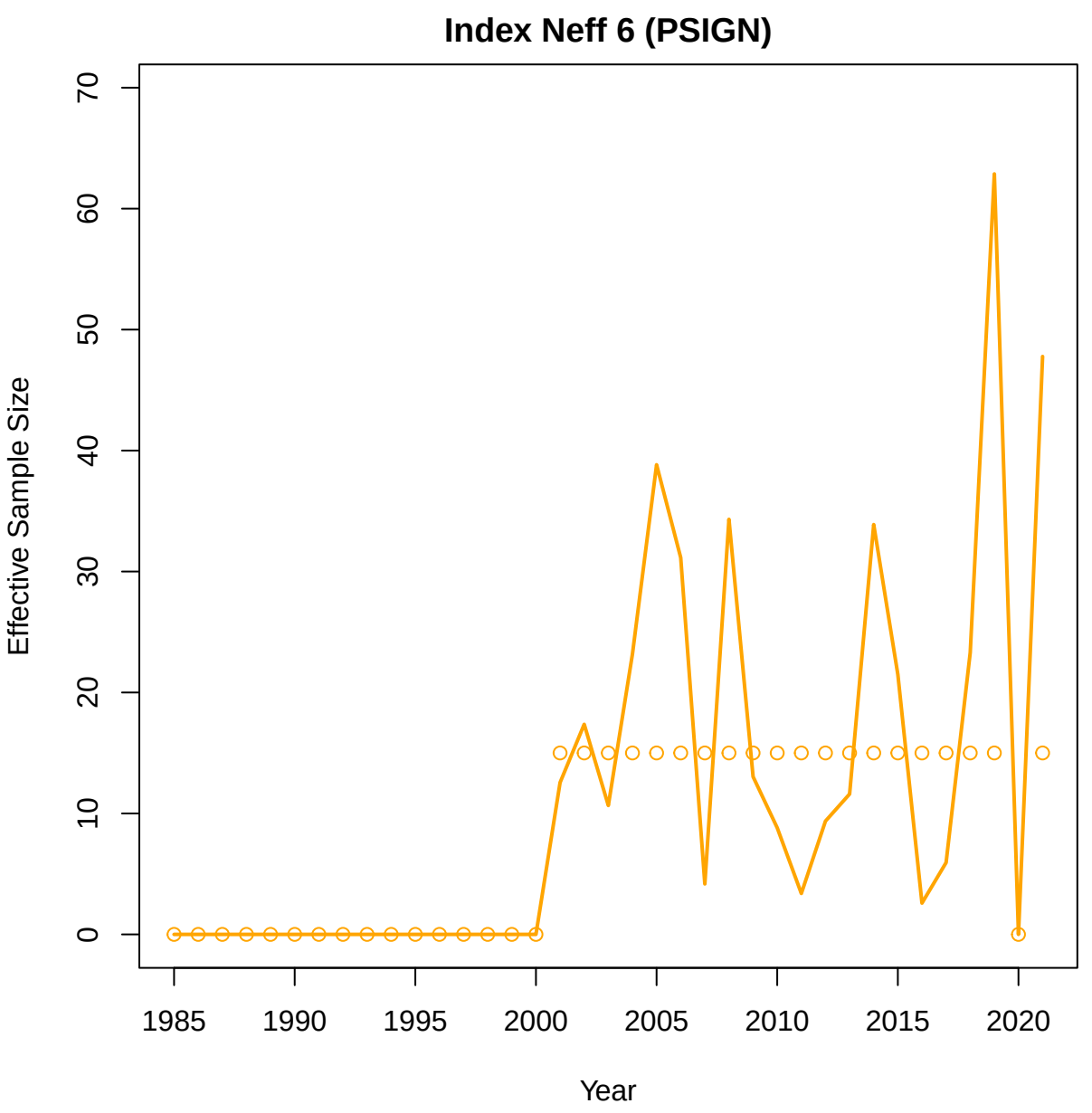

Age Comp Residuals for Index 8 (NJ Trawl)
Neg.
Pos.
Max(resid)=4.04
0.33
0.69
1.12
Pearson Residuals (Obs−Pred)/SQRT(Pred*(1−Pred)/NESS)
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
1
2
3
4
5
6
7
Age
Mean resid = 0.03 SD(resid) = 1.17

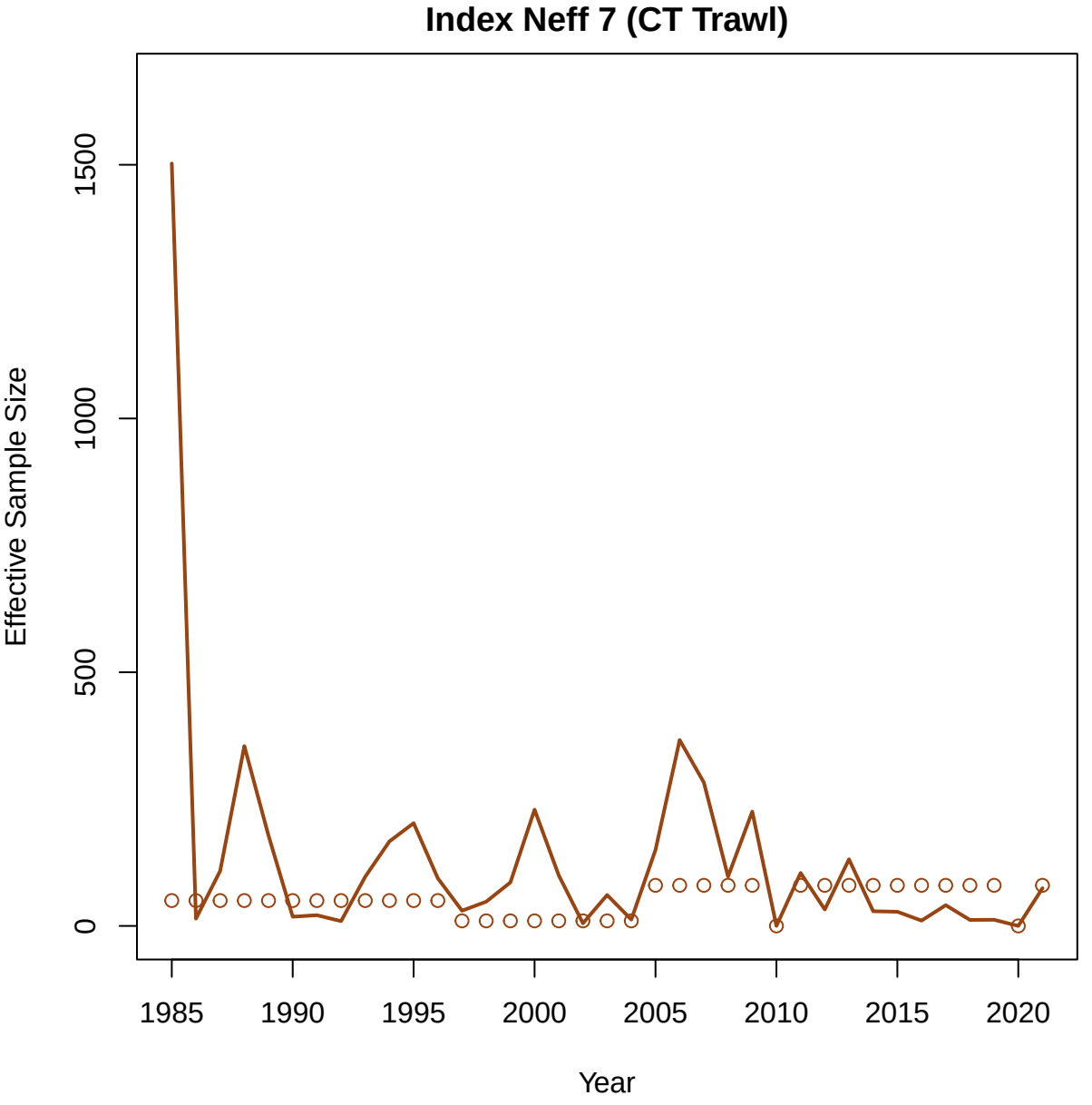

Index Neff 1 (NEFSC Inshore)
Effective Sample Size
0
1000
2000
3000
4000
5000
1985
1990
1995
2000
2005
2010
2015
2020
Year

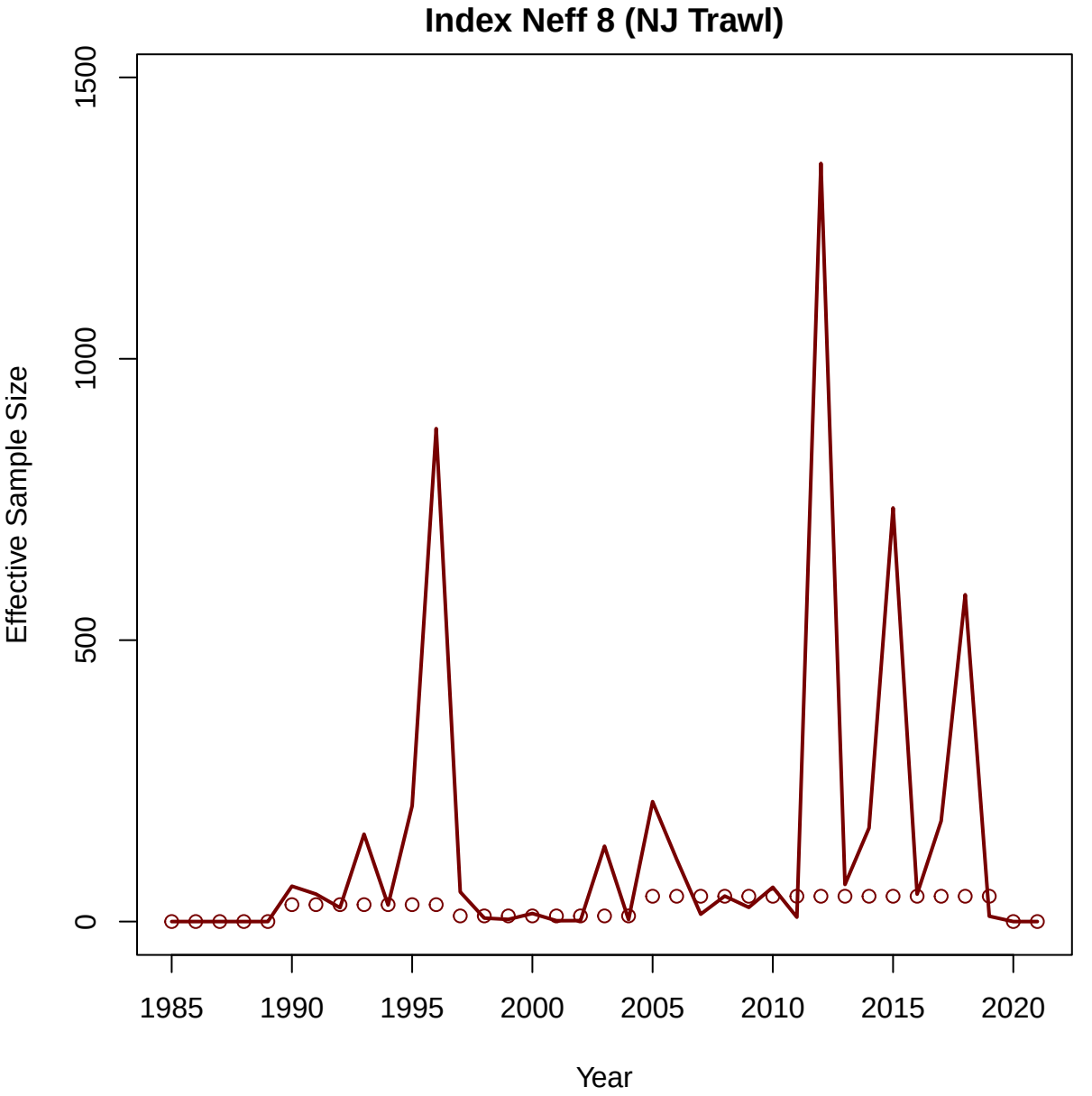

Index Neff 2 (Bigelow)
Effective Sample Size
0
50
100
150
1985
1990
1995
2000
2005
2010
2015
2020
Year

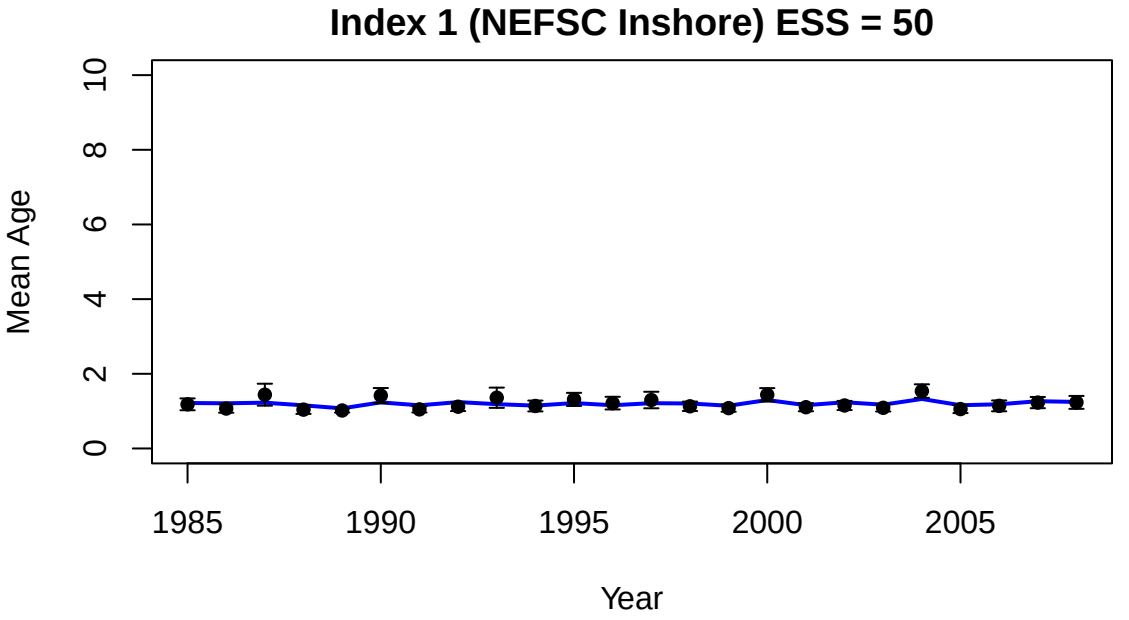

Index Neff 3 (MRIP)
Effective Sample Size
0
100
200
300
400
500
600
1985
1990
1995
2000
2005
2010
2015
2020
Year

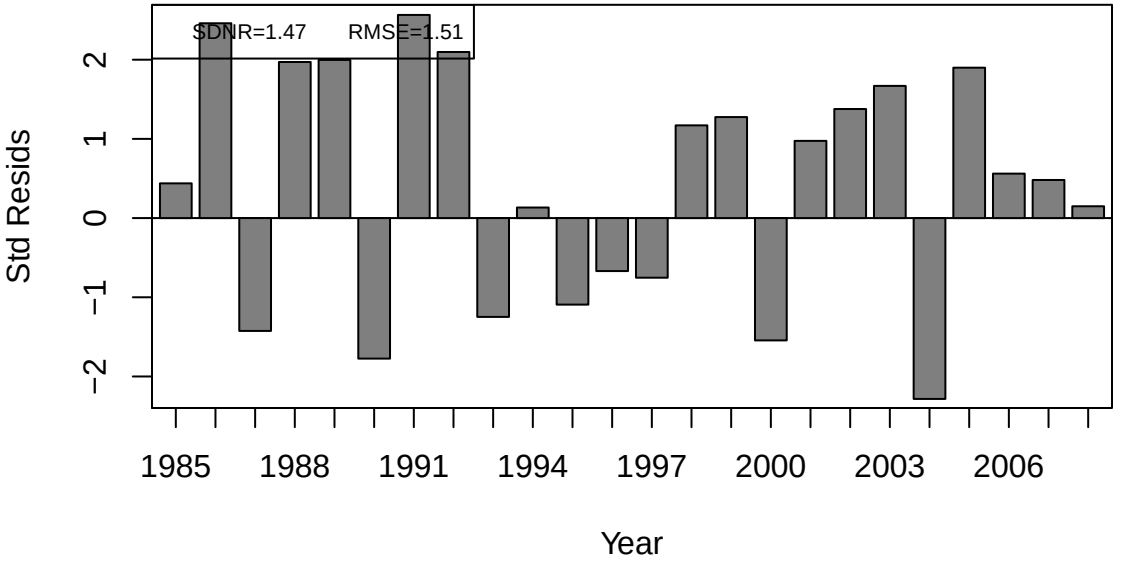

Index Neff 4 (NEAMAP)
Effective Sample Size
0
200
400
600
800
1985
1990
1995
2000
2005
2010
2015
2020
Year

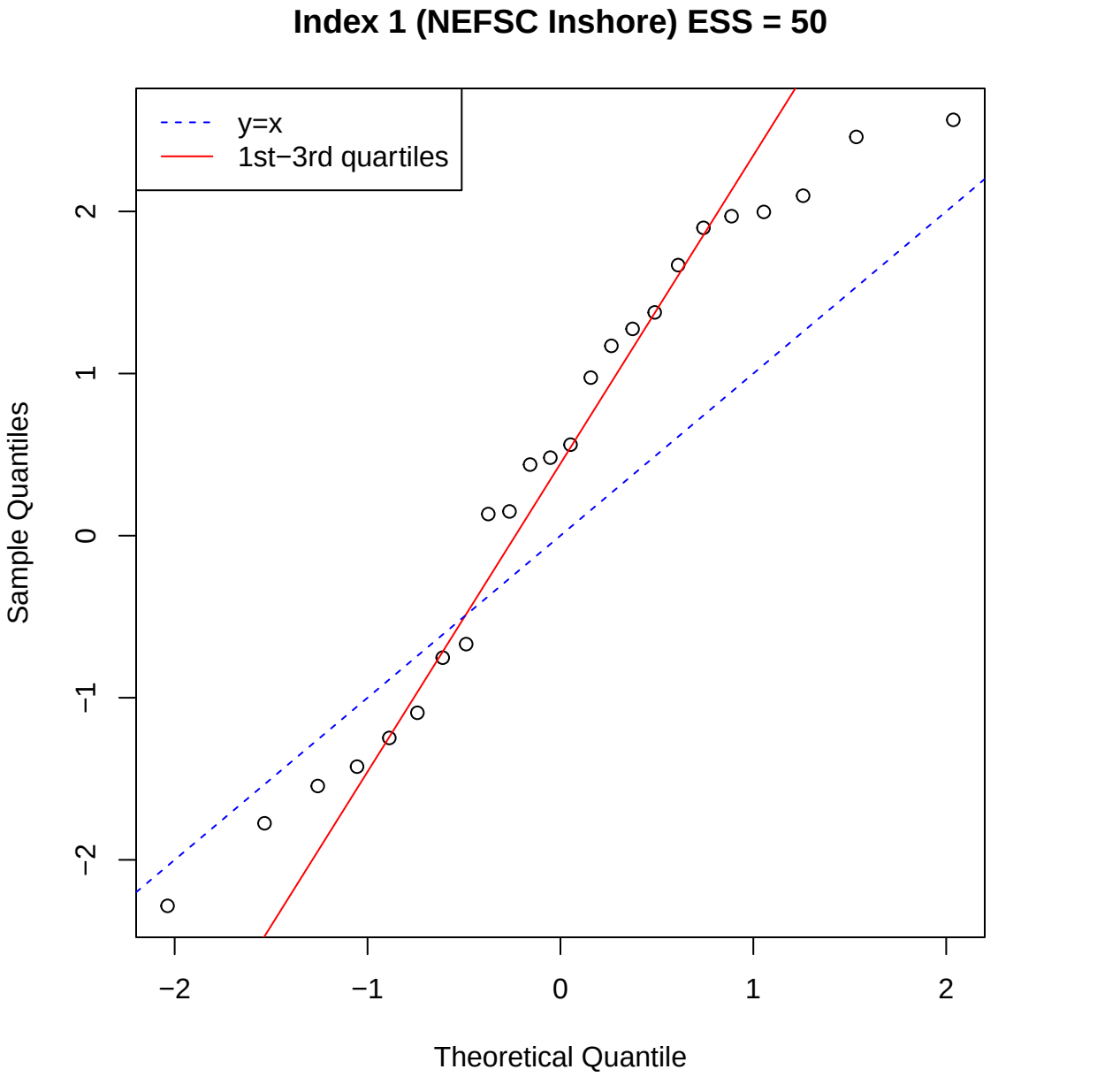

Index Neff 6 (PSIGN)
Effective Sample Size
0
10
20
30
40
50
60
70
1985
1990
1995
2000
2005
2010
2015
2020
Year

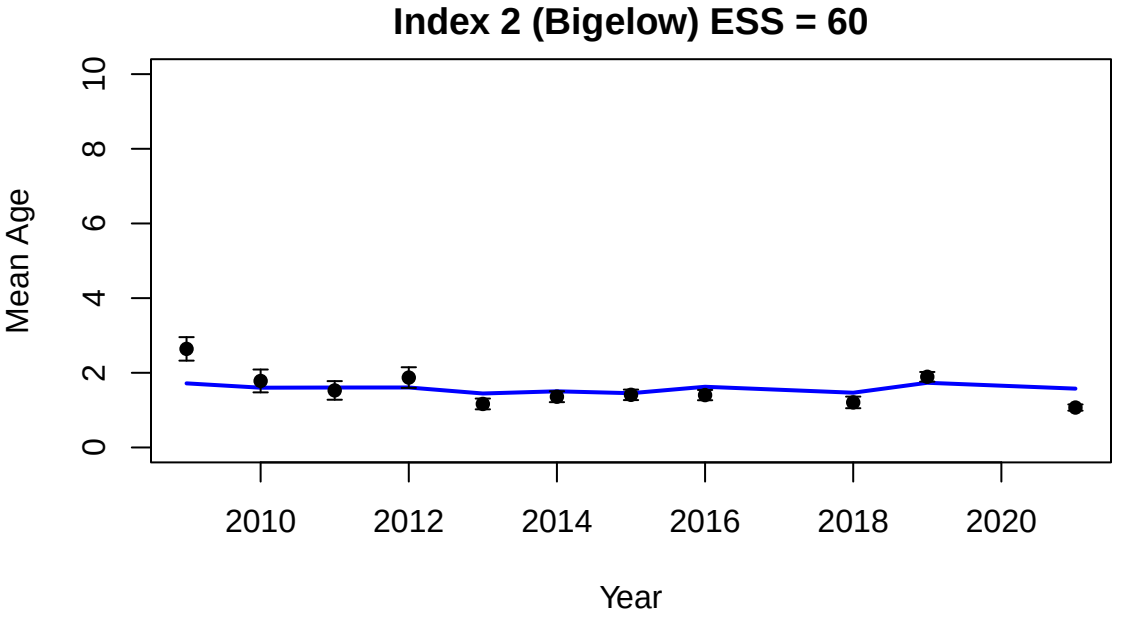

Index Neff 7 (CT Trawl)
Effective Sample Size
0
500
1000
1500
1985
1990
1995
2000
2005
2010
2015
2020
Year

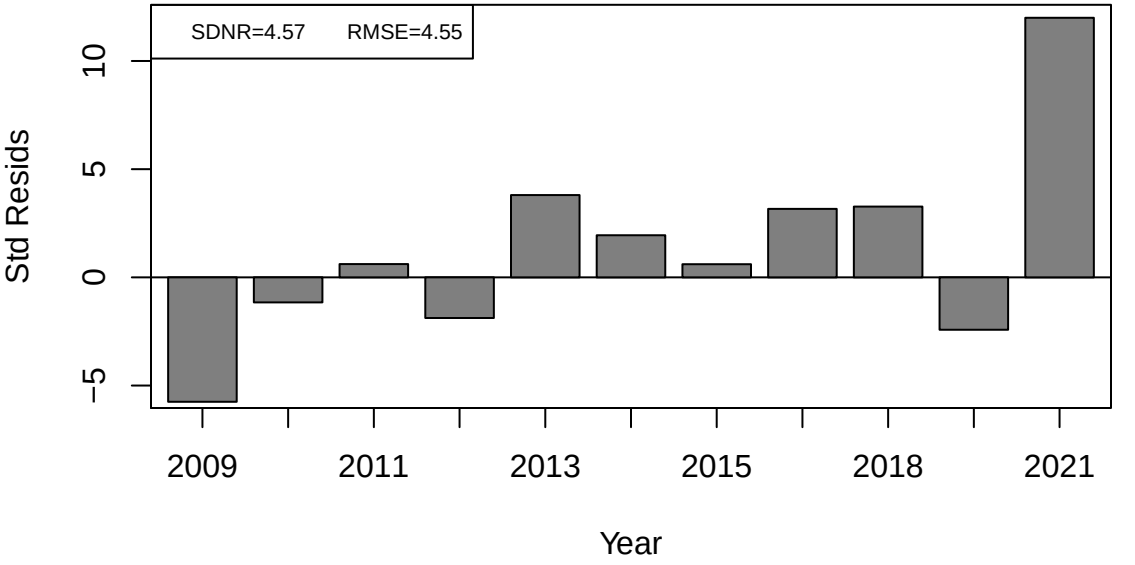

Index Neff 8 (NJ Trawl)
Effective Sample Size
0
500
1000
1500
1985
1990
1995
2000
2005
2010
2015
2020
Year

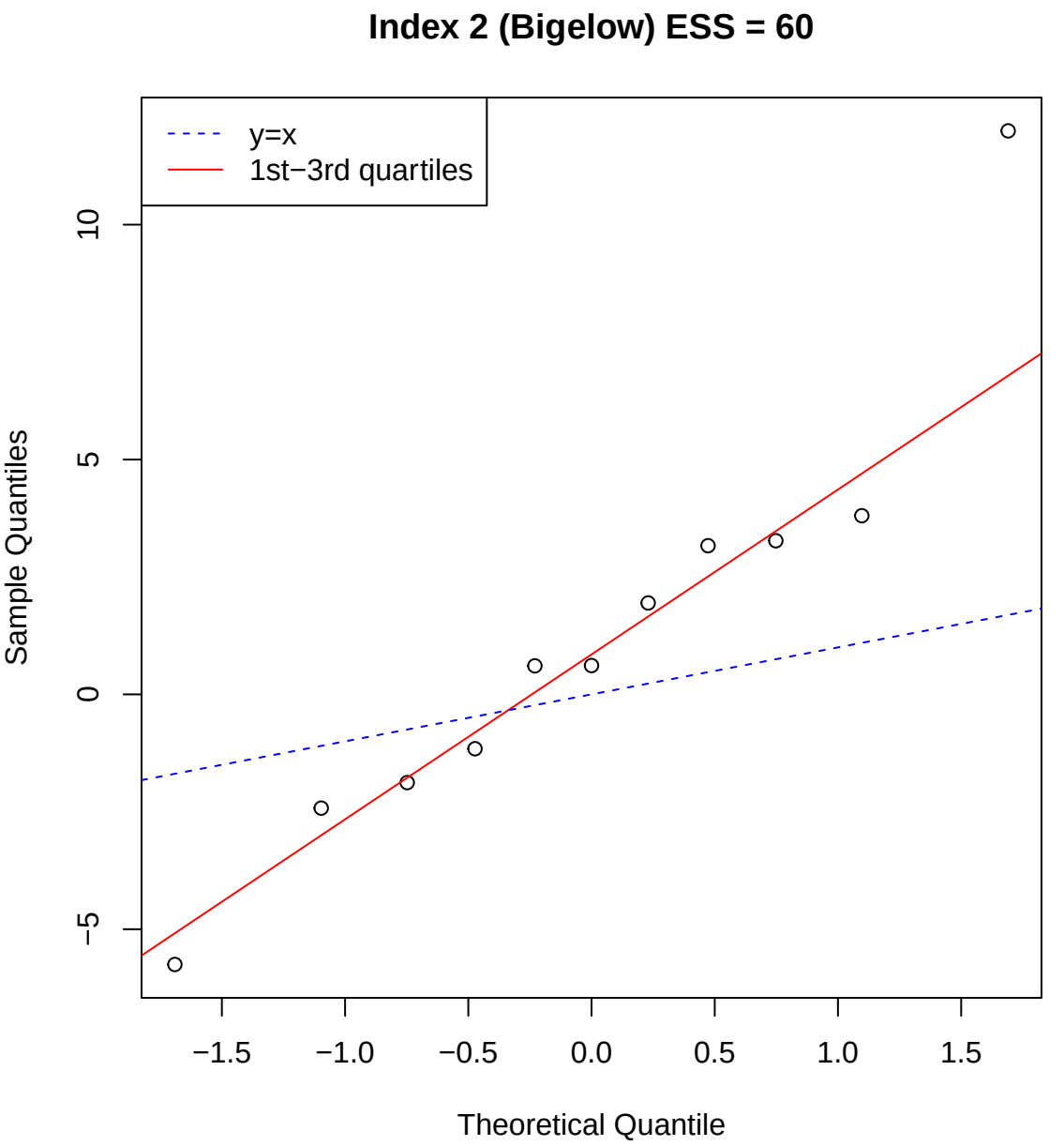

Index 1 (NEFSC Inshore) ESS = 50
Mean Age
0
2
4
6
8
10
1985
1990
1995
2000
2005
Year

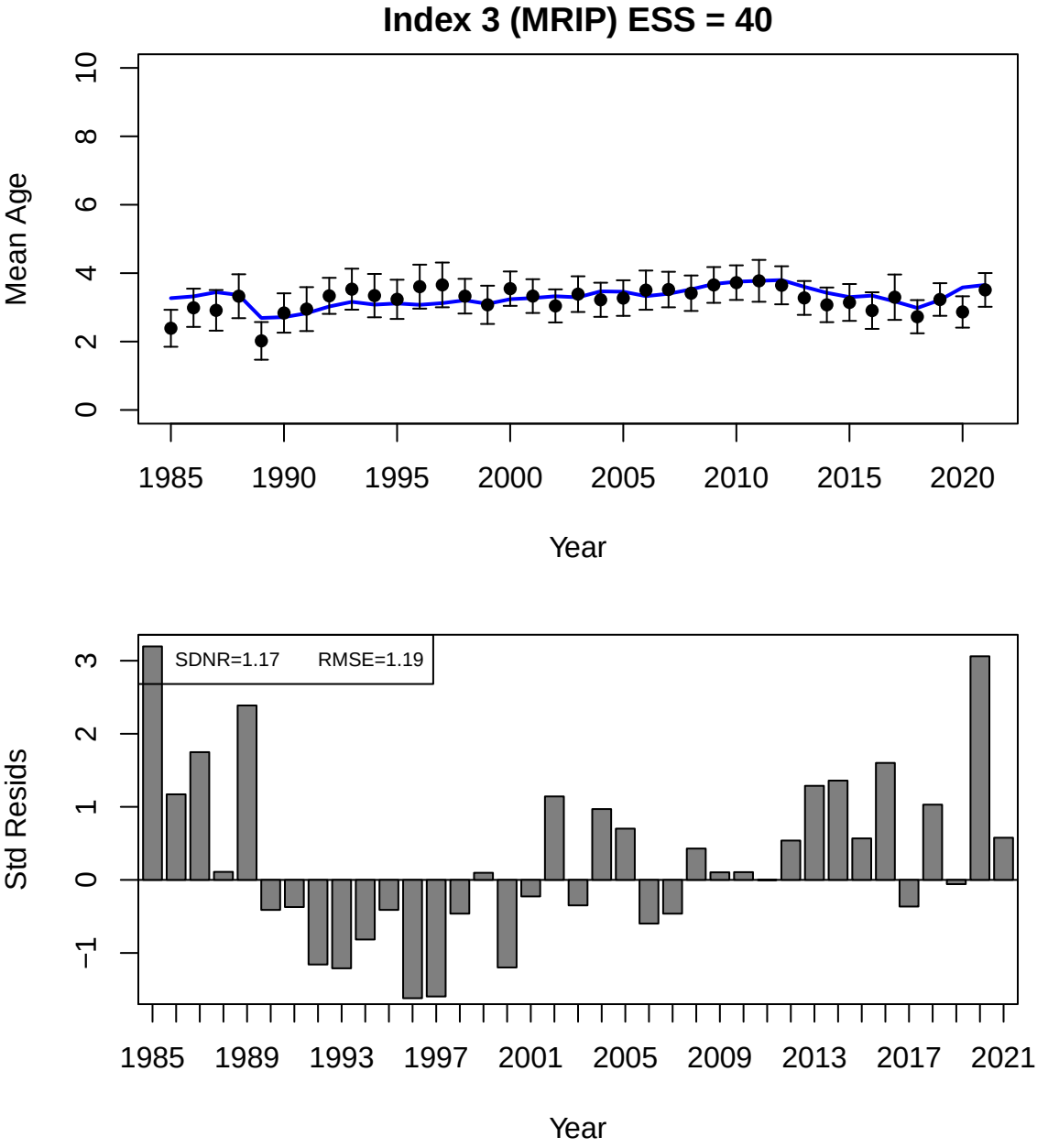

SDNR=1.47
RMSE=1.51
Std Resids
−2
−1
0
1
2
1985
1988
1991
1994
1997
2000
2003
2006
Year

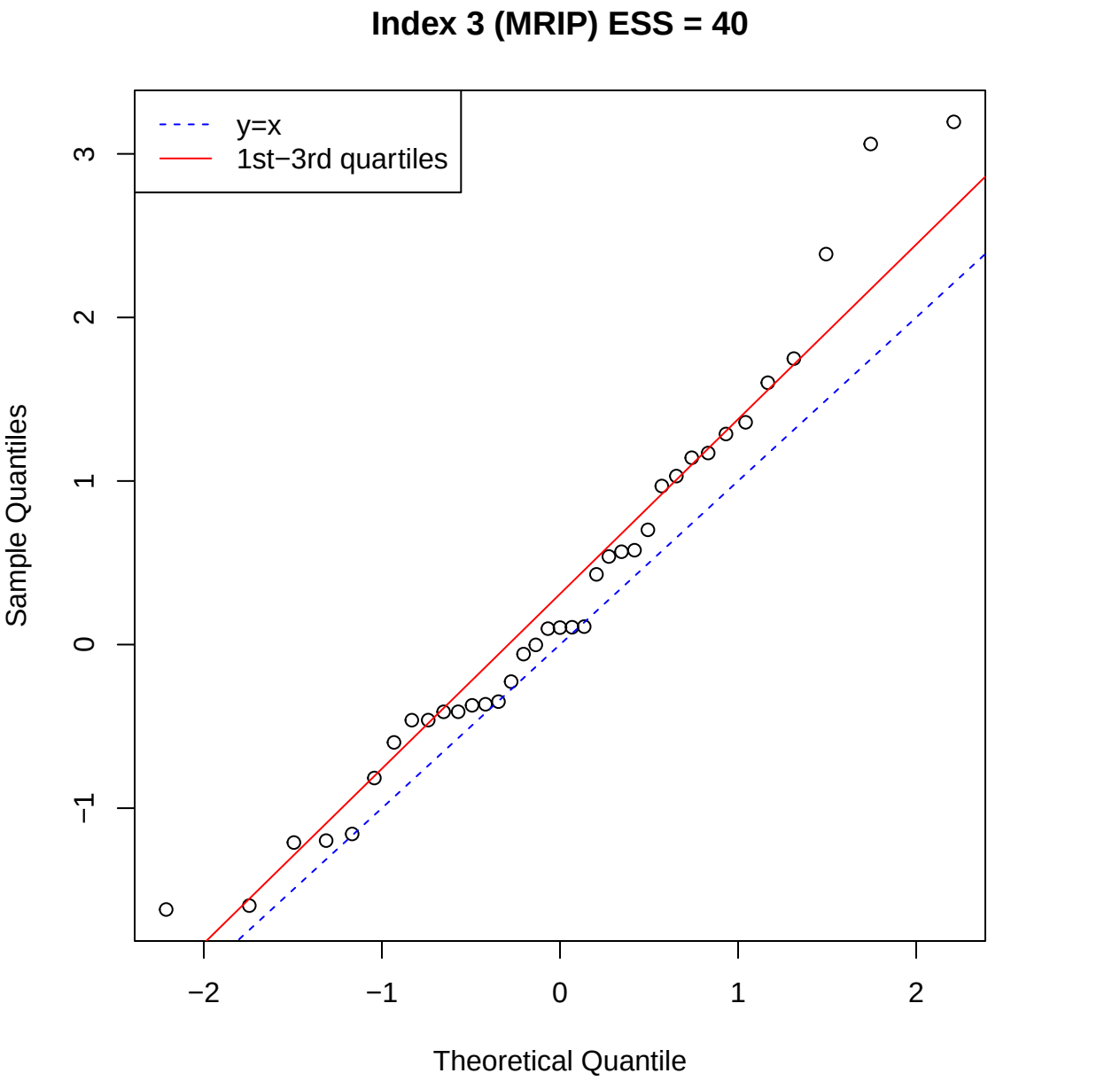

Index 1 (NEFSC Inshore) ESS = 50
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−2
−1
0
1
2

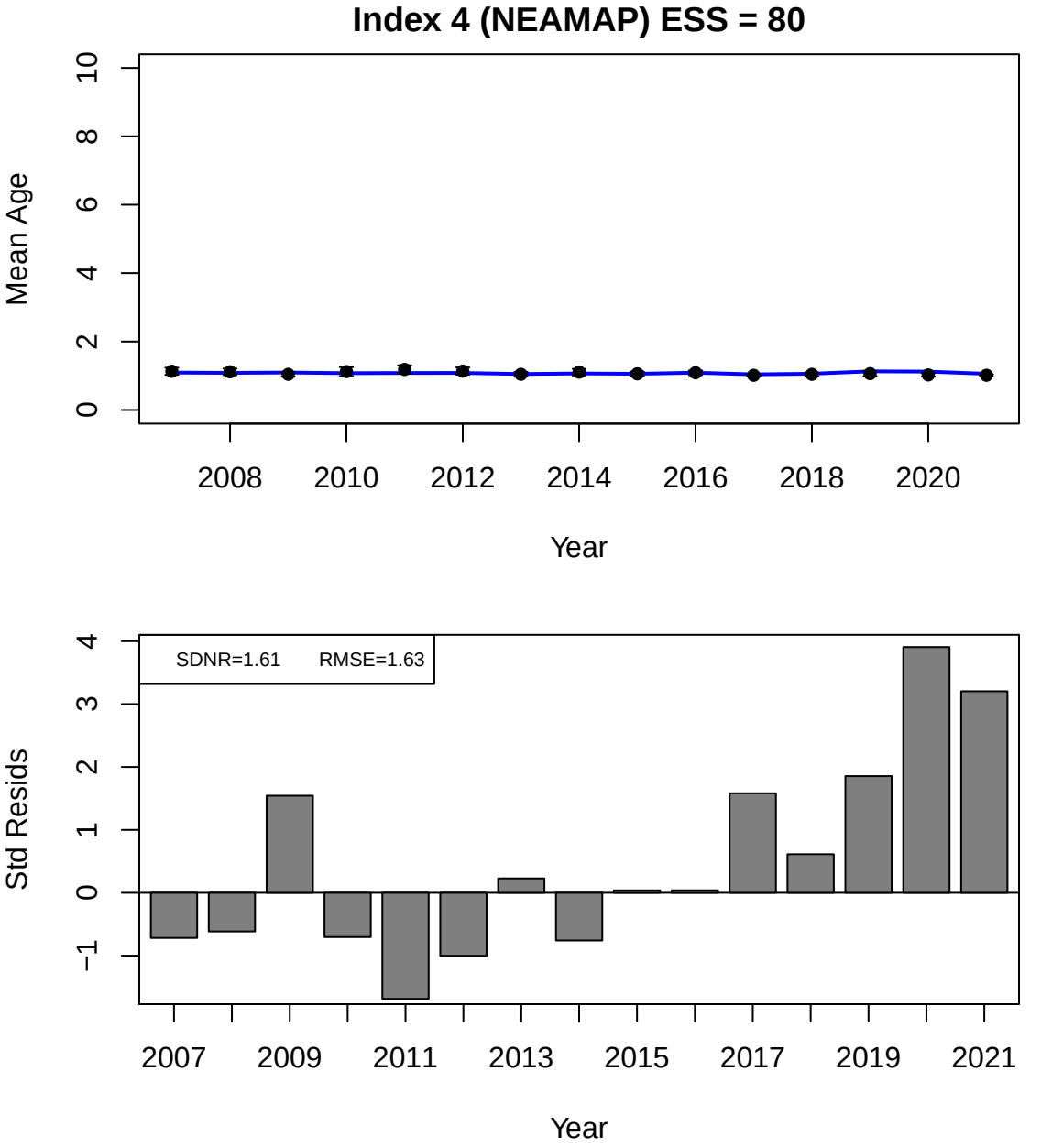

Index 2 (Bigelow) ESS = 60
Mean Age
0
2
4
6
8
10
2010
2012
2014
2016
2018
2020
Year

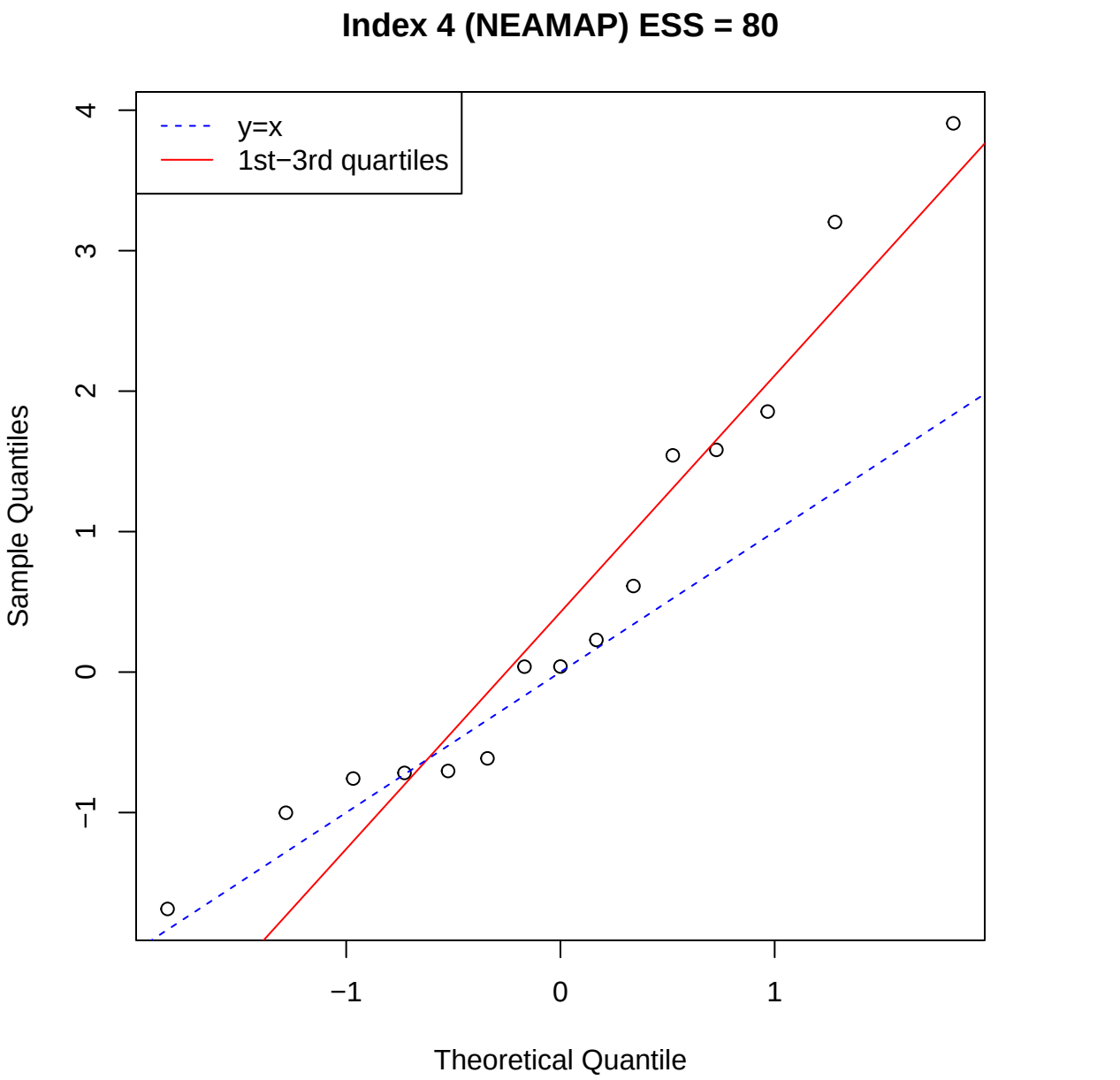

SDNR=4.57
RMSE=4.55
Std Resids
−5
0
5
10
2009
2011
2013
2015
2018
2021
Year

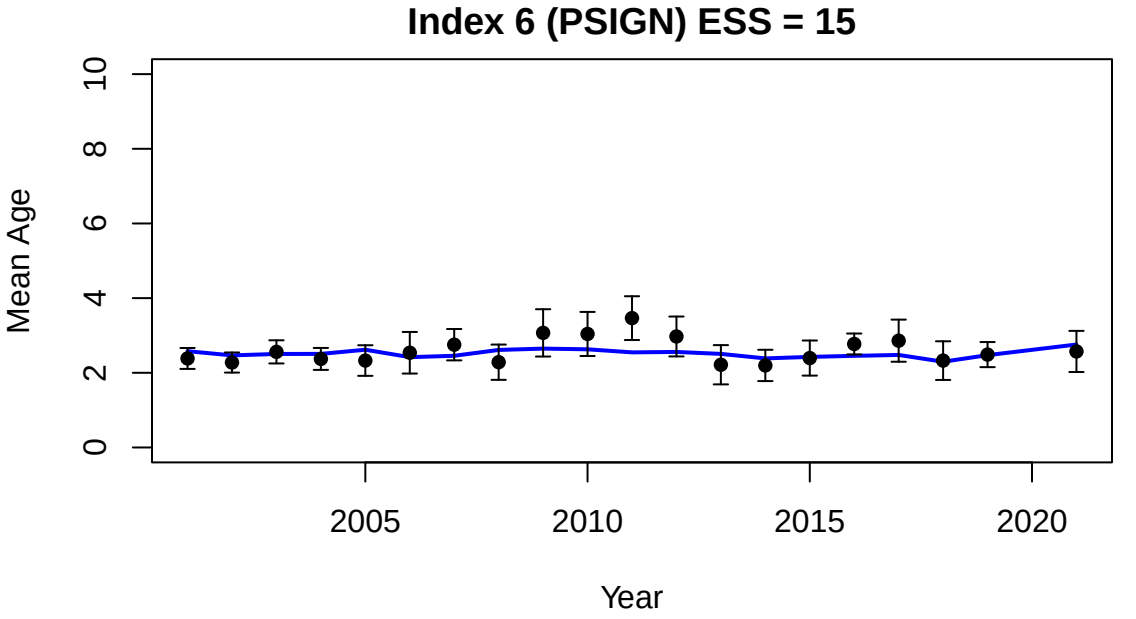

Index 2 (Bigelow) ESS = 60
y=x
1st−3rd quartiles
Sample Quantiles
10
5
0
−5
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
Theoretical Quantile

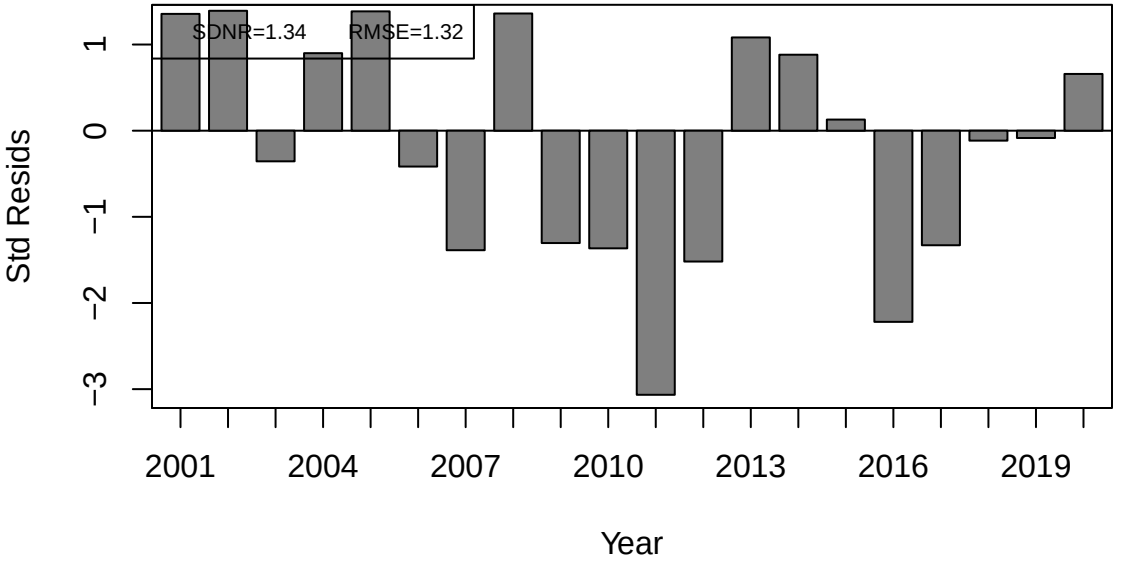

Index 3 (MRIP) ESS = 40
Mean Age
0
2
4
6
8
10
1985
1990
1995
2000
2005
2010
2015
2020
Year
SDNR=1.17
RMSE=1.19
Std Resids
−1
0
1
2
3
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Year

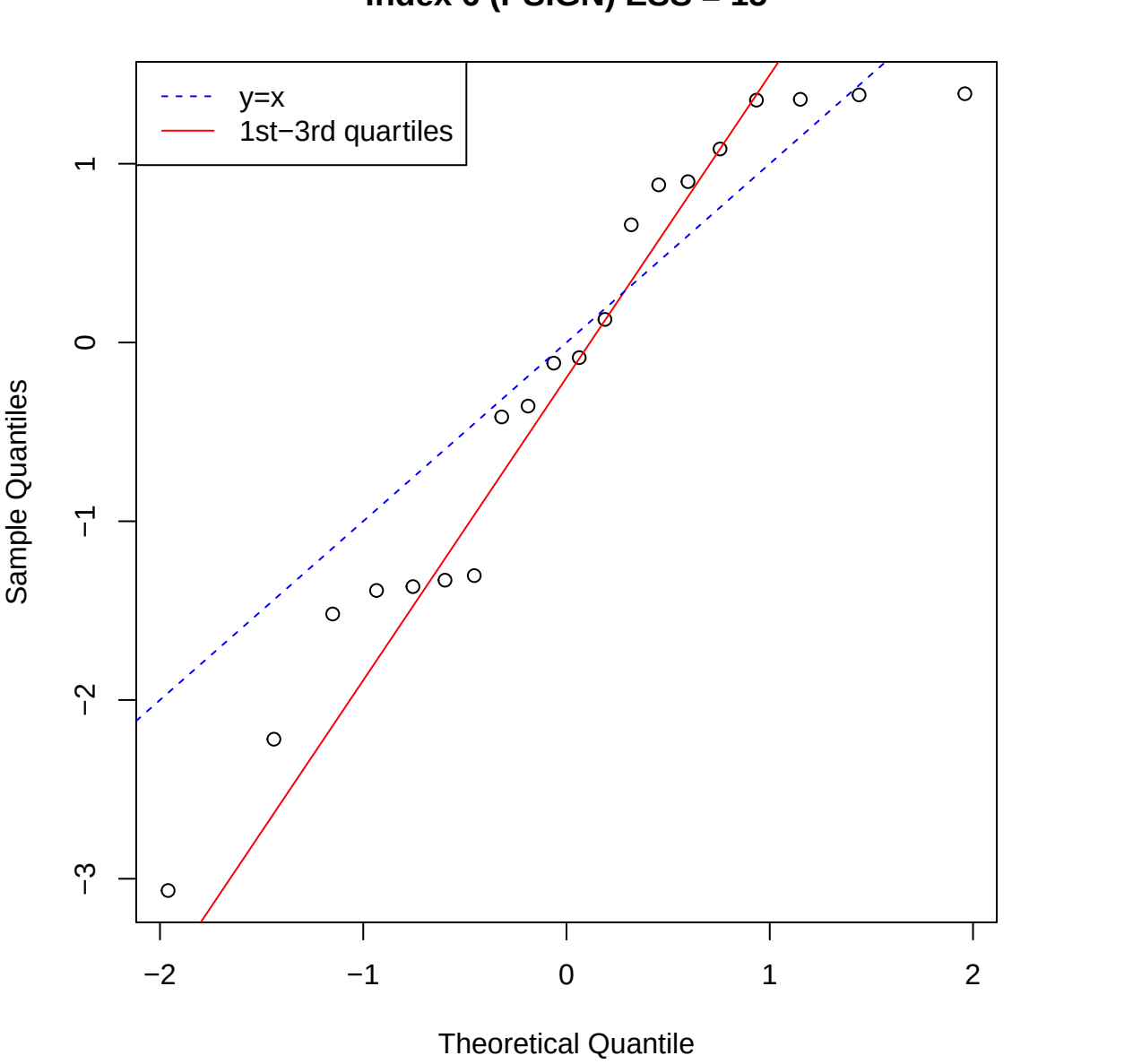

Index 3 (MRIP) ESS = 40
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−2
−1
0
1
2
3

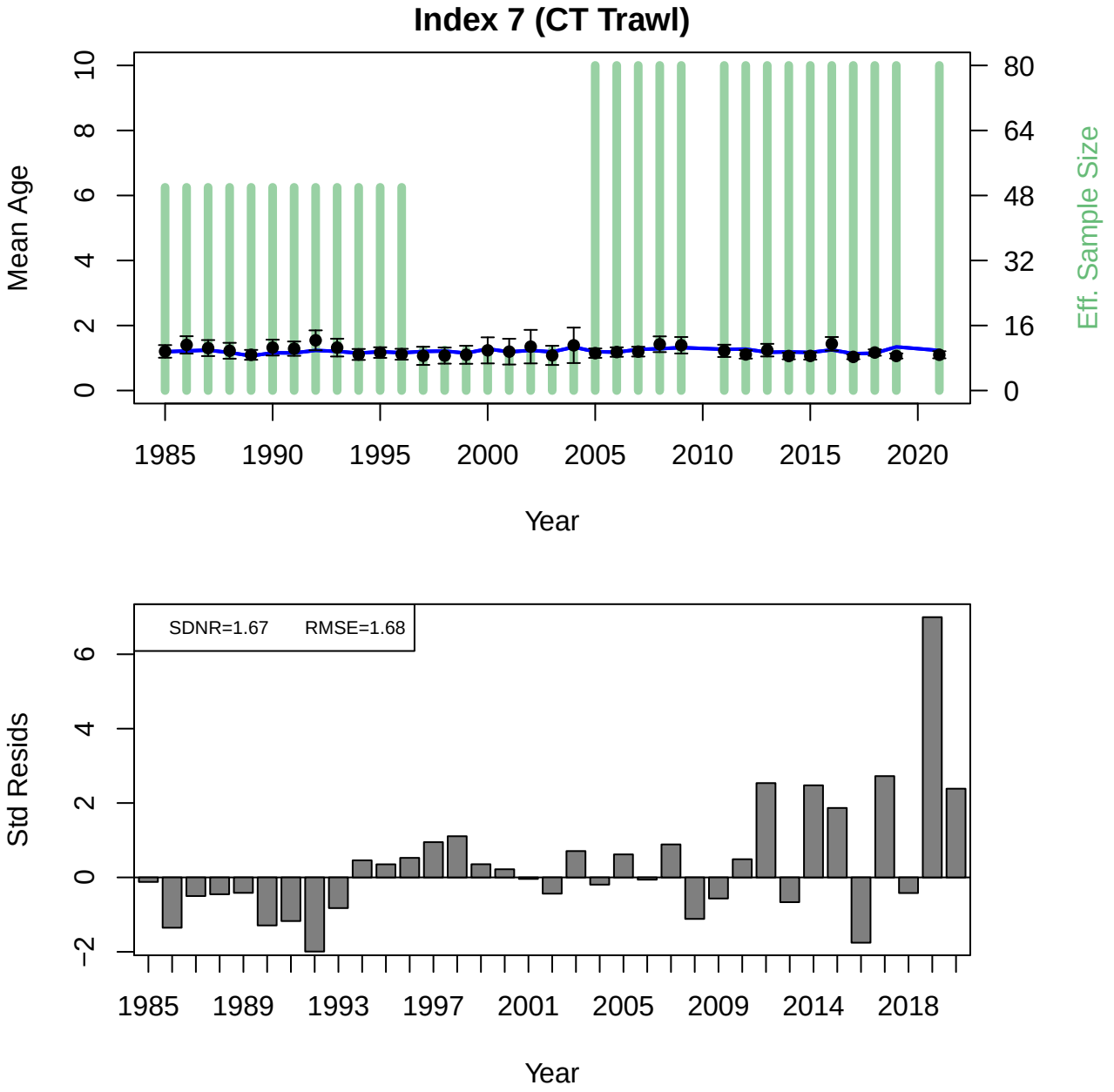

Index 4 (NEAMAP) ESS = 80
Mean Age
0
2
4
6
8
10
2008
2010
2012
2014
2016
2018
2020
Year
Std Resids
SDNR=1.61
RMSE=1.63
−1
0
1
2
3
4
2007
2009
2011
2013
2015
2017
2019
2021
Year

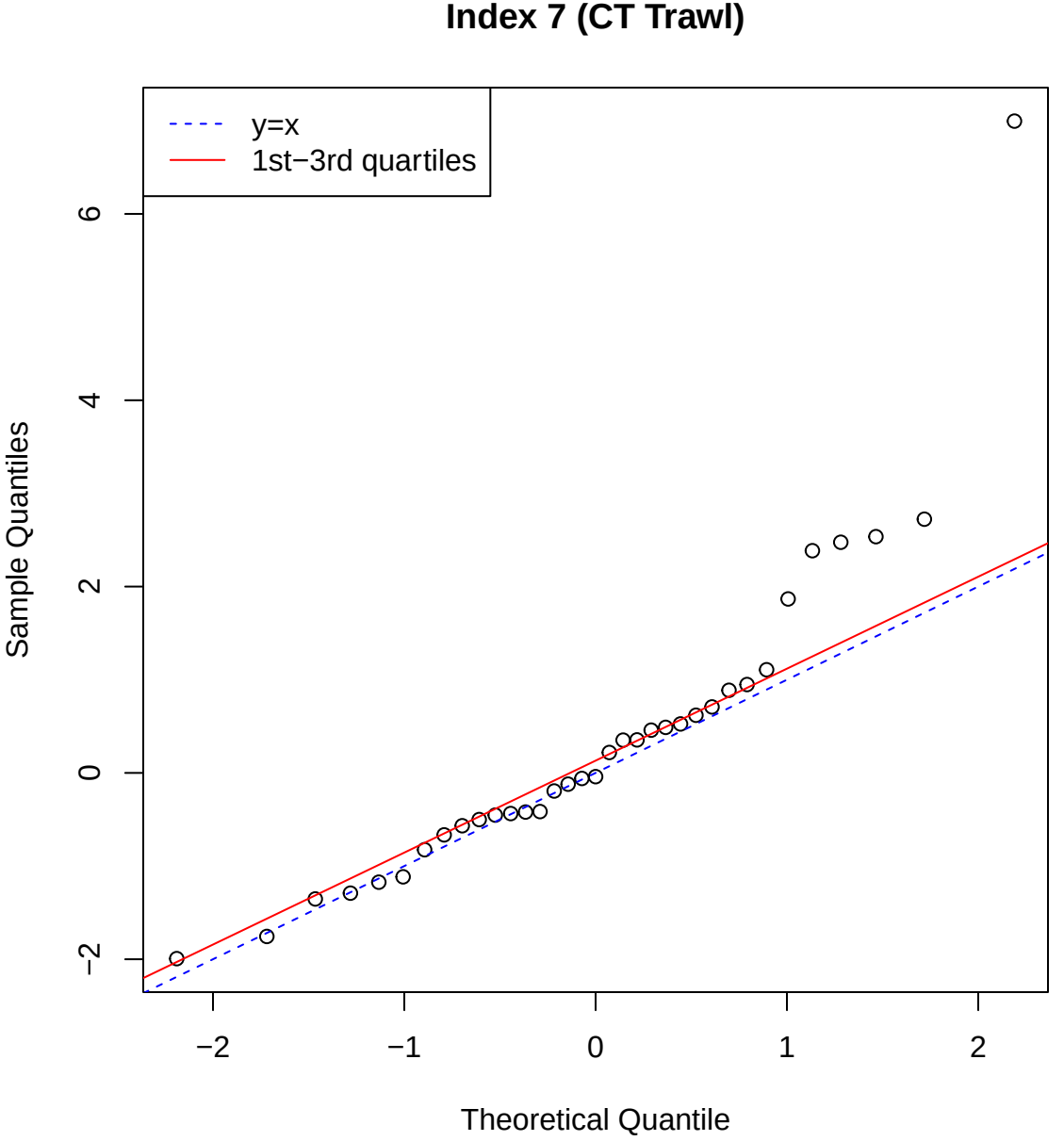

Index 4 (NEAMAP) ESS = 80
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−1
0
1
2
3
4
−1
0
1

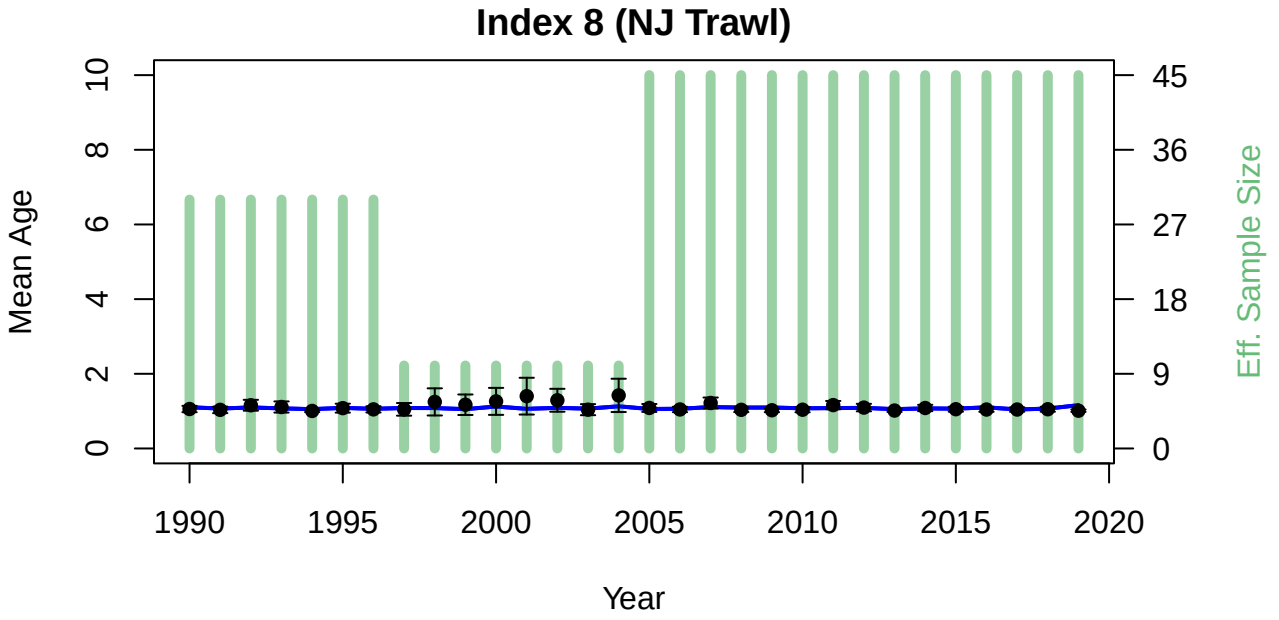

Index 6 (PSIGN) ESS = 15
Mean Age
0
2
4
6
8
10
2005
2010
2015
2020
Year

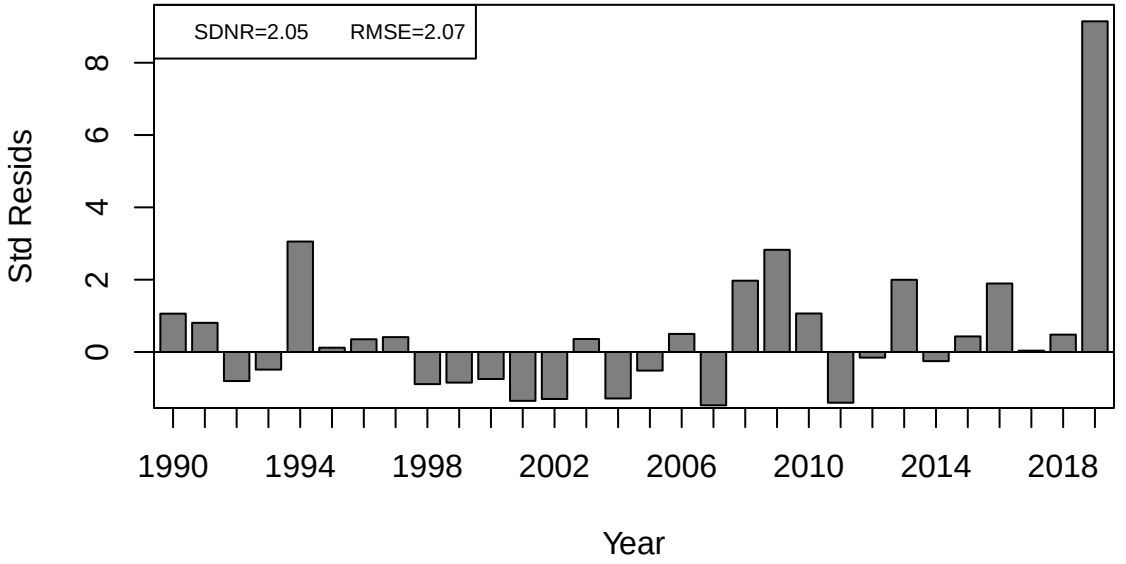

SDNR=1.34
RMSE=1.32
Std Resids
−3
−2
−1
0
1
2001
2004
2007
2010
2013
2016
2019
Year

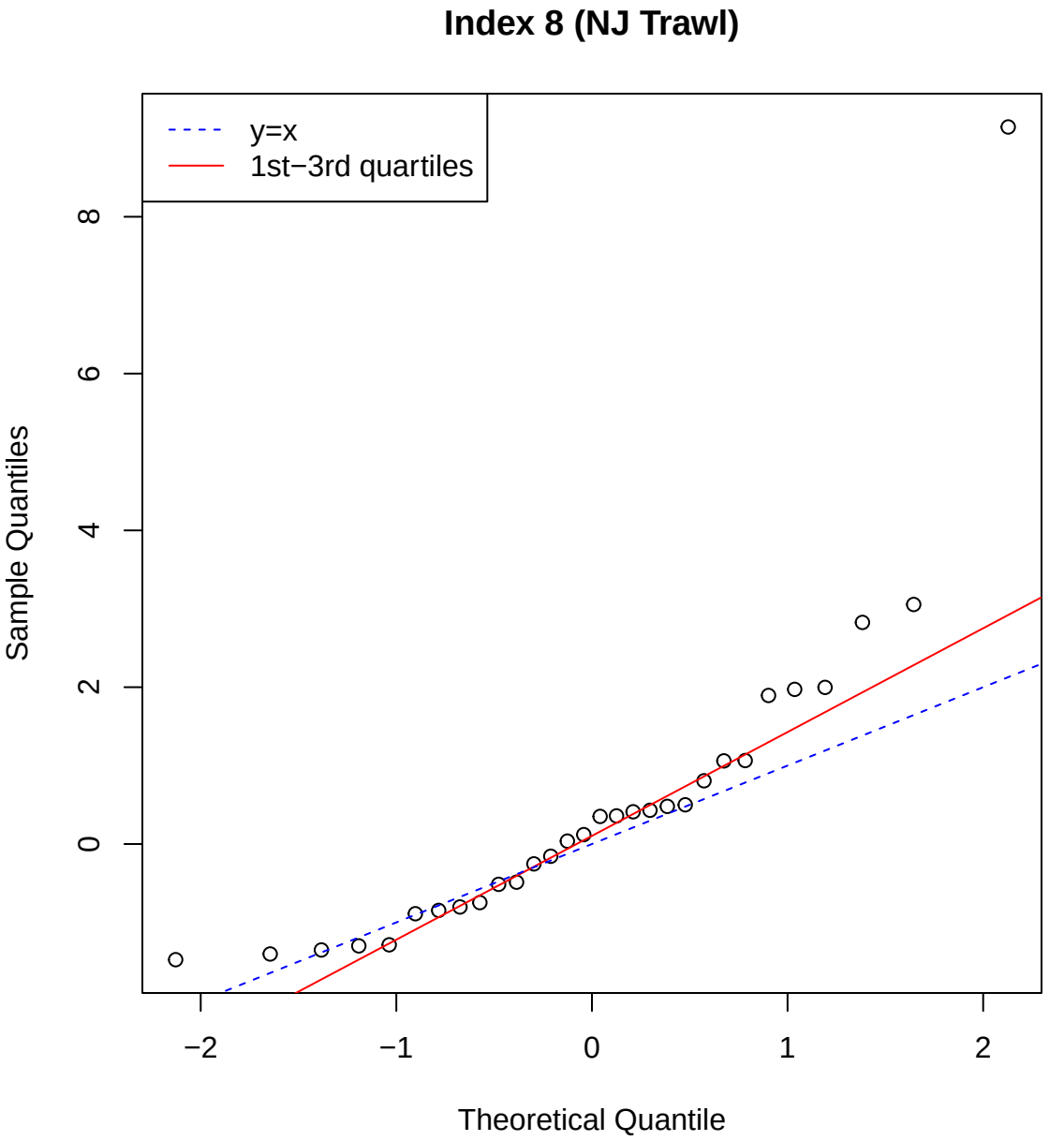

Index 6 (PSIGN) ESS = 15
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−3
−2
−1
0
1
2
−2
−1
0
1
2


Index 7 (CT Trawl)
Mean Age
Eff. Sample Size
0
2
4
6
8
10
0
16
32
48
64
80
1985
1990
1995
2000
2005
2010
2015
2020
Year
SDNR=1.67
RMSE=1.68
Std Resids
−2
0
2
4
6
1985
1989
1993
1997
2001
2005
2009
2014
2018
Year


Index 7 (CT Trawl)
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
−2
0
2
4
6
−2
−1
0
1
2


Index 8 (NJ Trawl)
Mean Age
Eff. Sample Size
0
2
4
6
8
10
0
9
18
27
36
45
1990
1995
2000
2005
2010
2015
2020
Year

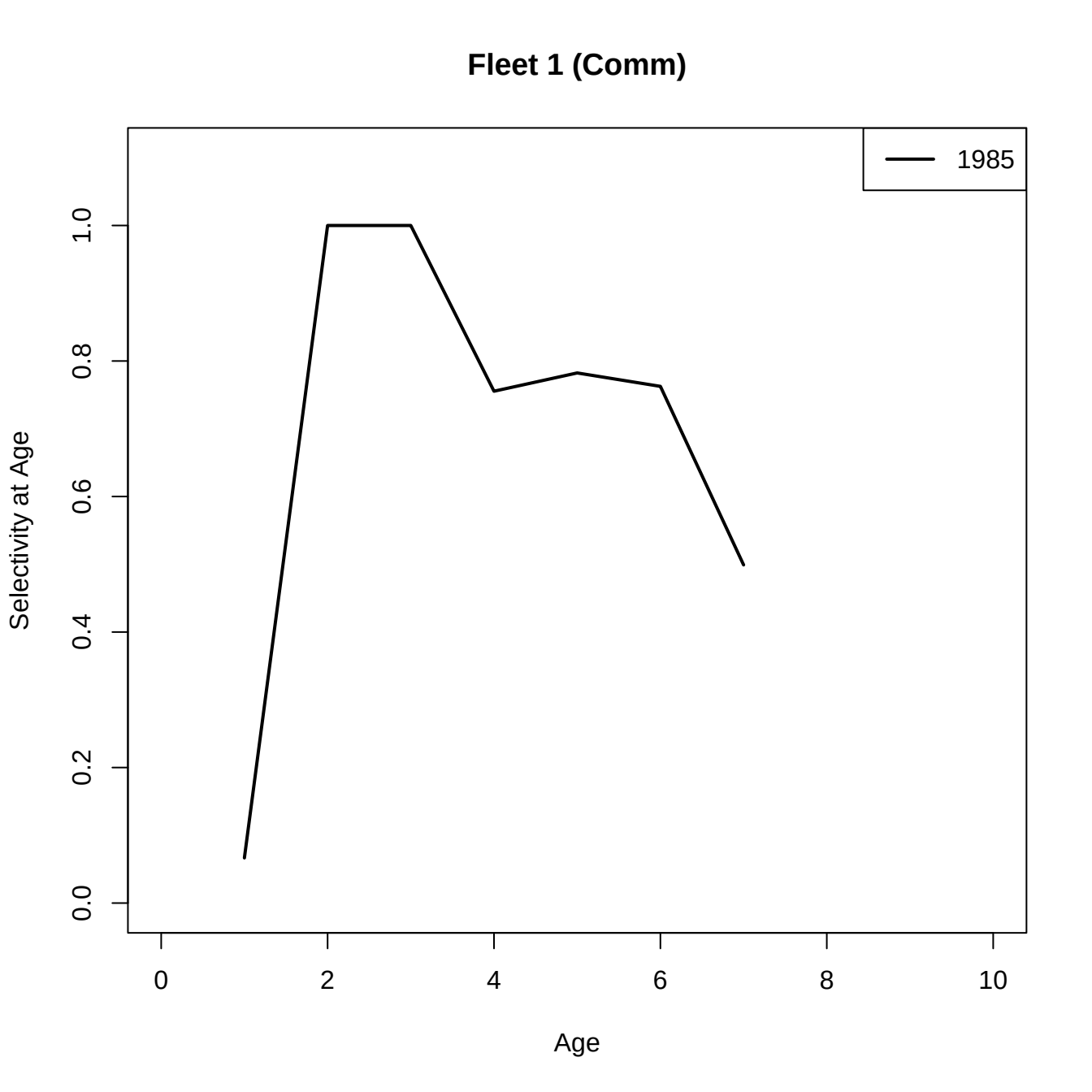

SDNR=2.05
RMSE=2.07
Std Resids
0
2
4
6
8
1990
1994
1998
2002
2006
2010
2014
2018
Year

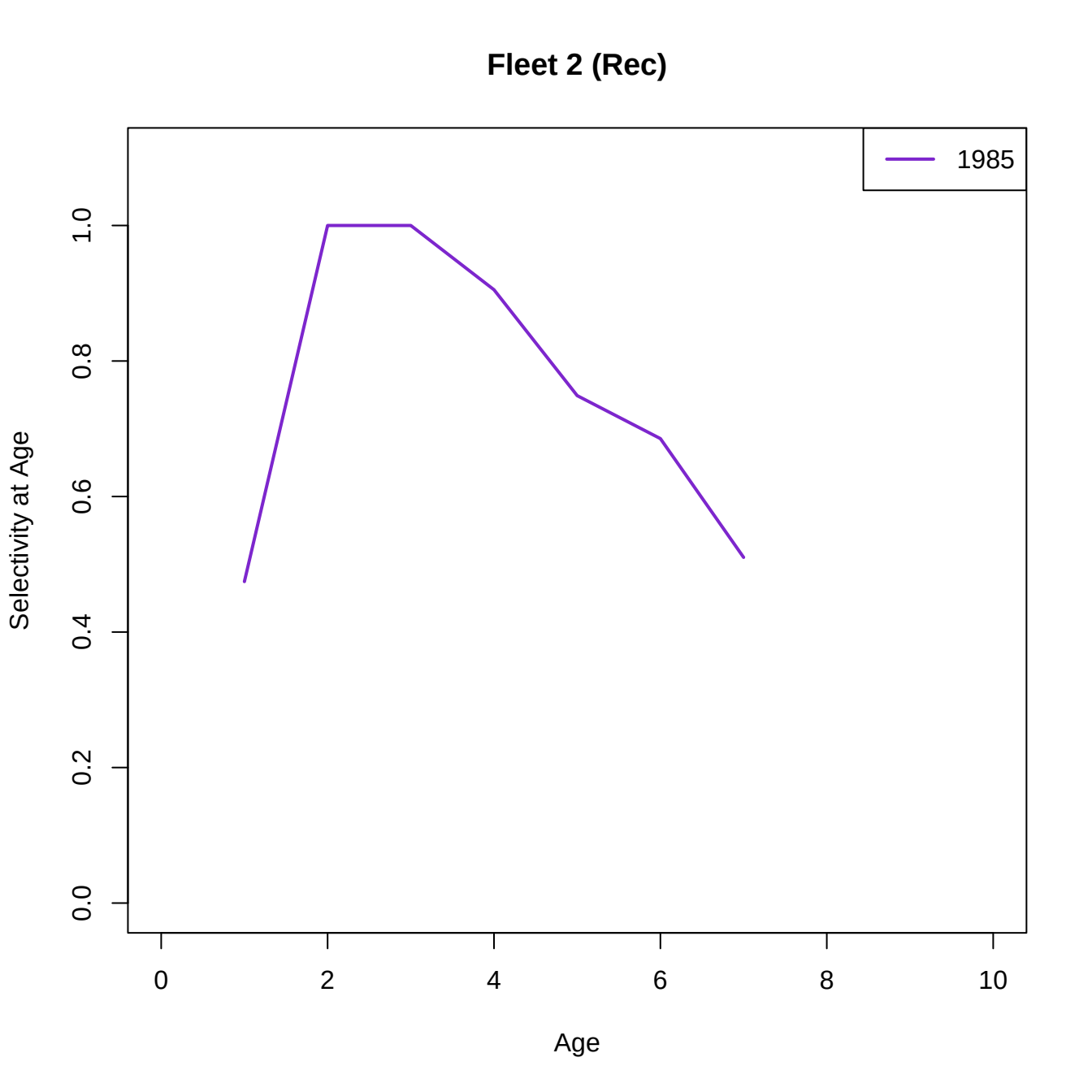

Index 8 (NJ Trawl)
y=x
1st−3rd quartiles
Sample Quantiles
Theoretical Quantile
0
2
4
6
8
−2
−1
0
1
2

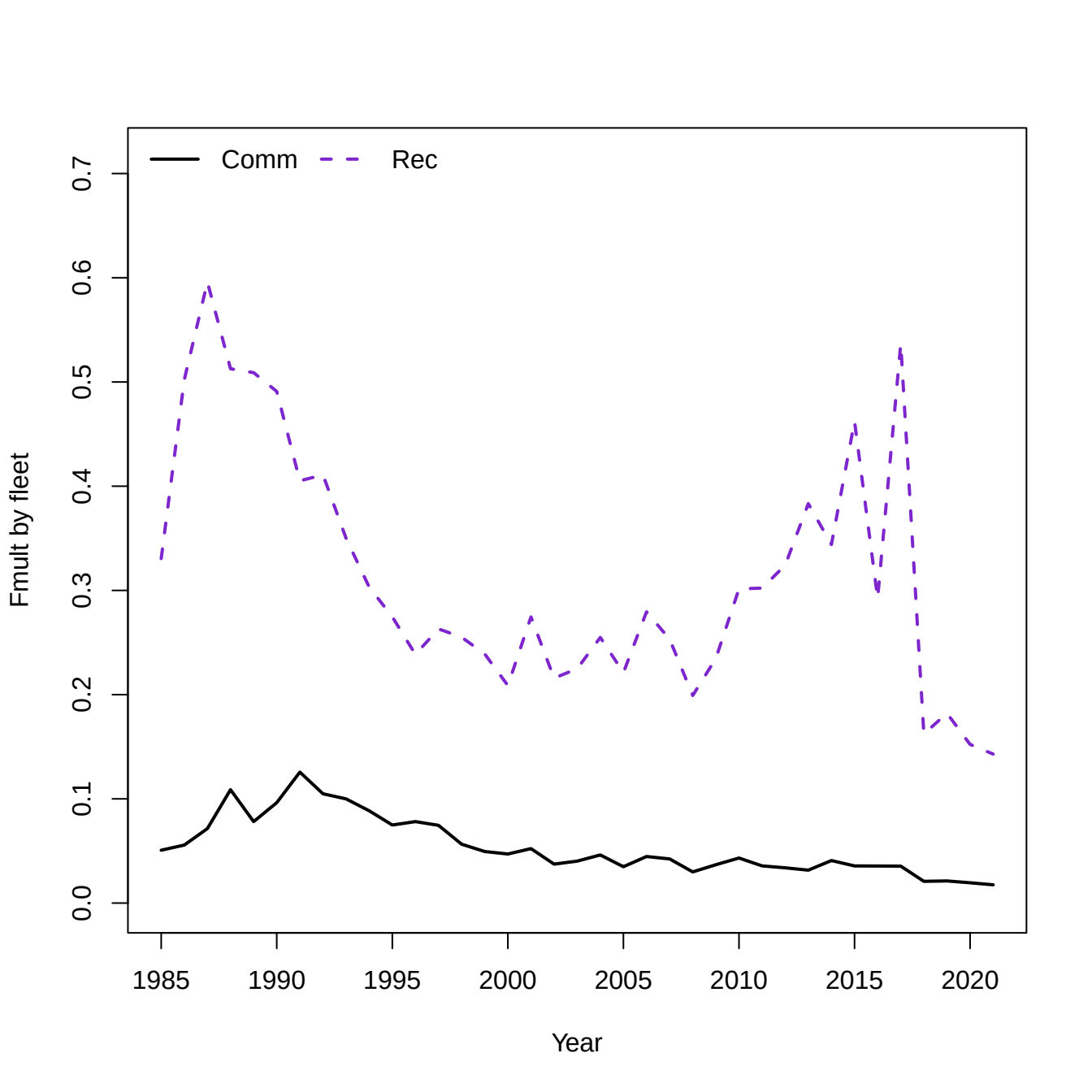
BF07

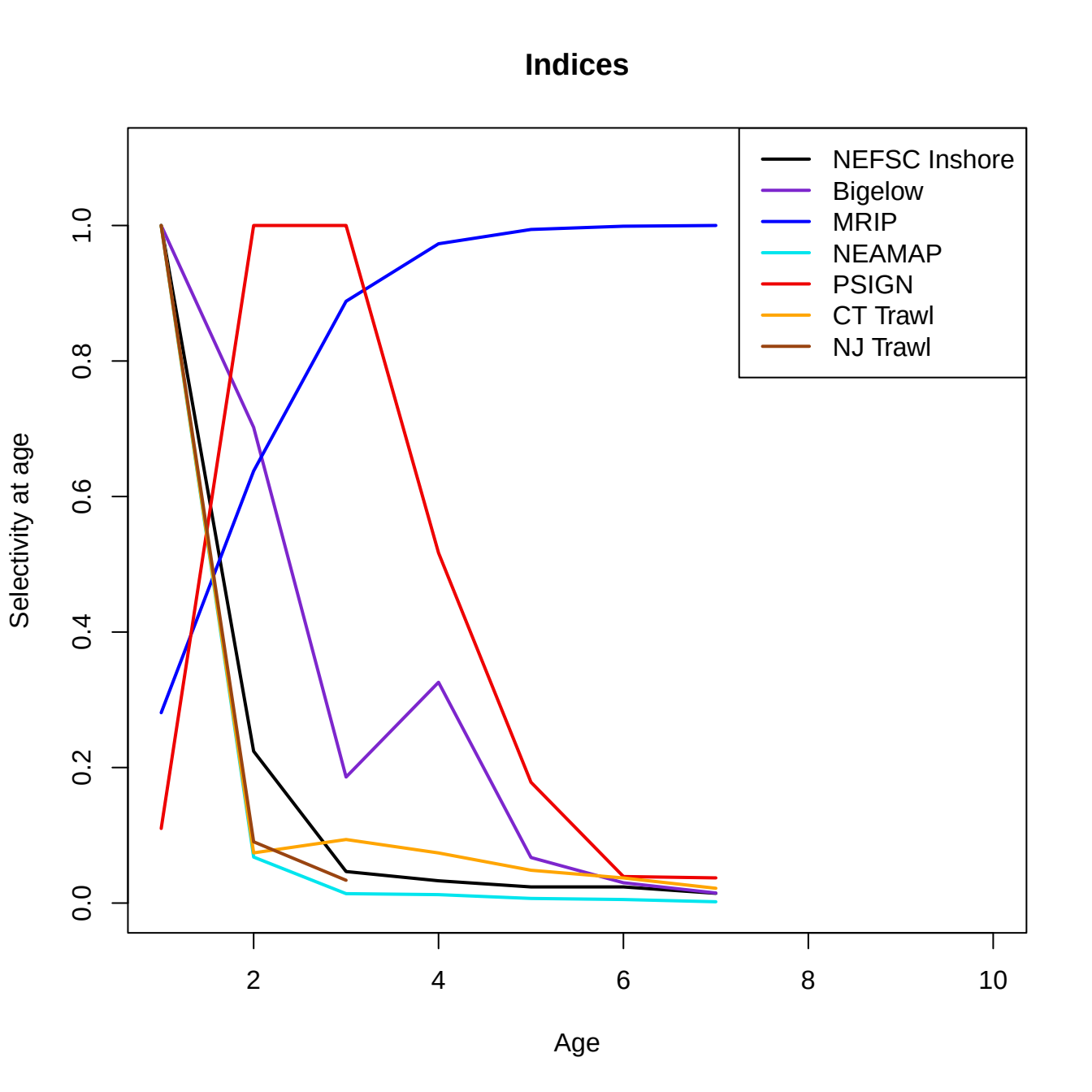
Update all fishery data, new L-W parameters, new recreational discard mortality, add commercial discards

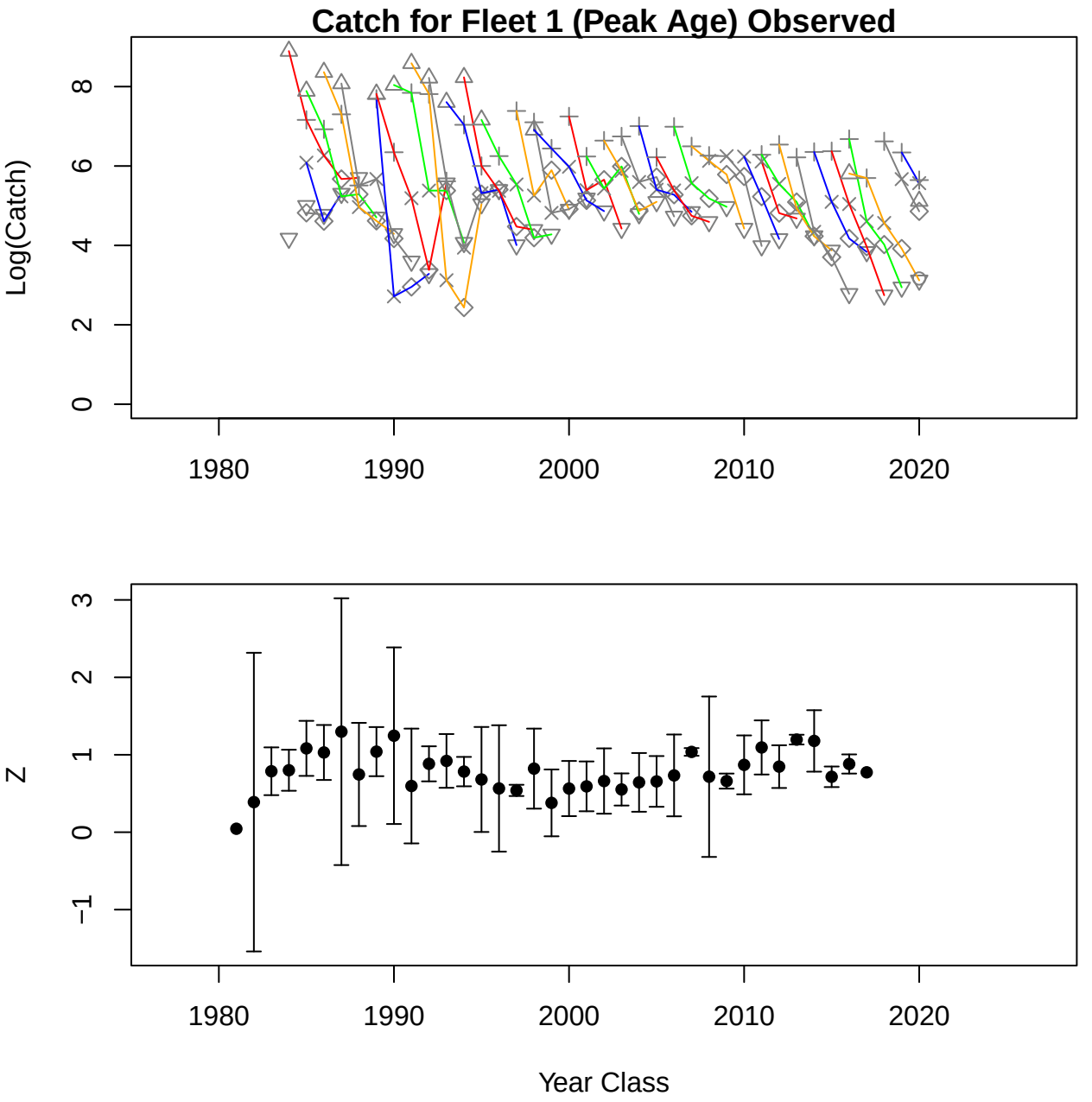
RESULTS PLOTS

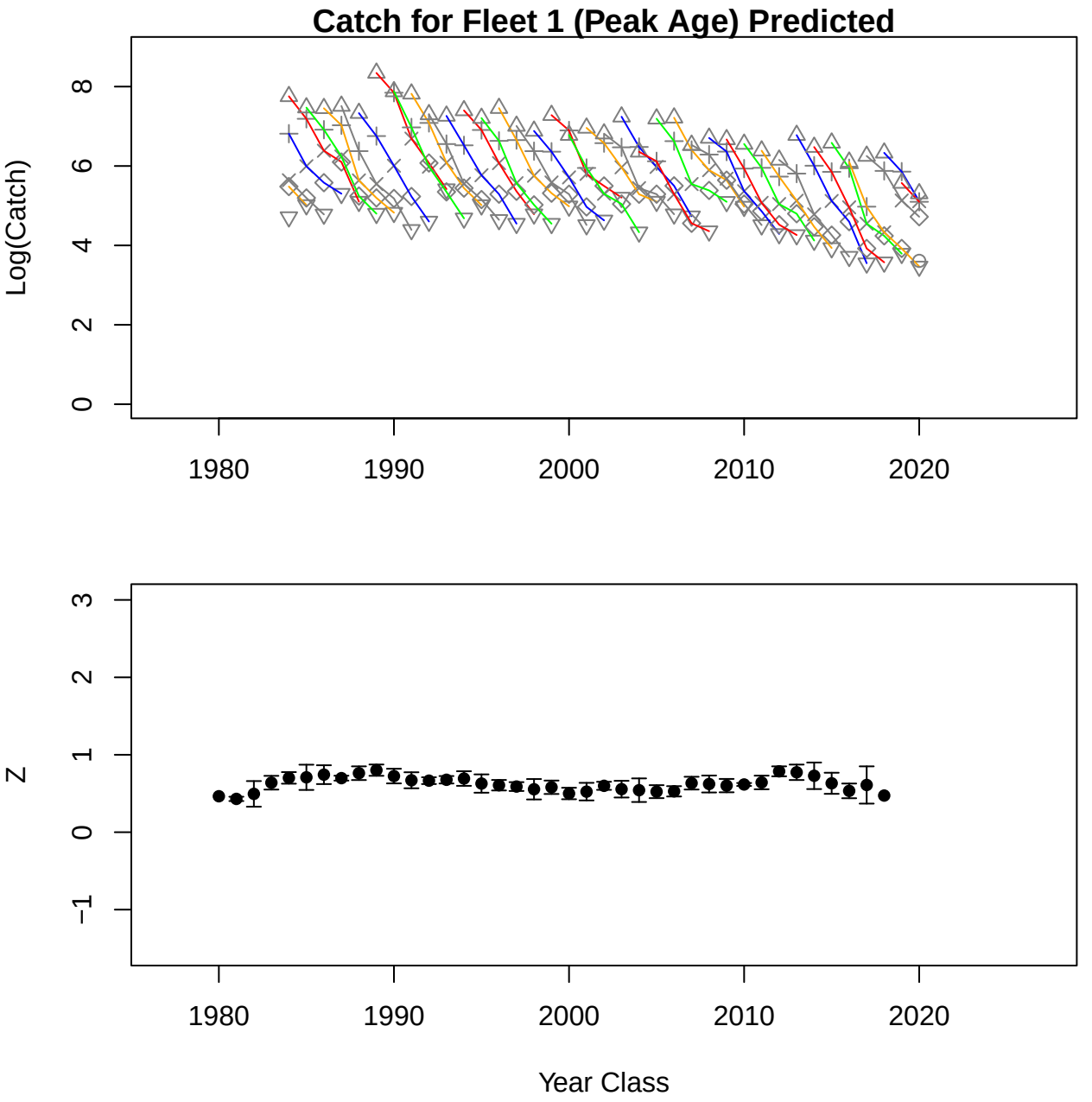

Fleet 1 (Comm)
1985
Selectivity at Age
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
Age

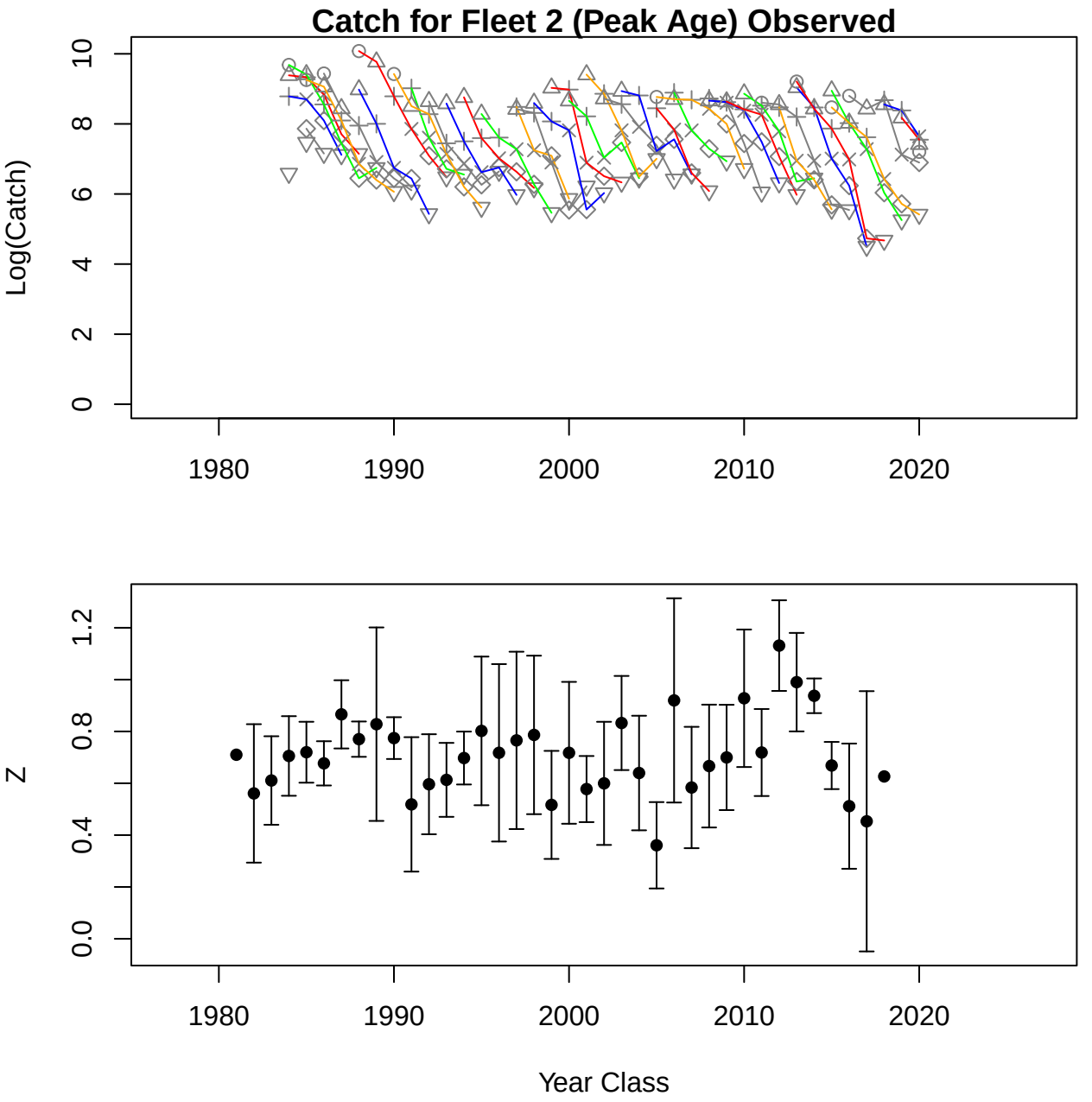

Fleet 2 (Rec)
1985
Selectivity at Age
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
Age

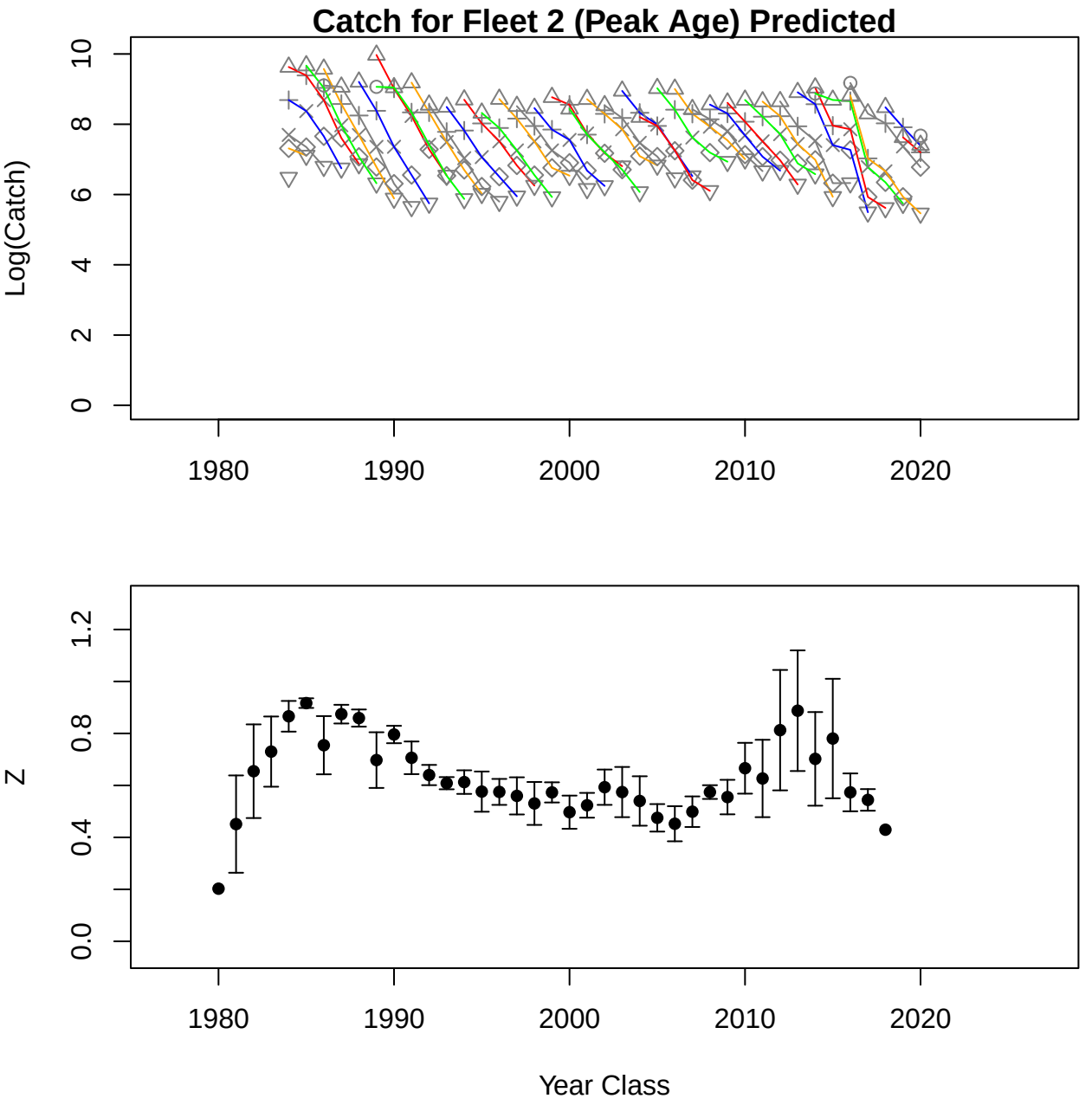

Comm
Rec
Fmult by fleet
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
1985
1990
1995
2000
2005
2010
2015
2020
Year

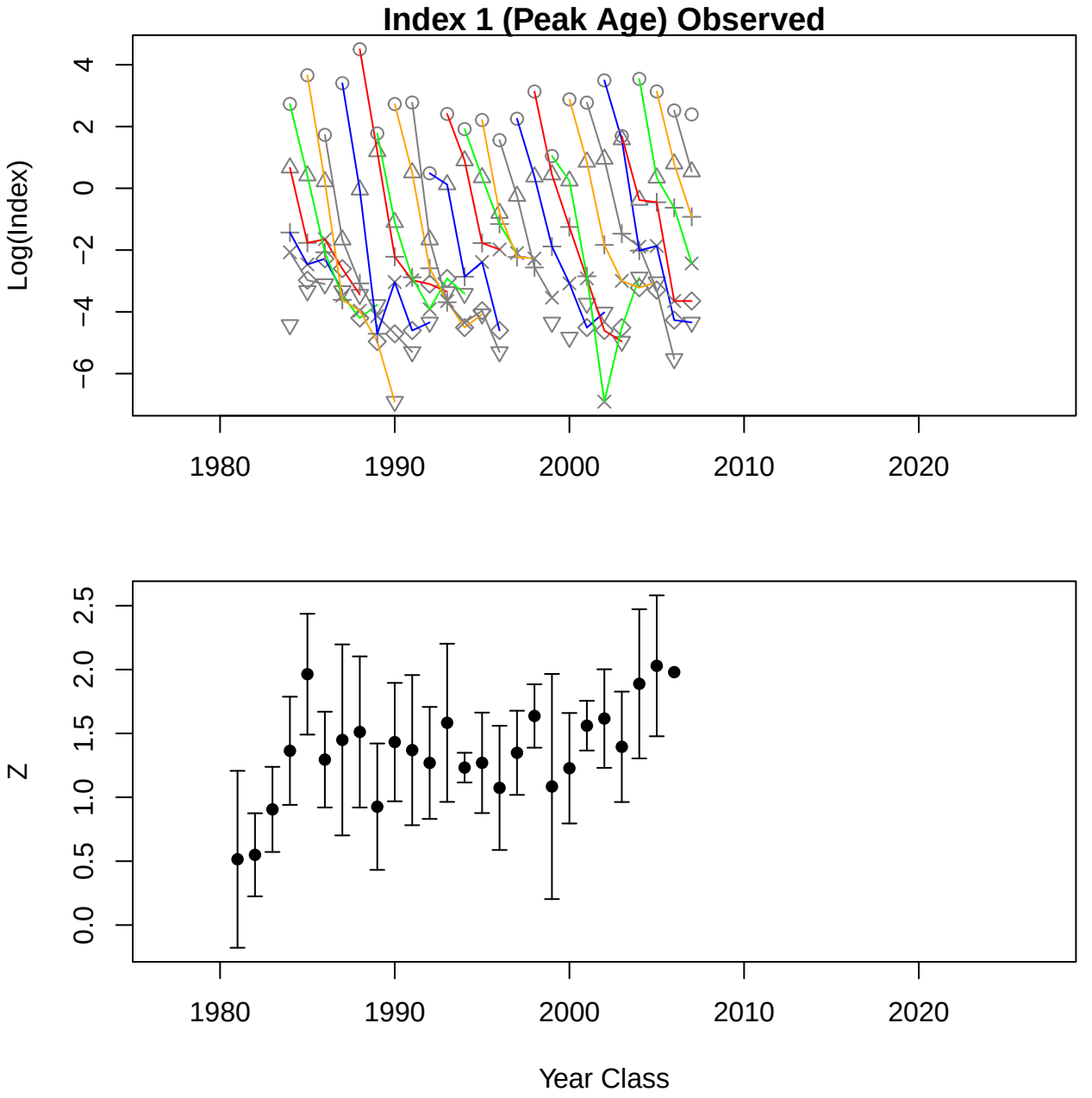

Indices
NEFSC Inshore
Bigelow
MRIP
NEAMAP
PSIGN
CT Trawl
NJ Trawl
Selectivity at age
0.0
0.2
0.4
0.6
0.8
1.0
2
4
6
8
10
Age

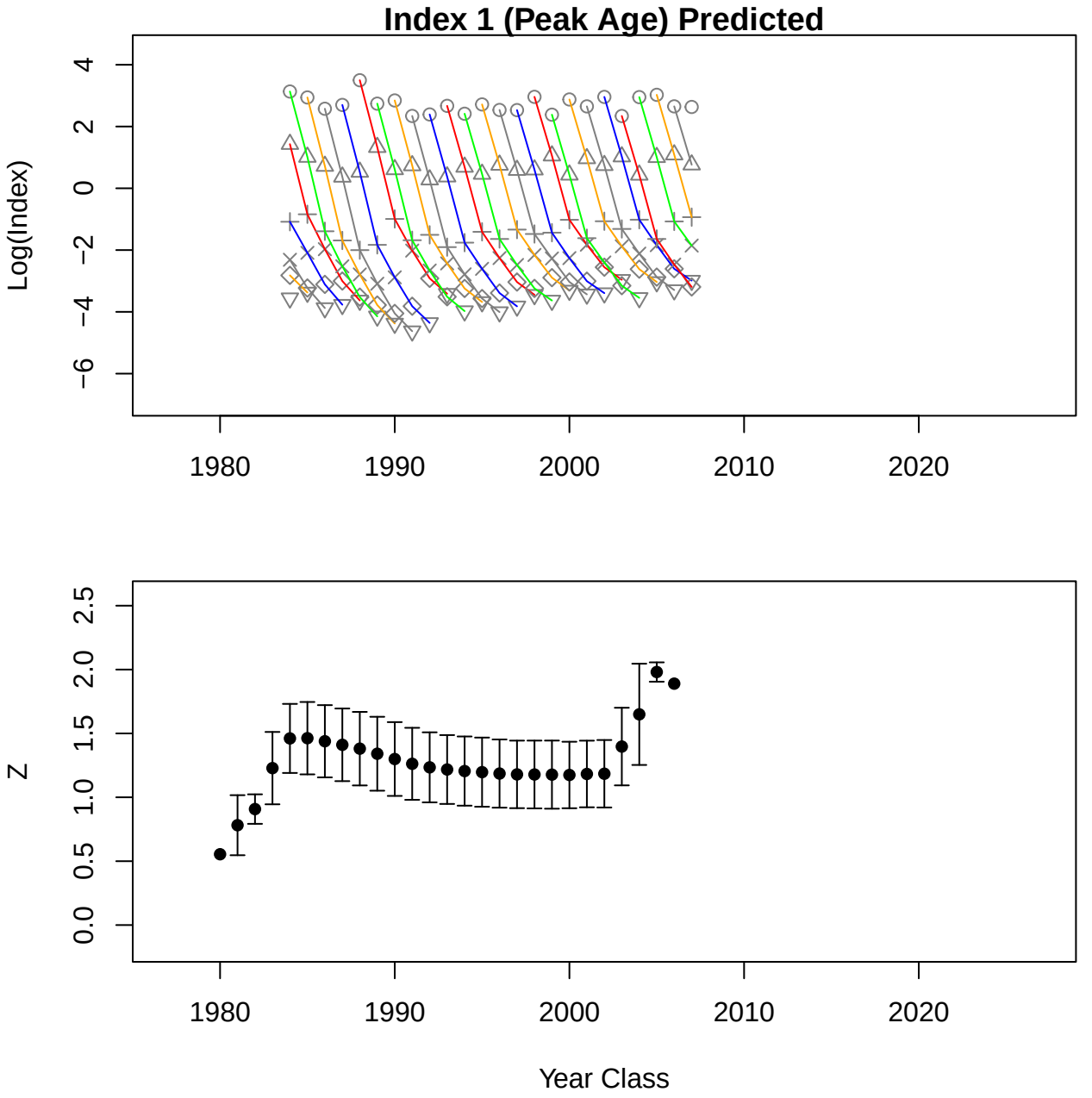

Catch for Fleet 1 (Peak Age) Observed
Log(Catch)
0
2
4
6
8
1980
1990
2000
2010
2020
Z
−1
0
1
2
3
1980
1990
2000
2010
2020
Year Class

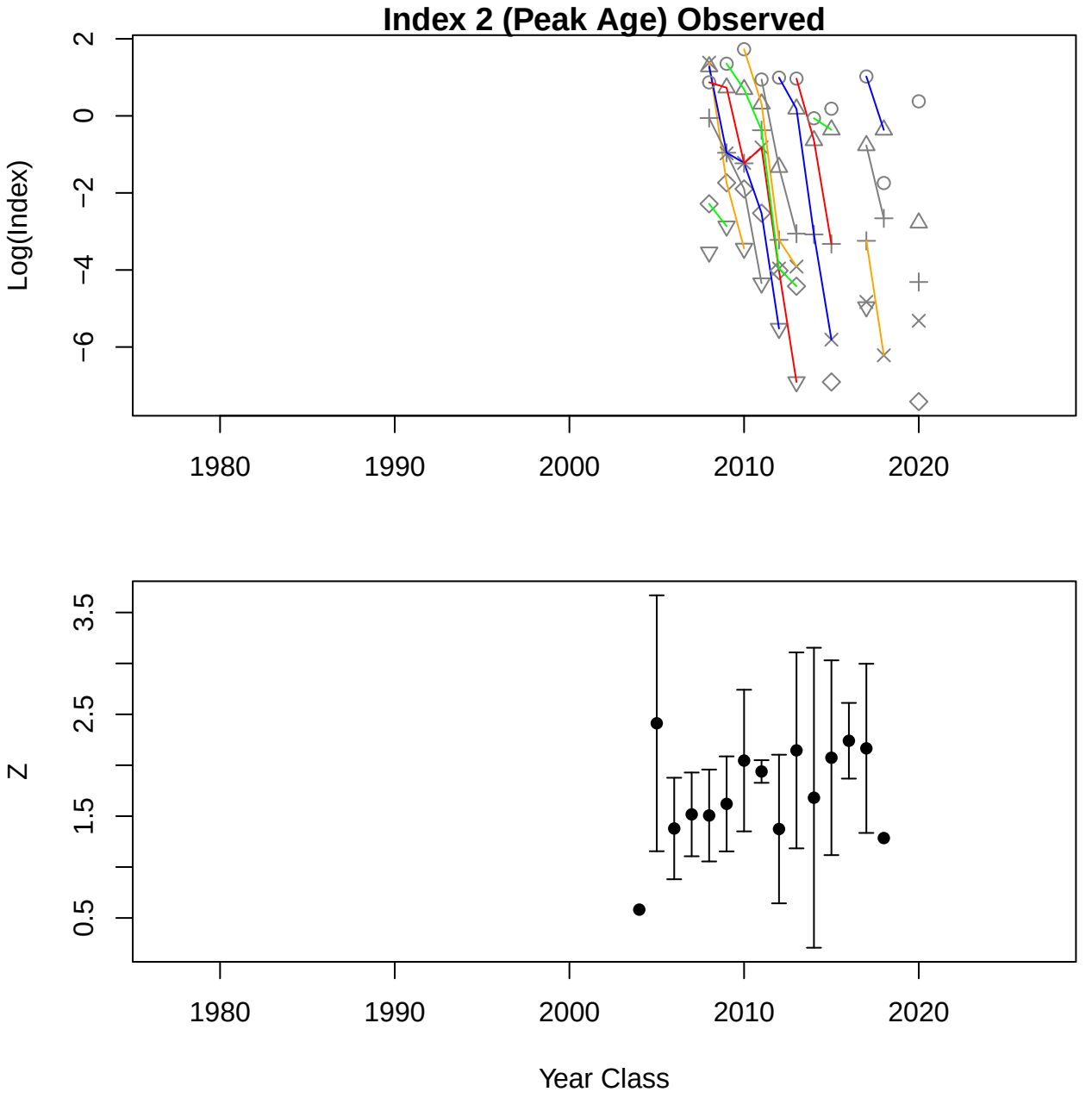

Catch for Fleet 1 (Peak Age) Predicted
Log(Catch)
0
2
4
6
8
1980
1990
2000
2010
2020
Z
−1
0
1
2
3
1980
1990
2000
2010
2020
Year Class

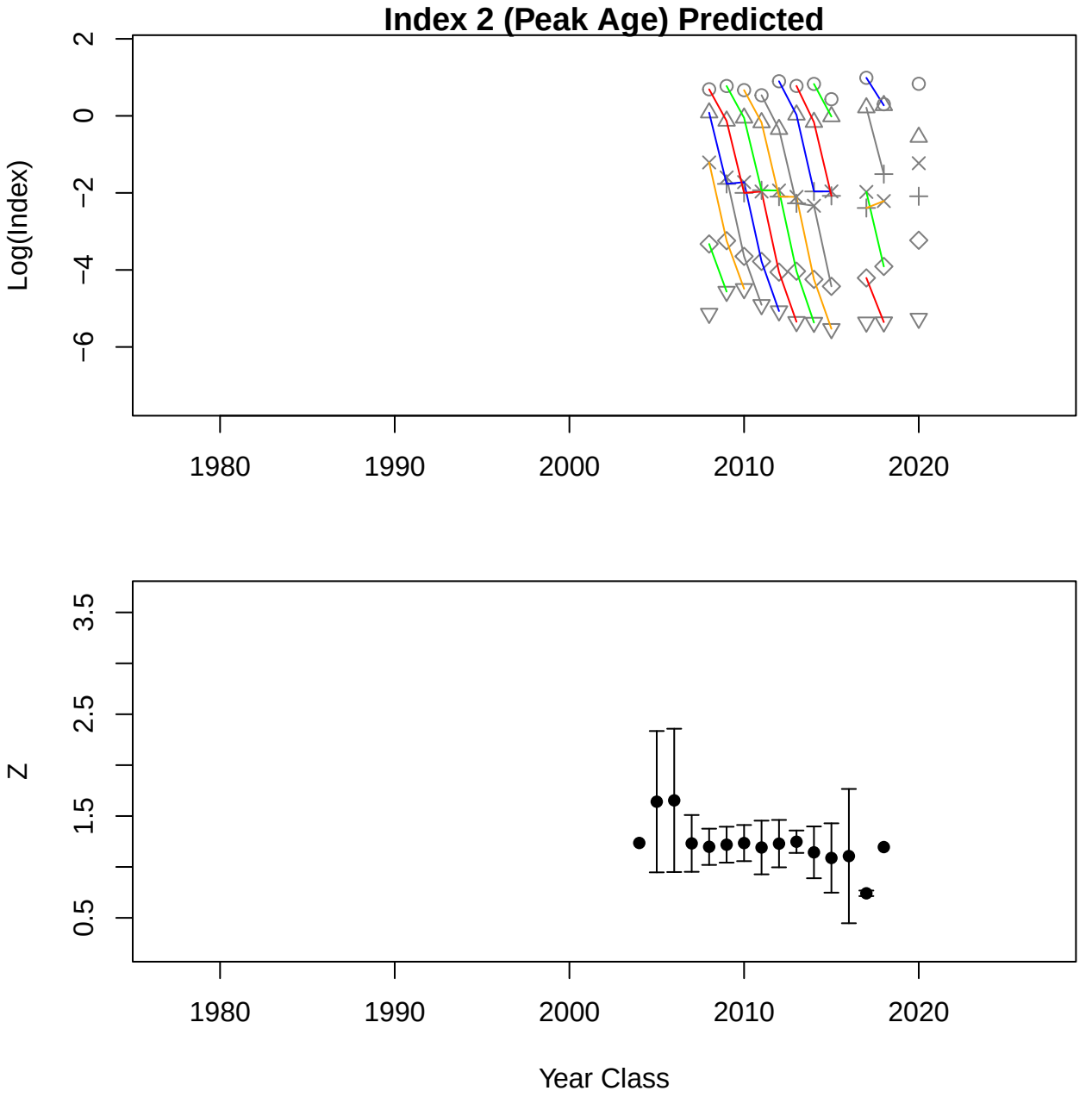

Catch for Fleet 2 (Peak Age) Observed
Log(Catch)
0
2
4
6
8
10
1980
1990
2000
2010
2020
Z
0.0
0.4
0.8
1.2
1980
1990
2000
2010
2020
Year Class

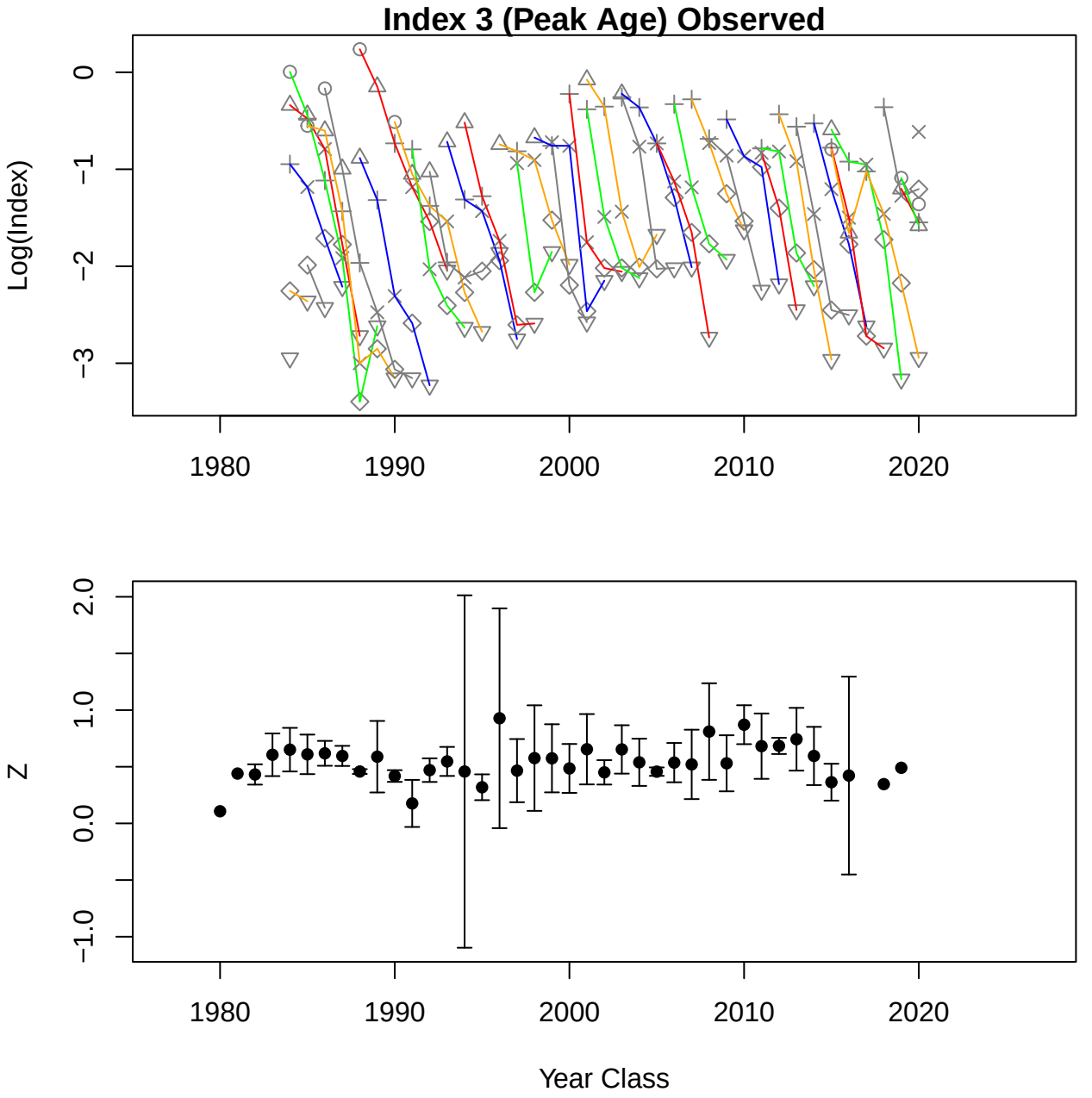

Catch for Fleet 2 (Peak Age) Predicted
Log(Catch)
0
2
4
6
8
10
1980
1990
2000
2010
2020
Z
0.0
0.4
0.8
1.2
1980
1990
2000
2010
2020
Year Class

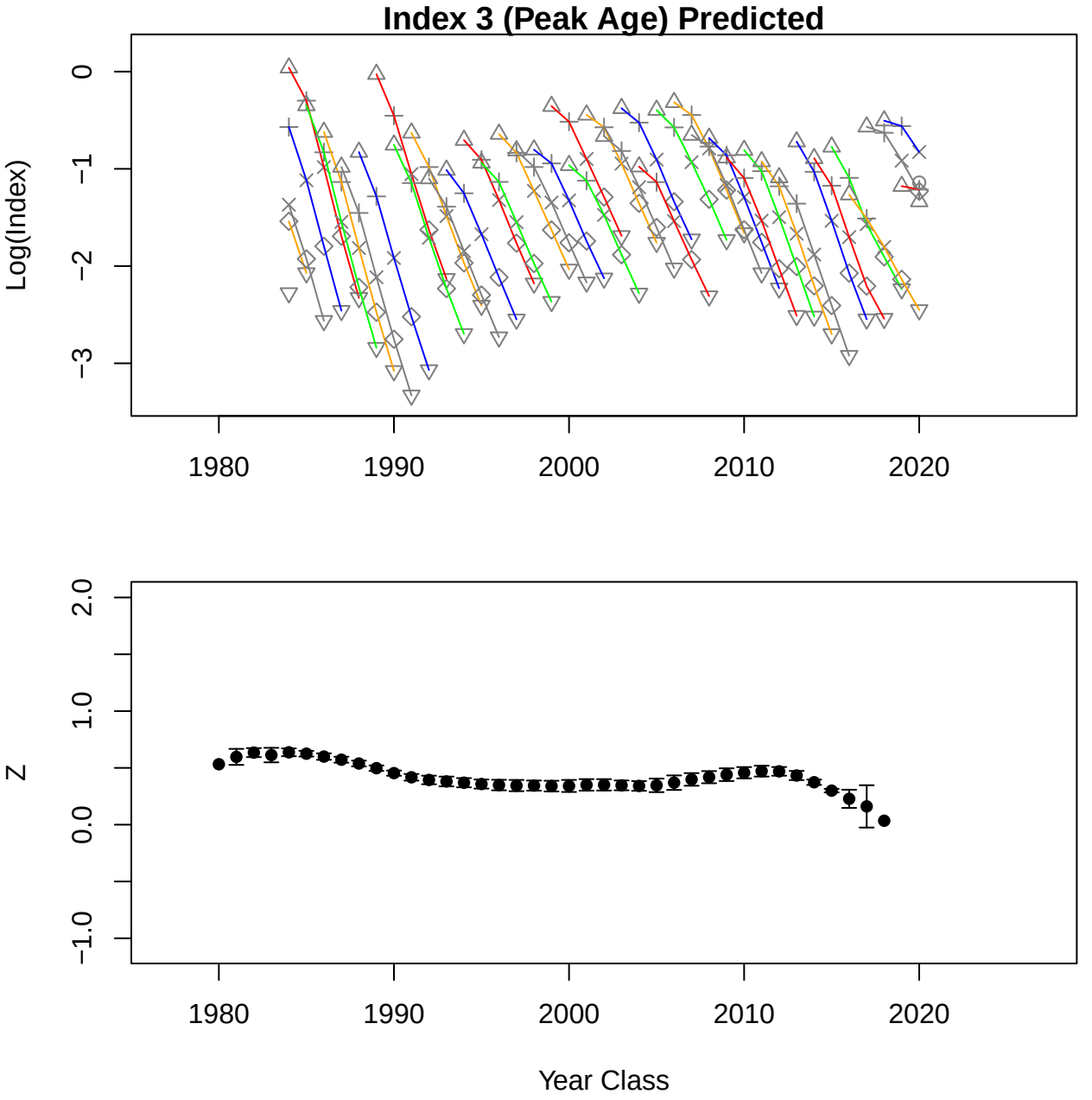

Index 1 (Peak Age) Observed
Log(Index)
4
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
2.5
2.0
1.5
1.0
0.5
0.0
1980
1990
2000
2010
2020
Year Class

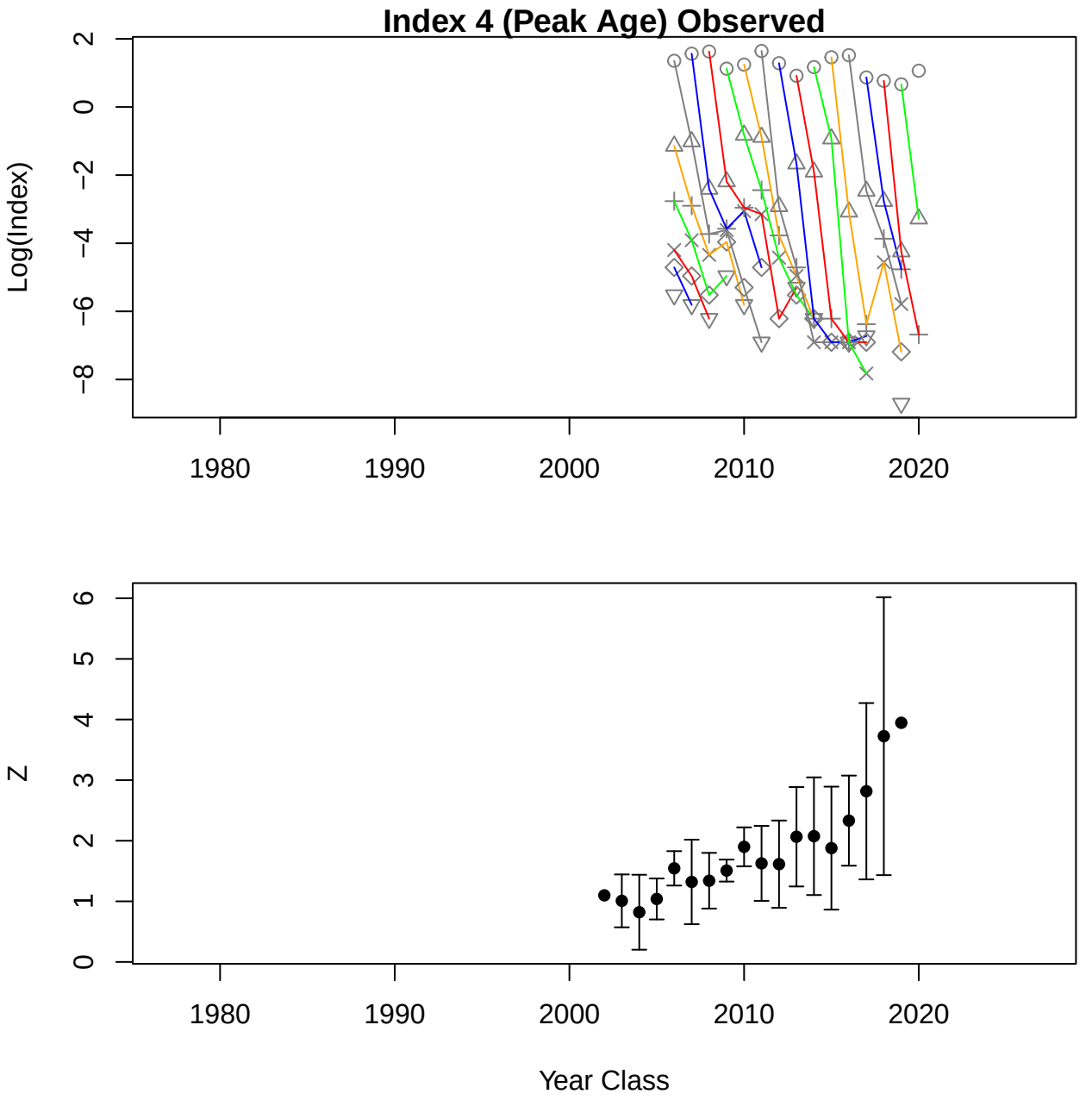

Index 1 (Peak Age) Predicted
Log(Index)
4
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
2.5
2.0
1.5
1.0
0.5
0.0
1980
1990
2000
2010
2020
Year Class

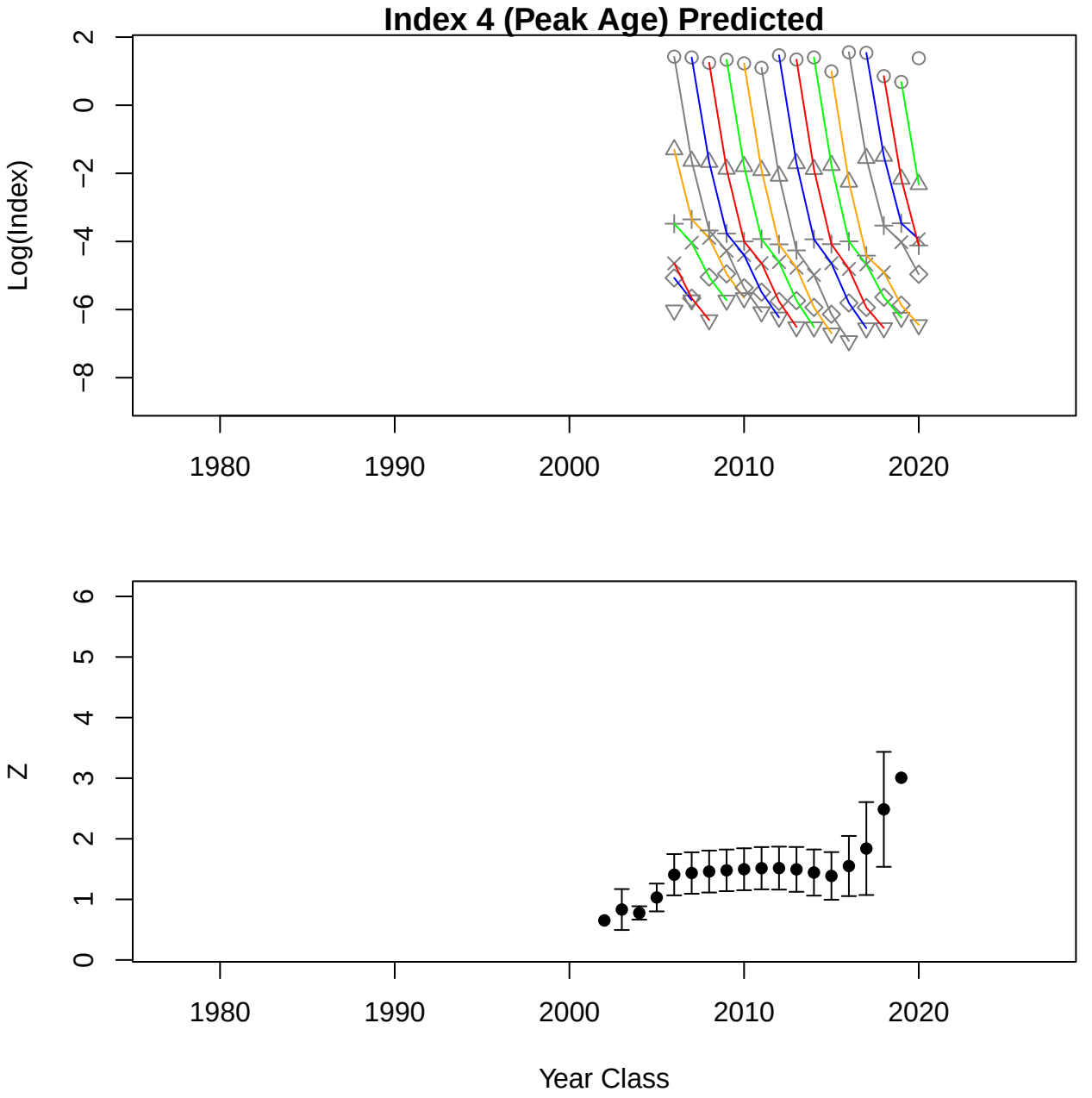

Index 2 (Peak Age) Observed
Log(Index)
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
3.5
2.5
1.5
0.5
1980
1990
2000
2010
2020
Year Class

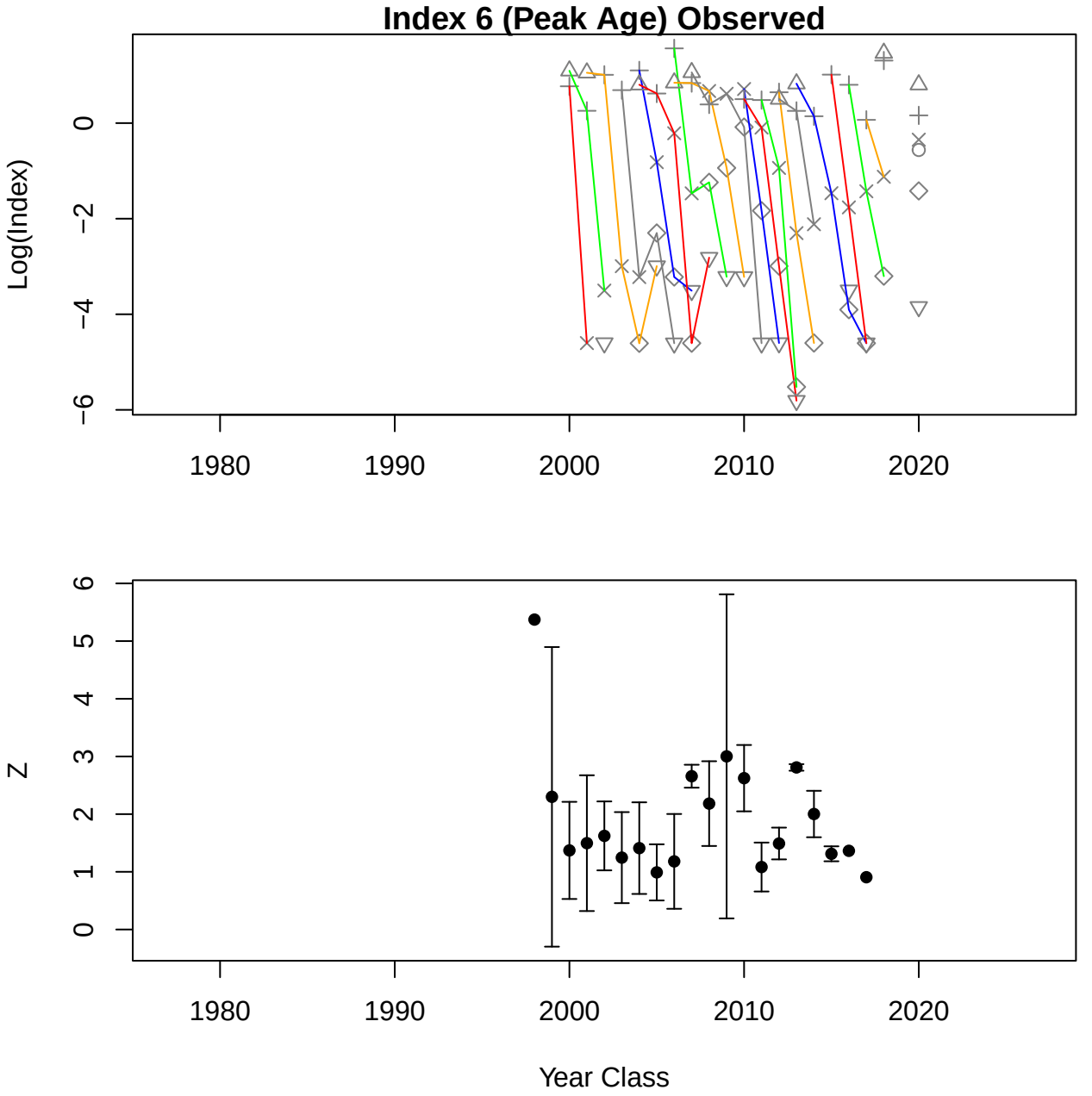

Index 2 (Peak Age) Predicted
Log(Index)
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
3.5
2.5
1.5
0.5
1980
1990
2000
2010
2020
Year Class

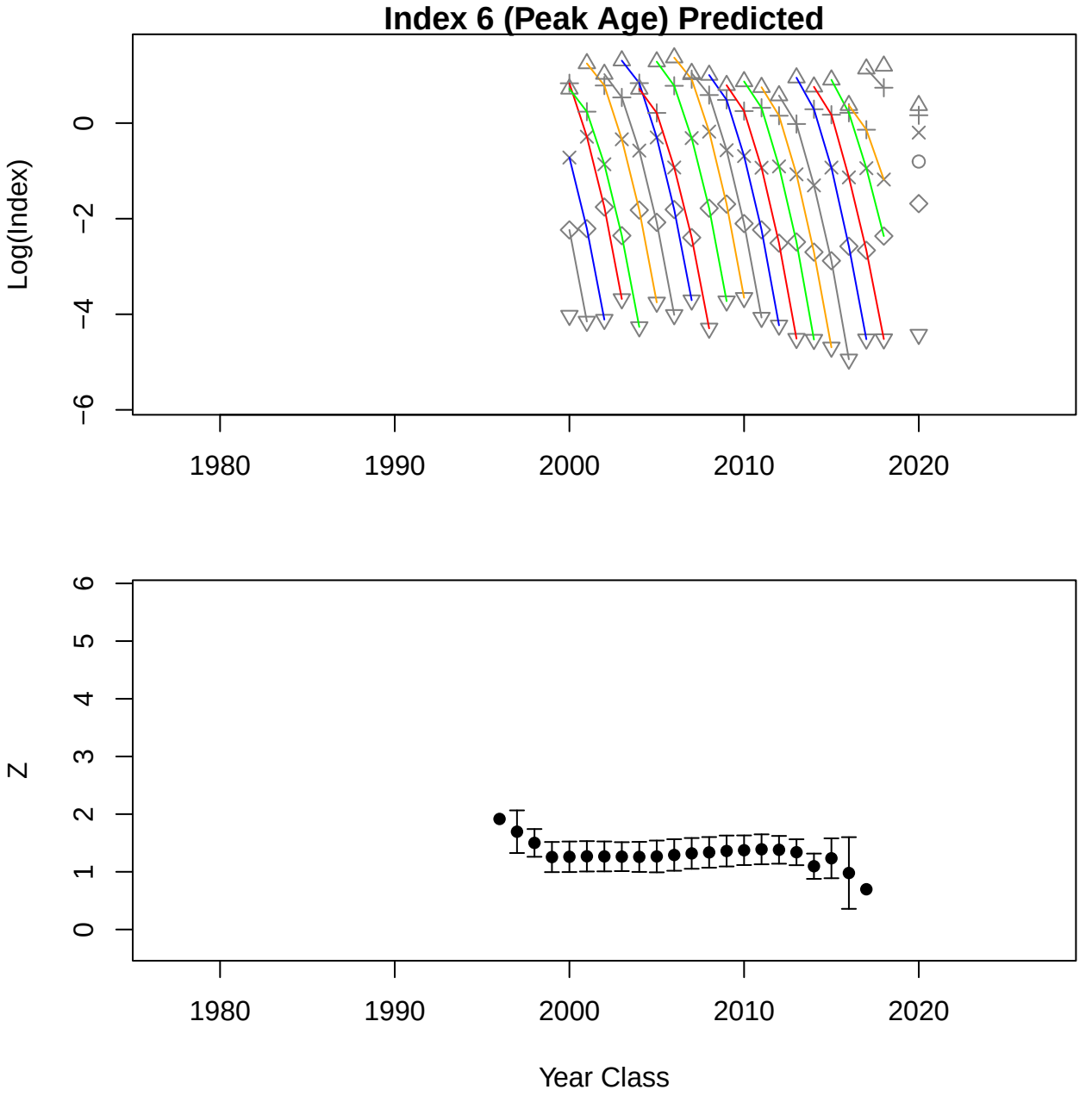

Index 3 (Peak Age) Observed
Log(Index)
0
−1
−2
−3
1980
1990
2000
2010
2020
Z
2.0
1.0
0.0
−1.0
1980
1990
2000
2010
2020
Year Class

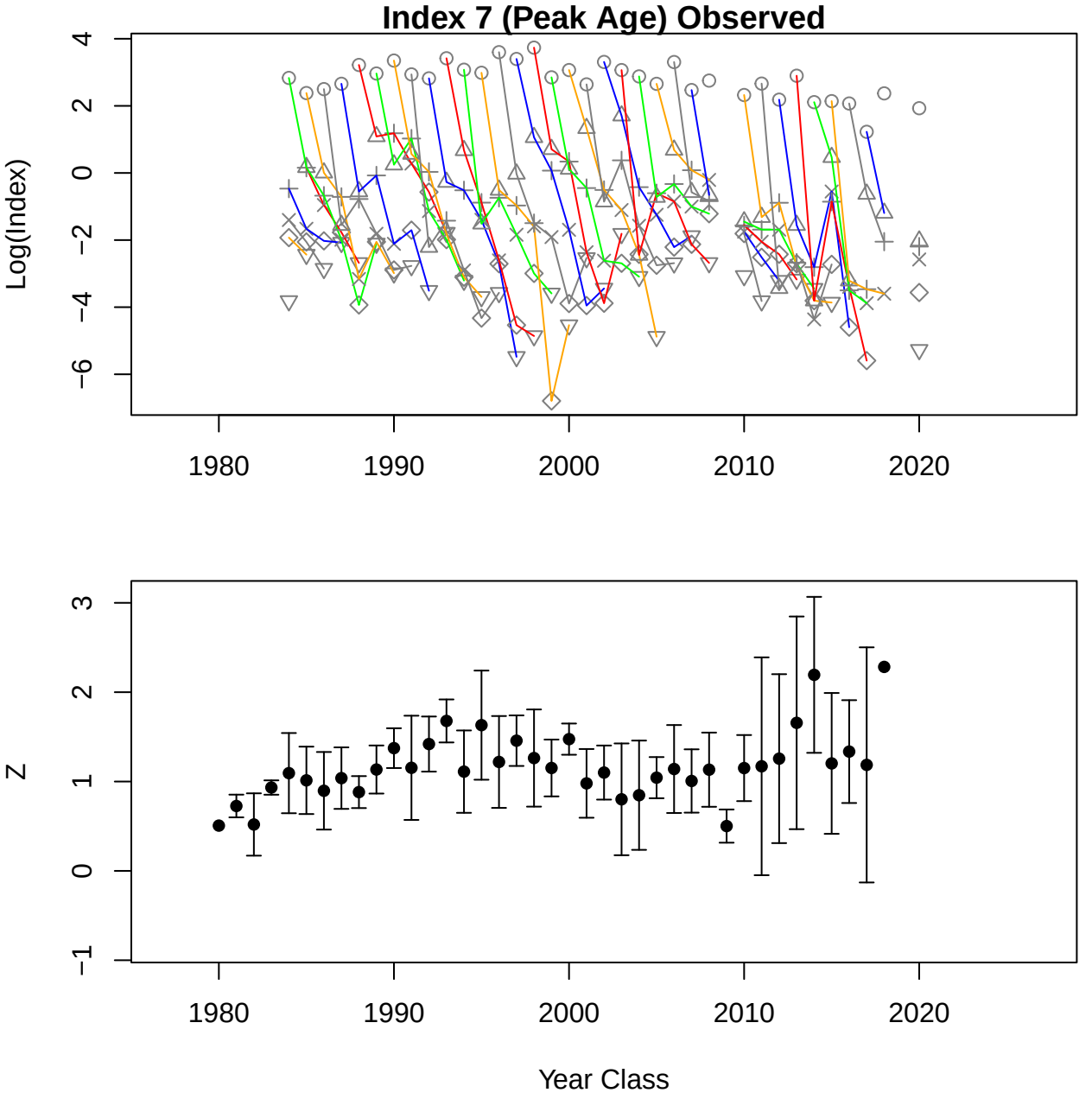

Index 3 (Peak Age) Predicted
Log(Index)
0
−1
−2
−3
1980
1990
2000
2010
2020
Z
2.0
1.0
0.0
−1.0
1980
1990
2000
2010
2020
Year Class

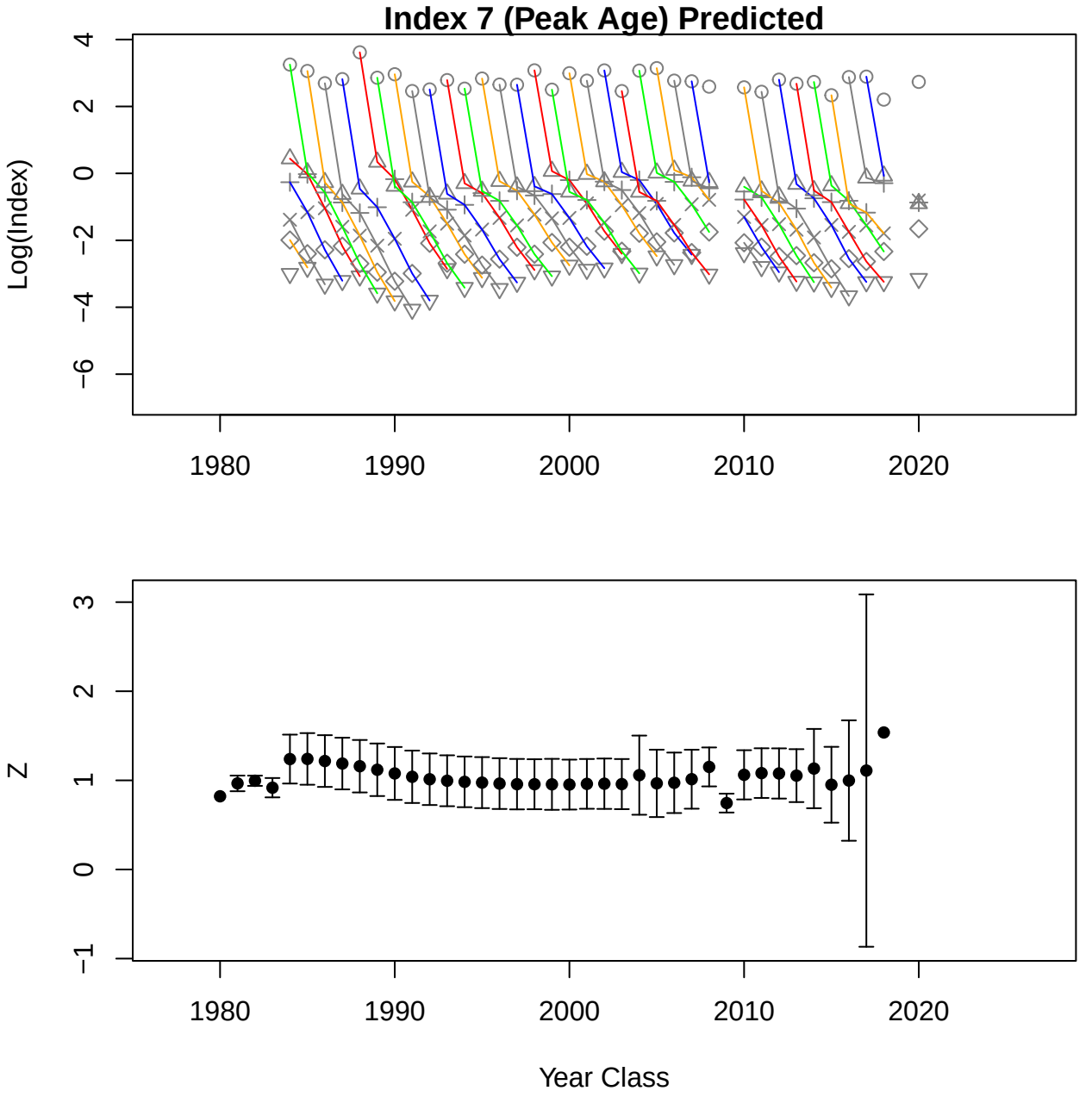

Index 4 (Peak Age) Observed
Log(Index)
2
0
−2
−4
−6
−8
1980
1990
2000
2010
2020
Z
0
1
2
3
4
5
6
1980
1990
2000
2010
2020
Year Class

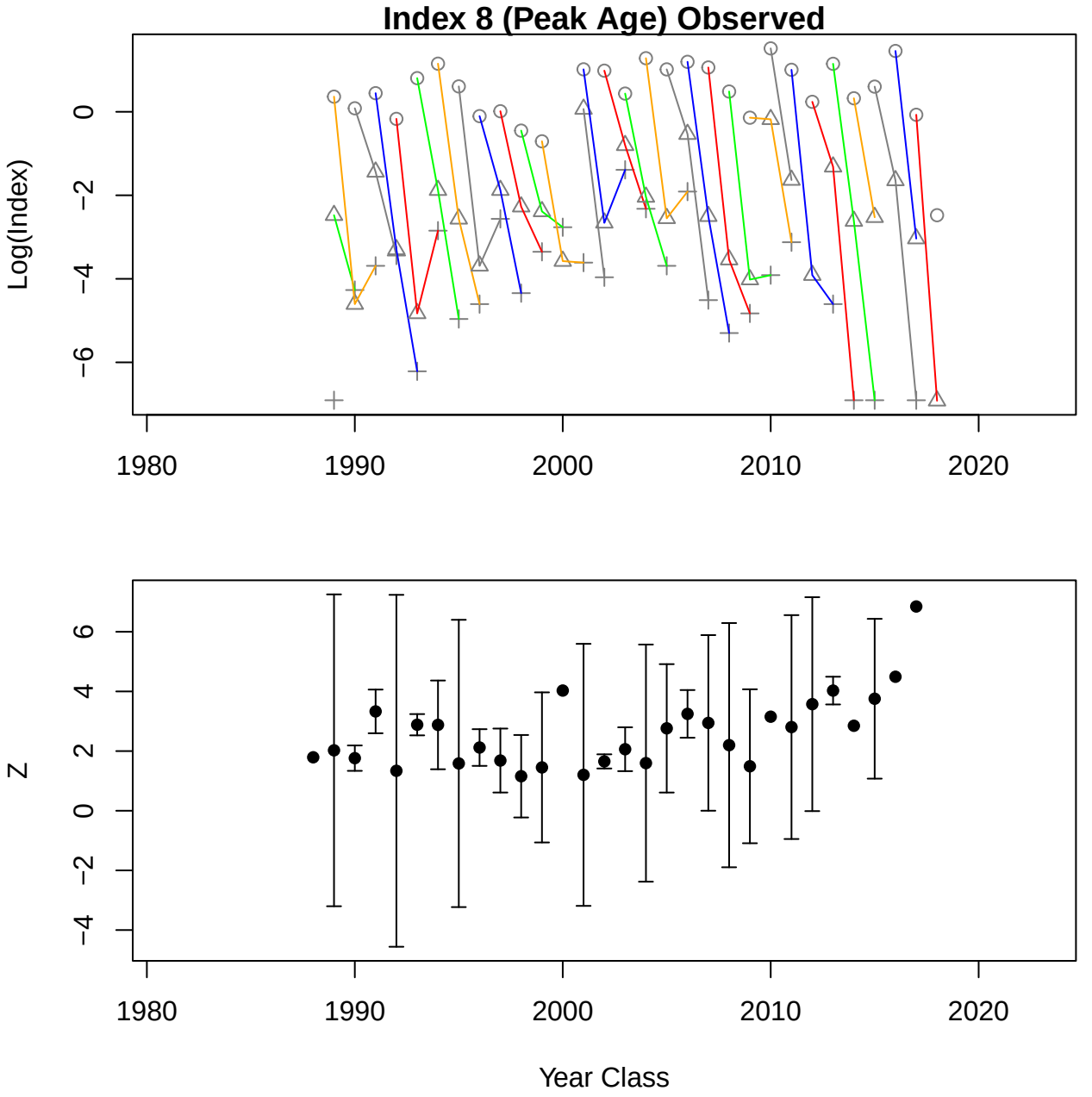

Index 4 (Peak Age) Predicted
Log(Index)
2
0
−2
−4
−6
−8
1980
1990
2000
2010
2020
Z
0
1
2
3
4
5
6
1980
1990
2000
2010
2020
Year Class

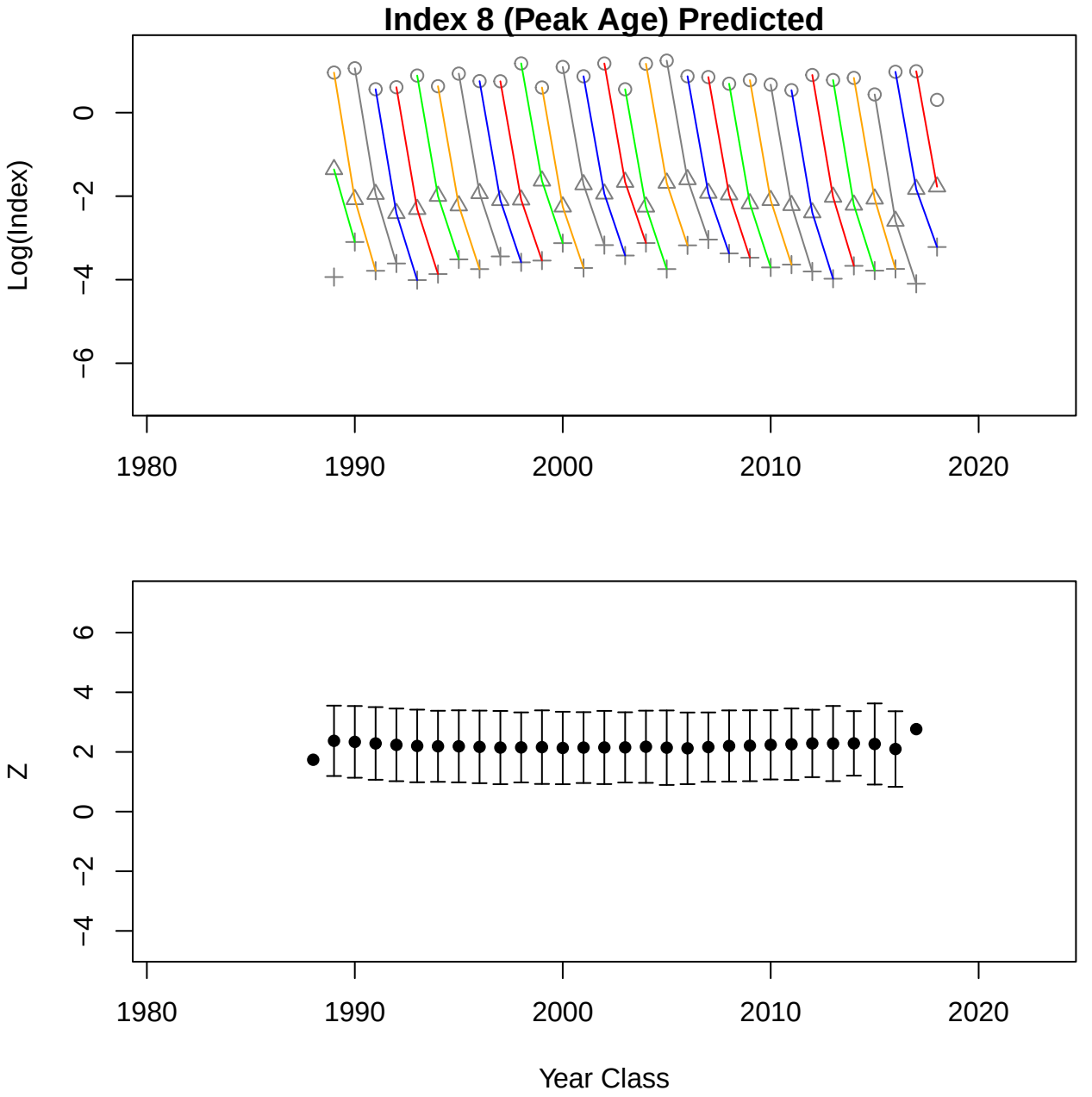

Index 6 (Peak Age) Observed
Log(Index)
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
0
1
2
3
4
5
6
1980
1990
2000
2010
2020
Year Class

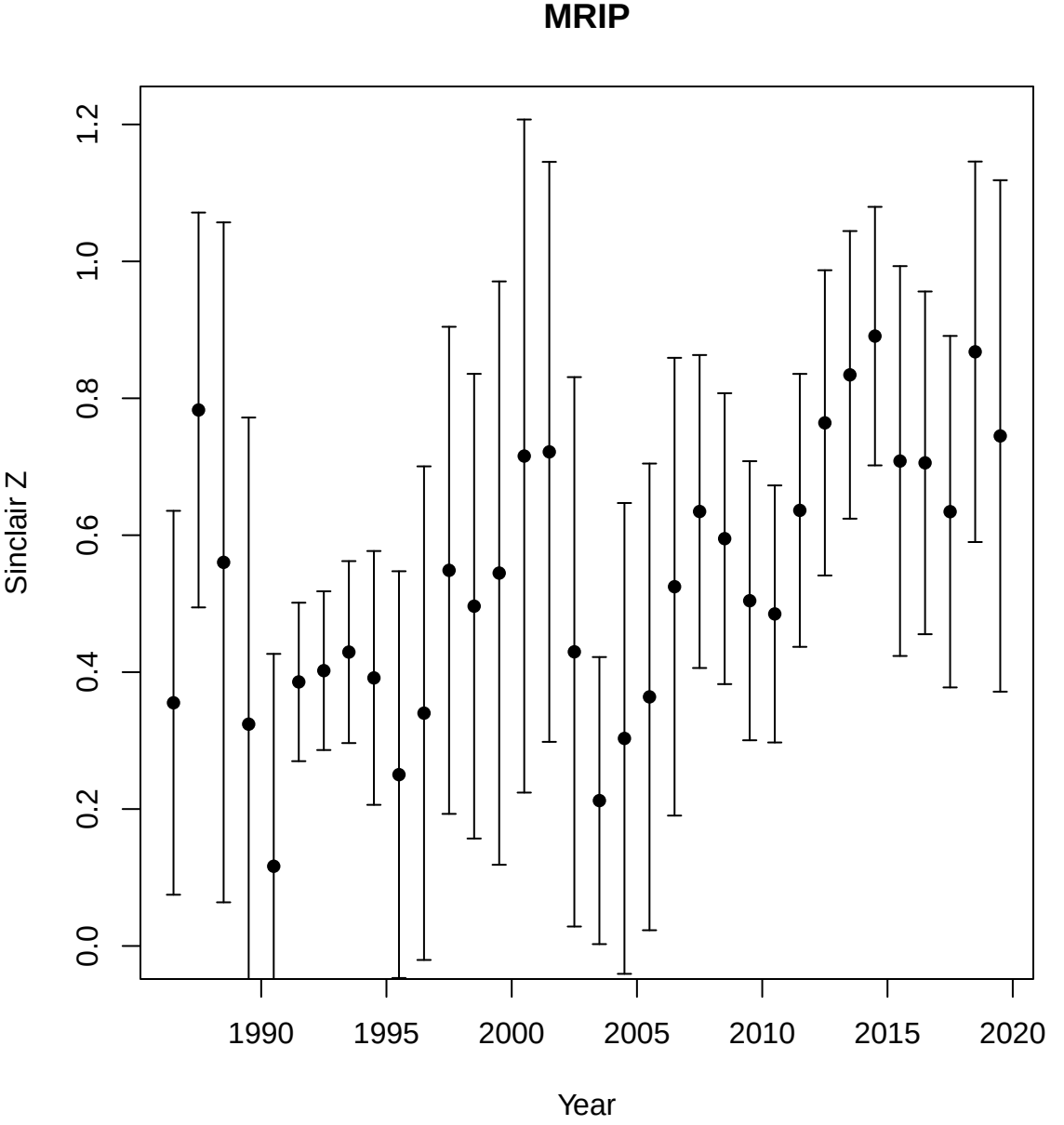

Index 6 (Peak Age) Predicted
Log(Index)
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
0
1
2
3
4
5
6
1980
1990
2000
2010
2020
Year Class

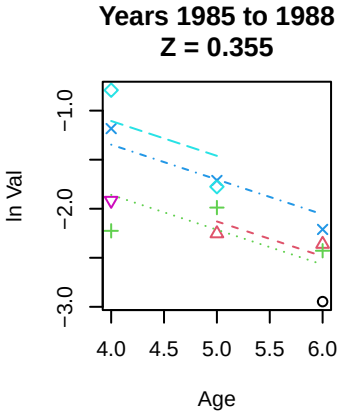

Index 7 (Peak Age) Observed
Log(Index)
4
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
3
2
1
0
−1
1980
1990
2000
2010
2020
Year Class

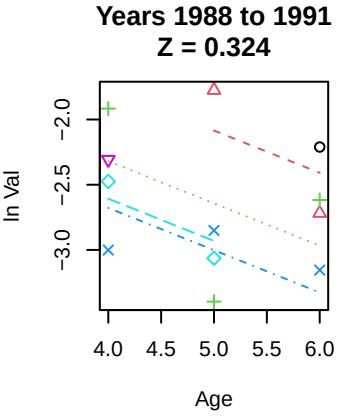

Index 7 (Peak Age) Predicted
Log(Index)
4
2
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
3
2
1
0
−1
1980
1990
2000
2010
2020
Year Class

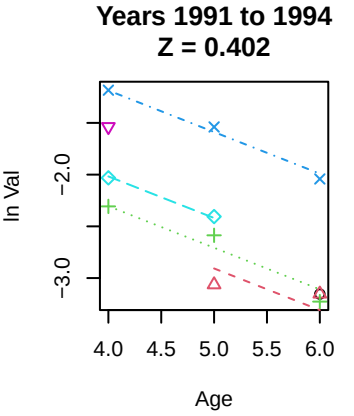

Index 8 (Peak Age) Observed
Log(Index)
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
6
4
2
0
−2
−4
1980
1990
2000
2010
2020
Year Class

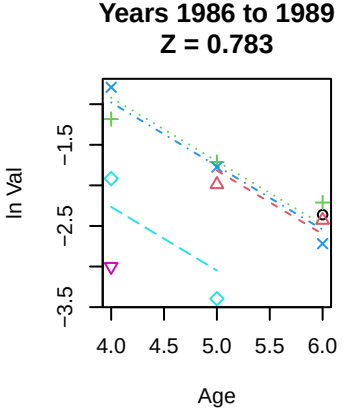

Index 8 (Peak Age) Predicted
Log(Index)
0
−2
−4
−6
1980
1990
2000
2010
2020
Z
6
4
2
0
−2
−4
1980
1990
2000
2010
2020
Year Class

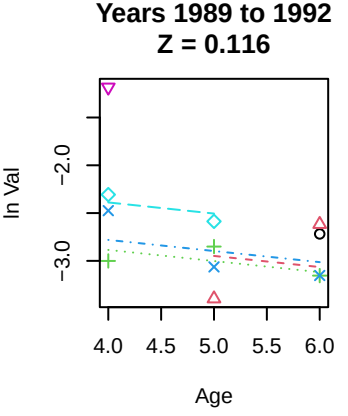

MRIP
Sinclair Z
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1990
1995
2000
2005
2010
2015
2020
Year

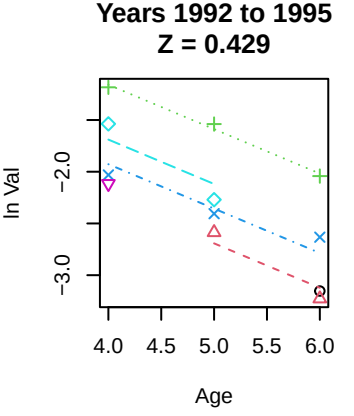

Years 1985 to 1988
Z = 0.355
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

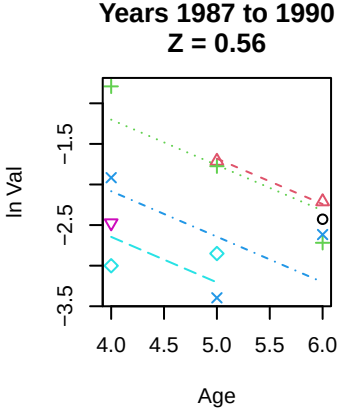

Years 1988 to 1991
Z = 0.324
ln Val
−2.0
−2.5
−3.0
4.0
4.5
5.0
5.5
6.0
Age

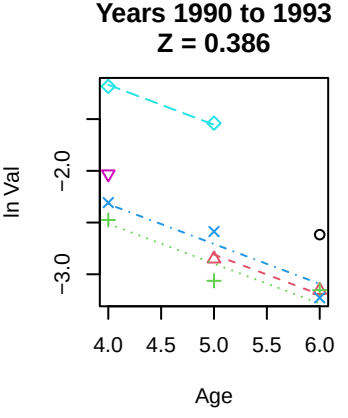

Years 1991 to 1994
Z = 0.402
ln Val
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

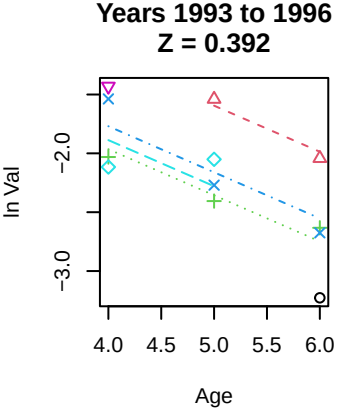

Years 1986 to 1989
Z = 0.783
ln Val
−1.5
−2.5
−3.5
4.0
4.5
5.0
5.5
6.0
Age

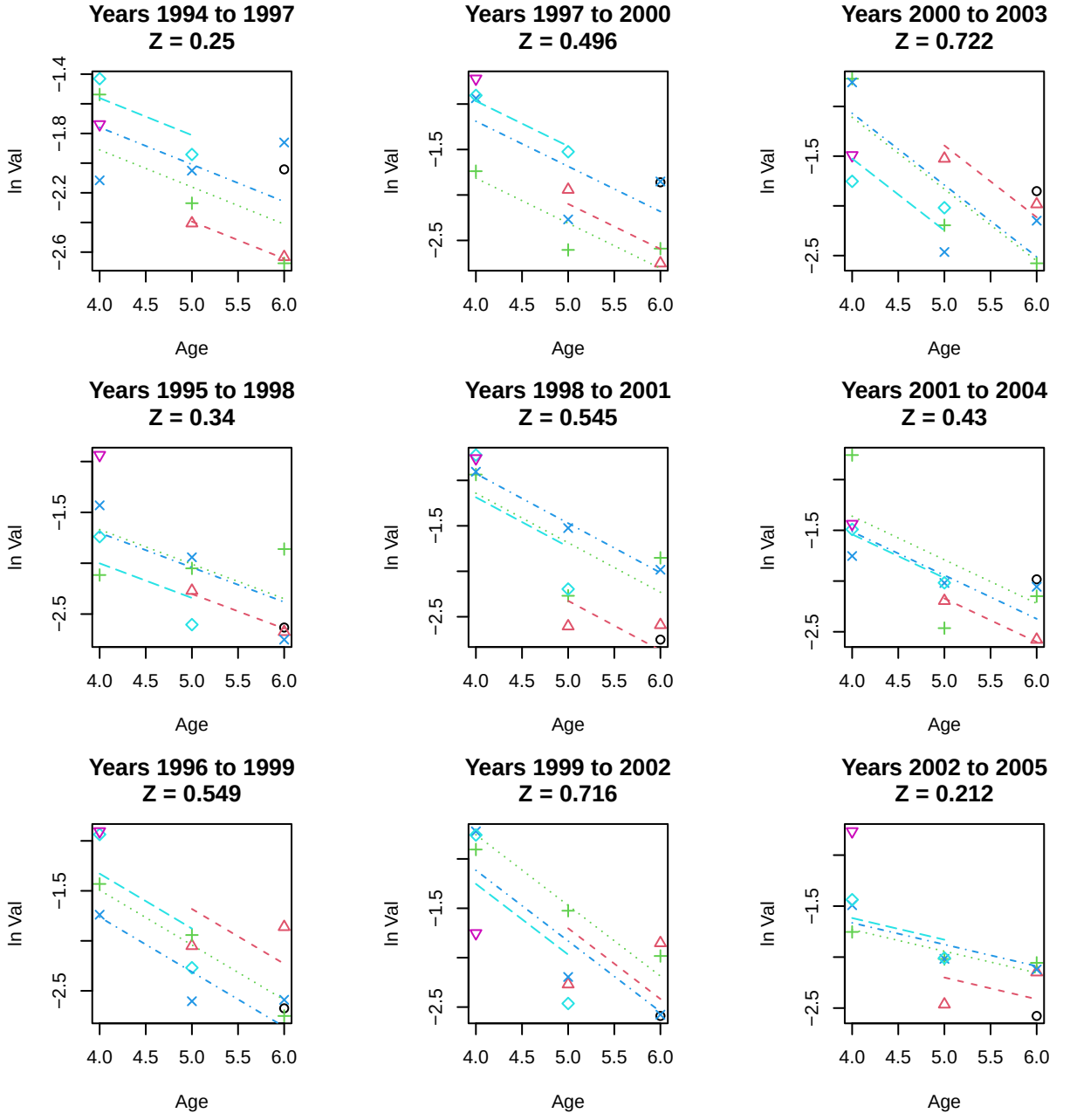

Years 1989 to 1992
Z = 0.116
ln Val
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

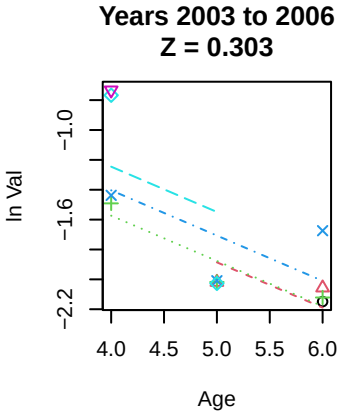

Years 1992 to 1995
Z = 0.429
ln Val
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

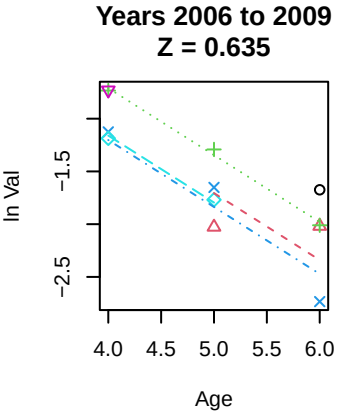

Years 1987 to 1990
Z = 0.56
ln Val
−1.5
−2.5
−3.5
4.0
4.5
5.0
5.5
6.0
Age

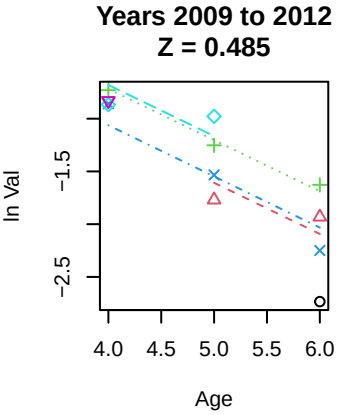

Years 1990 to 1993
Z = 0.386
ln Val
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

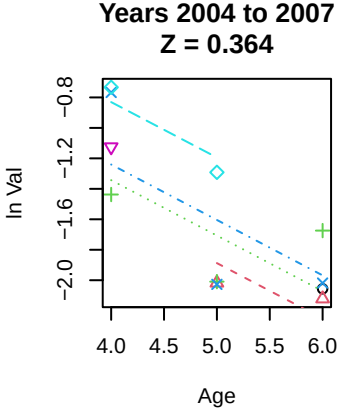

Years 1993 to 1996
Z = 0.392
ln Val
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

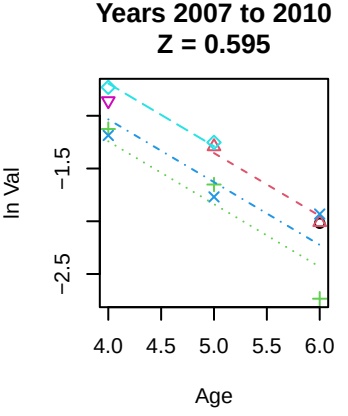

Years 1994 to 1997
Z = 0.25
Years 1997 to 2000
Z = 0.496
Years 2000 to 2003
Z = 0.722
Years 1995 to 1998
Z = 0.34
Years 1998 to 2001
Z = 0.545
Years 2001 to 2004
Z = 0.43
Years 1996 to 1999
Z = 0.549
Years 1999 to 2002
Z = 0.716
Years 2002 to 2005
Z = 0.212
ln Val
Age
−1.4
−1.8
−2.2
−2.6
−1.5
−2.5
4.0
4.5
5.0
5.5
6.0

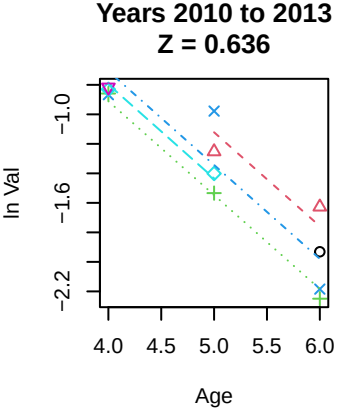

Years 2003 to 2006
Z = 0.303
ln Val
−1.0
−1.6
−2.2
4.0
4.5
5.0
5.5
6.0
Age

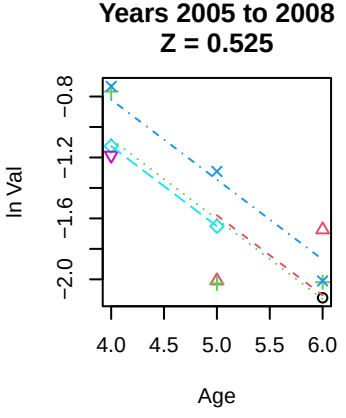

Years 2006 to 2009
Z = 0.635
ln Val
−1.5
−2.5
4.0
4.5
5.0
5.5
6.0
Age

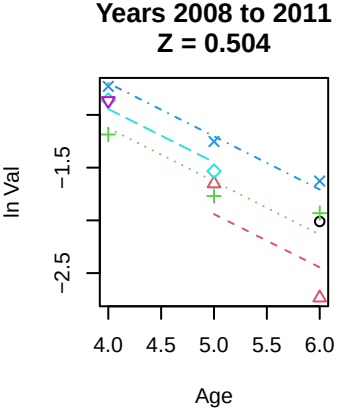

Years 2009 to 2012
Z = 0.485
ln Val
−1.5
−2.5
4.0
4.5
5.0
5.5
6.0
Age

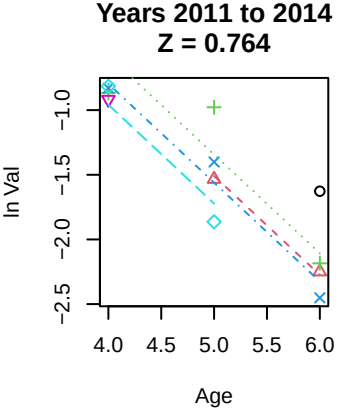

Years 2004 to 2007
Z = 0.364
ln Val
−0.8
−1.2
−1.6
−2.0
4.0
4.5
5.0
5.5
6.0
Age

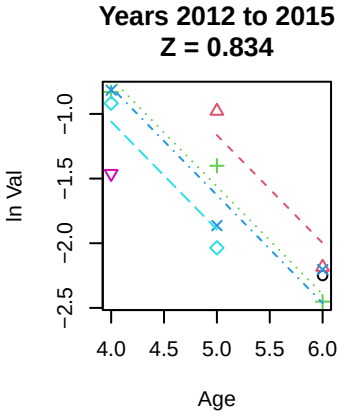

Years 2007 to 2010
Z = 0.595
ln Val
−1.5
−2.5
4.0
4.5
5.0
5.5
6.0
Age

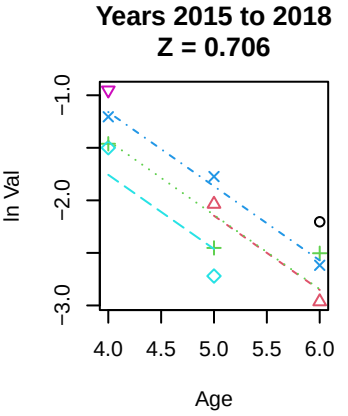

Years 2010 to 2013
Z = 0.636
ln Val
−1.0
−1.6
−2.2
4.0
4.5
5.0
5.5
6.0
Age

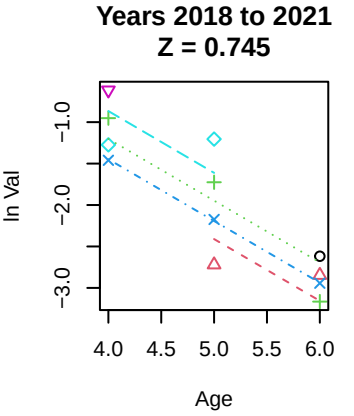

Years 2005 to 2008
Z = 0.525
ln Val
−0.8
−1.2
−1.6
−2.0
4.0
4.5
5.0
5.5
6.0
Age

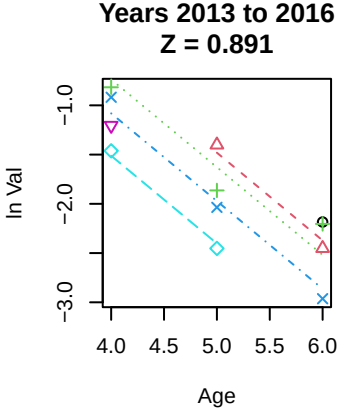

Years 2008 to 2011
Z = 0.504
ln Val
−1.5
−2.5
4.0
4.5
5.0
5.5
6.0
Age

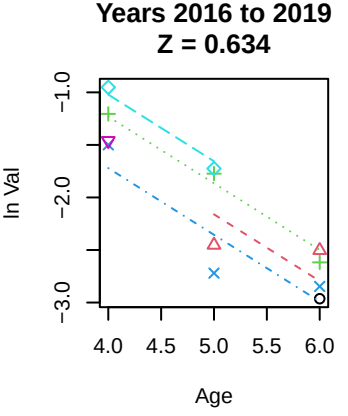

Years 2011 to 2014
Z = 0.764
ln Val
−1.0
−1.5
−2.0
−2.5
4.0
4.5
5.0
5.5
6.0
Age

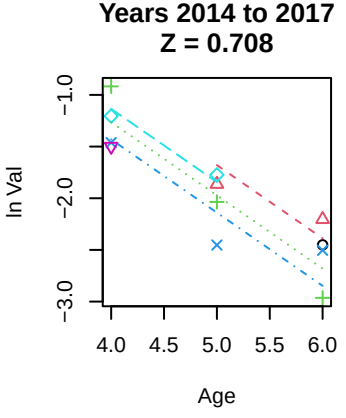

Years 2012 to 2015
Z = 0.834
ln Val
−1.0
−1.5
−2.0
−2.5
4.0
4.5
5.0
5.5
6.0
Age

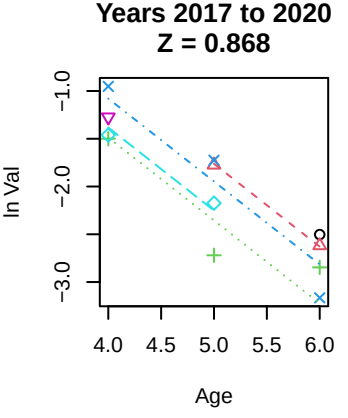

Years 2015 to 2018
Z = 0.706
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

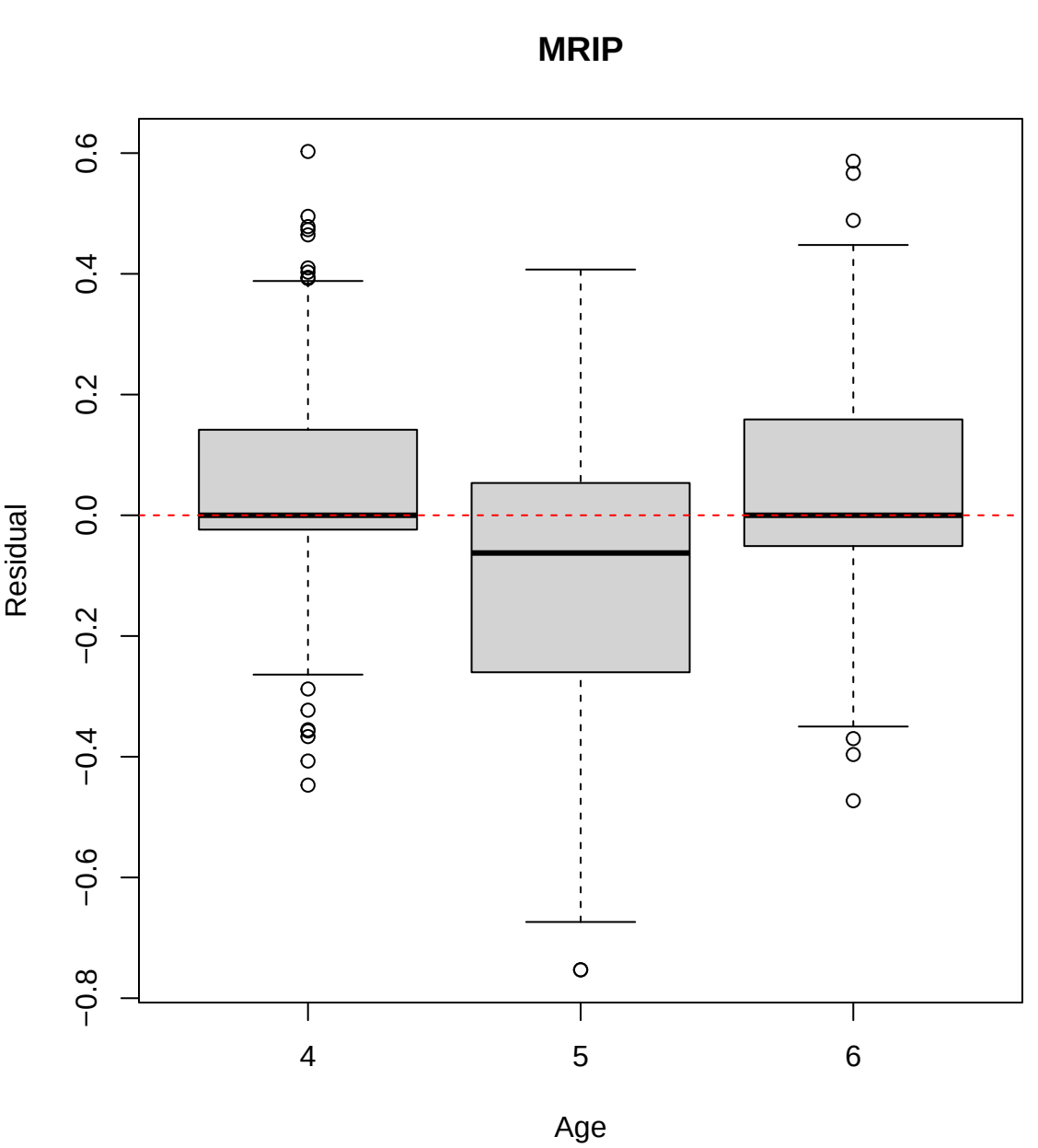

Years 2018 to 2021
Z = 0.745
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

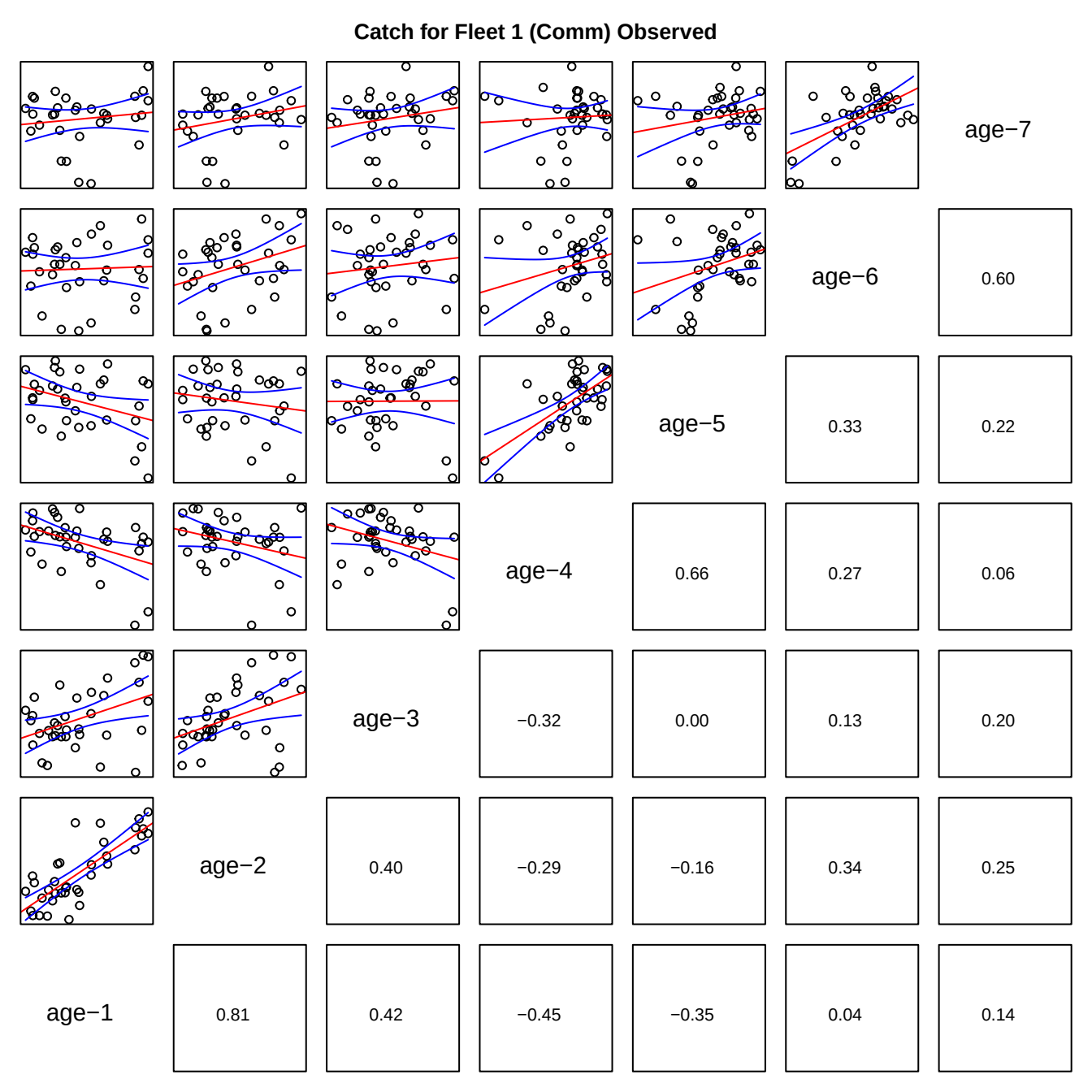

Years 2013 to 2016
Z = 0.891
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age


Years 2016 to 2019
Z = 0.634
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

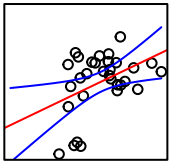
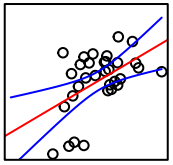
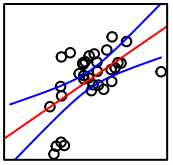
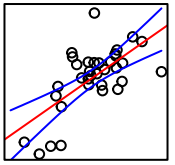
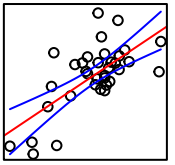
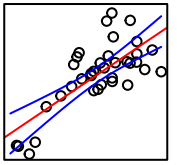

Years 2014 to 2017
Z = 0.708
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age


Years 2017 to 2020
Z = 0.868
ln Val
−1.0
−2.0
−3.0
4.0
4.5
5.0
5.5
6.0
Age

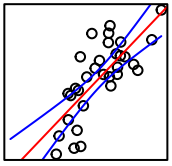
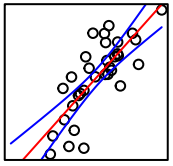
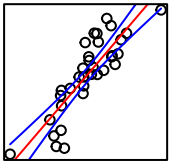
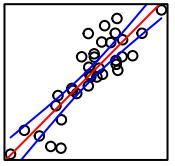
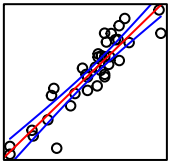

MRIP
Residual
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
4
5
6
Age


Catch for Fleet 1 (Comm) Observed
age−7
age−6
0.60
age−5
0.33
0.22
age−4
0.66
0.27
0.06
age−3
−0.32
0.00
0.13
0.20
age−2
0.40
−0.29
−0.16
0.34
0.25
age−1
0.81
0.42
−0.45
−0.35
0.04
0.14

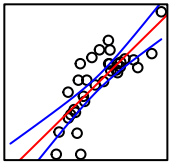
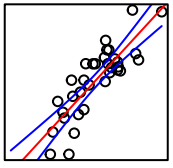
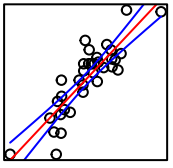
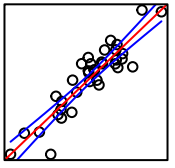
Catch for Fleet 1 (Comm) Predicted

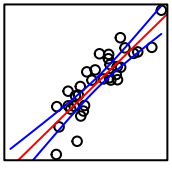
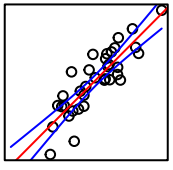
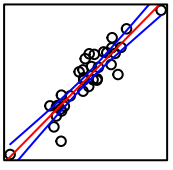
age−7

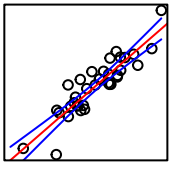
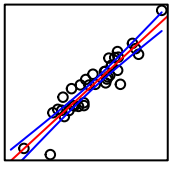
age−6 0.74

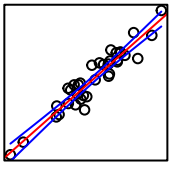
age−5 0.92 0.69

age−4 0.91 0.87 0.66

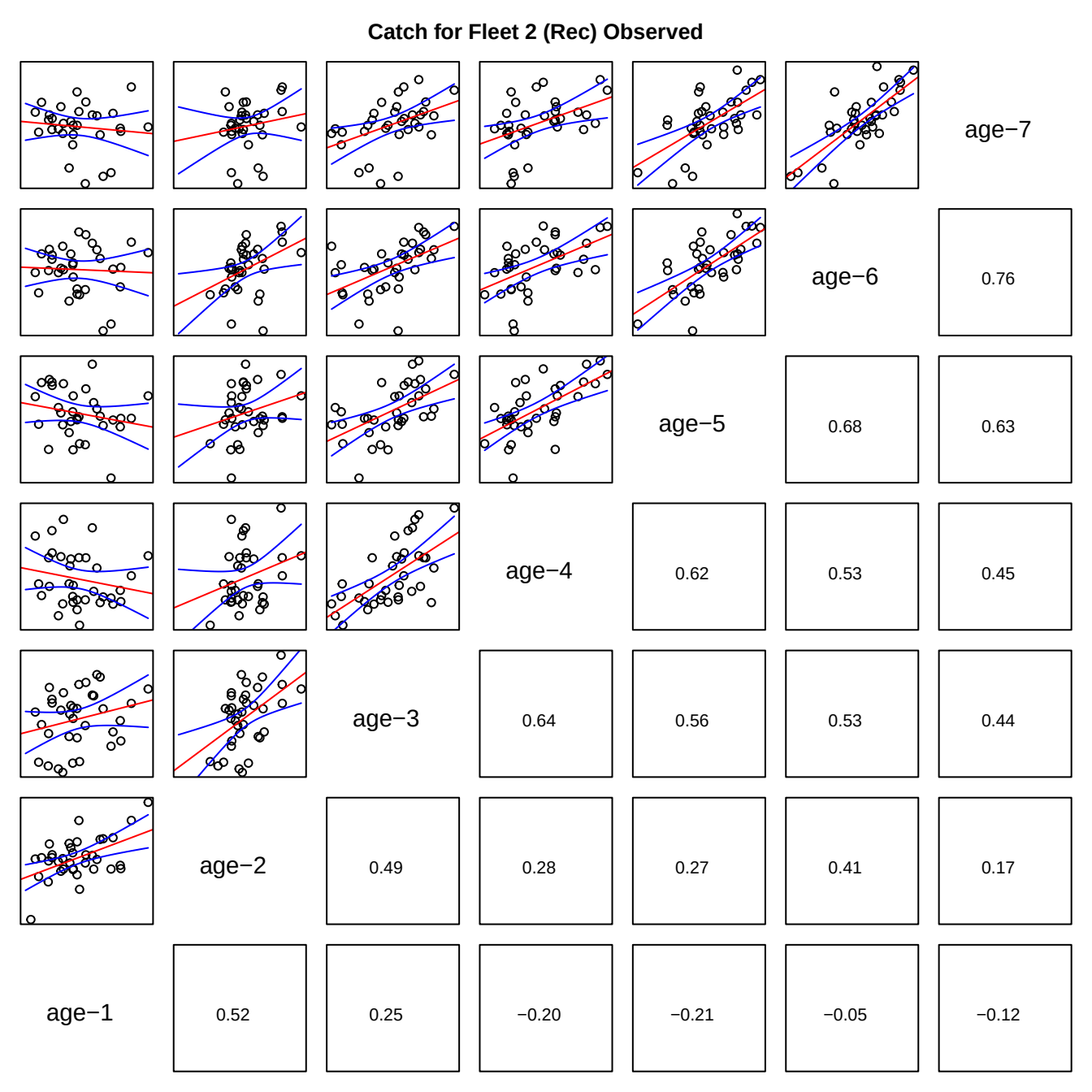



age−3 0.92 0.87 0.86 0.57

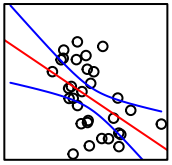


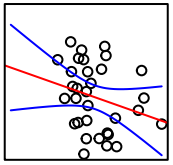
age−2 0.93 0.86 0.84 0.78 0.50

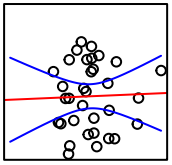
age−1 0.95 0.90 0.86 0.79 0.75 0.42

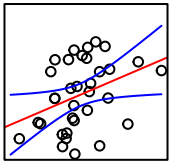

Catch for Fleet 2 (Rec) Observed
age−7
age−6
0.76
age−5
0.68
0.63
age−4
0.62
0.53
0.45
age−3
0.64
0.56
0.53
0.44
age−2
0.49
0.28
0.27
0.41
0.17
age−1
0.52
0.25
−0.20
−0.21
−0.05
−0.12

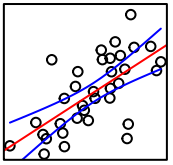
Catch for Fleet 2 (Rec) Predicted

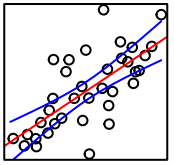




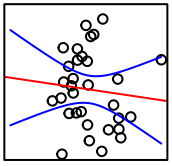


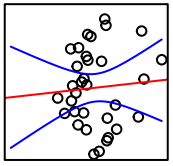


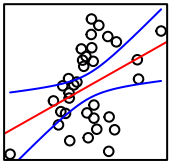


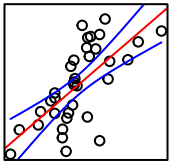


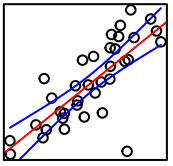
age−7





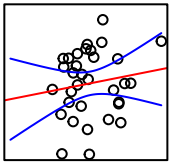


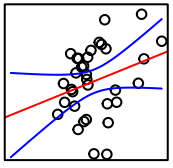


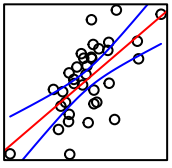


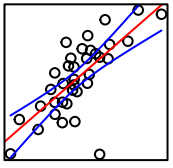
age−6

0.71





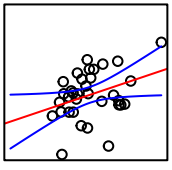


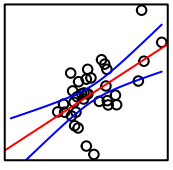


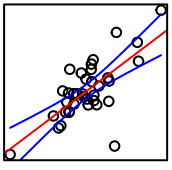
age−5

0.77

0.66





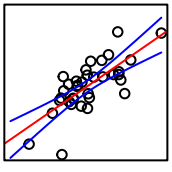


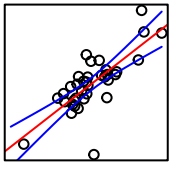
age−4

0.73

0.68

0.36





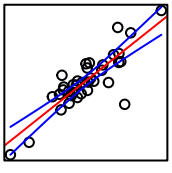
age−3

0.71

0.65

0.40

0.03



age−2

0.76

0.58

0.29

0.07

−0.26

age−1

0.85

0.74

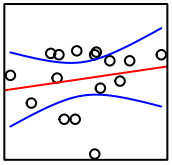
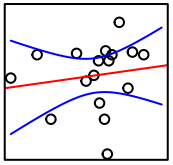
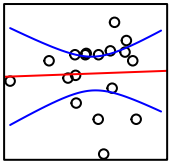
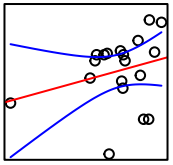
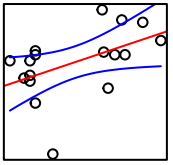
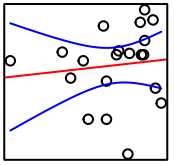
0.35

0.15

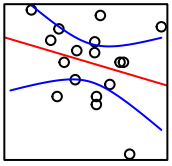
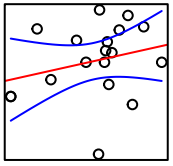
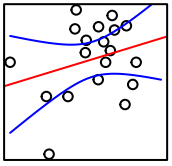
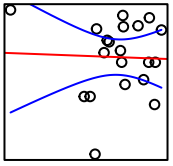
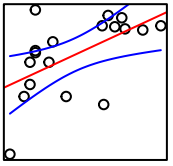
−0.10

−0.49

Index 1 (NEFSC Inshore) Observed

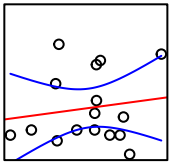
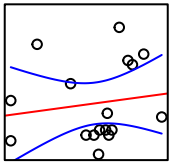
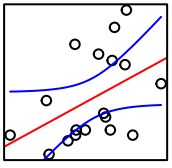
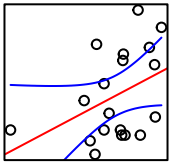







age−7

age−6

0.11

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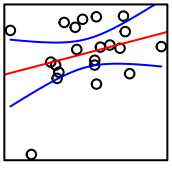
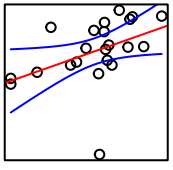
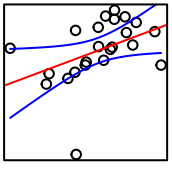

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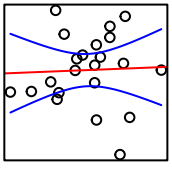
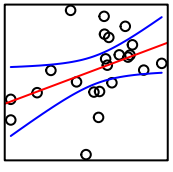

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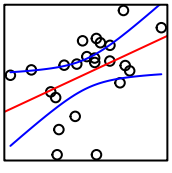

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age−1

0.44

0.04

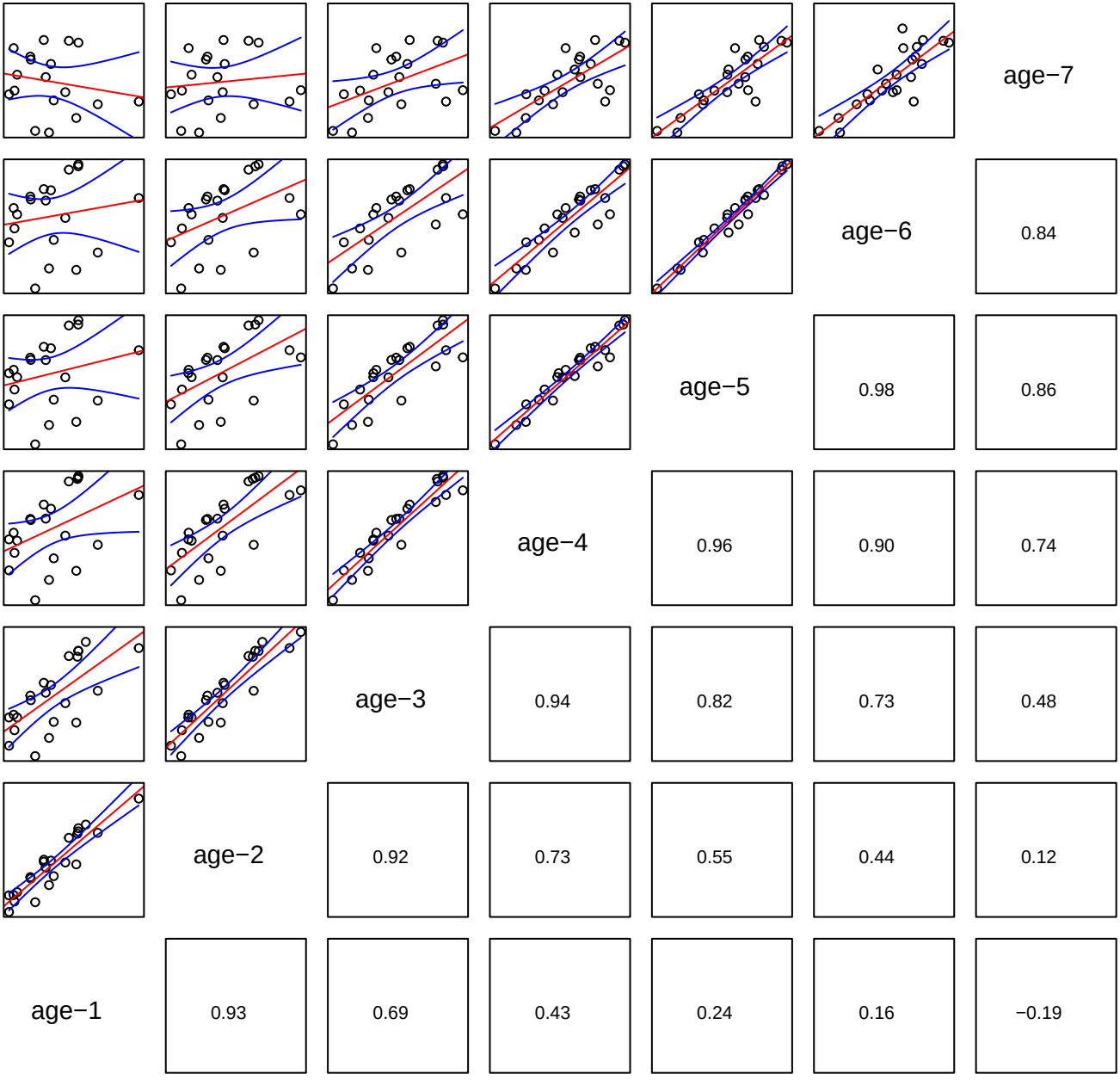
0.30

0.15

−0.26

0.18

Index 1 (NEFSC Inshore) Predicted



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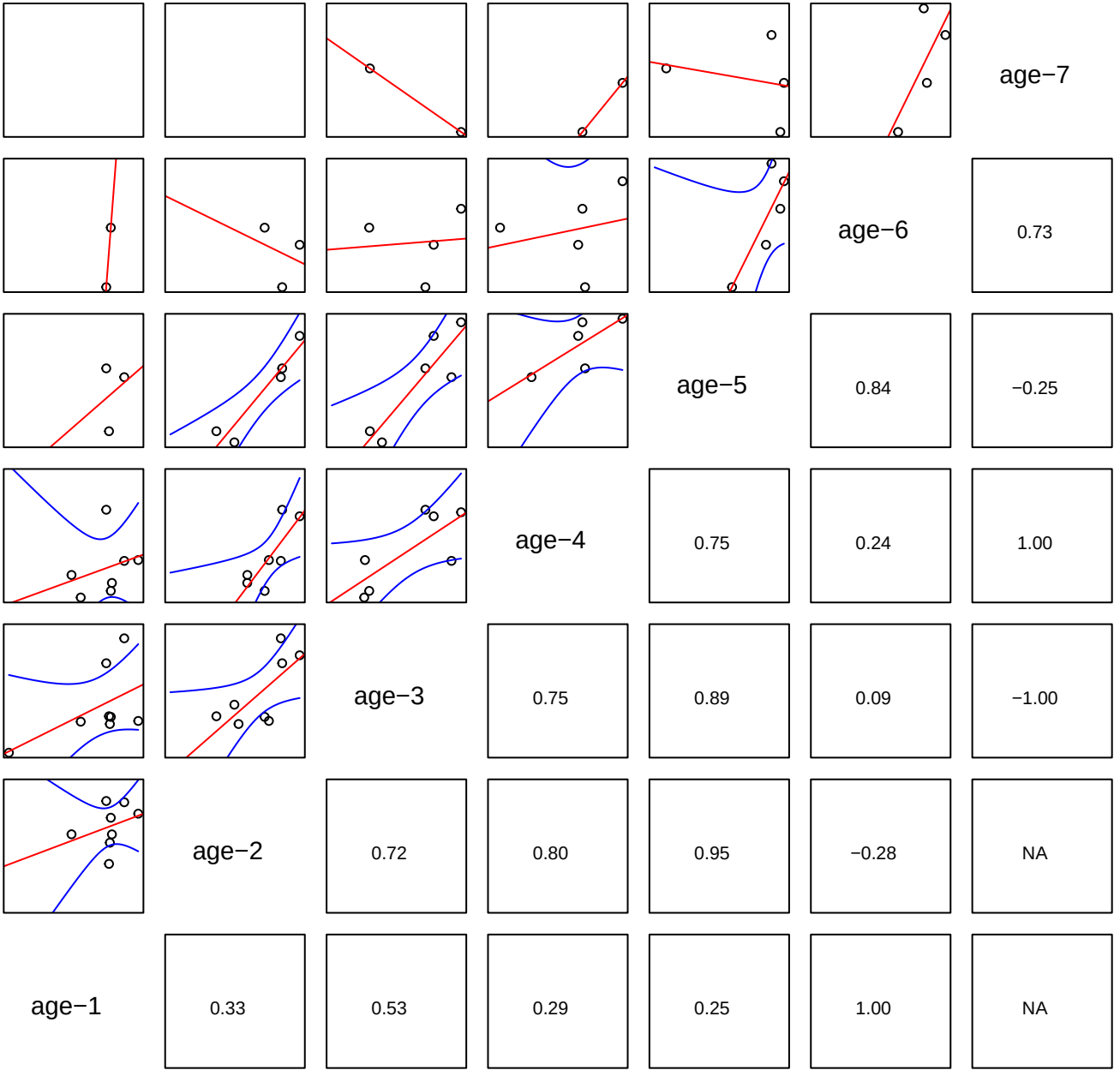

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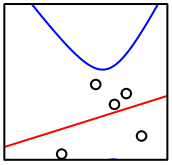
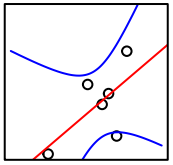
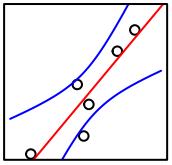
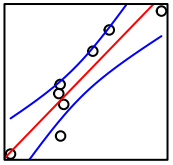
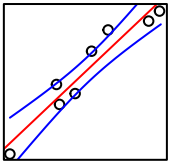
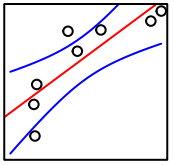
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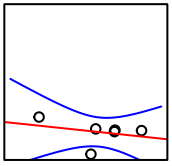
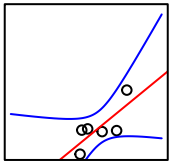
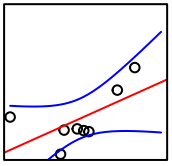
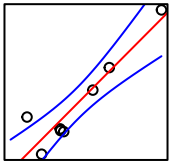
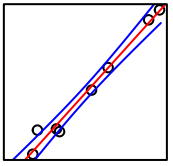
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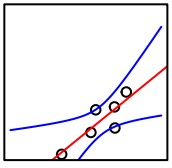
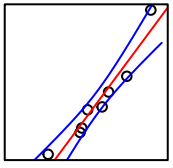
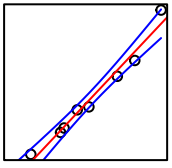
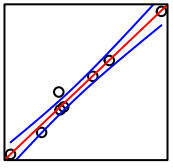
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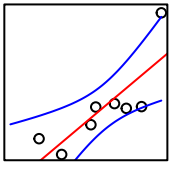
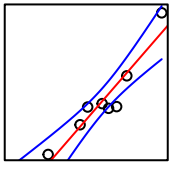
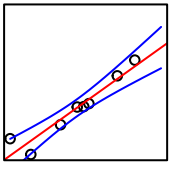
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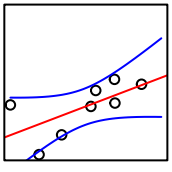
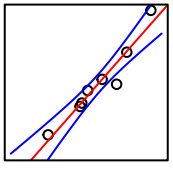
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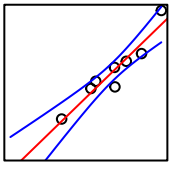
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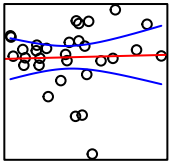
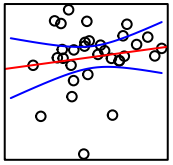
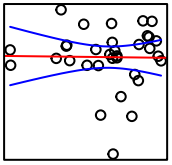
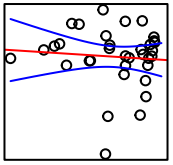
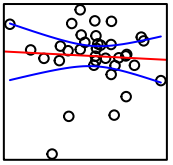
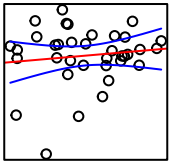
−0.30
0.33

Index 3 (MRIP) Observed

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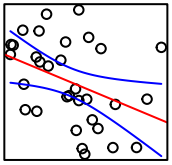
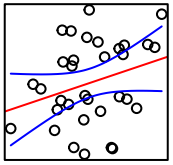
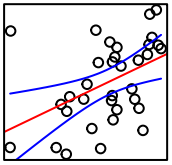
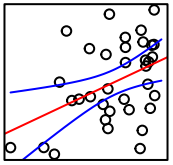
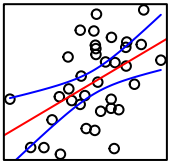

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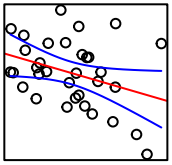
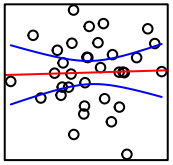
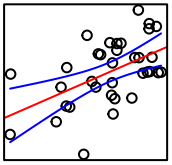
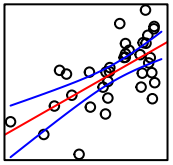

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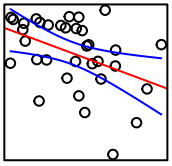
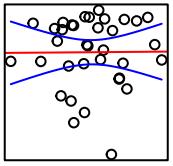
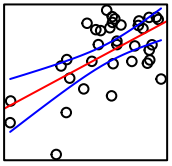

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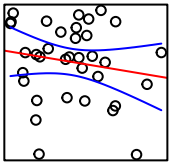
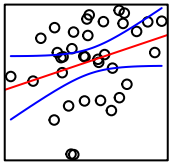

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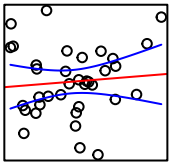
0.52

0.46

−0.02



age−2

0.31

0.01

0.03

0.29

0.15

age−1

0.09

−0.17

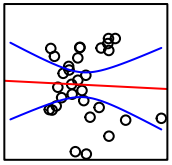
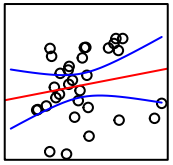
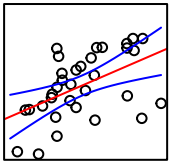
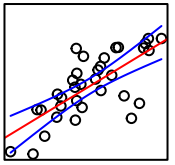
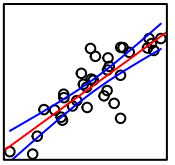
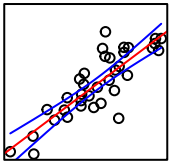
−0.42

−0.35

−0.39

0.03

Index 3 (MRIP) Predicted

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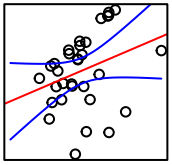
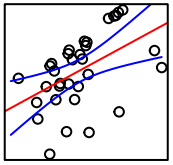
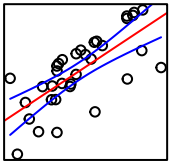
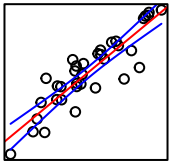
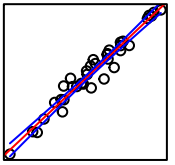

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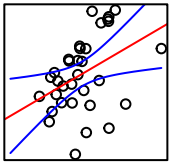
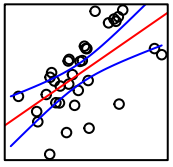
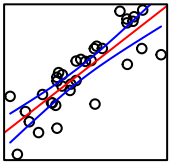
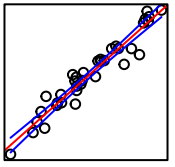

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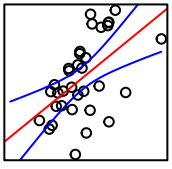
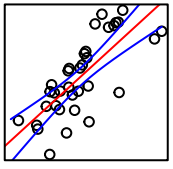
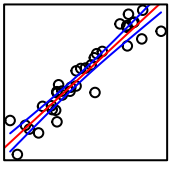
0.84

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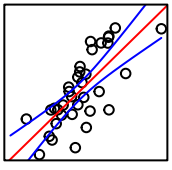
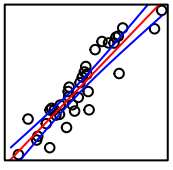
0.73

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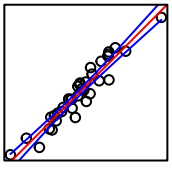
0.84

0.72

0.51



age−2

0.92

0.76

0.61

0.49

0.19

age−1

0.96

0.74

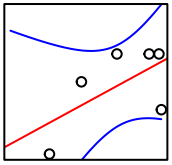
0.54

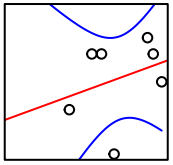
0.40

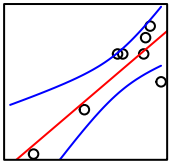
0.30

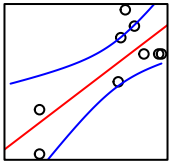
−0.04

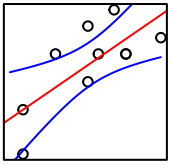
Index 4 (NEAMAP) Observed

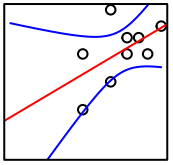












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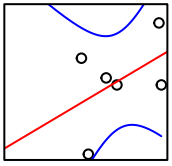

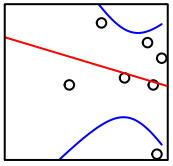

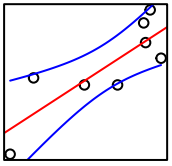

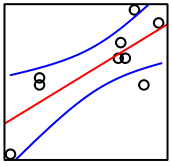

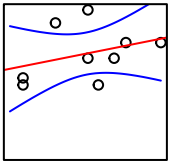

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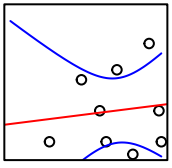

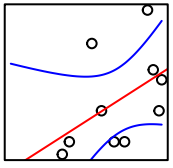

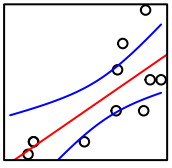

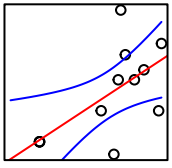

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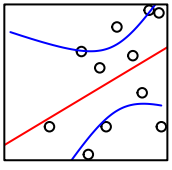
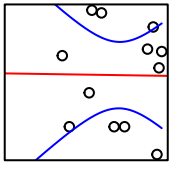
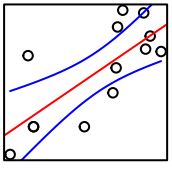
0.34

0.74





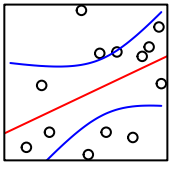


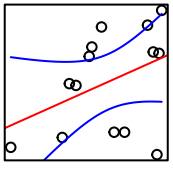
age−4

0.64

0.78

0.79





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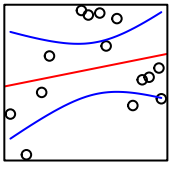
0.75

0.75

0.83

0.86



age−2

0.40

−0.01

0.49

−0.25

0.31

age−1

0.23

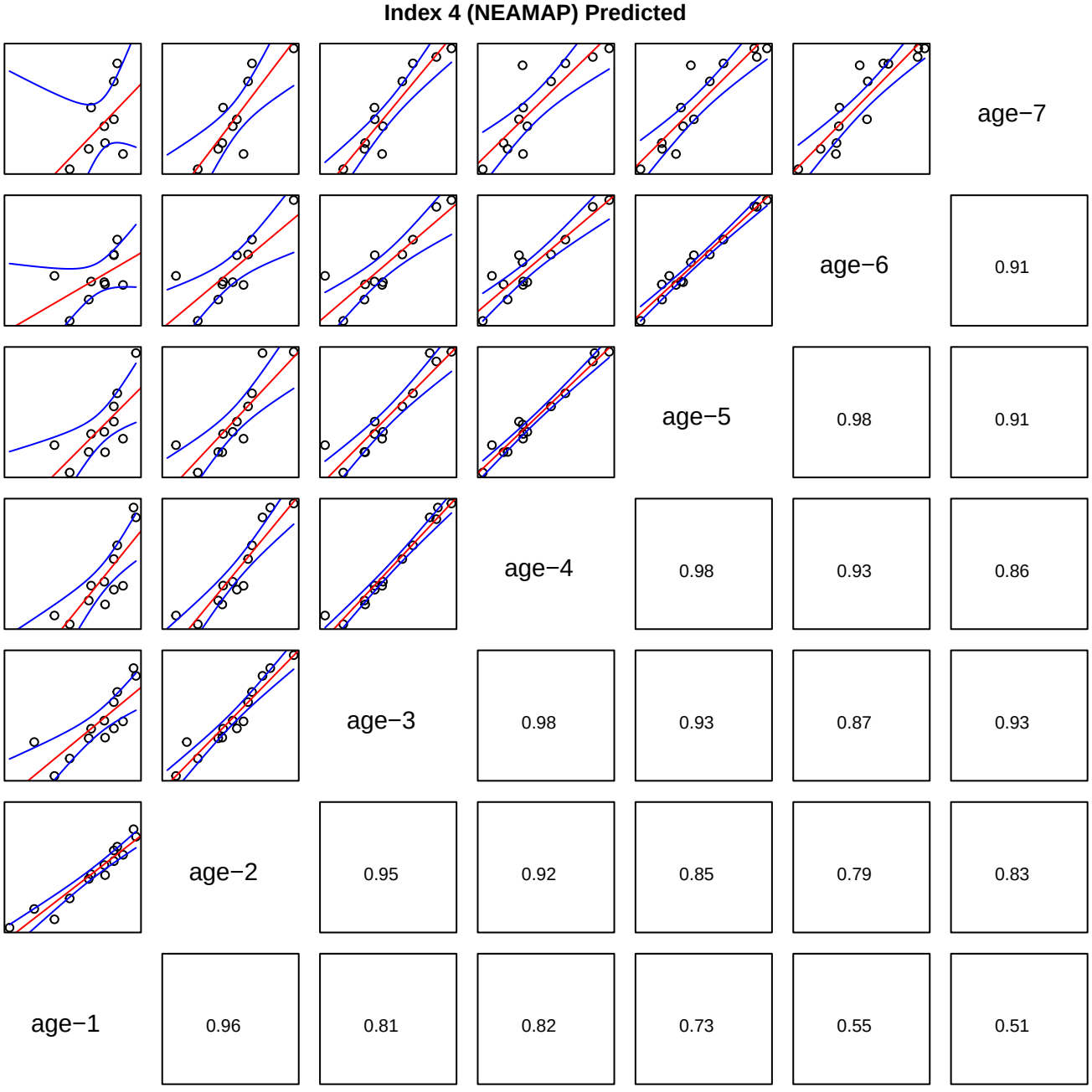
0.43

0.42

0.12

0.47

0.62


Index 4 (NEAMAP) Predicted
age−7
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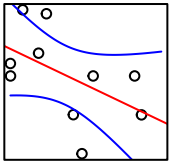
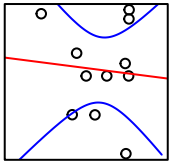
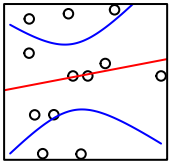
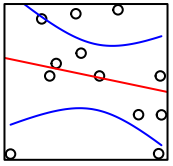
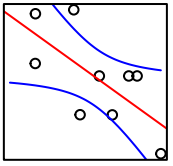
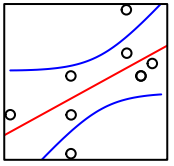
age−5
0.98
0.91
age−4
0.98
0.93
0.86
age−3
0.98
0.93
0.87
0.93
age−2
0.95
0.92
0.85
0.79
0.83
age−1
0.96
0.81
0.82
0.73
0.55
0.51

Index 6 (PSIGN) Observed

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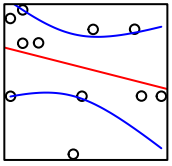
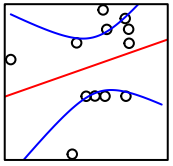
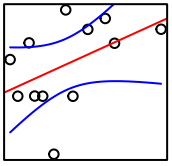
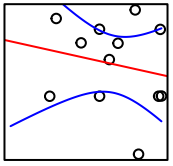
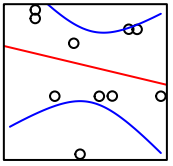
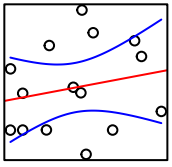
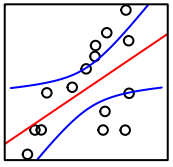
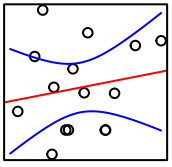
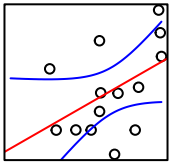






age−6

0.63

age−5

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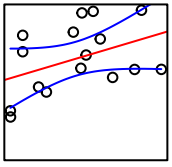
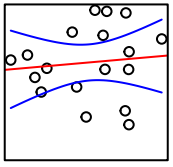
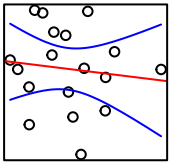
−0.68

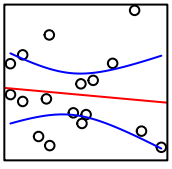
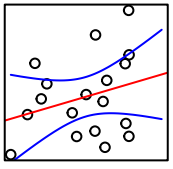




age−4

0.48

−0.20

−0.22

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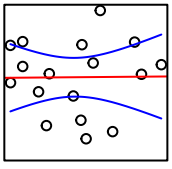
0.18

0.47

0.15



age−2

0.28

0.11

0.55

0.27

−0.08

age−1

0.01

−0.11

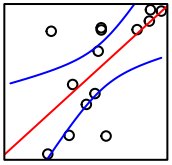
0.42

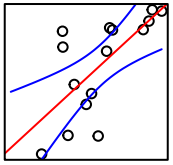
0.21

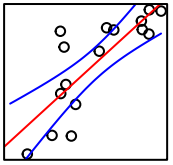
−0.31

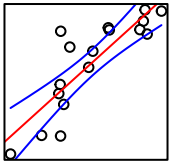
−0.51

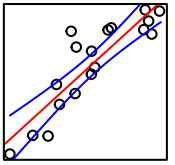
Index 6 (PSIGN) Predicted

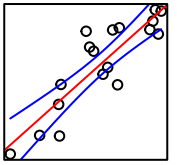












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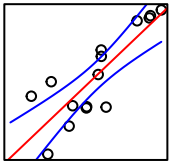

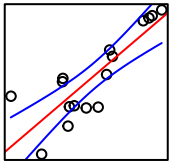

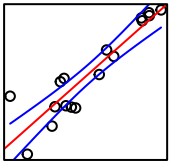

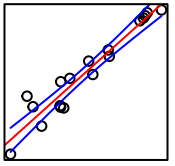

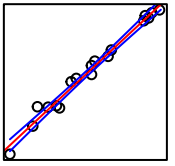

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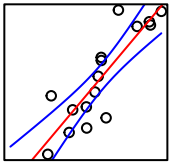
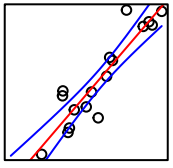
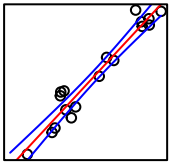
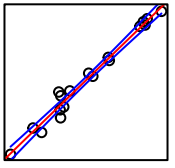




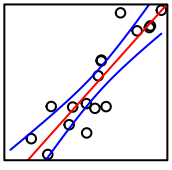


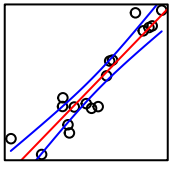


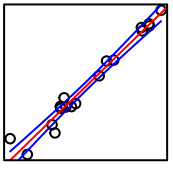
age−5

0.99

0.88





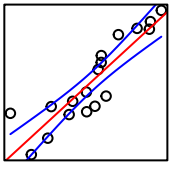


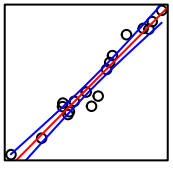
age−4

0.99

0.96

0.85





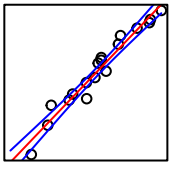
age−3

0.98

0.97

0.91

0.80



age−2

0.98

0.93

0.92

0.84

0.69

age−1

0.98

0.90

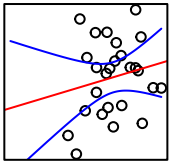
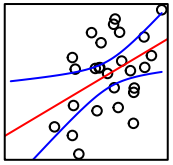
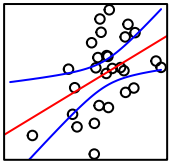
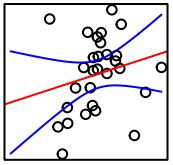
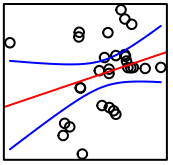
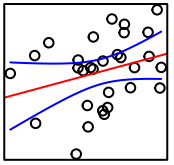
0.89

0.86

0.84

0.65

Index 7 (CT Trawl) Observed

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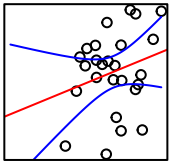
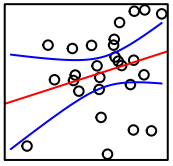
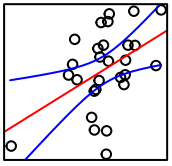
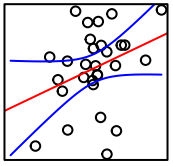
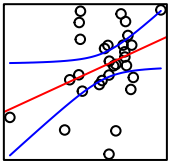
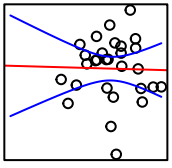
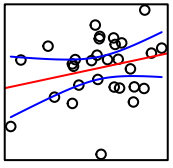
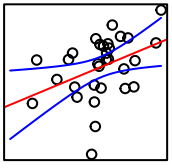
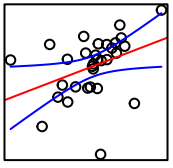






age−6

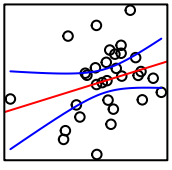
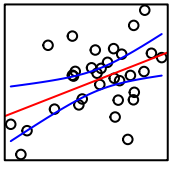
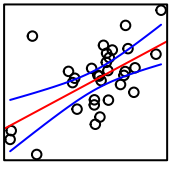
0.29

age−5

0.37

0.28

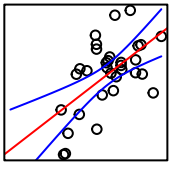
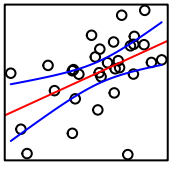




age−4

0.38

0.33

0.22

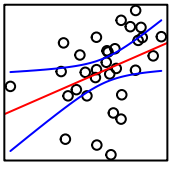
age−3

0.59

0.40

0.46

0.44



age−2

0.50

0.46

0.25

0.27

0.44

age−1

0.38

0.59

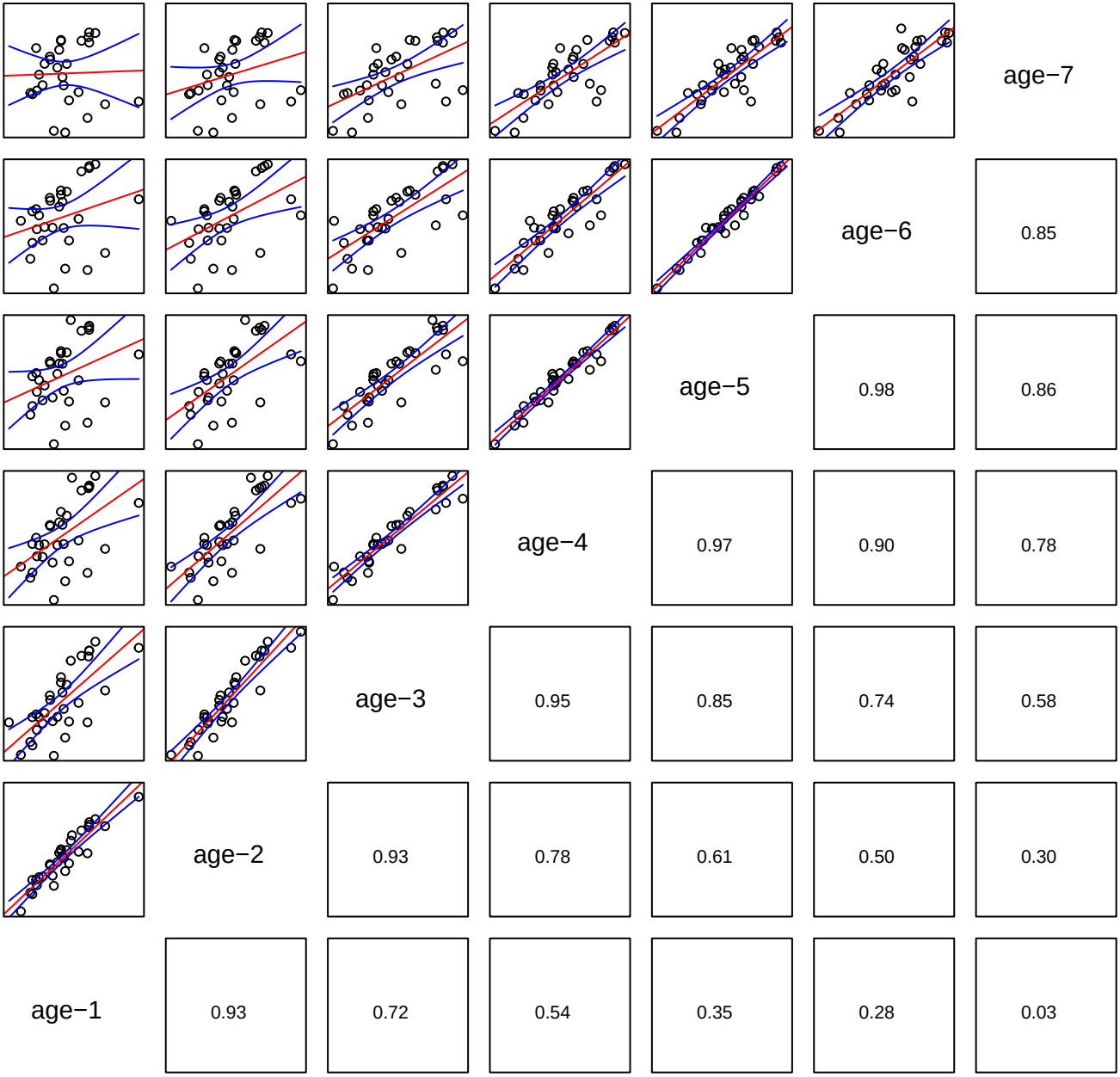
0.29

−0.02

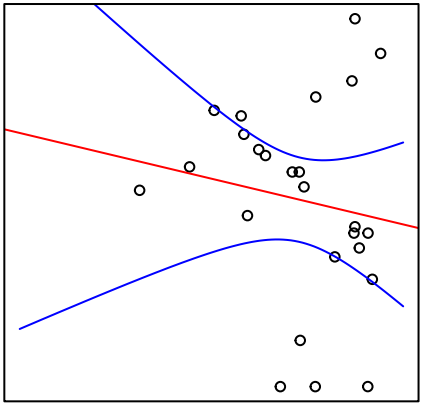
0.25

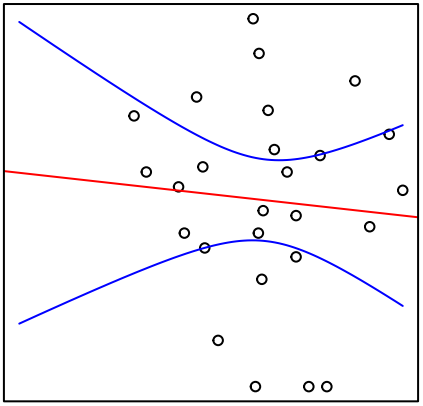
0.20

Index 7 (CT Trawl) Predicted

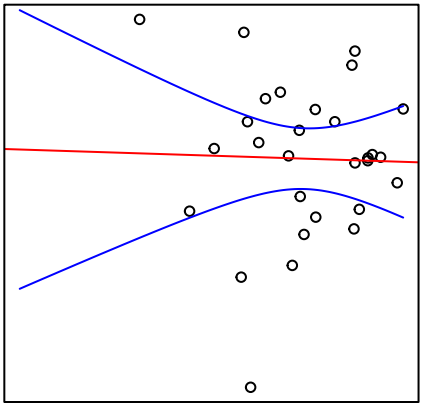


Index 8 (NJ Trawl) Observed





age−3



age−2

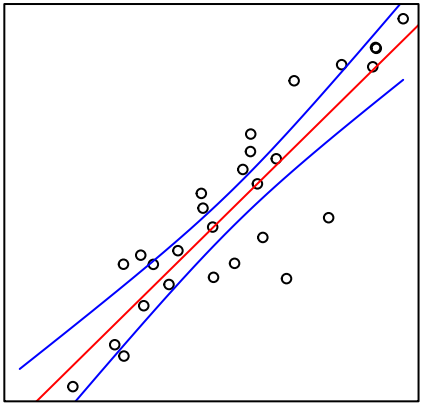
−0.08

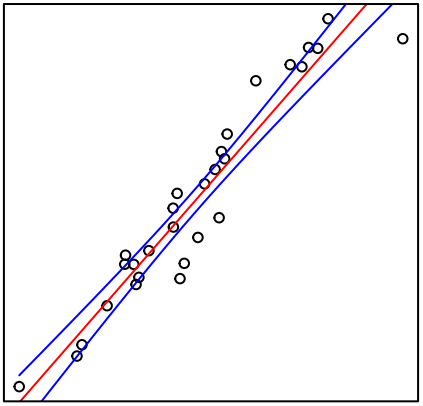
age−1

−0.03

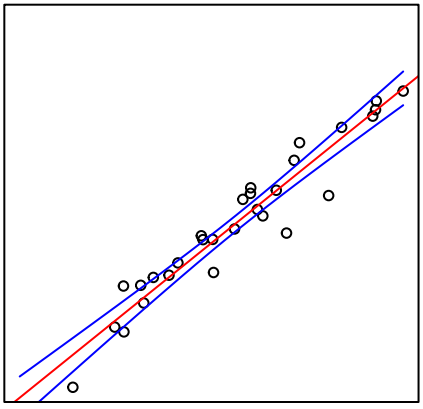
−0.15

Index 8 (NJ Trawl) Predicted





age−3



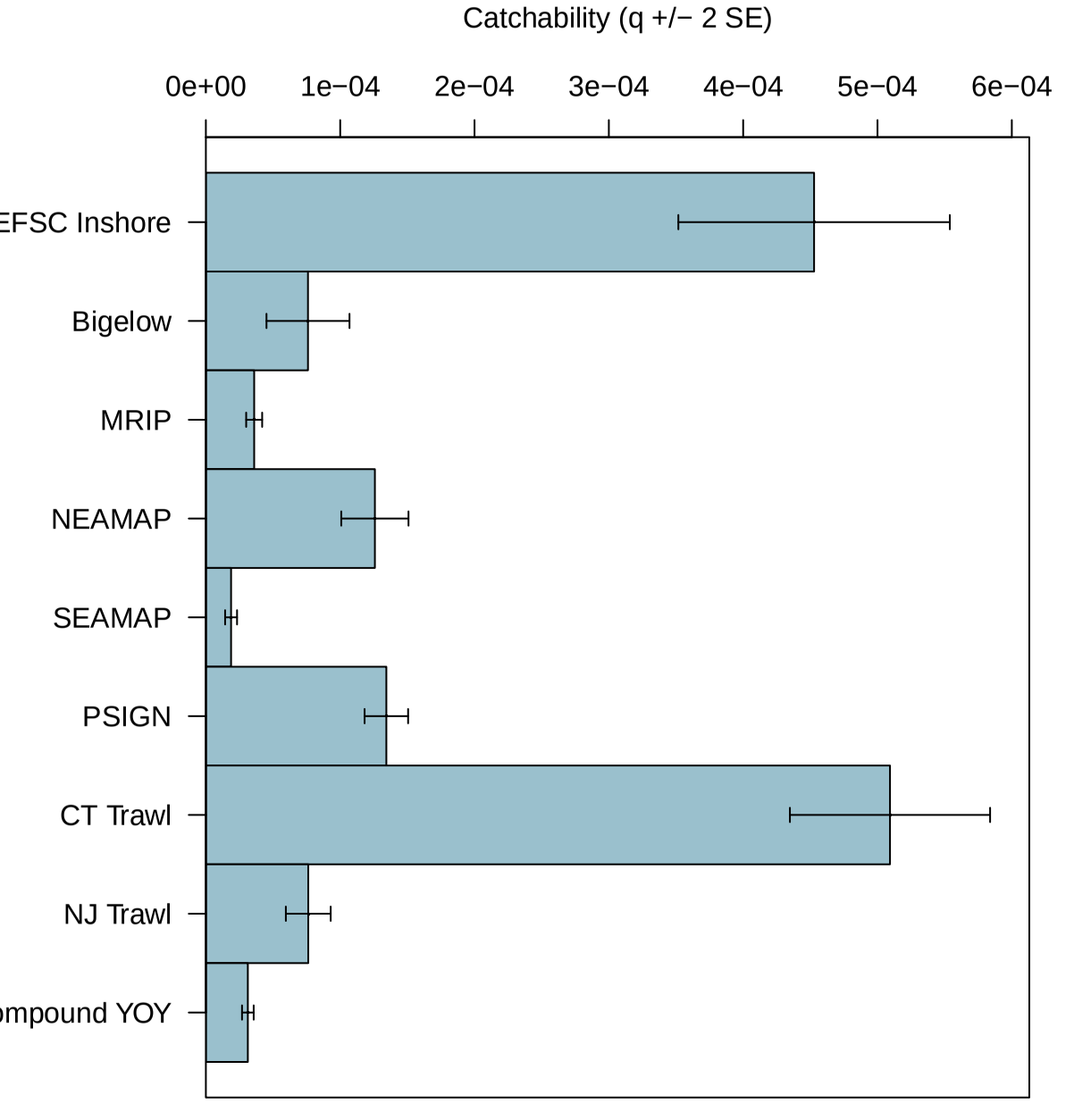
age−2

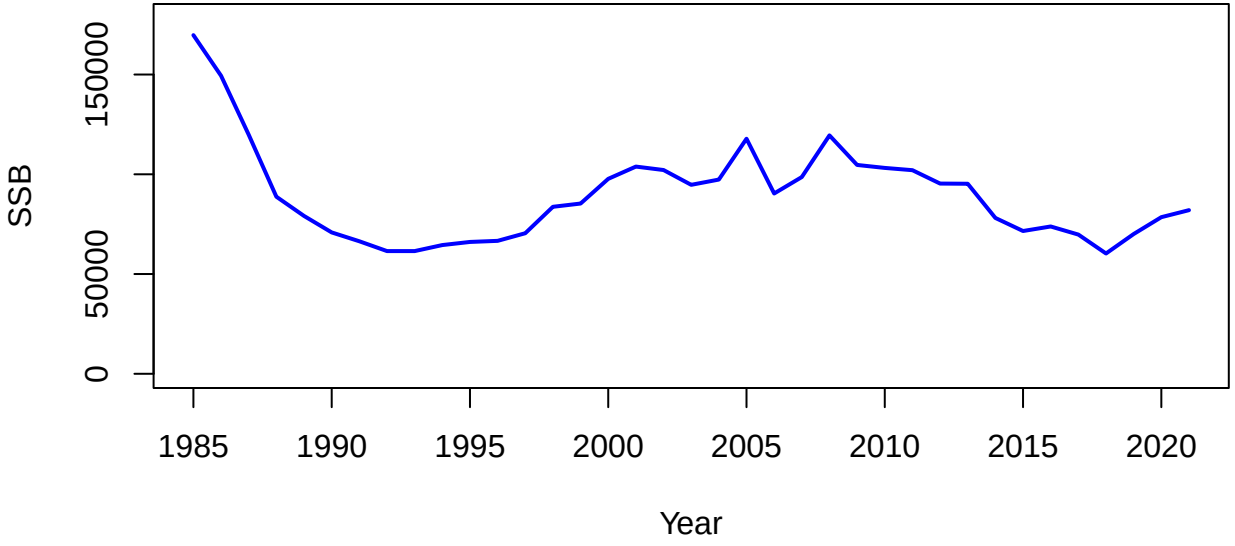
0.96

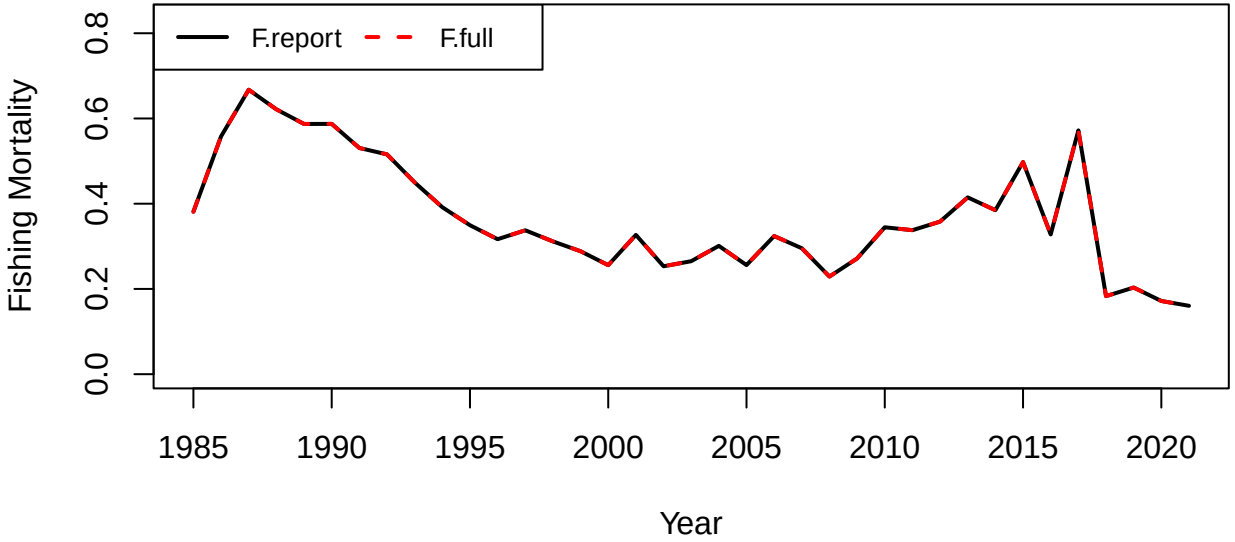
age−1

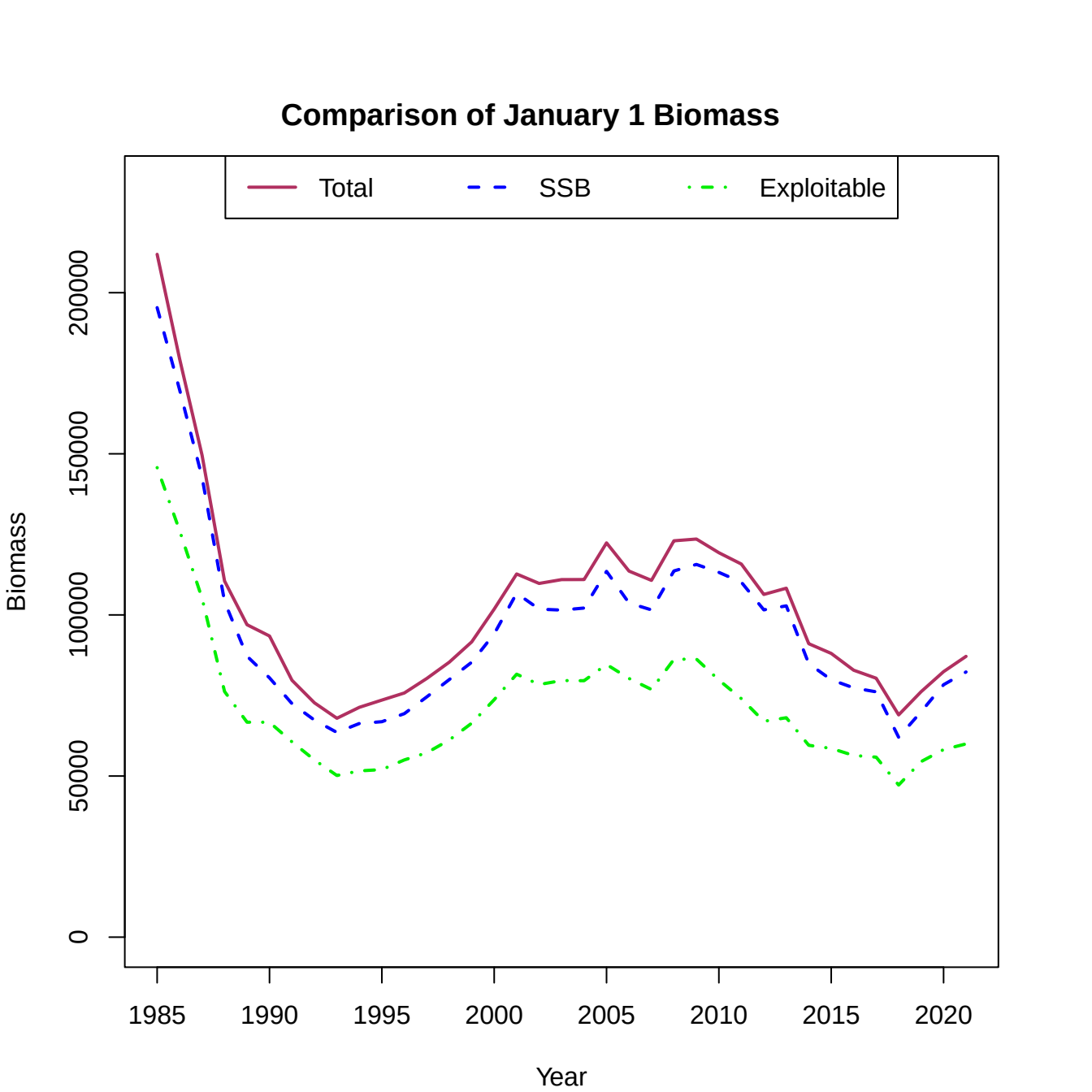
0.96

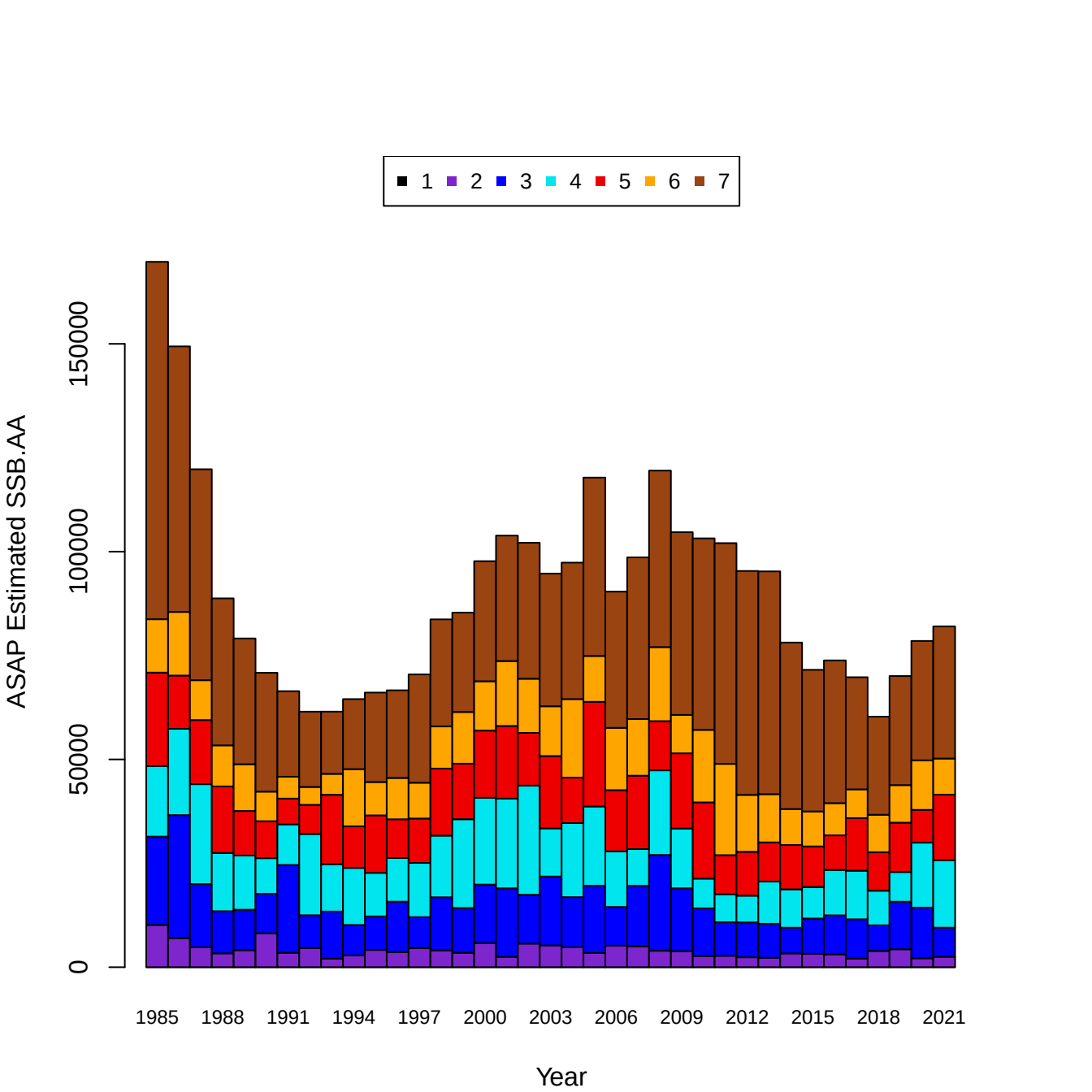
0.88

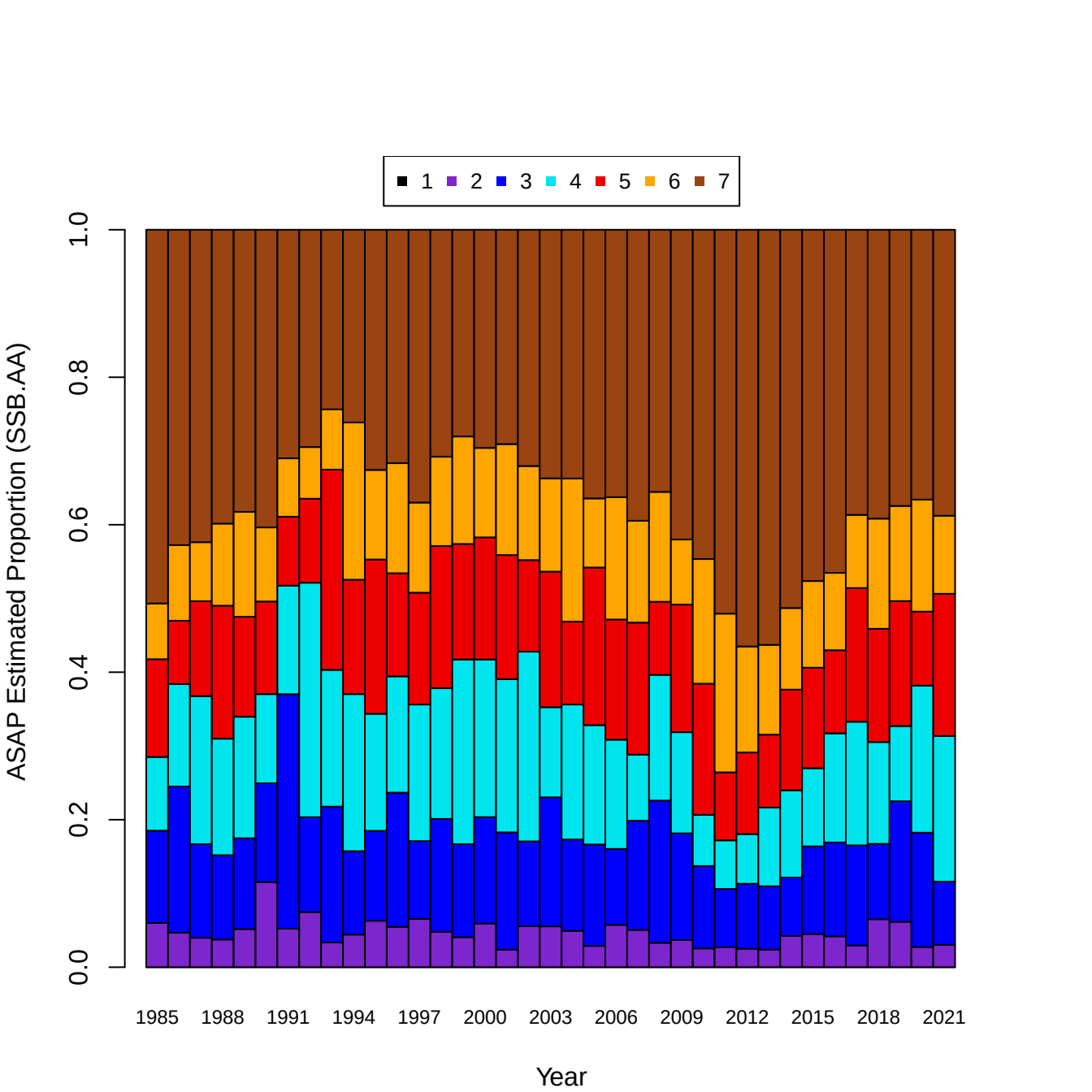

Catchability (q +/− 2 SE)
0e+00
1e−04
2e−04
3e−04
4e−04
5e−04
6e−04
EFSC Inshore
Bigelow
MRIP
NEAMAP
SEAMAP
PSIGN
CT Trawl
NJ Trawl
ompound YOY

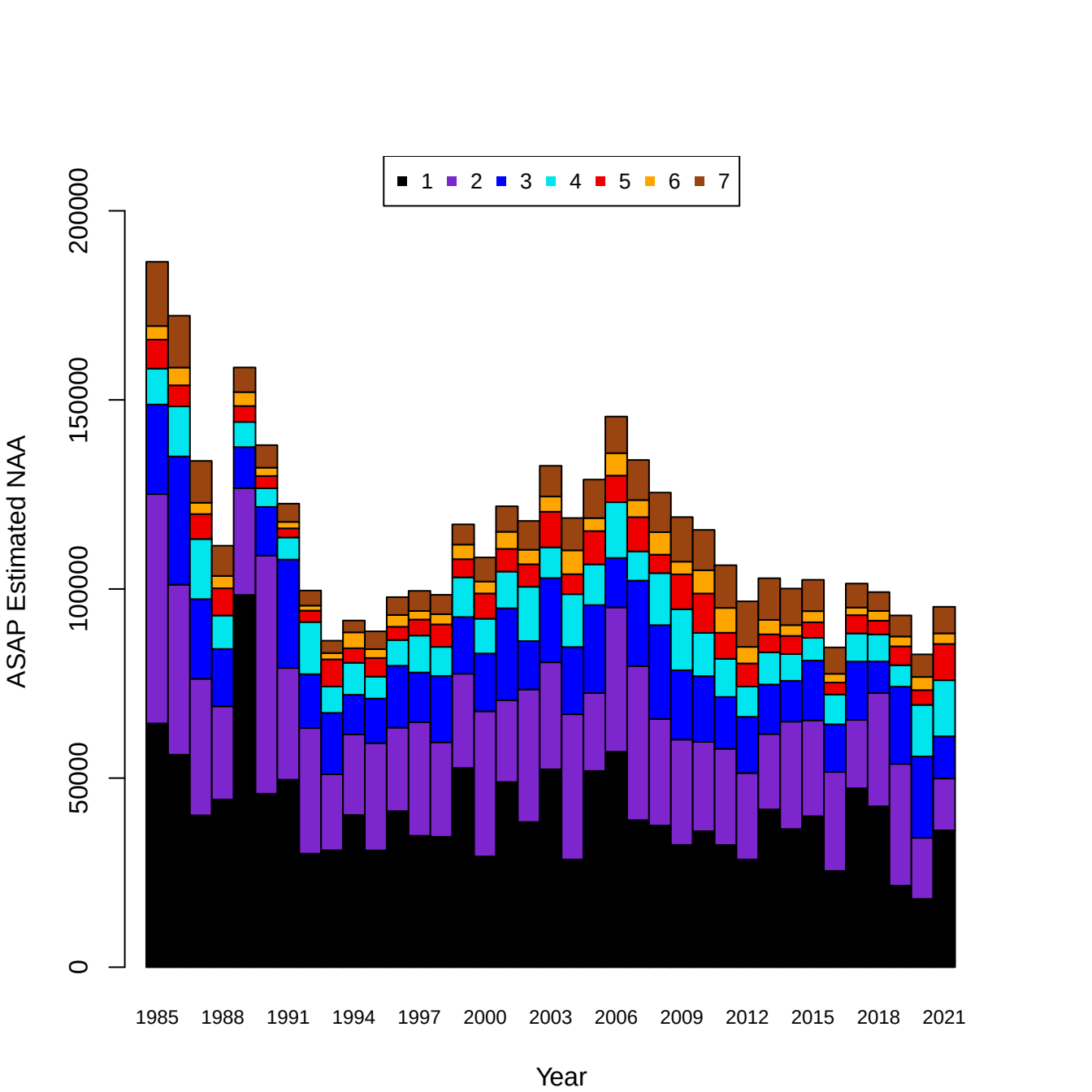

SSB
0
50000
150000
1985
1990
1995
2000
2005
2010
2015
2020
Year

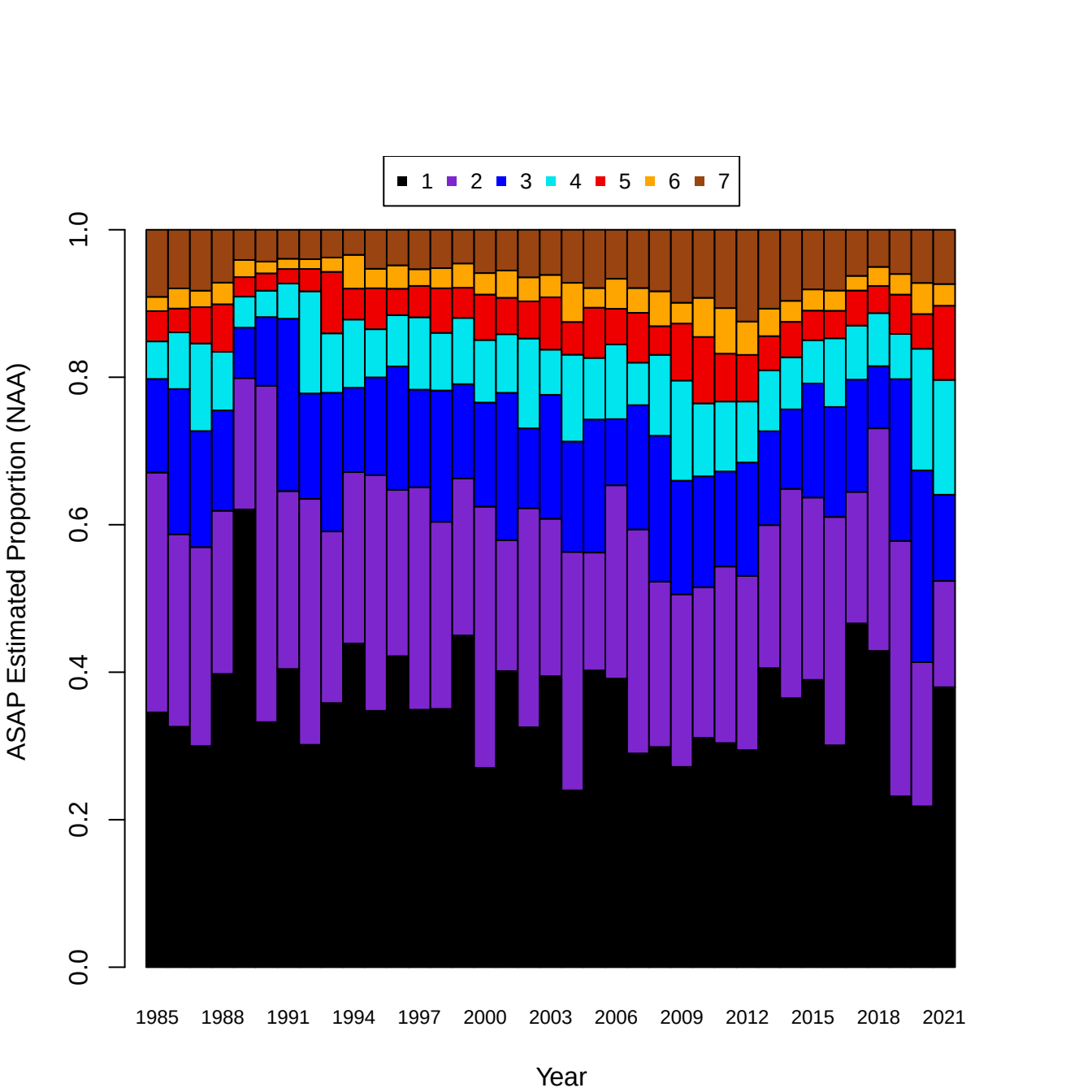

F.report
F.full
Fishing Mortality
0.0
0.2
0.4
0.6
0.8
1985
1990
1995
2000
2005
2010
2015
2020
Year

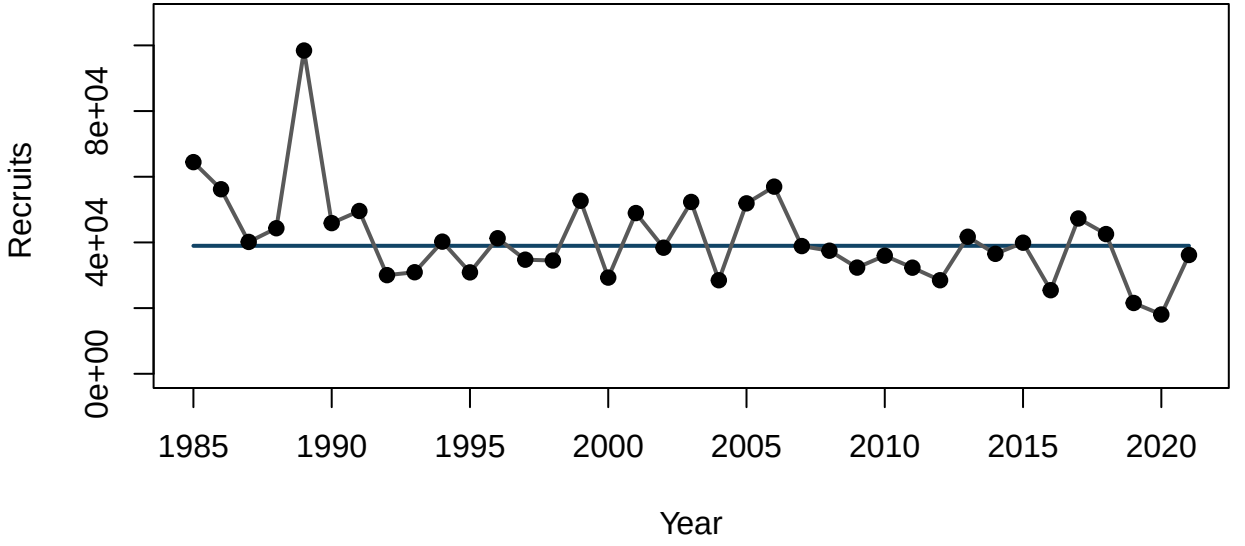

Comparison of January 1 Biomass
Total
SSB
Exploitable
Biomass
0
50000
100000
150000
200000
1985
1990
1995
2000
2005
2010
2015
2020
Year

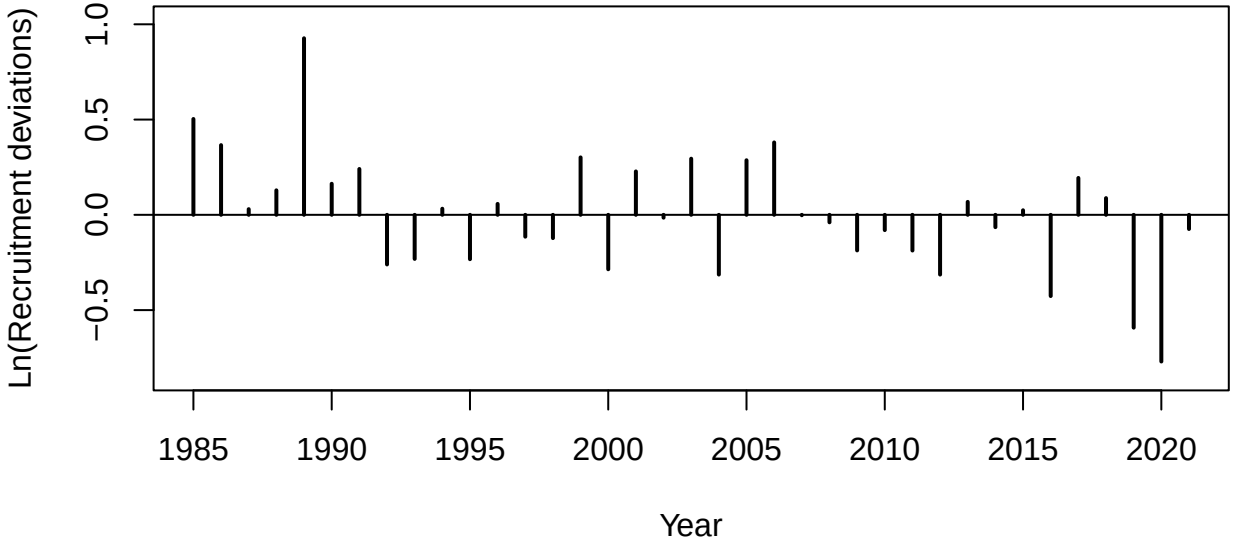

1
2
3
4
5
6
7
ASAP Estimated SSB.AA
0
50000
100000
150000
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
Year

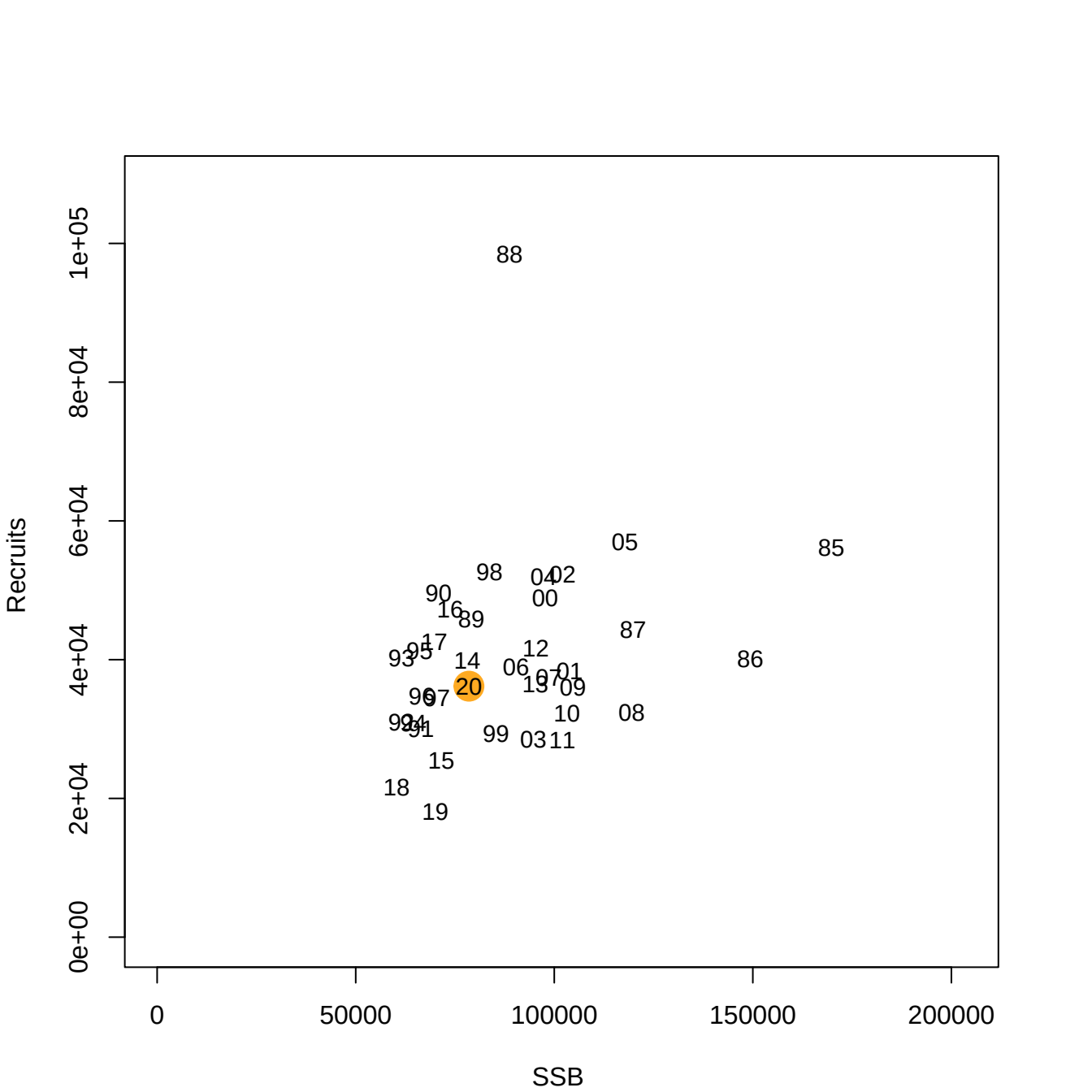

1 2 3 4 5 6 7
ASAP Estimated Proportion (SSB.AA)
0.0
0.2
0.4
0.6
0.8
1.0
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
Year

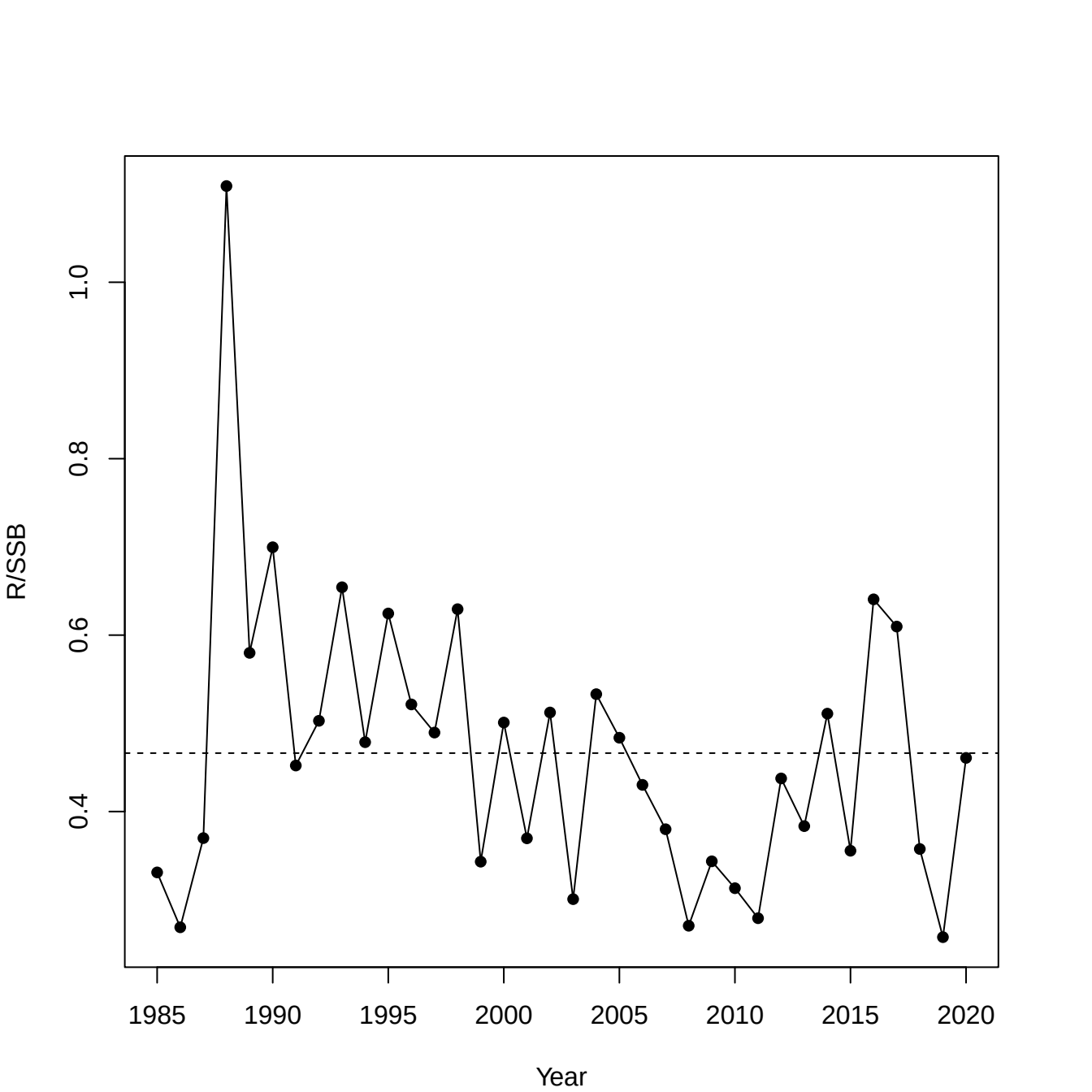

1 2 3 4 5 6 7
ASAP Estimated NAA
0
50000
100000
150000
200000
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
Year

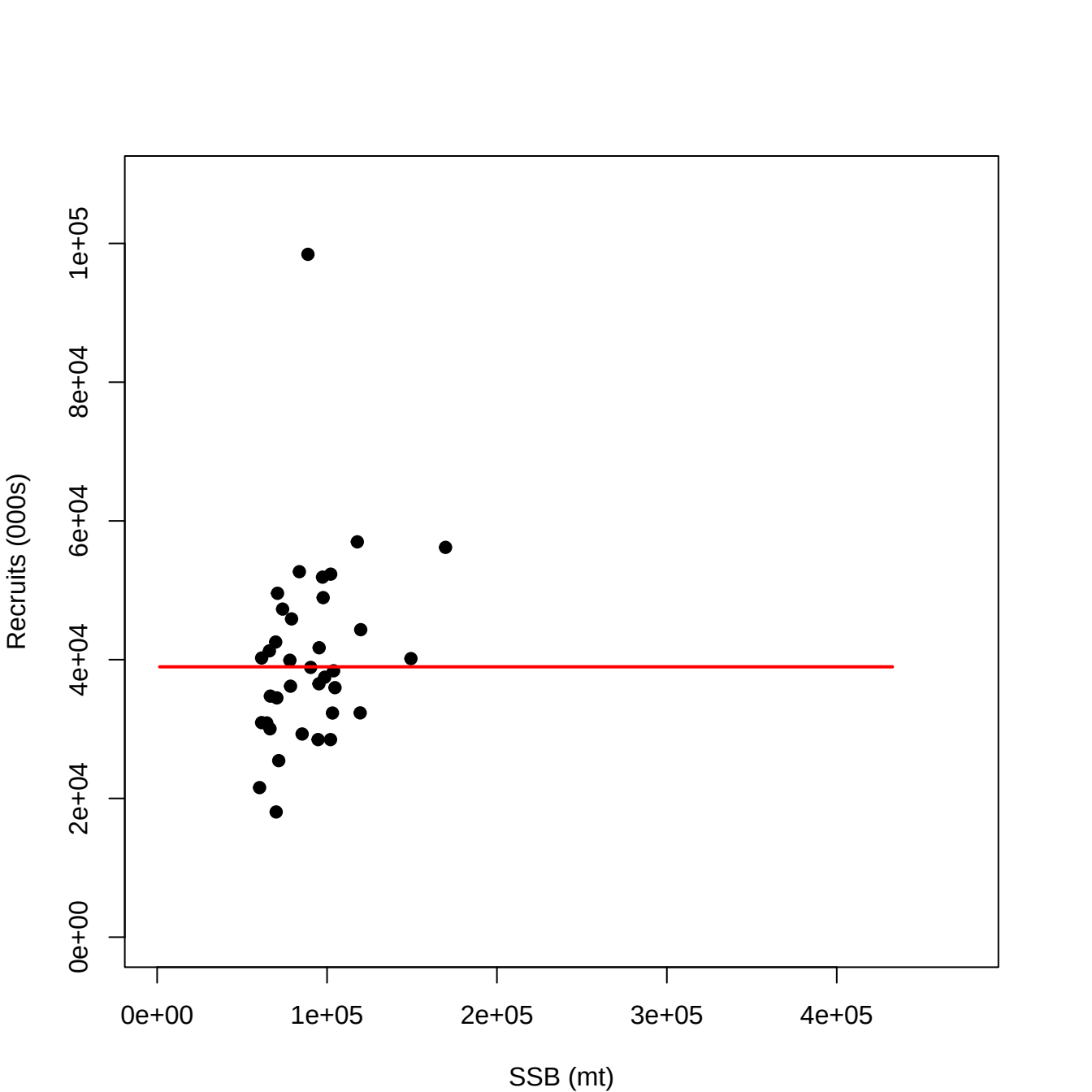

1 2 3 4 5 6 7
ASAP Estimated Proportion (NAA)
0.0
0.2
0.4
0.6
0.8
1.0
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
Year

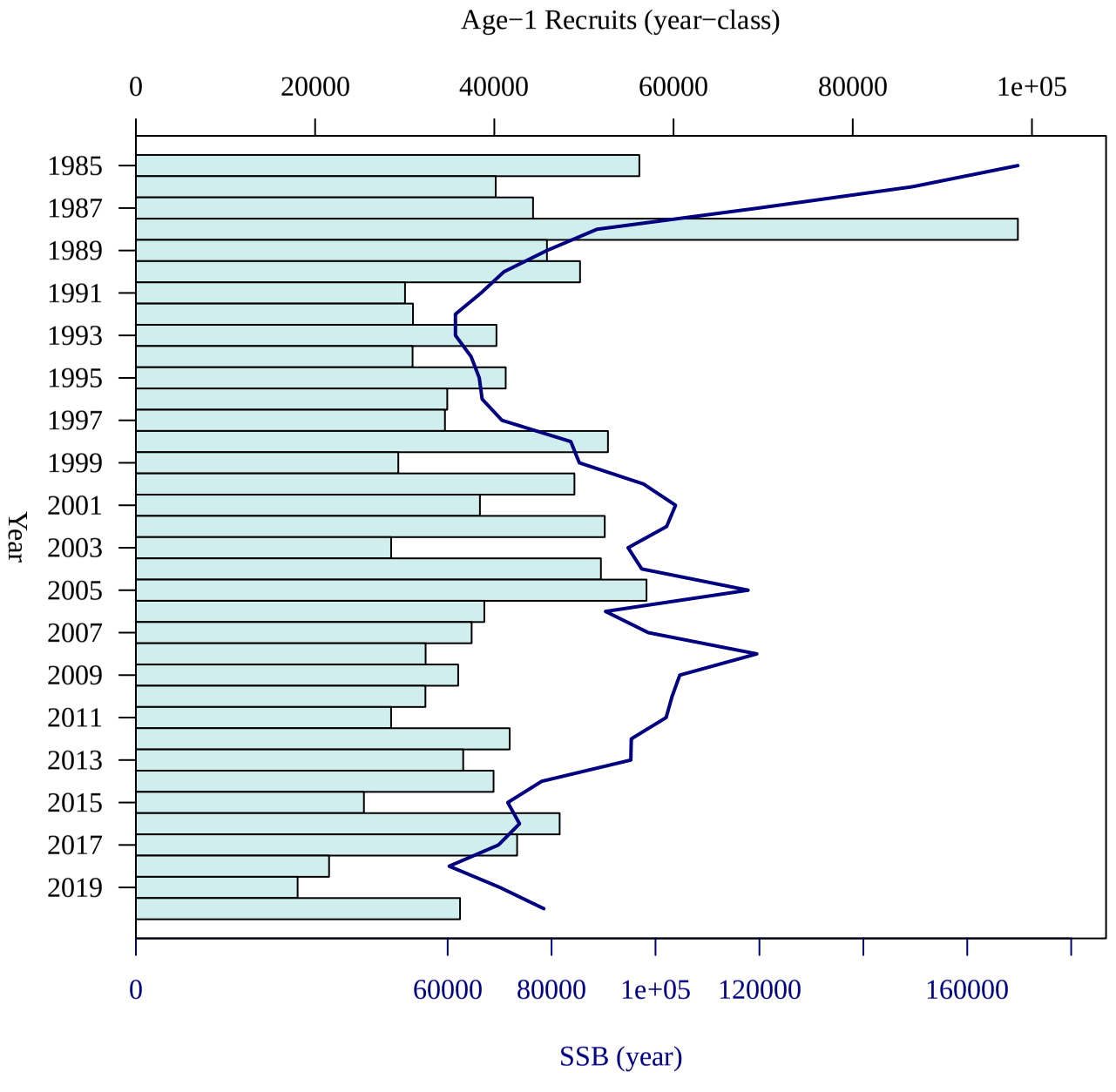

Recruits
0e+00
4e+04
8e+04
1985
1990
1995
2000
2005
2010
2015
2020
Year

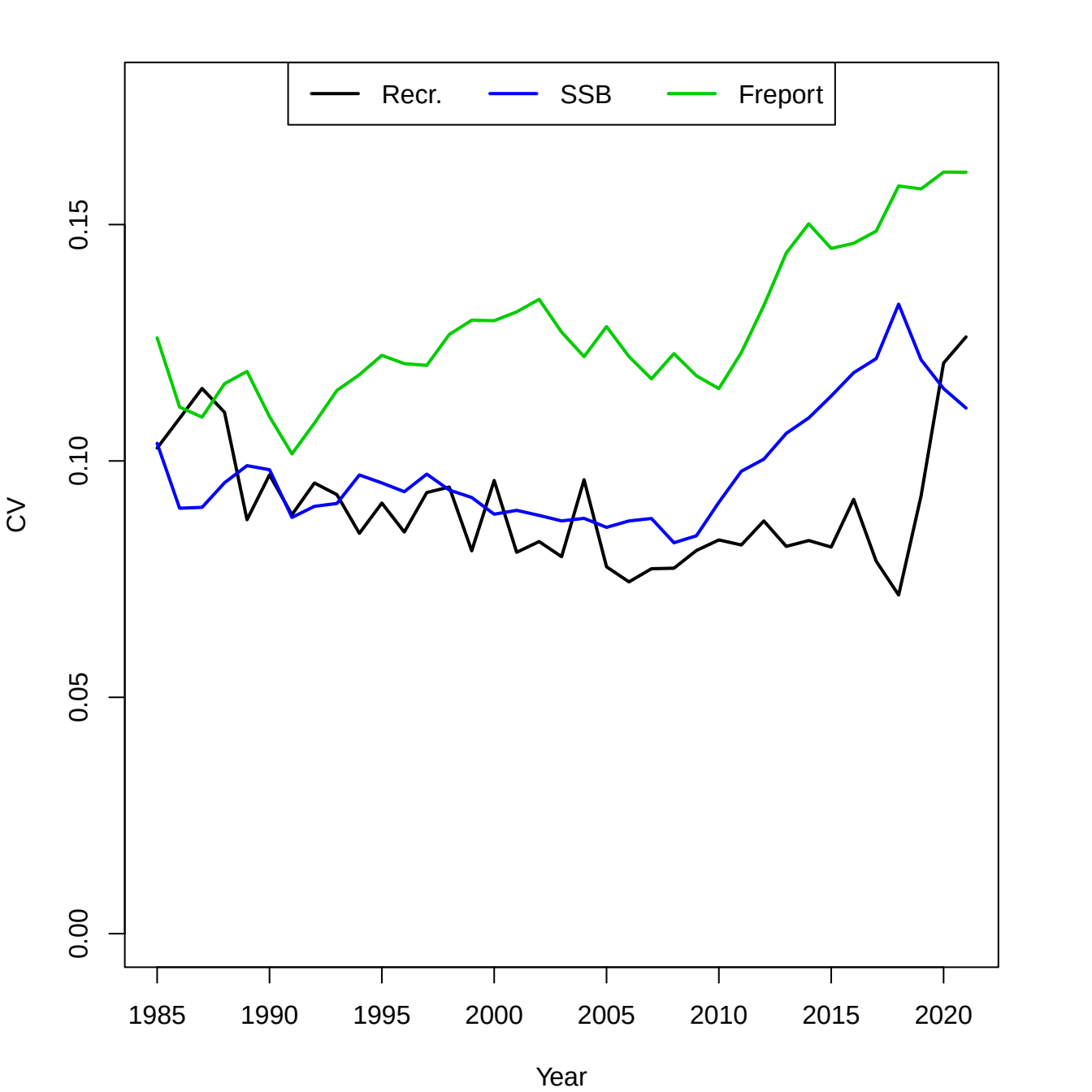

Ln(Recruitment deviations)
−0.5
0.0
0.5
1.0
1985
1990
1995
2000
2005
2010
2015
2020
Year


Recruits
SSB
0e+00
2e+04
4e+04
6e+04
8e+04
1e+05
0
50000
100000
150000
200000
88
05
85
98
04
02
90
00
16
89
87
17
12
93
95
14
06
86
01
20
09
10
08
99
03
11
15
18
19

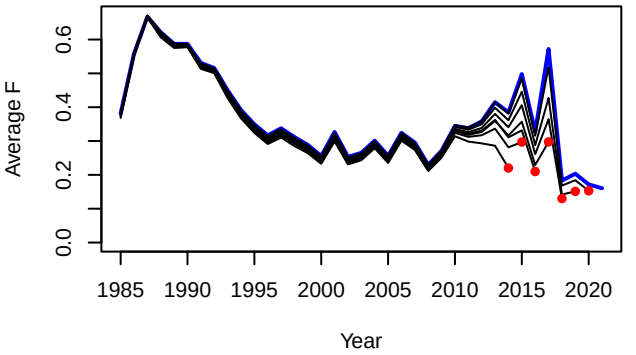

R/SSB
0.4
0.6
0.8
1.0
1985
1990
1995
2000
2005
2010
2015
2020
Year

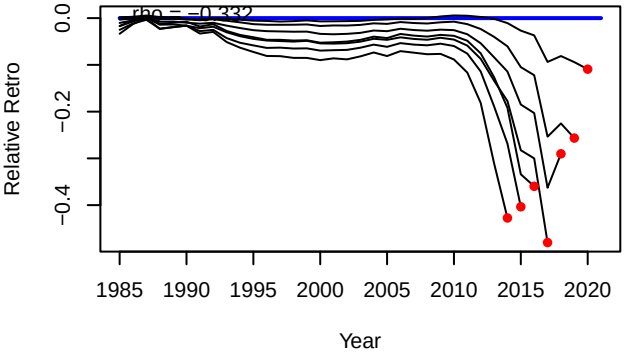

Recruits (000s)
0e+00
2e+04
4e+04
6e+04
8e+04
1e+05
0e+00
1e+05
2e+05
3e+05
4e+05
SSB (mt)

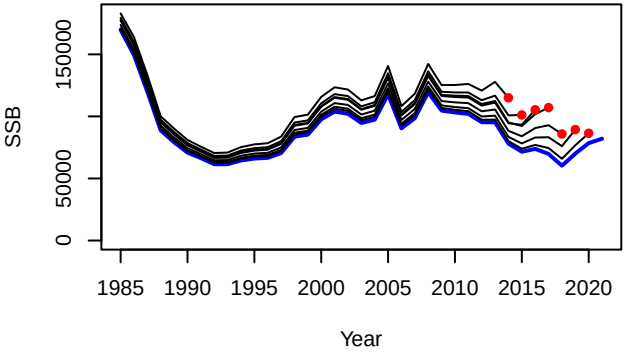

Age−1 Recruits (year−class)
0
20000
40000
60000
80000
1e+05
Year
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
0
60000
80000
1e+05
120000
160000
SSB (year)

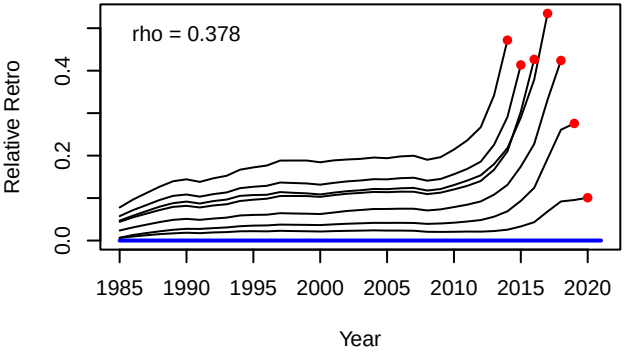

Recr.
SSB
Freport
CV
0.00
0.05
0.10
0.15
1985
1990
1995
2000
2005
2010
2015
2020
Year

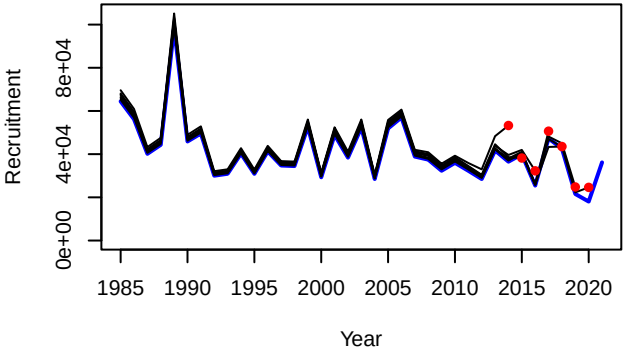
F, SSB, R

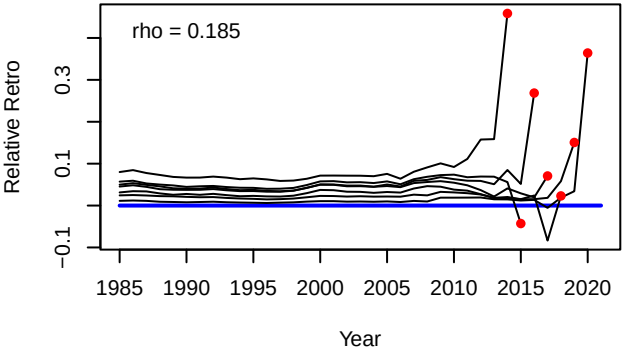

Average F
0.0
0.2
0.4
0.6
1985
1990
1995
2000
2005
2010
2015
2020
Year

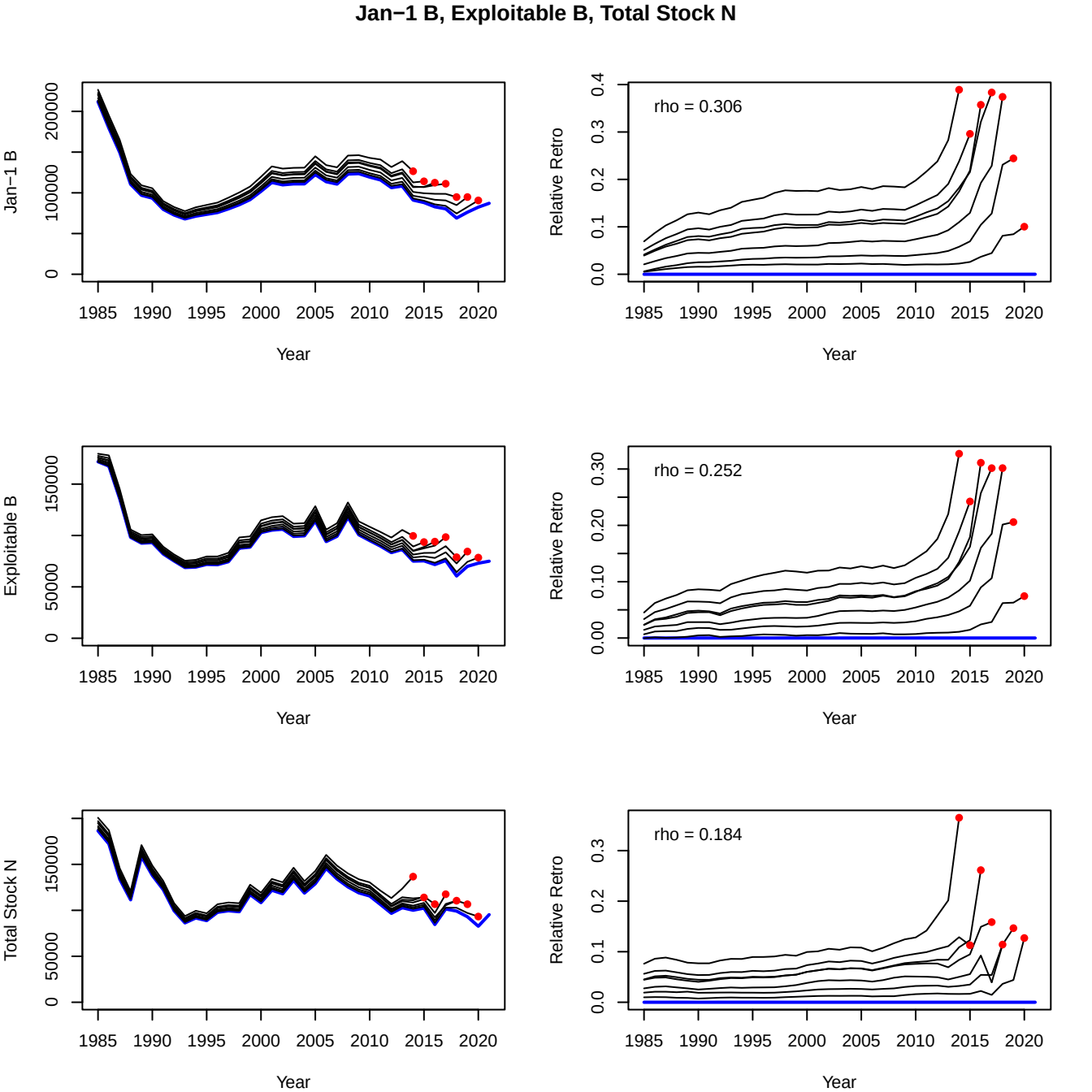

rho = −0.332
Relative Retro
0.0
−0.2
−0.4
1985
1990
1995
2000
2005
2010
2015
2020
Year


SSB
0
50000
150000
1985
1990
1995
2000
2005
2010
2015
2020
Year

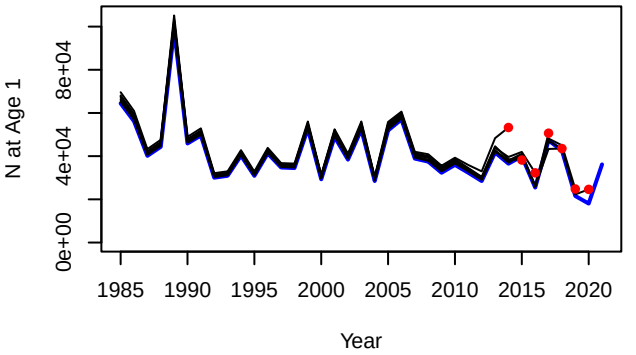

rho = 0.378
Relative Retro
0.0
0.2
0.4
1985
1990
1995
2000
2005
2010
2015
2020
Year

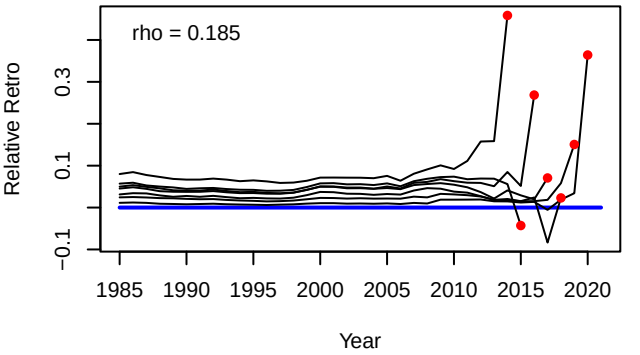

Recruitment
0e+00
4e+04
8e+04
1985
1990
1995
2000
2005
2010
2015
2020
Year

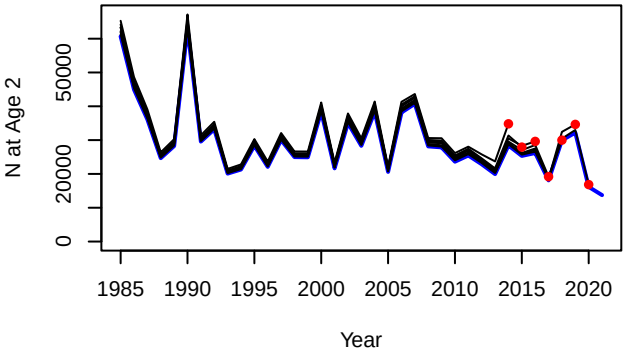

rho = 0.185
Relative Retro
−0.1
0.1
0.3
1985
1990
1995
2000
2005
2010
2015
2020
Year

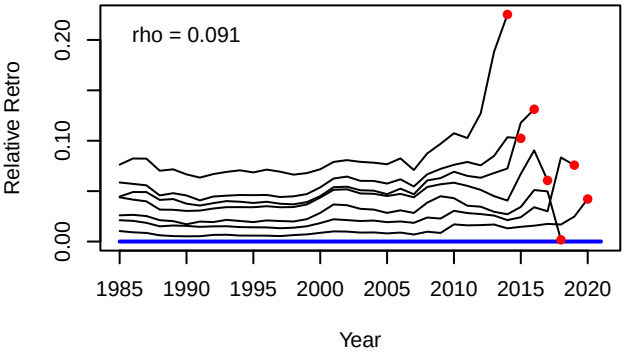

Jan−1 B, Exploitable B, Total Stock N
Jan−1 B
Exploitable B
Total Stock N
Relative Retro
Year
rho = 0.306
rho = 0.252
rho = 0.184
0
50000
100000
150000
200000
0.0
0.1
0.2
0.3
0.4
0.00
0.10
0.20
0.30
1985
1990
1995
2000
2005
2010
2015
2020

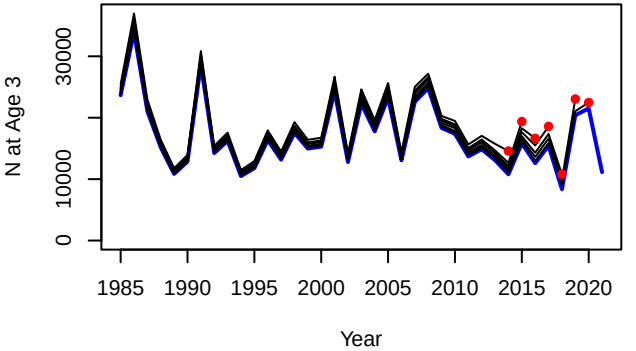
Stock Numbers at Age

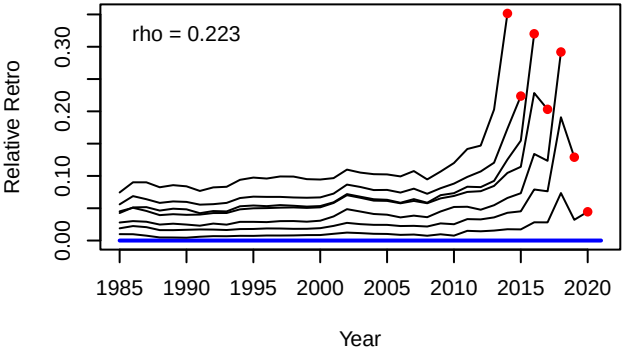




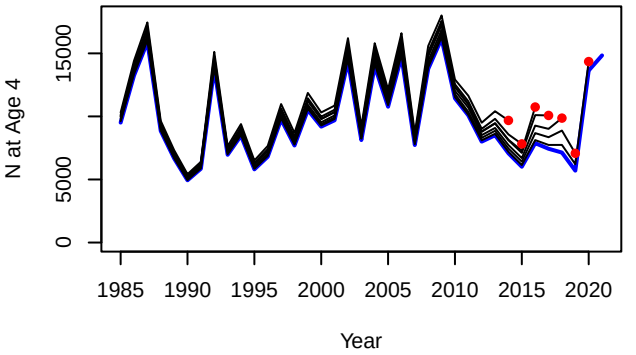


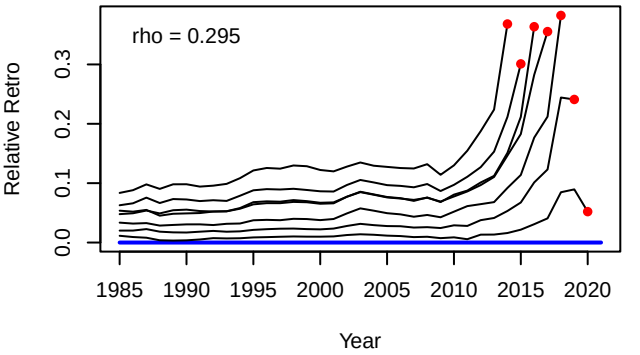


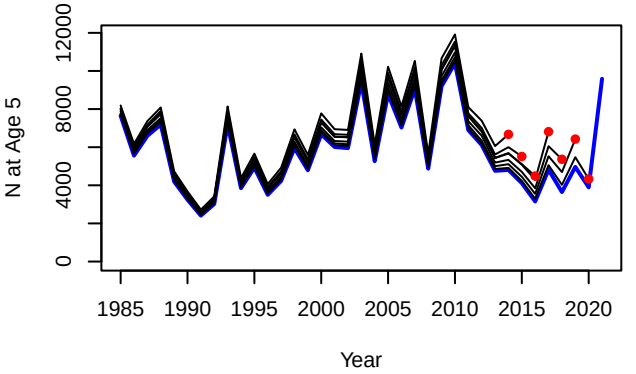


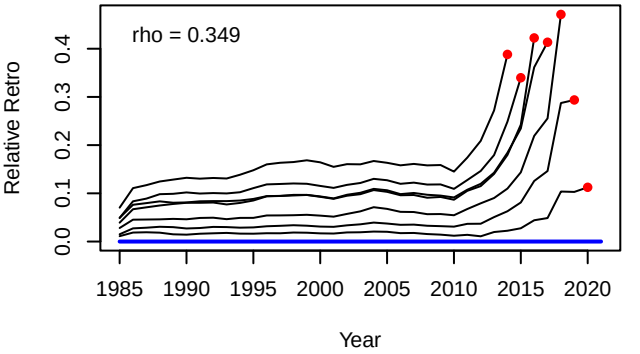


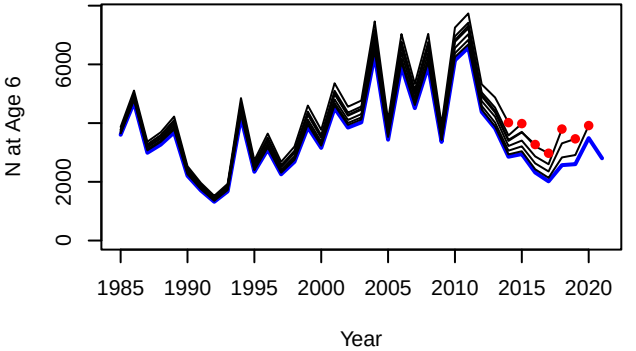
Stock Numbers at Age

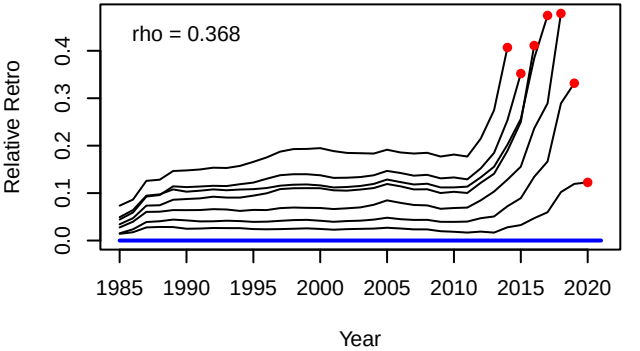




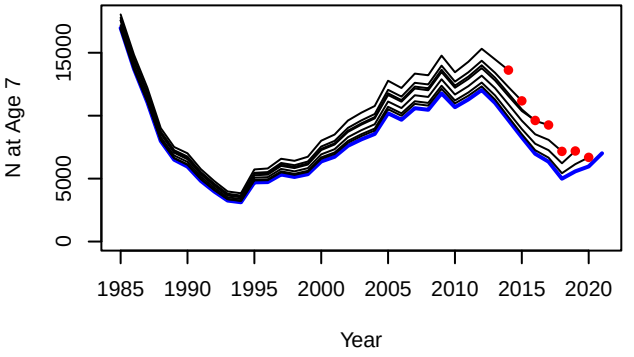


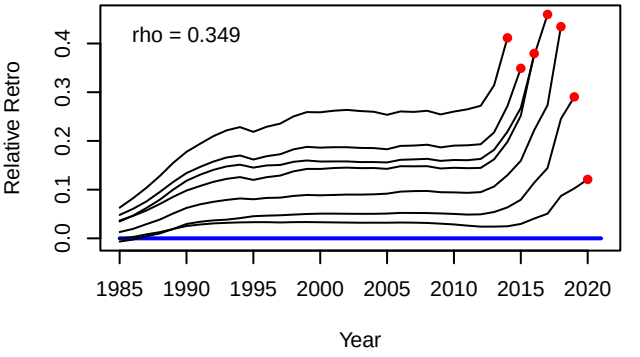






Stock Numbers at Age

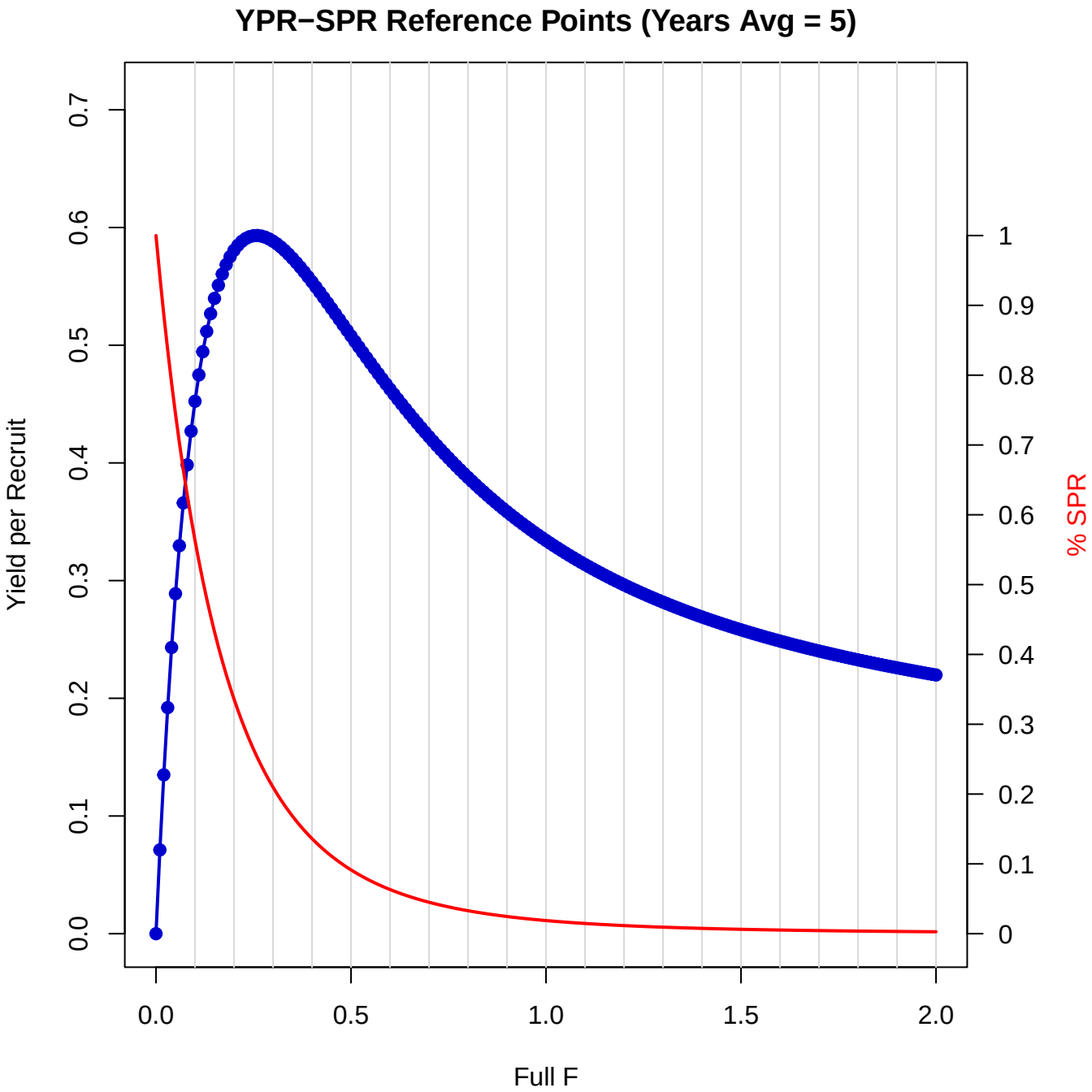




BF07

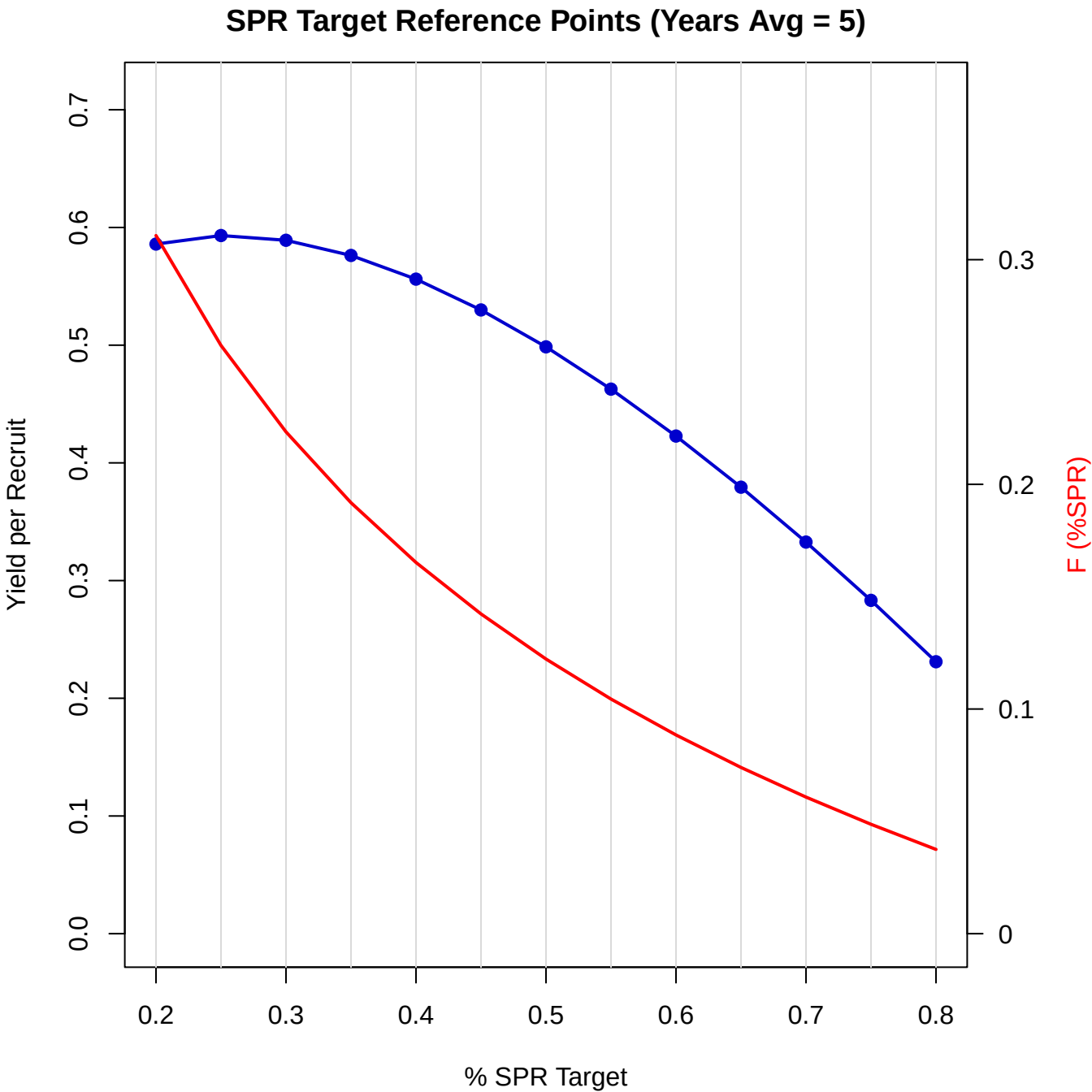
Update all fishery data, new L-W parameters, new recreational discard mortality, add commercial discards

REFERENCE POINT PLOTS


YPR−SPR Reference Points (Years Avg = 5)
Yield per Recruit
% SPR
Full F
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0.0
0.5
1.0
1.5
2.0

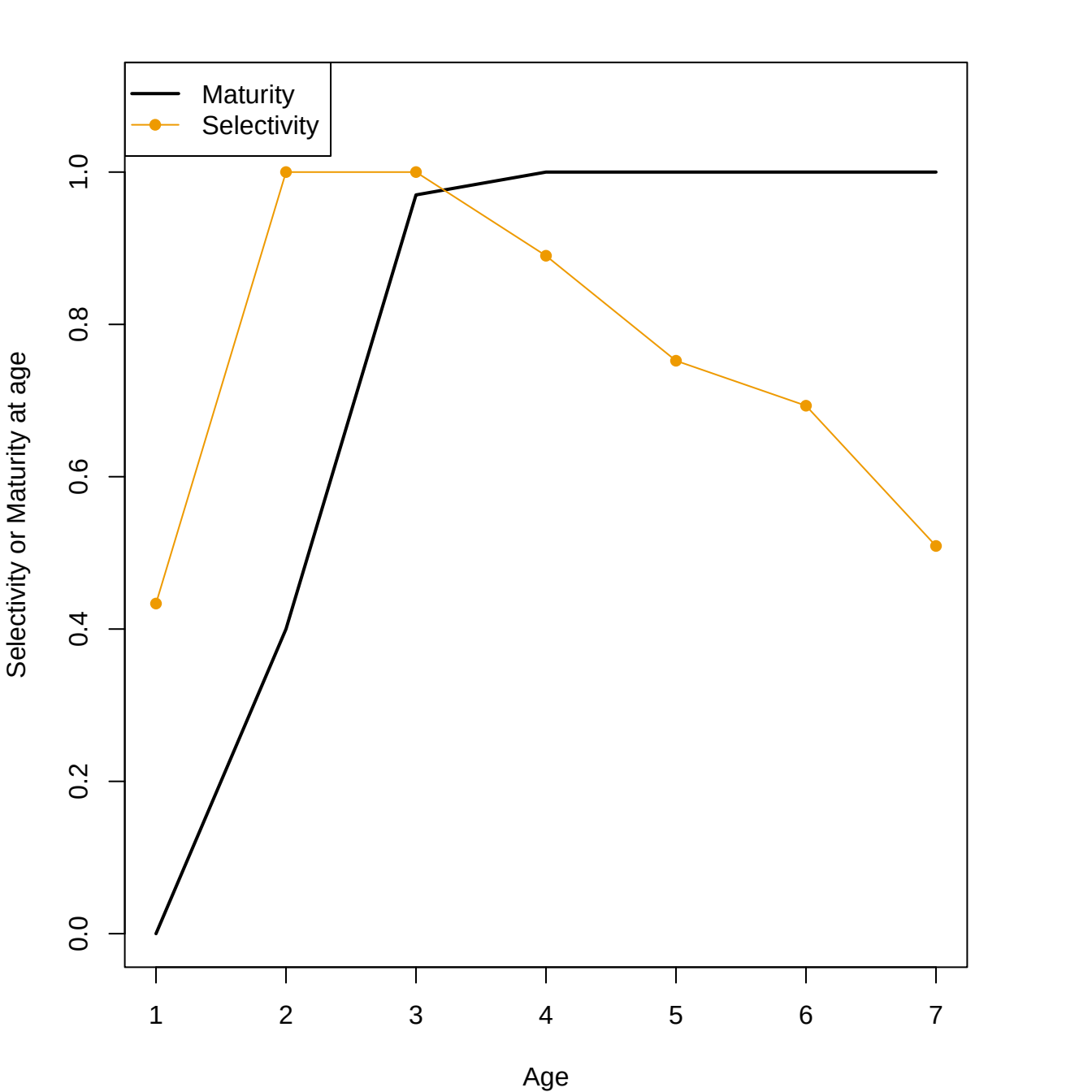
YPR−SPR Reference Points (Years Avg = 5)

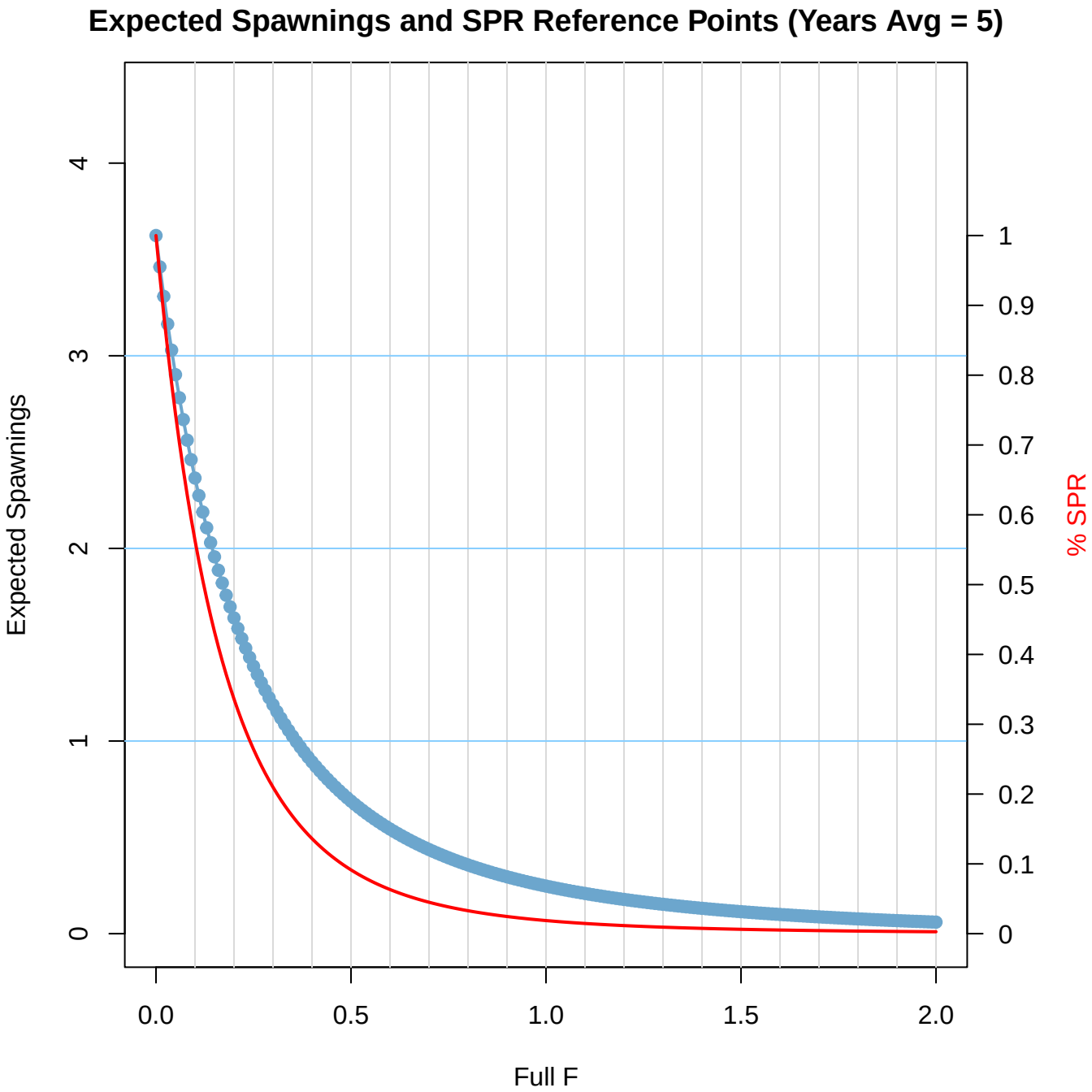
F	YPR	SPR	F	YPR	SPR	F	YPR	SPR
0	0	1	0.35	0.5738	0.1683	0.7	0.4222	0.045
0.01	0.0712	0.9413	0.36	0.5701	0.1612	0.71	0.4185	0.0436
0.02	0.135	0.8867	0.37	0.5663	0.1545	0.72	0.4148	0.0422
0.03	0.1921	0.8359	0.38	0.5623	0.1481	0.73	0.4112	0.0409
0.04	0.2432	0.7886	0.39	0.5581	0.142	0.74	0.4077	0.0396
0.05	0.2889	0.7444	0.4	0.5538	0.1362	0.75	0.4042	0.0384
0.06	0.3296	0.7032	0.41	0.5494	0.1307	0.76	0.4008	0.0372
0.07	0.366	0.6647	0.42	0.545	0.1254	0.77	0.3974	0.0361
0.08	0.3983	0.6287	0.43	0.5405	0.1204	0.78	0.3941	0.035
0.09	0.427	0.5949	0.44	0.5359	0.1157	0.79	0.3908	0.0339
0.1	0.4524	0.5634	0.45	0.5313	0.1111	0.8	0.3876	0.0329
0.11	0.4748	0.5338	0.46	0.5266	0.1068	0.81	0.3845	0.0319
0.12	0.4945	0.506	0.47	0.5219	0.1027	0.82	0.3814	0.031
0.13	0.5117	0.4799	0.48	0.5173	0.0987	0.83	0.3784	0.0301
0.14	0.5267	0.4555	0.49	0.5126	0.095	0.84	0.3754	0.0292
0.15	0.5397	0.4325	0.5	0.5079	0.0914	0.85	0.3724	0.0284
0.16	0.5509	0.4108	0.51	0.5032	0.088	0.86	0.3695	0.0276
0.17	0.5605	0.3904	0.52	0.4986	0.0847	0.87	0.3667	0.0268
0.18	0.5685	0.3713	0.53	0.494	0.0816	0.88	0.3639	0.026
0.19	0.5751	0.3532	0.54	0.4894	0.0786	0.89	0.3612	0.0253
0.2	0.5806	0.3361	0.55	0.4848	0.0758	0.9	0.3585	0.0246
0.21	0.5849	0.3201	0.56	0.4803	0.073	0.91	0.3559	0.0239
0.22	0.5882	0.3049	0.57	0.4758	0.0704	0.92	0.3533	0.0233
0.23	0.5906	0.2906	0.58	0.4714	0.0679	0.93	0.3507	0.0226
0.24	0.5922	0.277	0.59	0.467	0.0656	0.94	0.3482	0.022
0.25	0.593	0.2642	0.6	0.4626	0.0633	0.95	0.3458	0.0214
0.26	0.5932	0.2521	0.61	0.4583	0.0611	0.96	0.3434	0.0209
0.27	0.5927	0.2407	0.62	0.4541	0.059	0.97	0.341	0.0203
0.28	0.5918	0.2299	0.63	0.4499	0.057	0.98	0.3387	0.0198
0.29	0.5903	0.2196	0.64	0.4458	0.055	0.99	0.3364	0.0193
0.3	0.5884	0.2099	0.65	0.4417	0.0532	1	0.3341	0.0188
0.31	0.5861	0.2007	0.66	0.4377	0.0514	1.01	0.3319	0.0183
0.32	0.5834	0.1919	0.67	0.4338	0.0497	1.02	0.3297	0.0178
0.33	0.5805	0.1836	0.68	0.4299	0.0481	1.03	0.3276	0.0174
0.34	0.5773	0.1758	0.69	0.426	0.0465	1.04	0.3255	0.017


SPR Target Reference Points (Years Avg = 5)
Yield per Recruit
F (%SPR)
% SPR Target
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
0.1
0.2
0.3
0.2
0.3
0.4
0.5
0.6
0.7
0.8

SPR Target Reference Points (Years Avg = 5)

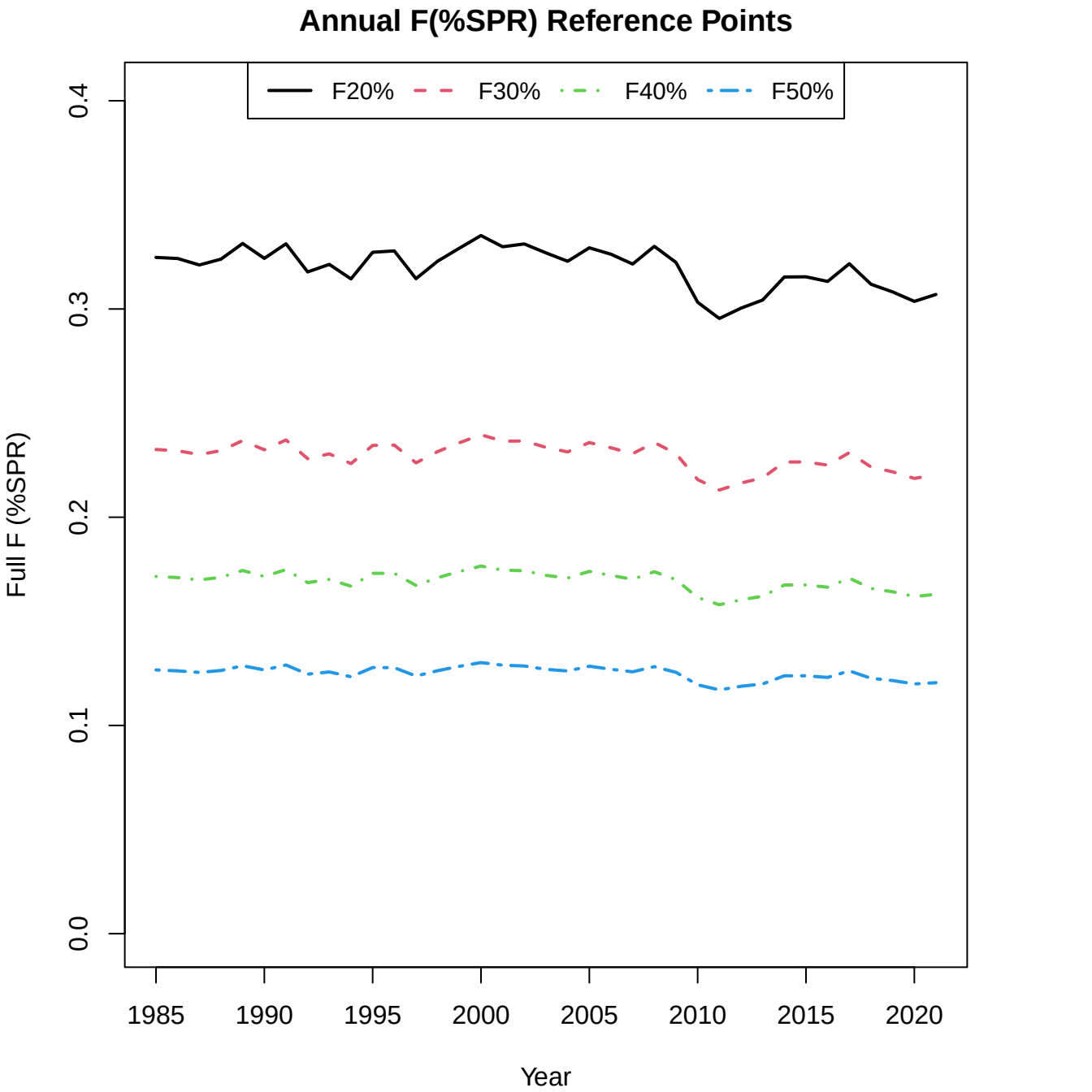
% SPR	F(%SPR)	YPR
0.2	0.3107	0.5859
0.25	0.2618	0.5931
0.3	0.2234	0.5891
0.35	0.1918	0.5762
0.4	0.1652	0.5561
0.45	0.1423	0.5299
0.5	0.1223	0.4986
0.55	0.1044	0.4627
0.6	0.0885	0.4228
0.65	0.074	0.3793
0.7	0.0608	0.3327
0.75	0.0487	0.2832
0.8	0.0375	0.231

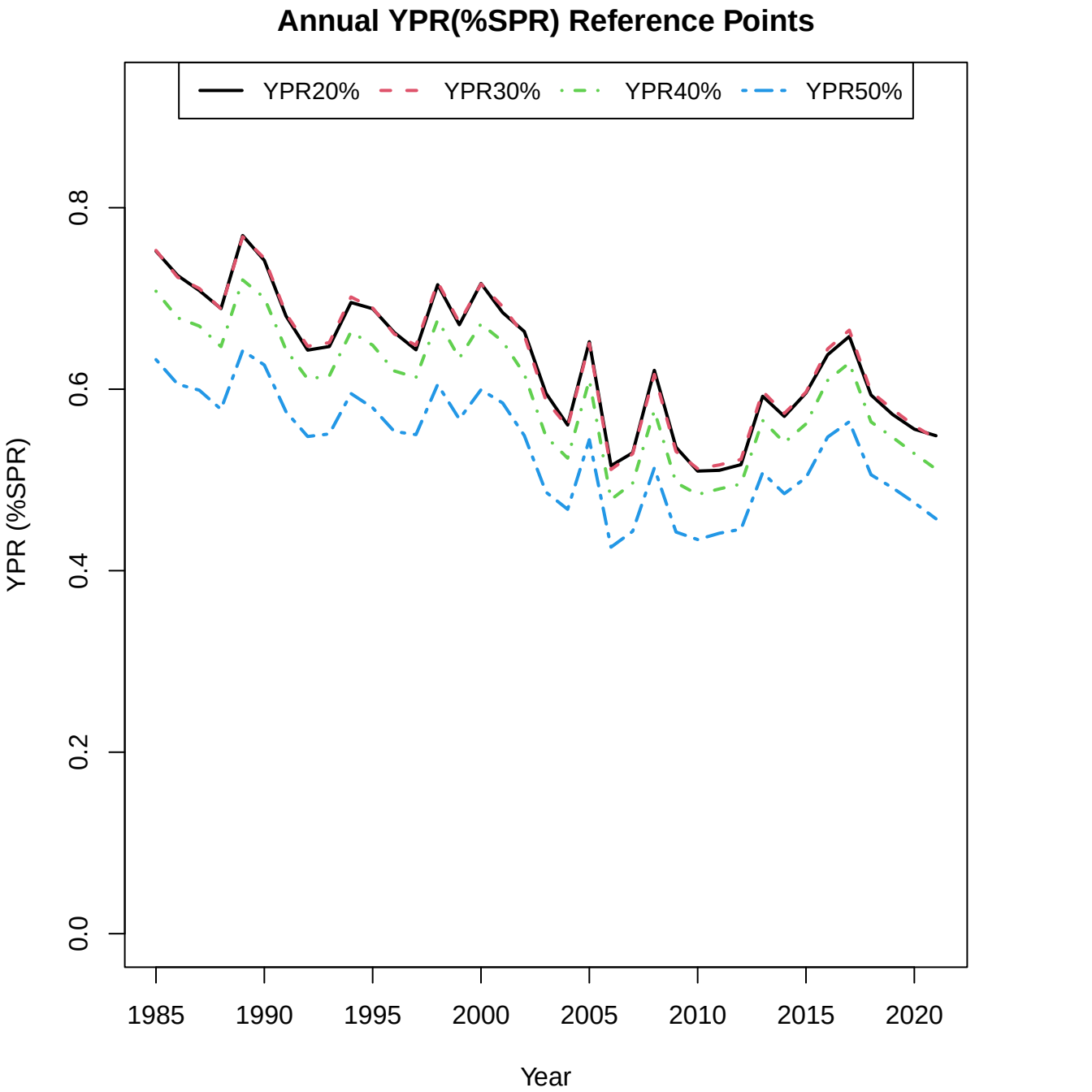

Maturity
Selectivity
Selectivity or Maturity at age
0.0
0.2
0.4
0.6
0.8
1.0
1
2
3
4
5
6
7
Age


Expected Spawnings and SPR Reference Points (Years Avg = 5)
Expected Spawnings
% SPR
Full F
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

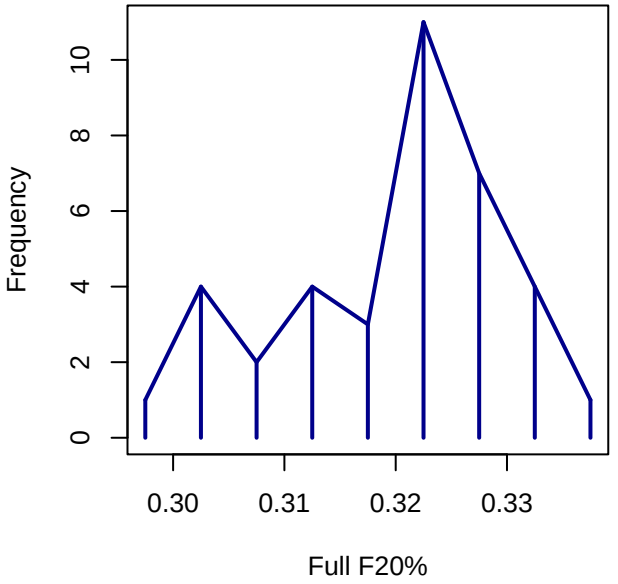
Expected Spawnings & SPR Reference Points (Years Avg = 5)

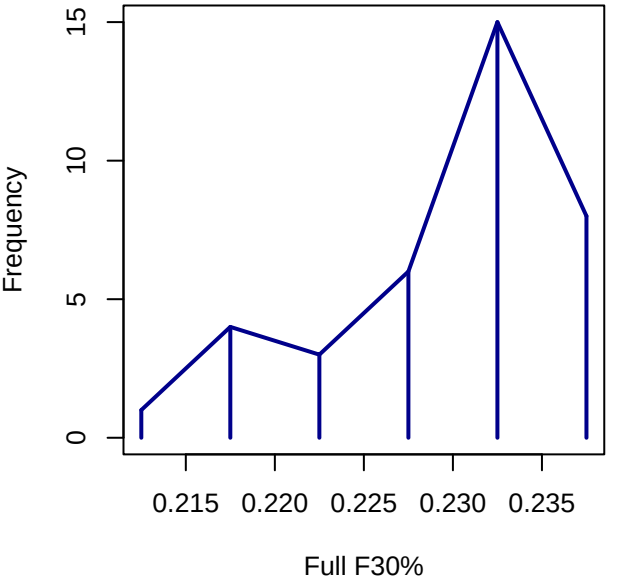
F	E[Sp]	SPR	F	E[Sp]	SPR	F	E[Sp]	SPR
0	3.6242	1	0.35	1.0254	0.1683	0.7	0.4369	0.045
0.01	3.4612	0.9413	0.36	0.9966	0.1612	0.71	0.4279	0.0436
0.02	3.3082	0.8867	0.37	0.9689	0.1545	0.72	0.4191	0.0422
0.03	3.1645	0.8359	0.38	0.9422	0.1481	0.73	0.4106	0.0409
0.04	3.0293	0.7886	0.39	0.9166	0.142	0.74	0.4023	0.0396
0.05	2.902	0.7444	0.4	0.8918	0.1362	0.75	0.3942	0.0384
0.06	2.782	0.7032	0.41	0.868	0.1307	0.76	0.3863	0.0372
0.07	2.6688	0.6647	0.42	0.8451	0.1254	0.77	0.3786	0.0361
0.08	2.5618	0.6287	0.43	0.8229	0.1204	0.78	0.3712	0.035
0.09	2.4607	0.5949	0.44	0.8016	0.1157	0.79	0.3639	0.0339
0.1	2.3651	0.5634	0.45	0.781	0.1111	0.8	0.3569	0.0329
0.11	2.2745	0.5338	0.46	0.7612	0.1068	0.81	0.35	0.0319
0.12	2.1886	0.506	0.47	0.742	0.1027	0.82	0.3433	0.031
0.13	2.1072	0.4799	0.48	0.7234	0.0987	0.83	0.3367	0.0301
0.14	2.0299	0.4555	0.49	0.7055	0.095	0.84	0.3304	0.0292
0.15	1.9564	0.4325	0.5	0.6883	0.0914	0.85	0.3242	0.0284
0.16	1.8866	0.4108	0.51	0.6715	0.088	0.86	0.3181	0.0276
0.17	1.8202	0.3904	0.52	0.6554	0.0847	0.87	0.3122	0.0268
0.18	1.7569	0.3713	0.53	0.6397	0.0816	0.88	0.3064	0.026
0.19	1.6967	0.3532	0.54	0.6246	0.0786	0.89	0.3008	0.0253
0.2	1.6392	0.3361	0.55	0.6099	0.0758	0.9	0.2953	0.0246
0.21	1.5844	0.3201	0.56	0.5957	0.073	0.91	0.29	0.0239
0.22	1.5321	0.3049	0.57	0.582	0.0704	0.92	0.2847	0.0233
0.23	1.4822	0.2906	0.58	0.5687	0.0679	0.93	0.2796	0.0226
0.24	1.4344	0.277	0.59	0.5558	0.0656	0.94	0.2747	0.022
0.25	1.3888	0.2642	0.6	0.5433	0.0633	0.95	0.2698	0.0214
0.26	1.3451	0.2521	0.61	0.5312	0.0611	0.96	0.265	0.0209
0.27	1.3034	0.2407	0.62	0.5194	0.059	0.97	0.2604	0.0203
0.28	1.2633	0.2299	0.63	0.508	0.057	0.98	0.2559	0.0198
0.29	1.225	0.2196	0.64	0.4969	0.055	0.99	0.2514	0.0193
0.3	1.1882	0.2099	0.65	0.4862	0.0532	1	0.2471	0.0188
0.31	1.1529	0.2007	0.66	0.4757	0.0514	1.01	0.2429	0.0183
0.32	1.1191	0.1919	0.67	0.4656	0.0497	1.02	0.2387	0.0178
0.33	1.0866	0.1836	0.68	0.4558	0.0481	1.03	0.2347	0.0174
0.34	1.0554	0.1758	0.69	0.4462	0.0465	1.04	0.2307	0.017

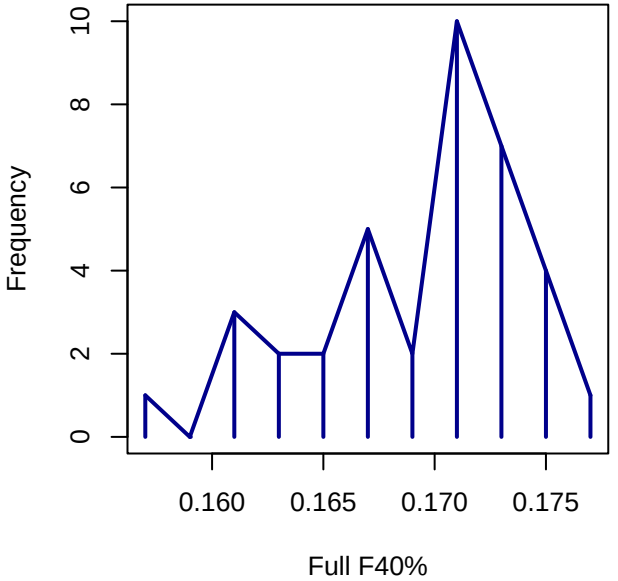

Annual F(%SPR) Reference Points
F20%
F30%
F40%
F50%
Full F (%SPR)
0.0
0.1
0.2
0.3
0.4
1985
1990
1995
2000
2005
2010
2015
2020
Year

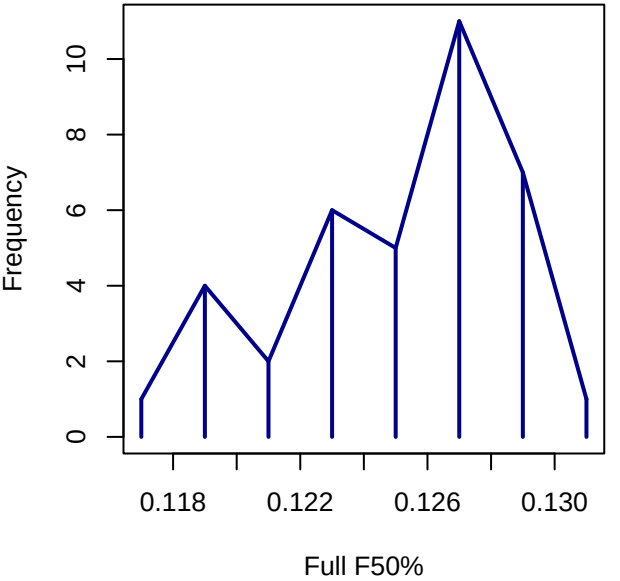

Annual YPR(%SPR) Reference Points
YPR20%
YPR30%
YPR40%
YPR50%
YPR (%SPR)
0.0
0.2
0.4
0.6
0.8
1985
1990
1995
2000
2005
2010
2015
2020
Year

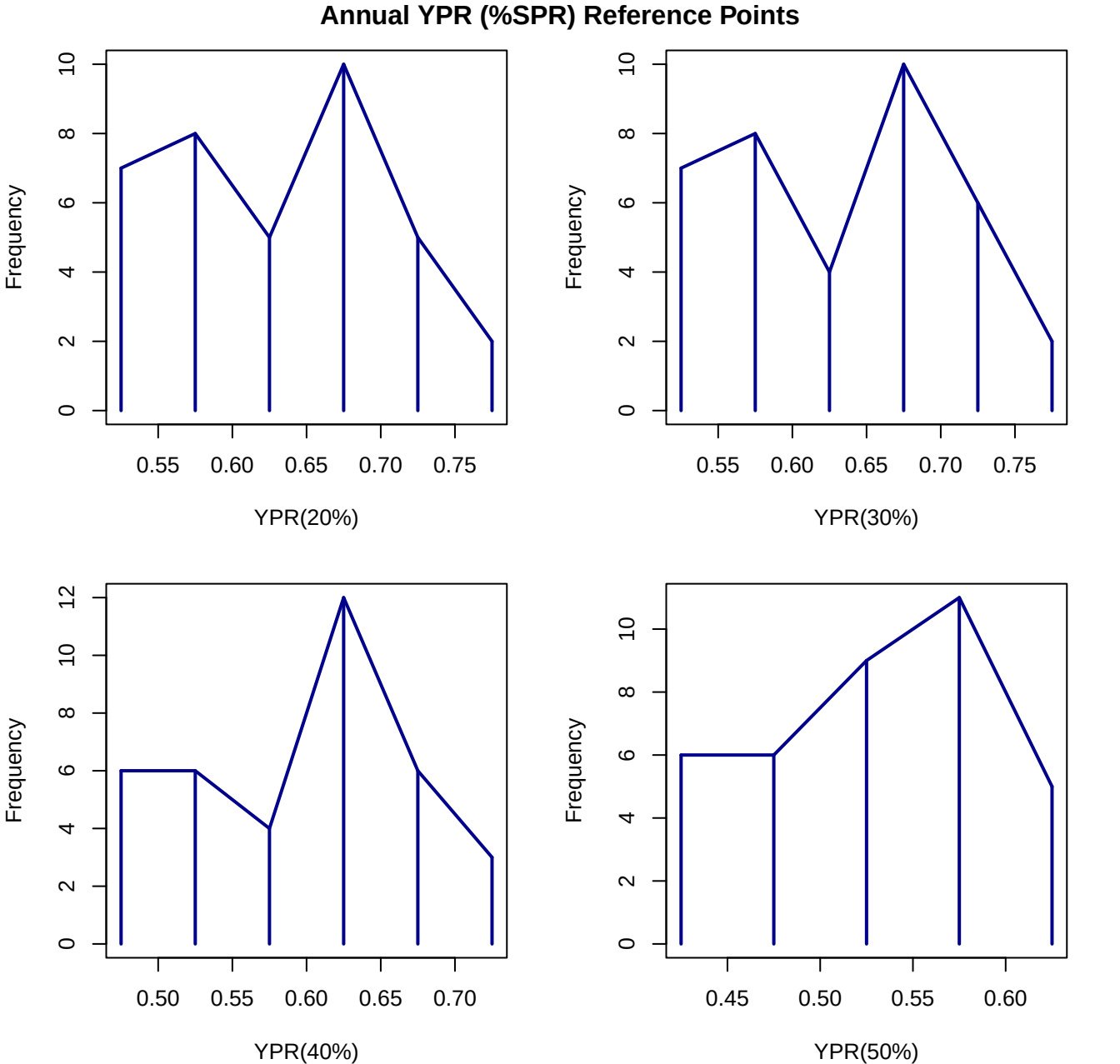
Annual F (%SPR) Reference Points










Annual YPR (%SPR) Reference Points
Frequency
0
2
4
6
8
10
0.55
0.60
0.65
0.70
0.75
YPR(20%)
Frequency
0
2
4
6
8
10
0.55
0.60
0.65
0.70
0.75
YPR(30%)
Frequency
0
2
4
6
8
10
12
0.50
0.55
0.60
0.65
0.70
YPR(40%)
Frequency
0
2
4
6
8
10
0.45
0.50
0.55
0.60
YPR(50%)