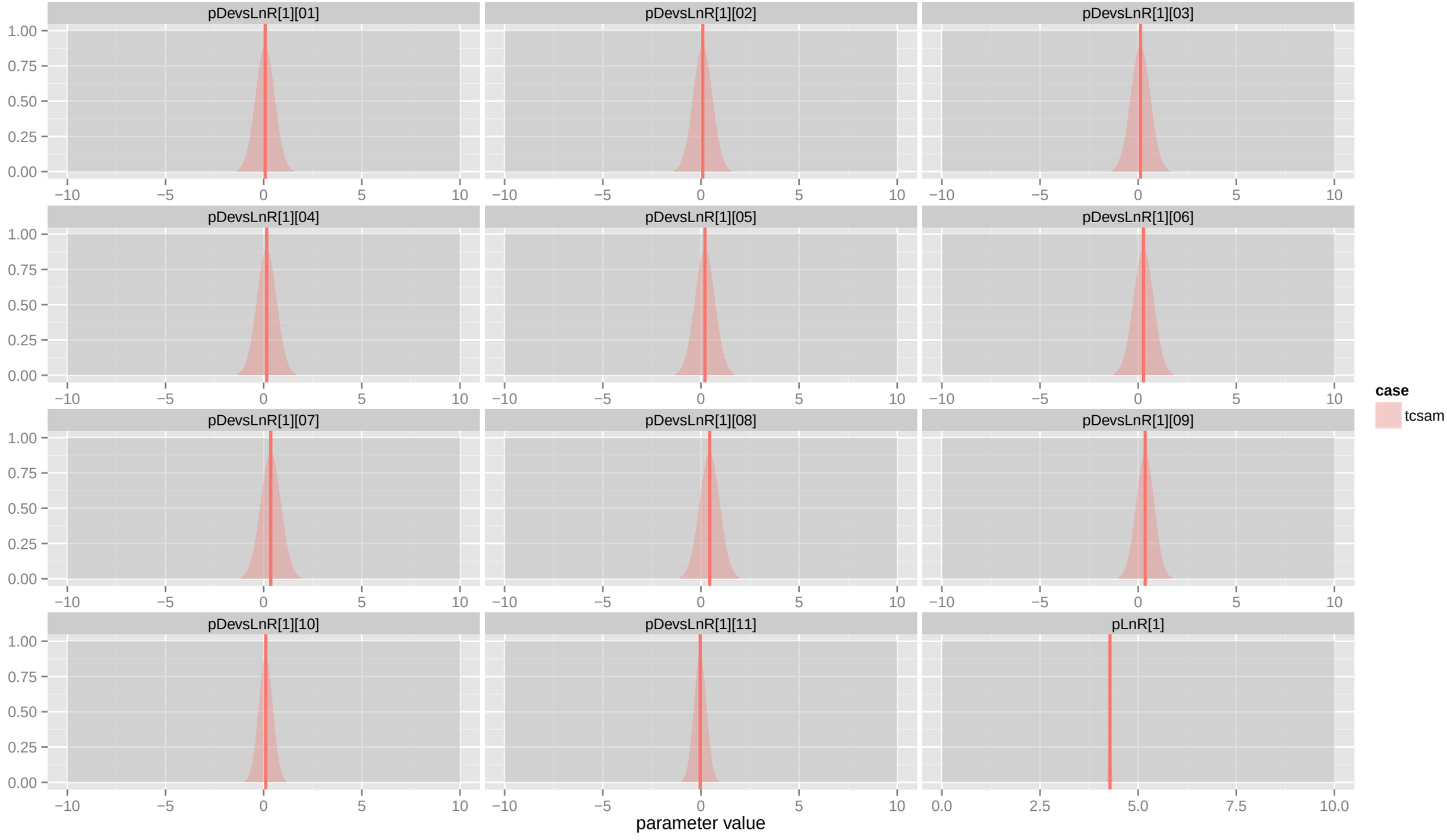
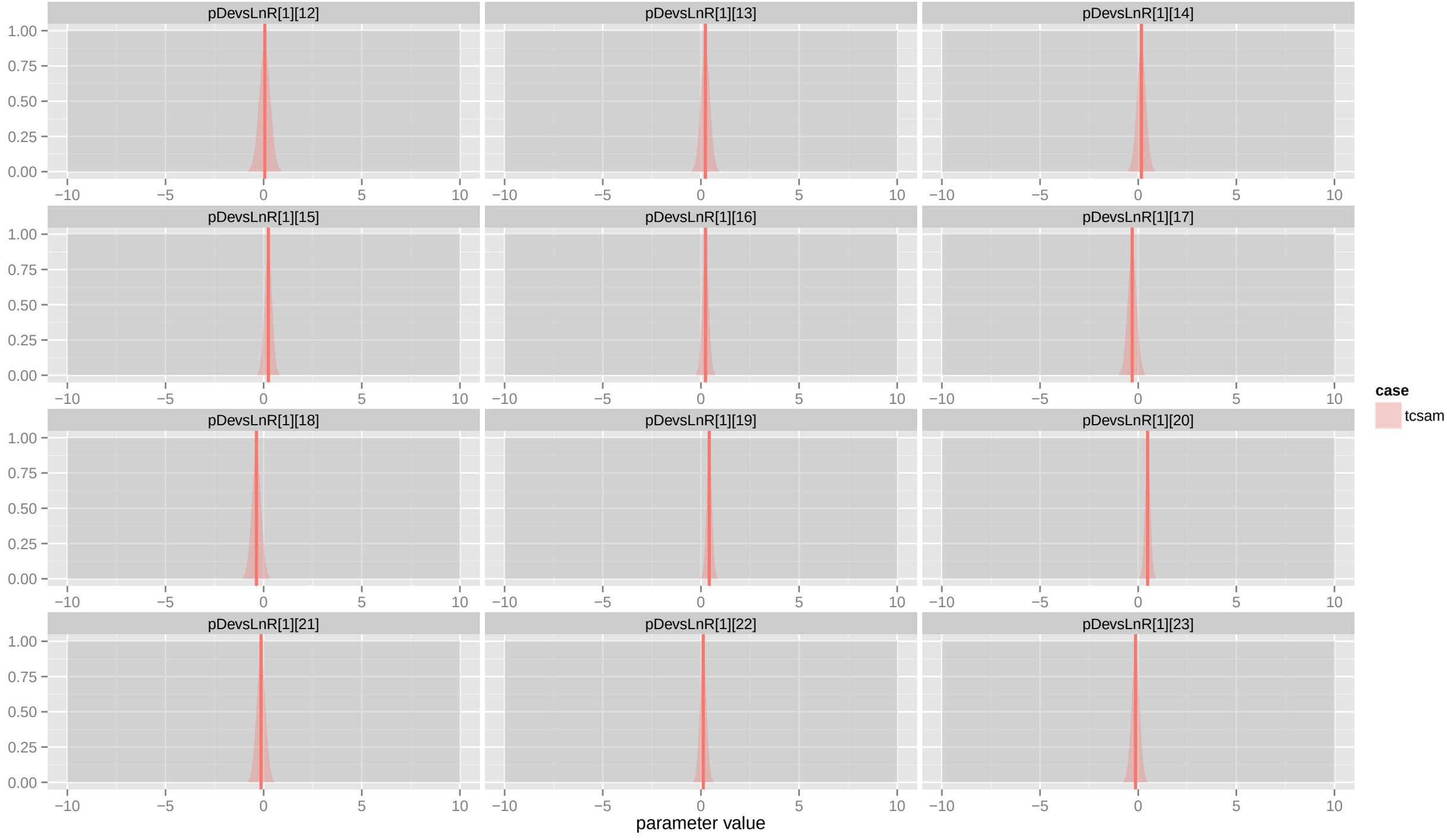
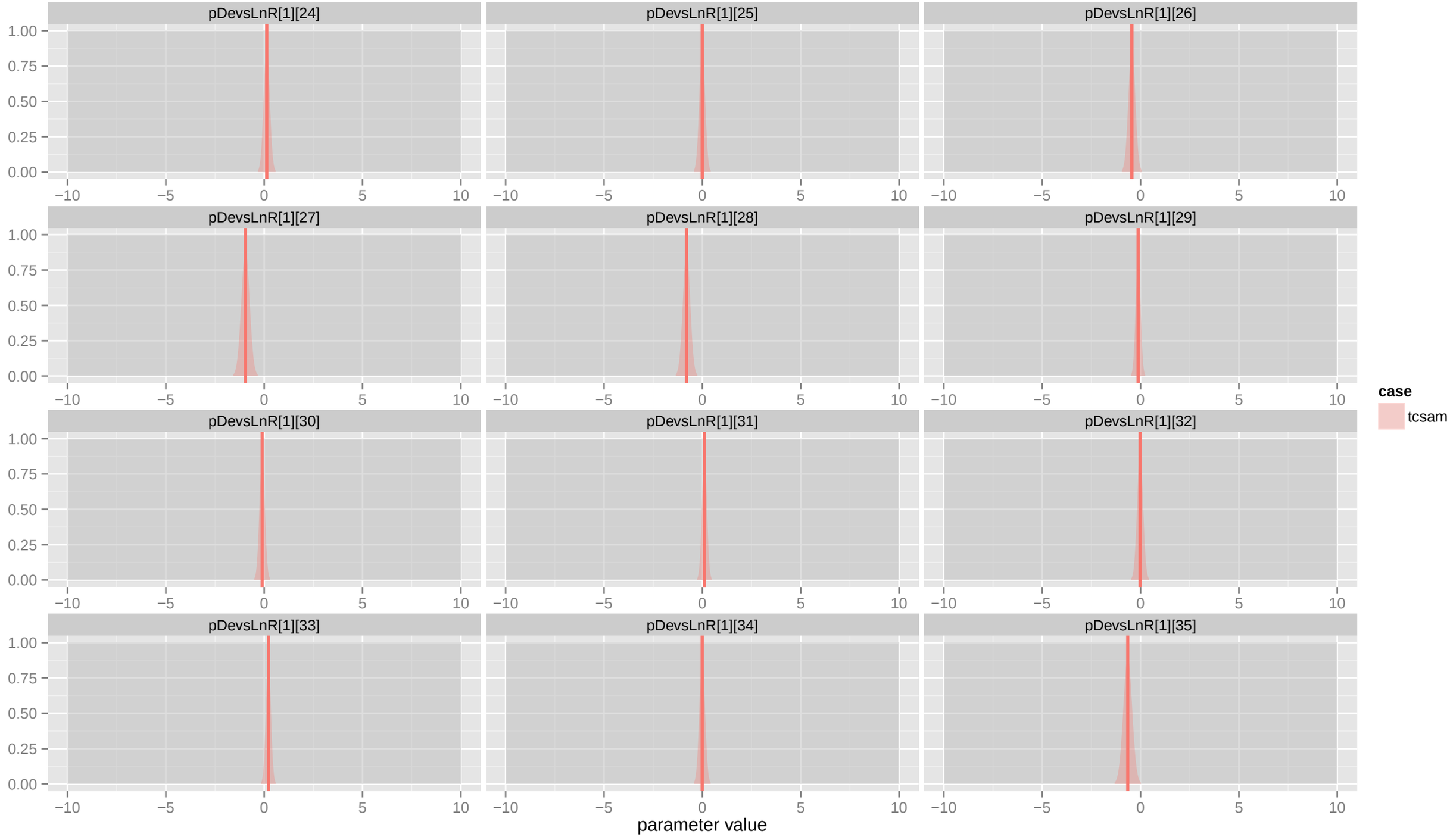

pDevsLnR[1][01]
pDevsLnR[1][02]
pDevsLnR[1][03]
pDevsLnR[1][04]
pDevsLnR[1][05]
pDevsLnR[1][06]
pDevsLnR[1][07]
pDevsLnR[1][08]
pDevsLnR[1][09]
pDevsLnR[1][10]
pDevsLnR[1][11]
pLnR[1]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
0.0
2.5
5.0
7.5
10.0
parameter value
case
tcsam


pDevsLnR[1][12]
pDevsLnR[1][13]
pDevsLnR[1][14]
pDevsLnR[1][15]
pDevsLnR[1][16]
pDevsLnR[1][17]
pDevsLnR[1][18]
pDevsLnR[1][19]
pDevsLnR[1][20]
pDevsLnR[1][21]
pDevsLnR[1][22]
pDevsLnR[1][23]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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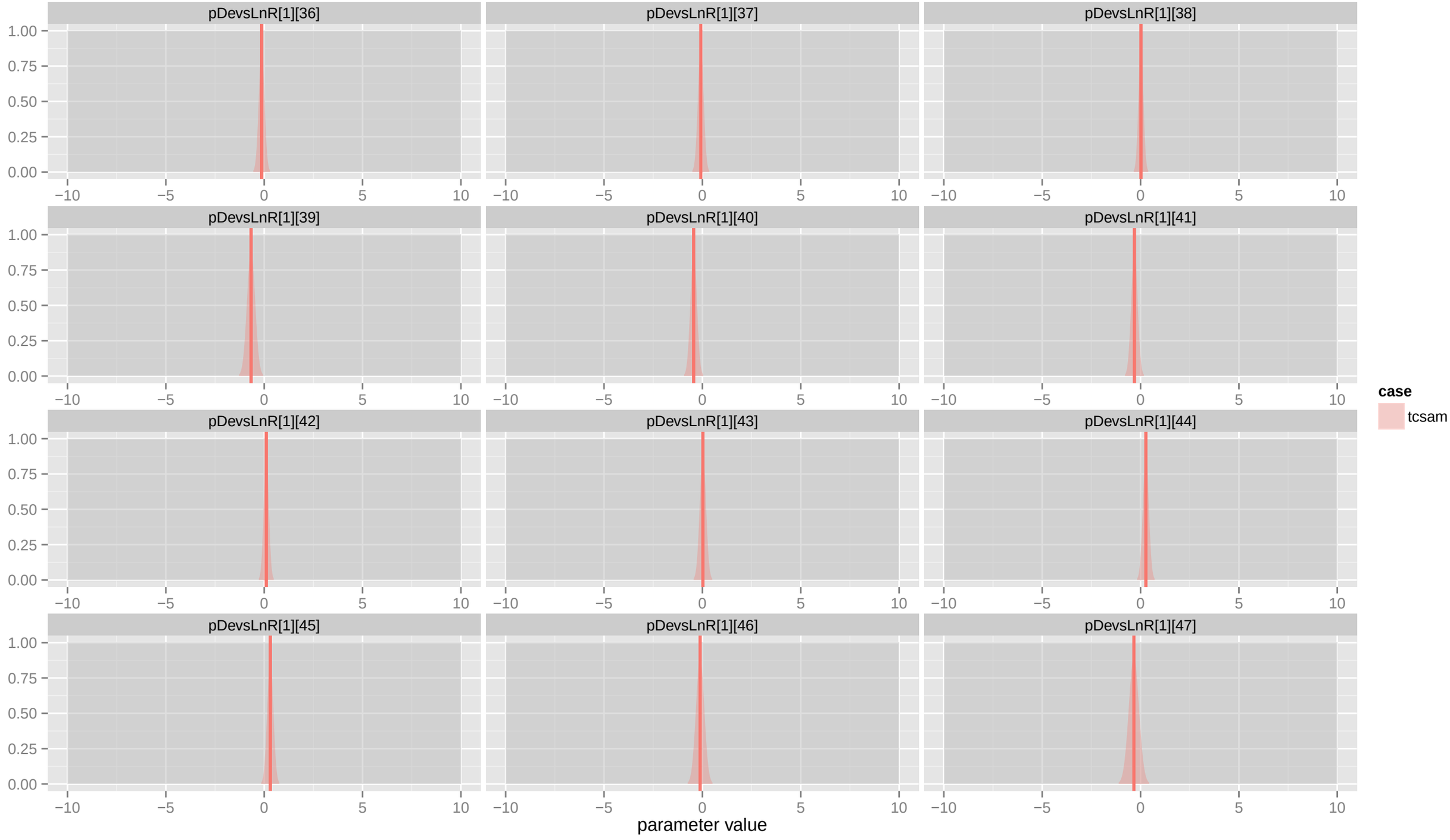
pDevsLnR[1][26]
pDevsLnR[1][27]
pDevsLnR[1][28]
pDevsLnR[1][29]
pDevsLnR[1][30]
pDevsLnR[1][31]
pDevsLnR[1][32]
pDevsLnR[1][33]
pDevsLnR[1][34]
pDevsLnR[1][35]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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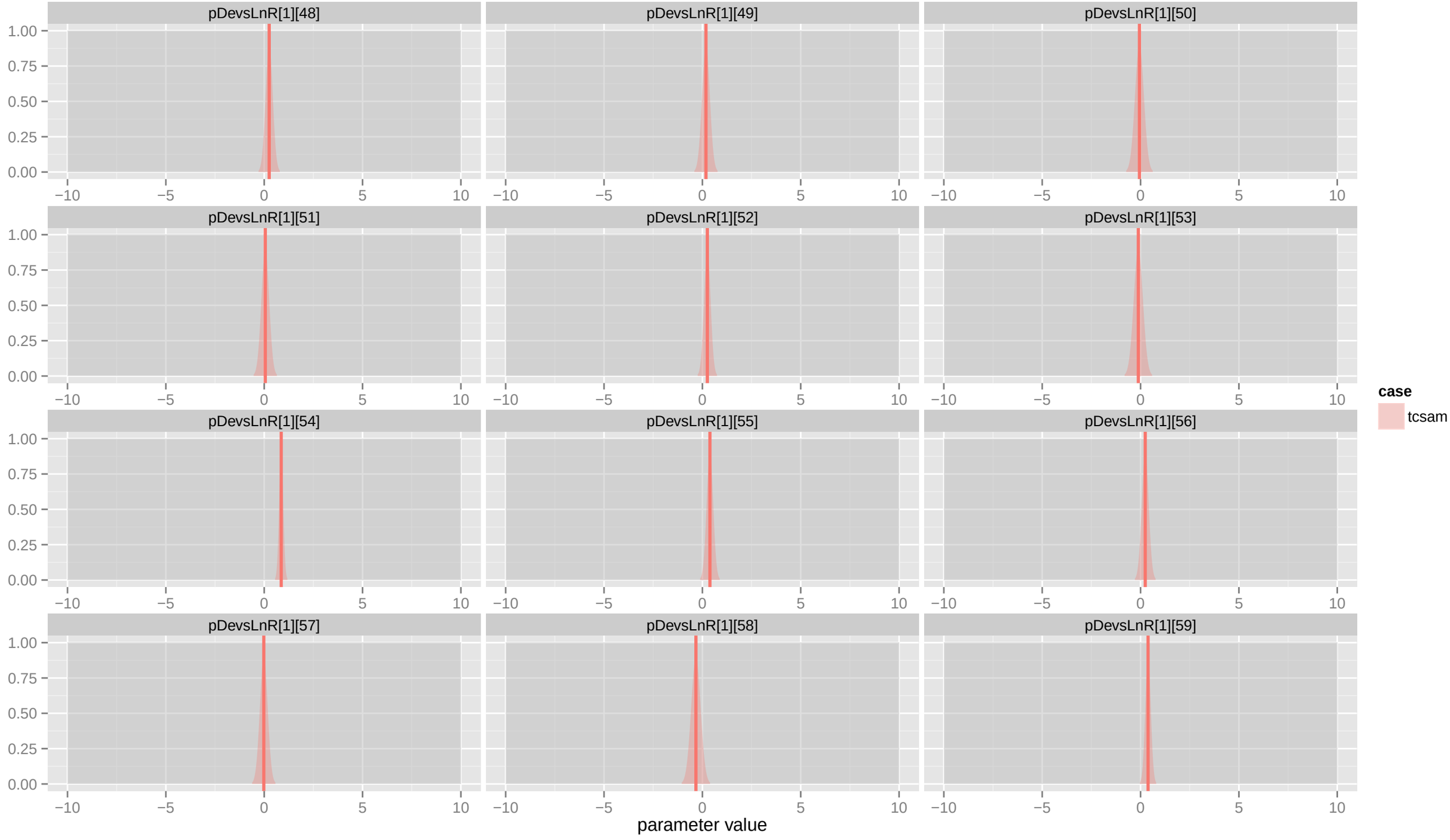
pDevsLnR[1][37]
pDevsLnR[1][38]
pDevsLnR[1][39]
pDevsLnR[1][40]
pDevsLnR[1][41]
pDevsLnR[1][42]
pDevsLnR[1][43]
pDevsLnR[1][44]
pDevsLnR[1][45]
pDevsLnR[1][46]
pDevsLnR[1][47]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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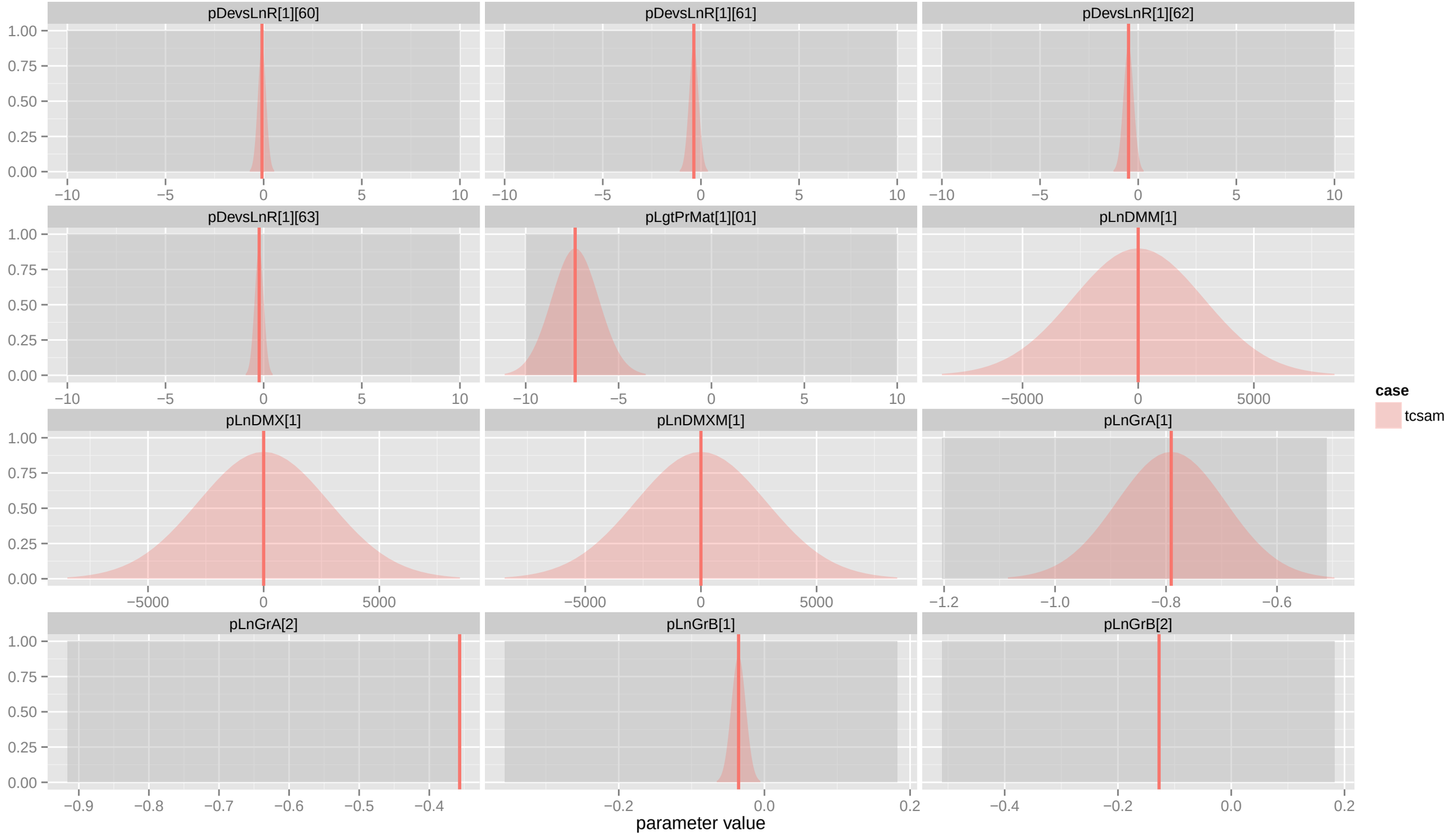
pDevsLnR[1][49]
pDevsLnR[1][50]
pDevsLnR[1][51]
pDevsLnR[1][52]
pDevsLnR[1][53]
pDevsLnR[1][54]
pDevsLnR[1][55]
pDevsLnR[1][56]
pDevsLnR[1][57]
pDevsLnR[1][58]
pDevsLnR[1][59]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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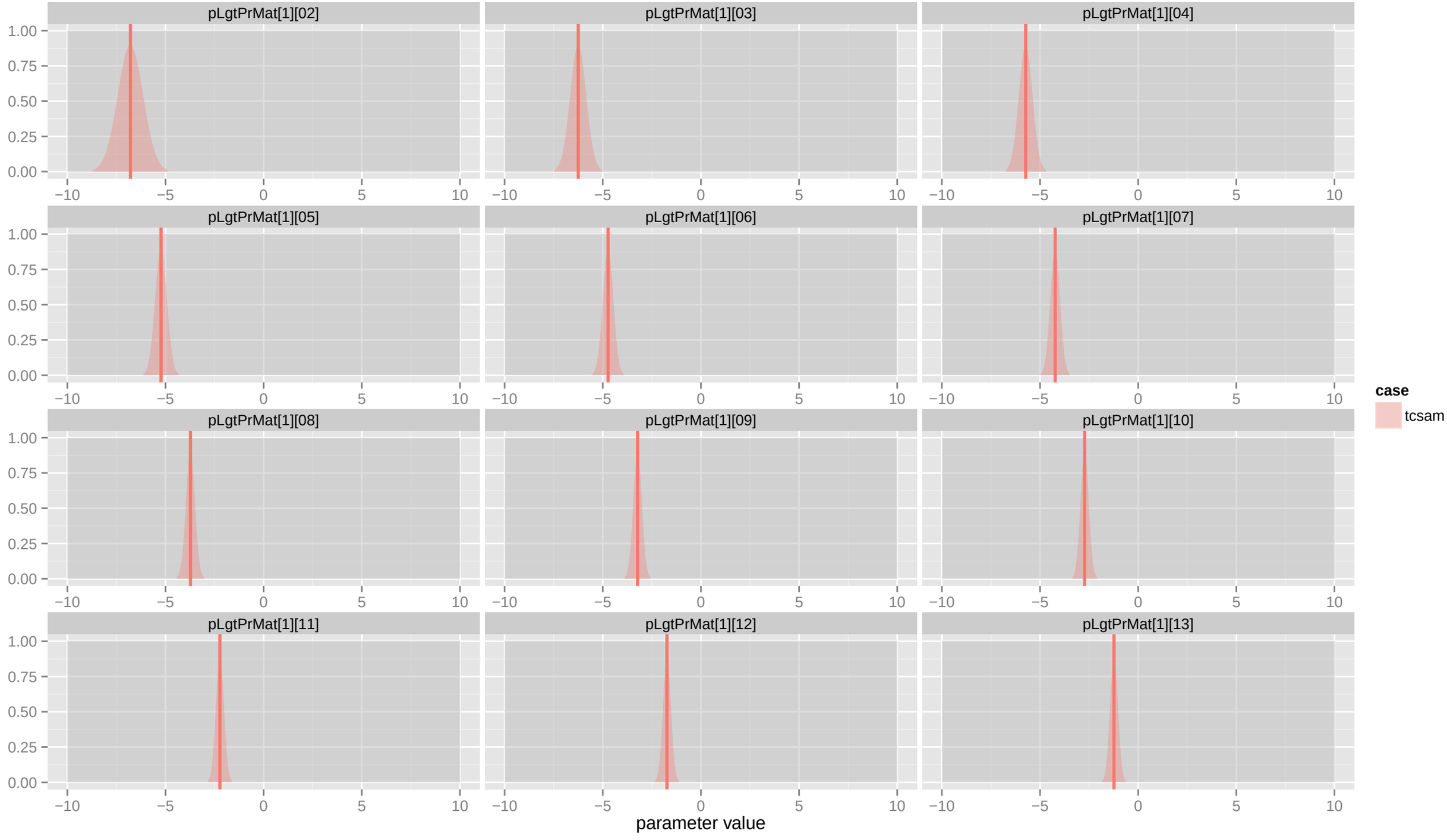
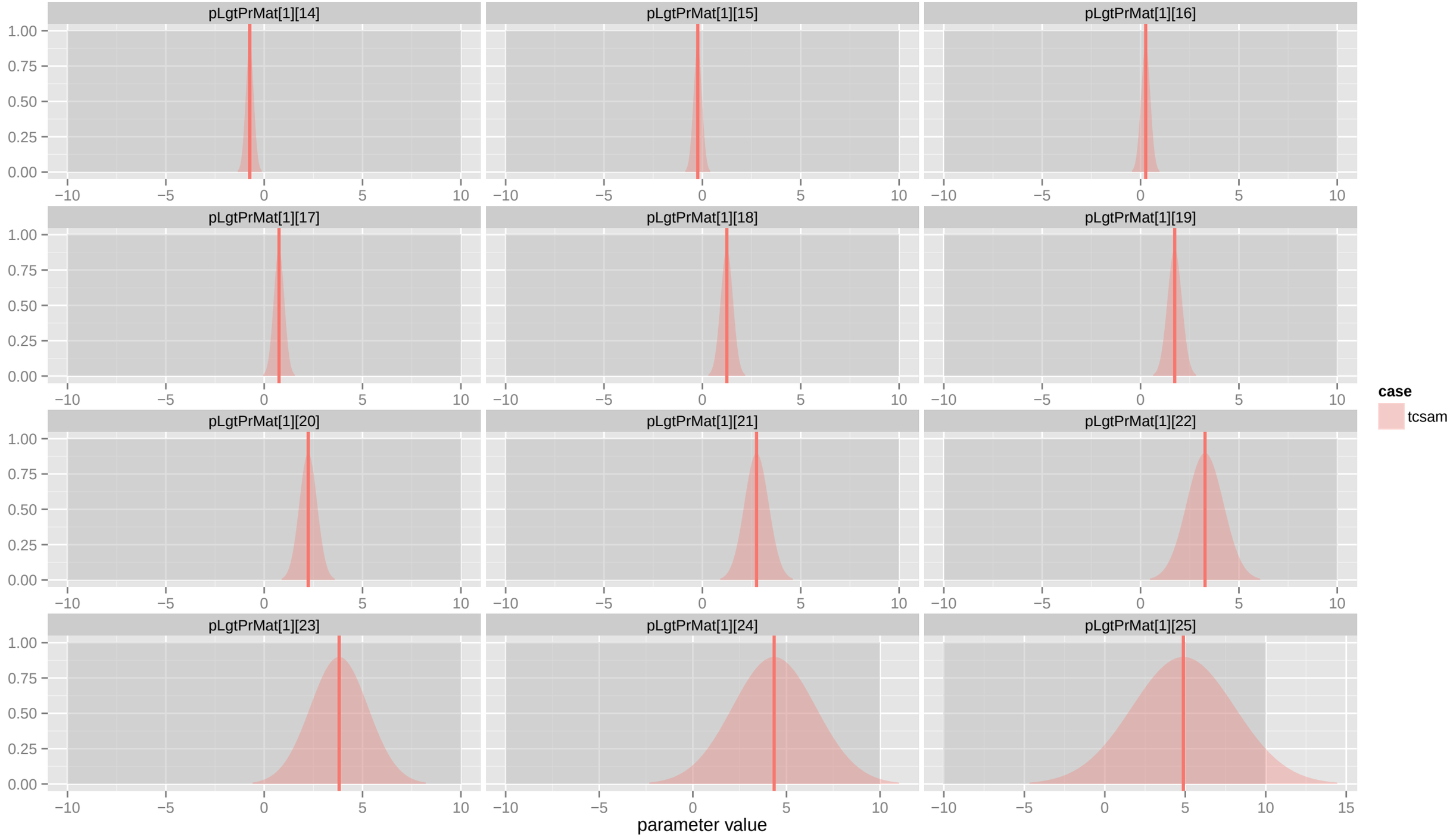
pDevsLnR[1][61]
pDevsLnR[1][62]
pDevsLnR[1][63]
pLgtPrMat[1][01]
pLnDMM[1]
pLnDMX[1]
pLnDMXM[1]
pLnGrA[1]
pLnGrA[2]
pLnGrB[1]
pLnGrB[2]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
−5000
5000
−1.2
−1.0
−0.8
−0.6
−0.9
−0.7
−0.4
−0.2
0.0
0.2
parameter value
case
tcsam


pLgtPrMat[1][02]
pLgtPrMat[1][03]
pLgtPrMat[1][04]
pLgtPrMat[1][05]
pLgtPrMat[1][06]
pLgtPrMat[1][07]
pLgtPrMat[1][08]
pLgtPrMat[1][09]
pLgtPrMat[1][10]
pLgtPrMat[1][11]
pLgtPrMat[1][12]
pLgtPrMat[1][13]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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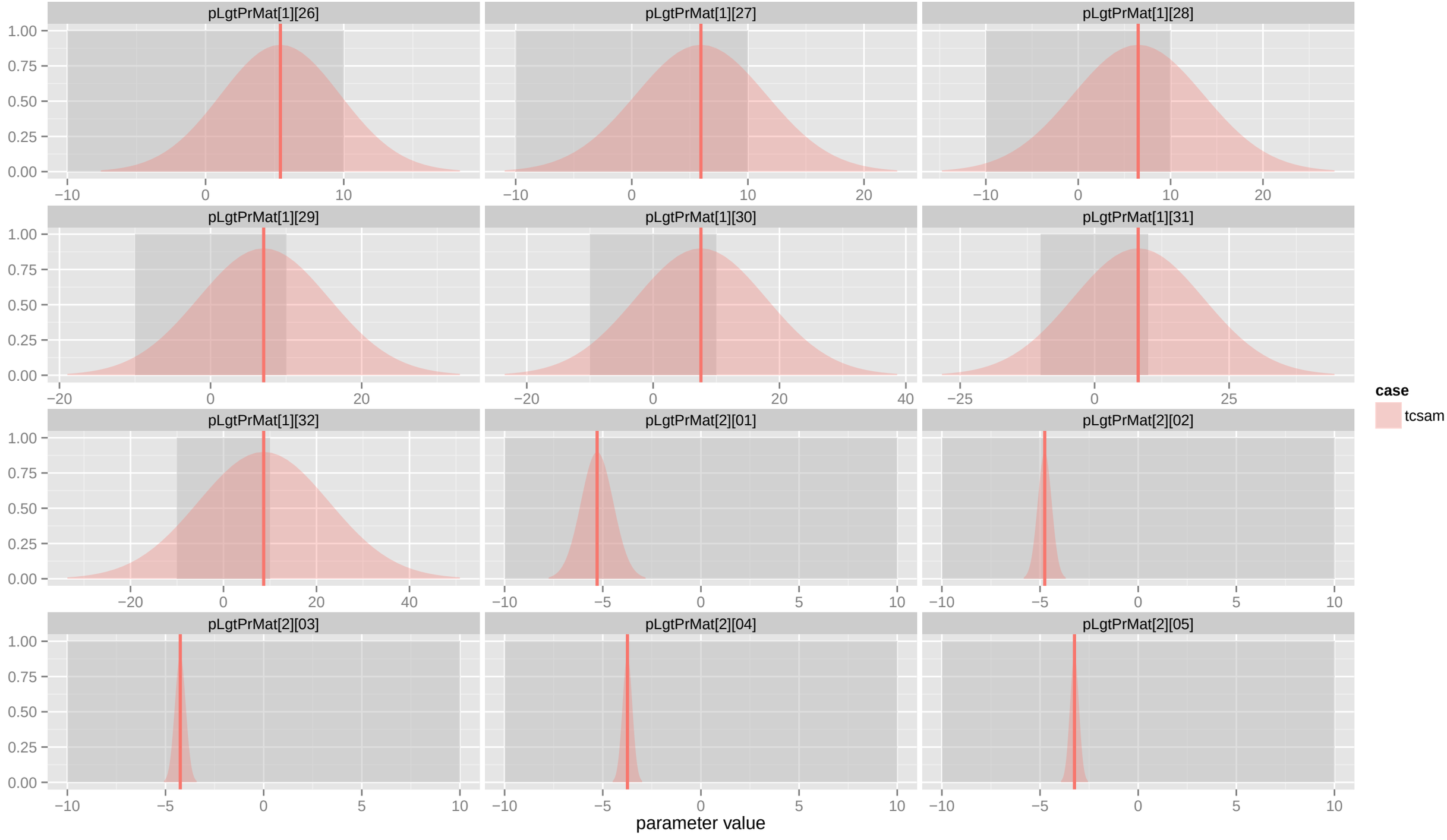
pLgtPrMat[1][15]
pLgtPrMat[1][16]
pLgtPrMat[1][17]
pLgtPrMat[1][18]
pLgtPrMat[1][19]
pLgtPrMat[1][20]
pLgtPrMat[1][21]
pLgtPrMat[1][22]
pLgtPrMat[1][23]
pLgtPrMat[1][24]
pLgtPrMat[1][25]
0.00
0.25
0.50
0.75
1.00
−10
−5
0
5
10
15
parameter value
case
tcsam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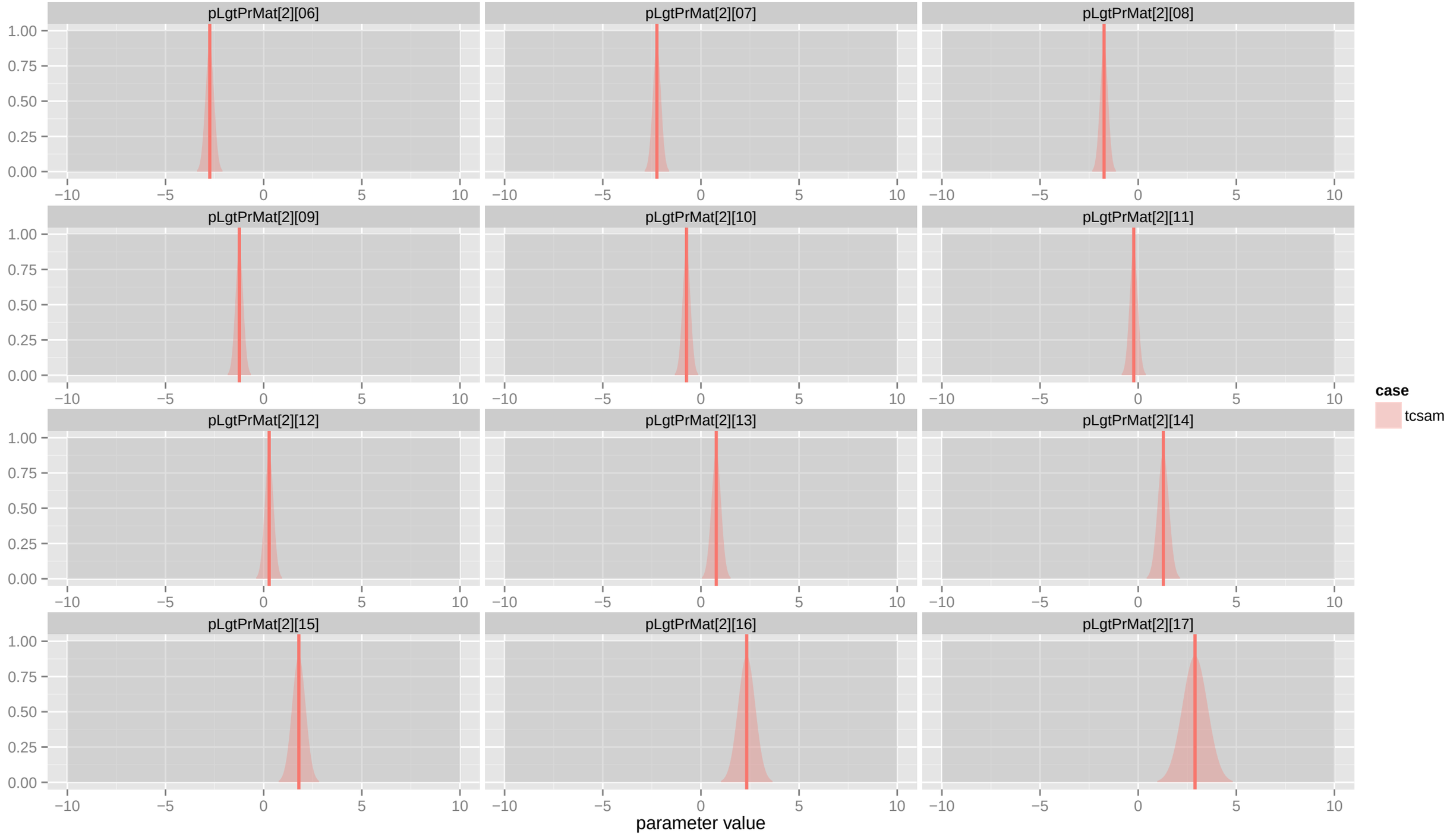
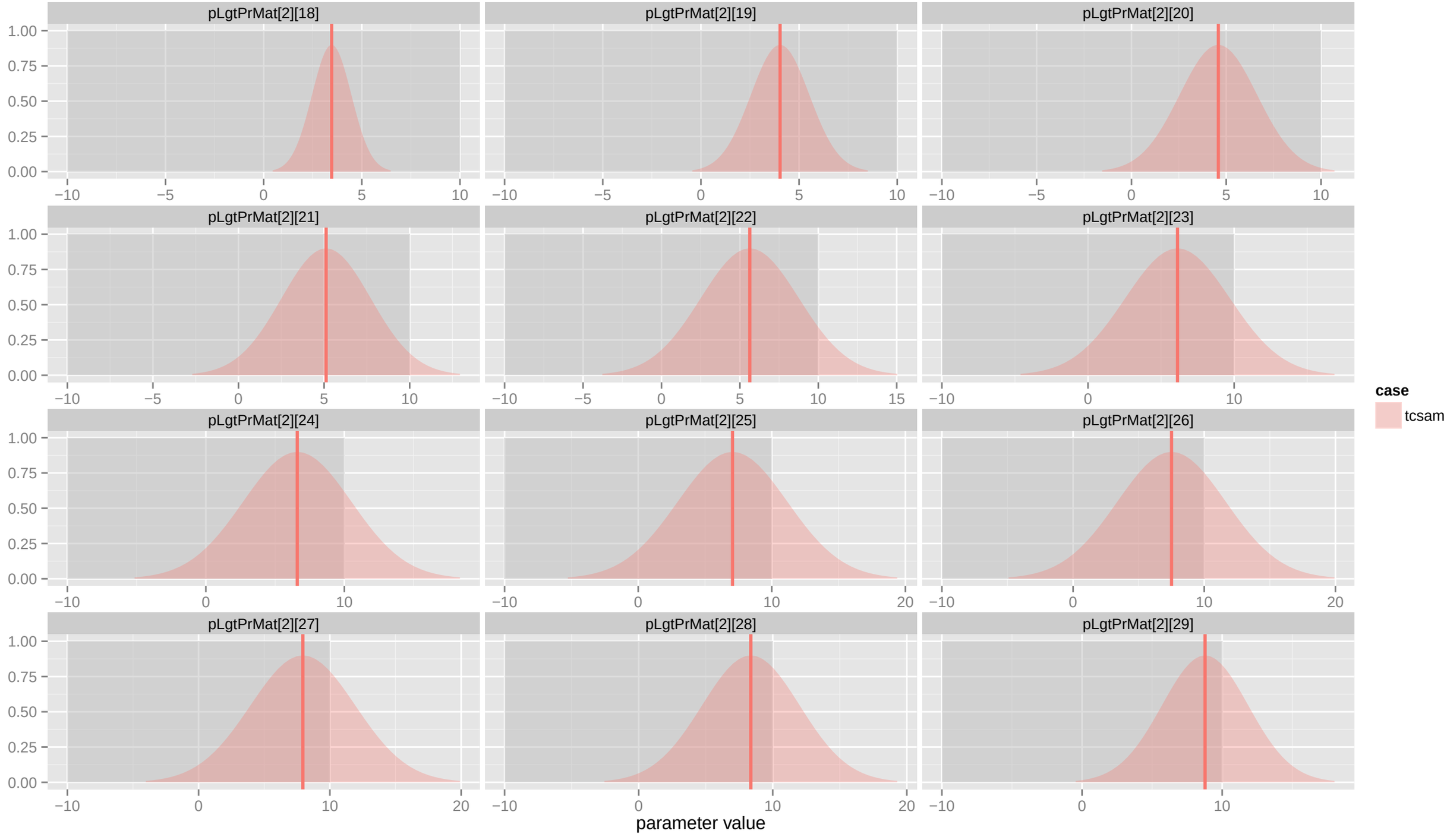
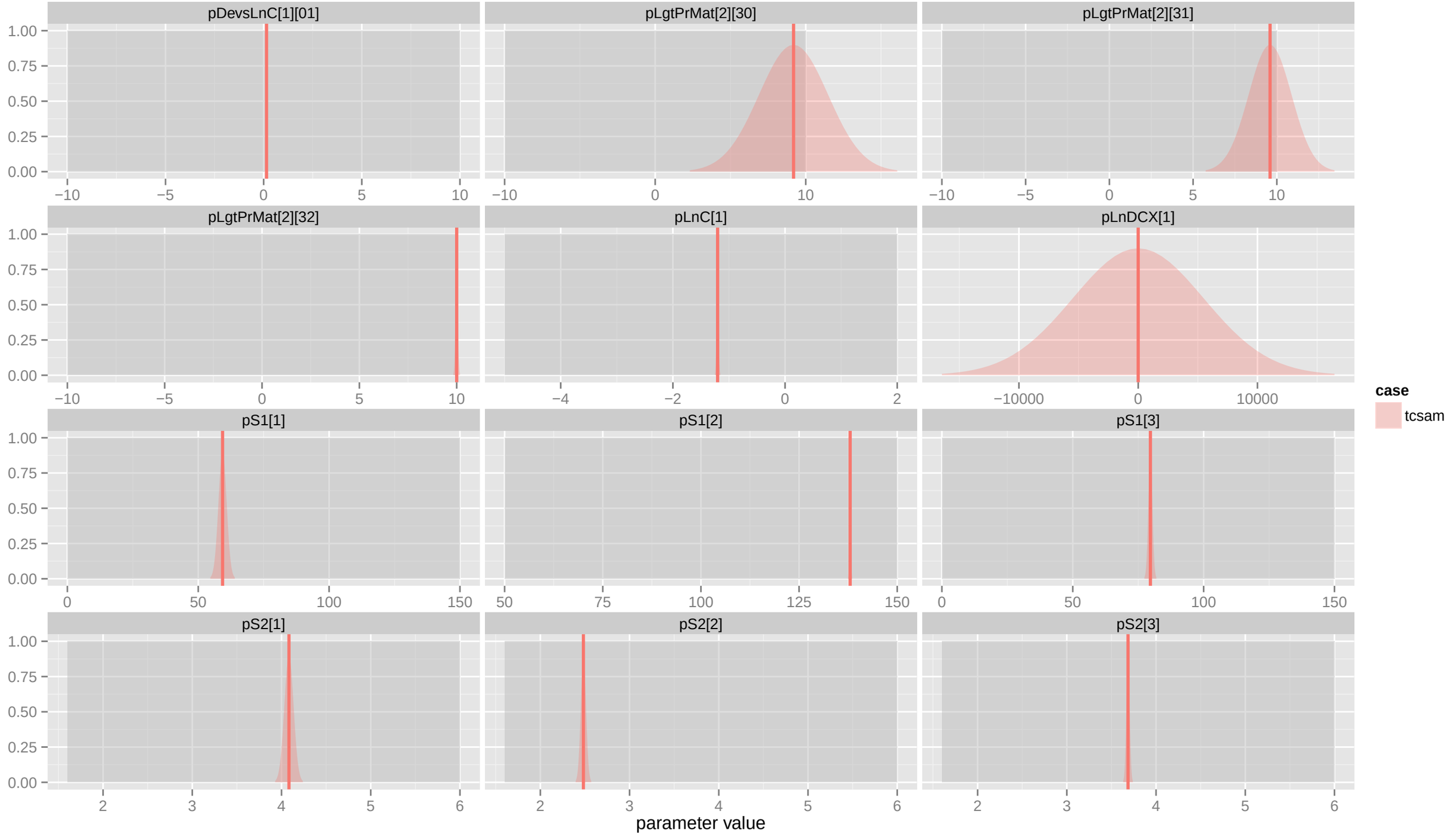
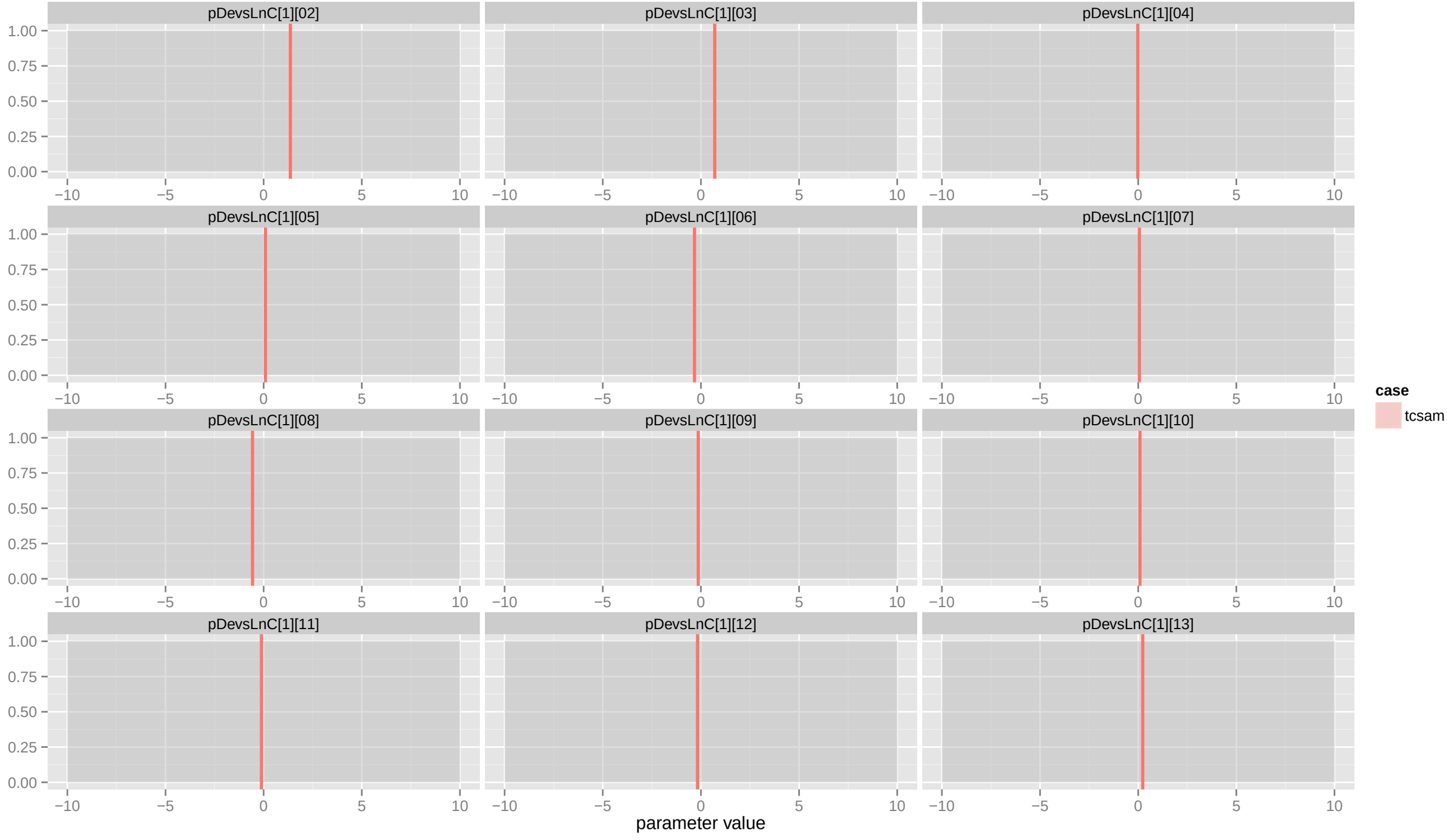
pLgtPrMat[1][27]
pLgtPrMat[1][28]
pLgtPrMat[1][29]
pLgtPrMat[1][30]
pLgtPrMat[1][31]
pLgtPrMat[1][32]
pLgtPrMat[2][01]
pLgtPrMat[2][02]
pLgtPrMat[2][03]
pLgtPrMat[2][04]
pLgtPrMat[2][05]
1.00
0.75
0.50
0.25
0.00
parameter value
case
tcsam


pLgtPrMat[2][06]
pLgtPrMat[2][07]
pLgtPrMat[2][08]
pLgtPrMat[2][09]
pLgtPrMat[2][10]
pLgtPrMat[2][11]
pLgtPrMat[2][12]
pLgtPrMat[2][13]
pLgtPrMat[2][14]
pLgtPrMat[2][15]
pLgtPrMat[2][16]
pLgtPrMat[2][17]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam


pLgtPrMat[2][18]
pLgtPrMat[2][19]
pLgtPrMat[2][20]
pLgtPrMat[2][21]
pLgtPrMat[2][22]
pLgtPrMat[2][23]
pLgtPrMat[2][24]
pLgtPrMat[2][25]
pLgtPrMat[2][26]
pLgtPrMat[2][27]
pLgtPrMat[2][28]
pLgtPrMat[2][29]
1.00
0.75
0.50
0.25
0.00
parameter value
case
tcsam


pDevsLnC[1][01]
pLgtPrMat[2][30]
pLgtPrMat[2][31]
pLgtPrMat[2][32]
pLnC[1]
pLnDCX[1]
pS1[1]
pS1[2]
pS1[3]
pS2[1]
pS2[2]
pS2[3]
1.00
0.75
0.50
0.25
0.00
parameter value
case
tcsam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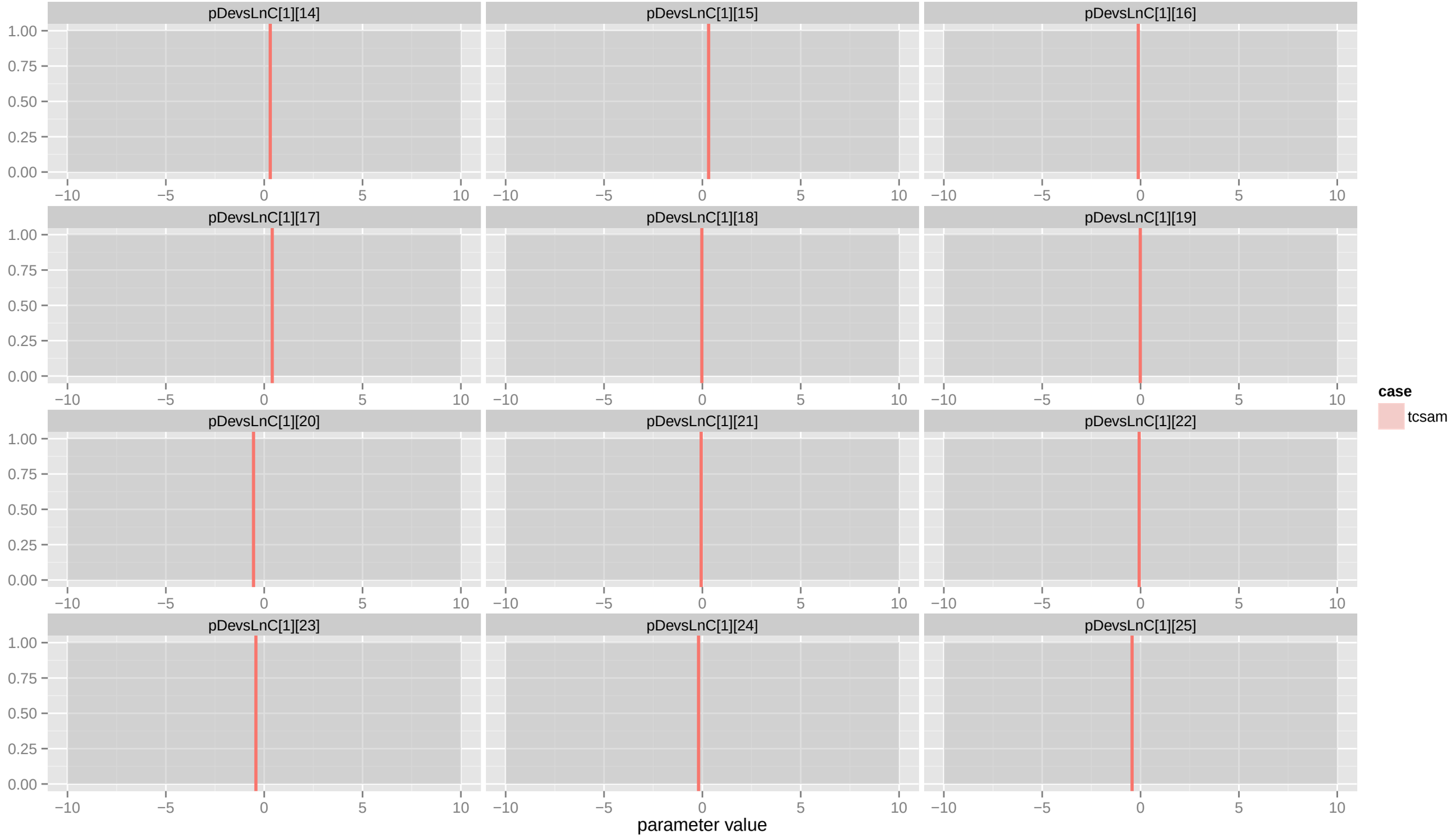
pDevsLnC[1][03]
pDevsLnC[1][04]
pDevsLnC[1][05]
pDevsLnC[1][06]
pDevsLnC[1][07]
pDevsLnC[1][08]
pDevsLnC[1][09]
pDevsLnC[1][10]
pDevsLnC[1][11]
pDevsLnC[1][12]
pDevsLnC[1][13]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam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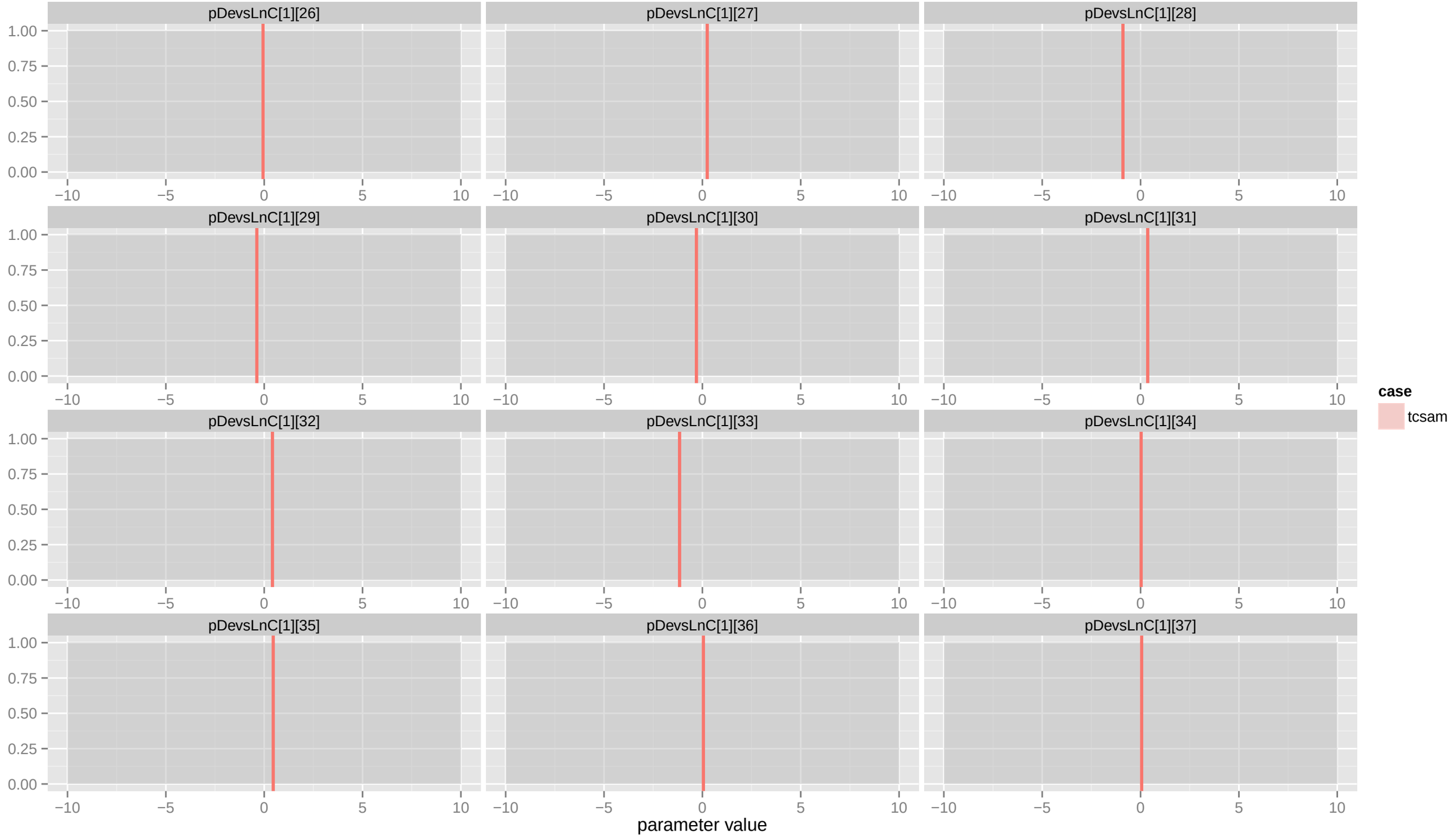
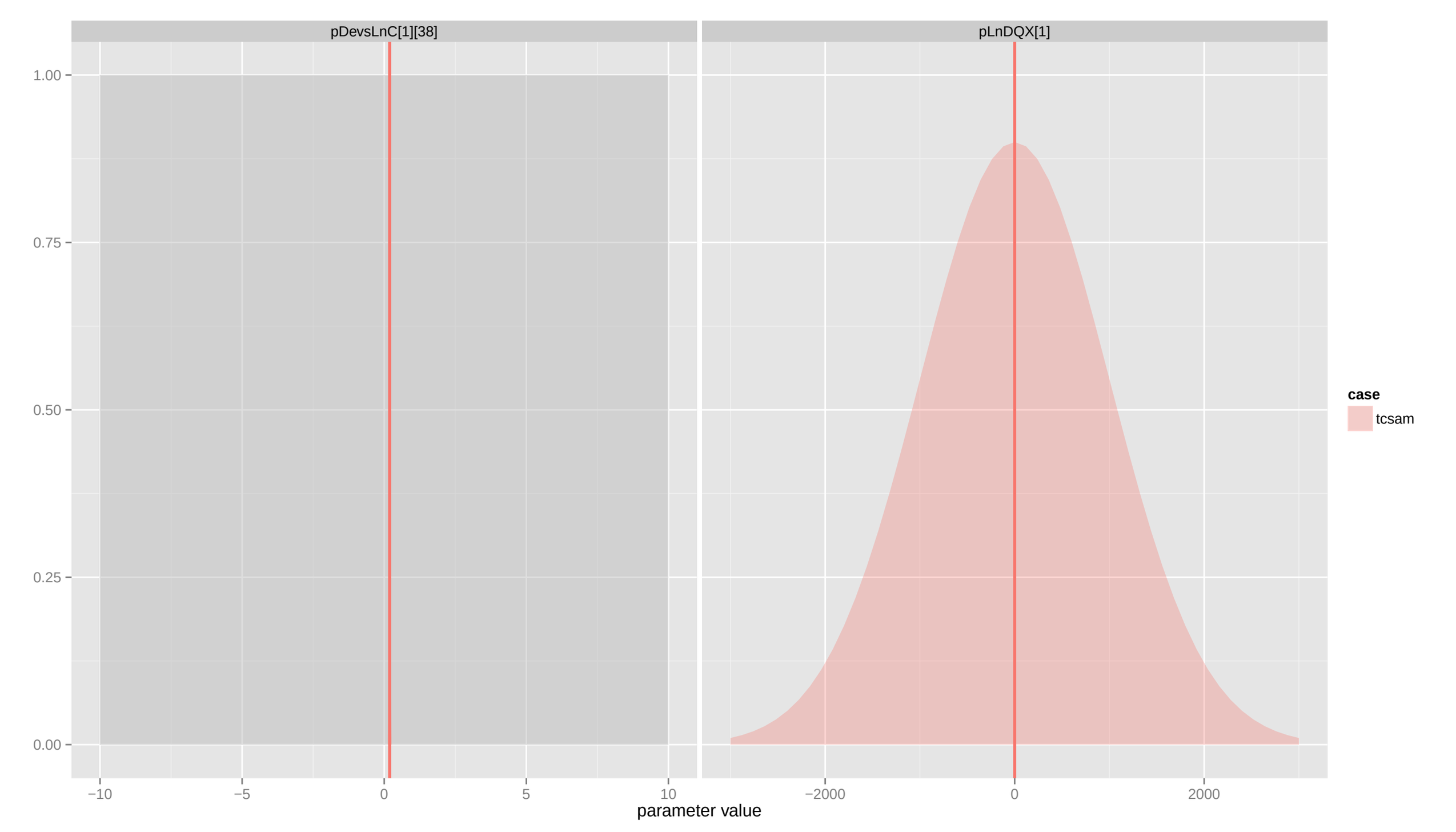
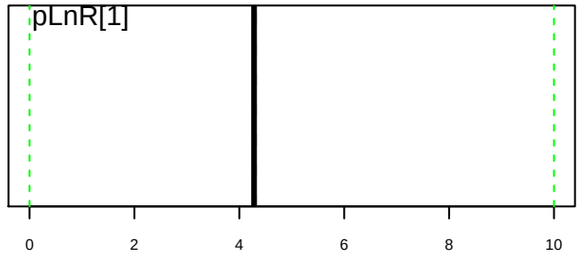
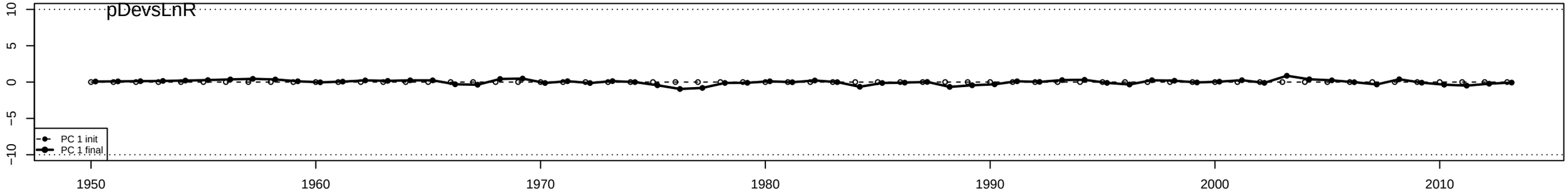
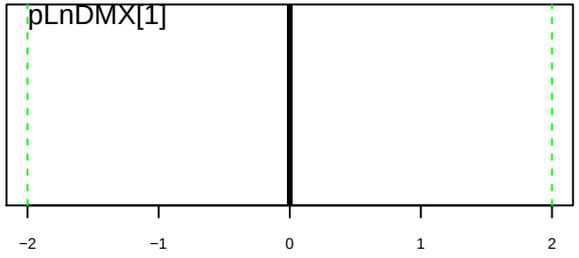
pDevsLnC[1][15]
pDevsLnC[1][16]
pDevsLnC[1][17]
pDevsLnC[1][18]
pDevsLnC[1][19]
pDevsLnC[1][20]
pDevsLnC[1][21]
pDevsLnC[1][22]
pDevsLnC[1][23]
pDevsLnC[1][24]
pDevsLnC[1][25]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam

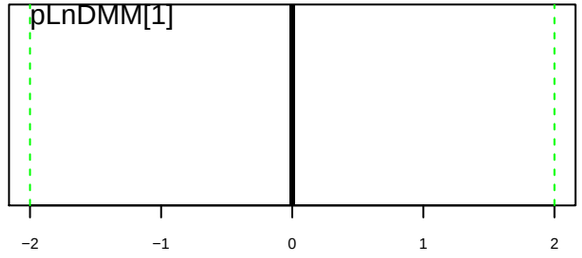

pDevsLnC[1][26]
pDevsLnC[1][27]
pDevsLnC[1][28]
pDevsLnC[1][29]
pDevsLnC[1][30]
pDevsLnC[1][31]
pDevsLnC[1][32]
pDevsLnC[1][33]
pDevsLnC[1][34]
pDevsLnC[1][35]
pDevsLnC[1][36]
pDevsLnC[1][37]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
parameter value
case
tcsam

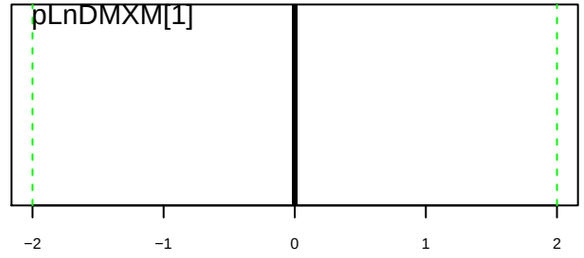

pDevsLnC[1][38]
pLnDQX[1]
1.00
0.75
0.50
0.25
0.00
−10
−5
0
5
10
−2000
0
2000
parameter value
case
tcsam

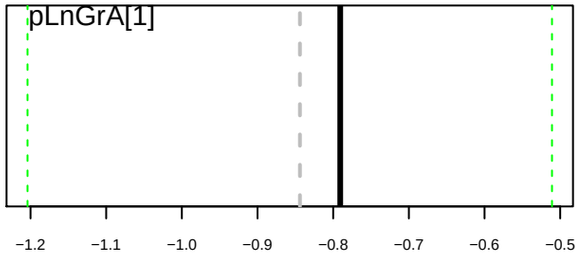

pLnR[1]
0
2
4
6
8
10

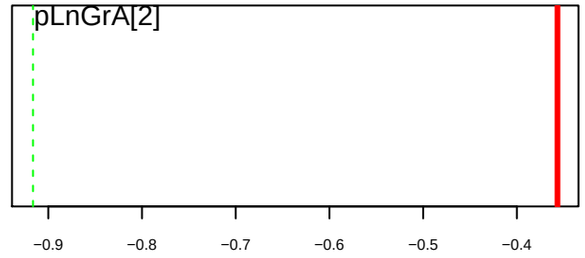

pDevsLnR
10
5
0
−5
−10
PC 1 init
PC 1 final
1950
1960
1970
1980
1990
2000
2010

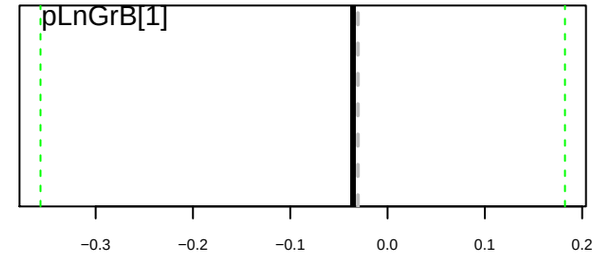

pLnDMX[1]
−2
−1
0
1
2

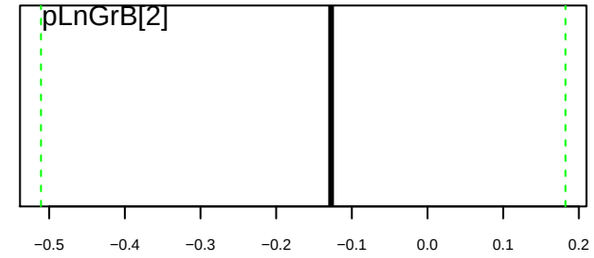

pLnDMM[1]
−2
−1
0
1
2


pLnDMXM[1]
−2
−1
0
1
2


pLnGrA[1]
−1.2
−1.1
−1.0
−0.9
−0.8
−0.7
−0.6
−0.5


pLnGrA[2]
−0.9
−0.8
−0.7
−0.6
−0.5
−0.4


pLnGrB[1]
−0.3
−0.2
−0.1
0.0
0.1
0.2


pLnGrB[2]
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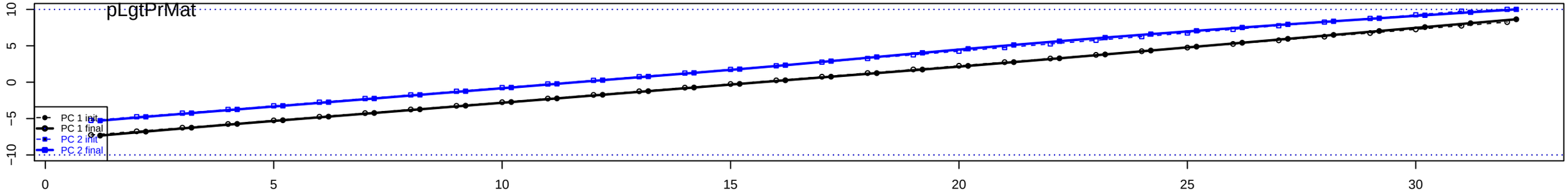
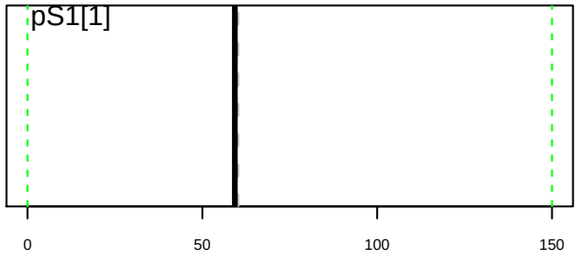
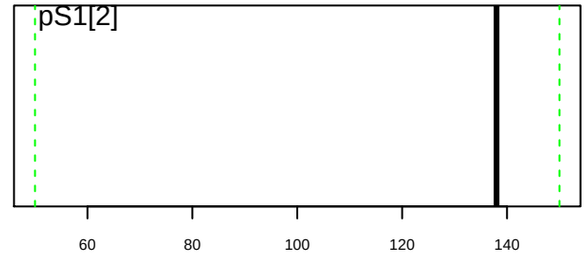
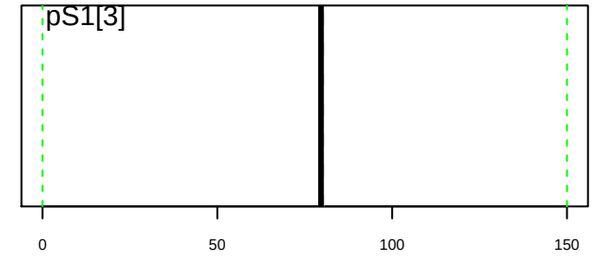
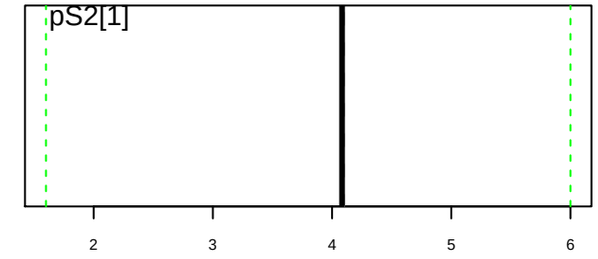
−0.4
−0.3
−0.2
−0.1
0.0
0.1
0.2

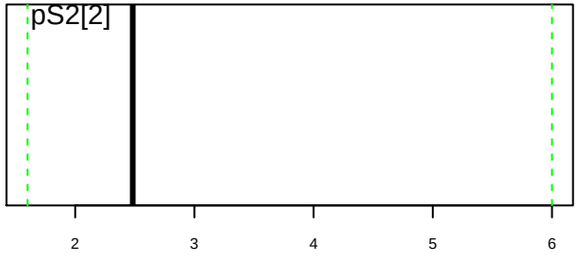

pLgtPrMat
10
5
0
−5
−10
0
5
10
15
20
25
30
PC 1 init
PC 1 final
PC 2 init
PC 2 final

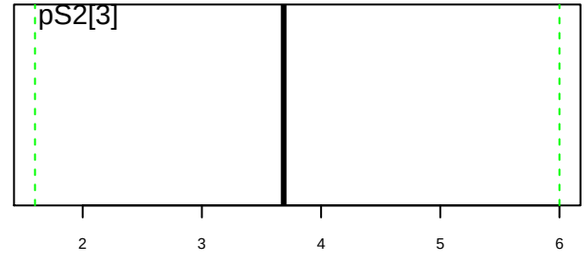

pS1[1]
0
50
100
150

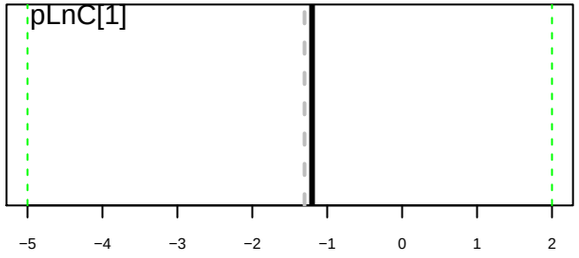

pS1[2]
60
80
100
120
140

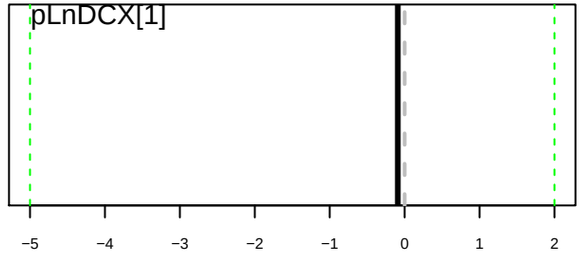

pS1[3]
0
50
100
150

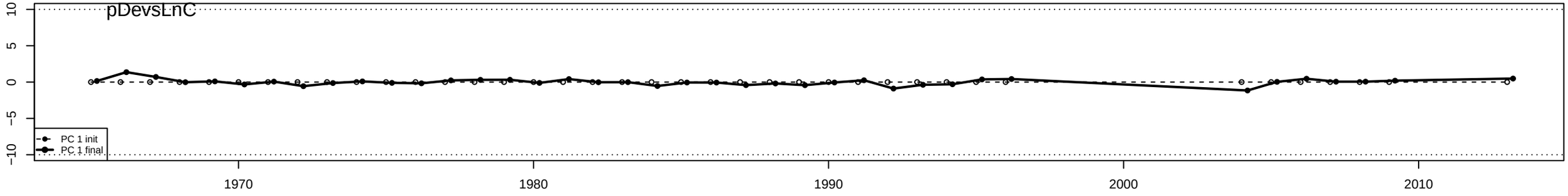

pS2[1]
2
3
4
5
6

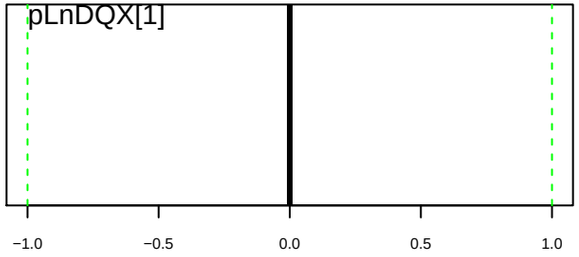

pS2[2]
2
3
4
5
6

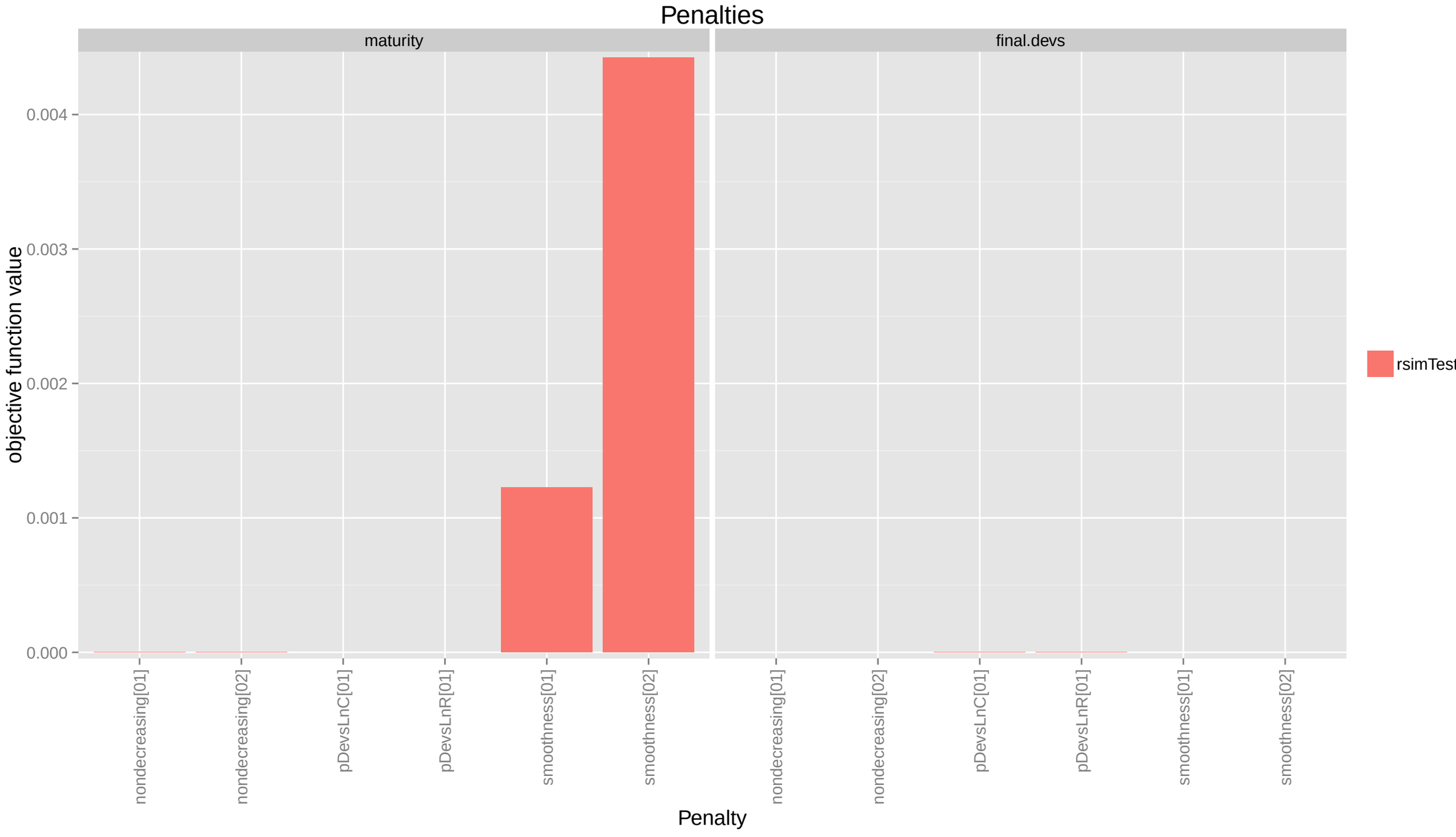

pS2[3]
2
3
4
5
6

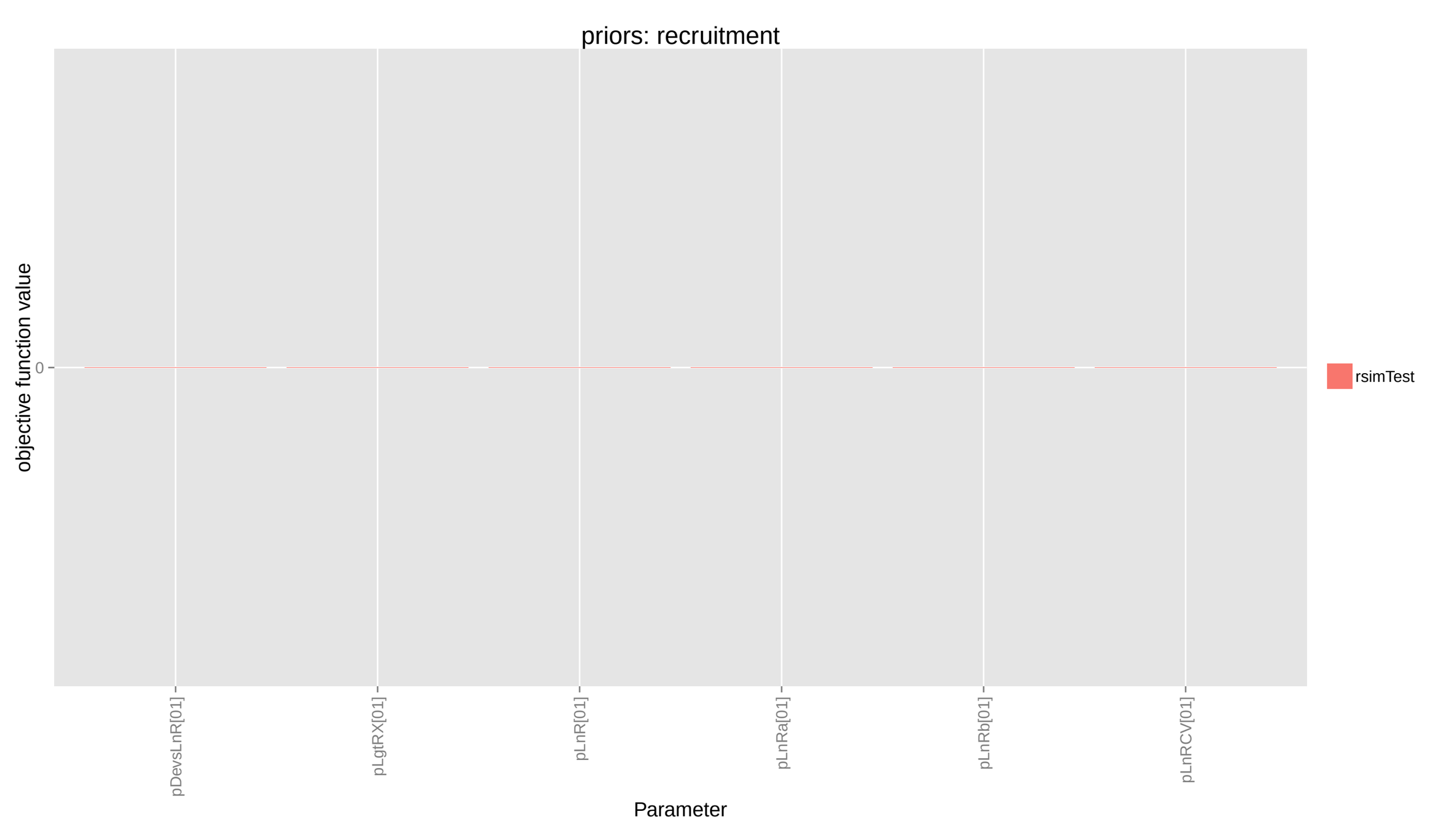

pLnC[1]
−5
−4
−3
−2
−1
0
1
2

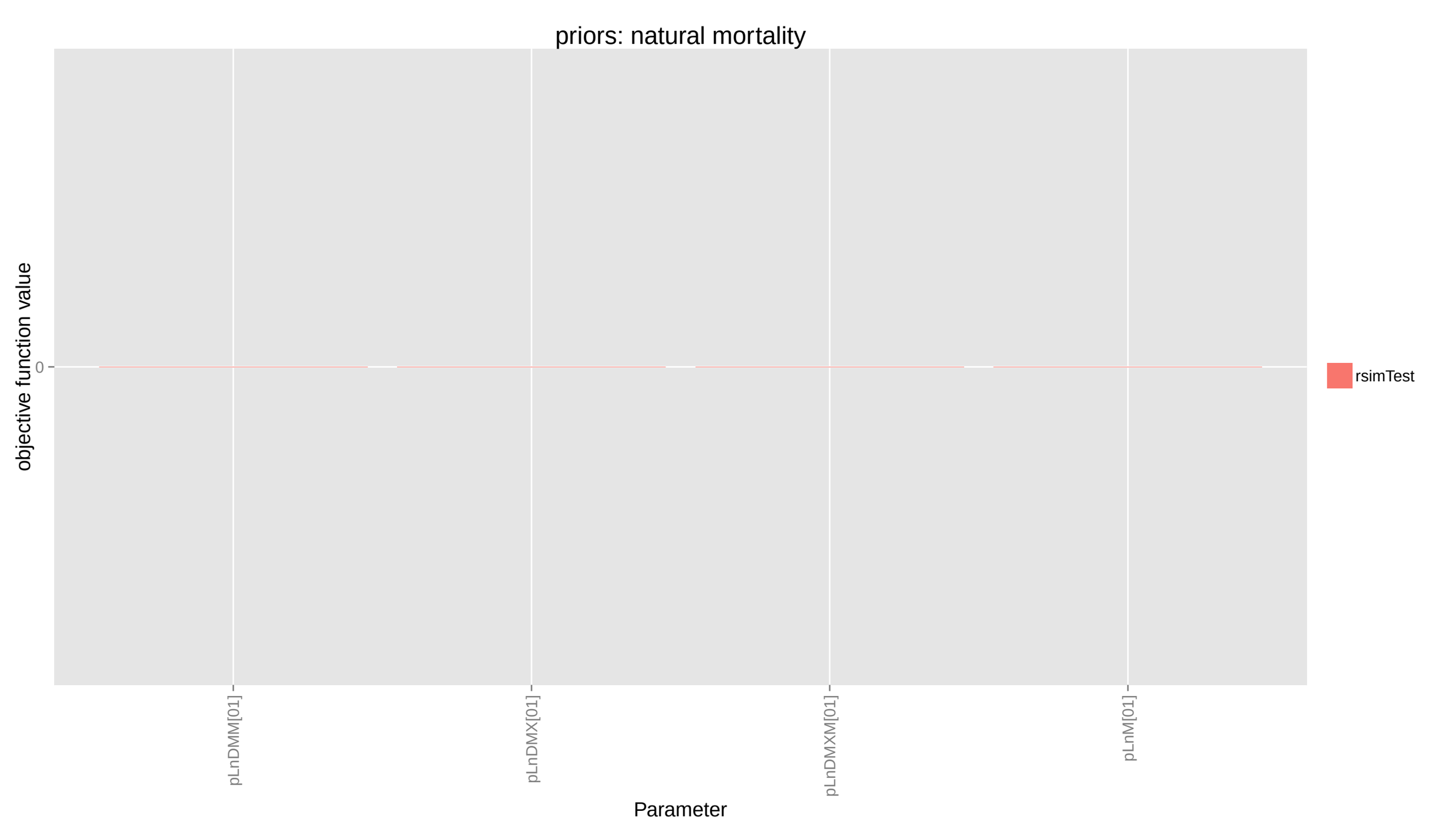

pLnDCX[1]
−5
−4
−3
−2
−1
0
1
2

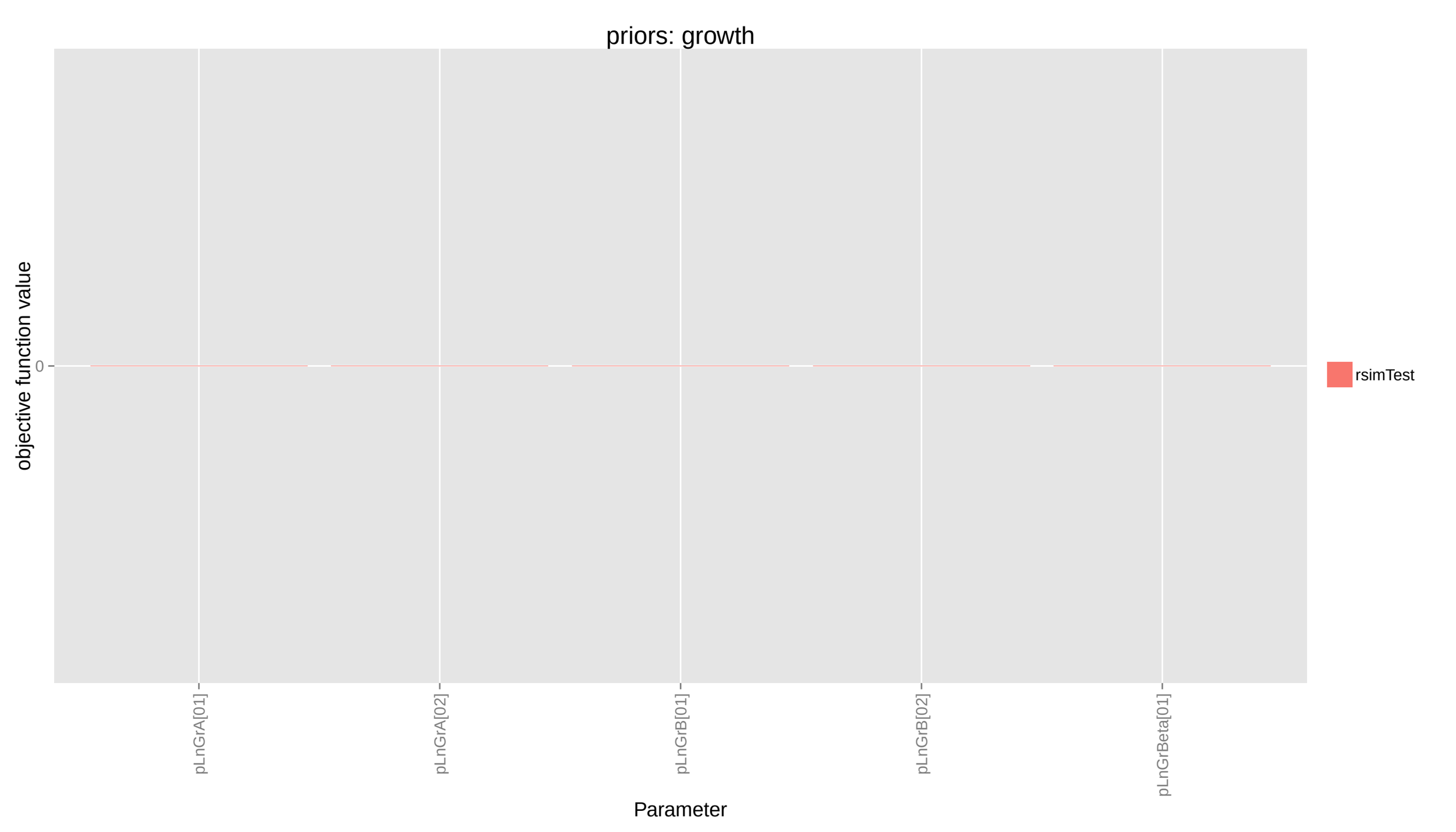

pDevsLnC
10
5
0
−5
−10
PC 1 init
PC 1 final
1970
1980
1990
2000
2010

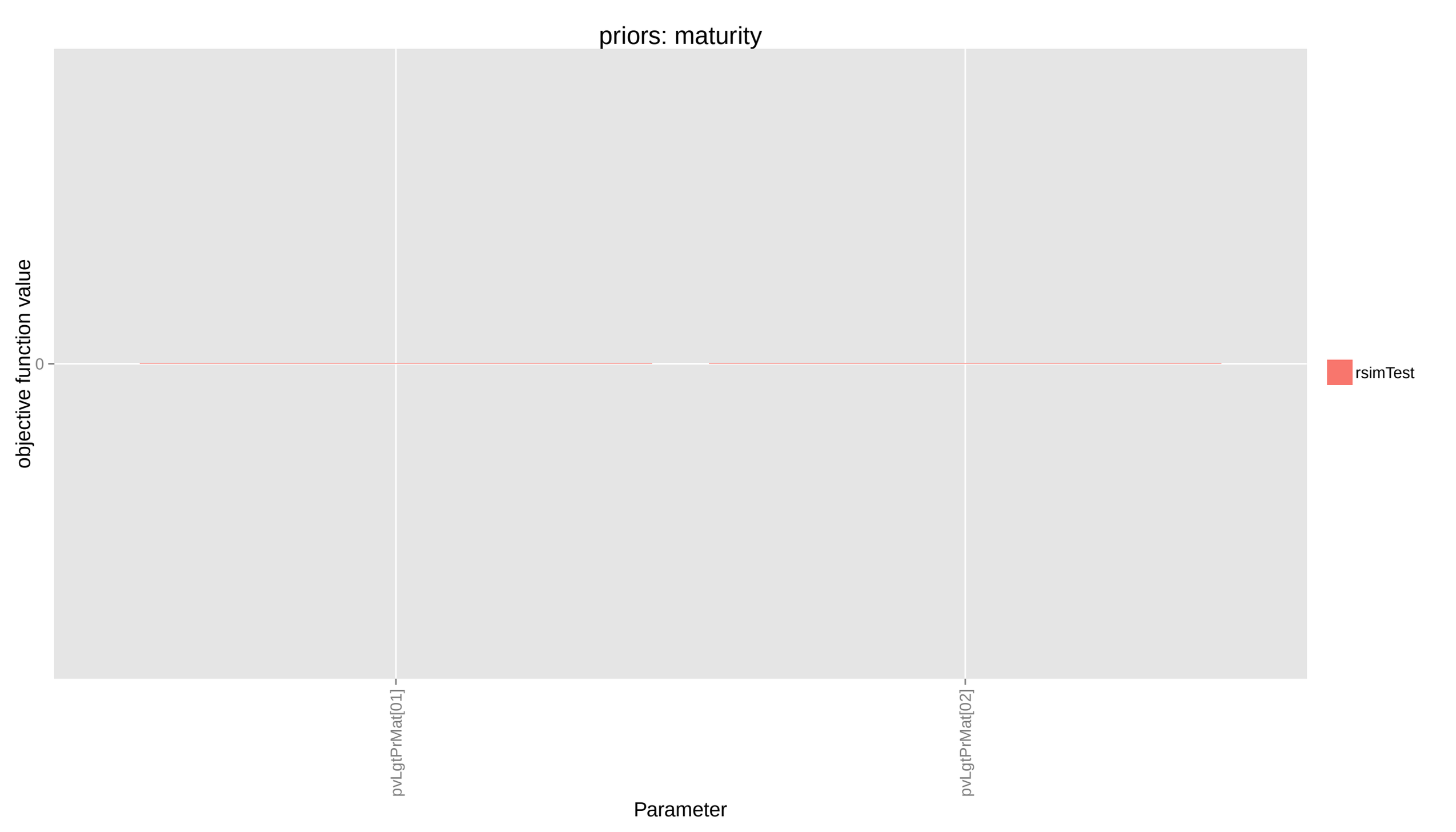

pLnDQX[1]
−1.0
−0.5
0.0
0.5
1.0

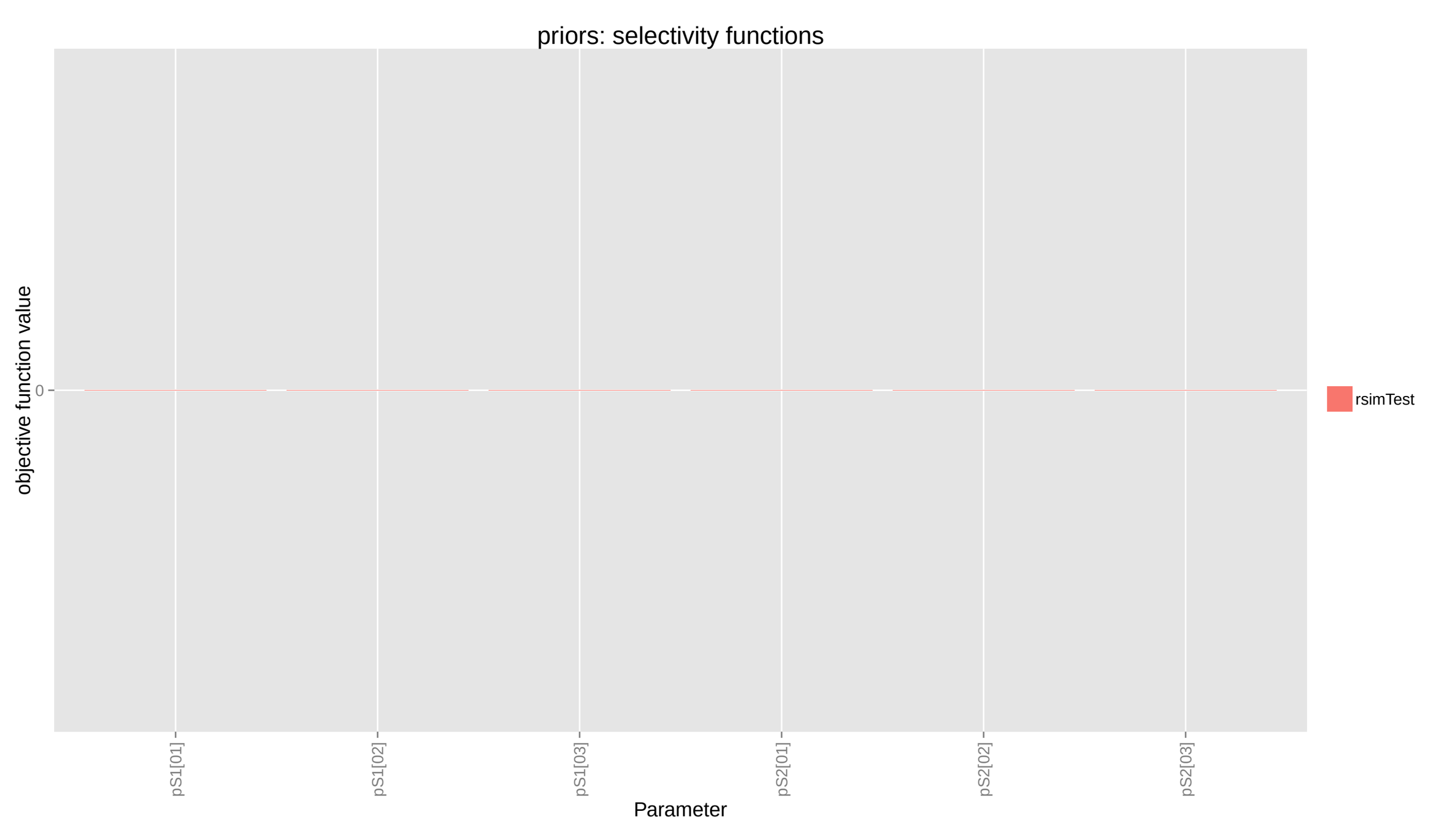

Penalties
maturity
final.devs
objective function value
0.004
0.003
0.002
0.001
0.000
nondecreasing[01]
nondecreasing[02]
pDevsLnC[01]
pDevsLnR[01]
smoothness[01]
smoothness[02]
Penalty
rsimTest

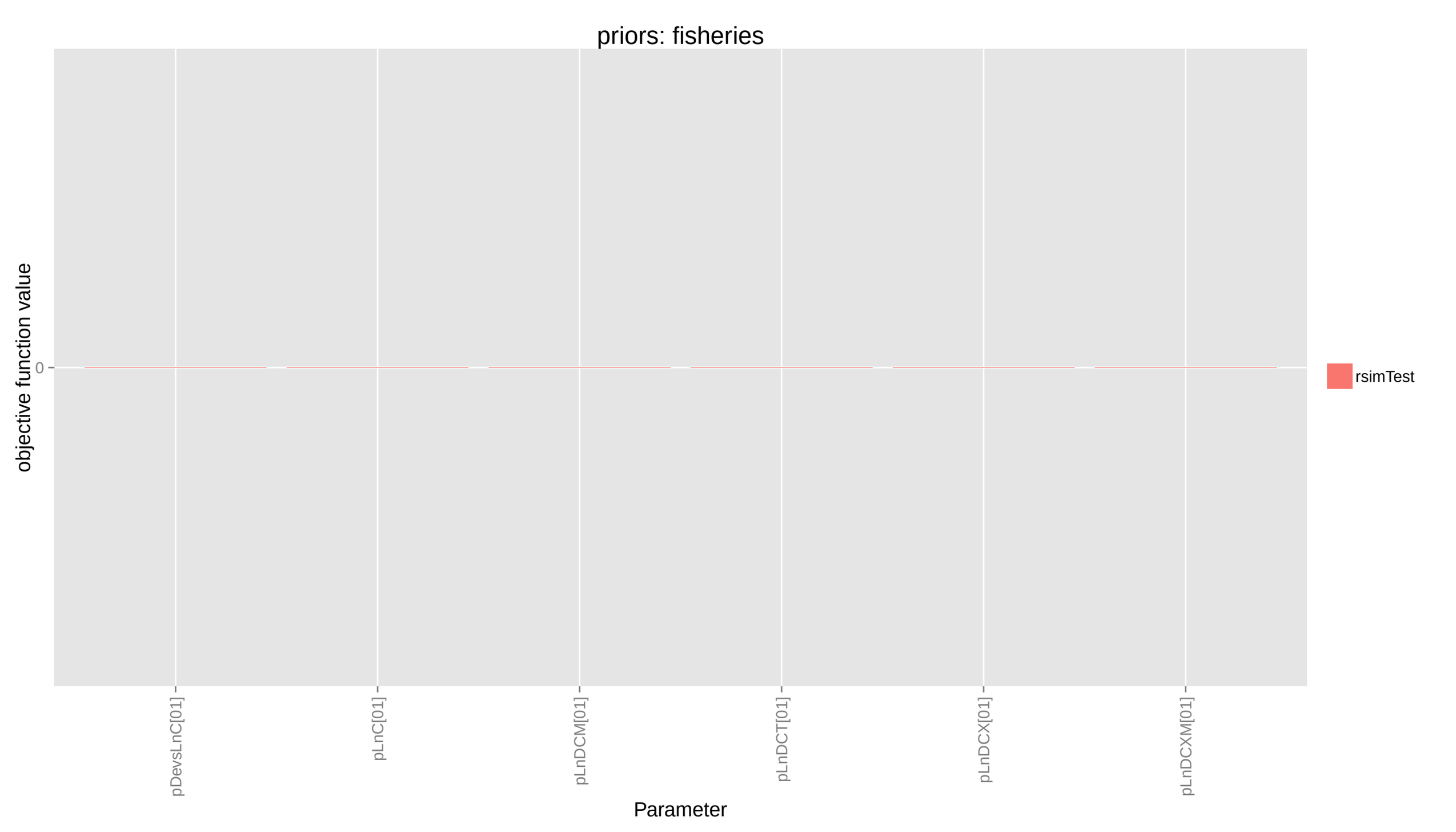

priors: recruitment
objective function value
0
pDevsLnR[01]
pLgtRX[01]
pLnR[01]
pLnRa[01]
pLnRb[01]
pLnRCV[01]
Parameter
rsimTest

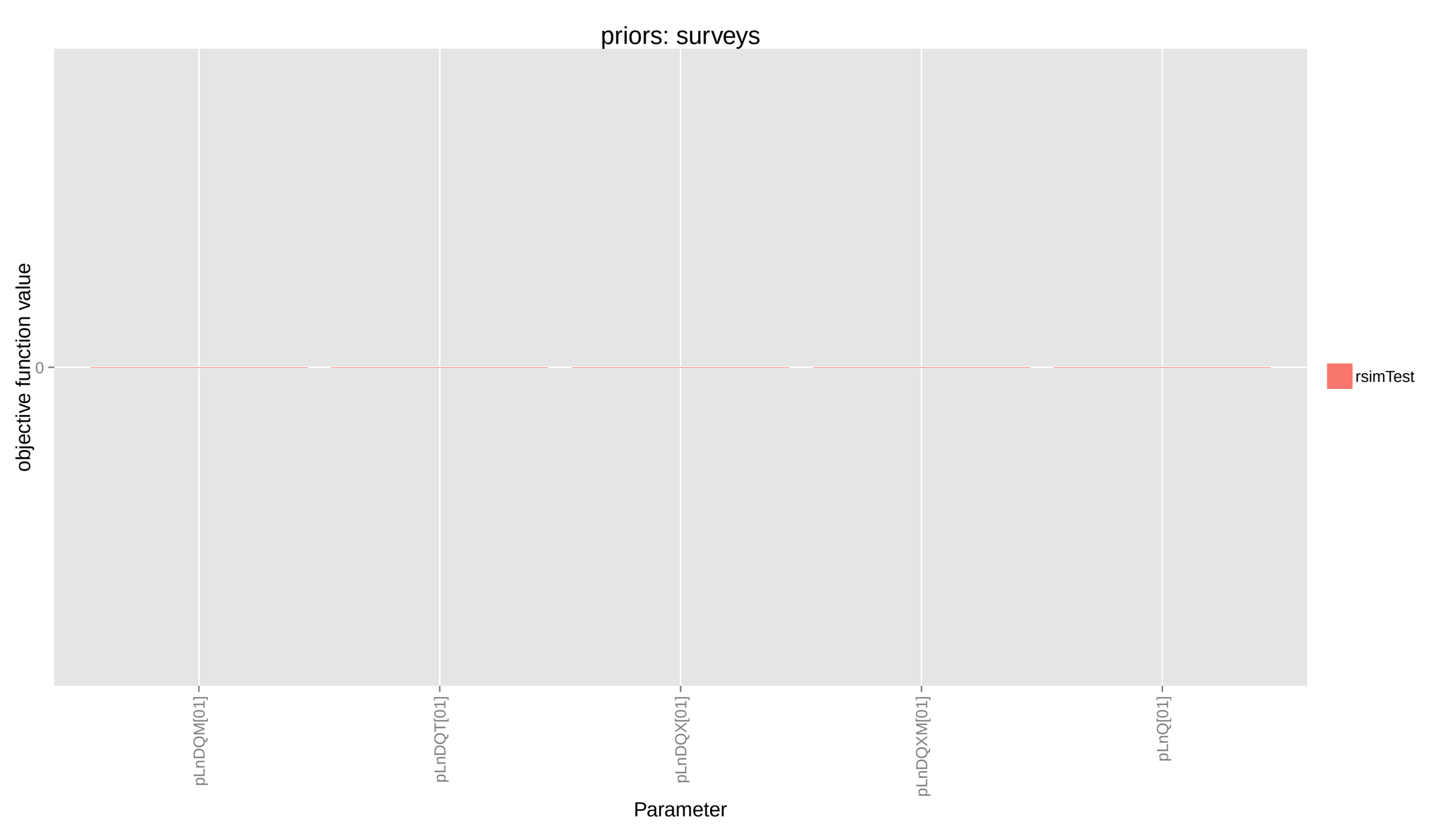

priors: natural mortality
objective function value
0
pLnDMM[01]
pLnDMX[01]
pLnDMXM[01]
pLnM[01]
Parameter
rsimTest

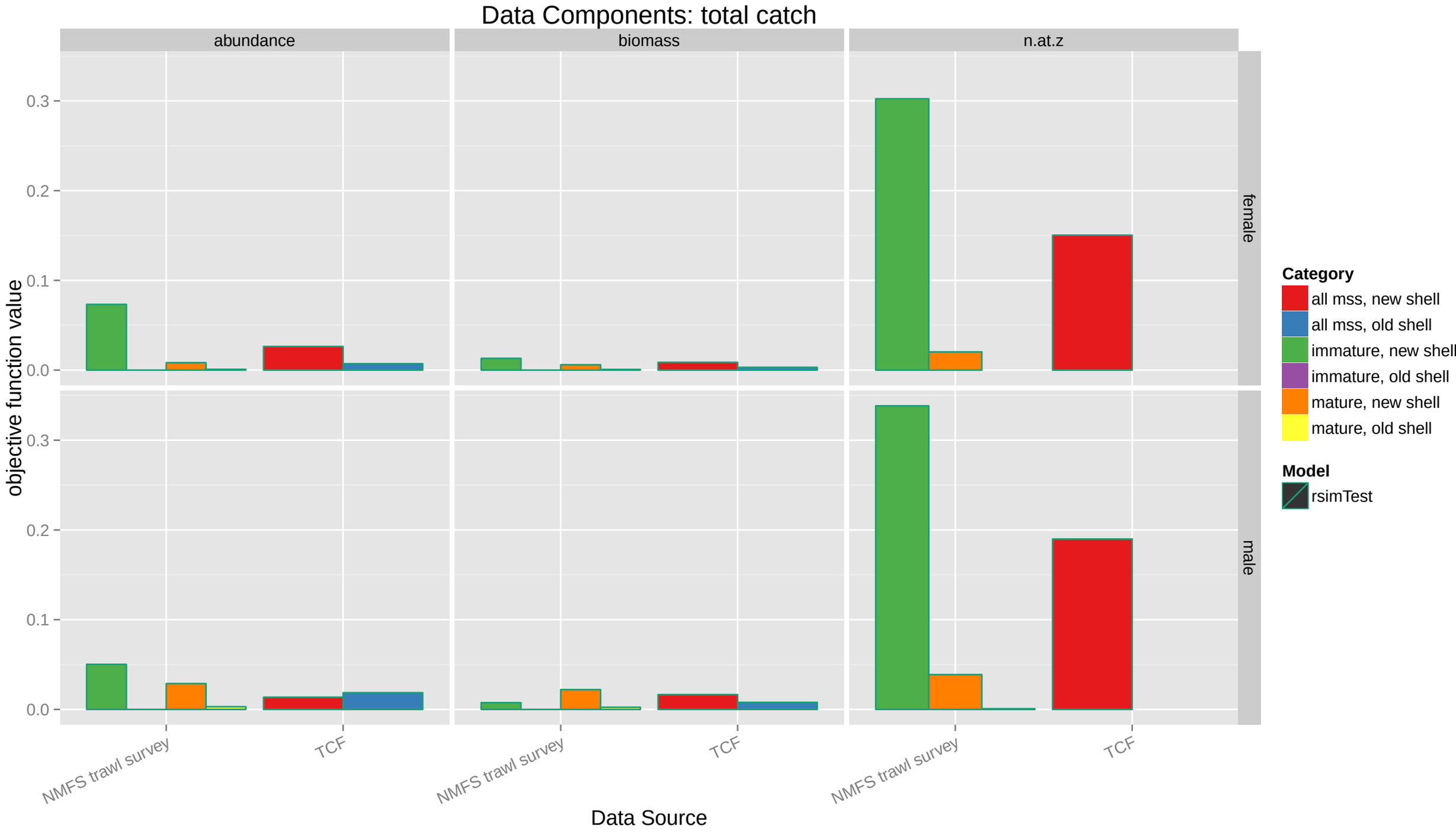

priors: growth
objective function value
0
pLnGrA[01]
pLnGrA[02]
pLnGrB[01]
pLnGrB[02]
pLnGrBeta[01]
Parameter
rsimTest

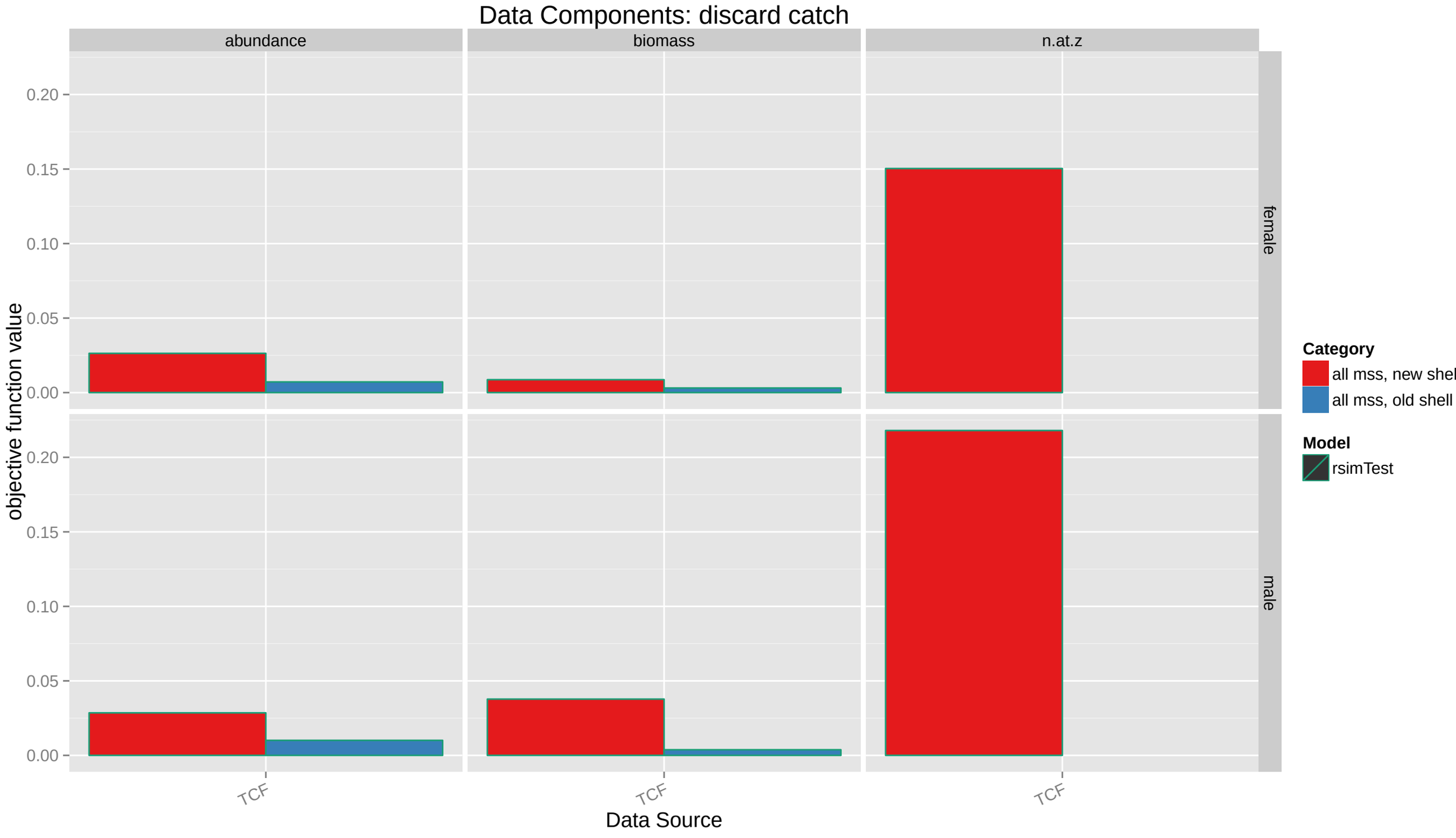

priors: maturity
objective function value
0
pvLgtPrMat[01]
pvLgtPrMat[02]
Parameter
rsimTest

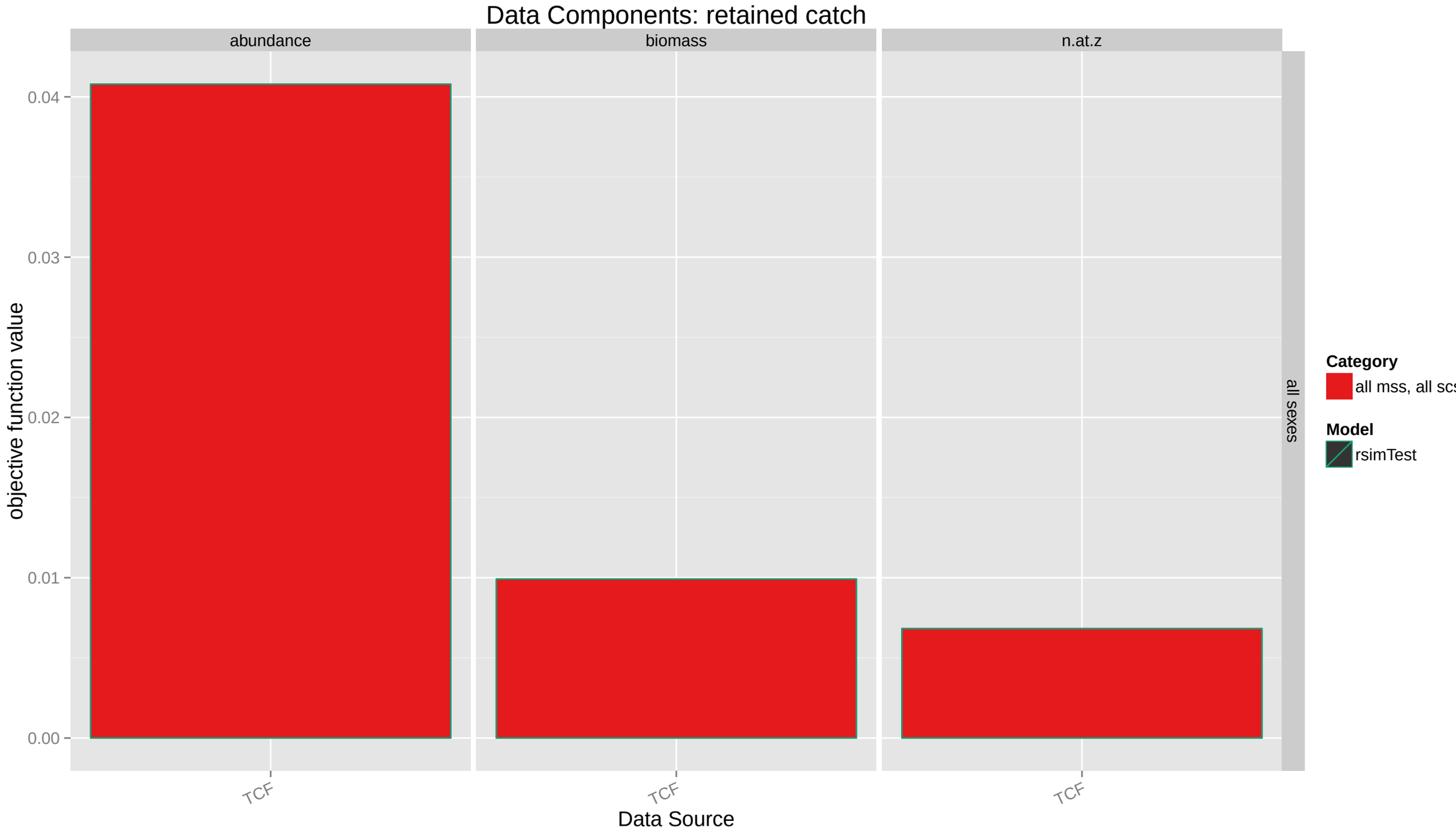

priors: selectivity functions
objective function value
0
pS1[01]
pS1[02]
pS1[03]
pS2[01]
pS2[02]
pS2[03]
Parameter
rsimTest

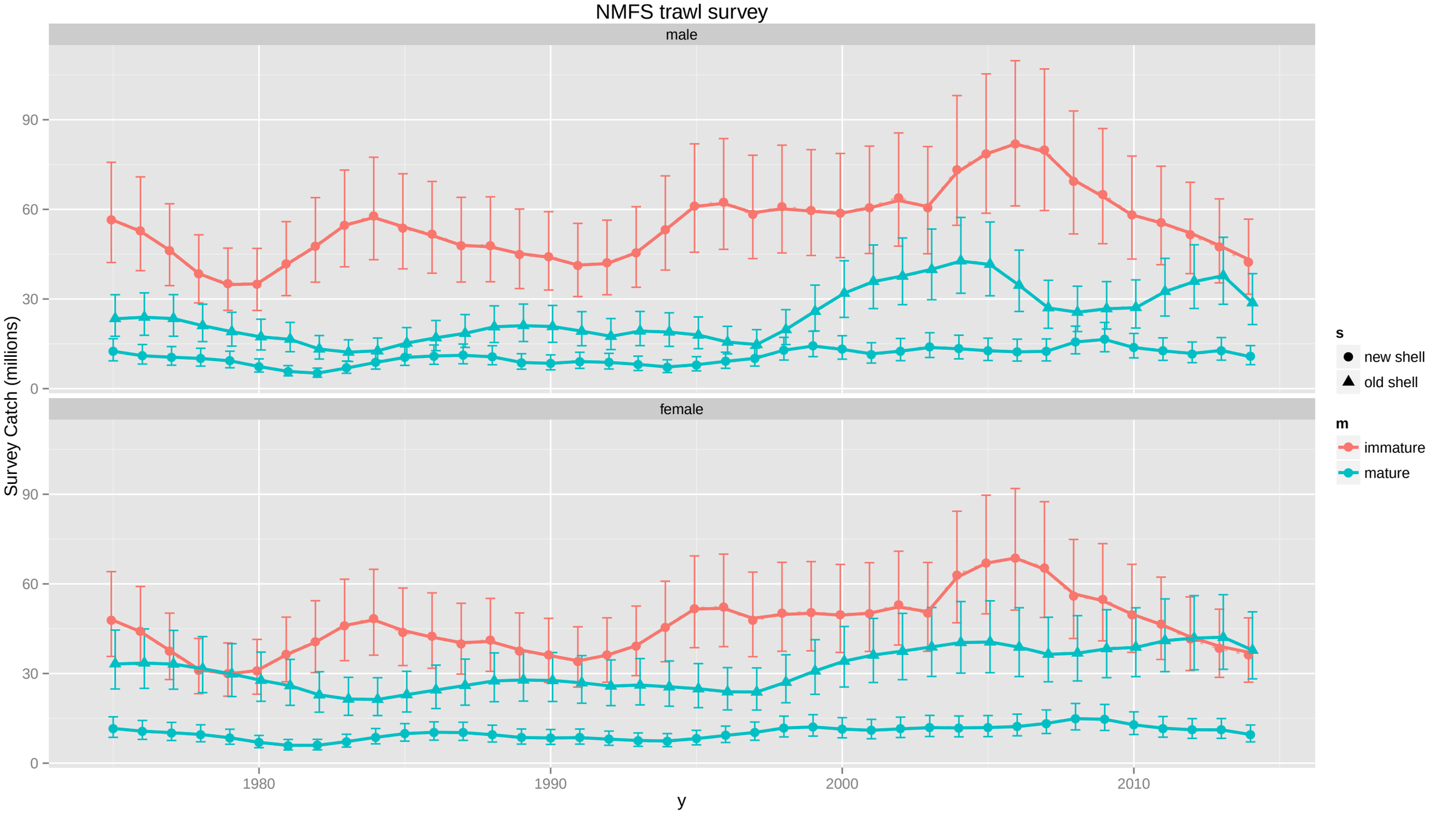

priors: fisheries
objective function value
0
pDevsLnC[01]
pLnC[01]
pLnDCM[01]
pLnDCT[01]
pLnDCX[01]
pLnDCXM[01]
Parameter
rsimTest

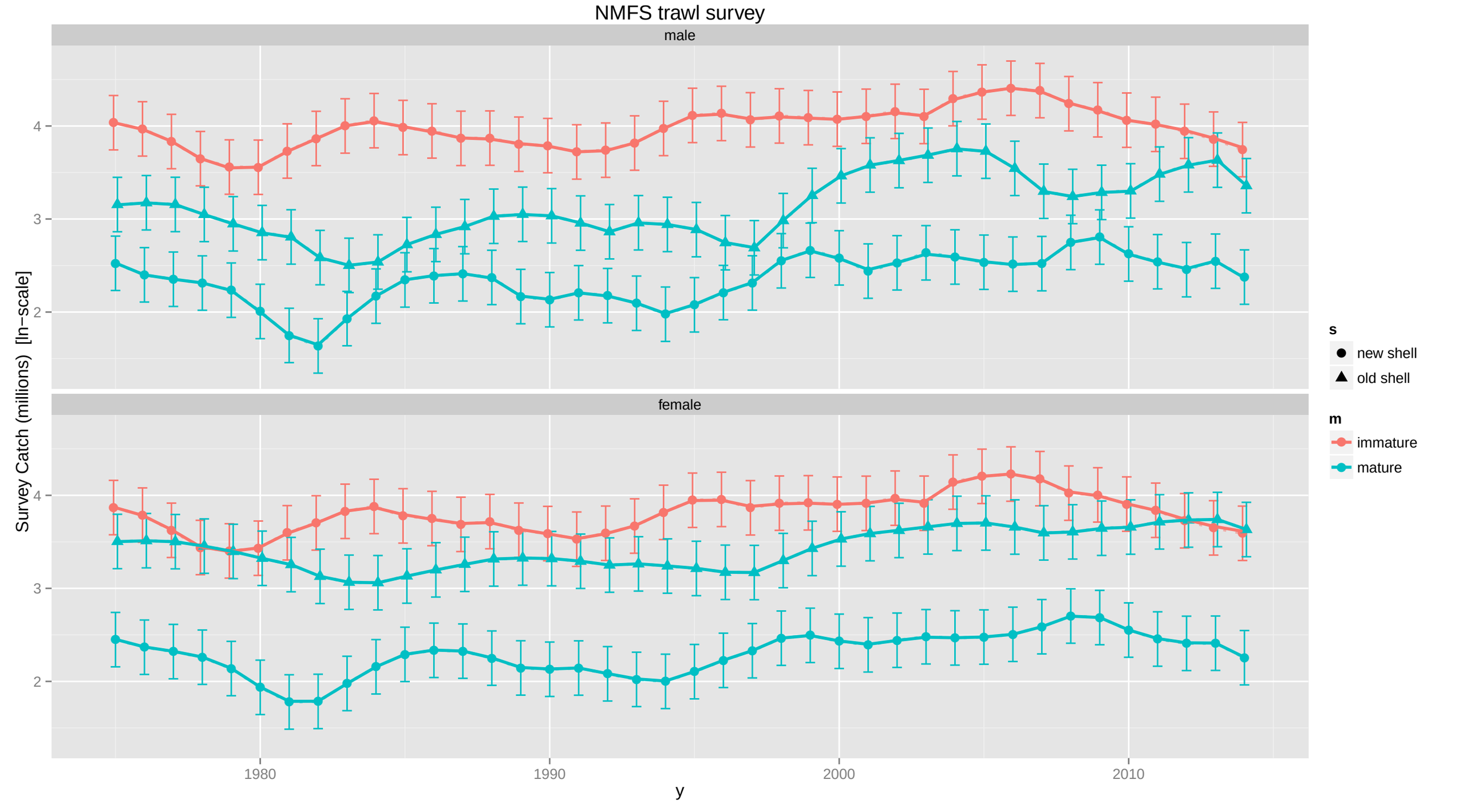

priors: surveys
objective function value
0
pLnDQM[01]
pLnDQT[01]
pLnDQX[01]
pLnDQXM[01]
pLnQ[01]
Parameter
rsimTest

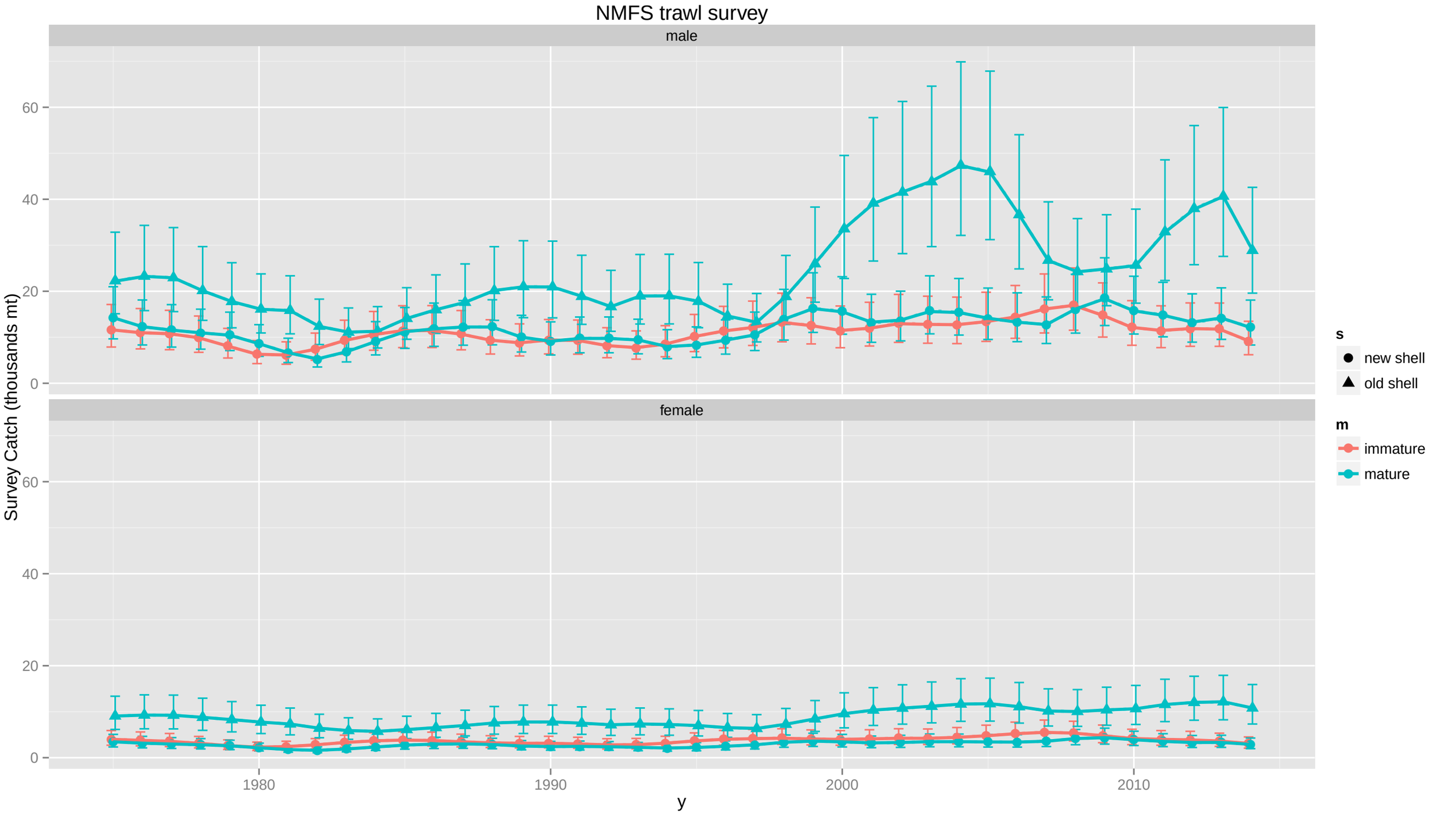

Data Components: total catch
abundance
biomass
n.at.z
female
male
objective function value
0.0
0.1
0.2
0.3
NMFS trawl survey
TCF
Data Source
Category
all mss, new shell
all mss, old shell
immature, new shell
immature, old shell
mature, new shell
mature, old shell
Model
rsimTest

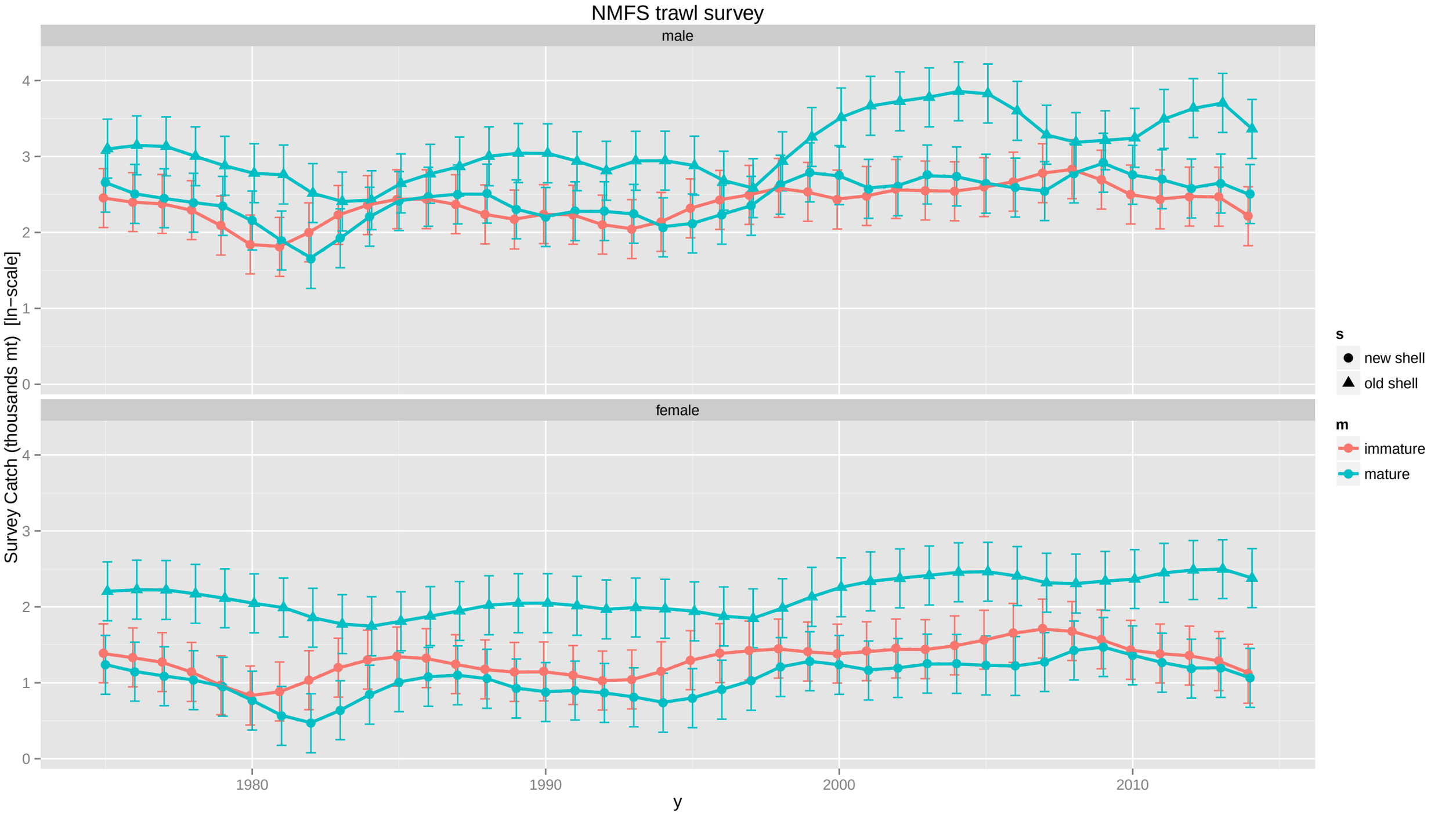

Data Components: discard catch
abundance
biomass
n.at.z
female
male
objective function value
0.20
0.15
0.10
0.05
0.00
TCF
Data Source
Category
all mss, new shell
all mss, old shell
Model
rsimTest

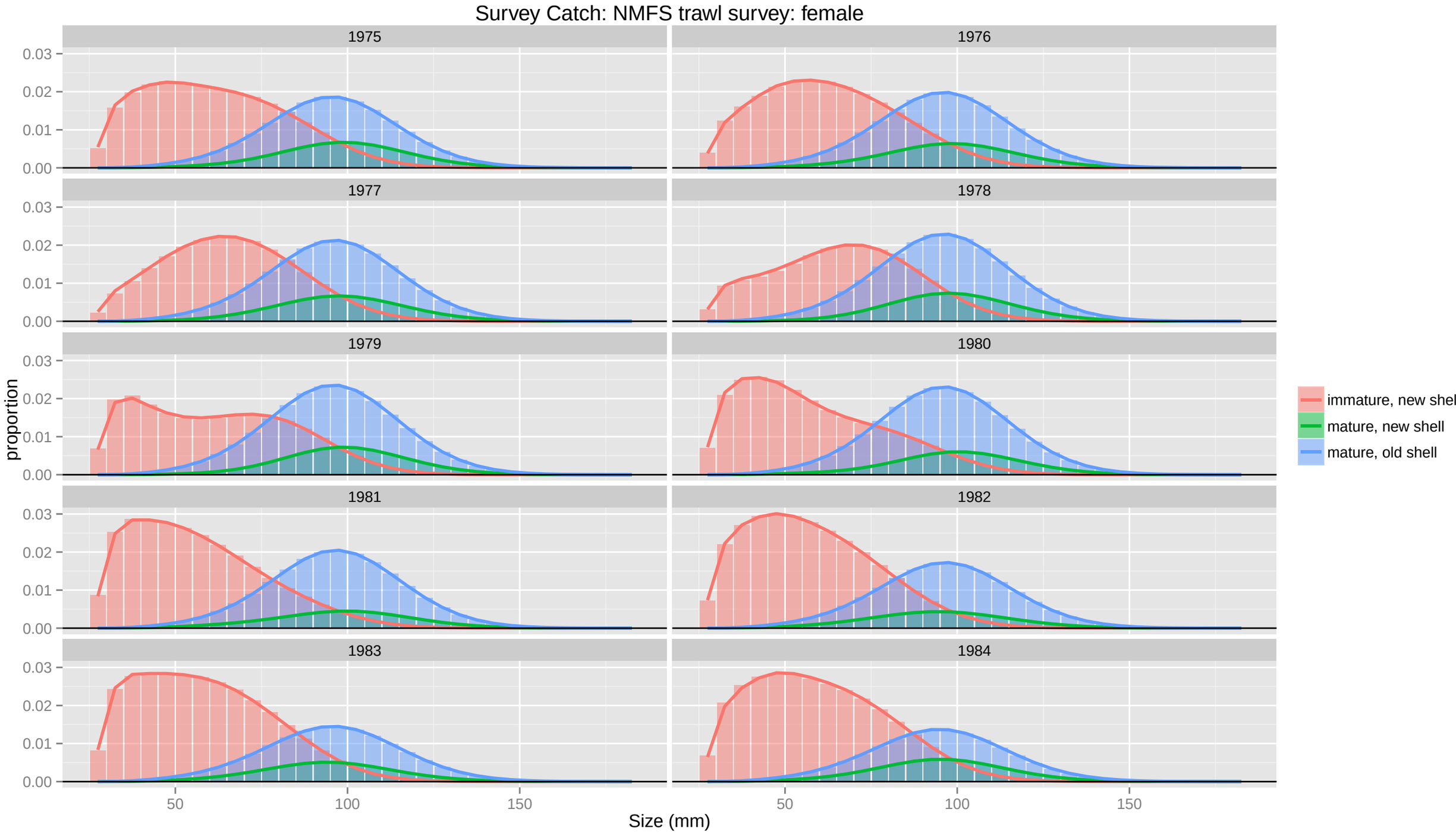

Data Components: retained catch
abundance
biomass
n.at.z
all sexes
objective function value
0.04
0.03
0.02
0.01
0.00
TCF
TCF
TCF
Data Source
Category
all mss, all scs
Model
rsimTest

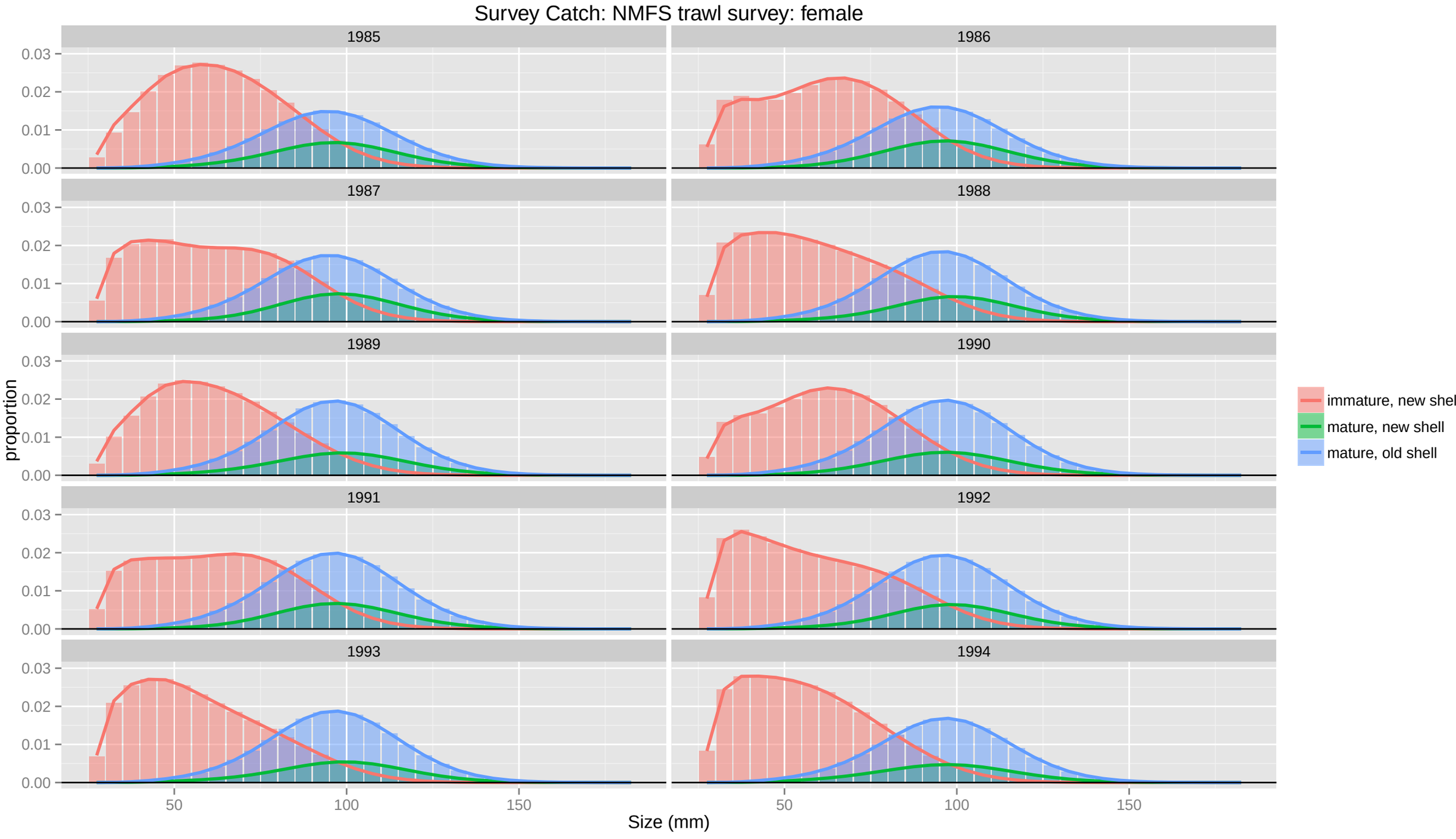

NMFS trawl survey
male
female
Survey Catch (millions)
0
30
60
90
1980
1990
2000
2010
y
s
new shell
old shell
m
immature
mature

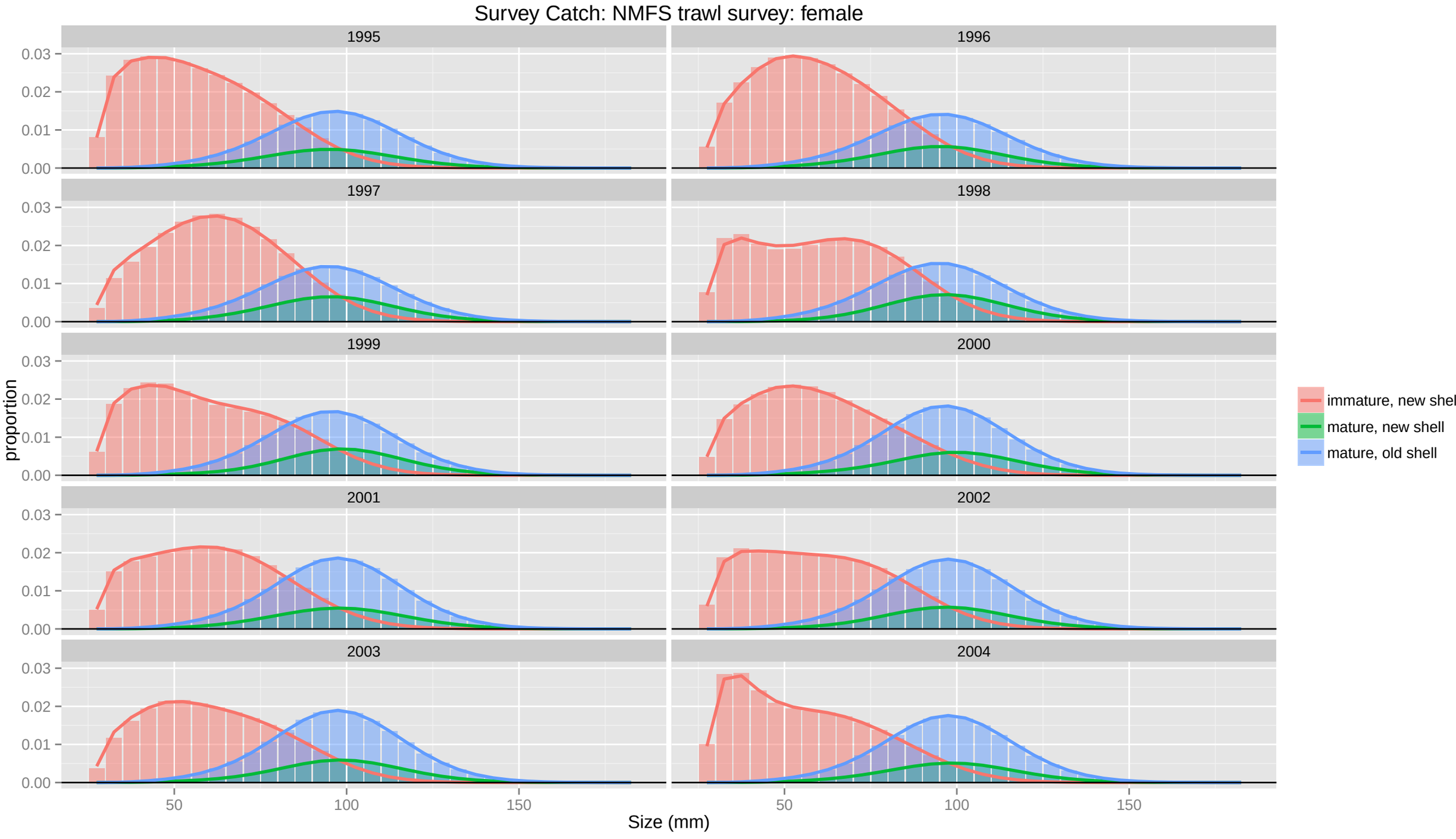

NMFS trawl survey
male
female
Survey Catch (millions) [ln−scale]
4
3
2
1980
1990
2000
2010
y
s
new shell
old shell
m
immature
mature


NMFS trawl survey
male
female
Survey Catch (thousands mt)
0
20
40
60
1980
1990
2000
2010
y
s
new shell
old shell
m
immature
mature

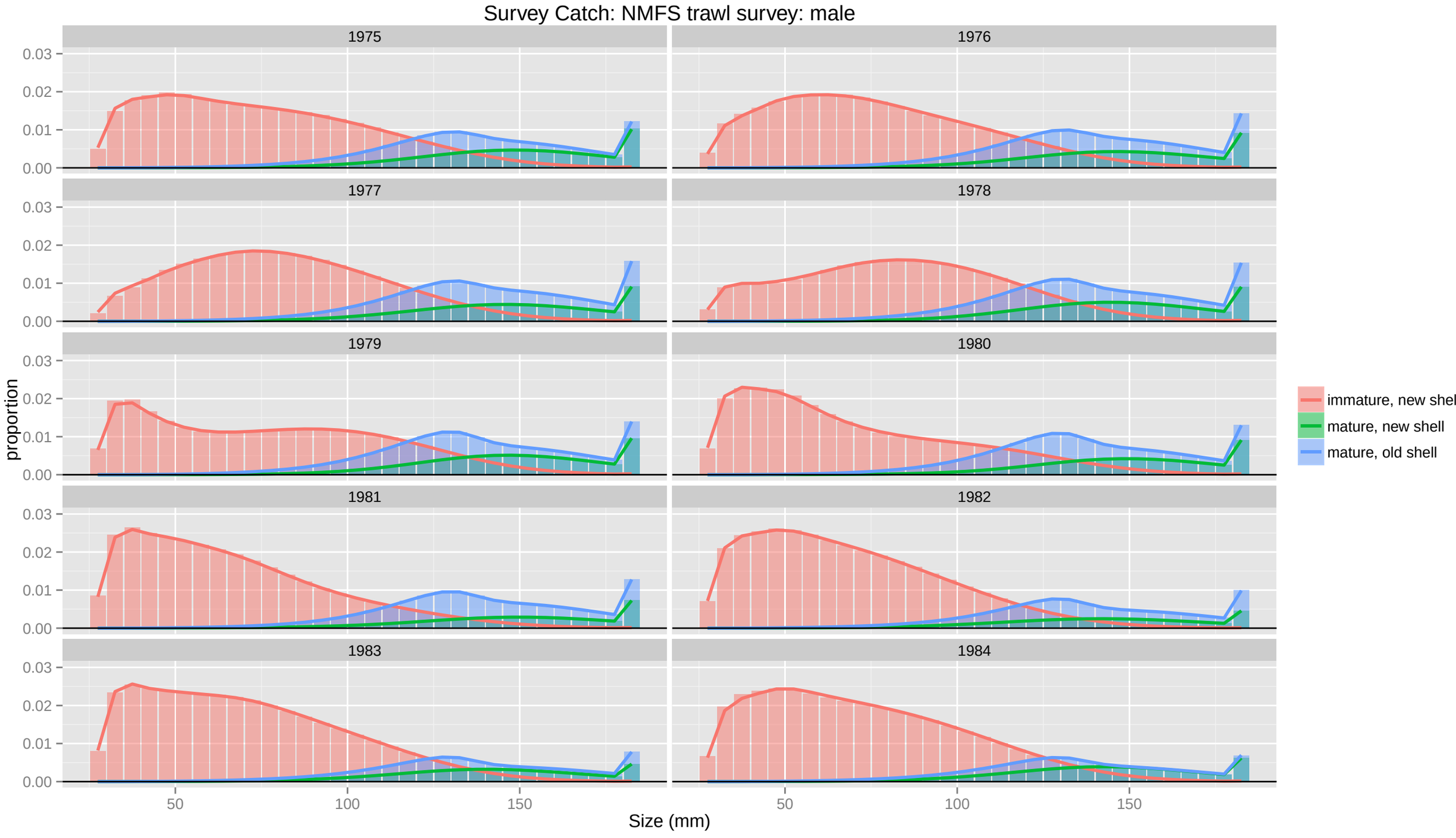

NMFS trawl survey
male
female
Survey Catch (thousands mt) [ln−scale]
0
1
2
3
4
1980
1990
2000
2010
y
s
new shell
old shell
m
immature
mature

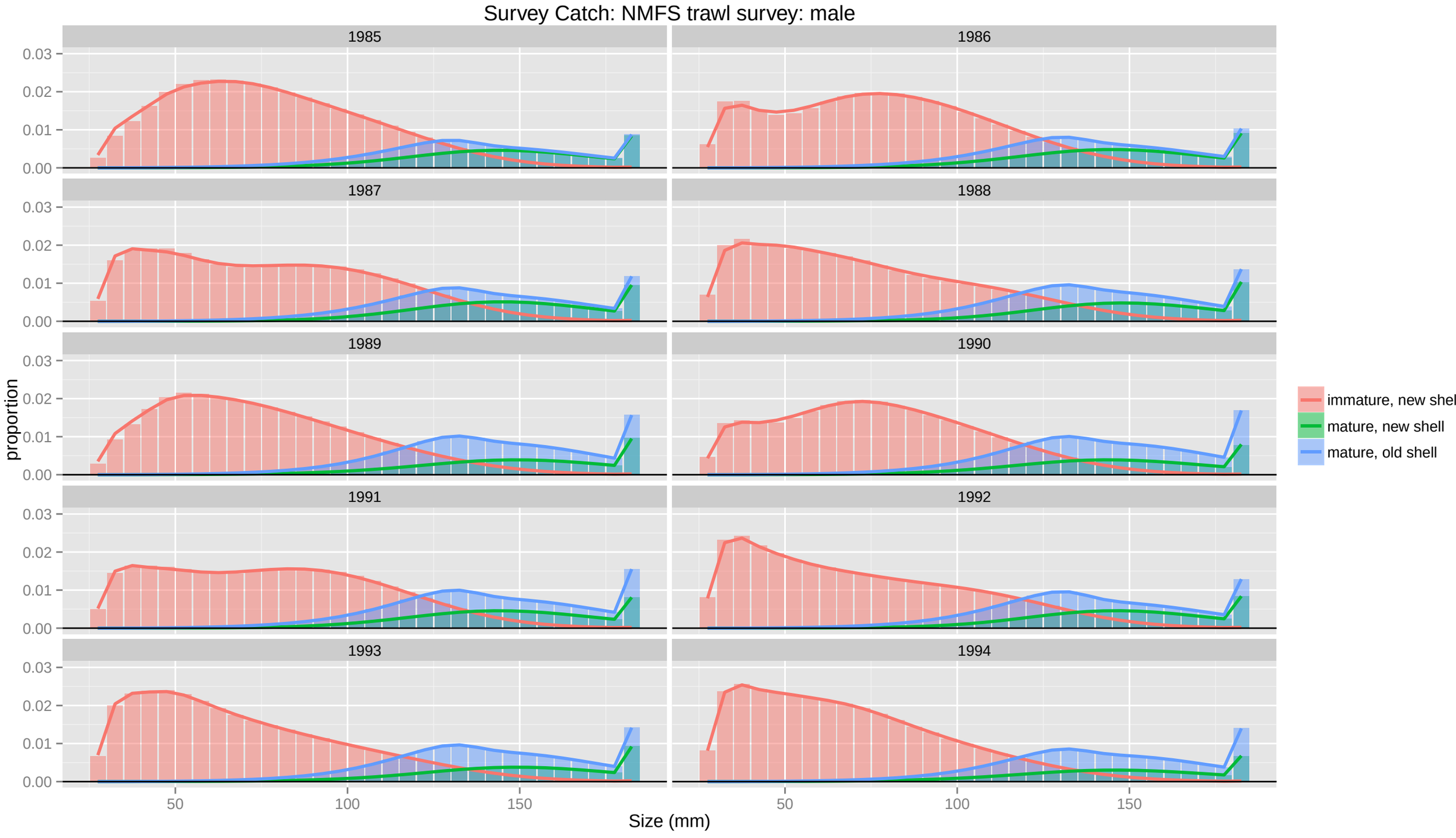

Survey Catch: NMFS trawl survey: female
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

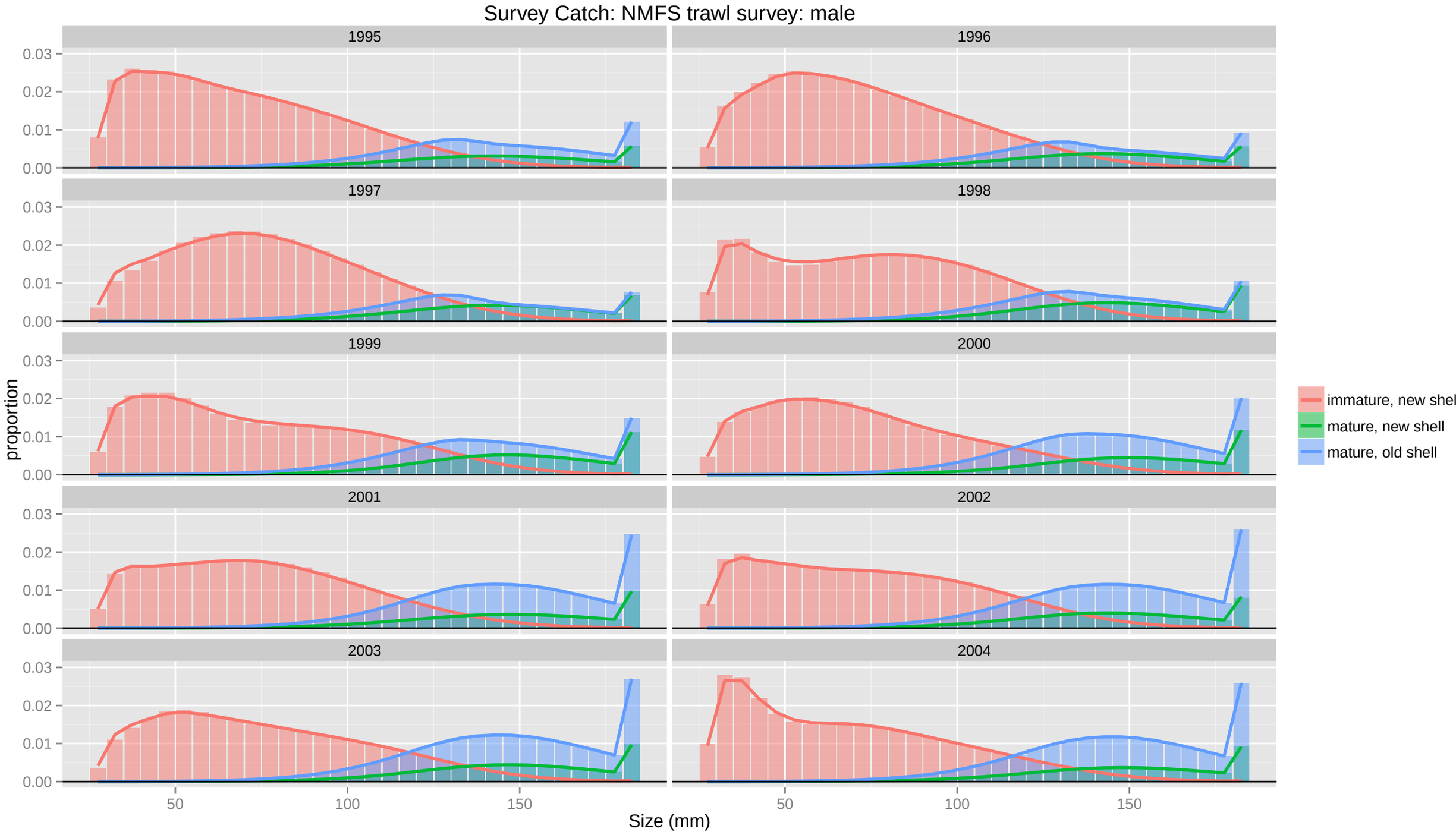

Survey Catch: NMFS trawl survey: female
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell


Survey Catch: NMFS trawl survey: female
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

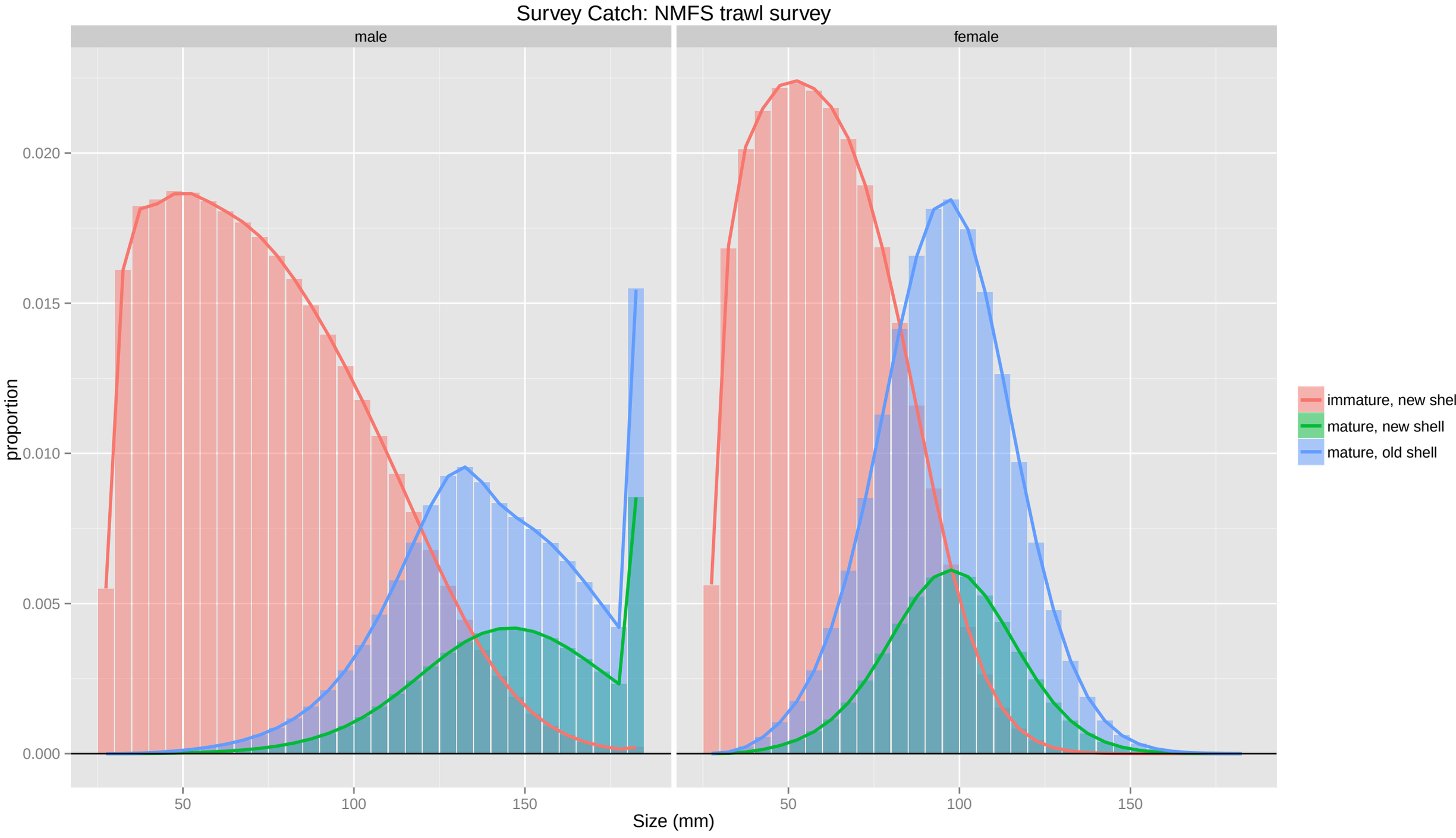

Survey Catch: NMFS trawl survey: female
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
proportion
0.03
0.02
0.01
0.00
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

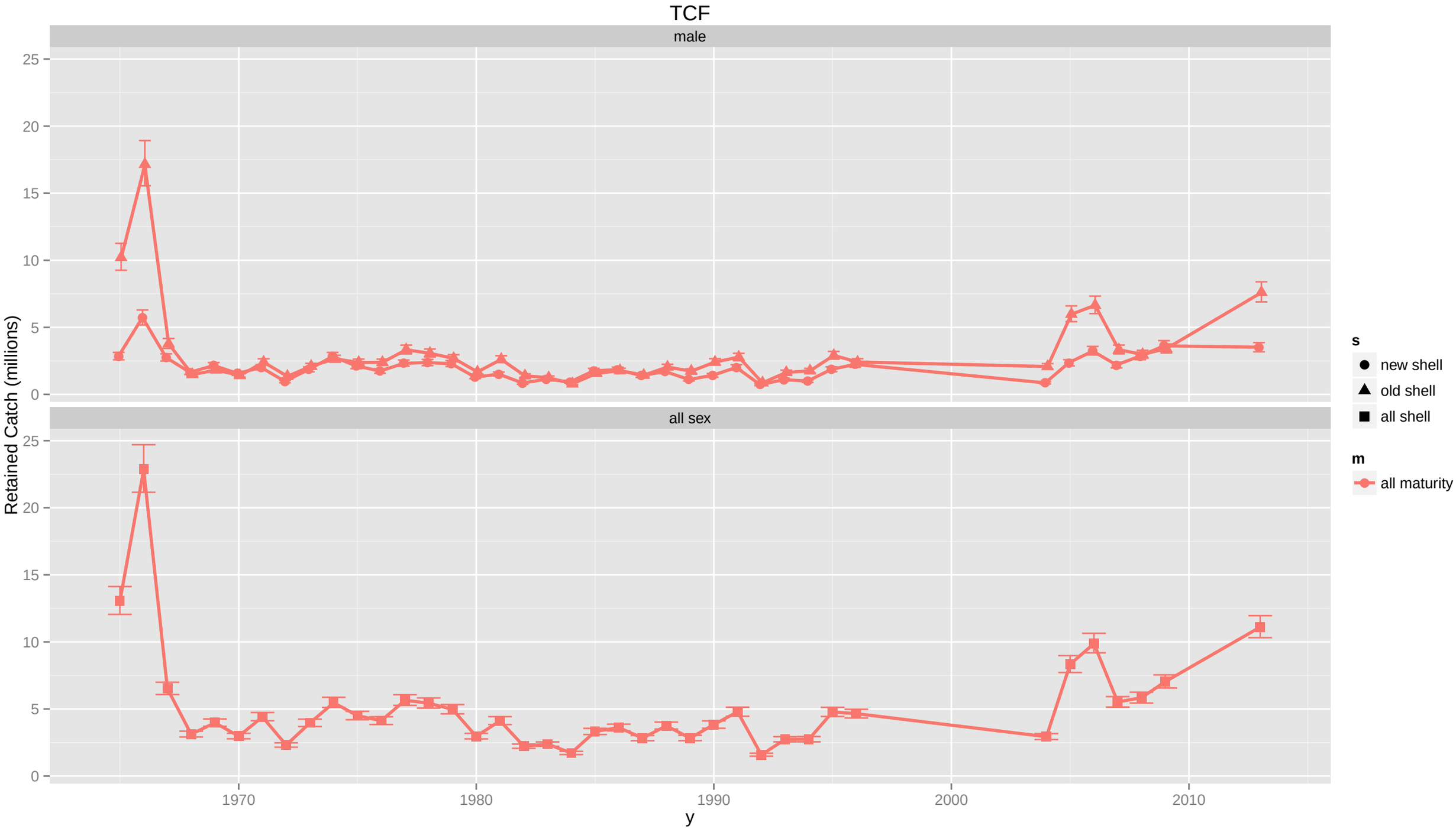

Survey Catch: NMFS trawl survey: male
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

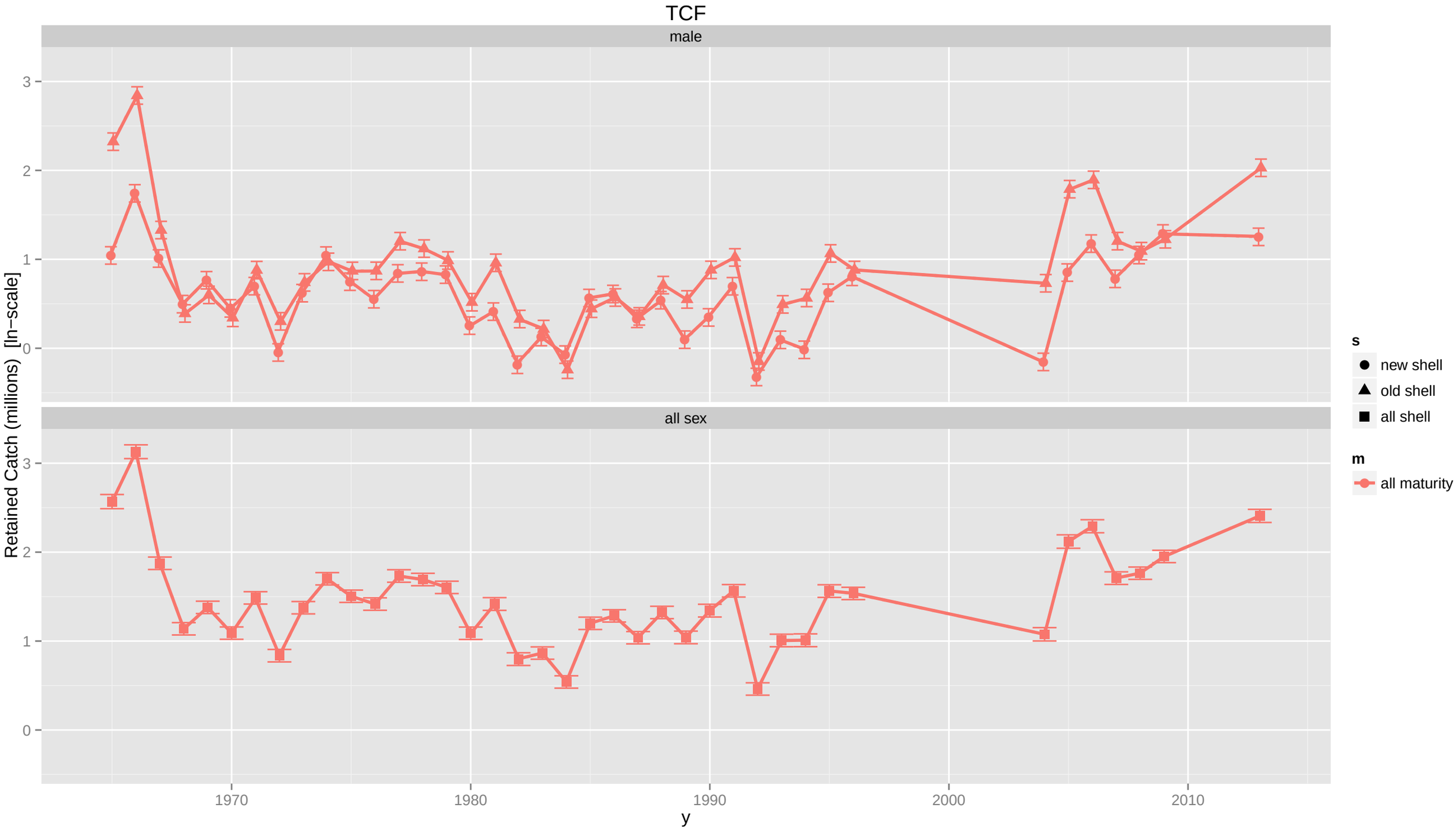

Survey Catch: NMFS trawl survey: male
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

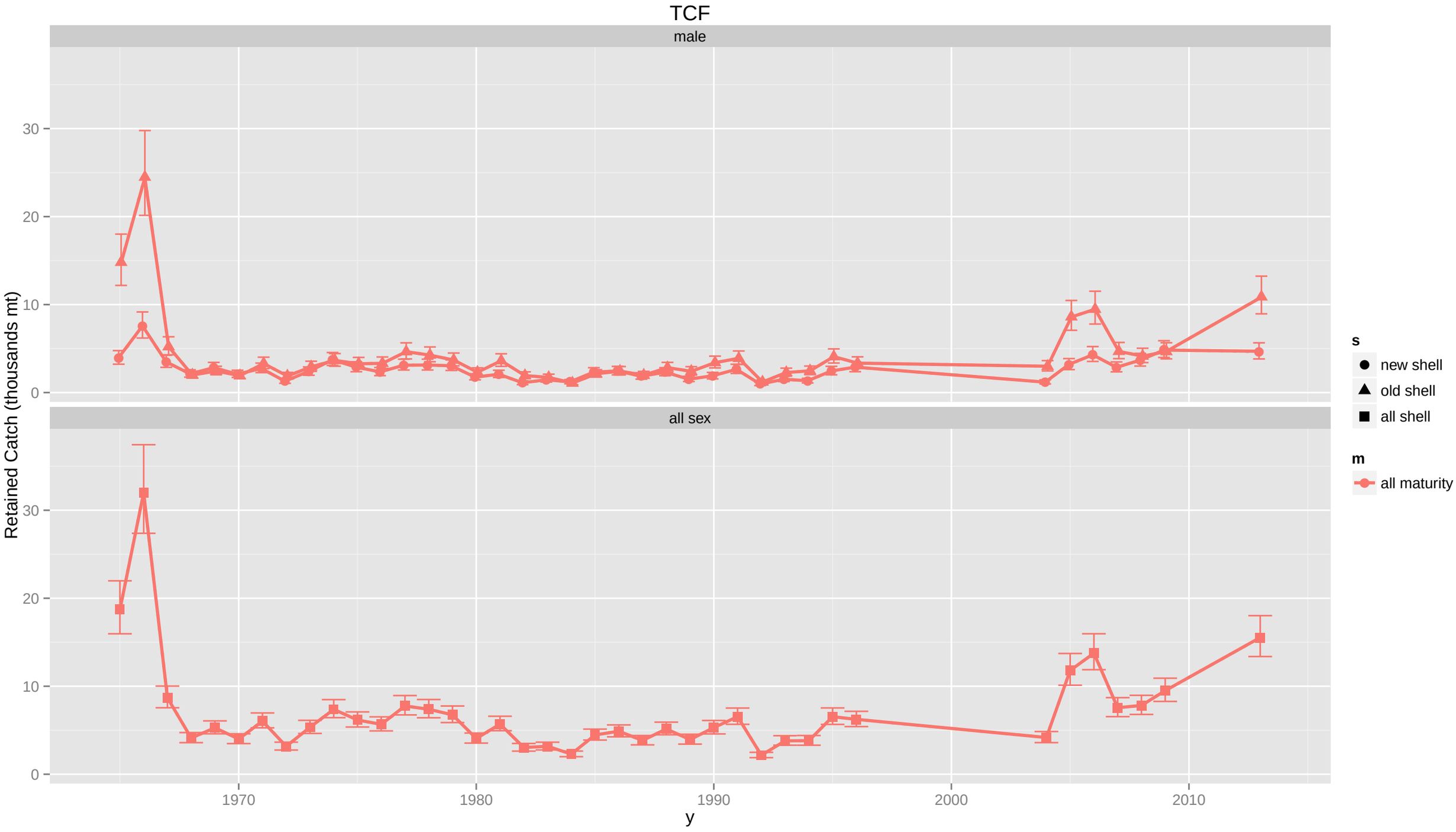

Survey Catch: NMFS trawl survey: male
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

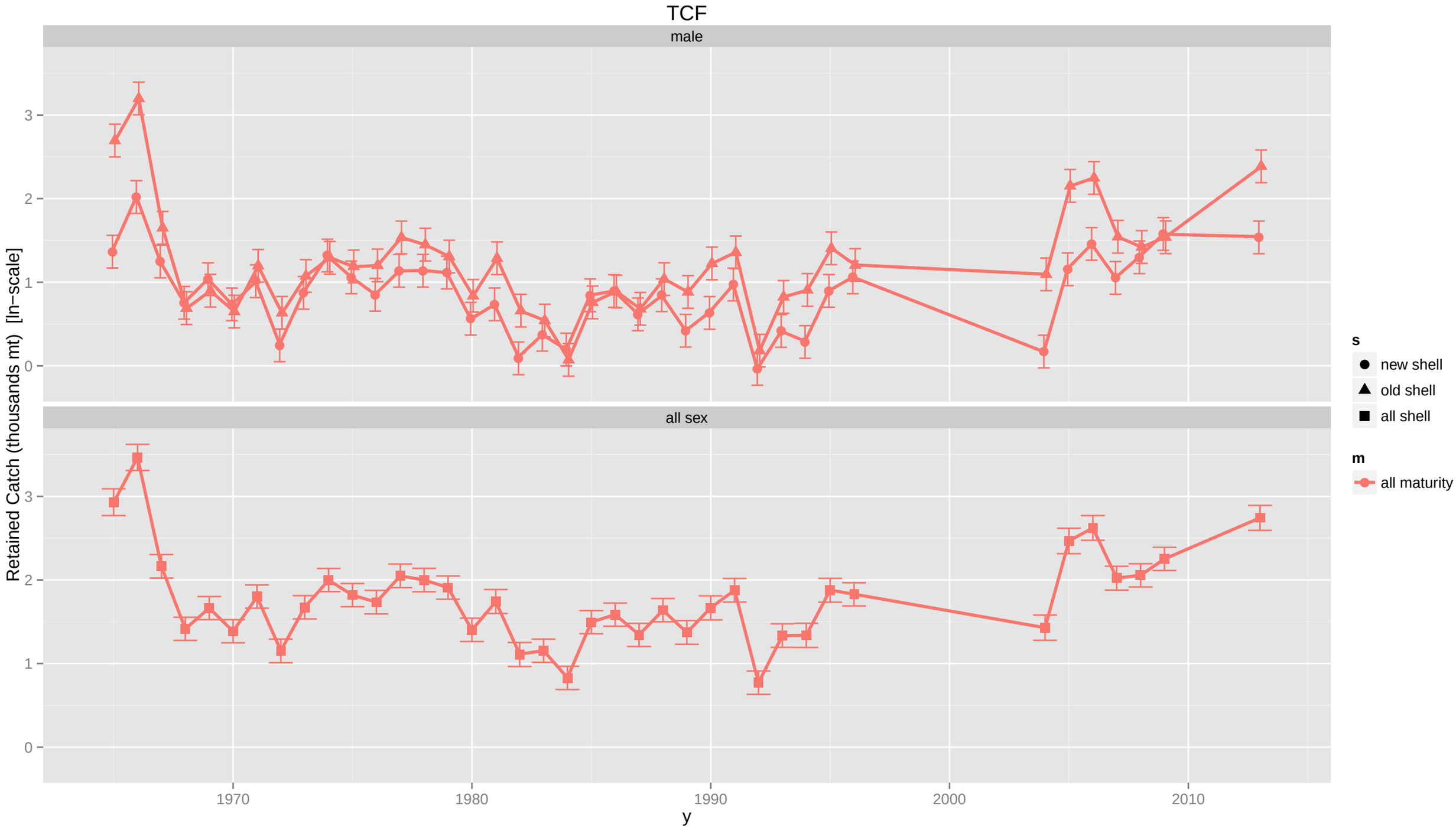

Survey Catch: NMFS trawl survey: male
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

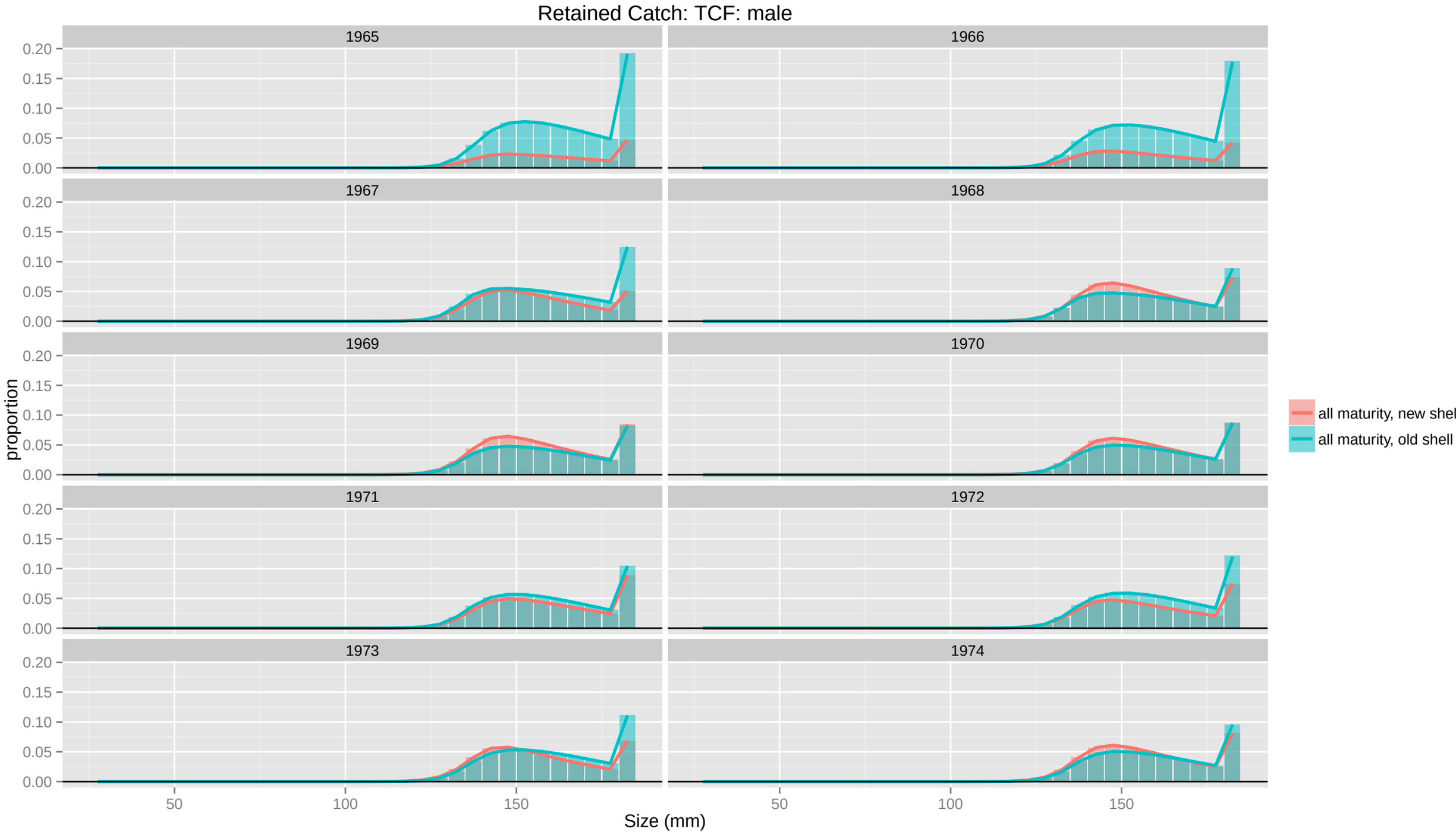

Survey Catch: NMFS trawl survey
male
female
proportion
0.020
0.015
0.010
0.005
0.000
50
100
150
Size (mm)
immature, new shell
mature, new shell
mature, old shell

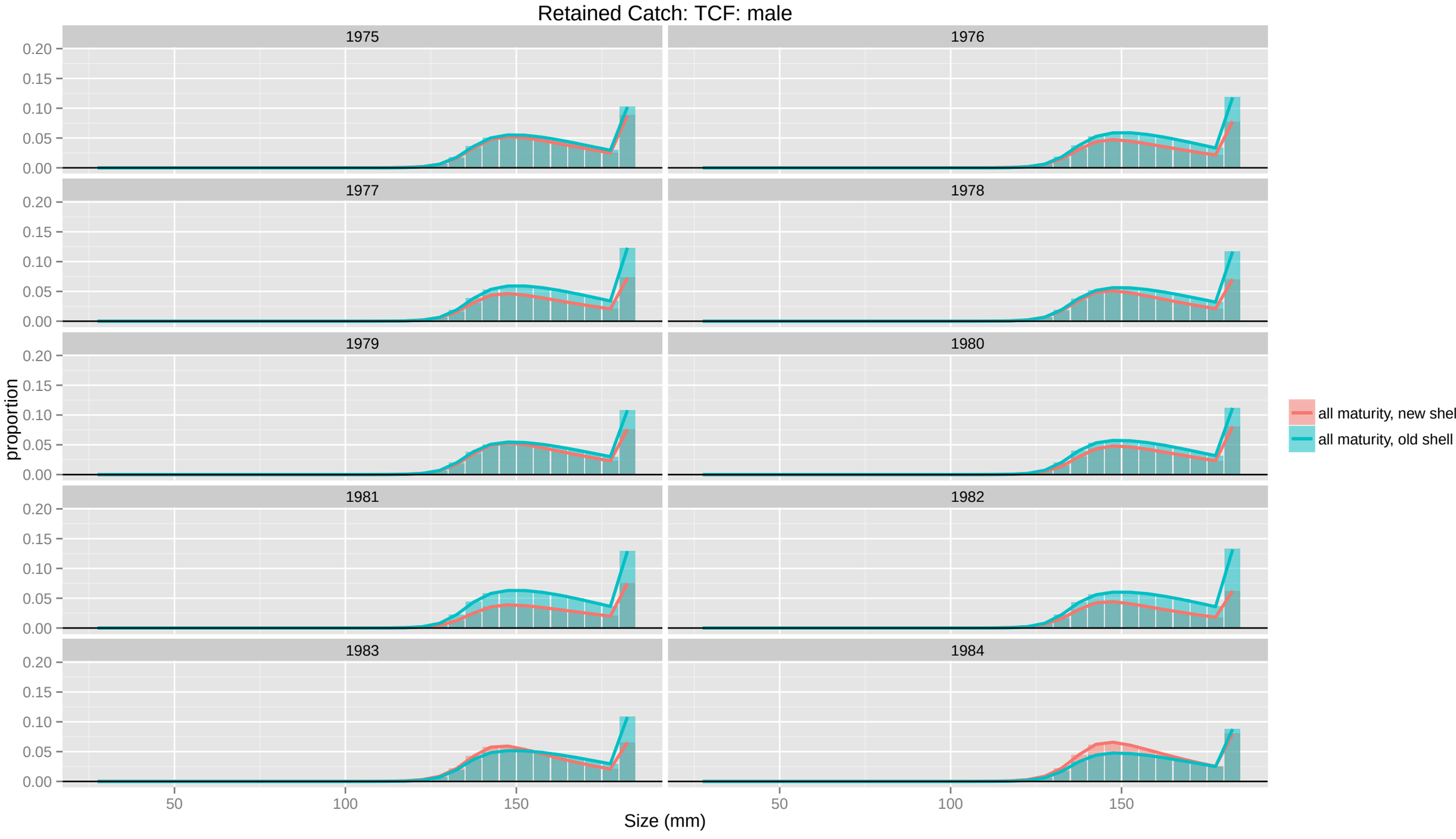

TCF
male
all sex
Retained Catch (millions)
0
5
10
15
20
25
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

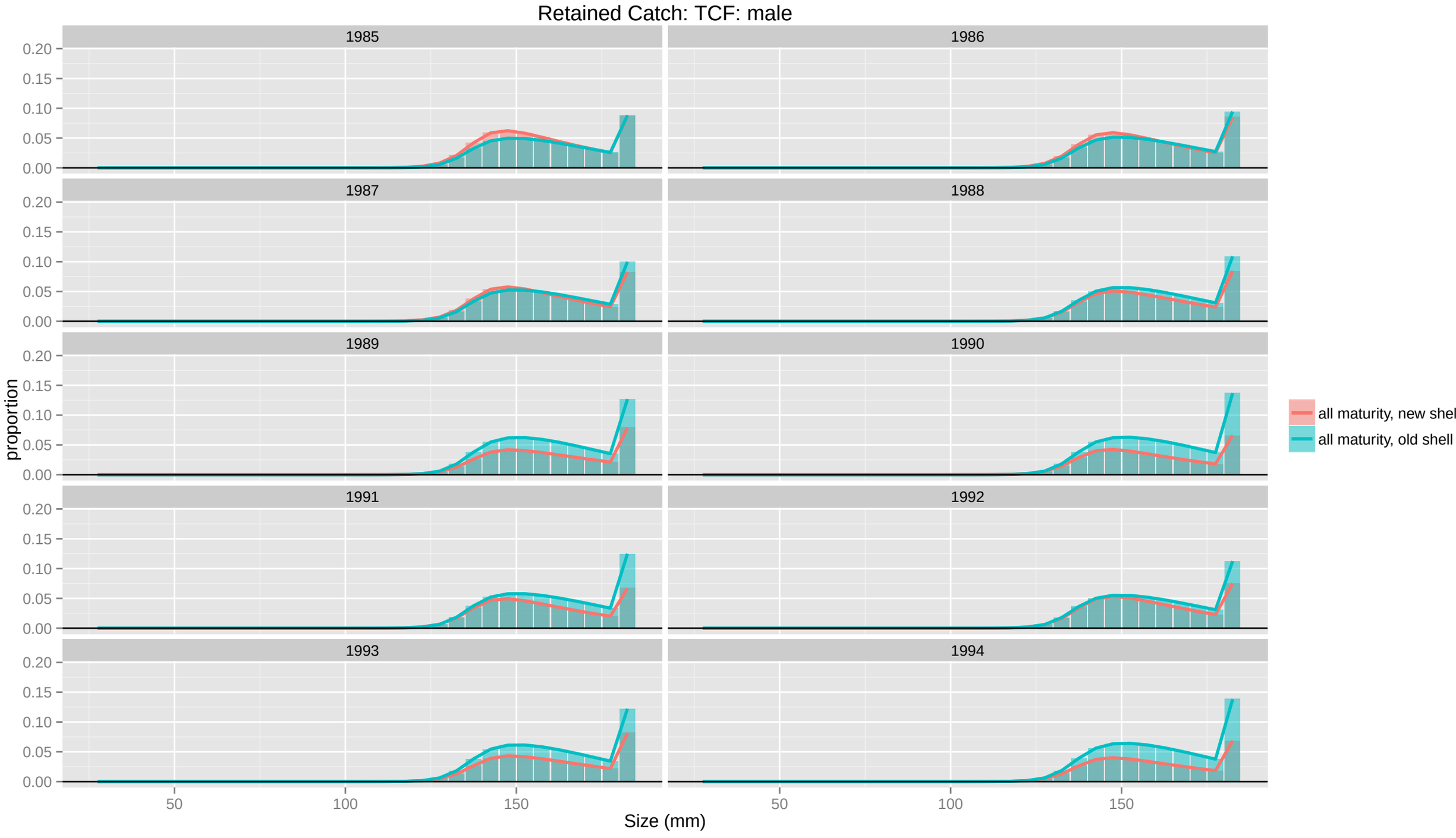

TCF
male
all sex
Retained Catch (millions) [ln−scale]
3
2
1
0
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

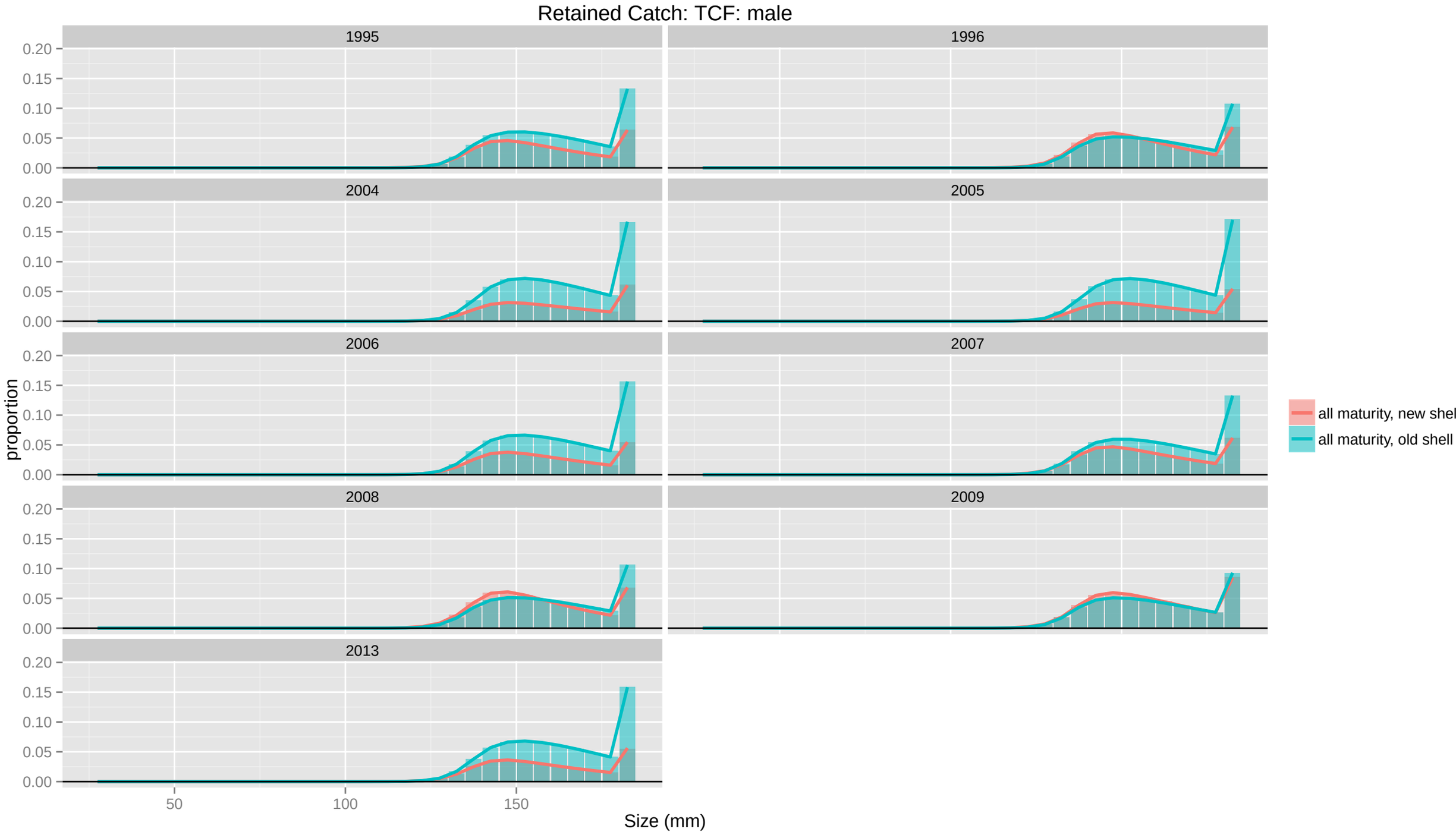

TCF
male
all sex
Retained Catch (thousands mt)
0
10
20
30
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

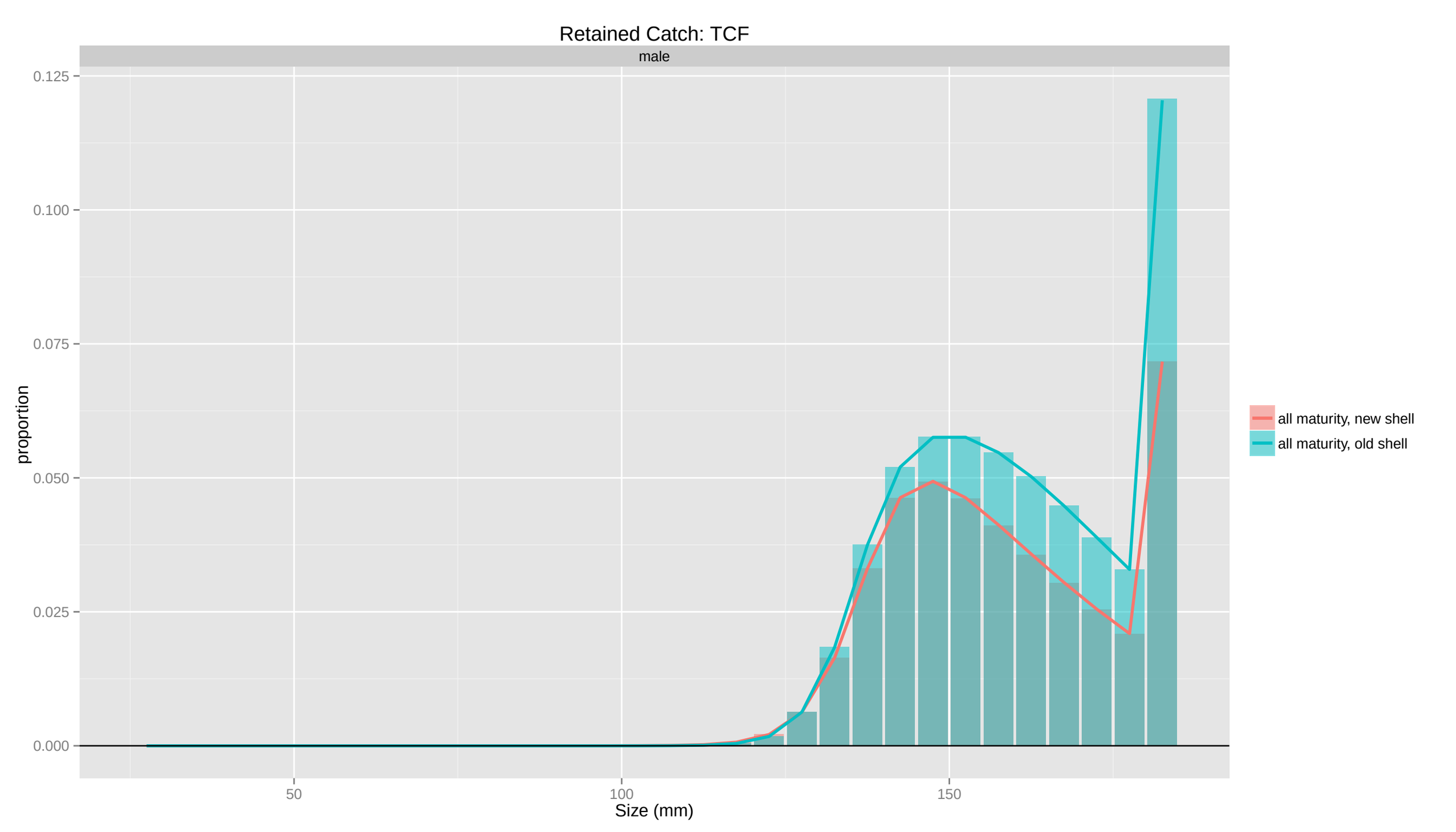

TCF
male
all sex
Retained Catch (thousands mt) [ln−scale]
0
1
2
3
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

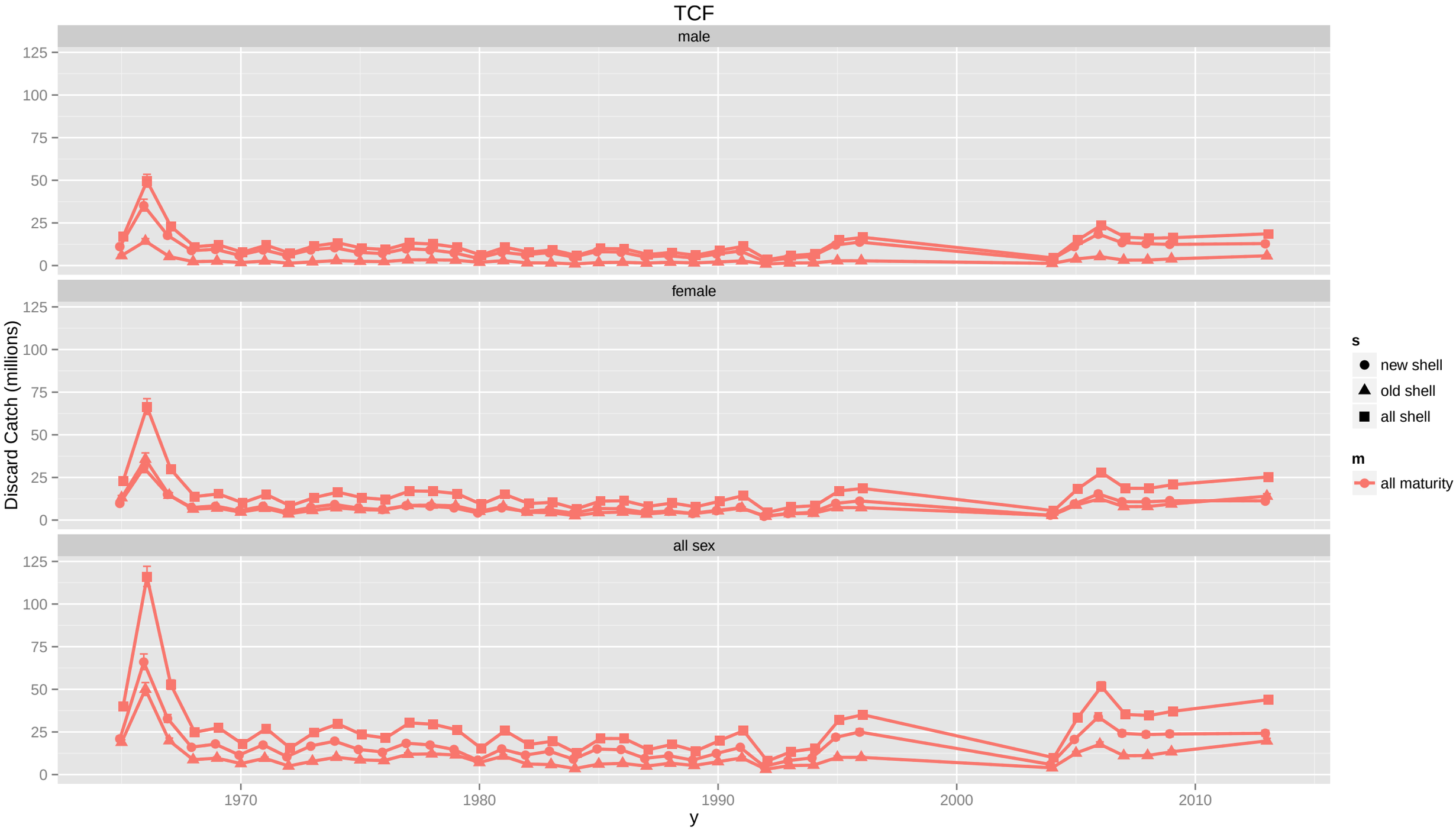

Retained Catch: TCF: male
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
0.20
0.15
0.10
0.05
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

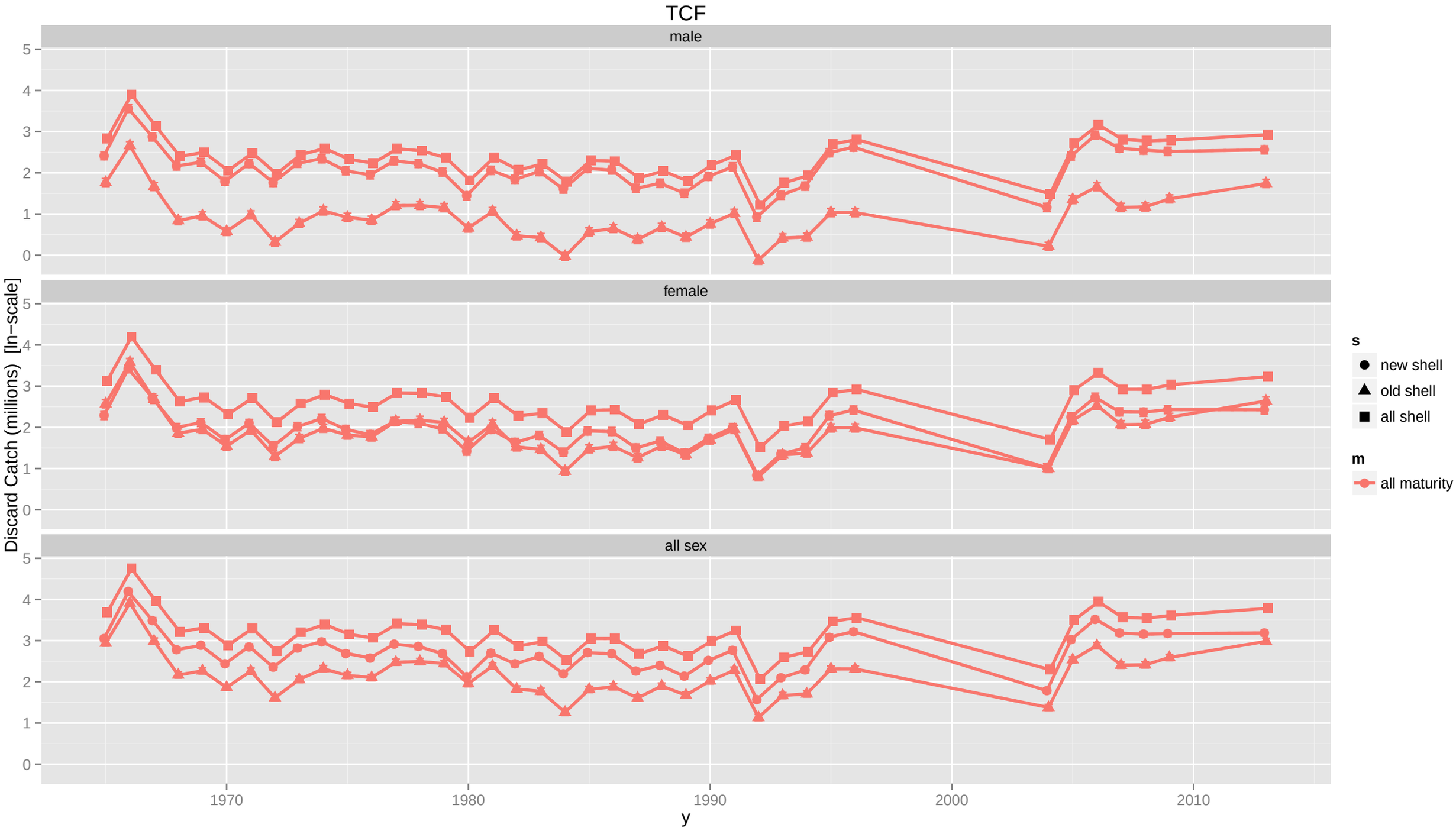

Retained Catch: TCF: male
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.20
0.15
0.10
0.05
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

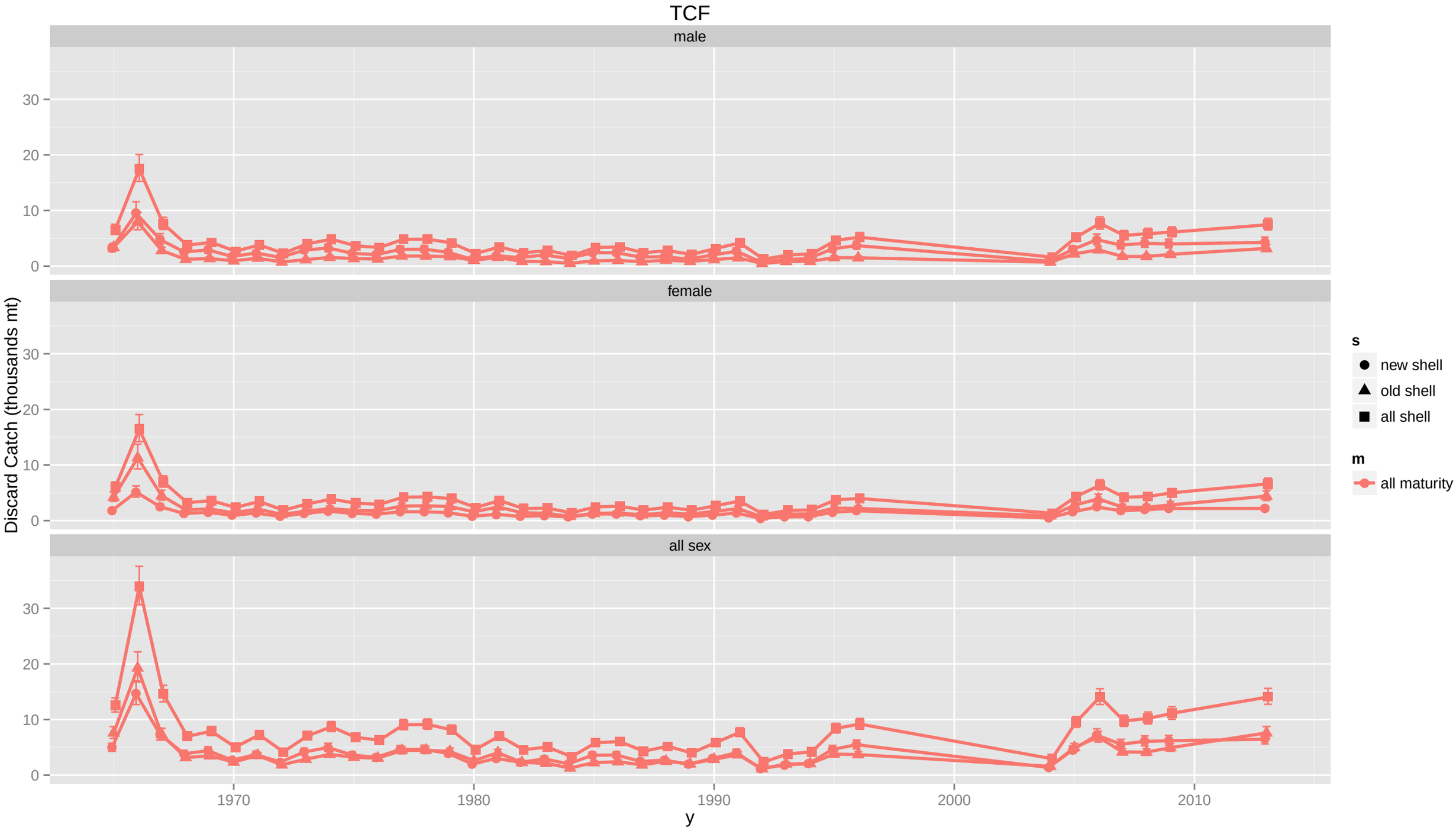

Retained Catch: TCF: male
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.20
0.15
0.10
0.05
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

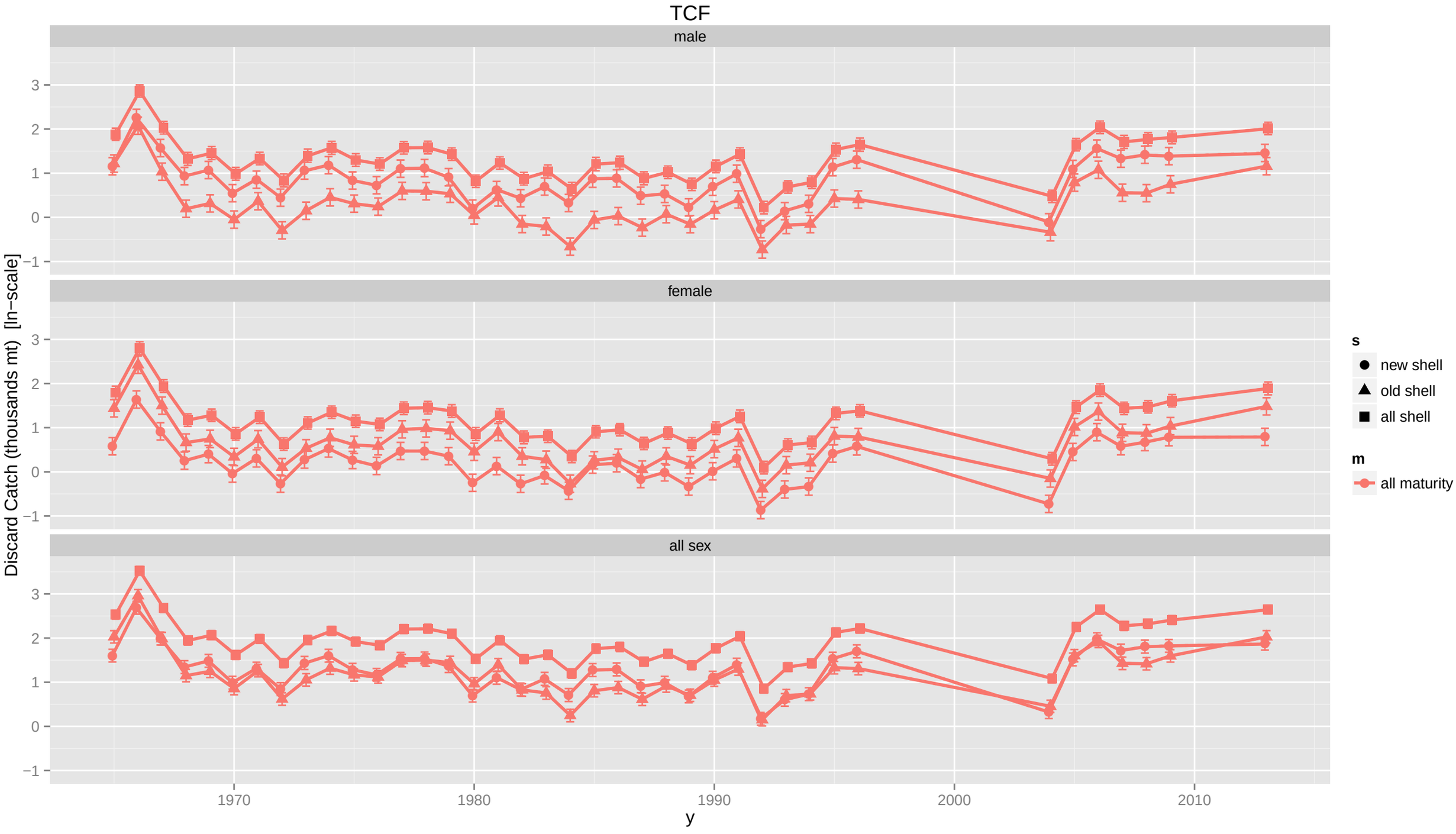

Retained Catch: TCF: male
1995
1996
2004
2005
2006
2007
2008
2009
2013
0.20
0.15
0.10
0.05
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

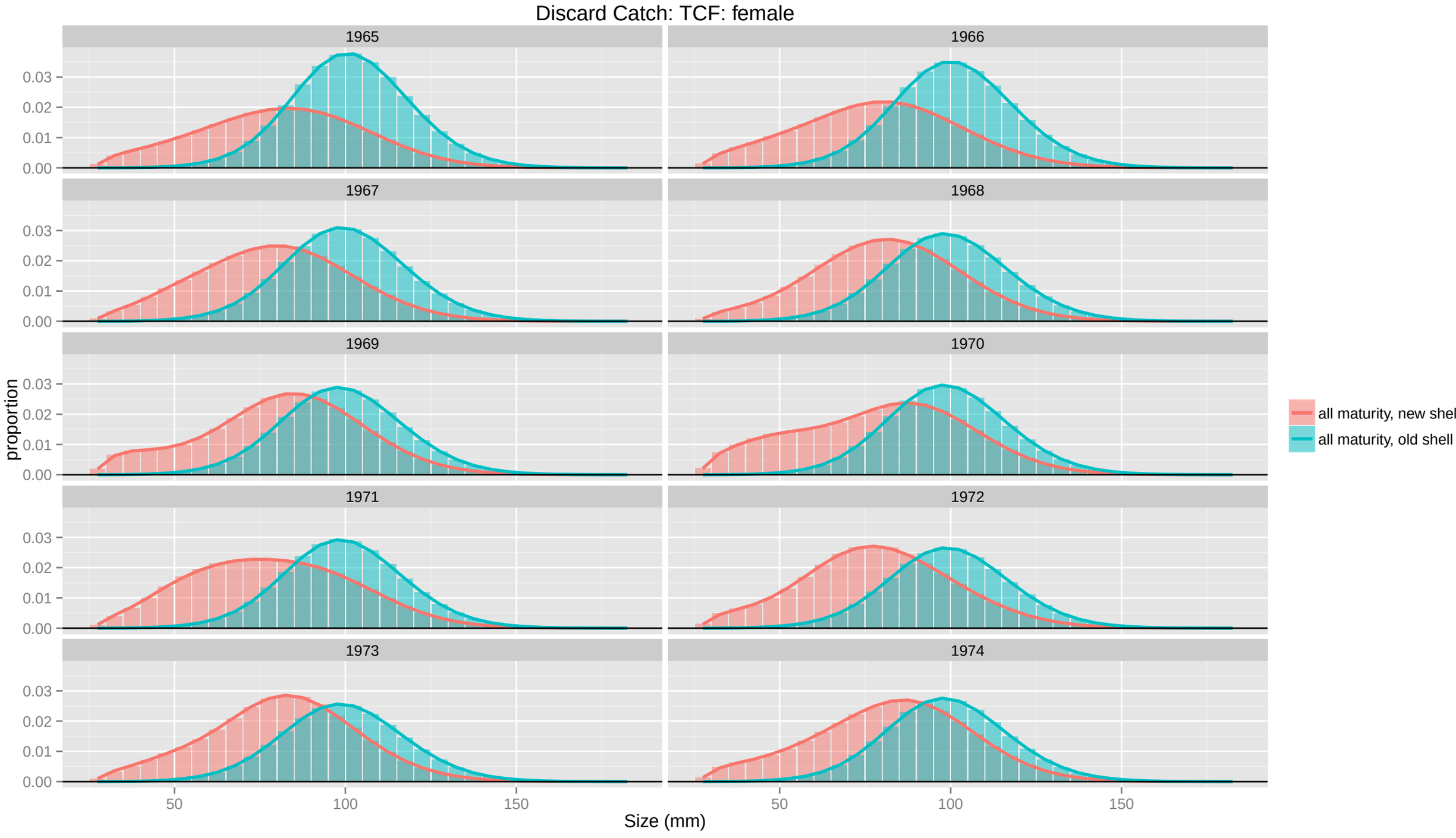

Retained Catch: TCF
male
0.125
0.100
0.075
0.050
0.025
0.000
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

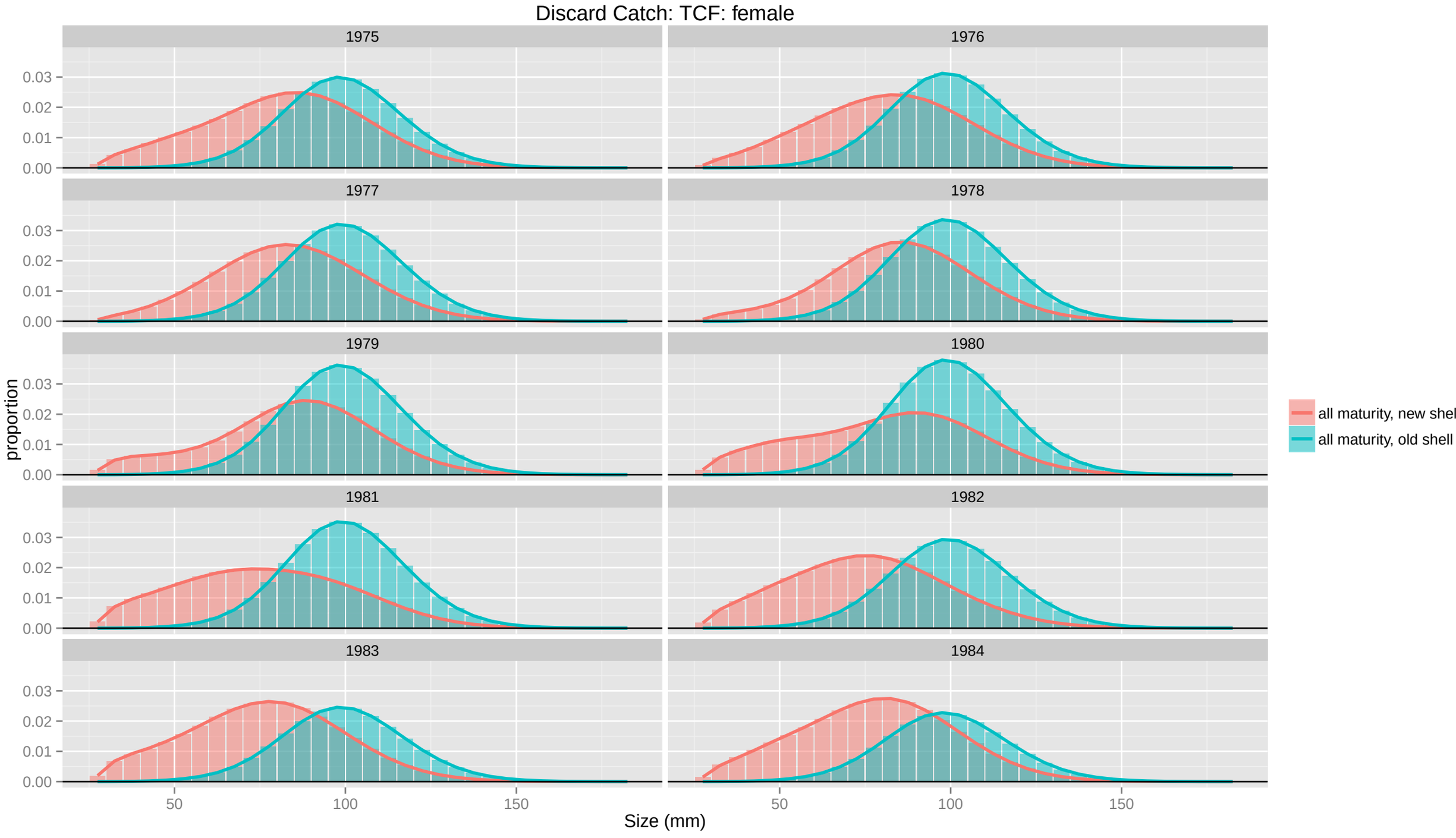

TCF
male
female
all sex
Discard Catch (millions)
0
25
50
75
100
125
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

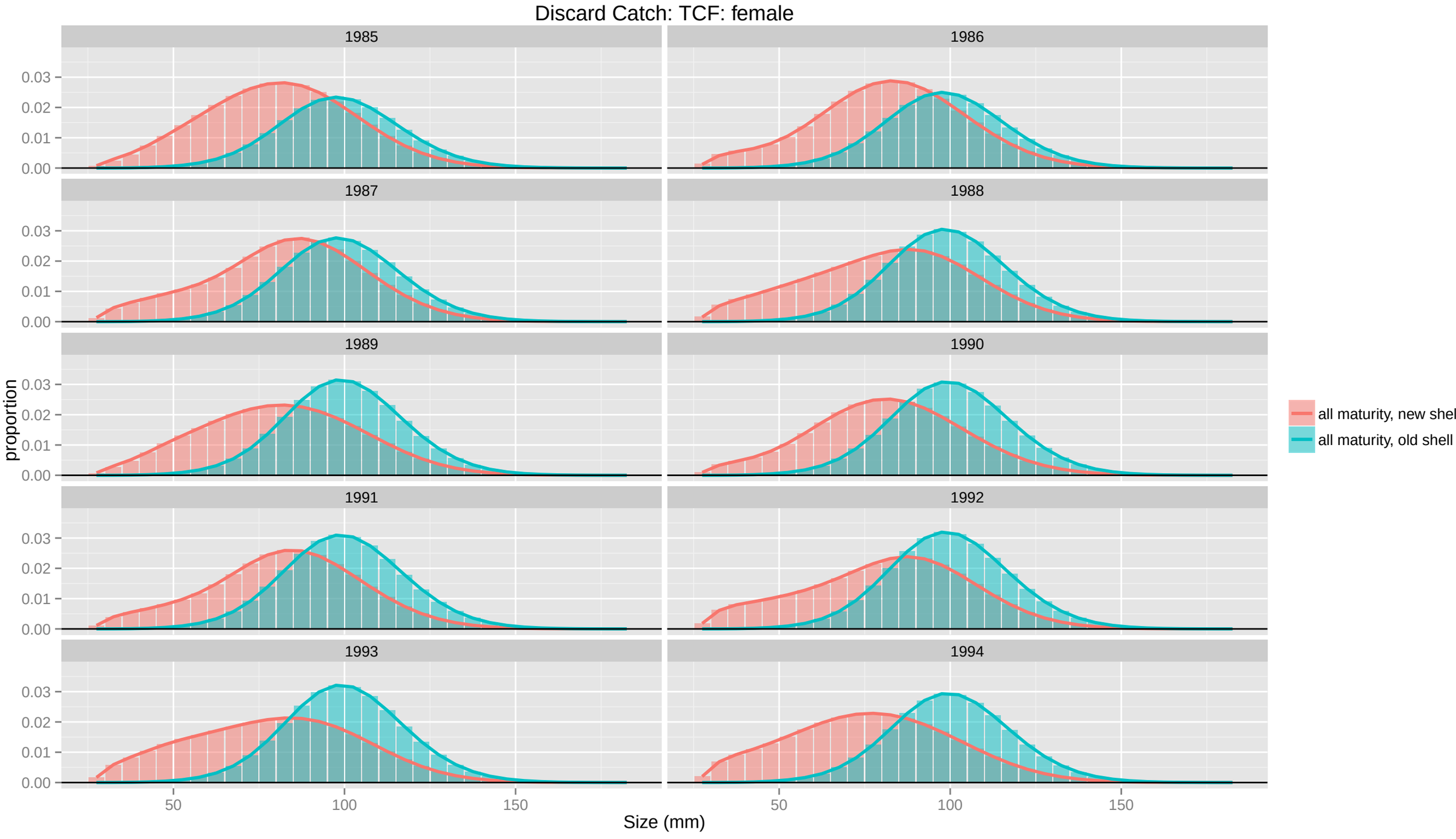

TCF
male
female
all sex
Discard Catch (millions) [ln−scale]
0
1
2
3
4
5
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

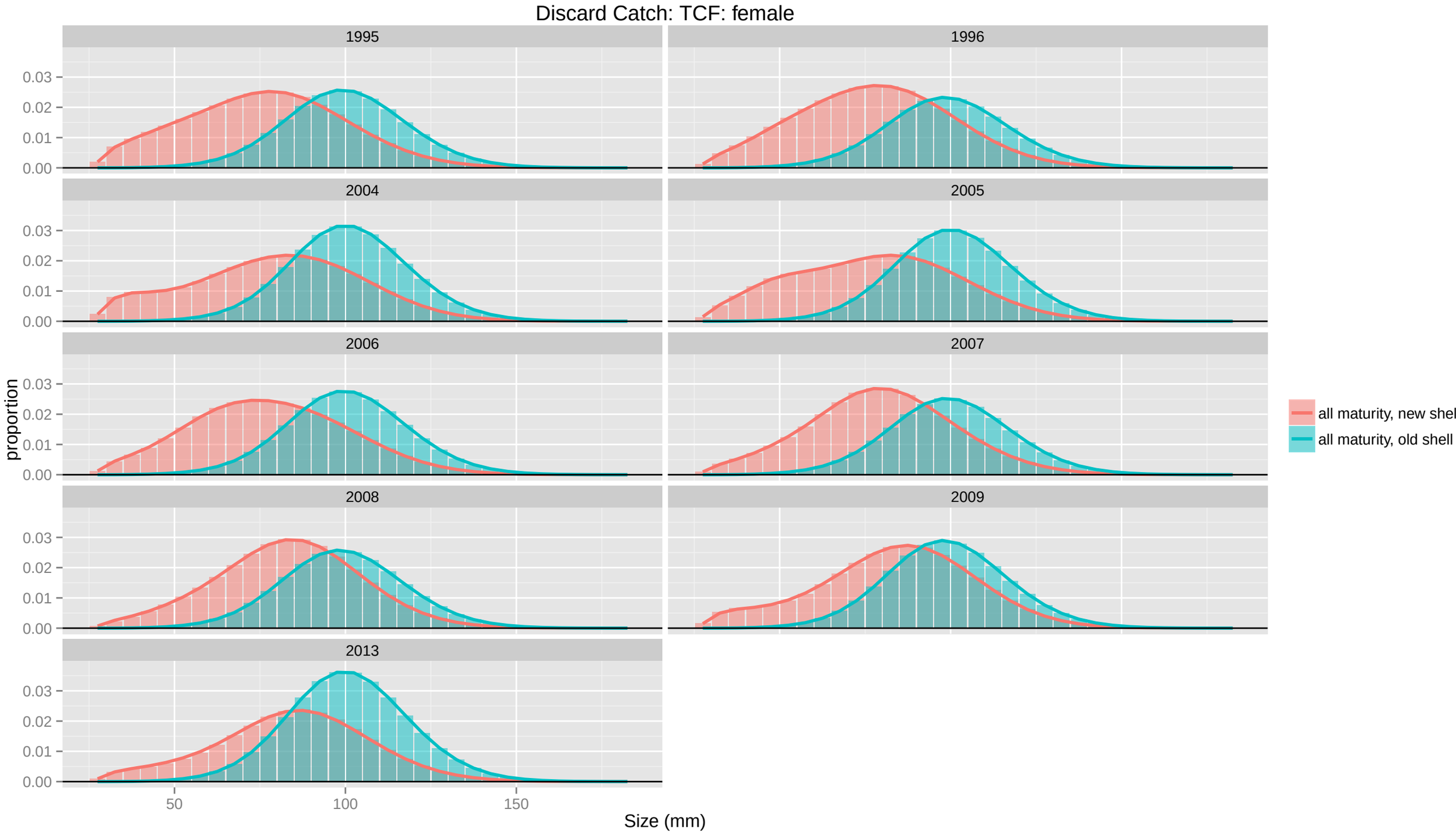

TCF
male
female
all sex
Discard Catch (thousands mt)
0
10
20
30
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

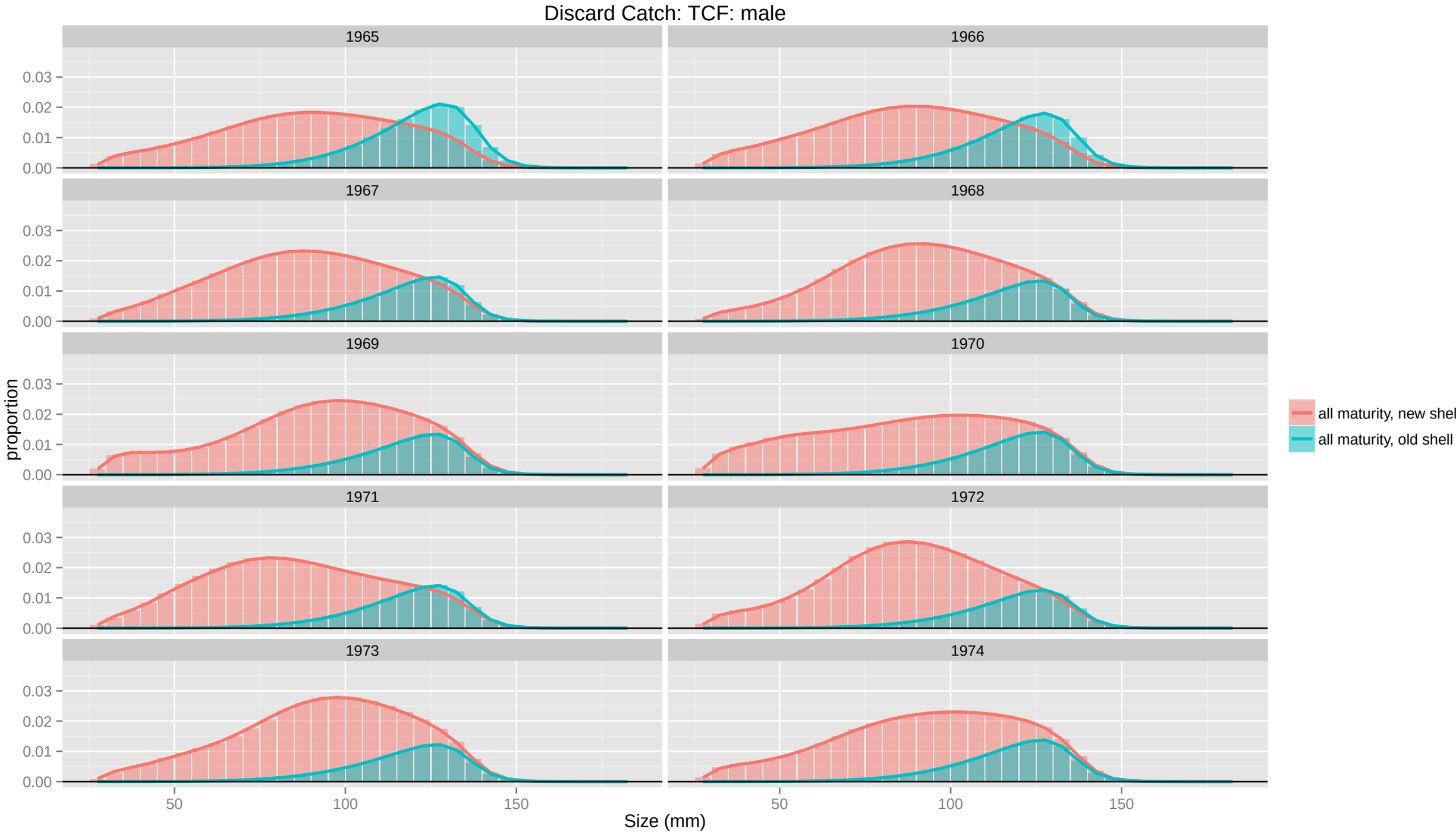

TCF
male
female
all sex
Discard Catch (thousands mt) [ln−scale]
3
2
1
0
−1
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

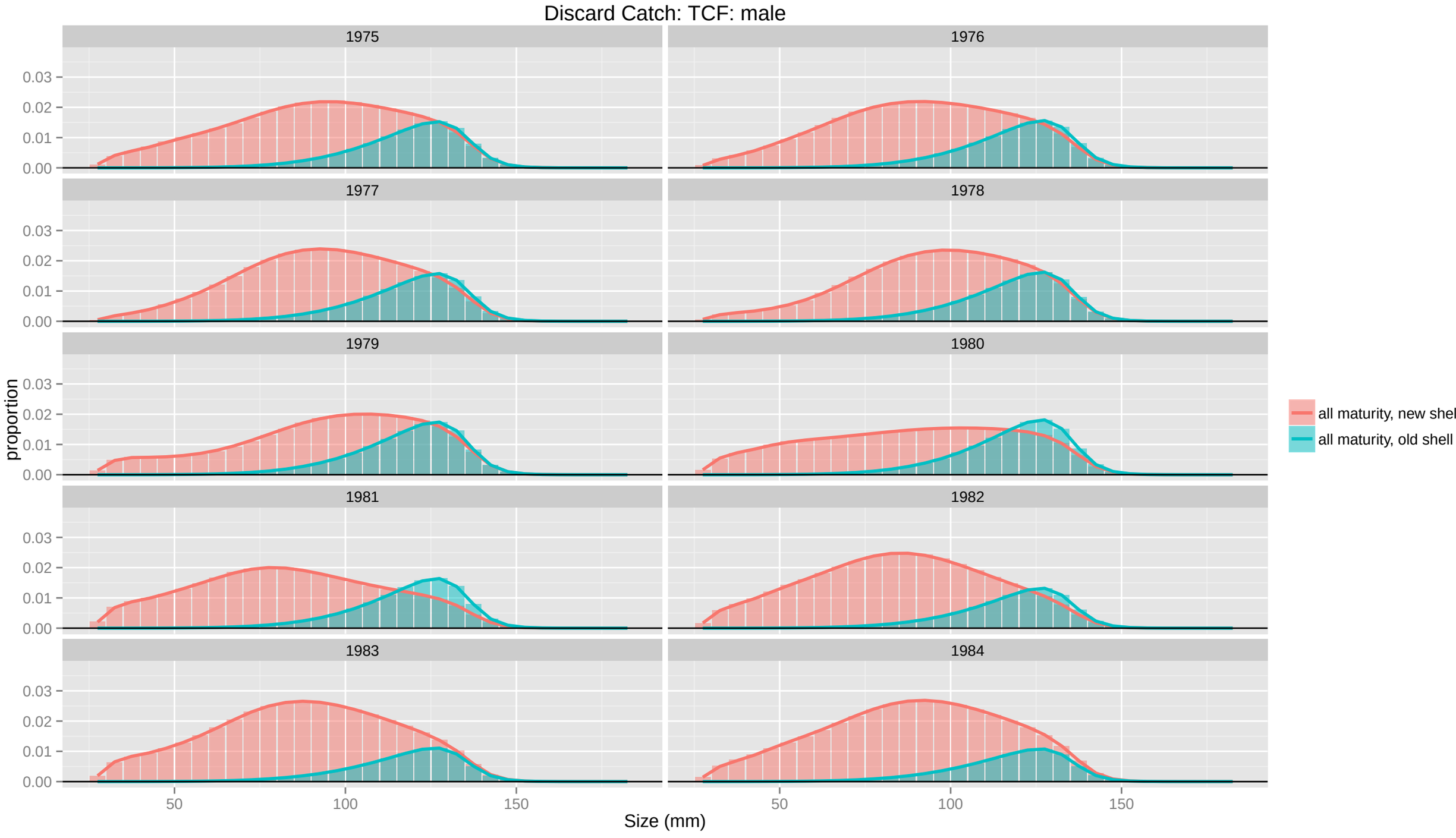

Discard Catch: TCF: female
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

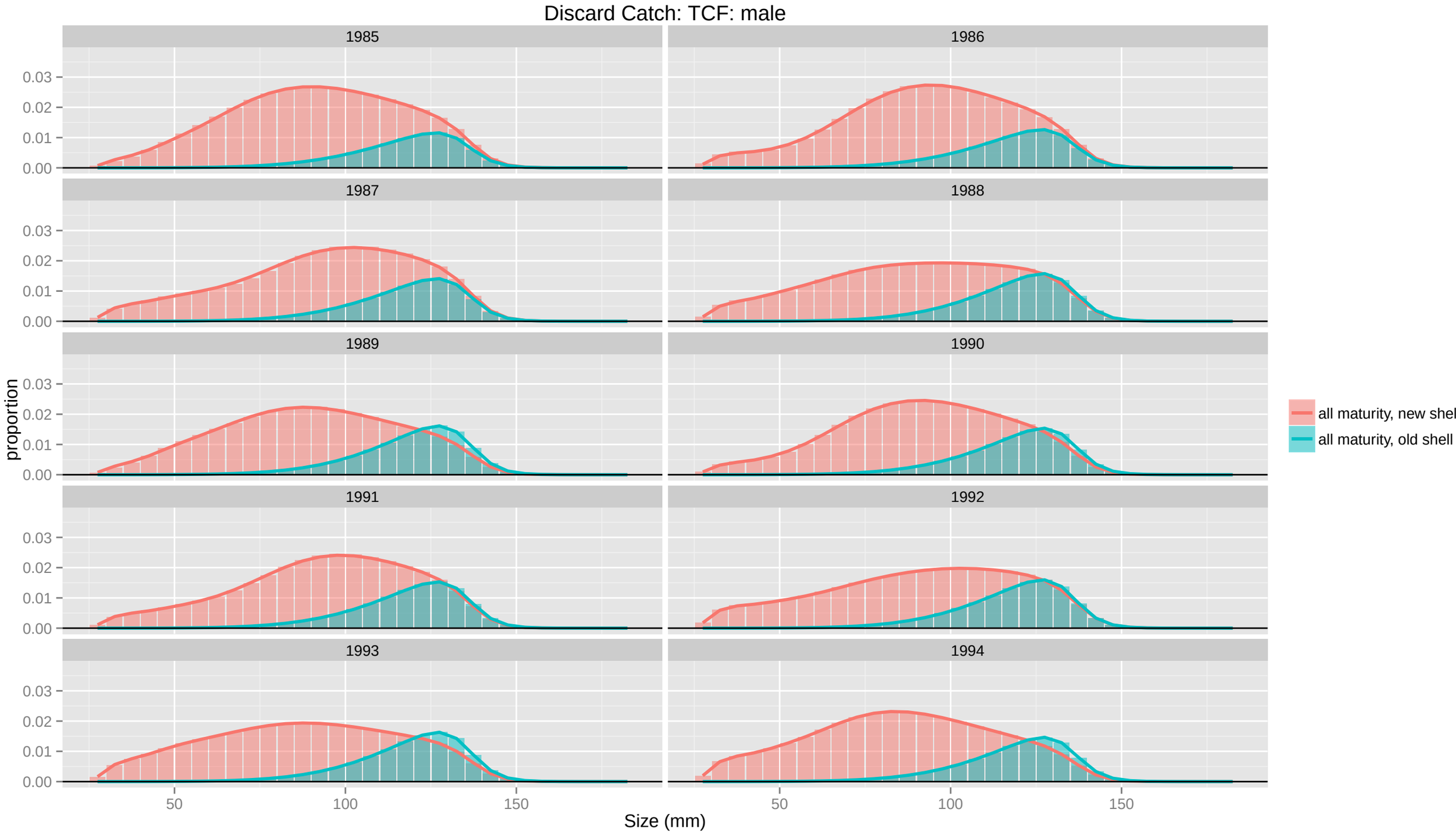

Discard Catch: TCF: female
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

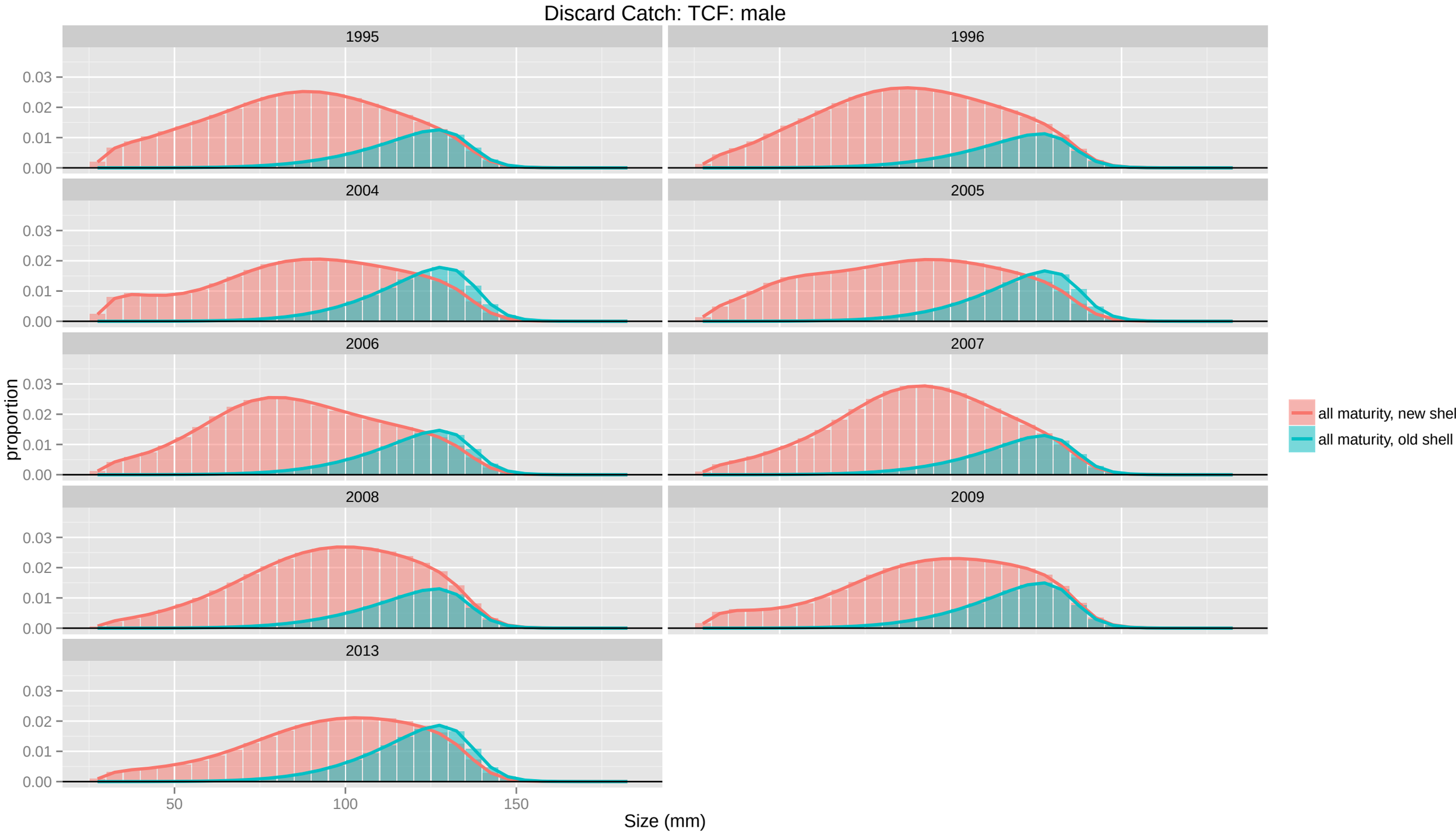

Discard Catch: TCF: female
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

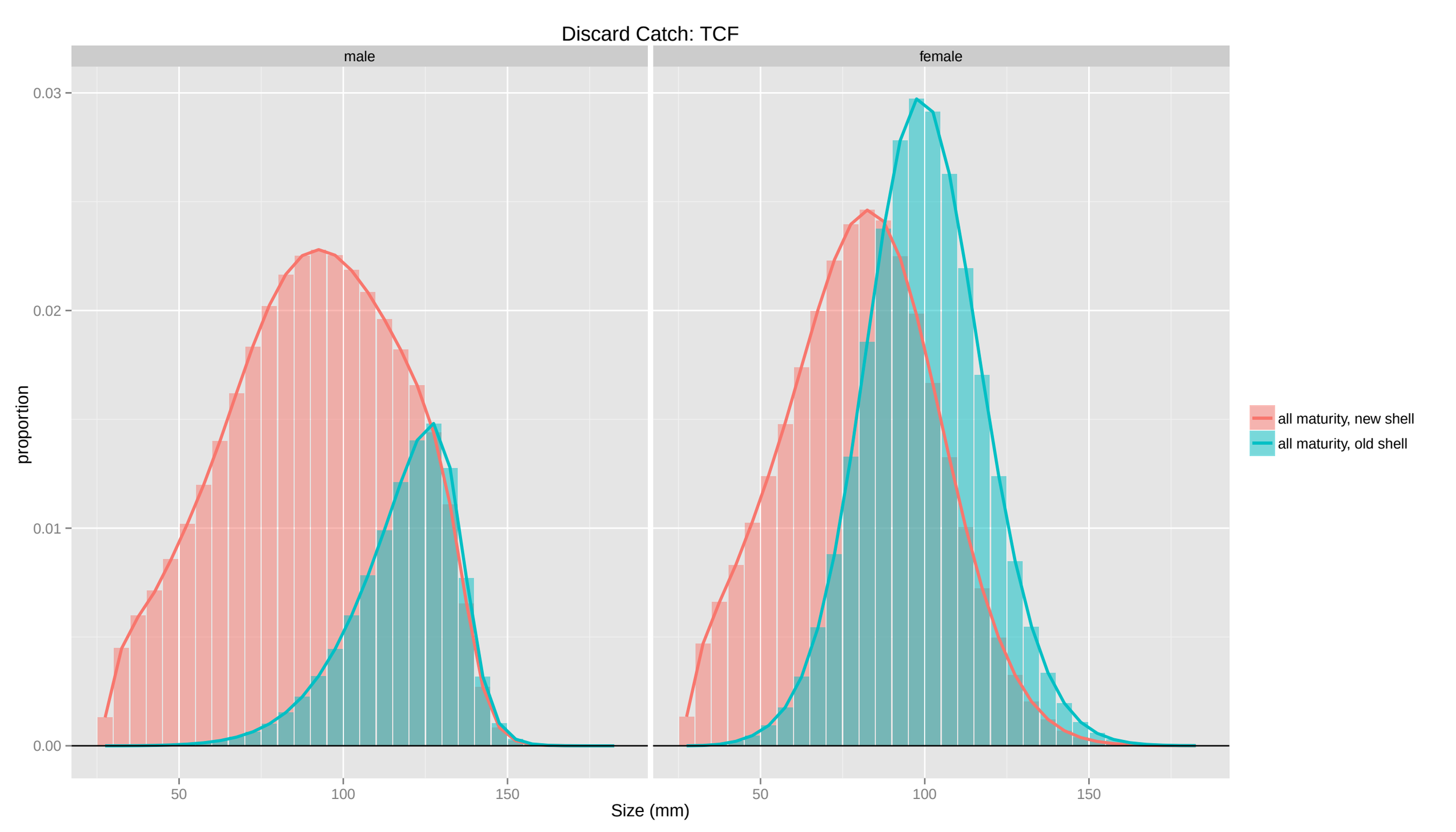

Discard Catch: TCF: female
1995
1996
2004
2005
2006
2007
2008
2009
2013
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

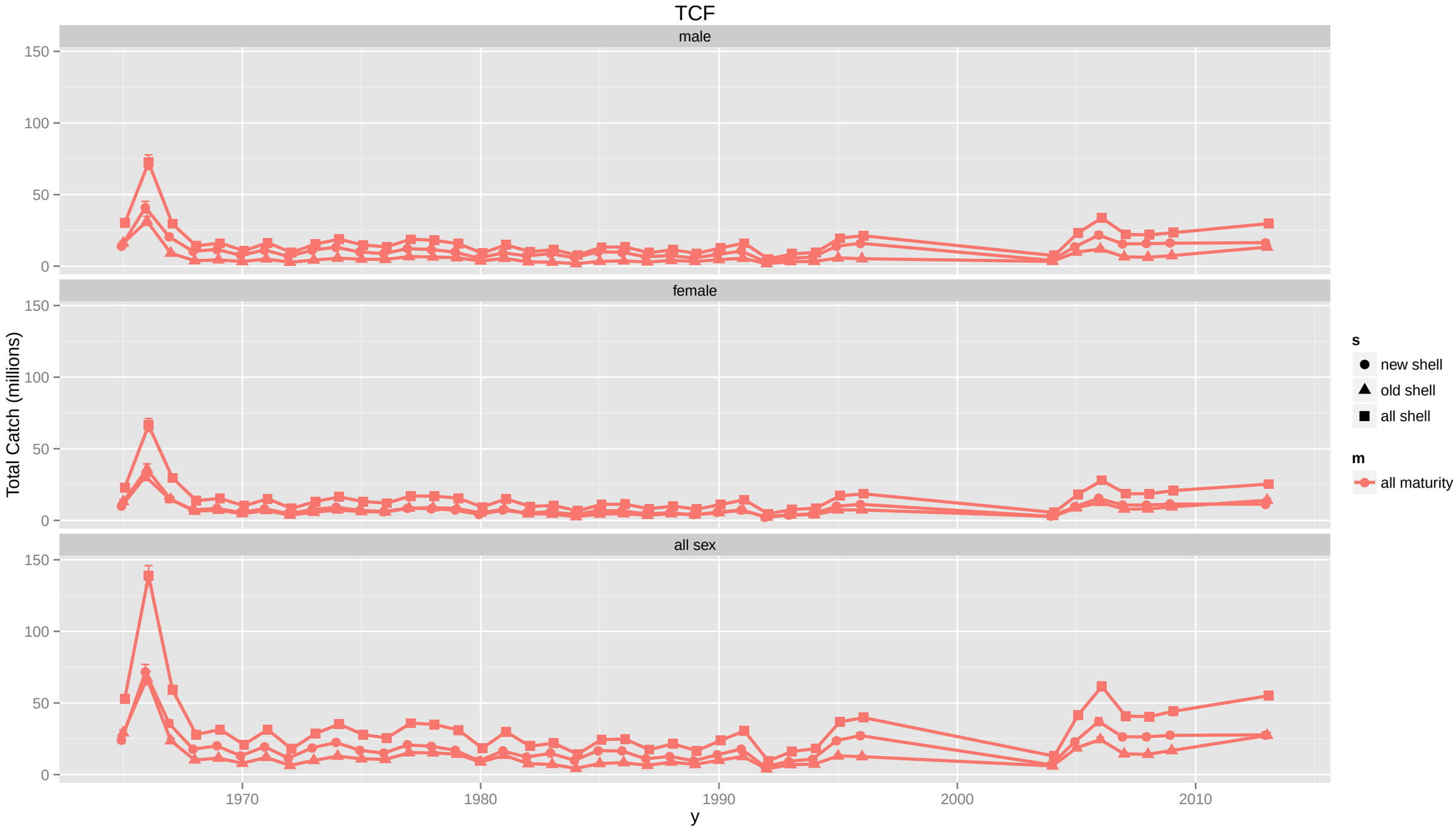

Discard Catch: TCF: male
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

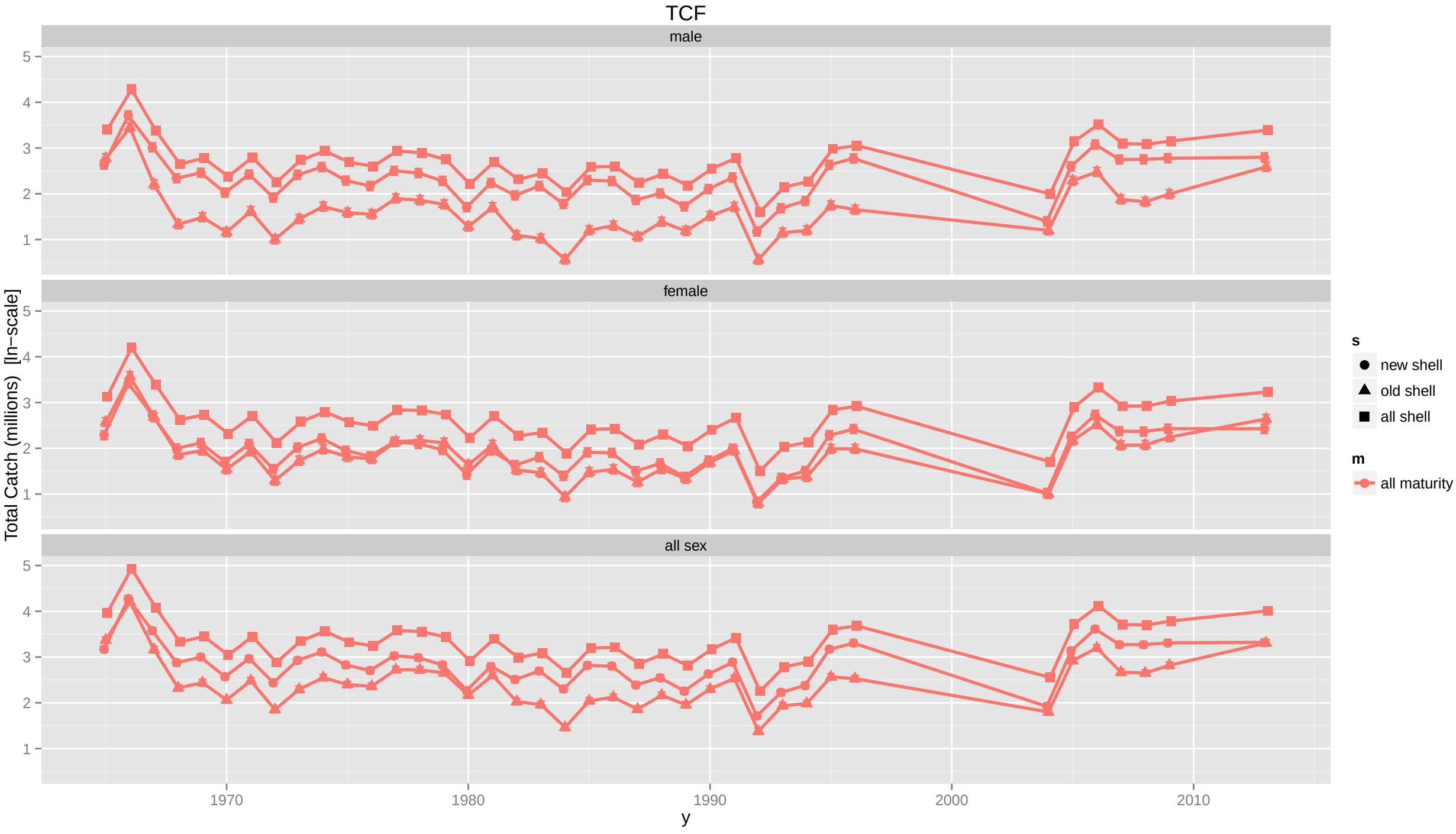

Discard Catch: TCF: male
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

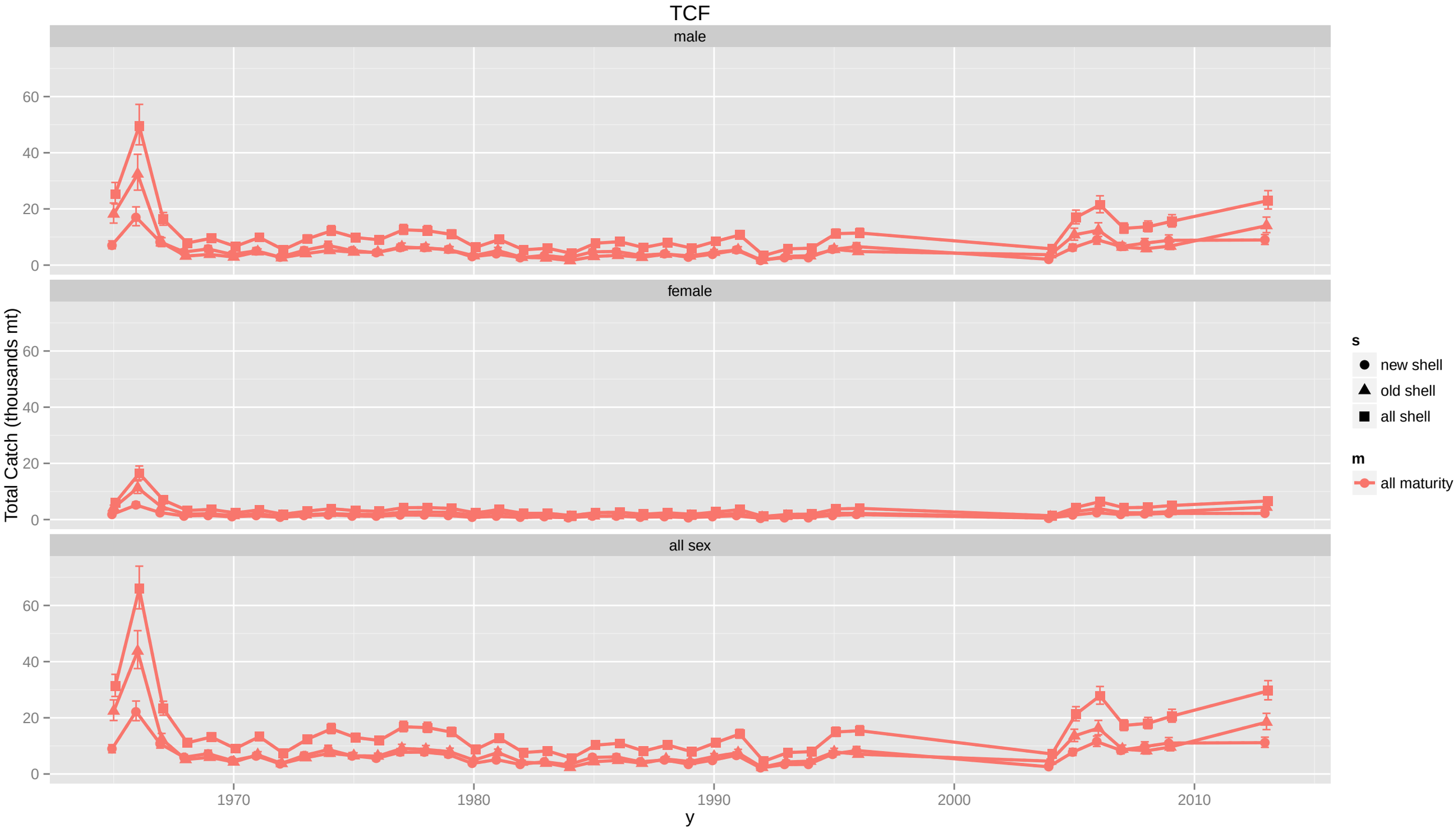

Discard Catch: TCF: male
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

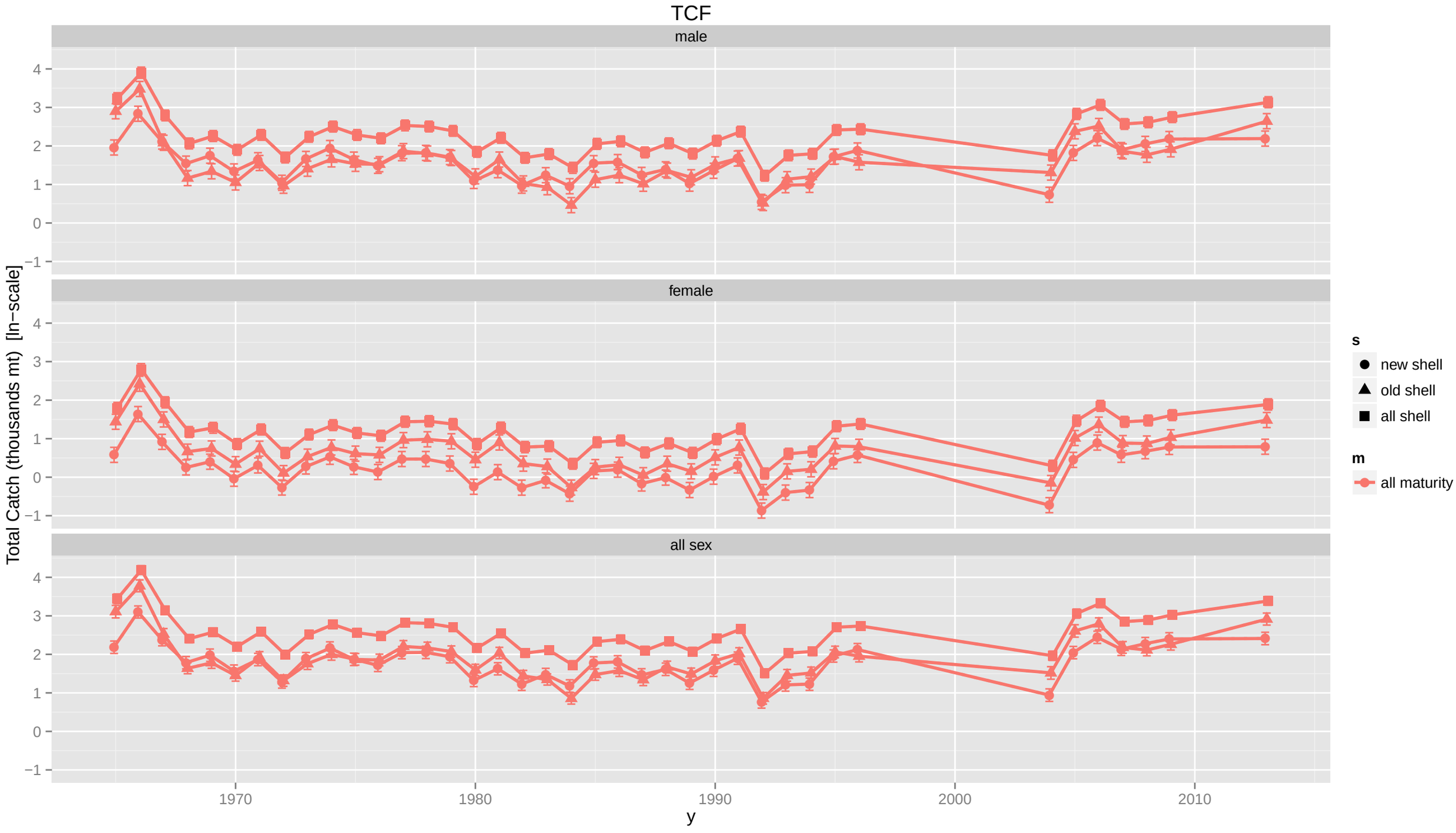

Discard Catch: TCF: male
1995
1996
2004
2005
2006
2007
2008
2009
2013
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

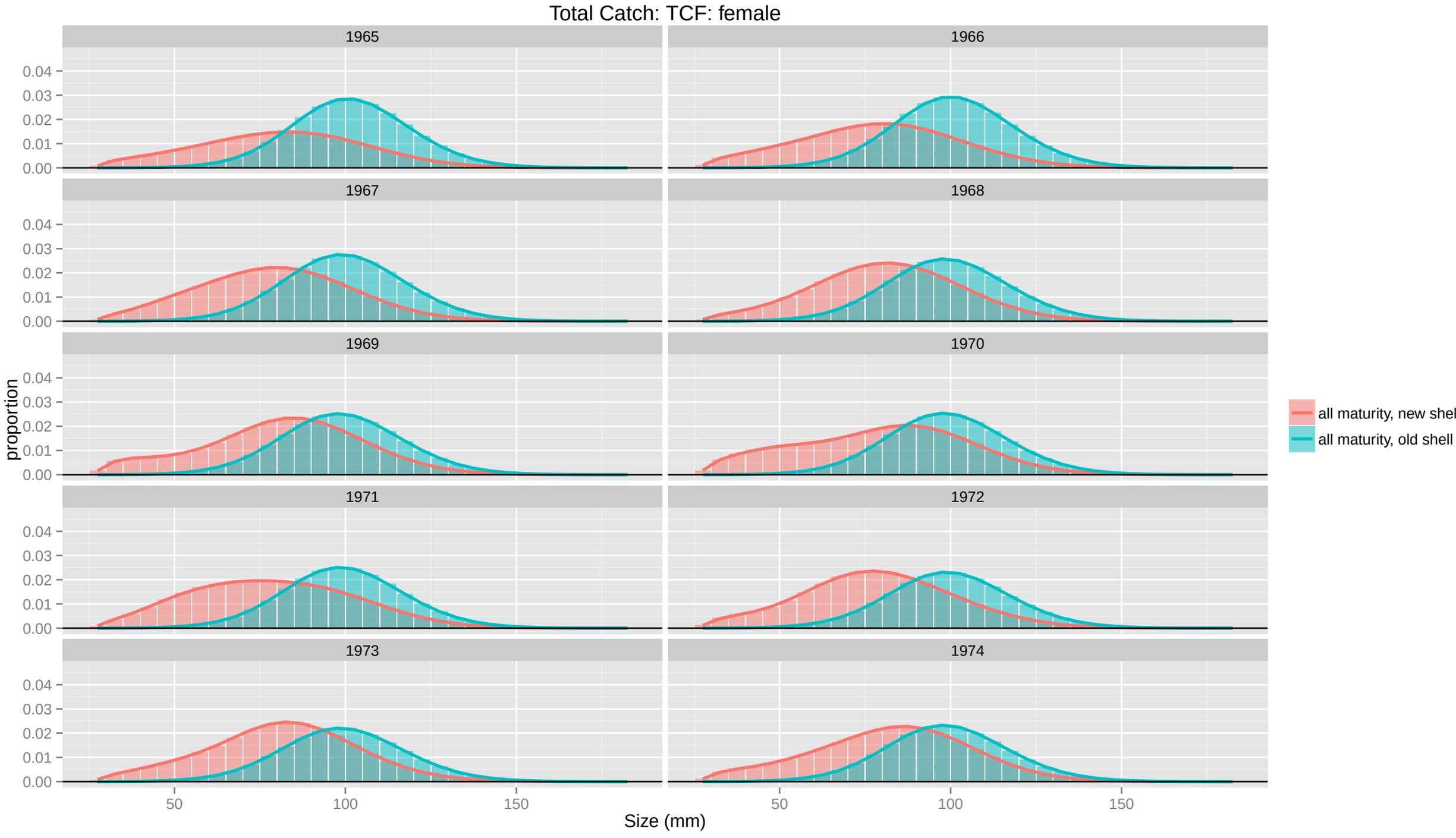

Discard Catch: TCF
male
female
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

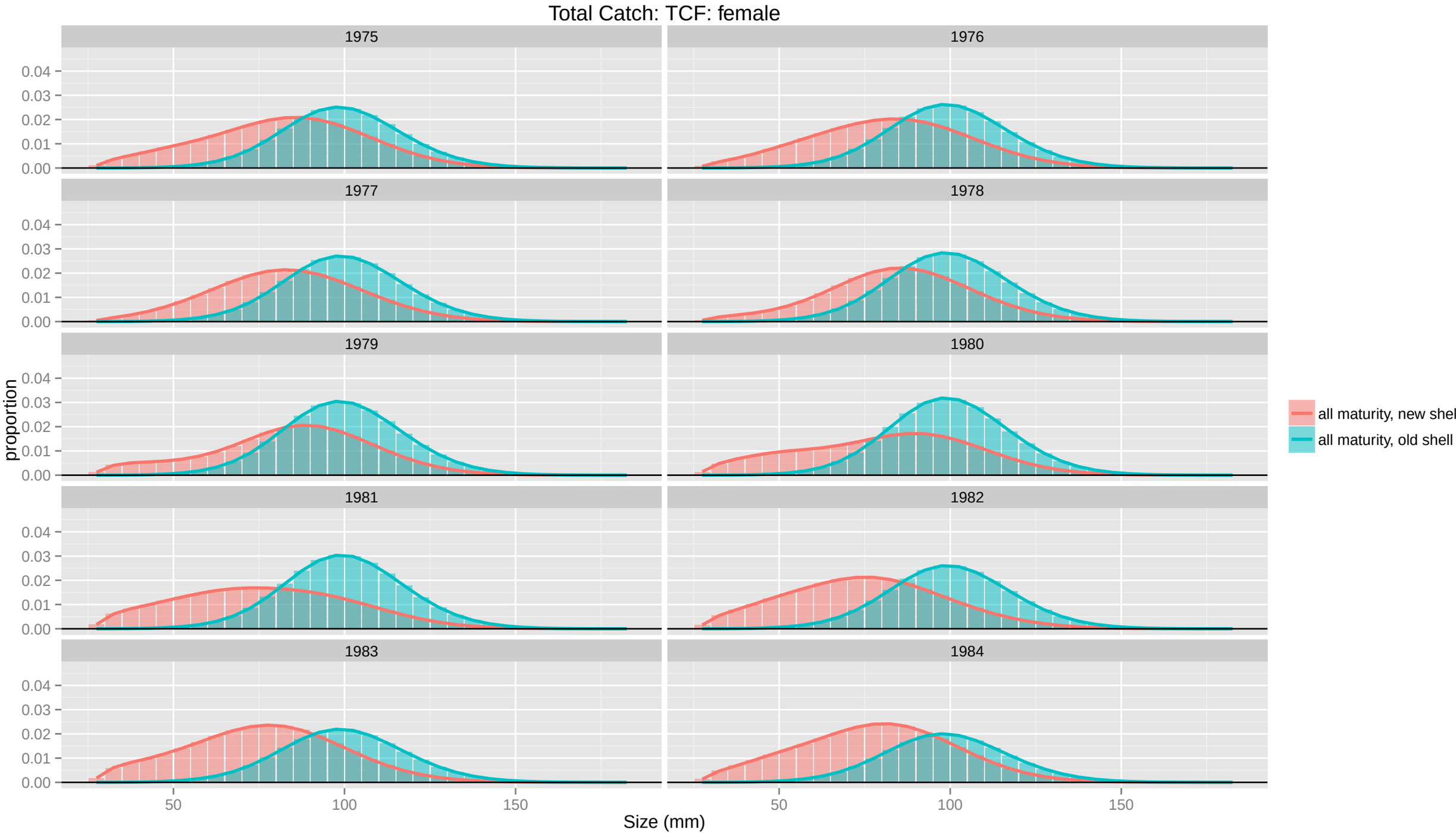

TCF
male
female
all sex
Total Catch (millions)
150
100
50
0
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

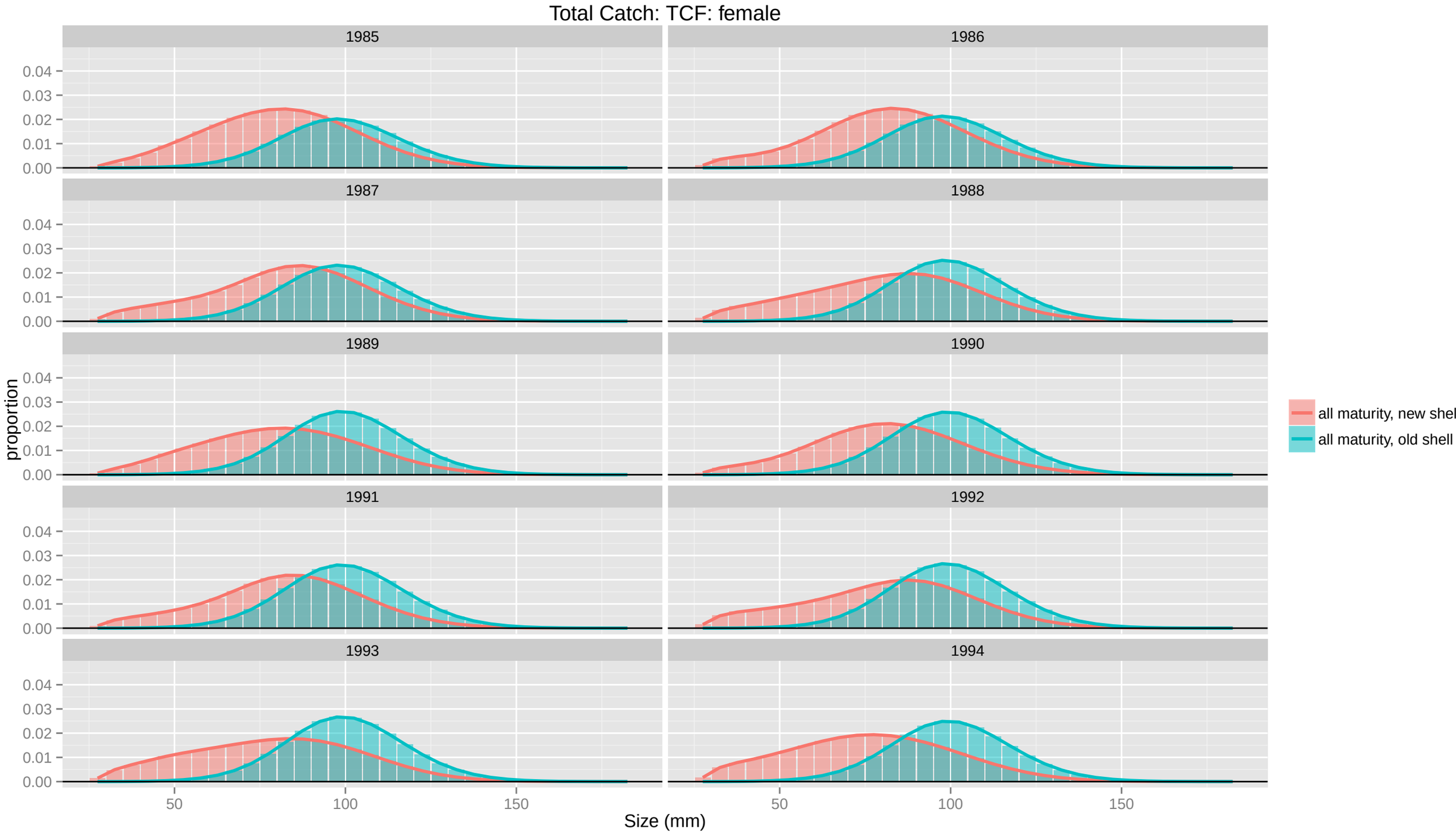

TCF
male
female
all sex
Total Catch (millions) [ln−scale]
5
4
3
2
1
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

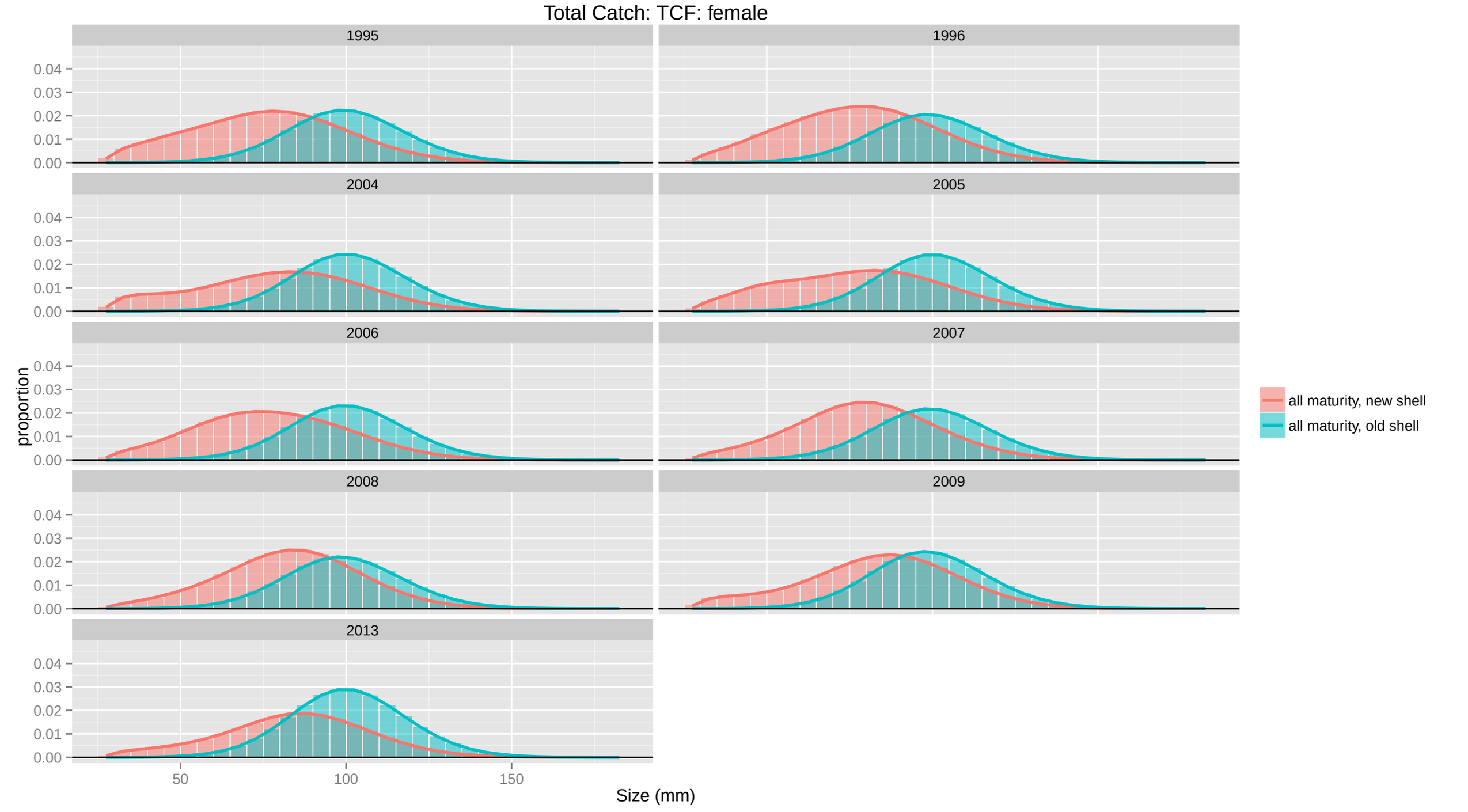

TCF
male
female
all sex
Total Catch (thousands mt)
0
20
40
60
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

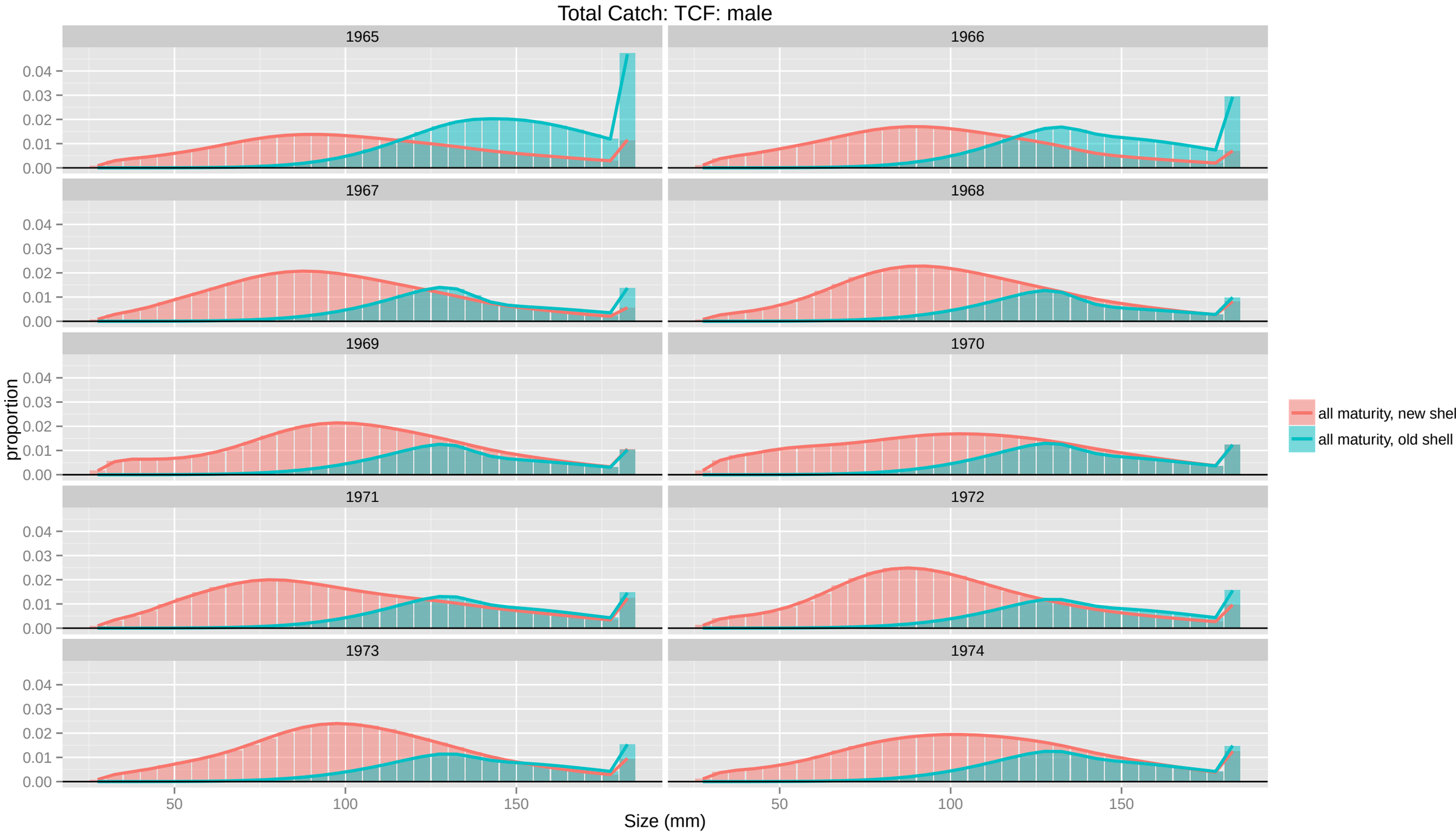

TCF
male
female
all sex
Total Catch (thousands mt) [ln−scale]
4
3
2
1
0
−1
1970
1980
1990
2000
2010
y
s
new shell
old shell
all shell
m
all maturity

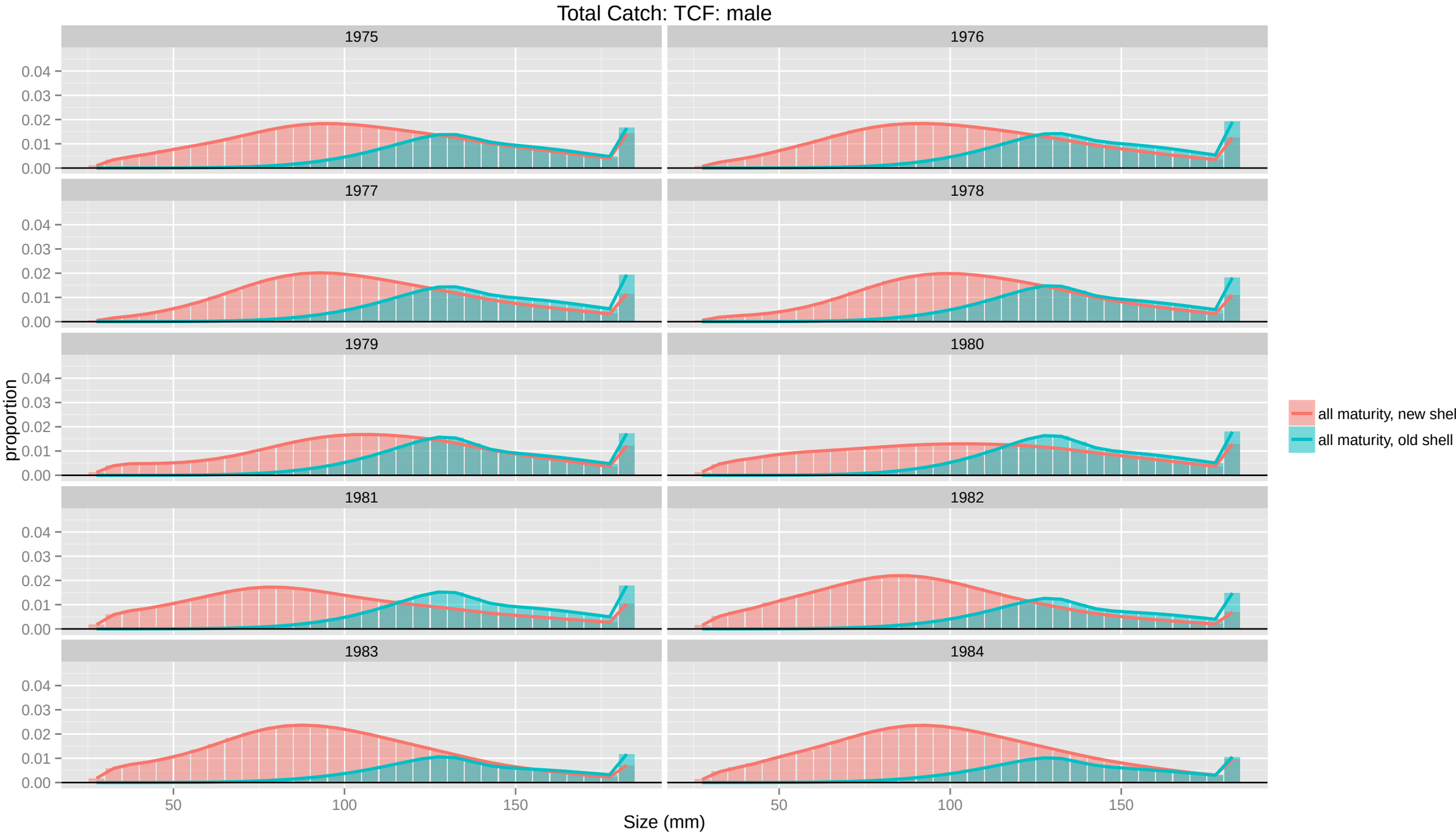

Total Catch: TCF: female
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

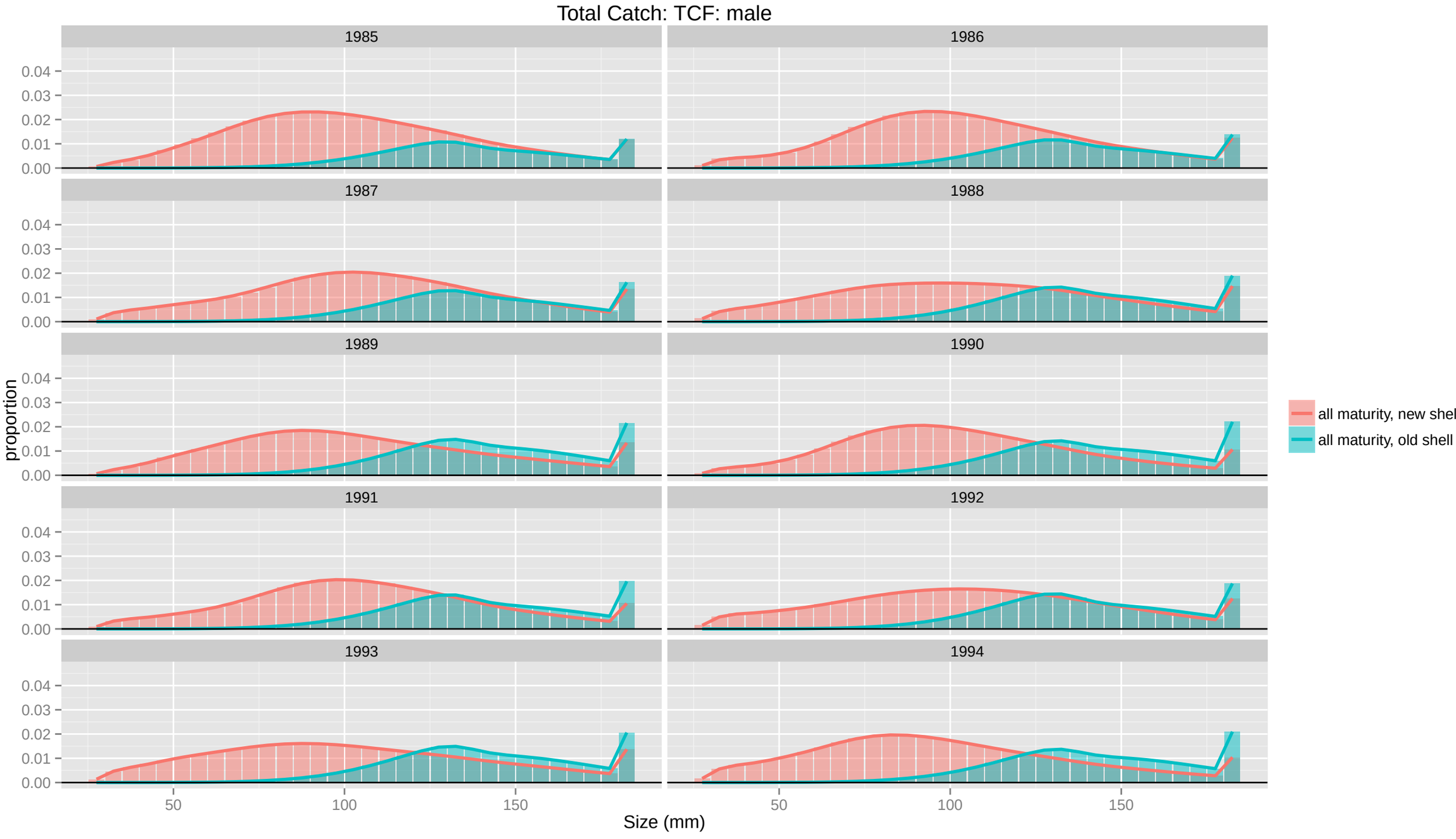

Total Catch: TCF: female
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

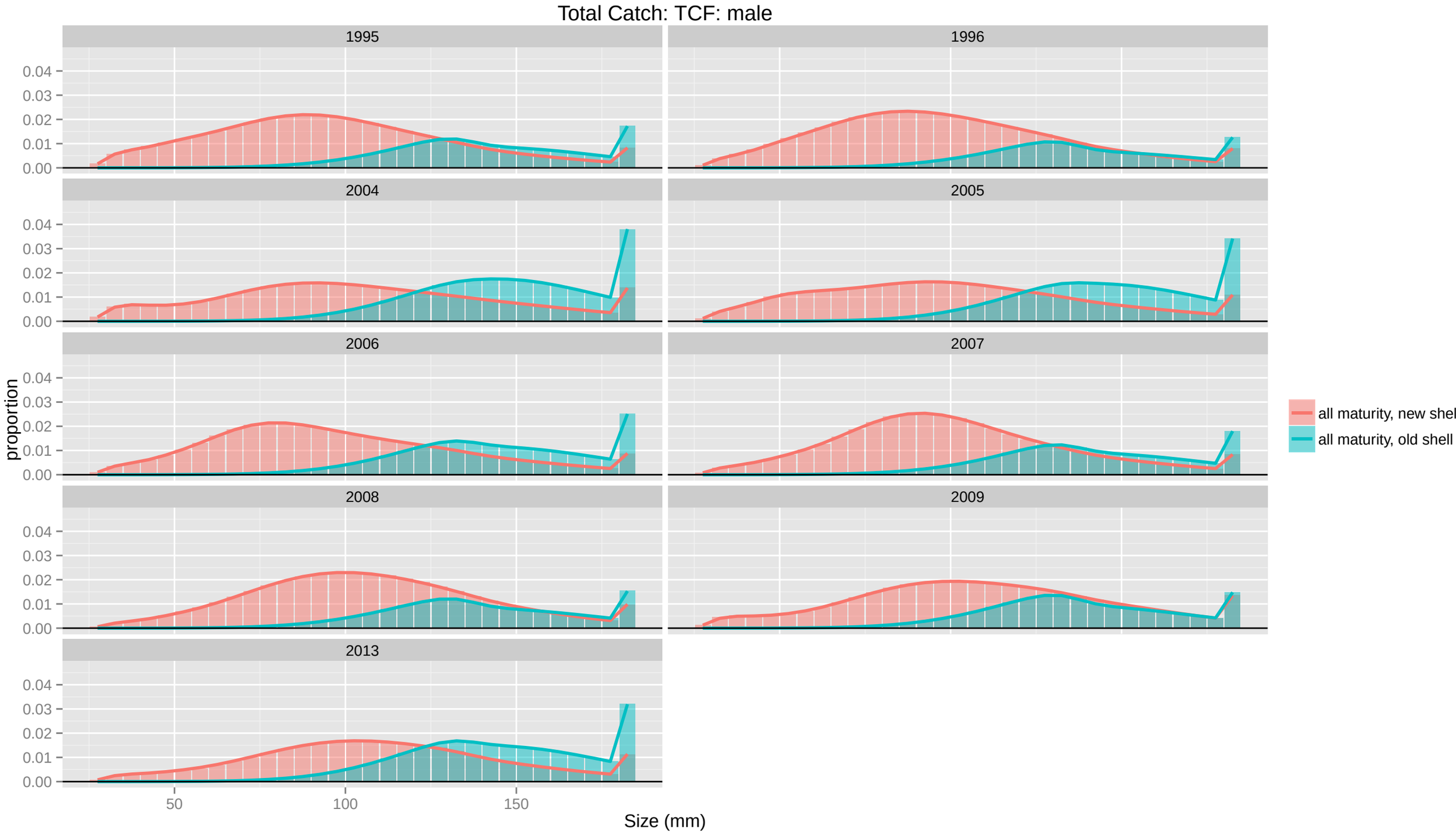

Total Catch: TCF: female
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

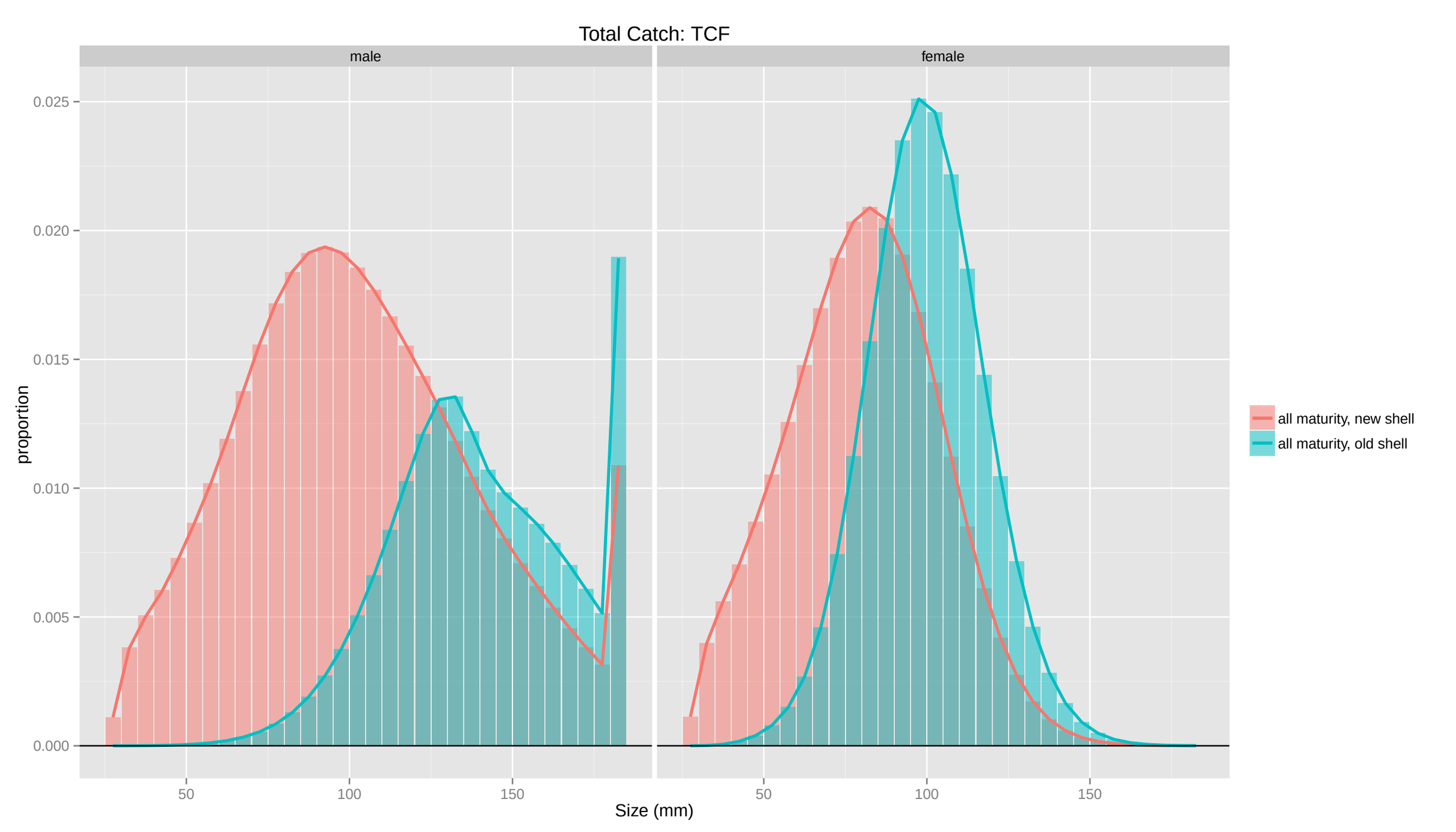

Total Catch: TCF: female
1995
1996
2004
2005
2006
2007
2008
2009
2013
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

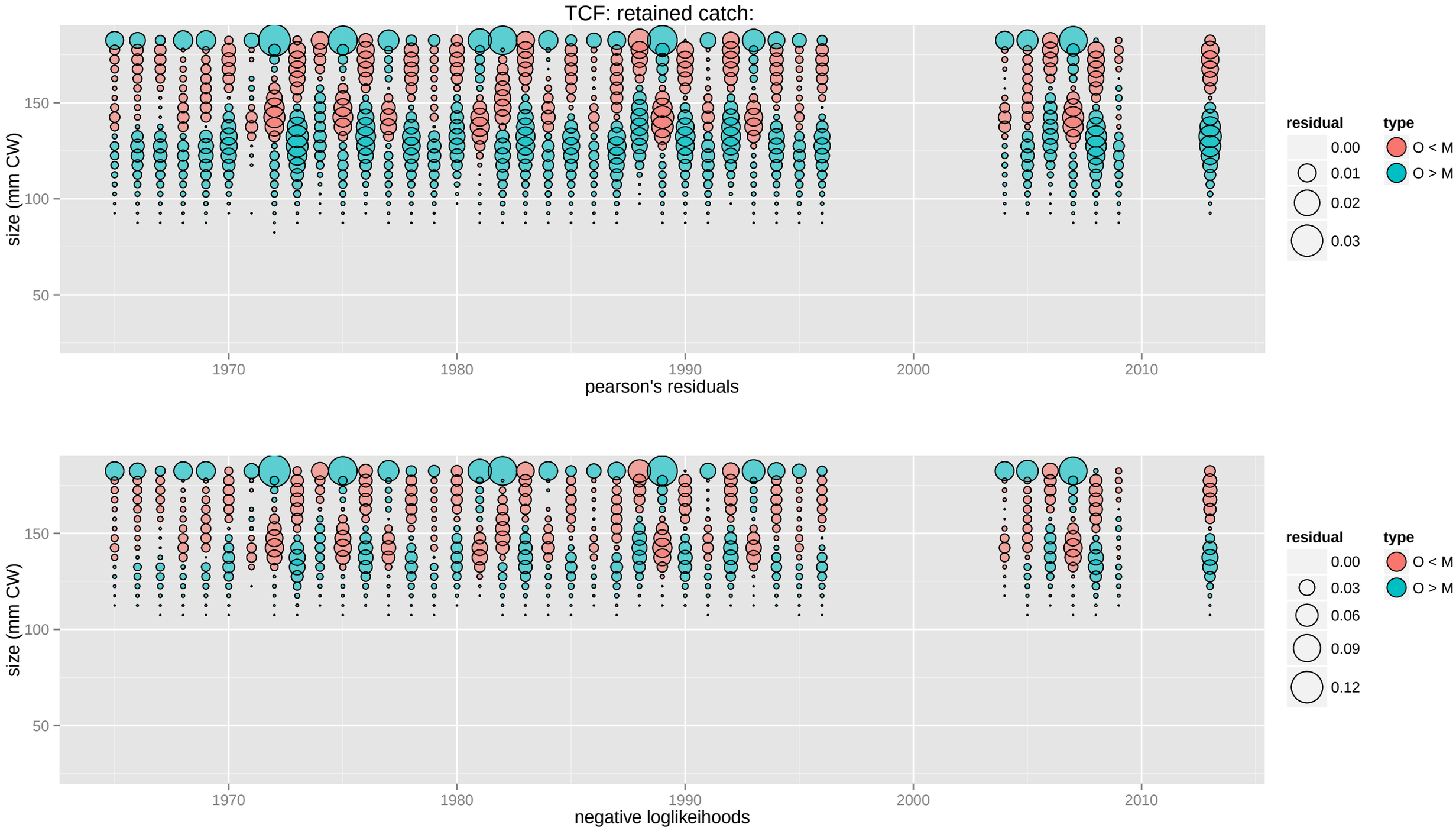

Total Catch: TCF: male
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

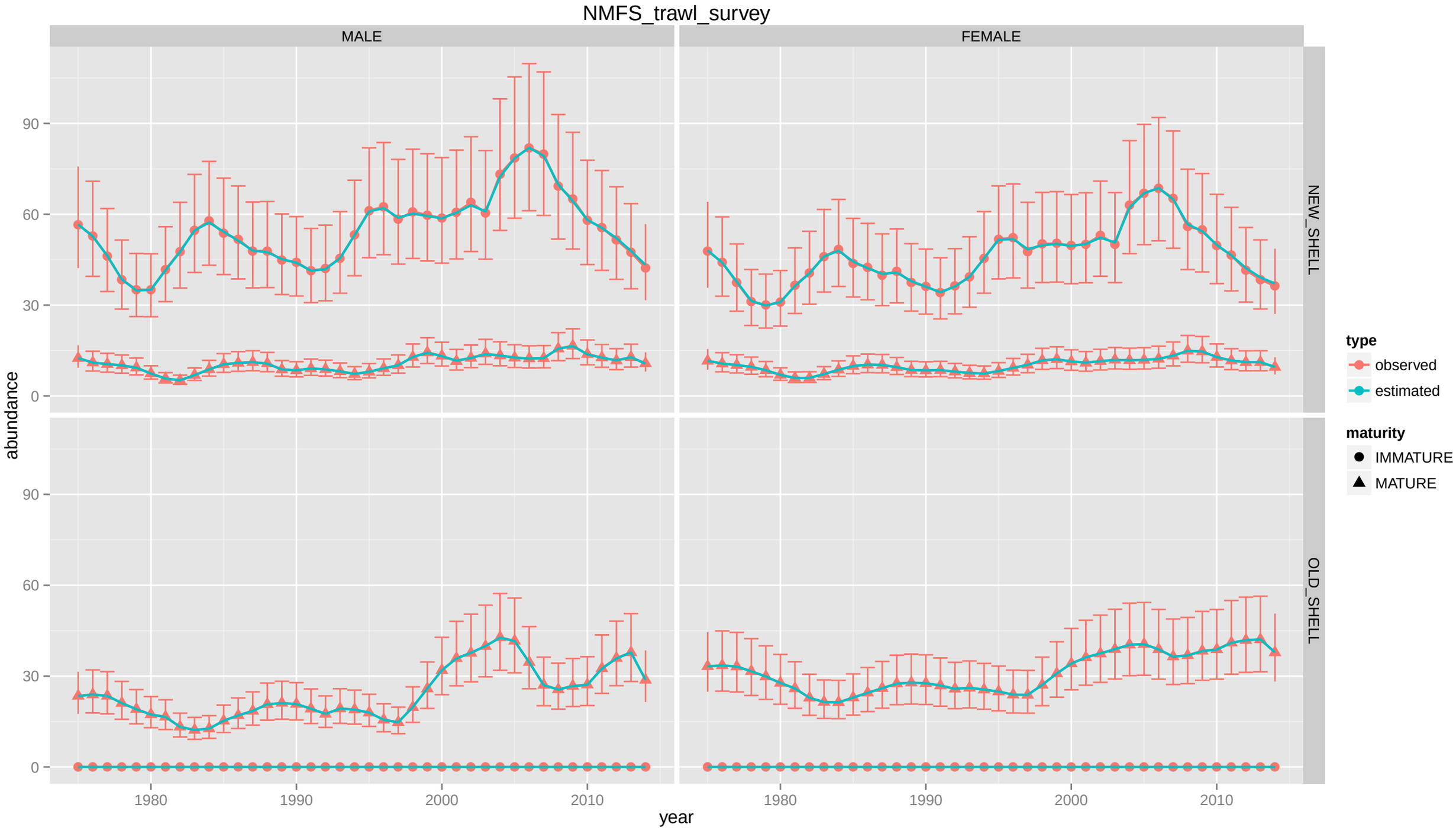

Total Catch: TCF: male
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

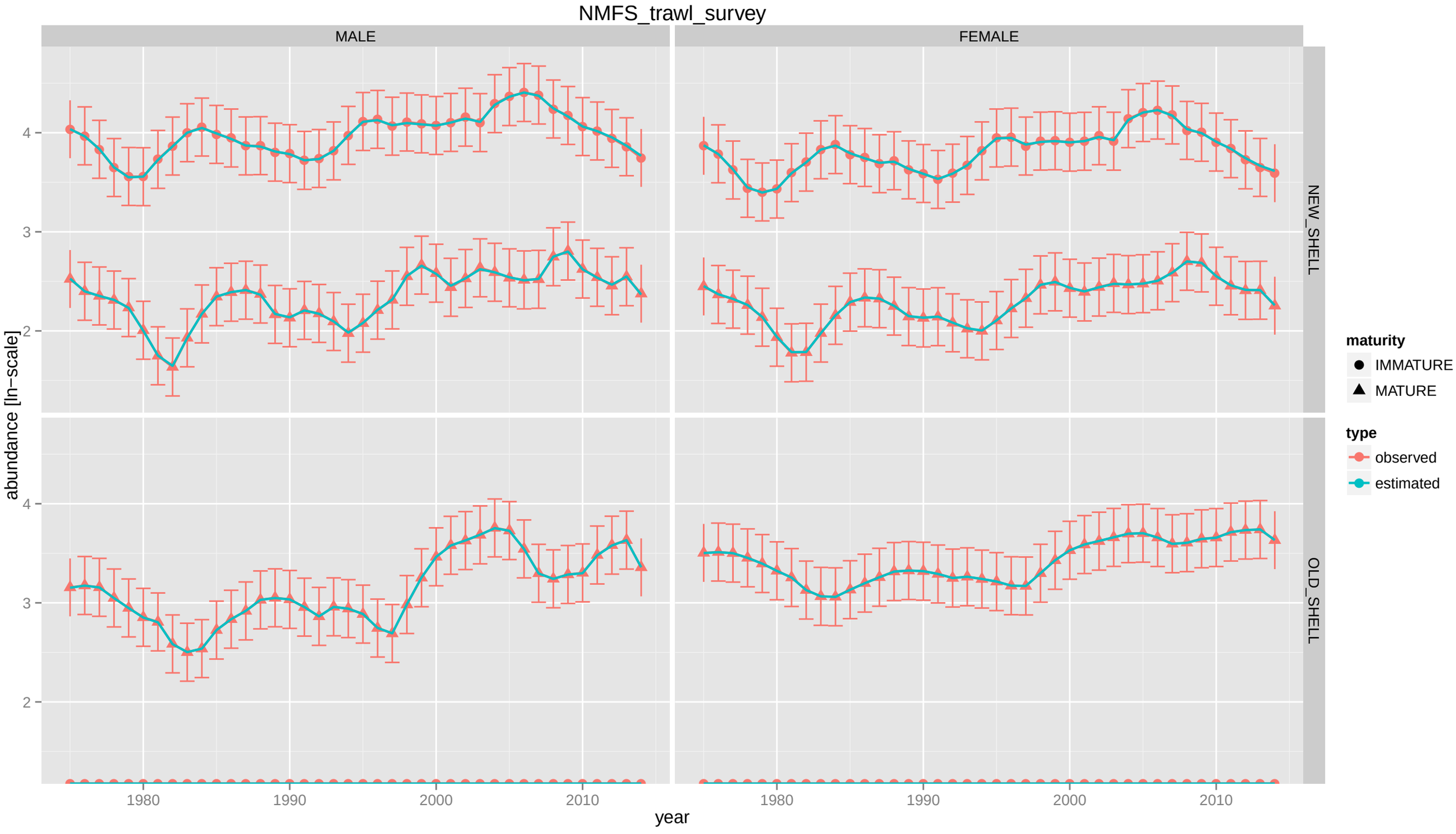

Total Catch: TCF: male
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell


Total Catch: TCF: male
1995
1996
2004
2005
2006
2007
2008
2009
2013
0.04
0.03
0.02
0.01
0.00
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell

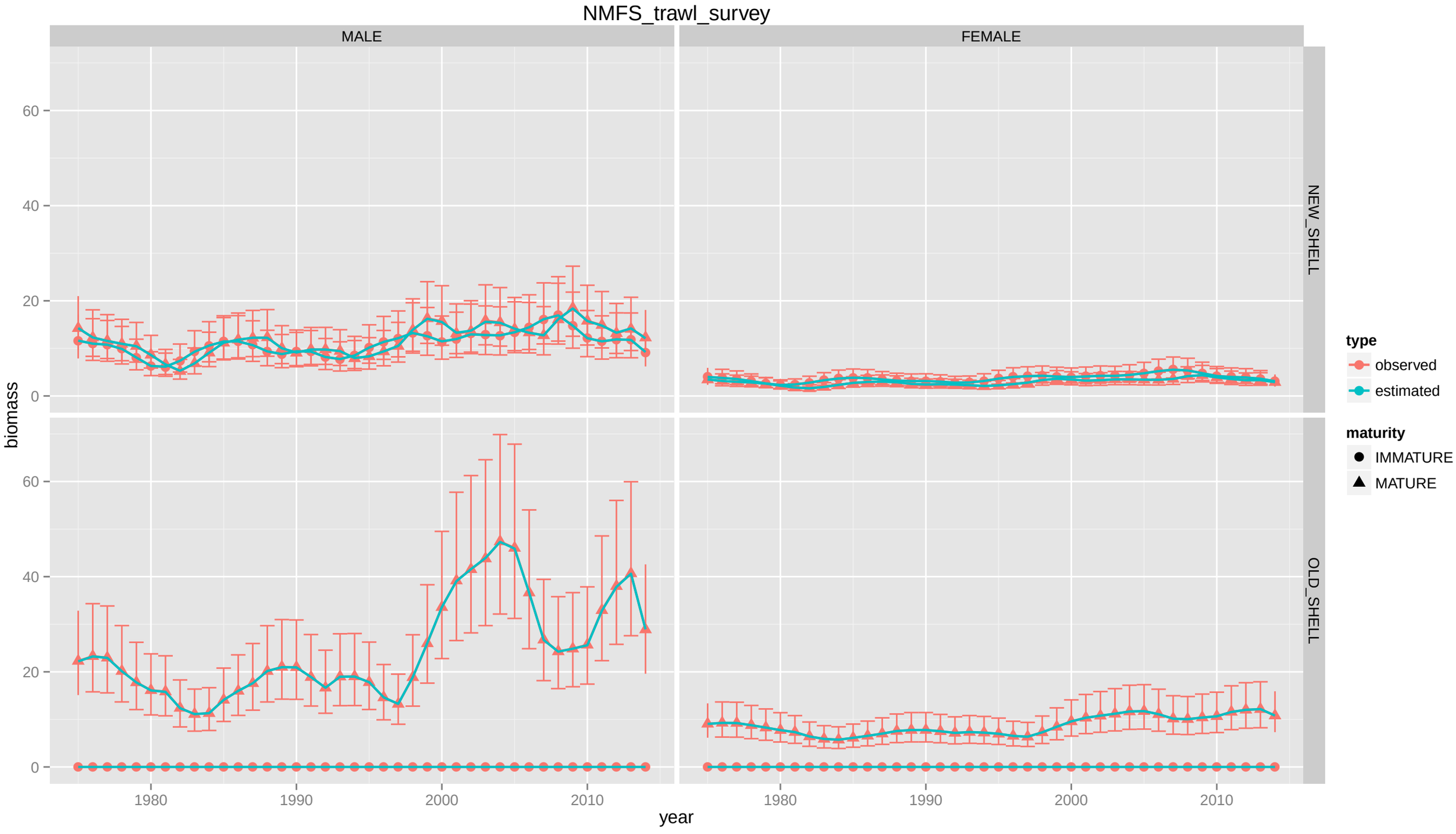

Total Catch: TCF
male
female
0.025
0.020
0.015
0.010
0.005
0.000
proportion
50
100
150
Size (mm)
all maturity, new shell
all maturity, old shell


TCF: retained catch:
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.00
0.01
0.02
0.03
type
O < M
O > M
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.03
0.06
0.09
0.12
type
O < M
O > M


NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance
year
0
30
60
90
1980
1990
2000
2010
type
observed
estimated
maturity
IMMATURE
MATURE

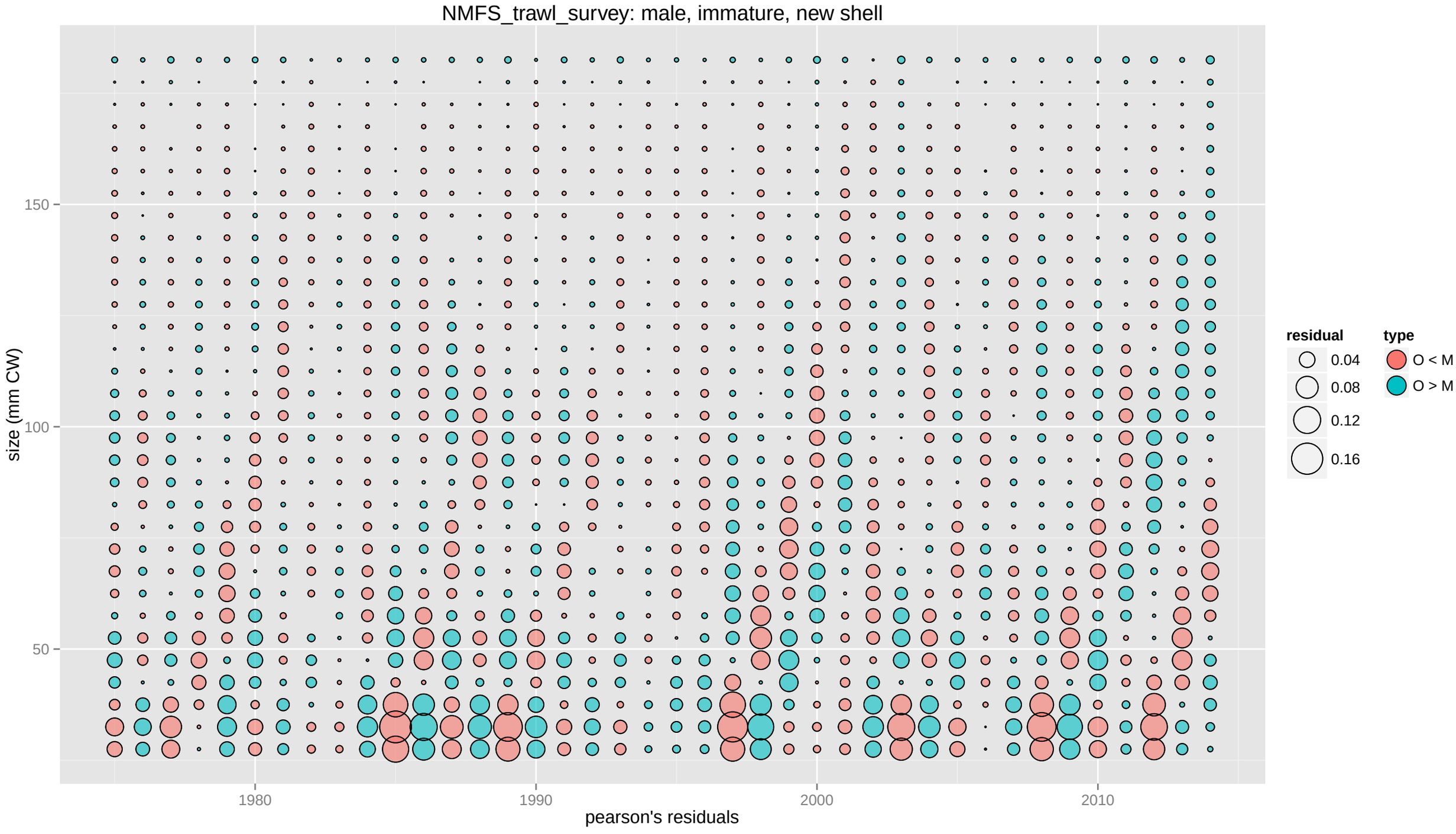

NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance [ln−scale]
year
2
3
4
1980
1990
2000
2010
maturity
IMMATURE
MATURE
type
observed
estimated

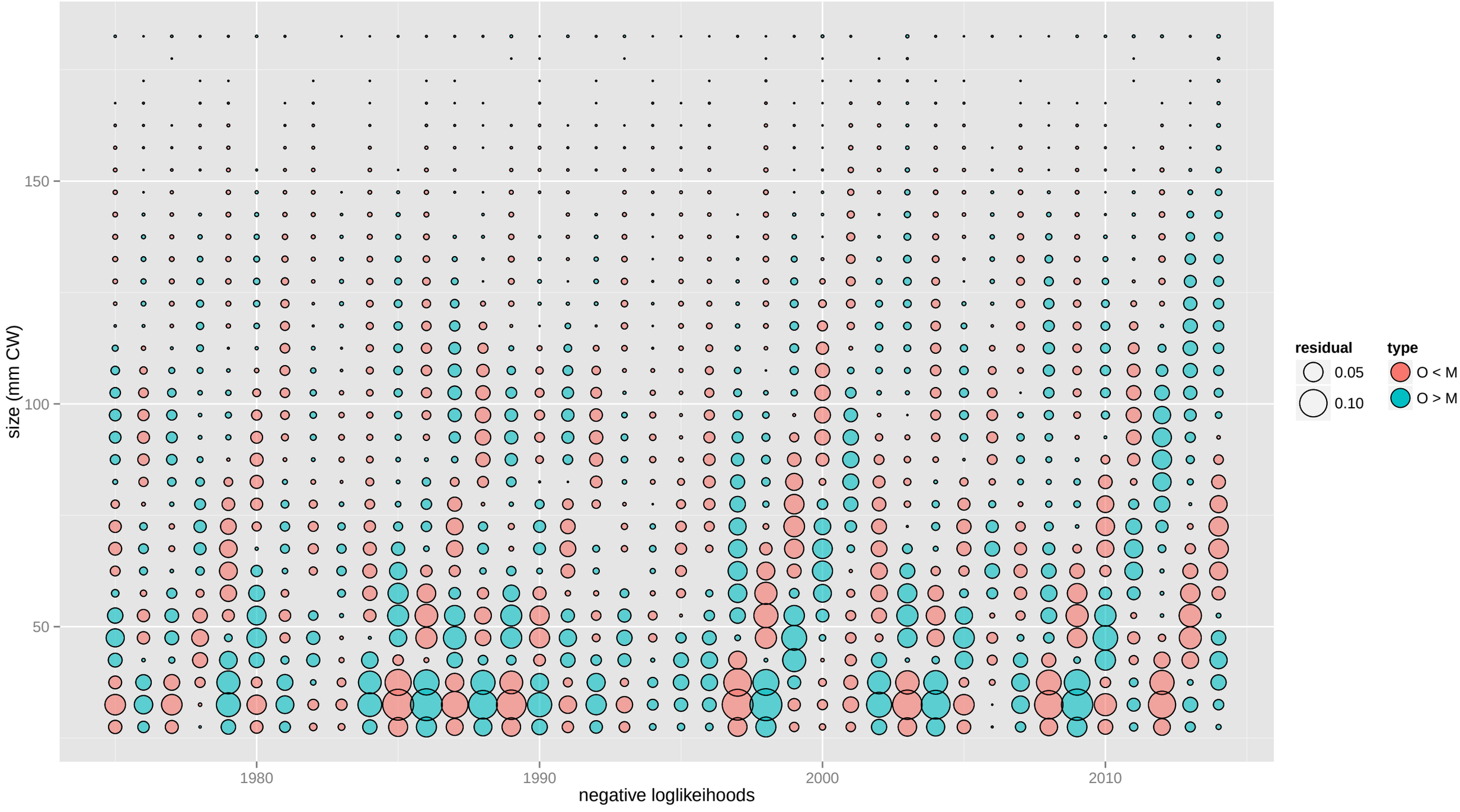

NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
0.1
0.0
−0.1
1980
1990
2000
2010
year
maturity
IMMATURE
MATURE

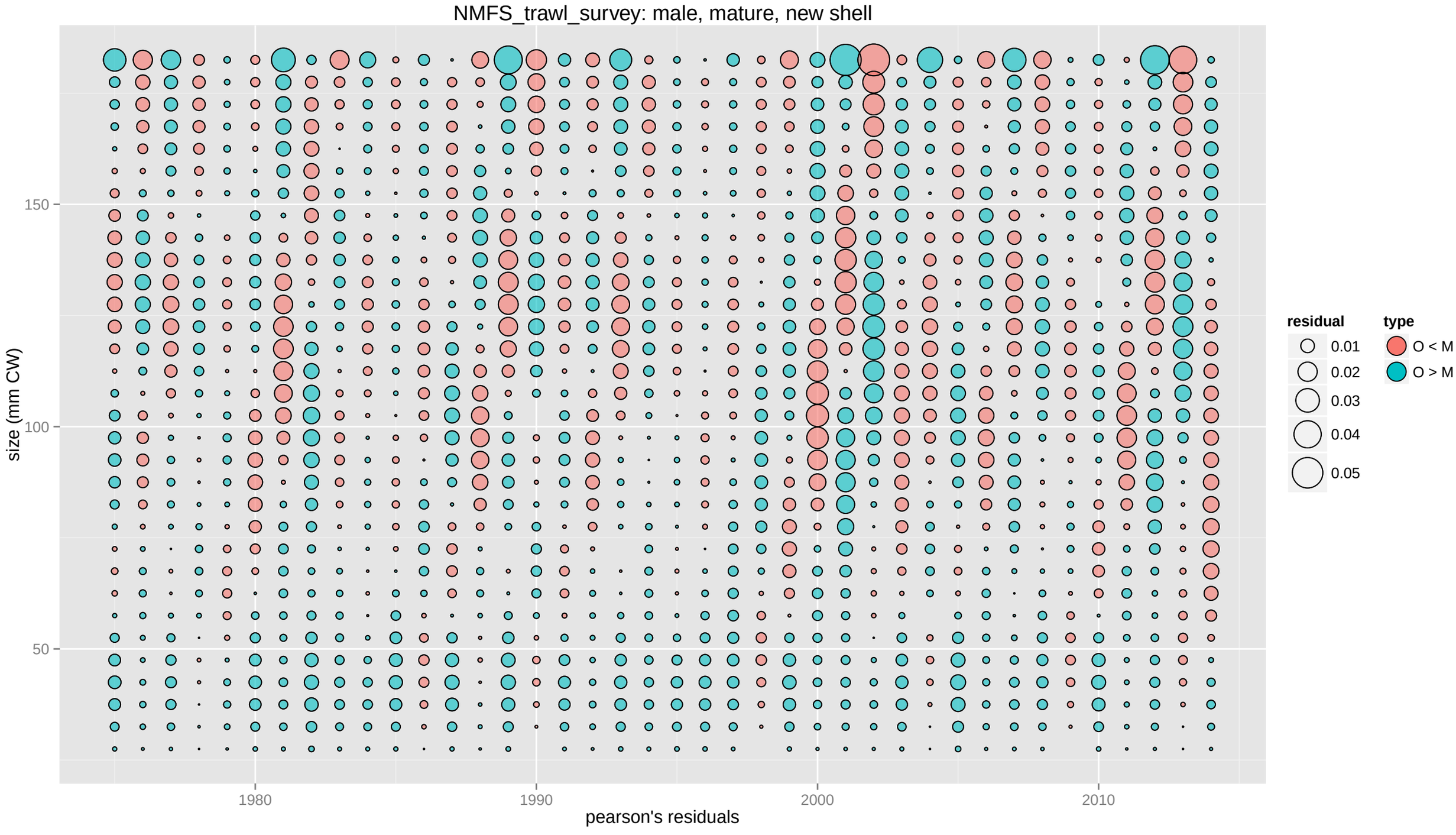

NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass
year
0
20
40
60
1980
1990
2000
2010
type
observed
estimated
maturity
IMMATURE
MATURE

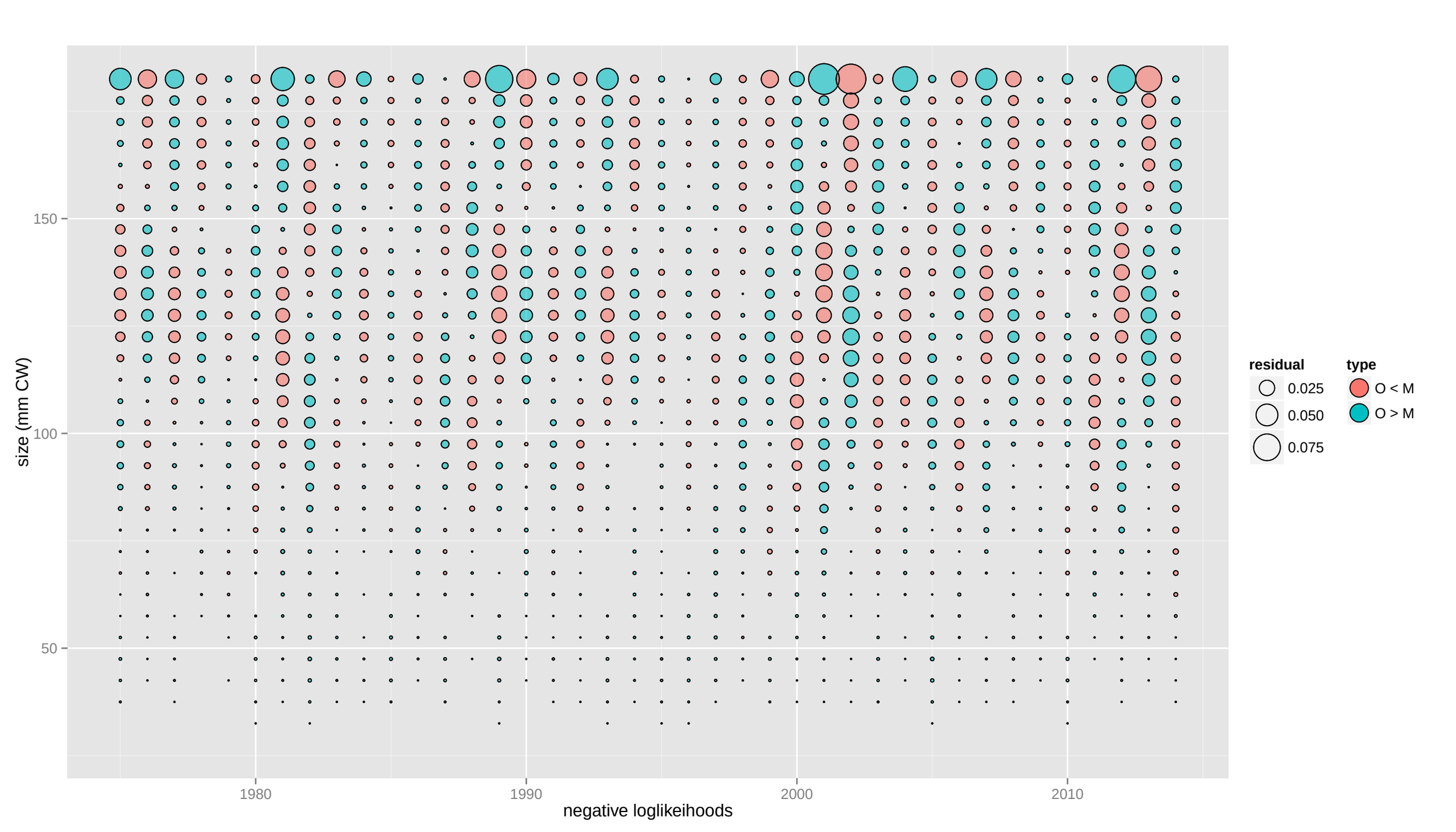

NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass [ln−scale]
year
0
1
2
3
4
1980
1990
2000
2010
maturity
IMMATURE
MATURE
type
observed
estimated

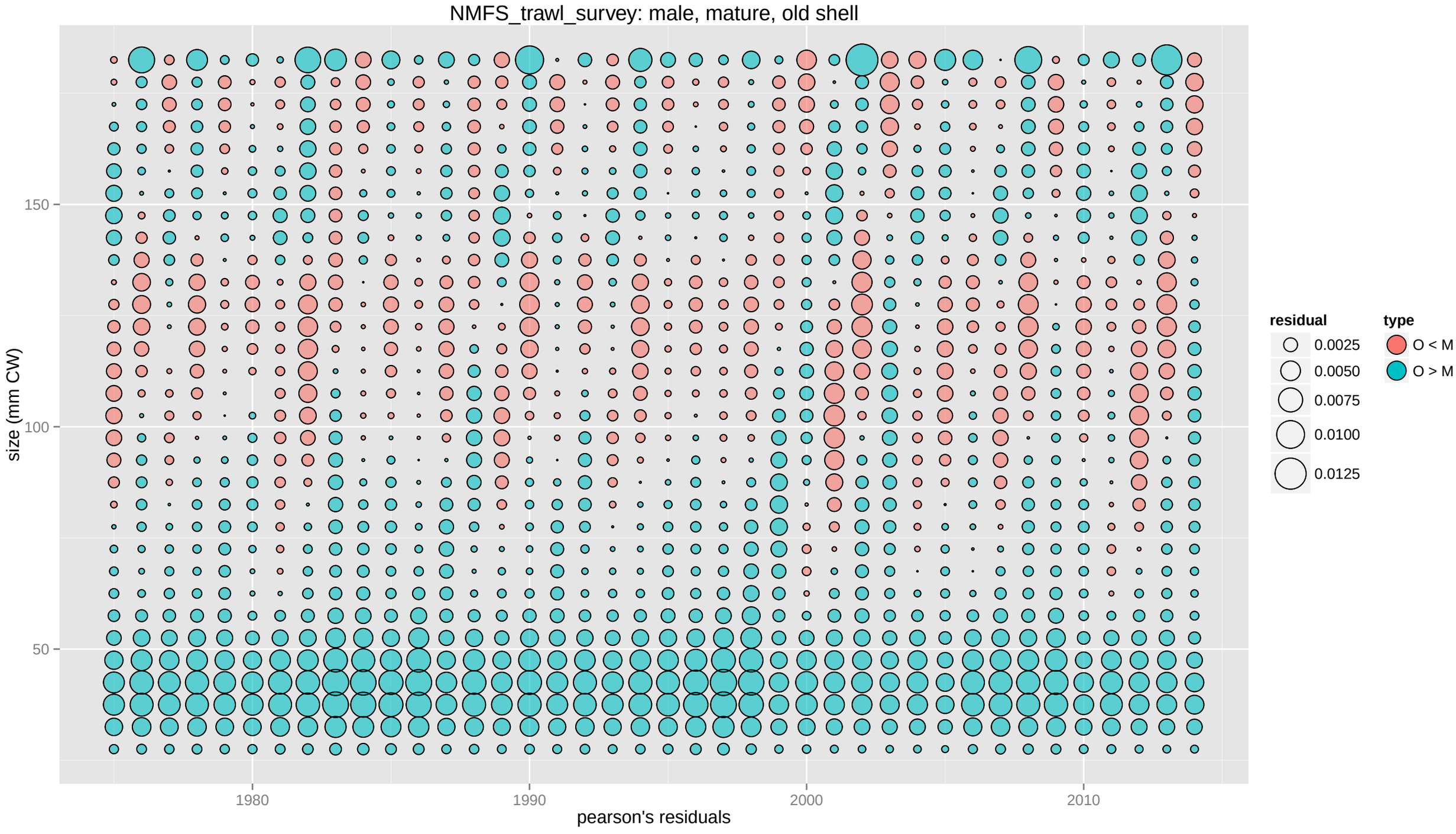

NMFS_trawl_survey
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
0.05
0.00
−0.05
1980
1990
2000
2010
year
maturity
IMMATURE
MATURE

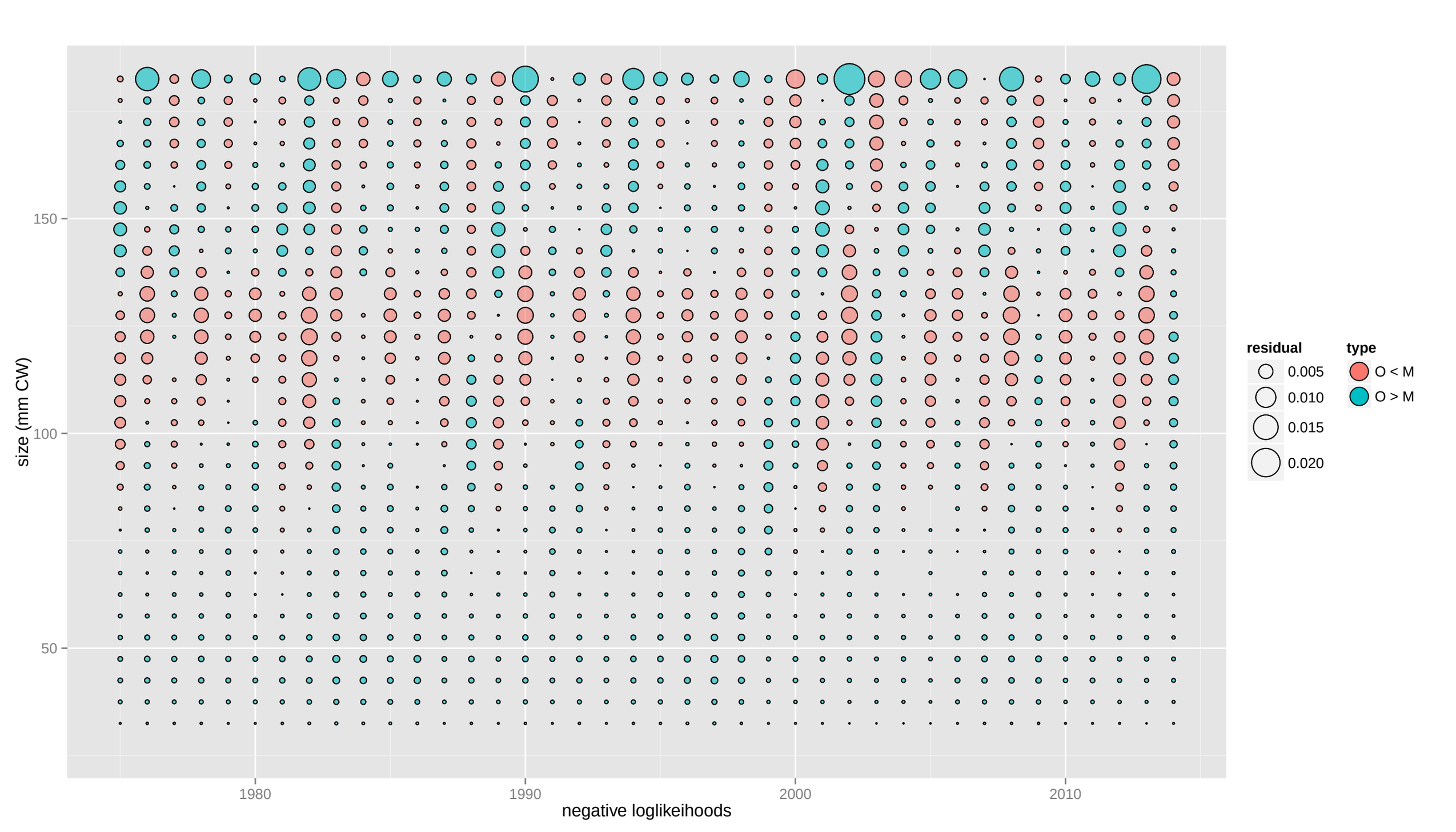

NMFS_trawl_survey: male, immature, new shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
residual
0.04
0.08
0.12
0.16
type
O < M
O > M

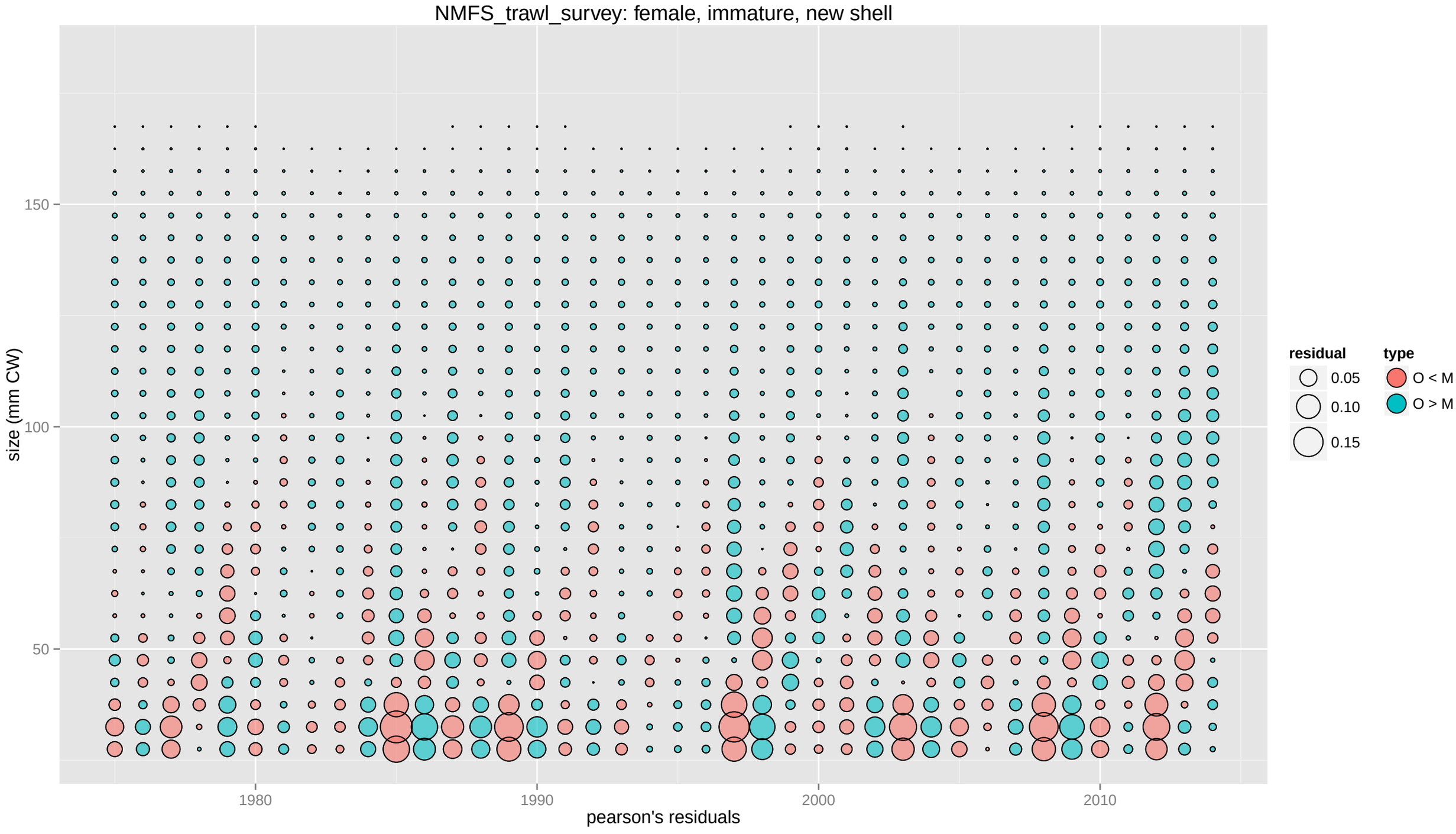

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
residual
0.05
0.10
type
O < M
O > M

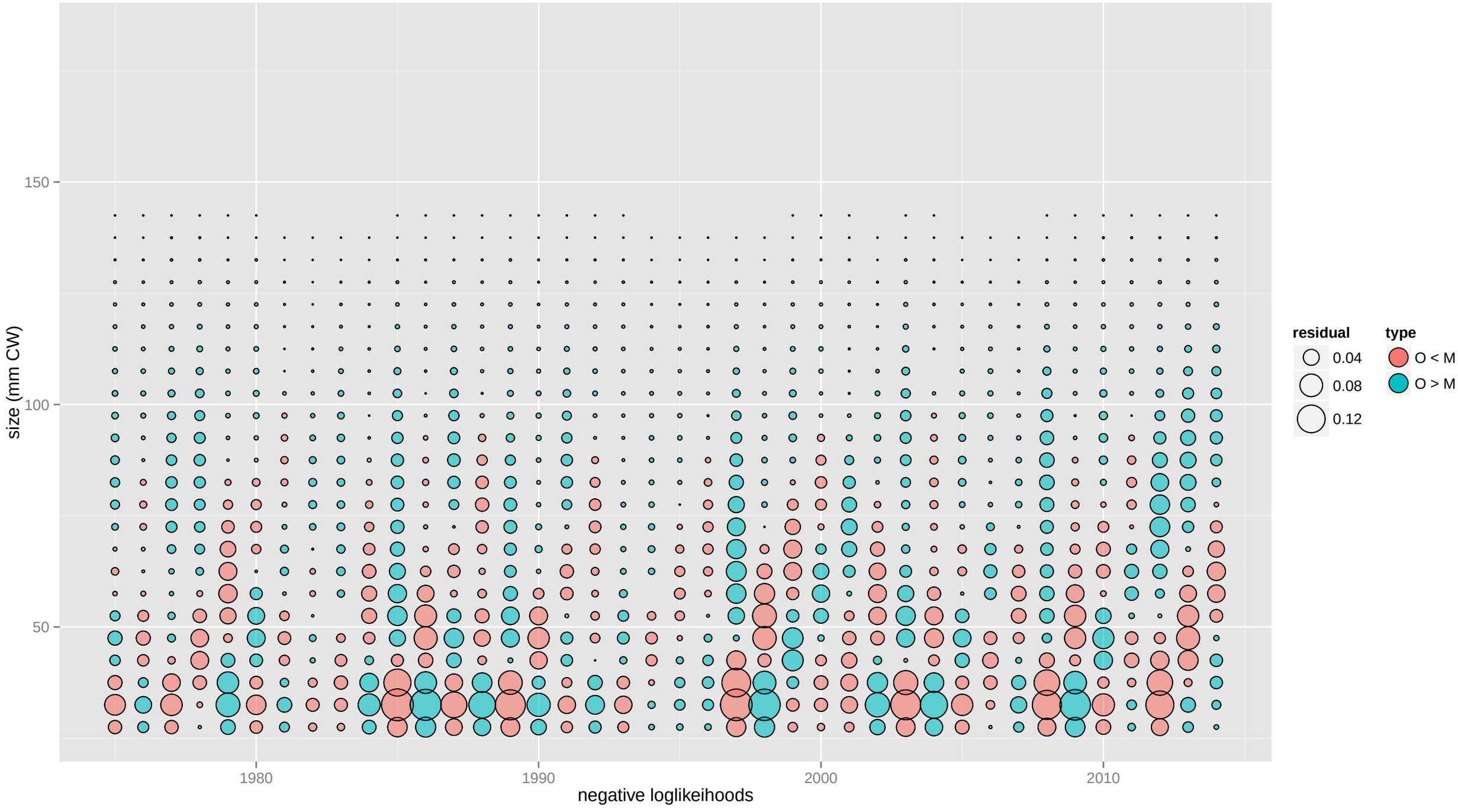

NMFS_trawl_survey: male, mature, new shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
residual
0.01
0.02
0.03
0.04
0.05
type
O < M
O > M

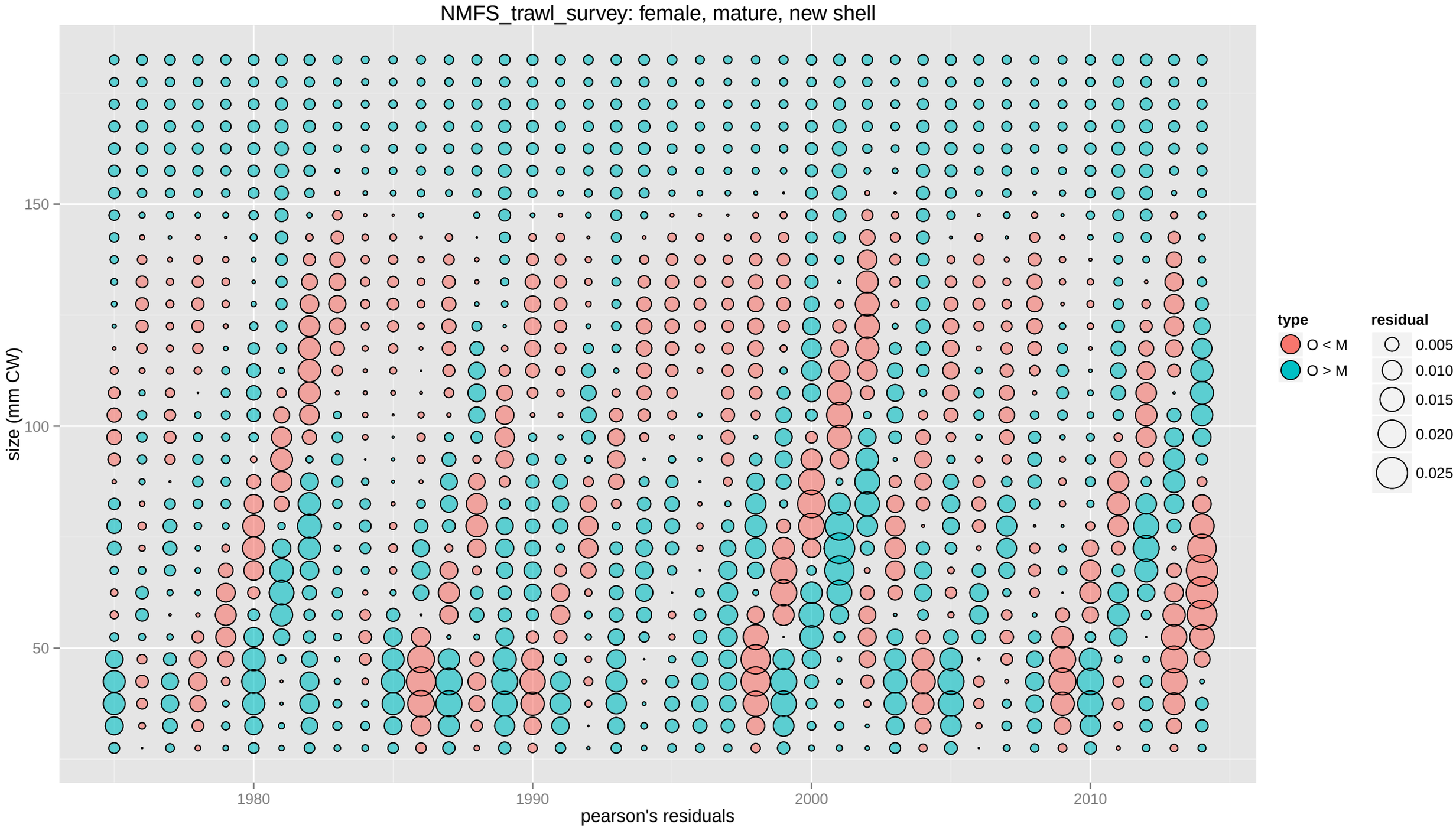

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
residual
0.025
0.050
0.075
type
O < M
O > M

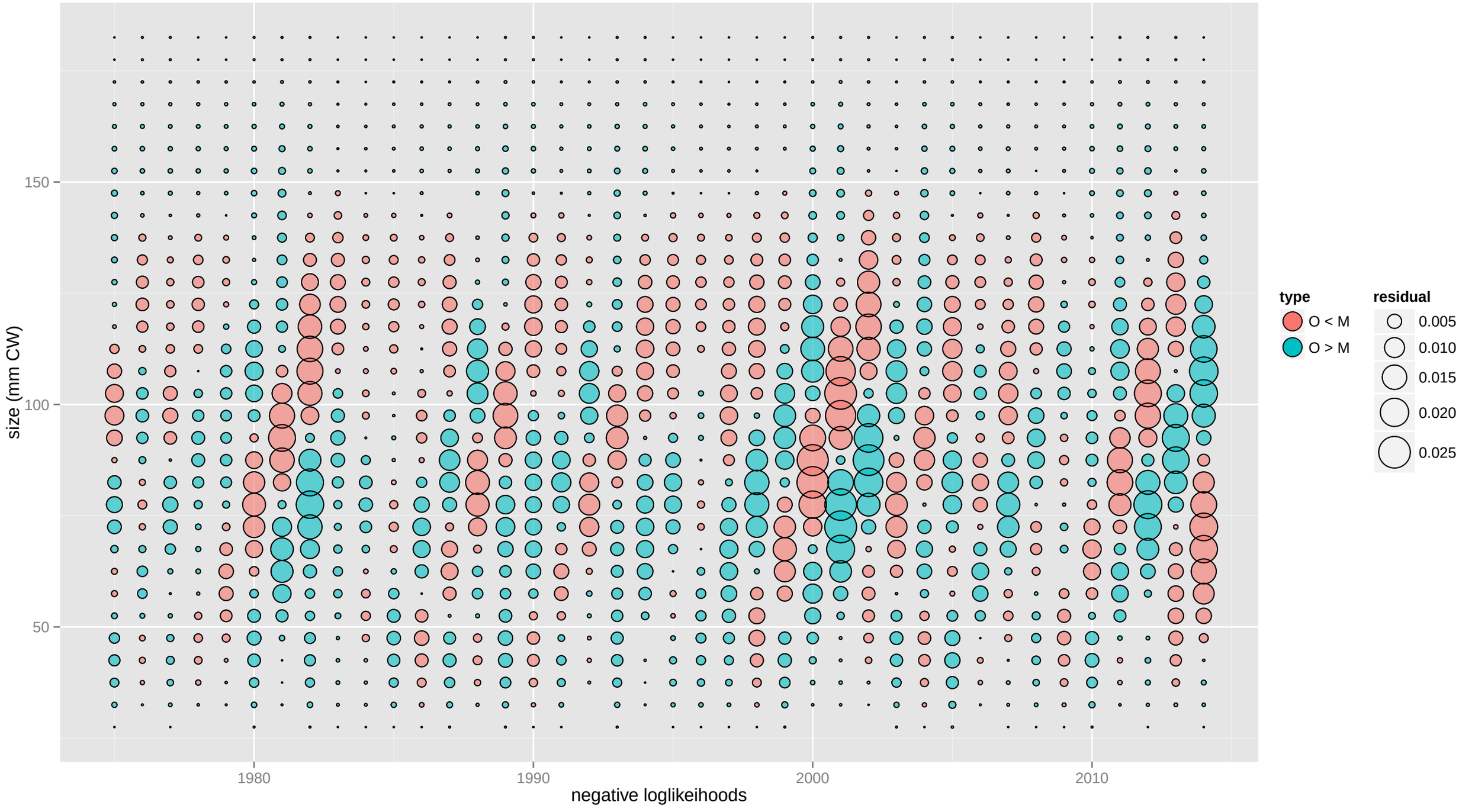

NMFS_trawl_survey: male, mature, old shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
residual
0.0025
0.0050
0.0075
0.0100
0.0125
type
O < M
O > M

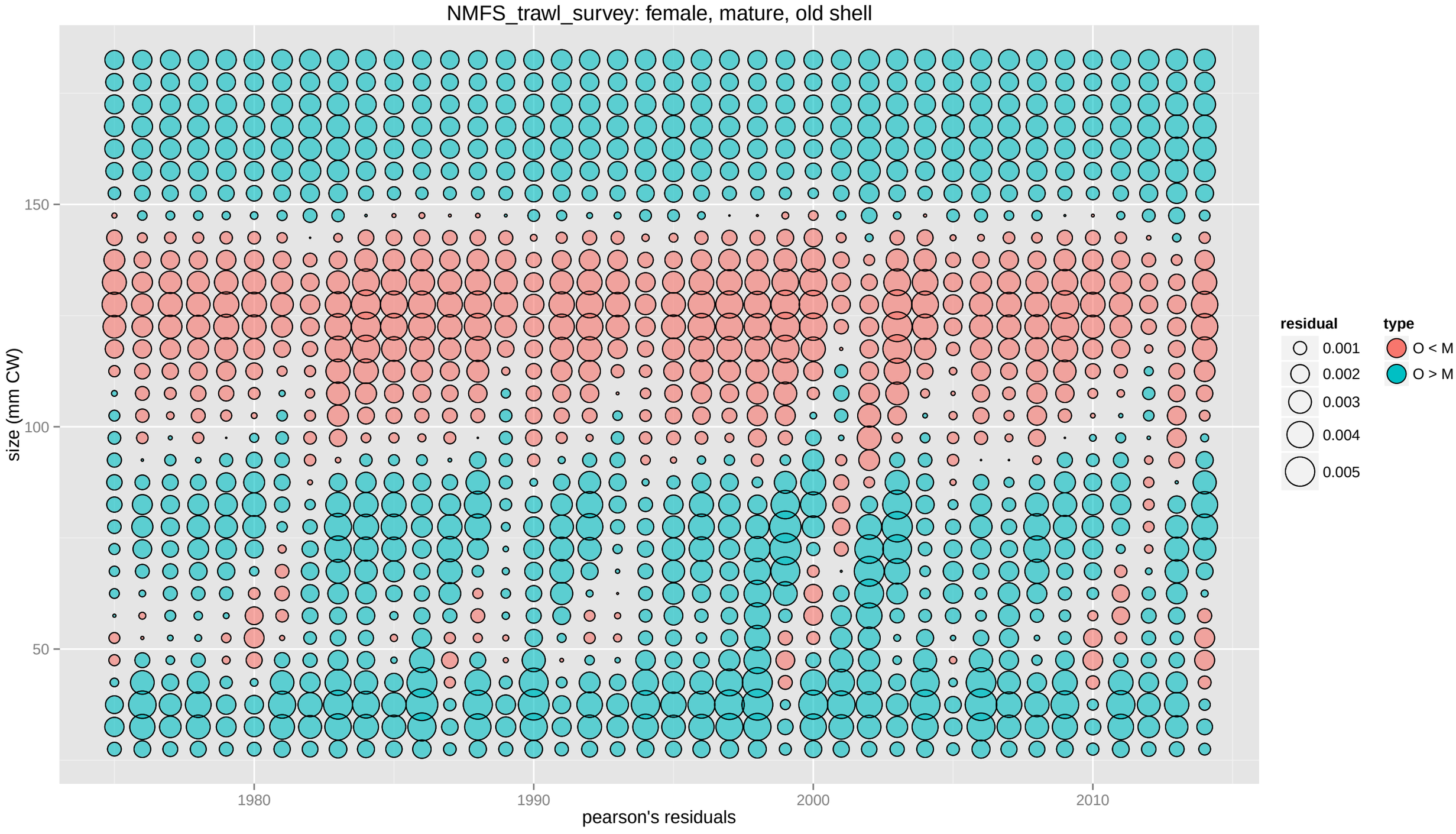

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
residual
0.005
0.010
0.015
0.020
type
O < M
O > M

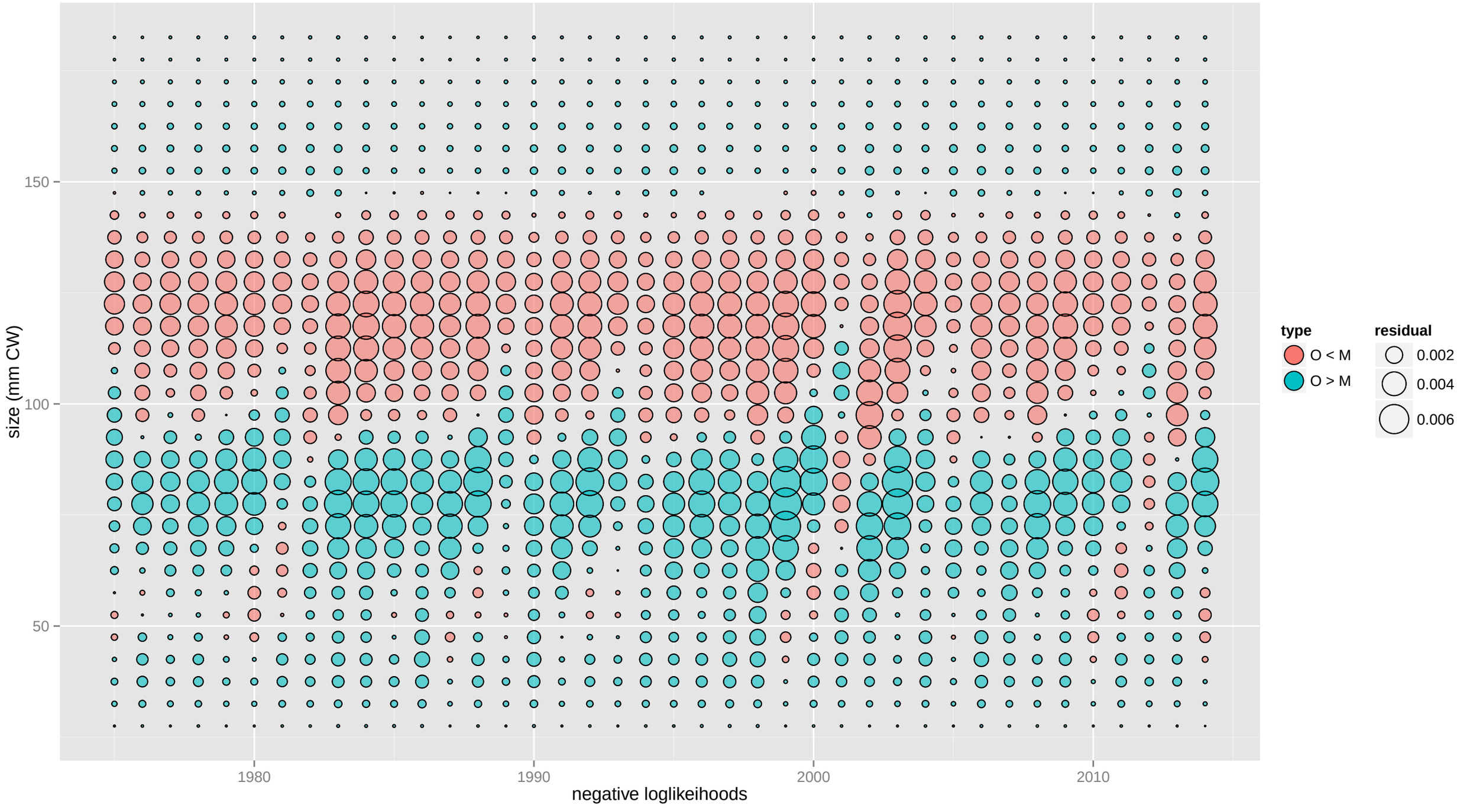

NMFS_trawl_survey: female, immature, new shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
residual
0.05
0.10
0.15
type
O < M
O > M

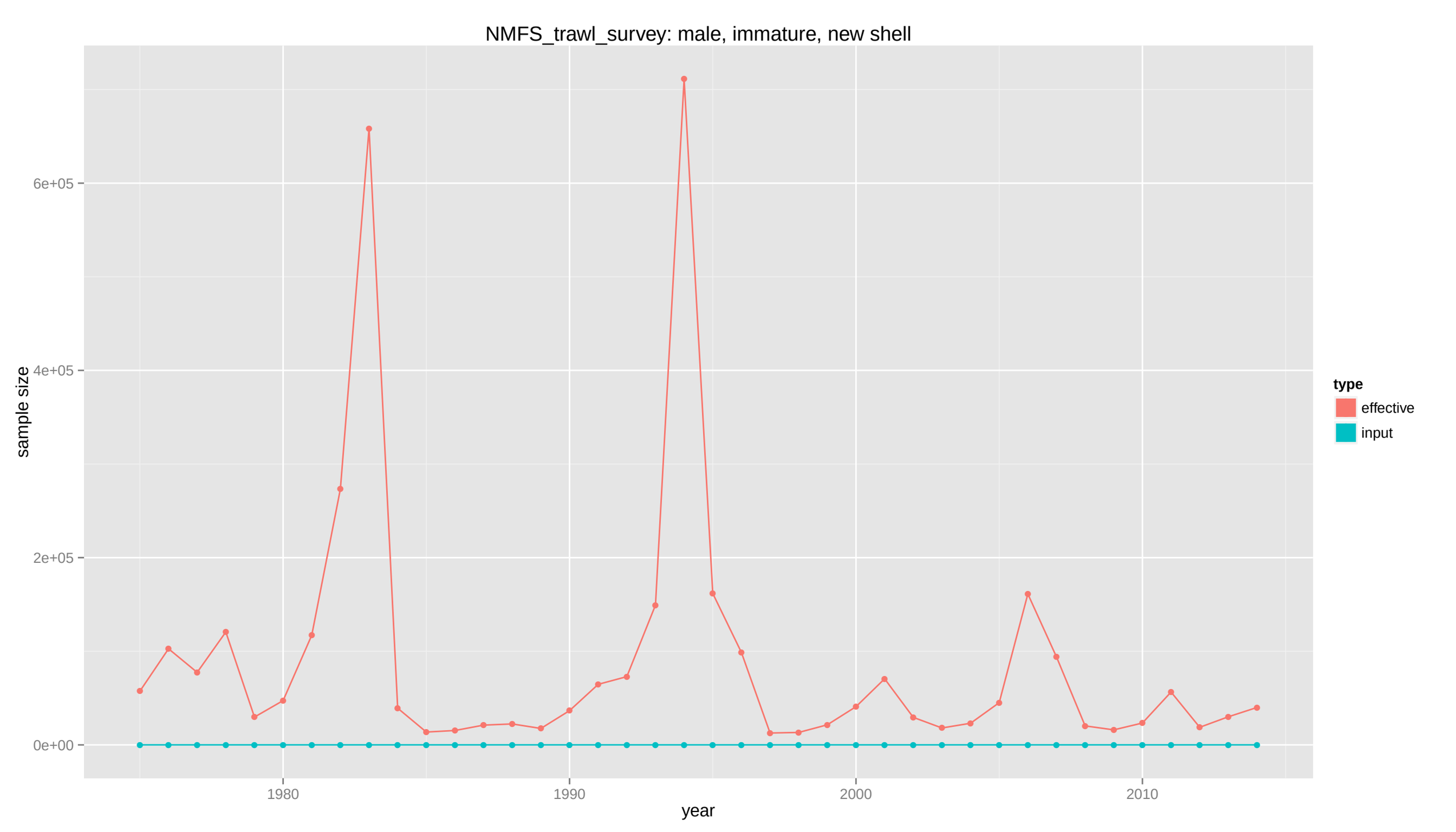

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
residual
0.04
0.08
0.12
type
O < M
O > M

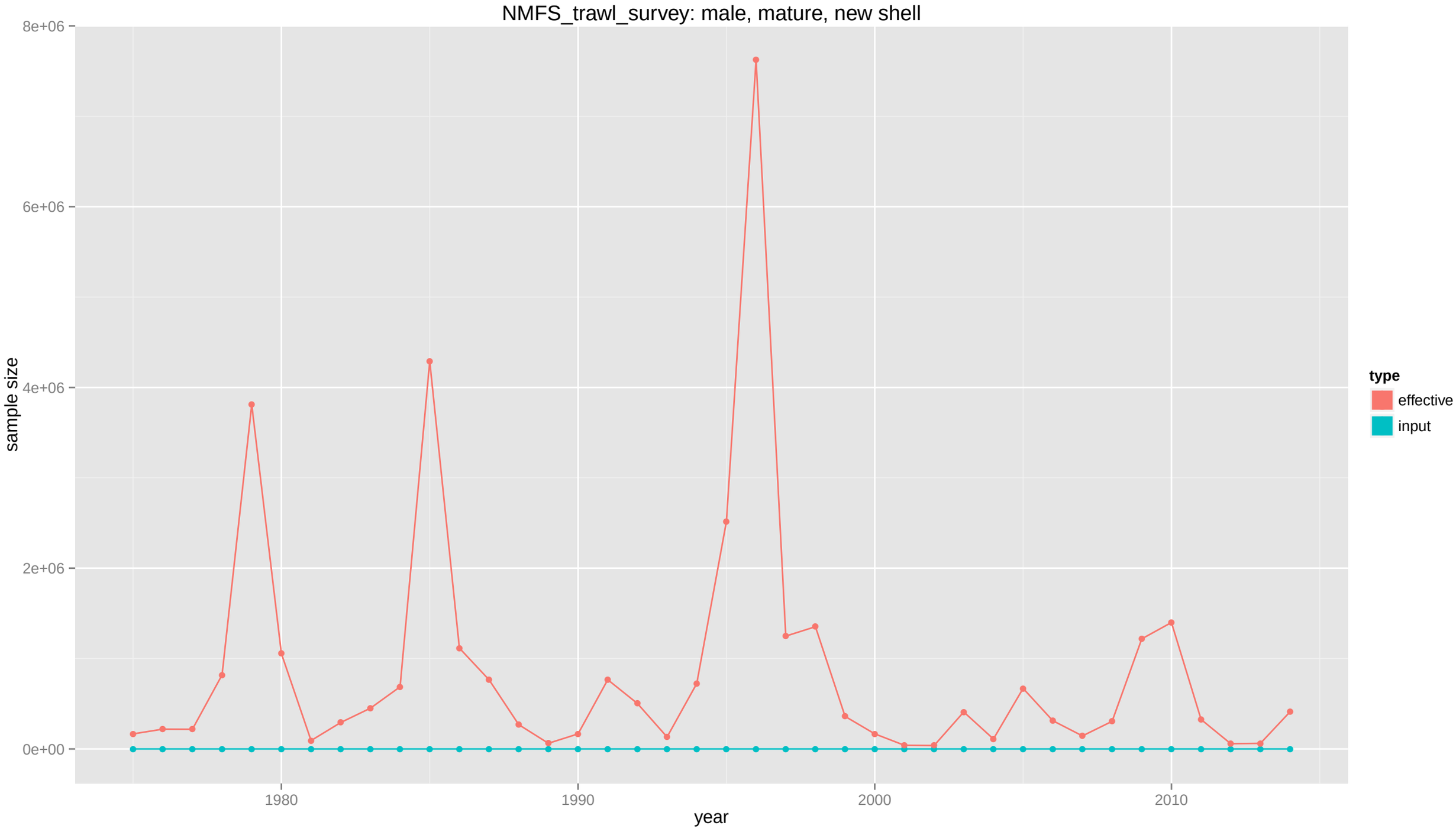

NMFS_trawl_survey: female, mature, new shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
type
O < M
O > M
residual
0.005
0.010
0.015
0.020
0.025

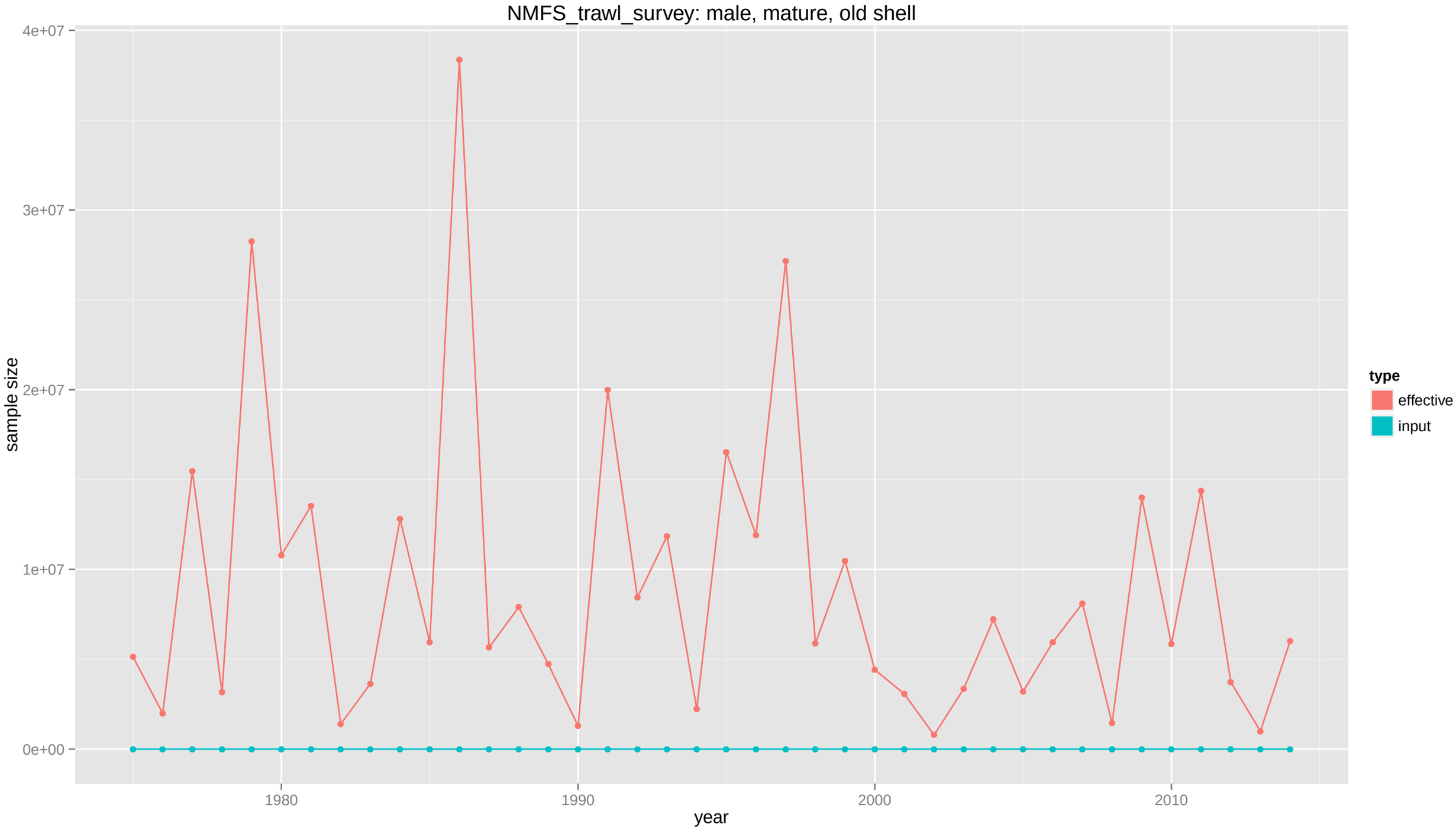

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
type
O < M
O > M
residual
0.005
0.010
0.015
0.020
0.025

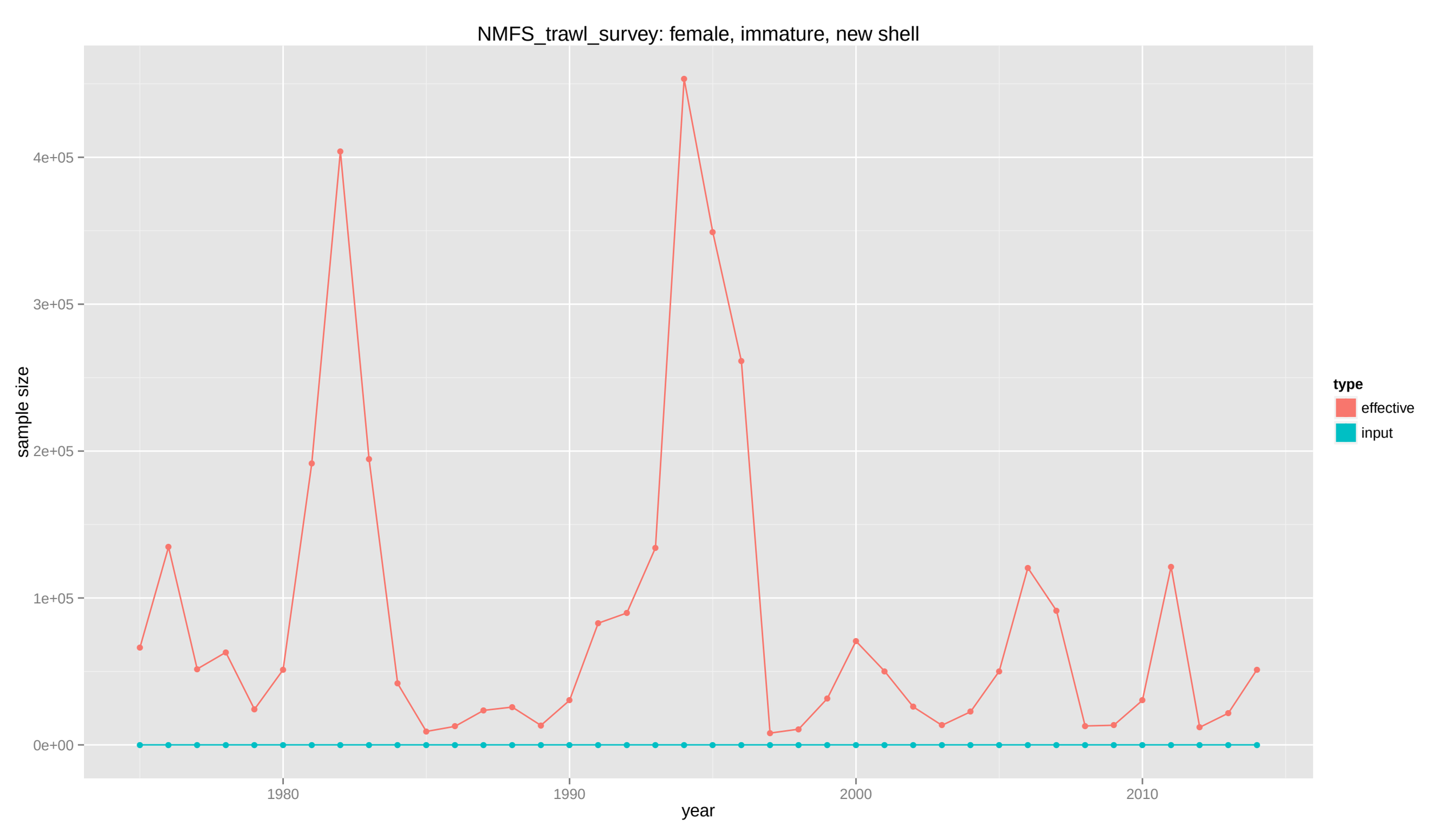

NMFS_trawl_survey: female, mature, old shell
size (mm CW)
150
100
50
1980
1990
2000
2010
pearson's residuals
residual
0.001
0.002
0.003
0.004
0.005
type
O < M
O > M

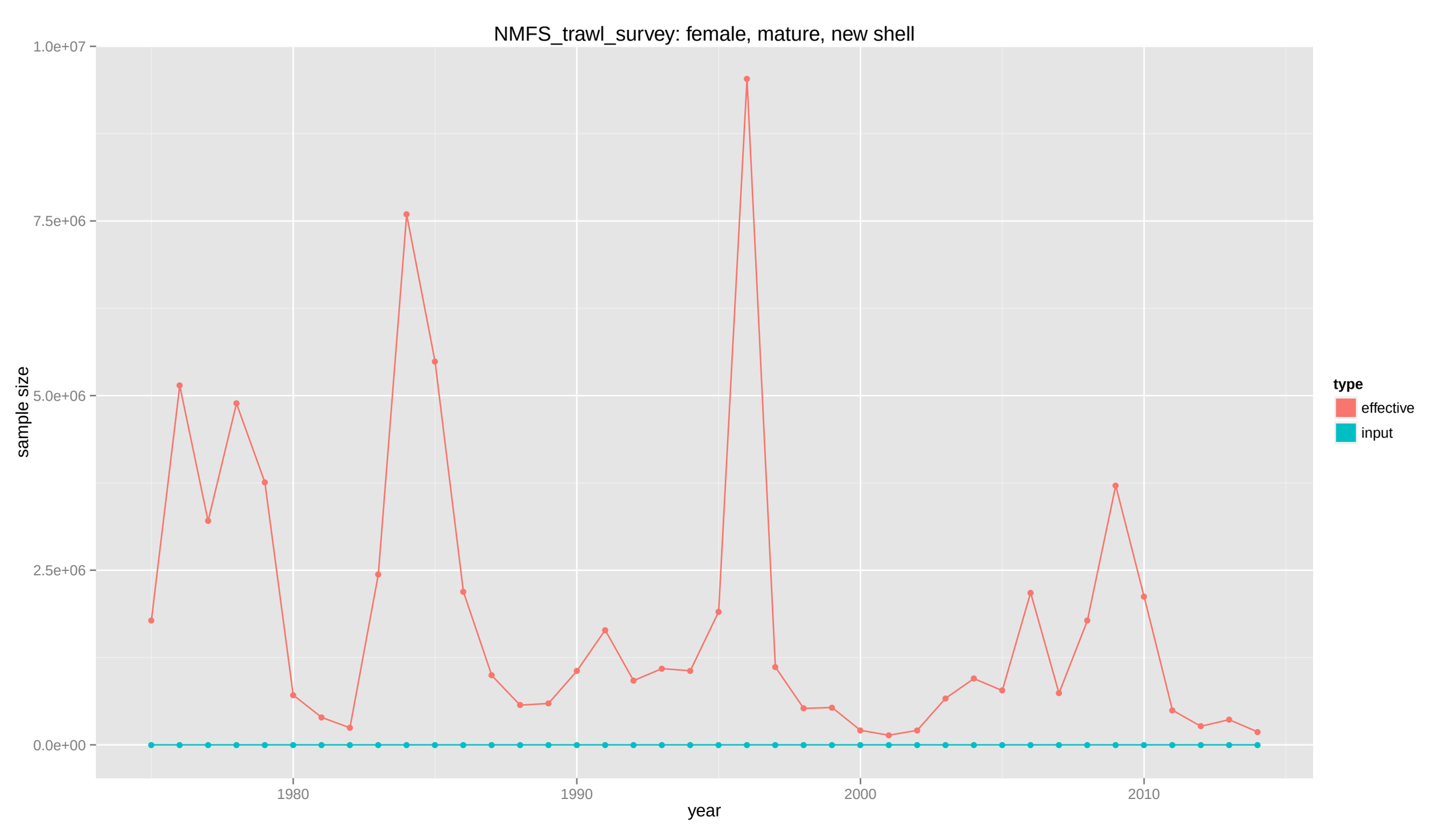

size (mm CW)
150
100
50
1980
1990
2000
2010
negative loglikeihoods
type
O < M
O > M
residual
0.002
0.004
0.006

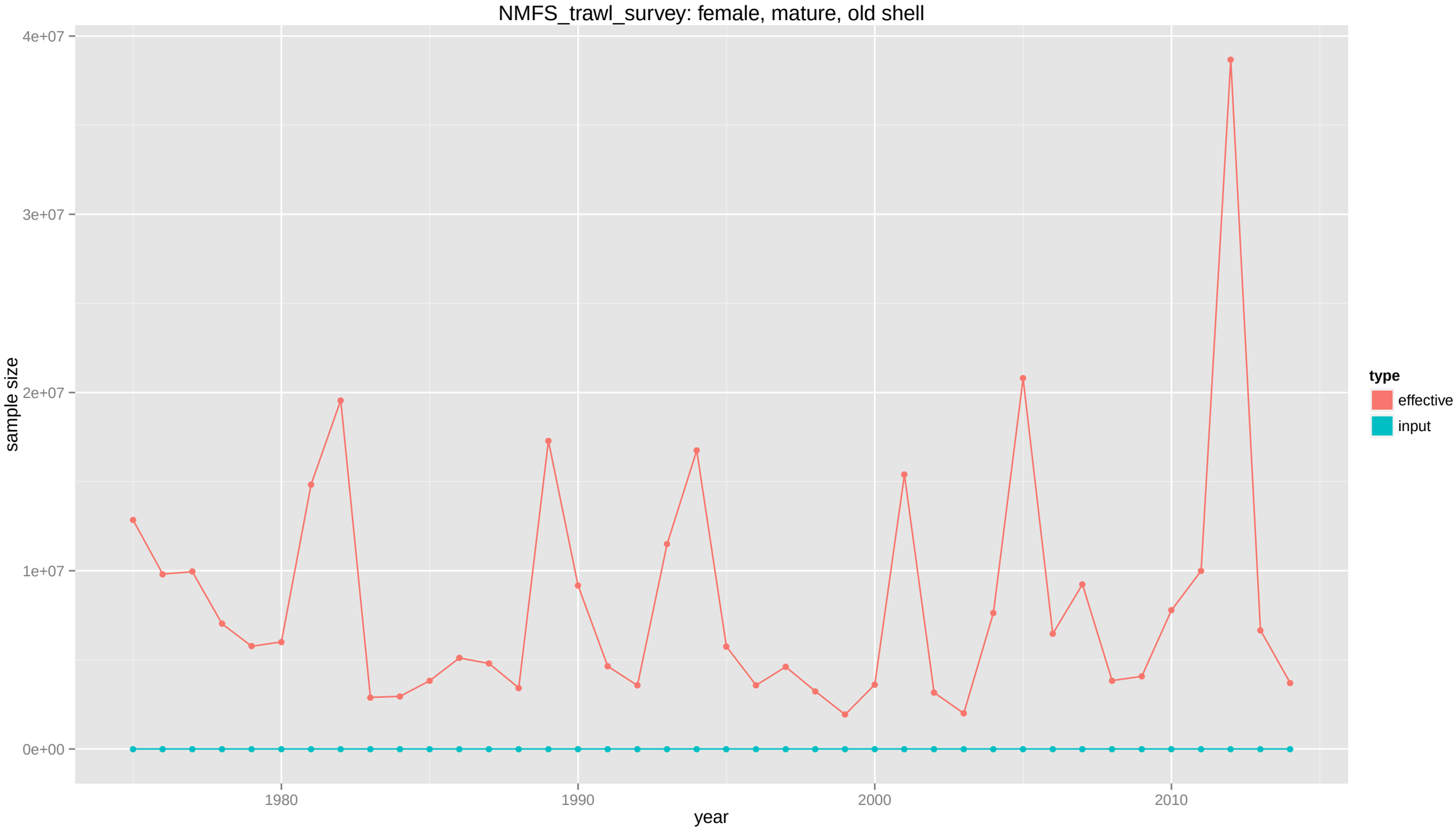

NMFS_trawl_survey: male, immature, new shell
sample size
6e+05
4e+05
2e+05
0e+00
1980
1990
2000
2010
year
type
effective
input

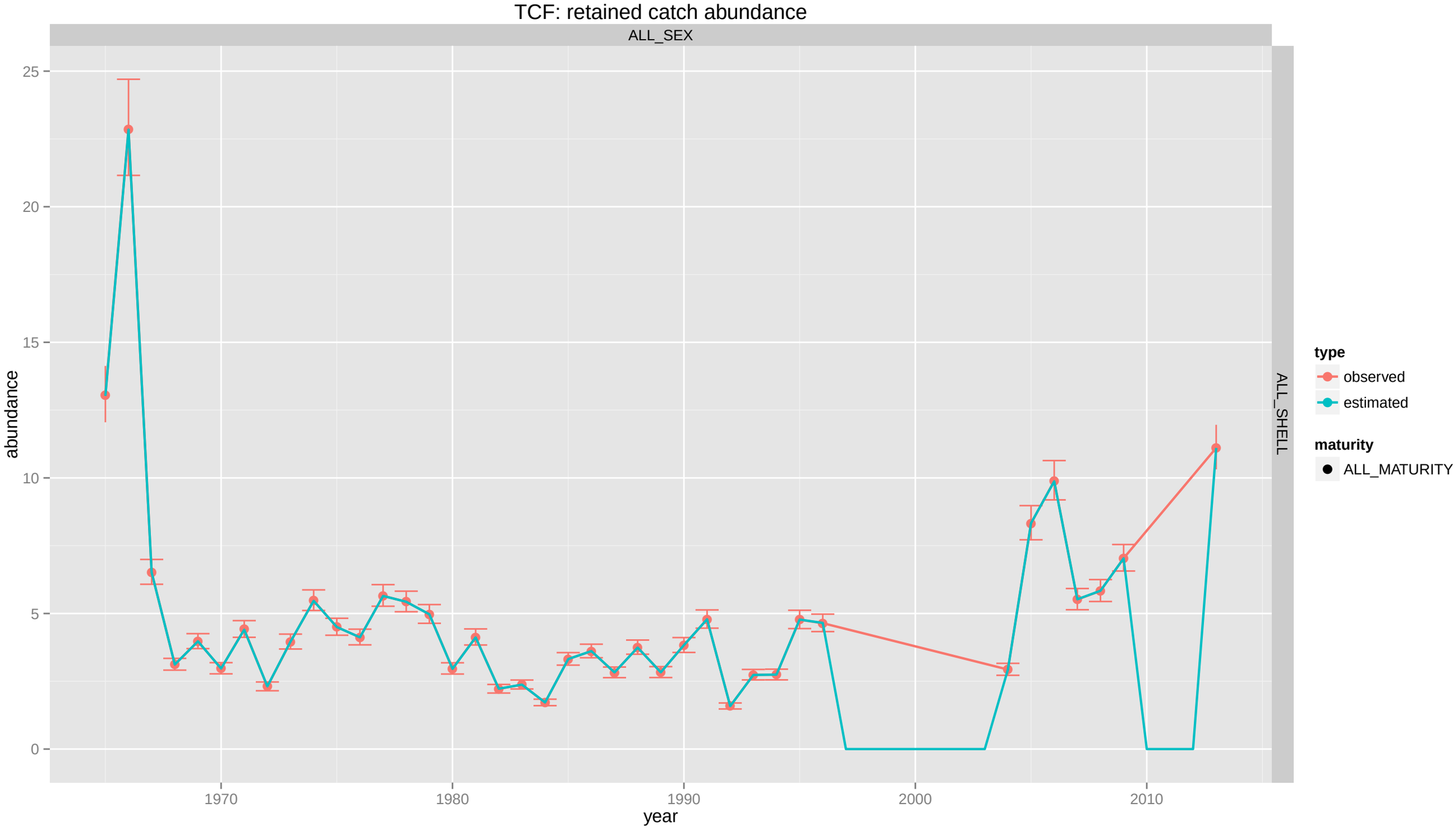

NMFS_trawl_survey: male, mature, new shell
8e+06
6e+06
4e+06
2e+06
0e+00
sample size
1980
1990
2000
2010
year
type
effective
input

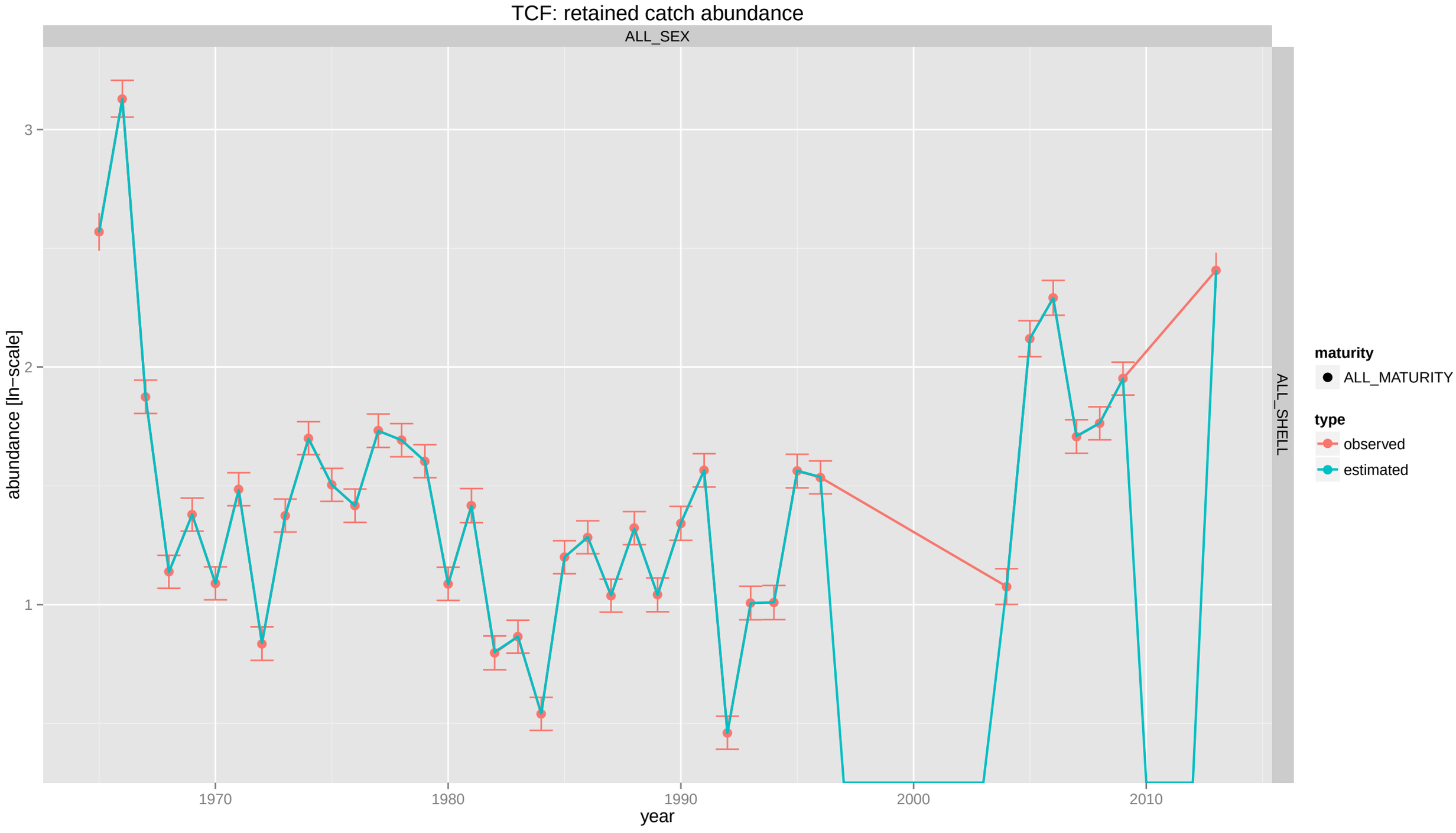

NMFS_trawl_survey: male, mature, old shell
4e+07
3e+07
2e+07
1e+07
0e+00
sample size
1980
1990
2000
2010
year
type
effective
input

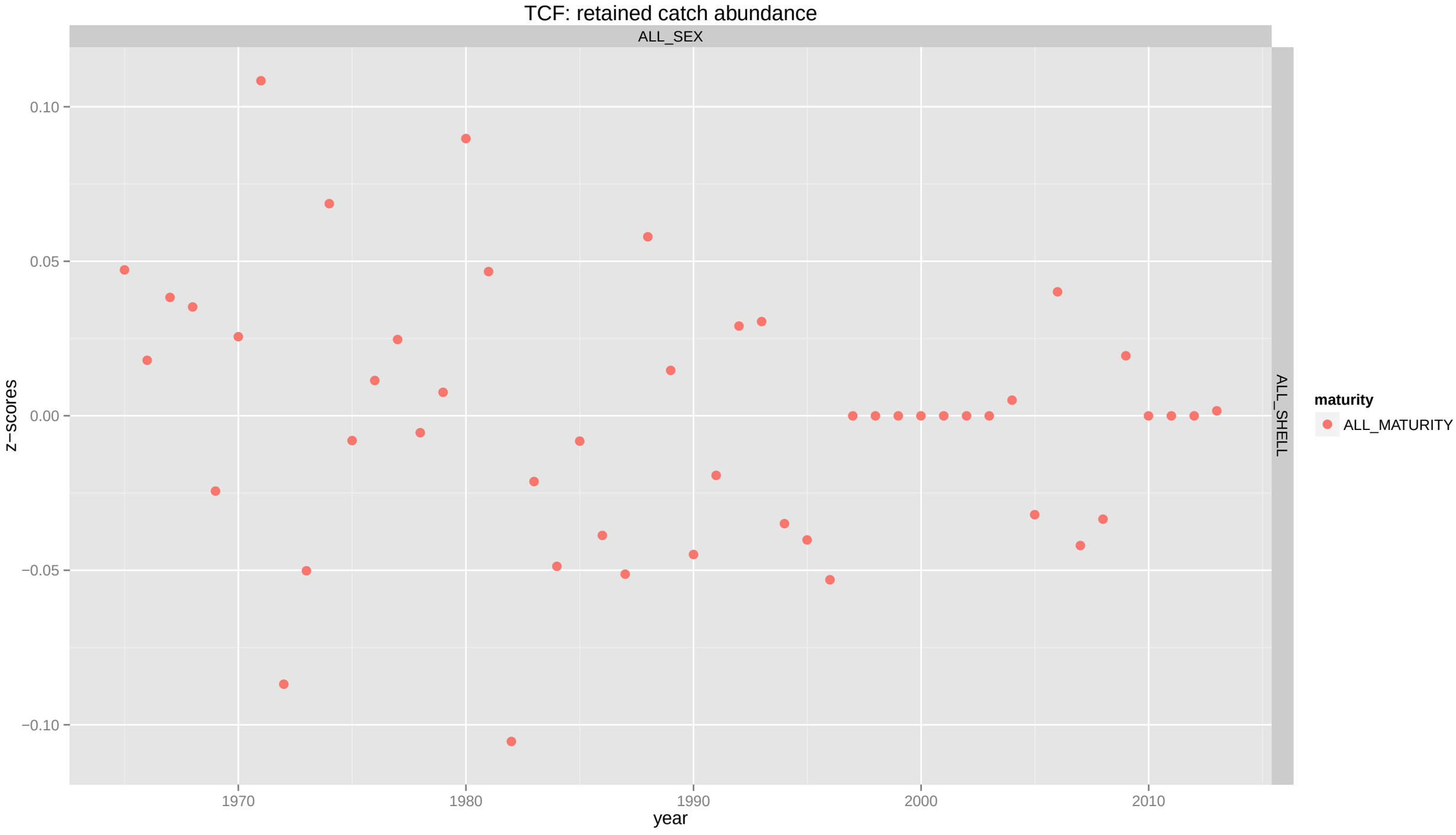

NMFS_trawl_survey: female, immature, new shell
sample size
4e+05
3e+05
2e+05
1e+05
0e+00
1980
1990
2000
2010
year
type
effective
input

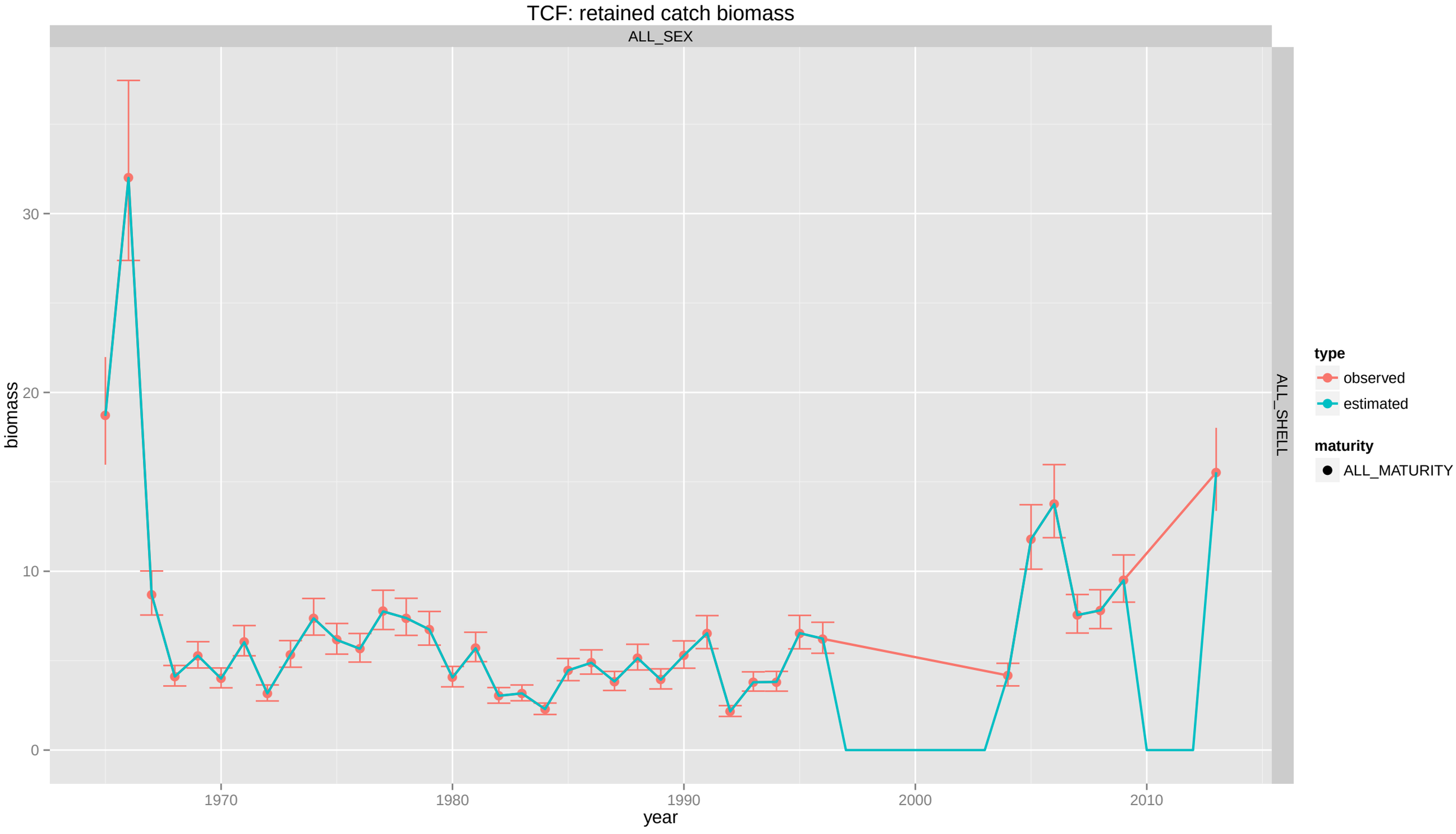

NMFS_trawl_survey: female, mature, new shell
1.0e+07
7.5e+06
5.0e+06
2.5e+06
0.0e+00
sample size
1980
1990
2000
2010
year
type
effective
input

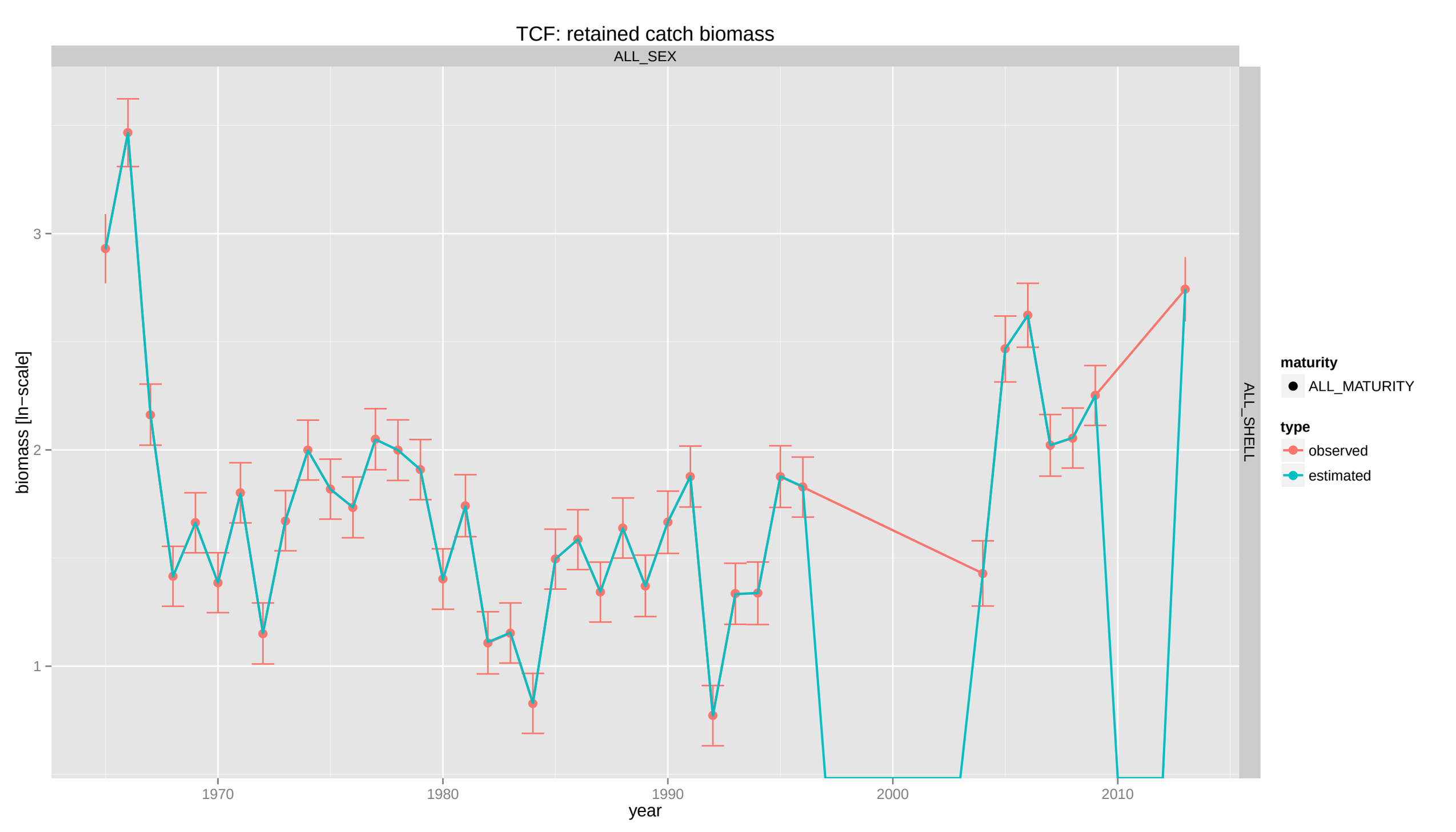

NMFS_trawl_survey: female, mature, old shell
sample size
4e+07
3e+07
2e+07
1e+07
0e+00
1980
1990
2000
2010
year
type
effective
input

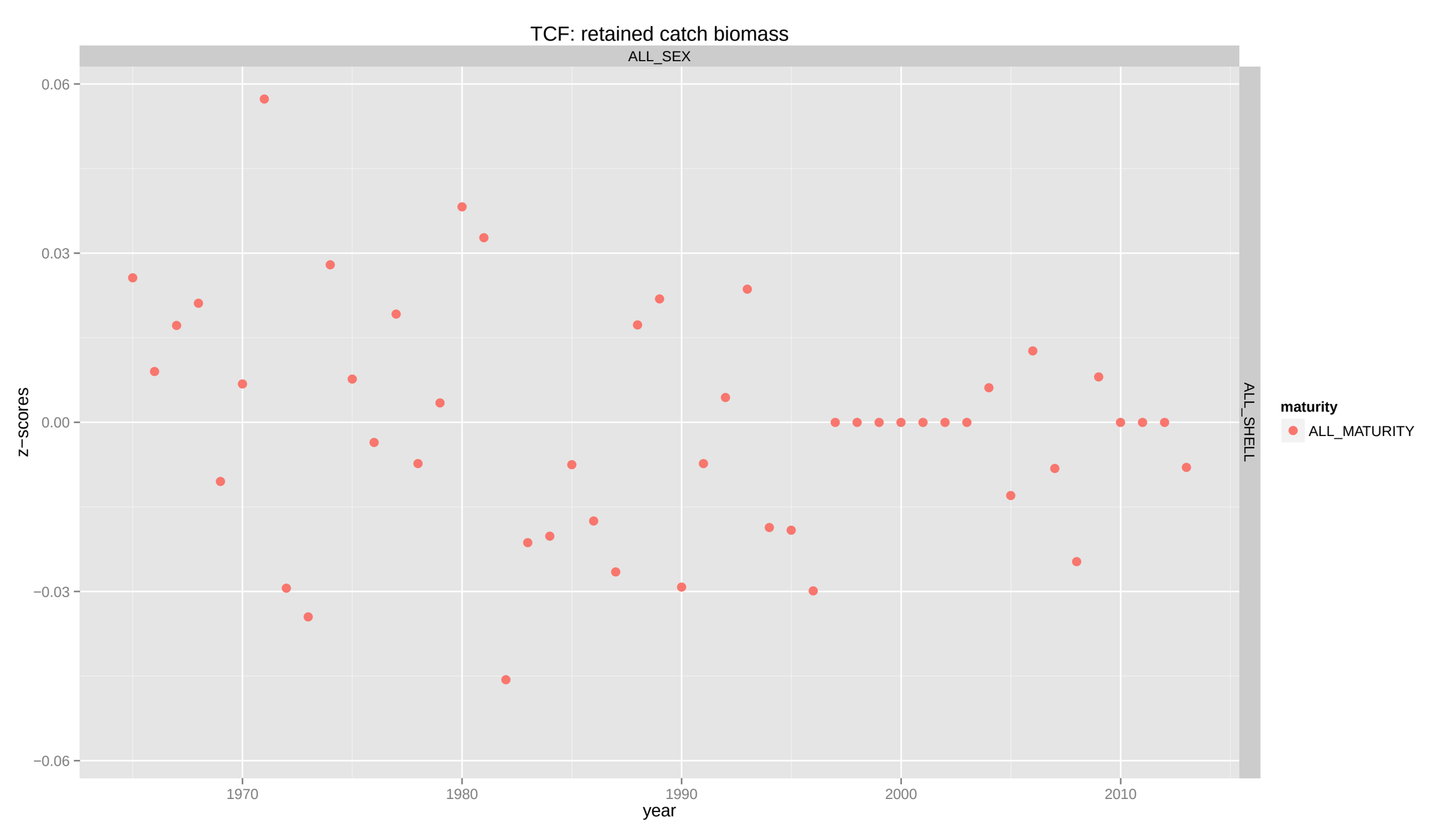

TCF: retained catch abundance
ALL_SEX
ALL_SHELL
abundance
year
25
20
15
10
5
0
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY


TCF: retained catch abundance
ALL_SEX
ALL_SHELL
abundance [ln−scale]
3
2
1
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY
type
observed
estimated

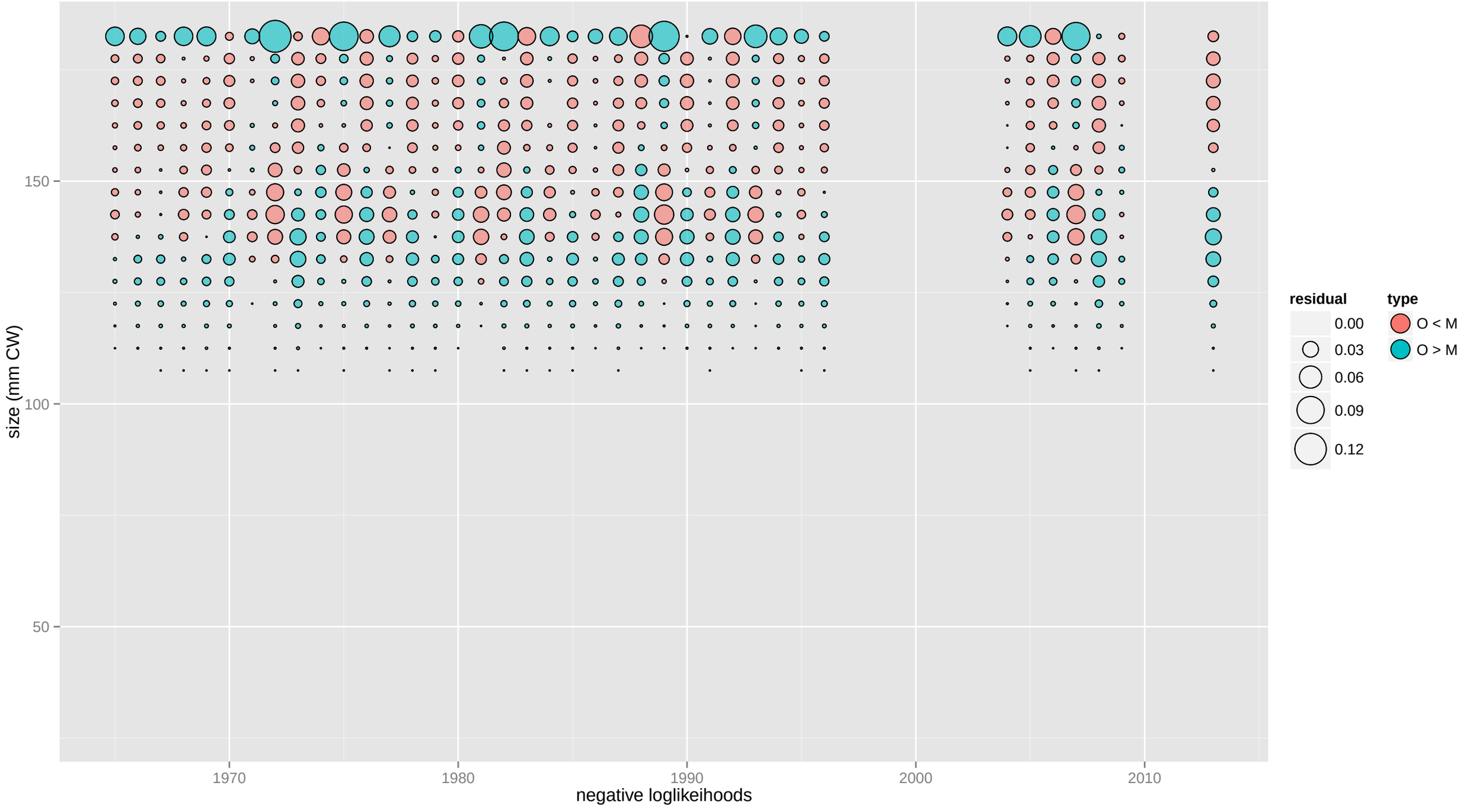

TCF: retained catch abundance
ALL_SEX
ALL_SHELL
z−scores
year
0.10
0.05
0.00
−0.05
−0.10
1970
1980
1990
2000
2010
maturity
ALL_MATURITY


TCF: retained catch biomass
ALL_SEX
ALL_SHELL
biomass
year
0
10
20
30
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY

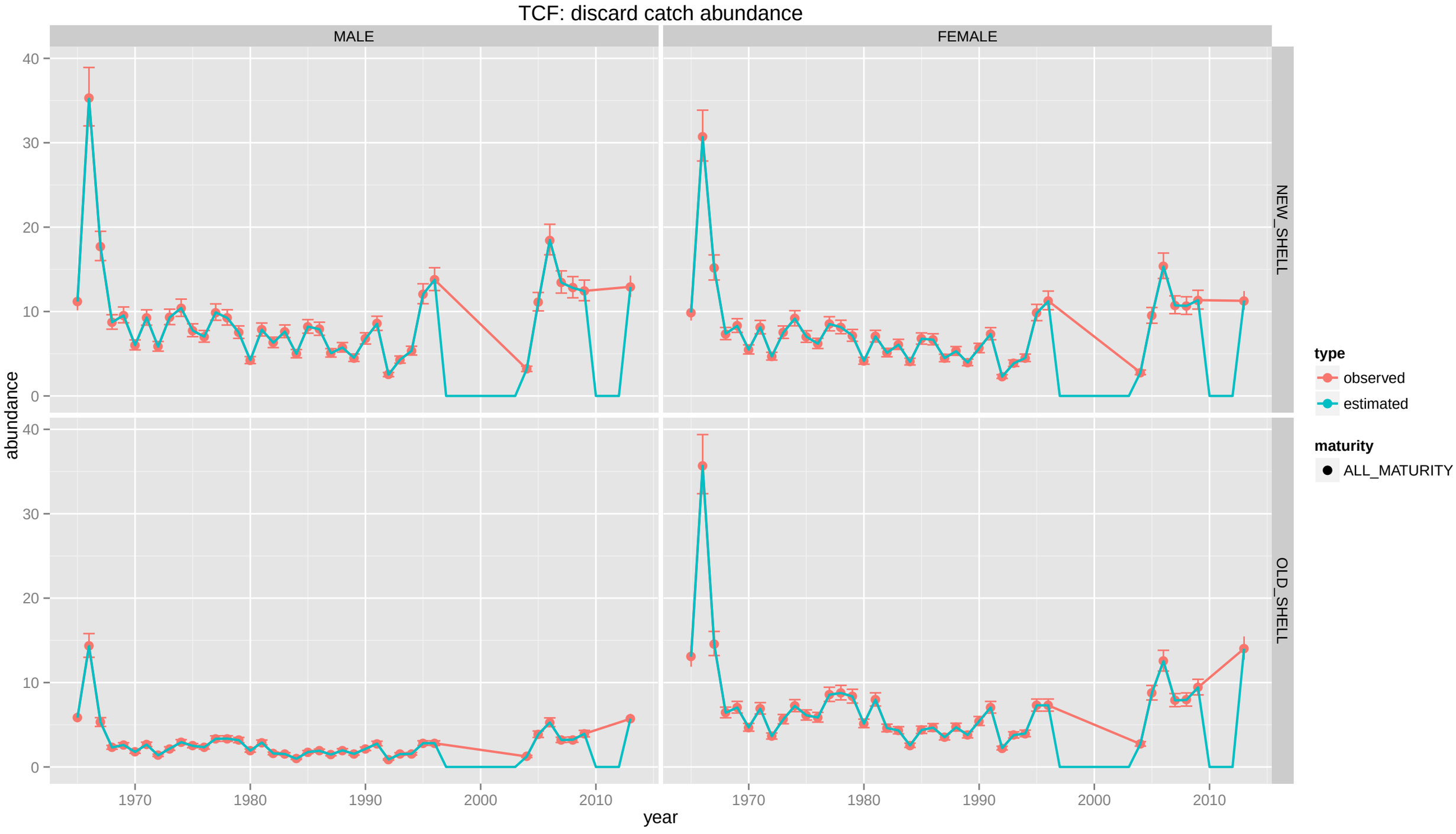

TCF: retained catch biomass
ALL_SEX
ALL_SHELL
biomass [ln−scale]
3
2
1
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY
type
observed
estimated

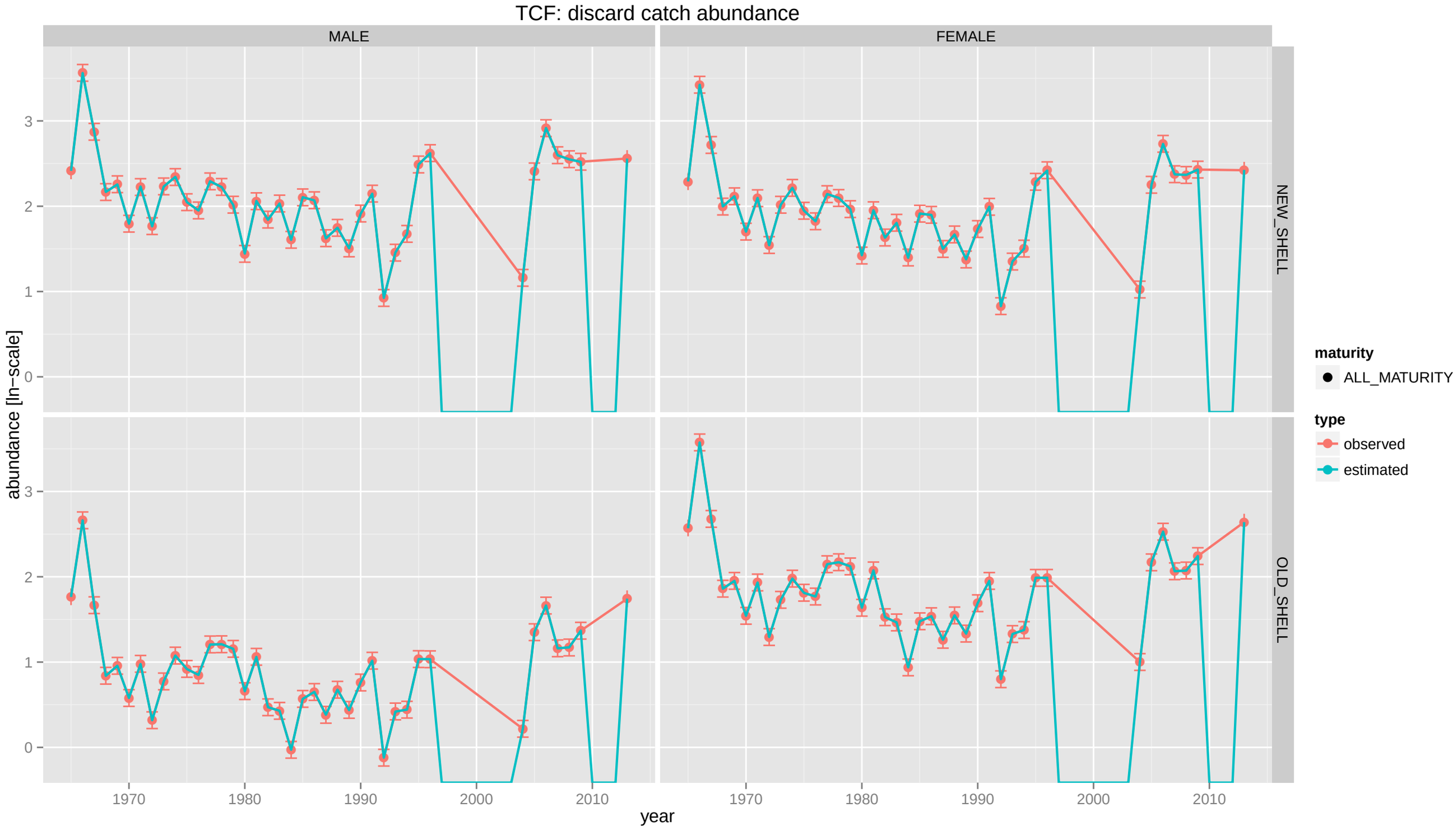

TCF: retained catch biomass
ALL_SEX
ALL_SHELL
0.06
0.03
0.00
−0.03
−0.06
z−scores
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY

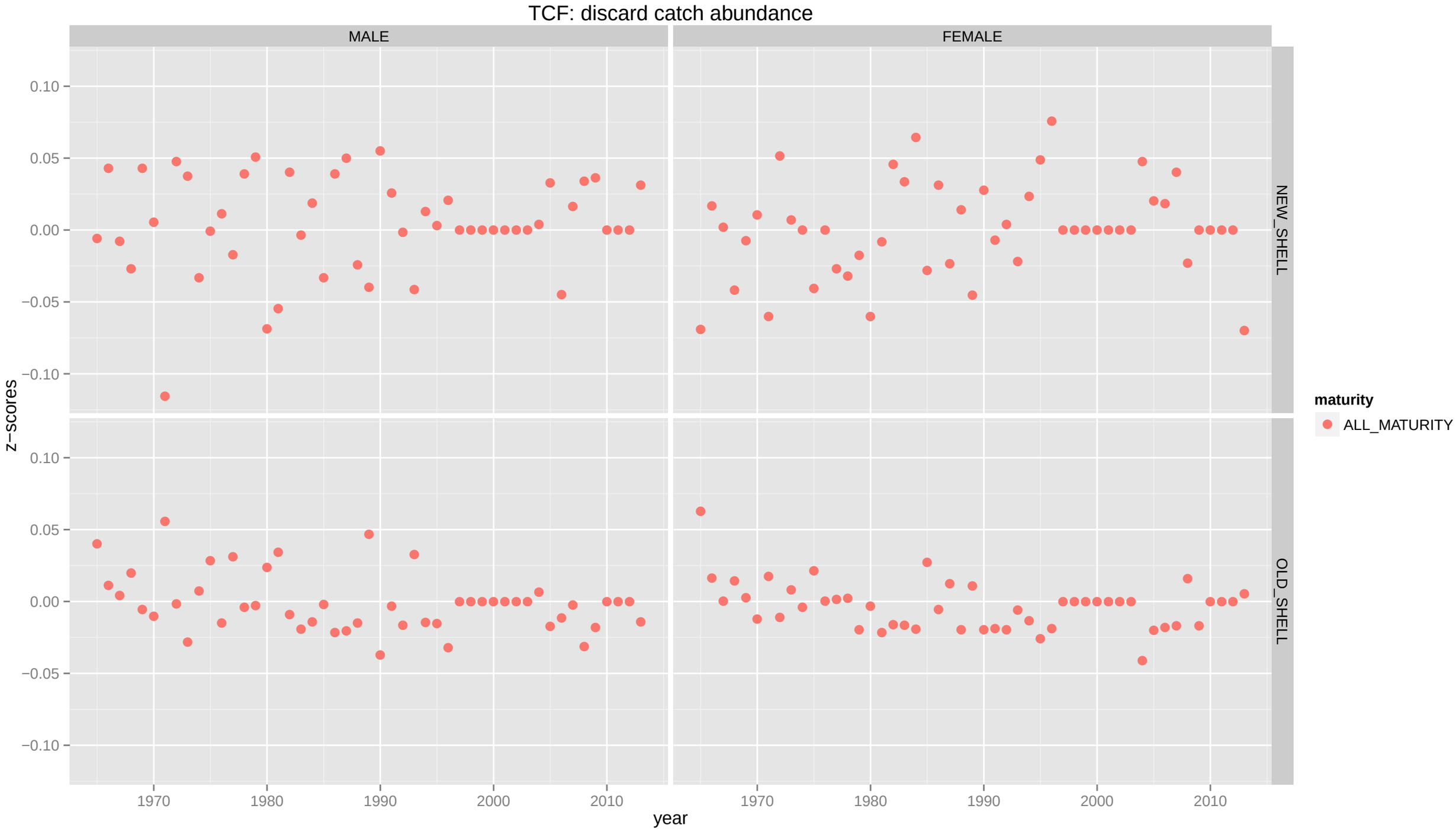

TCF: retained catch:
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.00
0.01
0.02
0.03
type
O < M
O > M


size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.03
0.06
0.09
0.12
type
O < M
O > M


TCF: retained catch: all sex, all maturity, all shell
6e+07
4e+07
2e+07
0e+00
sample size
1970
1980
1990
2000
2010
year
type
effective
input

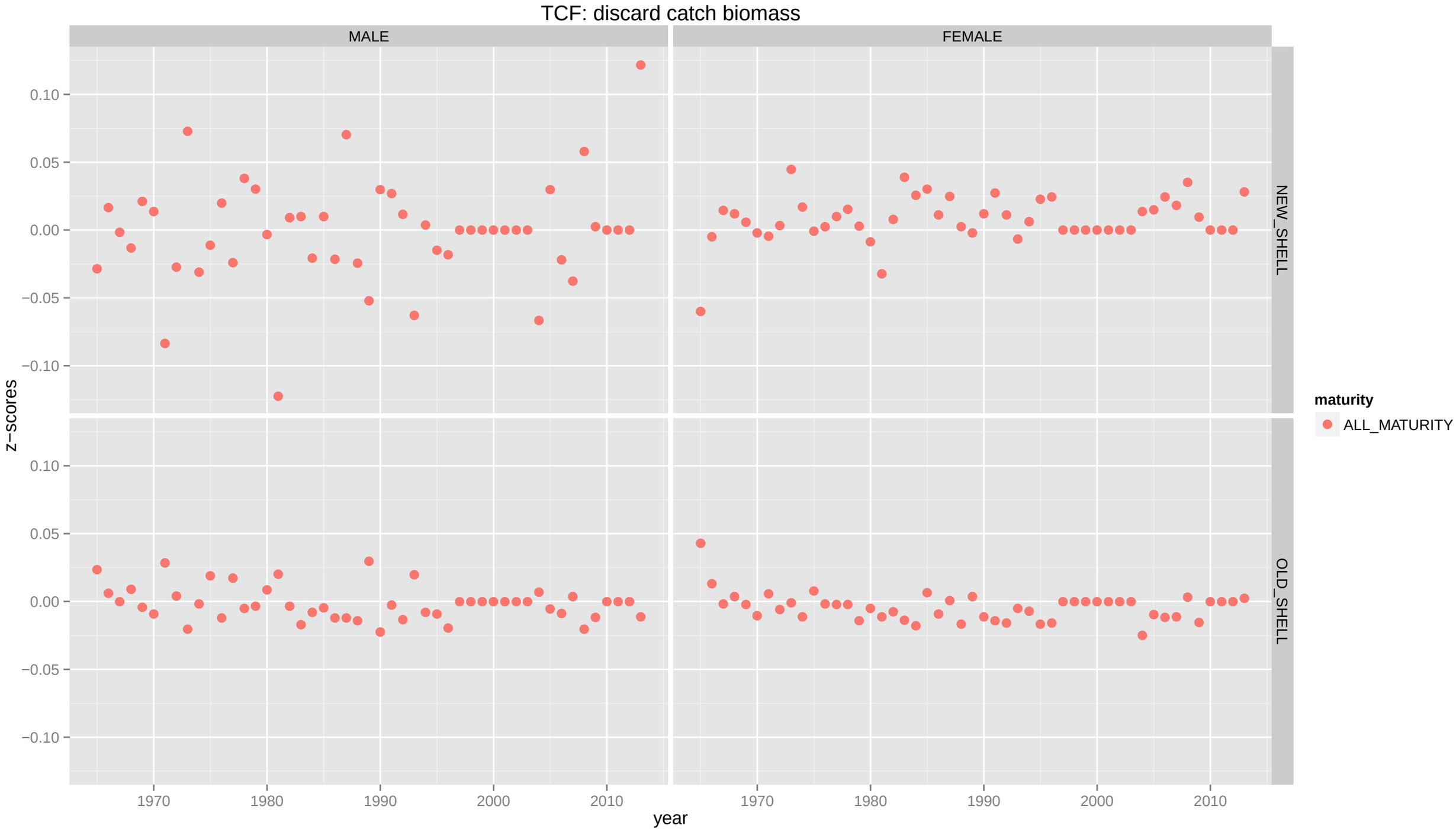

TCF: discard catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance
year
0
10
20
30
40
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY

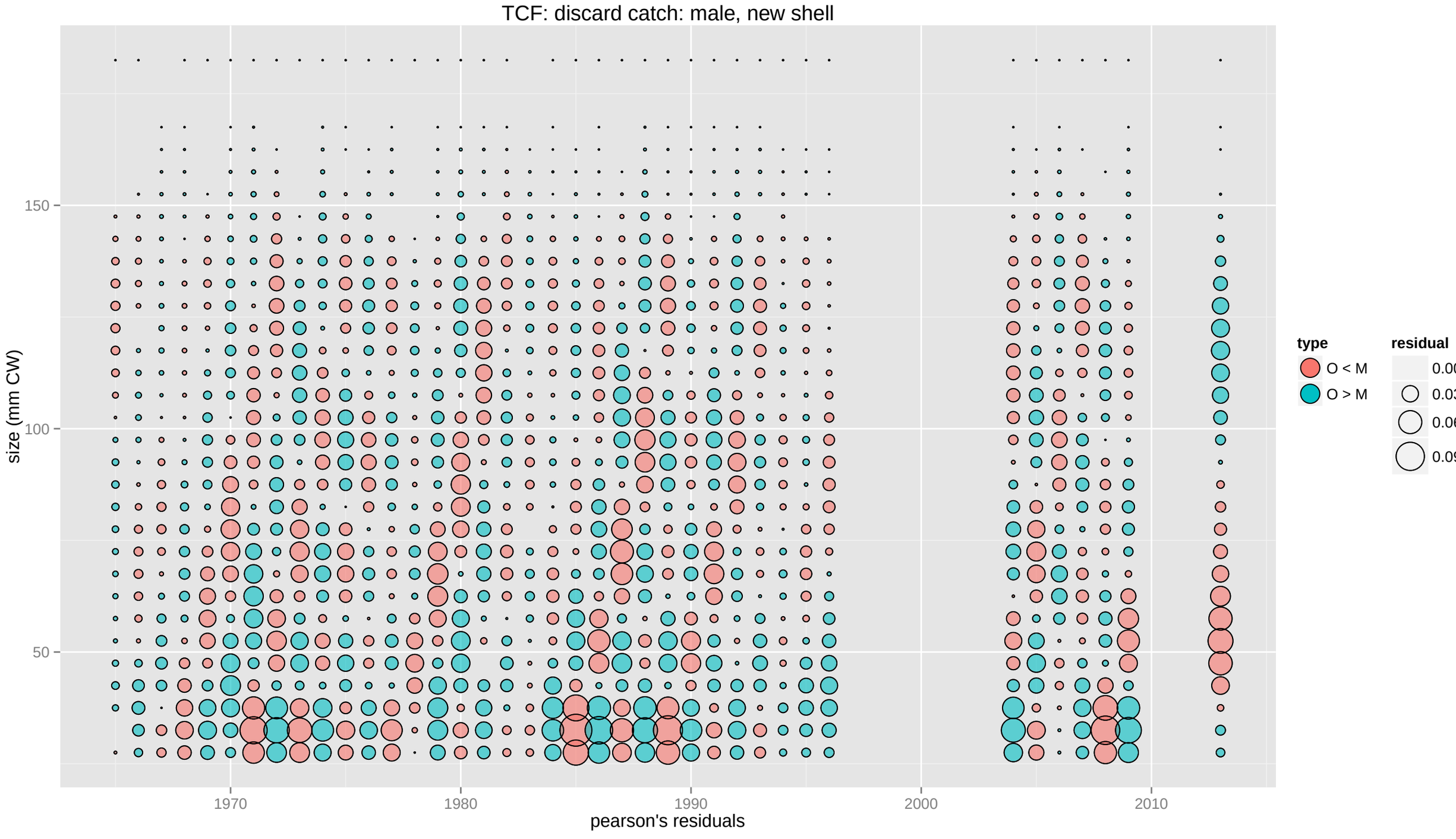

TCF: discard catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance [ln−scale]
year
0
1
2
3
1970
1980
1990
2000
2010
maturity
ALL_MATURITY
type
observed
estimated


TCF: discard catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
0.10
0.05
0.00
−0.05
−0.10
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY

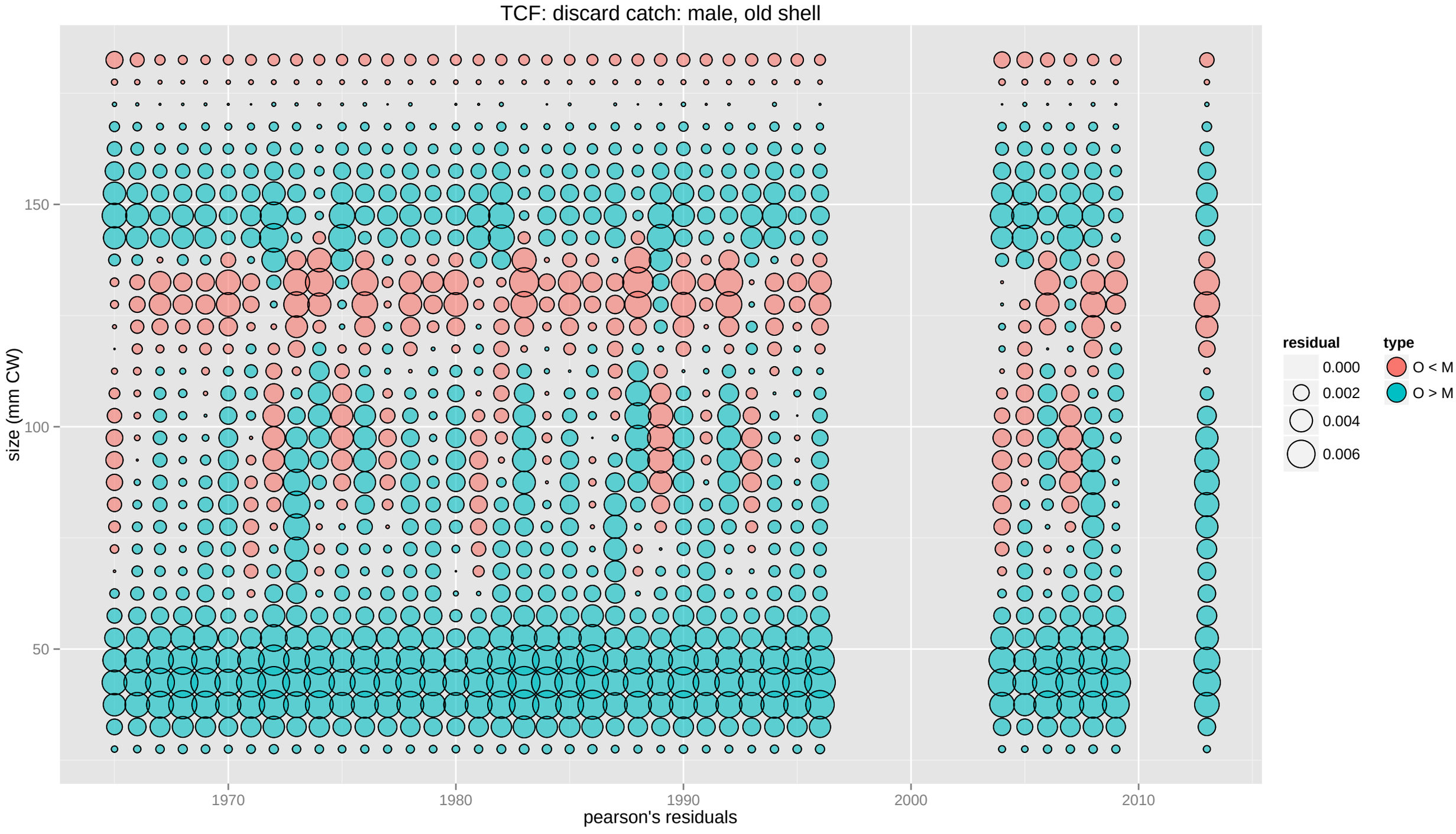

TCF: discard catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass
year
0
5
10
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY

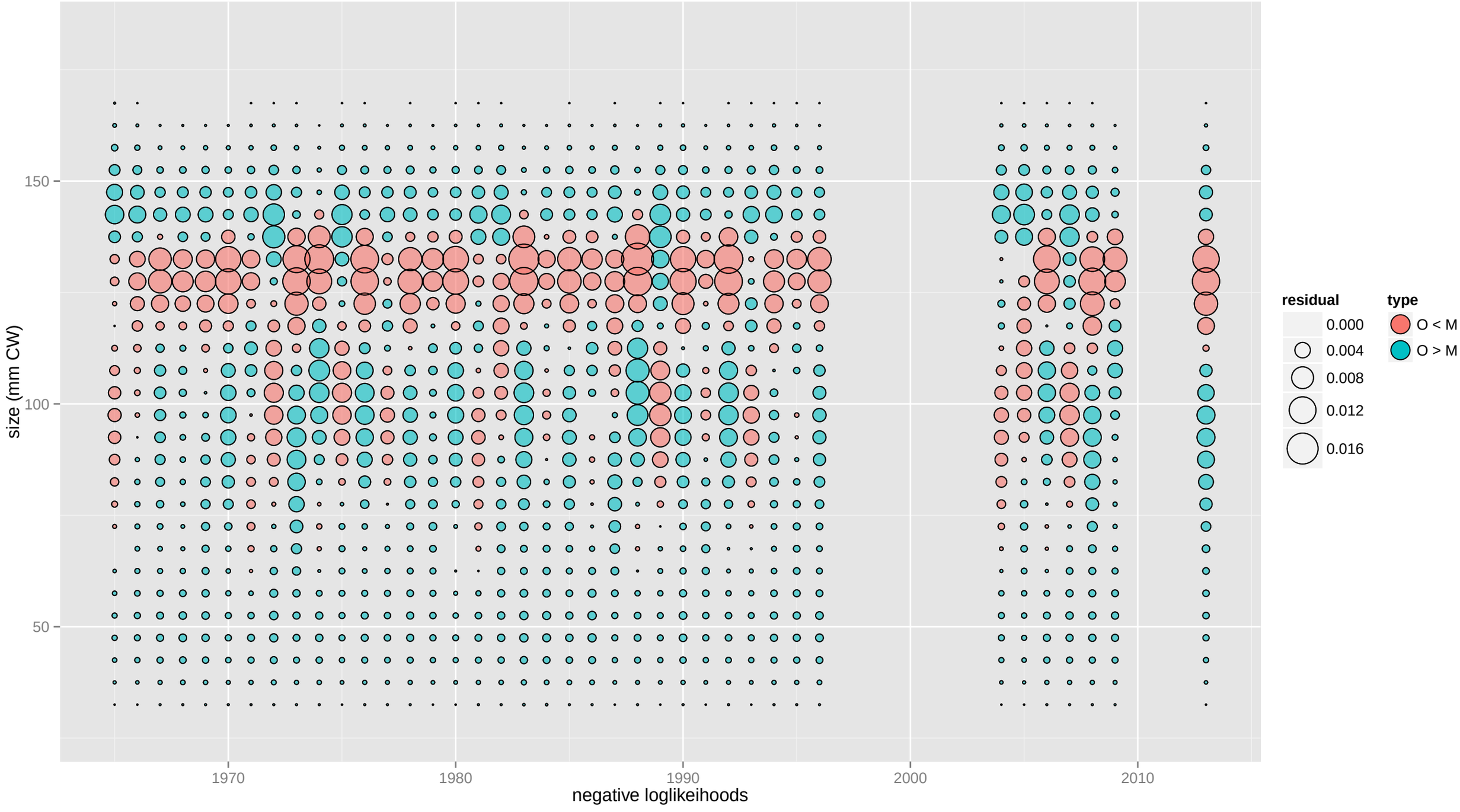

TCF: discard catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass [ln−scale]
year
2
1
0
−1
1970
1980
1990
2000
2010
maturity
ALL_MATURITY
type
observed
estimated


TCF: discard catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
0.10
0.05
0.00
−0.05
−0.10
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY

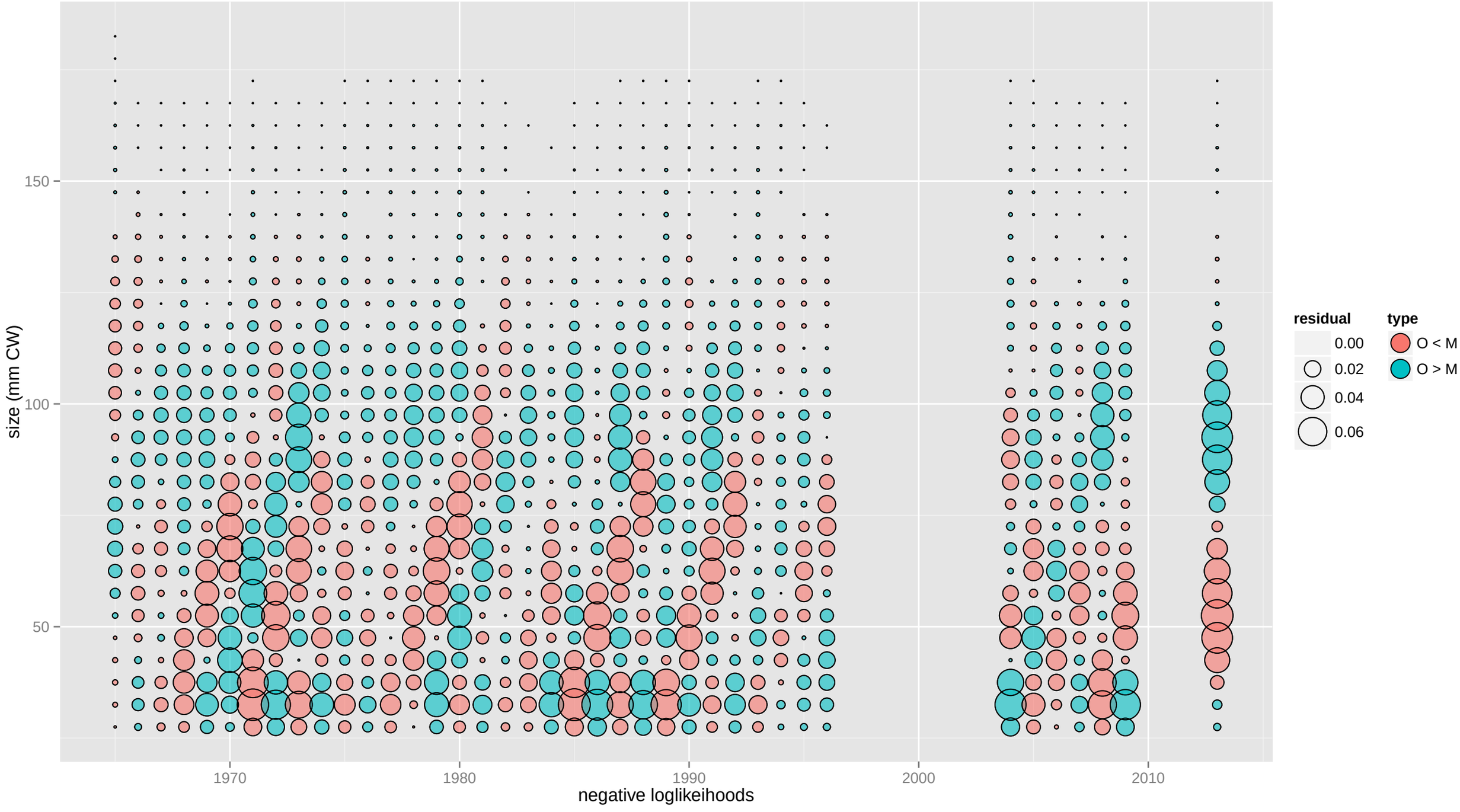

TCF: discard catch: male, new shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
type
O < M
O > M
residual
0.00
0.03
0.06
0.09

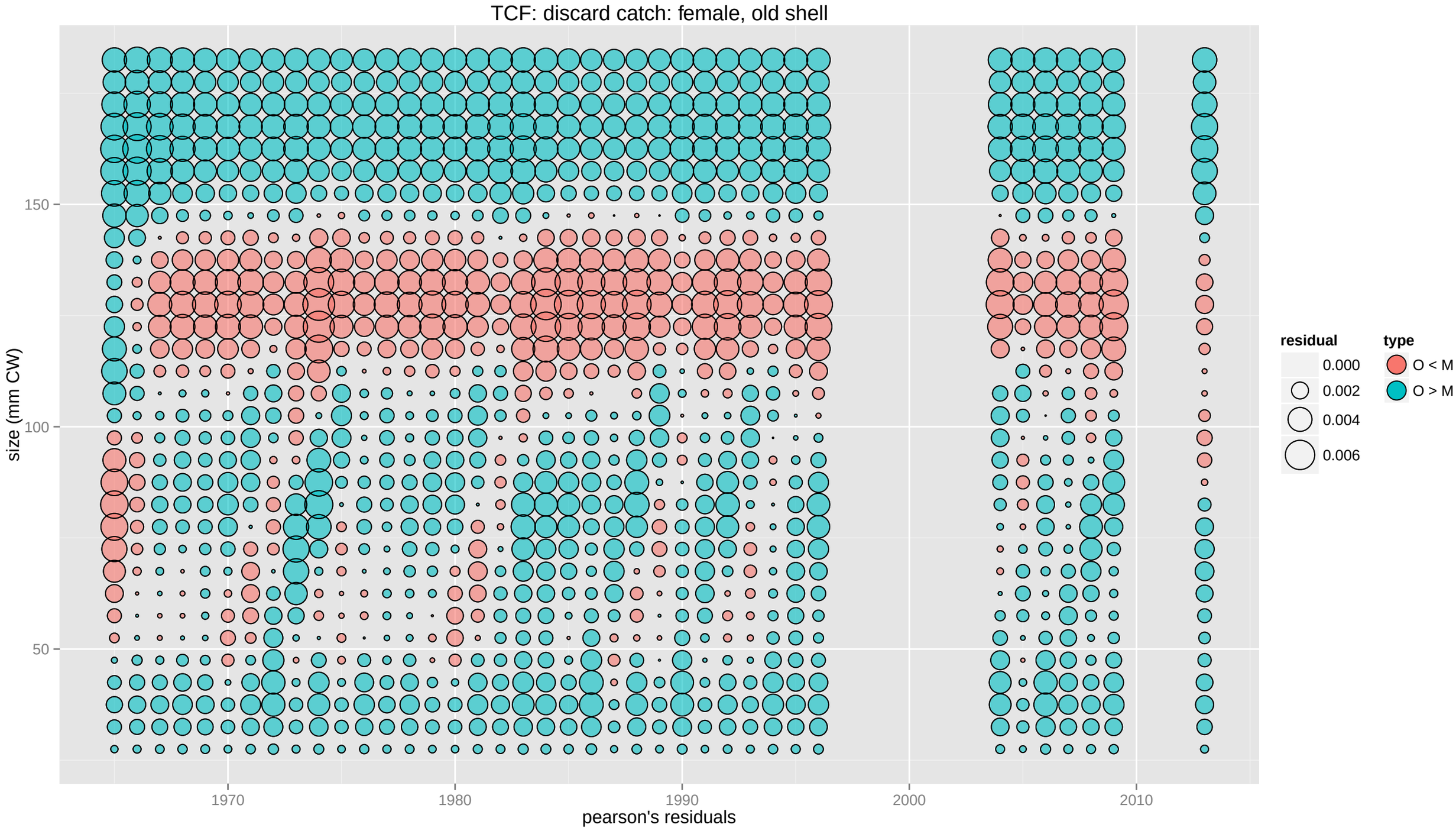

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.02
0.04
0.06
0.08
type
O < M
O > M

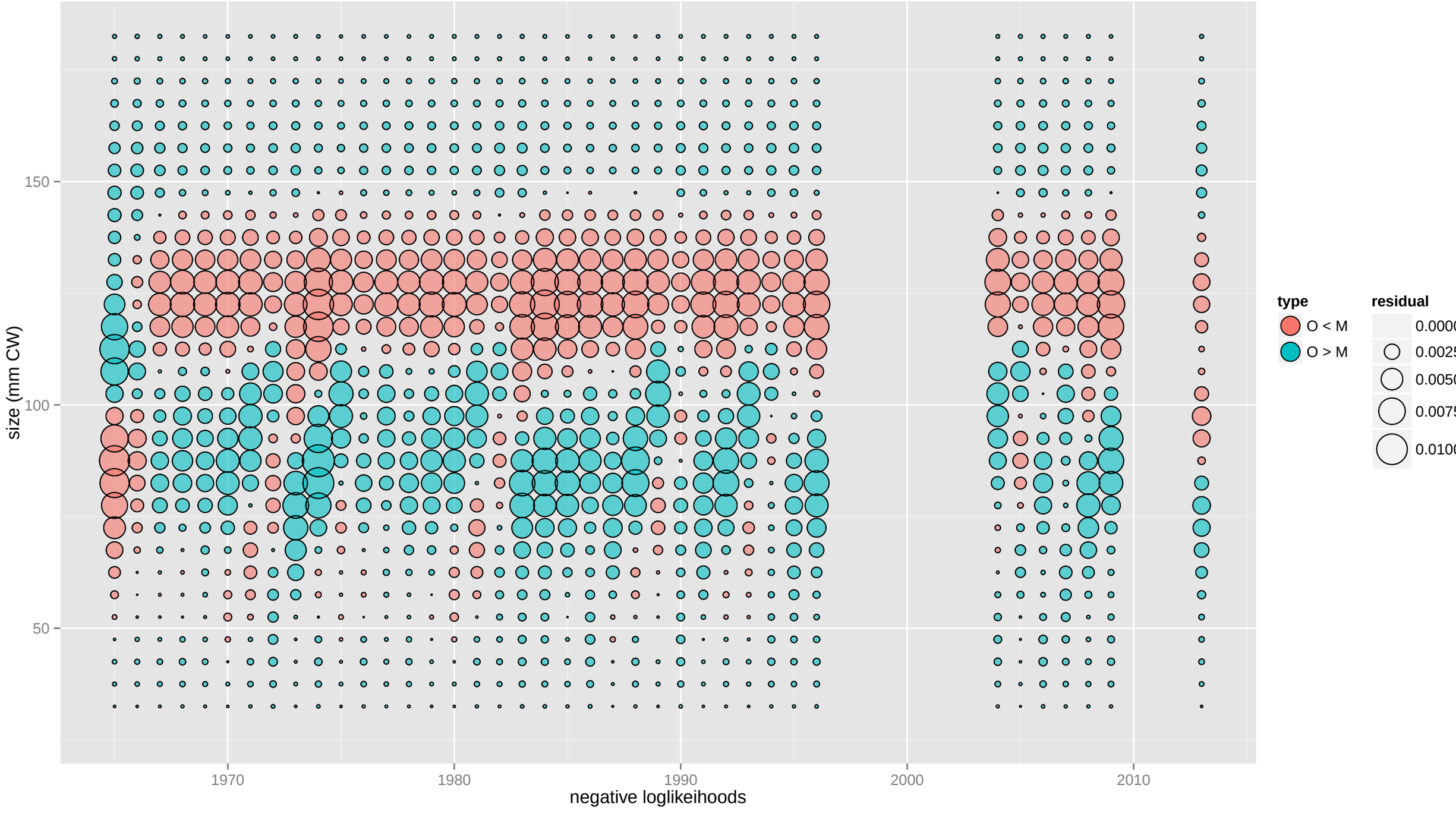

TCF: discard catch: male, old shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.002
0.004
0.006
type
O < M
O > M

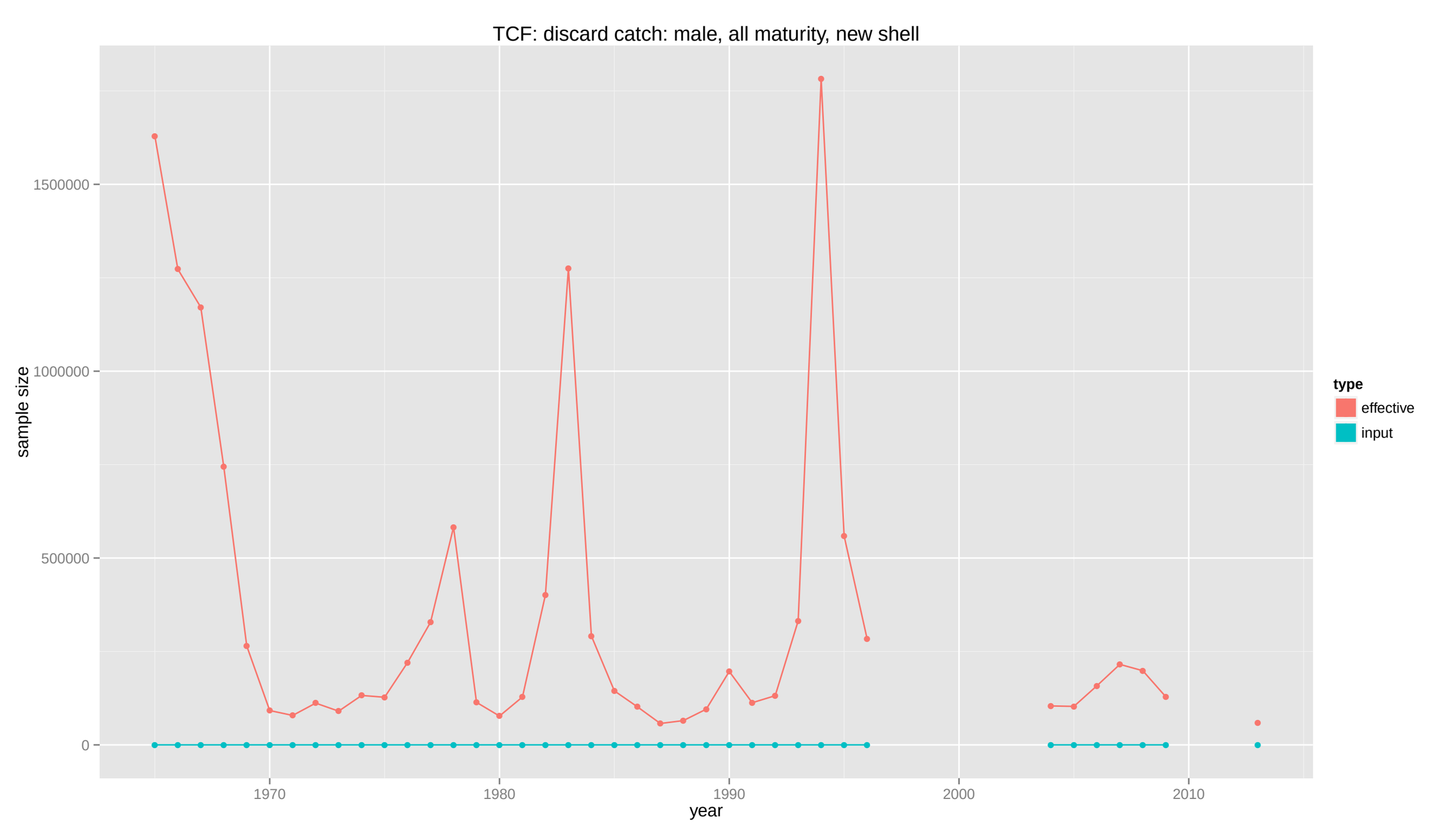

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.000
0.004
0.008
0.012
0.016
type
O < M
O > M

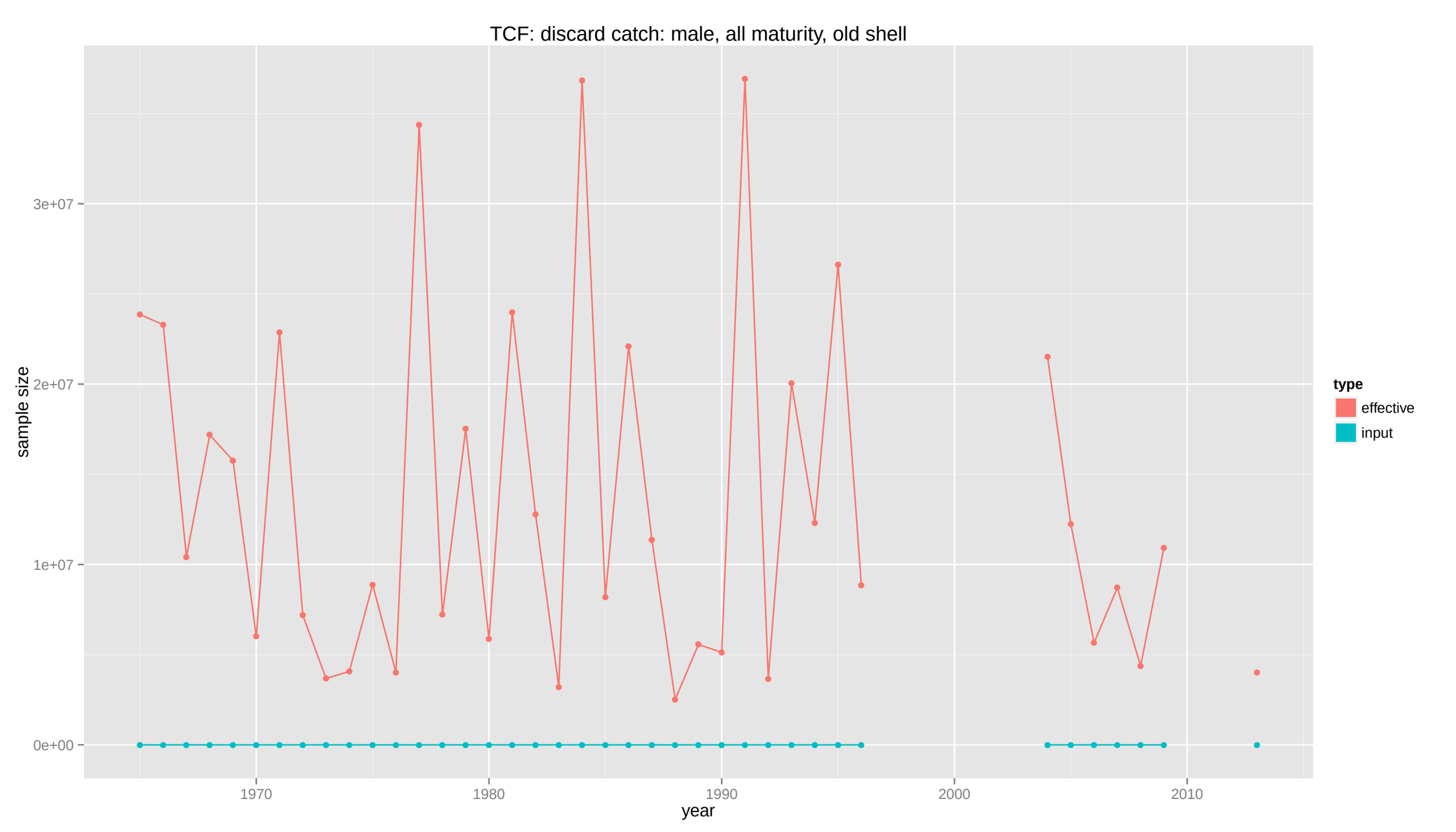

TCF: discard catch: female, new shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.025
0.050
0.075
0.100
type
O < M
O > M

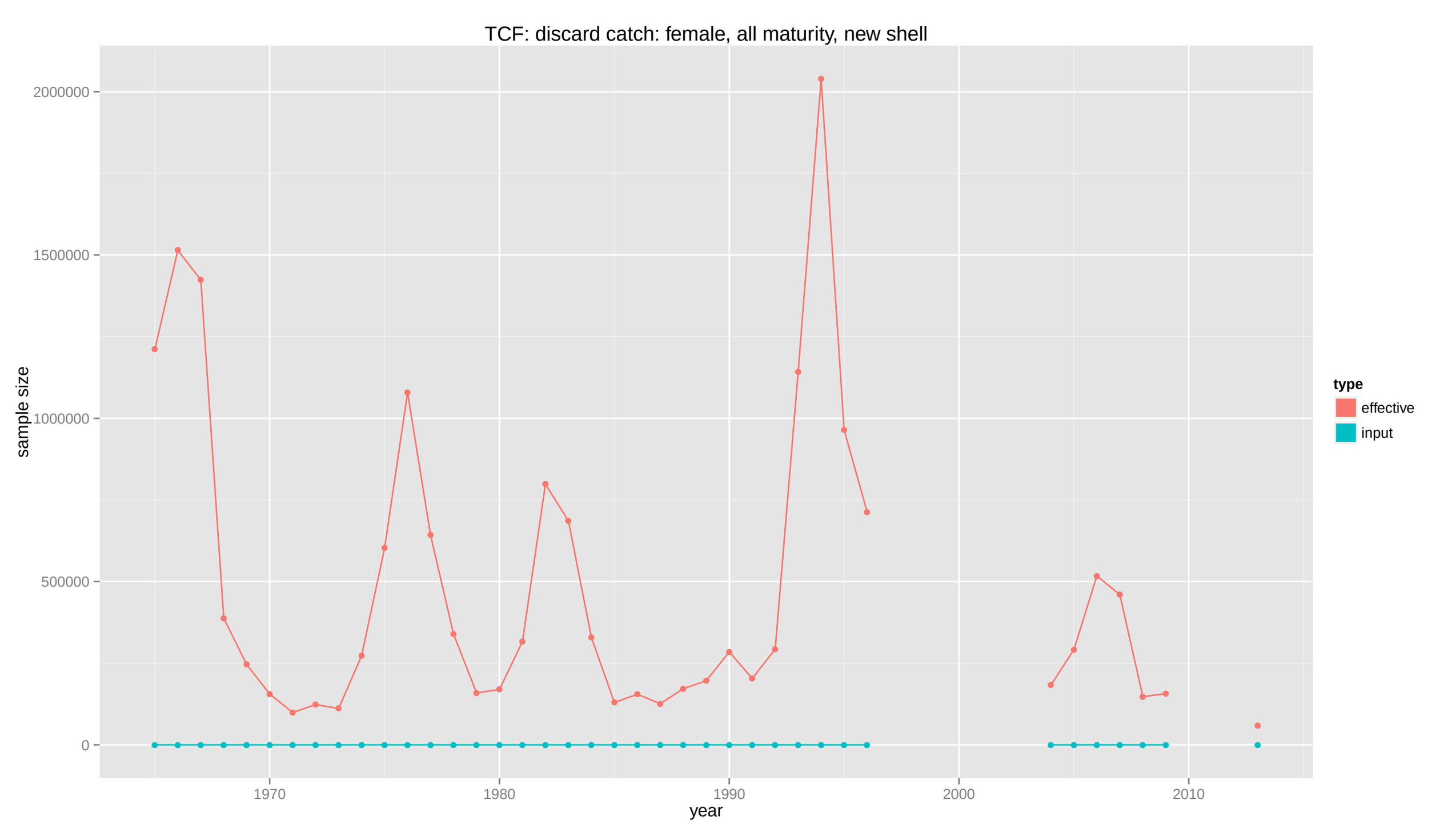

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.02
0.04
0.06
type
O < M
O > M

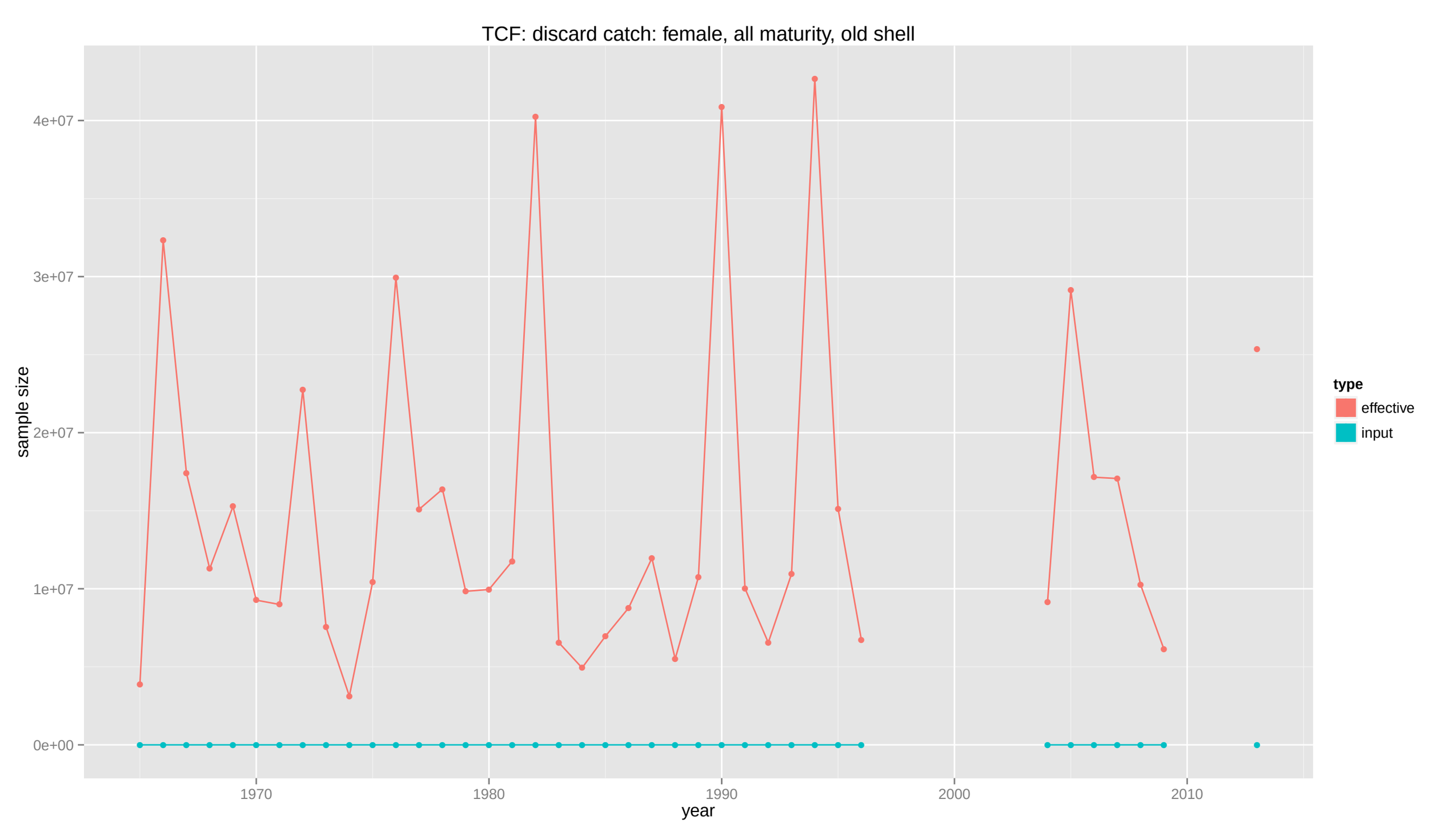

TCF: discard catch: female, old shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.002
0.004
0.006
type
O < M
O > M


size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
type
O < M
O > M
residual
0.0000
0.0025
0.0050
0.0075
0.0100


TCF: discard catch: male, all maturity, new shell
sample size
1500000
1000000
500000
0
1970
1980
1990
2000
2010
year
type
effective
input

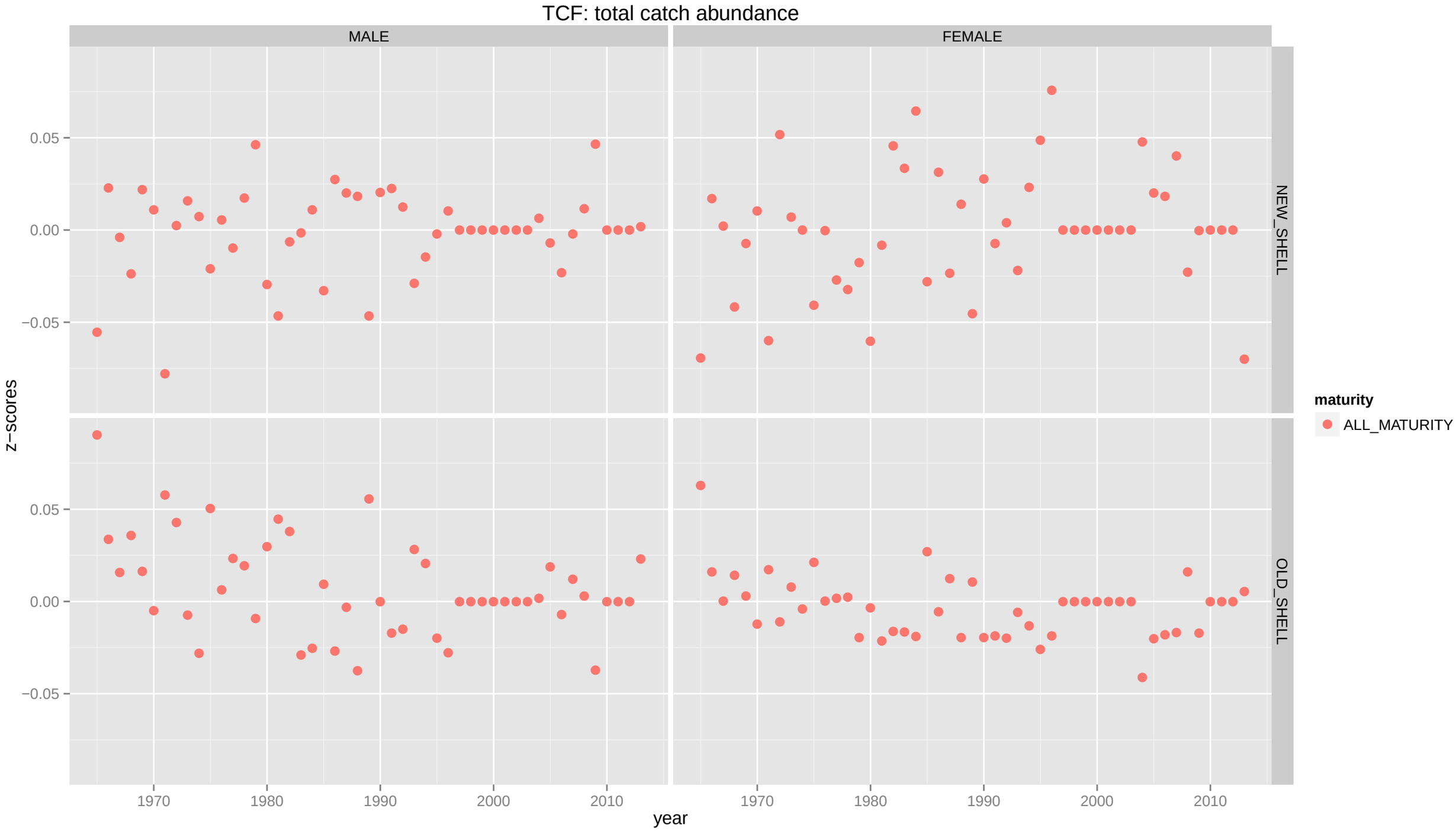

TCF: discard catch: male, all maturity, old shell
sample size
3e+07
2e+07
1e+07
0e+00
1970
1980
1990
2000
2010
year
type
effective
input

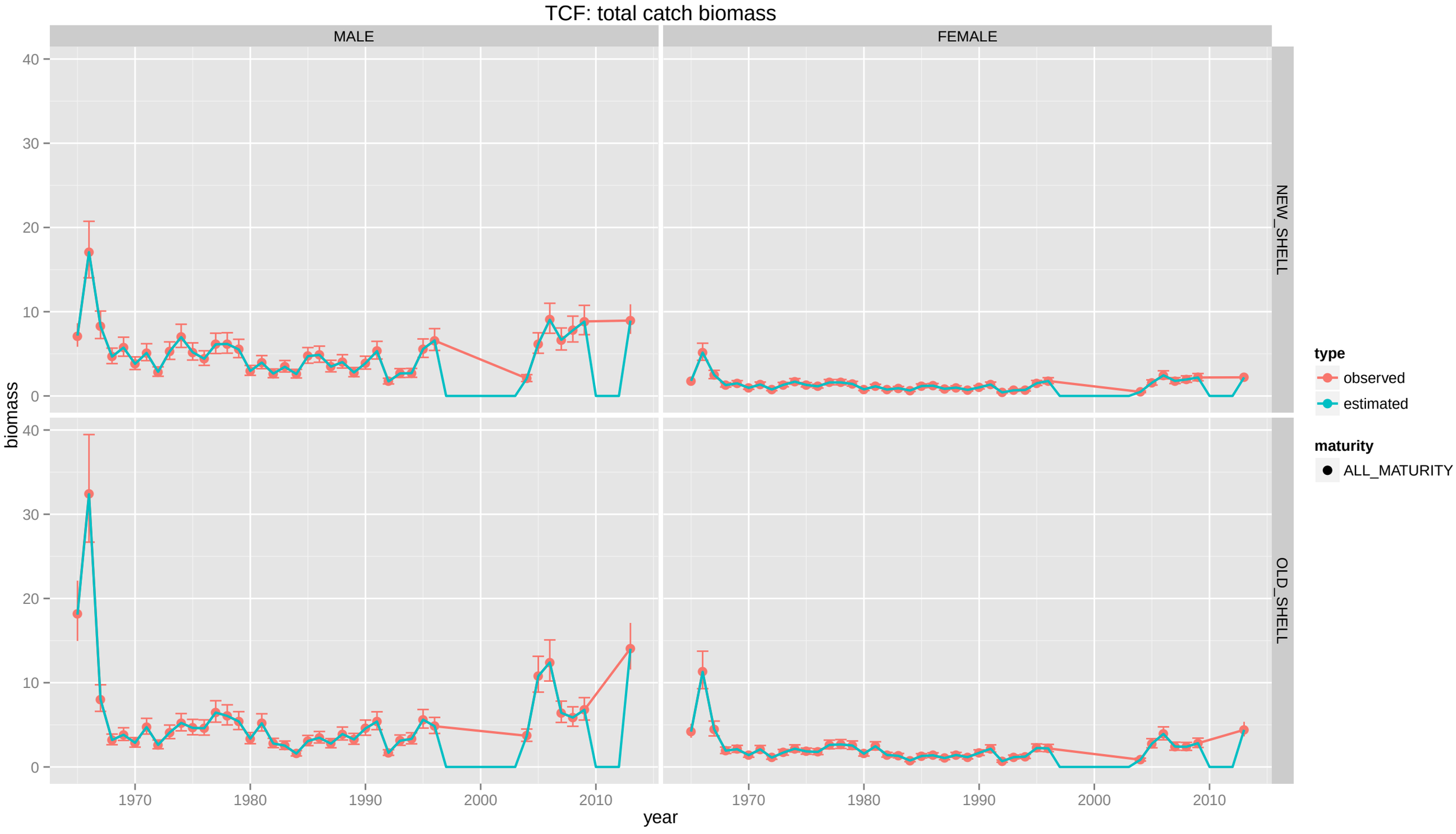

TCF: discard catch: female, all maturity, new shell
sample size
2000000
1500000
1000000
500000
0
1970
1980
1990
2000
2010
year
type
effective
input


TCF: discard catch: female, all maturity, old shell
sample size
4e+07
3e+07
2e+07
1e+07
0e+00
1970
1980
1990
2000
2010
year
type
effective
input

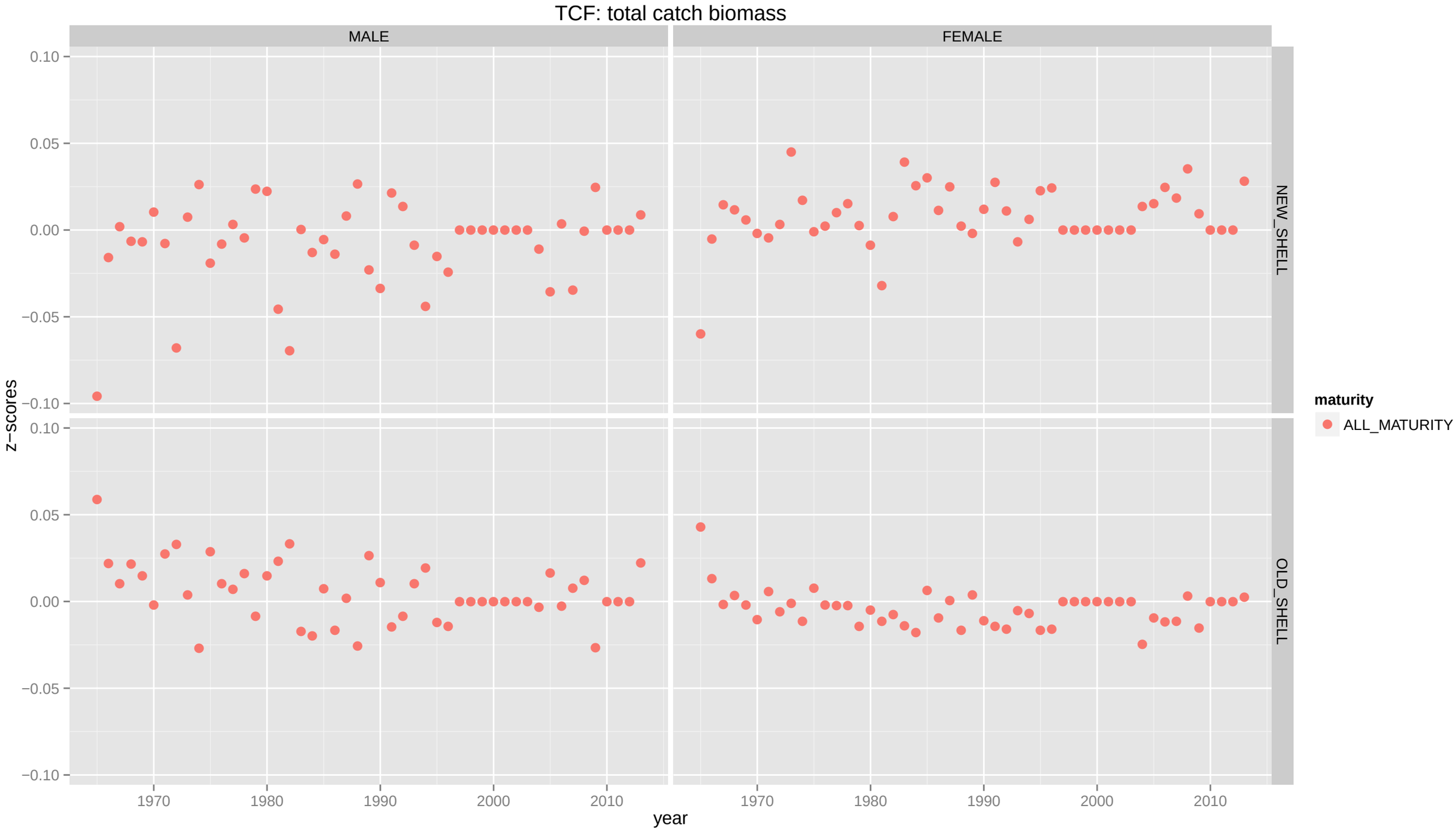

TCF: total catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance
year
0
10
20
30
40
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY

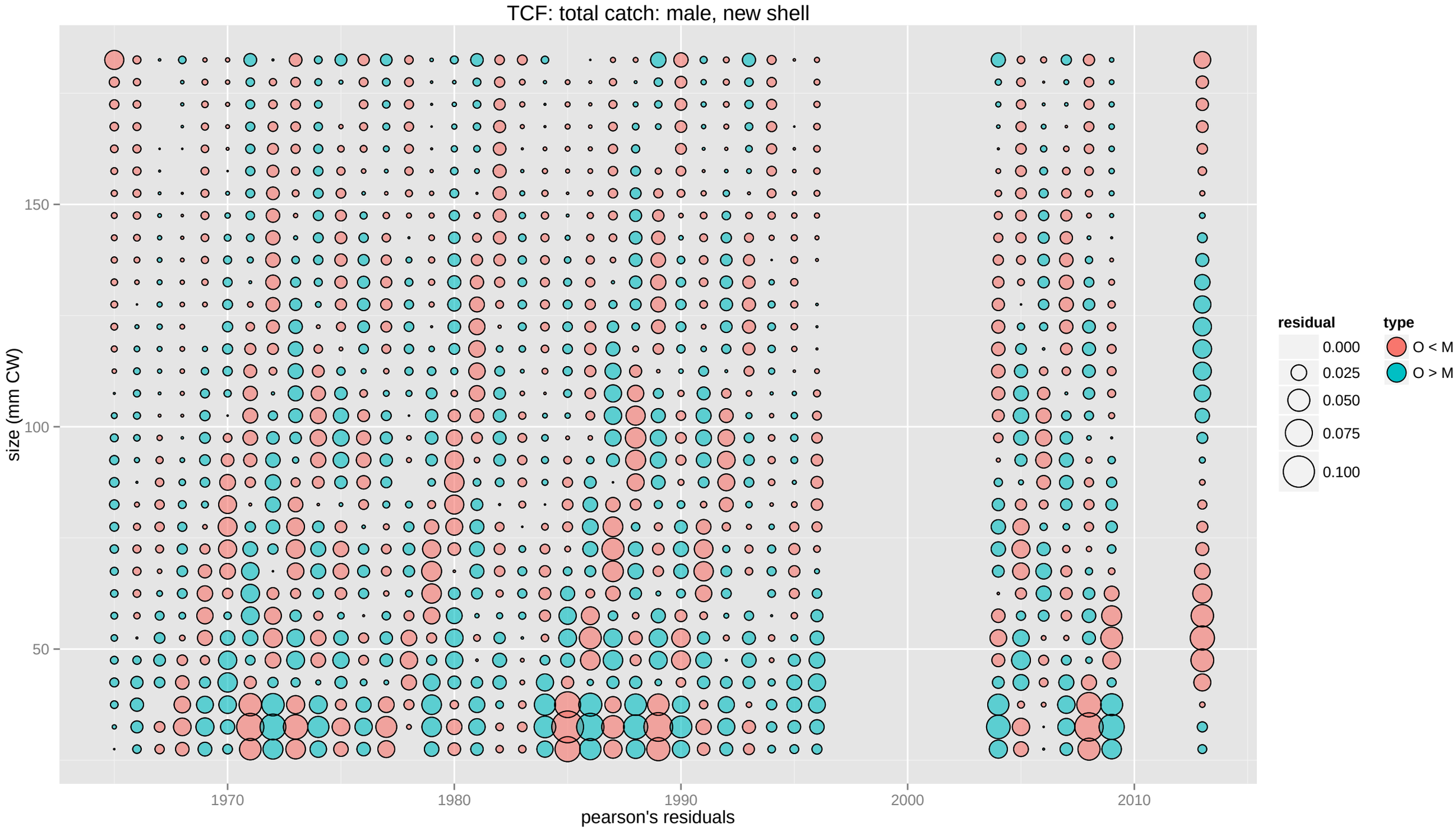

TCF: total catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
abundance [ln−scale]
year
1
2
3
1970
1980
1990
2000
2010
maturity
ALL_MATURITY
type
observed
estimated

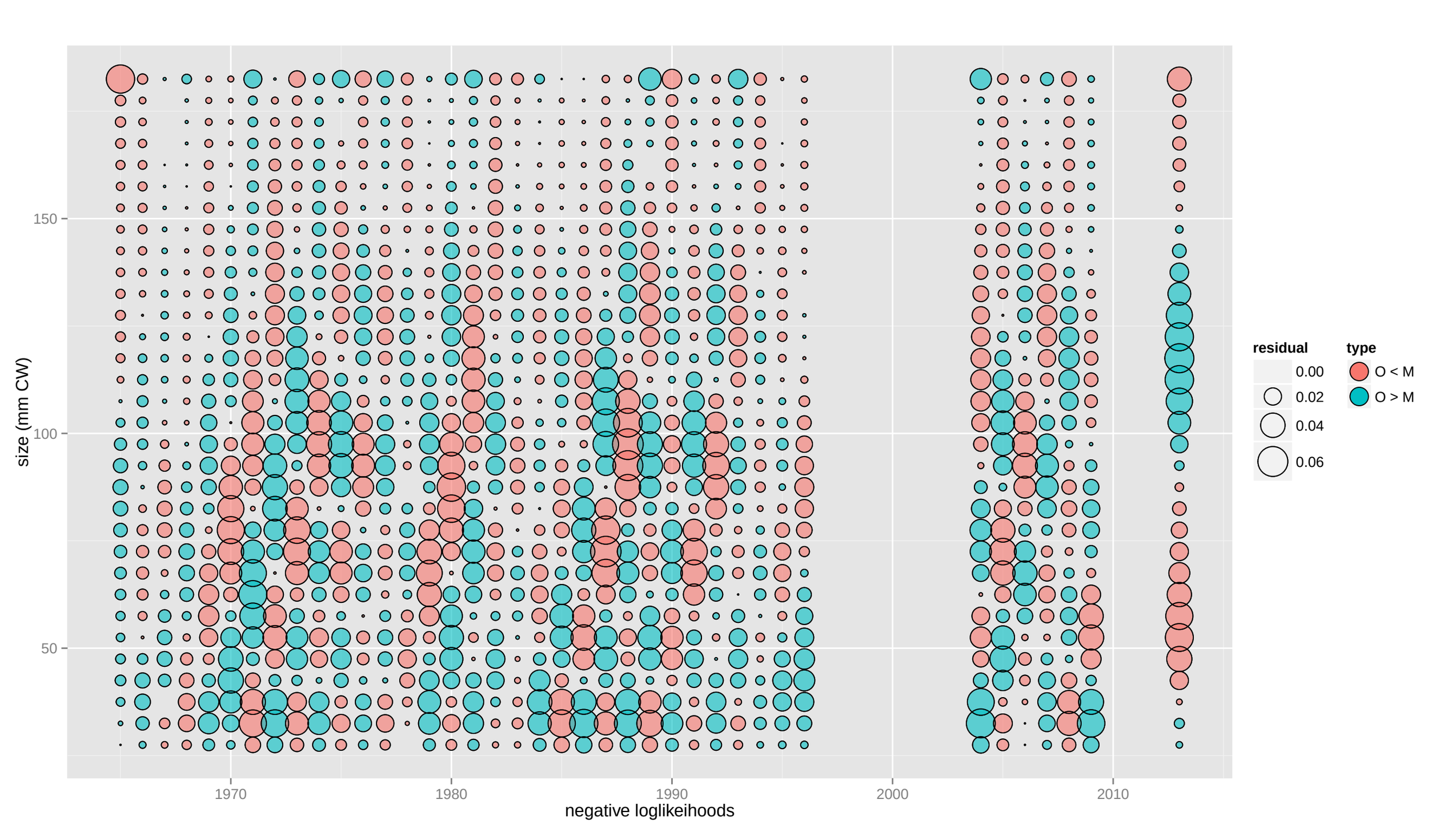

TCF: total catch abundance
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
0.05
0.00
−0.05
1970
1980
1990
2000
2010
year
maturity
ALL_MATURITY


TCF: total catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass
year
0
10
20
30
40
1970
1980
1990
2000
2010
type
observed
estimated
maturity
ALL_MATURITY

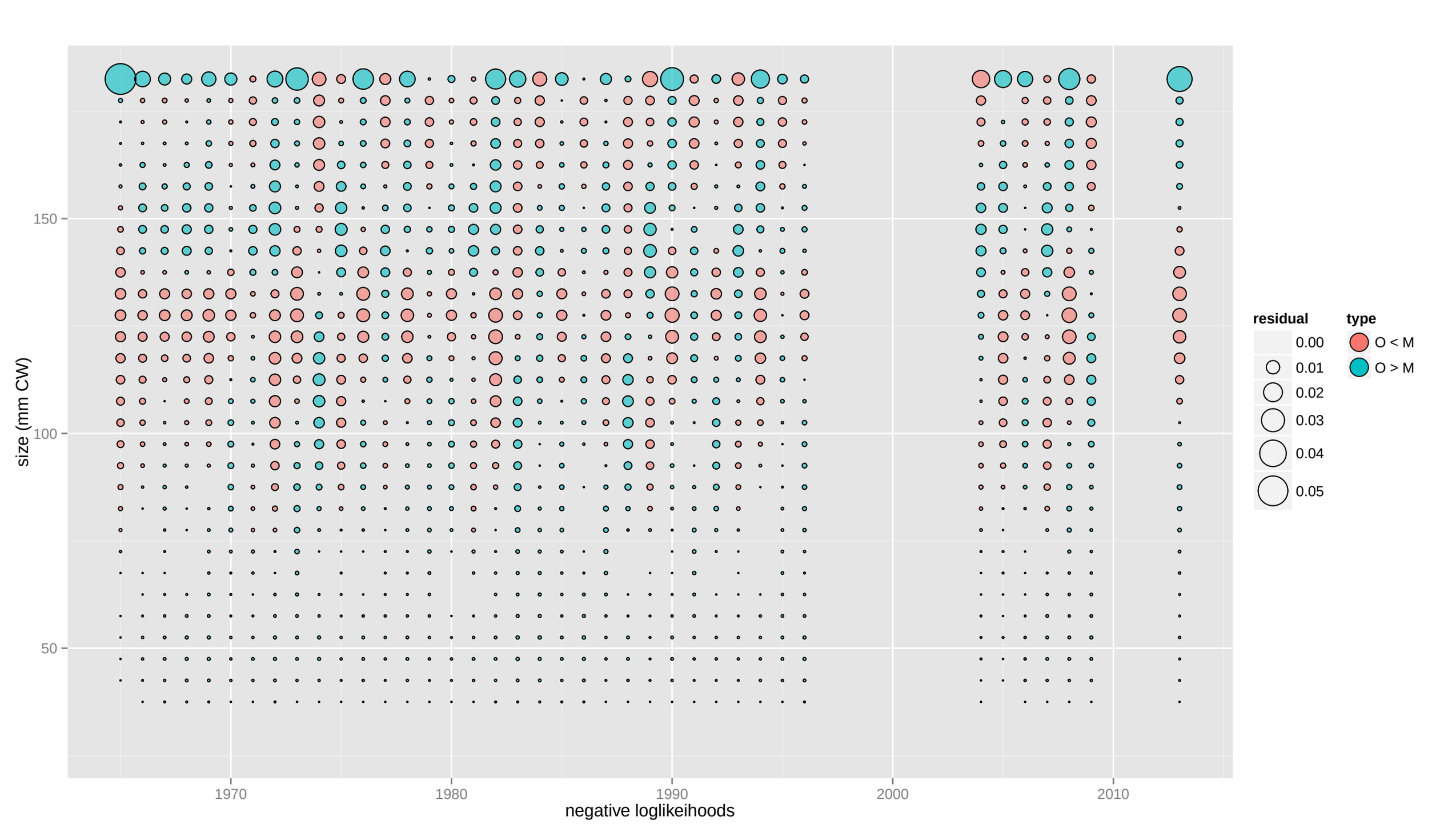

TCF: total catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
biomass [ln−scale]
year
3
2
1
0
−1
1970
1980
1990
2000
2010
maturity
ALL_MATURITY
type
observed
estimated

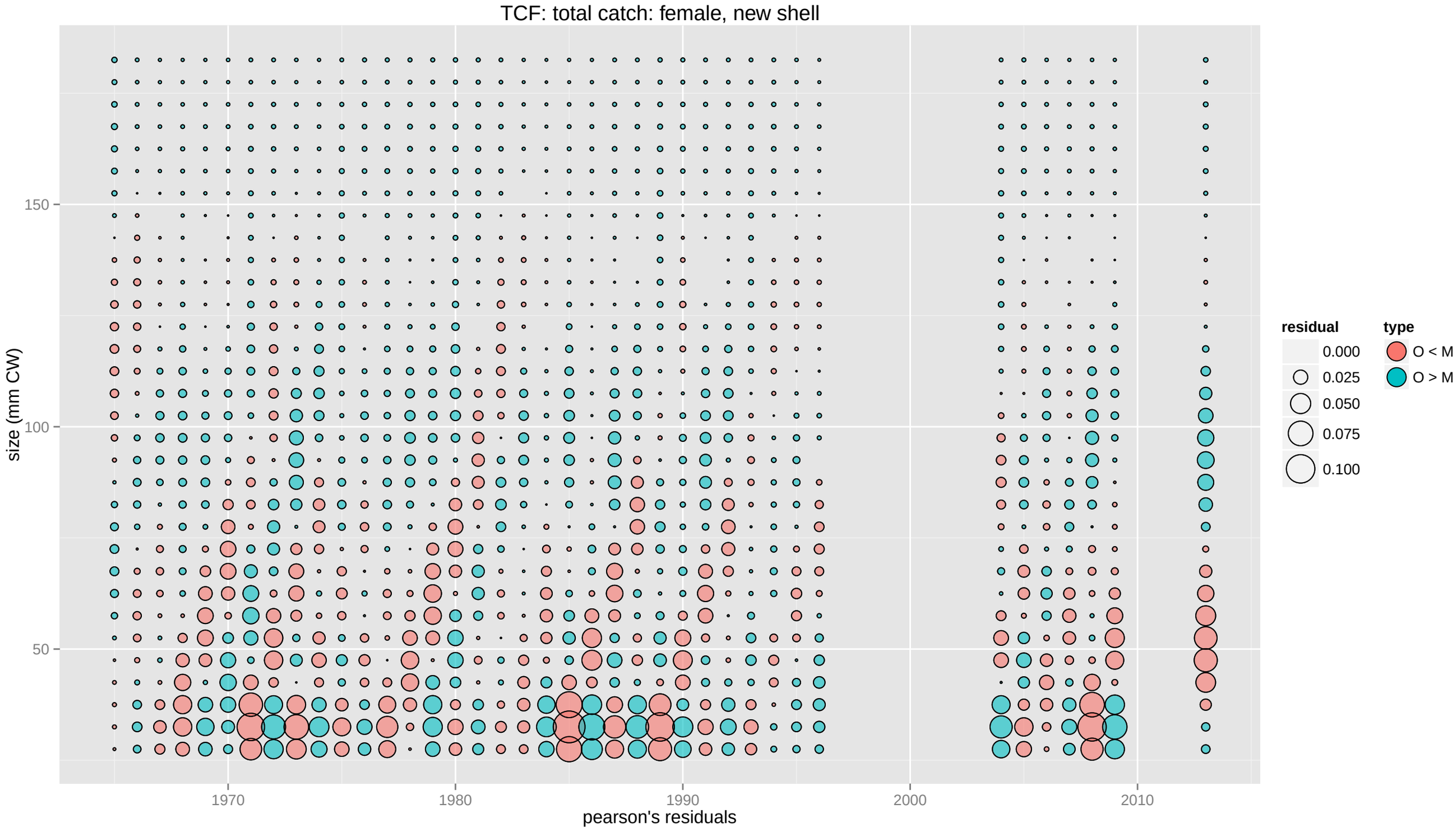

TCF: total catch biomass
MALE
FEMALE
NEW_SHELL
OLD_SHELL
z−scores
year
0.10
0.05
0.00
−0.05
−0.10
1970
1980
1990
2000
2010
maturity
ALL_MATURITY

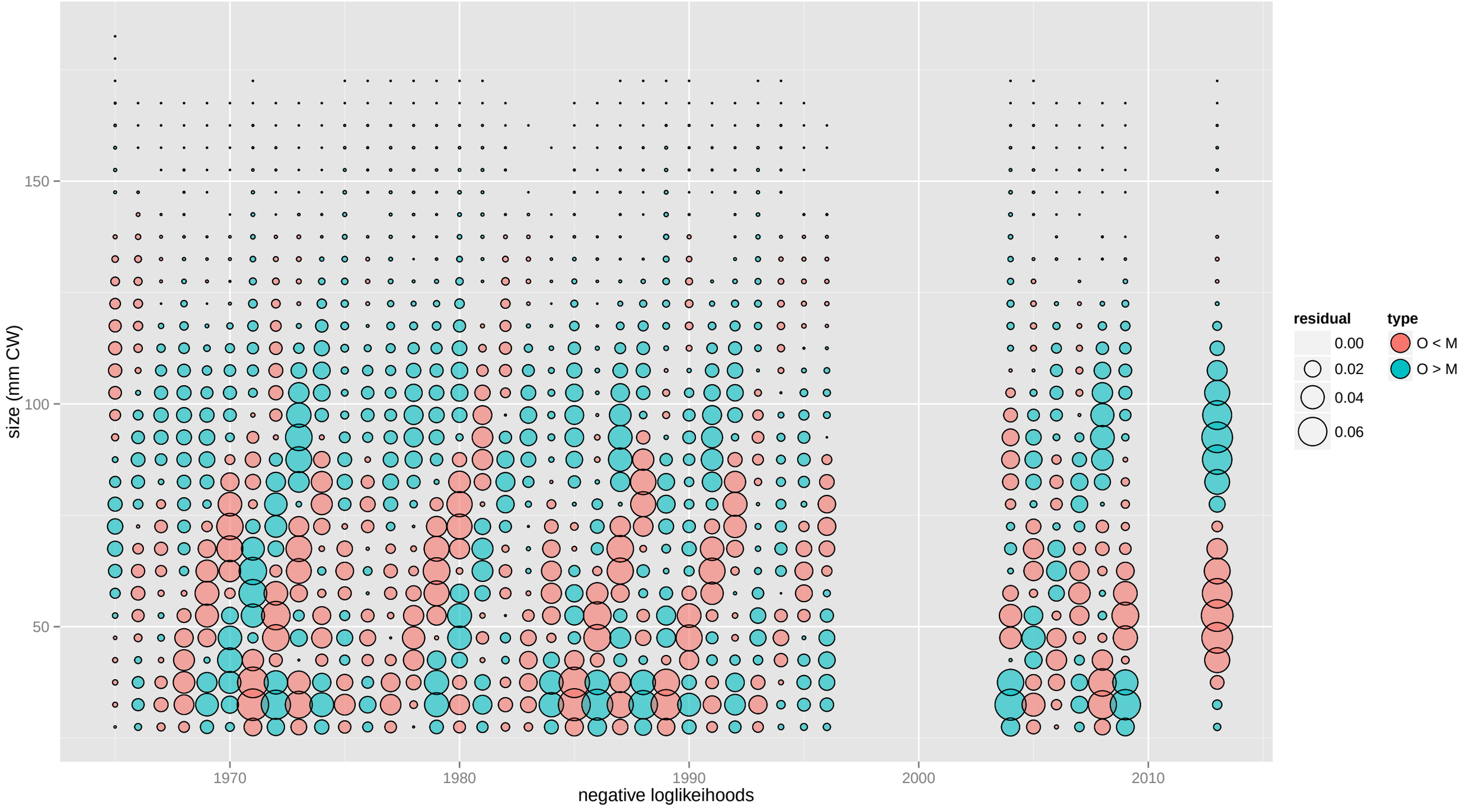

TCF: total catch: male, new shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.025
0.050
0.075
0.100
type
O < M
O > M

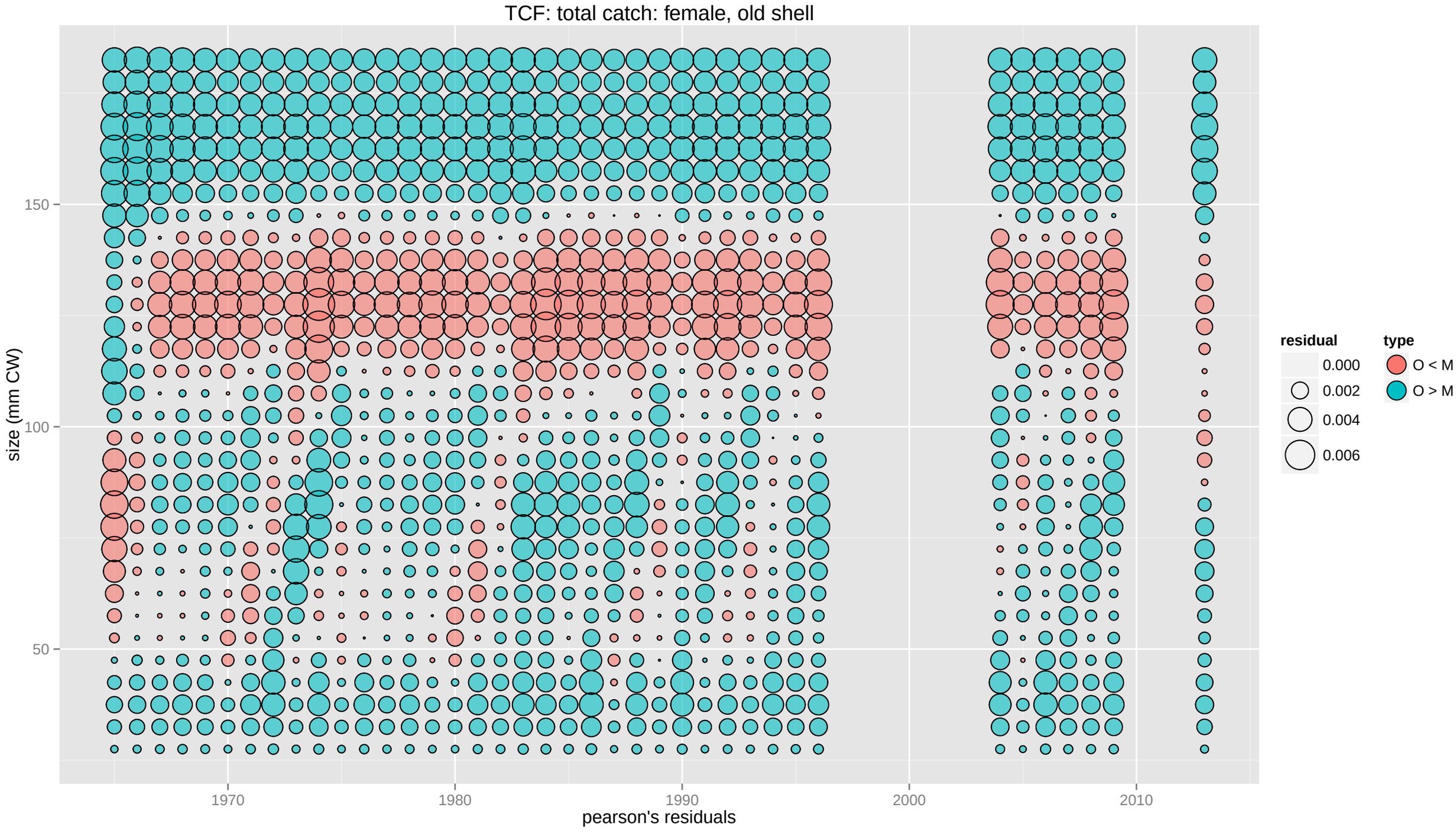

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.02
0.04
0.06
type
O < M
O > M

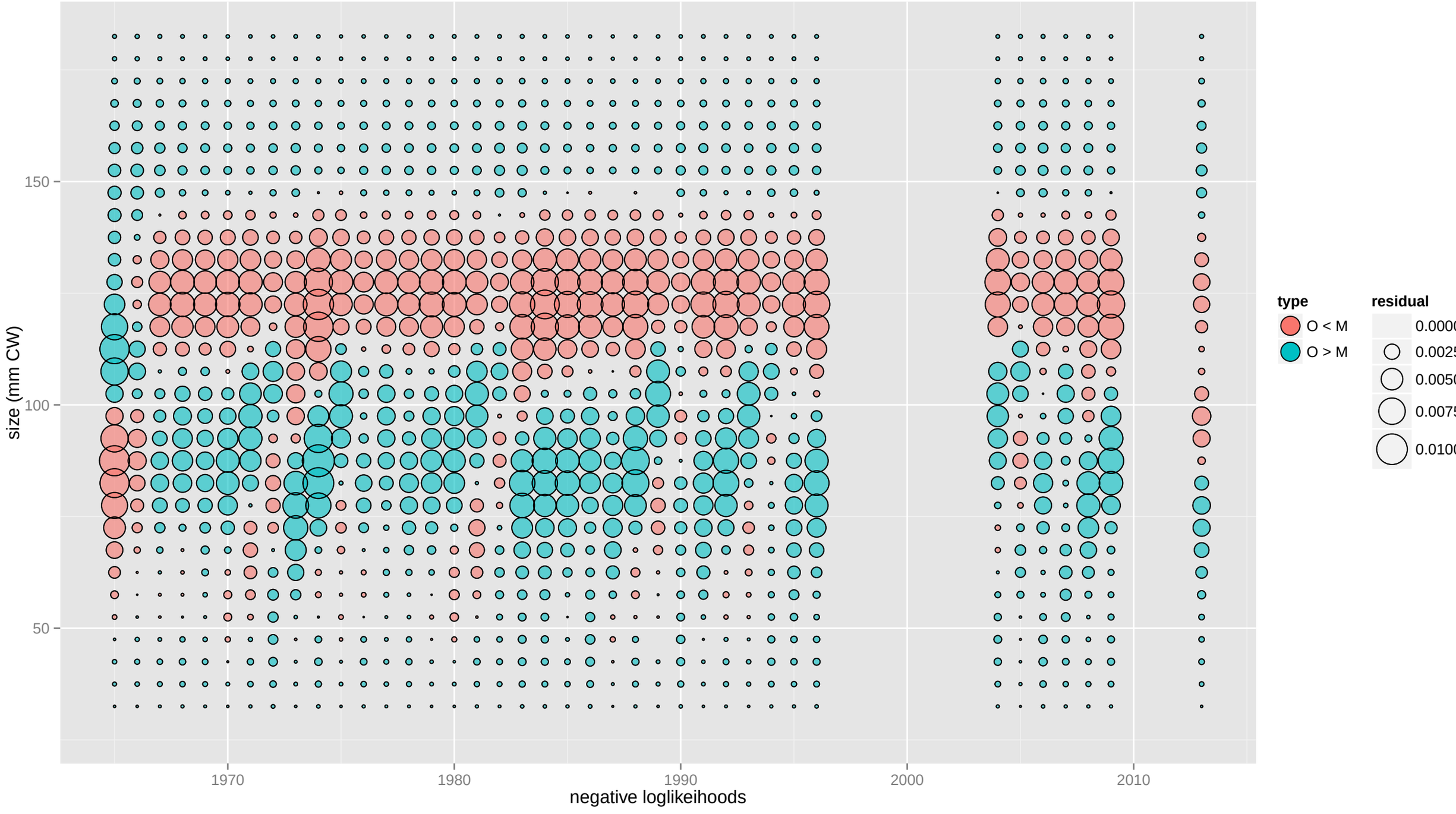

TCF: total catch: male, old shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.005
0.010
0.015
0.020
type
O < M
O > M

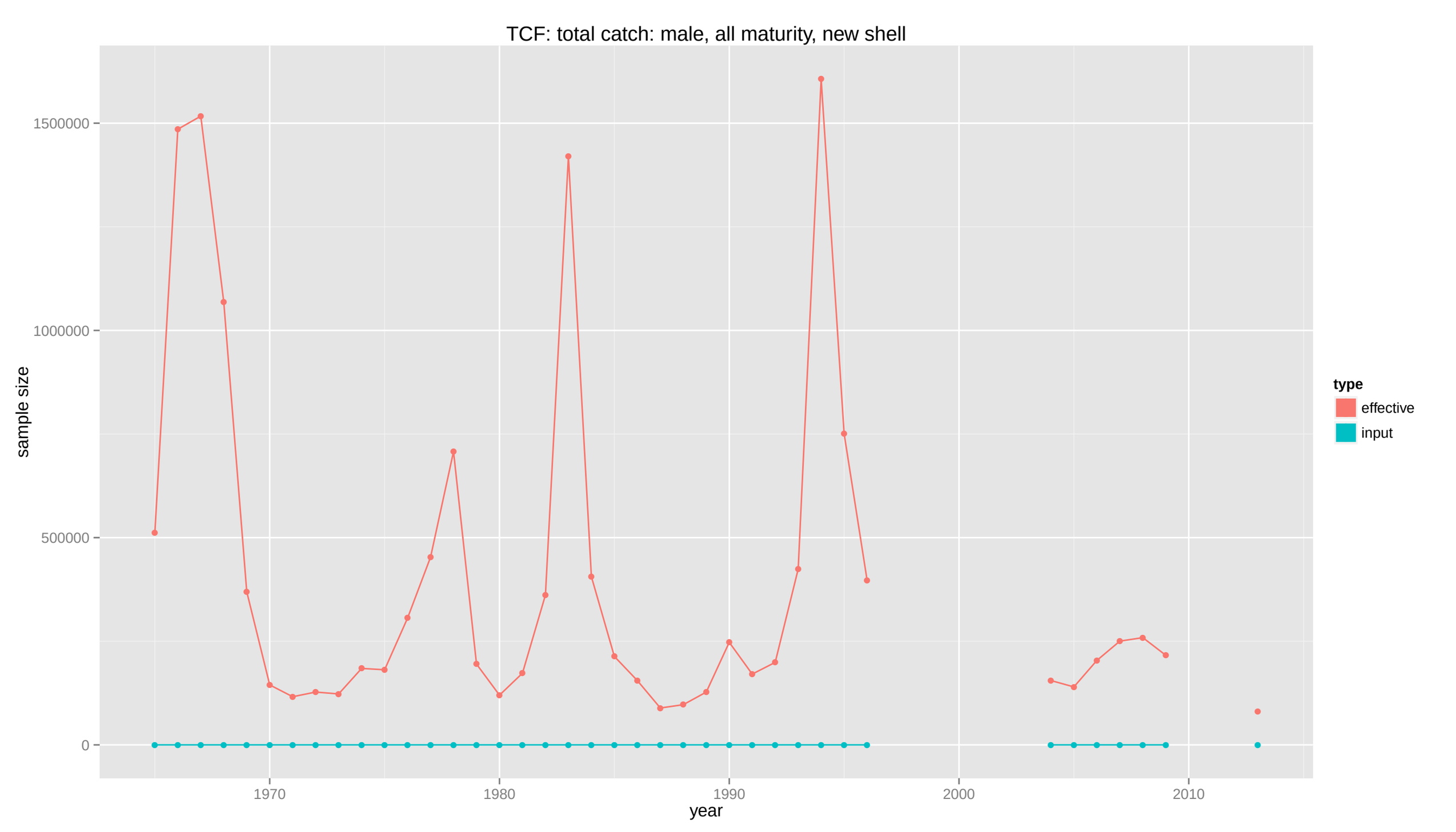

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.01
0.02
0.03
0.04
0.05
type
O < M
O > M

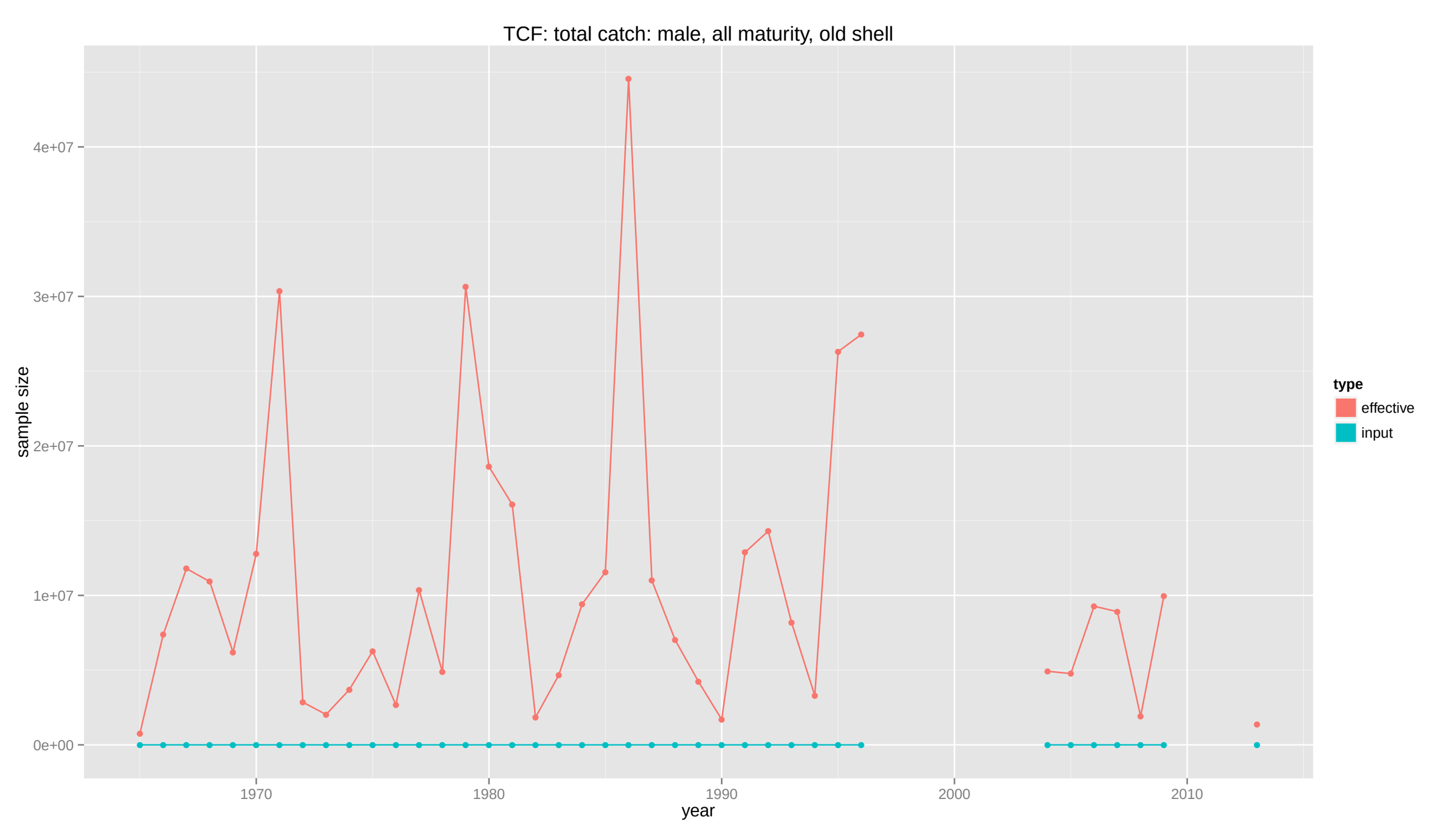

TCF: total catch: female, new shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.025
0.050
0.075
0.100
type
O < M
O > M

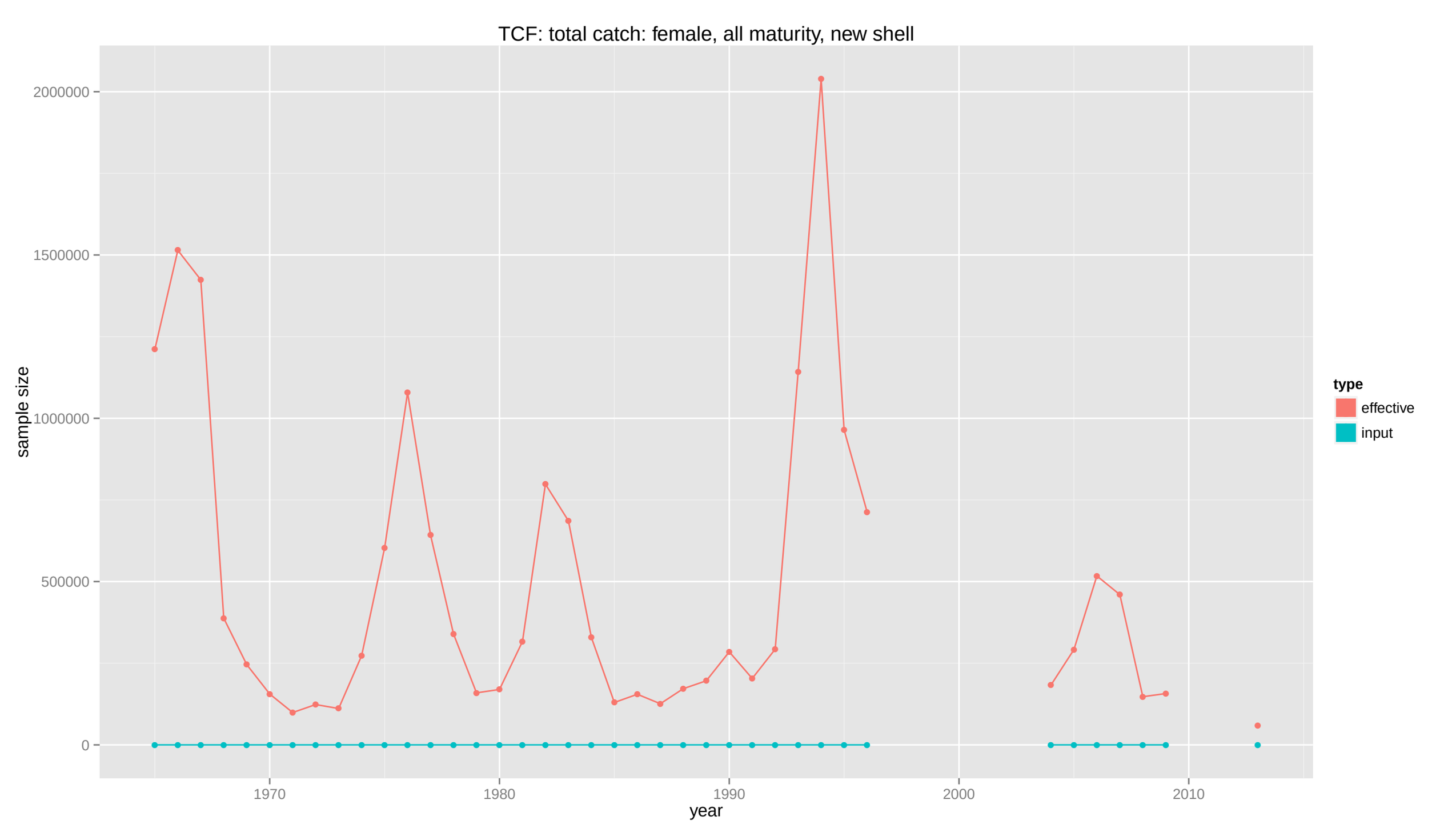

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
residual
0.00
0.02
0.04
0.06
type
O < M
O > M

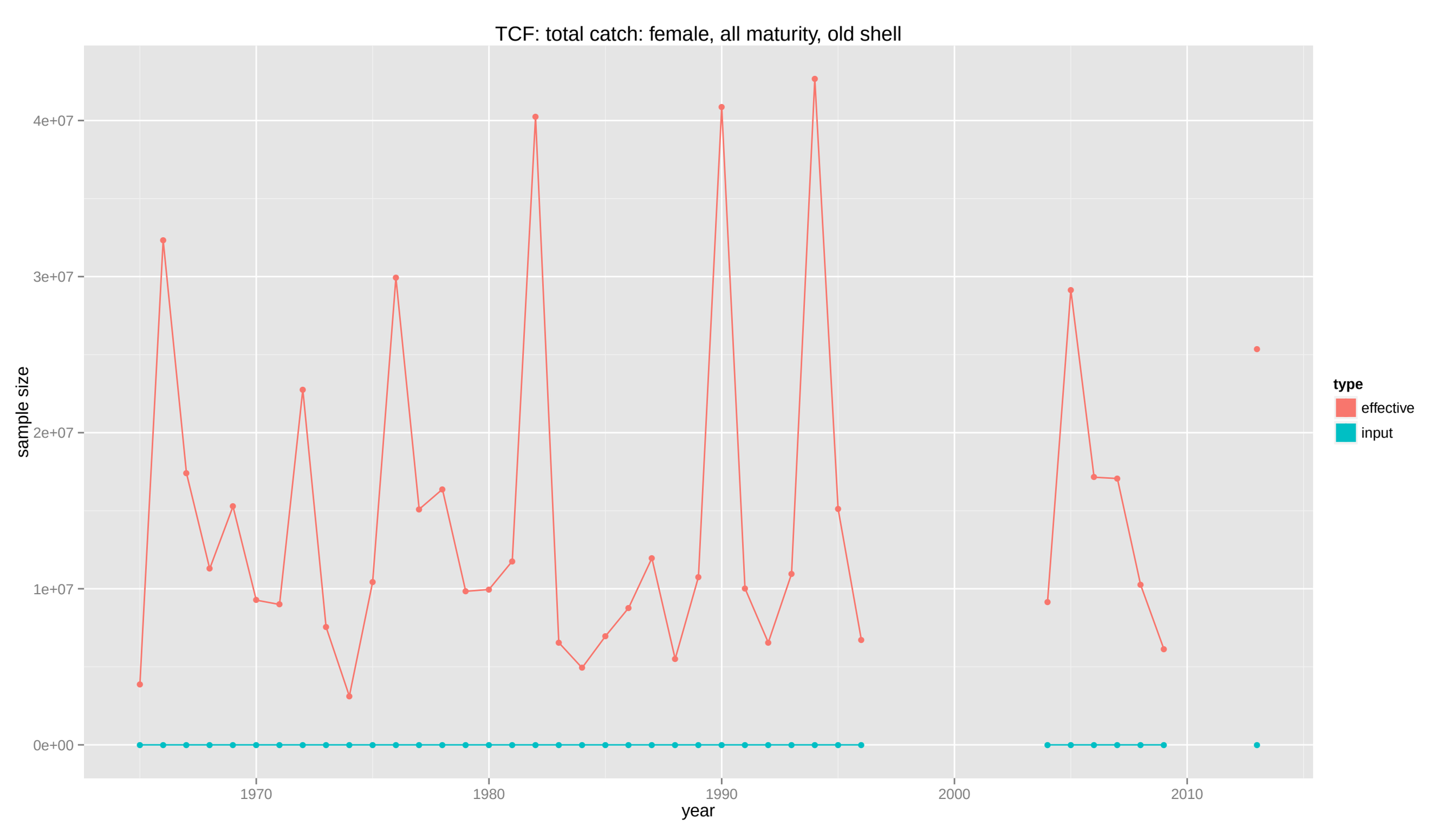

TCF: total catch: female, old shell
size (mm CW)
150
100
50
1970
1980
1990
2000
2010
pearson's residuals
residual
0.000
0.002
0.004
0.006
type
O < M
O > M

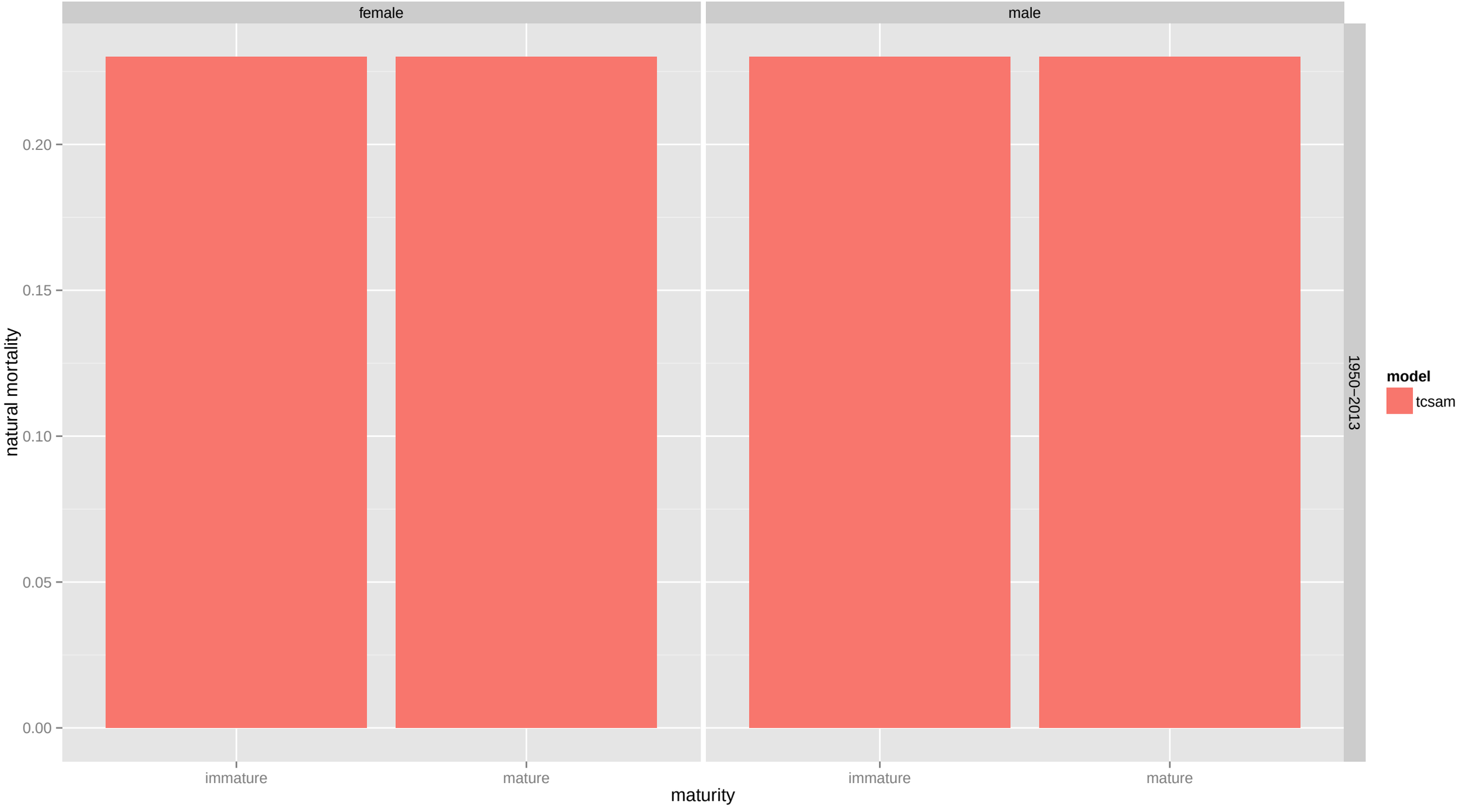

size (mm CW)
150
100
50
1970
1980
1990
2000
2010
negative loglikeihoods
type
O < M
O > M
residual
0.0000
0.0025
0.0050
0.0075
0.0100

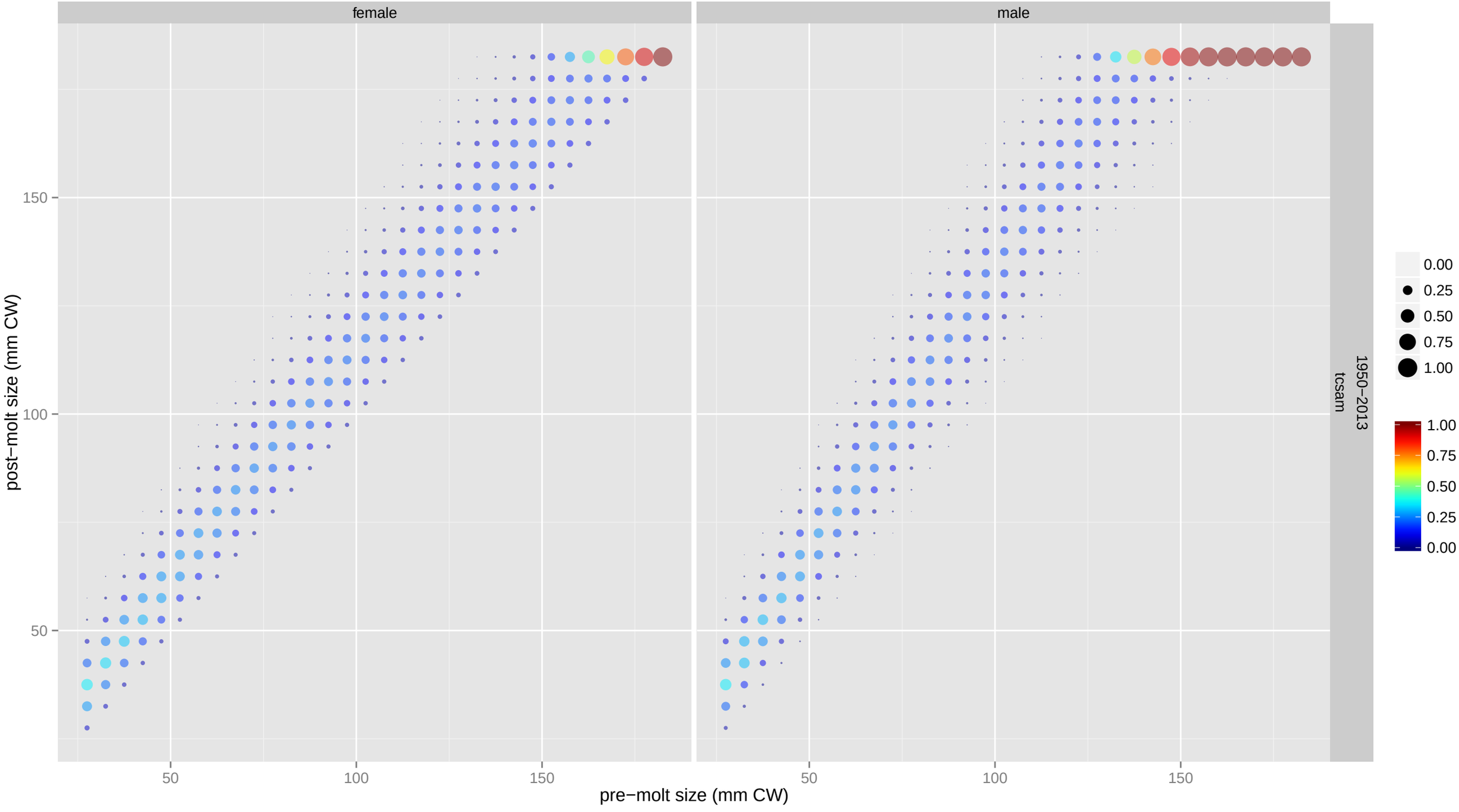

TCF: total catch: male, all maturity, new shell
sample size
1500000
1000000
500000
0
1970
1980
1990
2000
2010
year
type
effective
input

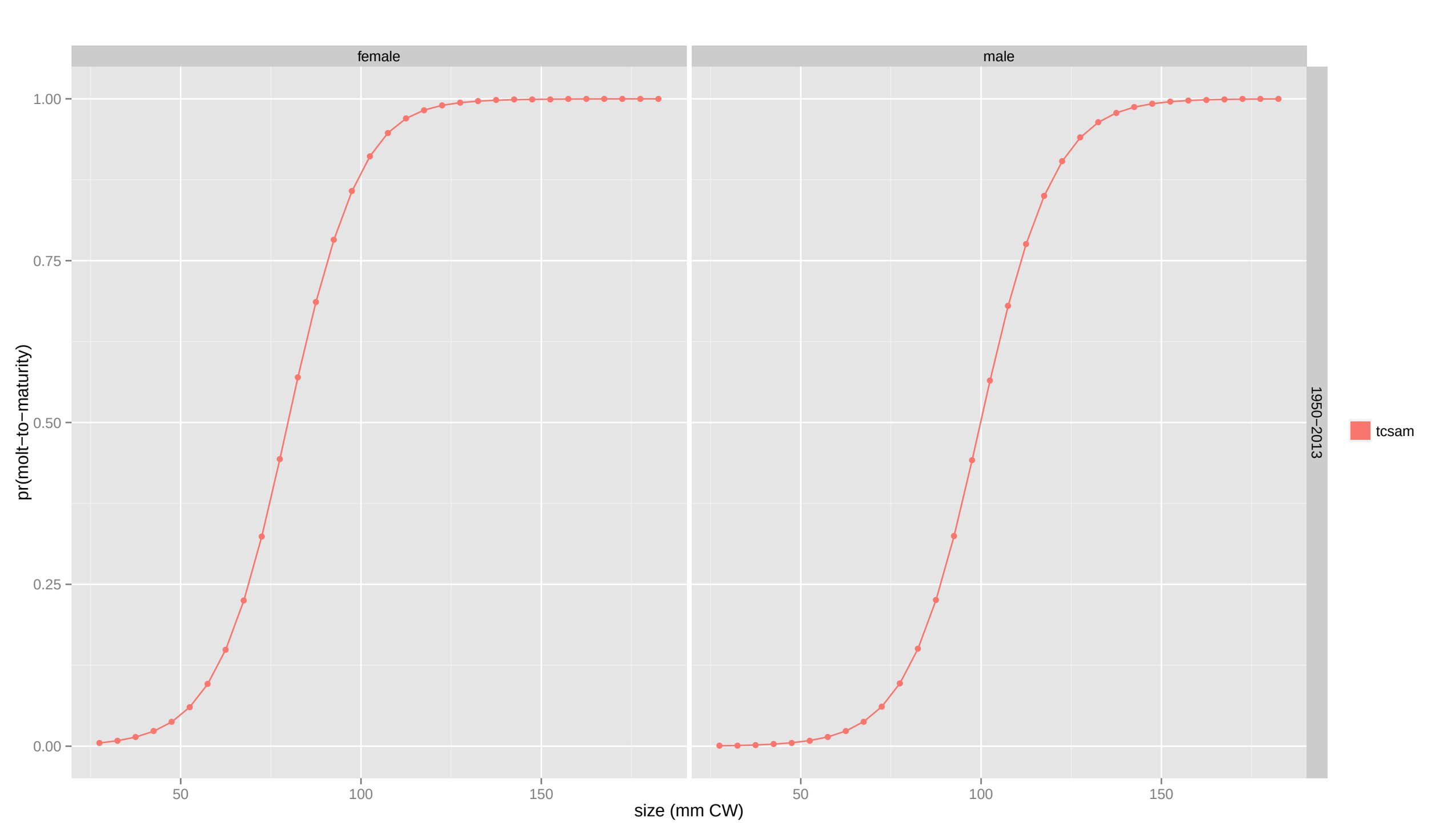

TCF: total catch: male, all maturity, old shell
sample size
4e+07
3e+07
2e+07
1e+07
0e+00
1970
1980
1990
2000
2010
year
type
effective
input

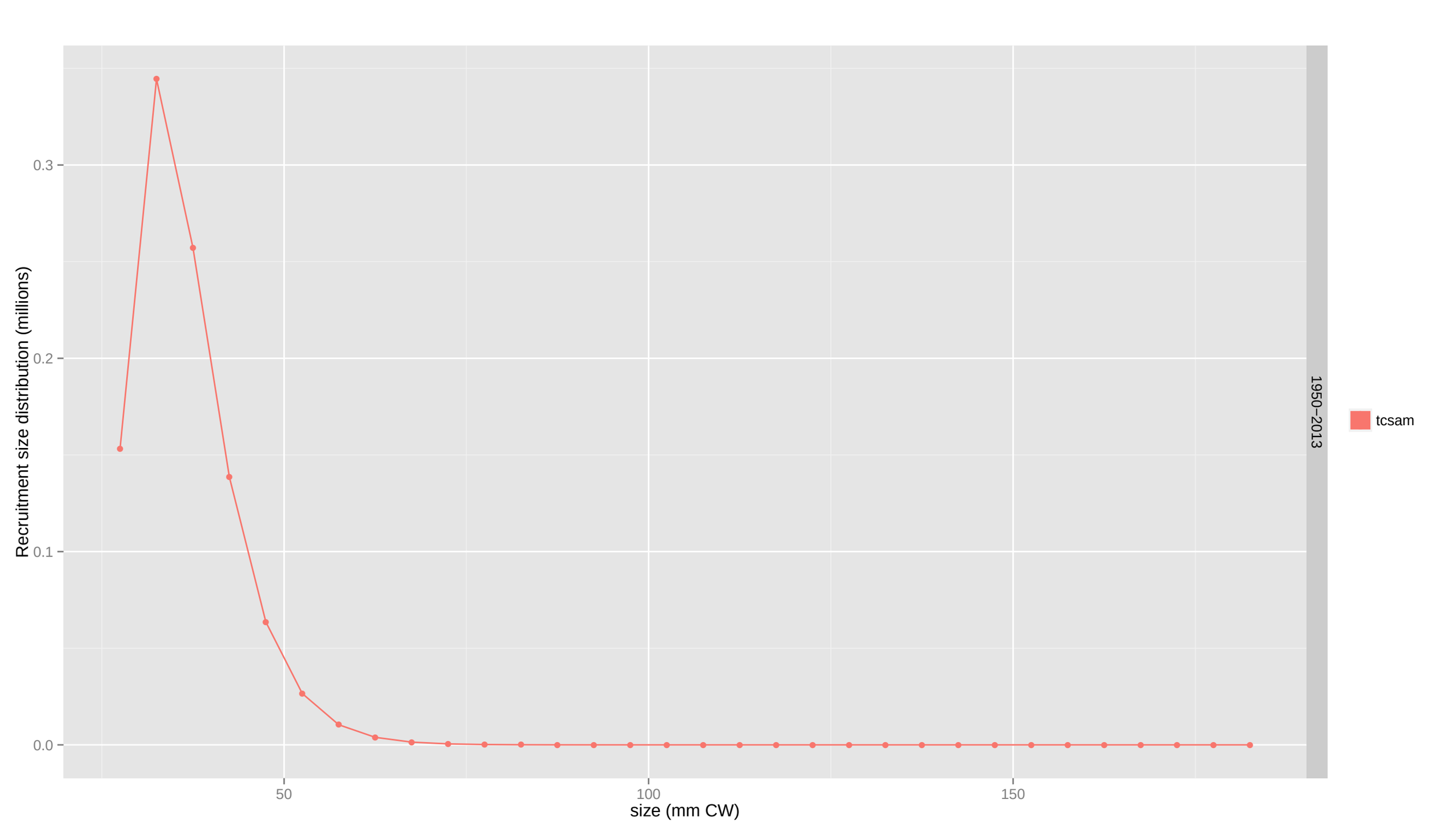

TCF: total catch: female, all maturity, new shell
sample size
2000000
1500000
1000000
500000
0
1970
1980
1990
2000
2010
year
type
effective
input

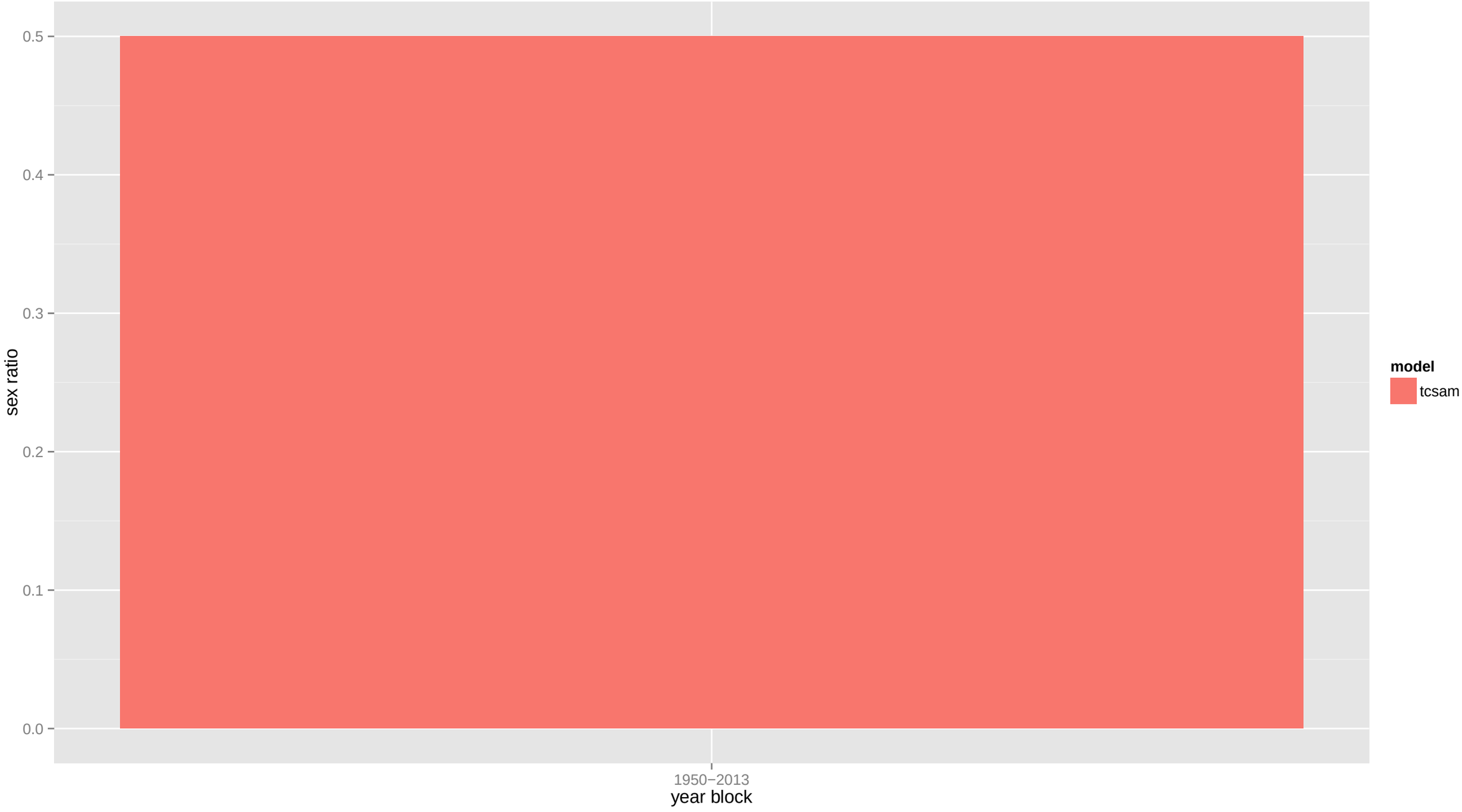

TCF: total catch: female, all maturity, old shell
sample size
4e+07
3e+07
2e+07
1e+07
0e+00
1970
1980
1990
2000
2010
year
type
effective
input

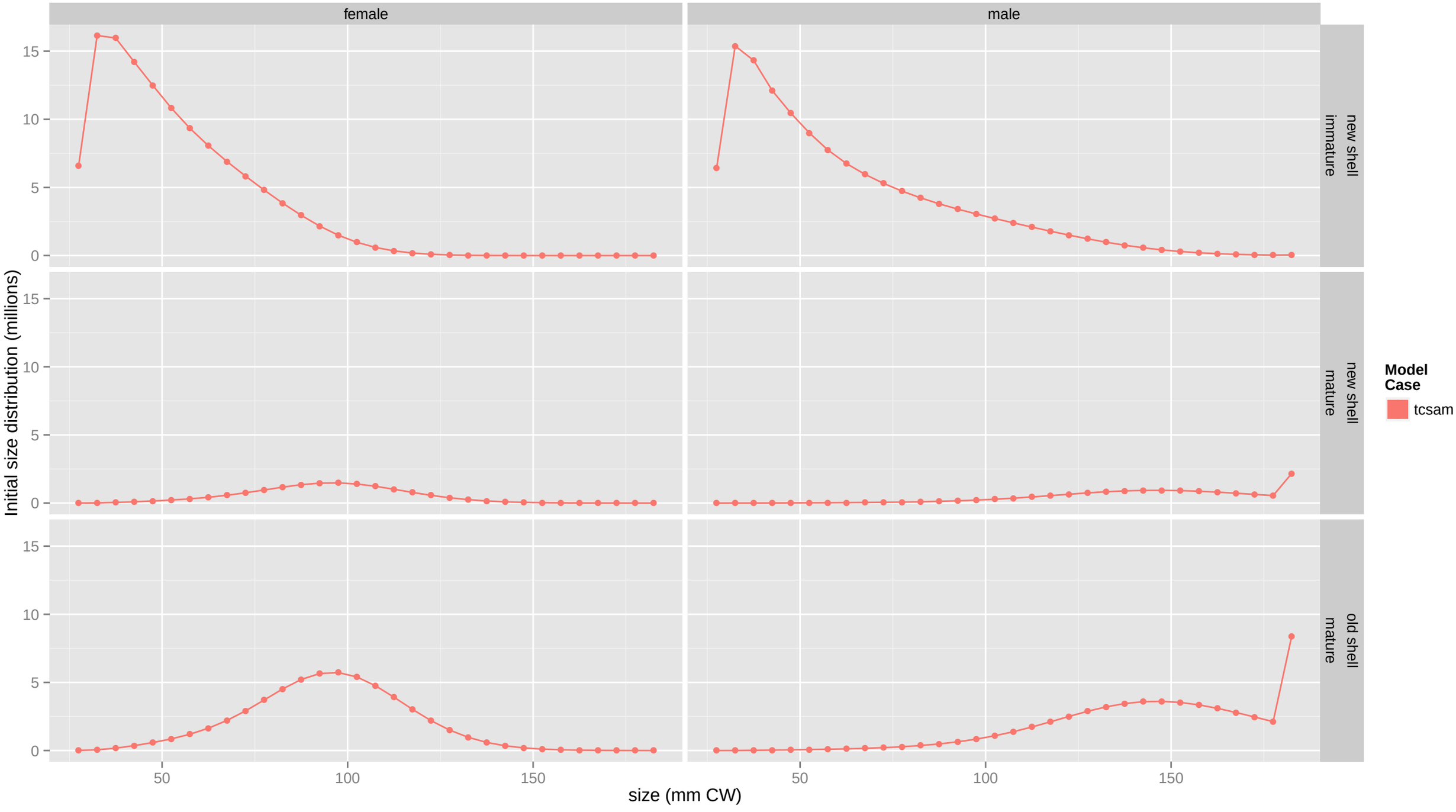

female
male
natural mortality
0.20
0.15
0.10
0.05
0.00
immature
mature
immature
mature
maturity
1950−2013
model
tcsam

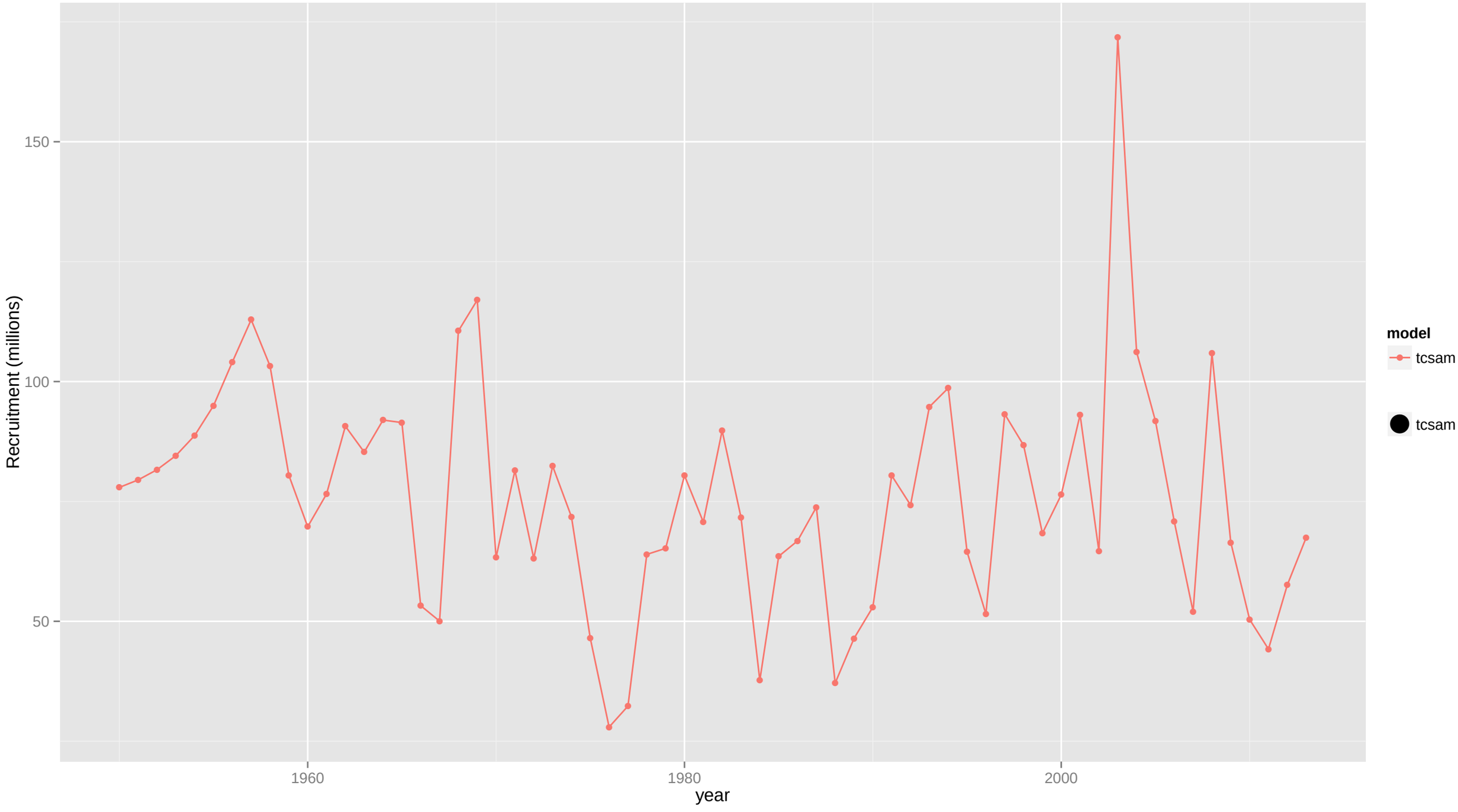

female
male
1950–2013
tcsam
post−molt size (mm CW)
pre−molt size (mm CW)
50
100
150
0.00
0.25
0.50
0.75
1.00


female
male
1.00
0.75
0.50
0.25
0.00
pr(molt−to−maturity)
50
100
150
size (mm CW)
1950−2013
tcsam

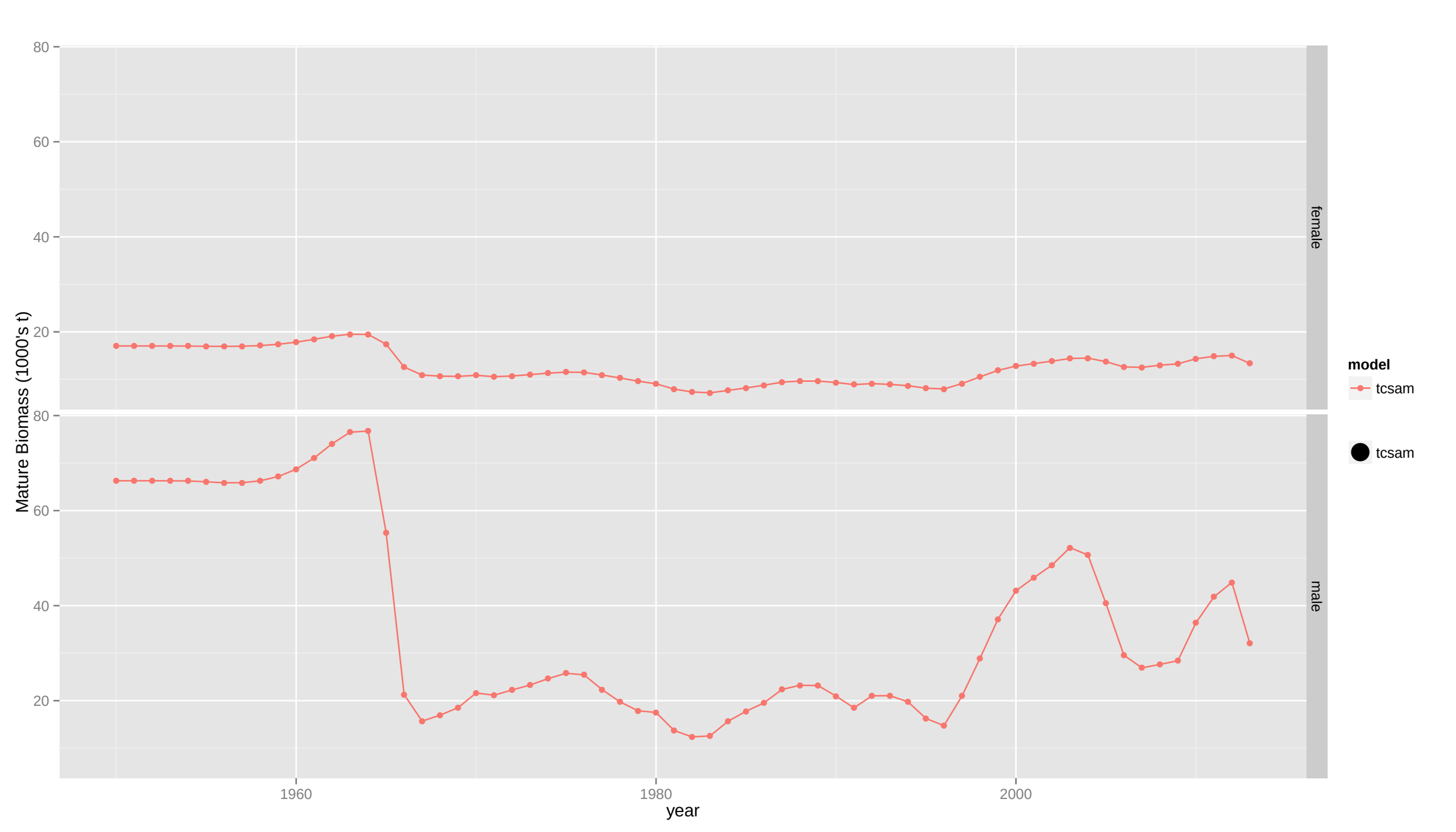

Recruitment size distribution (millions)
0.0
0.1
0.2
0.3
50
100
150
size (mm CW)
1950−2013
tcsam

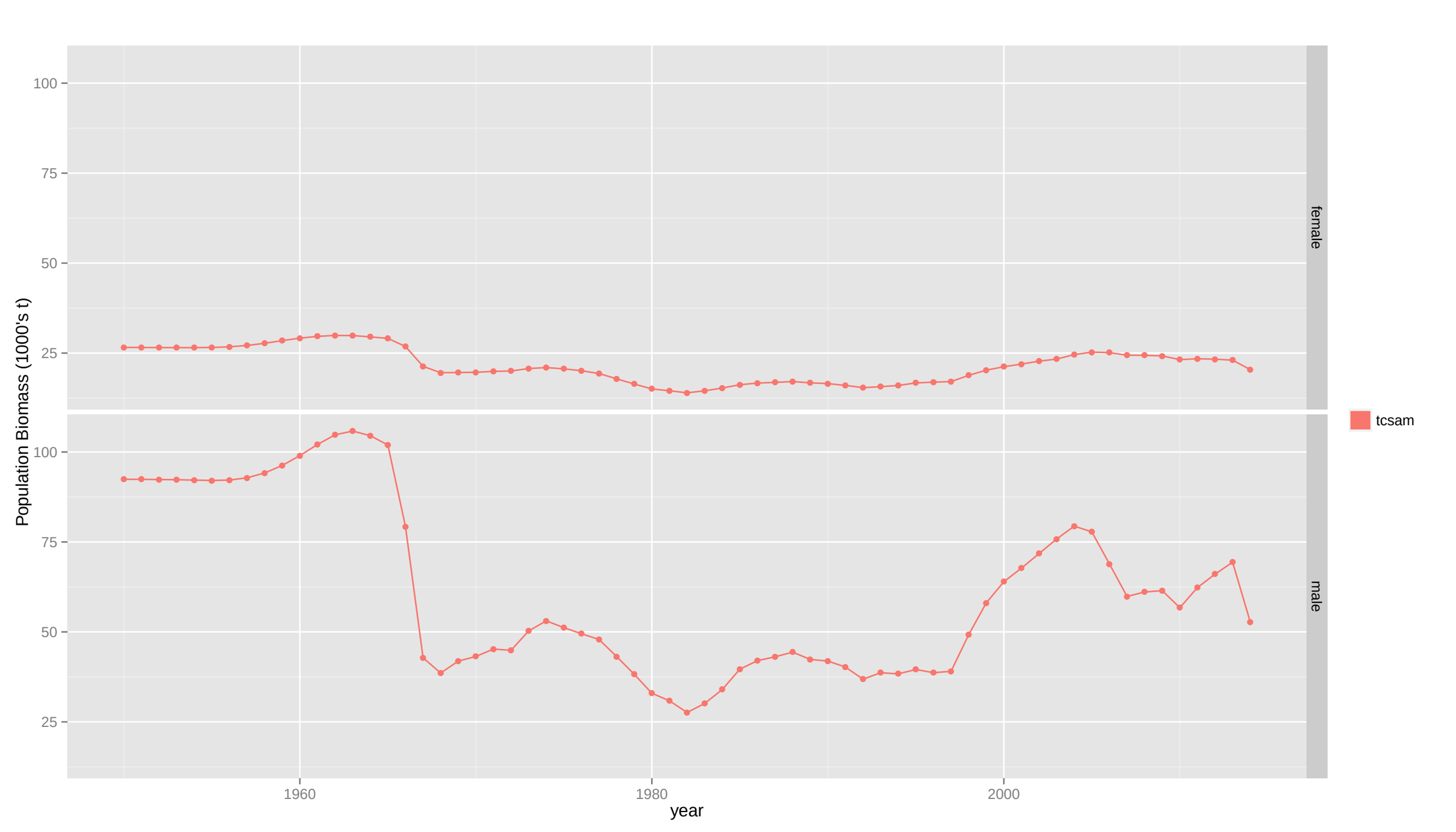

0.5
0.4
0.3
0.2
0.1
0.0
sex ratio
1950−2013
year block
model
tcsam

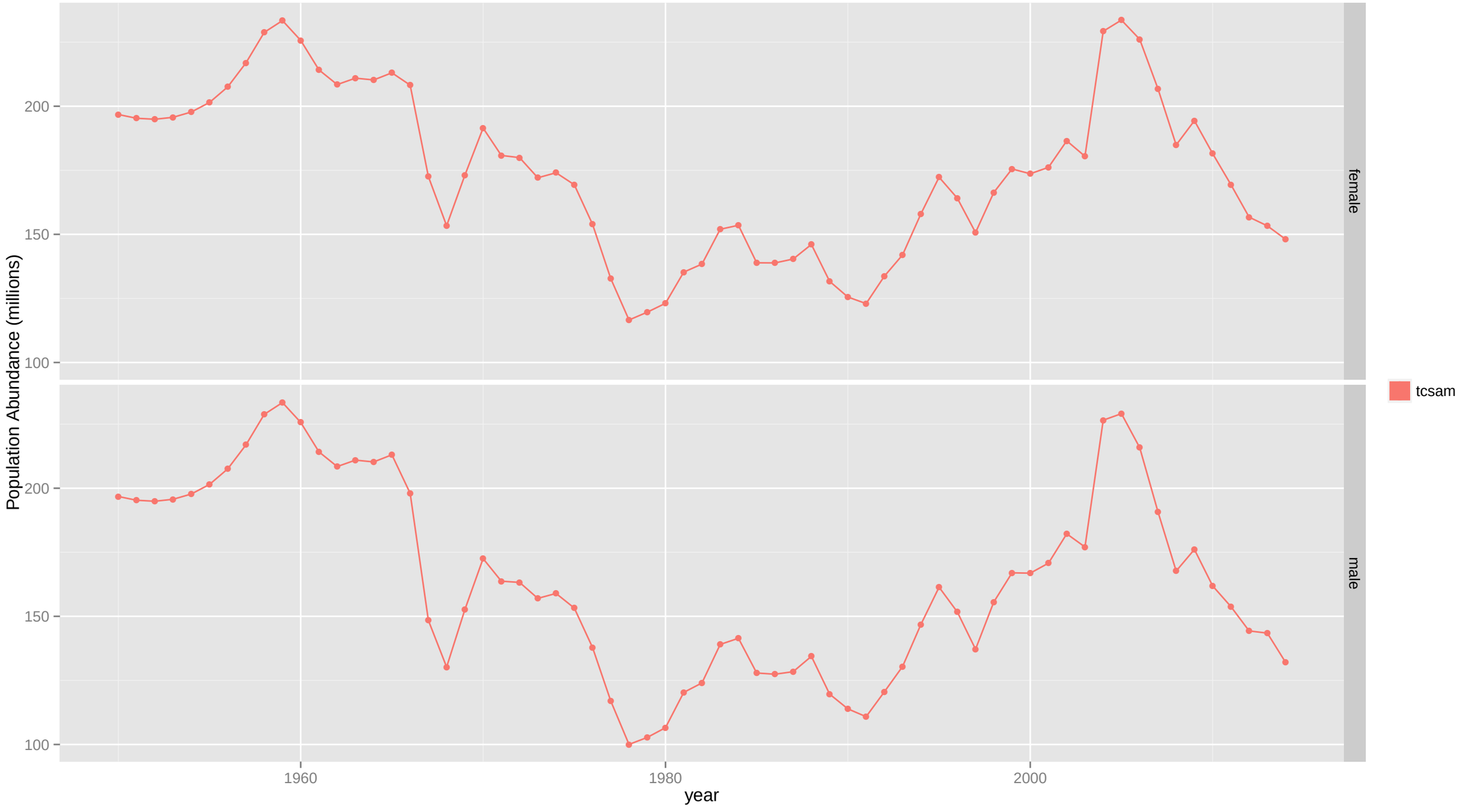

female
male
new shell immature
new shell mature
old shell mature
Initial size distribution (millions)
size (mm CW)
0
5
10
15
50
100
150
Model Case
tcsam


Recruitment (millions)
150
100
50
1960
1980
2000
year
model
tcsam
tcsam

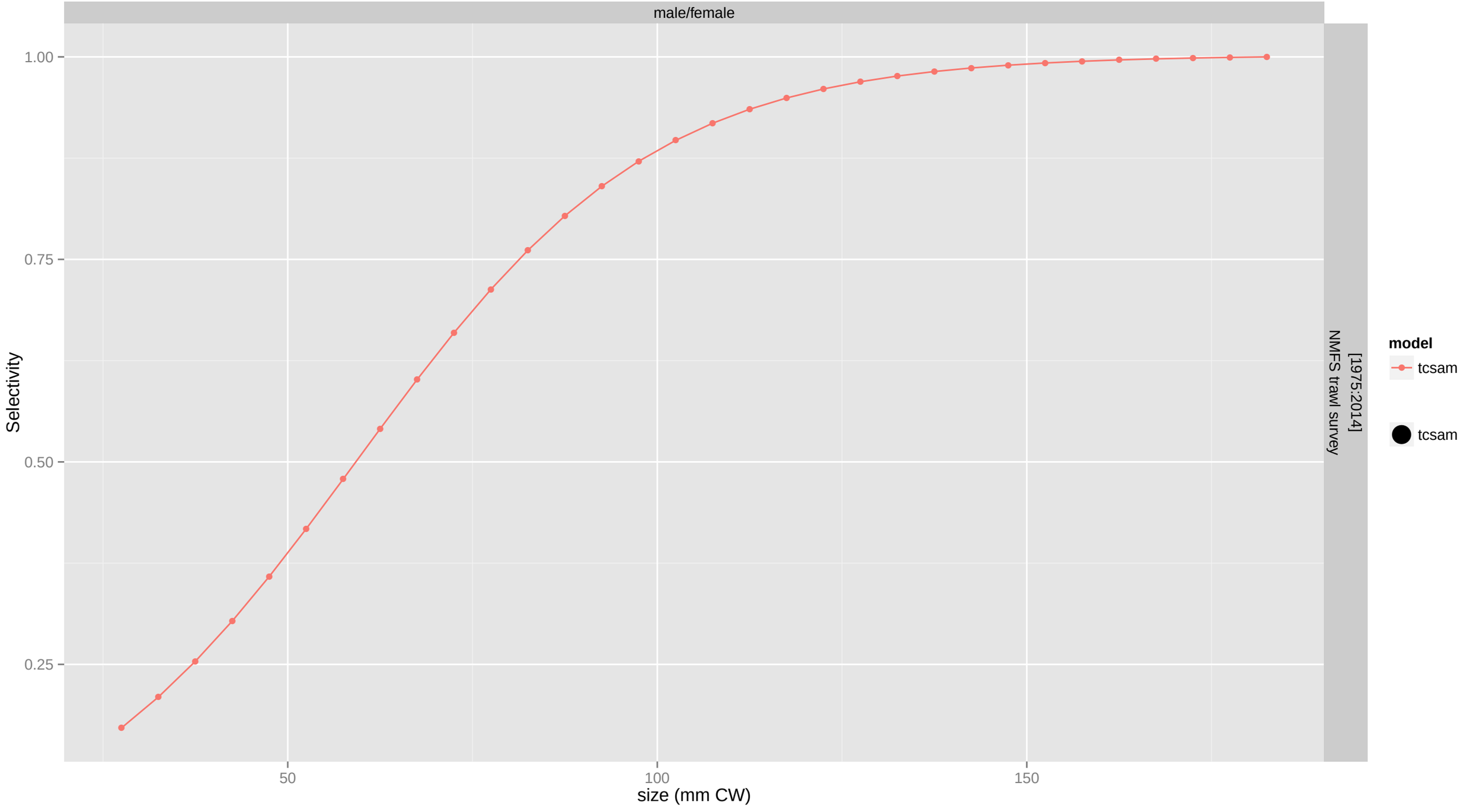

5.2
4.8
4.4
4.0
3.6
Recruitment (millions, ln−scale)
1960
1980
2000
year
model
tcsam
tcsam

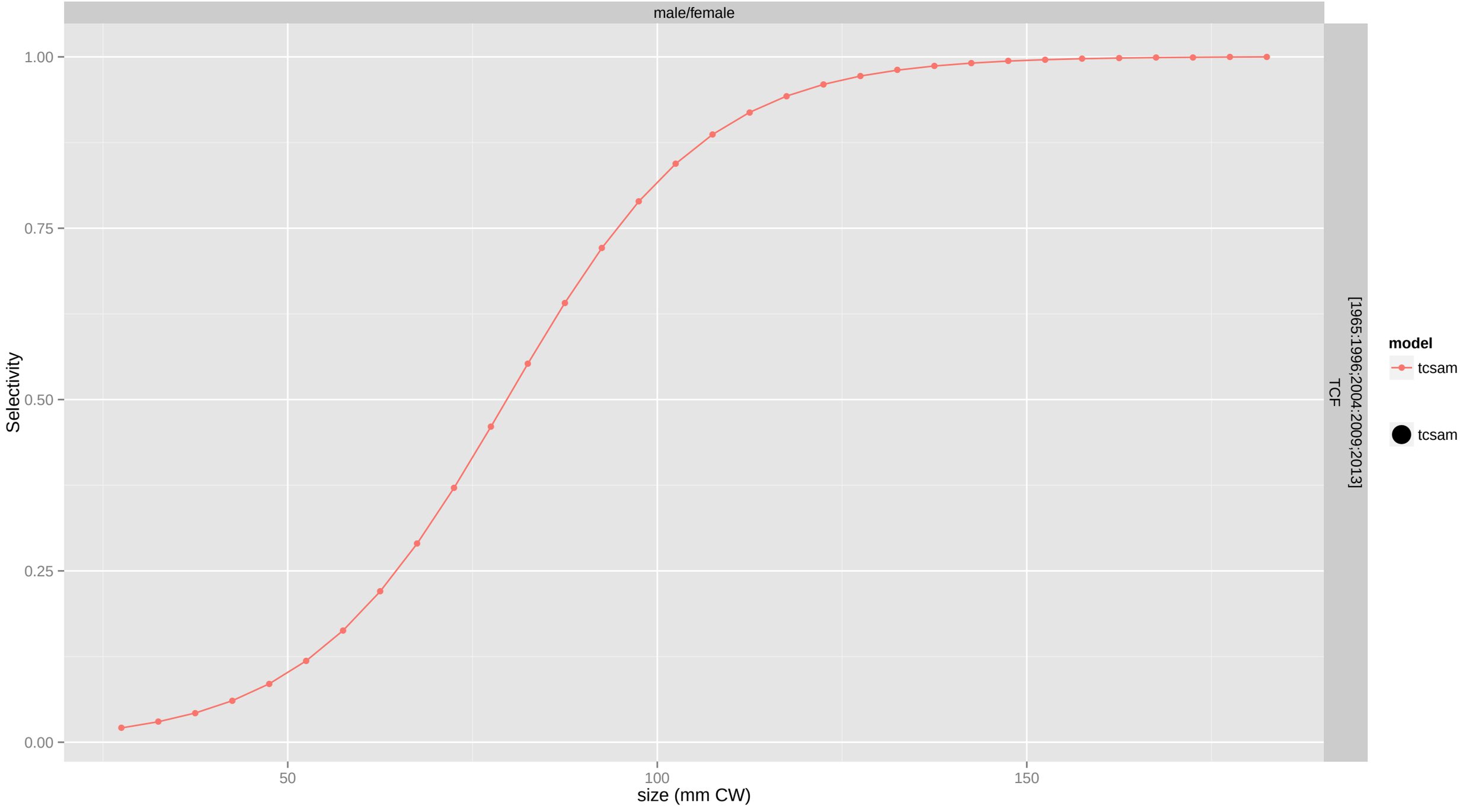

Mature Biomass (1000's t)
80
60
40
20
female
male
1960
1980
2000
year
model
tcsam
tcsam

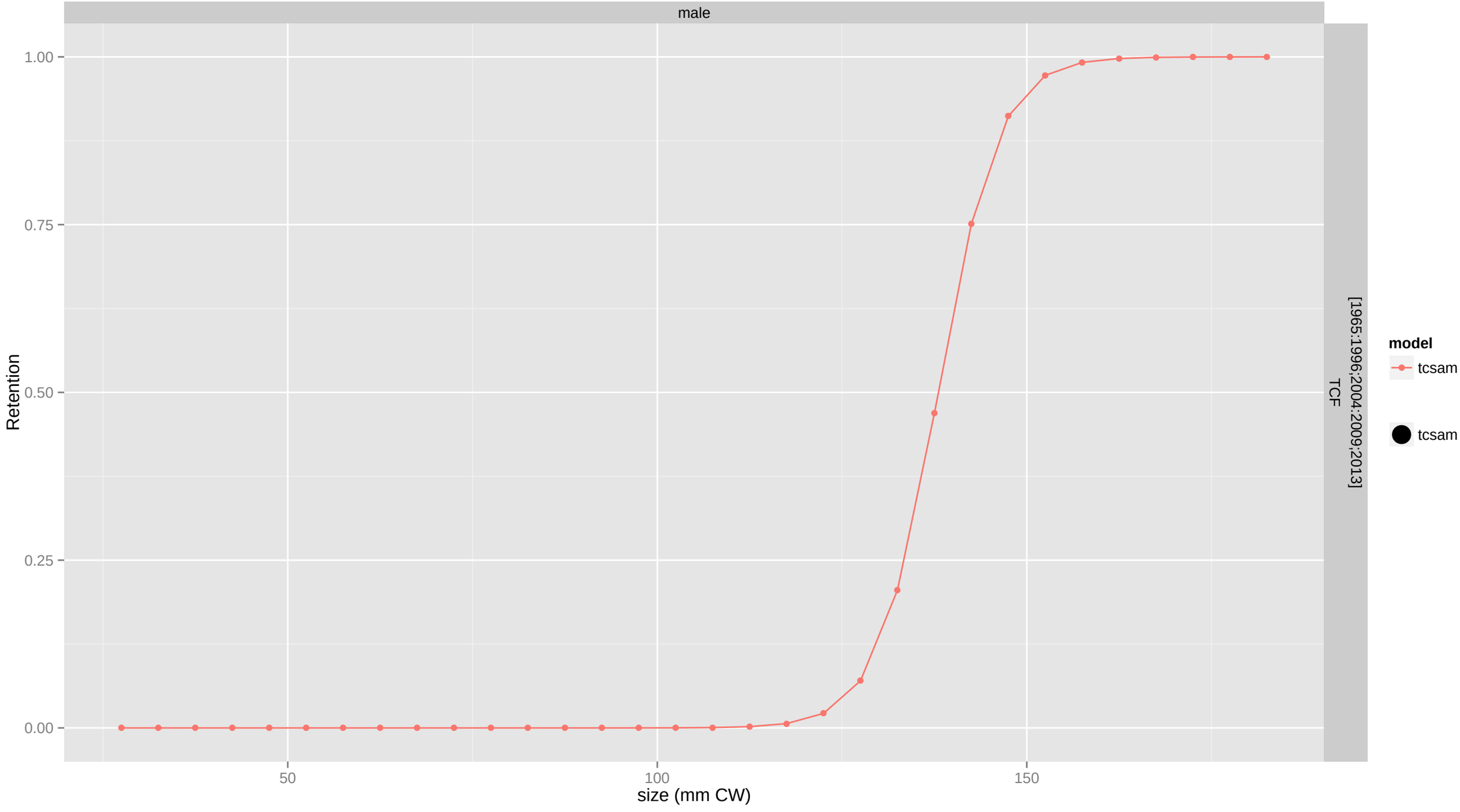

Population Biomass (1000's t)
100
75
50
25
female
male
1960
1980
2000
year
tcsam

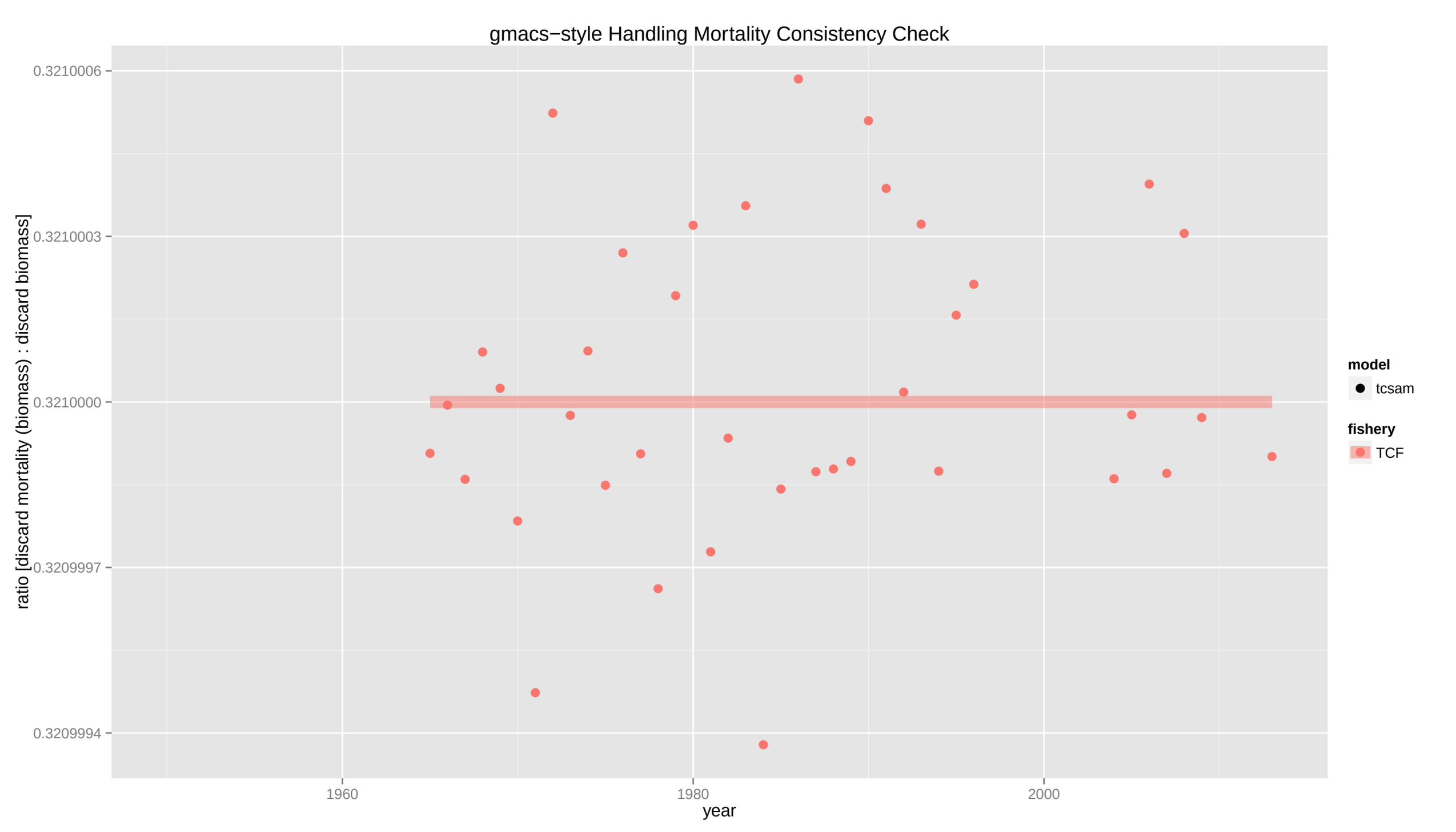

Population Abundance (millions)
200
150
100
female
male
1960
1980
2000
year
tcsam

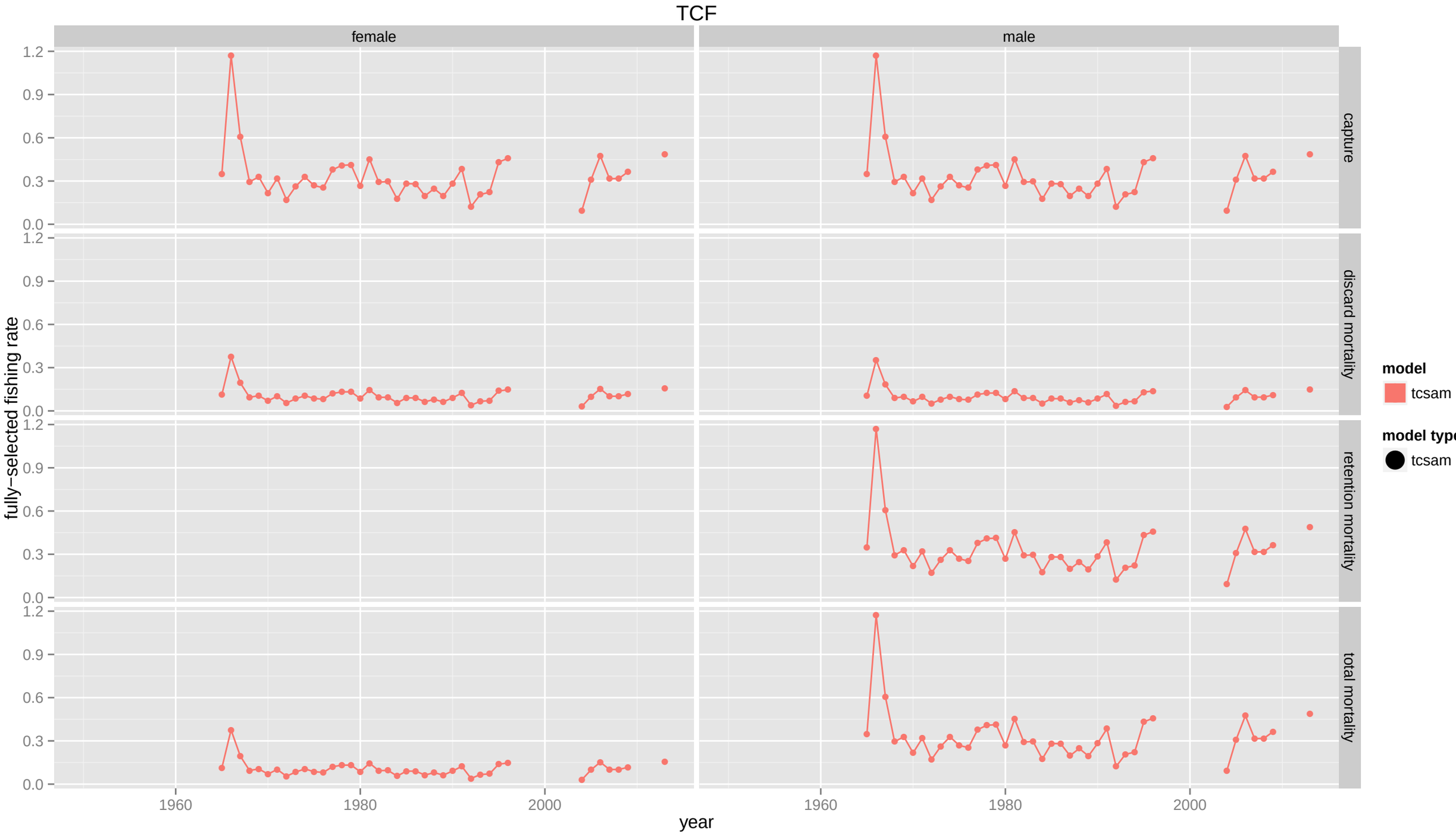

female
male
tcsam
size (mm CW)
150
100
50
1960
1980
2000
year
millions
10
20
30
30
20
10

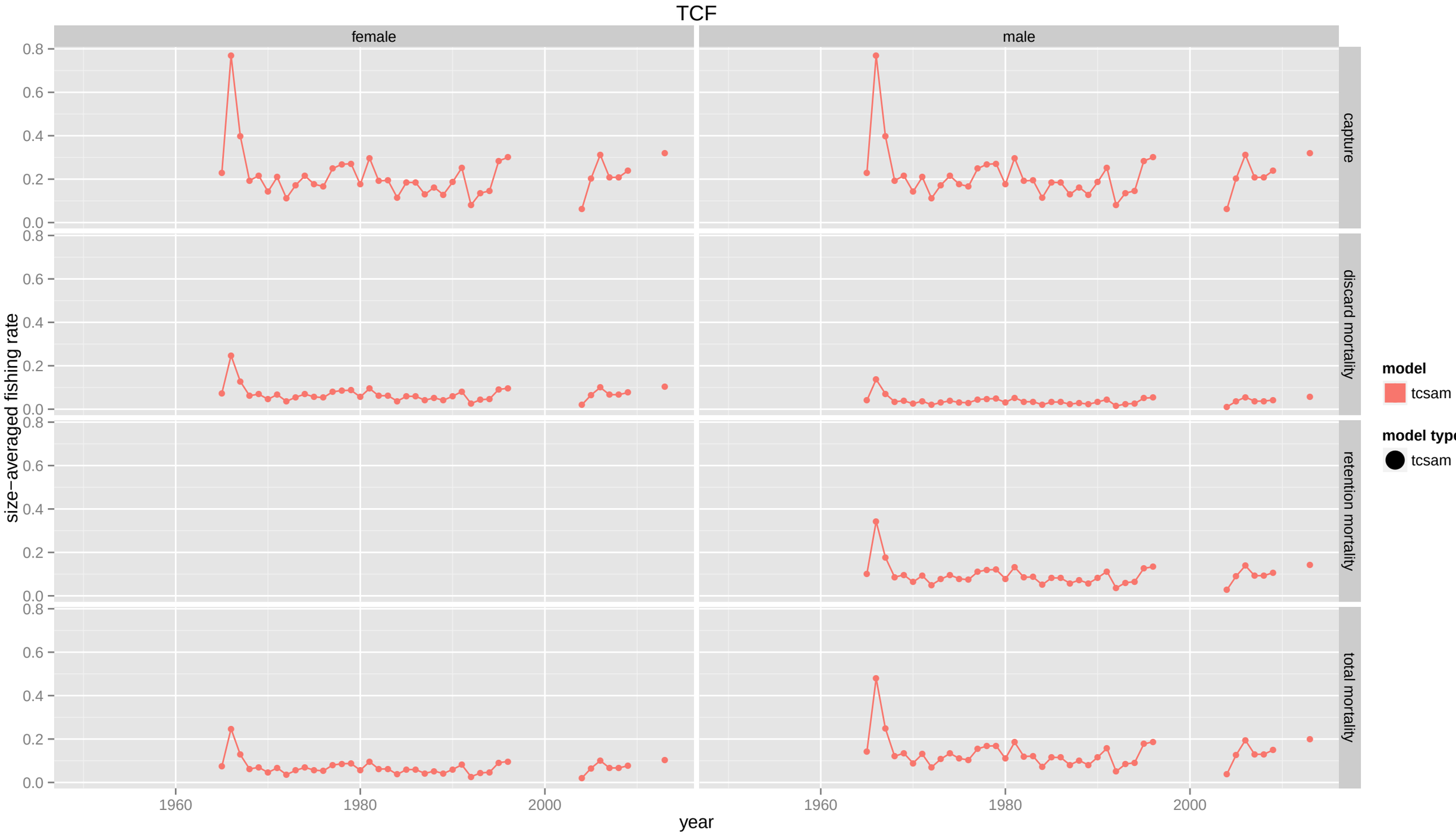

male/female
1.00
0.75
0.50
0.25
Selectivity
50
100
150
size (mm CW)
NMFS trawl survey [1975:2014]
model
tcsam
tcsam

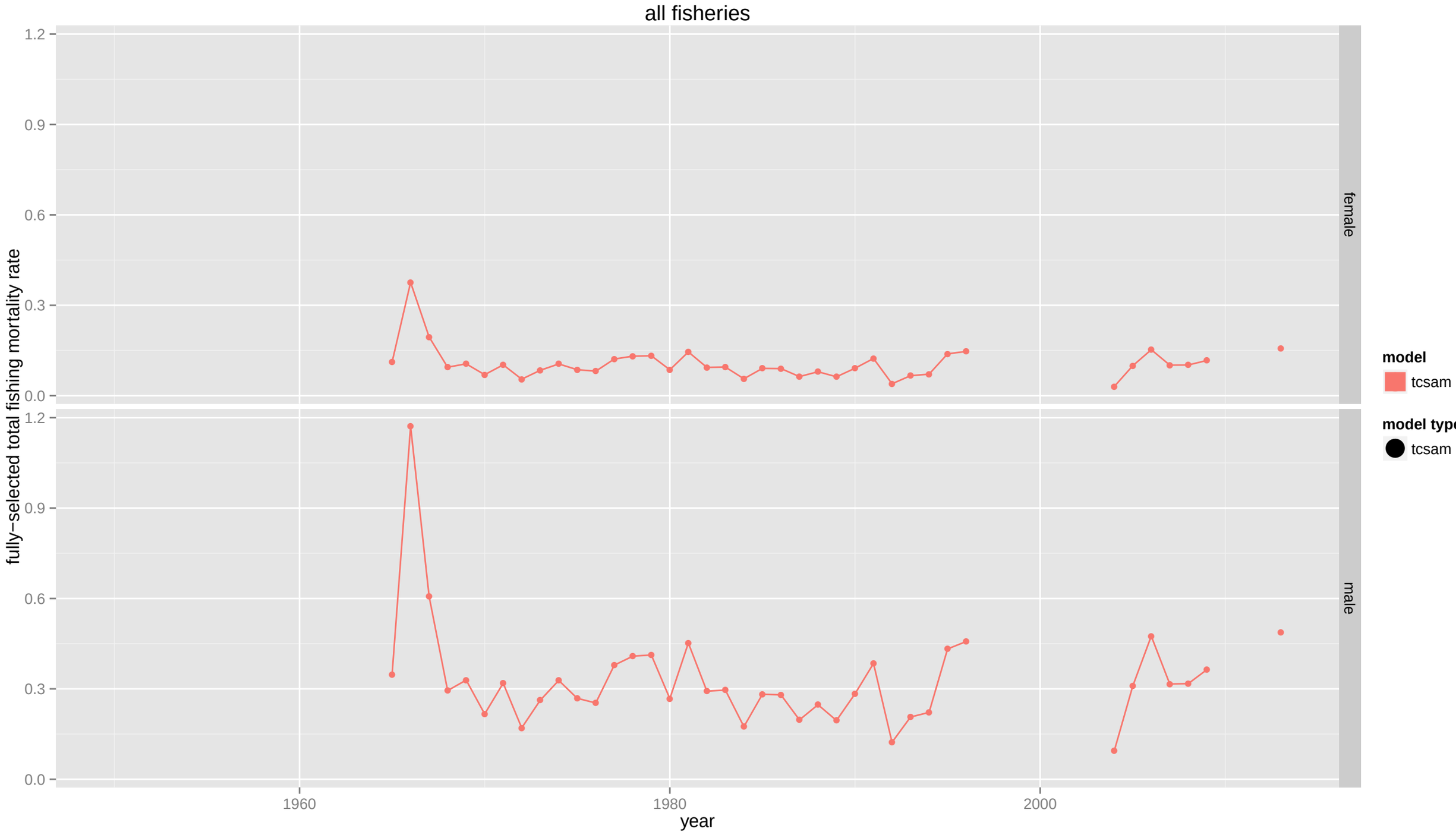

male/female
1.00
0.75
0.50
0.25
0.00
Selectivity
50
100
150
size (mm CW)
[1965:1996;2004:2009;2013]
TCF
model
tcsam
tcsam

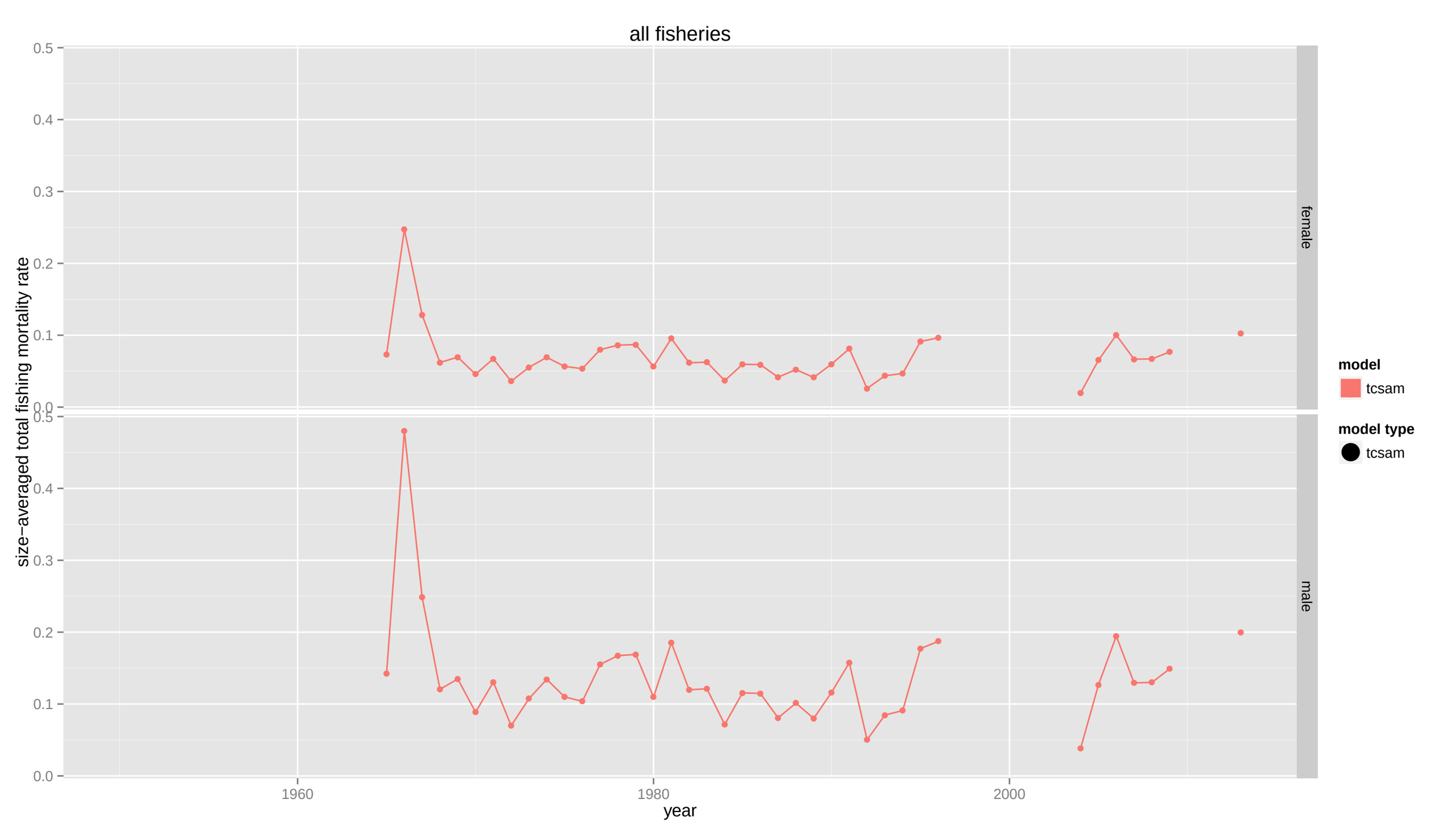

male
1.00
0.75
0.50
0.25
0.00
Retention
50
100
150
size (mm CW)
[1965:1996;2004:2009;2013]
TCF
model
tcsam
tcsam

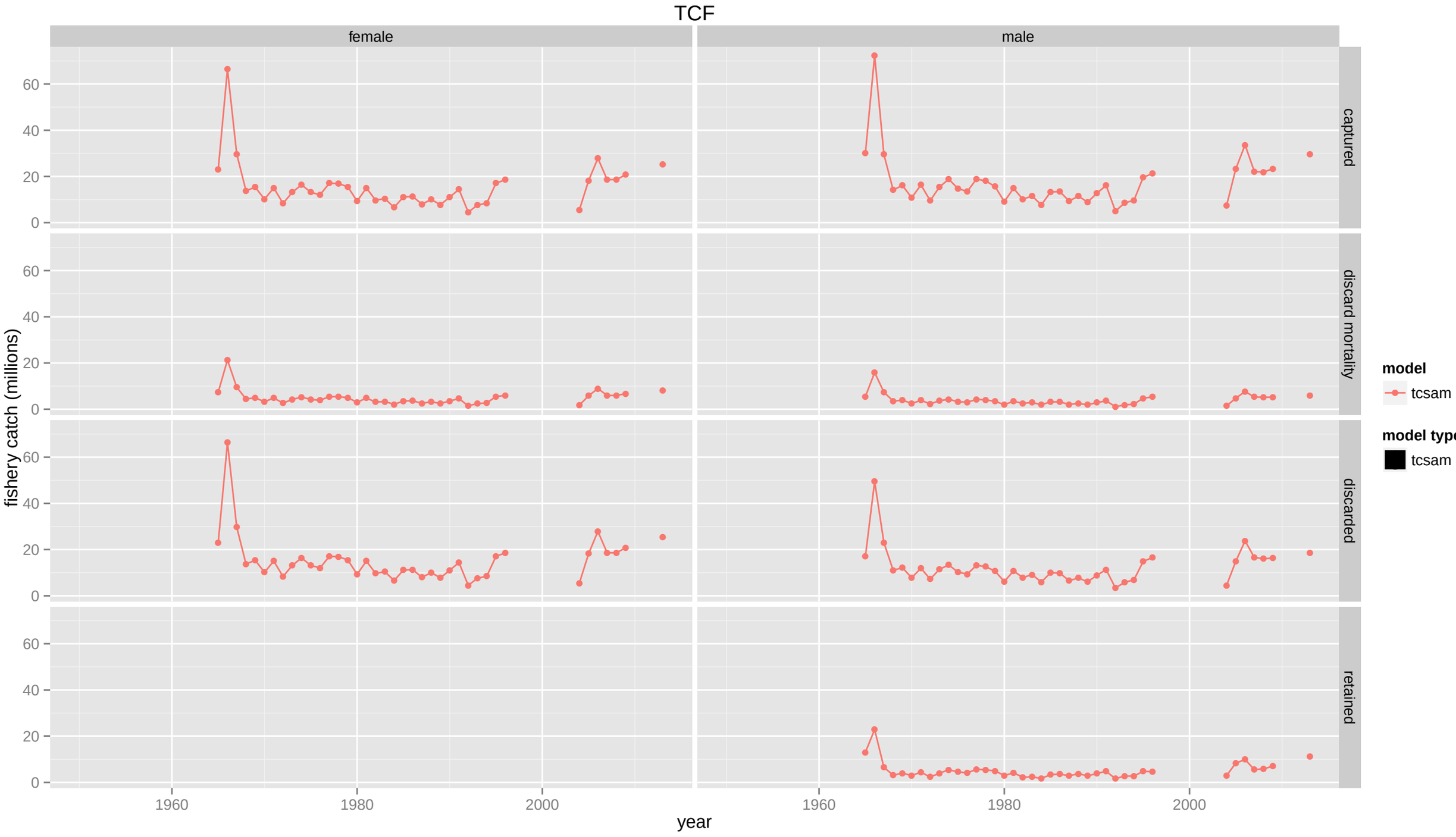

gmacs−style Handling Mortality Consistency Check
ratio [discard mortality (biomass) : discard biomass]
0.3210006
0.3210003
0.3210000
0.3209997
0.3209994
1960
1980
2000
year
model
tcsam
fishery
TCF

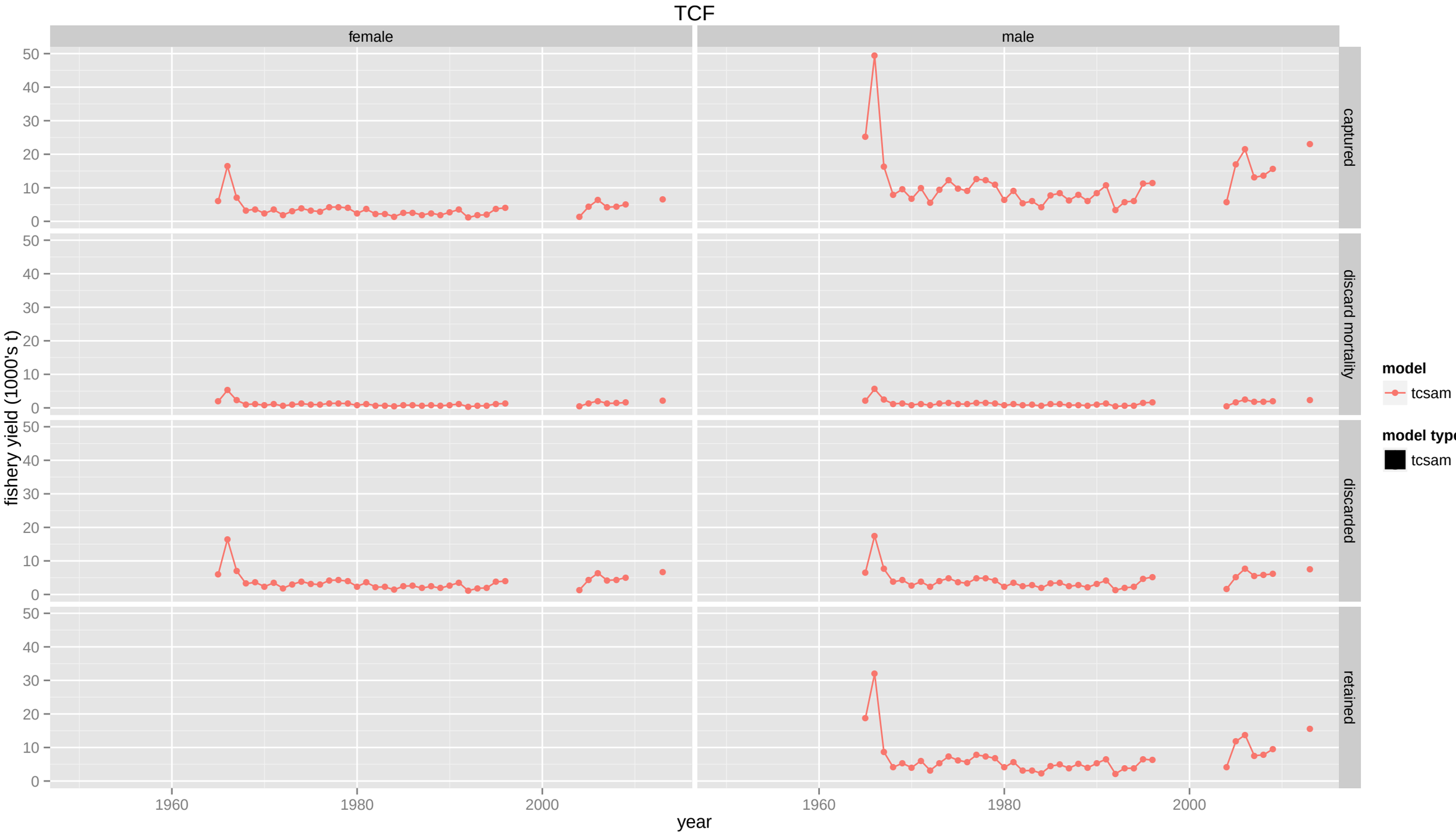

TCF
female
male
capture
discard mortality
retention mortality
total mortality
fully−selected fishing rate
year
1.2
0.9
0.6
0.3
0.0
1960
1980
2000
model
tcsam
model type
tcsam

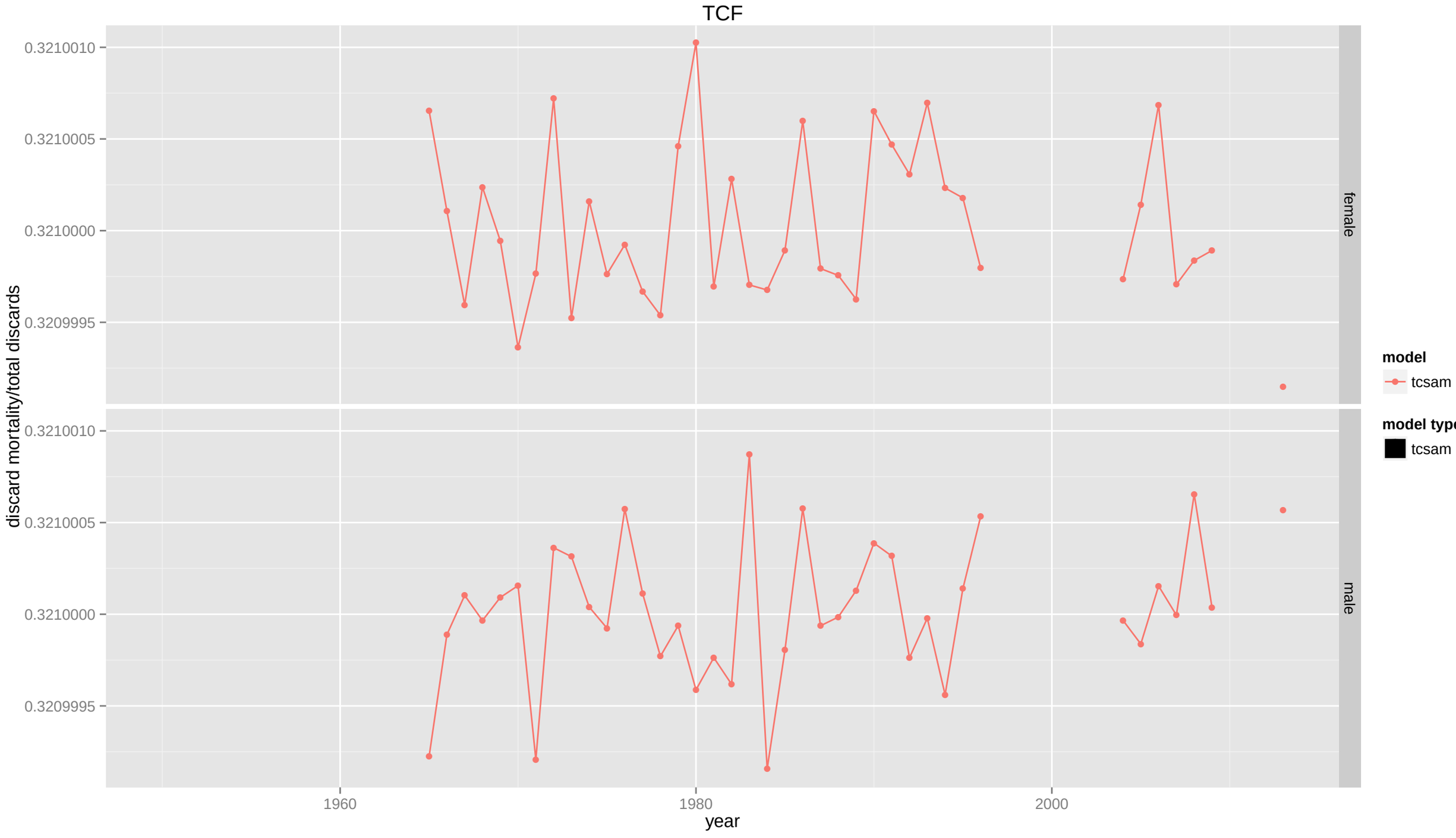

TCF
female
male
capture
discard mortality
retention mortality
total mortality
size−averaged fishing rate
year
0.0
0.2
0.4
0.6
0.8
1960
1980
2000
model
tcsam
model type
tcsam

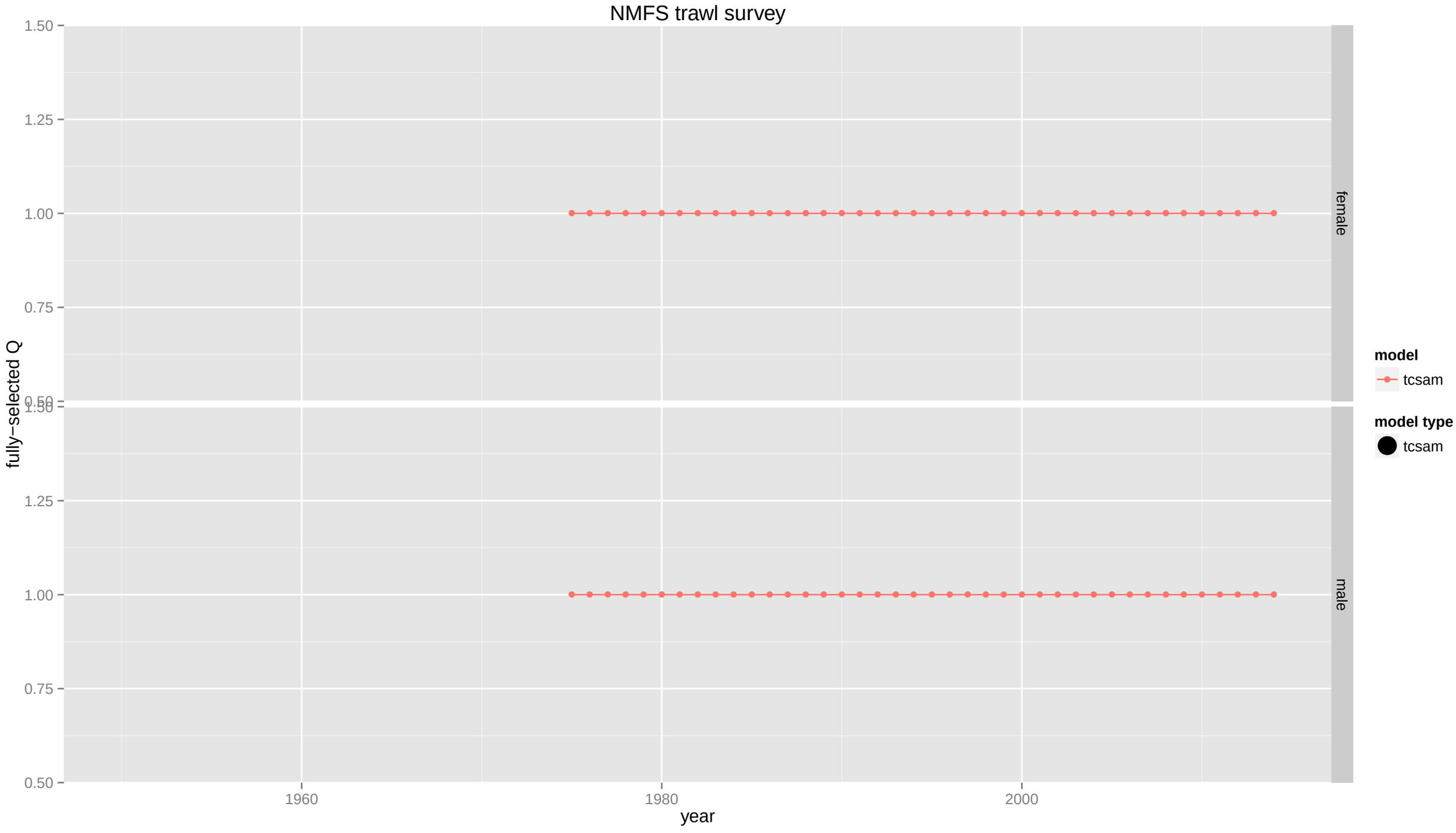

all fisheries
fully−selected total fishing mortality rate
1.2
0.9
0.6
0.3
0.0
female
male
1960
1980
2000
year
model
tcsam
model type
tcsam

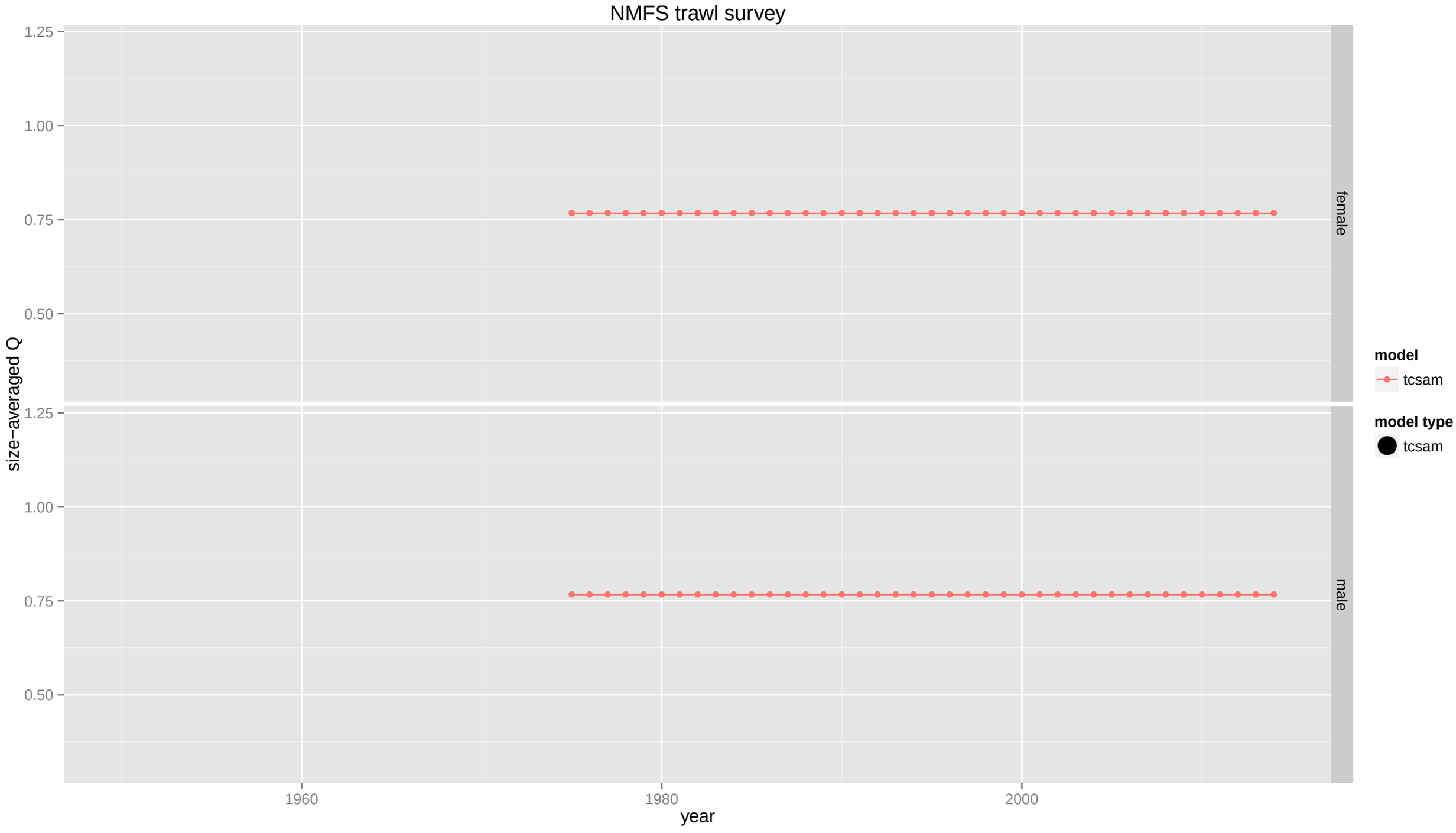

all fisheries
size−averaged total fishing mortality rate
year
female
male
0.0
0.1
0.2
0.3
0.4
0.5
1960
1980
2000
model
tcsam
model type
tcsam

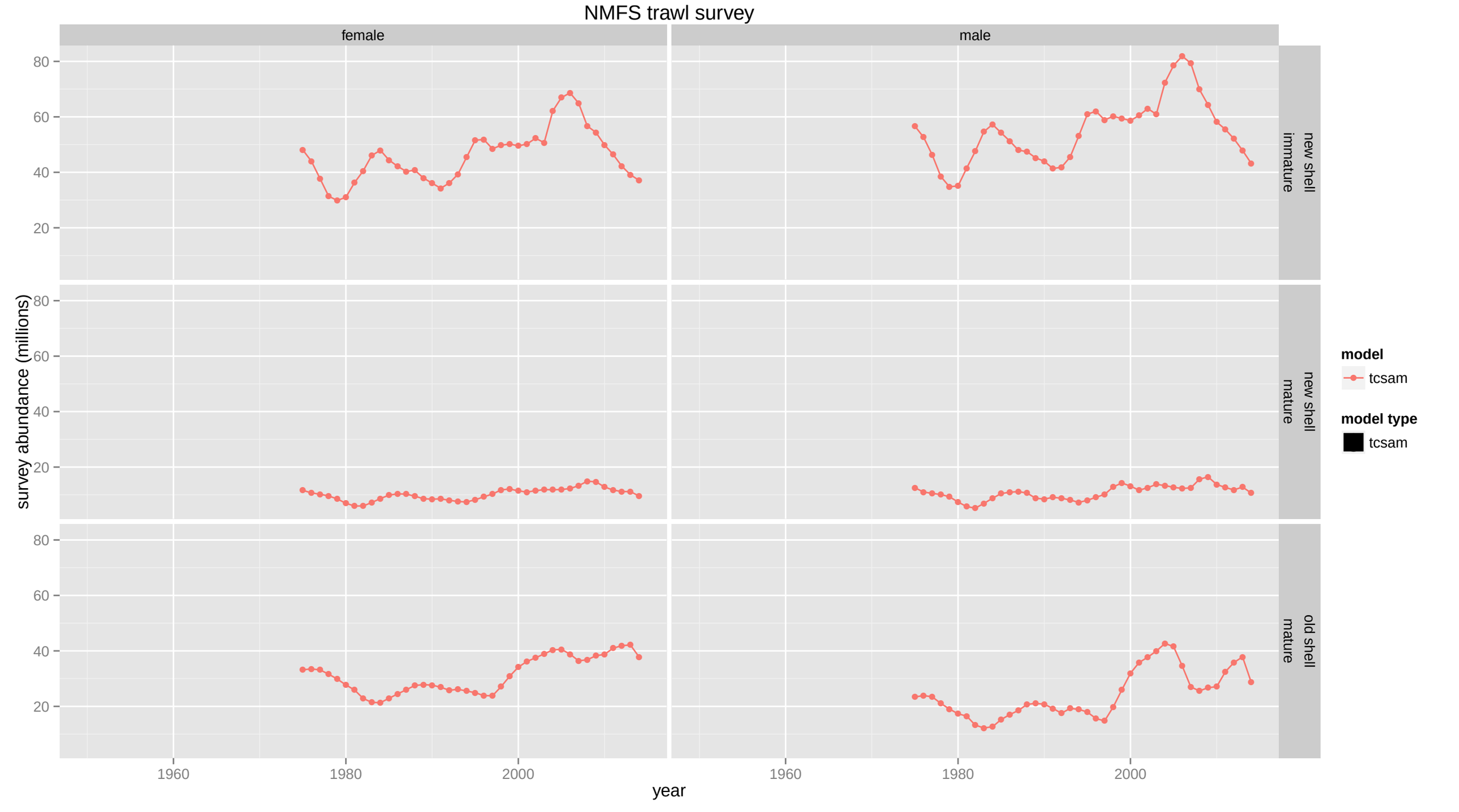

TCF
female
male
captured
discard mortality
discarded
retained
fishery catch (millions)
0
20
40
60
1960
1980
2000
year
model
tcsam
model type
tcsam


TCF
female
male
captured
discard mortality
discarded
retained
fishery yield (1000's t)
year
0
10
20
30
40
50
1960
1980
2000
model
tcsam
model type
tcsam


TCF
discard mortality/total discards
0.3210010
0.3210005
0.3210000
0.3209995
female
male
1960
1980
2000
year
model
tcsam
model type
tcsam


NMFS trawl survey
fully−selected Q
1.50
1.25
1.00
0.75
0.50
female
male
1960
1980
2000
year
model
tcsam
model type
tcsam


NMFS trawl survey
1.25
1.00
0.75
0.50
size−averaged Q
female
male
1960
1980
2000
year
model
tcsam
model type
tcsam


NMFS trawl survey
female
male
new shell immature
new shell mature
old shell mature
survey abundance (millions)
80
60
40
20
1960
1980
2000
year
model
tcsam
model type
tcsam


NMFS trawl survey
female
male
new shell immature
new shell mature
old shell mature
survey biomass (1000's t)
0
10
20
30
40
1960
1980
2000
year
model
tcsam
model type
tcsam