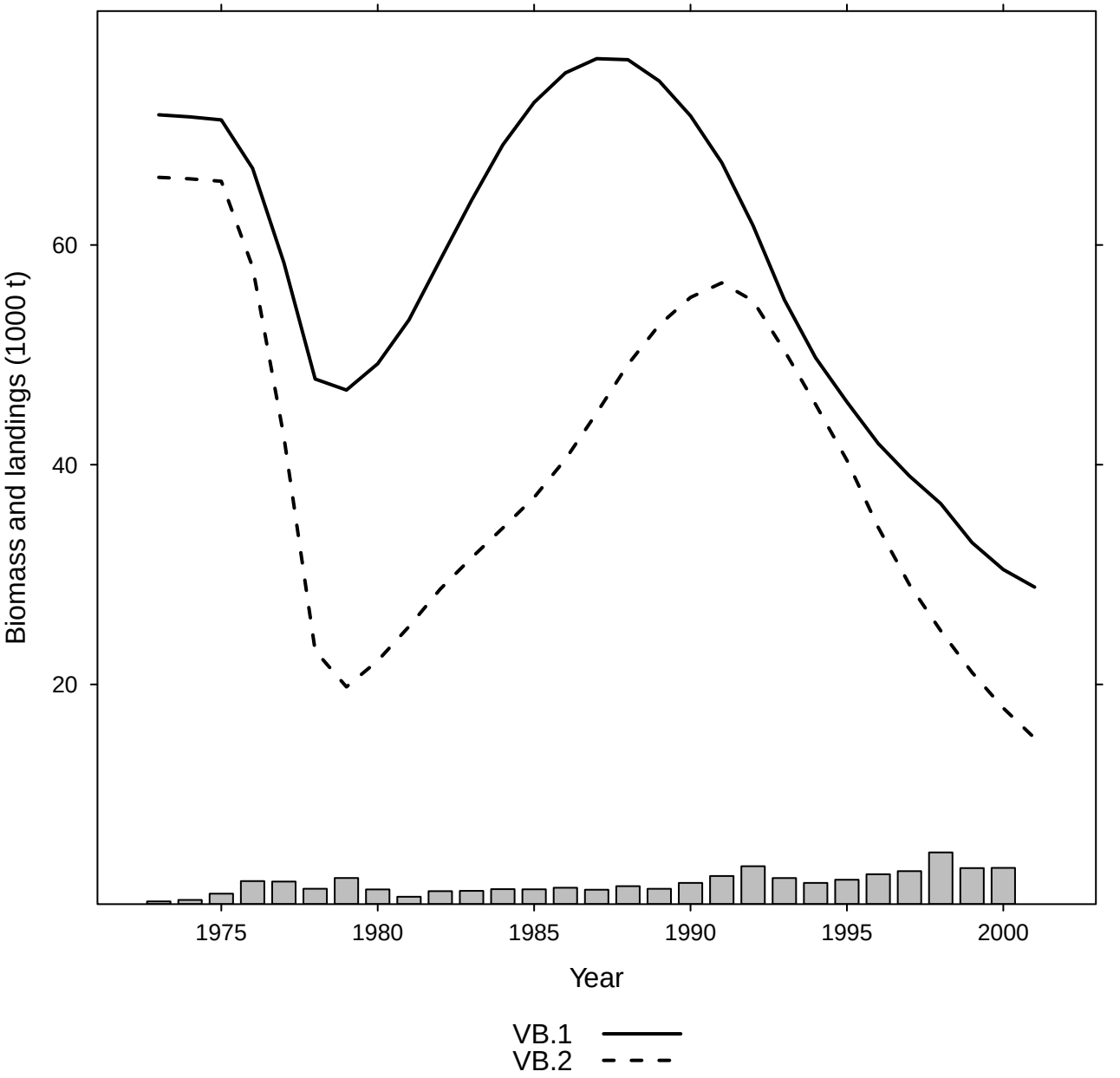
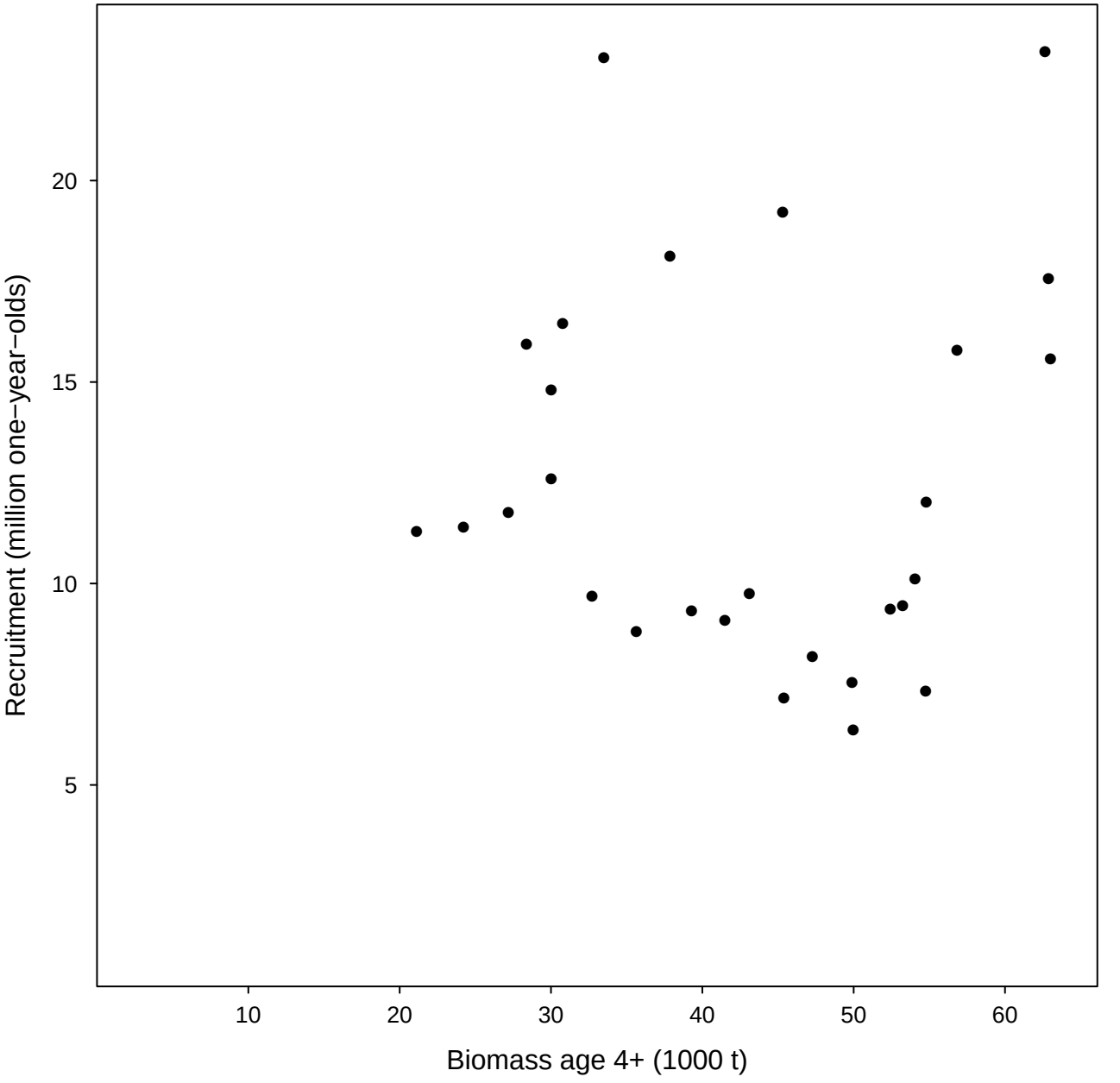
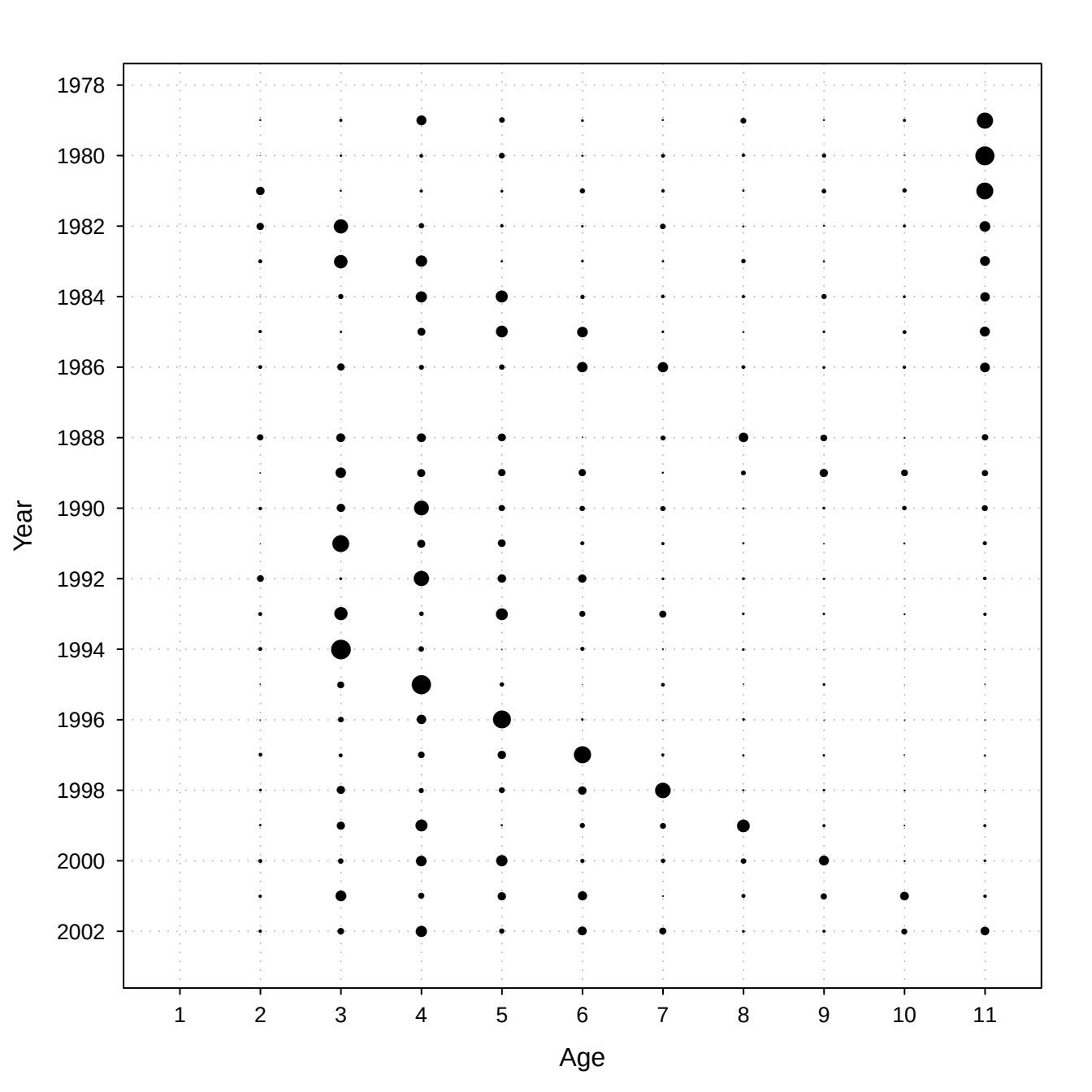
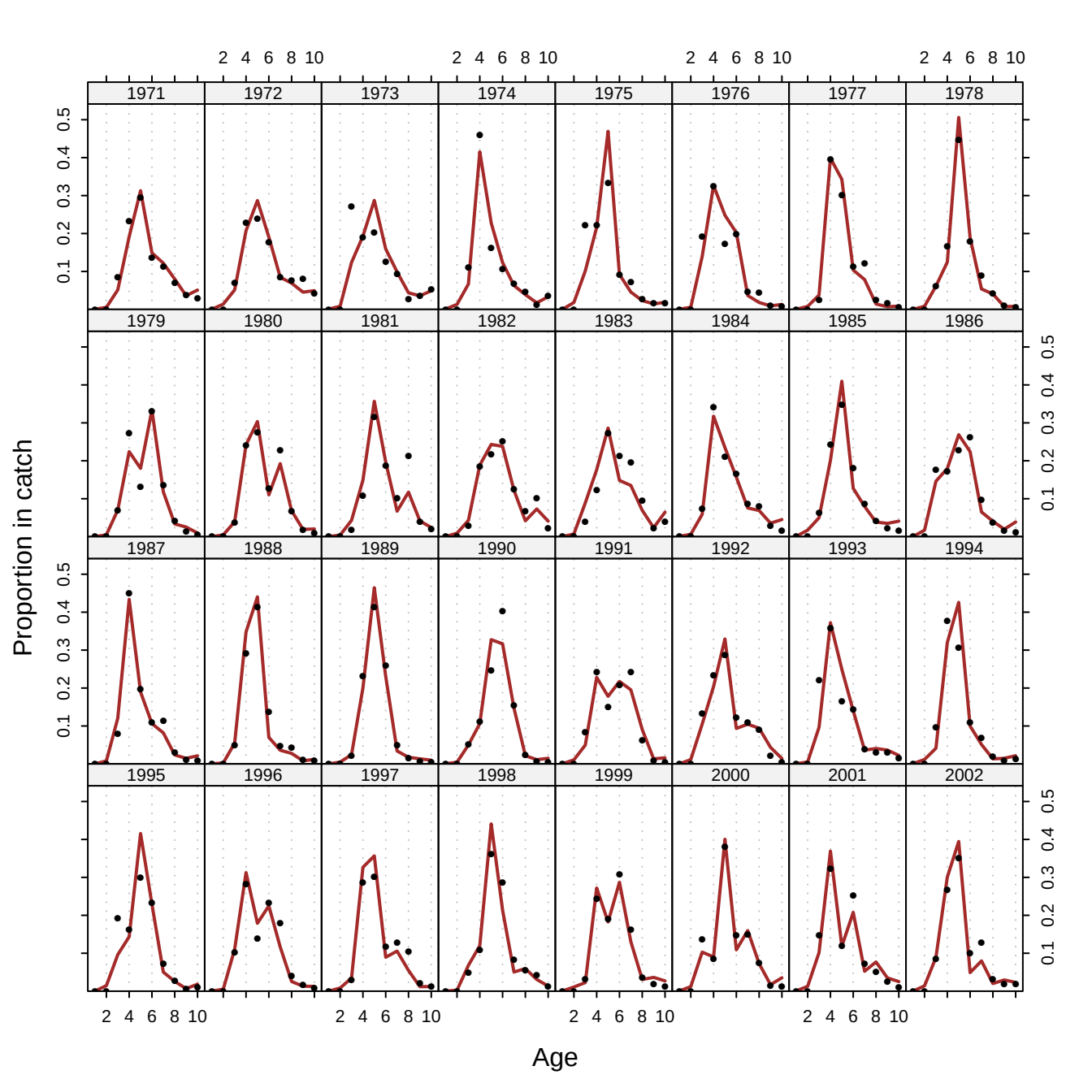
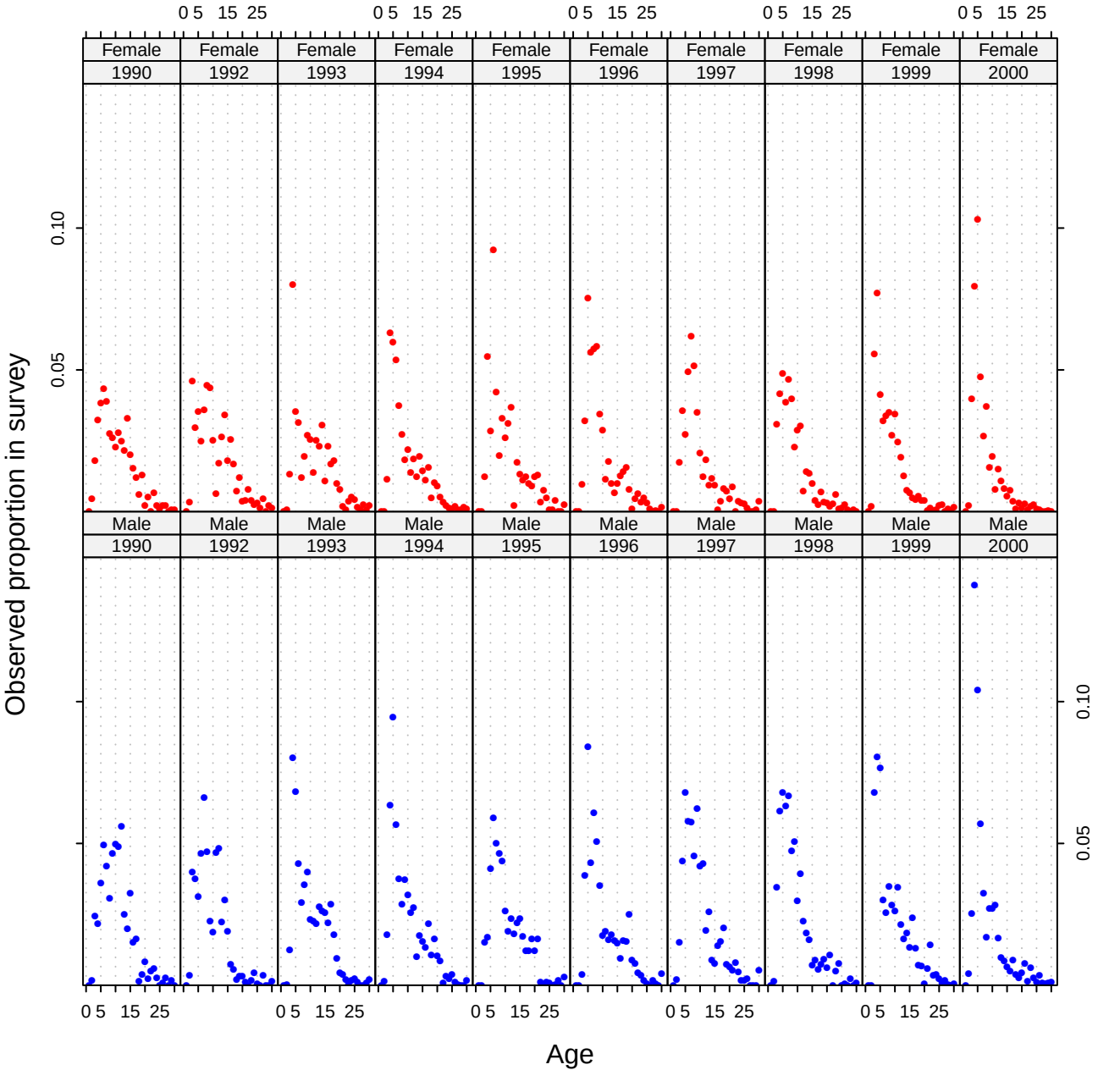
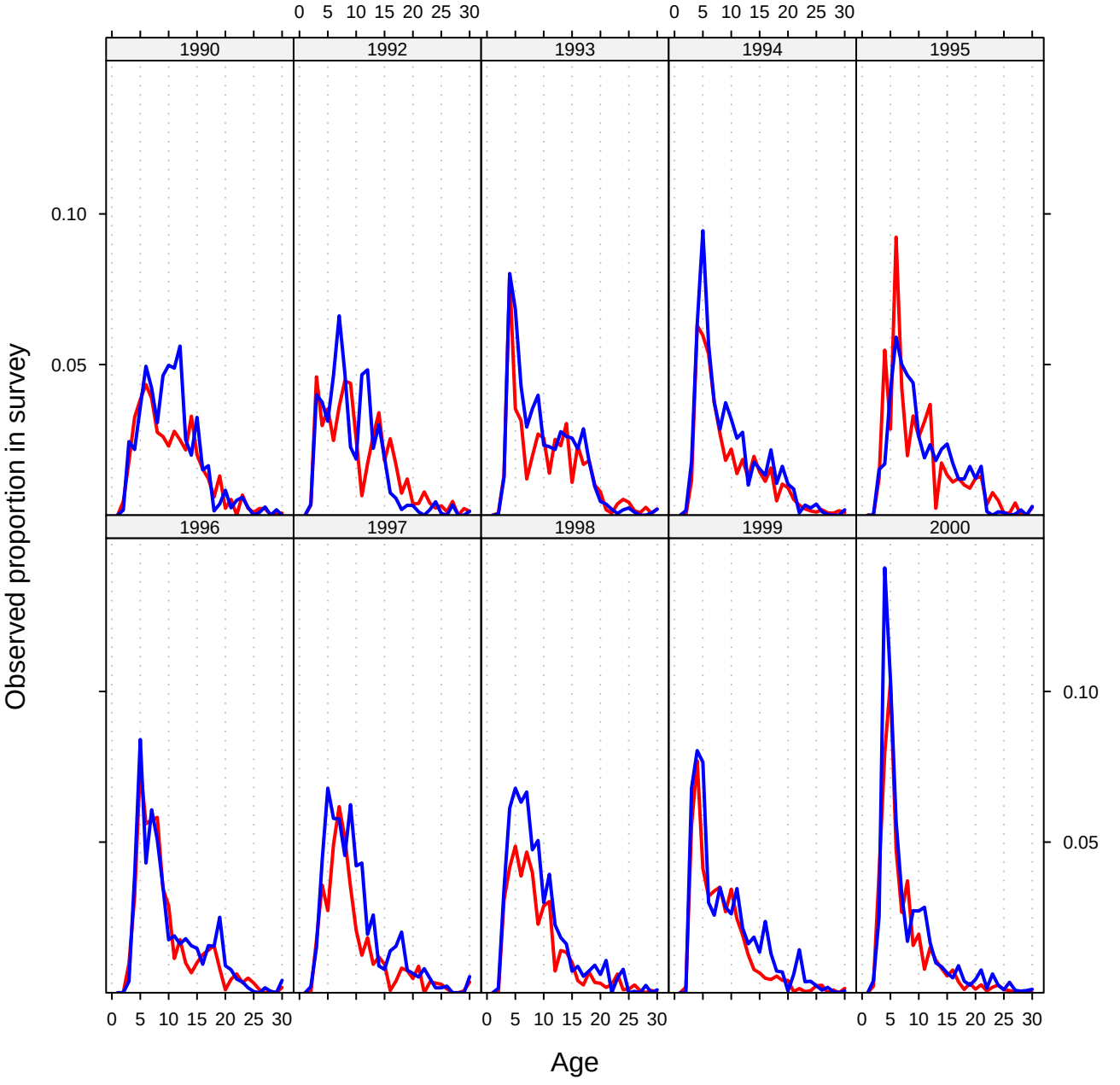

Biomass and landings (1000 t)
60
40
20
1975
1980
1985
1990
1995
2000
Year
VB.1
VB.2

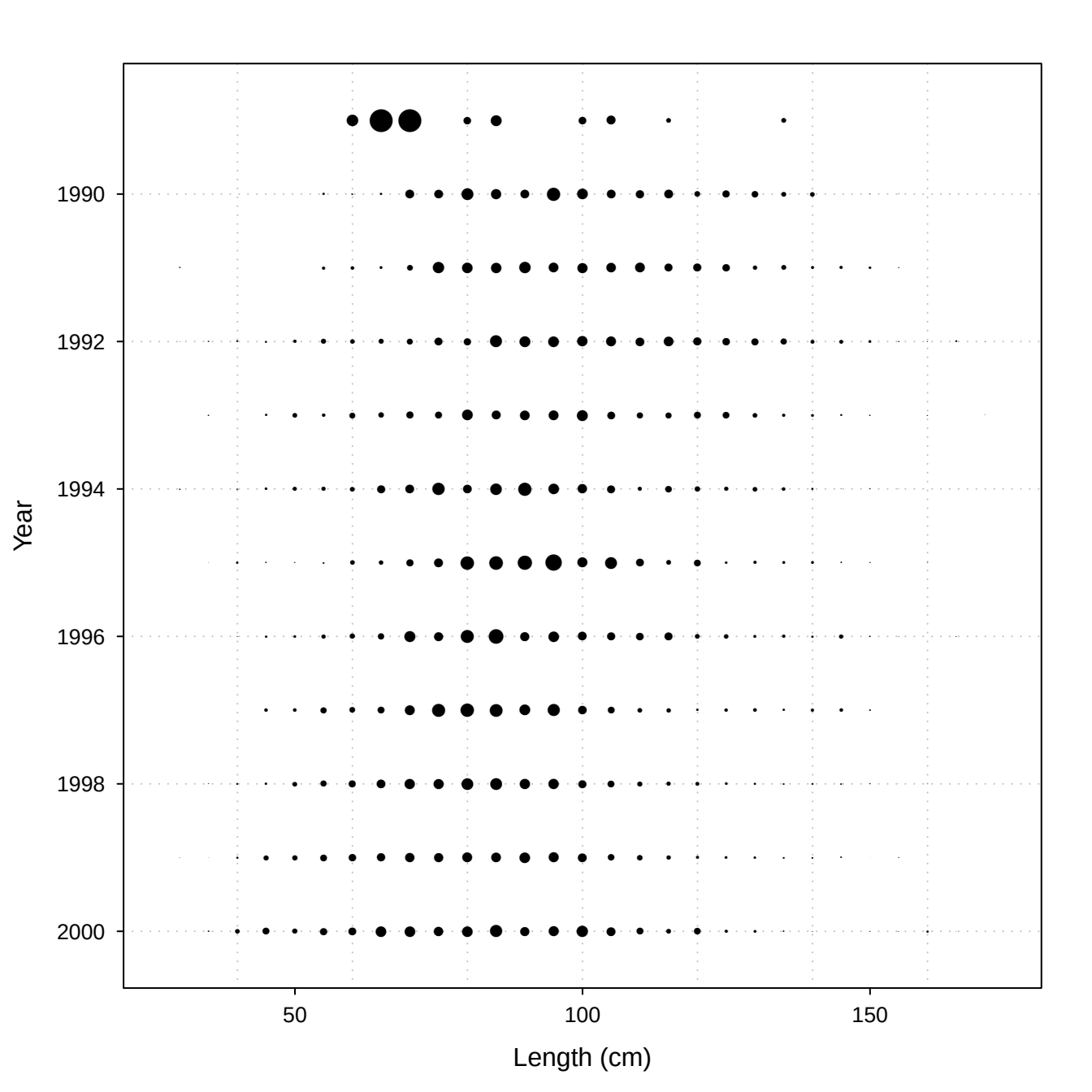

Recruitment (million one−year−olds)
20
15
10
5
10
20
30
40
50
60
Biomass age 4+ (1000 t)

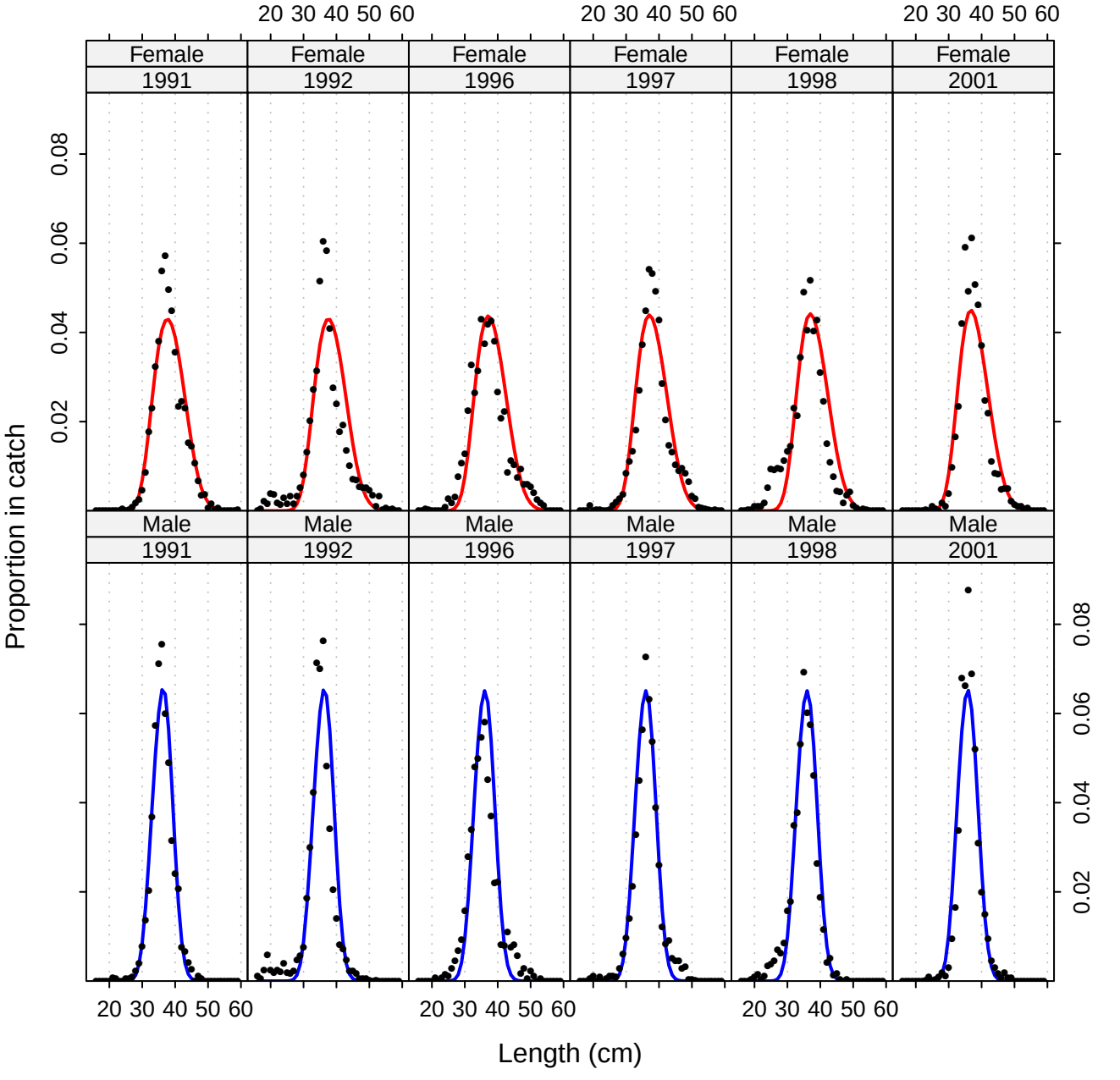

1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
Year
1
2
3
4
5
6
7
8
9
10
11
Age

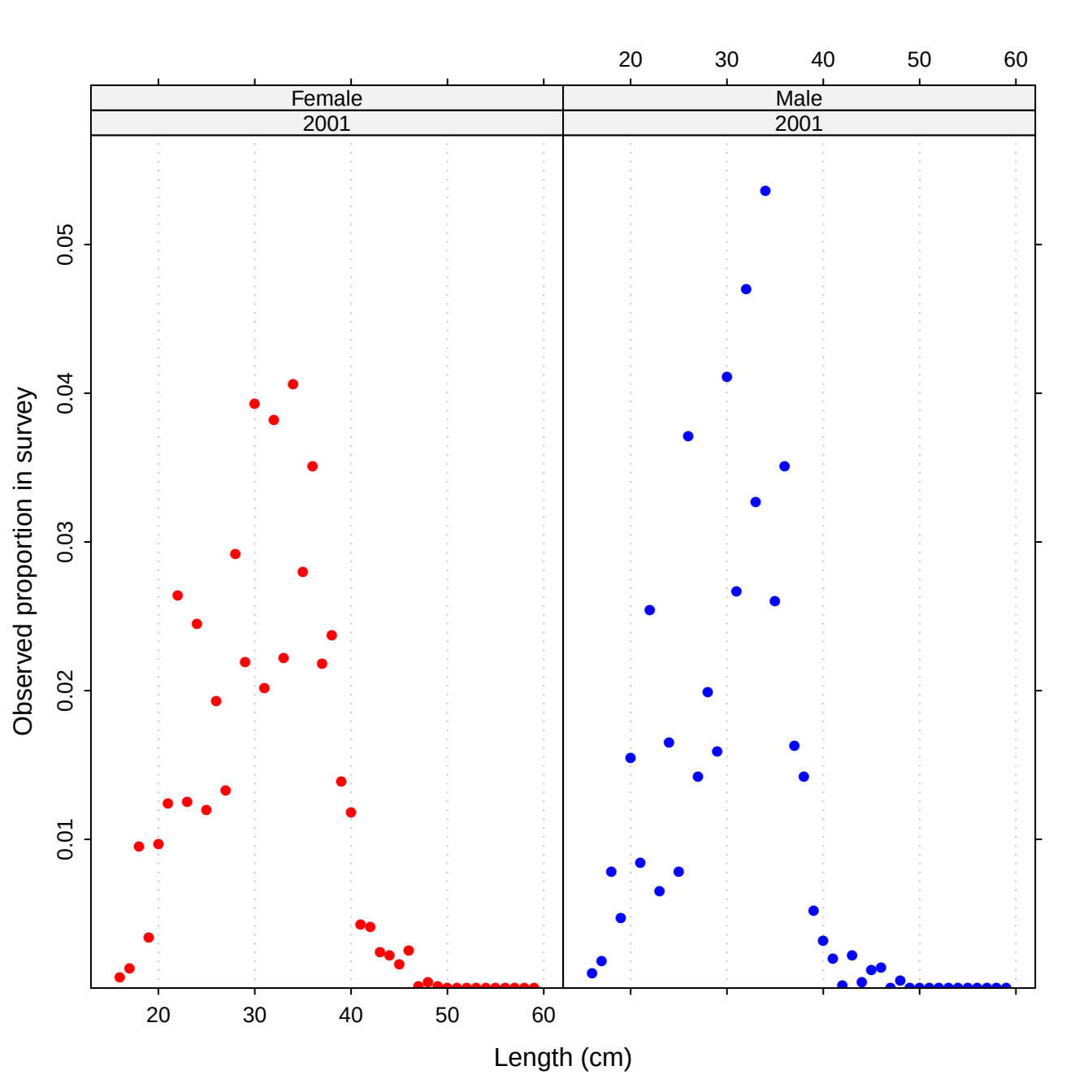

1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2 4 6 8 10
0.1 0.2 0.3 0.4 0.5
Proportion in catch
Age

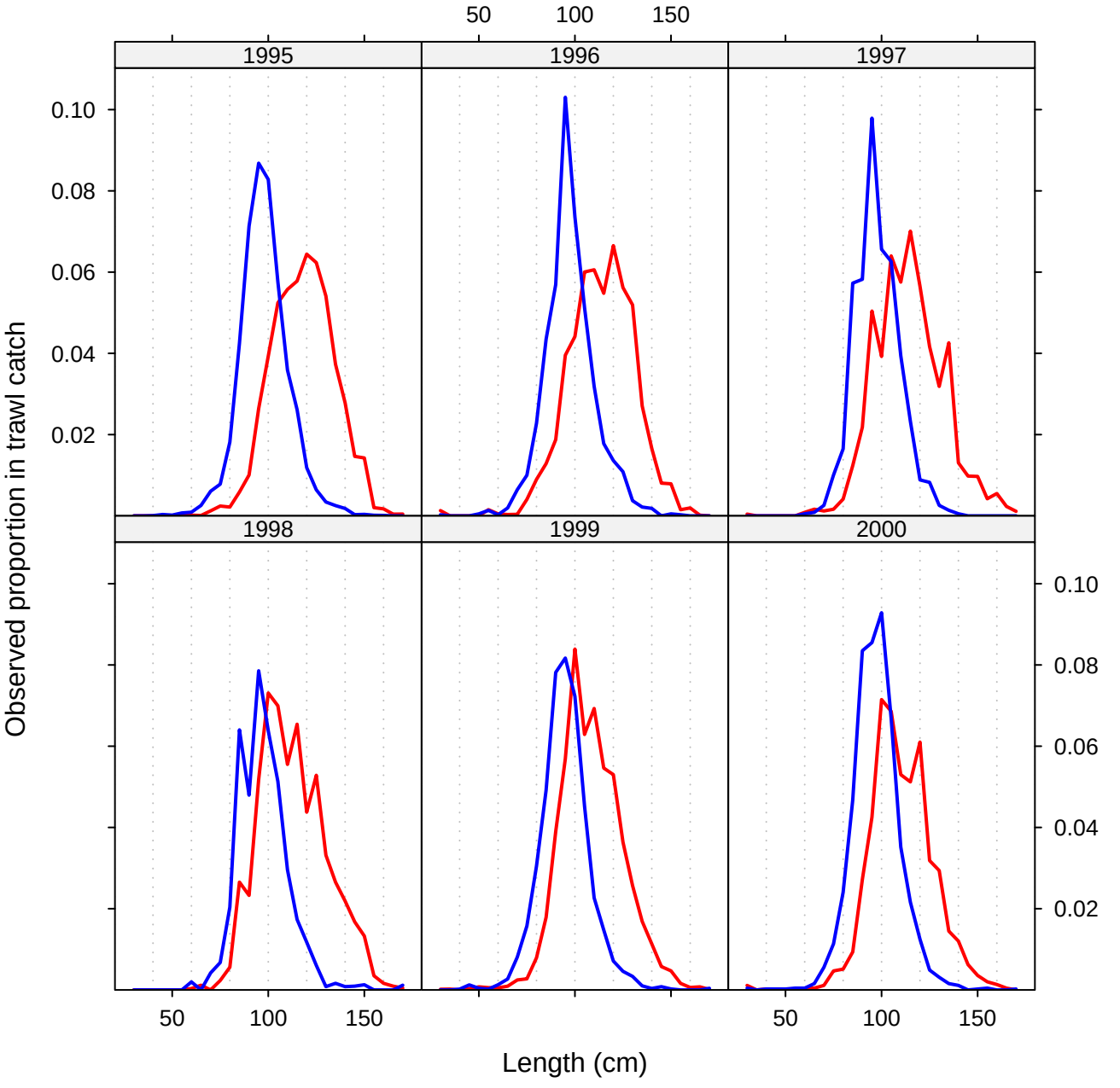

Female
1990
1992
1993
1994
1995
1996
1997
1998
1999
2000
Male
0 5 15 25
0.05
0.10
Observed proportion in survey
Age

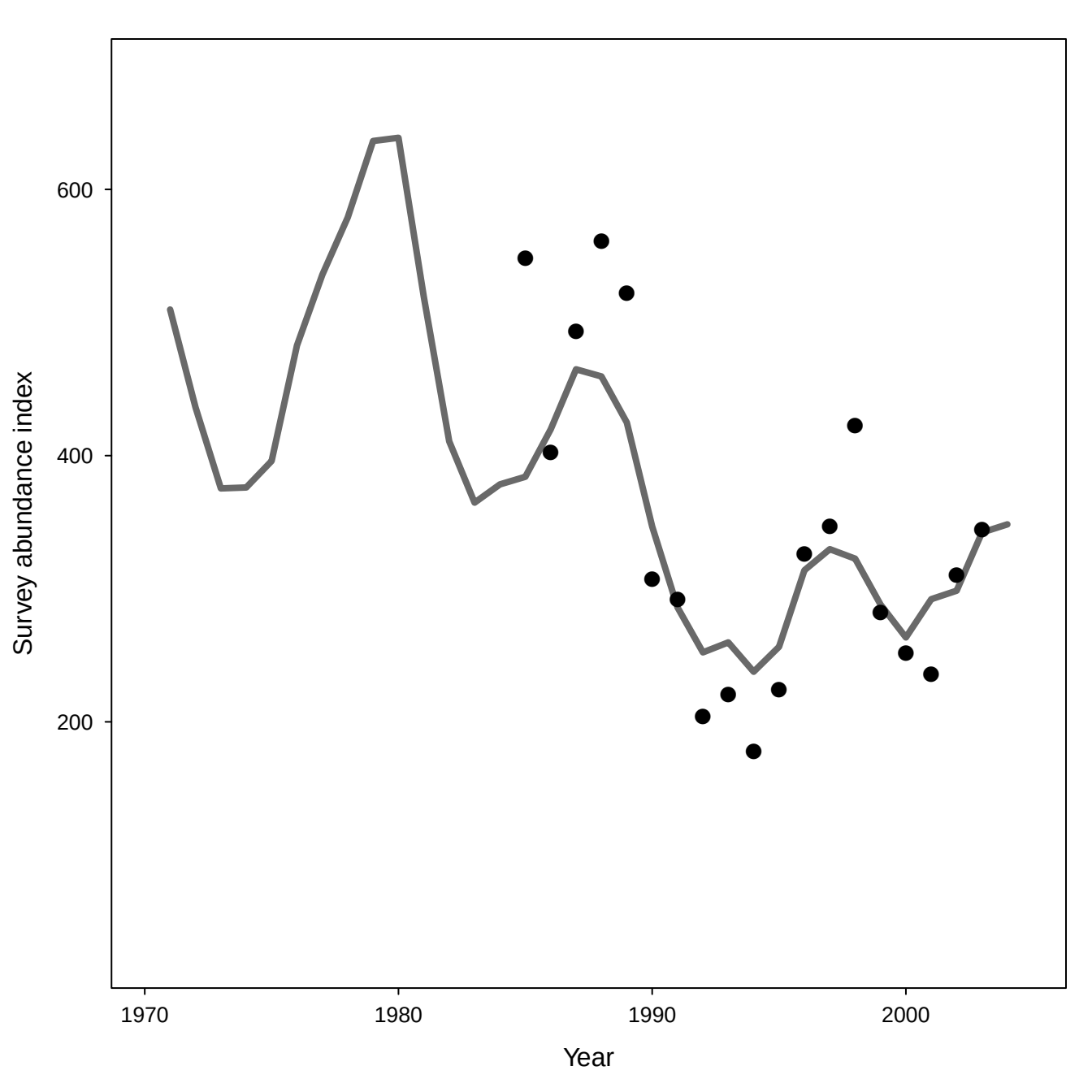

1990
1992
1993
1994
1995
1996
1997
1998
1999
2000
0 5 10 15 20 25 30
0.10
0.05
Observed proportion in survey
Age

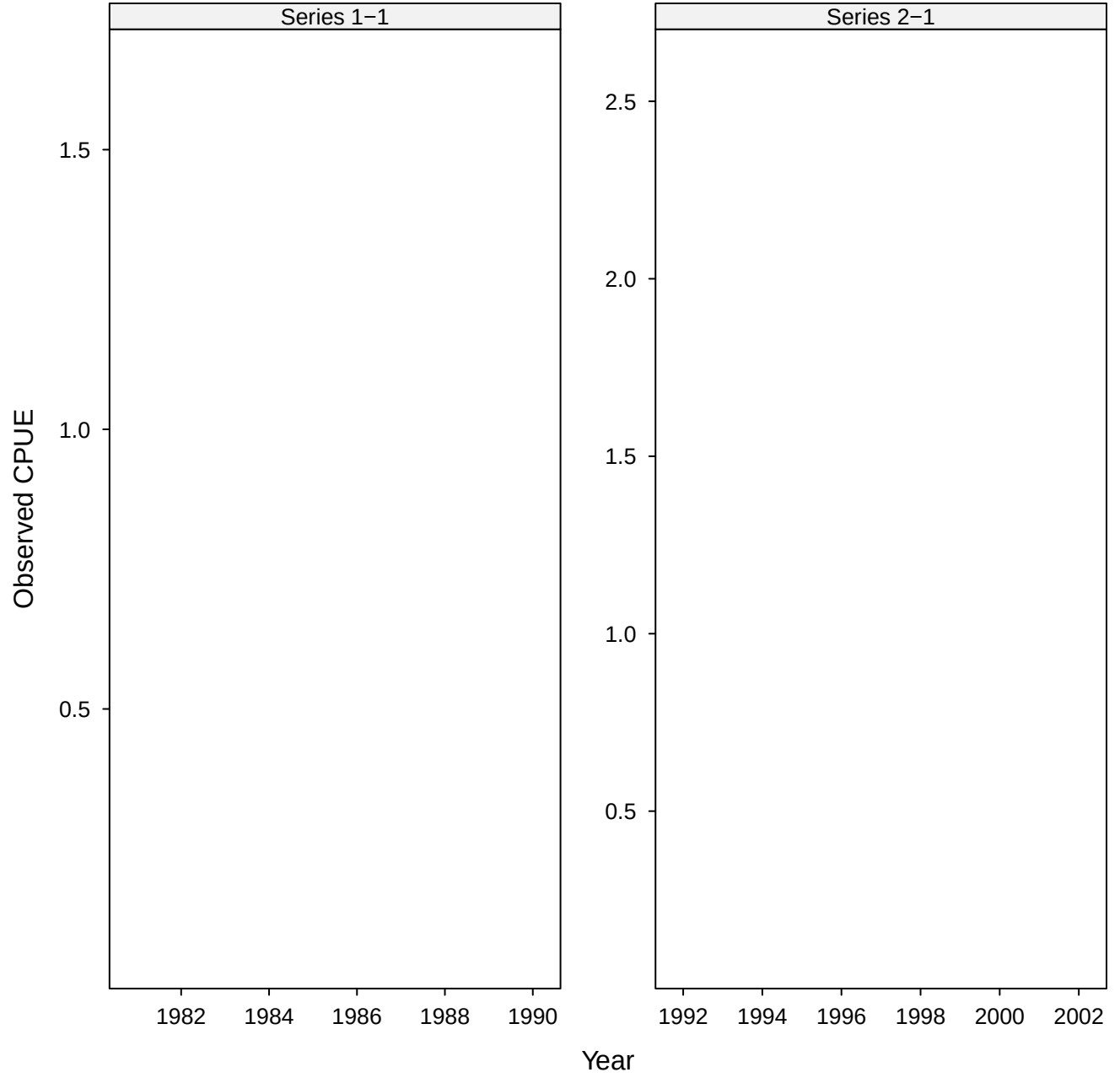

1990
1992
1994
1996
1998
2000
Year
50
100
150
Length (cm)

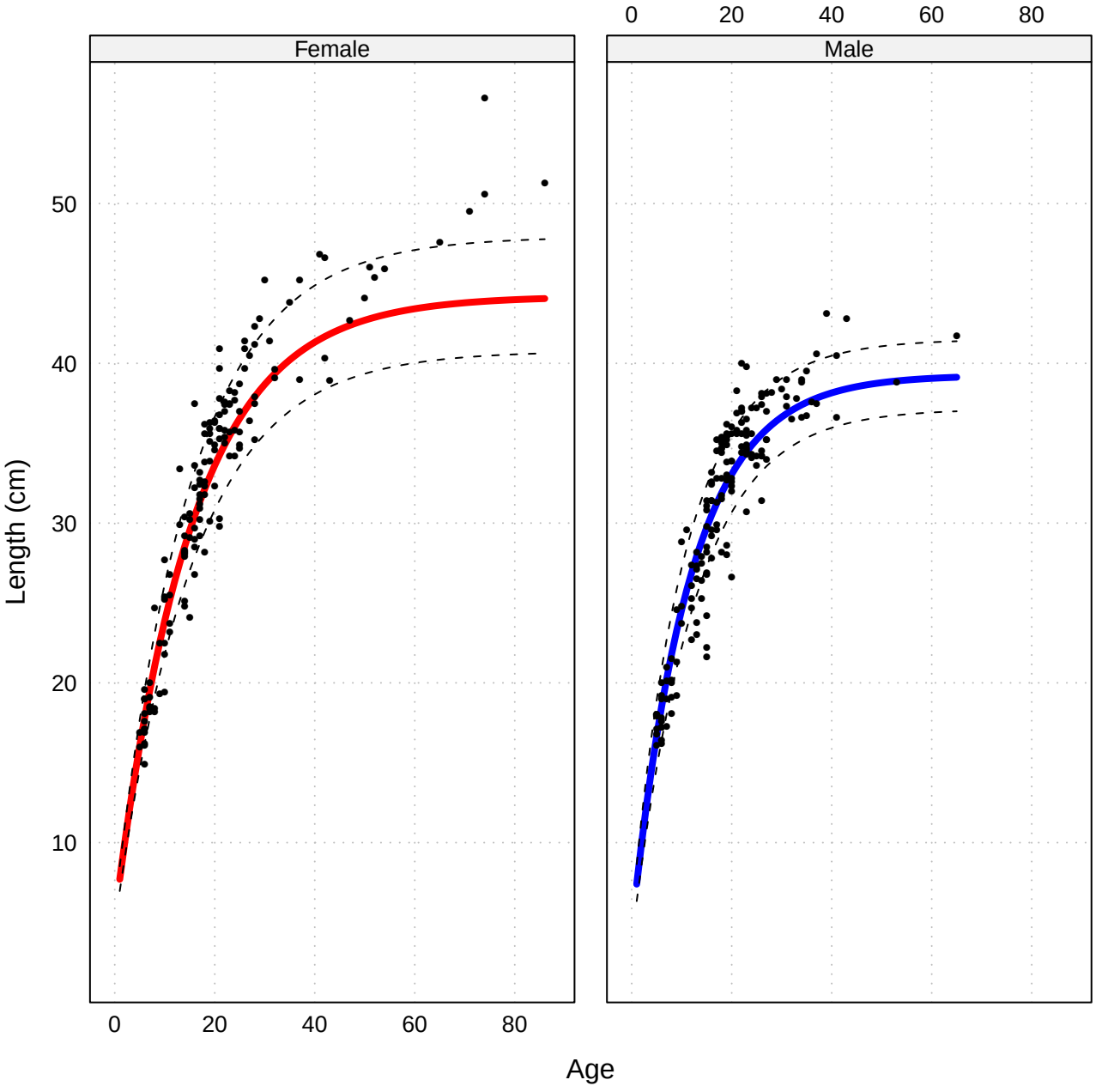

Female
1991
Female
1992
Female
1996
Female
1997
Female
1998
Female
2001
Male
1991
Male
1992
Male
1996
Male
1997
Male
1998
Male
2001
20 30 40 50 60
0.02
0.04
0.06
0.08
Proportion in catch
Length (cm)

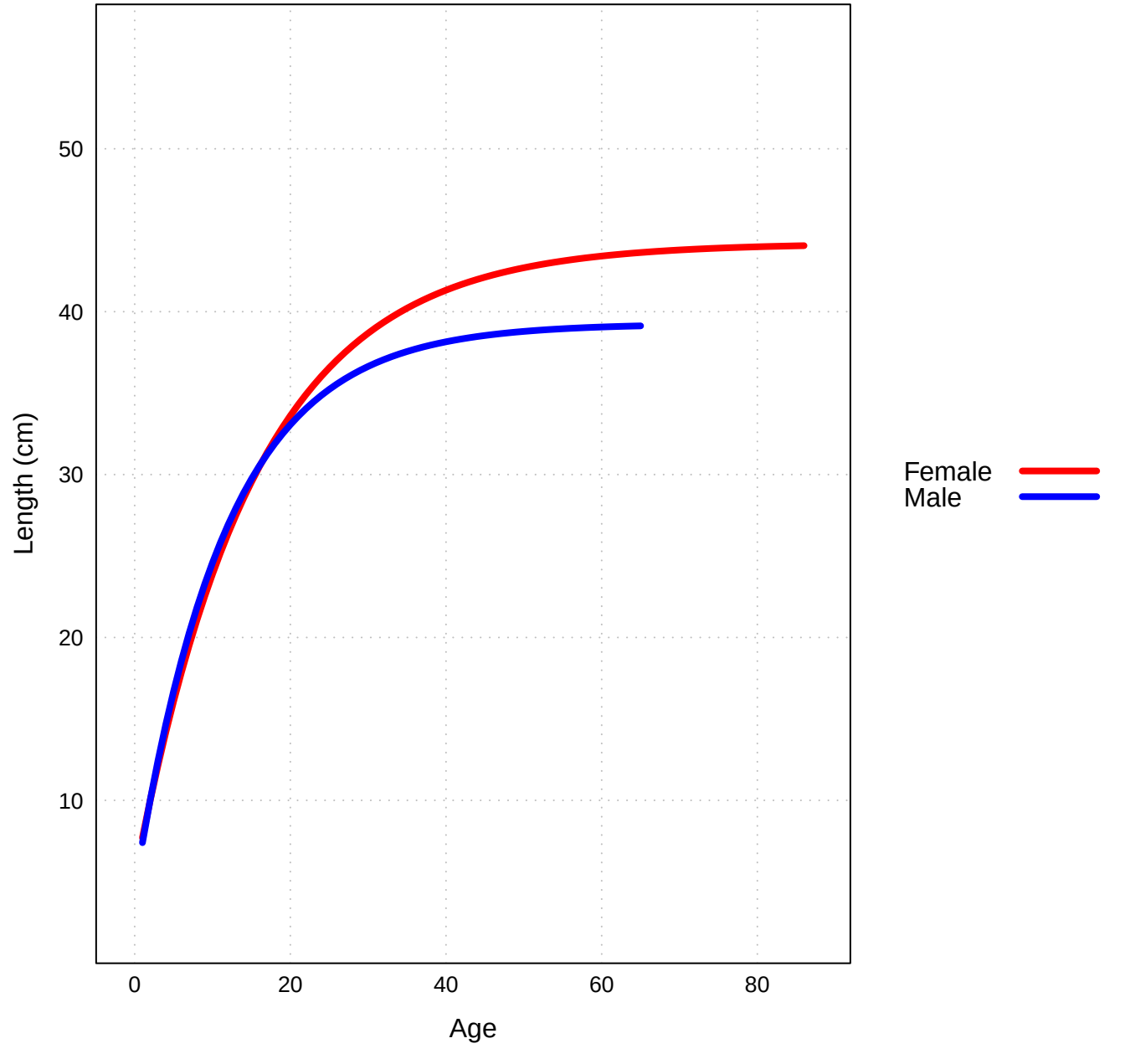

Female
2001
Male
2001
Observed proportion in survey
0.01
0.02
0.03
0.04
0.05
20
30
40
50
60
Length (cm)

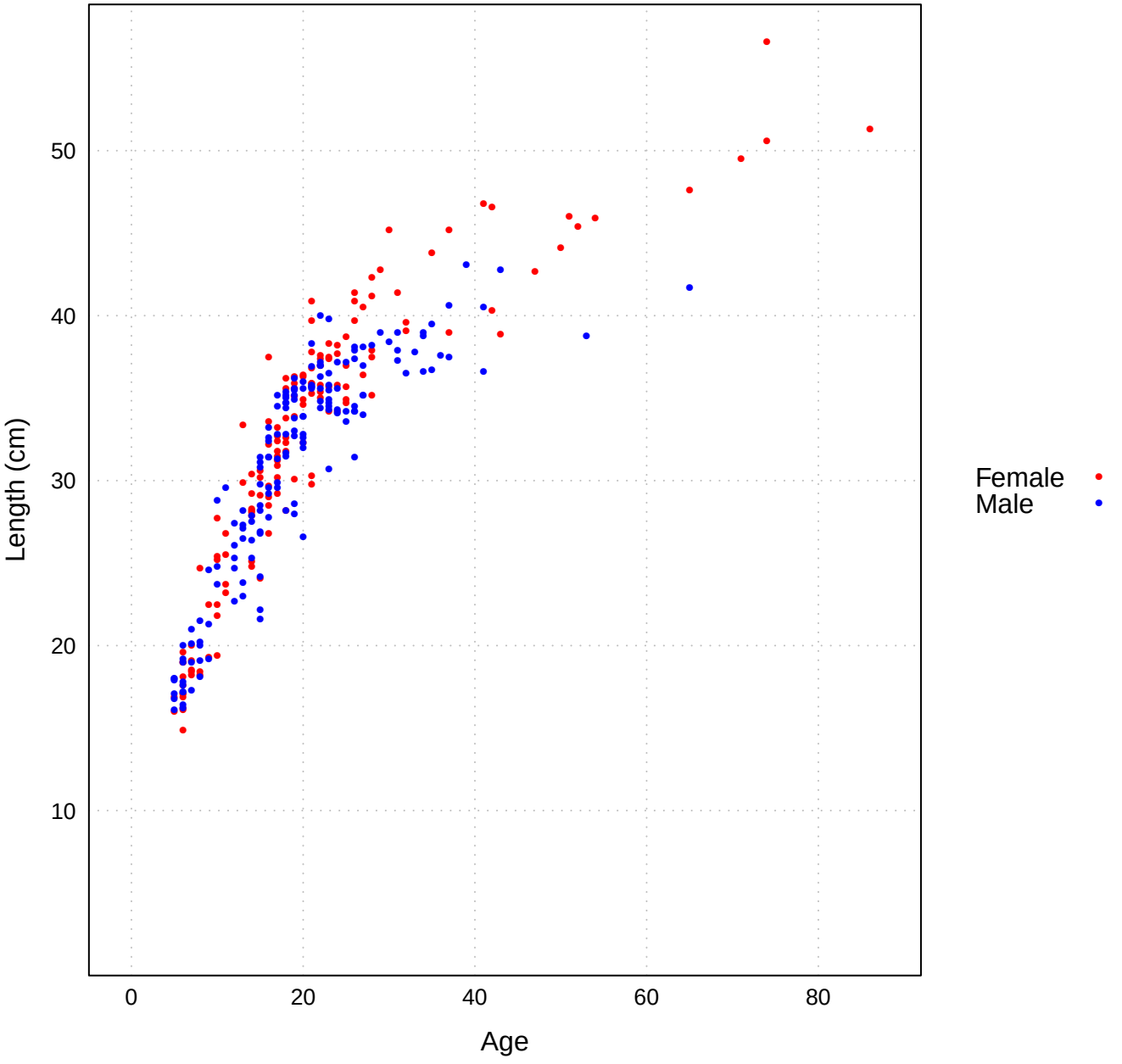

1995
1996
1997
1998
1999
2000
0.10
0.08
0.06
0.04
0.02
50
100
150
Observed proportion in trawl catch
Length (cm)

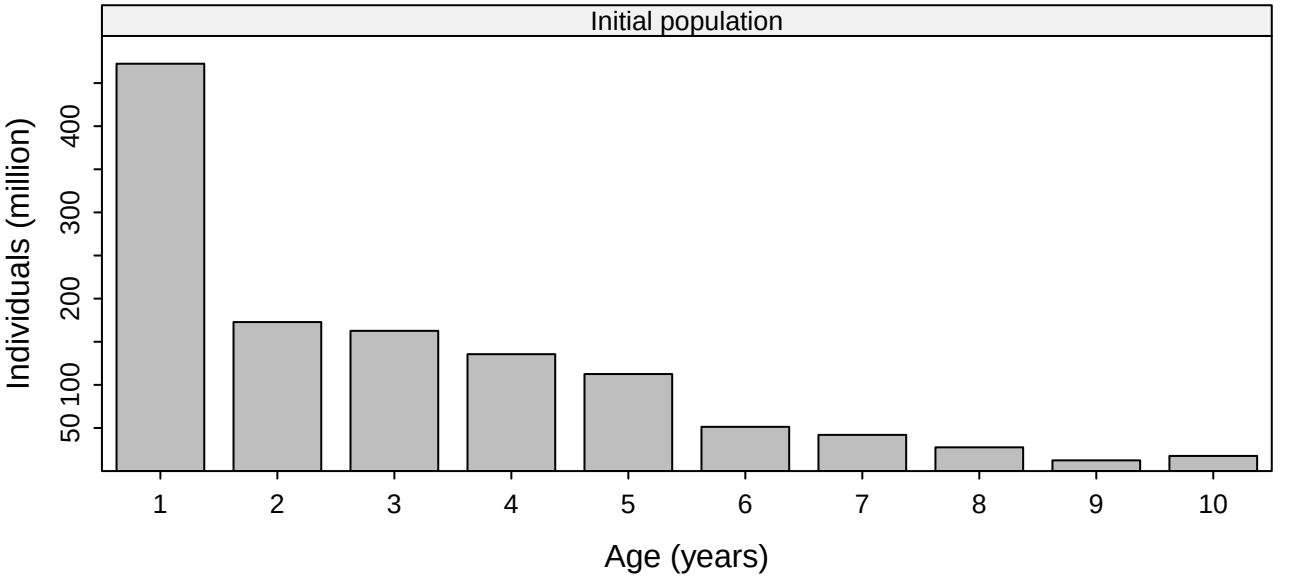

Survey abundance index
600
400
200
1970
1980
1990
2000
Year

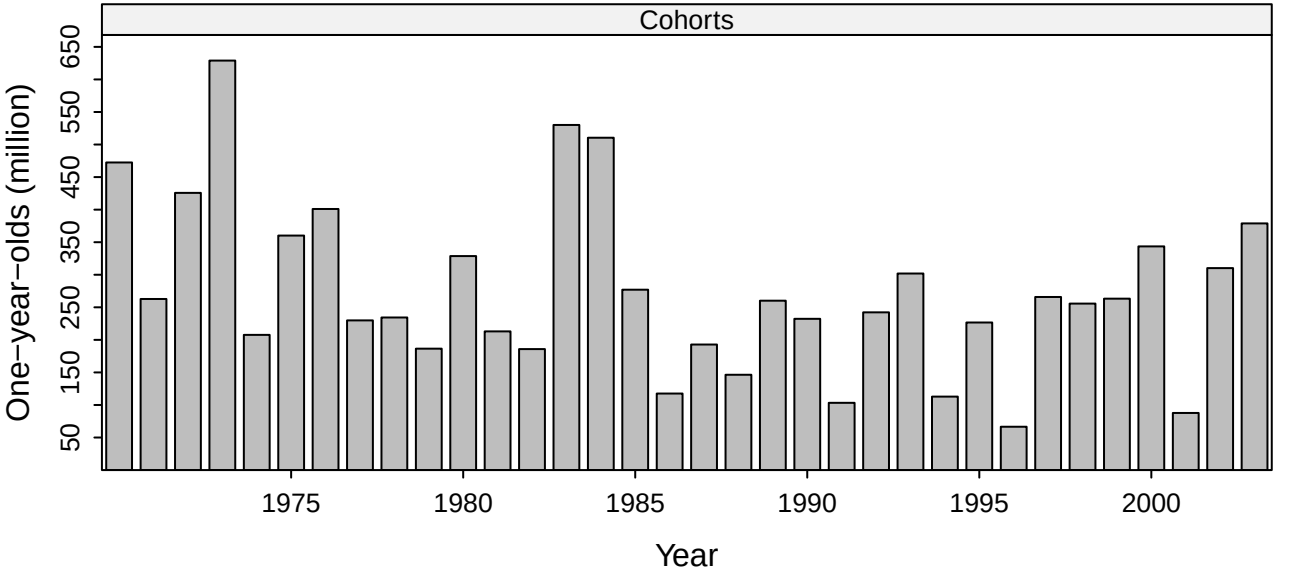

Series 1−1
Series 2−1
Observed CPUE
0.5
1.0
1.5
2.0
2.5
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
Year

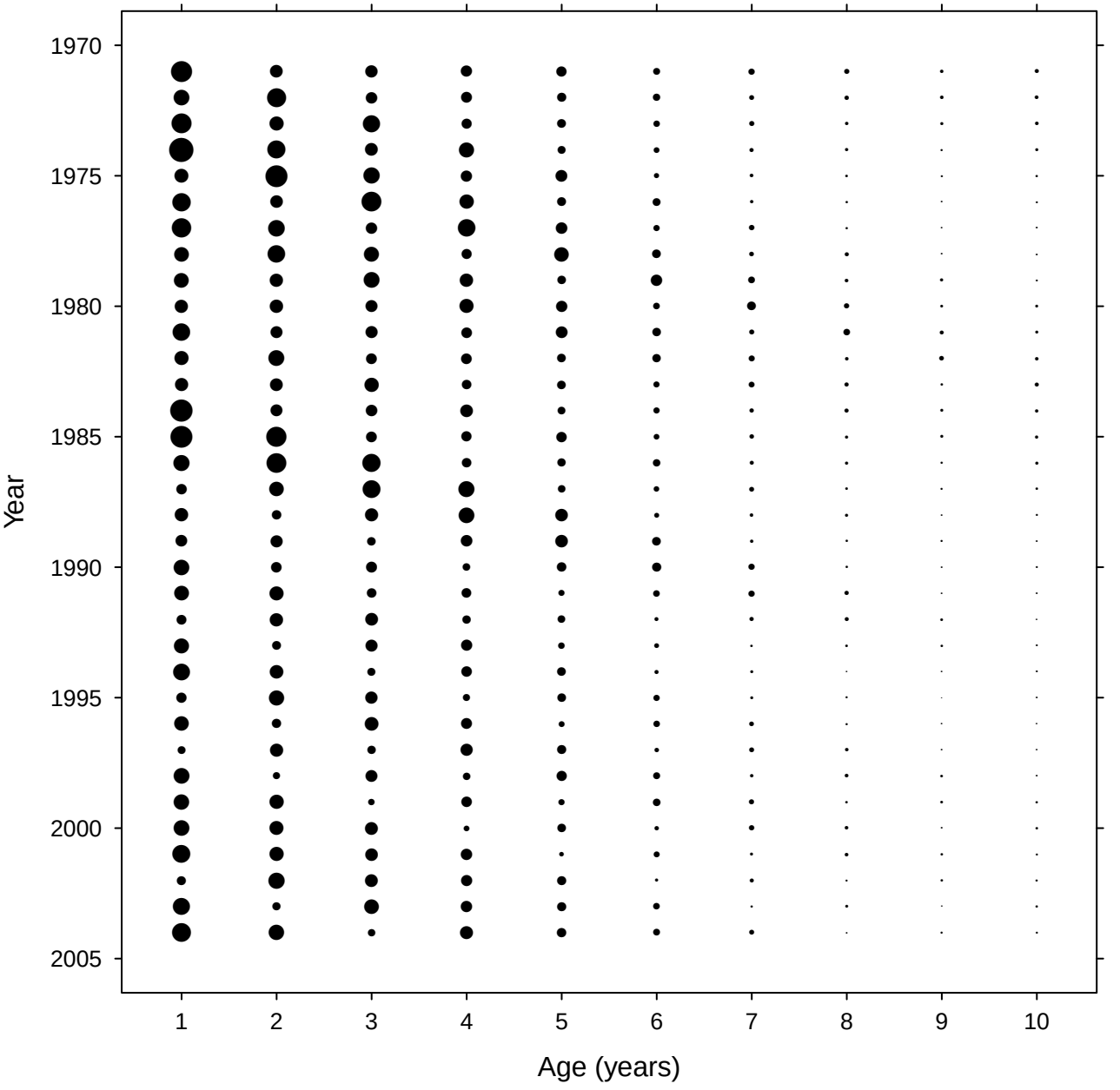

Female
Male
Length (cm)
Age
10
20
30
40
50
0
20
40
60
80

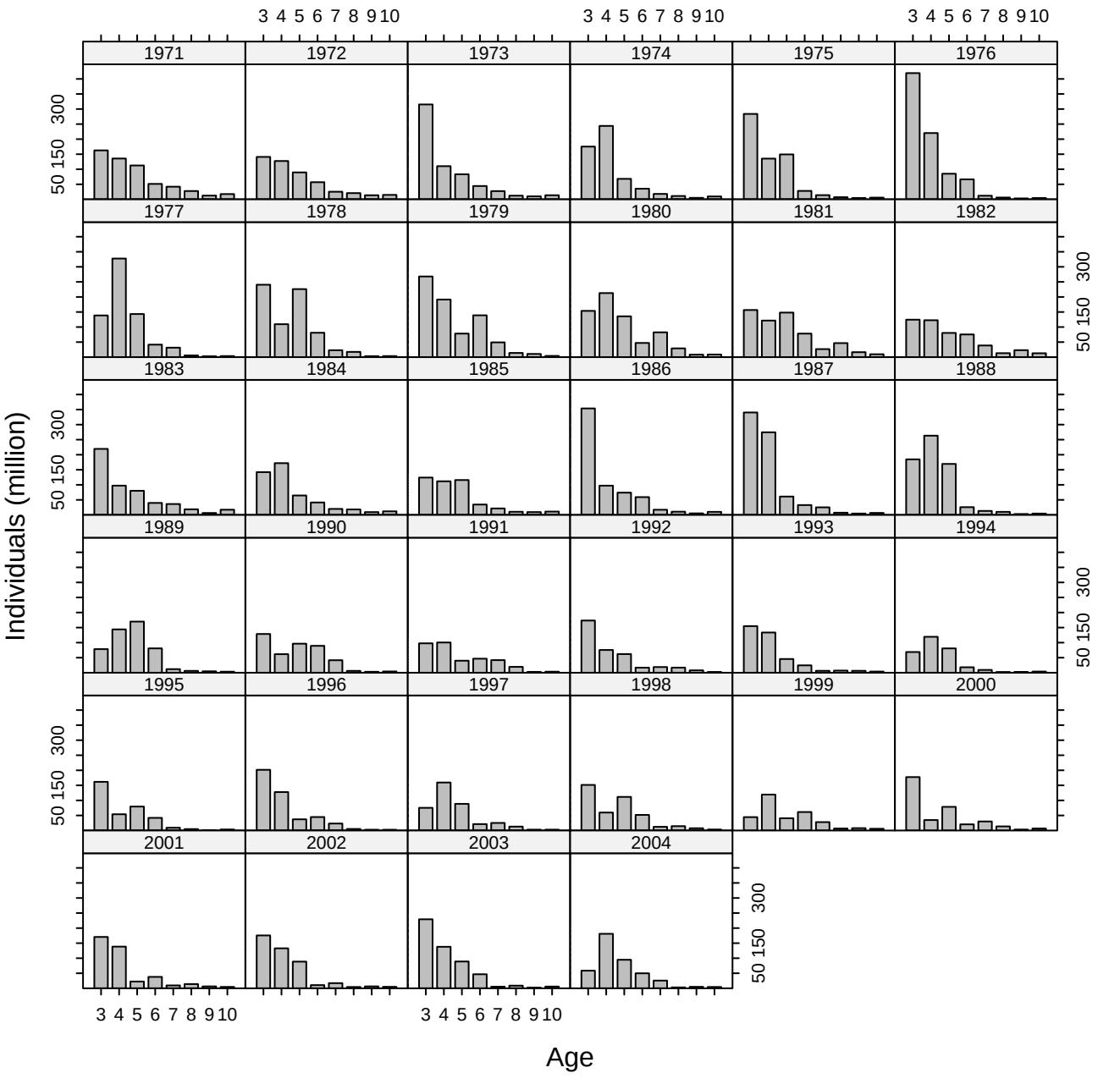

Length (cm)
50
40
30
20
10
0
20
40
60
80
Age
Female
Male

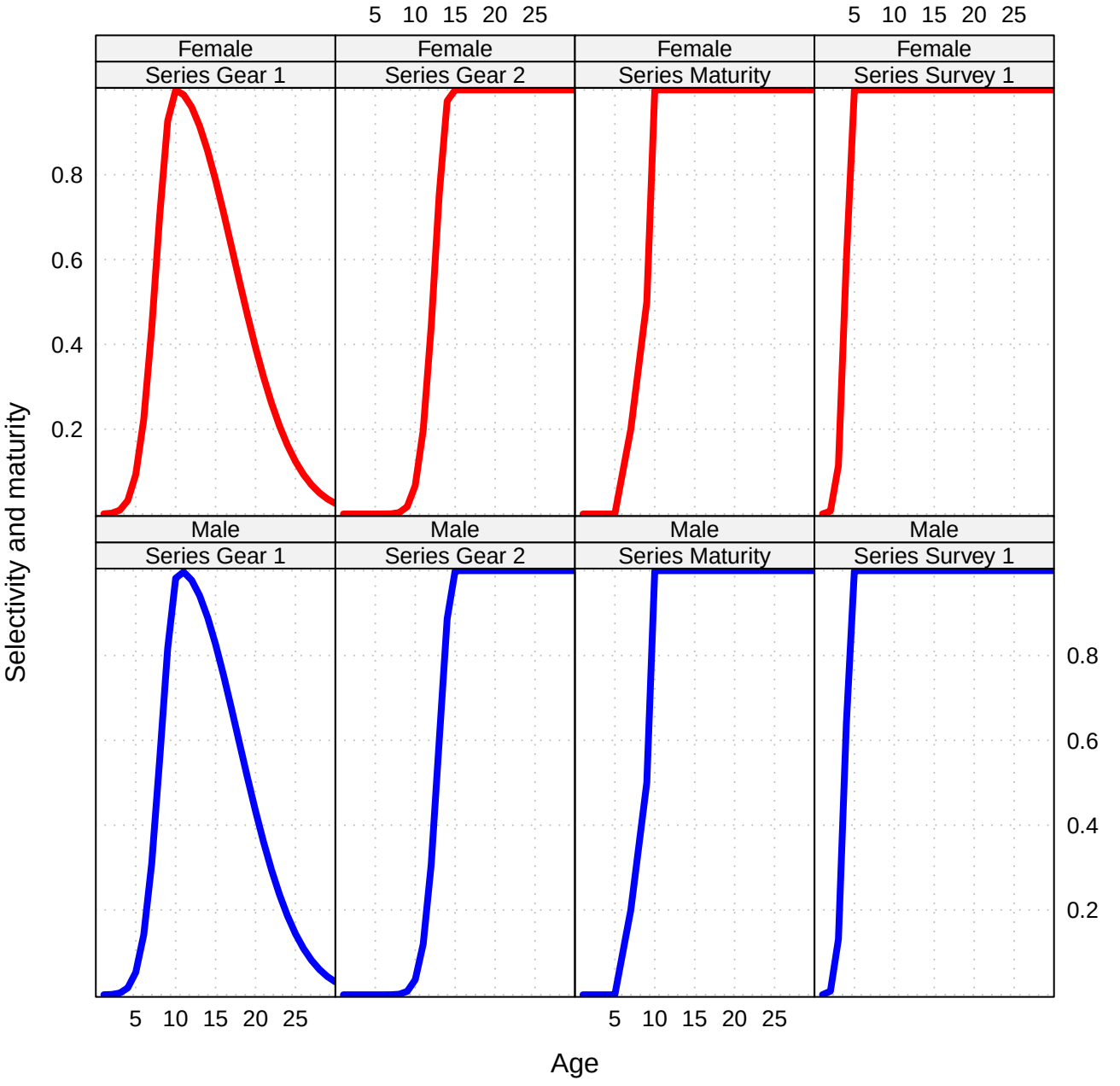

Length (cm)
50
40
30
20
10
0
20
40
60
80
Age
Female
Male

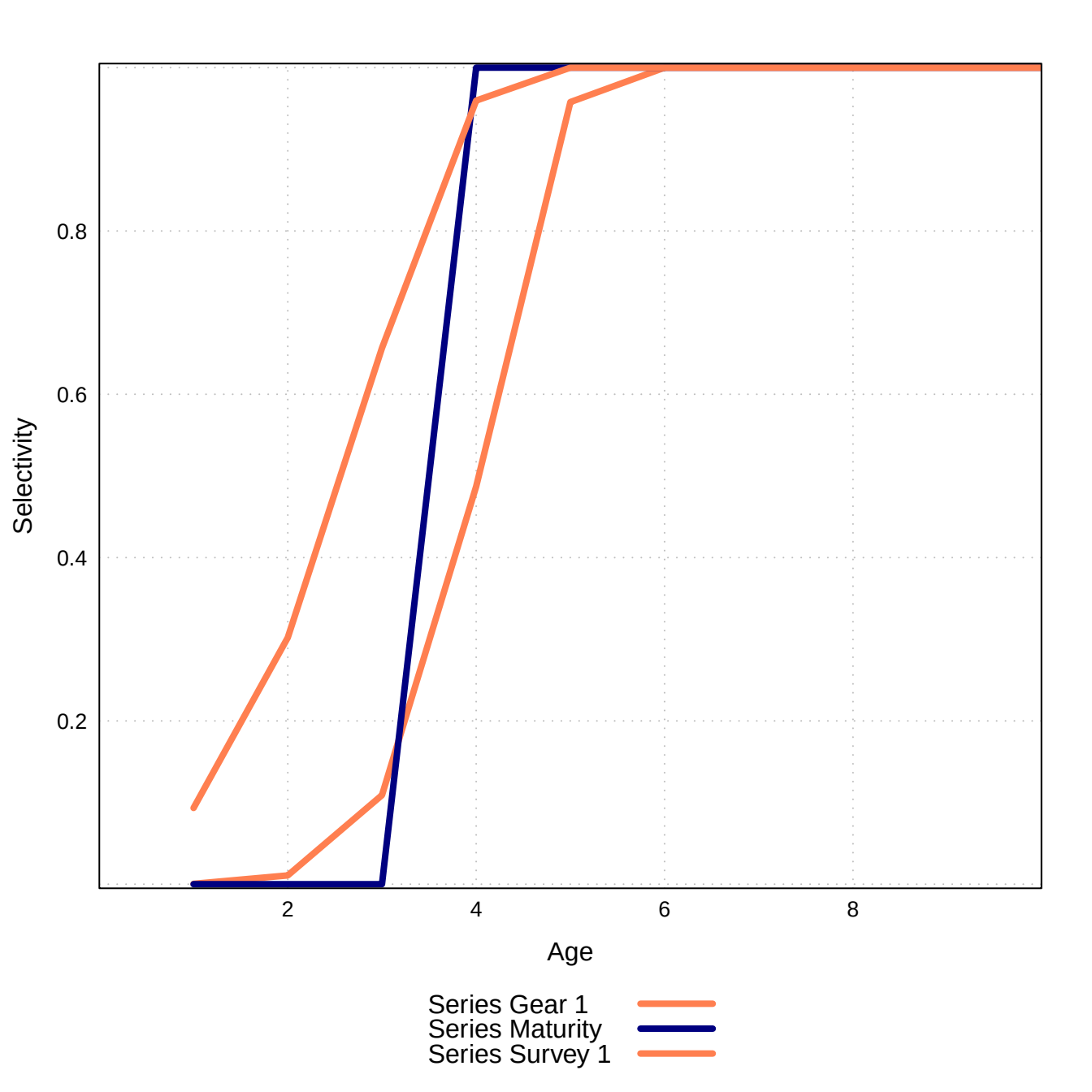

Initial population
Individuals (million)
50
100
200
300
400
1
2
3
4
5
6
7
8
9
10
Age (years)


Cohorts
One−year−olds (million)
50
150
250
350
450
550
650
1975
1980
1985
1990
1995
2000
Year


1970
1975
1980
1985
1990
1995
2000
2005
Year
1
2
3
4
5
6
7
8
9
10
Age (years)


1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
3 4 5 6 7 8 9 10
50 150 300
Individuals (million)
Age


Female
Series Gear 1
Female
Series Gear 2
Female
Series Maturity
Female
Series Survey 1
Male
Series Gear 1
Male
Series Gear 2
Male
Series Maturity
Male
Series Survey 1
Selectivity and maturity
0.2
0.4
0.6
0.8
5 10 15 20 25
Age


Selectivity
0.8
0.6
0.4
0.2
2
4
6
8
Age
Series Gear 1
Series Maturity
Series Survey 1