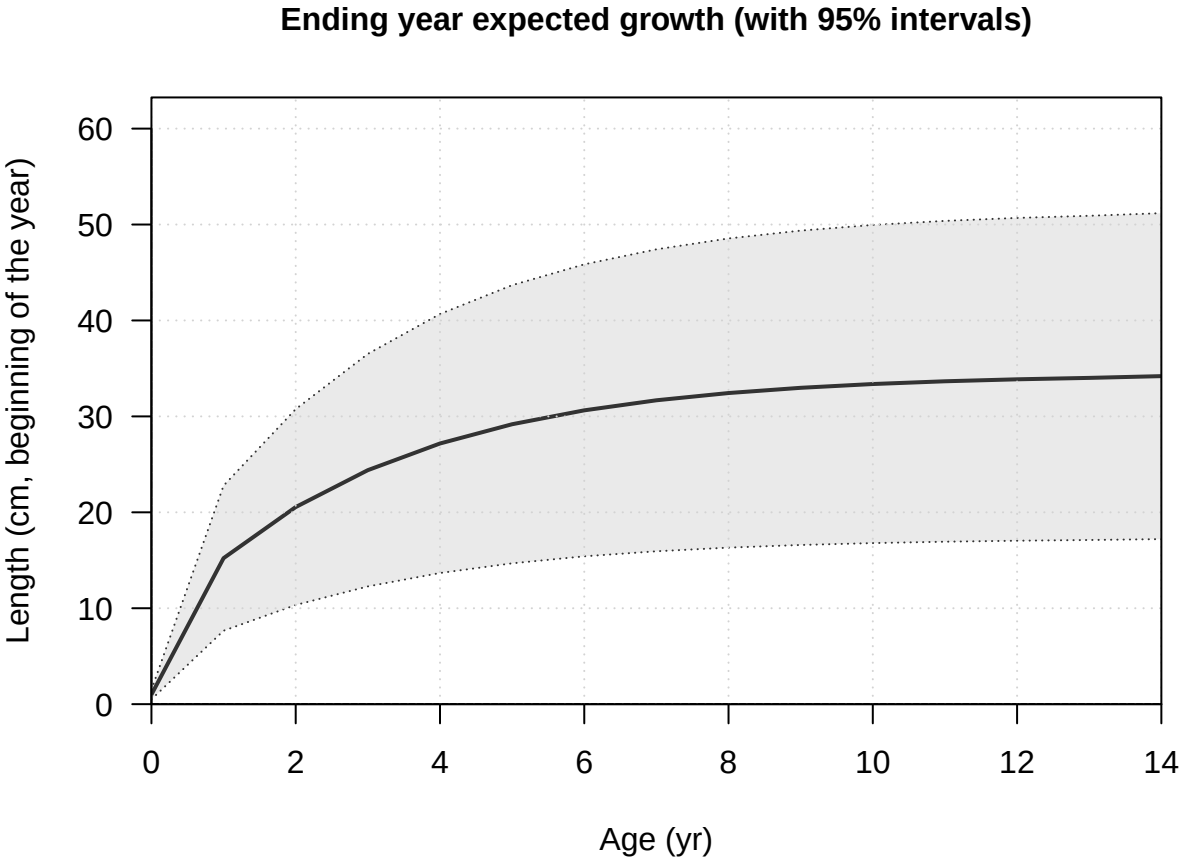
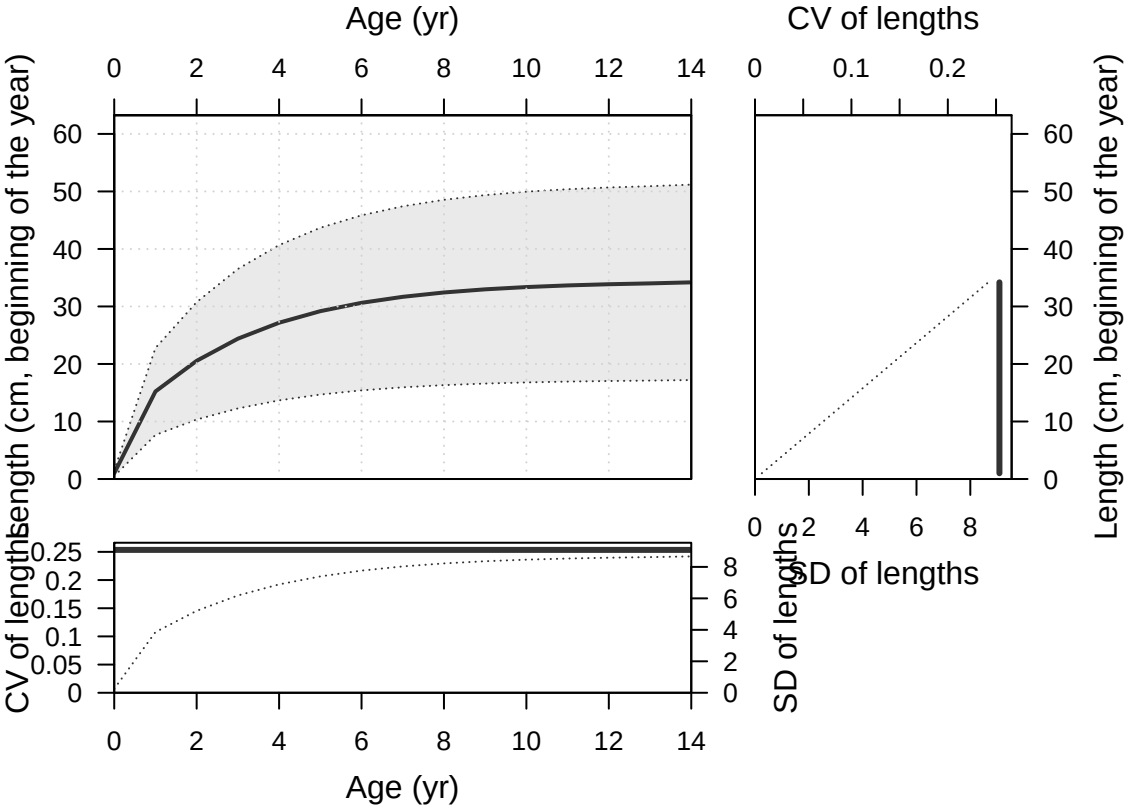
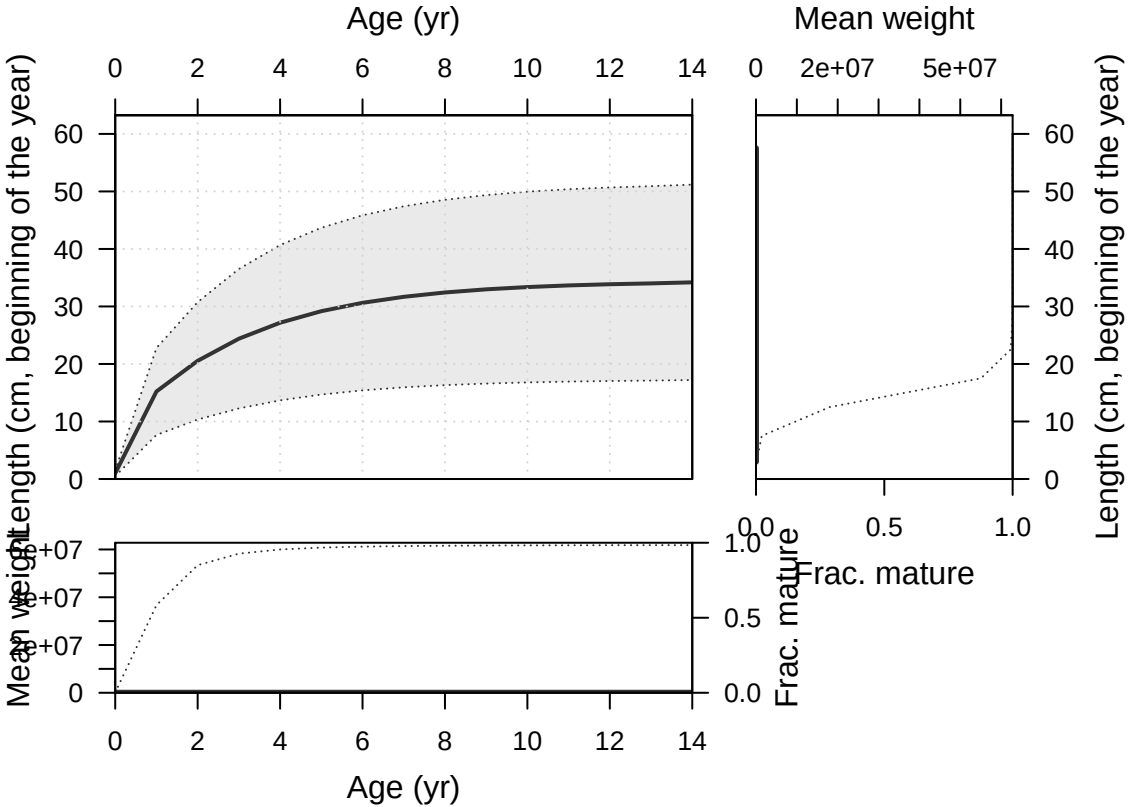
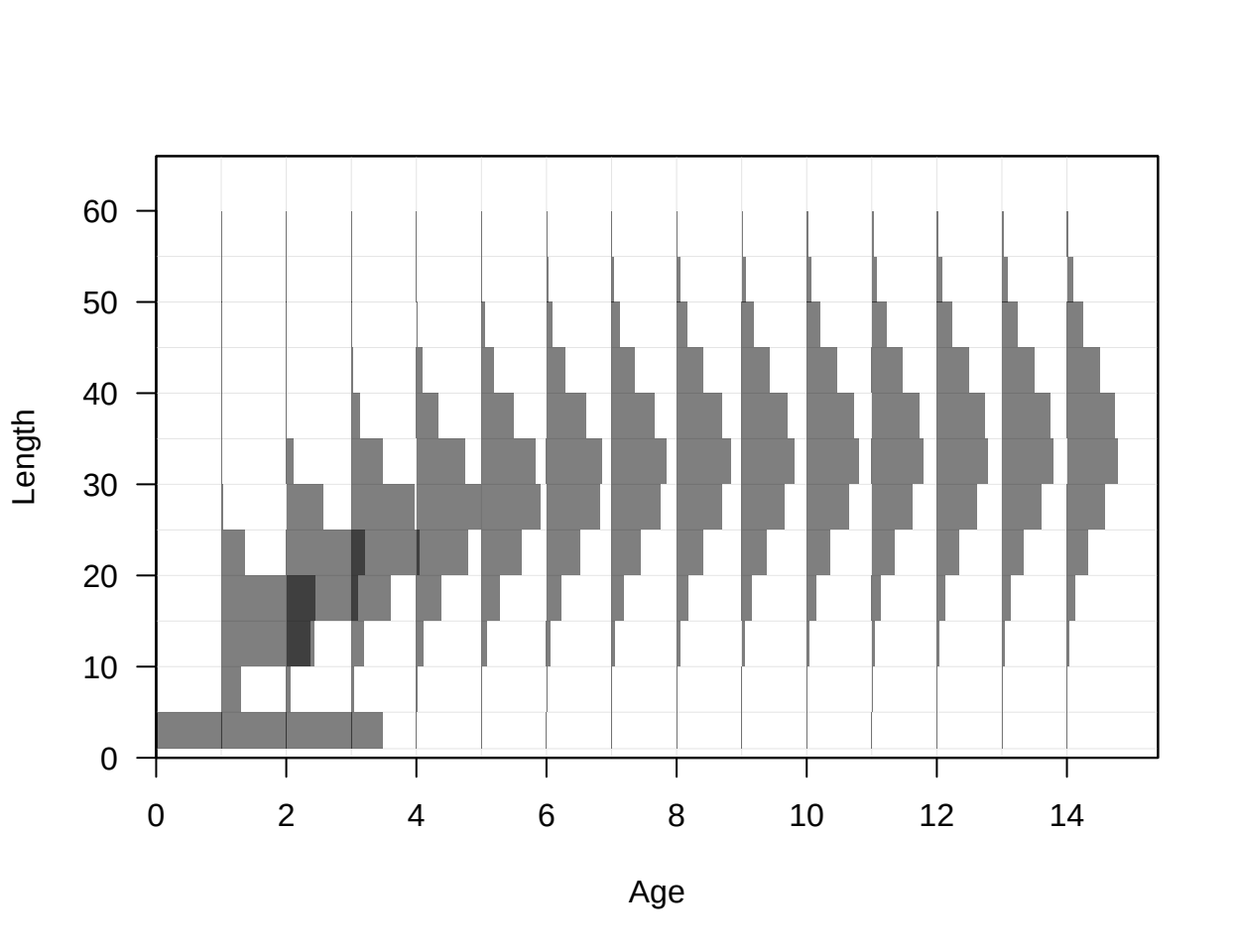
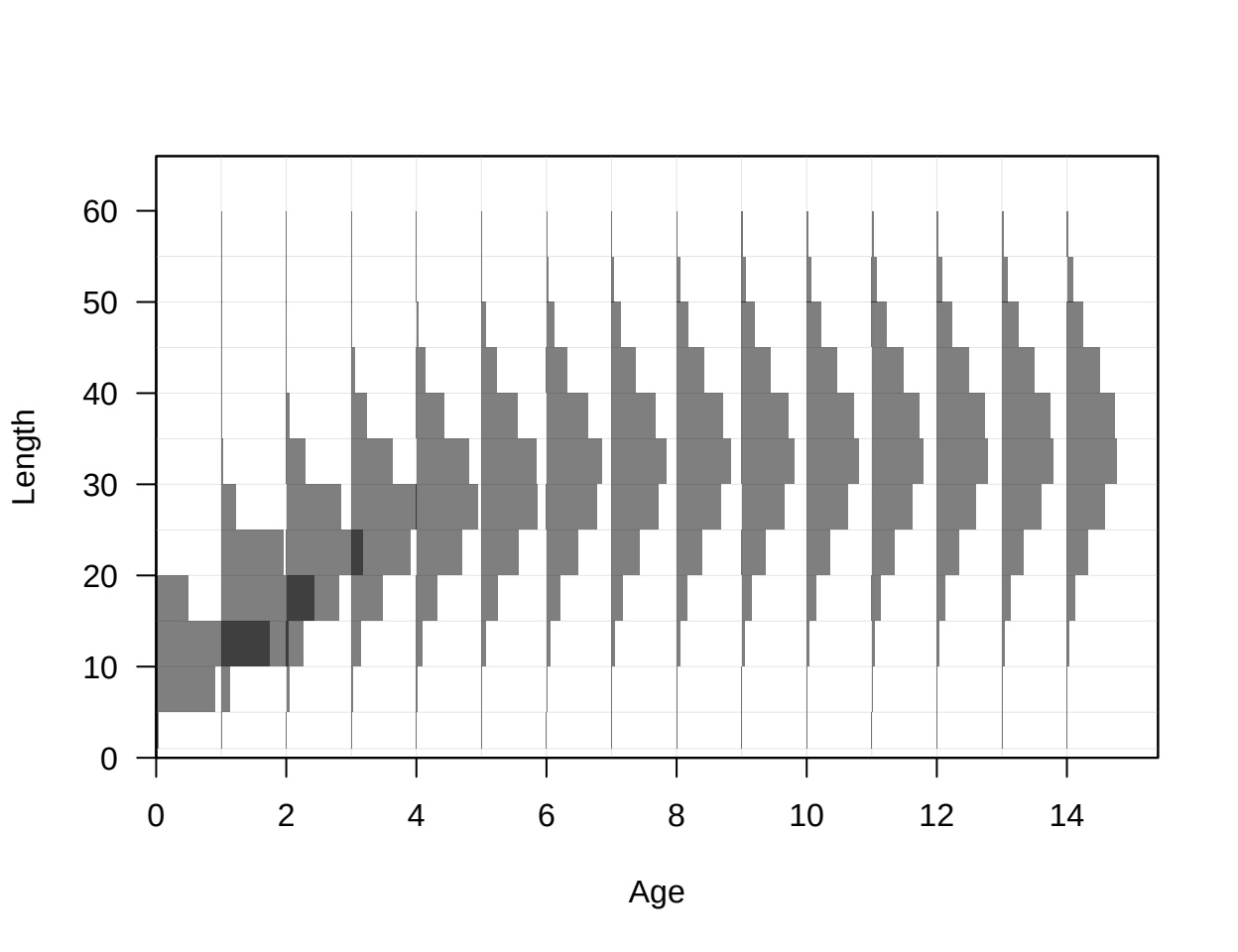
Plots created using the 'r4ss' package in R
Stock Synthesis version: 3.30.14.0
StartTime: Wed Nov 06 15:56:50 2019
Data_File: vermilion.dat
Control_File: vermilion.ctl

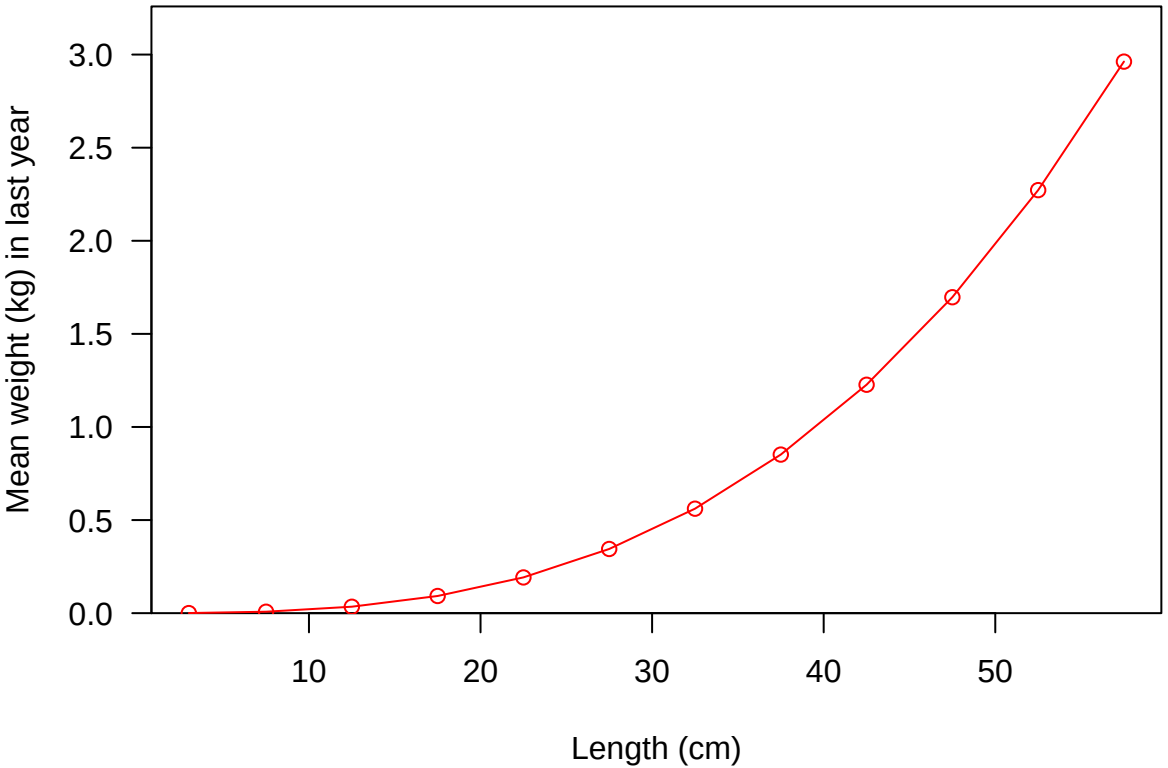

Ending year expected growth (with 95% intervals)
Length (cm, beginning of the year)
0
10
20
30
40
50
60
0
2
4
6
8
10
12
14
Age (yr)

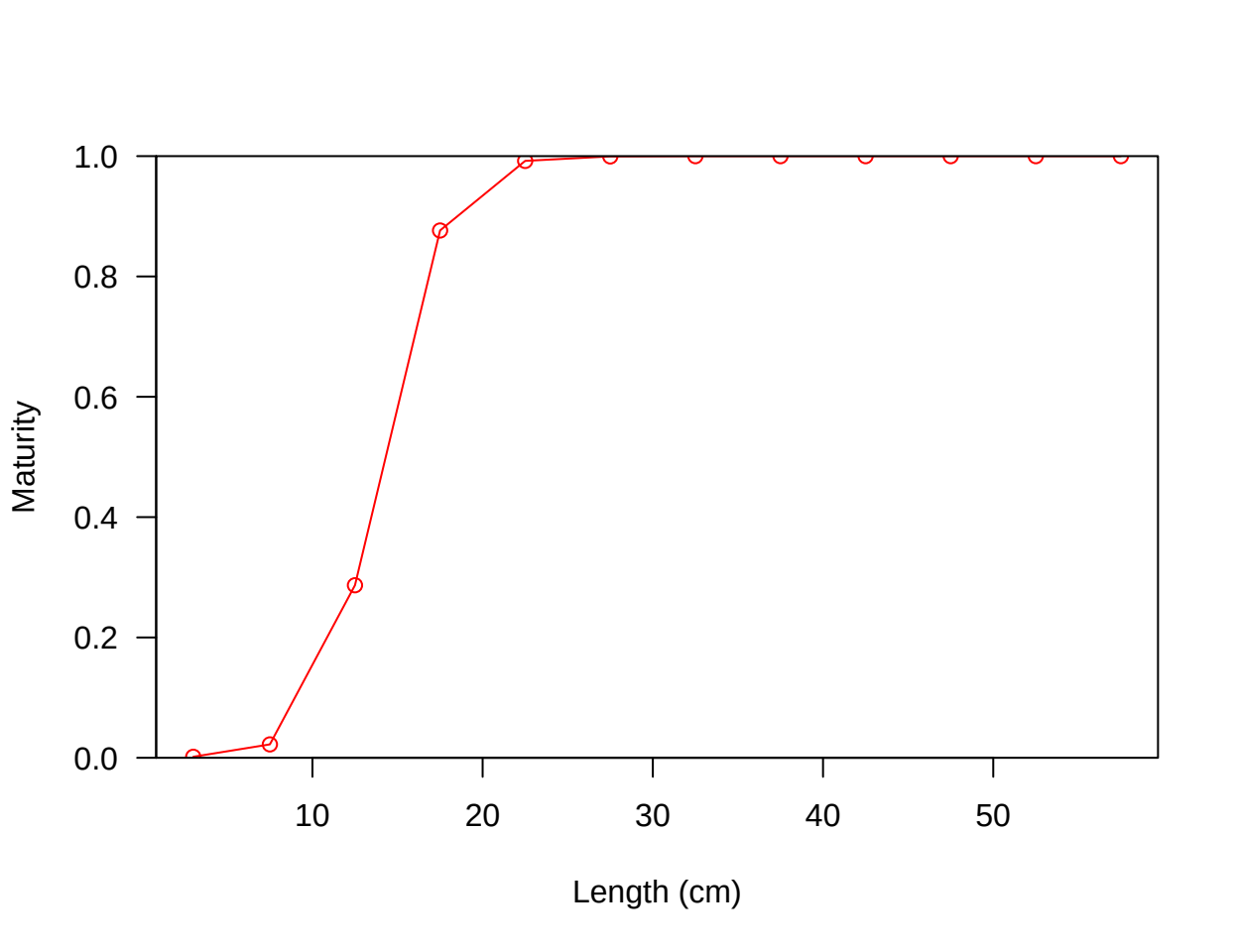

Age (yr)
CV of lengths
Length (cm, beginning of the year)
CV of lengths
SD of lengths
Age (yr)

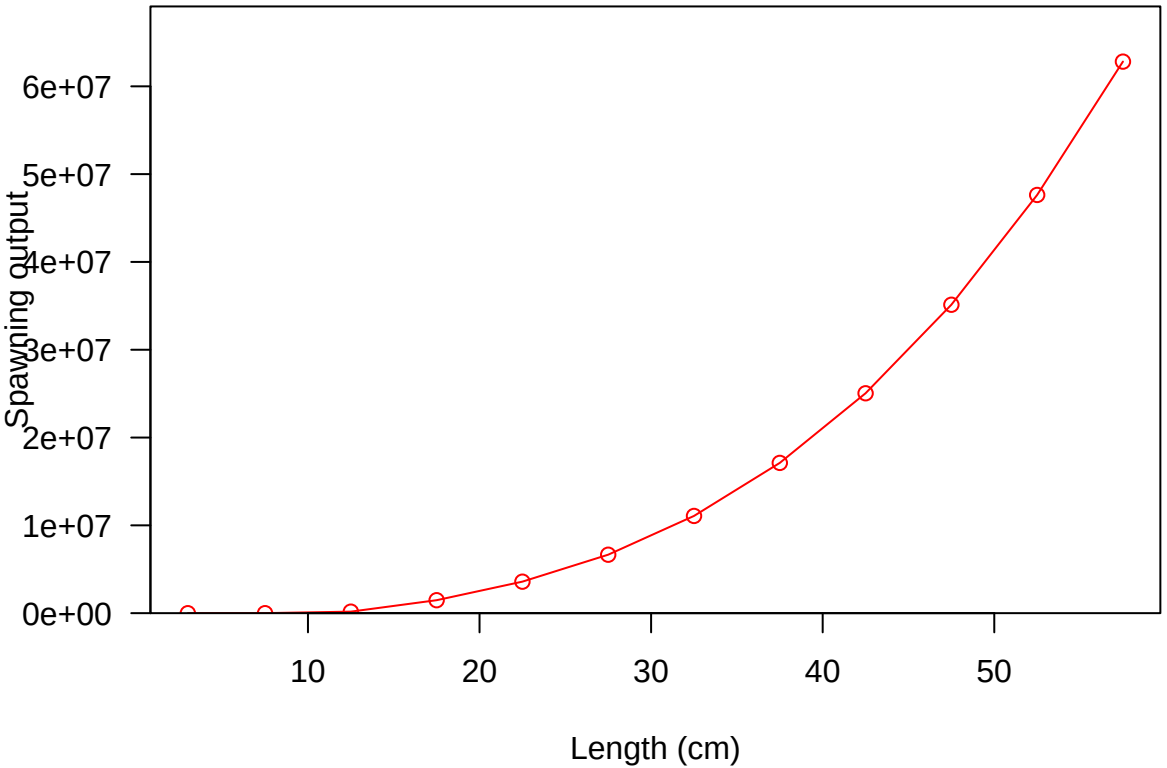

Age (yr)
0
2
4
6
8
10
12
14
Length (cm, beginning of the year)
0
10
20
30
40
50
60
Mean weight
0
2e+07
5e+07
Frac. mature
0.0
0.5
1.0
Mean weight
0
2e+07
4e+07
6e+07
Age (yr)

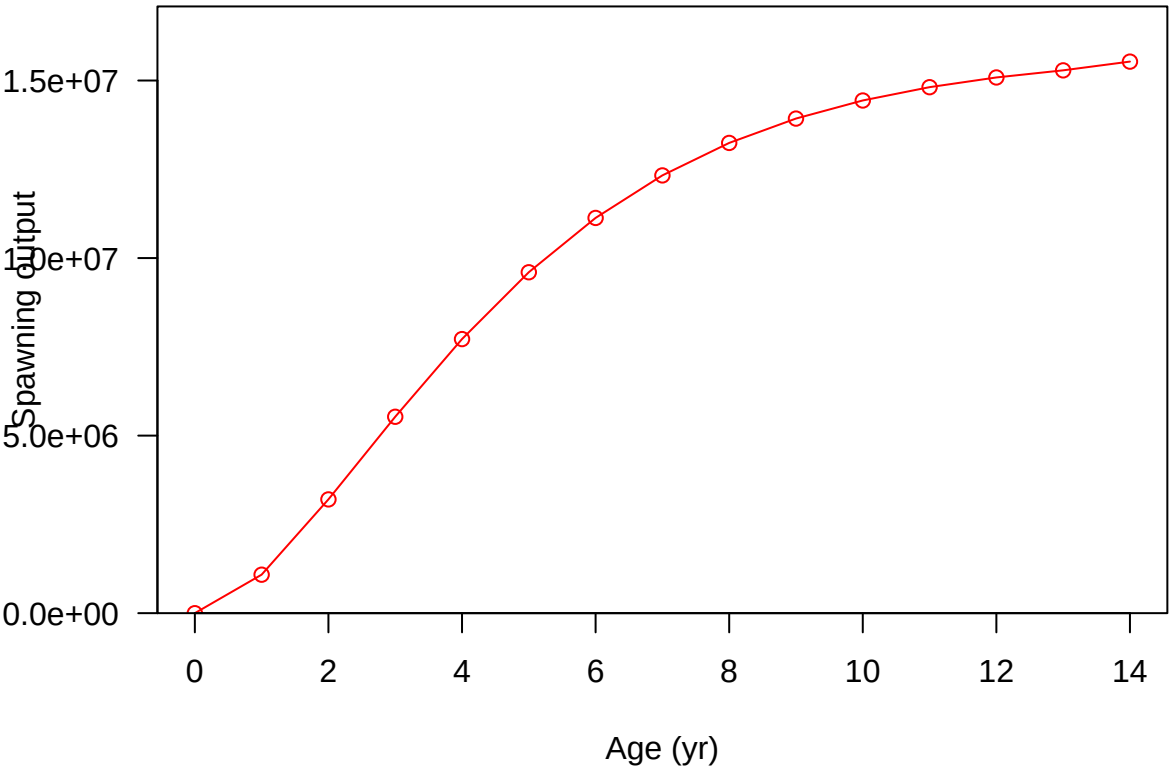

Length
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
Age

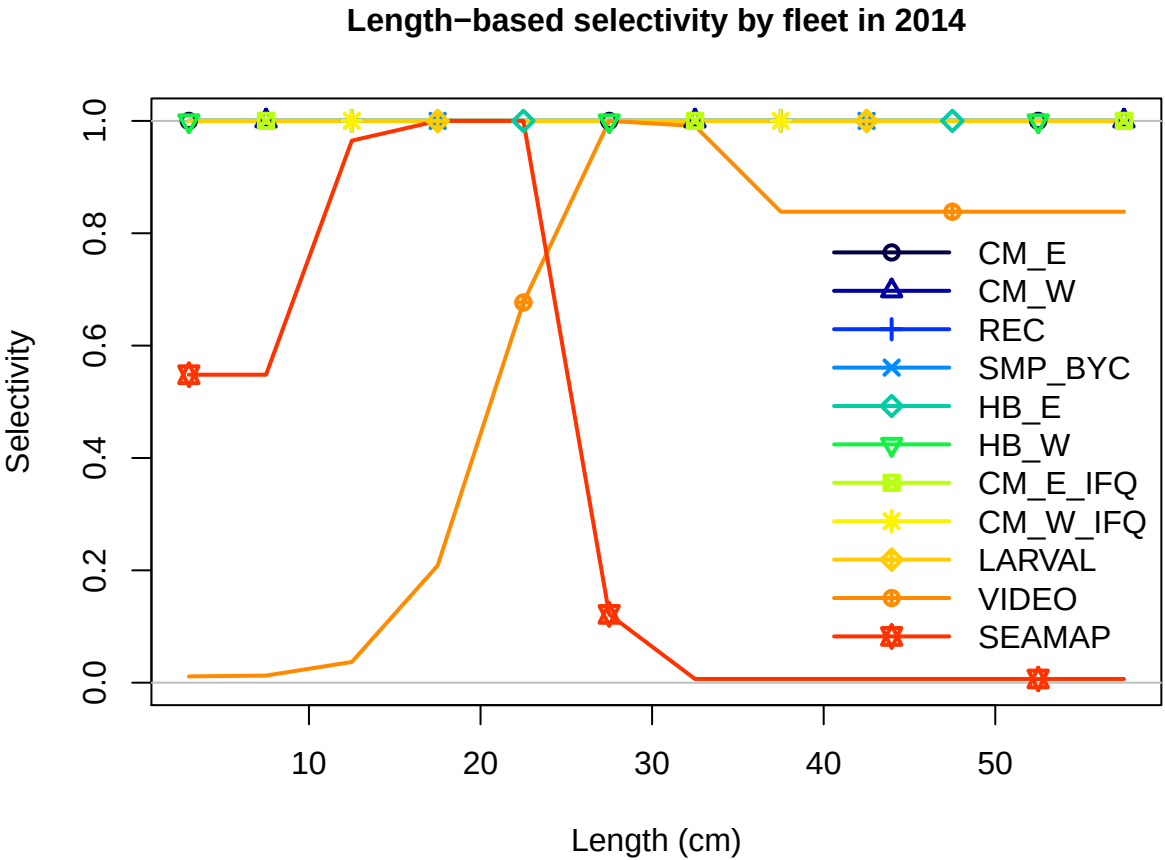

Length
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
Age

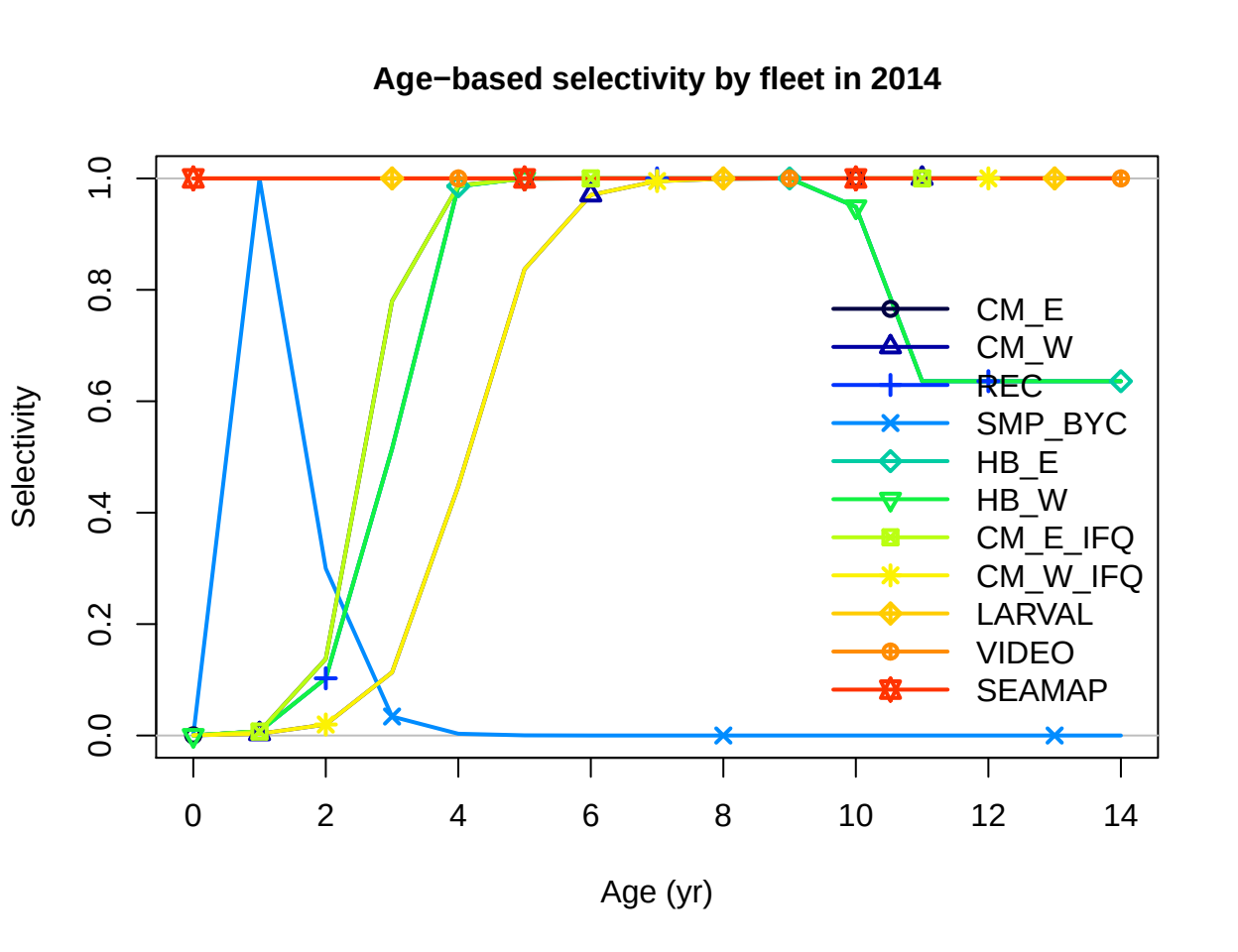

Mean weight (kg) in last year
3.0
2.5
2.0
1.5
1.0
0.5
0.0
10
20
30
40
50
Length (cm)

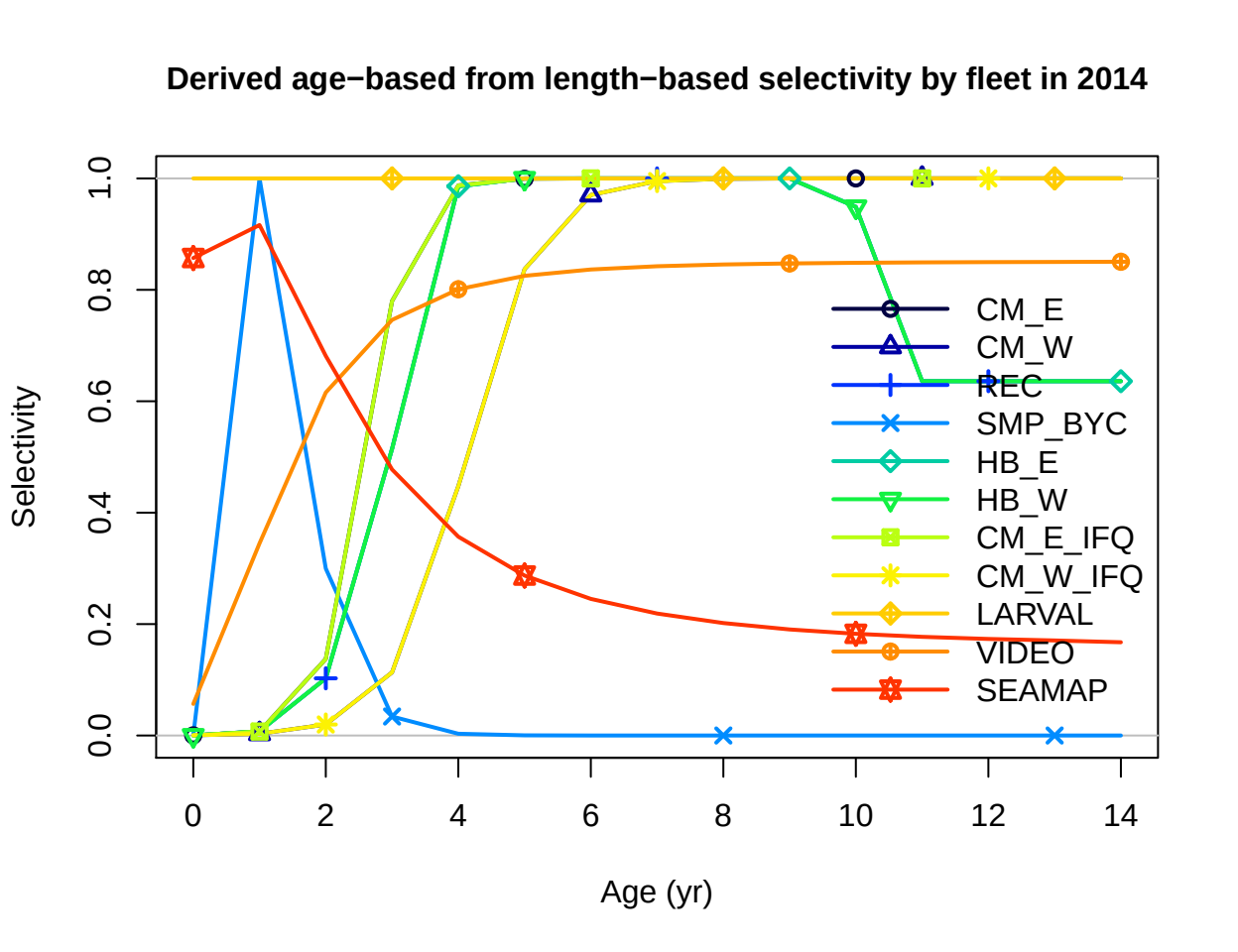

1.0
0.8
0.6
0.4
0.2
0.0
Maturity
10
20
30
40
50
Length (cm)

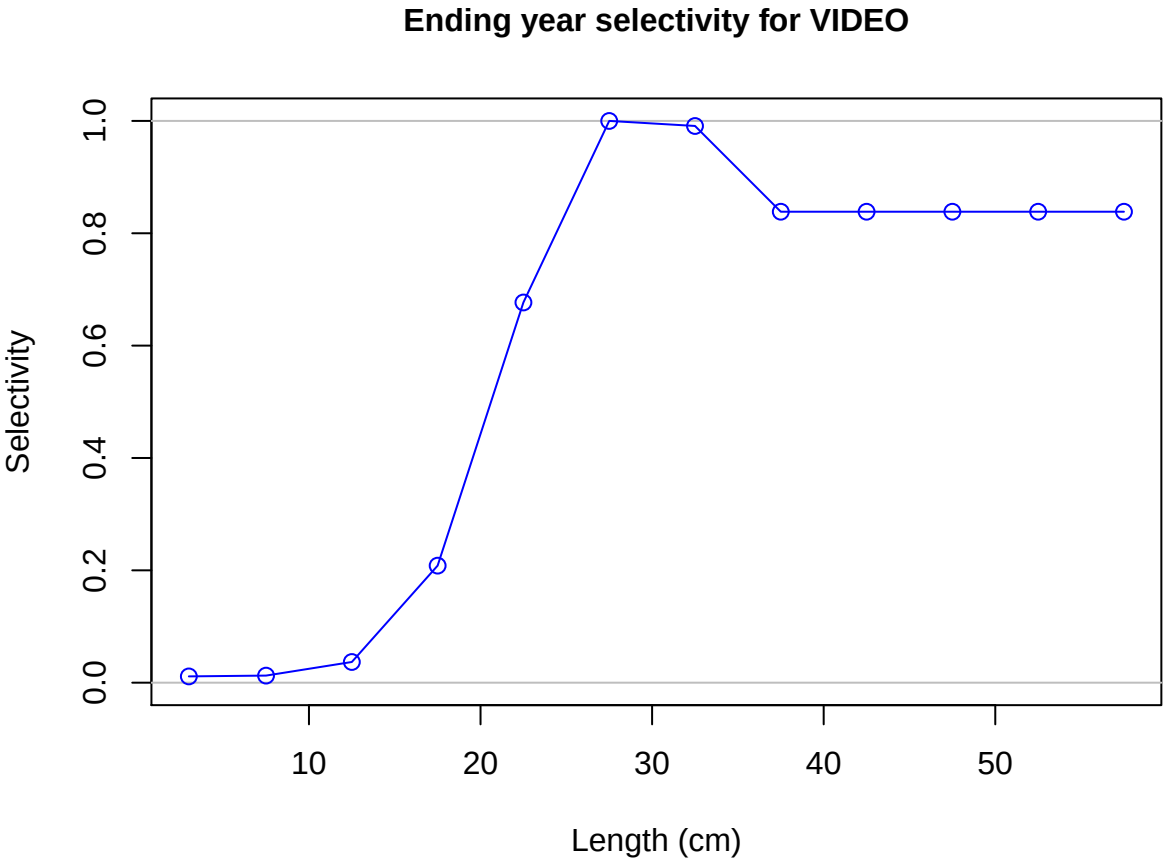

Spawning output
0e+00
1e+07
2e+07
3e+07
4e+07
5e+07
6e+07
10
20
30
40
50
Length (cm)

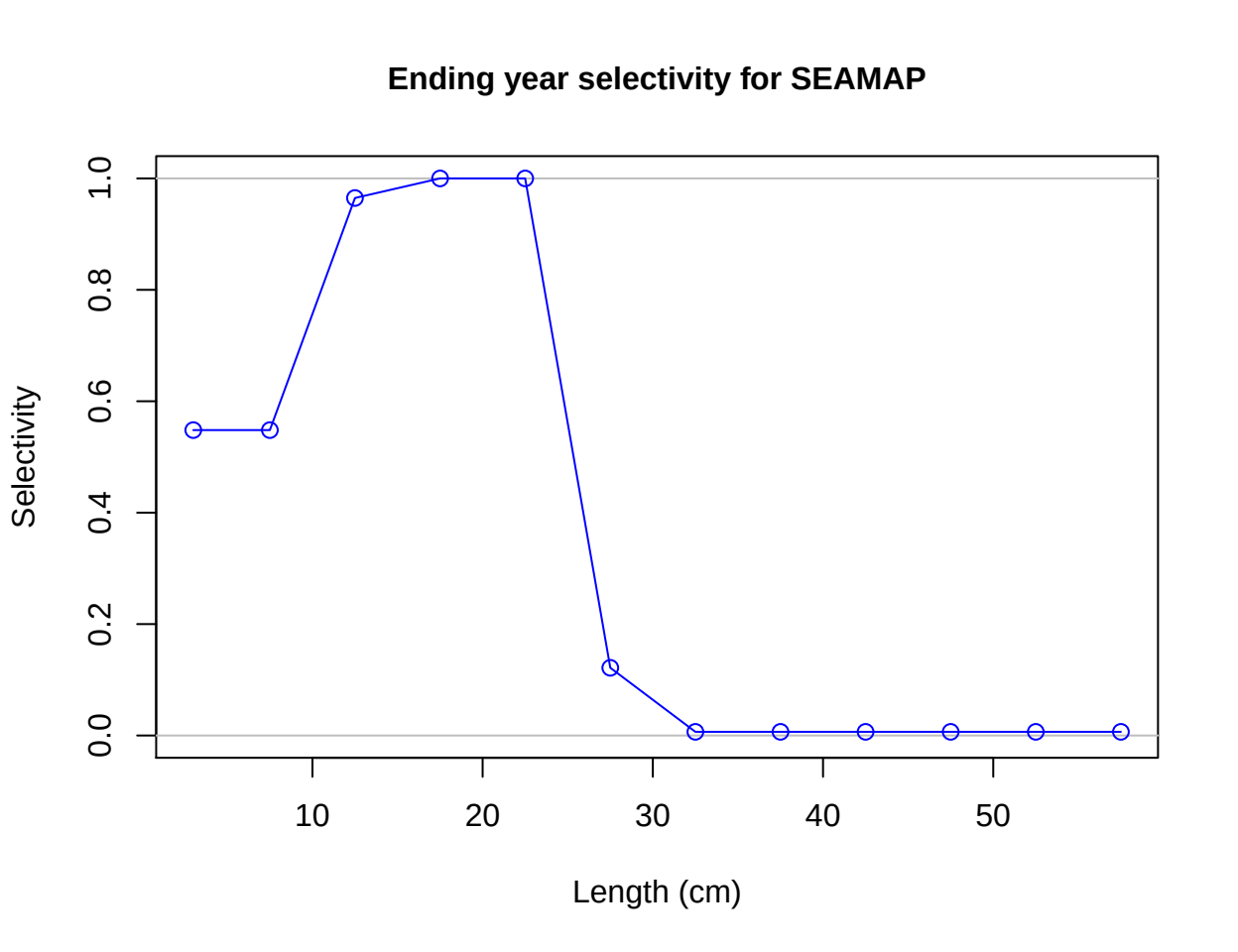

1.5e+07
1.0e+07
5.0e+06
0.0e+00
Spawning output
0
2
4
6
8
10
12
14
Age (yr)

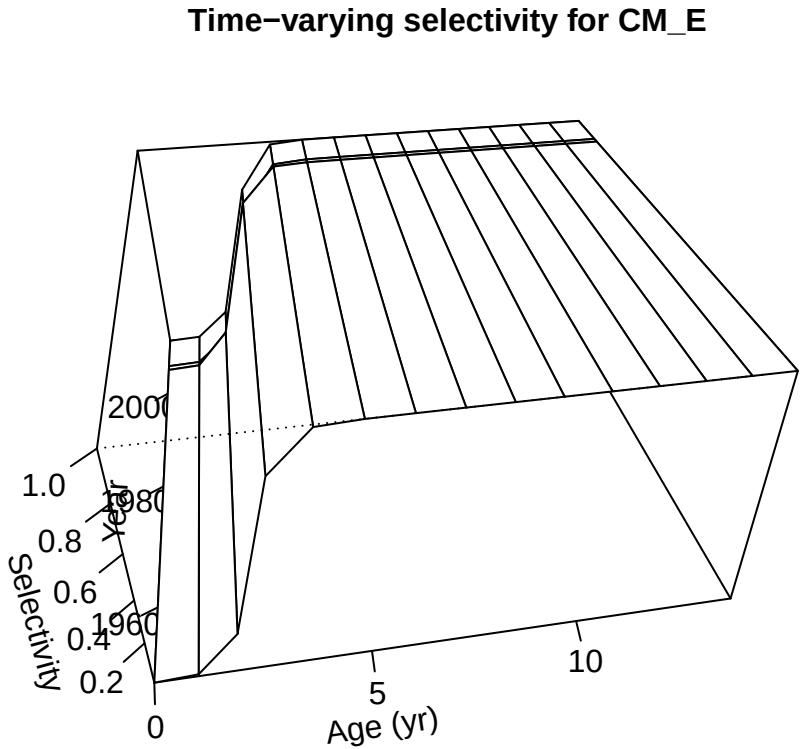

Length−based selectivity by fleet in 2014
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
10
20
30
40
50
Length (cm)
CM_E
CM_W
REC
SMP_BYC
HB_E
HB_W
CM_E_IFQ
CM_W_IFQ
LARVAL
VIDEO
SEAMAP

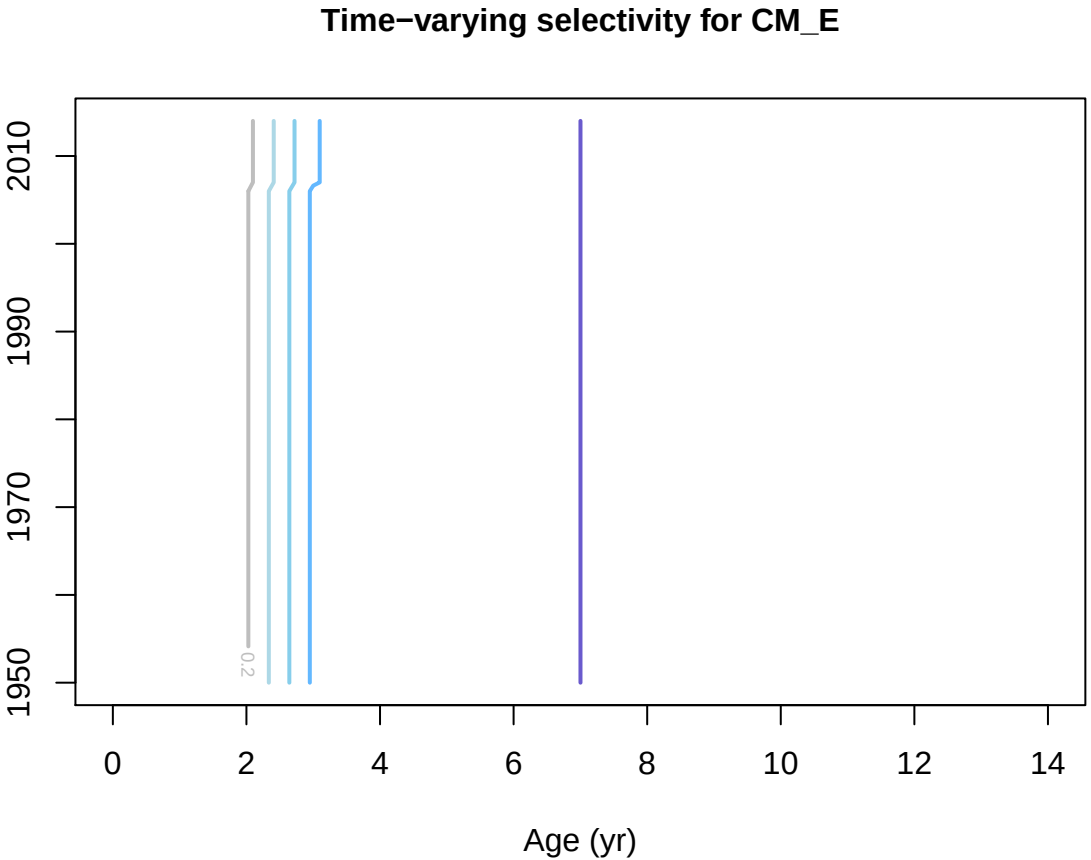

Age−based selectivity by fleet in 2014
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)
CM_E
CM_W
REC
SMP_BYC
HB_E
HB_W
CM_E_IFQ
CM_W_IFQ
LARVAL
VIDEO
SEAMAP

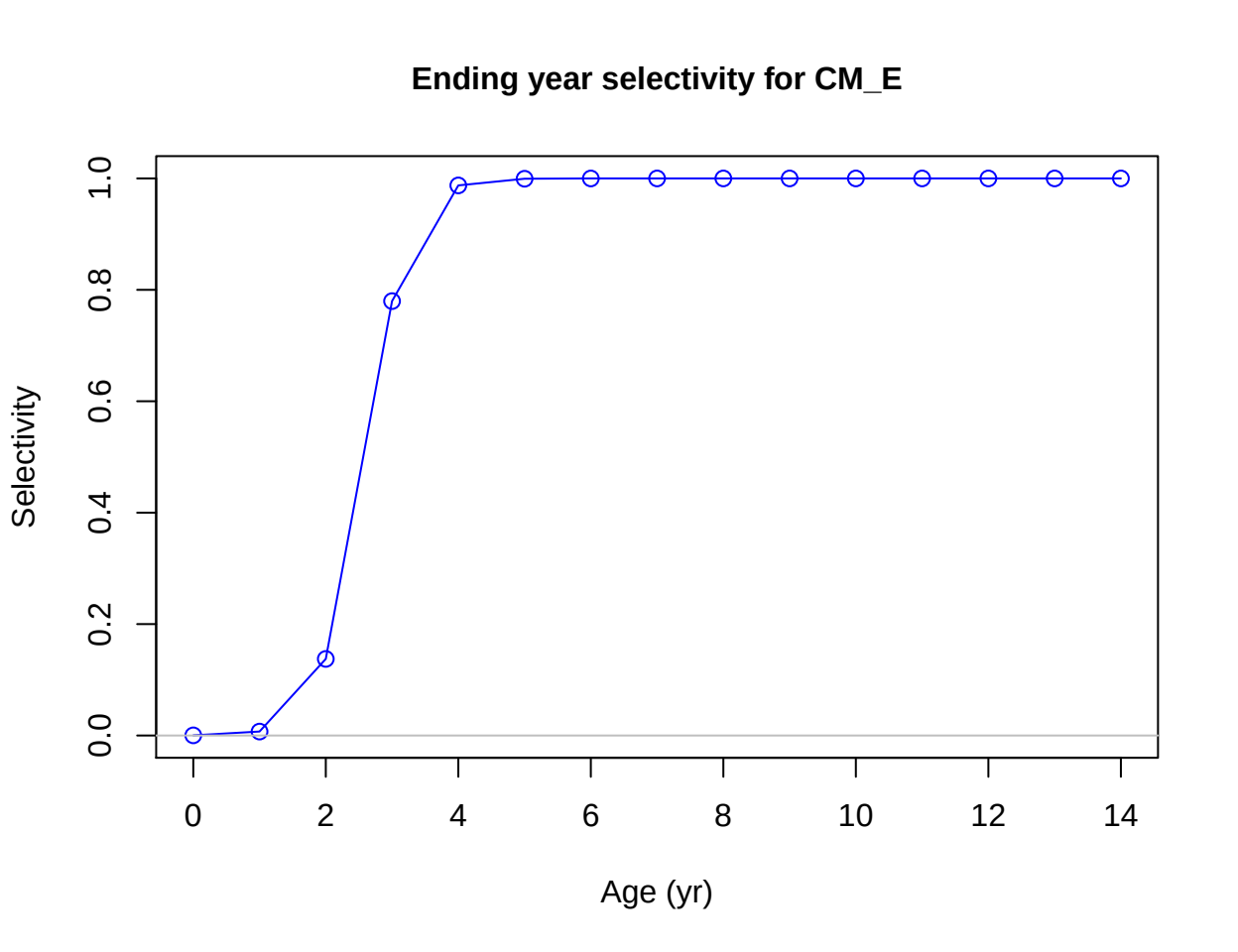

Derived age−based from length−based selectivity by fleet in 2014
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)
CM_E
CM_W
REC
SMP_BYC
HB_E
HB_W
CM_E_IFQ
CM_W_IFQ
LARVAL
VIDEO
SEAMAP

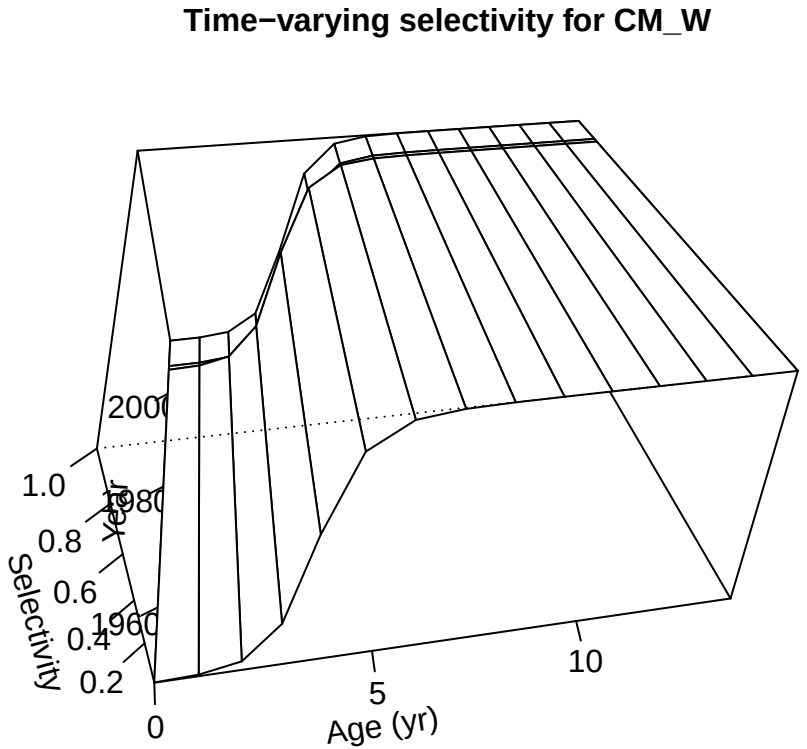

Ending year selectivity for VIDEO
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
10
20
30
40
50
Length (cm)

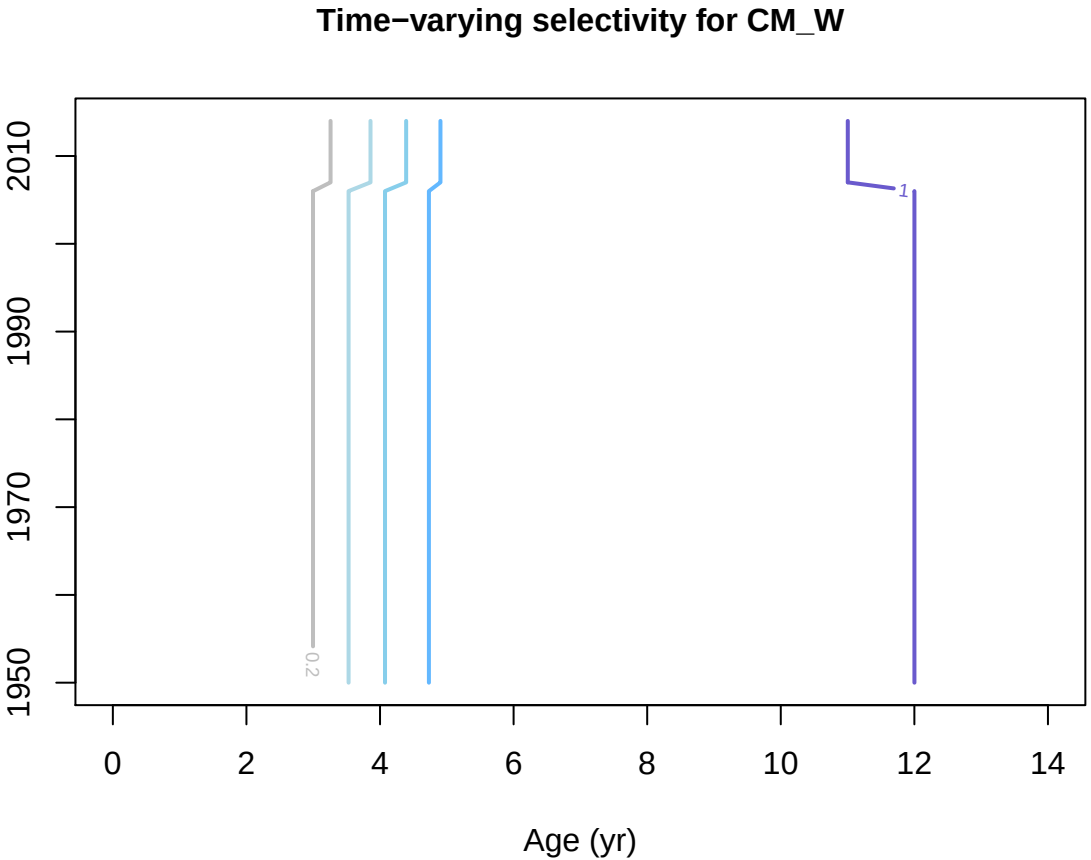

Ending year selectivity for SEAMAP
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
10
20
30
40
50
Length (cm)

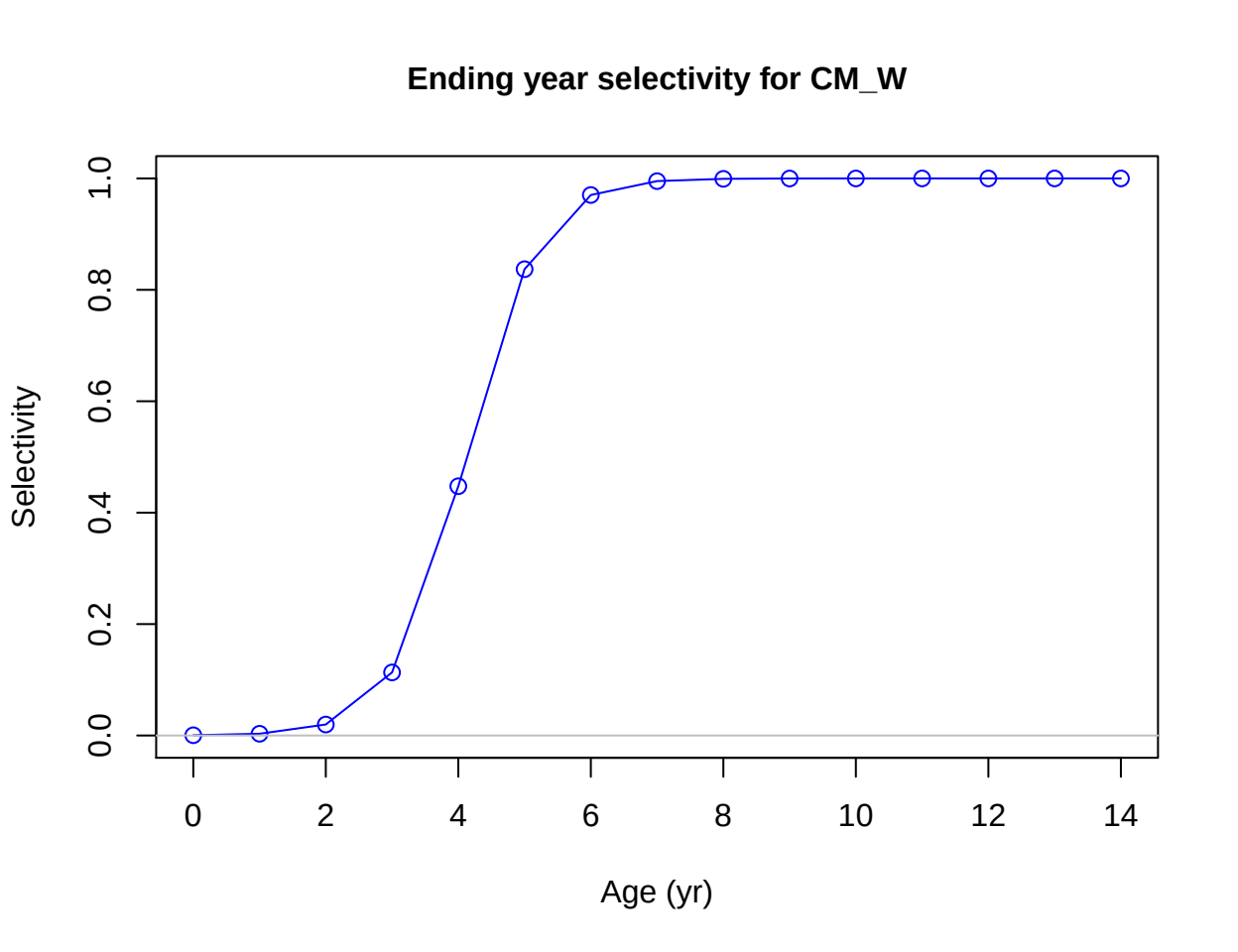

Time−varying selectivity for CM_E
Selectivity
1.0
0.8
0.6
0.4
0.2
Year
2000
1980
1960
0
5
10
Age (yr)

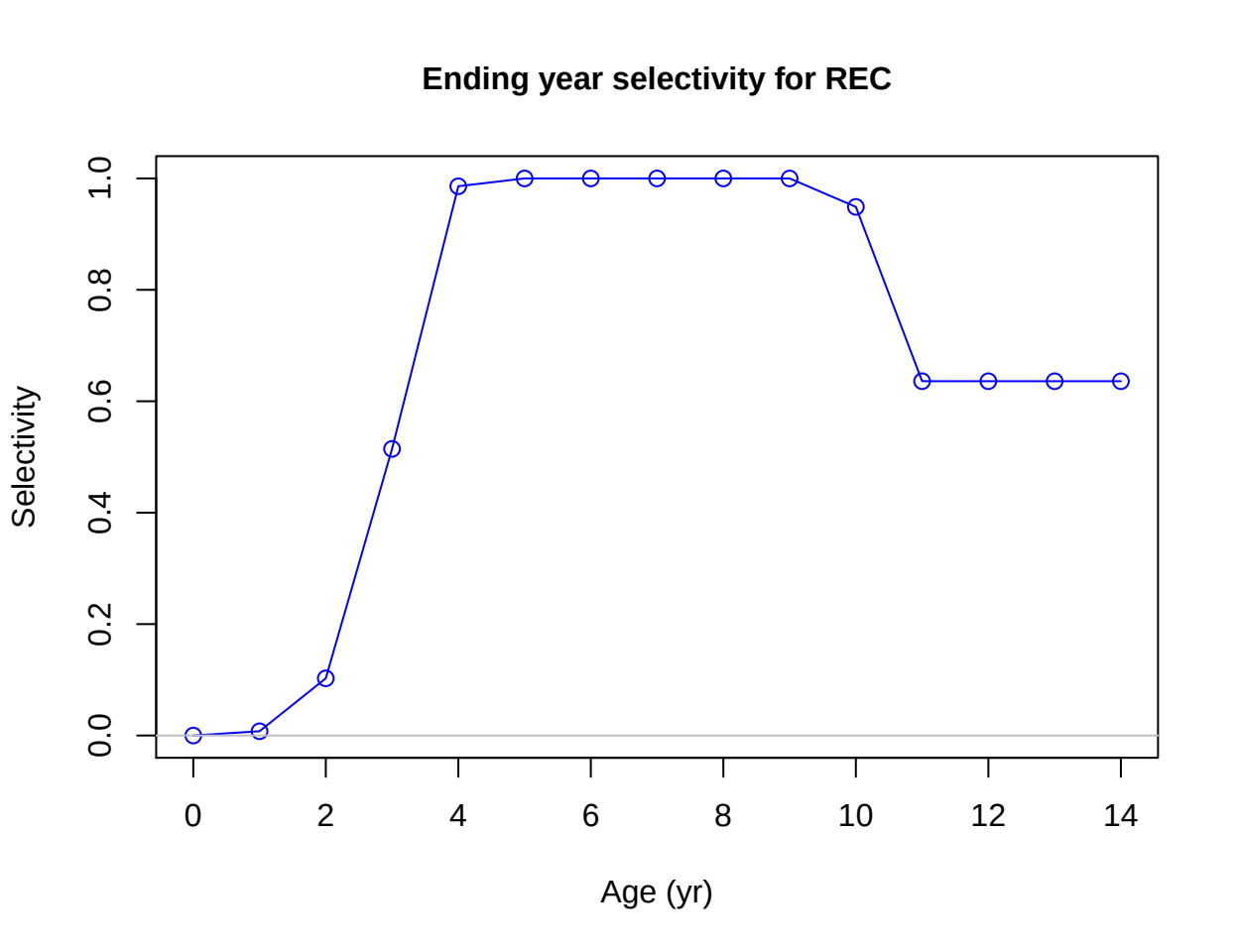

Time−varying selectivity for CM_E
2010
1990
1970
1950
0.2
0
2
4
6
8
10
12
14
Age (yr)

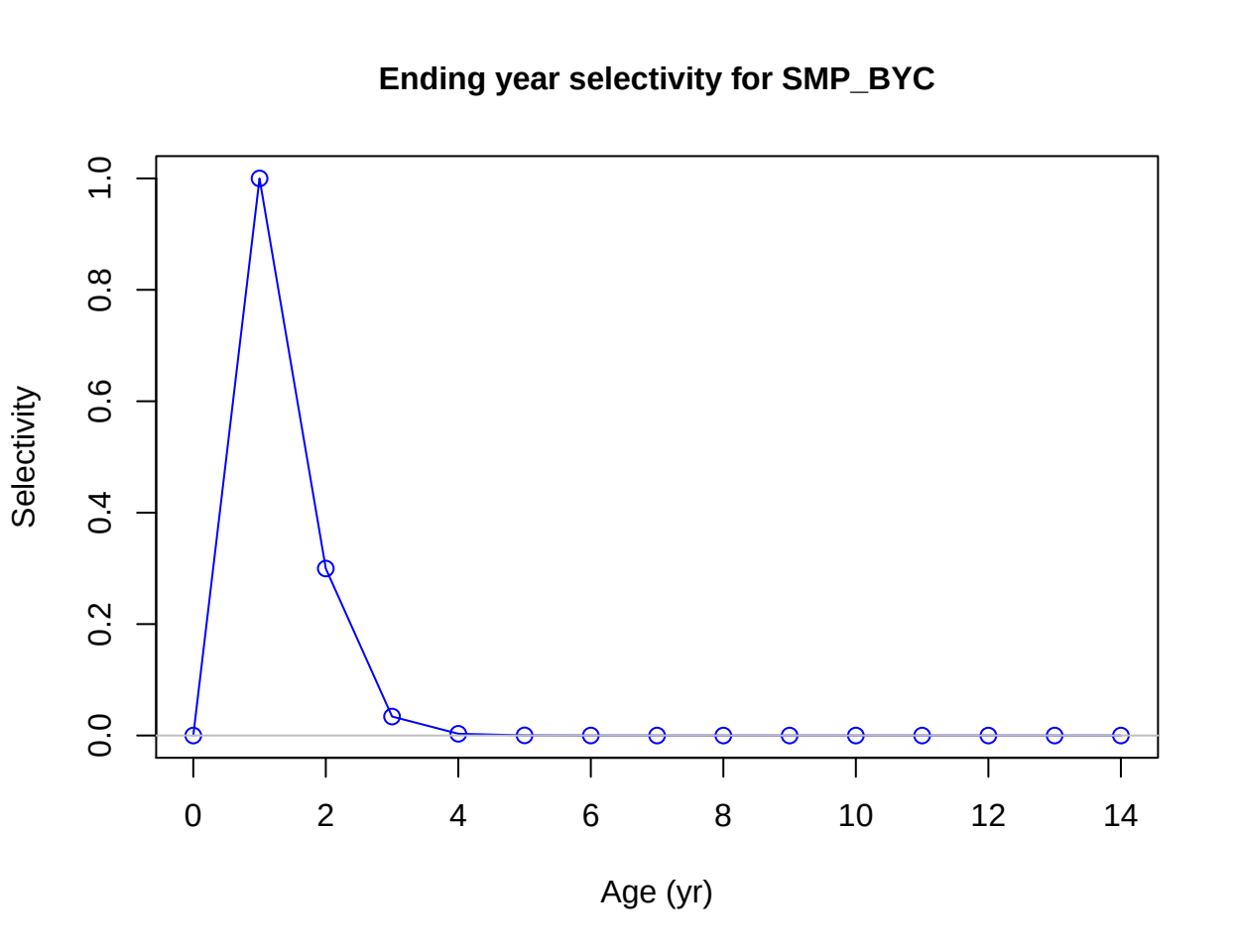

Ending year selectivity for CM_E
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

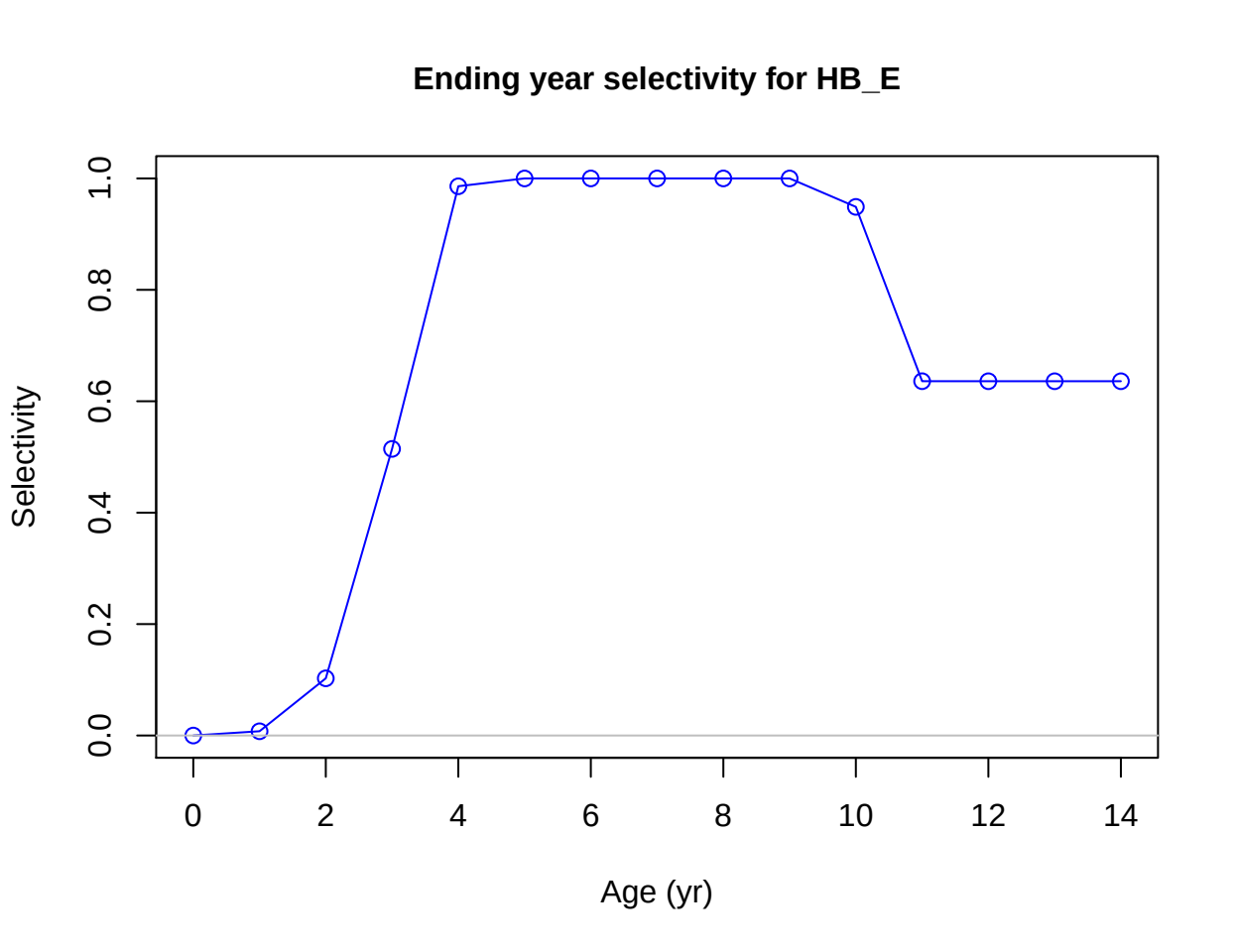

Time−varying selectivity for CM_W
Selectivity
1.0
0.8
0.6
0.4
0.2
Year
2000
1980
1960
0
5
10
Age (yr)

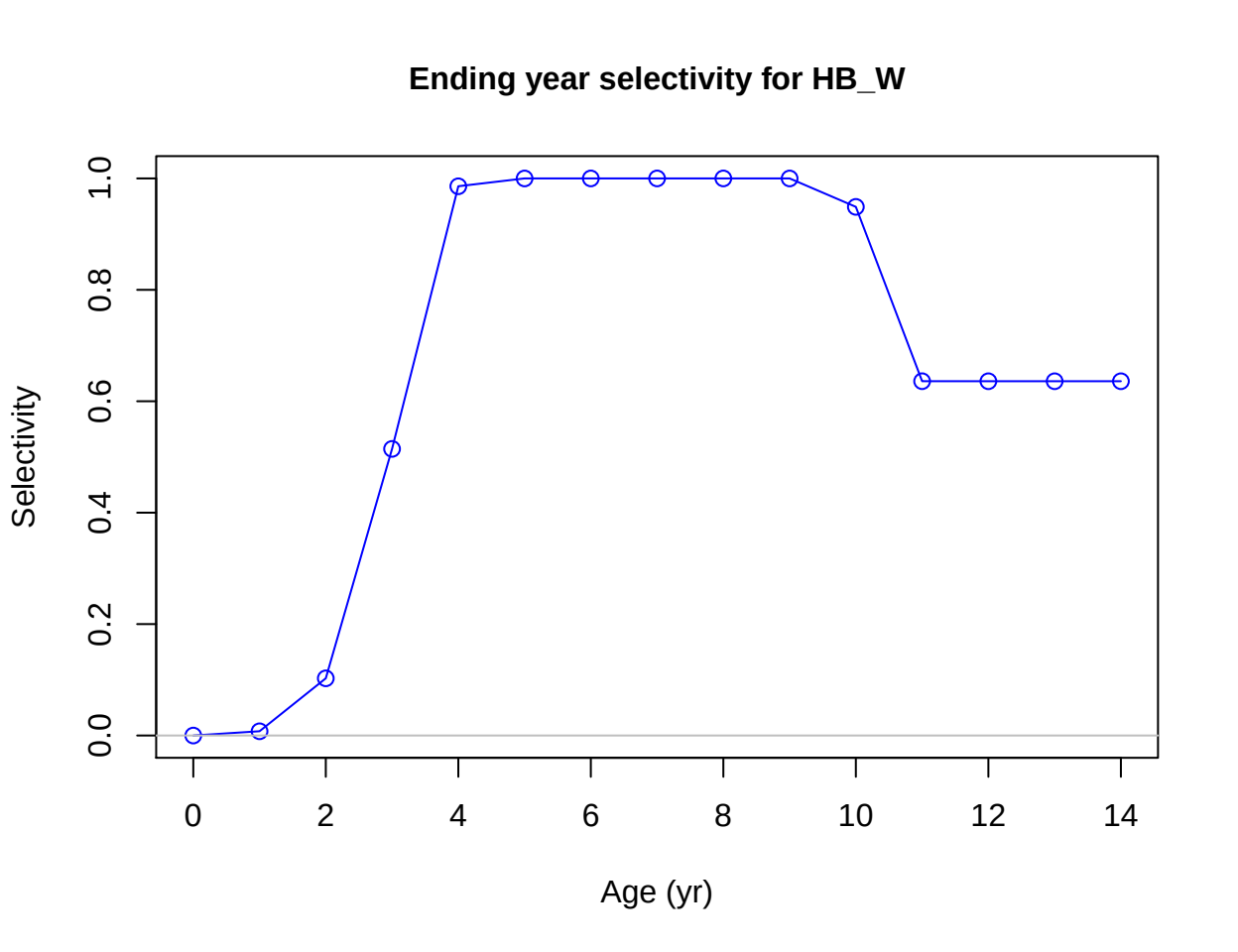

Time−varying selectivity for CM_W
2010
1990
1970
1950
0.2
1
0
2
4
6
8
10
12
14
Age (yr)

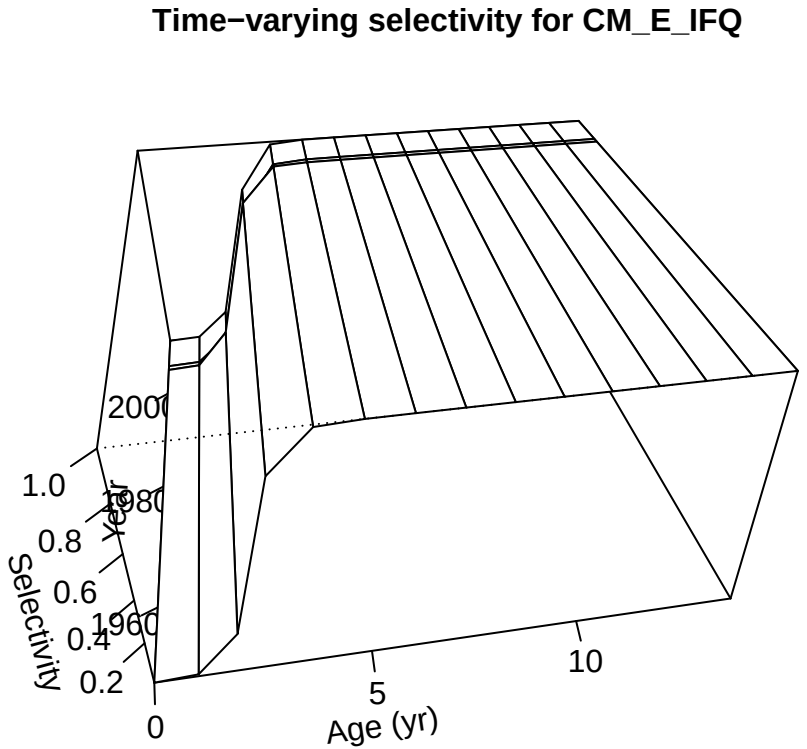

Ending year selectivity for CM_W
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

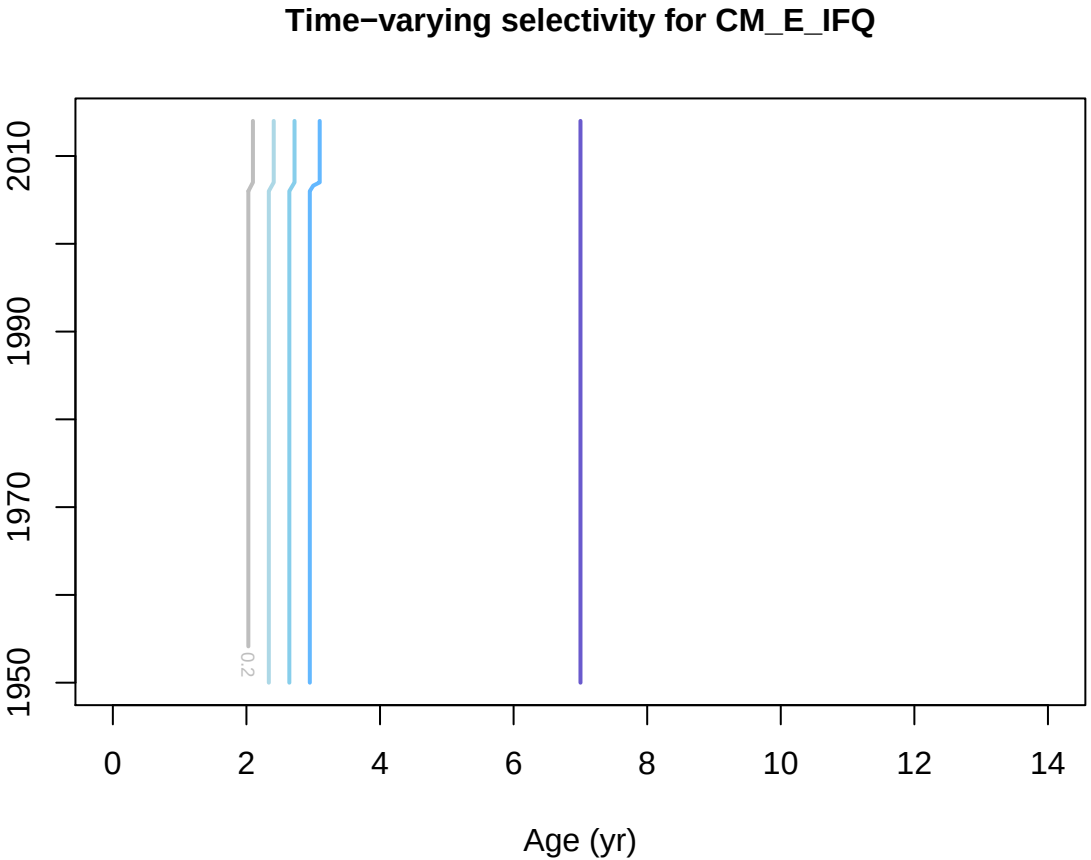

Ending year selectivity for REC
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

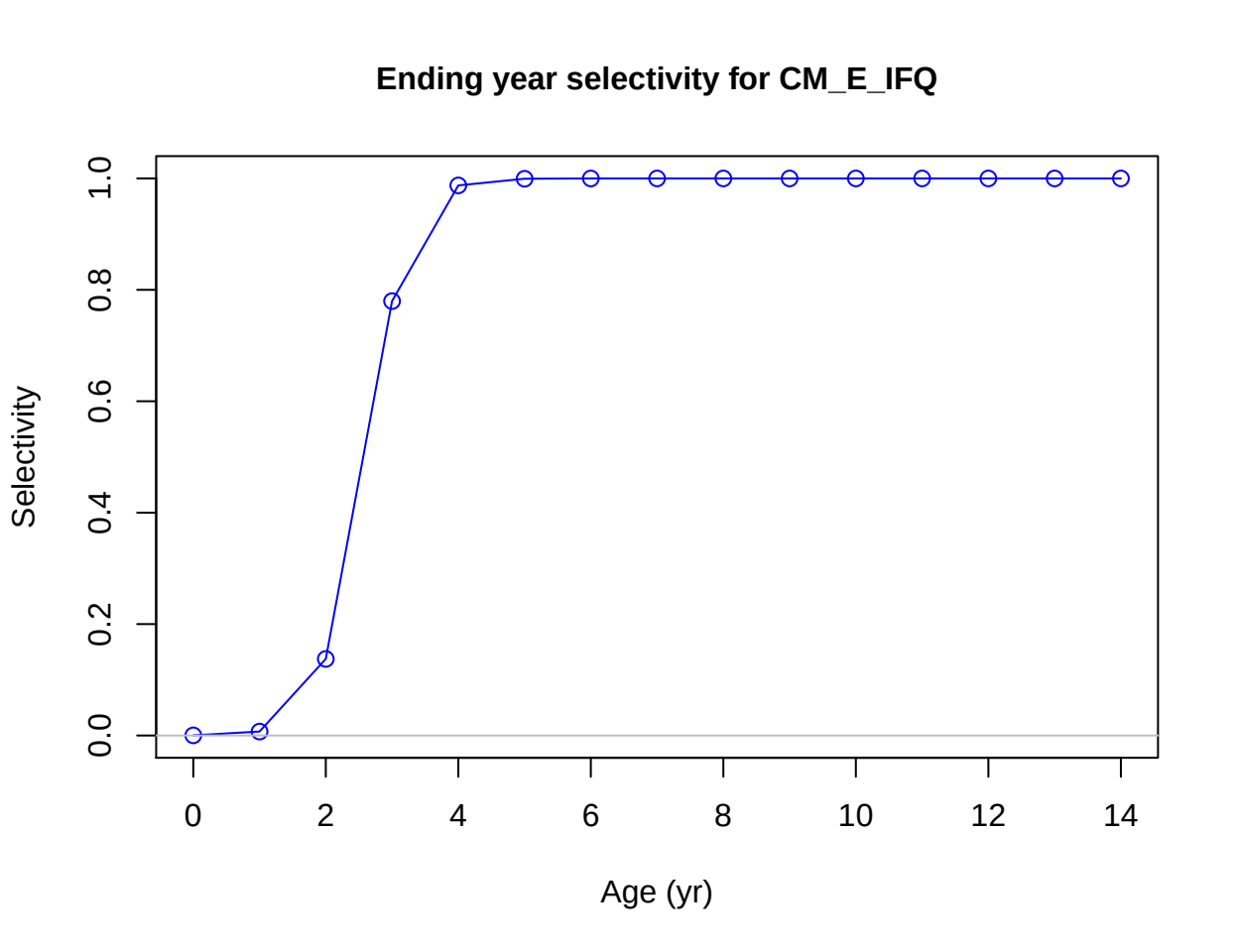

Ending year selectivity for SMP_BYC
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

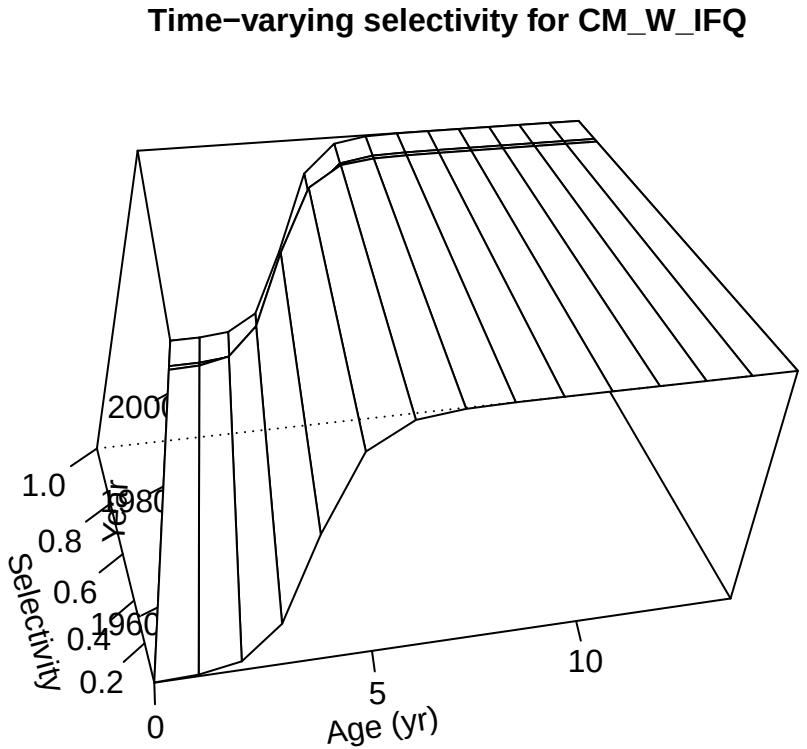

Ending year selectivity for HB_E
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

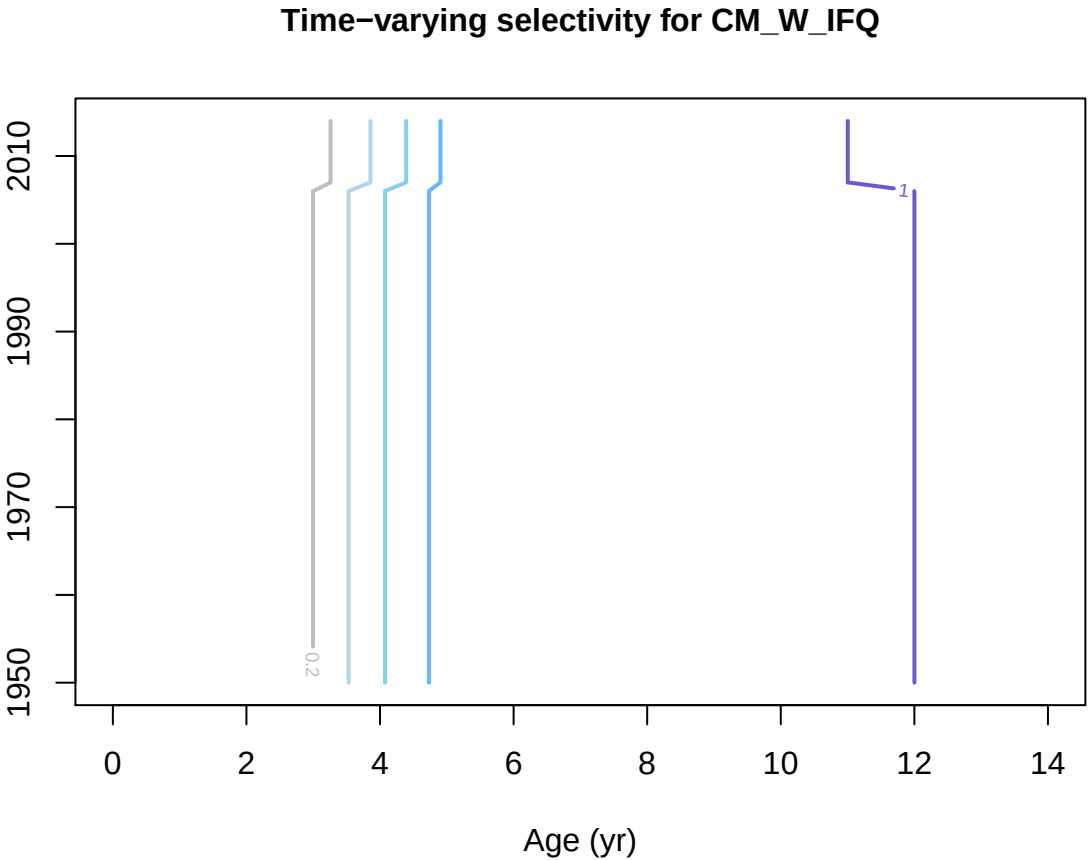

Ending year selectivity for HB_W
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

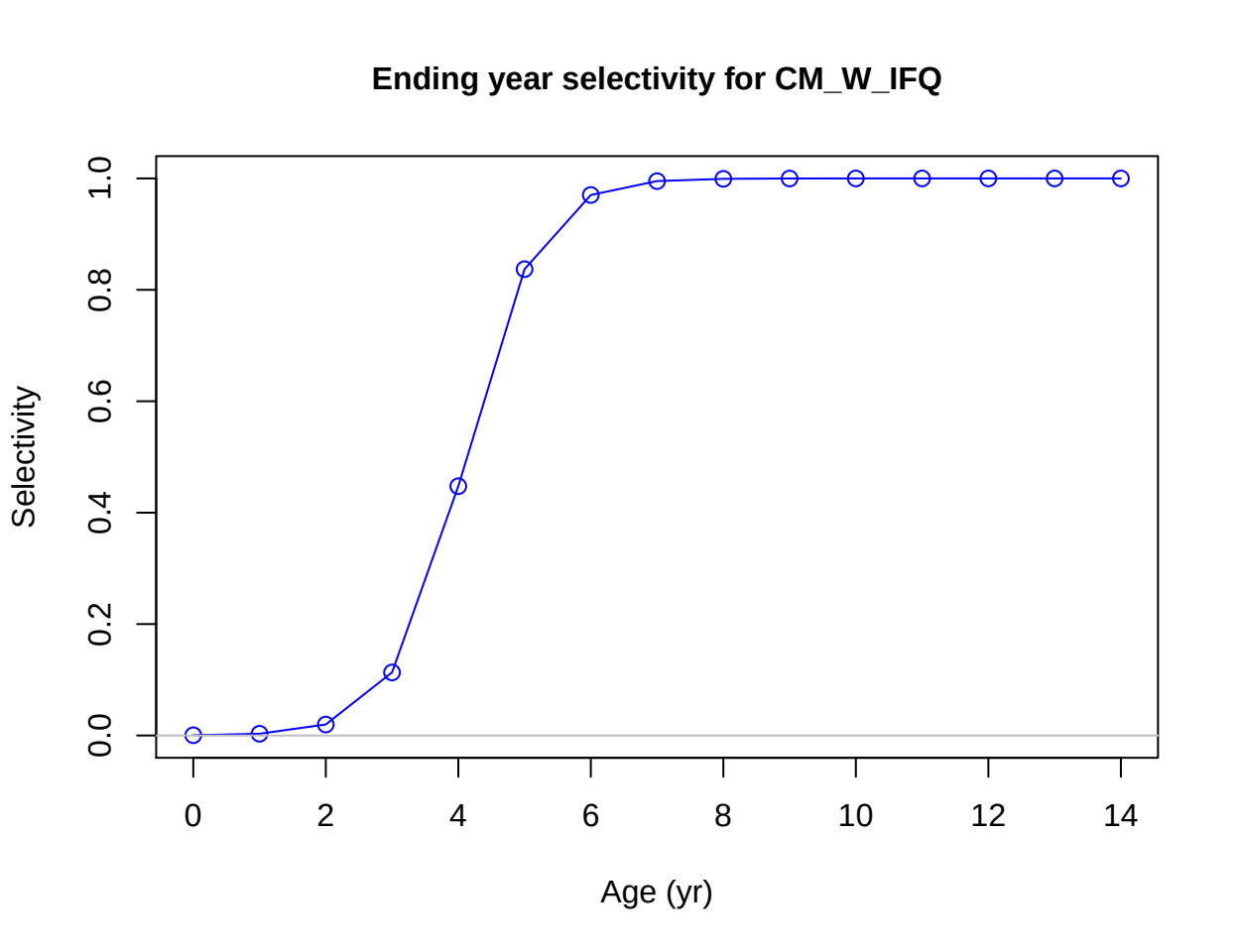

Time−varying selectivity for CM_E_IFQ
Selectivity
1.0
0.8
0.6
0.4
0.2
Year
2000
1980
1960
0
5
10
Age (yr)

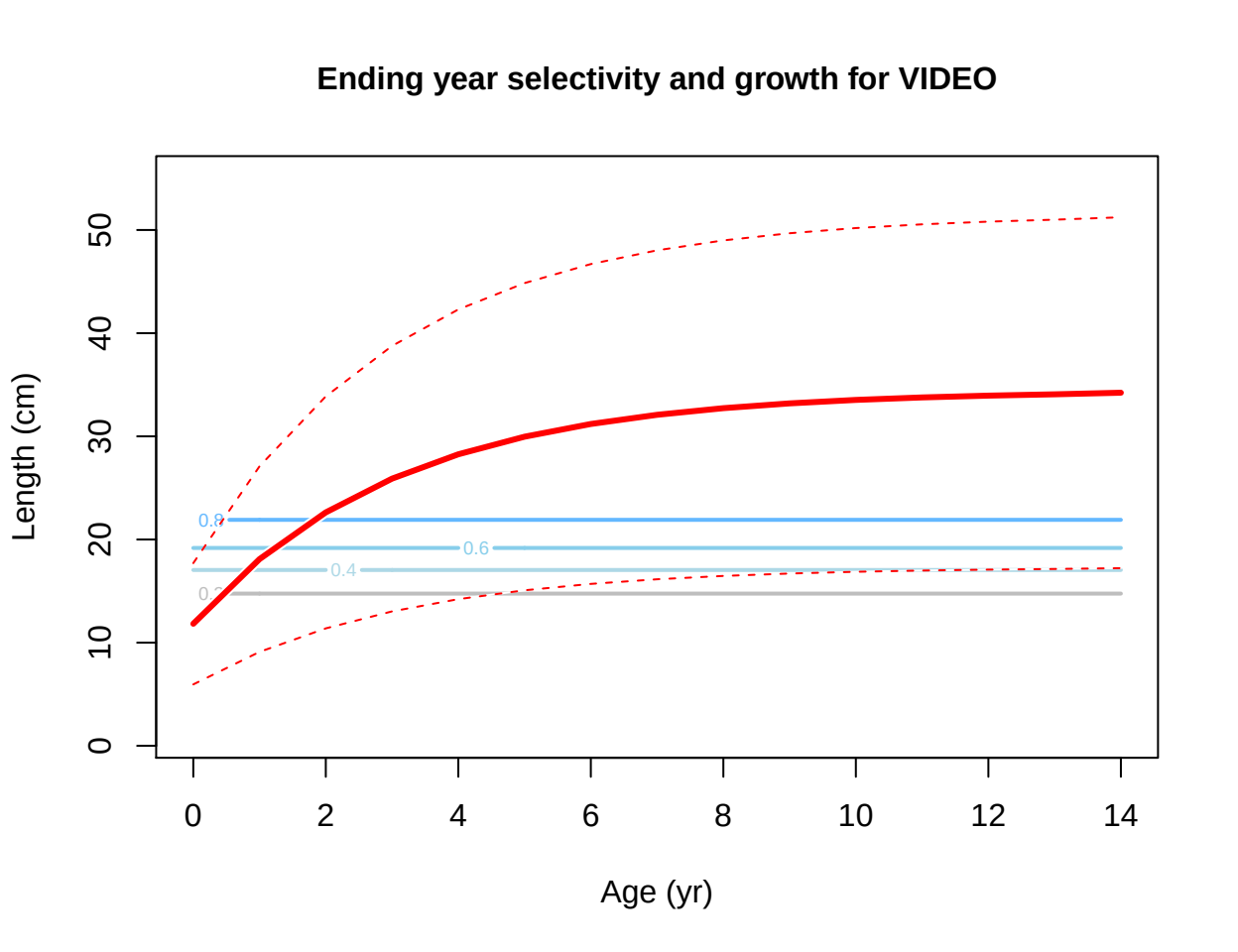

Time−varying selectivity for CM_E_IFQ
2010
1990
1970
1950
0.2
0
2
4
6
8
10
12
14
Age (yr)

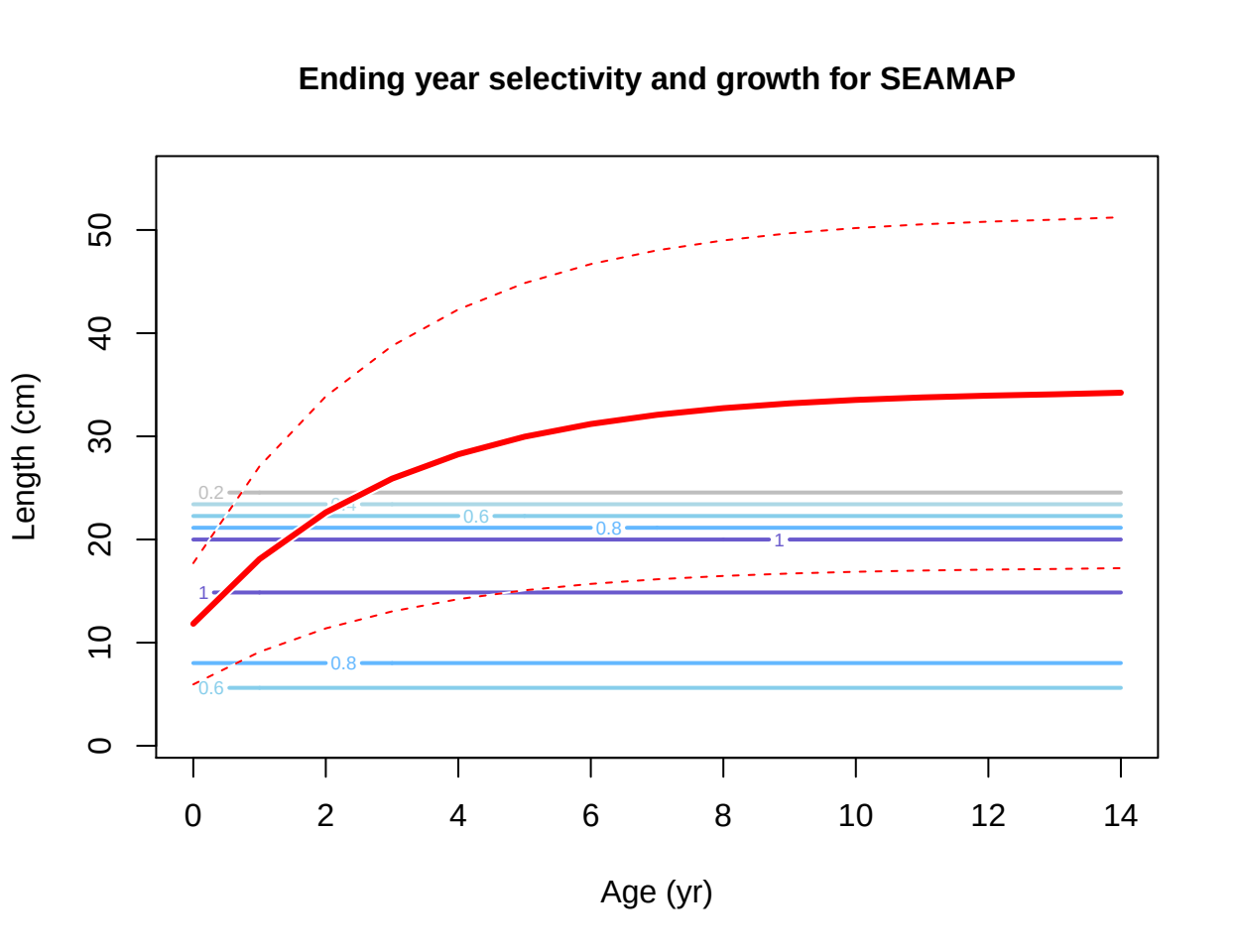

Ending year selectivity for CM_E_IFQ
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

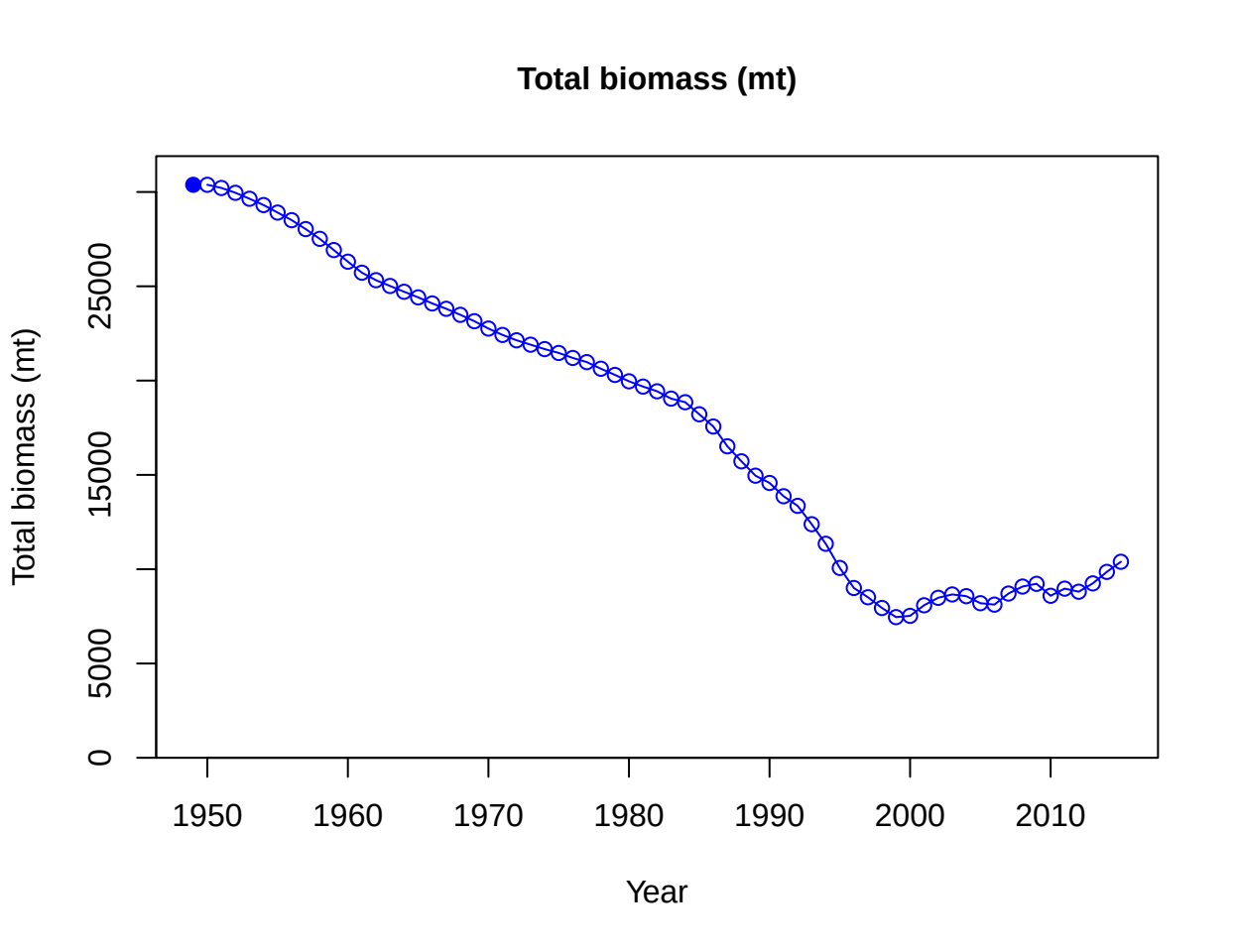

Time−varying selectivity for CM_W_IFQ
Selectivity
1.0
0.8
0.6
0.4
0.2
Year
2000
1980
1960
0
5
10
Age (yr)

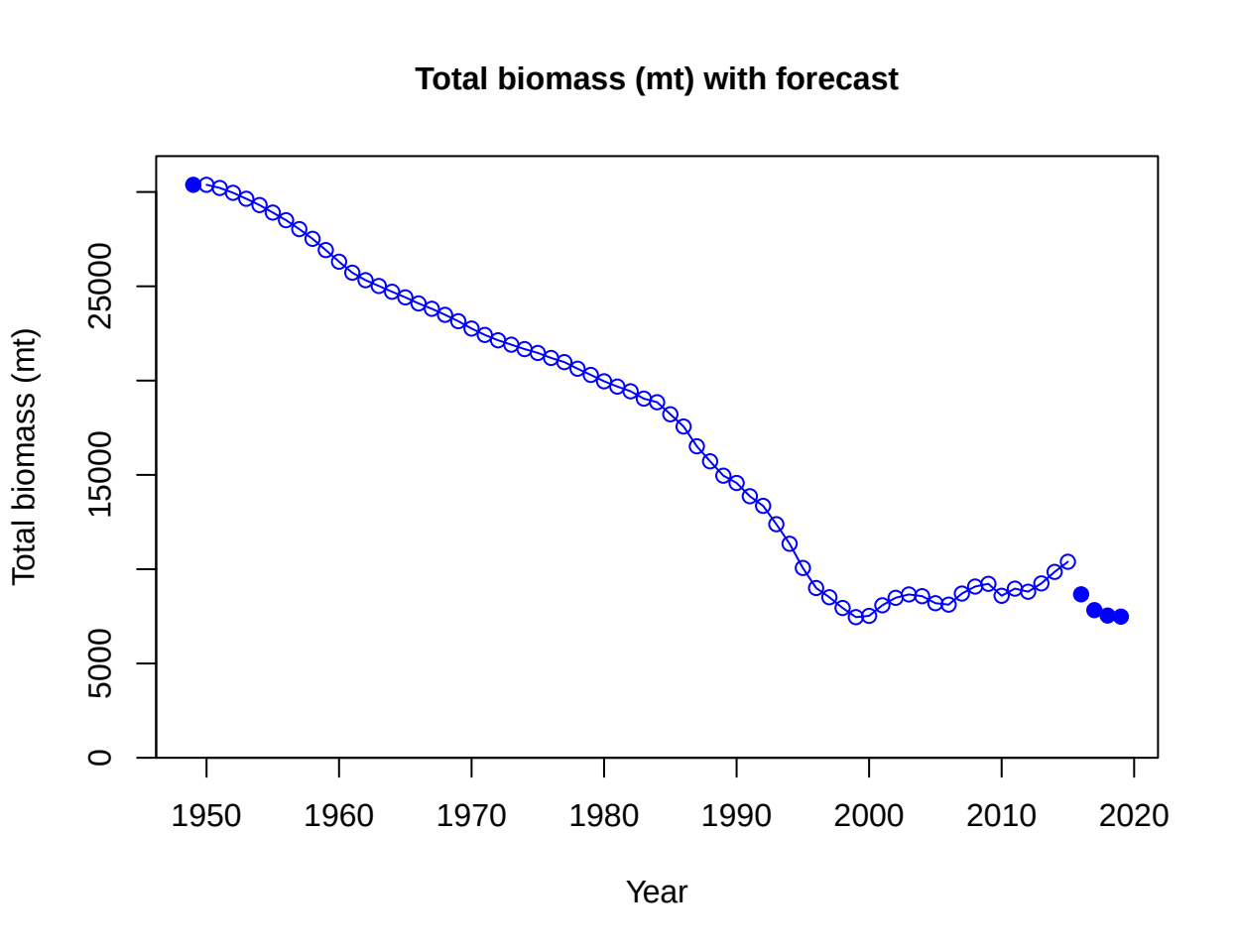

Time−varying selectivity for CM_W_IFQ
2010
1990
1970
1950
0.2
1
0
2
4
6
8
10
12
14
Age (yr)

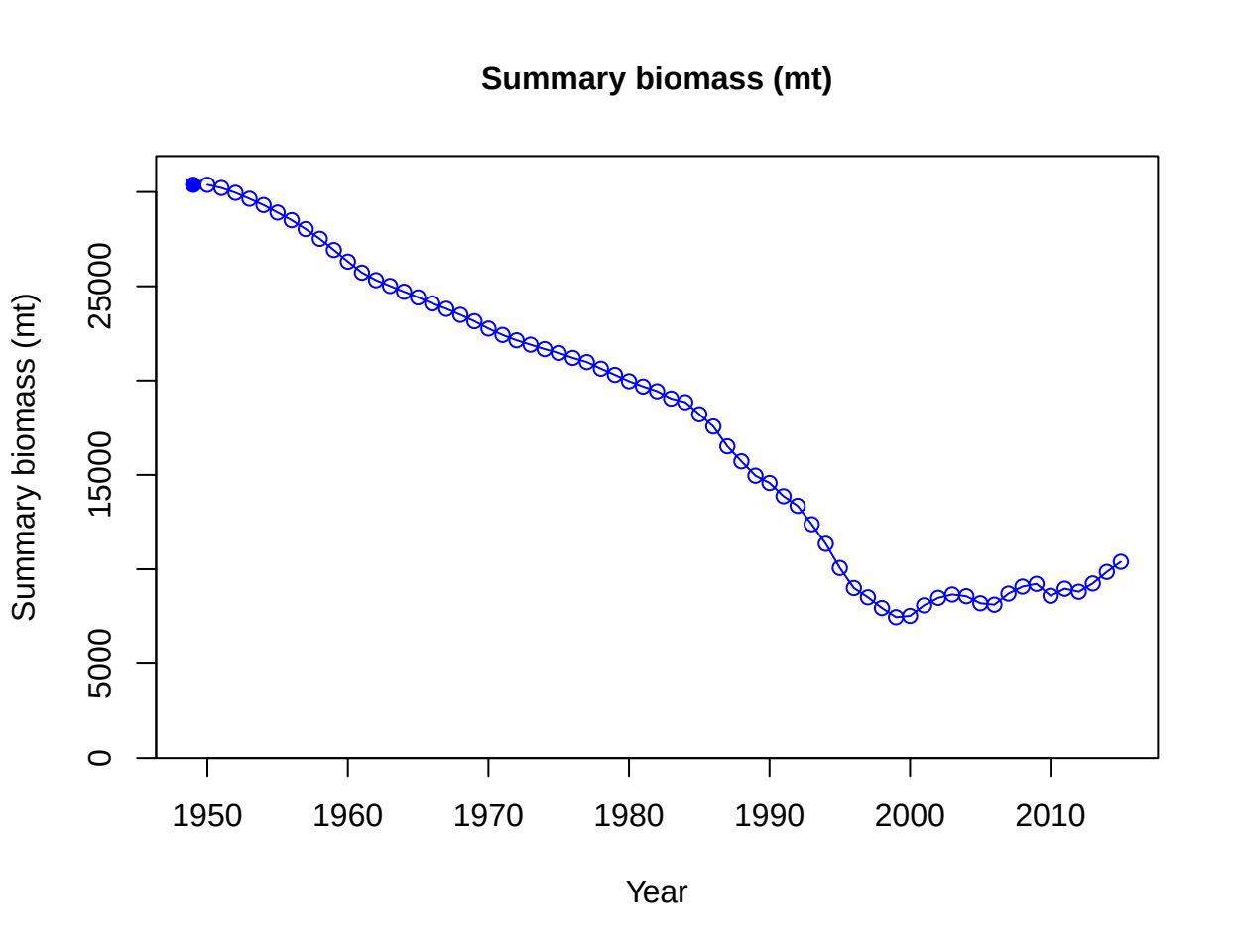

Ending year selectivity for CM_W_IFQ
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
Age (yr)

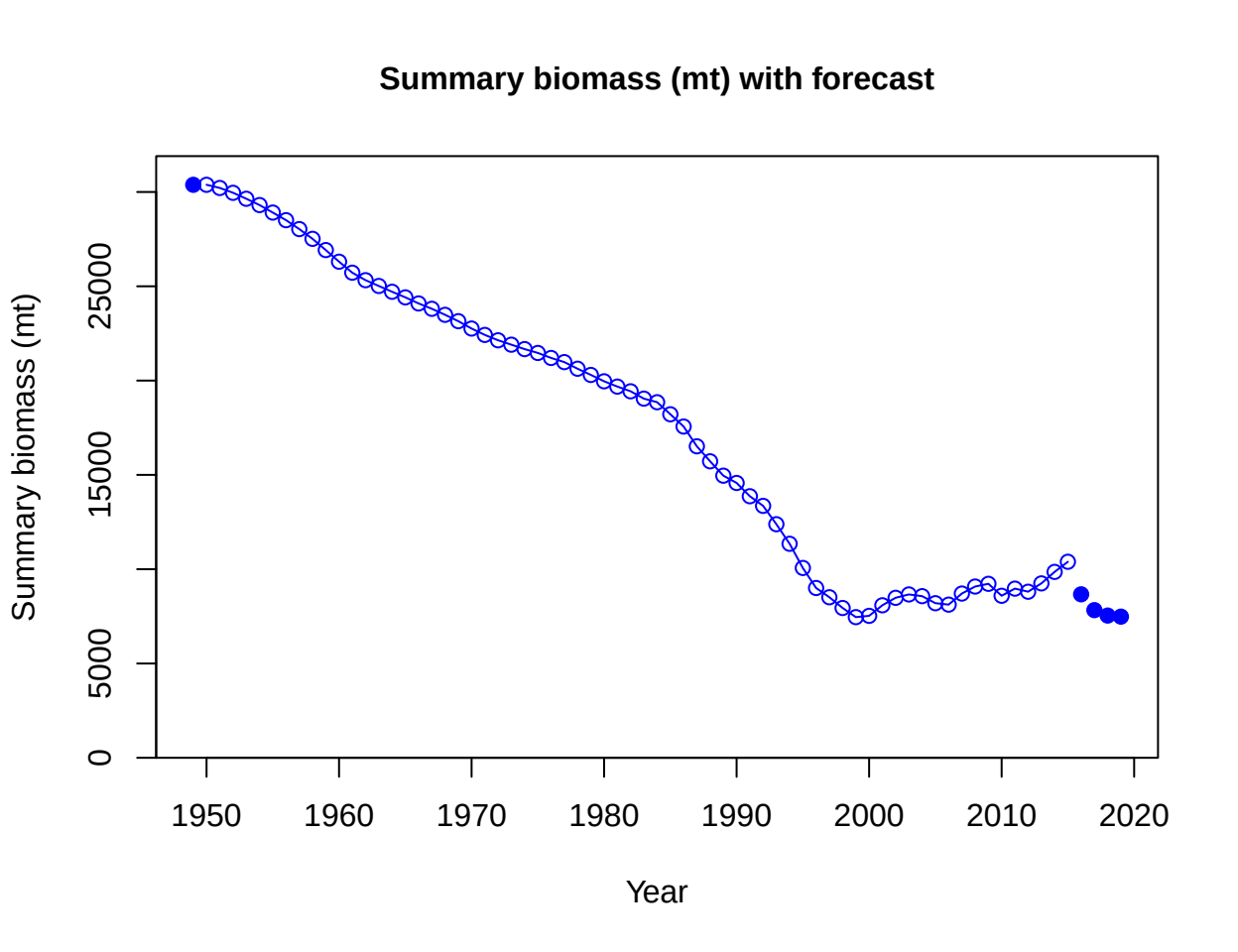

Ending year selectivity and growth for VIDEO
Length (cm)
0
10
20
30
40
50
0
2
4
6
8
10
12
14
Age (yr)
0.8
0.6
0.4

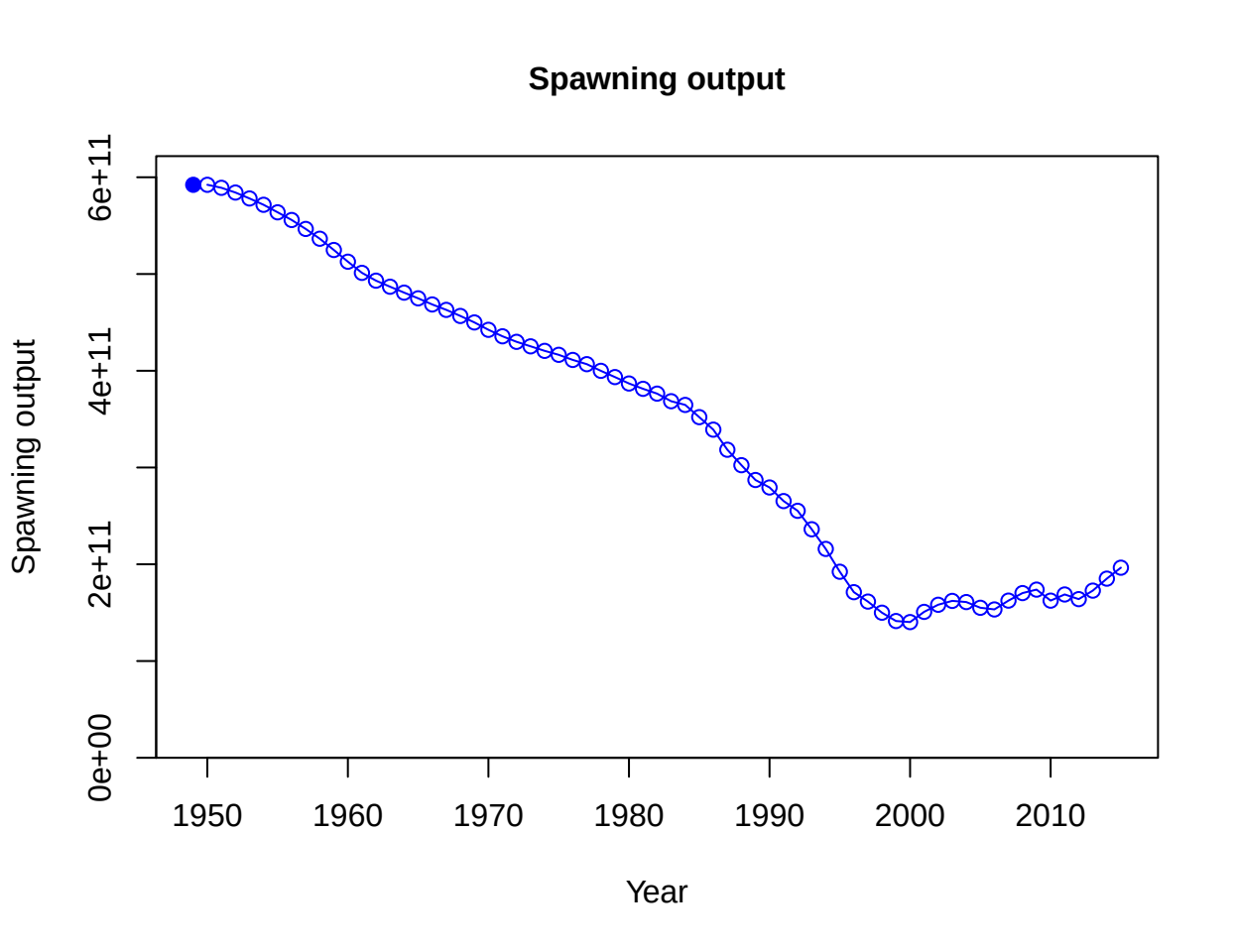

Ending year selectivity and growth for SEAMAP
Length (cm)
0
10
20
30
40
50
0
2
4
6
8
10
12
14
Age (yr)
0.2
0.4
0.6
0.8
1
1
0.8
0.6

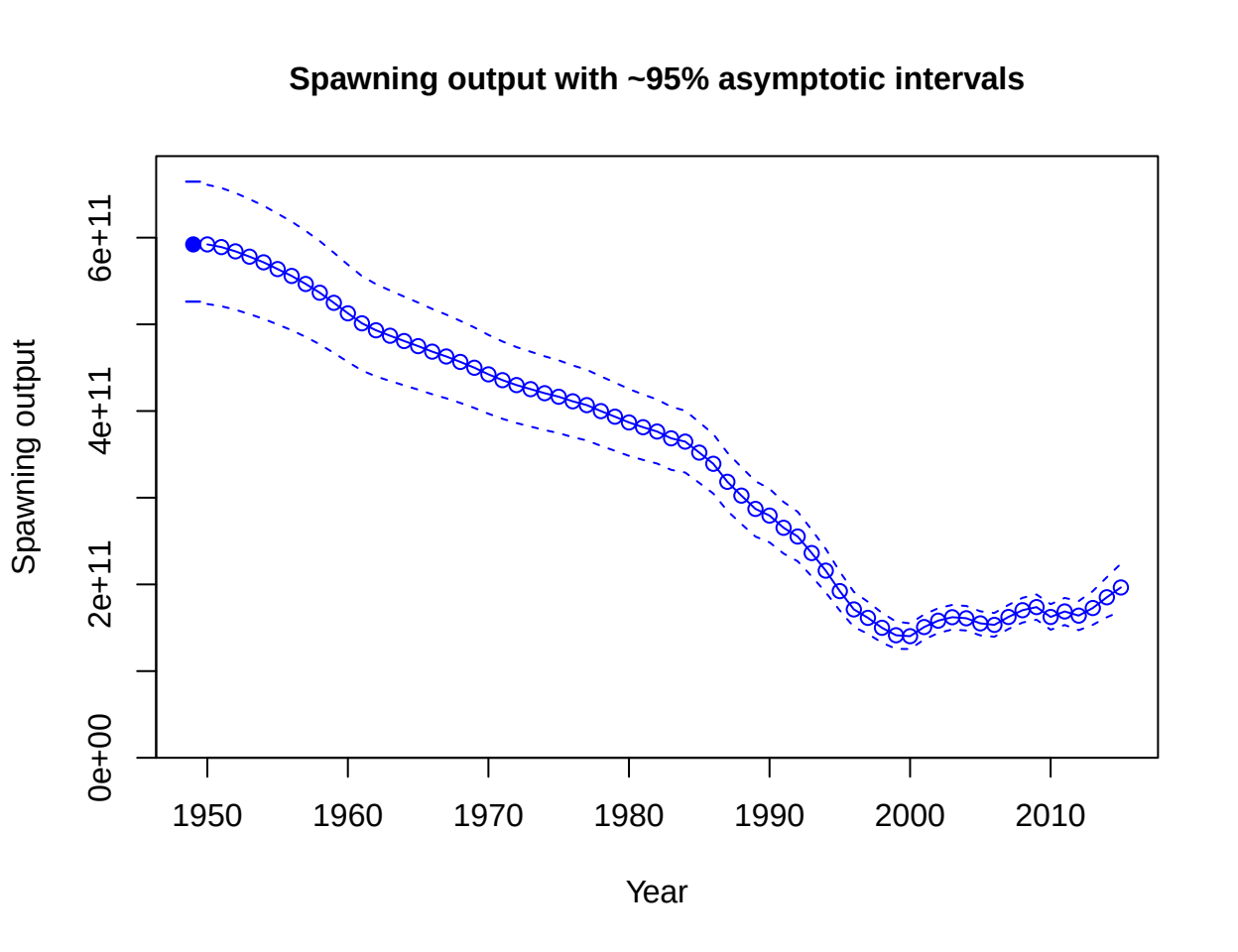

Total biomass (mt)
Total biomass (mt)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
Year

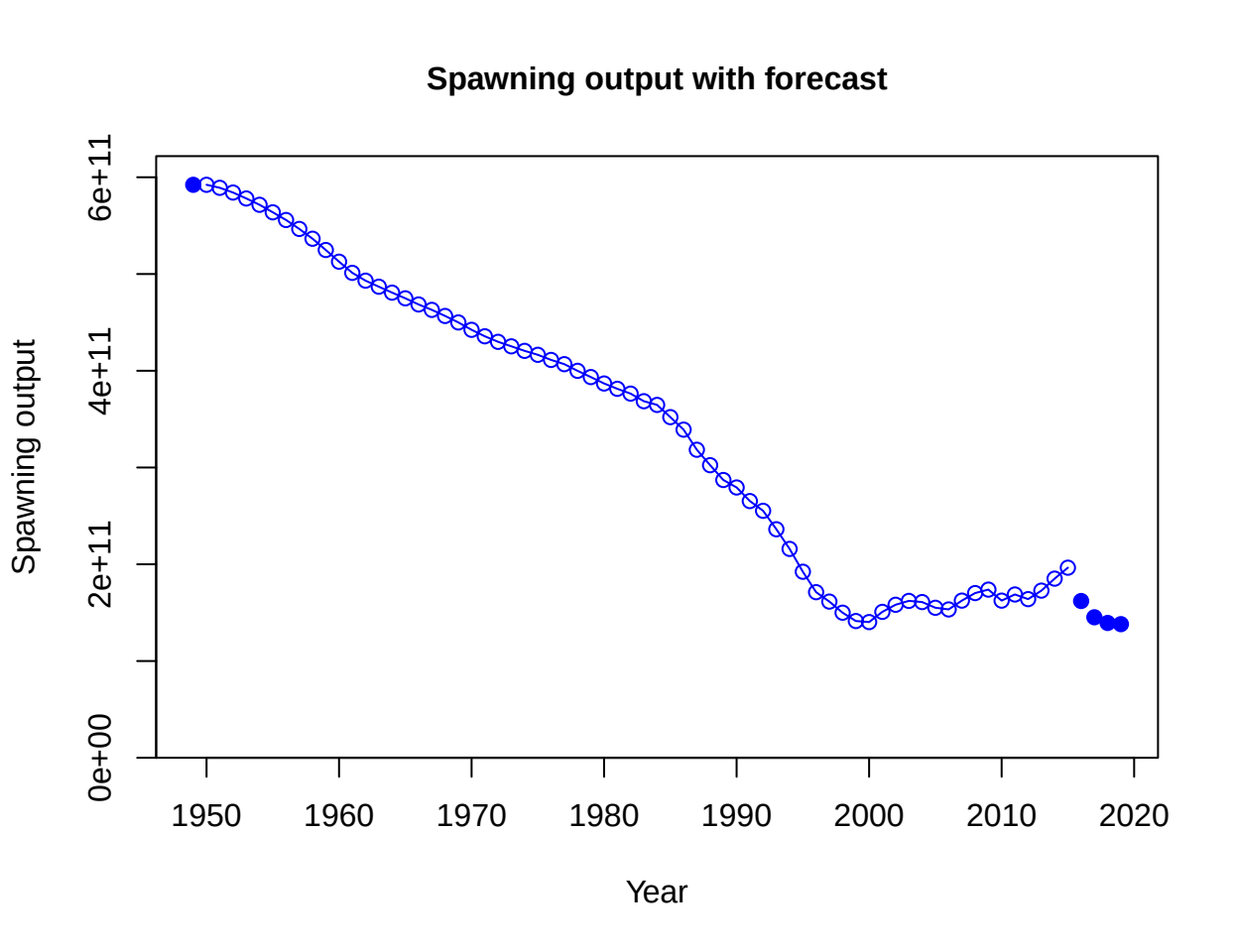

Total biomass (mt) with forecast
Total biomass (mt)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
2020
Year

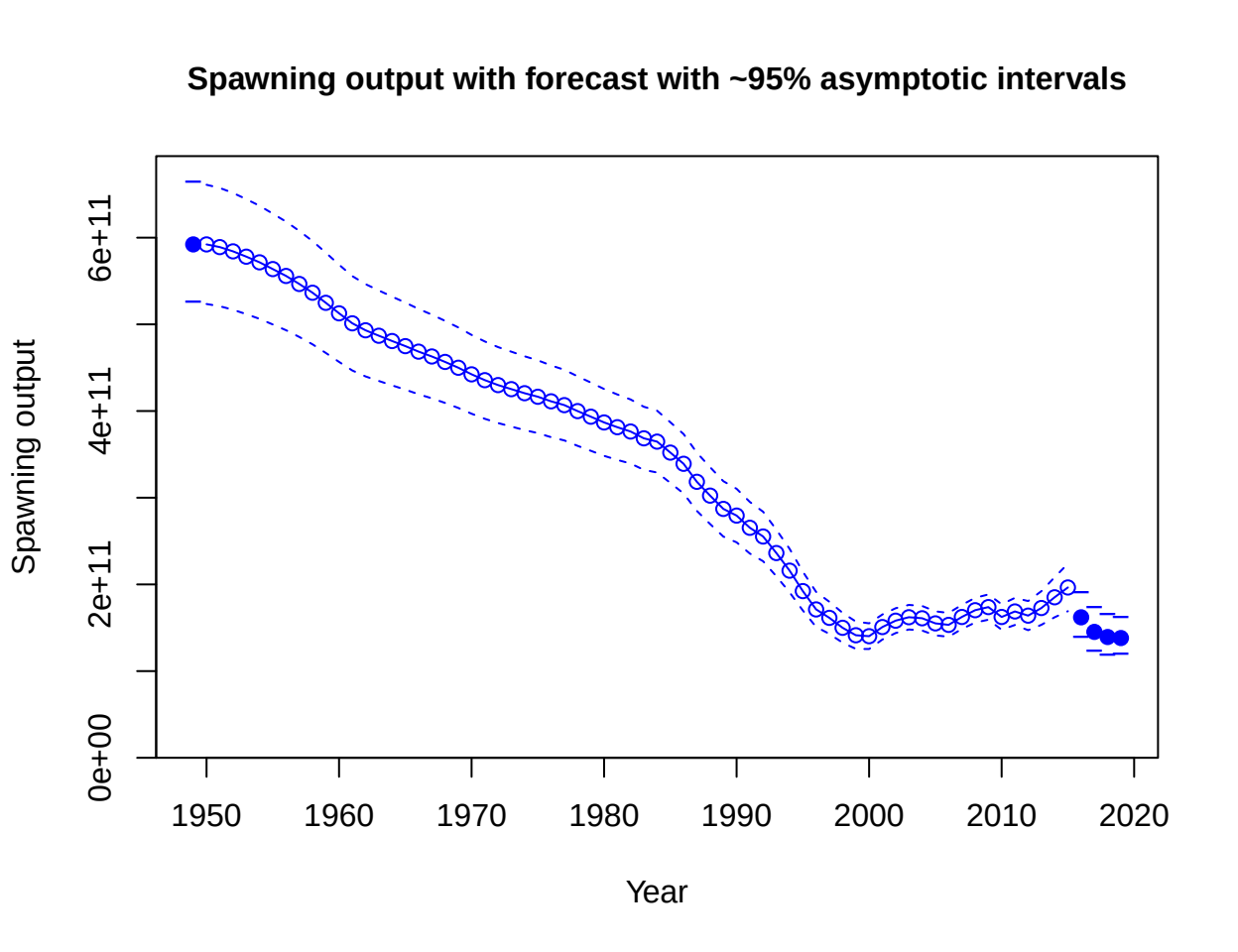

Summary biomass (mt)
Summary biomass (mt)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
Year

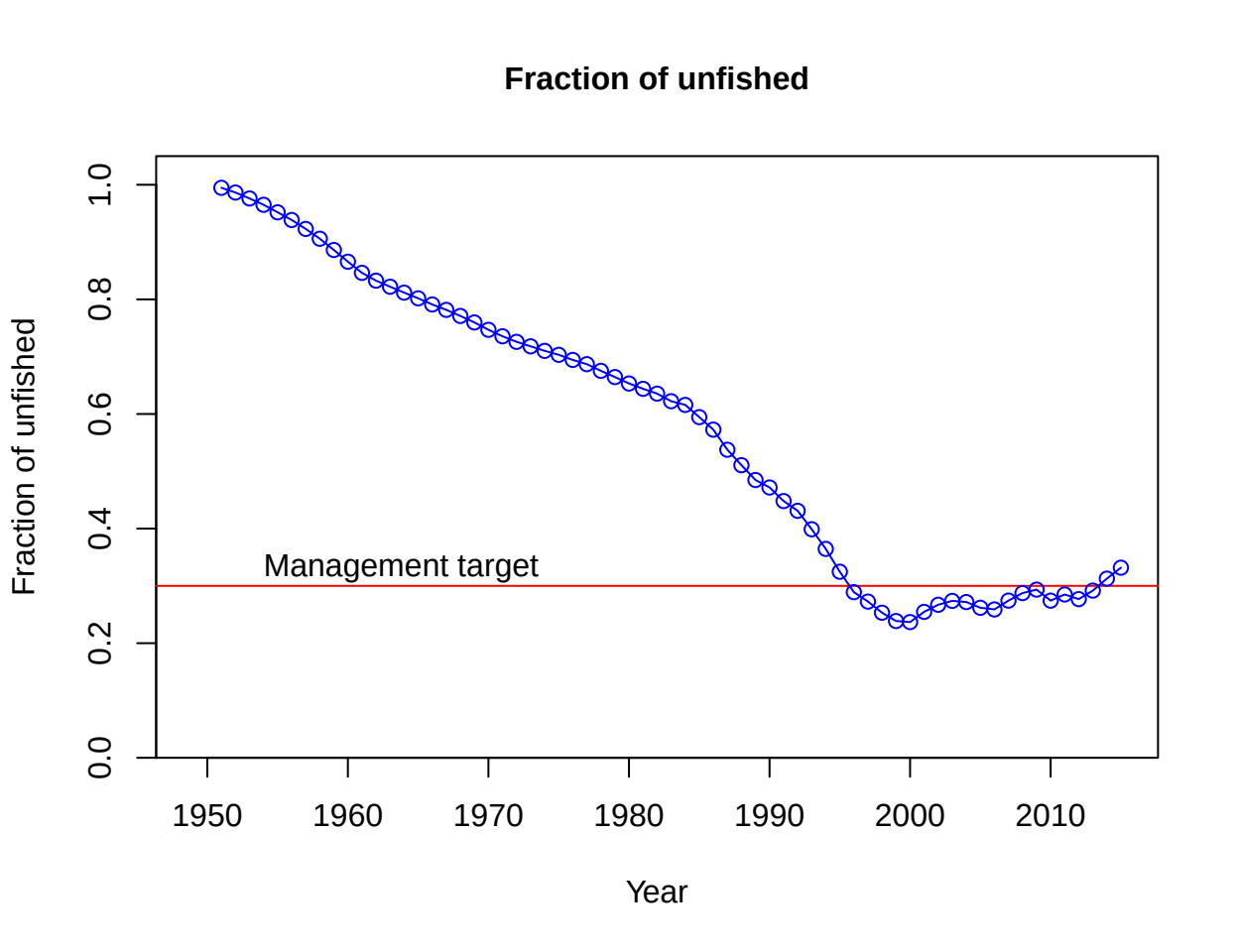

Summary biomass (mt) with forecast
Summary biomass (mt)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
2020
Year

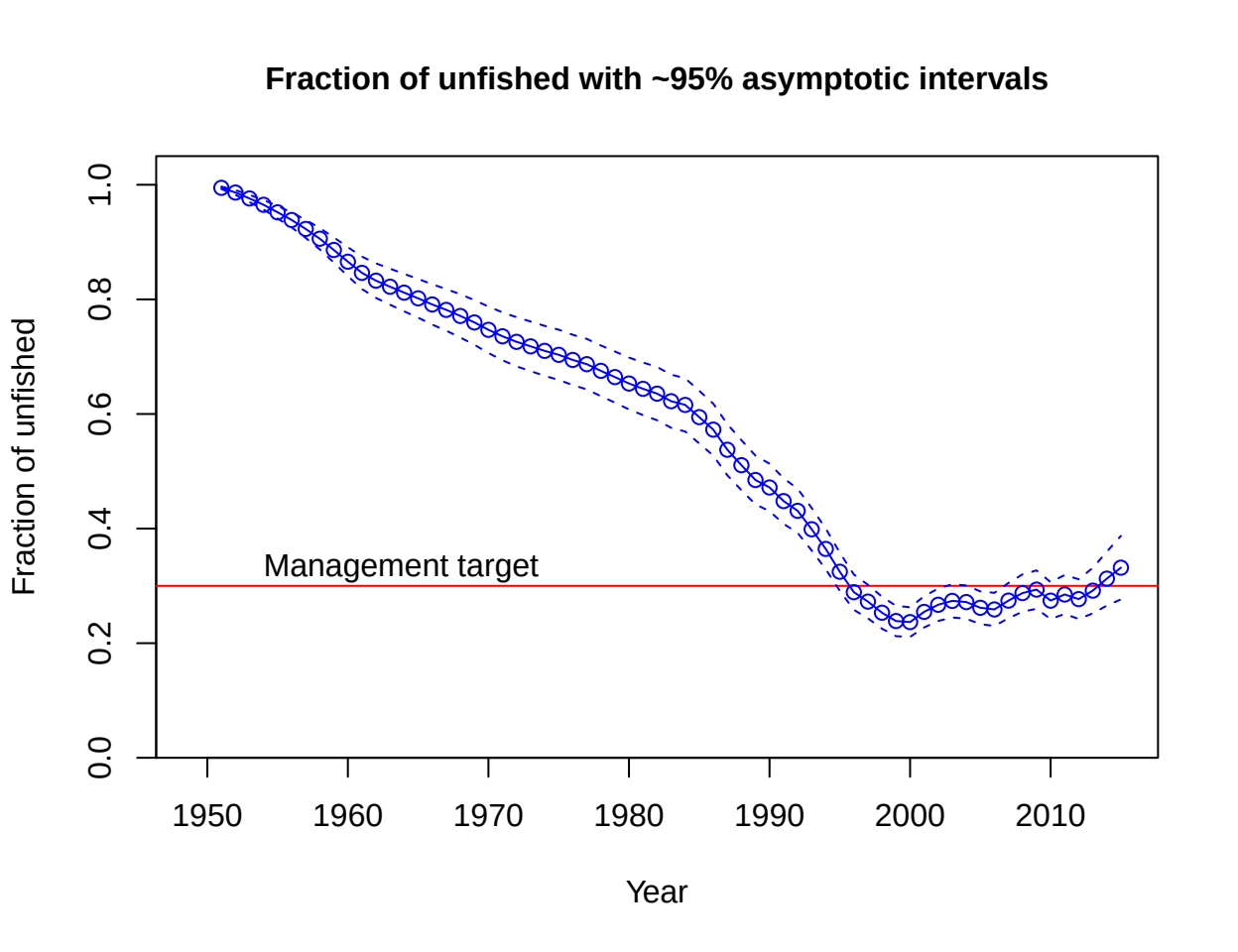

Spawning output
Spawning output
0e+00
2e+11
4e+11
6e+11
1950
1960
1970
1980
1990
2000
2010
Year

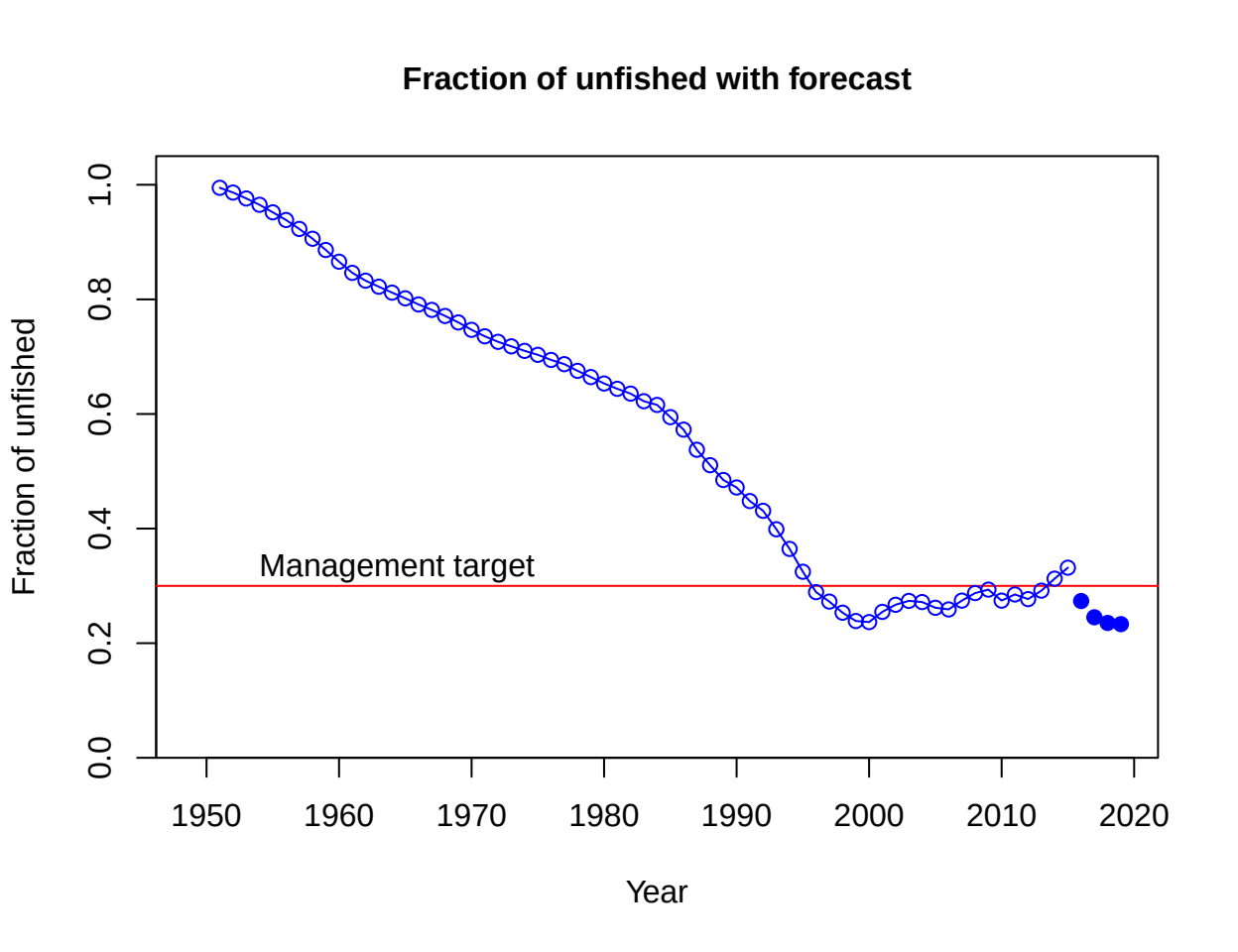

Spawning output with ~95% asymptotic intervals
Spawning output
0e+00
2e+11
4e+11
6e+11
1950
1960
1970
1980
1990
2000
2010
Year

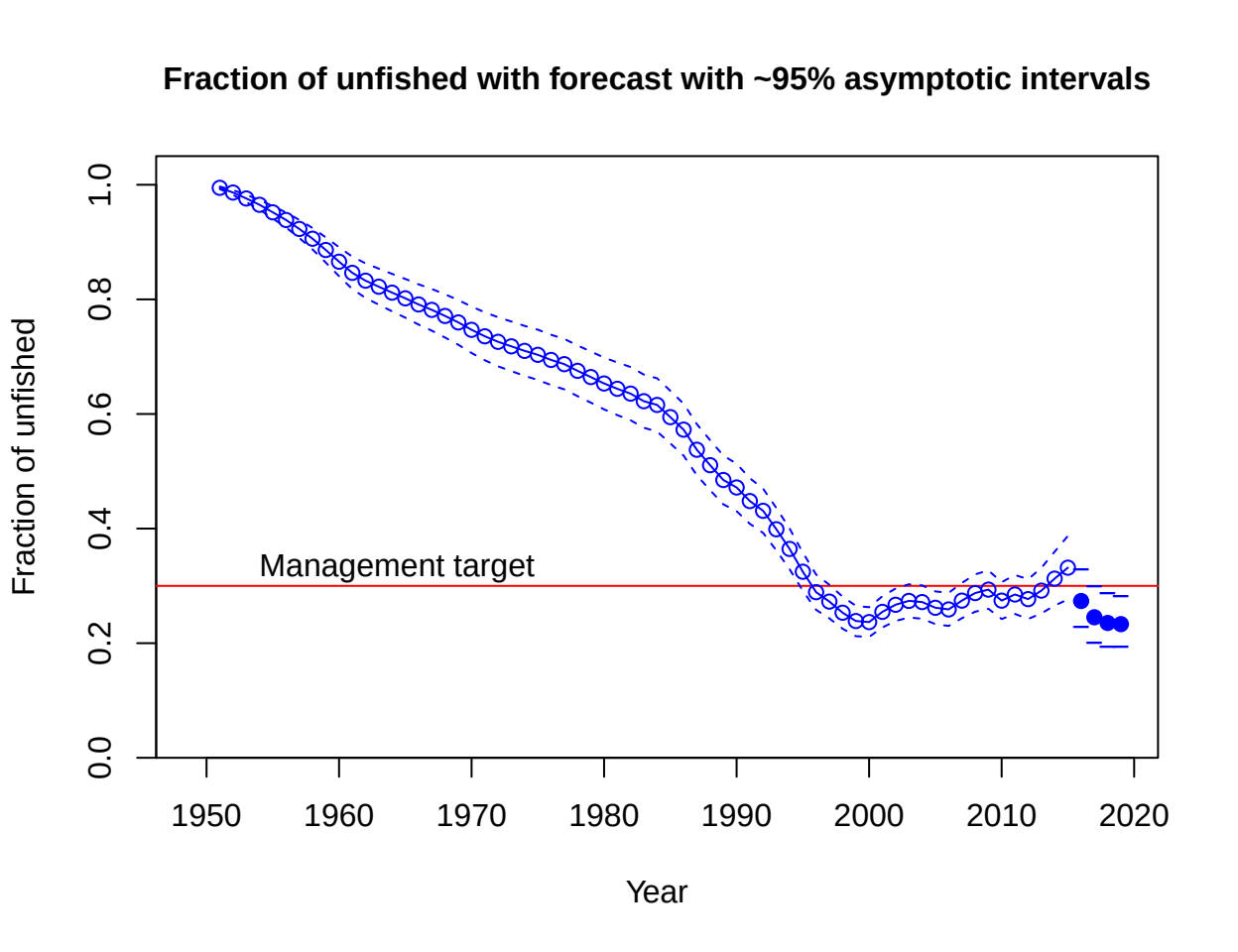

Spawning output with forecast
Spawning output
0e+00
2e+11
4e+11
6e+11
1950
1960
1970
1980
1990
2000
2010
2020
Year

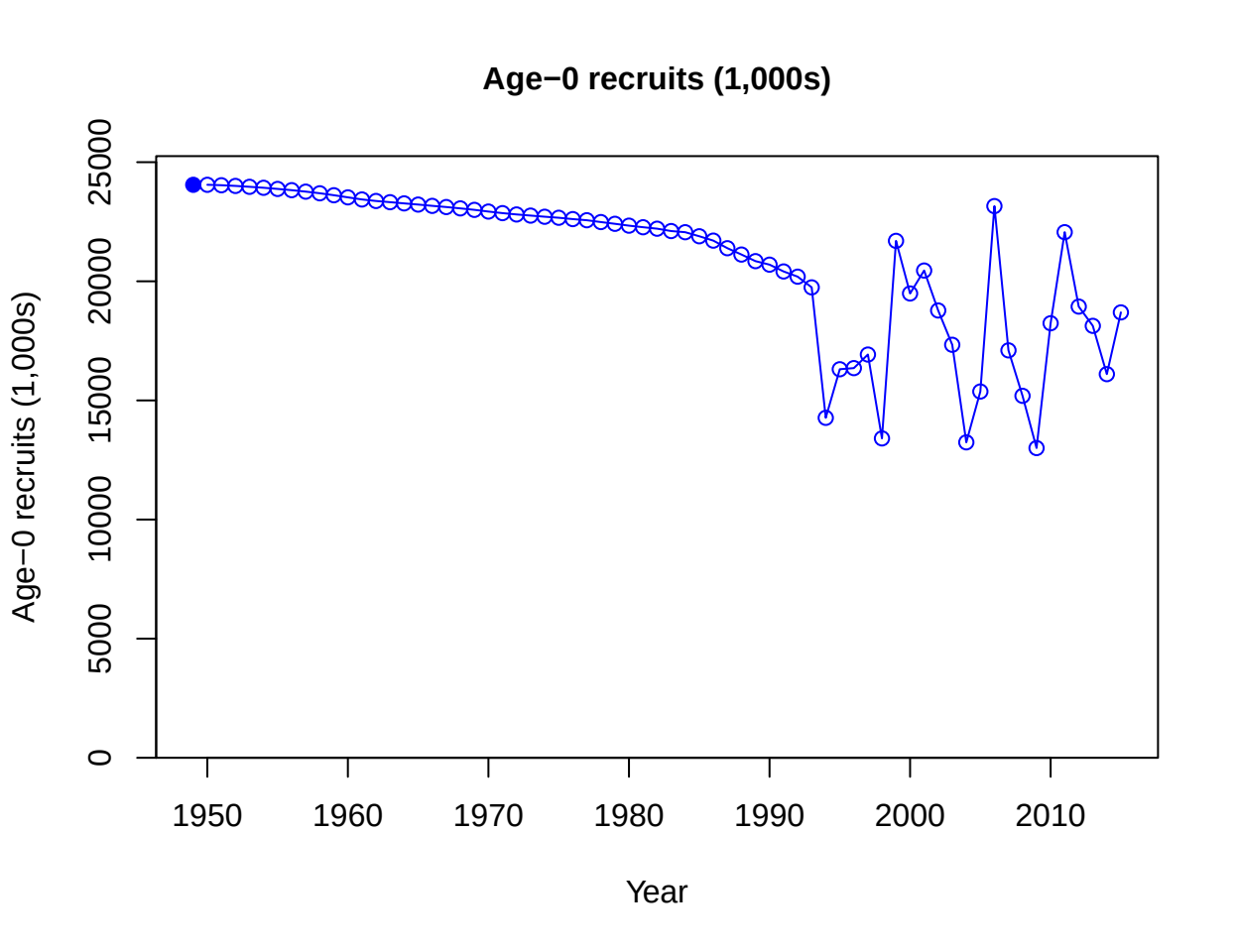

Spawning output with forecast with ~95% asymptotic intervals
Spawning output
0e+00
2e+11
4e+11
6e+11
1950
1960
1970
1980
1990
2000
2010
2020
Year

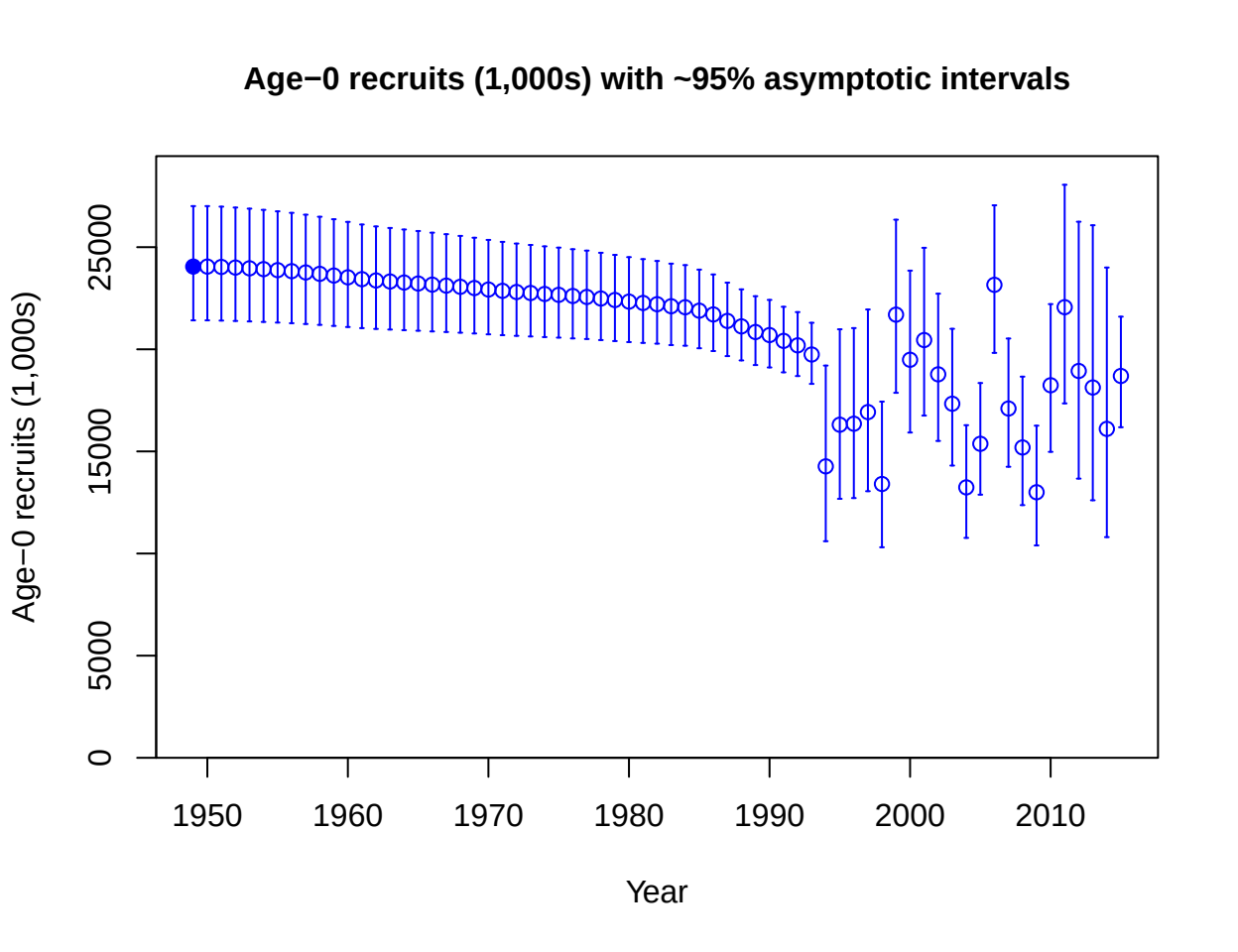

Fraction of unfished
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Management target
1950
1960
1970
1980
1990
2000
2010
Year

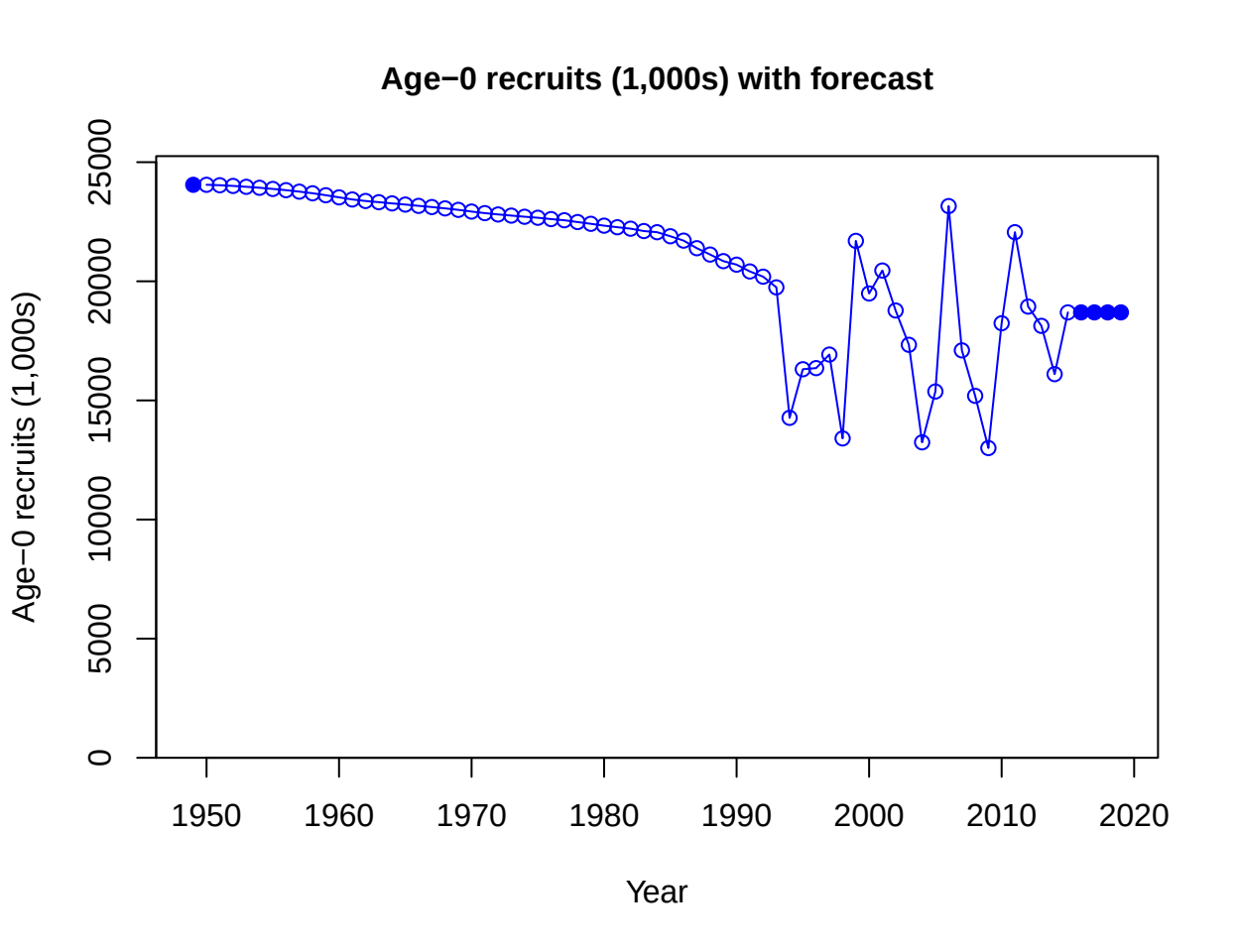

Fraction of unfished with ~95% asymptotic intervals
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Management target
1950
1960
1970
1980
1990
2000
2010
Year

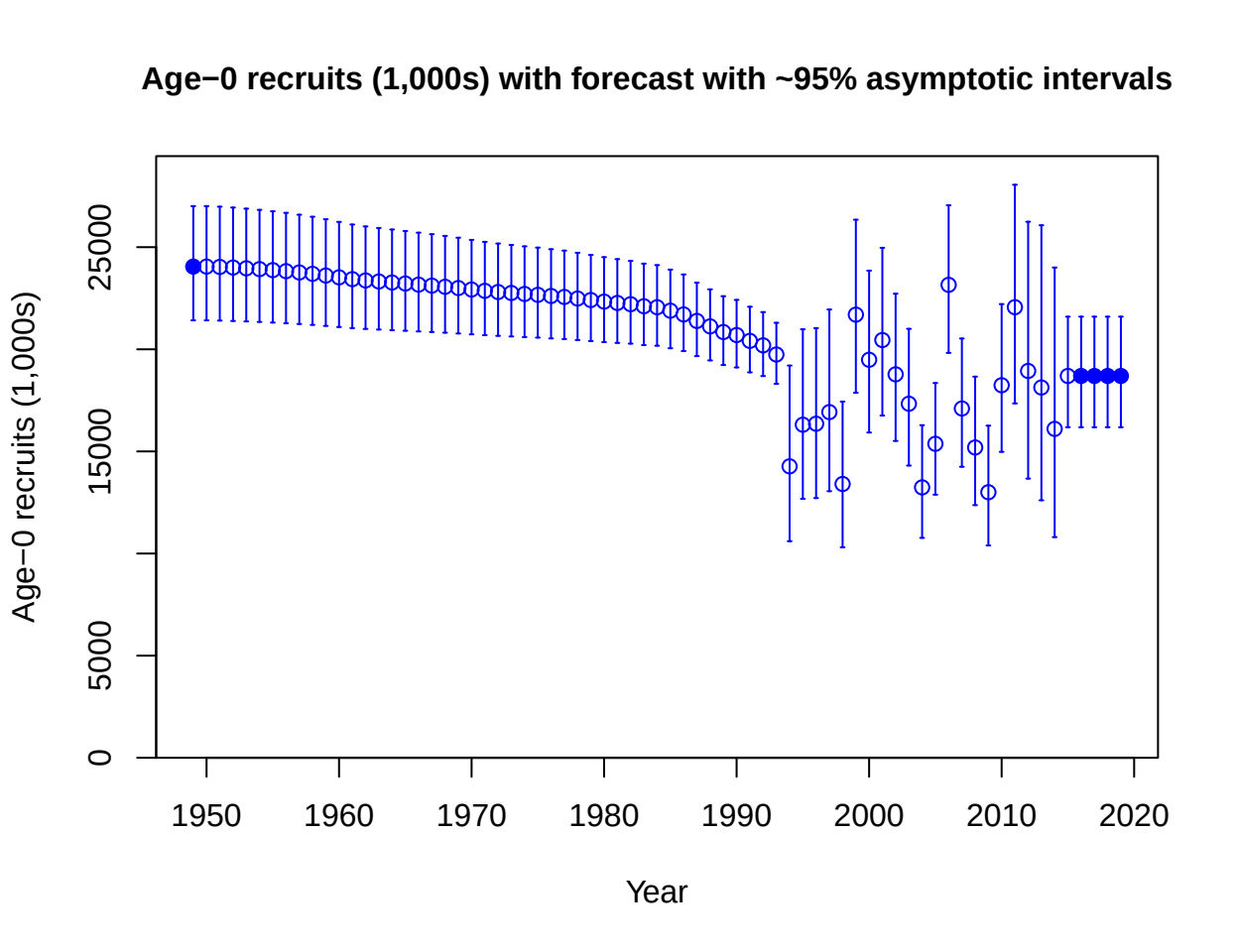

Fraction of unfished with forecast
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Management target
1950
1960
1970
1980
1990
2000
2010
2020
Year

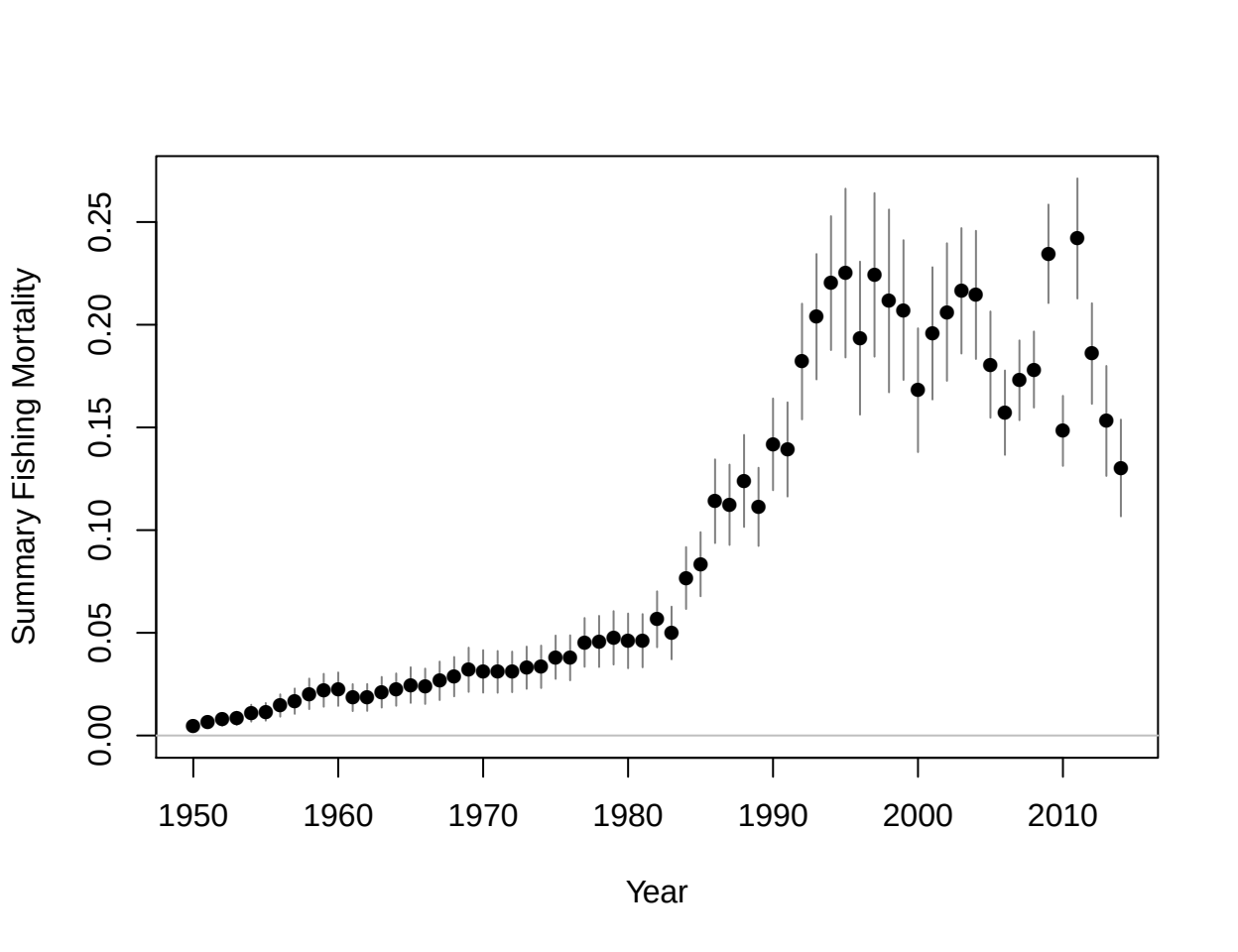

Fraction of unfished with forecast with ~95% asymptotic intervals
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Management target
1950
1960
1970
1980
1990
2000
2010
2020
Year

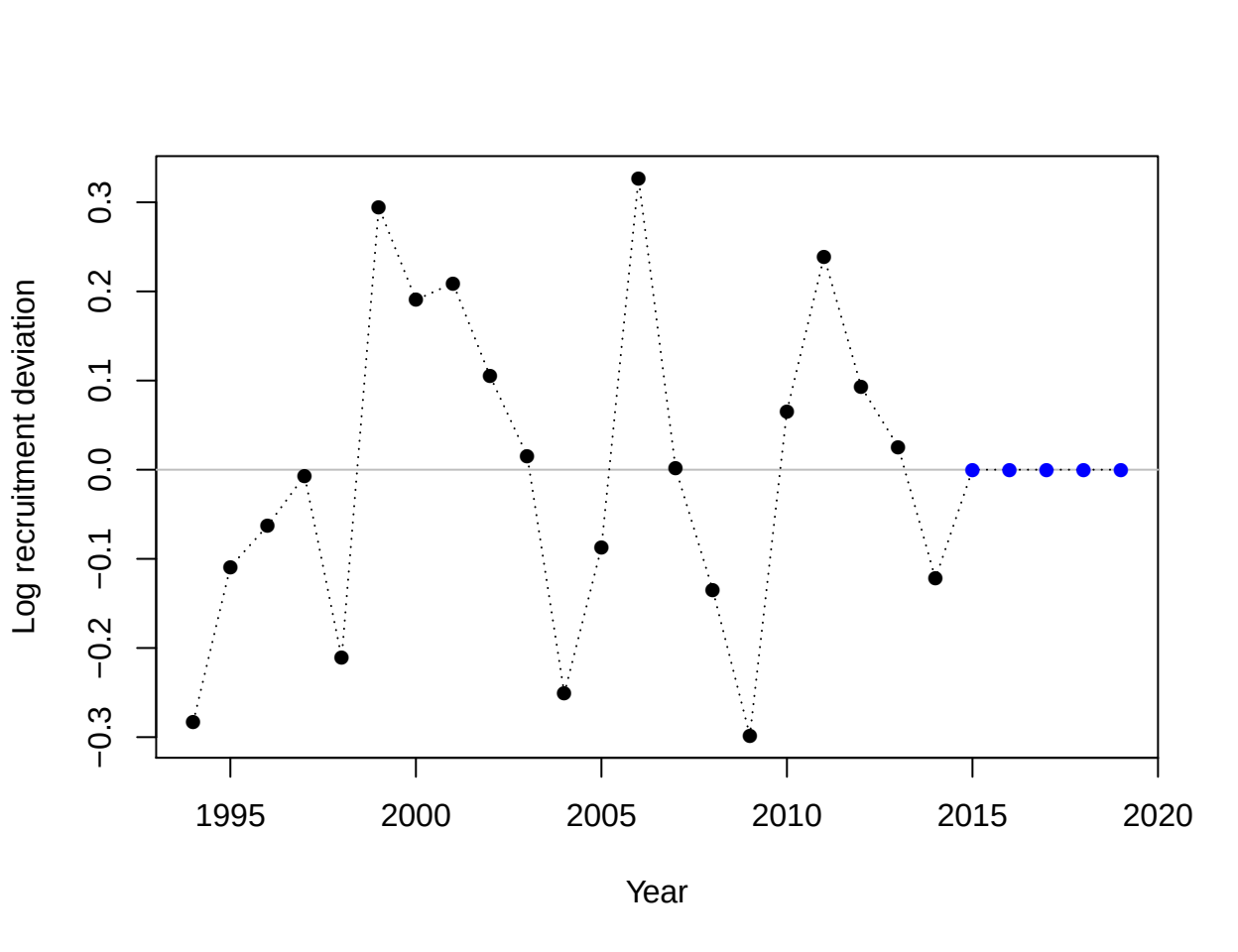

Age−0 recruits (1,000s)
Age−0 recruits (1,000s)
0
5000
10000
15000
20000
25000
1950
1960
1970
1980
1990
2000
2010
Year

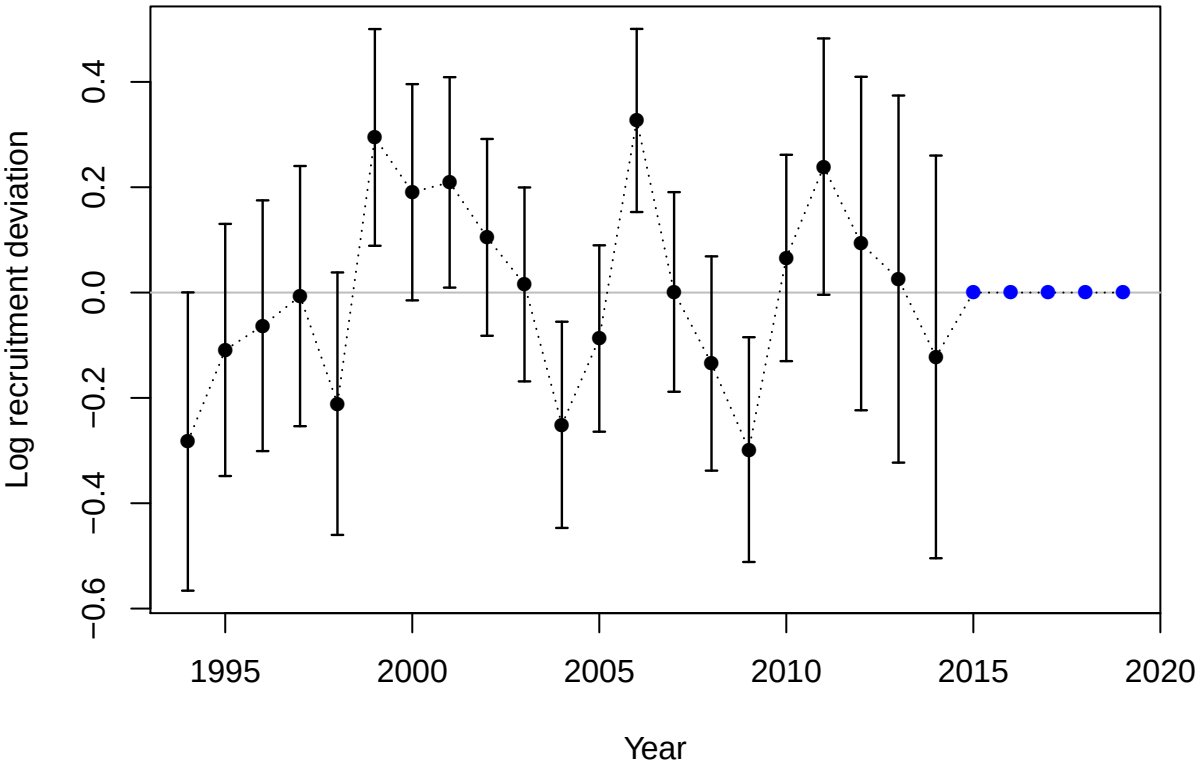

Age−0 recruits (1,000s) with ~95% asymptotic intervals
Age−0 recruits (1,000s)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
Year

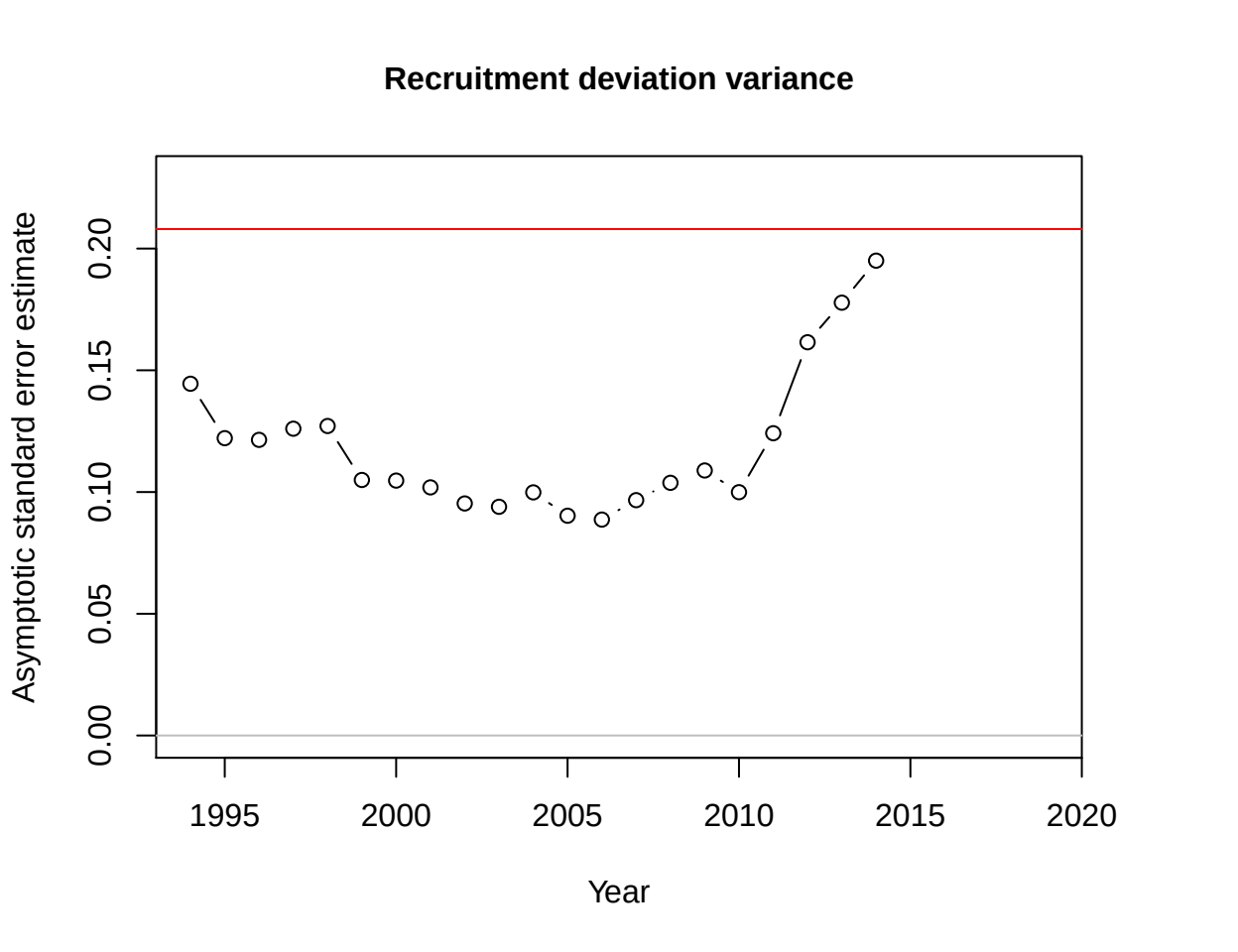

Age−0 recruits (1,000s) with forecast
Age−0 recruits (1,000s)
0
5000
10000
15000
20000
25000
1950
1960
1970
1980
1990
2000
2010
2020
Year

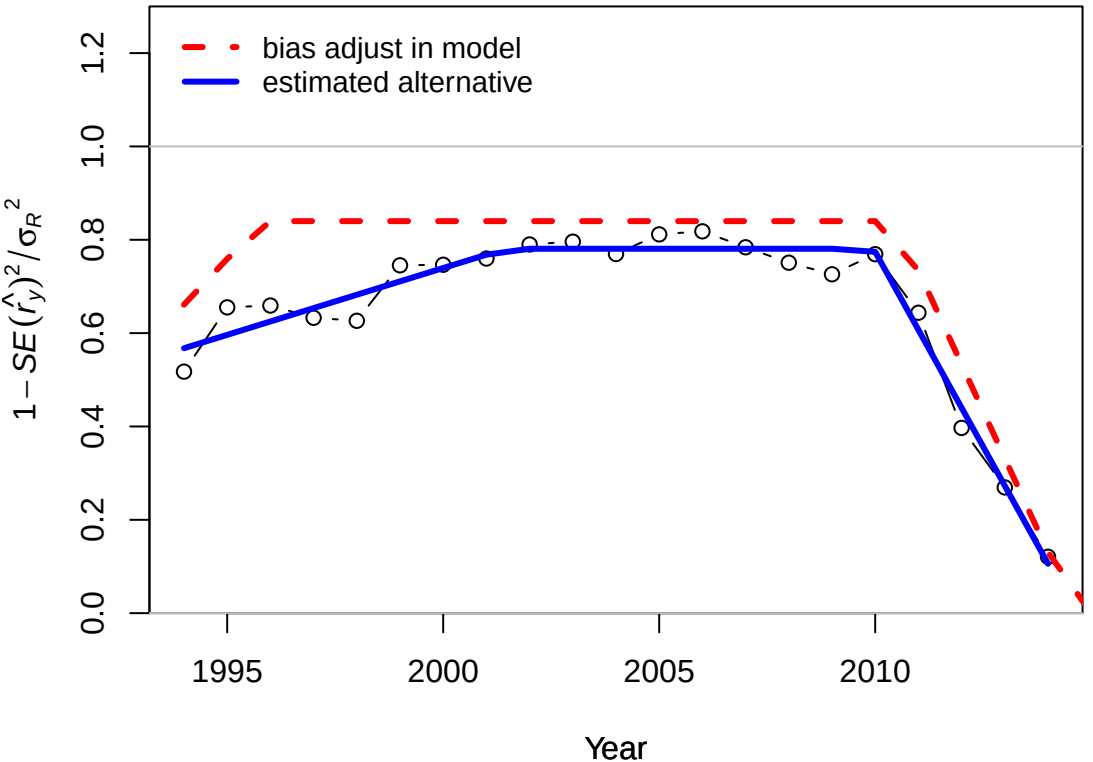

Age−0 recruits (1,000s) with forecast with ~95% asymptotic intervals
Age−0 recruits (1,000s)
0
5000
15000
25000
1950
1960
1970
1980
1990
2000
2010
2020
Year

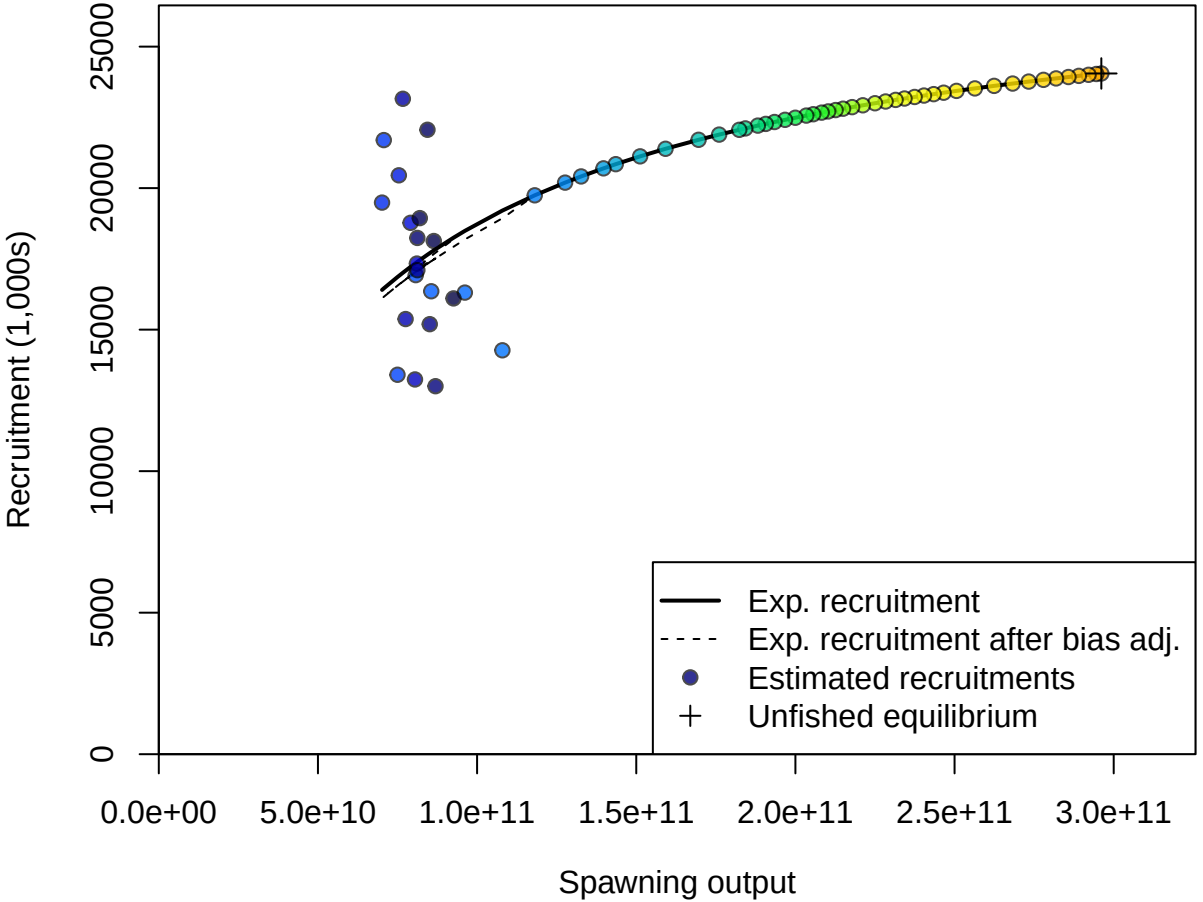

Summary Fishing Mortality
0.00
0.05
0.10
0.15
0.20
0.25
1950
1960
1970
1980
1990
2000
2010
Year

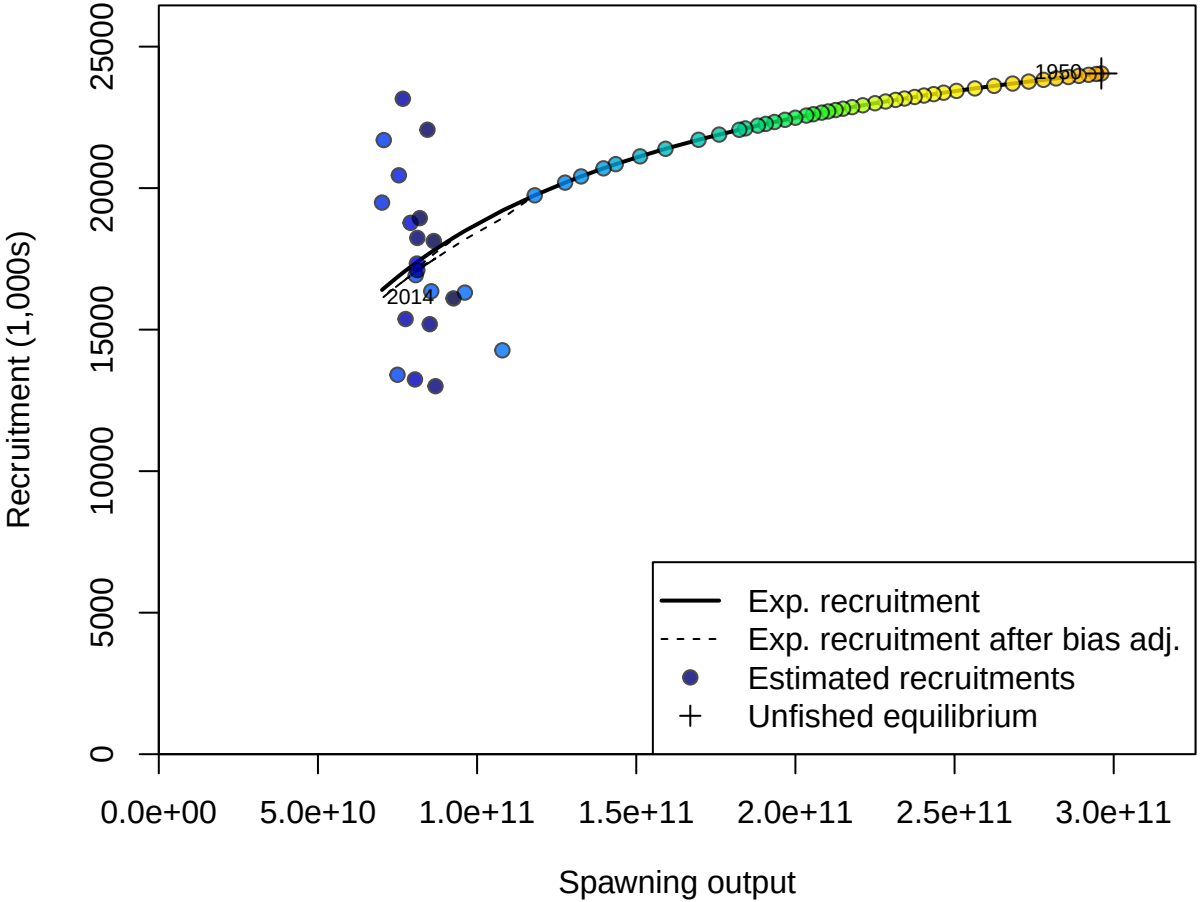

Log recruitment deviation
−0.3
−0.2
−0.1
0.0
0.1
0.2
0.3
1995
2000
2005
2010
2015
2020
Year

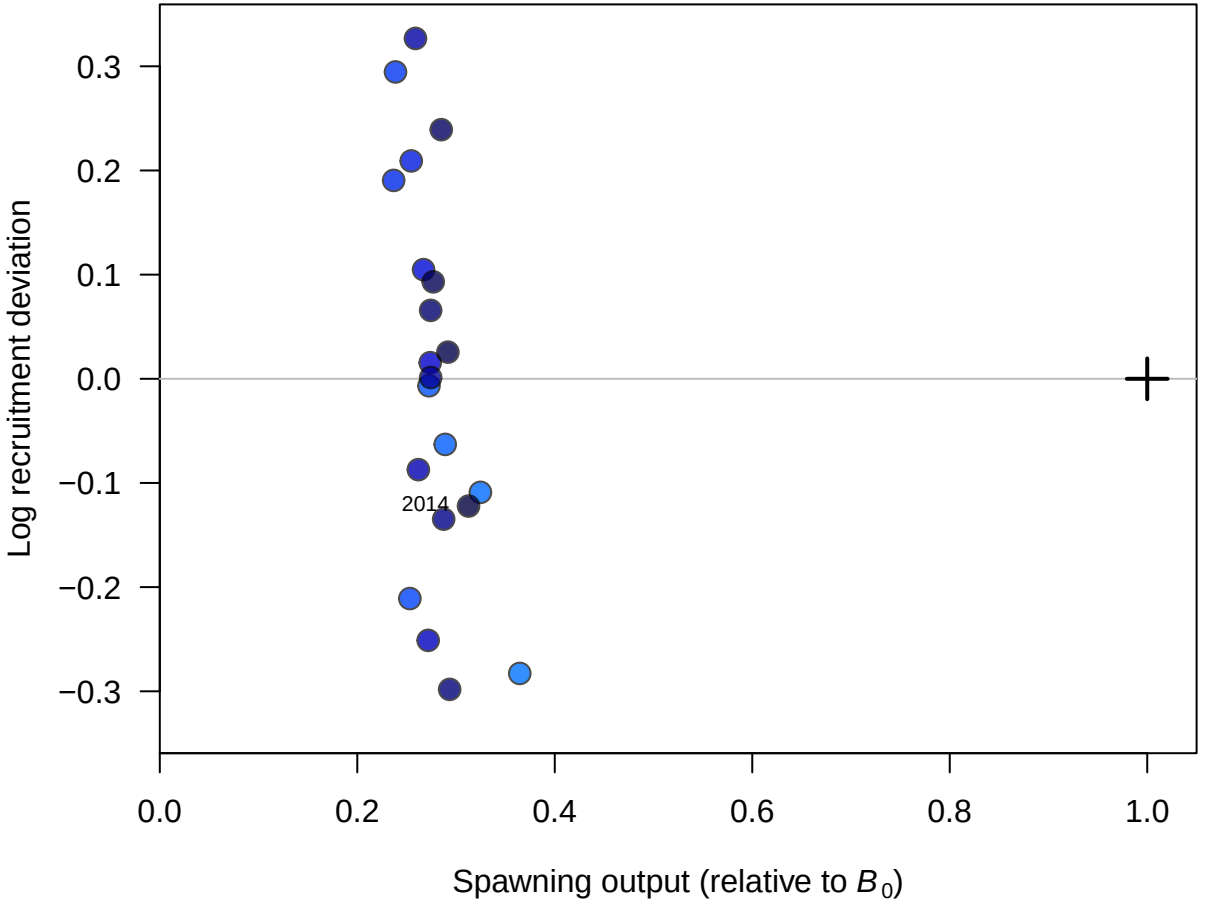

Log recruitment deviation
−0.6
−0.4
−0.2
0.0
0.2
0.4
1995
2000
2005
2010
2015
2020
Year

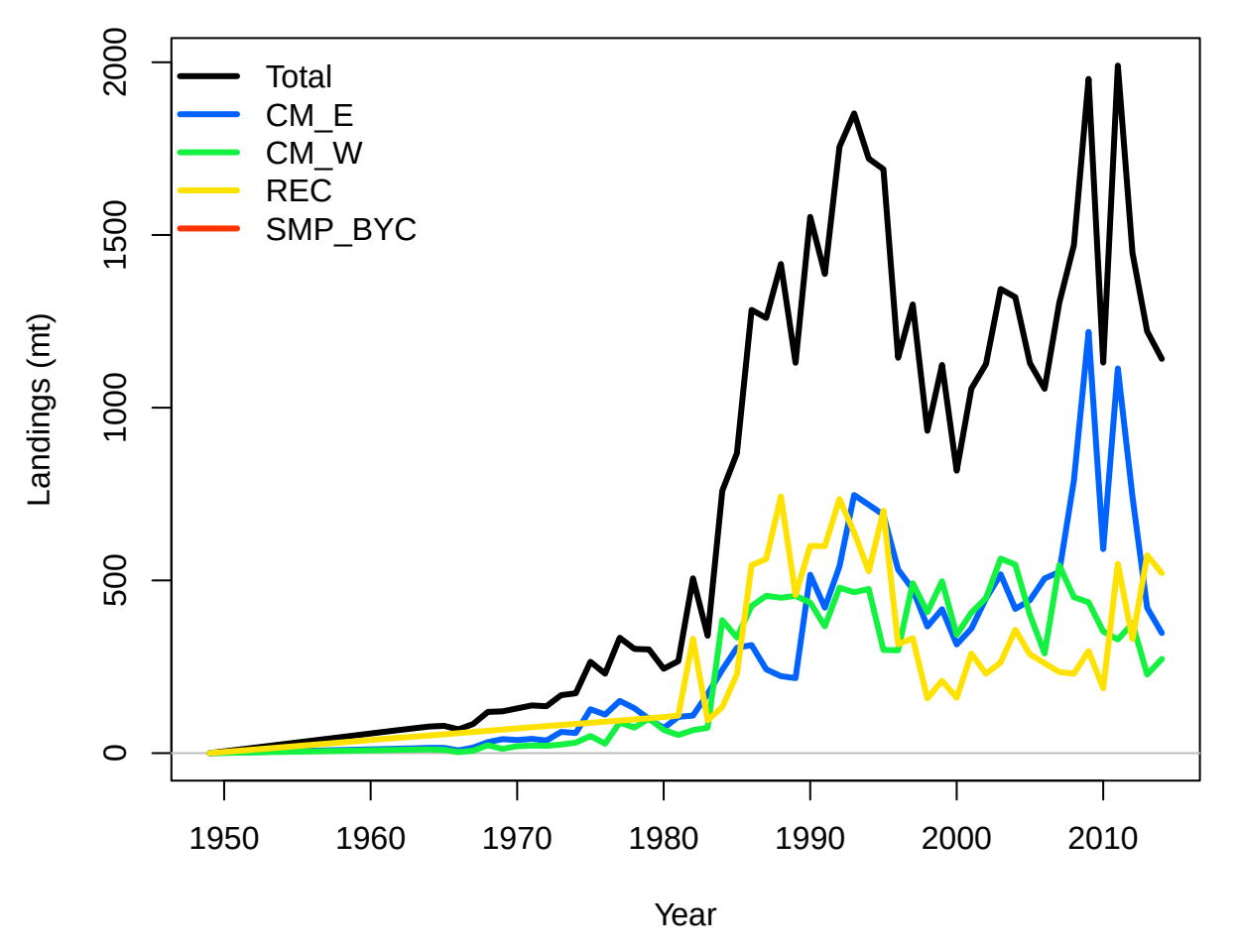

Recruitment deviation variance
Asymptotic standard error estimate
0.00
0.05
0.10
0.15
0.20
1995
2000
2005
2010
2015
2020
Year

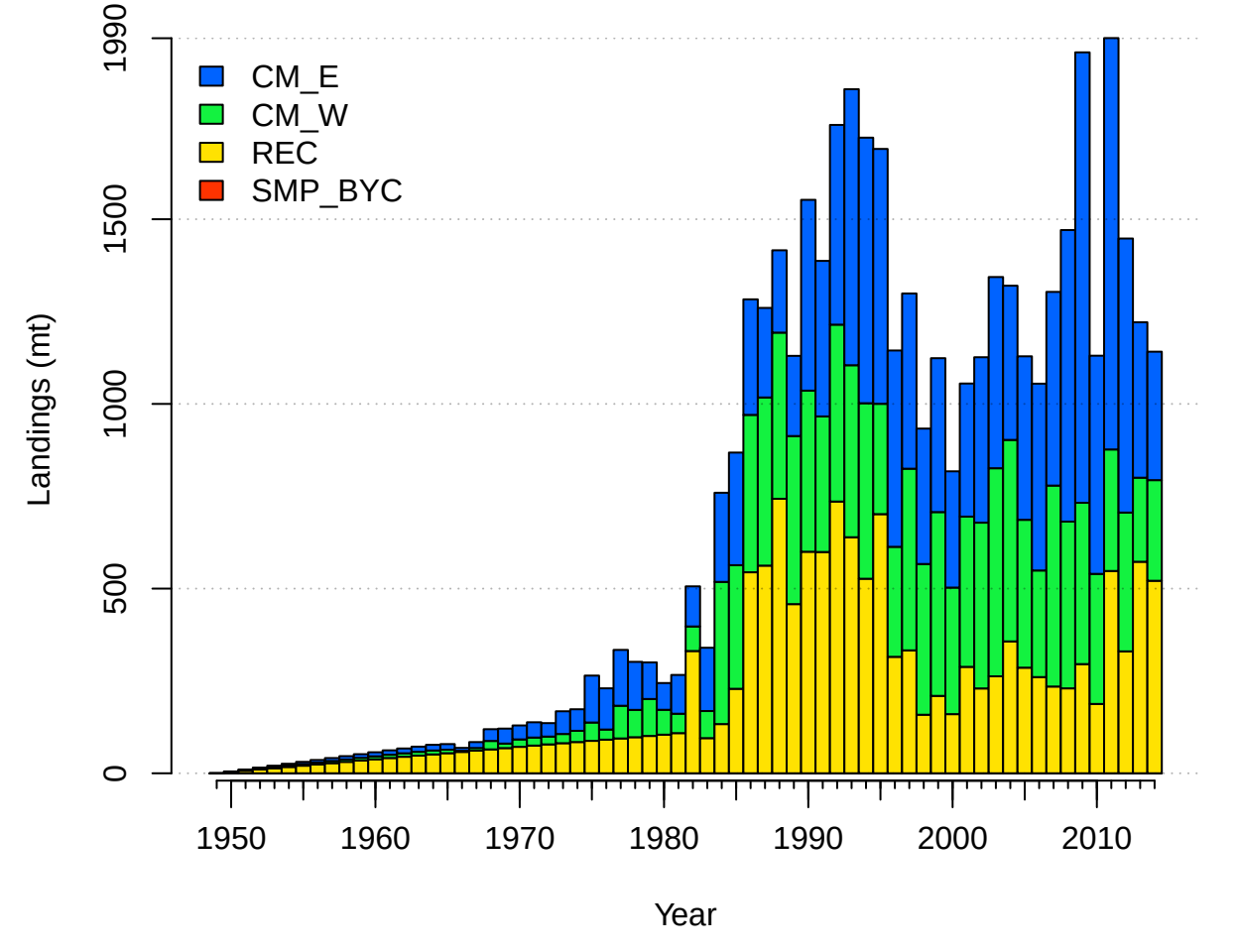

bias adjust in model
estimated alternative
$1 - SE(\hat{r}_y)^2/\sigma_R{}^2$
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1995
2000
2005
2010
Year

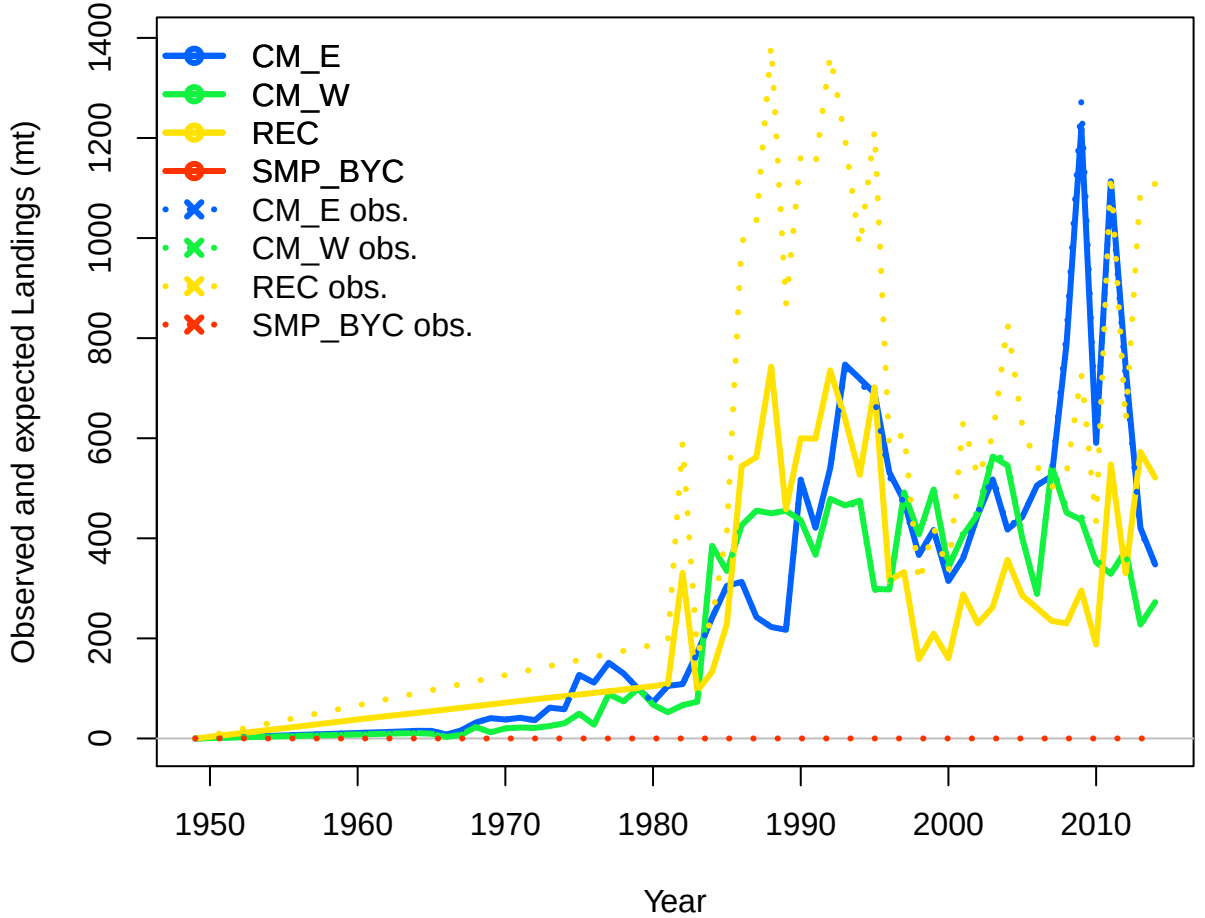

Recruitment (1,000s)
0
5000
10000
15000
20000
25000
0.0e+00
5.0e+10
1.0e+11
1.5e+11
2.0e+11
2.5e+11
3.0e+11
Spawning output
Exp. recruitment
Exp. recruitment after bias adj.
Estimated recruitments
Unfished equilibrium

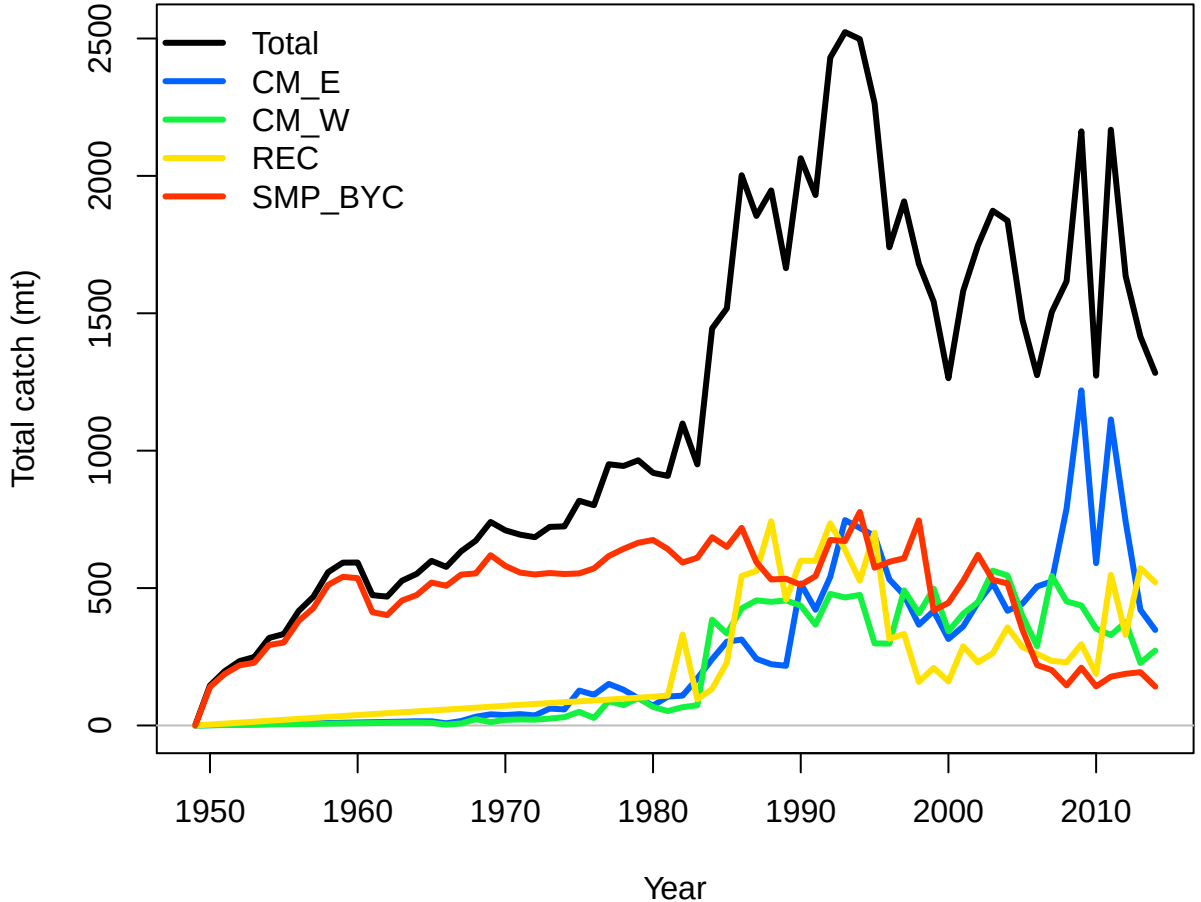

Recruitment (1,000s)
0
5000
10000
15000
20000
25000
0.0e+00
5.0e+10
1.0e+11
1.5e+11
2.0e+11
2.5e+11
3.0e+11
Spawning output
2014
1950
Exp. recruitment
Exp. recruitment after bias adj.
Estimated recruitments
Unfished equilibrium

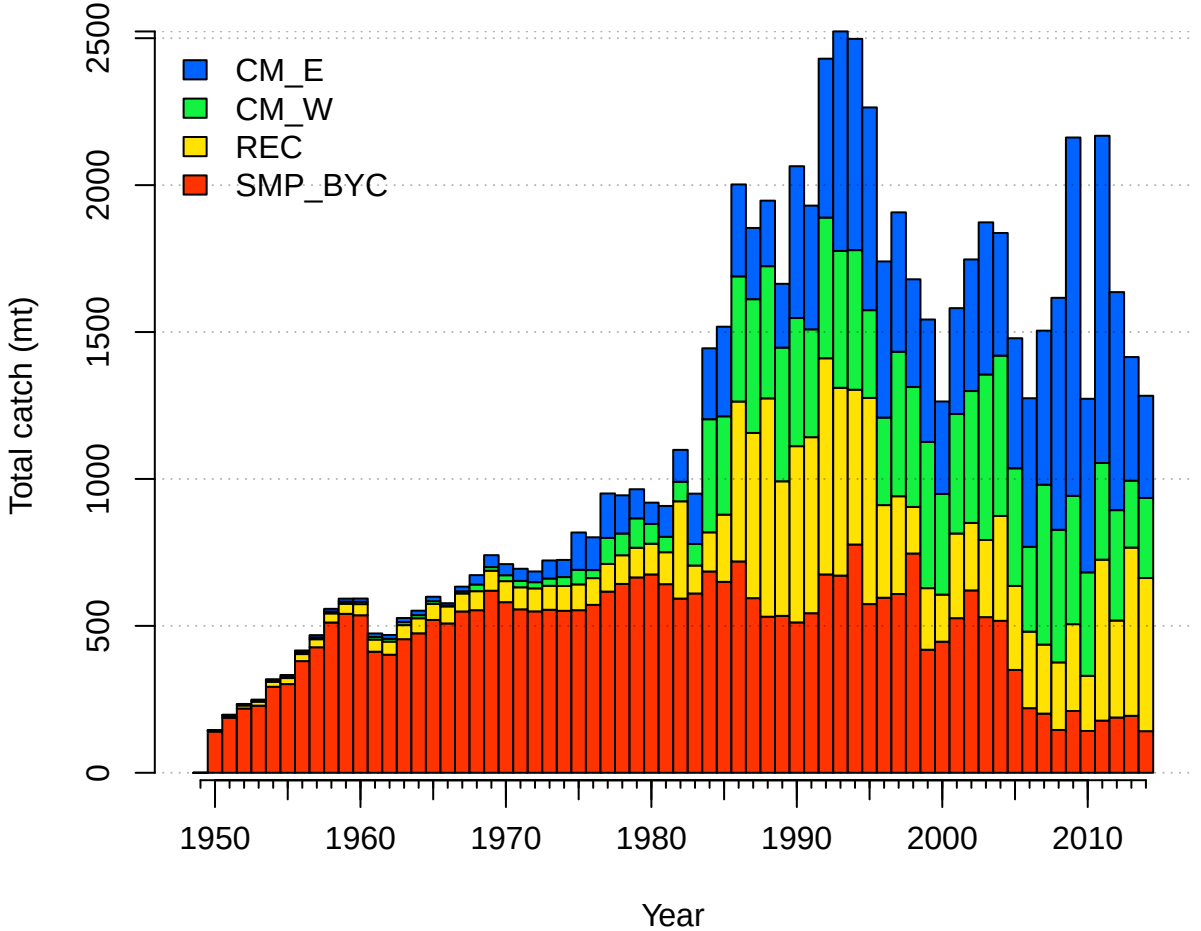

0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
Log recruitment deviation
2014
0.0
0.2
0.4
0.6
0.8
1.0
Spawning output (relative to B_0)

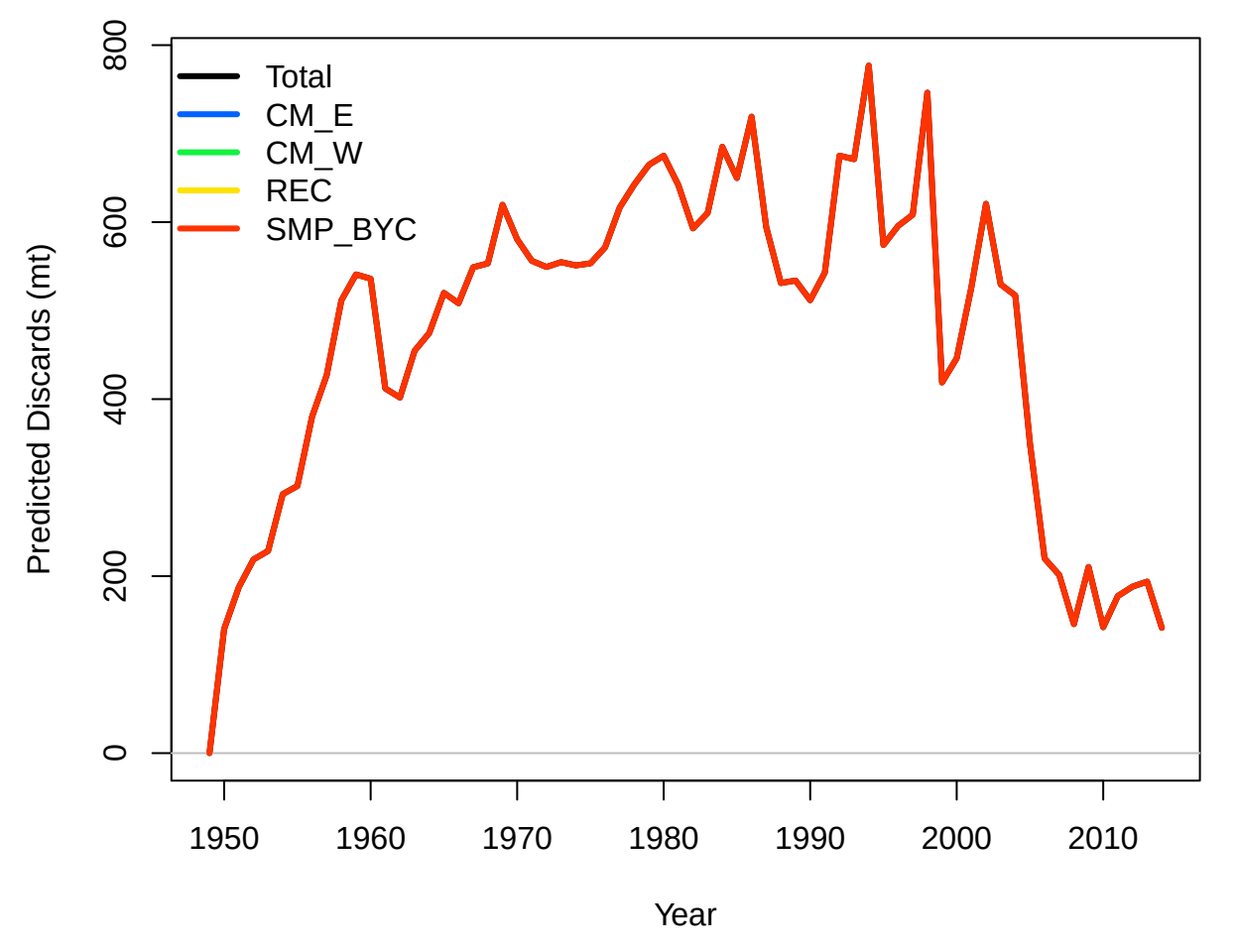

Total
CM_E
CM_W
REC
SMP_BYC
Landings (mt)
0
500
1000
1500
2000
1950
1960
1970
1980
1990
2000
2010
Year

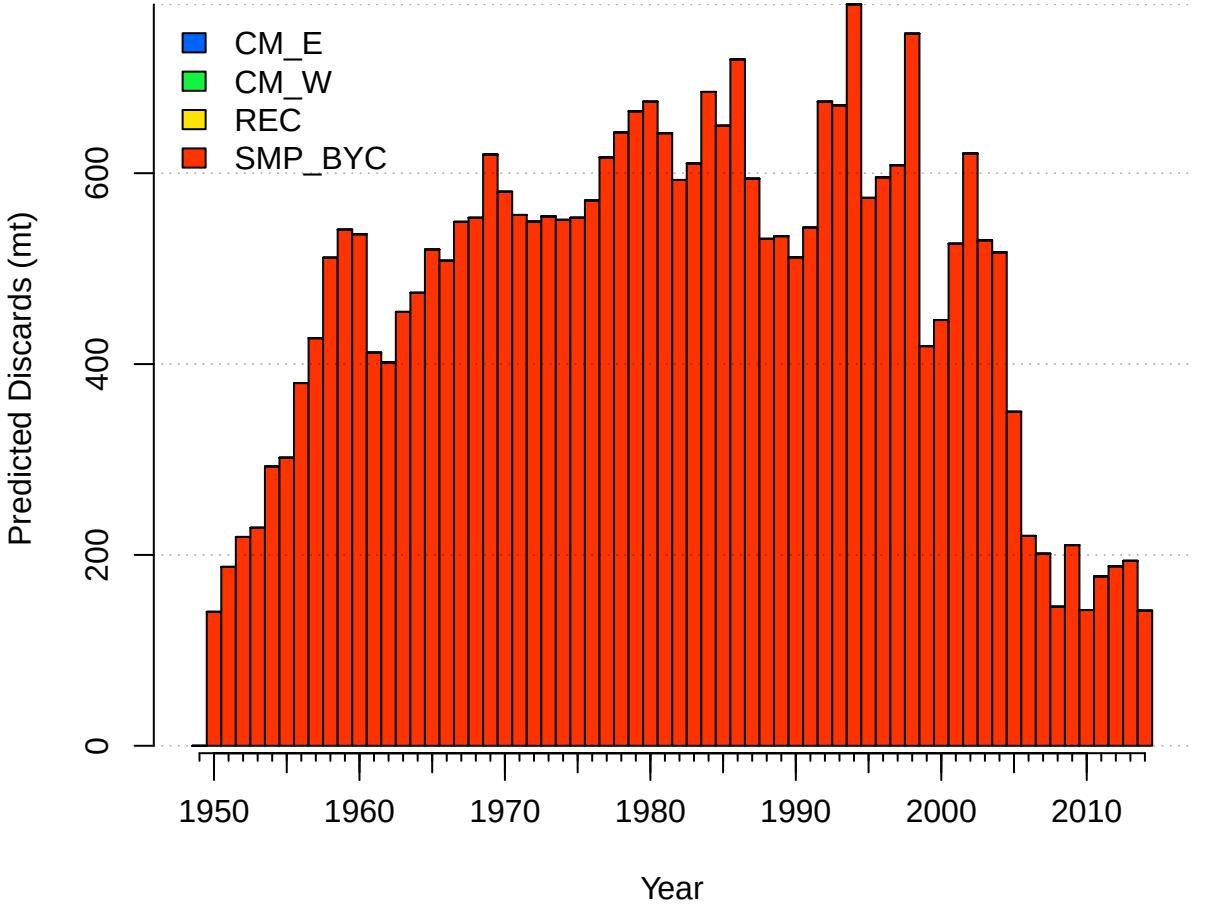

CM_E
CM_W
REC
SMP_BYC
Landings (mt)
0
500
1000
1500
1990
1950
1960
1970
1980
1990
2000
2010
Year

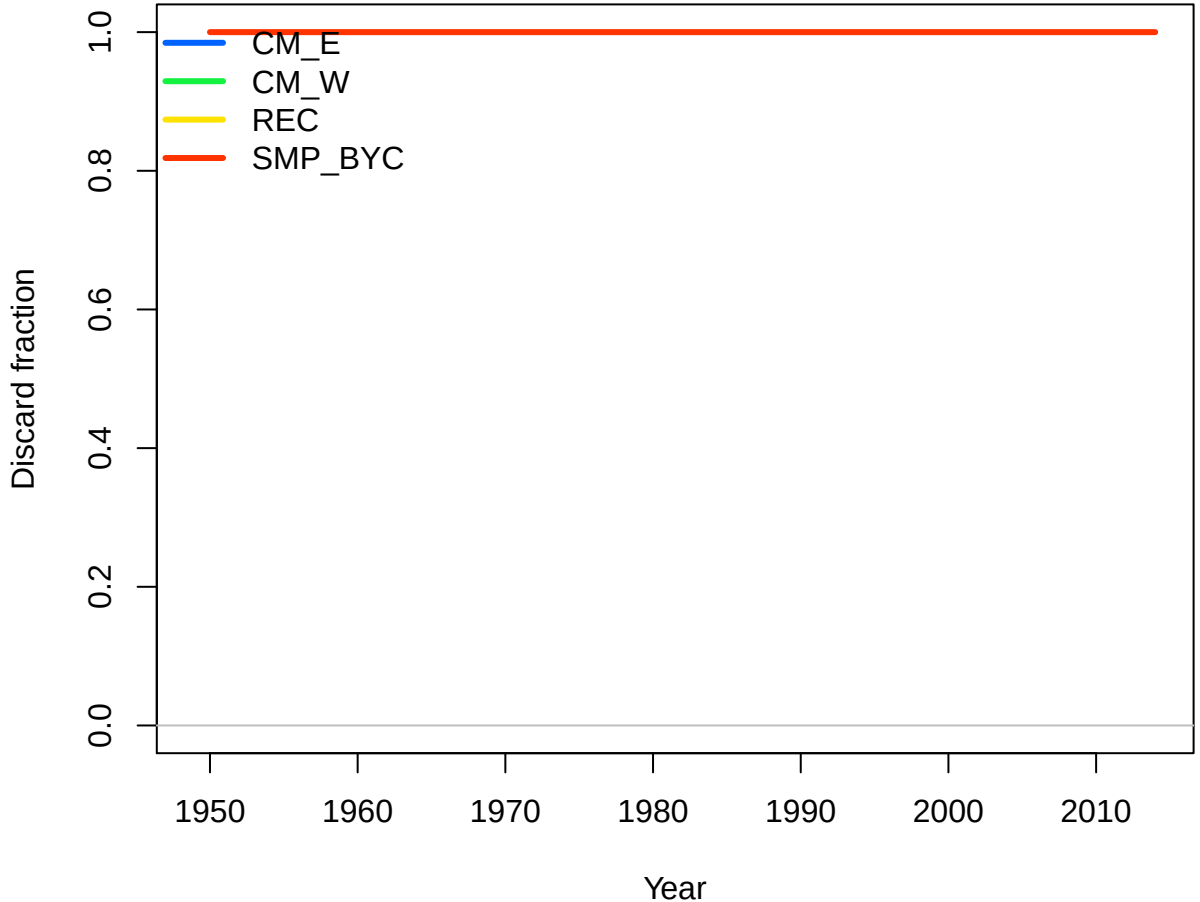

CM_E
CM_W
REC
SMP_BYC
CM_E obs.
CM_W obs.
REC obs.
SMP_BYC obs.
Observed and expected Landings (mt)
0
200
400
600
800
1000
1200
1400
1950
1960
1970
1980
1990
2000
2010
Year

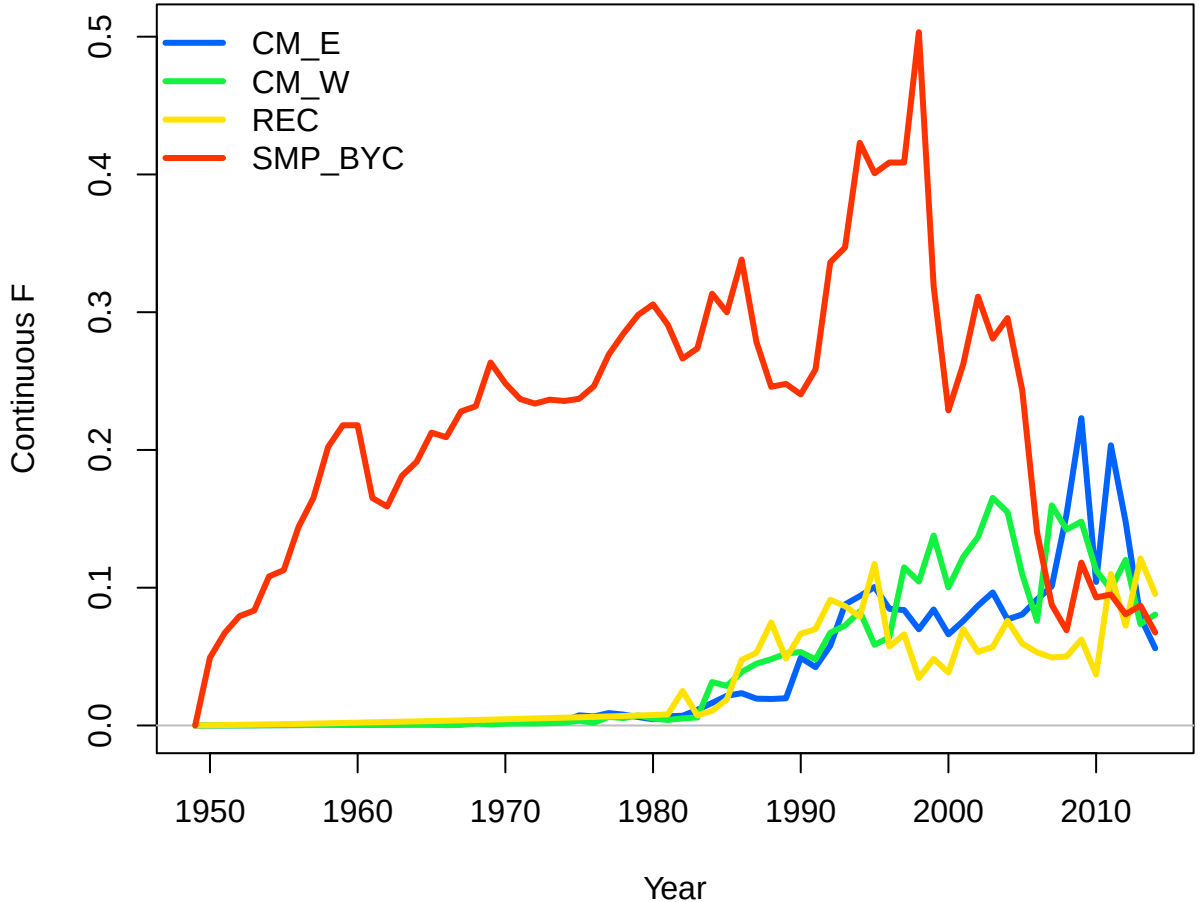

Total
CM_E
CM_W
REC
SMP_BYC
Total catch (mt)
0
500
1000
1500
2000
2500
1950
1960
1970
1980
1990
2000
2010
Year

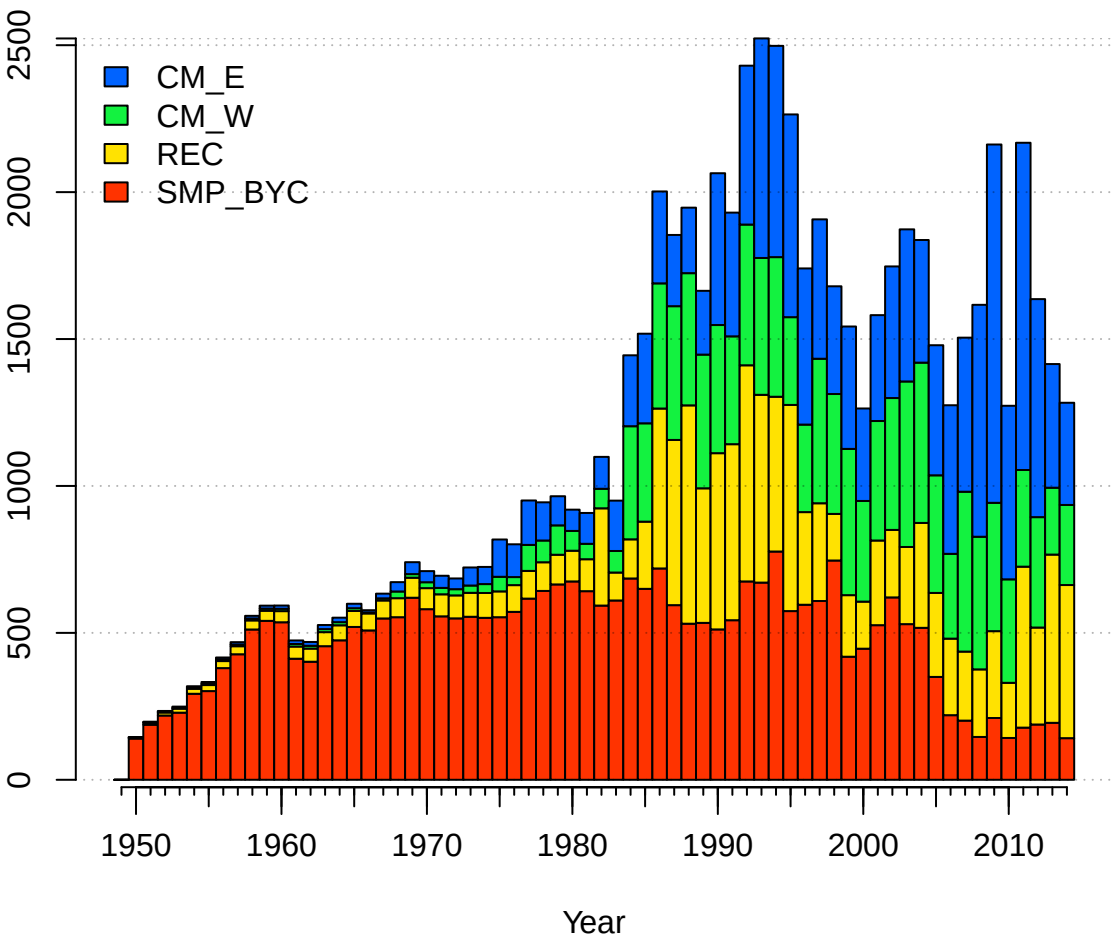

CM_E
CM_W
REC
SMP_BYC
Total catch (mt)
0
500
1000
1500
2000
2500
1950
1960
1970
1980
1990
2000
2010
Year

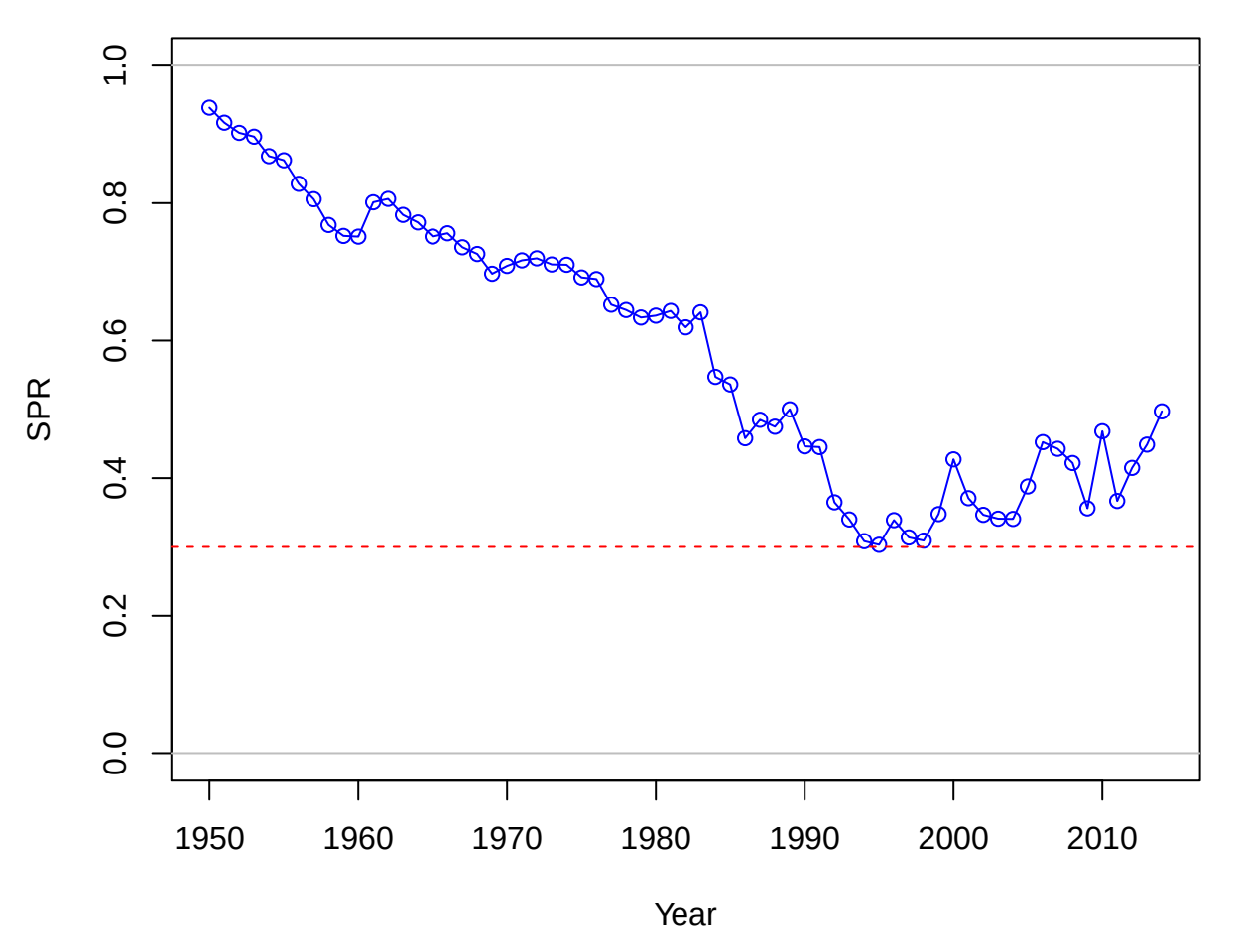

Total
CM_E
CM_W
REC
SMP_BYC
Predicted Discards (mt)
0
200
400
600
800
1950
1960
1970
1980
1990
2000
2010
Year

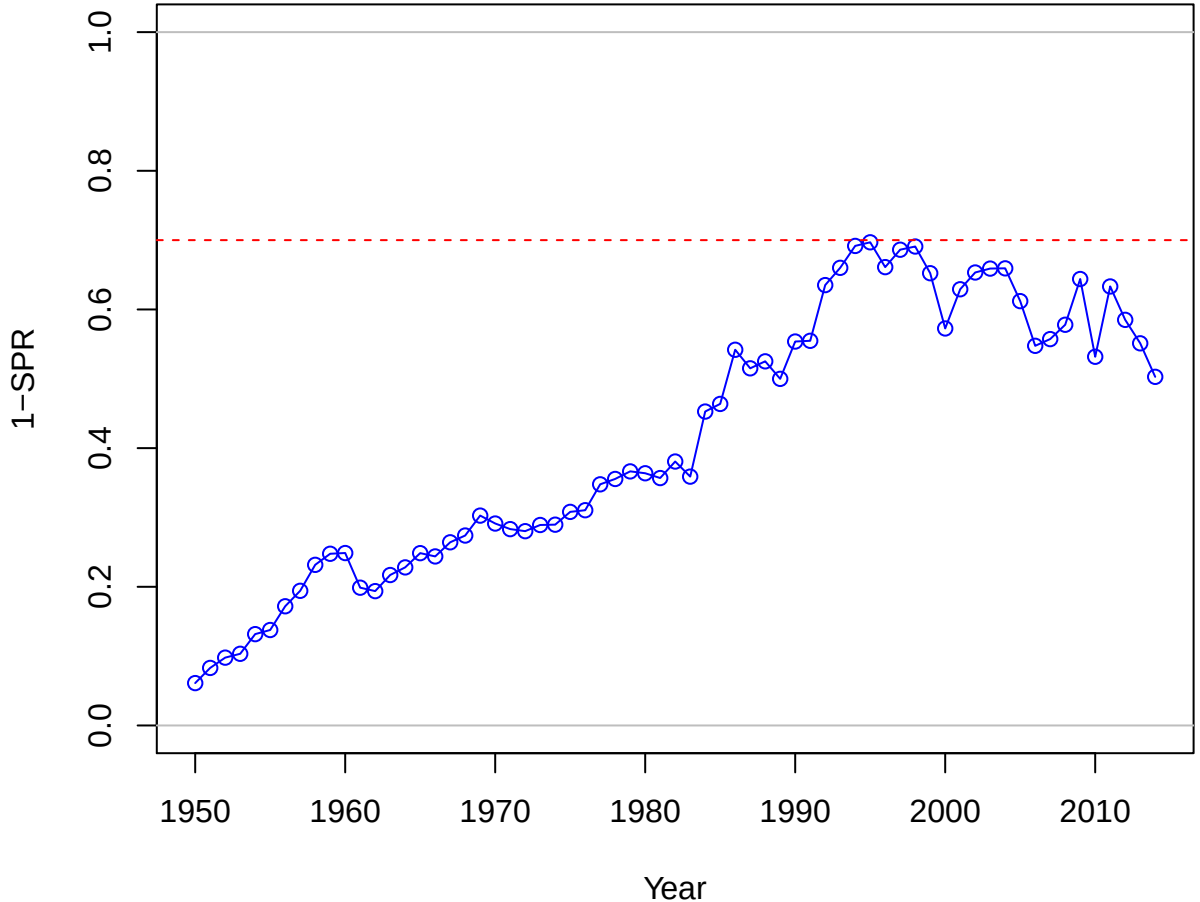

CM_E
CM_W
REC
SMP_BYC
Predicted Discards (mt)
0
200
400
600
1950
1960
1970
1980
1990
2000
2010
Year

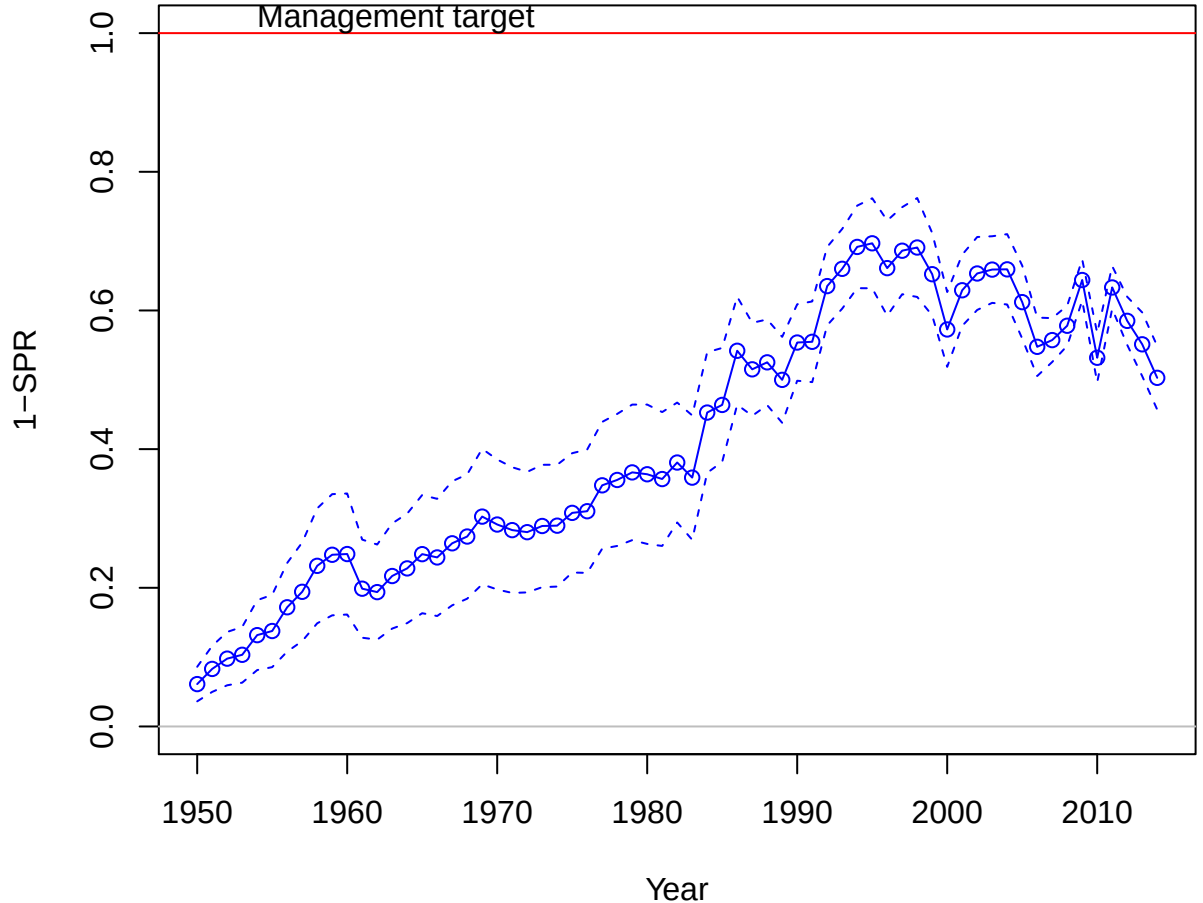

CM_E
CM_W
REC
SMP_BYC
Discard fraction
0.0
0.2
0.4
0.6
0.8
1.0
1950
1960
1970
1980
1990
2000
2010
Year

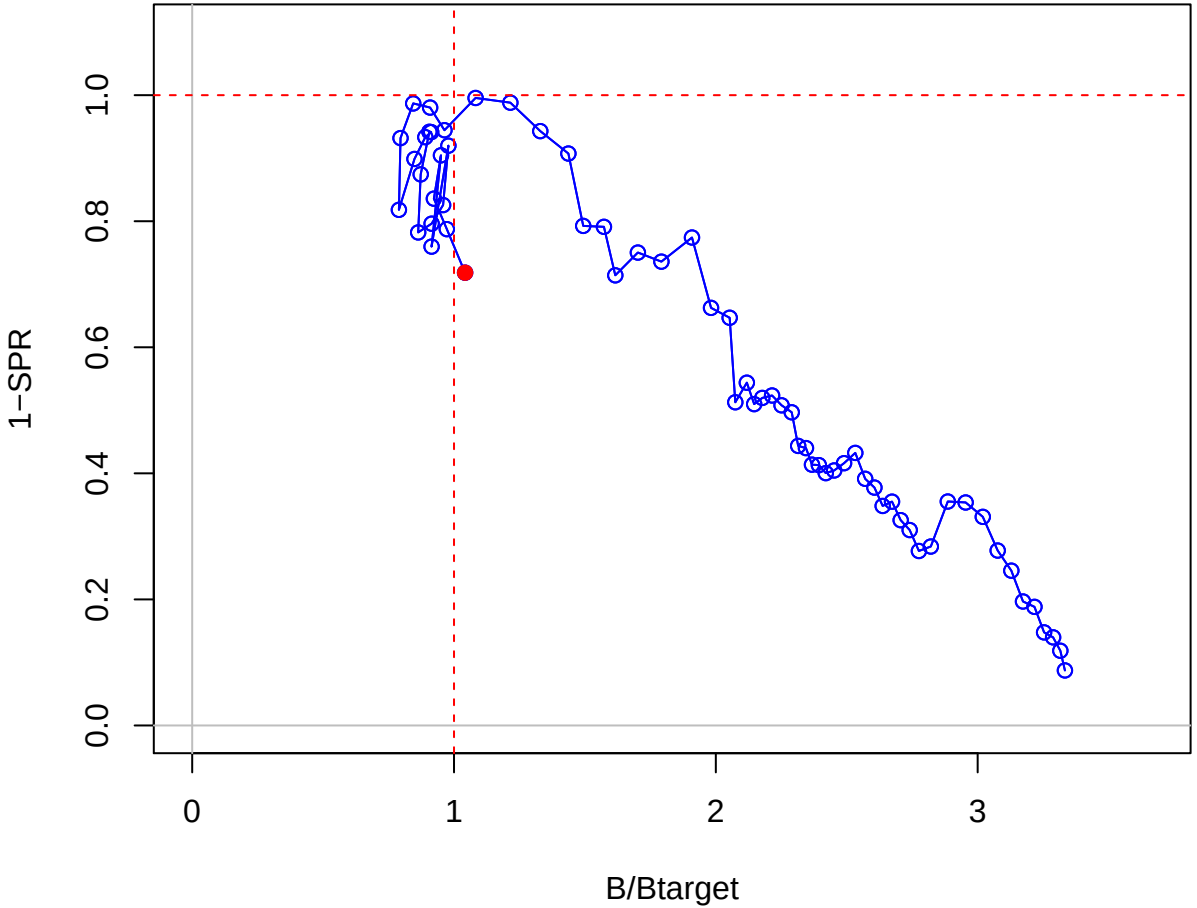

CM_E
CM_W
REC
SMP_BYC
Continuous F
0.0
0.1
0.2
0.3
0.4
0.5
1950
1960
1970
1980
1990
2000
2010
Year

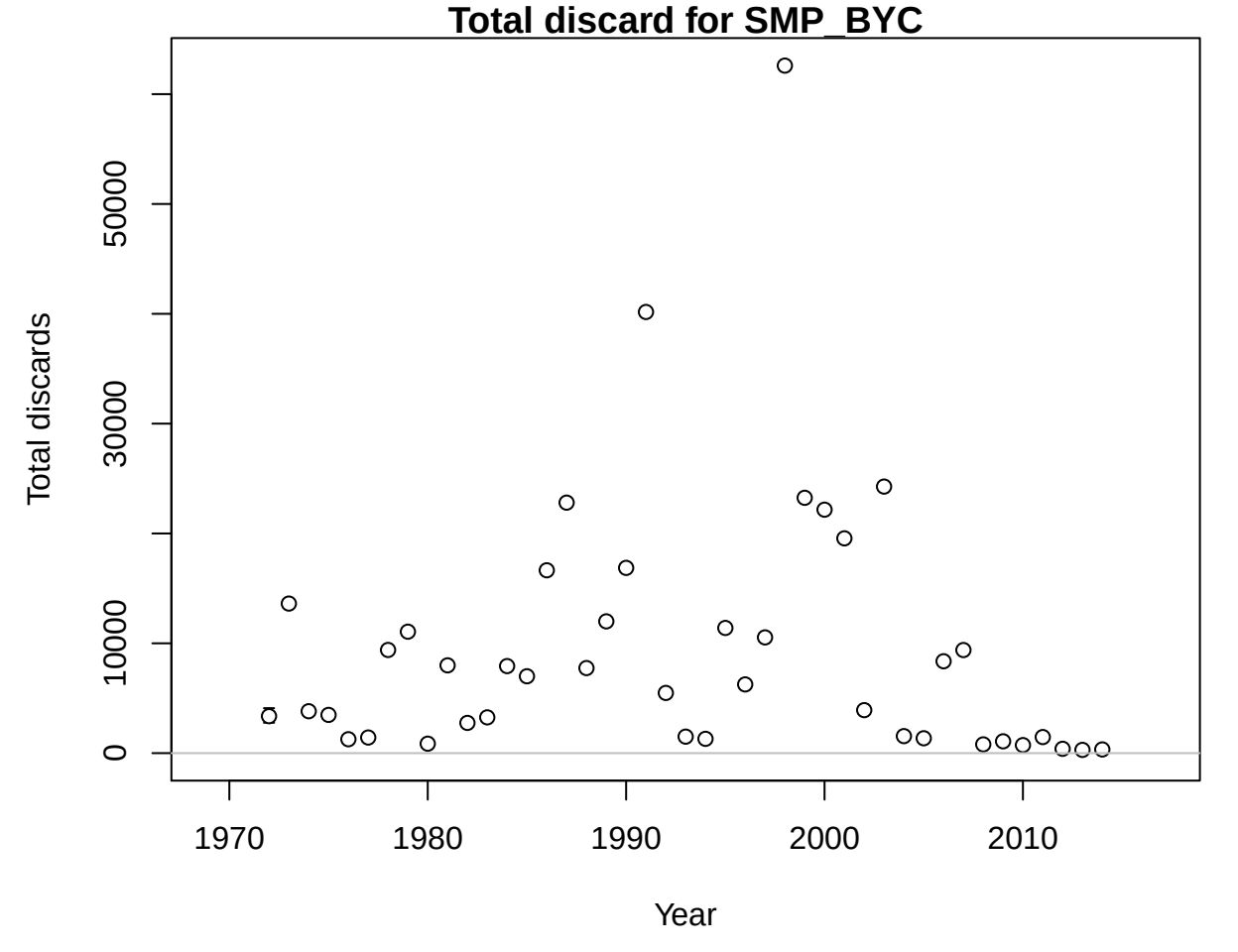

CM_E
CM_W
REC
SMP_BYC
0
500
1000
1500
2000
2500
1950
1960
1970
1980
1990
2000
2010
Year

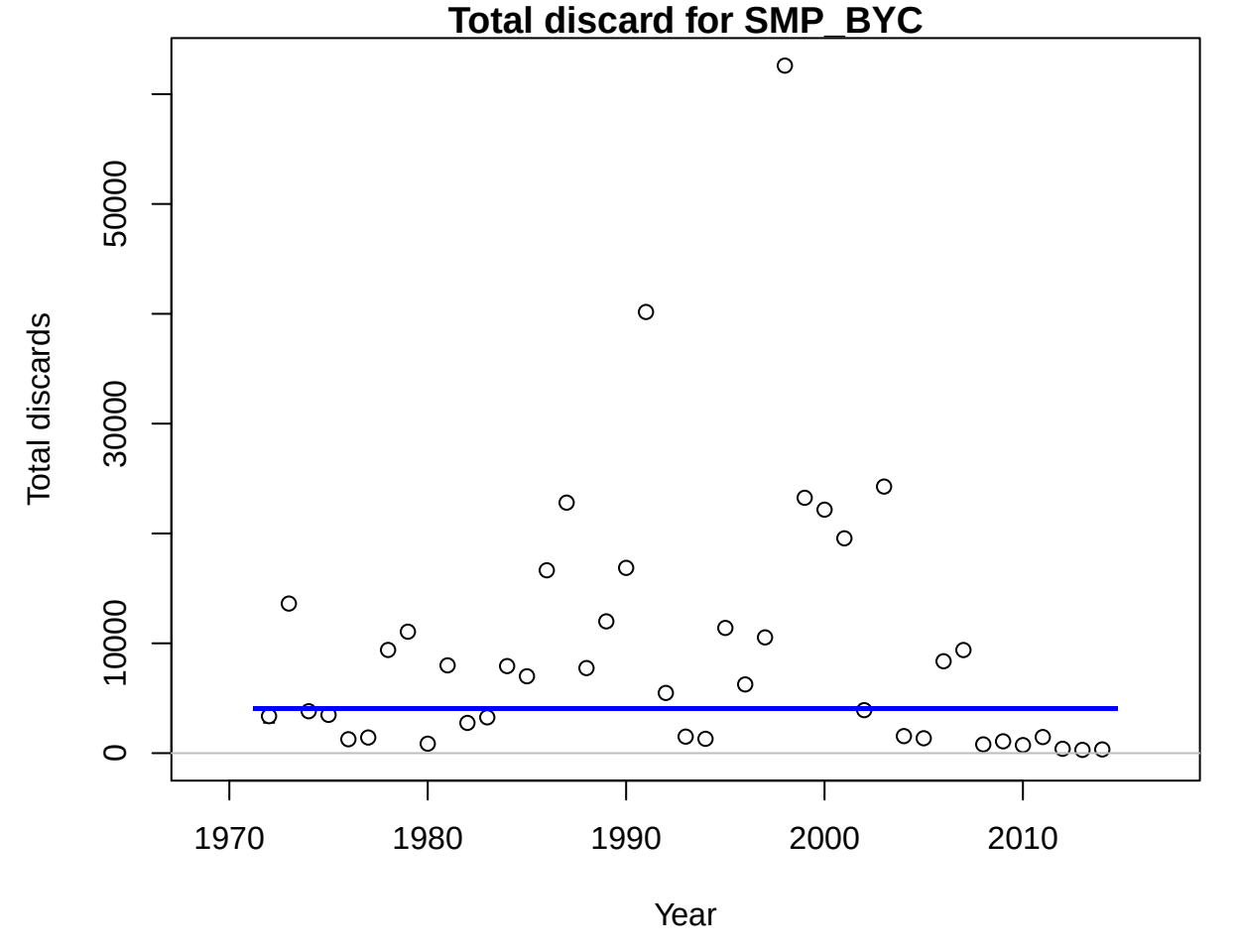

SPR
1.0
0.8
0.6
0.4
0.2
0.0
1950
1960
1970
1980
1990
2000
2010
Year

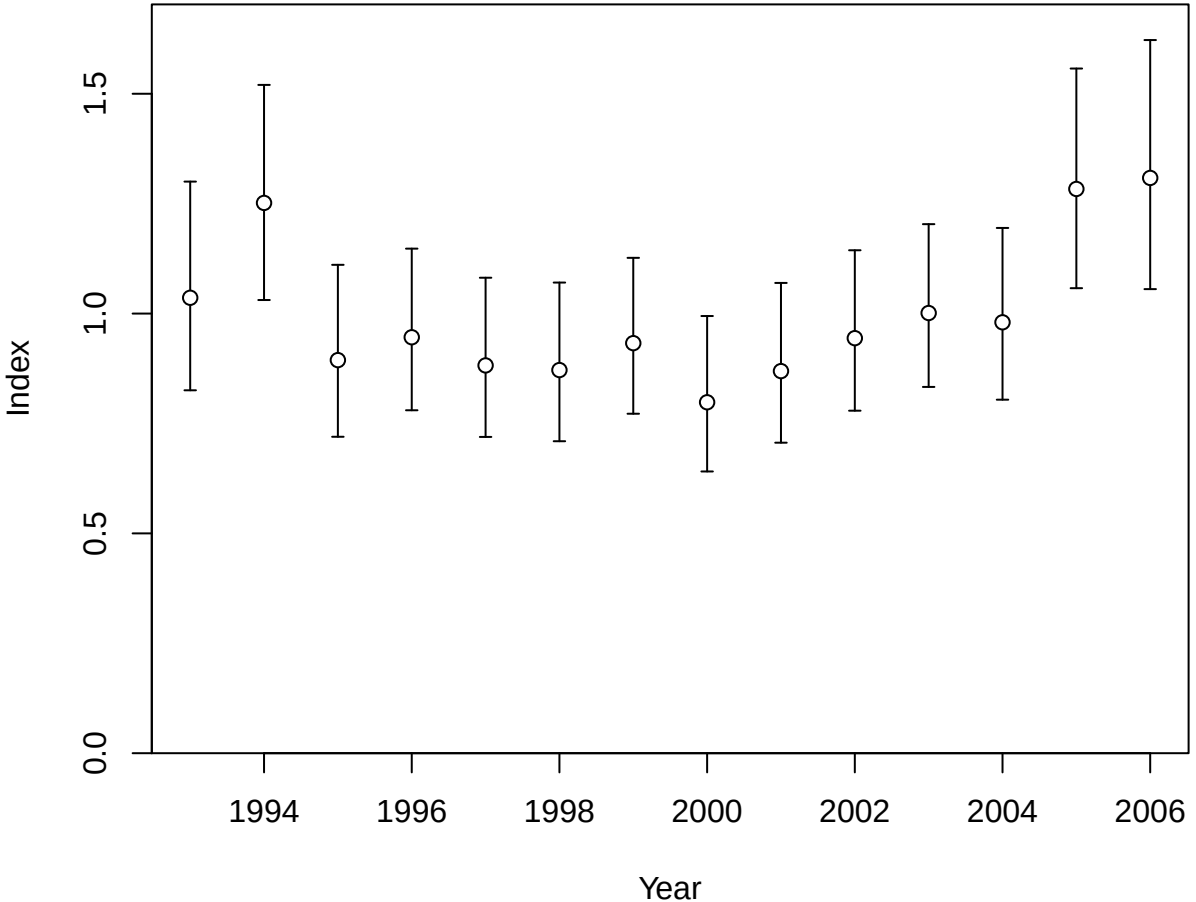

1−SPR
0.0
0.2
0.4
0.6
0.8
1.0
1950
1960
1970
1980
1990
2000
2010
Year

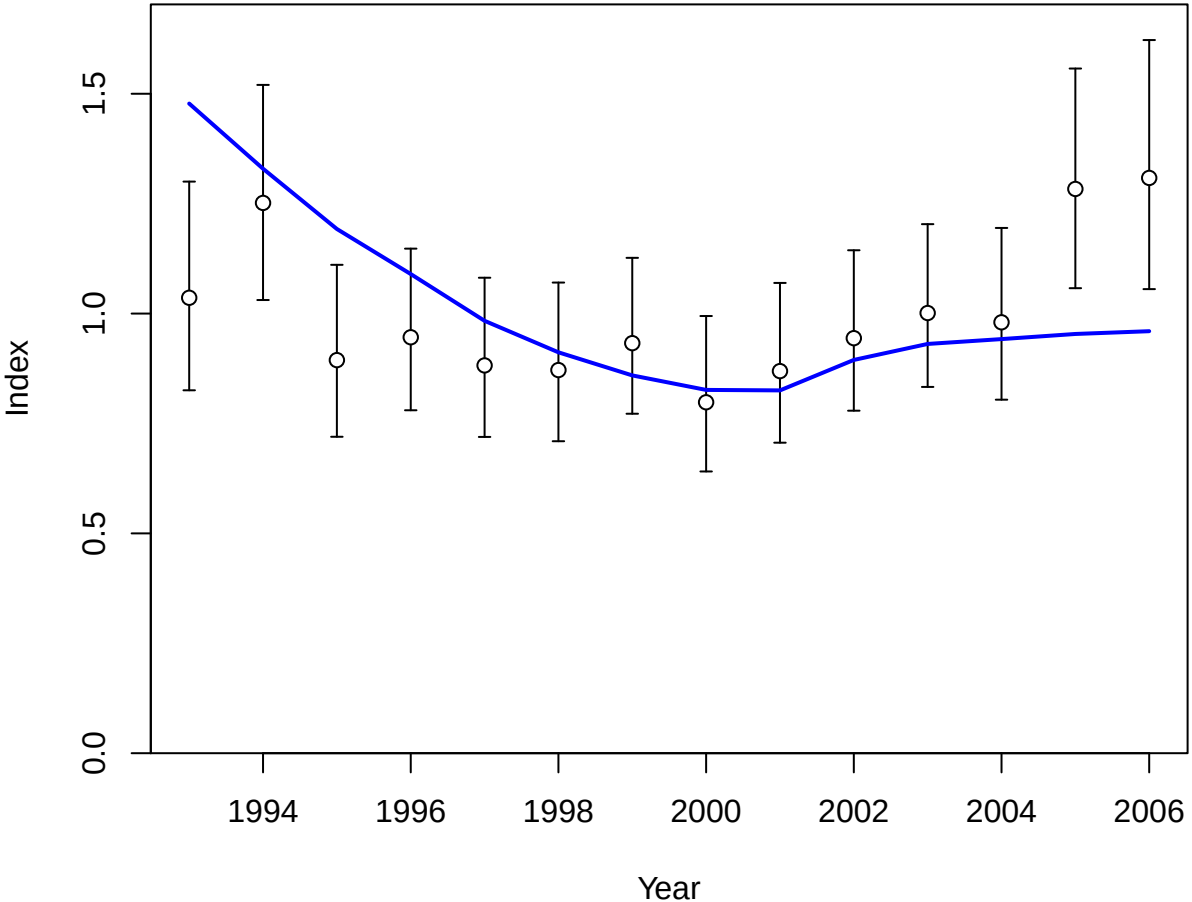

Management target
1−SPR
0.0
0.2
0.4
0.6
0.8
1.0
1950
1960
1970
1980
1990
2000
2010
Year

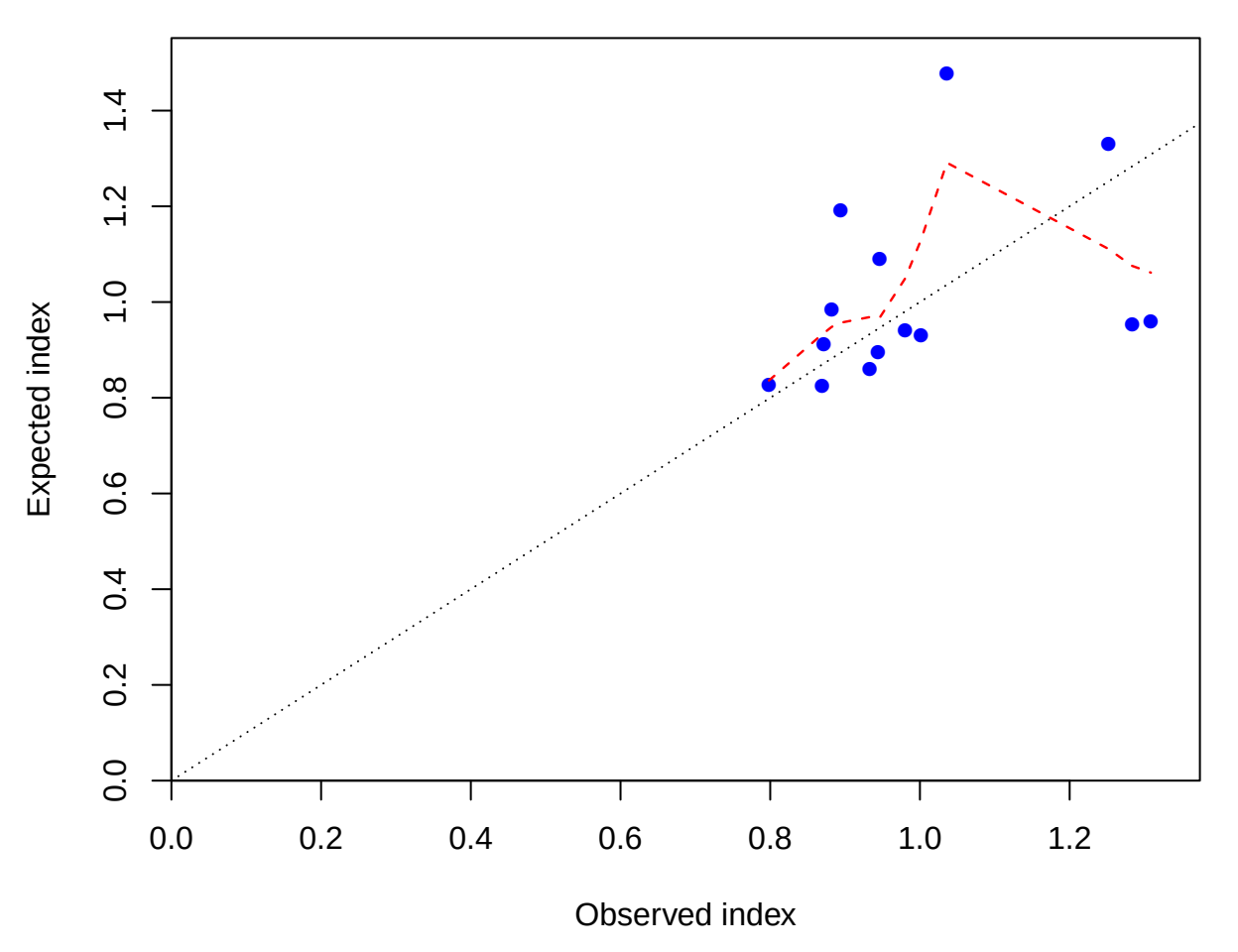

1−SPR
0.0
0.2
0.4
0.6
0.8
1.0
0
1
2
3
B/Btarget

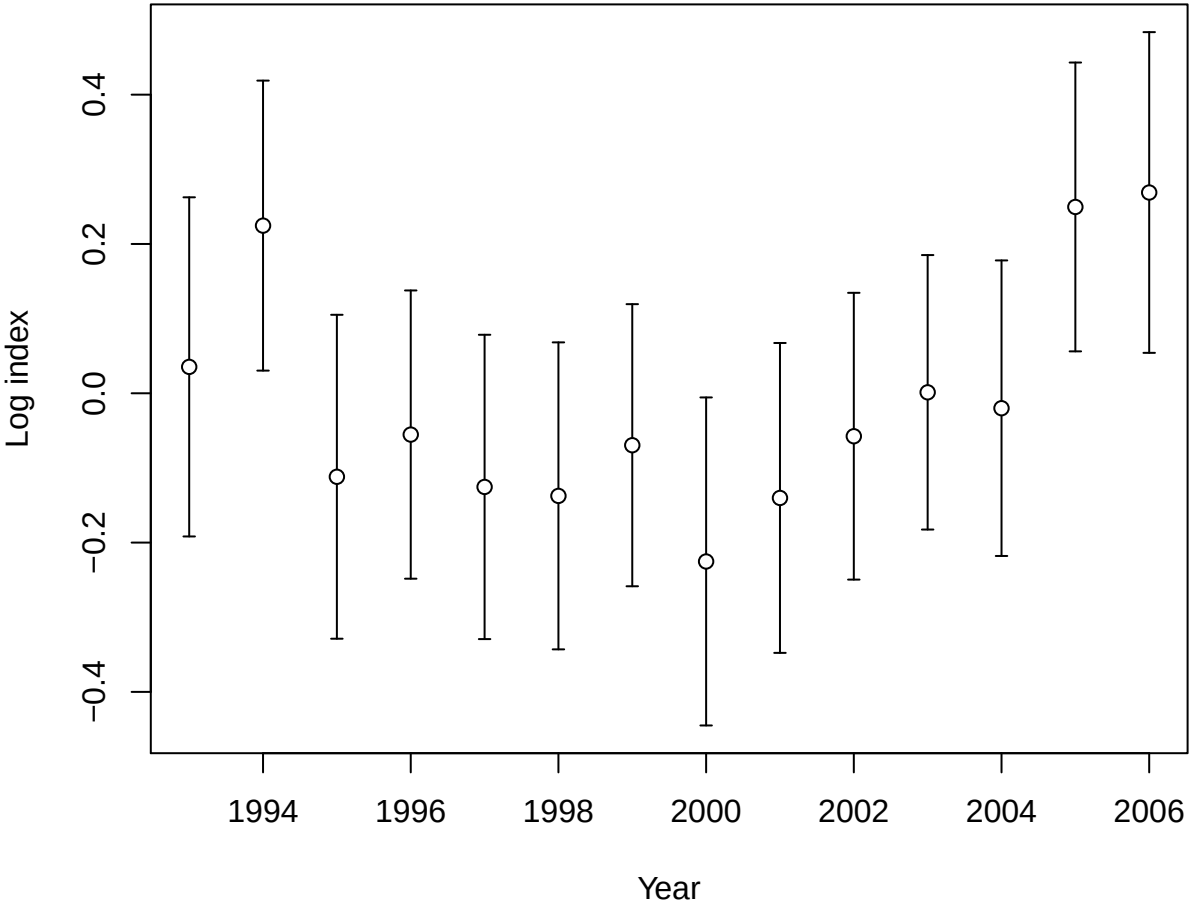

Total discard for SMP_BYC
Total discards
0
10000
30000
50000
1970
1980
1990
2000
2010
Year

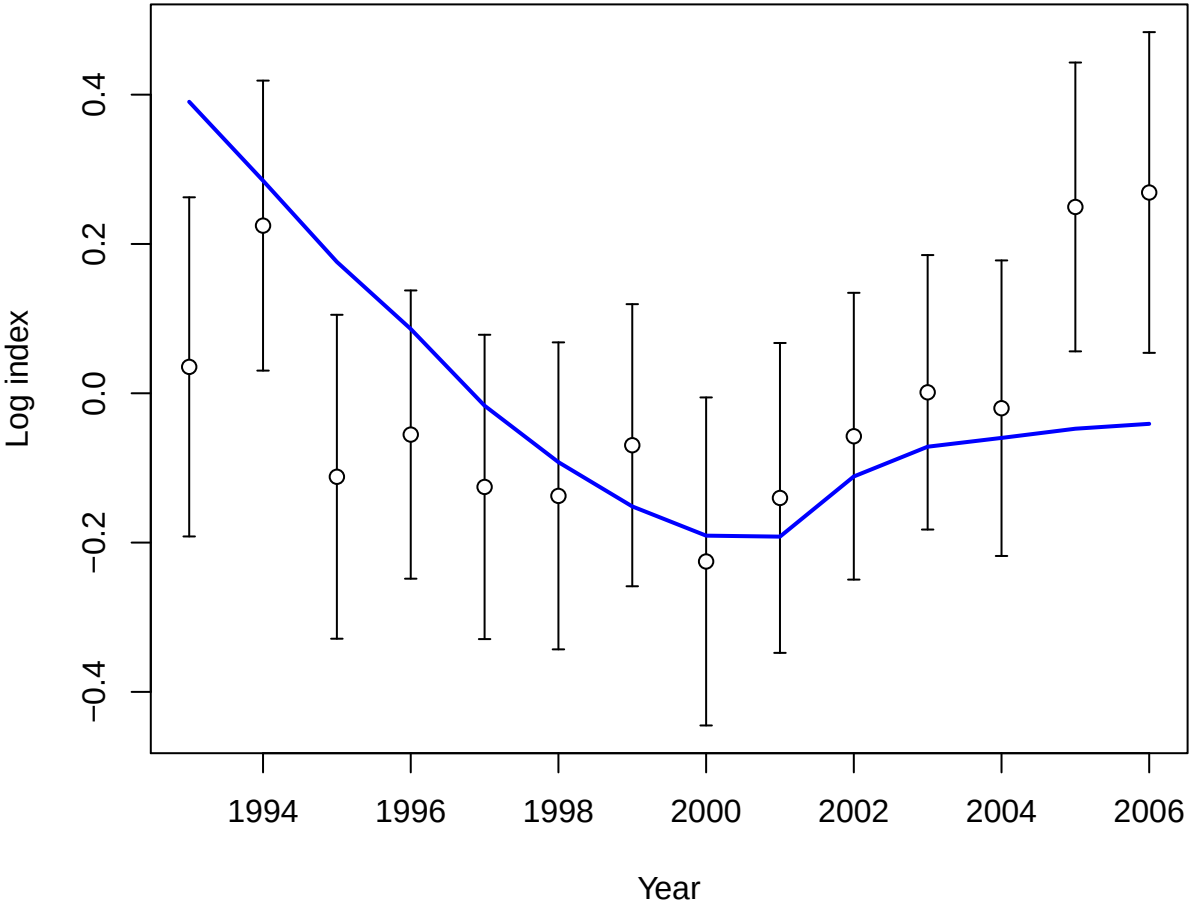

Total discard for SMP_BYC
Total discards
0
10000
30000
50000
1970
1980
1990
2000
2010
Year

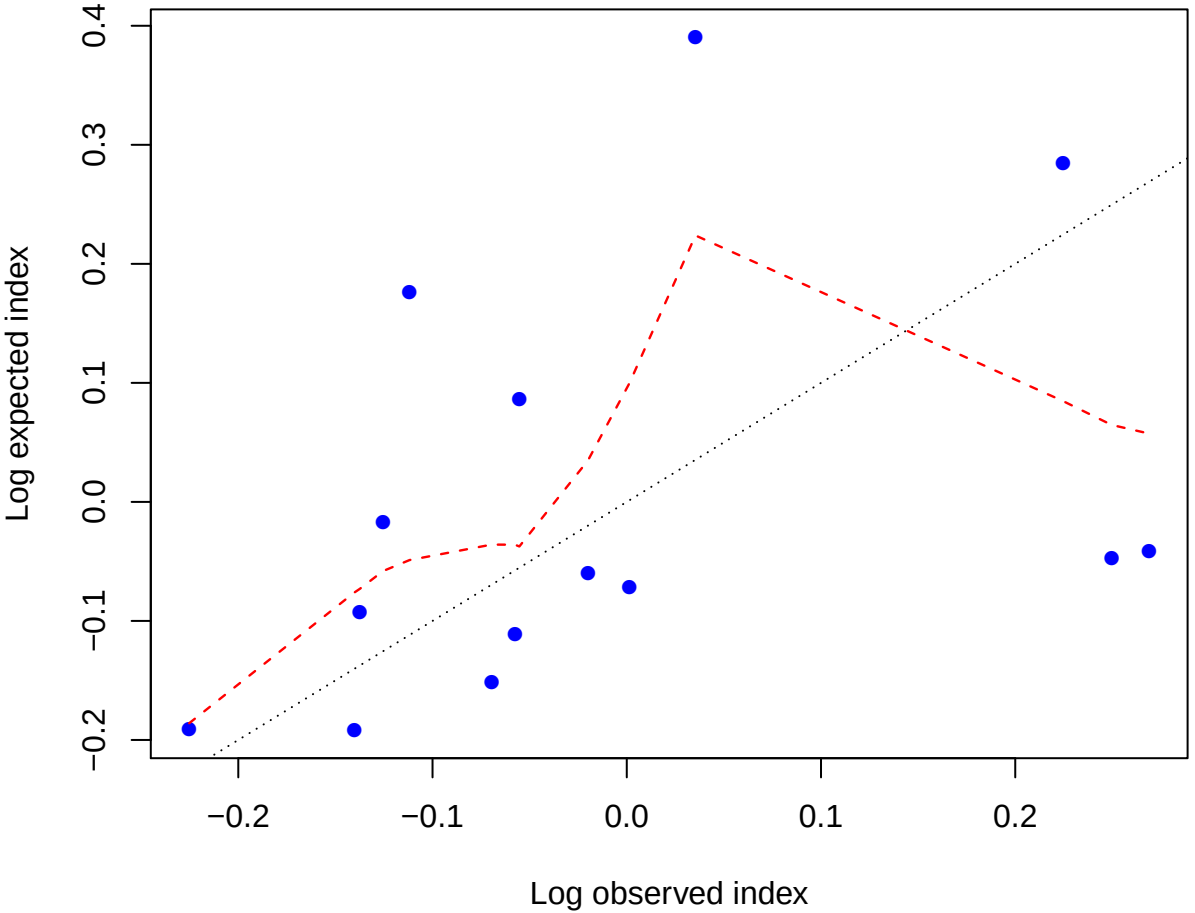

Index
0.0
0.5
1.0
1.5
1994
1996
1998
2000
2002
2004
2006
Year

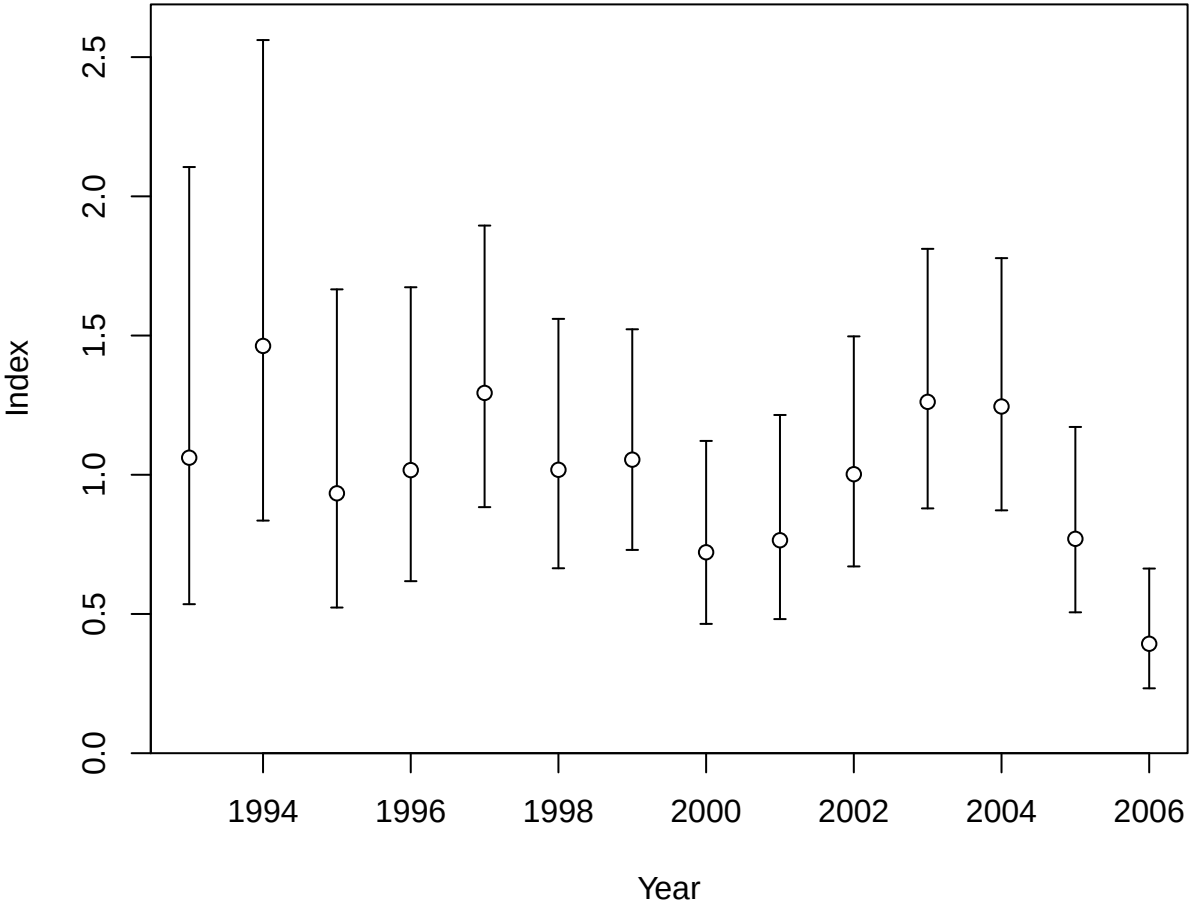

Index
0.0
0.5
1.0
1.5
1994
1996
1998
2000
2002
2004
2006
Year


Expected index
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Observed index
0.0
0.2
0.4
0.6
0.8
1.0
1.2


Log index
0.4
0.2
0.0
−0.2
−0.4
1994
1996
1998
2000
2002
2004
2006
Year


Log index
0.4
0.2
0.0
−0.2
−0.4
1994
1996
1998
2000
2002
2004
2006
Year


Log expected index
0.4
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.2
−0.1
0.0
0.1
0.2
Log observed index


Index
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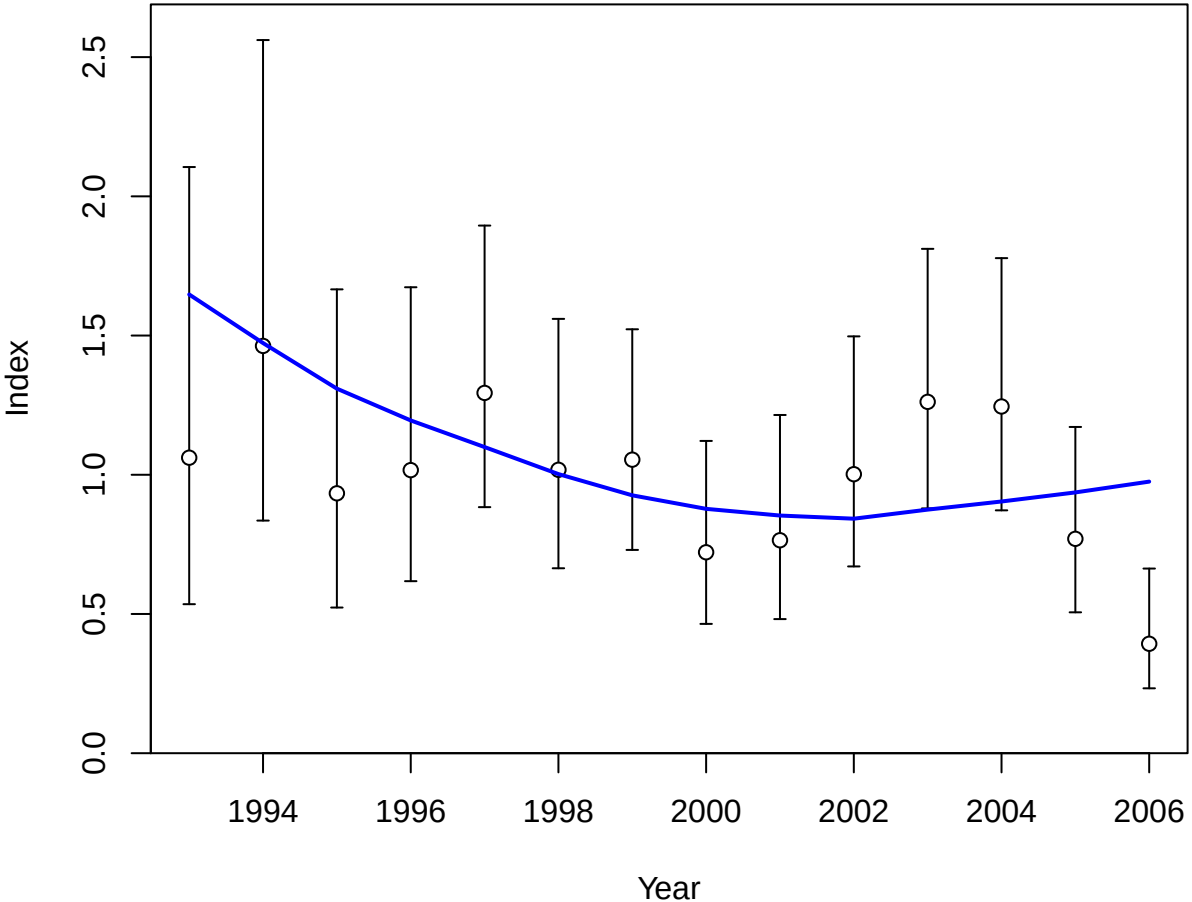
0.5
1.0
1.5
2.0
2.5
1994
1996
1998
2000
2002
2004
2006
Year


Index
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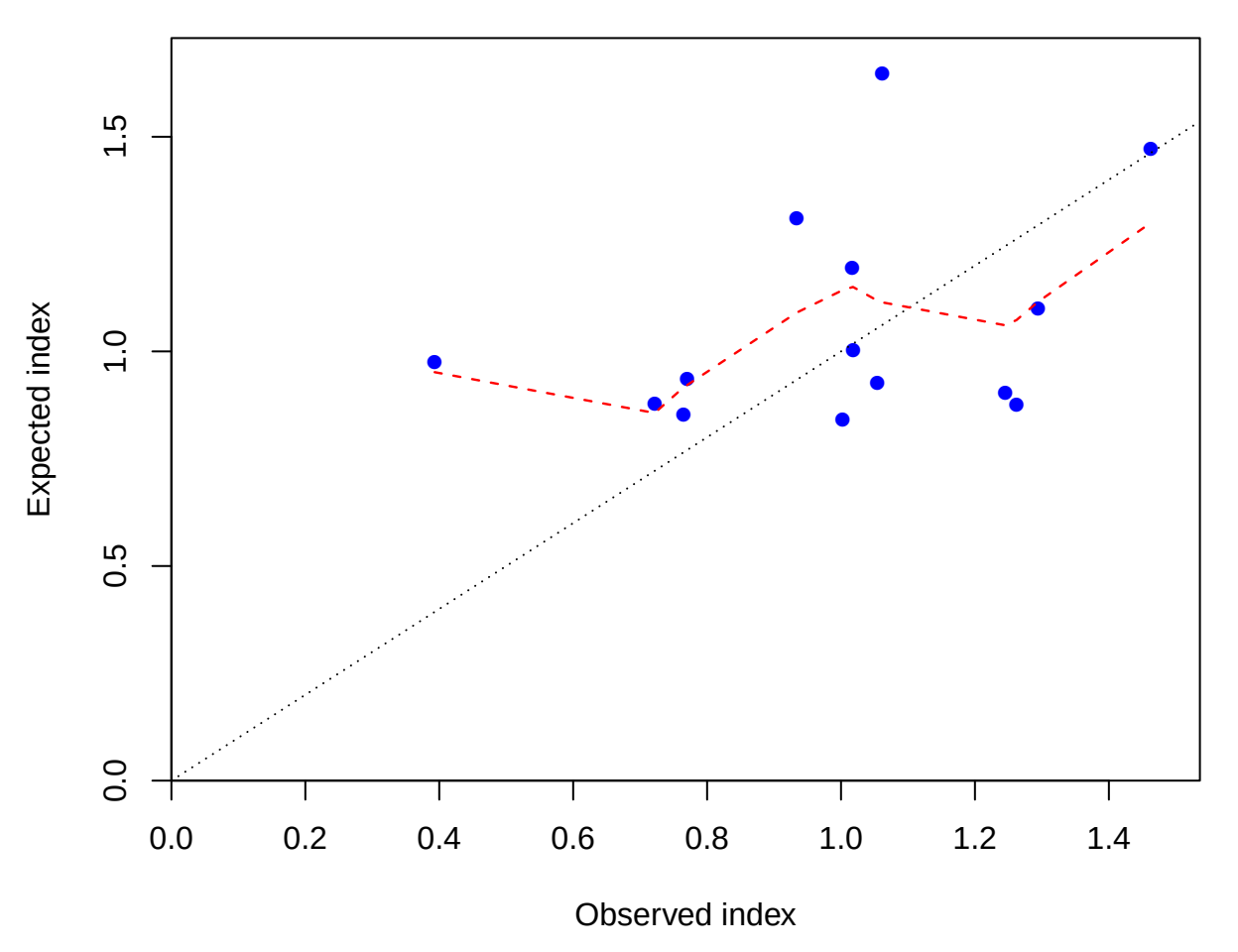
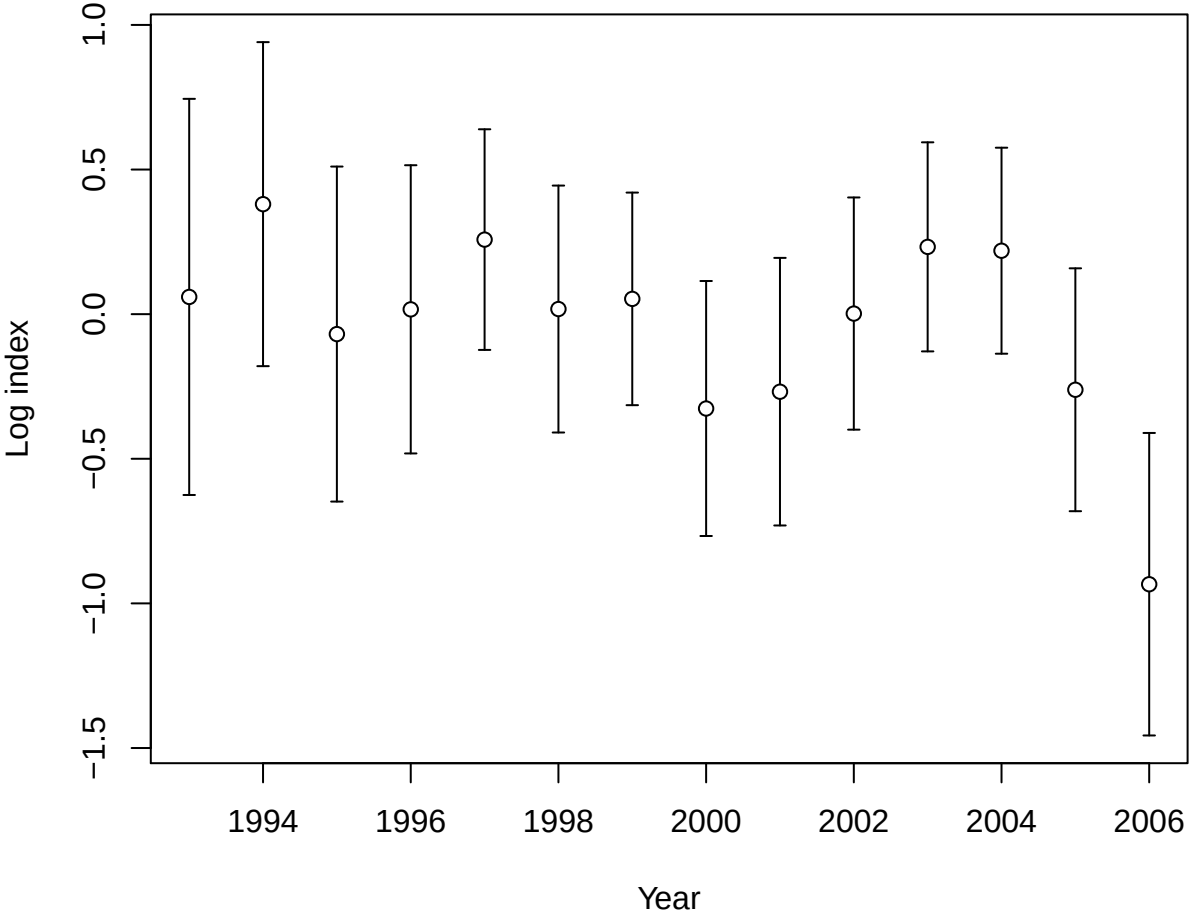
1.0
1.5
2.0
2.5
1994
1996
1998
2000
2002
2004
2006
Year


Expected index
0.0
0.5
1.0
1.5
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Observed index


Log index
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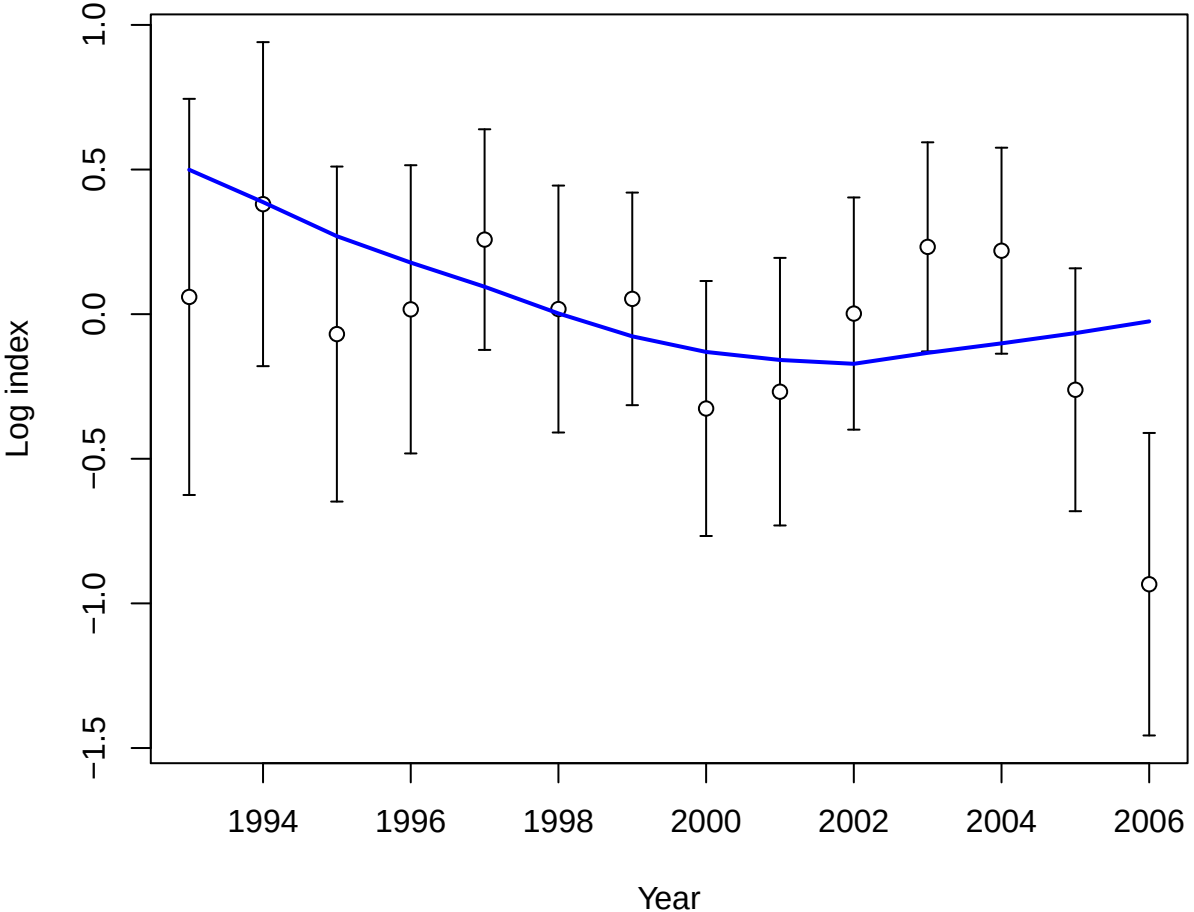
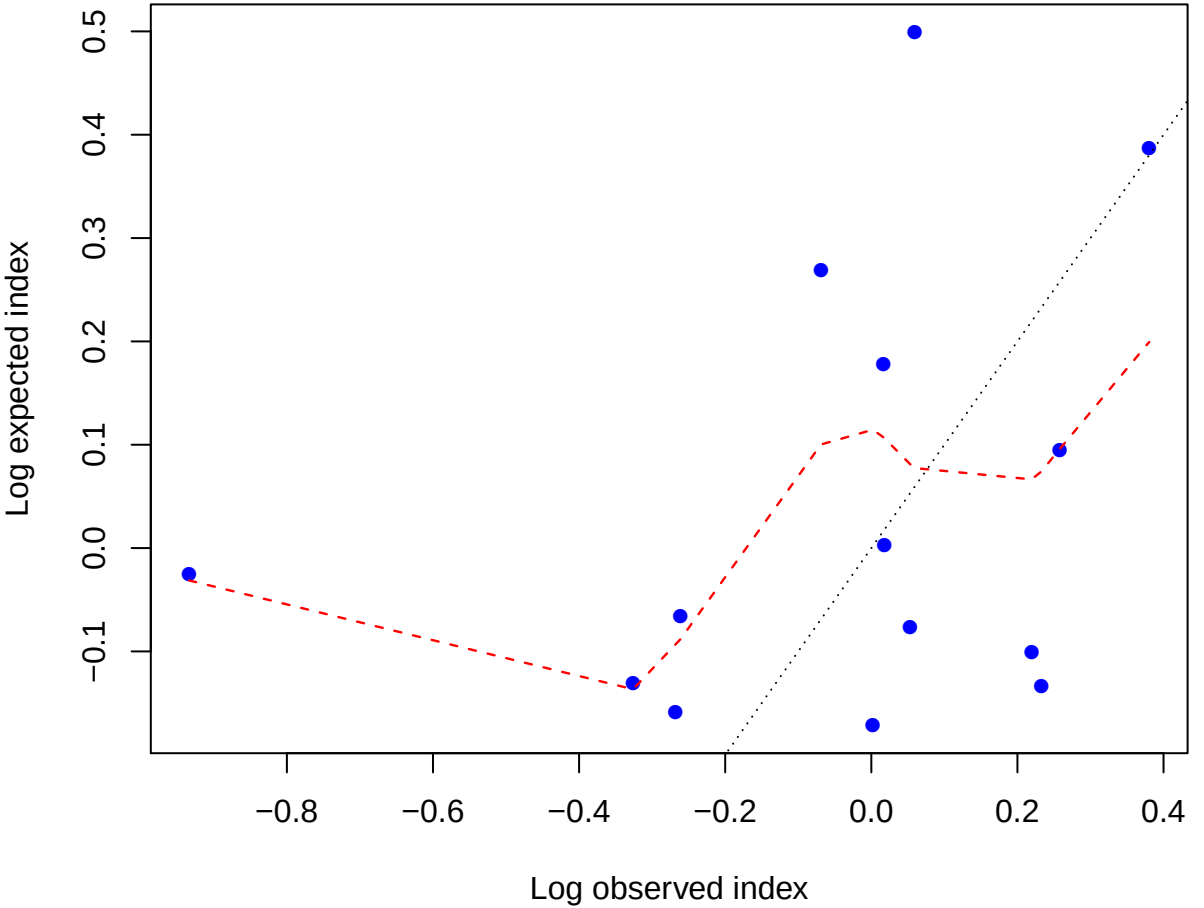
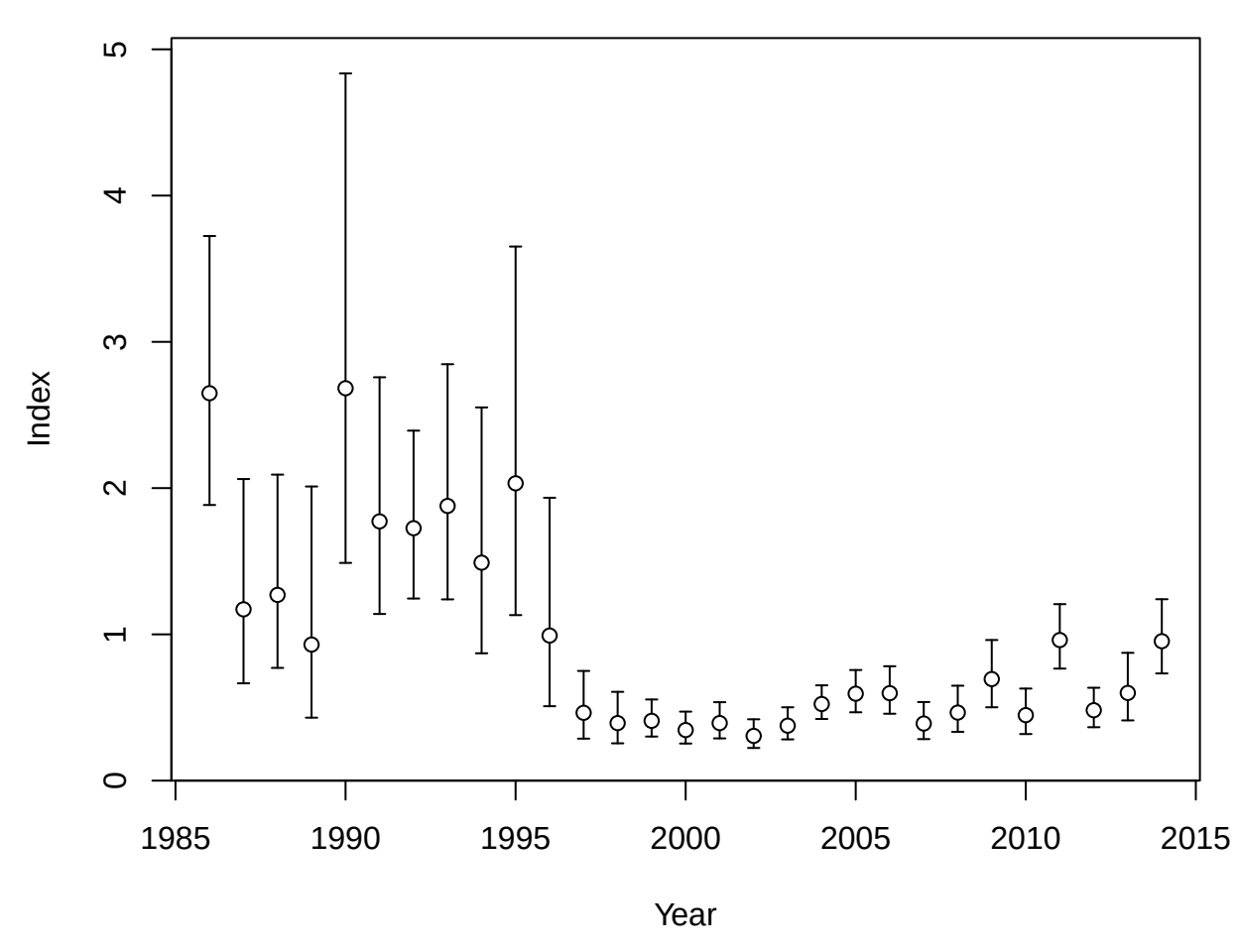
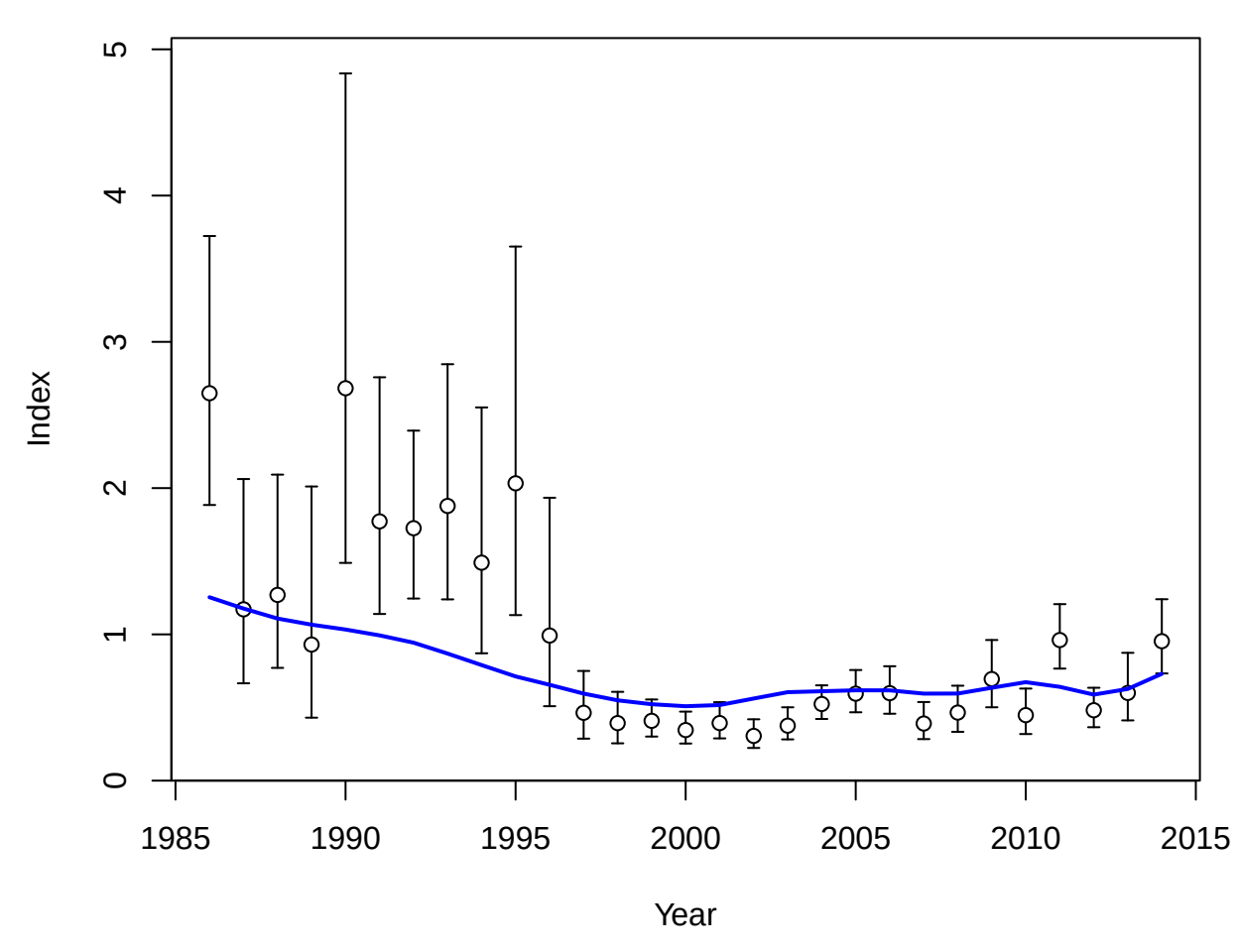
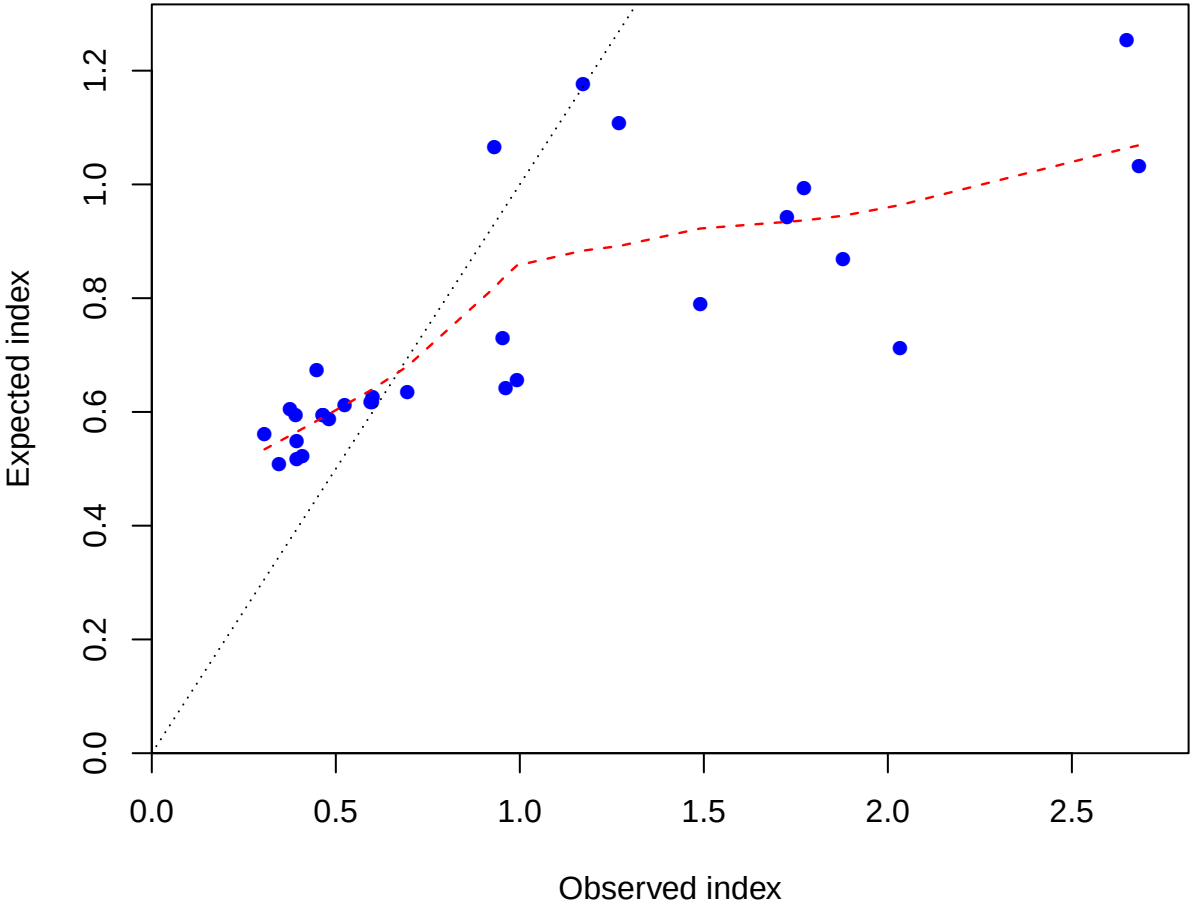
0.5
0.0
−0.5
−1.0
−1.5
1994
1996
1998
2000
2002
2004
2006
Year

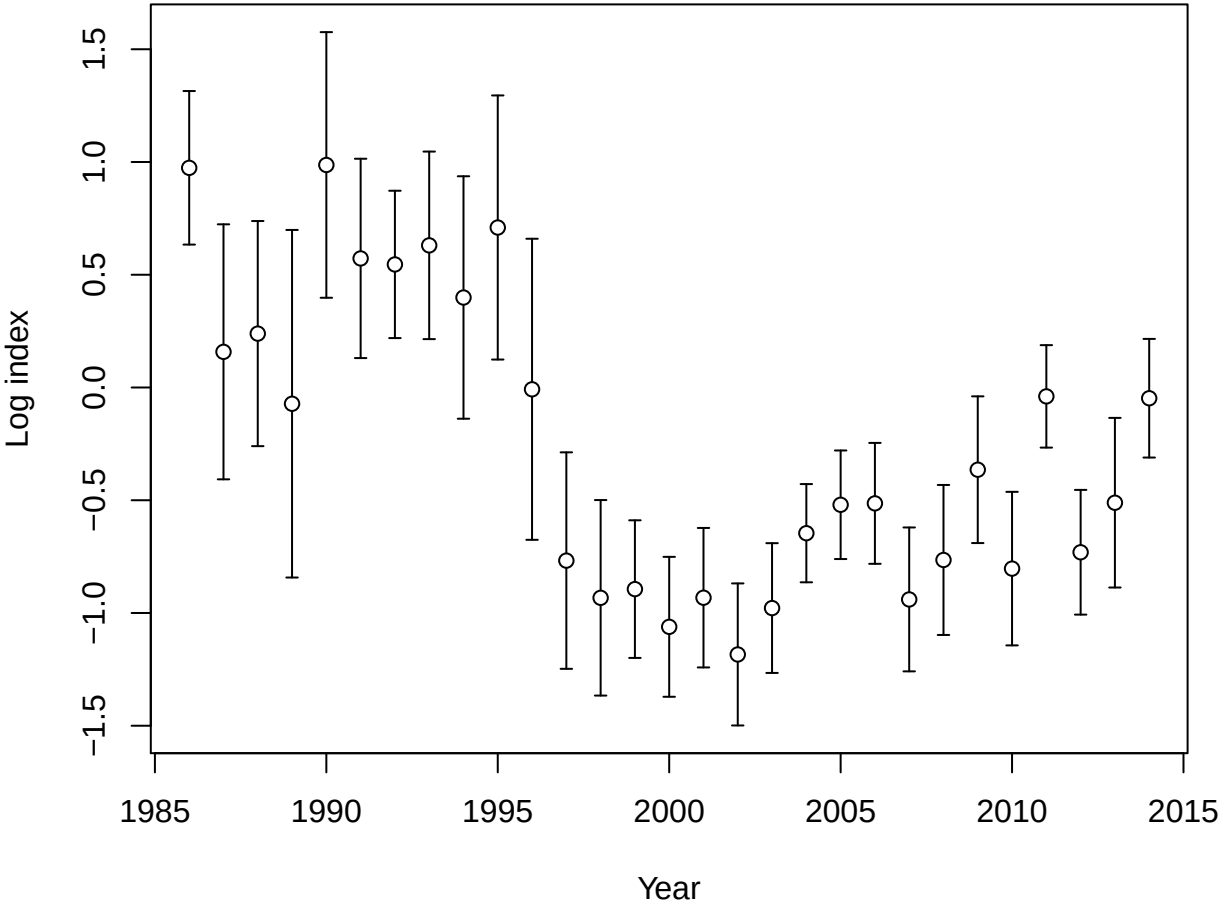

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
1994
1996
1998
2000
2002
2004
2006
Year


Log expected index
0.5
0.4
0.3
0.2
0.1
0.0
−0.1
−0.8
−0.6
−0.4
−0.2
0.0
0.2
0.4
Log observed index


Index
0
1
2
3
4
5
1985
1990
1995
2000
2005
2010
2015
Year


Index
0
1
2
3
4
5
1985
1990
1995
2000
2005
2010
2015
Year


Expected index
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0.0
0.5
1.0
1.5
2.0
2.5
Observed index


Log index
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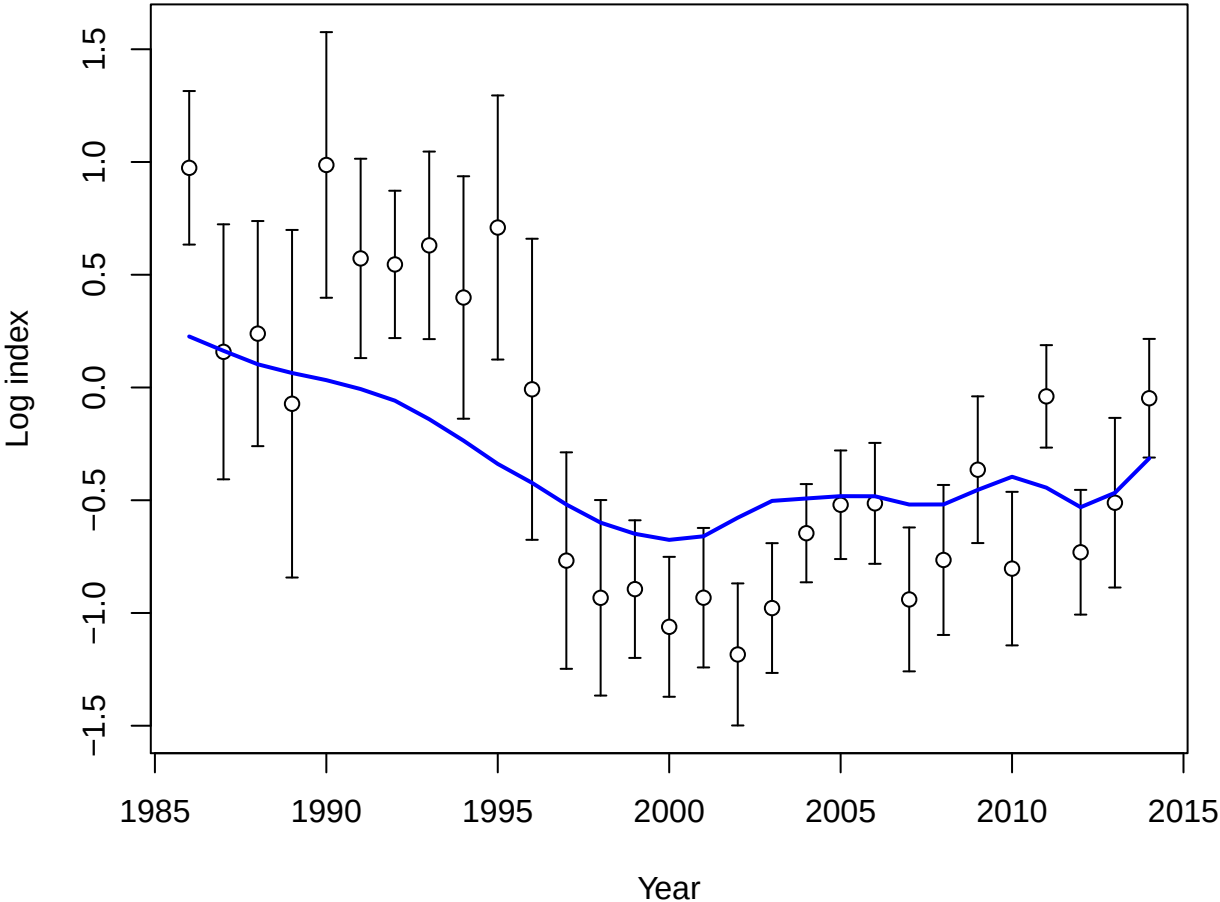
1.0
0.5
0.0
−0.5
−1.0
−1.5
1985
1990
1995
2000
2005
2010
2015
Year


Log index
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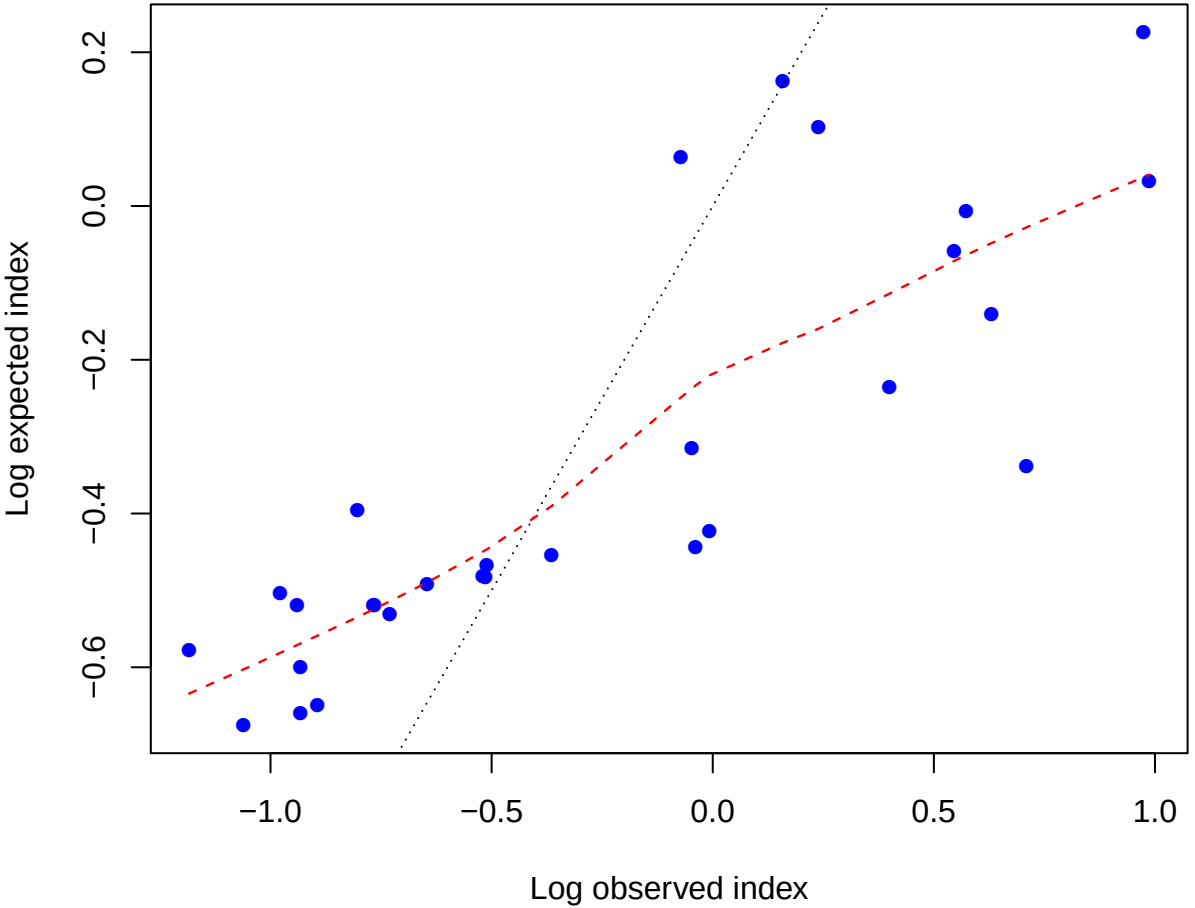
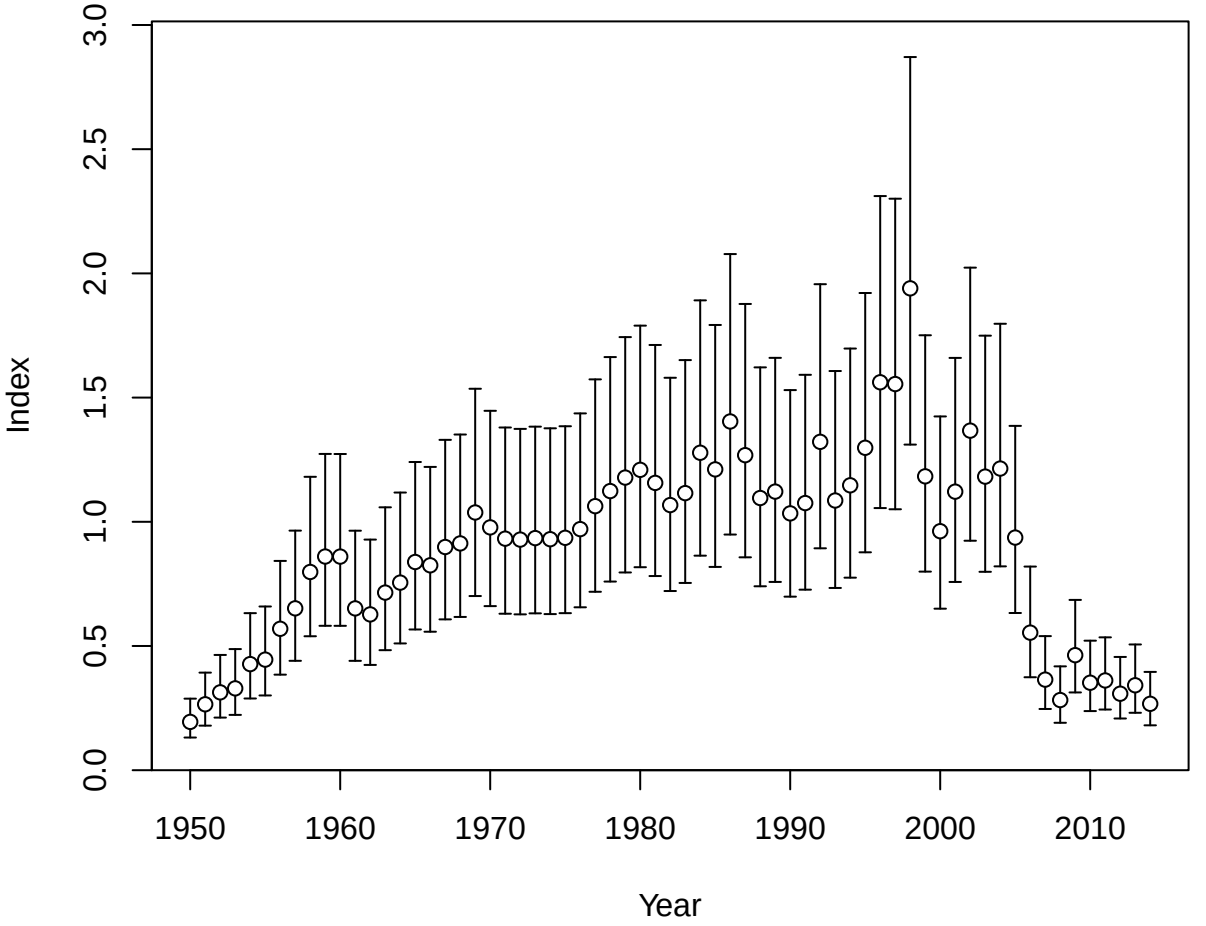
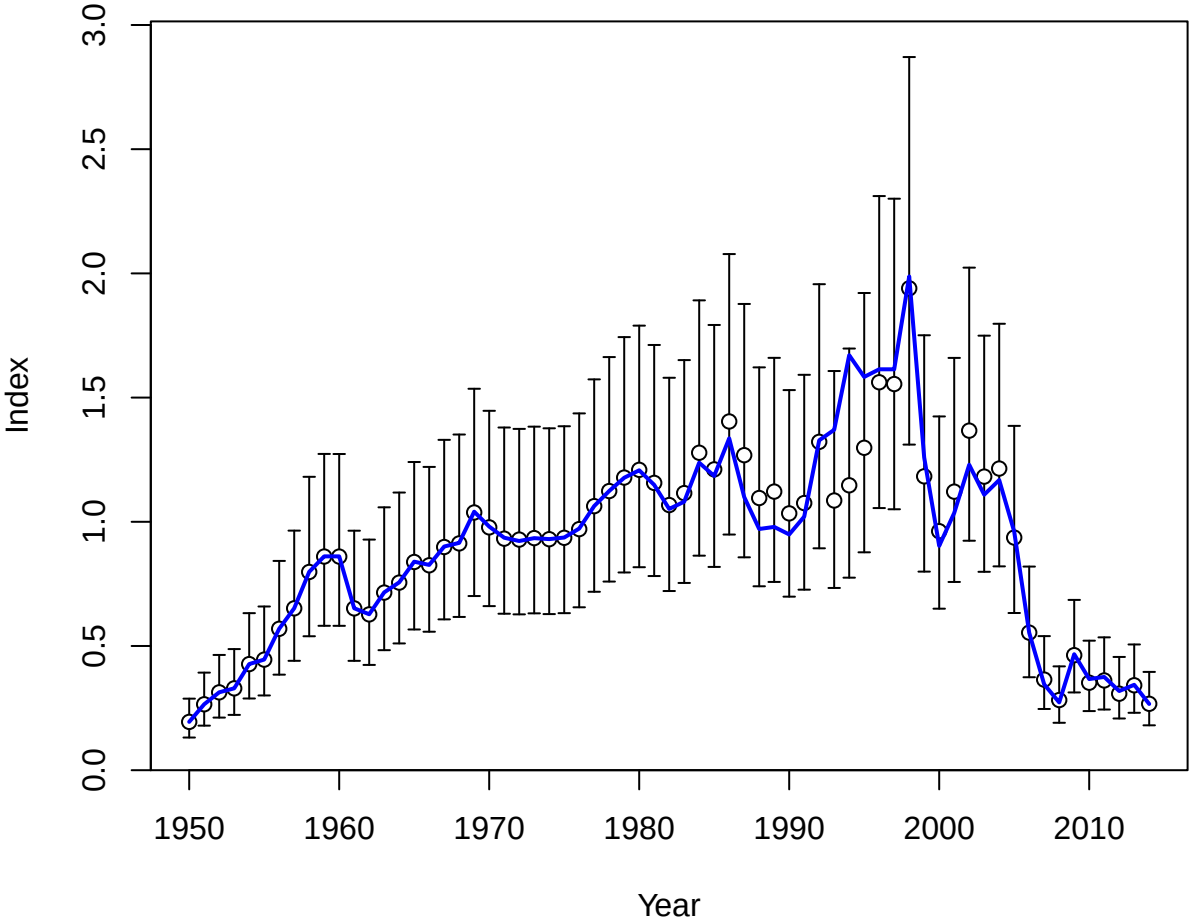
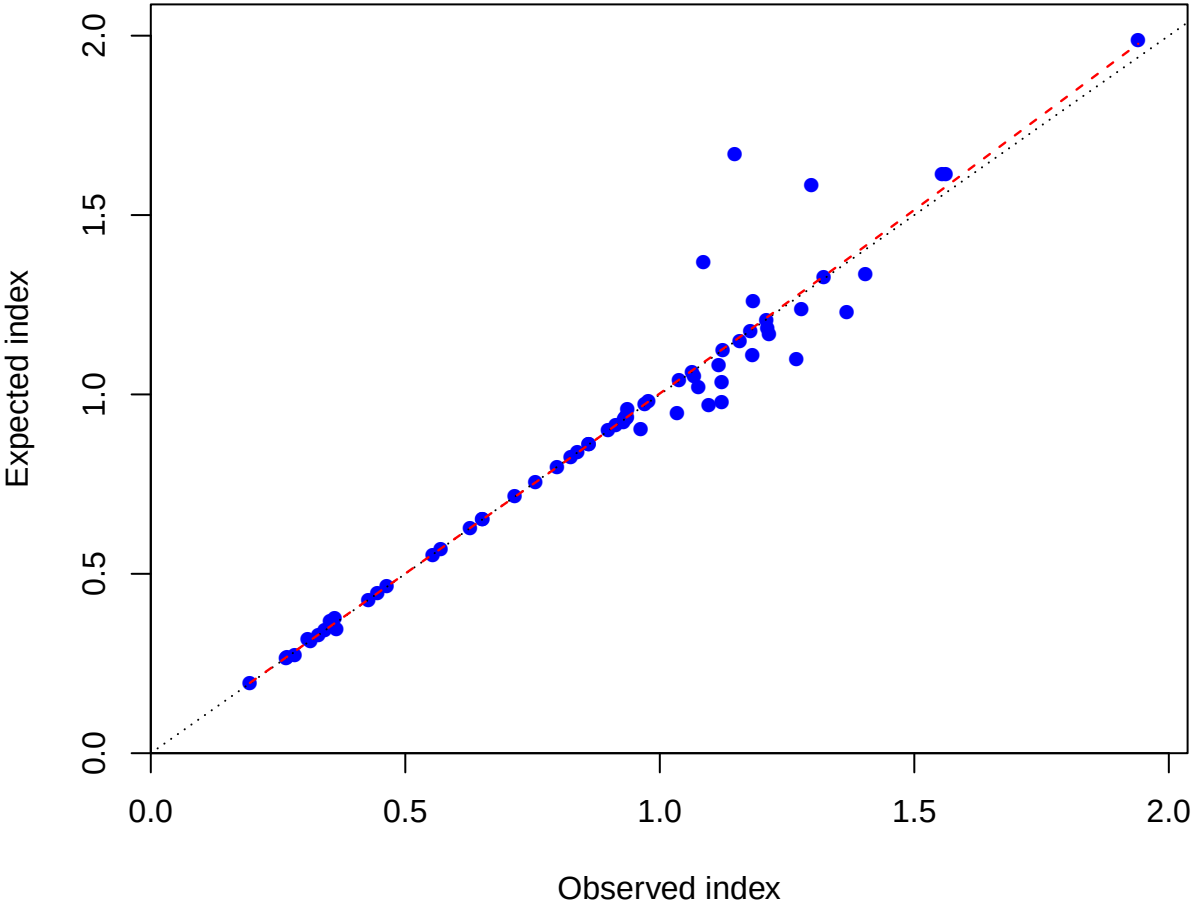
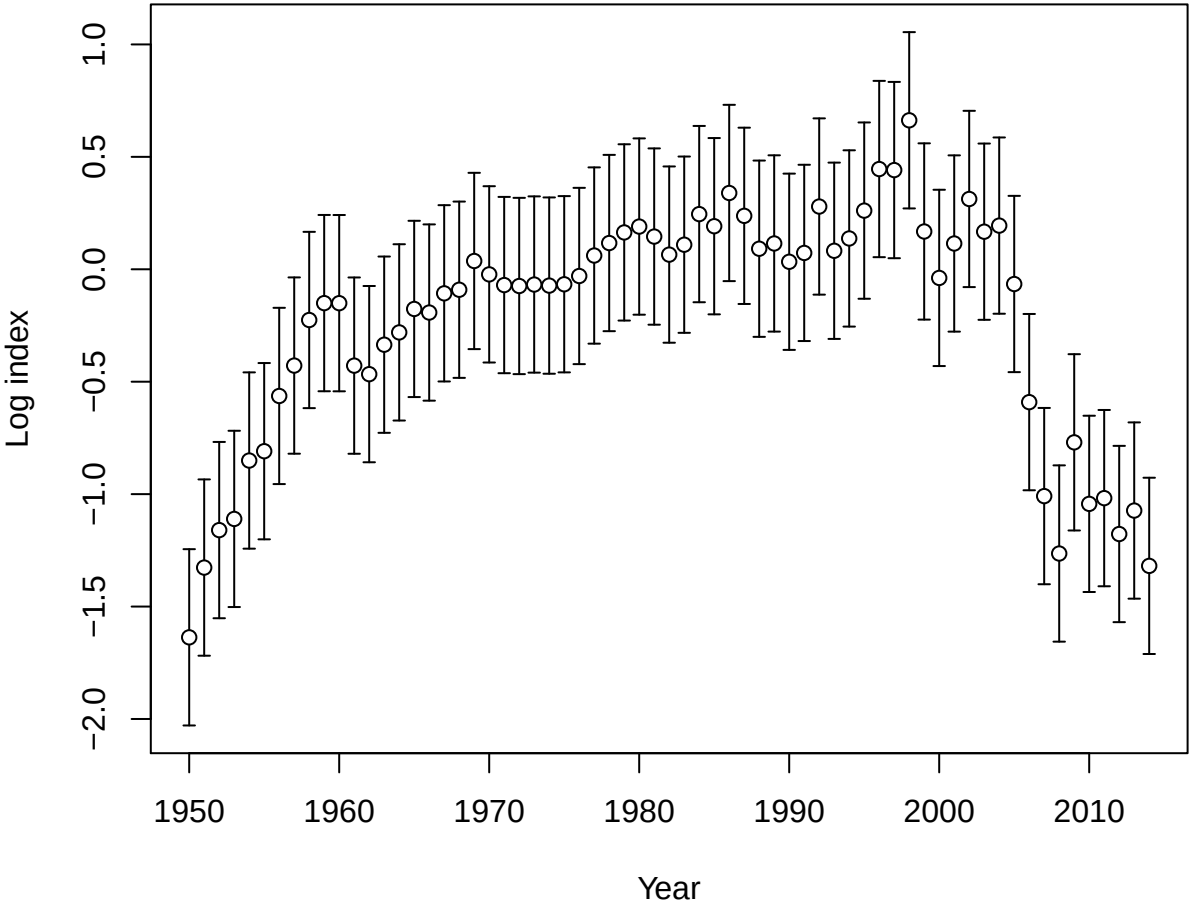
1.0
0.5
0.0
−0.5
−1.0
−1.5
1985
1990
1995
2000
2005
2010
2015
Year

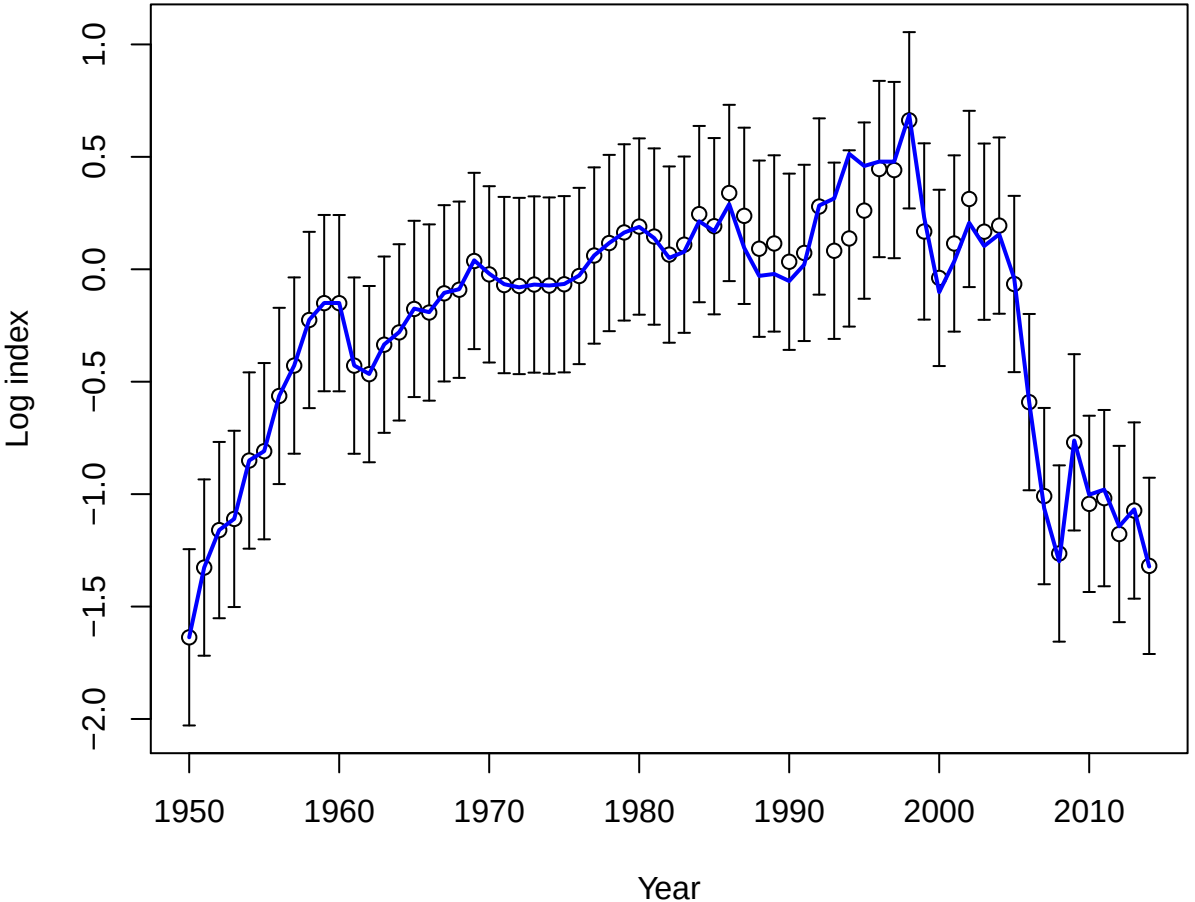

Log expected index
0.2
0.0
−0.2
−0.4
−0.6
−1.0
−0.5
0.0
0.5
1.0
Log observed index

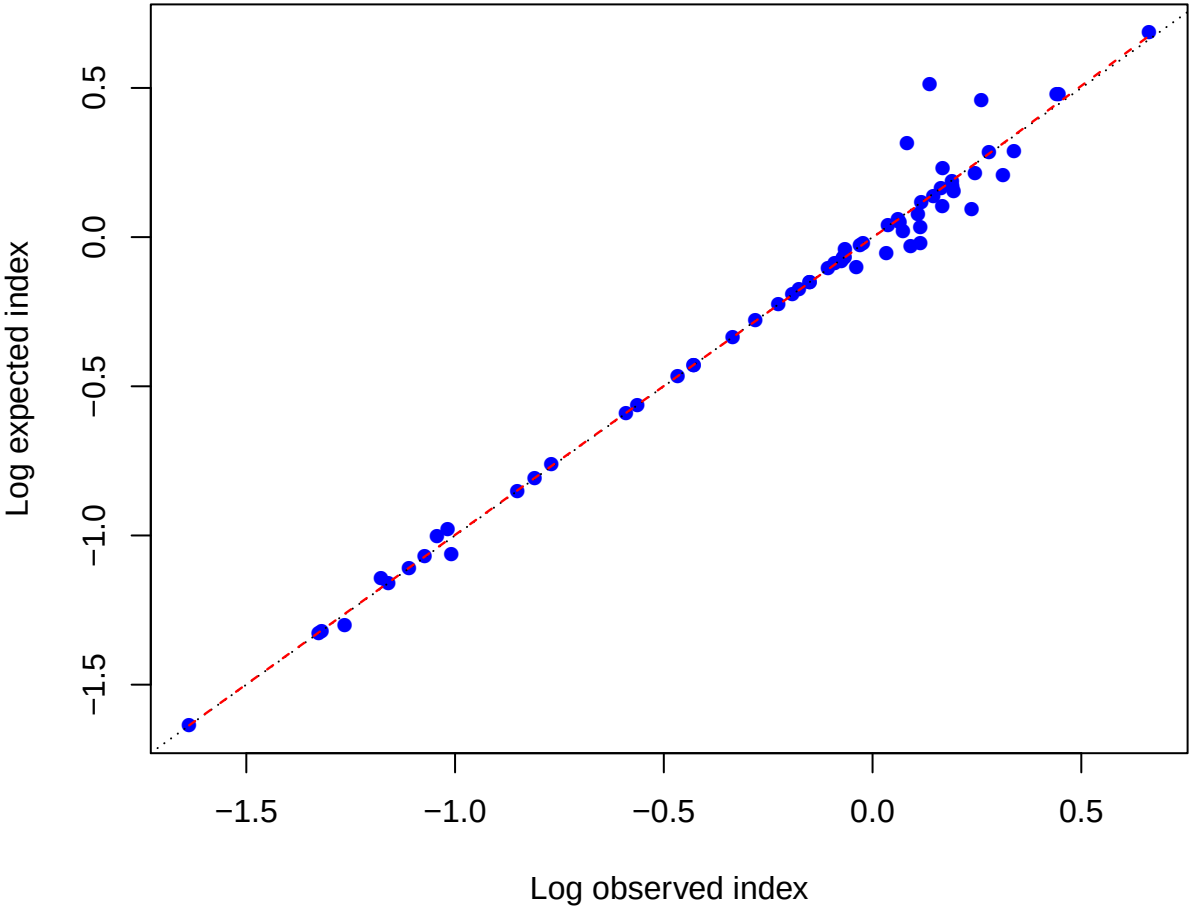

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1950
1960
1970
1980
1990
2000
2010
Year

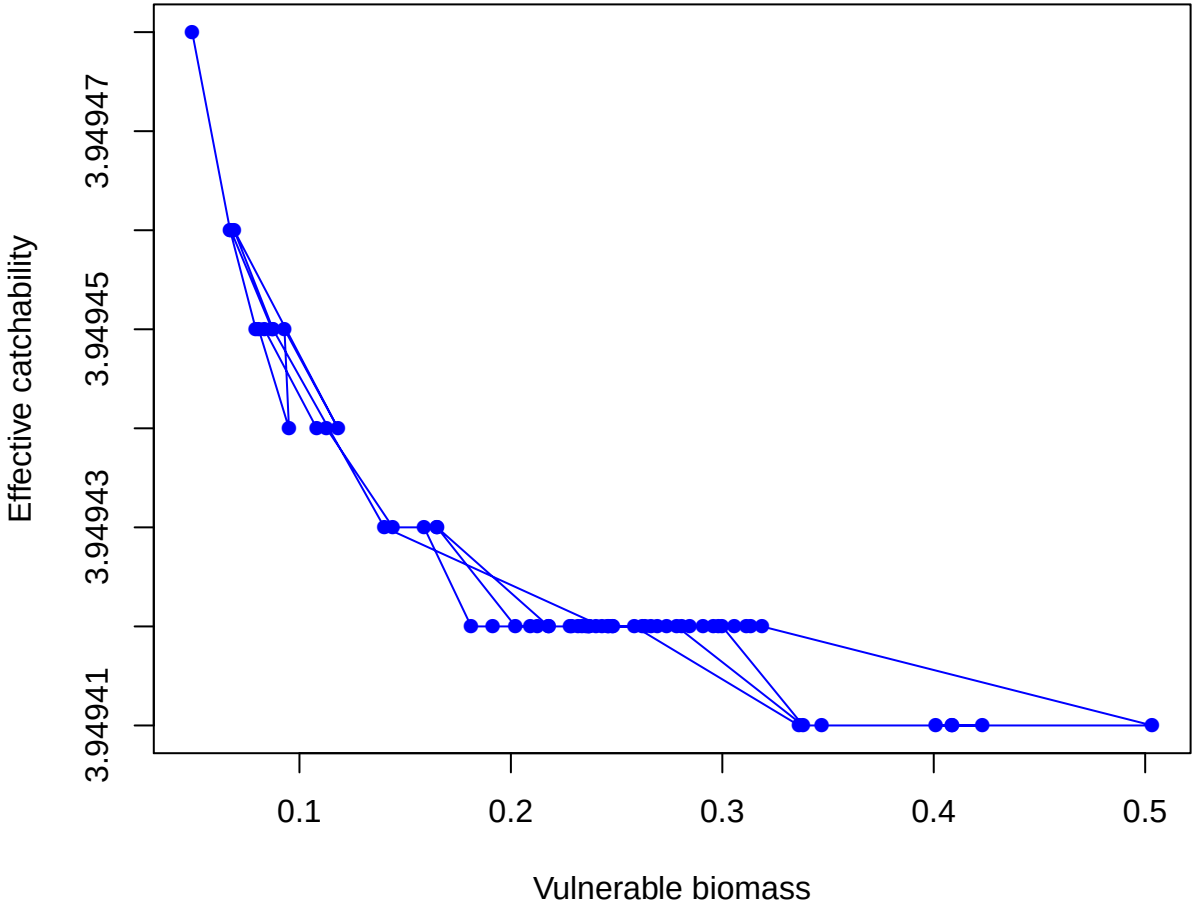

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1950
1960
1970
1980
1990
2000
2010
Year

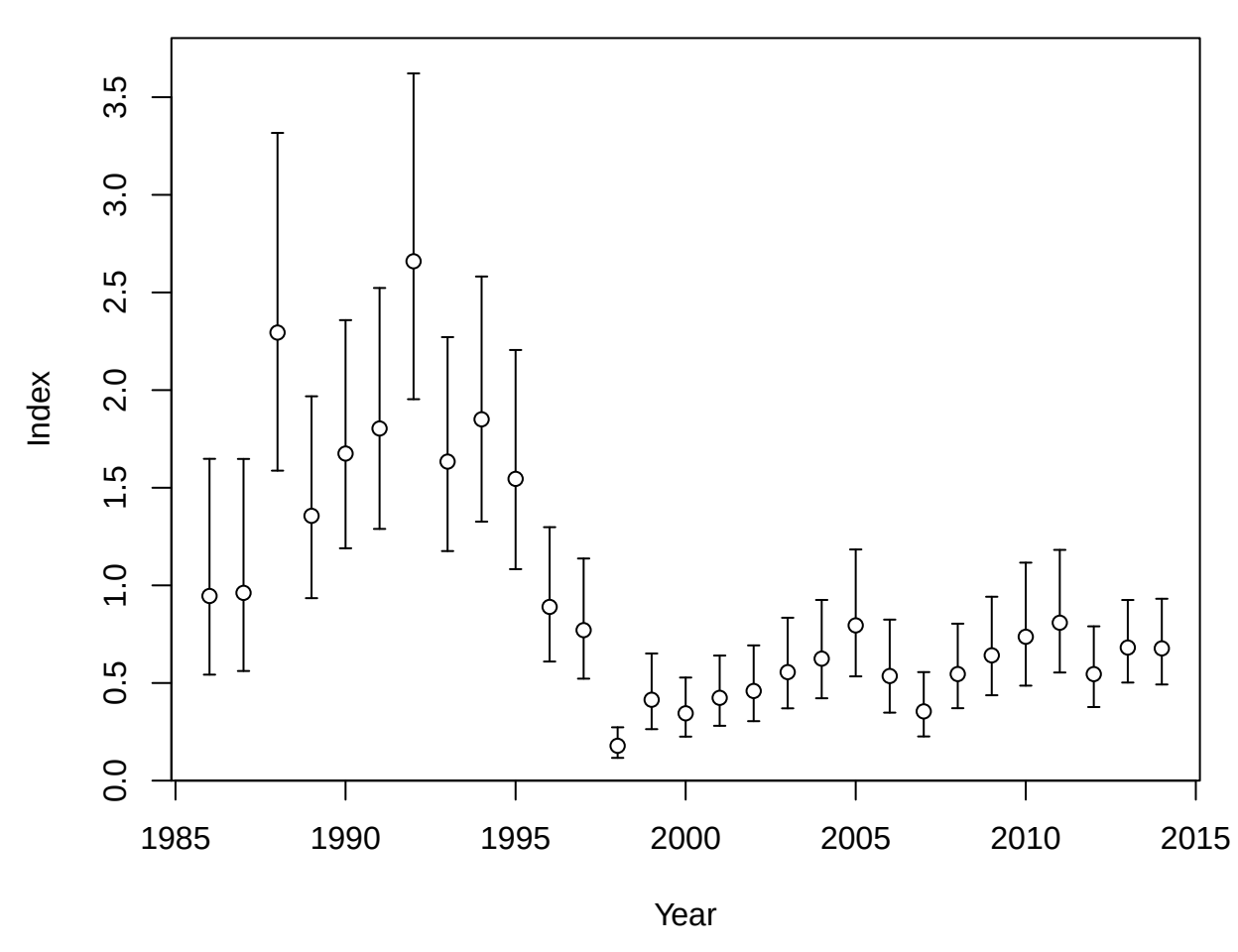

Expected index
Observed index
0.0
0.5
1.0
1.5
2.0

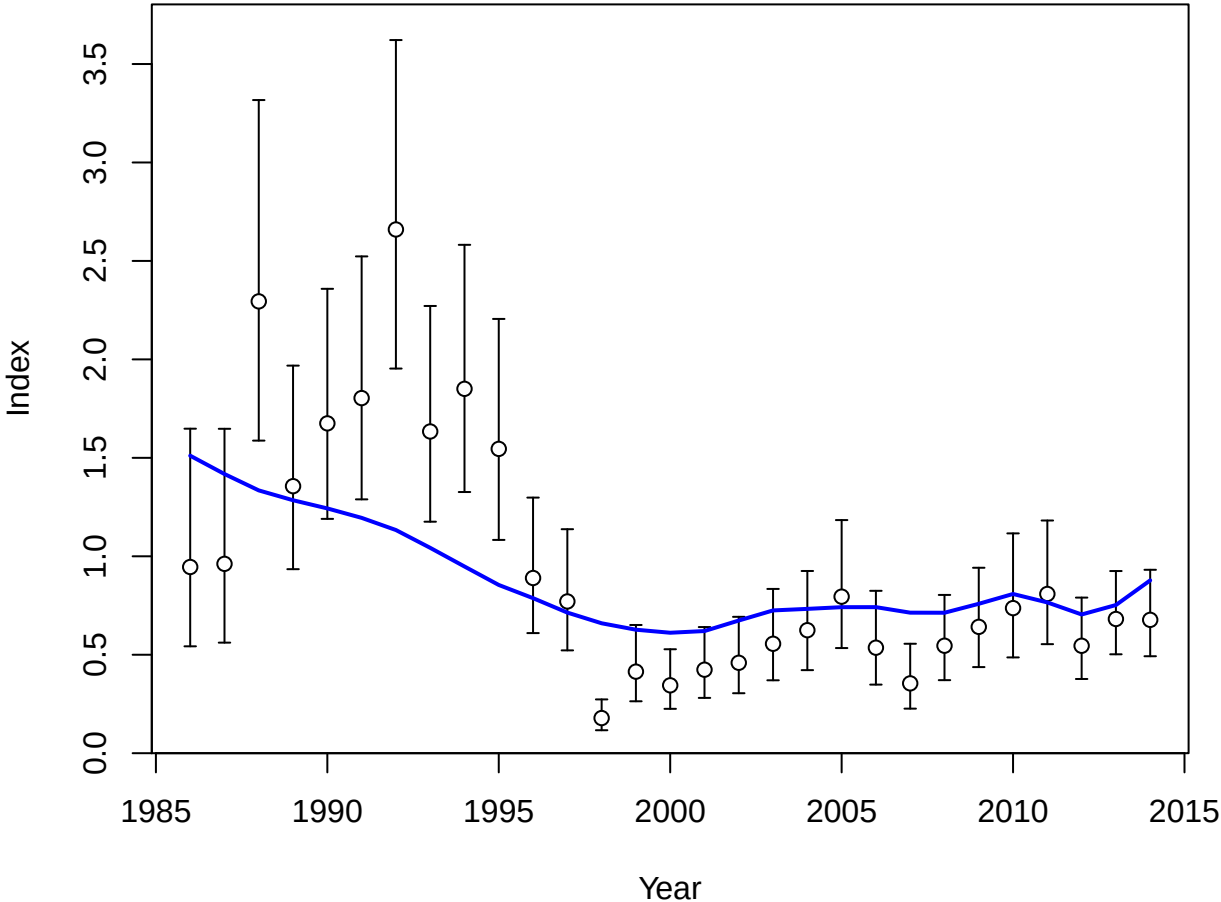

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1950
1960
1970
1980
1990
2000
2010
Year

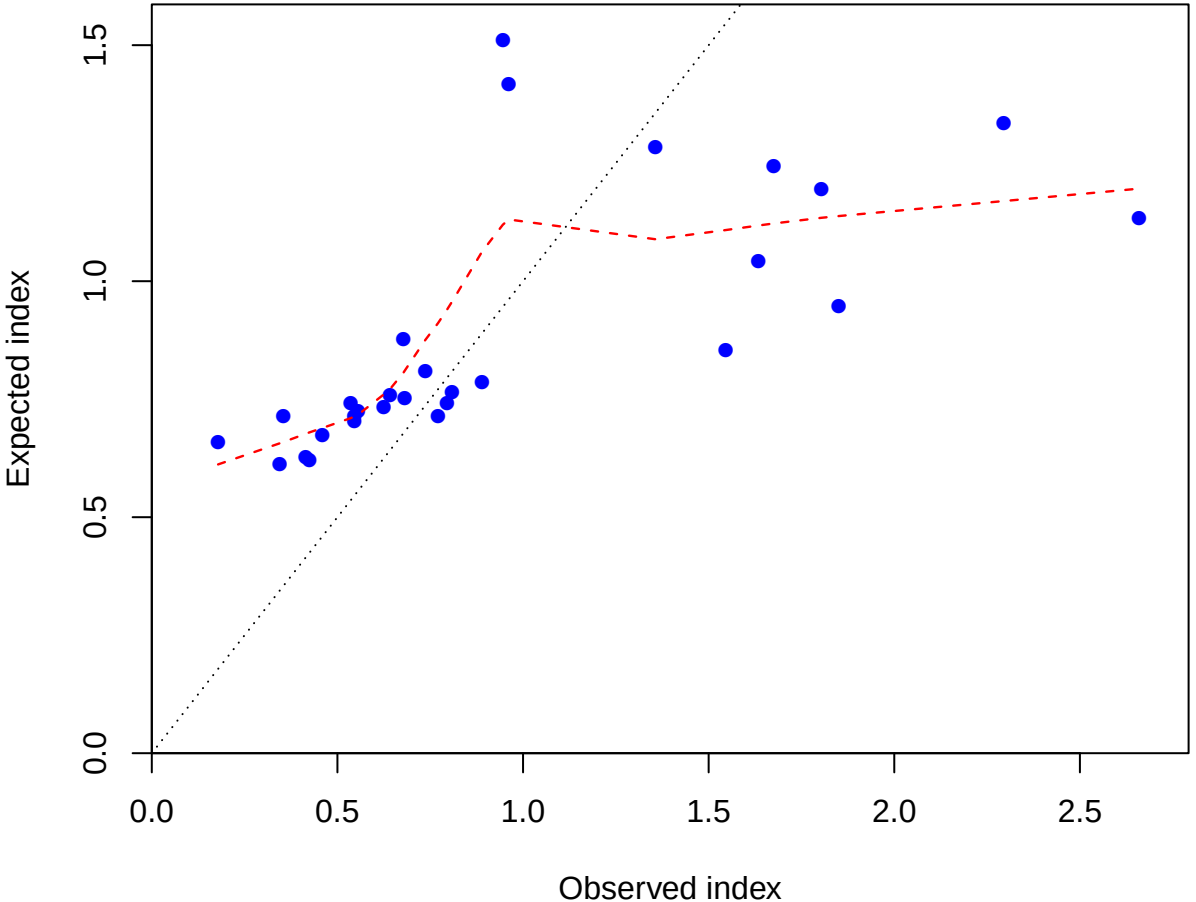

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1950
1960
1970
1980
1990
2000
2010
Year

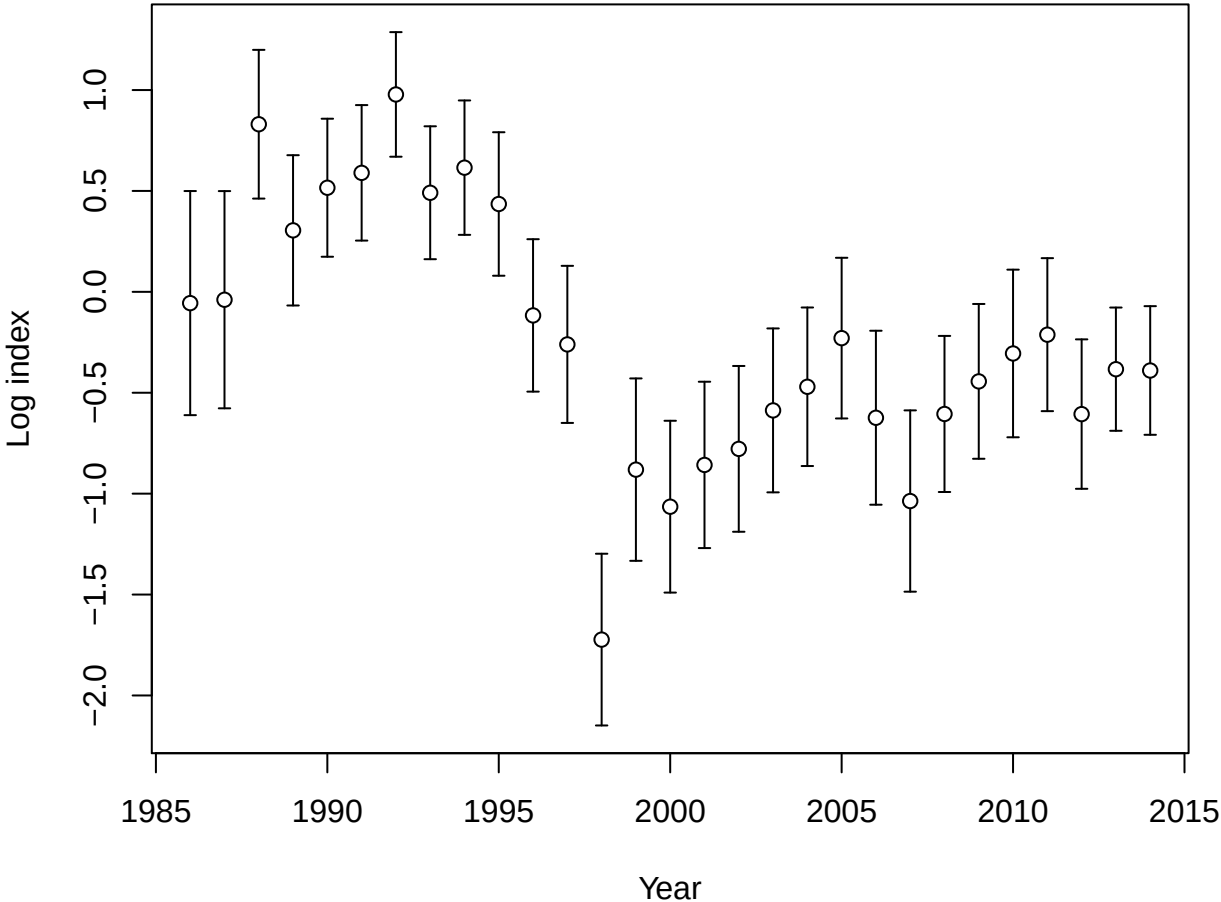

Log expected index
0.5
0.0
−0.5
−1.0
−1.5
−1.5
−1.0
−0.5
0.0
0.5
Log observed index

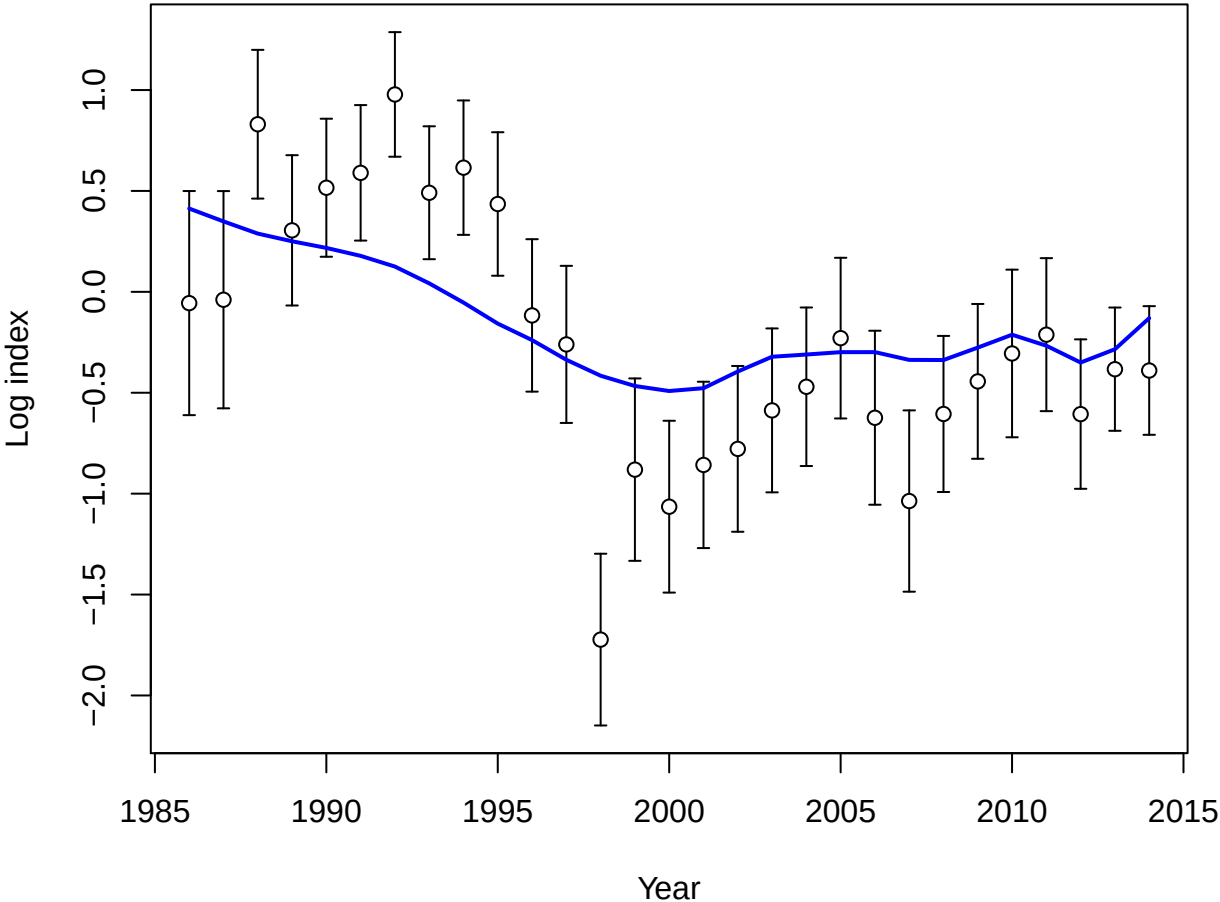

Effective catchability
3.94947
3.94945
3.94943
3.94941
0.1
0.2
0.3
0.4
0.5
Vulnerable biomass

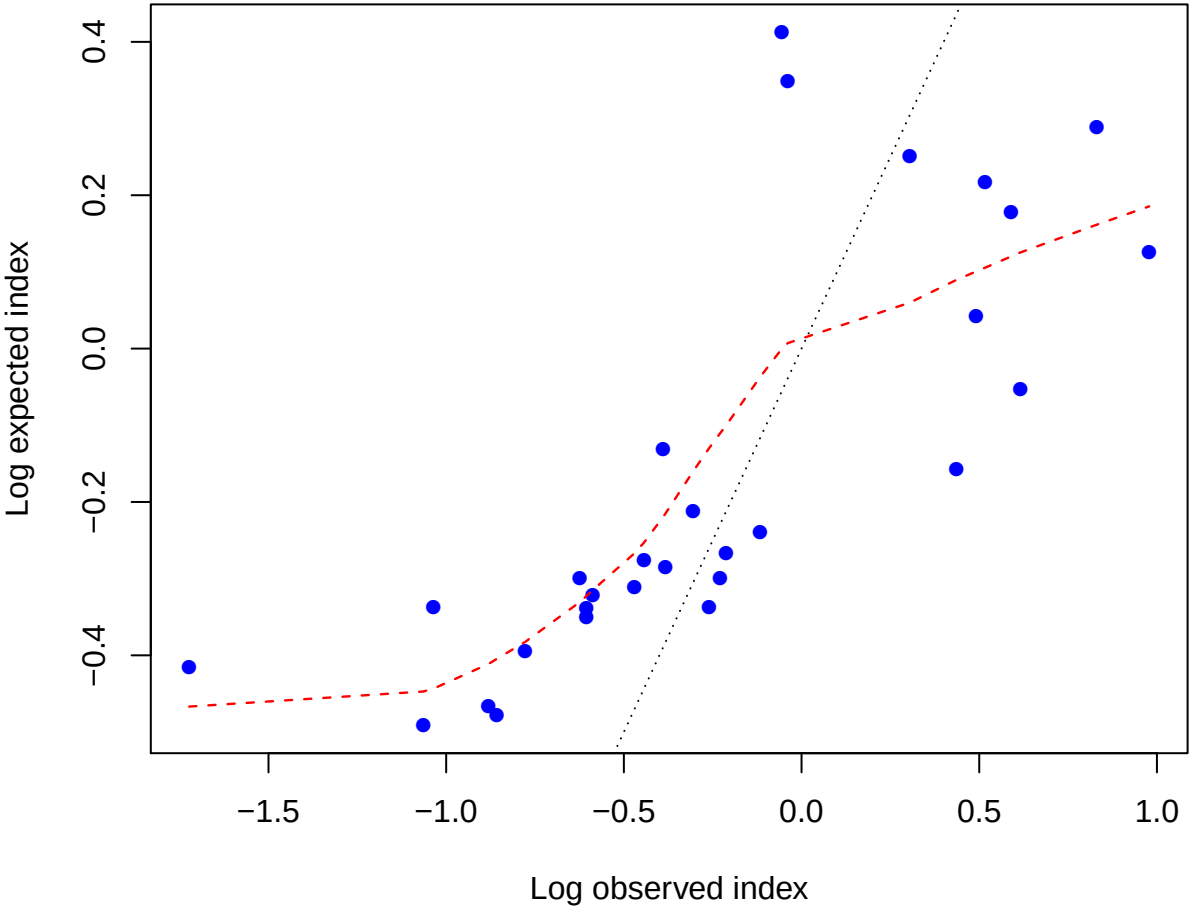

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
1985
1990
1995
2000
2005
2010
2015
Year

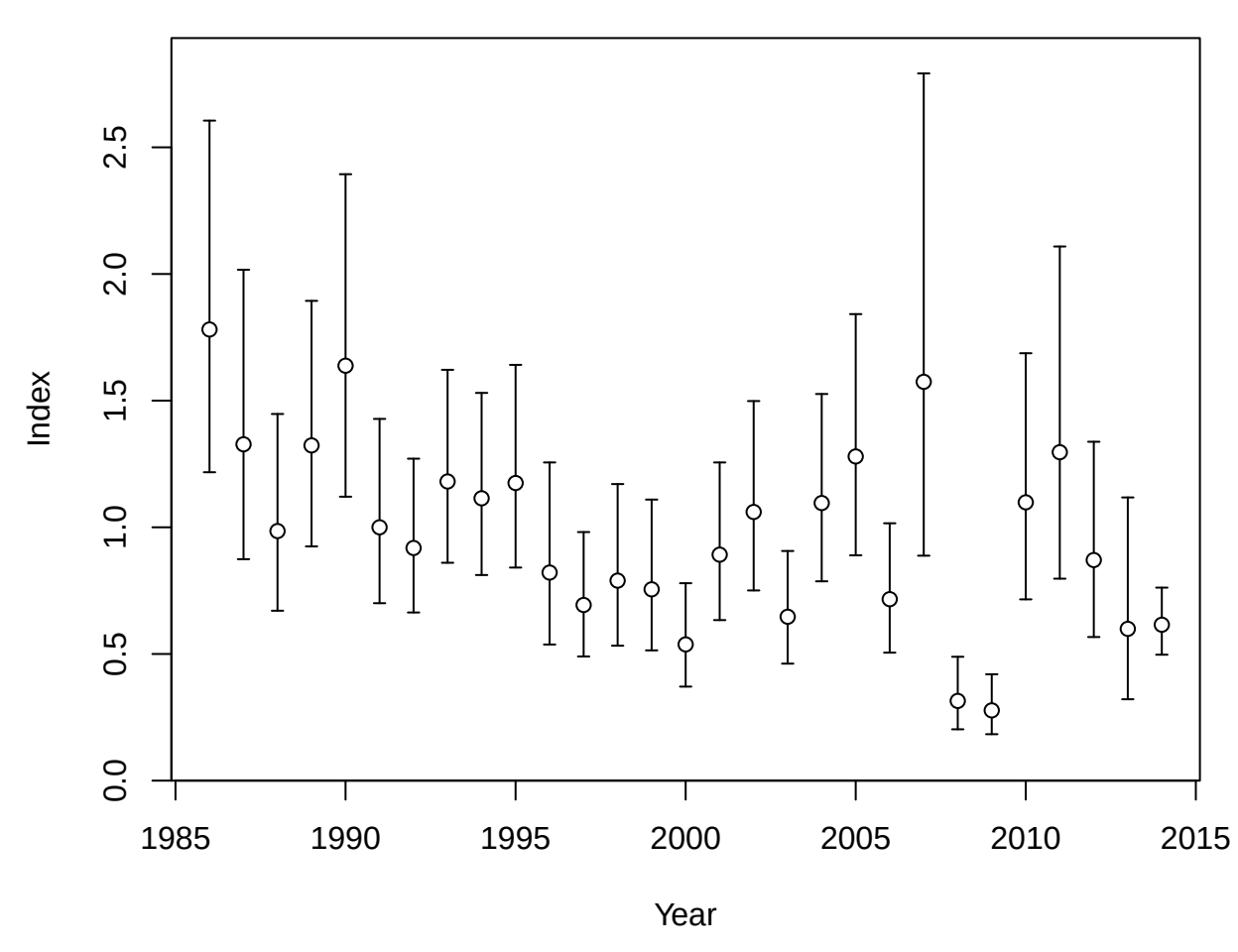

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
1985
1990
1995
2000
2005
2010
2015
Year


Expected index
Observed index
0.0
0.5
1.0
1.5
2.0
2.5


Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1985
1990
1995
2000
2005
2010
2015
Year


Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1985
1990
1995
2000
2005
2010
2015
Year


Log expected index
0.4
0.2
0.0
−0.2
−0.4
−1.5
−1.0
−0.5
0.0
0.5
1.0
Log observed index


Index
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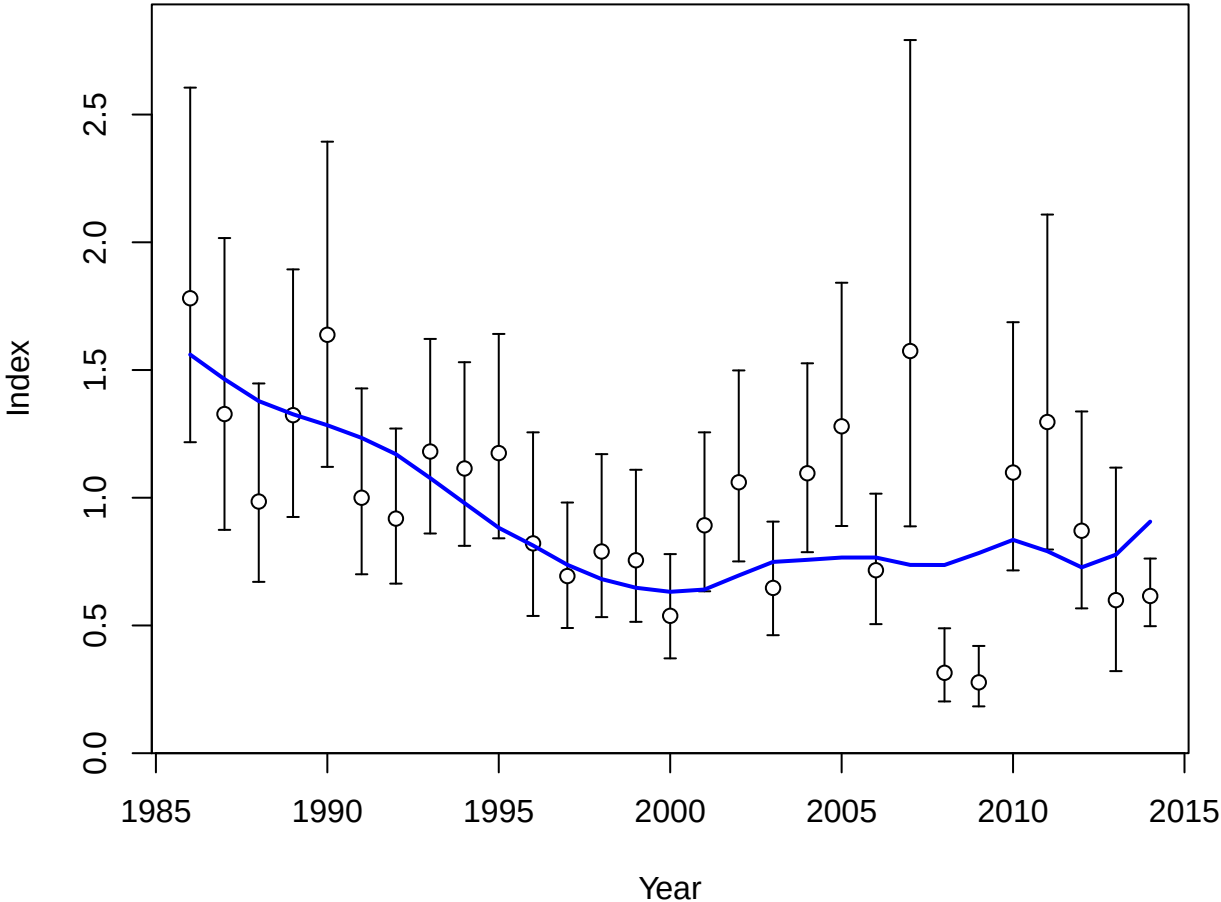
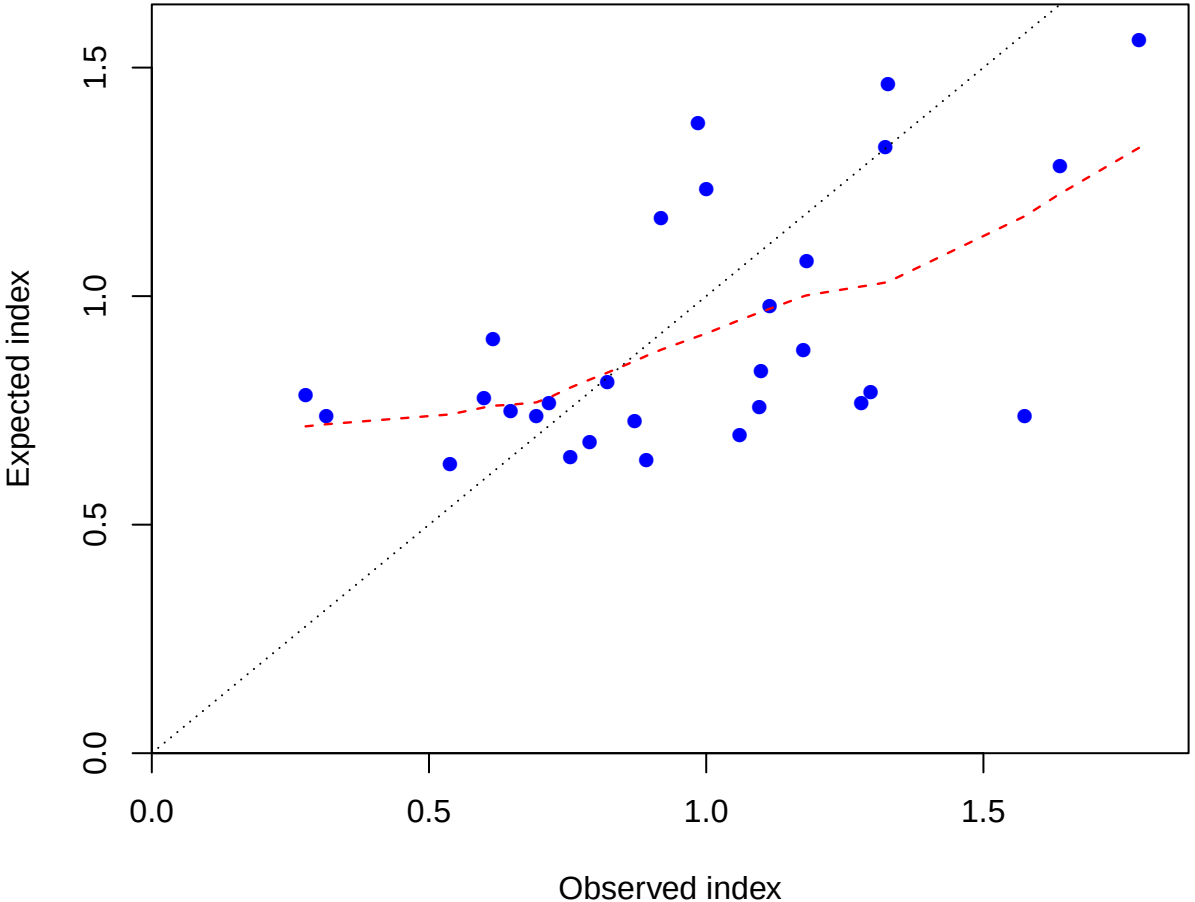
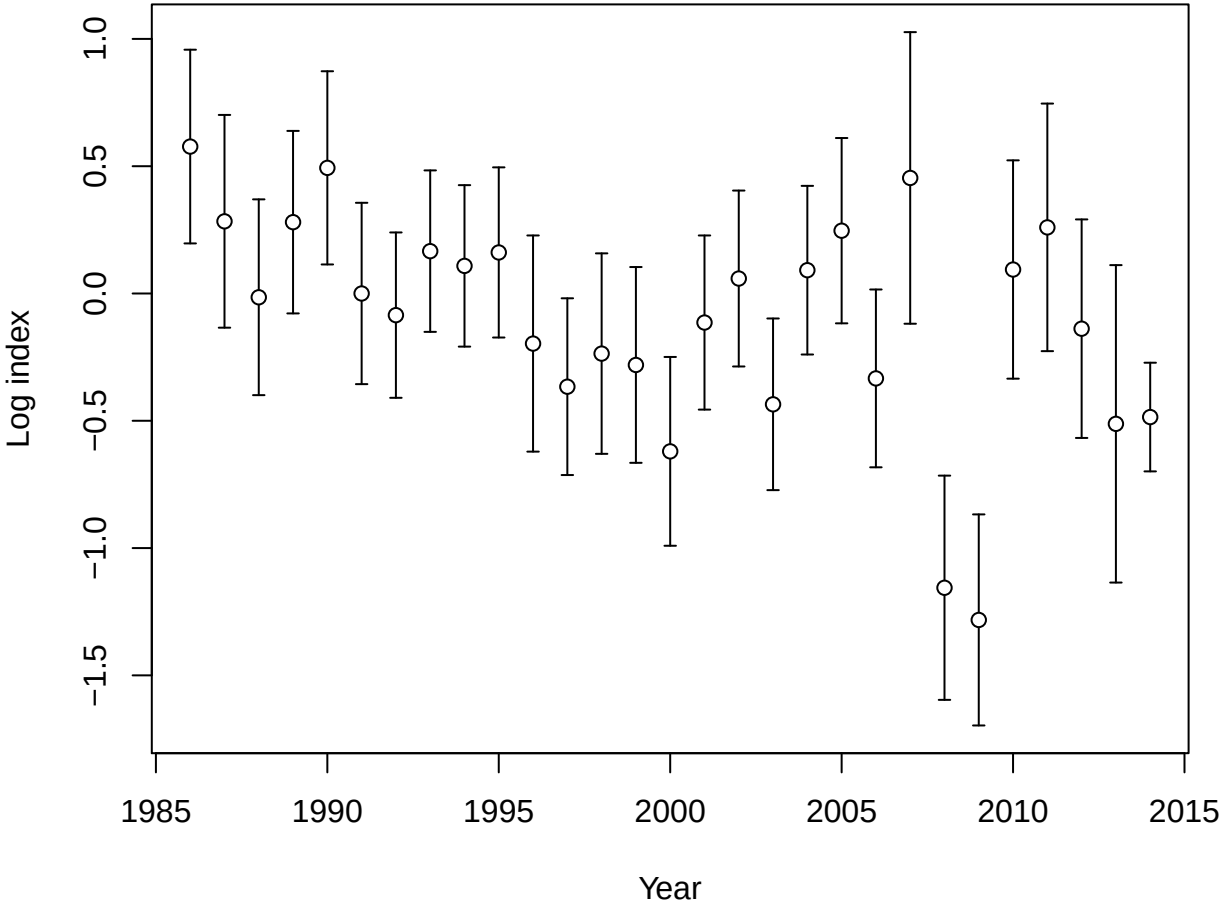
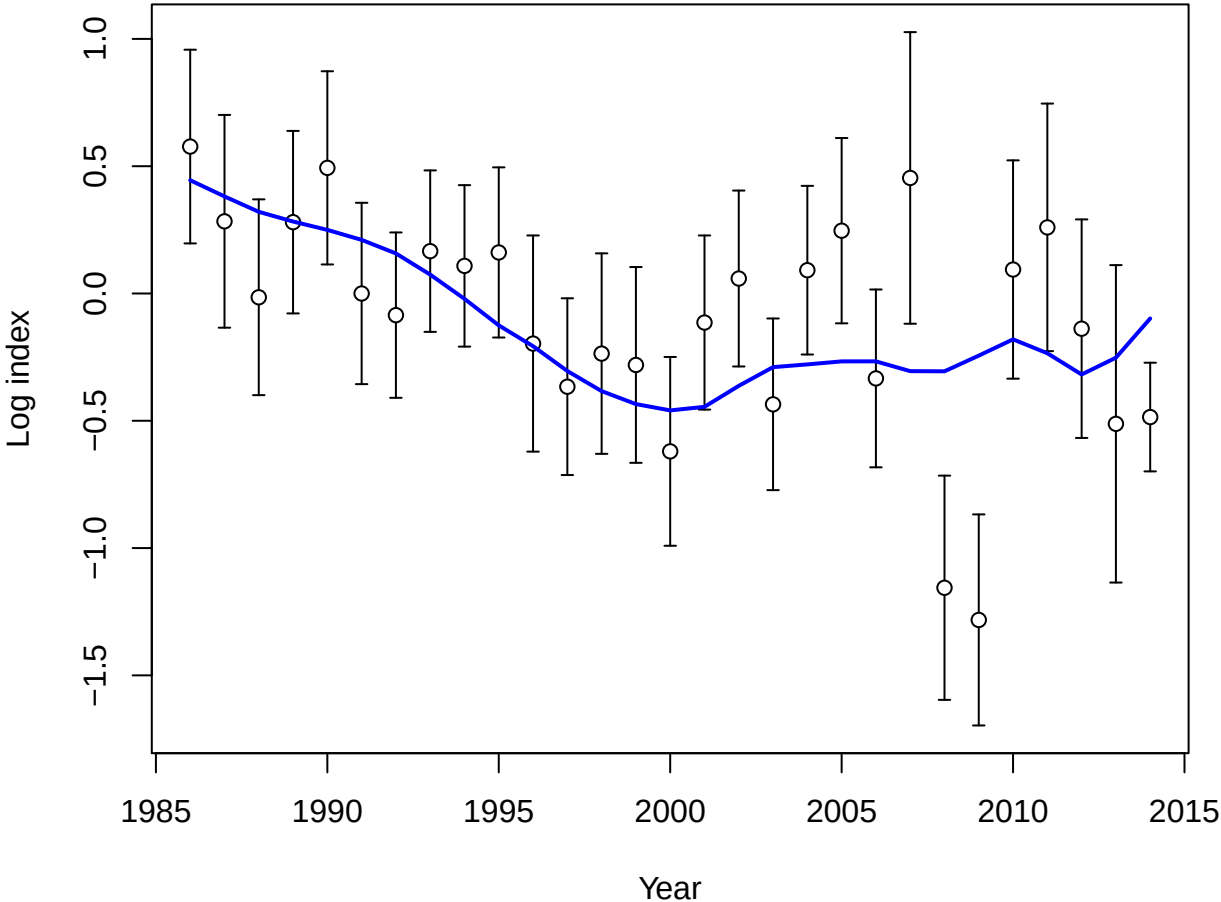
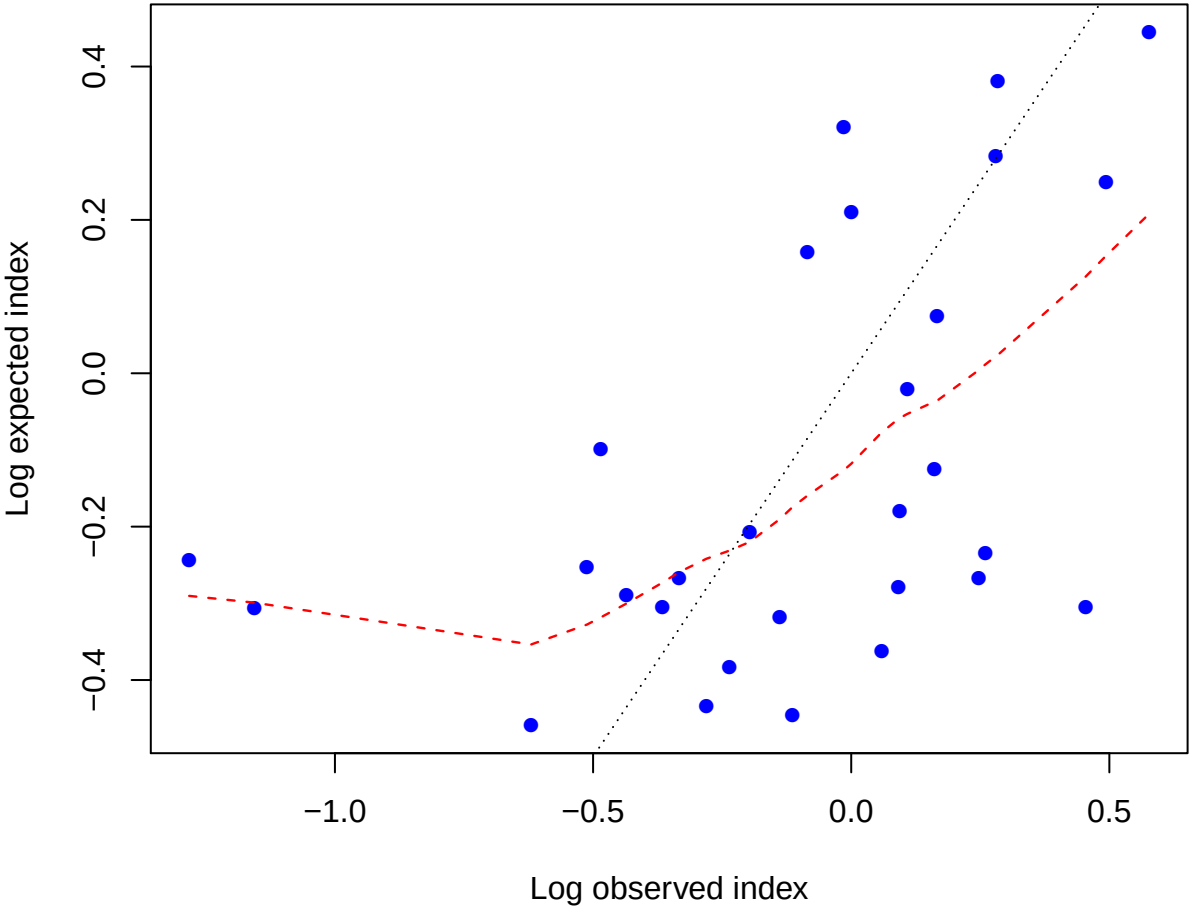
0.5
1.0
1.5
2.0
2.5
1985
1990
1995
2000
2005
2010
2015
Year


Index
0.0
0.5
1.0
1.5
2.0
2.5
1985
1990
1995
2000
2005
2010
2015
Year


Expected index
0.0
0.5
1.0
1.5
0.0
0.5
1.0
1.5
Observed index


Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
1985
1990
1995
2000
2005
2010
2015
Year


Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
1985
1990
1995
2000
2005
2010
2015
Year


Log expected index
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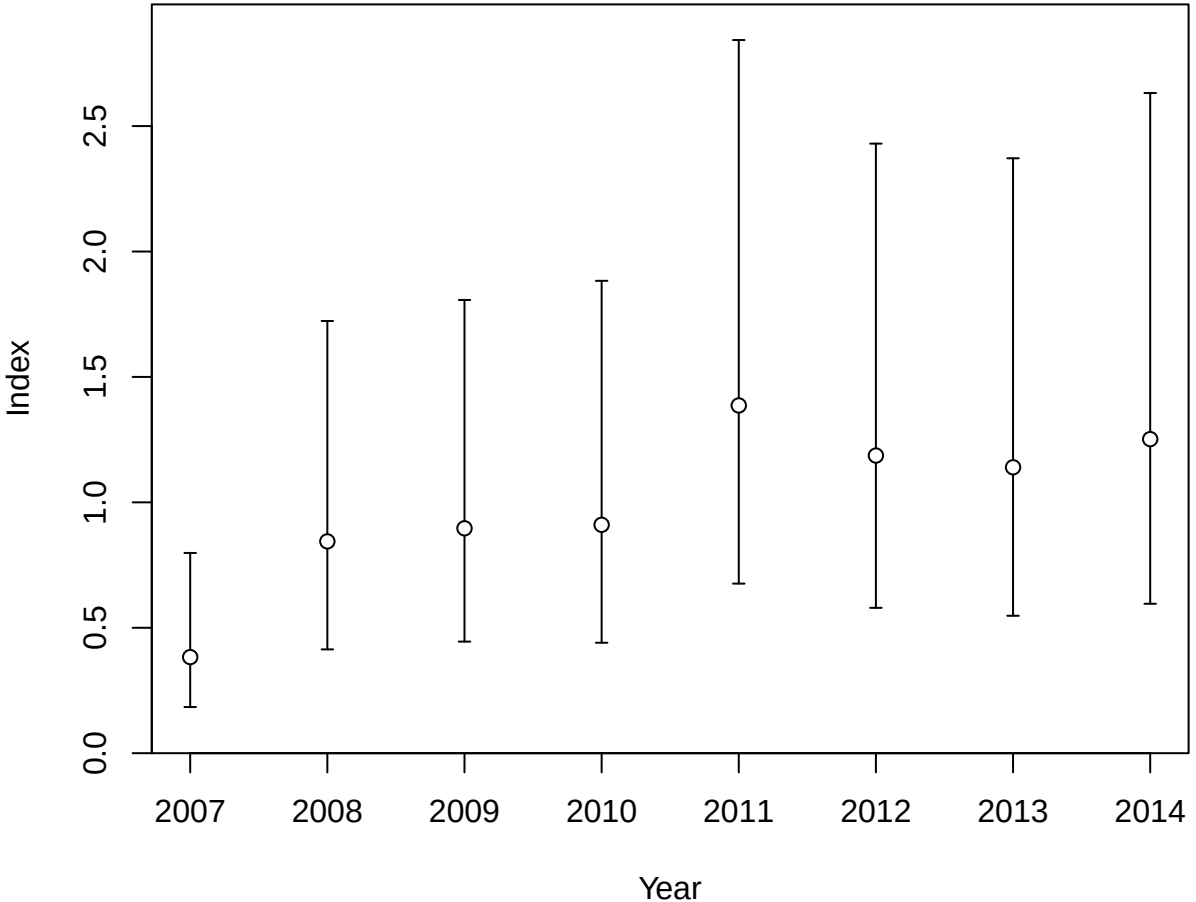
0.2
0.0
−0.2
−0.4
−1.0
−0.5
0.0
0.5
Log observed index


Index
0.0
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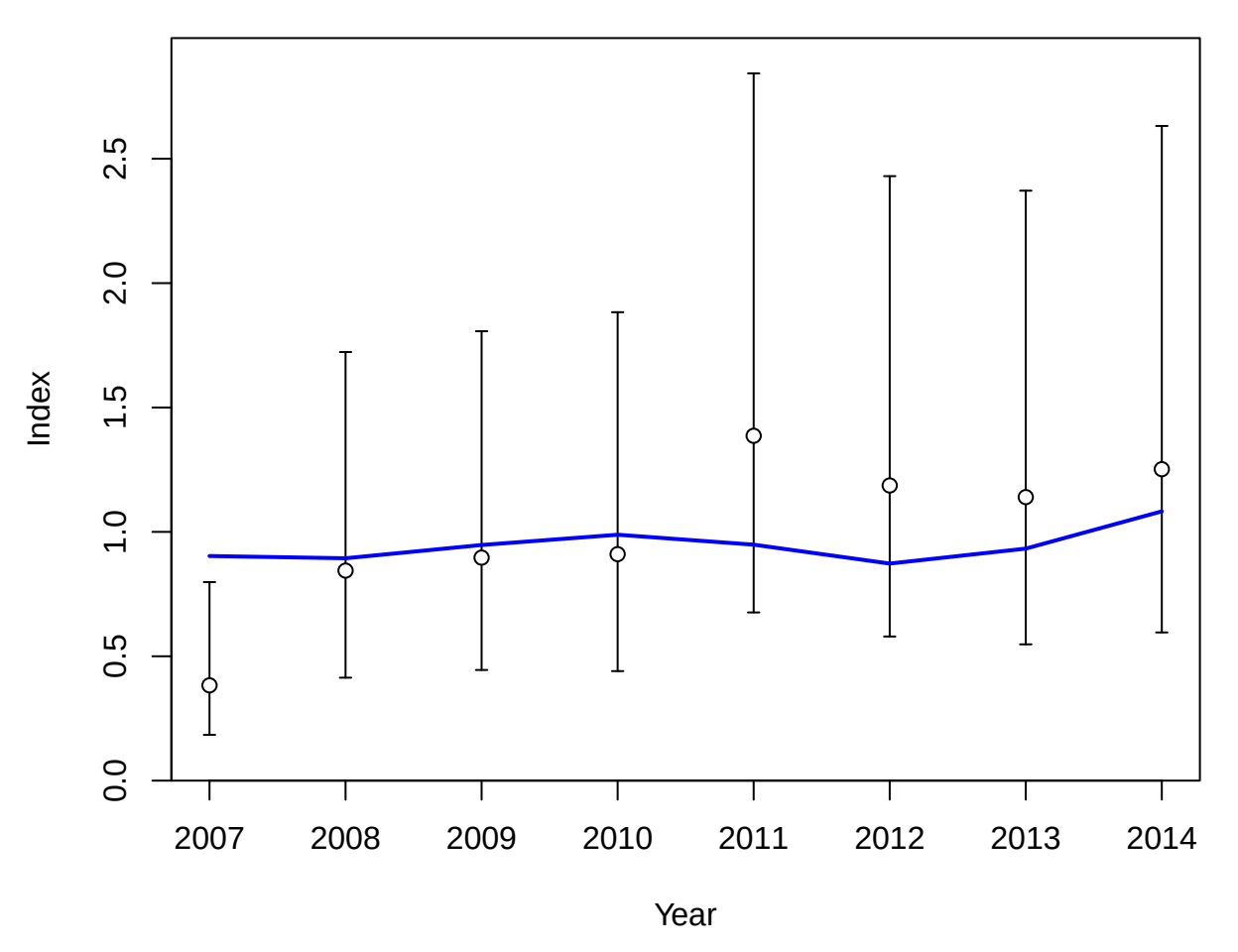
1.0
1.5
2.0
2.5
2007
2008
2009
2010
2011
2012
2013
2014
Year


Index
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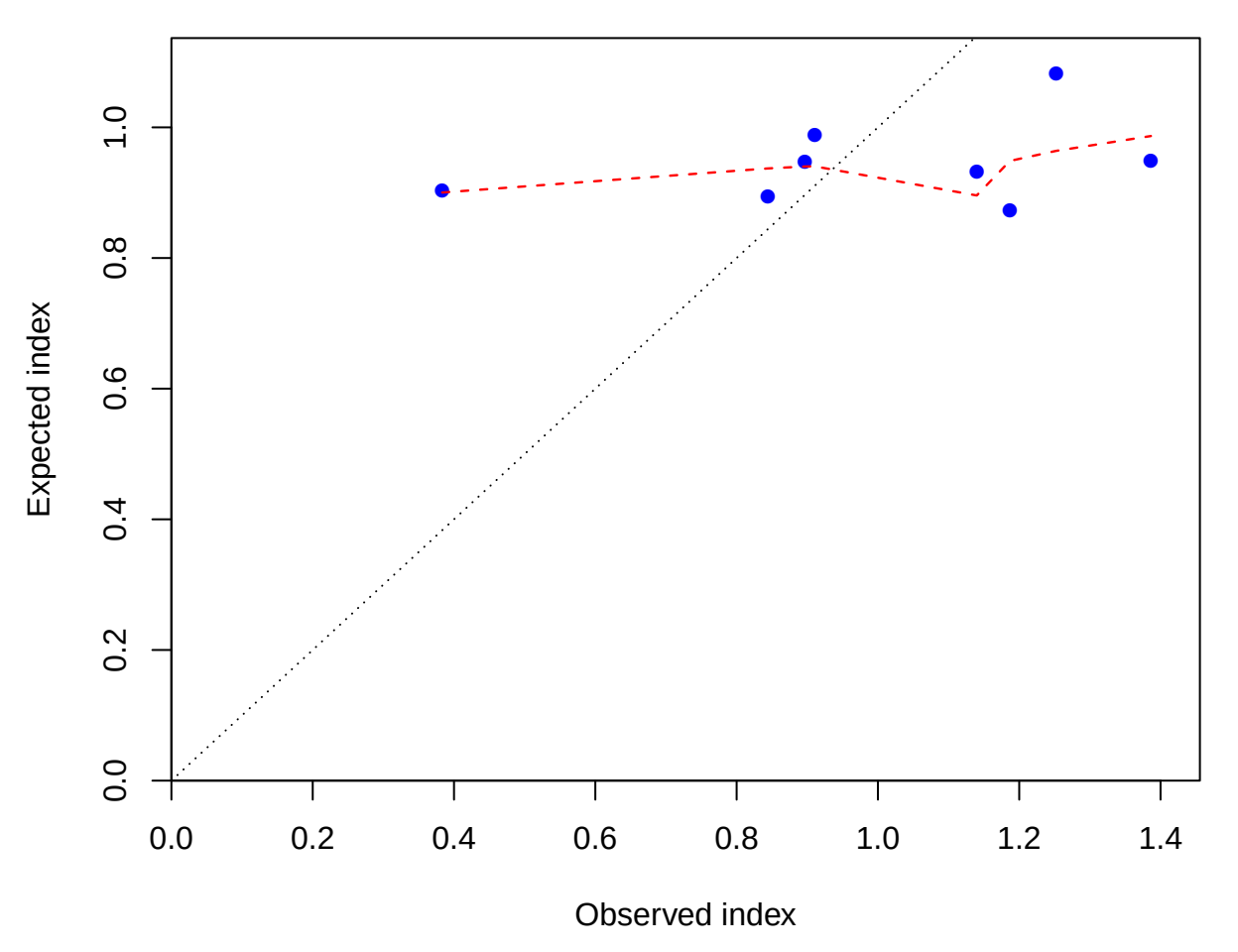
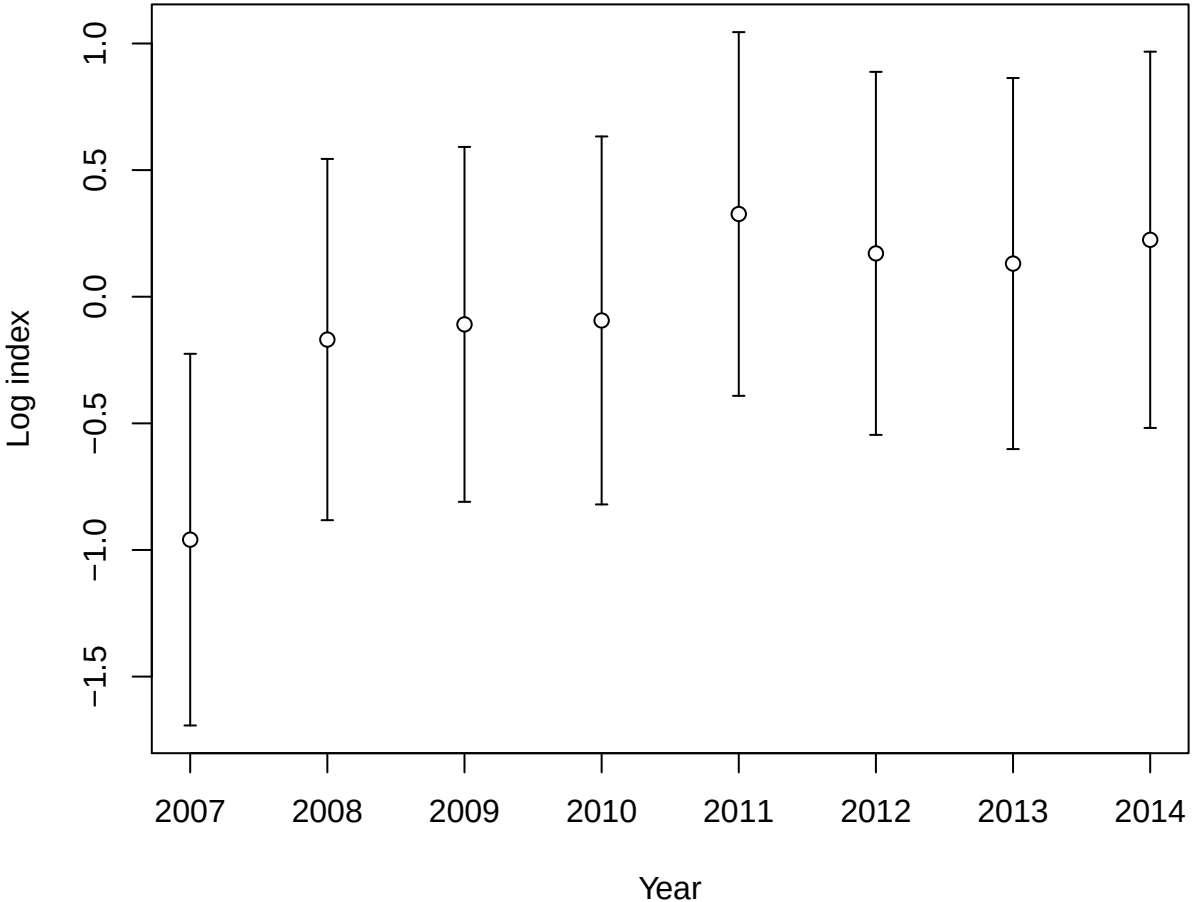
1.0
1.5
2.0
2.5
2007
2008
2009
2010
2011
2012
2013
2014
Year


Expected index
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Observed index


Log index
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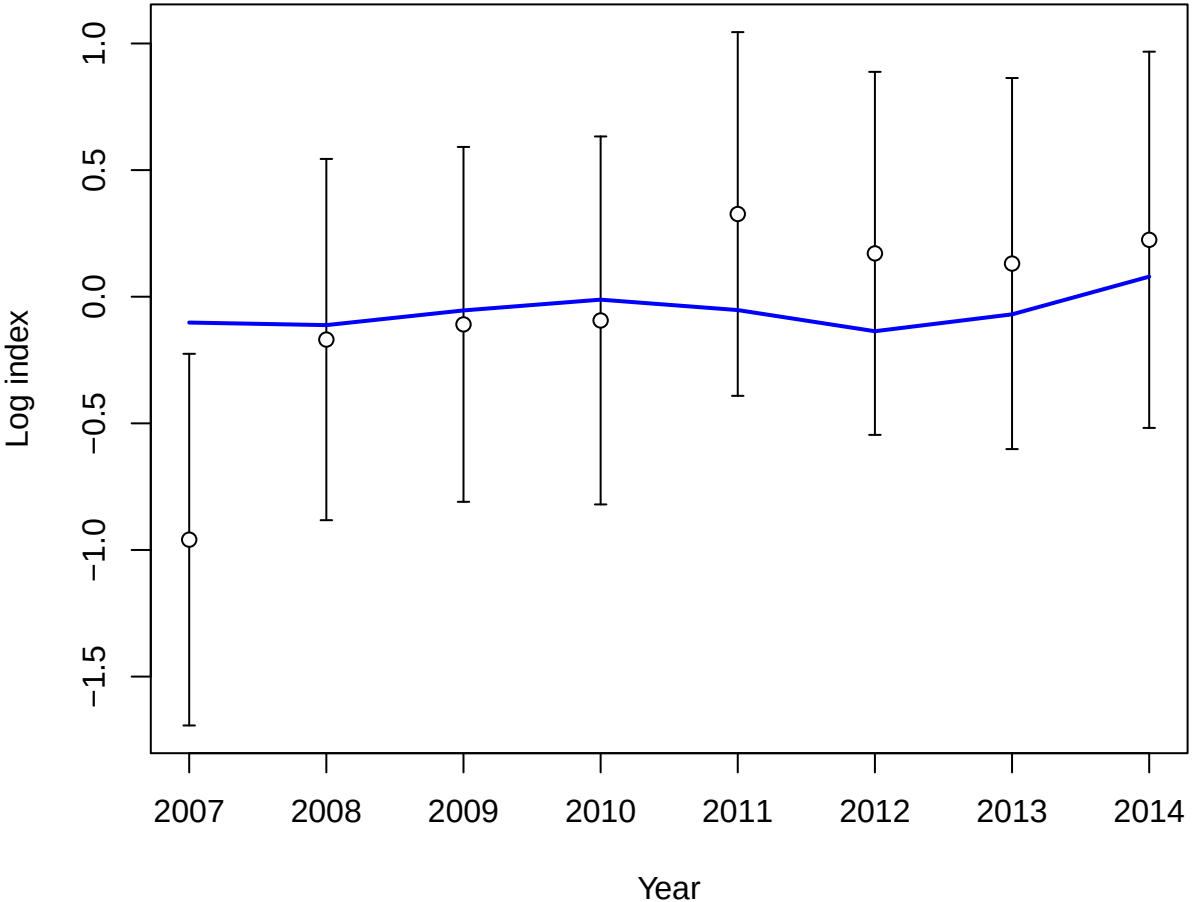
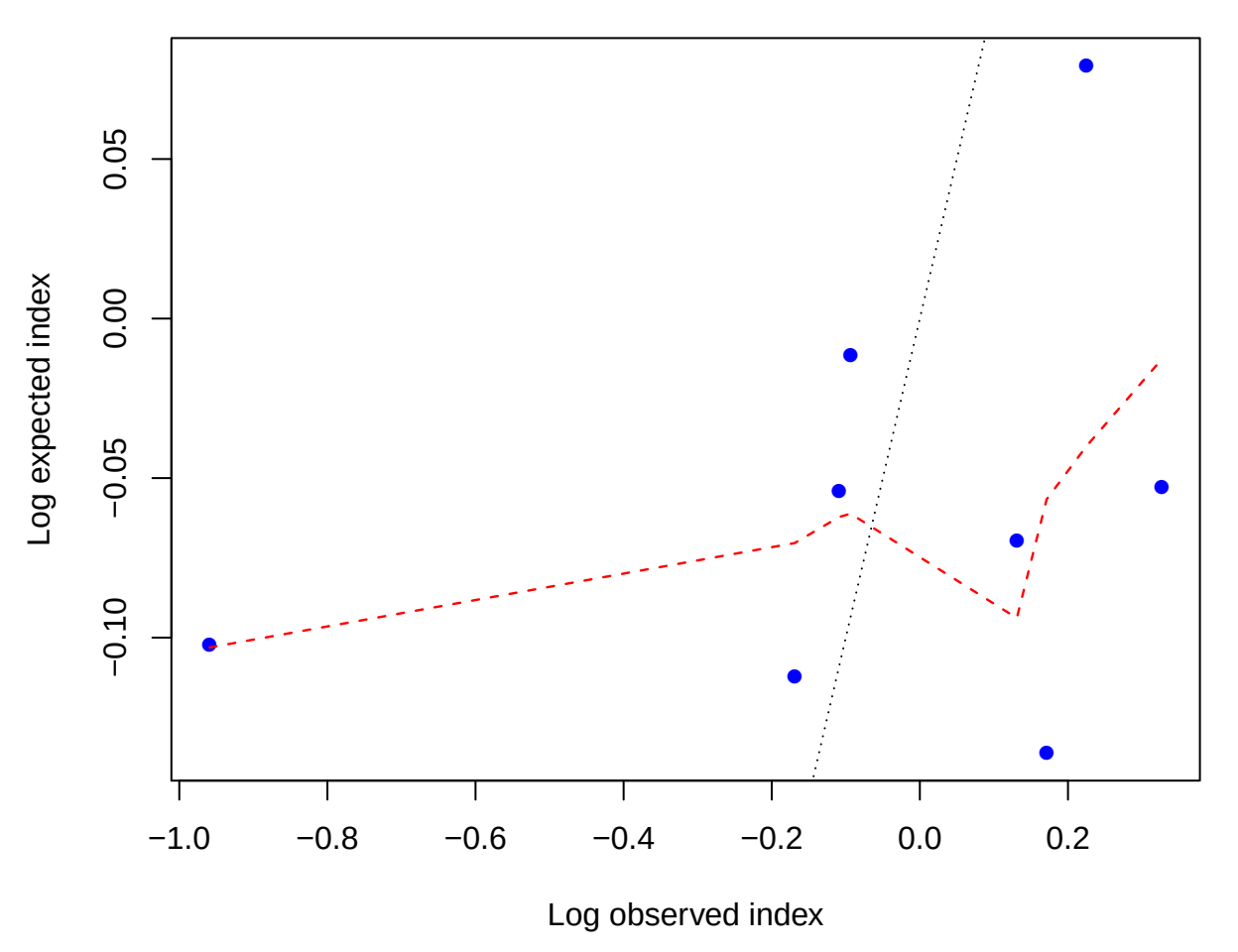
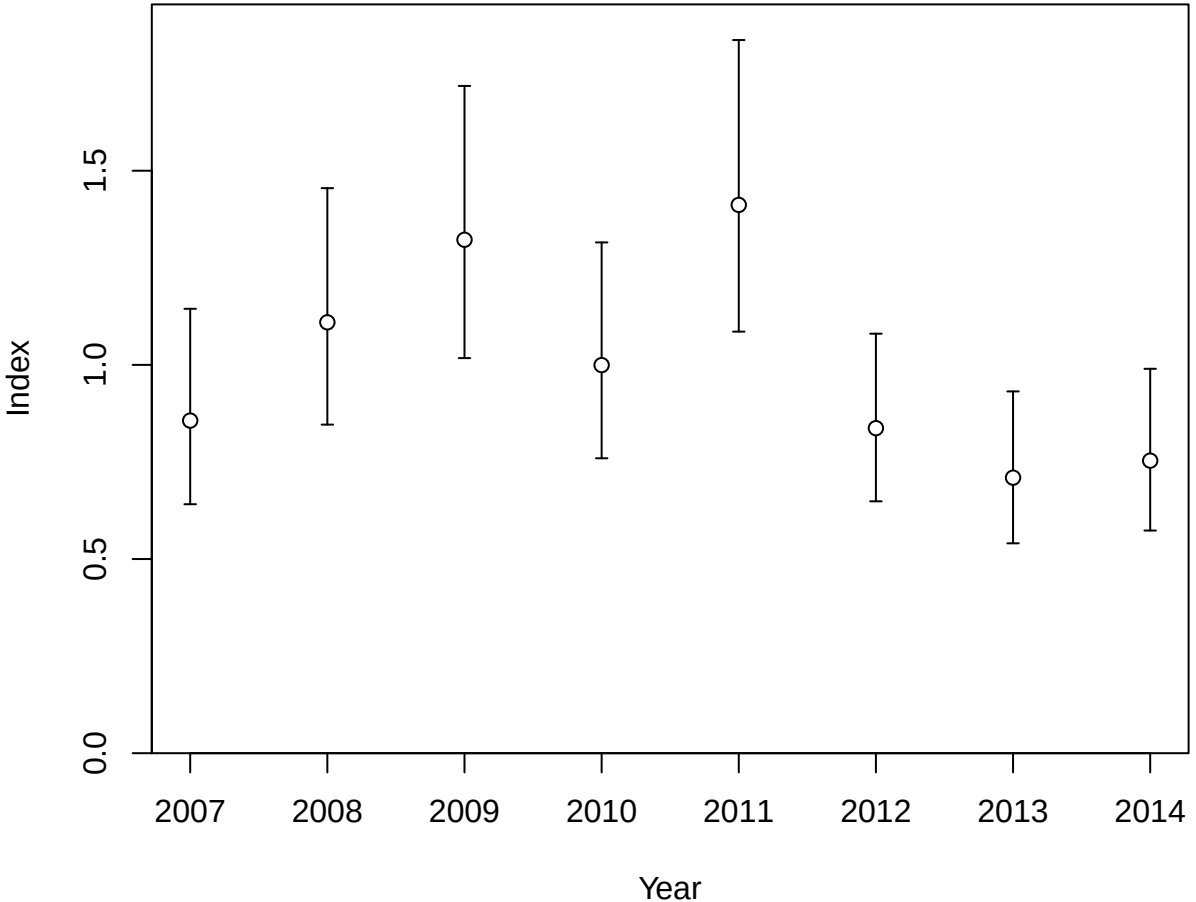
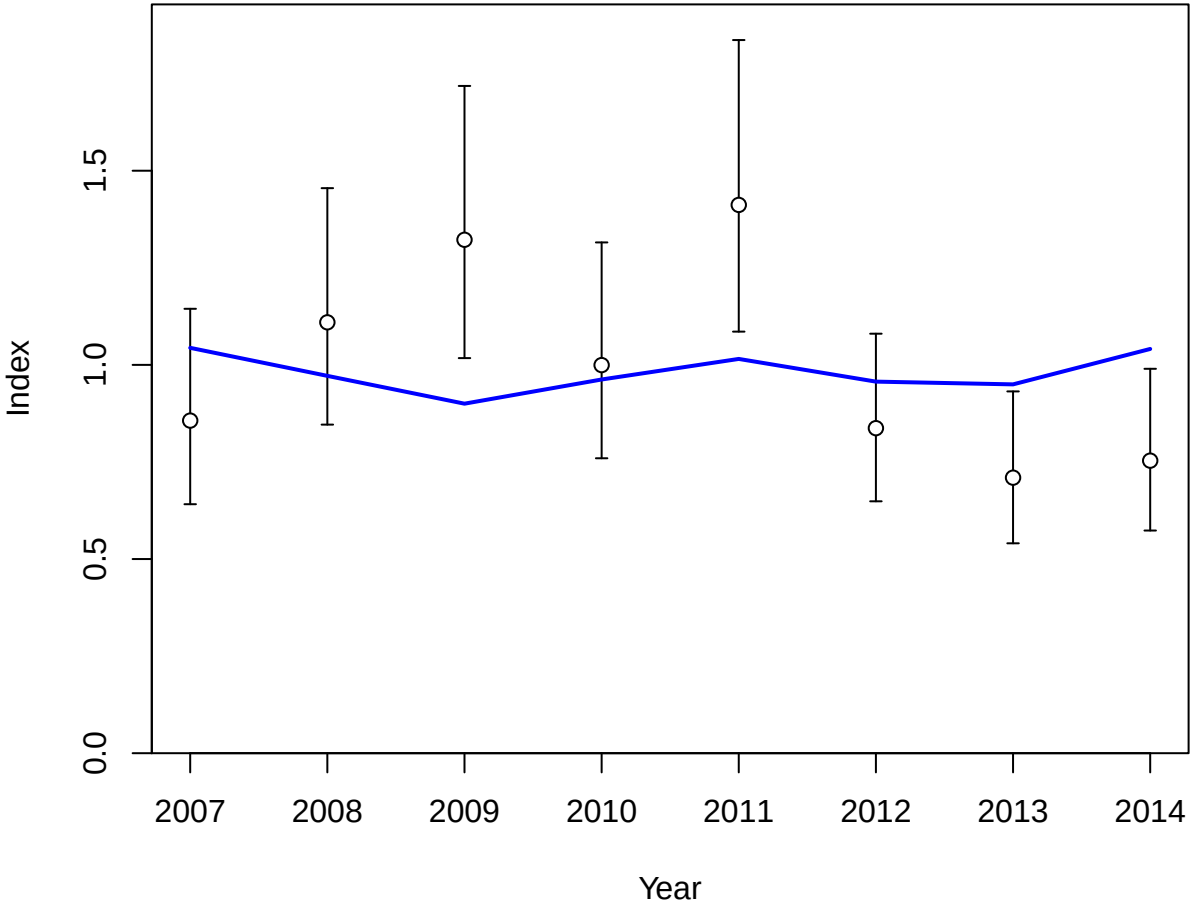
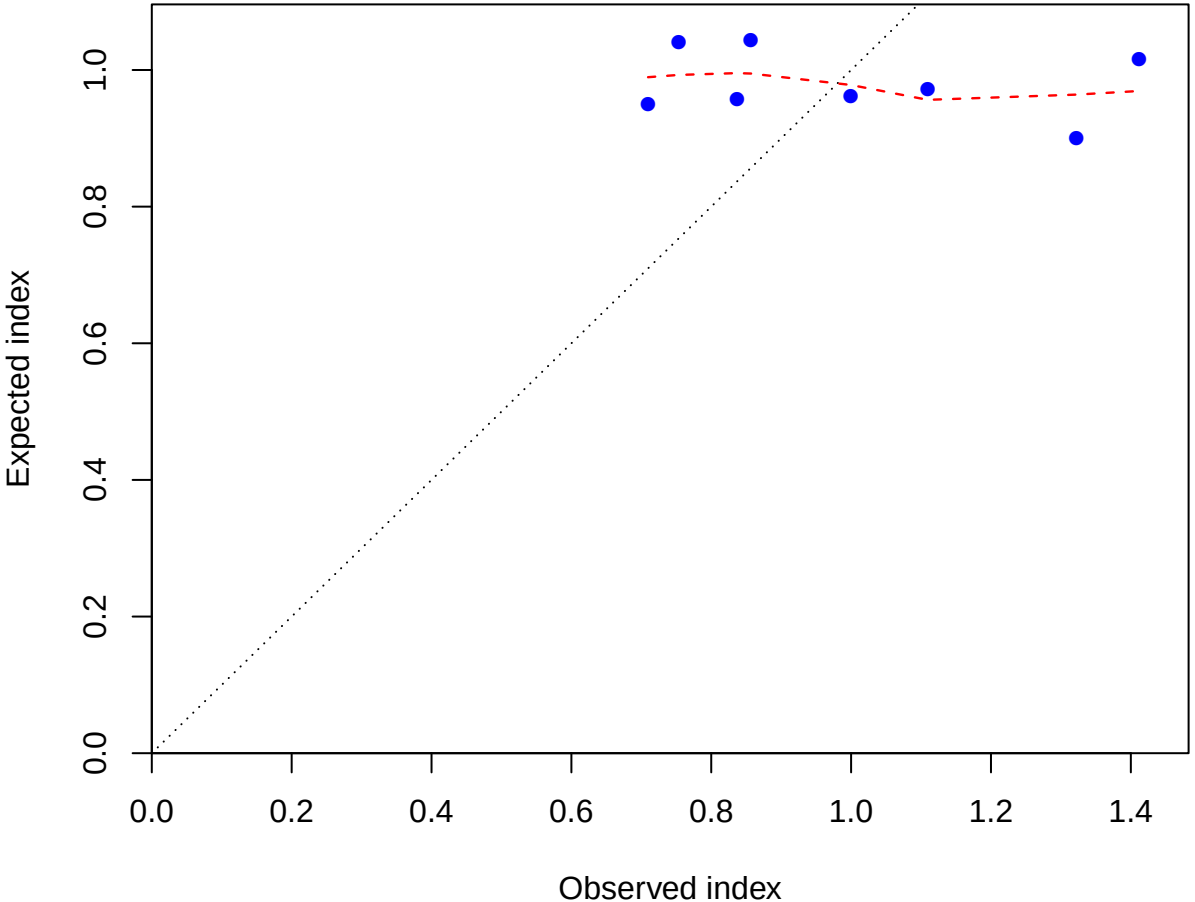
0.5
0.0
−0.5
−1.0
−1.5
2007
2008
2009
2010
2011
2012
2013
2014
Year

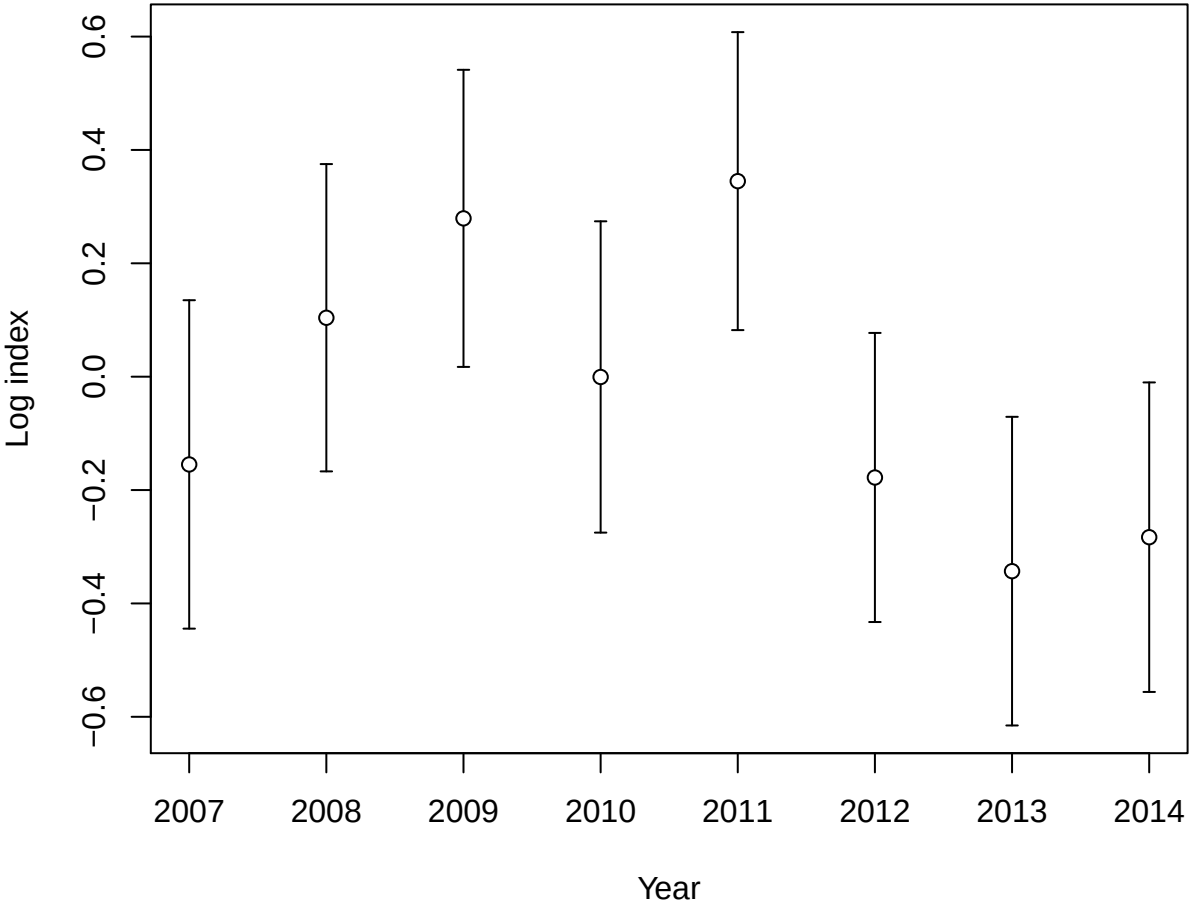

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
2007
2008
2009
2010
2011
2012
2013
2014
Year

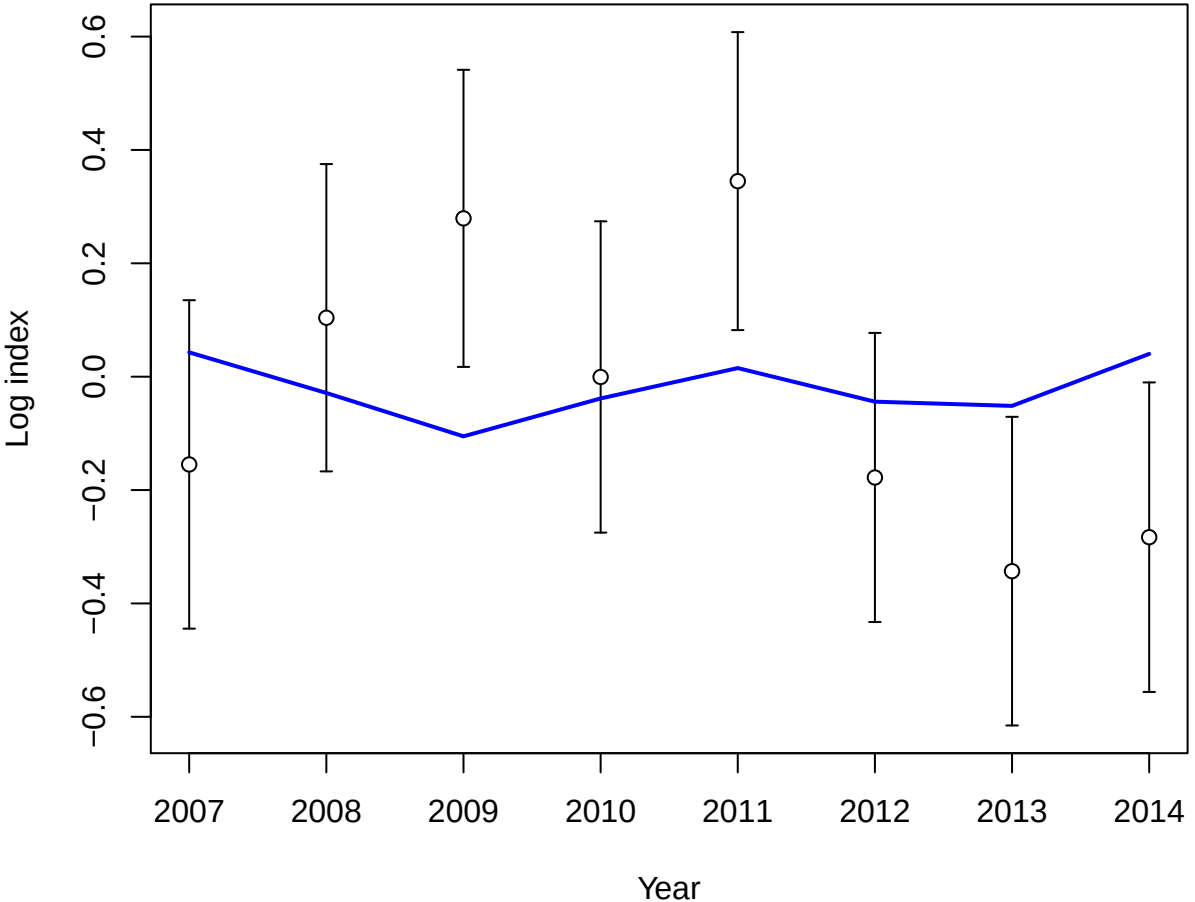

Log expected index
0.05
0.00
−0.05
−0.10
−1.0
−0.8
−0.6
−0.4
−0.2
0.0
0.2
Log observed index

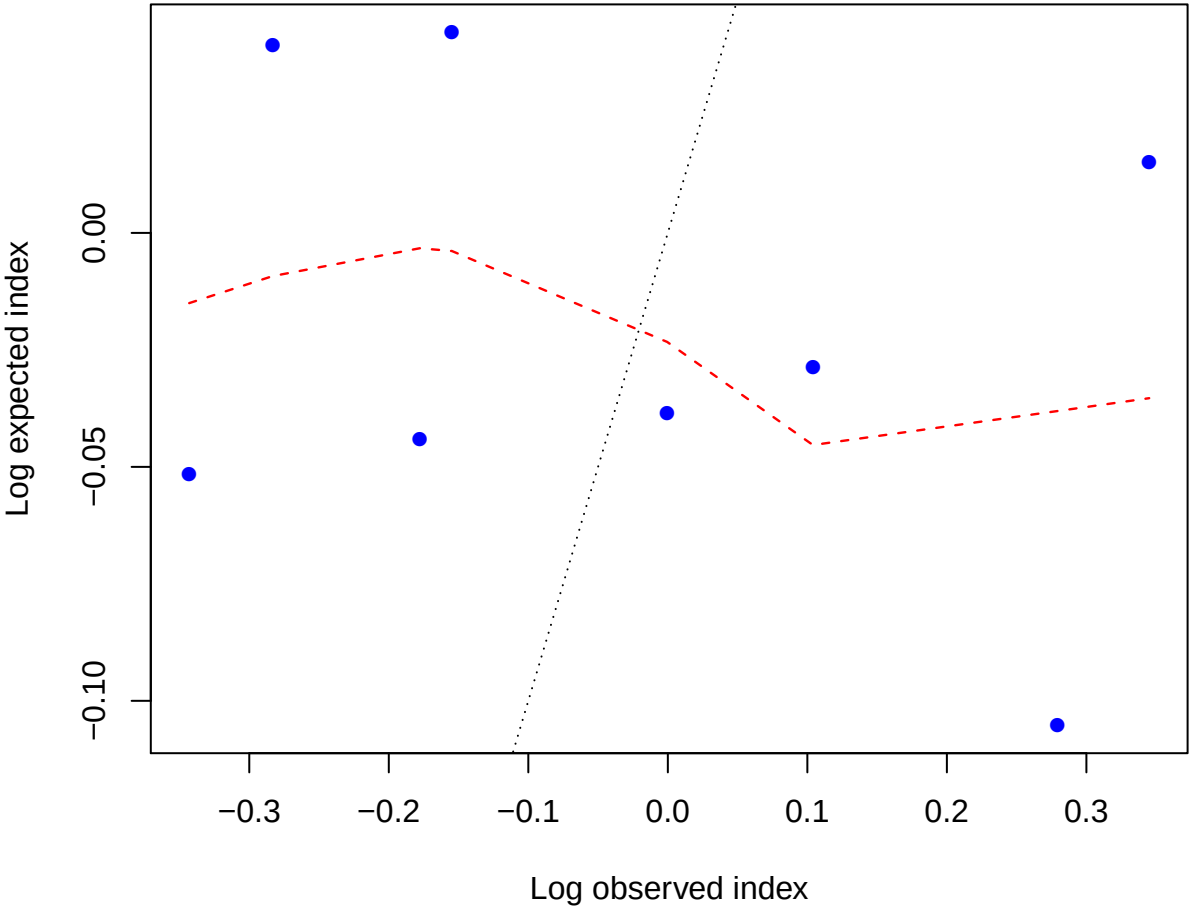

Index
0.0
0.5
1.0
1.5
2007
2008
2009
2010
2011
2012
2013
2014
Year

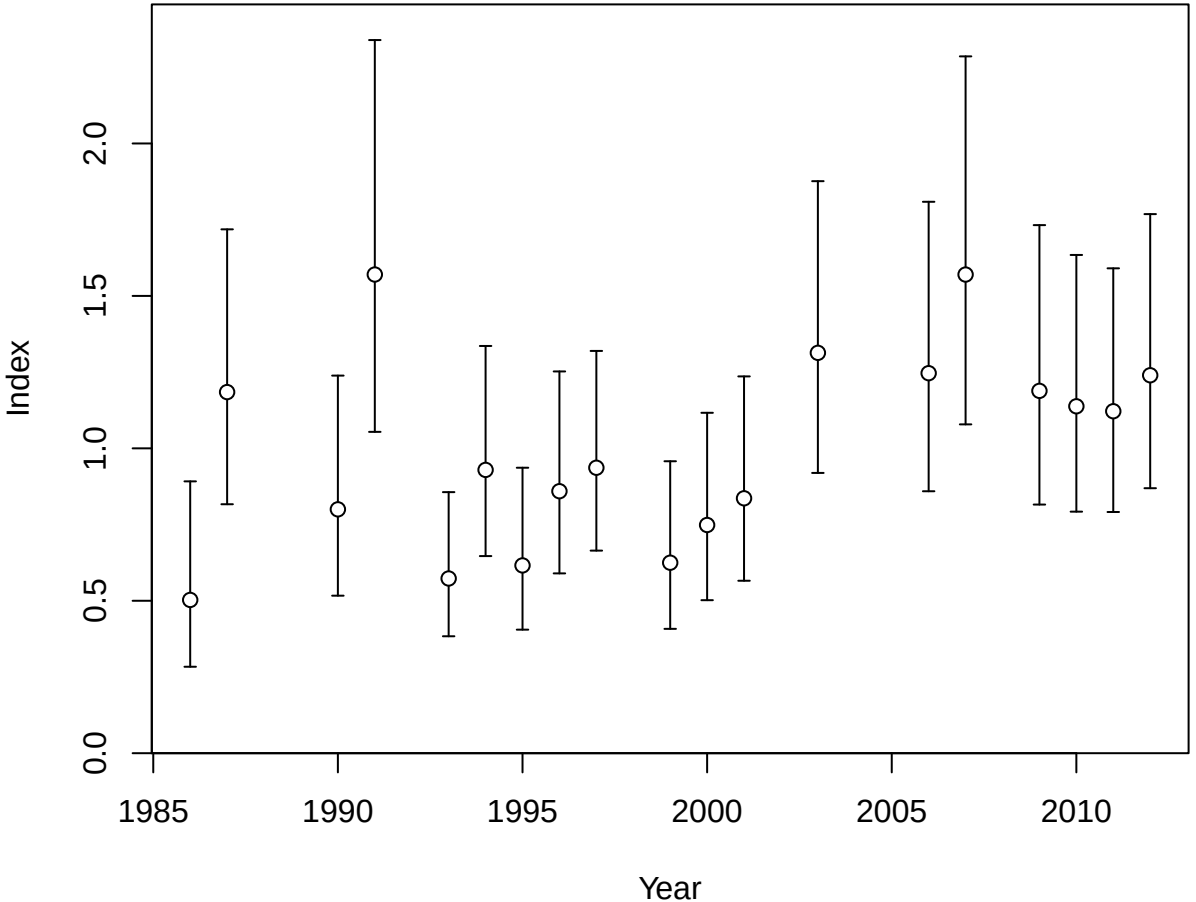

Index
0.0
0.5
1.0
1.5
2007
2008
2009
2010
2011
2012
2013
2014
Year

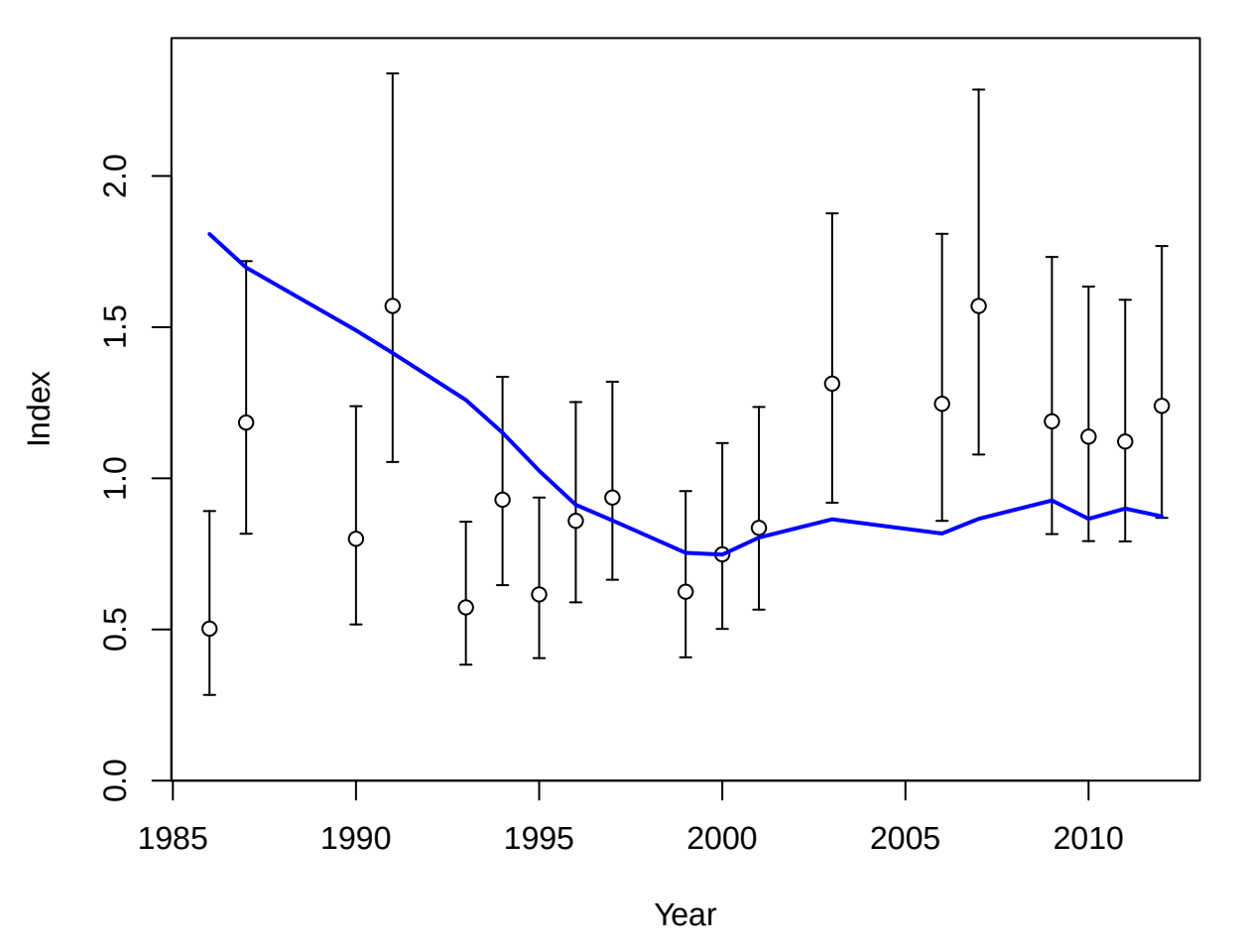

Expected index
0.0
0.2
0.4
0.6
0.8
1.0
Observed index
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4

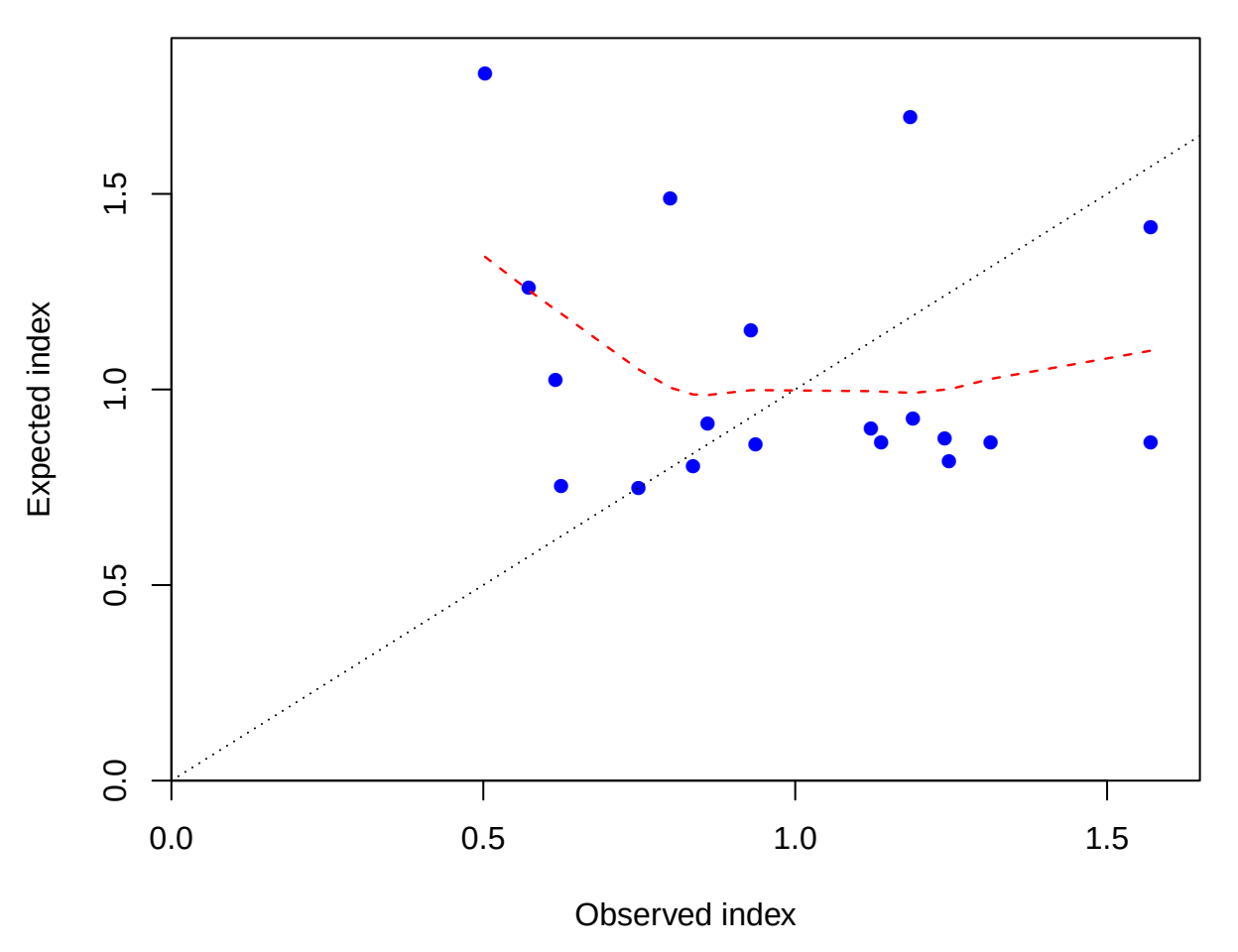

Log index
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
2007
2008
2009
2010
2011
2012
2013
2014
Year

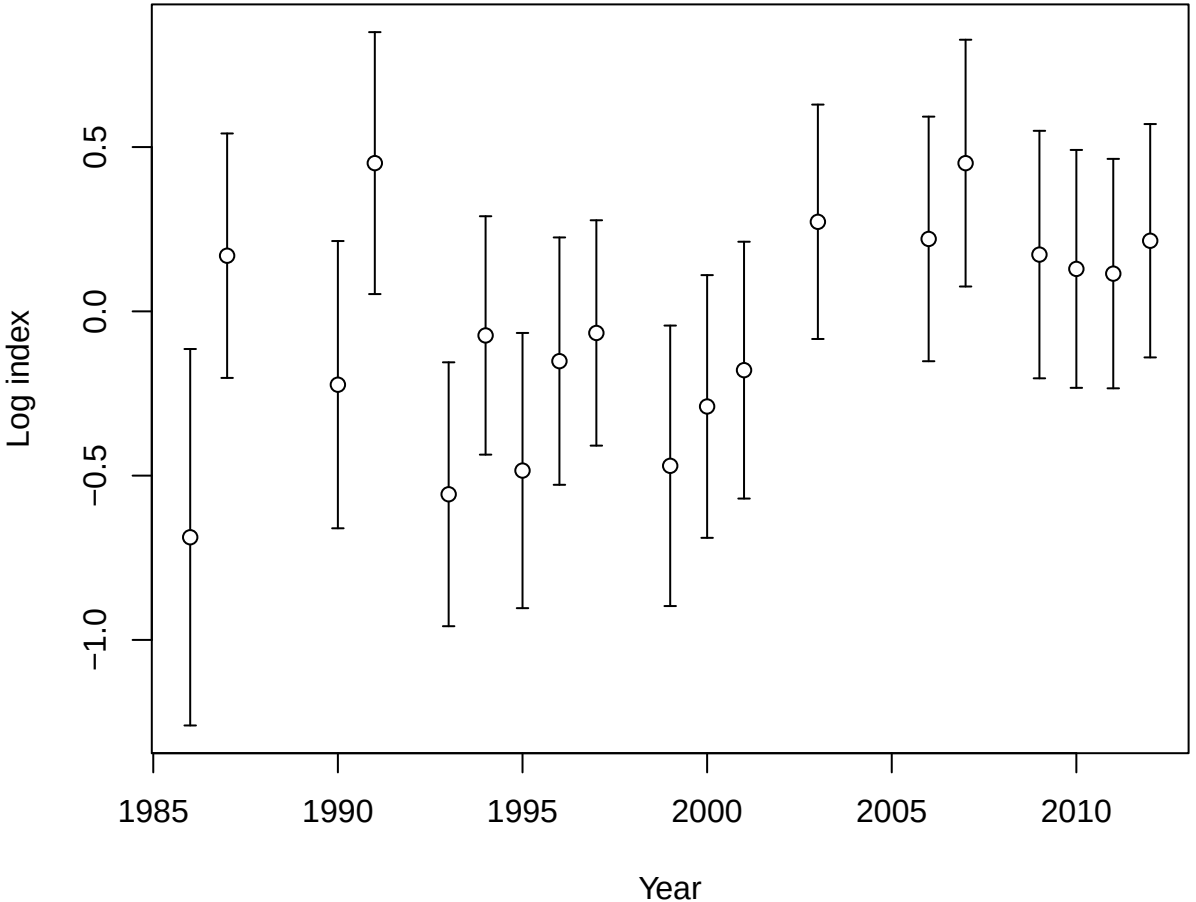

Log index
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
2007
2008
2009
2010
2011
2012
2013
2014
Year

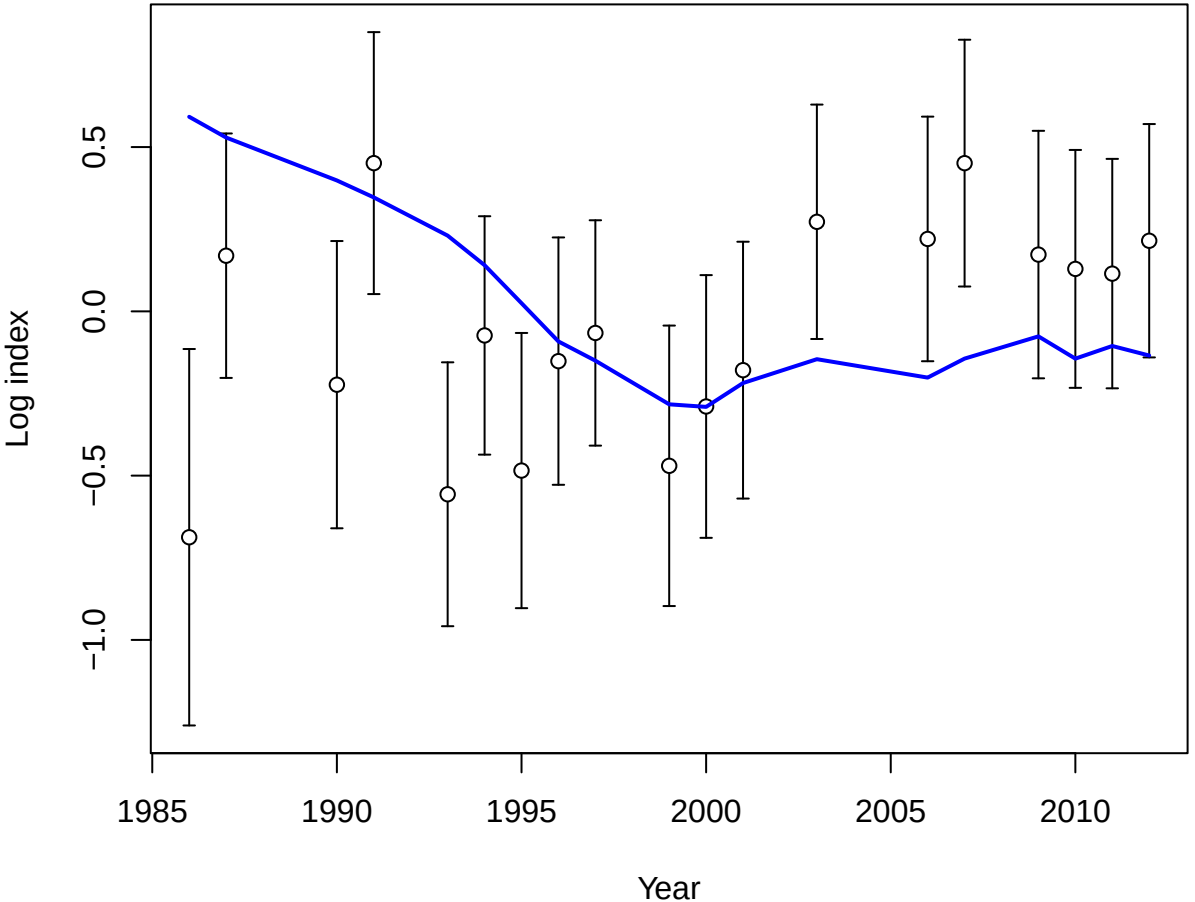

Log expected index
0.00
−0.05
−0.10
−0.3
−0.2
−0.1
0.0
0.1
0.2
0.3
Log observed index

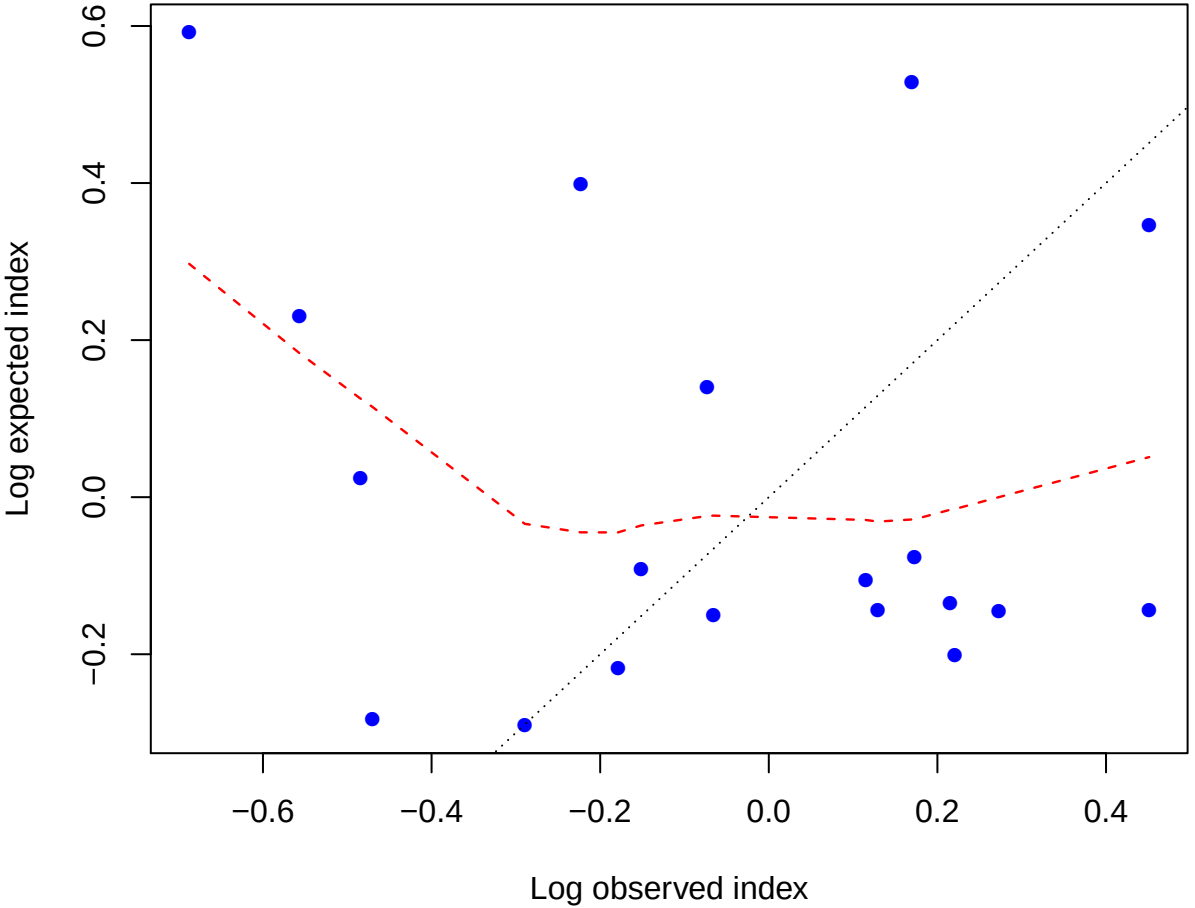

Index
0.0
0.5
1.0
1.5
2.0
1985
1990
1995
2000
2005
2010
Year

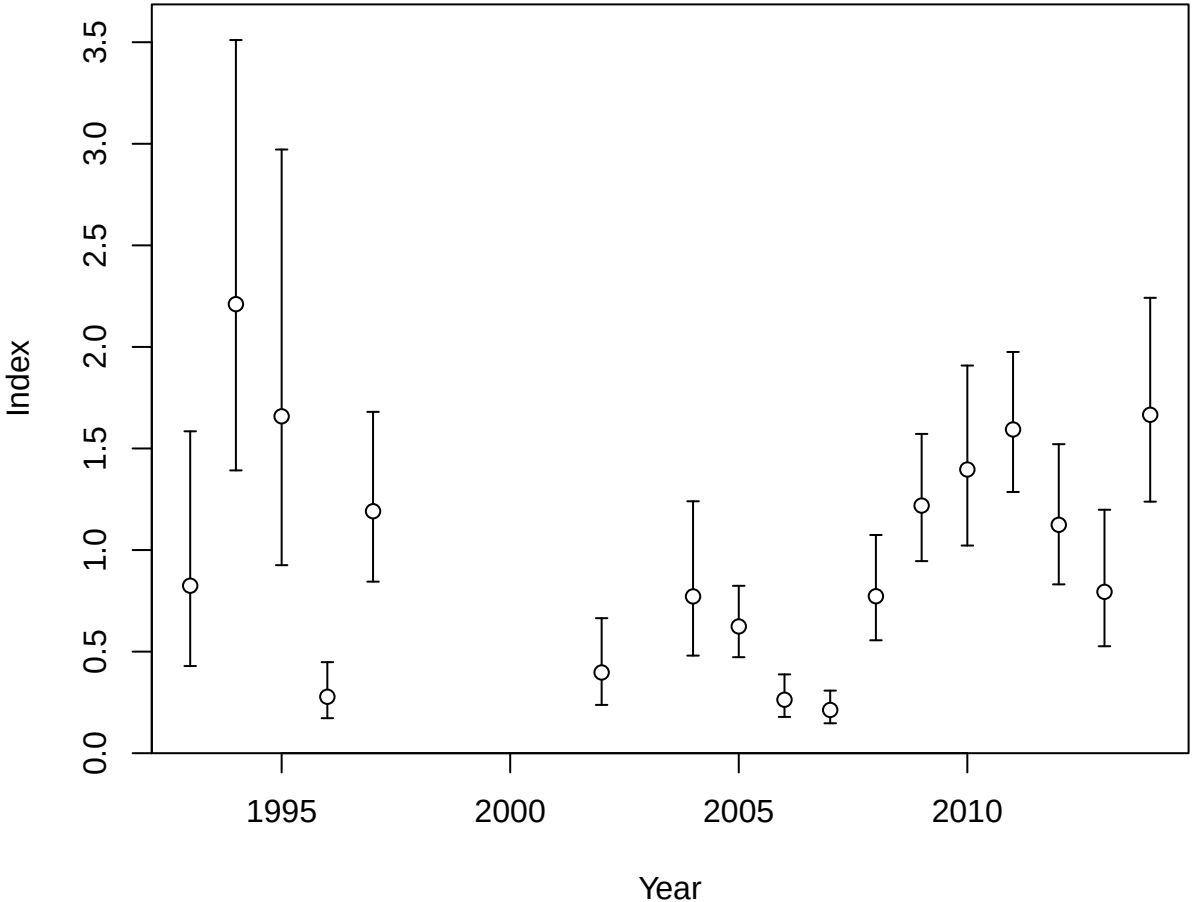

Index
0.0
0.5
1.0
1.5
2.0
1985
1990
1995
2000
2005
2010
Year

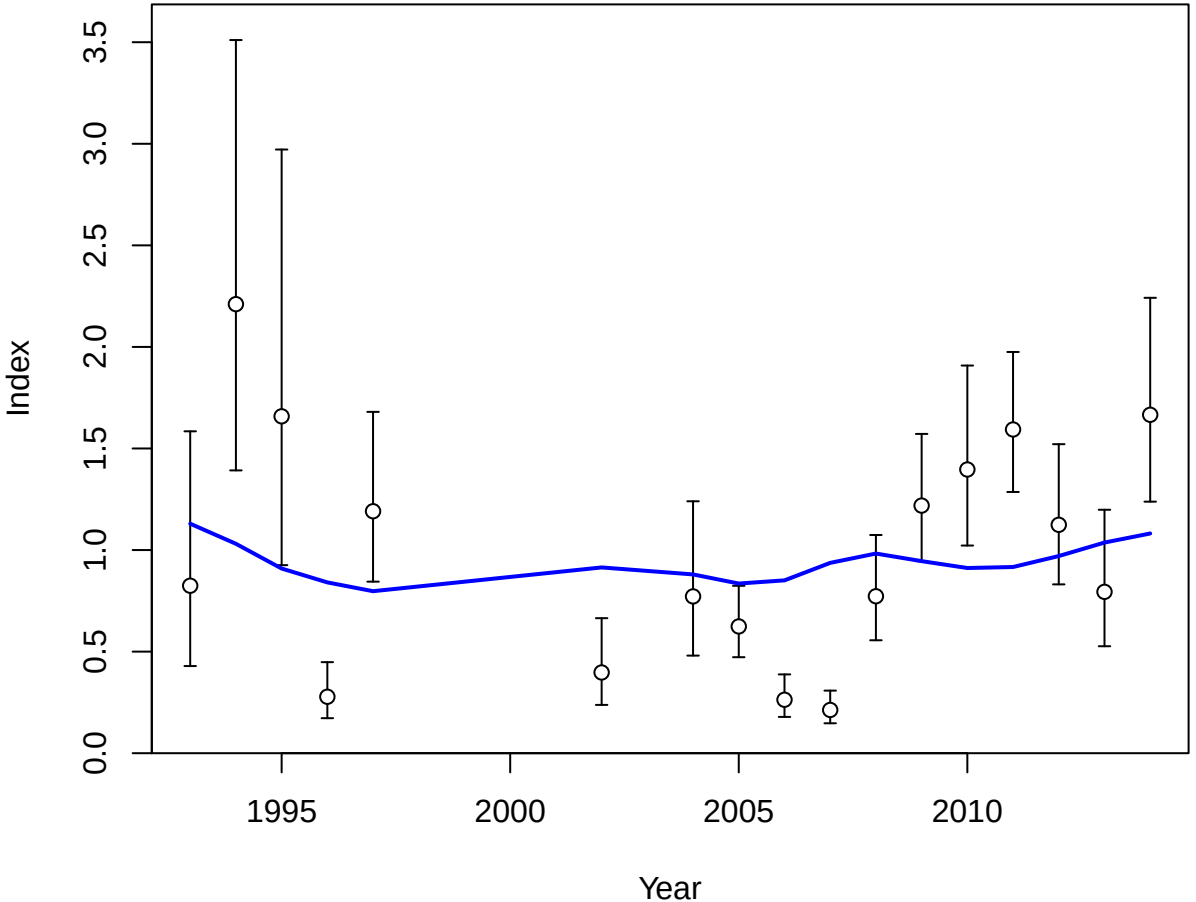

Expected index
0.0
0.5
1.0
1.5
0.0
0.5
1.0
1.5
Observed index

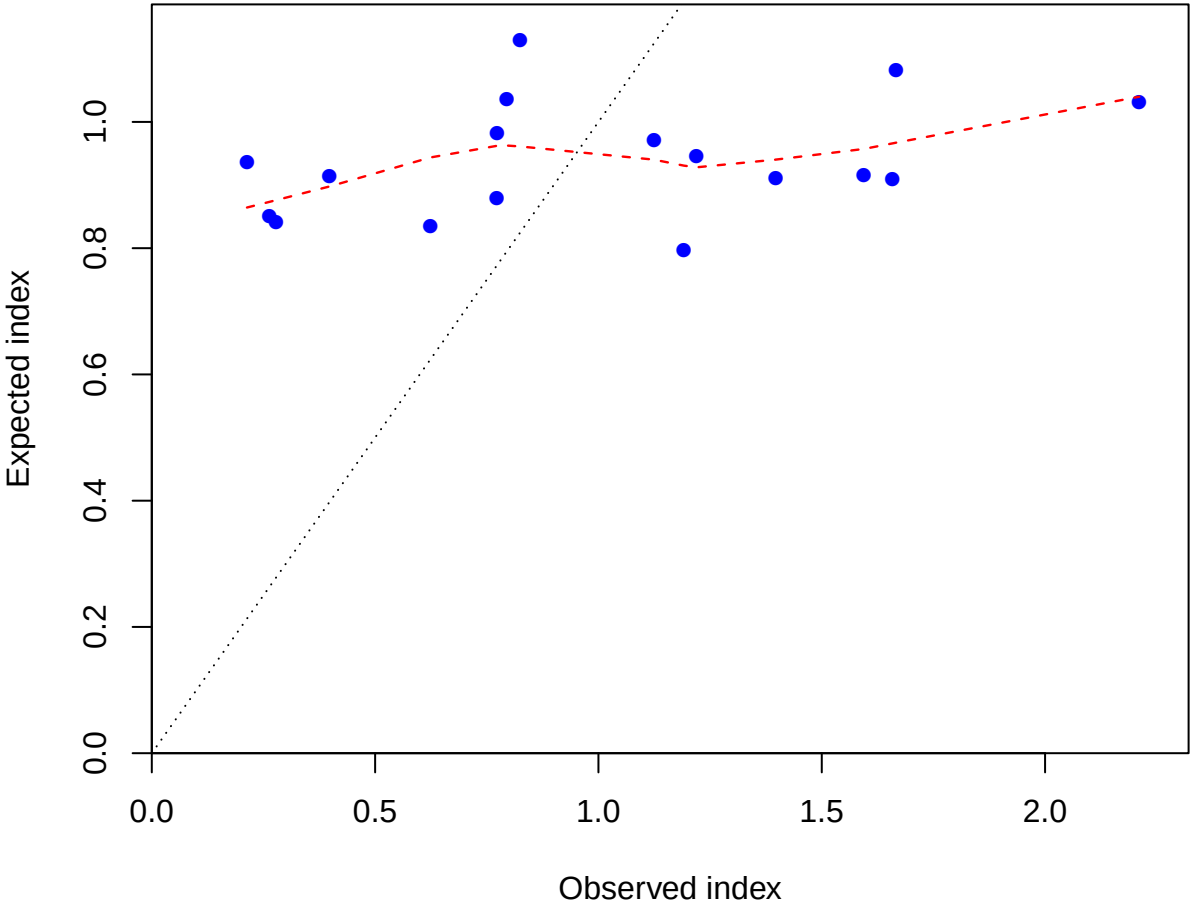

Log index
0.5
0.0
−0.5
−1.0
1985
1990
1995
2000
2005
2010
Year

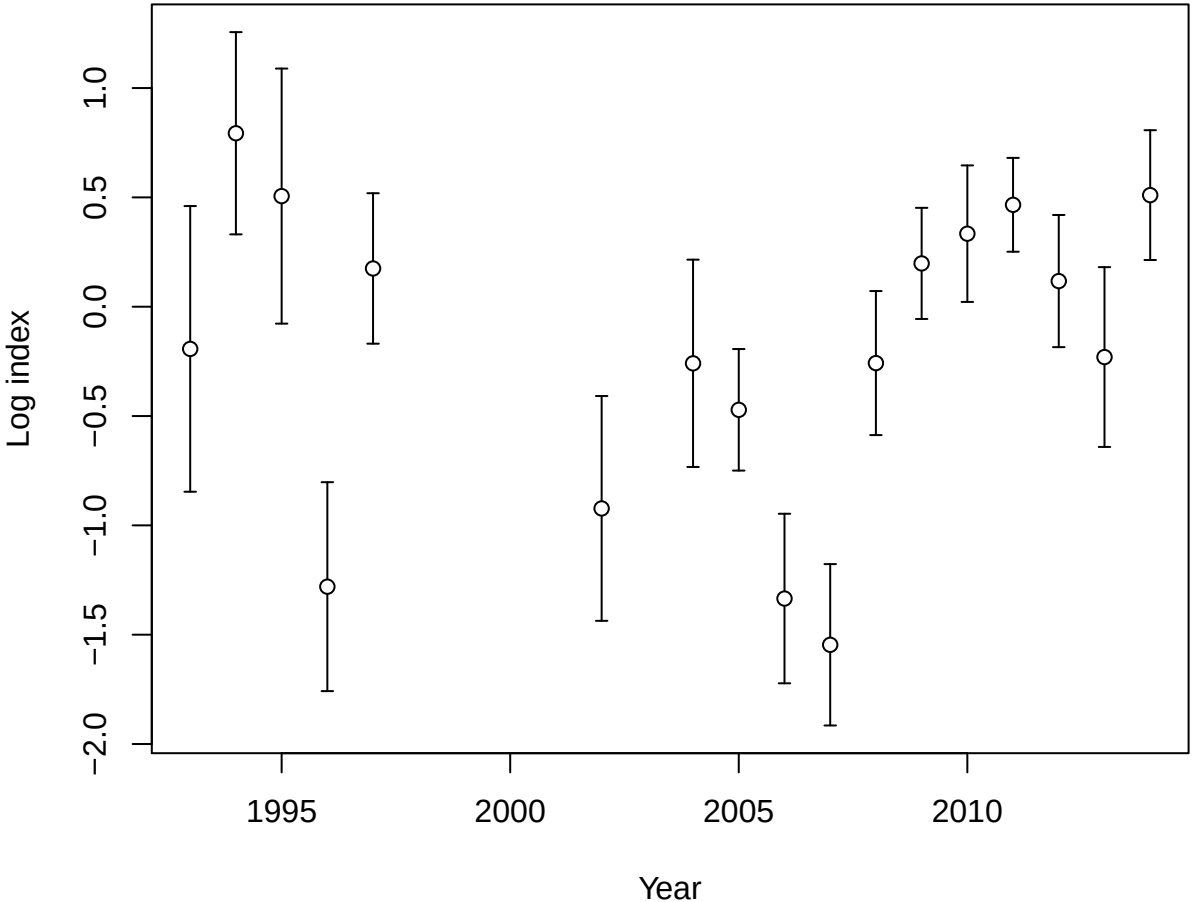

Log index
0.5
0.0
−0.5
−1.0
1985
1990
1995
2000
2005
2010
Year

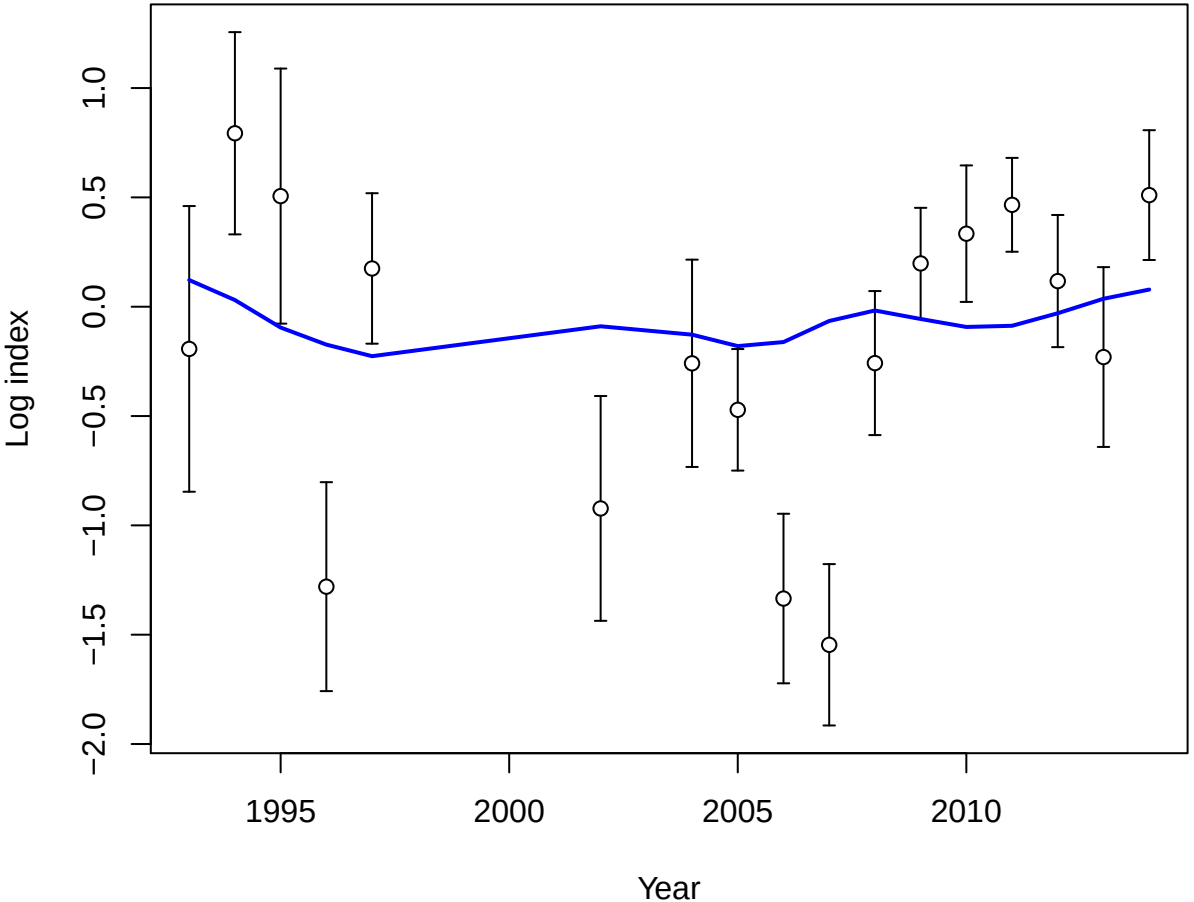

Log expected index
0.6
0.4
0.2
0.0
−0.2
−0.6
−0.4
−0.2
0.0
0.2
0.4
Log observed index

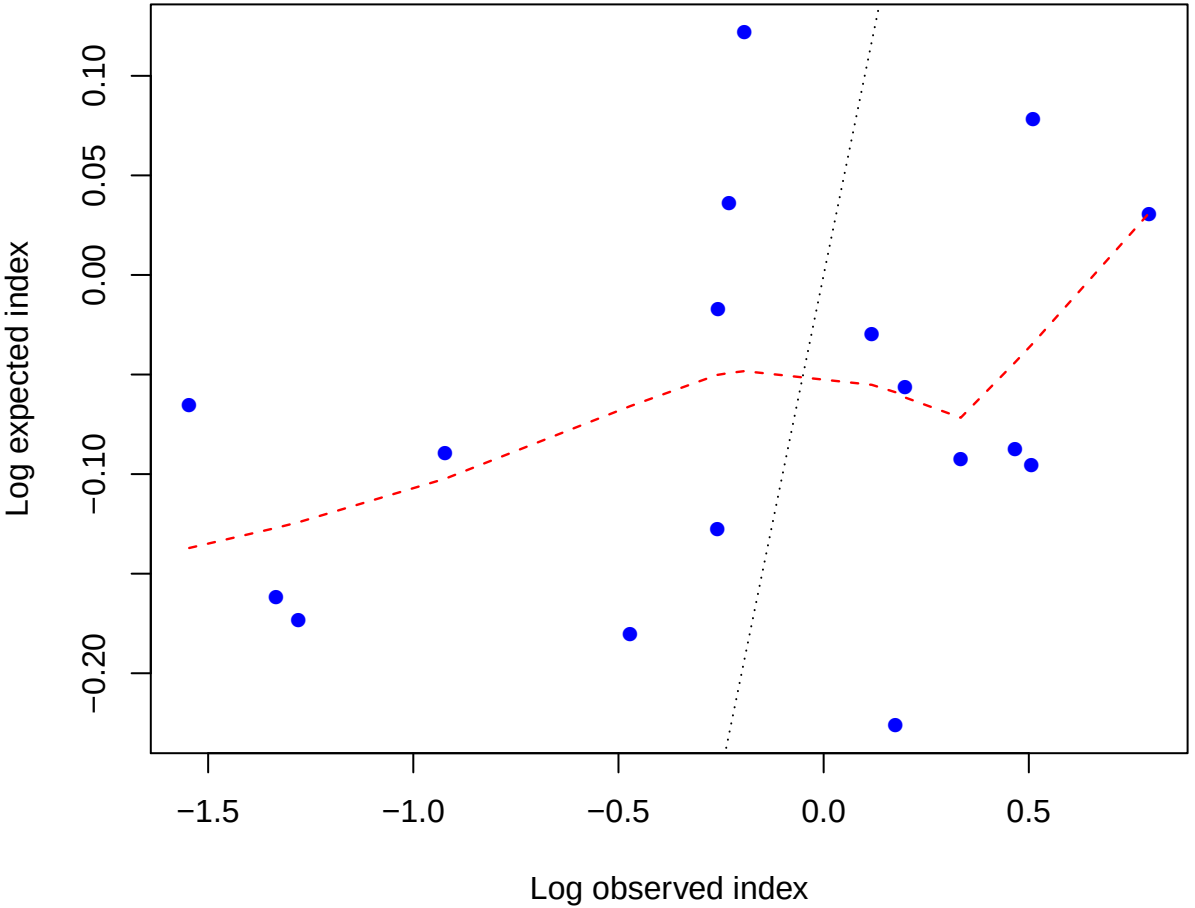

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
1995
2000
2005
2010
Year

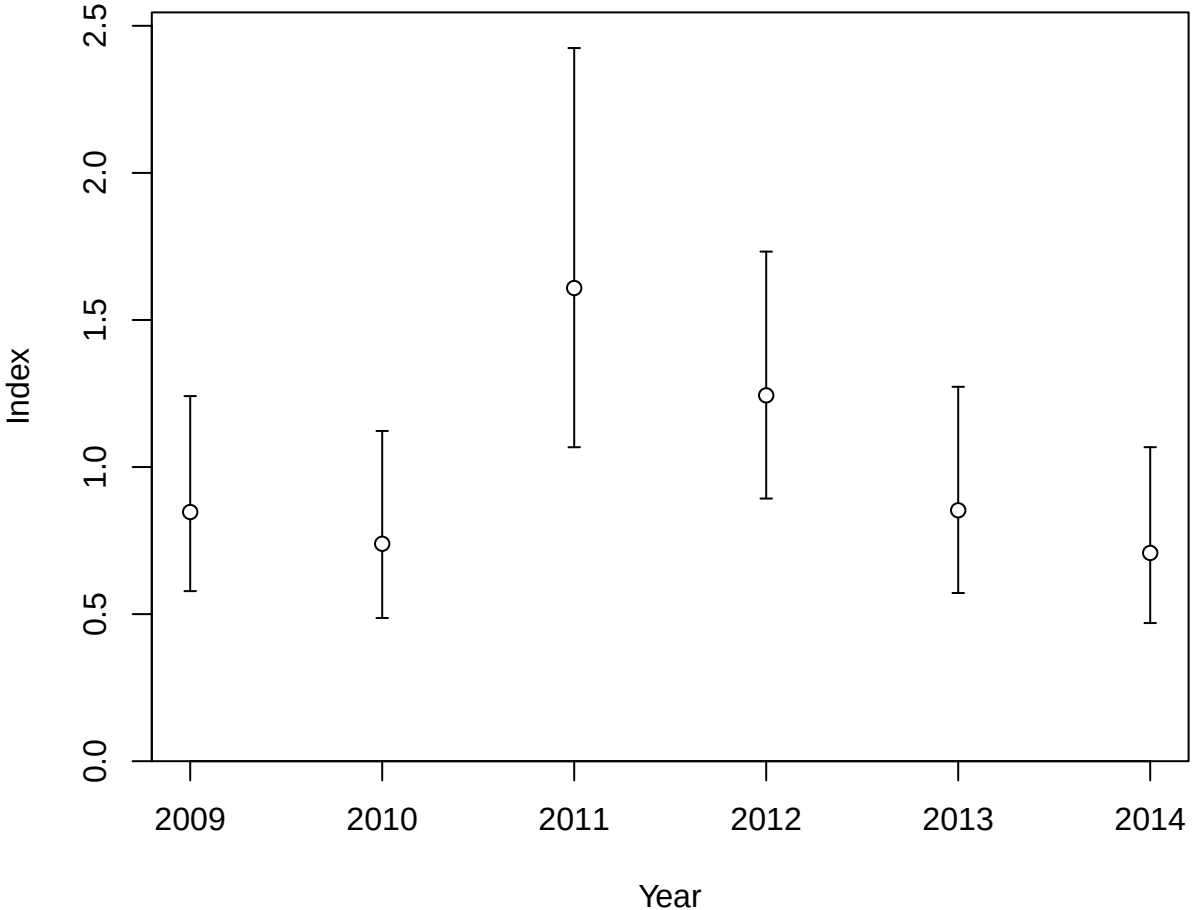

Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
1995
2000
2005
2010
Year

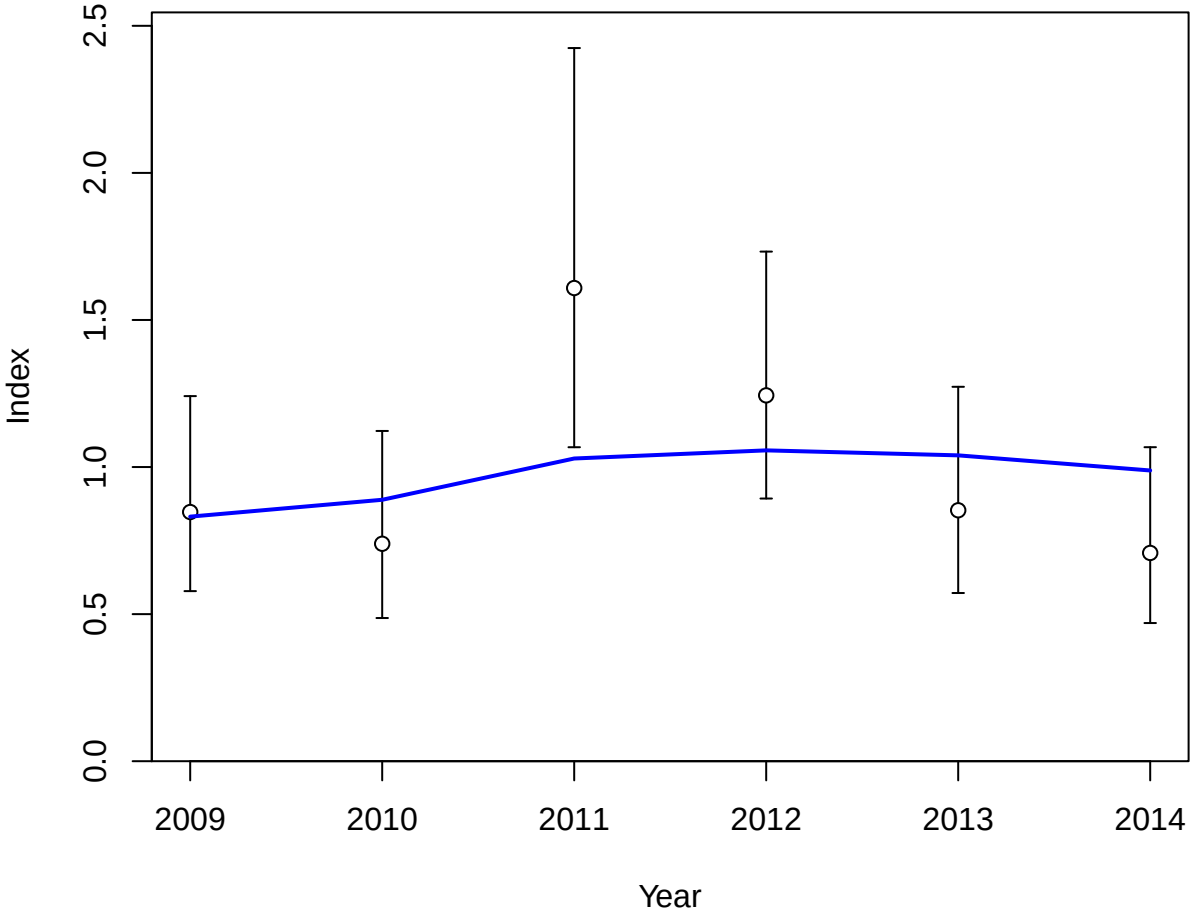

Expected index
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
2.0
Observed index

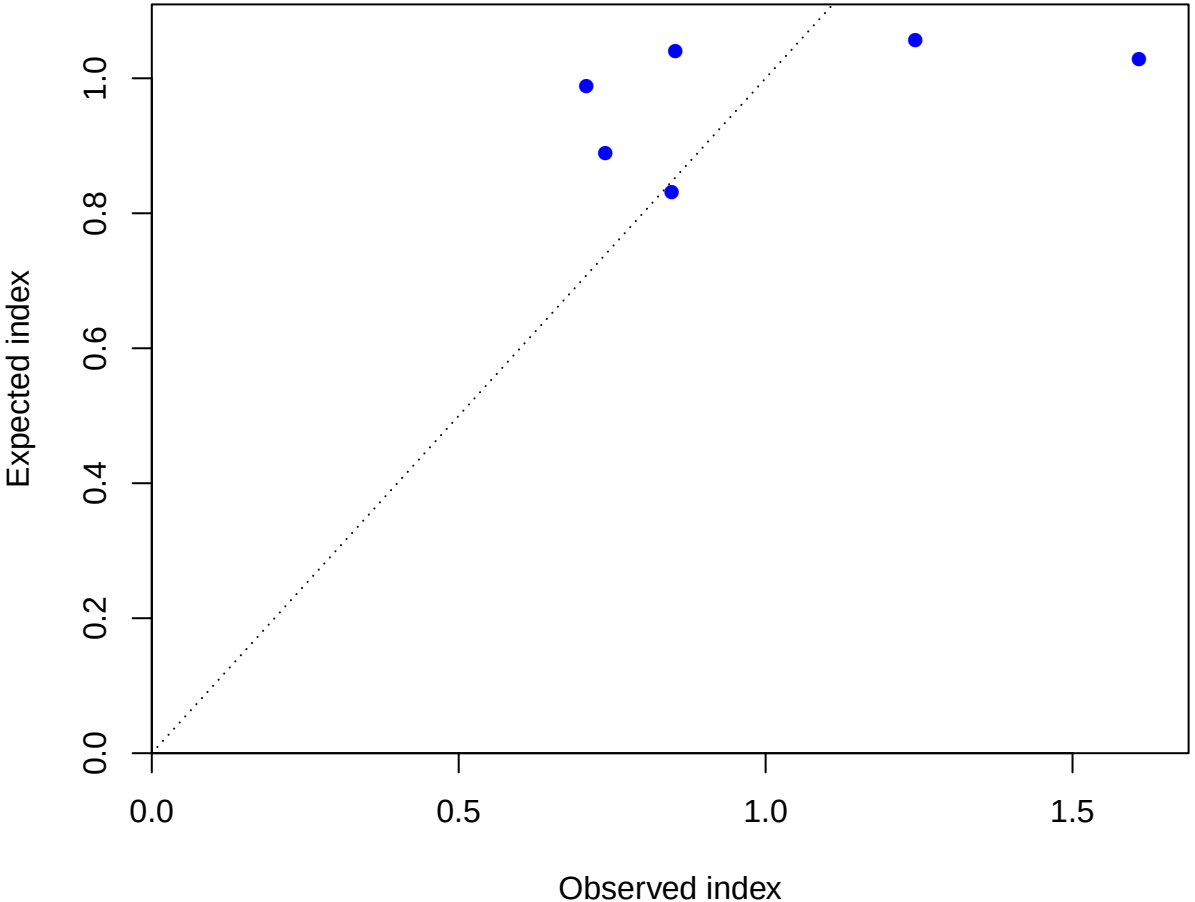

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1995
2000
2005
2010
Year

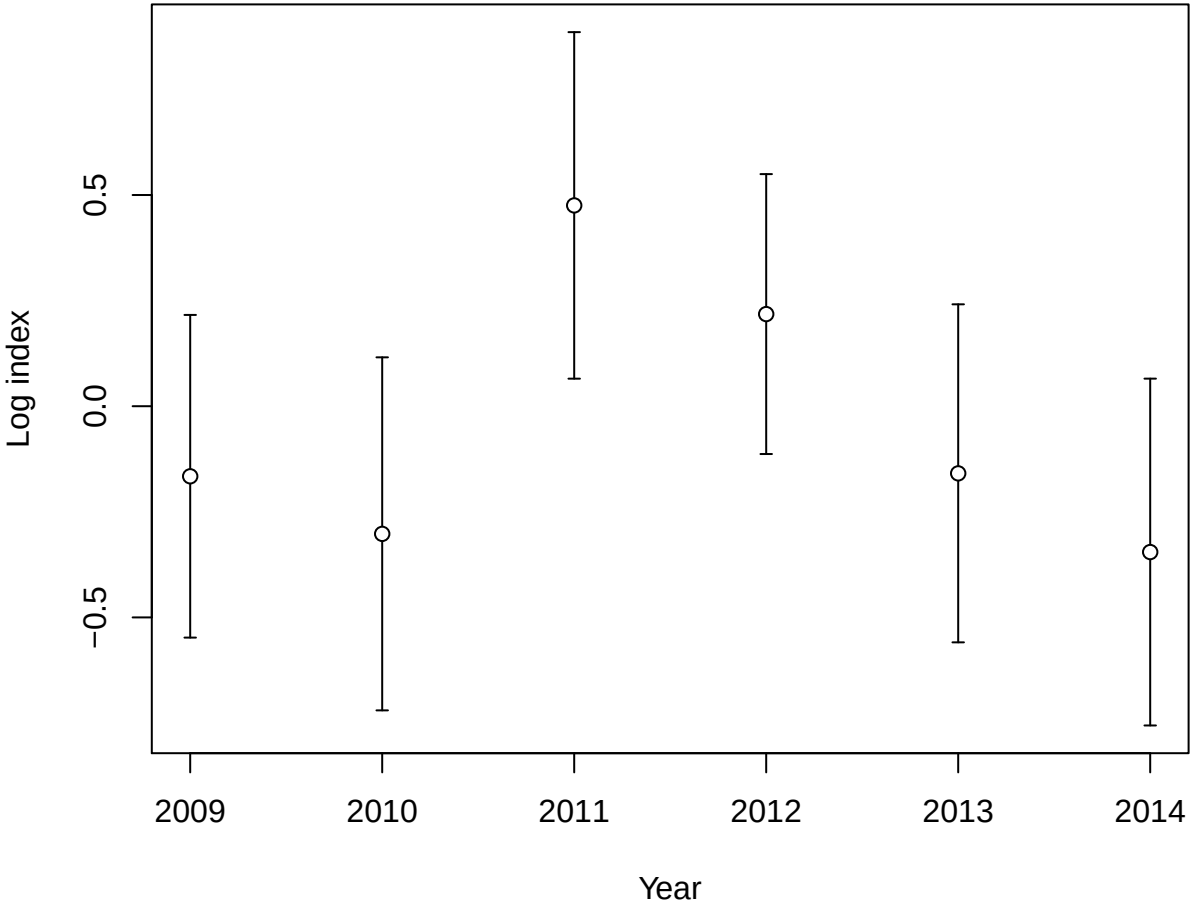

Log index
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
1995
2000
2005
2010
Year

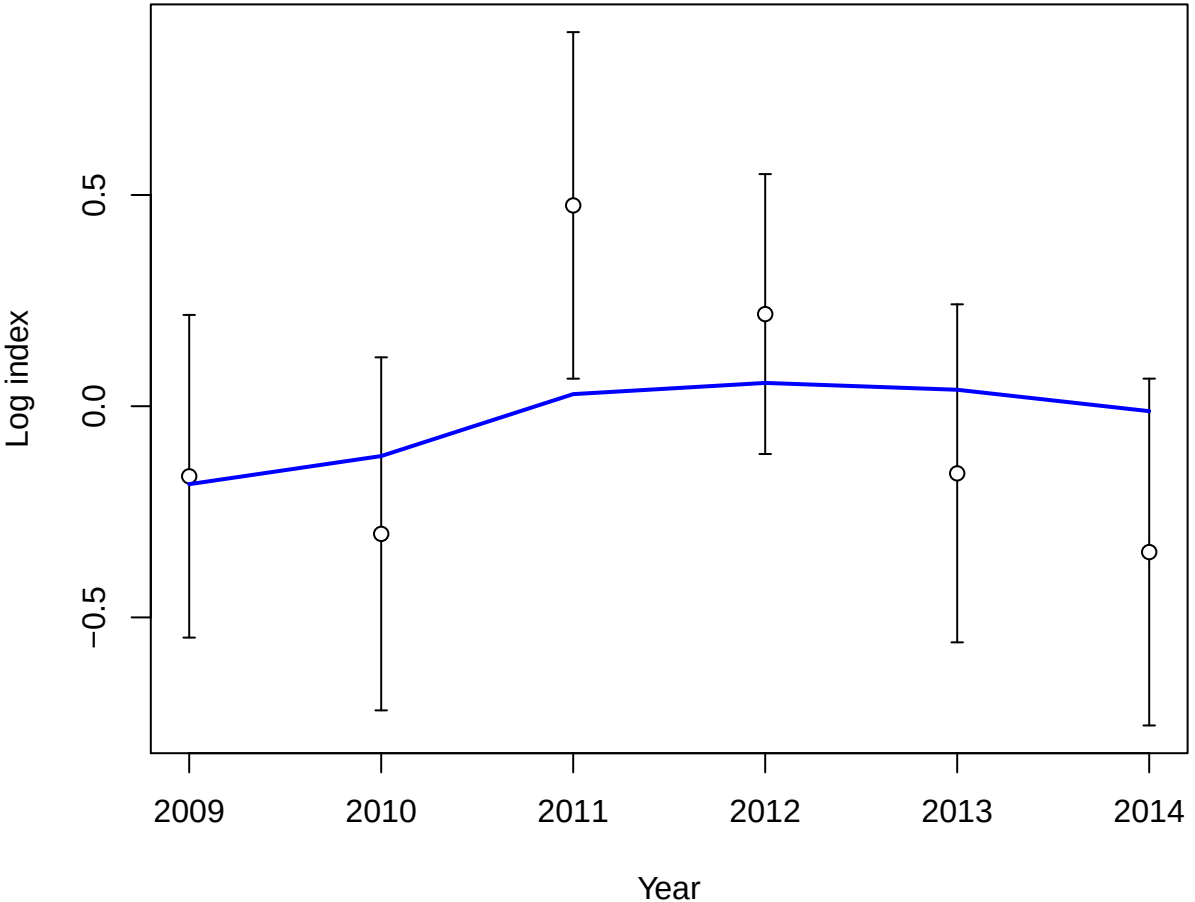

Log expected index
0.10
0.05
0.00
−0.10
−0.20
−1.5
−1.0
−0.5
0.0
0.5
Log observed index

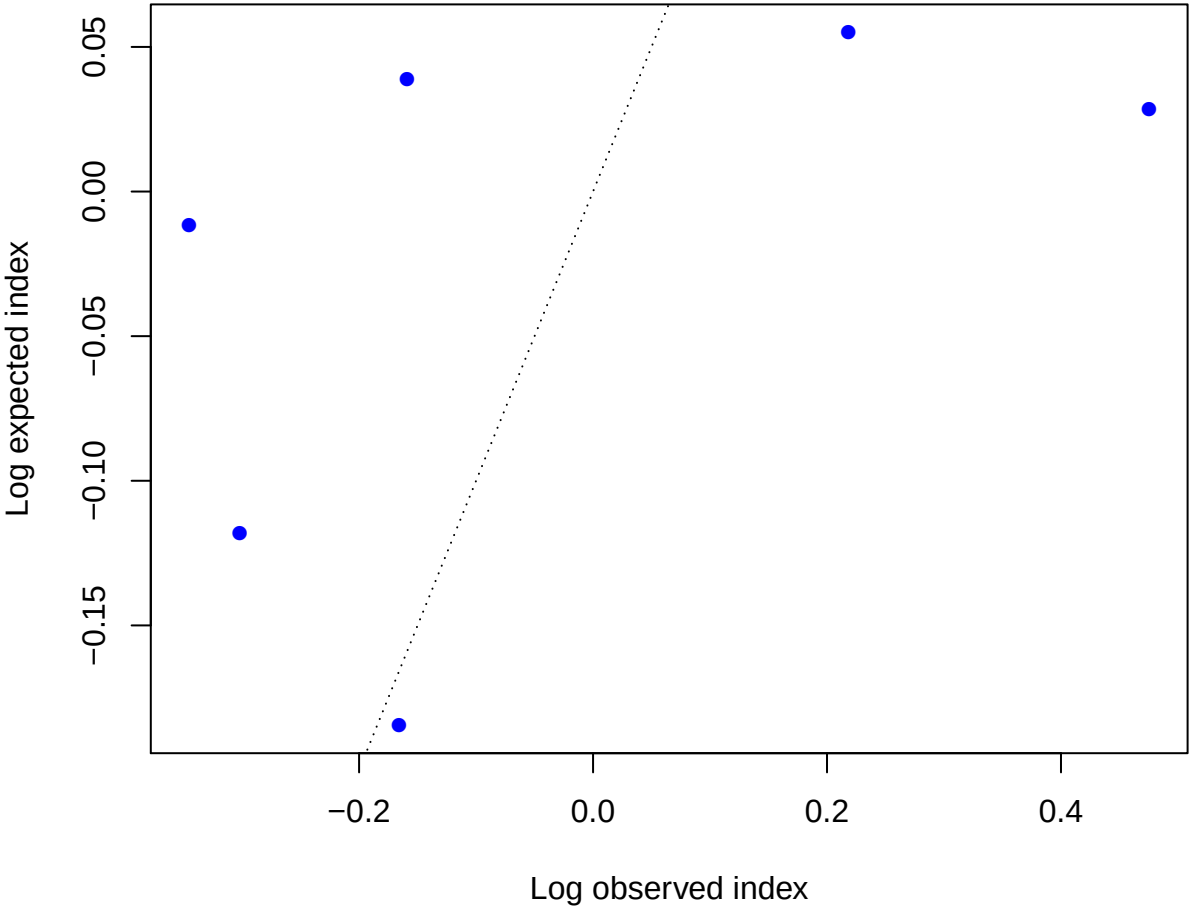

Index
0.0
0.5
1.0
1.5
2.0
2.5
2009
2010
2011
2012
2013
2014
Year

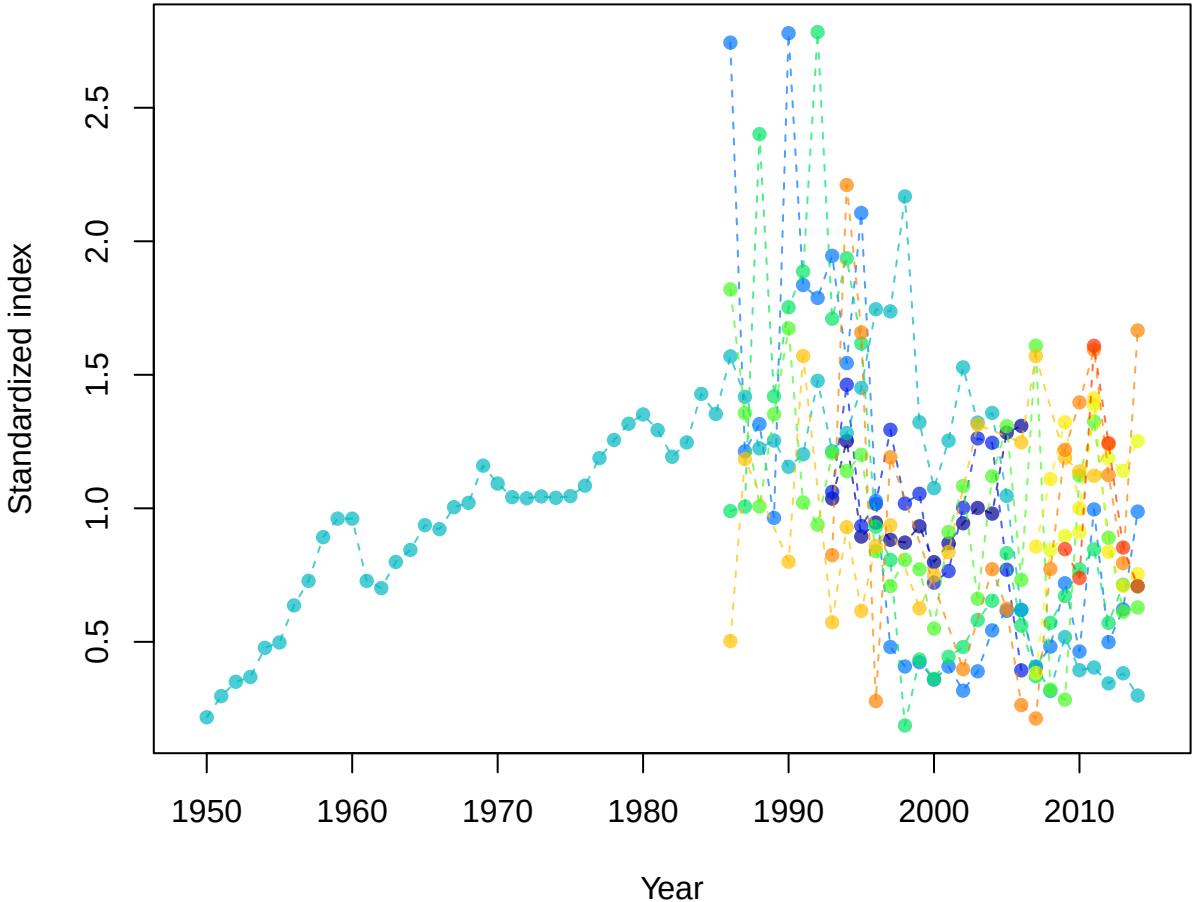

Index
0.0
0.5
1.0
1.5
2.0
2.5
2009
2010
2011
2012
2013
2014
Year

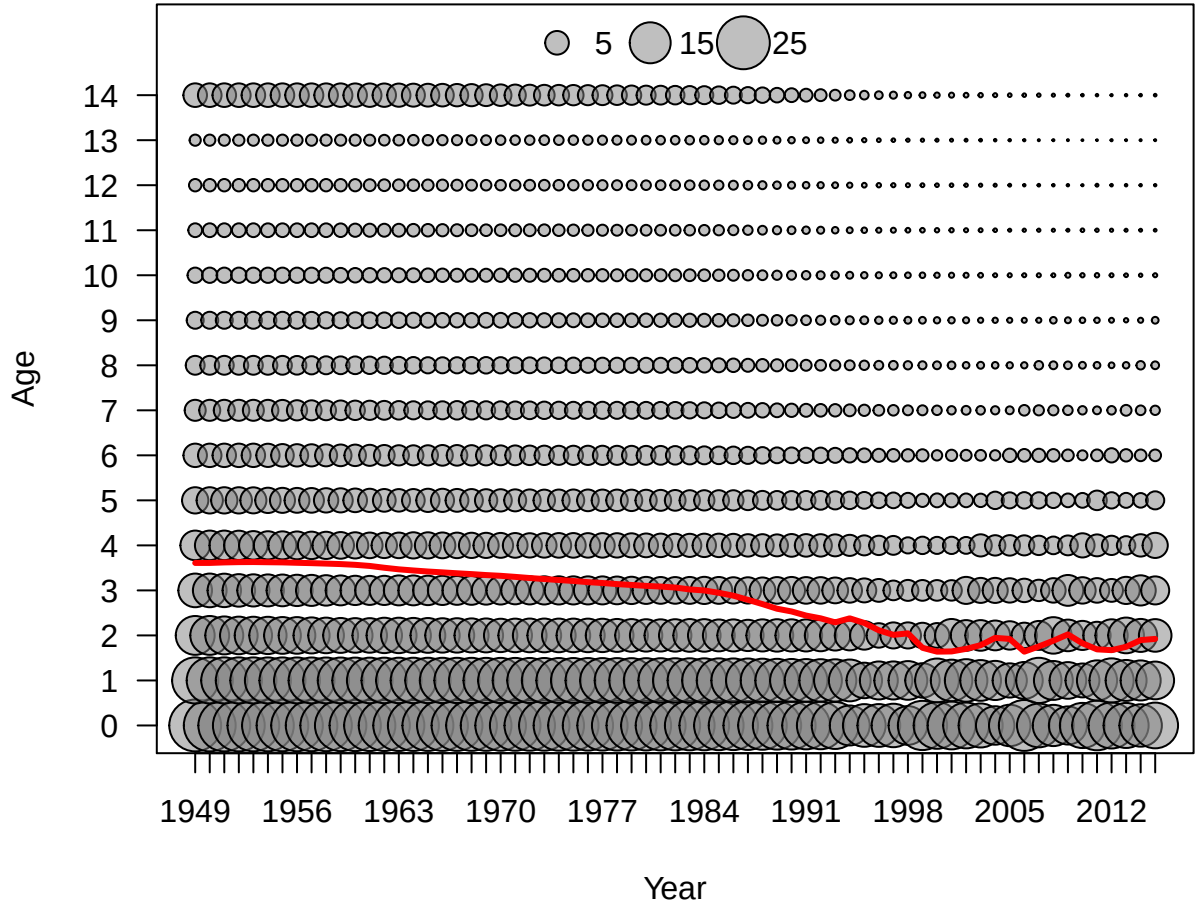

Expected index
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
Observed index

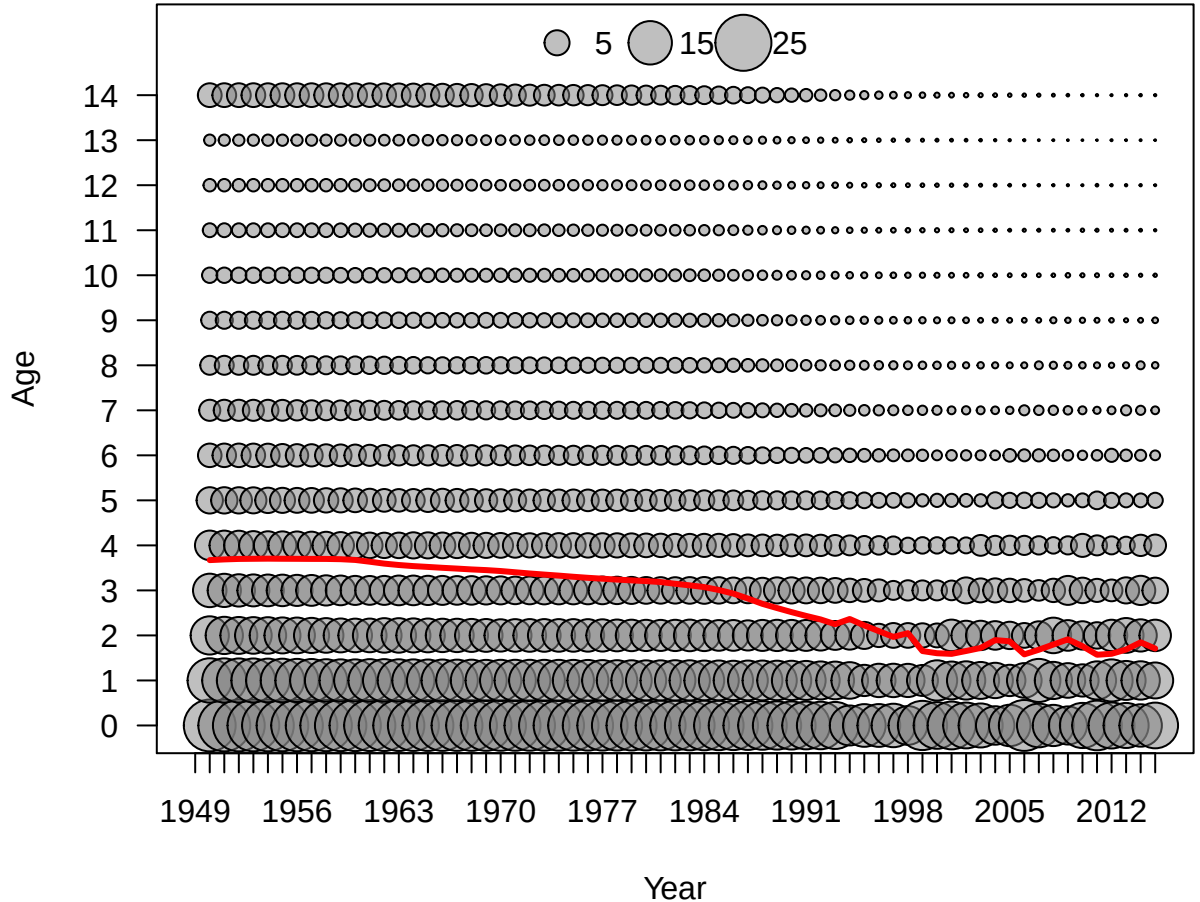

Log index
0.5
0.0
−0.5
2009
2010
2011
2012
2013
2014
Year

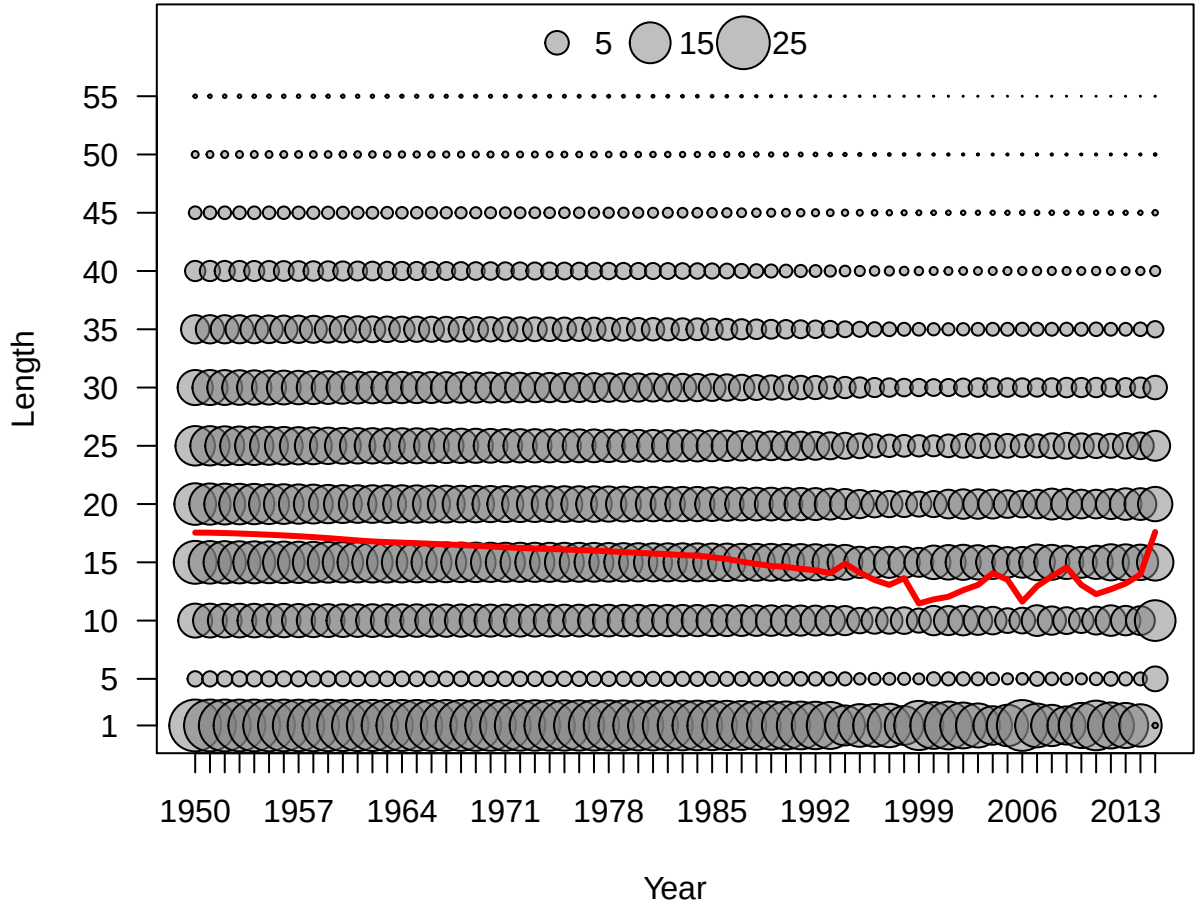

Log index
0.5
0.0
−0.5
2009
2010
2011
2012
2013
2014
Year

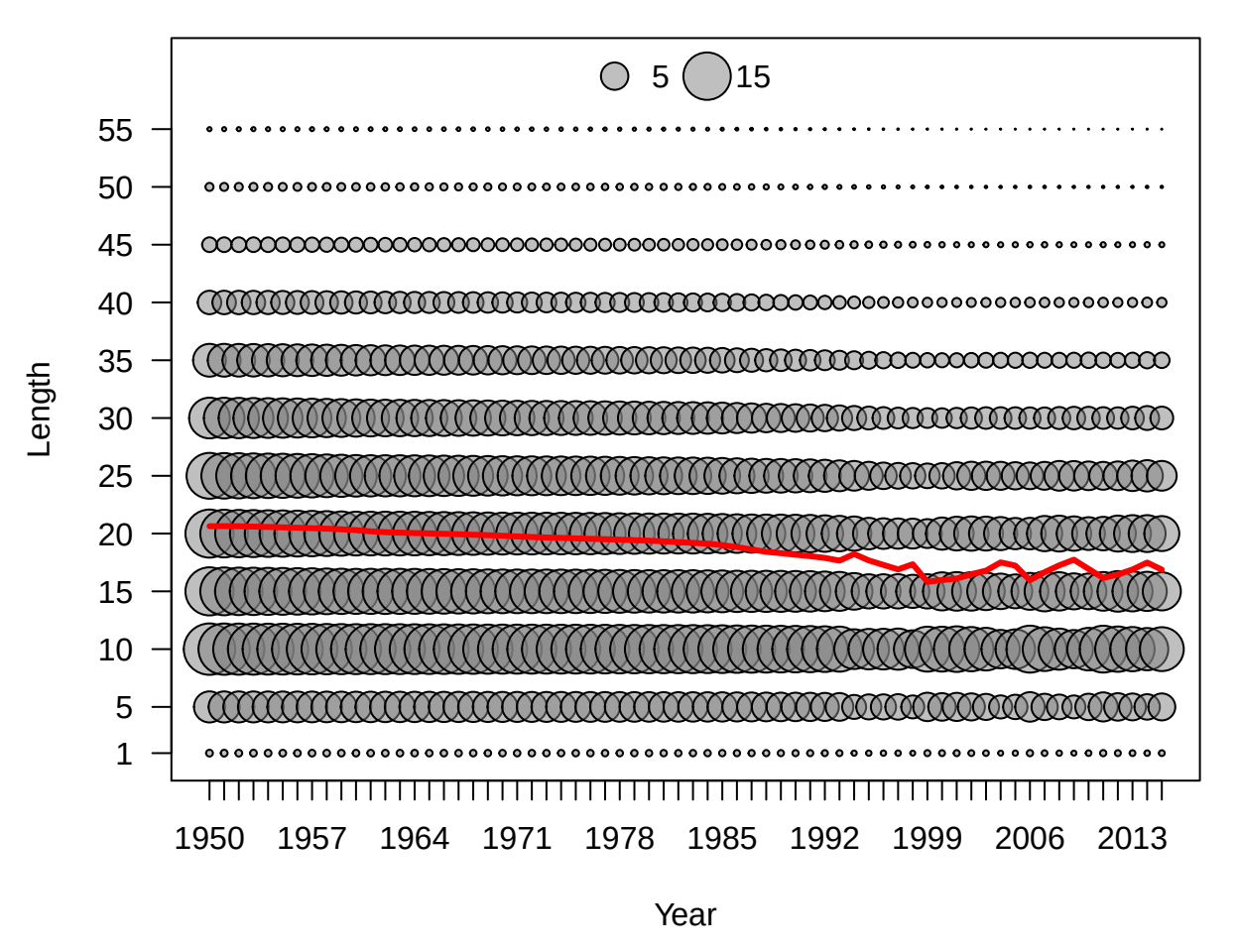

Log expected index
0.05
0.00
−0.05
−0.10
−0.15
−0.2
0.0
0.2
0.4
Log observed index

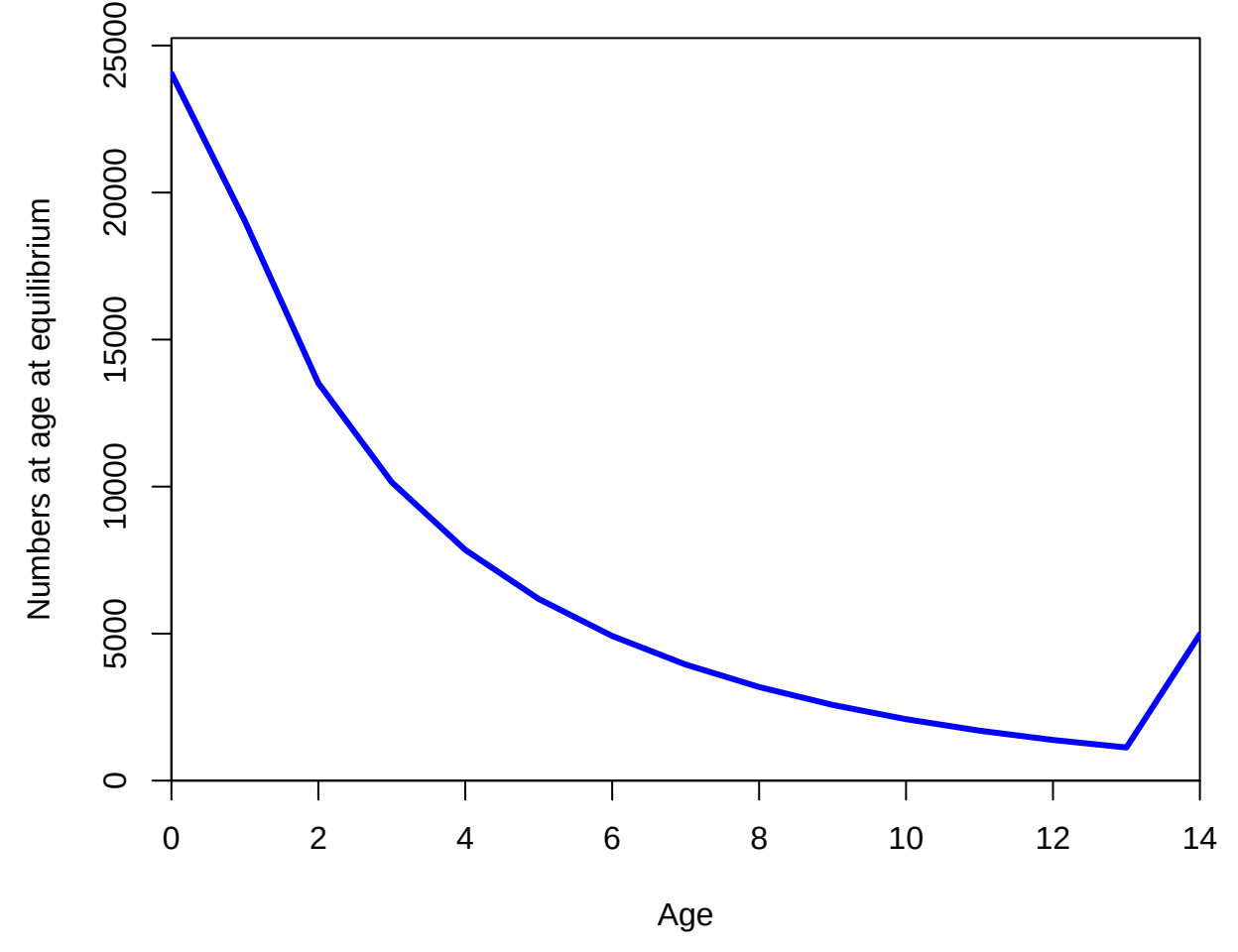

Standardized index
0.5
1.0
1.5
2.0
2.5
1950
1960
1970
1980
1990
2000
2010
Year

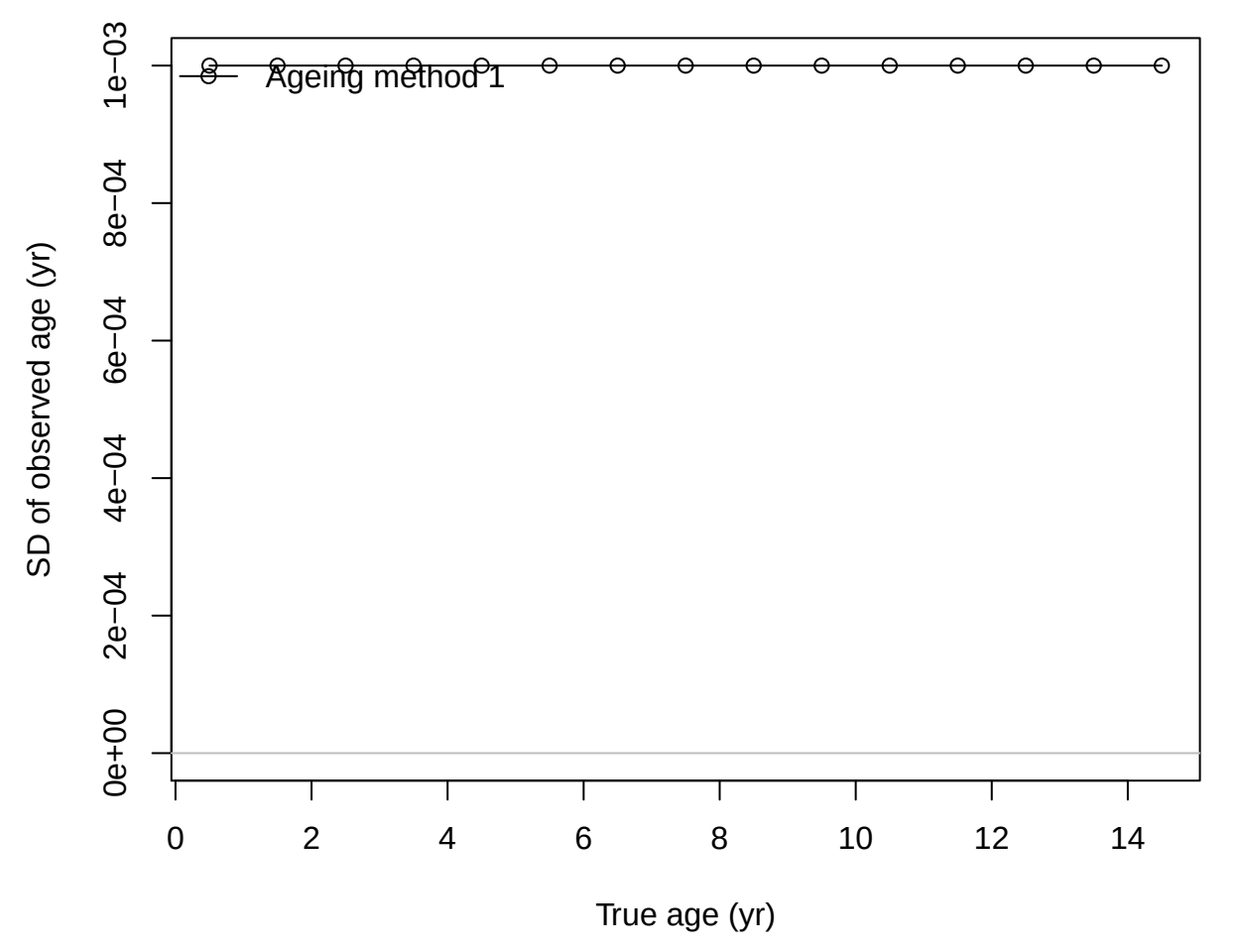

5
15
25
Age
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1949
1956
1963
1970
1977
1984
1991
1998
2005
2012
Year

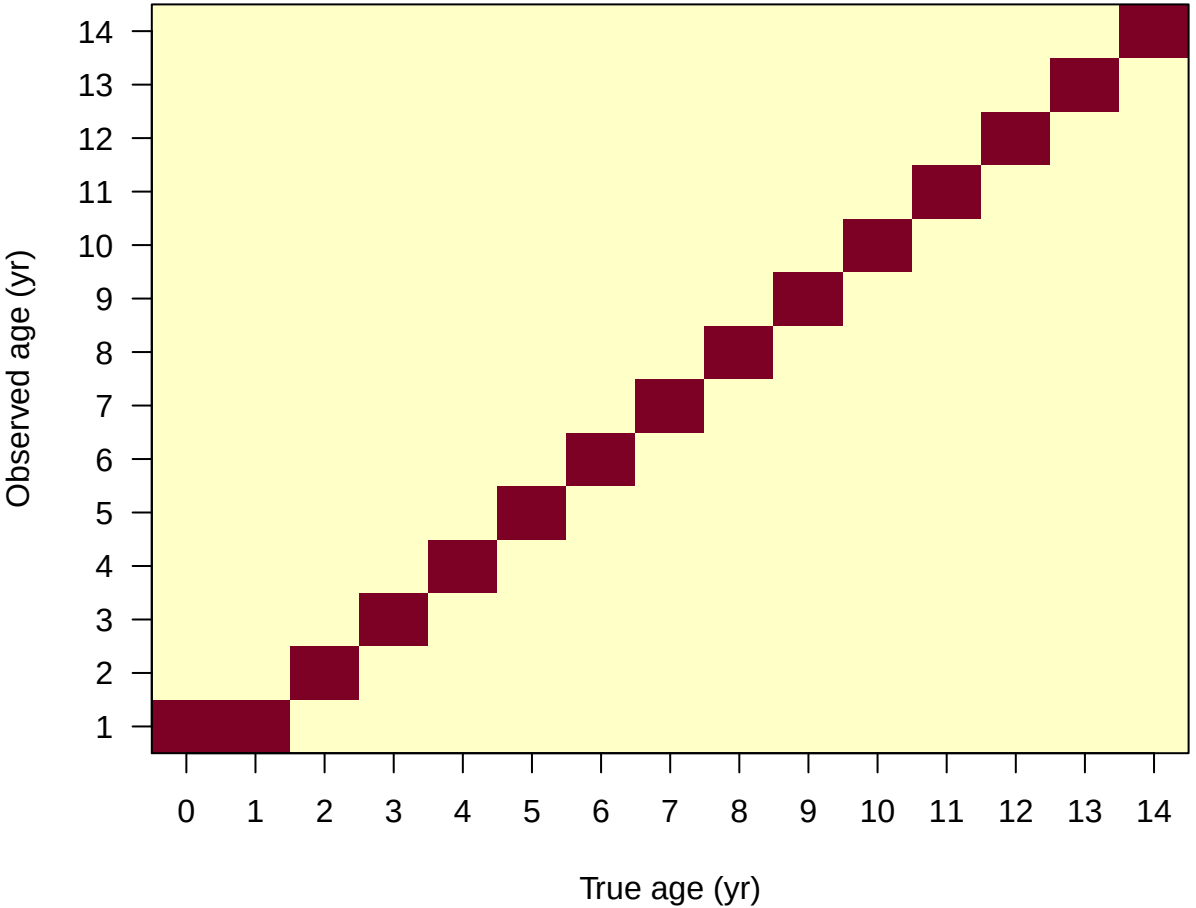

5
15
25
Age
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1949
1956
1963
1970
1977
1984
1991
1998
2005
2012
Year

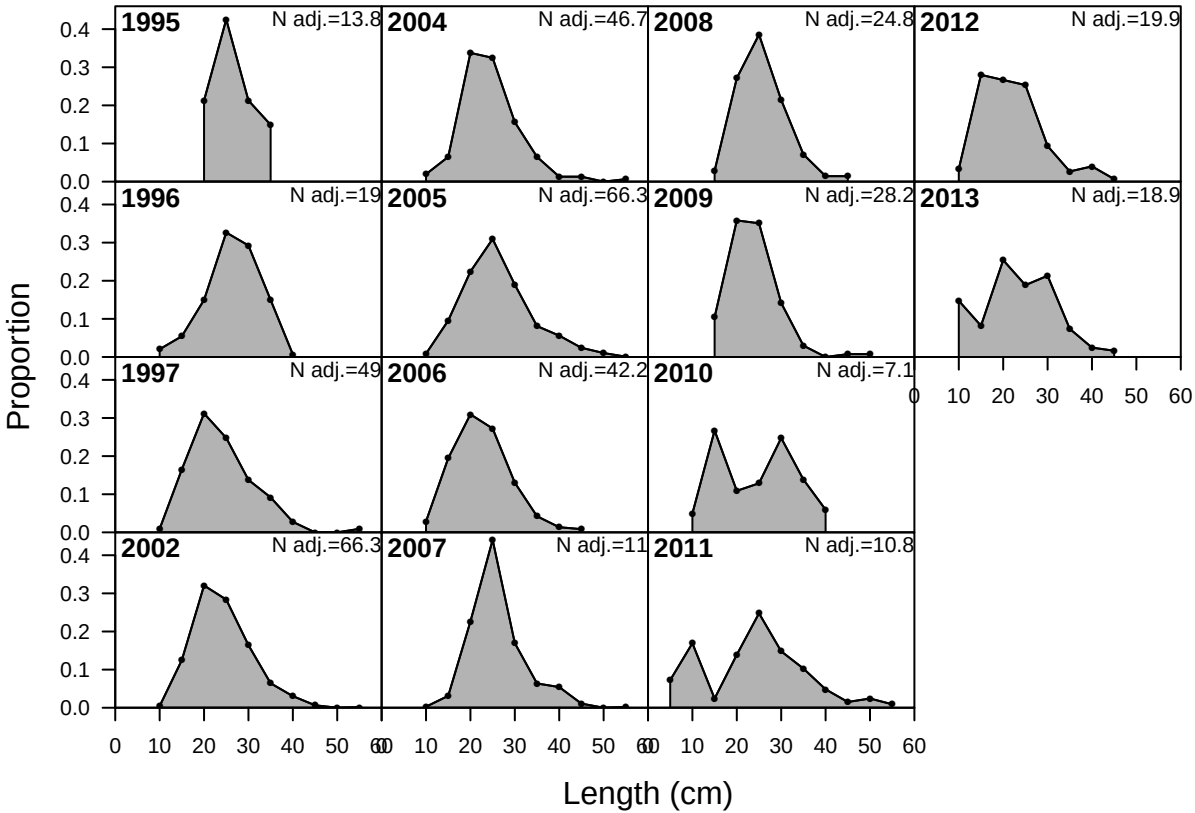

5
15
25
55
50
45
40
35
30
25
20
15
10
5
1
Length
1950
1957
1964
1971
1978
1985
1992
1999
2006
2013
Year

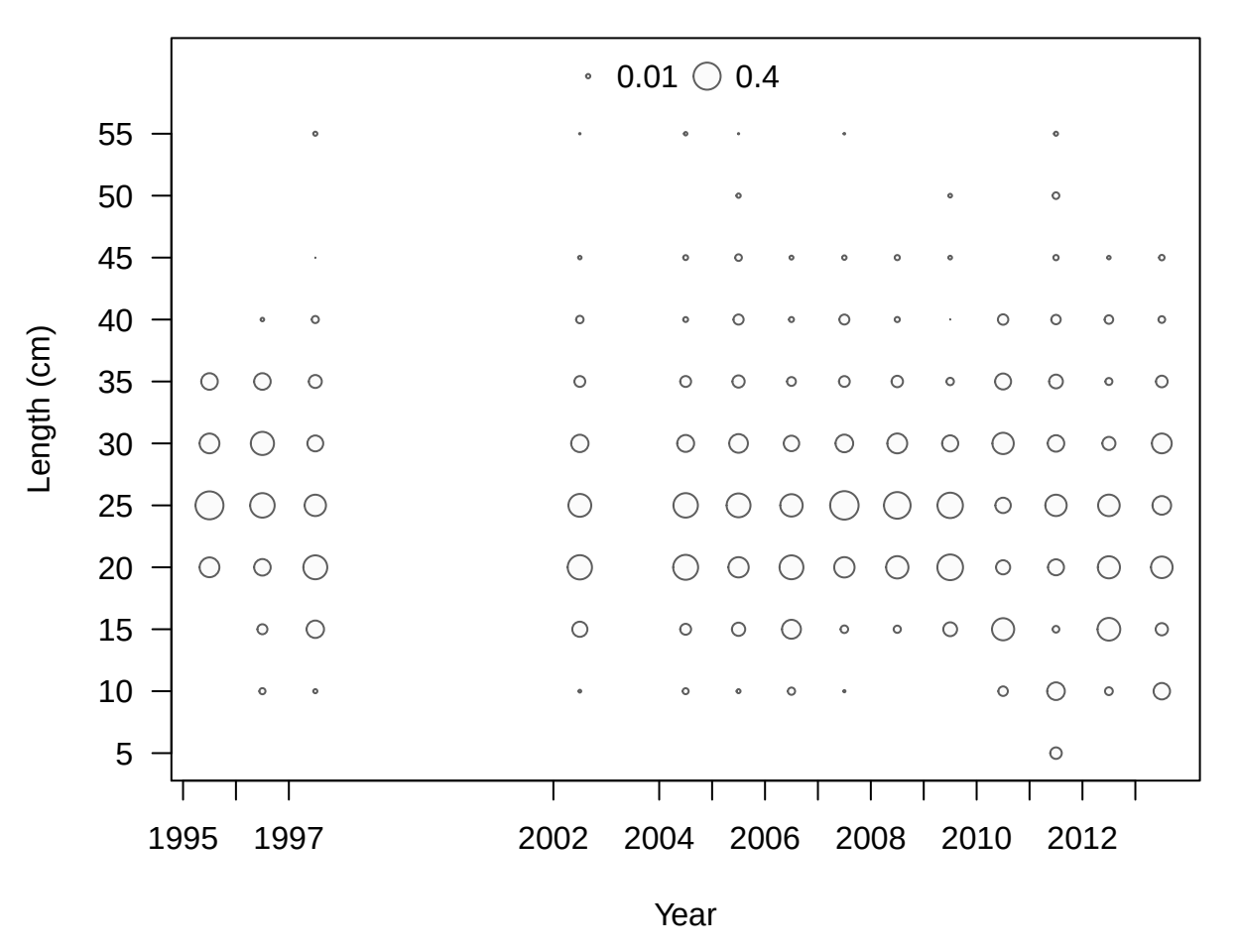

5
15
55
50
45
40
35
30
25
20
15
10
5
1
Length
1950
1957
1964
1971
1978
1985
1992
1999
2006
2013
Year

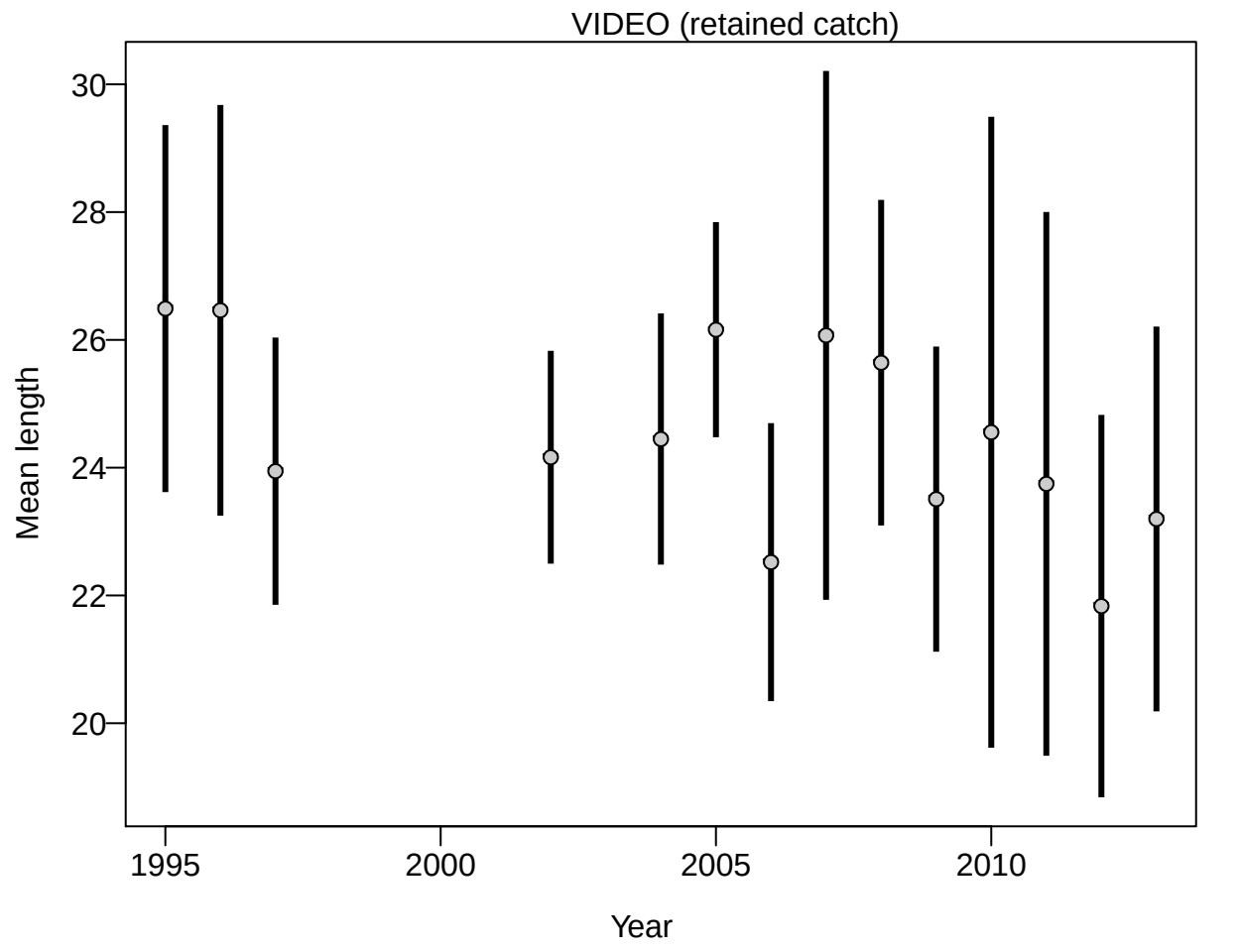

Numbers at age at equilibrium
0
5000
10000
15000
20000
25000
0
2
4
6
8
10
12
14
Age

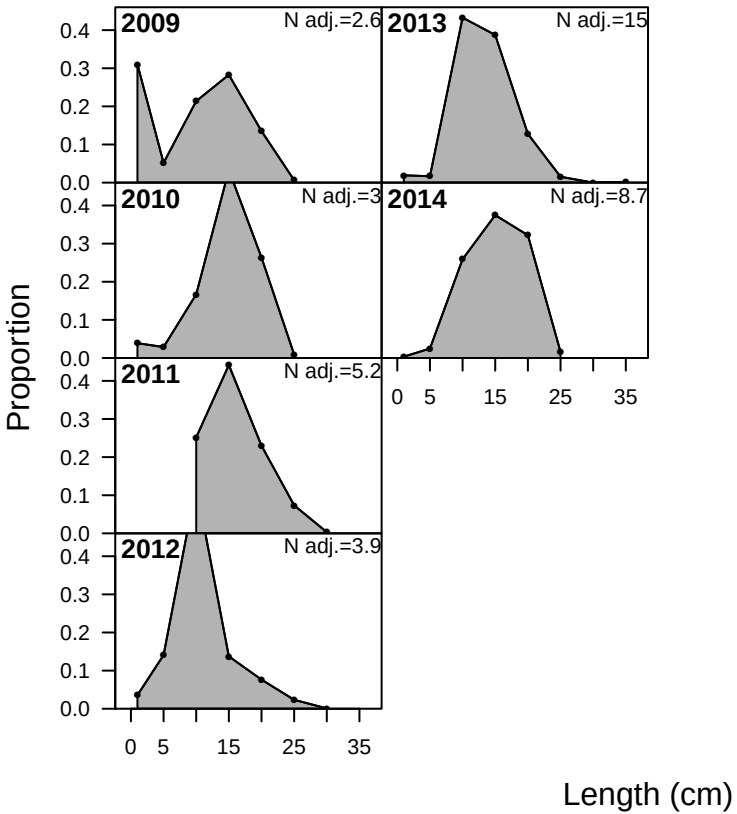

Ageing method 1
SD of observed age (yr)
0e+00
2e−04
4e−04
6e−04
8e−04
1e−03
0
2
4
6
8
10
12
14
True age (yr)

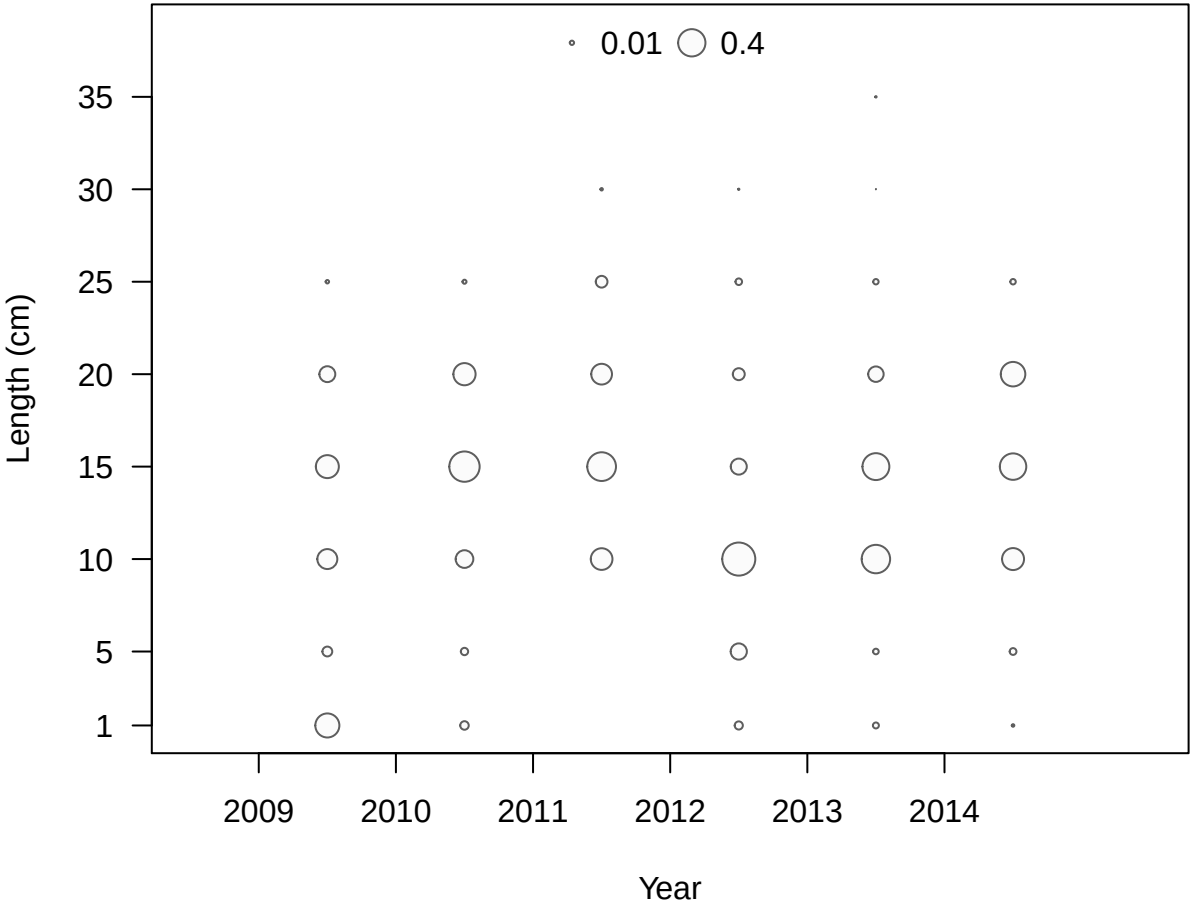

Observed age (yr)
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
True age (yr)

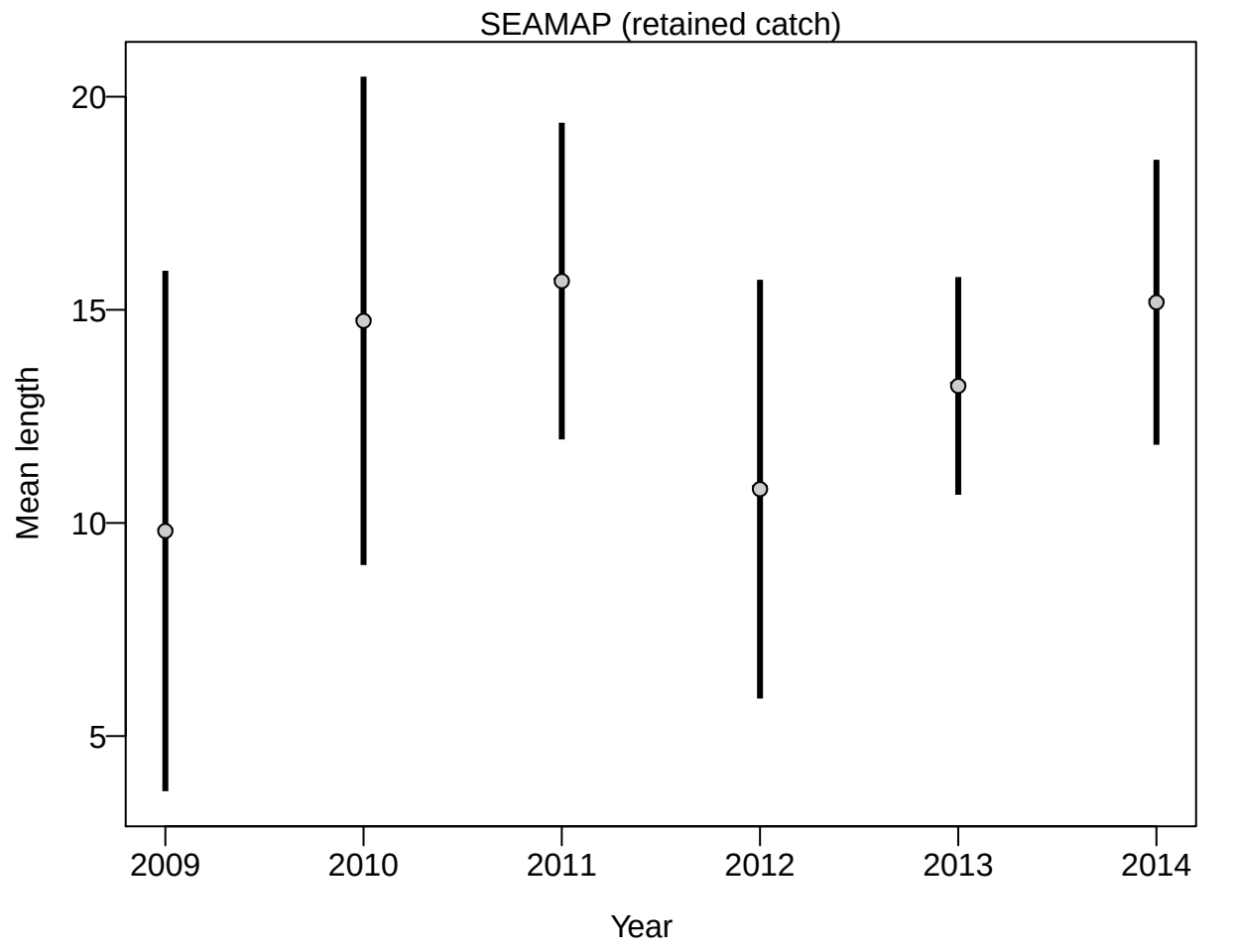

1995
N adj.=13.8
2004
N adj.=46.7
2008
N adj.=24.8
2012
N adj.=19.9
1996
N adj.=19
2005
N adj.=66.3
2009
N adj.=28.2
2013
N adj.=18.9
1997
N adj.=49
2006
N adj.=42.2
2010
N adj.=7.1
2002
N adj.=66.3
2007
N adj.=11
2011
N adj.=10.8
Proportion
0.0
0.1
0.2
0.3
0.4
0
10
20
30
40
50
60
Length (cm)

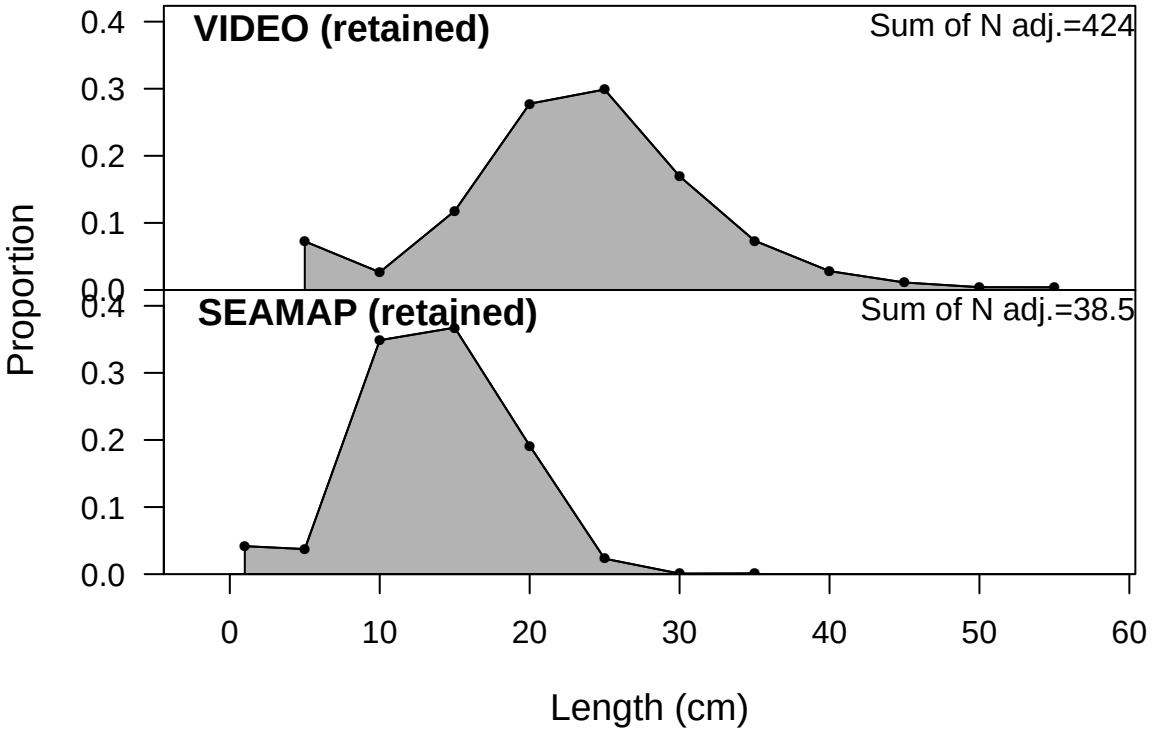

0.01
0.4
55
50
45
40
35
30
25
20
15
10
5
Length (cm)
1995
1997
2002
2004
2006
2008
2010
2012
Year

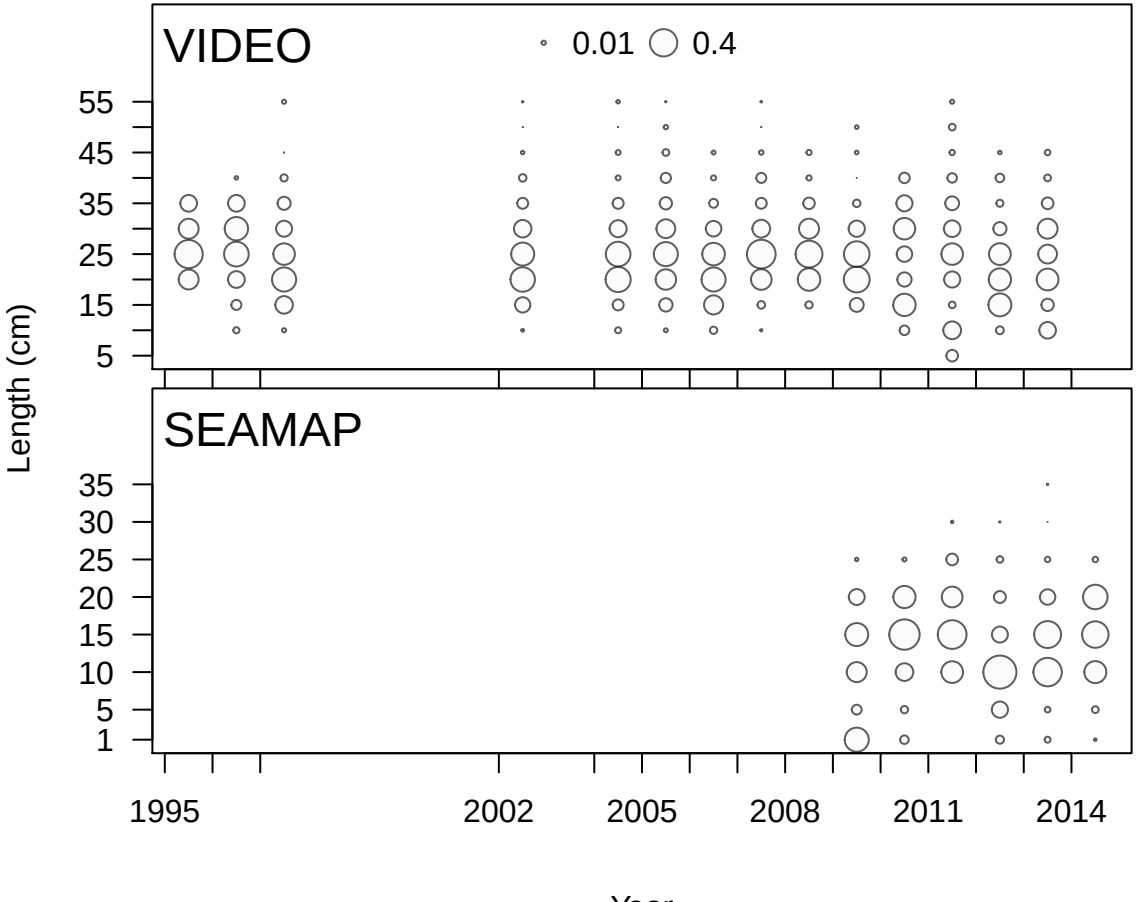

VIDEO (retained catch)
Mean length
30
28
26
24
22
20
1995
2000
2005
2010
Year

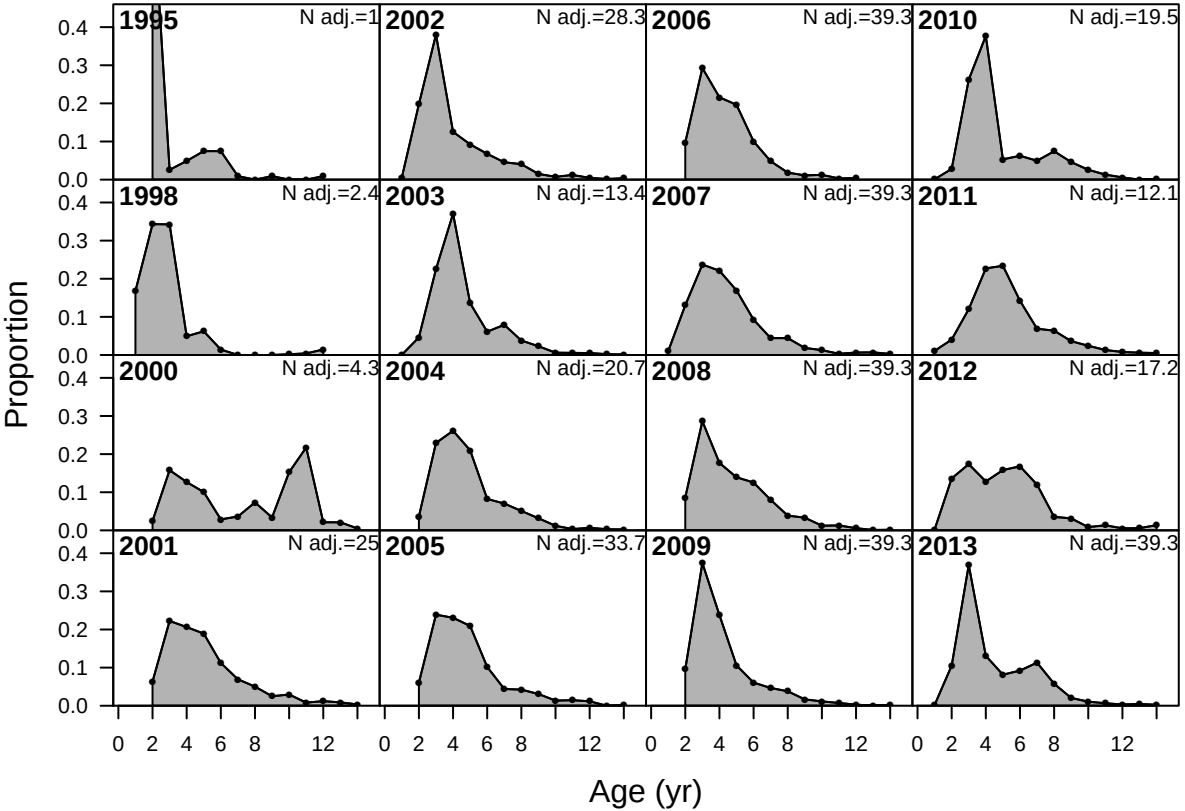

2009
N adj.=2.6
2013
N adj.=15
2010
N adj.=3
2014
N adj.=8.7
2011
N adj.=5.2
2012
N adj.=3.9
Proportion
0.0
0.1
0.2
0.3
0.4
0 5 15 25 35
Length (cm)

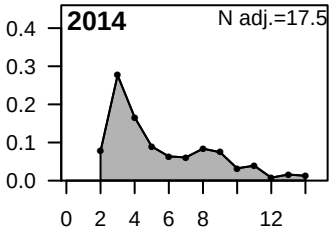

0.01
0.4
35
30
25
20
15
10
5
1
Length (cm)
2009
2010
2011
2012
2013
2014
Year


SEAMAP (retained catch)
Mean length
20
15
10
5
2009
2010
2011
2012
2013
2014
Year


VIDEO (retained)
Sum of N adj.=424
SEAMAP (retained)
Sum of N adj.=38.5
Proportion
0.0
0.1
0.2
0.3
0.4
0
10
20
30
40
50
60
Length (cm)

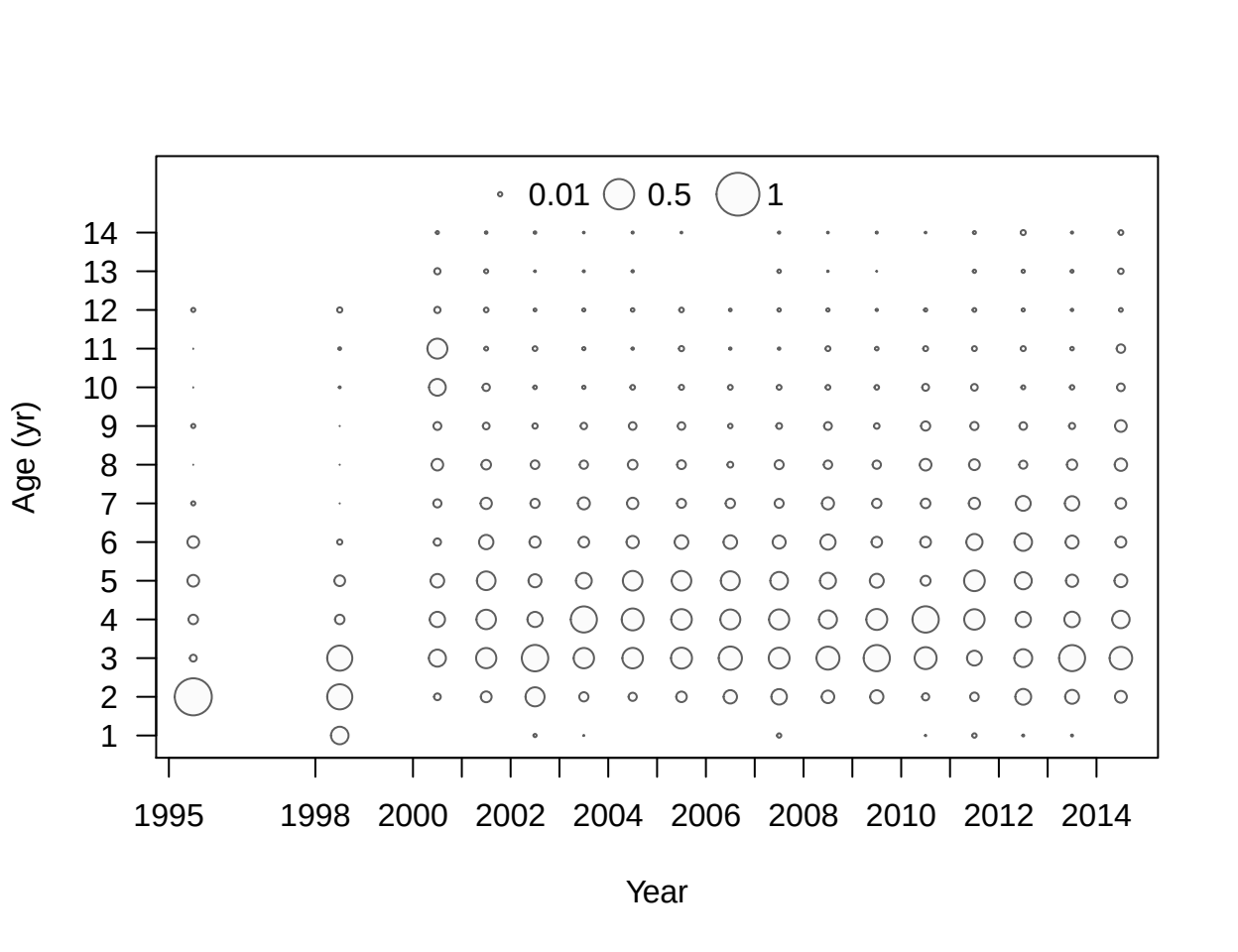

VIDEO
0.01
0.4
55
45
35
25
15
5
SEAMAP
35
30
25
20
15
10
5
1
Length (cm)
1995
2002
2005
2008
2011
2014
Year

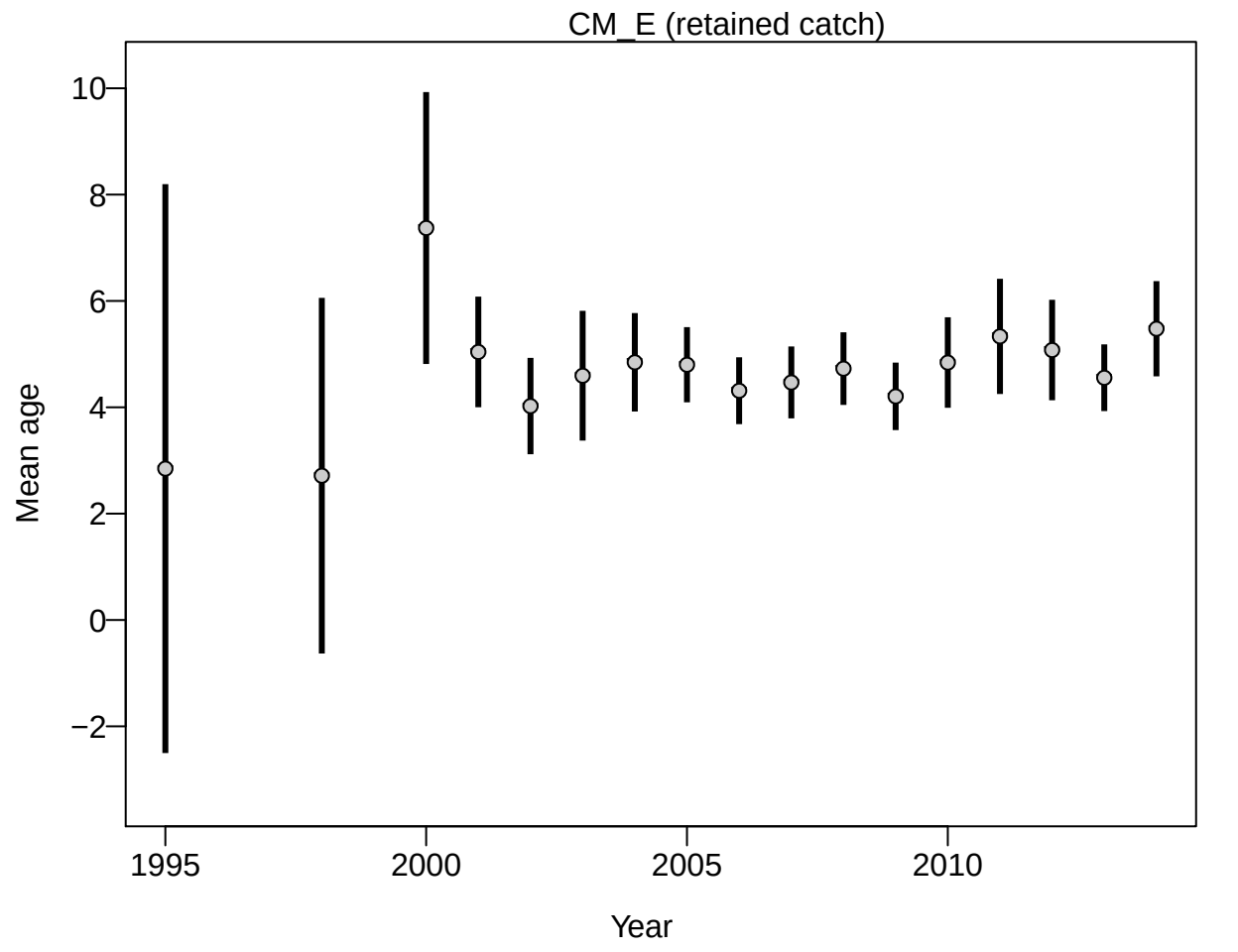

1995
N adj.=1
2002
N adj.=28.3
2006
N adj.=39.3
2010
N adj.=19.5
1998
N adj.=2.4
2003
N adj.=13.4
2007
N adj.=39.3
2011
N adj.=12.1
2000
N adj.=4.3
2004
N adj.=20.7
2008
N adj.=39.3
2012
N adj.=17.2
2001
N adj.=25
2005
N adj.=33.7
2009
N adj.=39.3
2013
N adj.=39.3
Proportion
0.0
0.1
0.2
0.3
0.4
0
2
4
6
8
12
Age (yr)

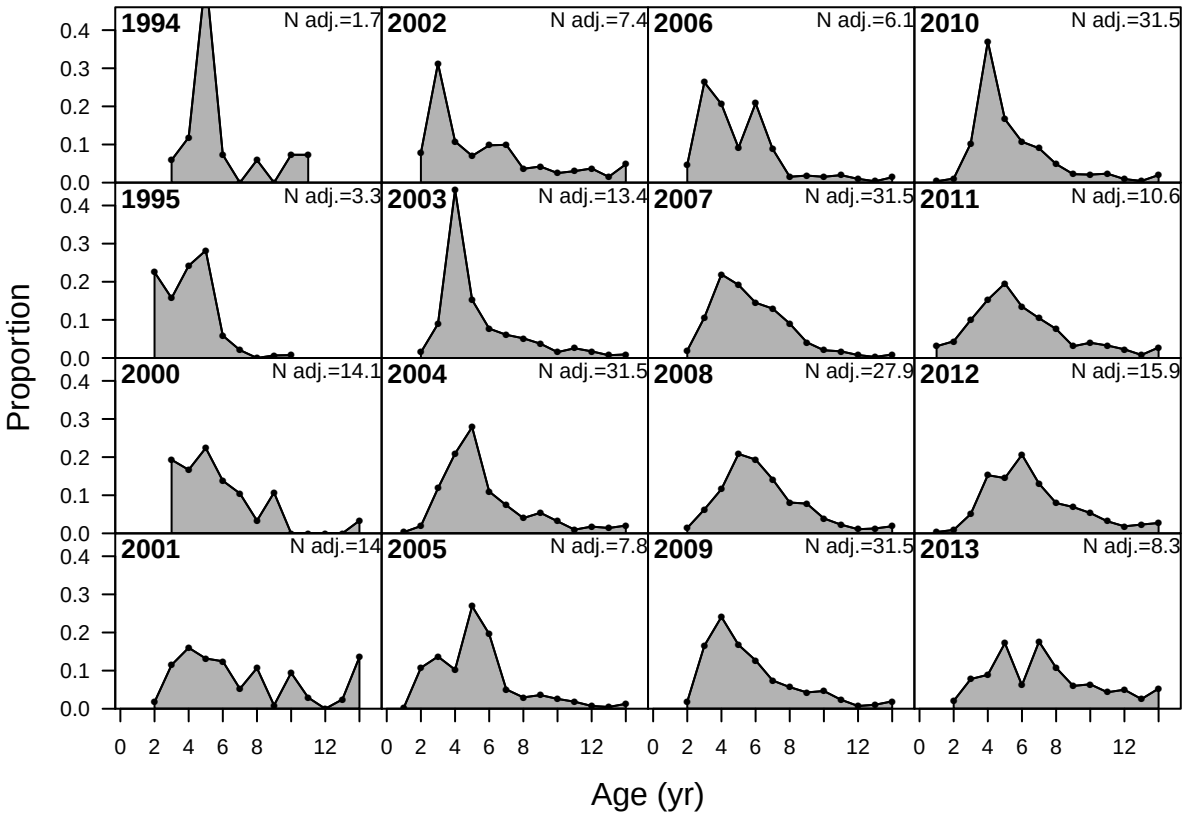


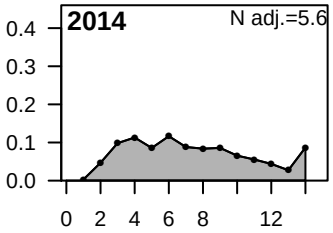
Proportion

Age (yr)


0.01
0.5
1
Age (yr)
14
13
12
11
10
9
8
7
6
5
4
3
2
1
1995
1998
2000
2002
2004
2006
2008
2010
2012
2014
Year

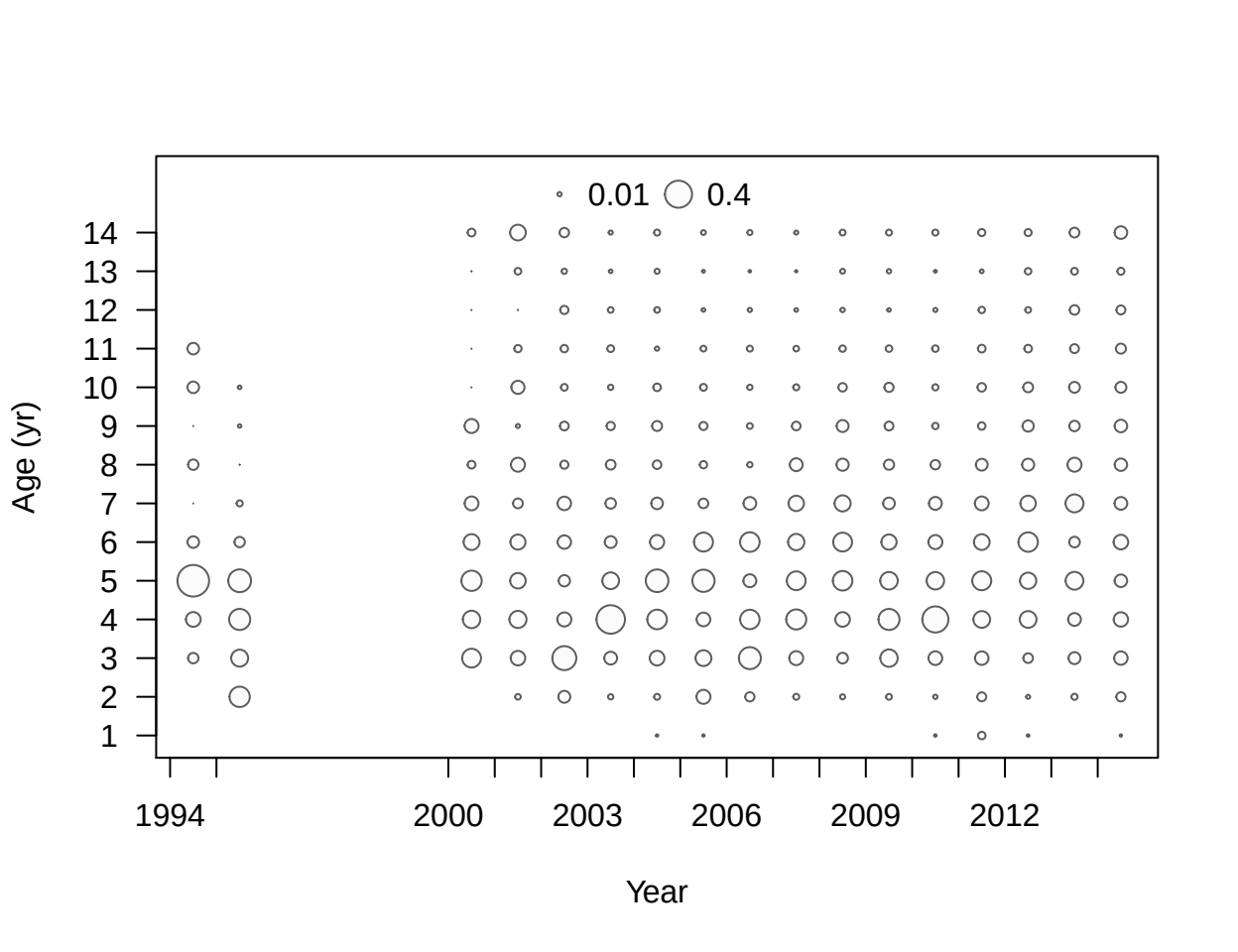

CM_E (retained catch)
Mean age
10
8
6
4
2
0
−2
1995
2000
2005
2010
Year

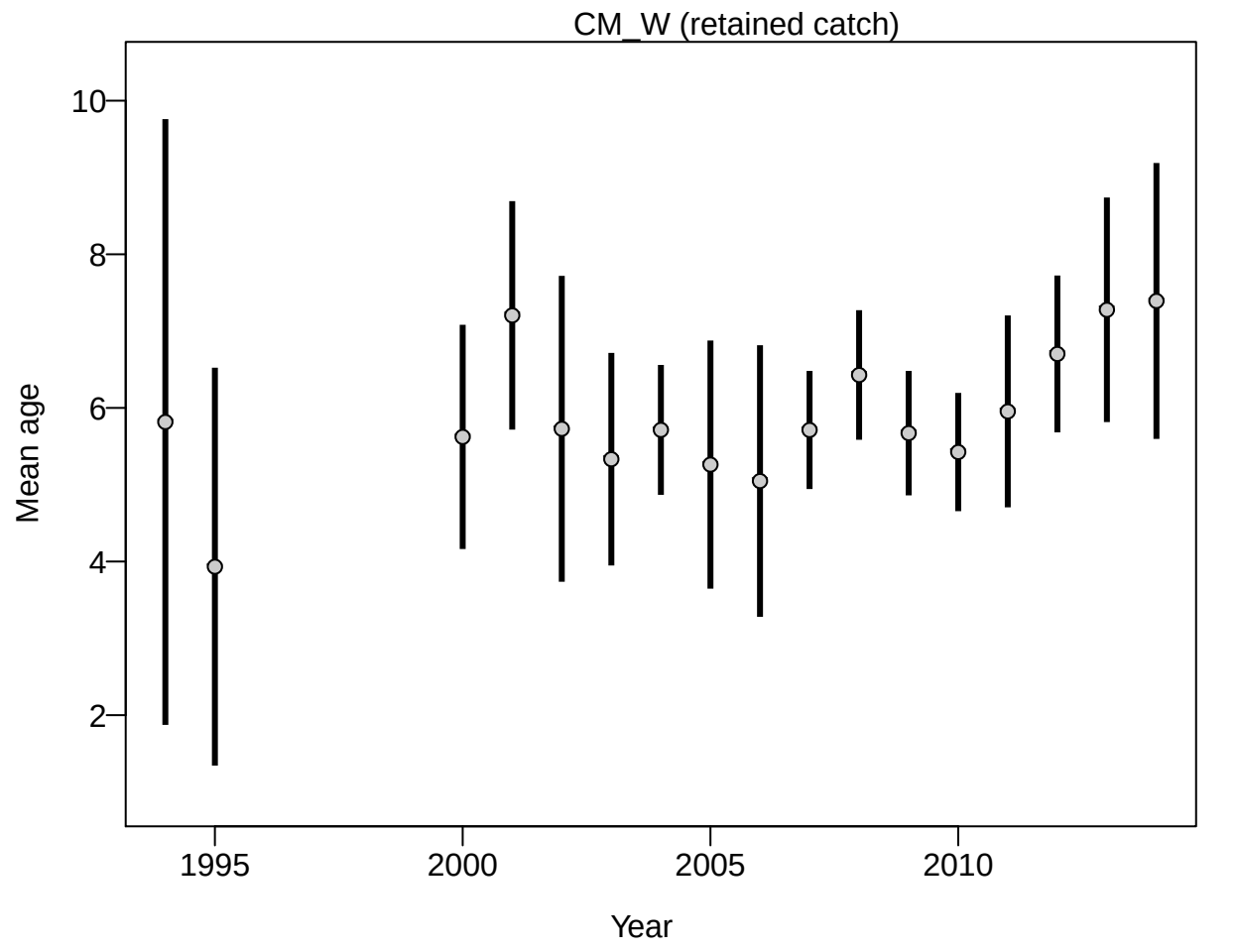

1994
N adj.=1.7
2002
N adj.=7.4
2006
N adj.=6.1
2010
N adj.=31.5
1995
N adj.=3.3
2003
N adj.=13.4
2007
N adj.=31.5
2011
N adj.=10.6
2000
N adj.=14.1
2004
N adj.=31.5
2008
N adj.=27.9
2012
N adj.=15.9
2001
N adj.=14
2005
N adj.=7.8
2009
N adj.=31.5
2013
N adj.=8.3
Proportion
0.0
0.1
0.2
0.3
0.4
0
2
4
6
8
12
Age (yr)

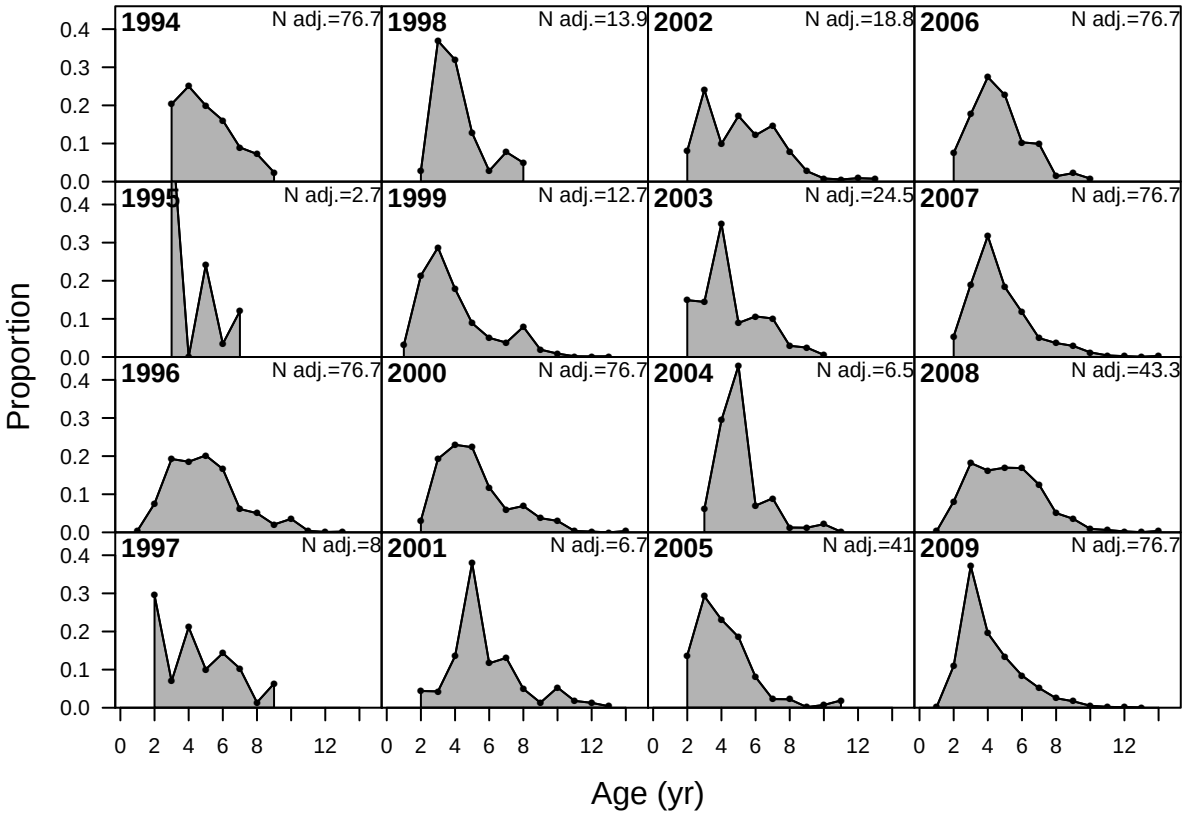


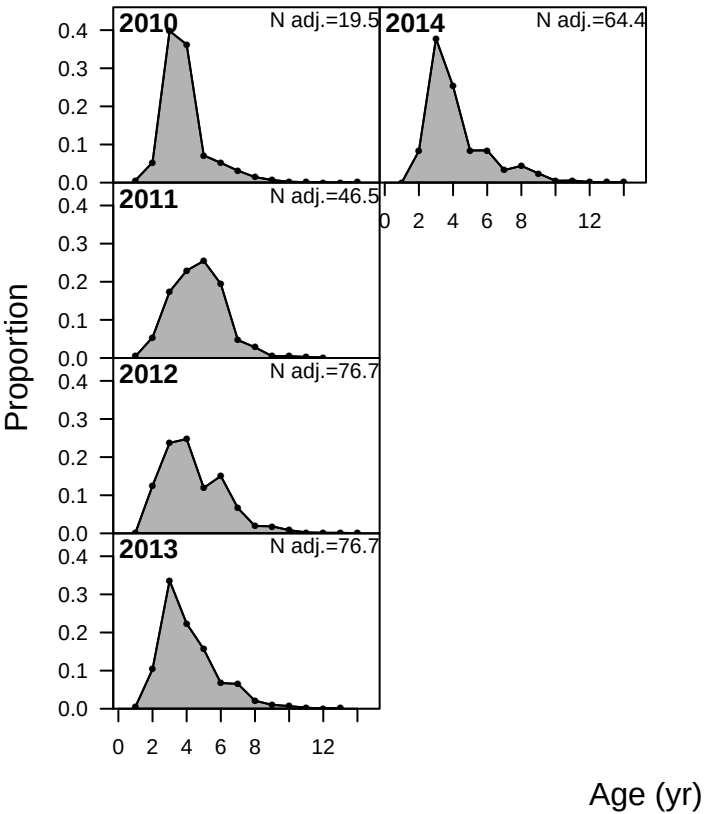
Proportion

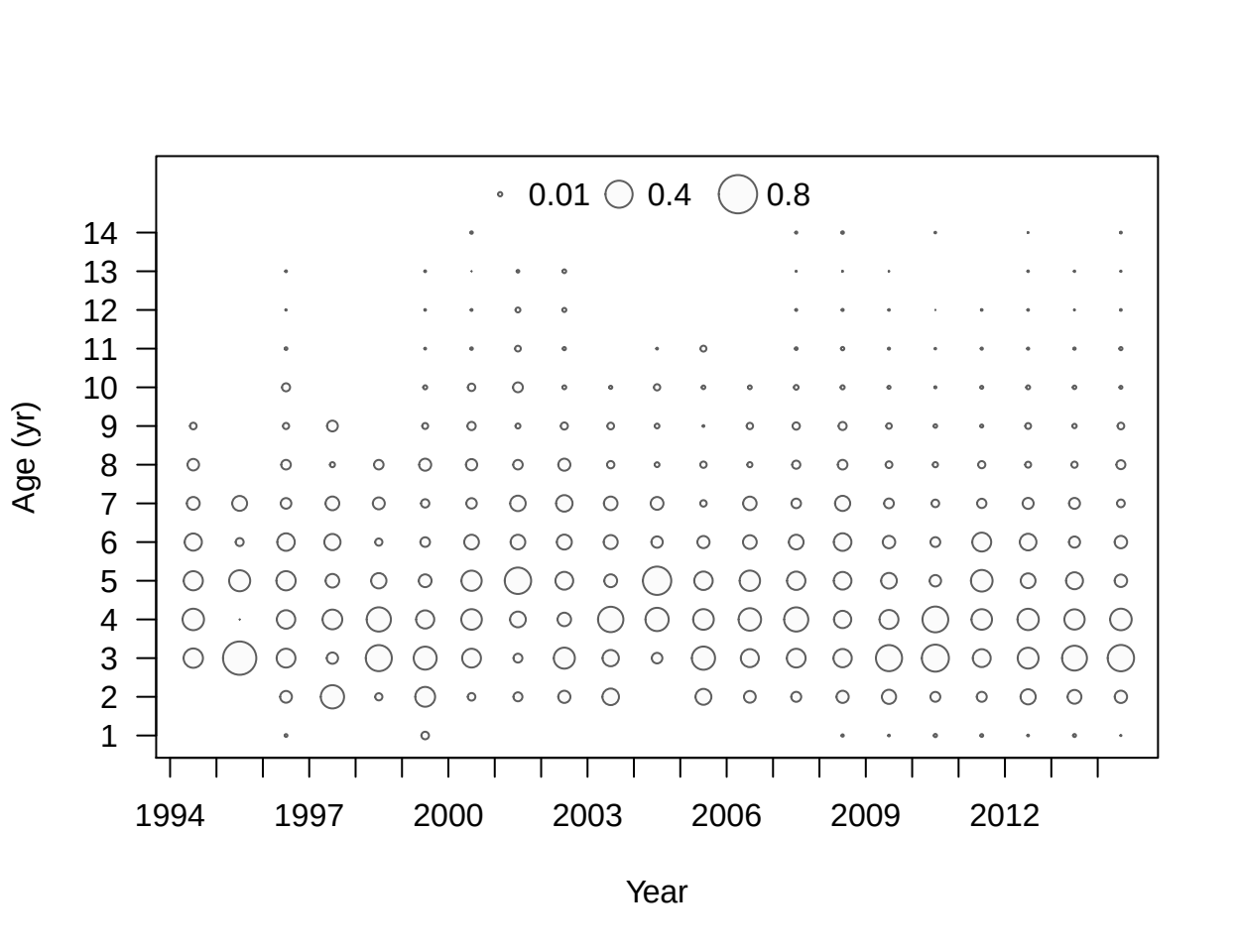
Age (yr)

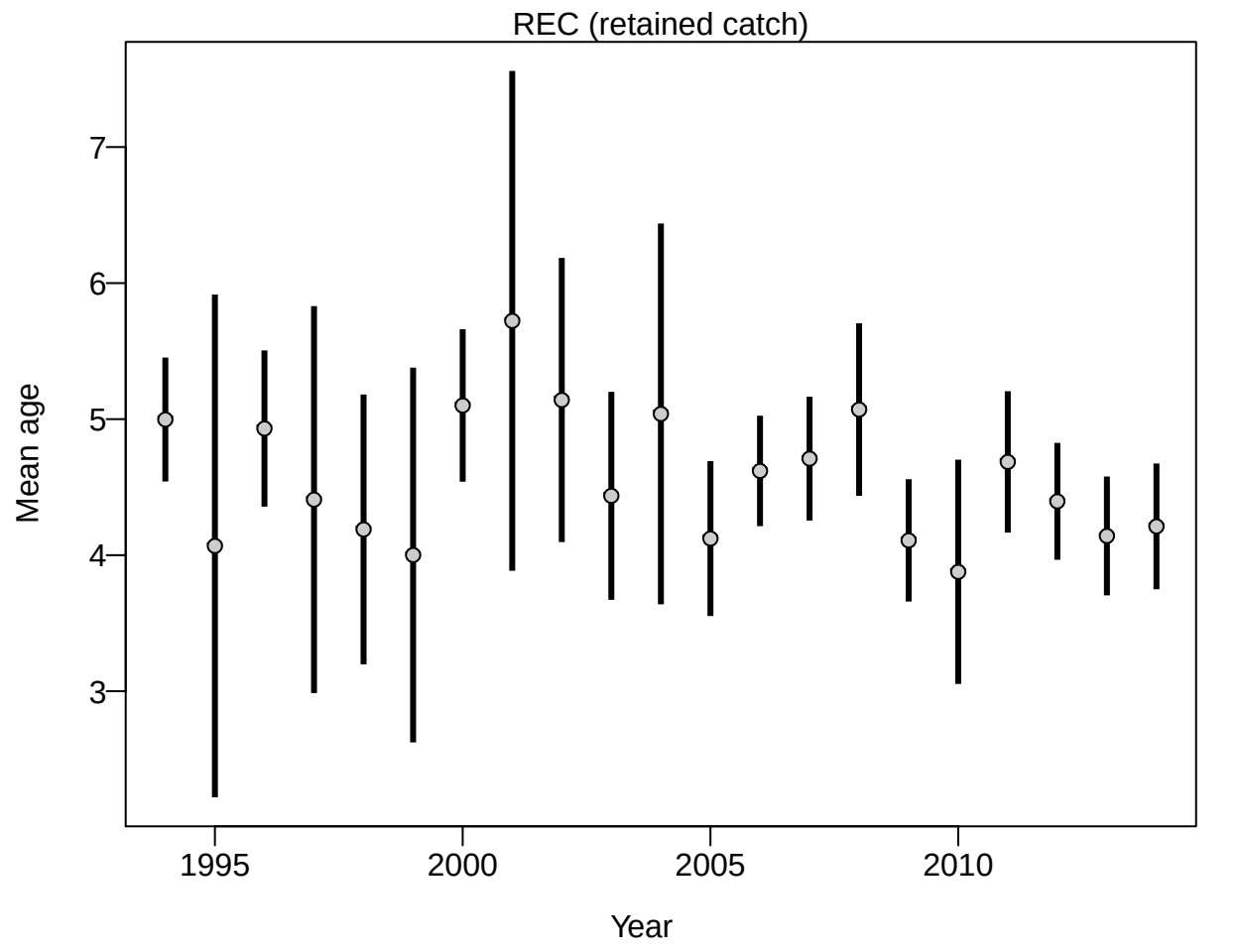

0.01
0.4
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Age (yr)
1994
2000
2003
2006
2009
2012
Year

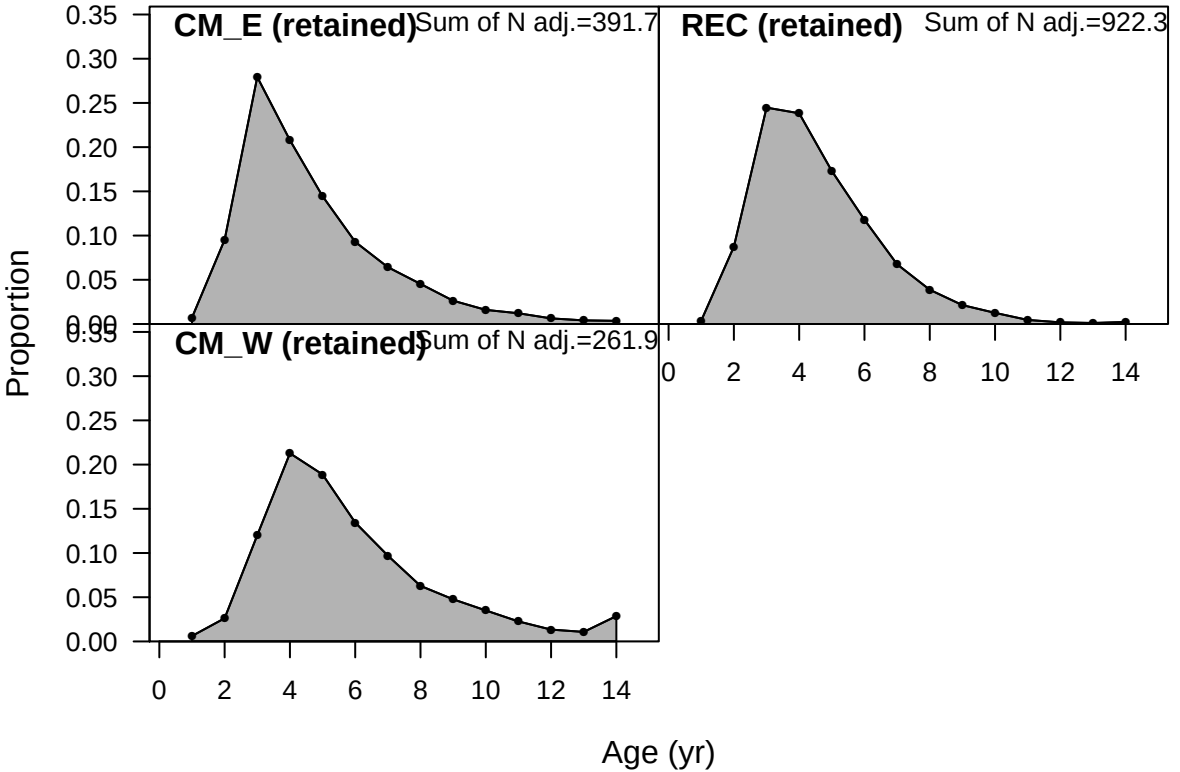

CM_W (retained catch)
Mean age
10
8
6
4
2
1995
2000
2005
2010
Year

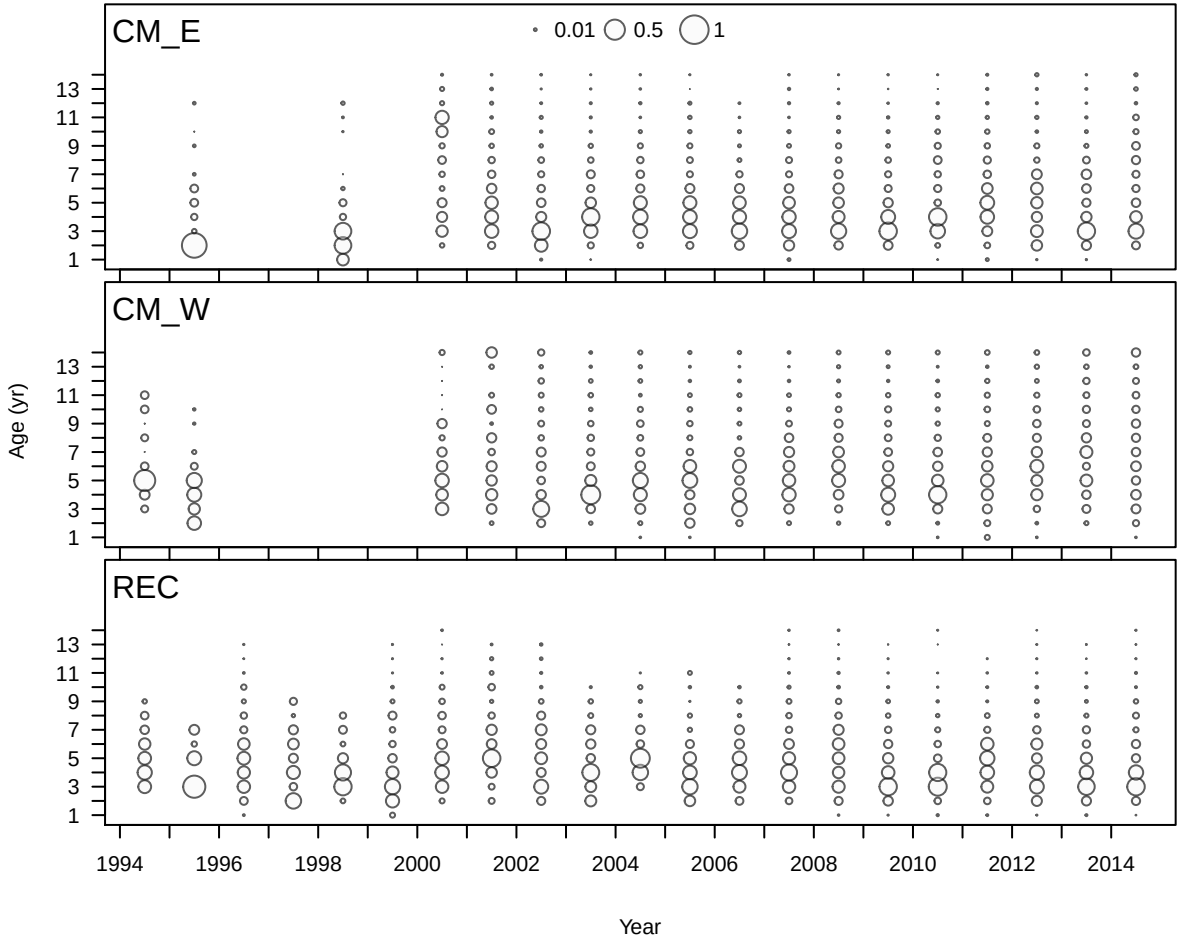

1994
N adj.=76.7
1998
N adj.=13.9
2002
N adj.=18.8
2006
N adj.=76.7
1995
N adj.=2.7
1999
N adj.=12.7
2003
N adj.=24.5
2007
N adj.=76.7
1996
N adj.=76.7
2000
N adj.=76.7
2004
N adj.=6.5
2008
N adj.=43.3
1997
N adj.=8
2001
N adj.=6.7
2005
N adj.=41
2009
N adj.=76.7
Proportion
0.0
0.1
0.2
0.3
0.4
0 2 4 6 8 12
Age (yr)

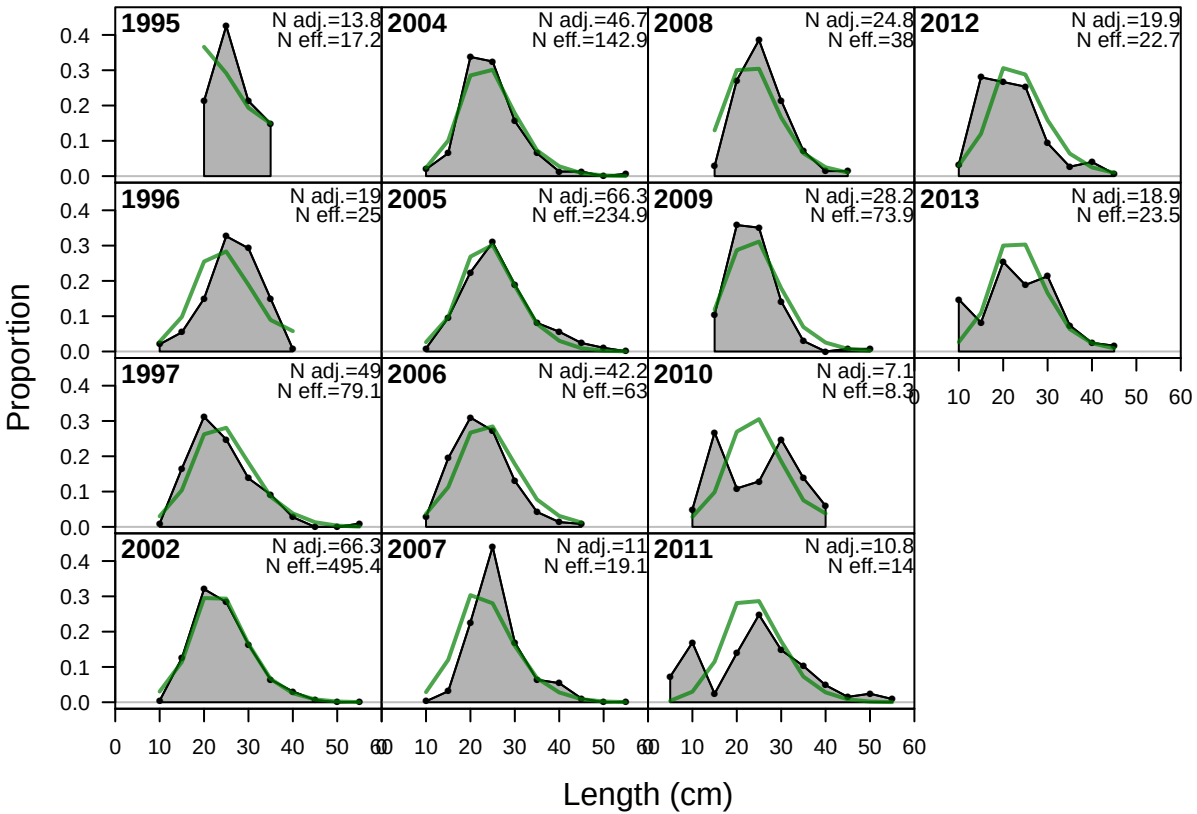

2010
N adj.=19.5
2014
N adj.=64.4
2011
N adj.=46.5
2012
N adj.=76.7
2013
N adj.=76.7
Proportion
0.0
0.1
0.2
0.3
0.4
0
2
4
6
8
12
Age (yr)

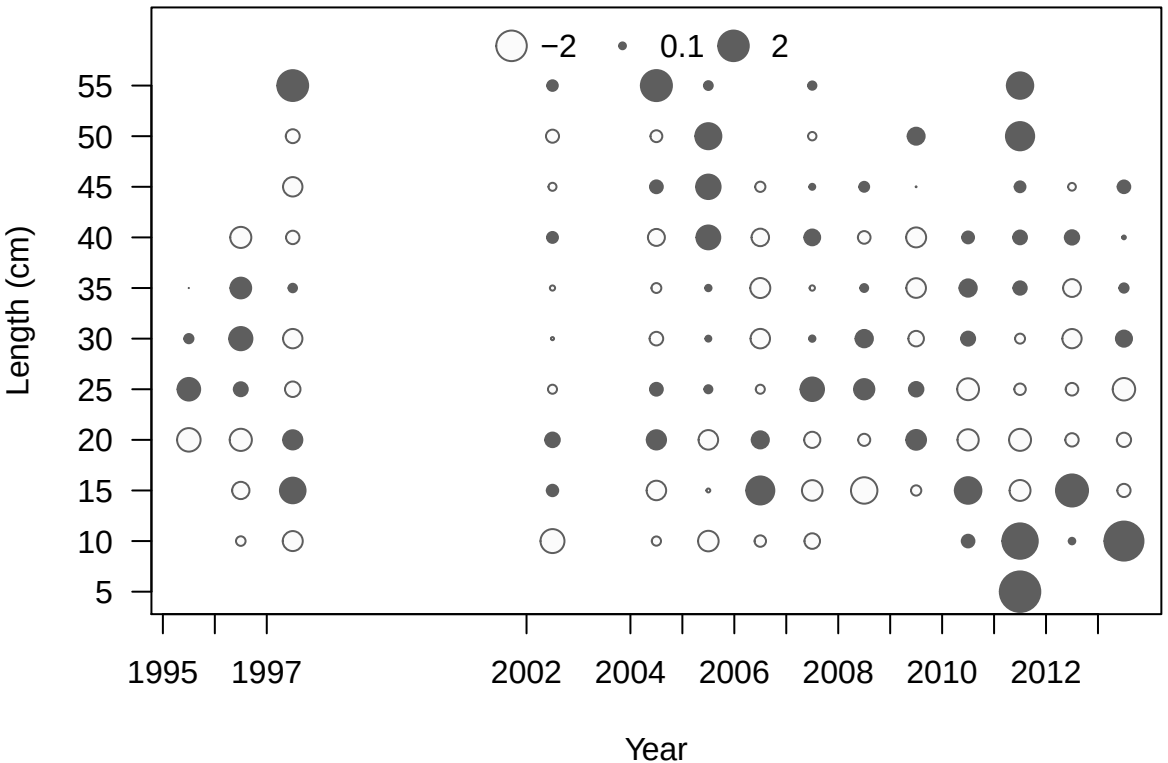

0.01
0.4
0.8
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Age (yr)
1994
1997
2000
2003
2006
2009
2012
Year

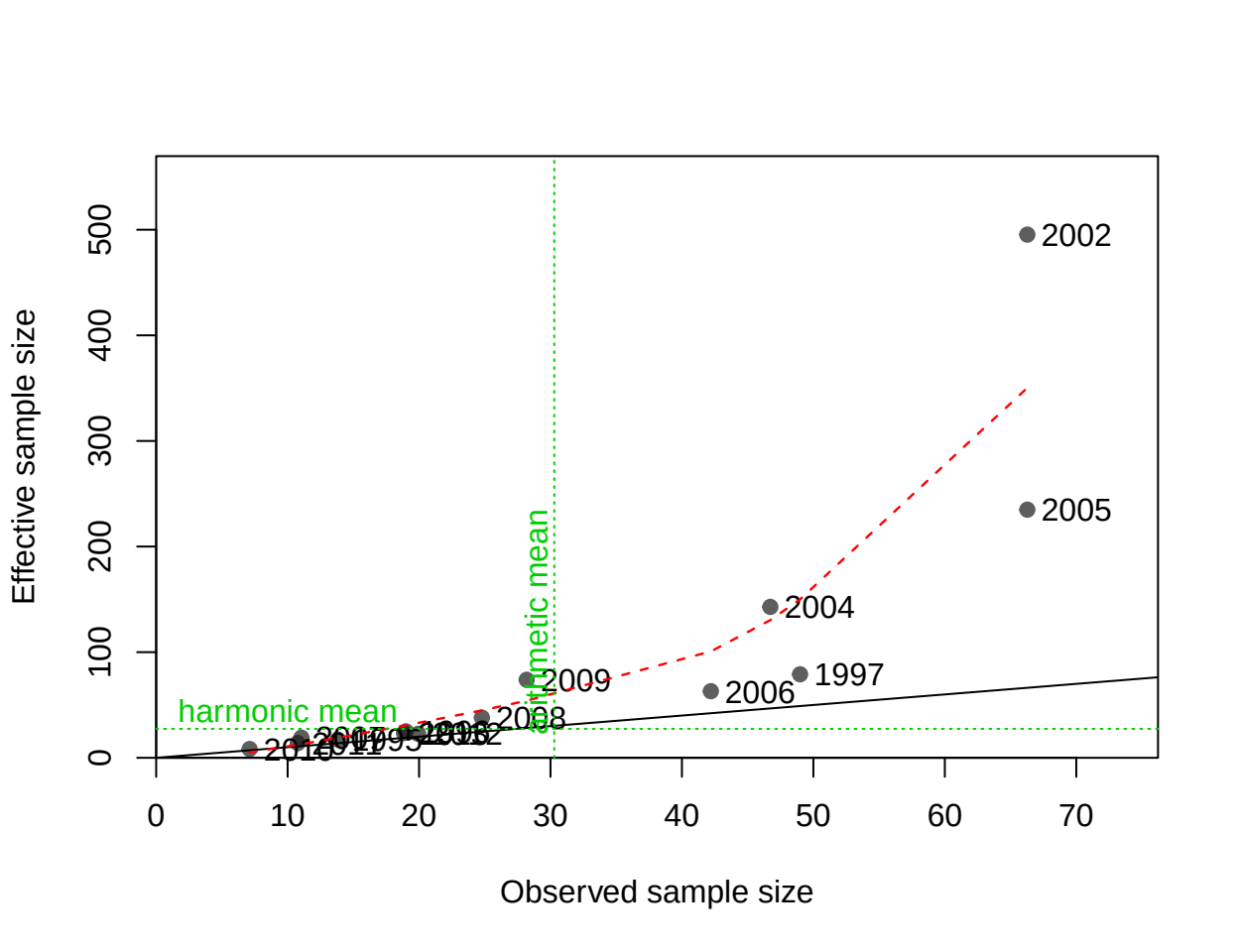

REC (retained catch)
Mean age
7
6
5
4
3
1995
2000
2005
2010
Year

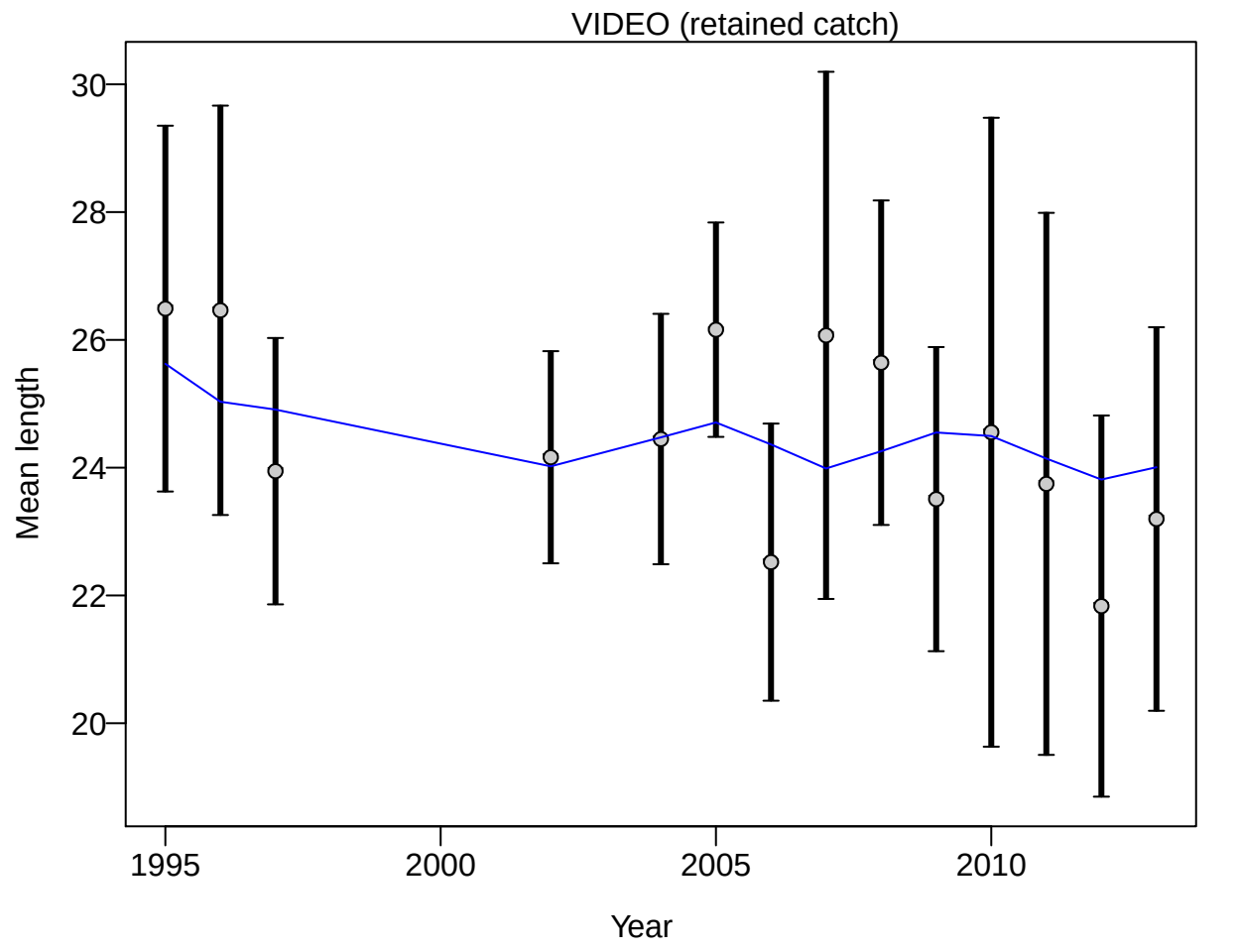

CM_E (retained)
Sum of N adj.=391.7
REC (retained)
Sum of N adj.=922.3
CM_W (retained)
Sum of N adj.=261.9
Proportion
Age (yr)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
2
4
6
8
10
12
14

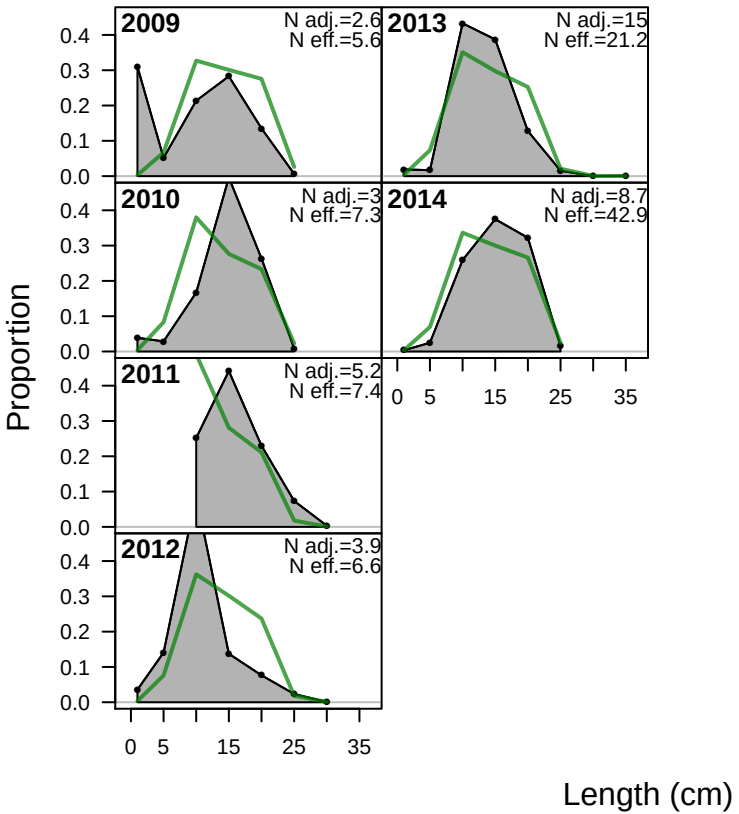

CM_E
0.01
0.5
1
CM_W
REC
Age (yr)
1
3
5
7
9
11
13
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Year

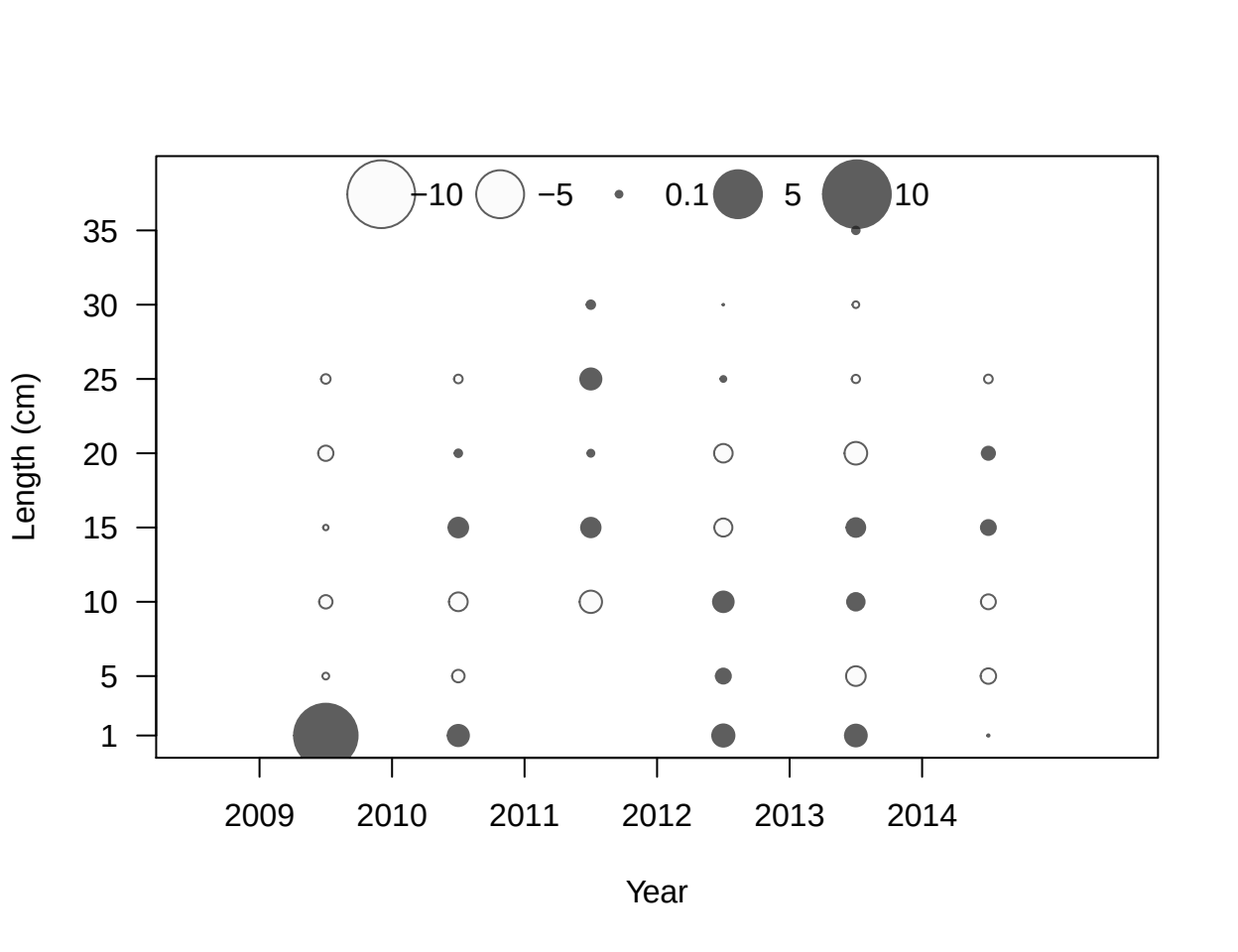

1995
N adj.=13.8
N eff.=17.2
2004
N adj.=46.7
N eff.=142.9
2008
N adj.=24.8
N eff.=38
2012
N adj.=19.9
N eff.=22.7
1996
N adj.=19
N eff.=25
2005
N adj.=66.3
N eff.=234.9
2009
N adj.=28.2
N eff.=73.9
2013
N adj.=18.9
N eff.=23.5
1997
N adj.=49
N eff.=79.1
2006
N adj.=42.2
N eff.=63
2010
N adj.=7.1
N eff.=8.3
2002
N adj.=66.3
N eff.=495.4
2007
N adj.=11
N eff.=19.1
2011
N adj.=10.8
N eff.=14
Proportion
0.0
0.1
0.2
0.3
0.4
0
10
20
30
40
50
60
Length (cm)

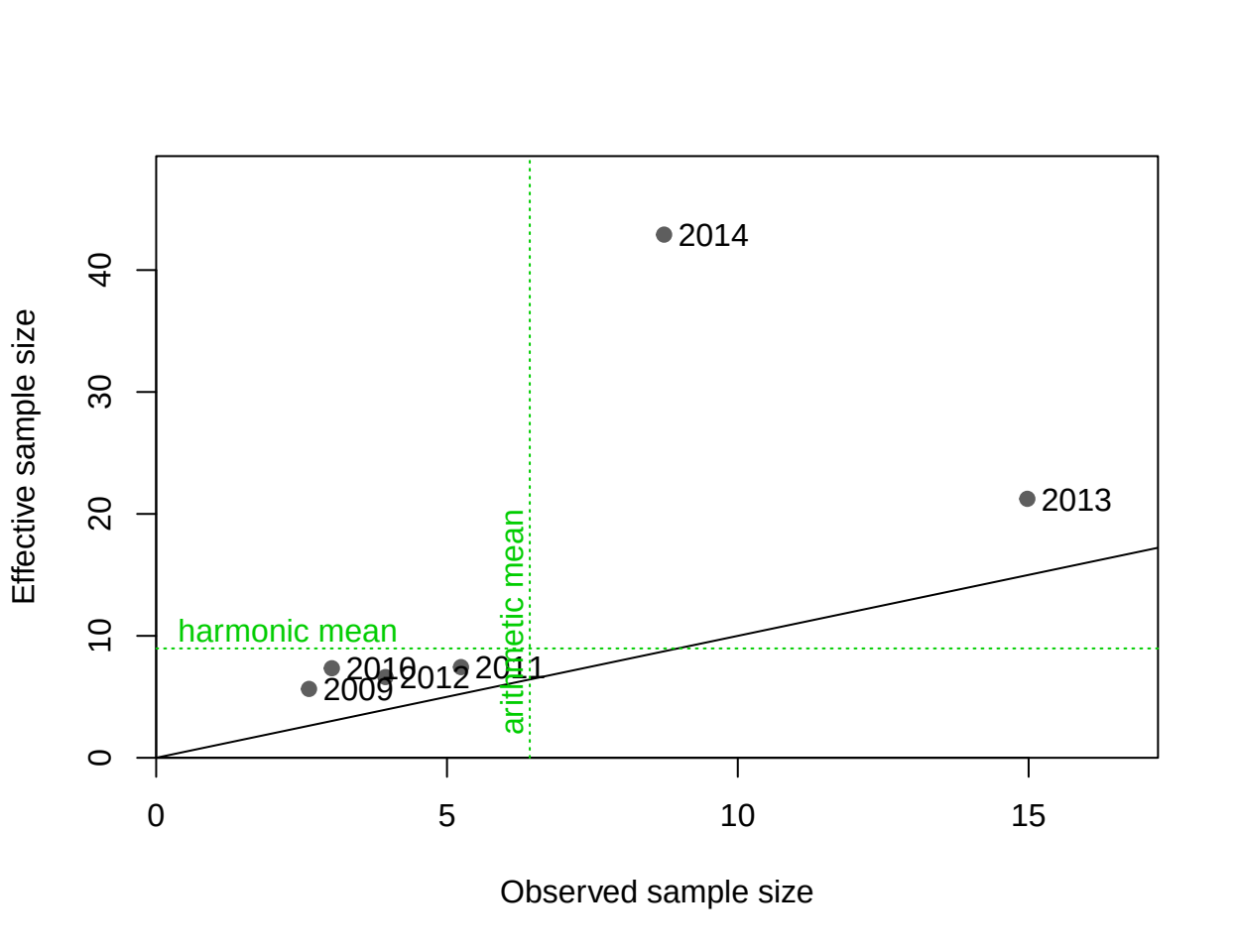

−2
0.1
2
55
50
45
40
35
30
25
20
15
10
5
Length (cm)
1995
1997
2002
2004
2006
2008
2010
2012
Year

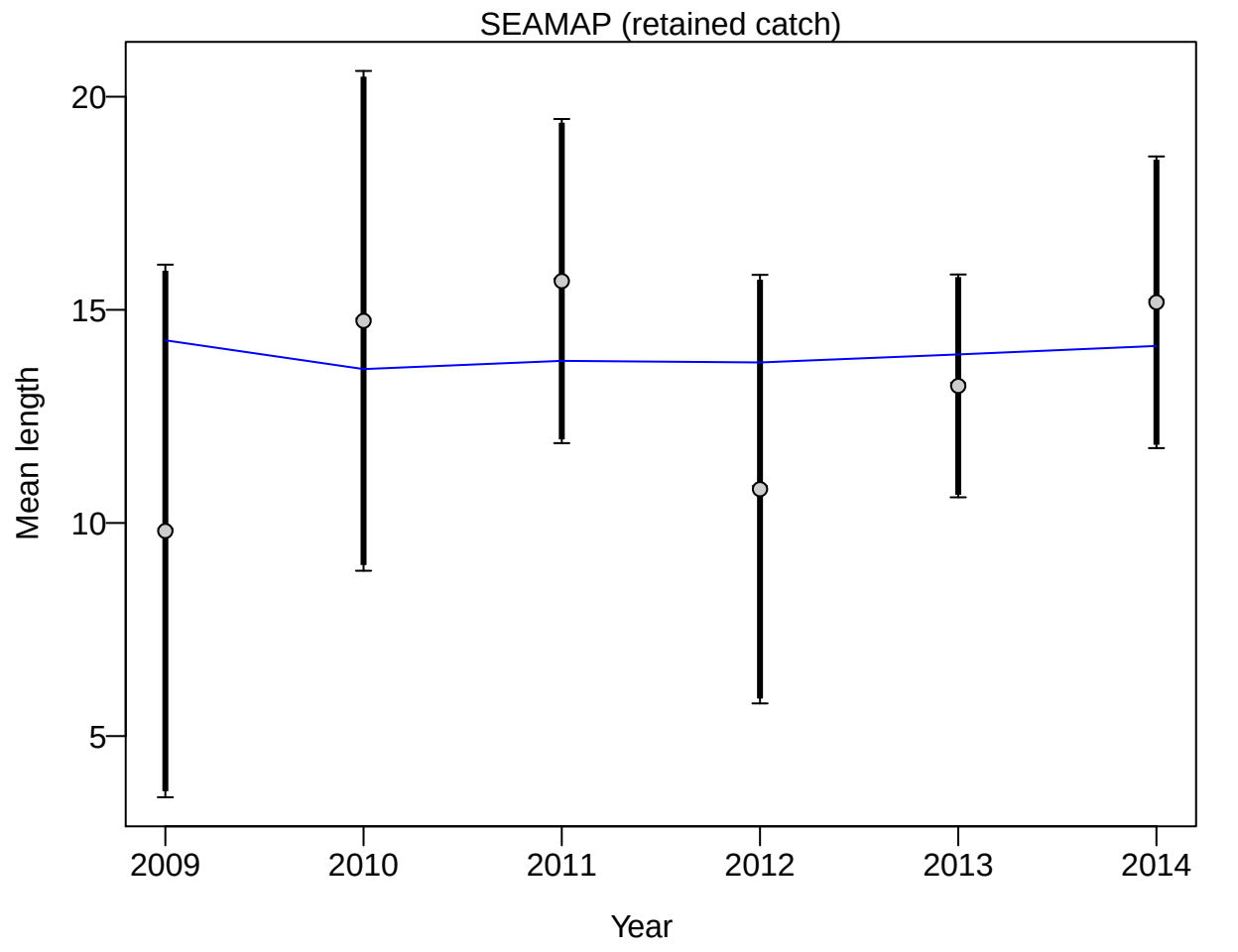

Effective sample size
0
100
200
300
400
500
0
10
20
30
40
50
60
70
Observed sample size
2002
2005
2004
1997
2006
2009
2008
harmonic mean
arithmetic mean

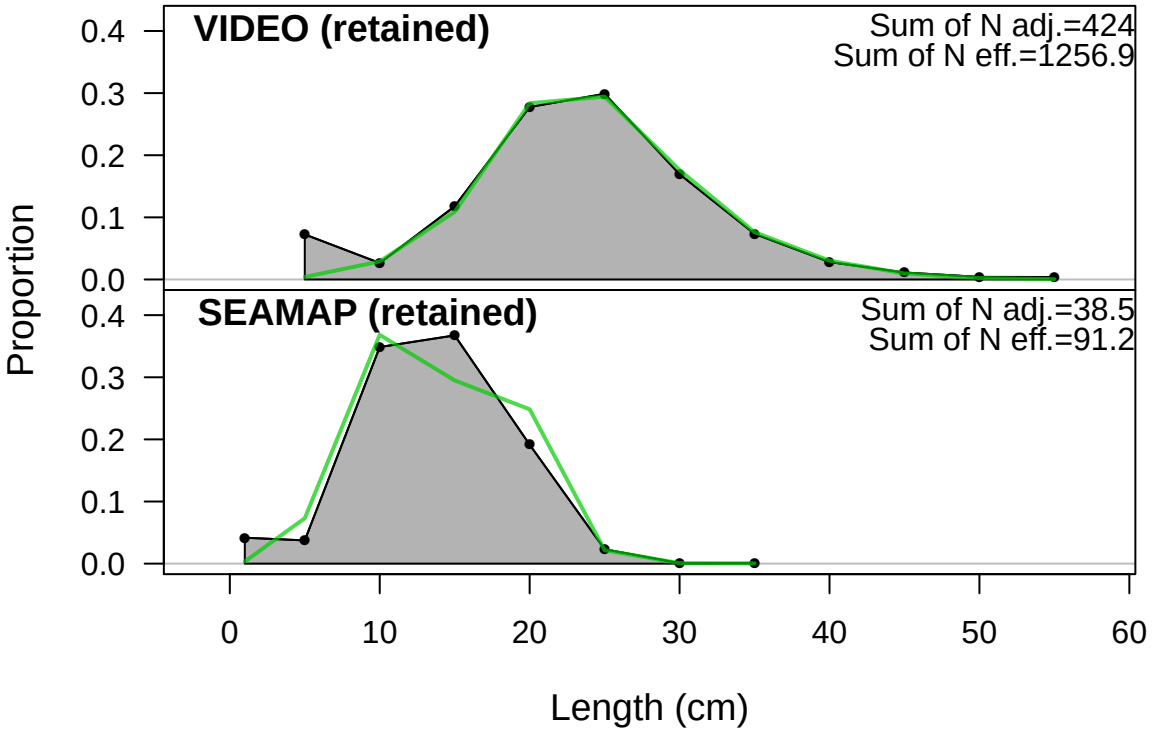

VIDEO (retained catch)
Mean length
30
28
26
24
22
20
1995
2000
2005
2010
Year

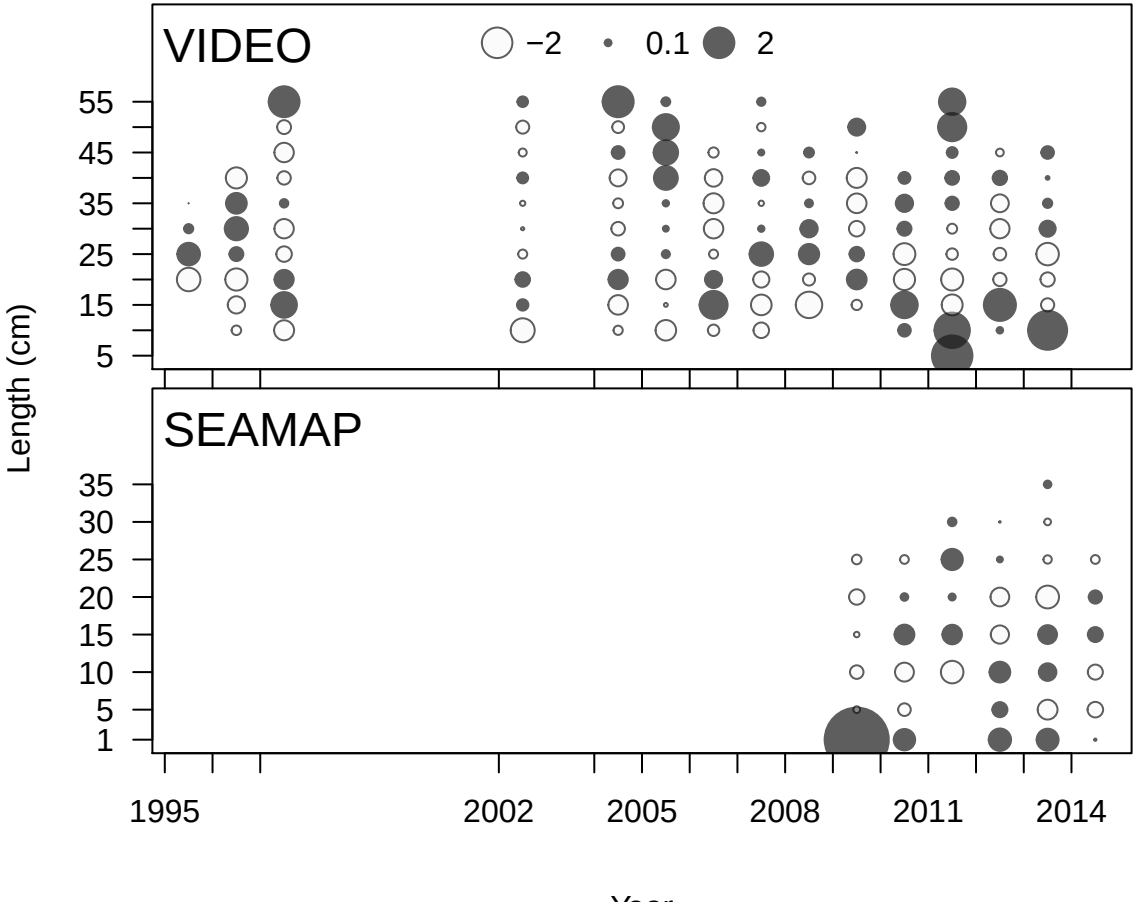

2009
N adj.=2.6
N eff.=5.6
2013
N adj.=15
N eff.=21.2
2010
N adj.=3
N eff.=7.3
2014
N adj.=8.7
N eff.=42.9
2011
N adj.=5.2
N eff.=7.4
2012
N adj.=3.9
N eff.=6.6
Proportion
Length (cm)
0.0
0.1
0.2
0.3
0.4
0
5
15
25
35

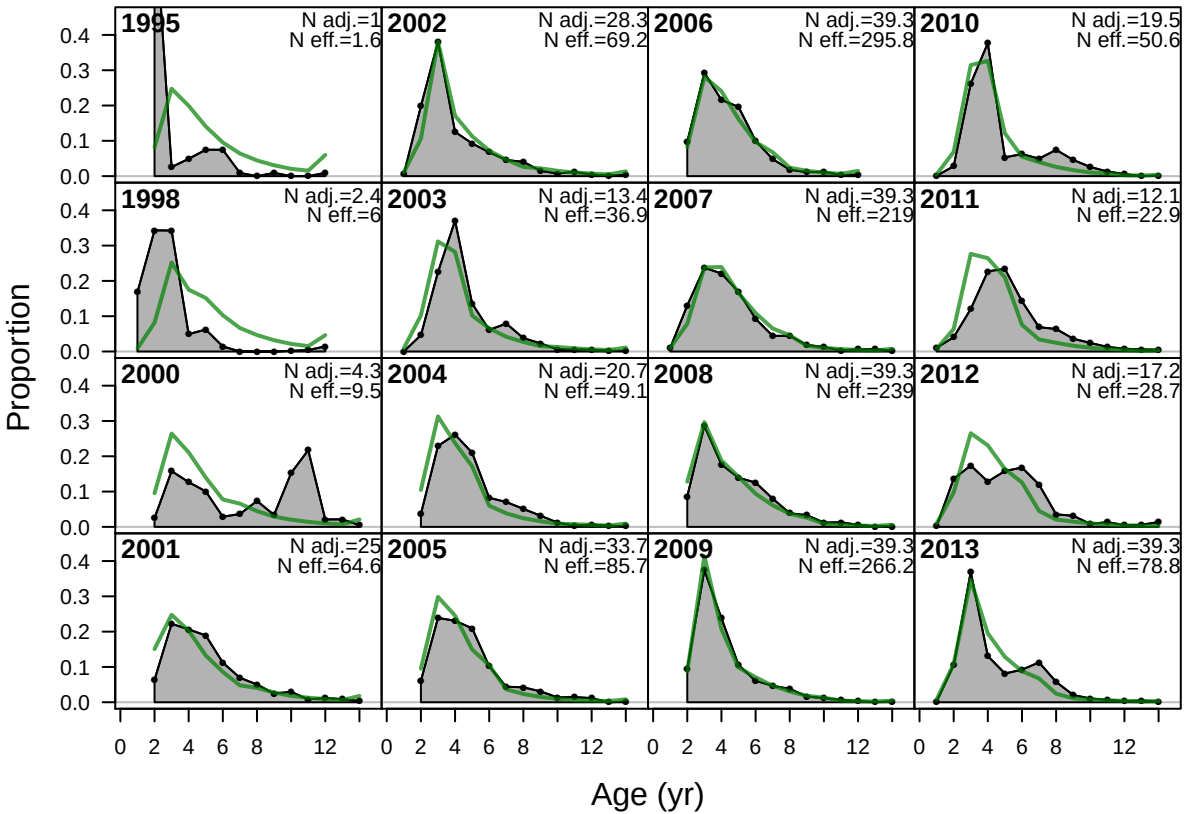

−10
−5
0.1
5
10
35
30
25
20
15
10
5
1
Length (cm)
2009
2010
2011
2012
2013
2014
Year

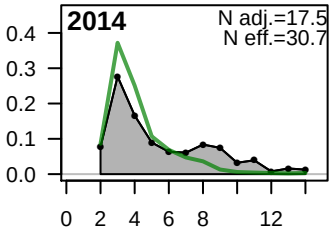

Effective sample size
0
10
20
30
40
0
5
10
15
Observed sample size
2014
2013
2010
2012
2011
2009
harmonic mean
arithmetic mean


SEAMAP (retained catch)
Mean length
20
15
10
5
2009
2010
2011
2012
2013
2014
Year


VIDEO (retained)
Sum of N adj.=424
Sum of N eff.=1256.9
SEAMAP (retained)
Sum of N adj.=38.5
Sum of N eff.=91.2
Proportion
0.0
0.1
0.2
0.3
0.4
0
10
20
30
40
50
60
Length (cm)

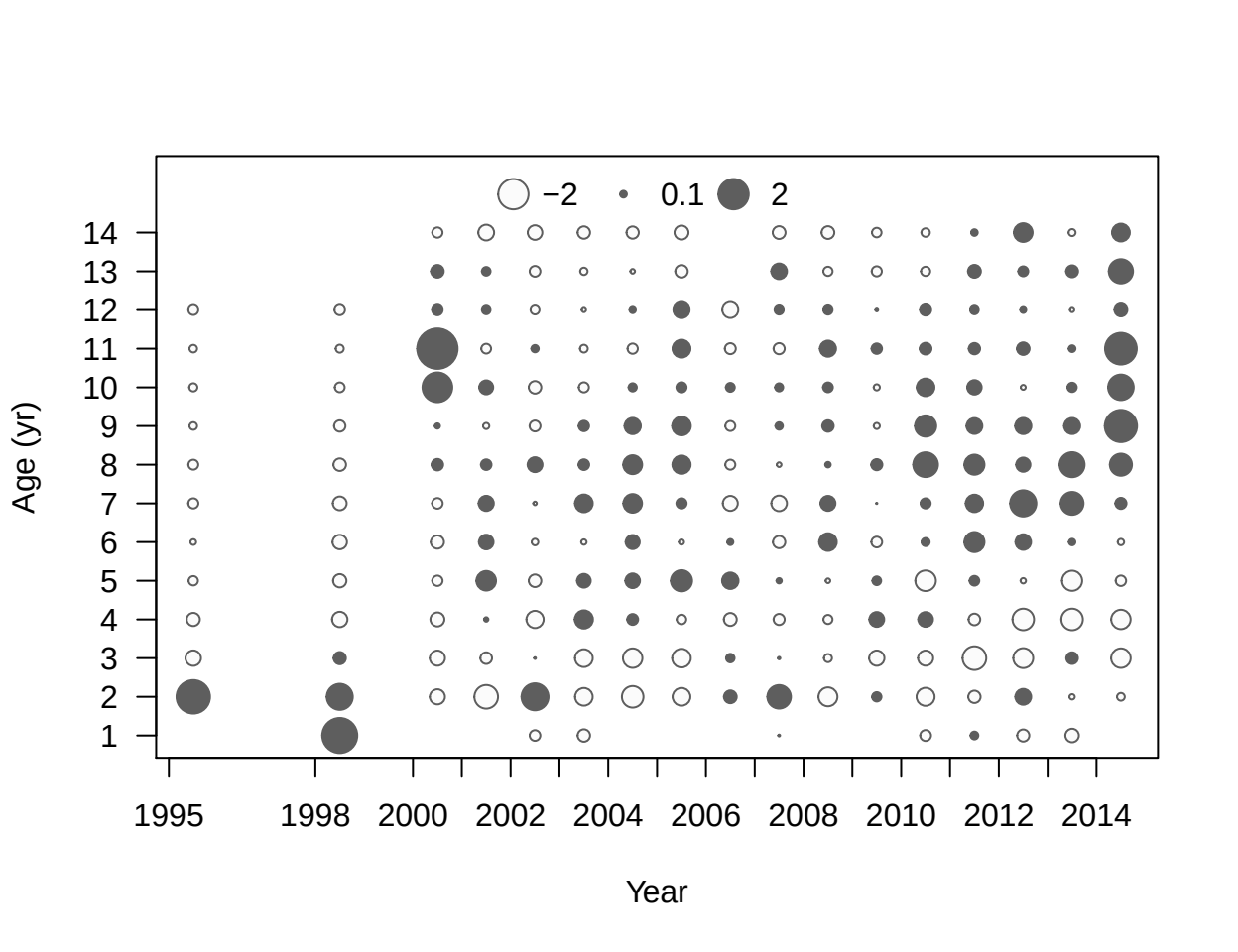

VIDEO
−2
0.1
2
55
45
35
25
15
5
SEAMAP
35
30
25
20
15
10
5
1
Length (cm)
1995
2002
2005
2008
2011
2014
Year

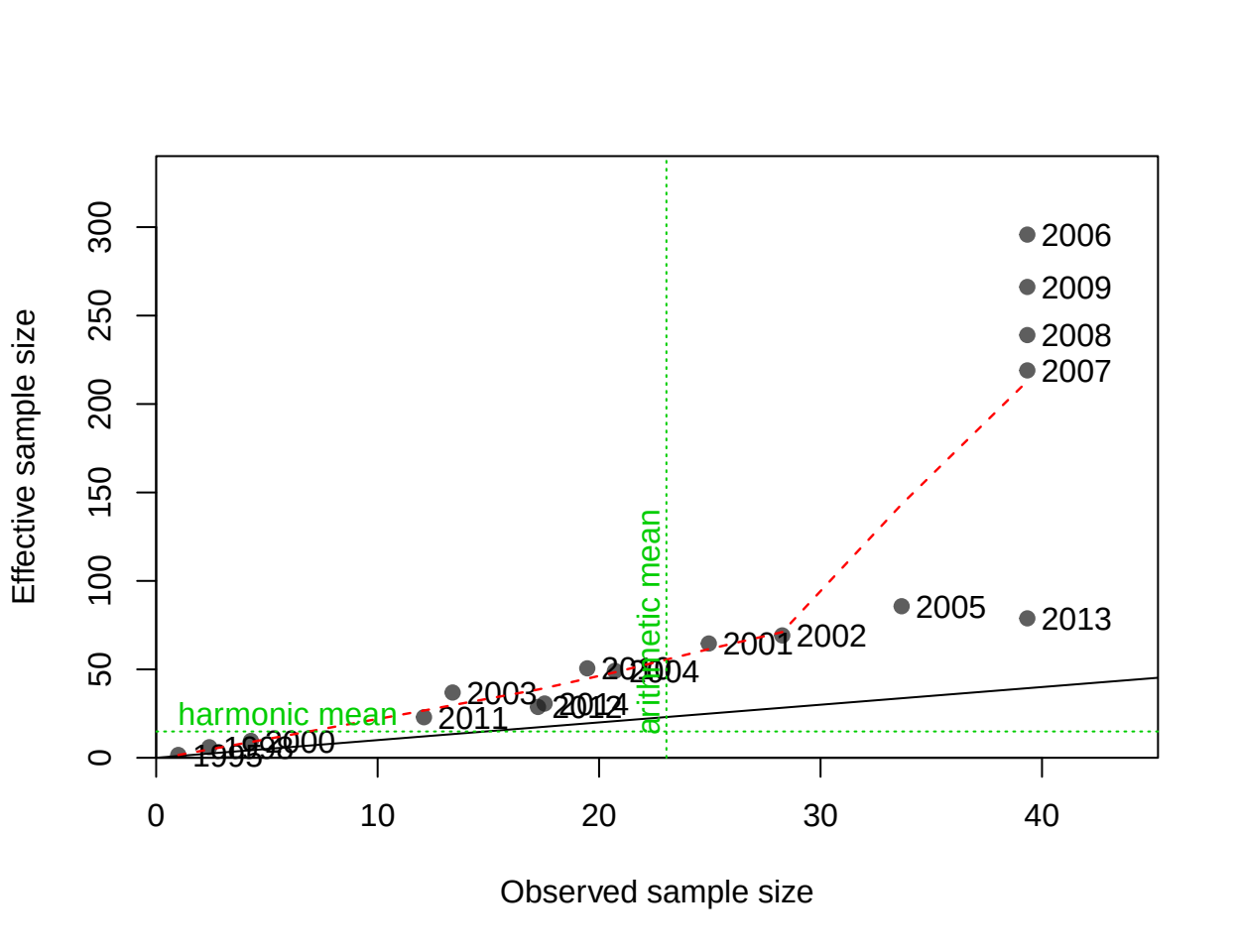

1995
N adj.=1
N eff.=1.6
2002
N adj.=28.3
N eff.=69.2
2006
N adj.=39.3
N eff.=295.8
2010
N adj.=19.5
N eff.=50.6
1998
N adj.=2.4
N eff.=6
2003
N adj.=13.4
N eff.=36.9
2007
N adj.=39.3
N eff.=219
2011
N adj.=12.1
N eff.=22.9
2000
N adj.=4.3
N eff.=9.5
2004
N adj.=20.7
N eff.=49.1
2008
N adj.=39.3
N eff.=239
2012
N adj.=17.2
N eff.=28.7
2001
N adj.=25
N eff.=64.6
2005
N adj.=33.7
N eff.=85.7
2009
N adj.=39.3
N eff.=266.2
2013
N adj.=39.3
N eff.=78.8
Proportion
0.0
0.1
0.2
0.3
0.4
0 2 4 6 8 12
Age (yr)

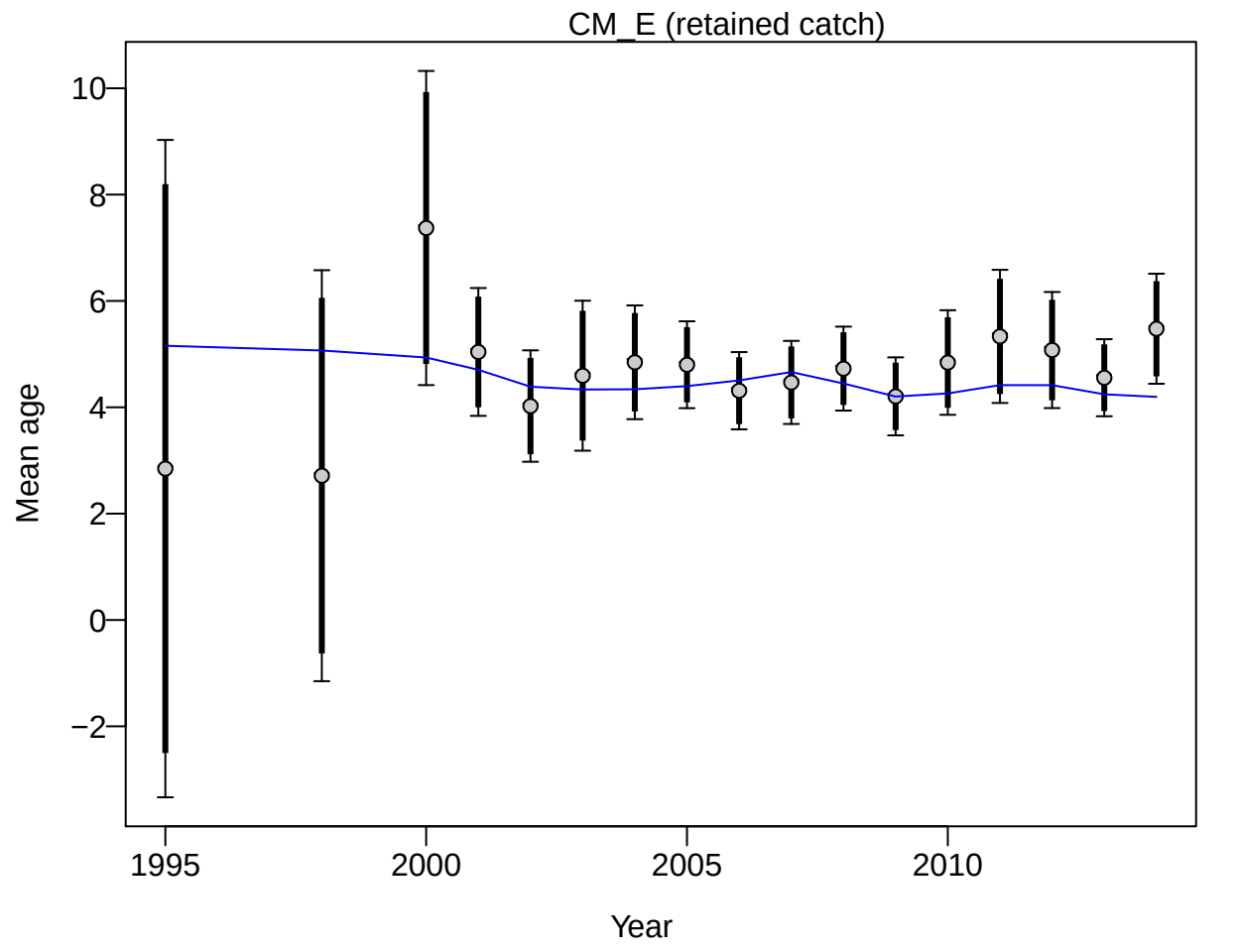


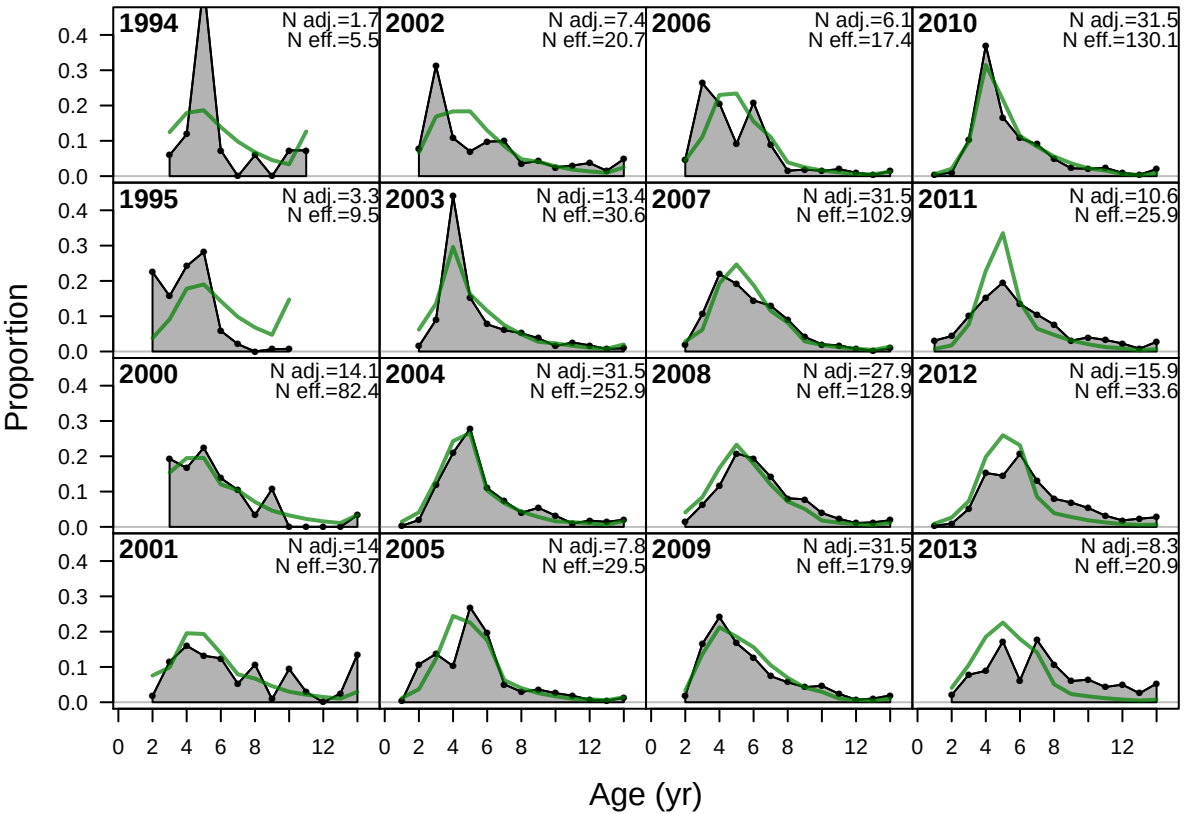
Proportion

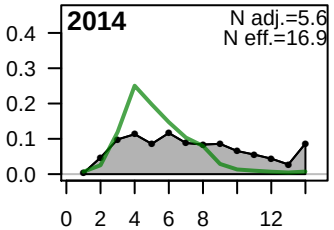
Age (yr)


−2
0.1
2
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Age (yr)
1995
1998
2000
2002
2004
2006
2008
2010
2012
2014
Year


Effective sample size
Observed sample size
0
50
100
150
200
250
300
0
10
20
30
40
harmonic mean
arithmetic mean
2006
2009
2008
2007
2005
2013
2002
2001
2004
2003
2011
2000

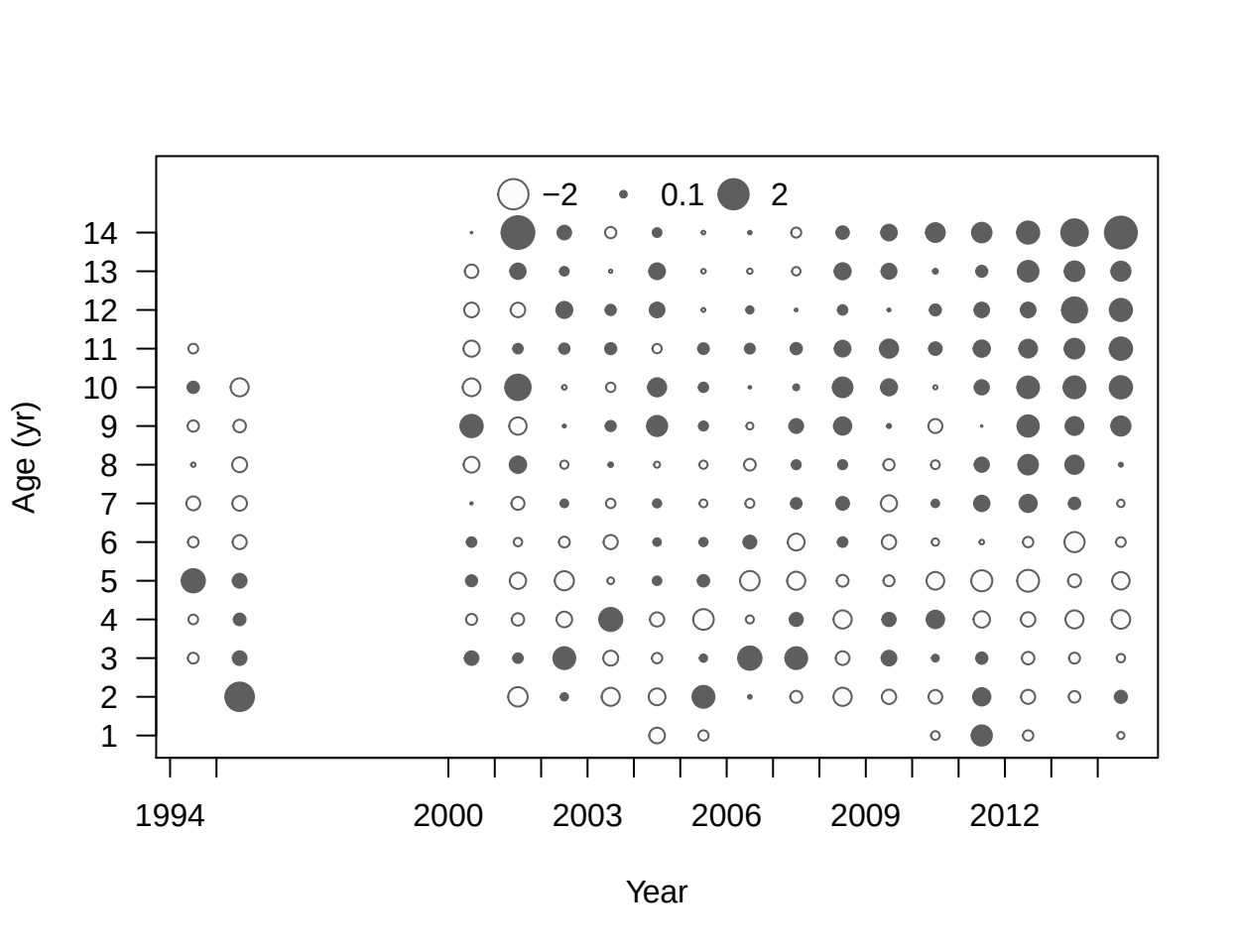

CM_E (retained catch)
Mean age
10
8
6
4
2
0
−2
1995
2000
2005
2010
Year

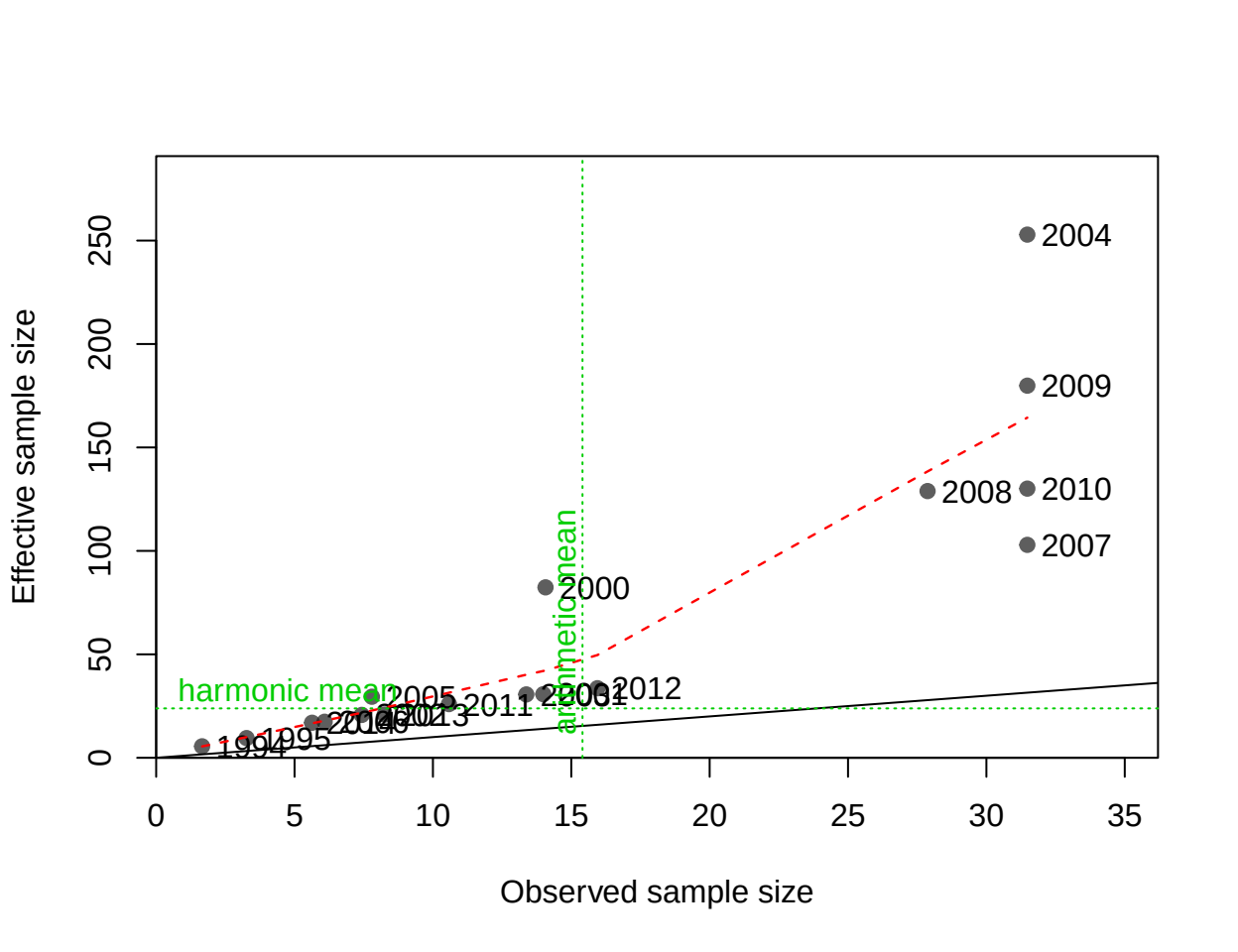

1994
N adj.=1.7
N eff.=5.5
2002
N adj.=7.4
N eff.=20.7
2006
N adj.=6.1
N eff.=17.4
2010
N adj.=31.5
N eff.=130.1
1995
N adj.=3.3
N eff.=9.5
2003
N adj.=13.4
N eff.=30.6
2007
N adj.=31.5
N eff.=102.9
2011
N adj.=10.6
N eff.=25.9
2000
N adj.=14.1
N eff.=82.4
2004
N adj.=31.5
N eff.=252.9
2008
N adj.=27.9
N eff.=128.9
2012
N adj.=15.9
N eff.=33.6
2001
N adj.=14
N eff.=30.7
2005
N adj.=7.8
N eff.=29.5
2009
N adj.=31.5
N eff.=179.9
2013
N adj.=8.3
N eff.=20.9
Proportion
0.0
0.1
0.2
0.3
0.4
0 2 4 6 8 12
Age (yr)

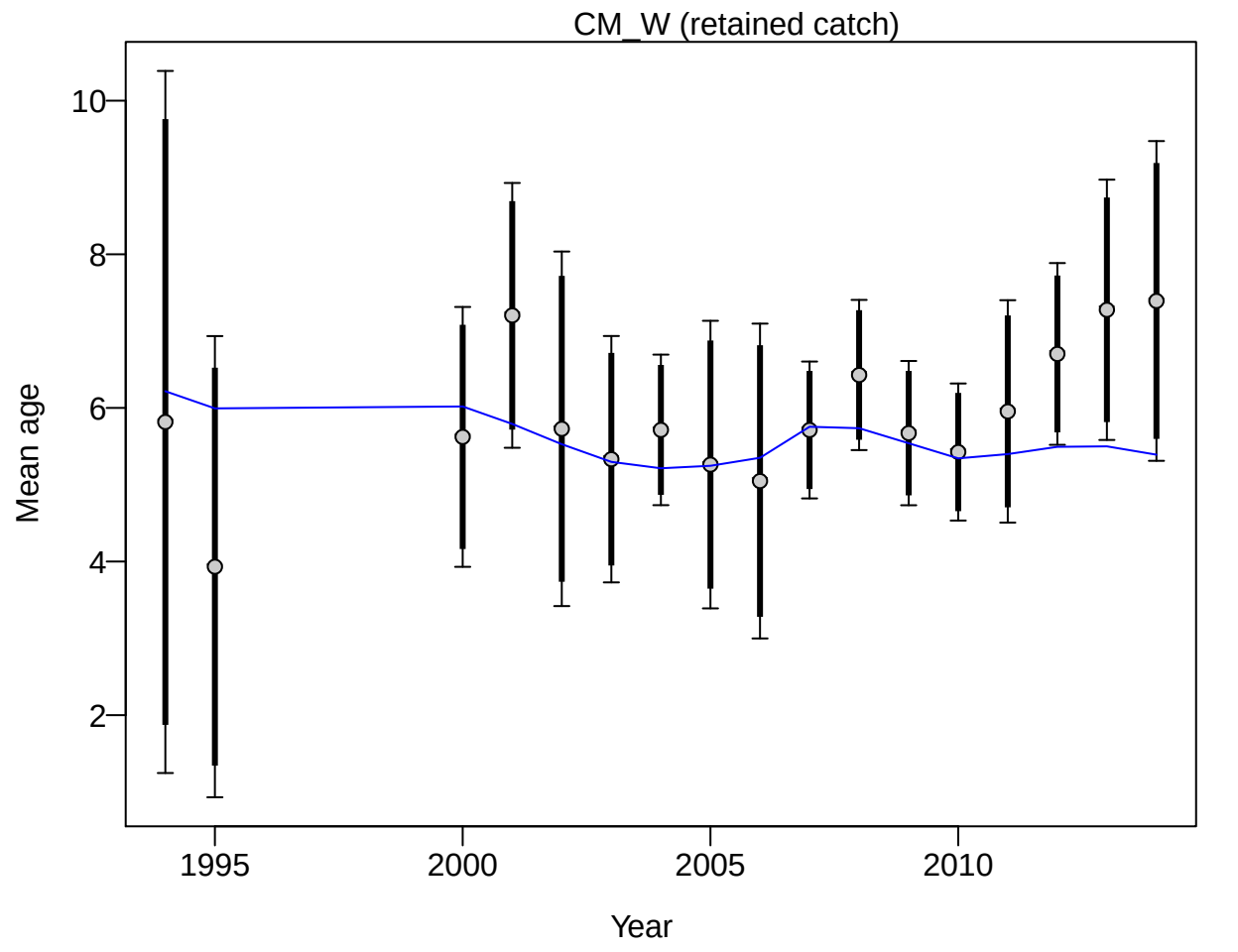


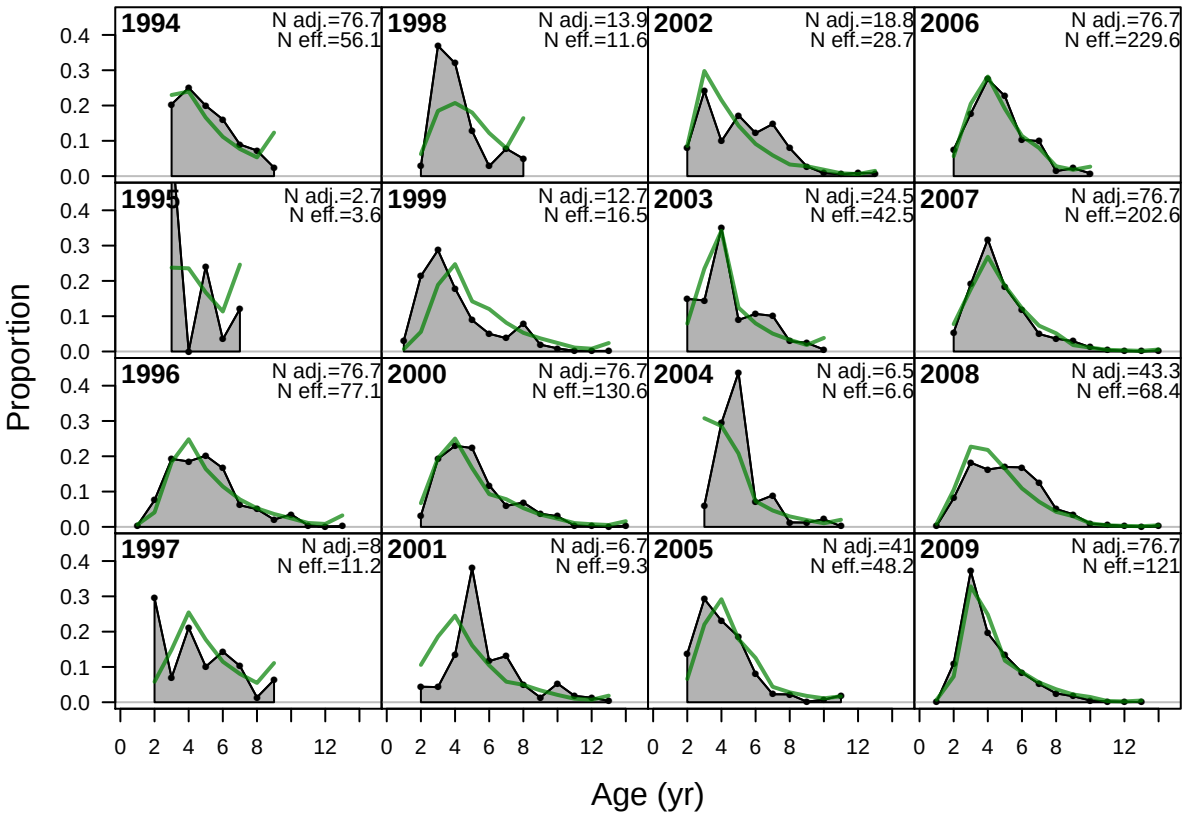
Proportion

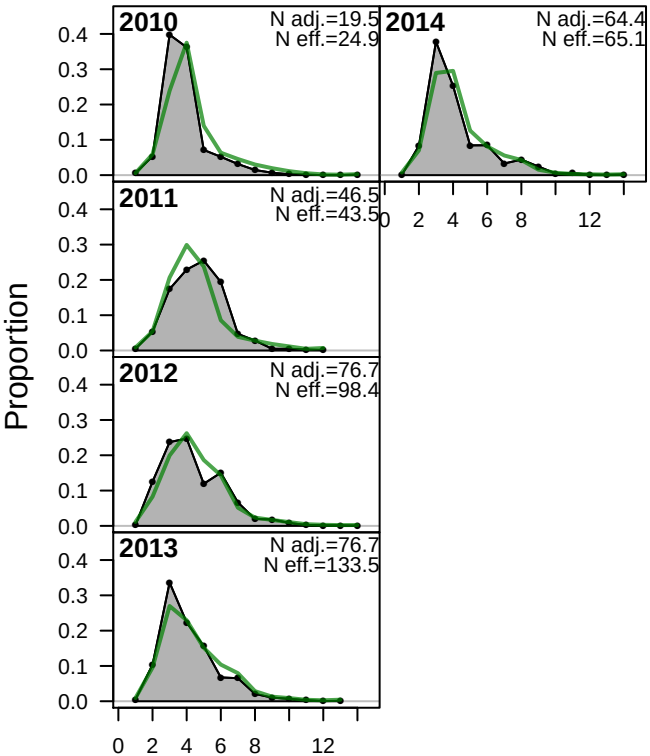
Age (yr)

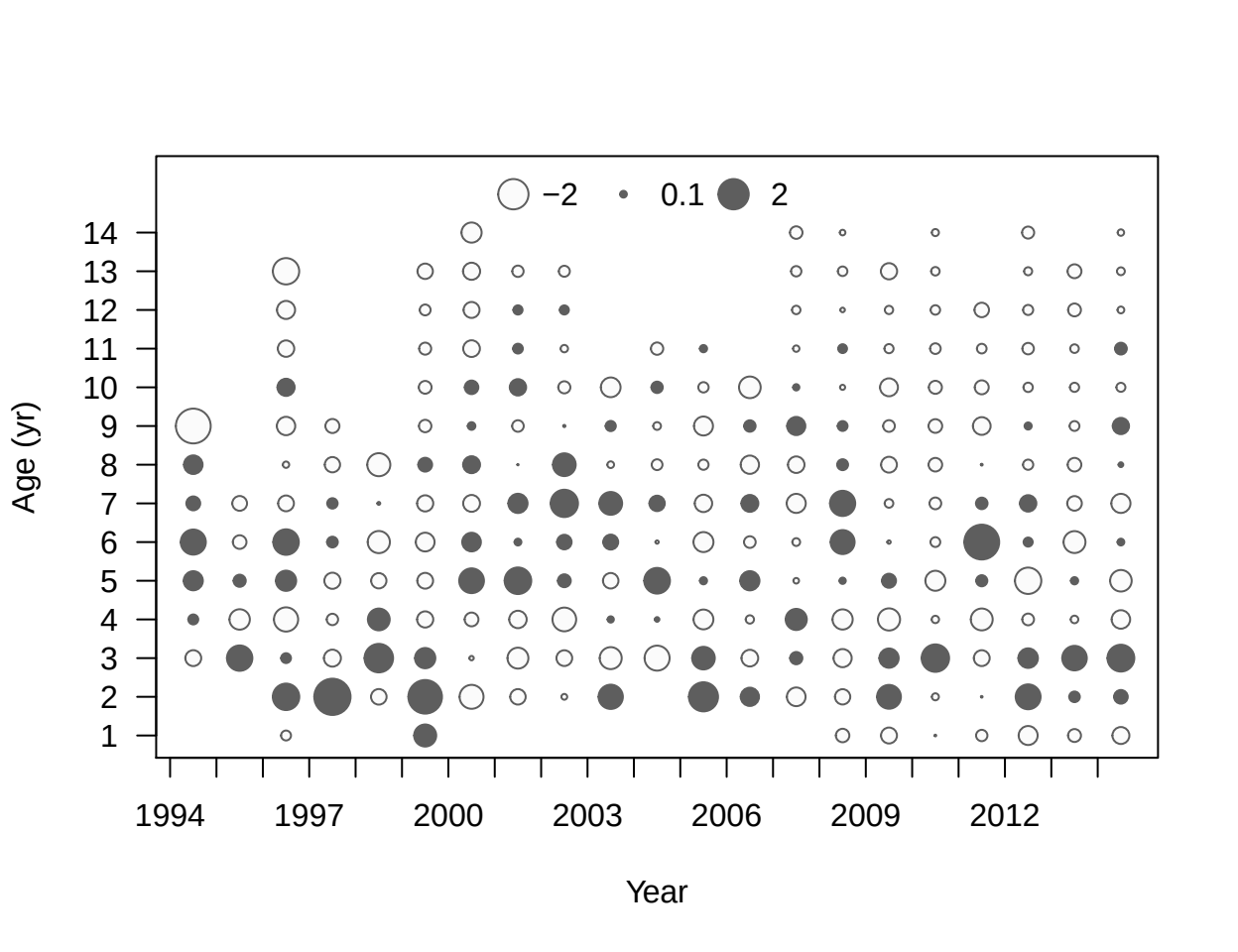

−2
0.1
2
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Age (yr)
1994
2000
2003
2006
2009
2012
Year

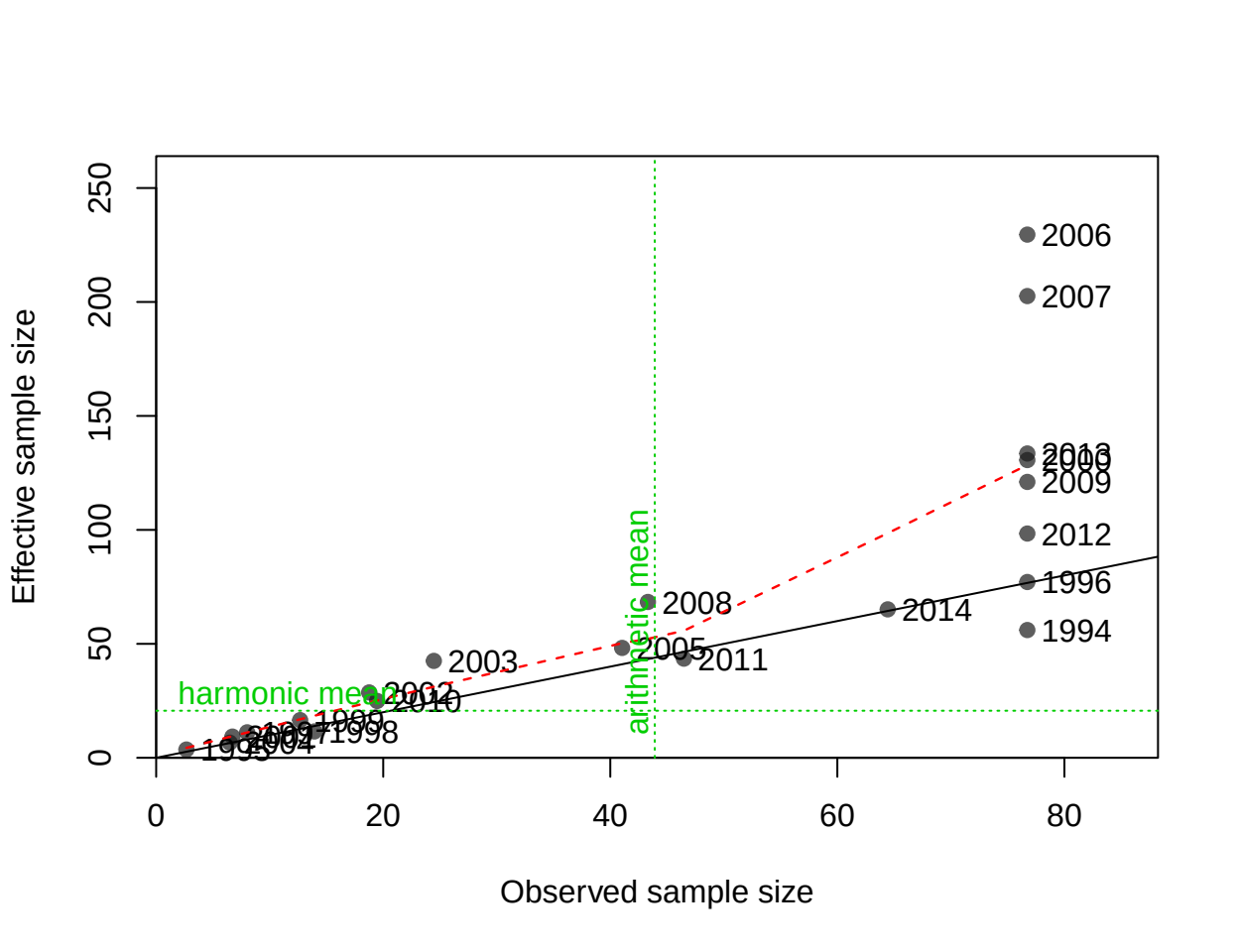

Effective sample size
Observed sample size
0
50
100
150
200
250
0
5
10
15
20
25
30
35
harmonic mean
arithmetic mean
2004
2009
2008
2010
2007
2000
2012
2005
2011
1994
1995

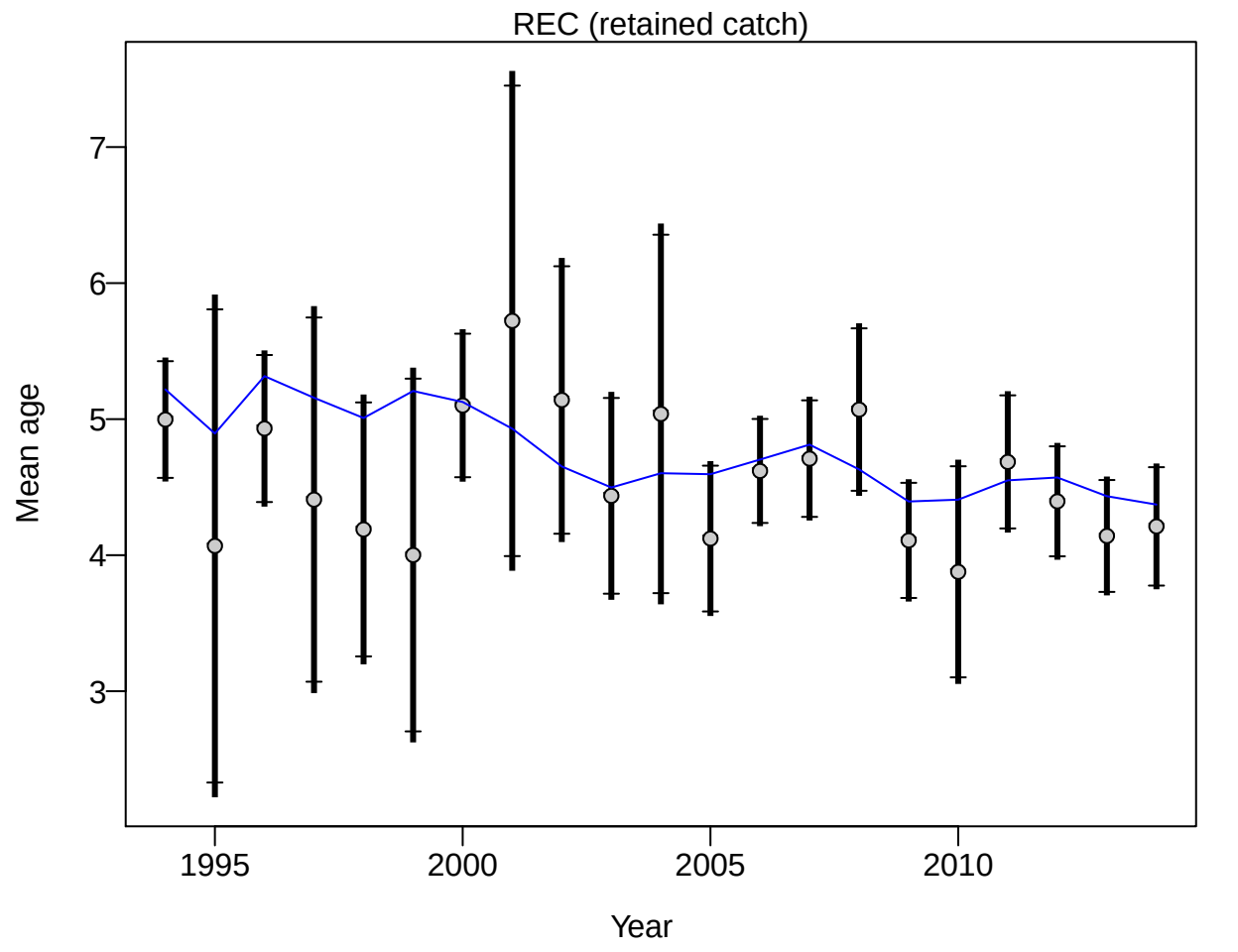

CM_W (retained catch)
Mean age
10
8
6
4
2
1995
2000
2005
2010
Year

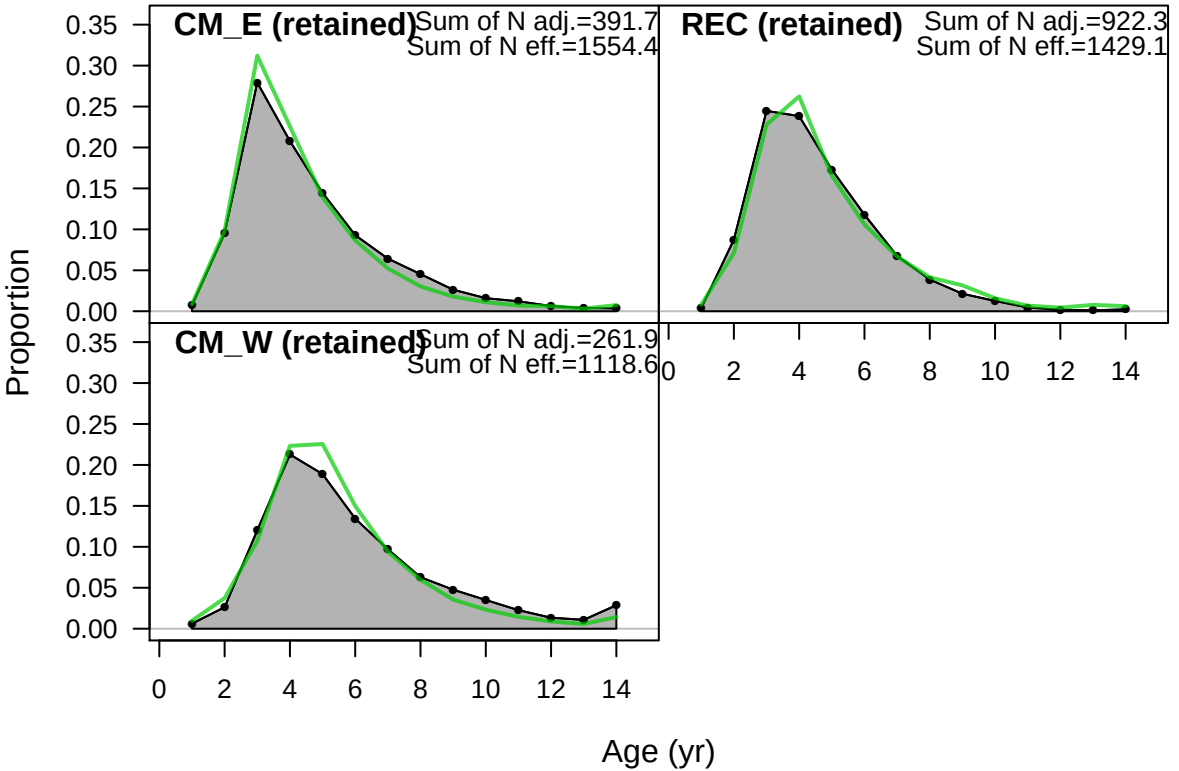

1994
N adj.=76.7
N eff.=56.1
1998
N adj.=13.9
N eff.=11.6
2002
N adj.=18.8
N eff.=28.7
2006
N adj.=76.7
N eff.=229.6
1995
N adj.=2.7
N eff.=3.6
1999
N adj.=12.7
N eff.=16.5
2003
N adj.=24.5
N eff.=42.5
2007
N adj.=76.7
N eff.=202.6
1996
N adj.=76.7
N eff.=77.1
2000
N adj.=76.7
N eff.=130.6
2004
N adj.=6.5
N eff.=6.6
2008
N adj.=43.3
N eff.=68.4
1997
N adj.=8
N eff.=11.2
2001
N adj.=6.7
N eff.=9.3
2005
N adj.=41
N eff.=48.2
2009
N adj.=76.7
N eff.=121
Proportion
0.0
0.1
0.2
0.3
0.4
0 2 4 6 8 12
Age (yr)

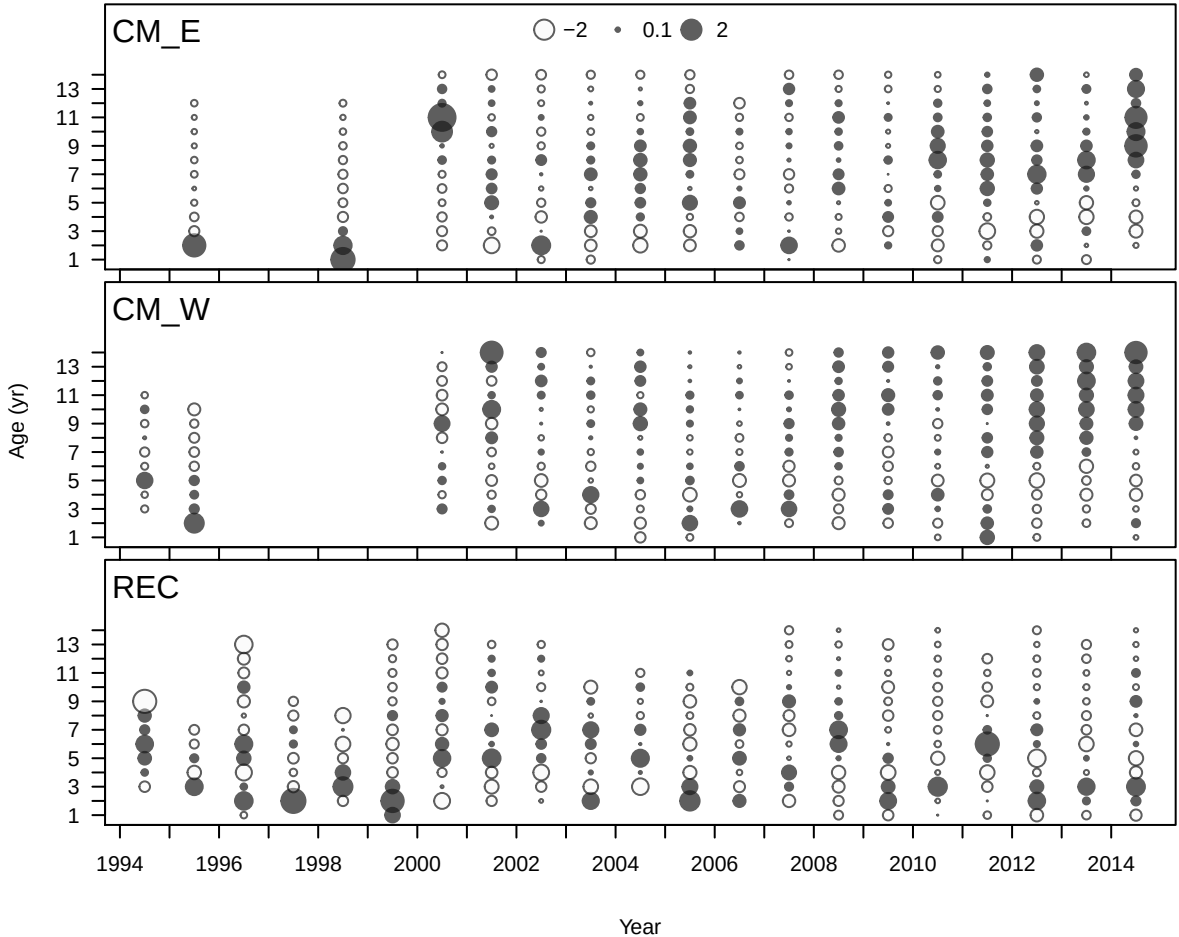

2010
N adj.=19.5
N eff.=24.9
2014
N adj.=64.4
N eff.=65.1
2011
N adj.=46.5
N eff.=43.5
2012
N adj.=76.7
N eff.=98.4
2013
N adj.=76.7
N eff.=133.5
Proportion
0.0
0.1
0.2
0.3
0.4
0
2
4
6
8
12
Age (yr)

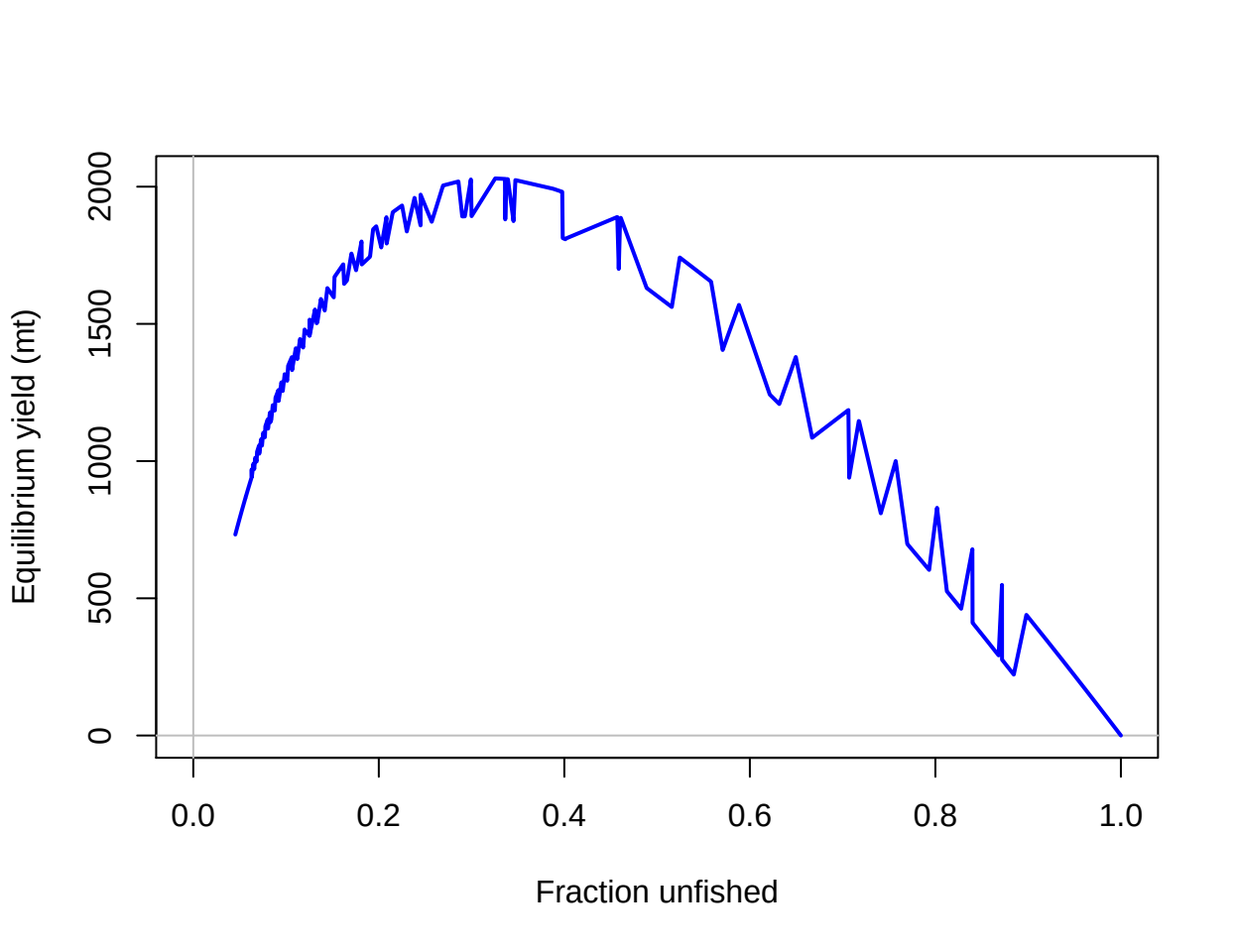

−2
0.1
2
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Age (yr)
1994
1997
2000
2003
2006
2009
2012
Year

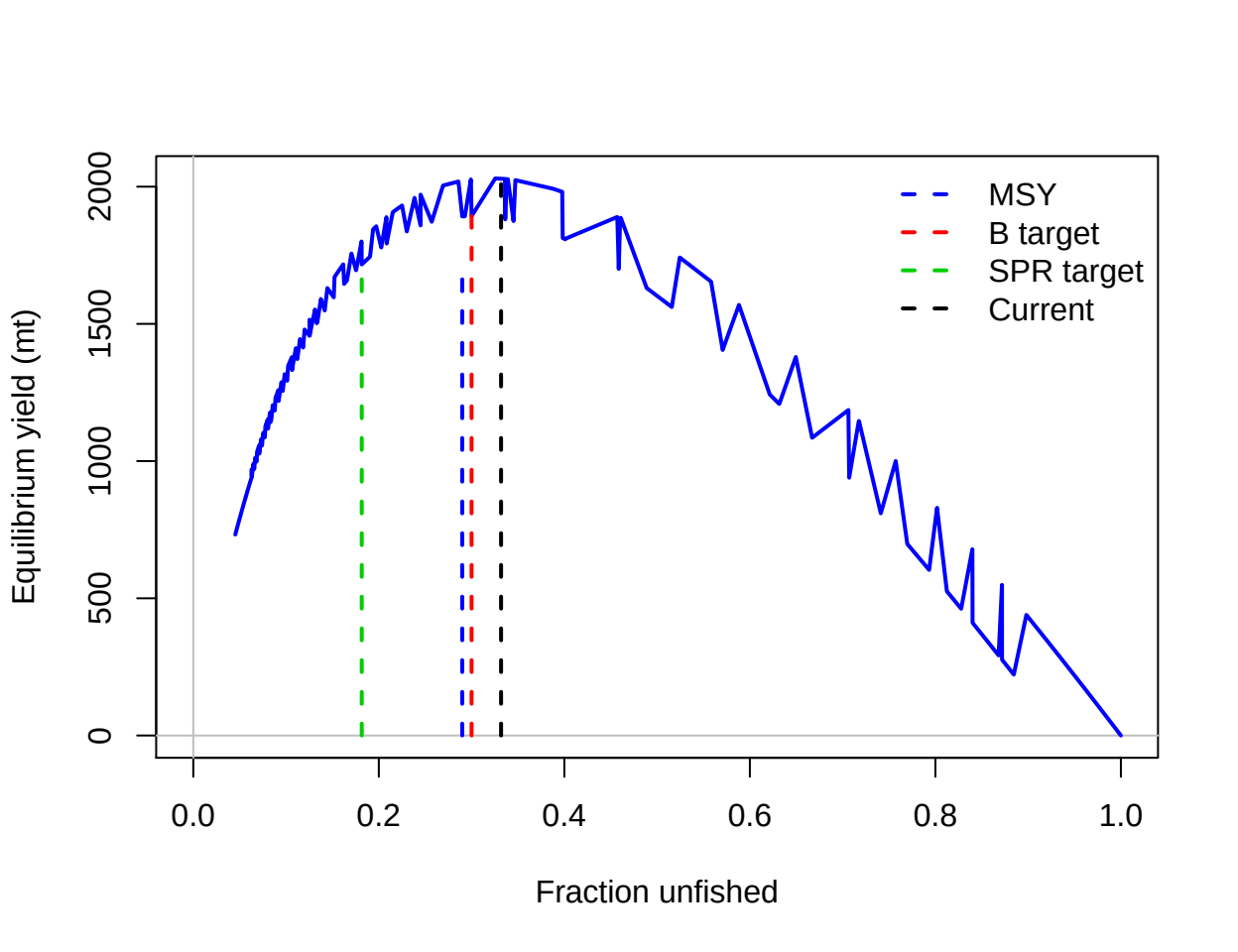

Effective sample size
Observed sample size
0
50
100
150
200
250
0
20
40
60
80
harmonic mean
arithmetic mean
2006
2007
2009
2012
1996
1994
2008
2014
2005
2011
2003
2010
1998

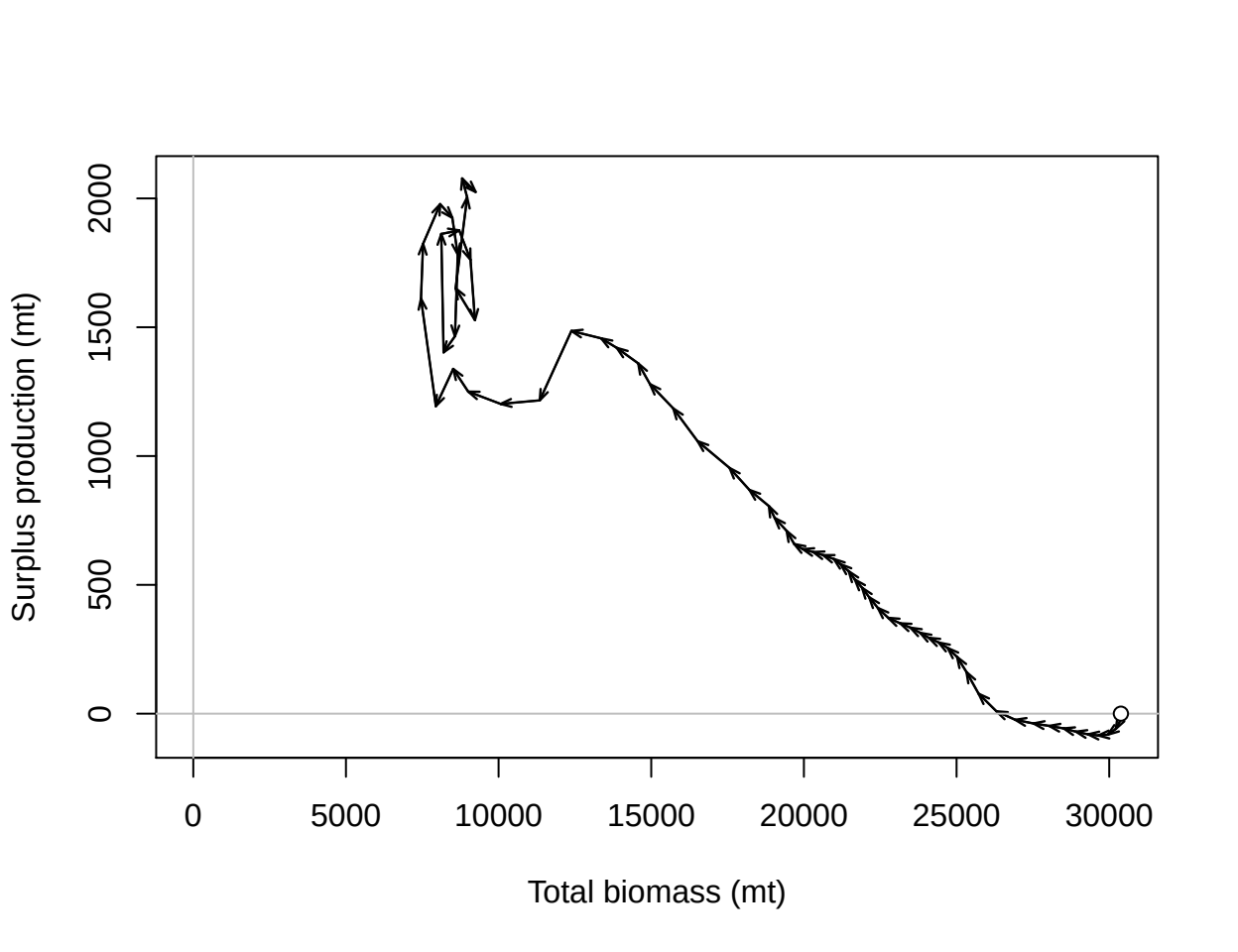

REC (retained catch)
Mean age
7
6
5
4
3
1995
2000
2005
2010
Year

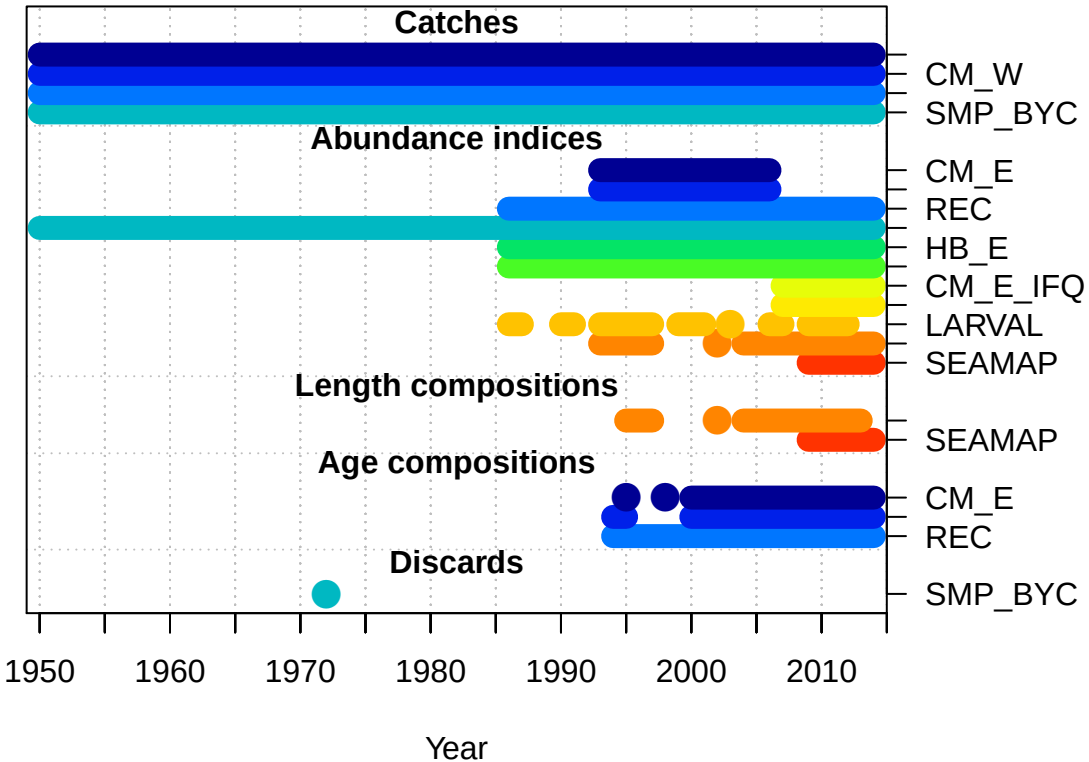

CM_E (retained)
Sum of N adj.=391.7
Sum of N eff.=1554.4
REC (retained)
Sum of N adj.=922.3
Sum of N eff.=1429.1
CM_W (retained)
Sum of N adj.=261.9
Sum of N eff.=1118.6
Proportion
Age (yr)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
2
4
6
8
10
12
14

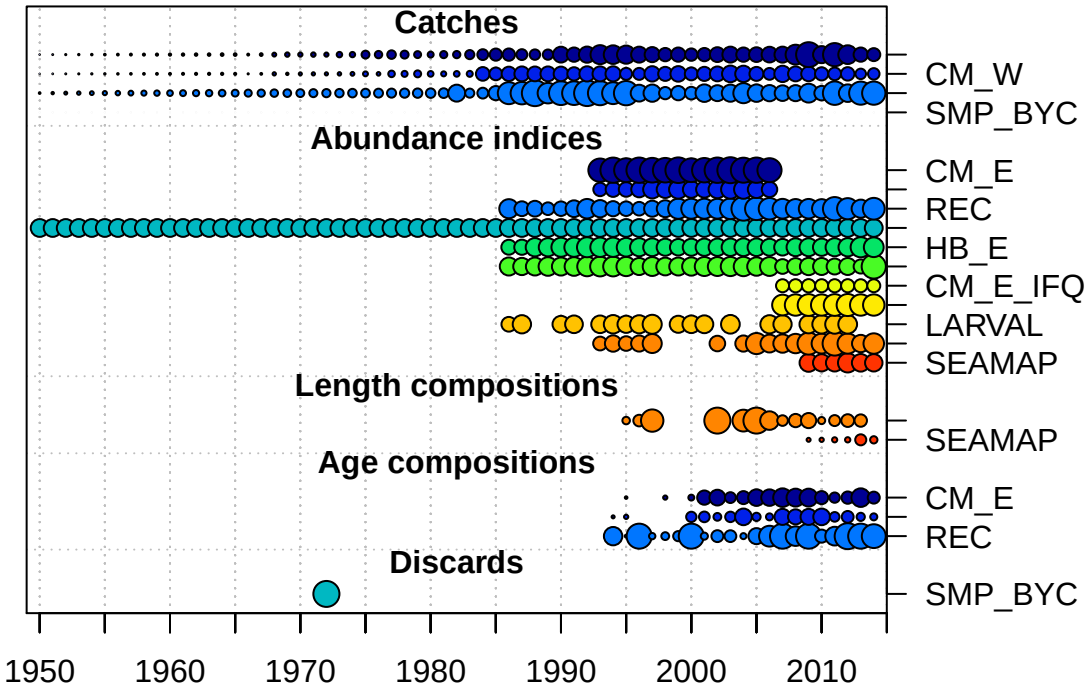

CM_E
−2
0.1
2
CM_W
REC
Age (yr)
Year
1
3
5
7
9
11
13
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014


Equilibrium yield (mt)
0
500
1000
1500
2000
0.0
0.2
0.4
0.6
0.8
1.0
Fraction unfished


Equilibrium yield (mt)
0
500
1000
1500
2000
0.0
0.2
0.4
0.6
0.8
1.0
Fraction unfished
MSY
B target
SPR target
Current


Surplus production (mt)
0
500
1000
1500
2000
0
5000
10000
15000
20000
25000
30000
Total biomass (mt)


Catches
CM_W
SMP_BYC
Abundance indices
CM_E
REC
HB_E
CM_E_IFQ
LARVAL
SEAMAP
Length compositions
SEAMAP
Age compositions
CM_E
REC
Discards
SMP_BYC
1950
1960
1970
1980
1990
2000
2010
Year


Catches
CM_W
SMP_BYC
Abundance indices
CM_E
REC
HB_E
CM_E_IFQ
LARVAL
SEAMAP
Length compositions
SEAMAP
Age compositions
CM_E
REC
Discards
SMP_BYC
1950
1960
1970
1980
1990
2000
2010
Year