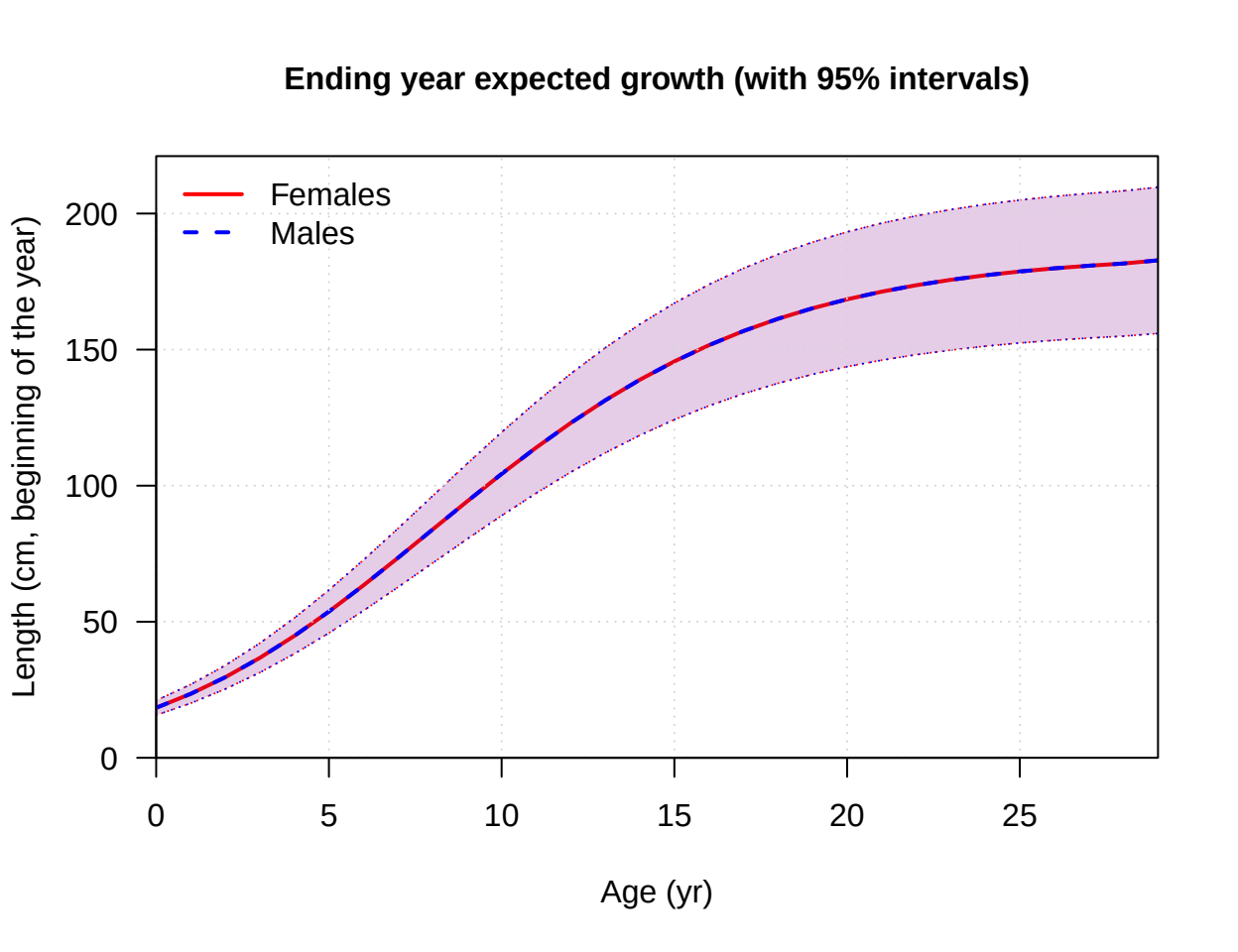
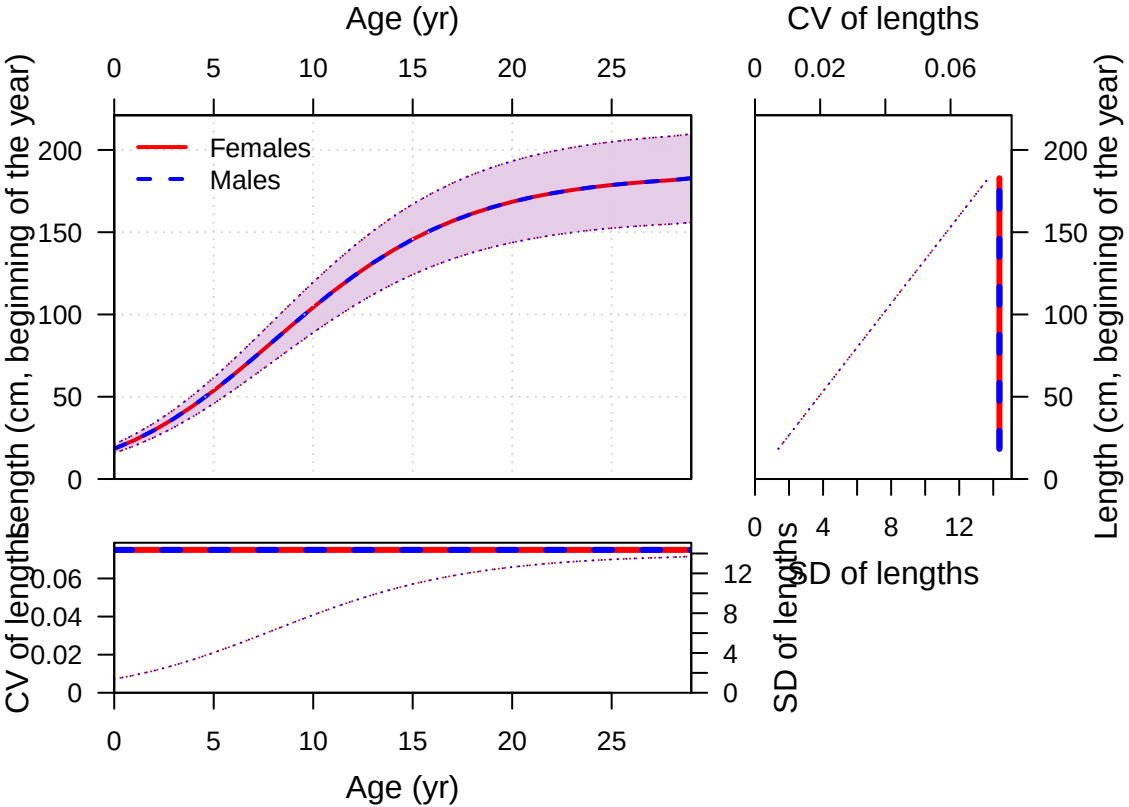
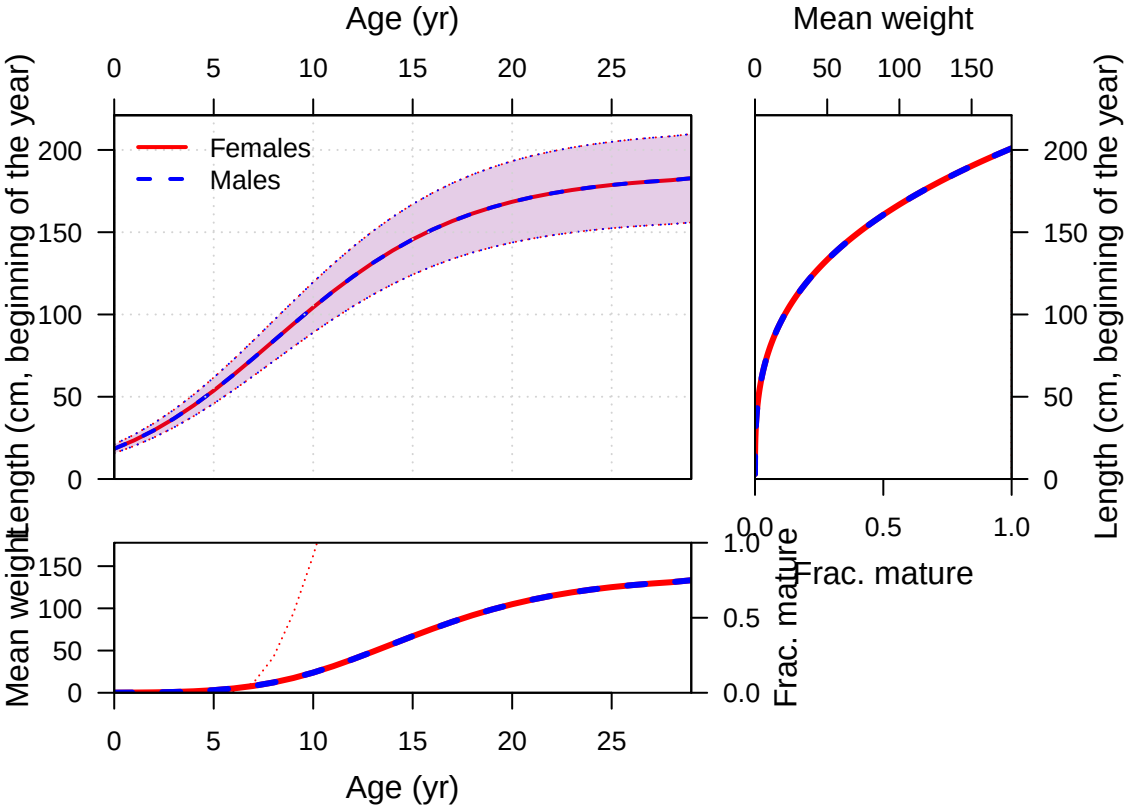
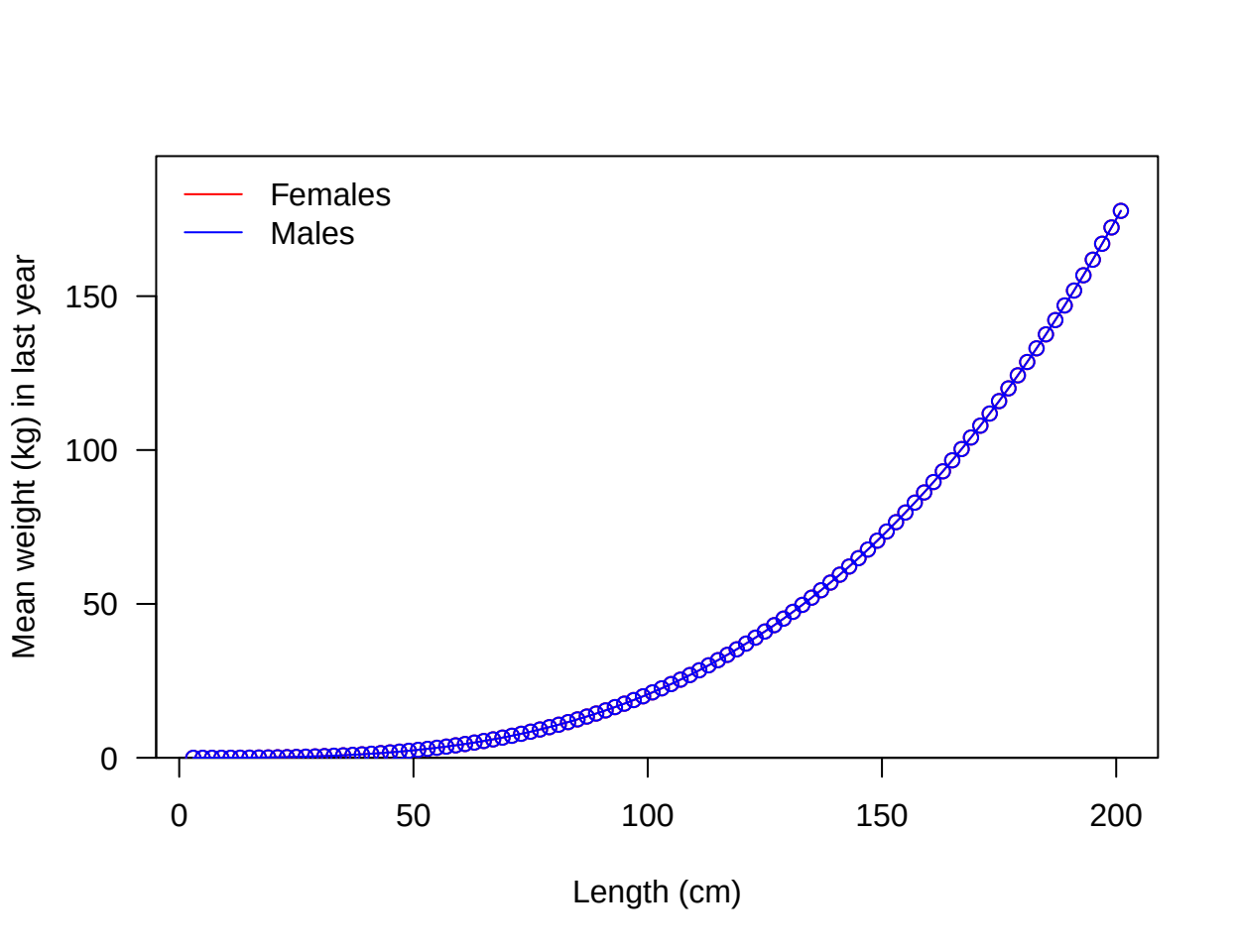
EPO yellowfin tuna
Benchmark assessment 2020
model: DS, h = 0.7

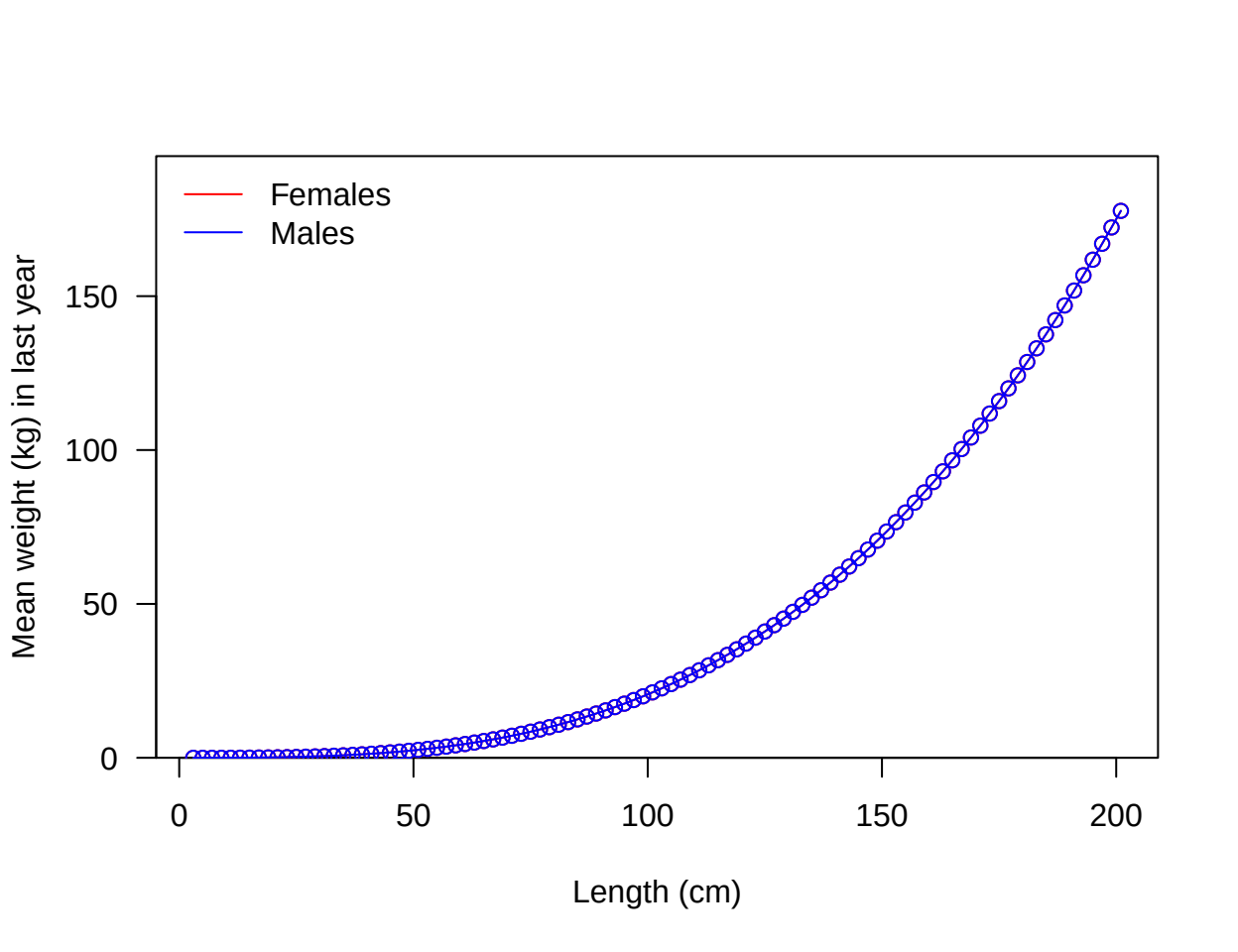
Plots created using the 'r4ss' package in R
Stock Synthesis version: 3.30.15.0
StartTime: Mon Jul 20 17:09:43 2020
Data_File: YFT−EPO.dat
Control_File: YFT−EPO.ctl

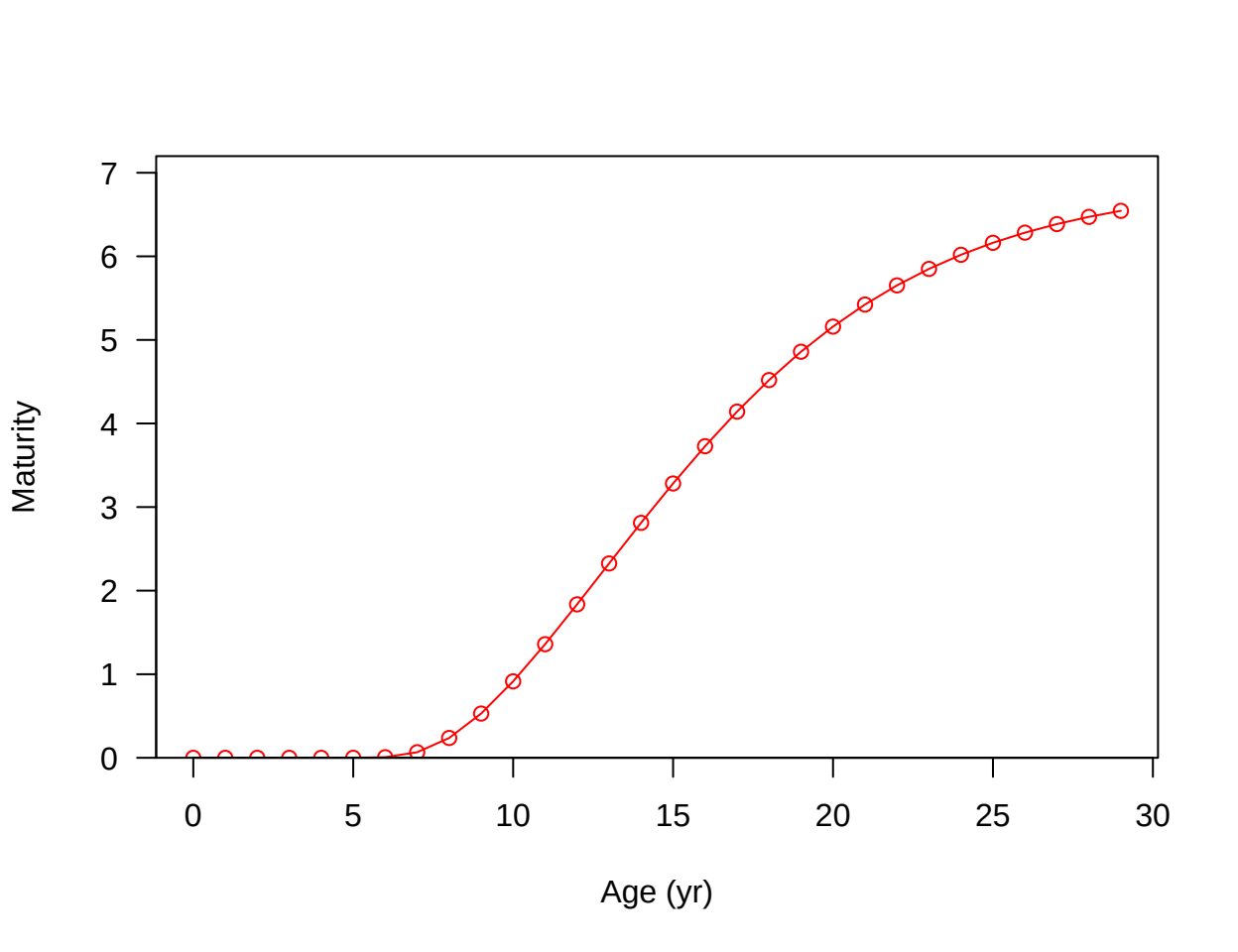

Ending year expected growth (with 95% intervals)
Females
Males
Length (cm, beginning of the year)
0
50
100
150
200
0
5
10
15
20
25
Age (yr)

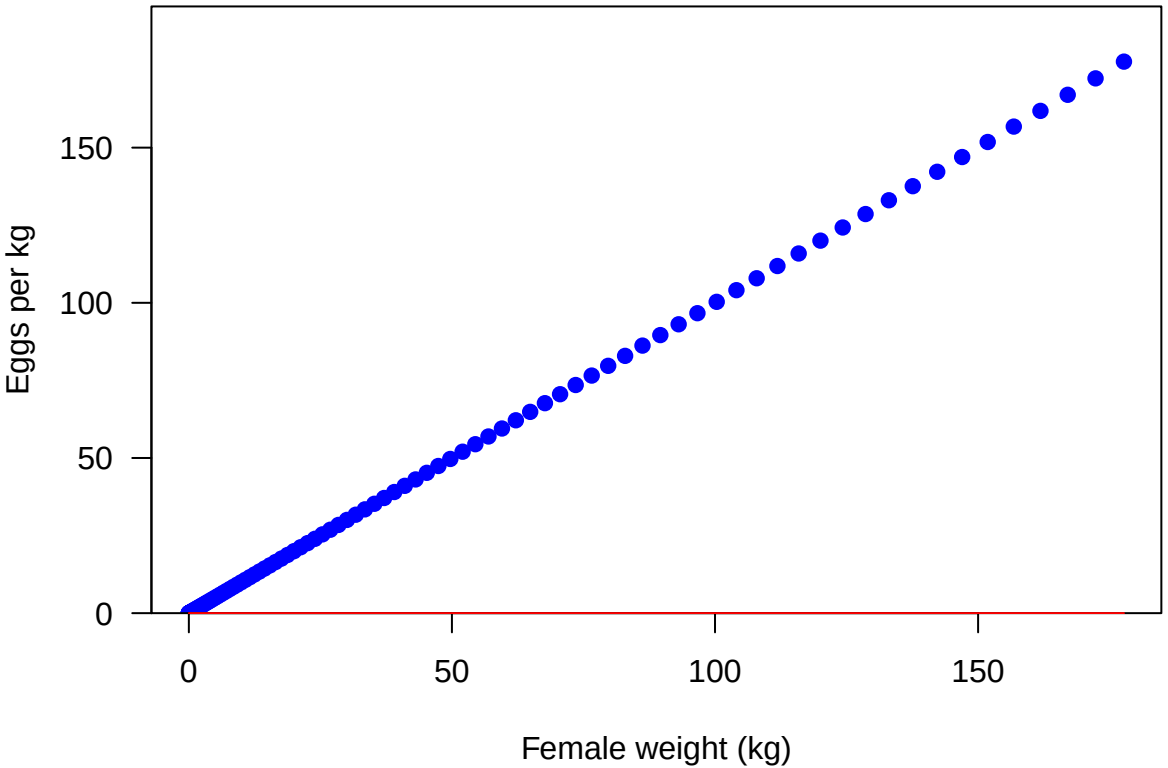

Age (yr)
CV of lengths
Females
Males
Length (cm, beginning of the year)
CV of lengths
SD of lengths
Age (yr)

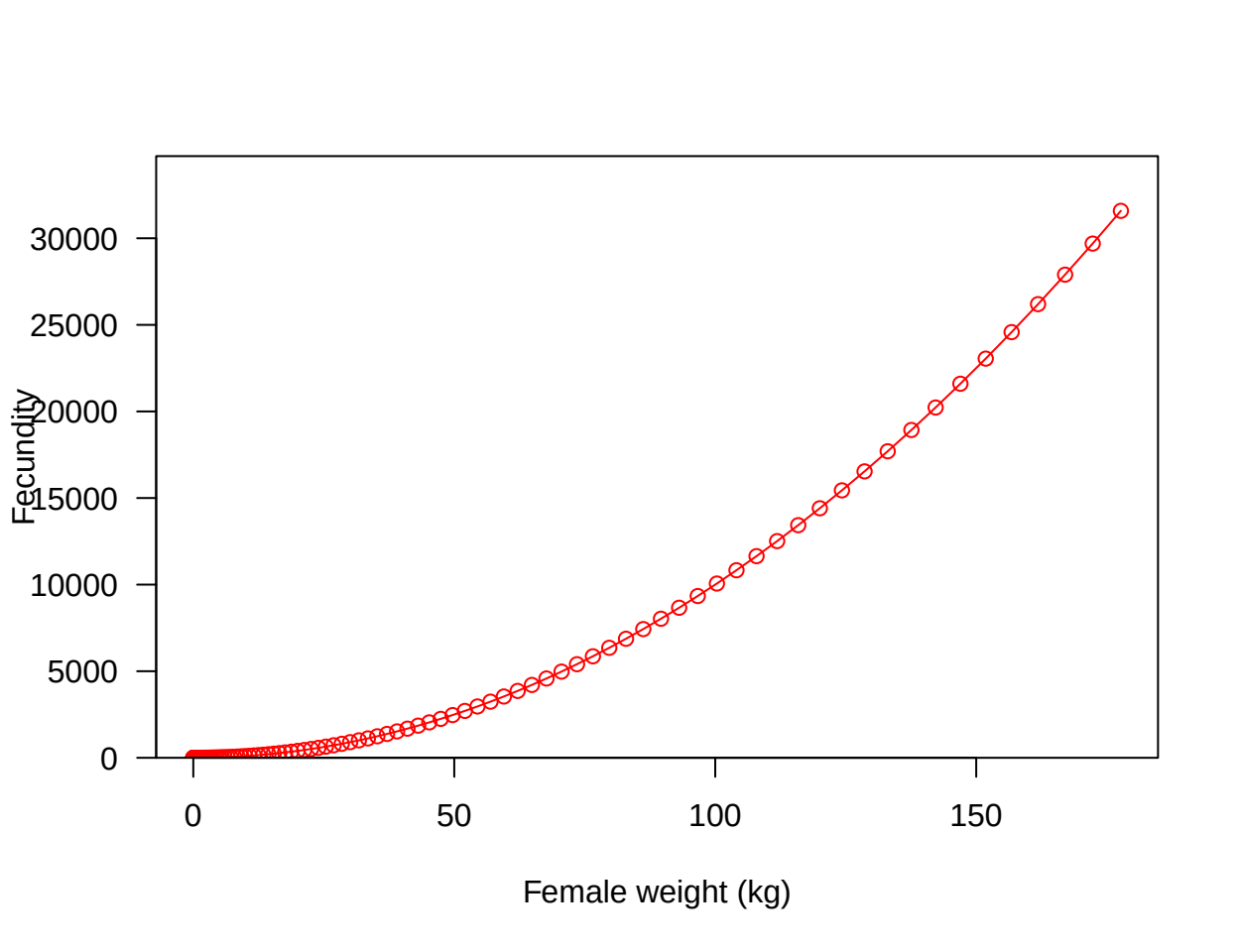

Age (yr)
Mean weight
Length (cm, beginning of the year)
Females
Males
Mean weight
Frac. mature
Age (yr)

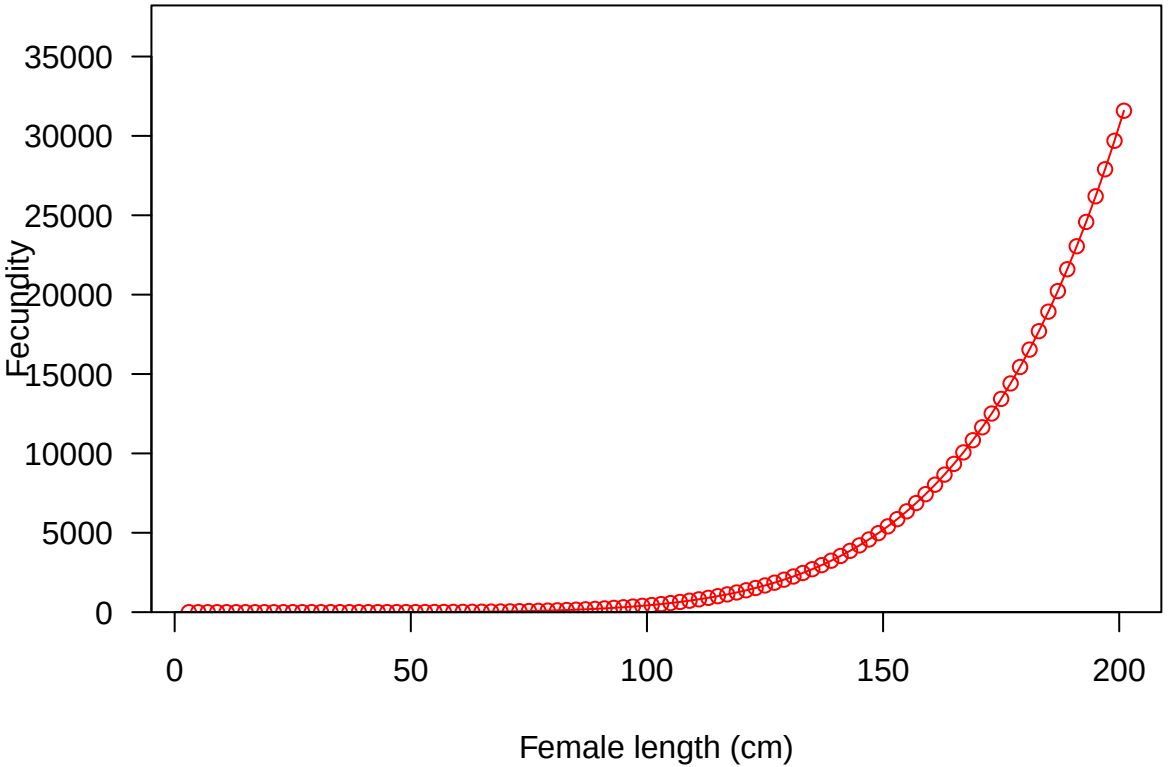

Females
Males
Mean weight (kg) in last year
0
50
100
150
0
50
100
150
200
Length (cm)

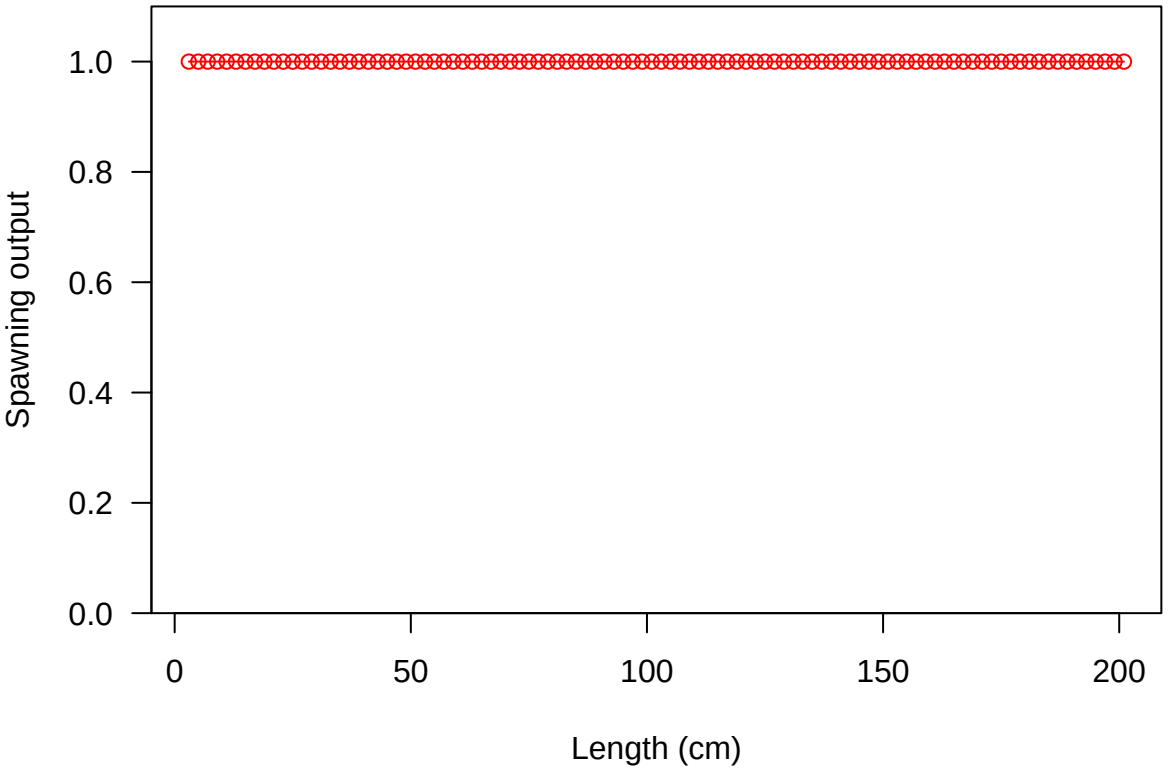

Females
Males
Mean weight (kg) in last year
0
50
100
150
0
50
100
150
200
Length (cm)

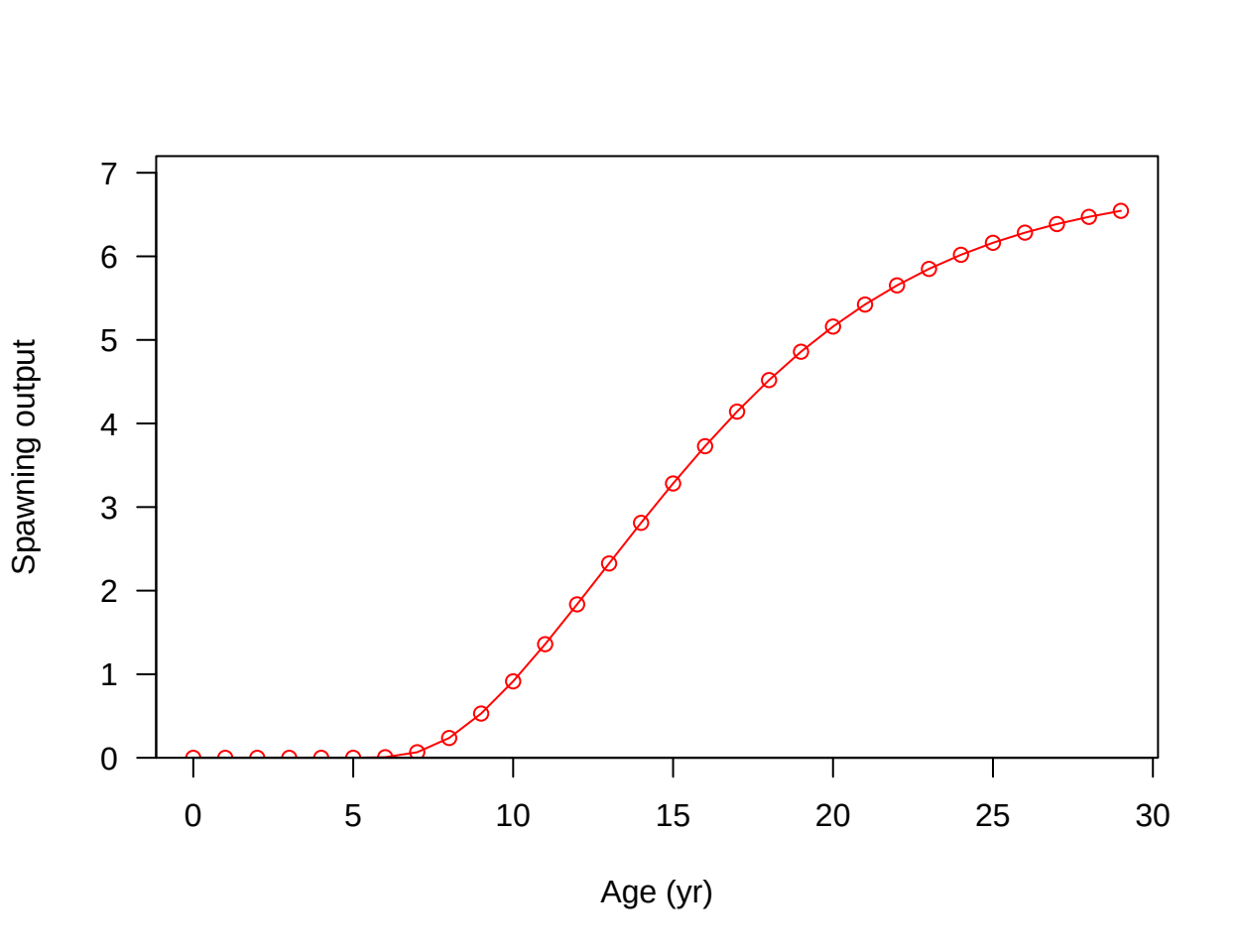

Maturity
0
1
2
3
4
5
6
7
0
5
10
15
20
25
30
Age (yr)

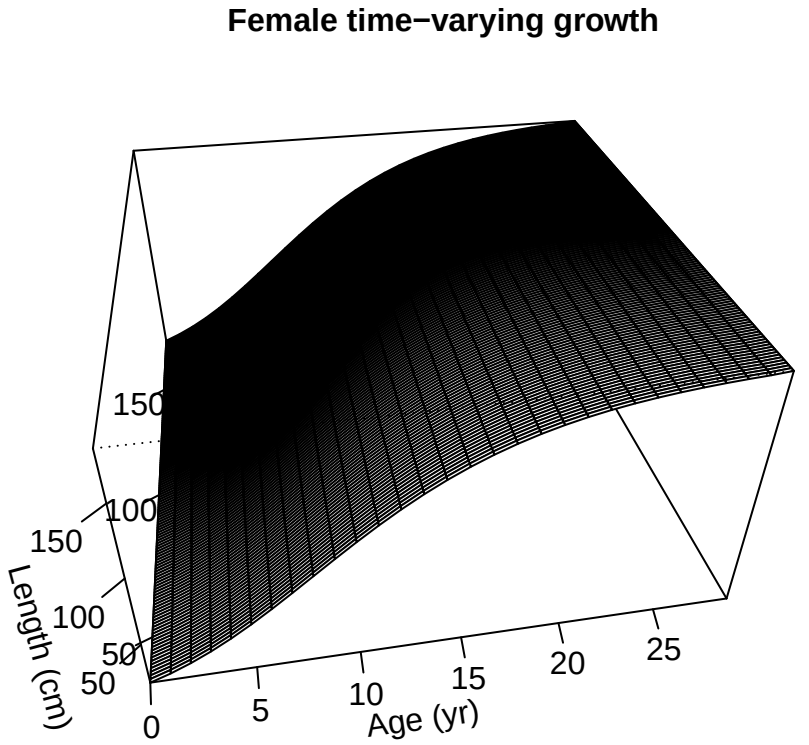

Eggs per kg
0
50
100
150
0
50
100
150
Female weight (kg)

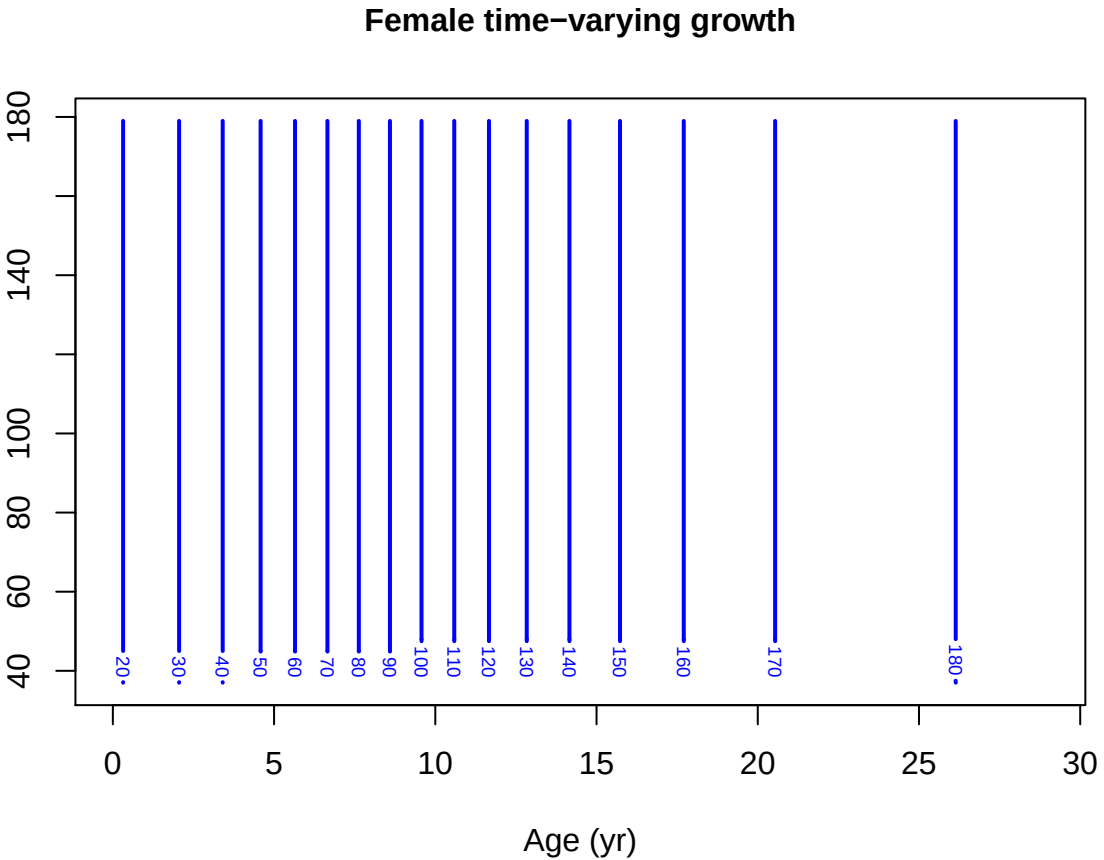

30000
25000
20000
15000
10000
5000
0
Fecundity
0
50
100
150
Female weight (kg)

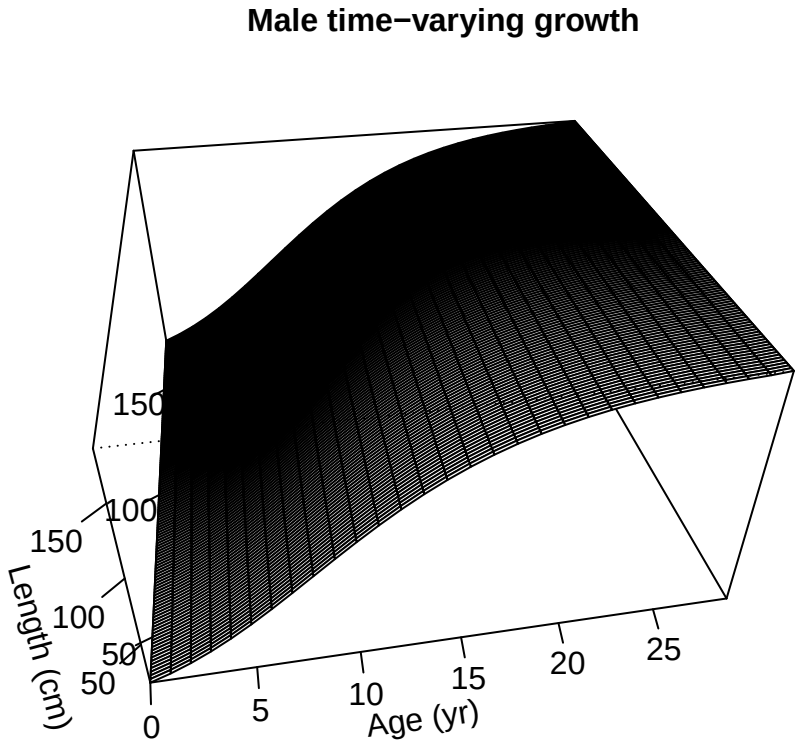

35000
30000
25000
20000
15000
10000
5000
0
Fecundity
0
50
100
150
200
Female length (cm)

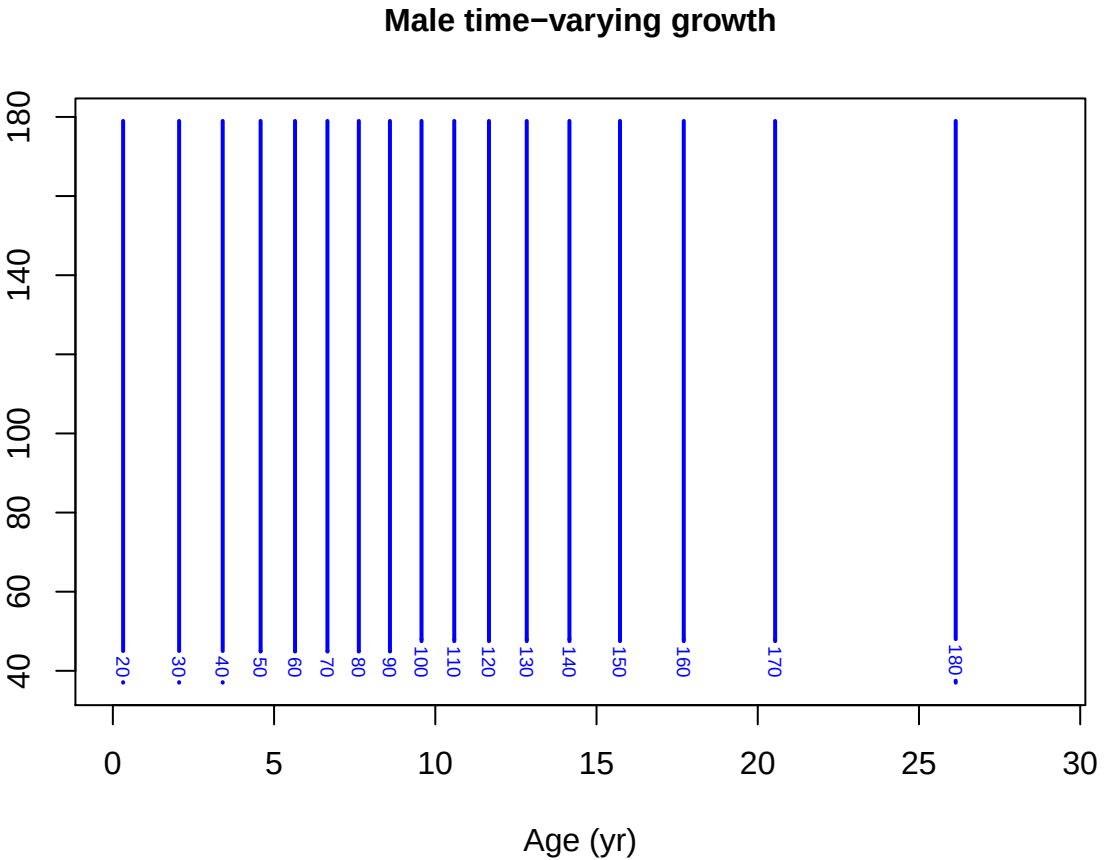

Spawning output
1.0
0.8
0.6
0.4
0.2
0.0
0
50
100
150
200
Length (cm)

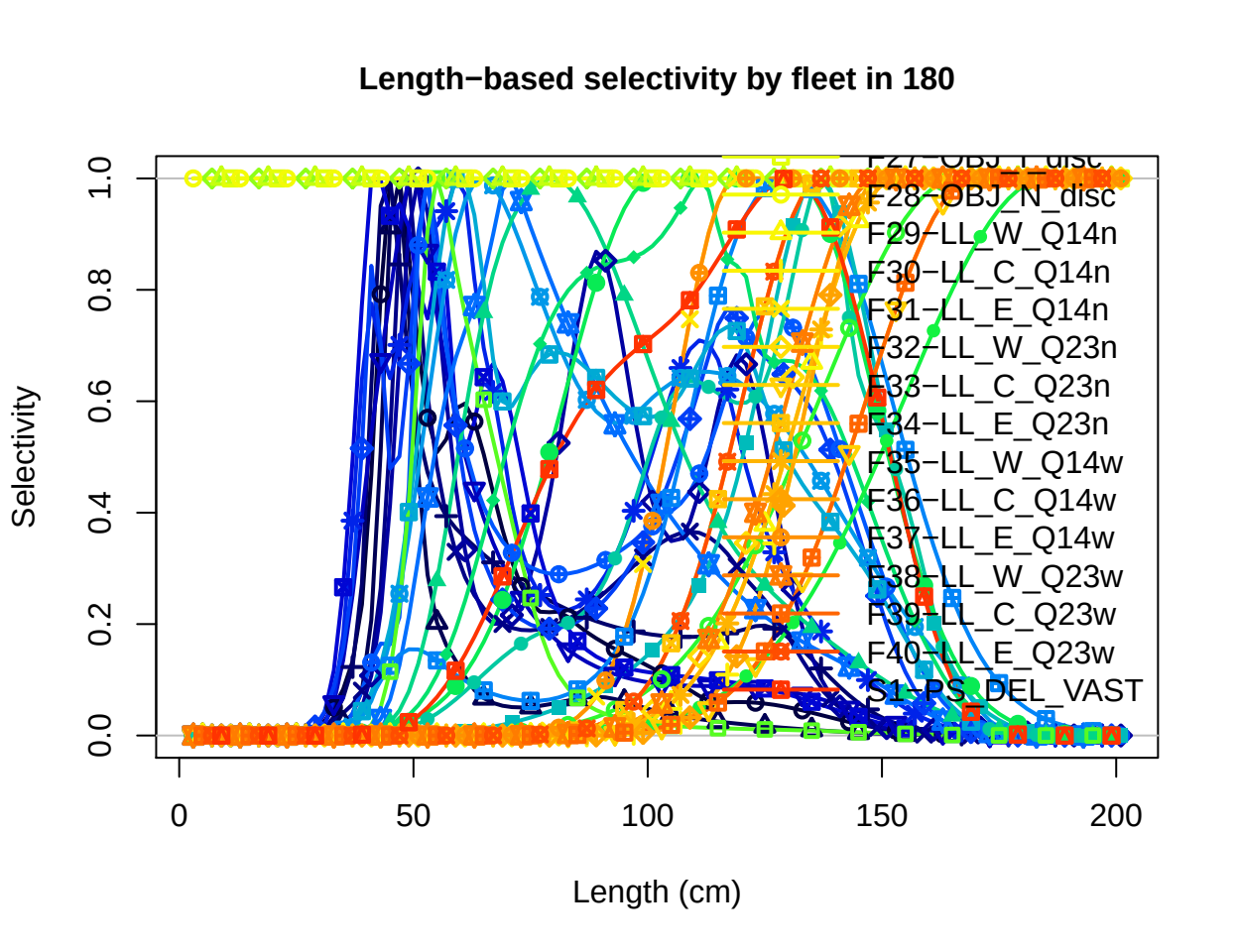

Spawning output
0
1
2
3
4
5
6
7
0
5
10
15
20
25
30
Age (yr)

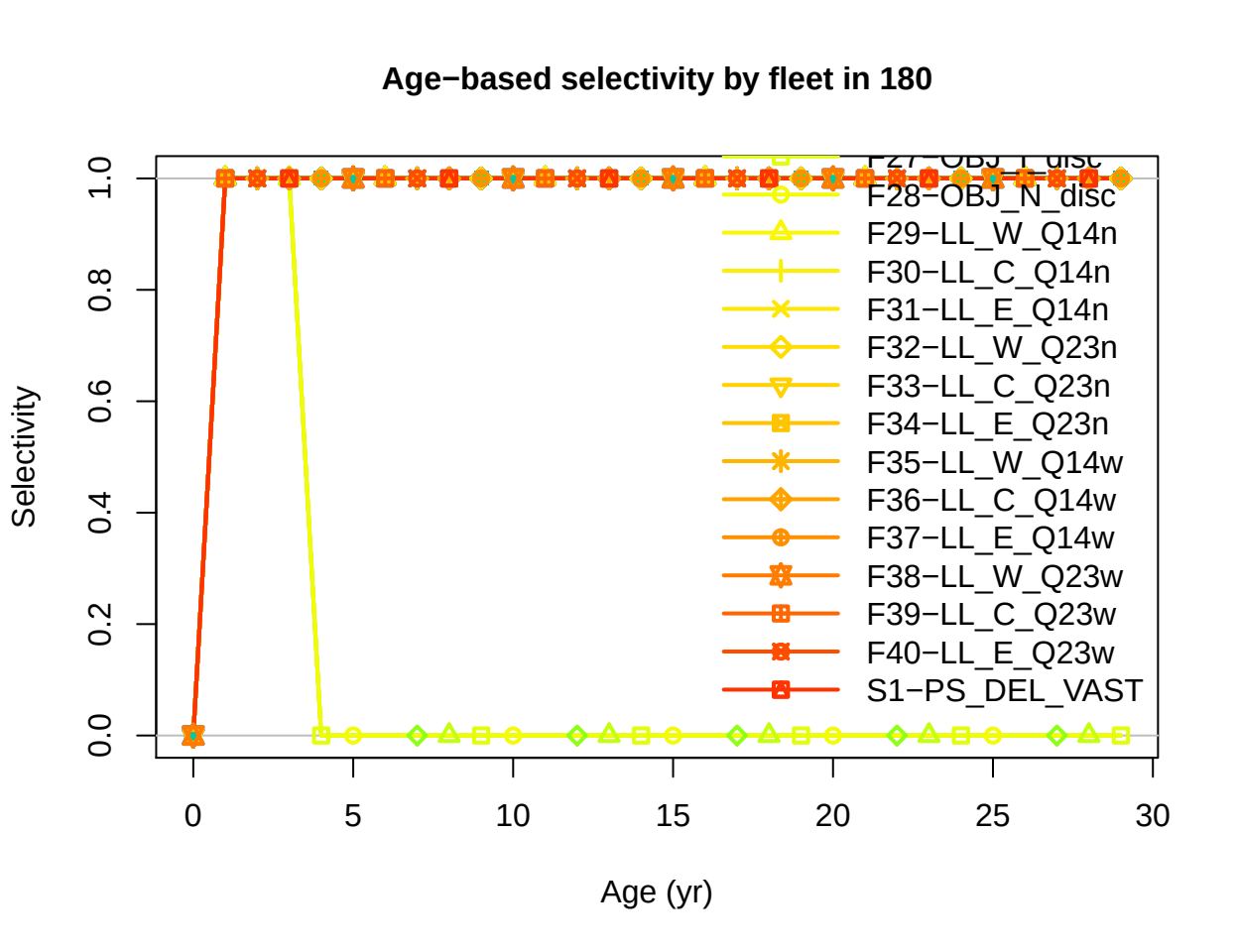

Female time−varying growth
150
100
150
100
50
Length (cm)
50
0
5
10
15
20
25
Age (yr)

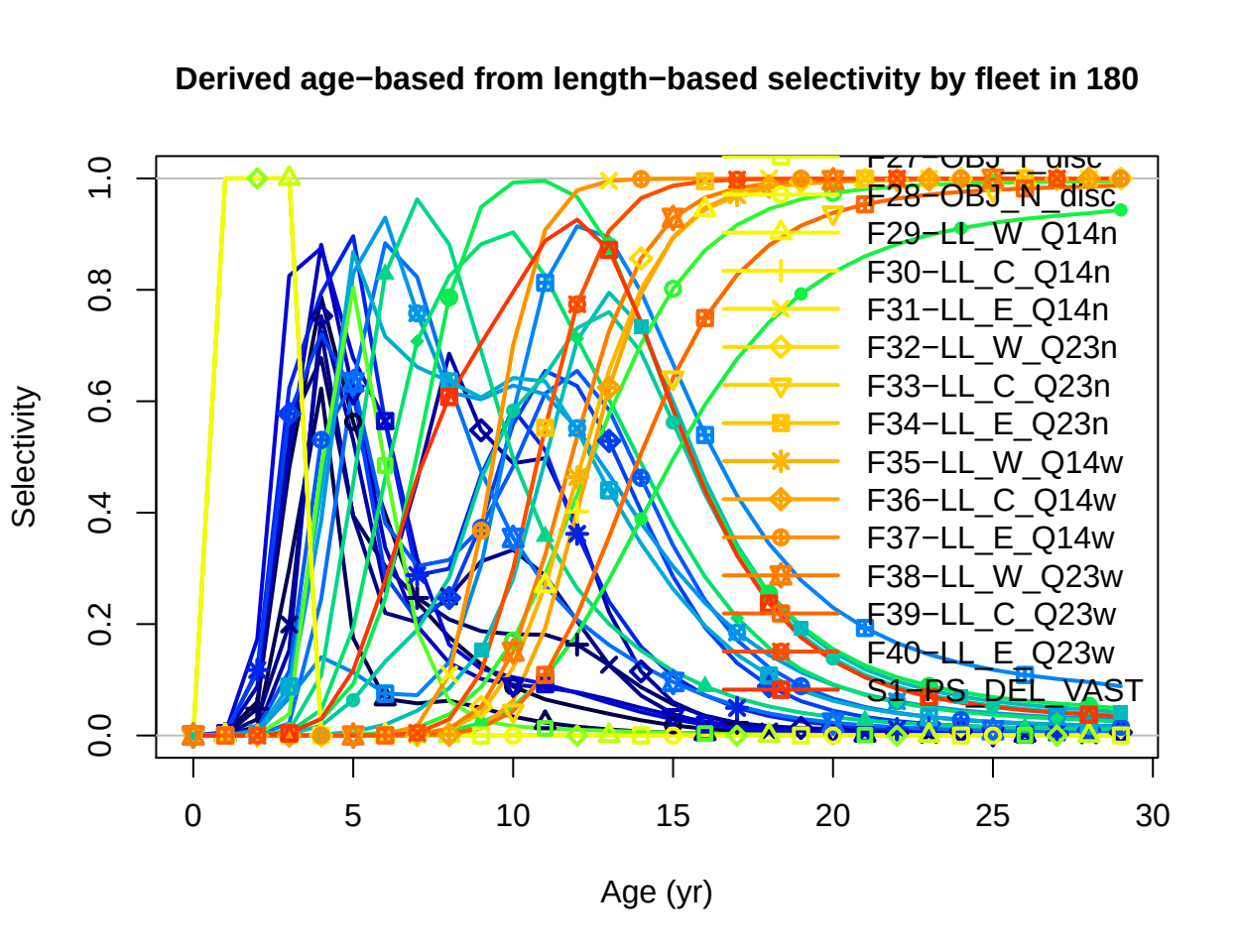

Female time−varying growth
180
140
100
80
60
40
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
0
5
10
15
20
25
30
Age (yr)

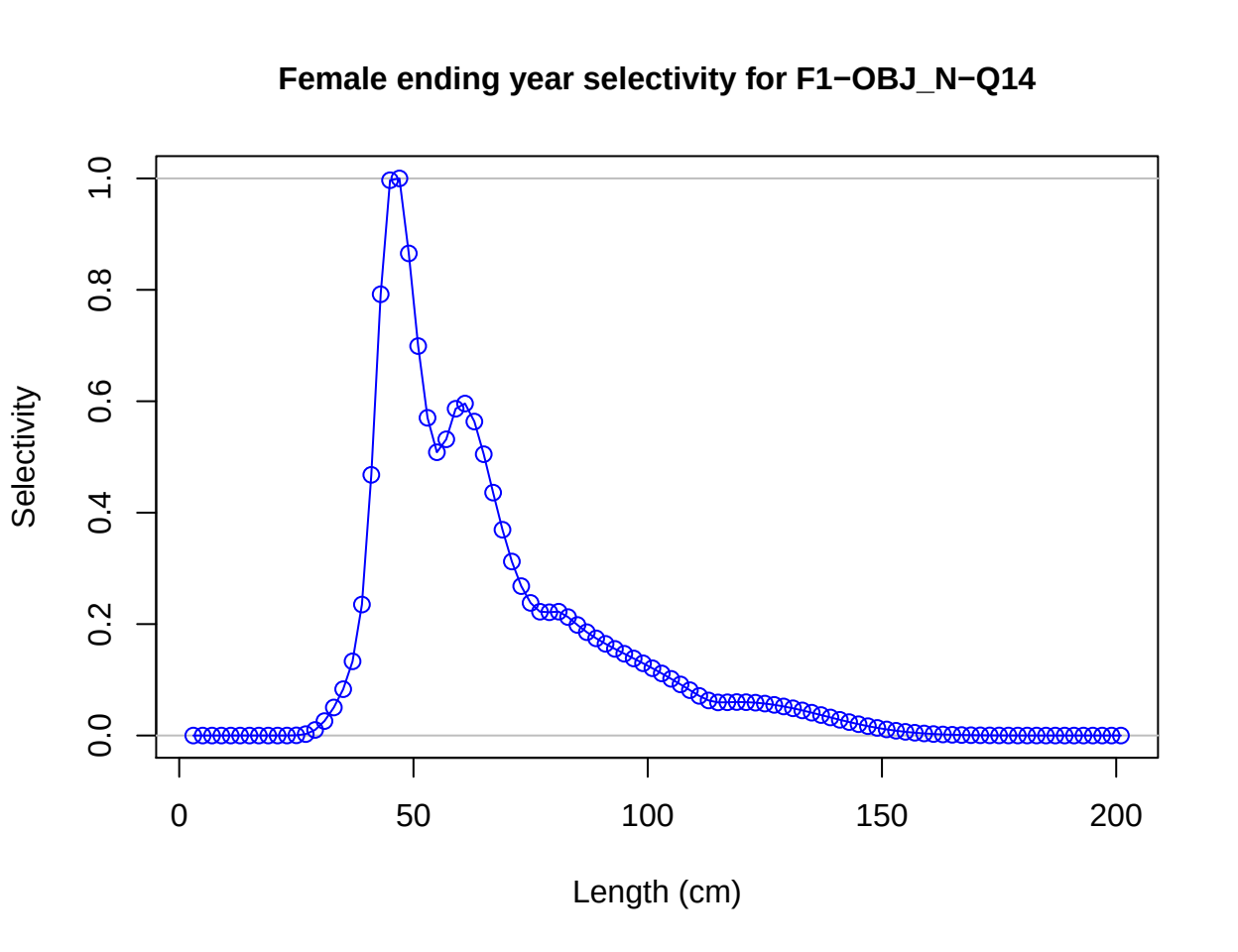

Male time−varying growth
150
100
150
100
50
Length (cm)
50
0
5
10
15
20
25
Age (yr)

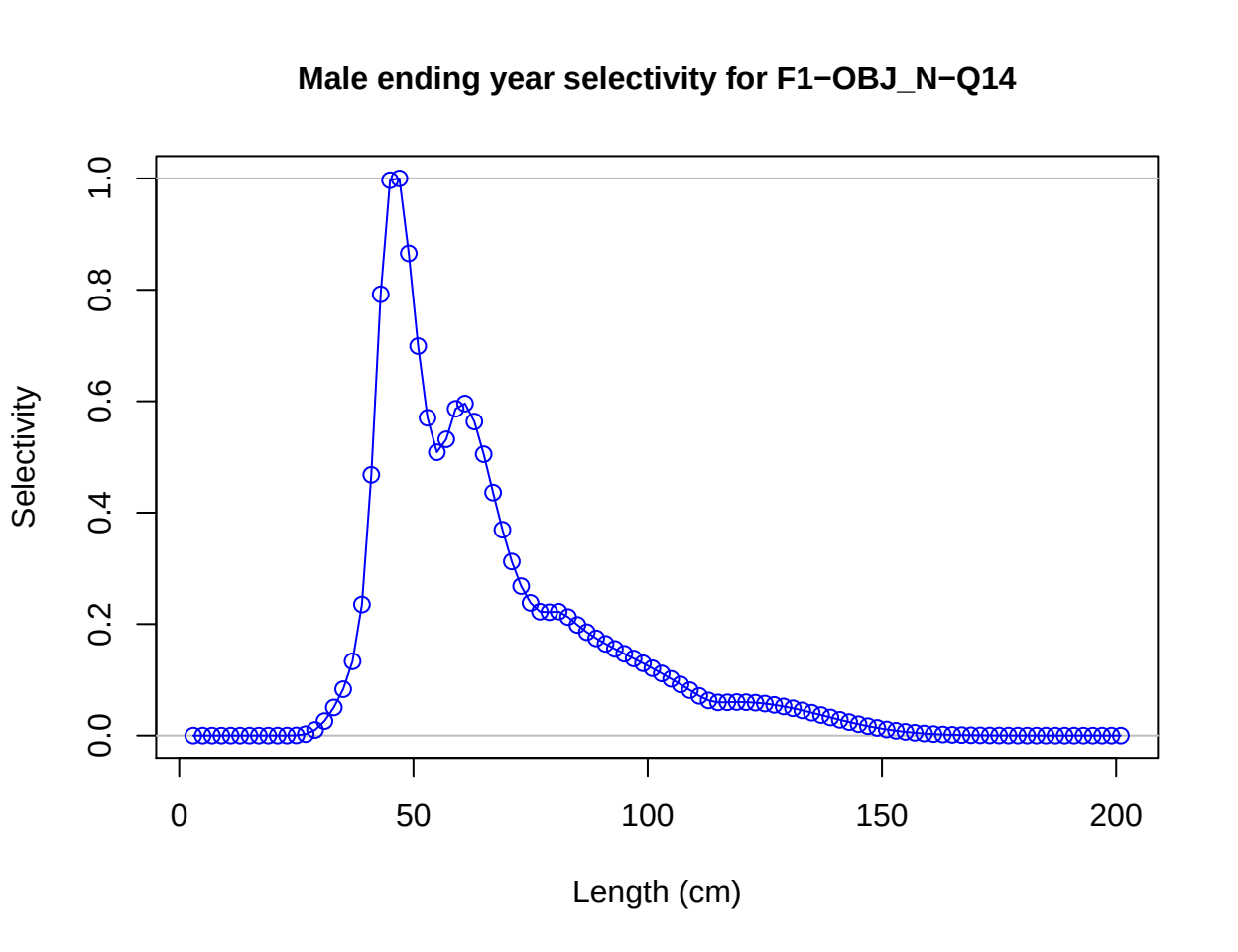

Male time−varying growth
180
140
100
80
60
40
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
0
5
10
15
20
25
30
Age (yr)

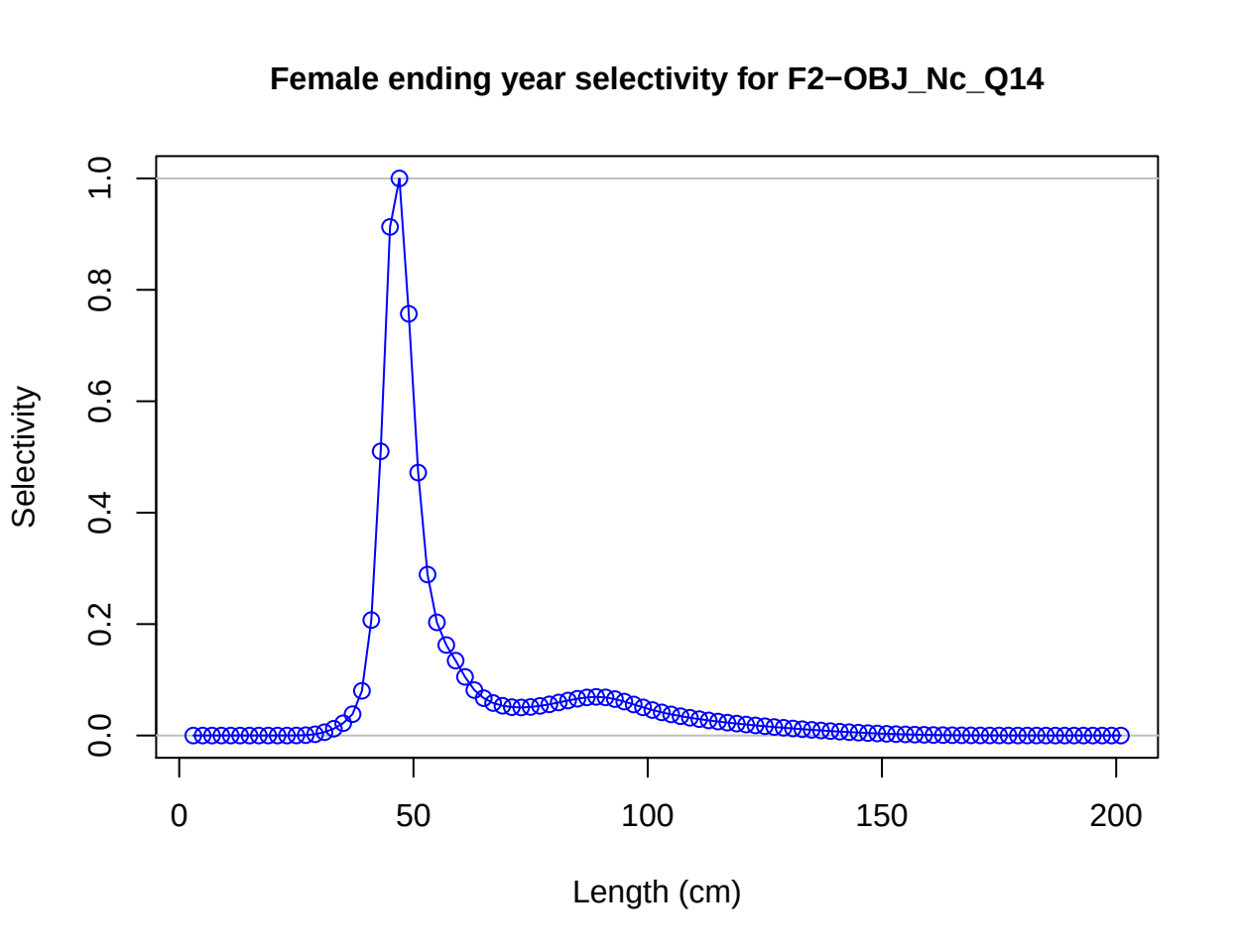

Length−based selectivity by fleet in 180
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)
F28−OBJ_N_disc
F29−LL_W_Q14n
F30−LL_C_Q14n
F31−LL_E_Q14n
F32−LL_W_Q23n
F33−LL_C_Q23n
F34−LL_E_Q23n
F35−LL_W_Q14w
F36−LL_C_Q14w
F37−LL_E_Q14w
F38−LL_W_Q23w
F39−LL_C_Q23w
F40−LL_E_Q23w
S1−PS_DEL_VAST

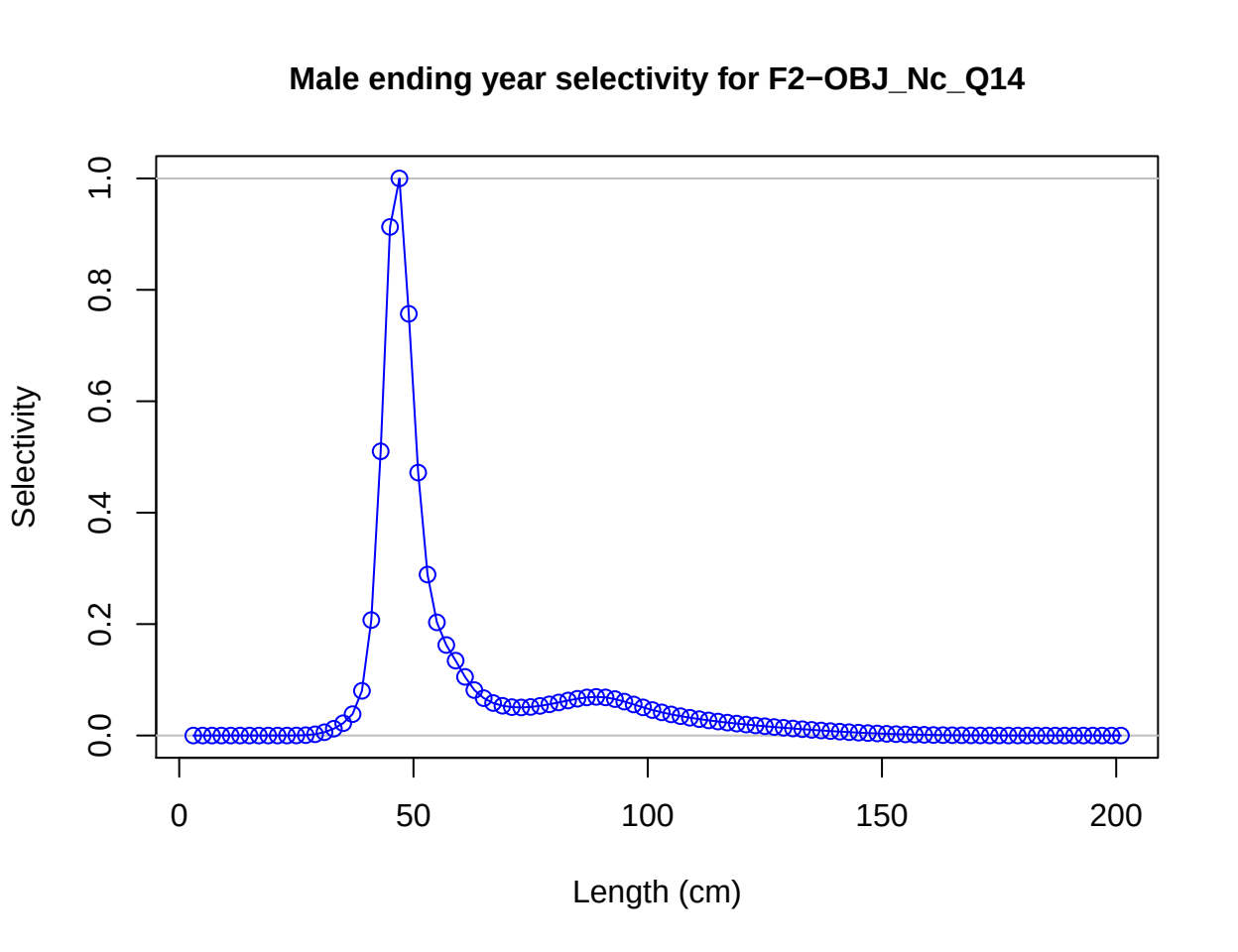

Age−based selectivity by fleet in 180
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)
F27−OBJ_T_disc
F28−OBJ_N_disc
F29−LL_W_Q14n
F30−LL_C_Q14n
F31−LL_E_Q14n
F32−LL_W_Q23n
F33−LL_C_Q23n
F34−LL_E_Q23n
F35−LL_W_Q14w
F36−LL_C_Q14w
F37−LL_E_Q14w
F38−LL_W_Q23w
F39−LL_C_Q23w
F40−LL_E_Q23w
S1−PS_DEL_VAST

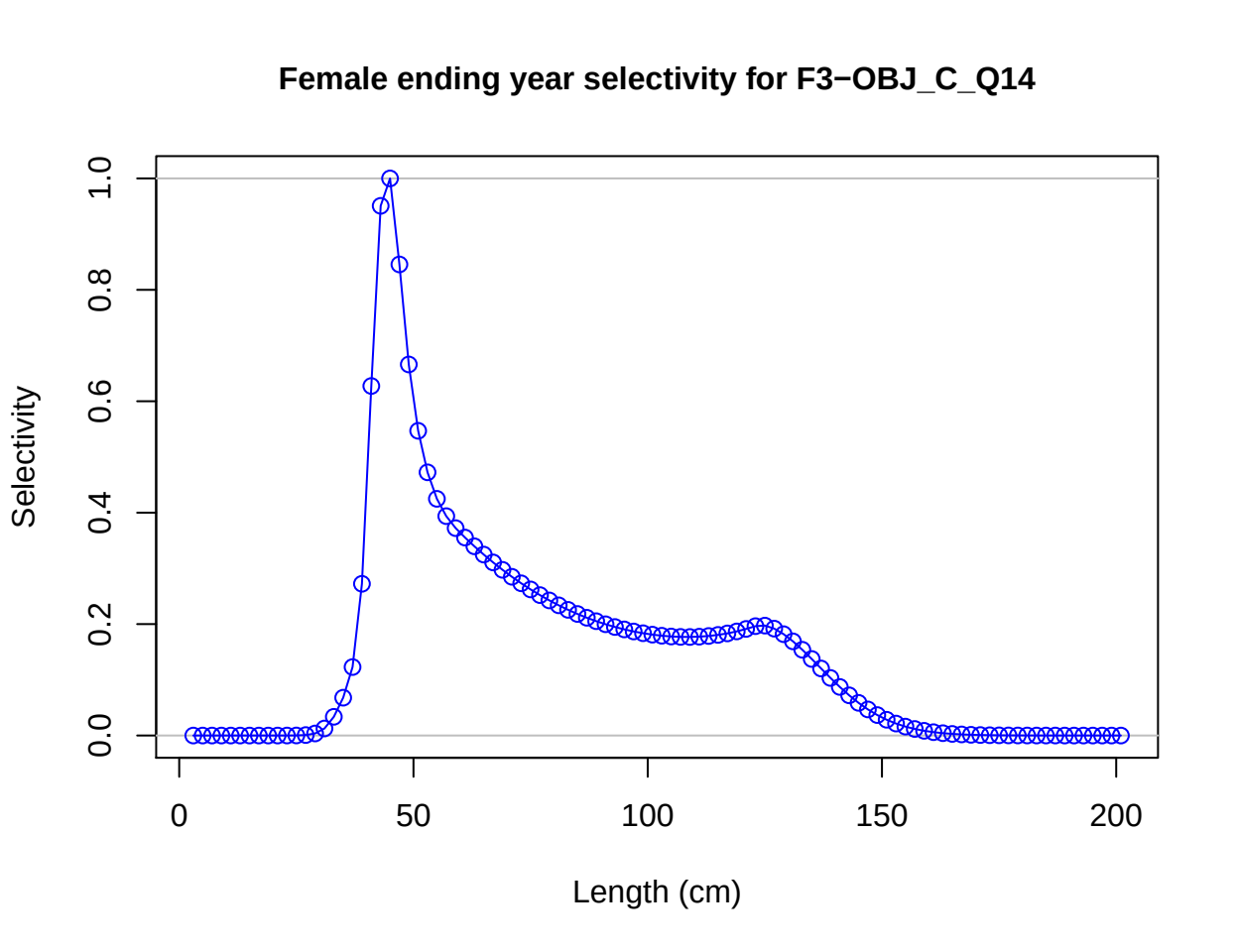

Derived age−based from length−based selectivity by fleet in 180
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)
F28−OBJ_N_disc
F29−LL_W_Q14n
F30−LL_C_Q14n
F31−LL_E_Q14n
F32−LL_W_Q23n
F33−LL_C_Q23n
F34−LL_E_Q23n
F35−LL_W_Q14w
F36−LL_C_Q14w
F37−LL_E_Q14w
F38−LL_W_Q23w
F39−LL_C_Q23w
F40−LL_E_Q23w
S1−PS_DEL_VAST

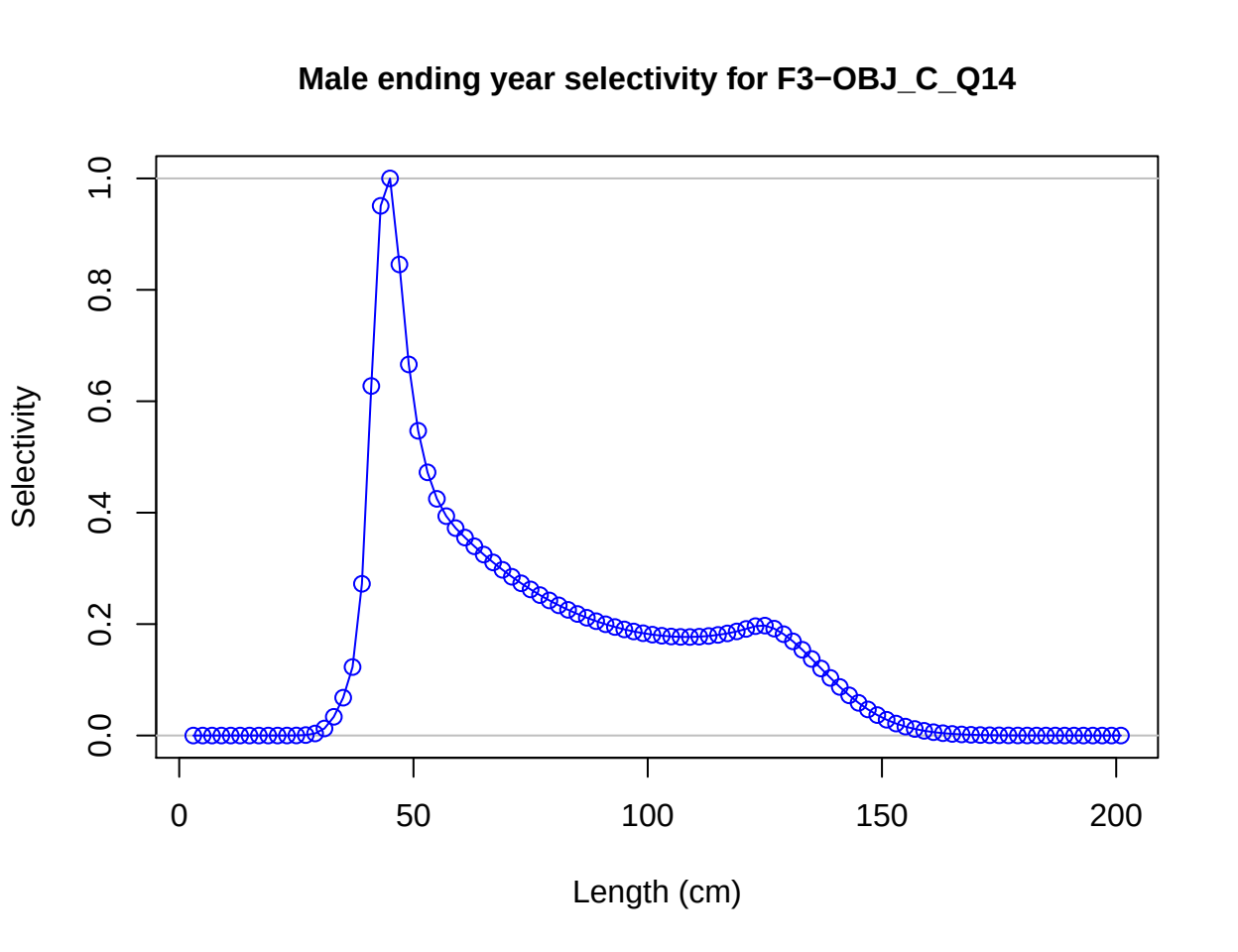

Female ending year selectivity for F1−OBJ_N−Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

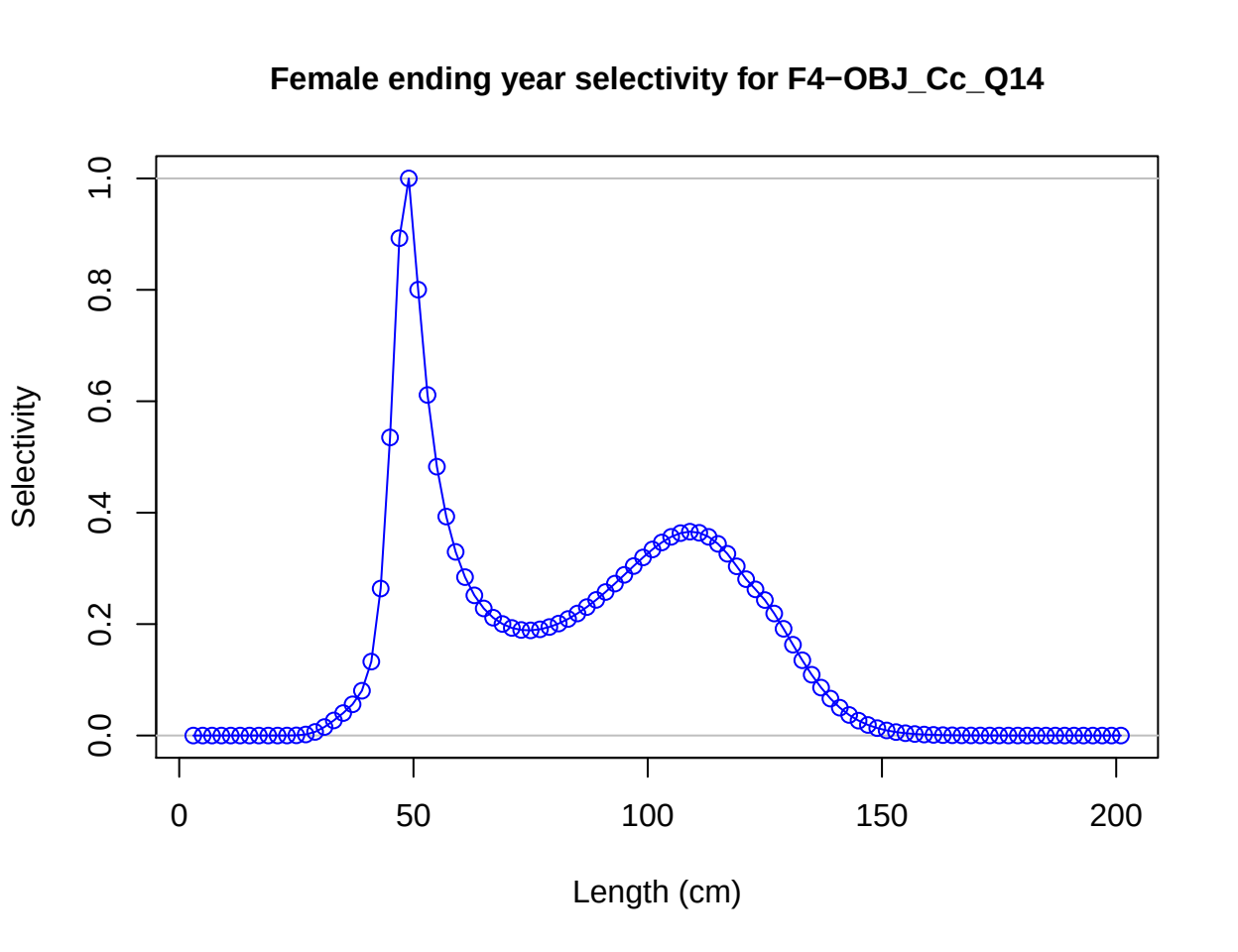

Male ending year selectivity for F1−OBJ_N−Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

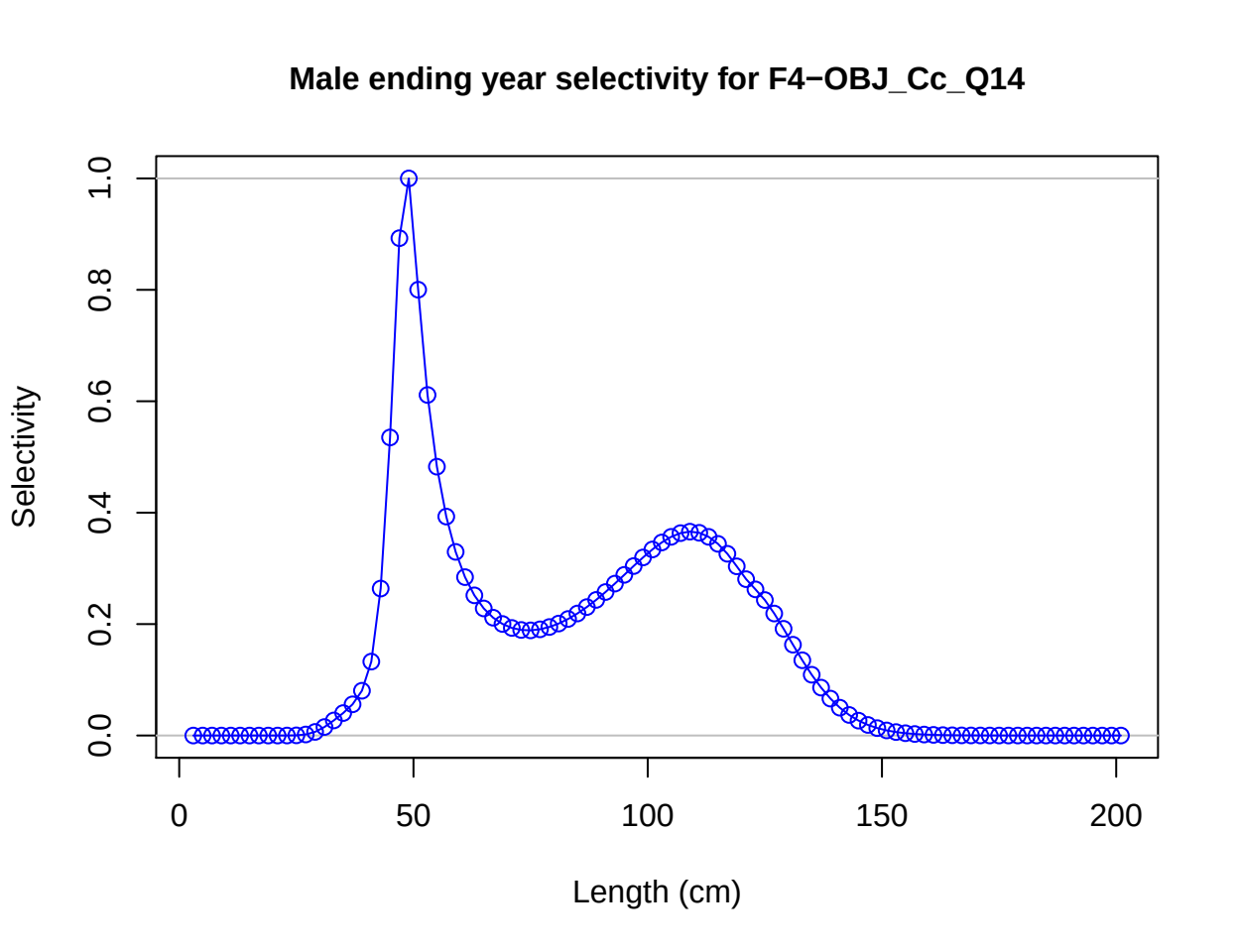

Female ending year selectivity for F2−OBJ_Nc_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

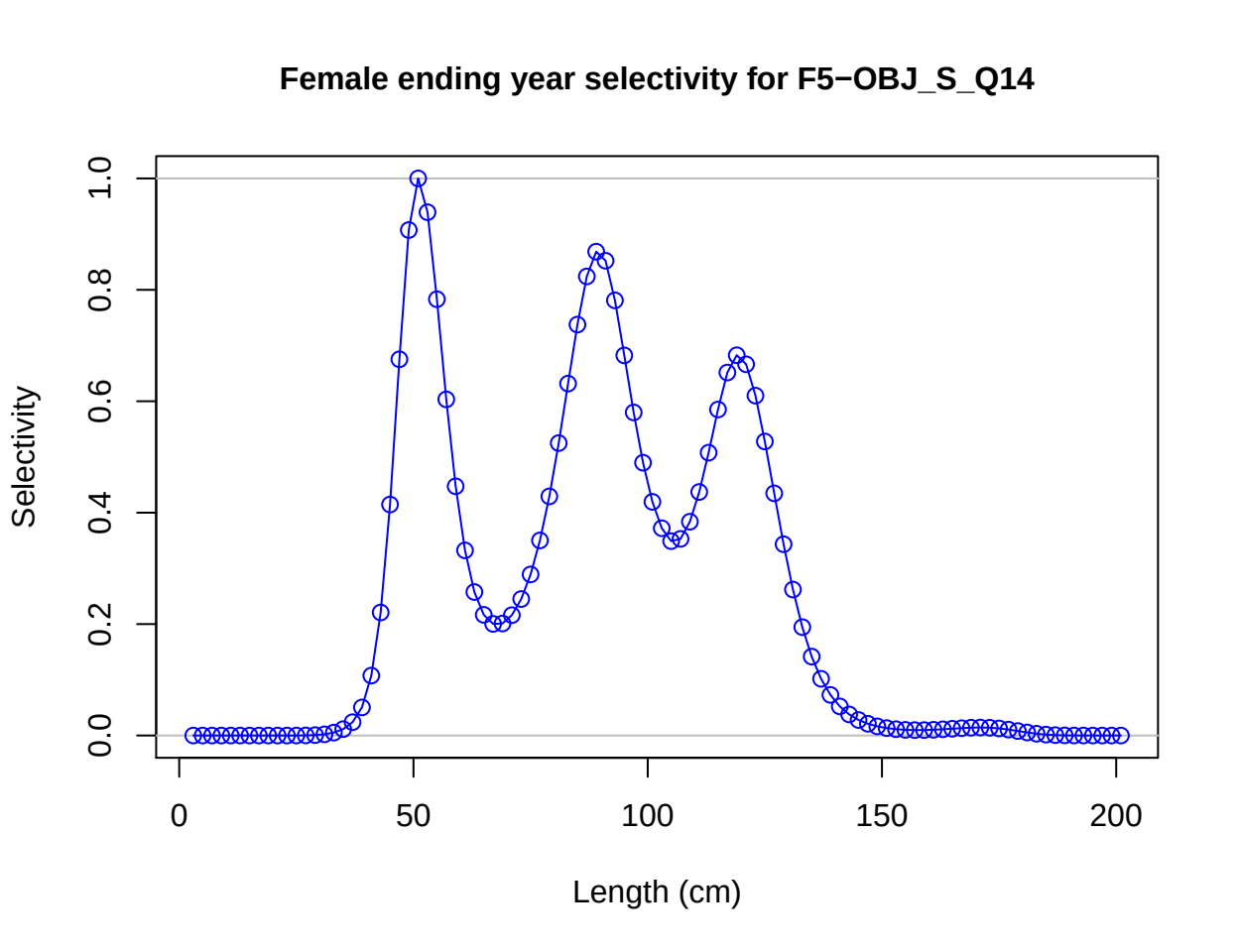

Male ending year selectivity for F2−OBJ_Nc_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

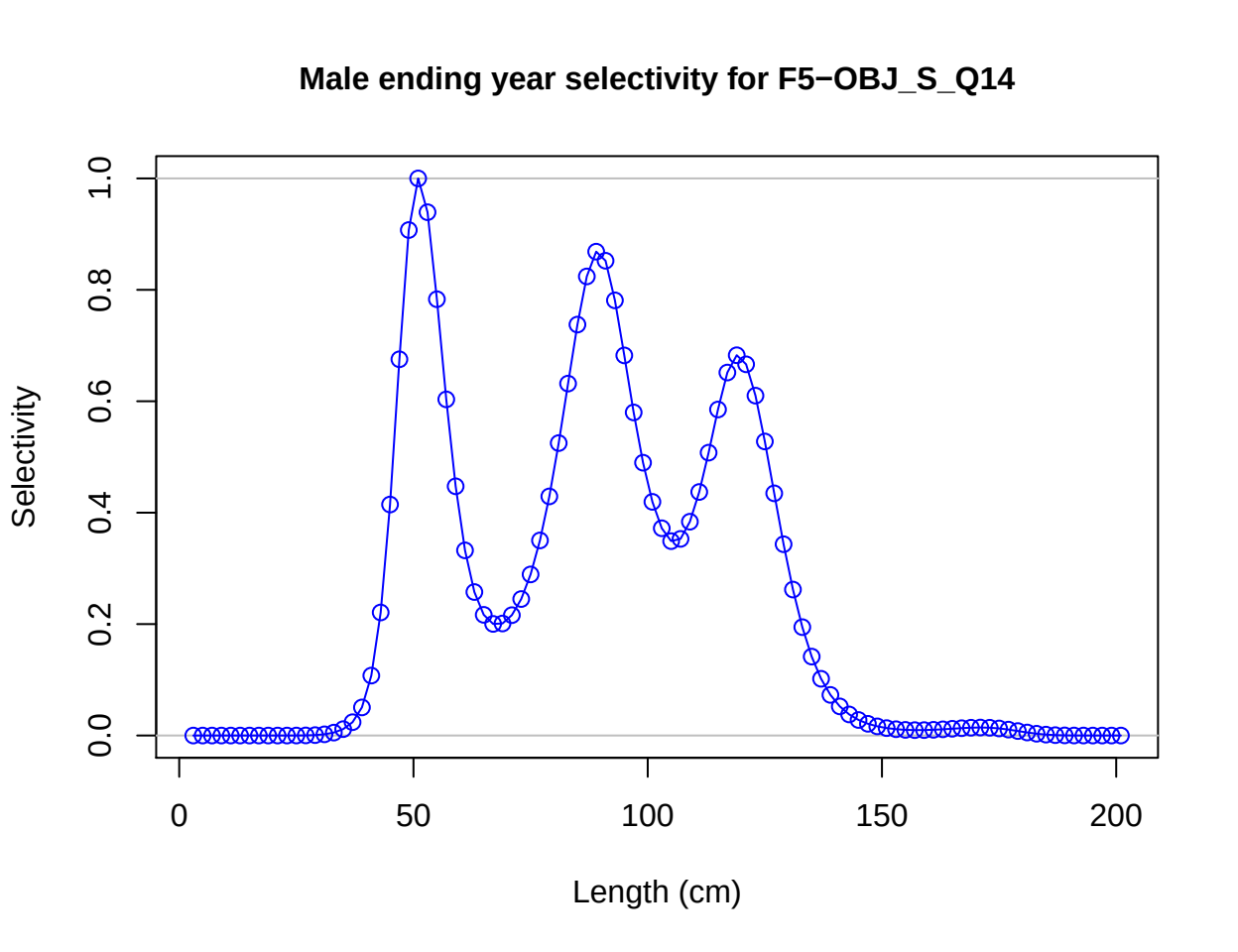

Female ending year selectivity for F3−OBJ_C_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

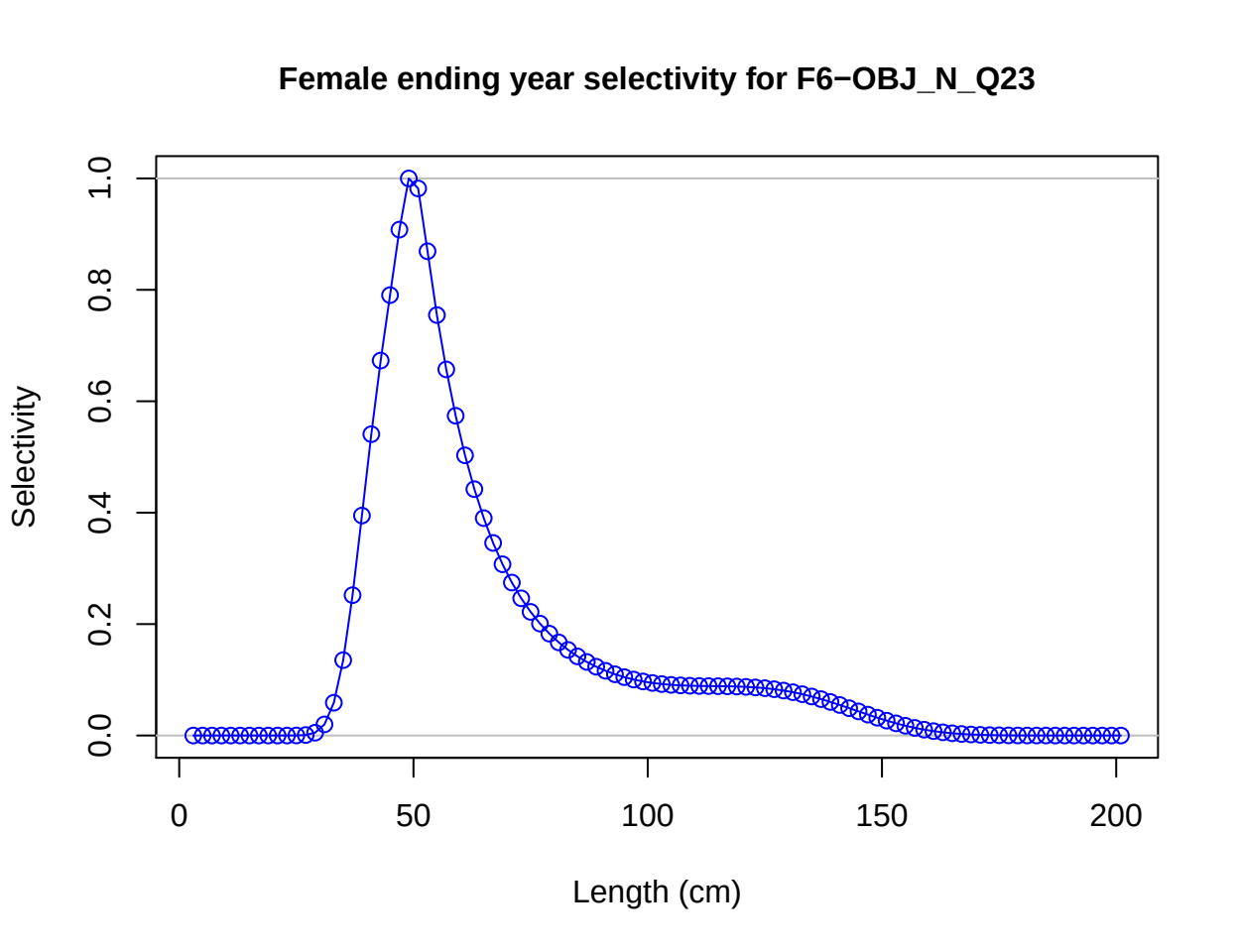

Male ending year selectivity for F3−OBJ_C_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

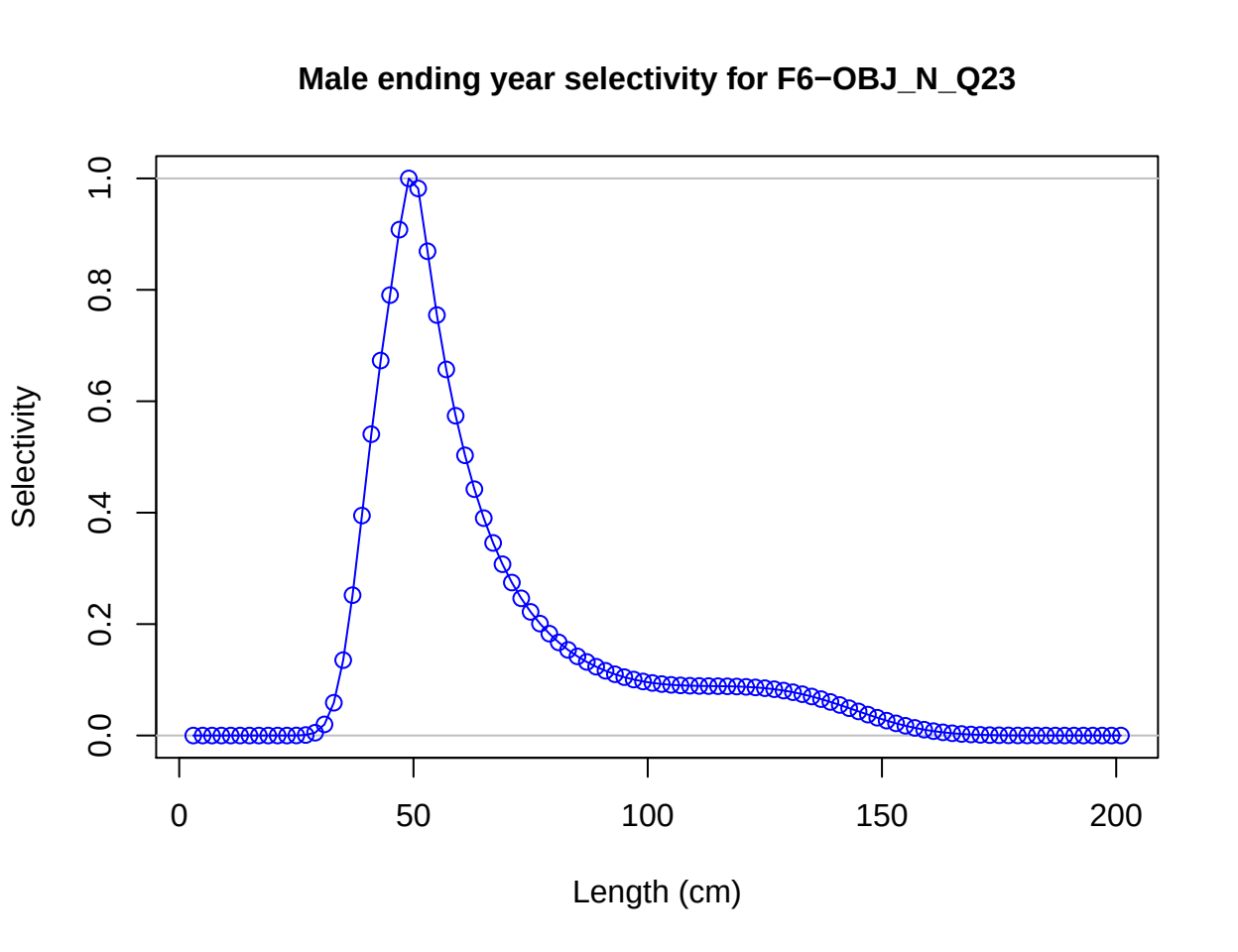

Female ending year selectivity for F4−OBJ_Cc_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

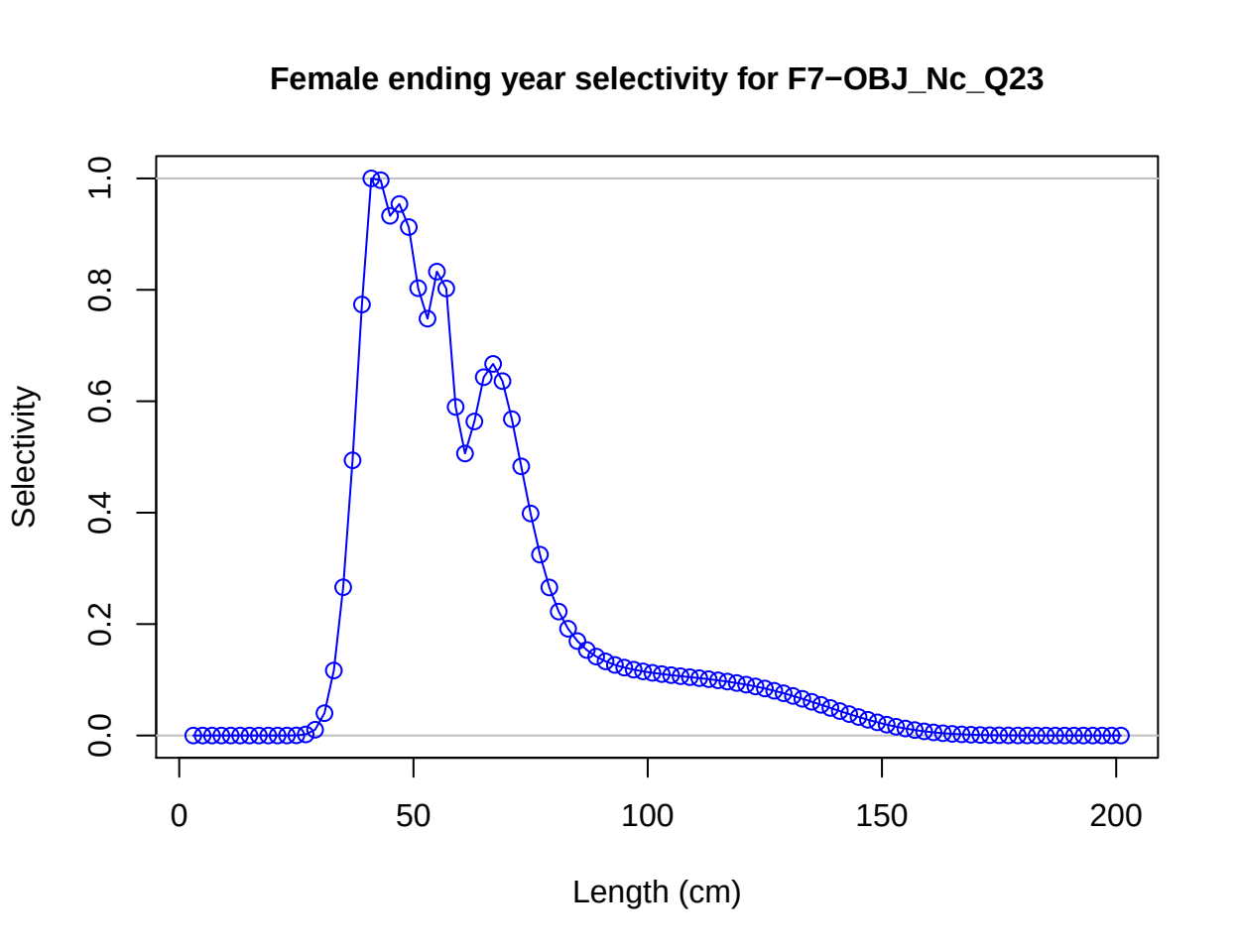

Male ending year selectivity for F4−OBJ_Cc_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

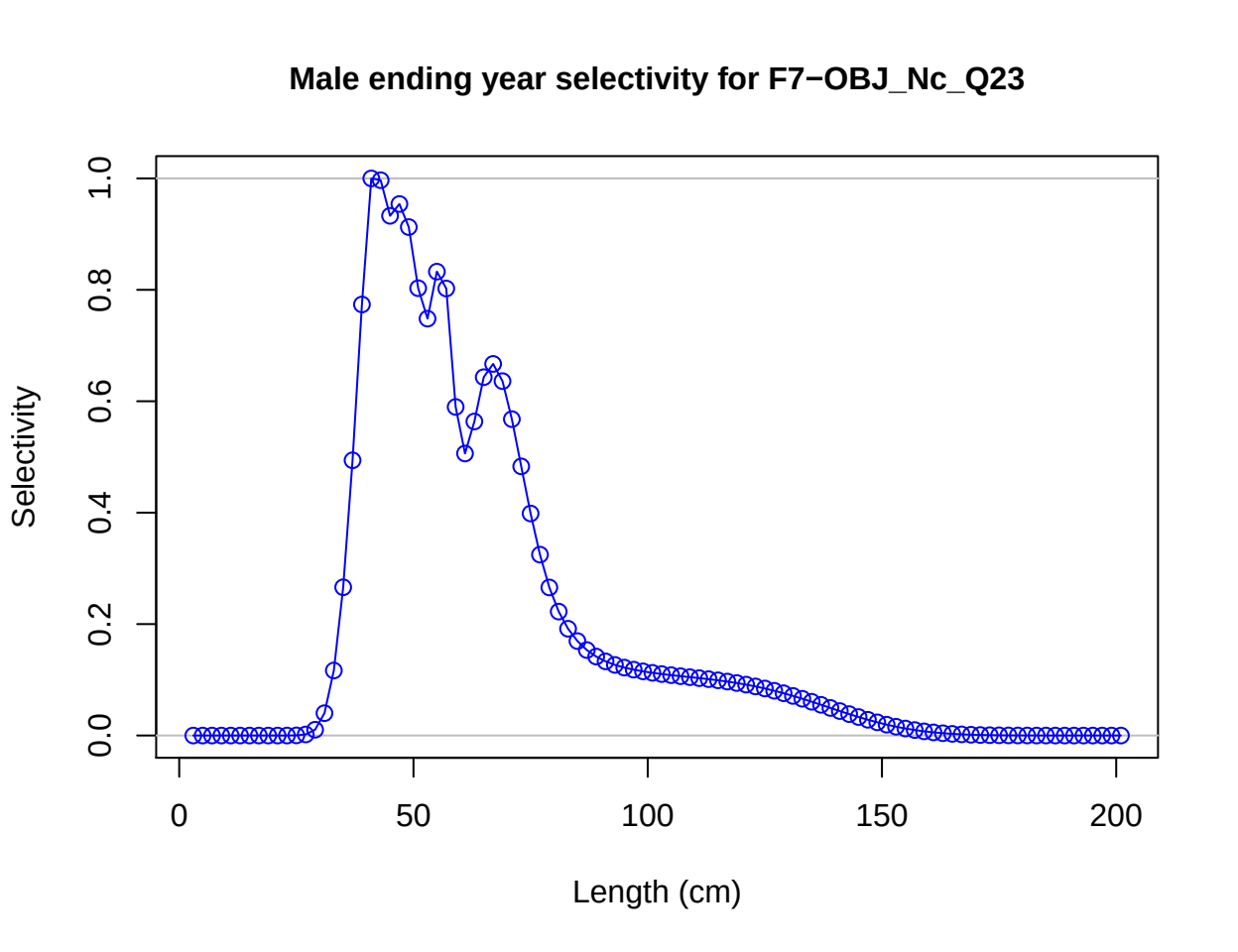

Female ending year selectivity for F5−OBJ_S_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

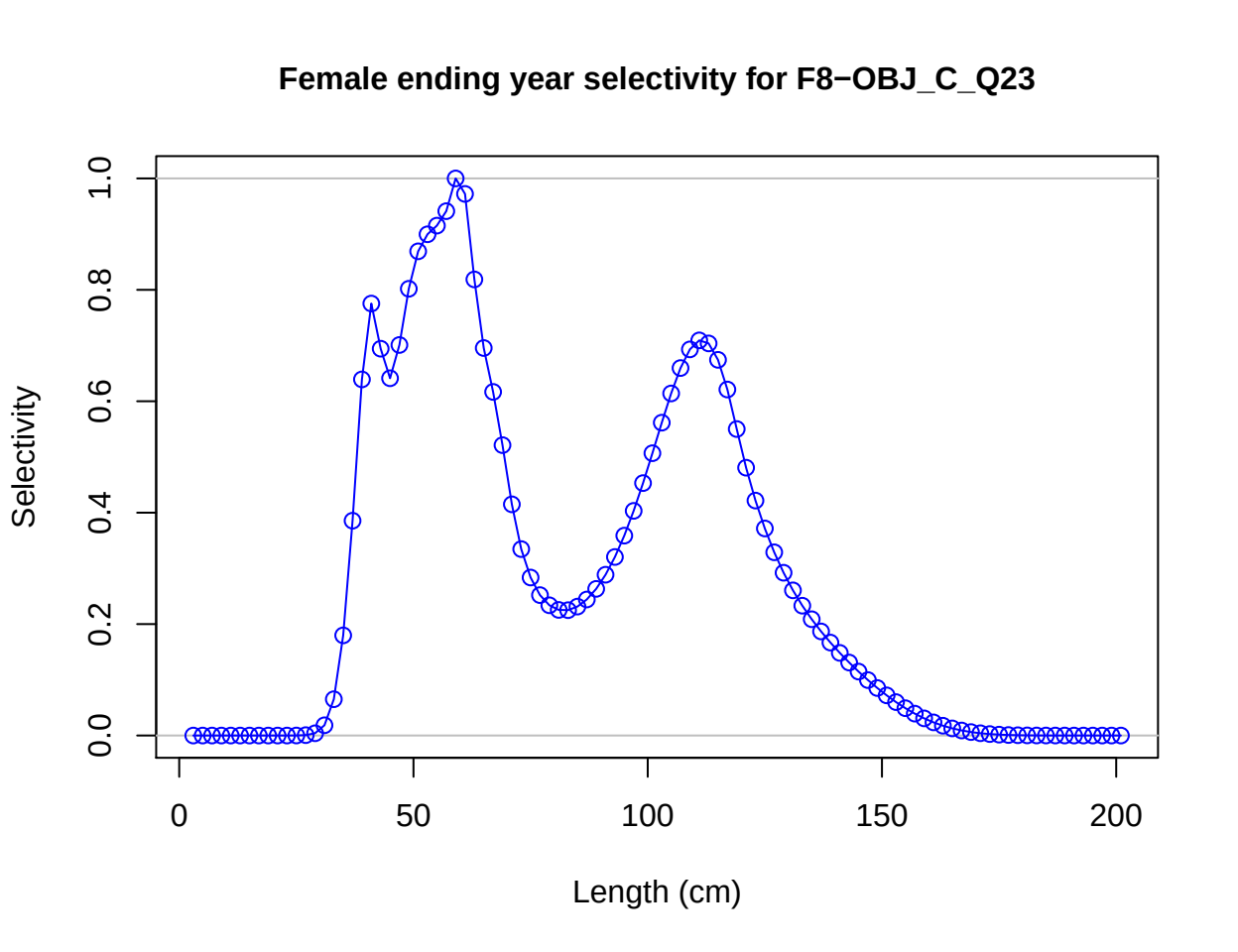

Male ending year selectivity for F5−OBJ_S_Q14
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

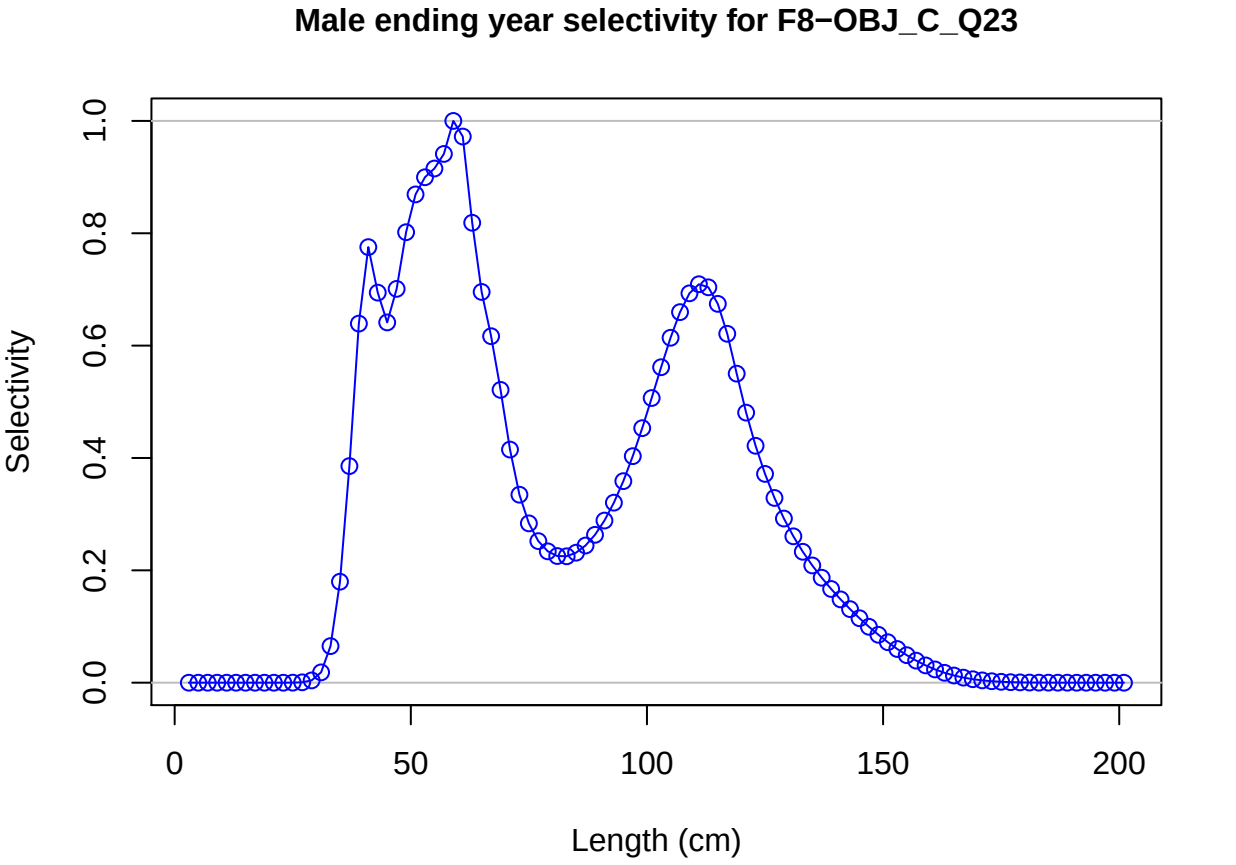

Female ending year selectivity for F6−OBJ_N_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

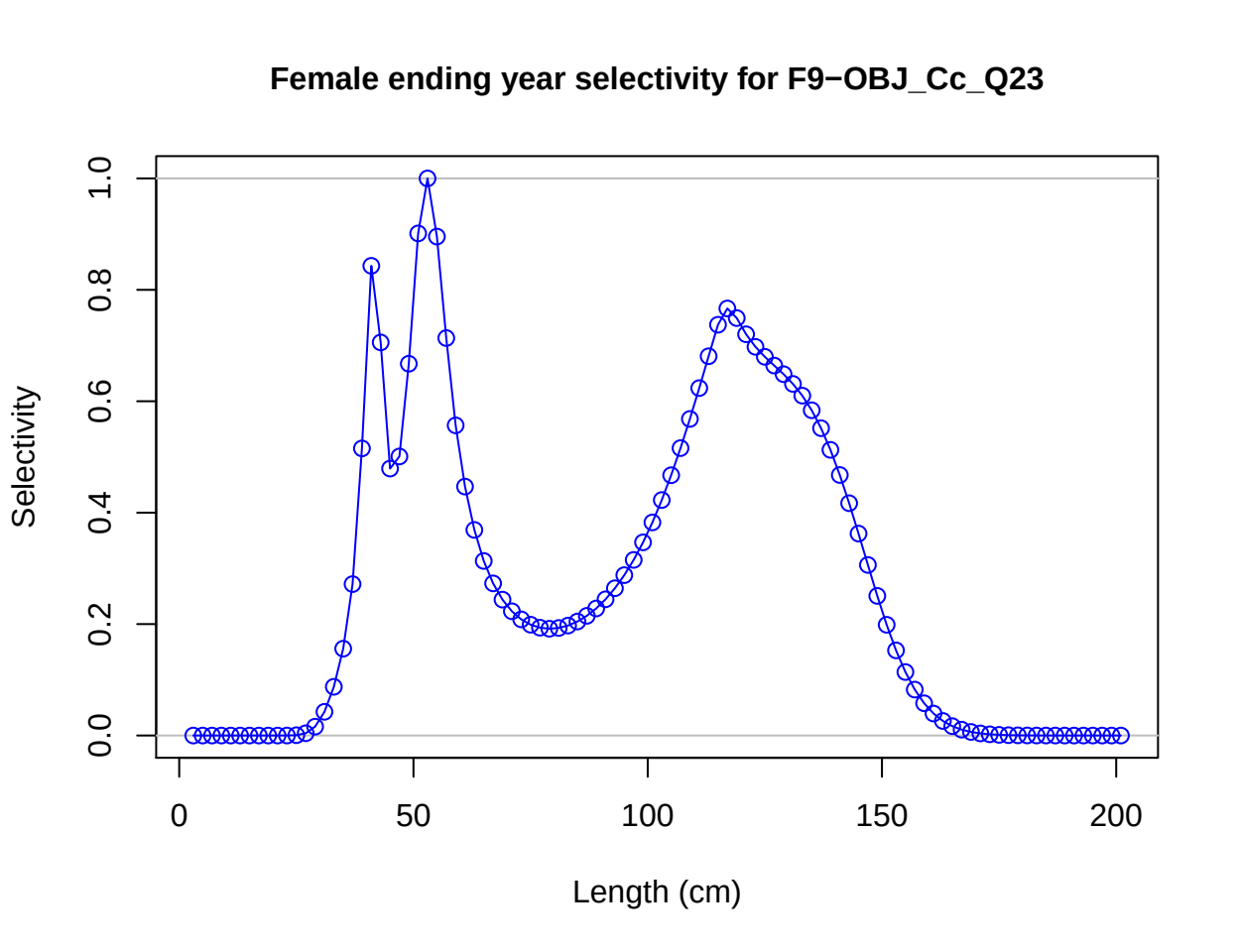

Male ending year selectivity for F6−OBJ_N_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

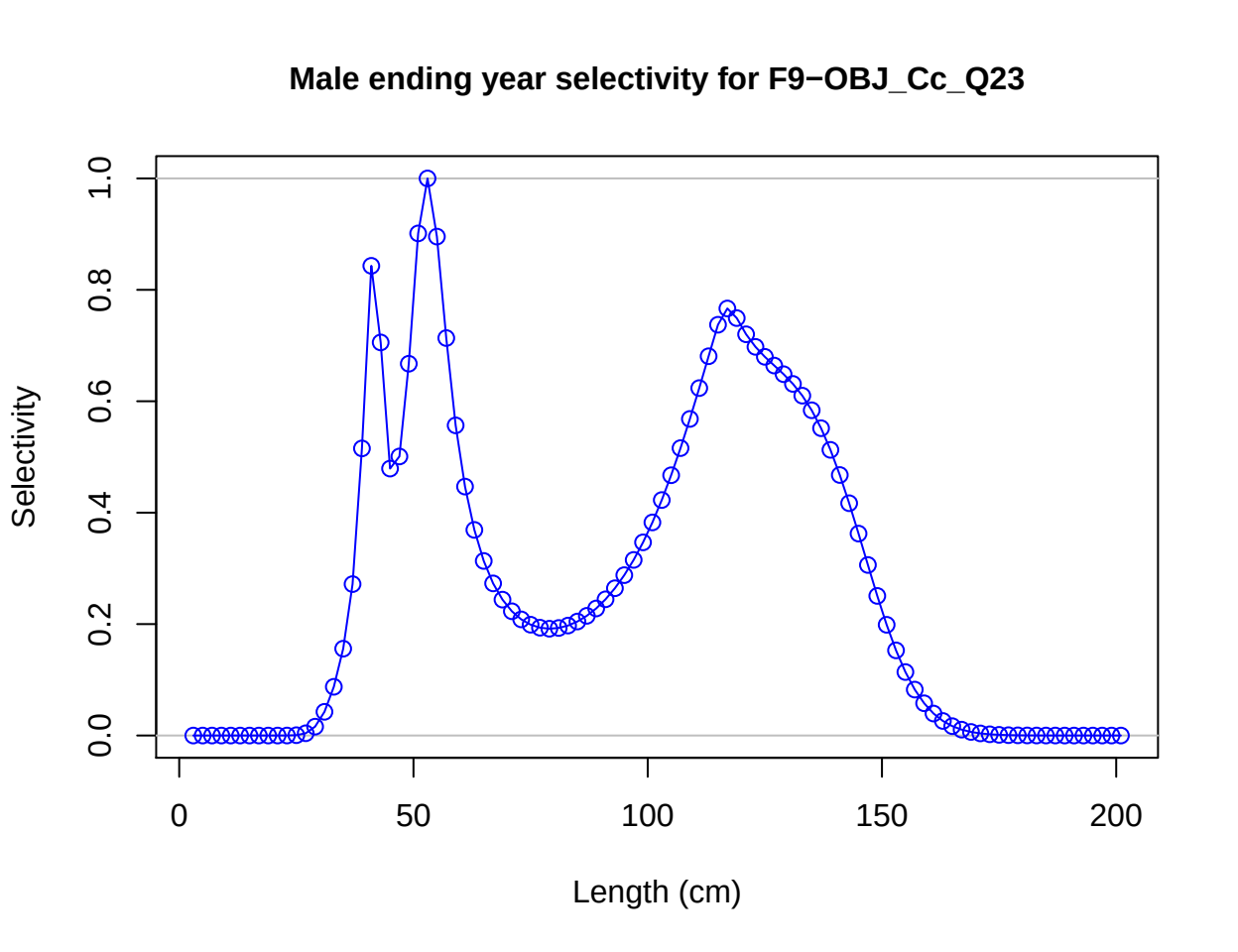

Female ending year selectivity for F7−OBJ_Nc_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

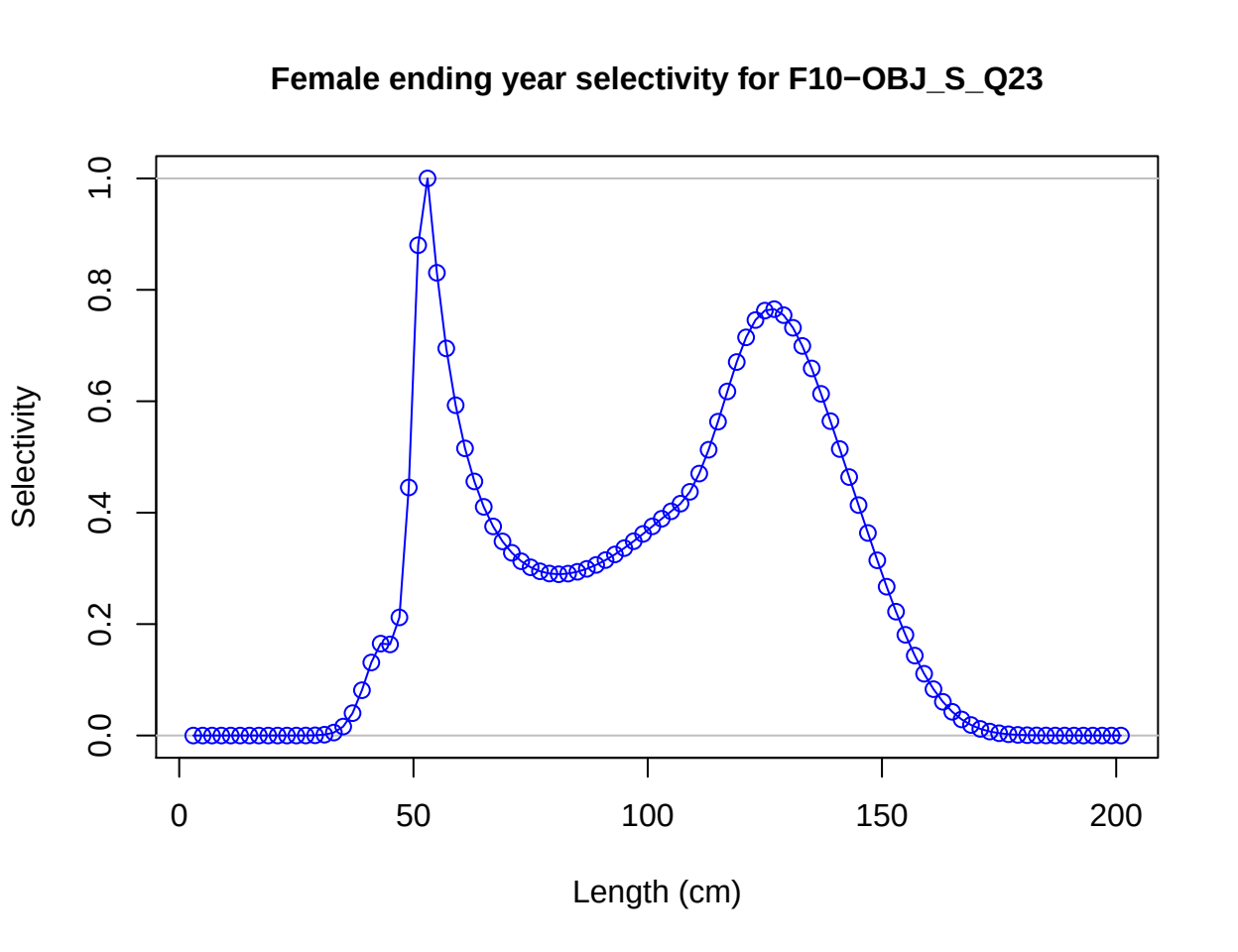

Male ending year selectivity for F7−OBJ_Nc_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

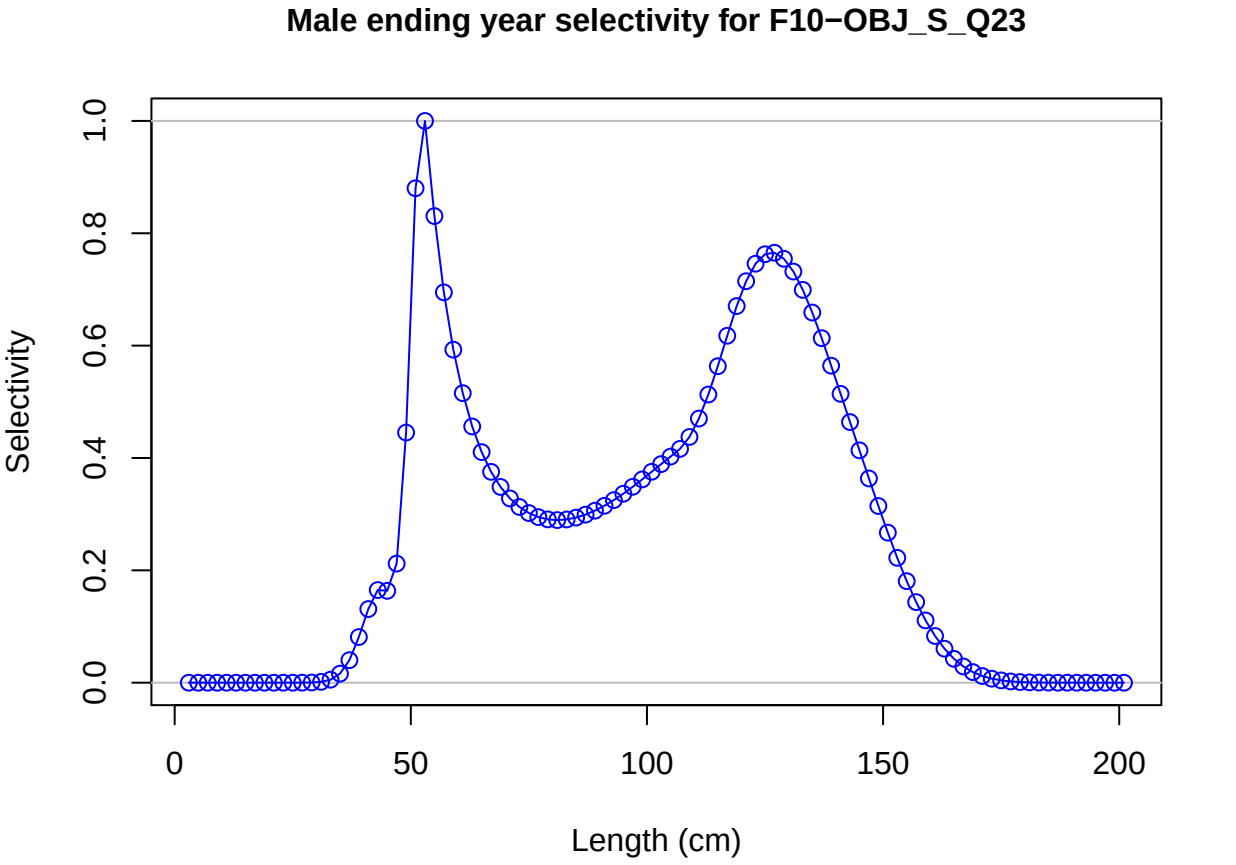

Female ending year selectivity for F8−OBJ_C_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

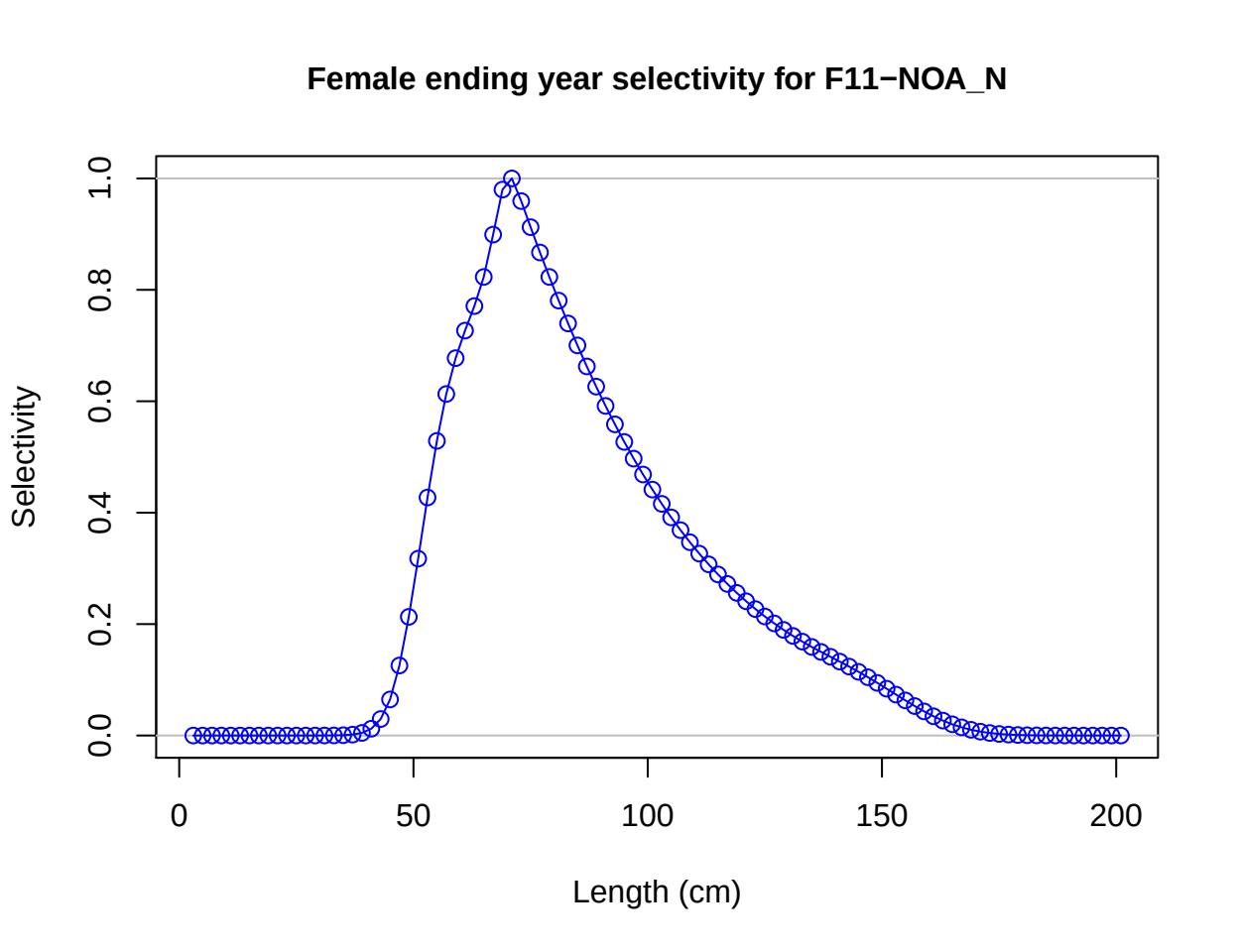

Male ending year selectivity for F8−OBJ_C_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

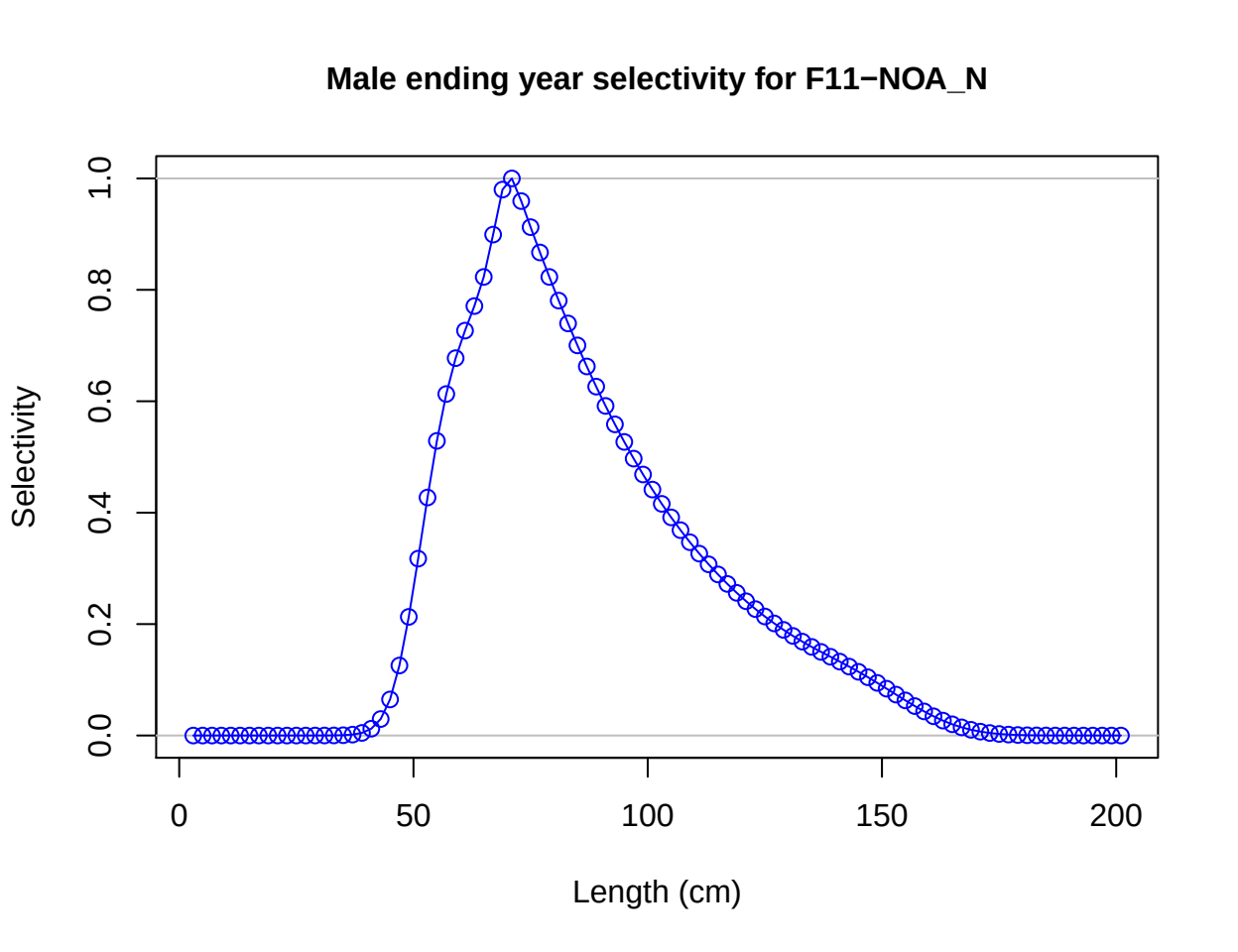

Female ending year selectivity for F9−OBJ_Cc_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

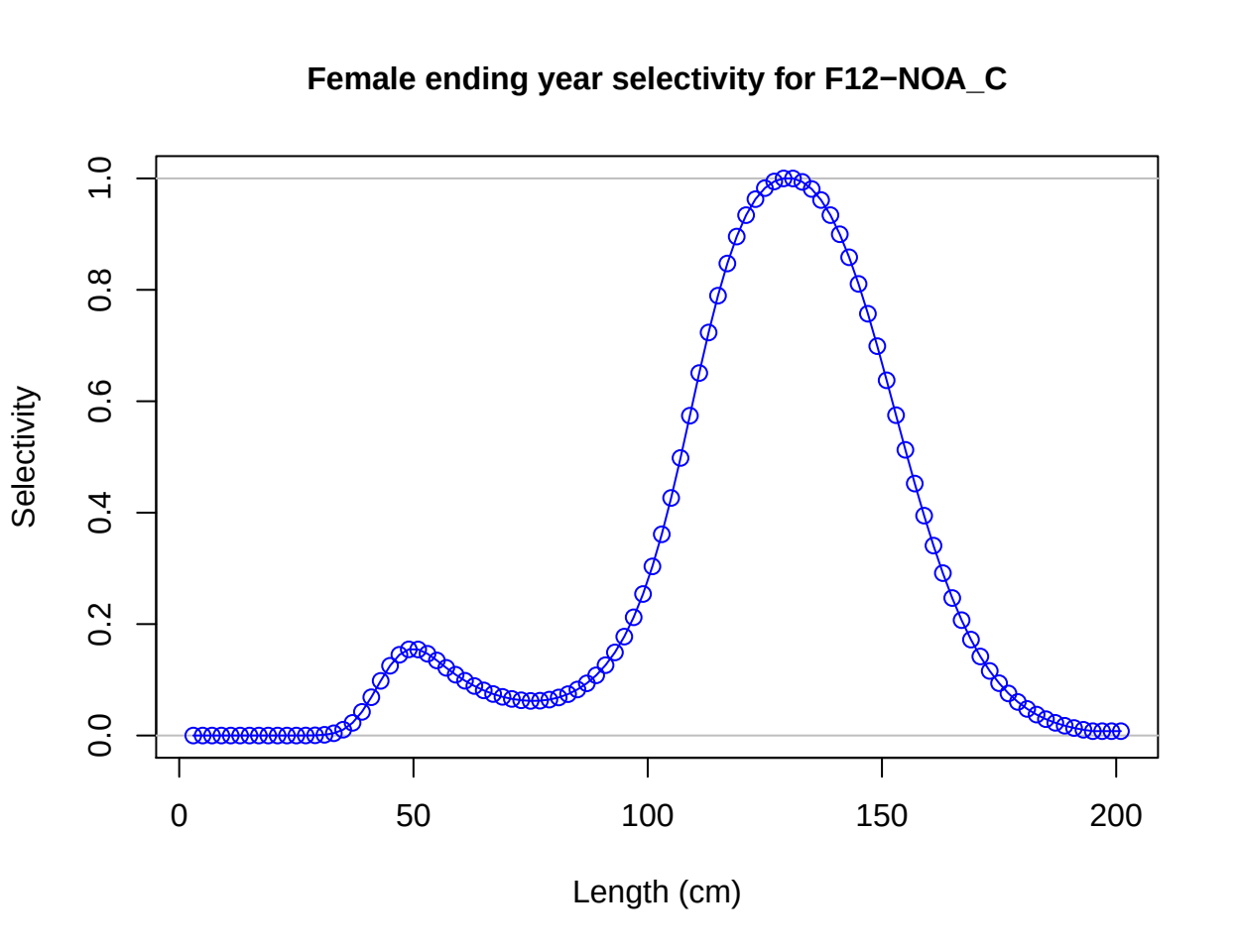

Male ending year selectivity for F9−OBJ_Cc_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

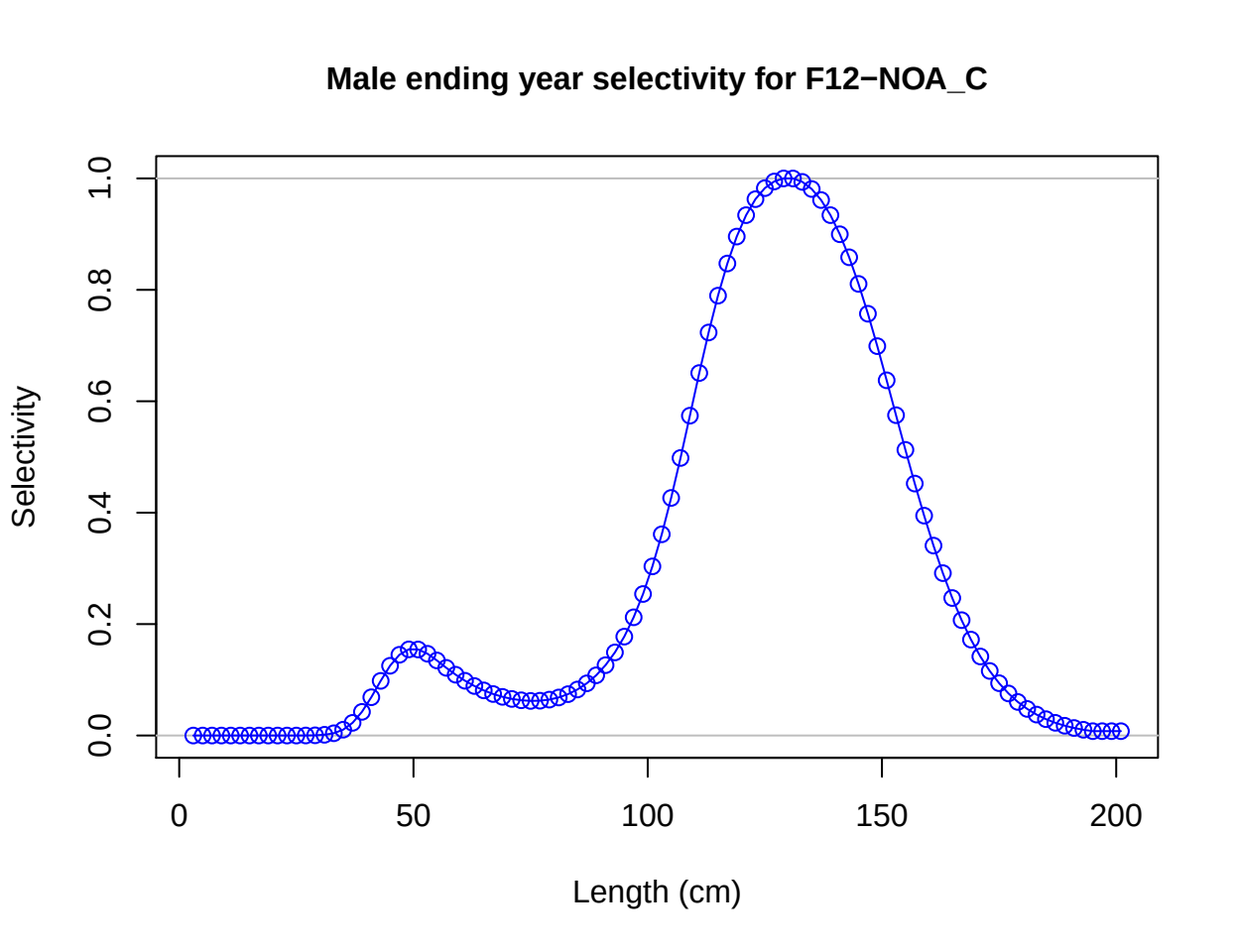

Female ending year selectivity for F10−OBJ_S_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

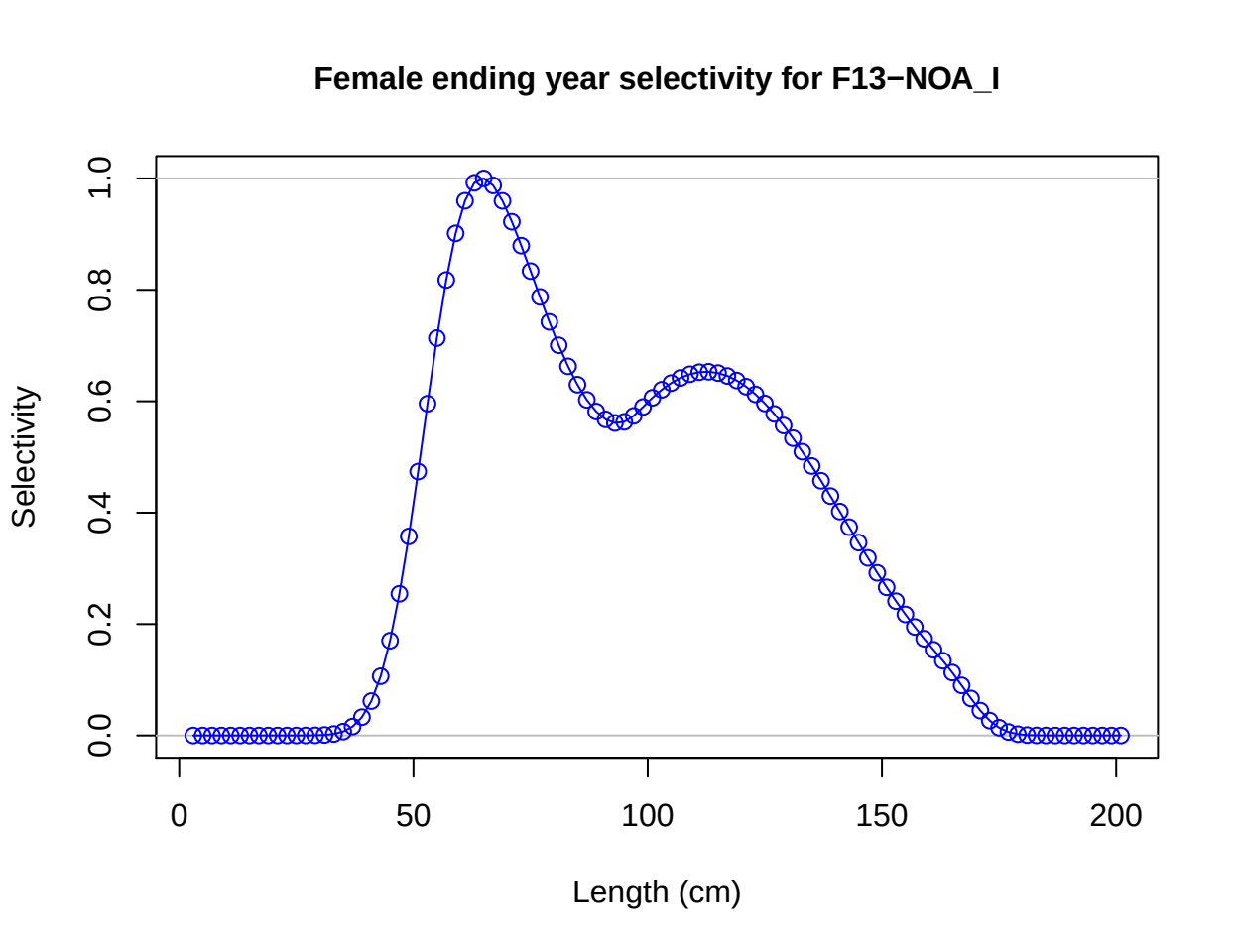

Male ending year selectivity for F10−OBJ_S_Q23
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

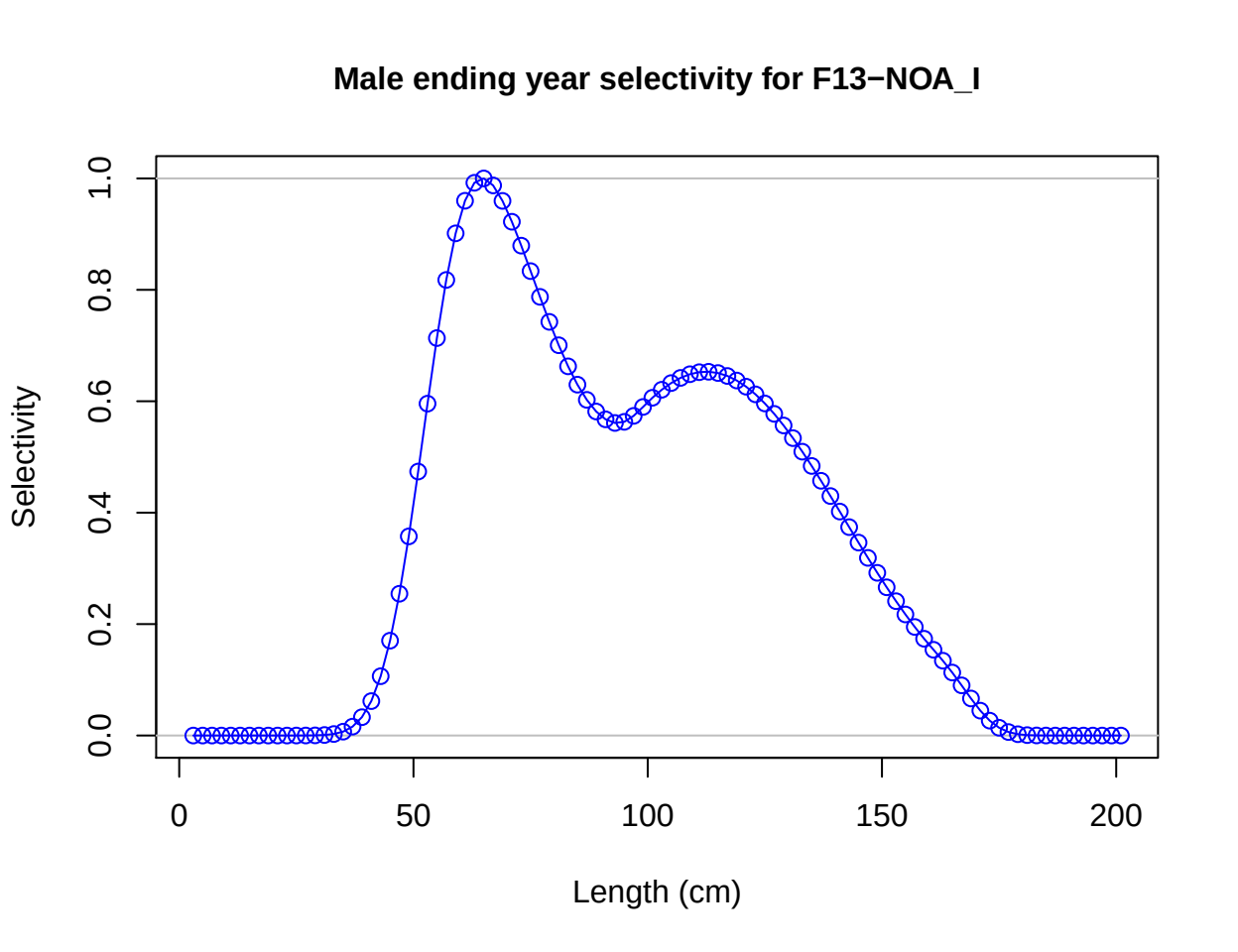

Female ending year selectivity for F11−NOA_N
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

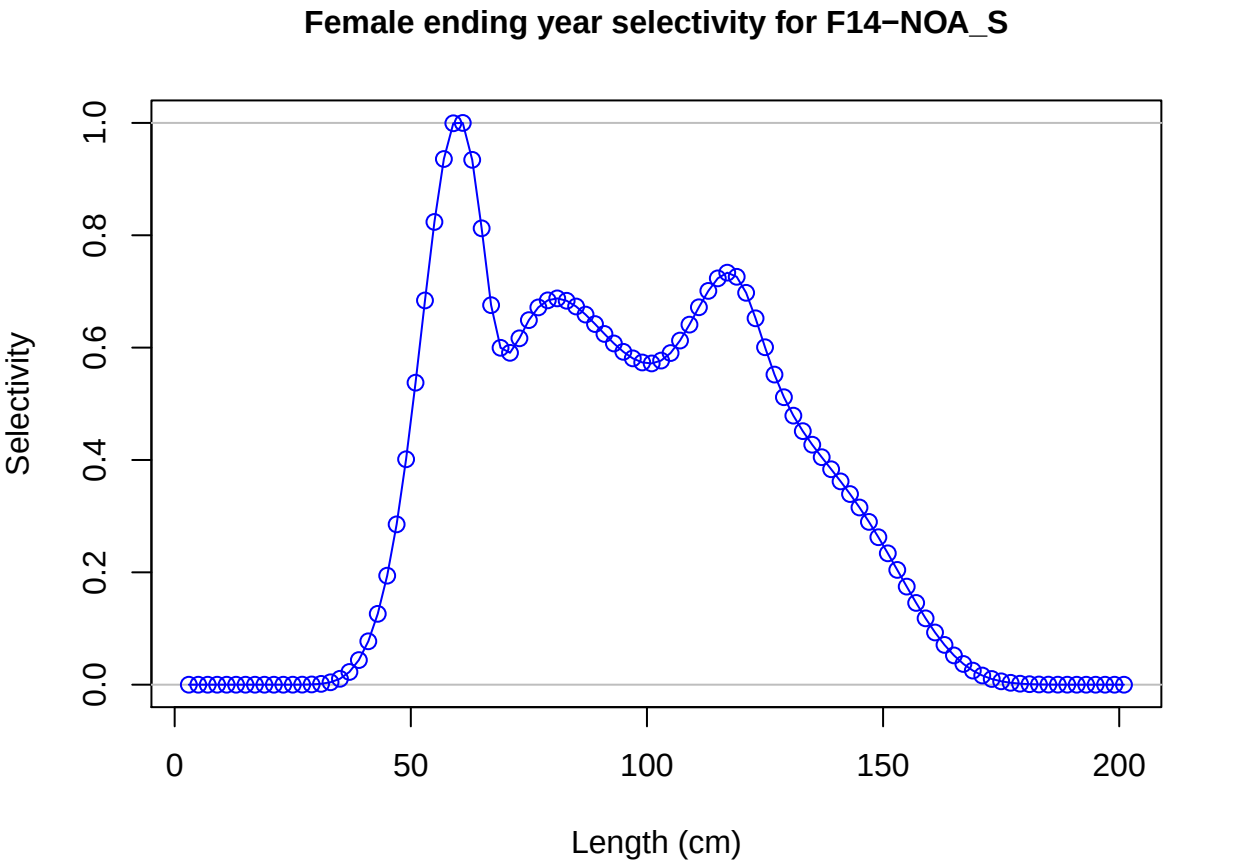

Male ending year selectivity for F11−NOA_N
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

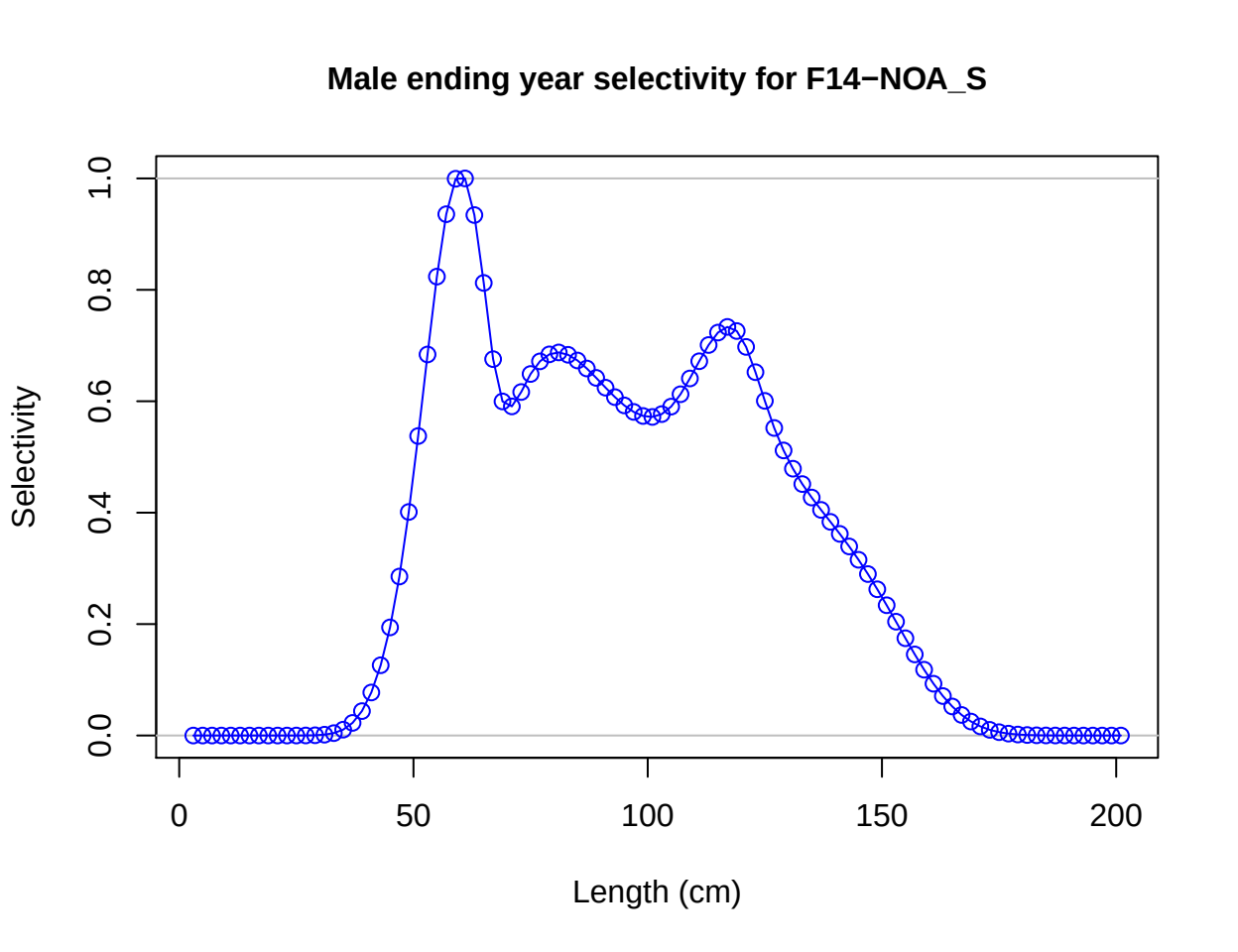

Female ending year selectivity for F12−NOA_C
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

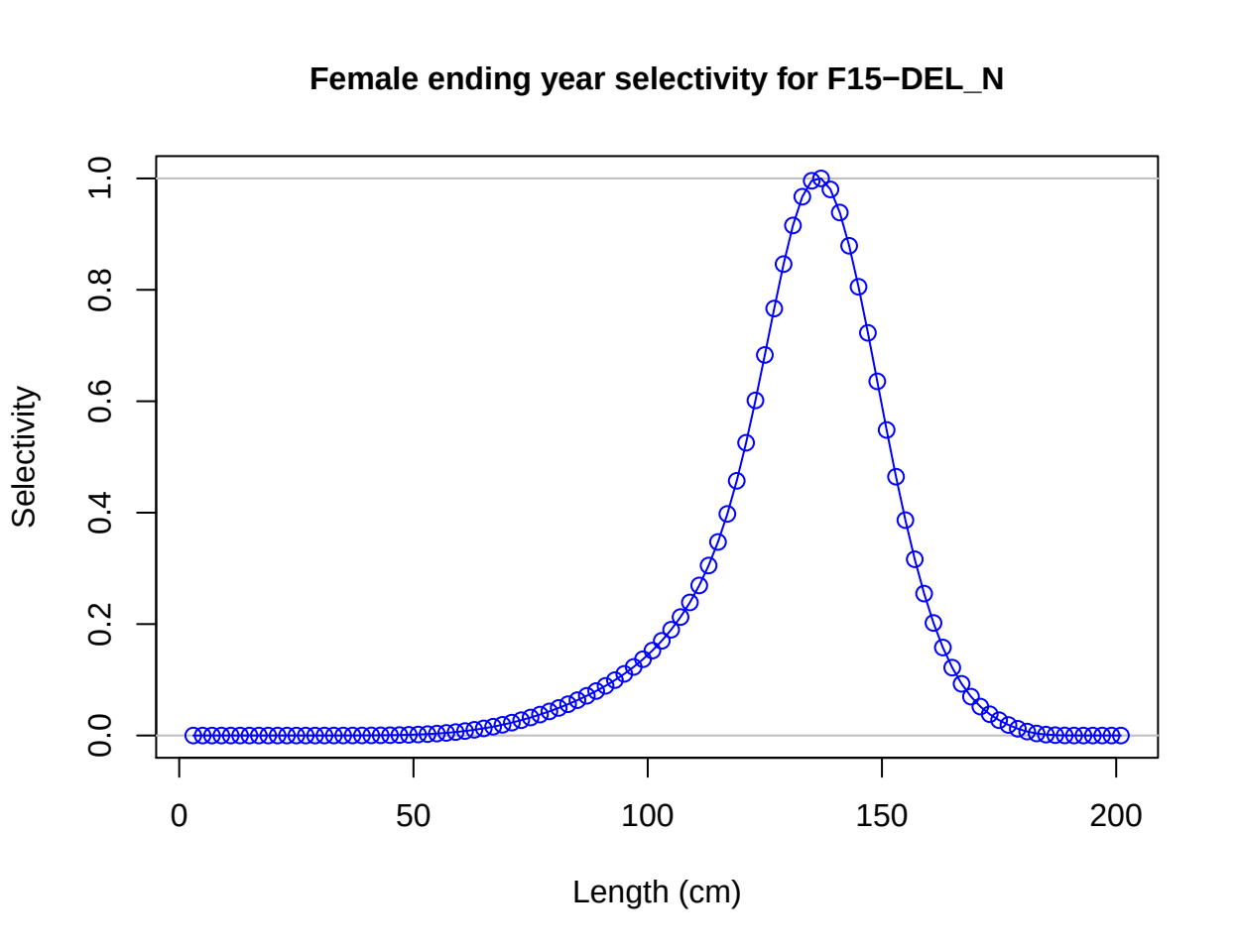

Male ending year selectivity for F12−NOA_C
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

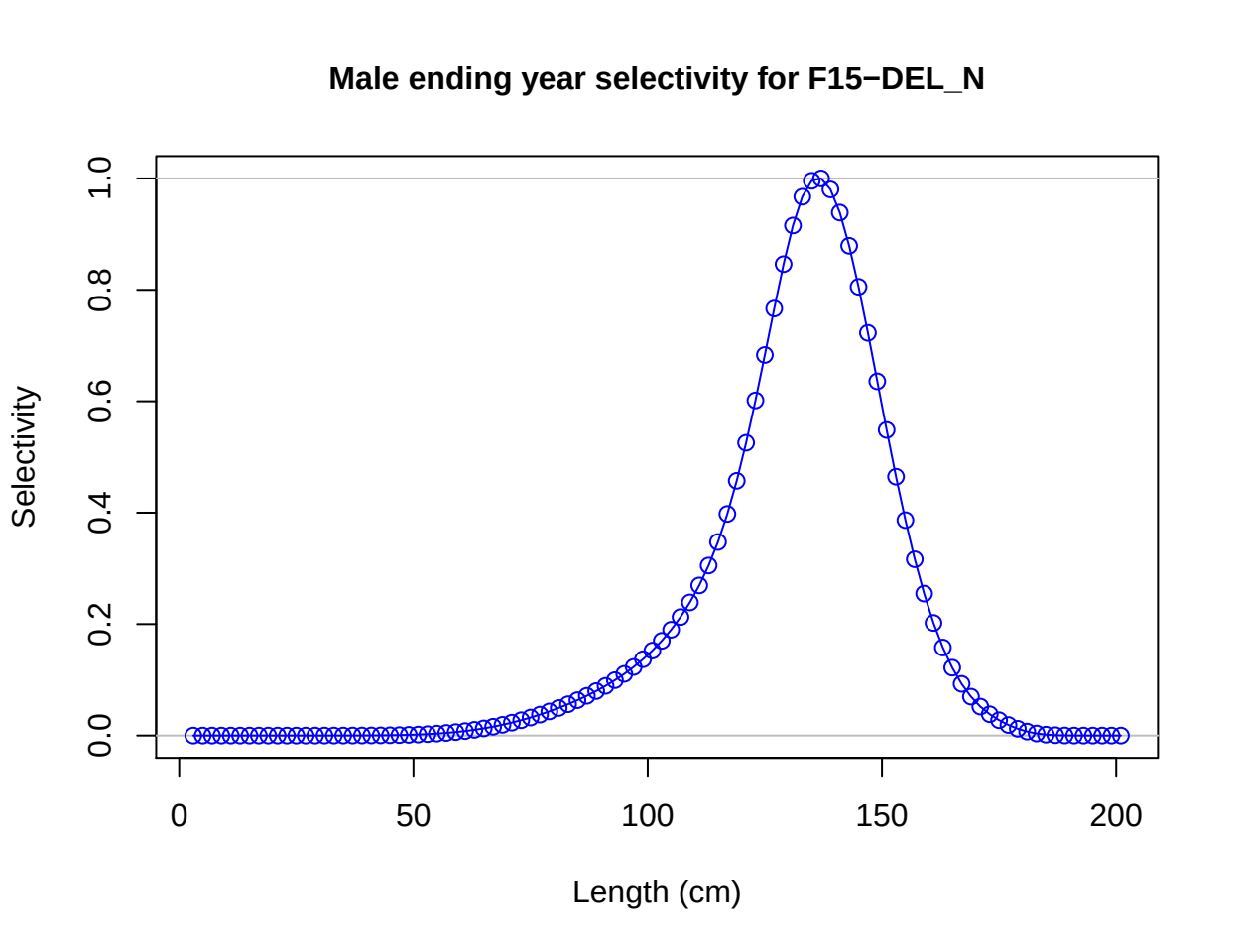

Female ending year selectivity for F13−NOA_I
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

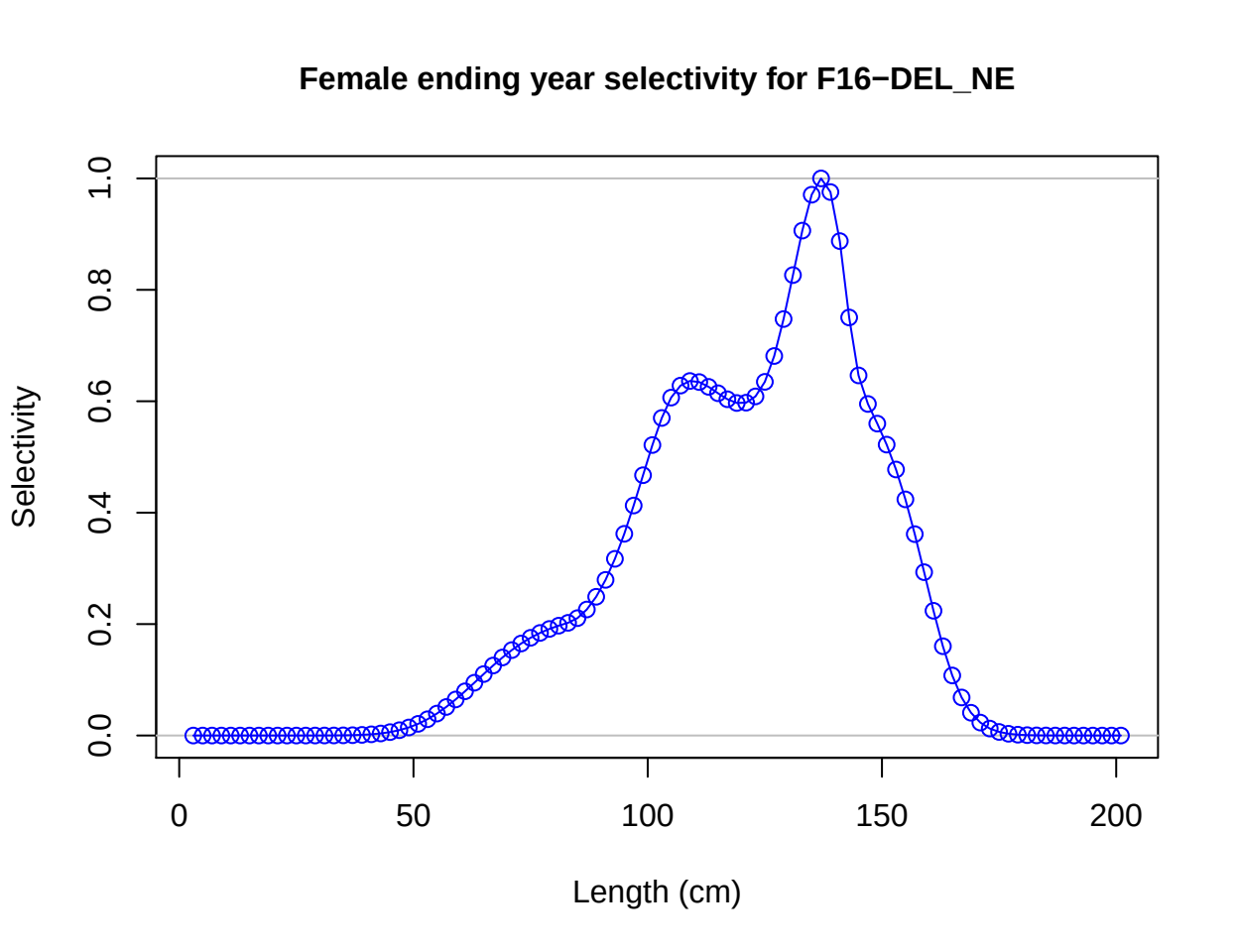

Male ending year selectivity for F13−NOA_I
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

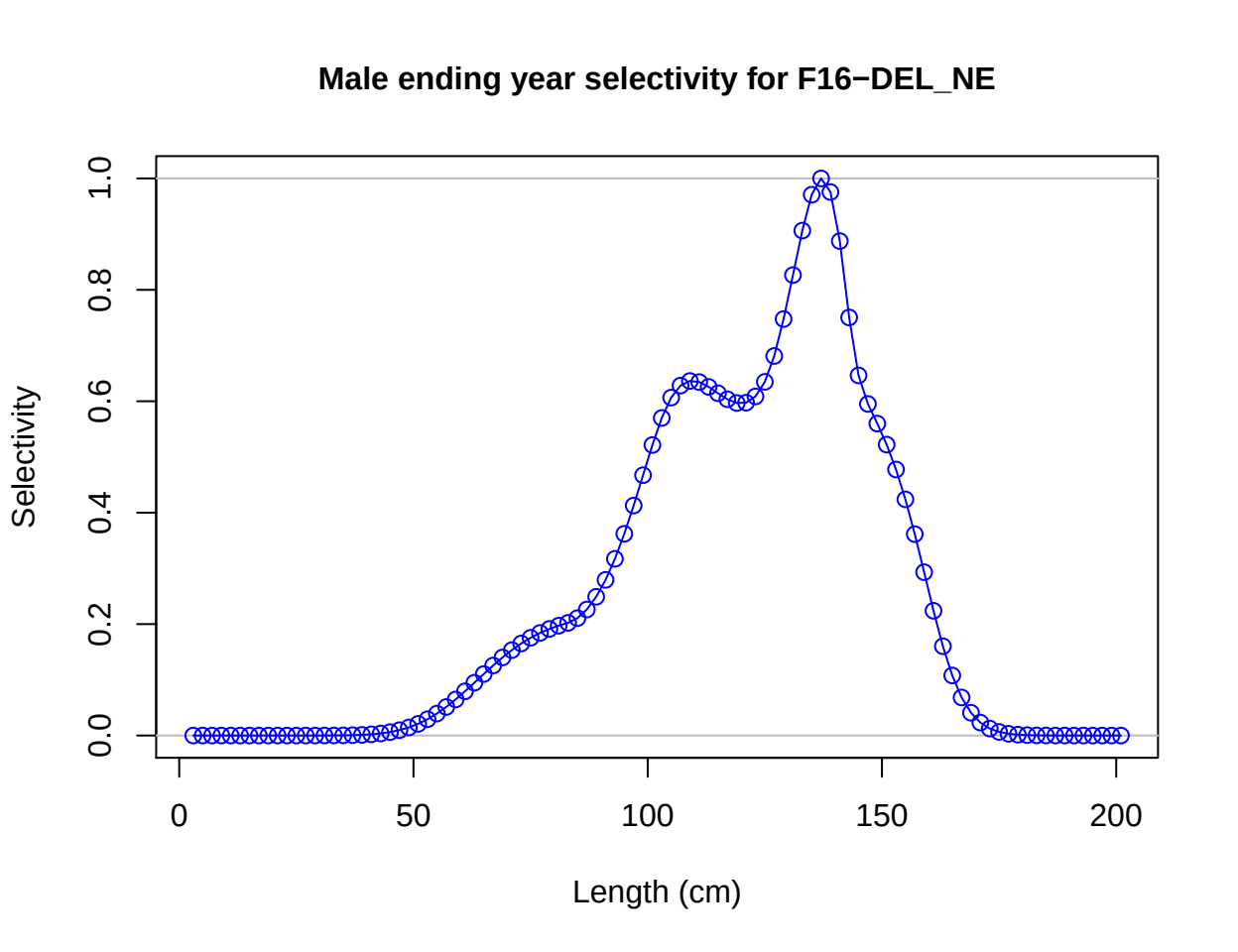

Female ending year selectivity for F14−NOA_S
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

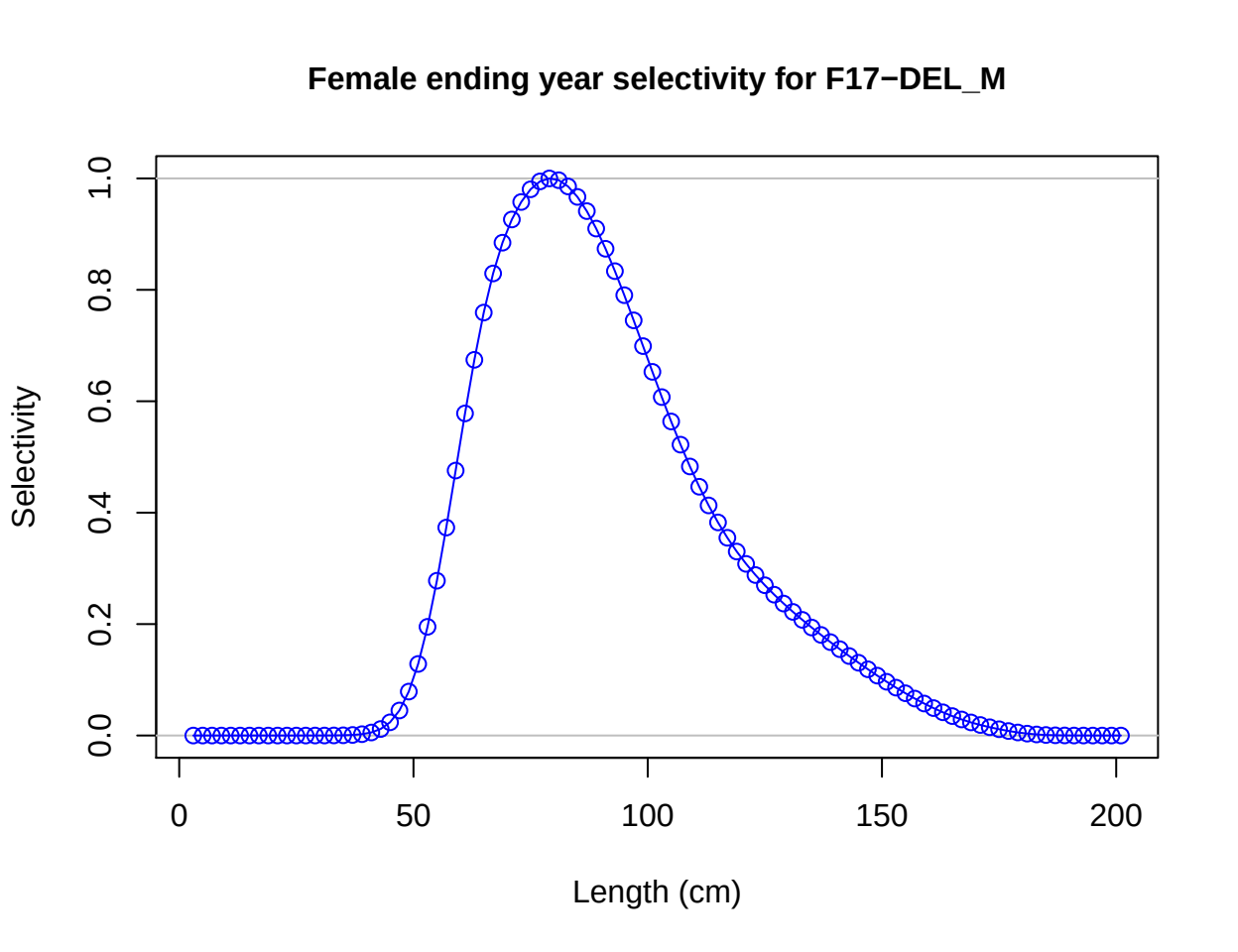

Male ending year selectivity for F14−NOA_S
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

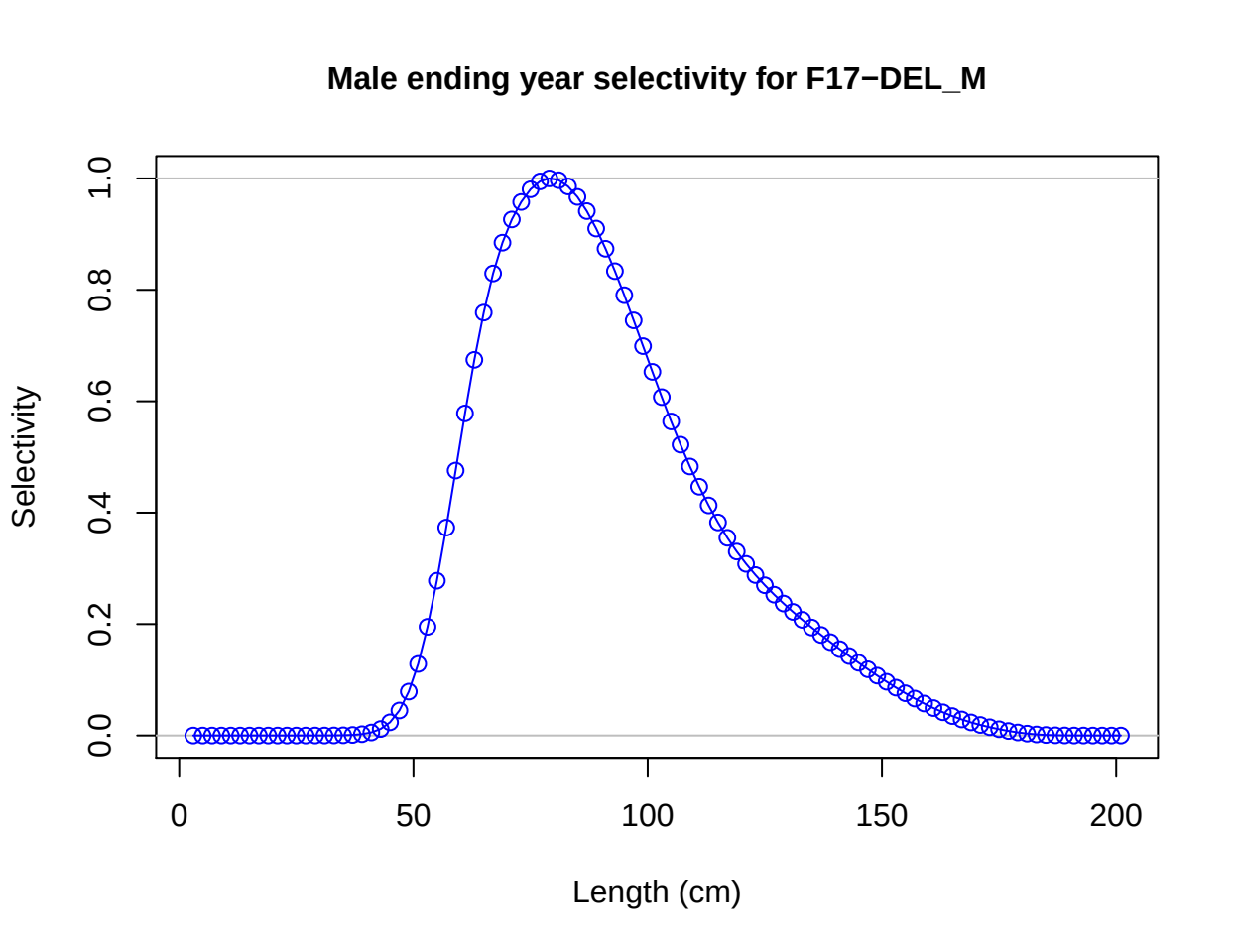

Female ending year selectivity for F15−DEL_N
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

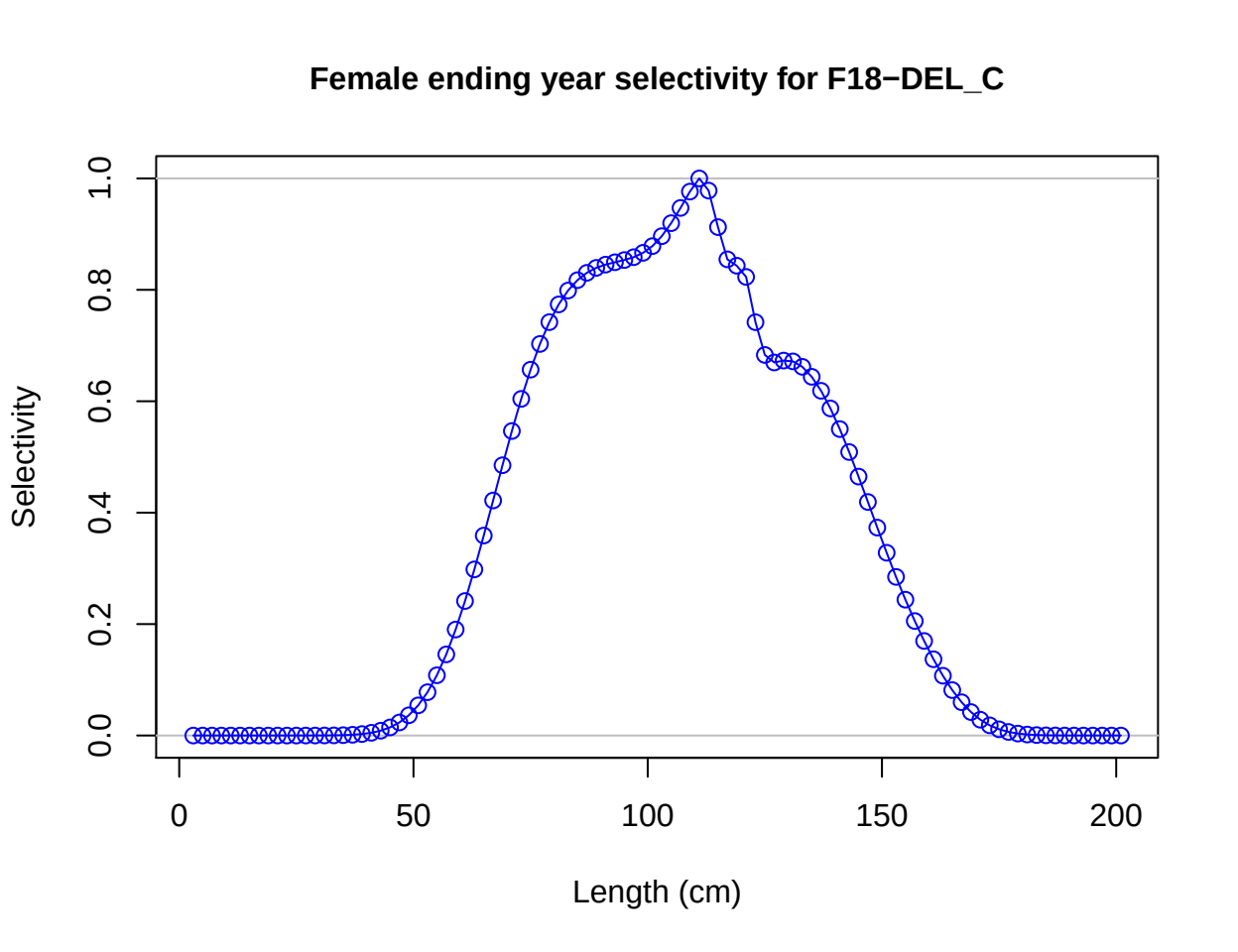

Male ending year selectivity for F15−DEL_N
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

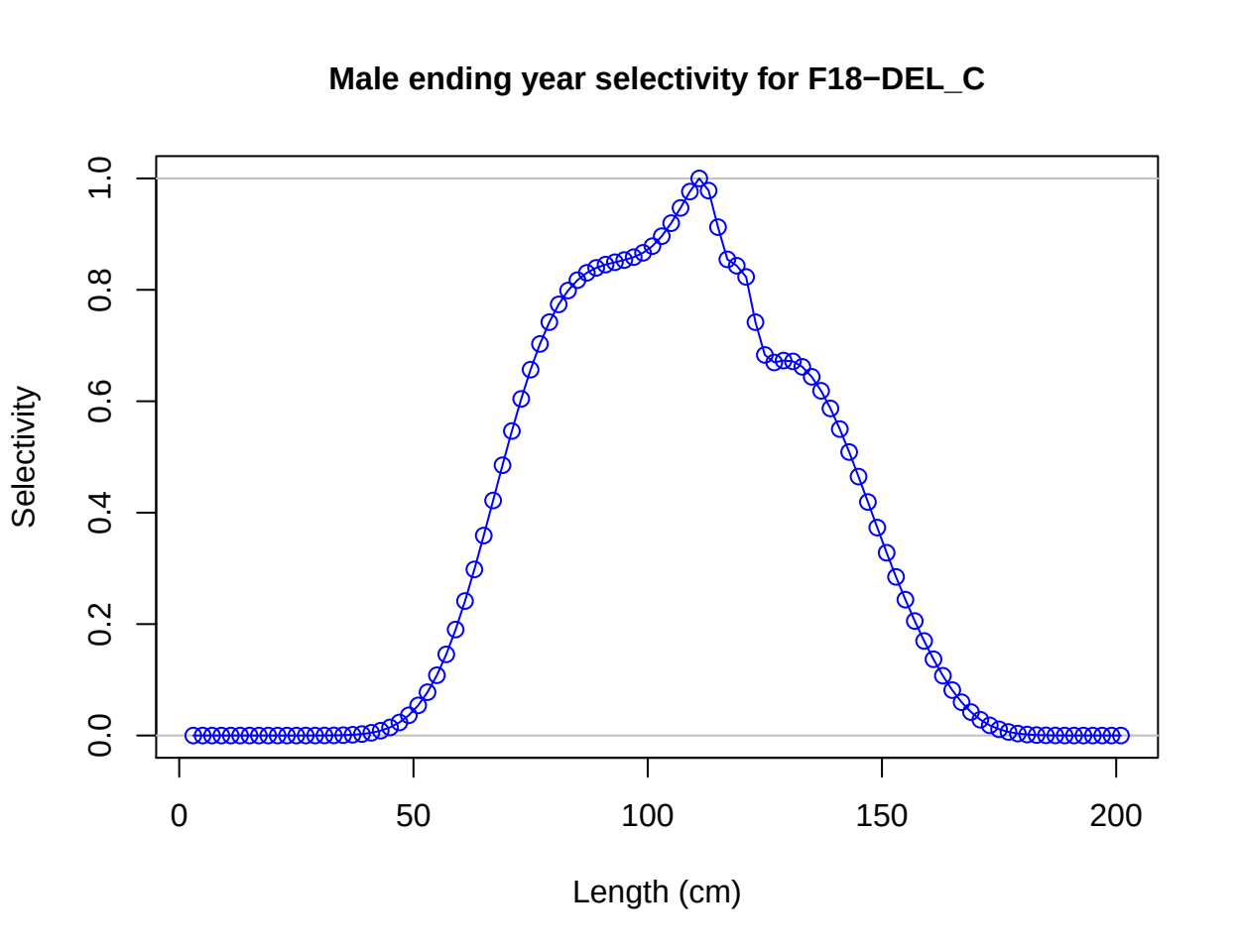

Female ending year selectivity for F16−DEL_NE
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

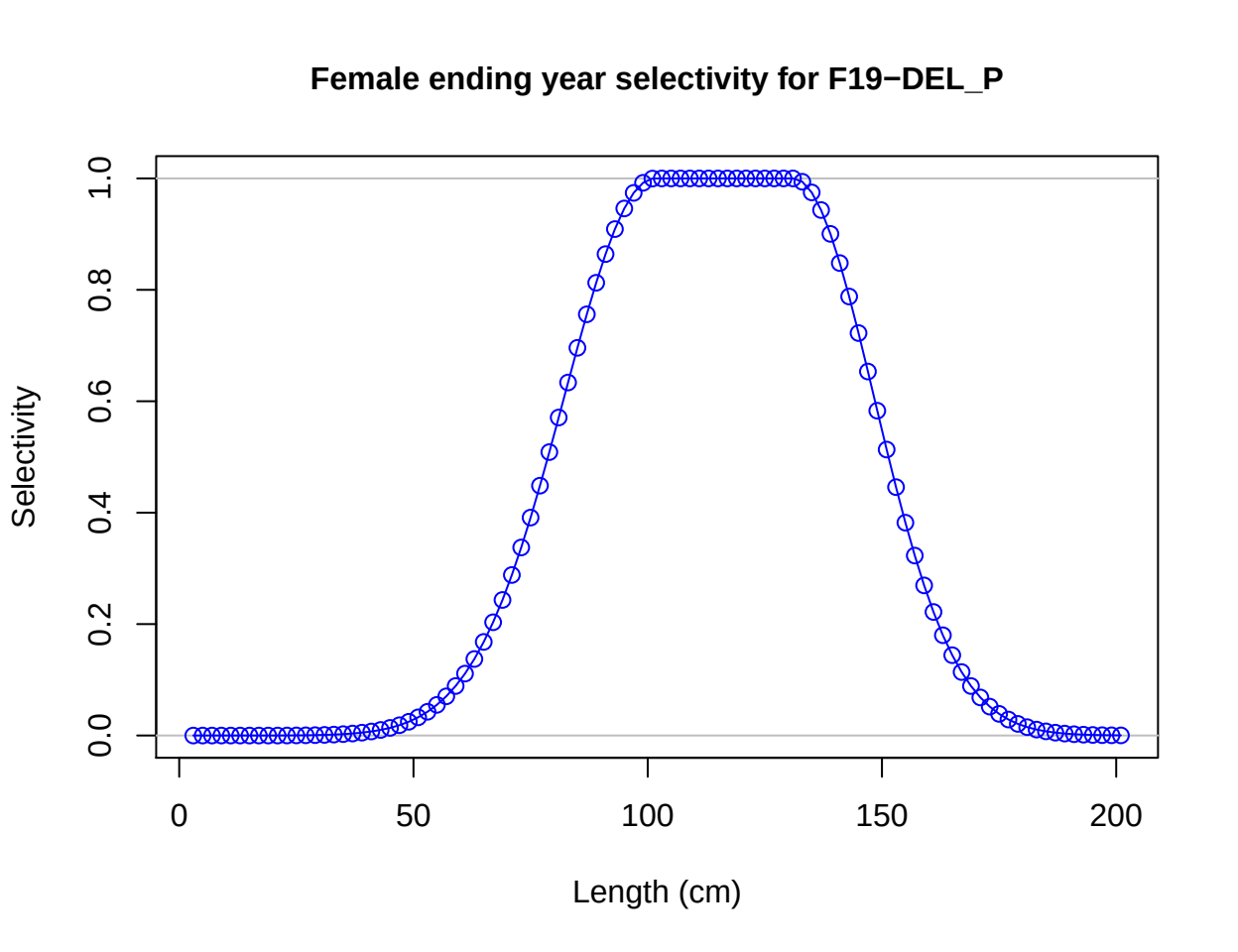

Male ending year selectivity for F16−DEL_NE
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

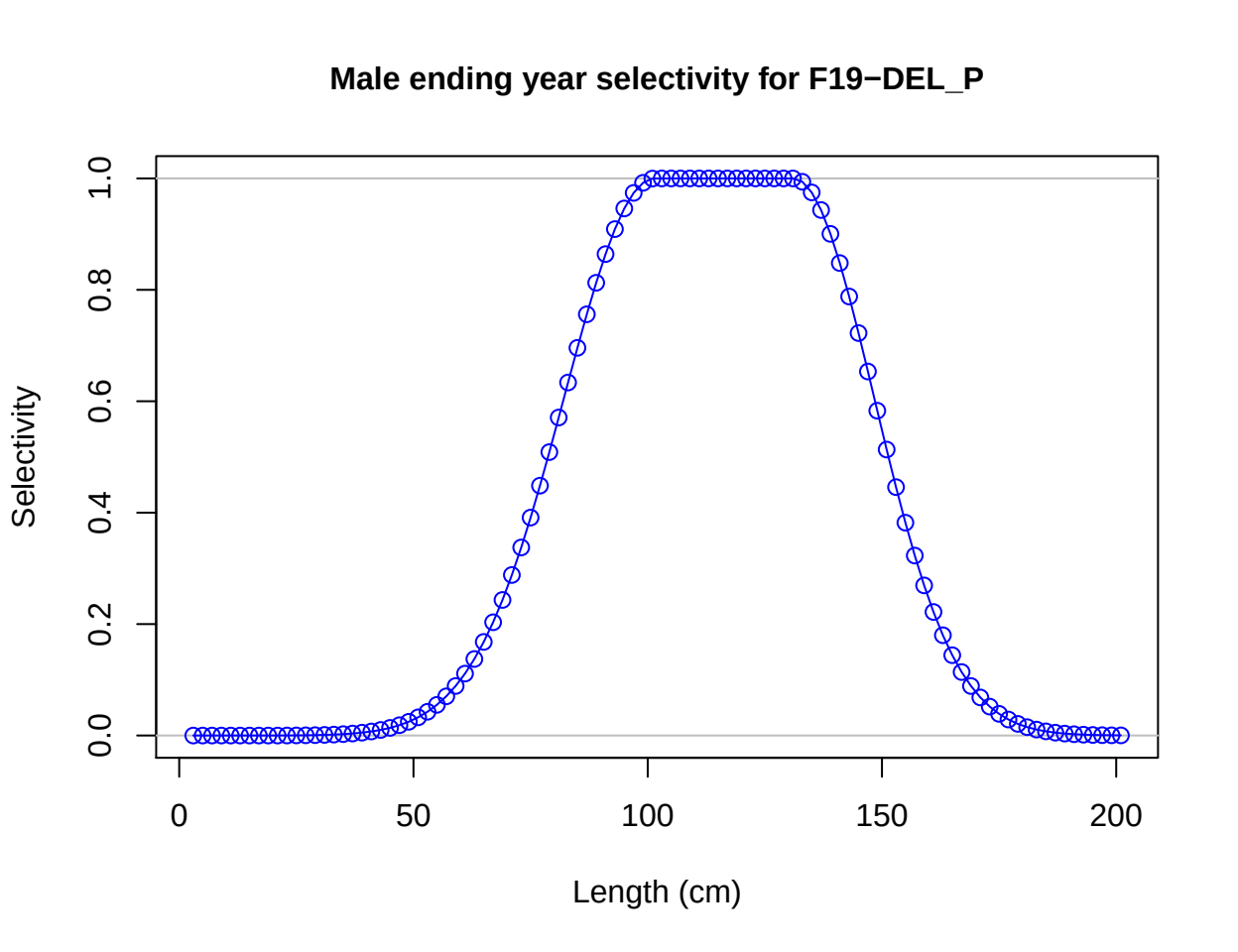

Female ending year selectivity for F17−DEL_M
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

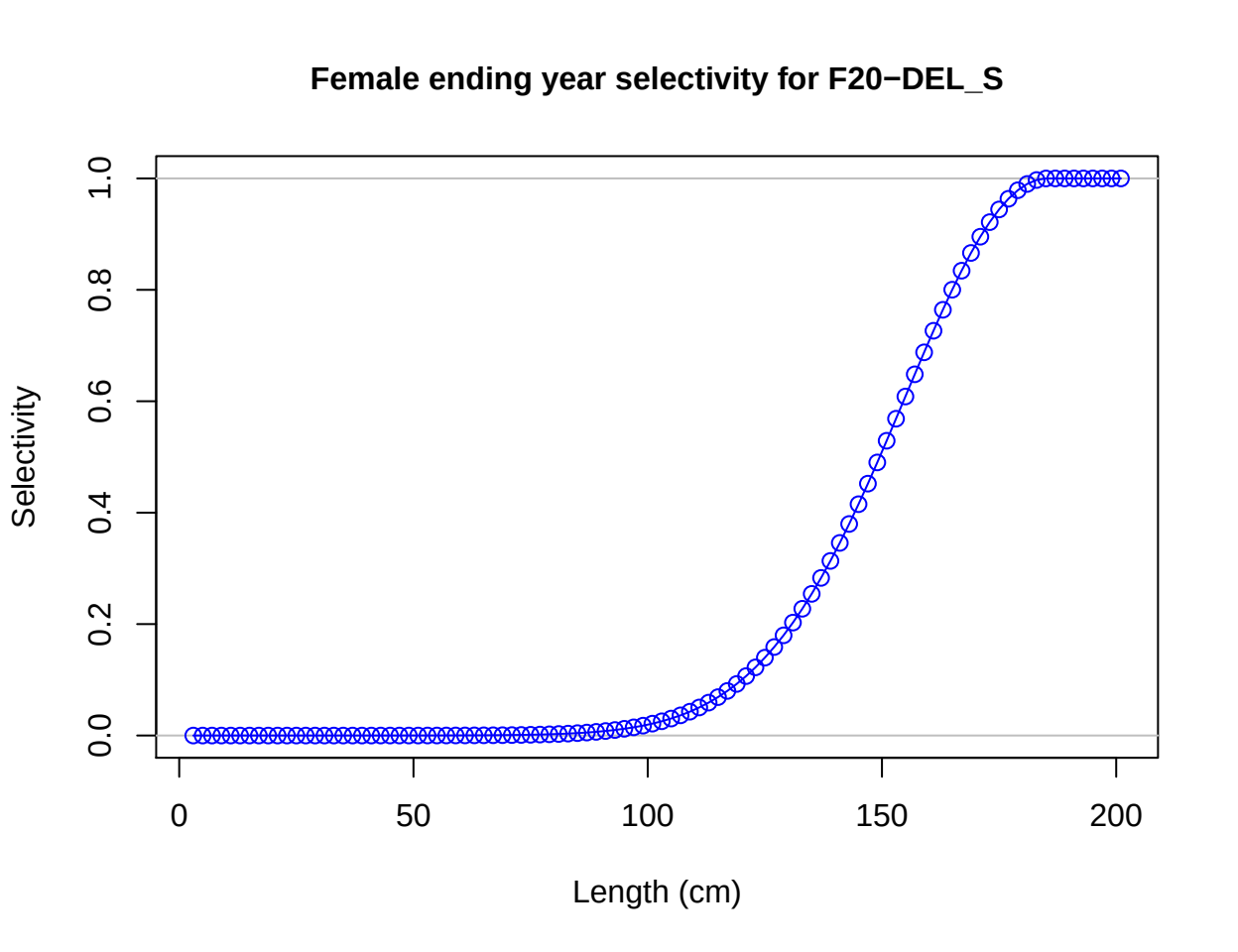

Male ending year selectivity for F17−DEL_M
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

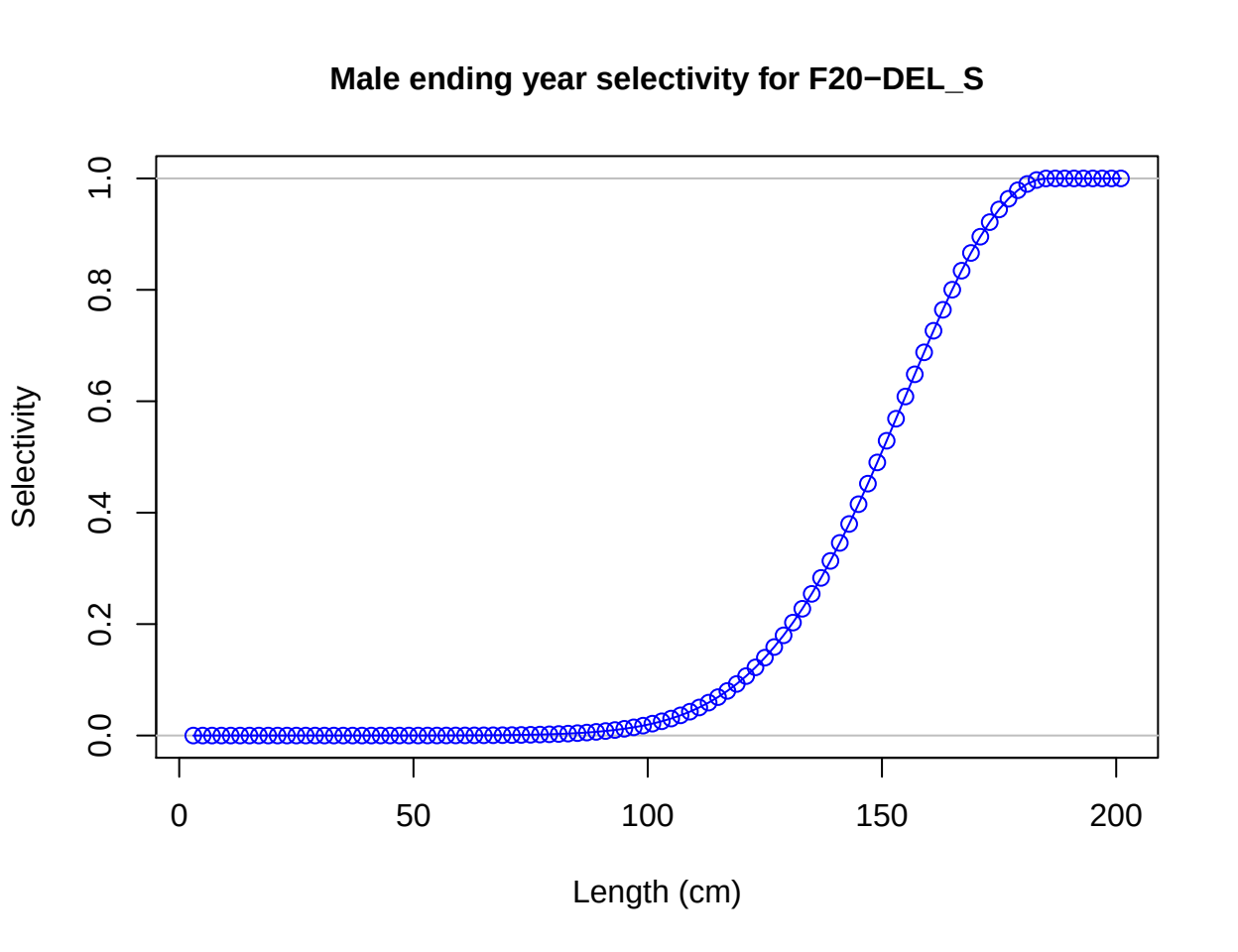

Female ending year selectivity for F18−DEL_C
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

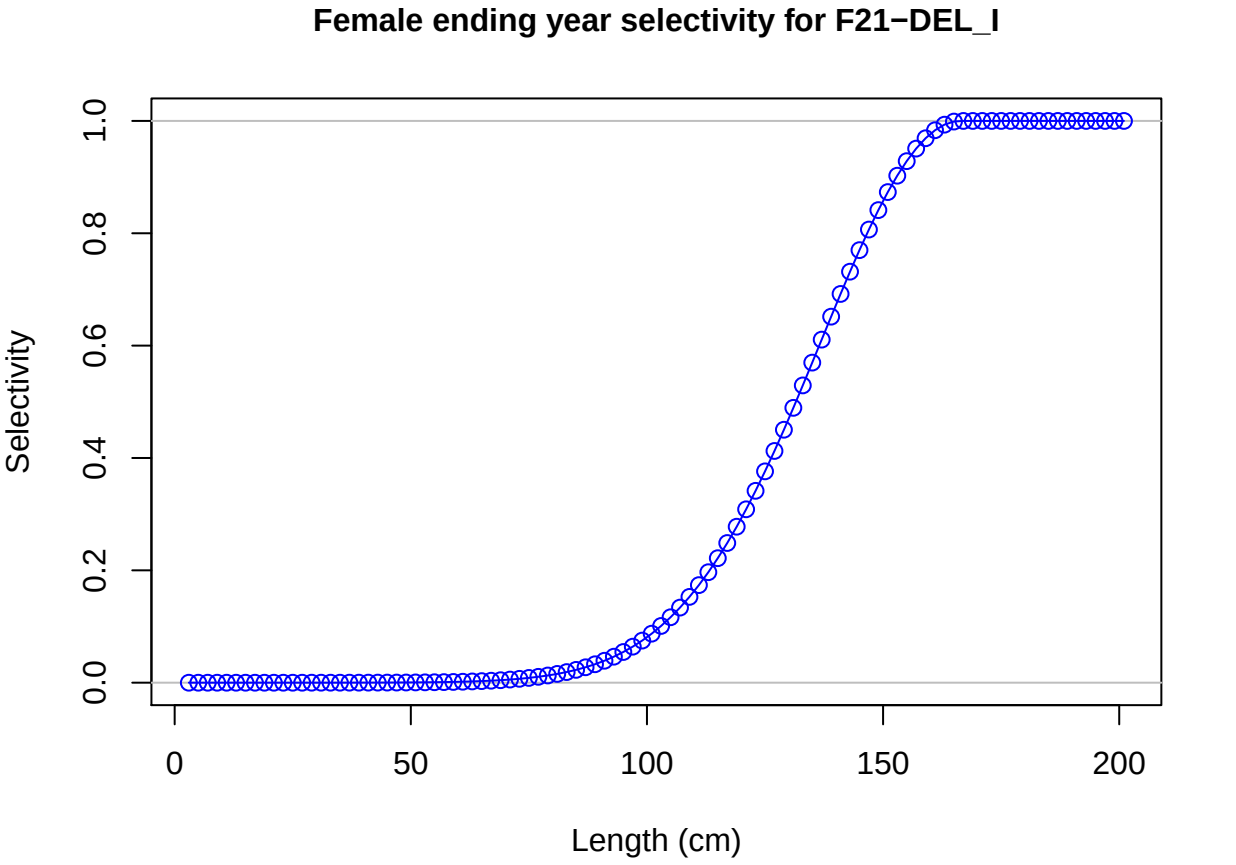

Male ending year selectivity for F18−DEL_C
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

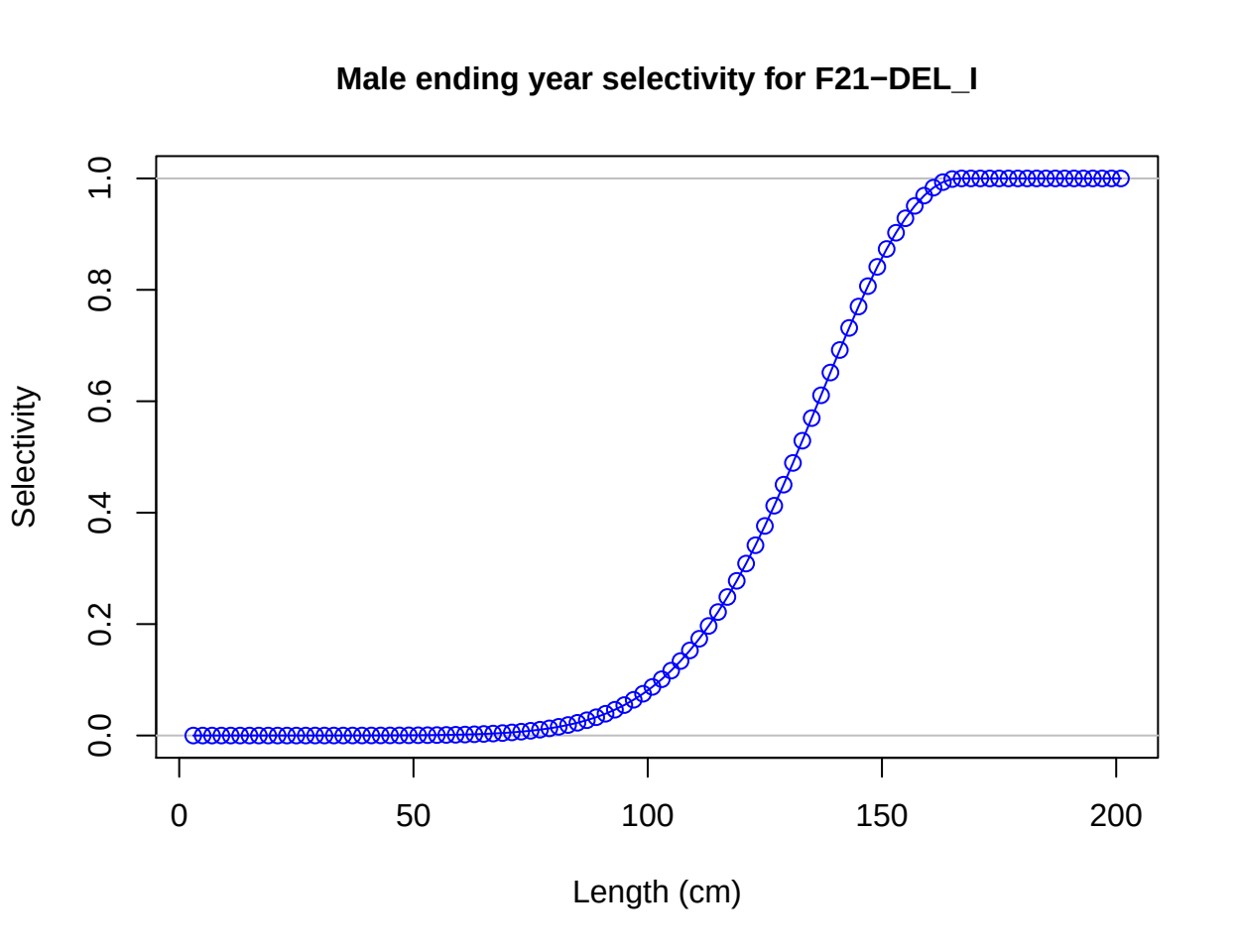

Female ending year selectivity for F19−DEL_P
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

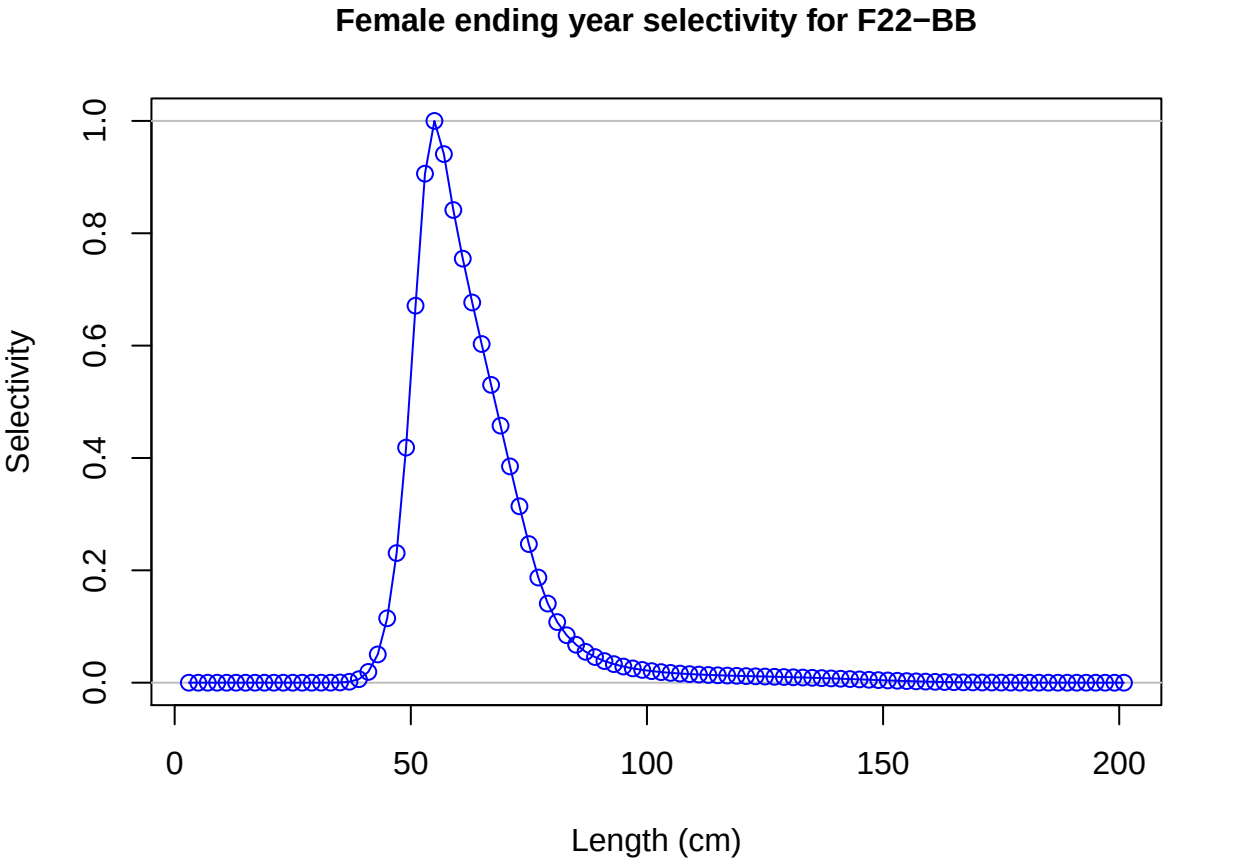

Male ending year selectivity for F19−DEL_P
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

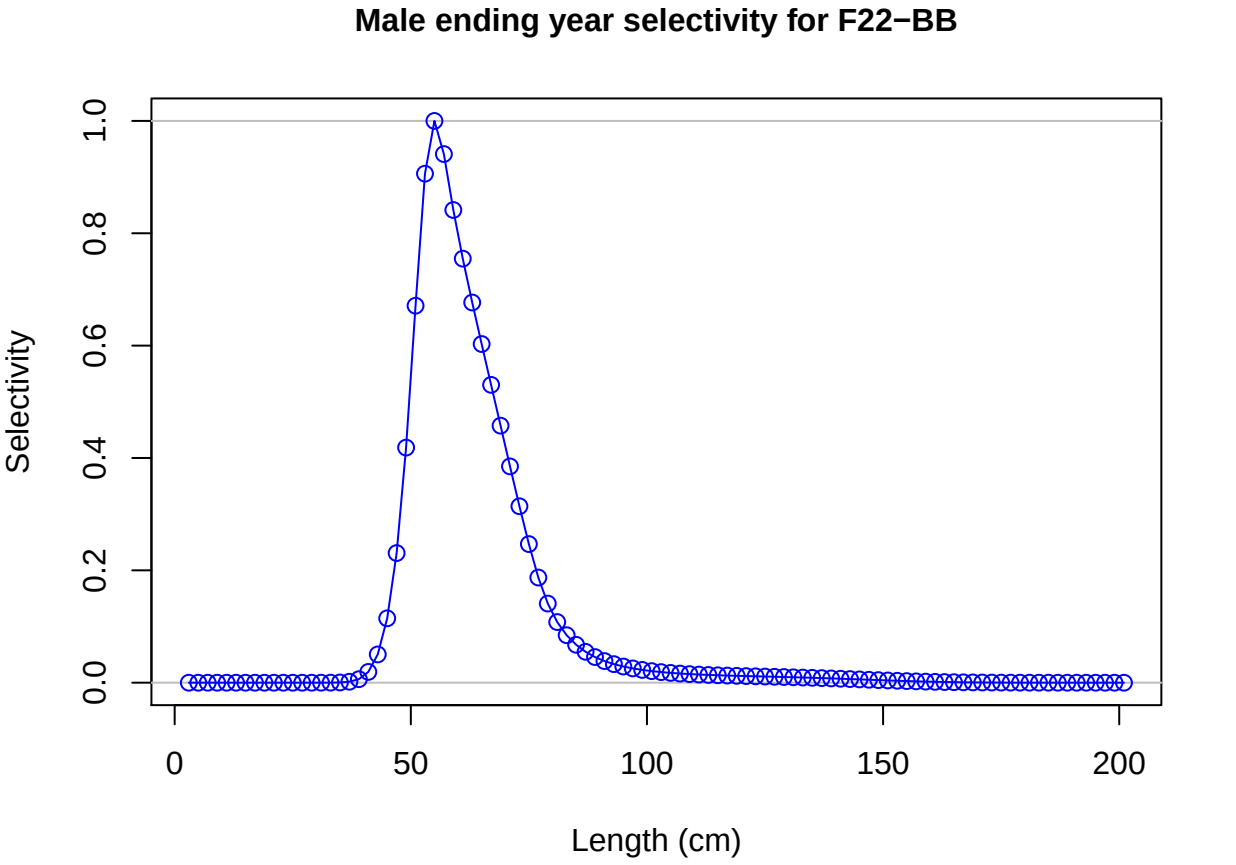

Female ending year selectivity for F20−DEL_S
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

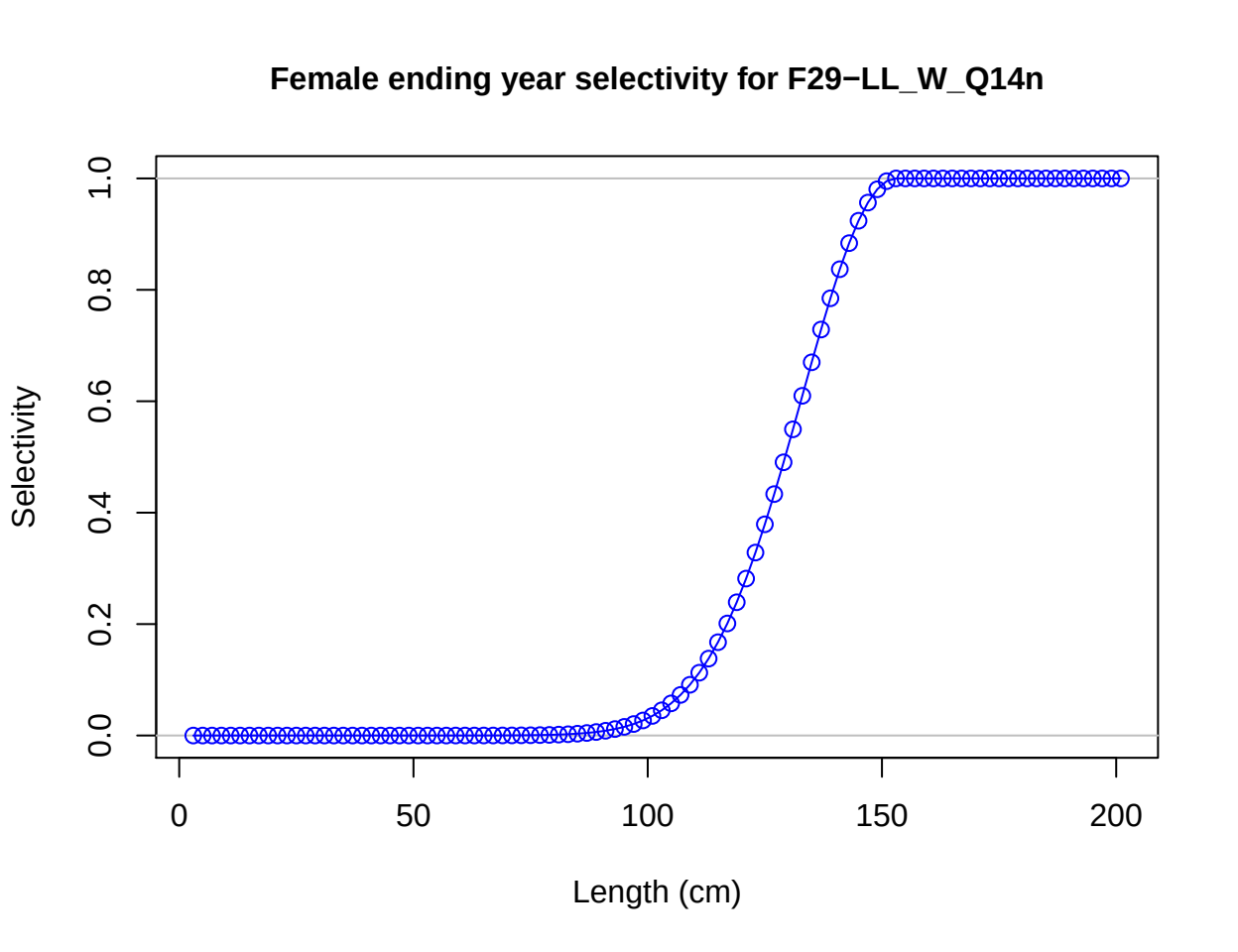

Male ending year selectivity for F20−DEL_S
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

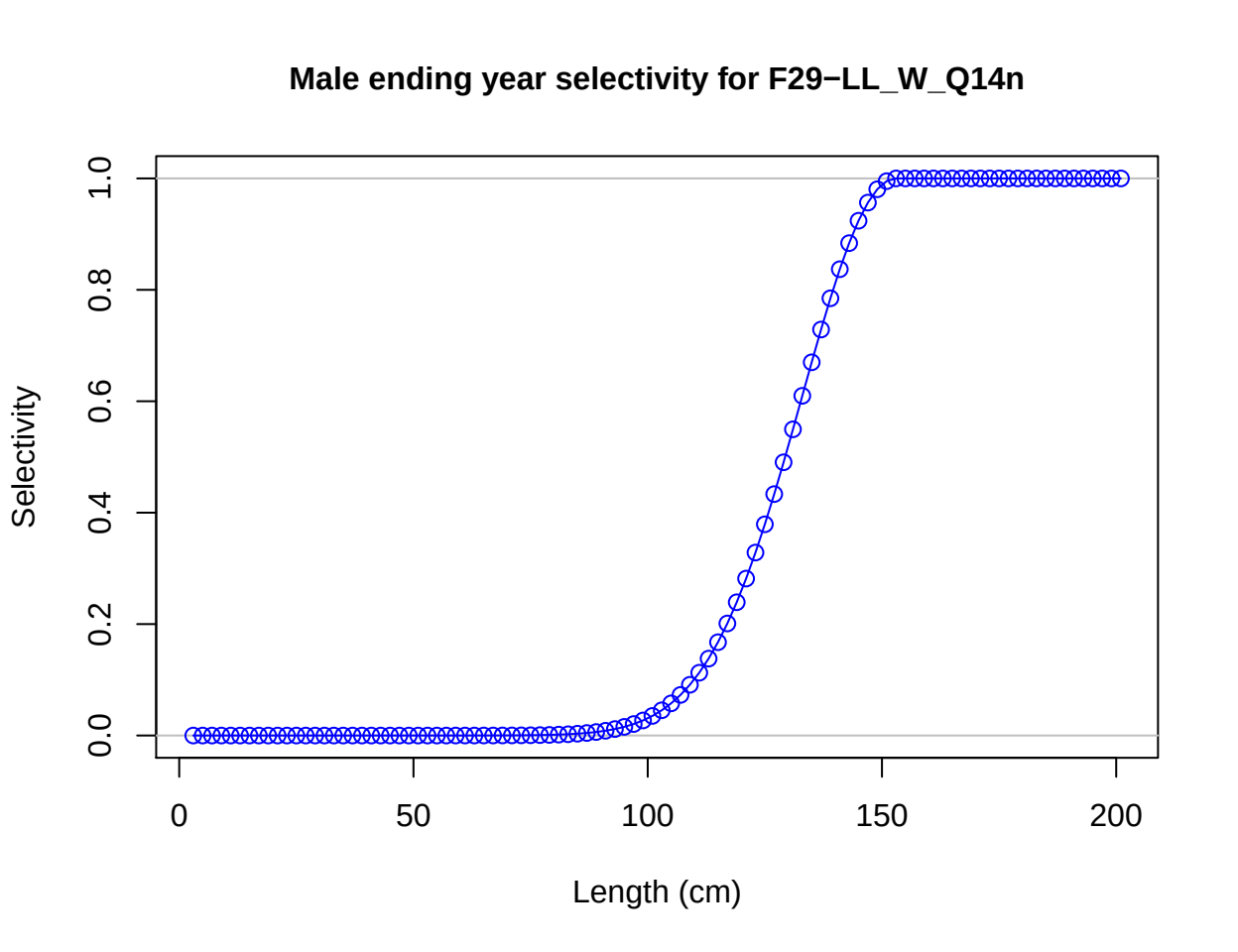

Female ending year selectivity for F21−DEL_I
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

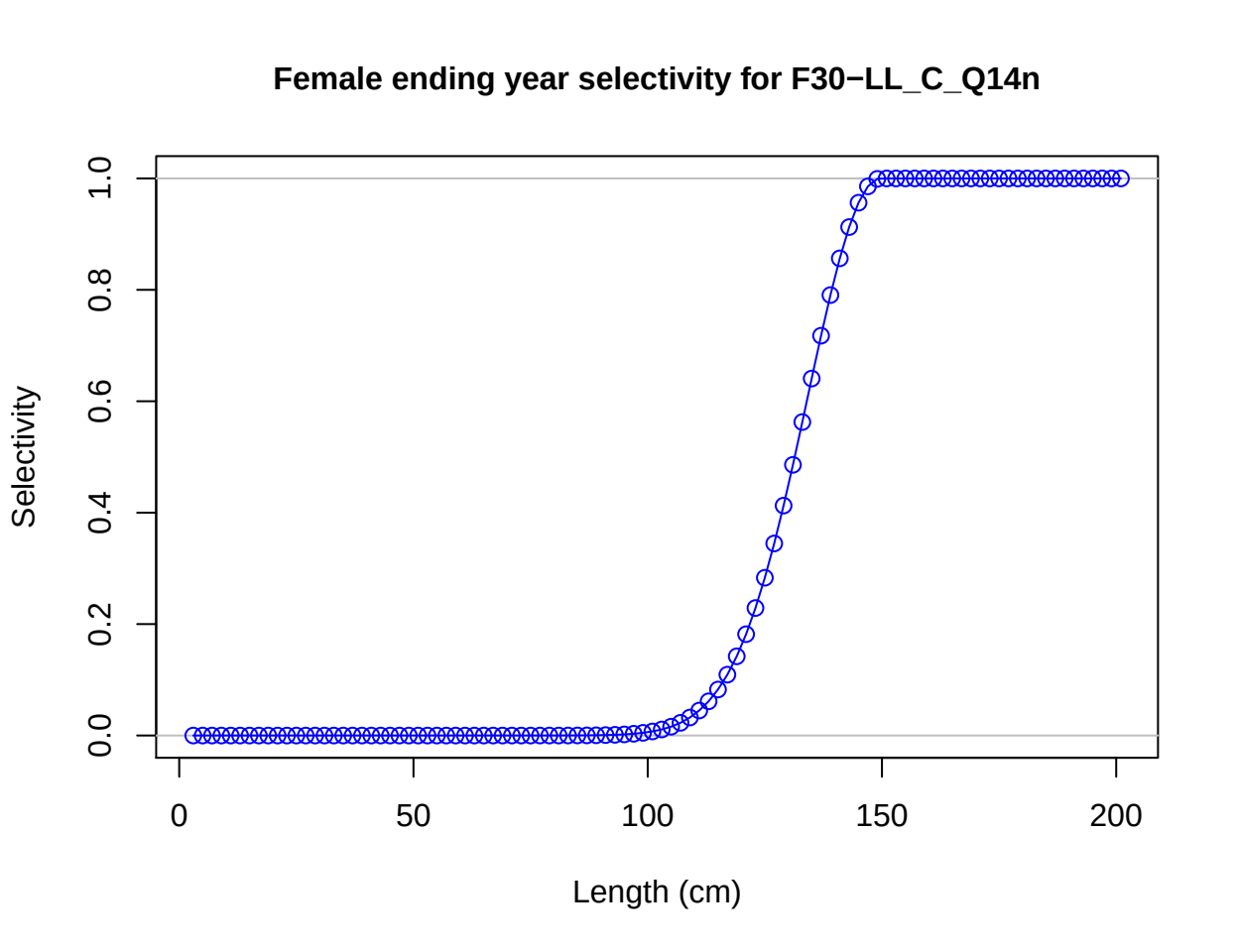

Male ending year selectivity for F21−DEL_I
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

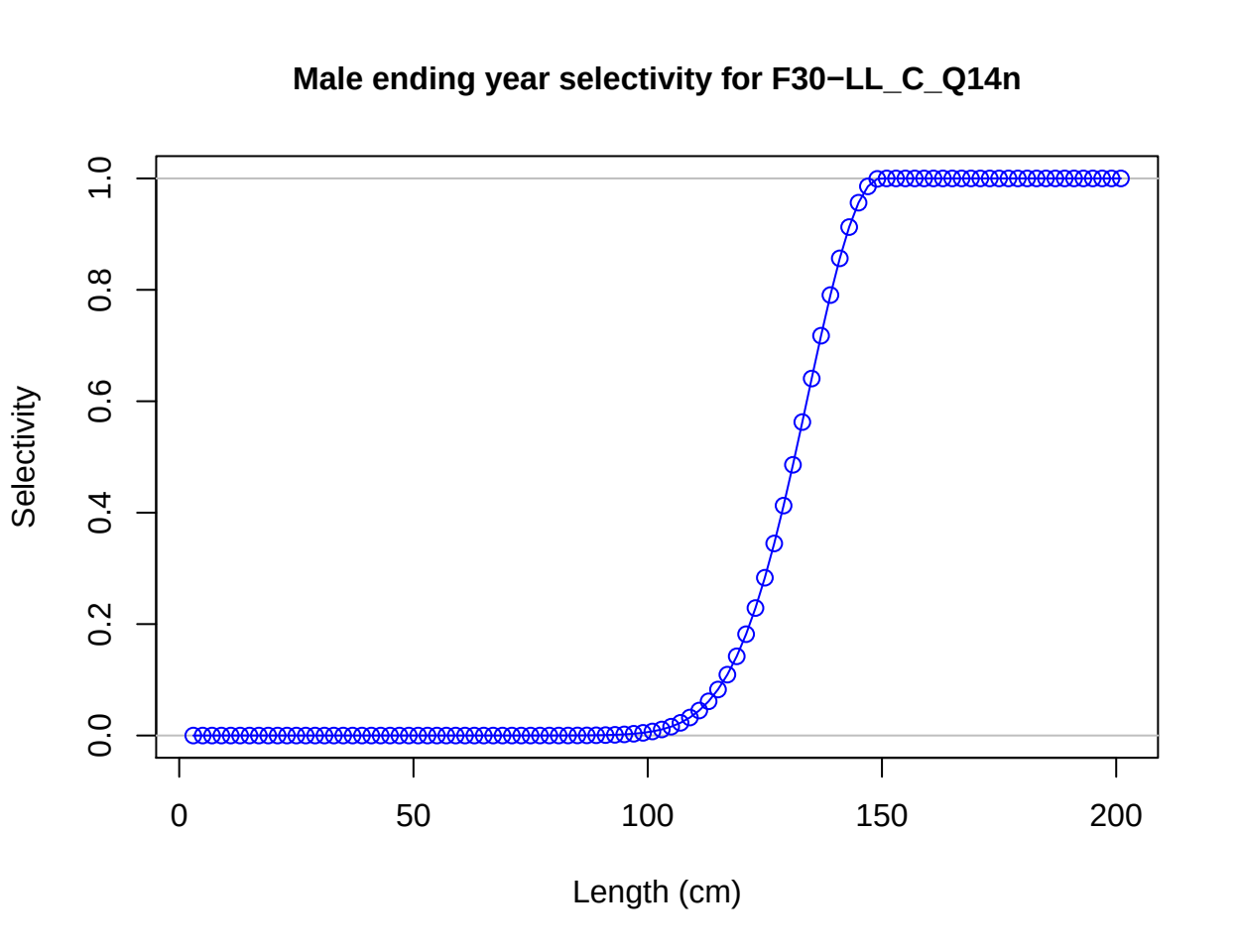

Female ending year selectivity for F22−BB
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

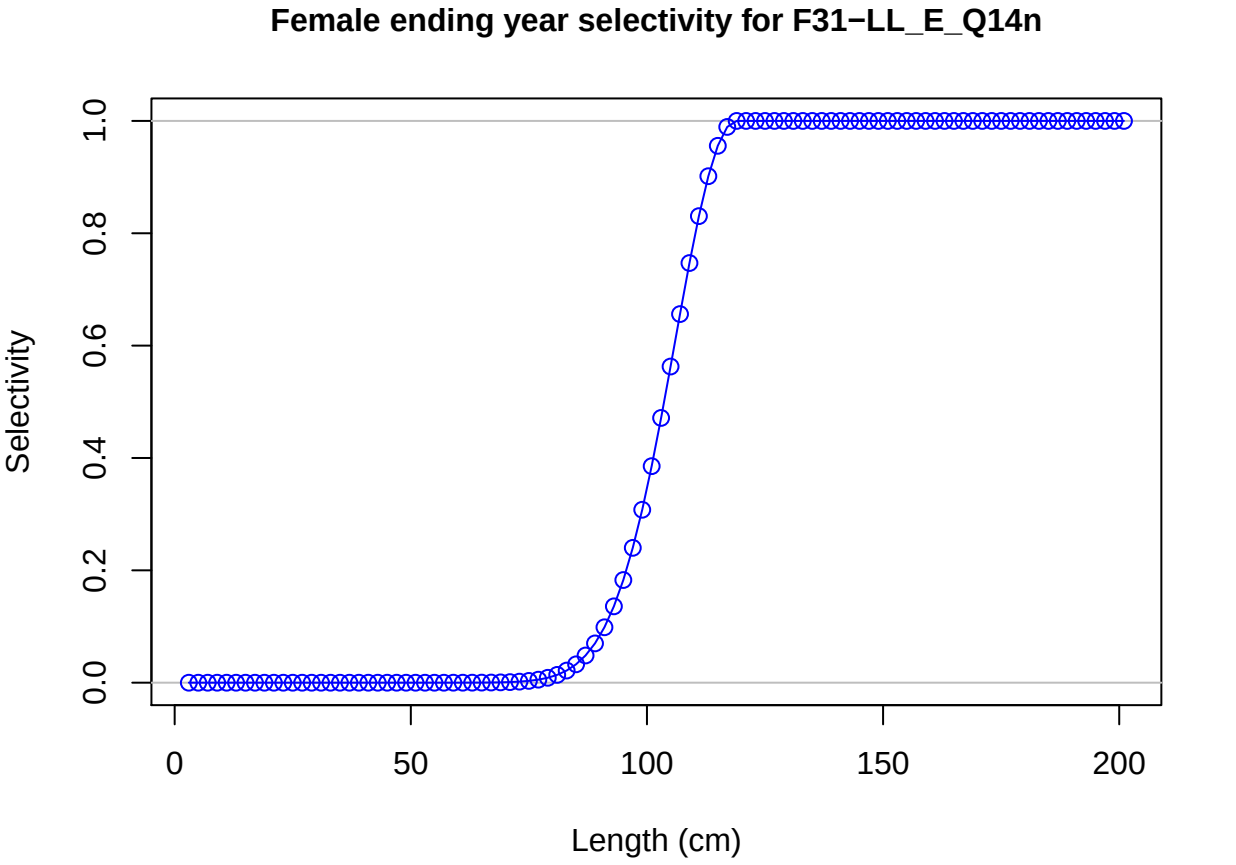

Male ending year selectivity for F22−BB
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

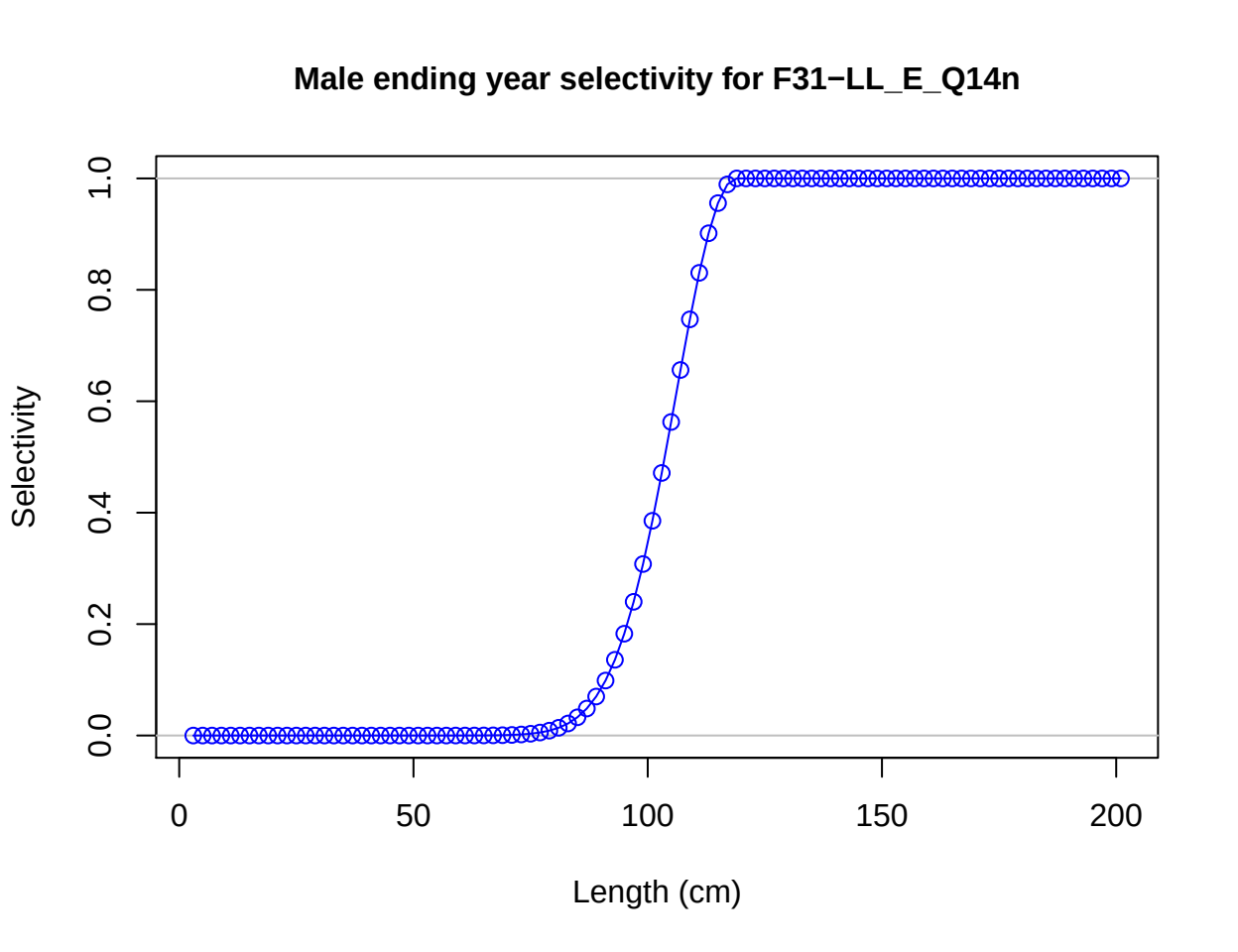

Female ending year selectivity for F29−LL_W_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

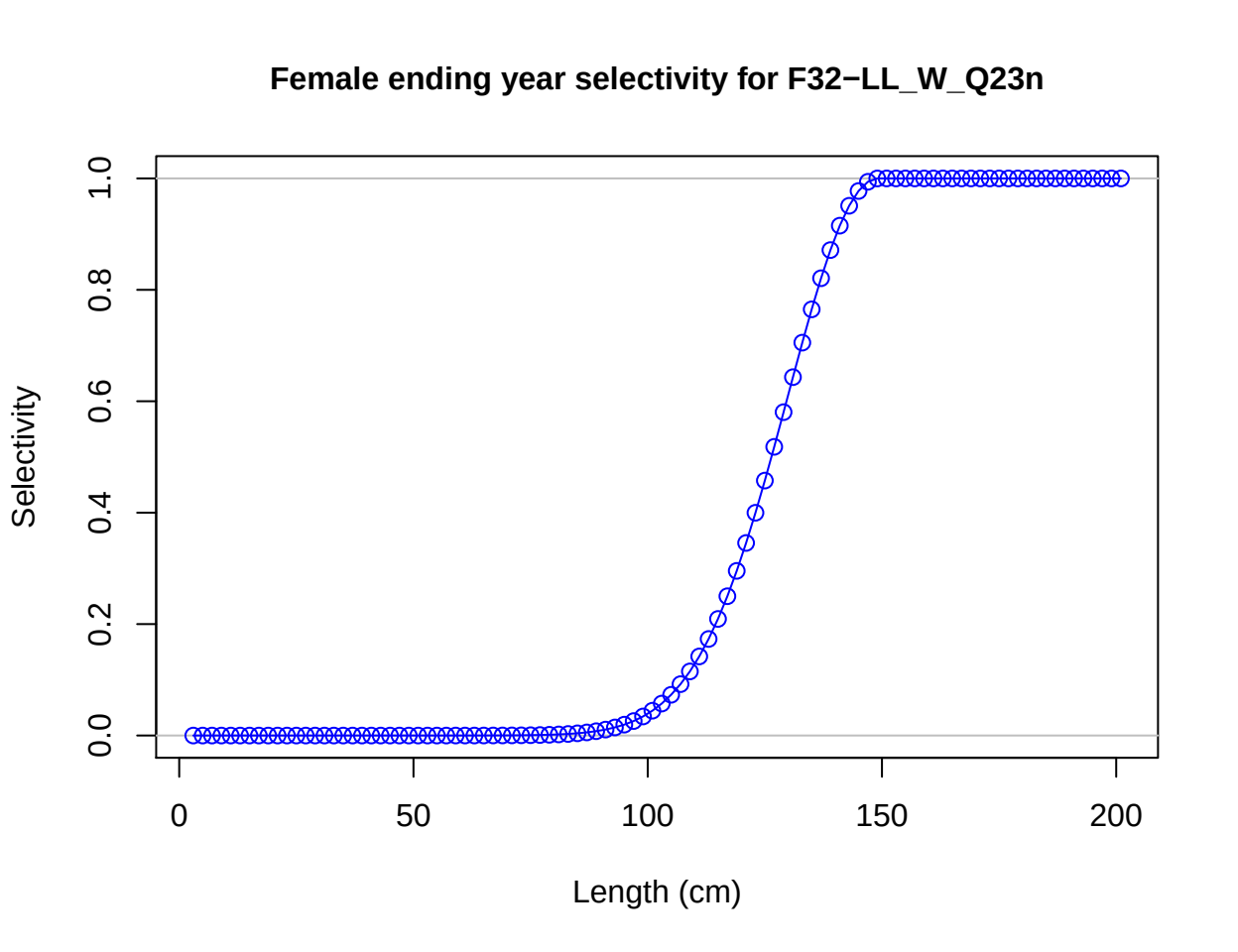

Male ending year selectivity for F29−LL_W_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

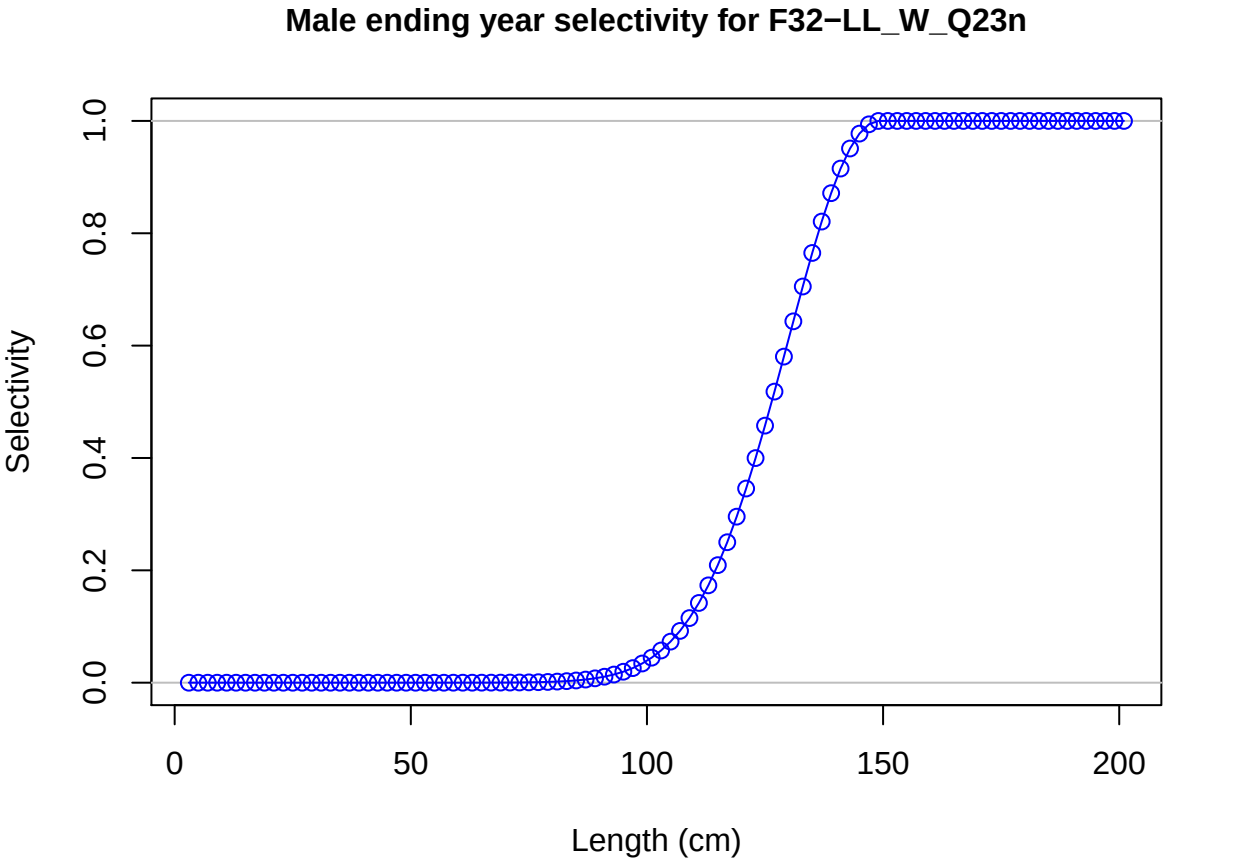

Female ending year selectivity for F30−LL_C_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

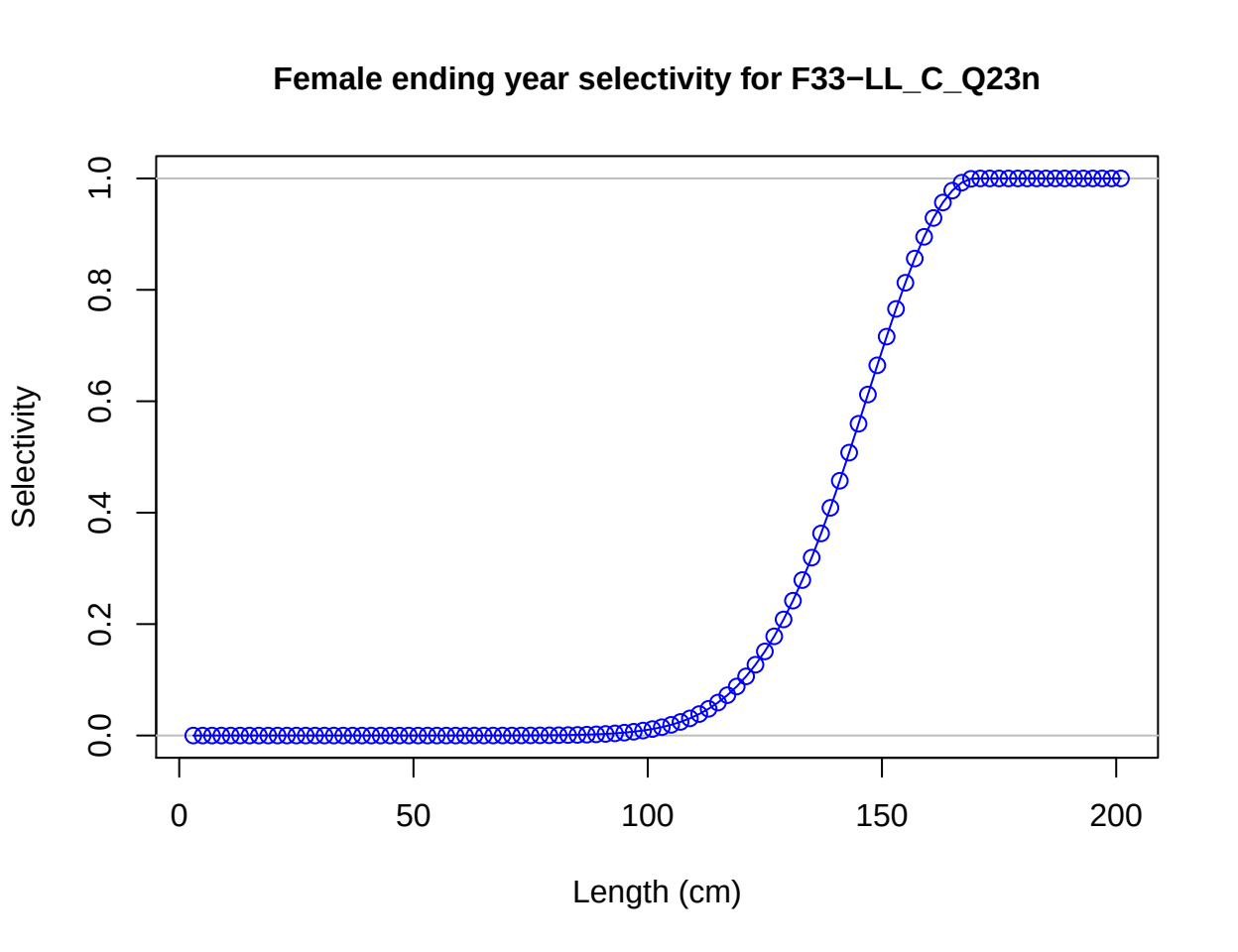

Male ending year selectivity for F30−LL_C_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

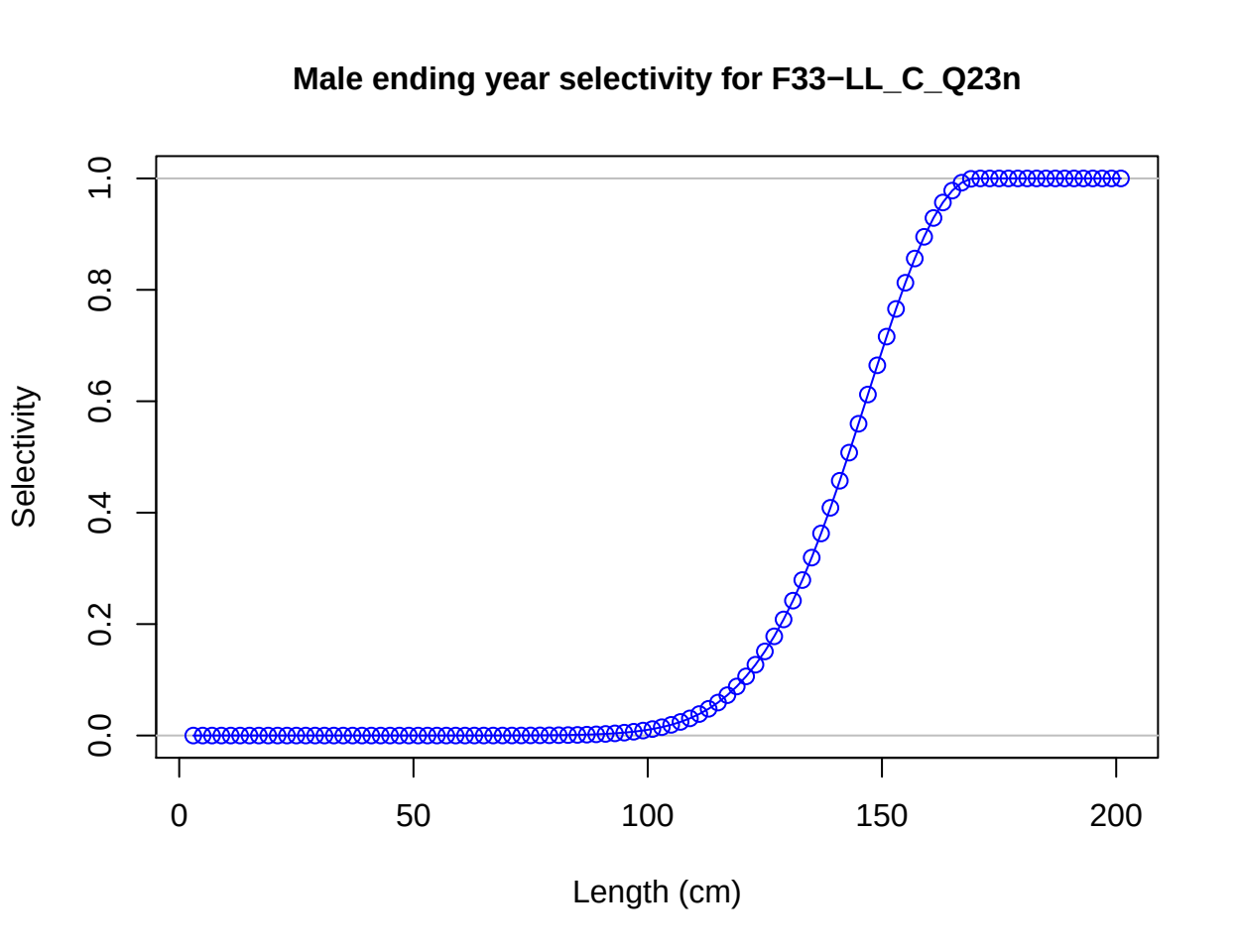

Female ending year selectivity for F31−LL_E_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

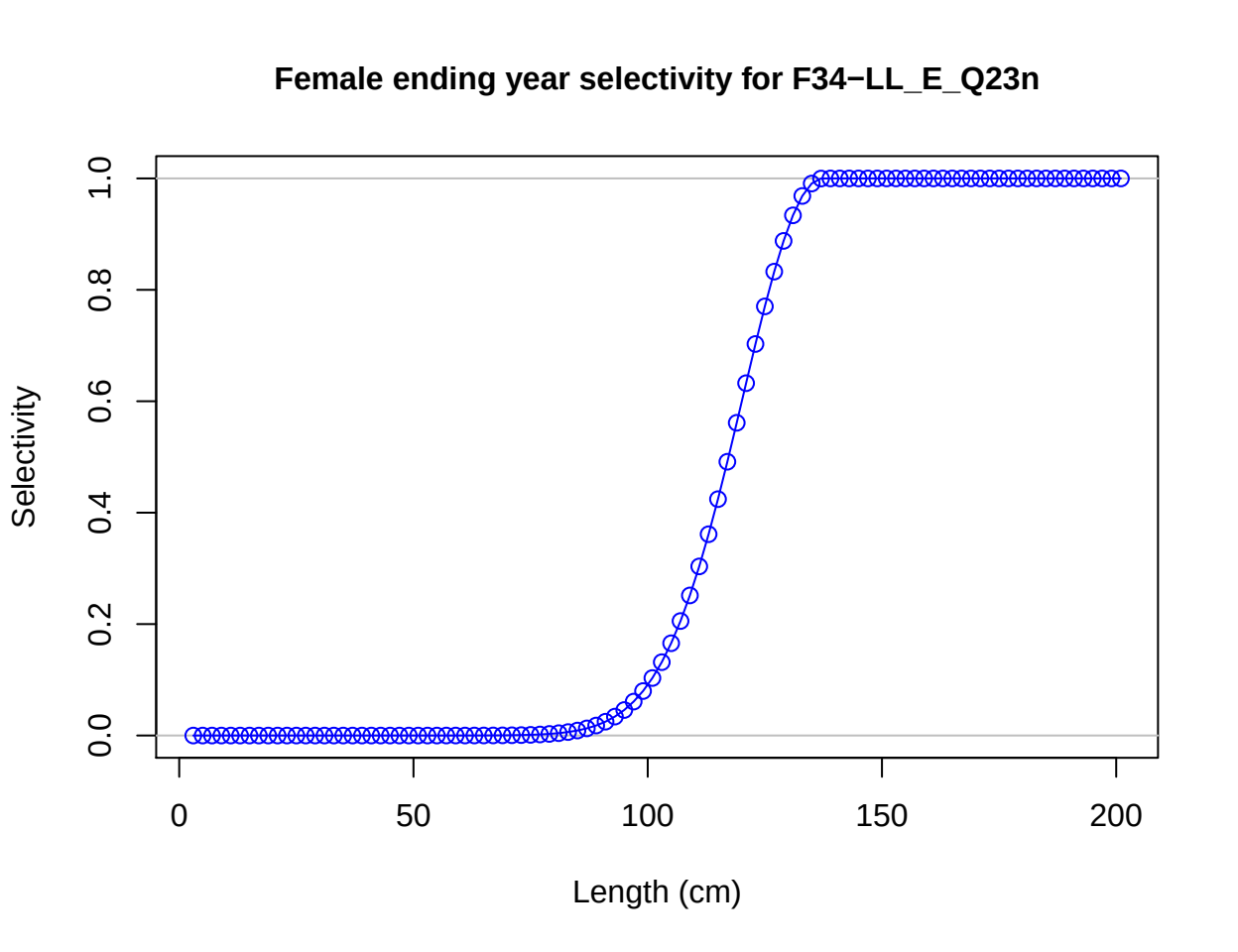

Male ending year selectivity for F31−LL_E_Q14n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

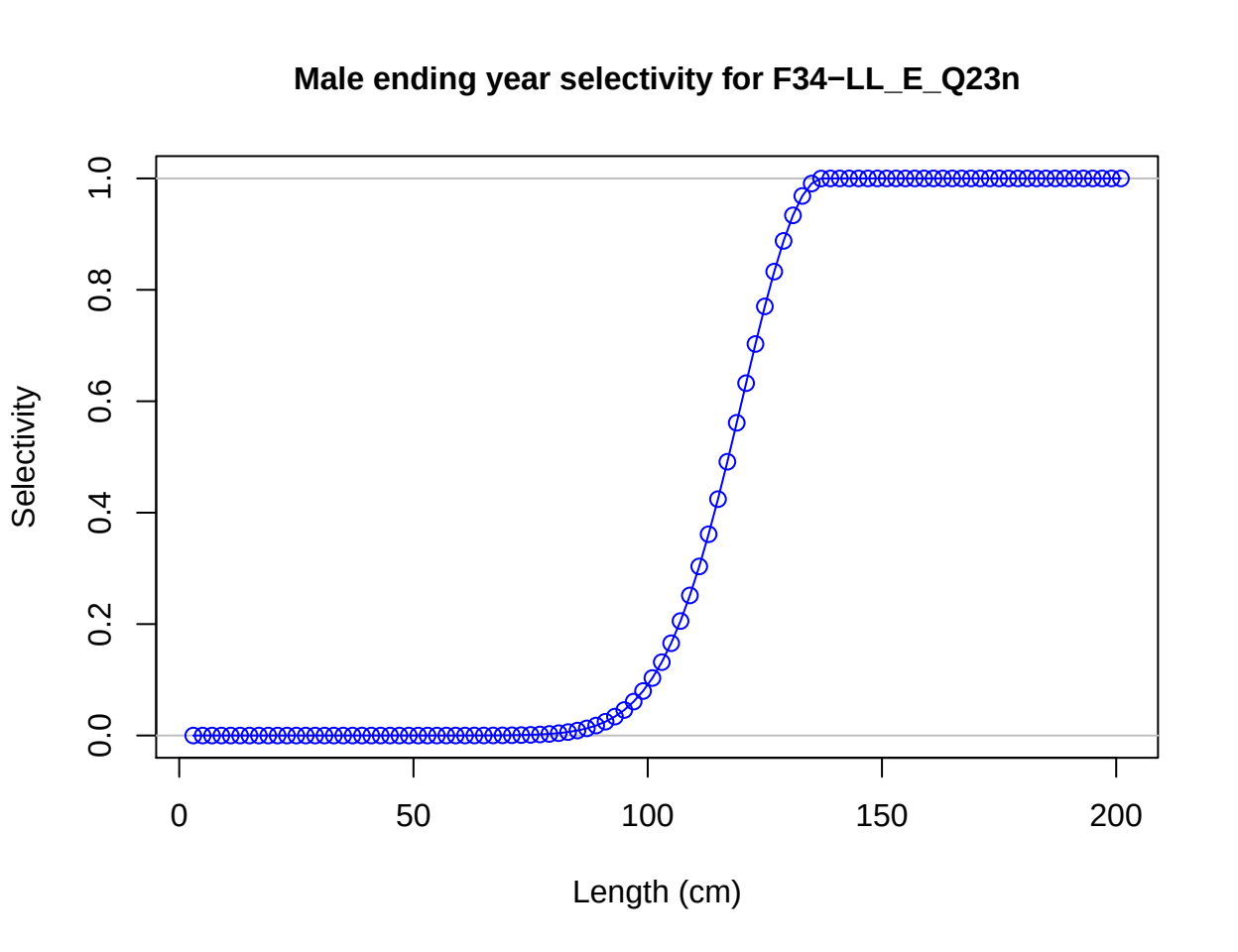

Female ending year selectivity for F32−LL_W_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

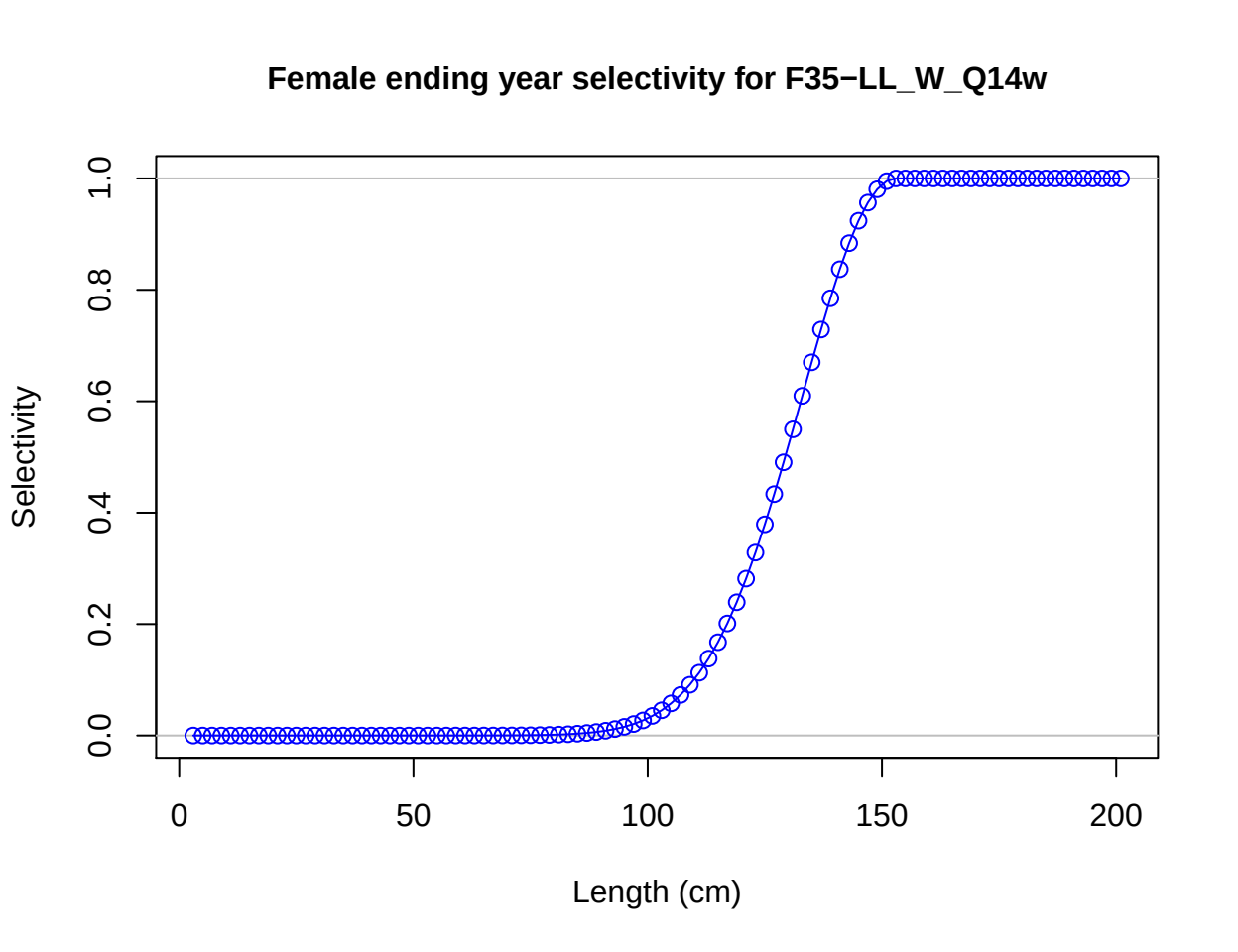

Male ending year selectivity for F32−LL_W_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

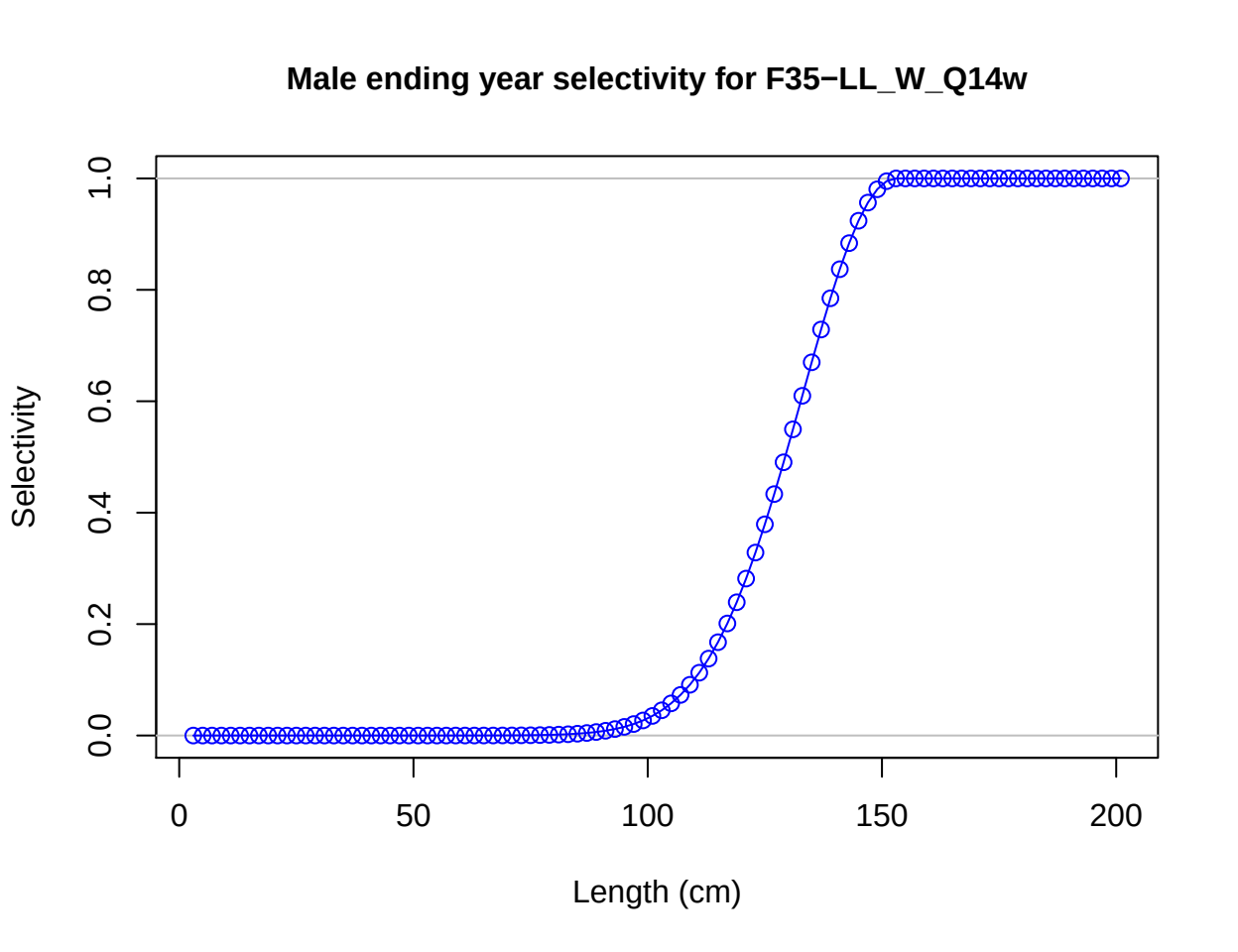

Female ending year selectivity for F33−LL_C_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

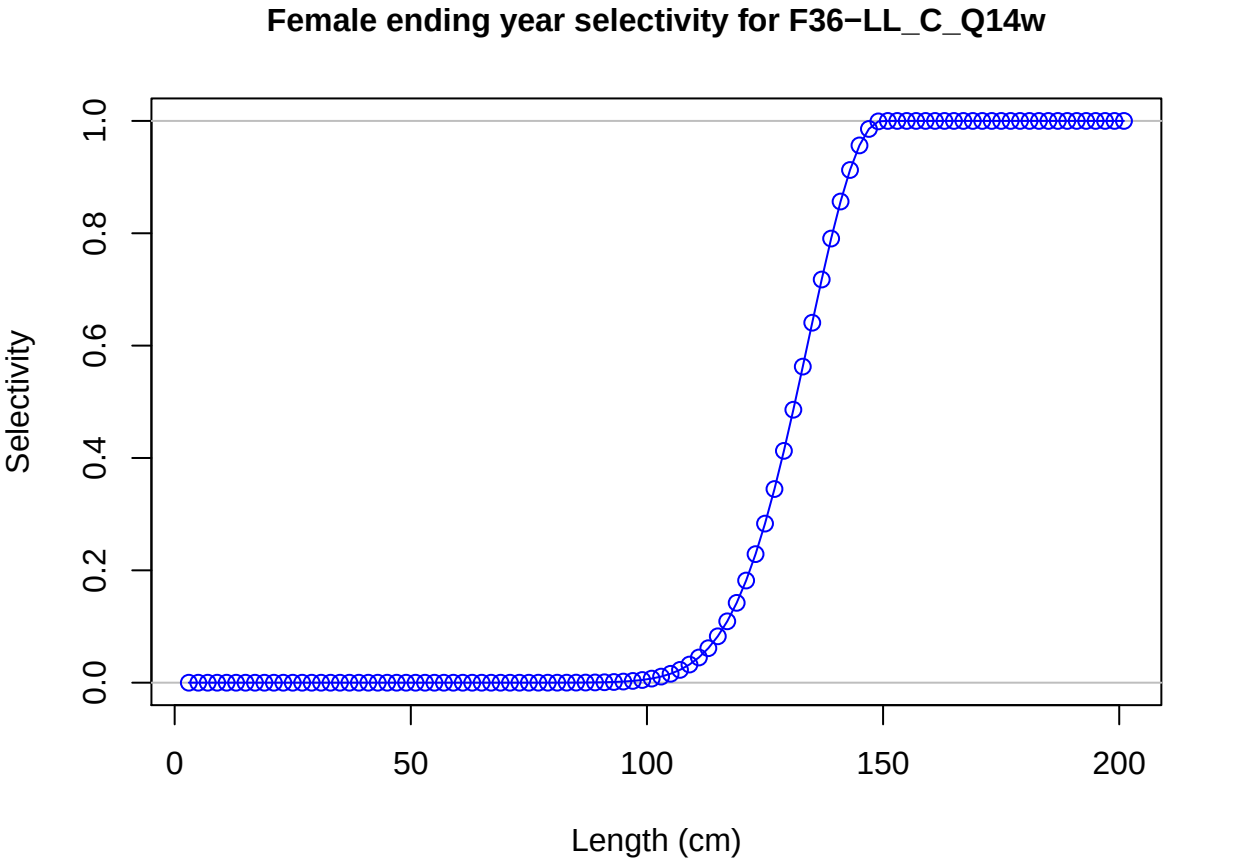

Male ending year selectivity for F33−LL_C_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

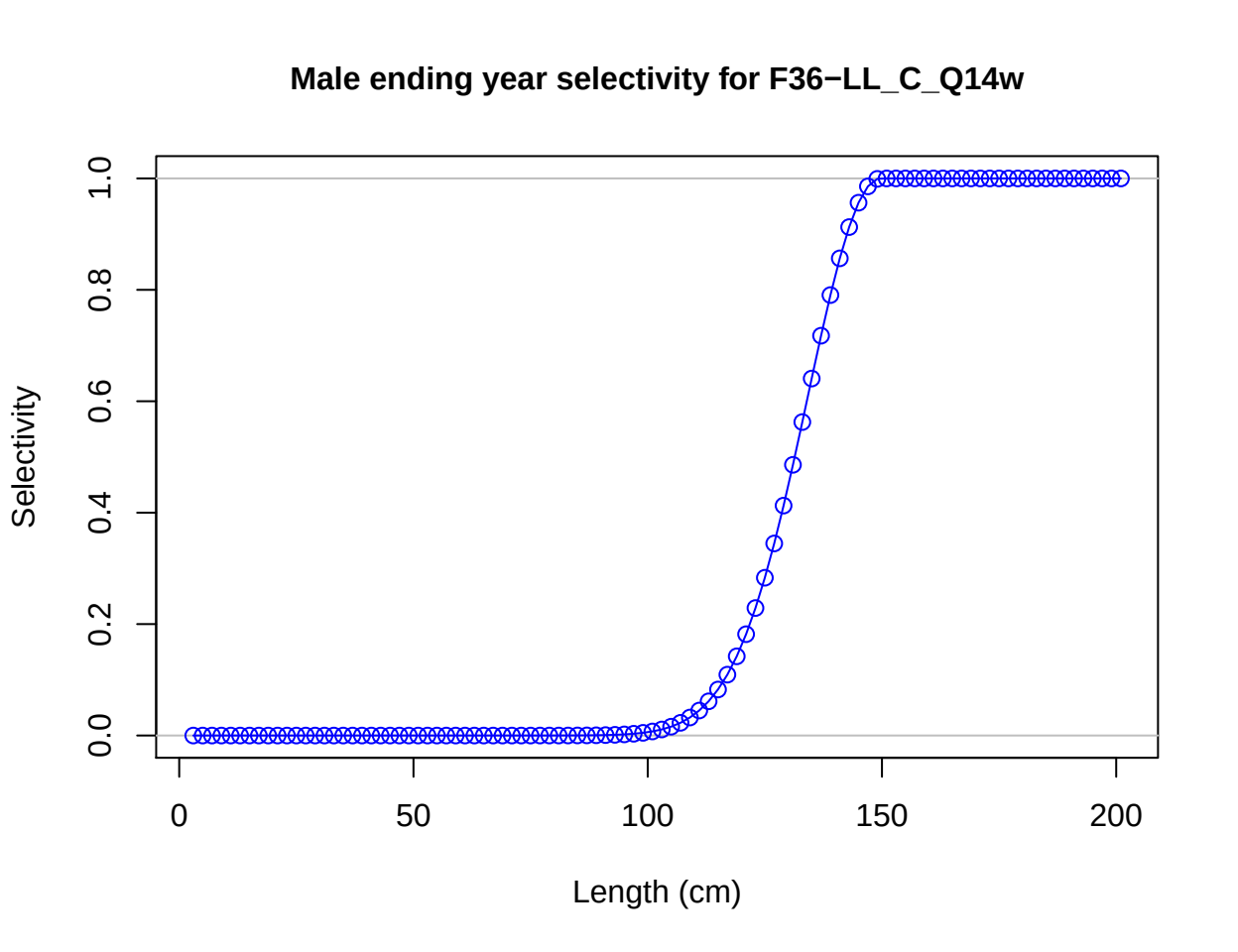

Female ending year selectivity for F34−LL_E_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

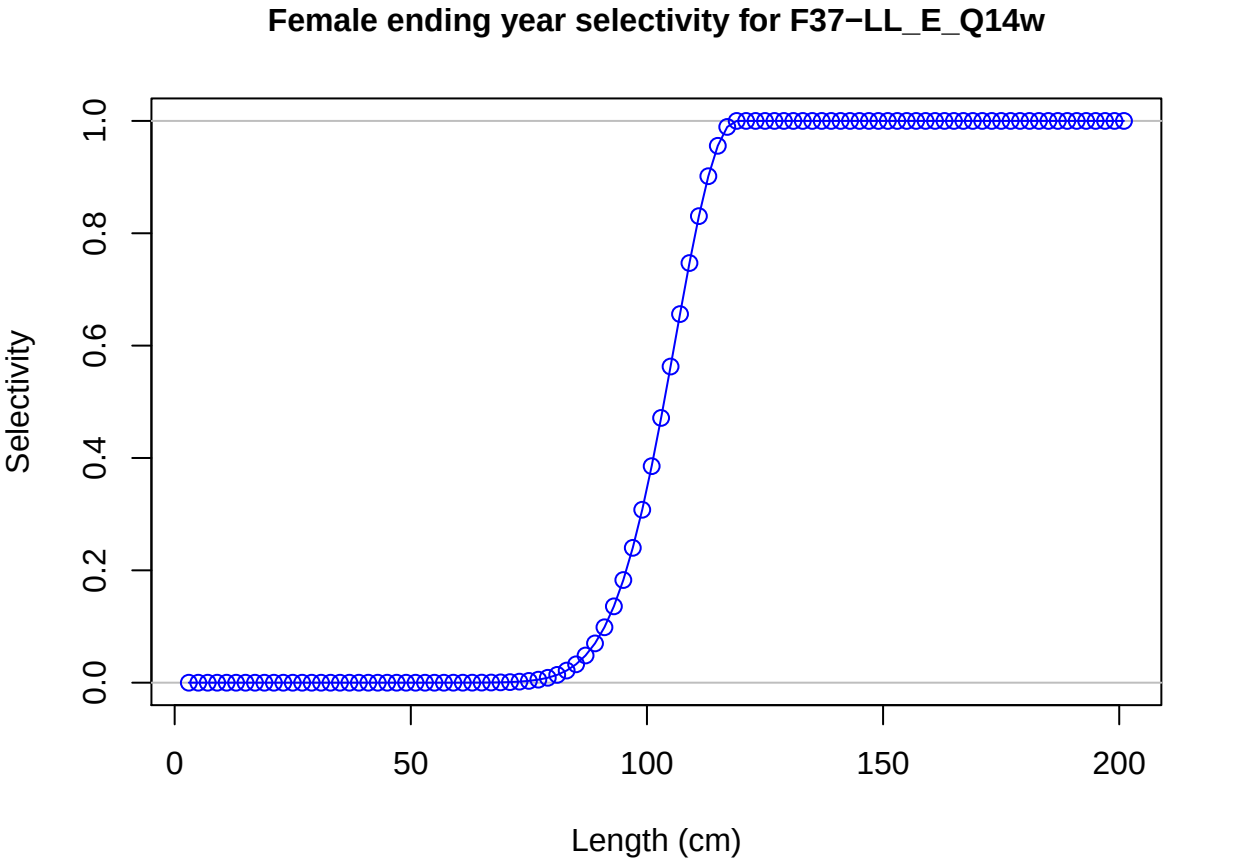

Male ending year selectivity for F34−LL_E_Q23n
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

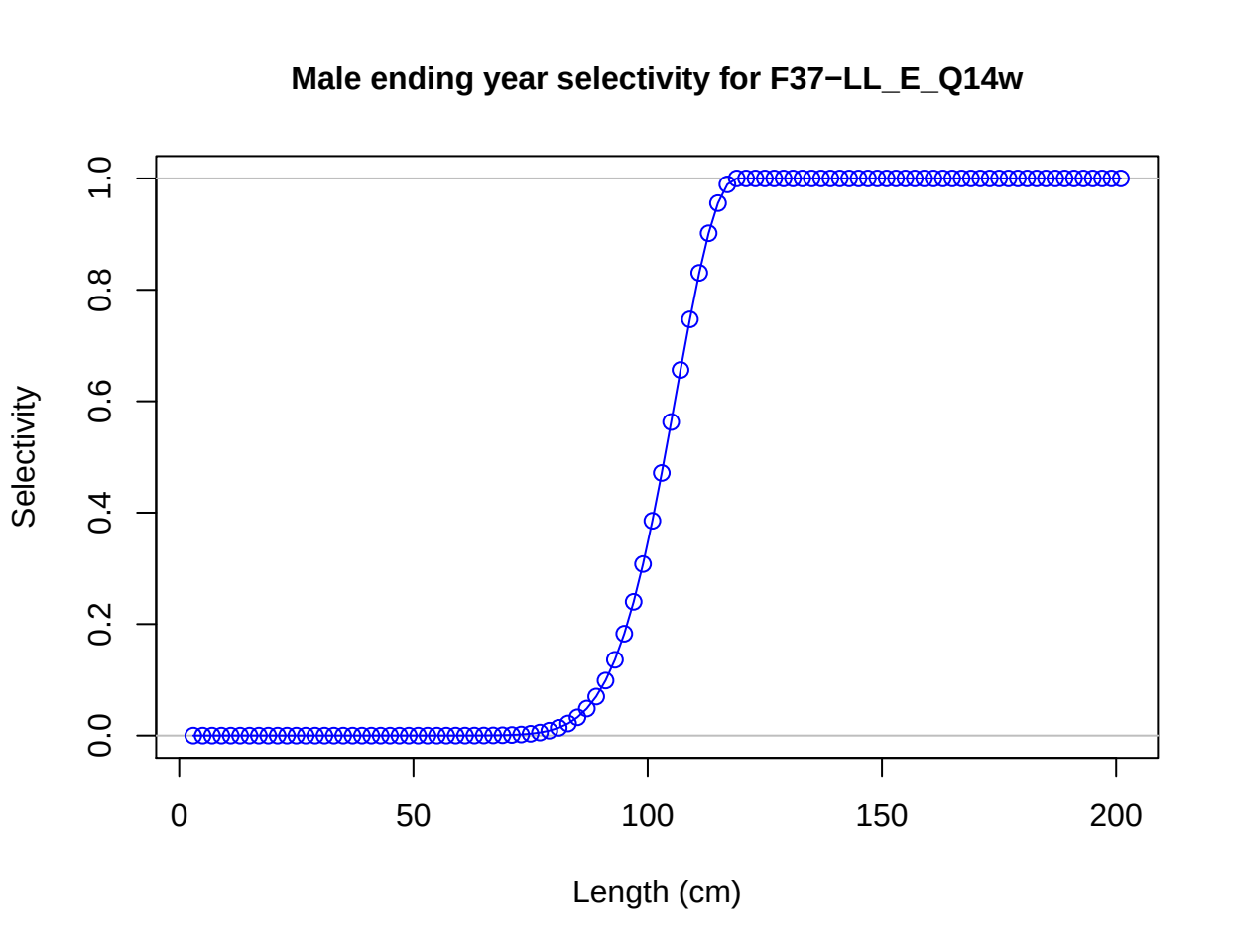

Female ending year selectivity for F35−LL_W_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

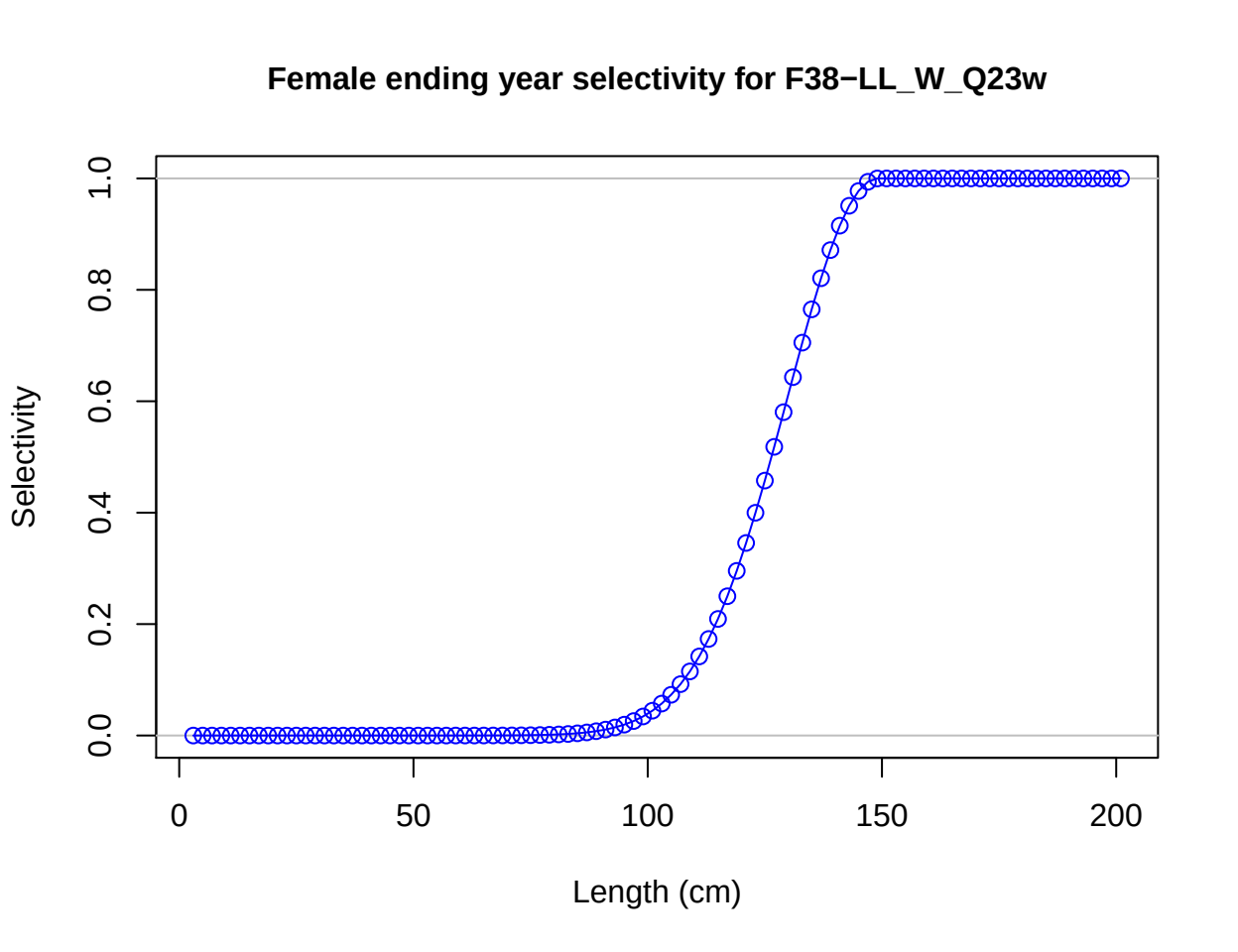

Male ending year selectivity for F35−LL_W_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

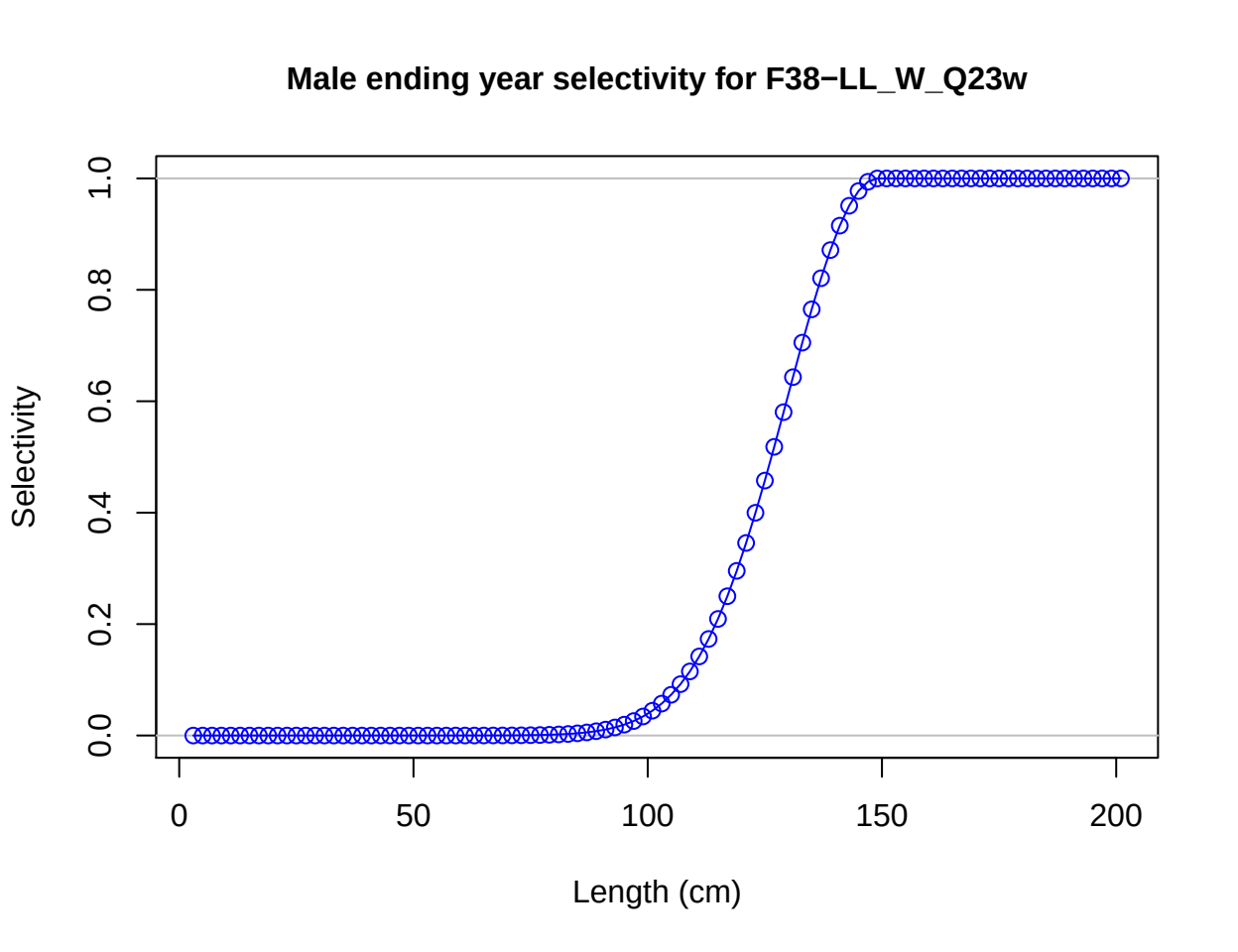

Female ending year selectivity for F36−LL_C_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

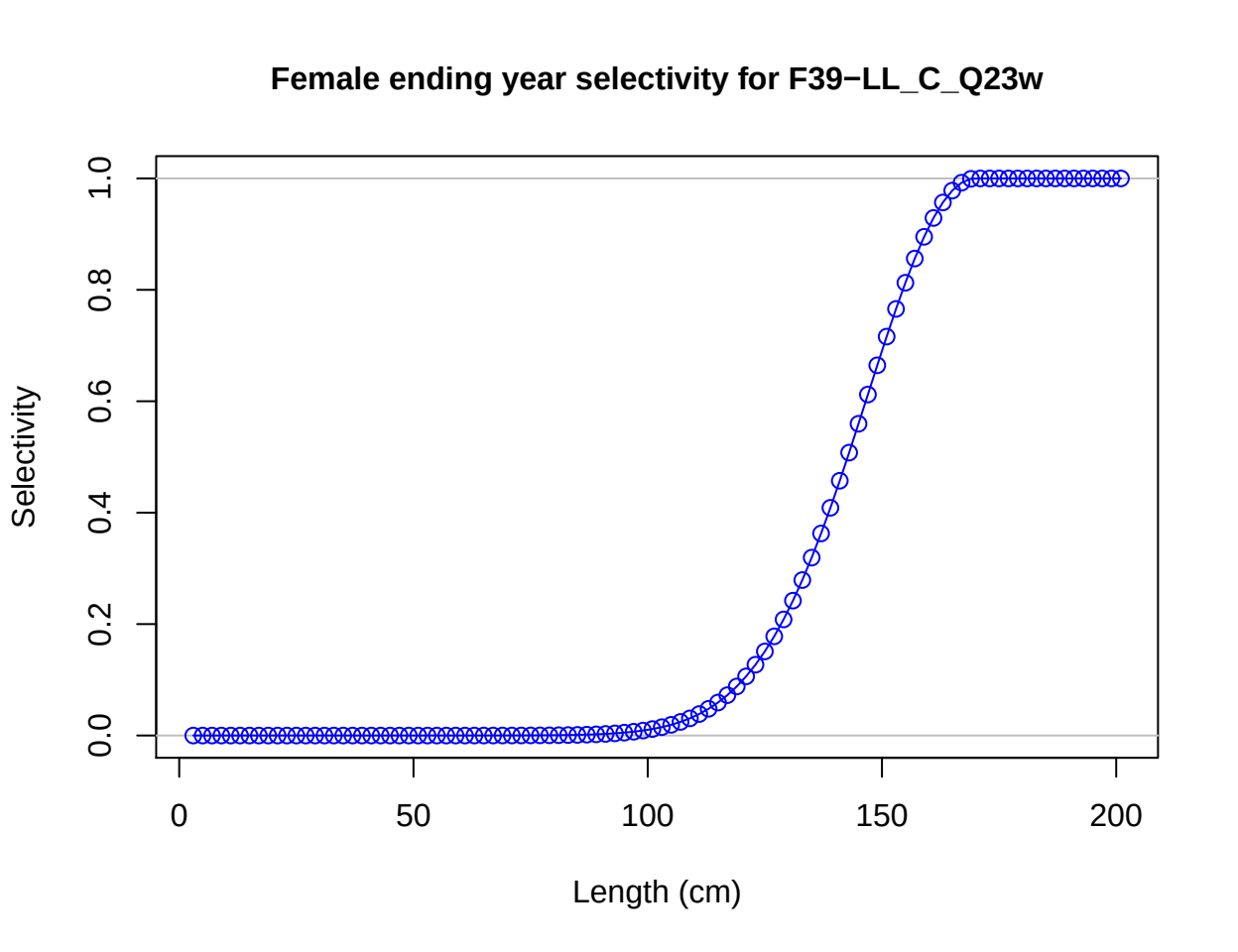

Male ending year selectivity for F36−LL_C_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

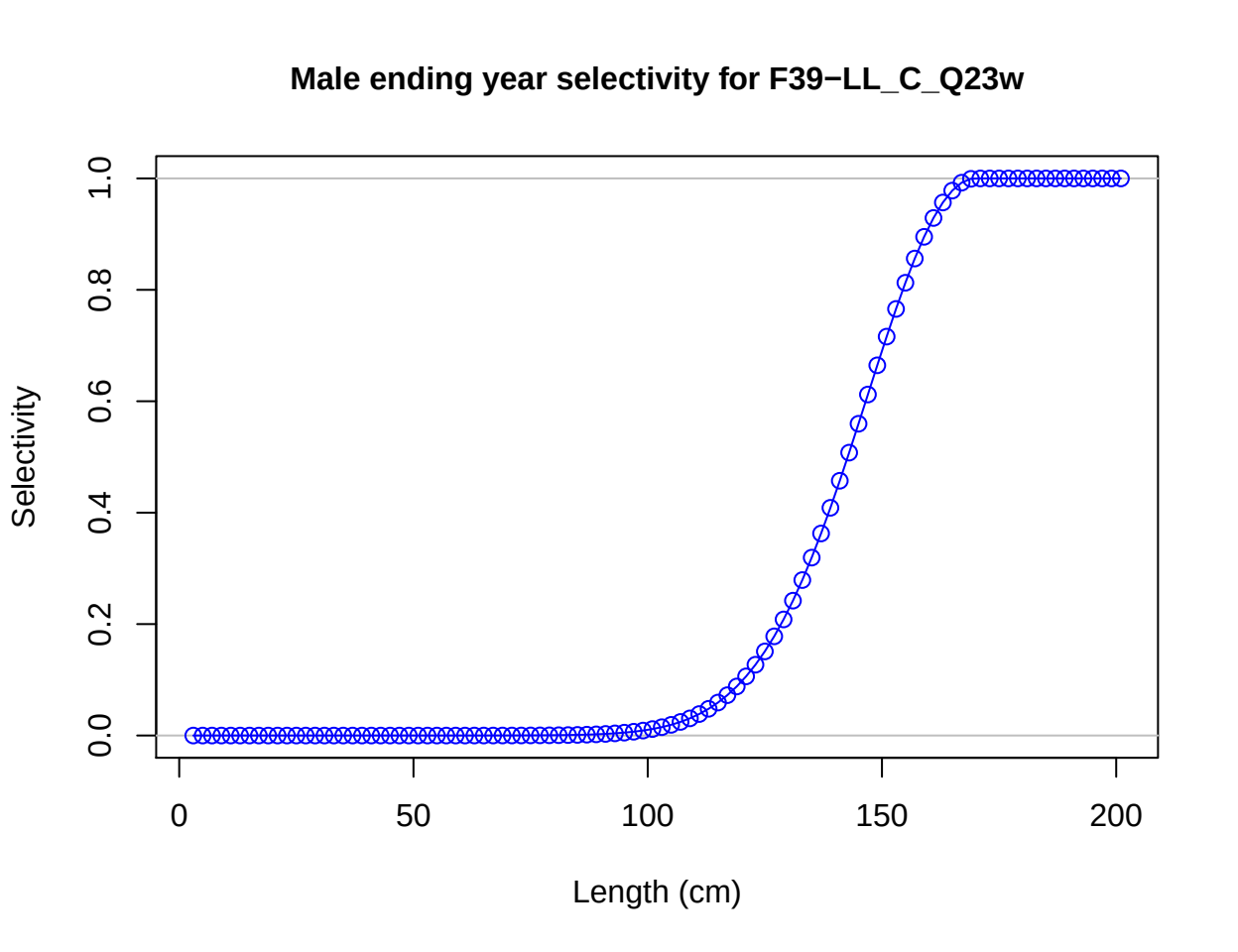

Female ending year selectivity for F37−LL_E_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

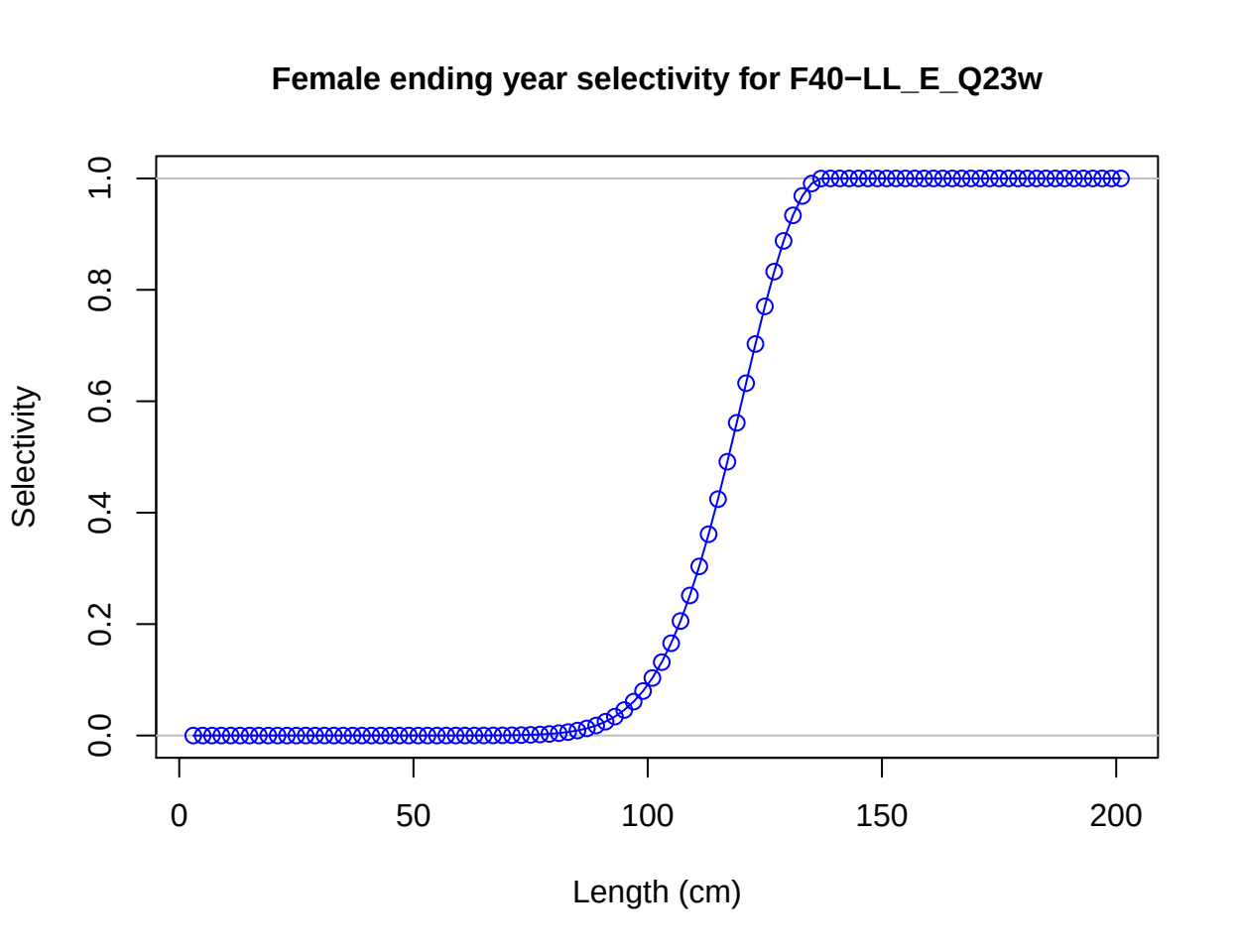

Male ending year selectivity for F37−LL_E_Q14w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

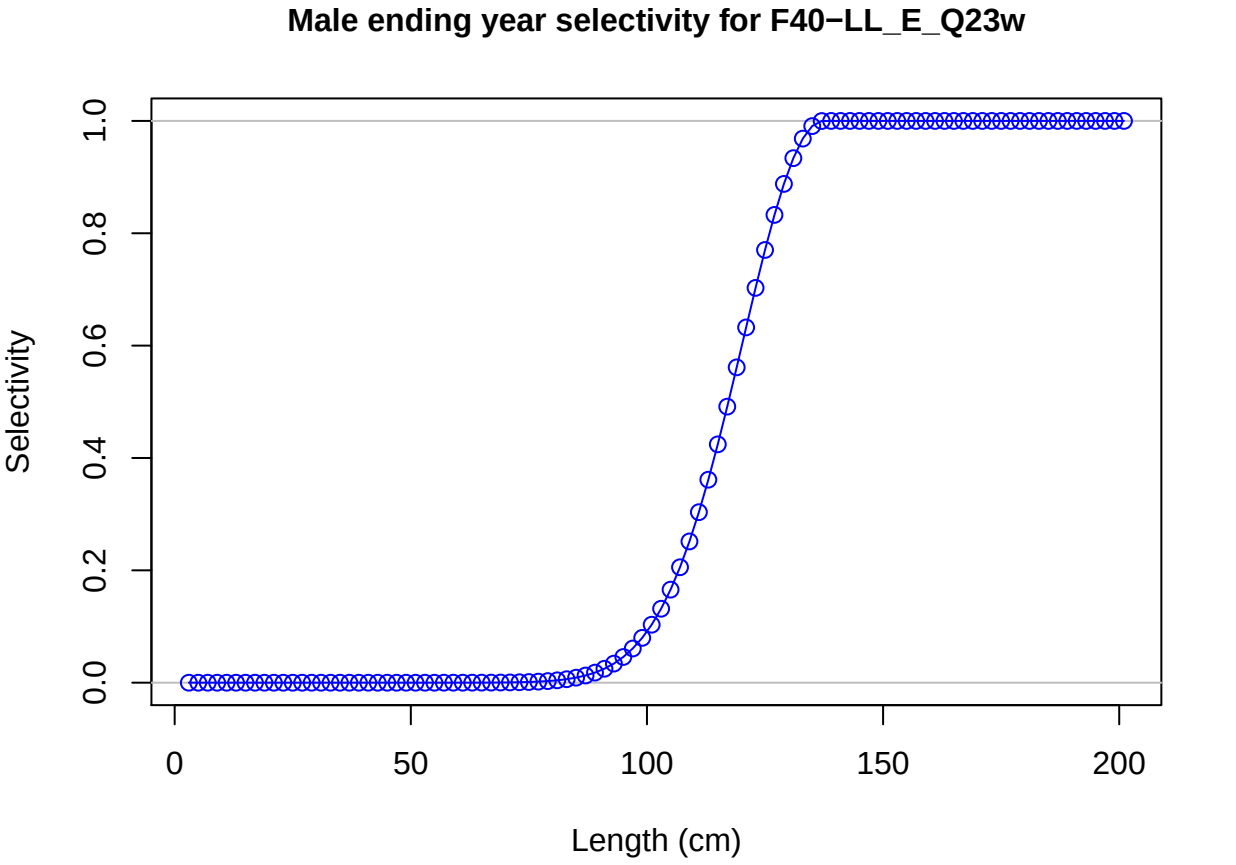

Female ending year selectivity for F38−LL_W_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

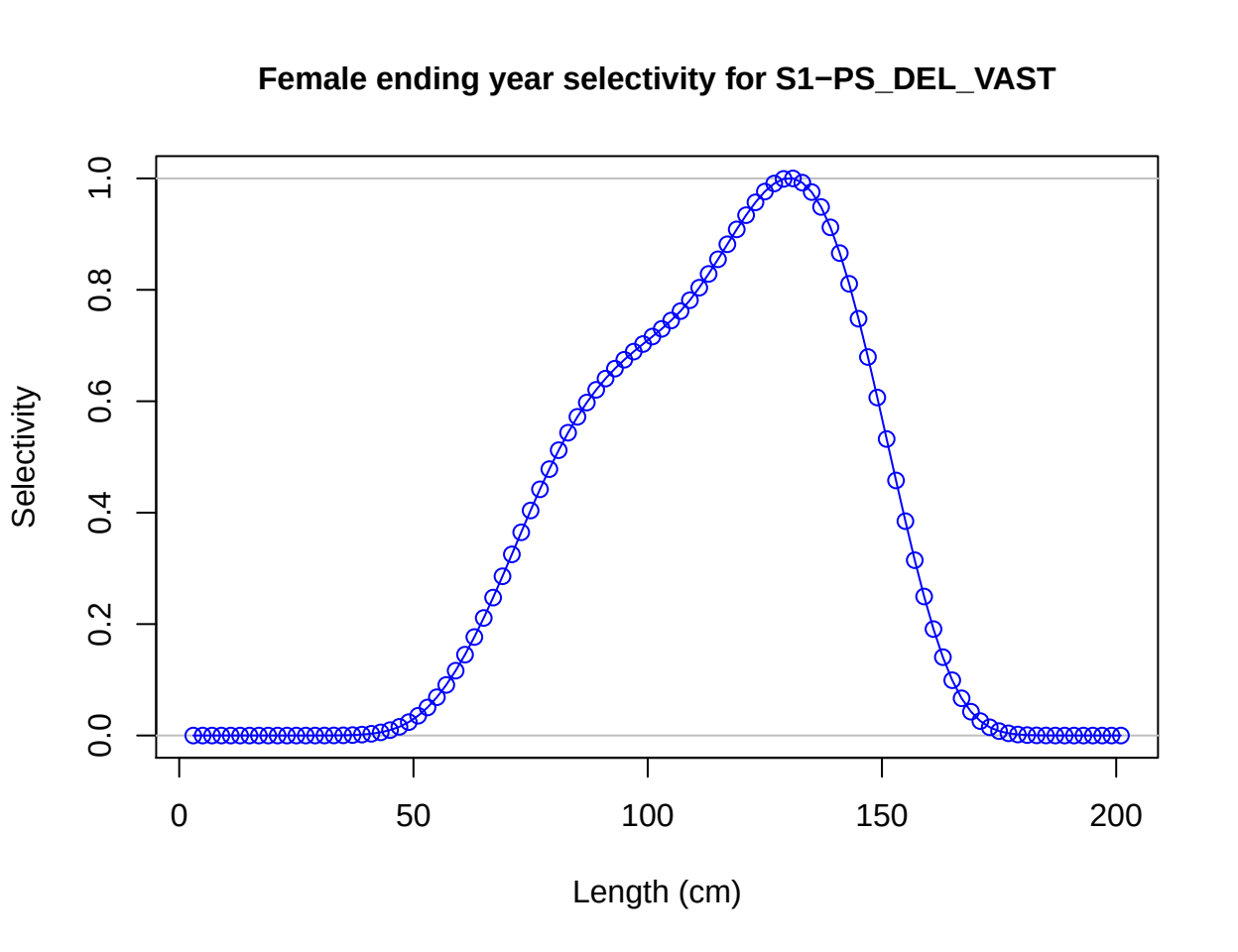

Male ending year selectivity for F38−LL_W_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

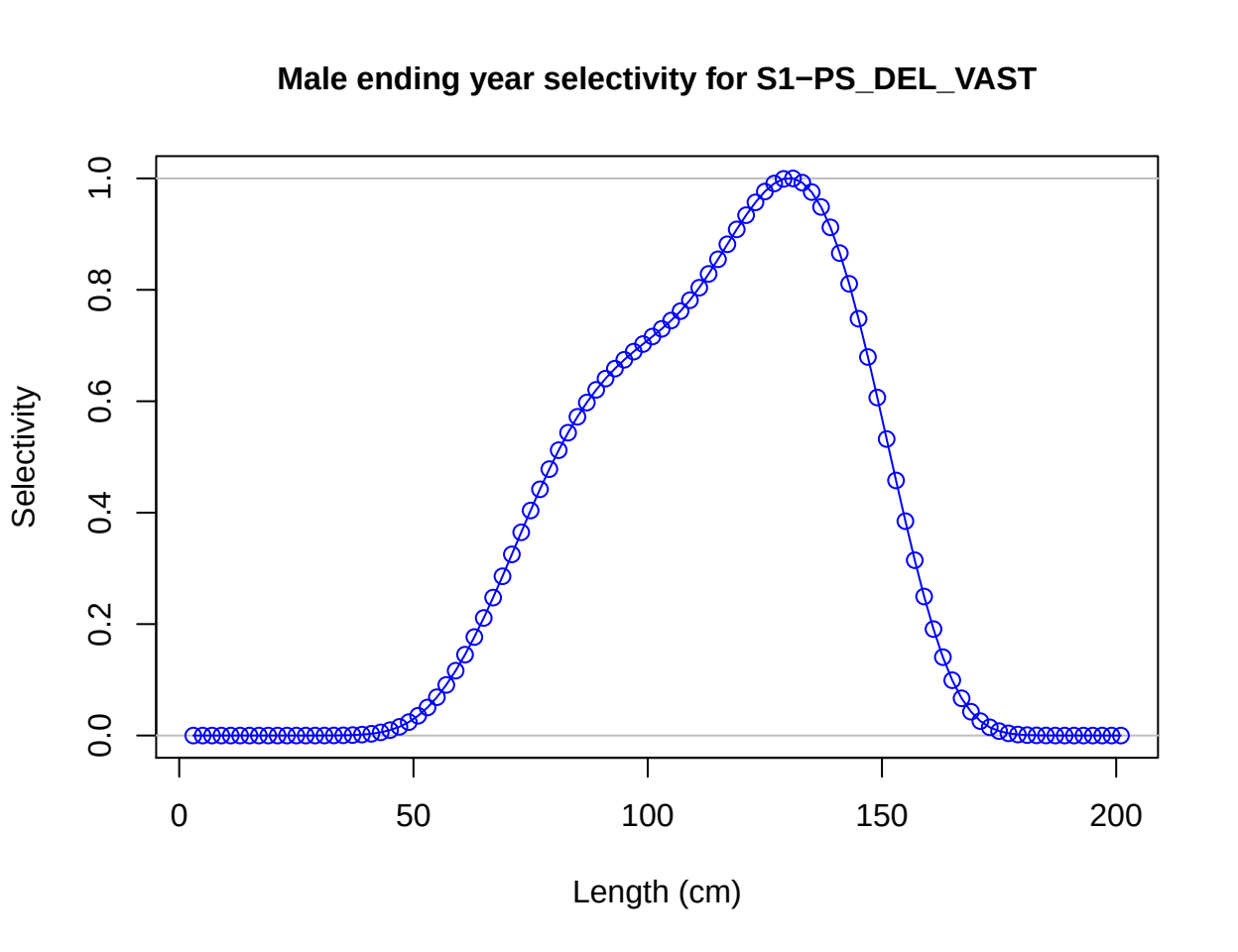

Female ending year selectivity for F39−LL_C_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

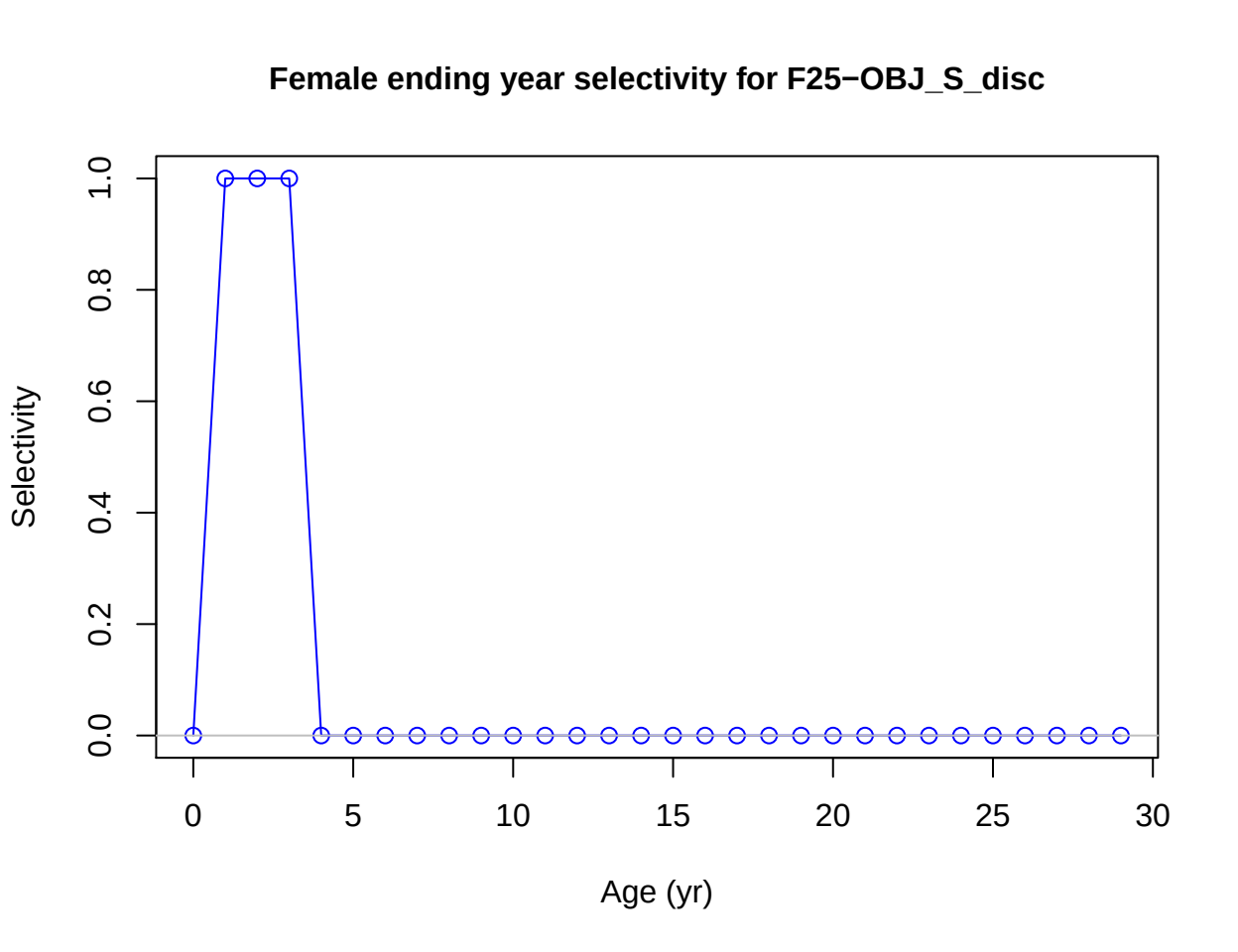

Male ending year selectivity for F39−LL_C_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

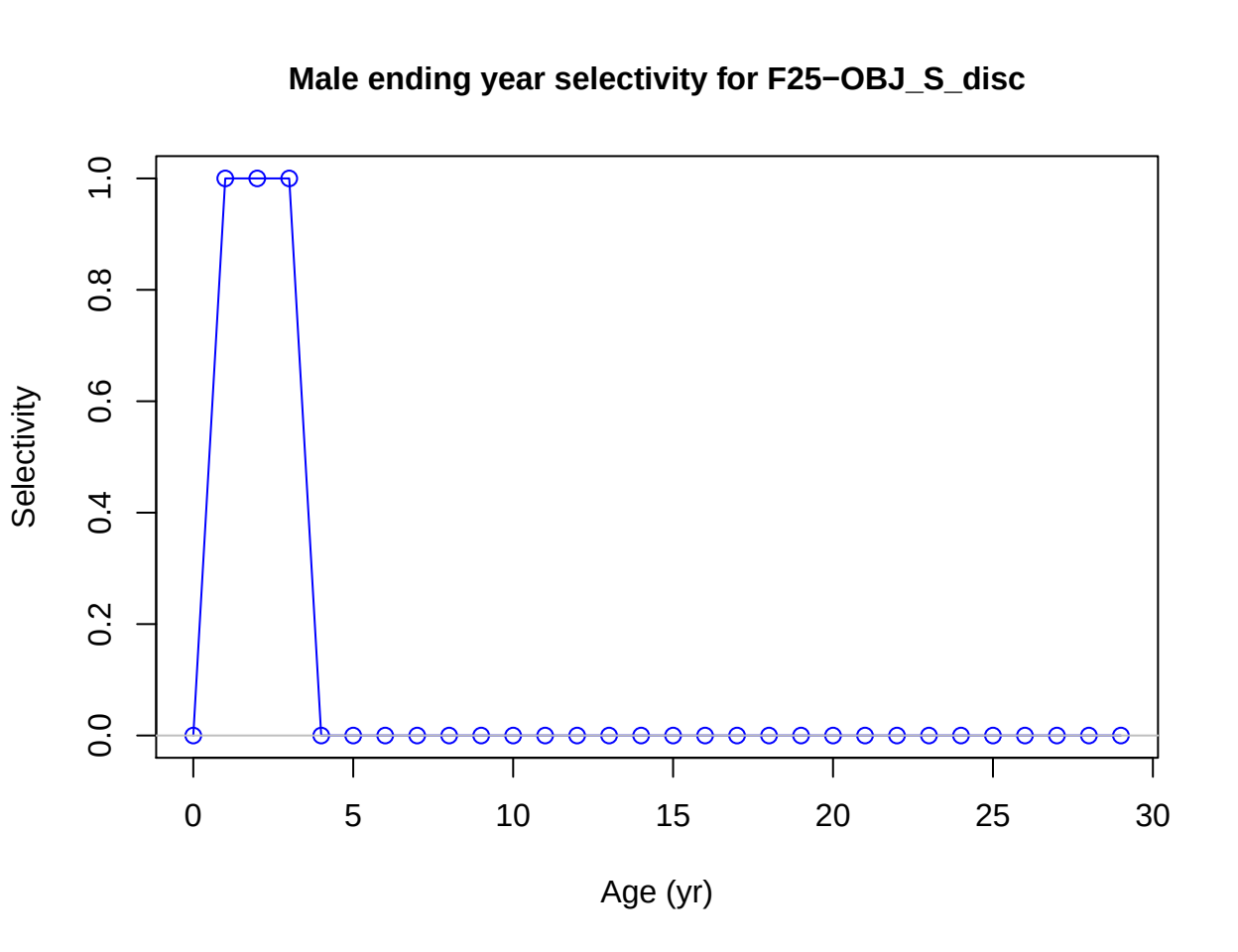

Female ending year selectivity for F40−LL_E_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

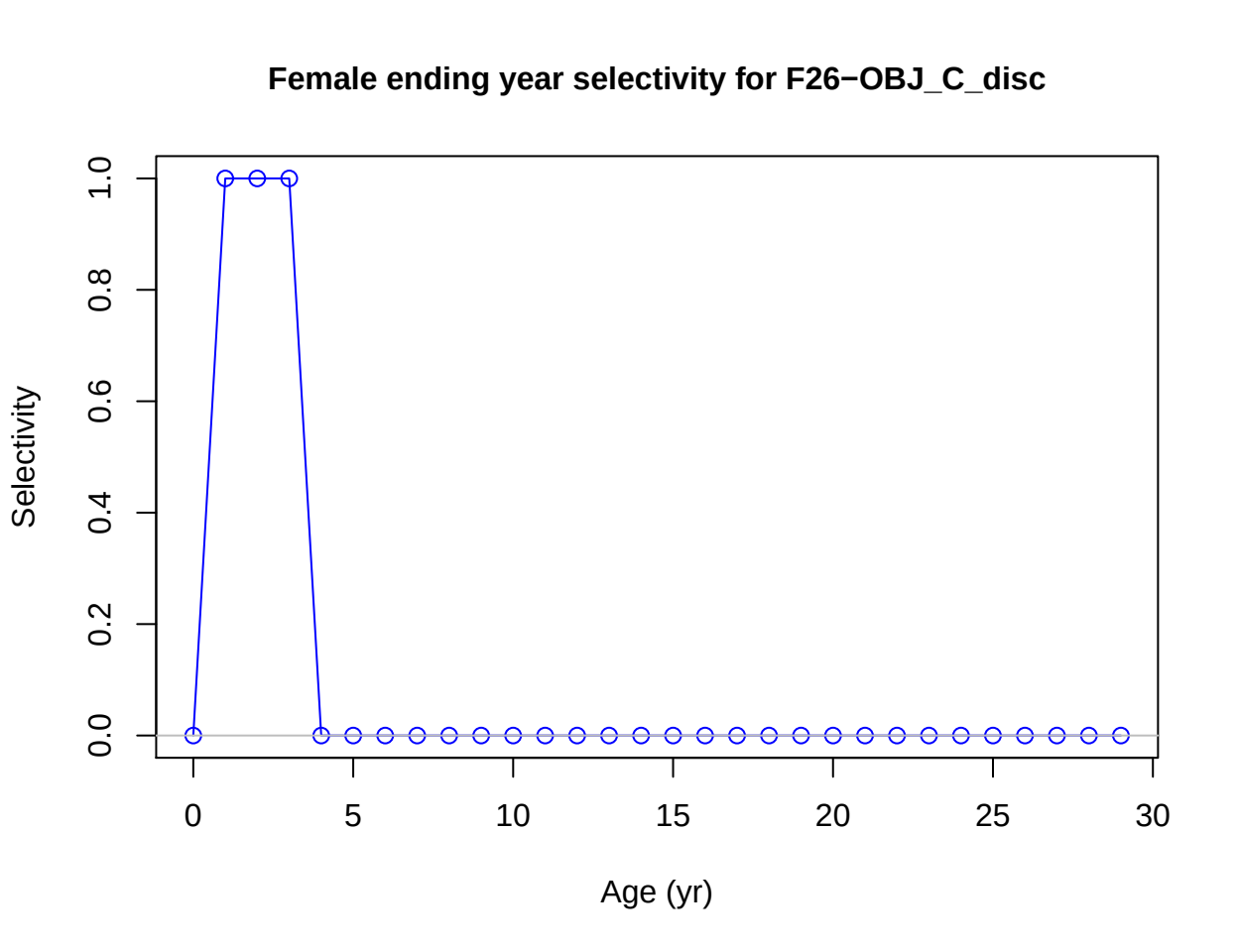

Male ending year selectivity for F40−LL_E_Q23w
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

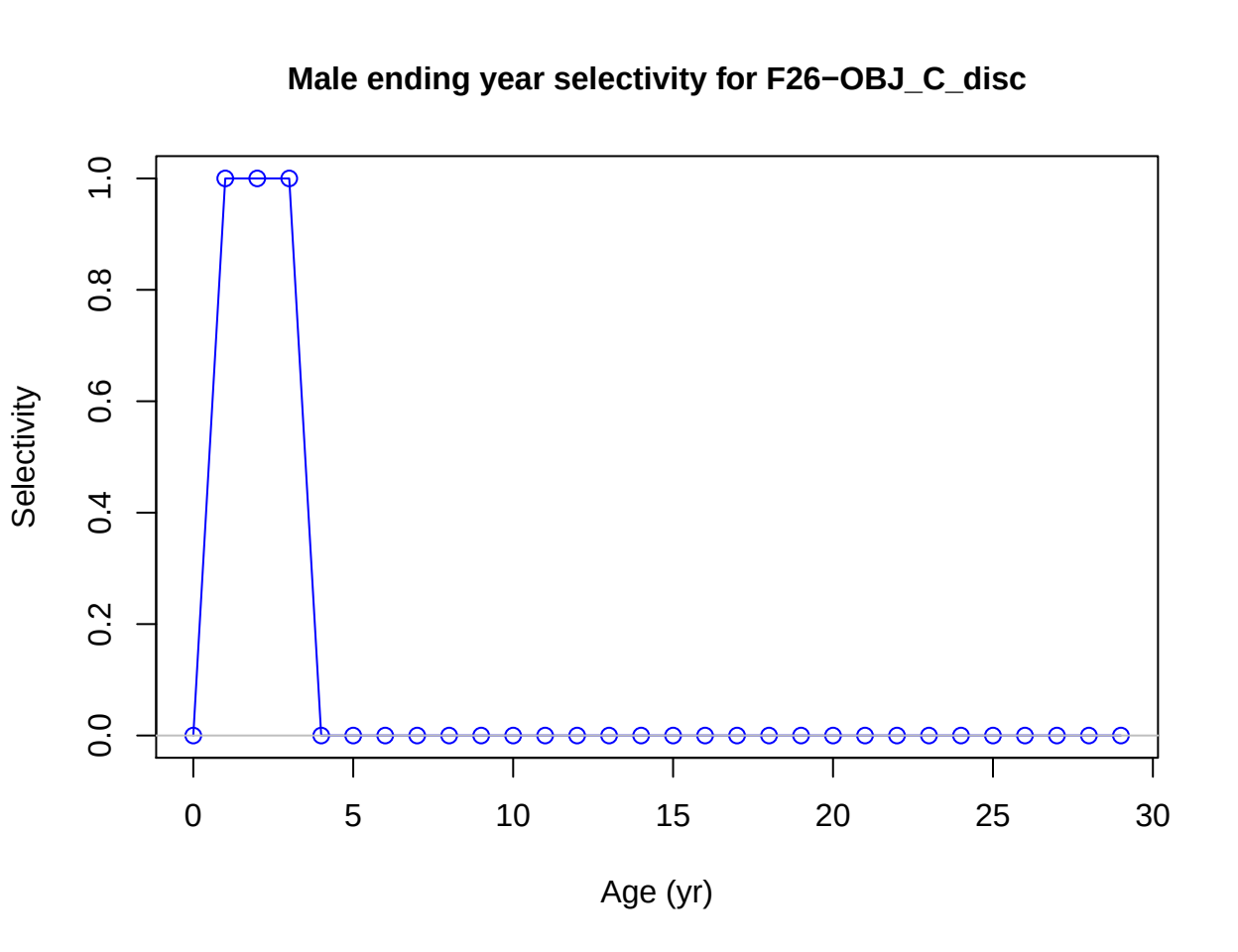

Female ending year selectivity for S1−PS_DEL_VAST
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

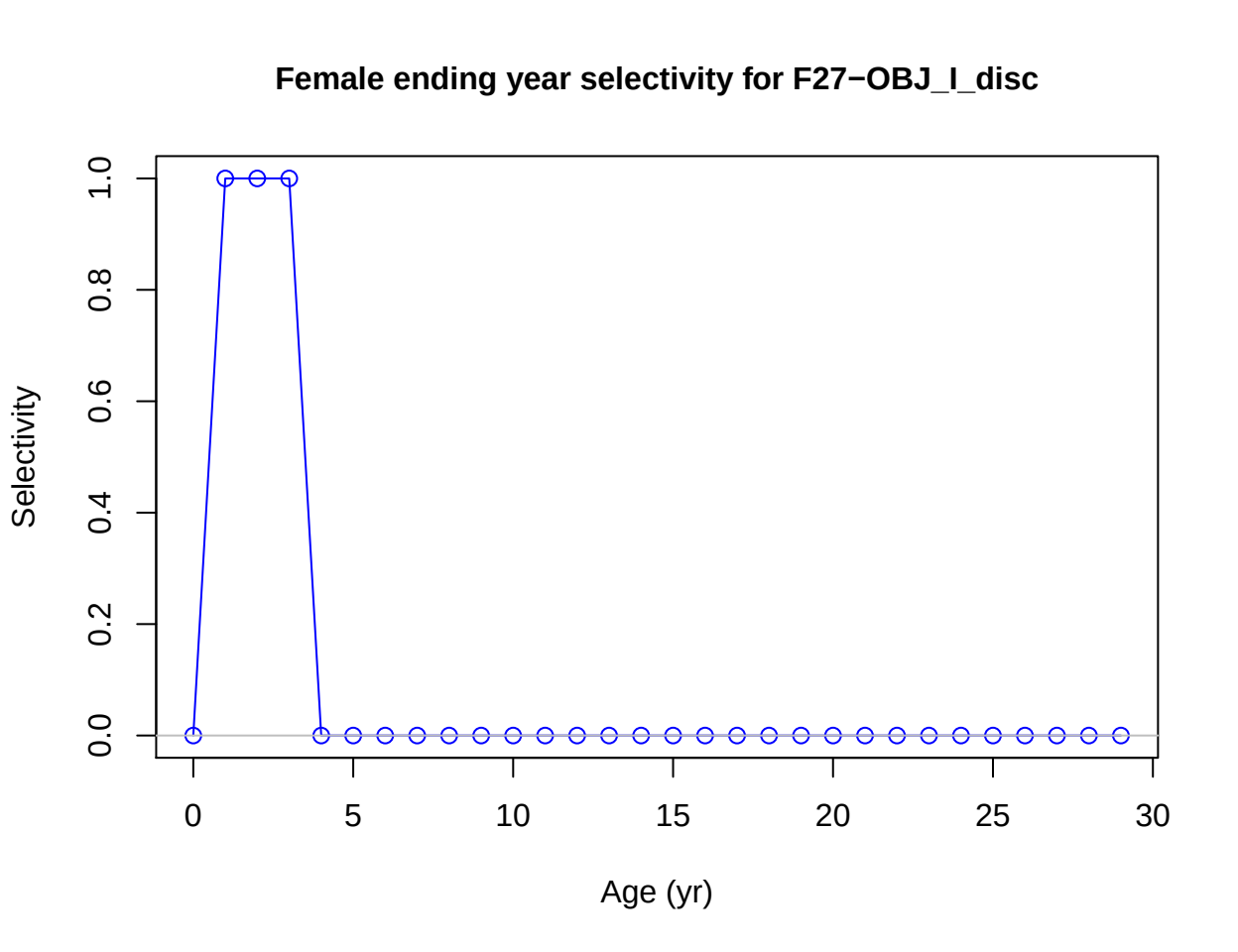

Male ending year selectivity for S1−PS_DEL_VAST
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
Length (cm)

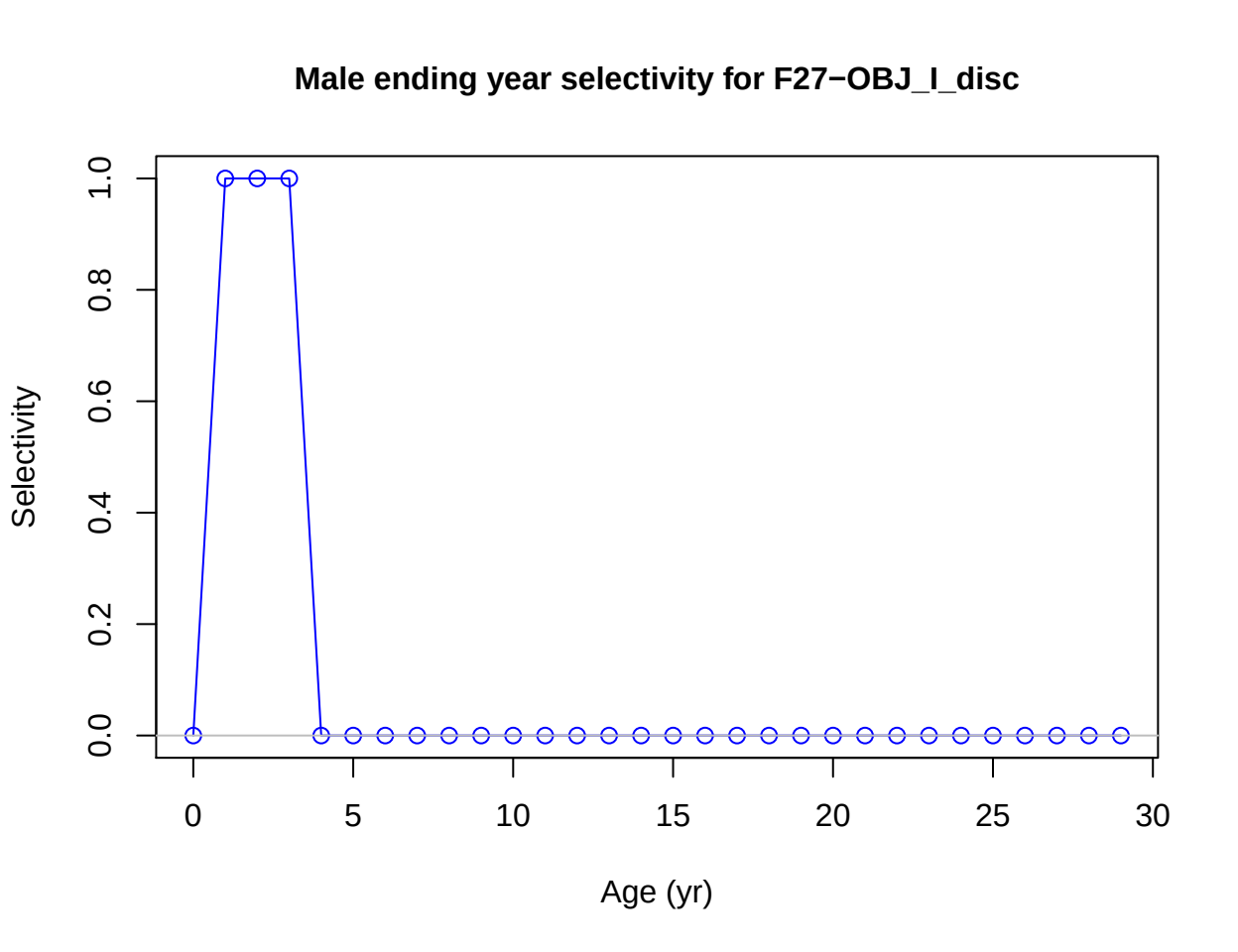

Female ending year selectivity for F25−OBJ_S_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

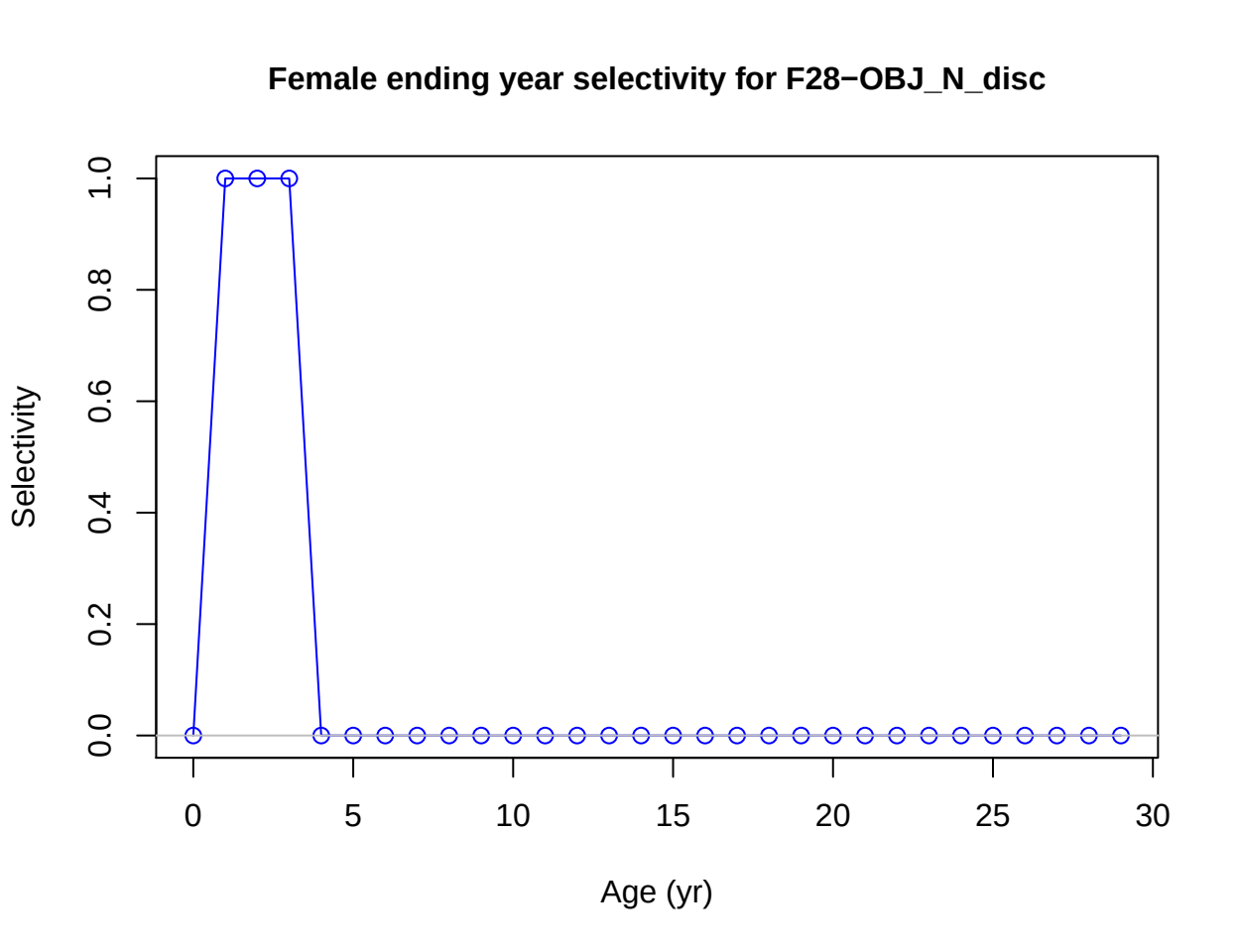

Male ending year selectivity for F25−OBJ_S_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

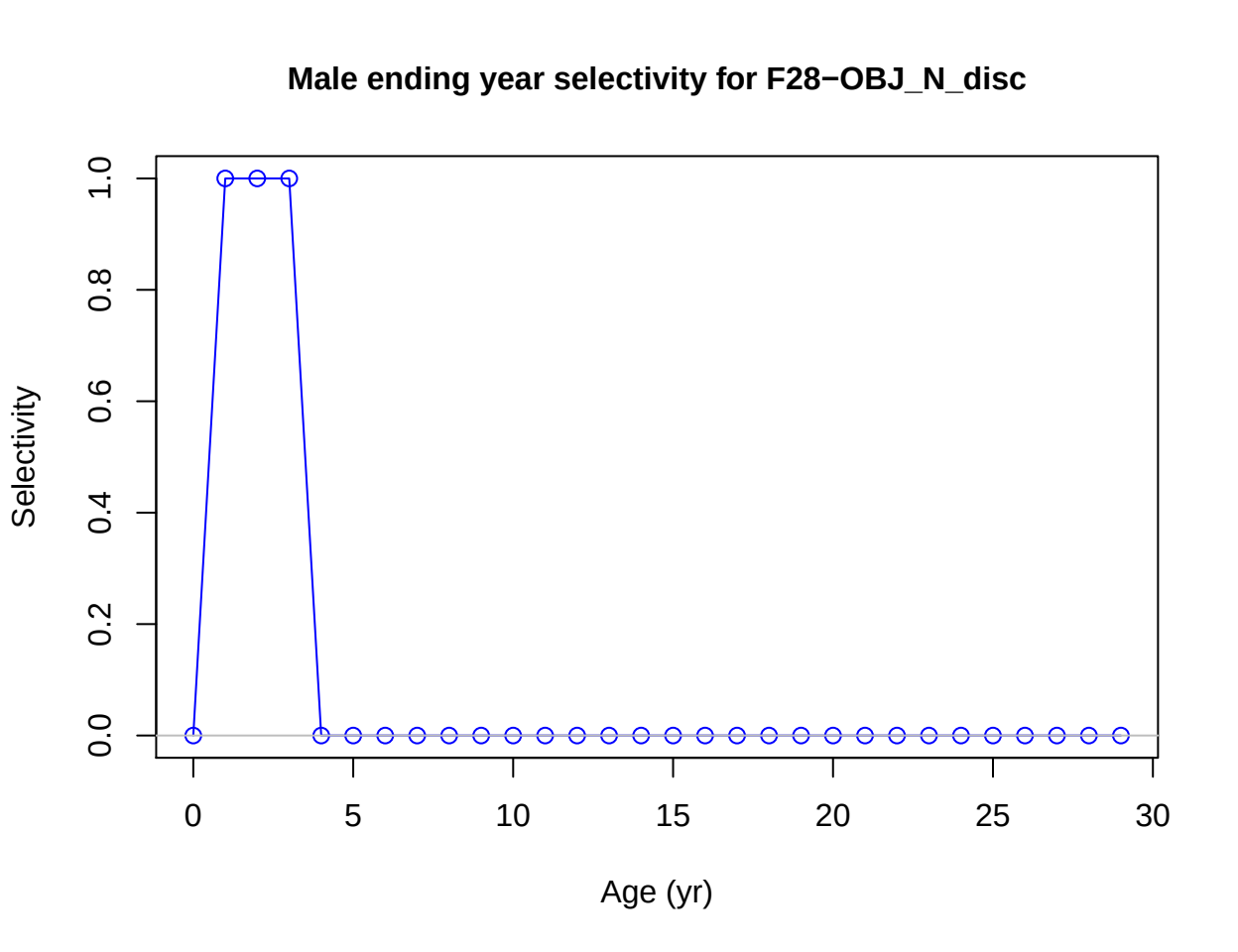

Female ending year selectivity for F26−OBJ_C_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

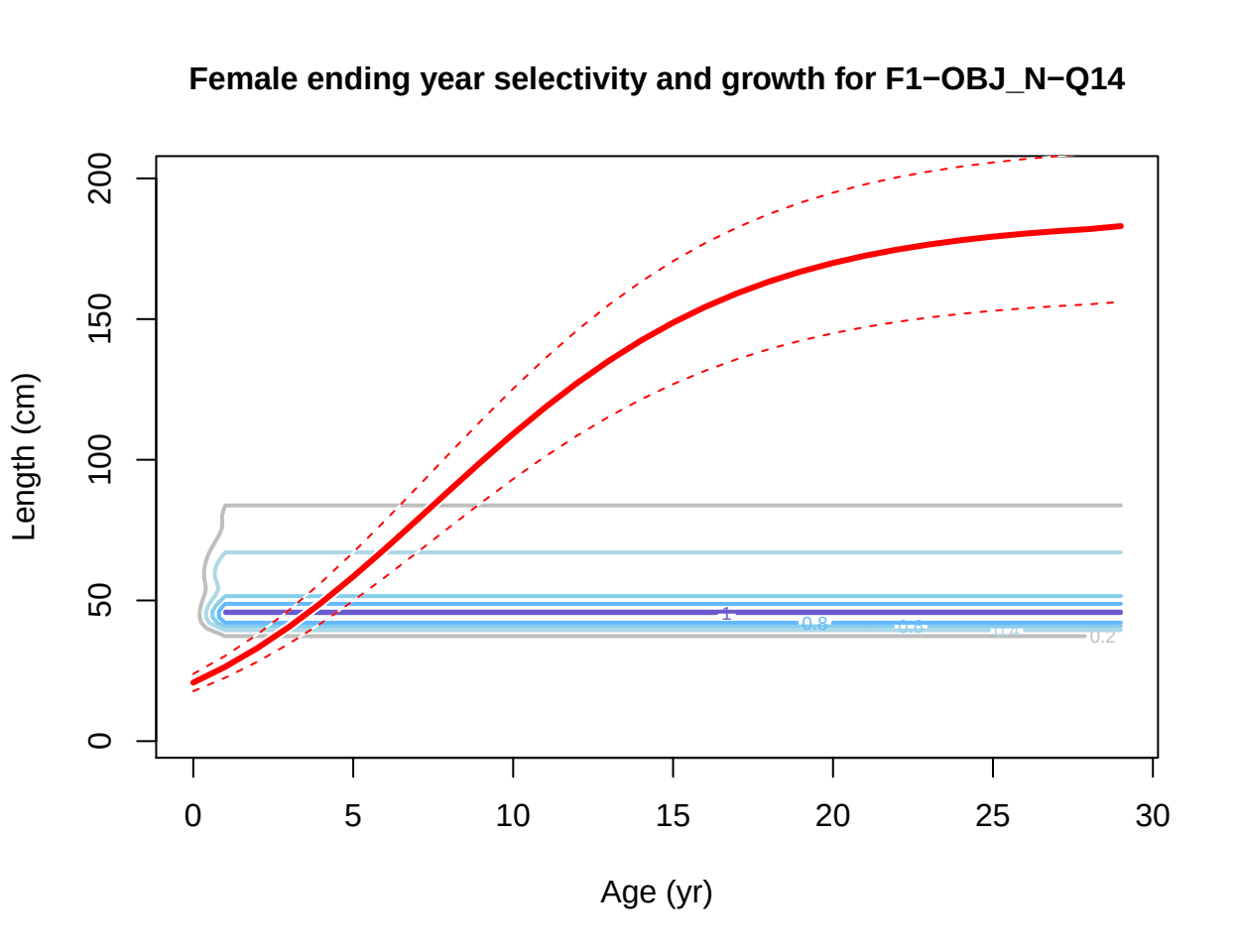

Male ending year selectivity for F26−OBJ_C_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

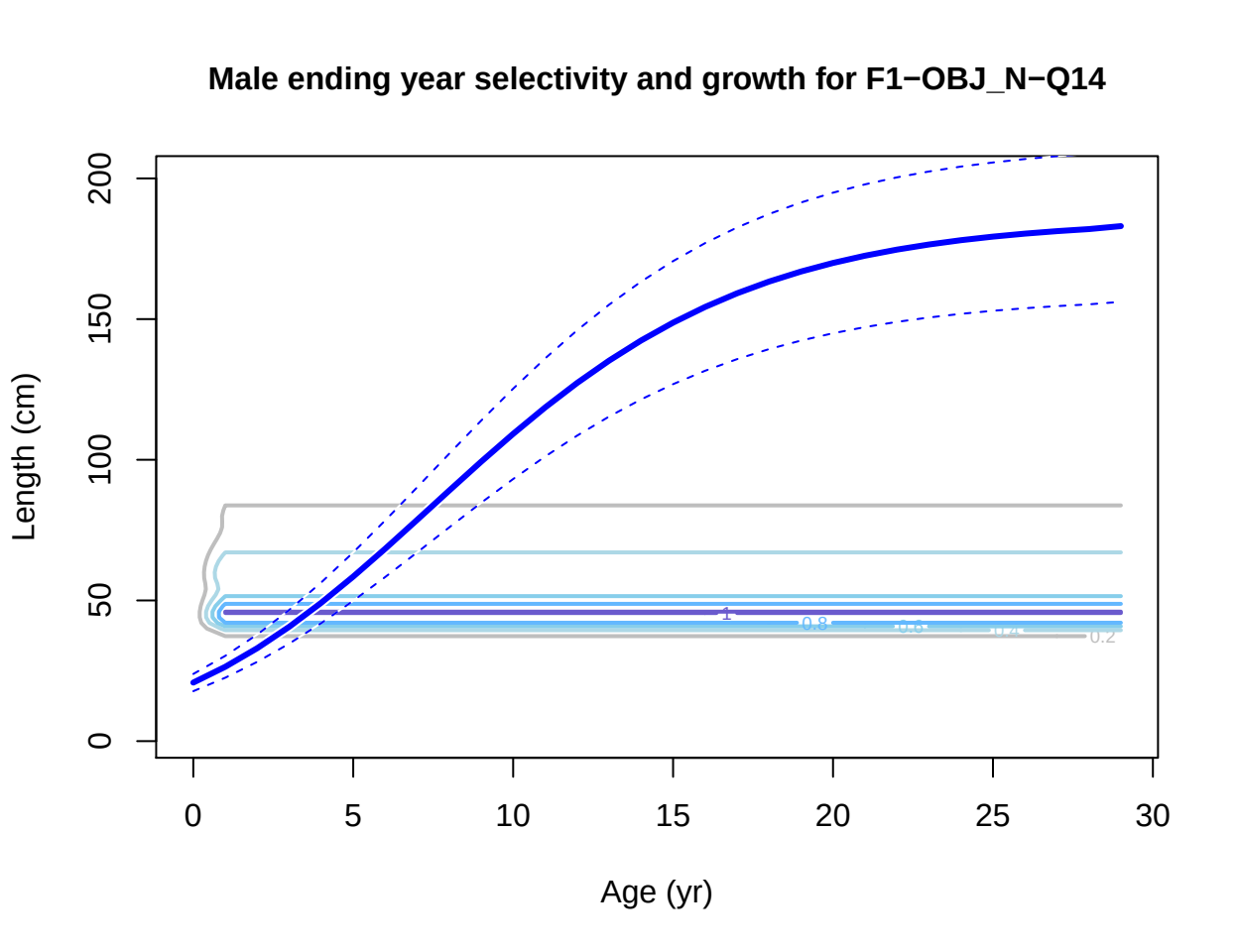

Female ending year selectivity for F27−OBJ_I_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

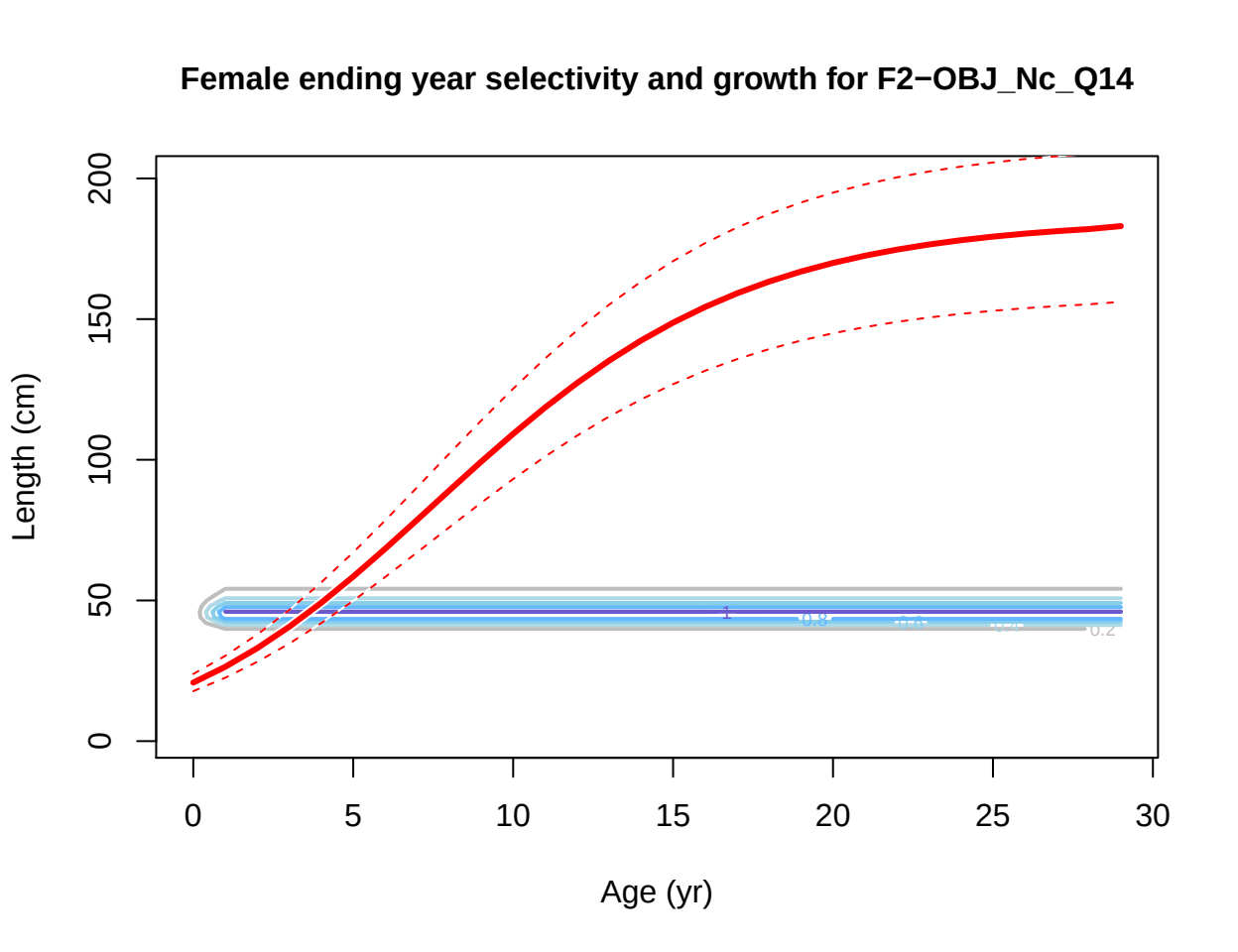

Male ending year selectivity for F27−OBJ_I_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

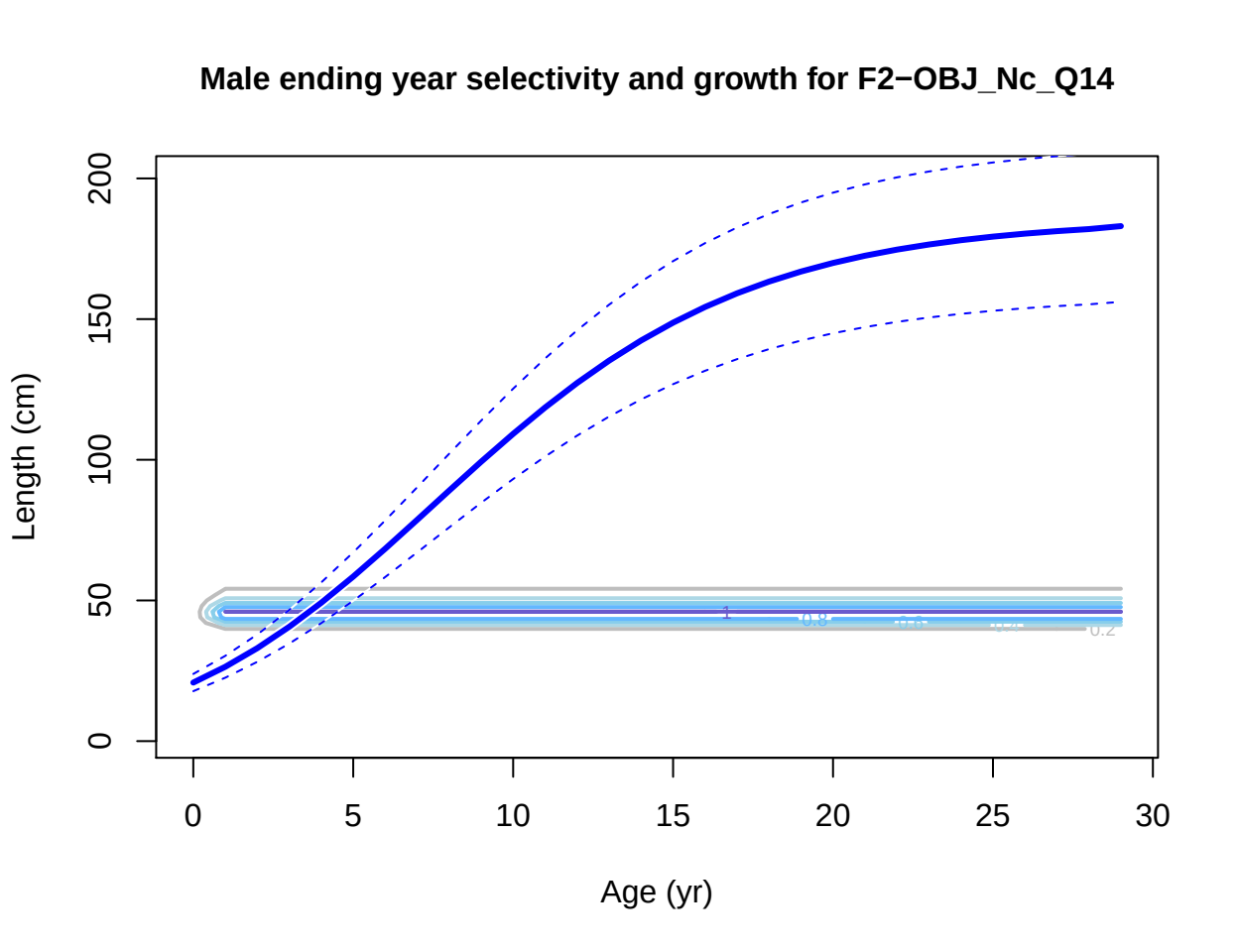

Female ending year selectivity for F28−OBJ_N_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

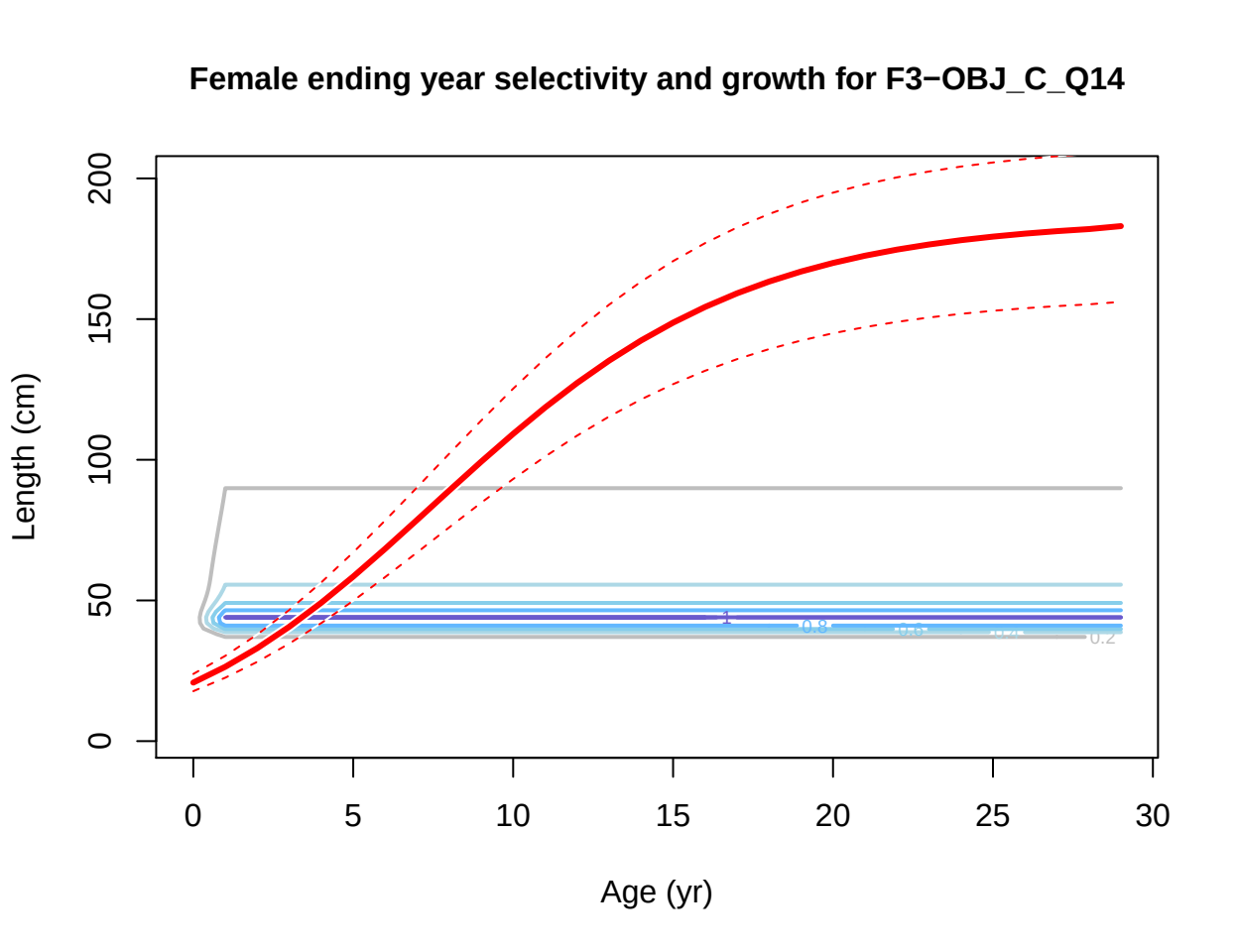

Male ending year selectivity for F28−OBJ_N_disc
Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)

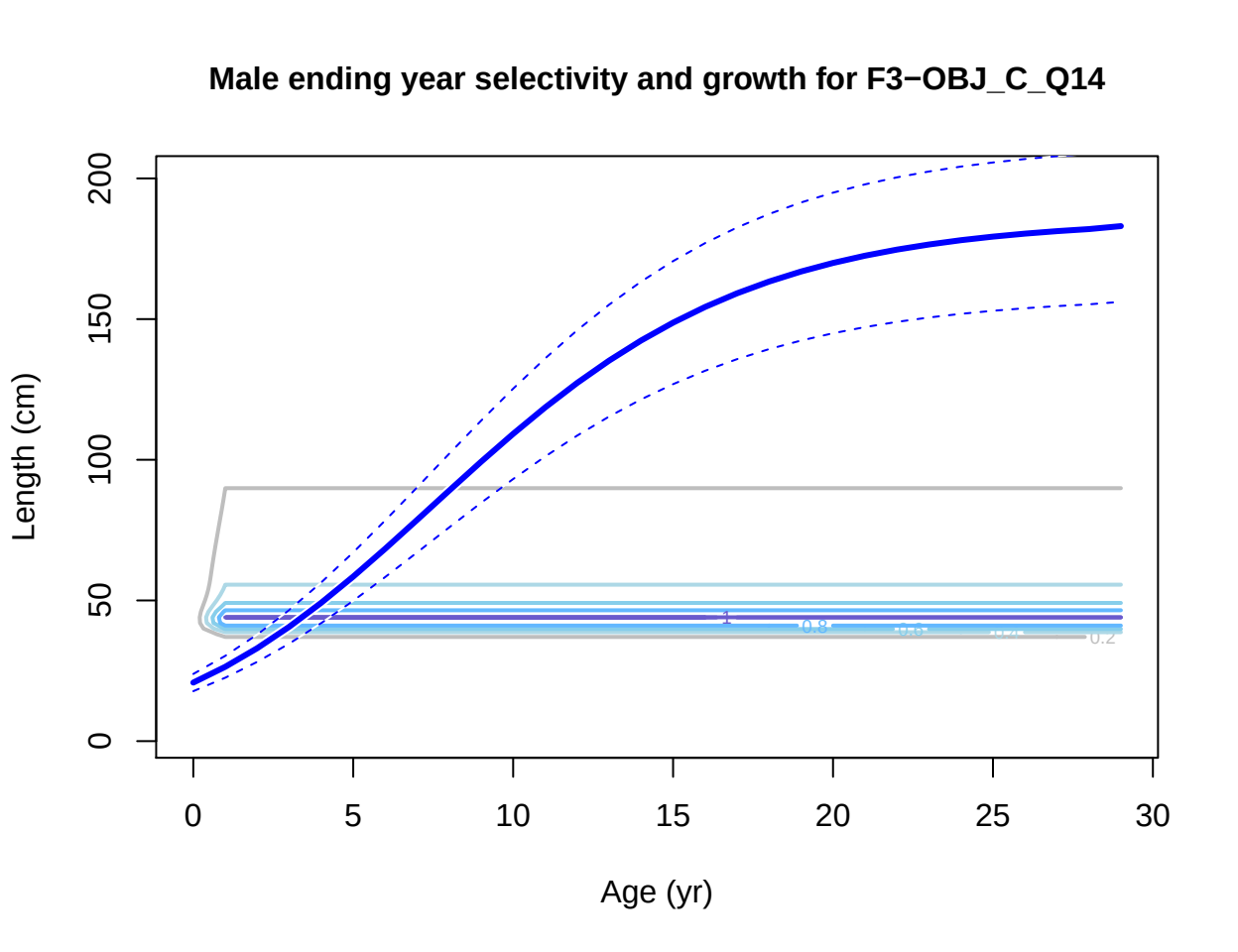

Female ending year selectivity and growth for F1−OBJ_N−Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

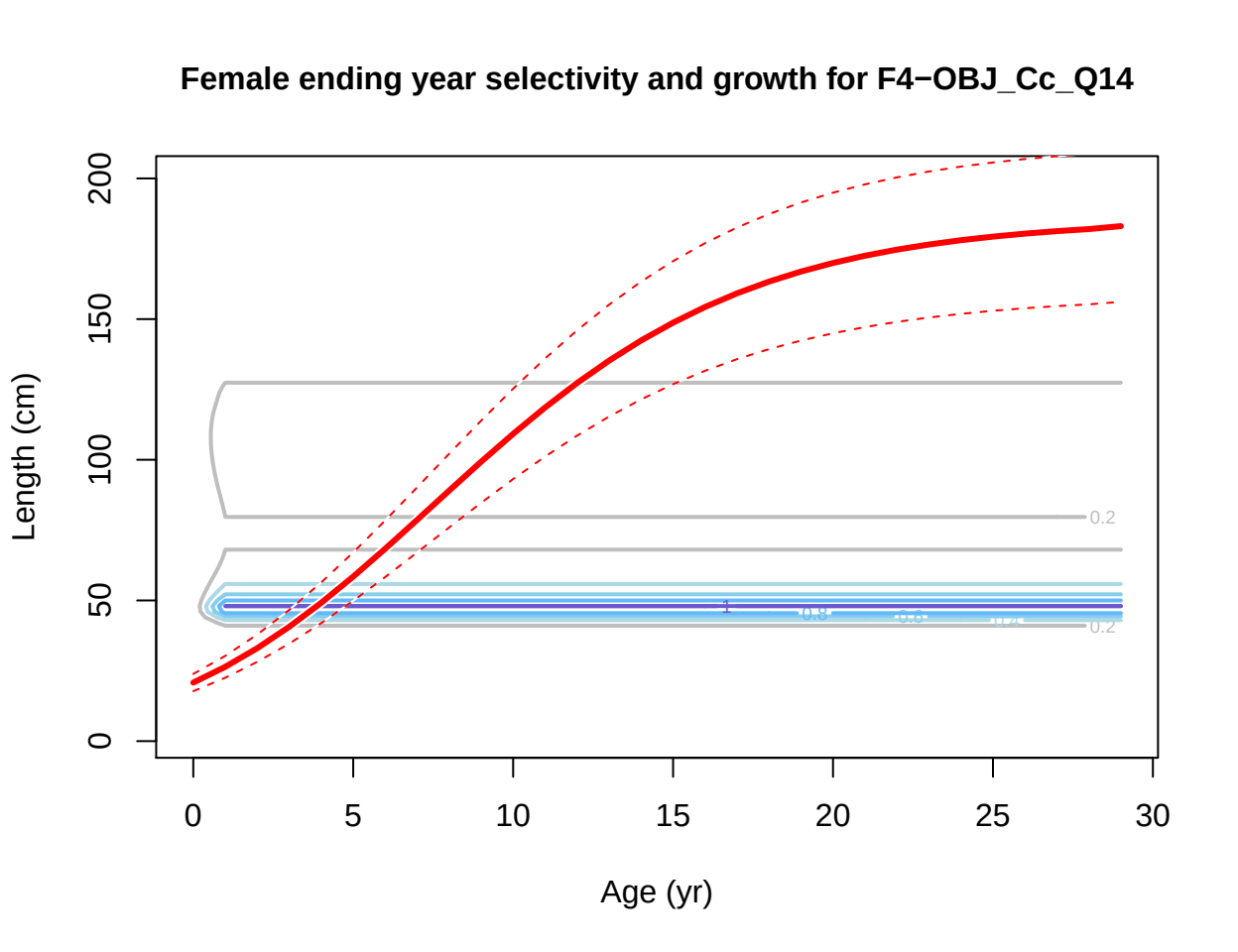

Male ending year selectivity and growth for F1−OBJ_N−Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

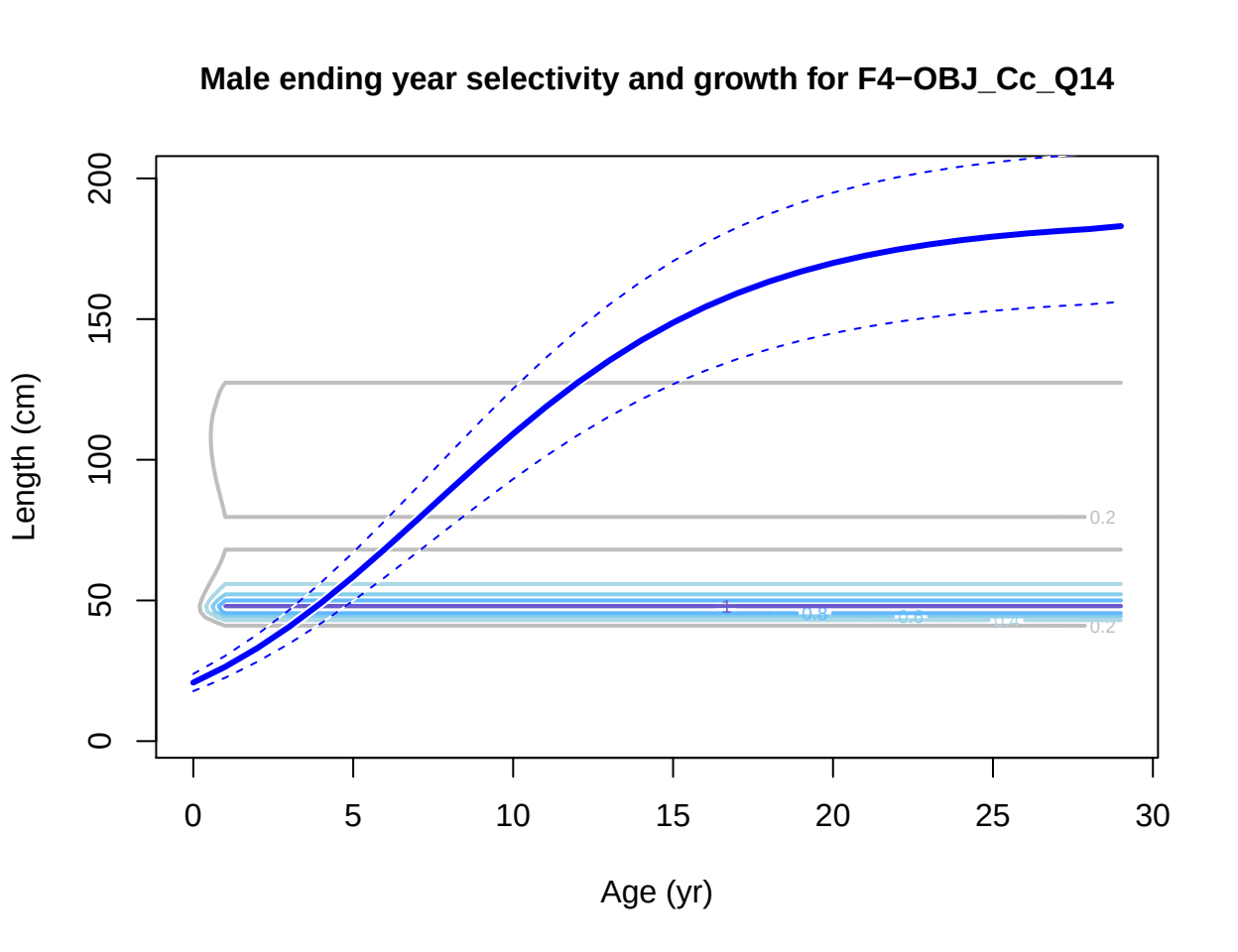

Female ending year selectivity and growth for F2−OBJ_Nc_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

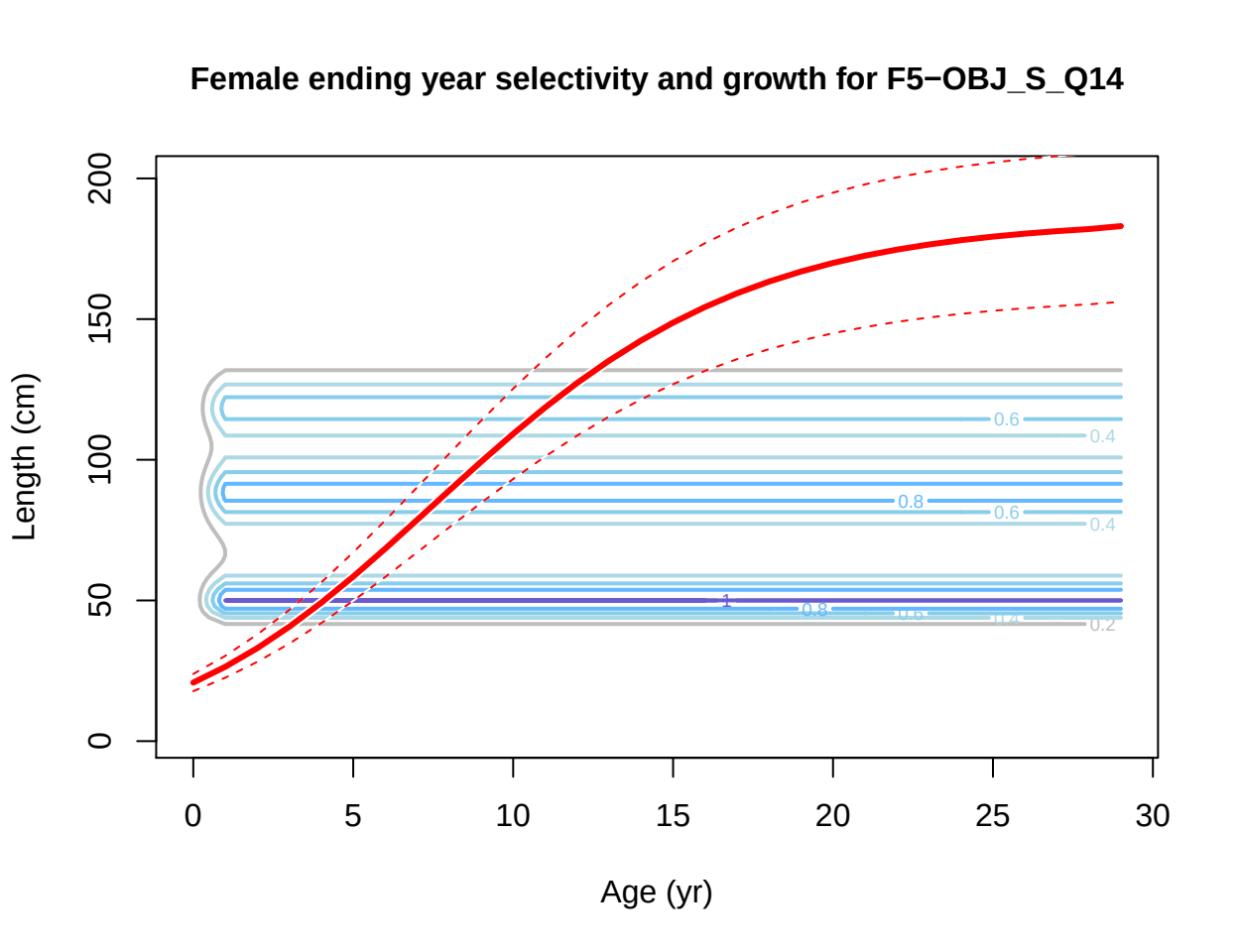

Male ending year selectivity and growth for F2−OBJ_Nc_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

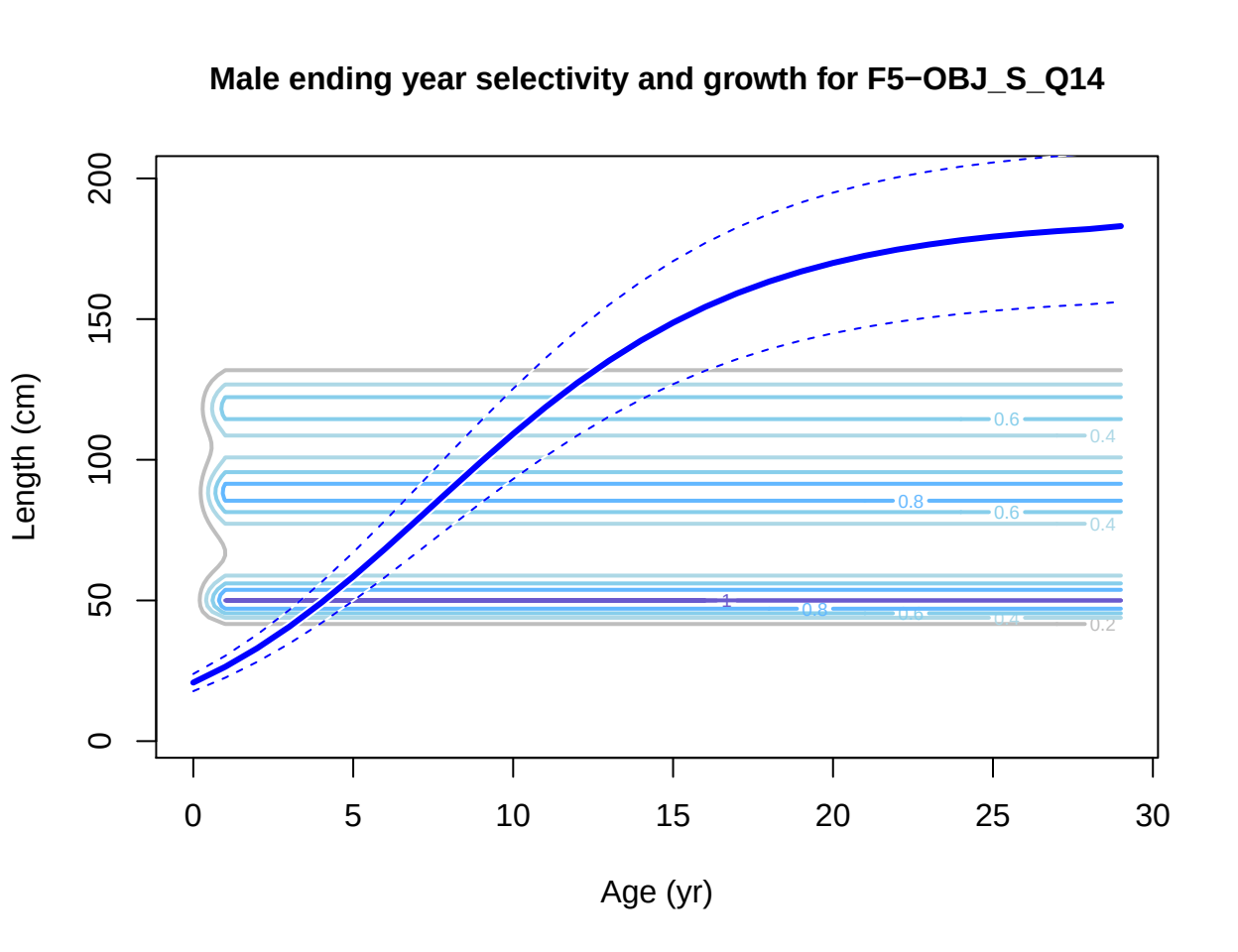

Female ending year selectivity and growth for F3−OBJ_C_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

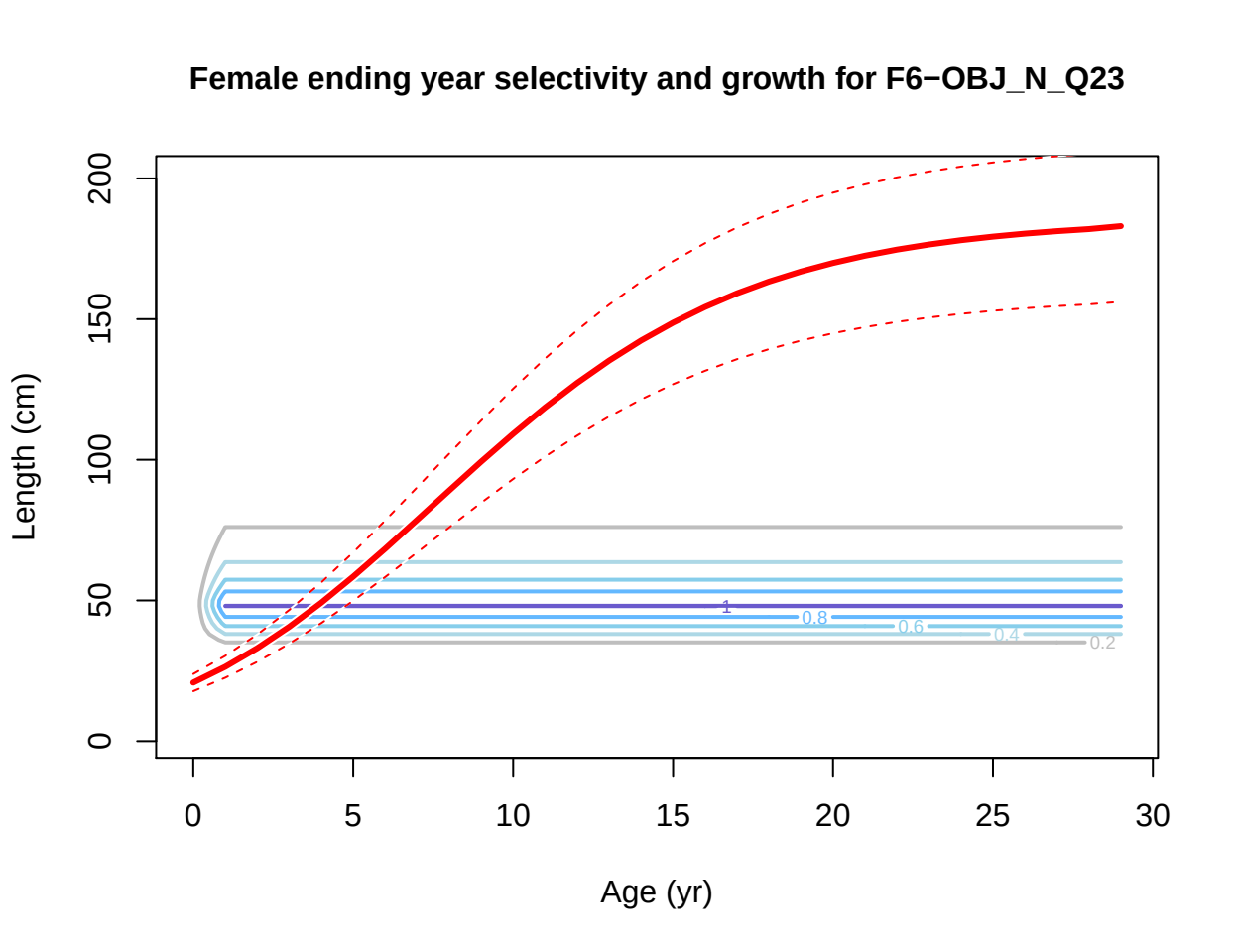

Male ending year selectivity and growth for F3−OBJ_C_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.2

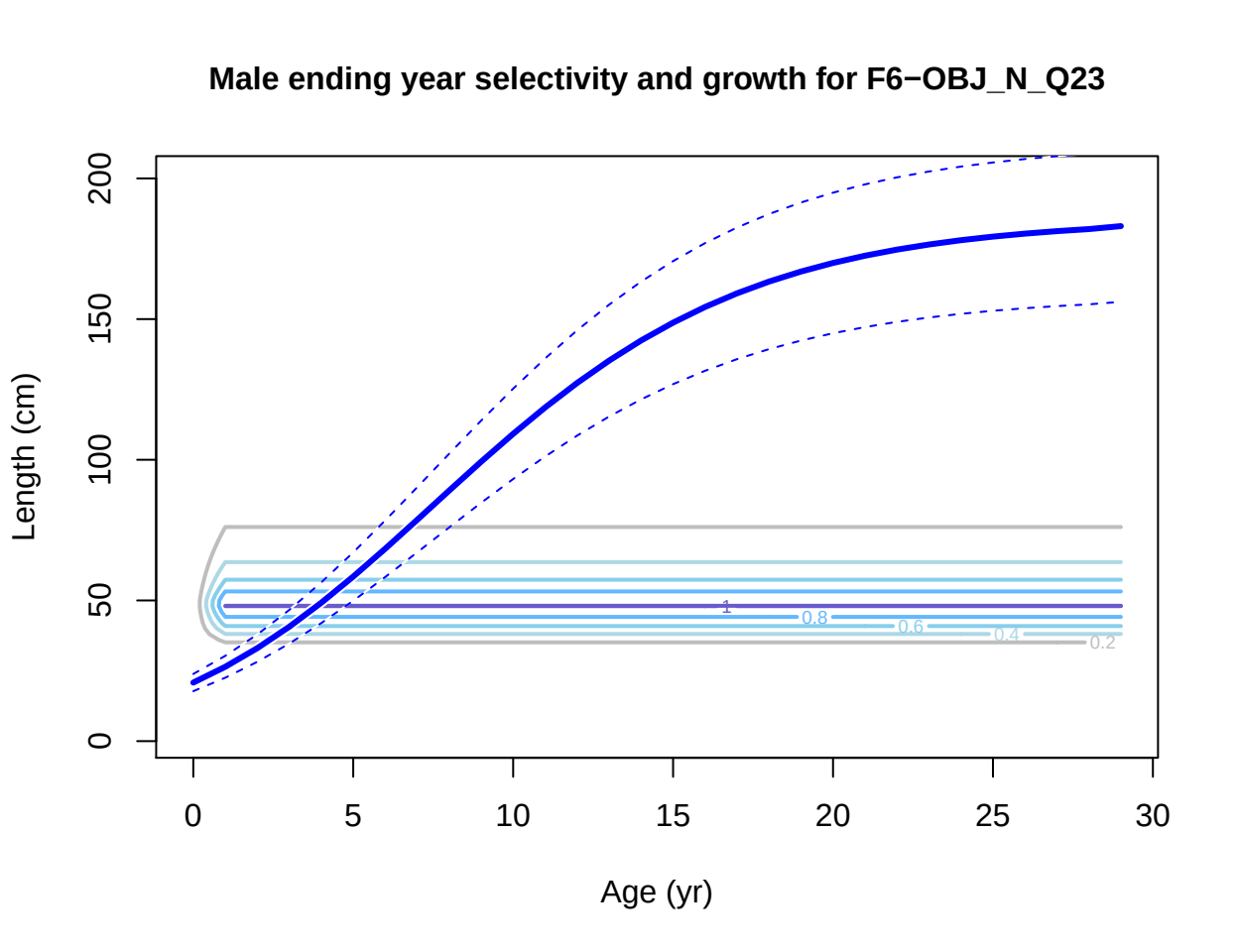

Female ending year selectivity and growth for F4−OBJ_Cc_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.2
0.2

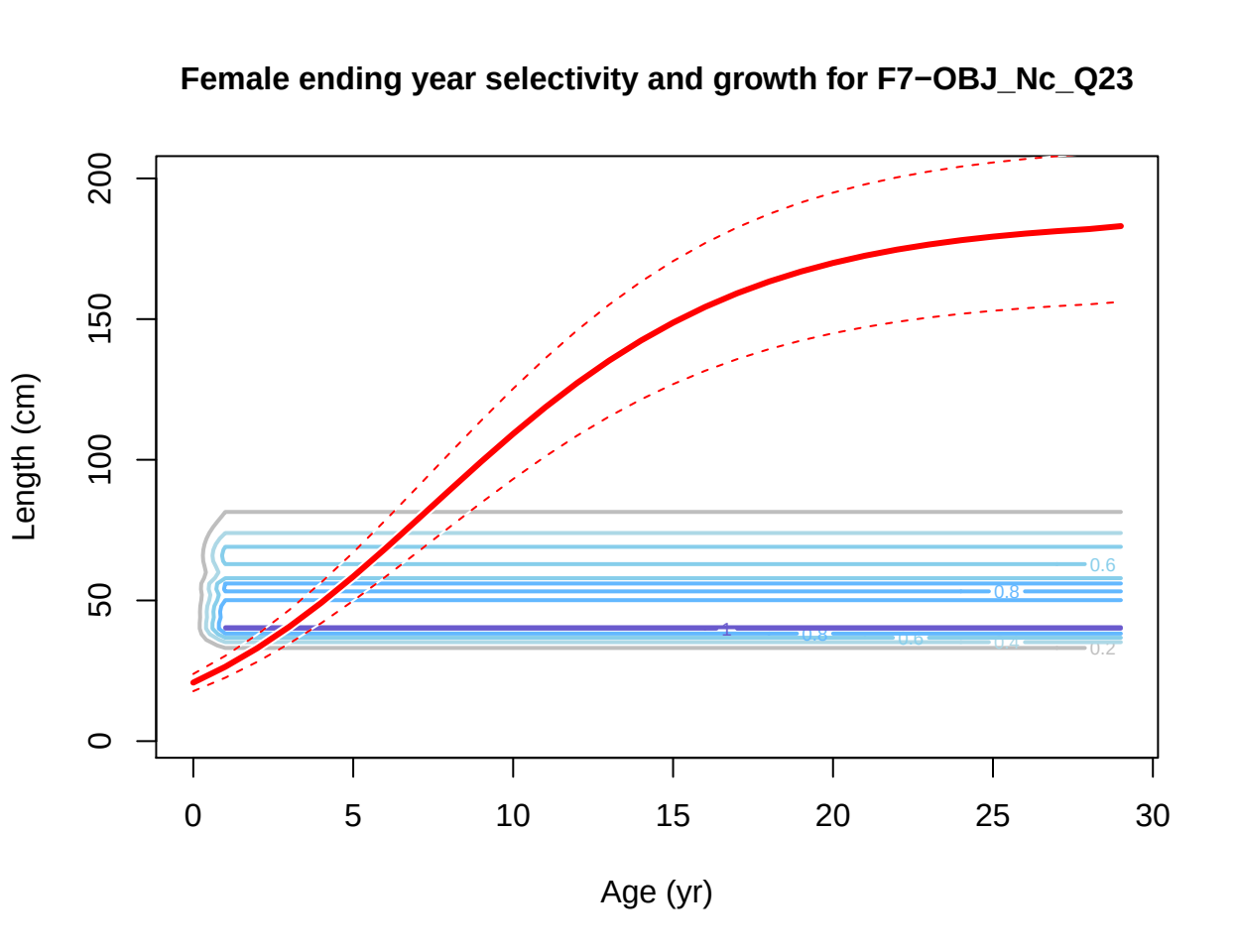

Male ending year selectivity and growth for F4−OBJ_Cc_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.2
0.2

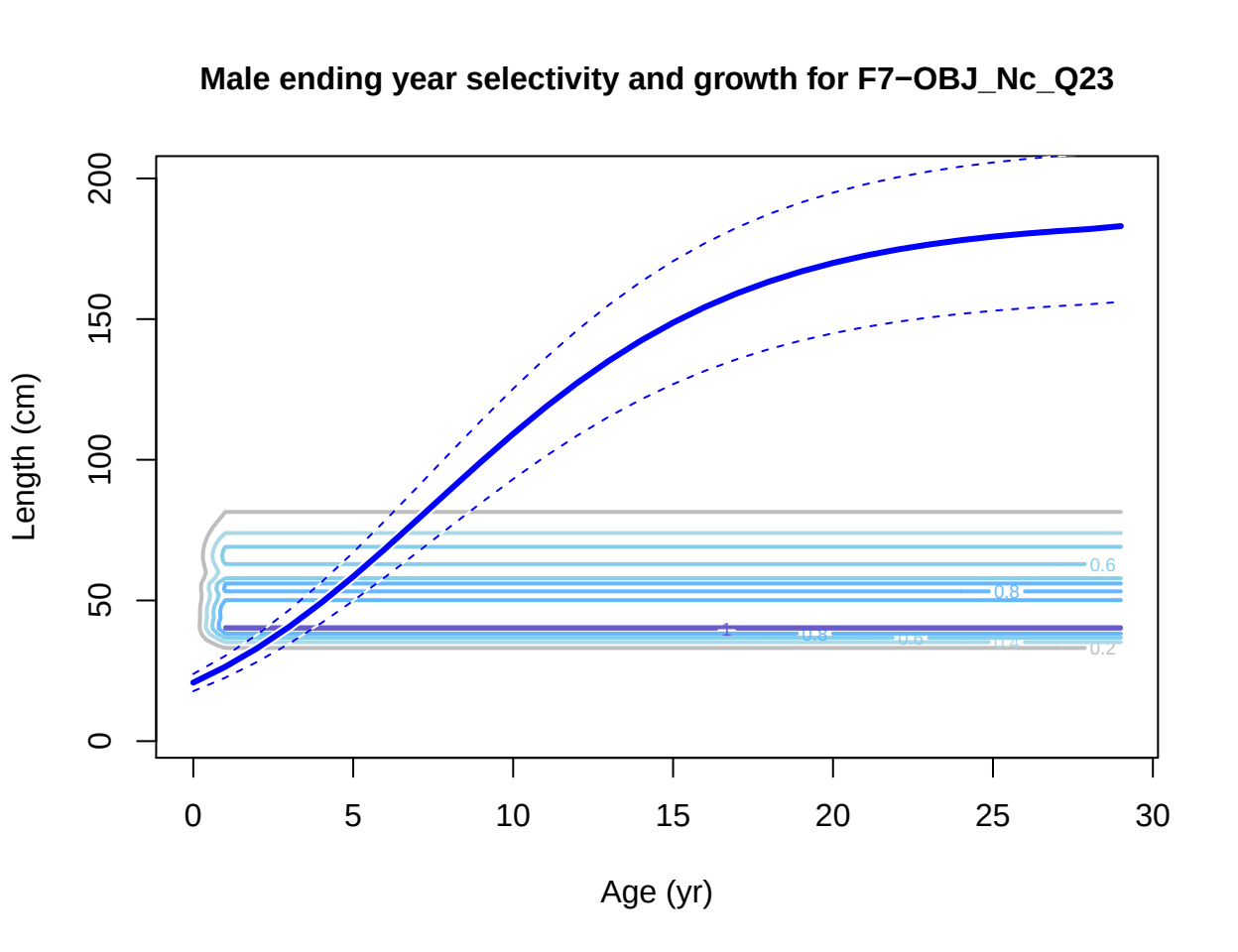

Female ending year selectivity and growth for F5−OBJ_S_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.8
0.6
0.4
1
0.8
0.2

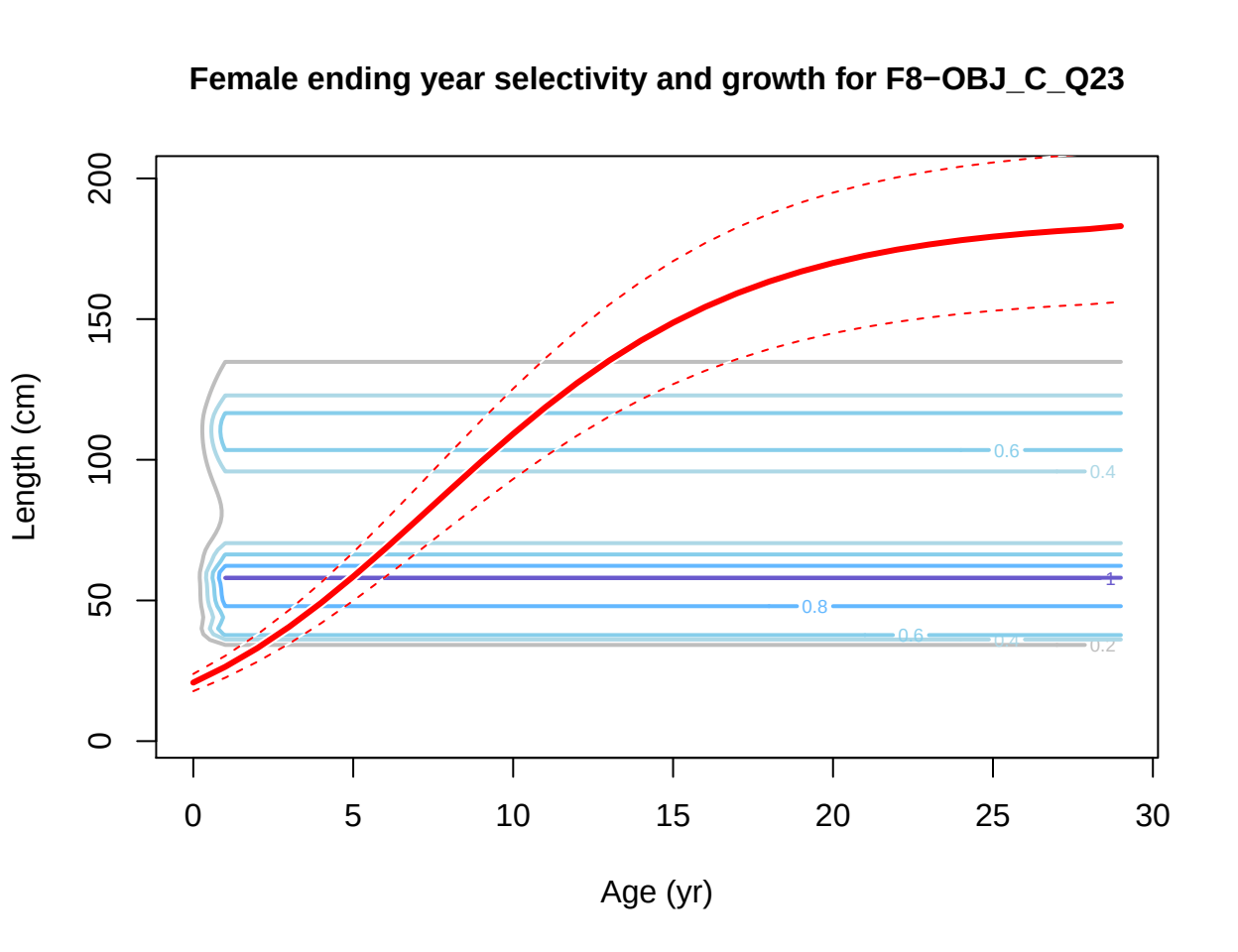

Male ending year selectivity and growth for F5−OBJ_S_Q14
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.8
0.6
0.4
1
0.8
0.2

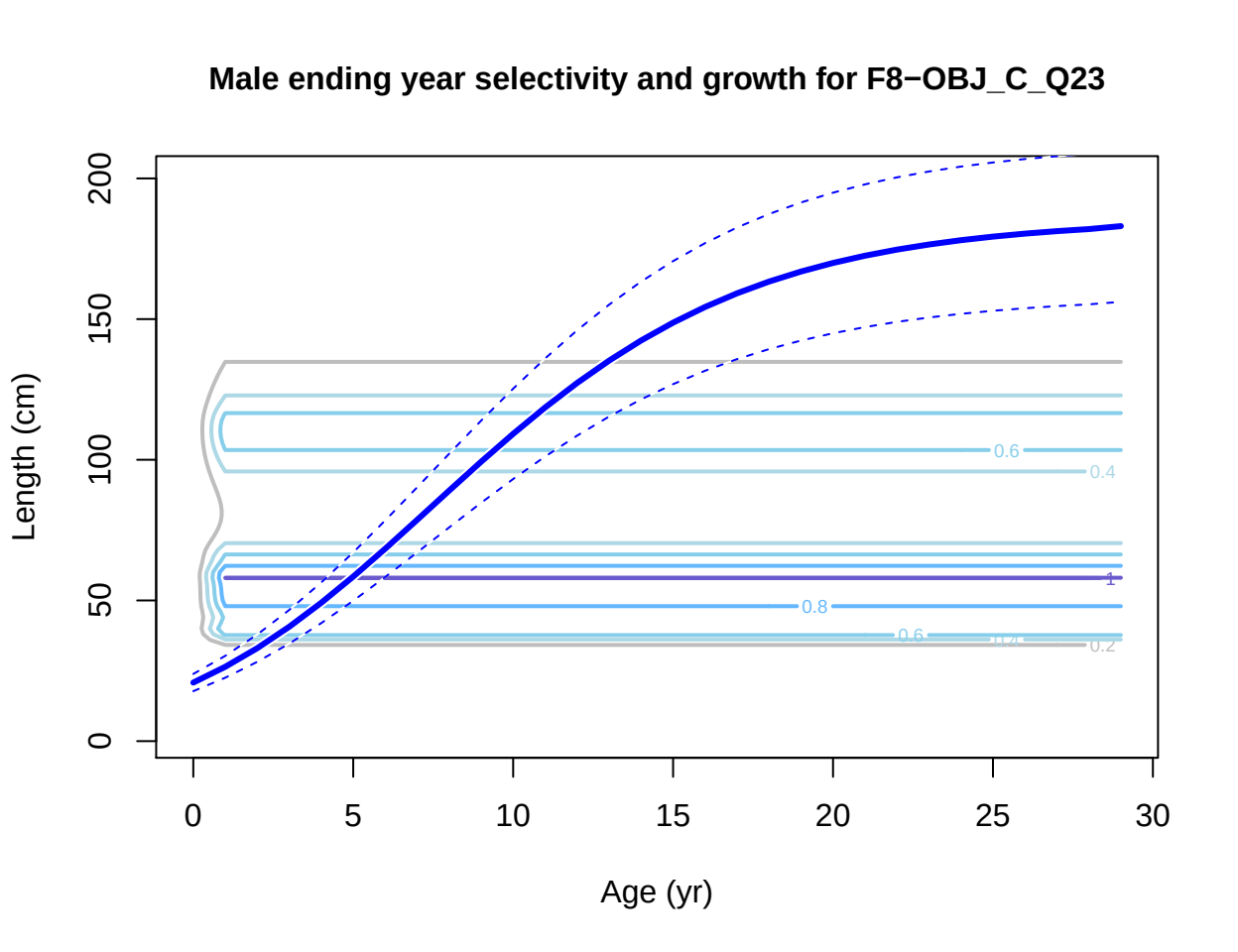

Female ending year selectivity and growth for F6−OBJ_N_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

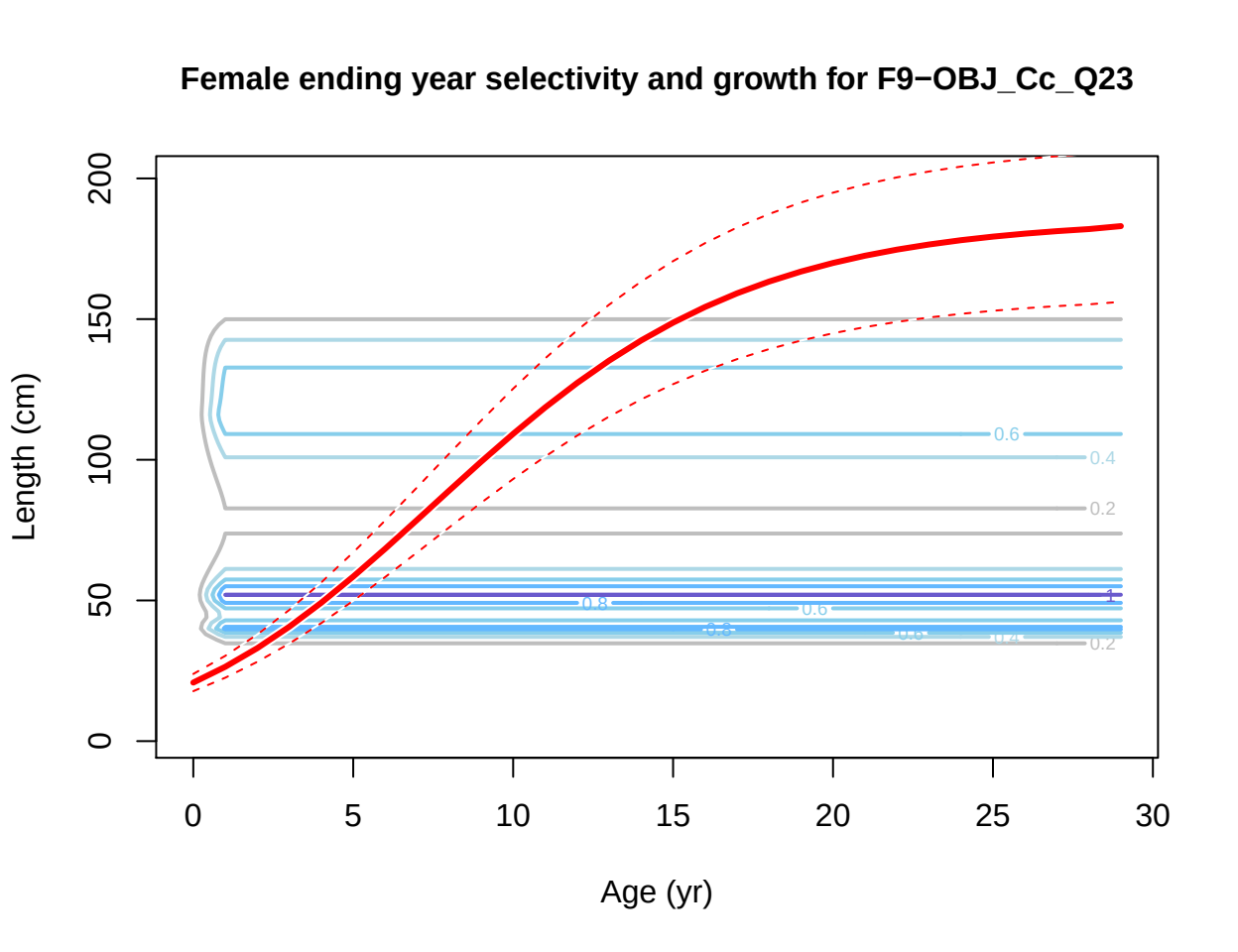

Male ending year selectivity and growth for F6−OBJ_N_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

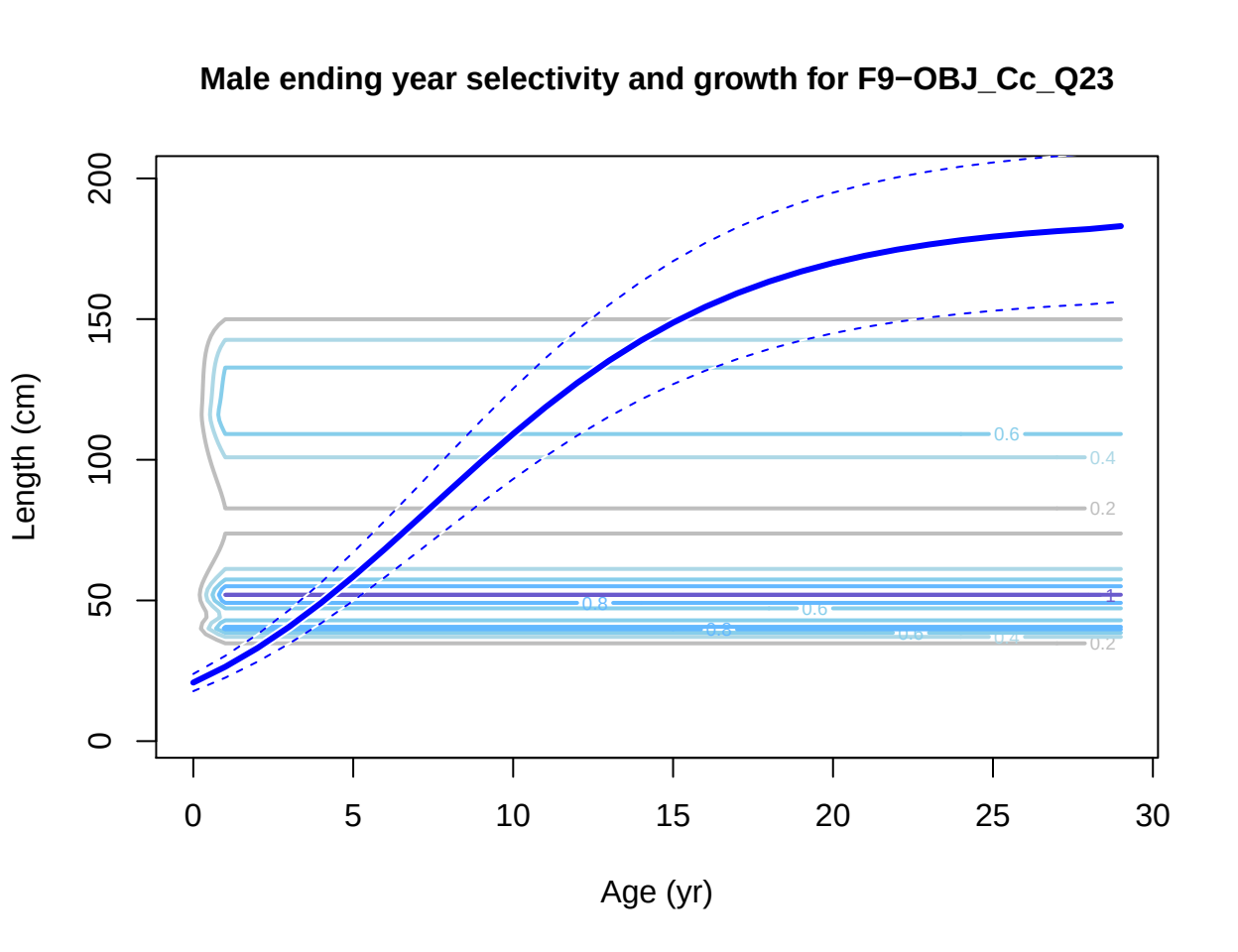

Female ending year selectivity and growth for F7−OBJ_Nc_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.8
1
0.2

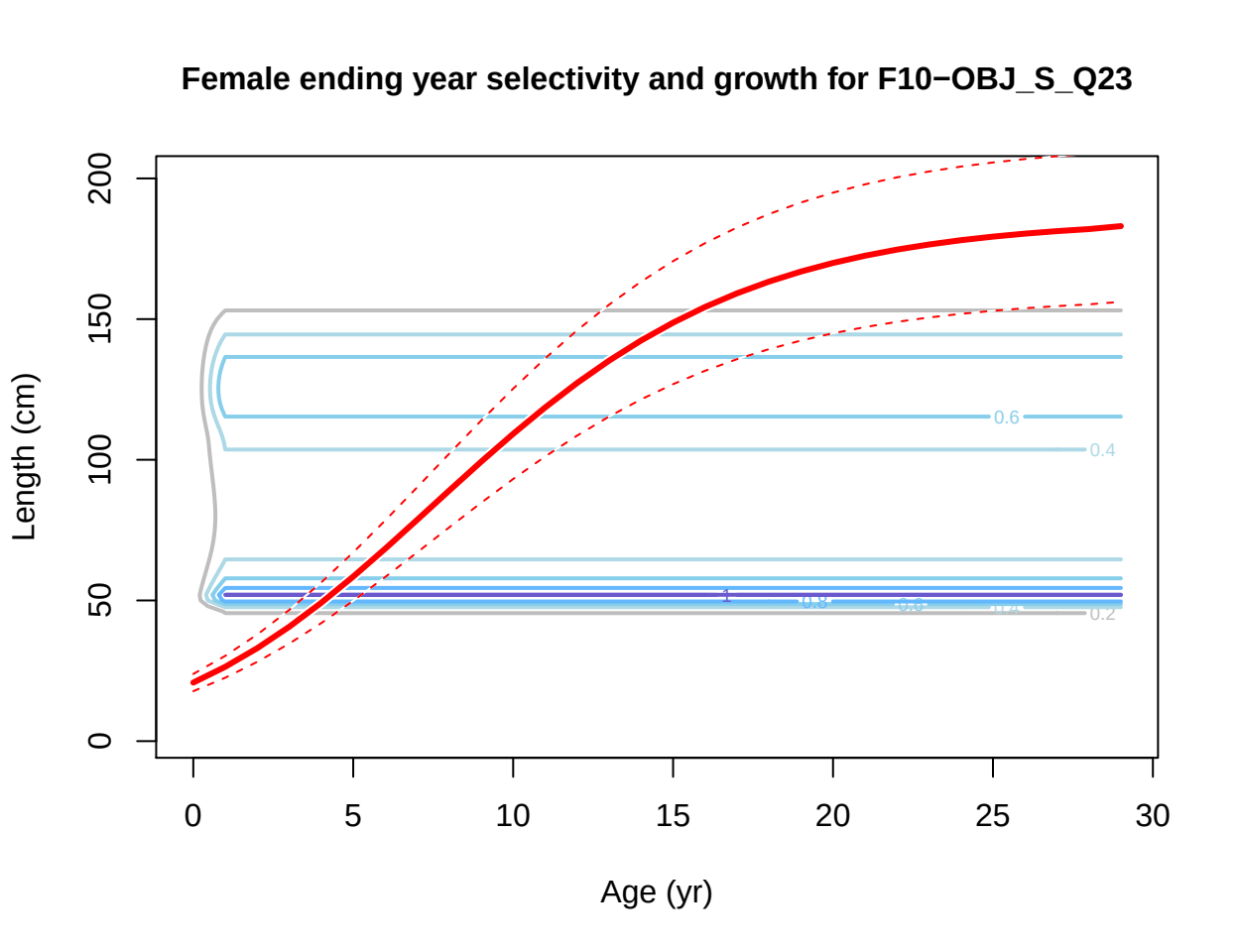

Male ending year selectivity and growth for F7−OBJ_Nc_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.8
1
0.2

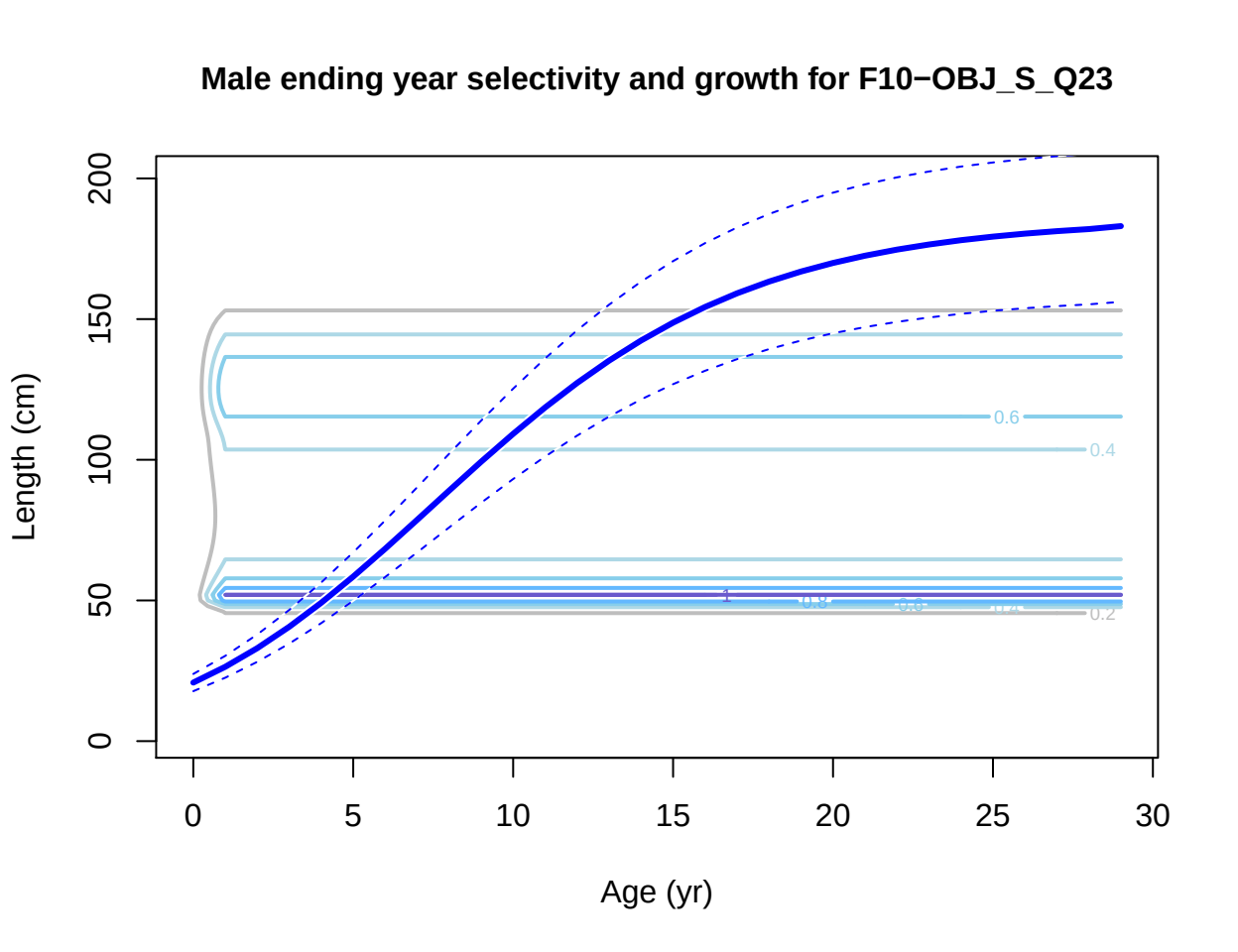

Female ending year selectivity and growth for F8−OBJ_C_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
1
0.8
0.6
0.2

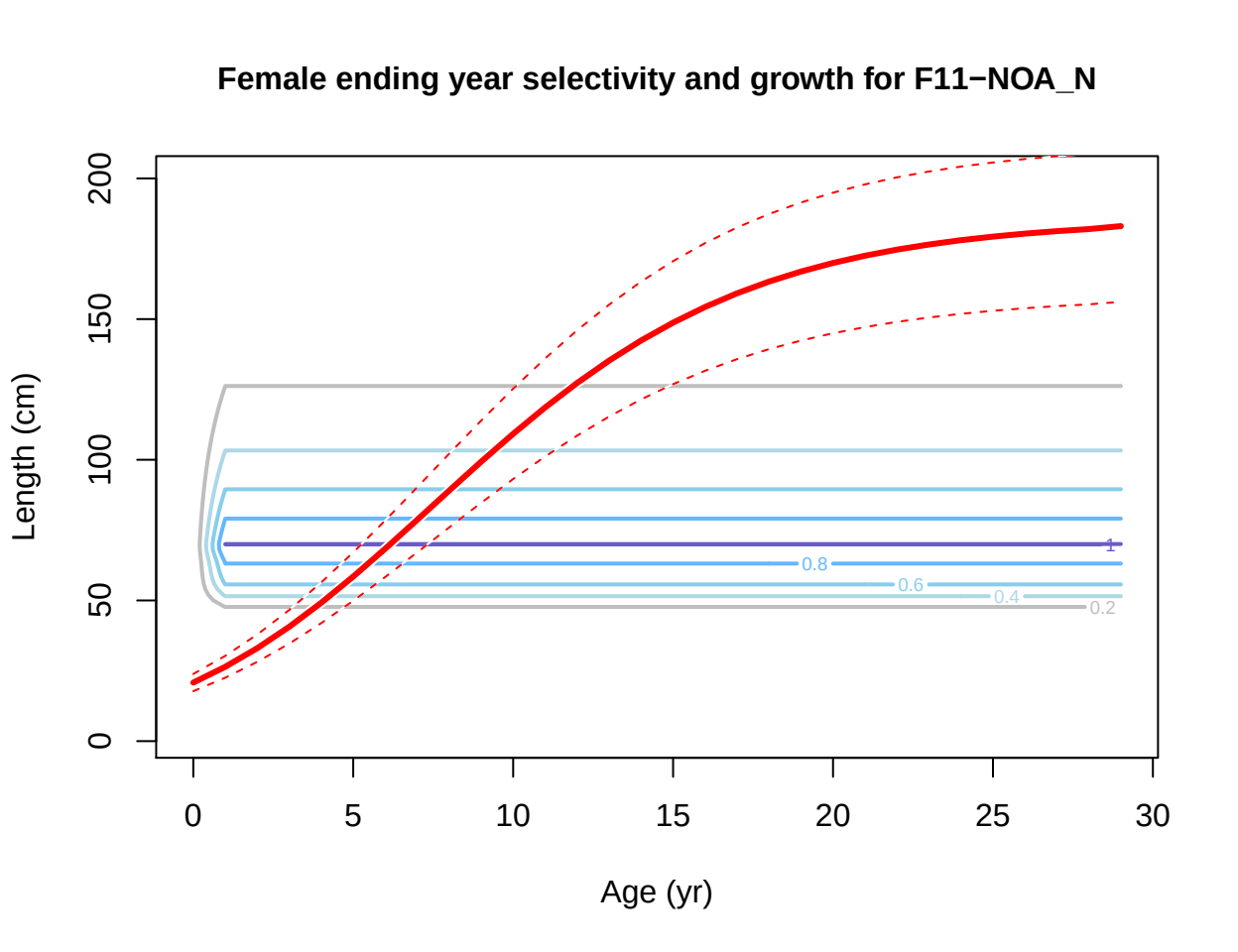

Male ending year selectivity and growth for F8−OBJ_C_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
1
0.8
0.6
0.2

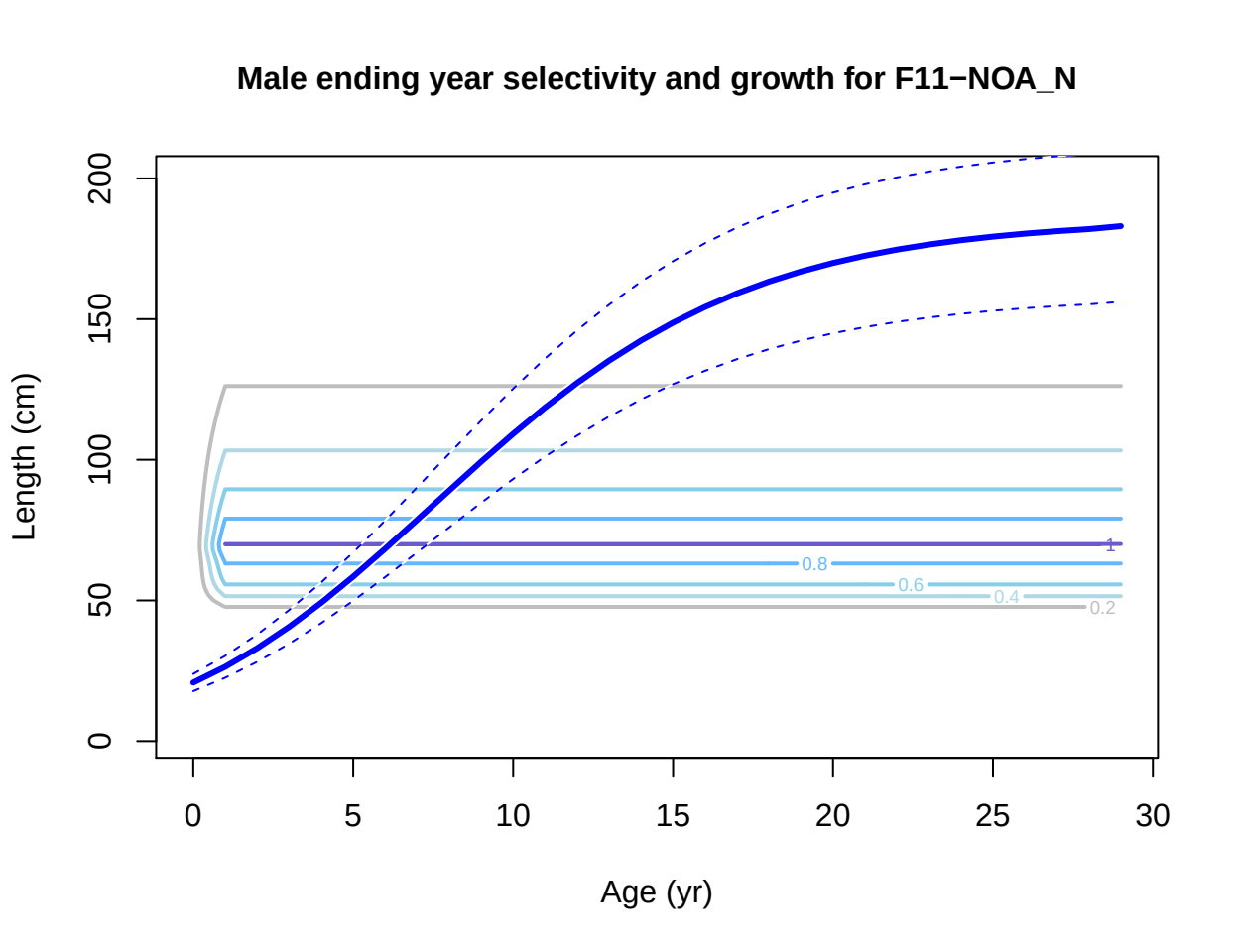

Female ending year selectivity and growth for F9−OBJ_Cc_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.2
0.8
0.6
1
0.2

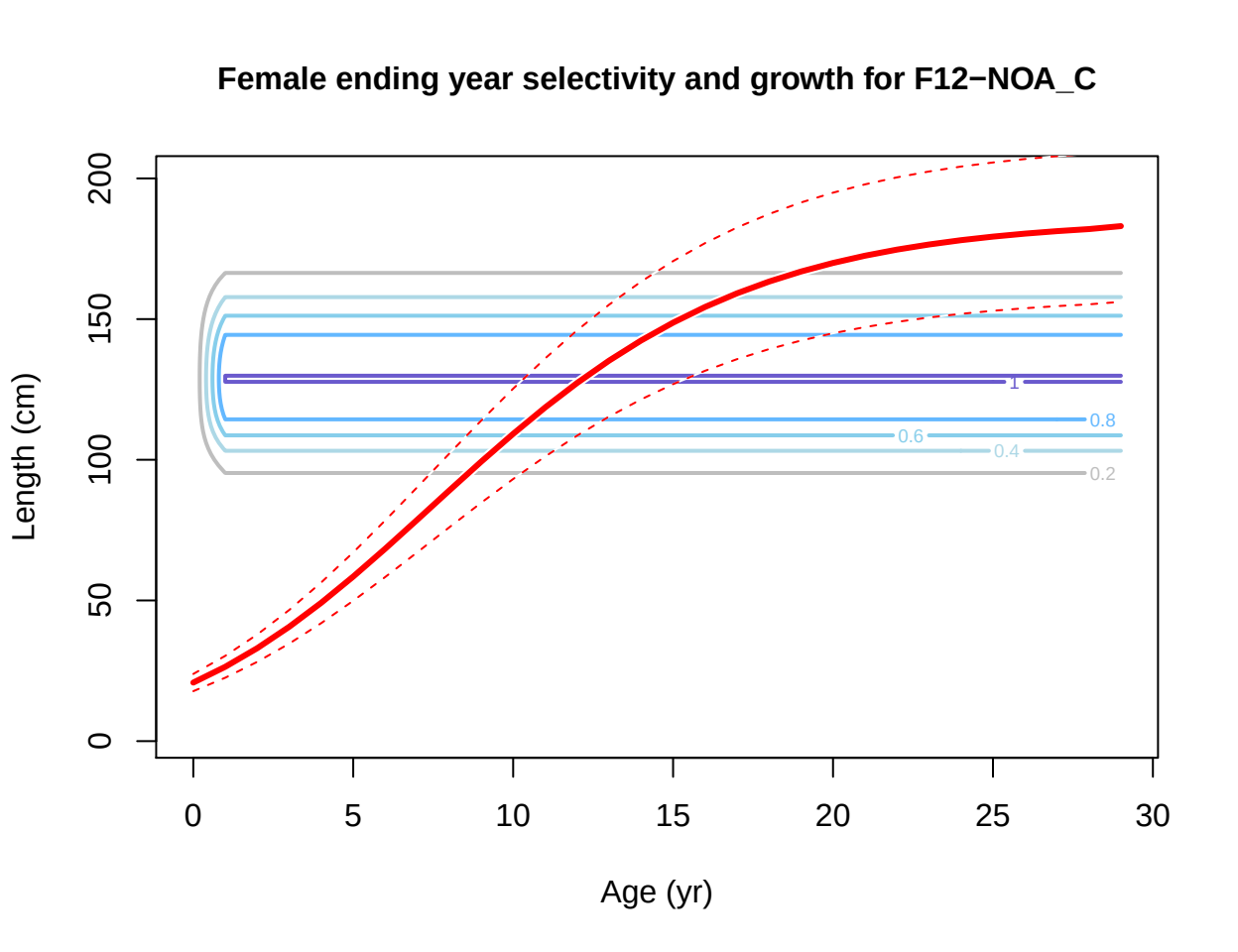

Male ending year selectivity and growth for F9−OBJ_Cc_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.2
0.8
0.6
1
0.2

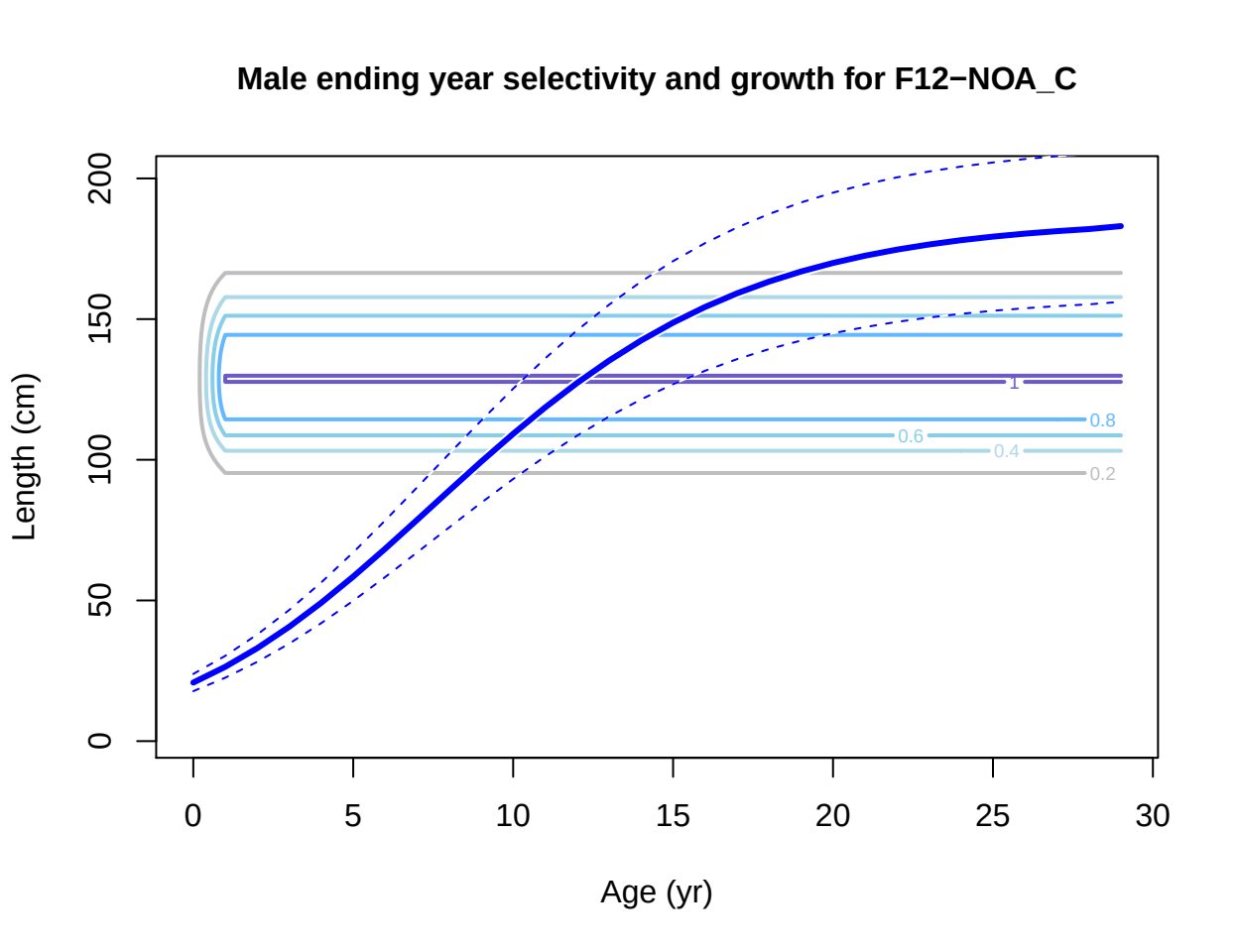

Female ending year selectivity and growth for F10−OBJ_S_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.2

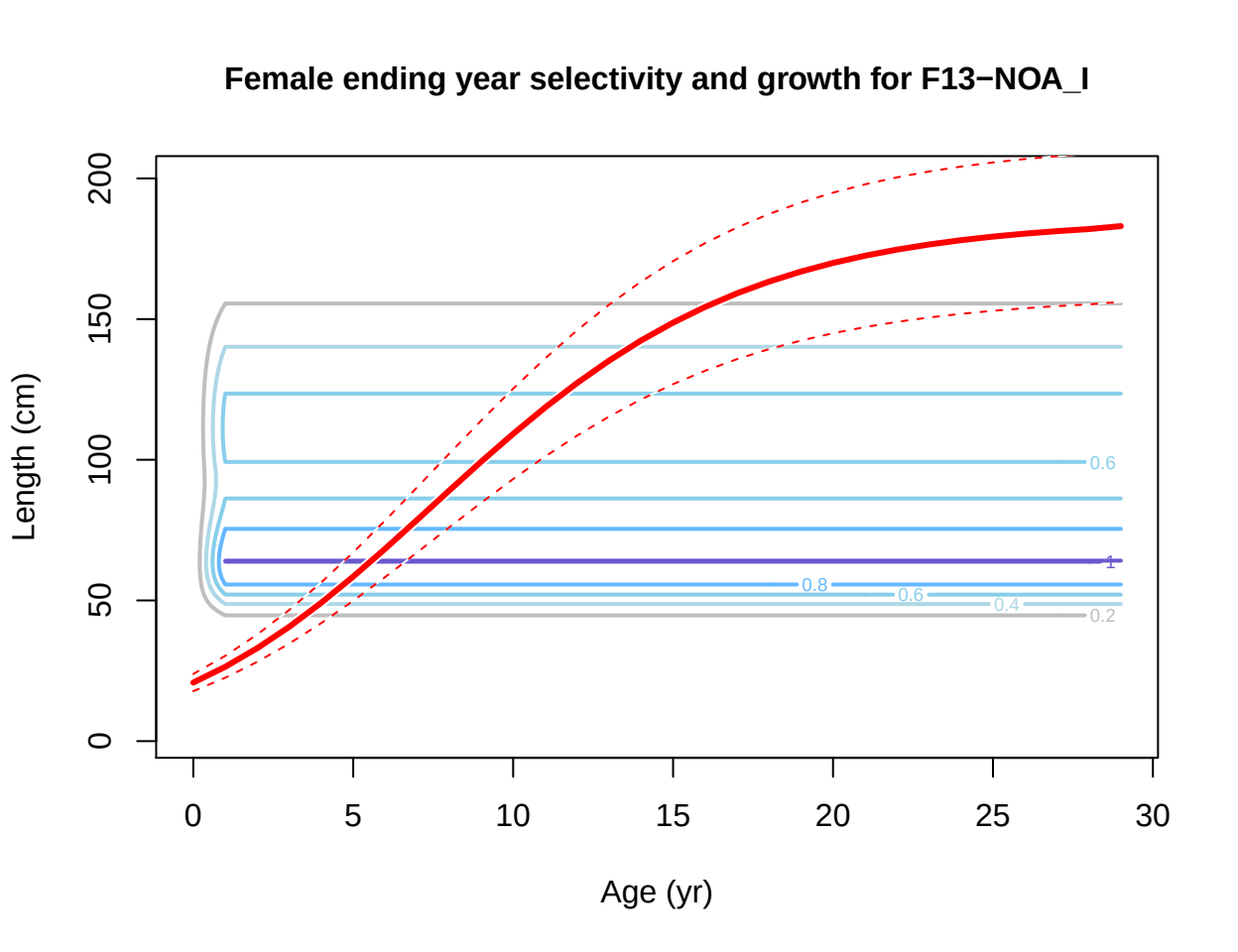

Male ending year selectivity and growth for F10−OBJ_S_Q23
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.4
0.2

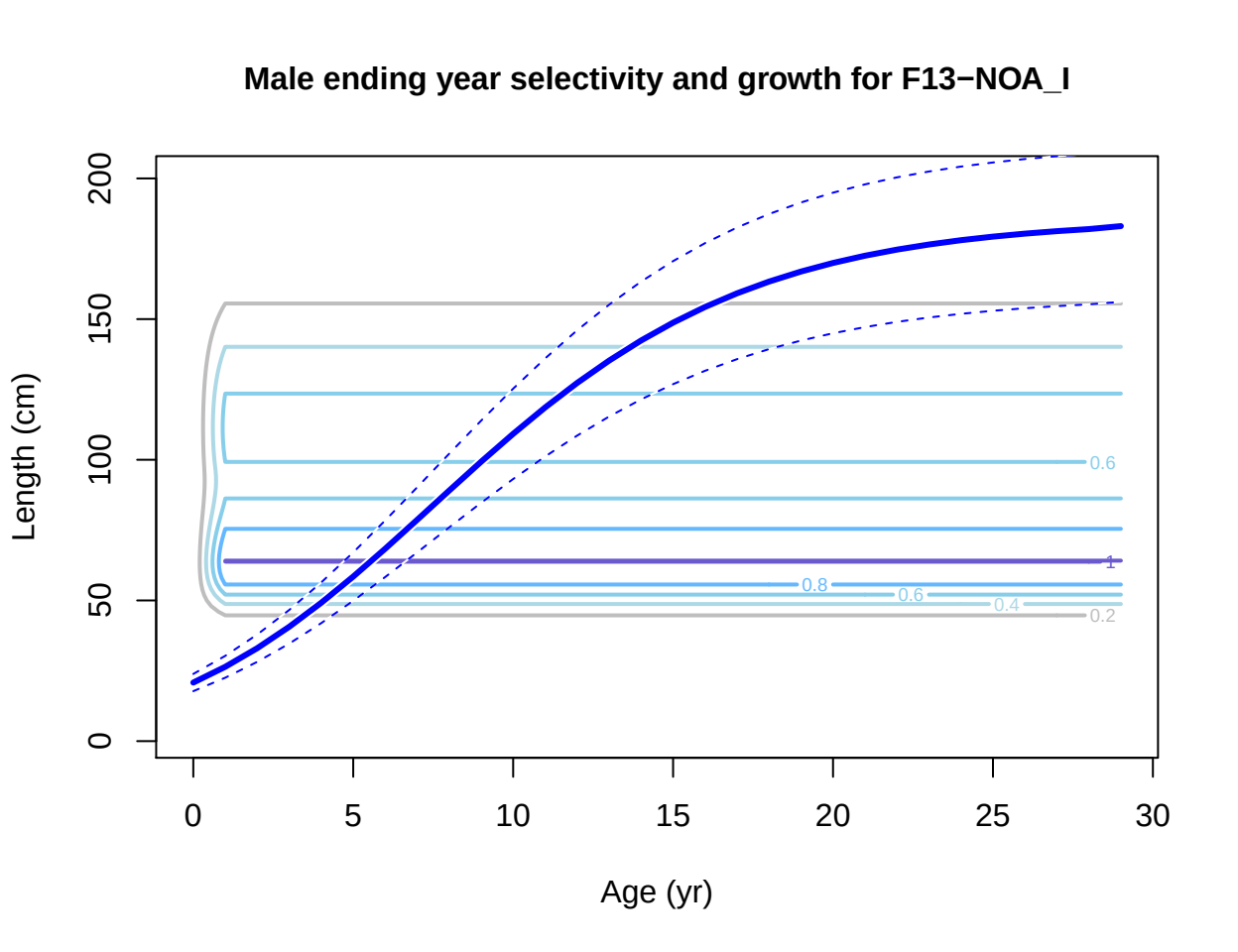

Female ending year selectivity and growth for F11−NOA_N
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

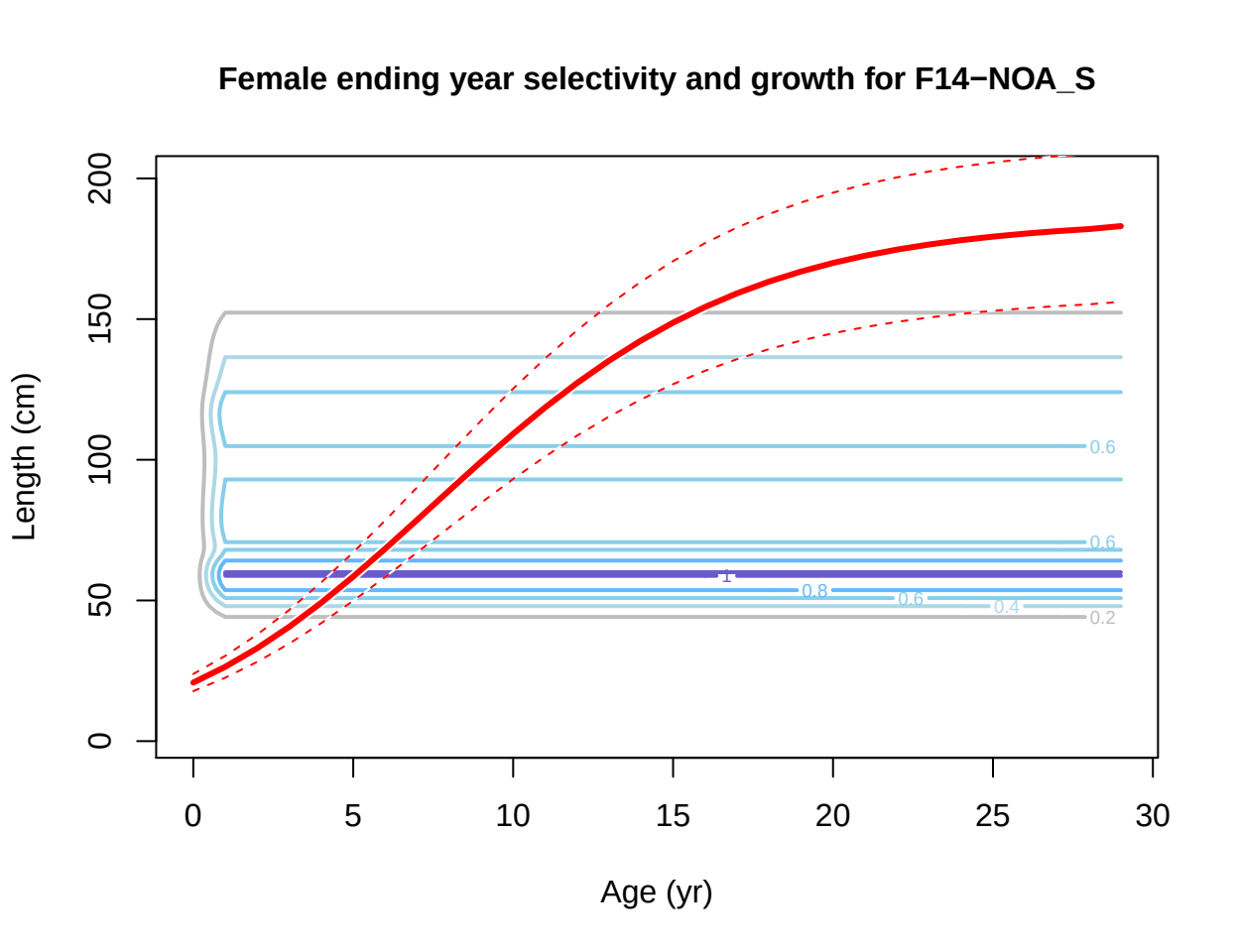

Male ending year selectivity and growth for F11−NOA_N
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

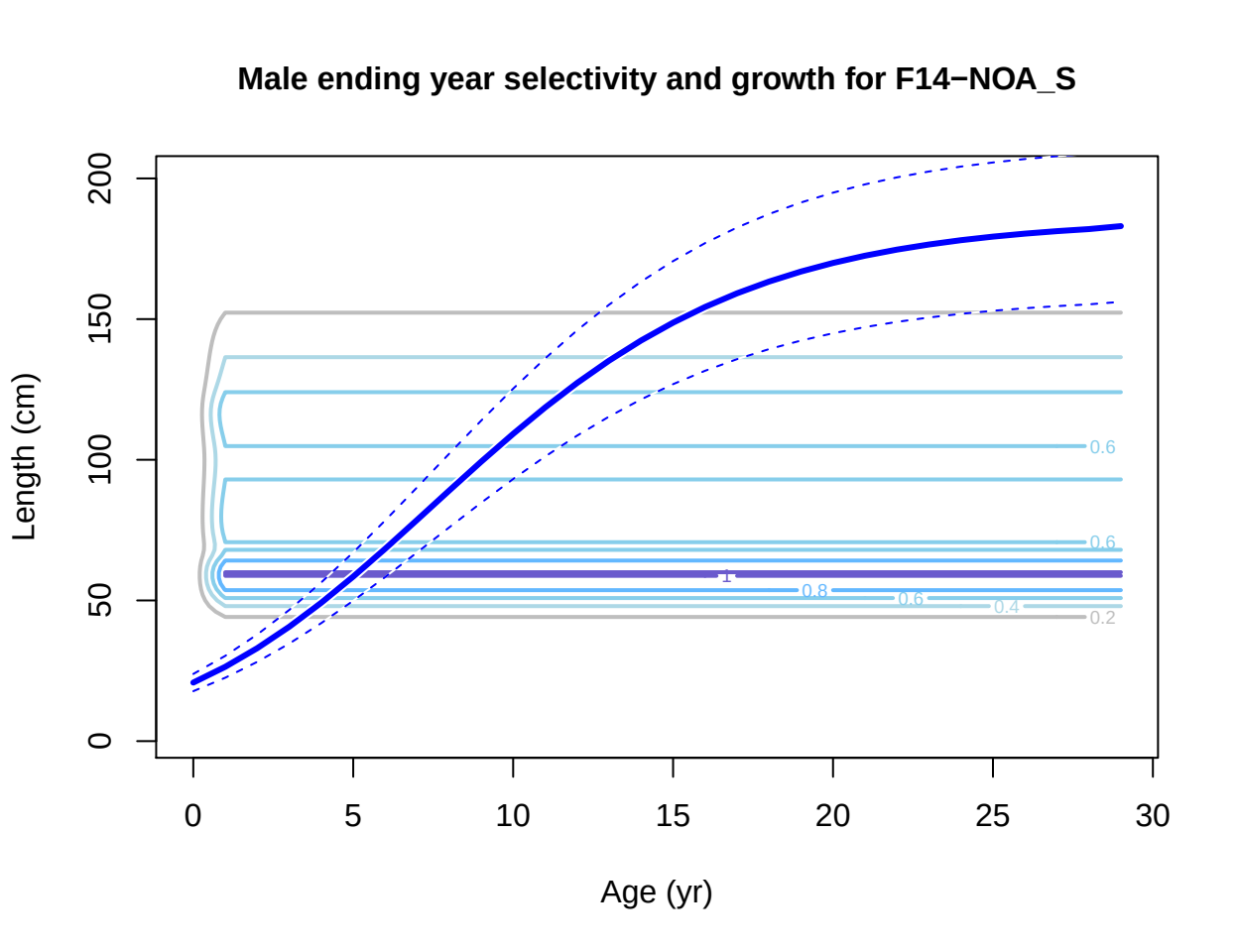

Female ending year selectivity and growth for F12−NOA_C
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

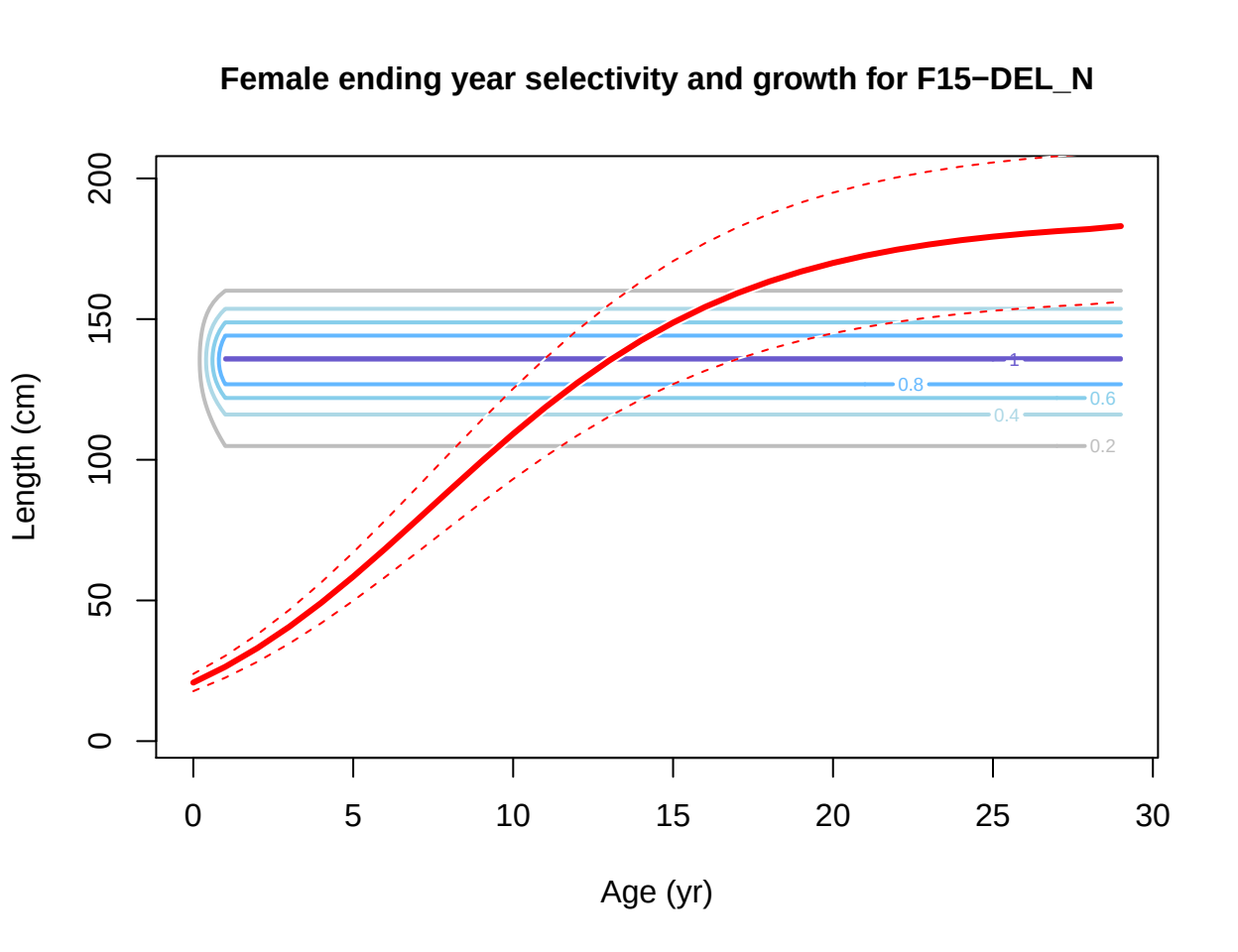

Male ending year selectivity and growth for F12−NOA_C
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

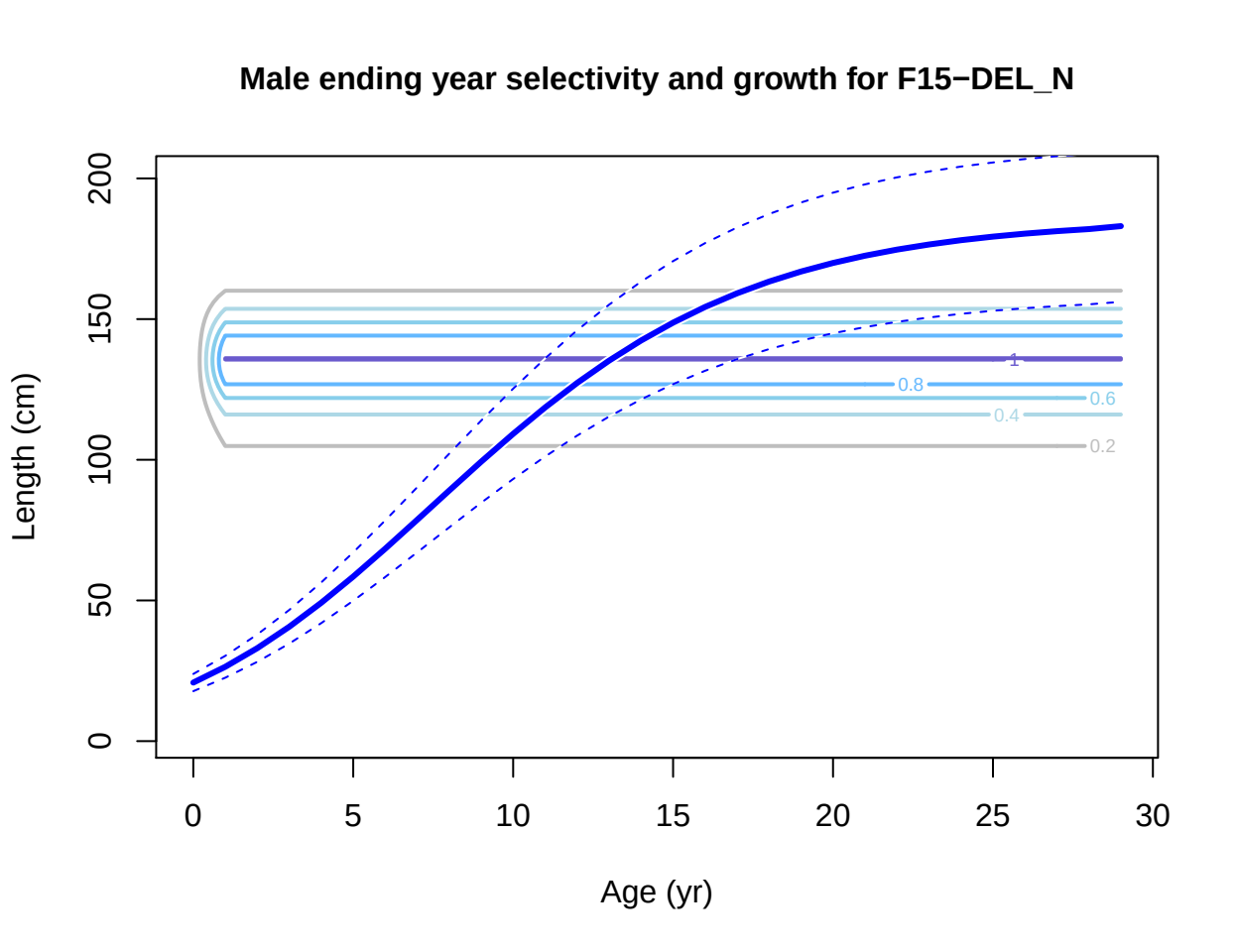

Female ending year selectivity and growth for F13−NOA_I
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
1
0.8
0.6
0.4
0.2

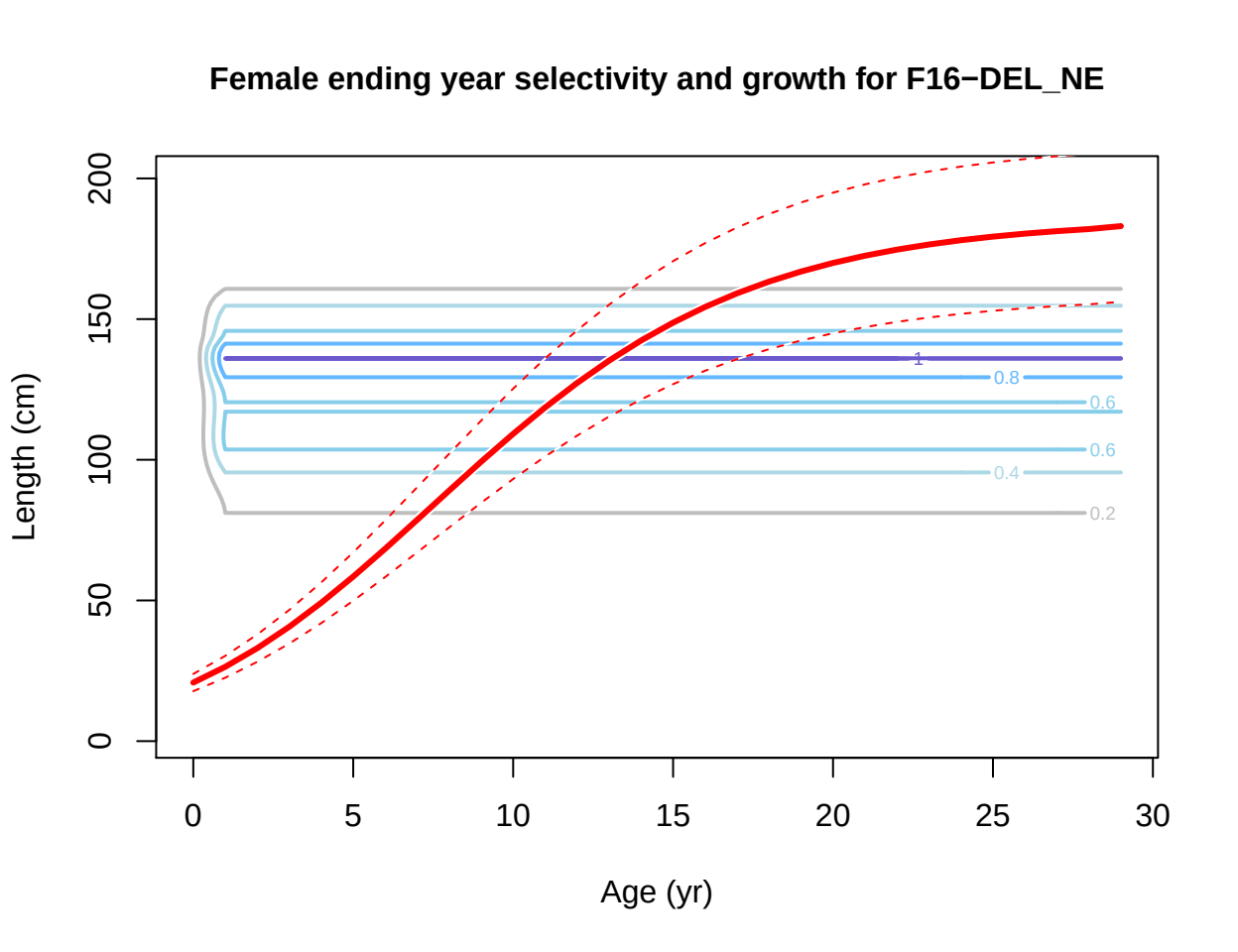

Male ending year selectivity and growth for F13−NOA_I
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
1
0.8
0.6
0.4
0.2

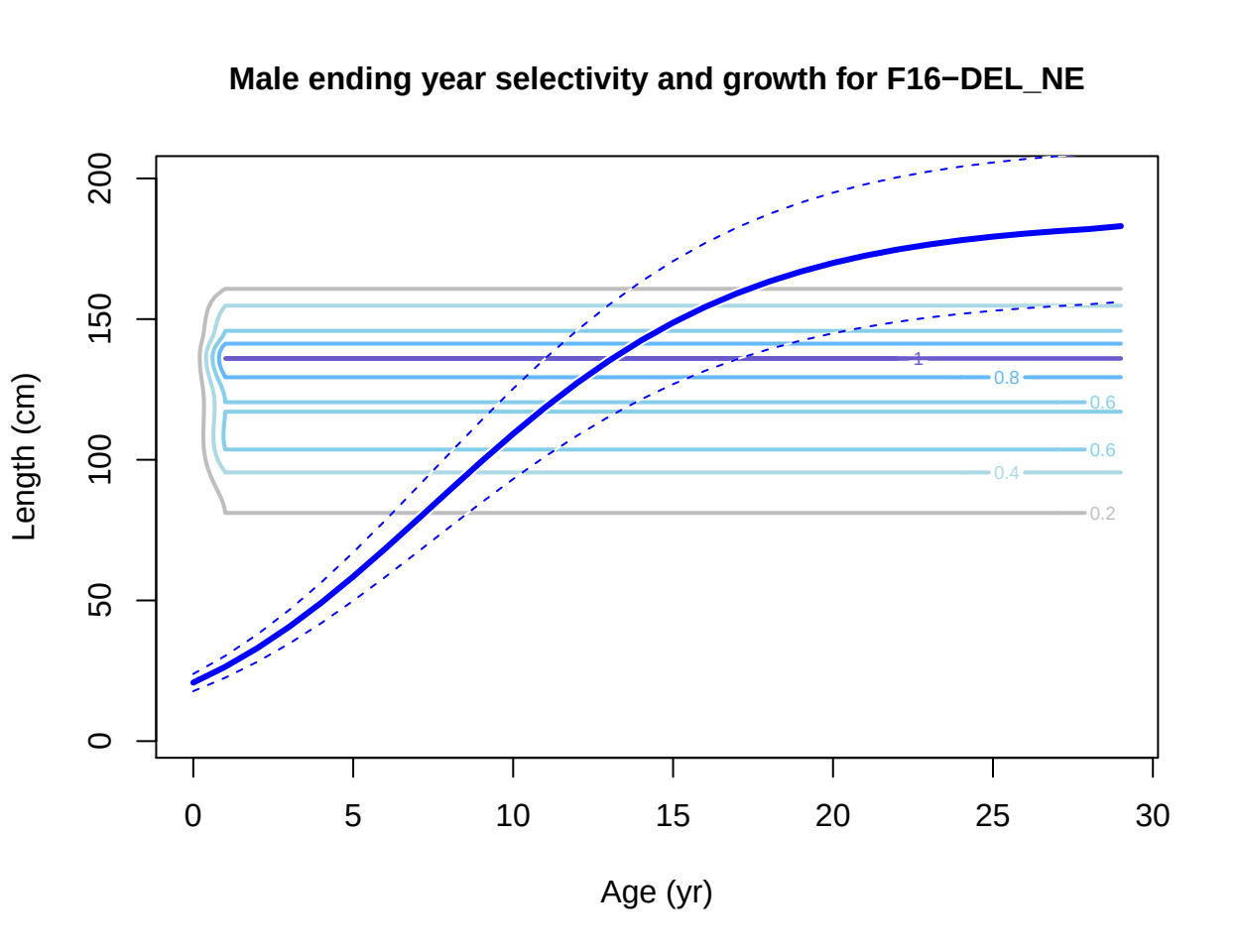

Female ending year selectivity and growth for F14−NOA_S
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
0.6
0.6
1
0.8
0.6
0.4
0.2

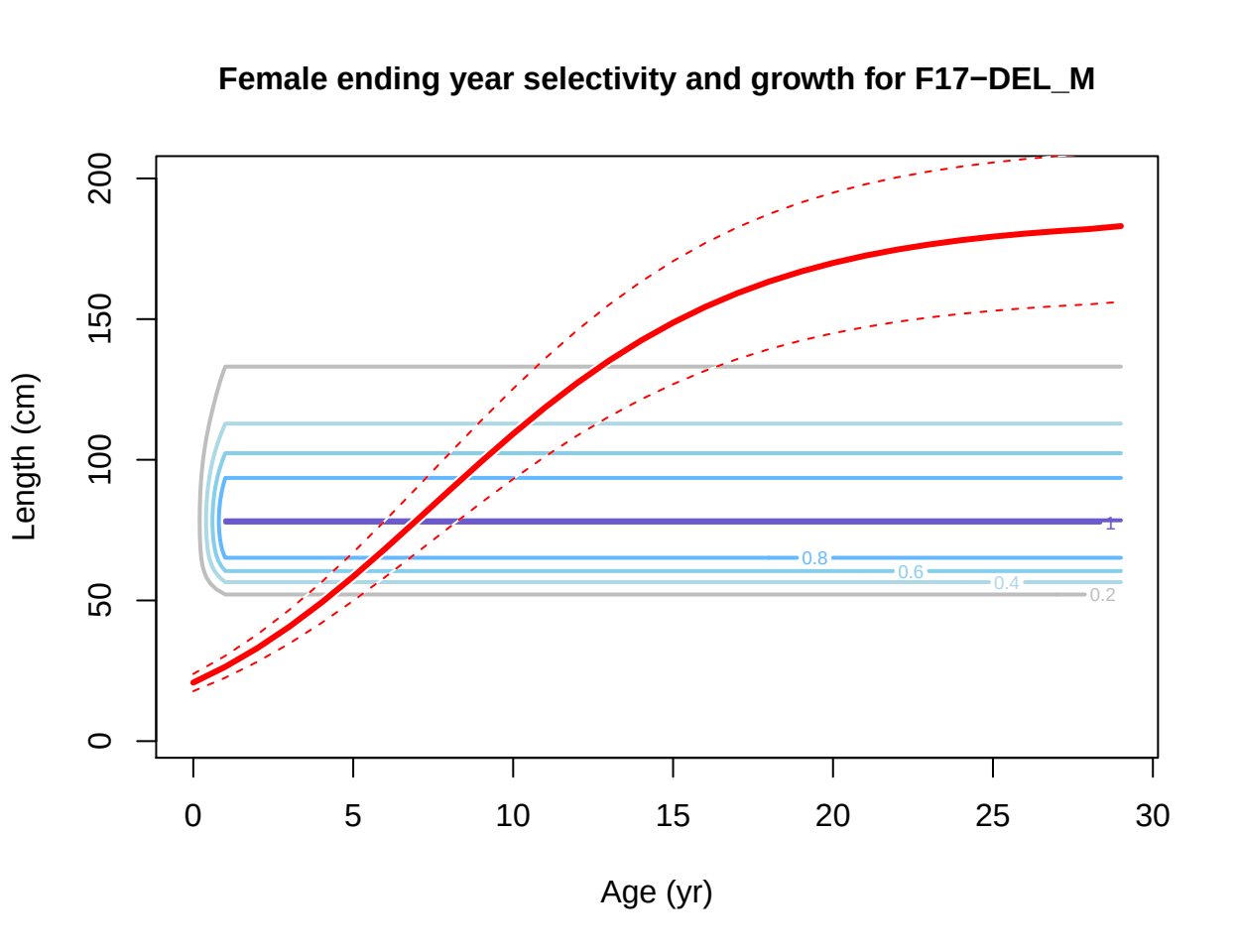

Male ending year selectivity and growth for F14−NOA_S
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2
0.6
0.6

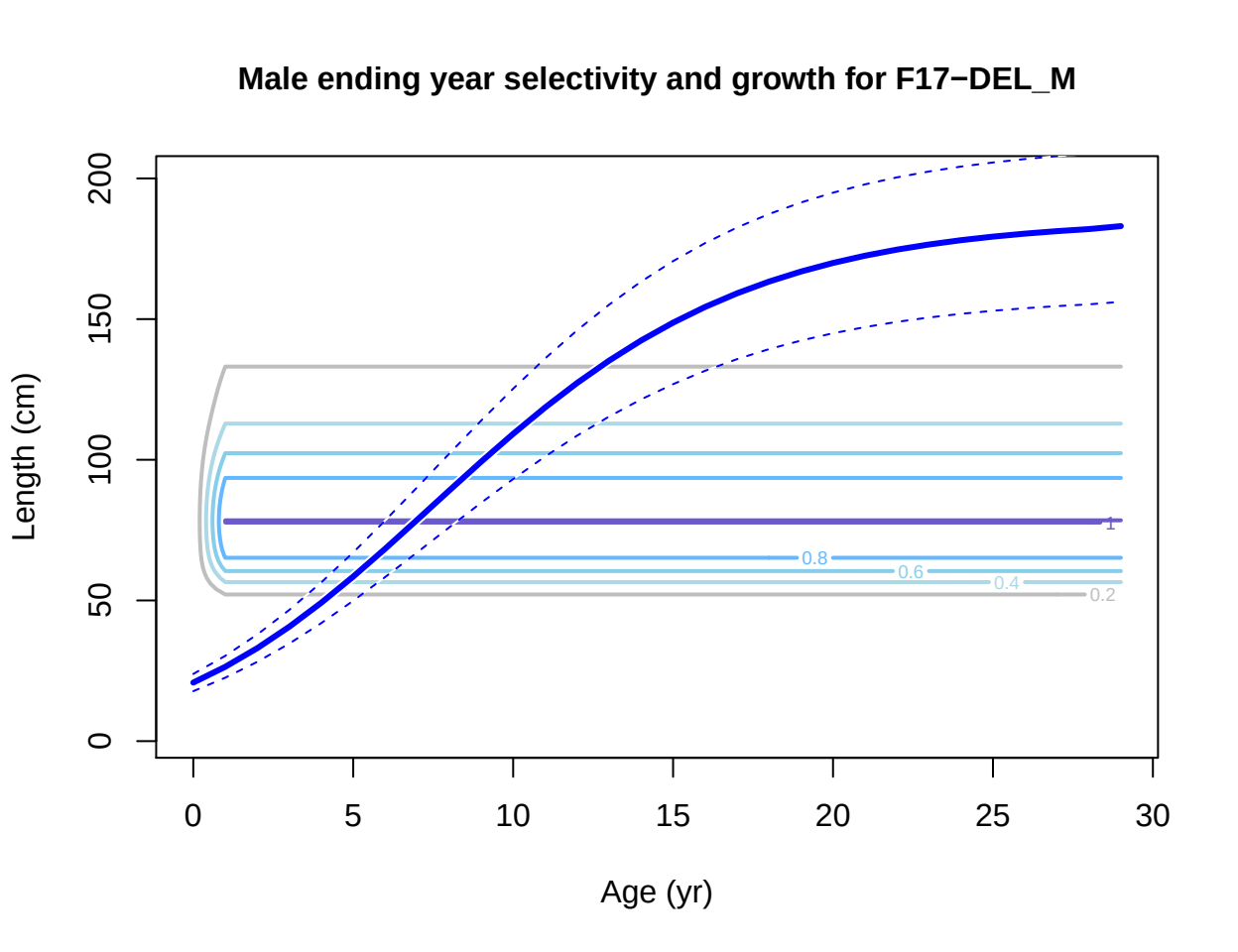

Female ending year selectivity and growth for F15−DEL_N
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

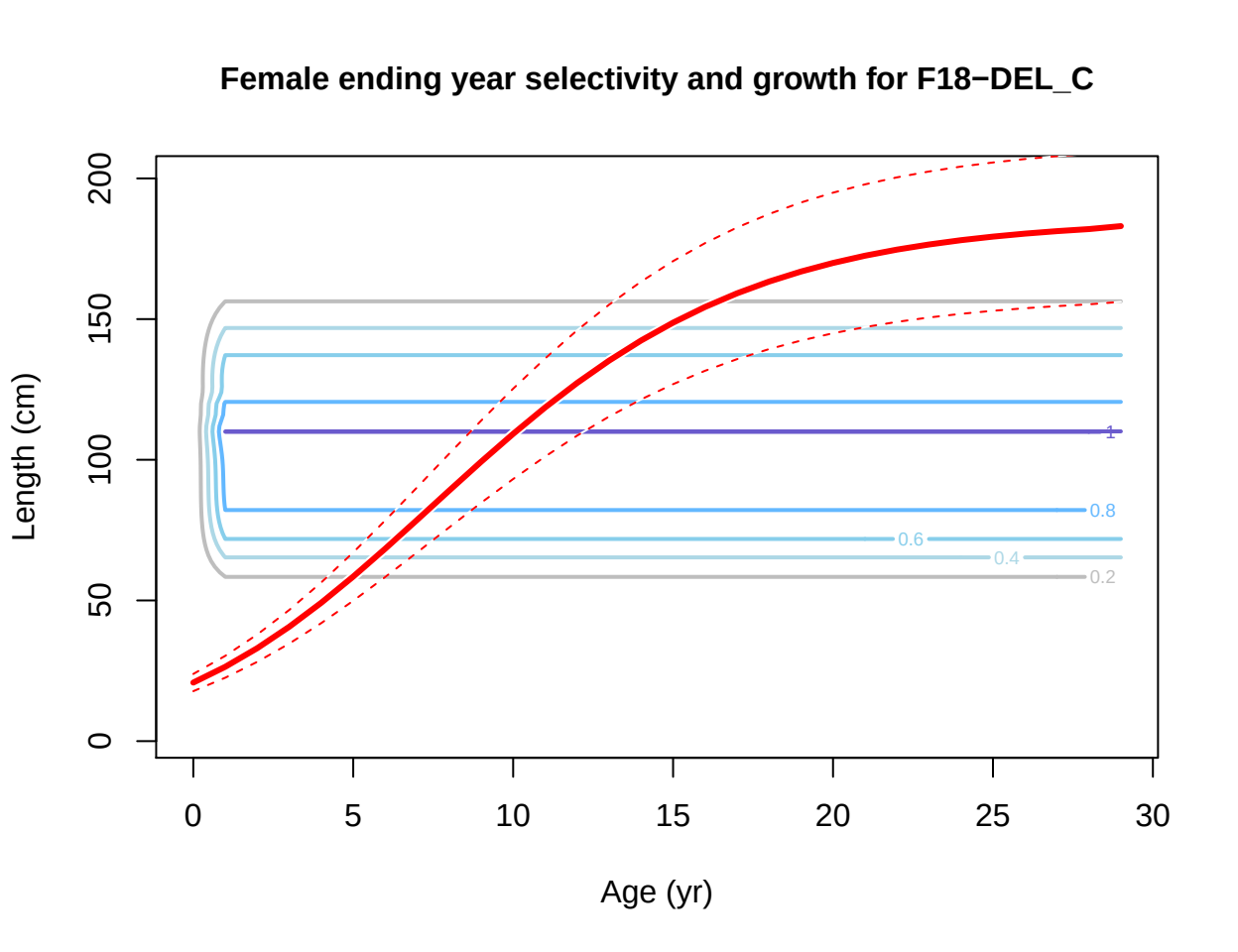

Male ending year selectivity and growth for F15−DEL_N
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

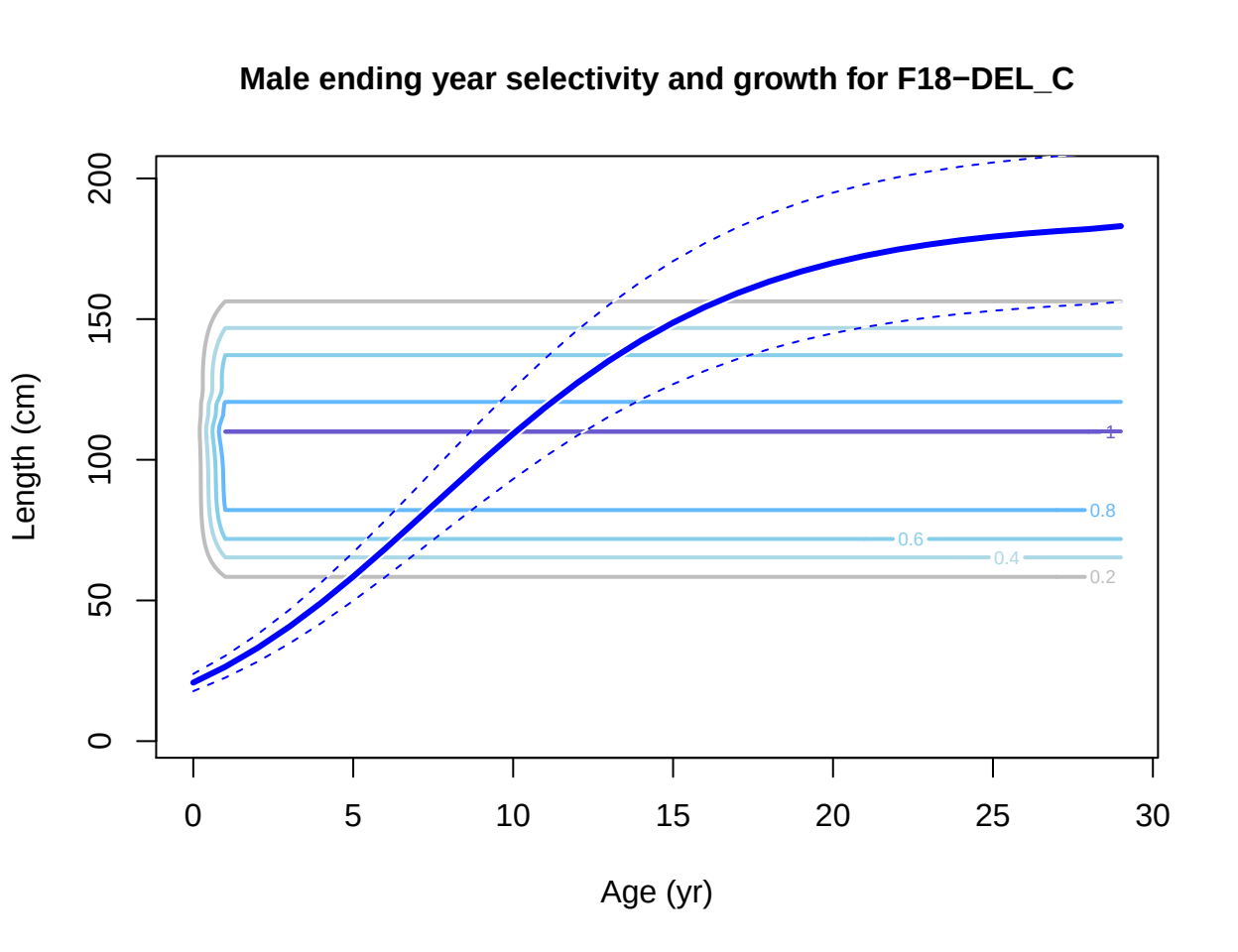

Female ending year selectivity and growth for F16−DEL_NE
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.6
0.4
0.2

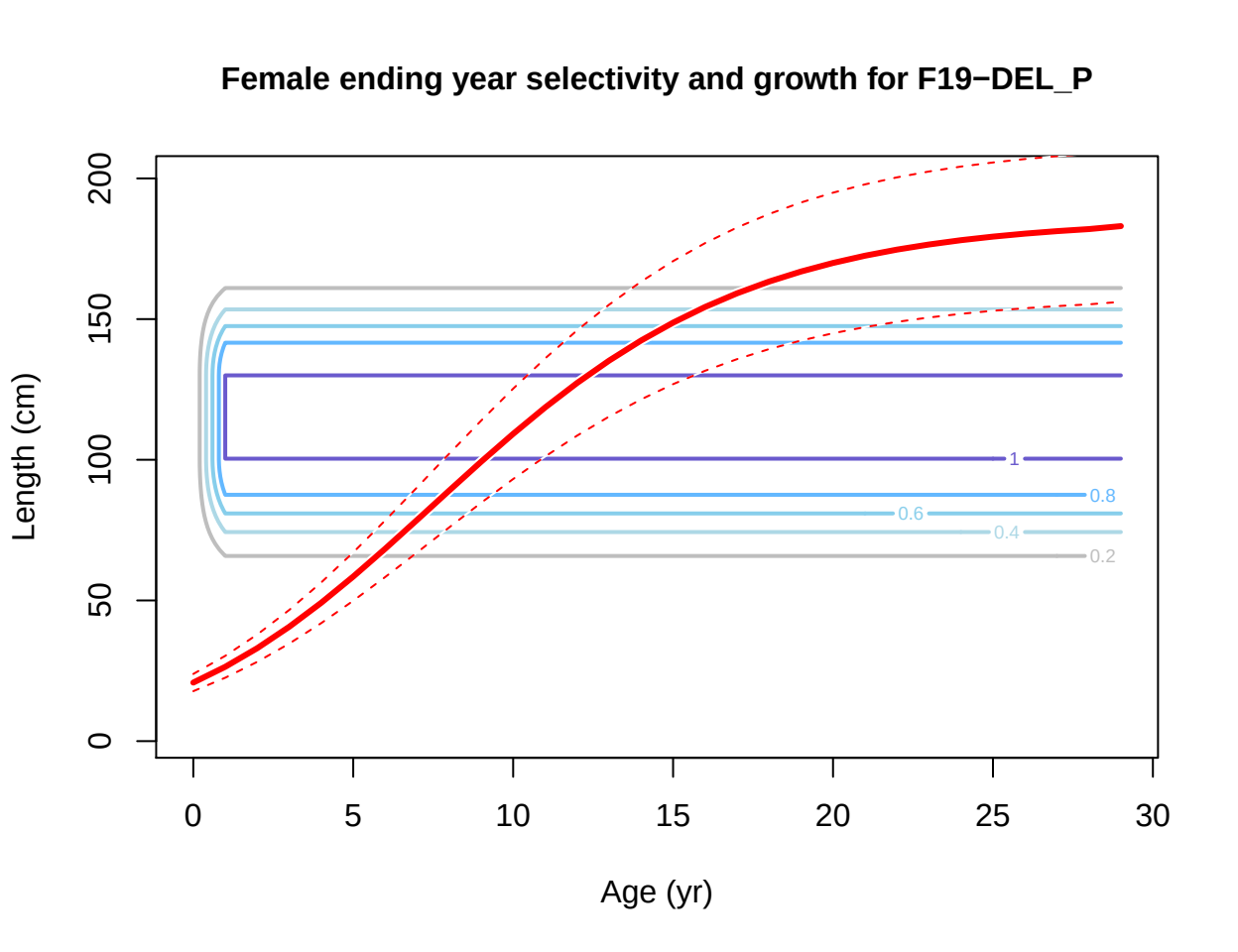

Male ending year selectivity and growth for F16−DEL_NE
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.6
0.4
0.2

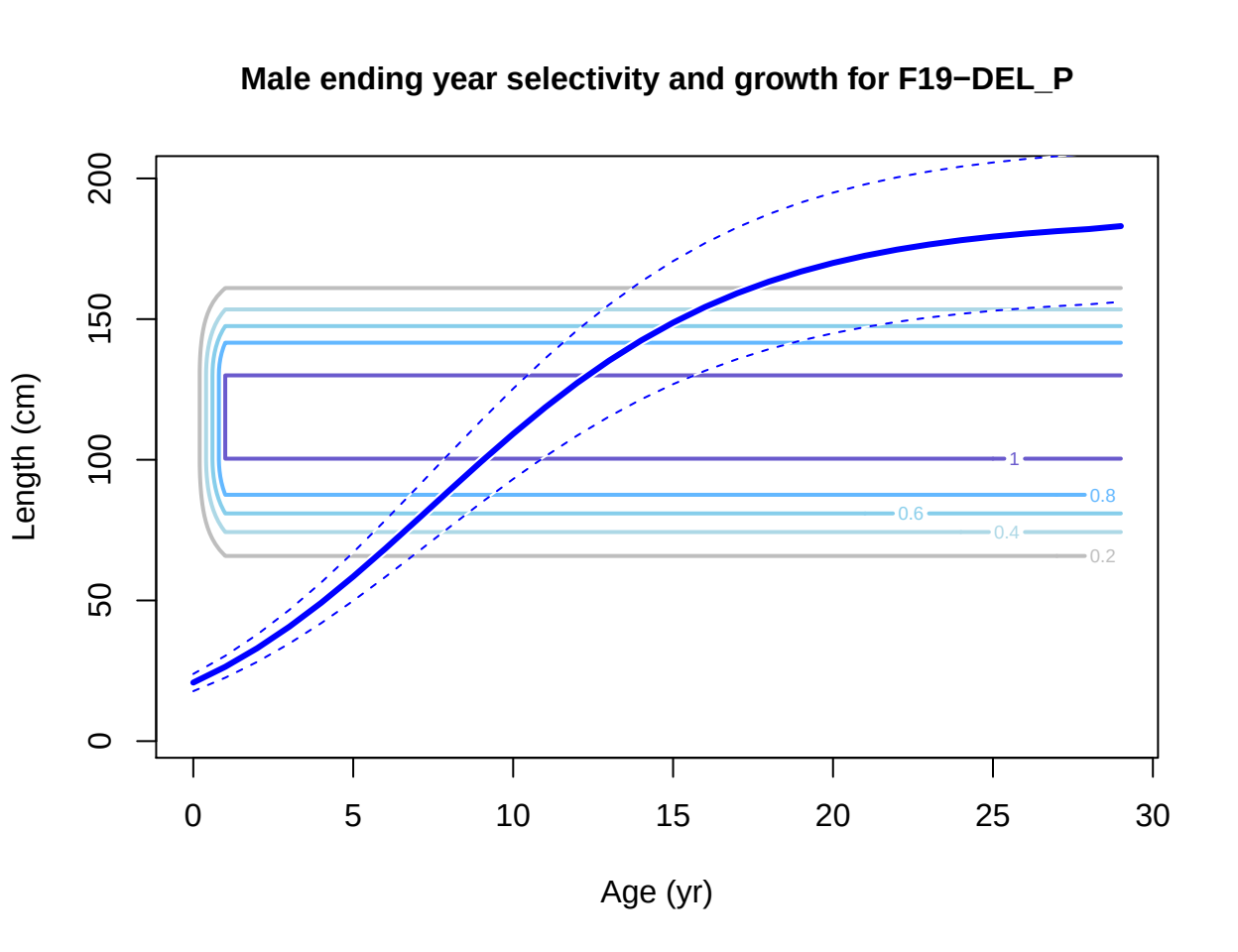

Female ending year selectivity and growth for F17−DEL_M
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

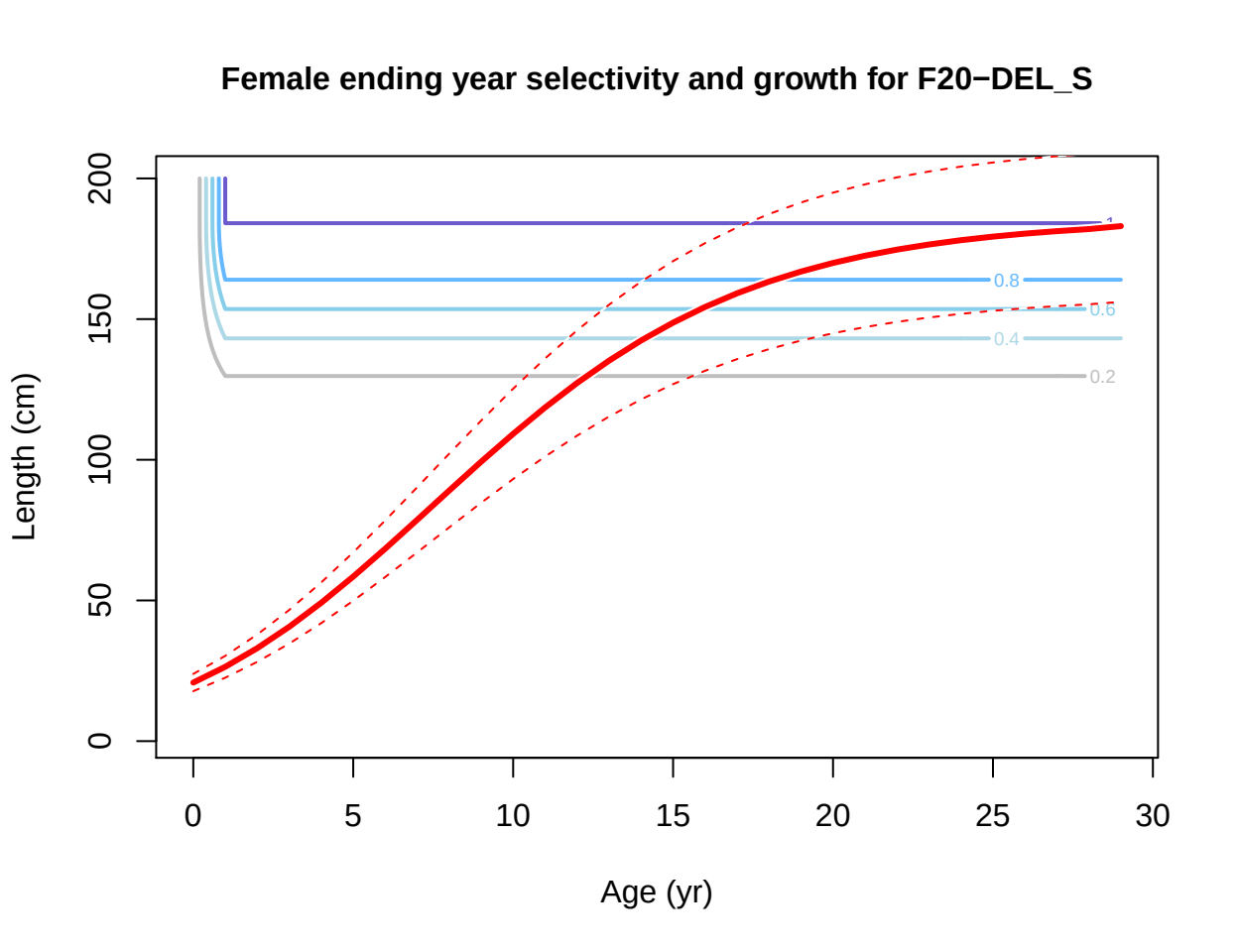

Male ending year selectivity and growth for F17−DEL_M
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

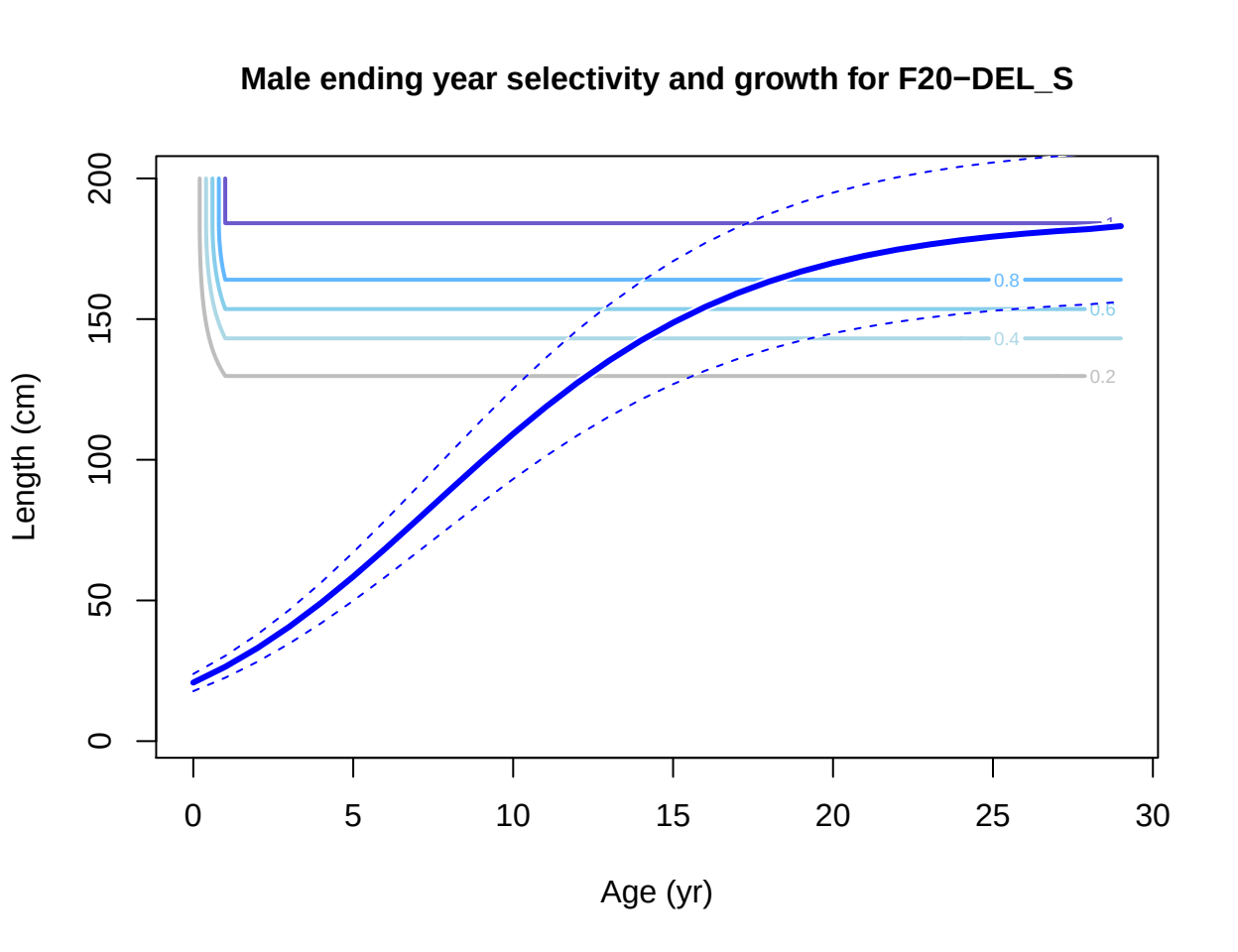

Female ending year selectivity and growth for F18−DEL_C
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

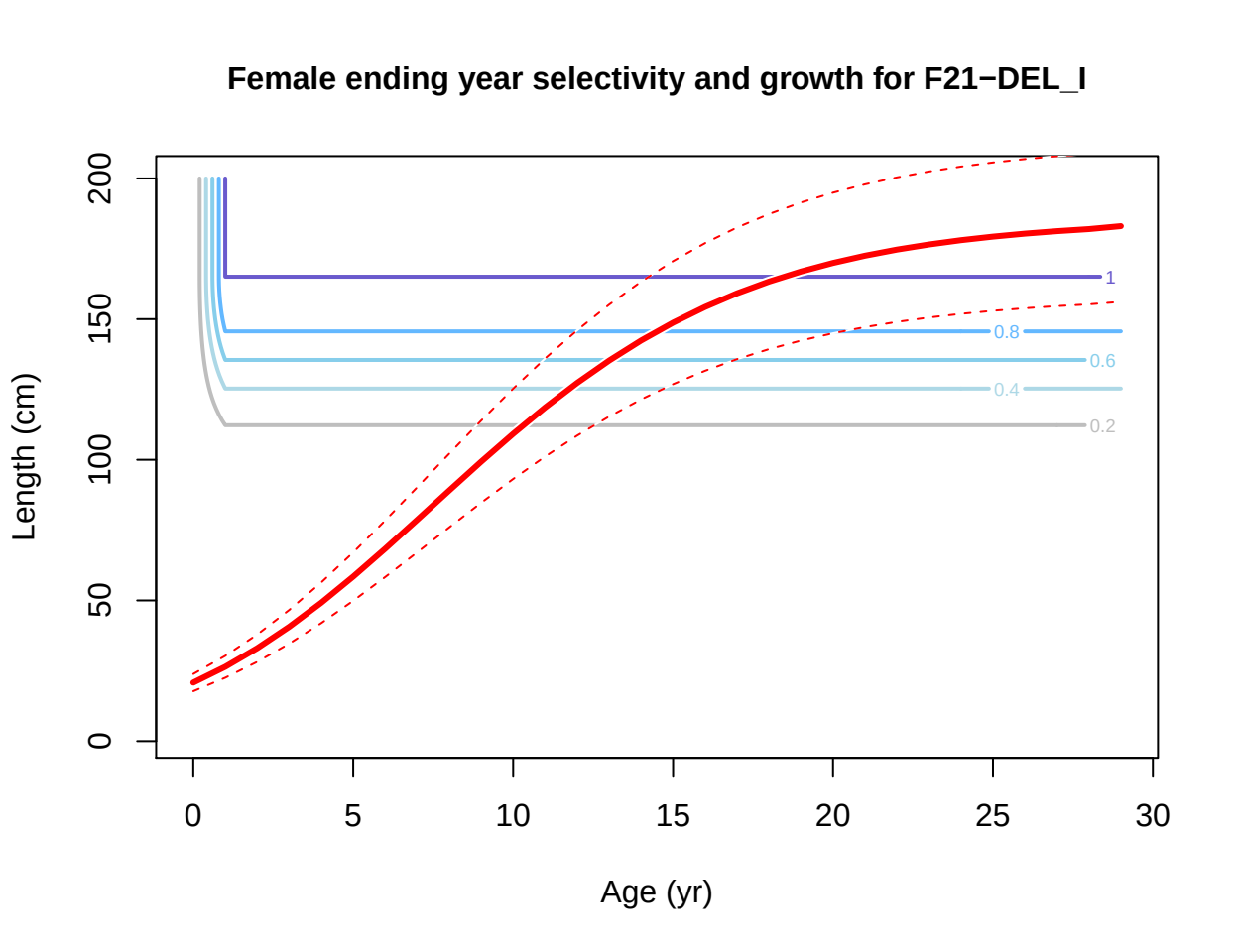

Male ending year selectivity and growth for F18−DEL_C
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

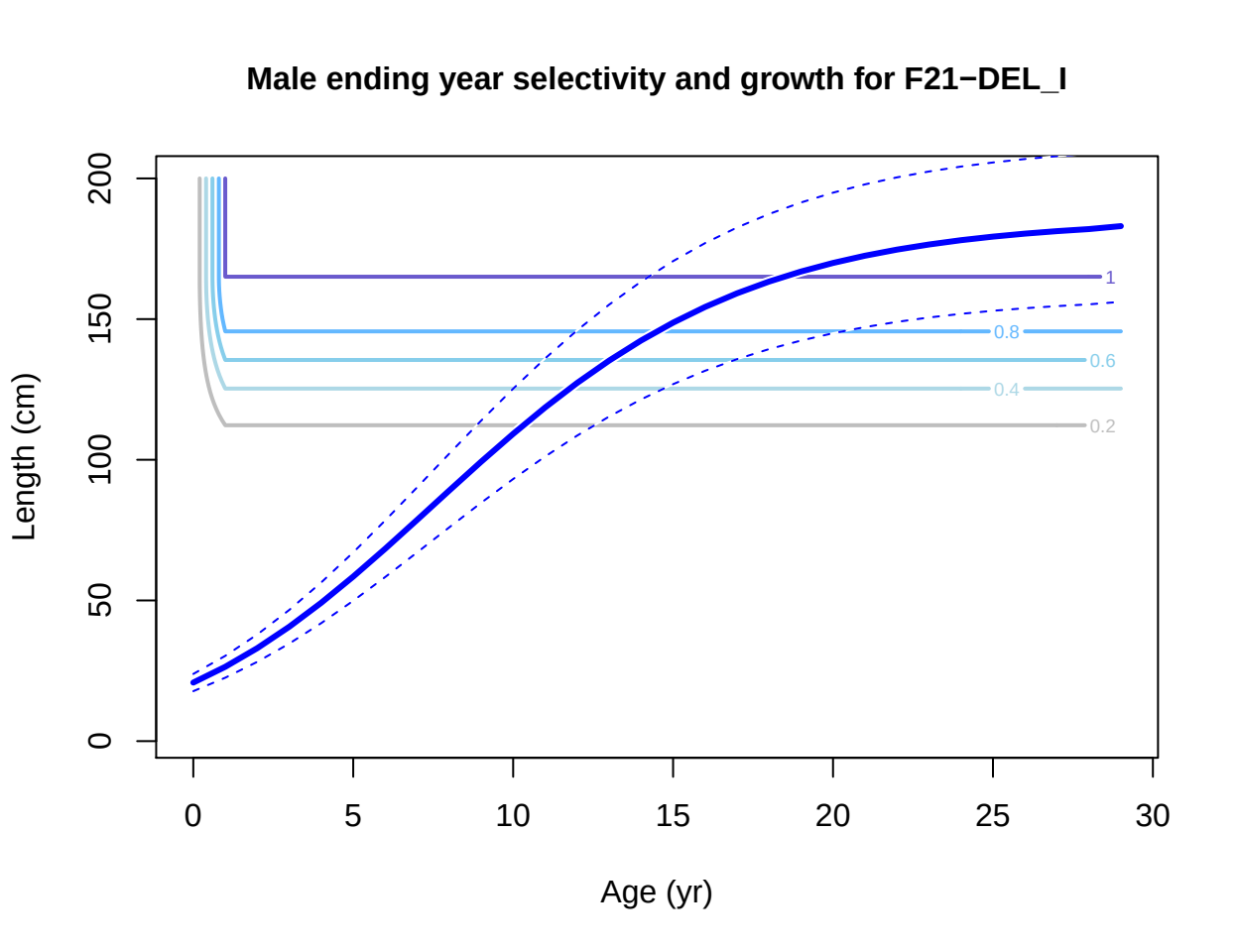

Female ending year selectivity and growth for F19−DEL_P
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

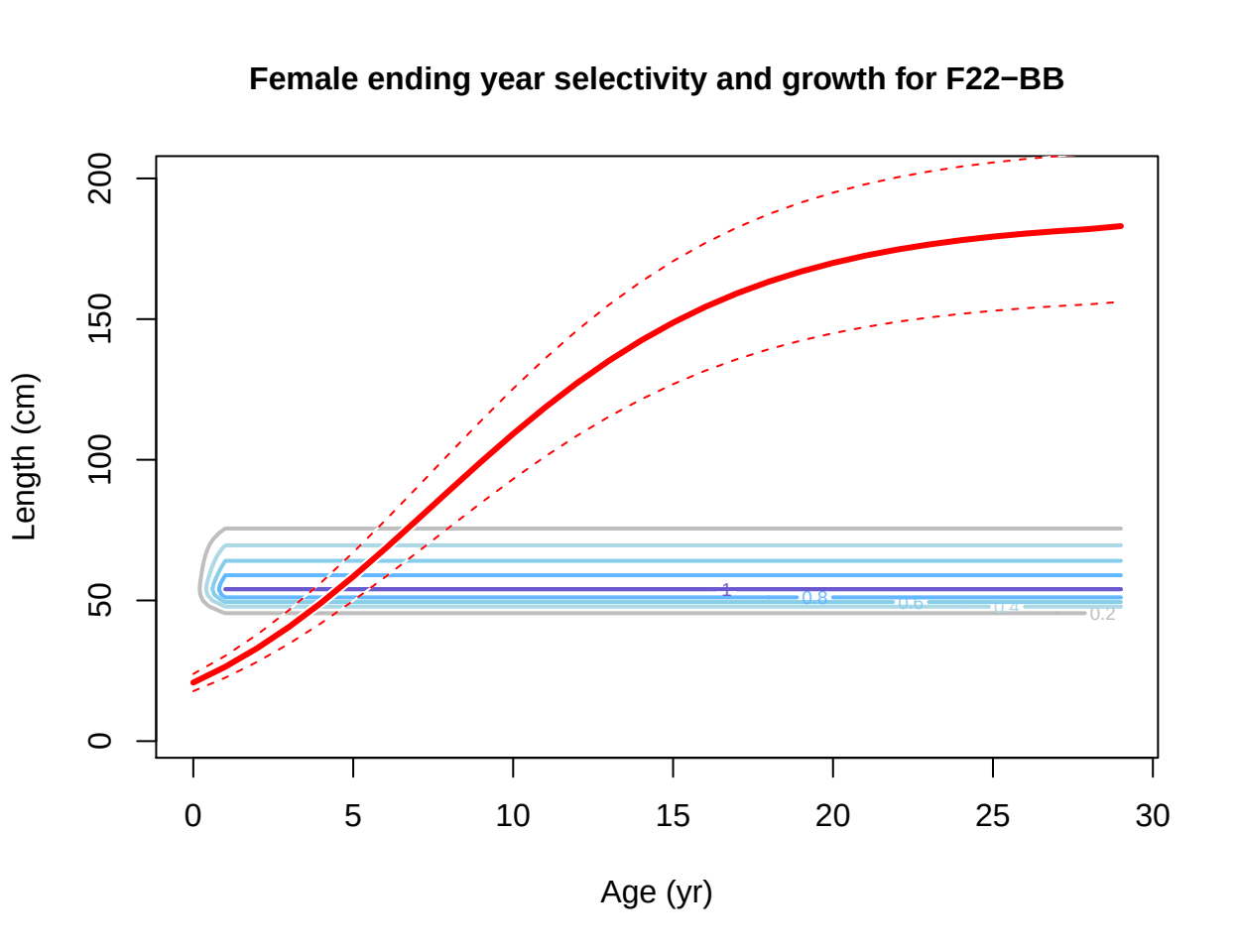

Male ending year selectivity and growth for F19−DEL_P
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

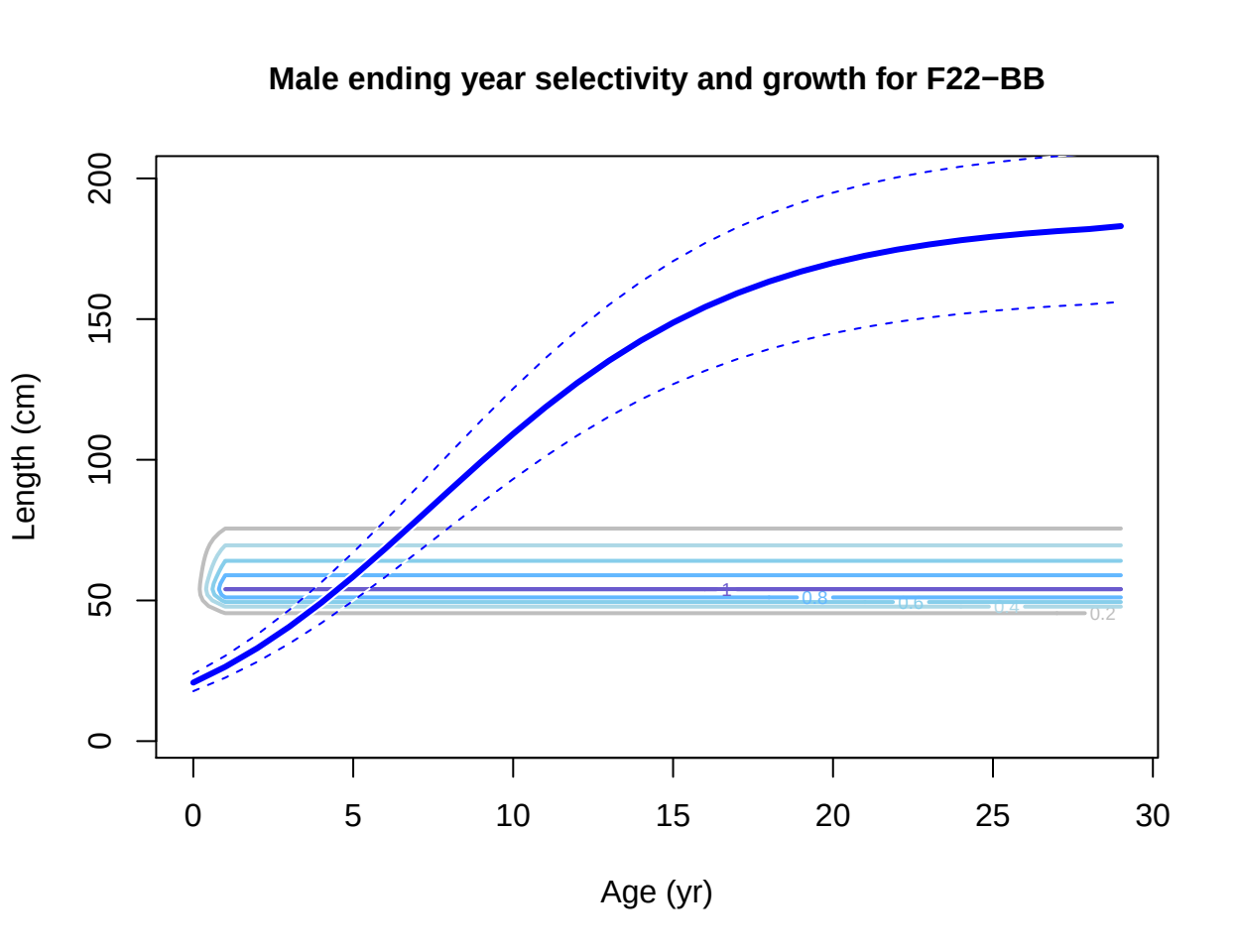

Female ending year selectivity and growth for F20−DEL_S
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

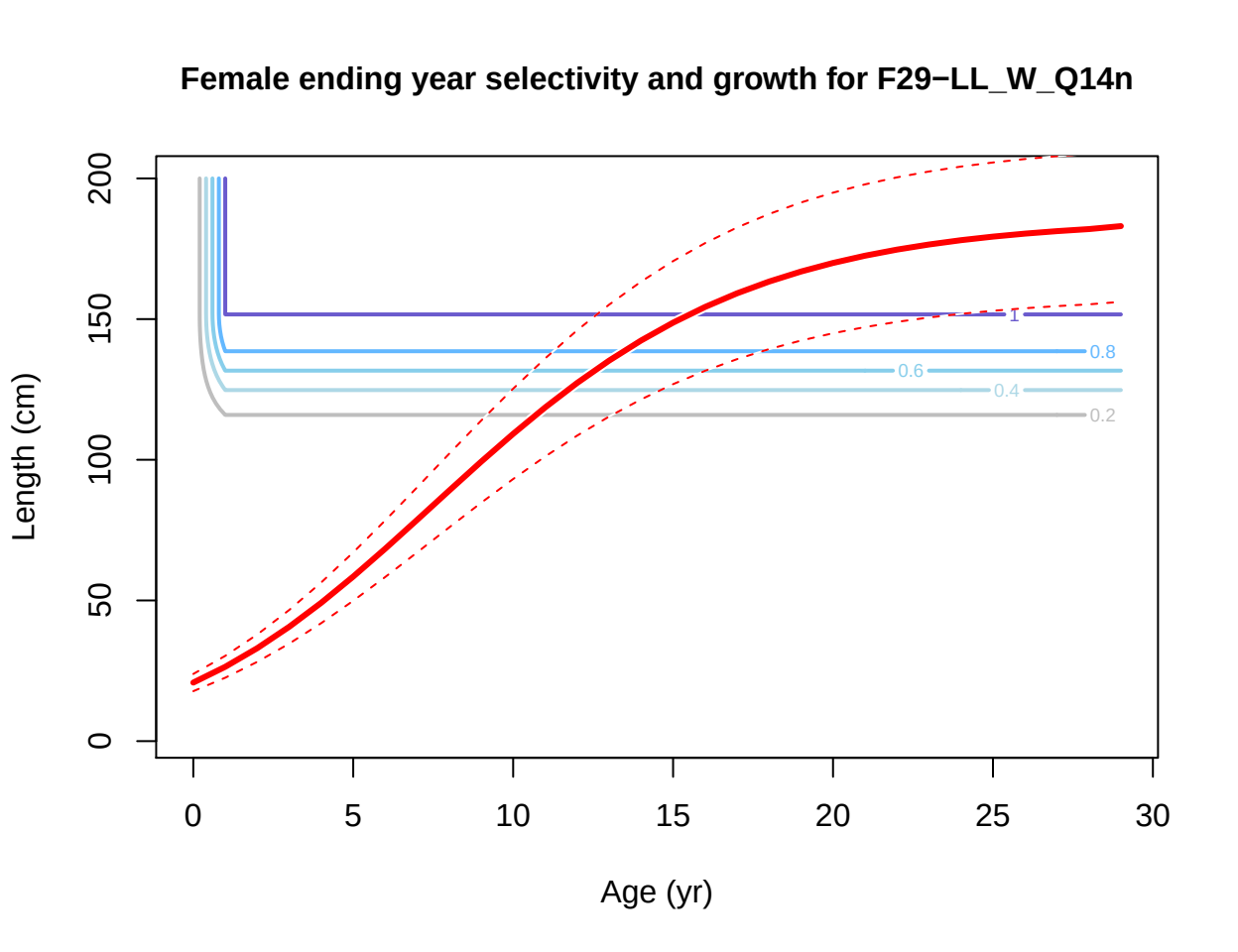

Male ending year selectivity and growth for F20−DEL_S
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

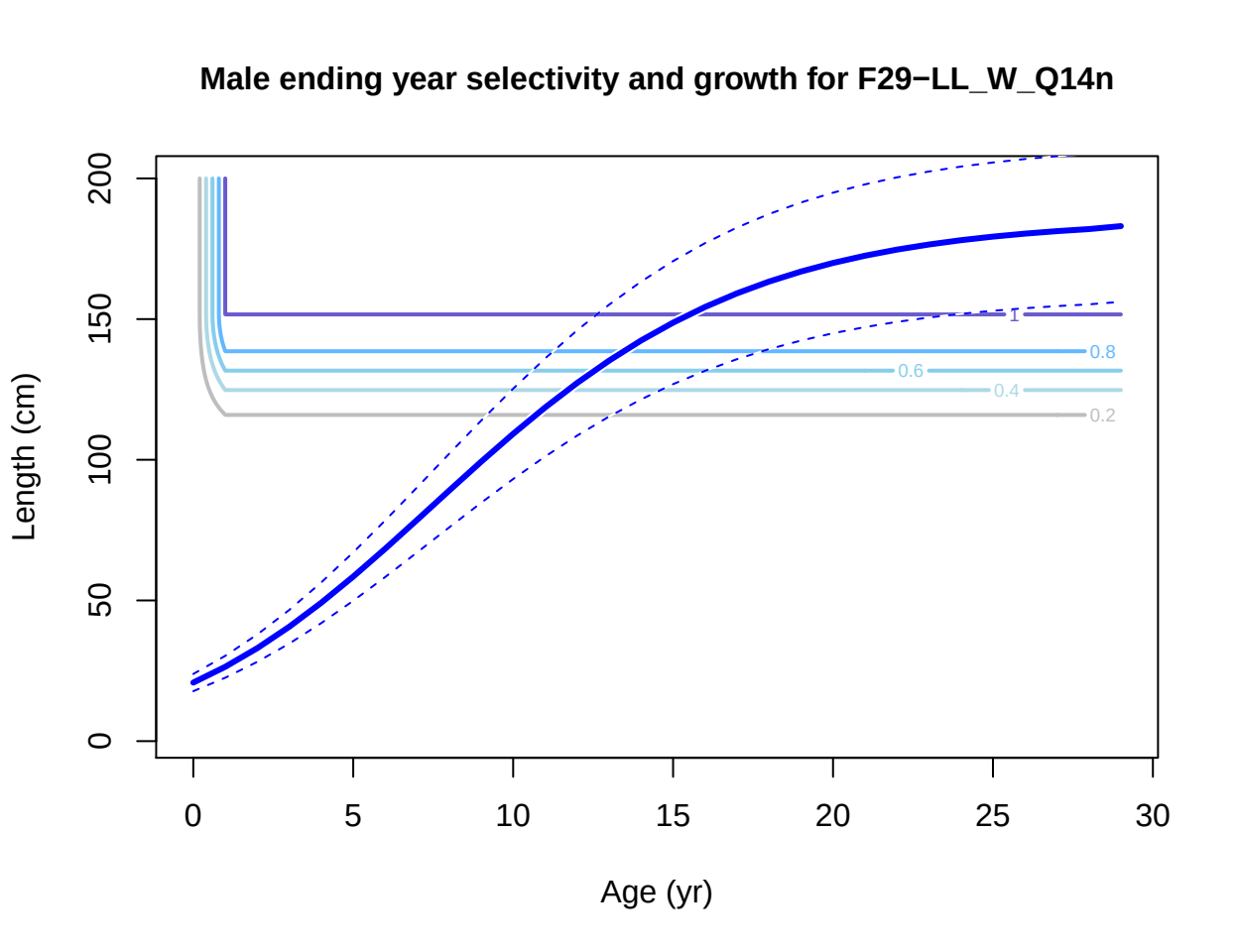

Female ending year selectivity and growth for F21−DEL_I
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

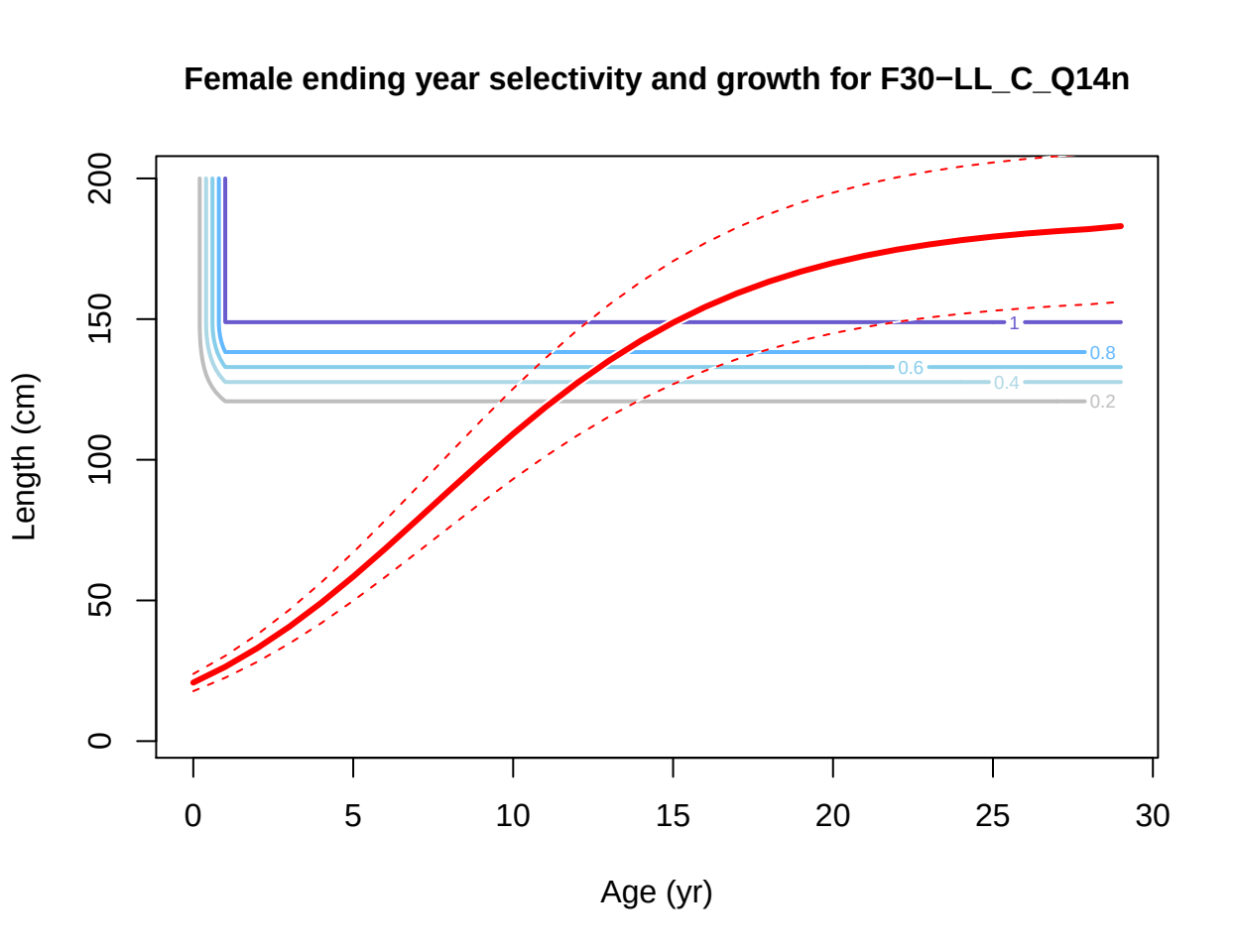

Male ending year selectivity and growth for F21−DEL_I
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

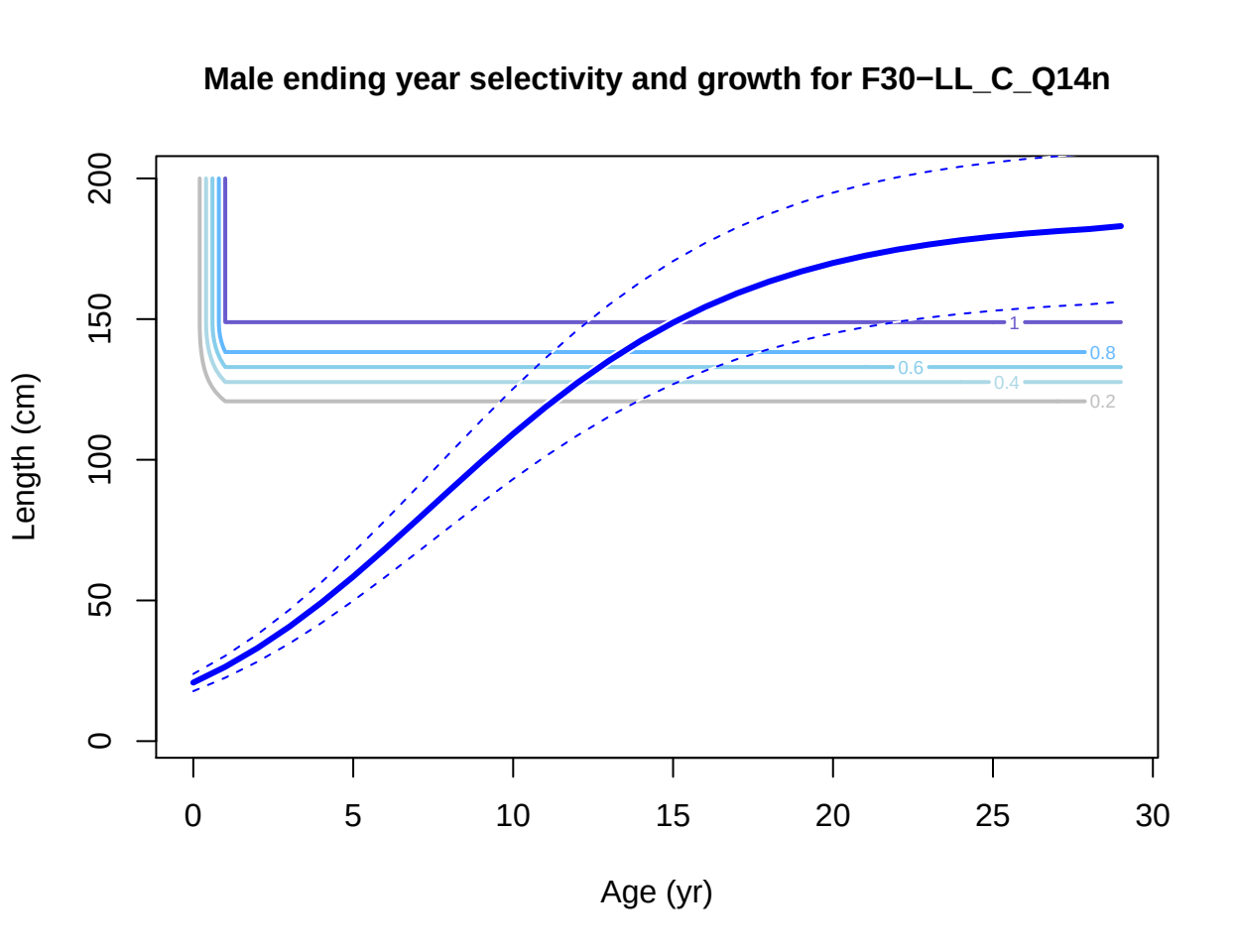

Female ending year selectivity and growth for F22−BB
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.2

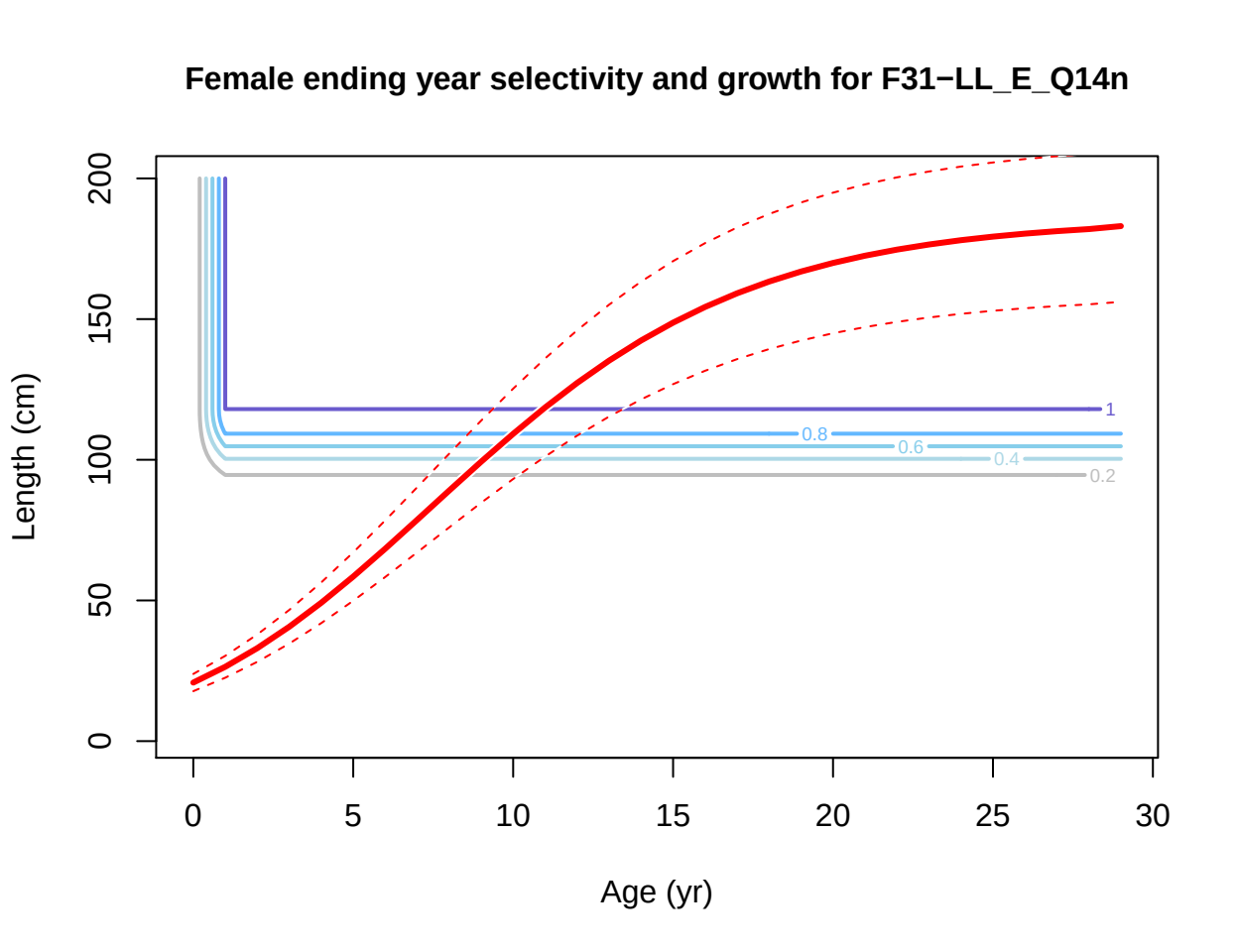

Male ending year selectivity and growth for F22−BB
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.2

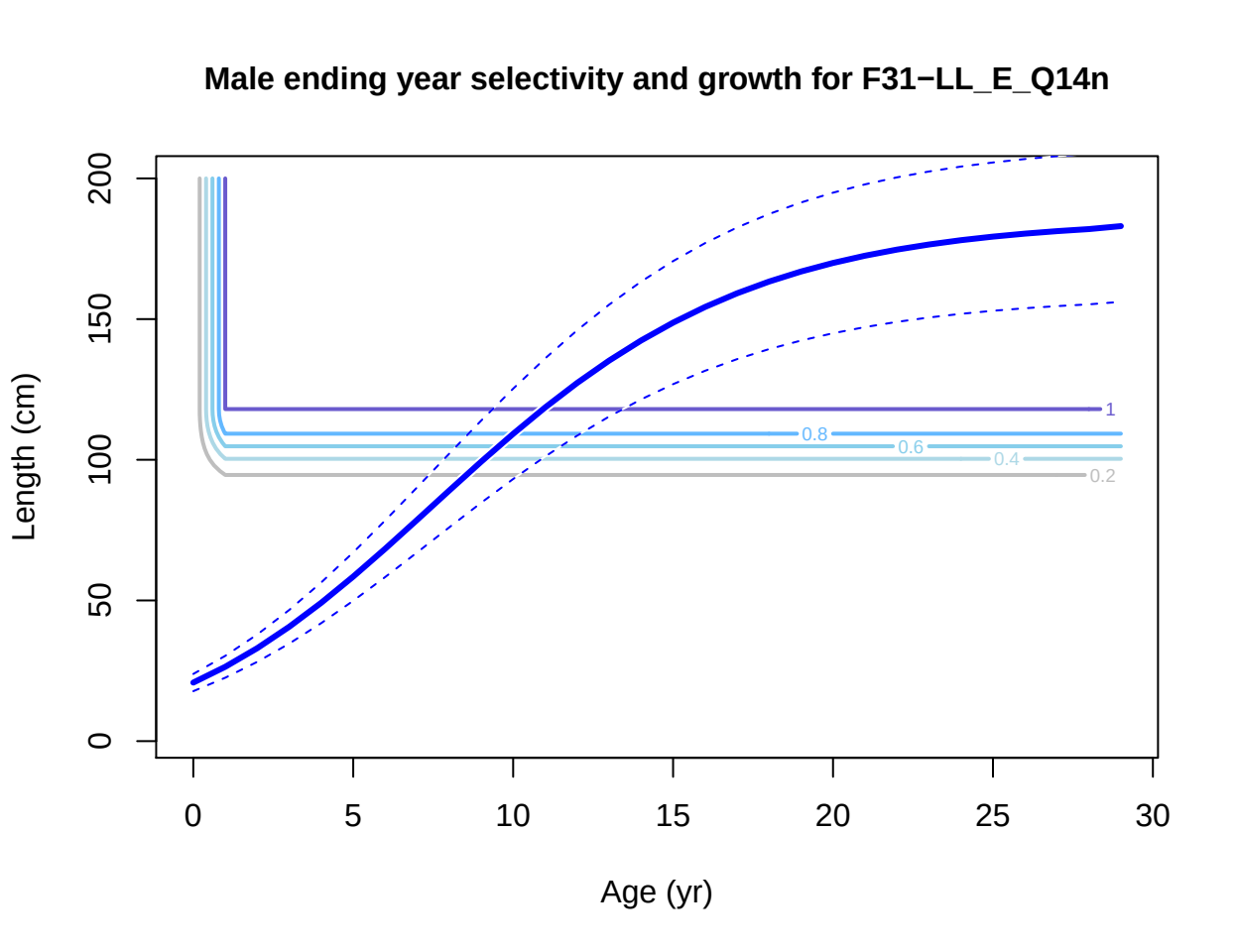

Female ending year selectivity and growth for F29−LL_W_Q14n
Length (cm)
0
50
100
150
200
Age (yr)
0
5
10
15
20
25
30
1
0.8
0.6
0.4
0.2

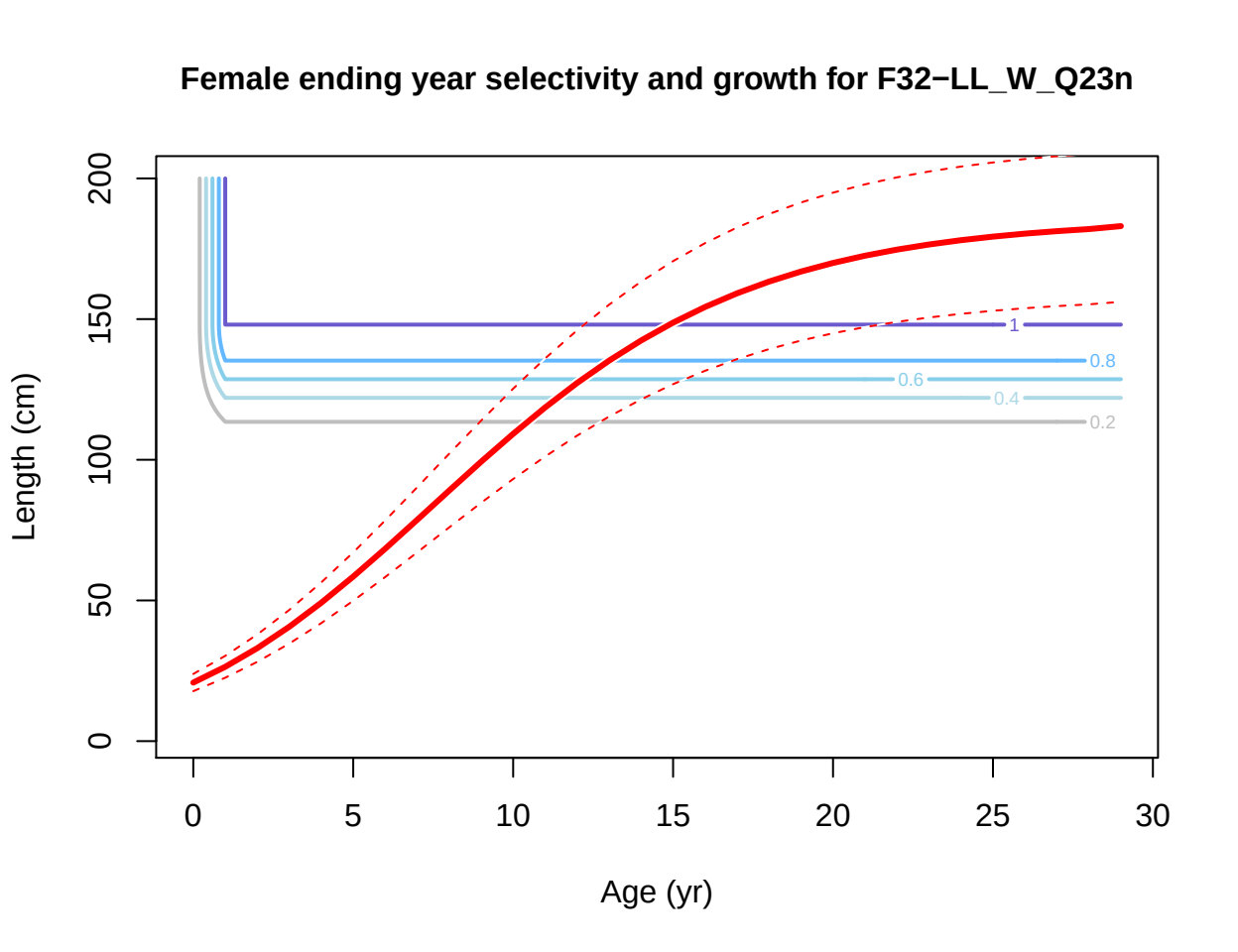

Male ending year selectivity and growth for F29−LL_W_Q14n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

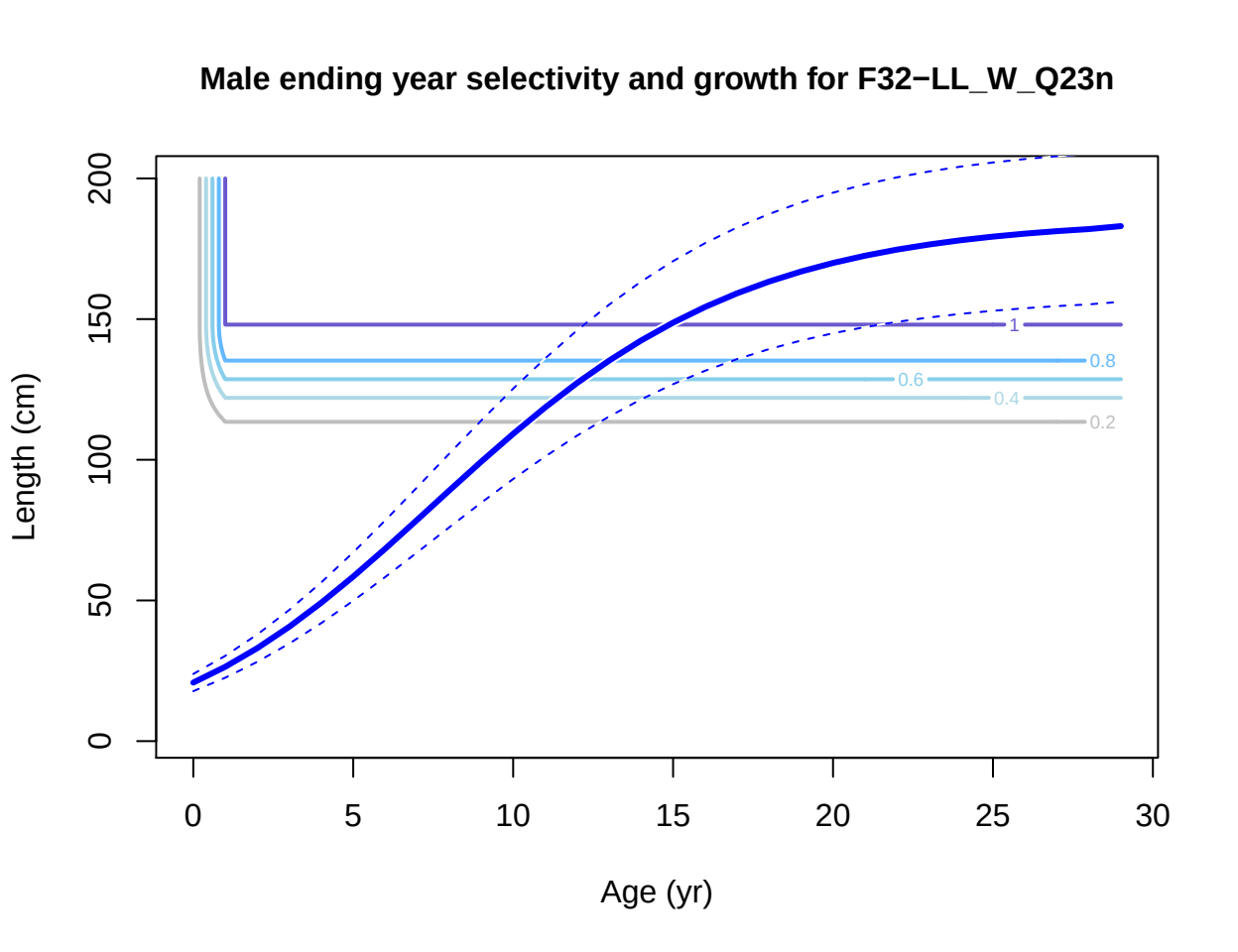

Female ending year selectivity and growth for F30−LL_C_Q14n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

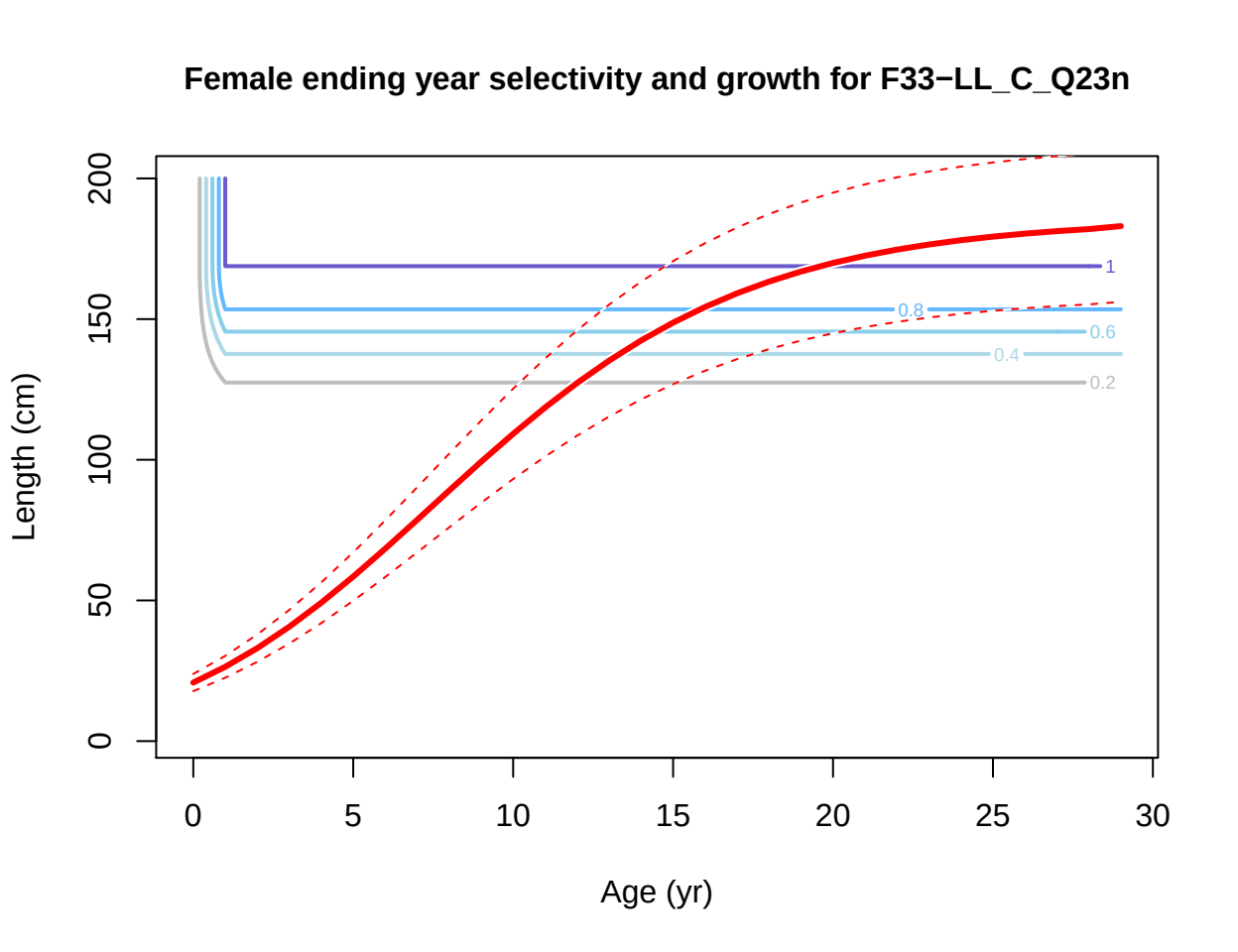

Male ending year selectivity and growth for F30−LL_C_Q14n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

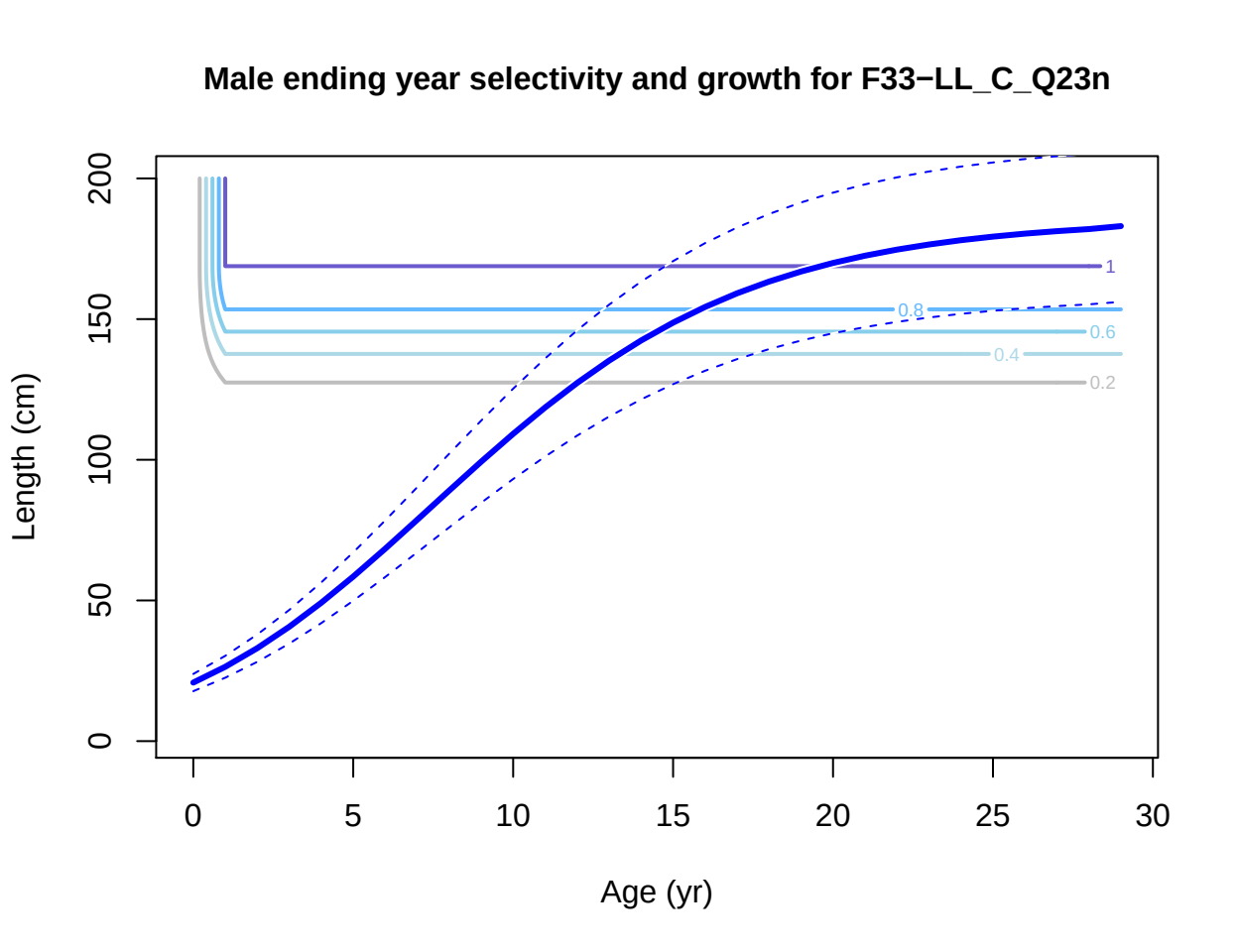

Female ending year selectivity and growth for F31−LL_E_Q14n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

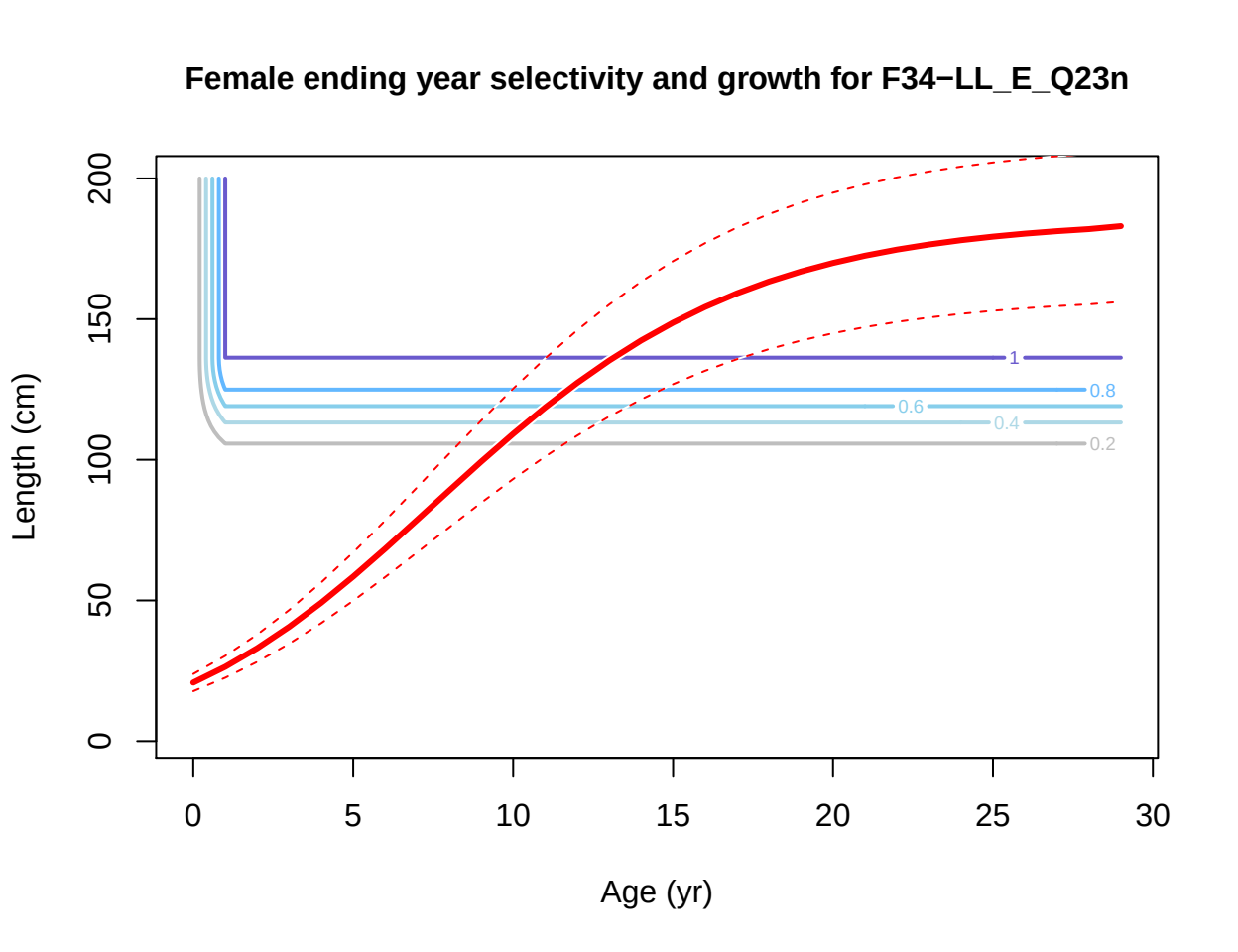

Male ending year selectivity and growth for F31−LL_E_Q14n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

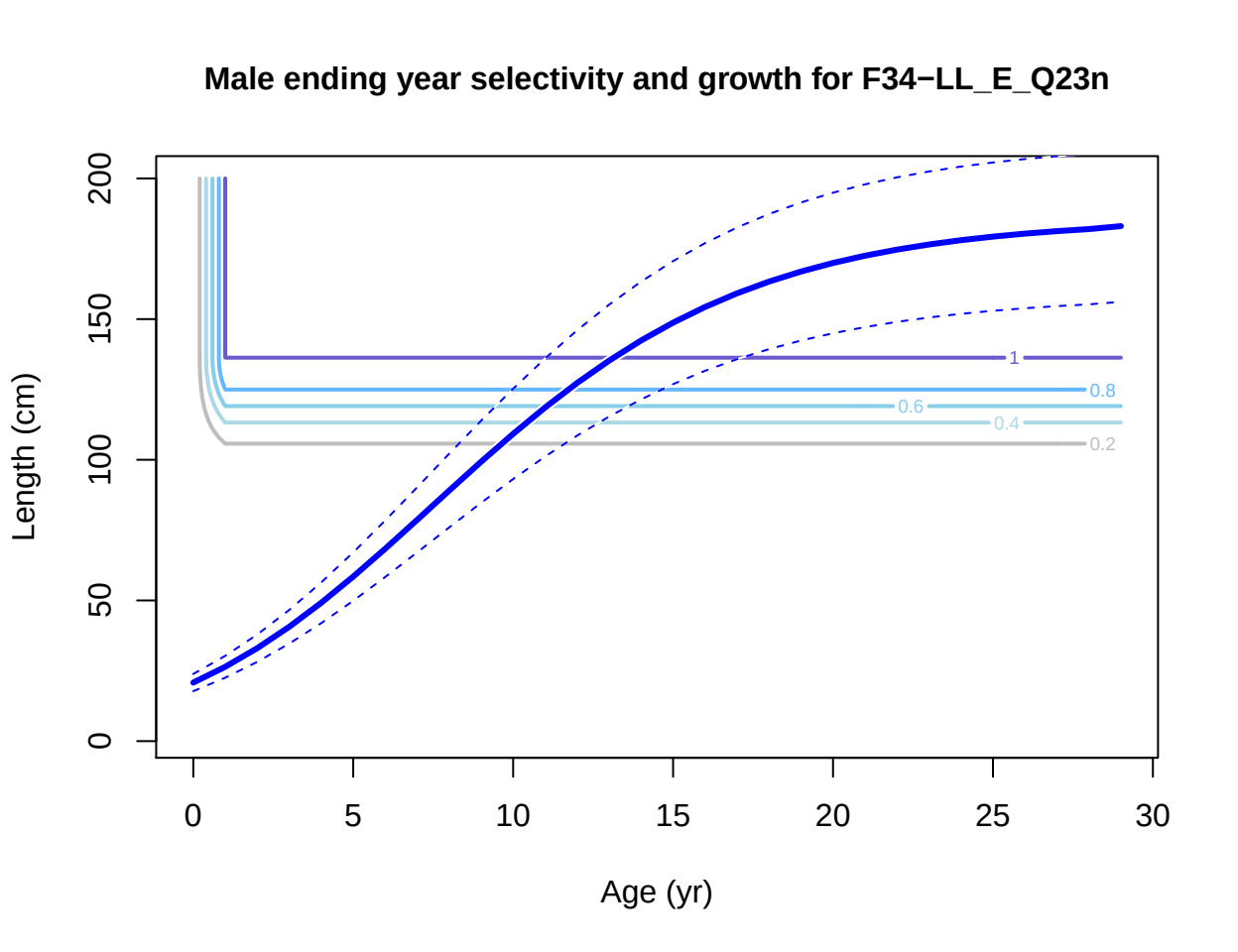

Female ending year selectivity and growth for F32−LL_W_Q23n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

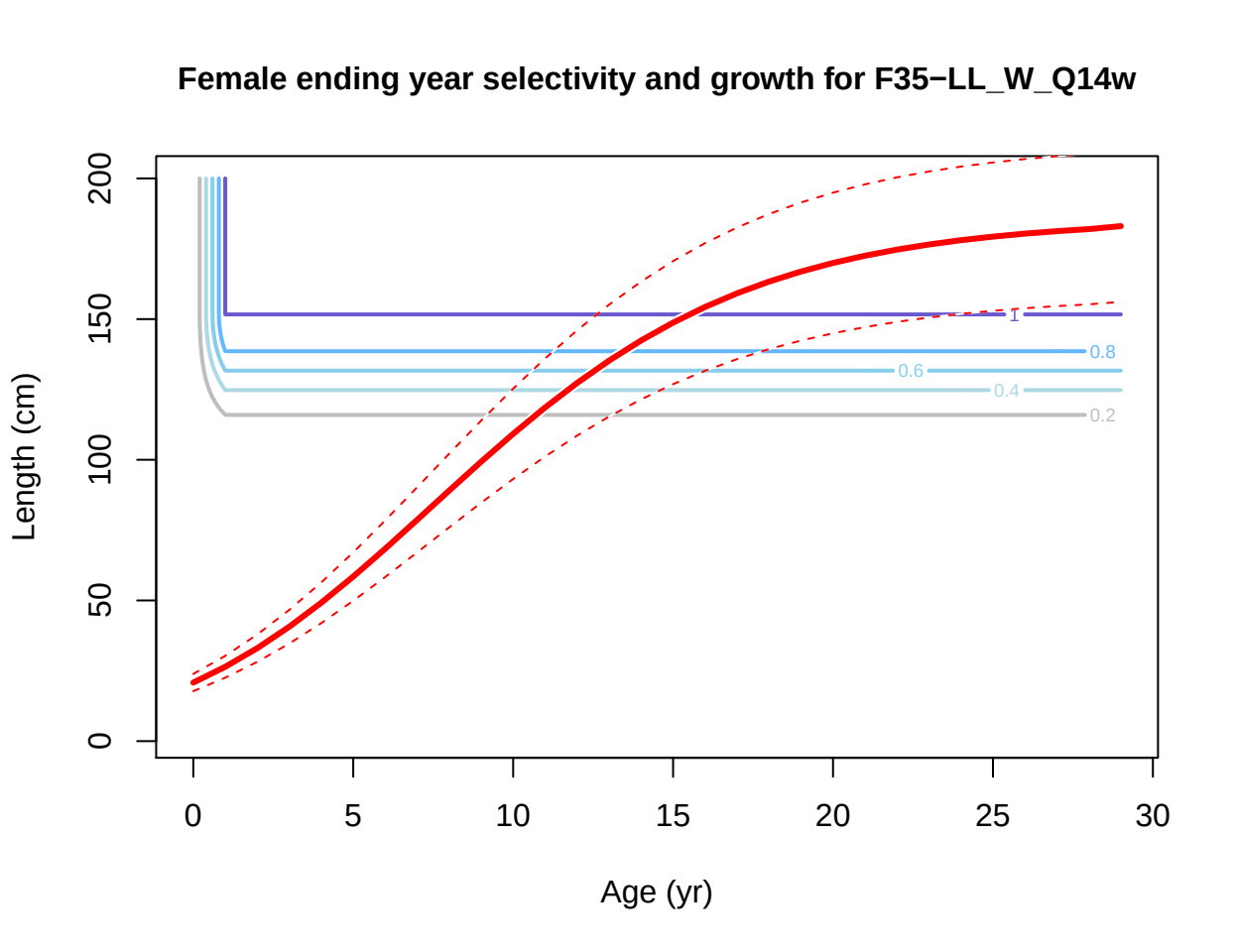

Male ending year selectivity and growth for F32−LL_W_Q23n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

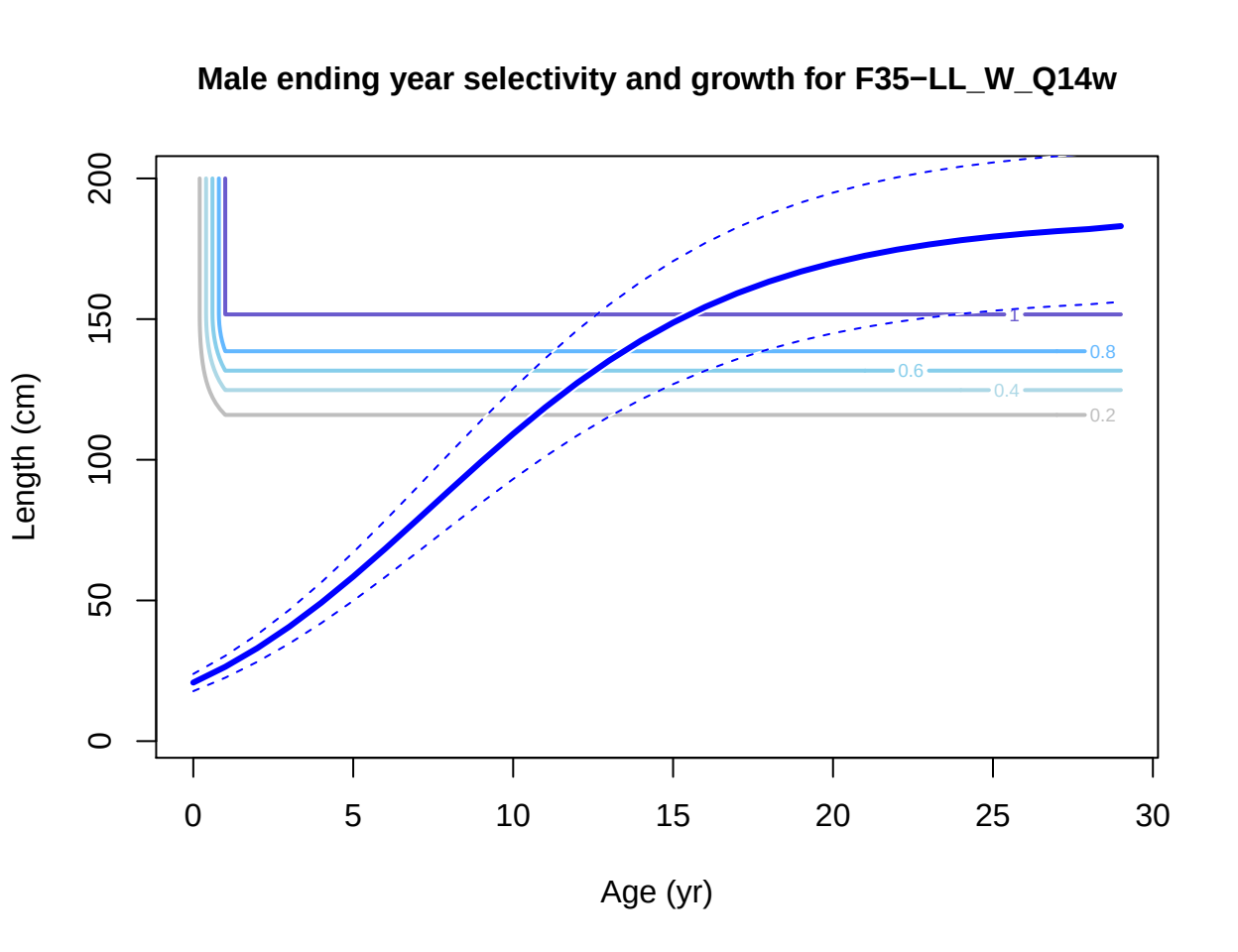

Female ending year selectivity and growth for F33−LL_C_Q23n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

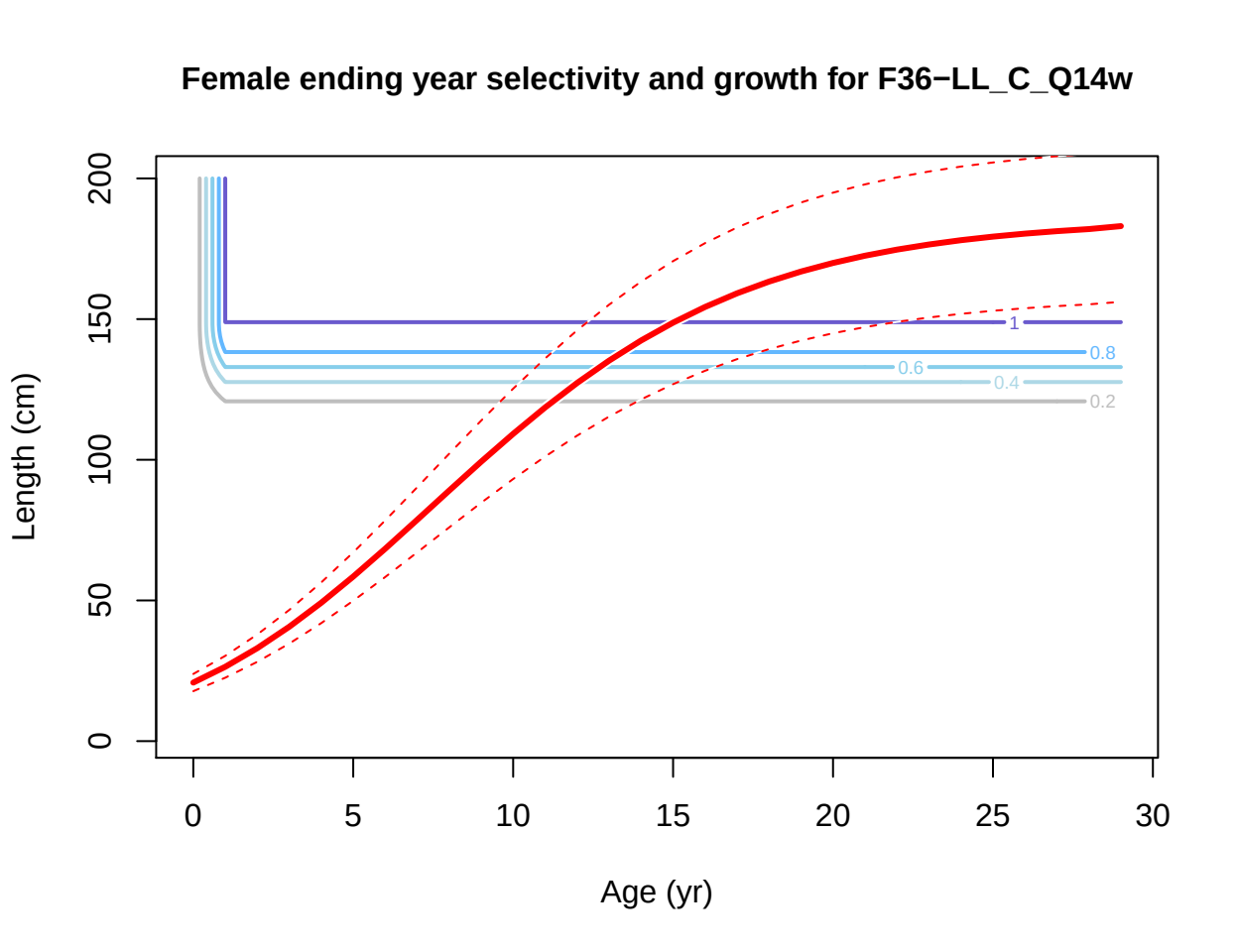

Male ending year selectivity and growth for F33−LL_C_Q23n
Length (cm)
0
50
100
150
200
Age (yr)
0
5
10
15
20
25
30
1
0.8
0.6
0.4
0.2

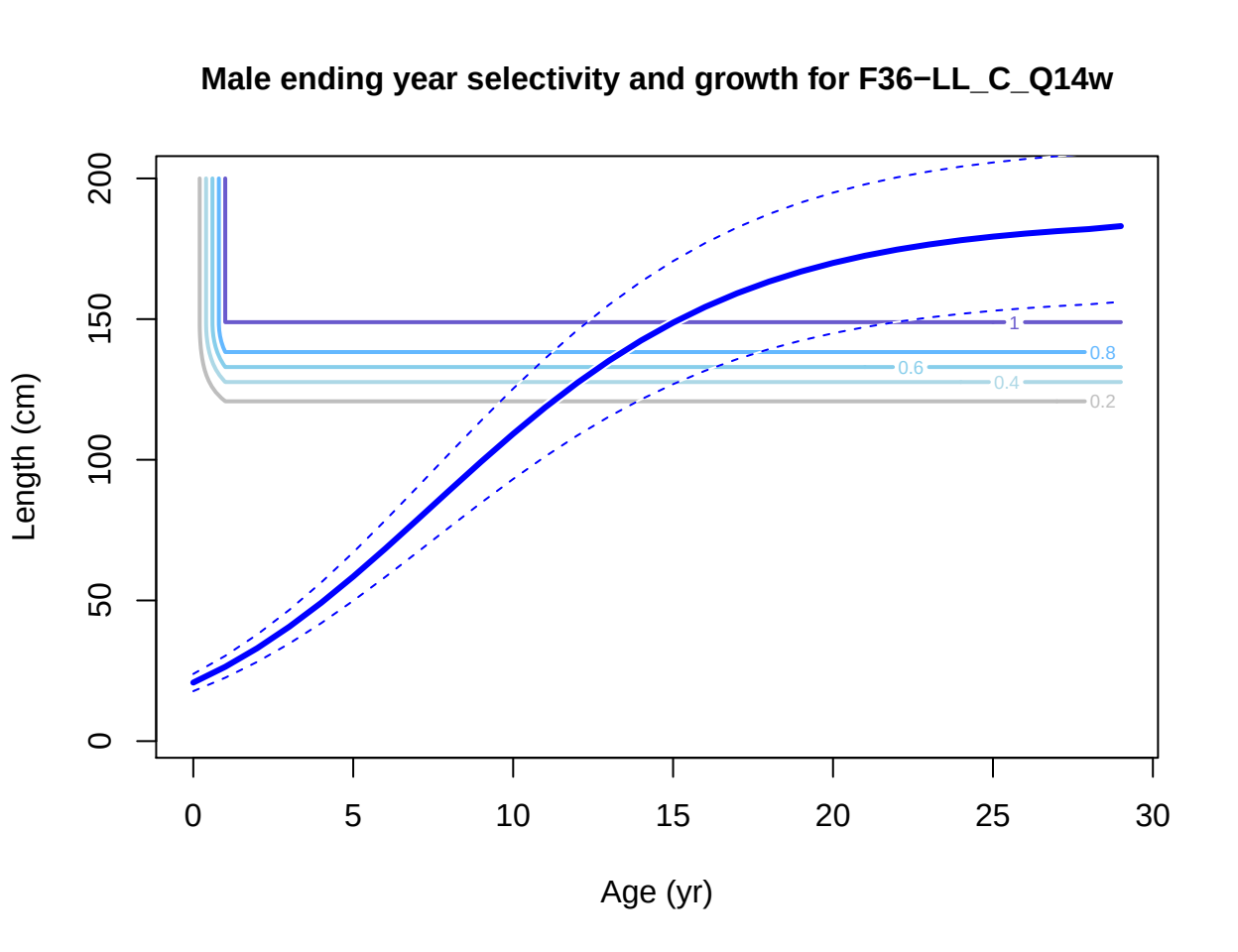

Female ending year selectivity and growth for F34−LL_E_Q23n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

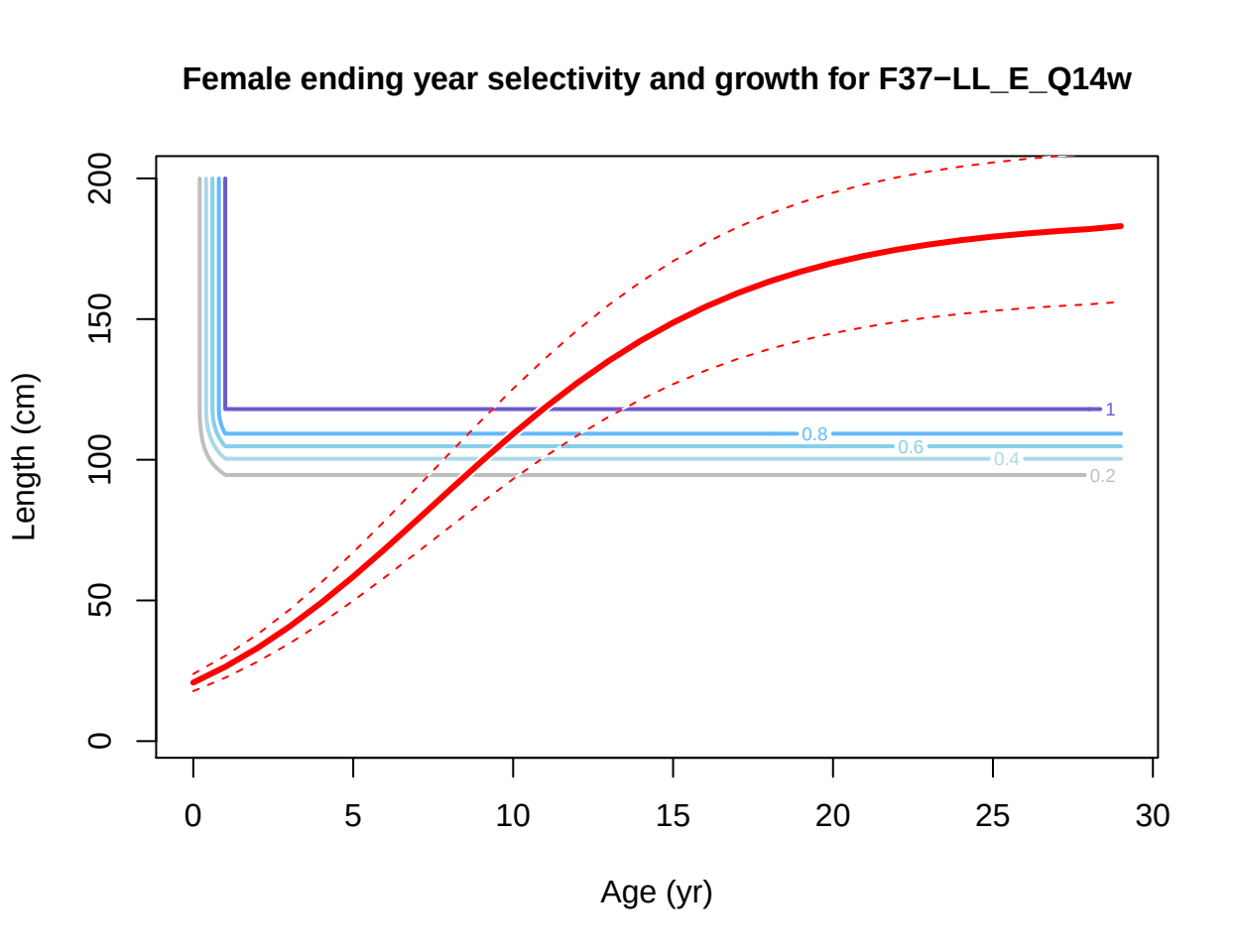

Male ending year selectivity and growth for F34−LL_E_Q23n
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

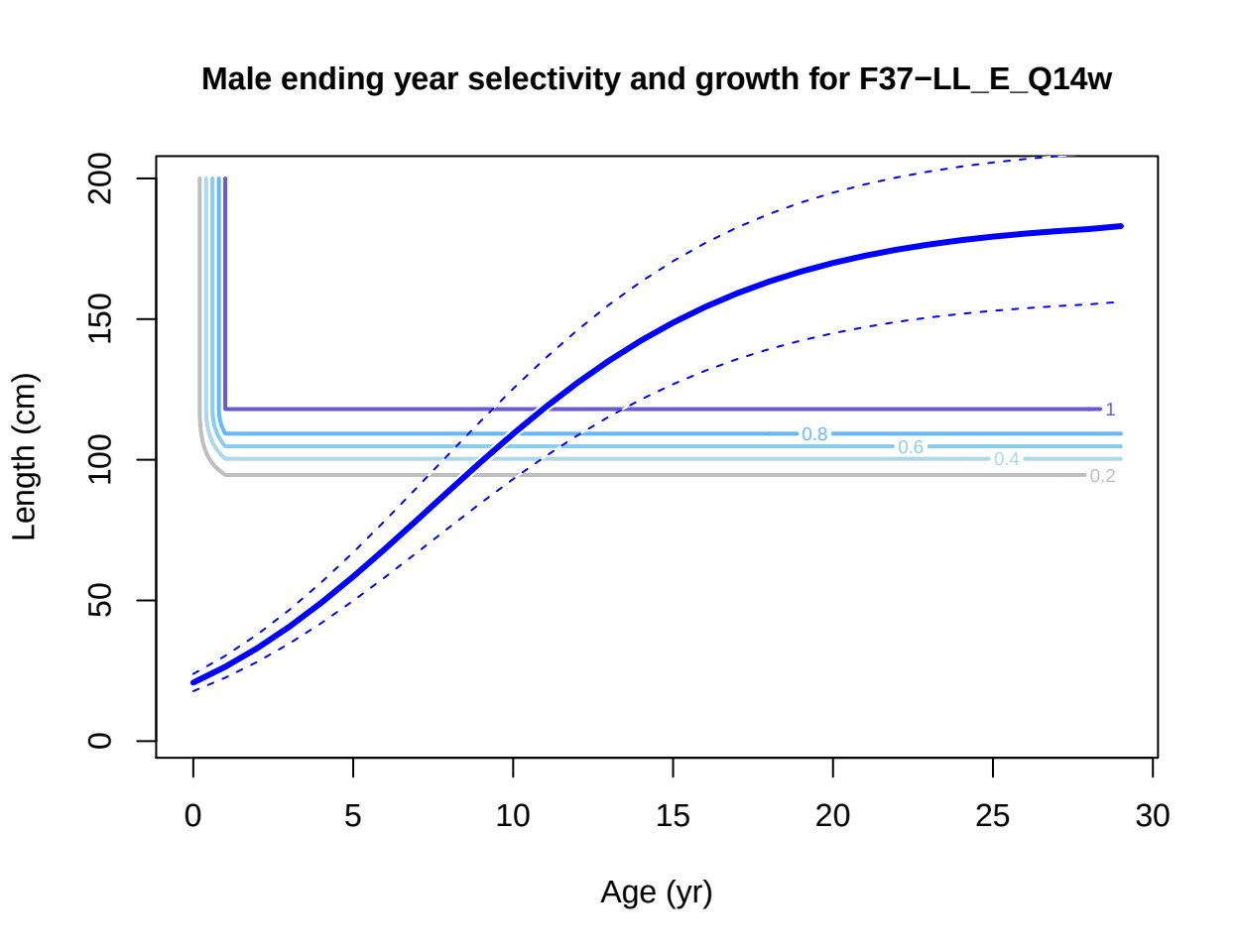

Female ending year selectivity and growth for F35−LL_W_Q14w
Length (cm)
0
50
100
150
200
Age (yr)
0
5
10
15
20
25
30
1
0.8
0.6
0.4
0.2

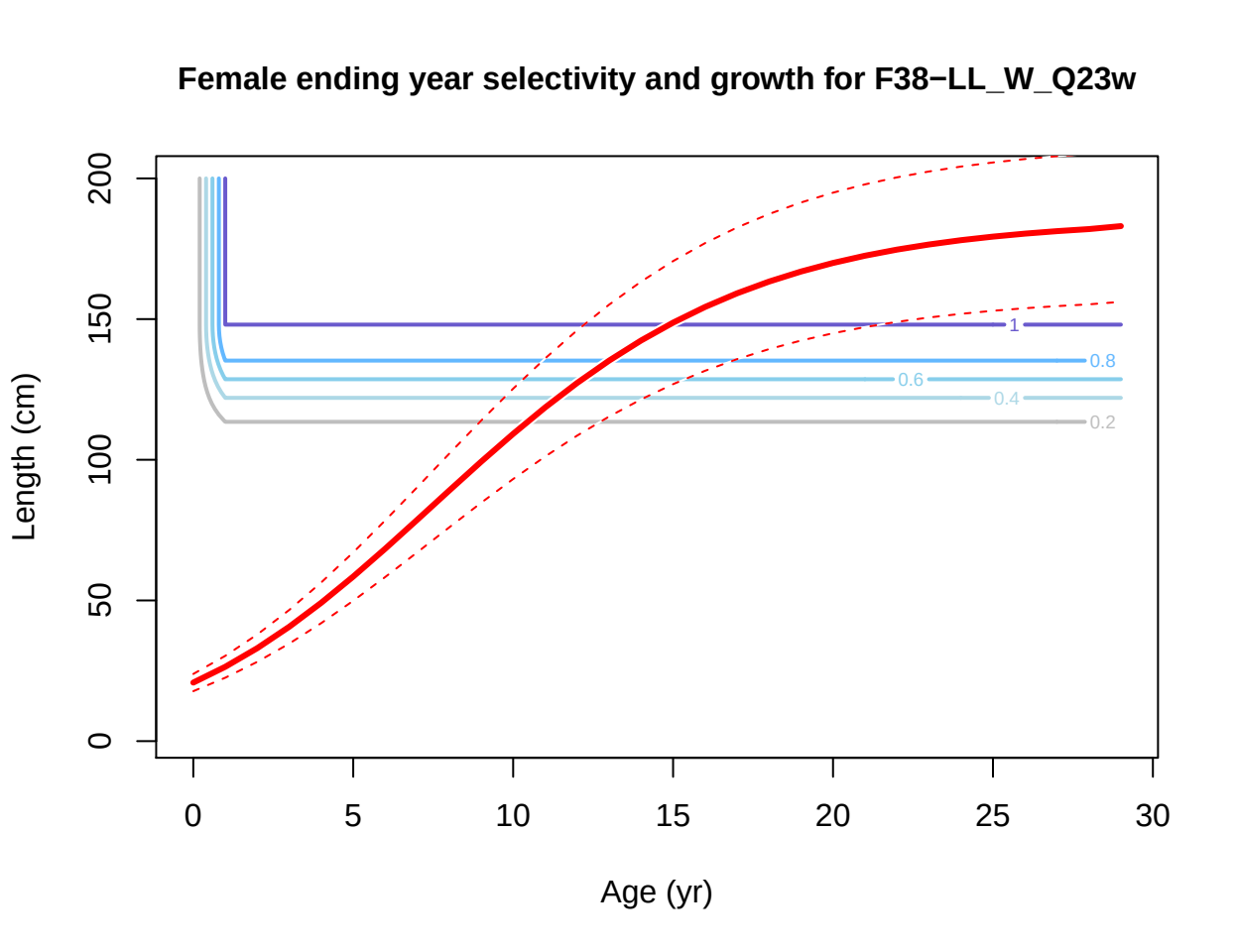

Male ending year selectivity and growth for F35−LL_W_Q14w
Length (cm)
0
50
100
150
200
Age (yr)
0
5
10
15
20
25
30
1
0.8
0.6
0.4
0.2

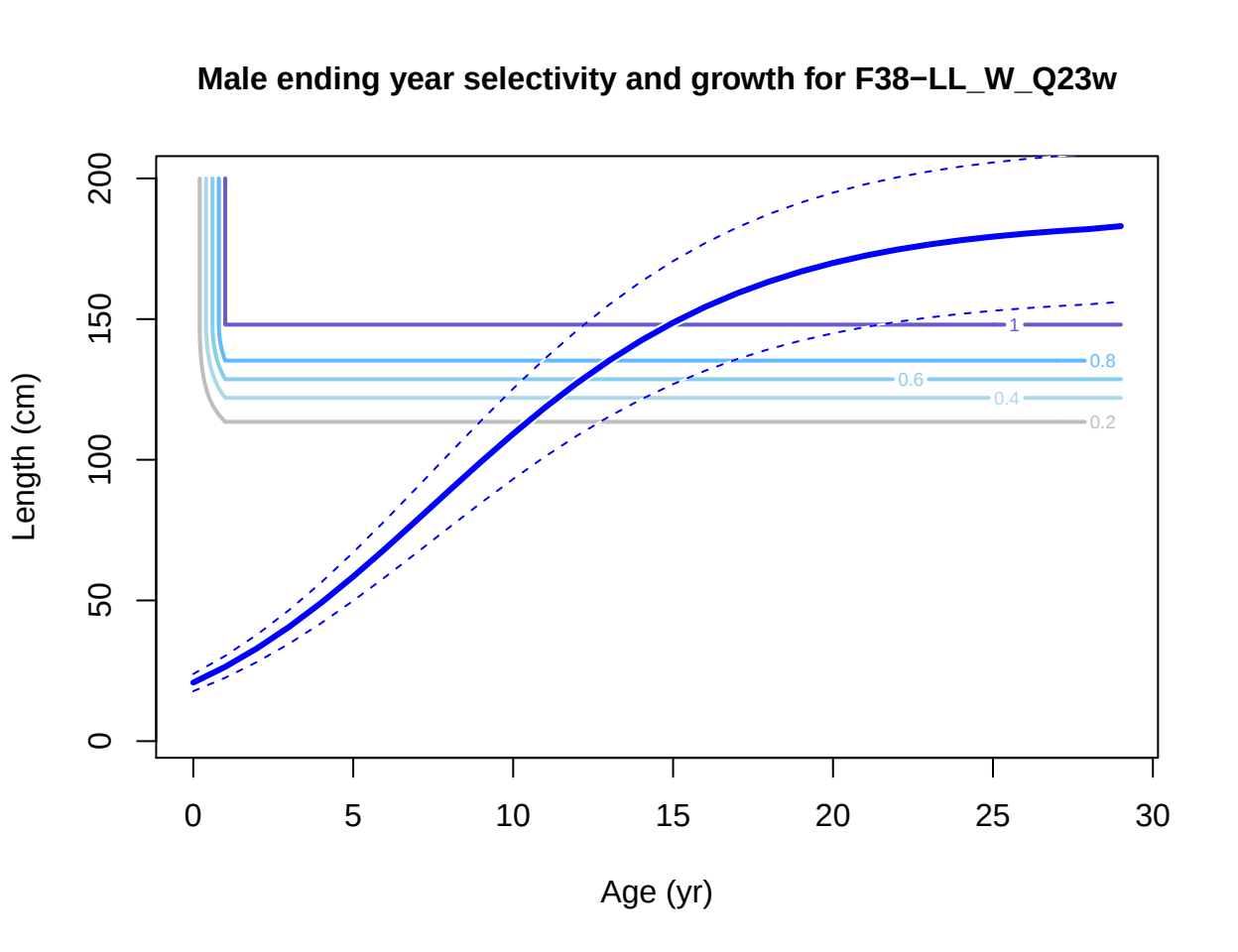

Female ending year selectivity and growth for F36−LL_C_Q14w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

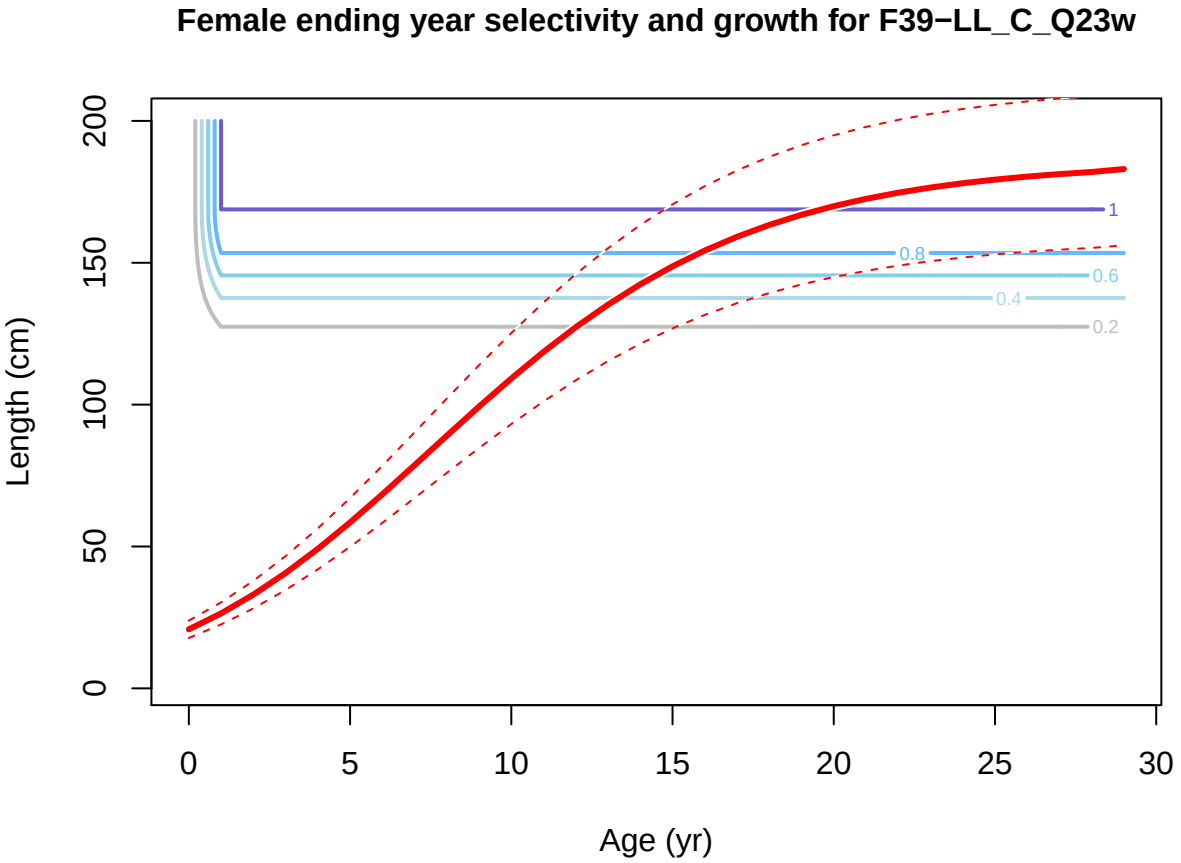

Male ending year selectivity and growth for F36−LL_C_Q14w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

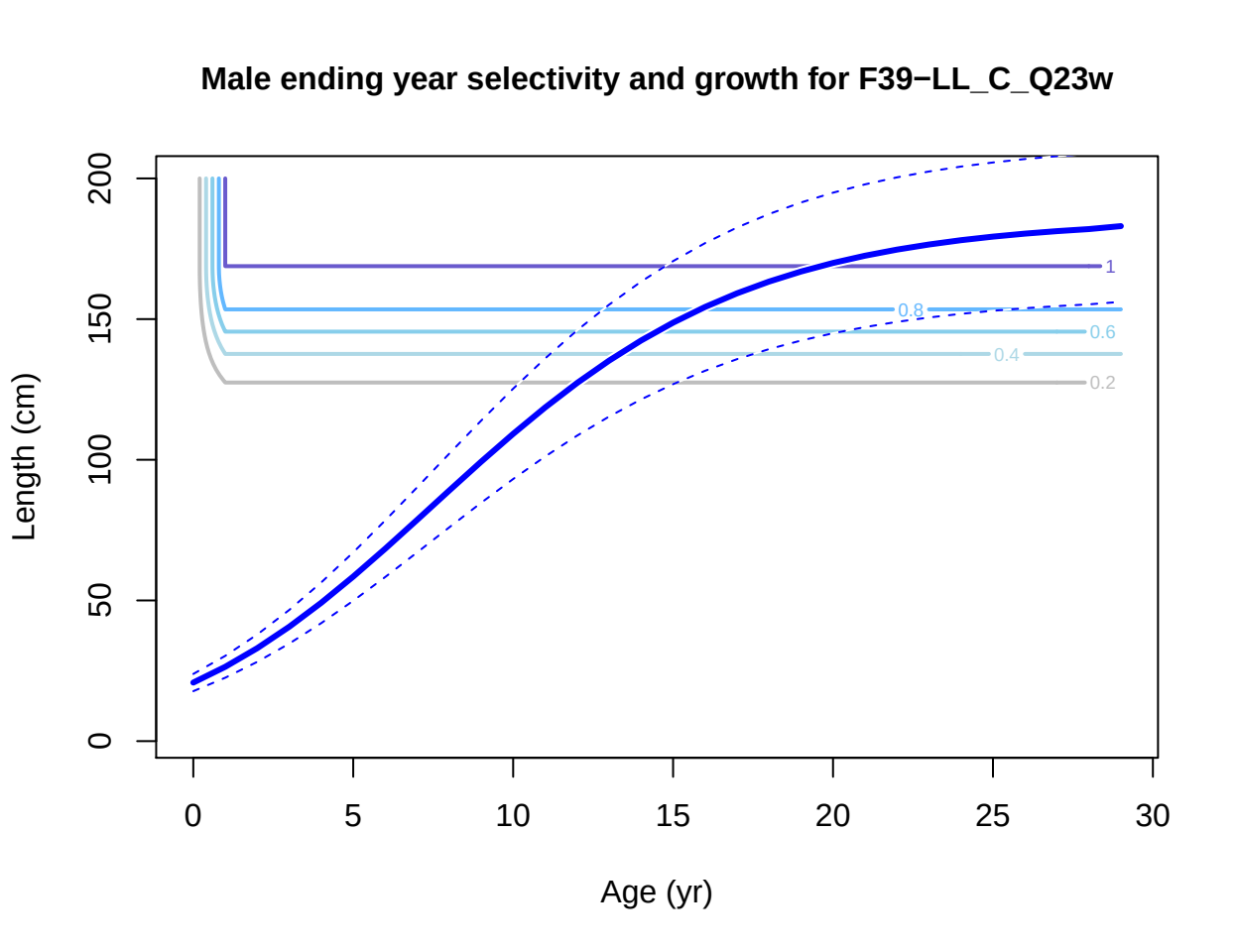

Female ending year selectivity and growth for F37−LL_E_Q14w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

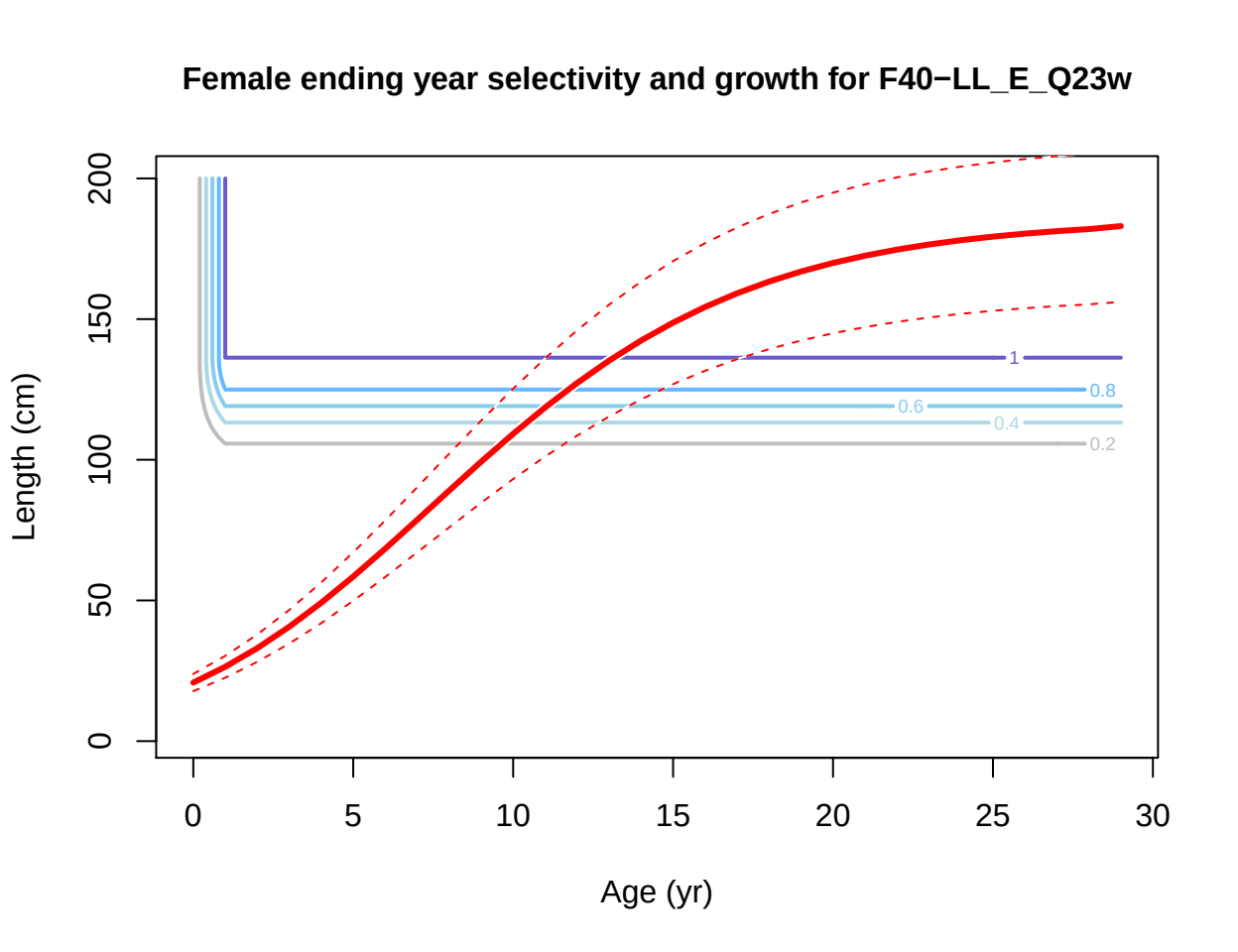

Male ending year selectivity and growth for F37−LL_E_Q14w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

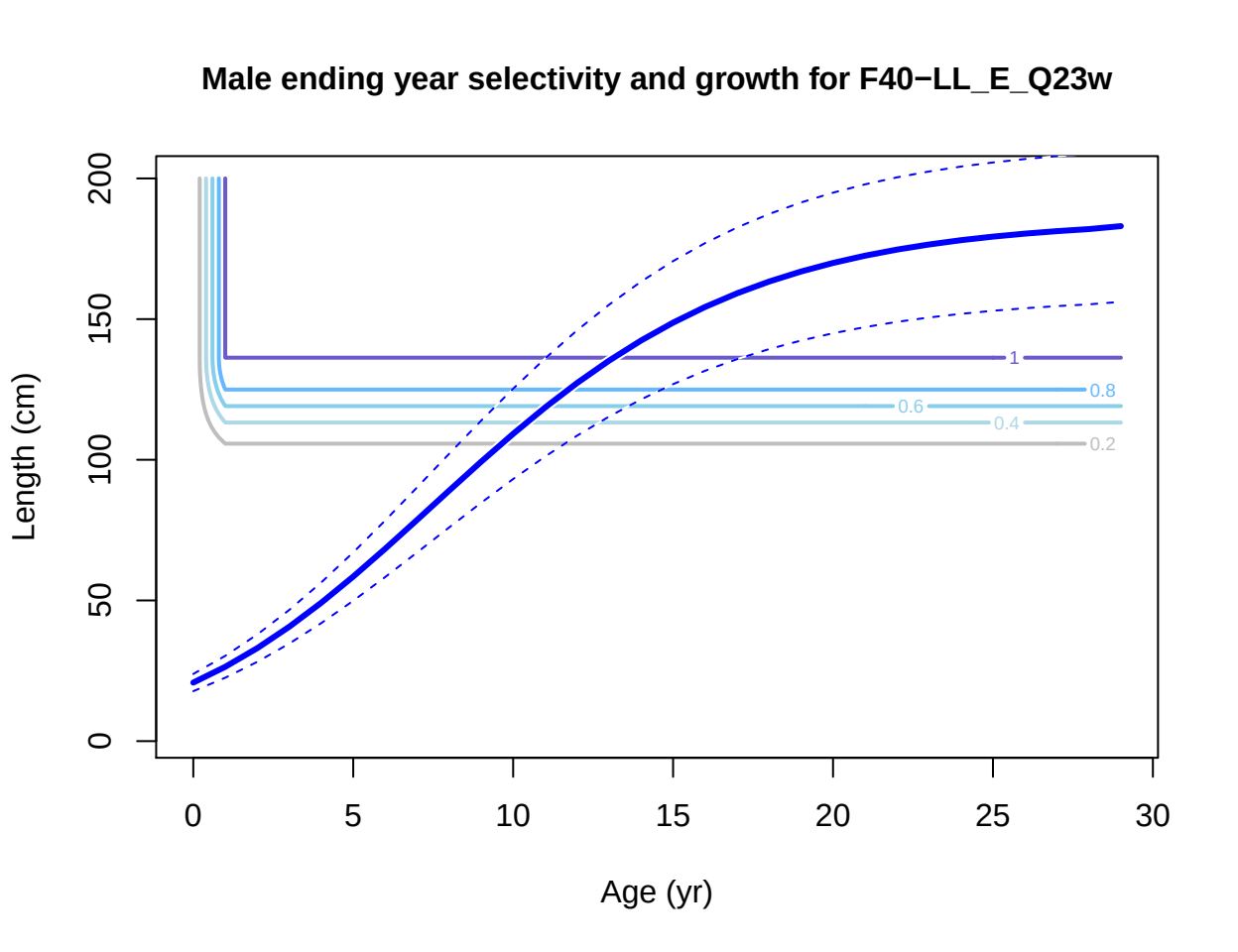

Female ending year selectivity and growth for F38−LL_W_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

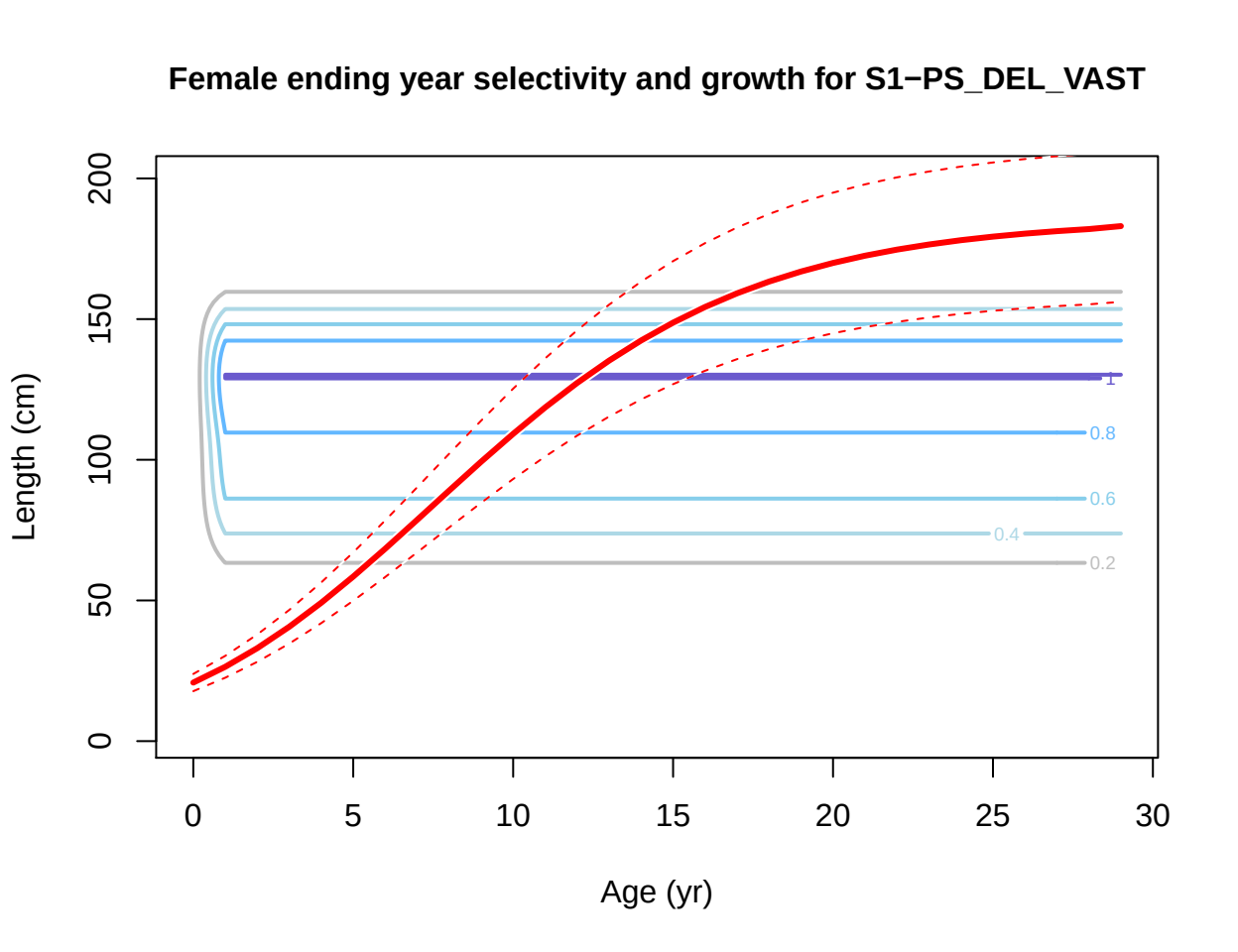

Male ending year selectivity and growth for F38−LL_W_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

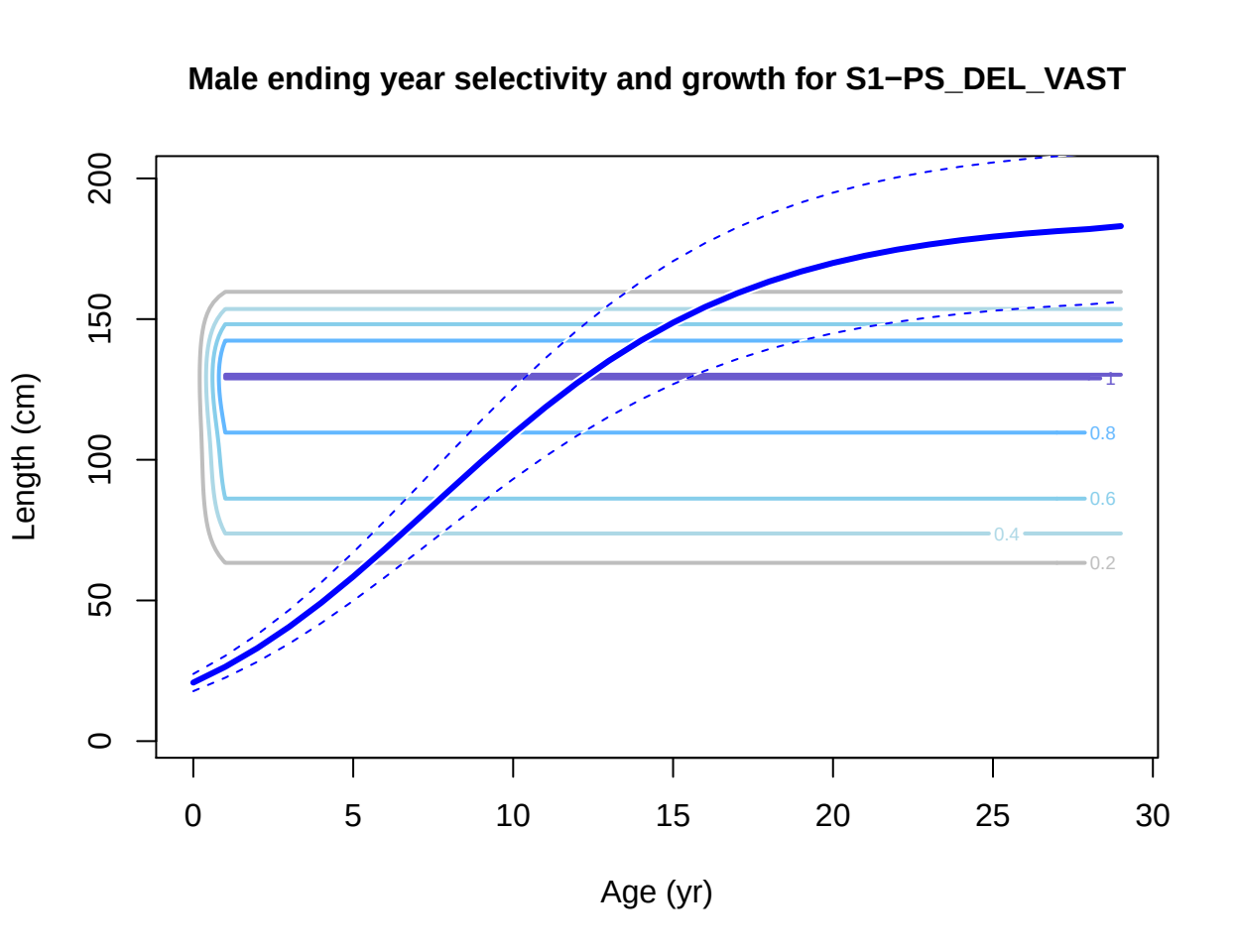

Female ending year selectivity and growth for F39−LL_C_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

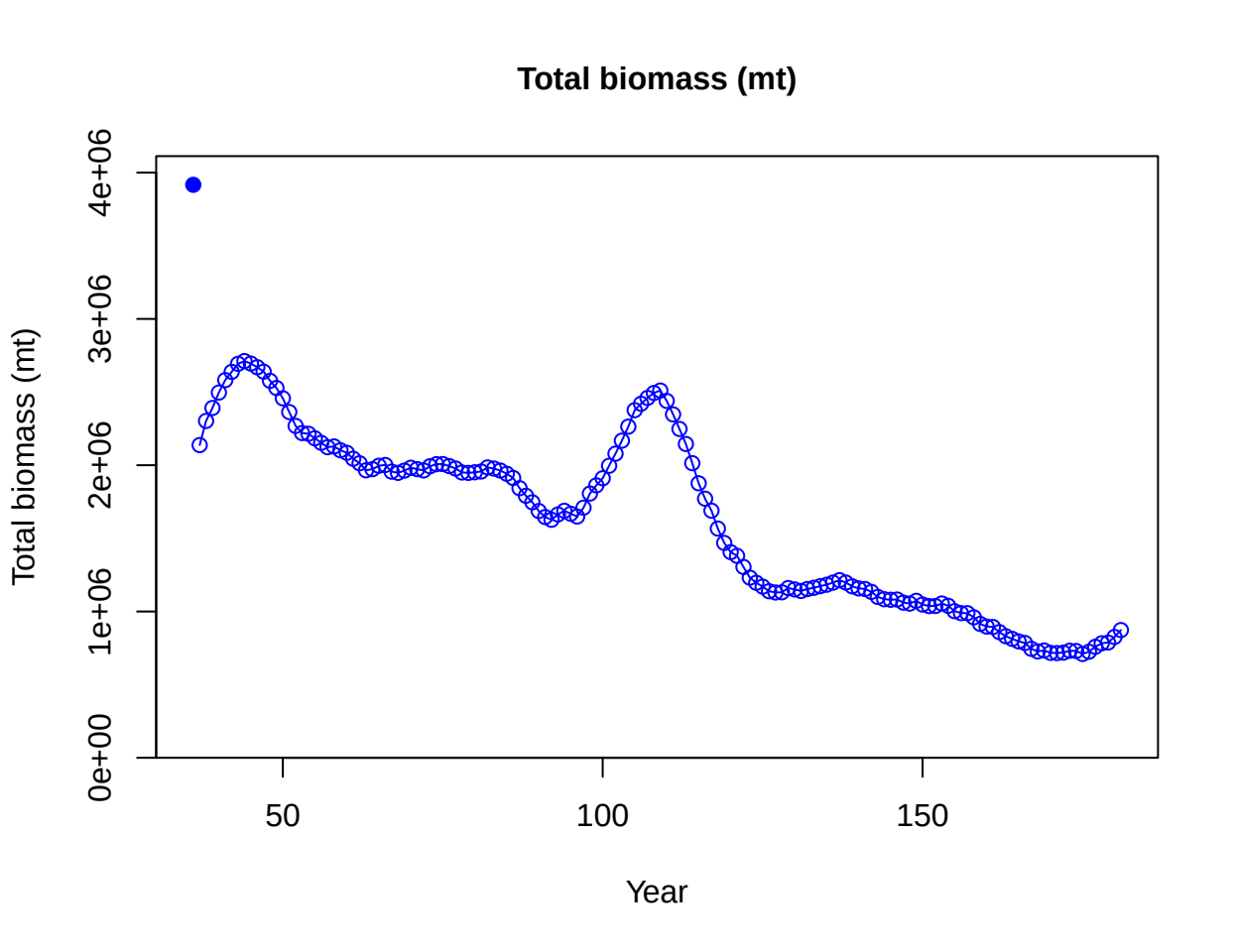

Male ending year selectivity and growth for F39−LL_C_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

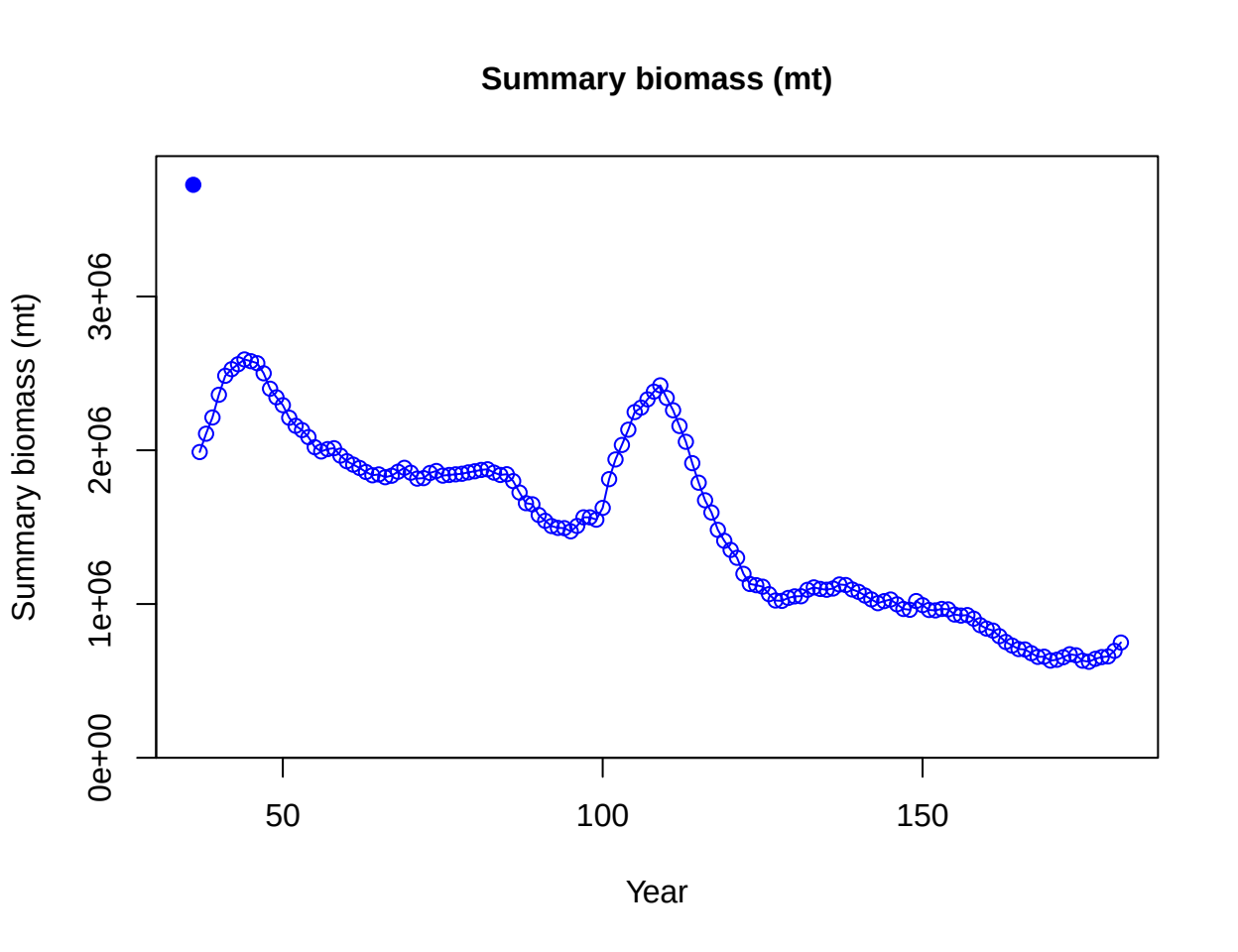

Female ending year selectivity and growth for F40−LL_E_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

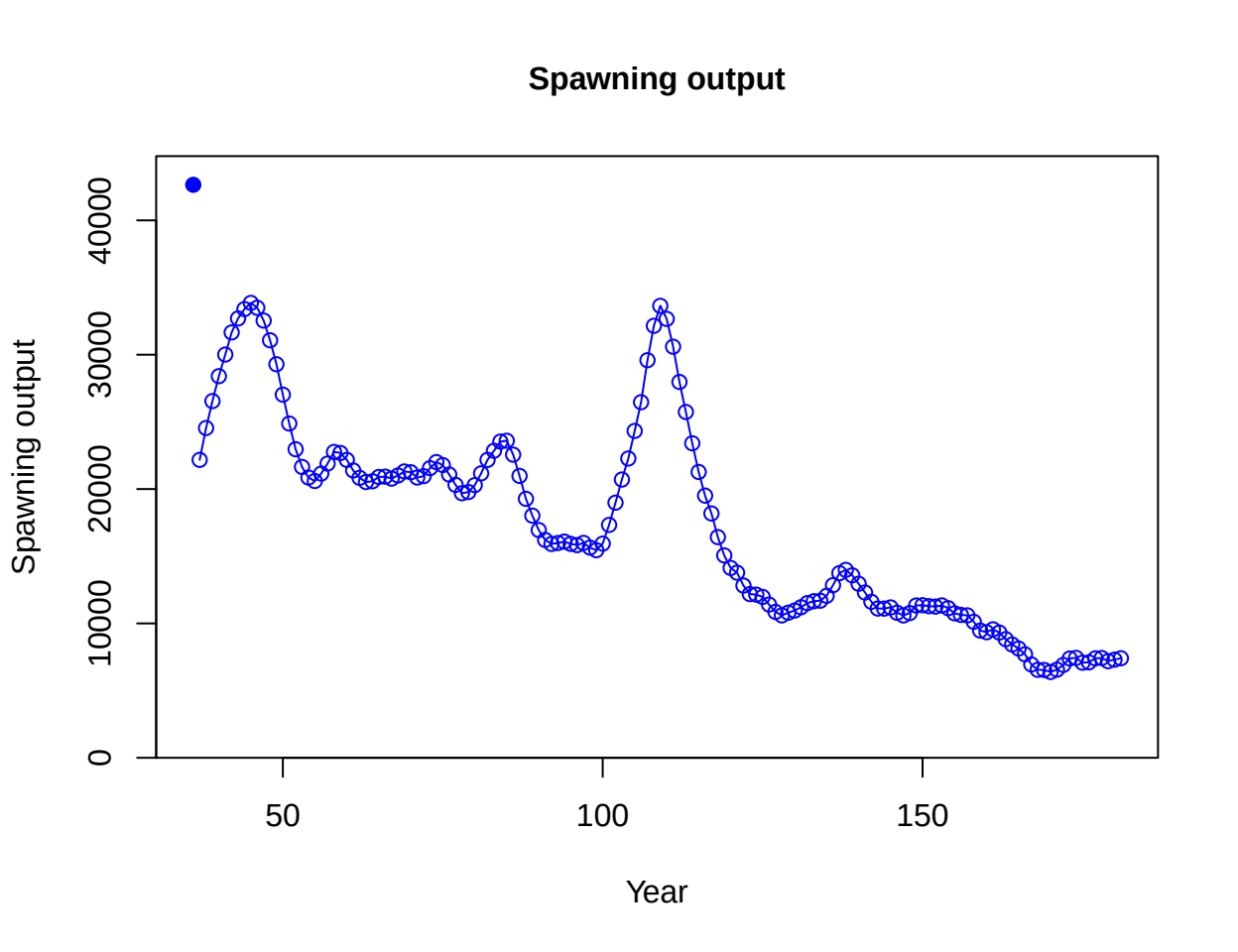

Male ending year selectivity and growth for F40−LL_E_Q23w
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

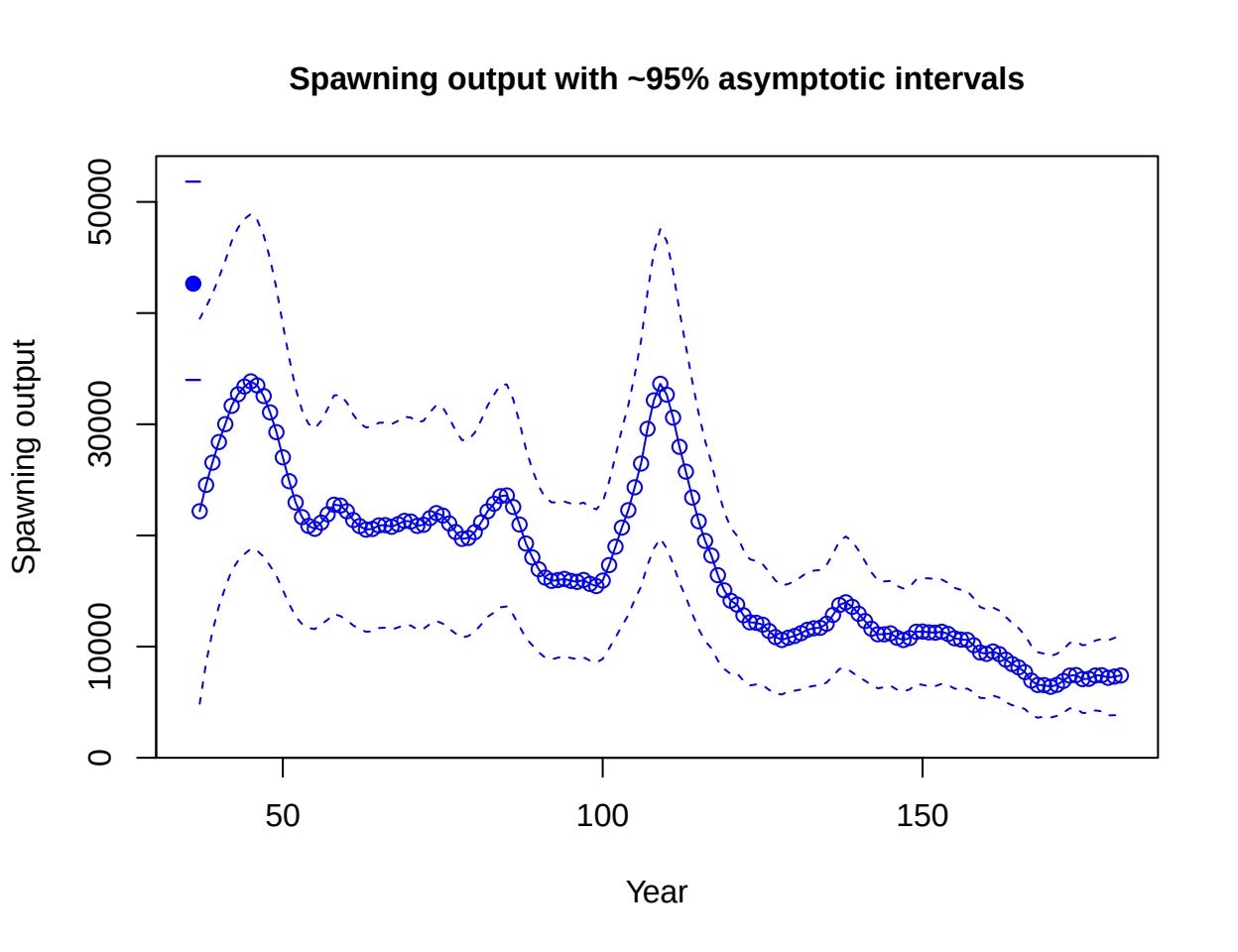

Female ending year selectivity and growth for S1−PS_DEL_VAST
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

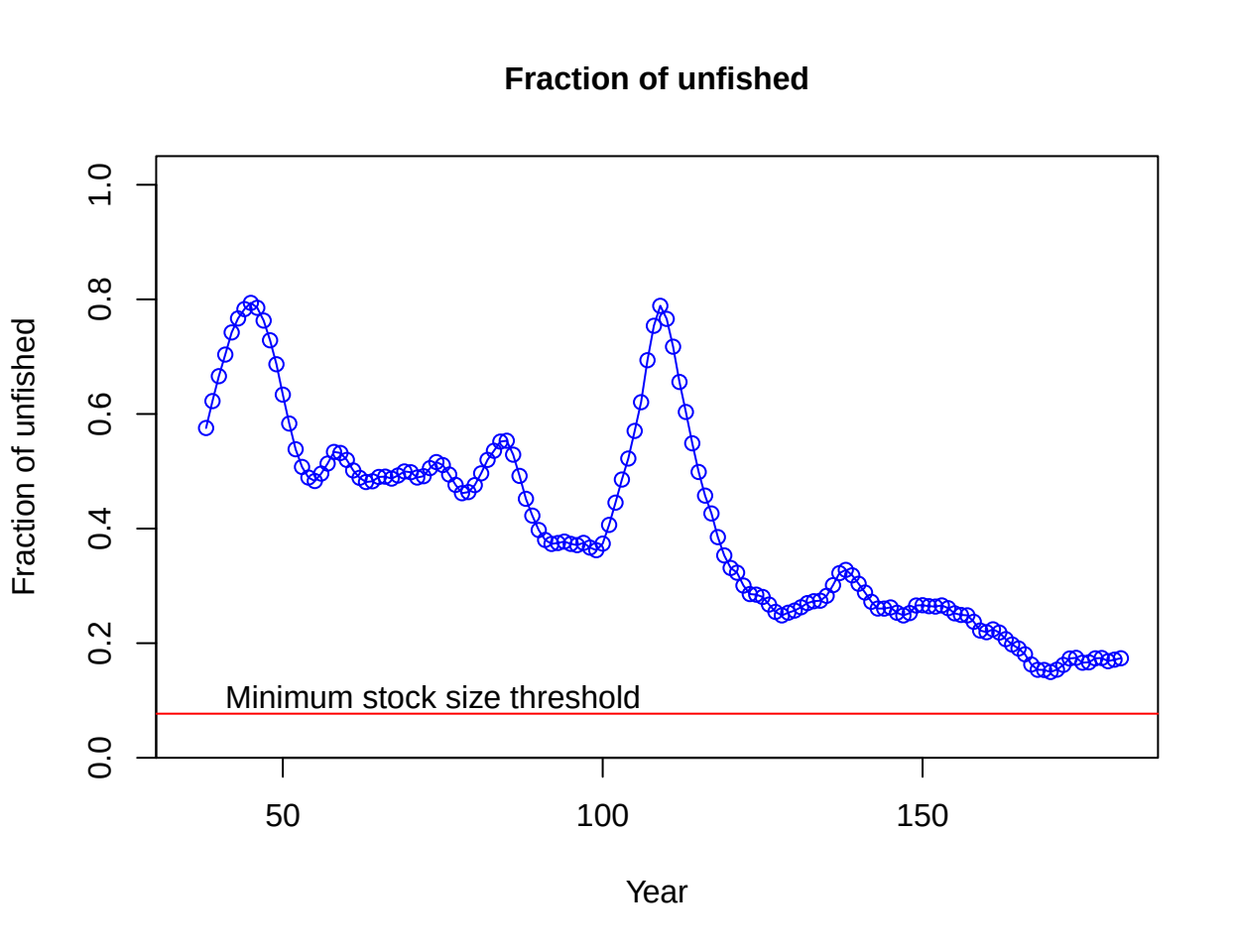

Male ending year selectivity and growth for S1−PS_DEL_VAST
Length (cm)
0
50
100
150
200
0
5
10
15
20
25
30
Age (yr)
1
0.8
0.6
0.4
0.2

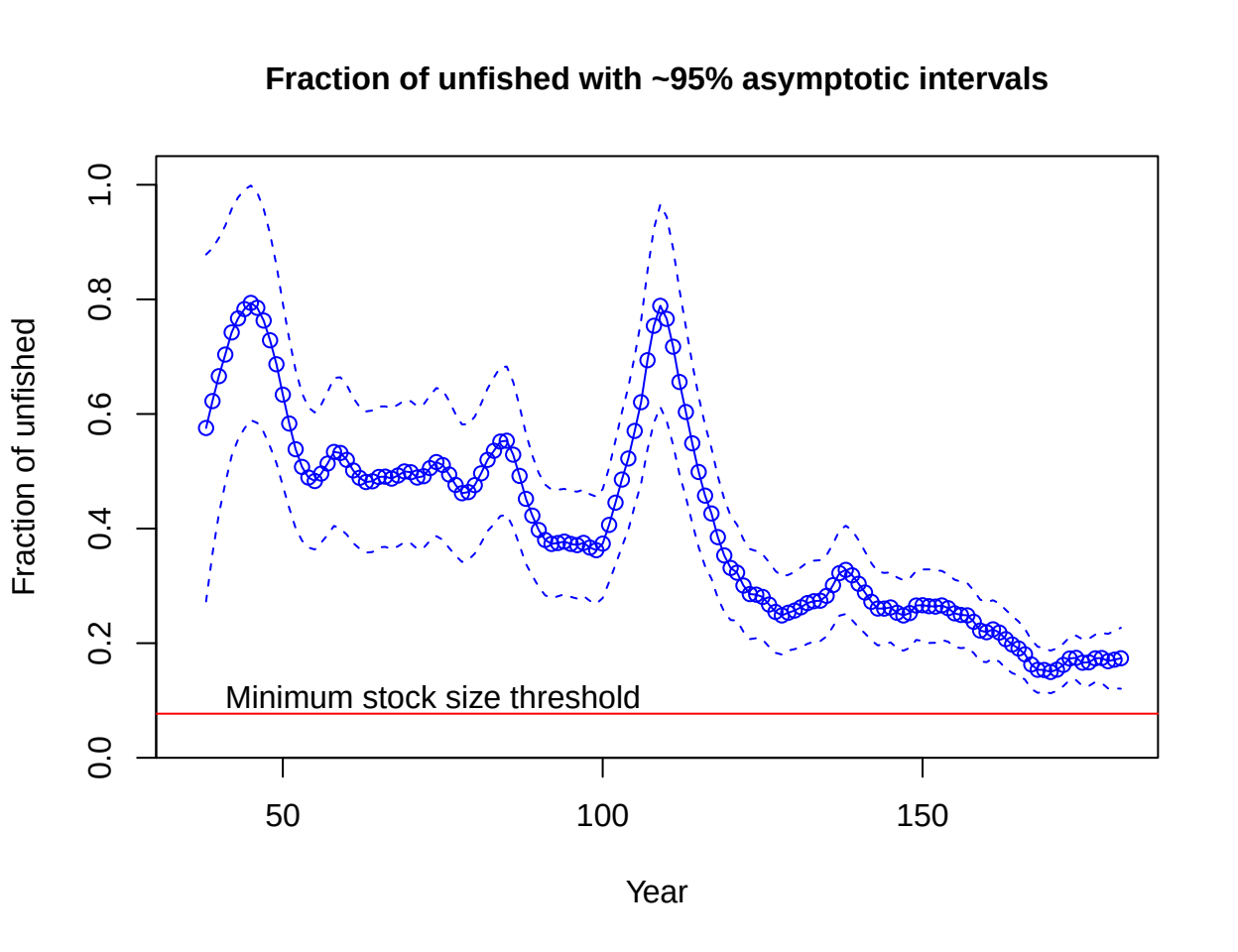

Total biomass (mt)
Total biomass (mt)
0e+00
1e+06
2e+06
3e+06
4e+06
50
100
150
Year

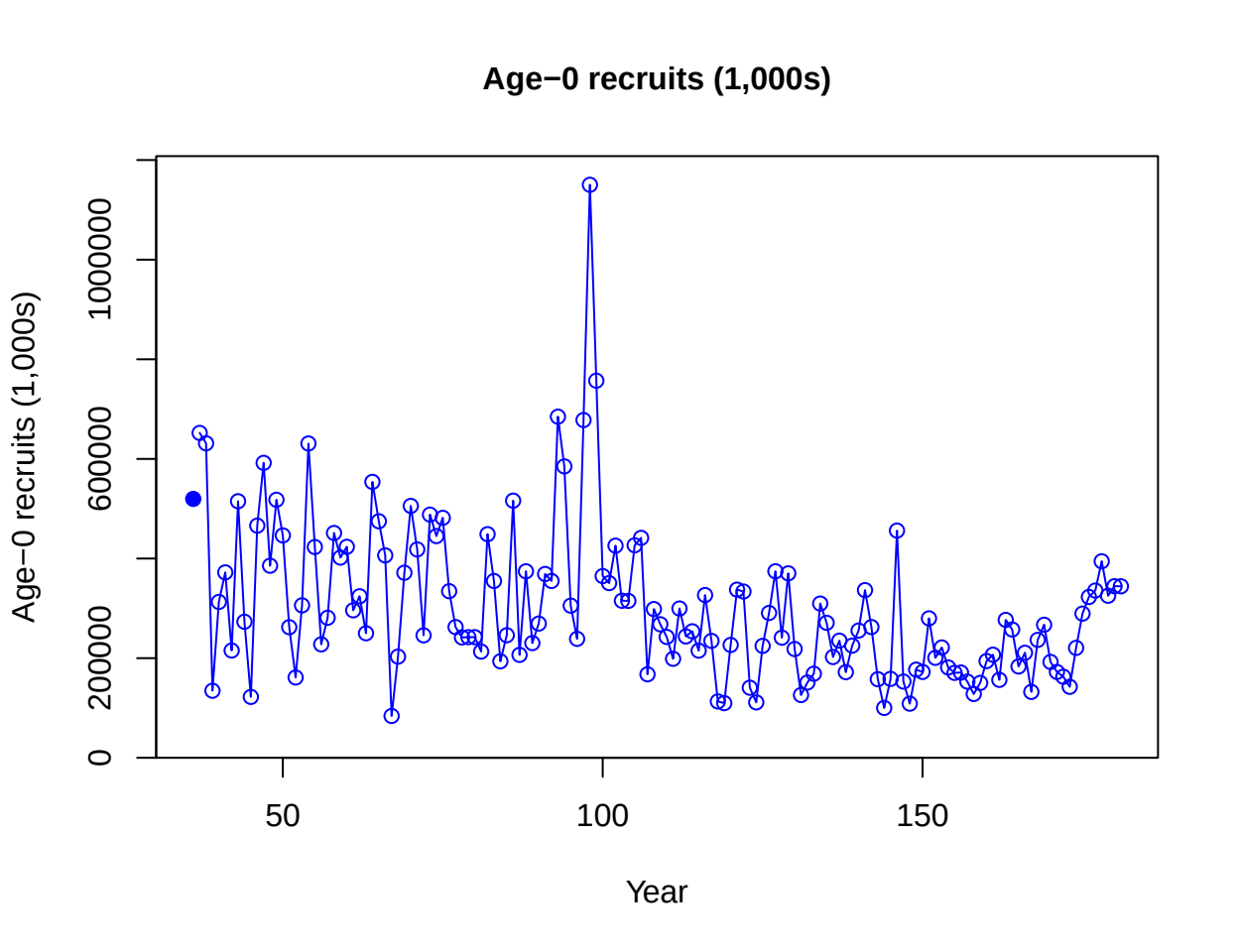

Summary biomass (mt)
Summary biomass (mt)
0e+00
1e+06
2e+06
3e+06
50
100
150
Year

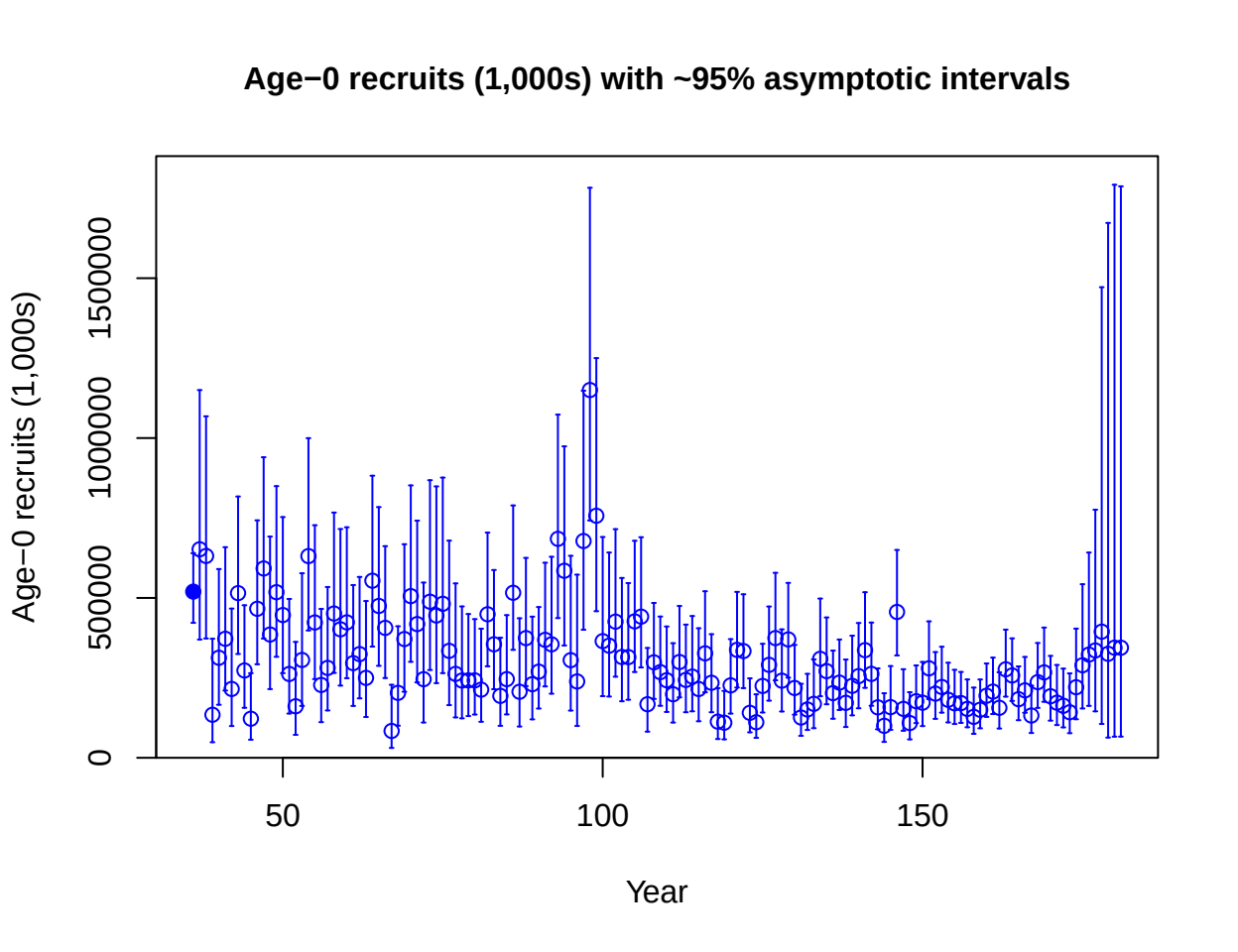

Spawning output
Spawning output
0
10000
20000
30000
40000
50
100
150
Year

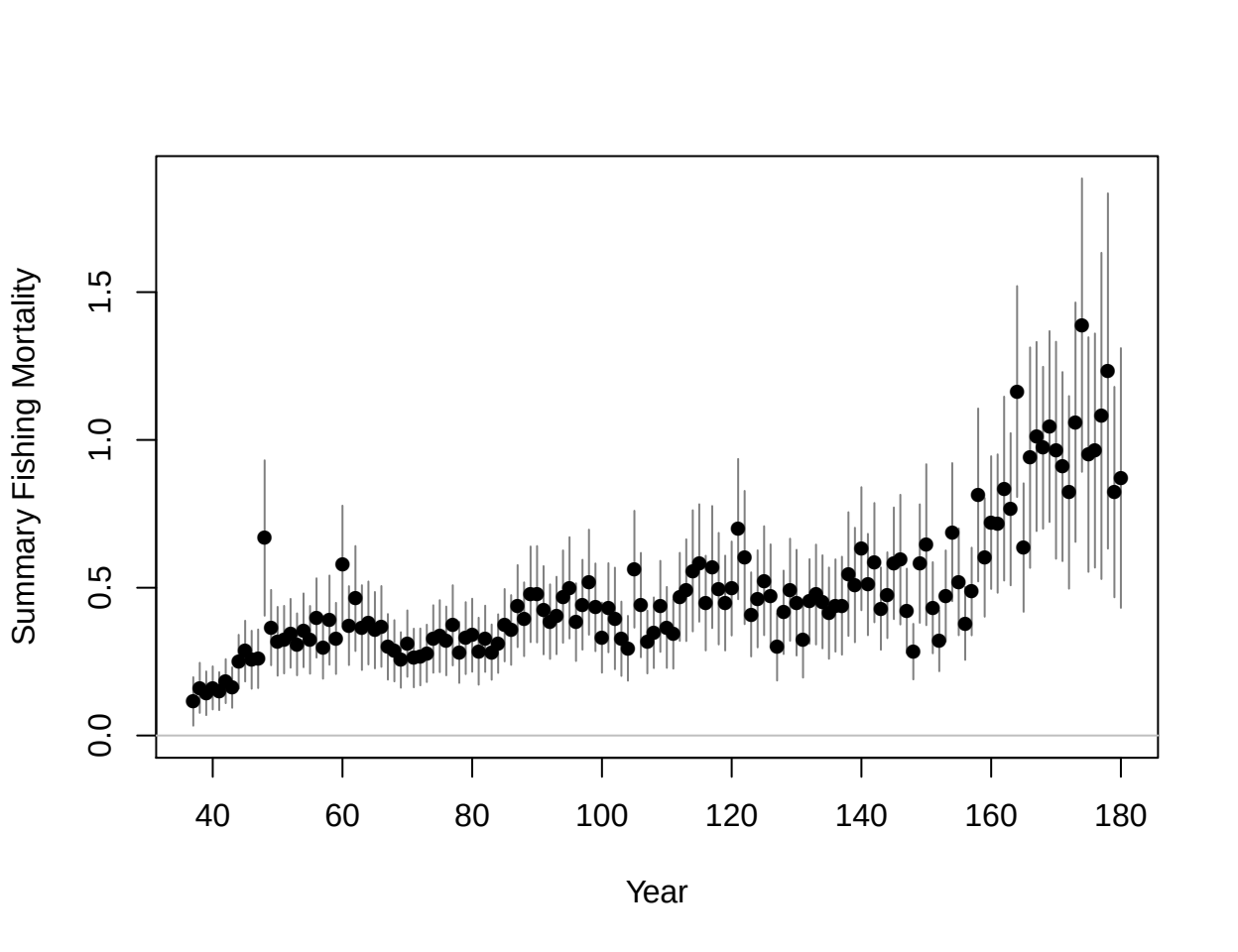

Spawning output with ~95% asymptotic intervals
Spawning output
0
10000
30000
50000
50
100
150
Year

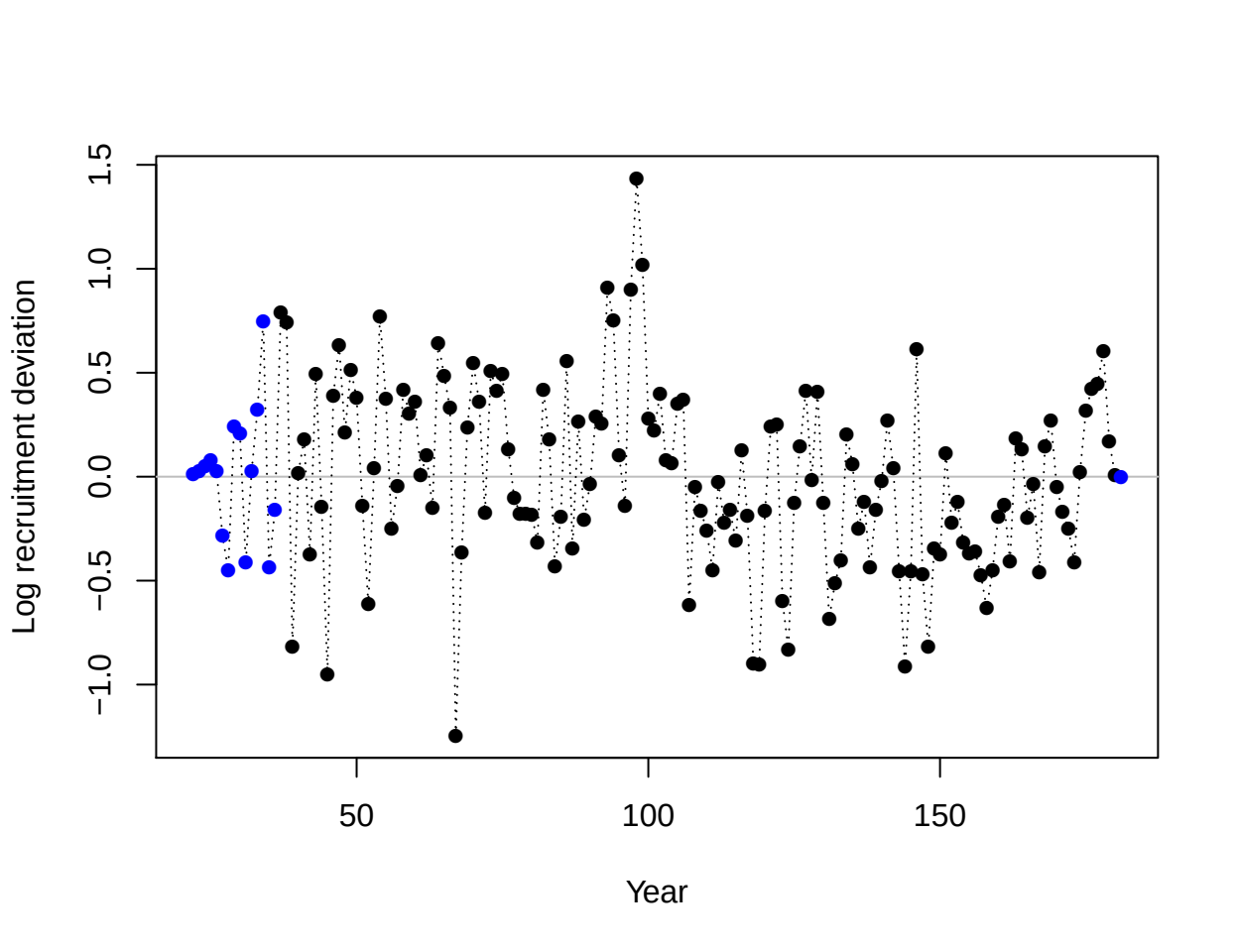

Fraction of unfished
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Minimum stock size threshold
50
100
150
Year

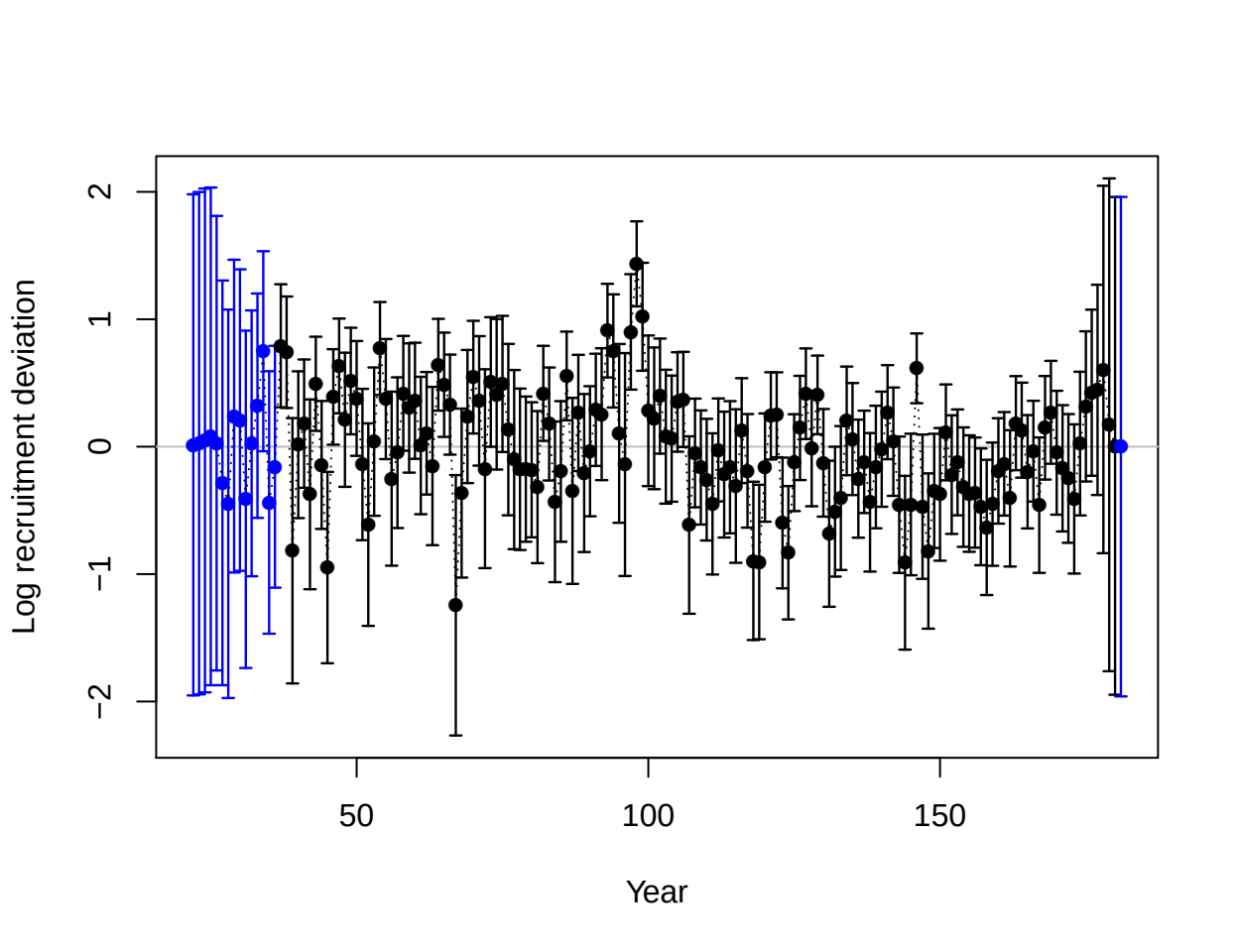

Fraction of unfished with ~95% asymptotic intervals
Fraction of unfished
0.0
0.2
0.4
0.6
0.8
1.0
Minimum stock size threshold
50
100
150
Year

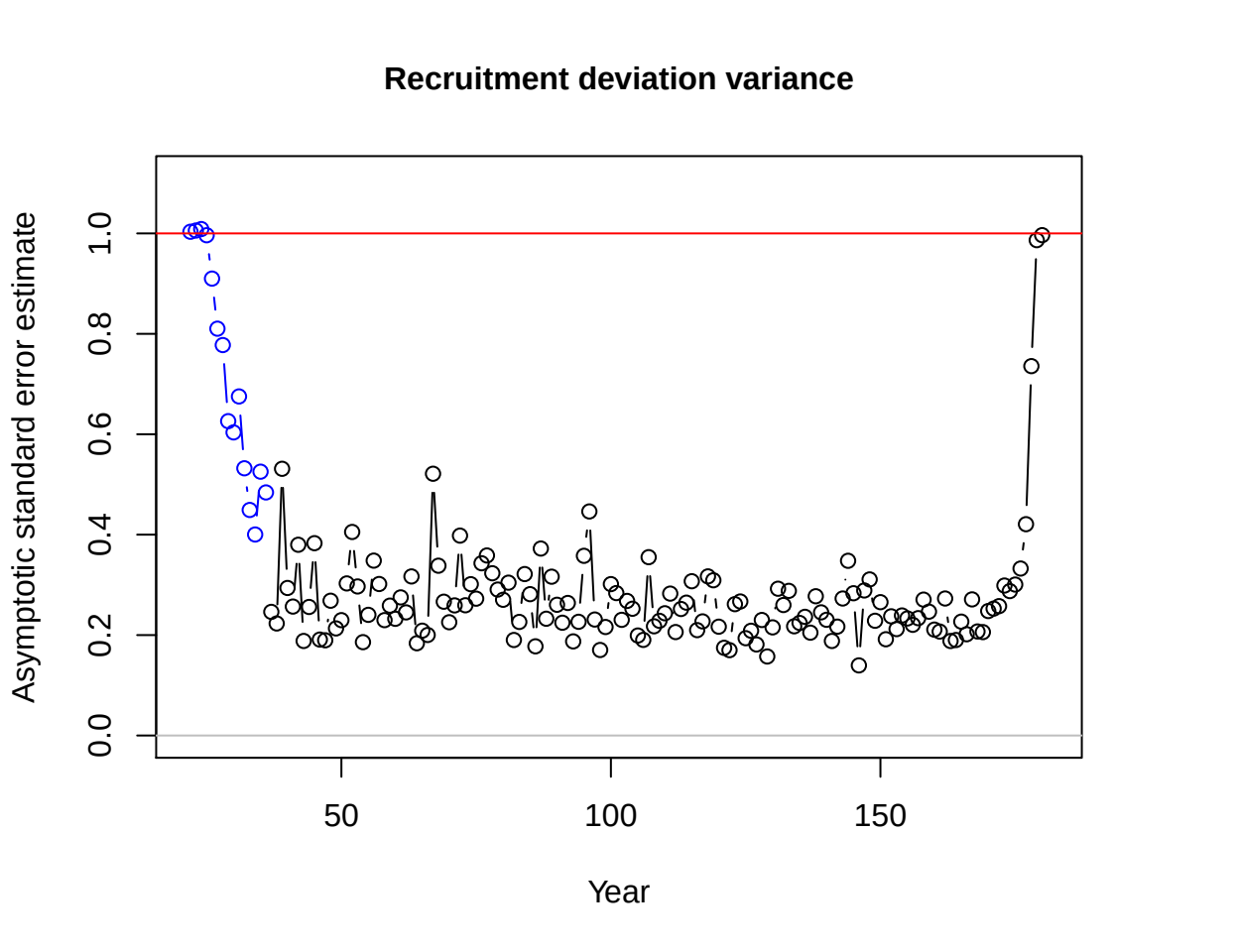

Age−0 recruits (1,000s)
Age−0 recruits (1,000s)
0
200000
600000
1000000
50
100
150
Year

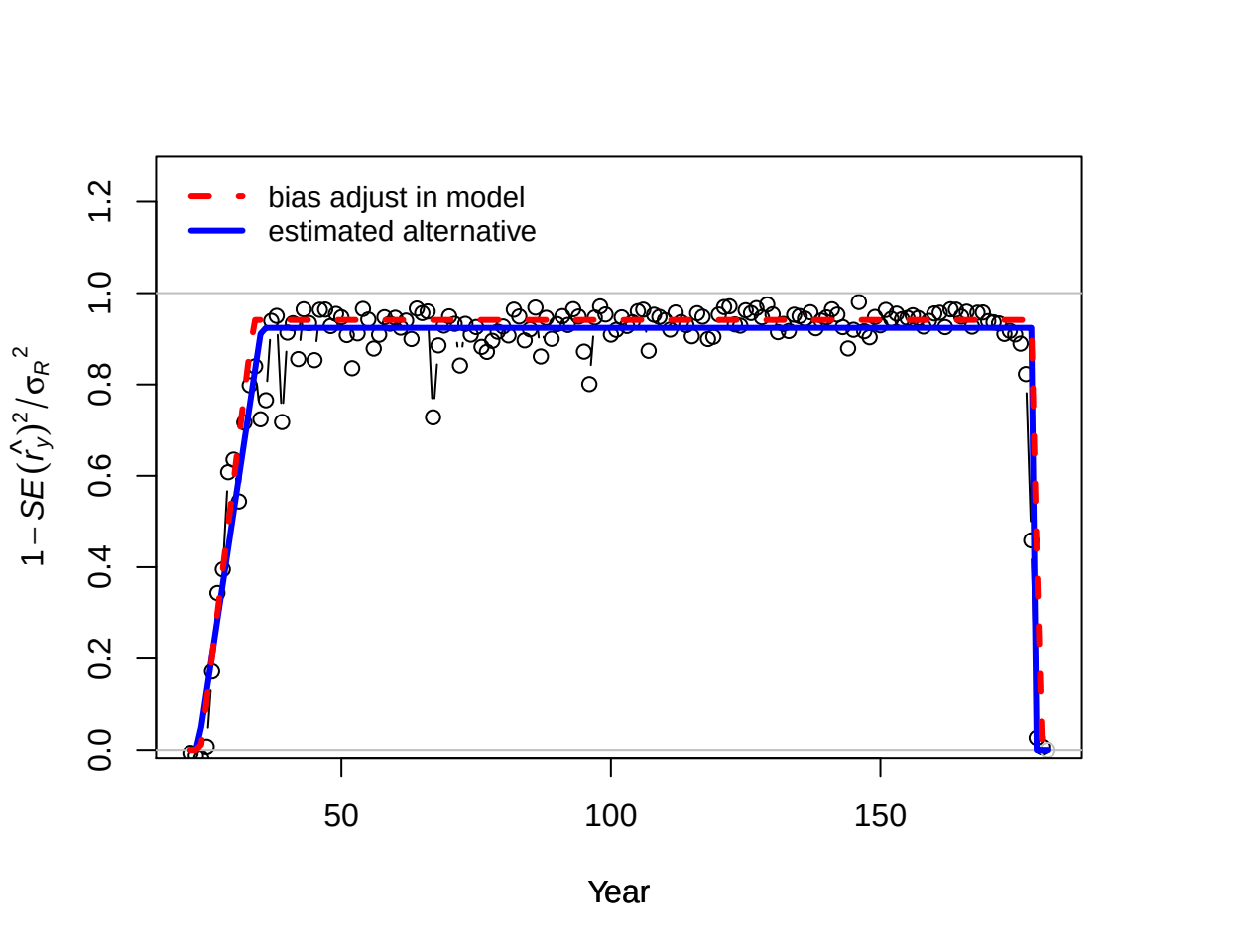

Age−0 recruits (1,000s) with ~95% asymptotic intervals
Age−0 recruits (1,000s)
0
500000
1000000
1500000
50
100
150
Year

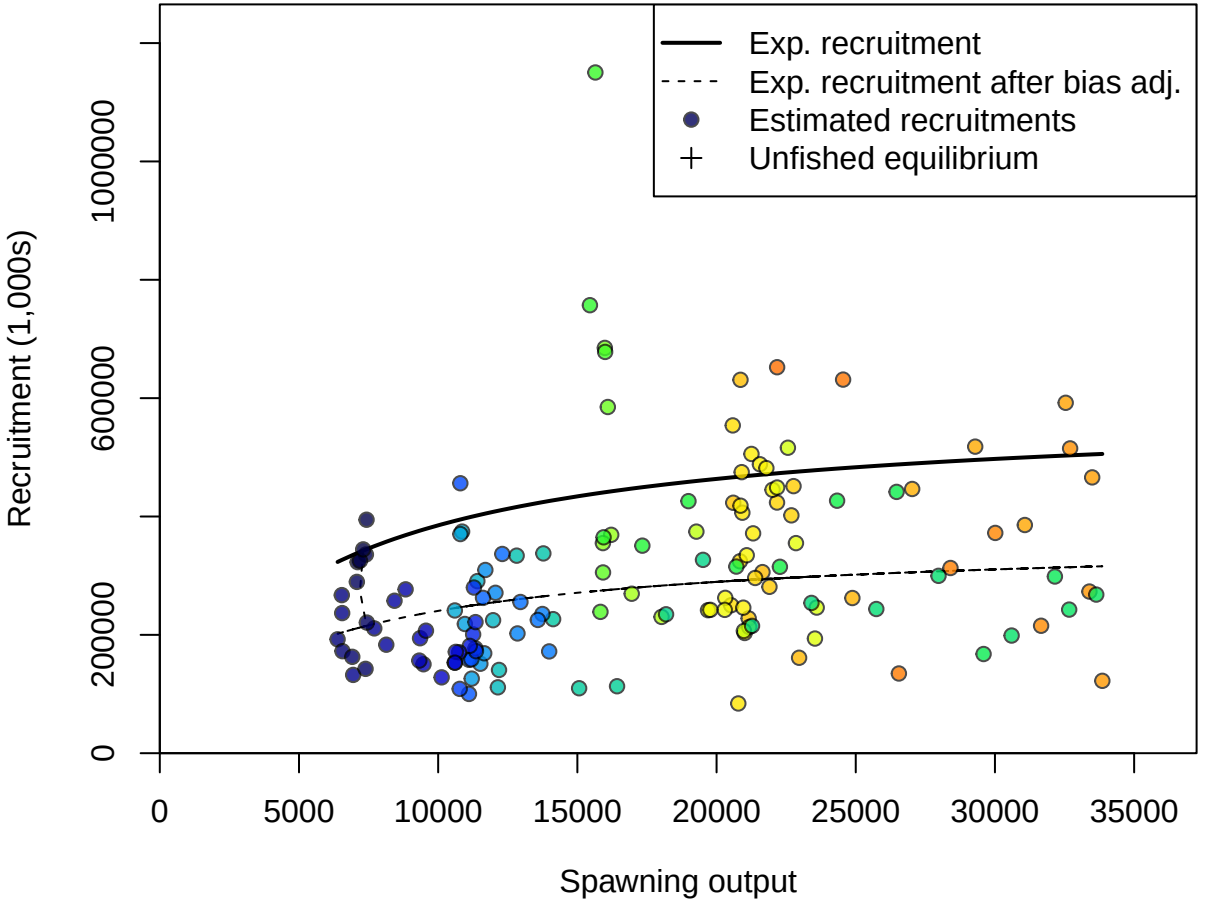

Summary Fishing Mortality
0.0
0.5
1.0
1.5
40
60
80
100
120
140
160
180
Year

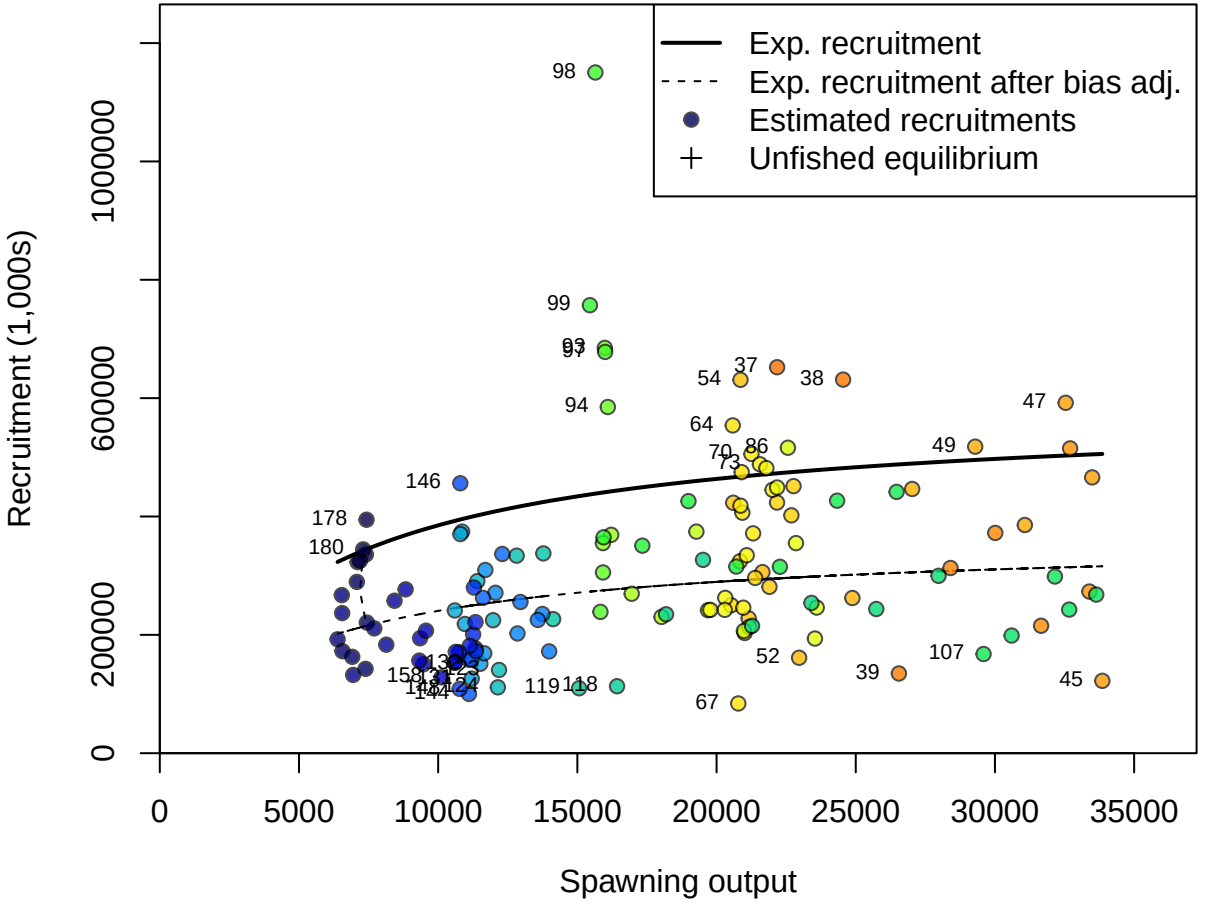

Log recruitment deviation
1.5
1.0
0.5
0.0
−0.5
−1.0
50
100
150
Year


Log recruitment deviation
2
1
0
−1
−2
50
100
150
Year

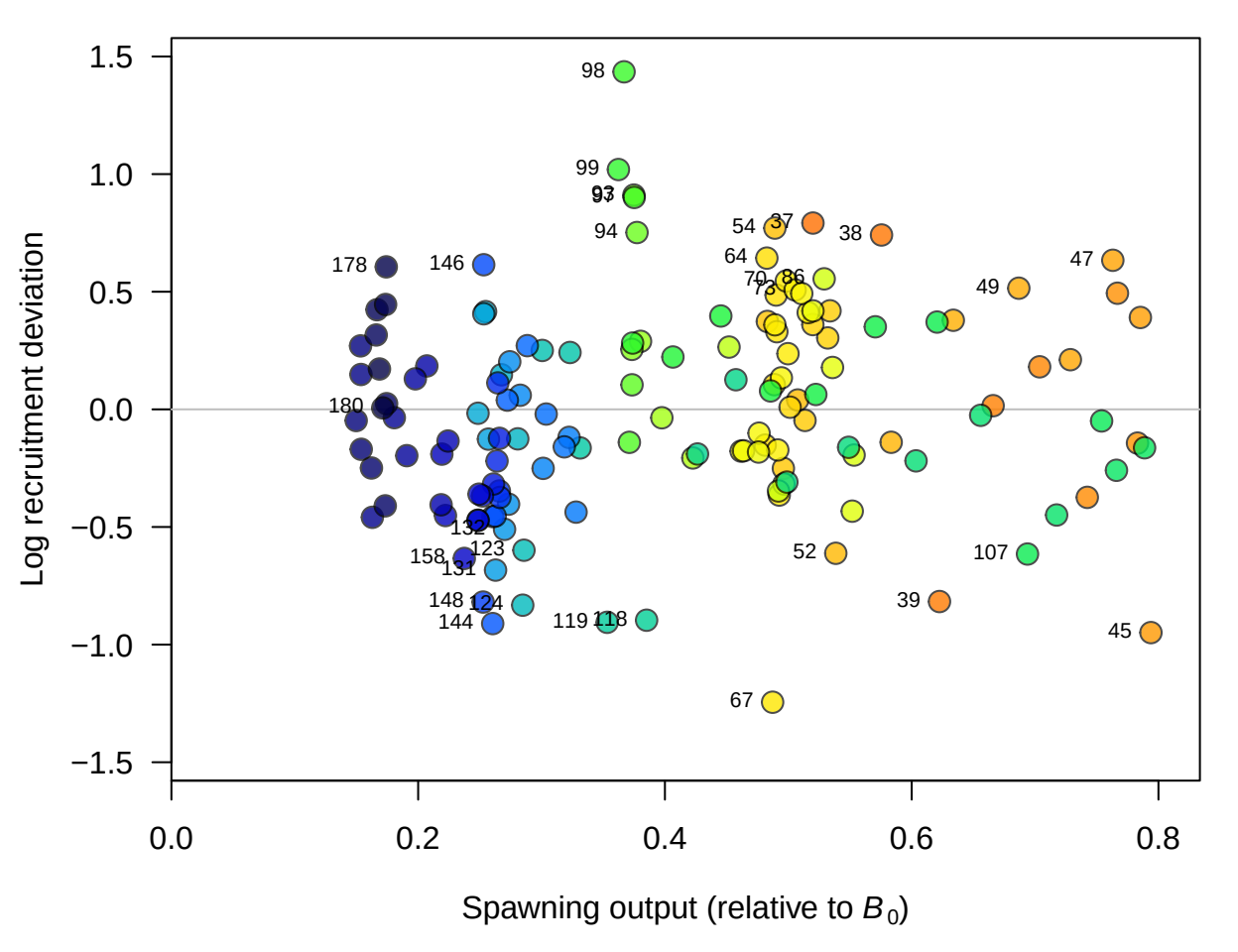

Recruitment deviation variance
Asymptotic standard error estimate
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
Year


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
50
100
150
Year

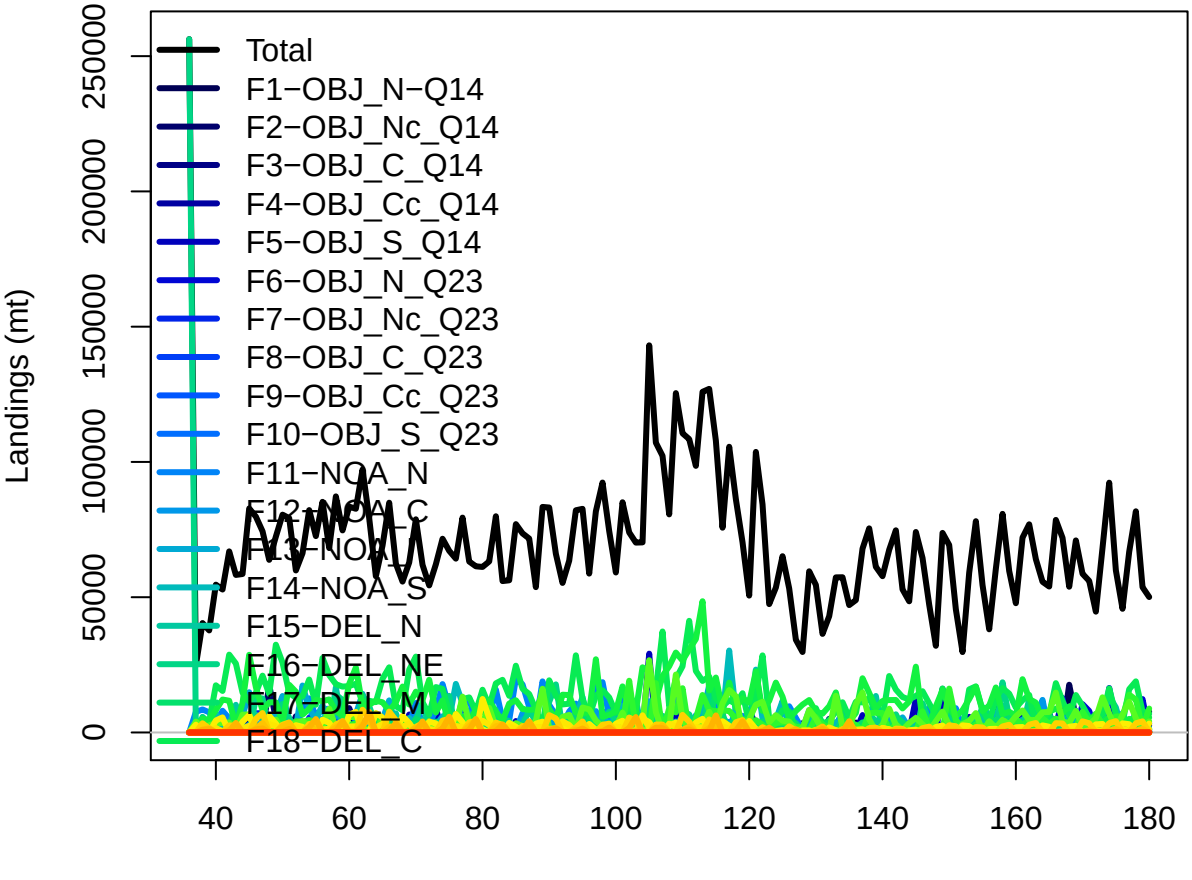

Exp. recruitment
Exp. recruitment after bias adj.
Estimated recruitments
Unfished equilibrium
Recruitment (1,000s)
0
200000
600000
1000000
0
5000
10000
15000
20000
25000
30000
35000
Spawning output

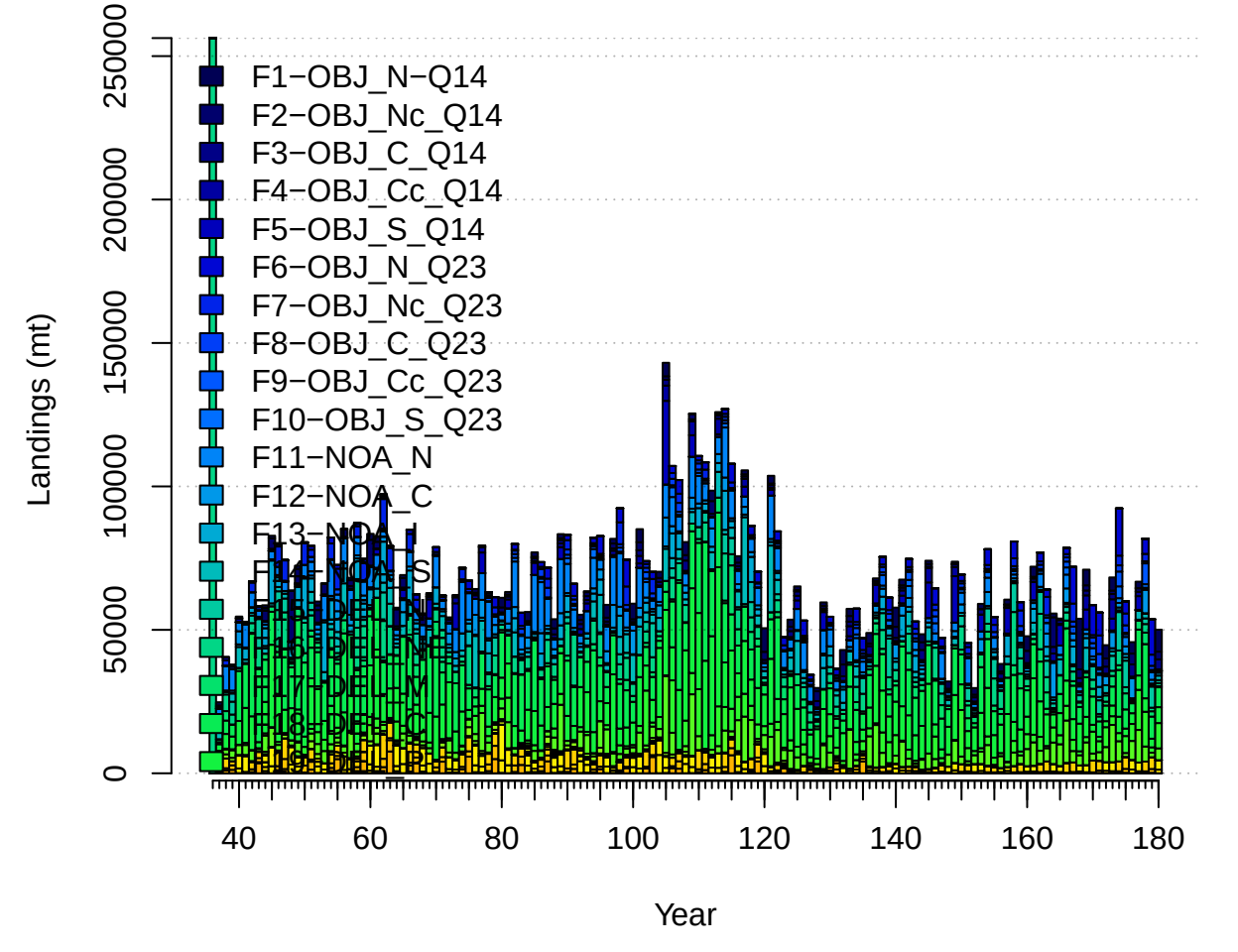


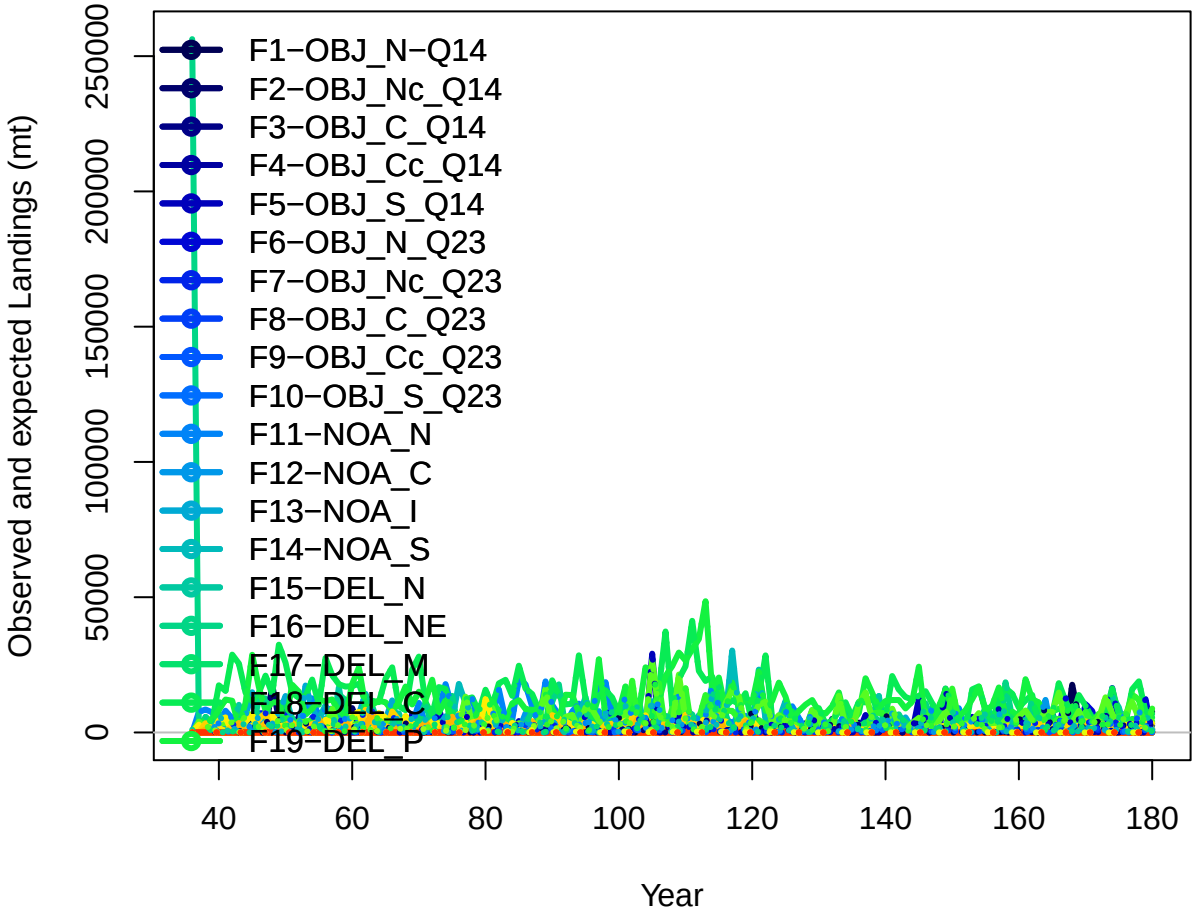
Exp. recruitment
Exp. recruitment after bias adj.
Estimated recruitments
Unfished equilibrium
Recruitment (1,000s)
Spawning output
0
200000
600000
1000000
0
5000
10000
15000
20000
25000
30000
35000
98
99
94
54
37
38
47
64
70
86
73
49
146
178
180
52
39
107
45
67
119
118

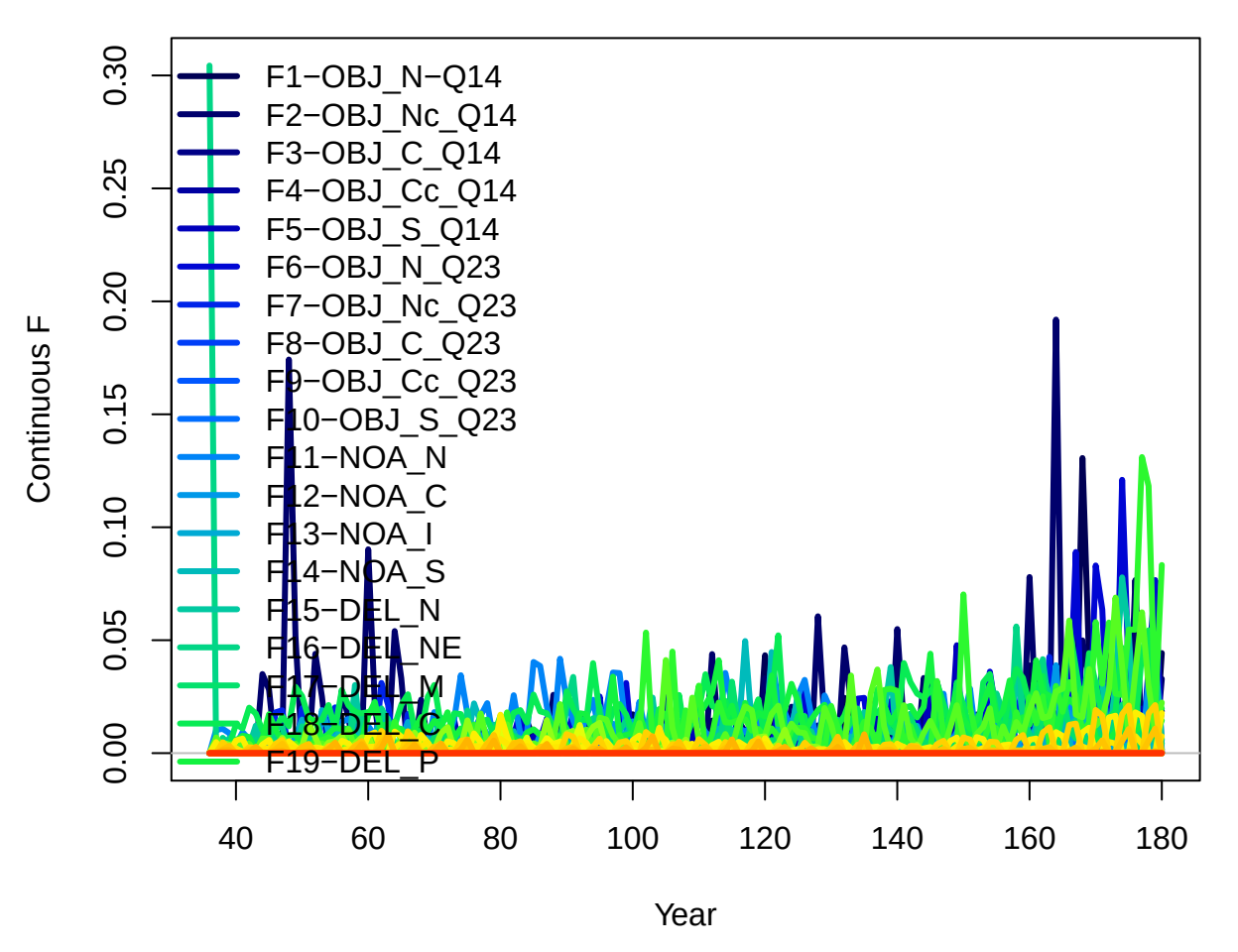


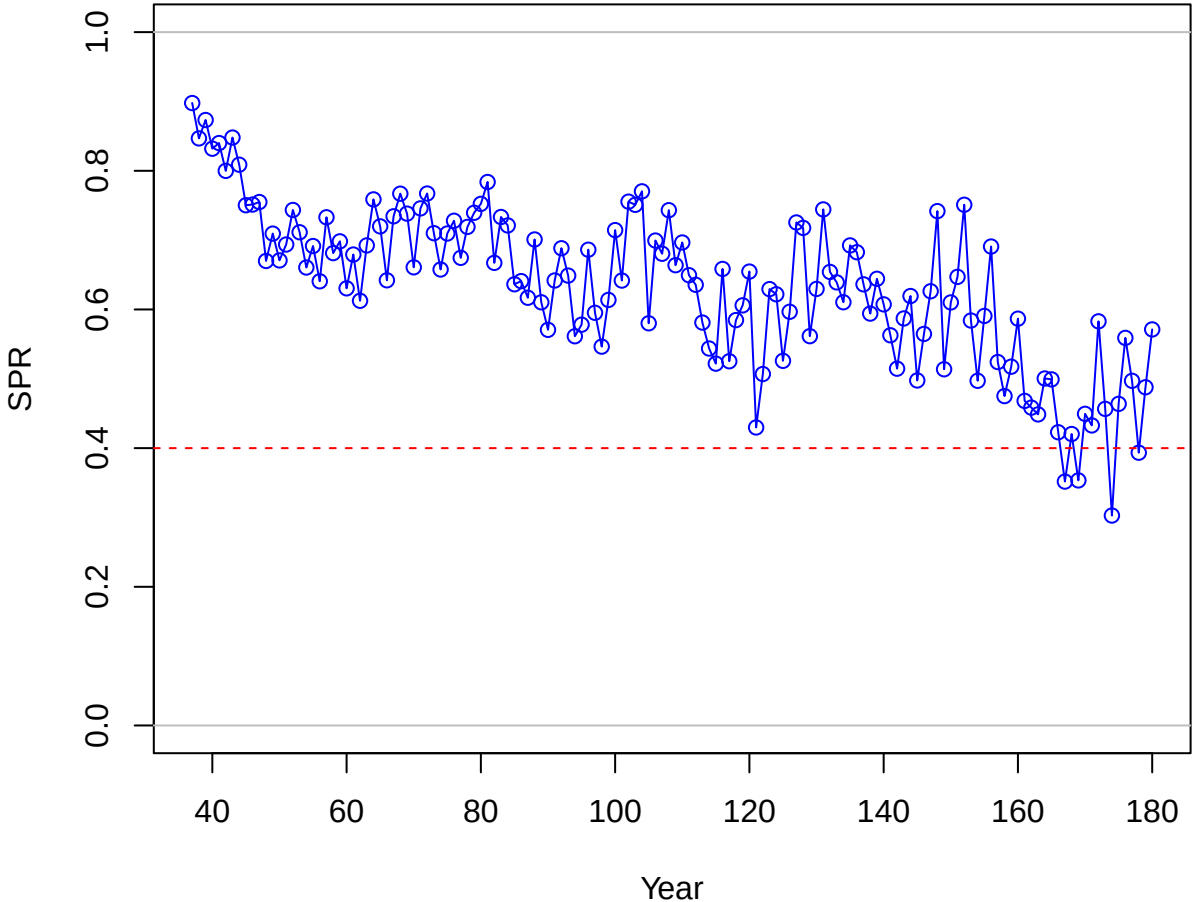
Log recruitment deviation
Spawning output (relative to B_0)
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
0.0
0.2
0.4
0.6
0.8
98
99
93
97
94
54
37
38
64
70
86
73
47
49
178
146
180
132
123
158
131
148
124
144
119
118
52
107
39
45
67

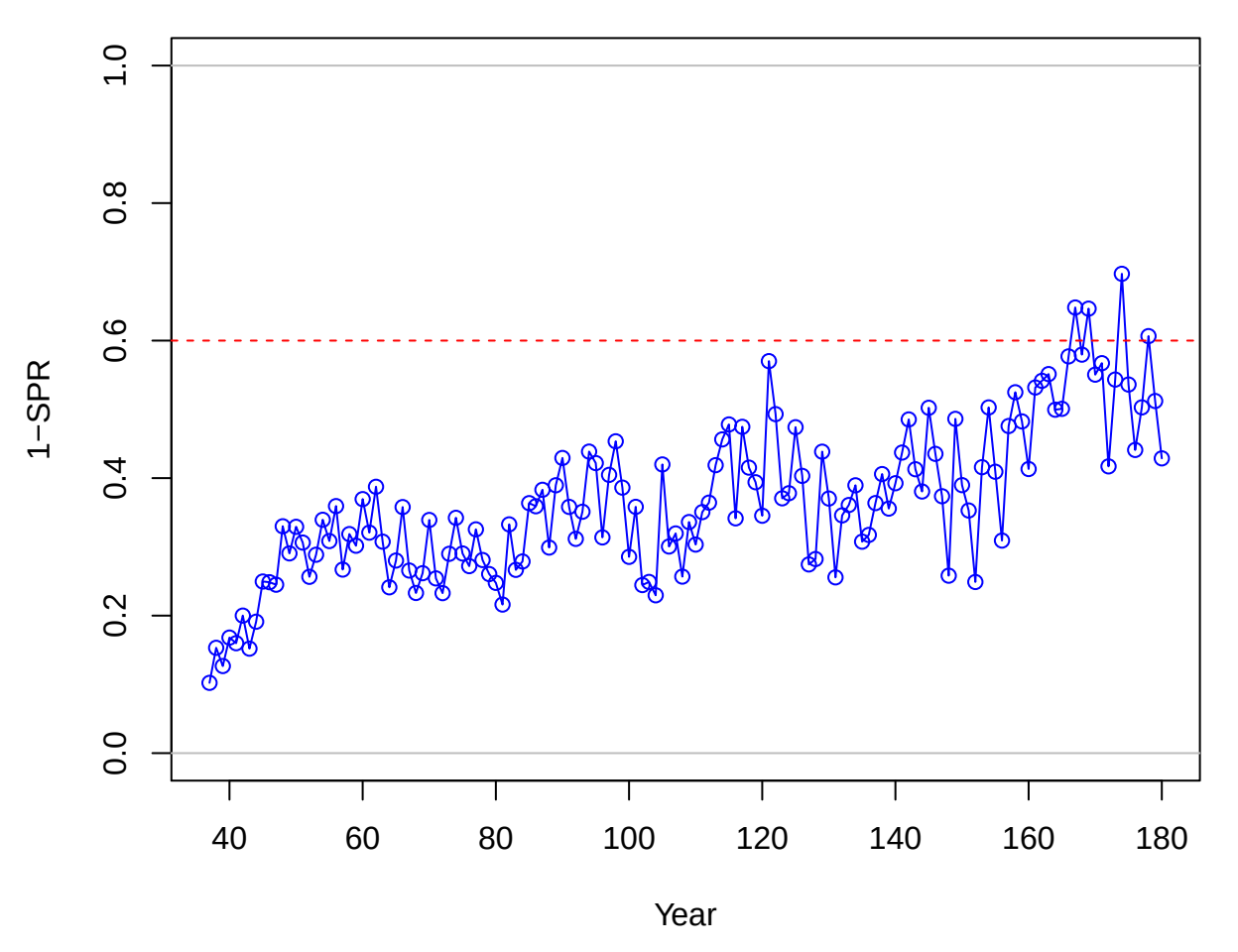

Landings (mt)
0
50000
100000
150000
200000
250000
Year
40
60
80
100
120
140
160
180
Total
F1−OBJ_N−Q14
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
F5−OBJ_S_Q14
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
F9−OBJ_Cc_Q23
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
F13−NOA_S
F14−NOA_S
F15−DEL_N
F16−DEL_NE
F17−DEL_M
F18−DEL_C

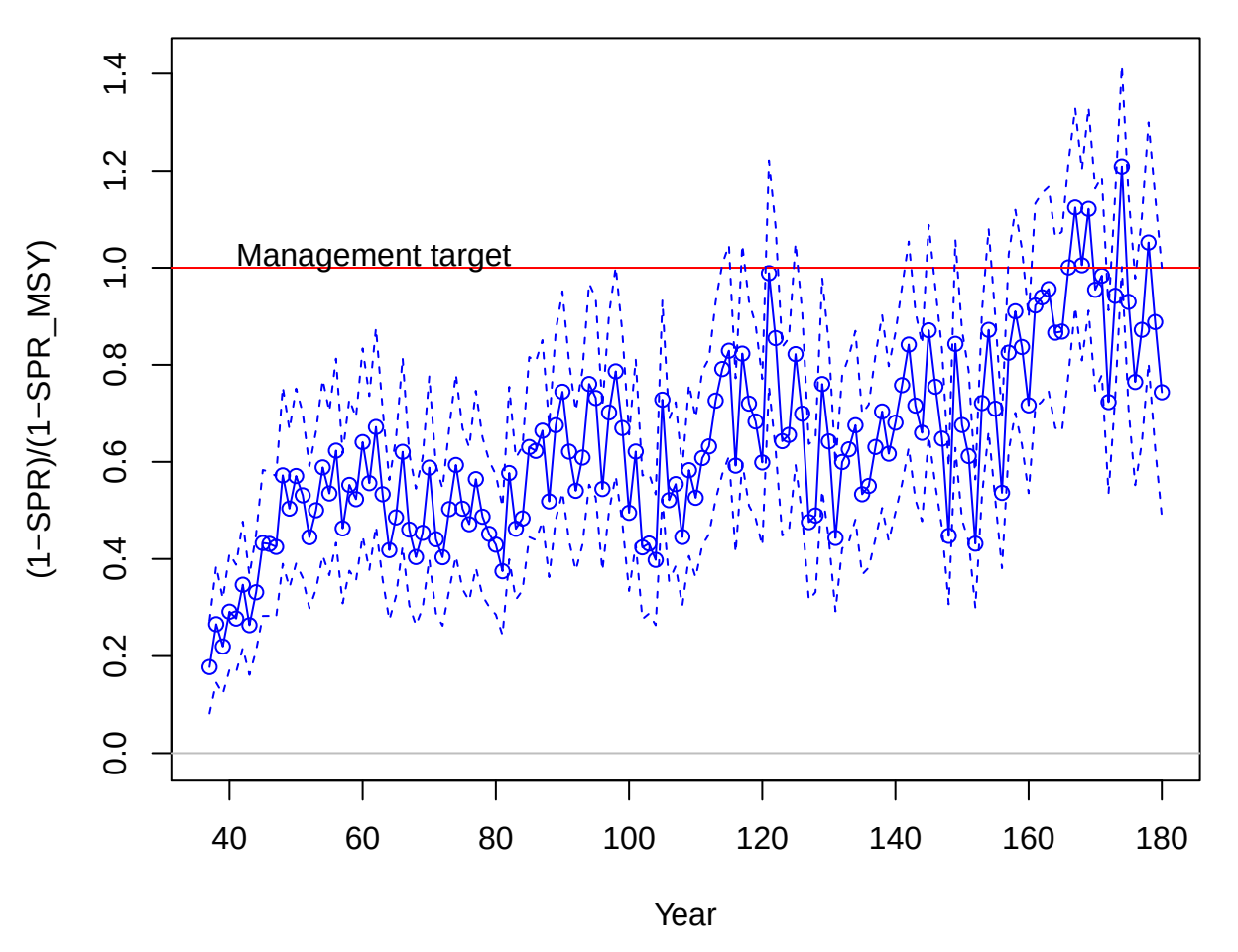

F1−OBJ_N−Q14
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
F5−OBJ_S_Q14
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
F9−OBJ_Cc_Q23
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
F13−NOA_I
F14−NOA_S
Landings (mt)
0
50000
100000
150000
200000
250000
40
60
80
100
120
140
160
180
Year

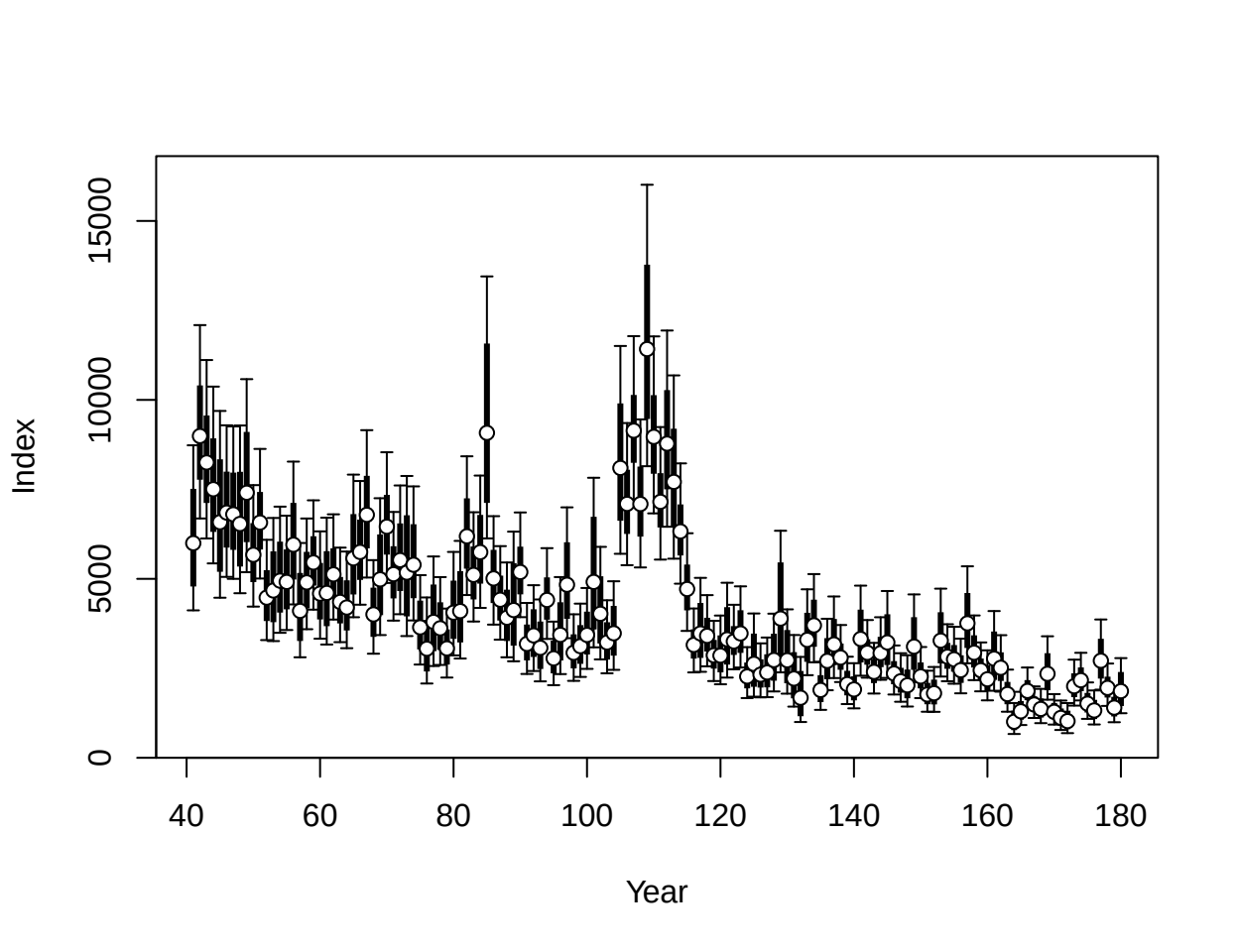

Observed and expected Landings (mt)
0
50000
100000
150000
200000
250000
40
60
80
100
120
140
160
180
Year
F1−OBJ_N−Q14
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
F5−OBJ_S_Q14
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
F9−OBJ_Cc_Q23
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
F13−NOA_I
F14−NOA_S
F15−DEL_N
F16−DEL_NE
F17−DEL_M
F18−DEL_C
F19−DEL_P

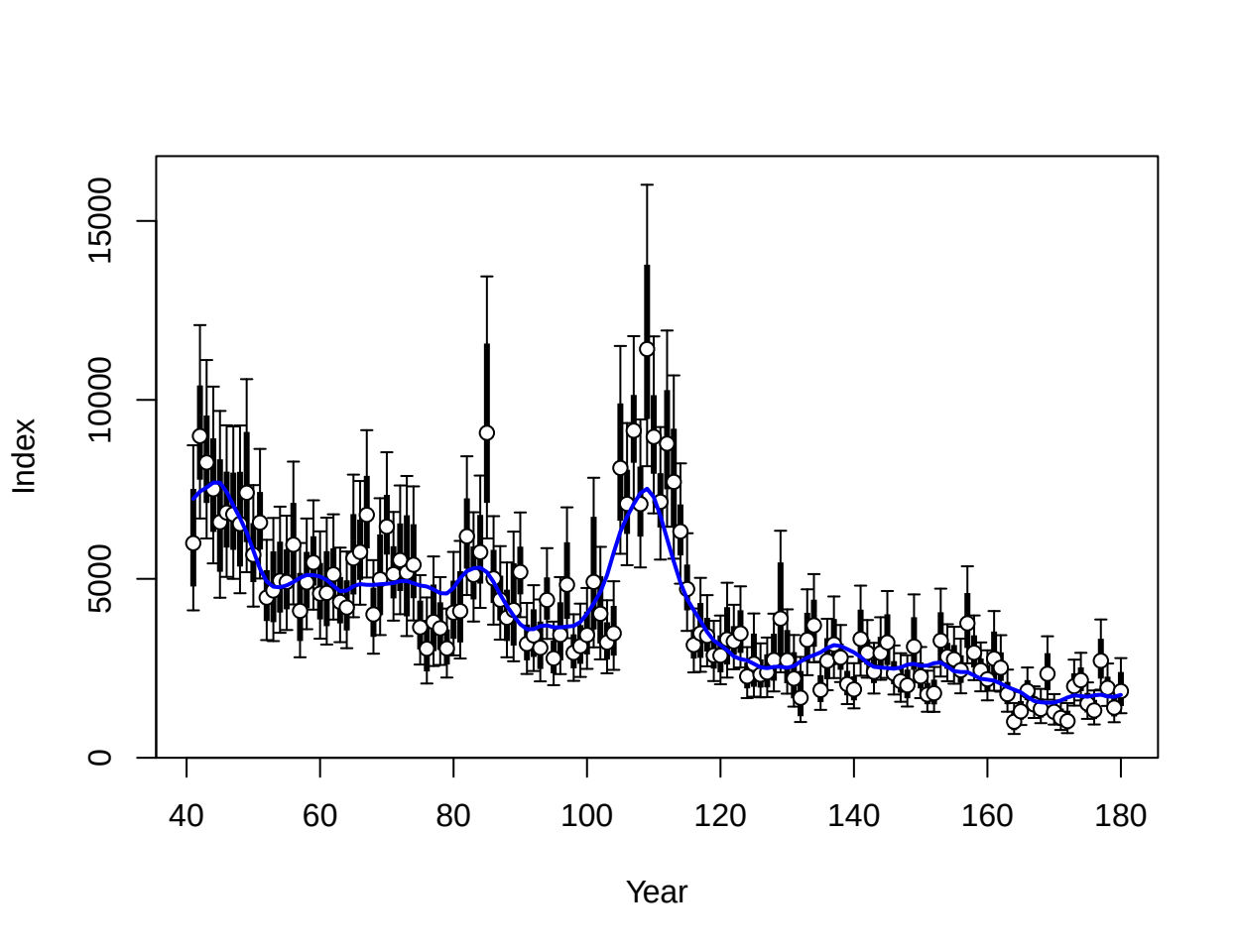

F1−OBJ_N−Q14
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
F5−OBJ_S_Q14
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
F9−OBJ_Cc_Q23
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
F13−NOA_I
F14−NOA_S
F15−DEL_N
F16−DEL_NE
F17−DEL_M
F18−DEL_C
F19−DEL_P
Continuous F
0.00
0.05
0.10
0.15
0.20
0.25
0.30
40
60
80
100
120
140
160
180
Year

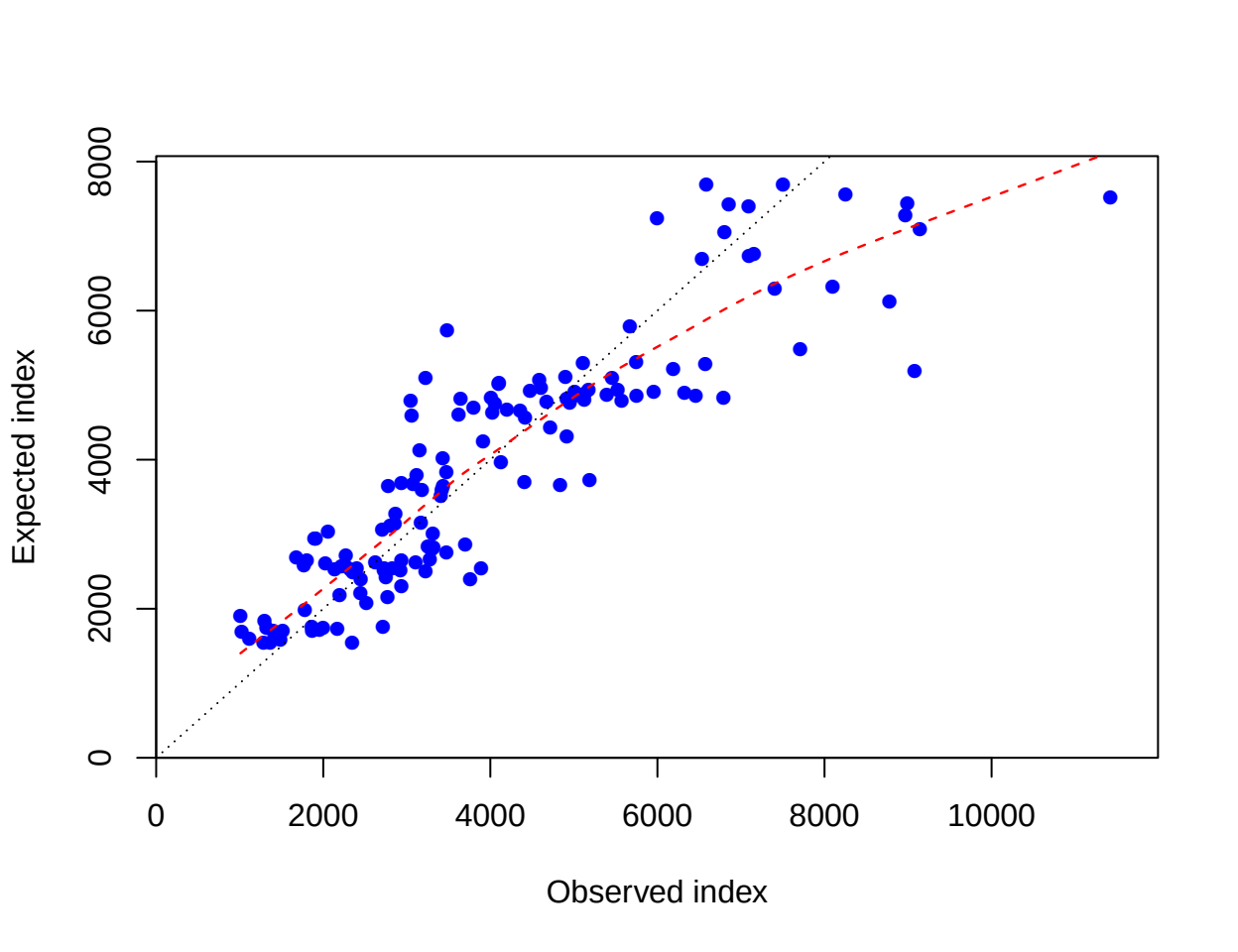

SPR
1.0
0.8
0.6
0.4
0.2
0.0
40
60
80
100
120
140
160
180
Year

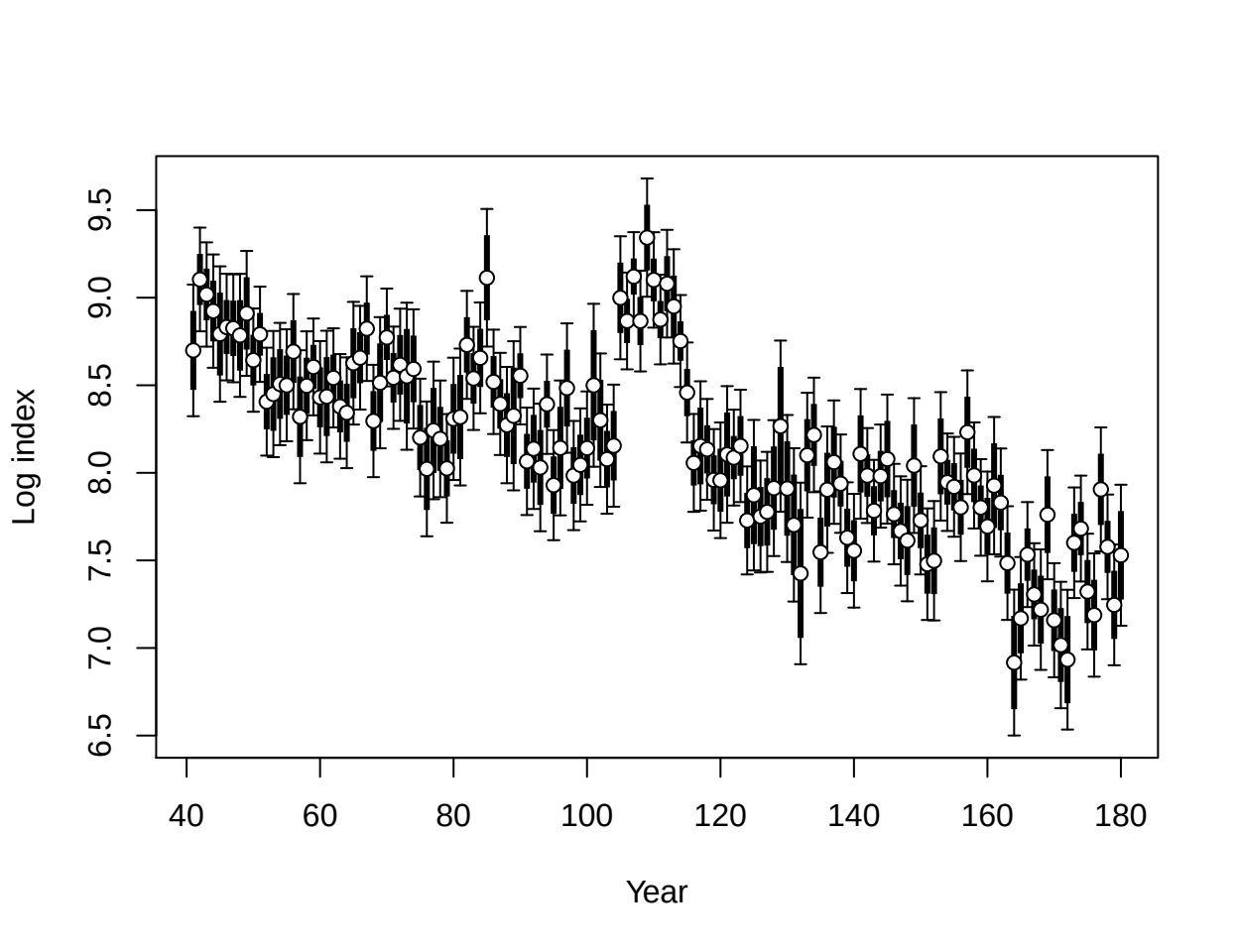

1−SPR
0.0
0.2
0.4
0.6
0.8
1.0
40
60
80
100
120
140
160
180
Year

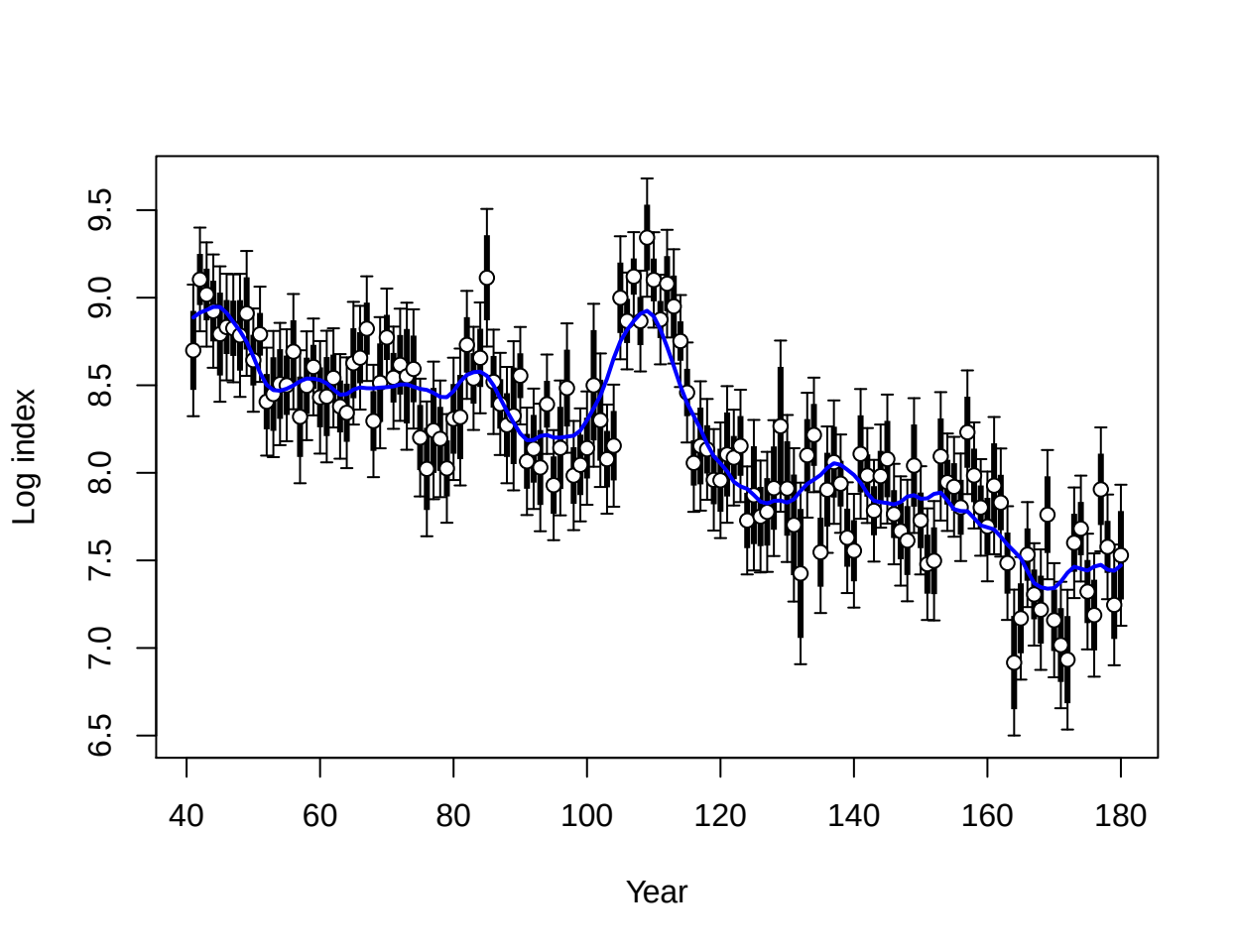

(1−SPR)/(1−SPR_MSY)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Management target
40
60
80
100
120
140
160
180
Year

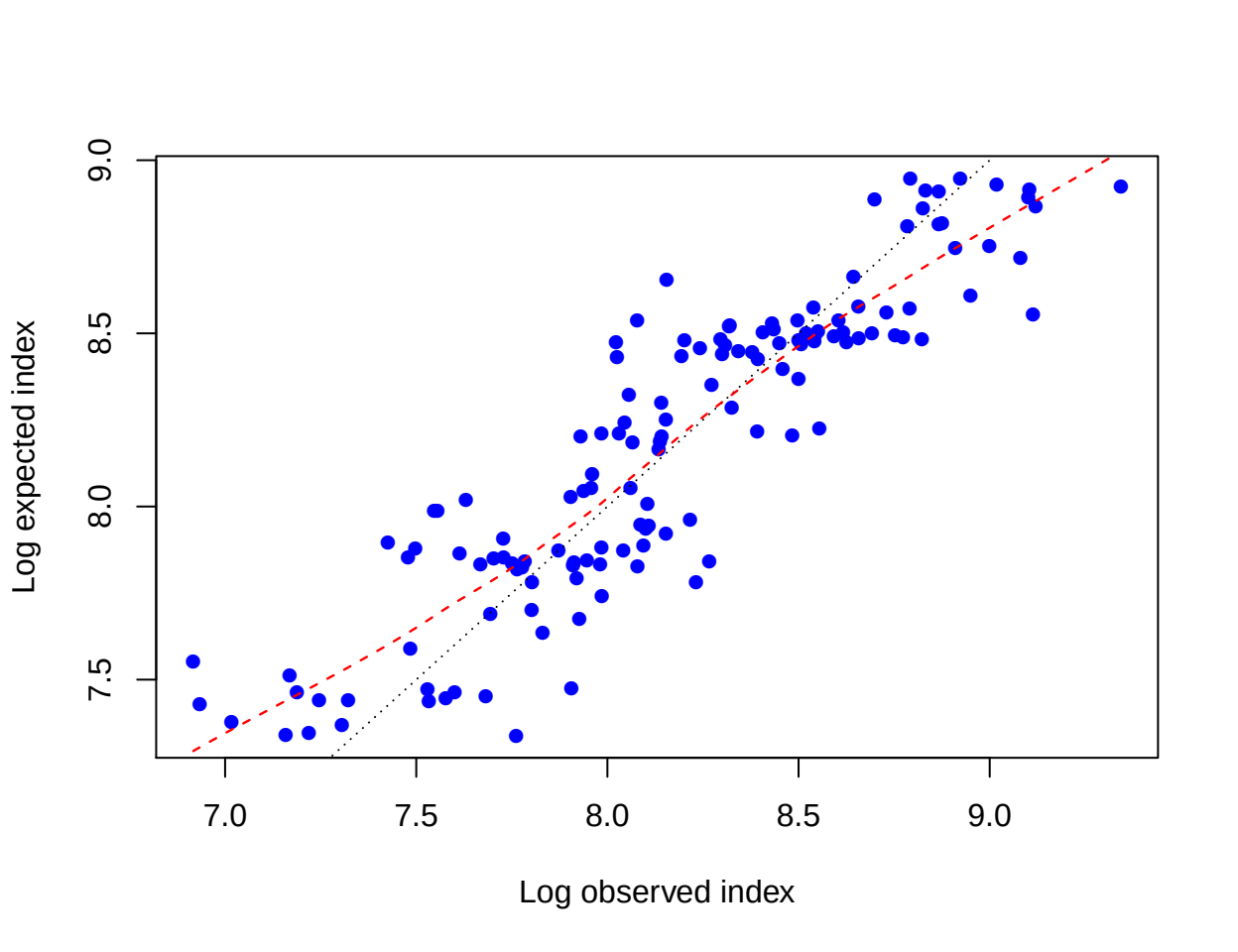

Index
0
5000
10000
15000
40
60
80
100
120
140
160
180
Year

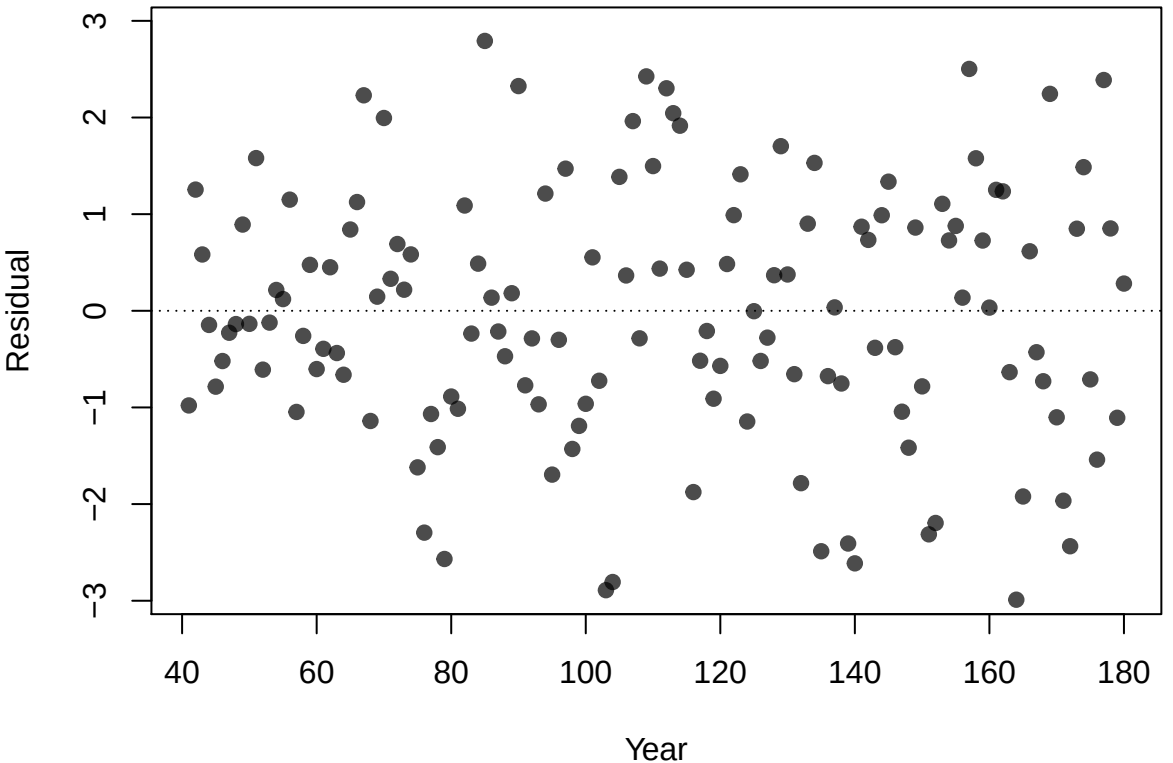

Index
0
5000
10000
15000
40
60
80
100
120
140
160
180
Year

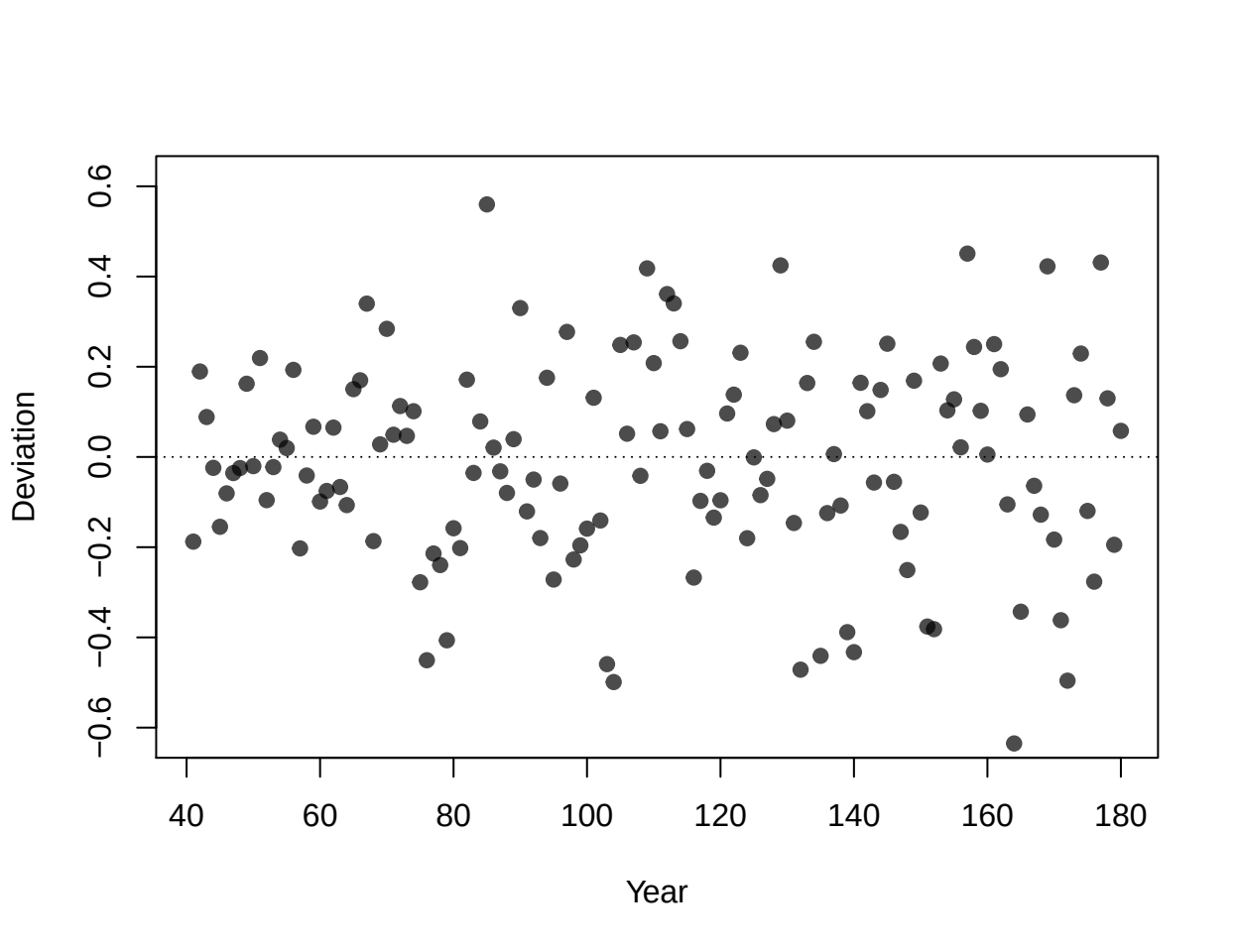

Expected index
0
2000
4000
6000
8000
Observed index
0
2000
4000
6000
8000
10000

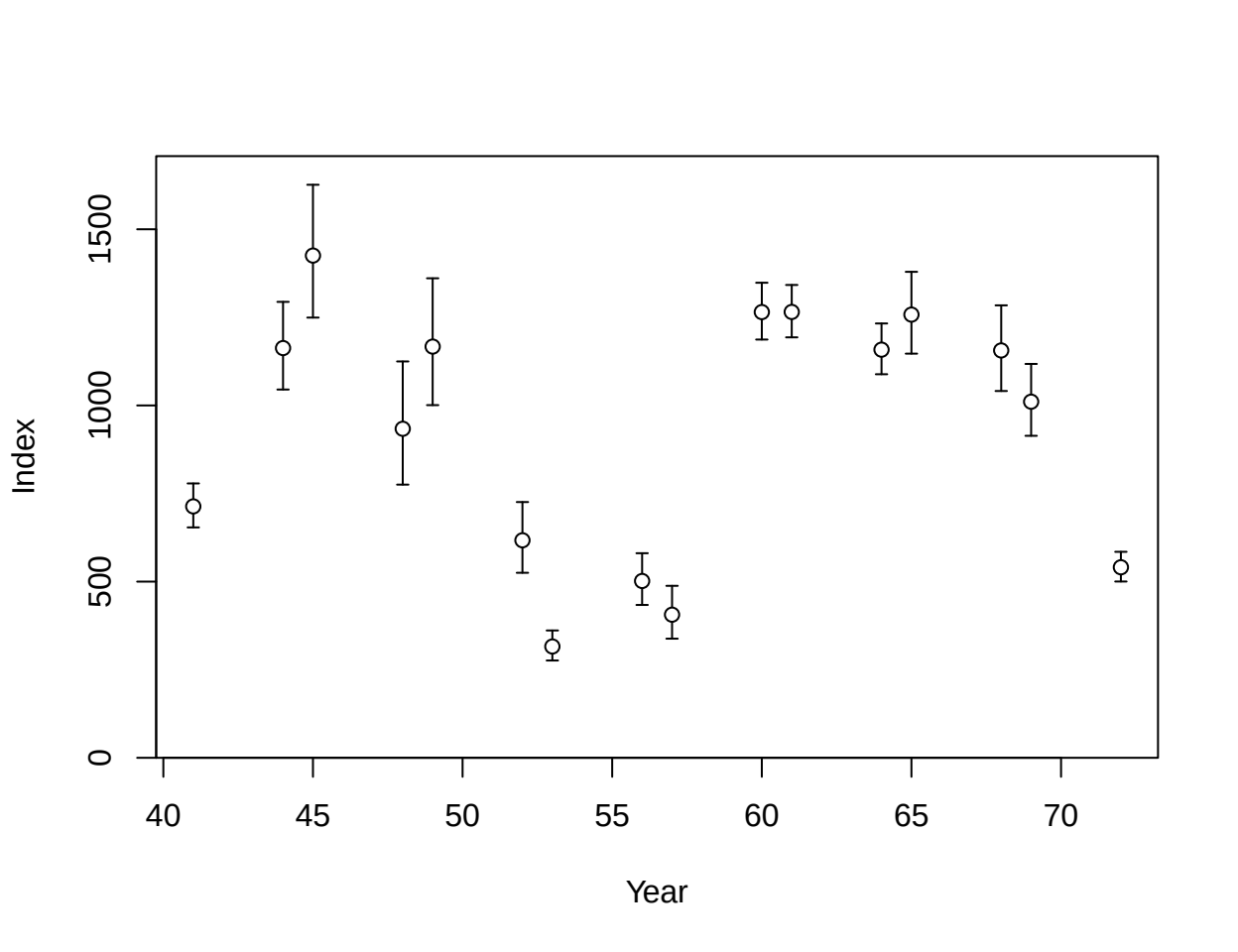

Log index
6.5
7.0
7.5
8.0
8.5
9.0
9.5
40
60
80
100
120
140
160
180
Year

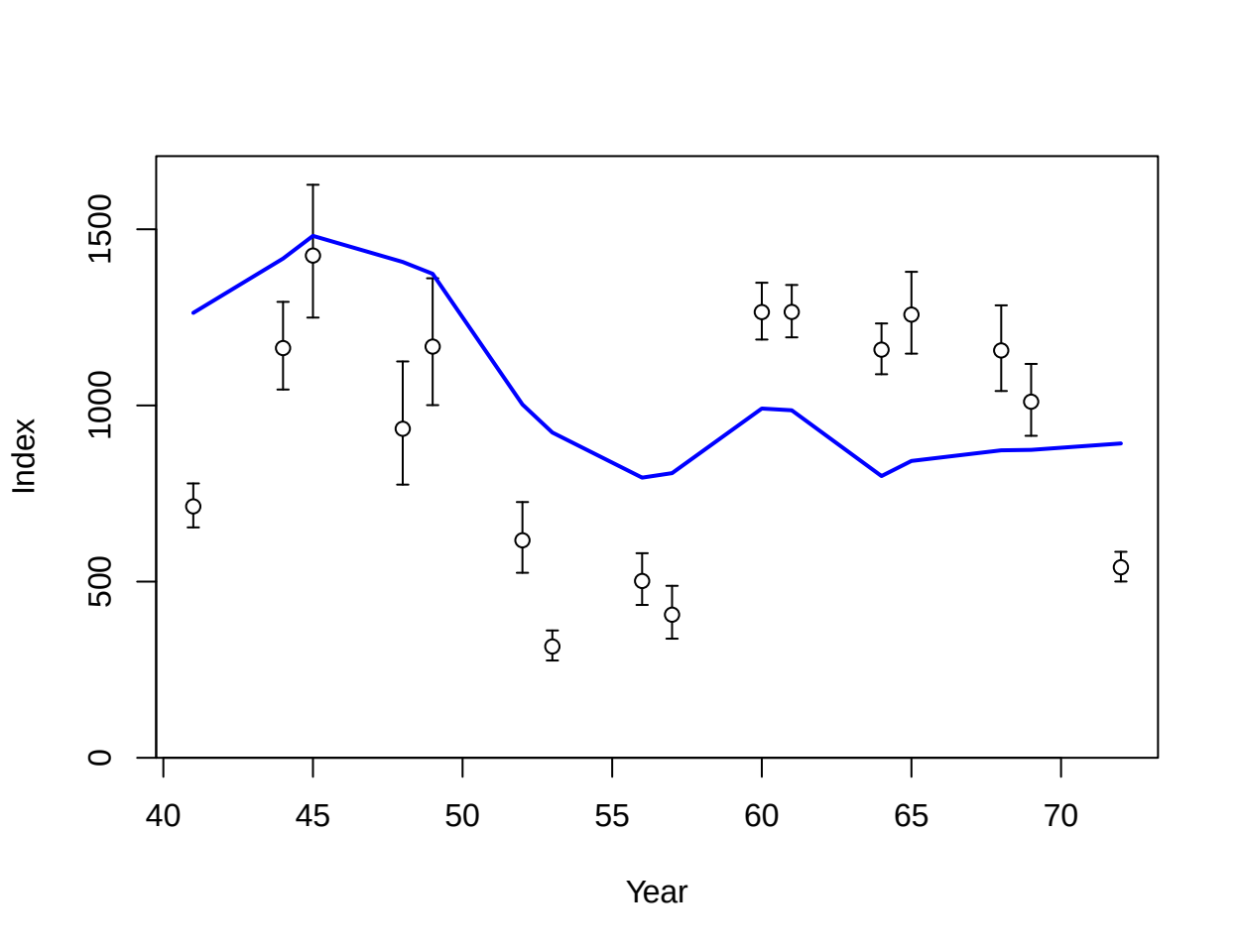

Log index
9.5
9.0
8.5
8.0
7.5
7.0
6.5
40
60
80
100
120
140
160
180
Year

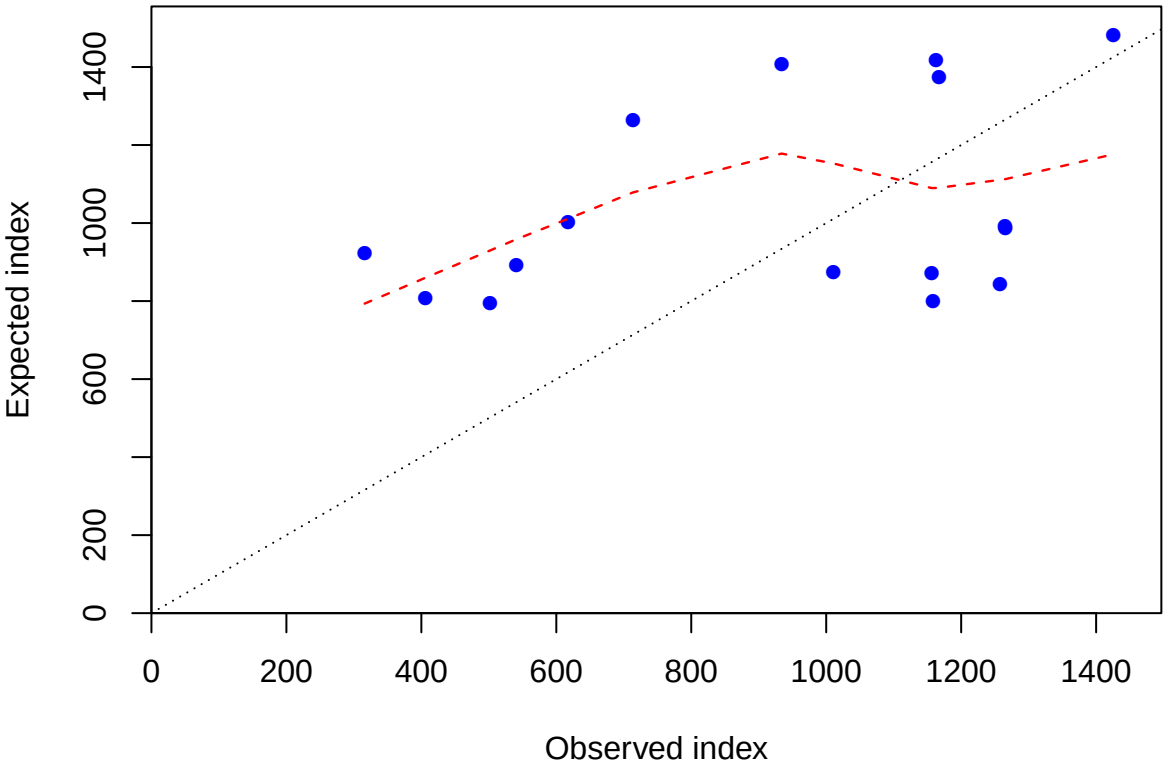

Log expected index
9.0
8.5
8.0
7.5
7.0
7.5
8.0
8.5
9.0
Log observed index

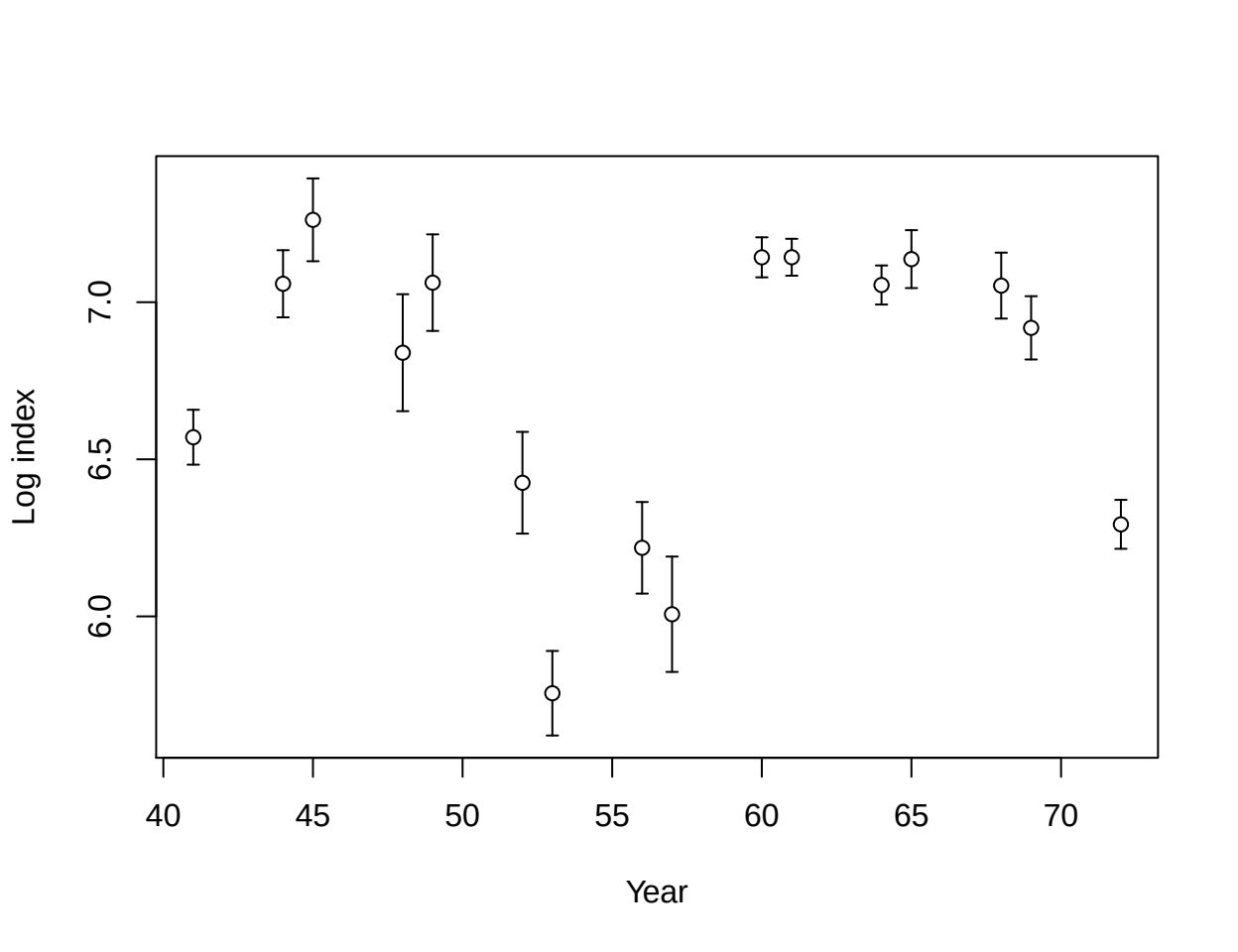

Residual
3
2
1
0
−1
−2
−3
40
60
80
100
120
140
160
180
Year

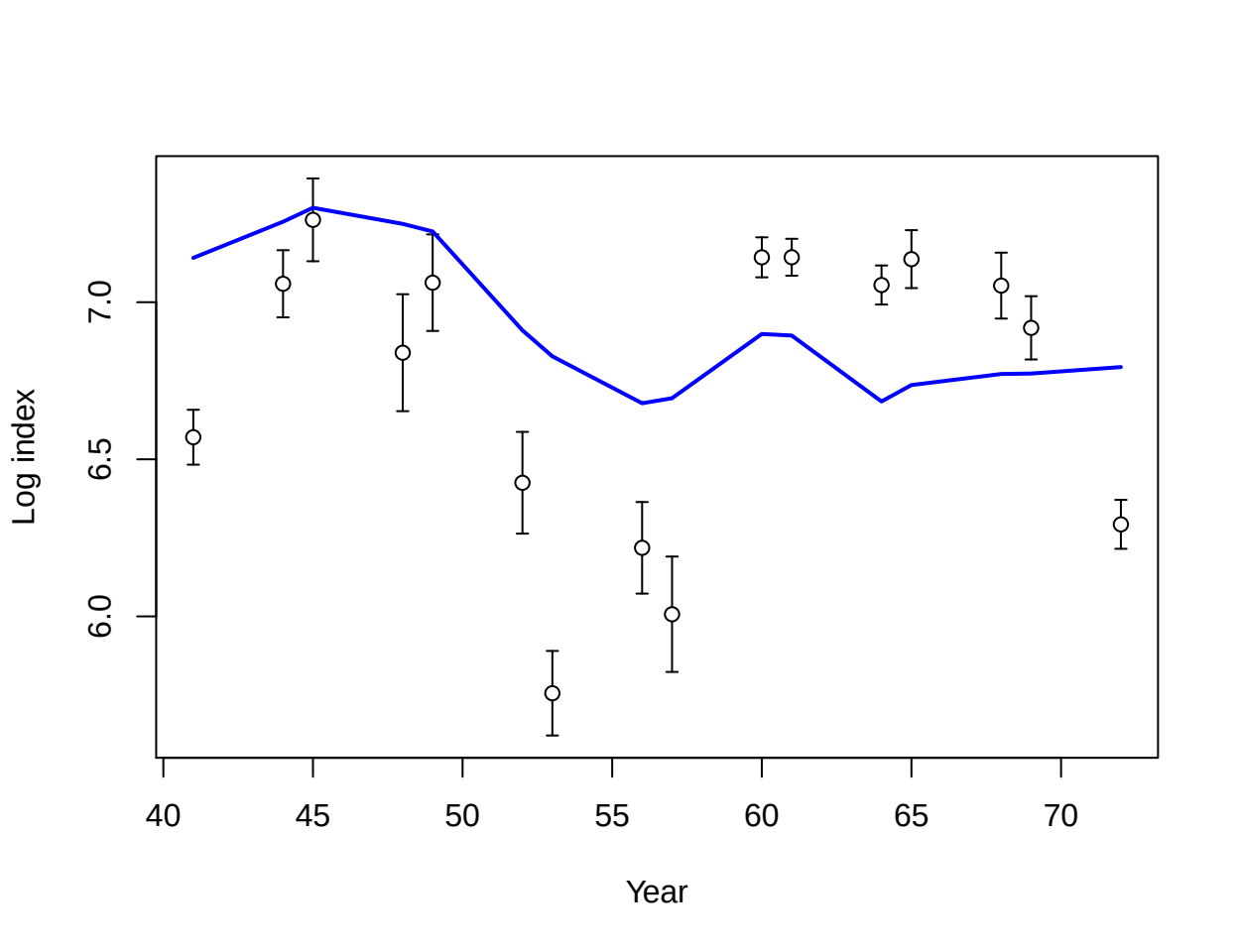

Deviation
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
40
60
80
100
120
140
160
180
Year

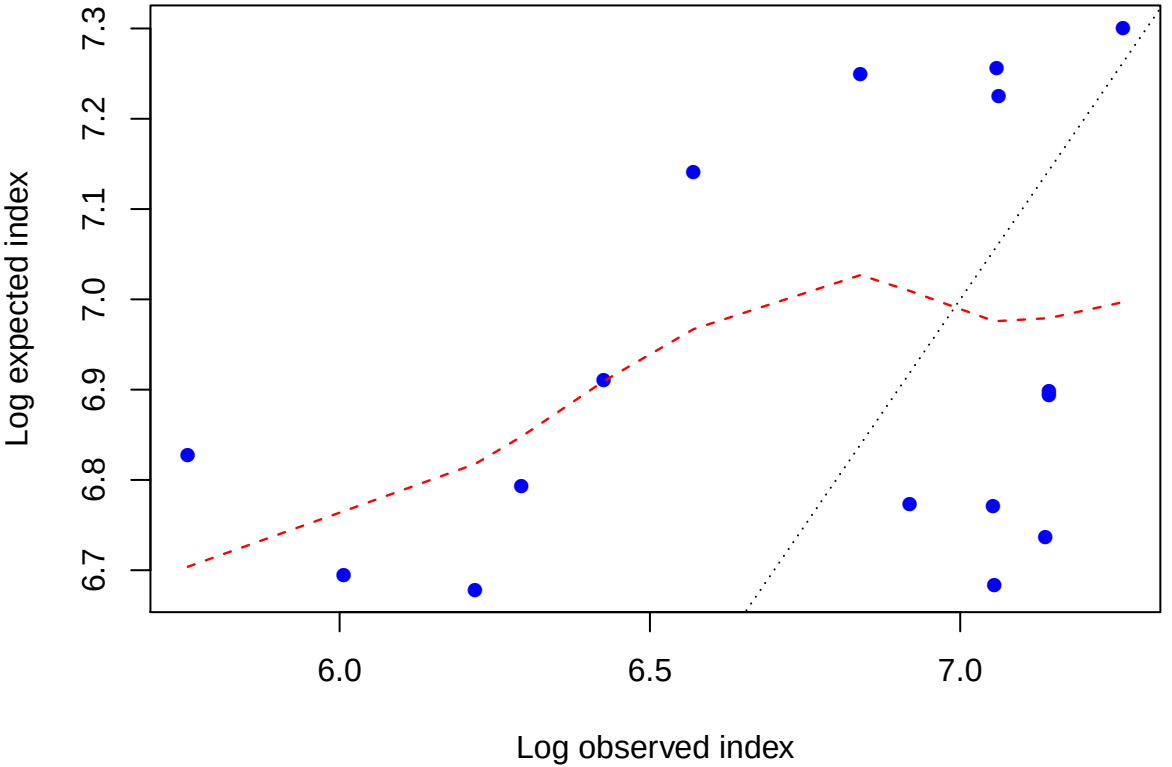

Index
0
500
1000
1500
40
45
50
55
60
65
70
Year

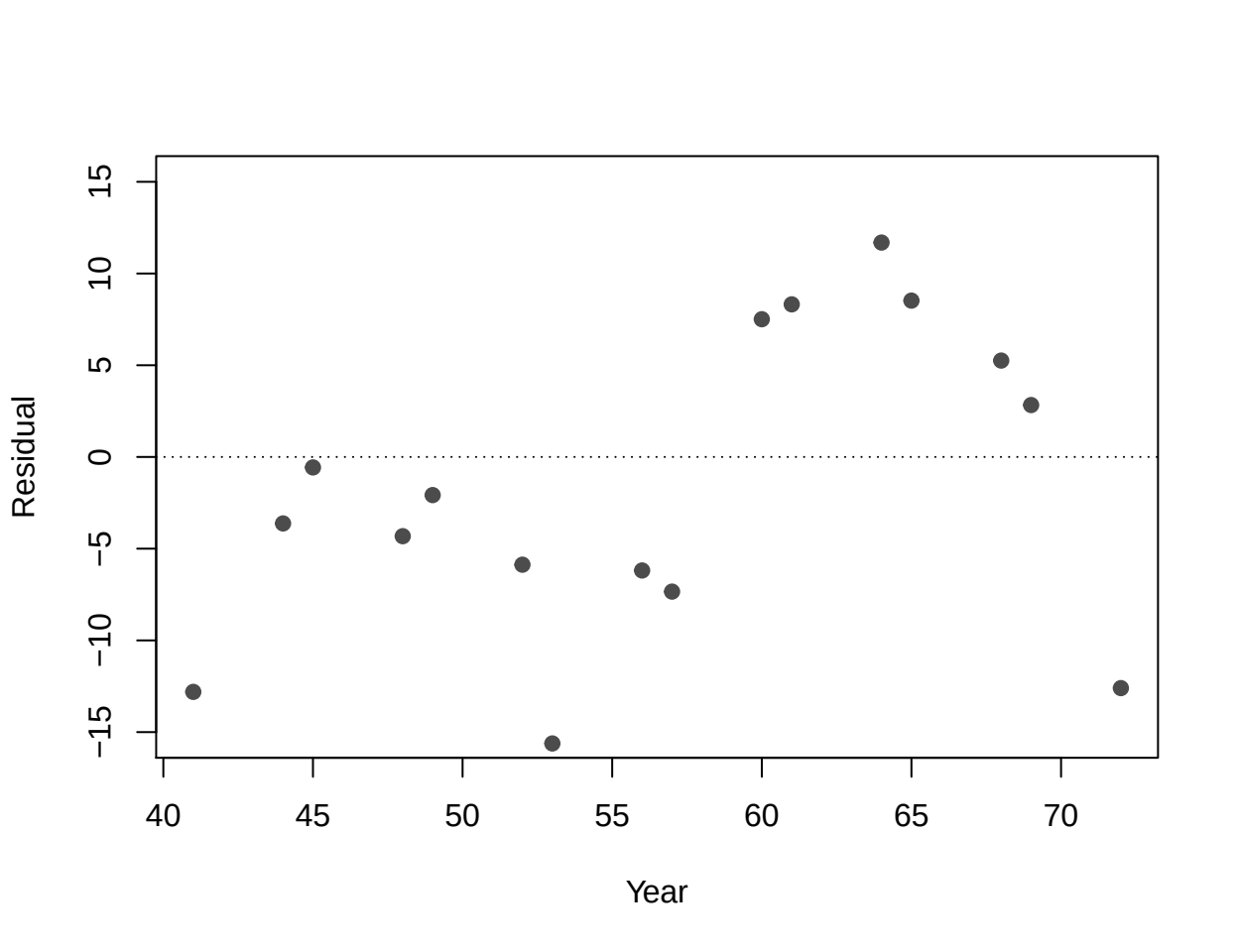

Index
0
500
1000
1500
40
45
50
55
60
65
70
Year

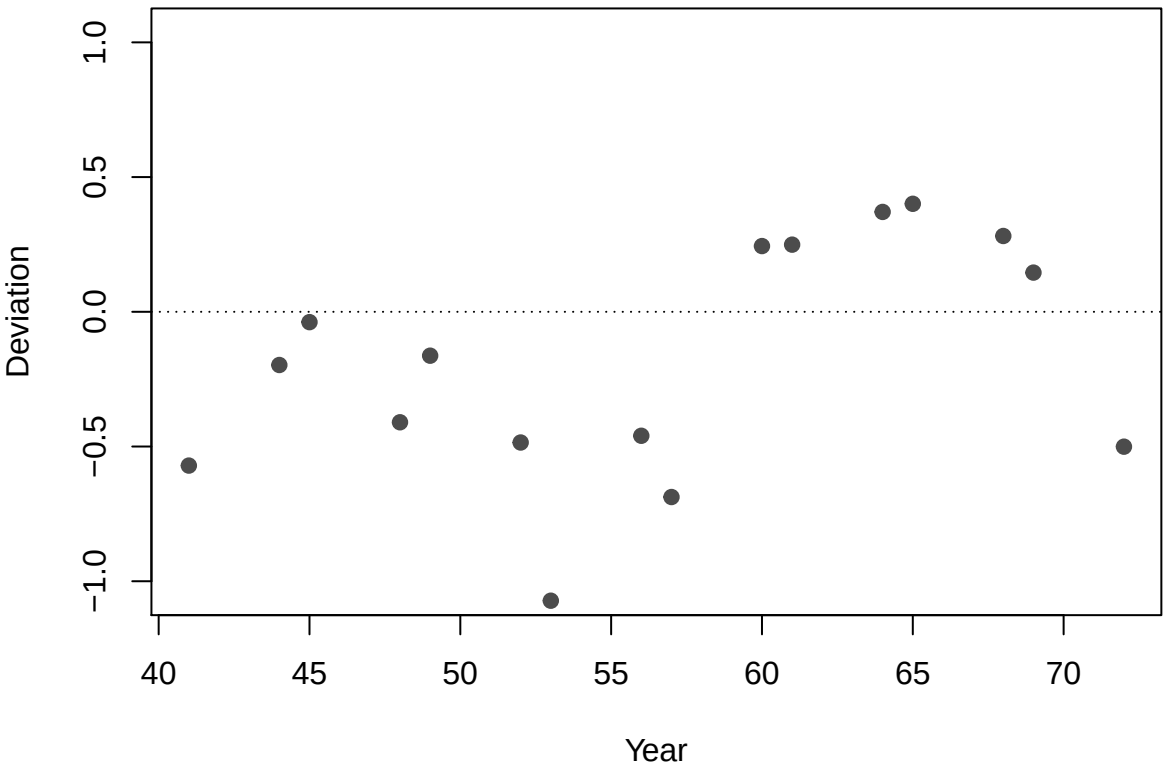

Expected index
0
200
600
1000
1400
0
200
400
600
800
1000
1200
1400
Observed index

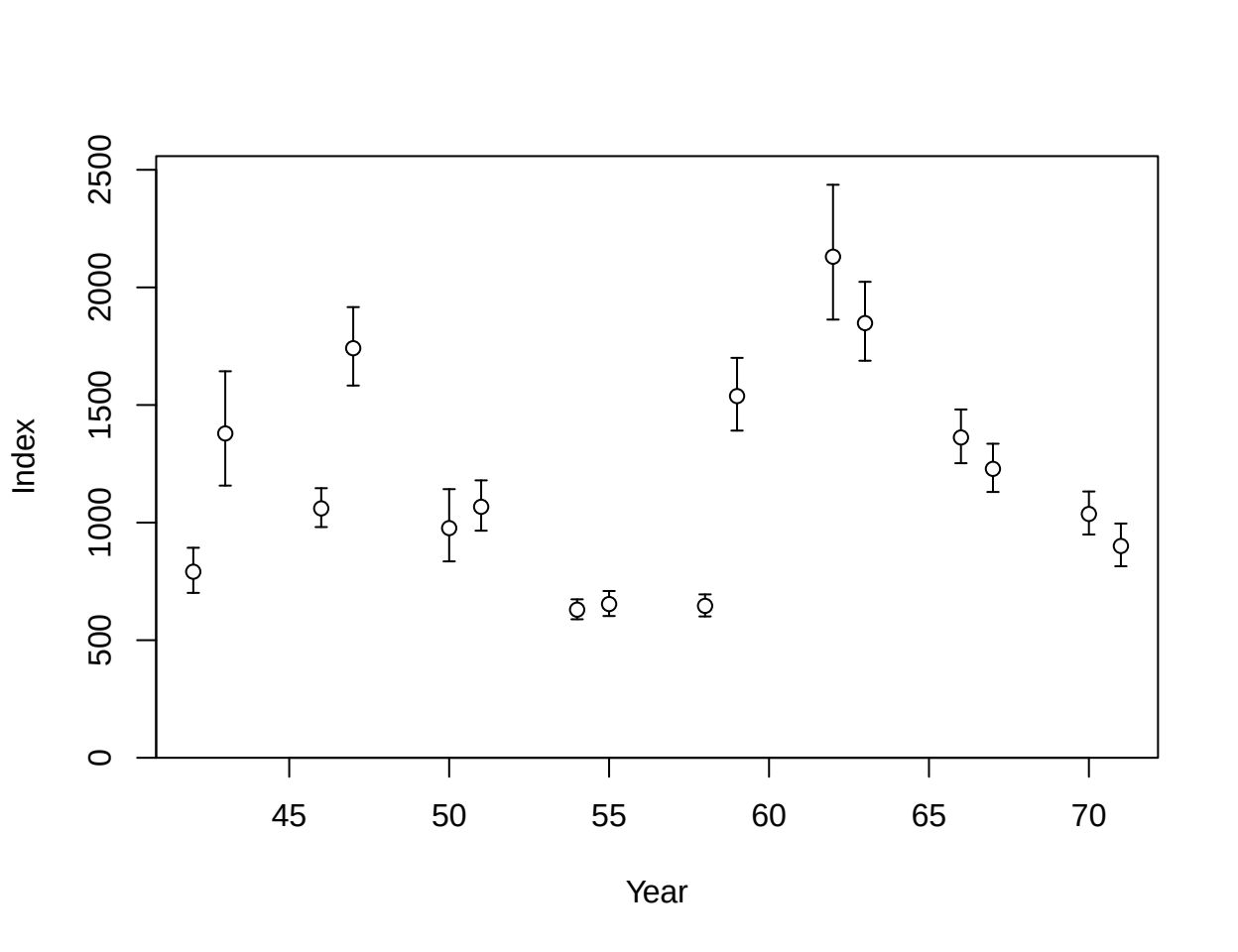

Log index
6.0
6.5
7.0
40
45
50
55
60
65
70
Year

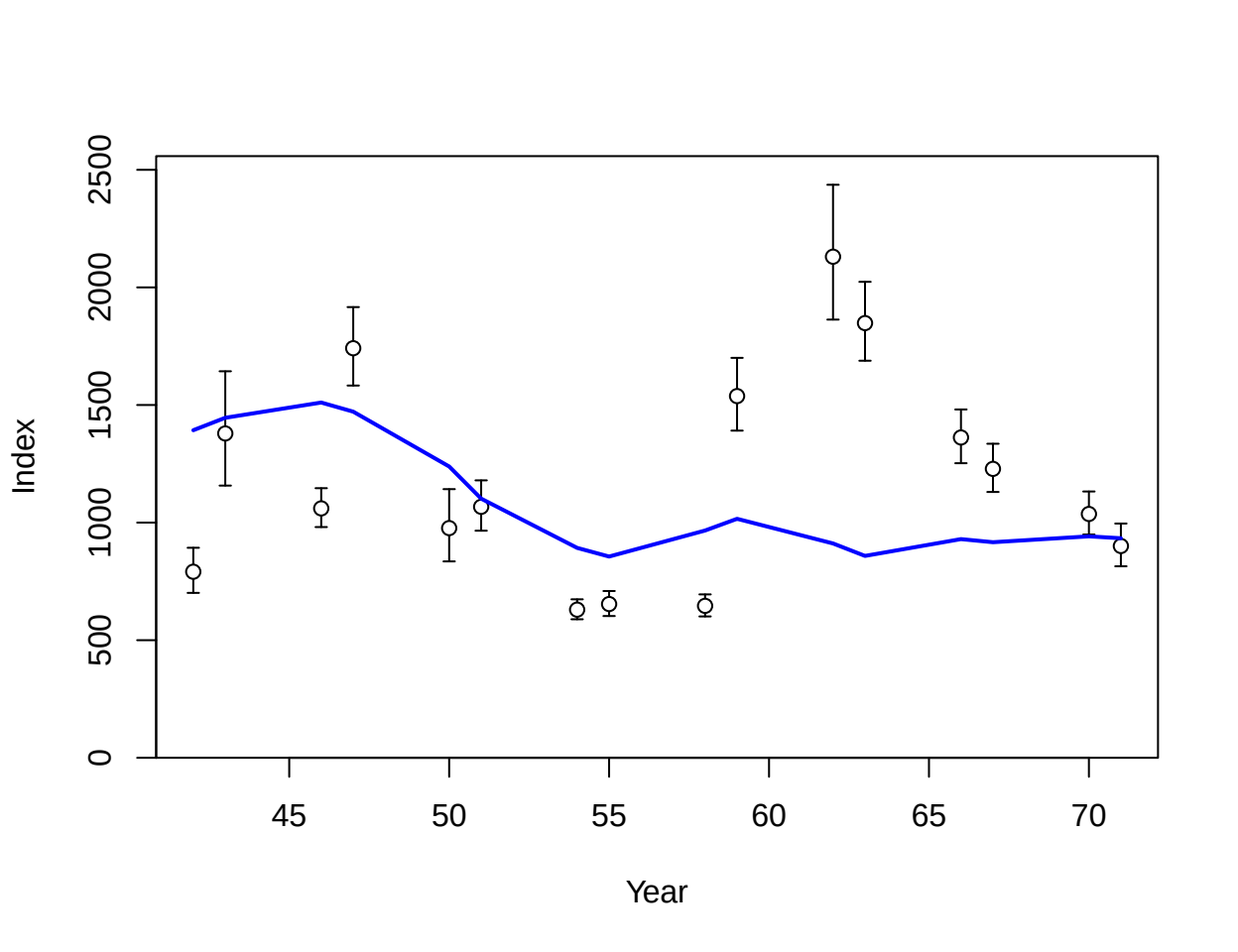

Log index
7.0
6.5
6.0
40
45
50
55
60
65
70
Year

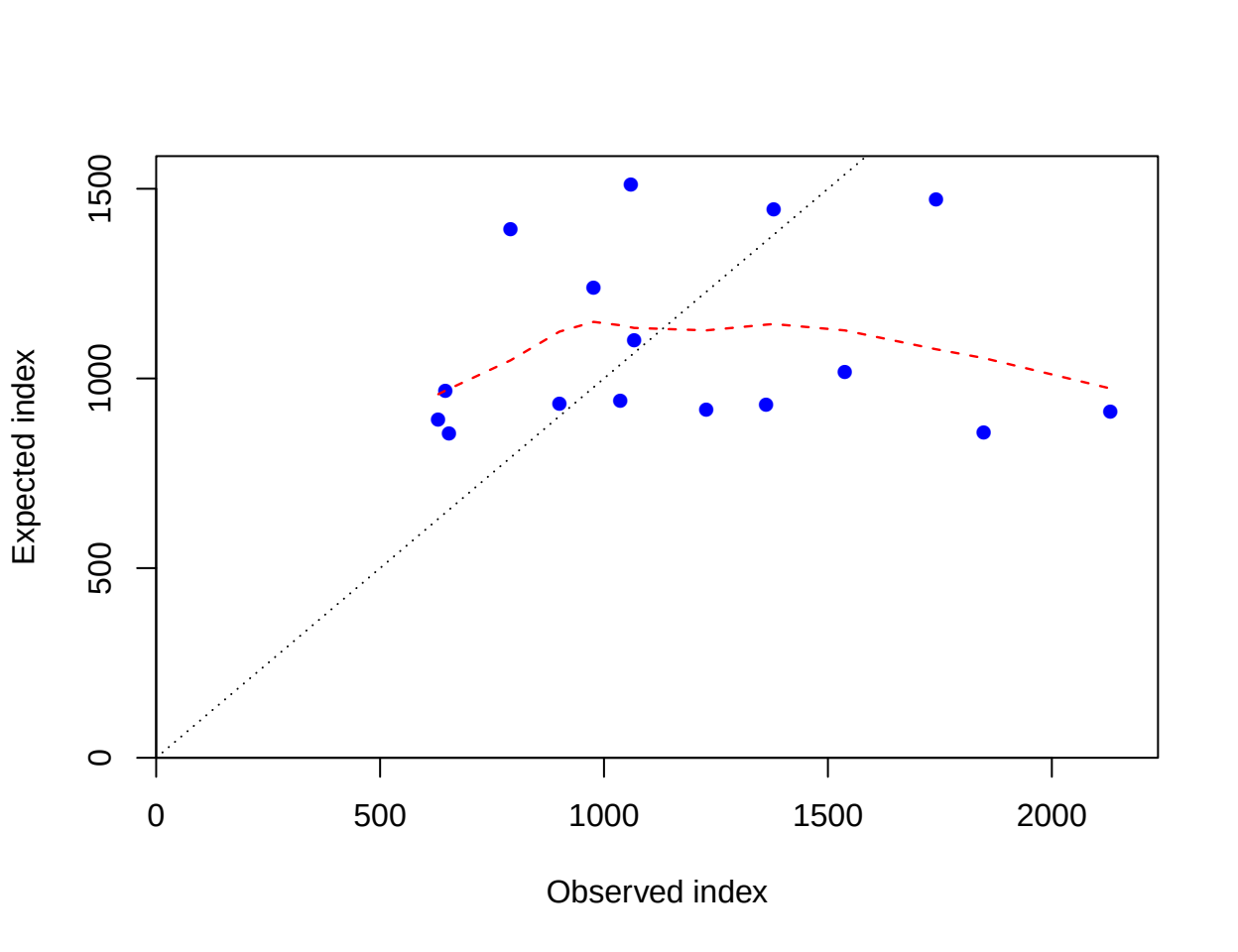

Log expected index
6.7
6.8
6.9
7.0
7.1
7.2
7.3
6.0
6.5
7.0
Log observed index

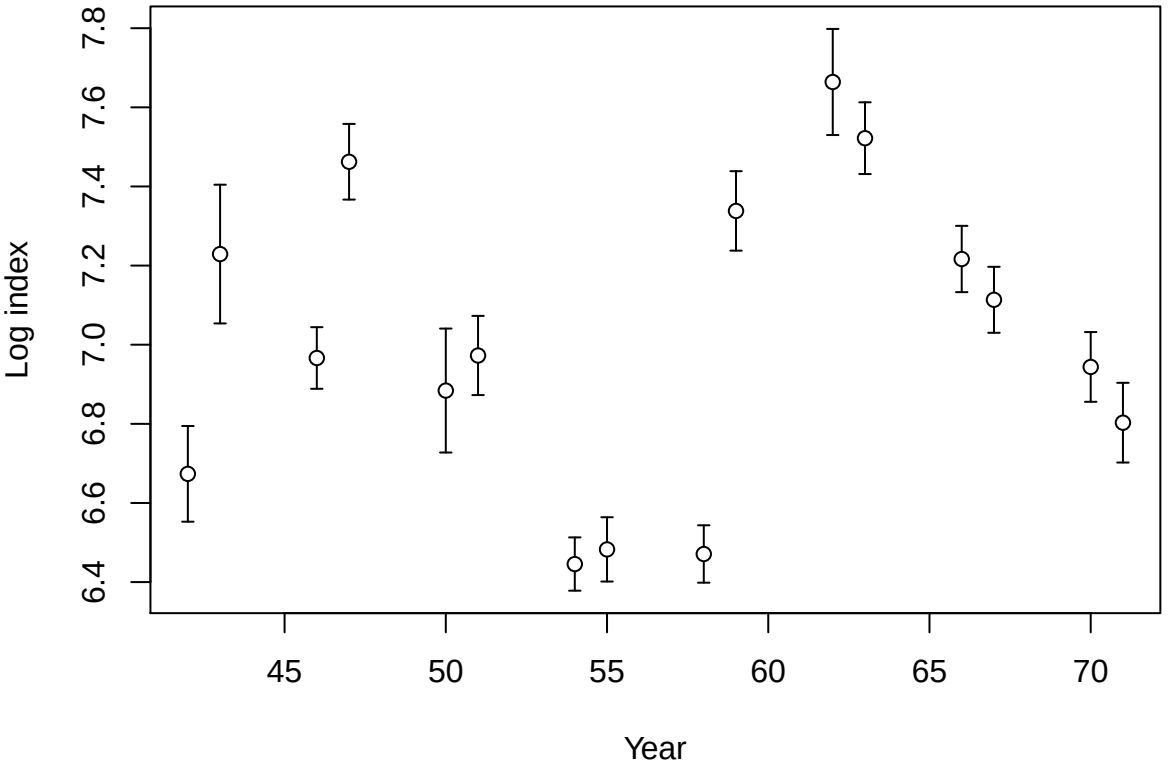

Residual
15
10
5
0
−5
−10
−15
40
45
50
55
60
65
70
Year

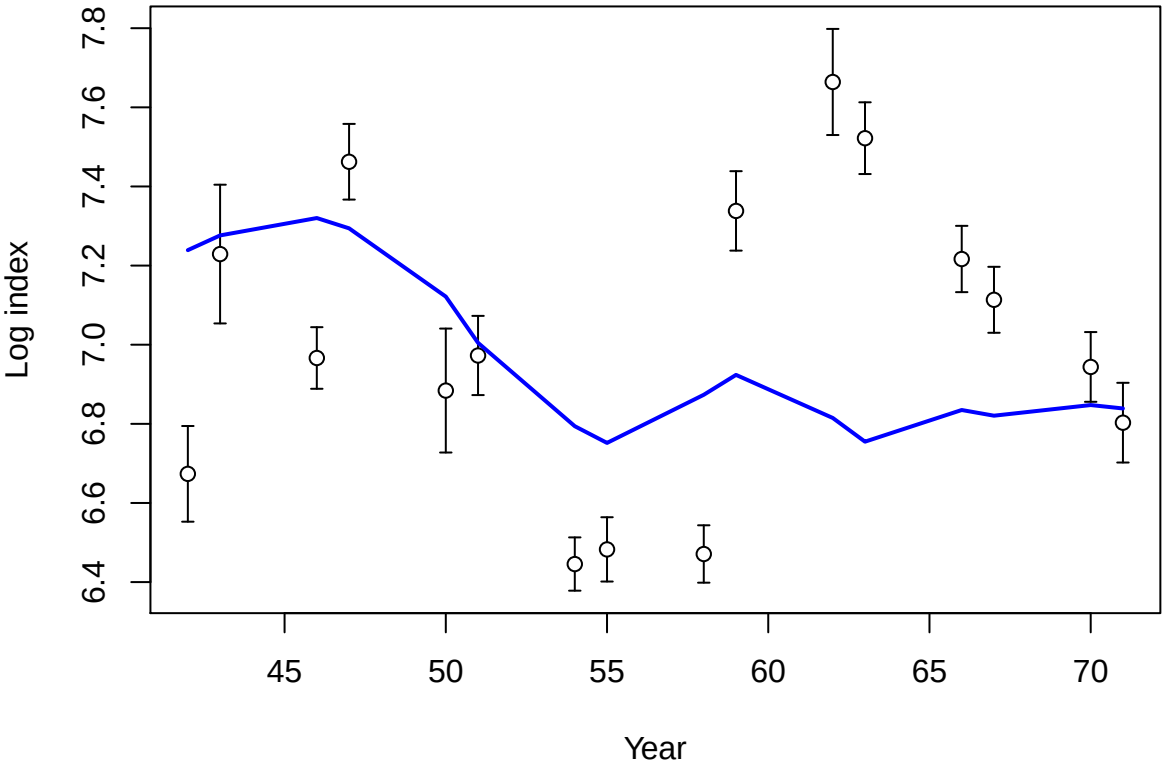

Deviation
1.0
0.5
0.0
−0.5
−1.0
40
45
50
55
60
65
70
Year

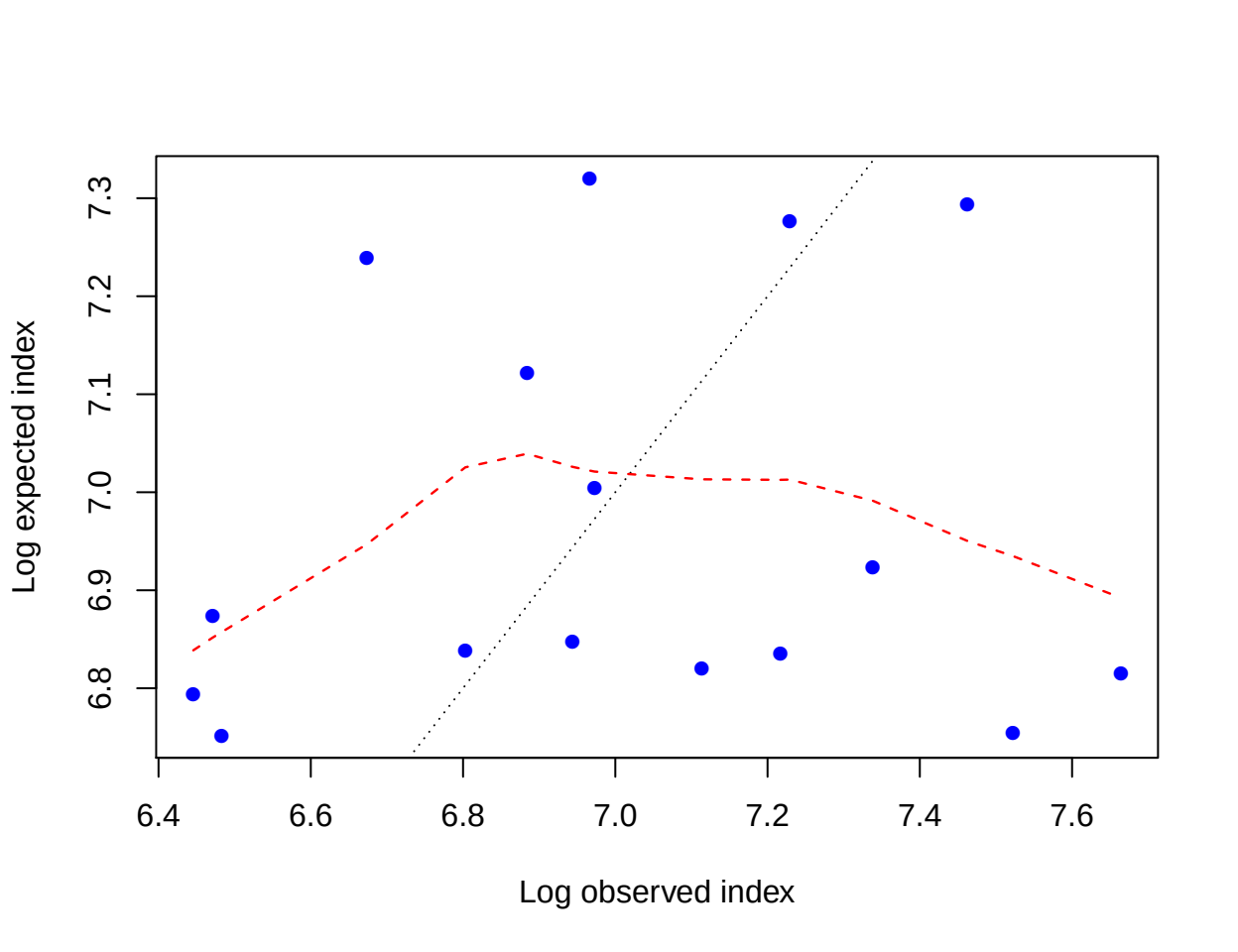

Index
0
500
1000
1500
2000
2500
45
50
55
60
65
70
Year

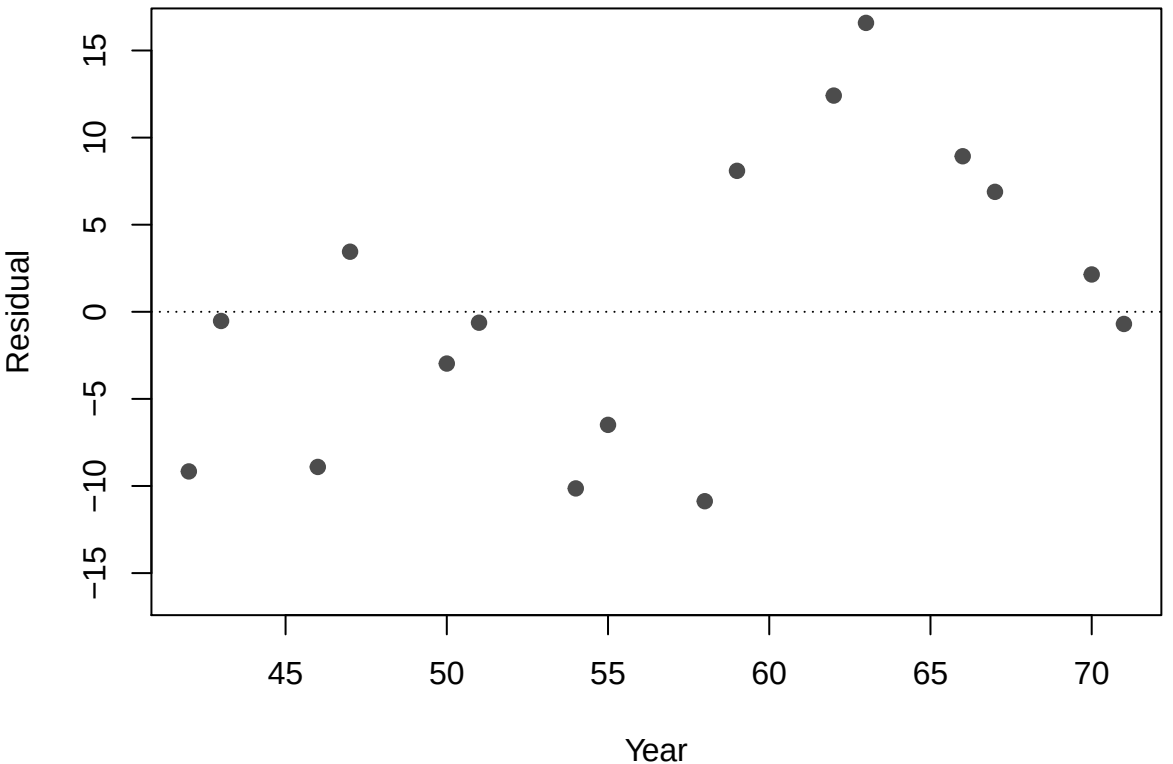

Index
0
500
1000
1500
2000
2500
45
50
55
60
65
70
Year

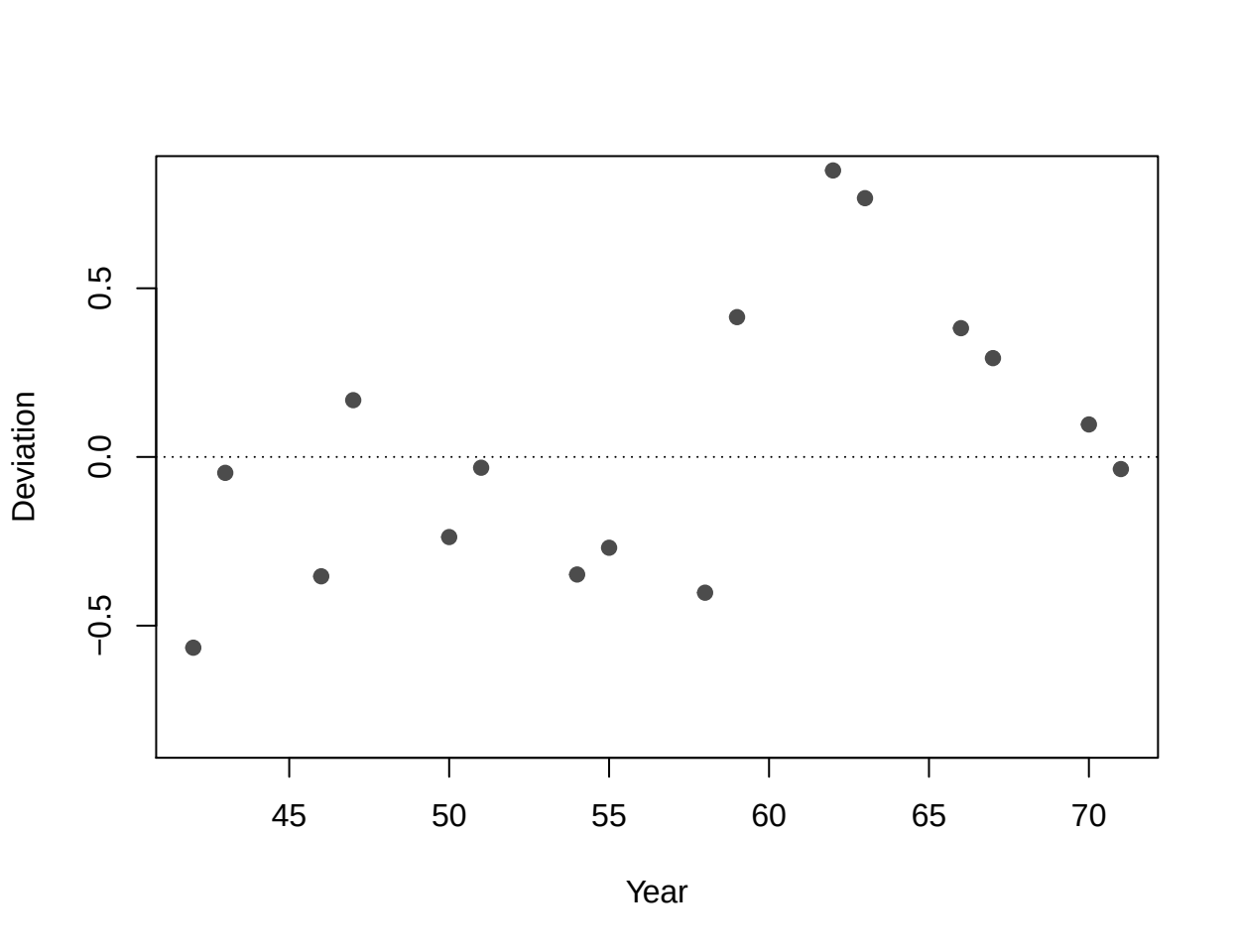

Expected index
Observed index
0
500
1000
1500
2000
0
500
1000
1500

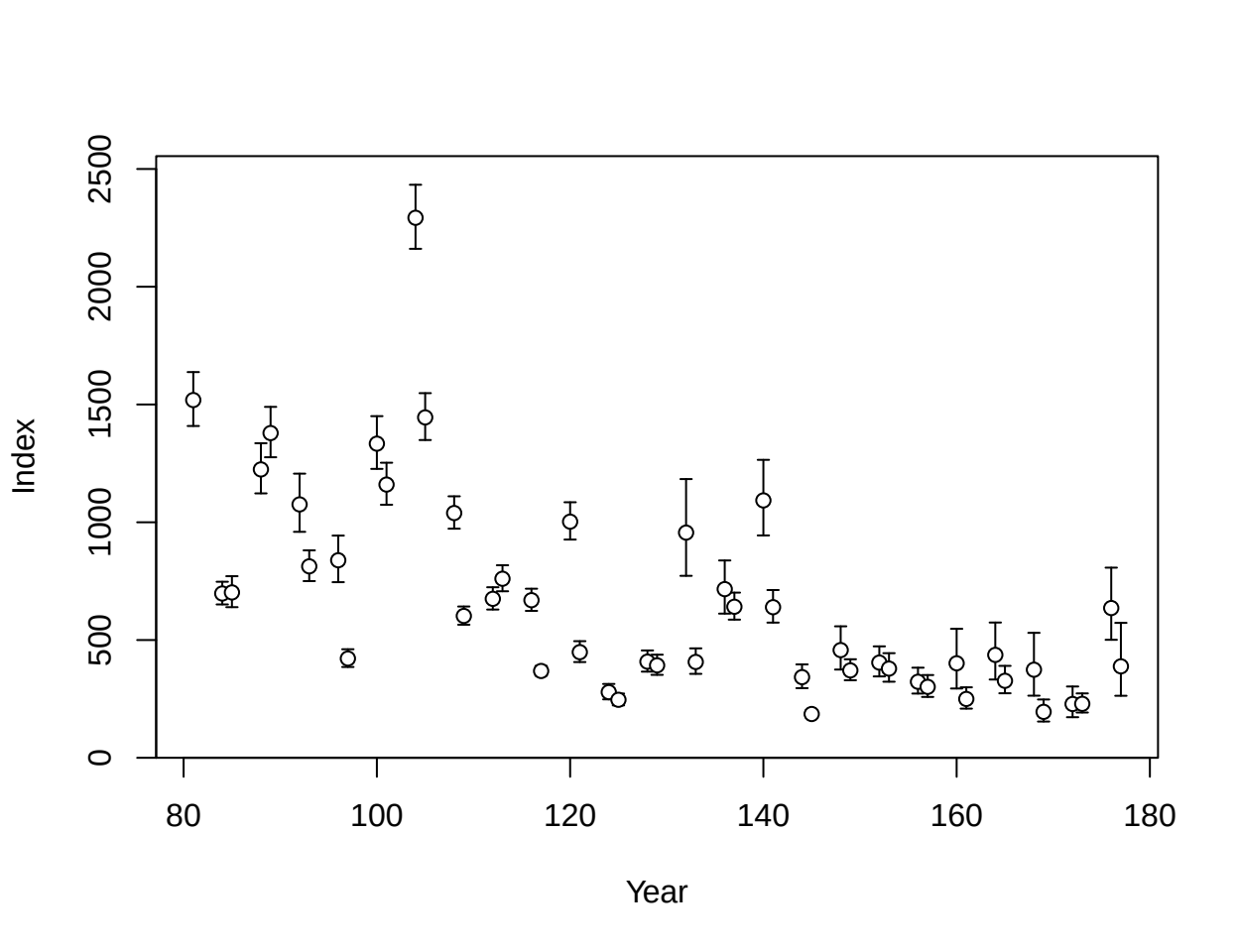

Log index
6.4
6.6
6.8
7.0
7.2
7.4
7.6
7.8
45
50
55
60
65
70
Year

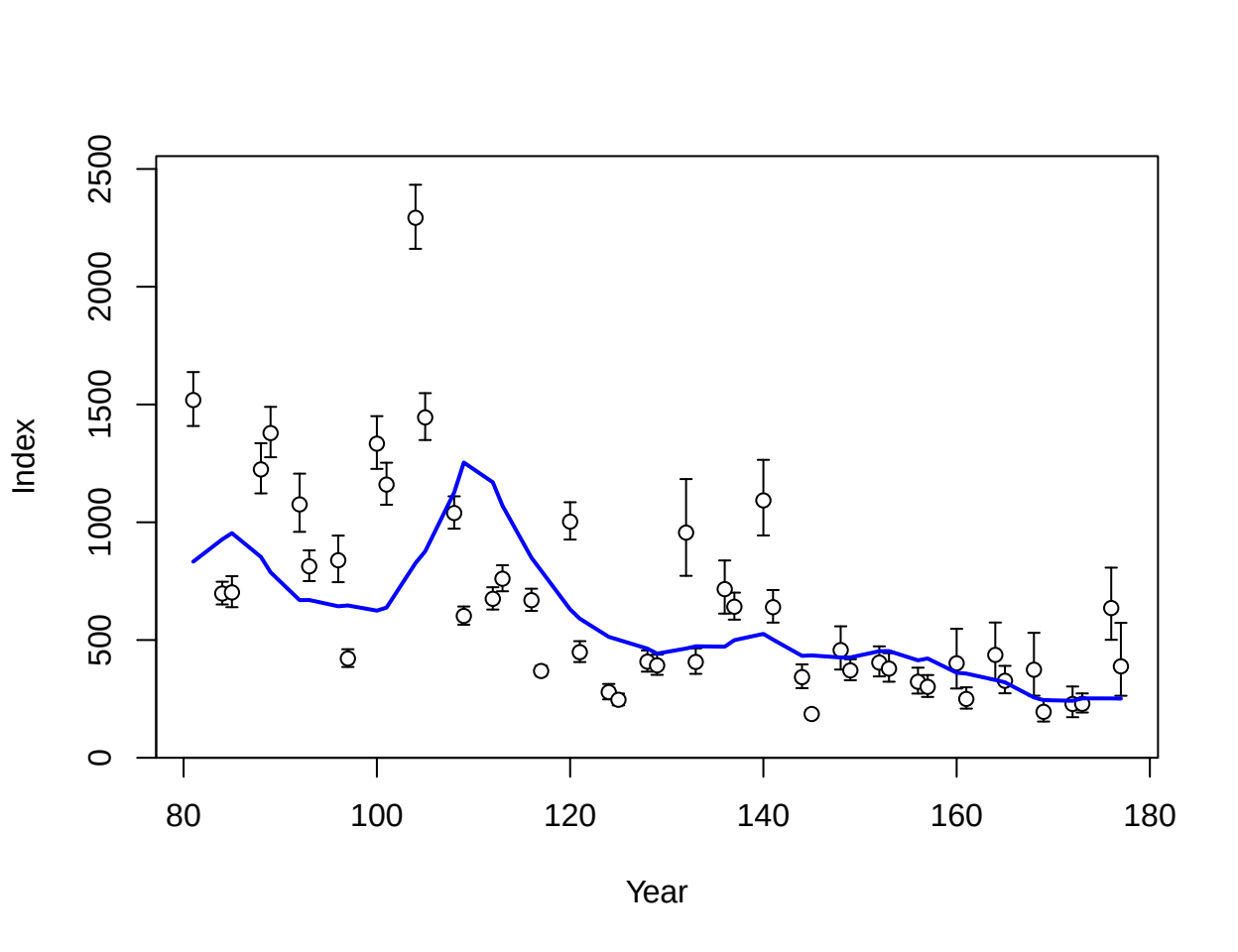

Log index
6.4
6.6
6.8
7.0
7.2
7.4
7.6
7.8
45
50
55
60
65
70
Year

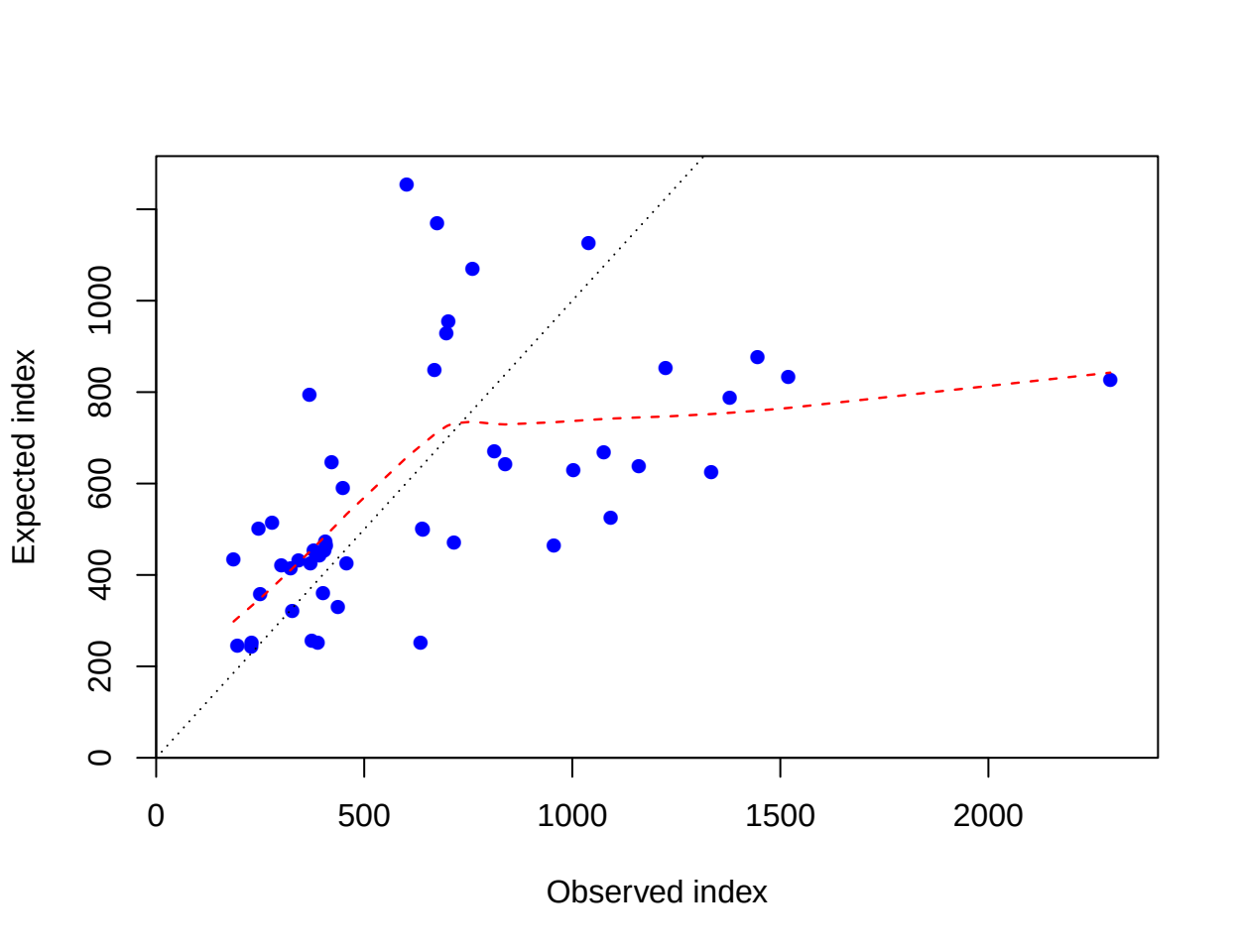

Log expected index
6.8
6.9
7.0
7.1
7.2
7.3
6.4
6.6
6.8
7.0
7.2
7.4
7.6
Log observed index

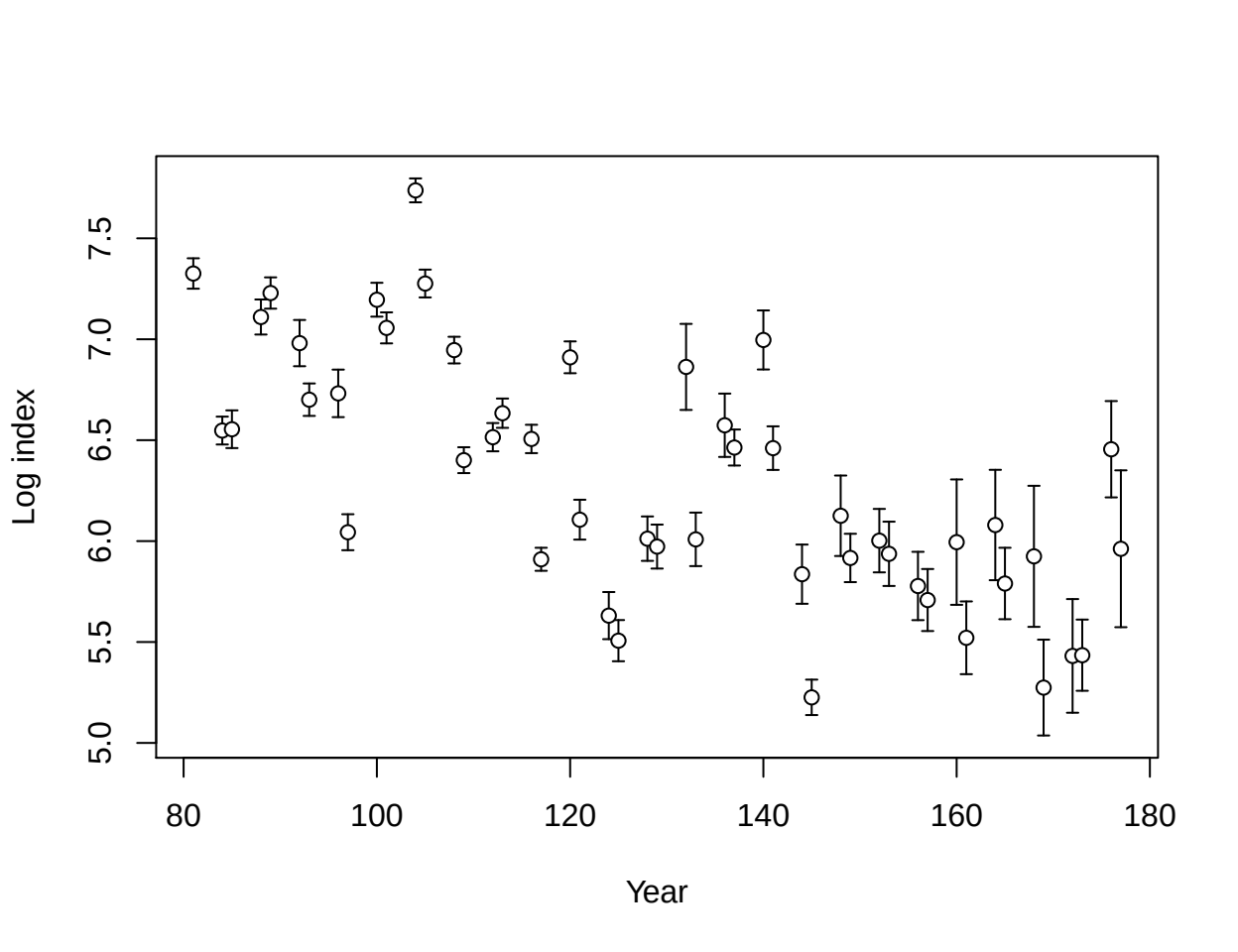

Residual
15
10
5
0
−5
−10
−15
45
50
55
60
65
70
Year

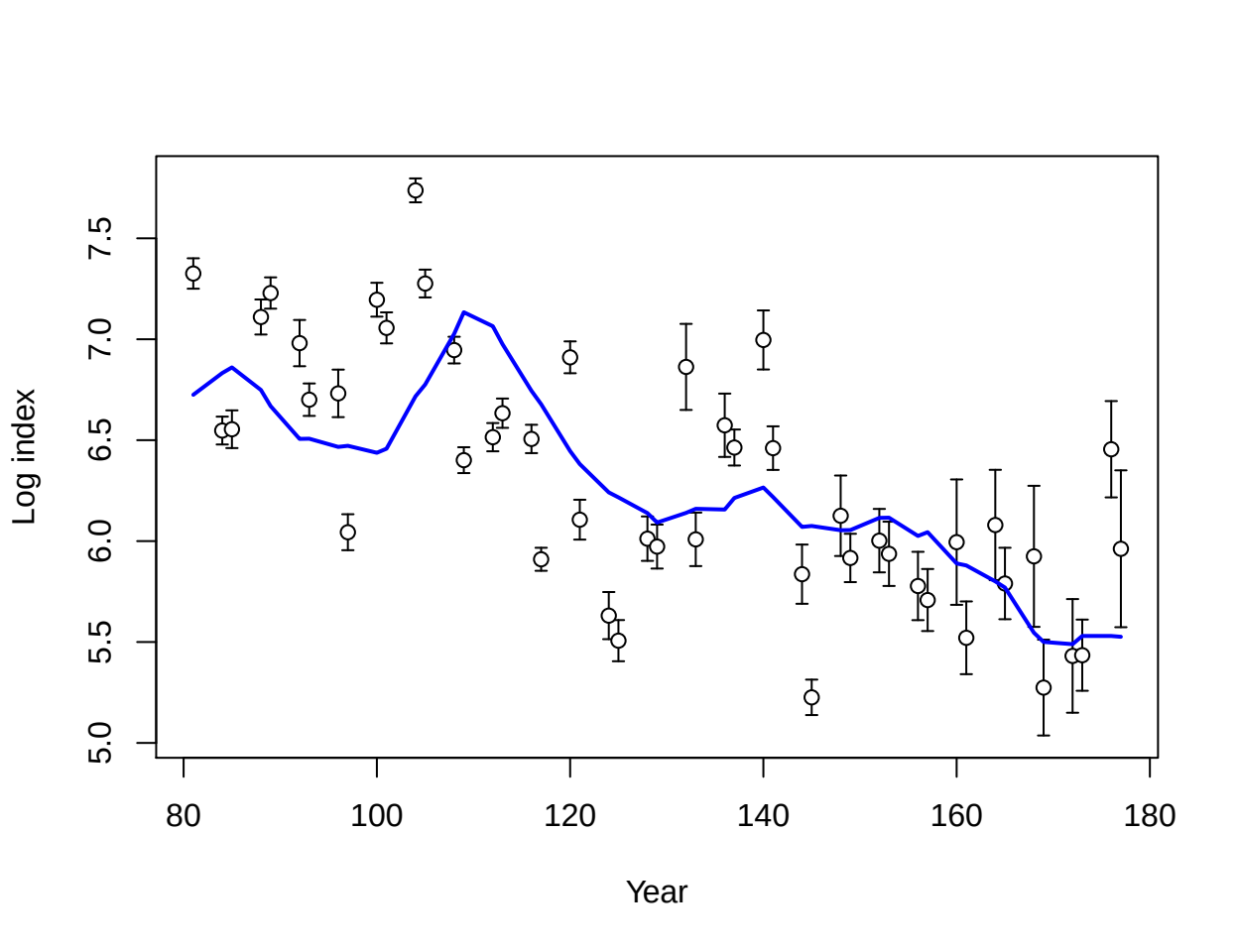

Deviation
0.5
0.0
−0.5
45
50
55
60
65
70
Year

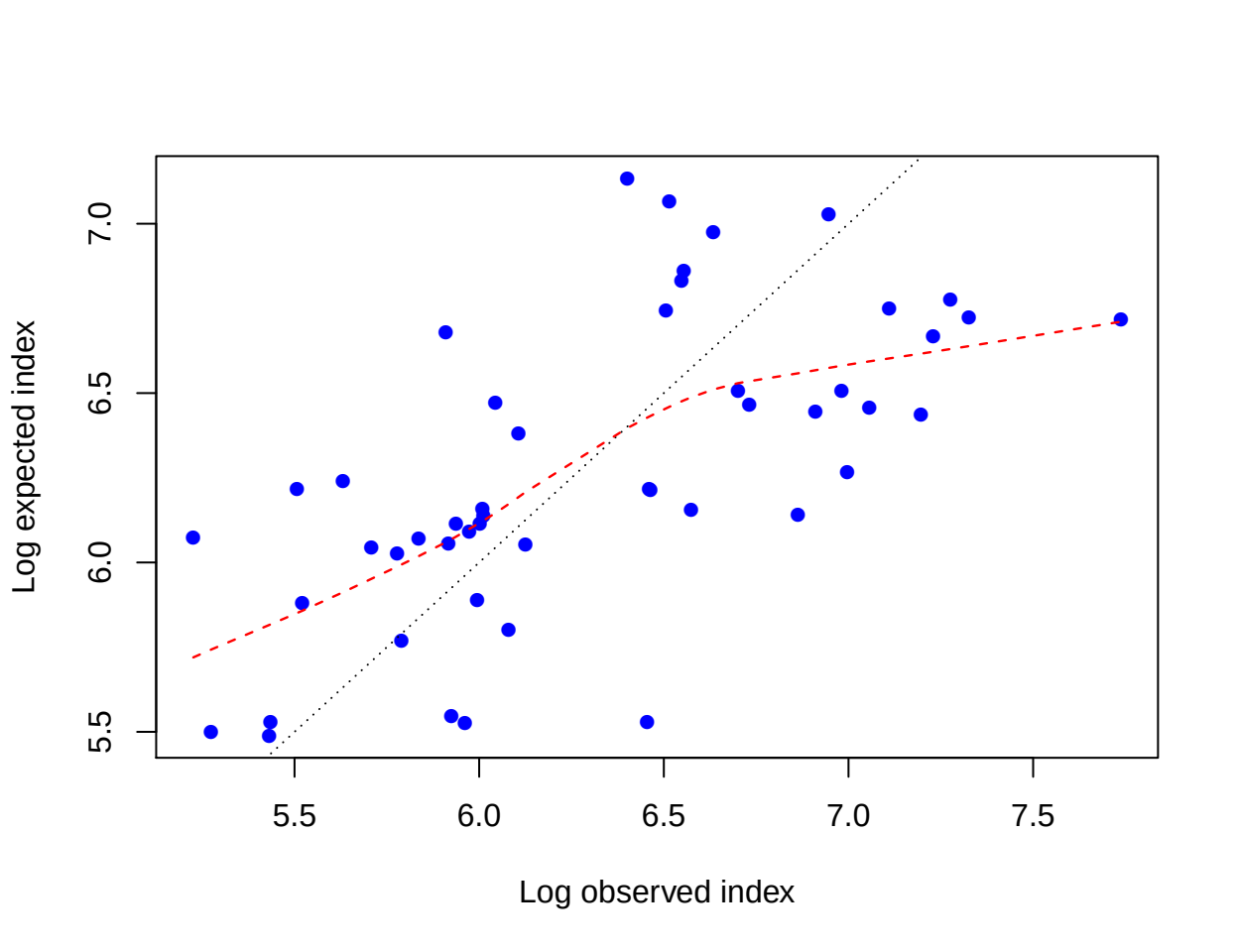

Index
0
500
1000
1500
2000
2500
80
100
120
140
160
180
Year

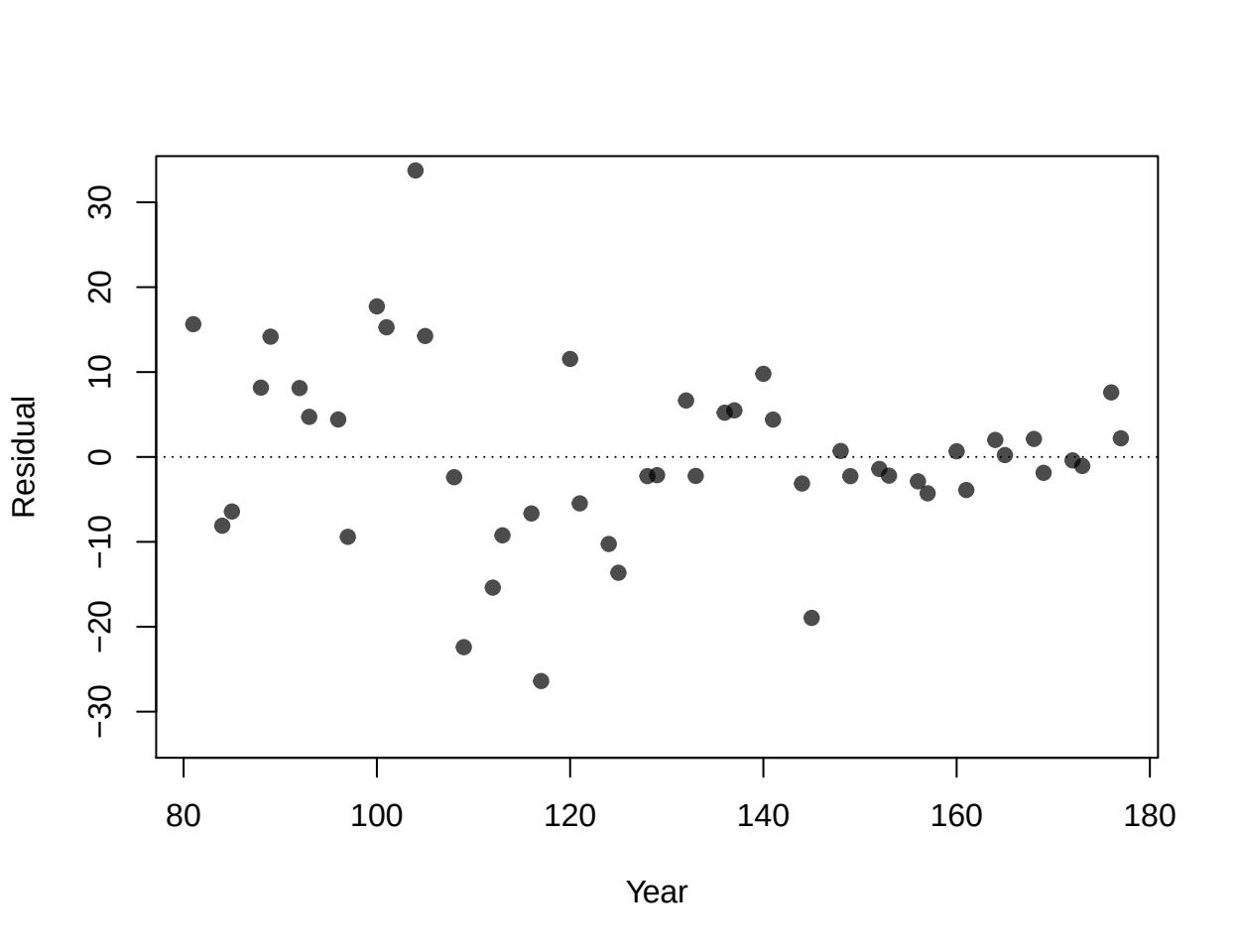

Index
0
500
1000
1500
2000
2500
80
100
120
140
160
180
Year

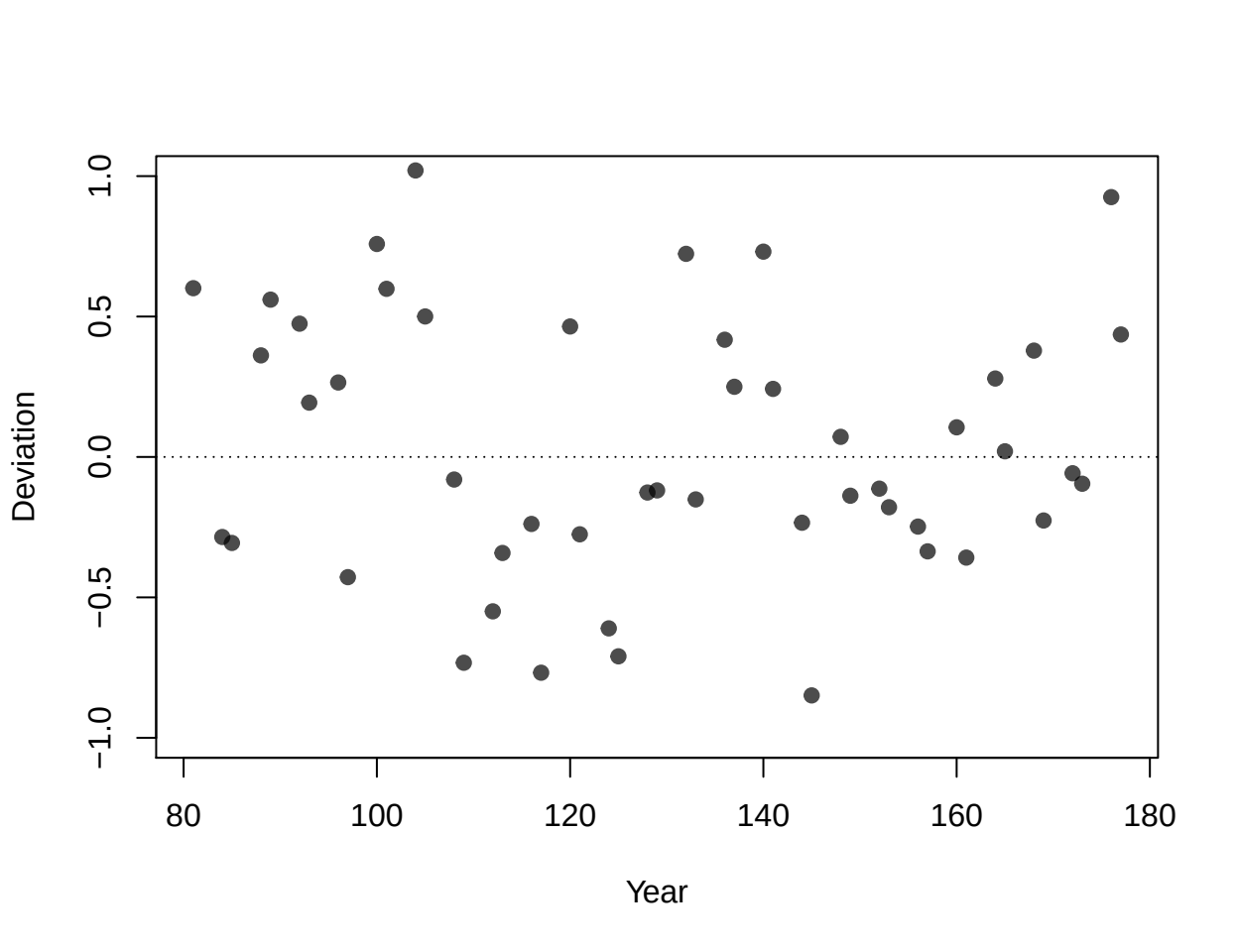

Expected index
0
200
400
600
800
1000
0
500
1000
1500
2000
Observed index

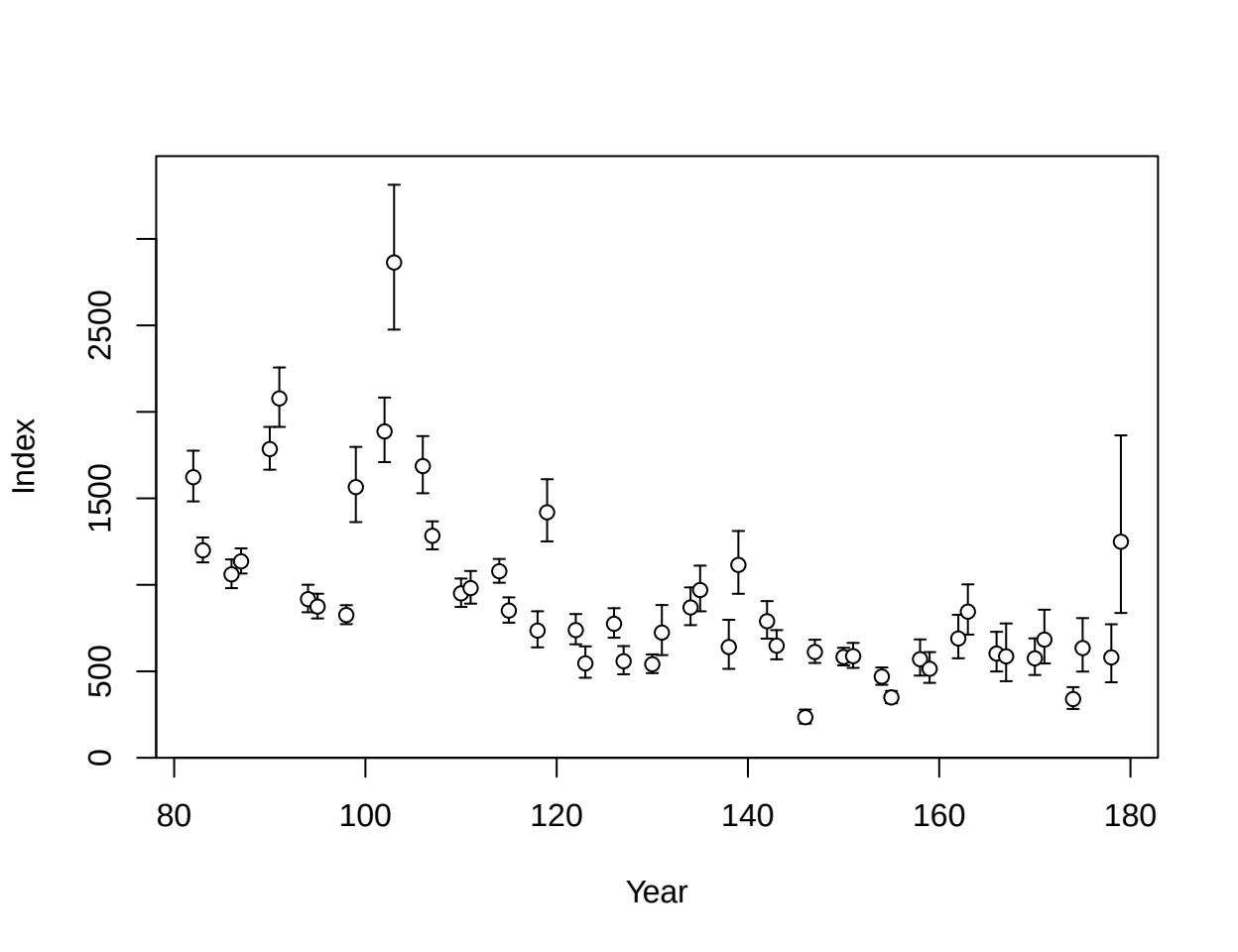

Log index
5.0
5.5
6.0
6.5
7.0
7.5
80
100
120
140
160
180
Year

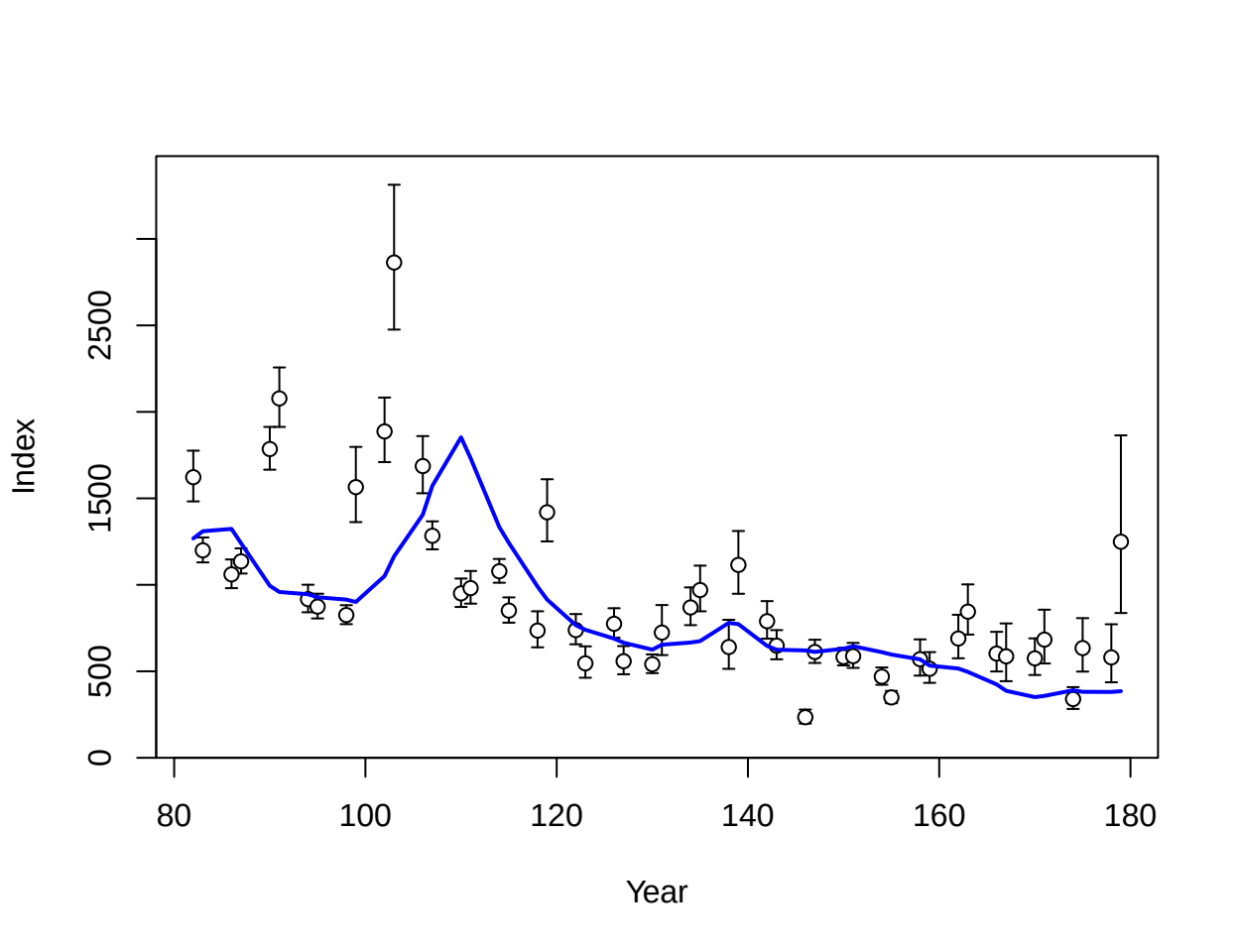

Log index
5.0
5.5
6.0
6.5
7.0
7.5
80
100
120
140
160
180
Year

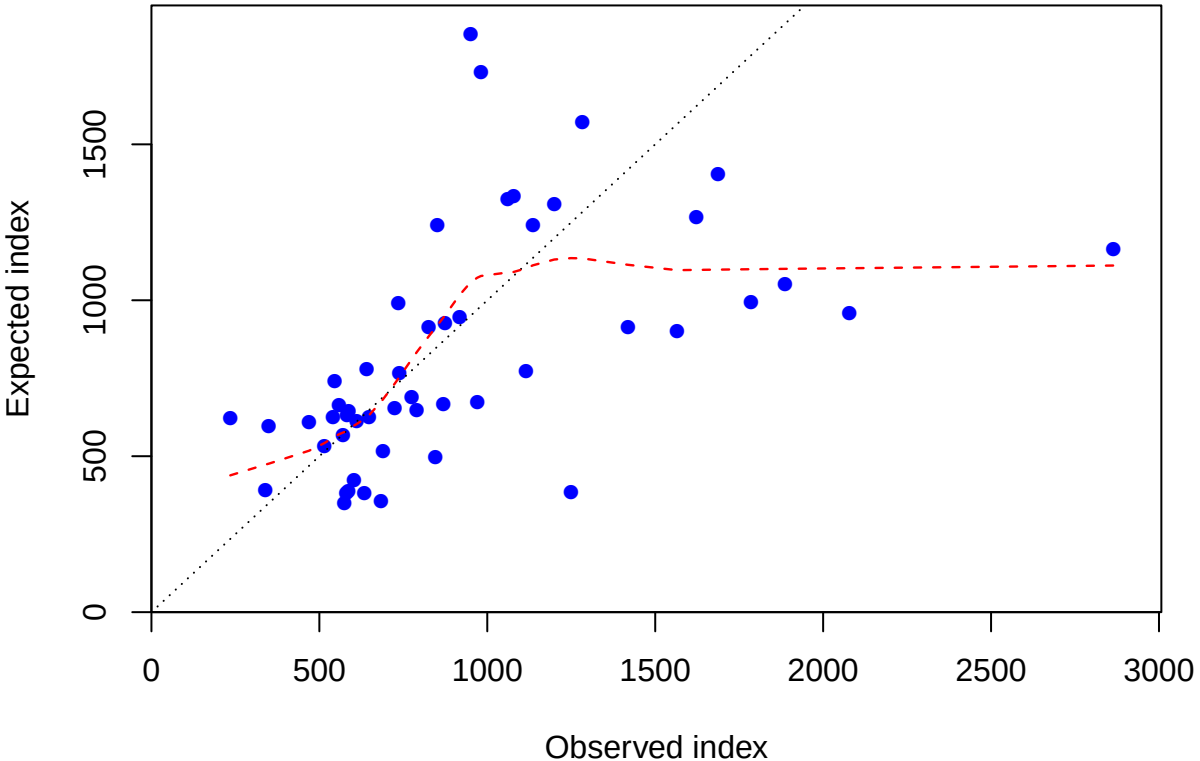

Log expected index
7.0
6.5
6.0
5.5
5.5
6.0
6.5
7.0
7.5
Log observed index

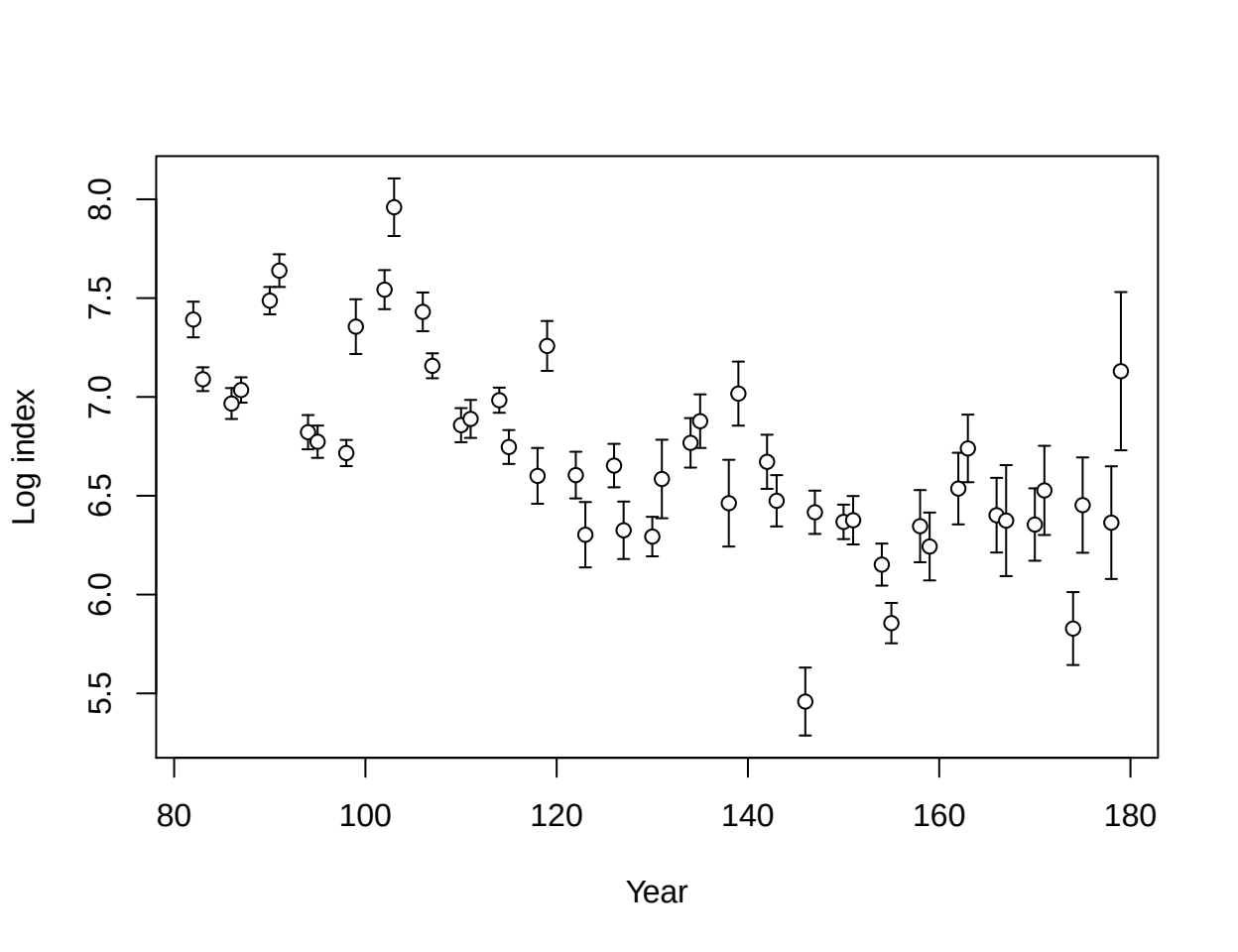

Residual
30
20
10
0
−10
−20
−30
80
100
120
140
160
180
Year

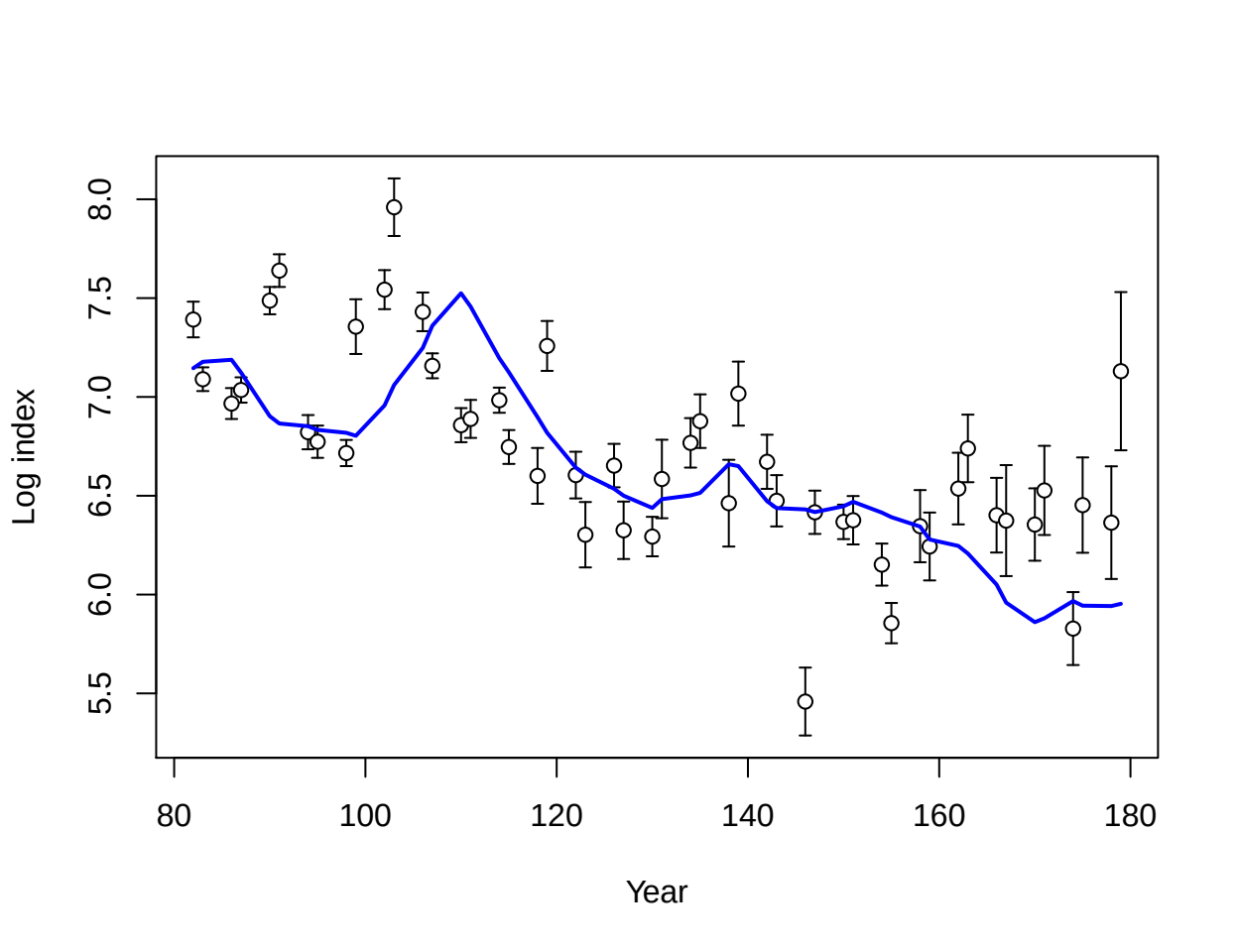

Deviation
1.0
0.5
0.0
−0.5
−1.0
80
100
120
140
160
180
Year

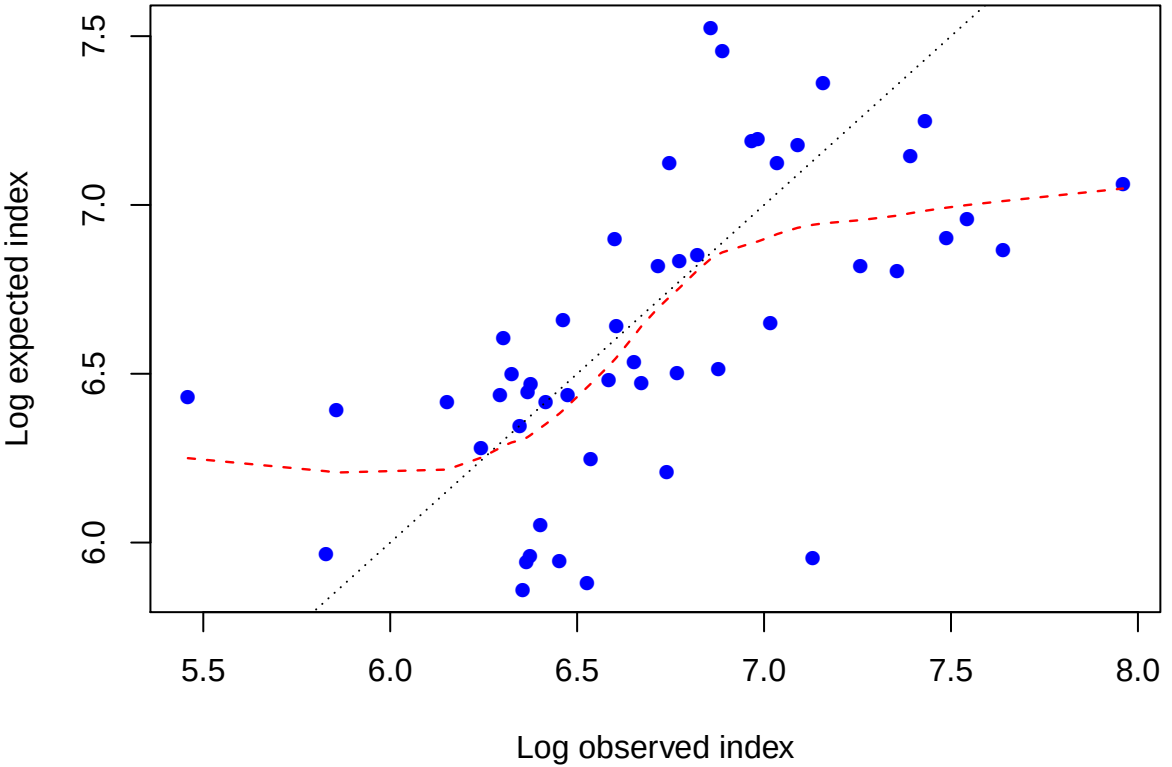

Index
0
500
1500
2500
80
100
120
140
160
180
Year

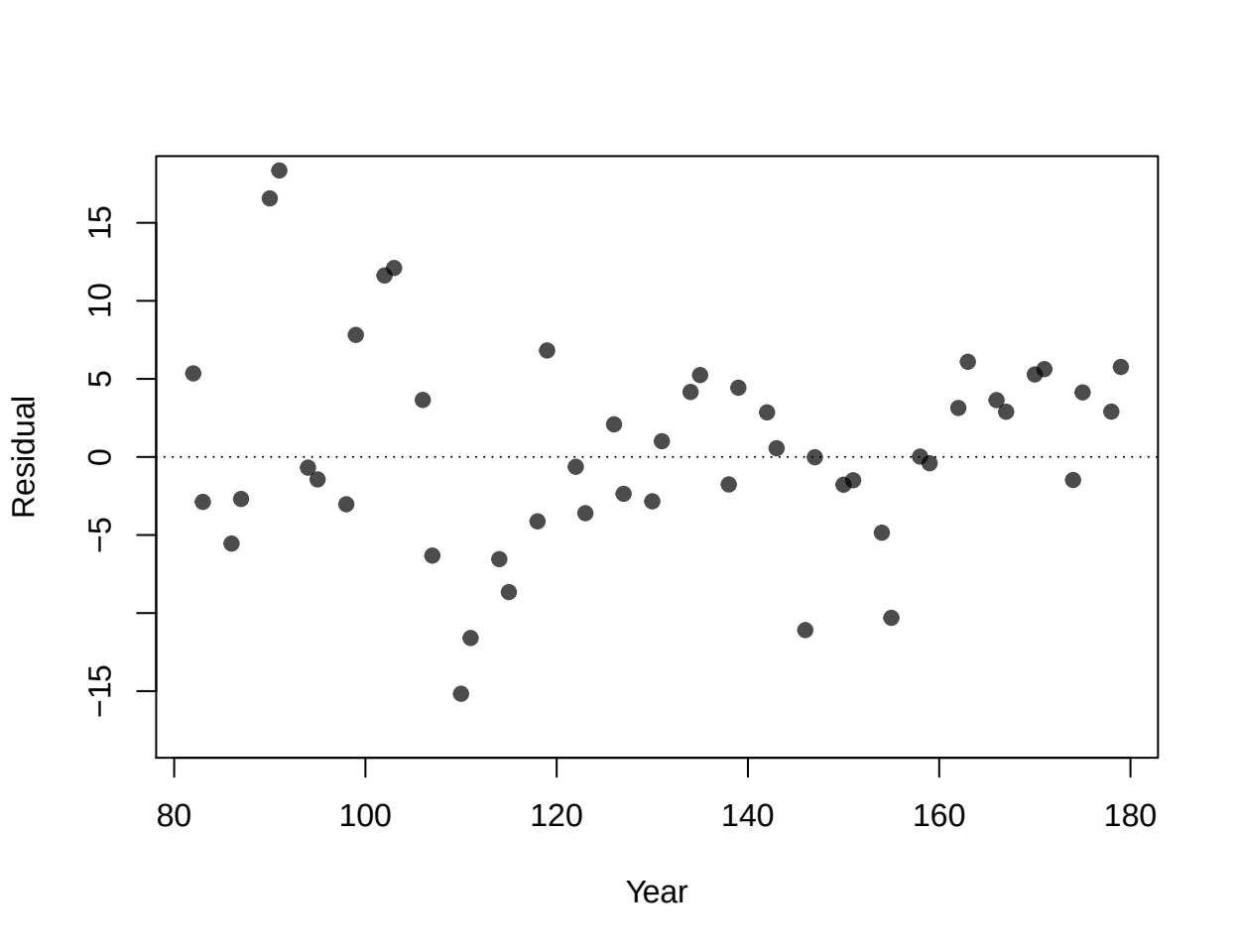

Index
0
500
1500
2500
80
100
120
140
160
180
Year

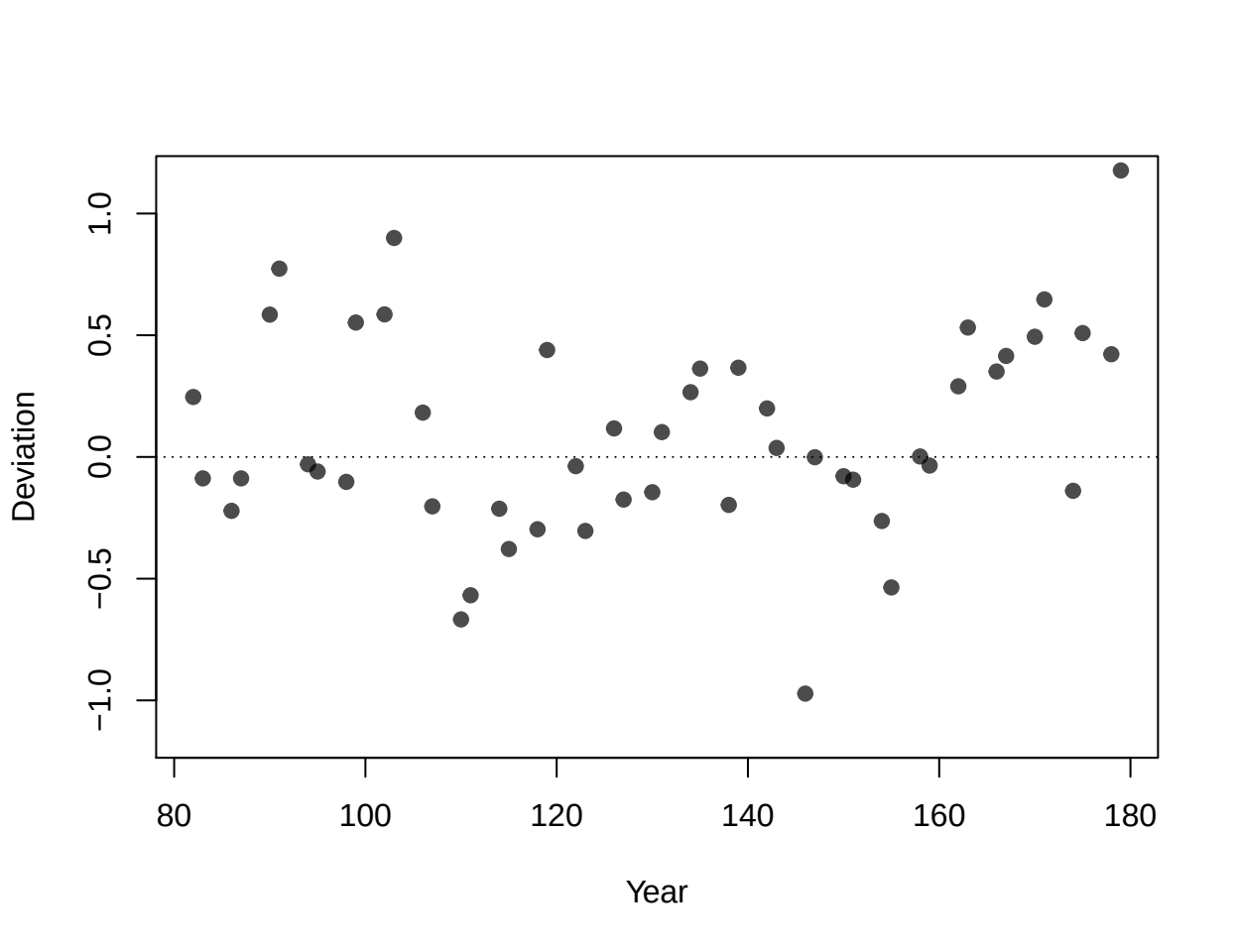

Expected index
0
500
1000
1500
0
500
1000
1500
2000
2500
3000
Observed index

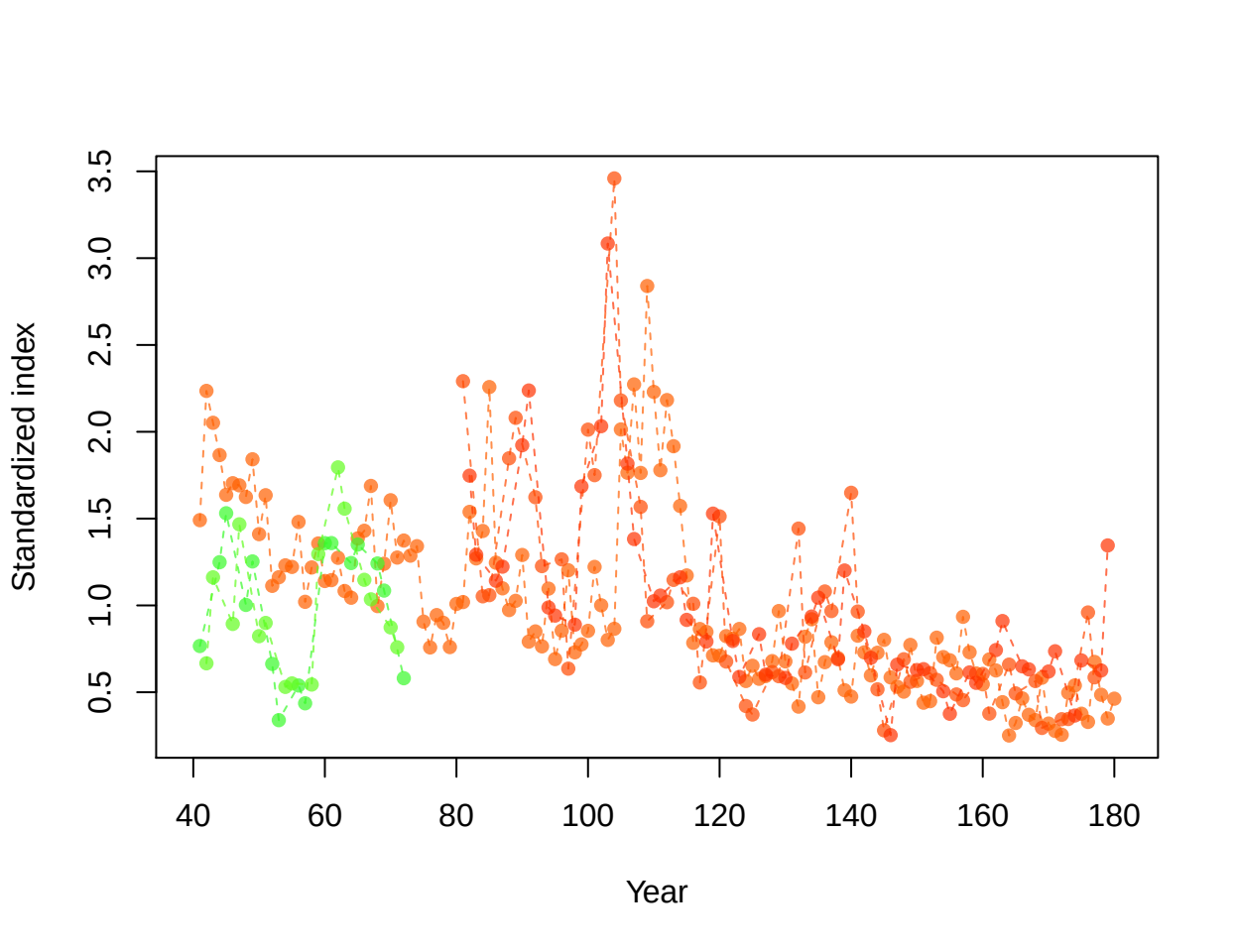

Log index
8.0
7.5
7.0
6.5
6.0
5.5
80
100
120
140
160
180
Year

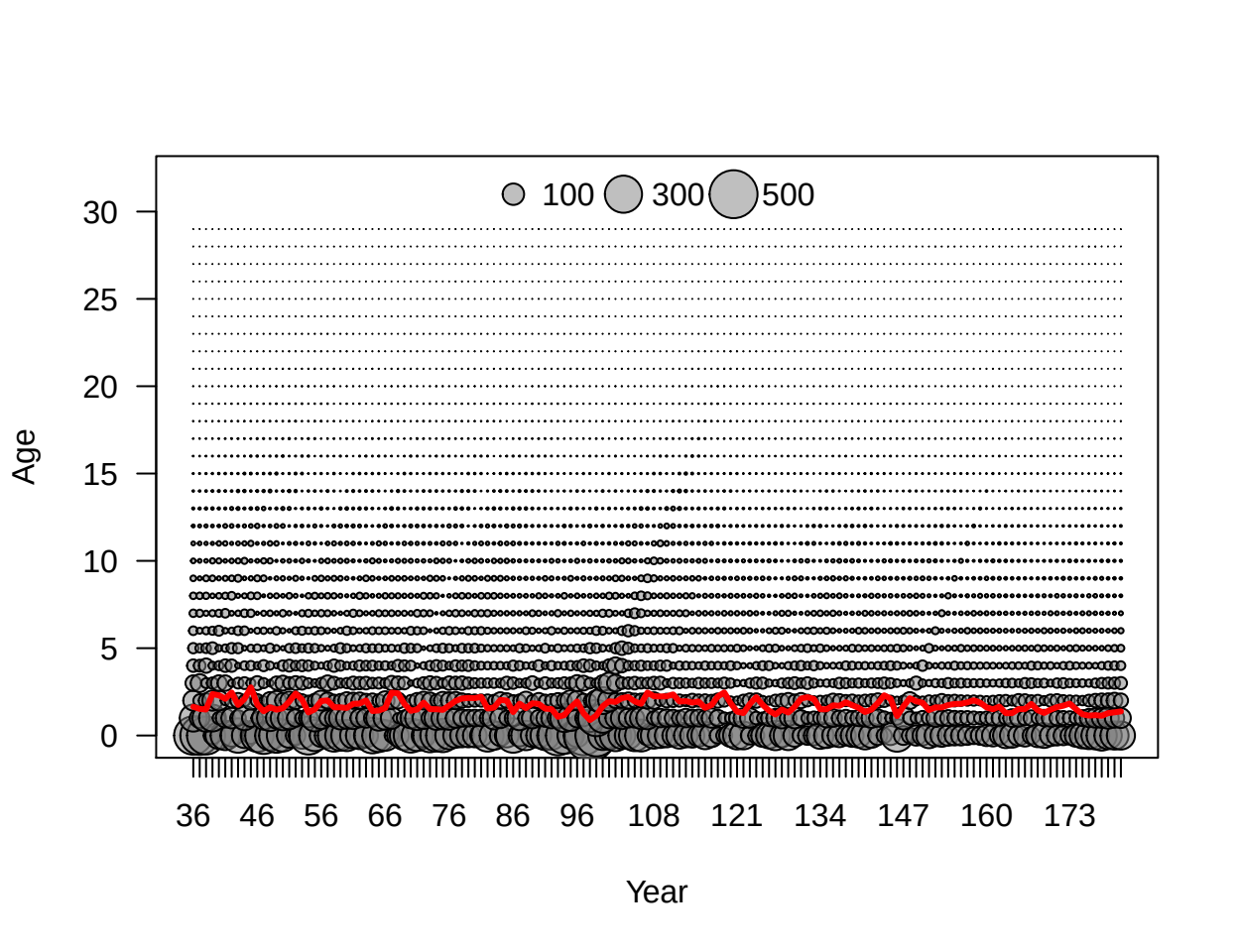

Log index
8.0
7.5
7.0
6.5
6.0
5.5
80
100
120
140
160
180
Year

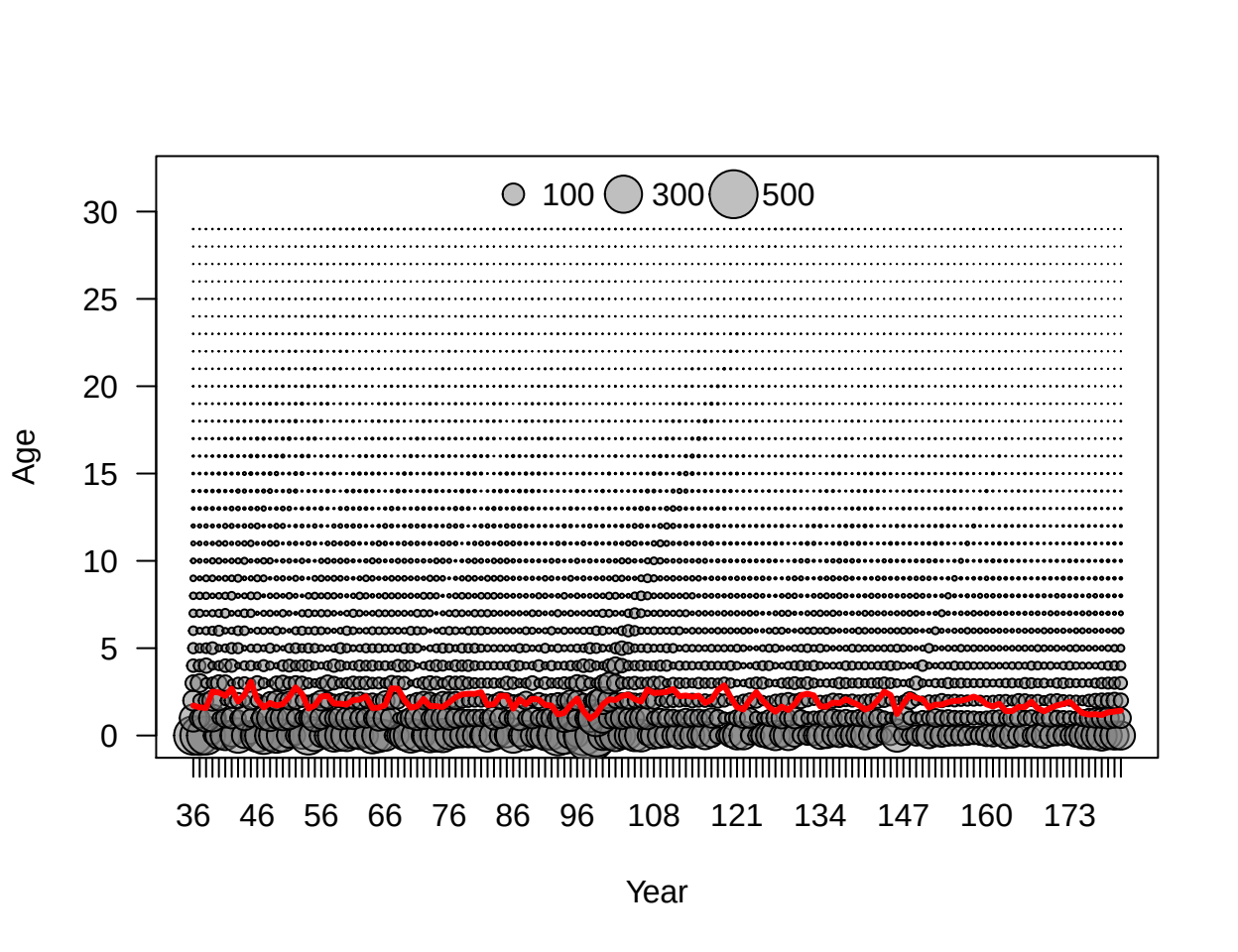

Log expected index
7.5
7.0
6.5
6.0
5.5
6.0
6.5
7.0
7.5
8.0
Log observed index

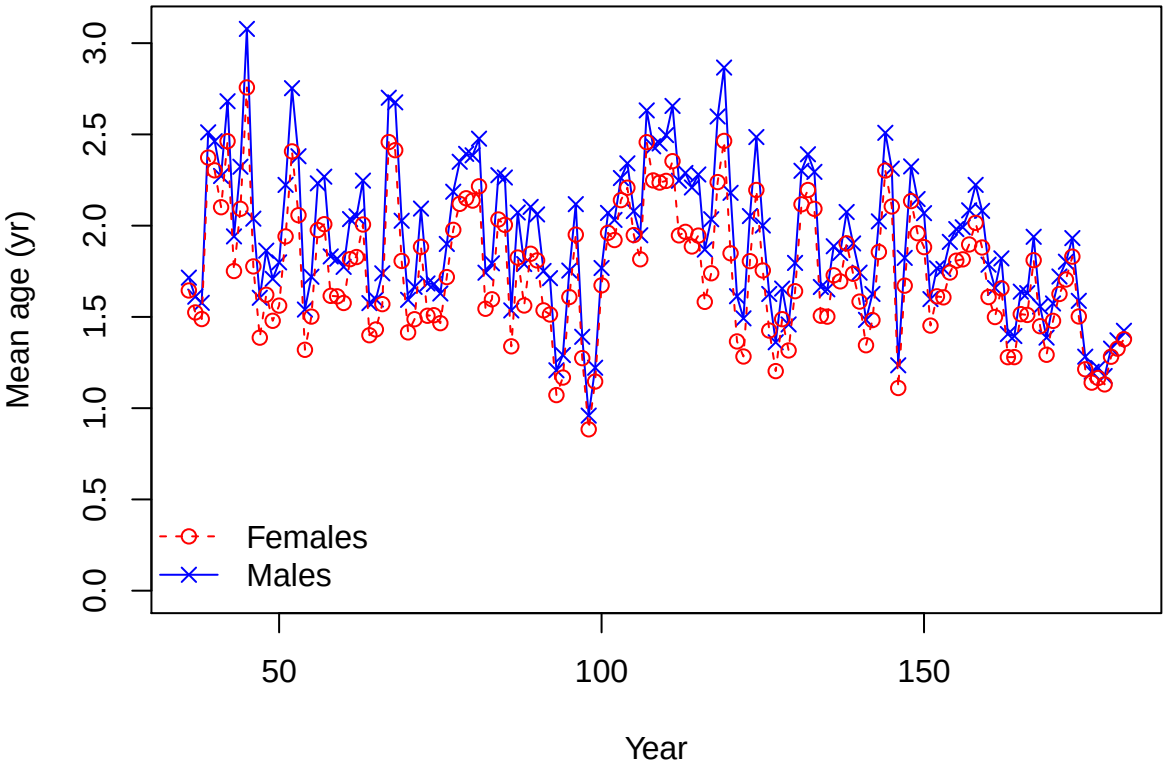

Residual
15
10
5
0
−5
−15
80
100
120
140
160
180
Year

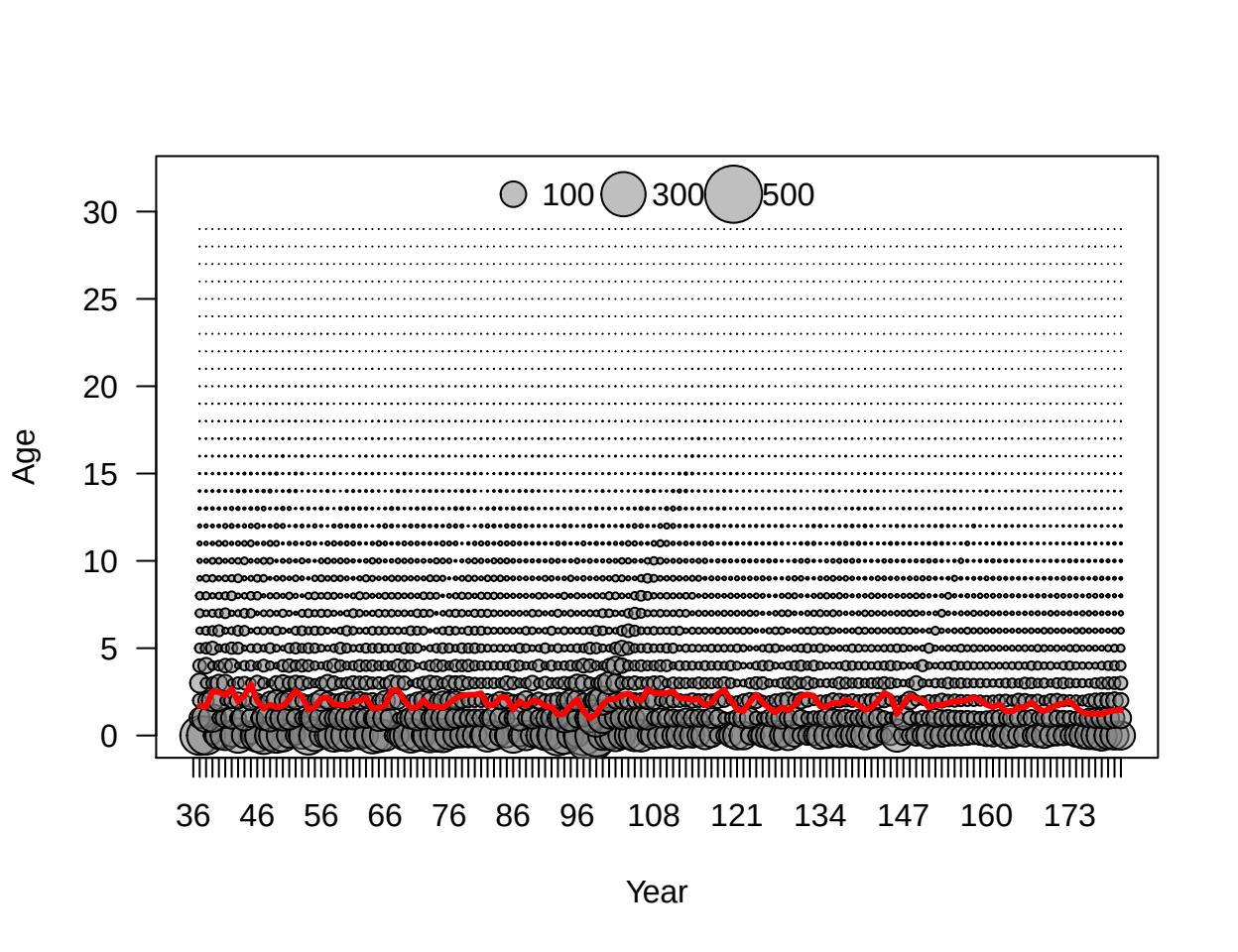

Deviation
1.0
0.5
0.0
−0.5
−1.0
80
100
120
140
160
180
Year

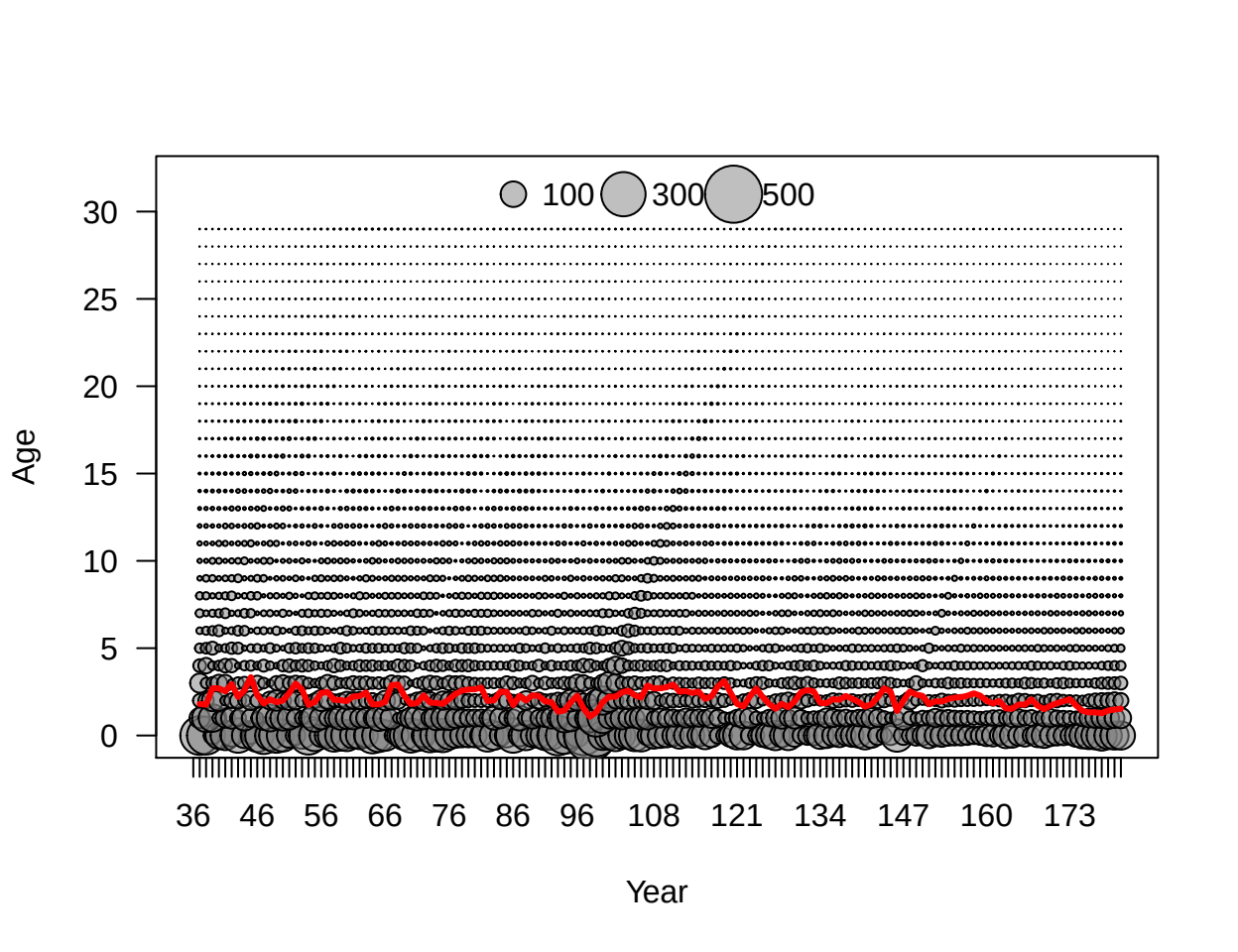

Standardized index
0.5
1.0
1.5
2.0
2.5
3.0
3.5
40
60
80
100
120
140
160
180
Year

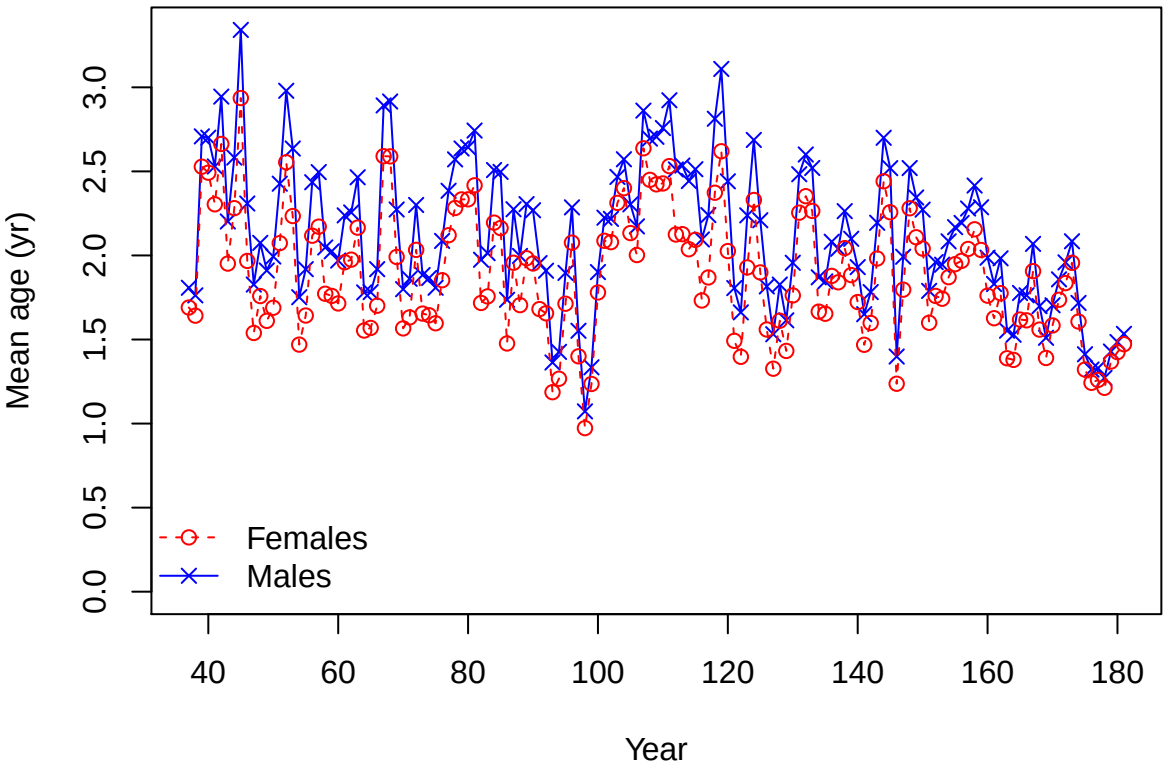

100
300
500
30
25
20
15
10
5
0
Age
36
46
56
66
76
86
96
108
121
134
147
160
173
Year

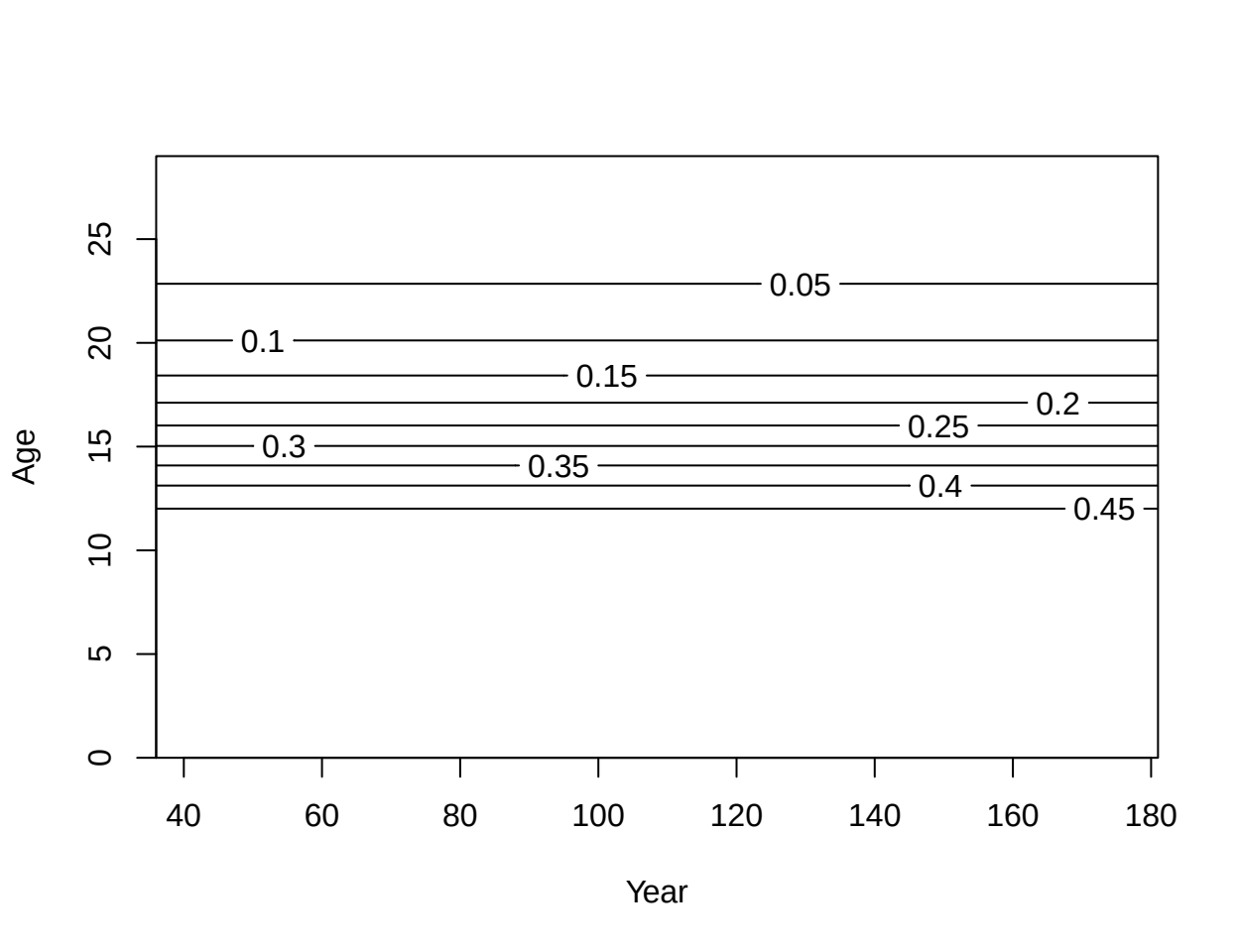

100
300
500
30
25
20
15
10
5
0
Age
36
46
56
66
76
86
96
108
121
134
147
160
173
Year

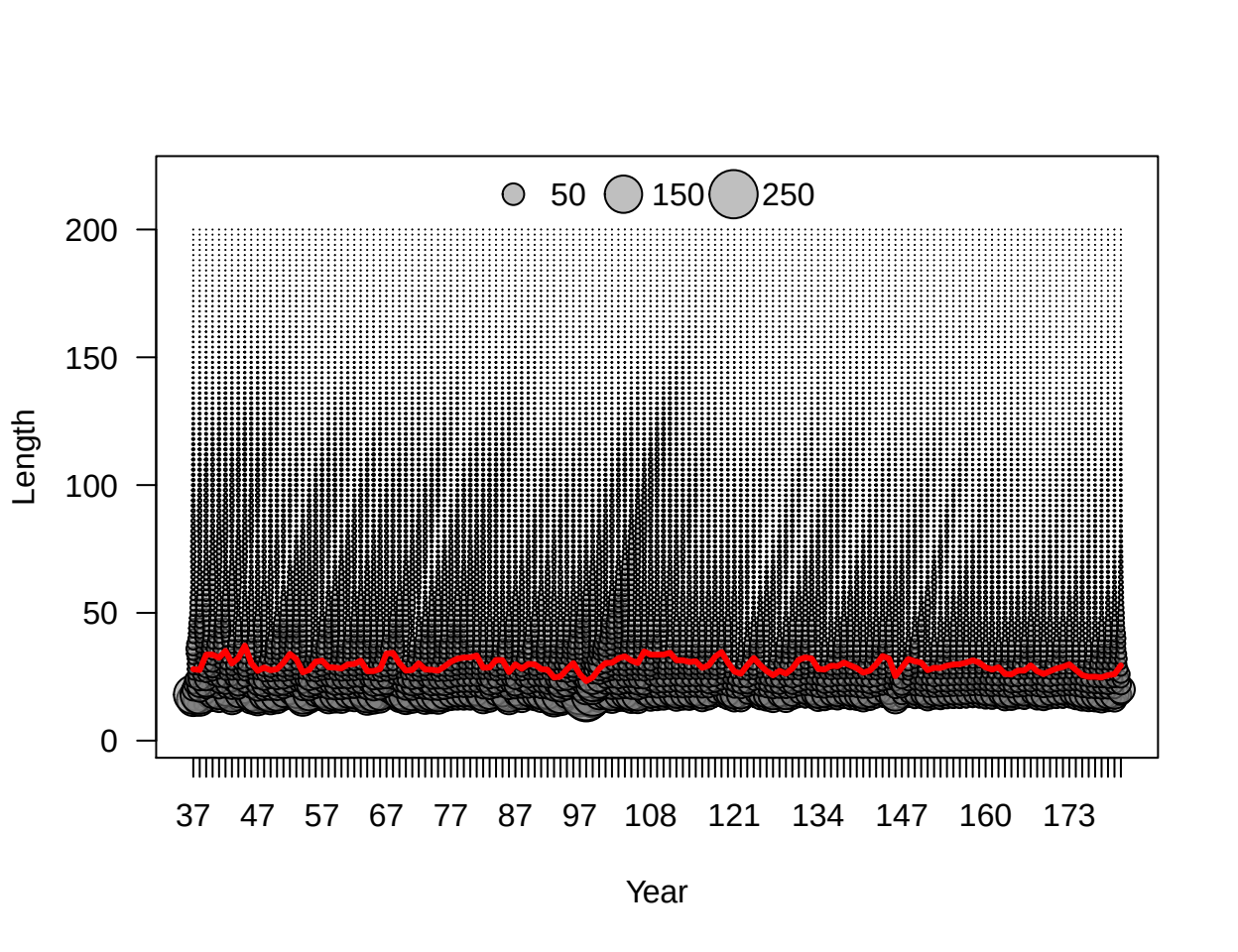

Mean age (yr)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
50
100
150
Year
Females
Males

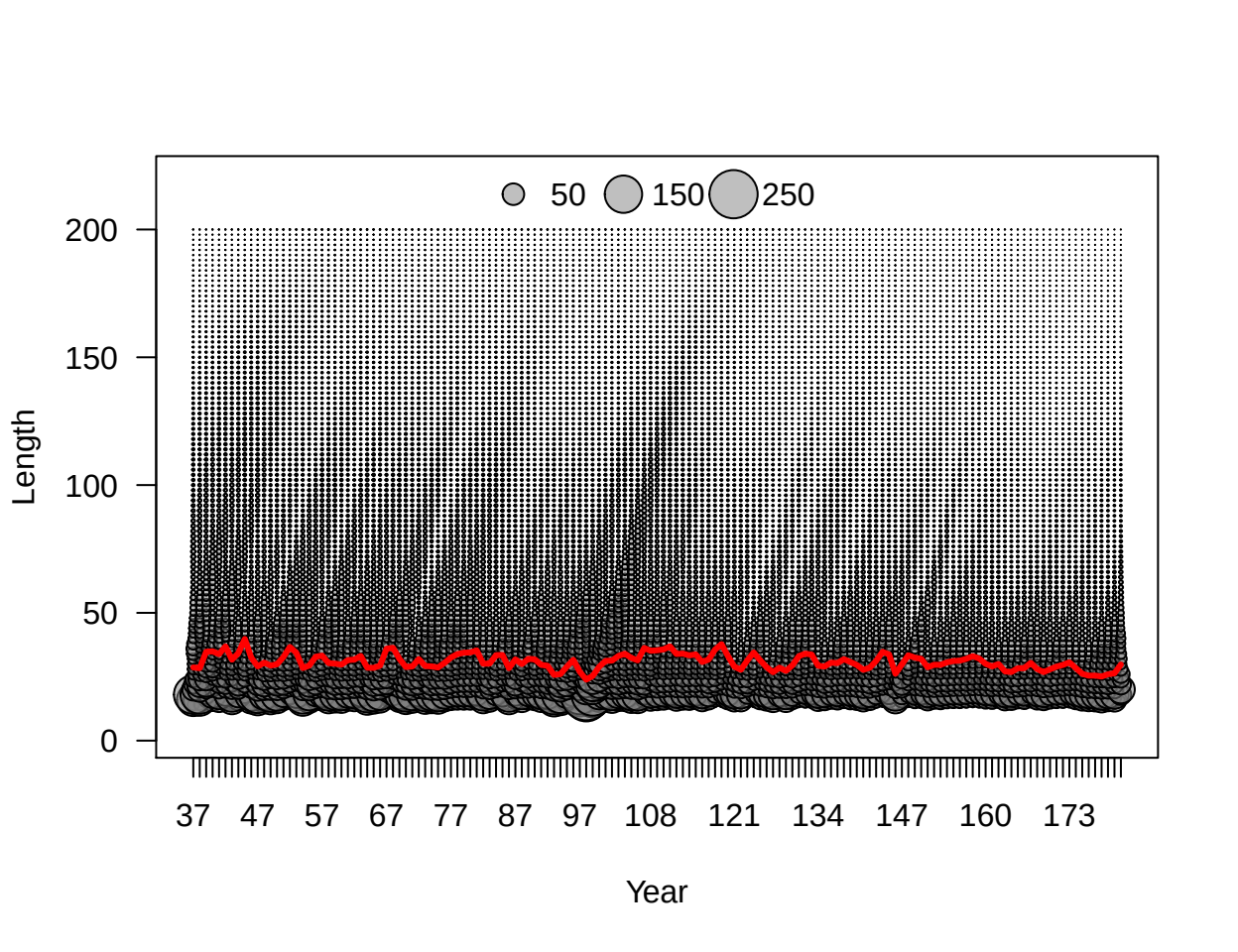

100
300
500
30
25
20
15
10
5
0
Age
36
46
56
66
76
86
96
108
121
134
147
160
173
Year

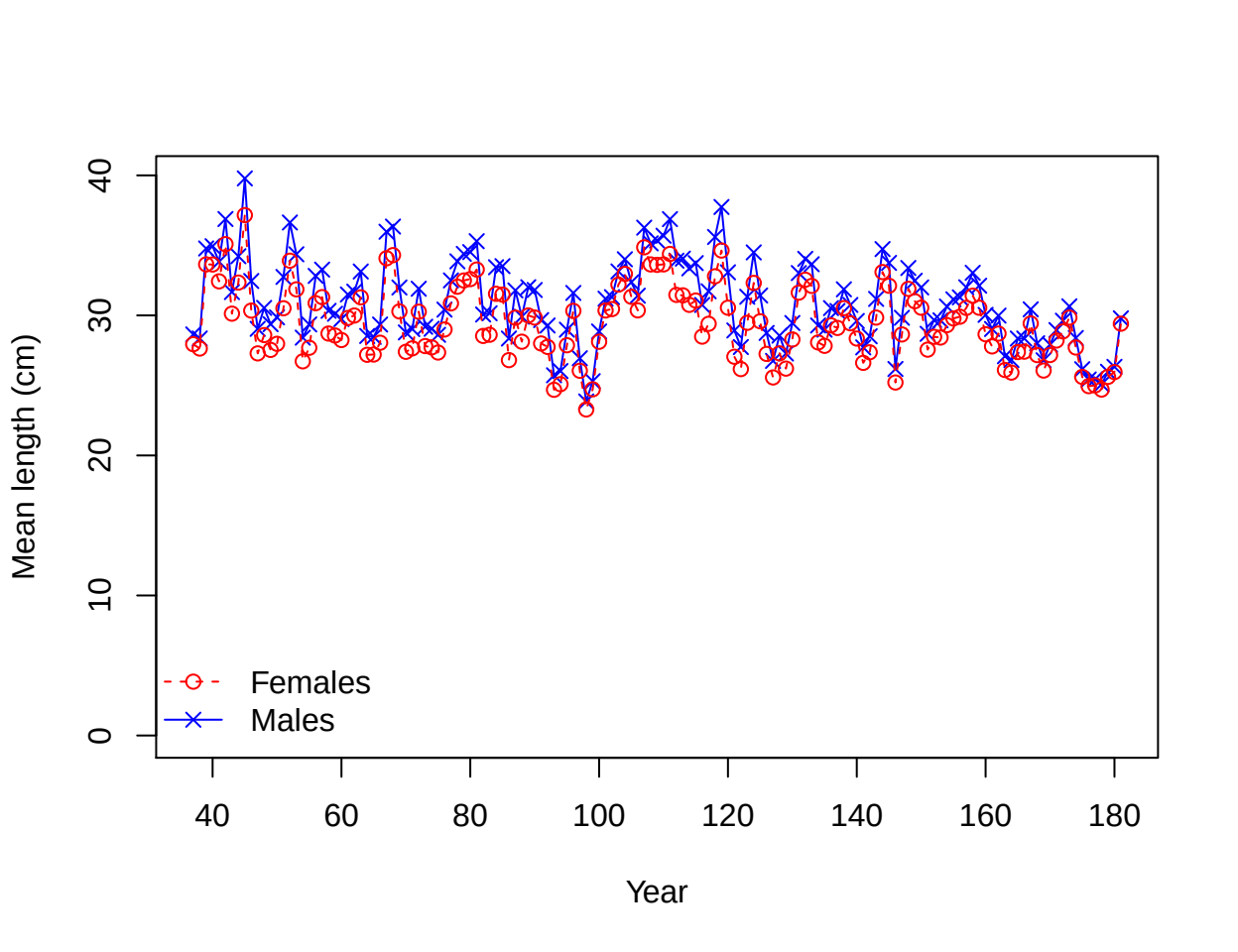

100
300
500
30
25
20
15
10
5
0
Age
36
46
56
66
76
86
96
108
121
134
147
160
173
Year

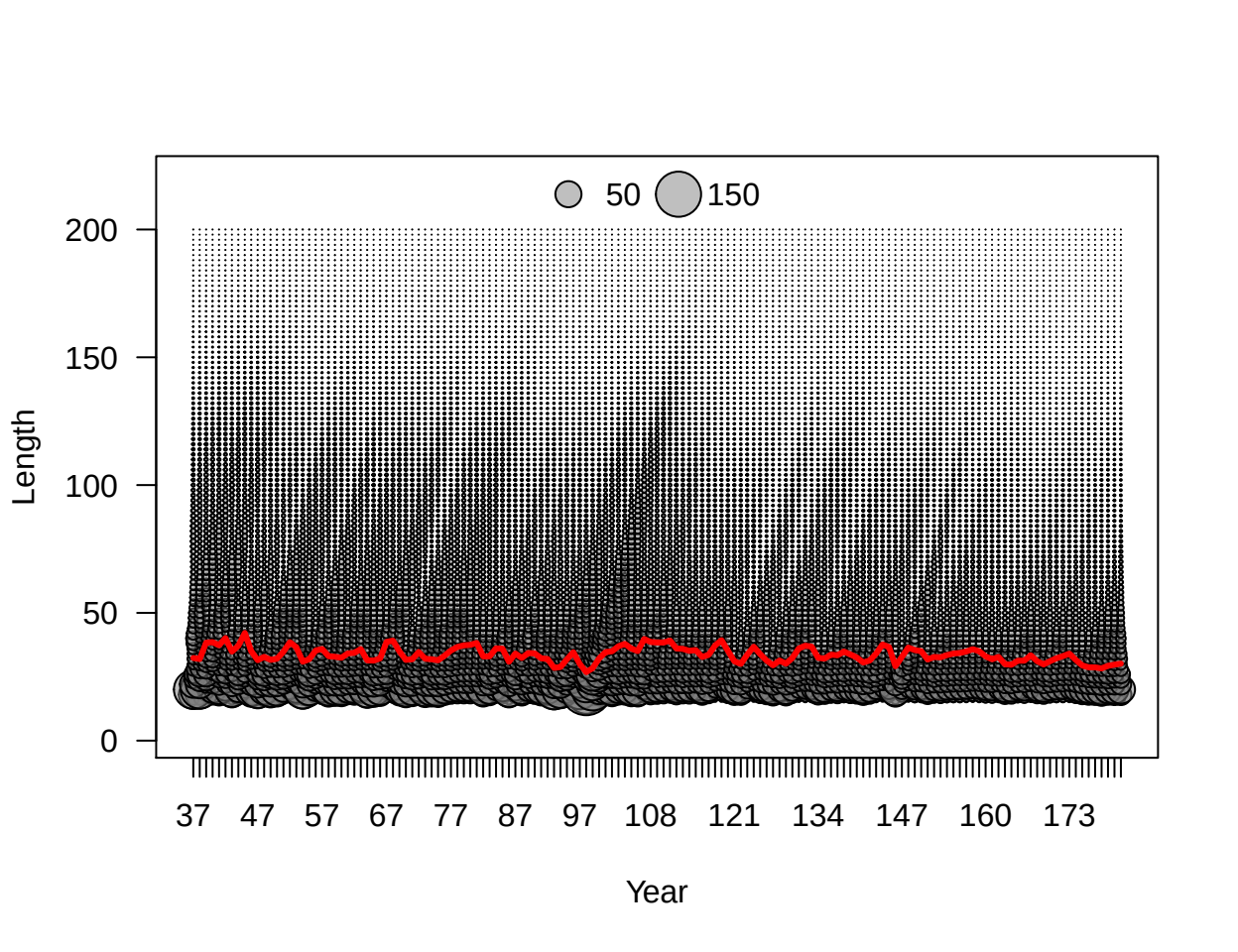

Mean age (yr)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
40
60
80
100
120
140
160
180
Year
Females
Males

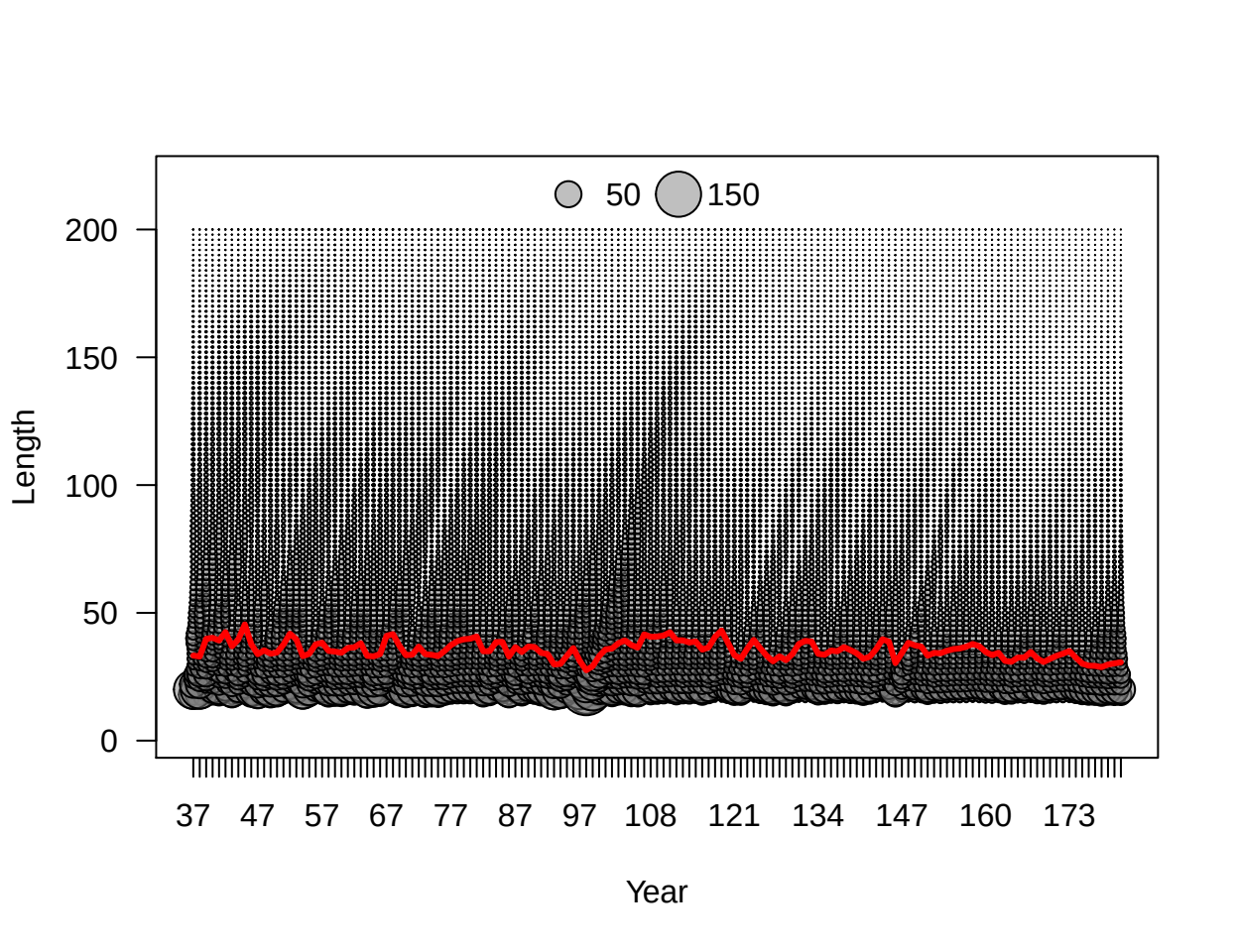

0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
Age
0
5
10
15
20
25
Year
40
60
80
100
120
140
160
180

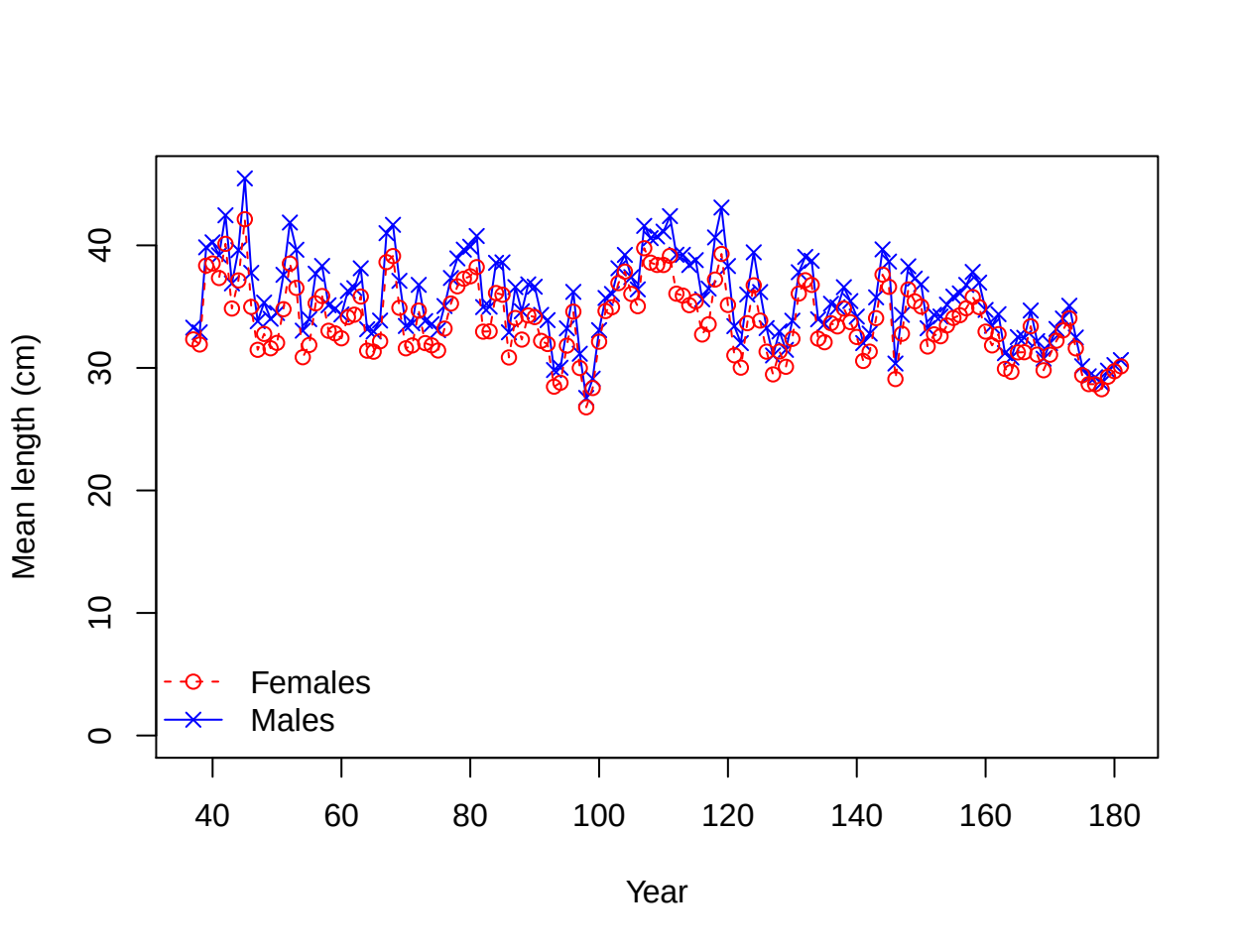

50
150
250
200
150
100
50
0
Length
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

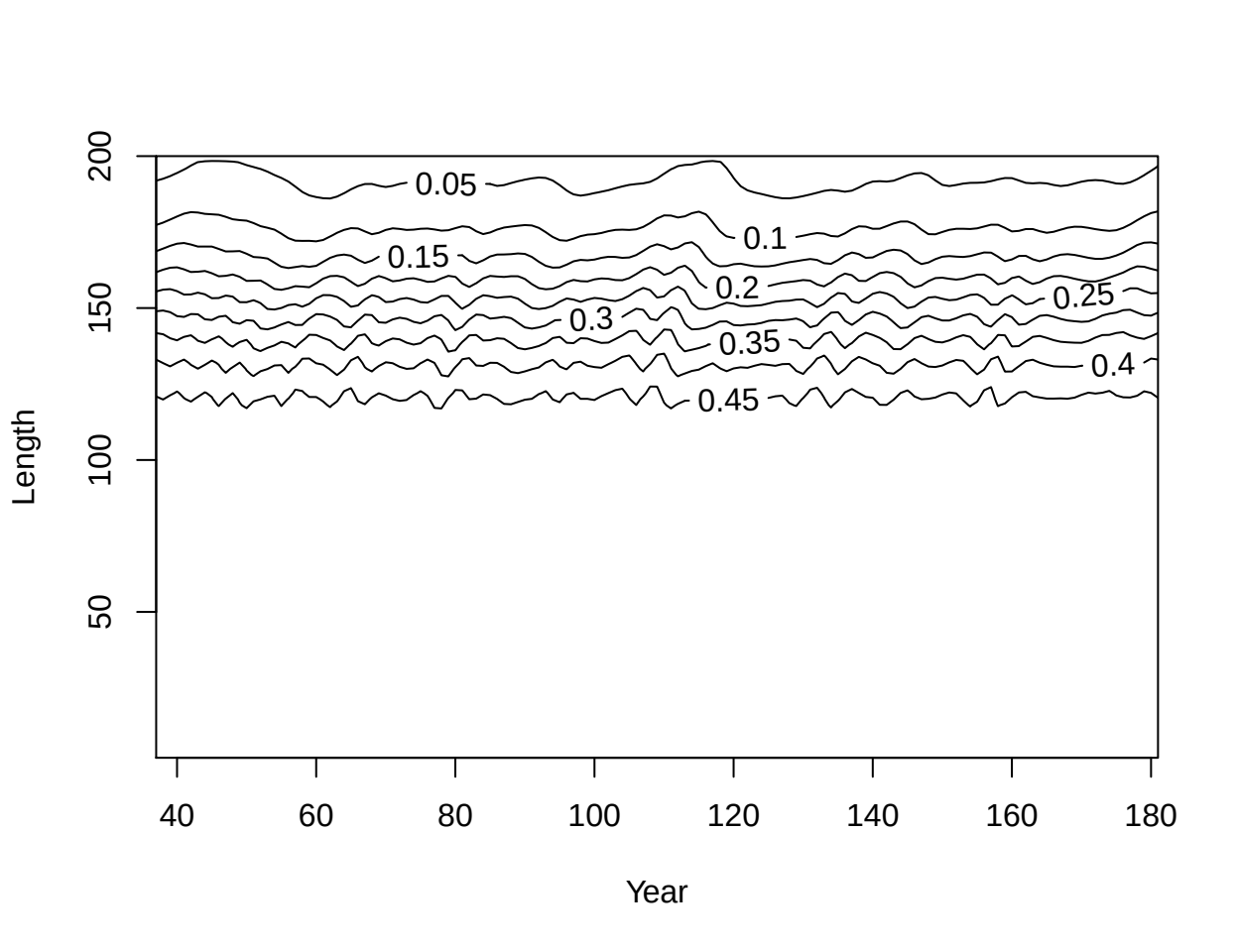

50
150
250
200
150
100
50
0
Length
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

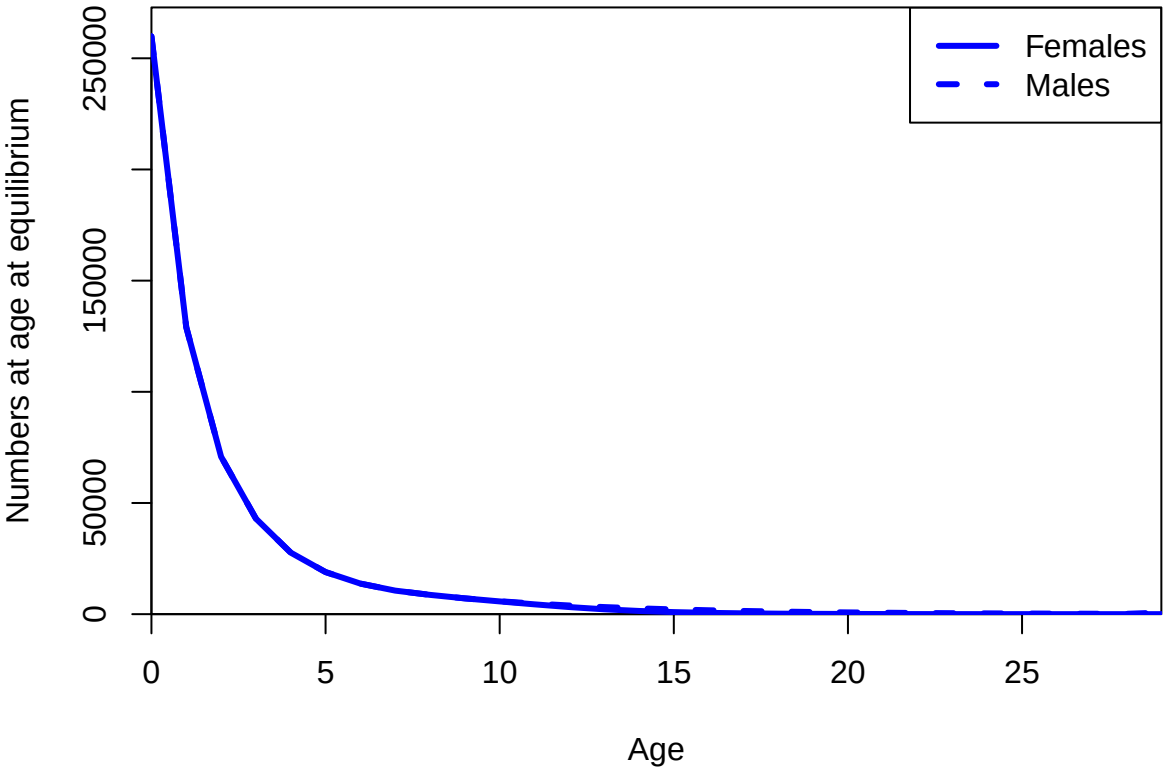

Mean length (cm)
0
10
20
30
40
40
60
80
100
120
140
160
180
Year
Females
Males

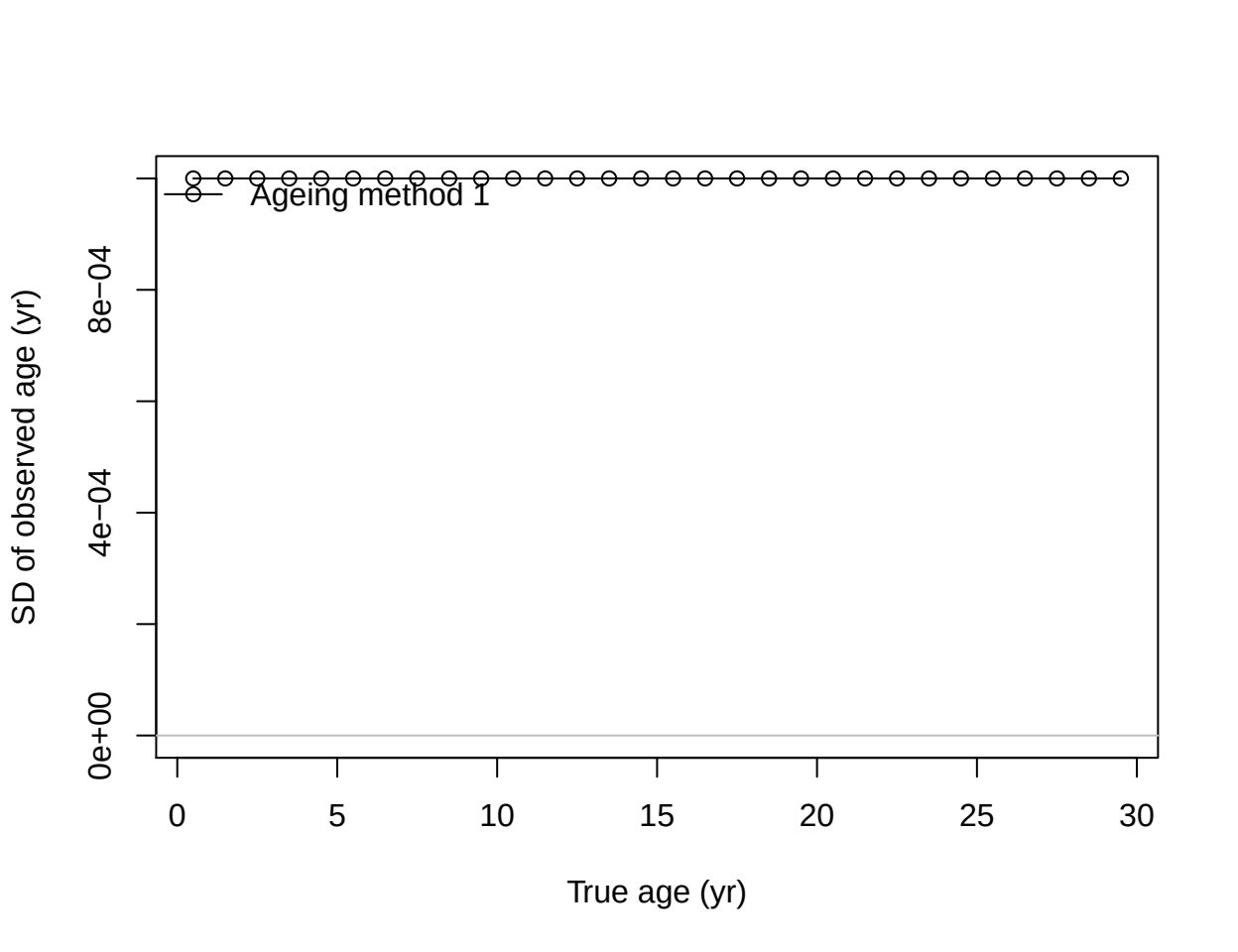

50
150
200
150
100
50
0
Length
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

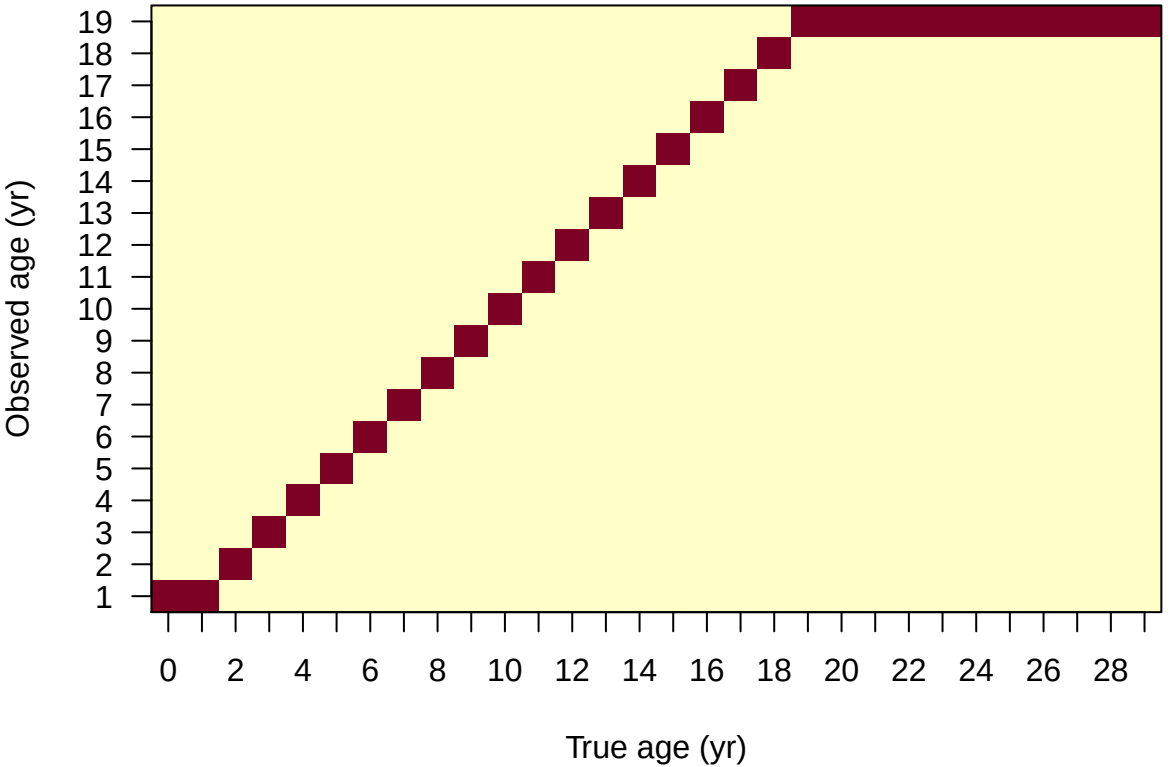

50
150
200
150
100
50
0
Length
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

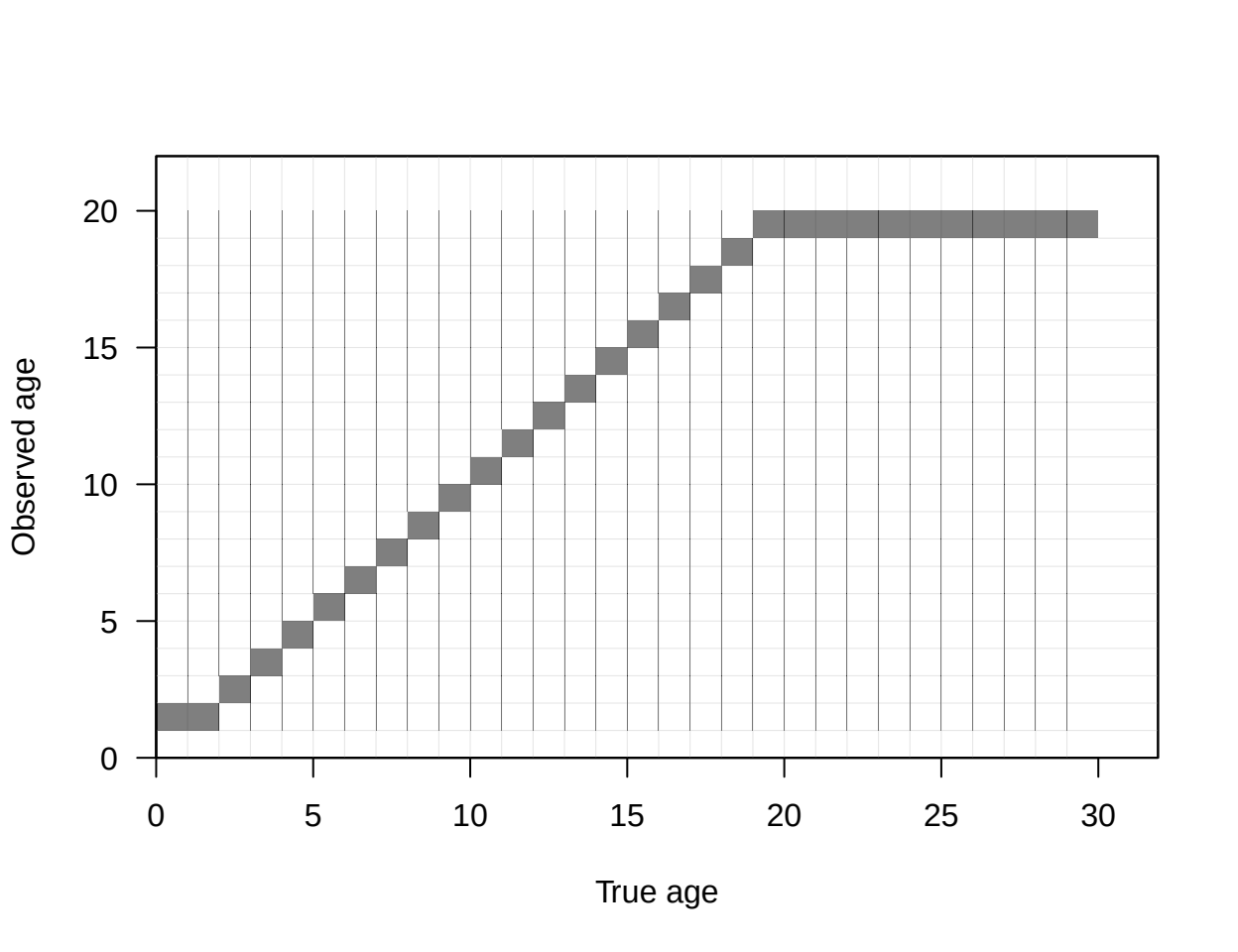

Mean length (cm)
0
10
20
30
40
40
60
80
100
120
140
160
180
Year
Females
Males

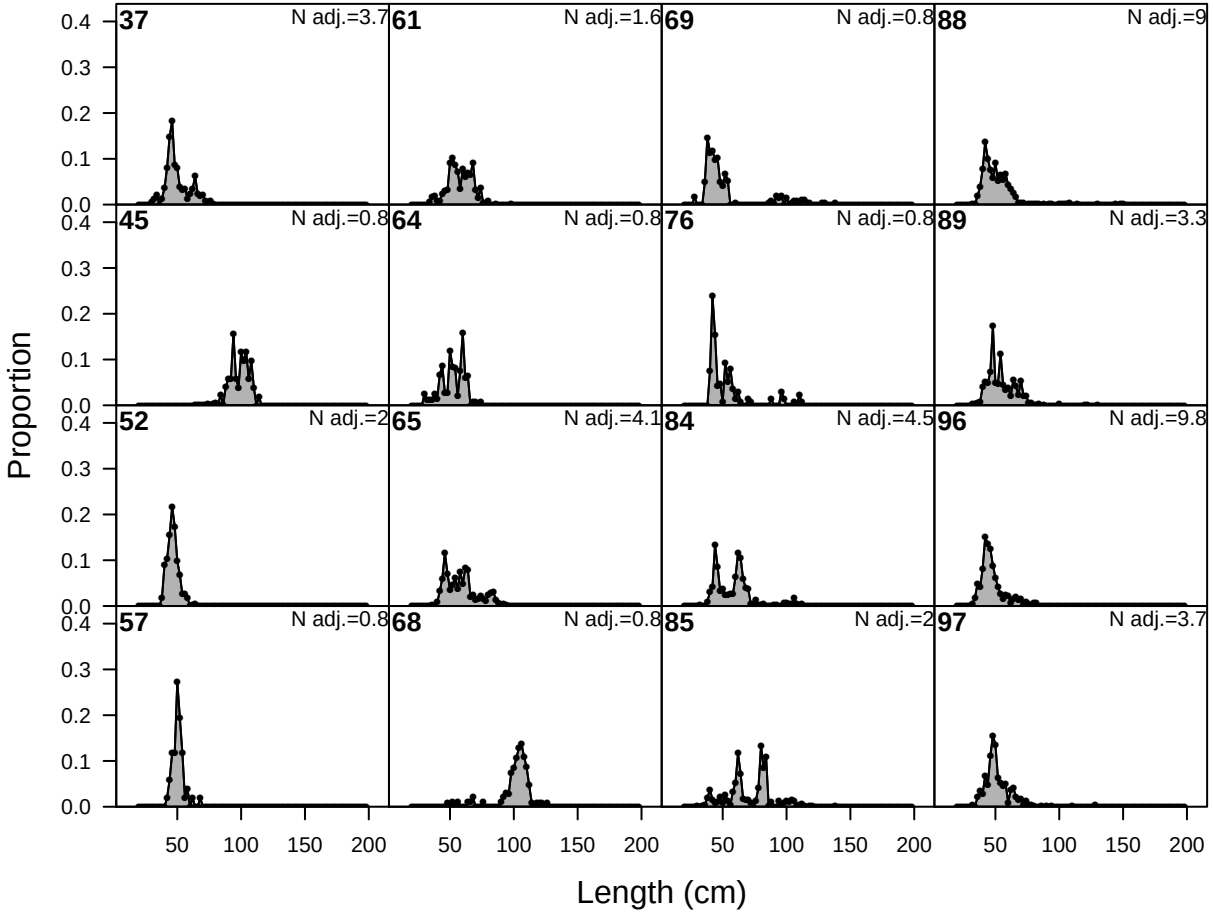

Length
200
150
100
50
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
40
60
80
100
120
140
160
180
Year

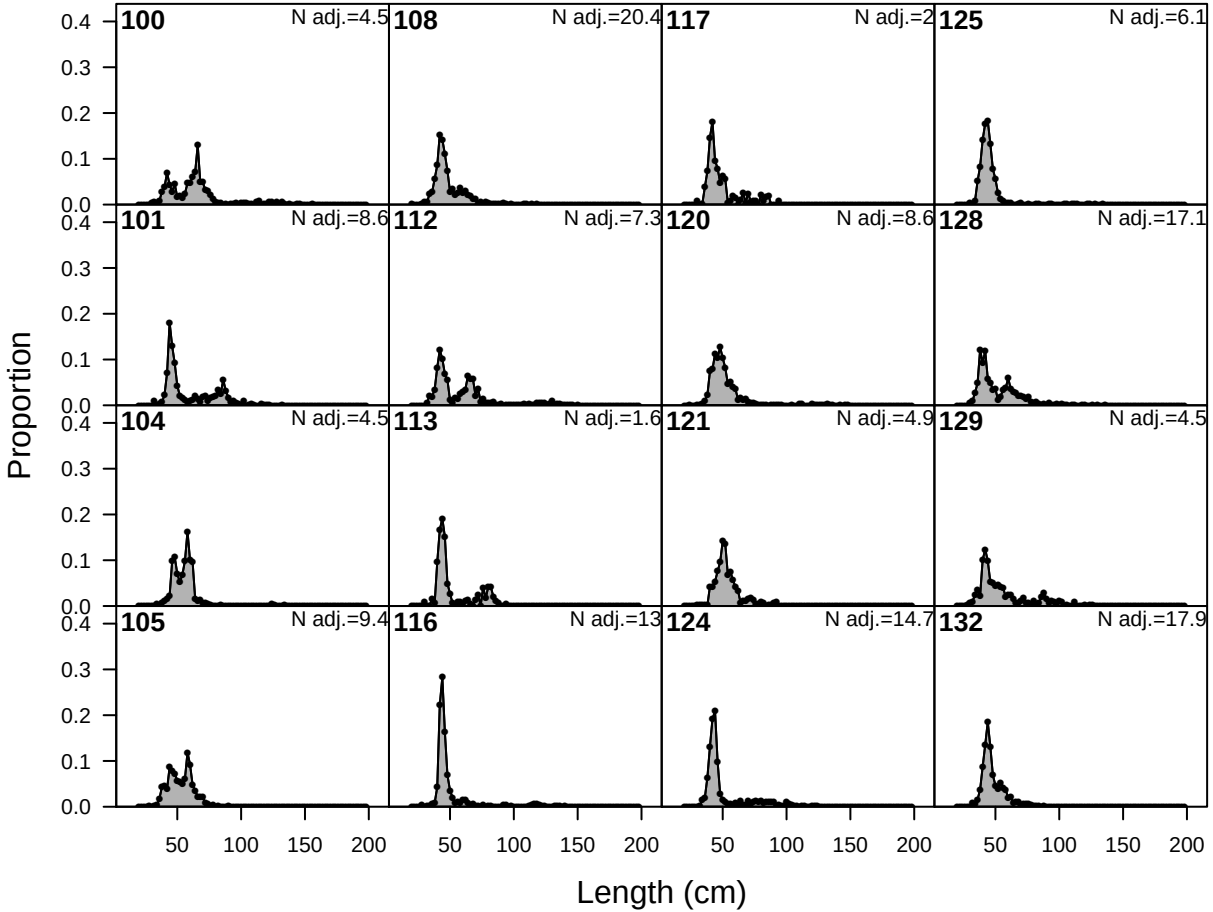

Numbers at age at equilibrium
0
50000
150000
250000
0
5
10
15
20
25
Age
Females
Males

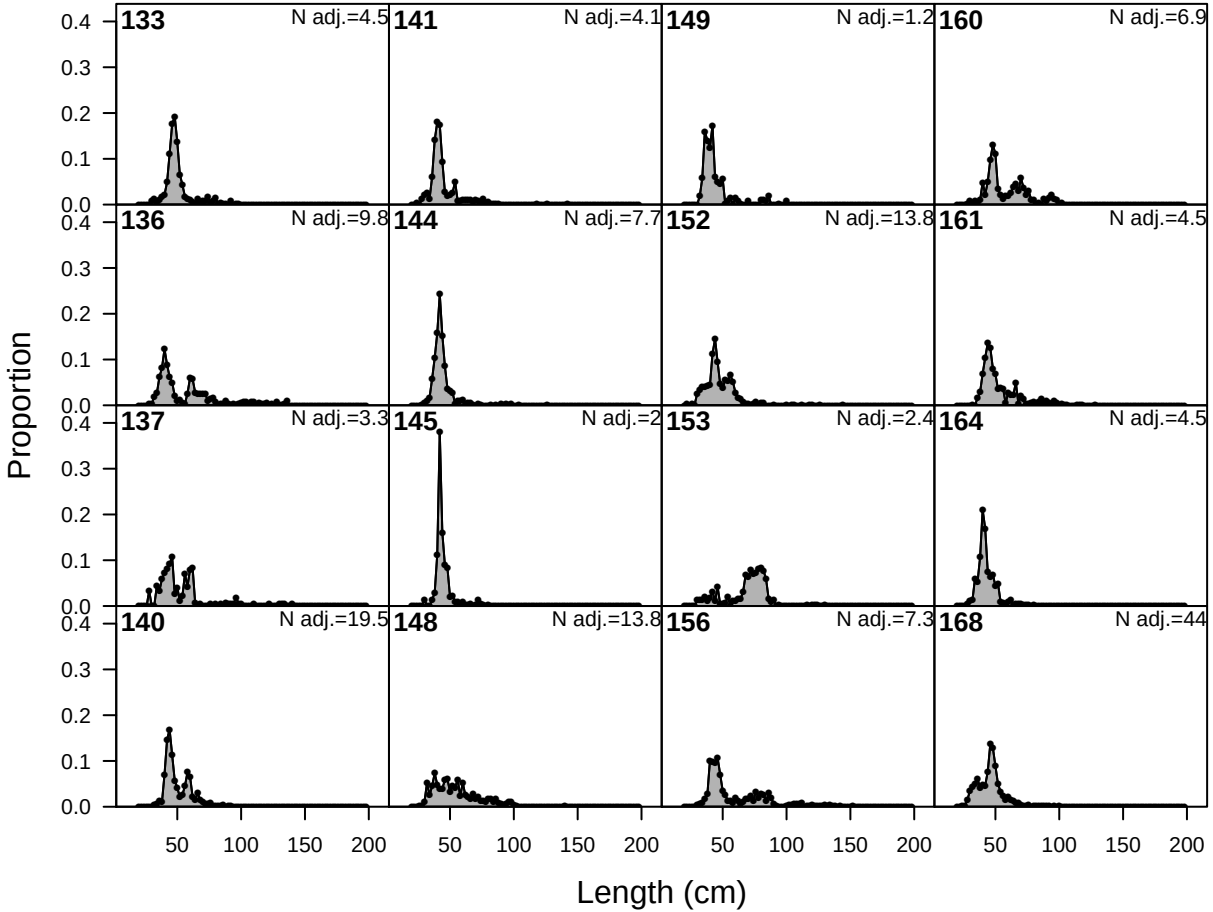

Ageing method 1
SD of observed age (yr)
0e+00
4e−04
8e−04
0
5
10
15
20
25
30
True age (yr)

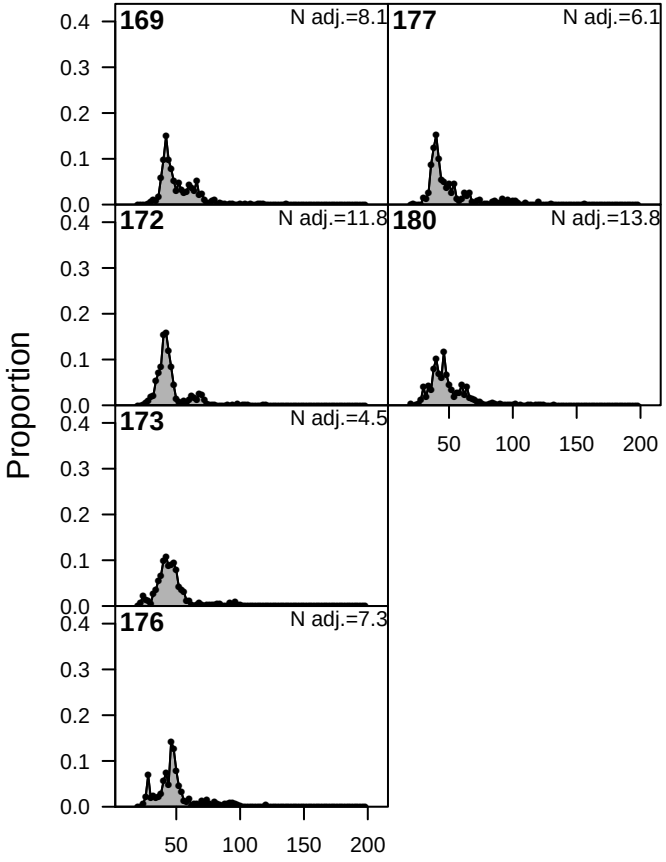

Observed age (yr)
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
True age (yr)

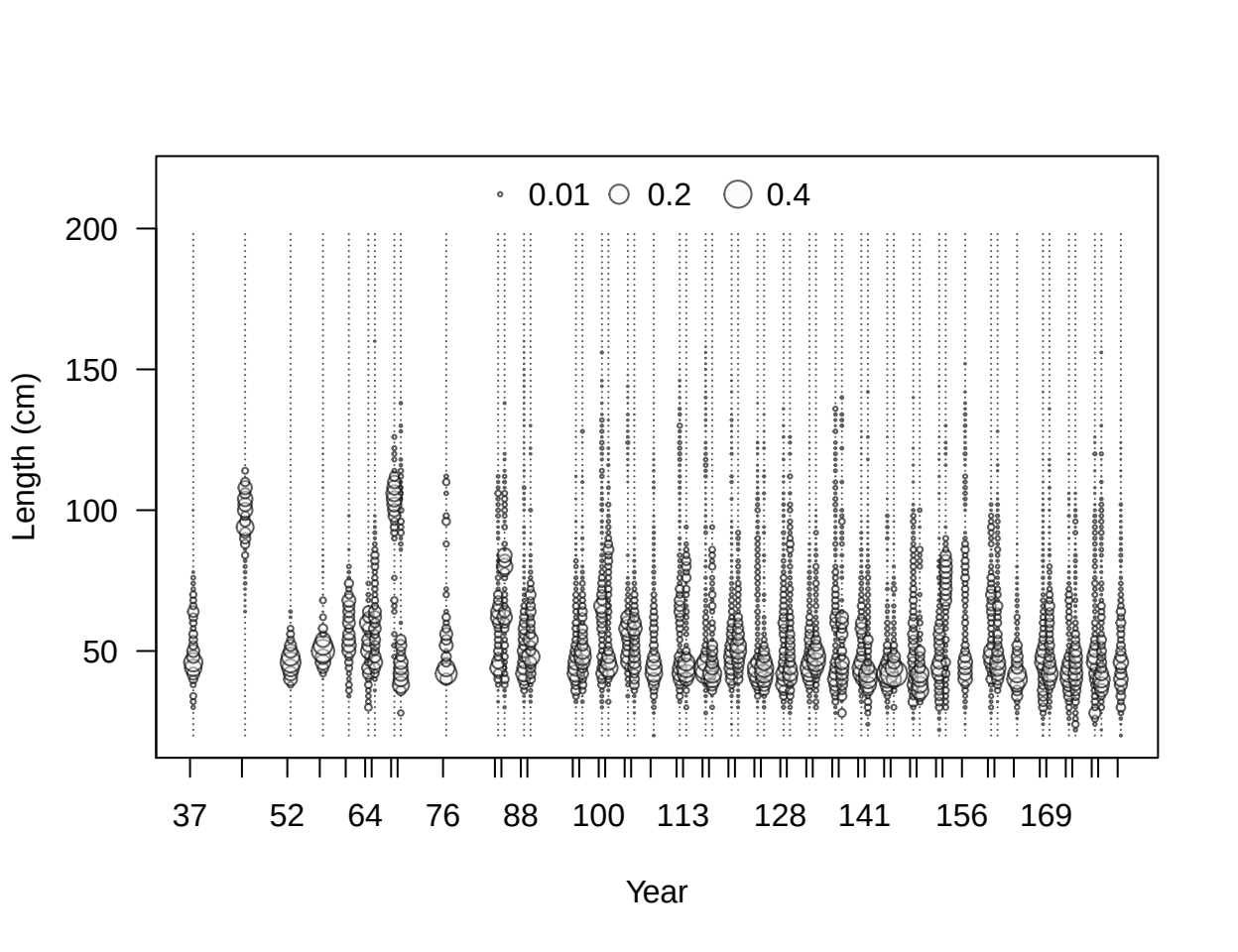

Observed age
0
5
10
15
20
0
5
10
15
20
25
30
True age

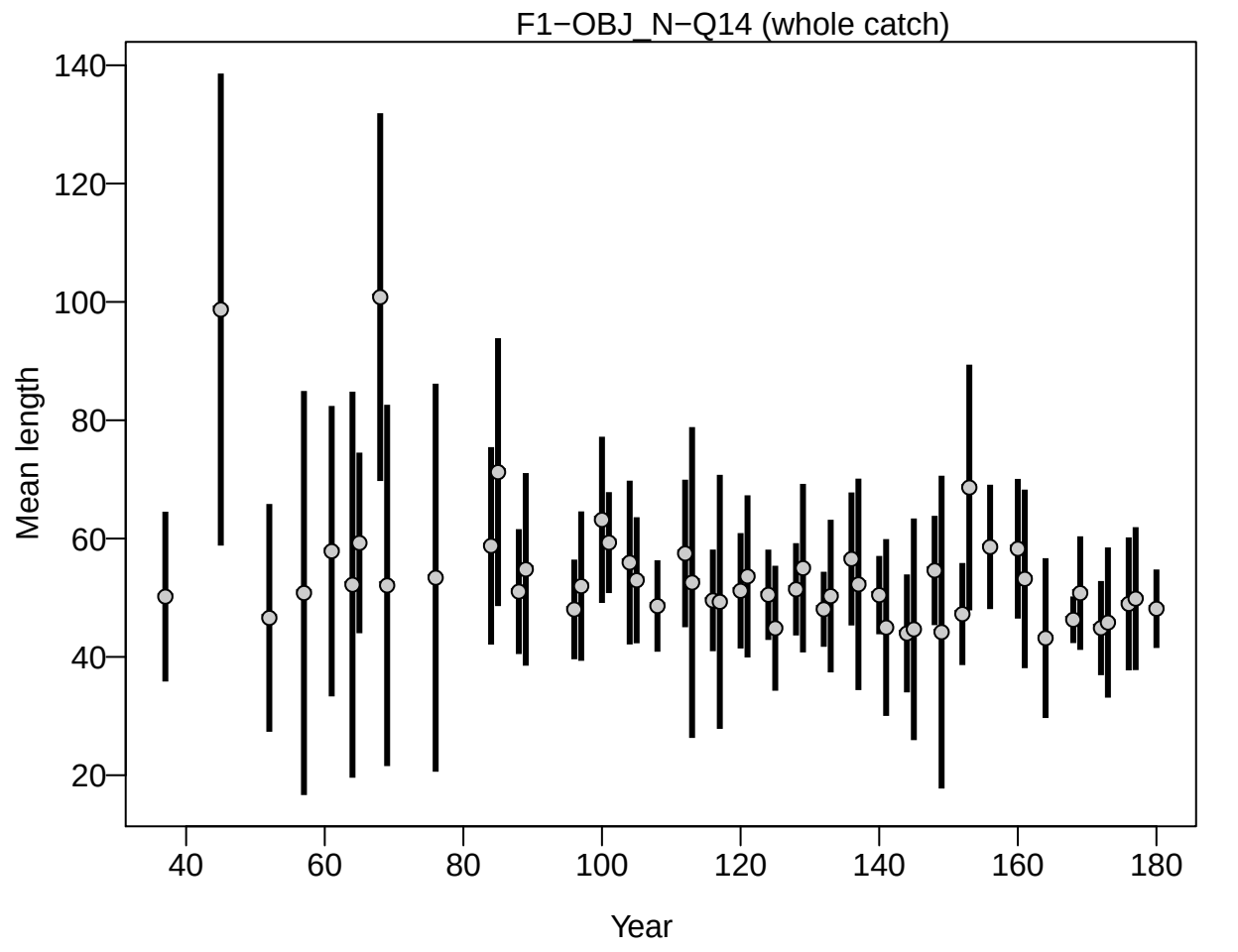

37
N adj.=3.7
61
N adj.=1.6
69
N adj.=0.8
88
N adj.=9
45
N adj.=0.8
64
N adj.=0.8
76
N adj.=0.8
89
N adj.=3.3
52
N adj.=2
65
N adj.=4.1
84
N adj.=4.5
96
N adj.=9.8
57
N adj.=0.8
68
N adj.=0.8
85
N adj.=2
97
N adj.=3.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

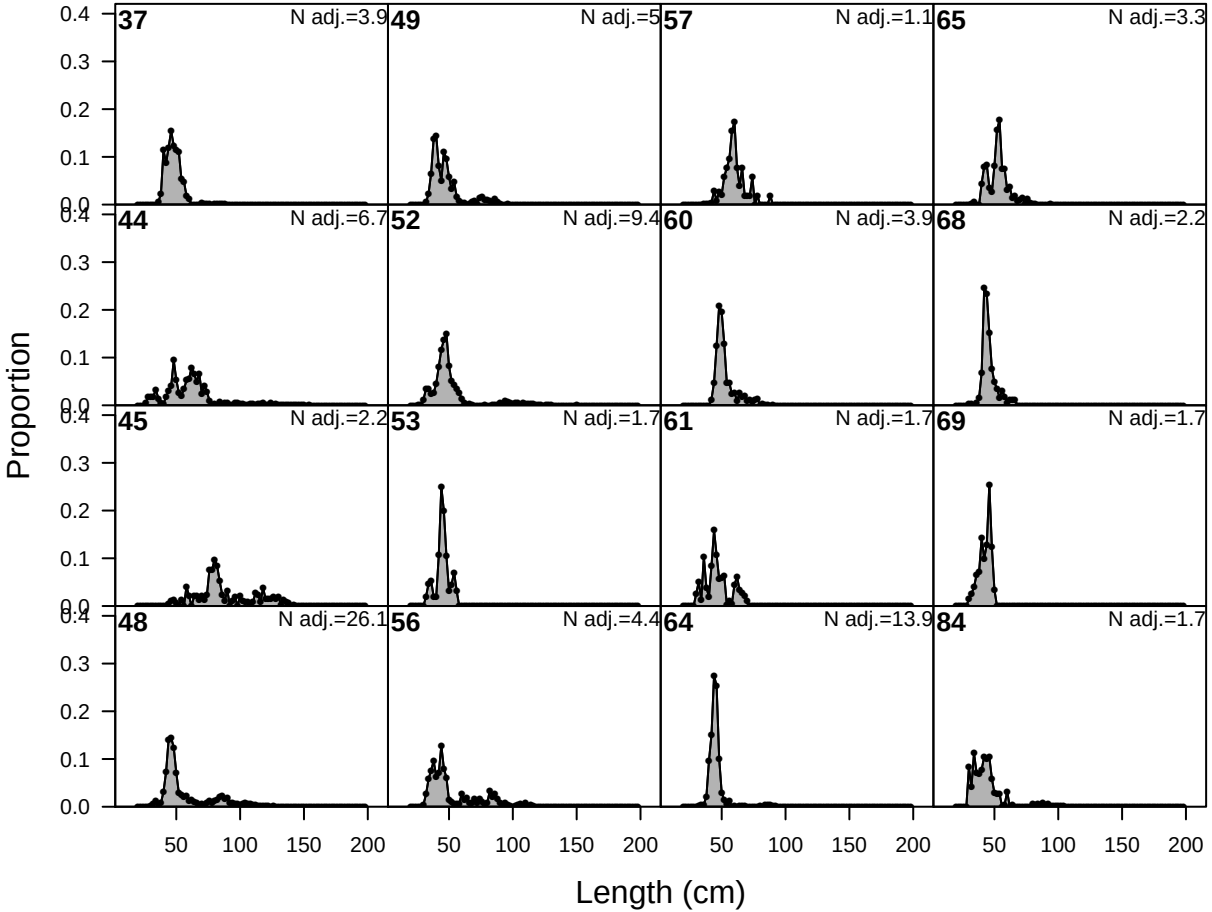

100
N adj.=4.5
108
N adj.=20.4
117
N adj.=2
125
N adj.=6.1
101
N adj.=8.6
112
N adj.=7.3
120
N adj.=8.6
128
N adj.=17.1
104
N adj.=4.5
113
N adj.=1.6
121
N adj.=4.9
129
N adj.=4.5
105
N adj.=9.4
116
N adj.=13
124
N adj.=14.7
132
N adj.=17.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

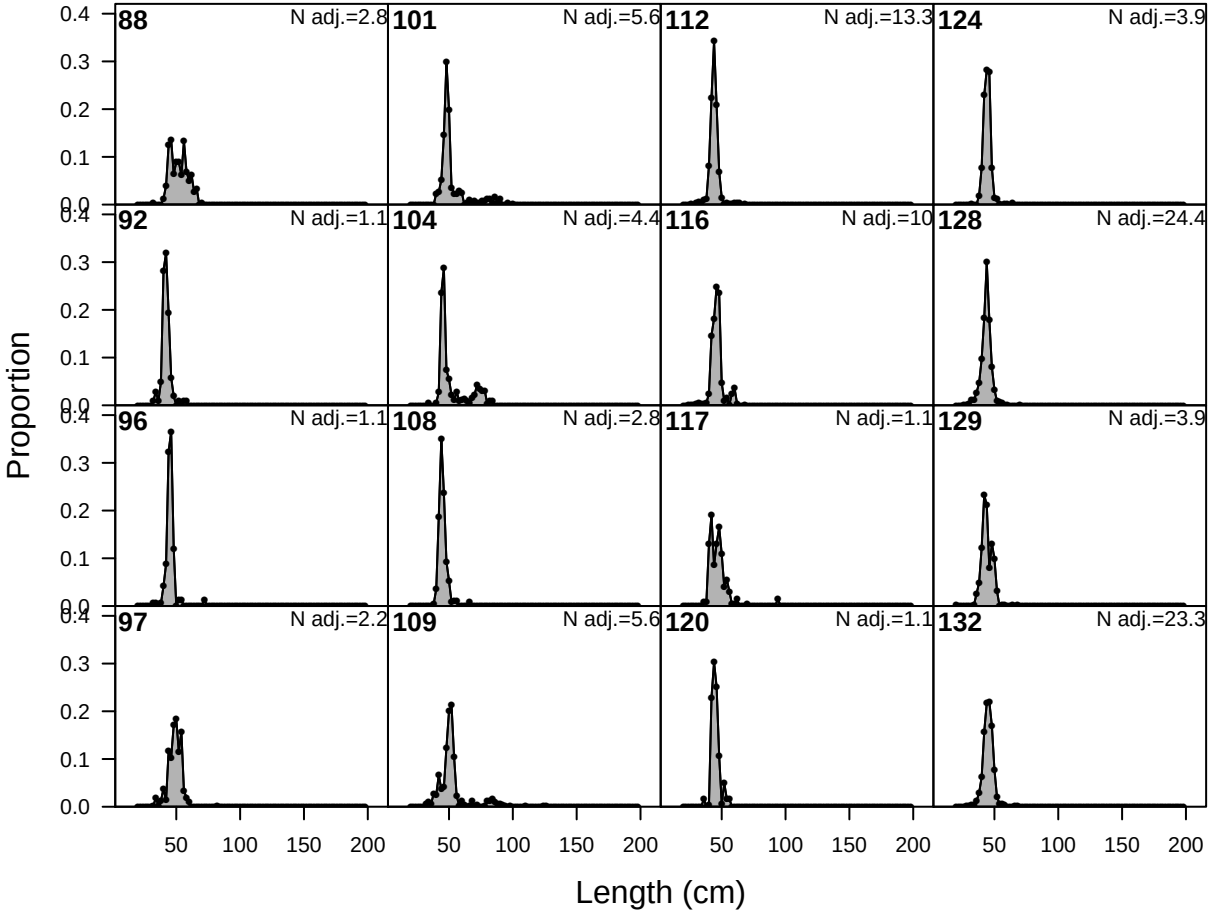

133
N adj.=4.5
141
N adj.=4.1
149
N adj.=1.2
160
N adj.=6.9
136
N adj.=9.8
144
N adj.=7.7
152
N adj.=13.8
161
N adj.=4.5
137
N adj.=3.3
145
N adj.=2
153
N adj.=2.4
164
N adj.=4.5
140
N adj.=19.5
148
N adj.=13.8
156
N adj.=7.3
168
N adj.=44
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

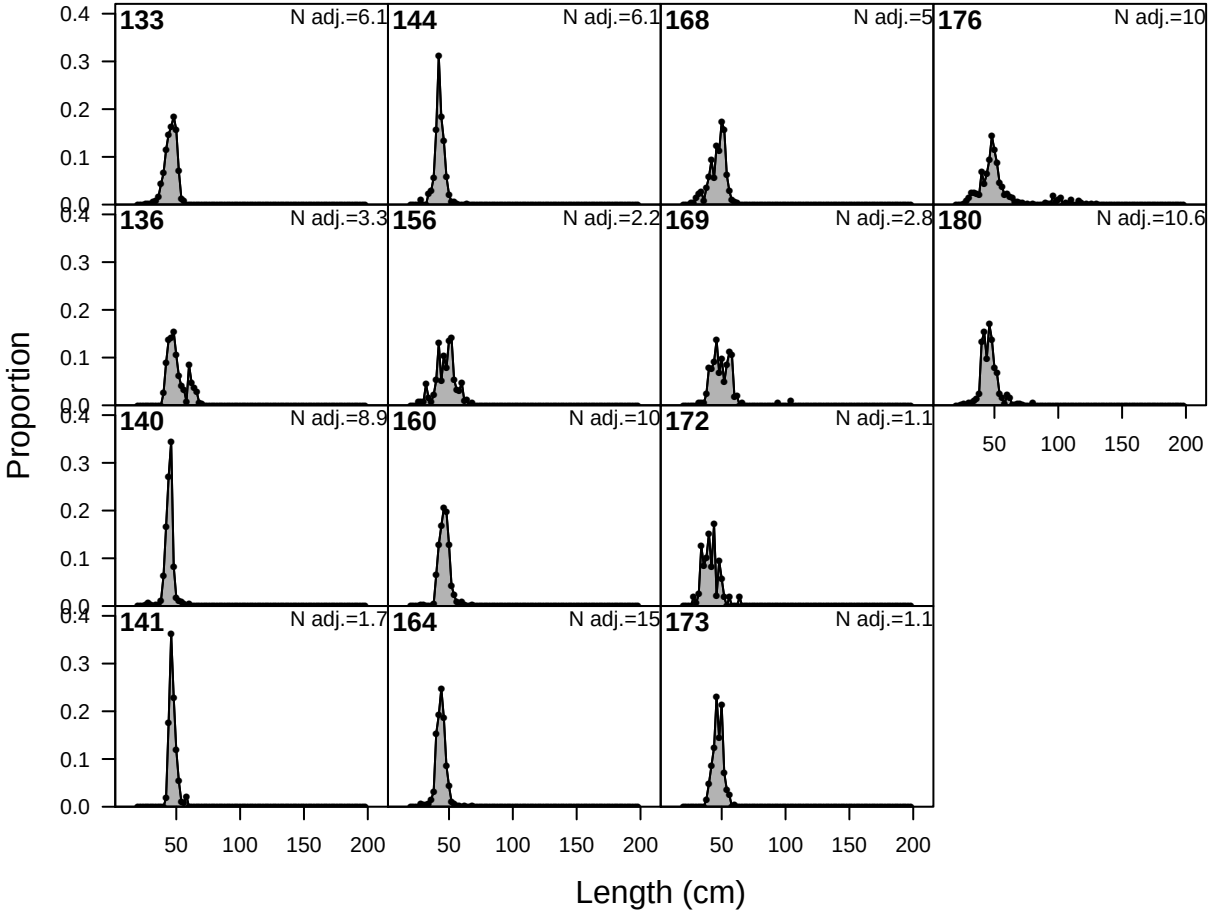

169
N adj.=8.1
177
N adj.=6.1
172
N adj.=11.8
180
N adj.=13.8
173
N adj.=4.5
176
N adj.=7.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

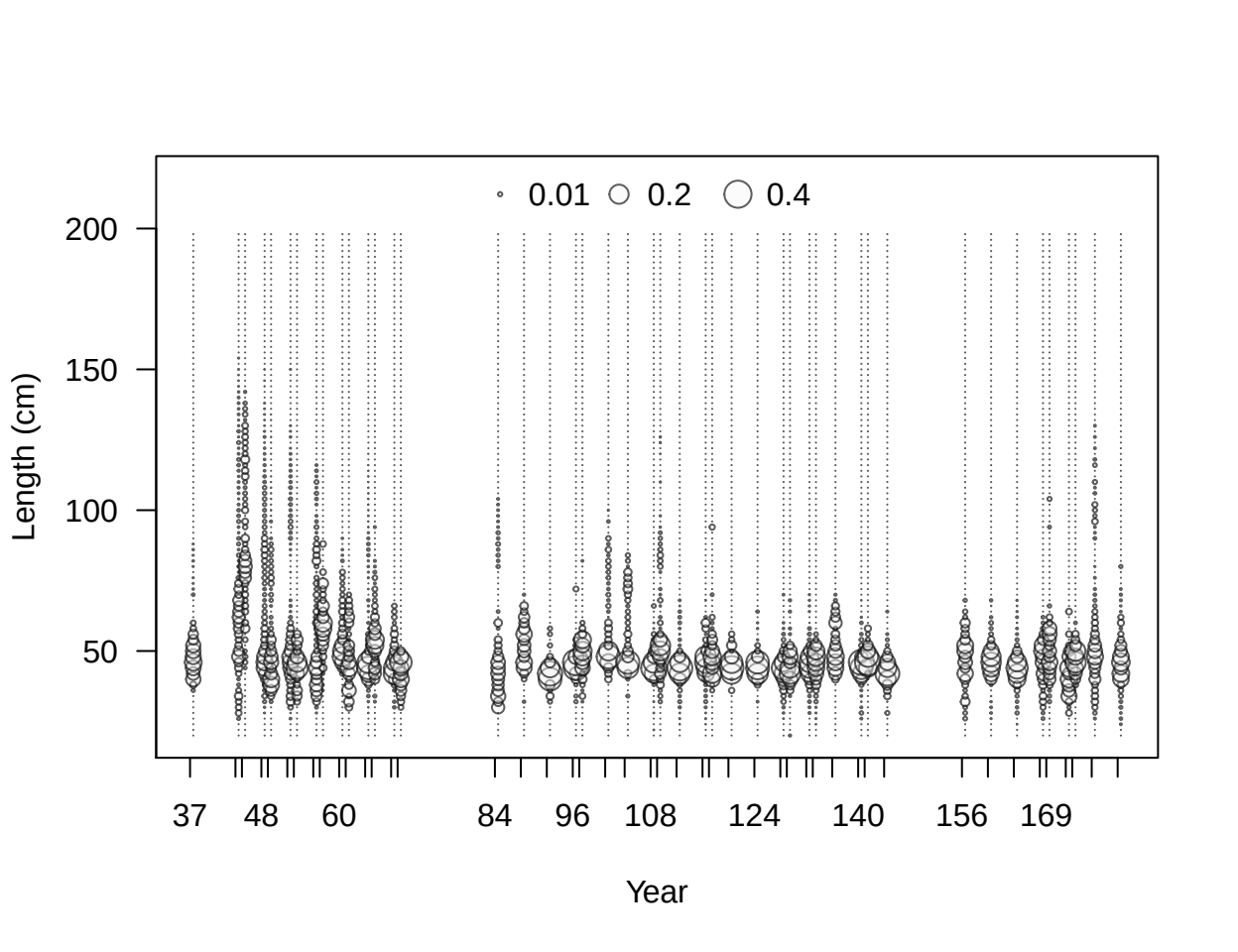

0.01
0.2
0.4
200
150
100
50
Length (cm)
37
52
64
76
88
100
113
128
141
156
169
Year

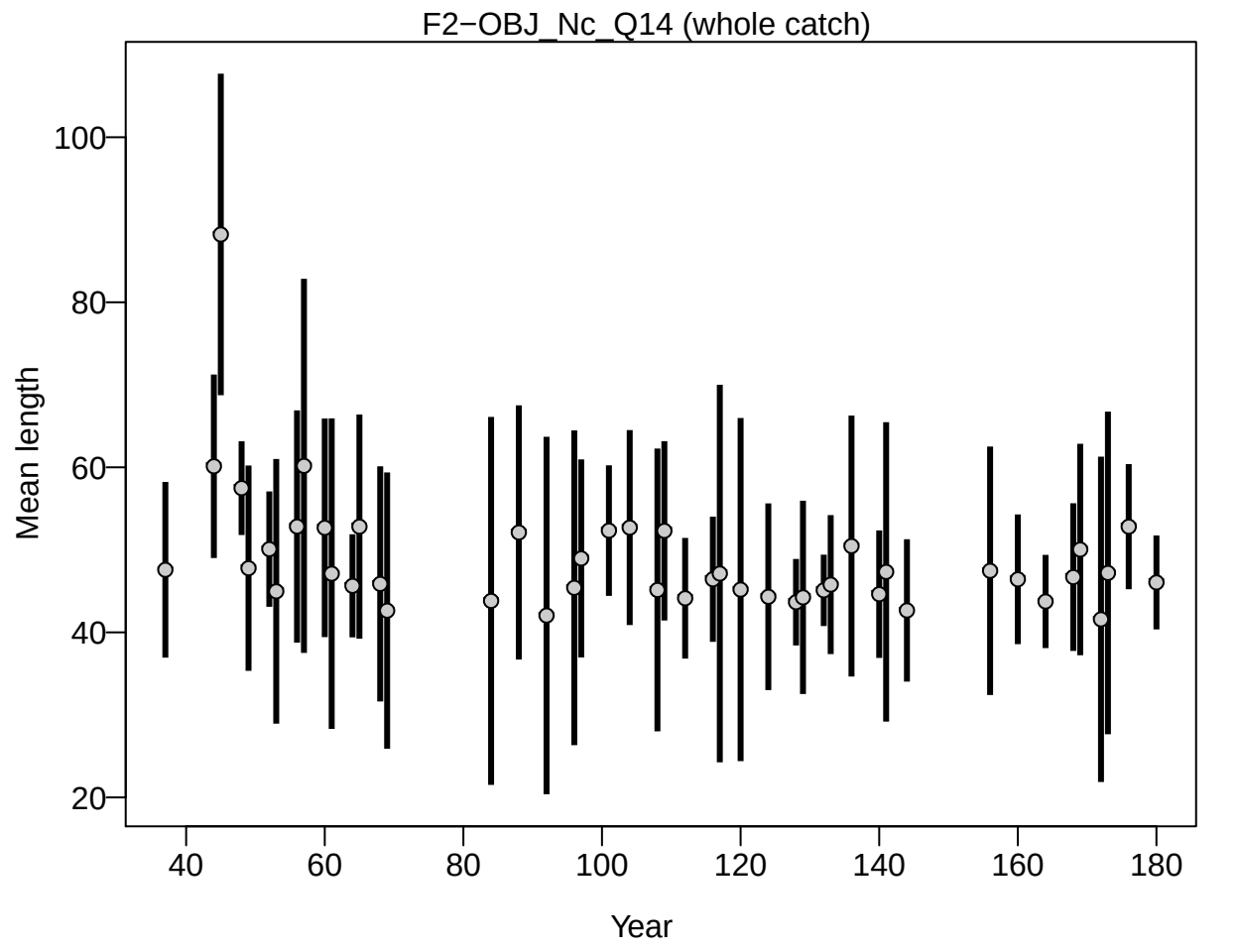

F1−OBJ_N−Q14 (whole catch)
Mean length
Year
140
120
100
80
60
40
20
40
60
80
100
120
140
160
180

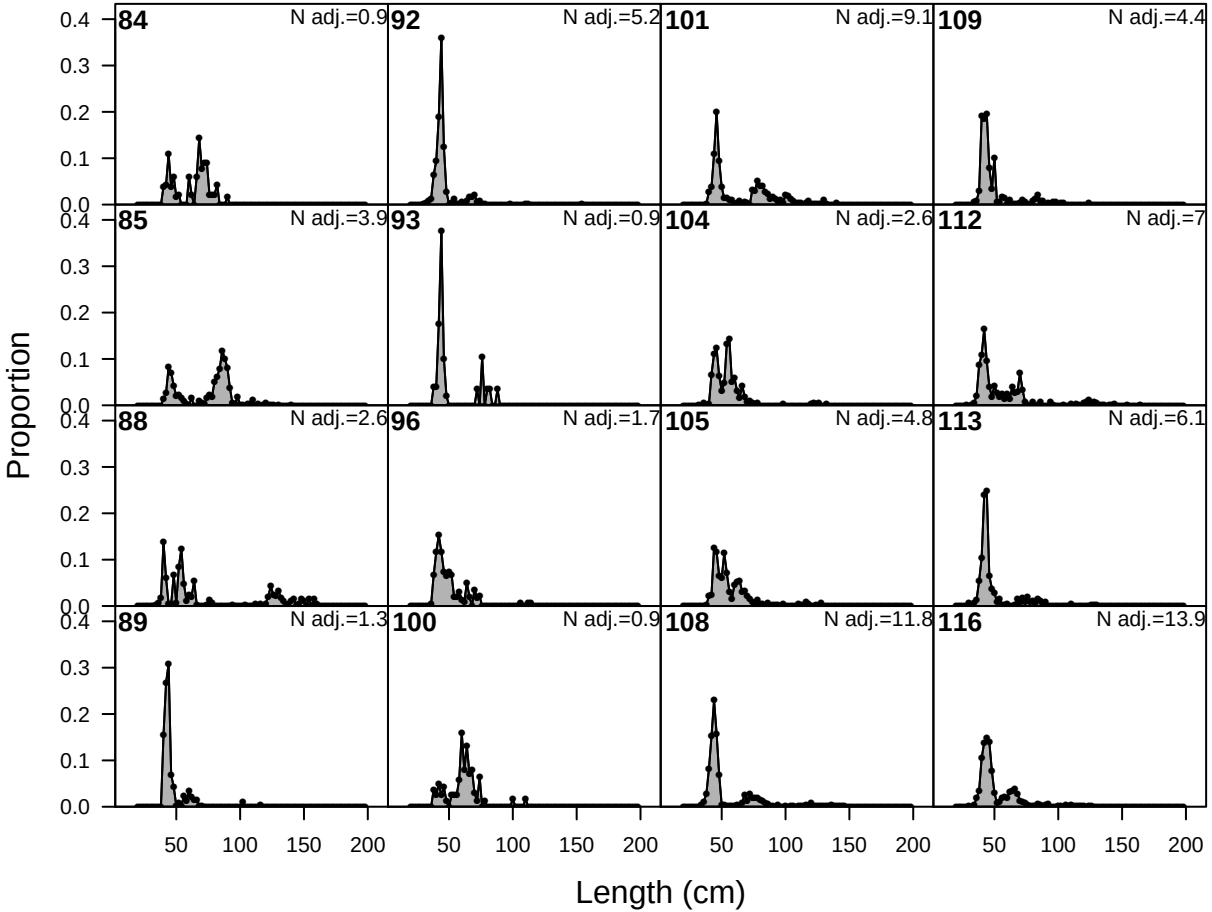

37
N adj.=3.9
49
N adj.=5
57
N adj.=1.1
65
N adj.=3.3
44
N adj.=6.7
52
N adj.=9.4
60
N adj.=3.9
68
N adj.=2.2
45
N adj.=2.2
53
N adj.=1.7
61
N adj.=1.7
69
N adj.=1.7
48
N adj.=26.1
56
N adj.=4.4
64
N adj.=13.9
84
N adj.=1.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

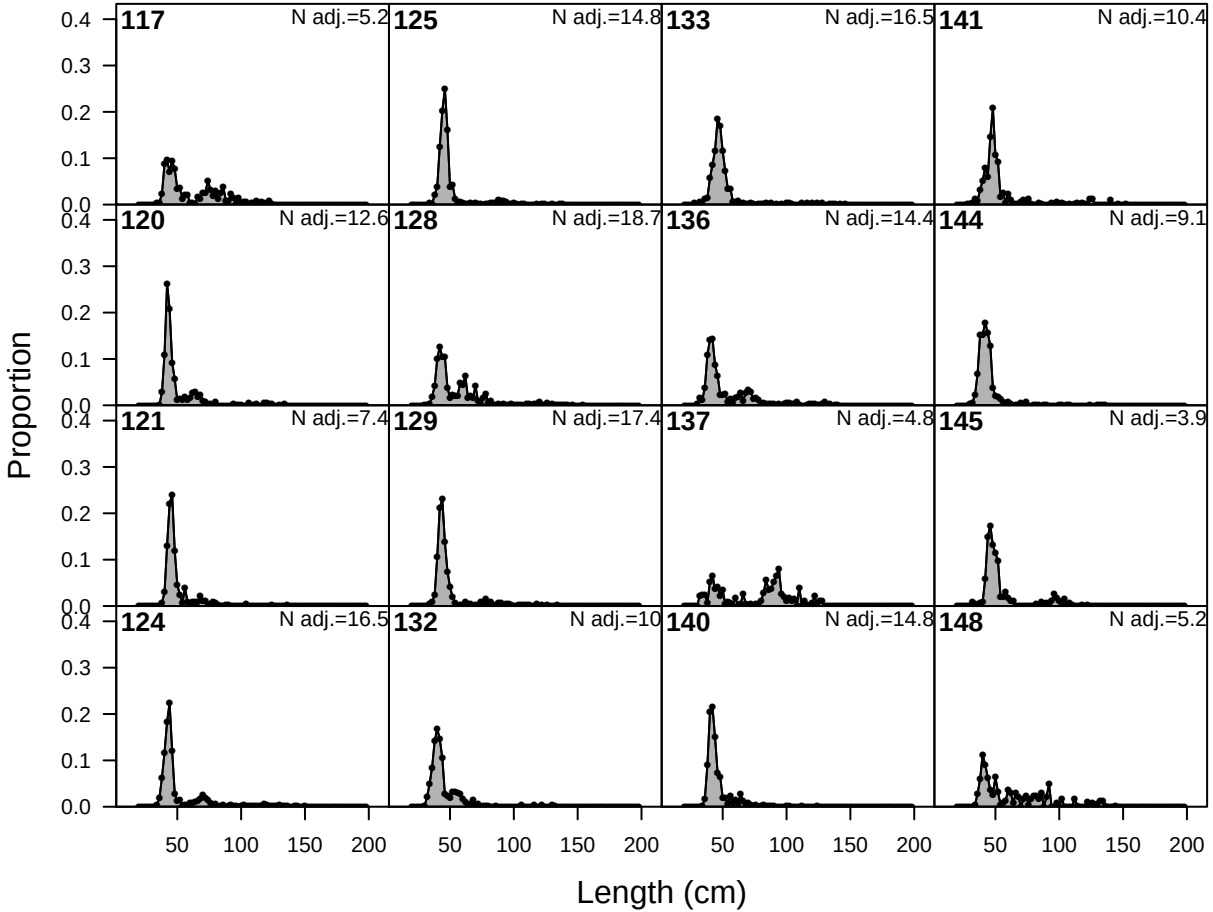

88
N adj.=2.8
101
N adj.=5.6
112
N adj.=13.3
124
N adj.=3.9
92
N adj.=1.1
104
N adj.=4.4
116
N adj.=10
128
N adj.=24.4
96
N adj.=1.1
108
N adj.=2.8
117
N adj.=1.1
129
N adj.=3.9
97
N adj.=2.2
109
N adj.=5.6
120
N adj.=1.1
132
N adj.=23.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

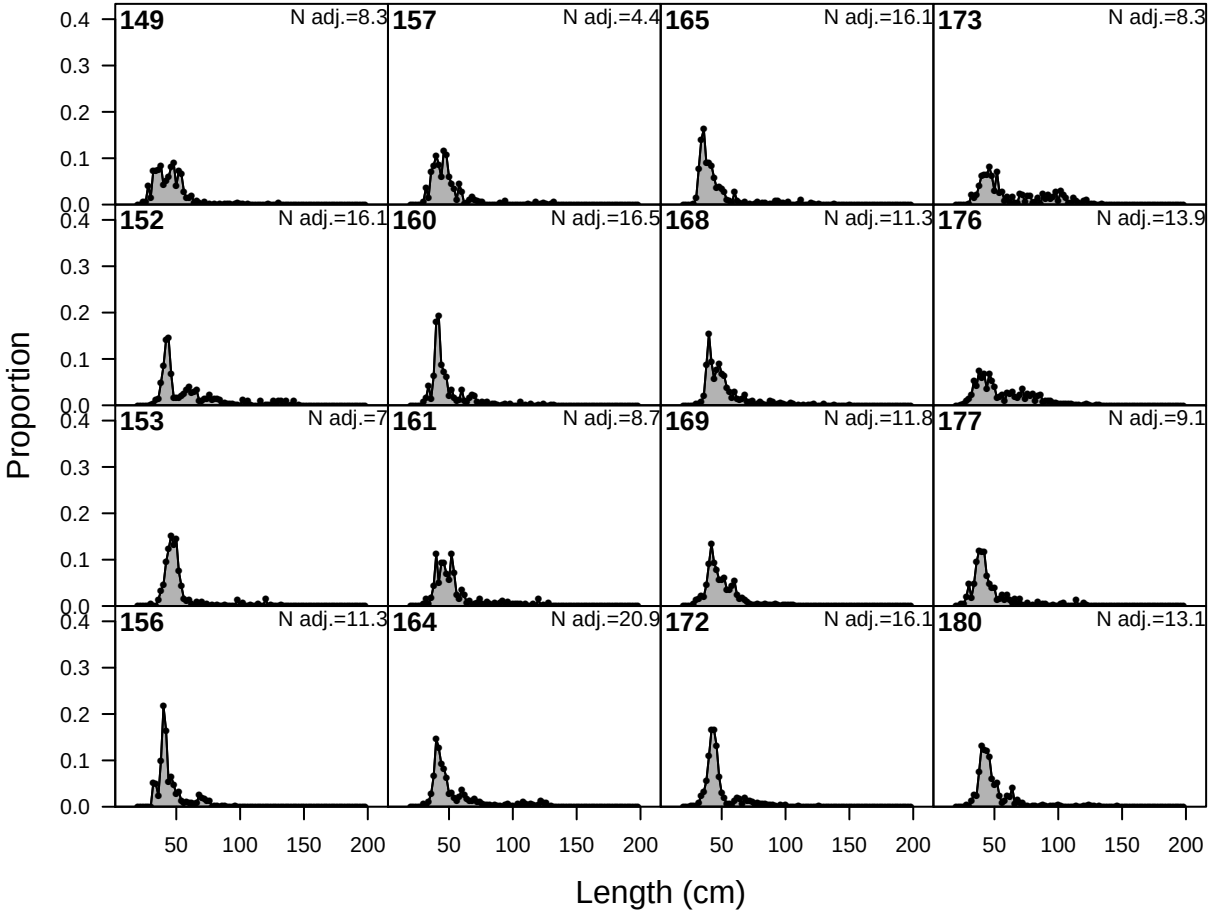

133
N adj.=6.1
144
N adj.=6.1
168
N adj.=5
176
N adj.=10
136
N adj.=3.3
156
N adj.=2.2
169
N adj.=2.8
180
N adj.=10.6
140
N adj.=8.9
160
N adj.=10
172
N adj.=1.1
141
N adj.=1.7
164
N adj.=15
173
N adj.=1.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

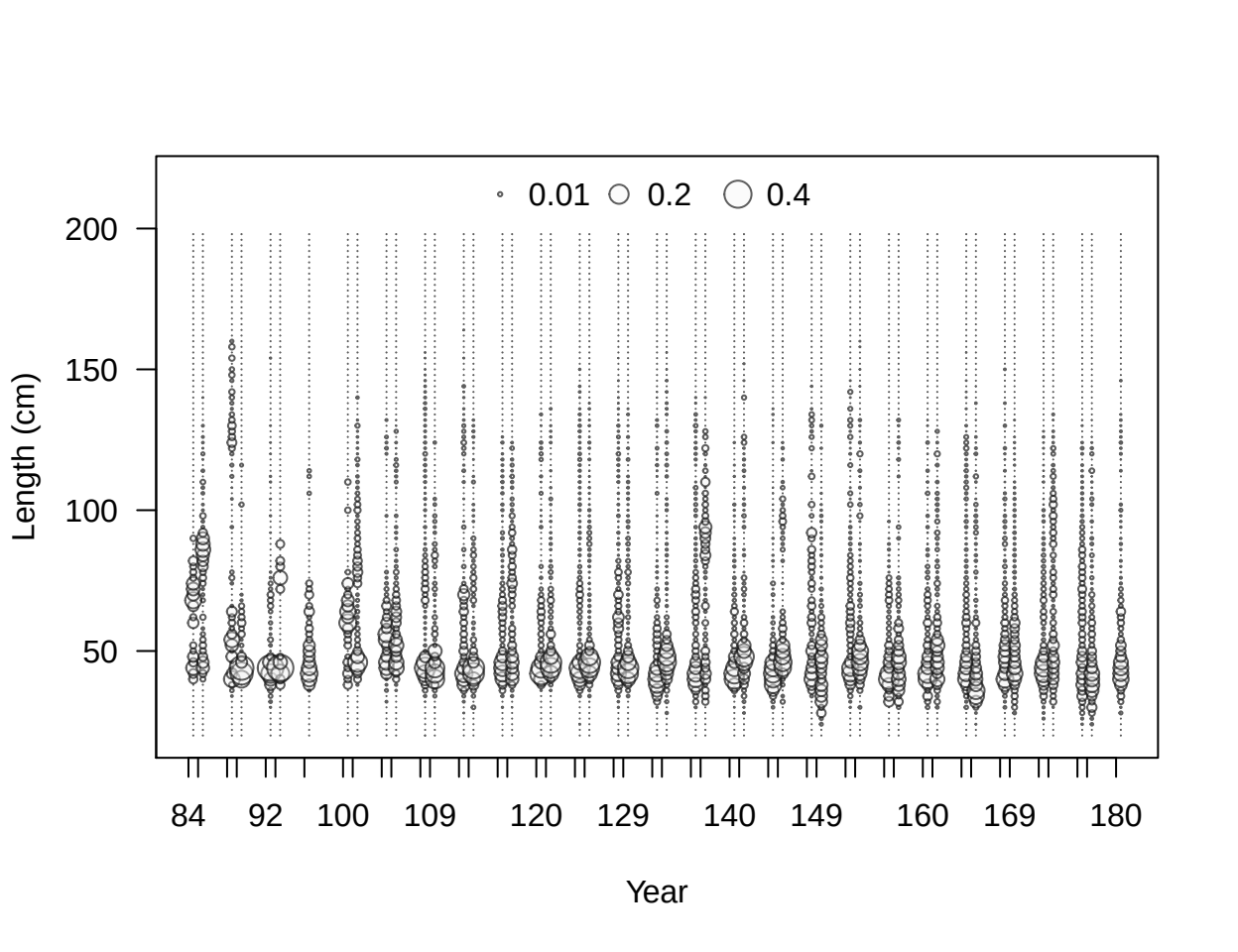

0.01
0.2
0.4
200
150
100
50
Length (cm)
37
48
60
84
96
108
124
140
156
169
Year

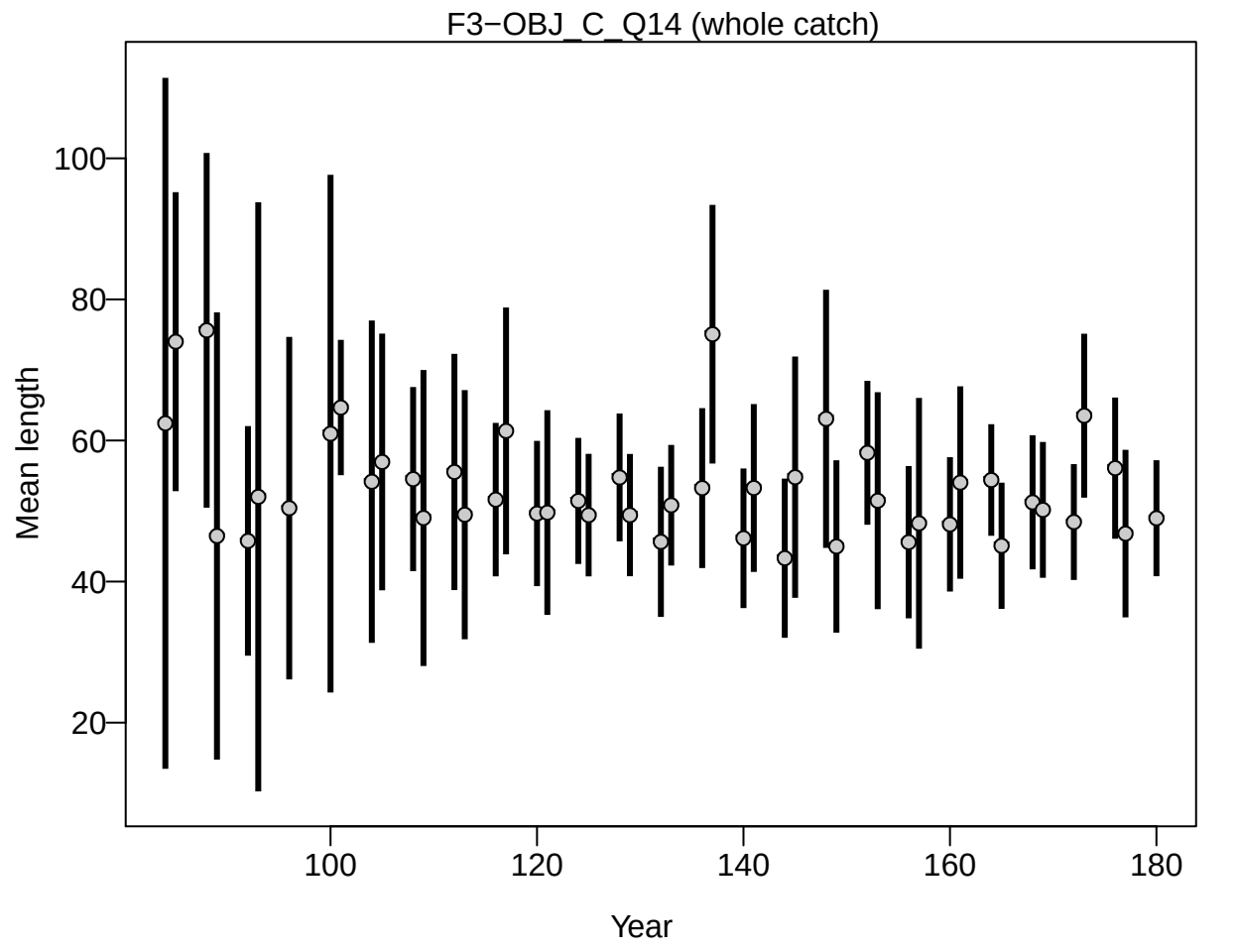

F2−OBJ_Nc_Q14 (whole catch)
Mean length
100
80
60
40
20
40
60
80
100
120
140
160
180
Year

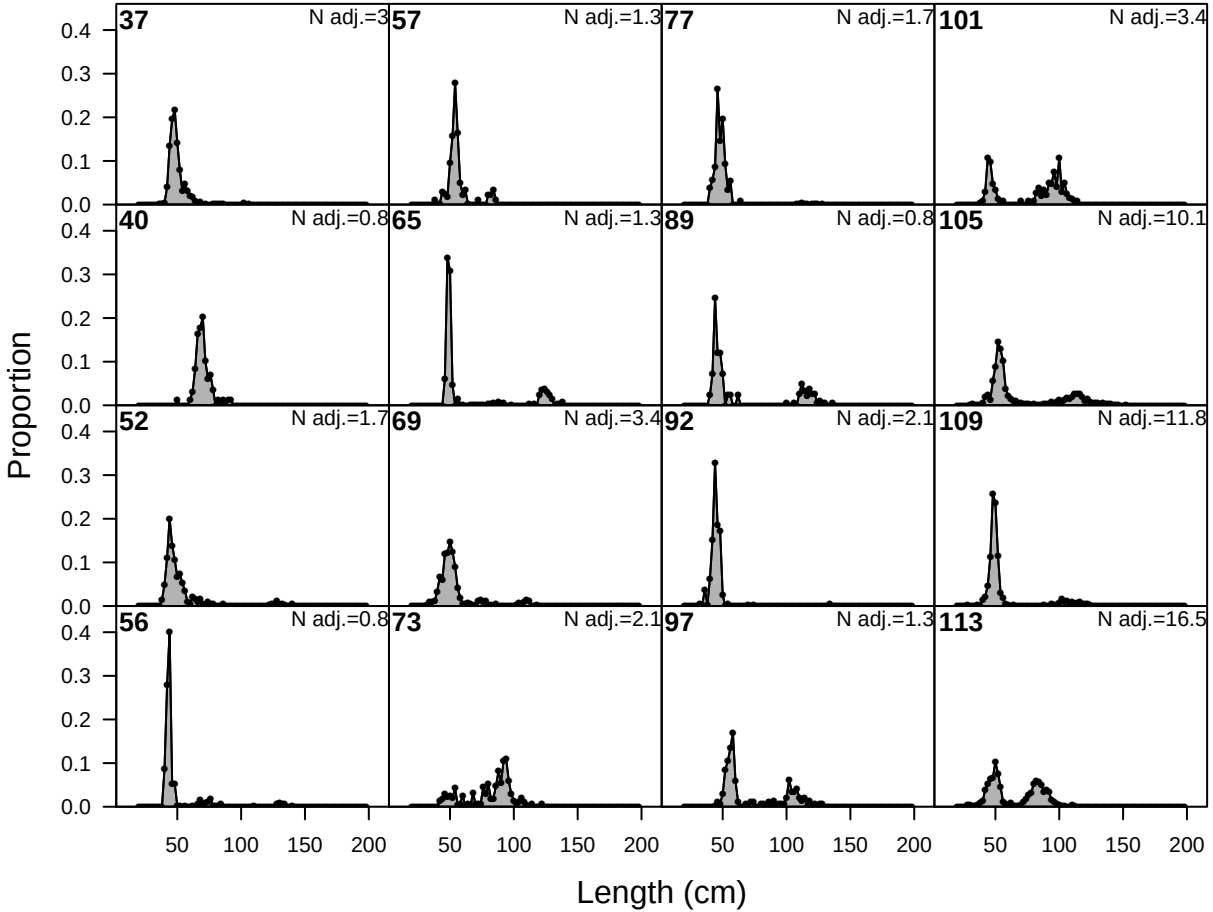

84
N adj.=0.9
92
N adj.=5.2
101
N adj.=9.1
109
N adj.=4.4
85
N adj.=3.9
93
N adj.=0.9
104
N adj.=2.6
112
N adj.=7
88
N adj.=2.6
96
N adj.=1.7
105
N adj.=4.8
113
N adj.=6.1
89
N adj.=1.3
100
N adj.=0.9
108
N adj.=11.8
116
N adj.=13.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

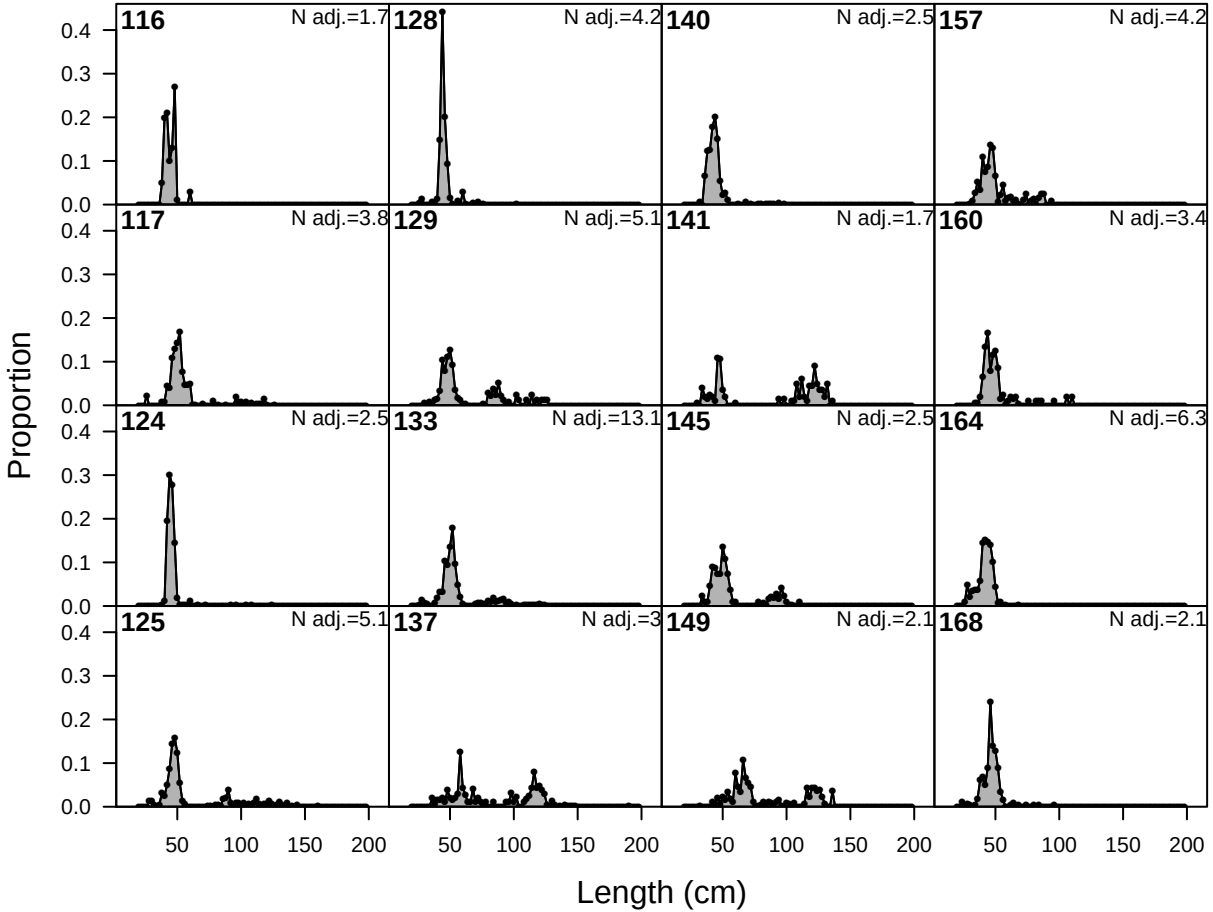

117
N adj.=5.2
125
N adj.=14.8
133
N adj.=16.5
141
N adj.=10.4
120
N adj.=12.6
128
N adj.=18.7
136
N adj.=14.4
144
N adj.=9.1
121
N adj.=7.4
129
N adj.=17.4
137
N adj.=4.8
145
N adj.=3.9
124
N adj.=16.5
132
N adj.=10
140
N adj.=14.8
148
N adj.=5.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

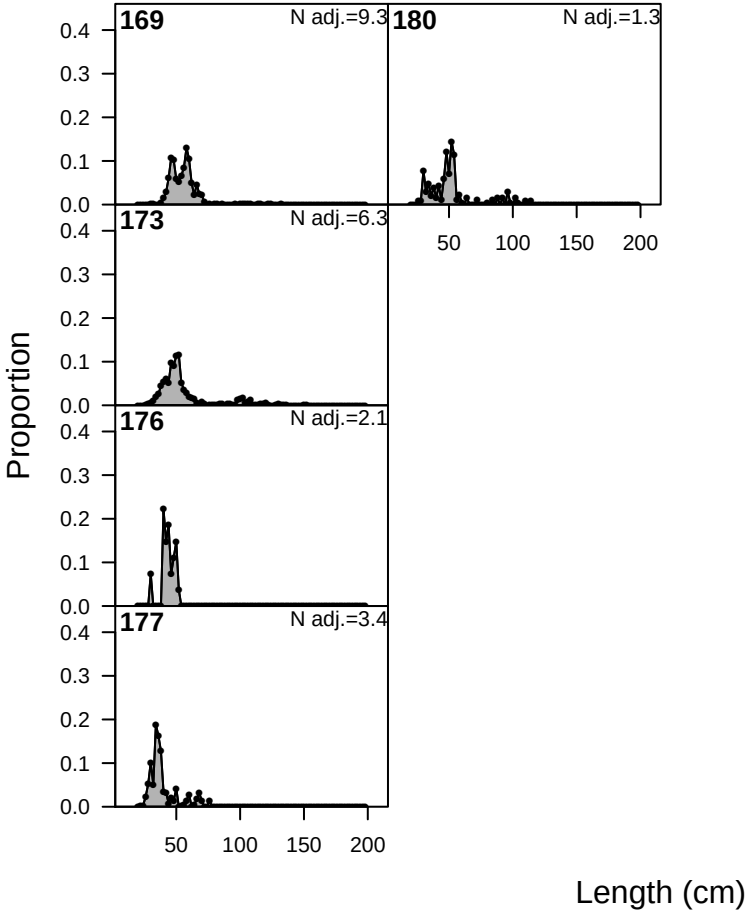

149
N adj.=8.3
157
N adj.=4.4
165
N adj.=16.1
173
N adj.=8.3
152
N adj.=16.1
160
N adj.=16.5
168
N adj.=11.3
176
N adj.=13.9
153
N adj.=7
161
N adj.=8.7
169
N adj.=11.8
177
N adj.=9.1
156
N adj.=11.3
164
N adj.=20.9
172
N adj.=16.1
180
N adj.=13.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

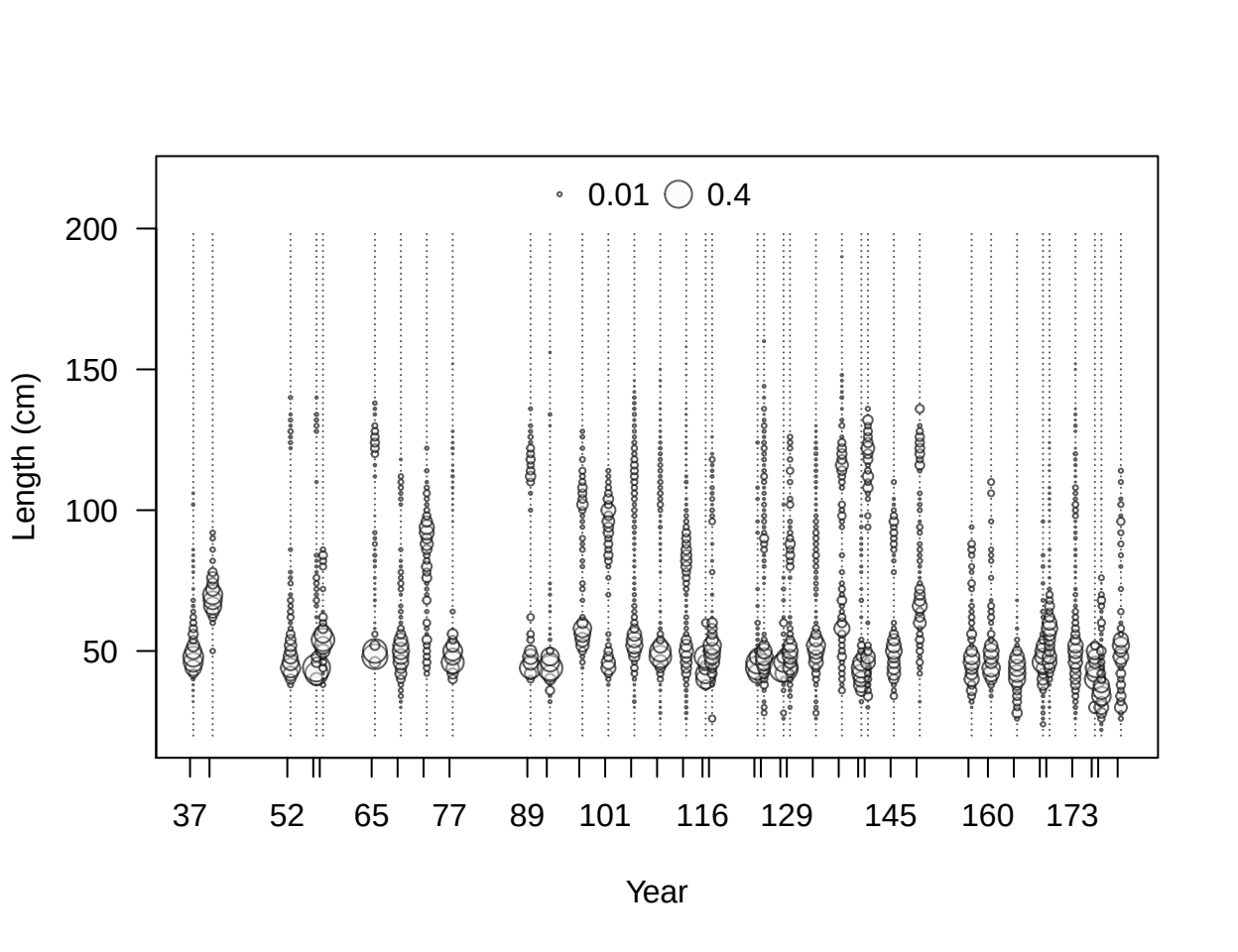

0.01
0.2
0.4
200
150
100
50
Length (cm)
84
92
100
109
120
129
140
149
160
169
180
Year

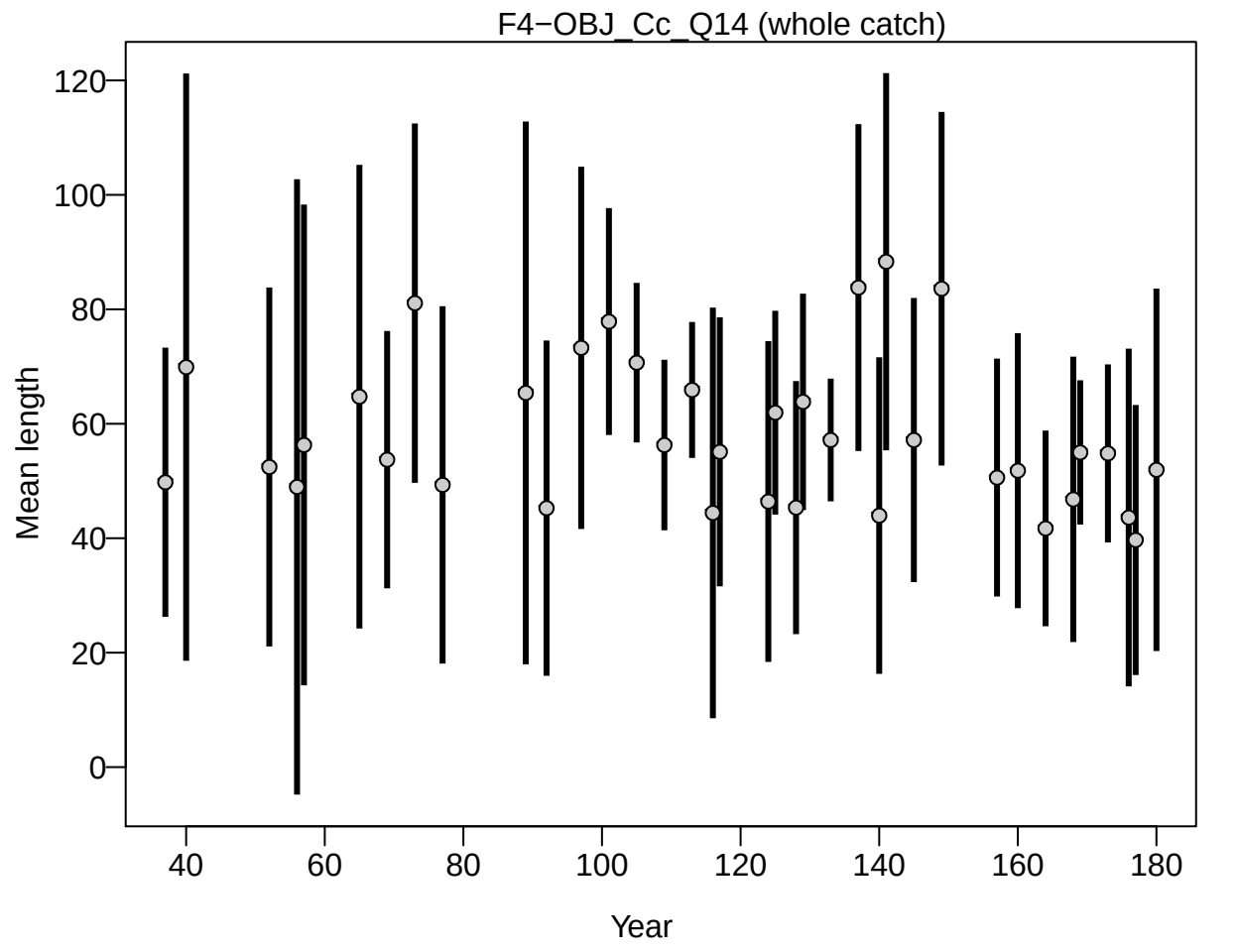

F3−OBJ_C_Q14 (whole catch)
Mean length
100
80
60
40
20
100
120
140
160
180
Year

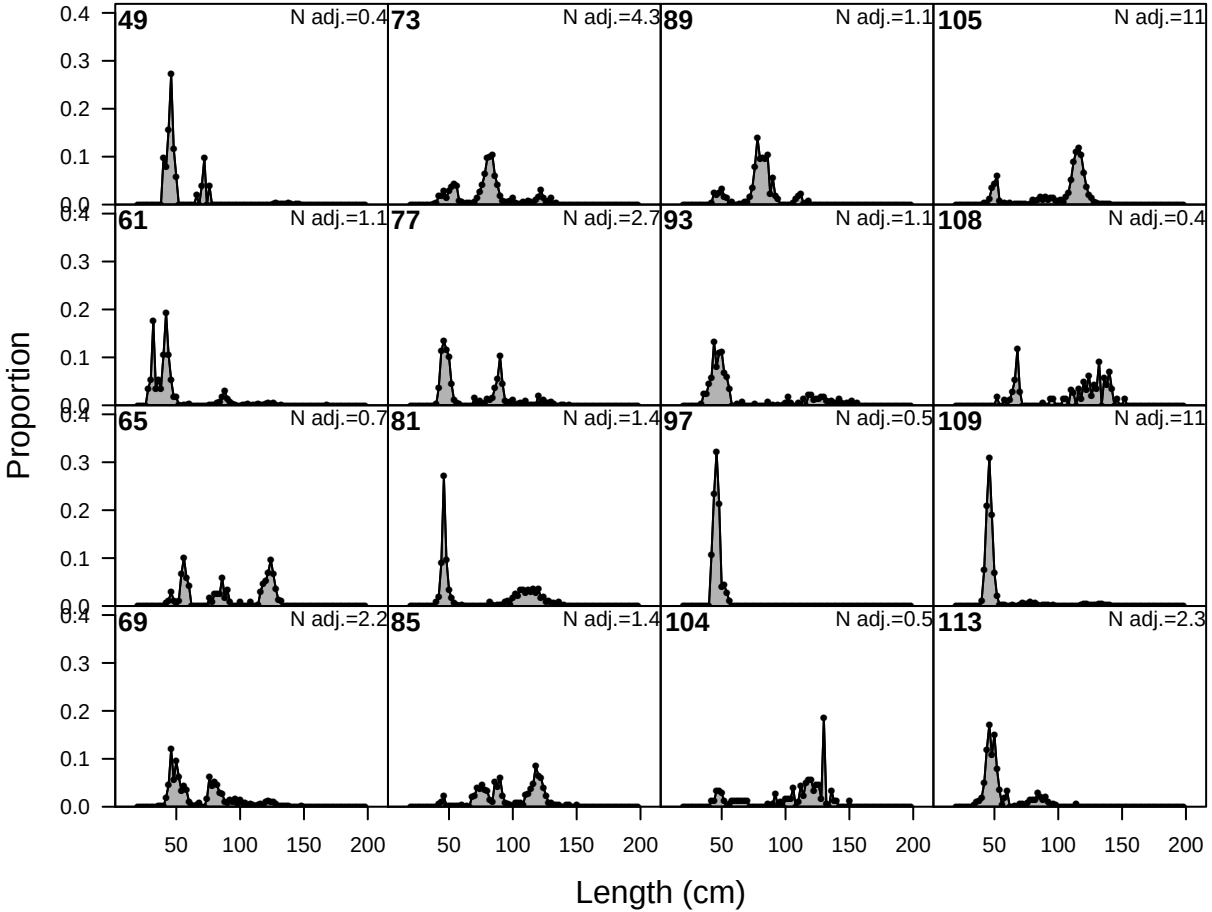

37
N adj.=3
57
N adj.=1.3
77
N adj.=1.7
101
N adj.=3.4
40
N adj.=0.8
65
N adj.=1.3
89
N adj.=0.8
105
N adj.=10.1
52
N adj.=1.7
69
N adj.=3.4
92
N adj.=2.1
109
N adj.=11.8
56
N adj.=0.8
73
N adj.=2.1
97
N adj.=1.3
113
N adj.=16.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

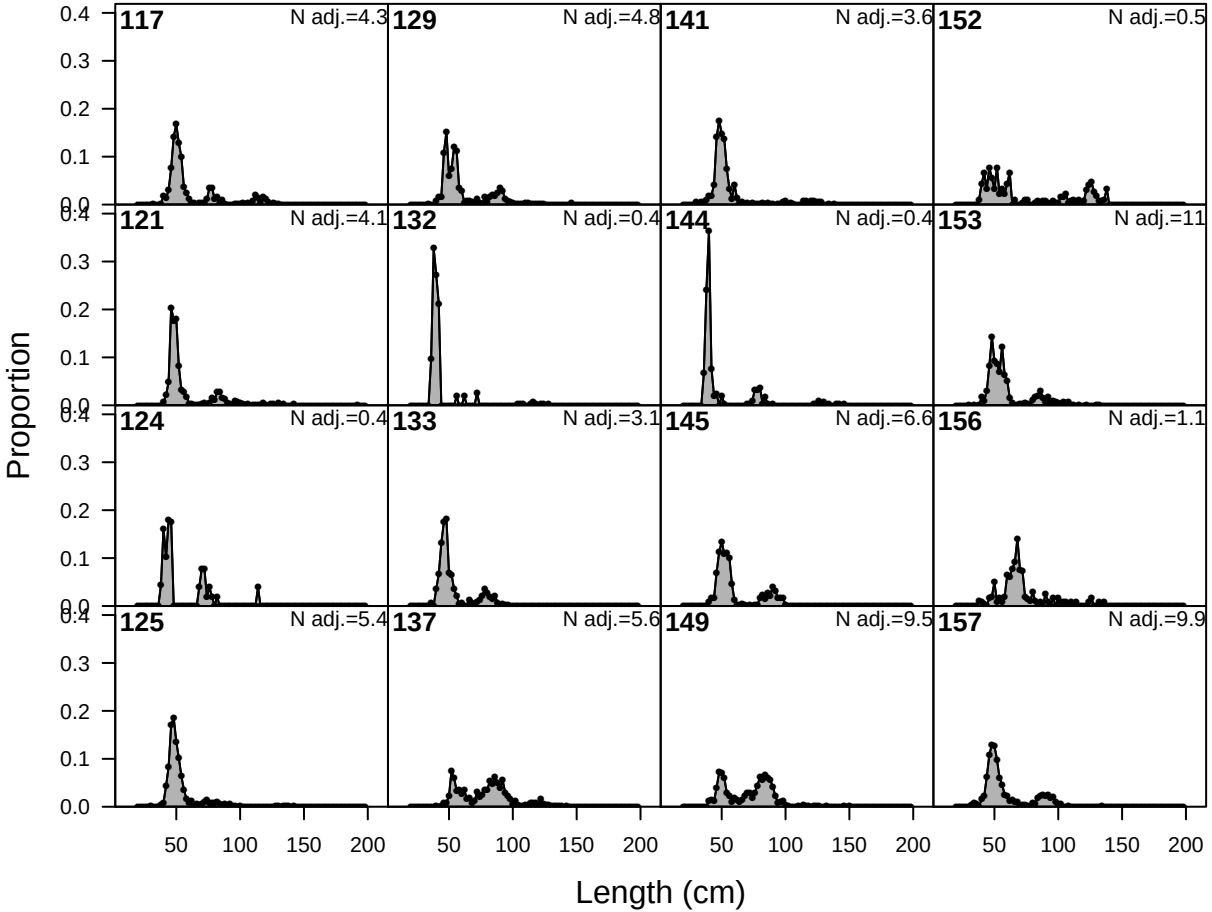

116
N adj.=1.7
128
N adj.=4.2
140
N adj.=2.5
157
N adj.=4.2
117
N adj.=3.8
129
N adj.=5.1
141
N adj.=1.7
160
N adj.=3.4
124
N adj.=2.5
133
N adj.=13.1
145
N adj.=2.5
164
N adj.=6.3
125
N adj.=5.1
137
N adj.=3
149
N adj.=2.1
168
N adj.=2.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

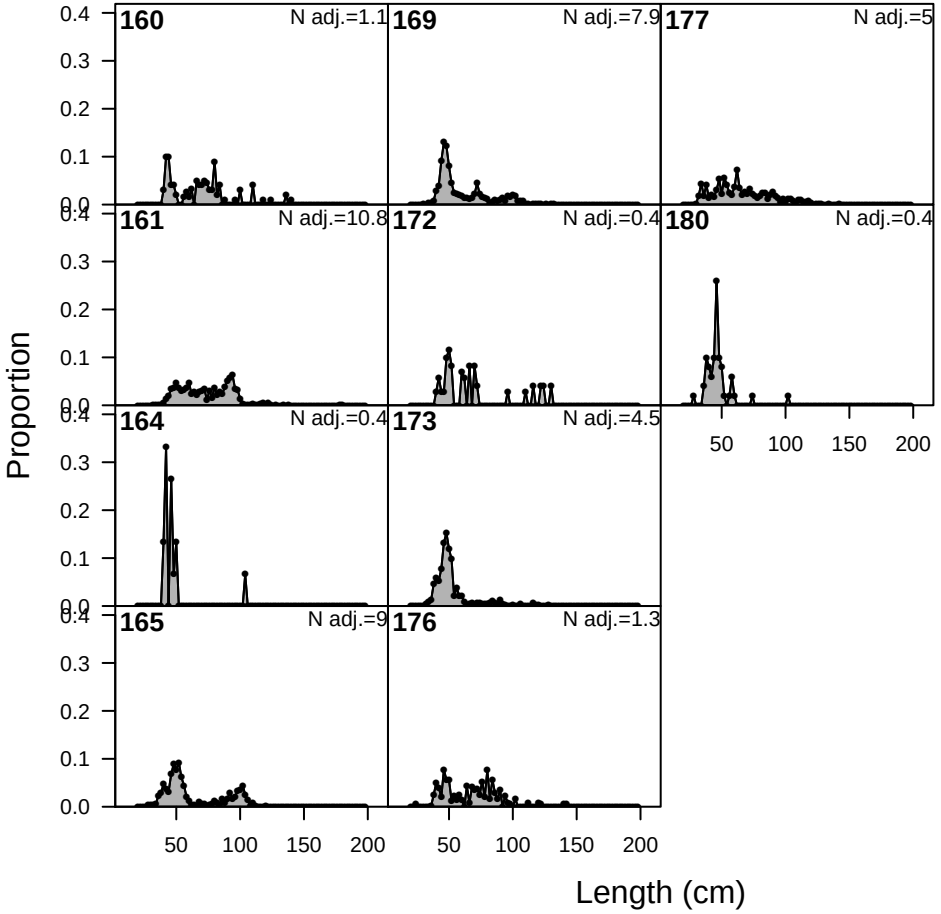

169
N adj.=9.3
180
N adj.=1.3
173
N adj.=6.3
176
N adj.=2.1
177
N adj.=3.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

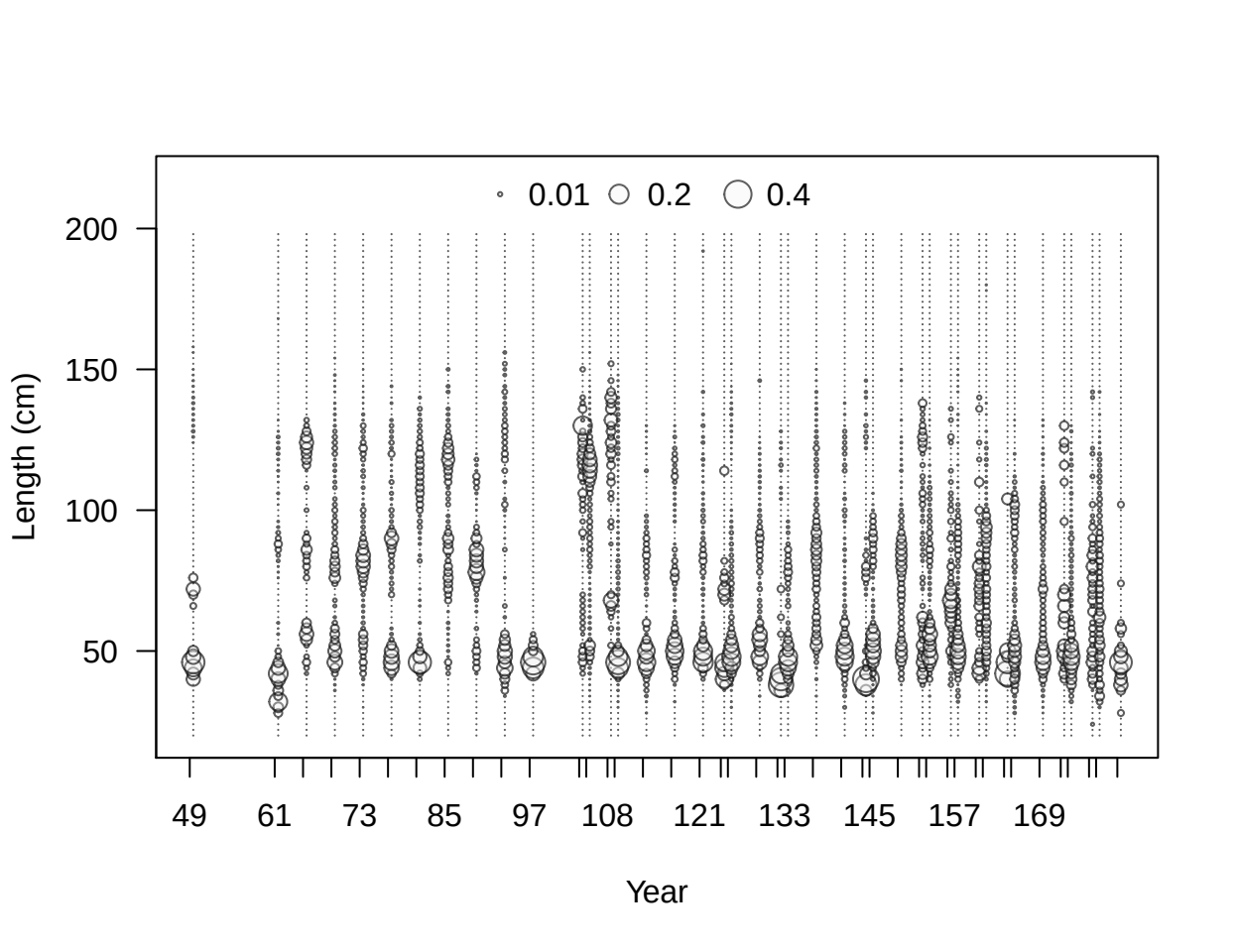

0.01
0.4
200
150
100
50
Length (cm)
37
52
65
77
89
101
116
129
145
160
173
Year

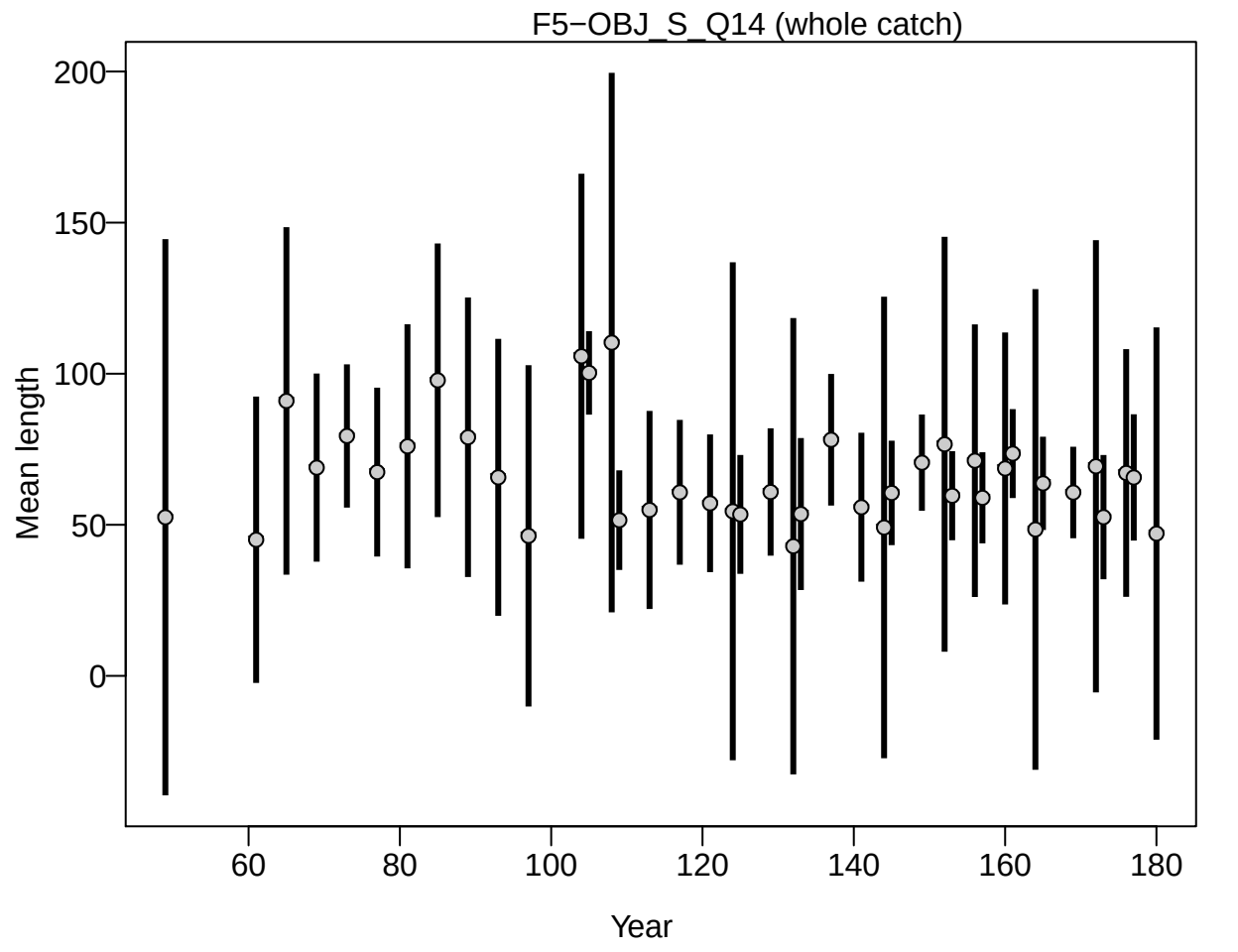

F4−OBJ_Cc_Q14 (whole catch)
Mean length
Year
0
20
40
60
80
100
120
40
60
80
100
120
140
160
180

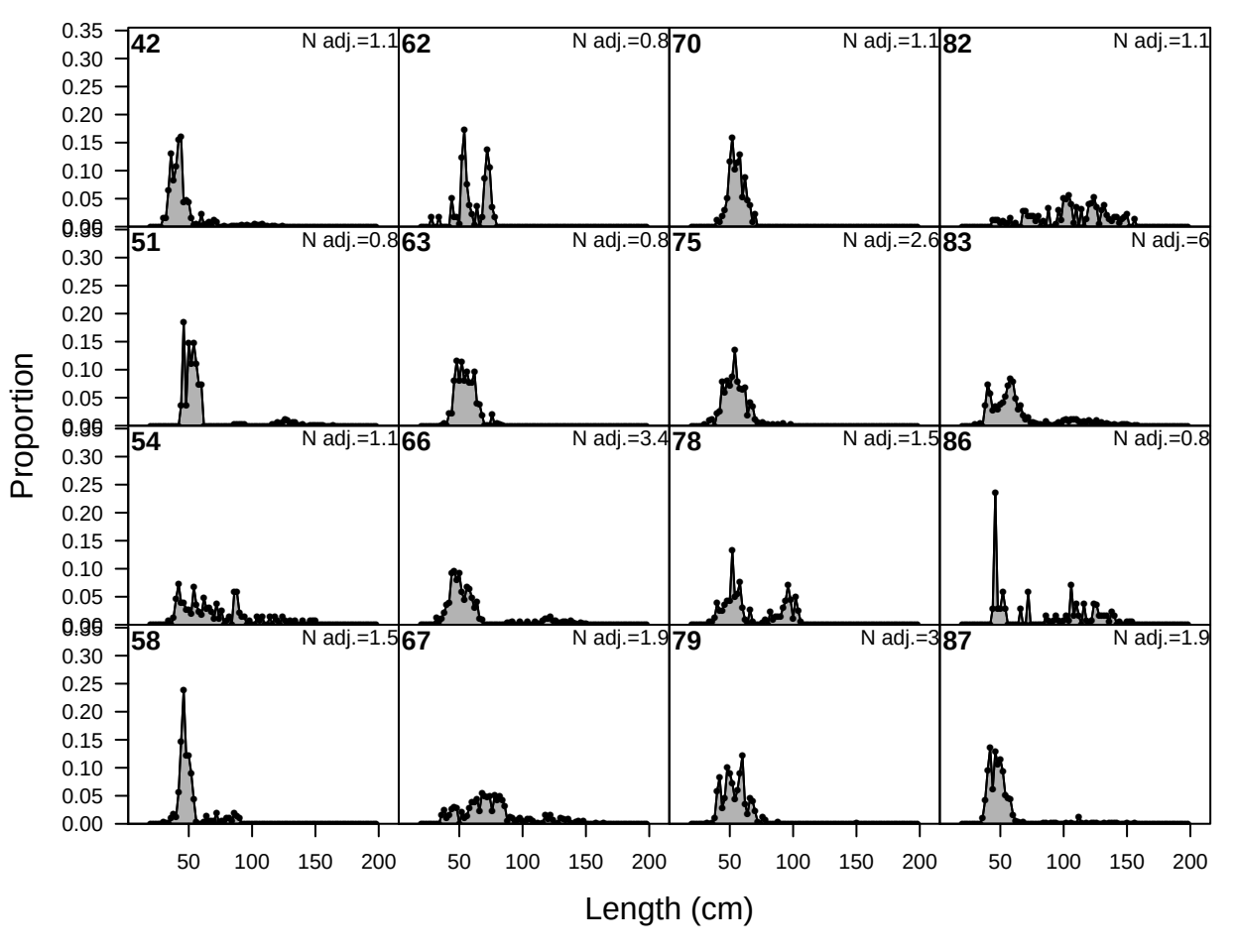

49
N adj.=0.4
73
N adj.=4.3
89
N adj.=1.1
105
N adj.=11
61
N adj.=1.1
77
N adj.=2.7
93
N adj.=1.1
108
N adj.=0.4
65
N adj.=0.7
81
N adj.=1.4
97
N adj.=0.5
109
N adj.=11
69
N adj.=2.2
85
N adj.=1.4
104
N adj.=0.5
113
N adj.=2.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

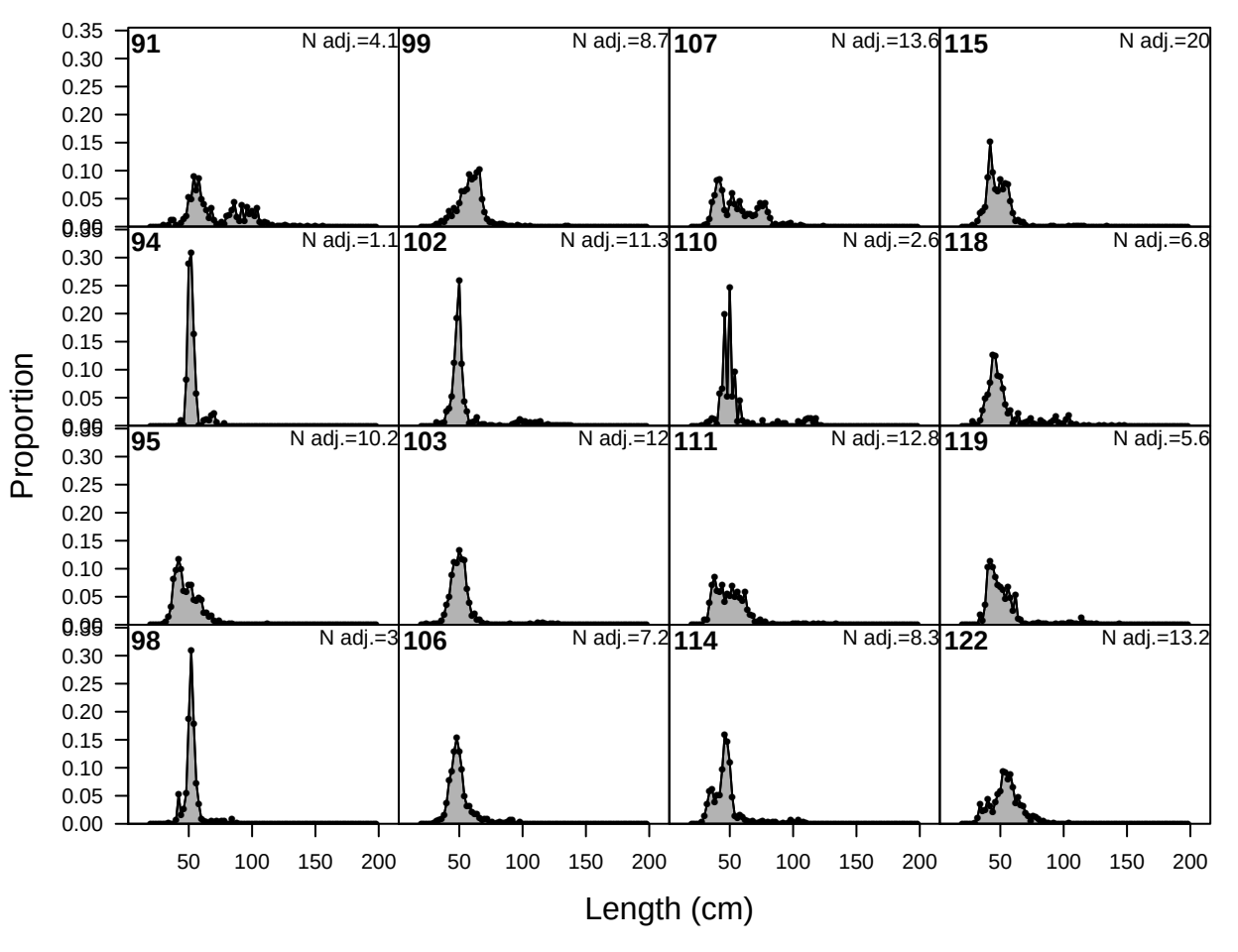

117
N adj.=4.3
129
N adj.=4.8
141
N adj.=3.6
152
N adj.=0.5
121
N adj.=4.1
132
N adj.=0.4
144
N adj.=0.4
153
N adj.=11
124
N adj.=0.4
133
N adj.=3.1
145
N adj.=6.6
156
N adj.=1.1
125
N adj.=5.4
137
N adj.=5.6
149
N adj.=9.5
157
N adj.=9.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

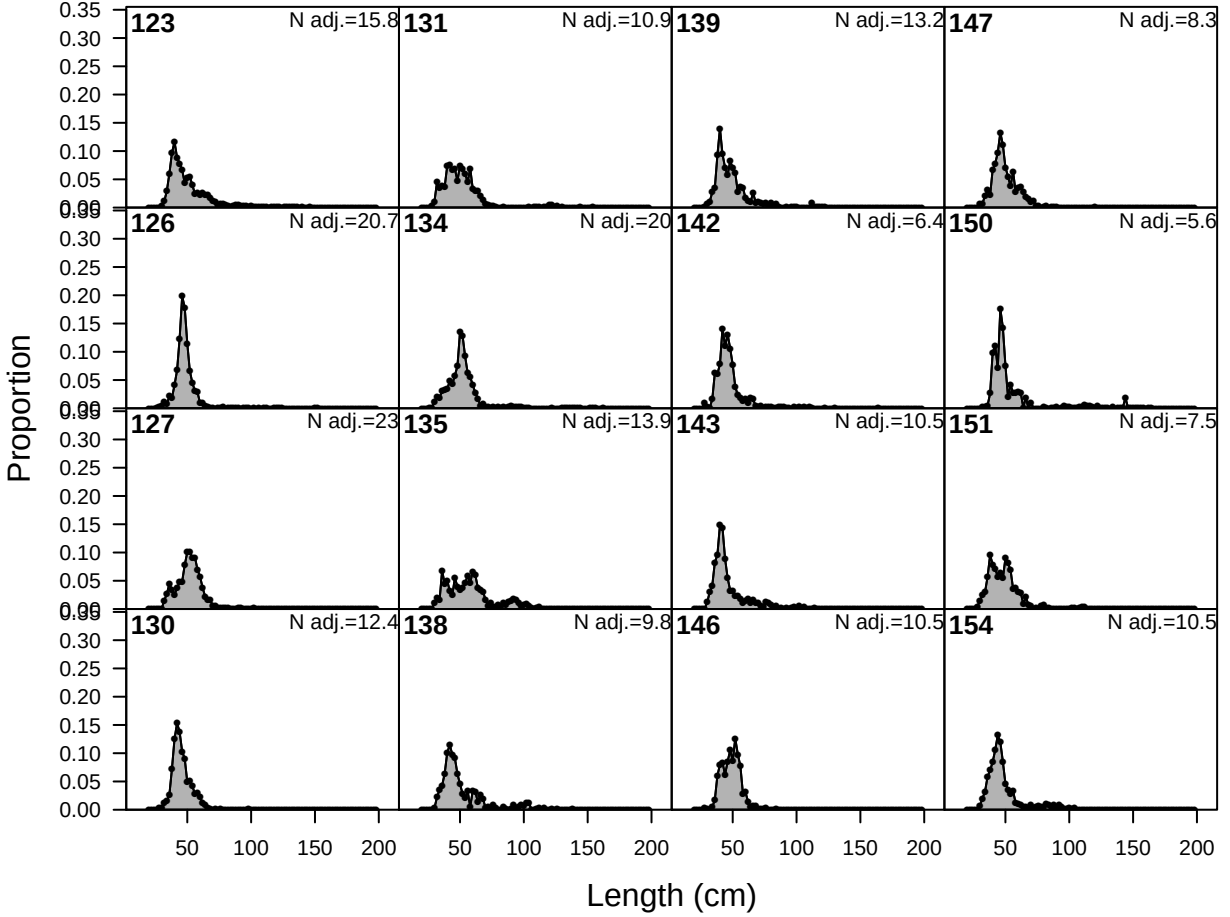

160
N adj.=1.1
169
N adj.=7.9
177
N adj.=5
161
N adj.=10.8
172
N adj.=0.4
180
N adj.=0.4
164
N adj.=0.4
173
N adj.=4.5
165
N adj.=9
176
N adj.=1.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

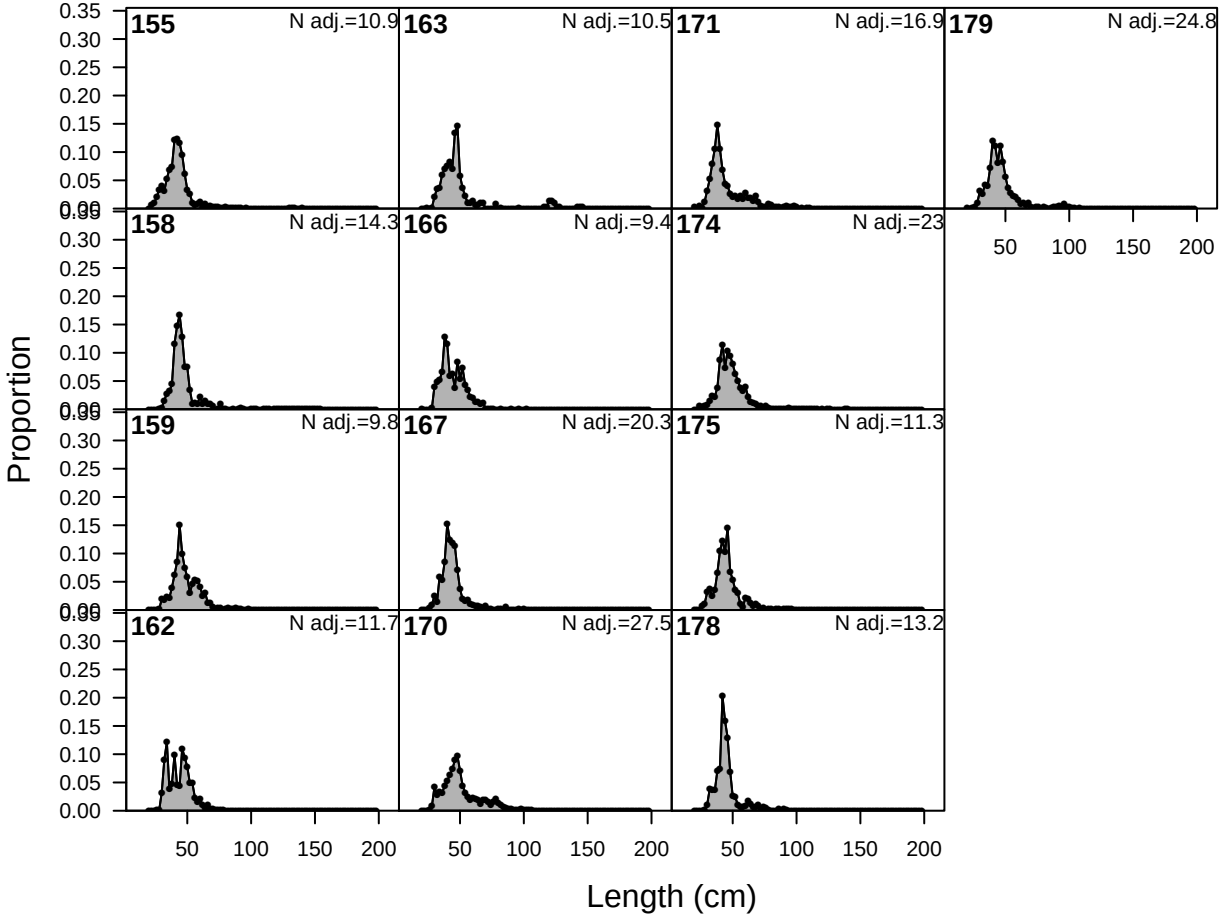

0.01
0.2
0.4
200
150
100
50
Length (cm)
49
61
73
85
97
108
121
133
145
157
169
Year

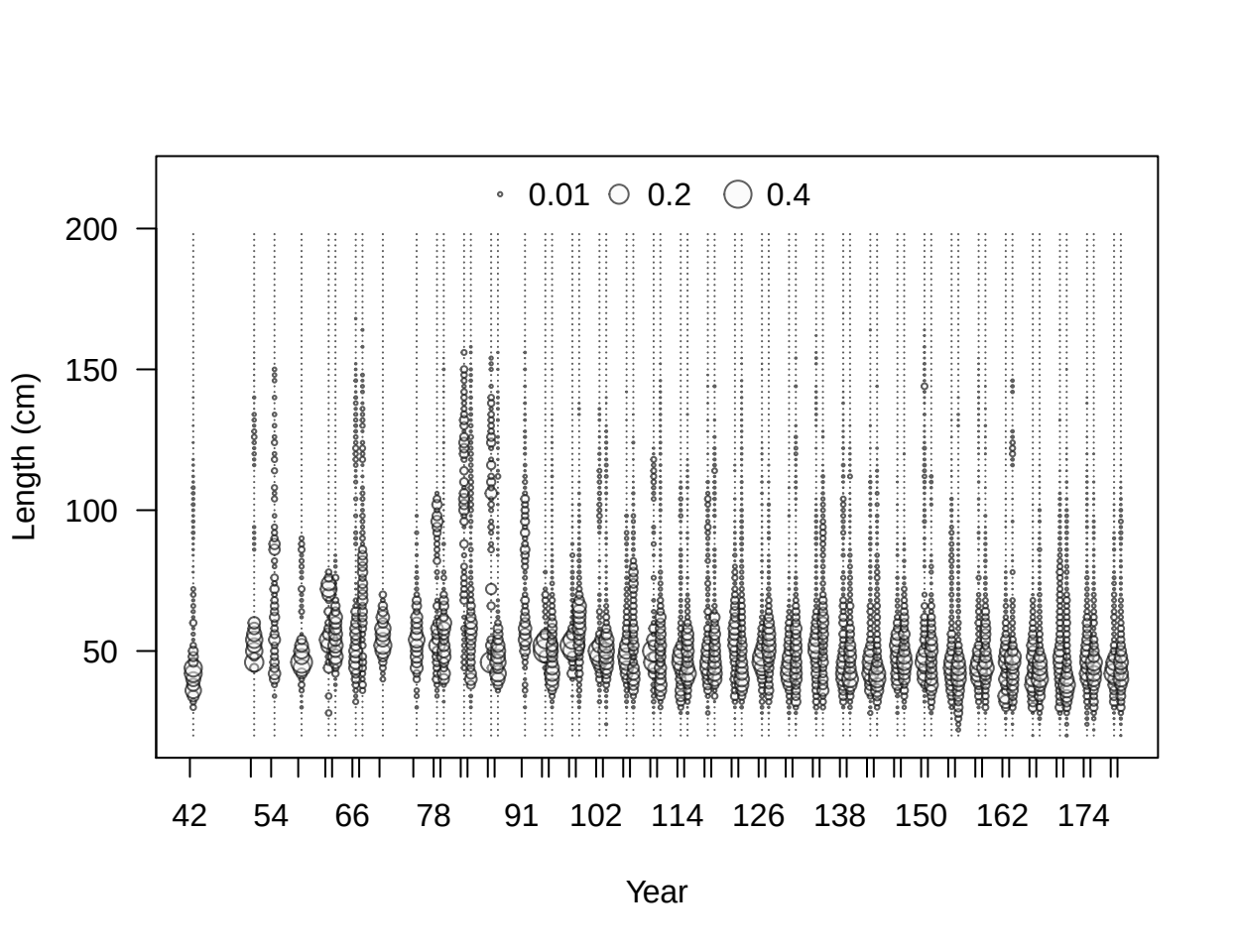

F5−OBJ_S_Q14 (whole catch)
Mean length
200
150
100
50
0
60
80
100
120
140
160
180
Year

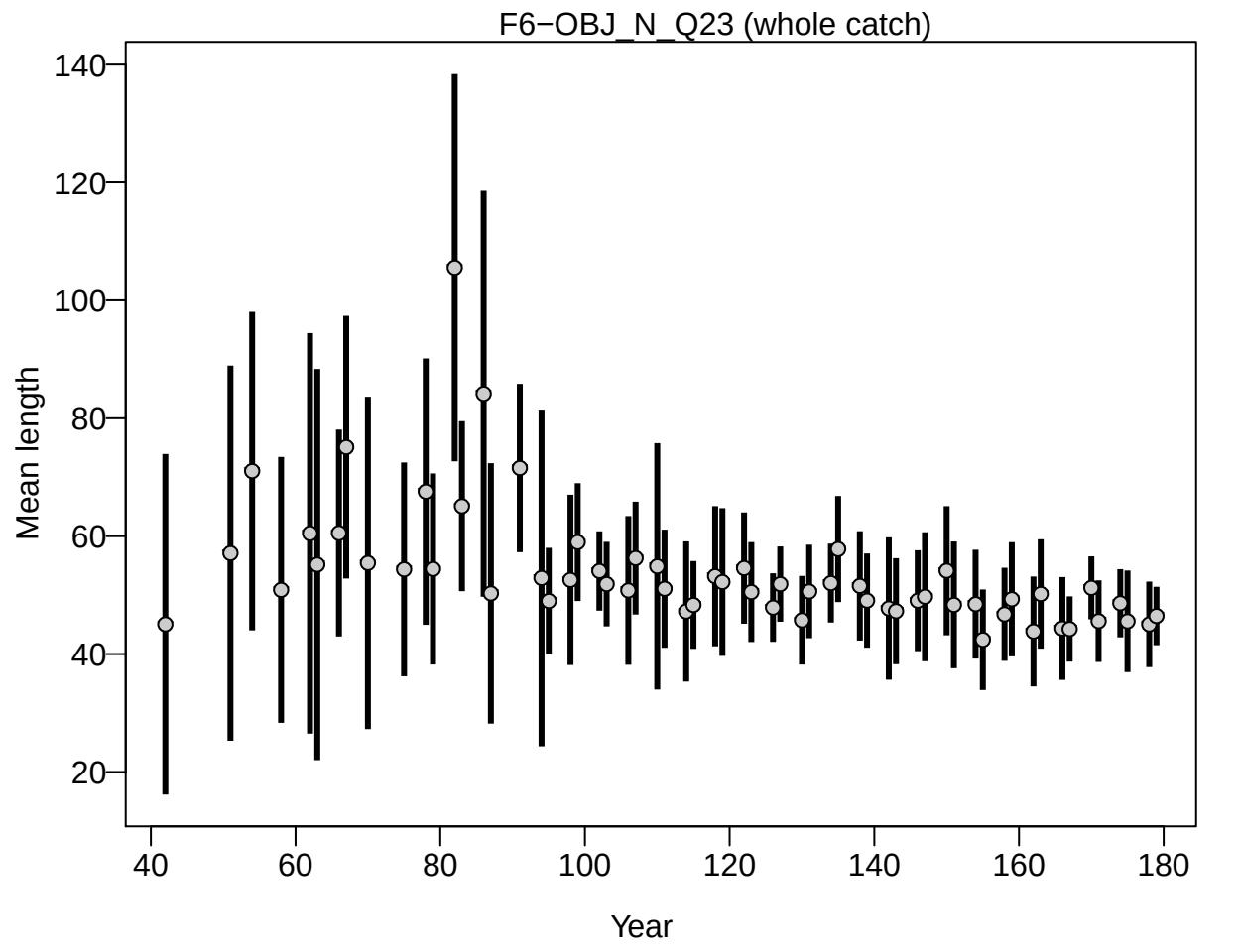

42
N adj.=1.1
62
N adj.=0.8
70
N adj.=1.1
82
N adj.=1.1
51
N adj.=0.8
63
N adj.=0.8
75
N adj.=2.6
83
N adj.=6
54
N adj.=1.1
66
N adj.=3.4
78
N adj.=1.5
86
N adj.=0.8
58
N adj.=1.5
67
N adj.=1.9
79
N adj.=3
87
N adj.=1.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

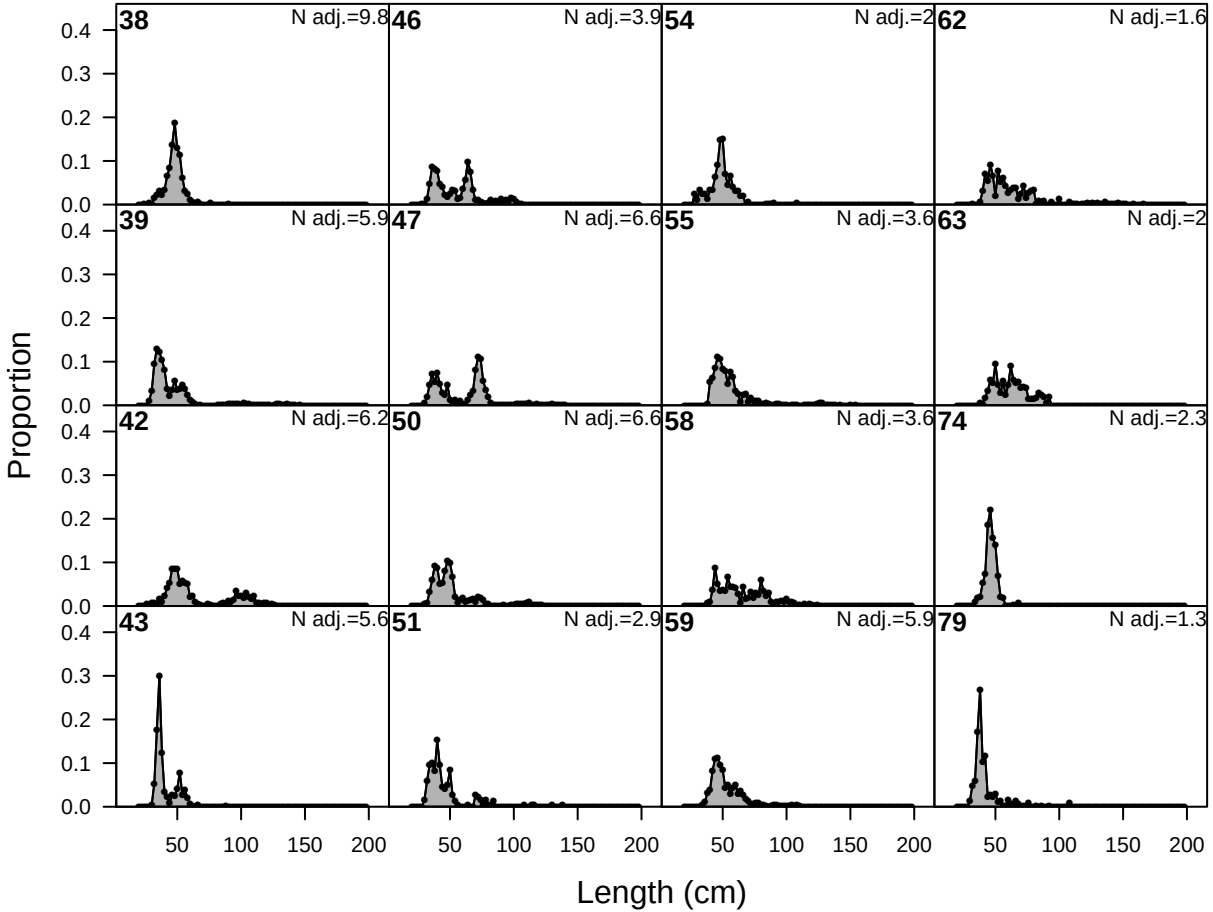

91
N adj.=4.1
99
N adj.=8.7
107
N adj.=13.6
115
N adj.=20
94
N adj.=1.1
102
N adj.=11.3
110
N adj.=2.6
118
N adj.=6.8
95
N adj.=10.2
103
N adj.=12
111
N adj.=12.8
119
N adj.=5.6
98
N adj.=3
106
N adj.=7.2
114
N adj.=8.3
122
N adj.=13.2
Proportion
Length (cm)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200

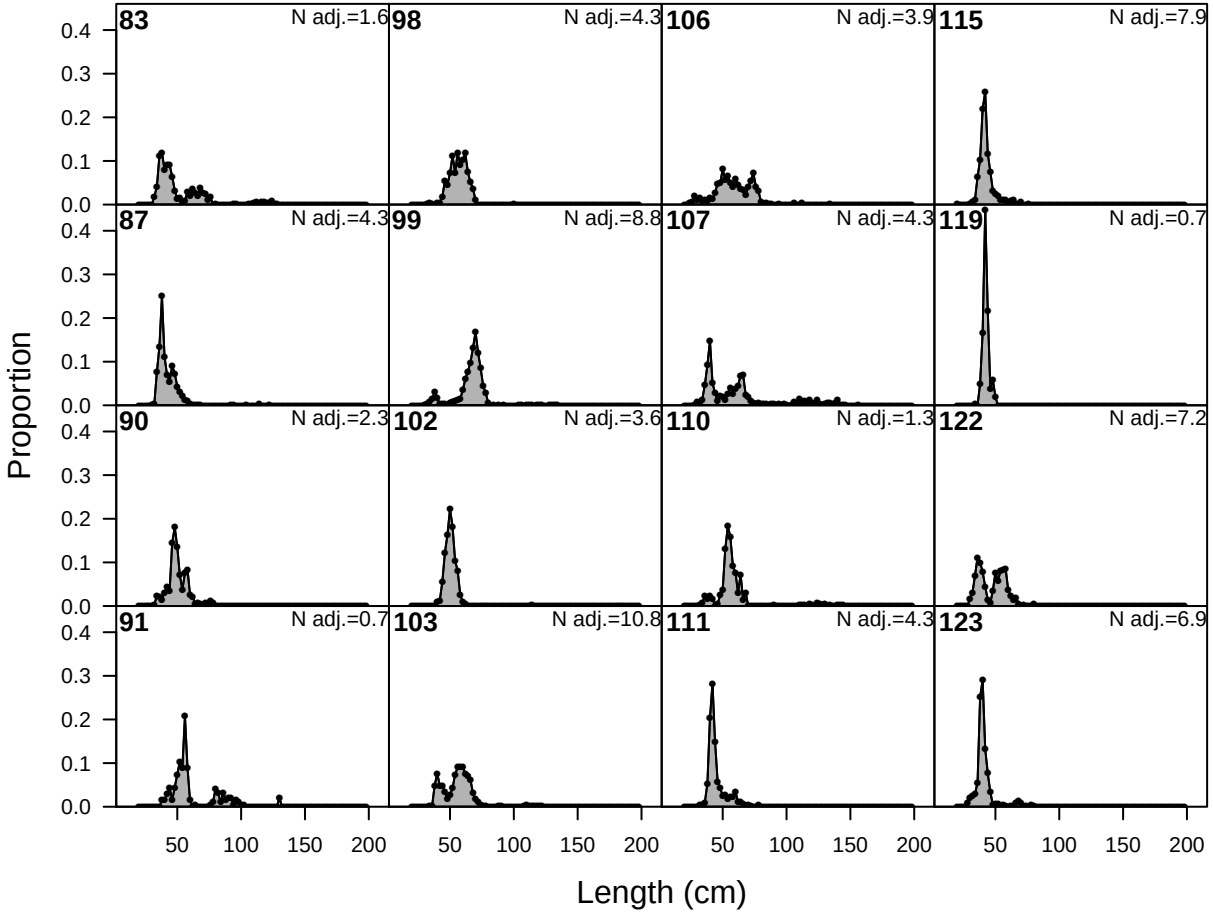

123
N adj.=15.8
131
N adj.=10.9
139
N adj.=13.2
147
N adj.=8.3
126
N adj.=20.7
134
N adj.=20
142
N adj.=6.4
150
N adj.=5.6
127
N adj.=23
135
N adj.=13.9
143
N adj.=10.5
151
N adj.=7.5
130
N adj.=12.4
138
N adj.=9.8
146
N adj.=10.5
154
N adj.=10.5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

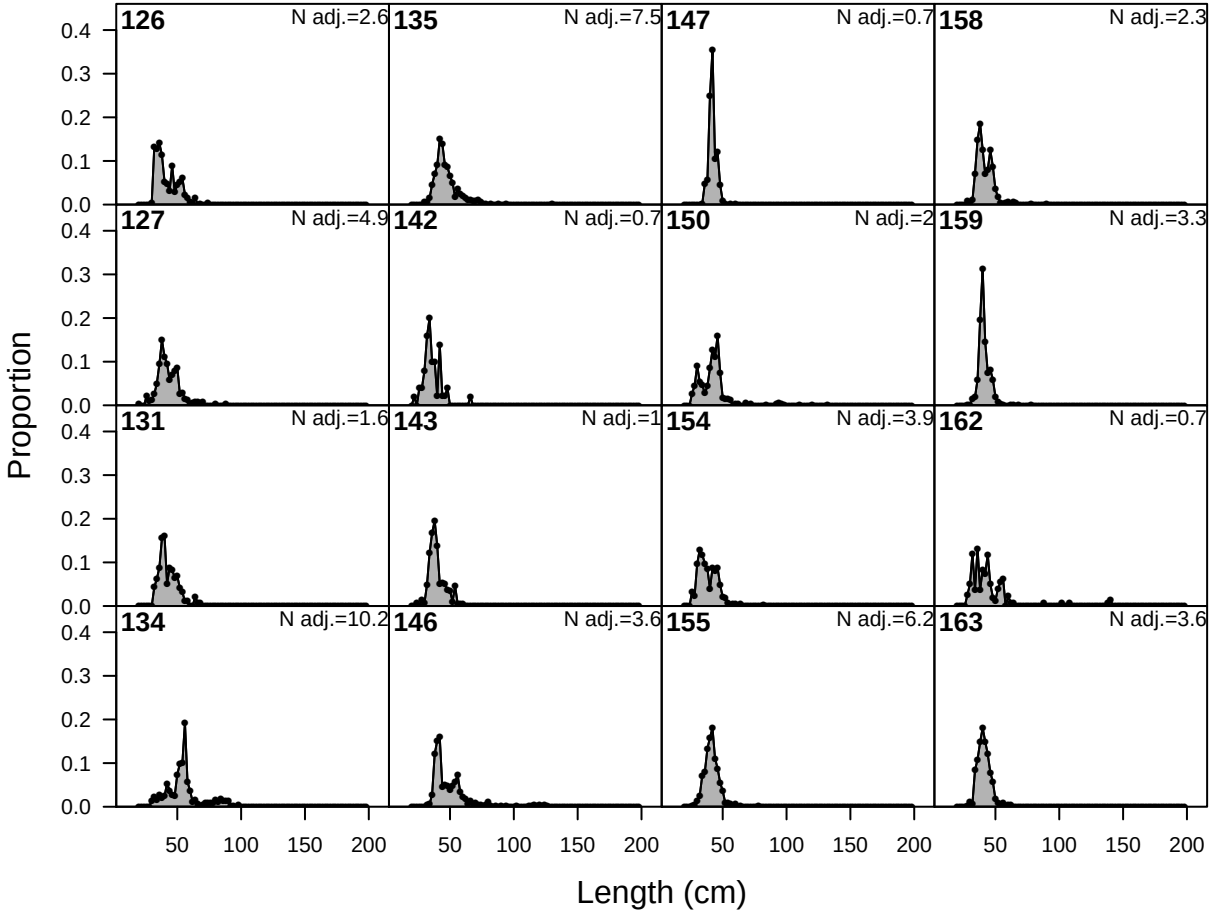

155
N adj.=10.9
163
N adj.=10.5
171
N adj.=16.9
179
N adj.=24.8
158
N adj.=14.3
166
N adj.=9.4
174
N adj.=23
159
N adj.=9.8
167
N adj.=20.3
175
N adj.=11.3
162
N adj.=11.7
170
N adj.=27.5
178
N adj.=13.2
Proportion
Length (cm)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200

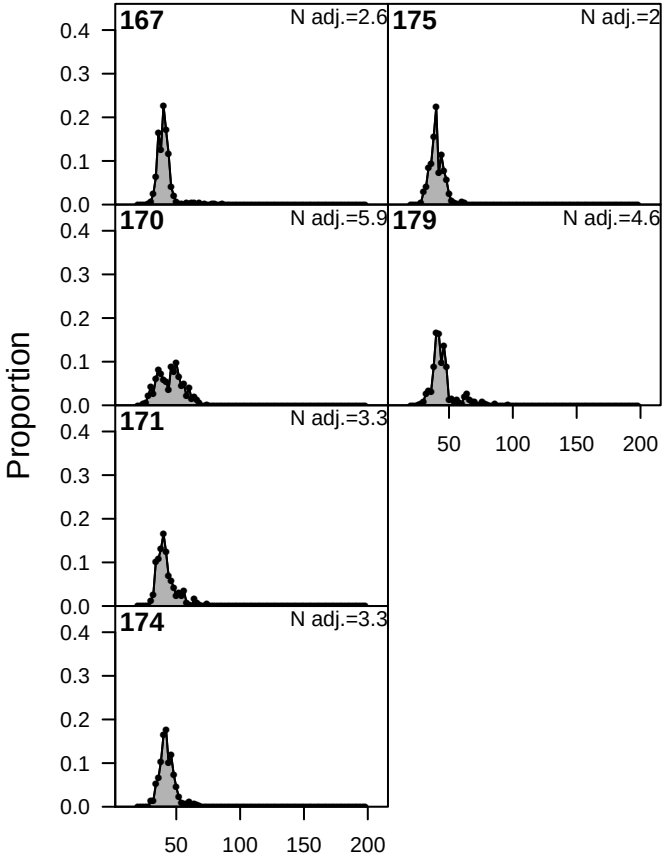

0.01
0.2
0.4
200
150
100
50
Length (cm)
42
54
66
78
91
102
114
126
138
150
162
174
Year

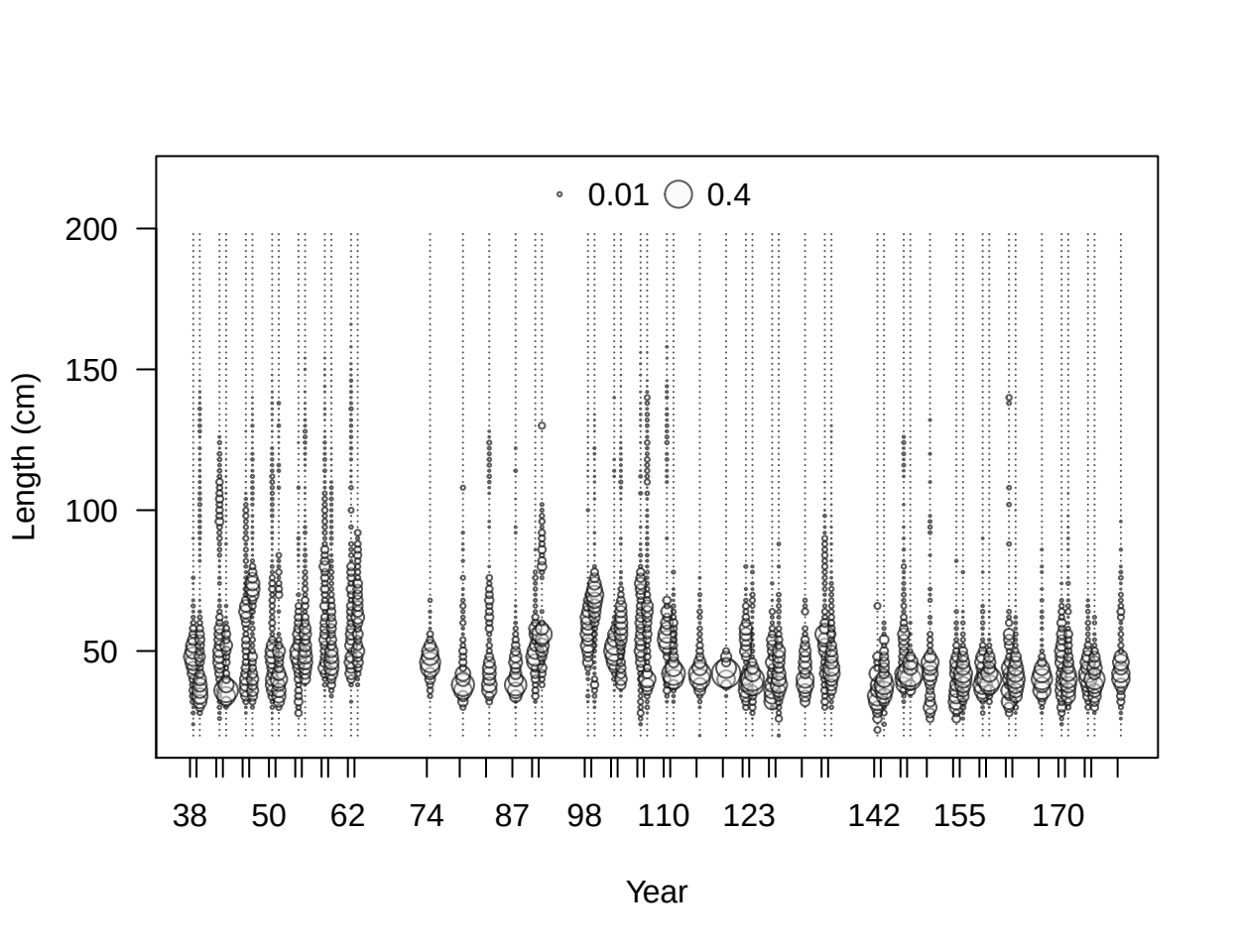

F6−OBJ_N_Q23 (whole catch)
Mean length
Year
140
120
100
80
60
40
20
40
60
80
100
120
140
160
180

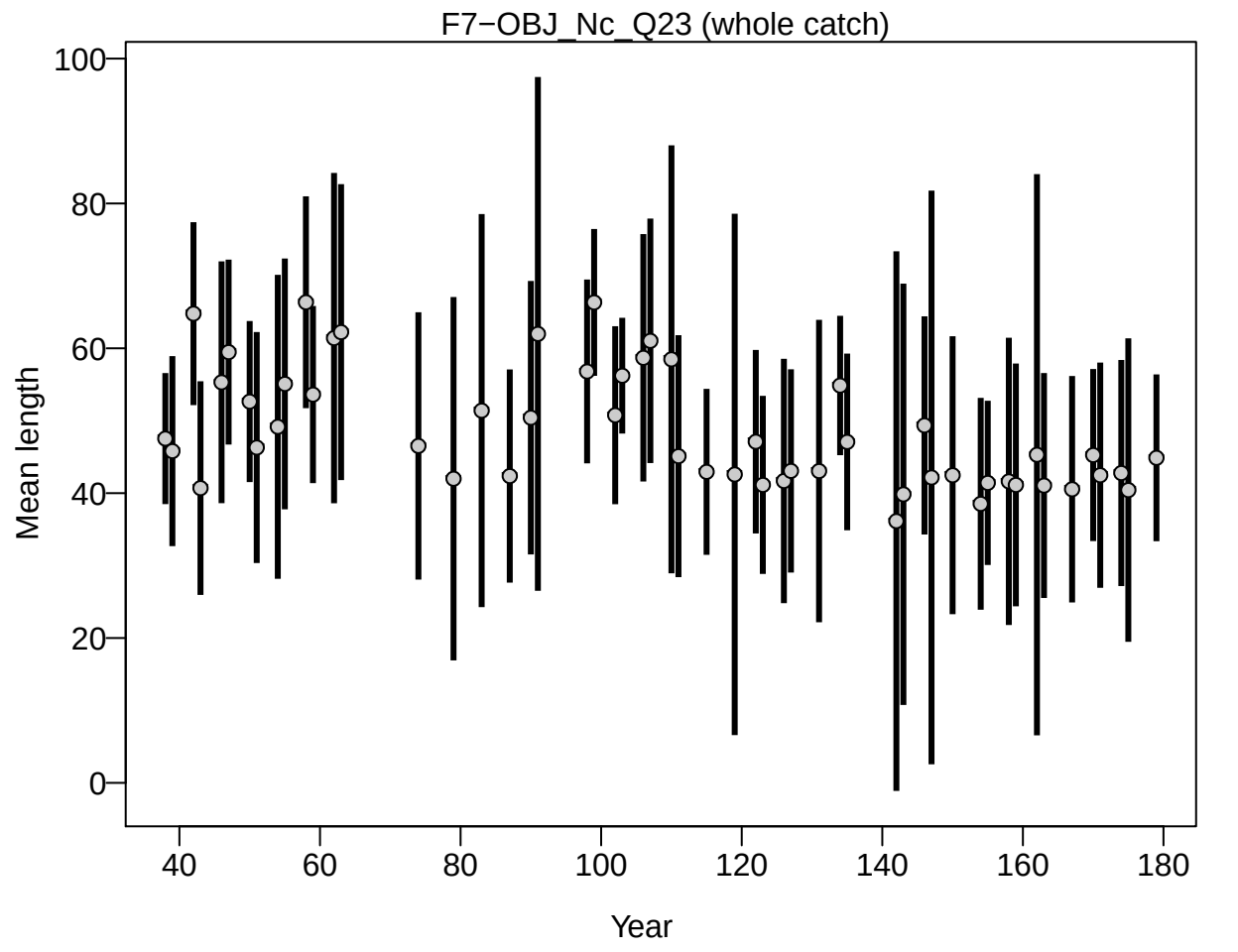

38
N adj.=9.8
46
N adj.=3.9
54
N adj.=2
62
N adj.=1.6
39
N adj.=5.9
47
N adj.=6.6
55
N adj.=3.6
63
N adj.=2
42
N adj.=6.2
50
N adj.=6.6
58
N adj.=3.6
74
N adj.=2.3
43
N adj.=5.6
51
N adj.=2.9
59
N adj.=5.9
79
N adj.=1.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

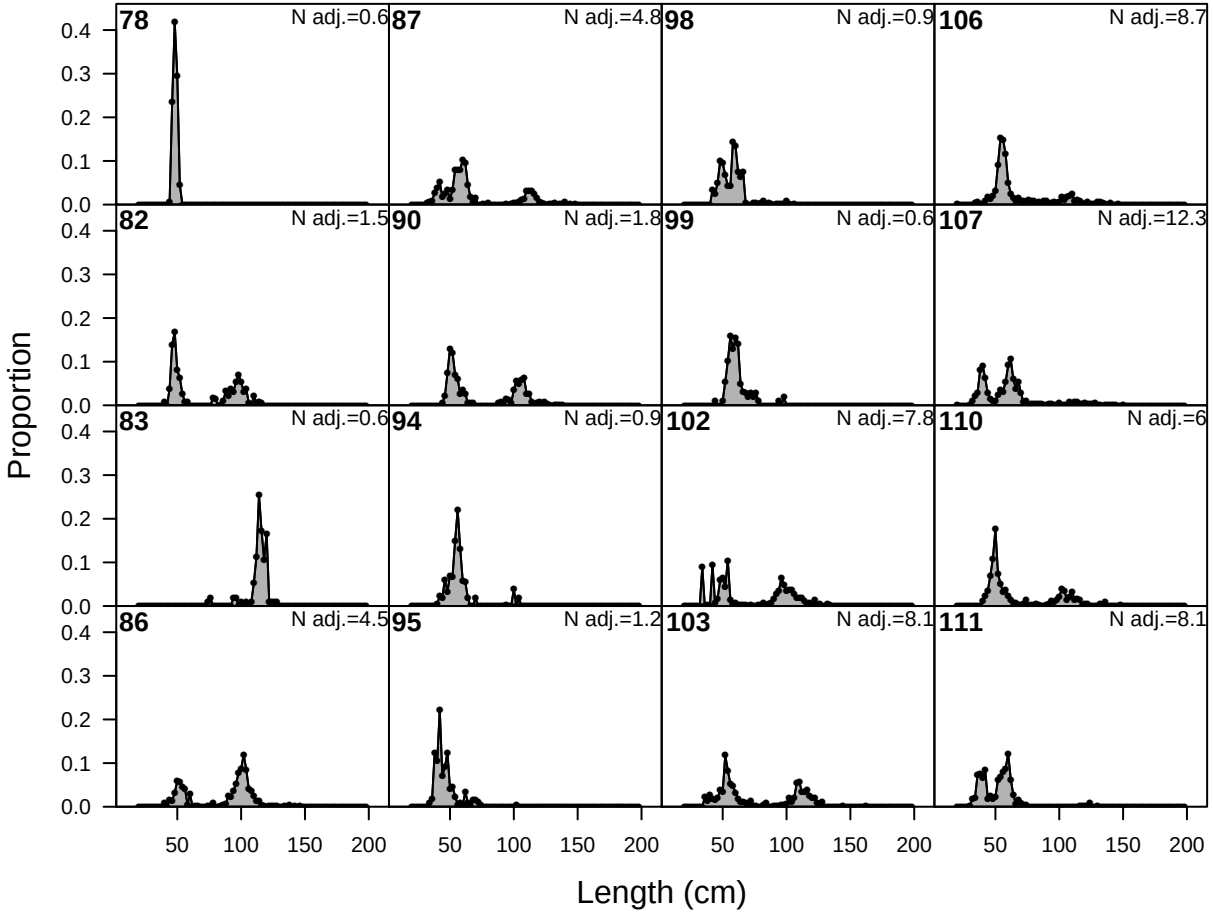

83
N adj.=1.6
98
N adj.=4.3
106
N adj.=3.9
115
N adj.=7.9
87
N adj.=4.3
99
N adj.=8.8
107
N adj.=4.3
119
N adj.=0.7
90
N adj.=2.3
102
N adj.=3.6
110
N adj.=1.3
122
N adj.=7.2
91
N adj.=0.7
103
N adj.=10.8
111
N adj.=4.3
123
N adj.=6.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

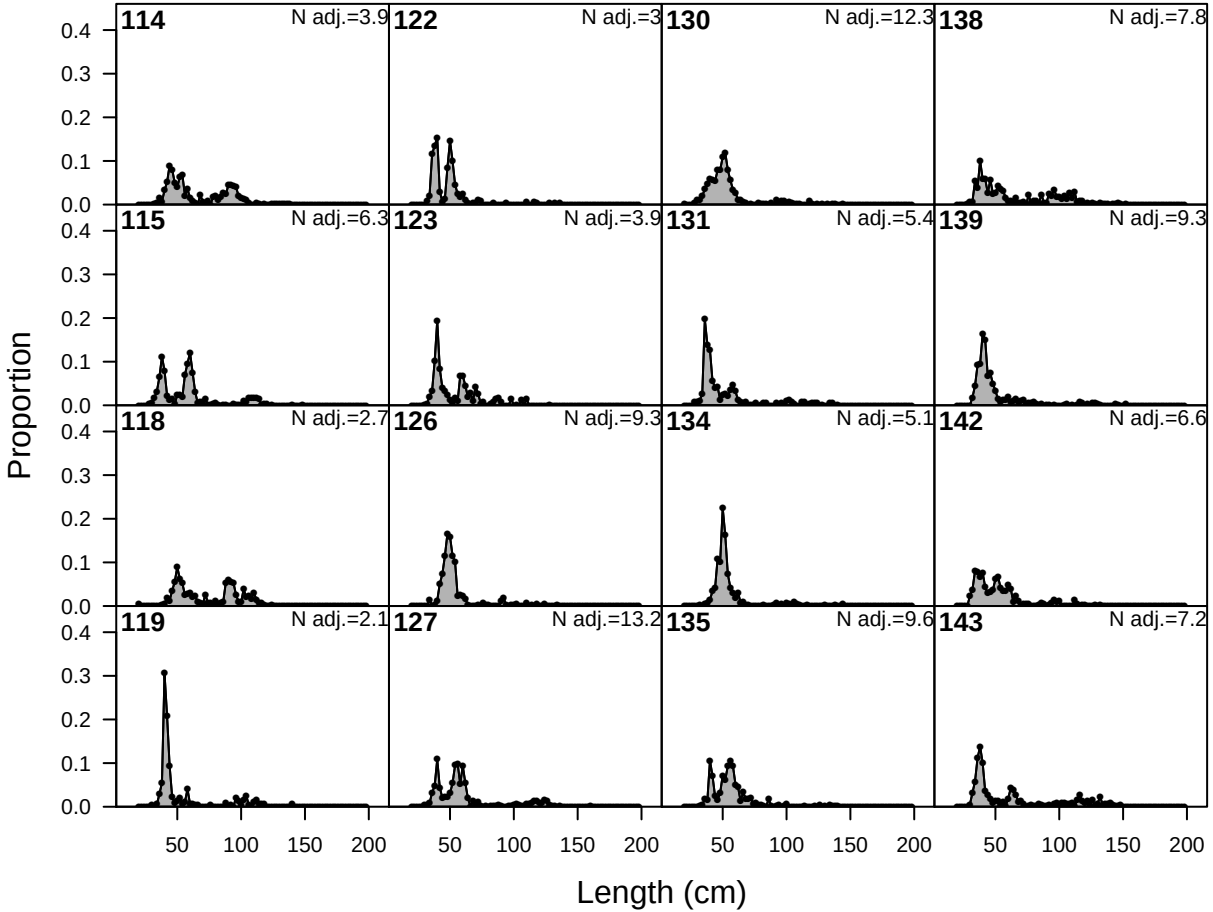

126
N adj.=2.6
135
N adj.=7.5
147
N adj.=0.7
158
N adj.=2.3
127
N adj.=4.9
142
N adj.=0.7
150
N adj.=2
159
N adj.=3.3
131
N adj.=1.6
143
N adj.=1
154
N adj.=3.9
162
N adj.=0.7
134
N adj.=10.2
146
N adj.=3.6
155
N adj.=6.2
163
N adj.=3.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

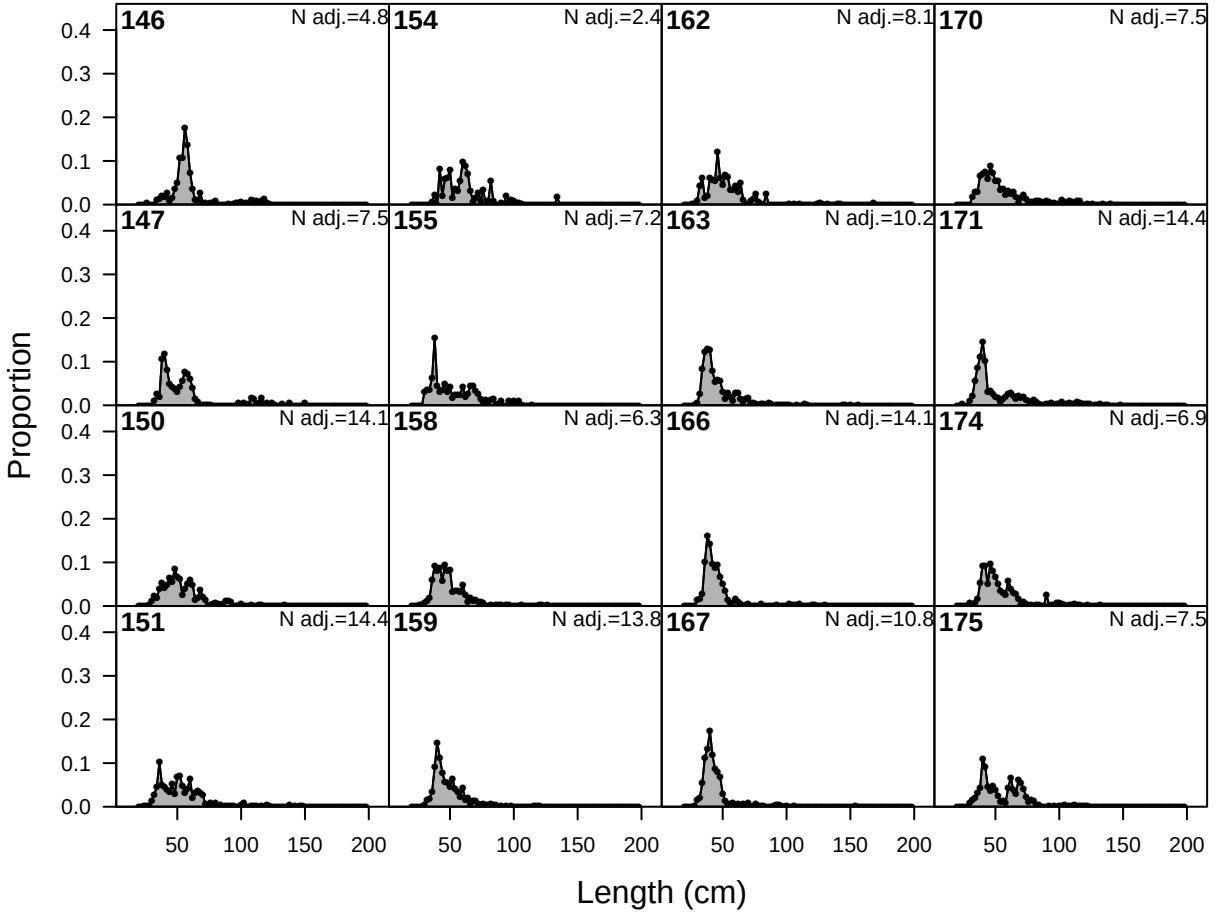

167
N adj.=2.6
175
N adj.=2
170
N adj.=5.9
179
N adj.=4.6
171
N adj.=3.3
174
N adj.=3.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

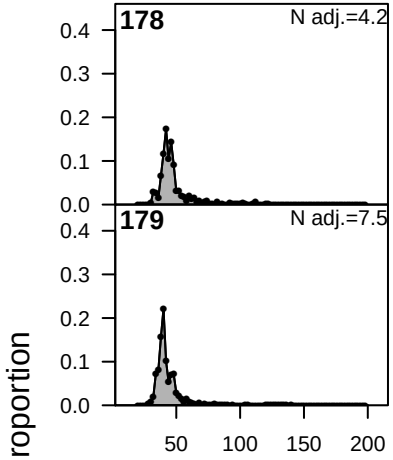

0.01
0.4
200
150
100
50
Length (cm)
38
50
62
74
87
98
110
123
142
155
170
Year


F7−OBJ_Nc_Q23 (whole catch)
Mean length
Year
100
80
60
40
20
0
40
60
80
100
120
140
160
180

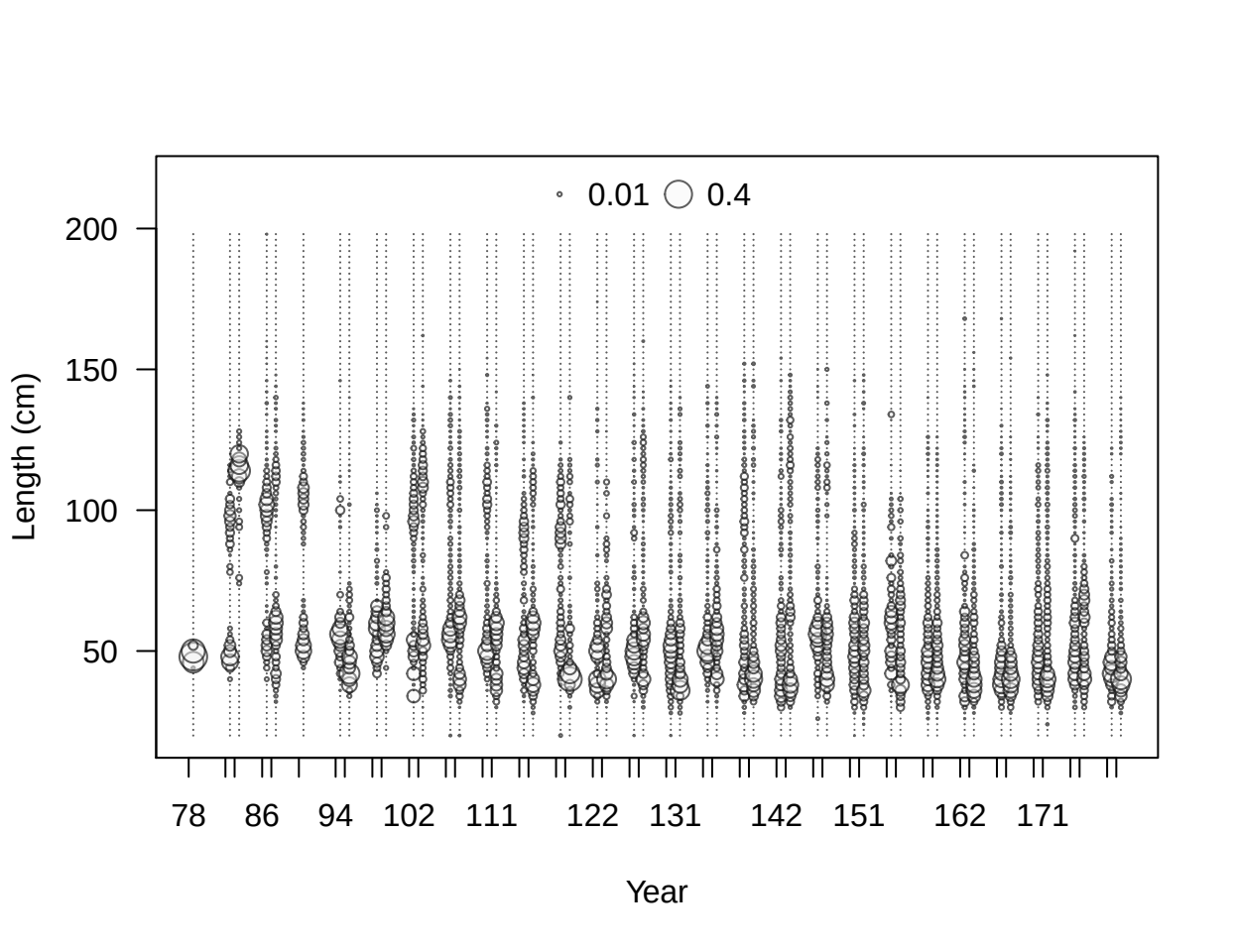

78
N adj.=0.6
87
N adj.=4.8
98
N adj.=0.9
106
N adj.=8.7
82
N adj.=1.5
90
N adj.=1.8
99
N adj.=0.6
107
N adj.=12.3
83
N adj.=0.6
94
N adj.=0.9
102
N adj.=7.8
110
N adj.=6
86
N adj.=4.5
95
N adj.=1.2
103
N adj.=8.1
111
N adj.=8.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

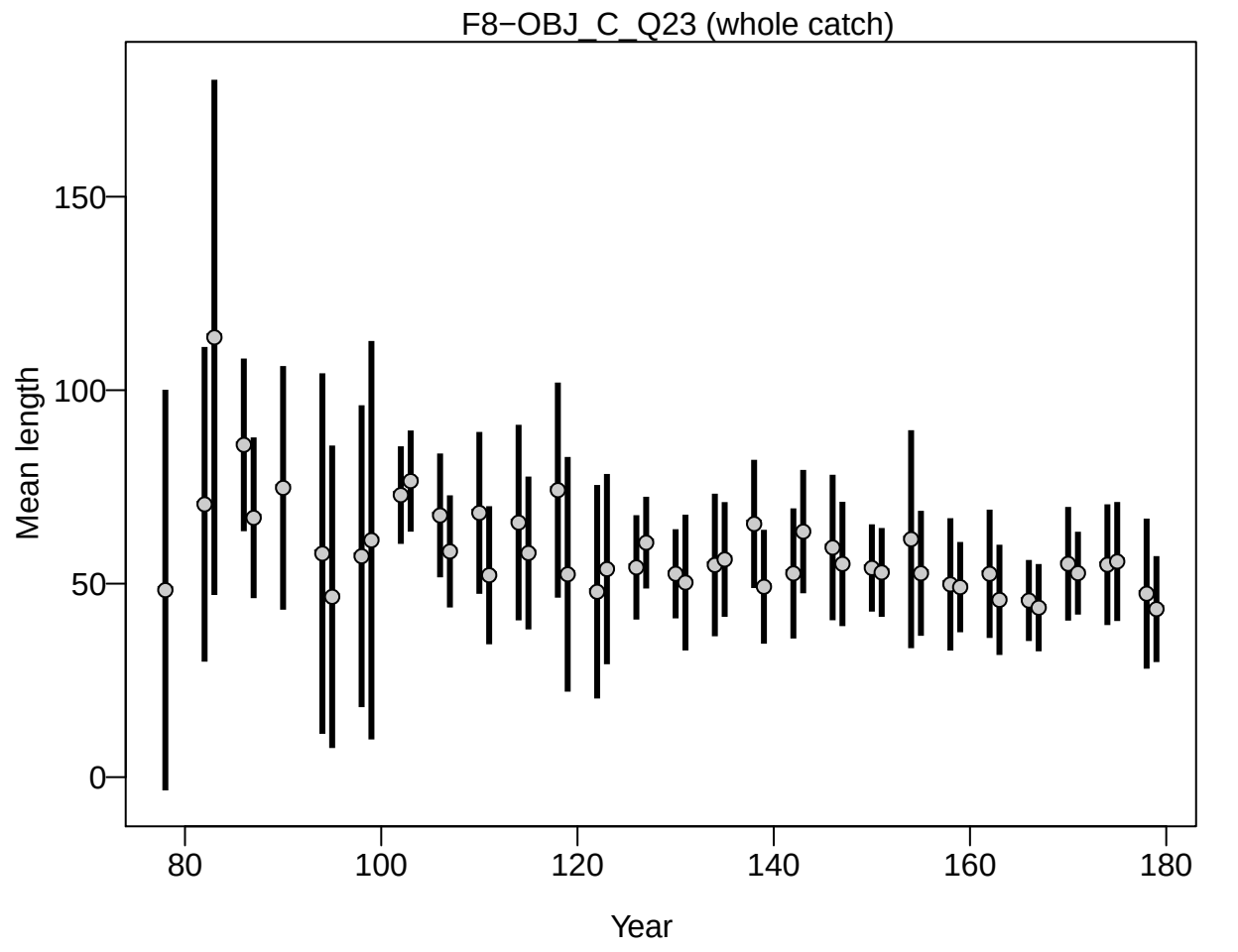

114
N adj.=3.9
122
N adj.=3
130
N adj.=12.3
138
N adj.=7.8
115
N adj.=6.3
123
N adj.=3.9
131
N adj.=5.4
139
N adj.=9.3
118
N adj.=2.7
126
N adj.=9.3
134
N adj.=5.1
142
N adj.=6.6
119
N adj.=2.1
127
N adj.=13.2
135
N adj.=9.6
143
N adj.=7.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

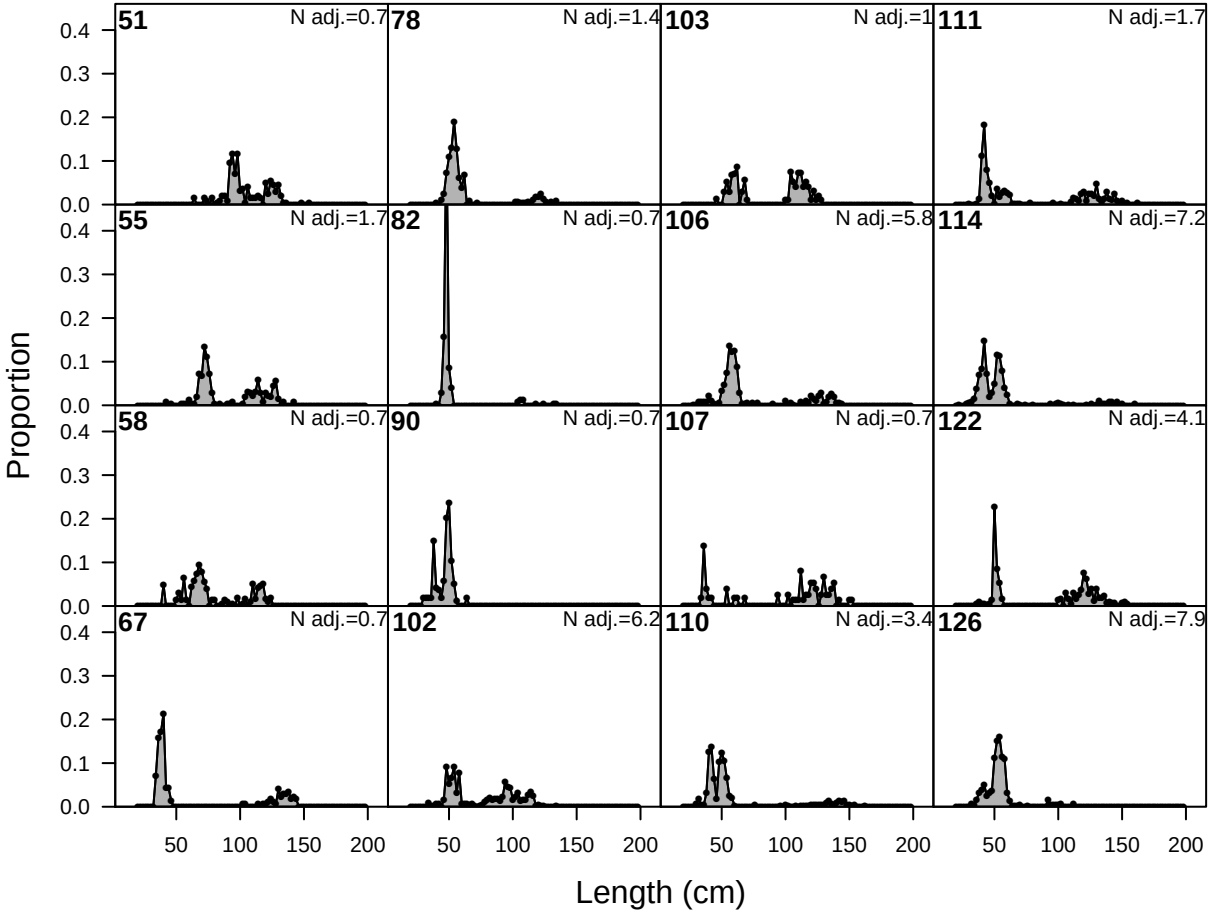

146
N adj.=4.8
154
N adj.=2.4
162
N adj.=8.1
170
N adj.=7.5
147
N adj.=7.5
155
N adj.=7.2
163
N adj.=10.2
171
N adj.=14.4
150
N adj.=14.1
158
N adj.=6.3
166
N adj.=14.1
174
N adj.=6.9
151
N adj.=14.4
159
N adj.=13.8
167
N adj.=10.8
175
N adj.=7.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

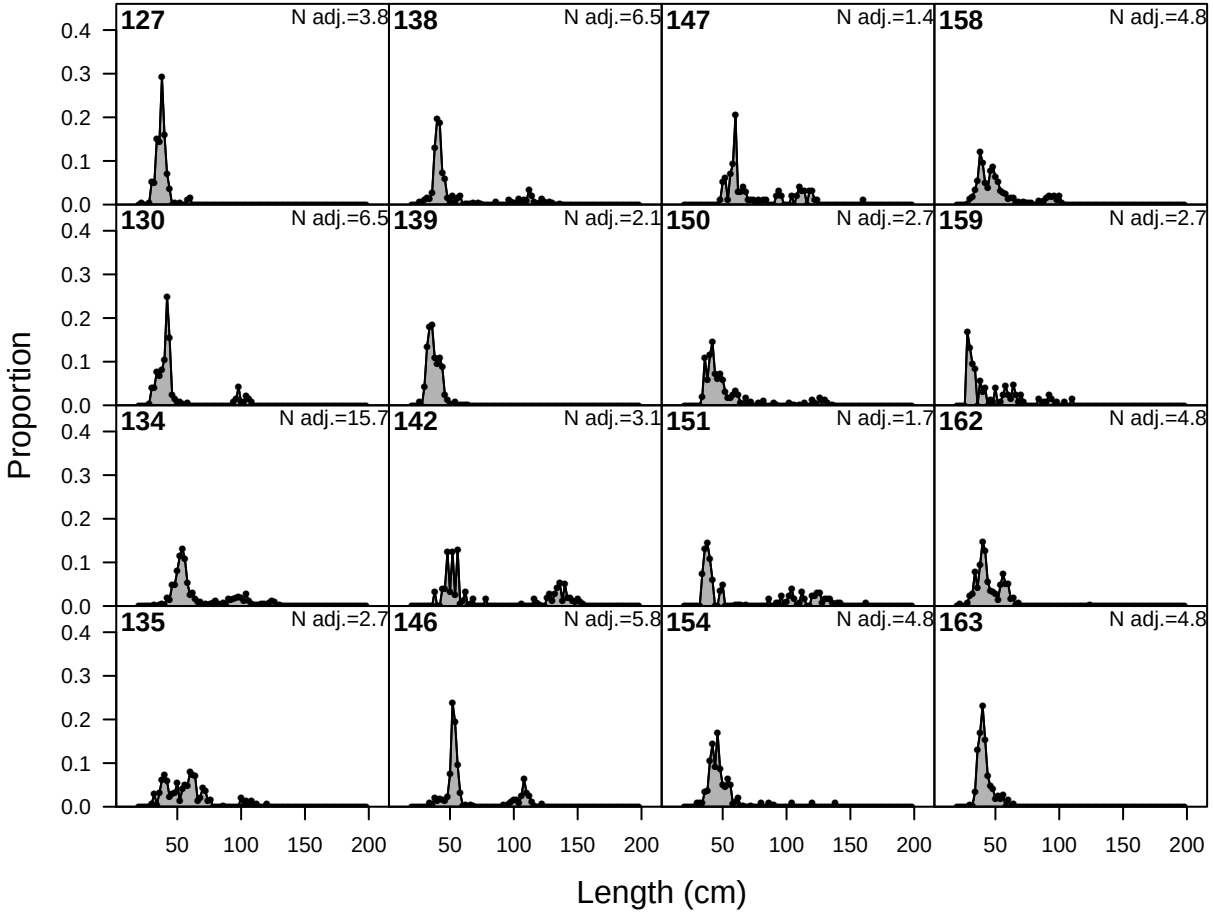


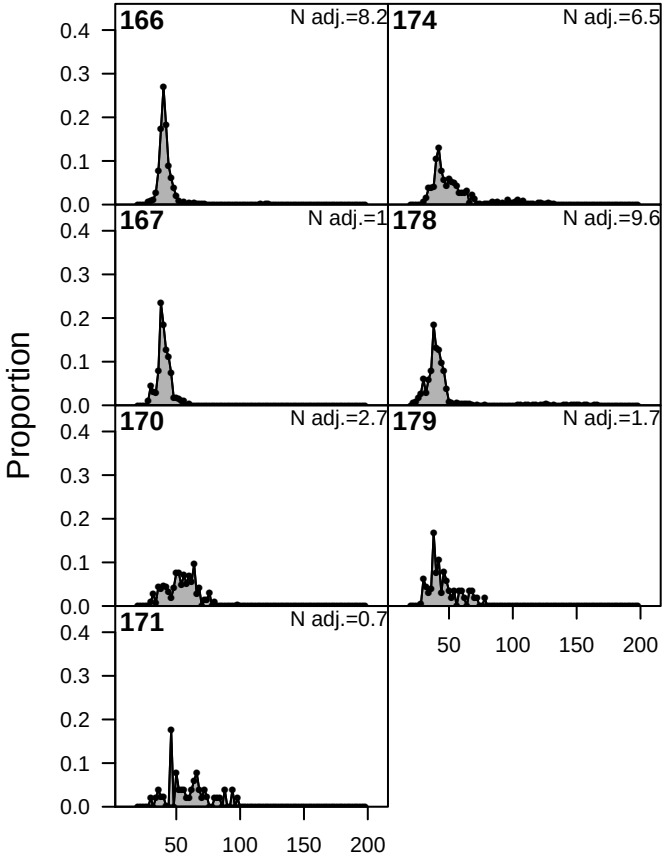
Length (cm)

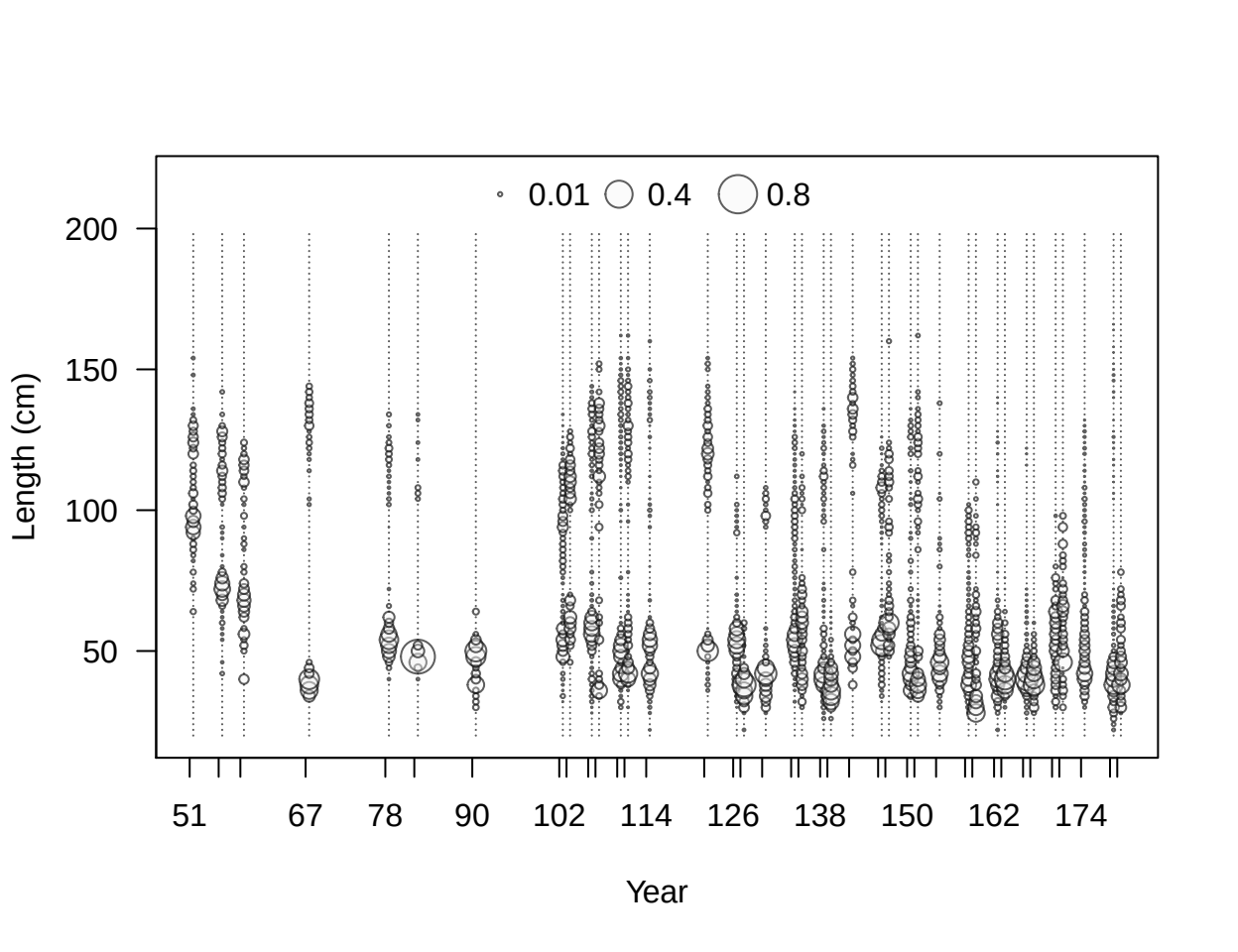

0.01
0.4
200
150
100
50
Length (cm)
78
86
94
102
111
122
131
142
151
162
171
Year

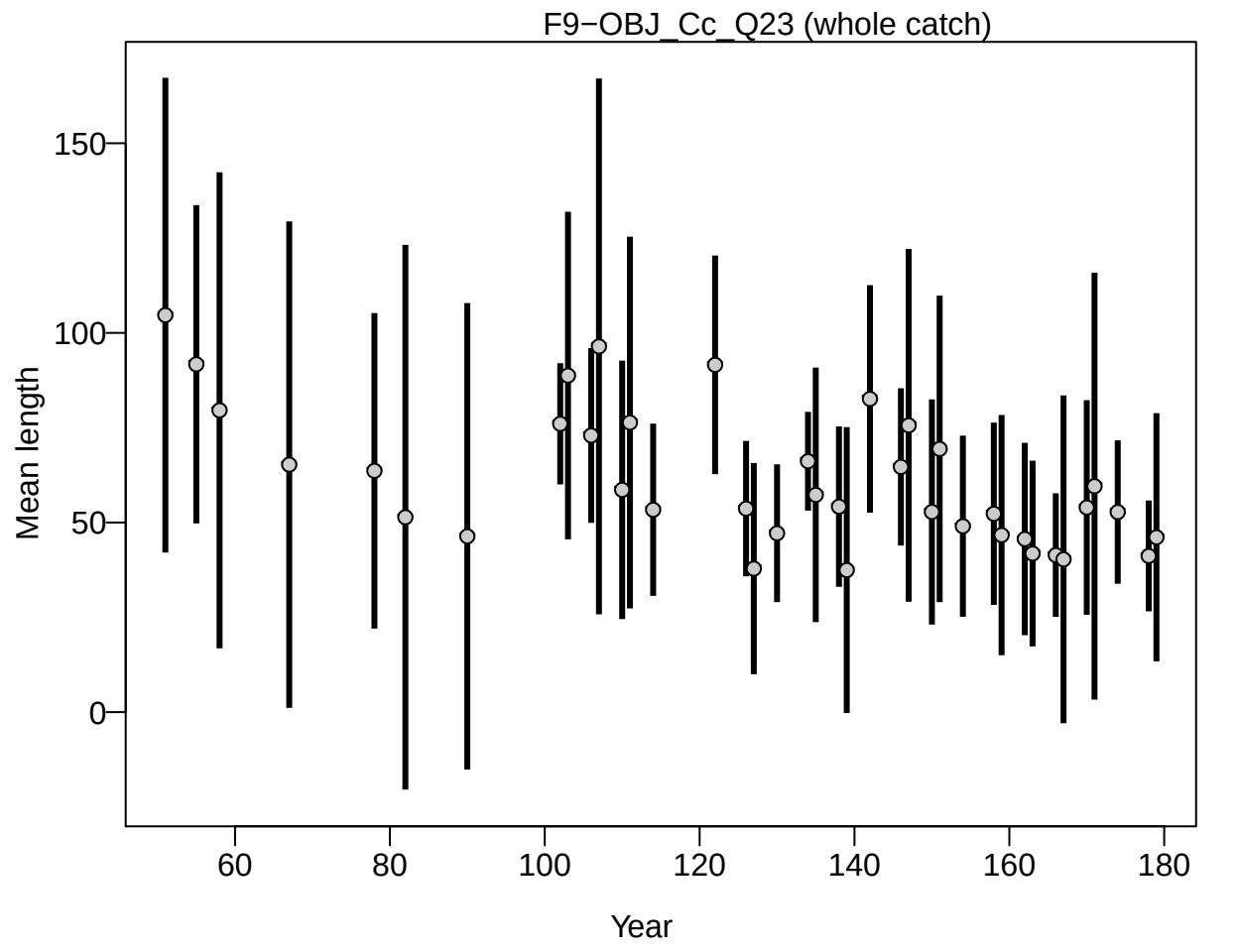

F8−OBJ_C_Q23 (whole catch)
Mean length
150
100
50
0
80
100
120
140
160
180
Year

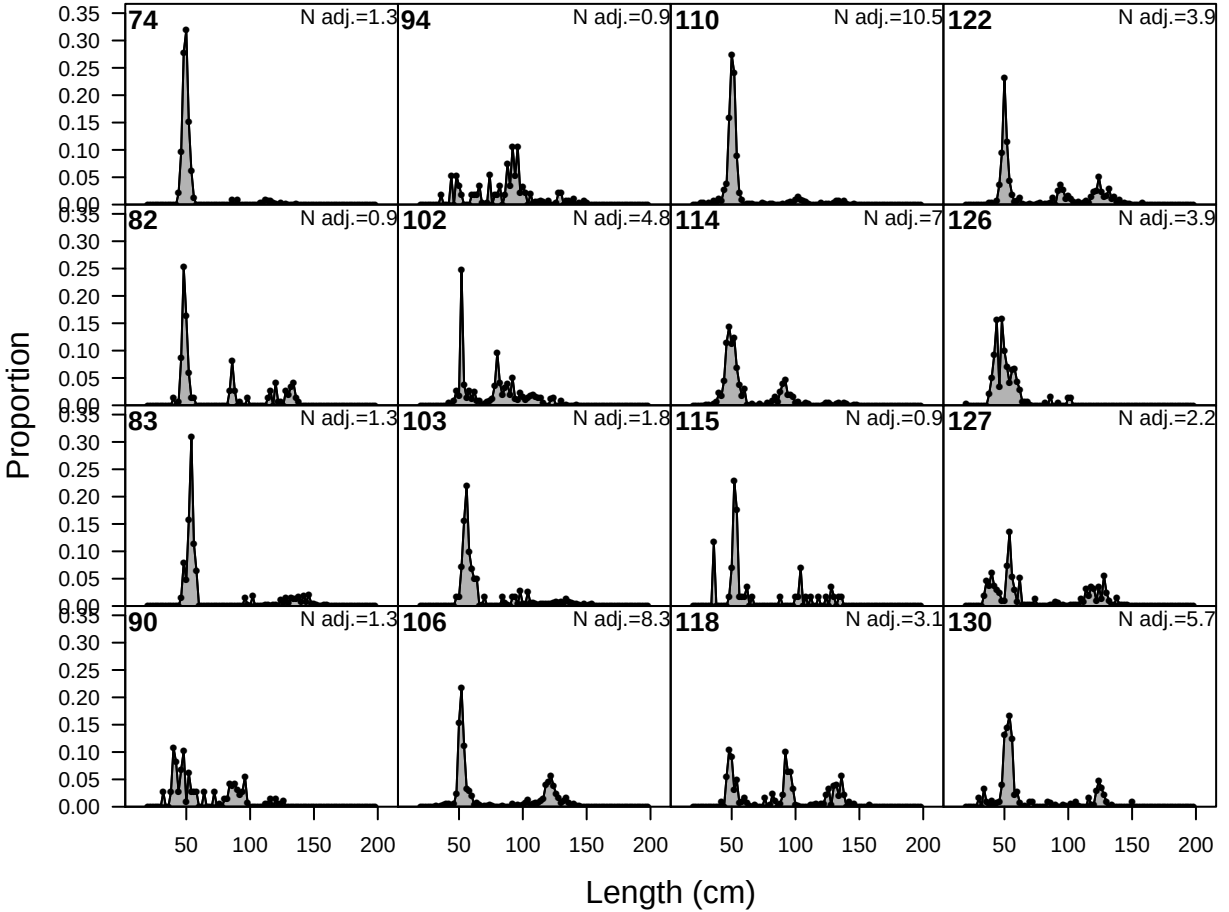

51
N adj.=0.7
78
N adj.=1.4
103
N adj.=1
111
N adj.=1.7
55
N adj.=1.7
82
N adj.=0.7
106
N adj.=5.8
114
N adj.=7.2
58
N adj.=0.7
90
N adj.=0.7
107
N adj.=0.7
122
N adj.=4.1
67
N adj.=0.7
102
N adj.=6.2
110
N adj.=3.4
126
N adj.=7.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

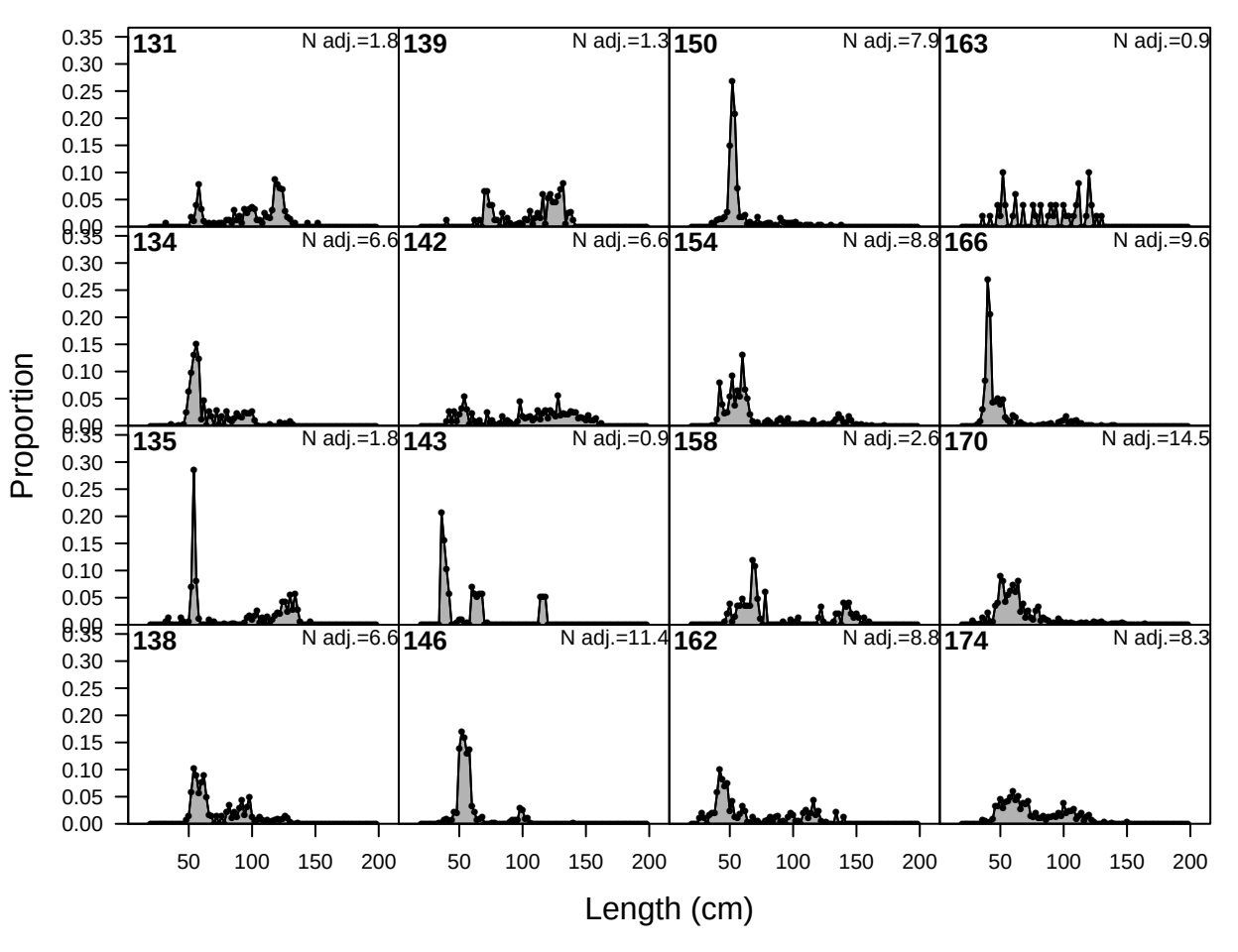

127
N adj.=3.8
138
N adj.=6.5
147
N adj.=1.4
158
N adj.=4.8
130
N adj.=6.5
139
N adj.=2.1
150
N adj.=2.7
159
N adj.=2.7
134
N adj.=15.7
142
N adj.=3.1
151
N adj.=1.7
162
N adj.=4.8
135
N adj.=2.7
146
N adj.=5.8
154
N adj.=4.8
163
N adj.=4.8
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

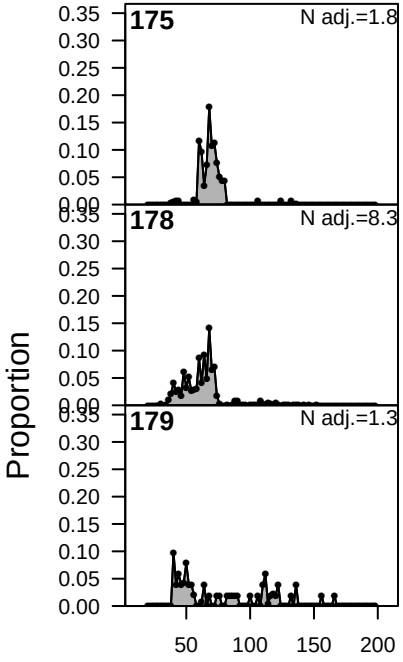

166
N adj.=8.2
174
N adj.=6.5
167
N adj.=1
178
N adj.=9.6
170
N adj.=2.7
179
N adj.=1.7
171
N adj.=0.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


0.01
0.4
0.8
200
150
100
50
Length (cm)
51
67
78
90
102
114
126
138
150
162
174
Year

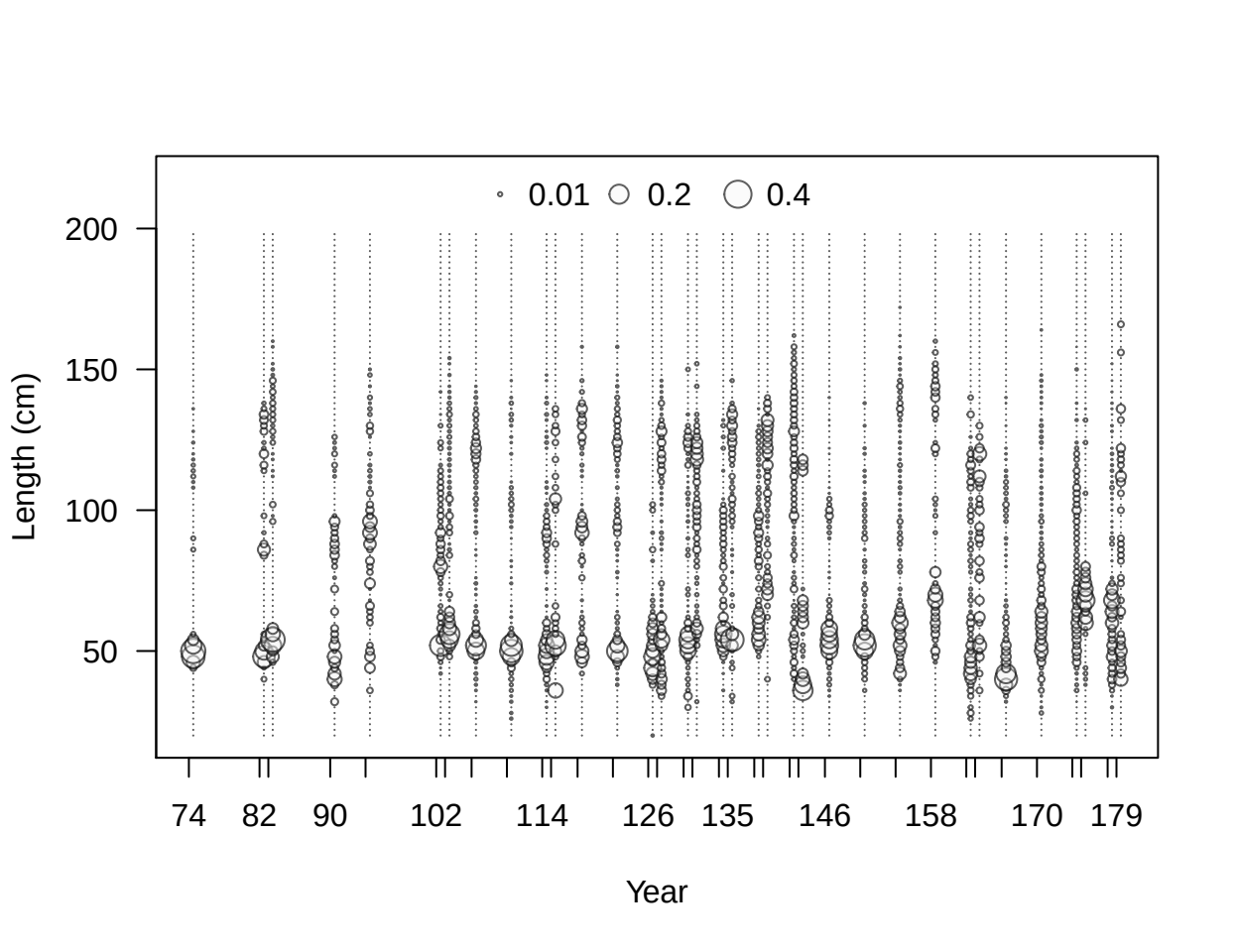

F9−OBJ_Cc_Q23 (whole catch)
Mean length
150
100
50
0
60
80
100
120
140
160
180
Year

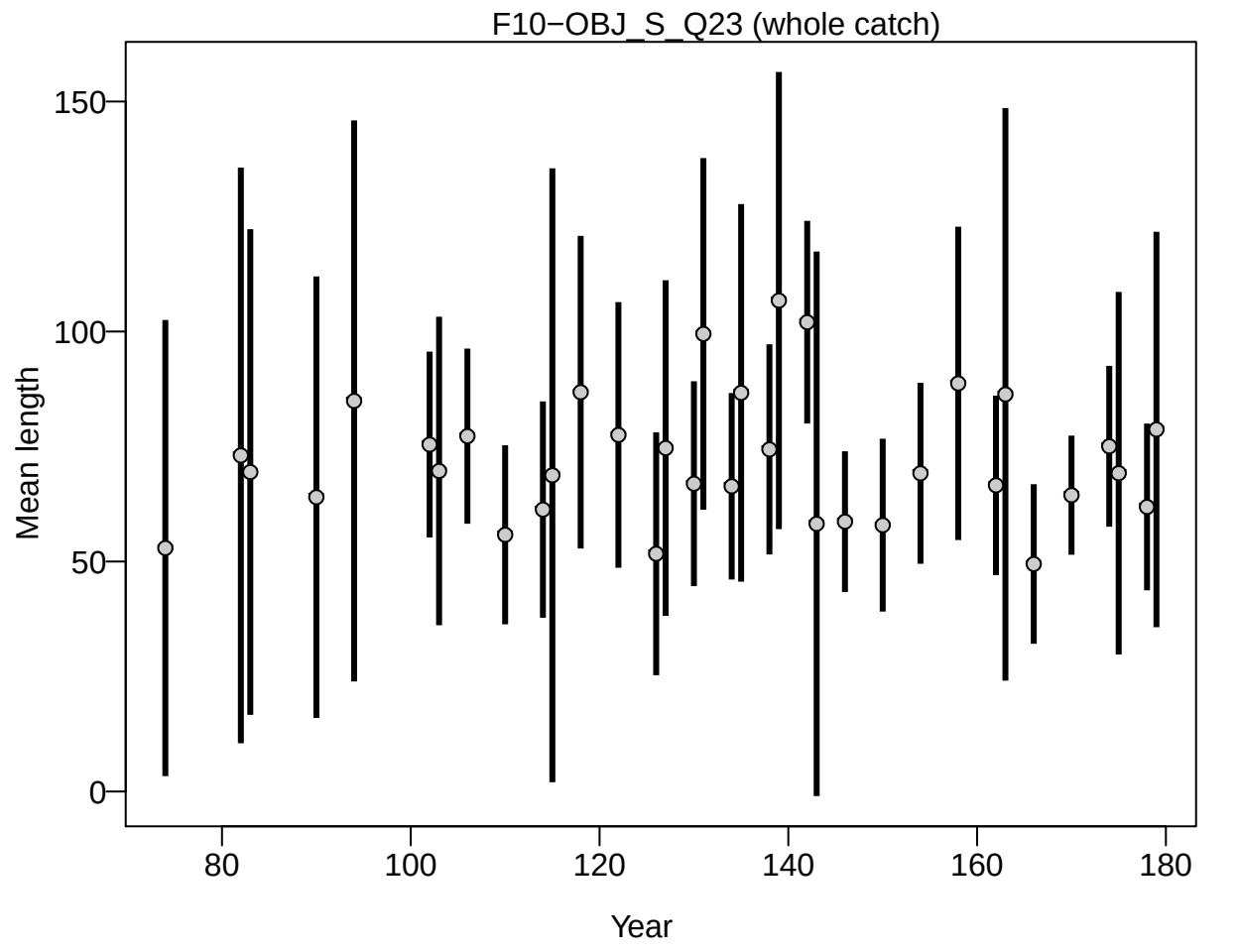

74
N adj.=1.3
94
N adj.=0.9
110
N adj.=10.5
122
N adj.=3.9
82
N adj.=0.9
102
N adj.=4.8
114
N adj.=7
126
N adj.=3.9
83
N adj.=1.3
103
N adj.=1.8
115
N adj.=0.9
127
N adj.=2.2
90
N adj.=1.3
106
N adj.=8.3
118
N adj.=3.1
130
N adj.=5.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

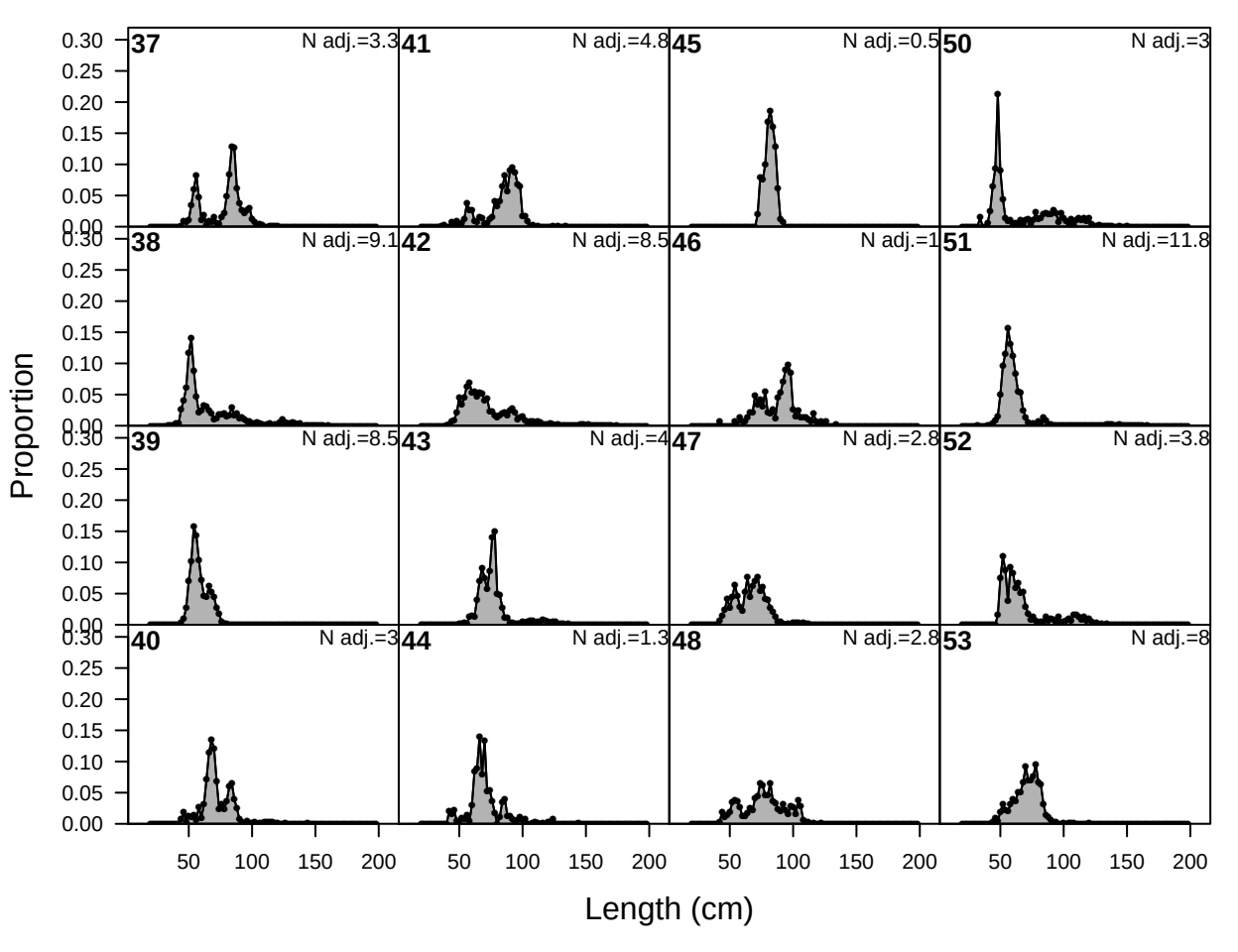

131
N adj.=1.8
139
N adj.=1.3
150
N adj.=7.9
163
N adj.=0.9
134
N adj.=6.6
142
N adj.=6.6
154
N adj.=8.8
166
N adj.=9.6
135
N adj.=1.8
143
N adj.=0.9
158
N adj.=2.6
170
N adj.=14.5
138
N adj.=6.6
146
N adj.=11.4
162
N adj.=8.8
174
N adj.=8.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

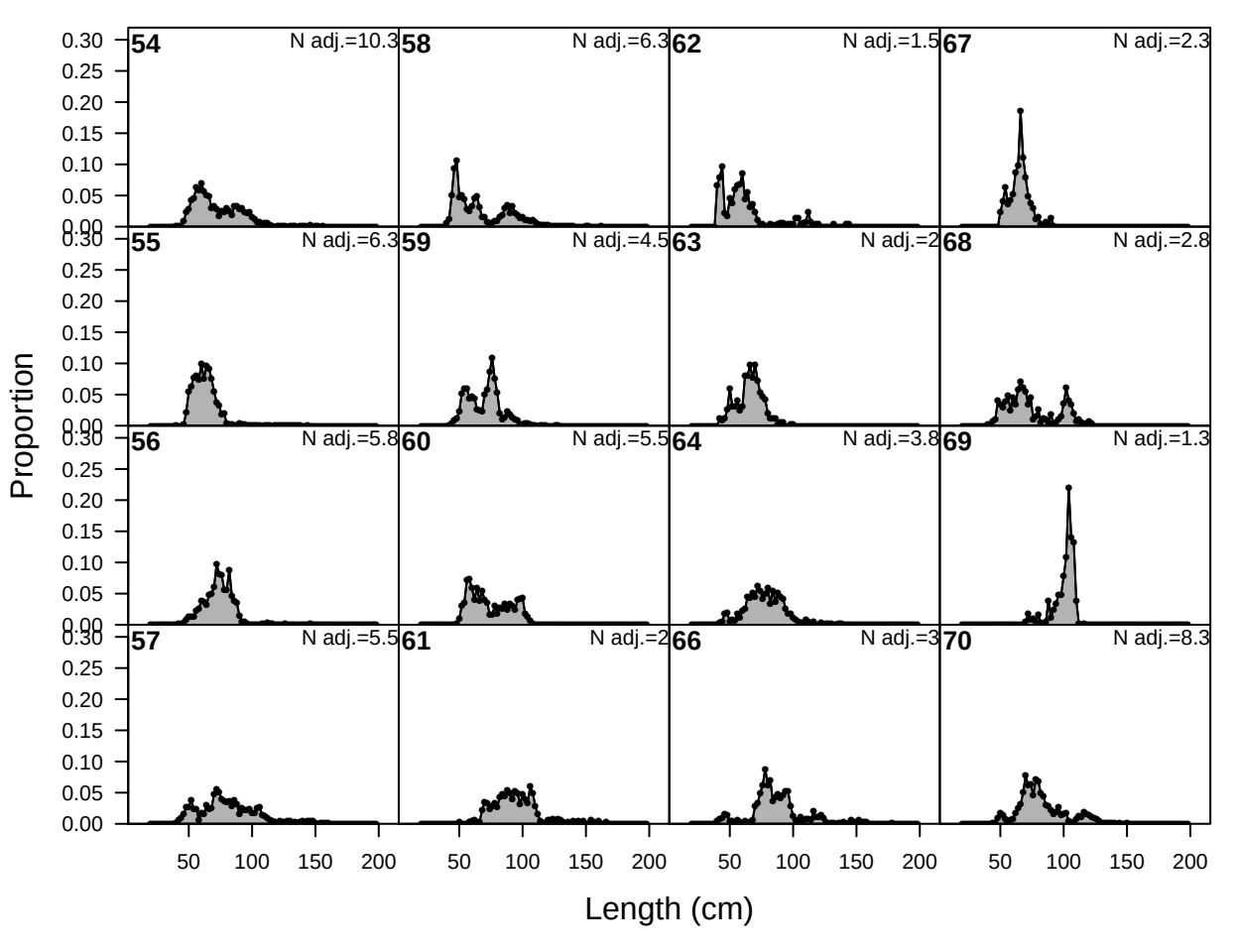

175
N adj.=1.8
178
N adj.=8.3
179
N adj.=1.3
Proportion
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200

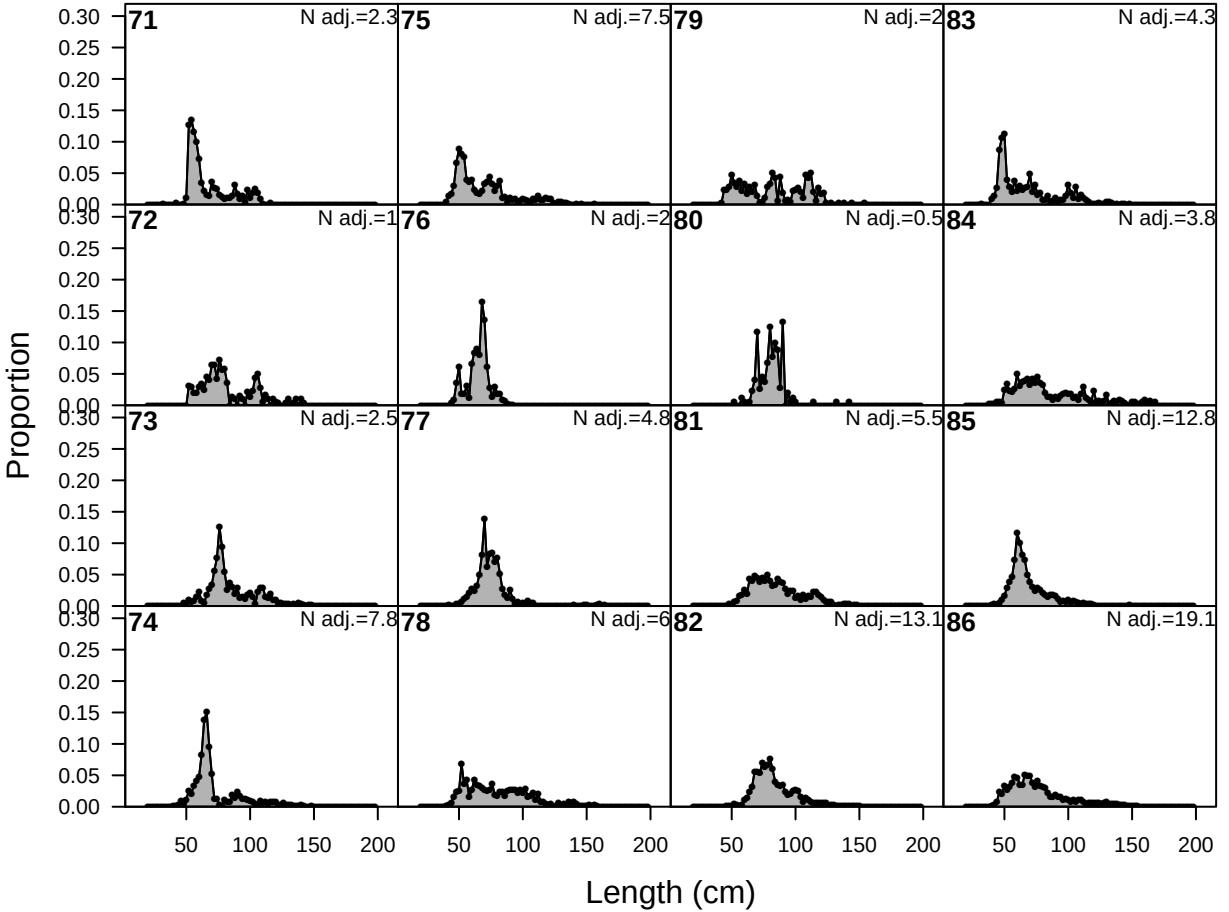
Length (cm)

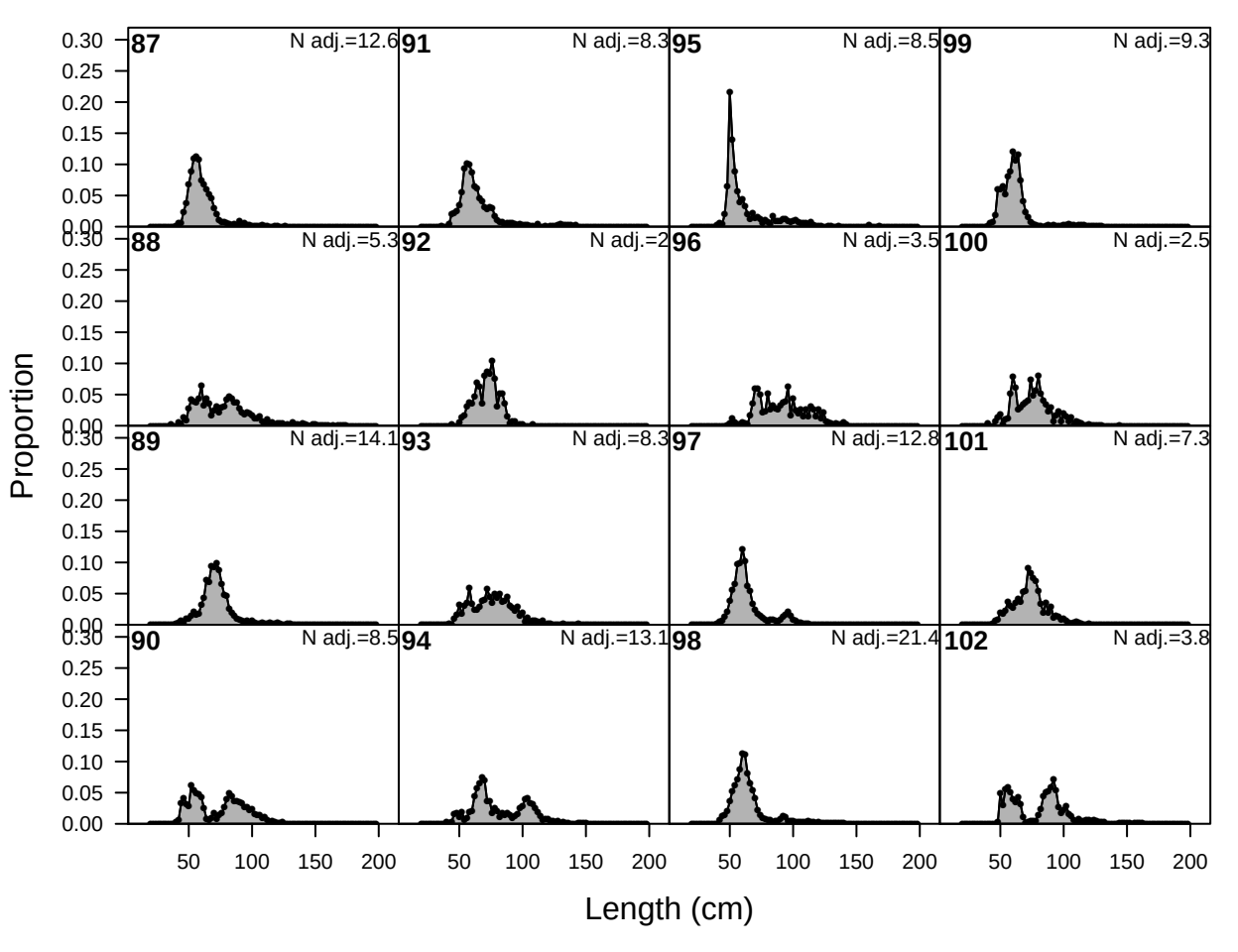

0.01
0.2
0.4
200
150
100
50
Length (cm)
74
82
90
102
114
126
135
146
158
170
179
Year

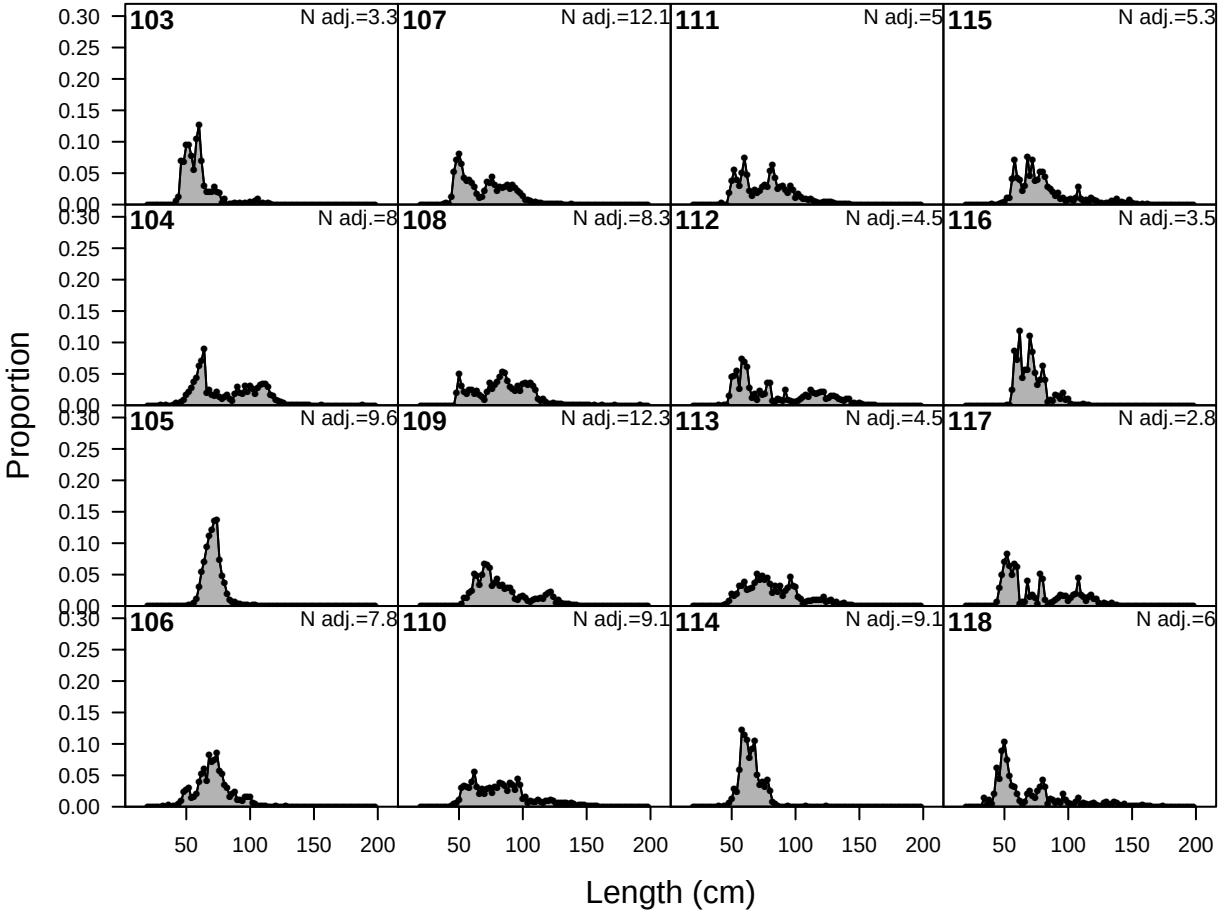

F10−OBJ_S_Q23 (whole catch)
Mean length
150
100
50
0
80
100
120
140
160
180
Year

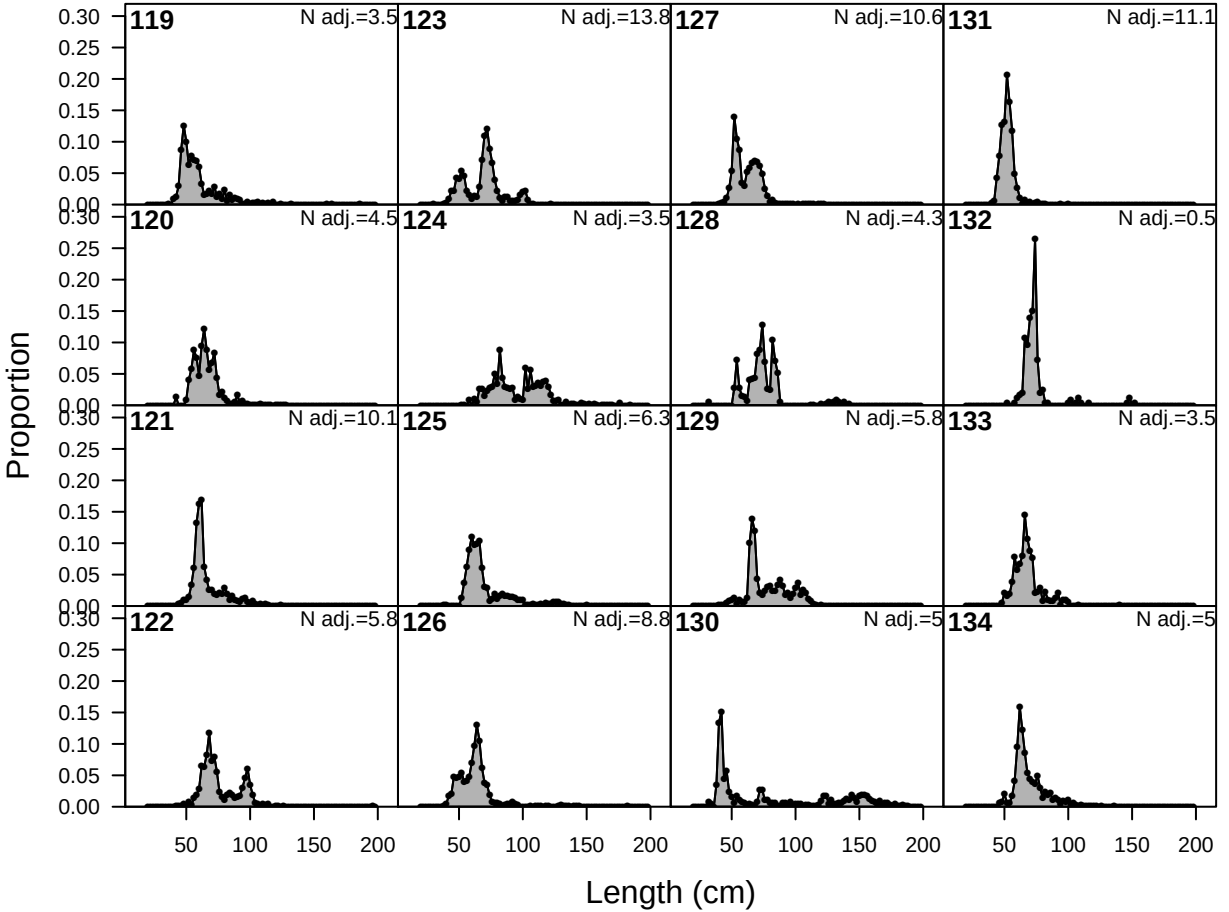

37
N adj.=3.3
41
N adj.=4.8
45
N adj.=0.5
50
N adj.=3
38
N adj.=9.1
42
N adj.=8.5
46
N adj.=1
51
N adj.=11.8
39
N adj.=8.5
43
N adj.=4
47
N adj.=2.8
52
N adj.=3.8
40
N adj.=3
44
N adj.=1.3
48
N adj.=2.8
53
N adj.=8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

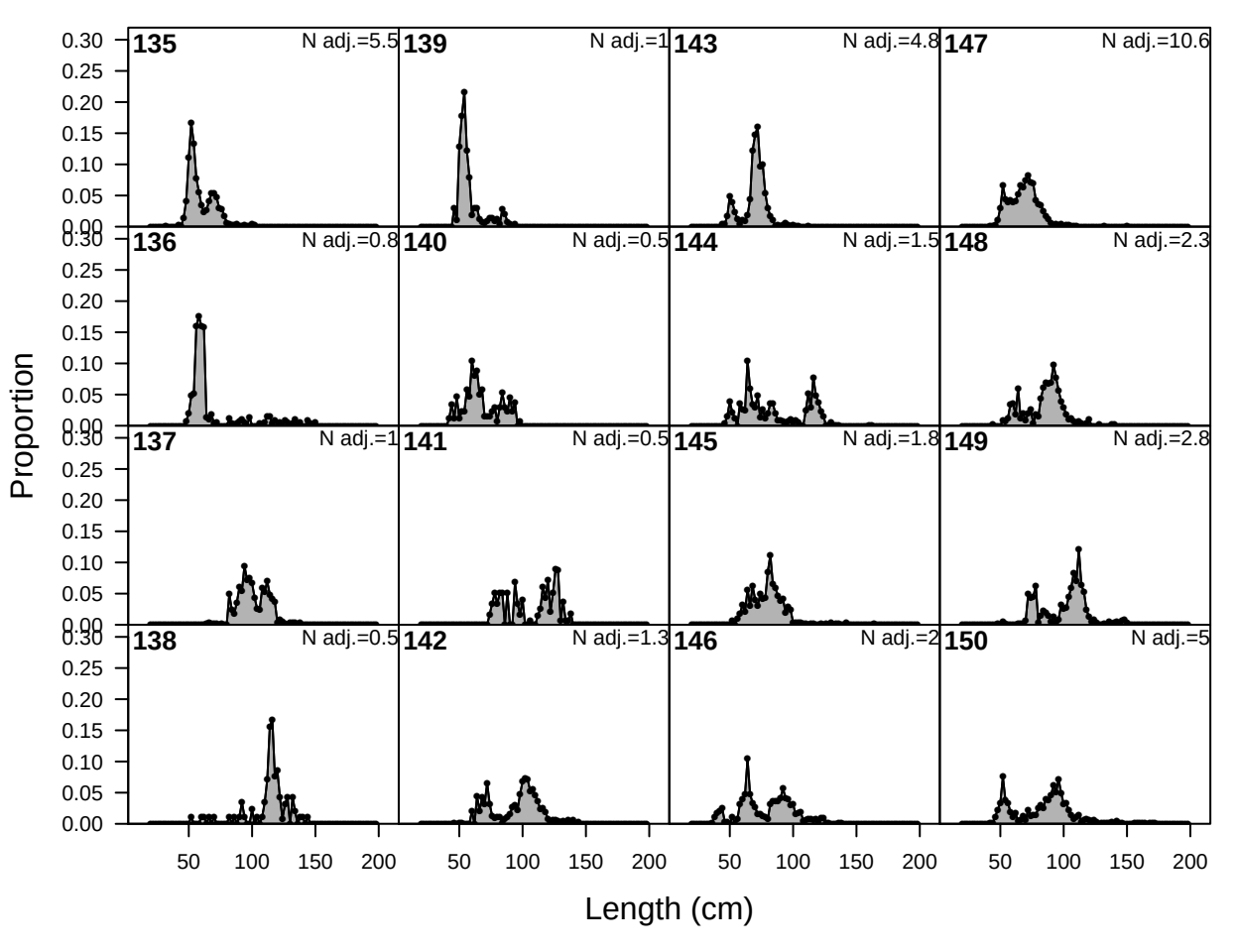

54
N adj.=10.3
58
N adj.=6.3
62
N adj.=1.5
67
N adj.=2.3
55
N adj.=6.3
59
N adj.=4.5
63
N adj.=2
68
N adj.=2.8
56
N adj.=5.8
60
N adj.=5.5
64
N adj.=3.8
69
N adj.=1.3
57
N adj.=5.5
61
N adj.=2
66
N adj.=3
70
N adj.=8.3
0.30
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

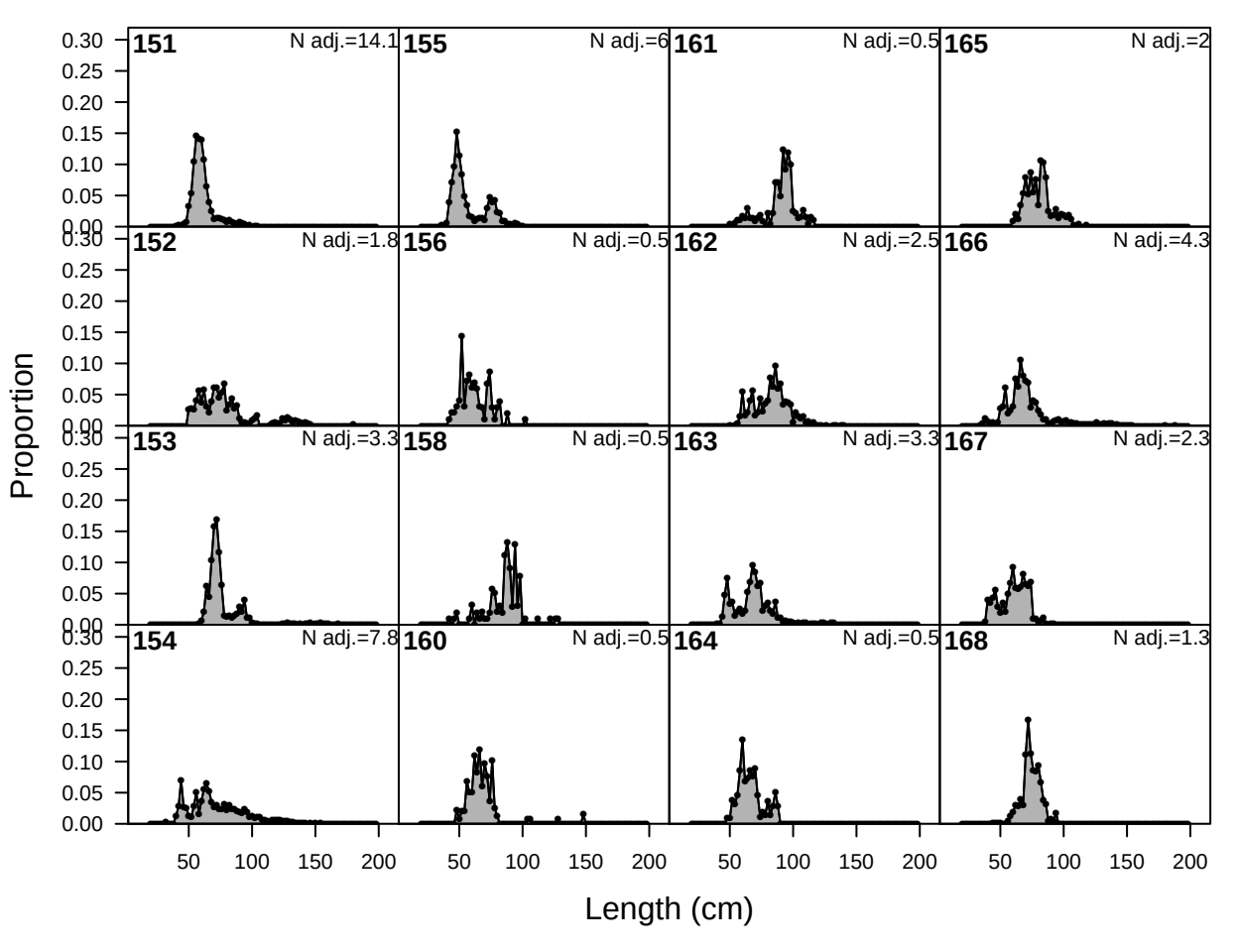

71
N adj.=2.3
75
N adj.=7.5
79
N adj.=2
83
N adj.=4.3
72
N adj.=1
76
N adj.=2
80
N adj.=0.5
84
N adj.=3.8
73
N adj.=2.5
77
N adj.=4.8
81
N adj.=5.5
85
N adj.=12.8
74
N adj.=7.8
78
N adj.=6
82
N adj.=13.1
86
N adj.=19.1
0.30
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

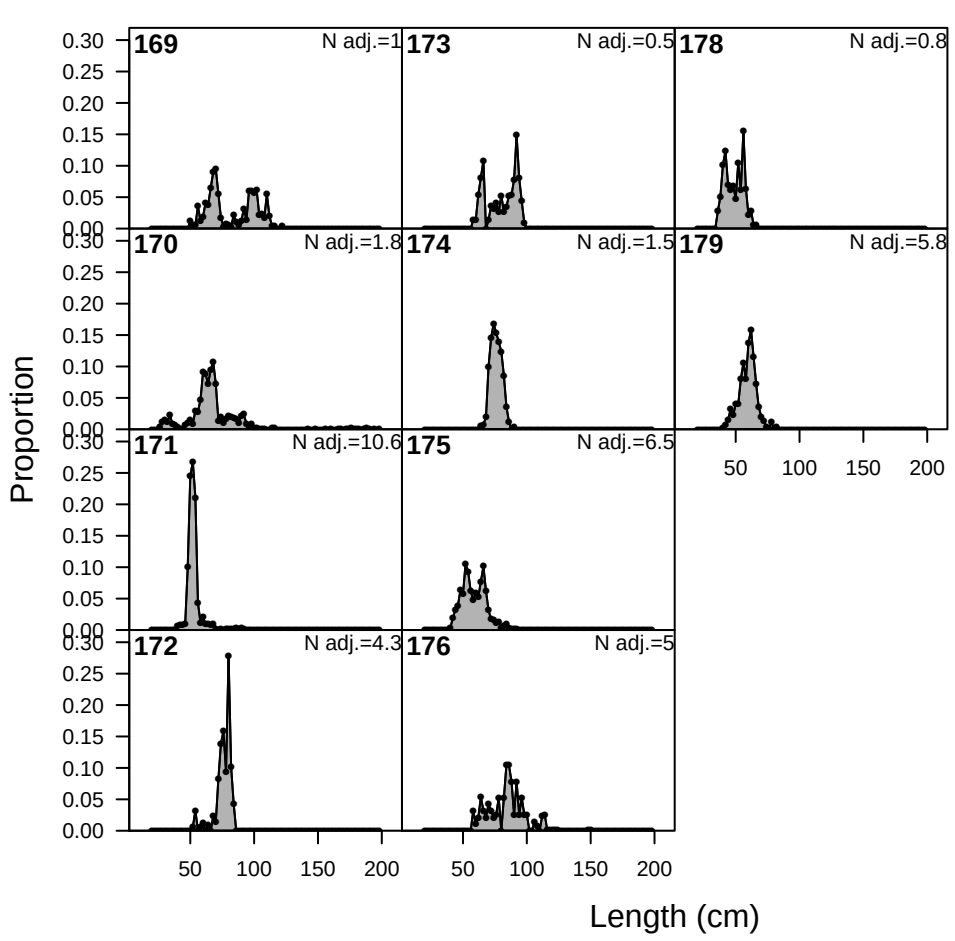

87
N adj.=12.6
91
N adj.=8.3
95
N adj.=8.5
99
N adj.=9.3
88
N adj.=5.3
92
N adj.=2
96
N adj.=3.5
100
N adj.=2.5
89
N adj.=14.1
93
N adj.=8.3
97
N adj.=12.8
101
N adj.=7.3
90
N adj.=8.5
94
N adj.=13.1
98
N adj.=21.4
102
N adj.=3.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

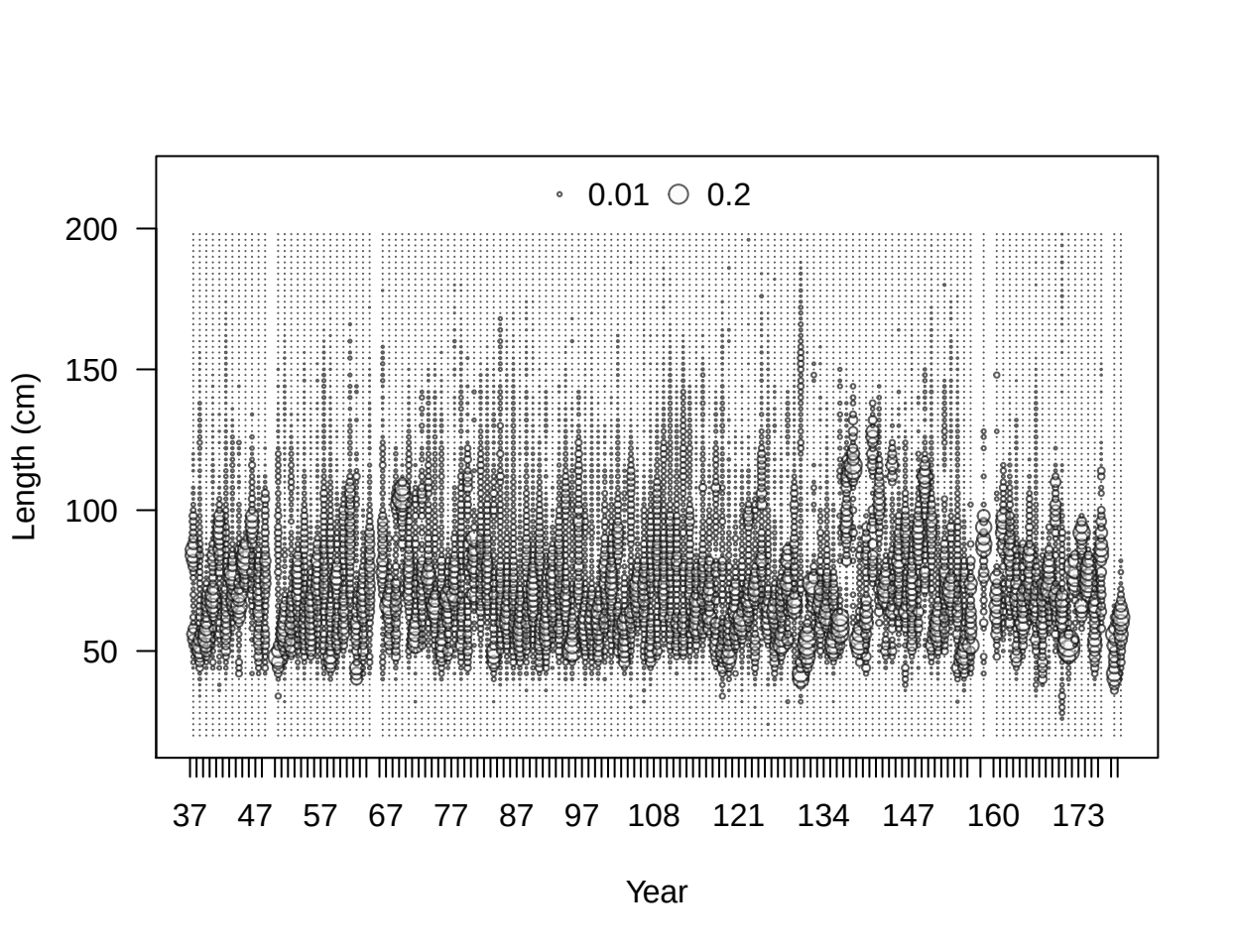

103
N adj.=3.3
107
N adj.=12.1
111
N adj.=5
115
N adj.=5.3
104
N adj.=8
108
N adj.=8.3
112
N adj.=4.5
116
N adj.=3.5
105
N adj.=9.6
109
N adj.=12.3
113
N adj.=4.5
117
N adj.=2.8
106
N adj.=7.8
110
N adj.=9.1
114
N adj.=9.1
118
N adj.=6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

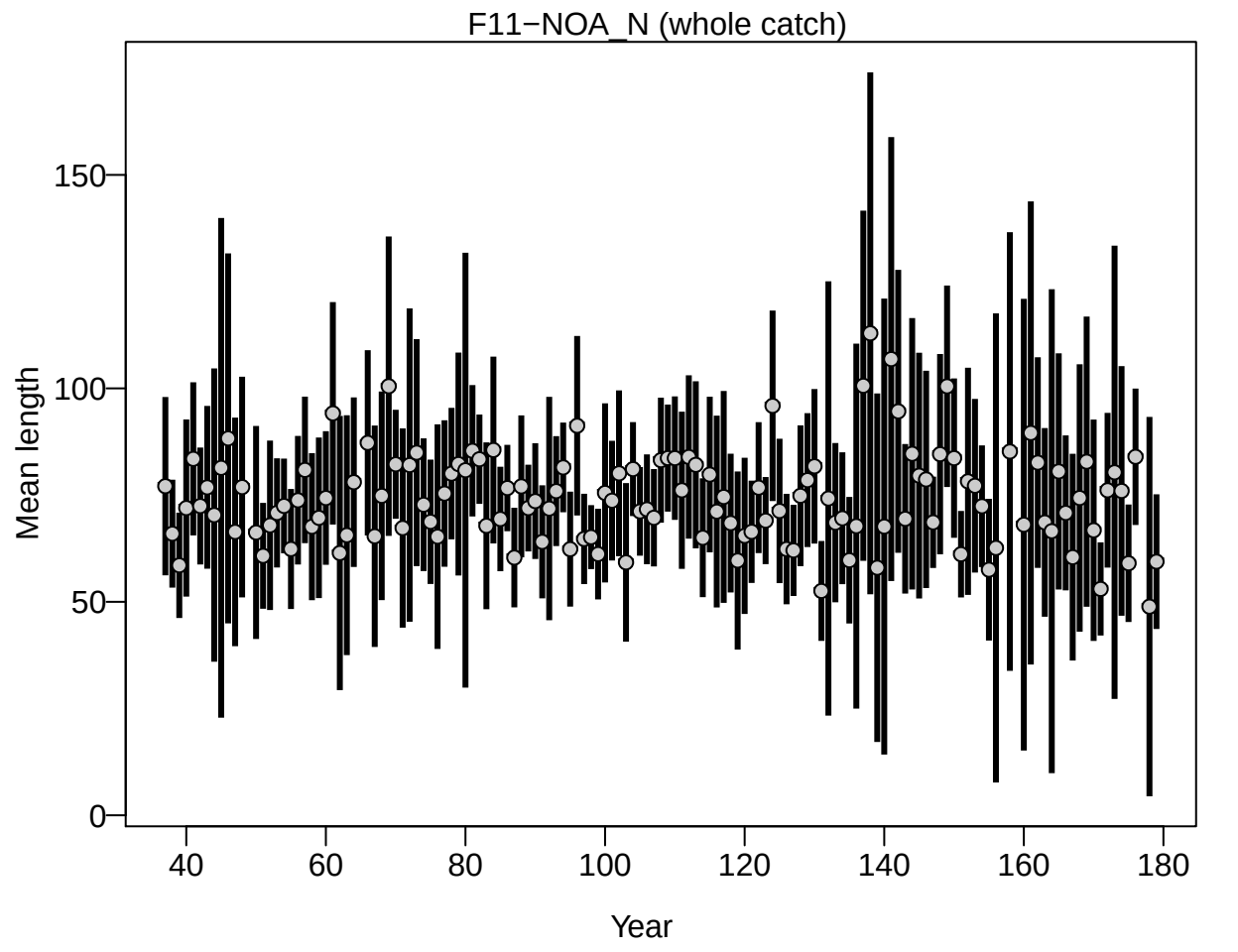

119
N adj.=3.5
123
N adj.=13.8
127
N adj.=10.6
131
N adj.=11.1
120
N adj.=4.5
124
N adj.=3.5
128
N adj.=4.3
132
N adj.=0.5
121
N adj.=10.1
125
N adj.=6.3
129
N adj.=5.8
133
N adj.=3.5
122
N adj.=5.8
126
N adj.=8.8
130
N adj.=5
134
N adj.=5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

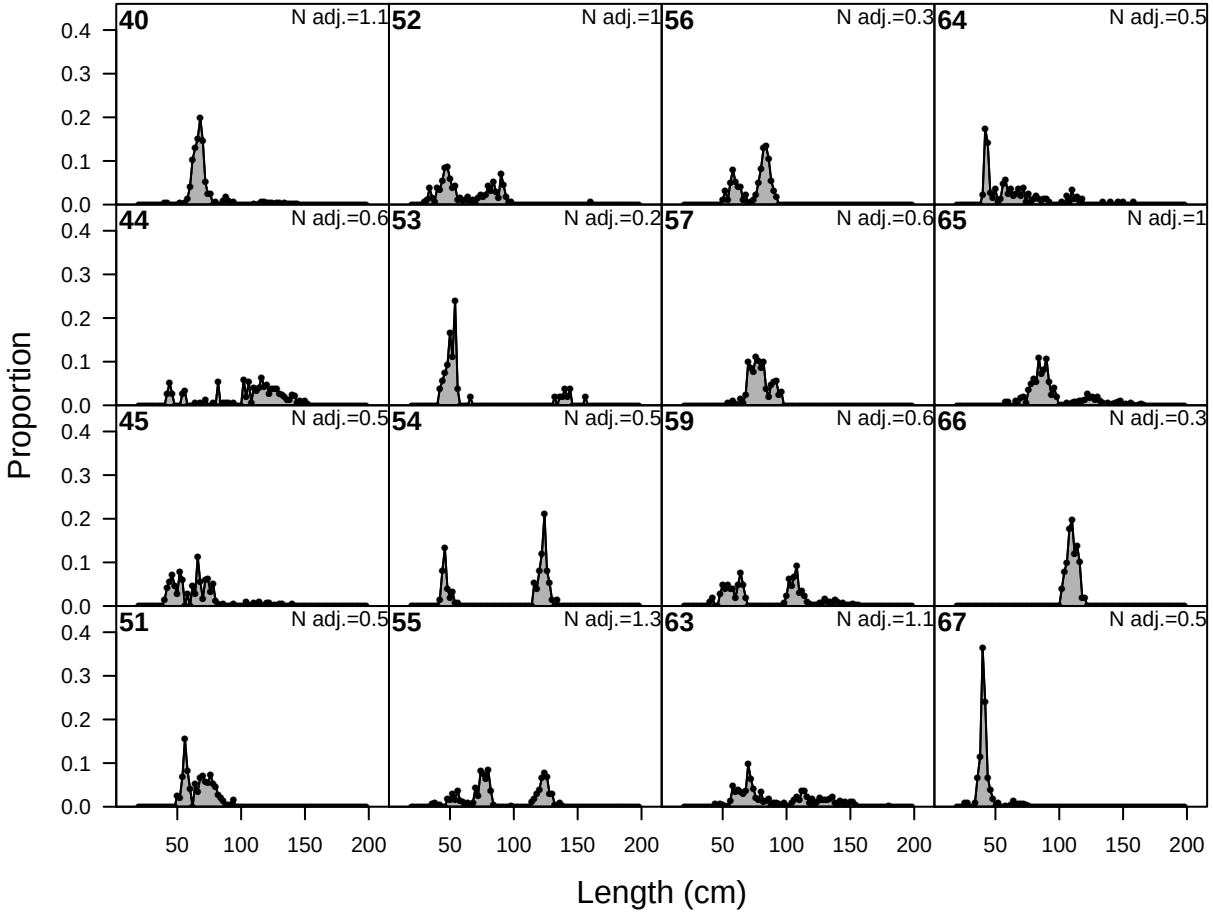

135
N adj.=5.5
139
N adj.=1
143
N adj.=4.8
147
N adj.=10.6
136
N adj.=0.8
140
N adj.=0.5
144
N adj.=1.5
148
N adj.=2.3
137
N adj.=1
141
N adj.=0.5
145
N adj.=1.8
149
N adj.=2.8
138
N adj.=0.5
142
N adj.=1.3
146
N adj.=2
150
N adj.=5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

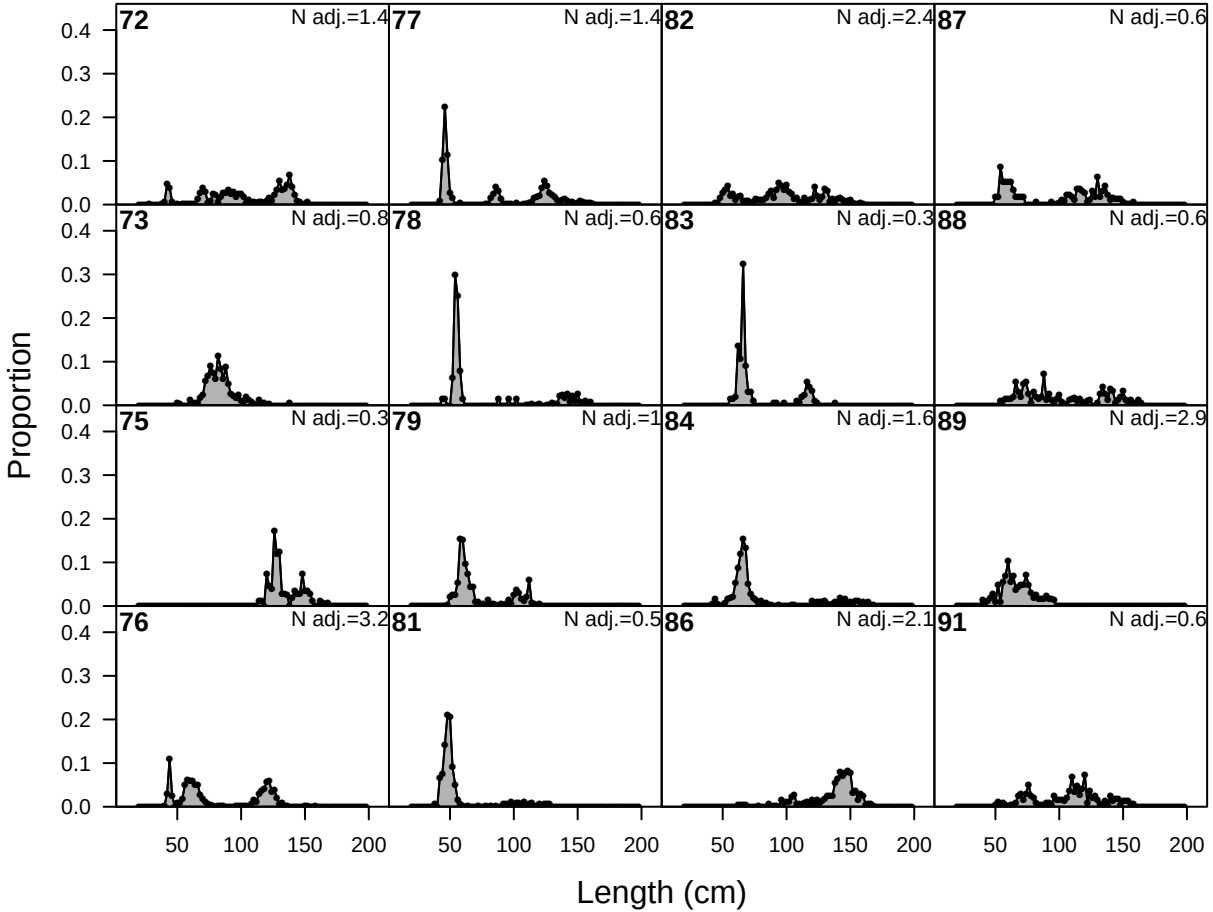

151
N adj.=14.1
155
N adj.=6
161
N adj.=0.5
165
N adj.=2
152
N adj.=1.8
156
N adj.=0.5
162
N adj.=2.5
166
N adj.=4.3
153
N adj.=3.3
158
N adj.=0.5
163
N adj.=3.3
167
N adj.=2.3
154
N adj.=7.8
160
N adj.=0.5
164
N adj.=0.5
168
N adj.=1.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

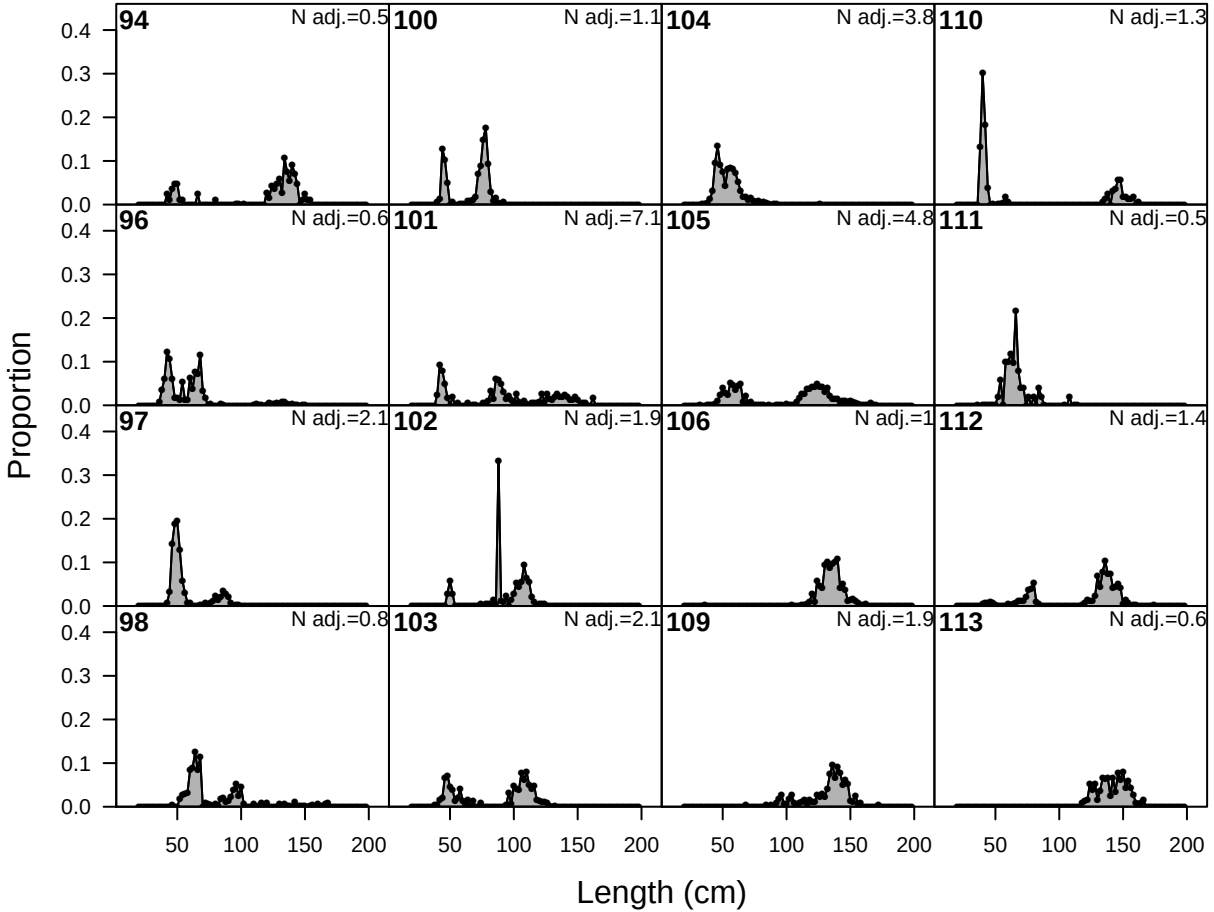

169
N adj.=1
173
N adj.=0.5
178
N adj.=0.8
170
N adj.=1.8
174
N adj.=1.5
179
N adj.=5.8
171
N adj.=10.6
175
N adj.=6.5
172
N adj.=4.3
176
N adj.=5
Proportion
Length (cm)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200

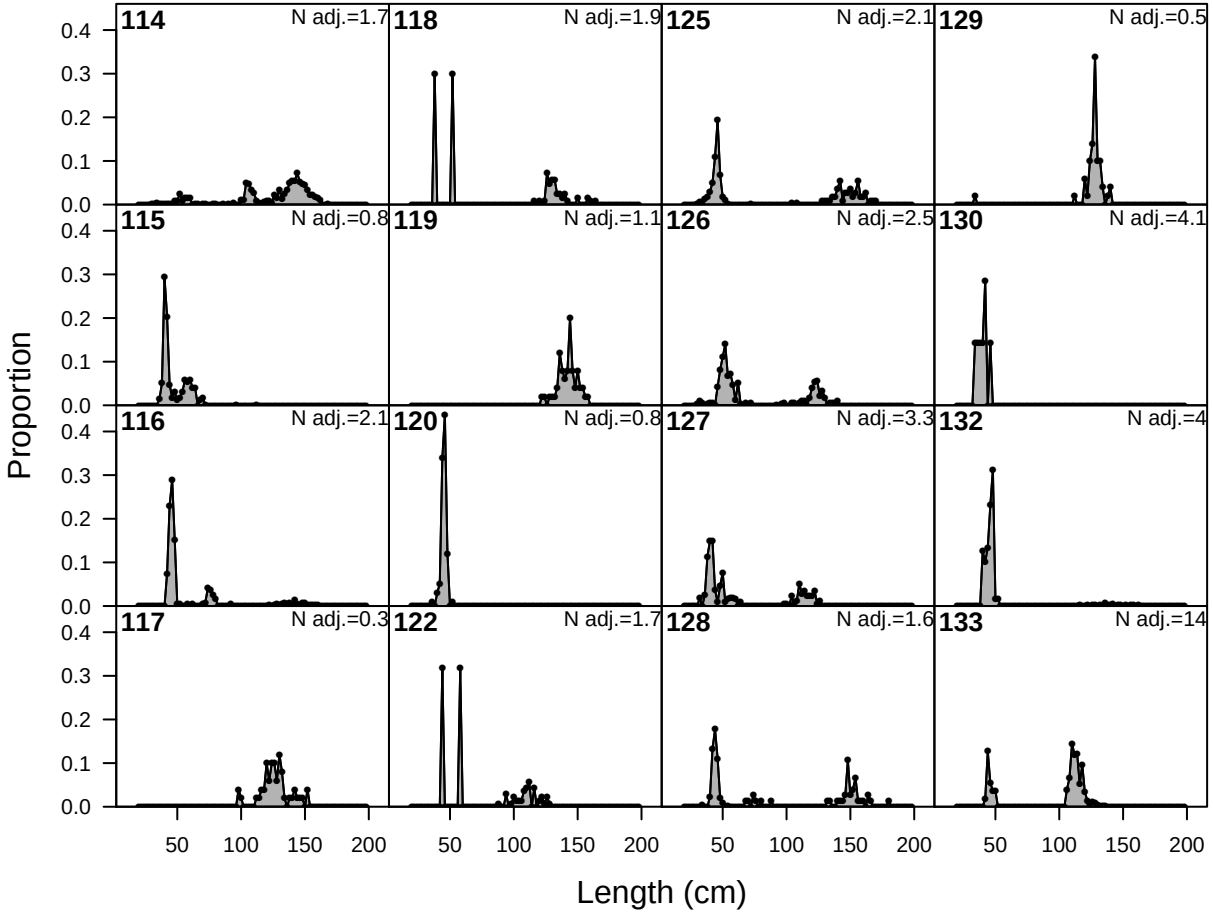

0.01
0.2
200
150
100
50
Length (cm)
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

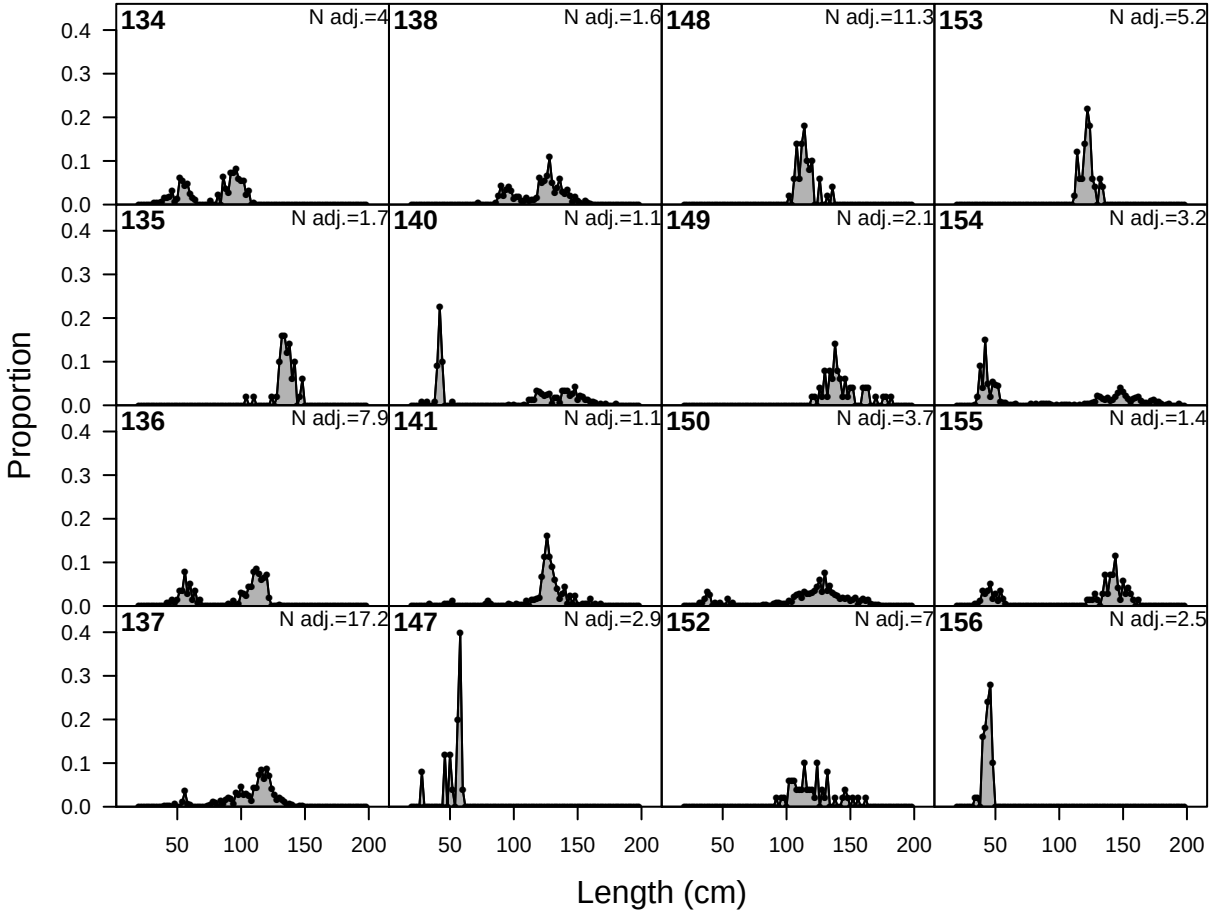

F11−NOA_N (whole catch)
Mean length
0
50
100
150
40
60
80
100
120
140
160
180
Year

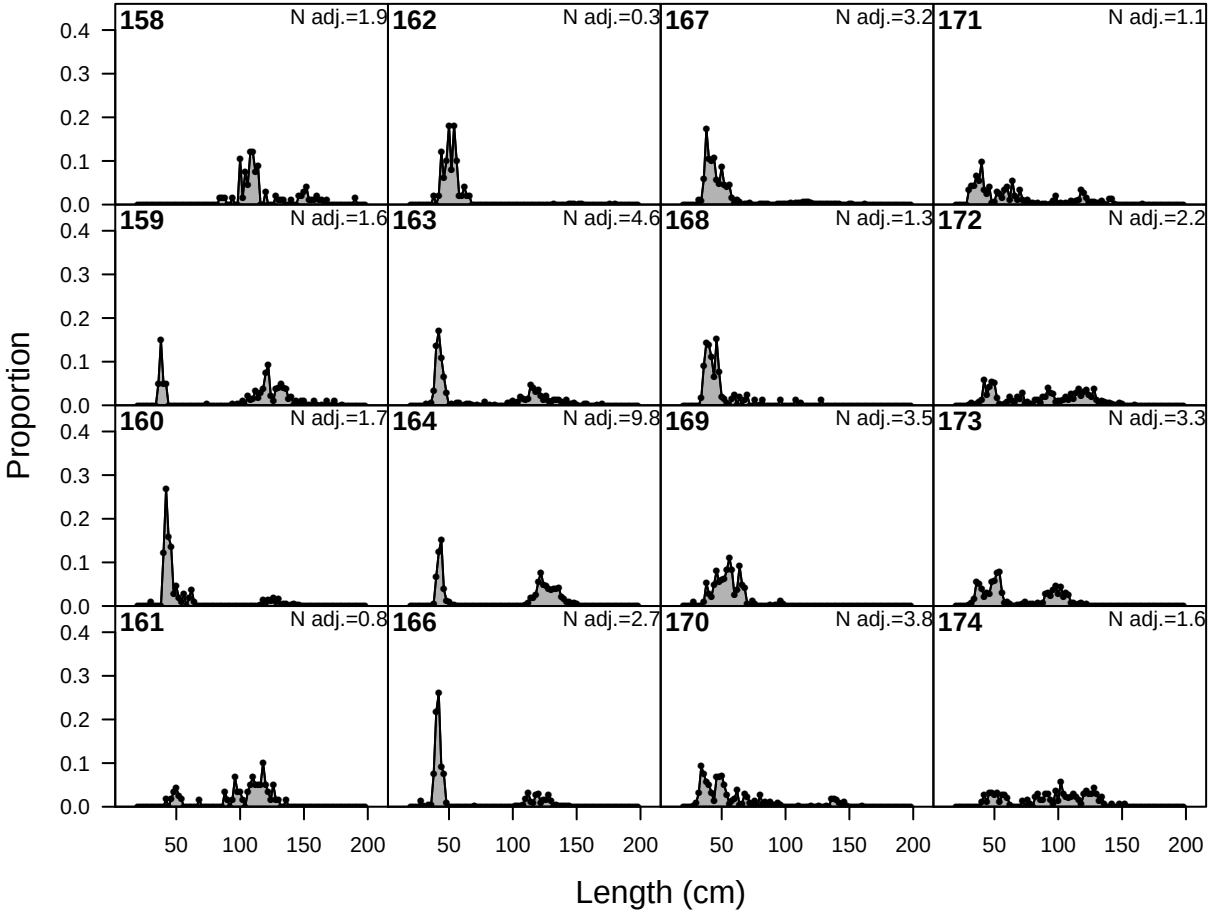

40
N adj.=1.1
52
N adj.=1
56
N adj.=0.3
64
N adj.=0.5
44
N adj.=0.6
53
N adj.=0.2
57
N adj.=0.6
65
N adj.=1
45
N adj.=0.5
54
N adj.=0.5
59
N adj.=0.6
66
N adj.=0.3
51
N adj.=0.5
55
N adj.=1.3
63
N adj.=1.1
67
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

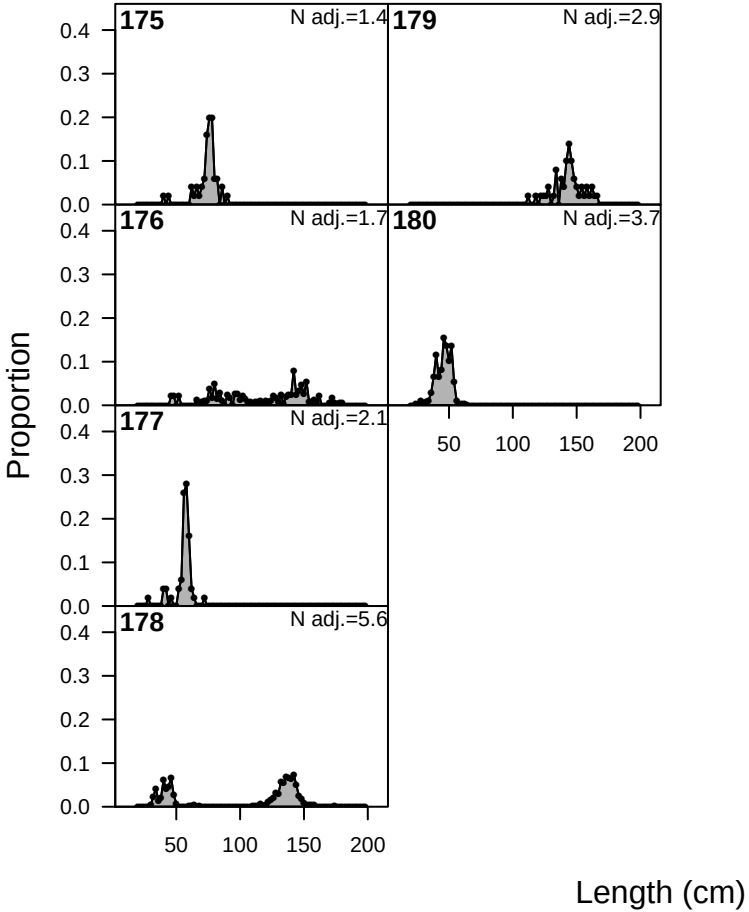

72
N adj.=1.4
77
N adj.=1.4
82
N adj.=2.4
87
N adj.=0.6
73
N adj.=0.8
78
N adj.=0.6
83
N adj.=0.3
88
N adj.=0.6
75
N adj.=0.3
79
N adj.=1
84
N adj.=1.6
89
N adj.=2.9
76
N adj.=3.2
81
N adj.=0.5
86
N adj.=2.1
91
N adj.=0.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

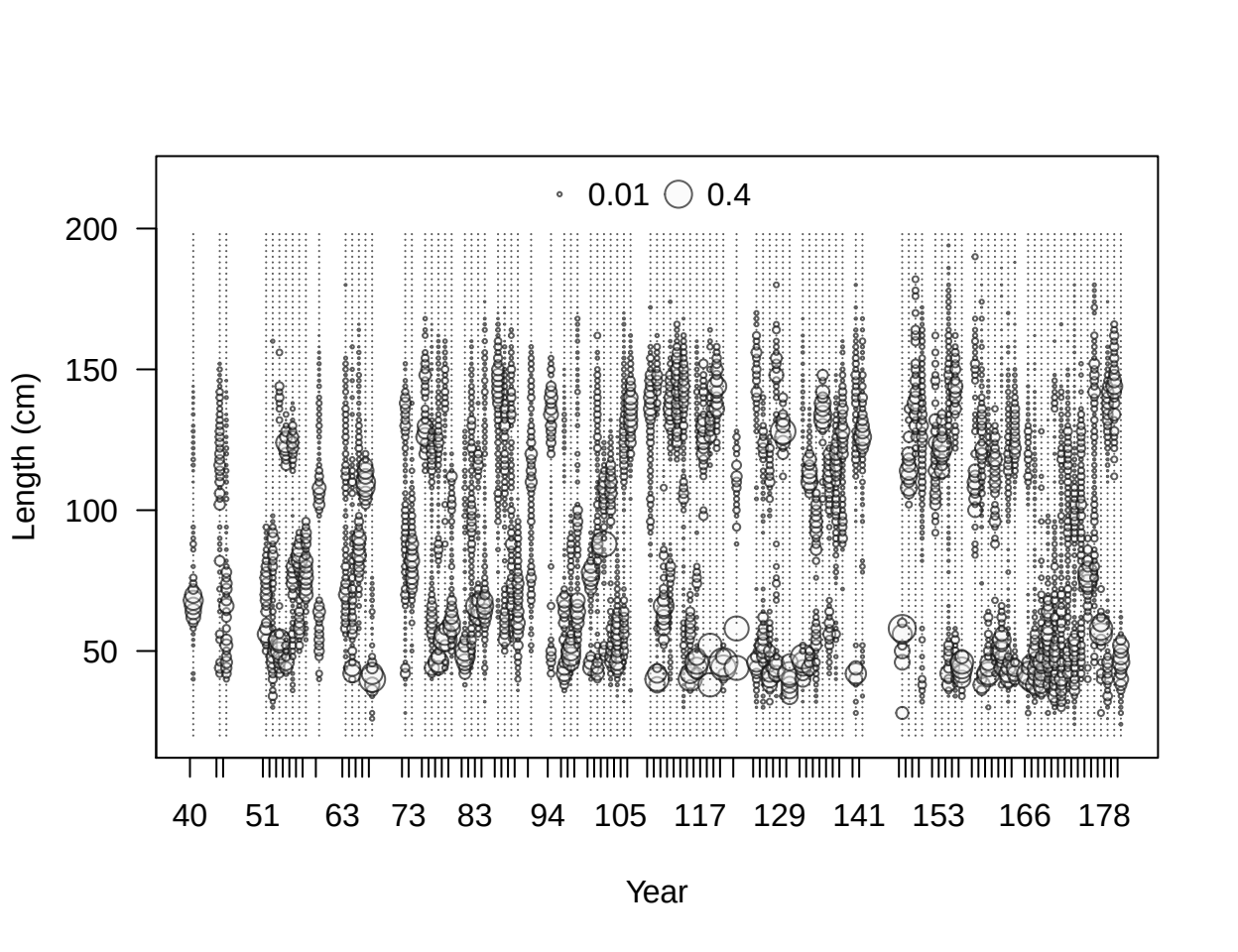

94
N adj.=0.5
100
N adj.=1.1
104
N adj.=3.8
110
N adj.=1.3
96
N adj.=0.6
101
N adj.=7.1
105
N adj.=4.8
111
N adj.=0.5
97
N adj.=2.1
102
N adj.=1.9
106
N adj.=1
112
N adj.=1.4
98
N adj.=0.8
103
N adj.=2.1
109
N adj.=1.9
113
N adj.=0.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

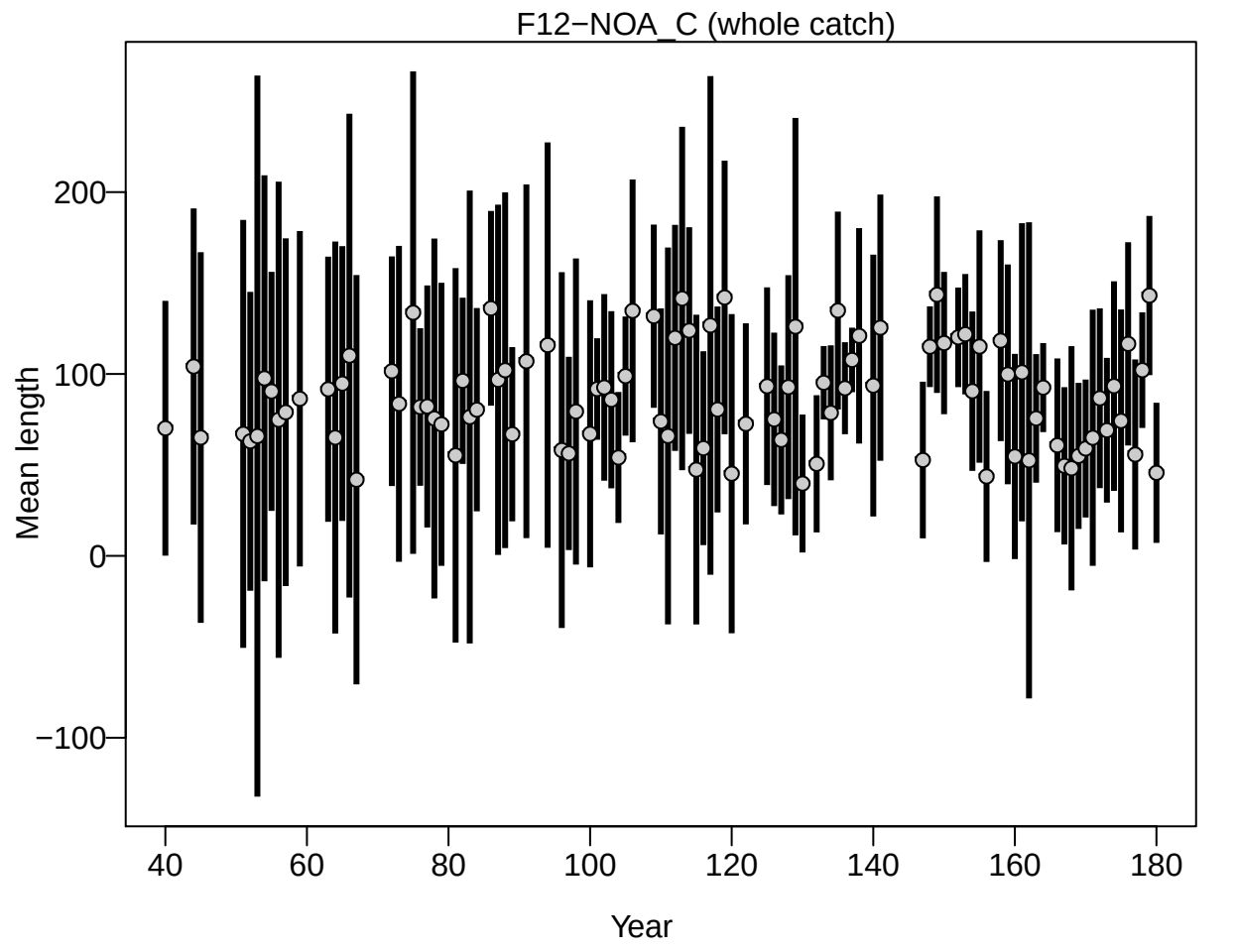

114
N adj.=1.7
118
N adj.=1.9
125
N adj.=2.1
129
N adj.=0.5
115
N adj.=0.8
119
N adj.=1.1
126
N adj.=2.5
130
N adj.=4.1
116
N adj.=2.1
120
N adj.=0.8
127
N adj.=3.3
132
N adj.=4
117
N adj.=0.3
122
N adj.=1.7
128
N adj.=1.6
133
N adj.=14
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

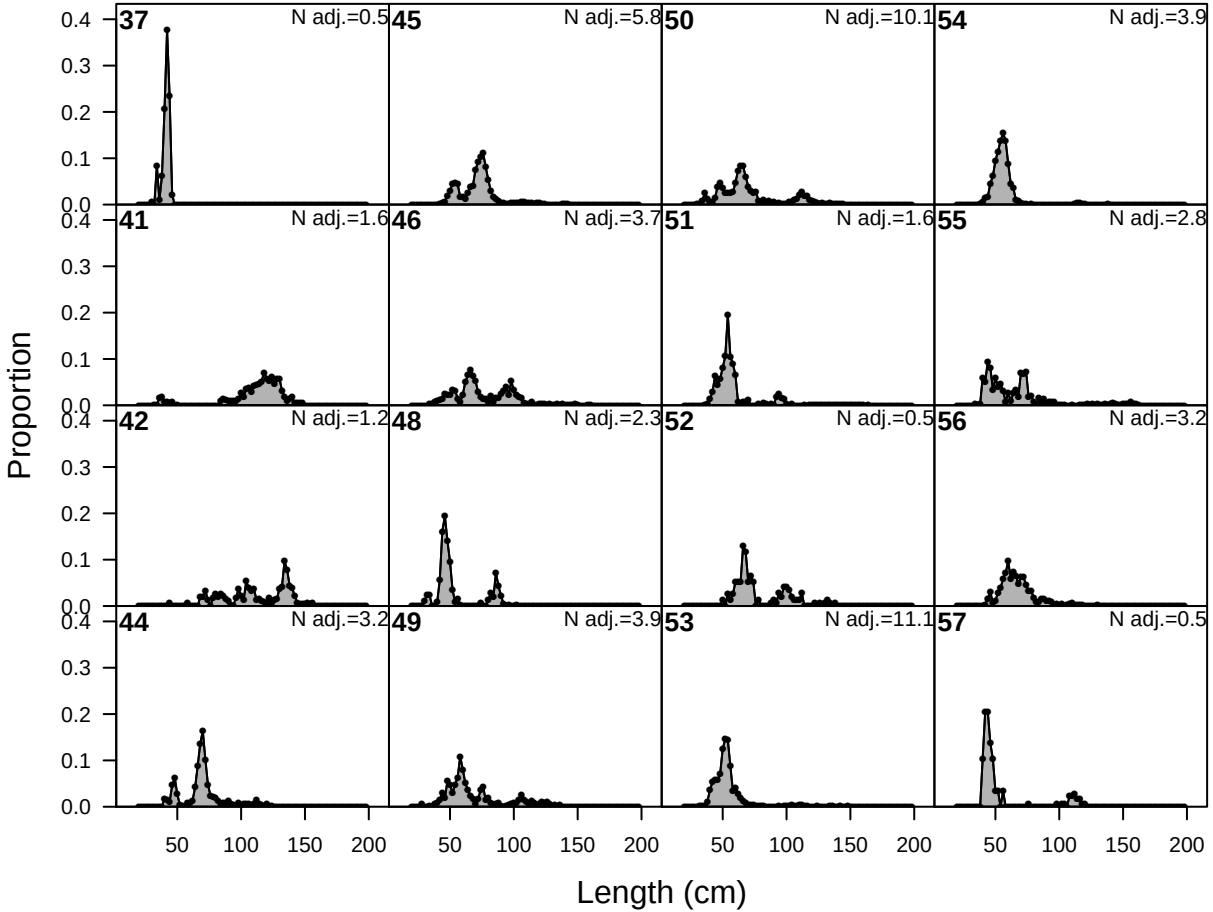

134
N adj.=4
138
N adj.=1.6
148
N adj.=11.3
153
N adj.=5.2
135
N adj.=1.7
140
N adj.=1.1
149
N adj.=2.1
154
N adj.=3.2
136
N adj.=7.9
141
N adj.=1.1
150
N adj.=3.7
155
N adj.=1.4
137
N adj.=17.2
147
N adj.=2.9
152
N adj.=7
156
N adj.=2.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

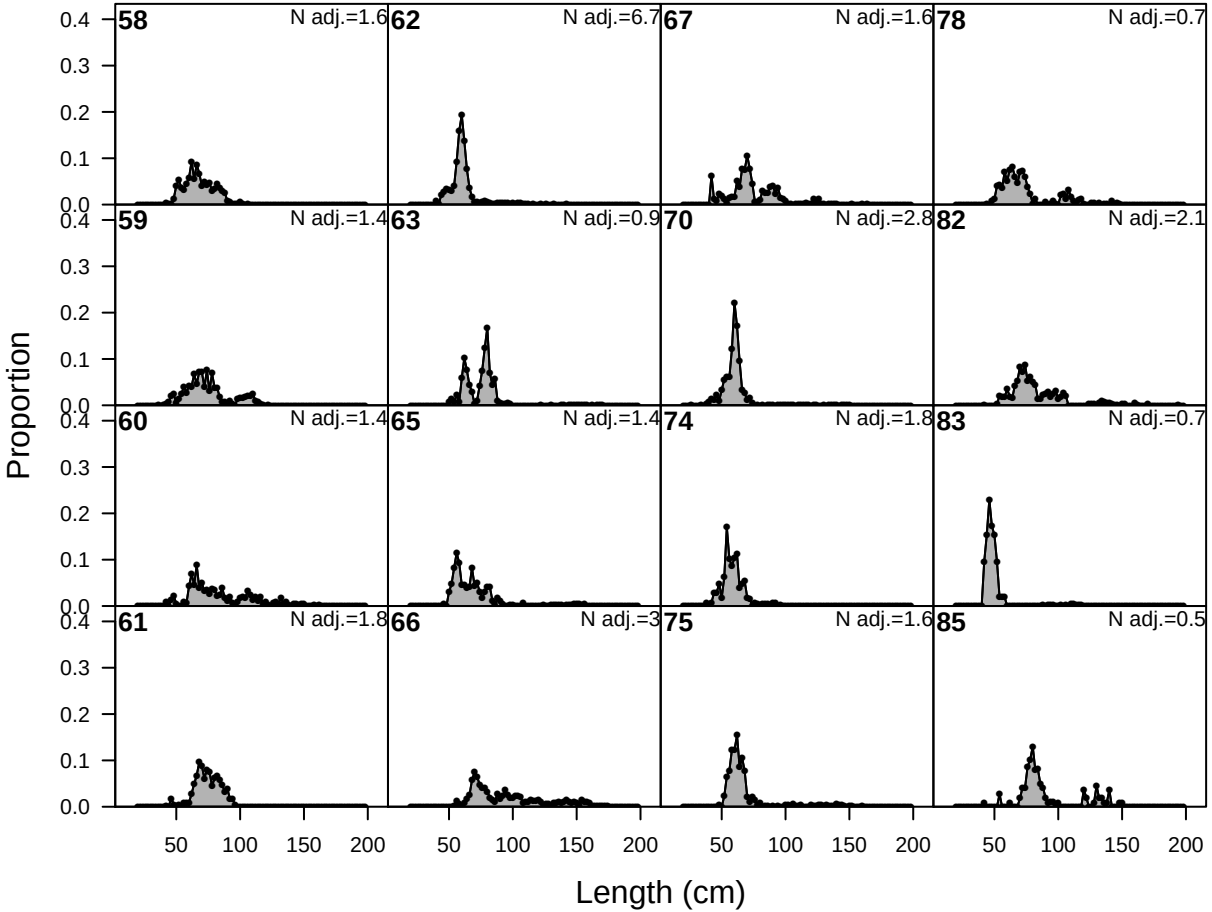

158
N adj.=1.9
162
N adj.=0.3
167
N adj.=3.2
171
N adj.=1.1
159
N adj.=1.6
163
N adj.=4.6
168
N adj.=1.3
172
N adj.=2.2
160
N adj.=1.7
164
N adj.=9.8
169
N adj.=3.5
173
N adj.=3.3
161
N adj.=0.8
166
N adj.=2.7
170
N adj.=3.8
174
N adj.=1.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

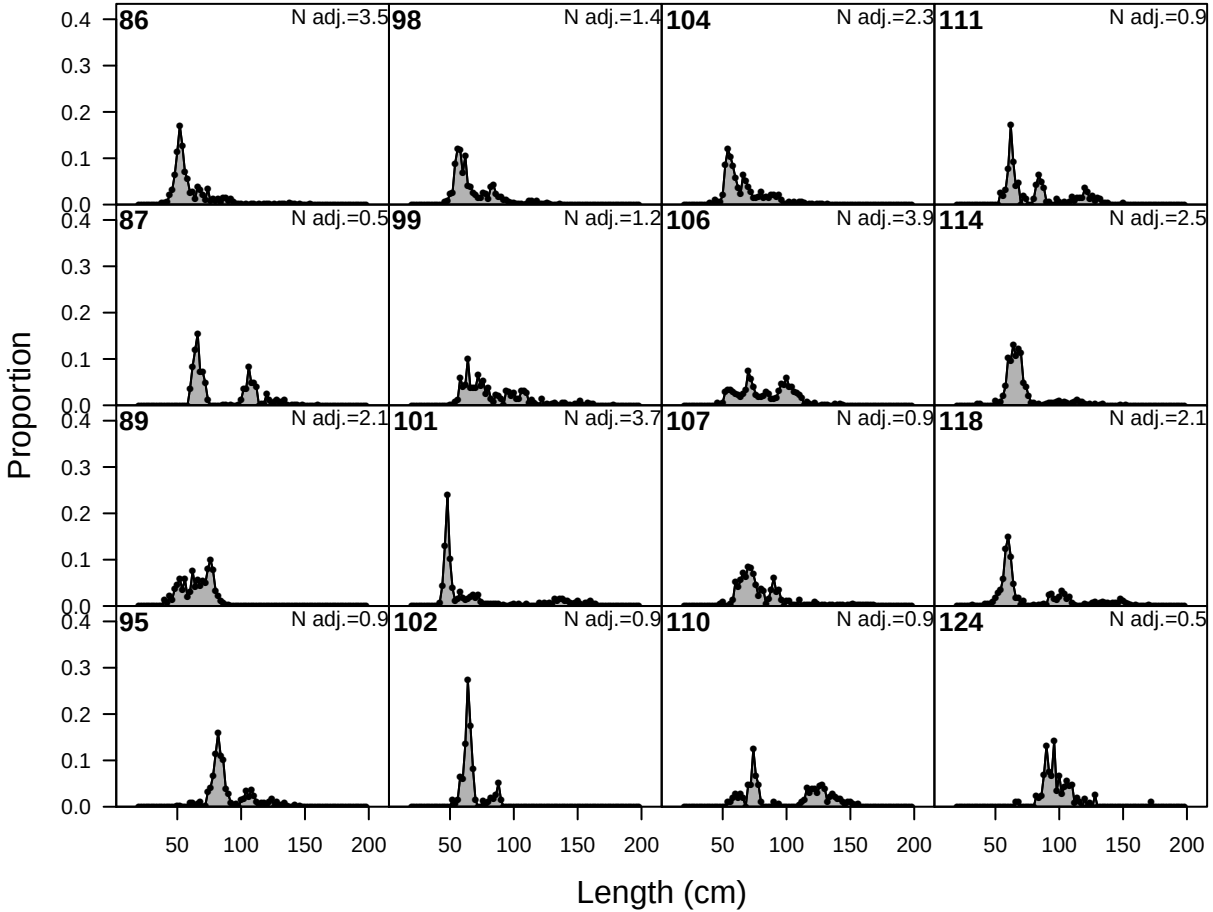

175
N adj.=1.4
179
N adj.=2.9
176
N adj.=1.7
180
N adj.=3.7
177
N adj.=2.1
178
N adj.=5.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

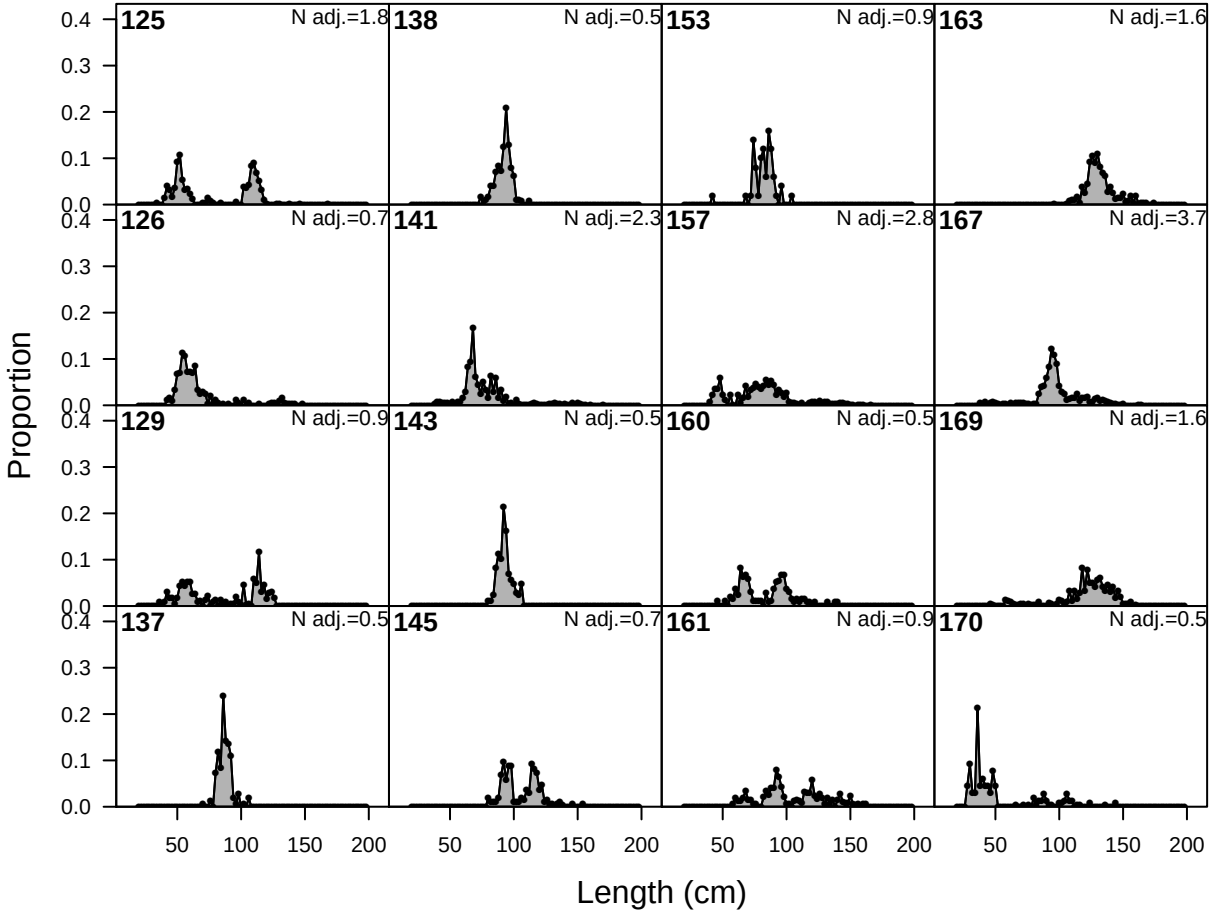

0.01
0.4
200
150
100
50
Length (cm)
40
51
63
73
83
94
105
117
129
141
153
166
178
Year

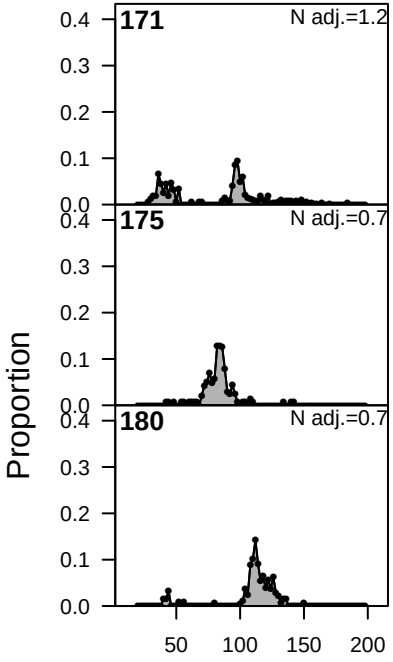

F12−NOA_C (whole catch)
Mean length
200
100
0
−100
40
60
80
100
120
140
160
180
Year

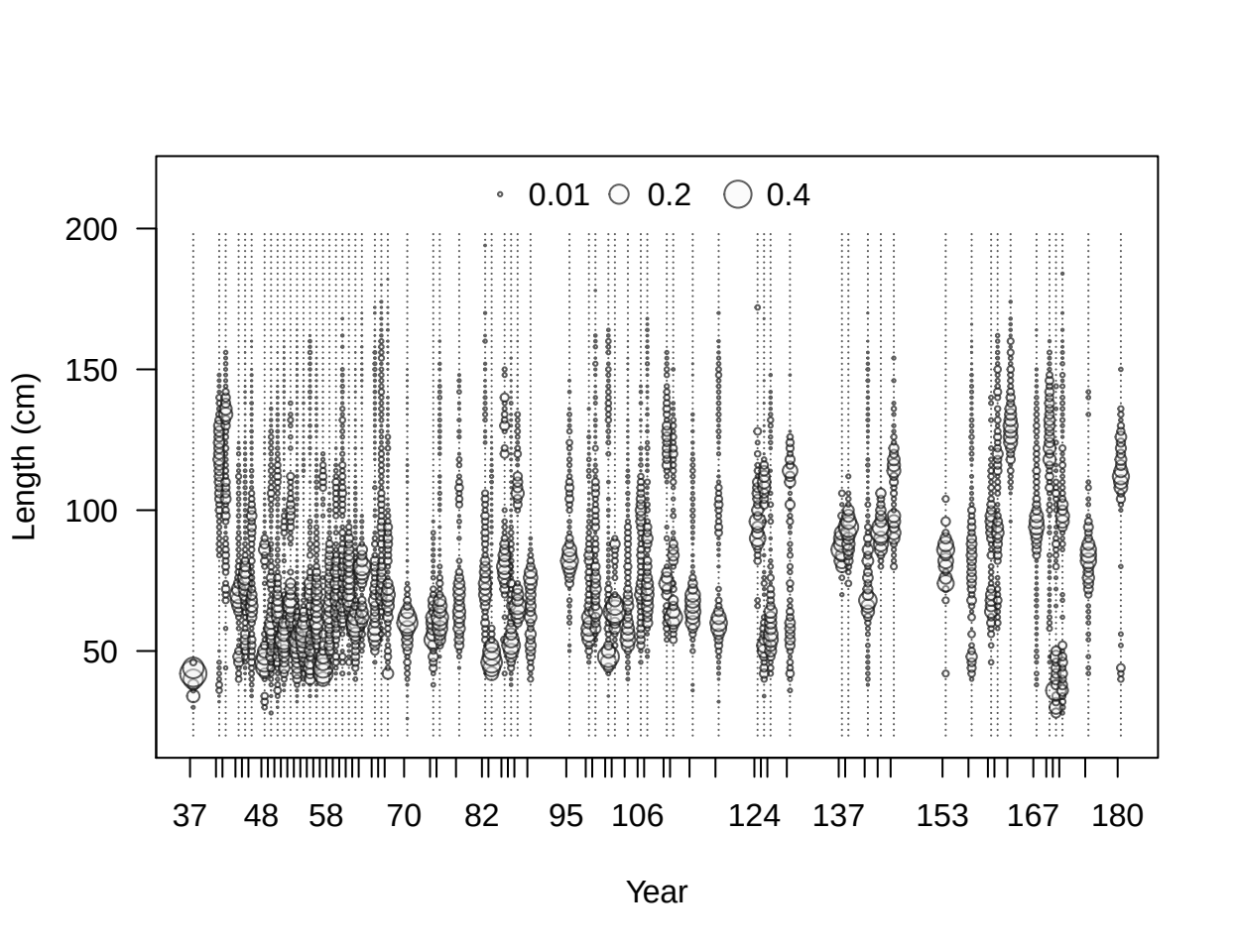

37
N adj.=0.5
45
N adj.=5.8
50
N adj.=10.1
54
N adj.=3.9
41
N adj.=1.6
46
N adj.=3.7
51
N adj.=1.6
55
N adj.=2.8
42
N adj.=1.2
48
N adj.=2.3
52
N adj.=0.5
56
N adj.=3.2
44
N adj.=3.2
49
N adj.=3.9
53
N adj.=11.1
57
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

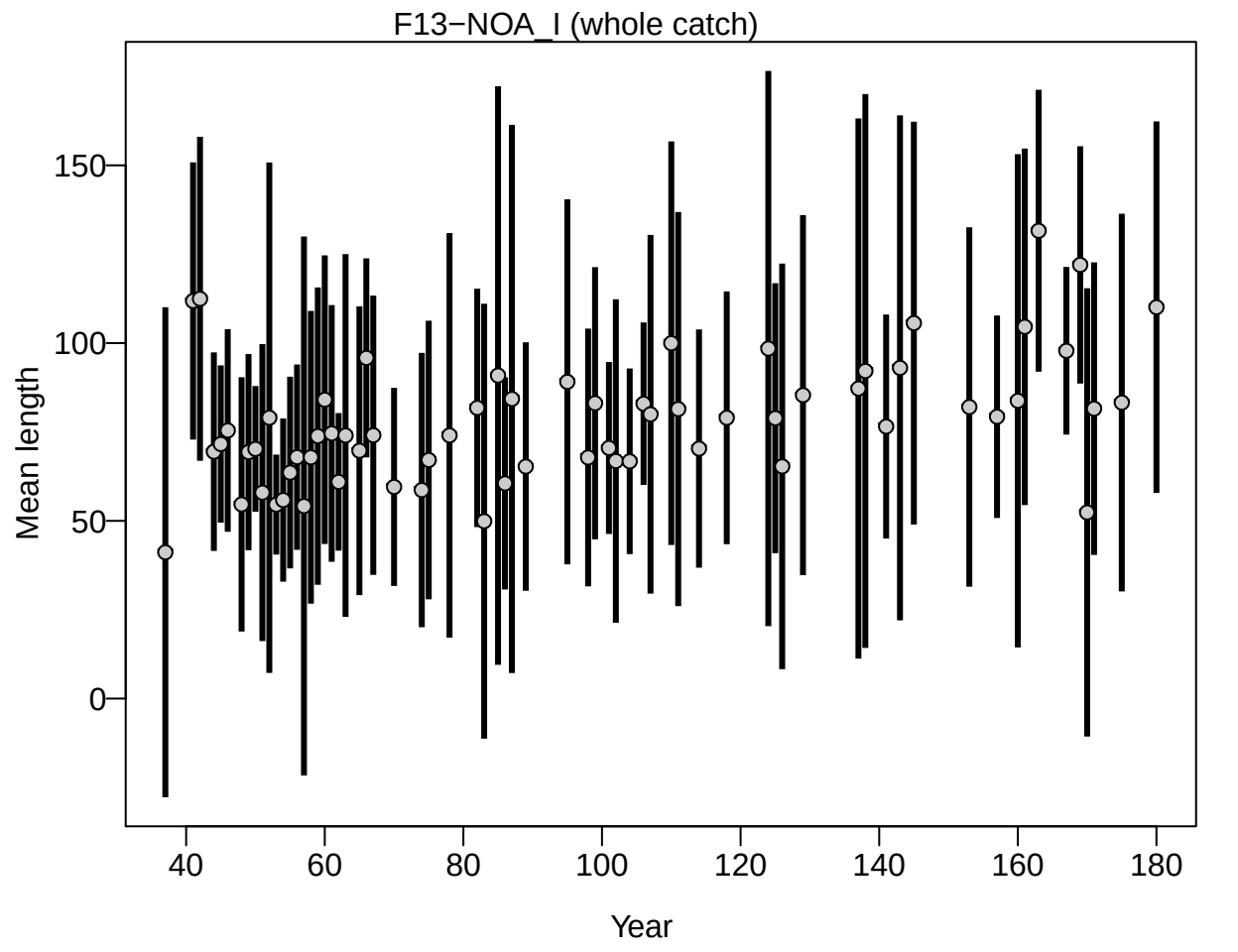

58
N adj.=1.6
62
N adj.=6.7
67
N adj.=1.6
78
N adj.=0.7
59
N adj.=1.4
63
N adj.=0.9
70
N adj.=2.8
82
N adj.=2.1
60
N adj.=1.4
65
N adj.=1.4
74
N adj.=1.8
83
N adj.=0.7
61
N adj.=1.8
66
N adj.=3
75
N adj.=1.6
85
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

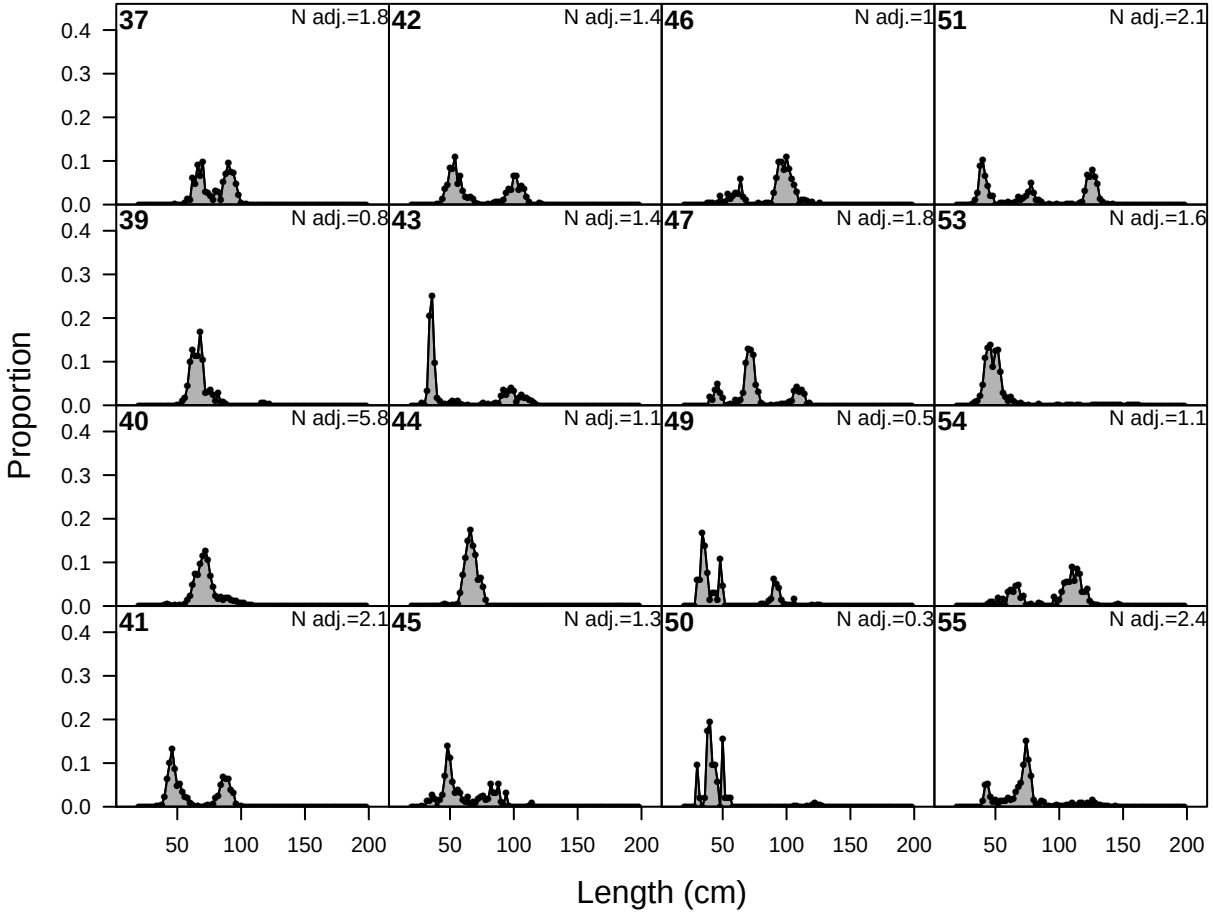

86
N adj.=3.5
98
N adj.=1.4
104
N adj.=2.3
111
N adj.=0.9
87
N adj.=0.5
99
N adj.=1.2
106
N adj.=3.9
114
N adj.=2.5
89
N adj.=2.1
101
N adj.=3.7
107
N adj.=0.9
118
N adj.=2.1
95
N adj.=0.9
102
N adj.=0.9
110
N adj.=0.9
124
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

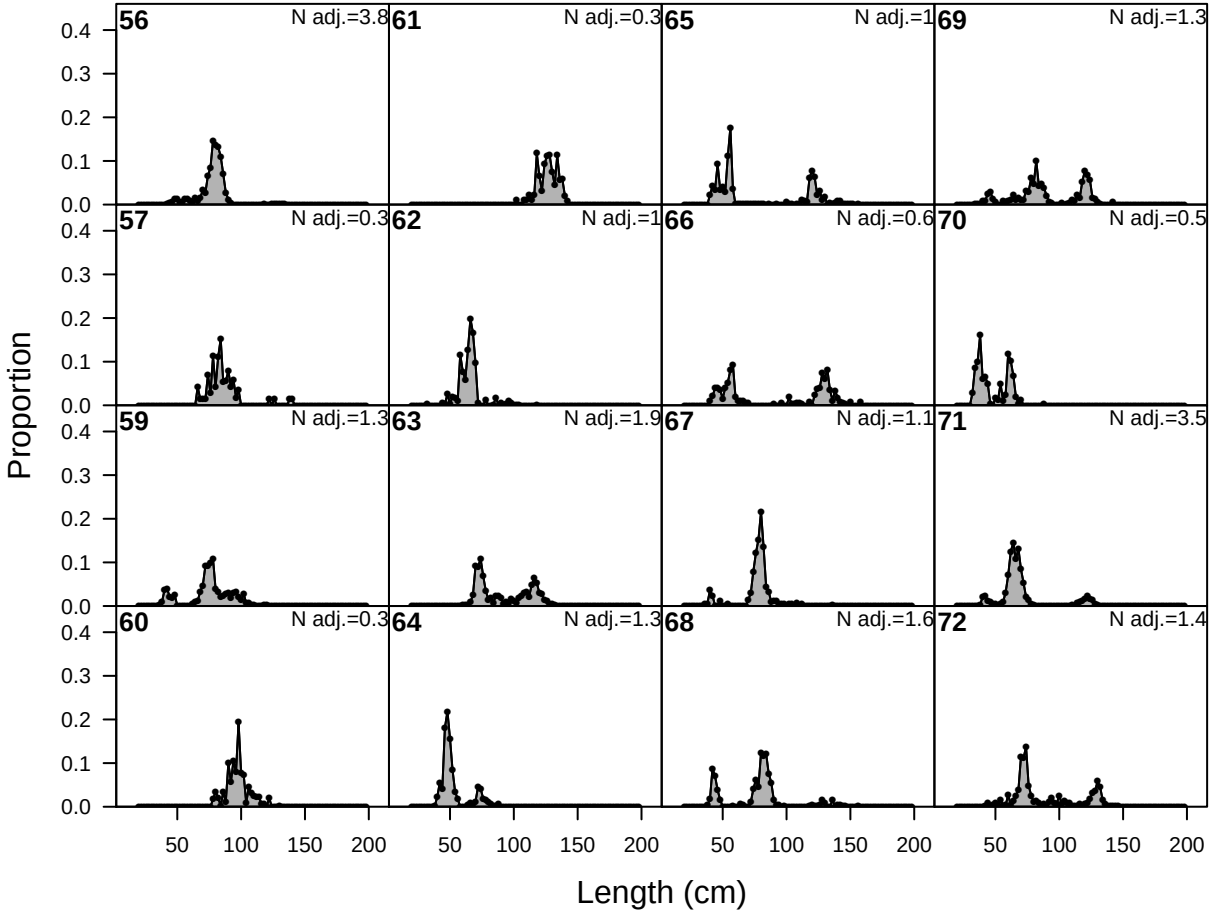

125
N adj.=1.8
138
N adj.=0.5
153
N adj.=0.9
163
N adj.=1.6
126
N adj.=0.7
141
N adj.=2.3
157
N adj.=2.8
167
N adj.=3.7
129
N adj.=0.9
143
N adj.=0.5
160
N adj.=0.5
169
N adj.=1.6
137
N adj.=0.5
145
N adj.=0.7
161
N adj.=0.9
170
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

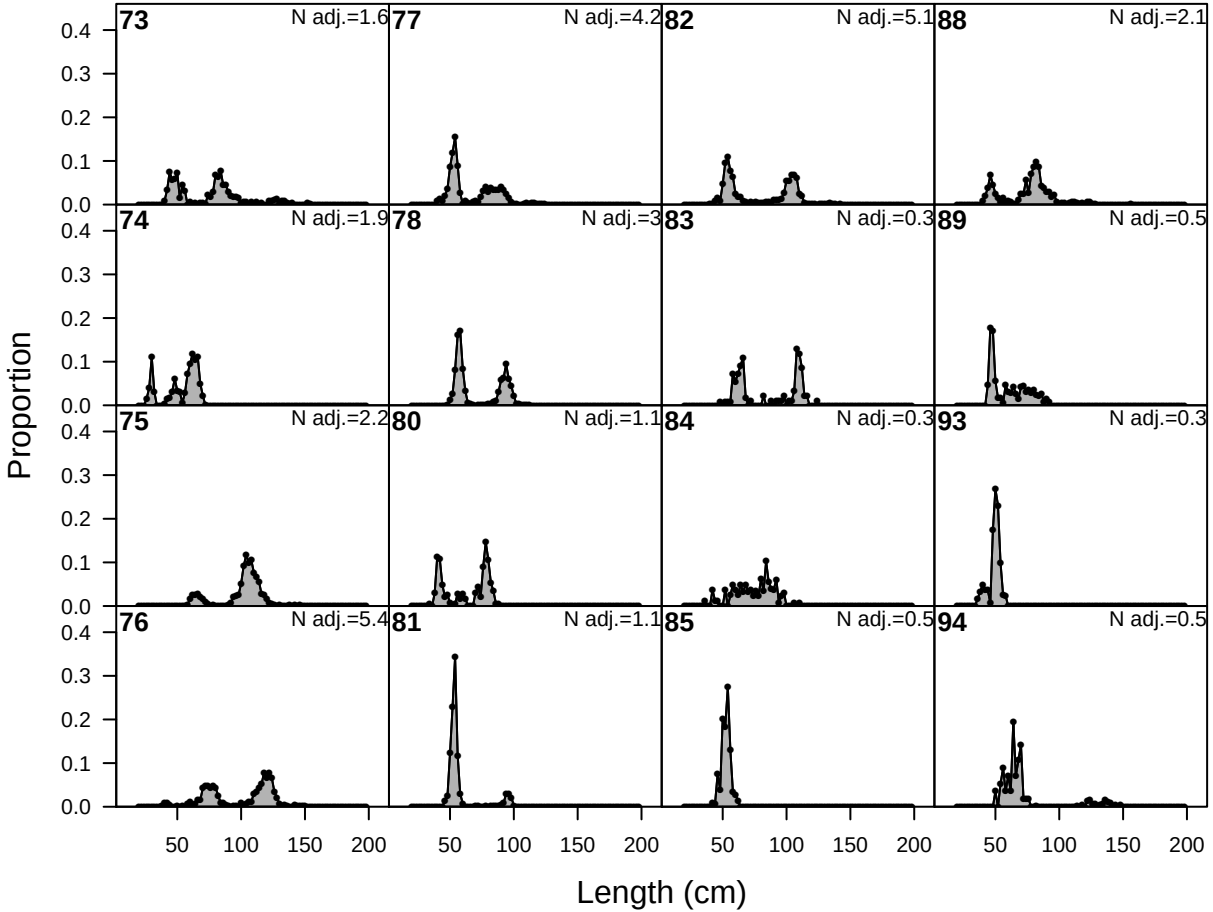

171
N adj.=1.2
175
N adj.=0.7
180
N adj.=0.7
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Proportion
Length (cm)

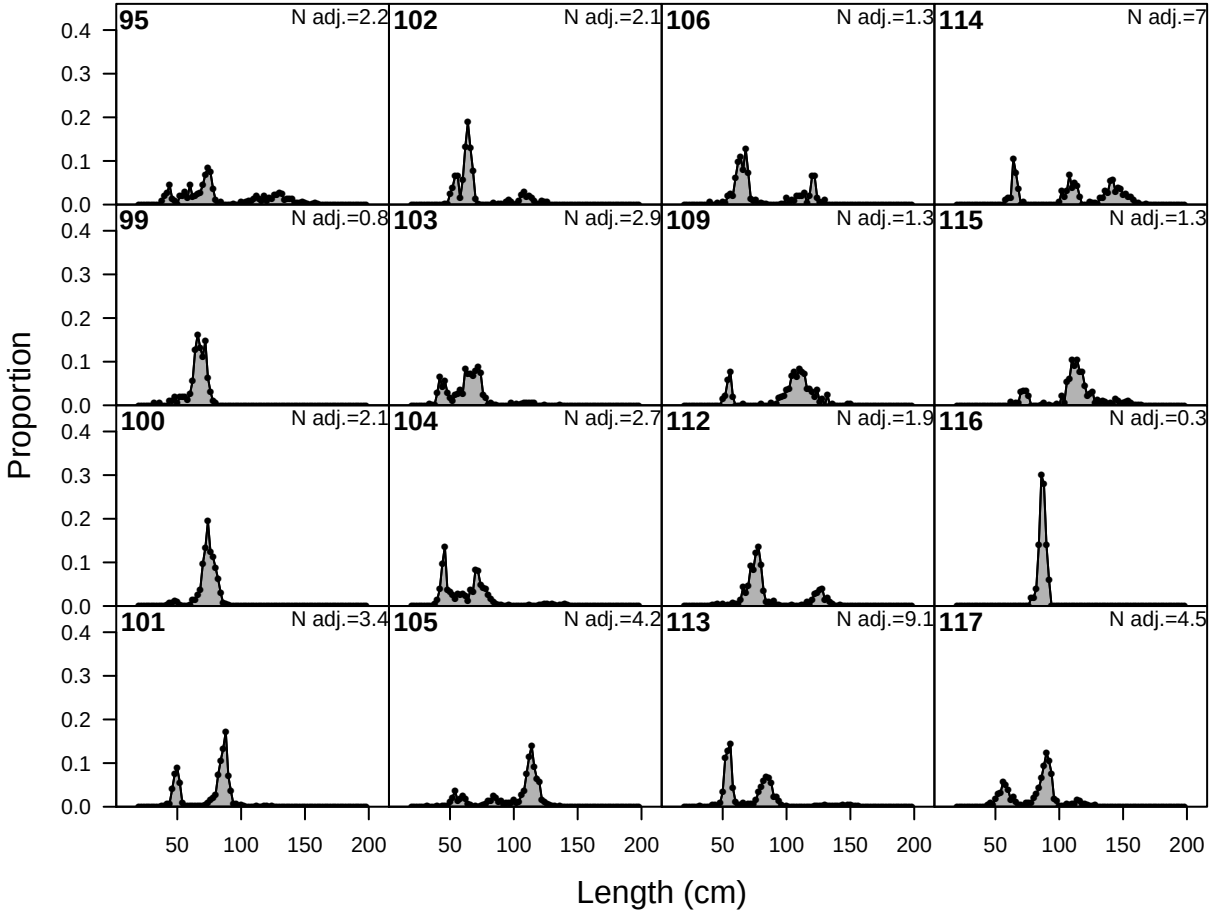

0.01
0.2
0.4
200
150
100
50
Length (cm)
37
48
58
70
82
95
106
124
137
153
167
180
Year

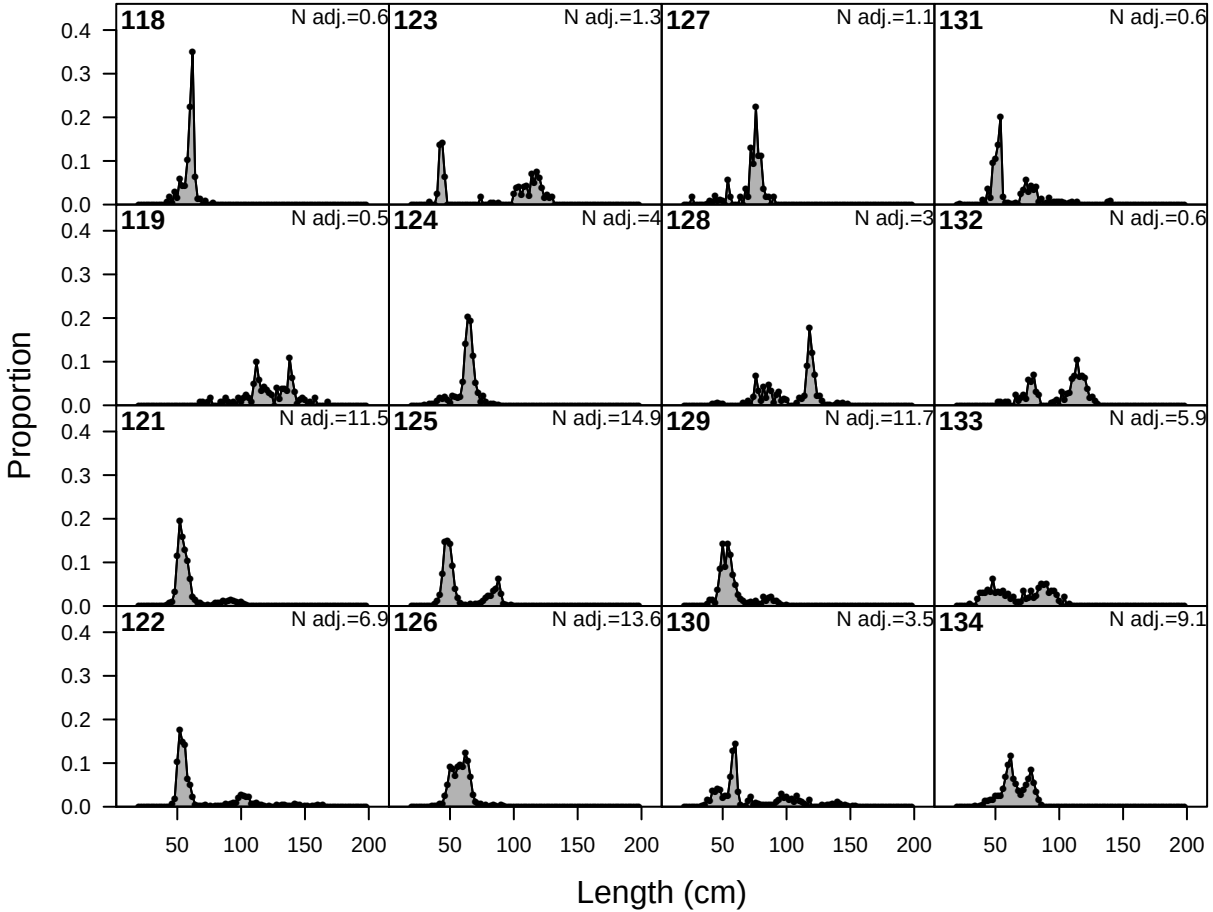

F13−NOA_I (whole catch)
Mean length
150
100
50
0
40
60
80
100
120
140
160
180
Year

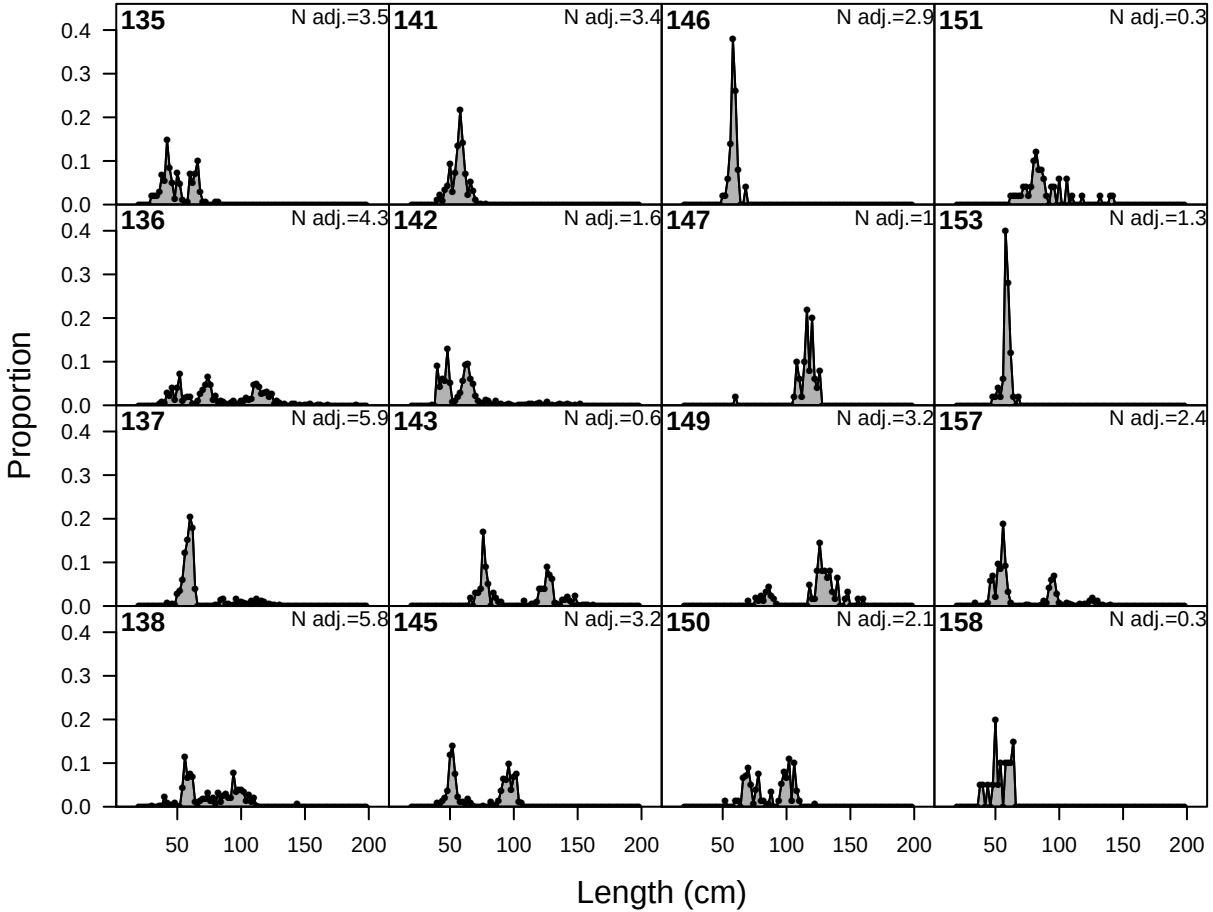

37
N adj.=1.8
42
N adj.=1.4
46
N adj.=1
51
N adj.=2.1
39
N adj.=0.8
43
N adj.=1.4
47
N adj.=1.8
53
N adj.=1.6
40
N adj.=5.8
44
N adj.=1.1
49
N adj.=0.5
54
N adj.=1.1
41
N adj.=2.1
45
N adj.=1.3
50
N adj.=0.3
55
N adj.=2.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

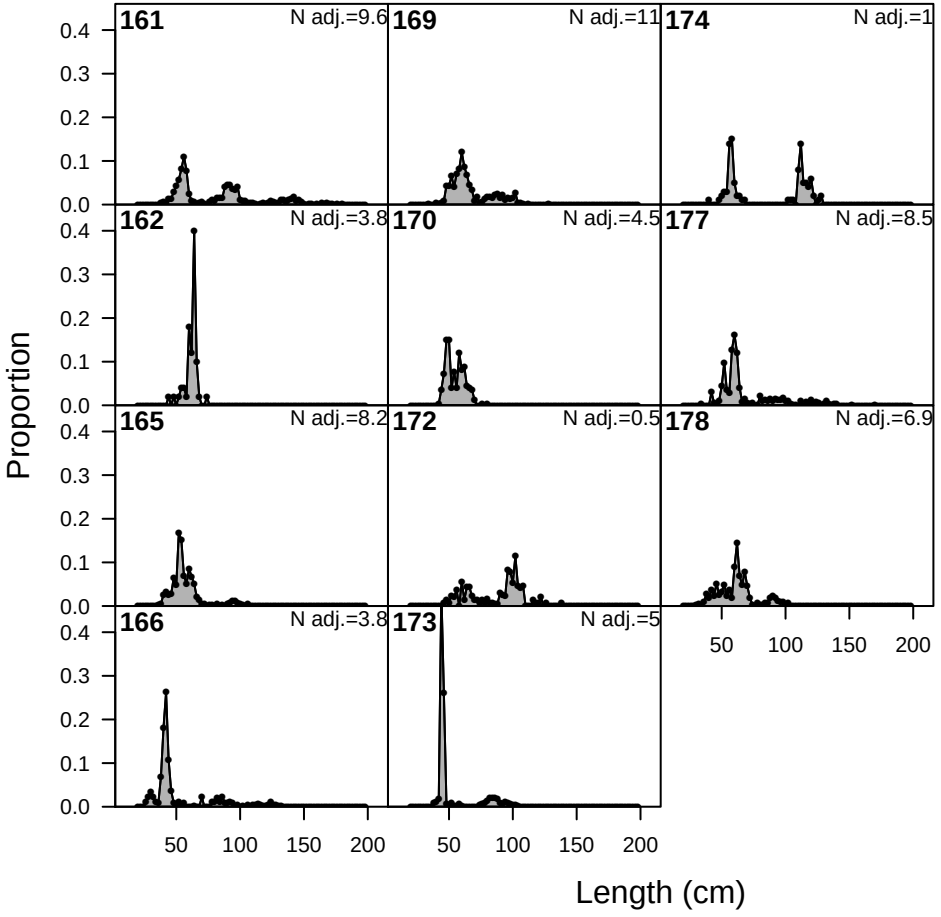

56
N adj.=3.8
61
N adj.=0.3
65
N adj.=1
69
N adj.=1.3
57
N adj.=0.3
62
N adj.=1
66
N adj.=0.6
70
N adj.=0.5
59
N adj.=1.3
63
N adj.=1.9
67
N adj.=1.1
71
N adj.=3.5
60
N adj.=0.3
64
N adj.=1.3
68
N adj.=1.6
72
N adj.=1.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

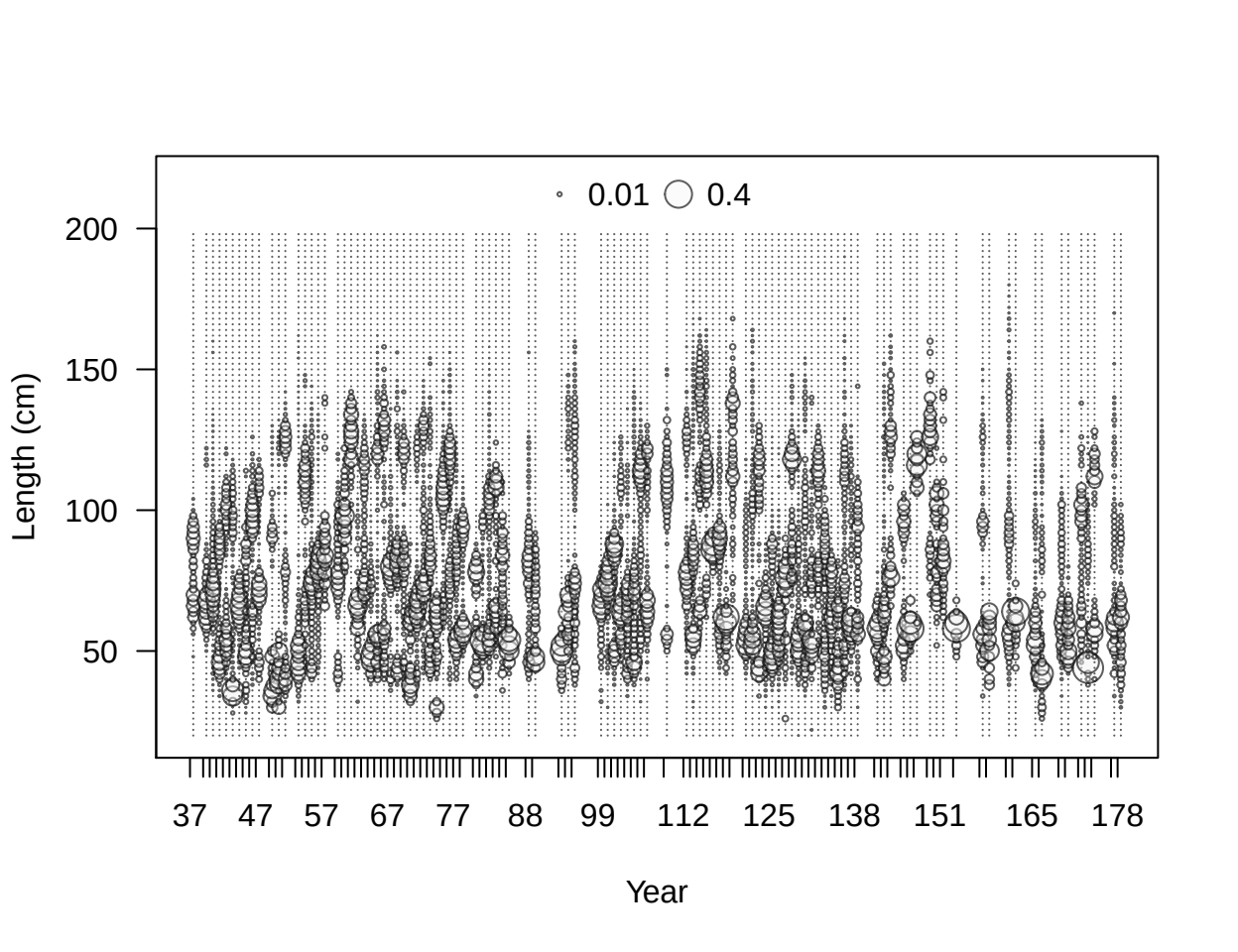

73
N adj.=1.6
77
N adj.=4.2
82
N adj.=5.1
88
N adj.=2.1
74
N adj.=1.9
78
N adj.=3
83
N adj.=0.3
89
N adj.=0.5
75
N adj.=2.2
80
N adj.=1.1
84
N adj.=0.3
93
N adj.=0.3
76
N adj.=5.4
81
N adj.=1.1
85
N adj.=0.5
94
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

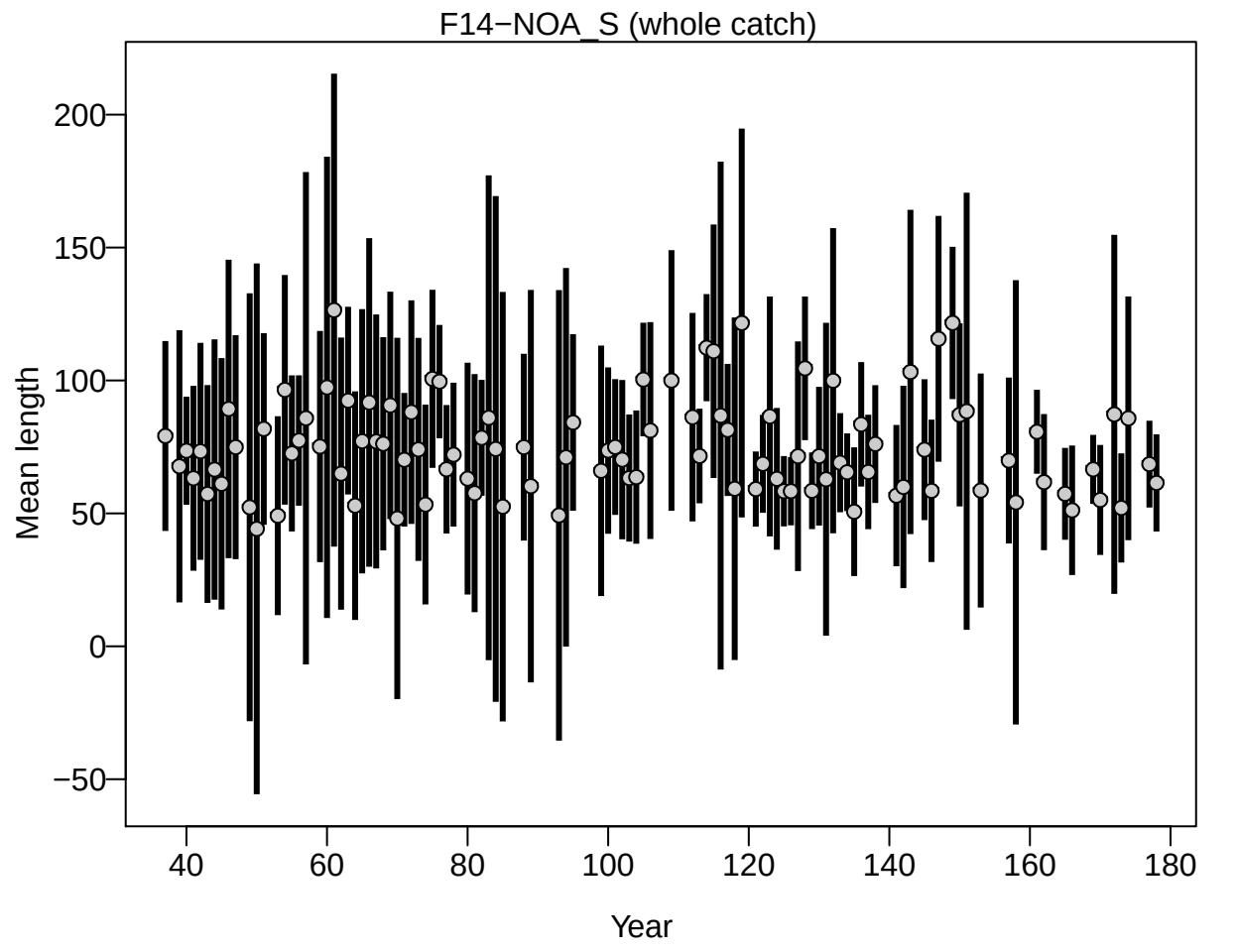

95
N adj.=2.2
102
N adj.=2.1
106
N adj.=1.3
114
N adj.=7
99
N adj.=0.8
103
N adj.=2.9
109
N adj.=1.3
115
N adj.=1.3
100
N adj.=2.1
104
N adj.=2.7
112
N adj.=1.9
116
N adj.=0.3
101
N adj.=3.4
105
N adj.=4.2
113
N adj.=9.1
117
N adj.=4.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

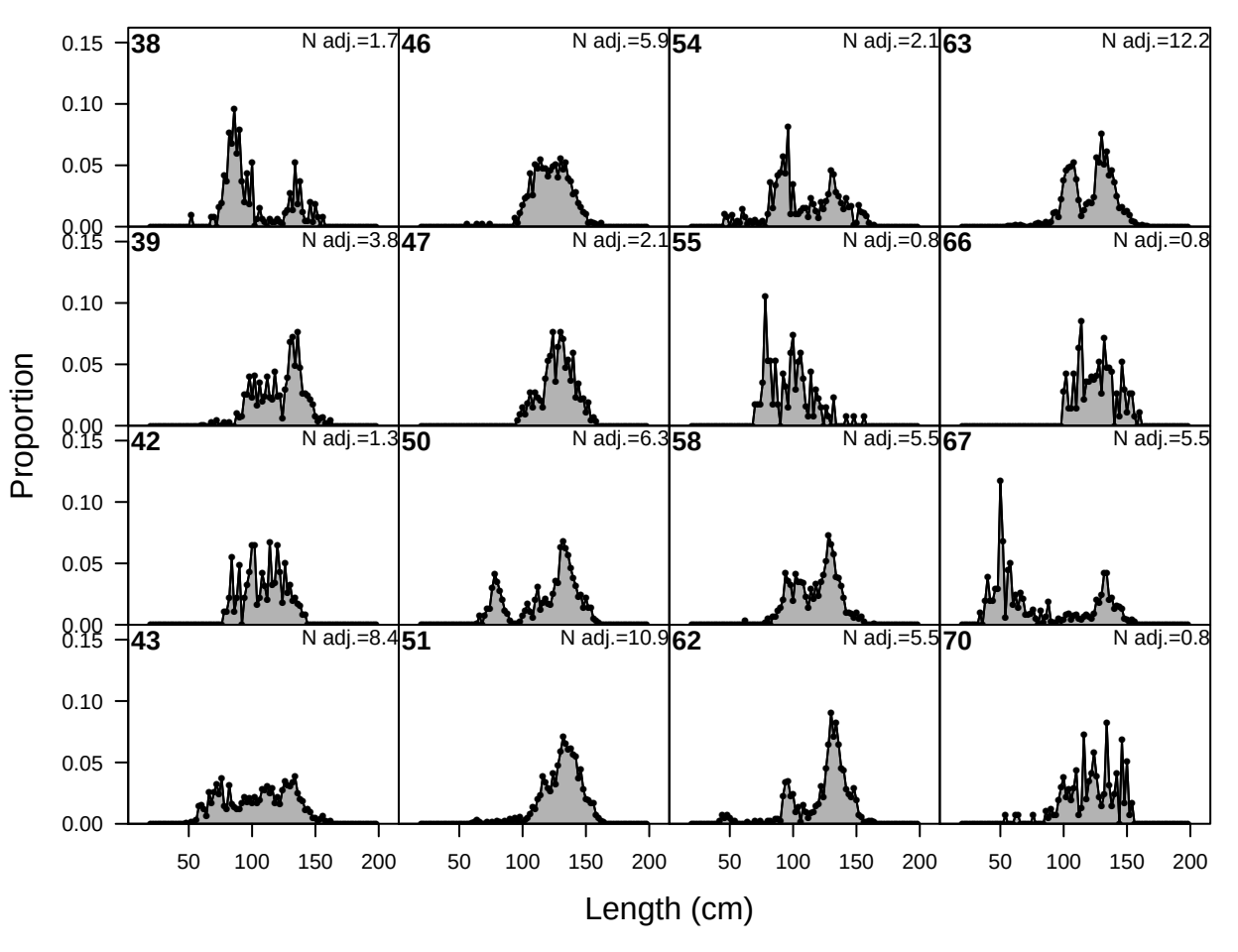

118
N adj.=0.6
123
N adj.=1.3
127
N adj.=1.1
131
N adj.=0.6
119
N adj.=0.5
124
N adj.=4
128
N adj.=3
132
N adj.=0.6
121
N adj.=11.5
125
N adj.=14.9
129
N adj.=11.7
133
N adj.=5.9
122
N adj.=6.9
126
N adj.=13.6
130
N adj.=3.5
134
N adj.=9.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

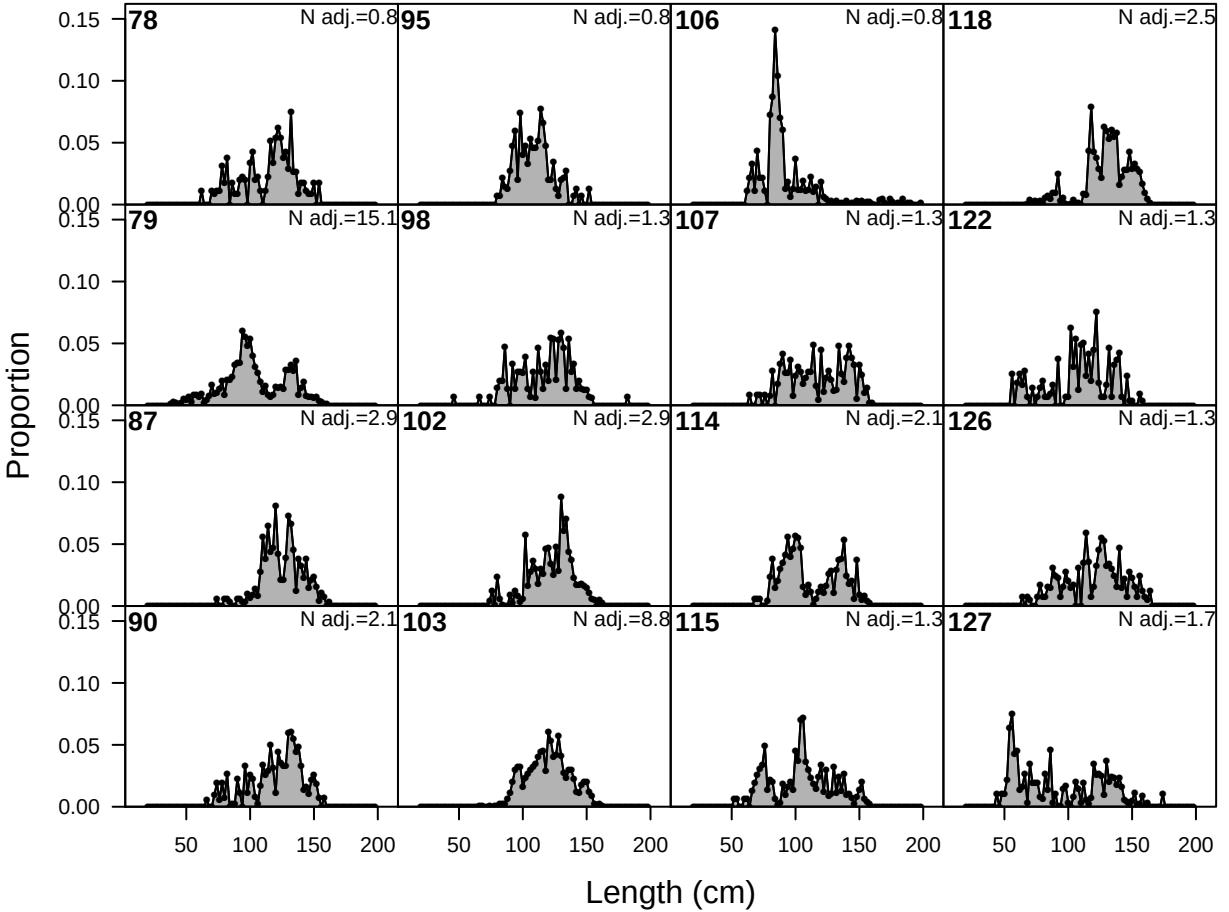

135
N adj.=3.5
141
N adj.=3.4
146
N adj.=2.9
151
N adj.=0.3
136
N adj.=4.3
142
N adj.=1.6
147
N adj.=1
153
N adj.=1.3
137
N adj.=5.9
143
N adj.=0.6
149
N adj.=3.2
157
N adj.=2.4
138
N adj.=5.8
145
N adj.=3.2
150
N adj.=2.1
158
N adj.=0.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


161
N adj.=9.6
169
N adj.=11
174
N adj.=1
162
N adj.=3.8
170
N adj.=4.5
177
N adj.=8.5
165
N adj.=8.2
172
N adj.=0.5
178
N adj.=6.9
166
N adj.=3.8
173
N adj.=5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


0.01
0.4
200
150
100
50
Length (cm)
37
47
57
67
77
88
99
112
125
138
151
165
178
Year


F14−NOA_S (whole catch)
Mean length
200
150
100
50
0
−50
40
60
80
100
120
140
160
180
Year


38
N adj.=1.7
46
N adj.=5.9
54
N adj.=2.1
63
N adj.=12.2
39
N adj.=3.8
47
N adj.=2.1
55
N adj.=0.8
66
N adj.=0.8
42
N adj.=1.3
50
N adj.=6.3
58
N adj.=5.5
67
N adj.=5.5
43
N adj.=8.4
51
N adj.=10.9
62
N adj.=5.5
70
N adj.=0.8
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


78
N adj.=0.8
95
N adj.=0.8
106
N adj.=0.8
118
N adj.=2.5
79
N adj.=15.1
98
N adj.=1.3
107
N adj.=1.3
122
N adj.=1.3
87
N adj.=2.9
102
N adj.=2.9
114
N adj.=2.1
126
N adj.=1.3
90
N adj.=2.1
103
N adj.=8.8
115
N adj.=1.3
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N adj.=1.7
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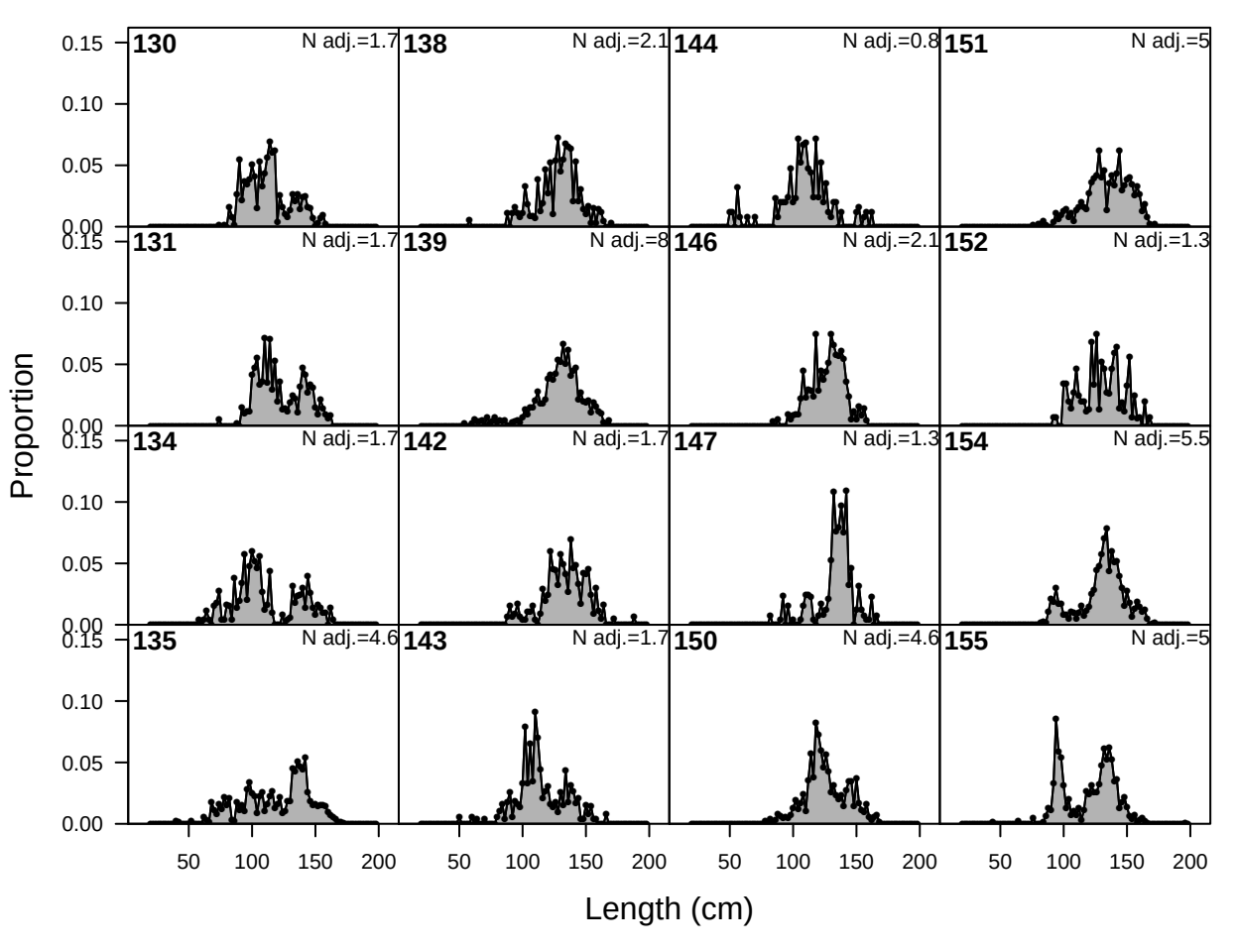
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


130
N adj.=1.7
138
N adj.=2.1
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N adj.=0.8
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N adj.=5
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N adj.=1.7
139
N adj.=8
146
N adj.=2.1
152
N adj.=1.3
134
N adj.=1.7
142
N adj.=1.7
147
N adj.=1.3
154
N adj.=5.5
135
N adj.=4.6
143
N adj.=1.7
150
N adj.=4.6
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N adj.=5
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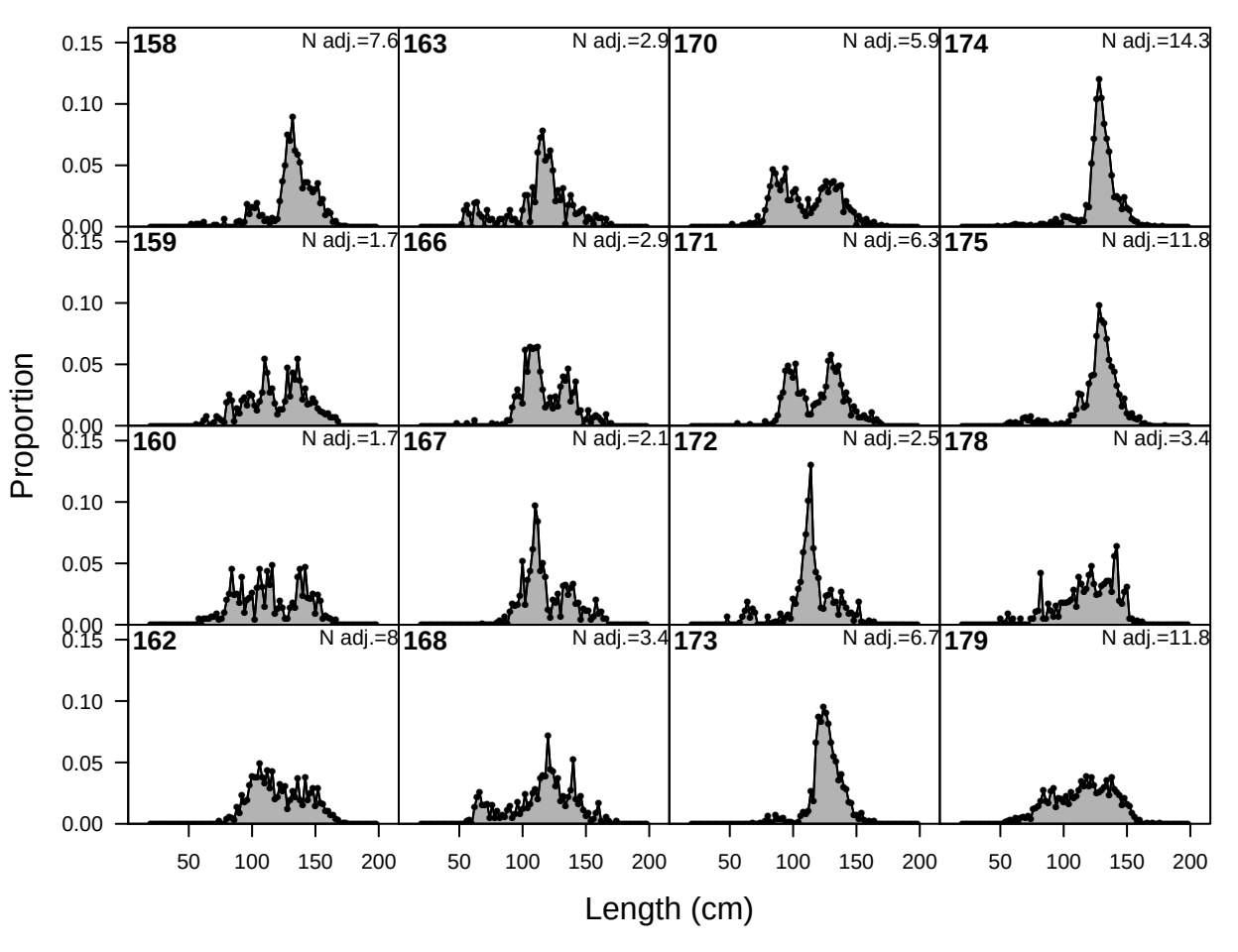
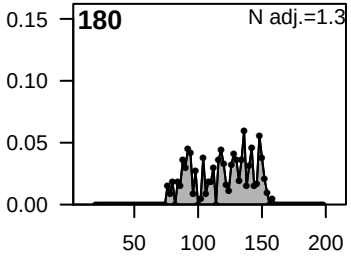
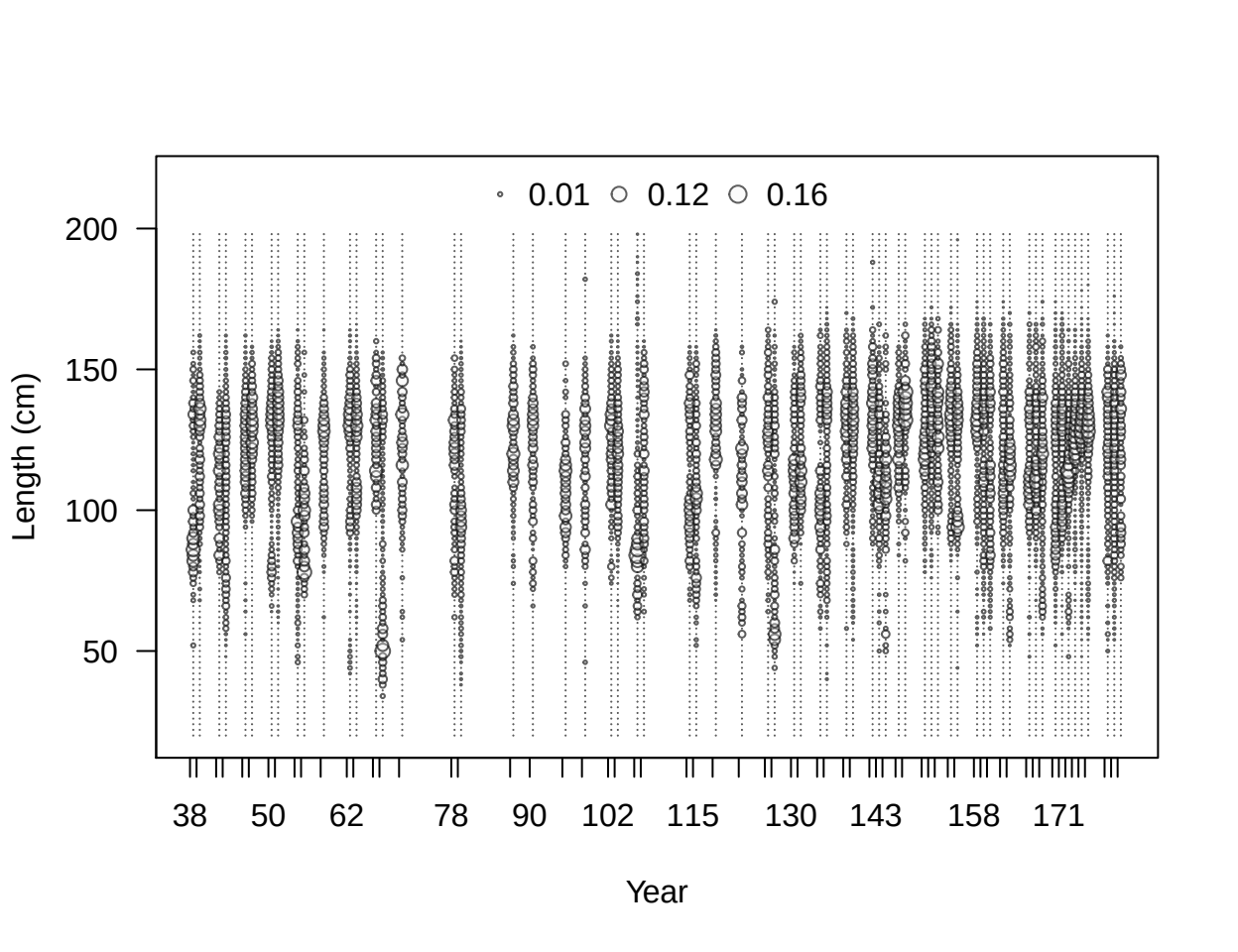
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

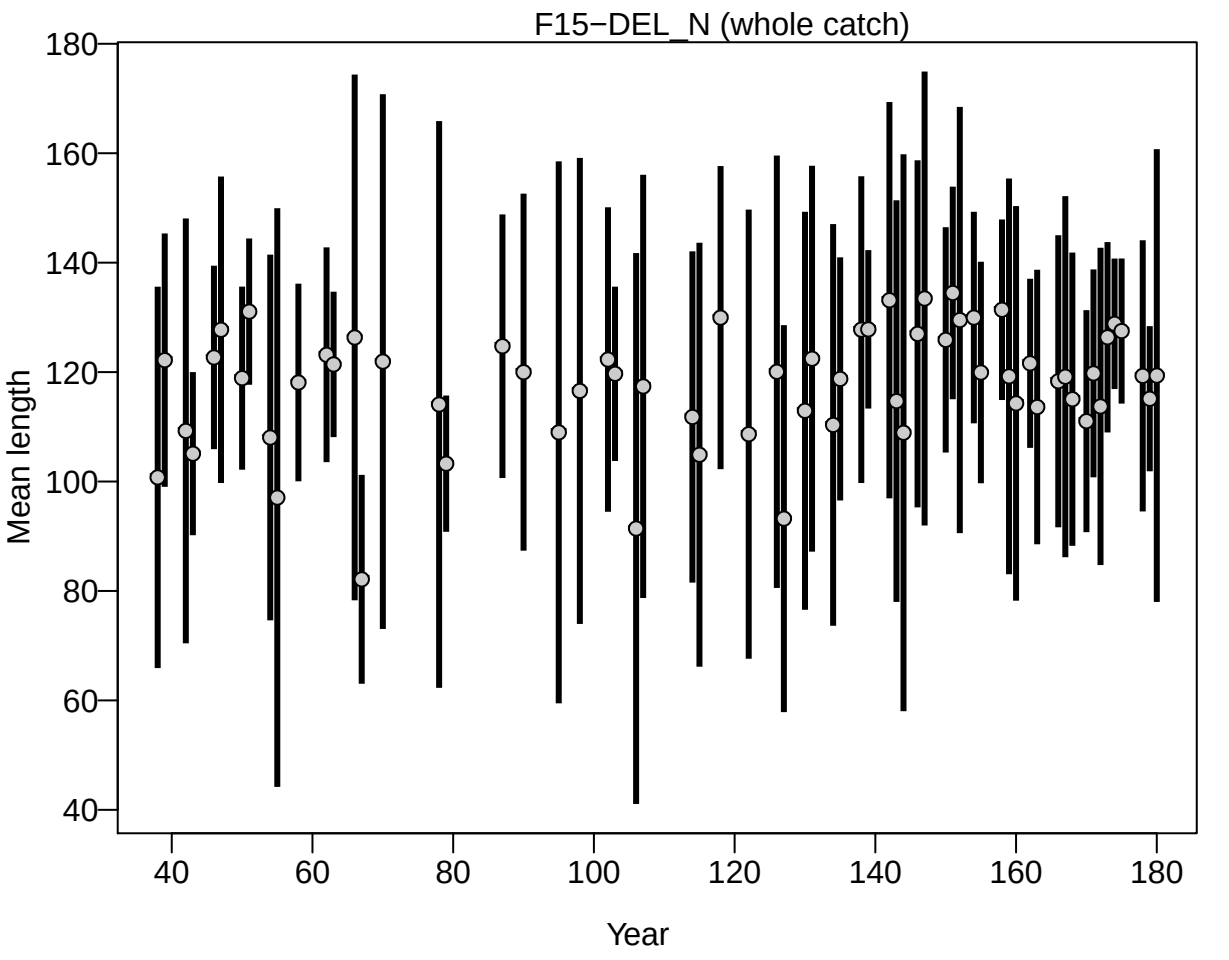

158
N adj.=7.6
163
N adj.=2.9
170
N adj.=5.9
174
N adj.=14.3
159
N adj.=1.7
166
N adj.=2.9
171
N adj.=6.3
175
N adj.=11.8
160
N adj.=1.7
167
N adj.=2.1
172
N adj.=2.5
178
N adj.=3.4
162
N adj.=8
168
N adj.=3.4
173
N adj.=6.7
179
N adj.=11.8
Proportion
0.00
0.05
0.10
0.15
50
100
150
200
Length (cm)

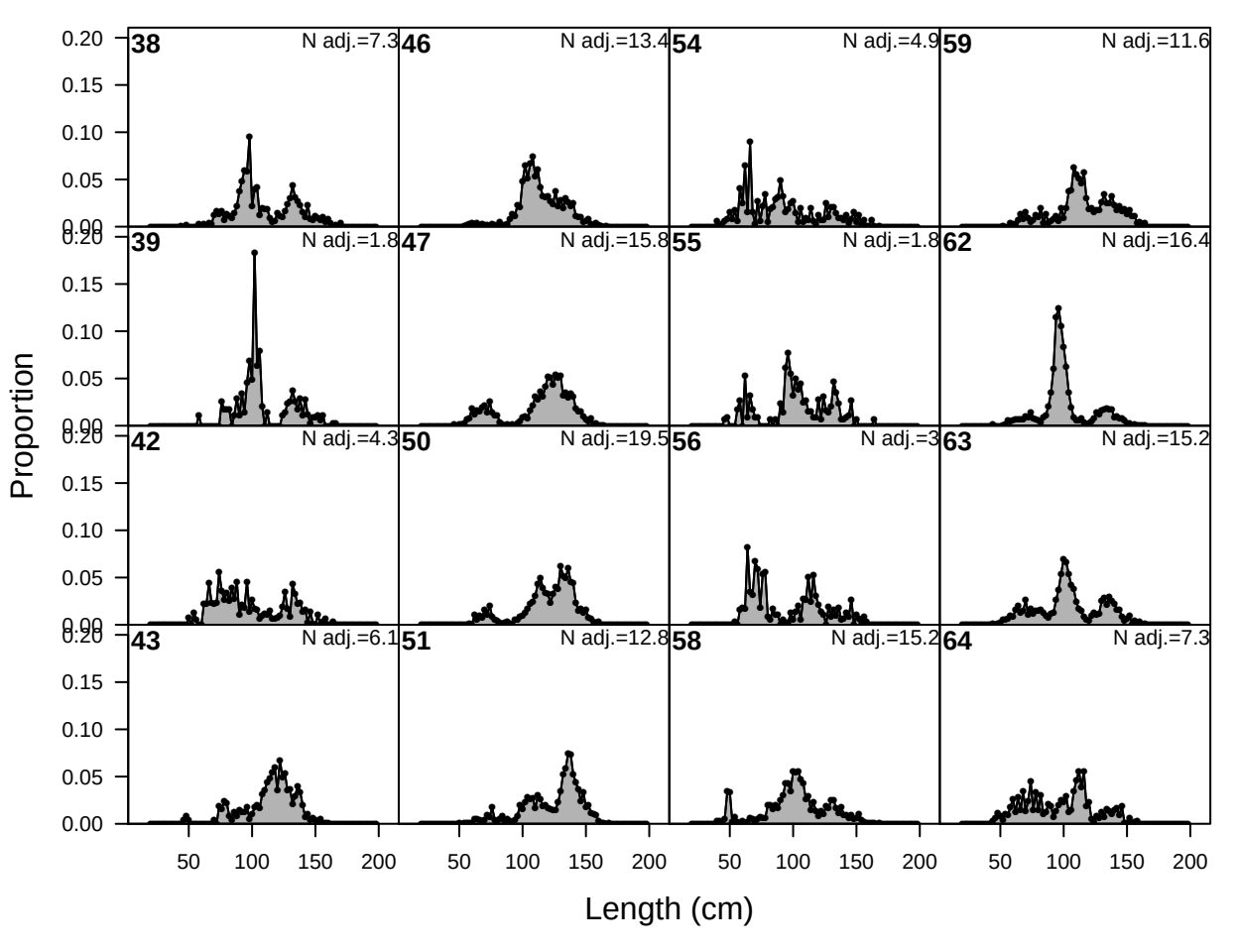


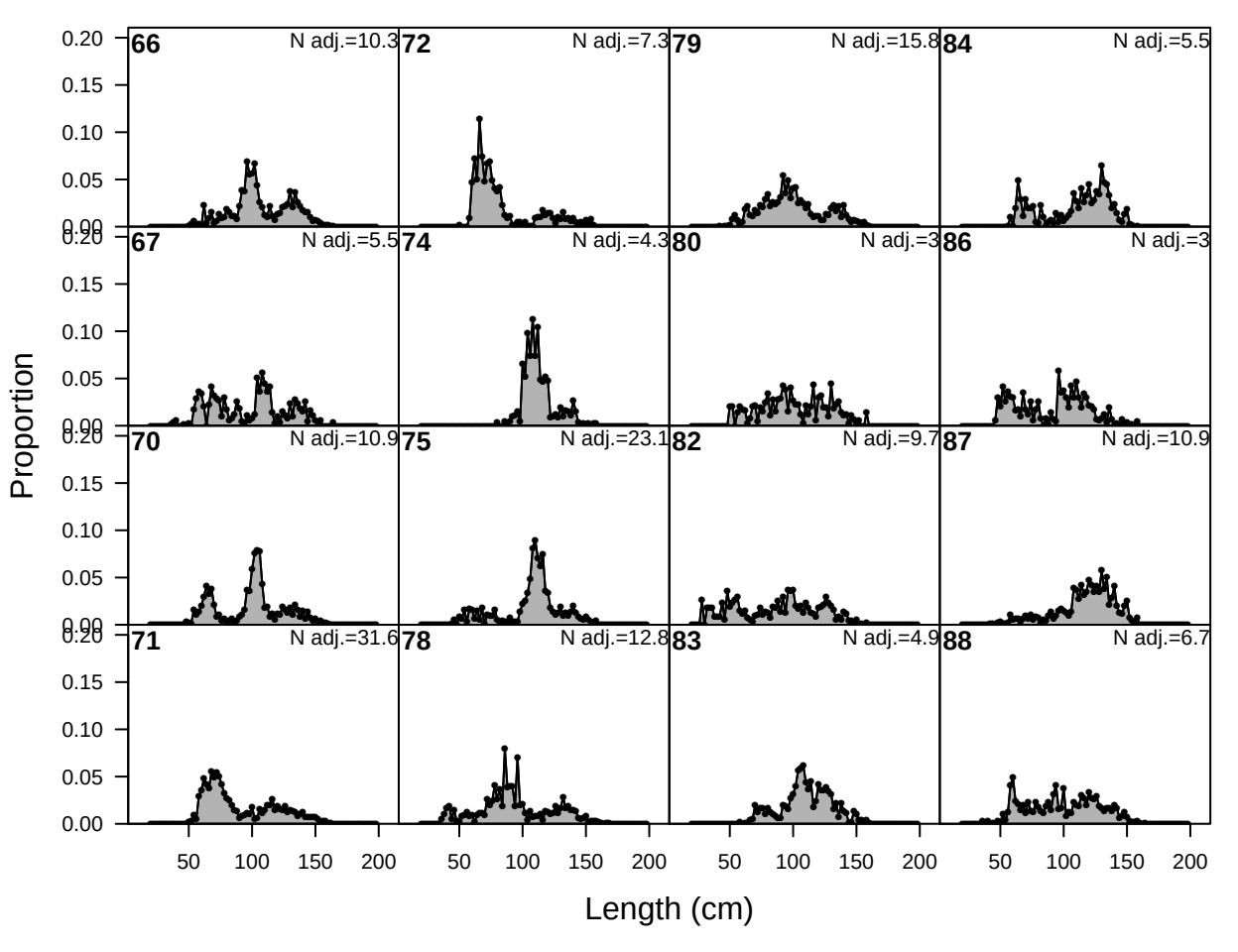
Proportion

Length (cm)


0.01
0.12
0.16
200
150
100
50
Length (cm)
38
50
62
78
90
102
115
130
143
158
171
Year


F15−DEL_N (whole catch)
Mean length
Year
180
160
140
120
100
80
60
40
40
60
80
100
120
140
160
180


38
N adj.=7.3
46
N adj.=13.4
54
N adj.=4.9
59
N adj.=11.6
39
N adj.=1.8
47
N adj.=15.8
55
N adj.=1.8
62
N adj.=16.4
42
N adj.=4.3
50
N adj.=19.5
56
N adj.=3
63
N adj.=15.2
43
N adj.=6.1
51
N adj.=12.8
58
N adj.=15.2
64
N adj.=7.3
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


66
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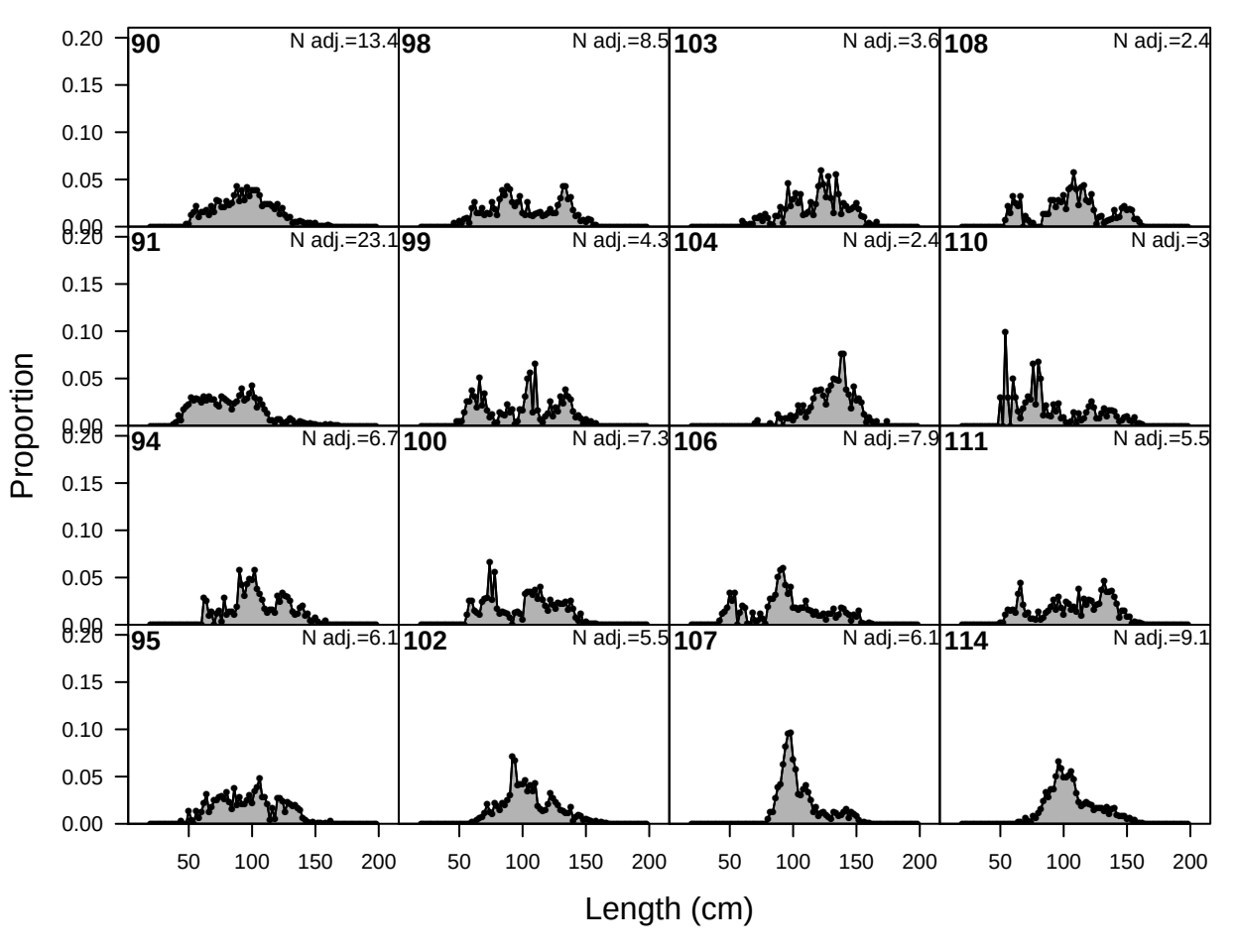
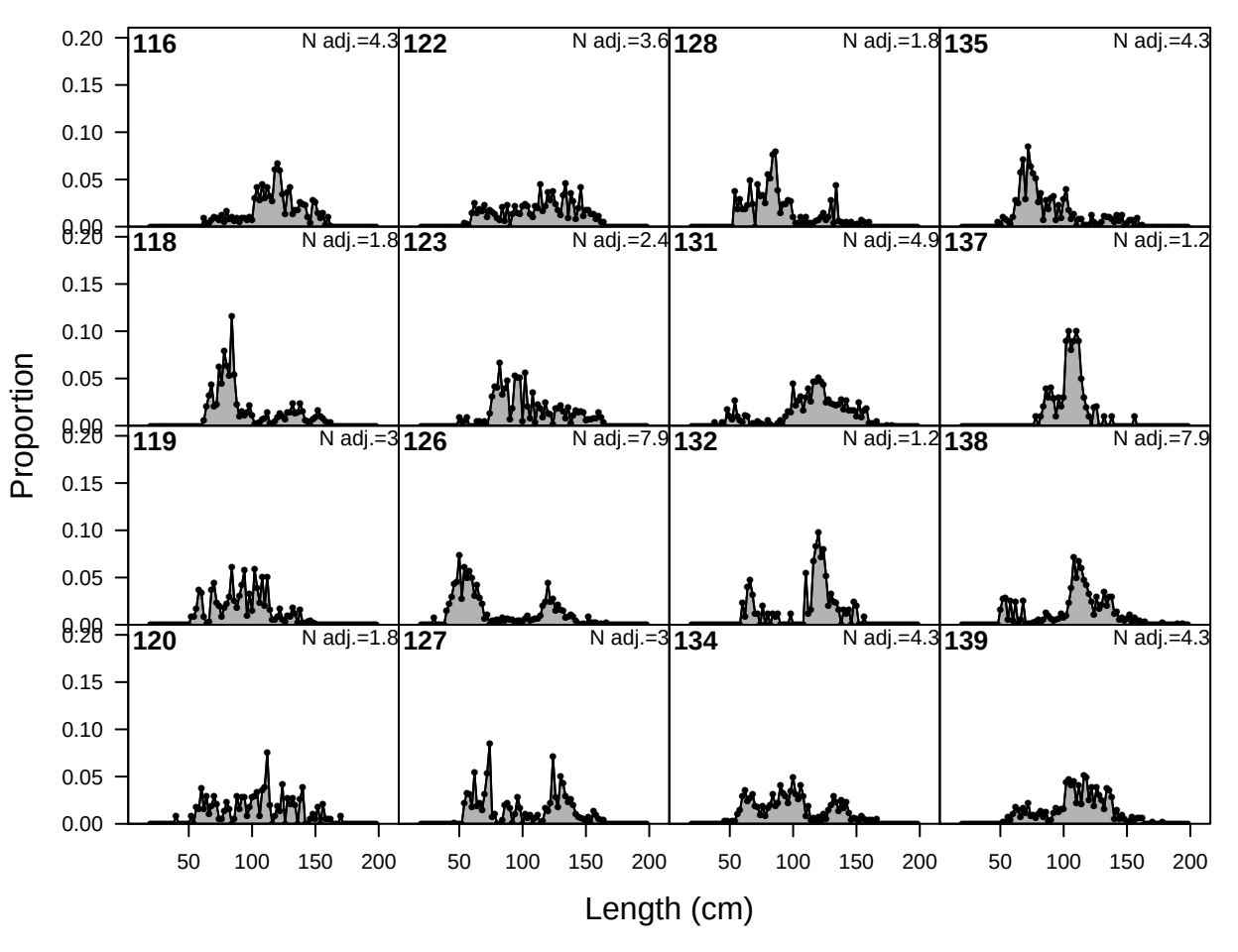
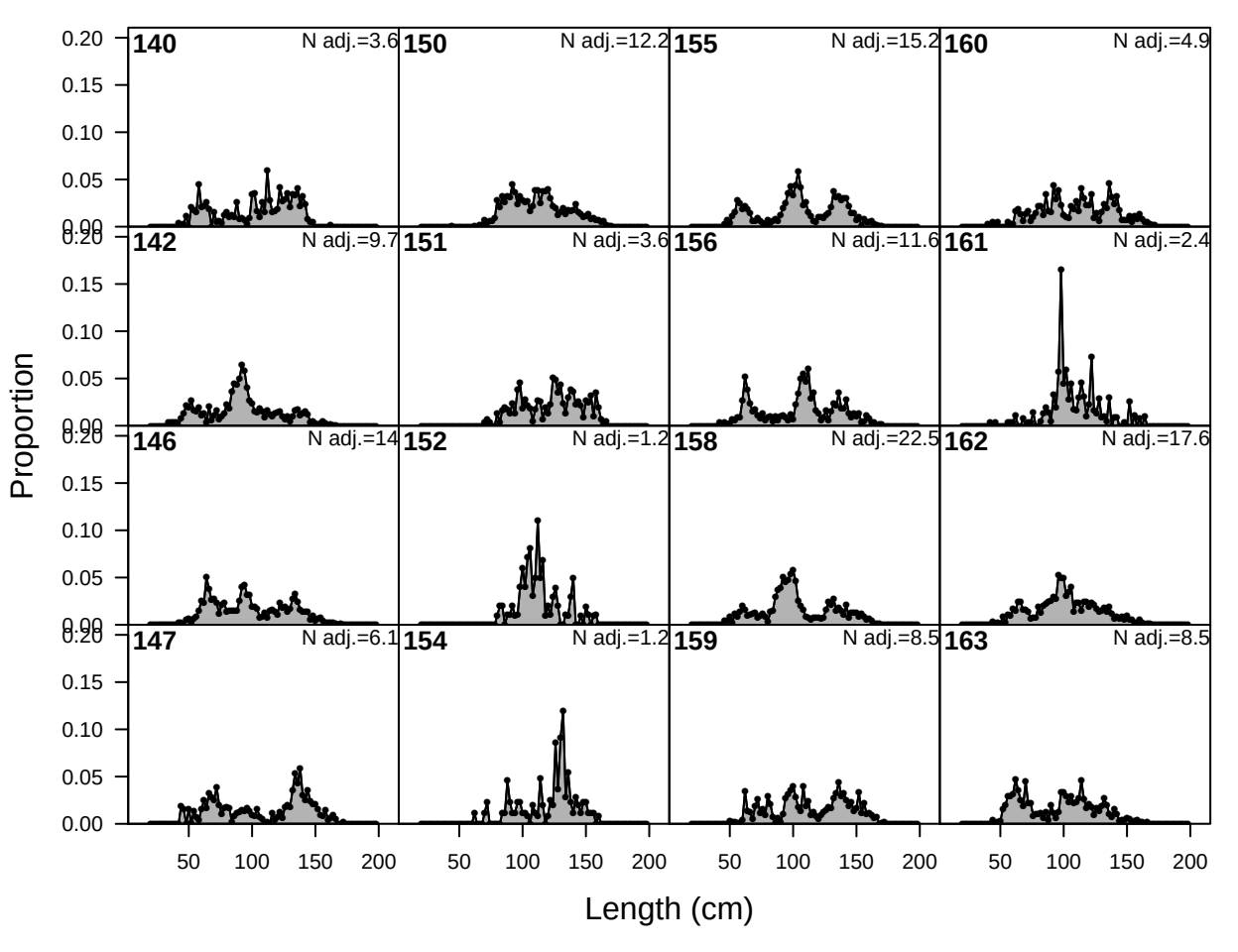
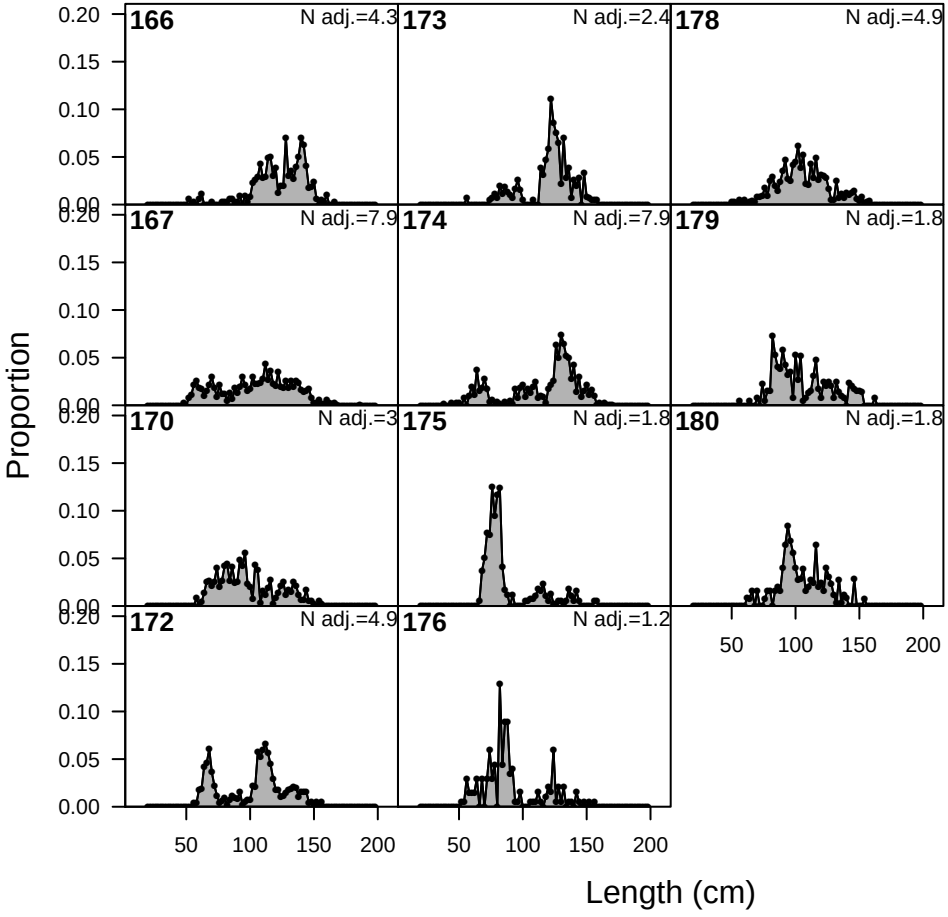
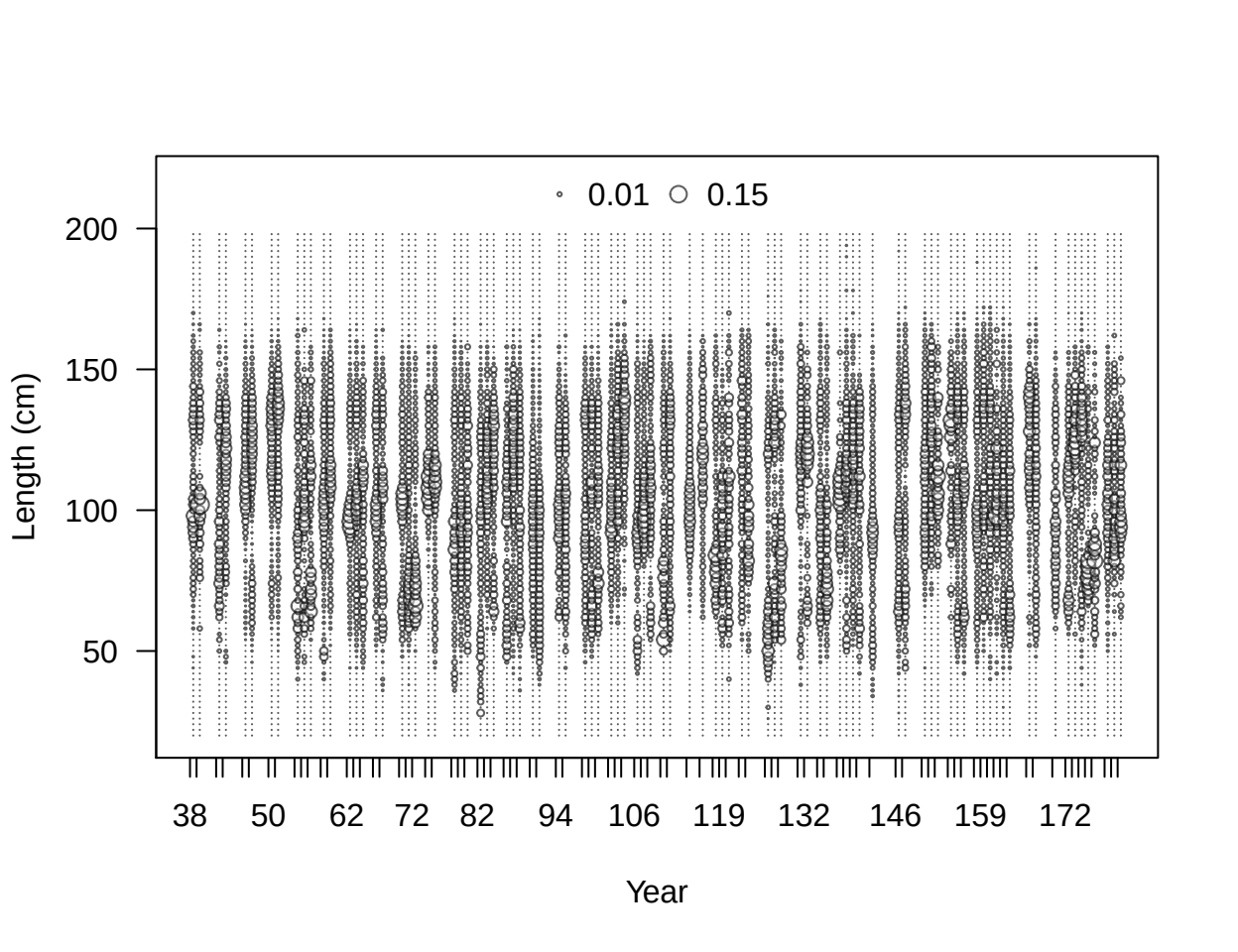
72
N adj.=7.3
79
N adj.=15.8
84
N adj.=5.5
67
N adj.=5.5
74
N adj.=4.3
80
N adj.=3
86
N adj.=3
70
N adj.=10.9
75
N adj.=23.1
82
N adj.=9.7
87
N adj.=10.9
71
N adj.=31.6
78
N adj.=12.8
83
N adj.=4.9
88
N adj.=6.7
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

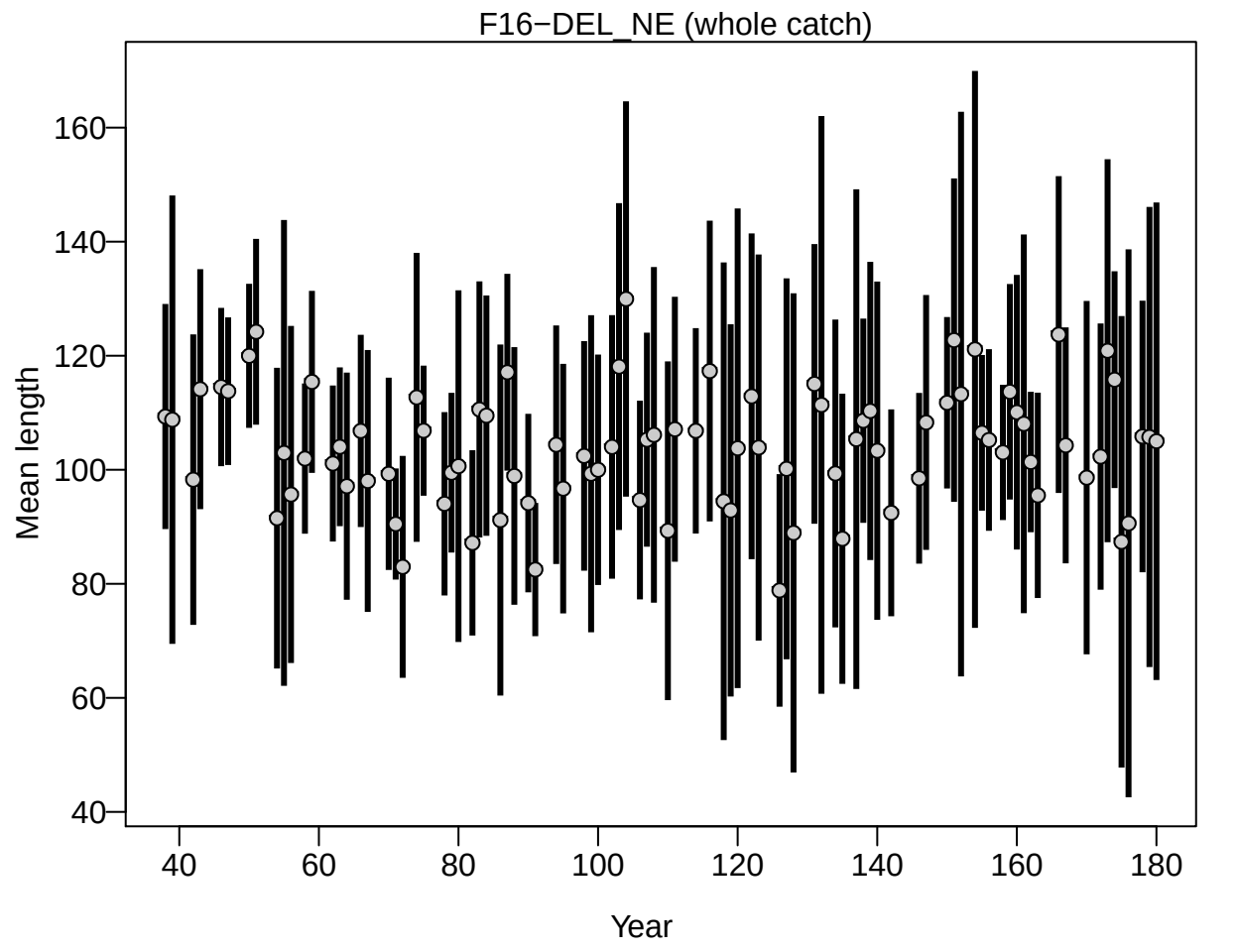

90
N adj.=13.4
98
N adj.=8.5
103
N adj.=3.6
108
N adj.=2.4
91
N adj.=23.1
99
N adj.=4.3
104
N adj.=2.4
110
N adj.=3
94
N adj.=6.7
100
N adj.=7.3
106
N adj.=7.9
111
N adj.=5.5
95
N adj.=6.1
102
N adj.=5.5
107
N adj.=6.1
114
N adj.=9.1
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

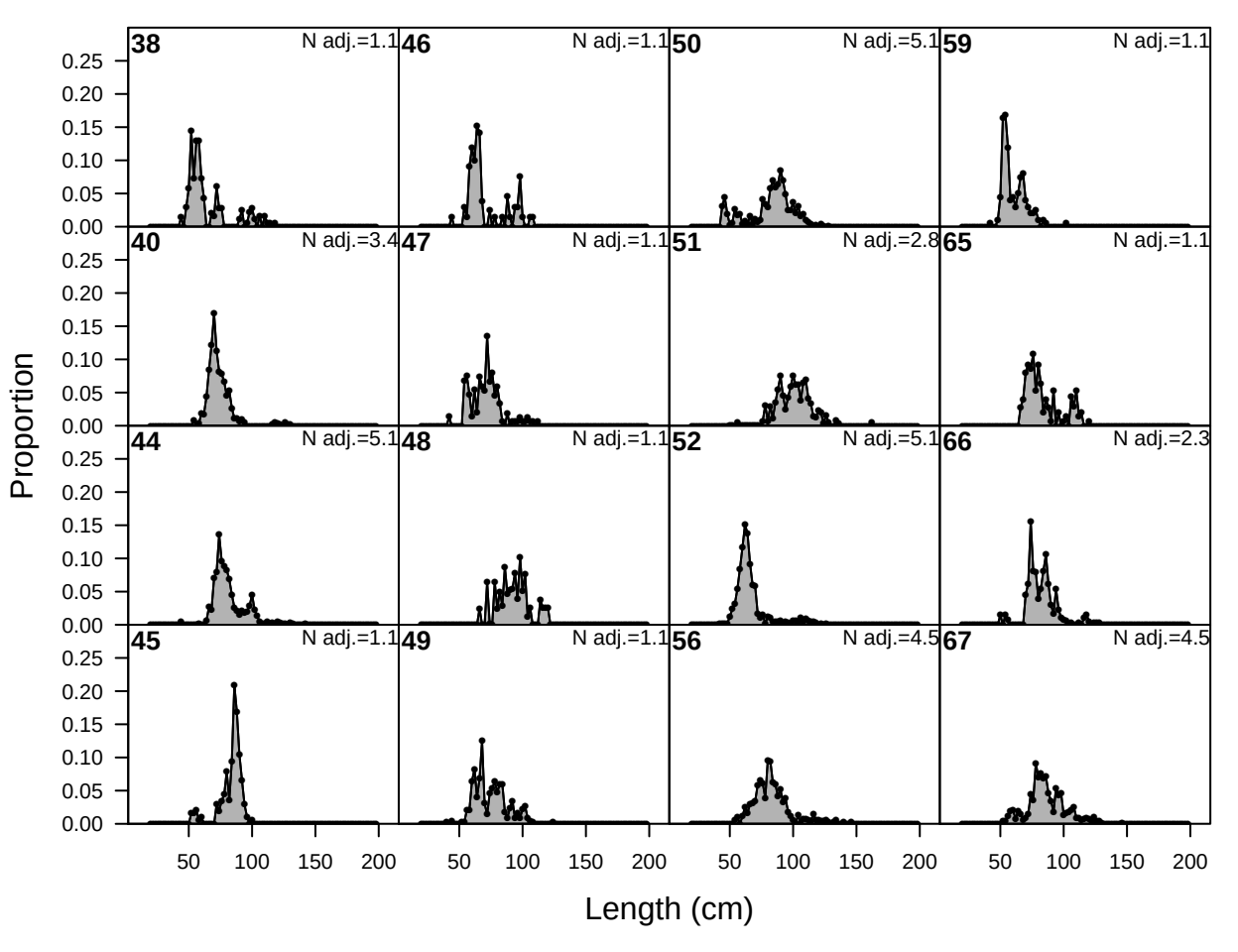

116
N adj.=4.3
122
N adj.=3.6
128
N adj.=1.8
135
N adj.=4.3
118
N adj.=1.8
123
N adj.=2.4
131
N adj.=4.9
137
N adj.=1.2
119
N adj.=3
126
N adj.=7.9
132
N adj.=1.2
138
N adj.=7.9
120
N adj.=1.8
127
N adj.=3
134
N adj.=4.3
139
N adj.=4.3
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)

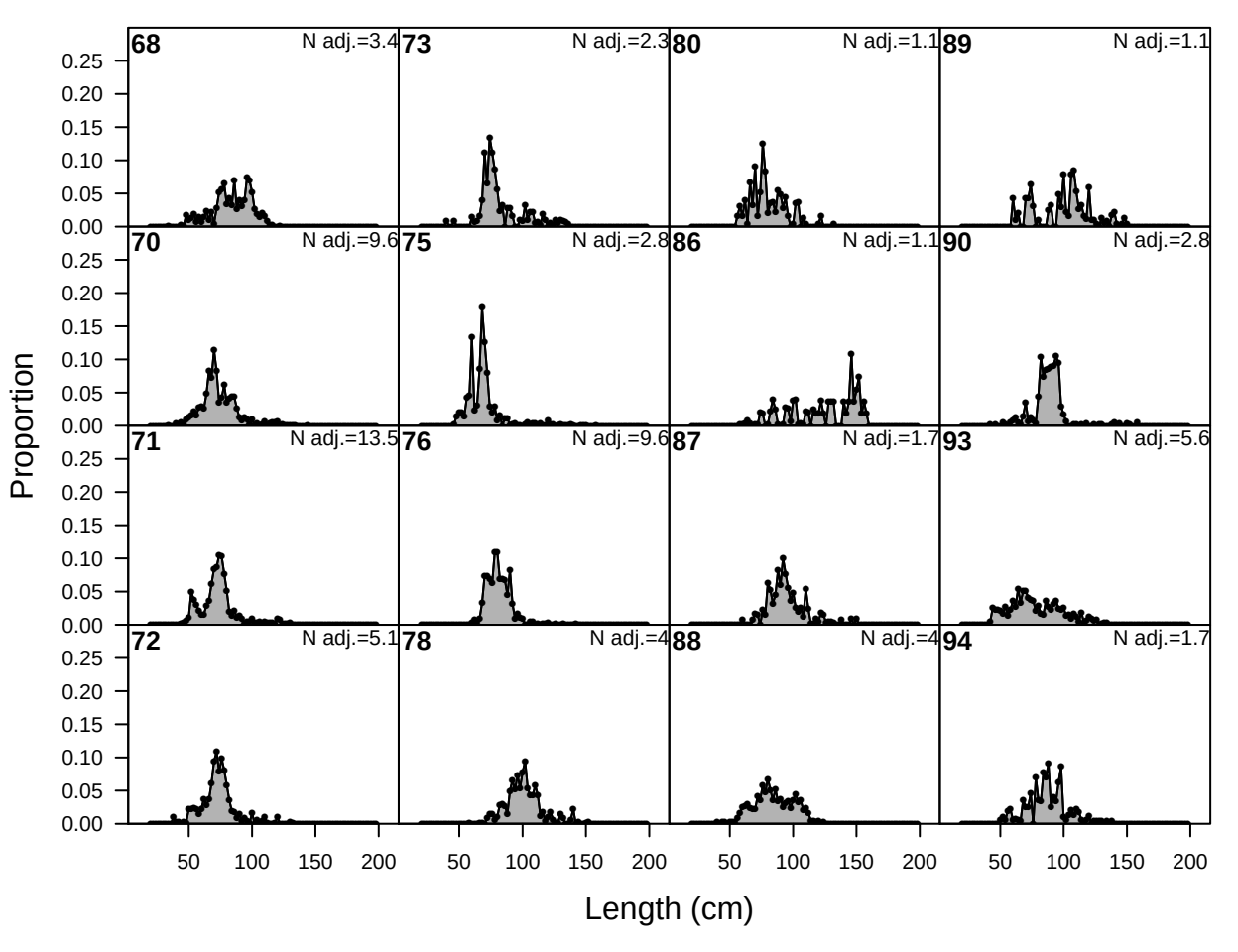

140
N adj.=3.6
150
N adj.=12.2
155
N adj.=15.2
160
N adj.=4.9
142
N adj.=9.7
151
N adj.=3.6
156
N adj.=11.6
161
N adj.=2.4
146
N adj.=14
152
N adj.=1.2
158
N adj.=22.5
162
N adj.=17.6
147
N adj.=6.1
154
N adj.=1.2
159
N adj.=8.5
163
N adj.=8.5
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

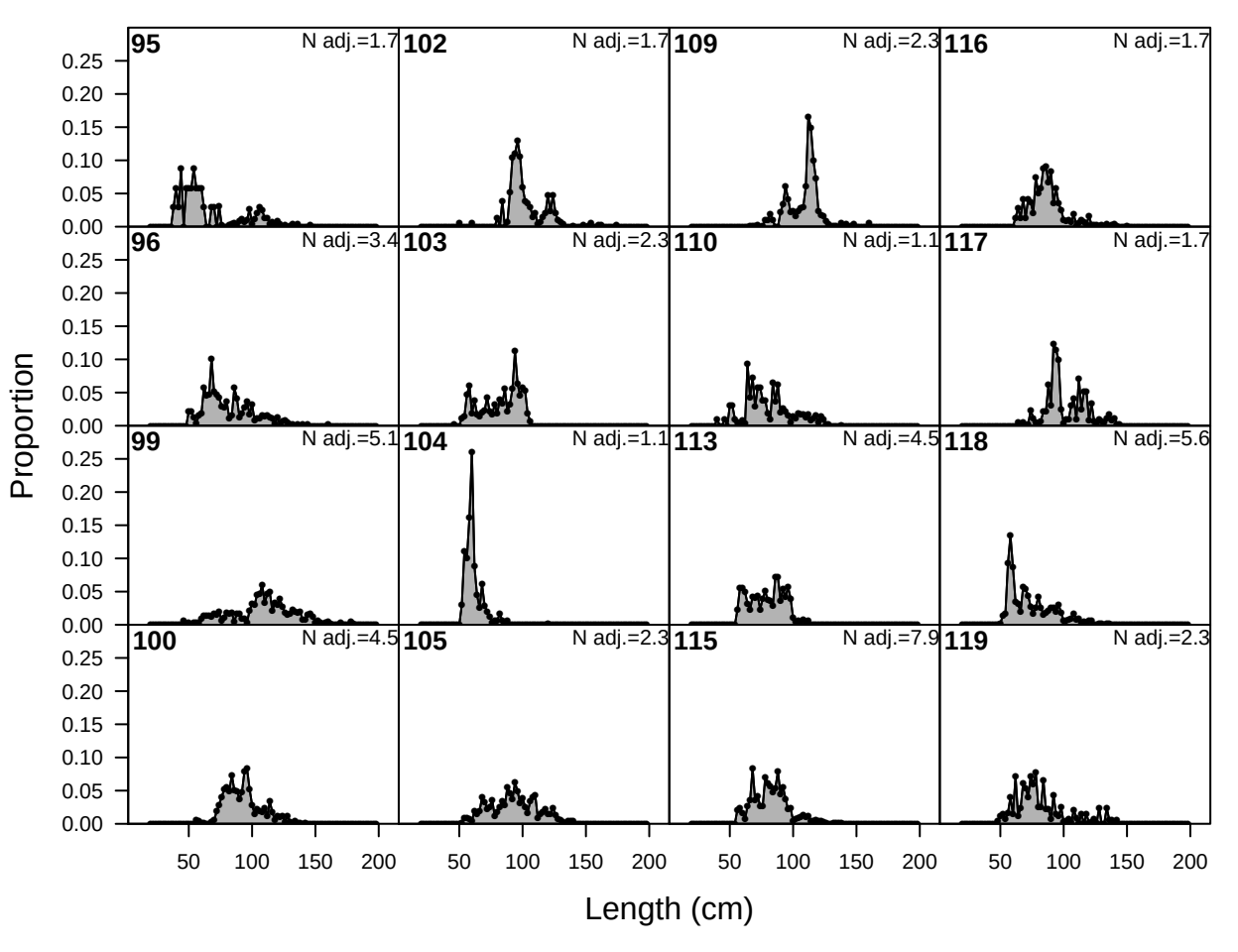

166
N adj.=4.3
173
N adj.=2.4
178
N adj.=4.9
167
N adj.=7.9
174
N adj.=7.9
179
N adj.=1.8
170
N adj.=3
175
N adj.=1.8
180
N adj.=1.8
172
N adj.=4.9
176
N adj.=1.2
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

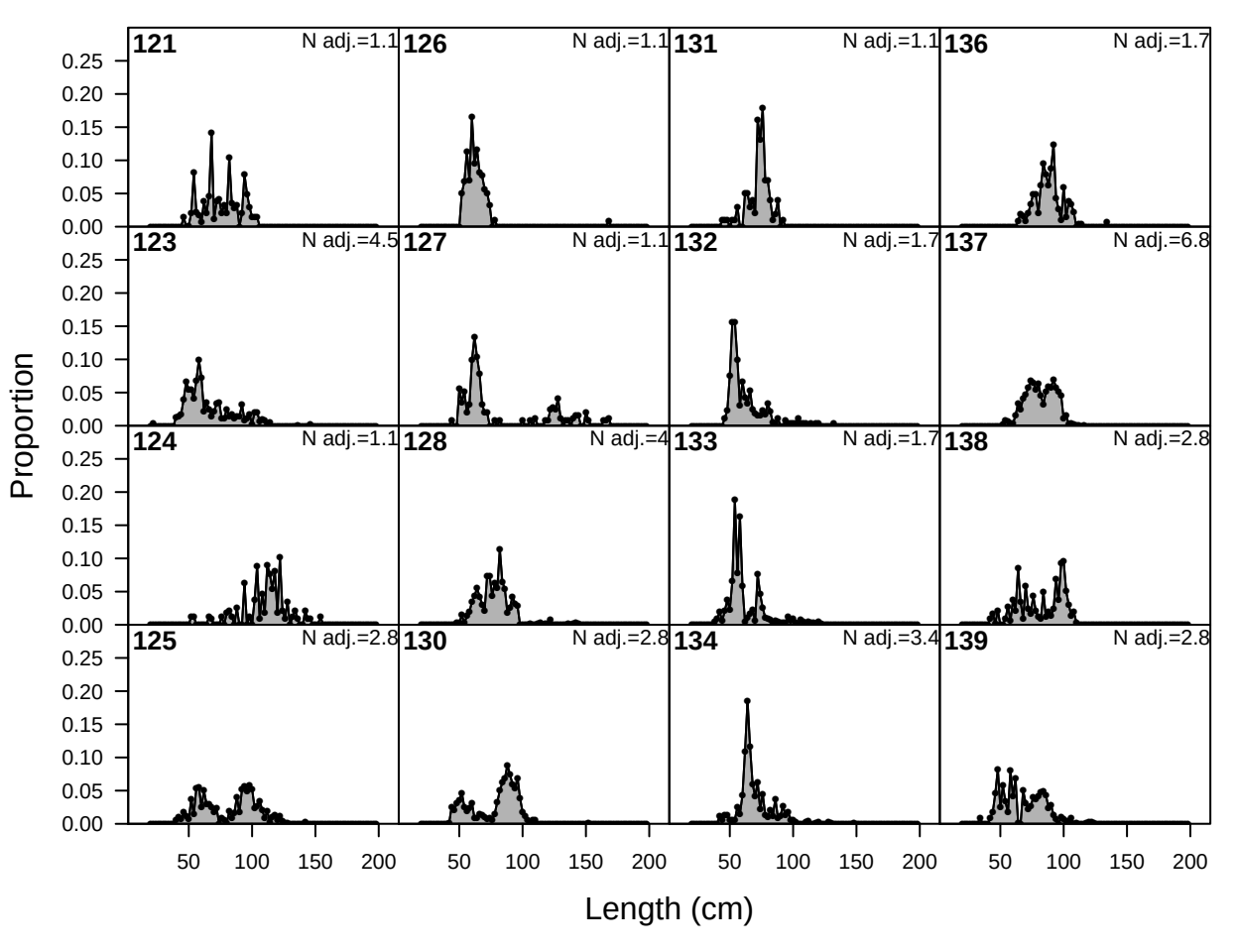

0.01
0.15
200
150
100
50
Length (cm)
38
50
62
72
82
94
106
119
132
146
159
172
Year


F16−DEL_NE (whole catch)
Mean length
Year
40
60
80
100
120
140
160
180


38
N adj.=1.1
46
N adj.=1.1
50
N adj.=5.1
59
N adj.=1.1
40
N adj.=3.4
47
N adj.=1.1
51
N adj.=2.8
65
N adj.=1.1
44
N adj.=5.1
48
N adj.=1.1
52
N adj.=5.1
66
N adj.=2.3
45
N adj.=1.1
49
N adj.=1.1
56
N adj.=4.5
67
N adj.=4.5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


68
N adj.=3.4
73
N adj.=2.3
80
N adj.=1.1
89
N adj.=1.1
70
N adj.=9.6
75
N adj.=2.8
86
N adj.=1.1
90
N adj.=2.8
71
N adj.=13.5
76
N adj.=9.6
87
N adj.=1.7
93
N adj.=5.6
72
N adj.=5.1
78
N adj.=4
88
N adj.=4
94
N adj.=1.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


95
N adj.=1.7
102
N adj.=1.7
109
N adj.=2.3
116
N adj.=1.7
96
N adj.=3.4
103
N adj.=2.3
110
N adj.=1.1
117
N adj.=1.7
99
N adj.=5.1
104
N adj.=1.1
113
N adj.=4.5
118
N adj.=5.6
100
N adj.=4.5
105
N adj.=2.3
115
N adj.=7.9
119
N adj.=2.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


121
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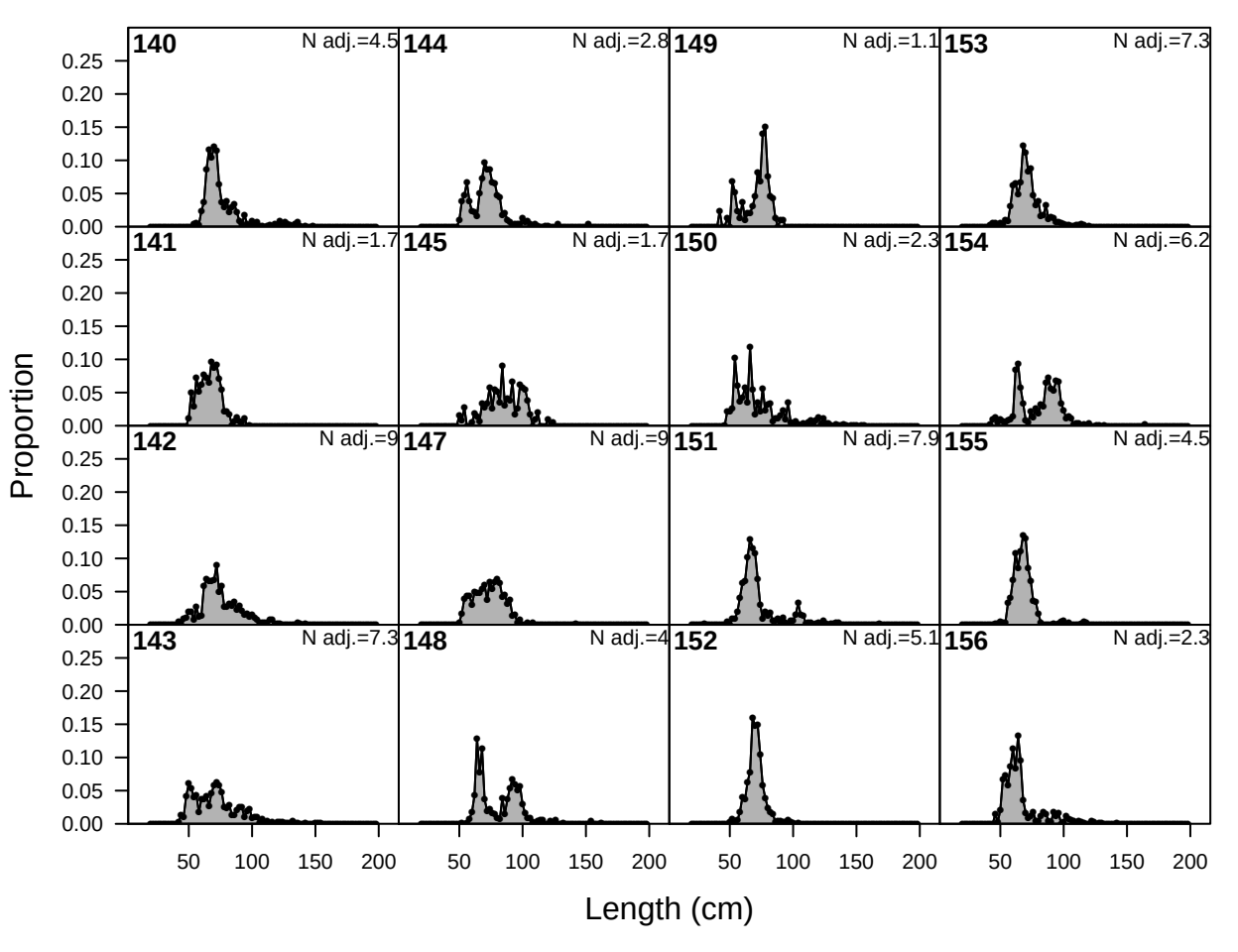
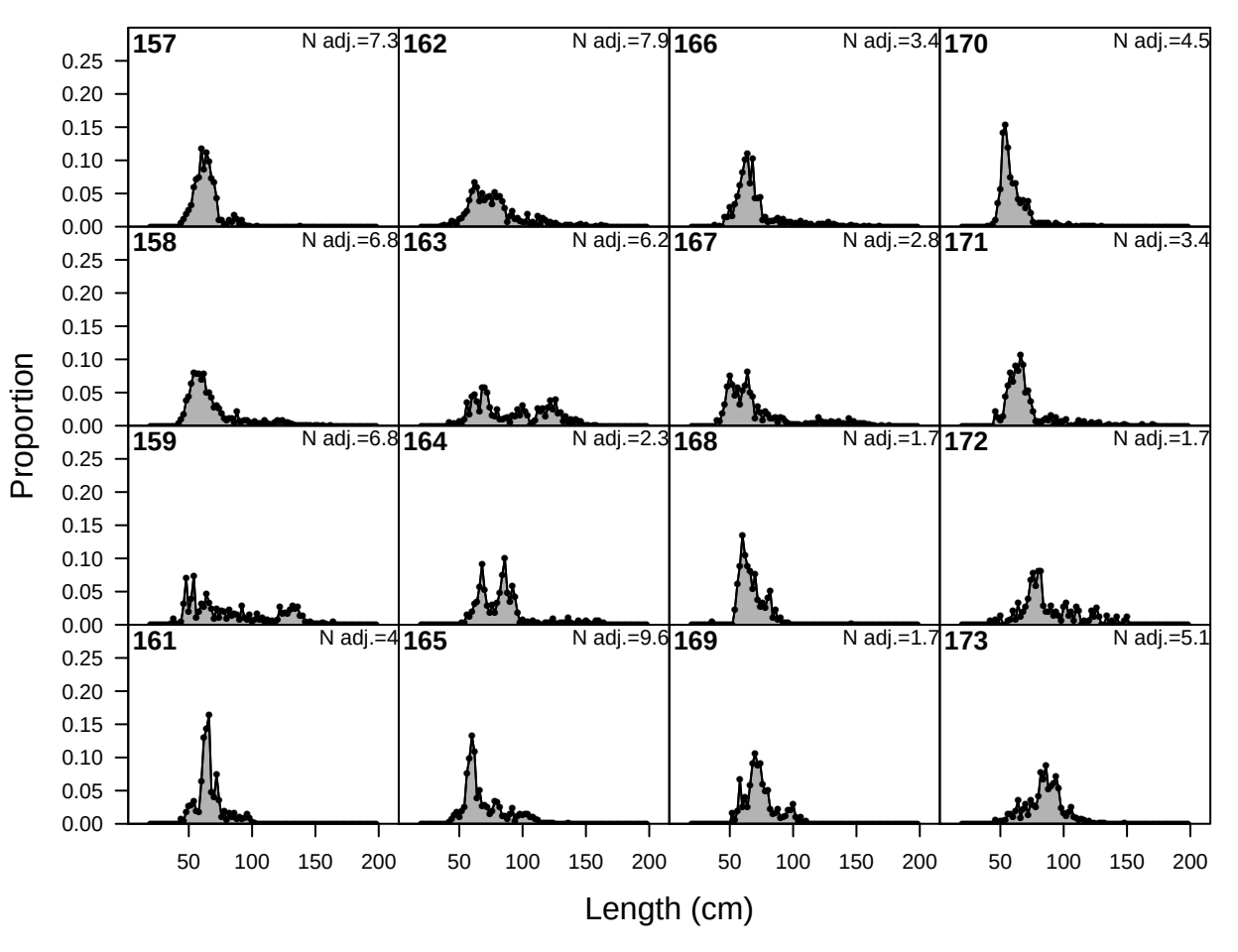
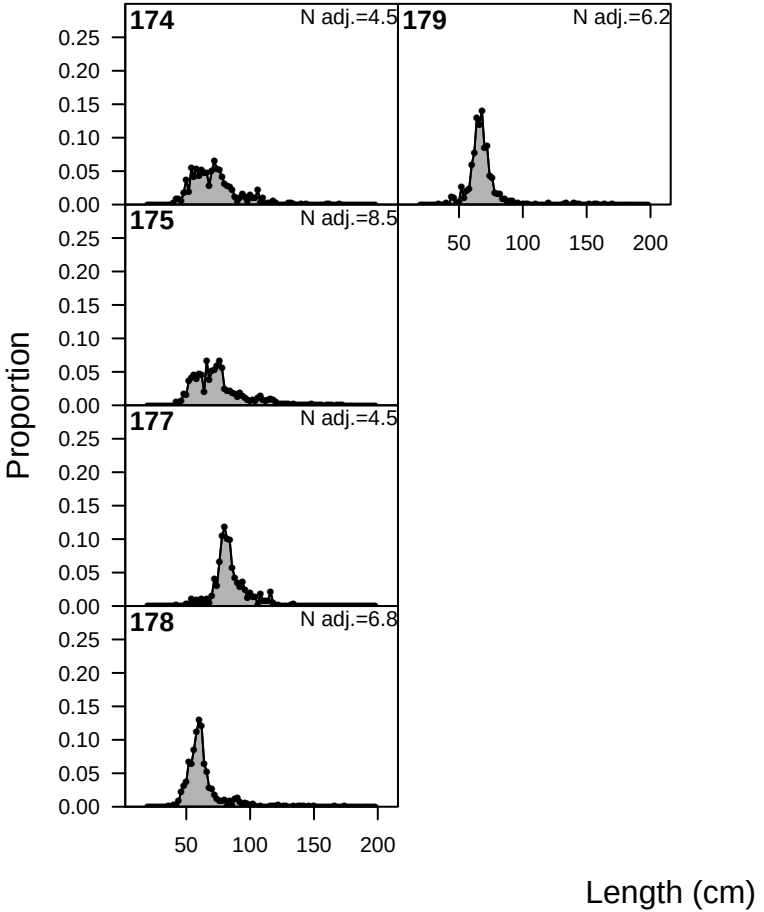
126
N adj.=1.1
131
N adj.=1.1
136
N adj.=1.7
123
N adj.=4.5
127
N adj.=1.1
132
N adj.=1.7
137
N adj.=6.8
124
N adj.=1.1
128
N adj.=4
133
N adj.=1.7
138
N adj.=2.8
125
N adj.=2.8
130
N adj.=2.8
134
N adj.=3.4
139
N adj.=2.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


140
N adj.=4.5
144
N adj.=2.8
149
N adj.=1.1
153
N adj.=7.3
141
N adj.=1.7
145
N adj.=1.7
150
N adj.=2.3
154
N adj.=6.2
142
N adj.=9
147
N adj.=9
151
N adj.=7.9
155
N adj.=4.5
143
N adj.=7.3
148
N adj.=4
152
N adj.=5.1
156
N adj.=2.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


157
N adj.=7.3
162
N adj.=7.9
166
N adj.=3.4
170
N adj.=4.5
158
N adj.=6.8
163
N adj.=6.2
167
N adj.=2.8
171
N adj.=3.4
159
N adj.=6.8
164
N adj.=2.3
168
N adj.=1.7
172
N adj.=1.7
161
N adj.=4
165
N adj.=9.6
169
N adj.=1.7
173
N adj.=5.1
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


174
N adj.=4.5
179
N adj.=6.2
175
N adj.=8.5
177
N adj.=4.5
178
N adj.=6.8
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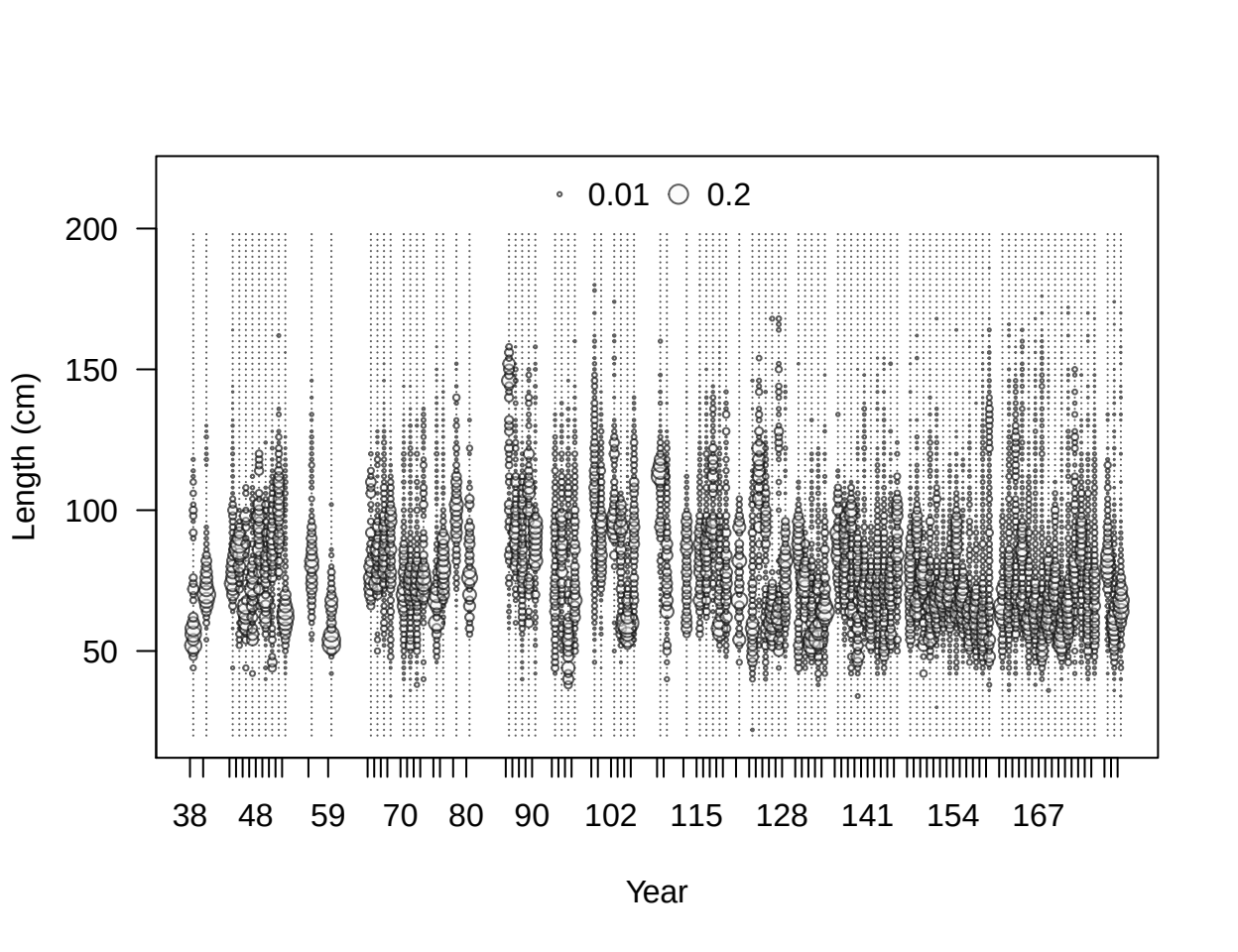
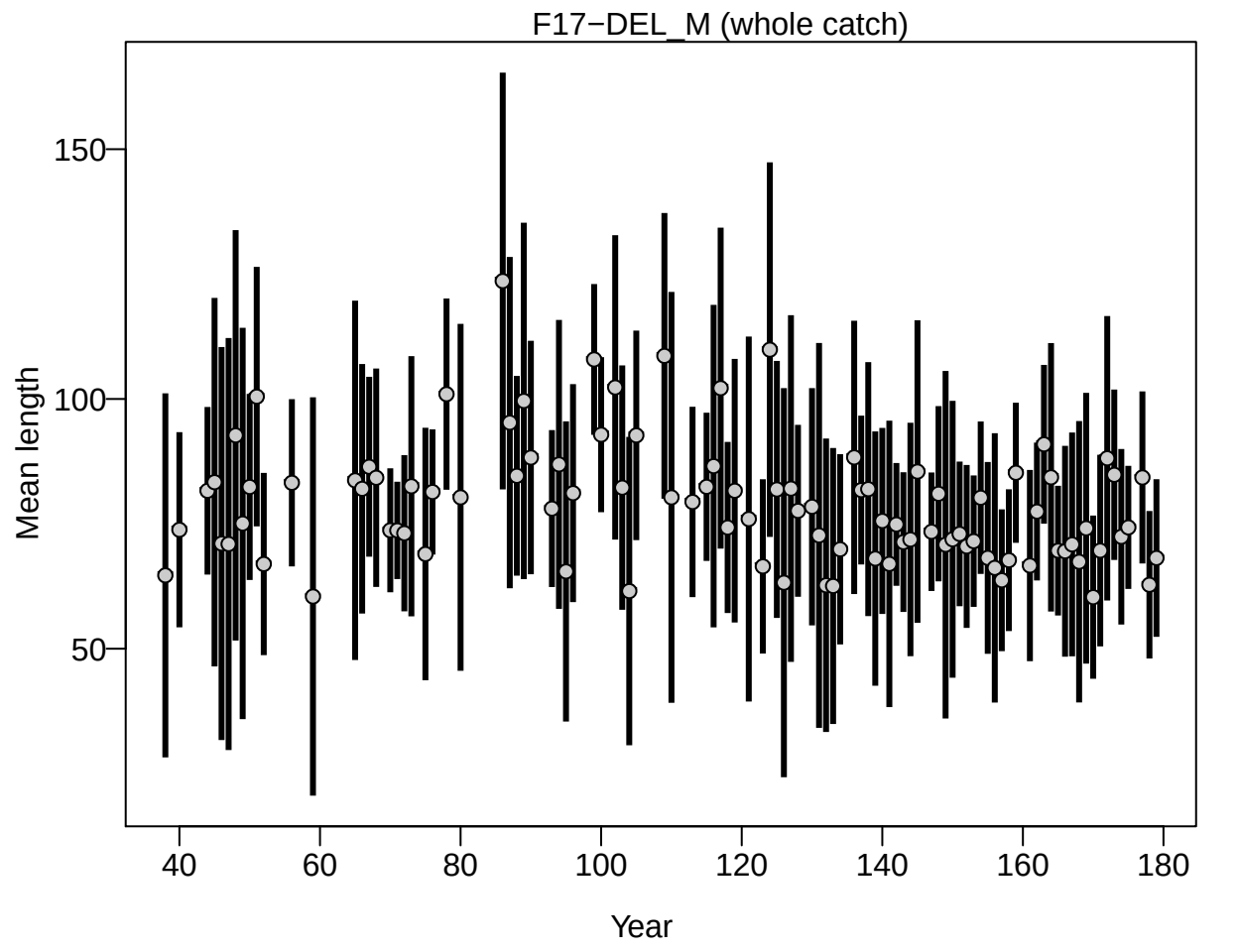
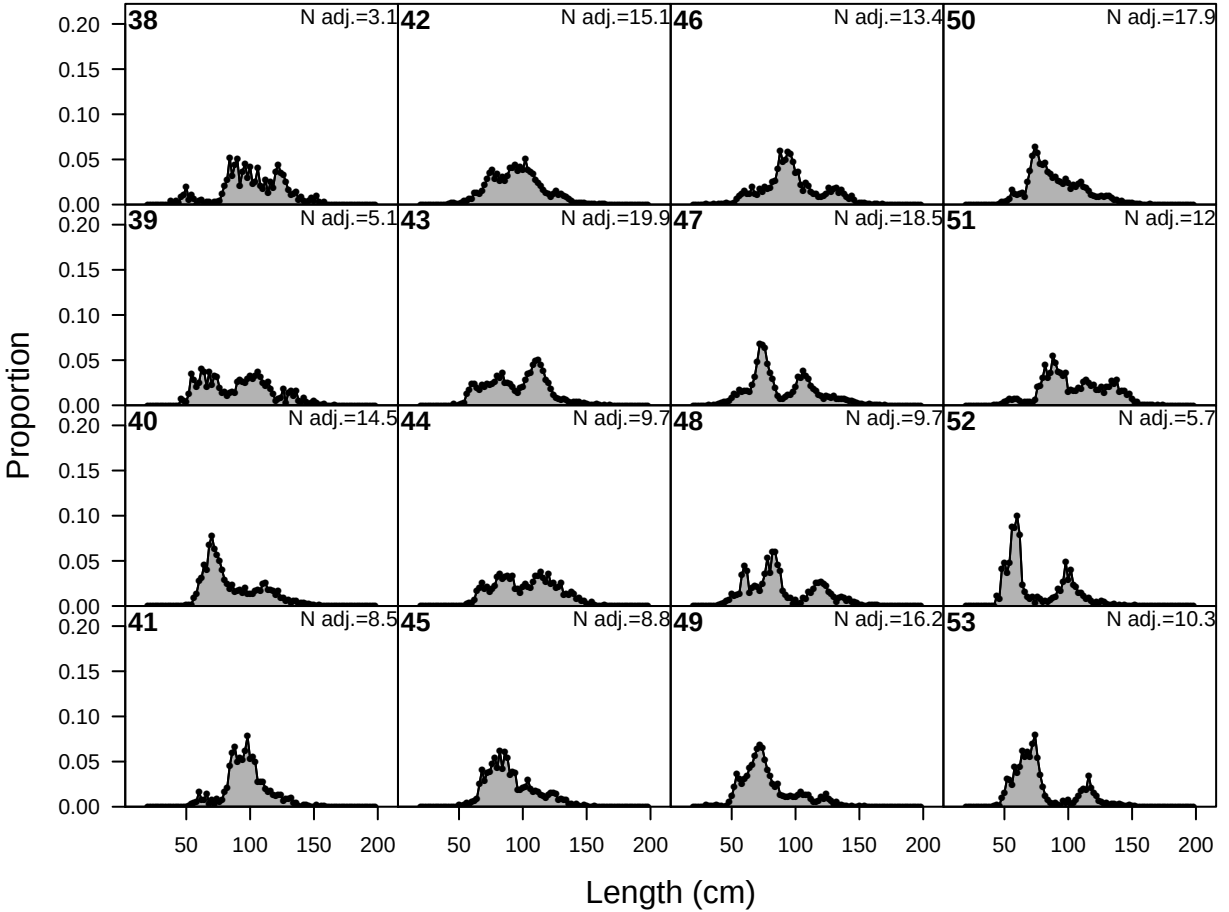
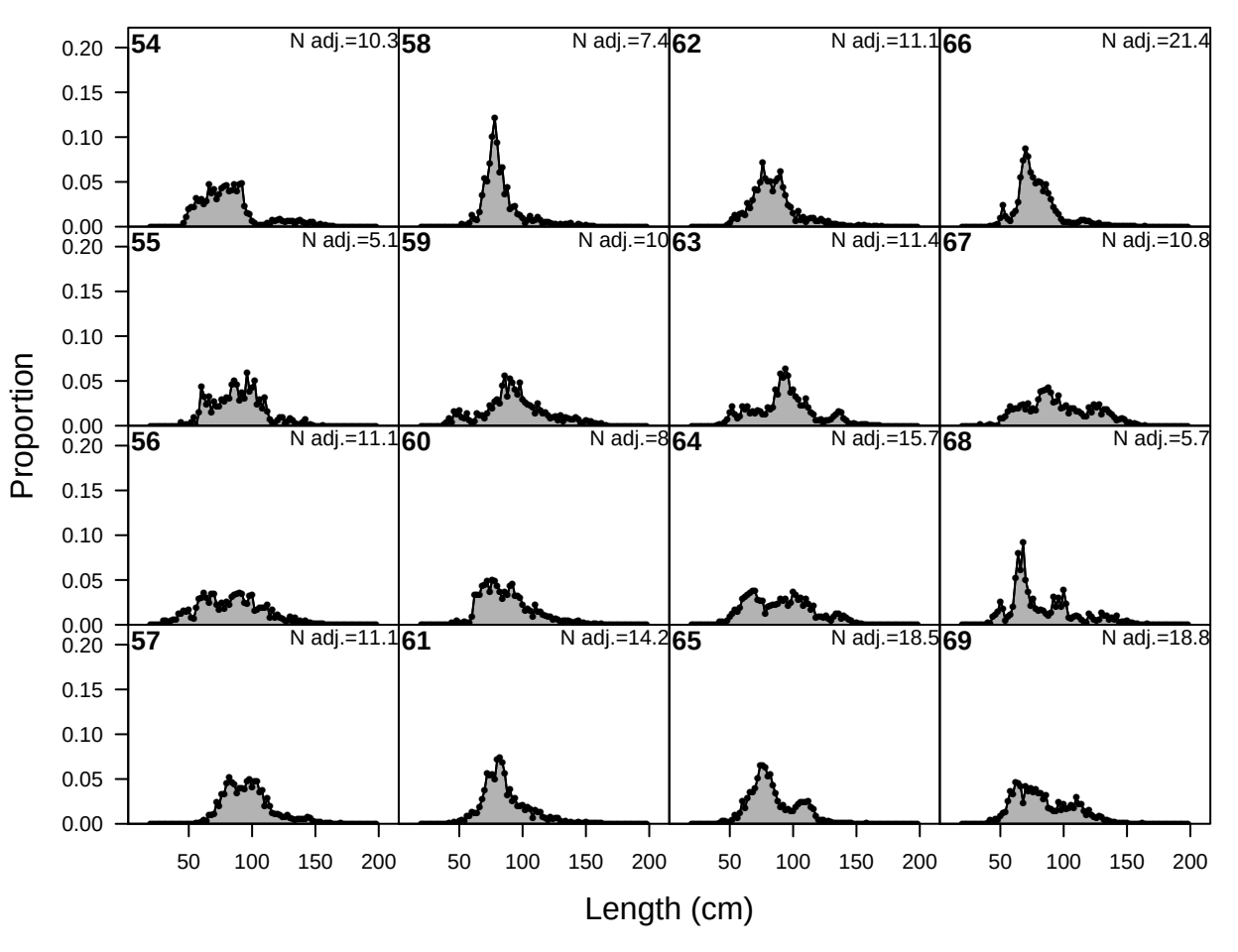
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


0.01
0.2
200
150
100
50
Length (cm)
38
48
59
70
80
90
102
115
128
141
154
167
Year


F17−DEL_M (whole catch)
Mean length
150
100
50
40
60
80
100
120
140
160
180
Year


38
N adj.=3.1
42
N adj.=15.1
46
N adj.=13.4
50
N adj.=17.9
39
N adj.=5.1
43
N adj.=19.9
47
N adj.=18.5
51
N adj.=12
40
N adj.=14.5
44
N adj.=9.7
48
N adj.=9.7
52
N adj.=5.7
41
N adj.=8.5
45
N adj.=8.8
49
N adj.=16.2
53
N adj.=10.3
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


54
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N adj.=7.4
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N adj.=11.1
66
N adj.=21.4
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N adj.=5.1
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N adj.=10
63
N adj.=11.4
67
N adj.=10.8
56
N adj.=11.1
60
N adj.=8
64
N adj.=15.7
68
N adj.=5.7
57
N adj.=11.1
61
N adj.=14.2
65
N adj.=18.5
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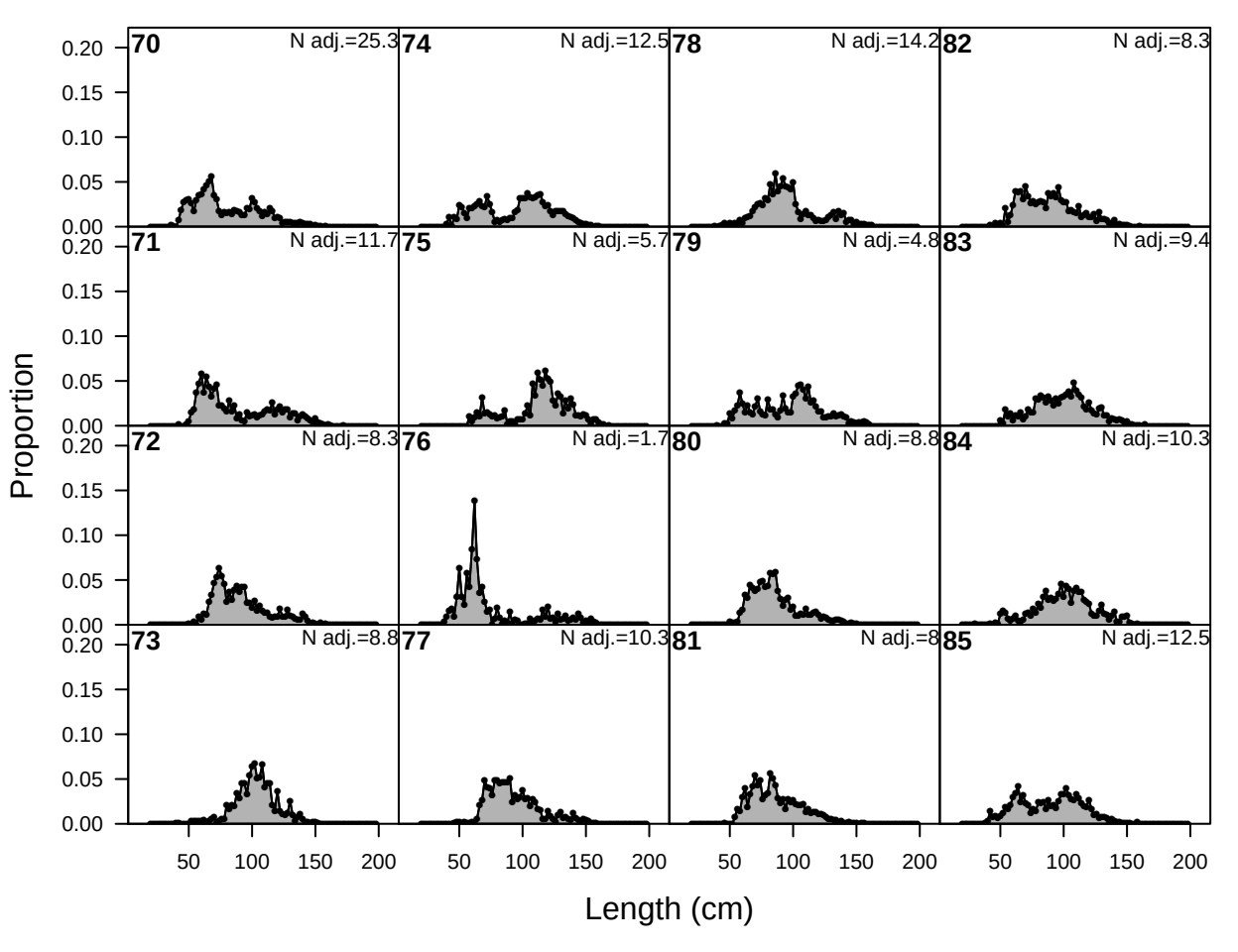
N adj.=18.8
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


70
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74
N adj.=12.5
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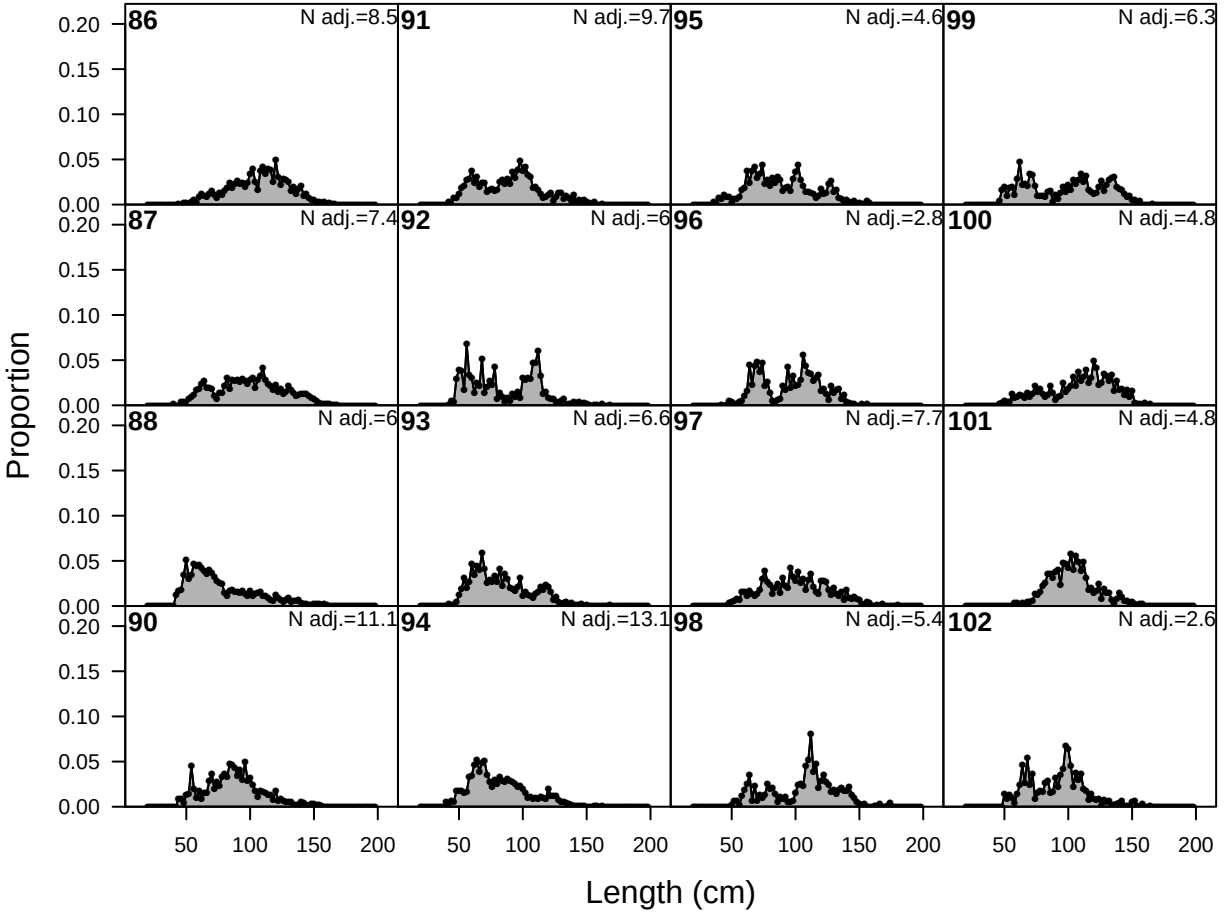
N adj.=14.2
82
N adj.=8.3
71
N adj.=11.7
75
N adj.=5.7
79
N adj.=4.8
83
N adj.=9.4
72
N adj.=8.3
76
N adj.=1.7
80
N adj.=8.8
84
N adj.=10.3
73
N adj.=8.8
77
N adj.=10.3
81
N adj.=8
85
N adj.=12.5
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


86
N adj.=8.5
91
N adj.=9.7
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N adj.=4.6
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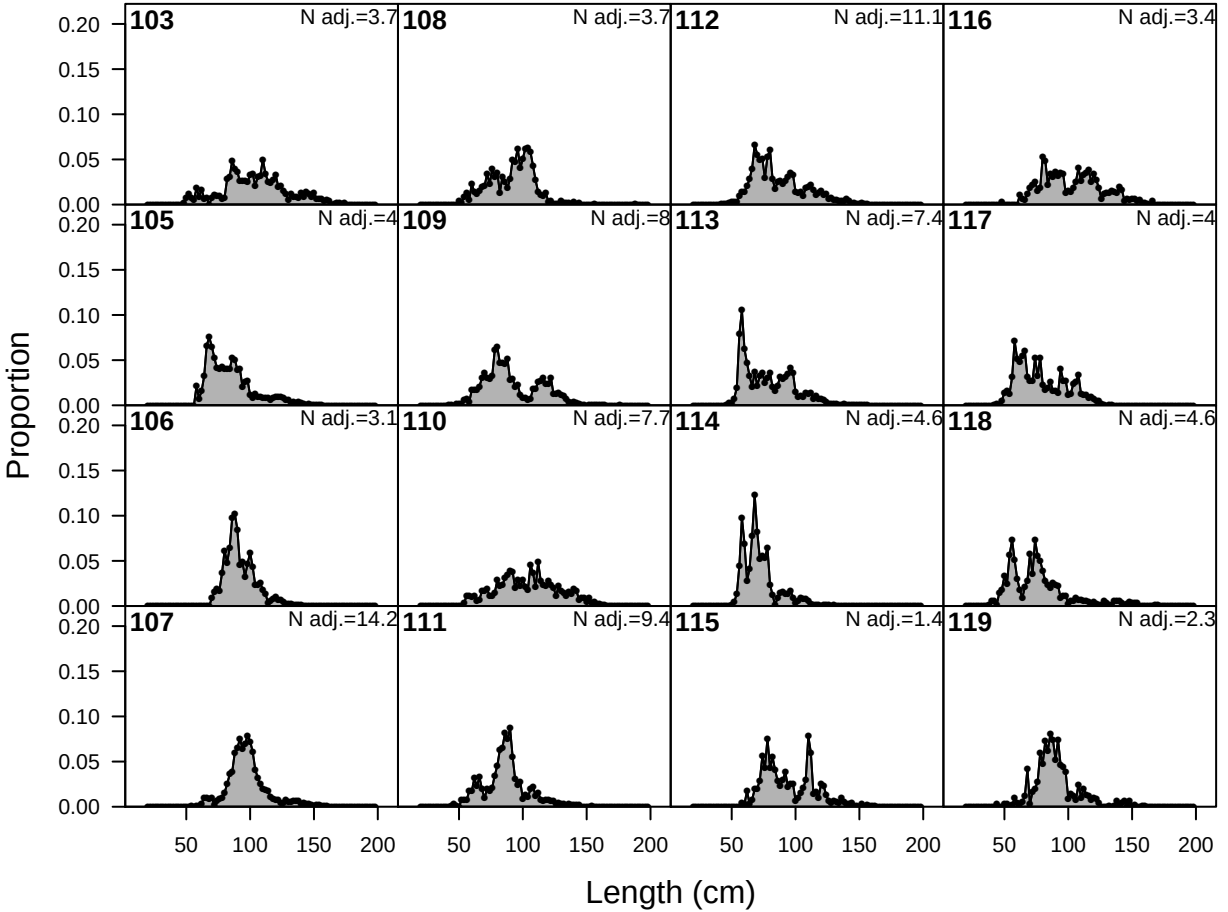
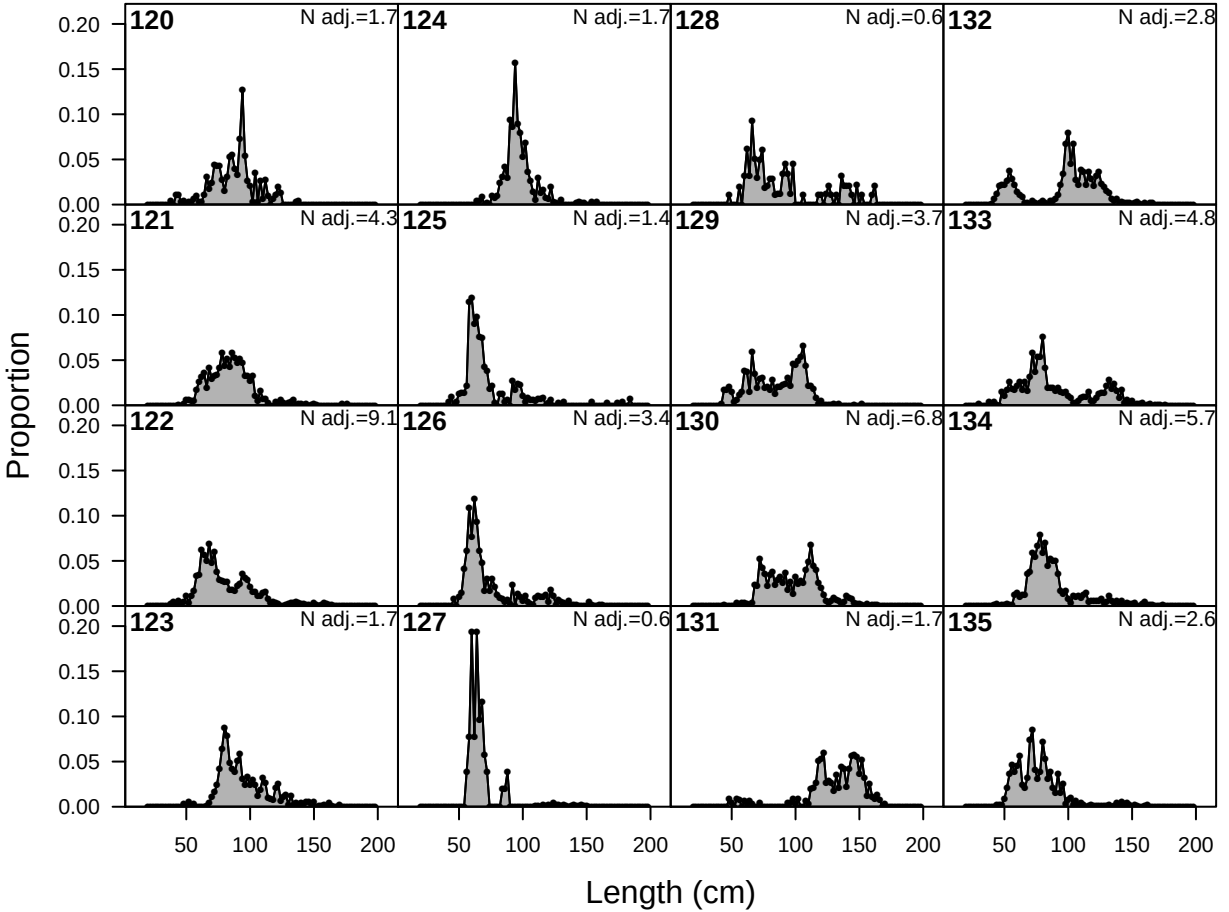
N adj.=6.3
87
N adj.=7.4
92
N adj.=6
96
N adj.=2.8
100
N adj.=4.8
88
N adj.=6
93
N adj.=6.6
97
N adj.=7.7
101
N adj.=4.8
90
N adj.=11.1
94
N adj.=13.1
98
N adj.=5.4
102
N adj.=2.6
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


103
N adj.=3.7
108
N adj.=3.7
112
N adj.=11.1
116
N adj.=3.4
105
N adj.=4
109
N adj.=8
113
N adj.=7.4
117
N adj.=4
106
N adj.=3.1
110
N adj.=7.7
114
N adj.=4.6
118
N adj.=4.6
107
N adj.=14.2
111
N adj.=9.4
115
N adj.=1.4
119
N adj.=2.3
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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132
N adj.=2.8
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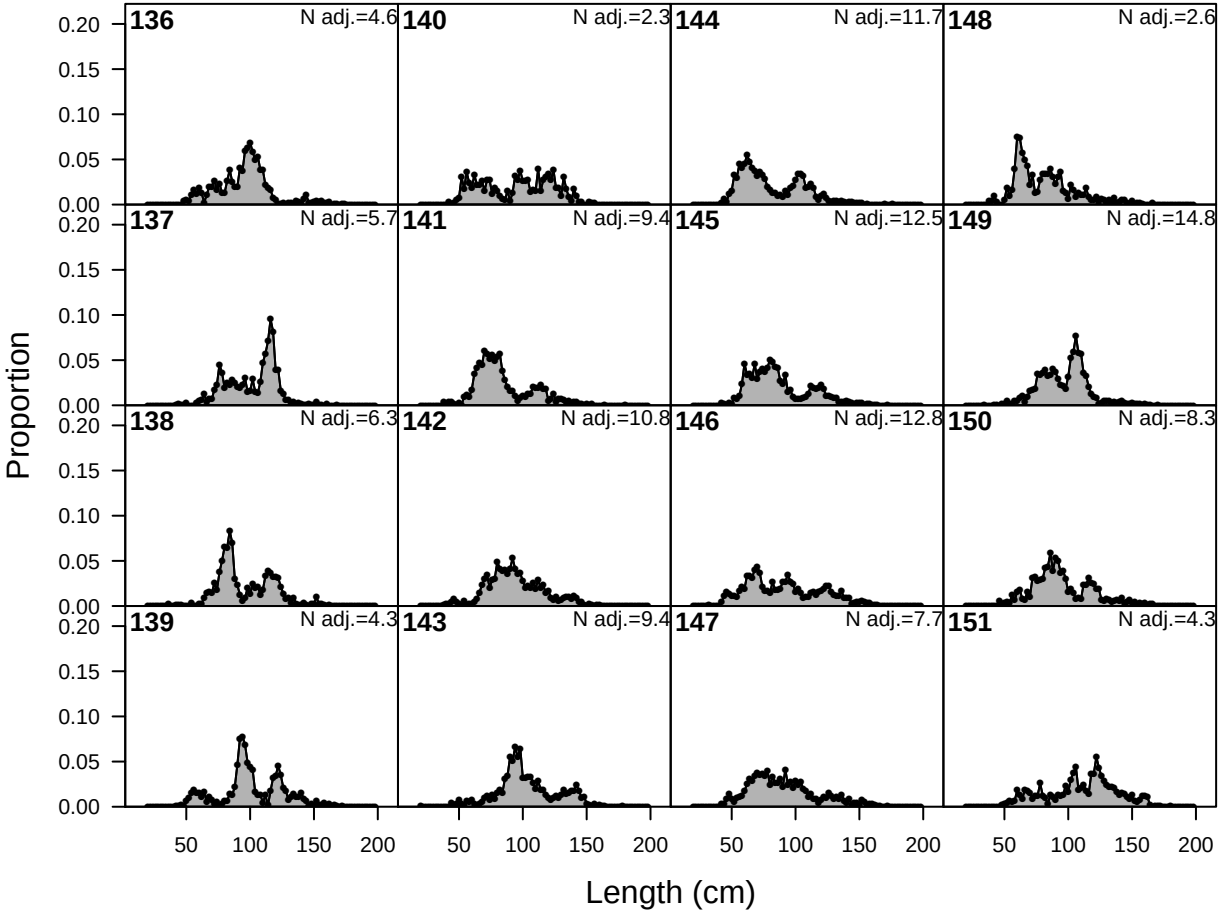
N adj.=4.3
125
N adj.=1.4
129
N adj.=3.7
133
N adj.=4.8
122
N adj.=9.1
126
N adj.=3.4
130
N adj.=6.8
134
N adj.=5.7
123
N adj.=1.7
127
N adj.=0.6
131
N adj.=1.7
135
N adj.=2.6
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


136
N adj.=4.6
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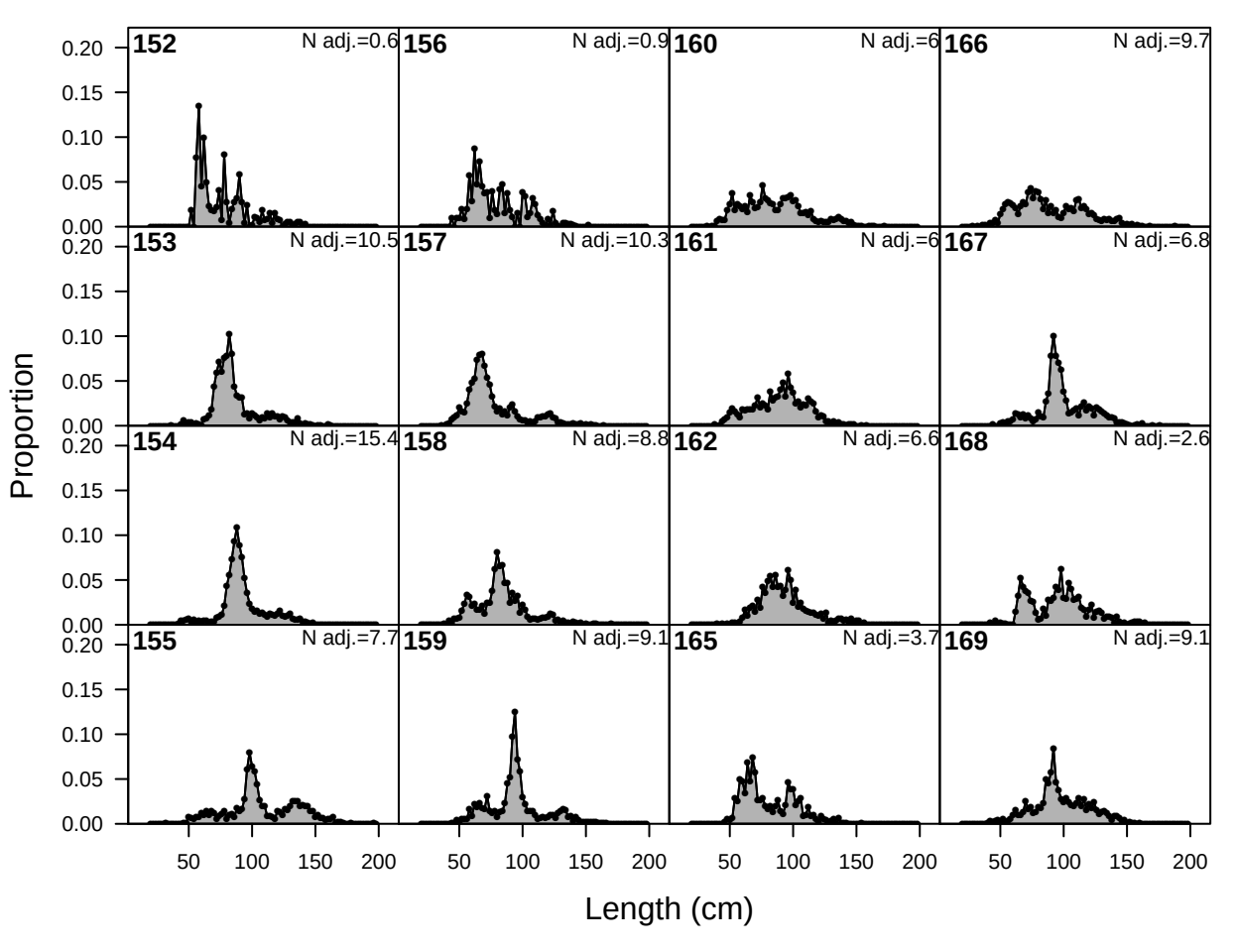
N adj.=2.3
144
N adj.=11.7
148
N adj.=2.6
137
N adj.=5.7
141
N adj.=9.4
145
N adj.=12.5
149
N adj.=14.8
138
N adj.=6.3
142
N adj.=10.8
146
N adj.=12.8
150
N adj.=8.3
139
N adj.=4.3
143
N adj.=9.4
147
N adj.=7.7
151
N adj.=4.3
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


152
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N adj.=0.9
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N adj.=6
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N adj.=9.7
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N adj.=10.5
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N adj.=10.3
161
N adj.=6
167
N adj.=6.8
154
N adj.=15.4
158
N adj.=8.8
162
N adj.=6.6
168
N adj.=2.6
155
N adj.=7.7
159
N adj.=9.1
165
N adj.=3.7
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N adj.=9.1
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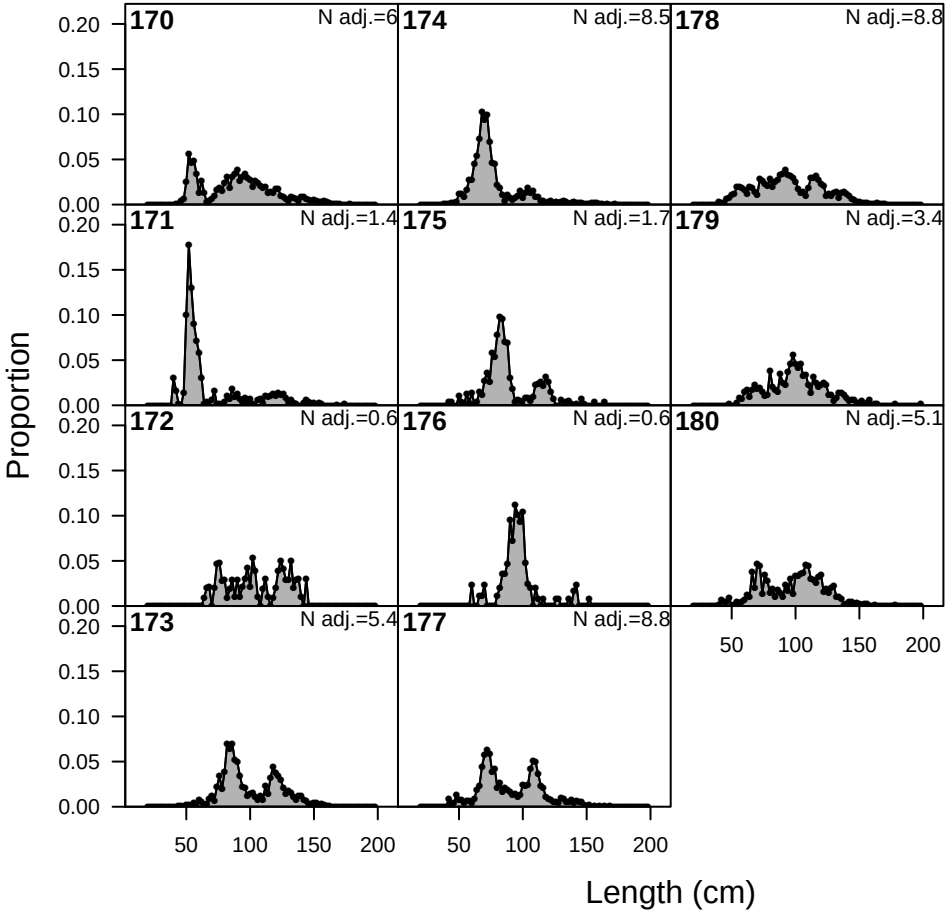
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


170
N adj.=6
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N adj.=8.5
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N adj.=8.8
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N adj.=1.4
175
N adj.=1.7
179
N adj.=3.4
172
N adj.=0.6
176
N adj.=0.6
180
N adj.=5.1
173
N adj.=5.4
177
N adj.=8.8
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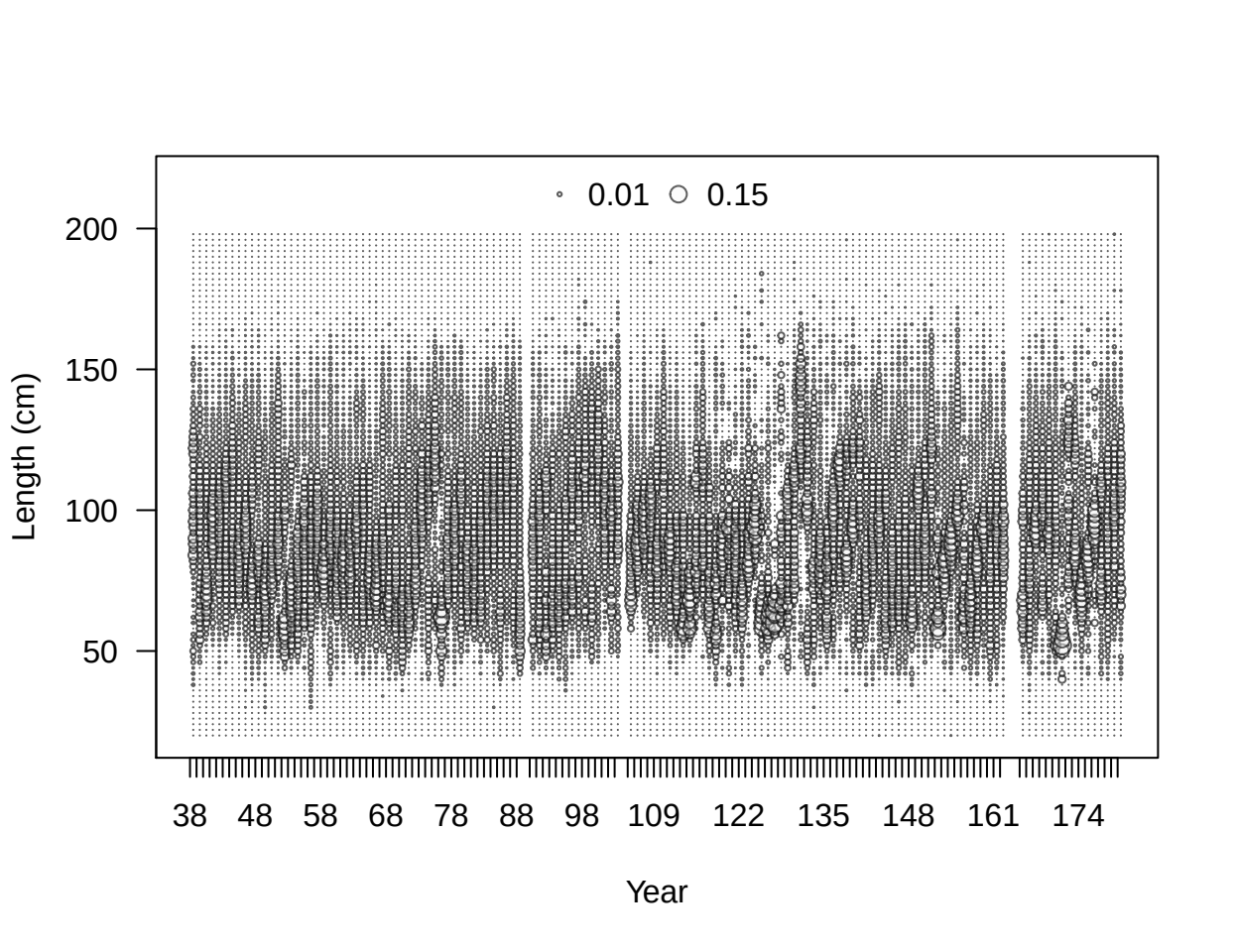
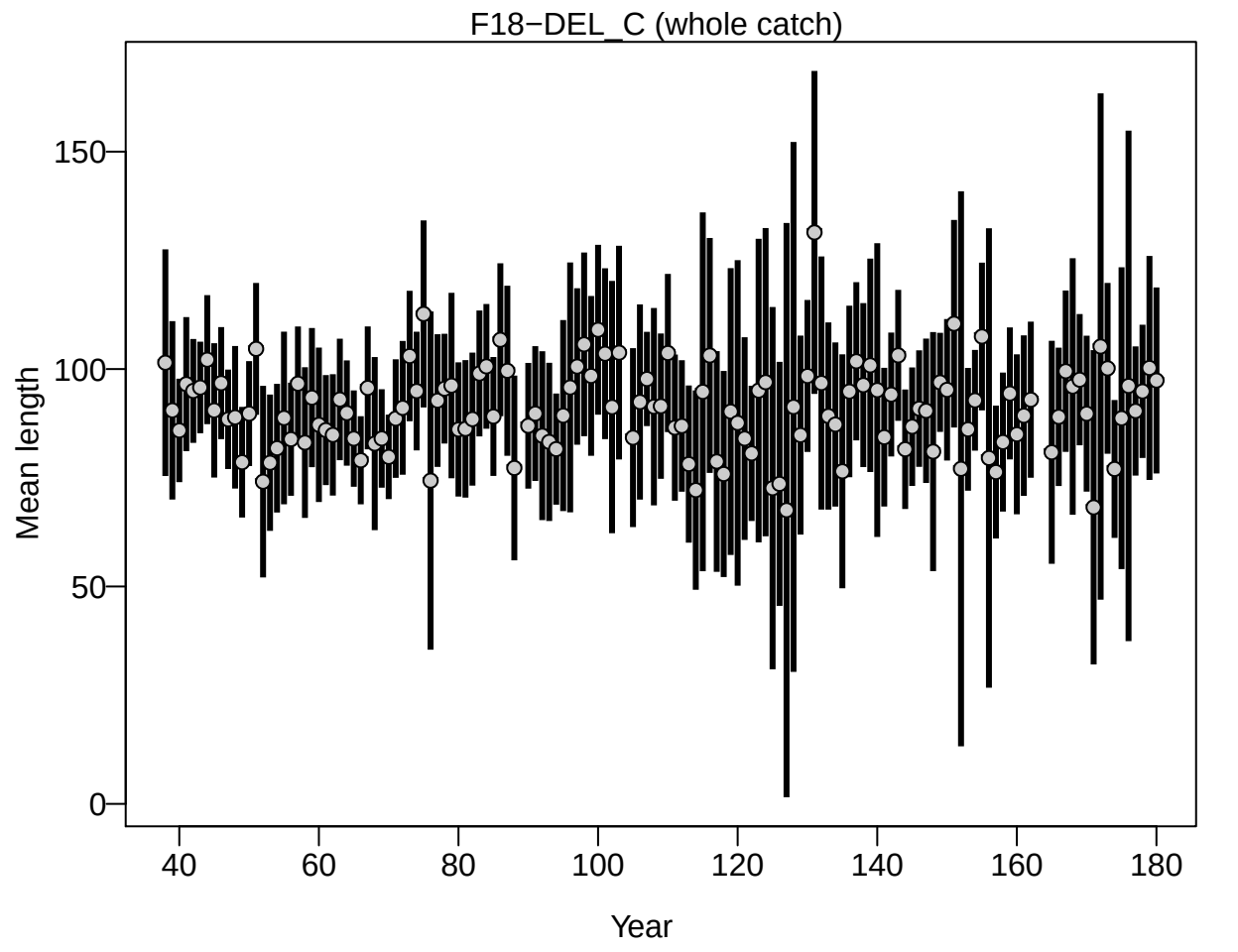
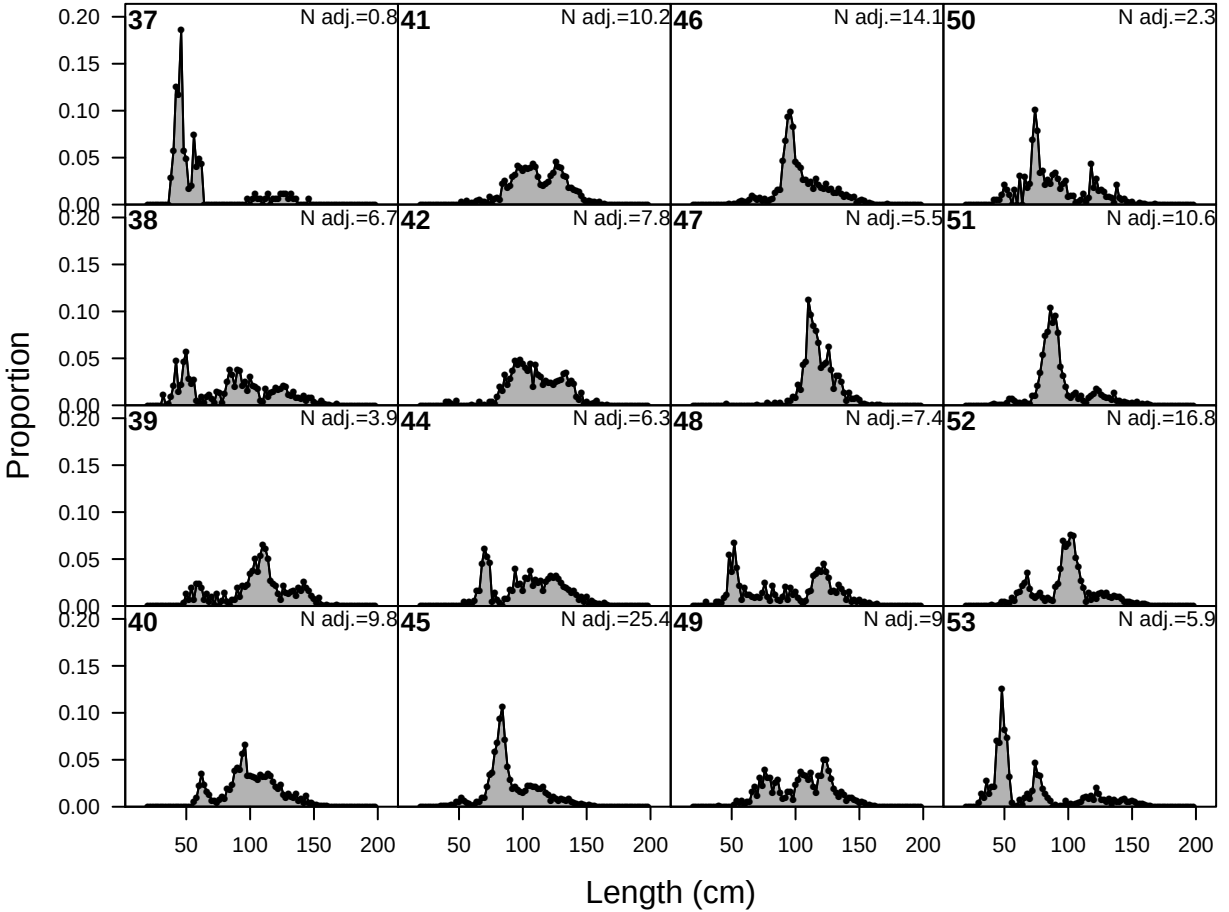
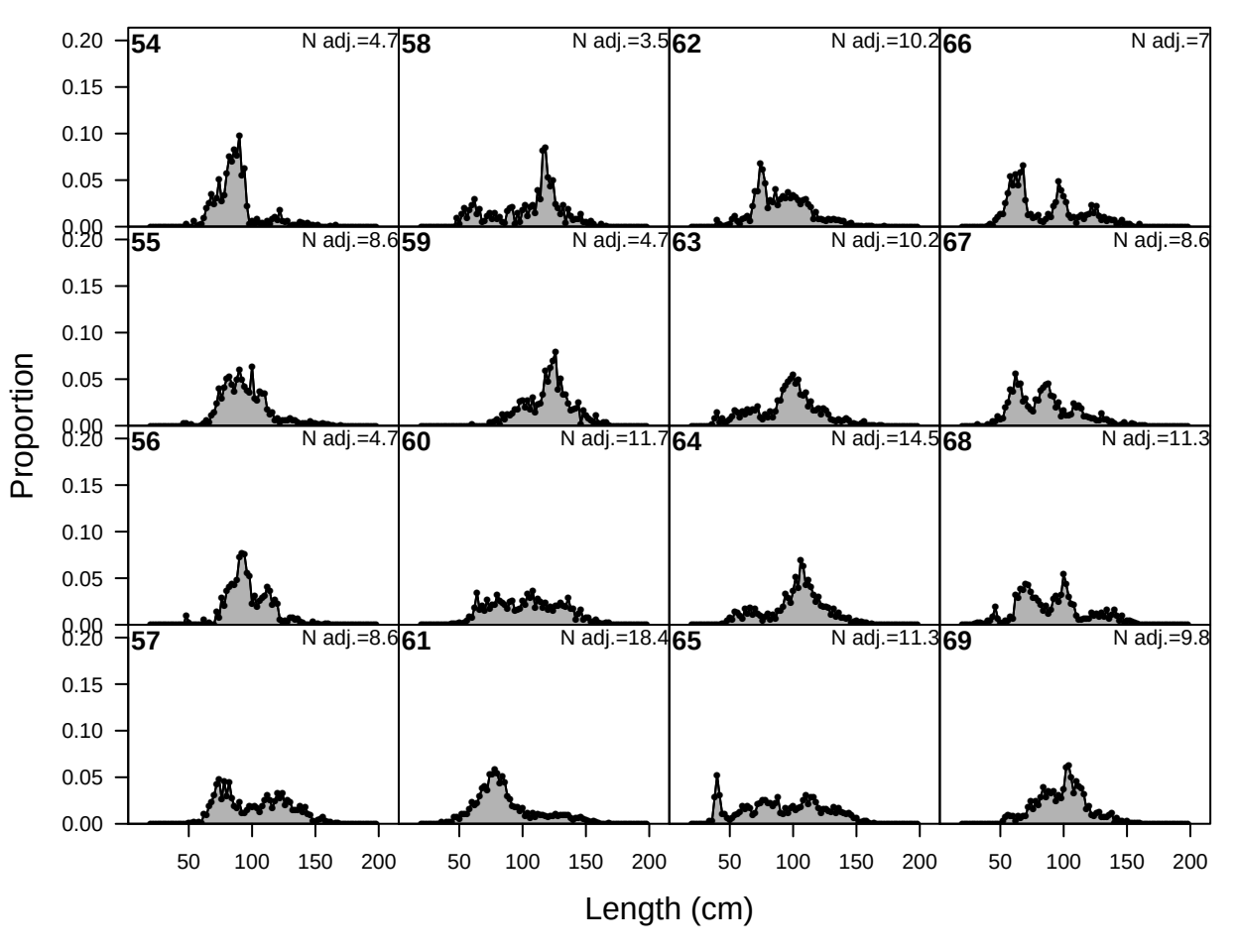
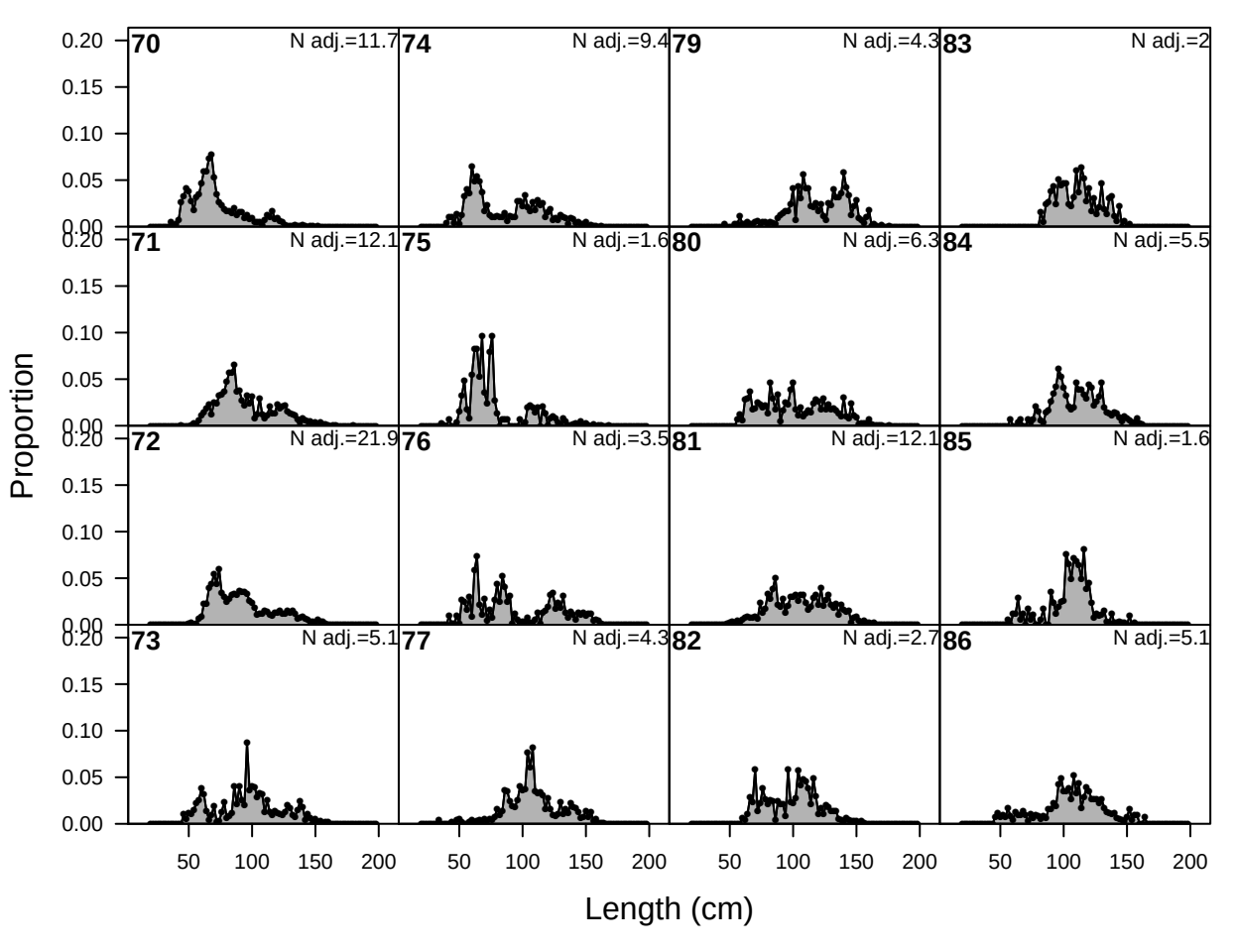
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)

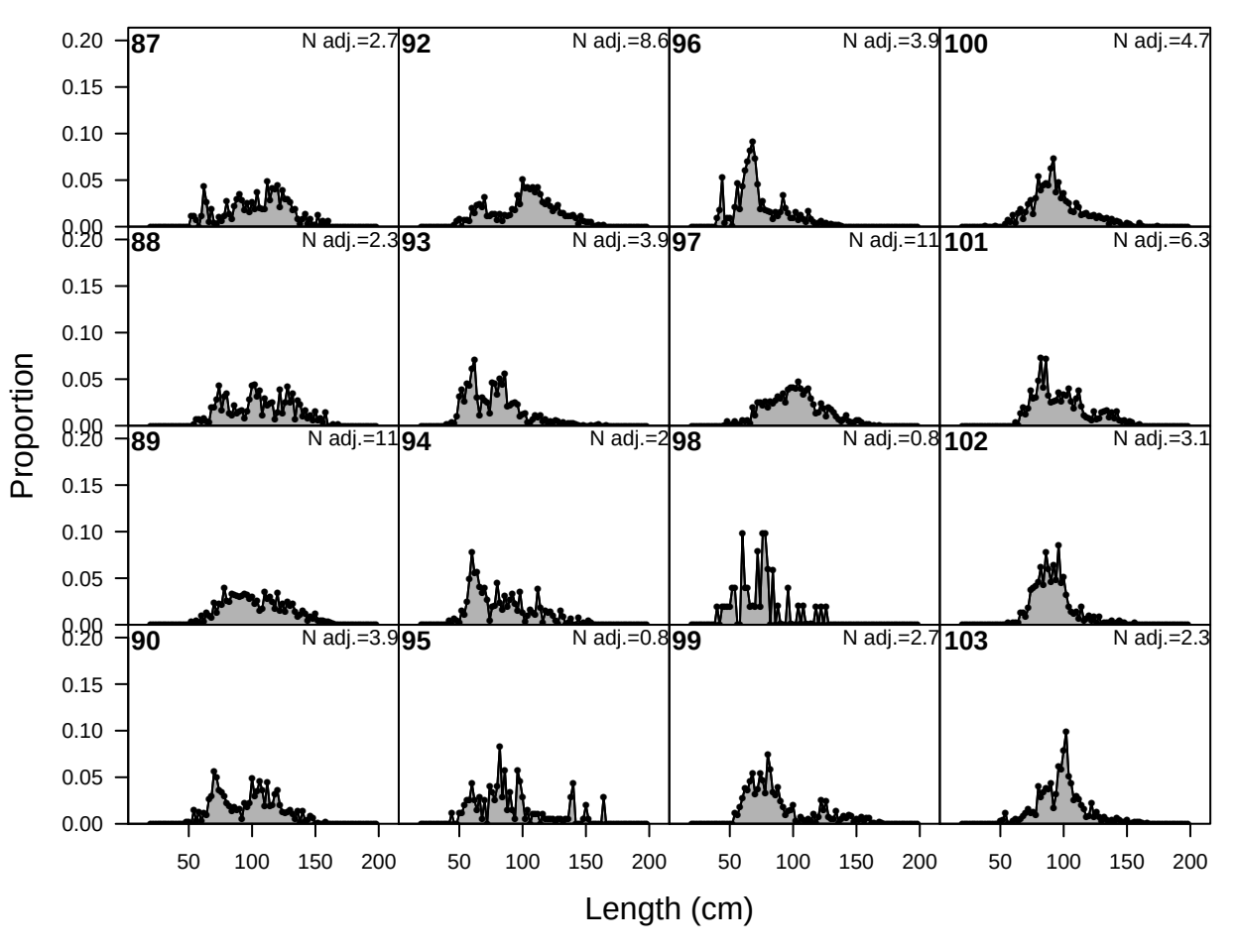

0.01
0.15
200
150
100
50
Length (cm)
38
48
58
68
78
88
98
109
122
135
148
161
174
Year

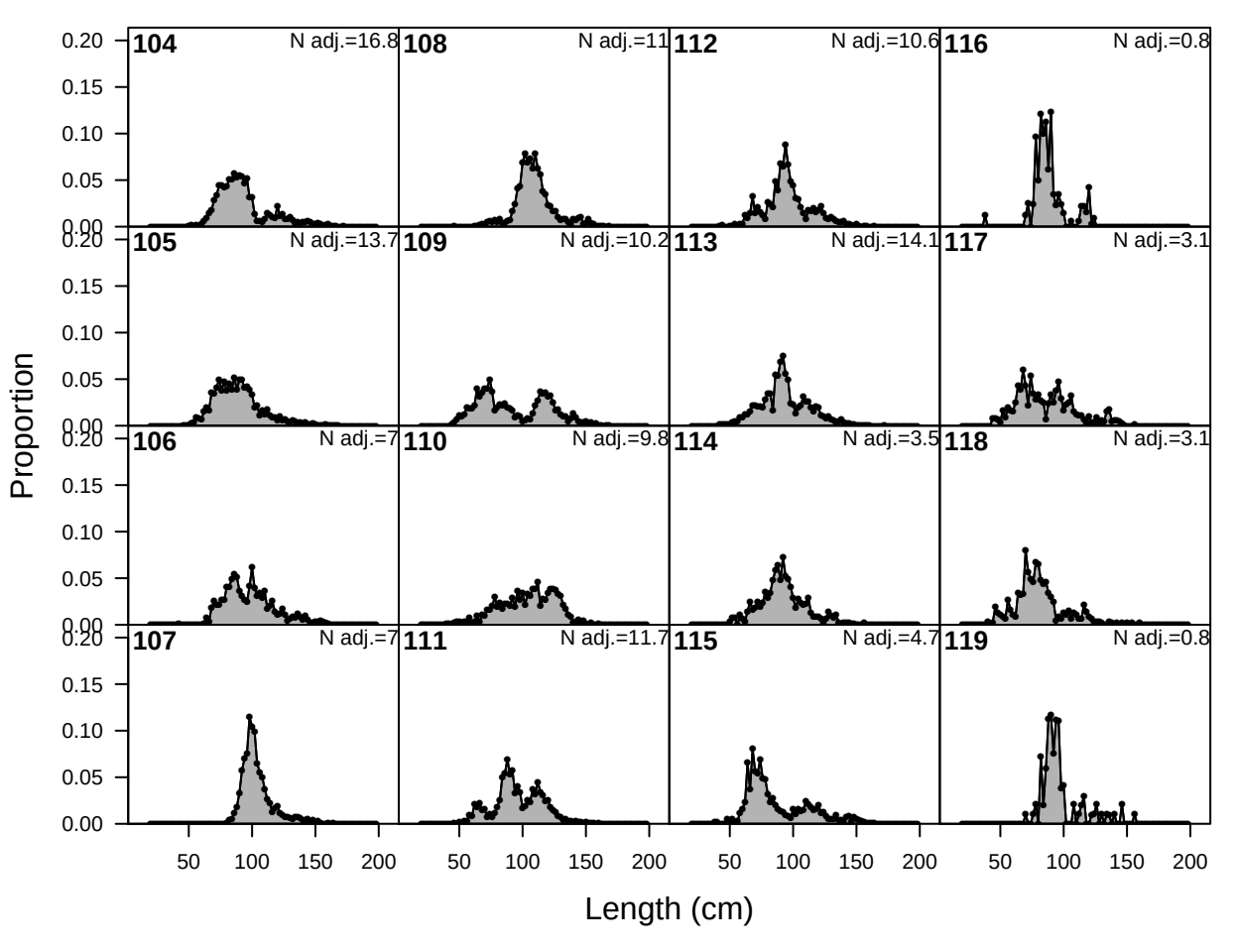

F18−DEL_C (whole catch)
Mean length
150
100
50
0
40
60
80
100
120
140
160
180
Year

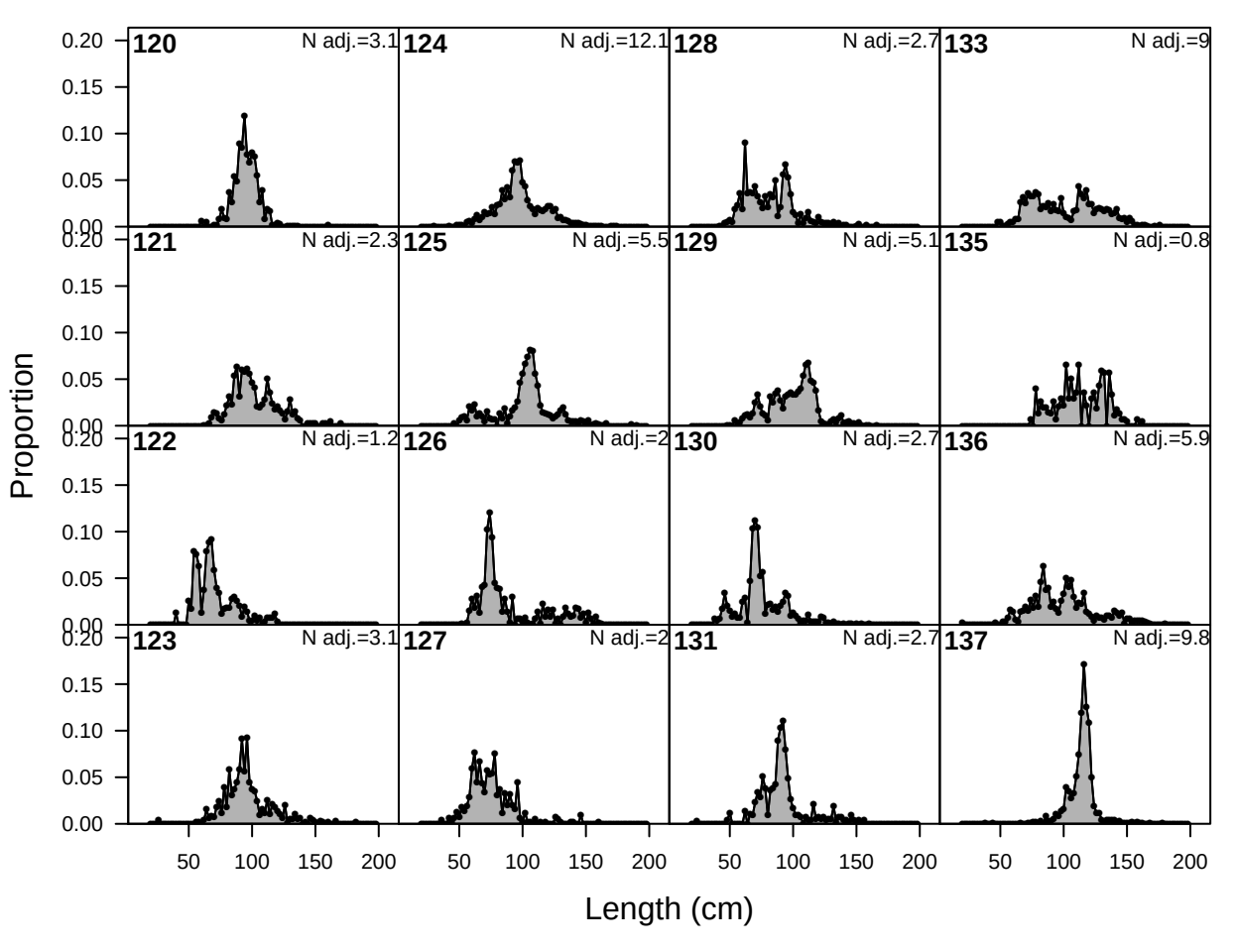

37
N adj.=0.8
41
N adj.=10.2
46
N adj.=14.1
50
N adj.=2.3
38
N adj.=6.7
42
N adj.=7.8
47
N adj.=5.5
51
N adj.=10.6
39
N adj.=3.9
44
N adj.=6.3
48
N adj.=7.4
52
N adj.=16.8
40
N adj.=9.8
45
N adj.=25.4
49
N adj.=9
53
N adj.=5.9
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

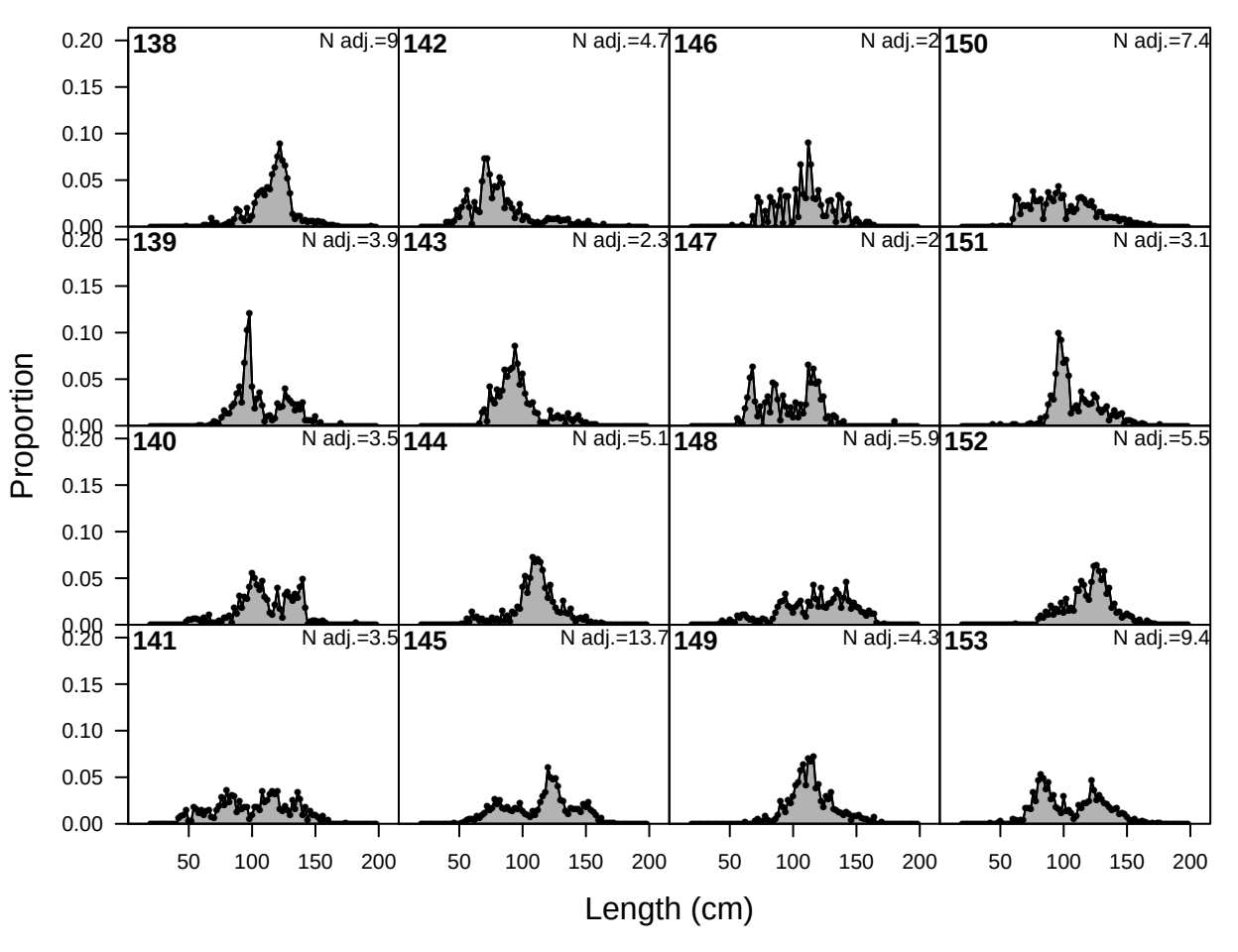

54
N adj.=4.7
58
N adj.=3.5
62
N adj.=10.2
66
N adj.=7
55
N adj.=8.6
59
N adj.=4.7
63
N adj.=10.2
67
N adj.=8.6
56
N adj.=4.7
60
N adj.=11.7
64
N adj.=14.5
68
N adj.=11.3
57
N adj.=8.6
61
N adj.=18.4
65
N adj.=11.3
69
N adj.=9.8
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


70
N adj.=11.7
74
N adj.=9.4
79
N adj.=4.3
83
N adj.=2
71
N adj.=12.1
75
N adj.=1.6
80
N adj.=6.3
84
N adj.=5.5
72
N adj.=21.9
76
N adj.=3.5
81
N adj.=12.1
85
N adj.=1.6
73
N adj.=5.1
77
N adj.=4.3
82
N adj.=2.7
86
N adj.=5.1
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


87
N adj.=2.7
92
N adj.=8.6
96
N adj.=3.9
100
N adj.=4.7
88
N adj.=2.3
93
N adj.=3.9
97
N adj.=11
101
N adj.=6.3
89
N adj.=11
94
N adj.=2
98
N adj.=0.8
102
N adj.=3.1
90
N adj.=3.9
95
N adj.=0.8
99
N adj.=2.7
103
N adj.=2.3
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


104
N adj.=16.8
108
N adj.=11
112
N adj.=10.6
116
N adj.=0.8
105
N adj.=13.7
109
N adj.=10.2
113
N adj.=14.1
117
N adj.=3.1
106
N adj.=7
110
N adj.=9.8
114
N adj.=3.5
118
N adj.=3.1
107
N adj.=7
111
N adj.=11.7
115
N adj.=4.7
119
N adj.=0.8
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


120
N adj.=3.1
124
N adj.=12.1
128
N adj.=2.7
133
N adj.=9
121
N adj.=2.3
125
N adj.=5.5
129
N adj.=5.1
135
N adj.=0.8
122
N adj.=1.2
126
N adj.=2
130
N adj.=2.7
136
N adj.=5.9
123
N adj.=3.1
127
N adj.=2
131
N adj.=2.7
137
N adj.=9.8
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


138
N adj.=9
142
N adj.=4.7
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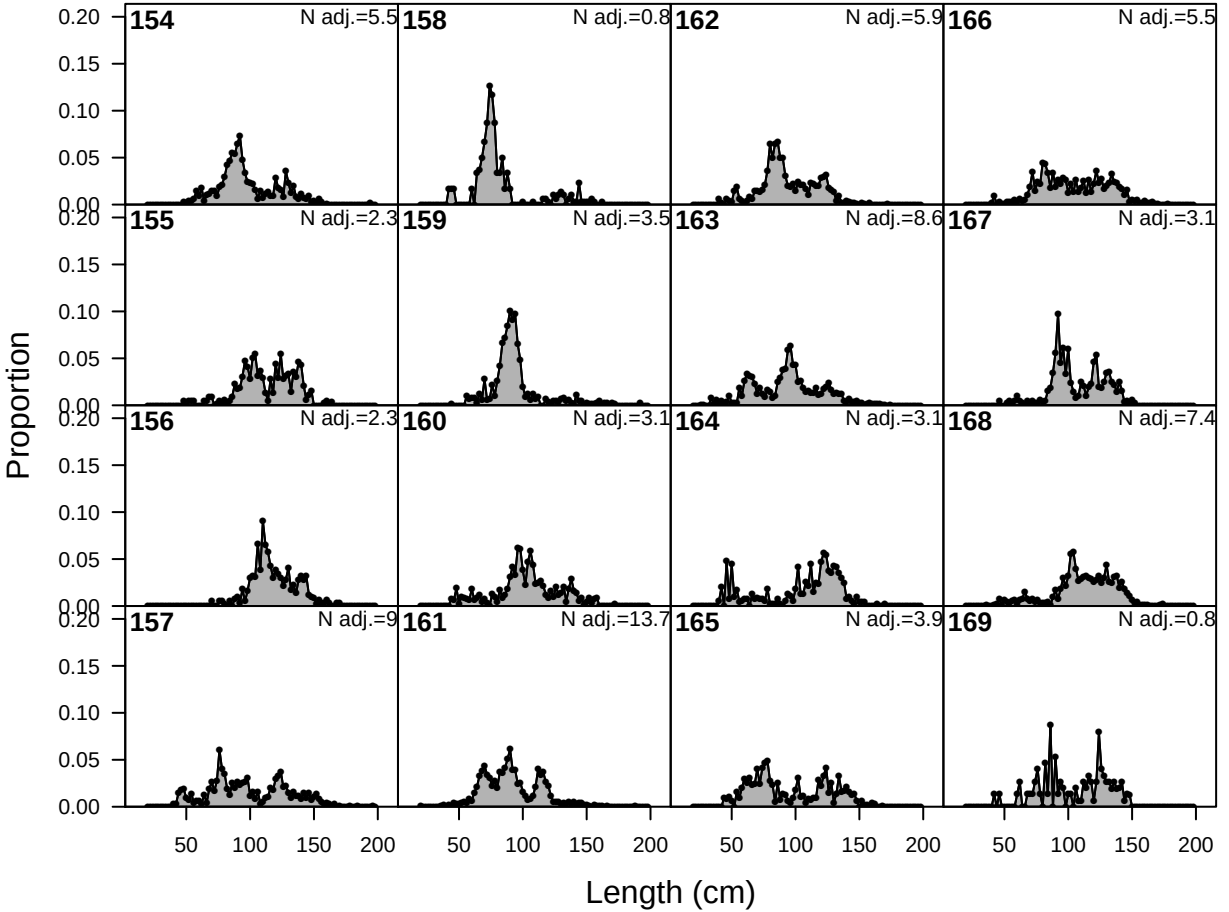
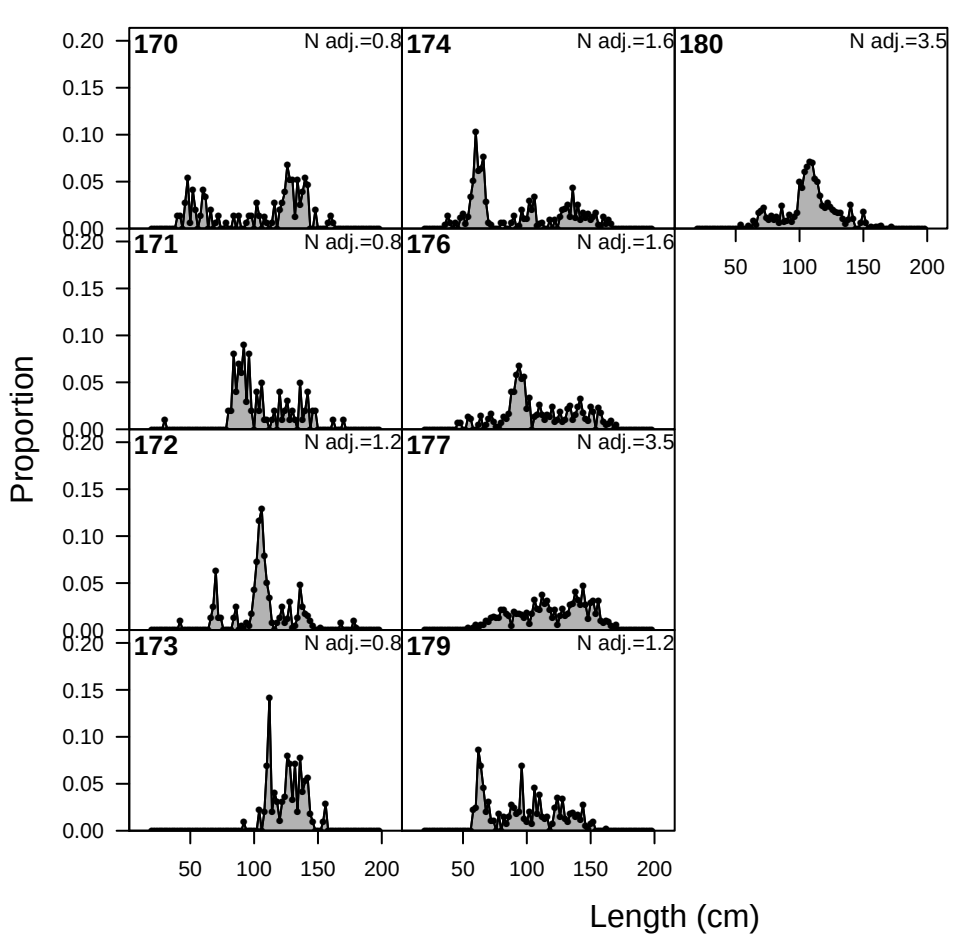
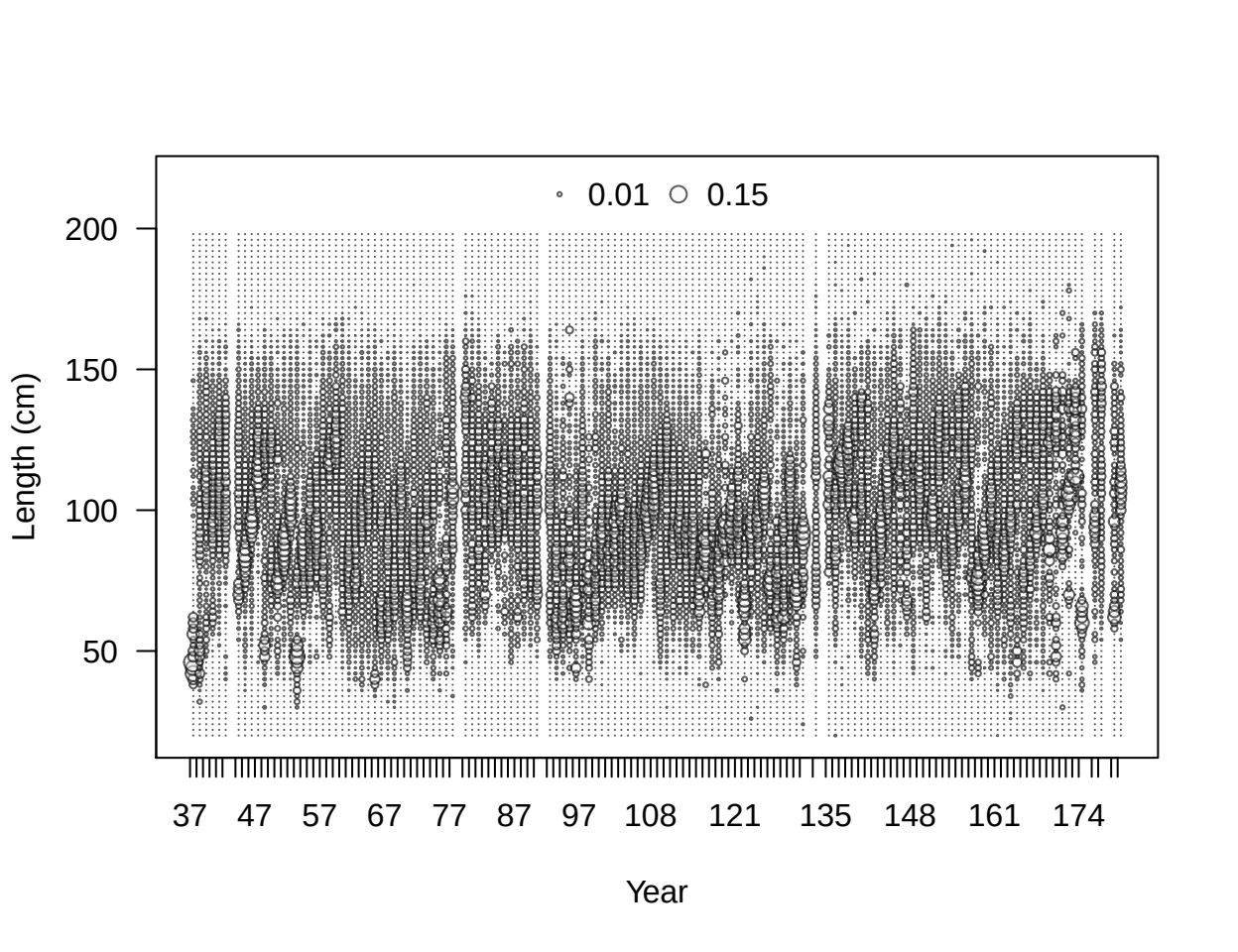
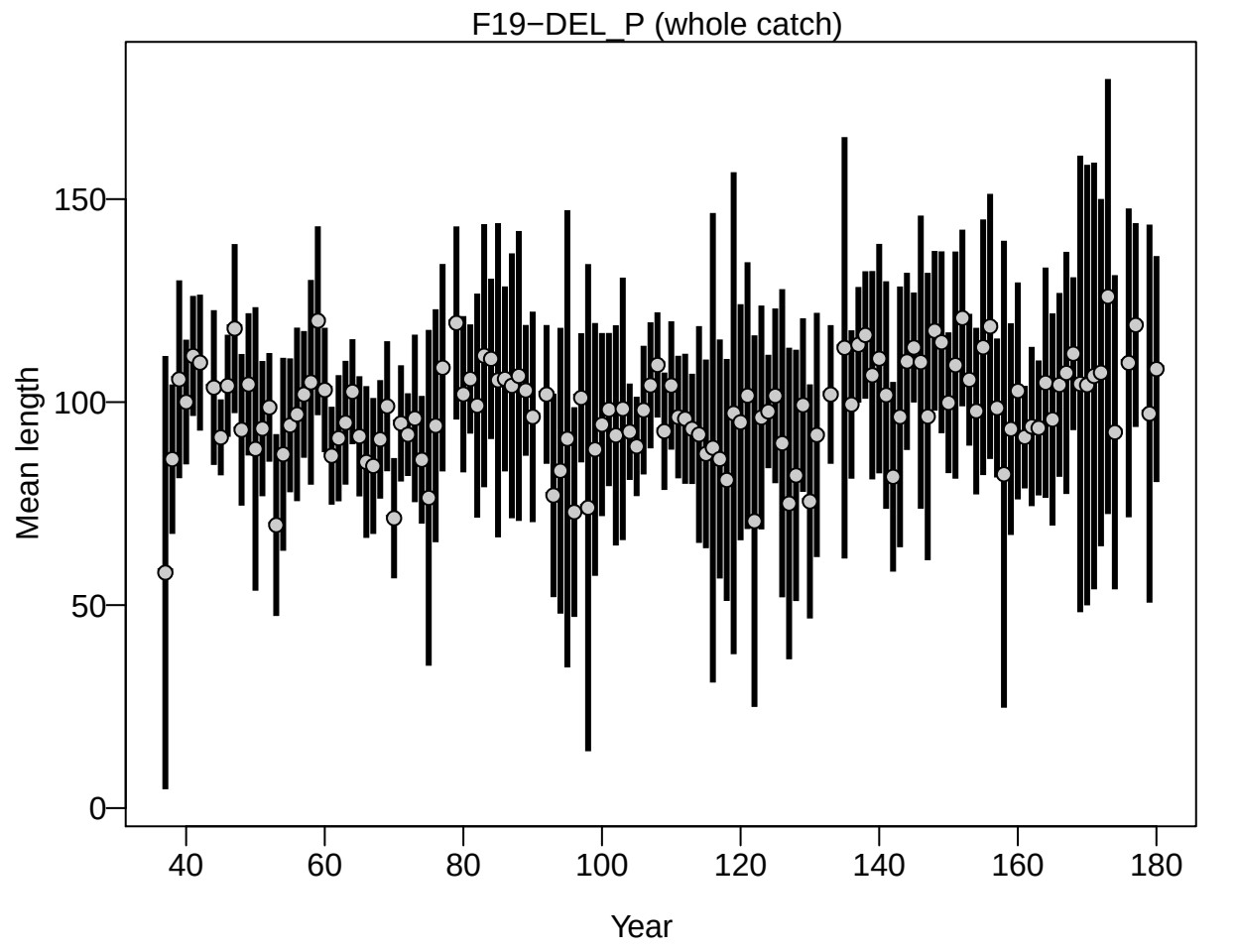
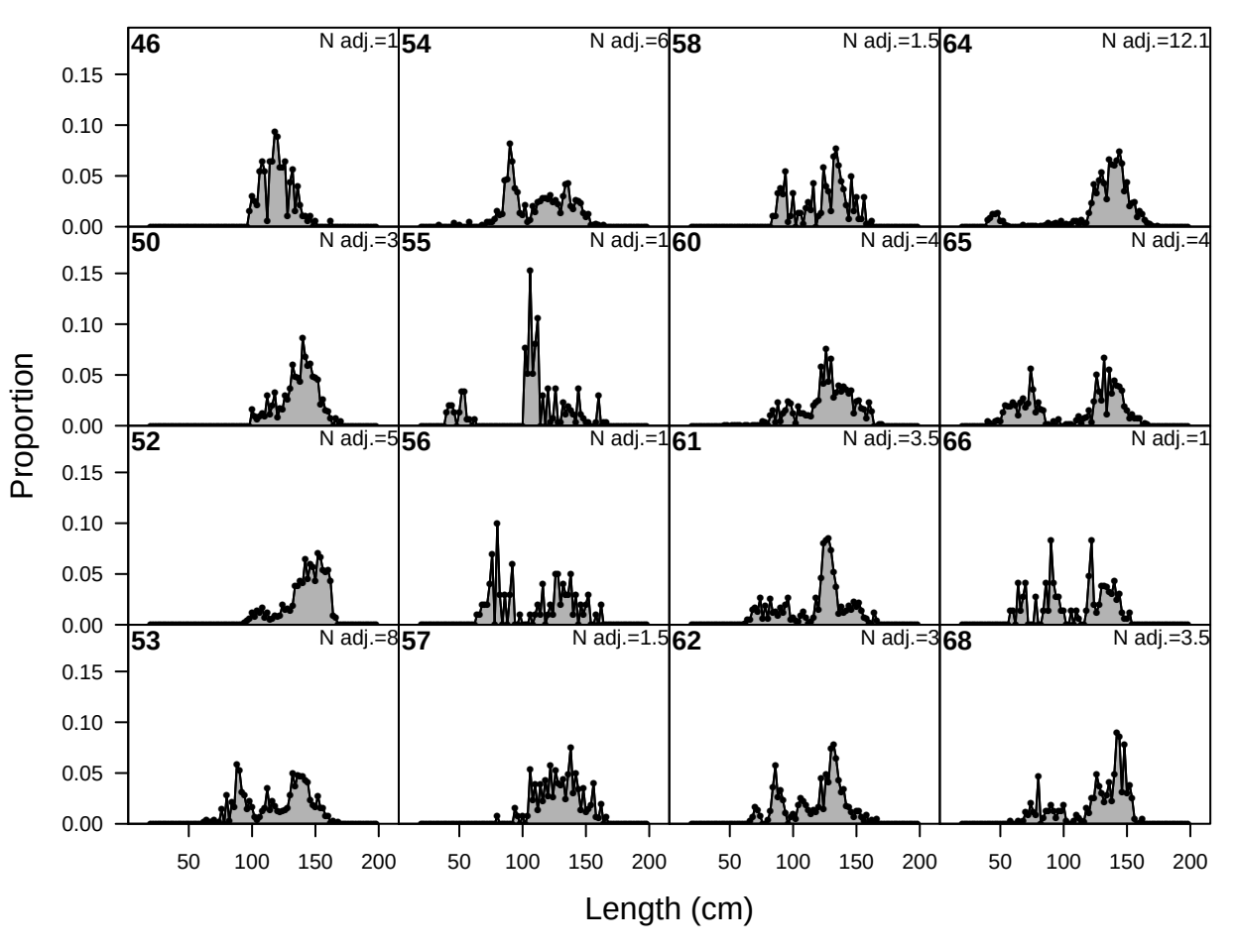
N adj.=2
150
N adj.=7.4
139
N adj.=3.9
143
N adj.=2.3
147
N adj.=2
151
N adj.=3.1
140
N adj.=3.5
144
N adj.=5.1
148
N adj.=5.9
152
N adj.=5.5
141
N adj.=3.5
145
N adj.=13.7
149
N adj.=4.3
153
N adj.=9.4
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

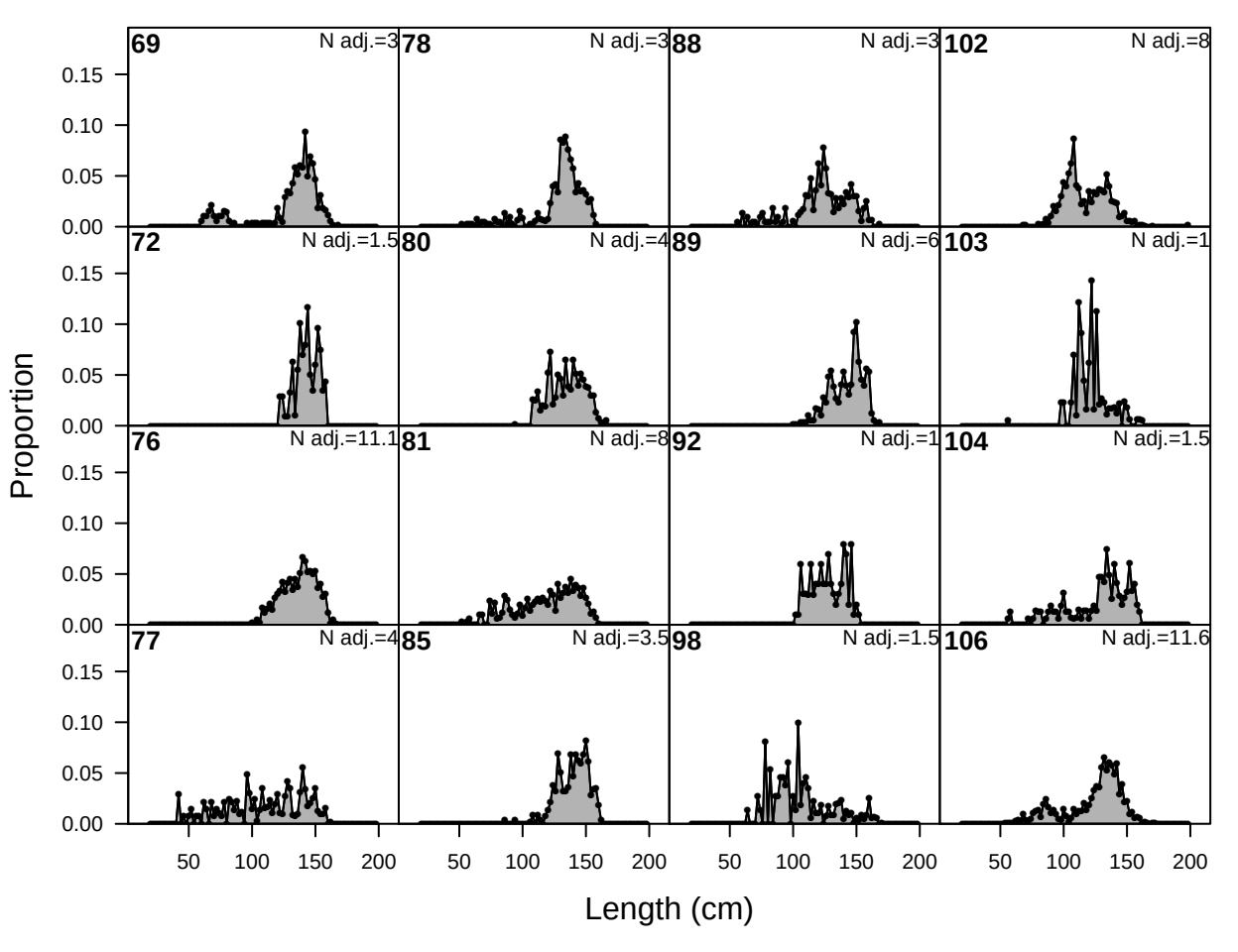

154
N adj.=5.5
158
N adj.=0.8
162
N adj.=5.9
166
N adj.=5.5
155
N adj.=2.3
159
N adj.=3.5
163
N adj.=8.6
167
N adj.=3.1
156
N adj.=2.3
160
N adj.=3.1
164
N adj.=3.1
168
N adj.=7.4
157
N adj.=9
161
N adj.=13.7
165
N adj.=3.9
169
N adj.=0.8
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)

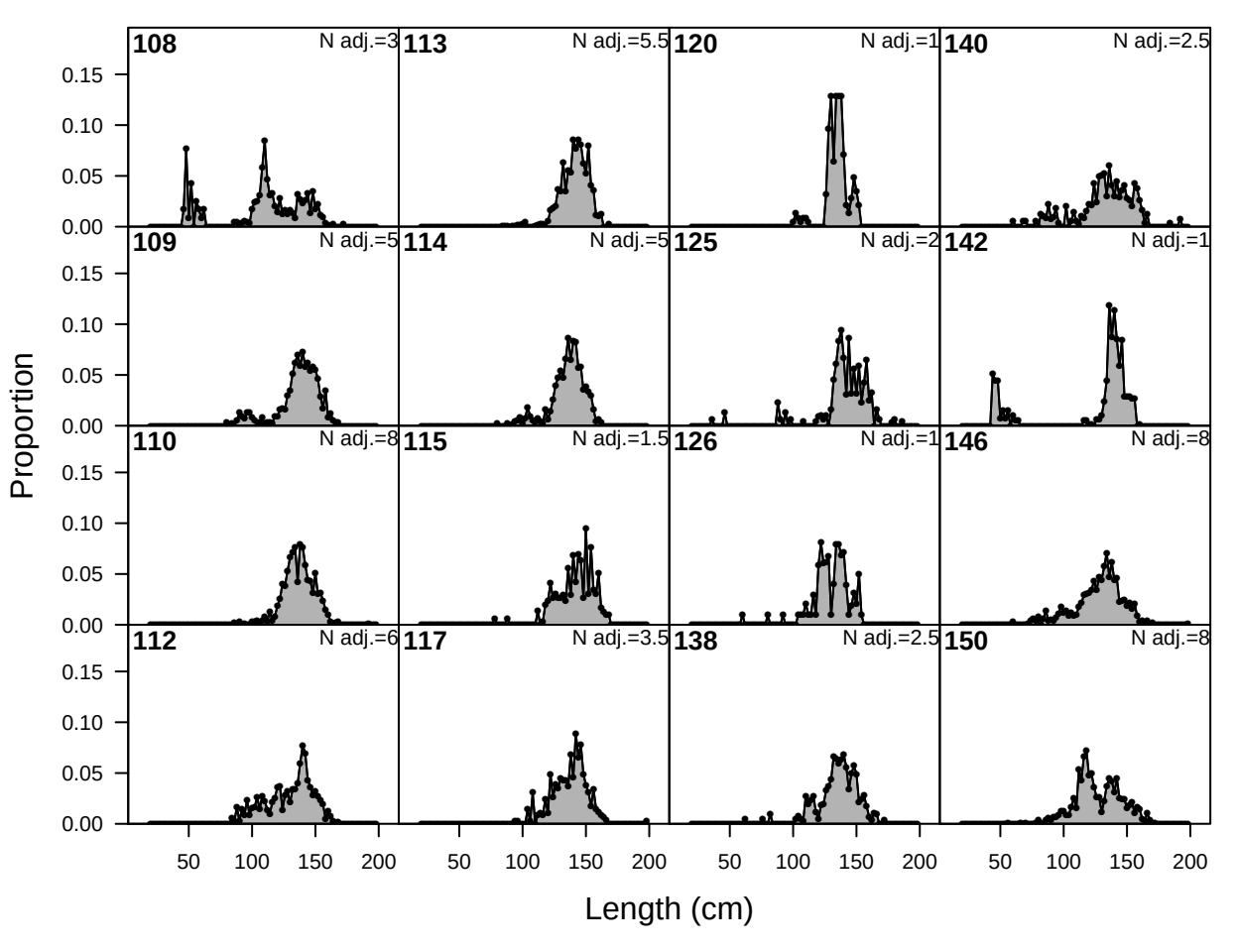

170
N adj.=0.8
174
N adj.=1.6
180
N adj.=3.5
171
N adj.=0.8
176
N adj.=1.6
172
N adj.=1.2
177
N adj.=3.5
173
N adj.=0.8
179
N adj.=1.2
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

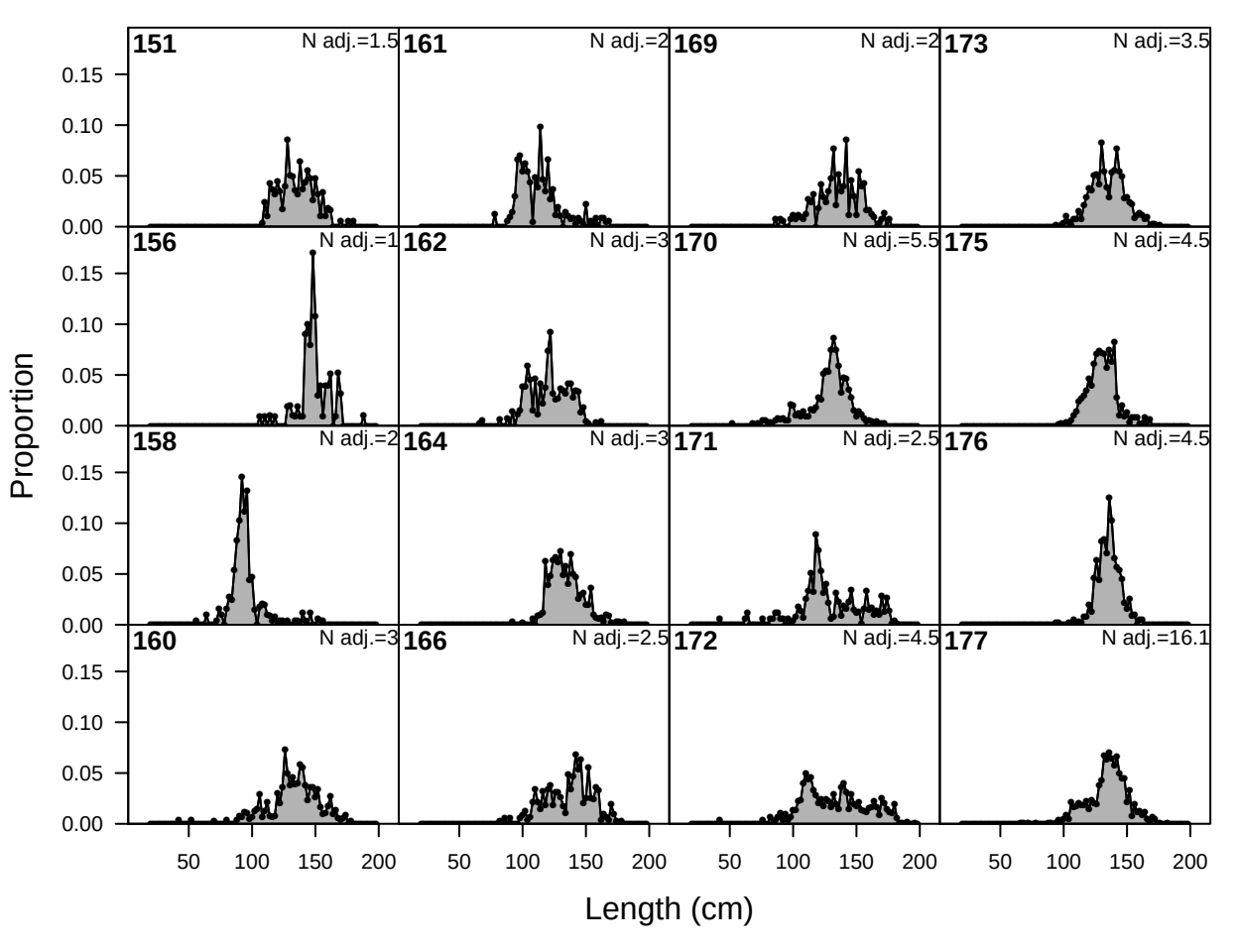

0.01
0.15
200
150
100
50
Length (cm)
37
47
57
67
77
87
97
108
121
135
148
161
174
Year

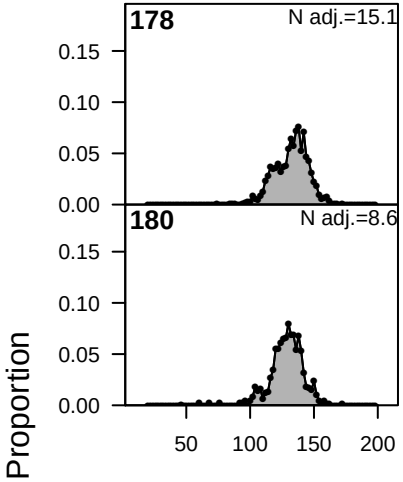

F19−DEL_P (whole catch)
Mean length
0
50
100
150
40
60
80
100
120
140
160
180
Year

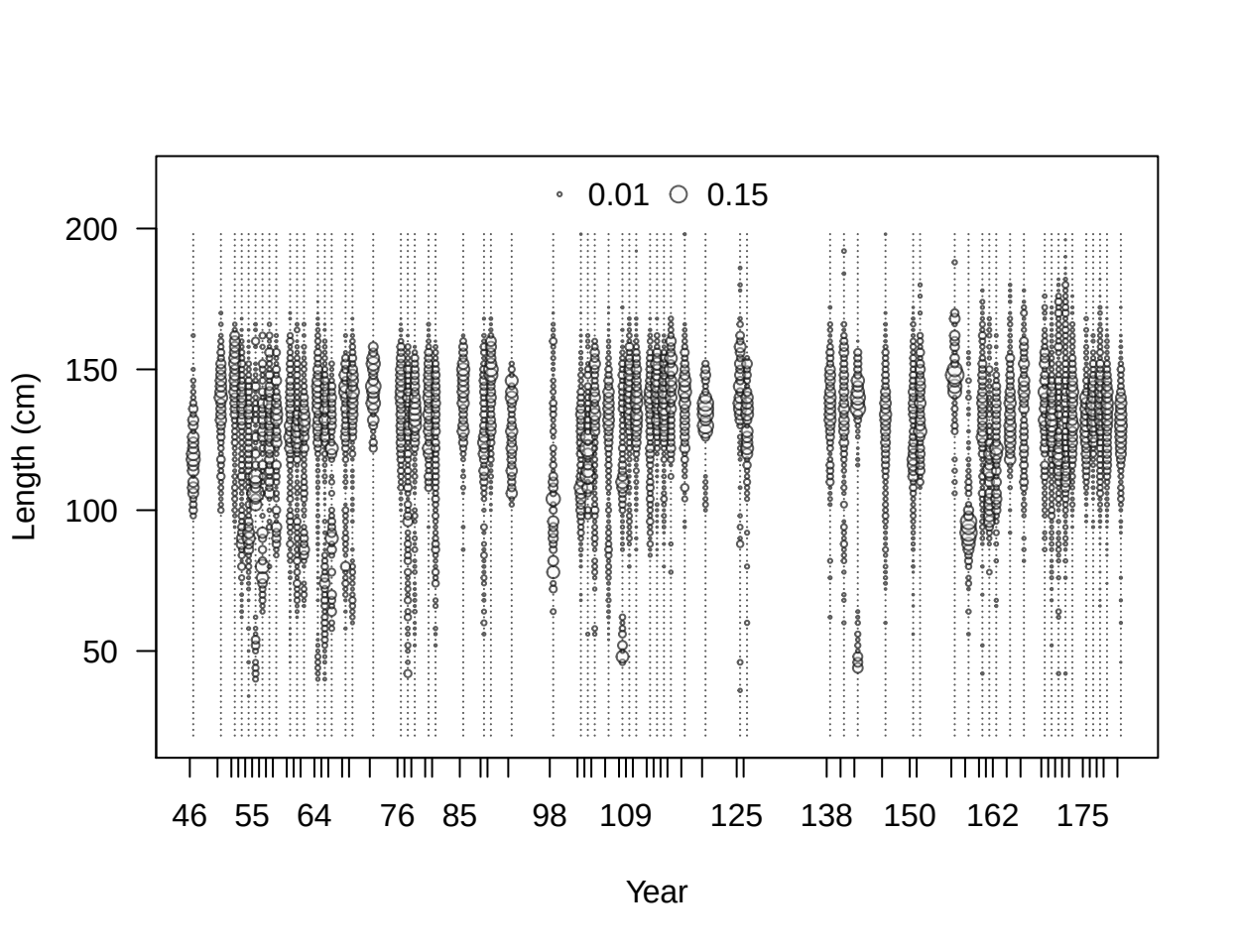

46
N adj.=1
54
N adj.=6
58
N adj.=1.5
64
N adj.=12.1
50
N adj.=3
55
N adj.=1
60
N adj.=4
65
N adj.=4
52
N adj.=5
56
N adj.=1
61
N adj.=3.5
66
N adj.=1
53
N adj.=8
57
N adj.=1.5
62
N adj.=3
68
N adj.=3.5
Proportion
0.00
0.05
0.10
0.15
50
100
150
200
Length (cm)

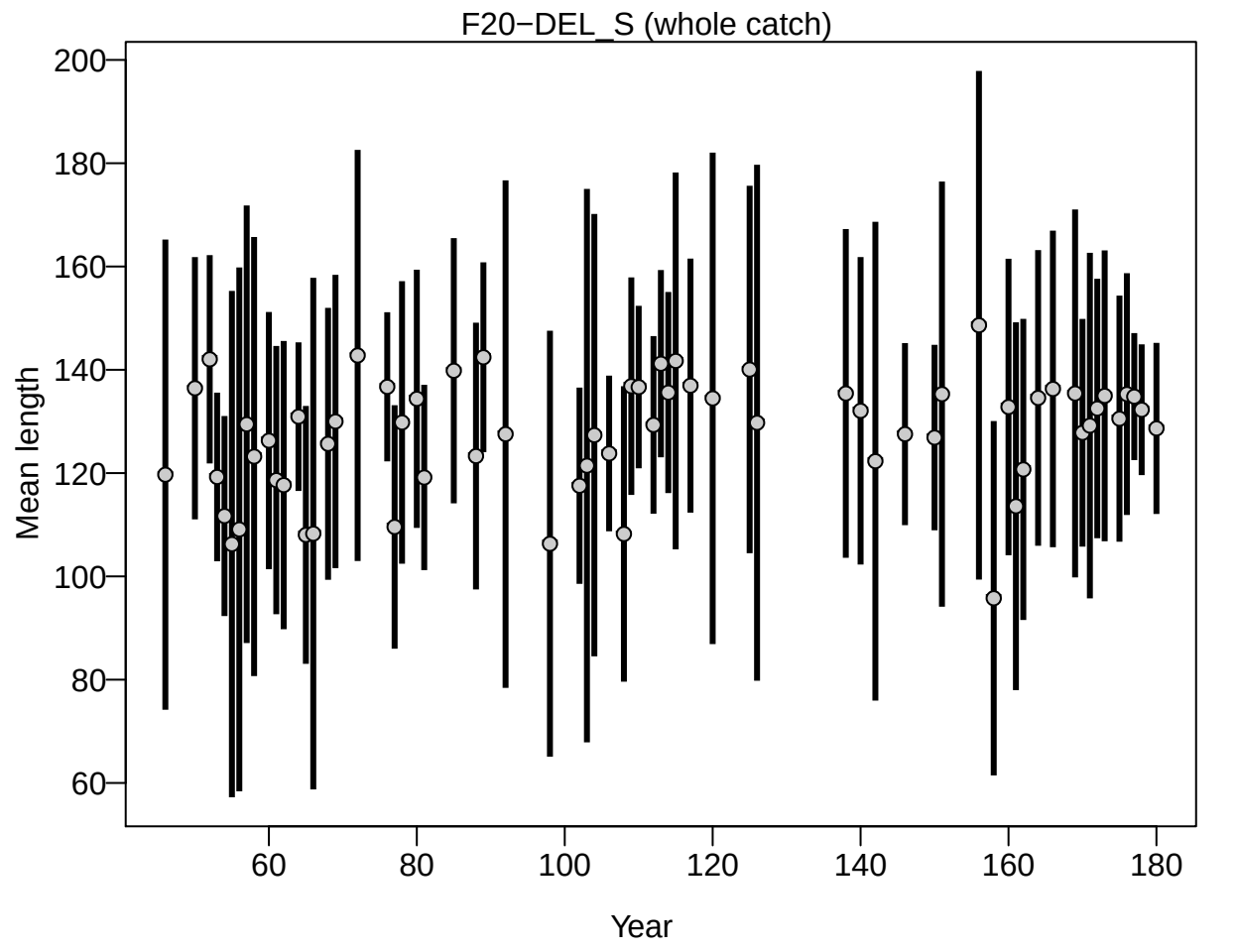

69
N adj.=3
78
N adj.=3
88
N adj.=3
102
N adj.=8
72
N adj.=1.5
80
N adj.=4
89
N adj.=6
103
N adj.=1
76
N adj.=11.1
81
N adj.=8
92
N adj.=1
104
N adj.=1.5
77
N adj.=4
85
N adj.=3.5
98
N adj.=1.5
106
N adj.=11.6
0.00
0.05
0.10
0.15
50
100
150
200
Proportion
Length (cm)

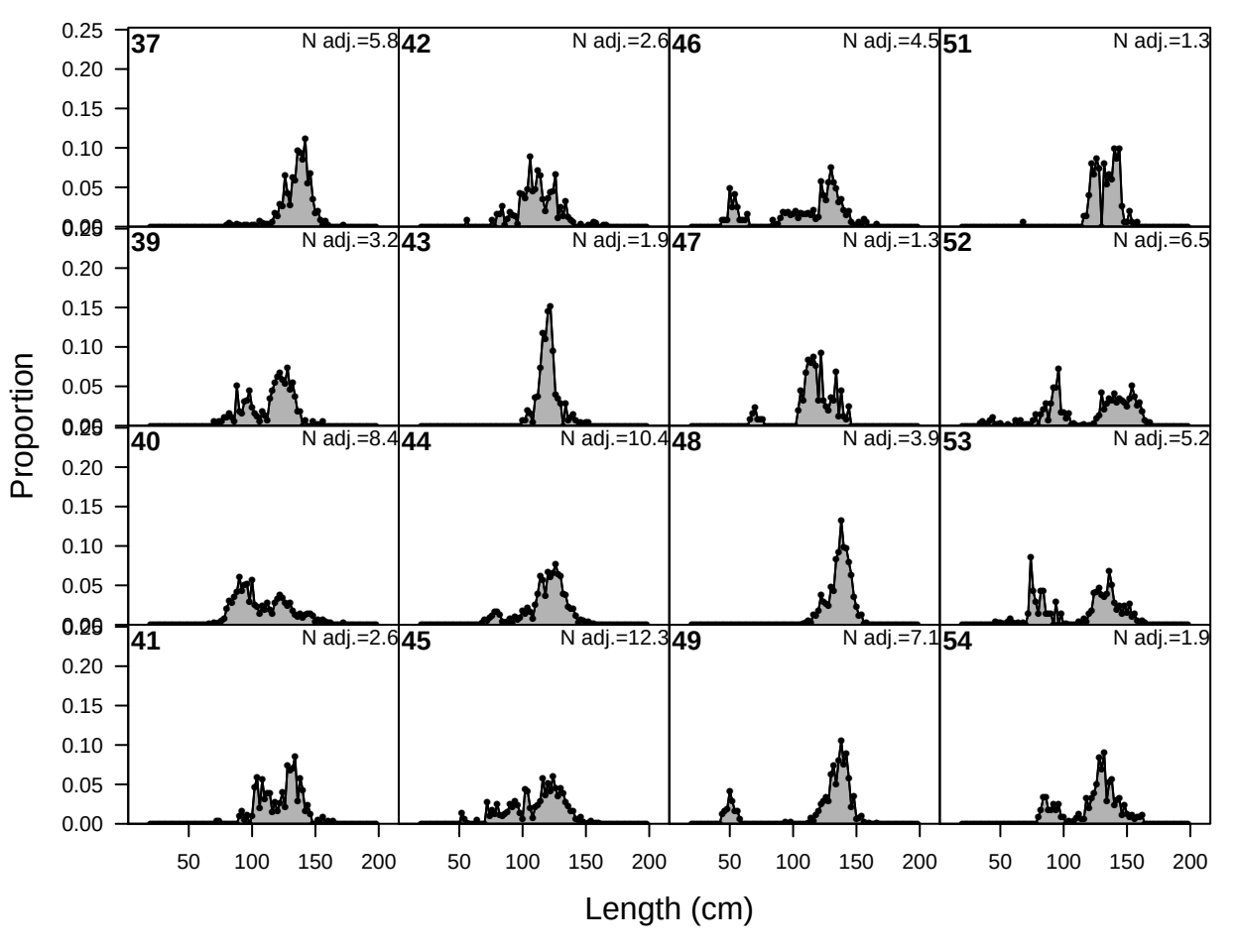

108
N adj.=3
113
N adj.=5.5
120
N adj.=1
140
N adj.=2.5
109
N adj.=5
114
N adj.=5
125
N adj.=2
142
N adj.=1
110
N adj.=8
115
N adj.=1.5
126
N adj.=1
146
N adj.=8
112
N adj.=6
117
N adj.=3.5
138
N adj.=2.5
150
N adj.=8
Proportion
0.00
0.05
0.10
0.15
50
100
150
200
Length (cm)

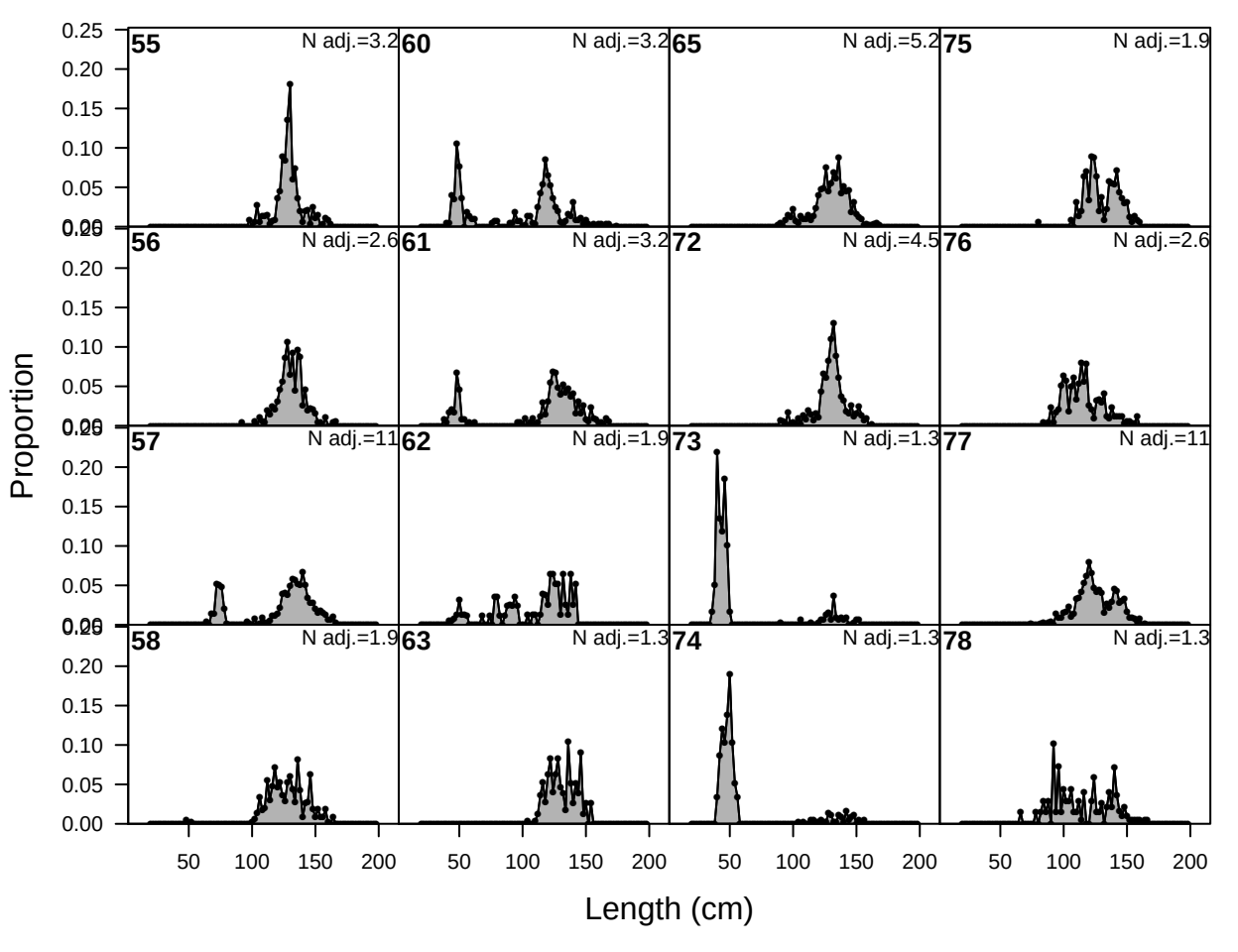

151
N adj.=1.5
161
N adj.=2
169
N adj.=2
173
N adj.=3.5
156
N adj.=1
162
N adj.=3
170
N adj.=5.5
175
N adj.=4.5
158
N adj.=2
164
N adj.=3
171
N adj.=2.5
176
N adj.=4.5
160
N adj.=3
166
N adj.=2.5
172
N adj.=4.5
177
N adj.=16.1
0.00
0.05
0.10
0.15
50
100
150
200
Proportion
Length (cm)

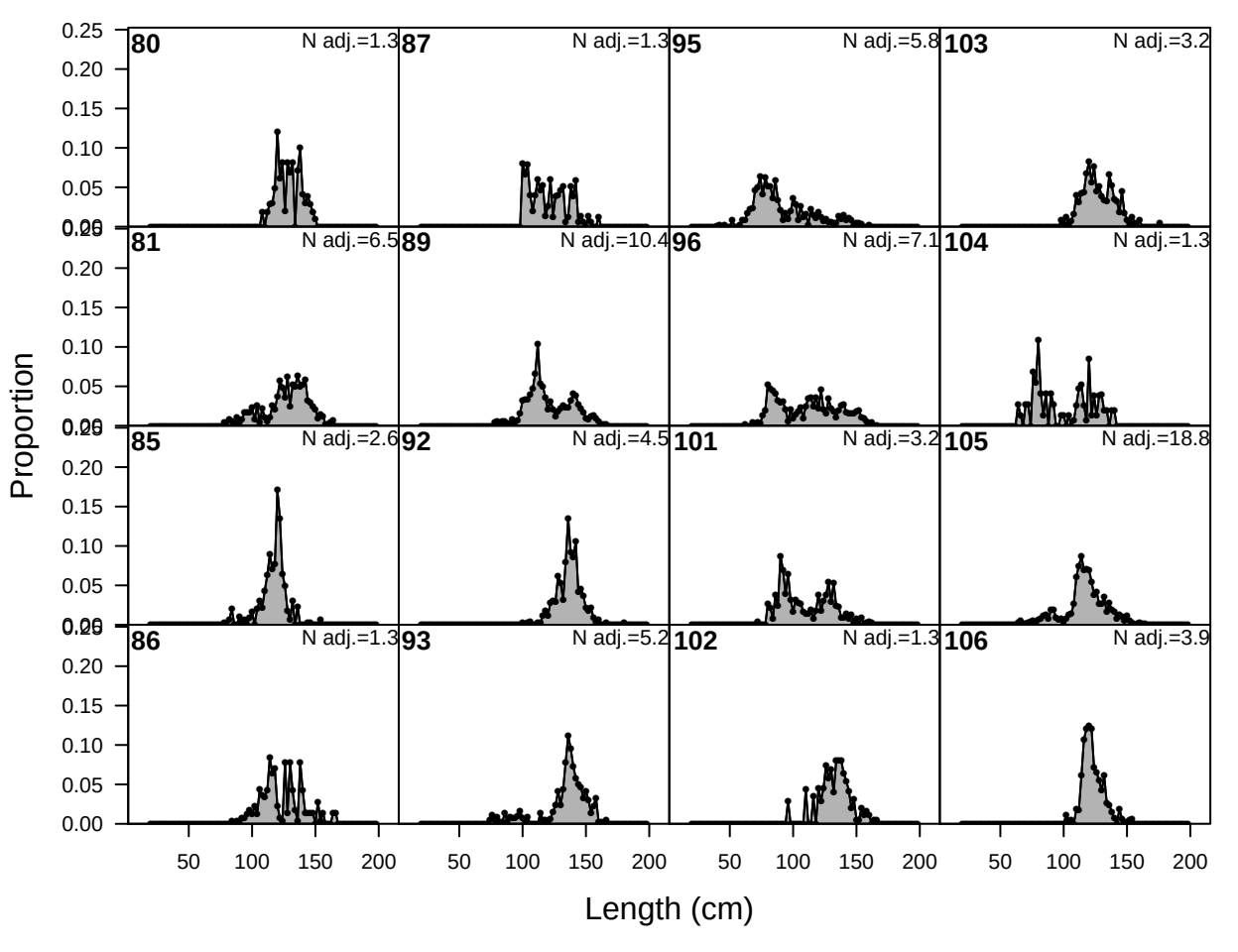

178
N adj.=15.1
180
N adj.=8.6
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

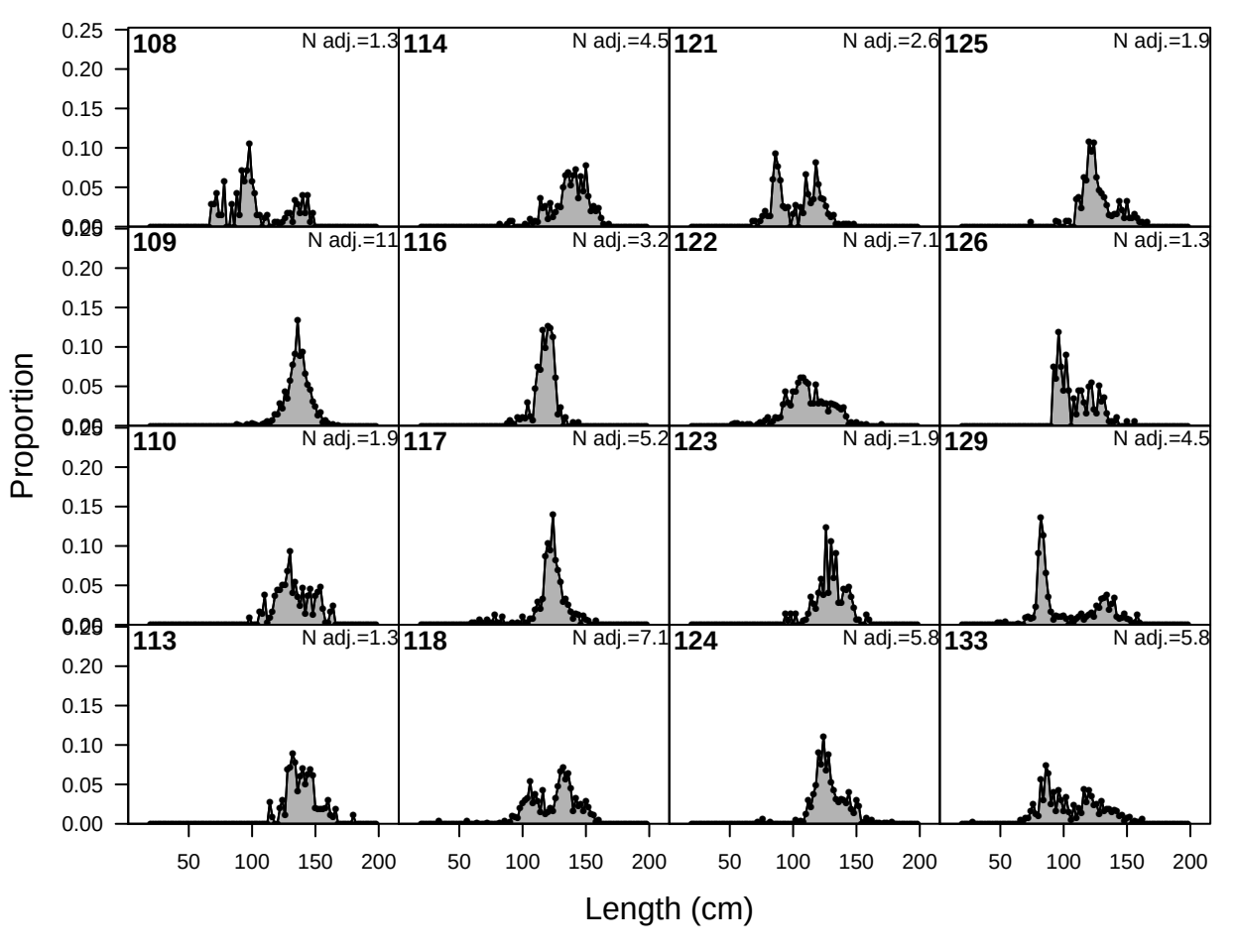

0.01
0.15
200
150
100
50
Length (cm)
46
55
64
76
85
98
109
125
138
150
162
175
Year

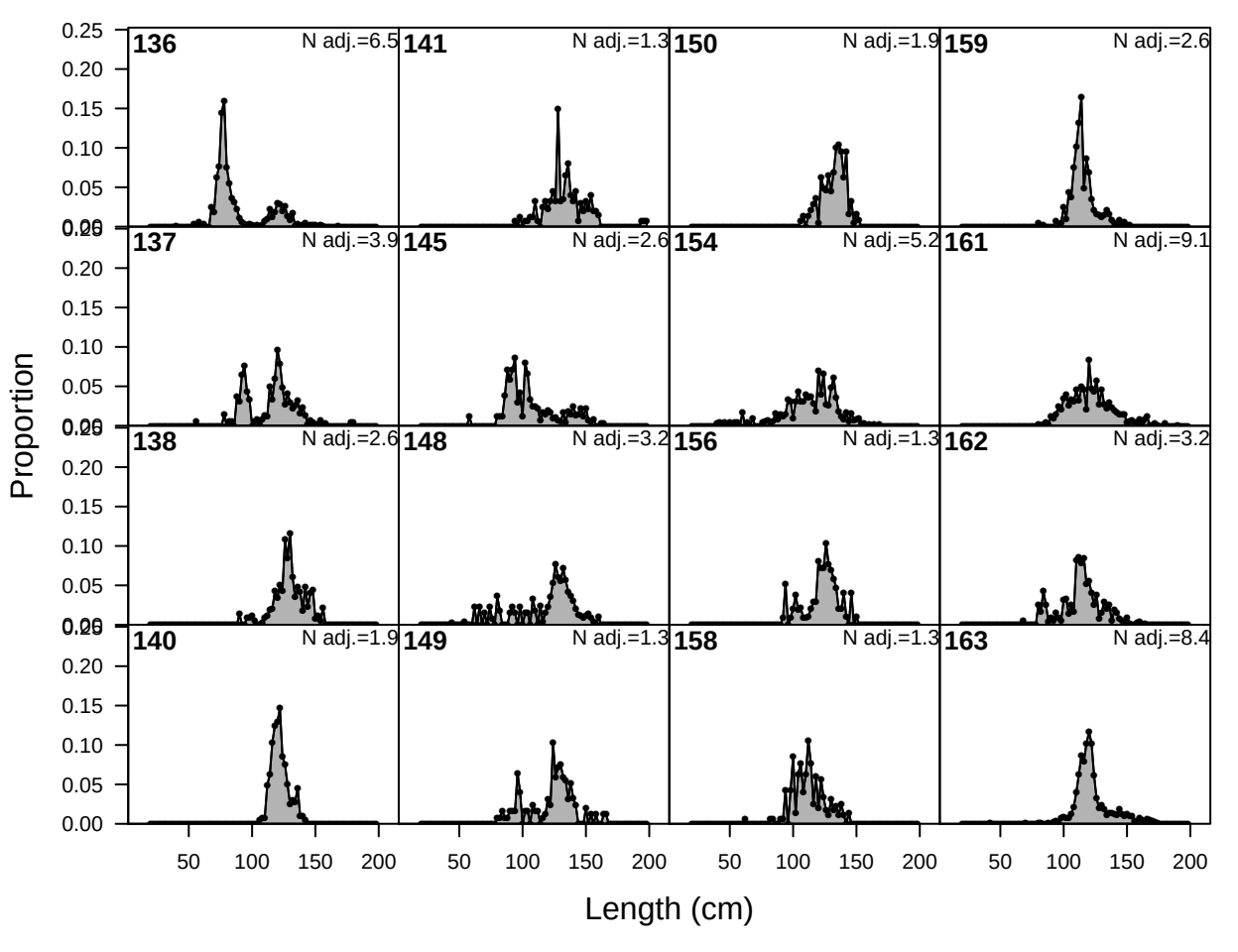

F20−DEL_S (whole catch)
Mean length
Year
200
180
160
140
120
100
80
60
60
80
100
120
140
160
180

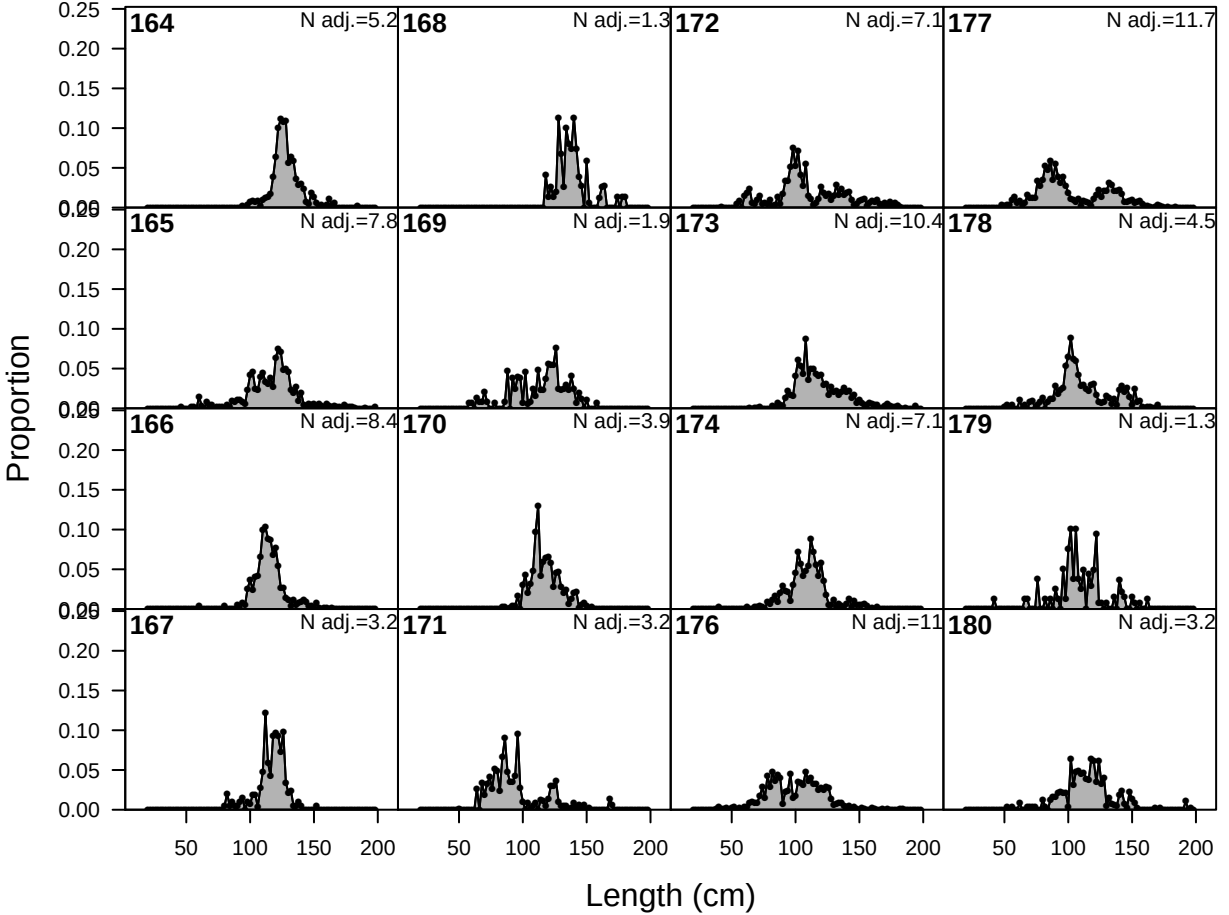

37
N adj.=5.8
42
N adj.=2.6
46
N adj.=4.5
51
N adj.=1.3
39
N adj.=3.2
43
N adj.=1.9
47
N adj.=1.3
52
N adj.=6.5
40
N adj.=8.4
44
N adj.=10.4
48
N adj.=3.9
53
N adj.=5.2
41
N adj.=2.6
45
N adj.=12.3
49
N adj.=7.1
54
N adj.=1.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)

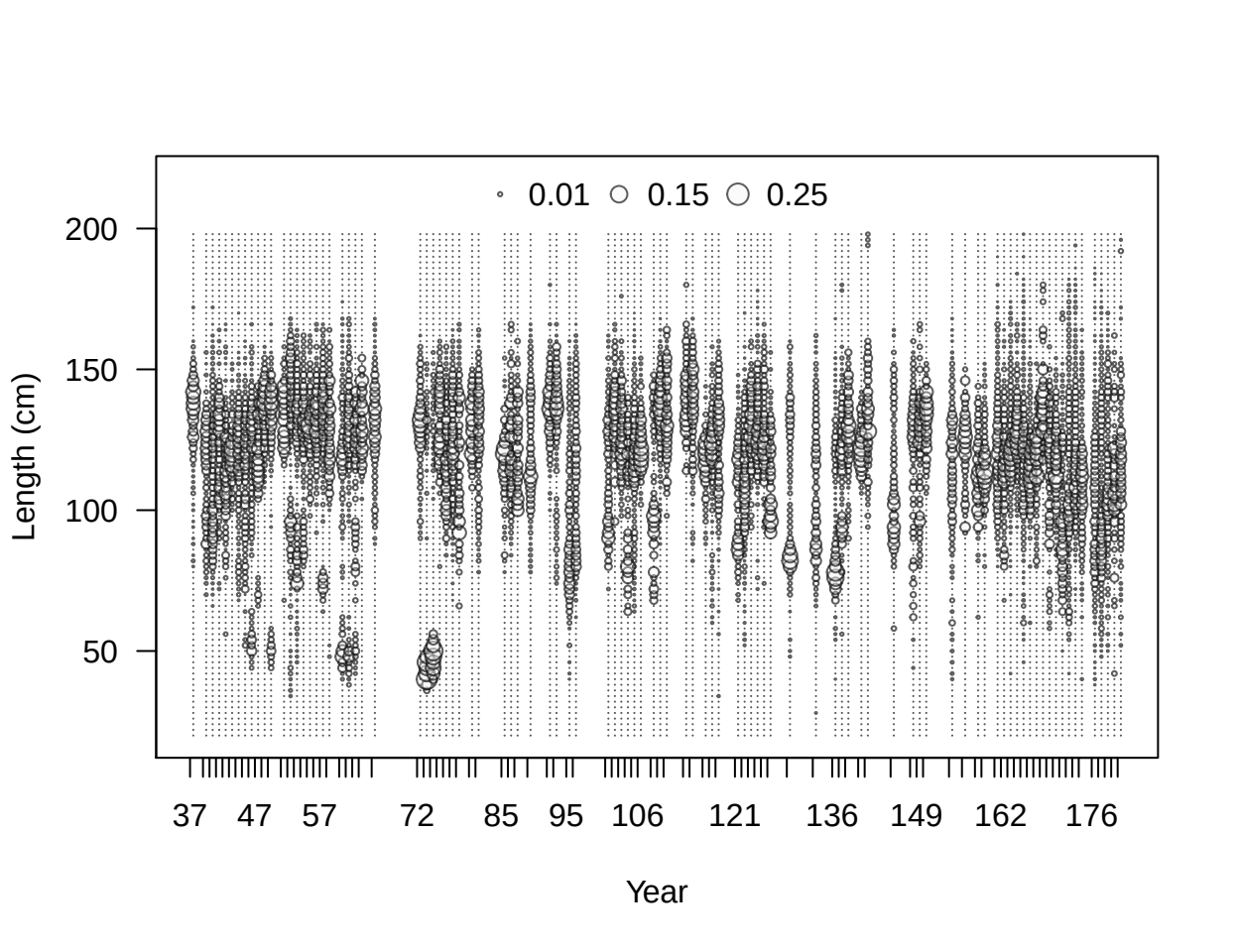

55
N adj.=3.2
60
N adj.=3.2
65
N adj.=5.2
75
N adj.=1.9
56
N adj.=2.6
61
N adj.=3.2
72
N adj.=4.5
76
N adj.=2.6
57
N adj.=11
62
N adj.=1.9
73
N adj.=1.3
77
N adj.=11
58
N adj.=1.9
63
N adj.=1.3
74
N adj.=1.3
78
N adj.=1.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)

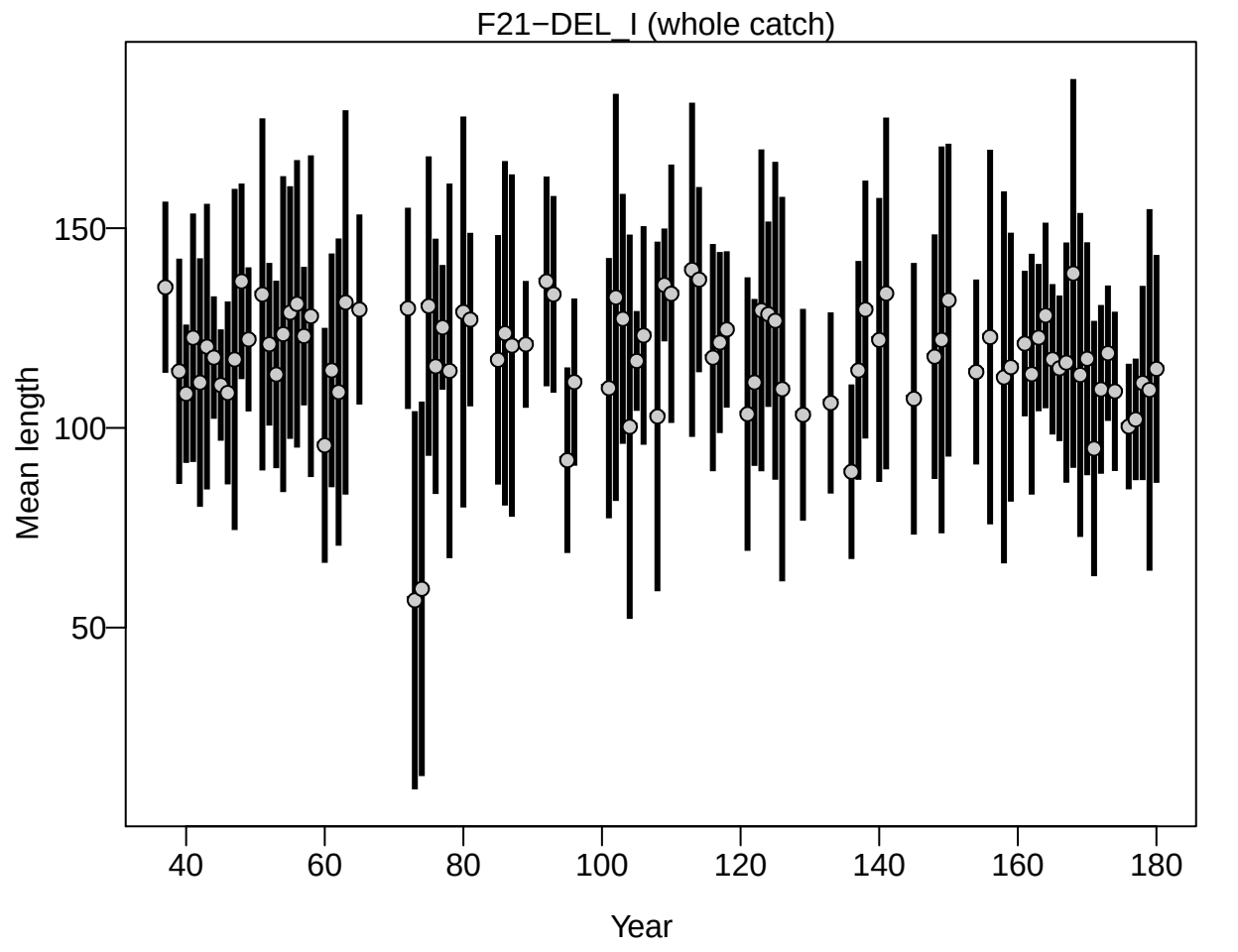

80
N adj.=1.3
87
N adj.=1.3
95
N adj.=5.8
103
N adj.=3.2
81
N adj.=6.5
89
N adj.=10.4
96
N adj.=7.1
104
N adj.=1.3
85
N adj.=2.6
92
N adj.=4.5
101
N adj.=3.2
105
N adj.=18.8
86
N adj.=1.3
93
N adj.=5.2
102
N adj.=1.3
106
N adj.=3.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)

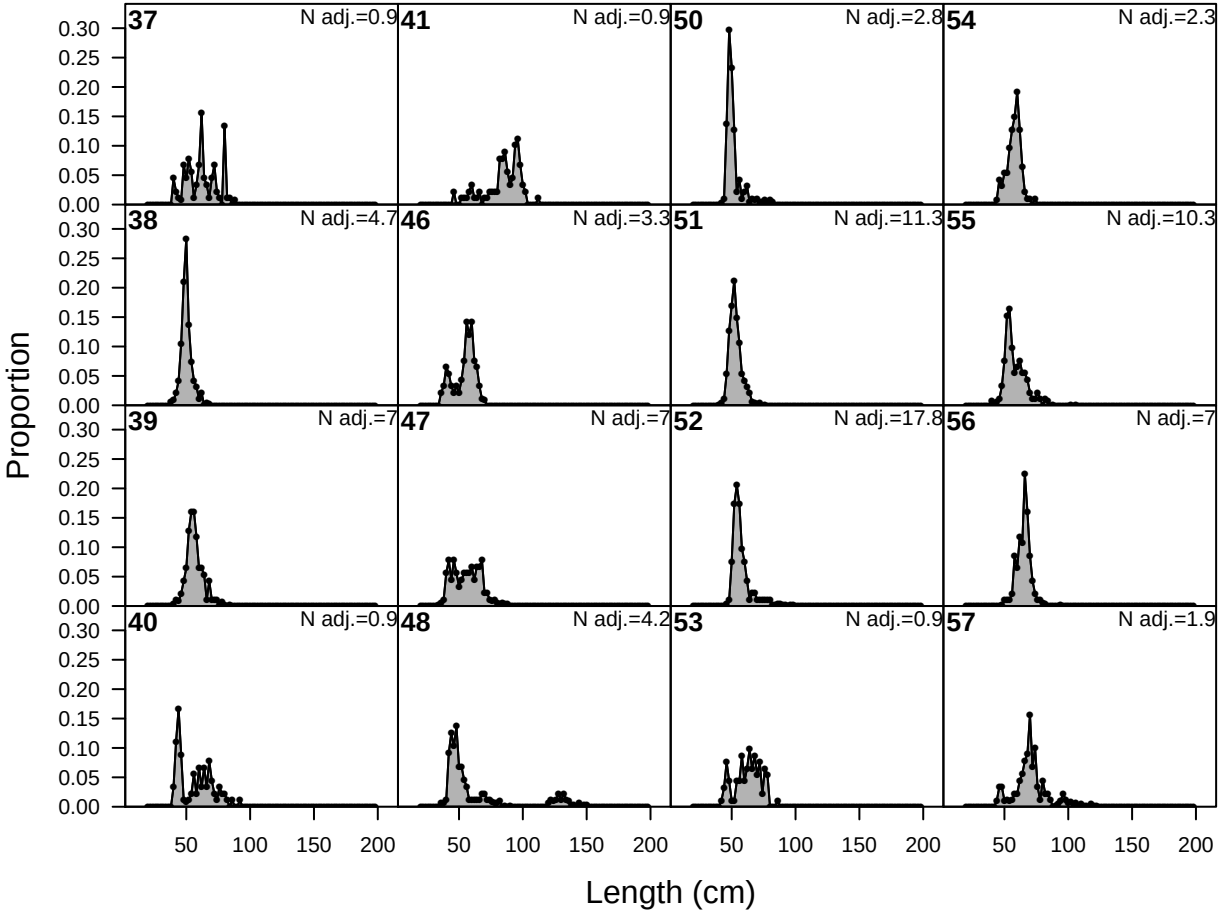

108
N adj.=1.3
114
N adj.=4.5
121
N adj.=2.6
125
N adj.=1.9
109
N adj.=11
116
N adj.=3.2
122
N adj.=7.1
126
N adj.=1.3
110
N adj.=1.9
117
N adj.=5.2
123
N adj.=1.9
129
N adj.=4.5
113
N adj.=1.3
118
N adj.=7.1
124
N adj.=5.8
133
N adj.=5.8
Proportion
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Length (cm)

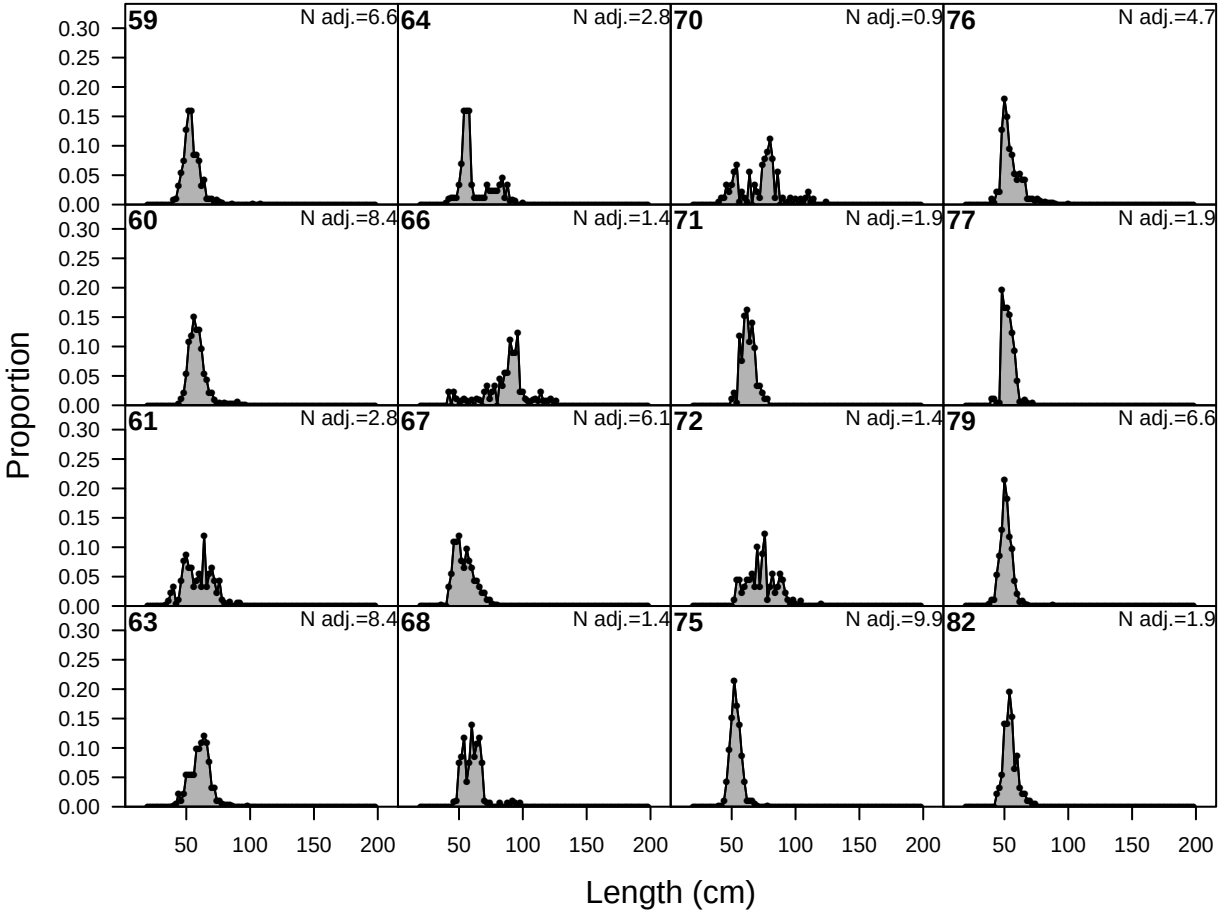

136
N adj.=6.5
141
N adj.=1.3
150
N adj.=1.9
159
N adj.=2.6
137
N adj.=3.9
145
N adj.=2.6
154
N adj.=5.2
161
N adj.=9.1
138
N adj.=2.6
148
N adj.=3.2
156
N adj.=1.3
162
N adj.=3.2
140
N adj.=1.9
149
N adj.=1.3
158
N adj.=1.3
163
N adj.=8.4
Proportion
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Length (cm)

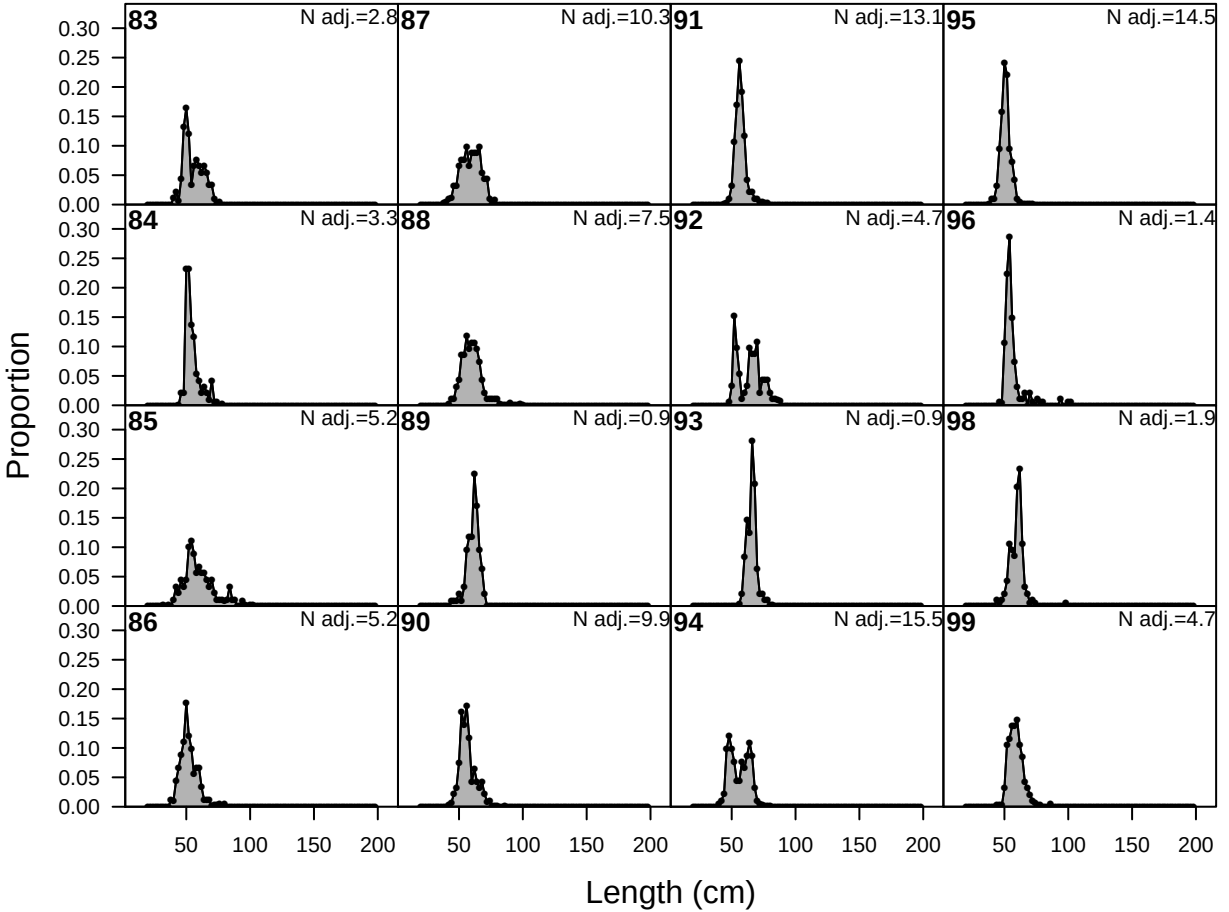

164
N adj.=5.2
168
N adj.=1.3
172
N adj.=7.1
177
N adj.=11.7
165
N adj.=7.8
169
N adj.=1.9
173
N adj.=10.4
178
N adj.=4.5
166
N adj.=8.4
170
N adj.=3.9
174
N adj.=7.1
179
N adj.=1.3
167
N adj.=3.2
171
N adj.=3.2
176
N adj.=11
180
N adj.=3.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)

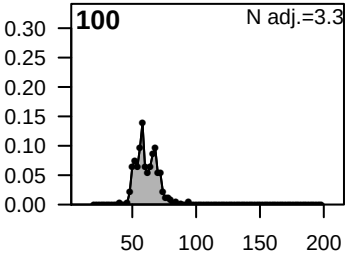

0.01
0.15
0.25
200
150
100
50
Length (cm)
37
47
57
72
85
95
106
121
136
149
162
176
Year


F21−DEL_I (whole catch)
Mean length
150
100
50
40
60
80
100
120
140
160
180
Year


37
N adj.=0.9
41
N adj.=0.9
50
N adj.=2.8
54
N adj.=2.3
38
N adj.=4.7
46
N adj.=3.3
51
N adj.=11.3
55
N adj.=10.3
39
N adj.=7
47
N adj.=7
52
N adj.=17.8
56
N adj.=7
40
N adj.=0.9
48
N adj.=4.2
53
N adj.=0.9
57
N adj.=1.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

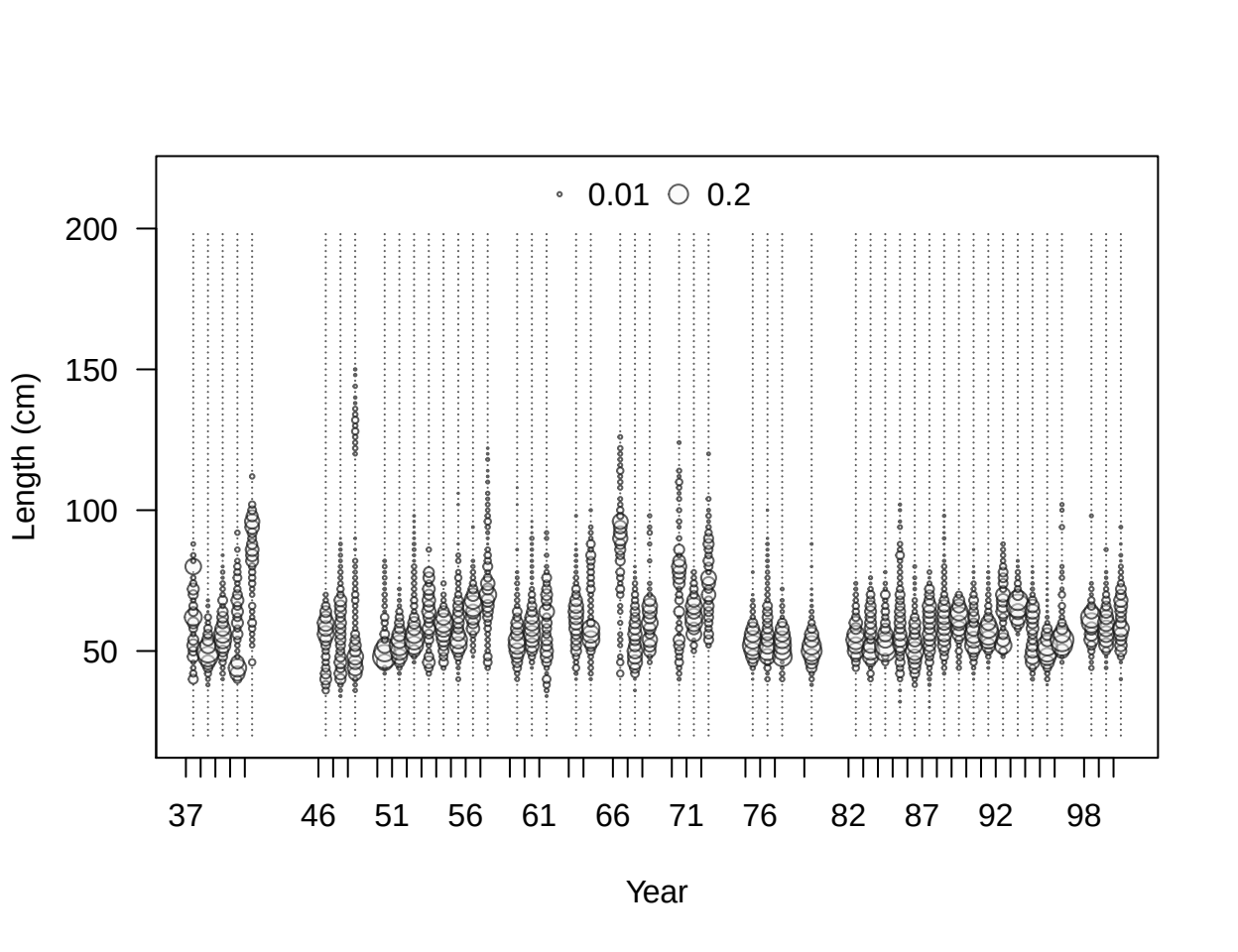

59
N adj.=6.6
64
N adj.=2.8
70
N adj.=0.9
76
N adj.=4.7
60
N adj.=8.4
66
N adj.=1.4
71
N adj.=1.9
77
N adj.=1.9
61
N adj.=2.8
67
N adj.=6.1
72
N adj.=1.4
79
N adj.=6.6
63
N adj.=8.4
68
N adj.=1.4
75
N adj.=9.9
82
N adj.=1.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

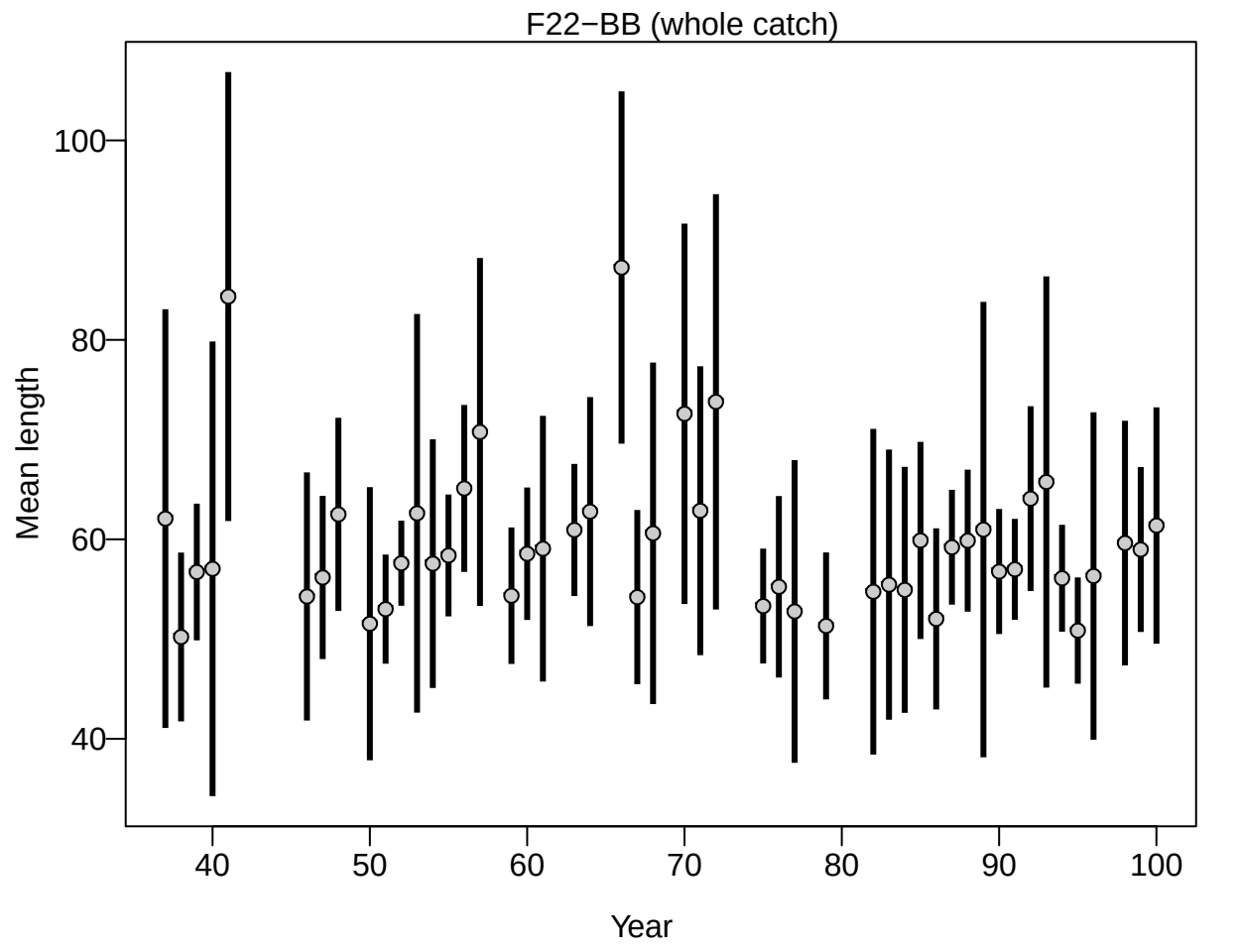

83
N adj.=2.8
87
N adj.=10.3
91
N adj.=13.1
95
N adj.=14.5
84
N adj.=3.3
88
N adj.=7.5
92
N adj.=4.7
96
N adj.=1.4
85
N adj.=5.2
89
N adj.=0.9
93
N adj.=0.9
98
N adj.=1.9
86
N adj.=5.2
90
N adj.=9.9
94
N adj.=15.5
99
N adj.=4.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

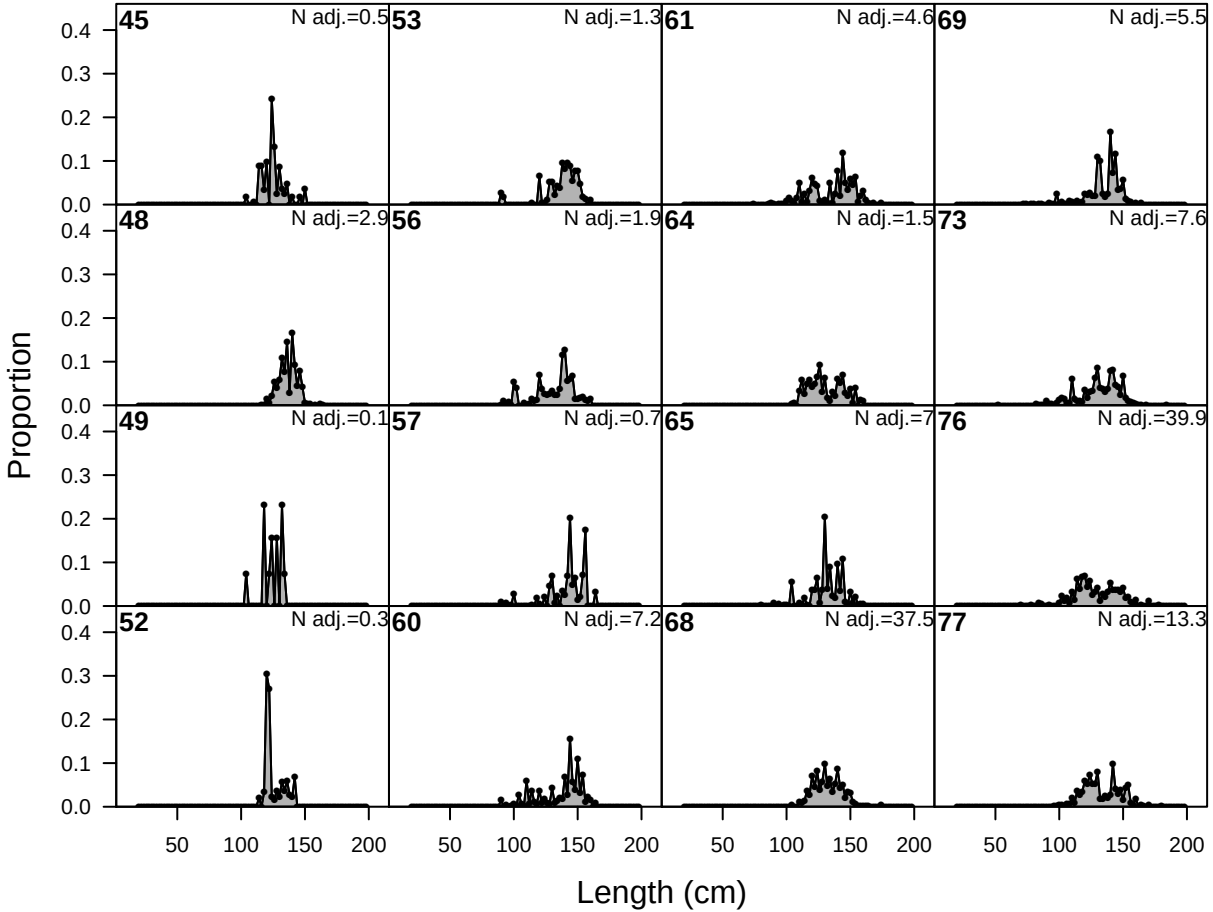


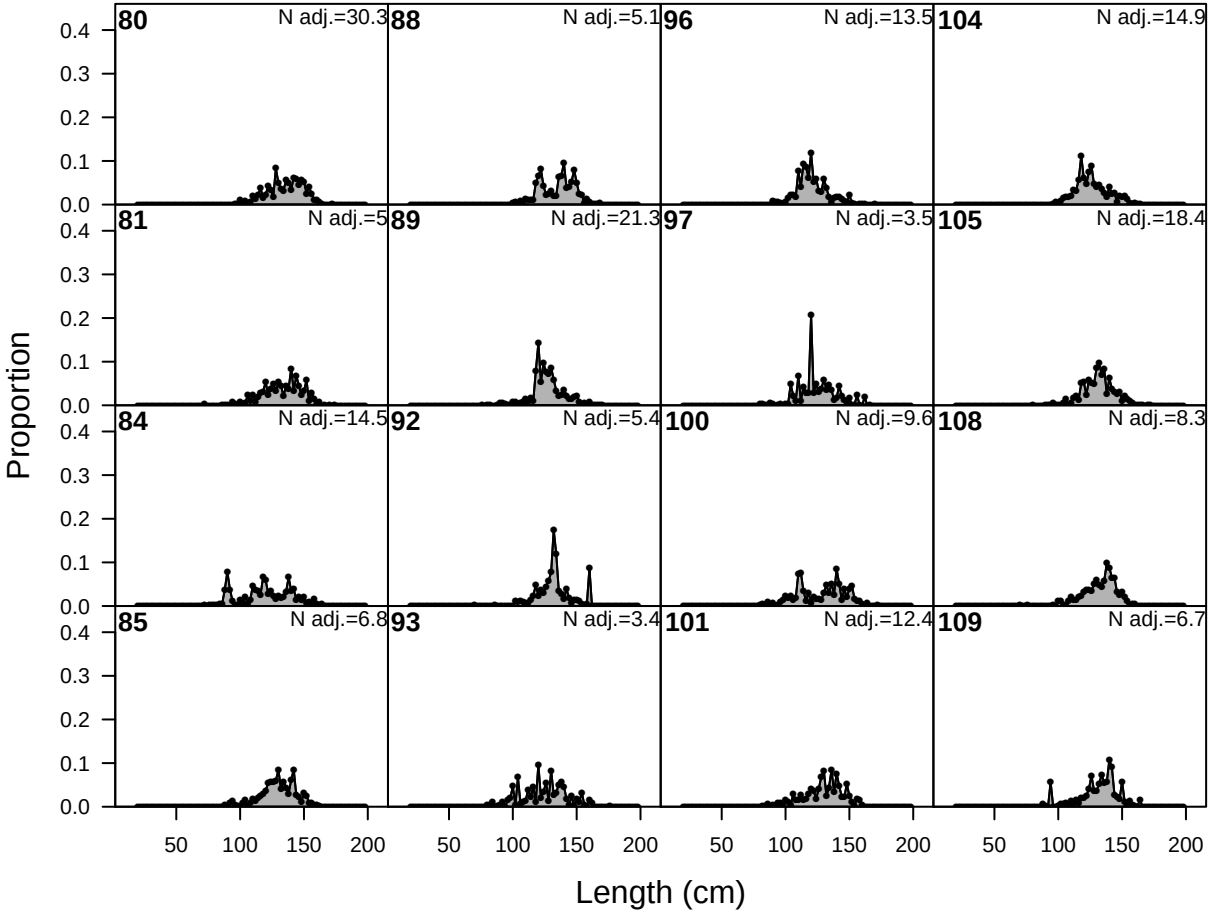
Proportion

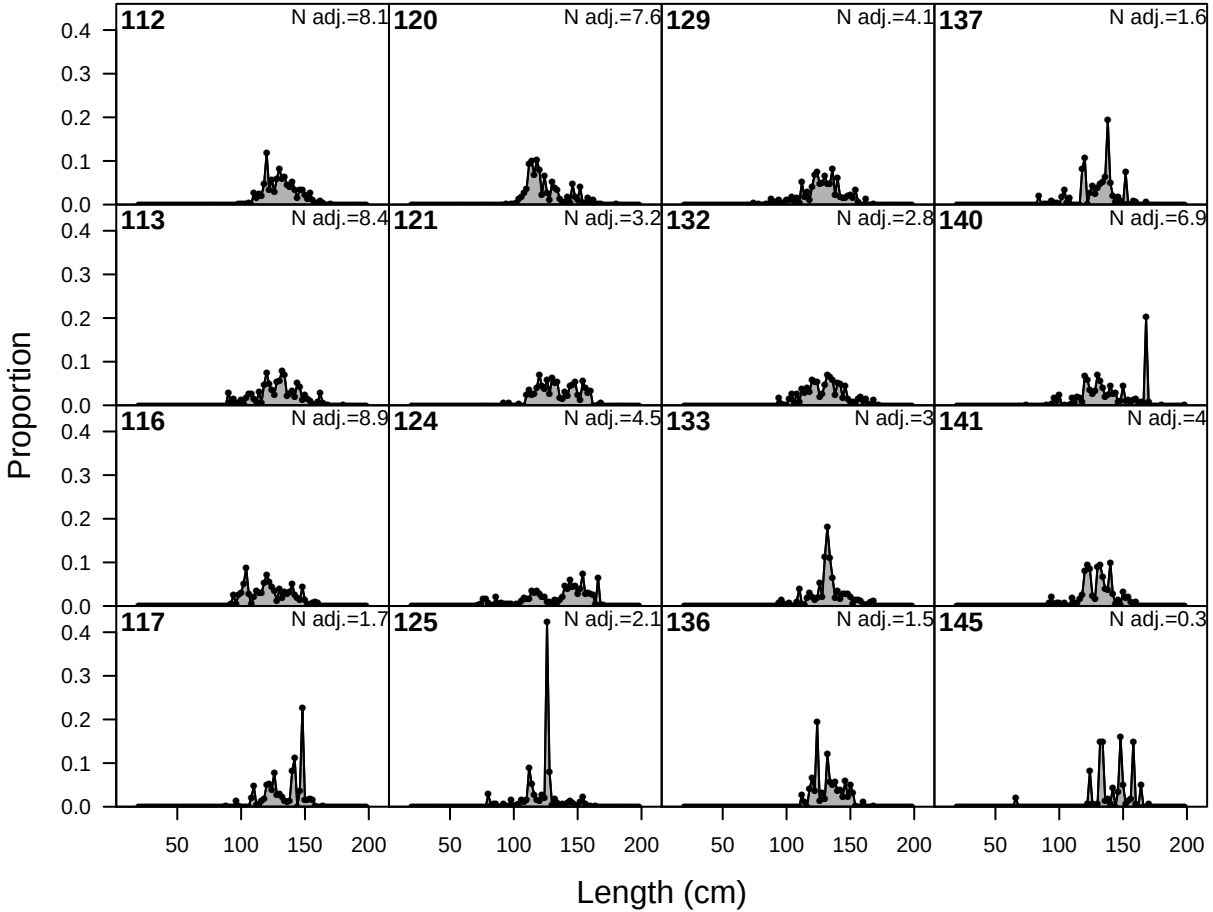
Length (cm)

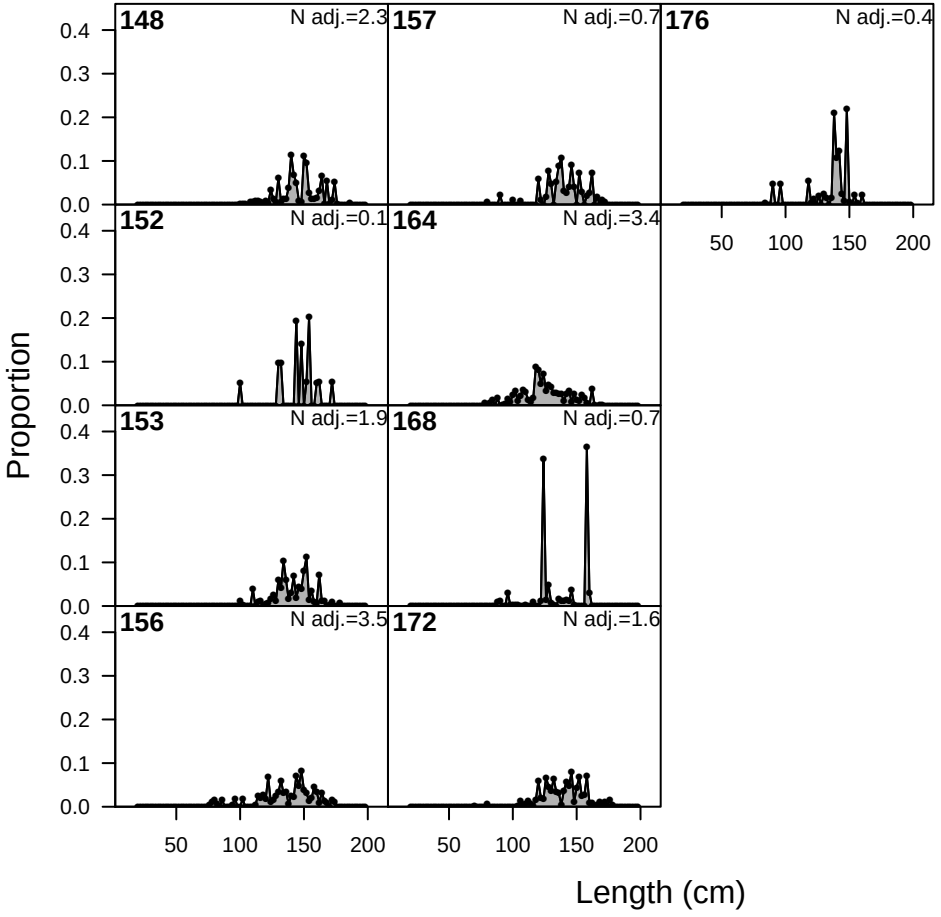

0.01
0.2
200
150
100
50
Length (cm)
37
46
51
56
61
66
71
76
82
87
92
98
Year

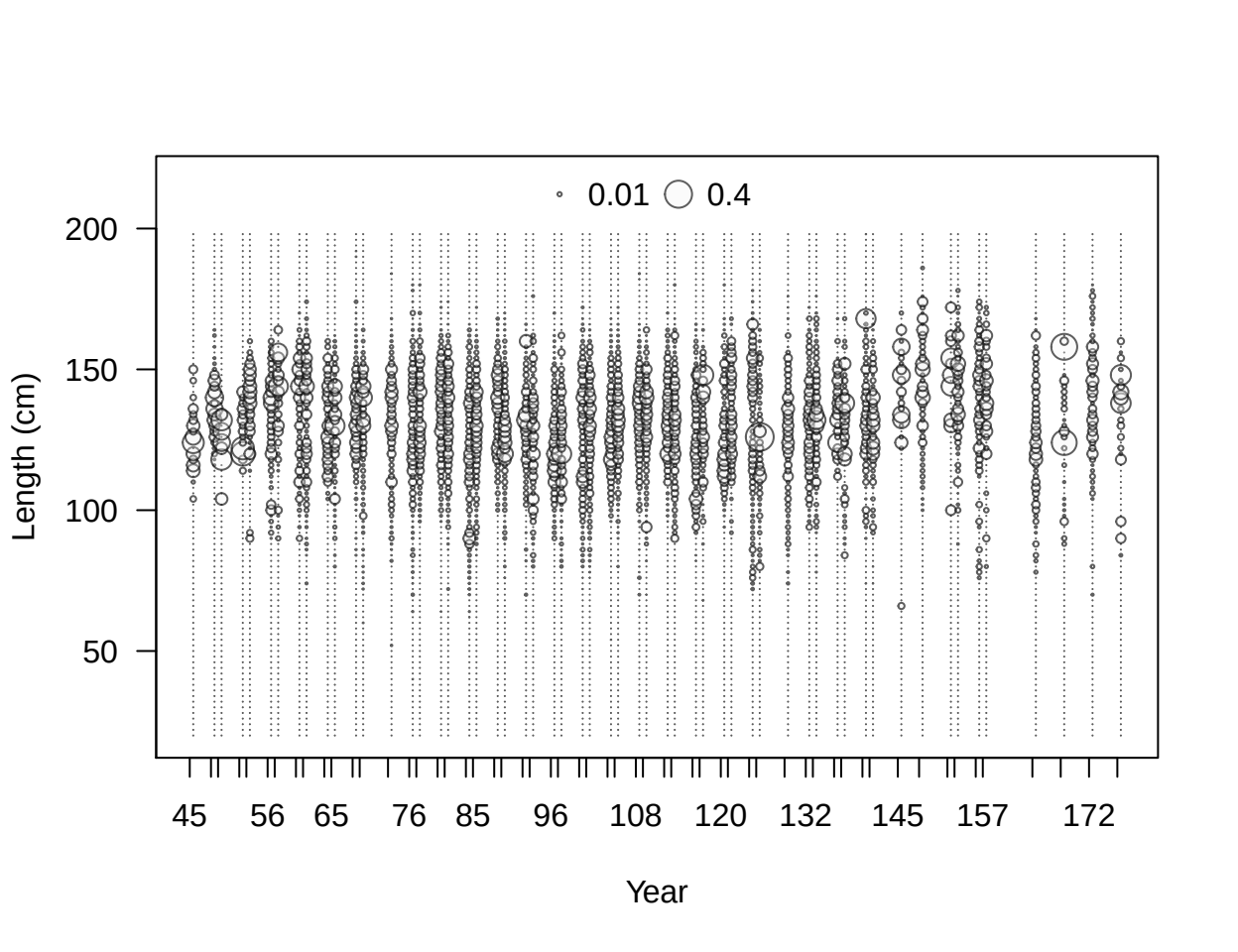

F22−BB (whole catch)
Mean length
100
80
60
40
40
50
60
70
80
90
100
Year

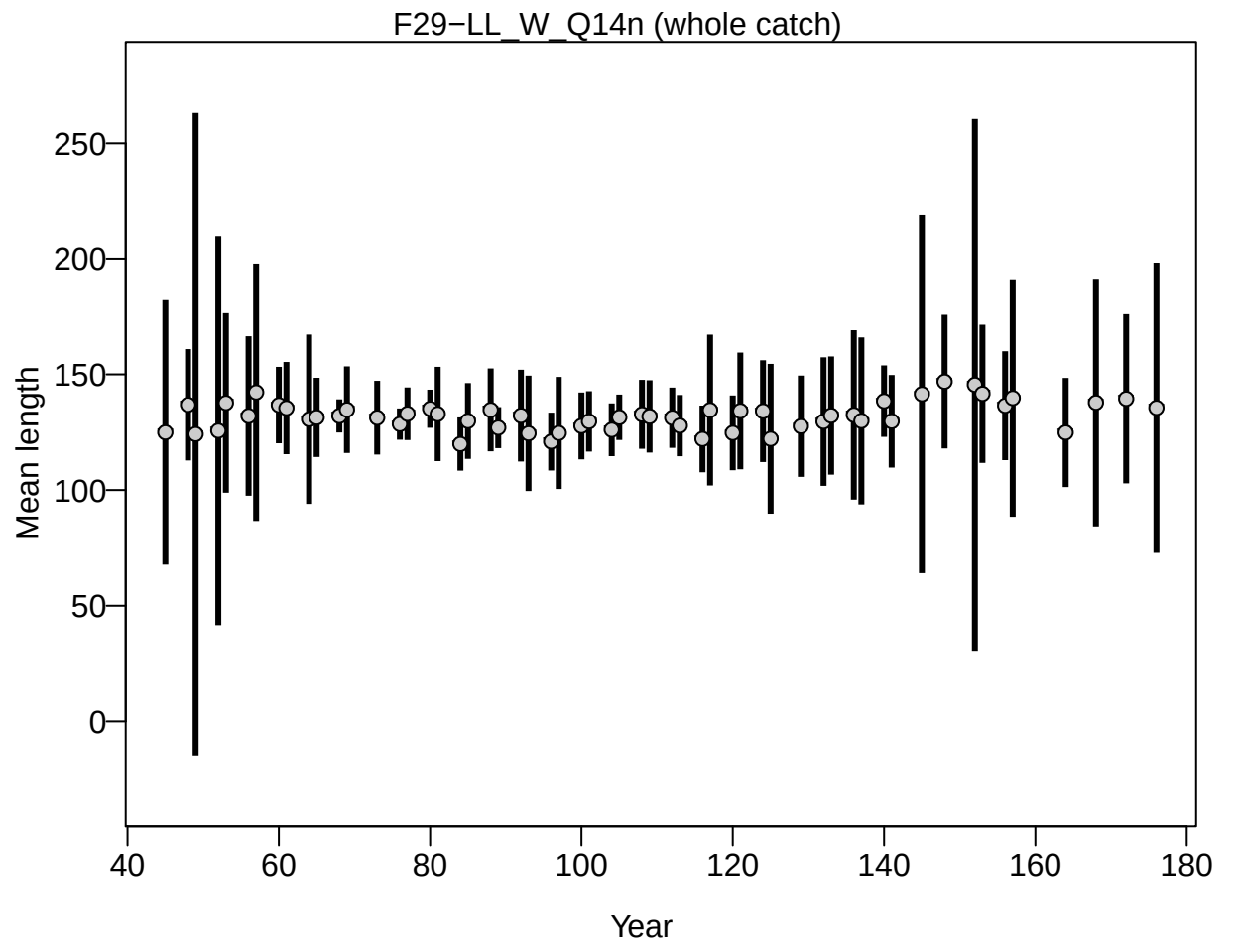

45
N adj.=0.5
53
N adj.=1.3
61
N adj.=4.6
69
N adj.=5.5
48
N adj.=2.9
56
N adj.=1.9
64
N adj.=1.5
73
N adj.=7.6
49
N adj.=0.1
57
N adj.=0.7
65
N adj.=7
76
N adj.=39.9
52
N adj.=0.3
60
N adj.=7.2
68
N adj.=37.5
77
N adj.=13.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

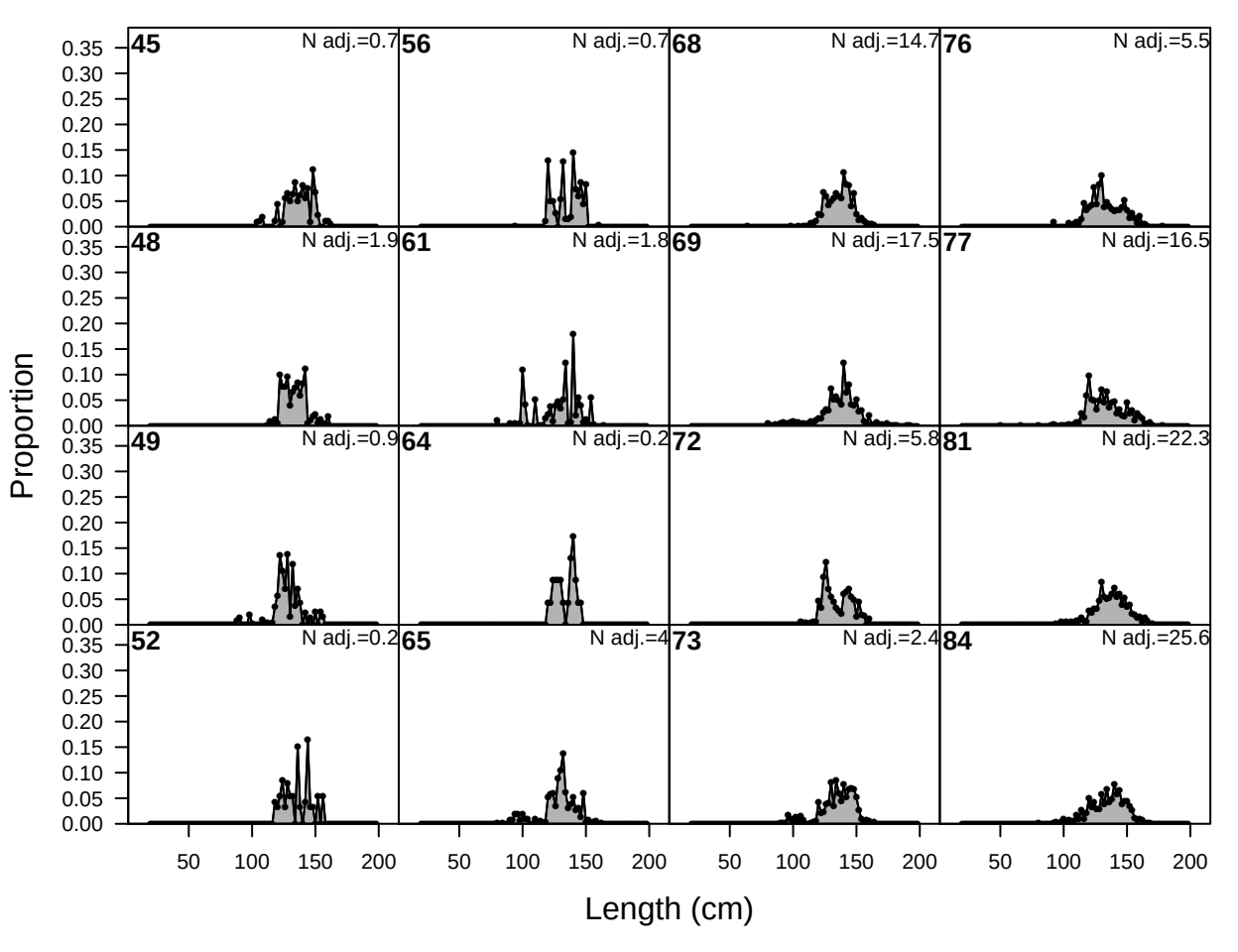

80
N adj.=30.3
88
N adj.=5.1
96
N adj.=13.5
104
N adj.=14.9
81
N adj.=5
89
N adj.=21.3
97
N adj.=3.5
105
N adj.=18.4
84
N adj.=14.5
92
N adj.=5.4
100
N adj.=9.6
108
N adj.=8.3
85
N adj.=6.8
93
N adj.=3.4
101
N adj.=12.4
109
N adj.=6.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

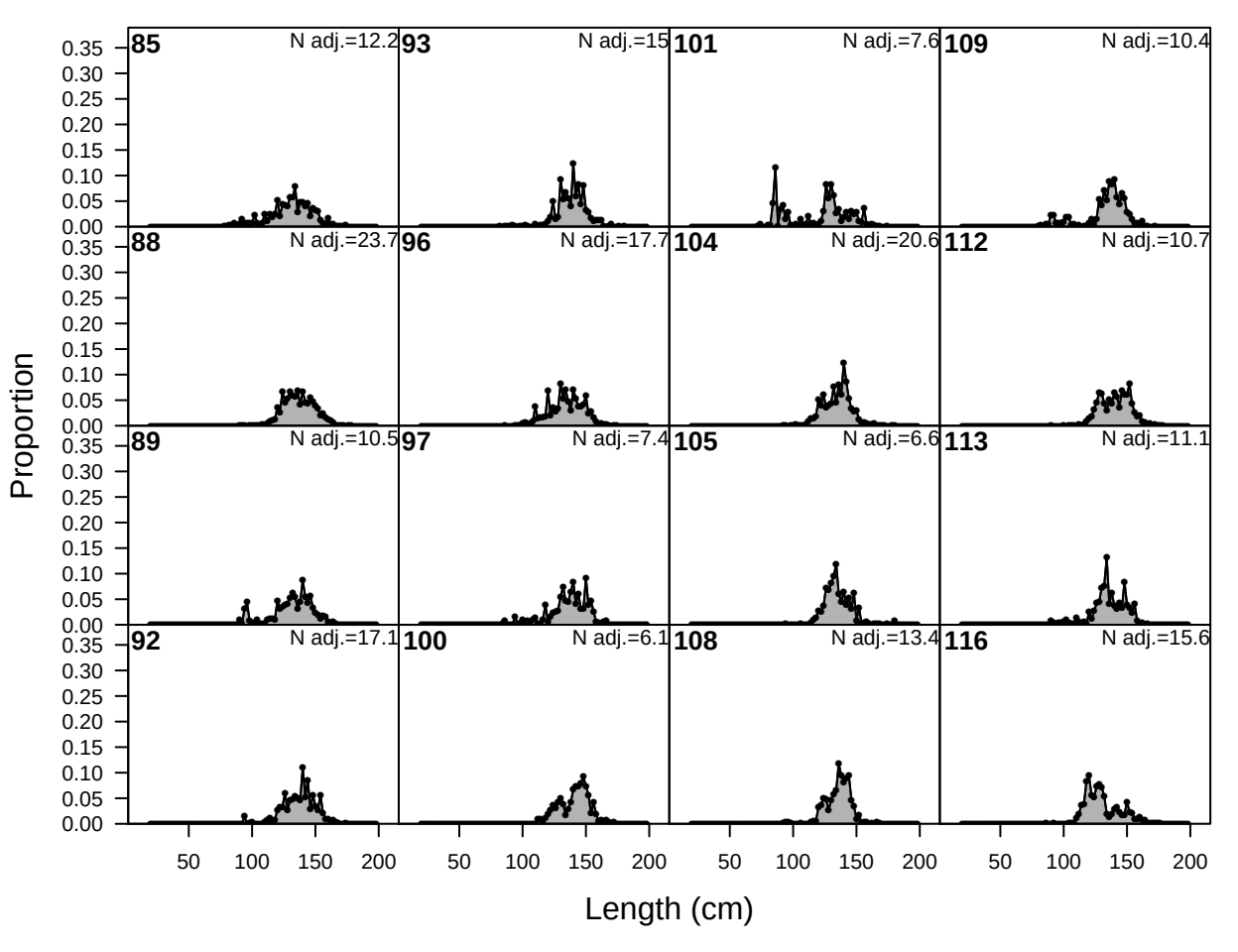

112
N adj.=8.1
120
N adj.=7.6
129
N adj.=4.1
137
N adj.=1.6
113
N adj.=8.4
121
N adj.=3.2
132
N adj.=2.8
140
N adj.=6.9
116
N adj.=8.9
124
N adj.=4.5
133
N adj.=3
141
N adj.=4
117
N adj.=1.7
125
N adj.=2.1
136
N adj.=1.5
145
N adj.=0.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

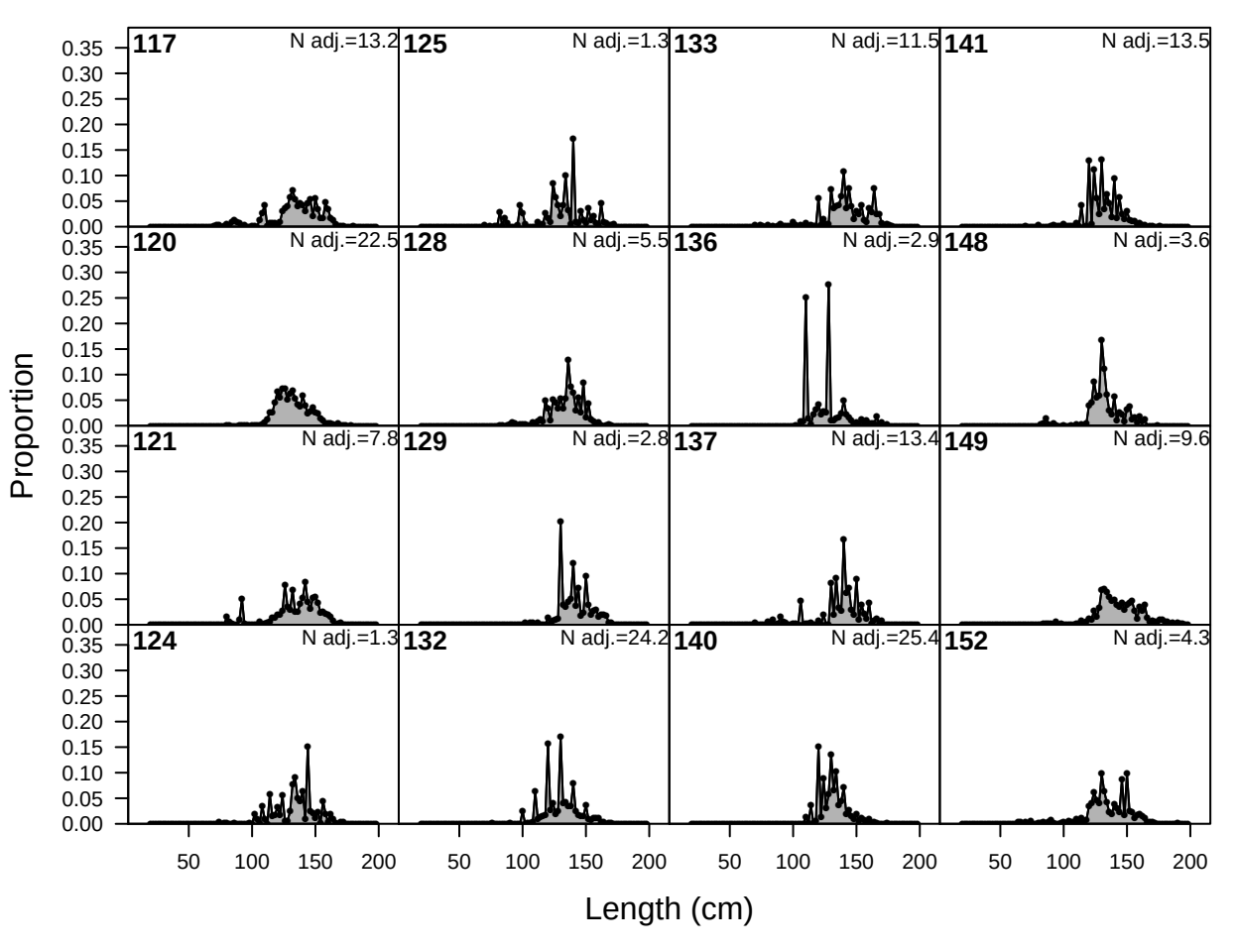

148
N adj.=2.3
157
N adj.=0.7
176
N adj.=0.4
152
N adj.=0.1
164
N adj.=3.4
153
N adj.=1.9
168
N adj.=0.7
156
N adj.=3.5
172
N adj.=1.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

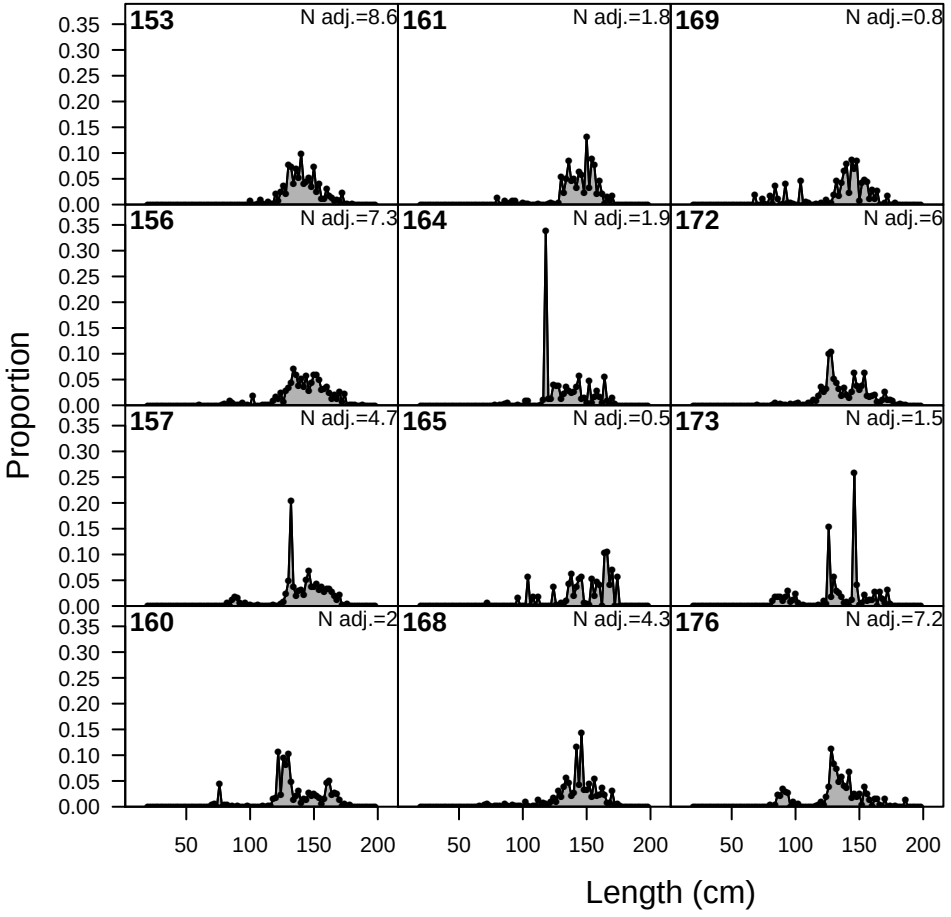

0.01
0.4
200
150
100
50
Length (cm)
45
56
65
76
85
96
108
120
132
145
157
172
Year

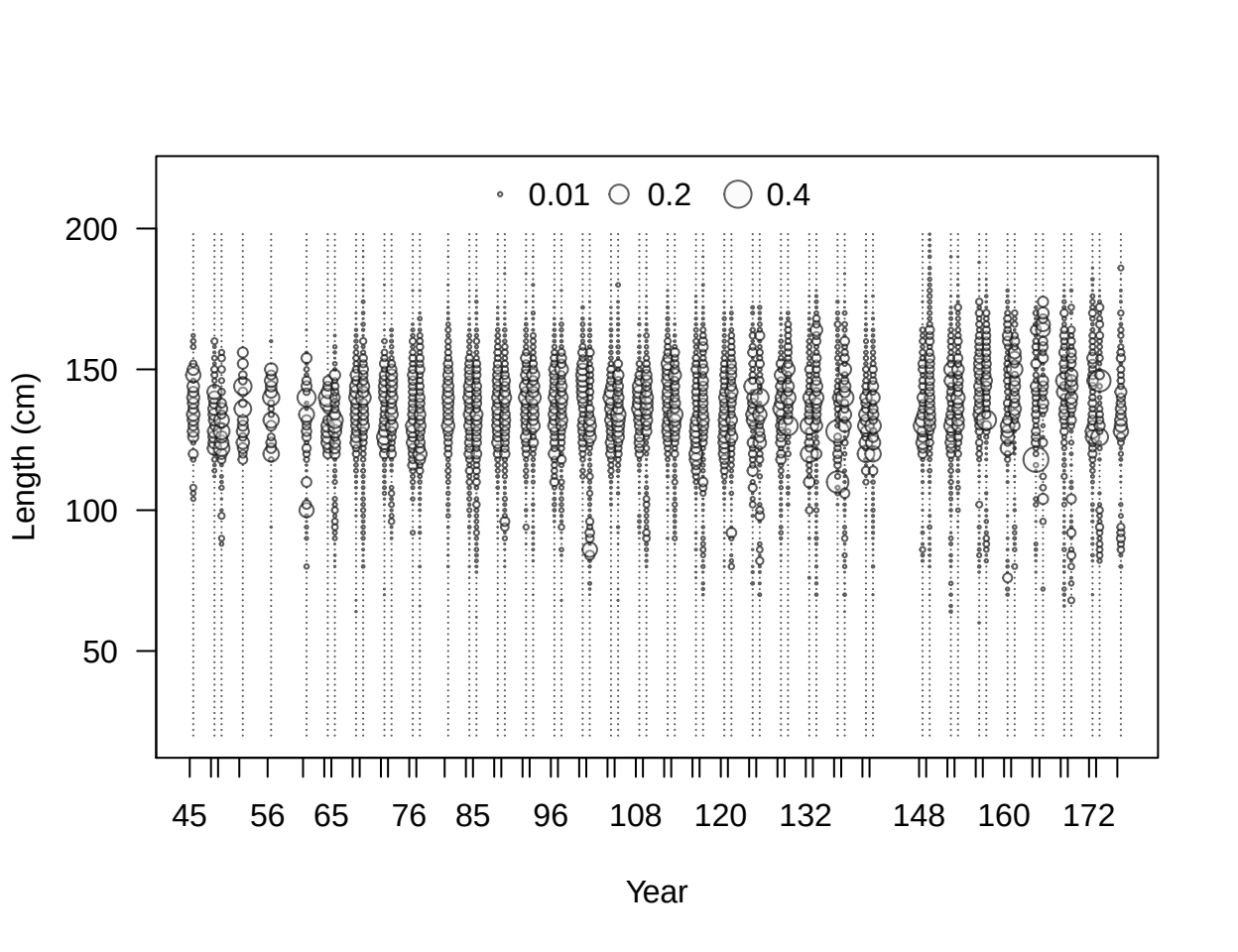

F29−LL_W_Q14n (whole catch)
Mean length
250
200
150
100
50
0
40
60
80
100
120
140
160
180
Year

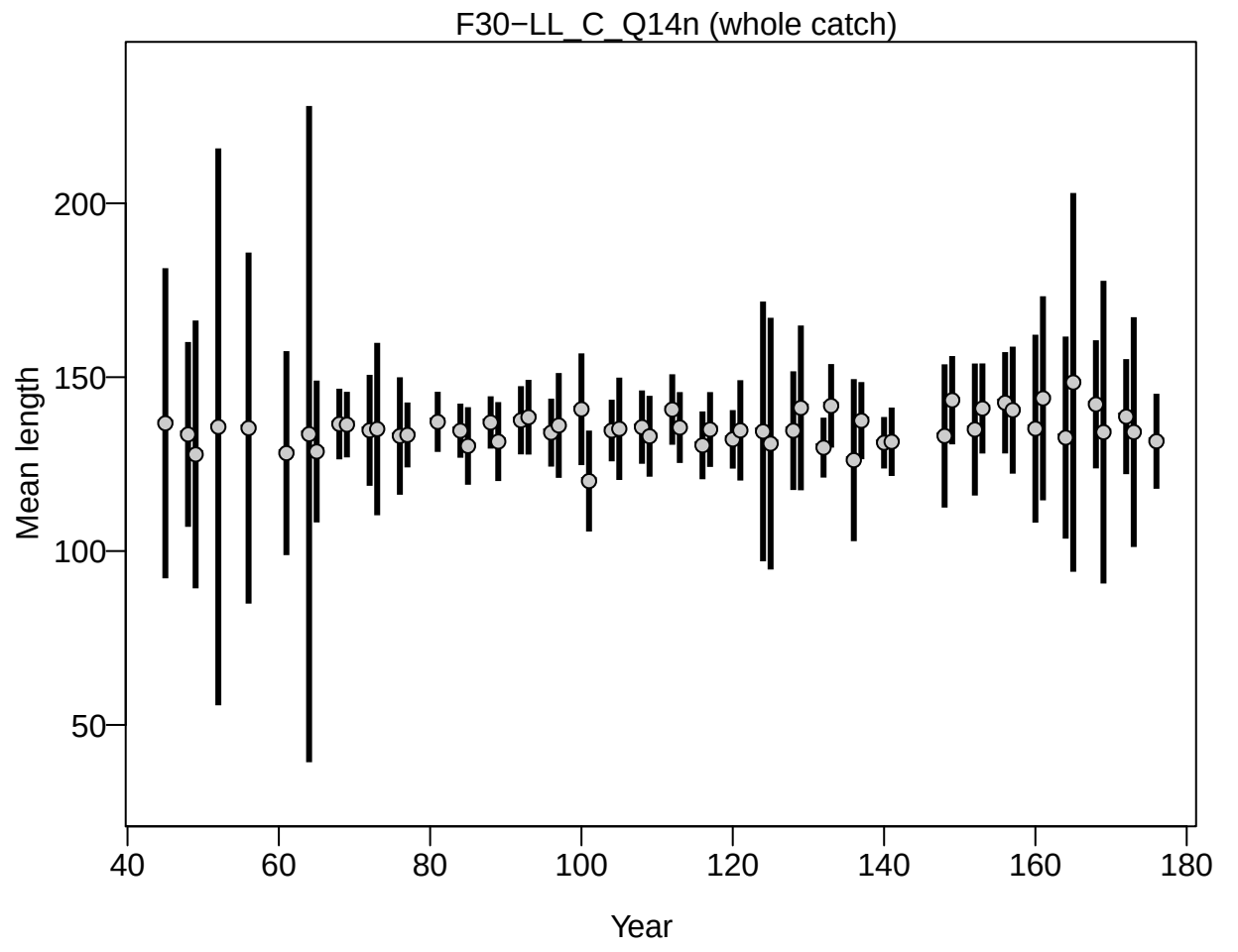

45
N adj.=0.7
56
N adj.=0.7
68
N adj.=14.7
76
N adj.=5.5
48
N adj.=1.9
61
N adj.=1.8
69
N adj.=17.5
77
N adj.=16.5
49
N adj.=0.9
64
N adj.=0.2
72
N adj.=5.8
81
N adj.=22.3
52
N adj.=0.2
65
N adj.=4
73
N adj.=2.4
84
N adj.=25.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

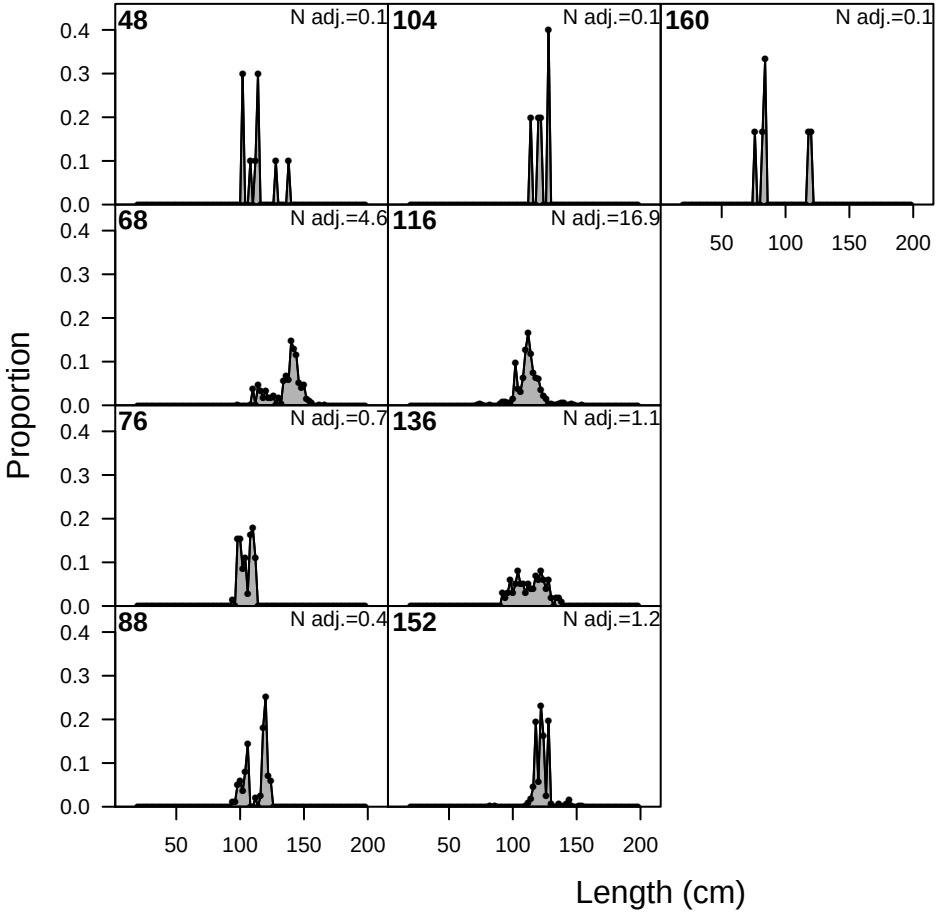

85
N adj.=12.2
93
N adj.=15
101
N adj.=7.6
109
N adj.=10.4
88
N adj.=23.7
96
N adj.=17.7
104
N adj.=20.6
112
N adj.=10.7
89
N adj.=10.5
97
N adj.=7.4
105
N adj.=6.6
113
N adj.=11.1
92
N adj.=17.1
100
N adj.=6.1
108
N adj.=13.4
116
N adj.=15.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

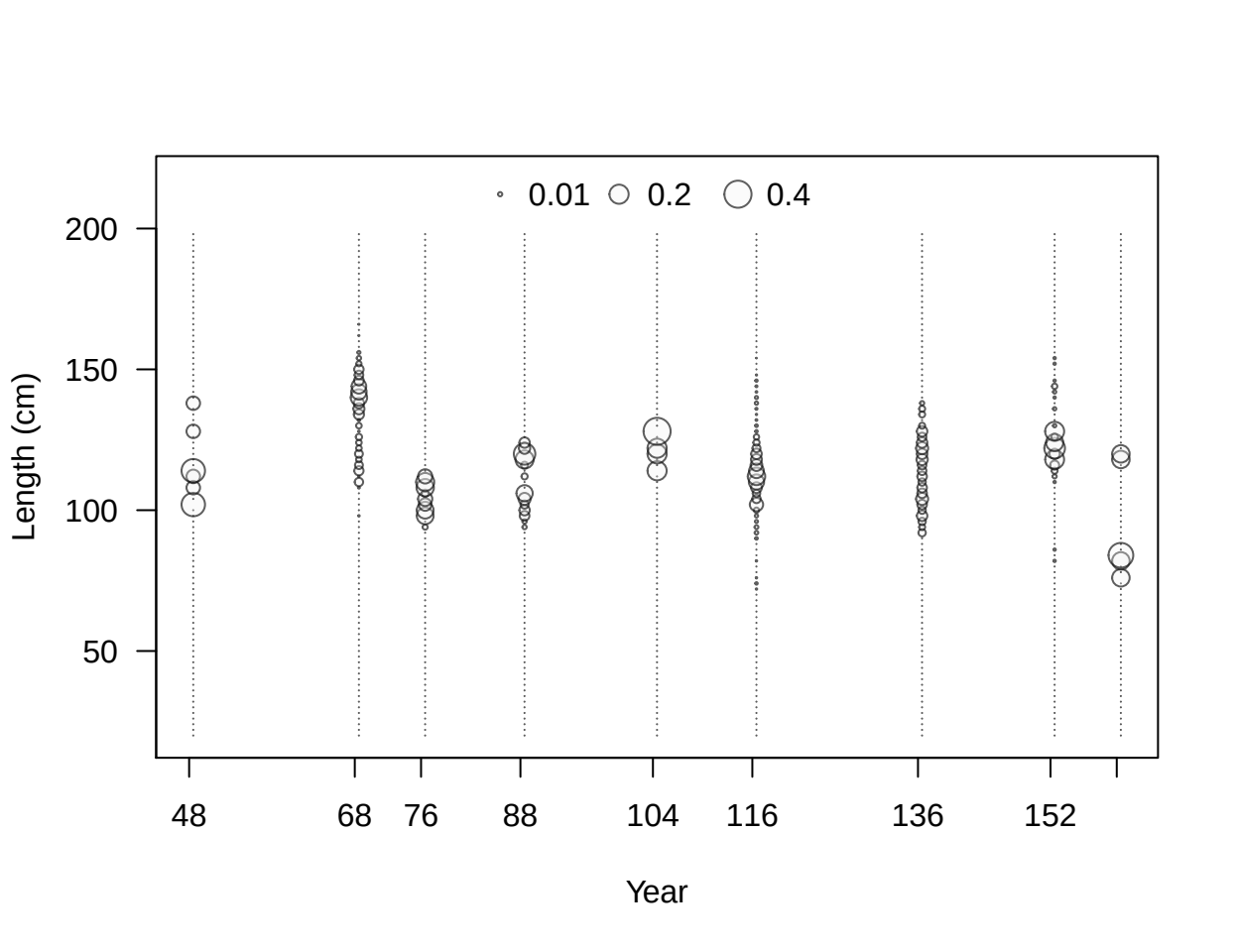

117
N adj.=13.2
125
N adj.=1.3
133
N adj.=11.5
141
N adj.=13.5
120
N adj.=22.5
128
N adj.=5.5
136
N adj.=2.9
148
N adj.=3.6
121
N adj.=7.8
129
N adj.=2.8
137
N adj.=13.4
149
N adj.=9.6
124
N adj.=1.3
132
N adj.=24.2
140
N adj.=25.4
152
N adj.=4.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

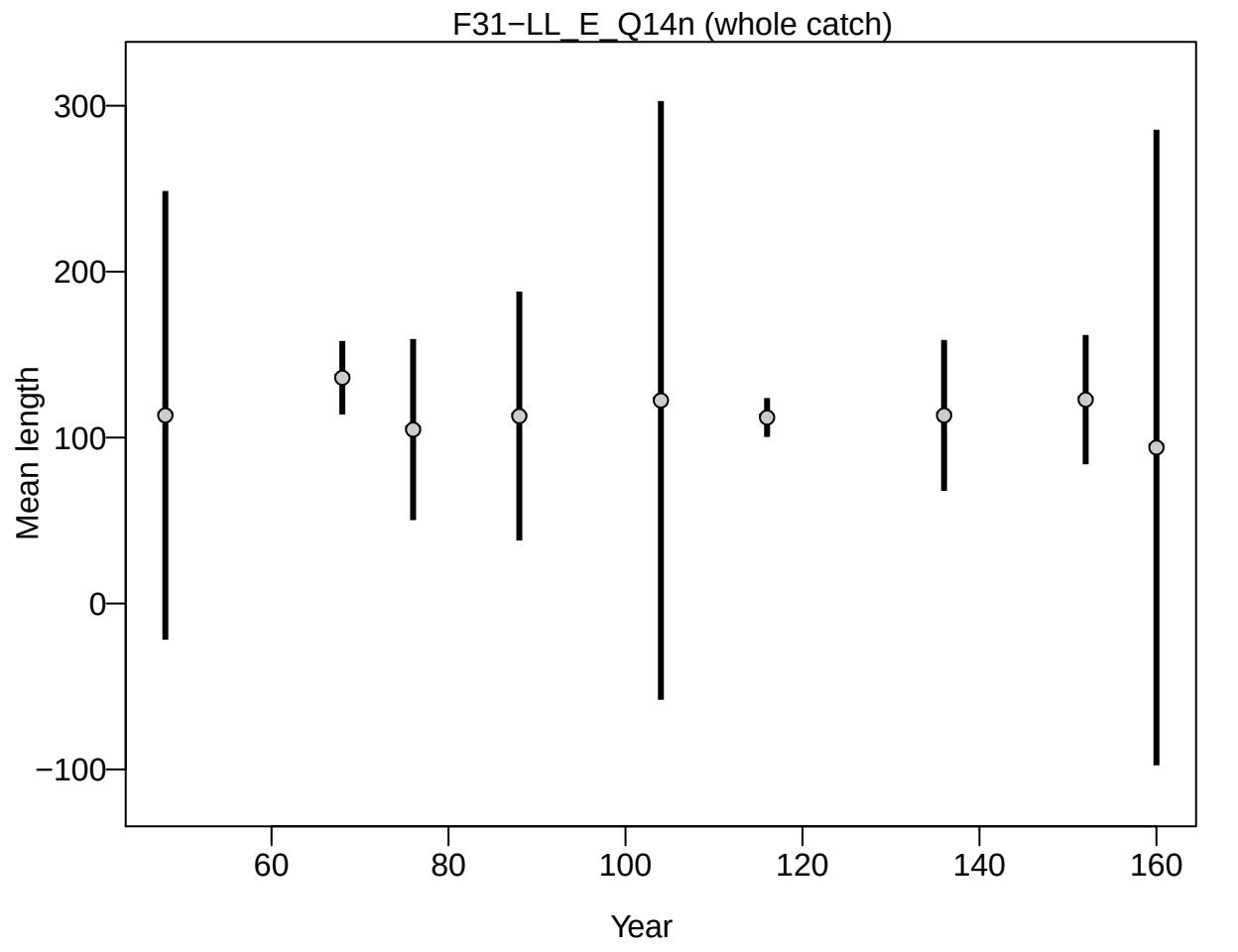

153
N adj.=8.6
161
N adj.=1.8
169
N adj.=0.8
156
N adj.=7.3
164
N adj.=1.9
172
N adj.=6
157
N adj.=4.7
165
N adj.=0.5
173
N adj.=1.5
160
N adj.=2
168
N adj.=4.3
176
N adj.=7.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

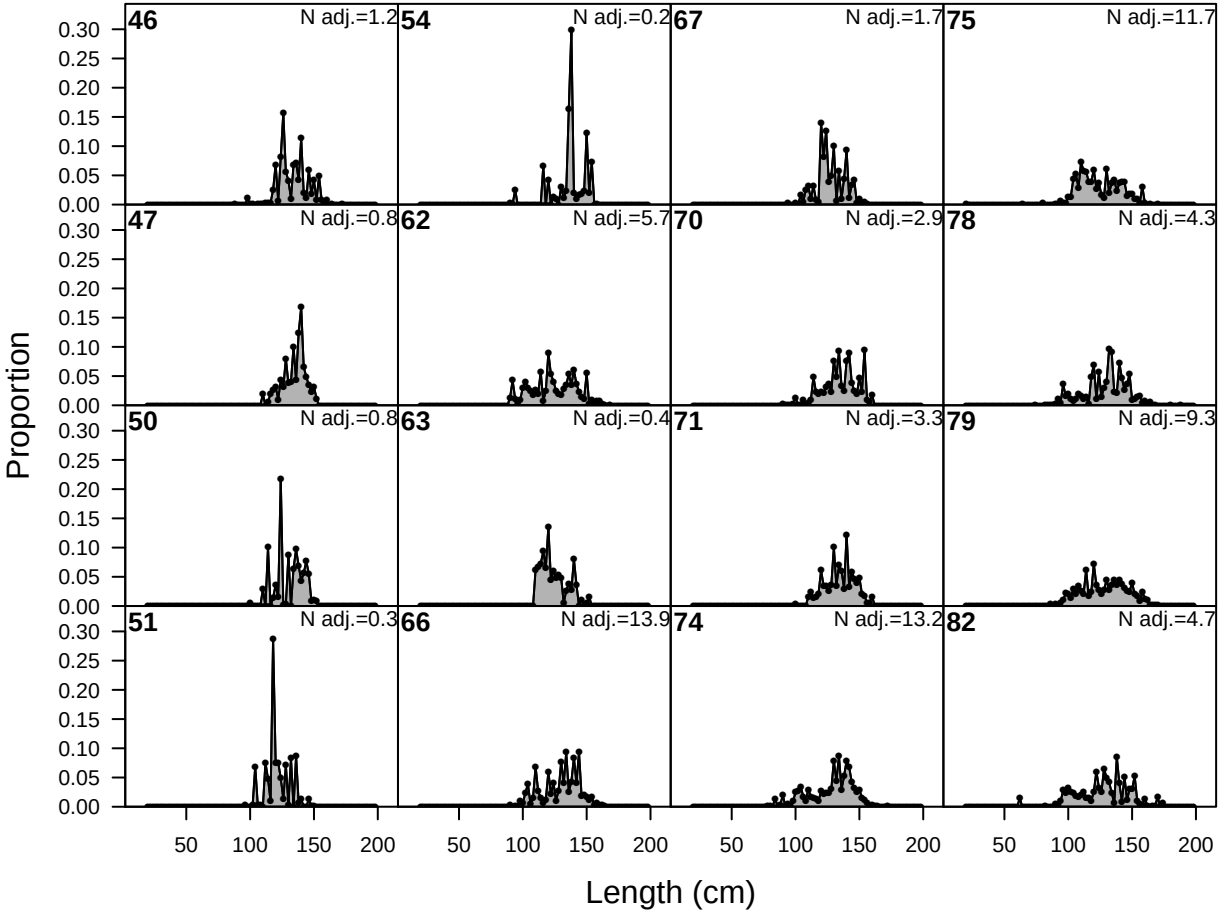

0.01
0.2
0.4
200
150
100
50
Length (cm)
45
56
65
76
85
96
108
120
132
148
160
172
Year

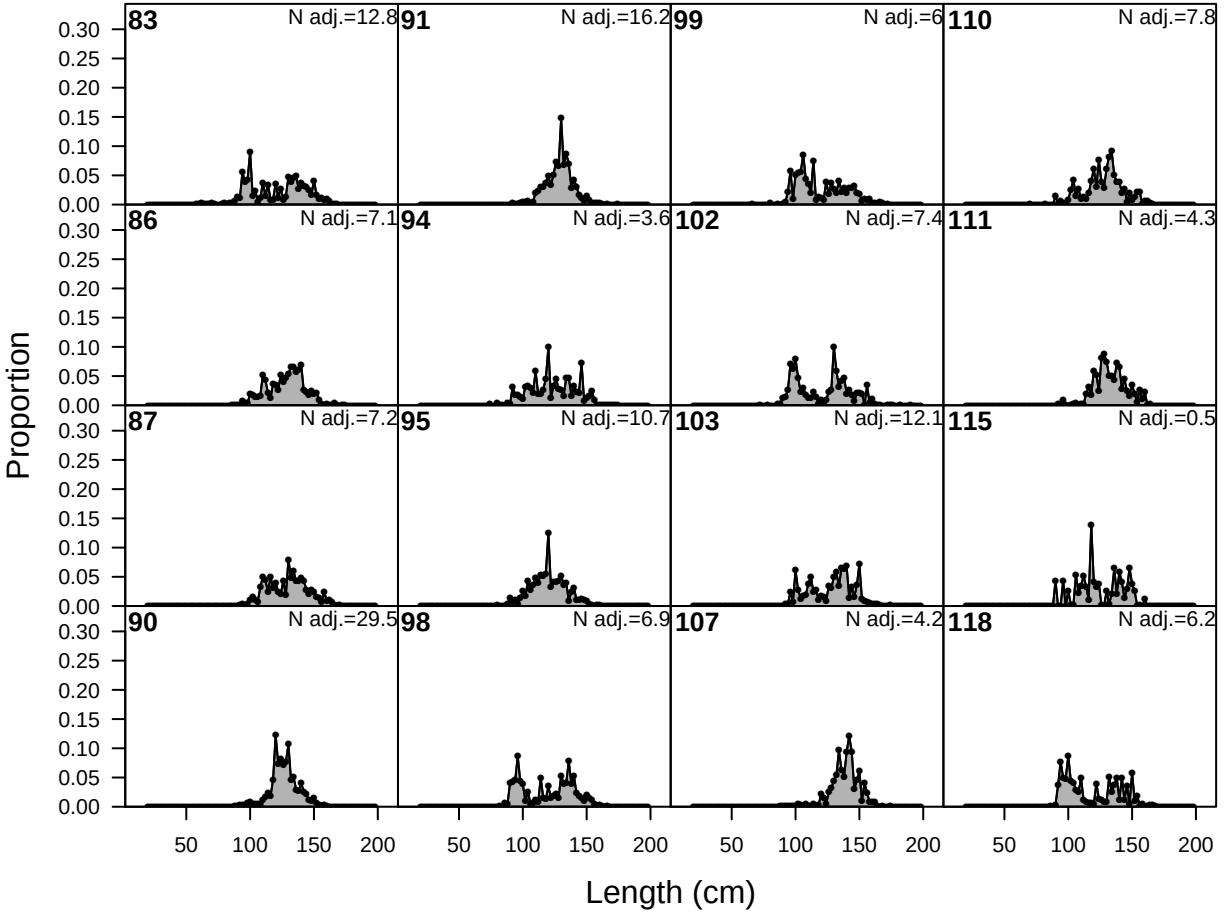

F30−LL_C_Q14n (whole catch)
Mean length
200
150
100
50
40
60
80
100
120
140
160
180
Year

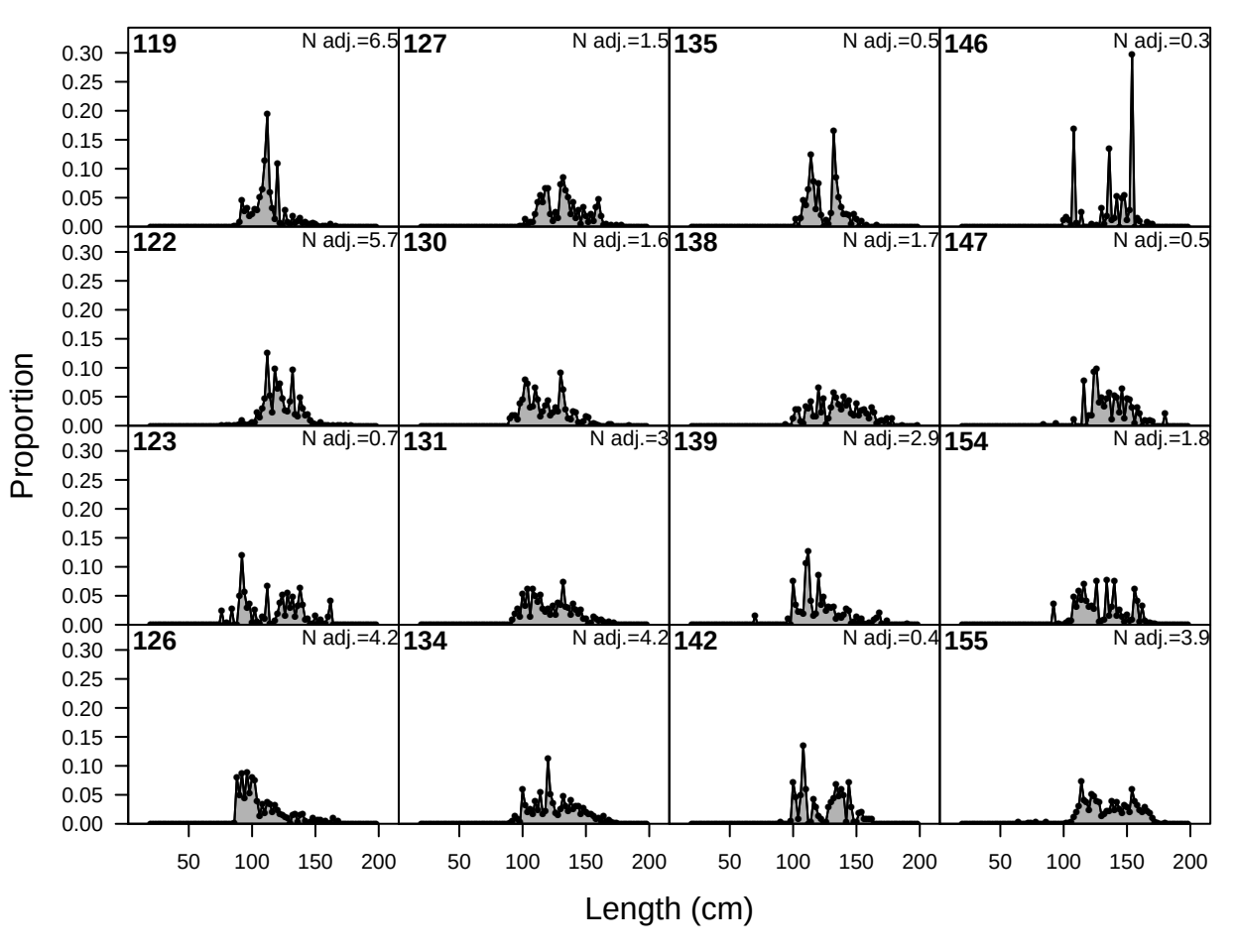

48
N adj.=0.1
104
N adj.=0.1
160
N adj.=0.1
68
N adj.=4.6
116
N adj.=16.9
76
N adj.=0.7
136
N adj.=1.1
88
N adj.=0.4
152
N adj.=1.2
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Proportion
Length (cm)

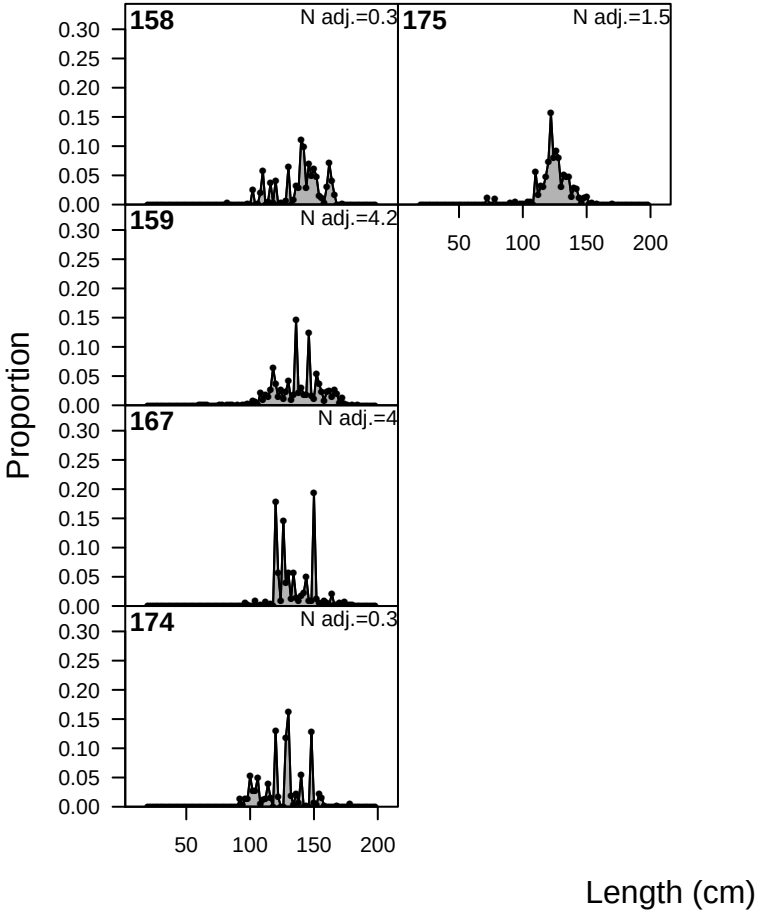

0.01
0.2
0.4
200
150
100
50
Length (cm)
48
68
76
88
104
116
136
152
Year

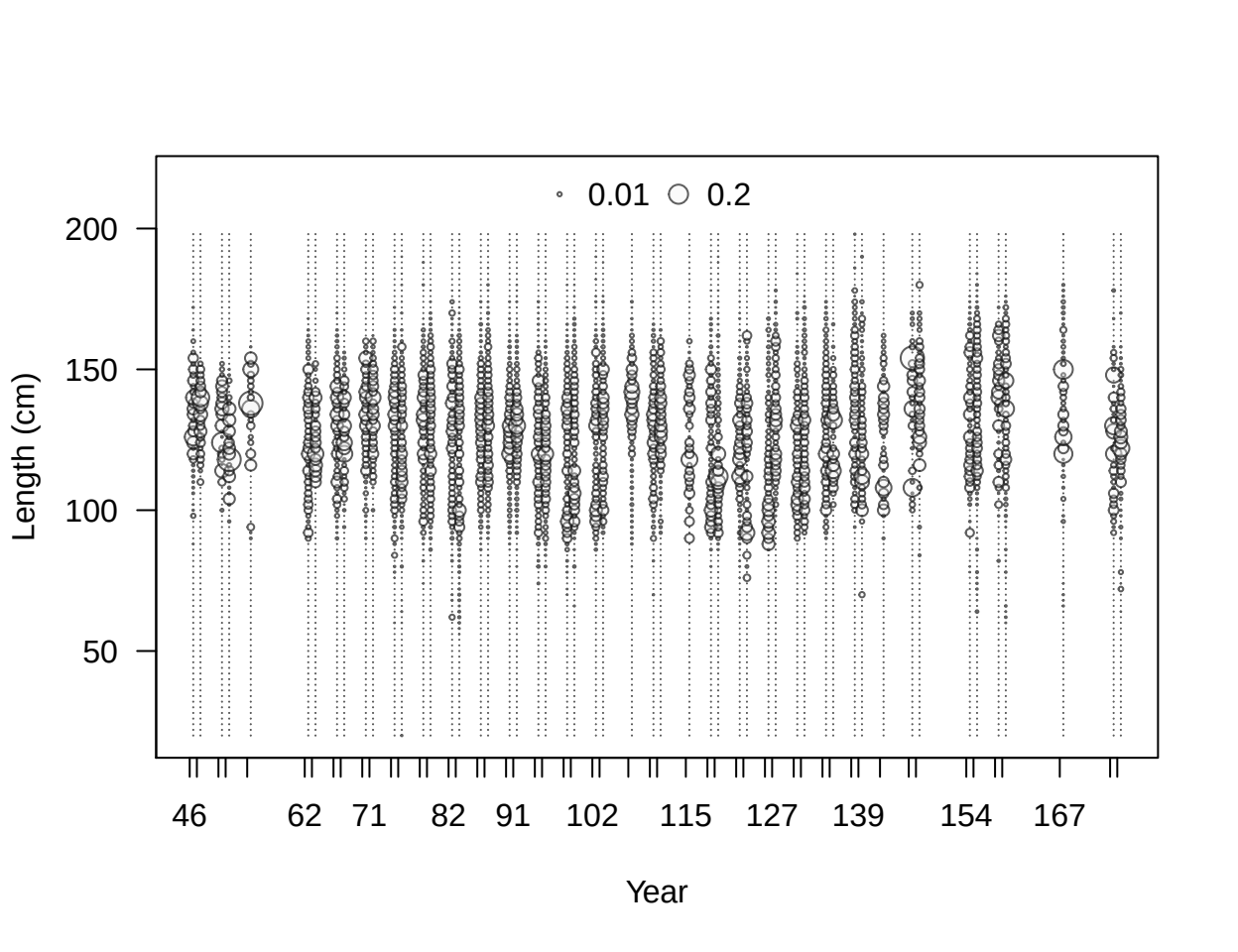

F31−LL_E_Q14n (whole catch)
300
200
100
0
−100
Mean length
60
80
100
120
140
160
Year

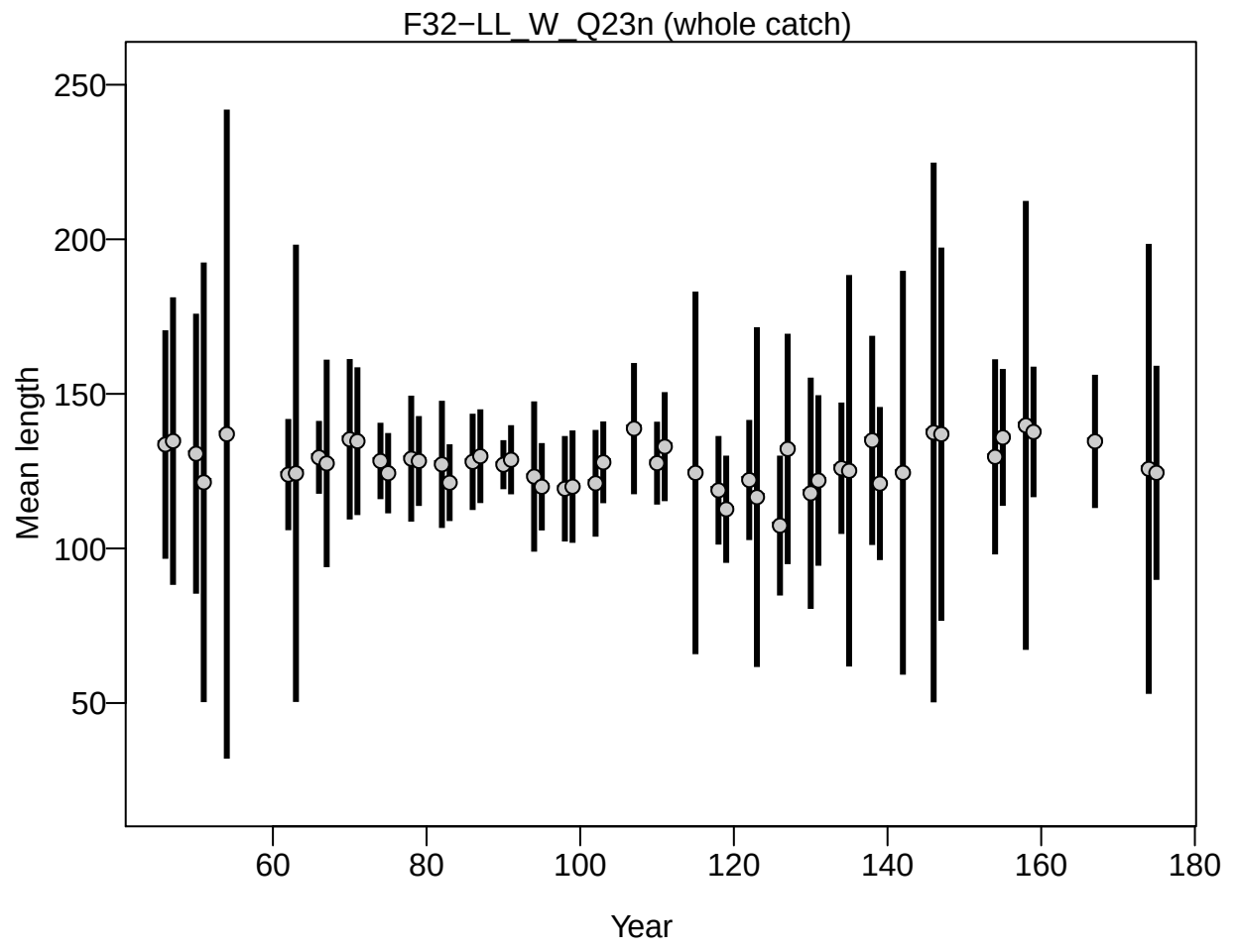

46
N adj.=1.2
54
N adj.=0.2
67
N adj.=1.7
75
N adj.=11.7
47
N adj.=0.8
62
N adj.=5.7
70
N adj.=2.9
78
N adj.=4.3
50
N adj.=0.8
63
N adj.=0.4
71
N adj.=3.3
79
N adj.=9.3
51
N adj.=0.3
66
N adj.=13.9
74
N adj.=13.2
82
N adj.=4.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

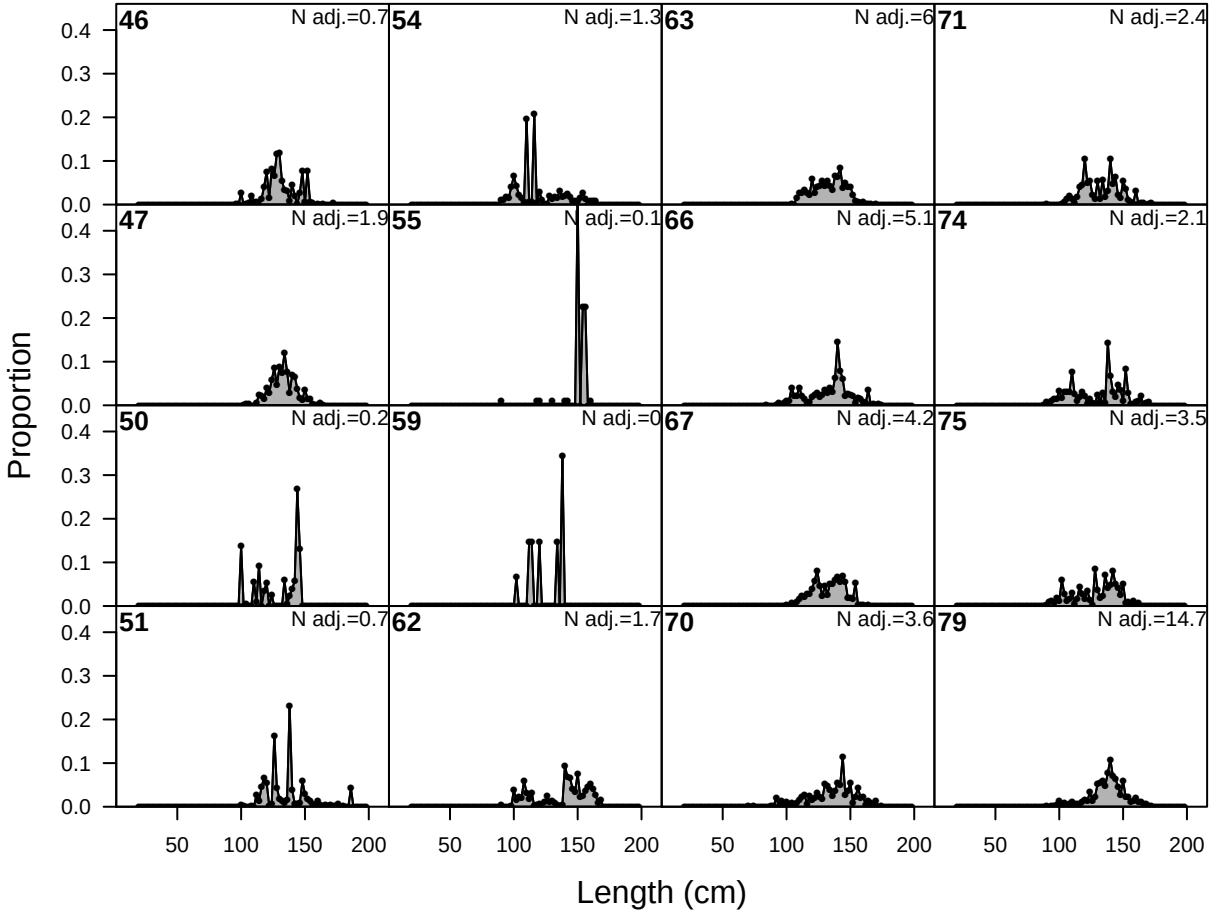

83
N adj.=12.8
91
N adj.=16.2
99
N adj.=6
110
N adj.=7.8
86
N adj.=7.1
94
N adj.=3.6
102
N adj.=7.4
111
N adj.=4.3
87
N adj.=7.2
95
N adj.=10.7
103
N adj.=12.1
115
N adj.=0.5
90
N adj.=29.5
98
N adj.=6.9
107
N adj.=4.2
118
N adj.=6.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

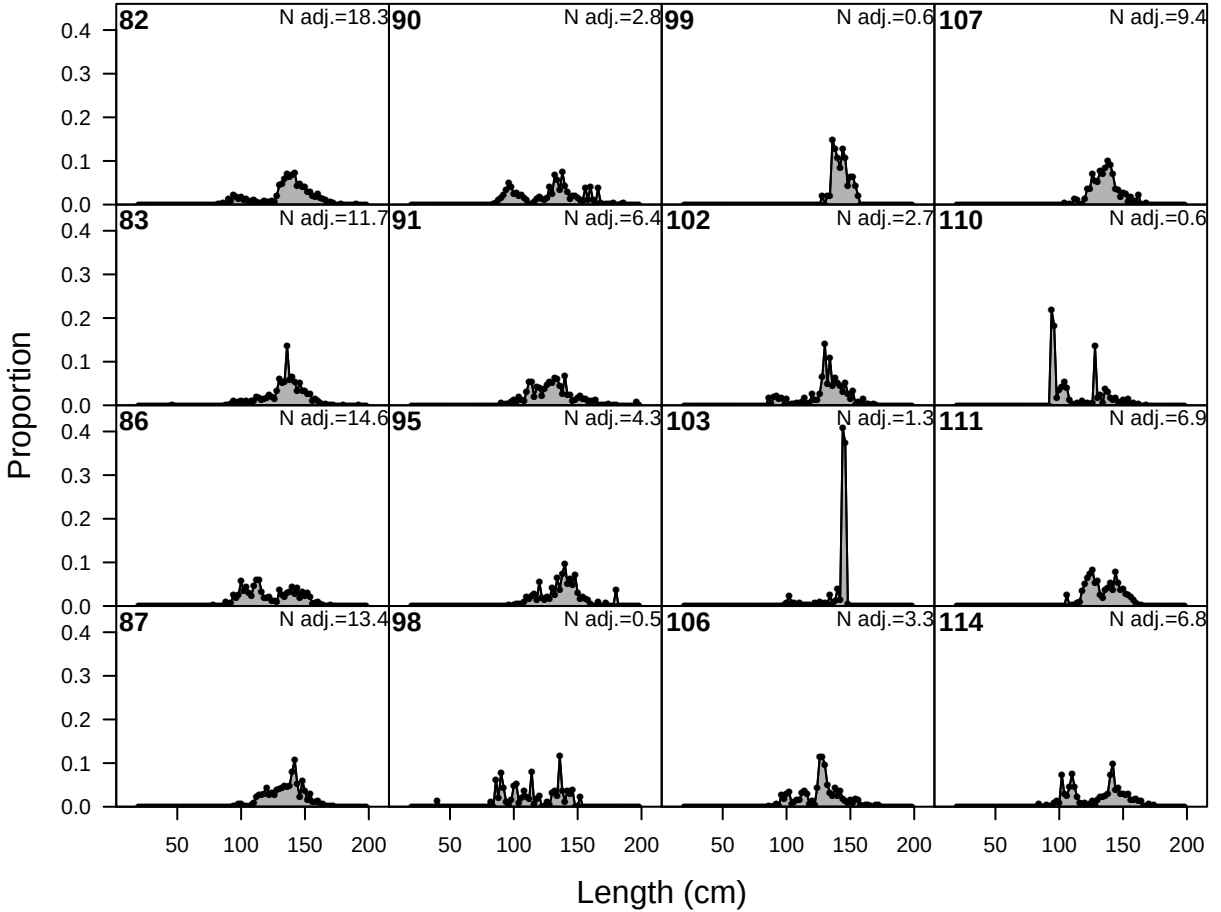

119
N adj.=6.5
127
N adj.=1.5
135
N adj.=0.5
146
N adj.=0.3
122
N adj.=5.7
130
N adj.=1.6
138
N adj.=1.7
147
N adj.=0.5
123
N adj.=0.7
131
N adj.=3
139
N adj.=2.9
154
N adj.=1.8
126
N adj.=4.2
134
N adj.=4.2
142
N adj.=0.4
155
N adj.=3.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

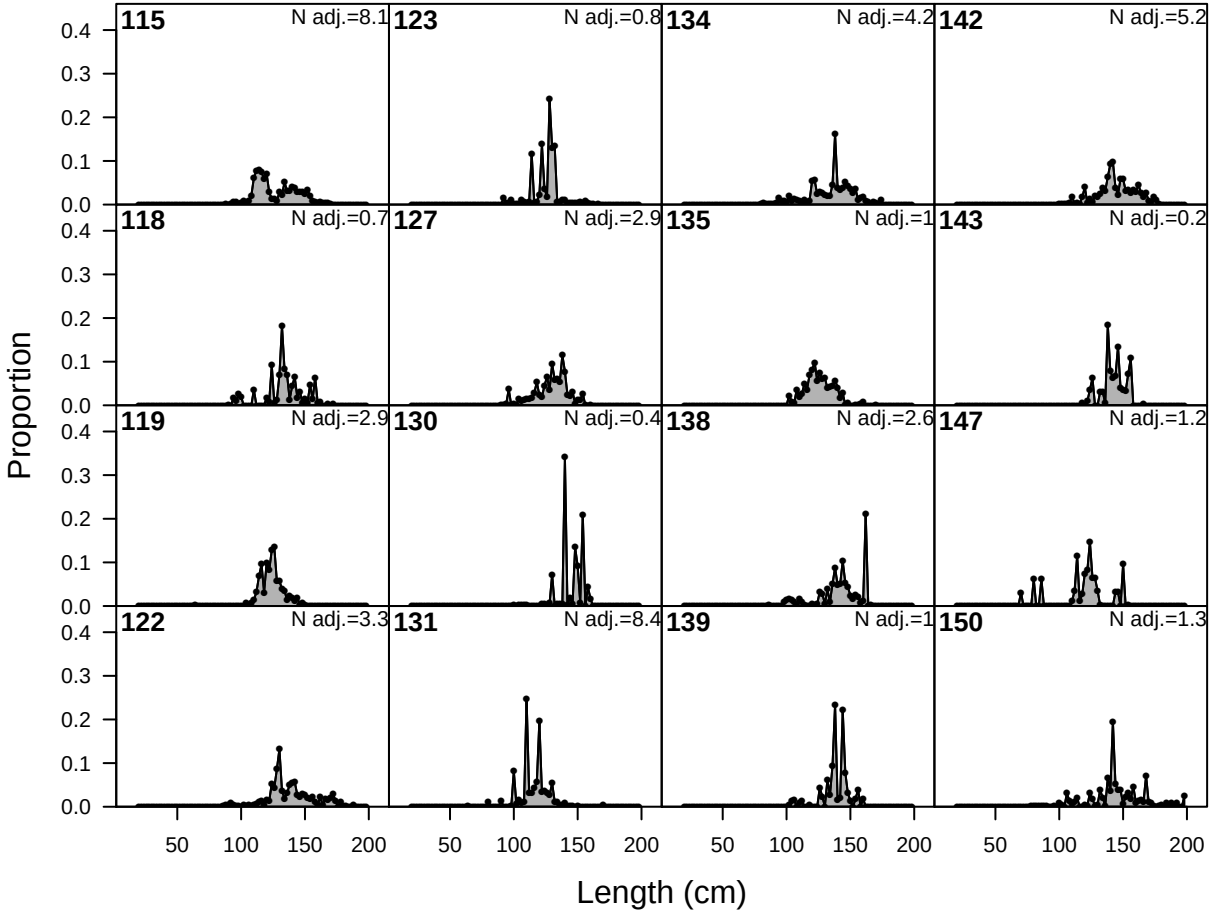

158
N adj.=0.3
175
N adj.=1.5
159
N adj.=4.2
167
N adj.=4
174
N adj.=0.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

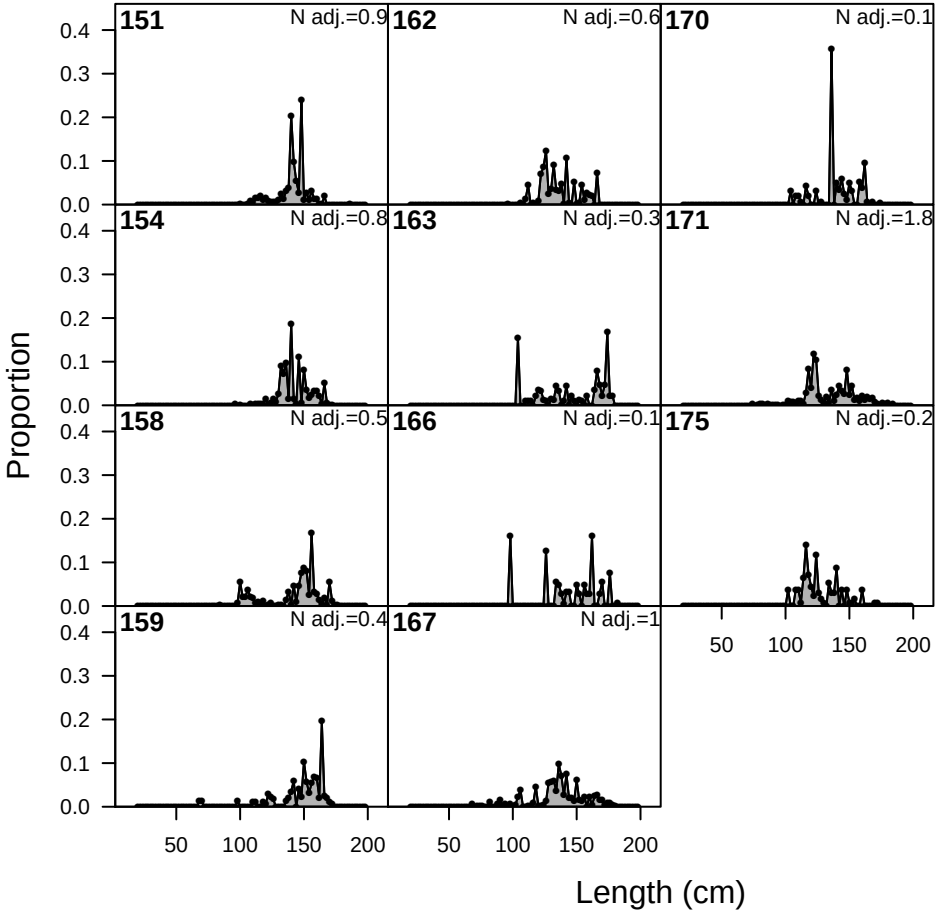

0.01
0.2
200
150
100
50
Length (cm)
46
62
71
82
91
102
115
127
139
154
167
Year

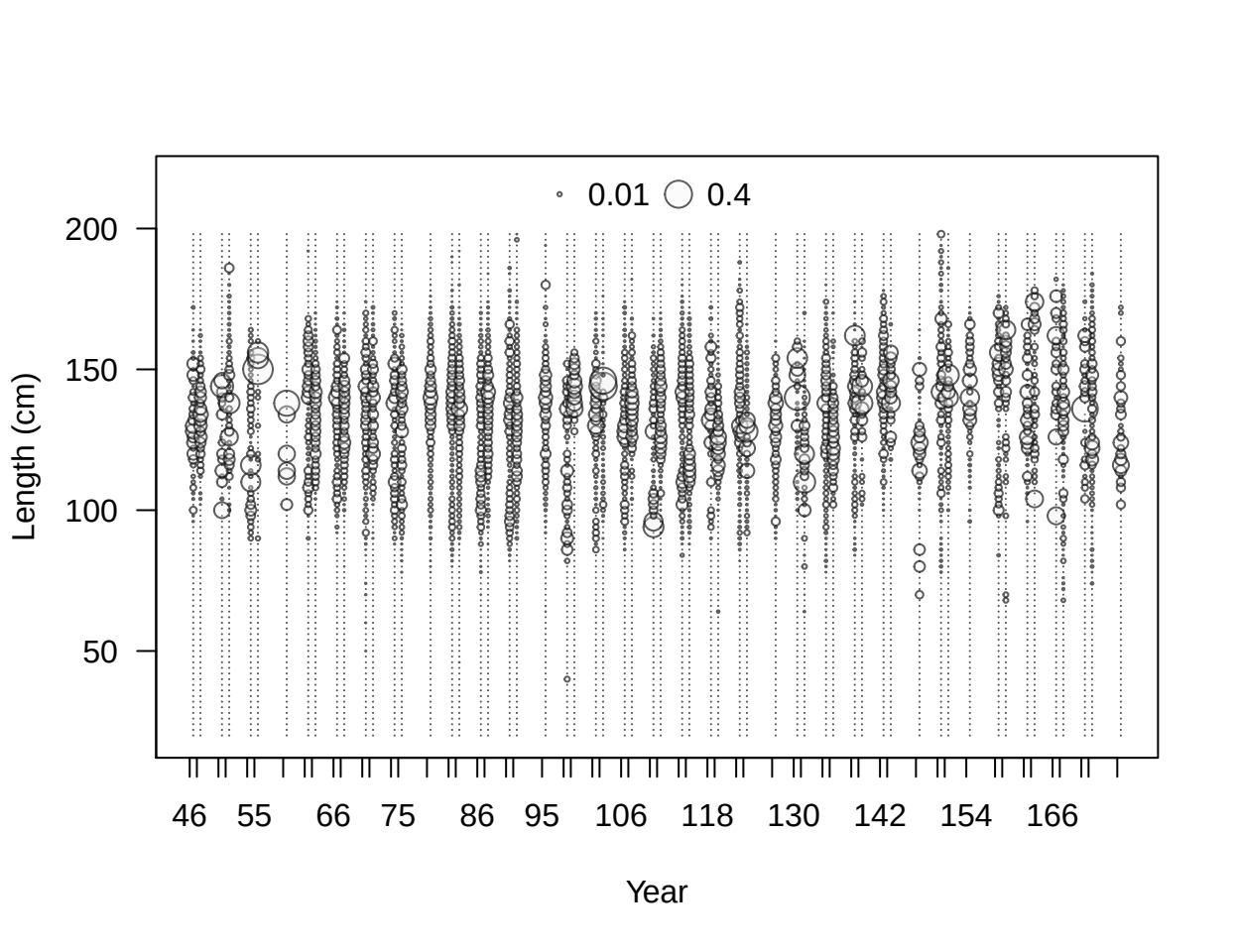

F32−LL_W_Q23n (whole catch)
Mean length
250
200
150
100
50
60
80
100
120
140
160
180
Year

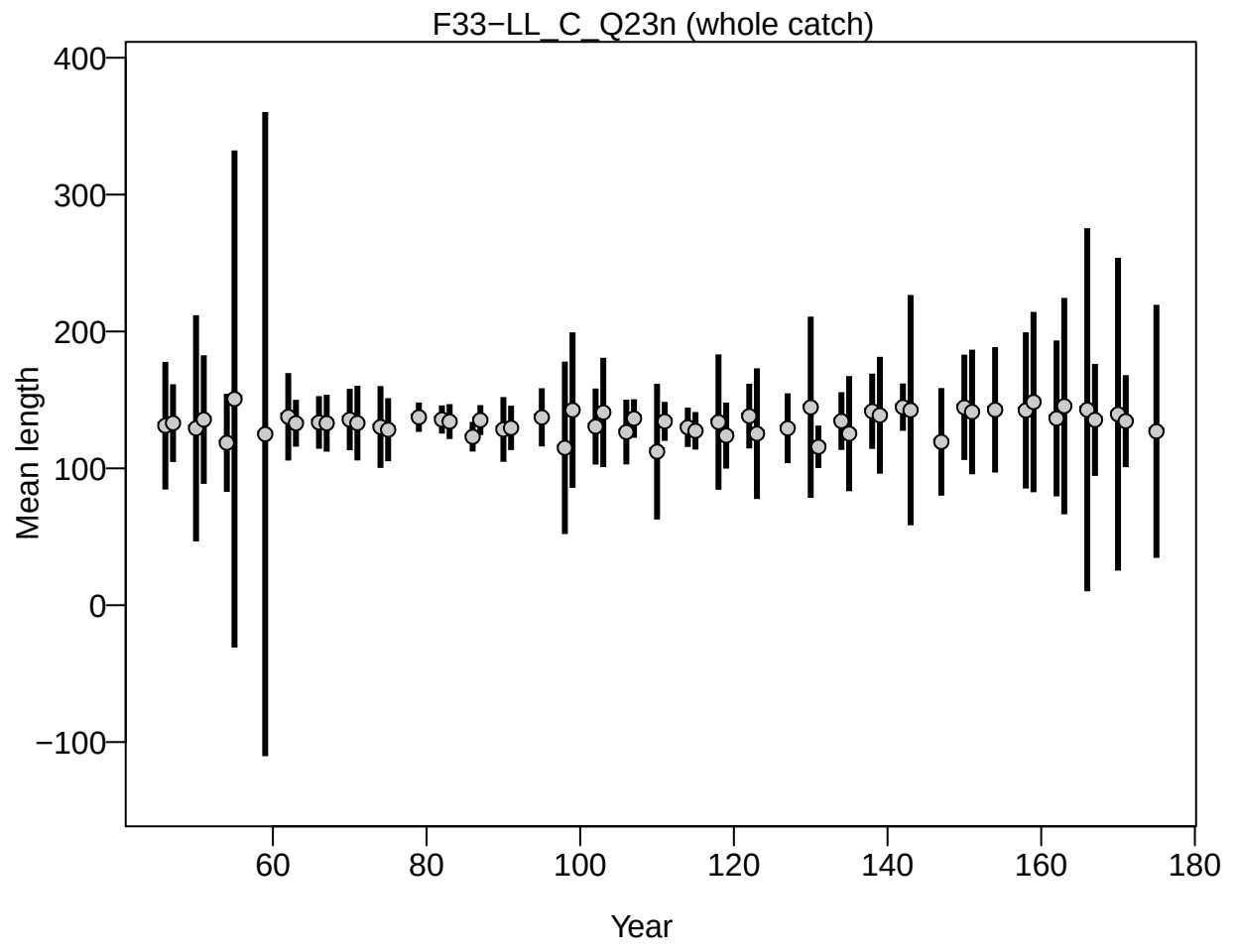

46
N adj.=0.7
54
N adj.=1.3
63
N adj.=6
71
N adj.=2.4
47
N adj.=1.9
55
N adj.=0.1
66
N adj.=5.1
74
N adj.=2.1
50
N adj.=0.2
59
N adj.=0
67
N adj.=4.2
75
N adj.=3.5
51
N adj.=0.7
62
N adj.=1.7
70
N adj.=3.6
79
N adj.=14.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

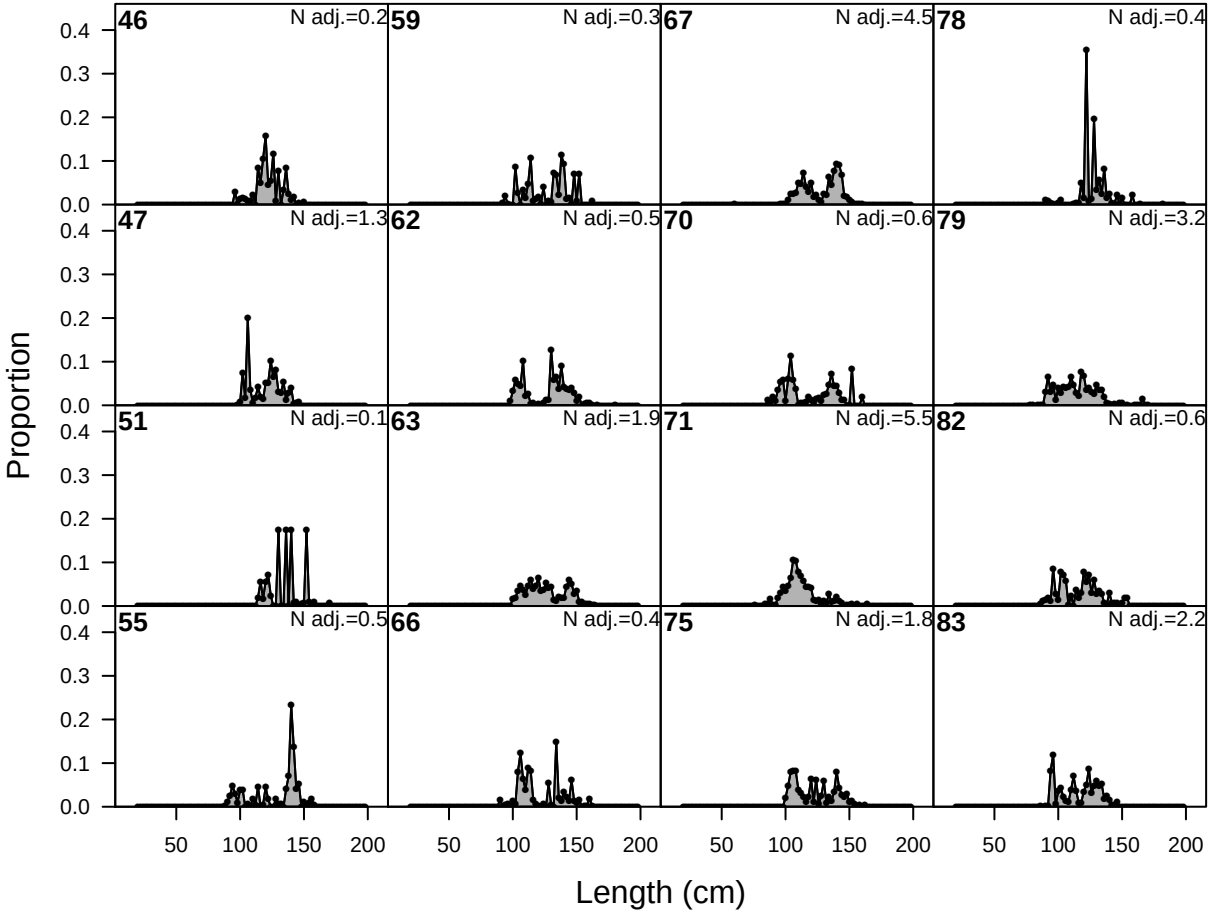

82
N adj.=18.3
90
N adj.=2.8
99
N adj.=0.6
107
N adj.=9.4
83
N adj.=11.7
91
N adj.=6.4
102
N adj.=2.7
110
N adj.=0.6
86
N adj.=14.6
95
N adj.=4.3
103
N adj.=1.3
111
N adj.=6.9
87
N adj.=13.4
98
N adj.=0.5
106
N adj.=3.3
114
N adj.=6.8
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

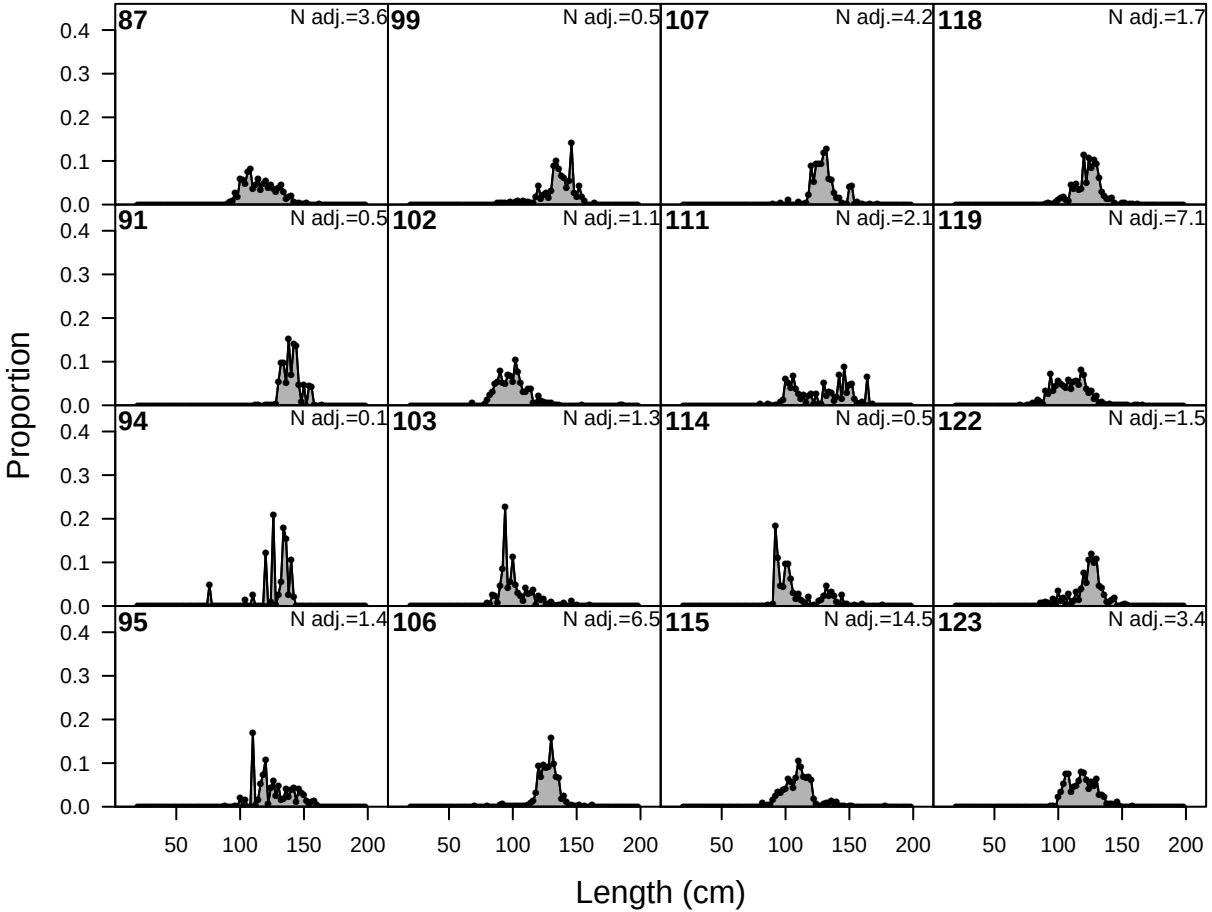

115
N adj.=8.1
123
N adj.=0.8
134
N adj.=4.2
142
N adj.=5.2
118
N adj.=0.7
127
N adj.=2.9
135
N adj.=1
143
N adj.=0.2
119
N adj.=2.9
130
N adj.=0.4
138
N adj.=2.6
147
N adj.=1.2
122
N adj.=3.3
131
N adj.=8.4
139
N adj.=1
150
N adj.=1.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

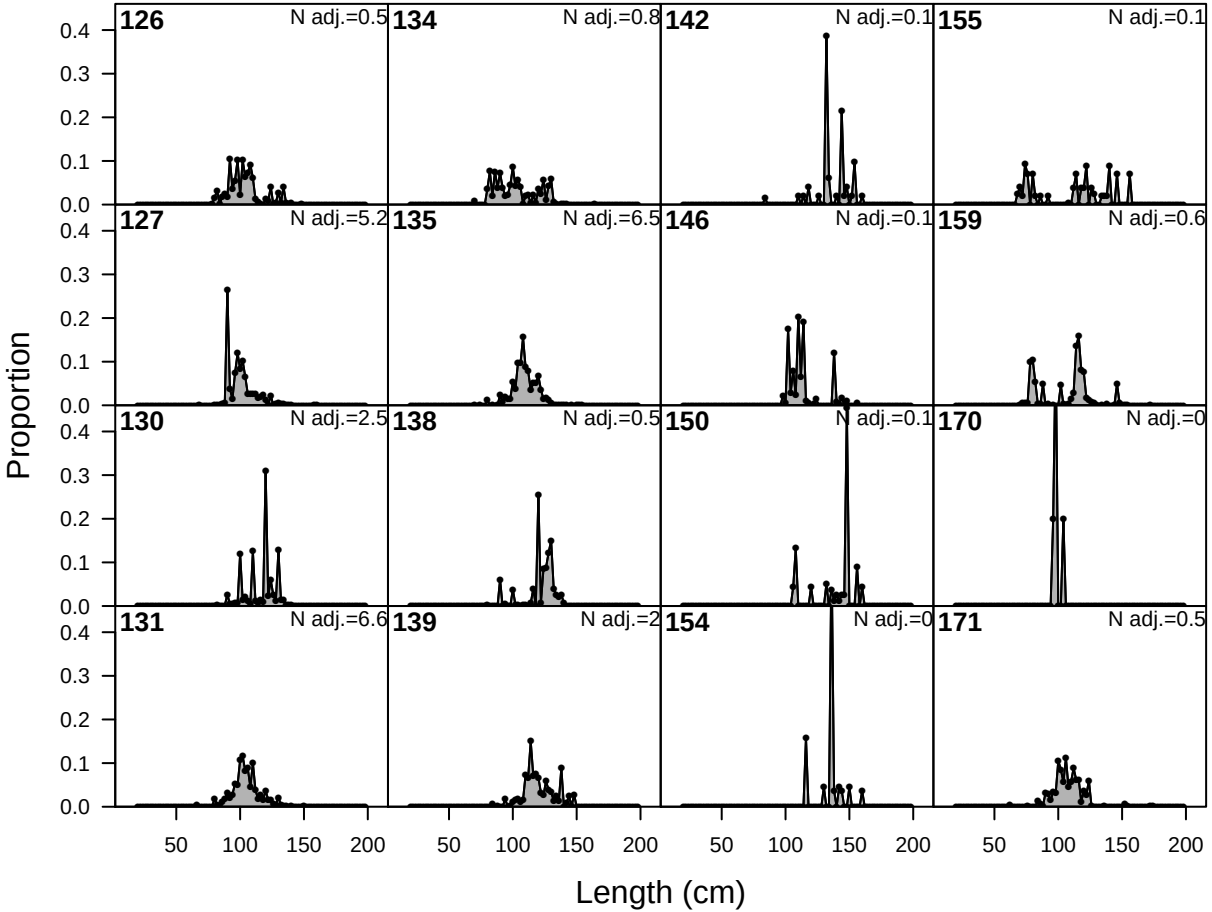

151
N adj.=0.9
162
N adj.=0.6
170
N adj.=0.1
154
N adj.=0.8
163
N adj.=0.3
171
N adj.=1.8
158
N adj.=0.5
166
N adj.=0.1
175
N adj.=0.2
159
N adj.=0.4
167
N adj.=1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

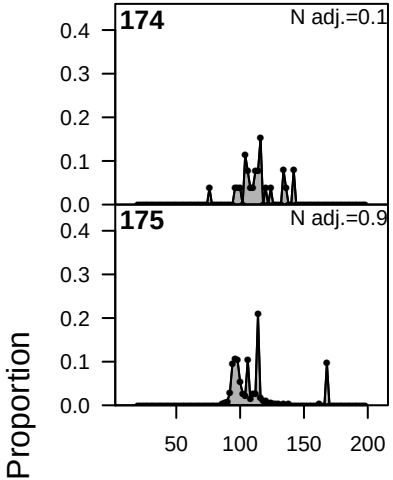

0.01
0.4
200
150
100
50
Length (cm)
46
55
66
75
86
95
106
118
130
142
154
166
Year

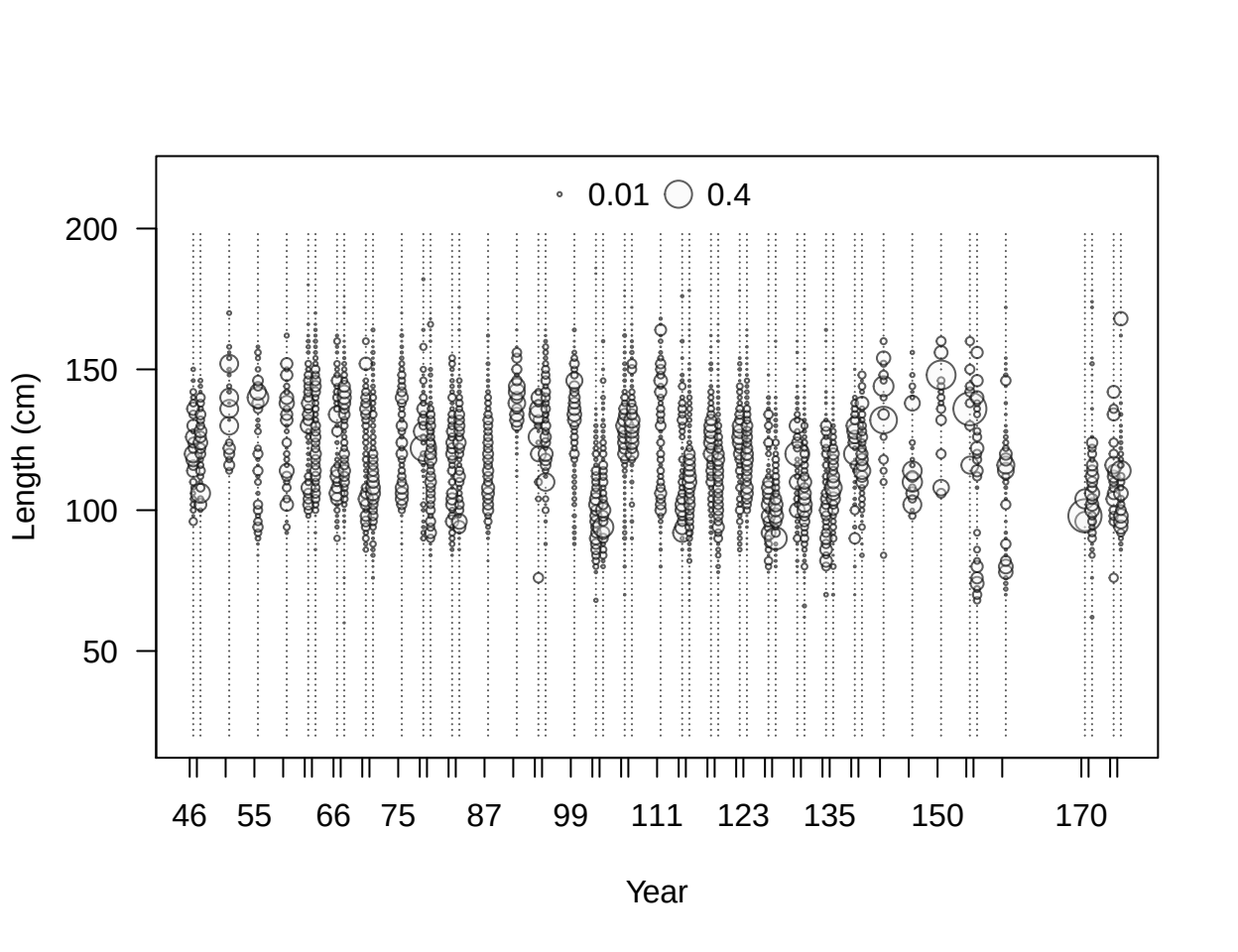

F33−LL_C_Q23n (whole catch)
400
300
200
100
0
−100
Mean length
60
80
100
120
140
160
180
Year

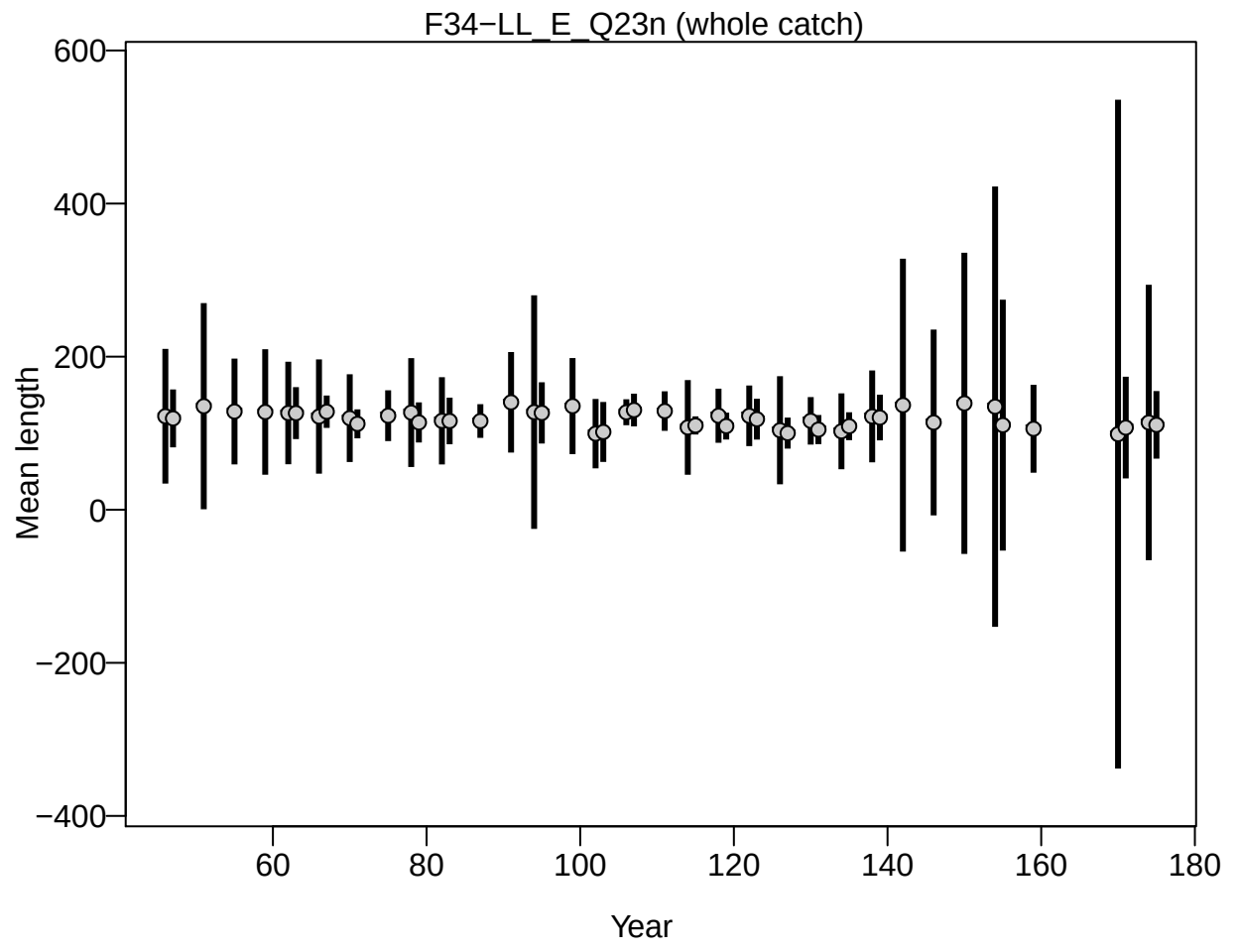

46
N adj.=0.2
59
N adj.=0.3
67
N adj.=4.5
78
N adj.=0.4
47
N adj.=1.3
62
N adj.=0.5
70
N adj.=0.6
79
N adj.=3.2
51
N adj.=0.1
63
N adj.=1.9
71
N adj.=5.5
82
N adj.=0.6
55
N adj.=0.5
66
N adj.=0.4
75
N adj.=1.8
83
N adj.=2.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

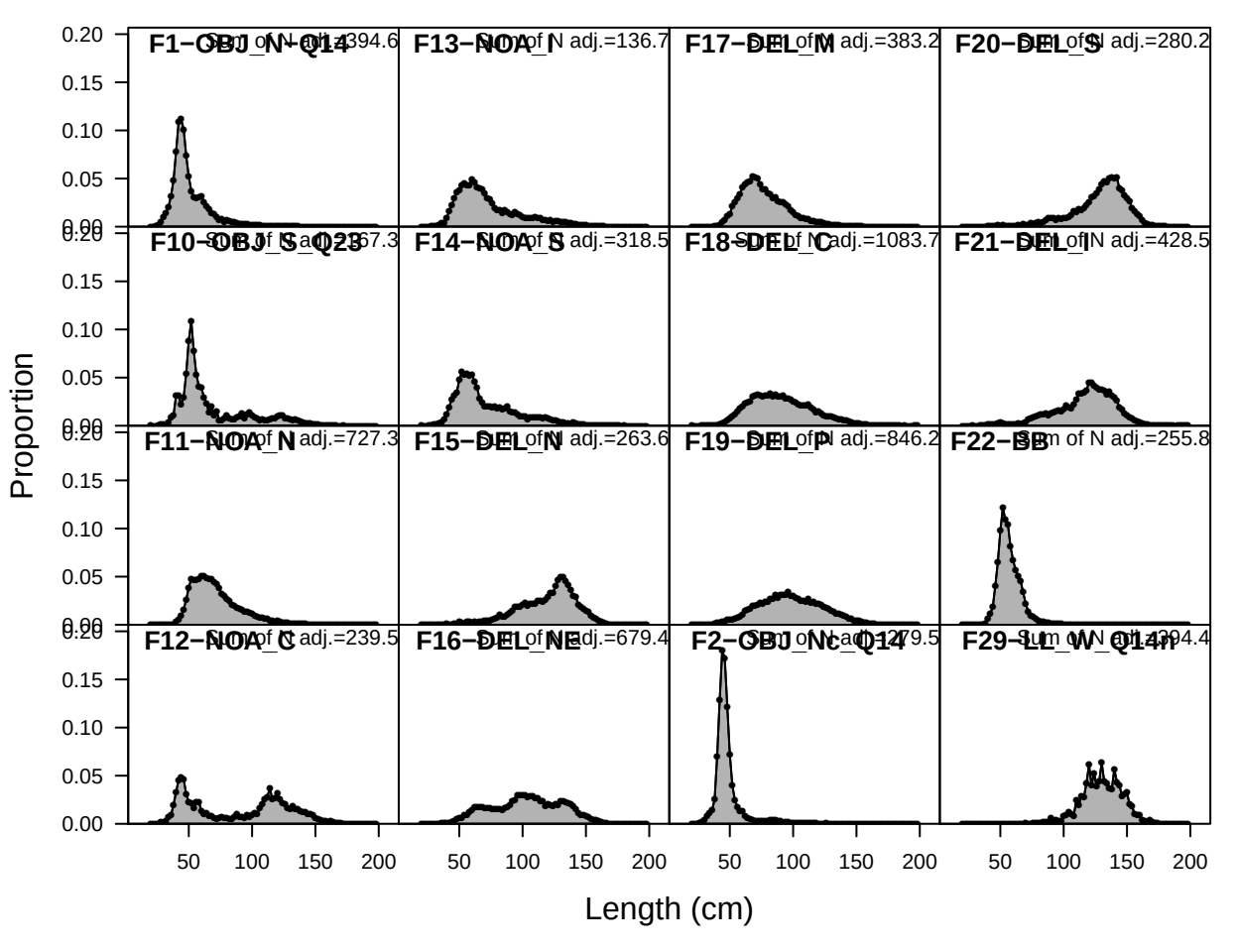

87
N adj.=3.6
99
N adj.=0.5
107
N adj.=4.2
118
N adj.=1.7
91
N adj.=0.5
102
N adj.=1.1
111
N adj.=2.1
119
N adj.=7.1
94
N adj.=0.1
103
N adj.=1.3
114
N adj.=0.5
122
N adj.=1.5
95
N adj.=1.4
106
N adj.=6.5
115
N adj.=14.5
123
N adj.=3.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

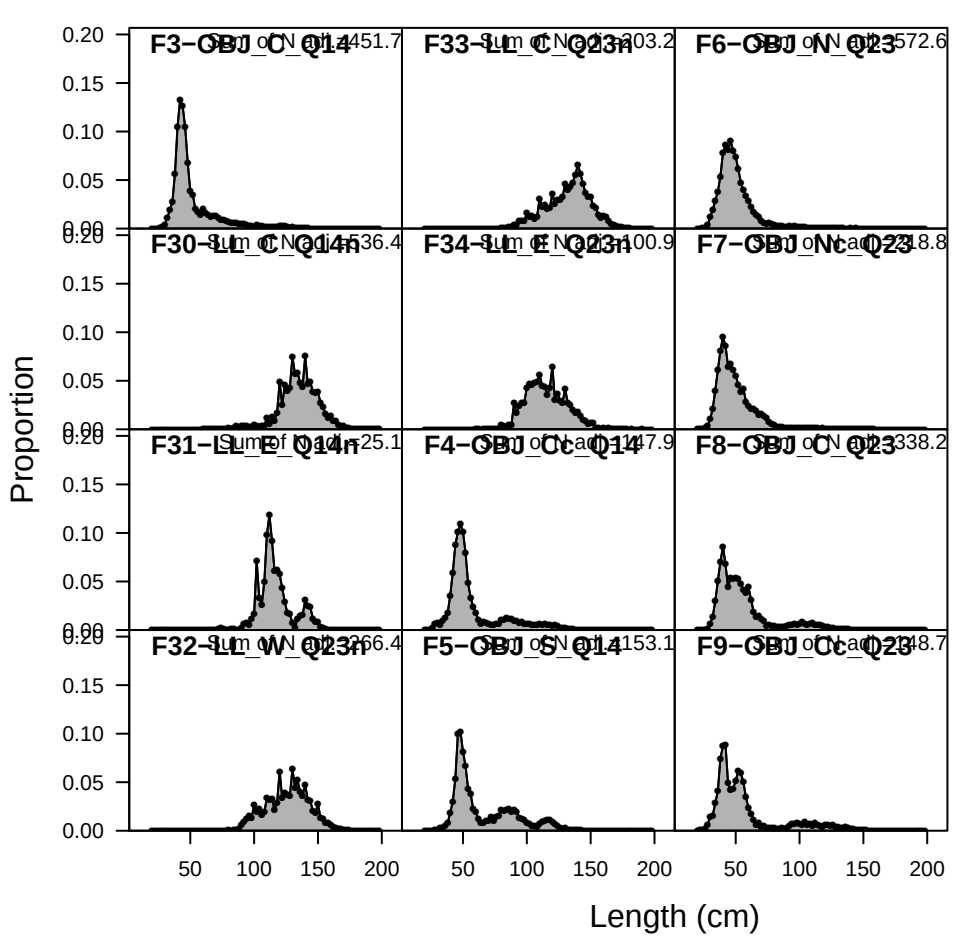

126
N adj.=0.5
134
N adj.=0.8
142
N adj.=0.1
155
N adj.=0.1
127
N adj.=5.2
135
N adj.=6.5
146
N adj.=0.1
159
N adj.=0.6
130
N adj.=2.5
138
N adj.=0.5
150
N adj.=0.1
170
N adj.=0
131
N adj.=6.6
139
N adj.=2
154
N adj.=0
171
N adj.=0.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

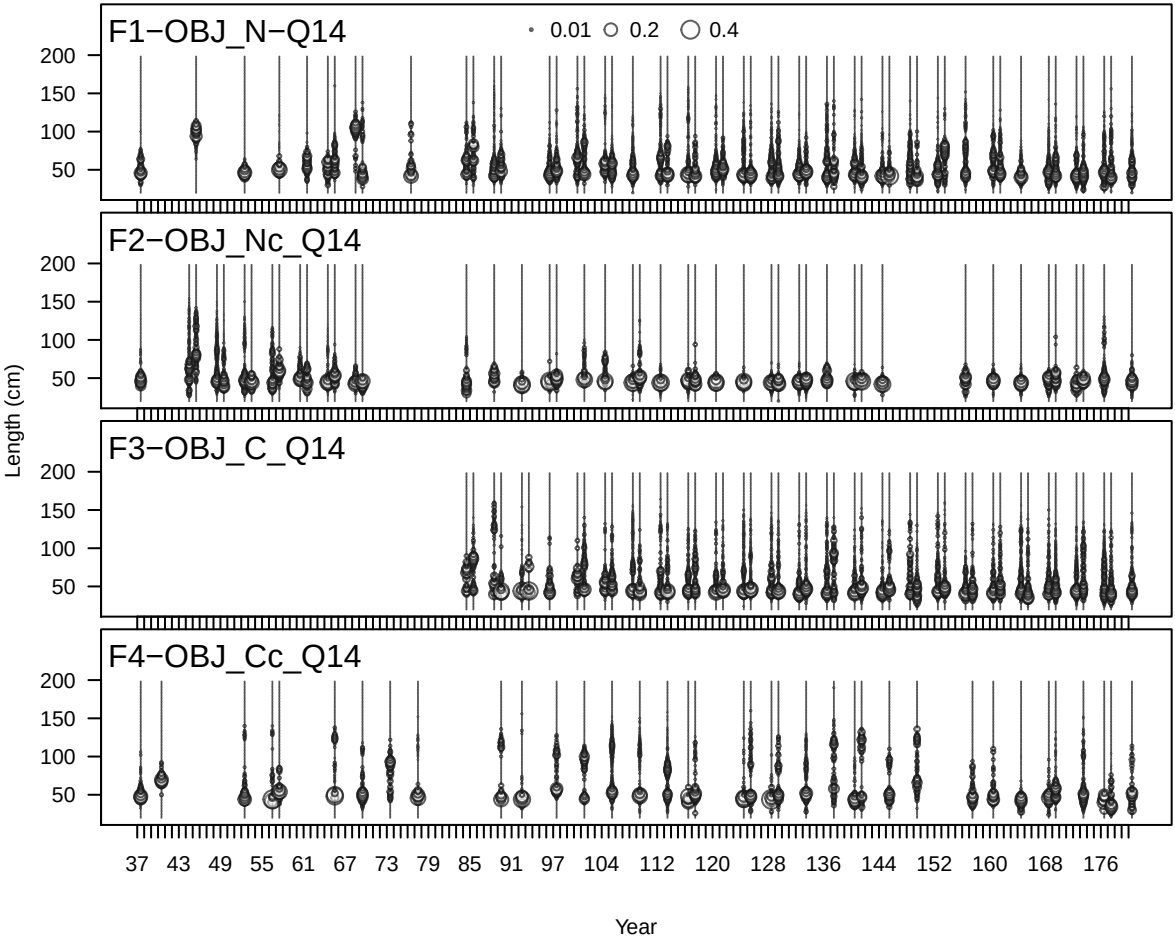

174
N adj.=0.1
175
N adj.=0.9
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Proportion
Length (cm)

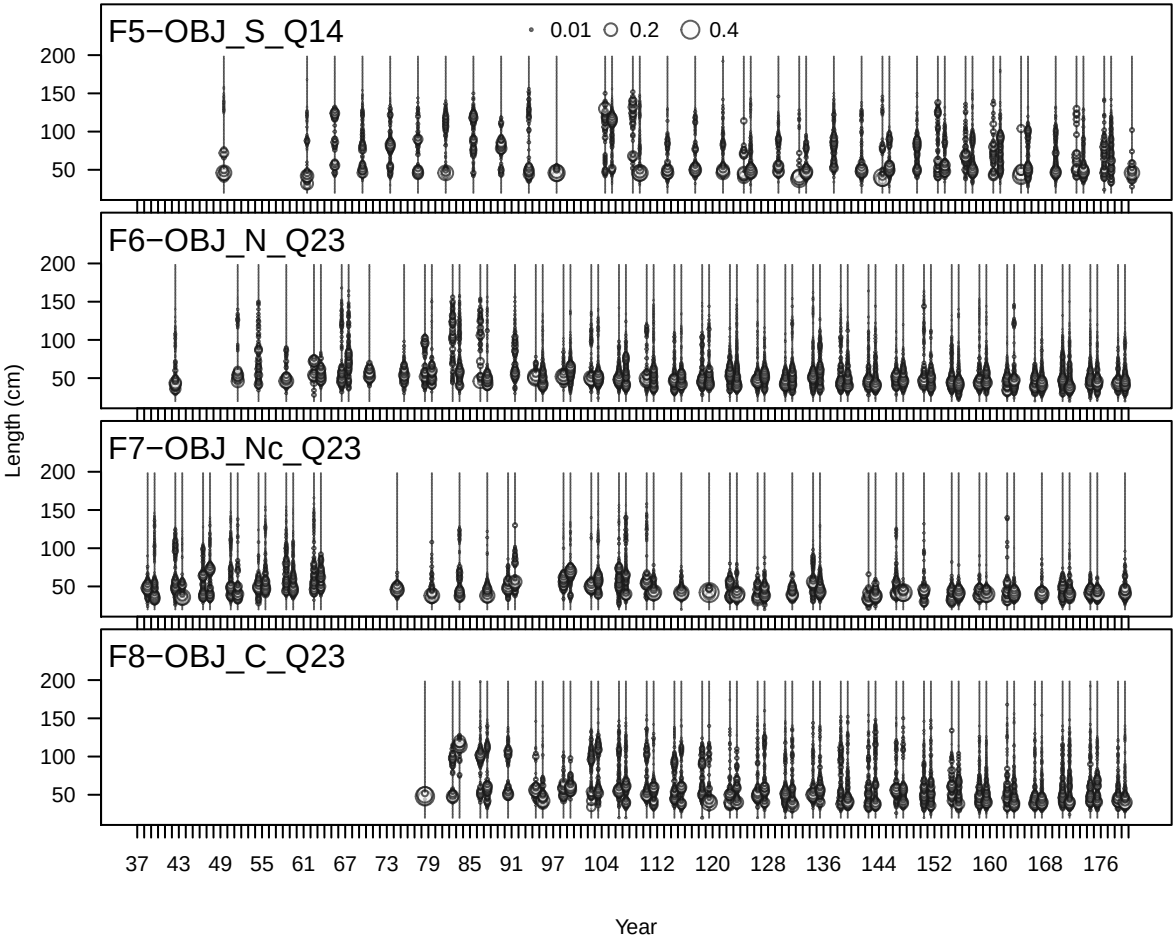

0.01
0.4
200
150
100
50
Length (cm)
46
55
66
75
87
99
111
123
135
150
170
Year

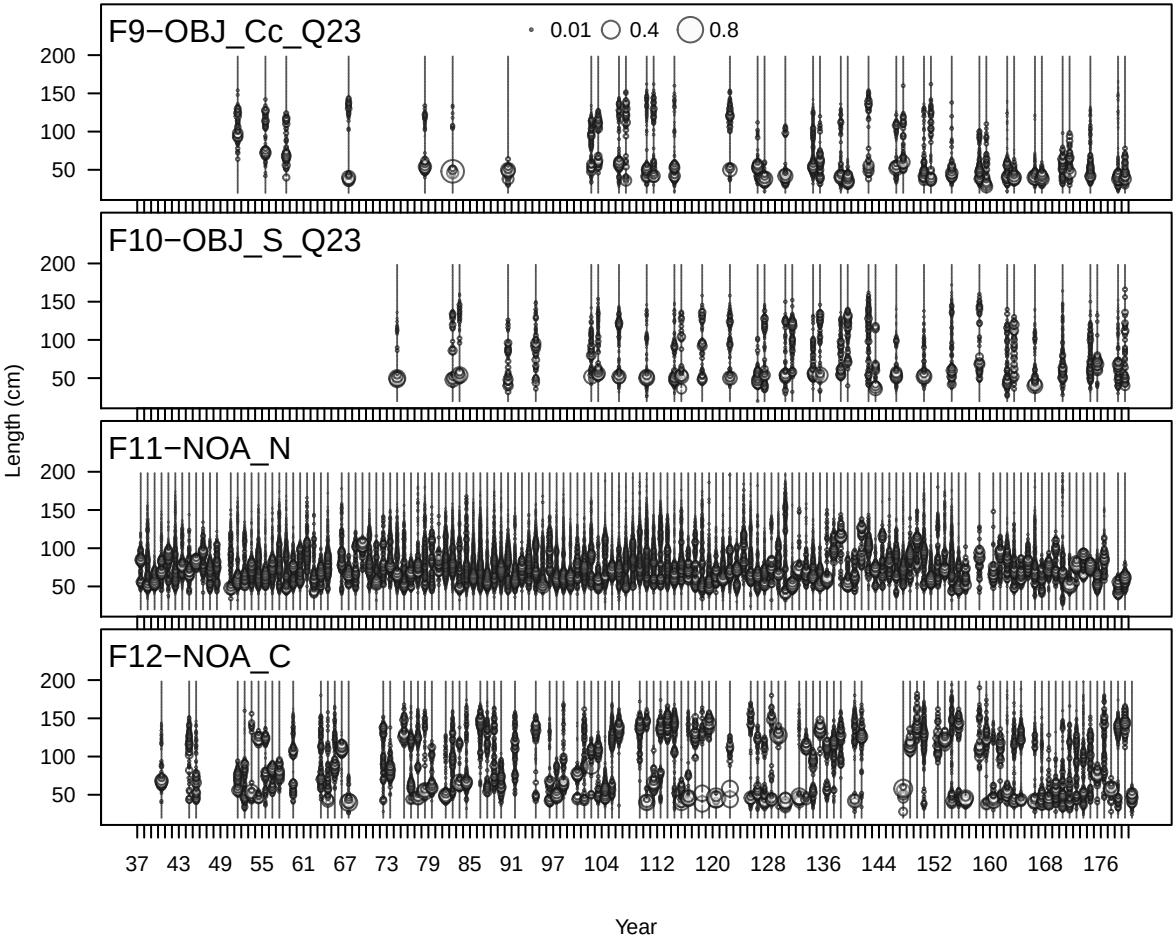

F34−LL_E_Q23n (whole catch)
600
400
200
0
−200
−400
Mean length
60
80
100
120
140
160
180
Year

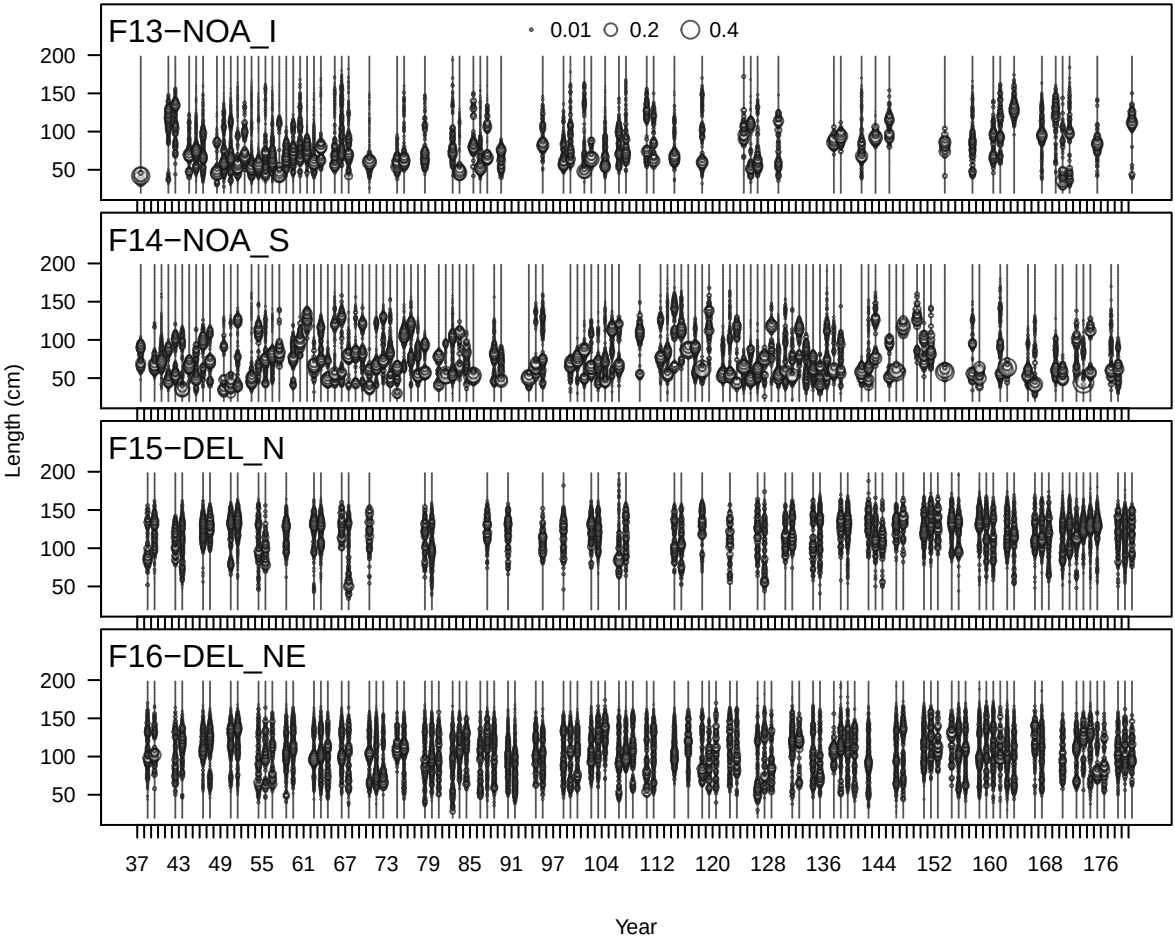

F1−OBJ_N_Q14
Sum of N adj.=394.6
F13−NOA_I
Sum of N adj.=136.7
F17−DEL_M
Sum of N adj.=383.2
F20−DEL_S
Sum of N adj.=280.2
F10−OBJ_S_Q23
Sum of N adj.=367.3
F14−NOA_S
Sum of N adj.=318.5
F18−DEL_C
Sum of N adj.=1083.7
F21−DEL_I
Sum of N adj.=428.5
F11−NOA_N
Sum of N adj.=727.3
F15−DEL_N
Sum of N adj.=263.6
F19−DEL_P
Sum of N adj.=846.2
F22−BB
Sum of N adj.=255.8
F12−NOA_C
Sum of N adj.=239.5
F16−DEL_NE
Sum of N adj.=679.4
F2−OBJ_Nc_Q14
Sum of N adj.=1279.5
F29−LL_W_Q14m
Sum of N adj.=394.4
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

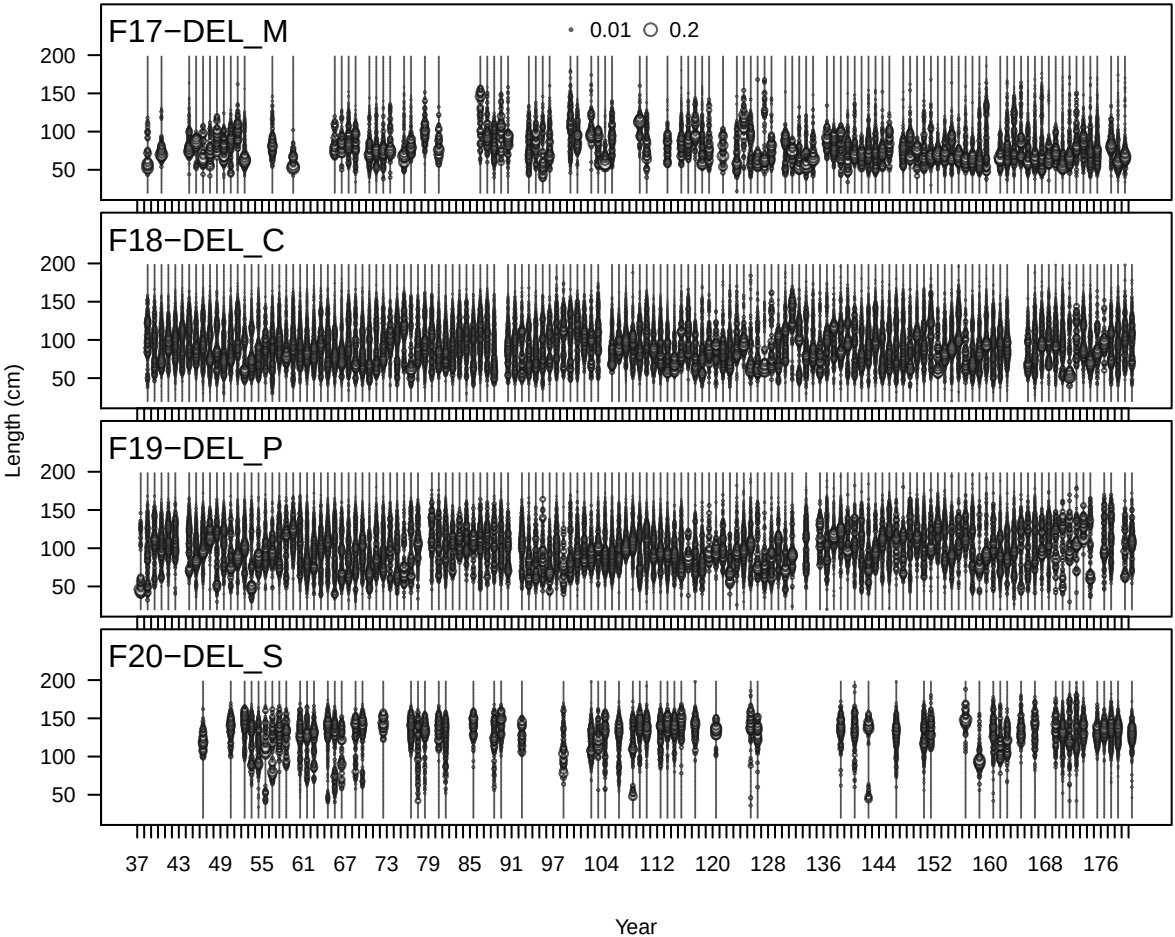

F3−OBJ_C_Q14
Sum of N adj 1451.7
F33−LL_C_Q23m
Sum of N adj 1203.2
F6−OBJ_N_Q23
Sum of N adj 572.6
F30−LL_C_Q14m
Sum of N adj 536.4
F34−LL_E_Q23m
Sum of N adj 100.9
F7−OBJ_Nc_Q23
Sum of N adj 218.8
F31−LL_E_Q14m
Sum of N adj 25.1
F4−OBJ_Cc_Q14
Sum of N adj 47.9
F8−OBJ_C_Q23
Sum of N adj 338.2
F32−LL_W_Q23m
Sum of N adj 266.4
F5−OBJ_S_Q14
Sum of N adj 153.1
F9−OBJ_Cc_Q23
Sum of N adj 48.7
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

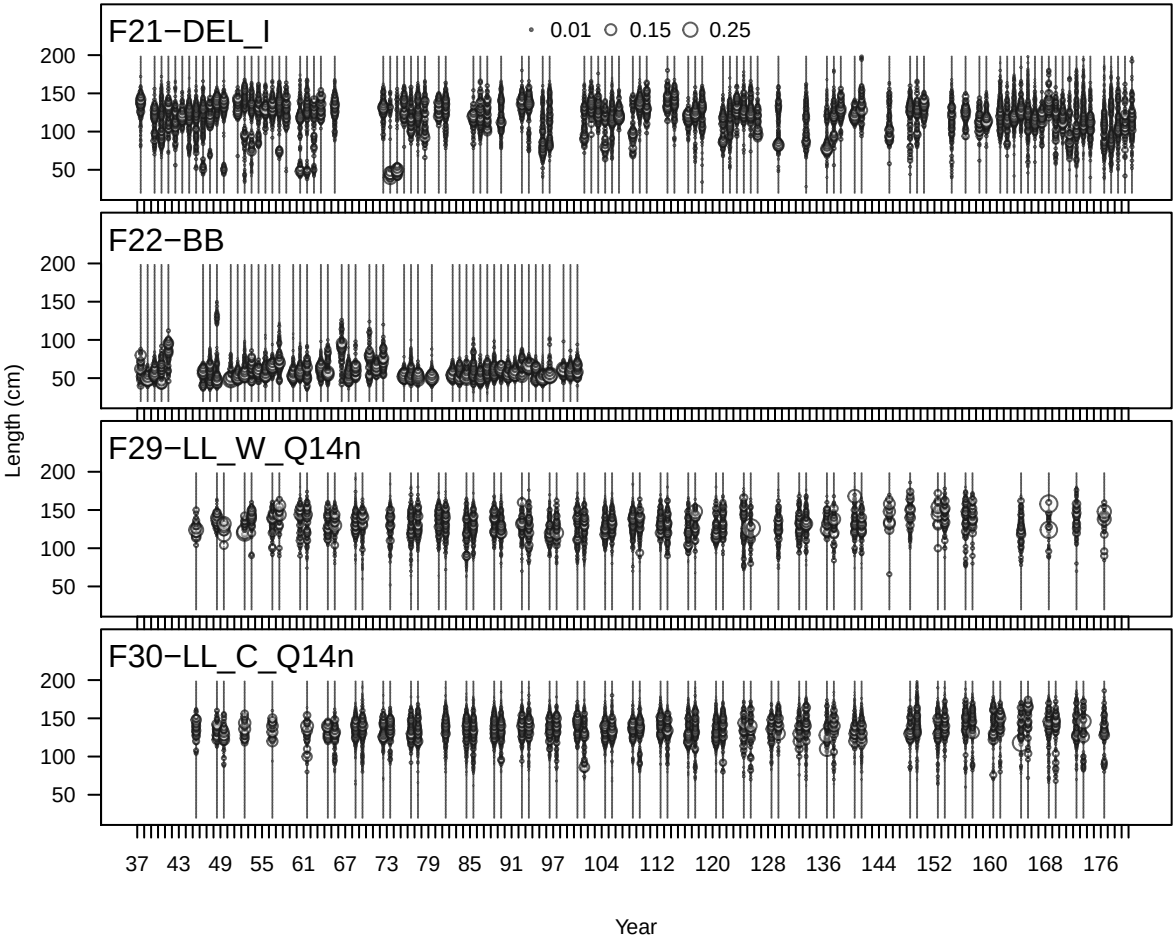

F1−OBJ_N−Q14
0.01
0.2
0.4
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

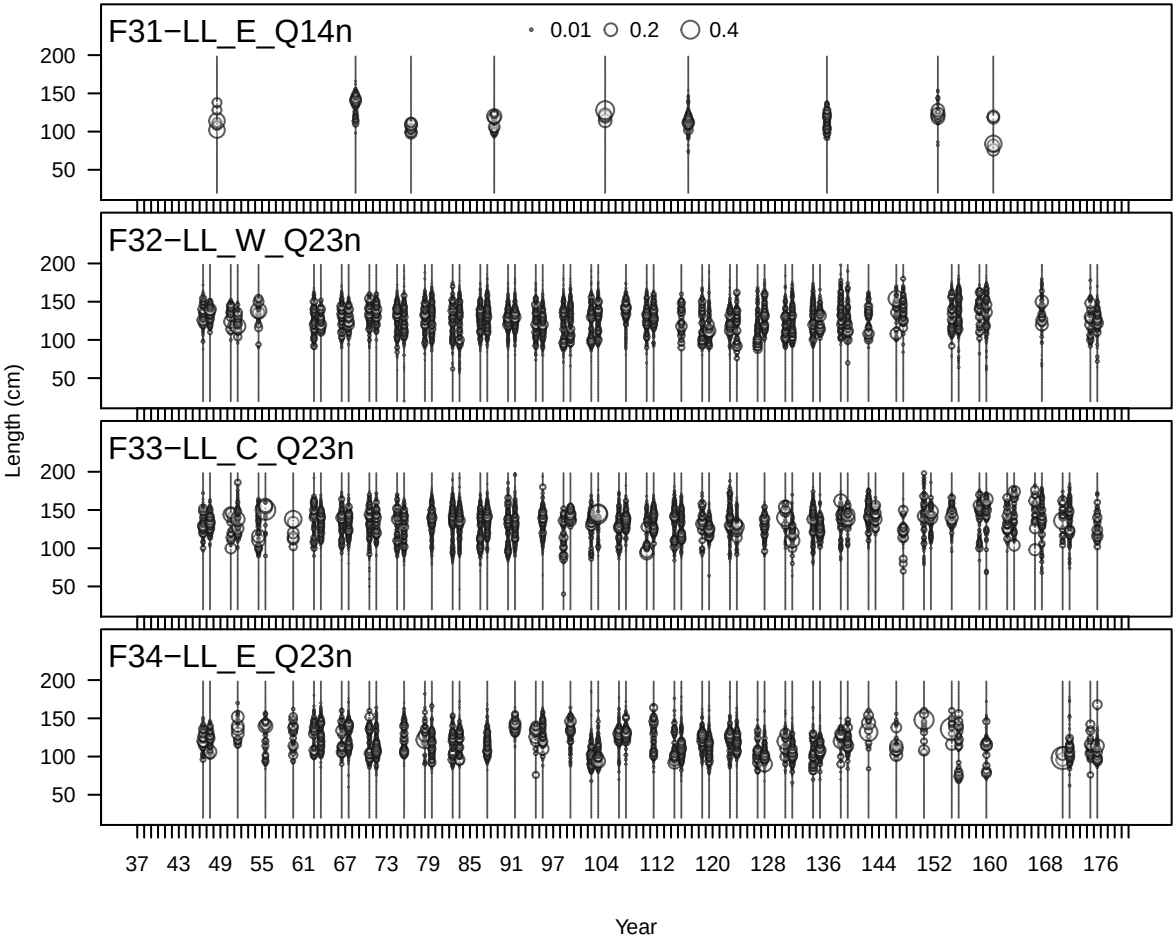

F5−OBJ_S_Q14
0.01
0.2
0.4
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
Length (cm)
50
100
150
200
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

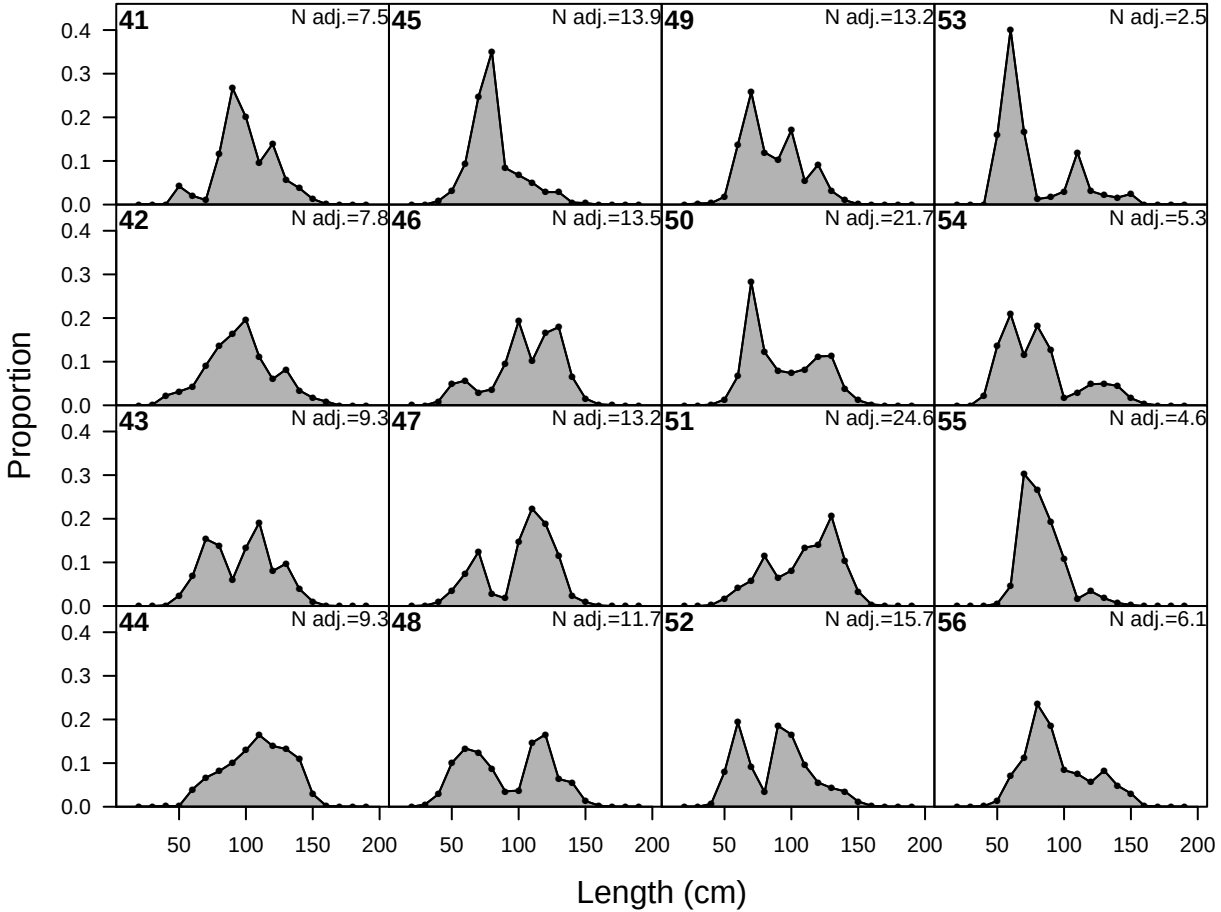

F9−OBJ_Cc_Q23
0.01
0.4
0.8
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year


F13−NOA_I
F14−NOA_S
F15−DEL_N
F16−DEL_NE
0.01
0.2
0.4
Length (cm)
50
100
150
200
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year


F17−DEL_M
0.01
0.2
F18−DEL_C
F19−DEL_P
F20−DEL_S
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year


F21−DEL_I
0.01
0.15
0.25
F22−BB
F29−LL_W_Q14n
F30−LL_C_Q14n
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year


F31−LL_E_Q14n
0.01
0.2
0.4
F32−LL_W_Q23n
F33−LL_C_Q23n
F34−LL_E_Q23n
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year


41
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N adj.=13.9
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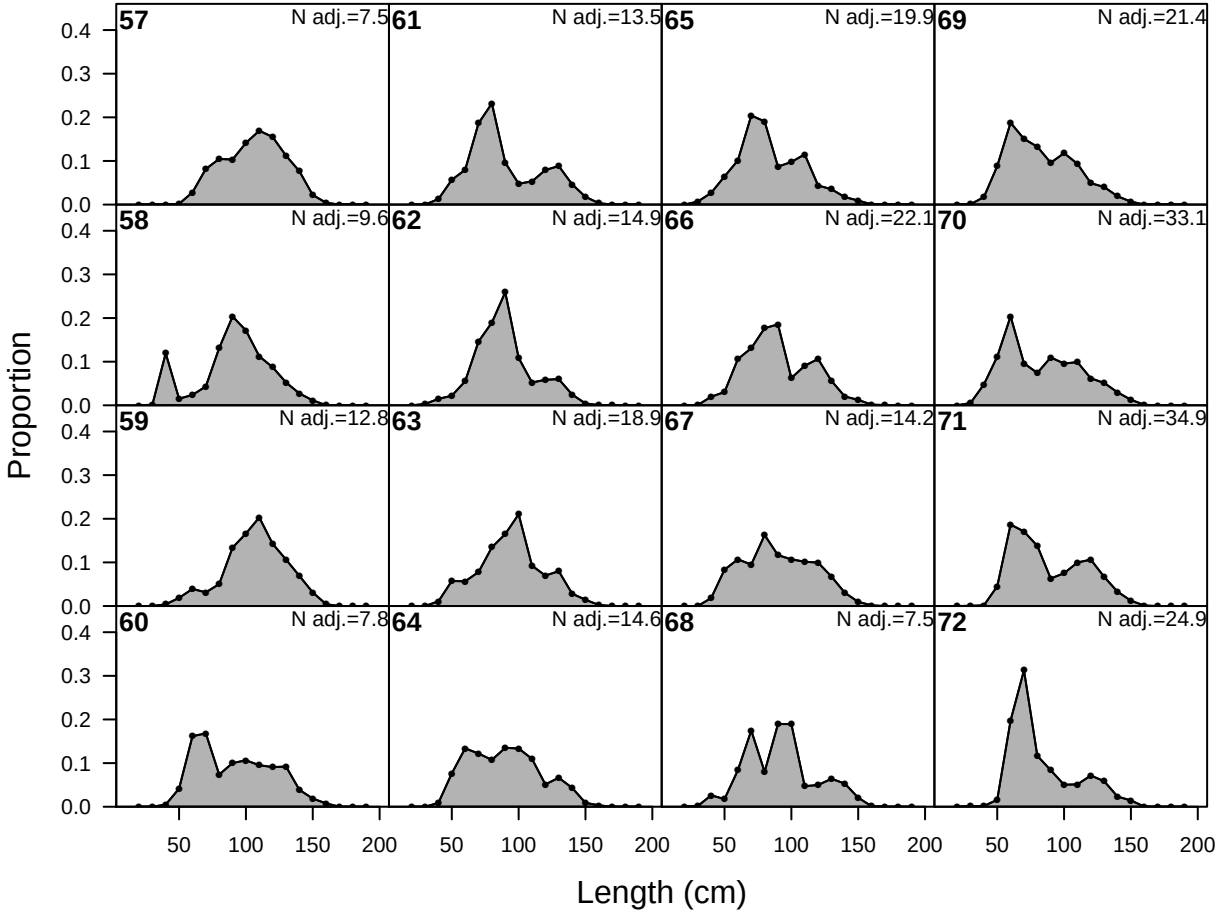
N adj.=13.2
53
N adj.=2.5
42
N adj.=7.8
46
N adj.=13.5
50
N adj.=21.7
54
N adj.=5.3
43
N adj.=9.3
47
N adj.=13.2
51
N adj.=24.6
55
N adj.=4.6
44
N adj.=9.3
48
N adj.=11.7
52
N adj.=15.7
56
N adj.=6.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


57
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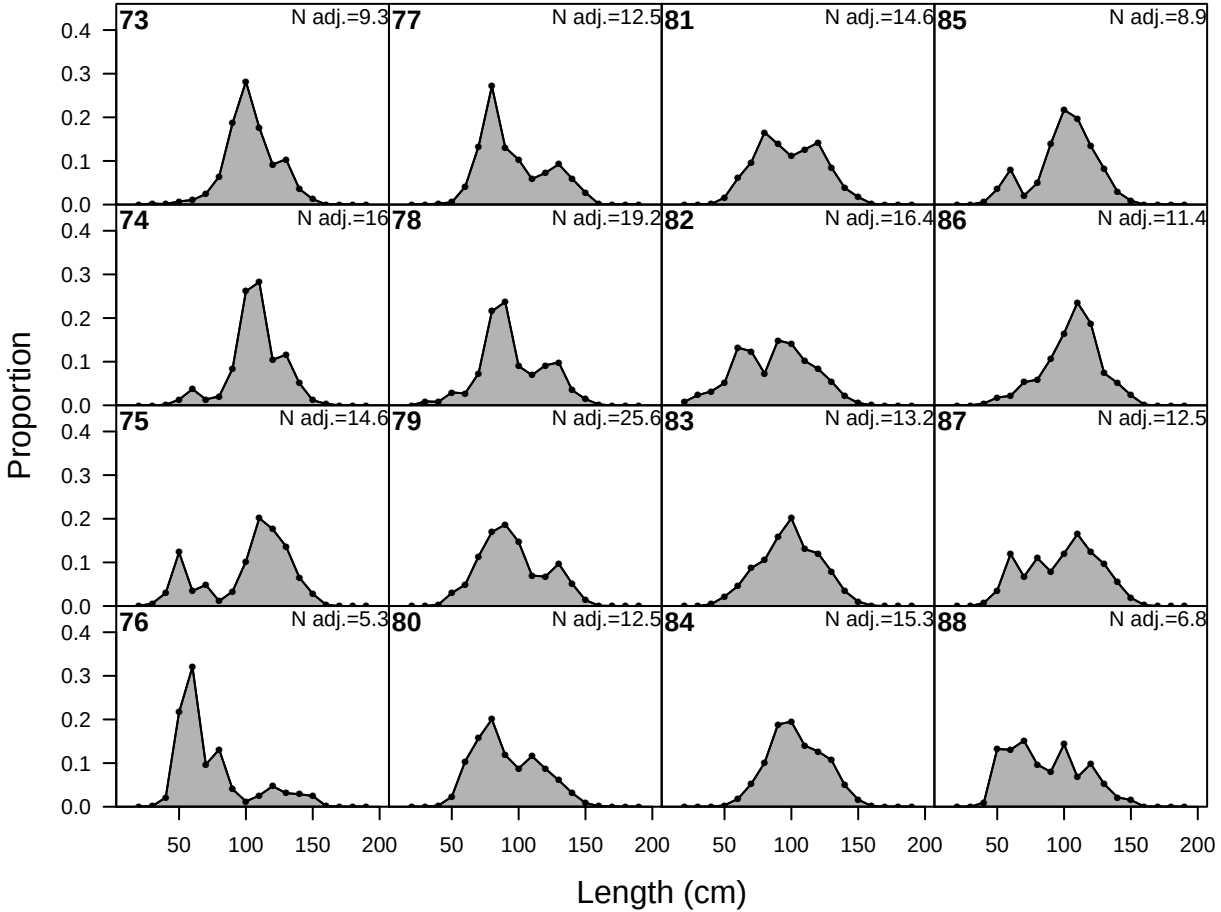
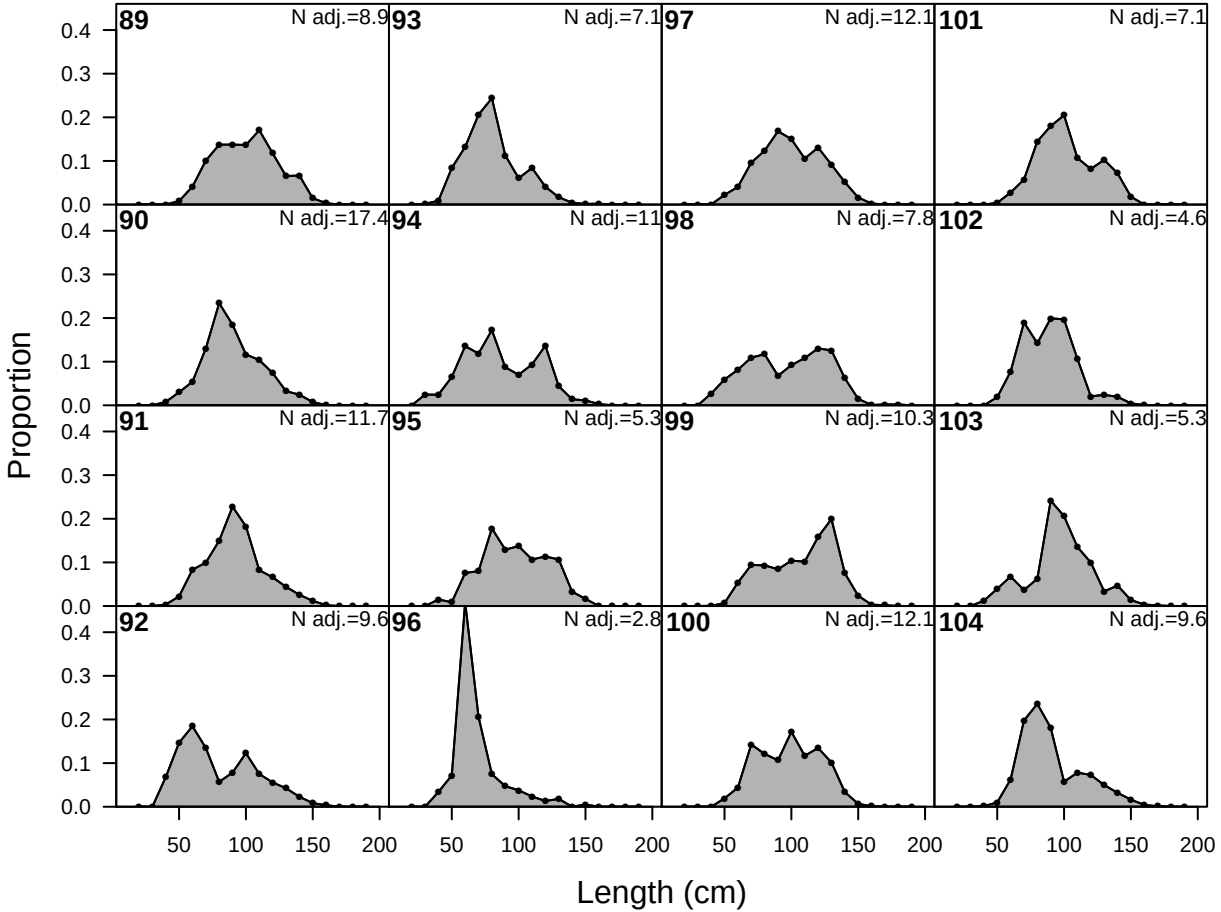
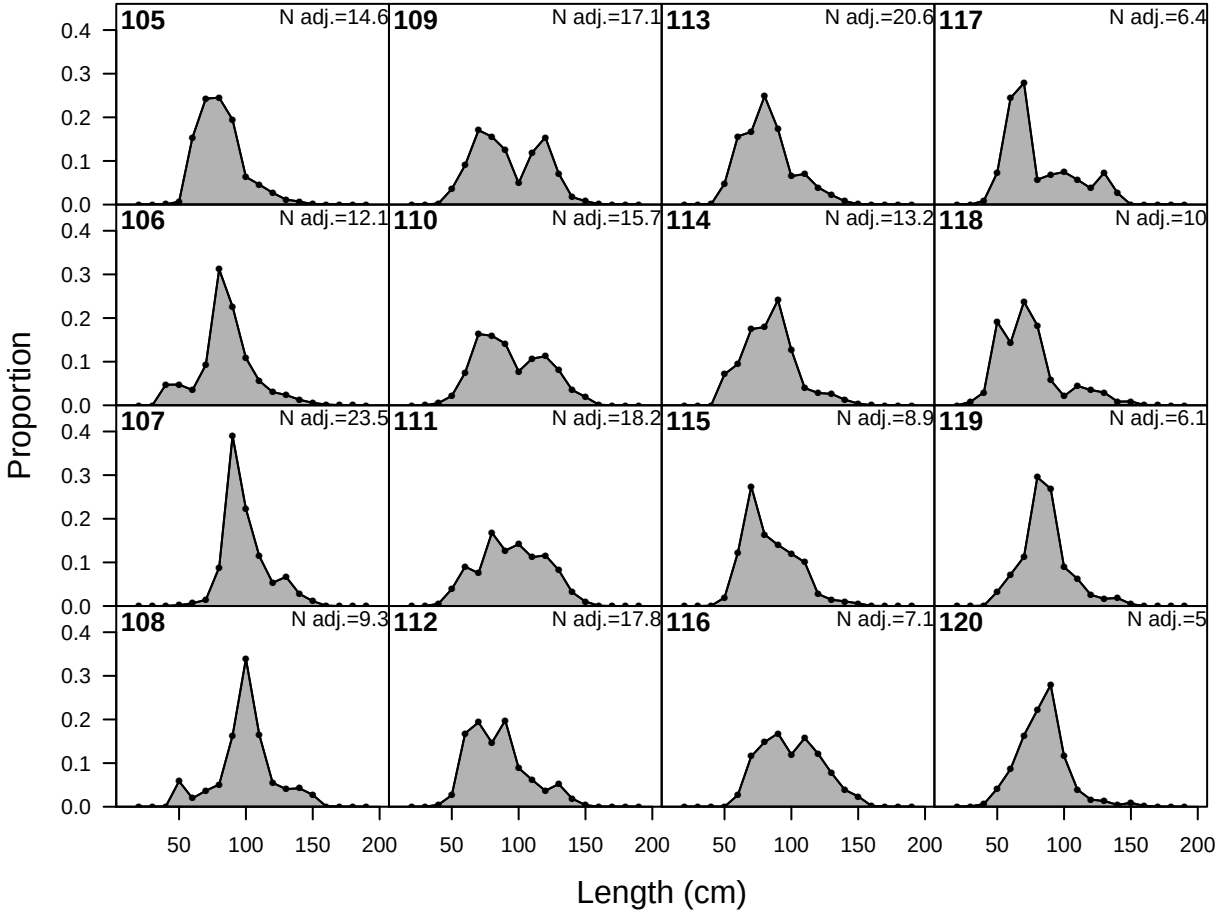
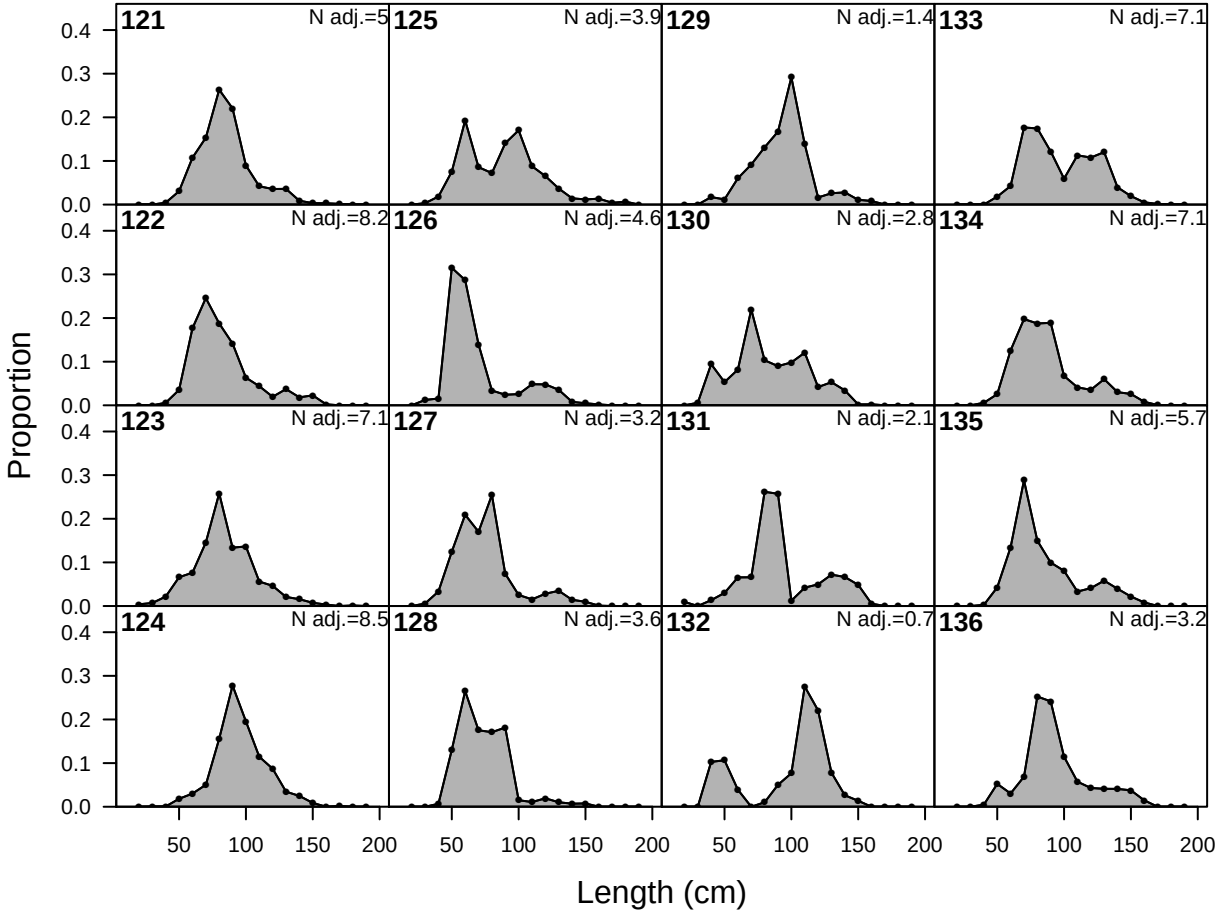
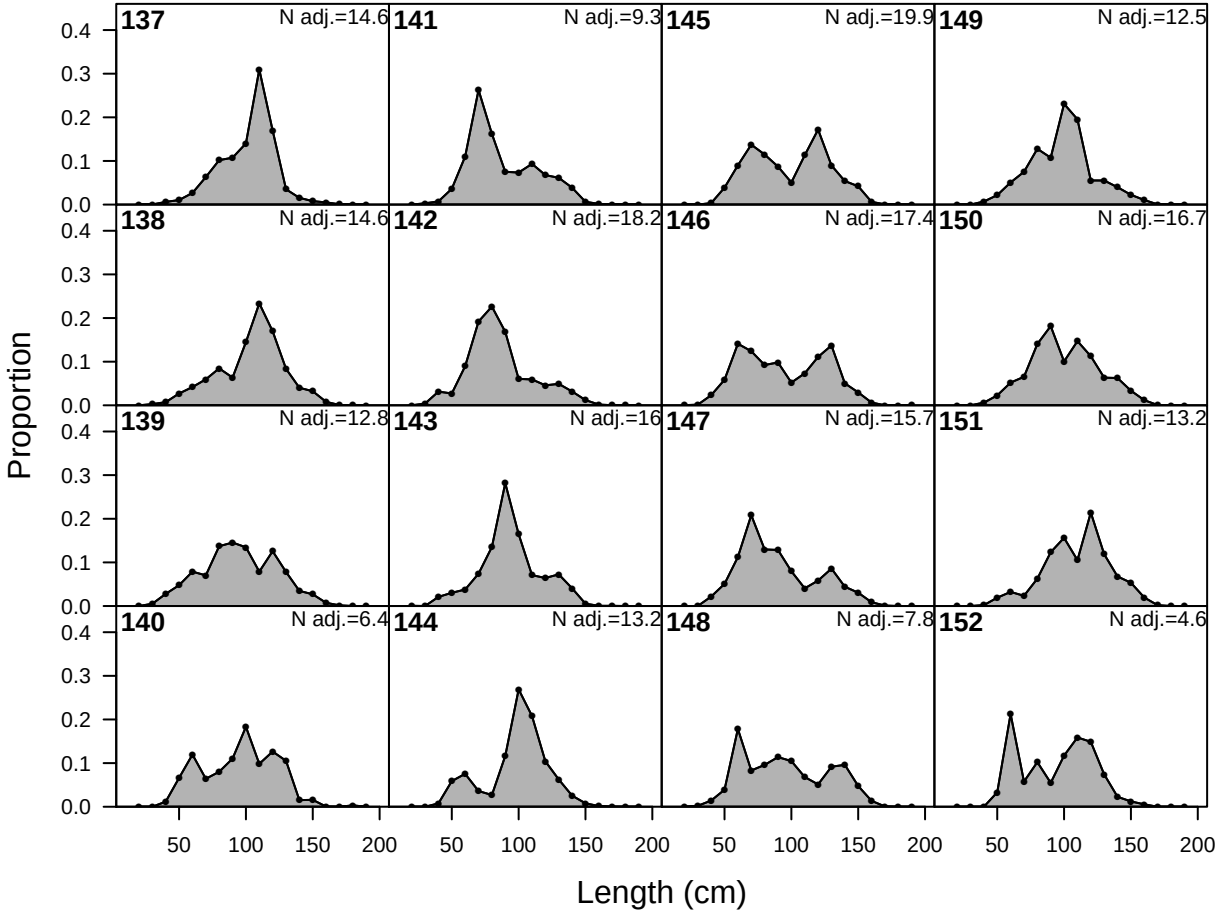
N adj.=13.5
65
N adj.=19.9
69
N adj.=21.4
58
N adj.=9.6
62
N adj.=14.9
66
N adj.=22.1
70
N adj.=33.1
59
N adj.=12.8
63
N adj.=18.9
67
N adj.=14.2
71
N adj.=34.9
60
N adj.=7.8
64
N adj.=14.6
68
N adj.=7.5
72
N adj.=24.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

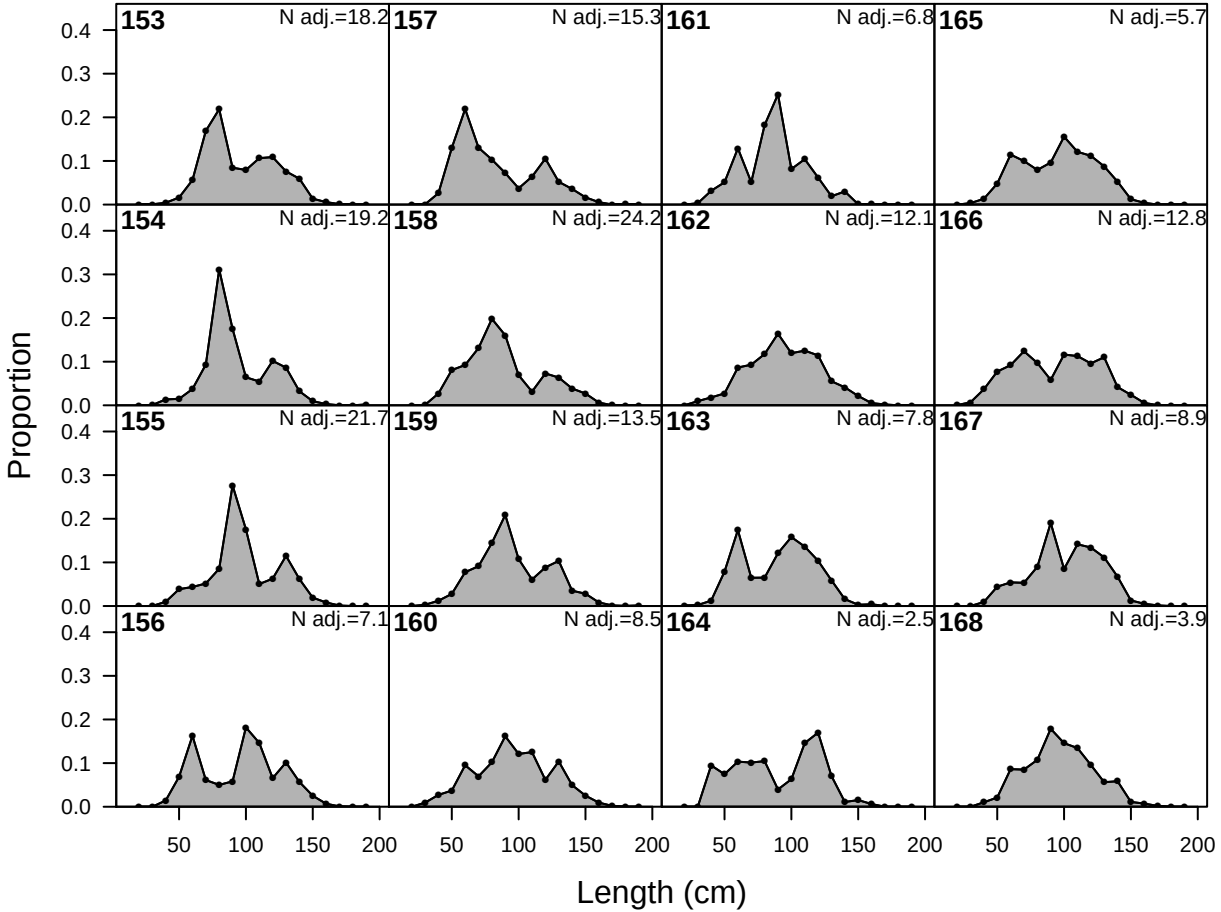

73
N adj.=9.3
77
N adj.=12.5
81
N adj.=14.6
85
N adj.=8.9
74
N adj.=16
78
N adj.=19.2
82
N adj.=16.4
86
N adj.=11.4
75
N adj.=14.6
79
N adj.=25.6
83
N adj.=13.2
87
N adj.=12.5
76
N adj.=5.3
80
N adj.=12.5
84
N adj.=15.3
88
N adj.=6.8
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

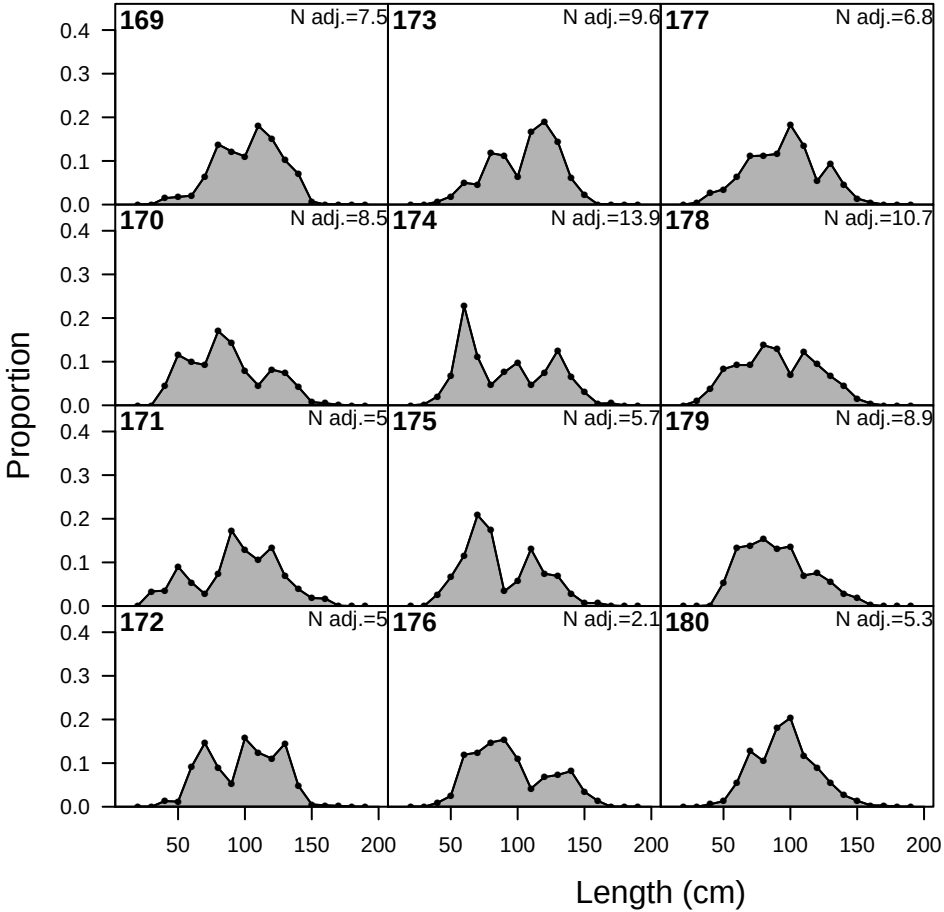

89
N adj.=8.9
93
N adj.=7.1
97
N adj.=12.1
101
N adj.=7.1
90
N adj.=17.4
94
N adj.=11
98
N adj.=7.8
102
N adj.=4.6
91
N adj.=11.7
95
N adj.=5.3
99
N adj.=10.3
103
N adj.=5.3
92
N adj.=9.6
96
N adj.=2.8
100
N adj.=12.1
104
N adj.=9.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

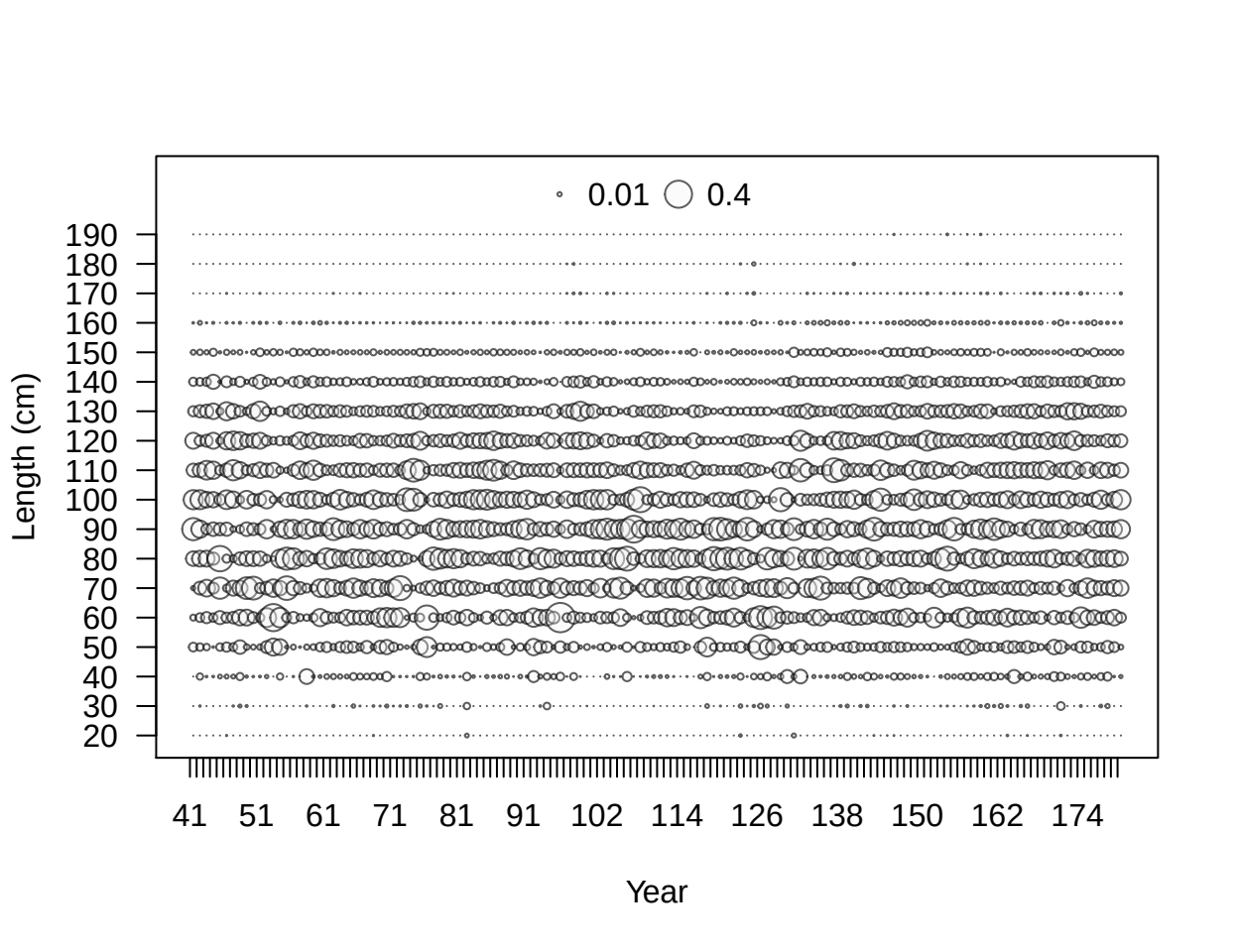

105
N adj.=14.6
109
N adj.=17.1
113
N adj.=20.6
117
N adj.=6.4
106
N adj.=12.1
110
N adj.=15.7
114
N adj.=13.2
118
N adj.=10
107
N adj.=23.5
111
N adj.=18.2
115
N adj.=8.9
119
N adj.=6.1
108
N adj.=9.3
112
N adj.=17.8
116
N adj.=7.1
120
N adj.=5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

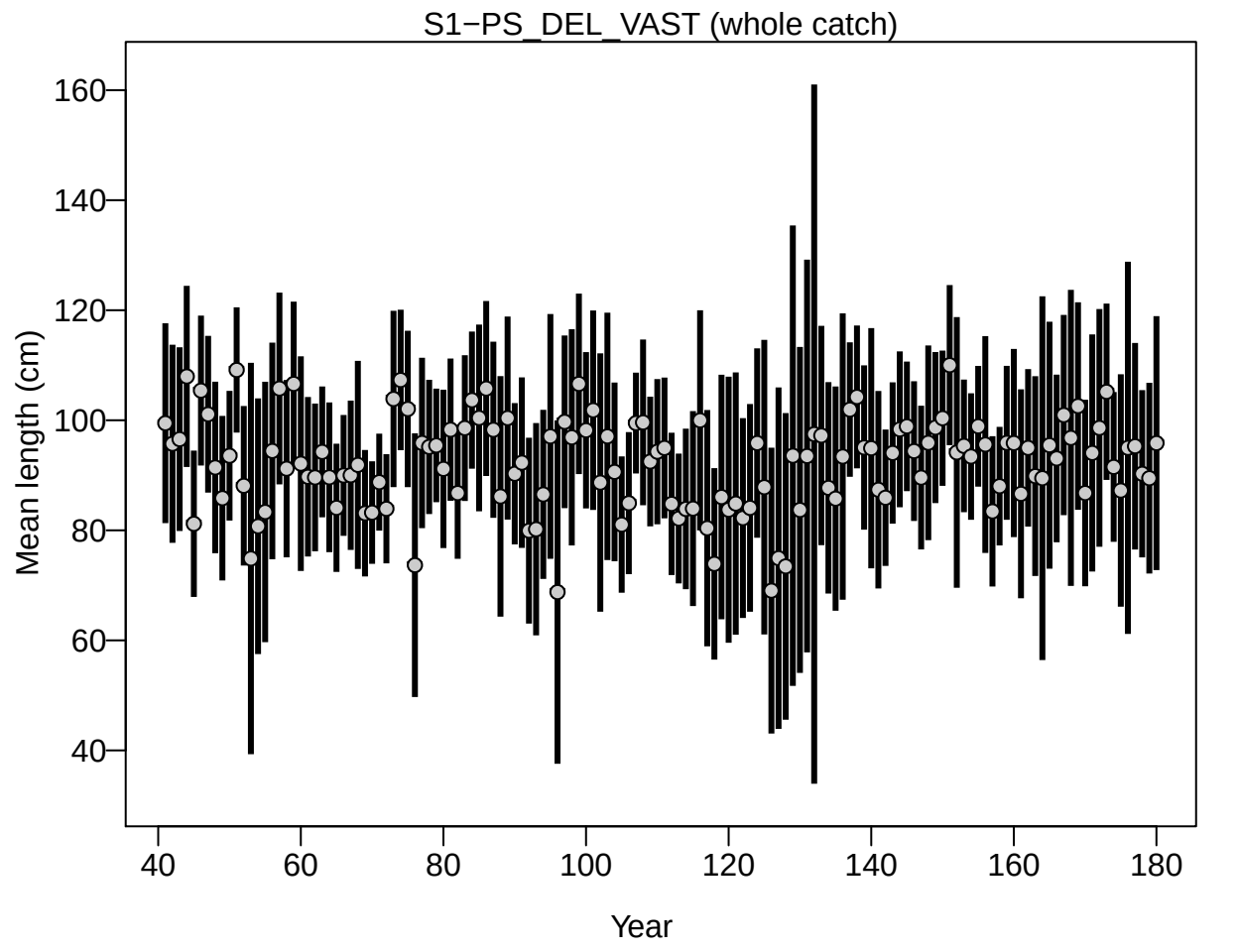

121
N adj.=5
125
N adj.=3.9
129
N adj.=1.4
133
N adj.=7.1
122
N adj.=8.2
126
N adj.=4.6
130
N adj.=2.8
134
N adj.=7.1
123
N adj.=7.1
127
N adj.=3.2
131
N adj.=2.1
135
N adj.=5.7
124
N adj.=8.5
128
N adj.=3.6
132
N adj.=0.7
136
N adj.=3.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

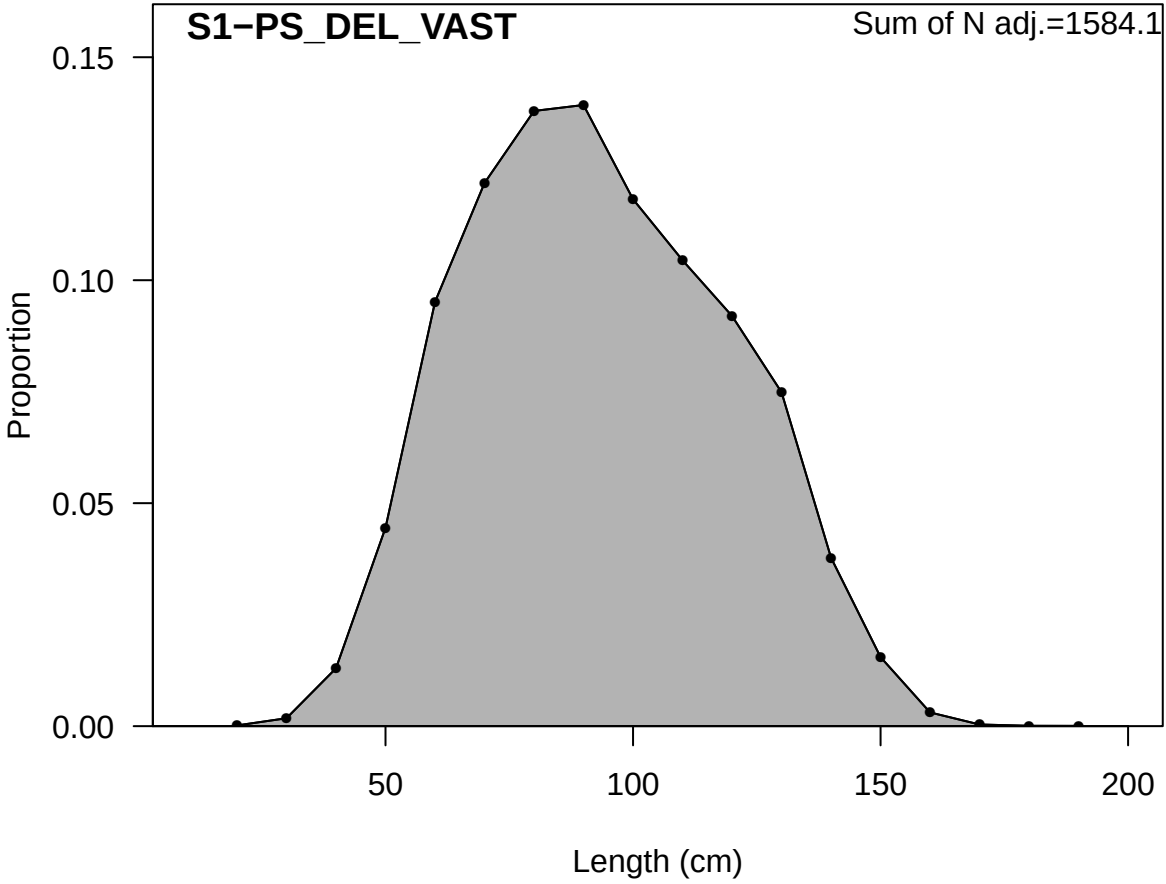

137
N adj.=14.6
141
N adj.=9.3
145
N adj.=19.9
149
N adj.=12.5
138
N adj.=14.6
142
N adj.=18.2
146
N adj.=17.4
150
N adj.=16.7
139
N adj.=12.8
143
N adj.=16
147
N adj.=15.7
151
N adj.=13.2
140
N adj.=6.4
144
N adj.=13.2
148
N adj.=7.8
152
N adj.=4.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

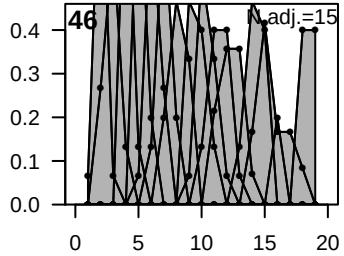

153
N adj.=18.2
157
N adj.=15.3
161
N adj.=6.8
165
N adj.=5.7
154
N adj.=19.2
158
N adj.=24.2
162
N adj.=12.1
166
N adj.=12.8
155
N adj.=21.7
159
N adj.=13.5
163
N adj.=7.8
167
N adj.=8.9
156
N adj.=7.1
160
N adj.=8.5
164
N adj.=2.5
168
N adj.=3.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


169
N adj.=7.5
173
N adj.=9.6
177
N adj.=6.8
170
N adj.=8.5
174
N adj.=13.9
178
N adj.=10.7
171
N adj.=5
175
N adj.=5.7
179
N adj.=8.9
172
N adj.=5
176
N adj.=2.1
180
N adj.=5.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


0.01
0.4
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
Length (cm)
41
51
61
71
81
91
102
114
126
138
150
162
174
Year

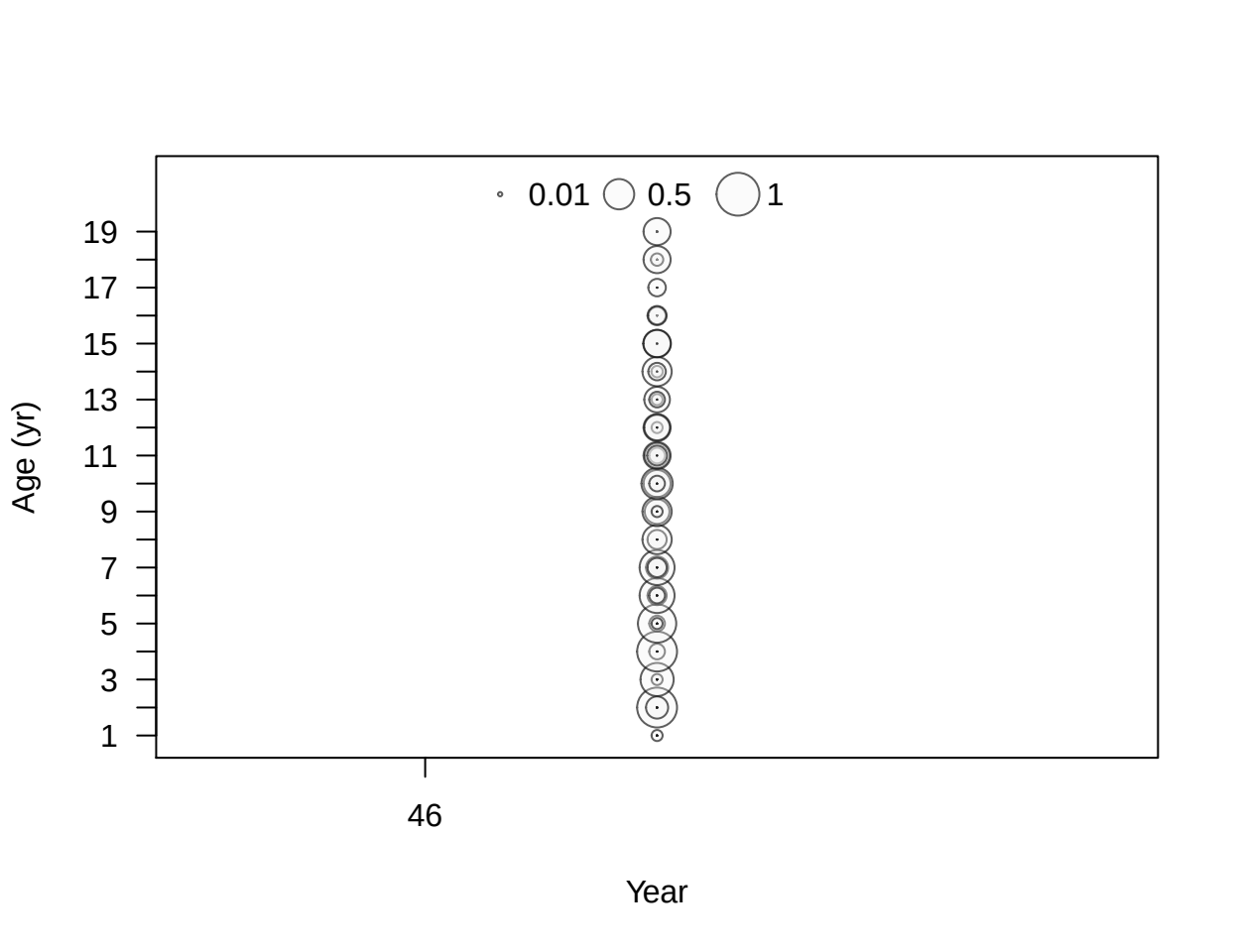

S1−PS_DEL_VAST (whole catch)
Mean length (cm)
160
140
120
100
80
60
40
40
60
80
100
120
140
160
180
Year

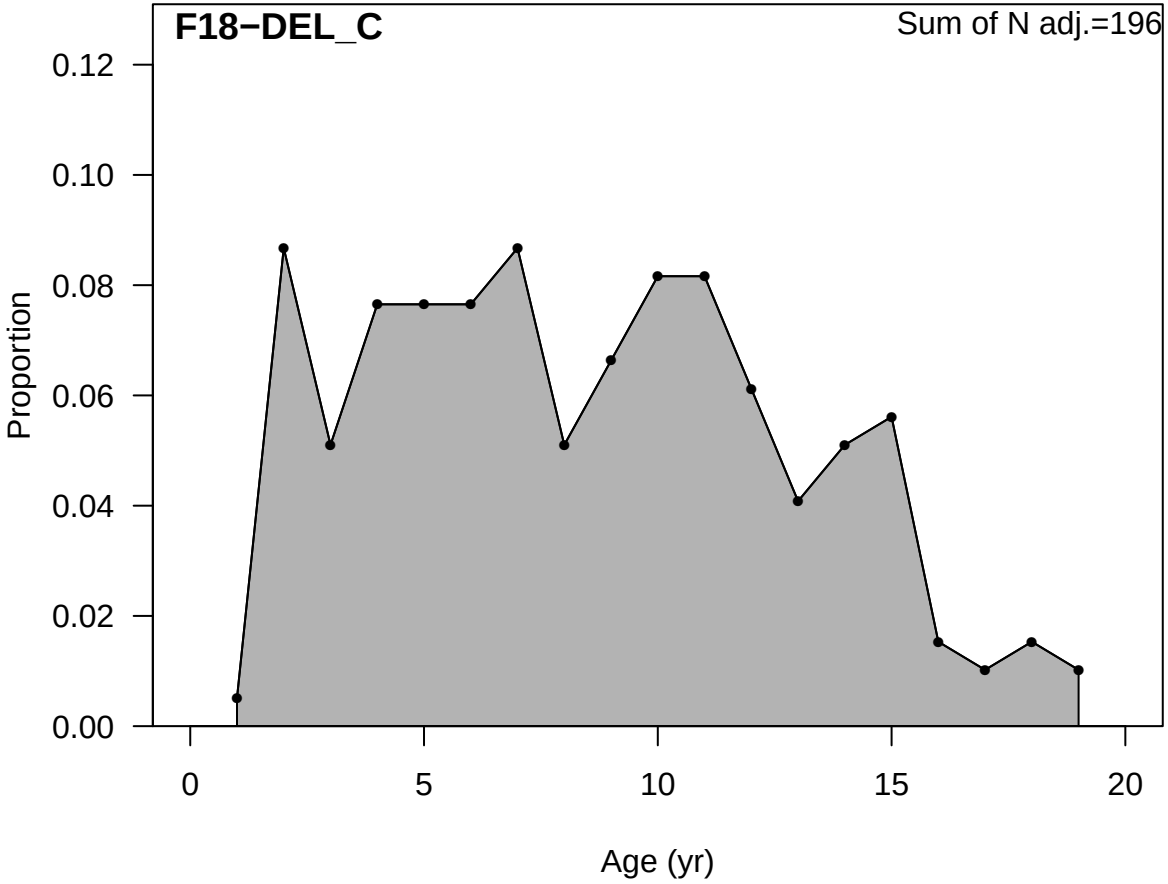

S1−PS_DEL_VAST
Sum of N adj.=1584.1
0.15
0.10
0.05
0.00
Proportion
50
100
150
200
Length (cm)

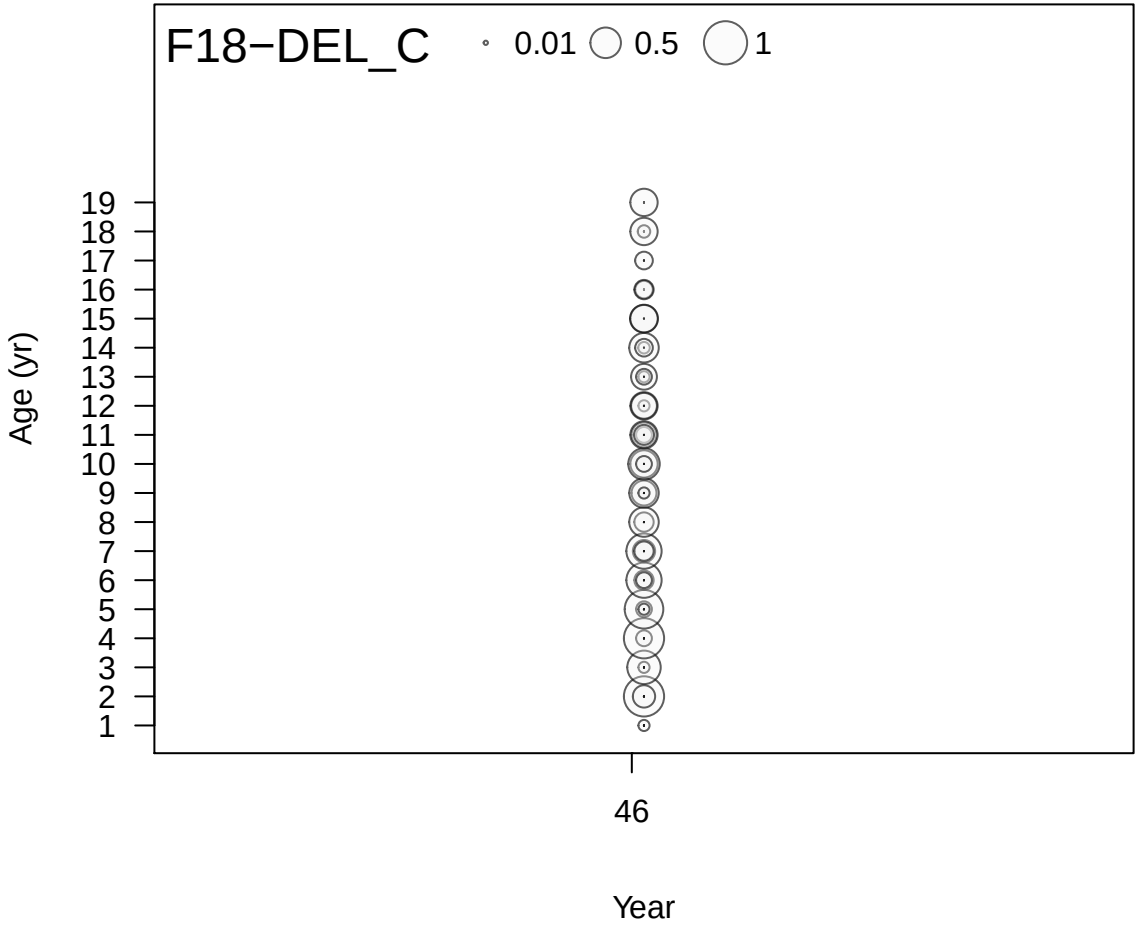


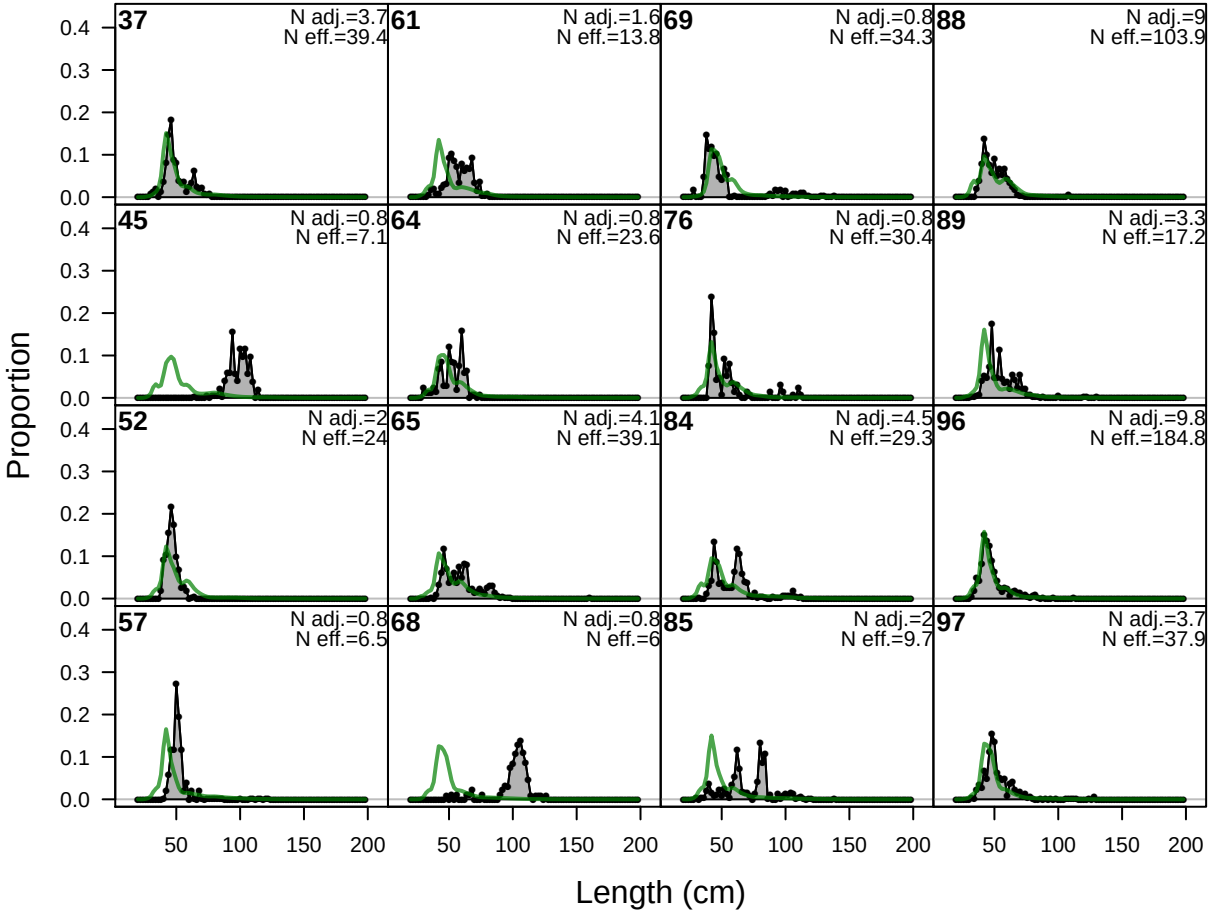
Proportion

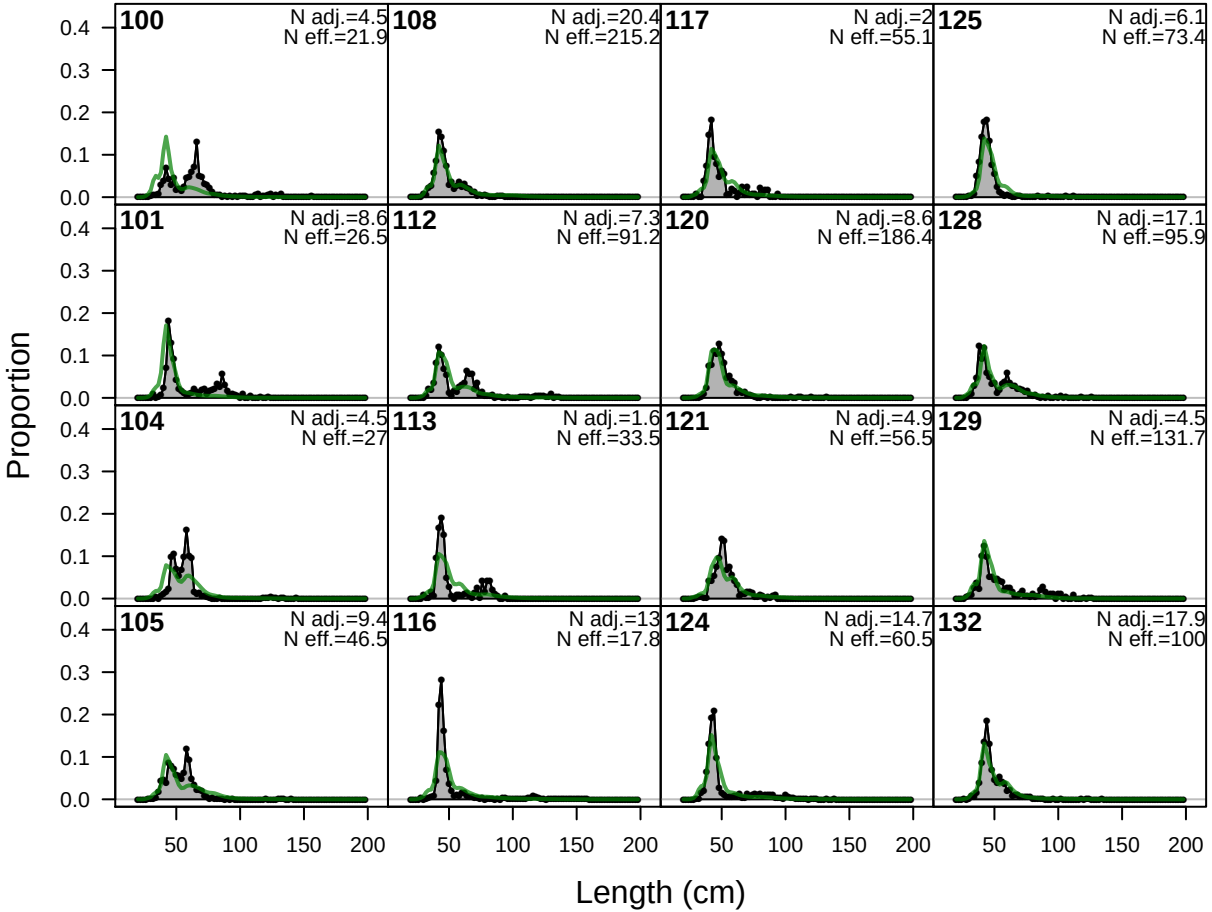
Age (yr)

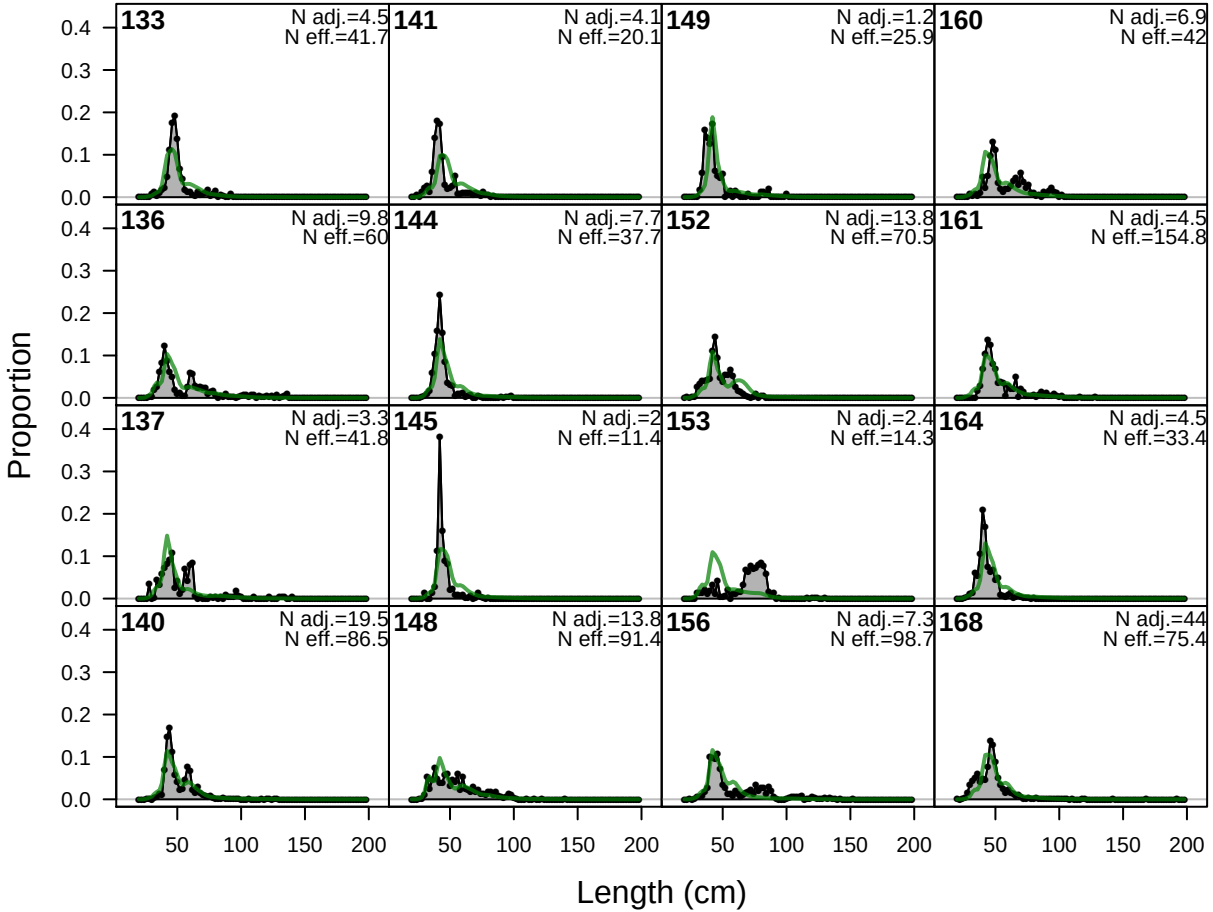

0.01
0.5
1
19
17
15
13
11
9
7
5
3
1
Age (yr)
46
Year

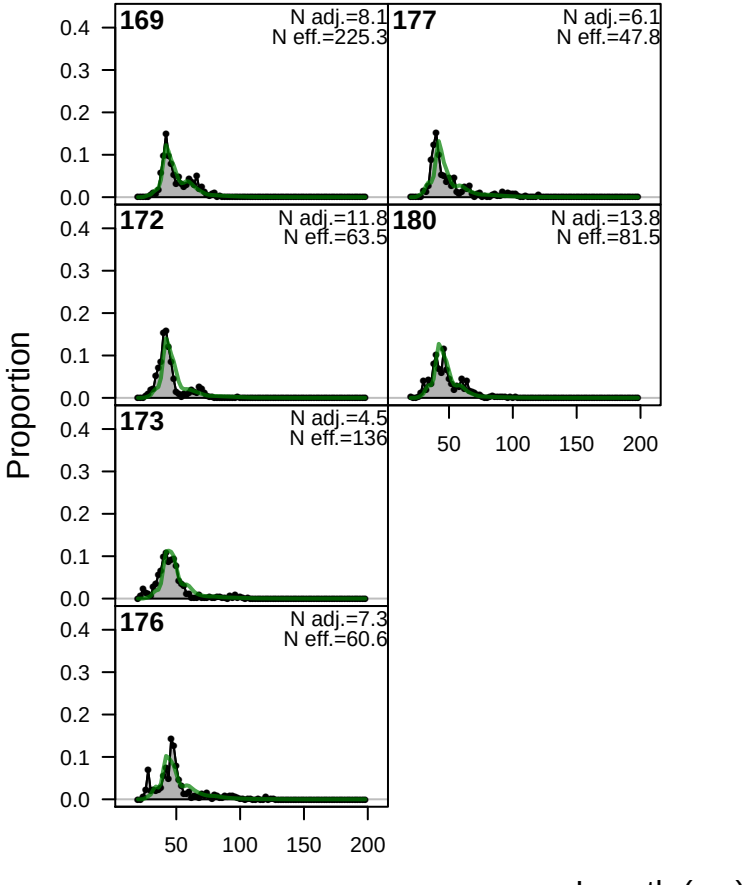

F18−DEL_C
Sum of N adj.=196
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Proportion
0
5
10
15
20
Age (yr)

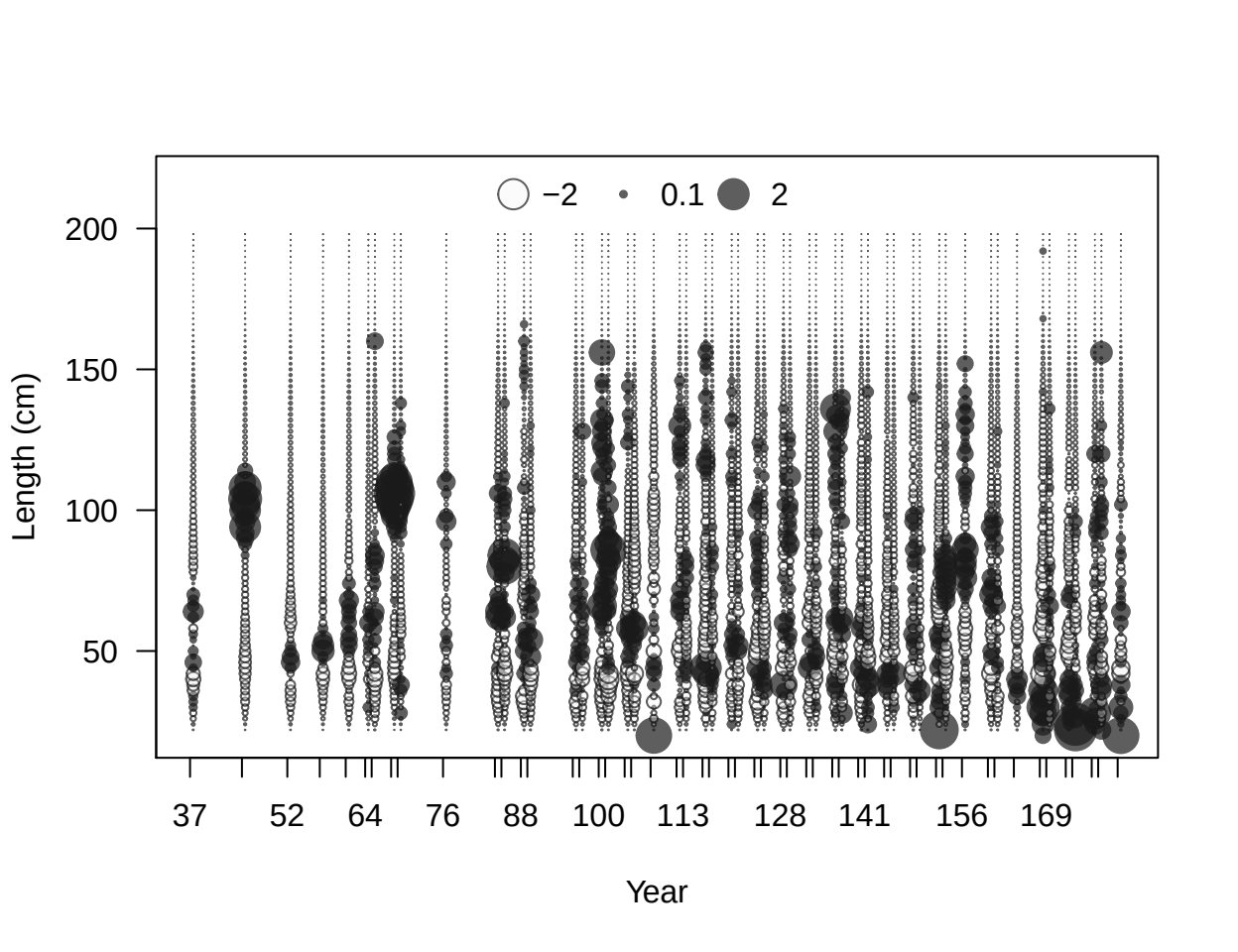

F18−DEL_C
0.01
0.5
1
Age (yr)
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
46
Year

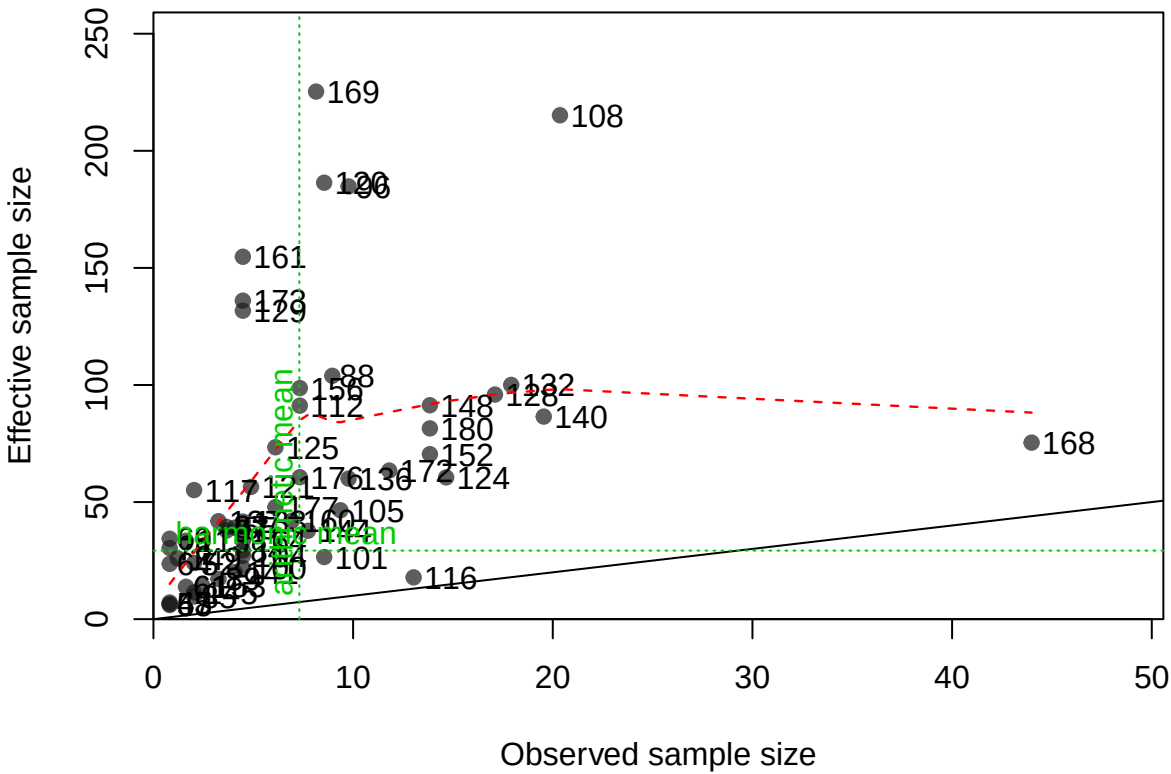

37
N adj.=3.7
N eff.=39.4
61
N adj.=1.6
N eff.=13.8
69
N adj.=0.8
N eff.=34.3
88
N adj.=9
N eff.=103.9
45
N adj.=0.8
N eff.=7.1
64
N adj.=0.8
N eff.=23.6
76
N adj.=0.8
N eff.=30.4
89
N adj.=3.3
N eff.=17.2
52
N adj.=2
N eff.=24
65
N adj.=4.1
N eff.=39.1
84
N adj.=4.5
N eff.=29.3
96
N adj.=9.8
N eff.=184.8
57
N adj.=0.8
N eff.=6.5
68
N adj.=0.8
N eff.=6
85
N adj.=2
N eff.=9.7
97
N adj.=3.7
N eff.=37.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


100
N adj.=4.5
N eff.=21.9
108
N adj.=20.4
N eff.=215.2
117
N adj.=2
N eff.=55.1
125
N adj.=6.1
N eff.=73.4
101
N adj.=8.6
N eff.=26.5
112
N adj.=7.3
N eff.=91.2
120
N adj.=8.6
N eff.=186.4
128
N adj.=17.1
N eff.=95.9
104
N adj.=4.5
N eff.=27
113
N adj.=1.6
N eff.=33.5
121
N adj.=4.9
N eff.=56.5
129
N adj.=4.5
N eff.=131.7
105
N adj.=9.4
N eff.=46.5
116
N adj.=13
N eff.=17.8
124
N adj.=14.7
N eff.=60.5
132
N adj.=17.9
N eff.=100
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

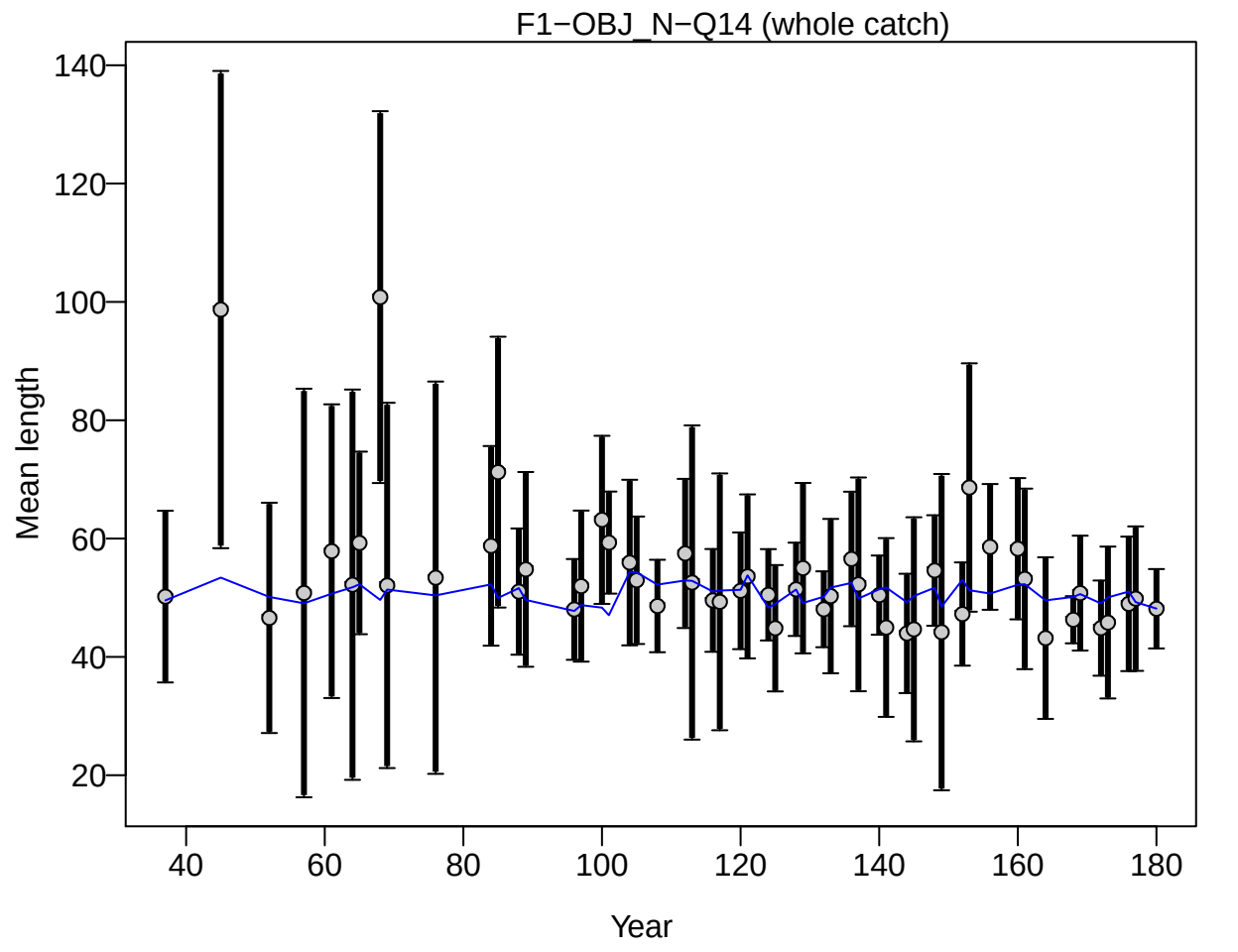

133
N adj.=4.5
N eff.=41.7
141
N adj.=4.1
N eff.=20.1
149
N adj.=1.2
N eff.=25.9
160
N adj.=6.9
N eff.=42
136
N adj.=9.8
N eff.=60
144
N adj.=7.7
N eff.=37.7
152
N adj.=13.8
N eff.=70.5
161
N adj.=4.5
N eff.=154.8
137
N adj.=3.3
N eff.=41.8
145
N adj.=2
N eff.=11.4
153
N adj.=2.4
N eff.=14.3
164
N adj.=4.5
N eff.=33.4
140
N adj.=19.5
N eff.=86.5
148
N adj.=13.8
N eff.=91.4
156
N adj.=7.3
N eff.=98.7
168
N adj.=44
N eff.=75.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

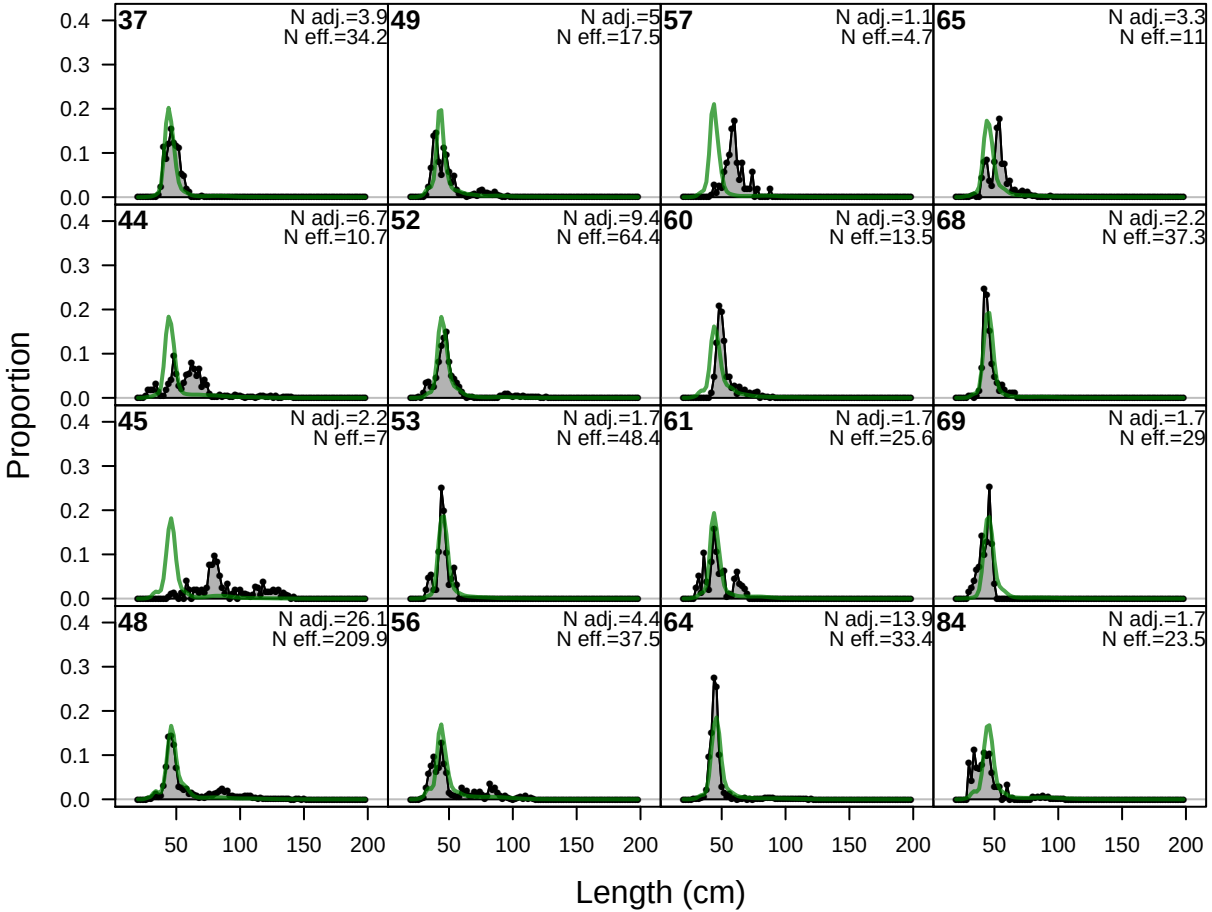

169
N adj.=8.1
N eff.=225.3
177
N adj.=6.1
N eff.=47.8
172
N adj.=11.8
N eff.=63.5
180
N adj.=13.8
N eff.=81.5
173
N adj.=4.5
N eff.=136
176
N adj.=7.3
N eff.=60.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

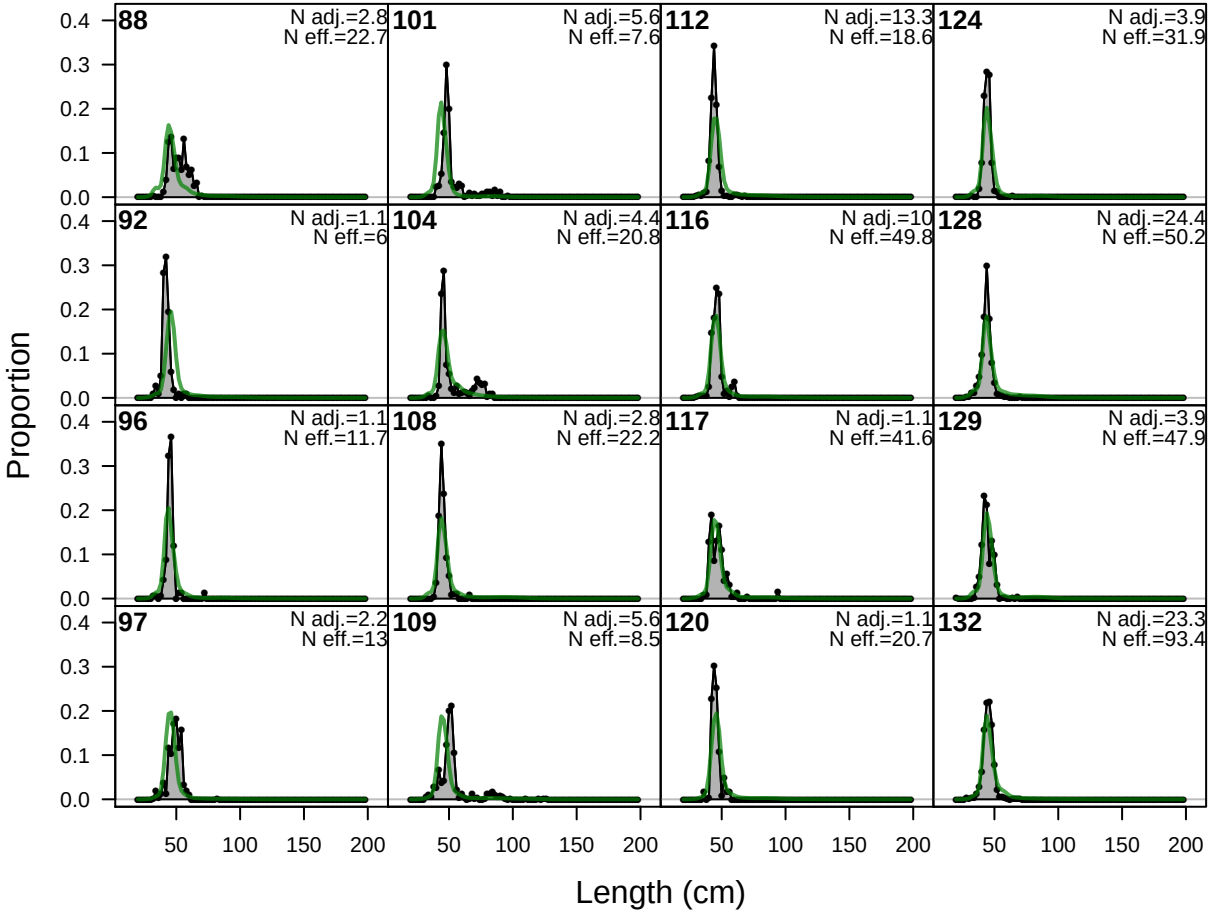

−2
0.1
2
200
150
100
50
Length (cm)
37
52
64
76
88
100
113
128
141
156
169
Year

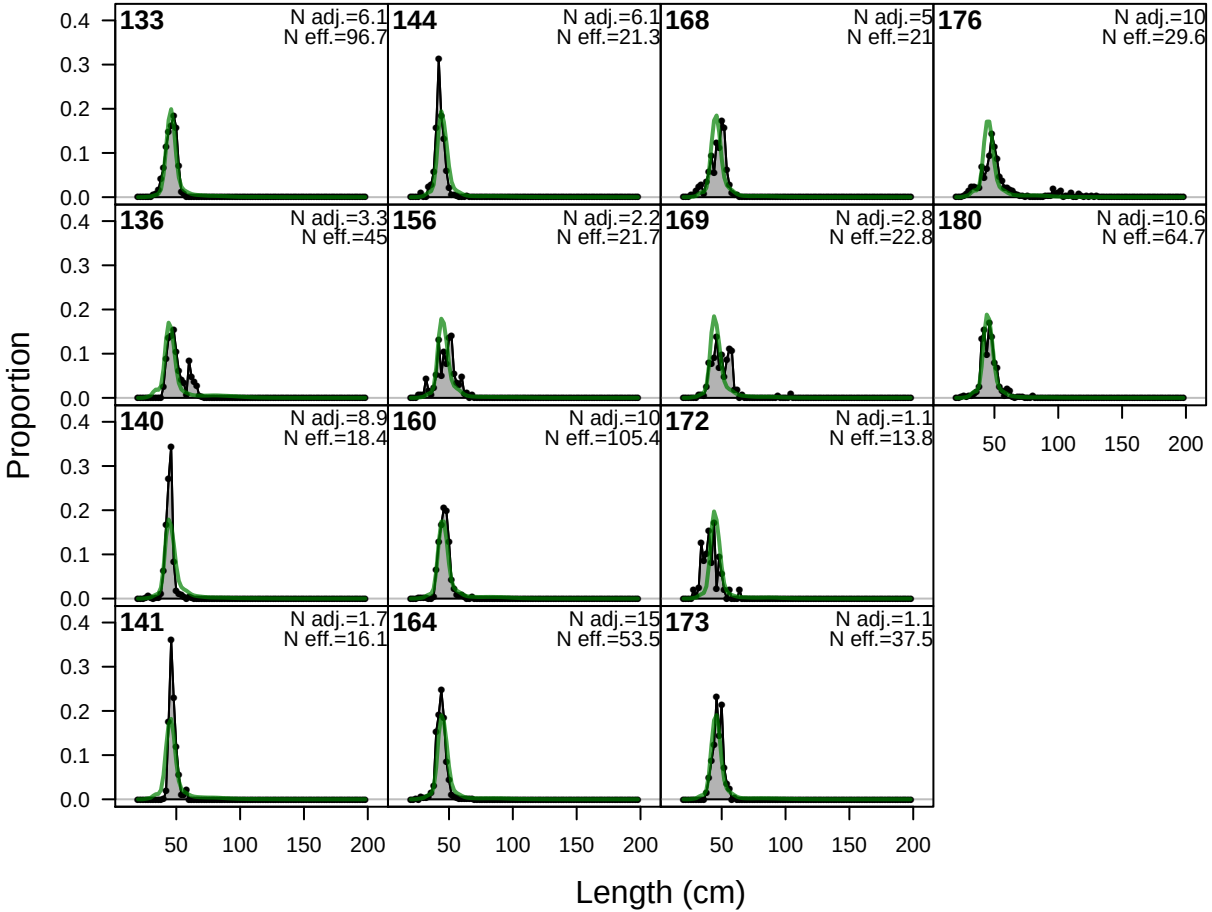


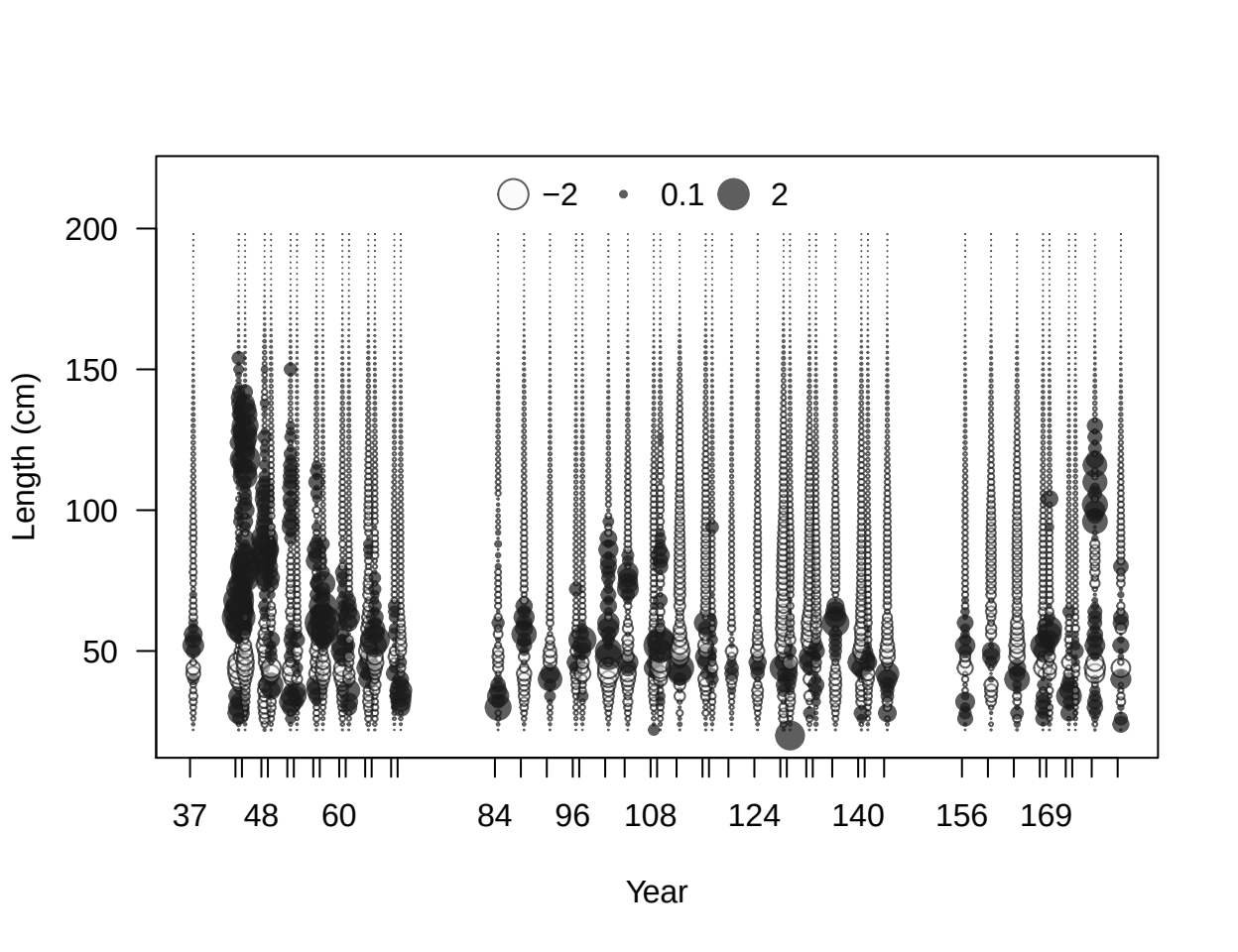
Effective sample size
Observed sample size
0
50
100
150
200
250
0
10
20
30
40
50
169
108
161
173
129
88
156
112
132
128
148
140
180
168
125
152
124
117
105
101
116

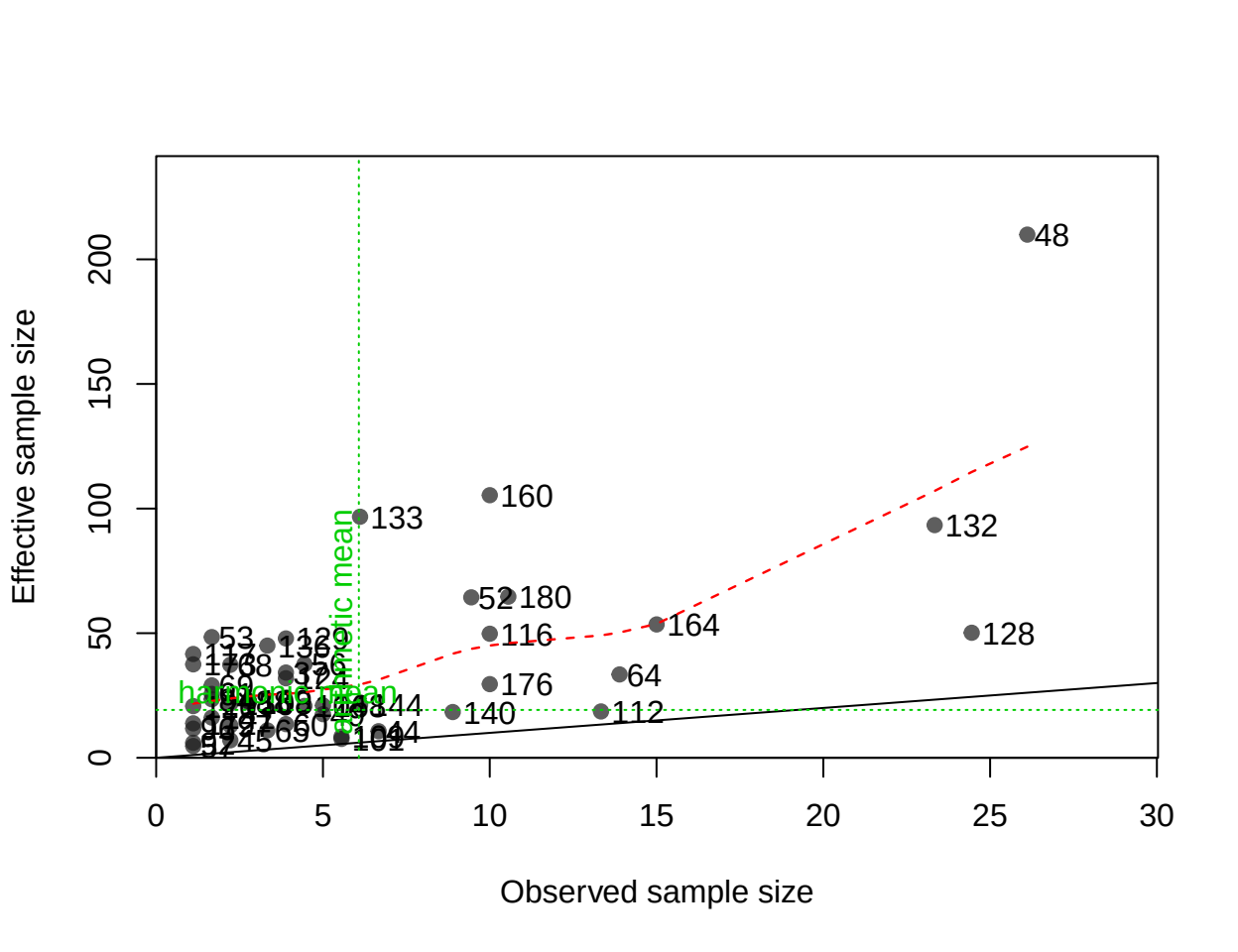

F1−OBJ_N−Q14 (whole catch)
Mean length
Year
140
120
100
80
60
40
20
40
60
80
100
120
140
160
180

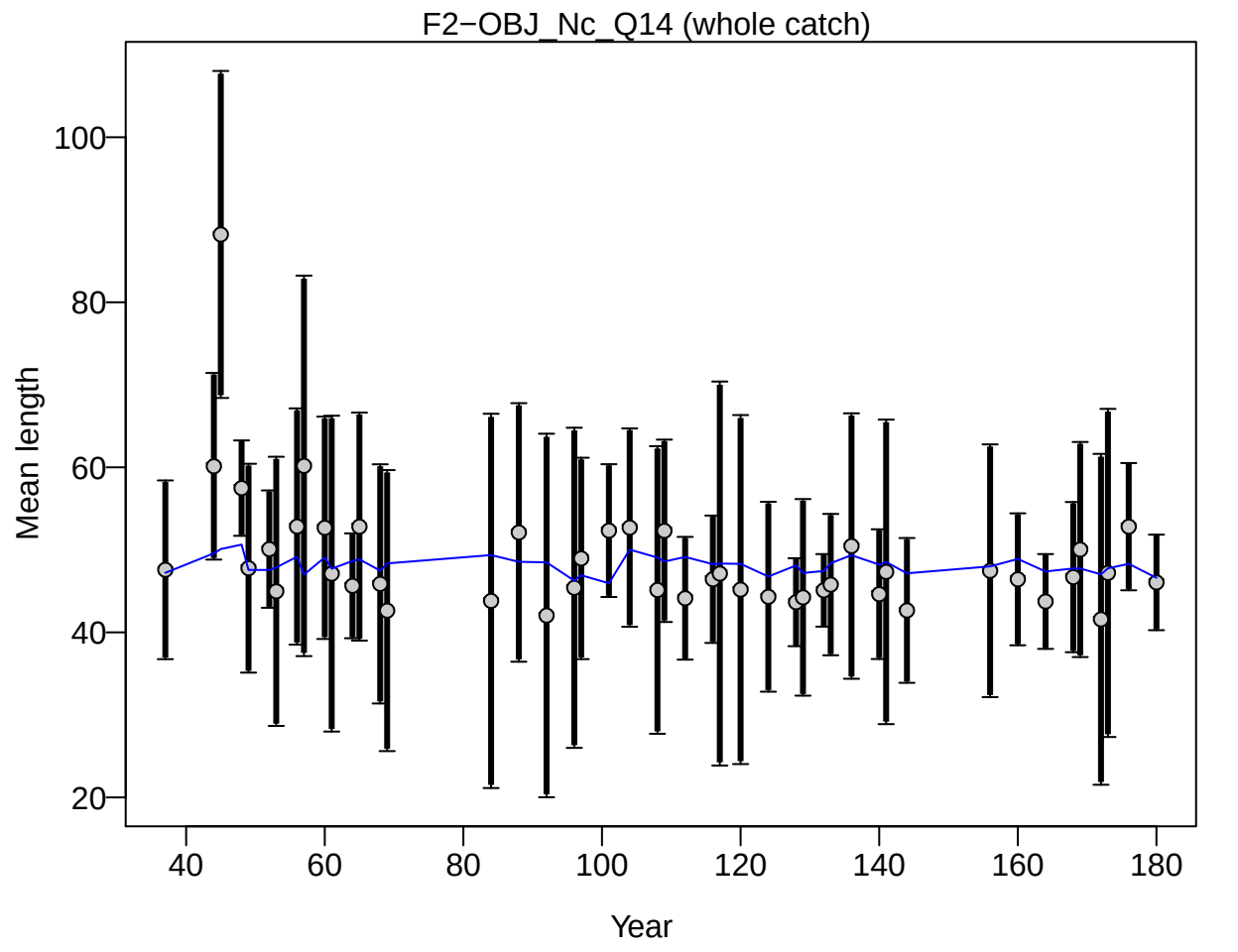

37
N adj.=3.9
N eff.=34.2
49
N adj.=5
N eff.=17.5
57
N adj.=1.1
N eff.=4.7
65
N adj.=3.3
N eff.=11
44
N adj.=6.7
N eff.=10.7
52
N adj.=9.4
N eff.=64.4
60
N adj.=3.9
N eff.=13.5
68
N adj.=2.2
N eff.=37.3
45
N adj.=2.2
N eff.=7
53
N adj.=1.7
N eff.=48.4
61
N adj.=1.7
N eff.=25.6
69
N adj.=1.7
N eff.=29
48
N adj.=26.1
N eff.=209.9
56
N adj.=4.4
N eff.=37.5
64
N adj.=13.9
N eff.=33.4
84
N adj.=1.7
N eff.=23.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

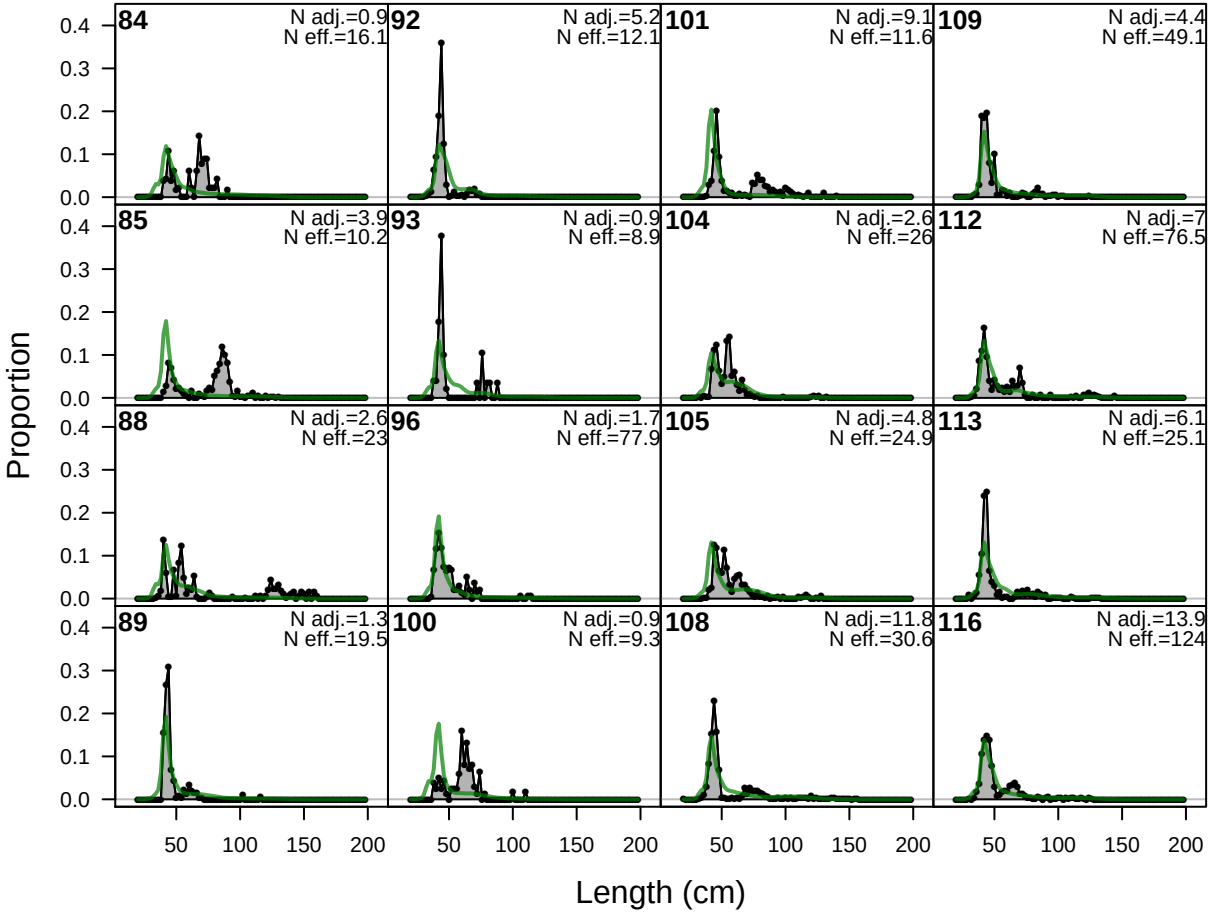

88
N adj.=2.8
N eff.=22.7
101
N adj.=5.6
N eff.=7.6
112
N adj.=13.3
N eff.=18.6
124
N adj.=3.9
N eff.=31.9
92
N adj.=1.1
N eff.=6
104
N adj.=4.4
N eff.=20.8
116
N adj.=10
N eff.=49.8
128
N adj.=24.4
N eff.=50.2
96
N adj.=1.1
N eff.=11.7
108
N adj.=2.8
N eff.=22.2
117
N adj.=1.1
N eff.=41.6
129
N adj.=3.9
N eff.=47.9
97
N adj.=2.2
N eff.=13
109
N adj.=5.6
N eff.=8.5
120
N adj.=1.1
N eff.=20.7
132
N adj.=23.3
N eff.=93.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

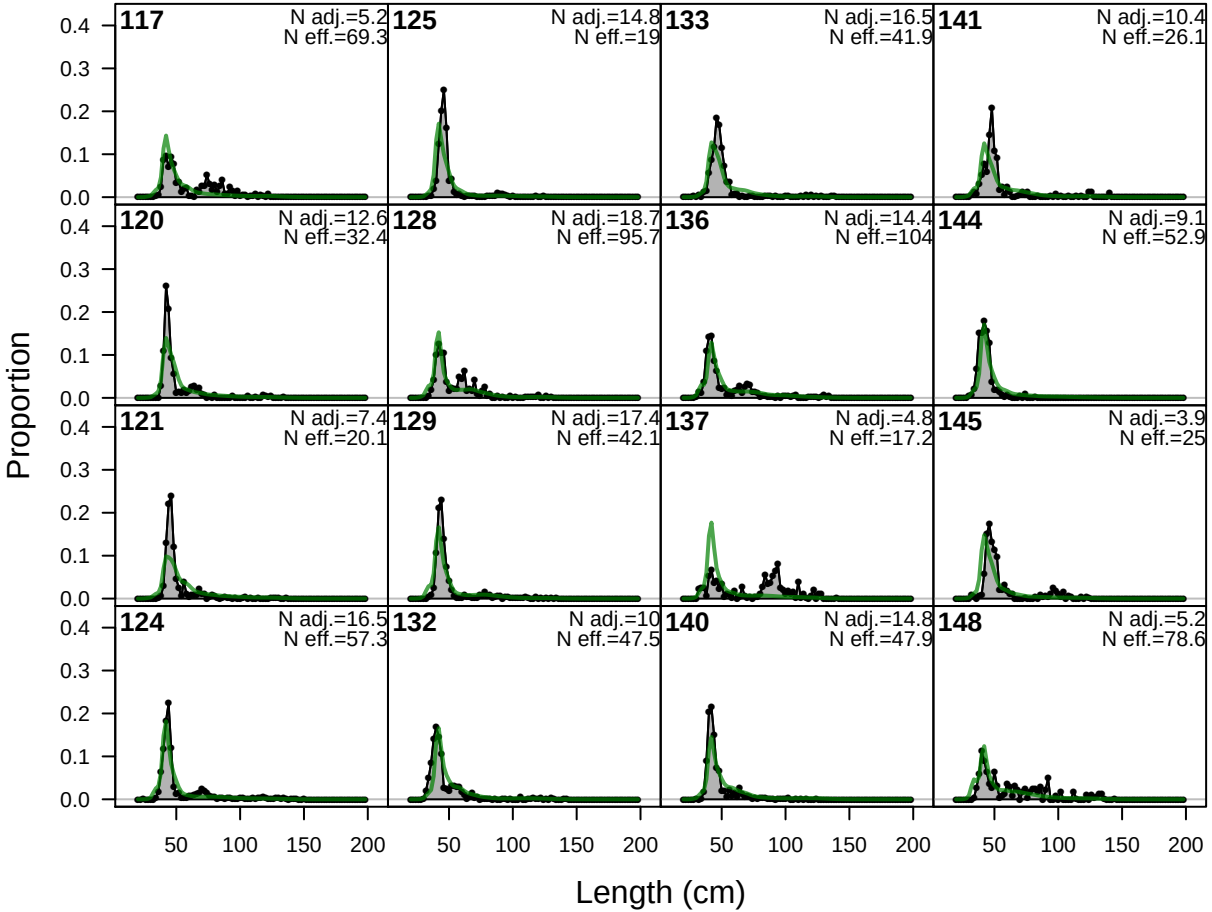

133
N adj.=6.1
N eff.=96.7
144
N adj.=6.1
N eff.=21.3
168
N adj.=5
N eff.=21
176
N adj.=10
N eff.=29.6
136
N adj.=3.3
N eff.=45
156
N adj.=2.2
N eff.=21.7
169
N adj.=2.8
N eff.=22.8
180
N adj.=10.6
N eff.=64.7
140
N adj.=8.9
N eff.=18.4
160
N adj.=10
N eff.=105.4
172
N adj.=1.1
N eff.=13.8
141
N adj.=1.7
N eff.=16.1
164
N adj.=15
N eff.=53.5
173
N adj.=1.1
N eff.=37.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

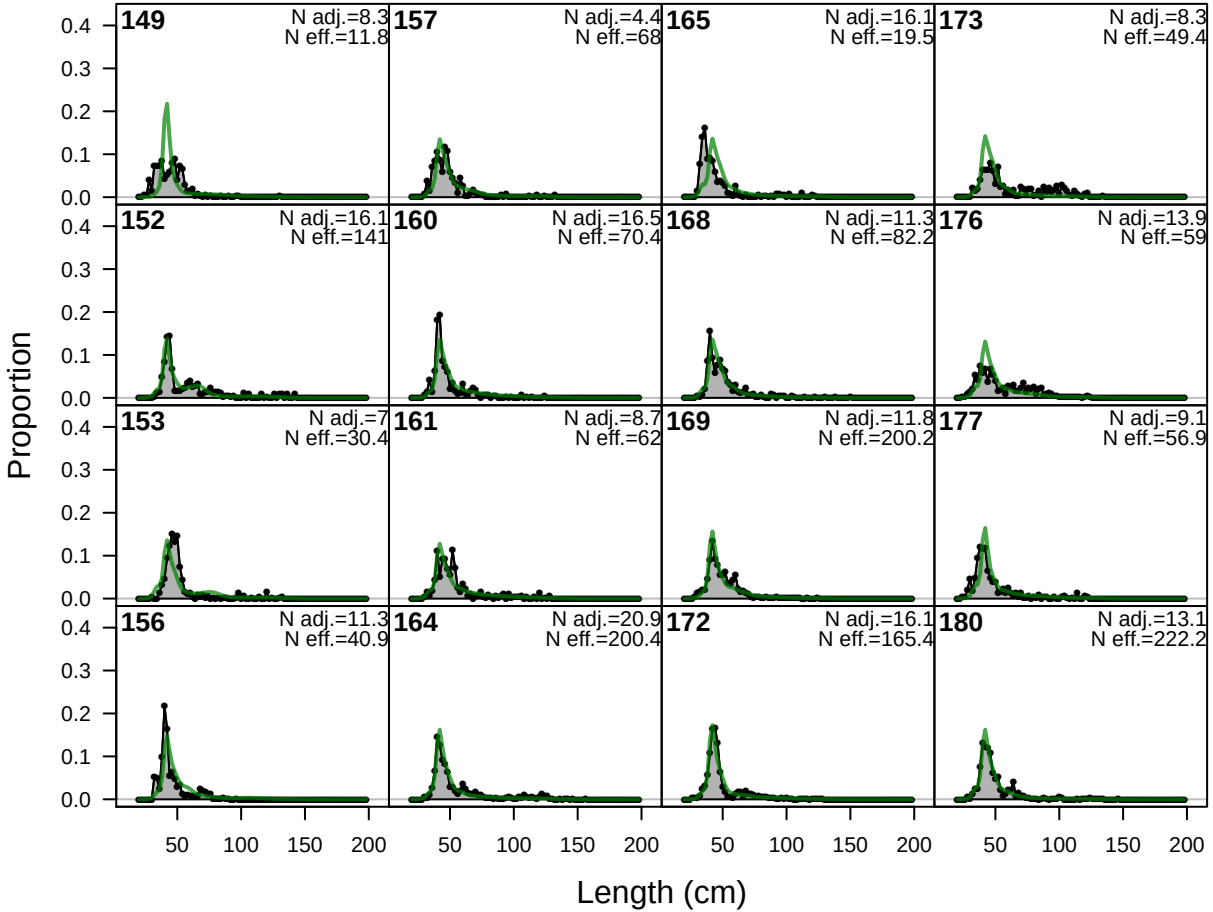

−2
0.1
2
200
150
100
50
Length (cm)
37
48
60
84
96
108
124
140
156
169
Year

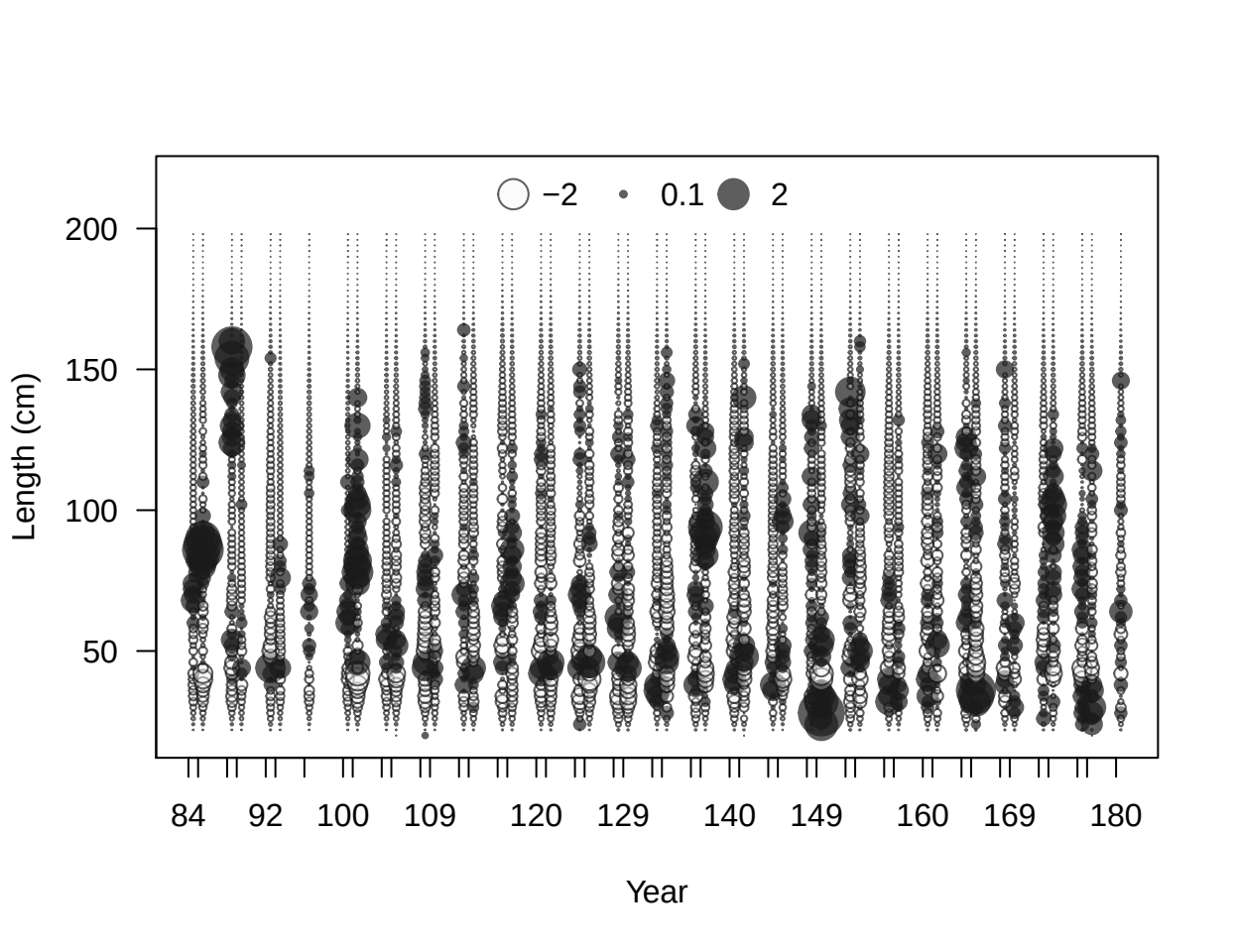

Effective sample size
Observed sample size
0
50
100
150
200
0
5
10
15
20
25
30
48
160
133
132
52
180
164
116
128
64
176
140
112
arithmetic mean
harmonic mean

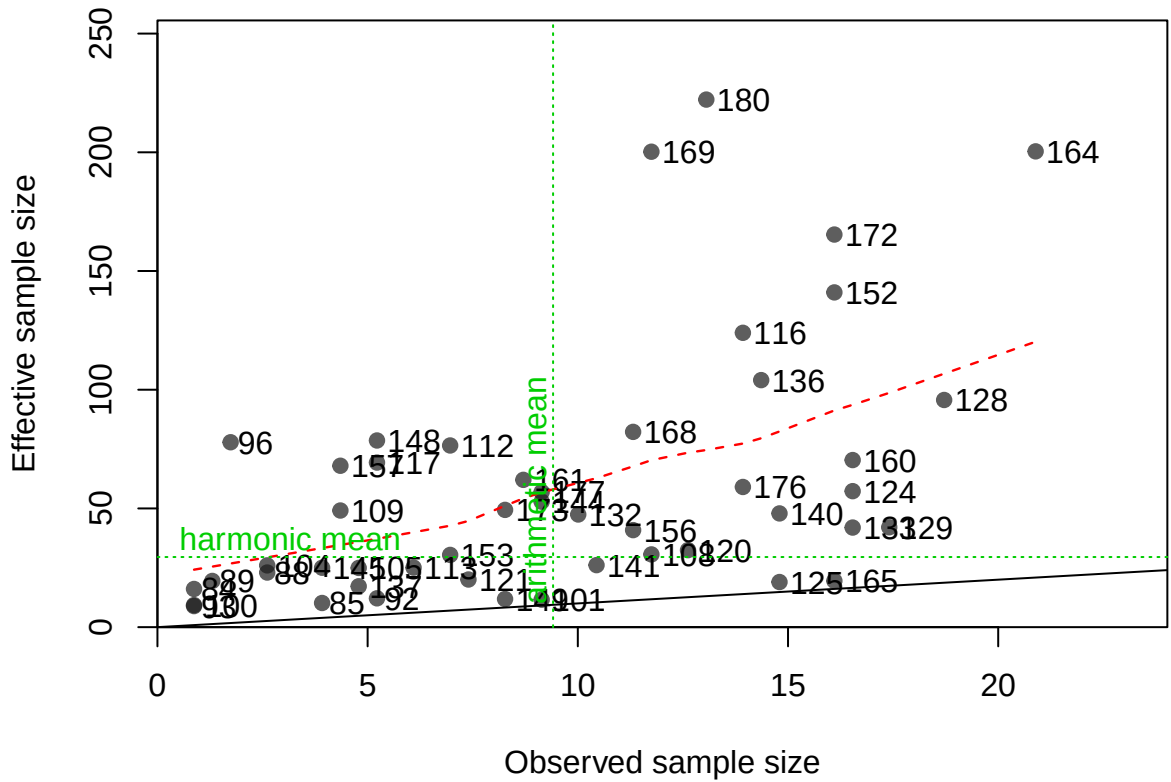

F2−OBJ_Nc_Q14 (whole catch)
Mean length
100
80
60
40
20
40
60
80
100
120
140
160
180
Year


84
N adj.=0.9
N eff.=16.1
92
N adj.=5.2
N eff.=12.1
101
N adj.=9.1
N eff.=11.6
109
N adj.=4.4
N eff.=49.1
85
N adj.=3.9
N eff.=10.2
93
N adj.=0.9
N eff.=8.9
104
N adj.=2.6
N eff.=26
112
N adj.=7
N eff.=76.5
88
N adj.=2.6
N eff.=23
96
N adj.=1.7
N eff.=77.9
105
N adj.=4.8
N eff.=24.9
113
N adj.=6.1
N eff.=25.1
89
N adj.=1.3
N eff.=19.5
100
N adj.=0.9
N eff.=9.3
108
N adj.=11.8
N eff.=30.6
116
N adj.=13.9
N eff.=124
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

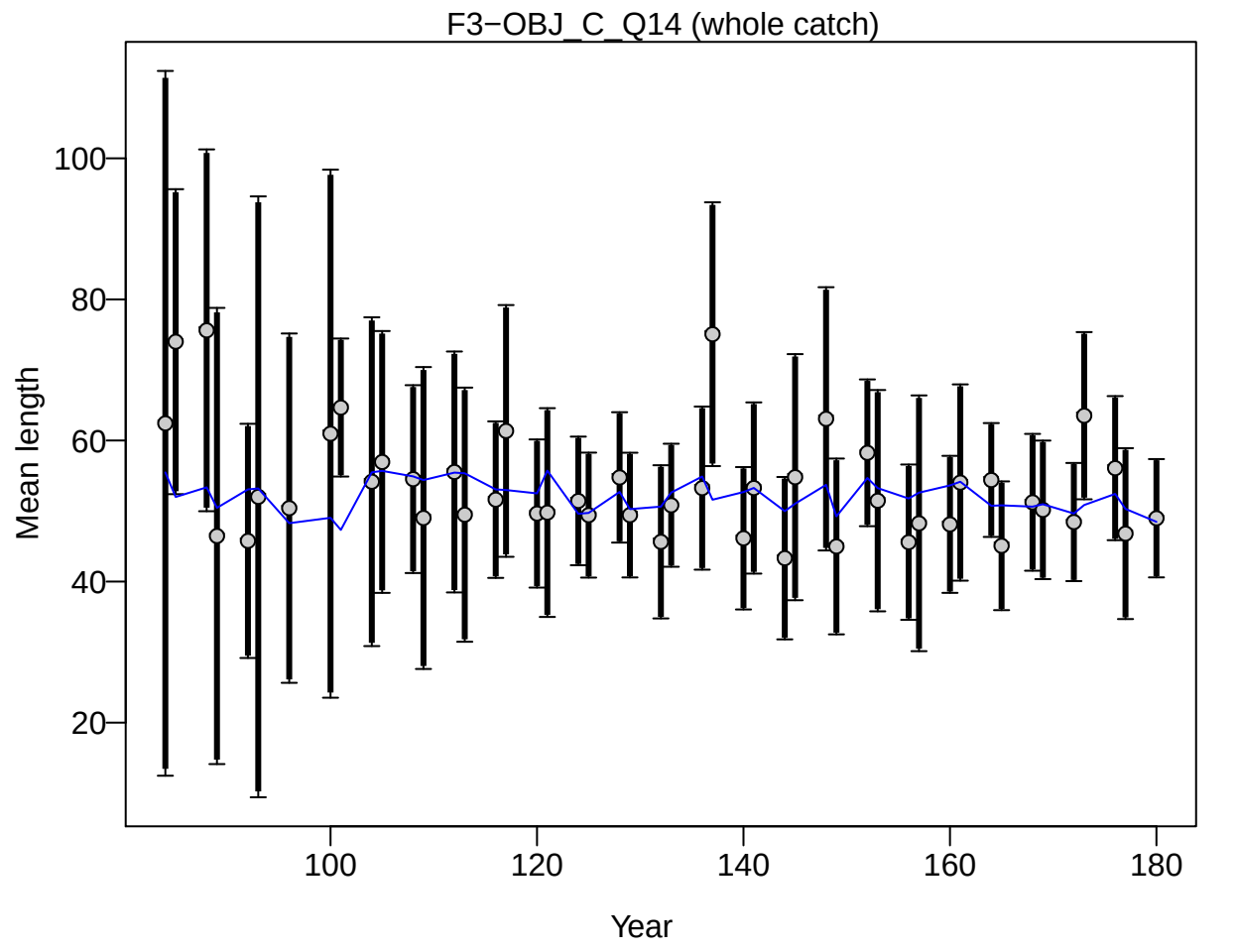

117
N adj.=5.2
N eff.=69.3
125
N adj.=14.8
N eff.=19
133
N adj.=16.5
N eff.=41.9
141
N adj.=10.4
N eff.=26.1
120
N adj.=12.6
N eff.=32.4
128
N adj.=18.7
N eff.=95.7
136
N adj.=14.4
N eff.=104
144
N adj.=9.1
N eff.=52.9
121
N adj.=7.4
N eff.=20.1
129
N adj.=17.4
N eff.=42.1
137
N adj.=4.8
N eff.=17.2
145
N adj.=3.9
N eff.=25
124
N adj.=16.5
N eff.=57.3
132
N adj.=10
N eff.=47.5
140
N adj.=14.8
N eff.=47.9
148
N adj.=5.2
N eff.=78.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

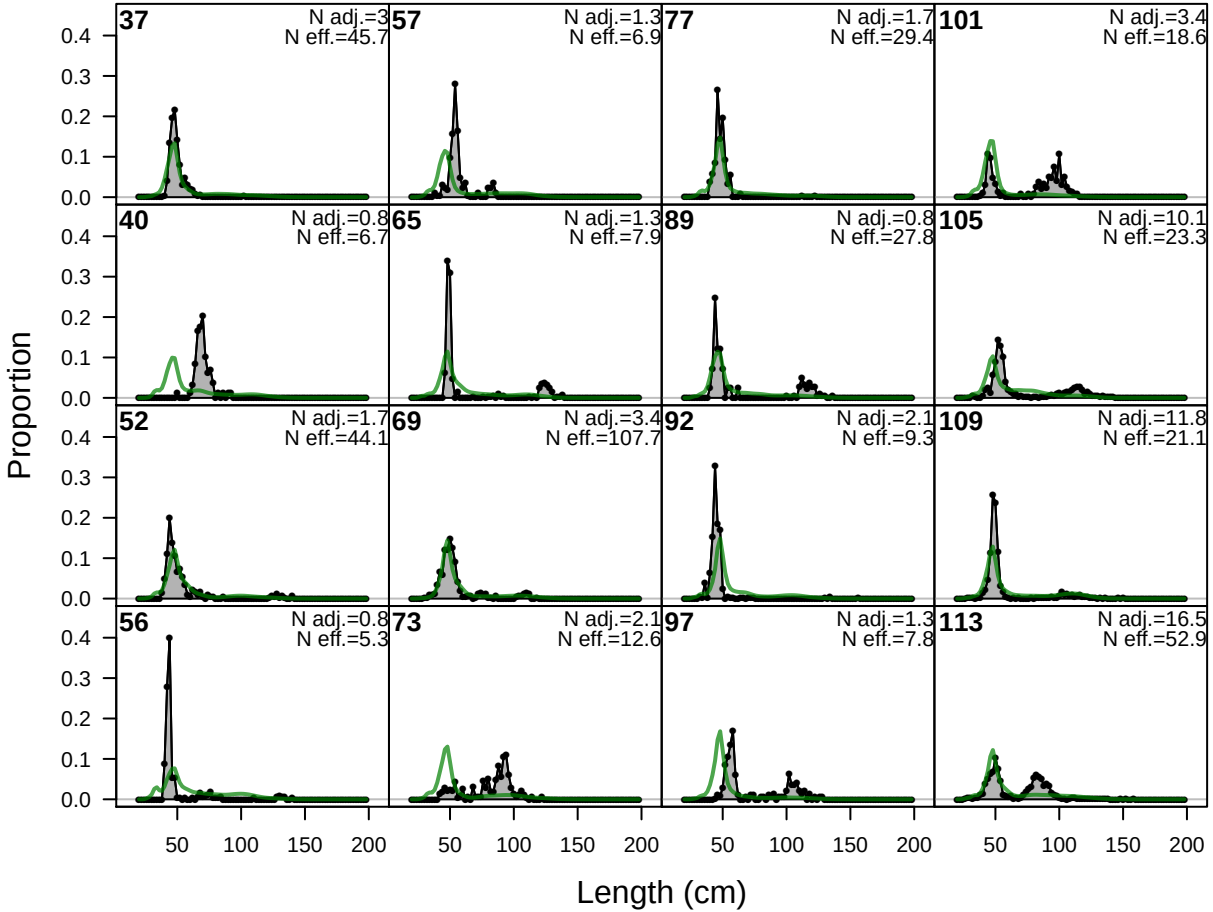

149
N adj.=8.3
N eff.=11.8
157
N adj.=4.4
N eff.=68
165
N adj.=16.1
N eff.=19.5
173
N adj.=8.3
N eff.=49.4
152
N adj.=16.1
N eff.=141
160
N adj.=16.5
N eff.=70.4
168
N adj.=11.3
N eff.=82.2
176
N adj.=13.9
N eff.=59
153
N adj.=7
N eff.=30.4
161
N adj.=8.7
N eff.=62
169
N adj.=11.8
N eff.=200.2
177
N adj.=9.1
N eff.=56.9
156
N adj.=11.3
N eff.=40.9
164
N adj.=20.9
N eff.=200.4
172
N adj.=16.1
N eff.=165.4
180
N adj.=13.1
N eff.=222.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

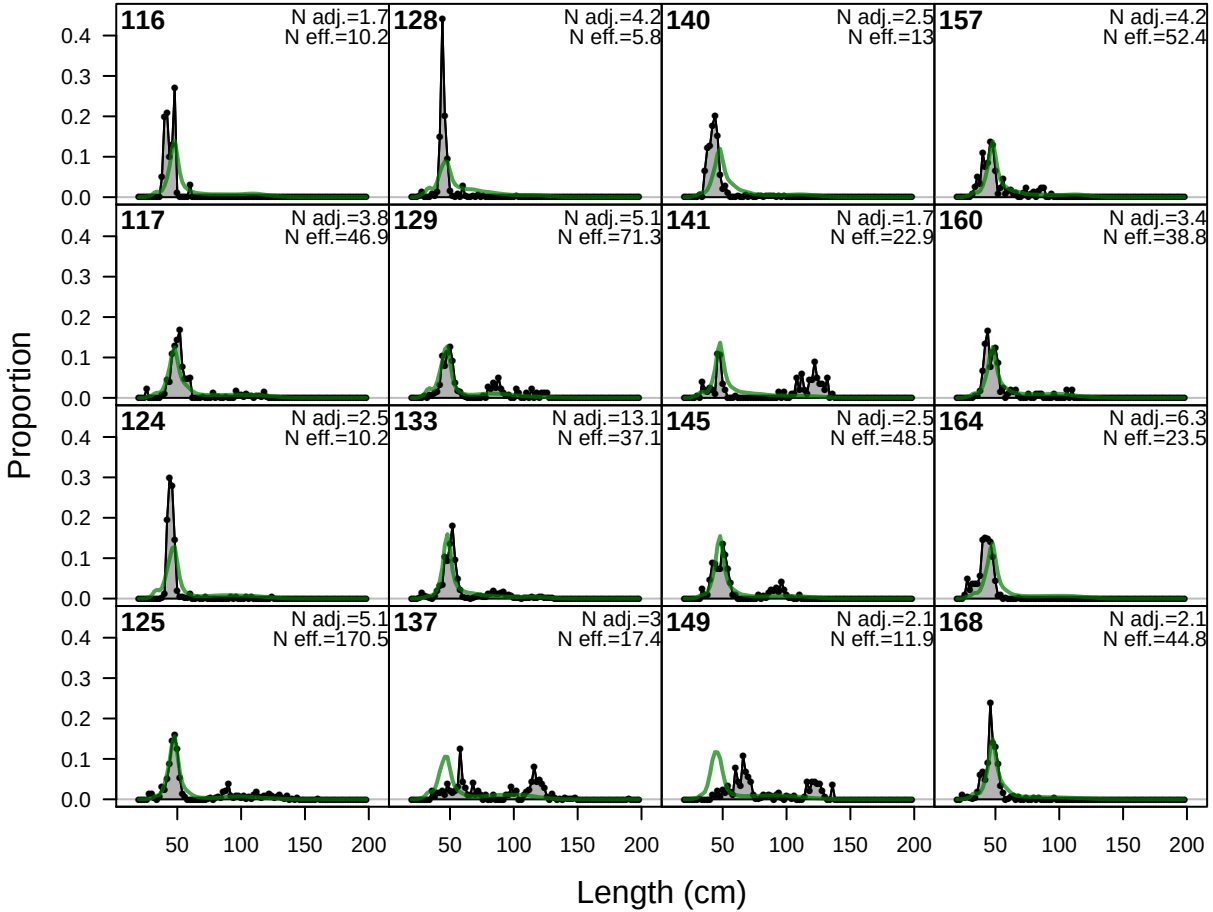

−2
0.1
2
200
150
100
50
Length (cm)
84
92
100
109
120
129
140
149
160
169
180
Year

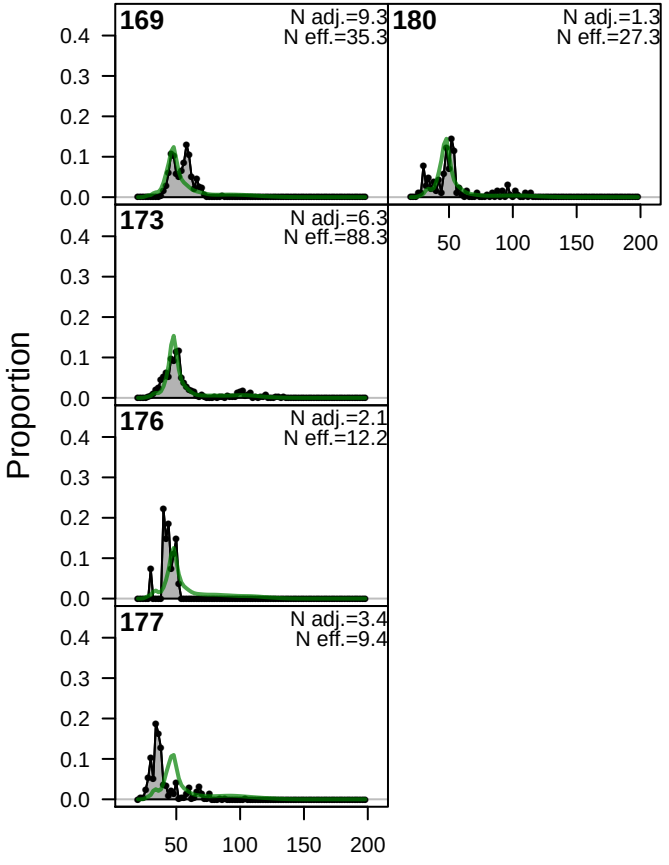


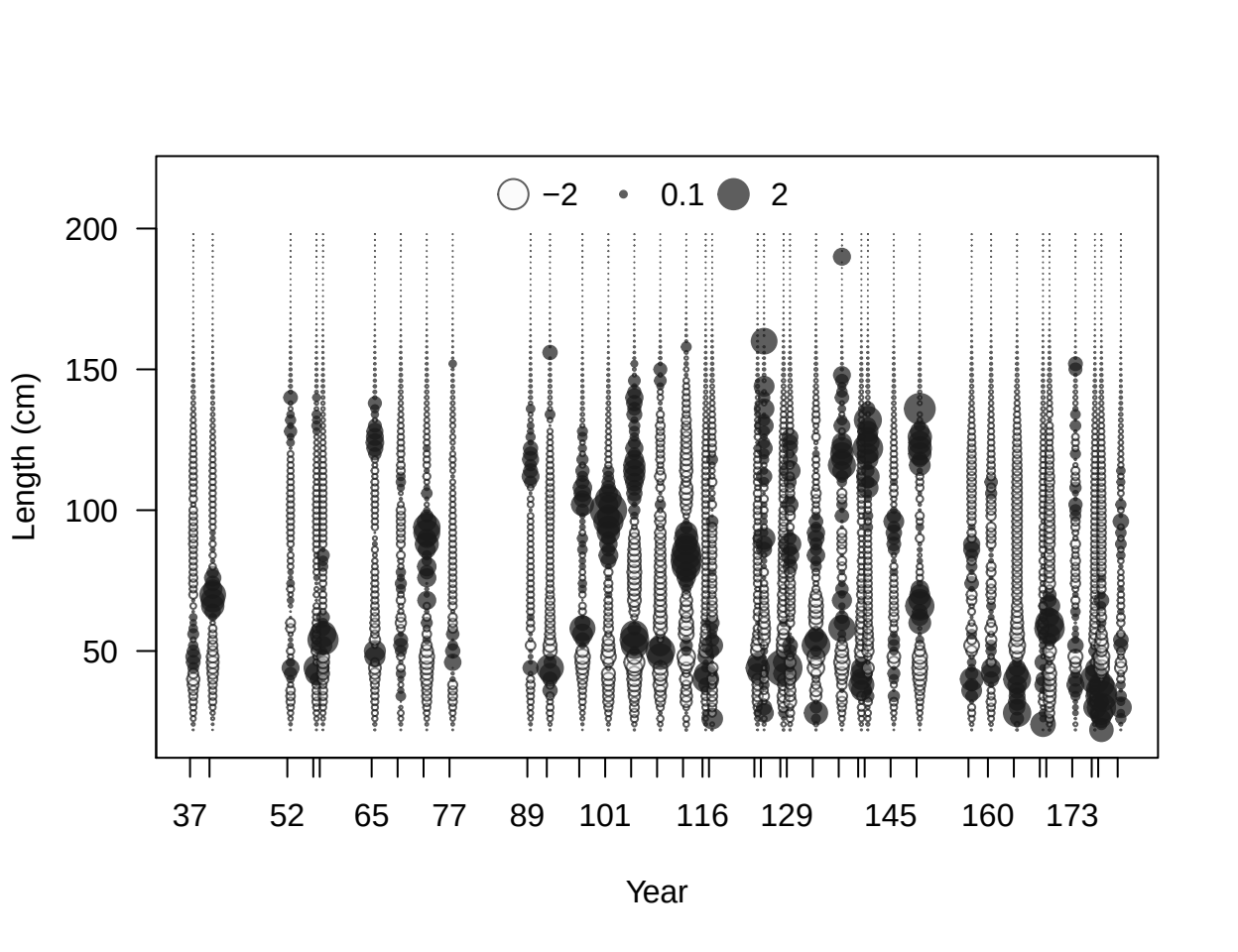
Effective sample size
Observed sample size
harmonic mean
arithmetic mean
0
50
100
150
200
250
0
5
10
15
20
180
169
164
172
152
116
136
128
168
96
148
112
160
176
124
109
140
132
156
153
141
121
85
92

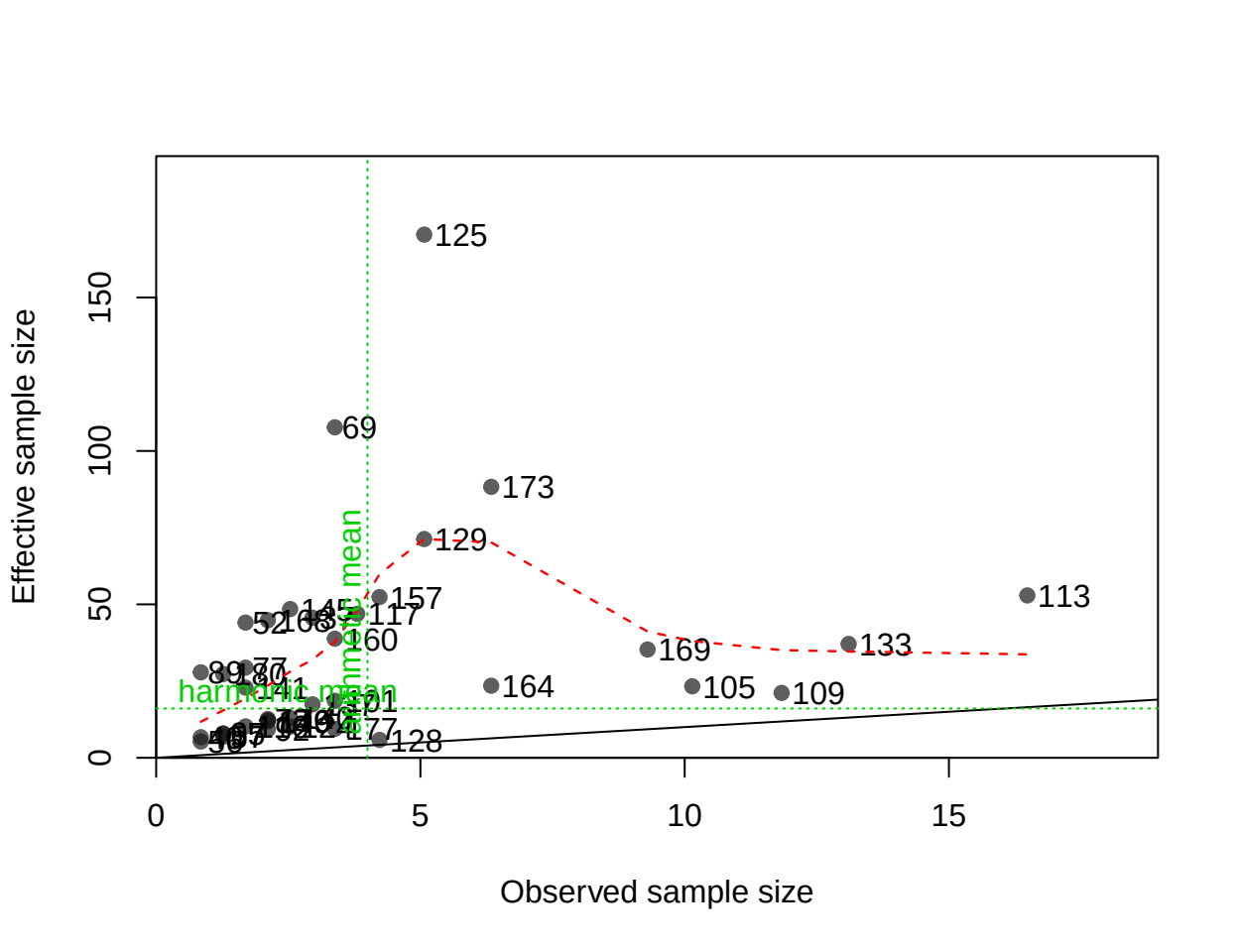

F3−OBJ_C_Q14 (whole catch)
Mean length
100
80
60
40
20
100
120
140
160
180
Year

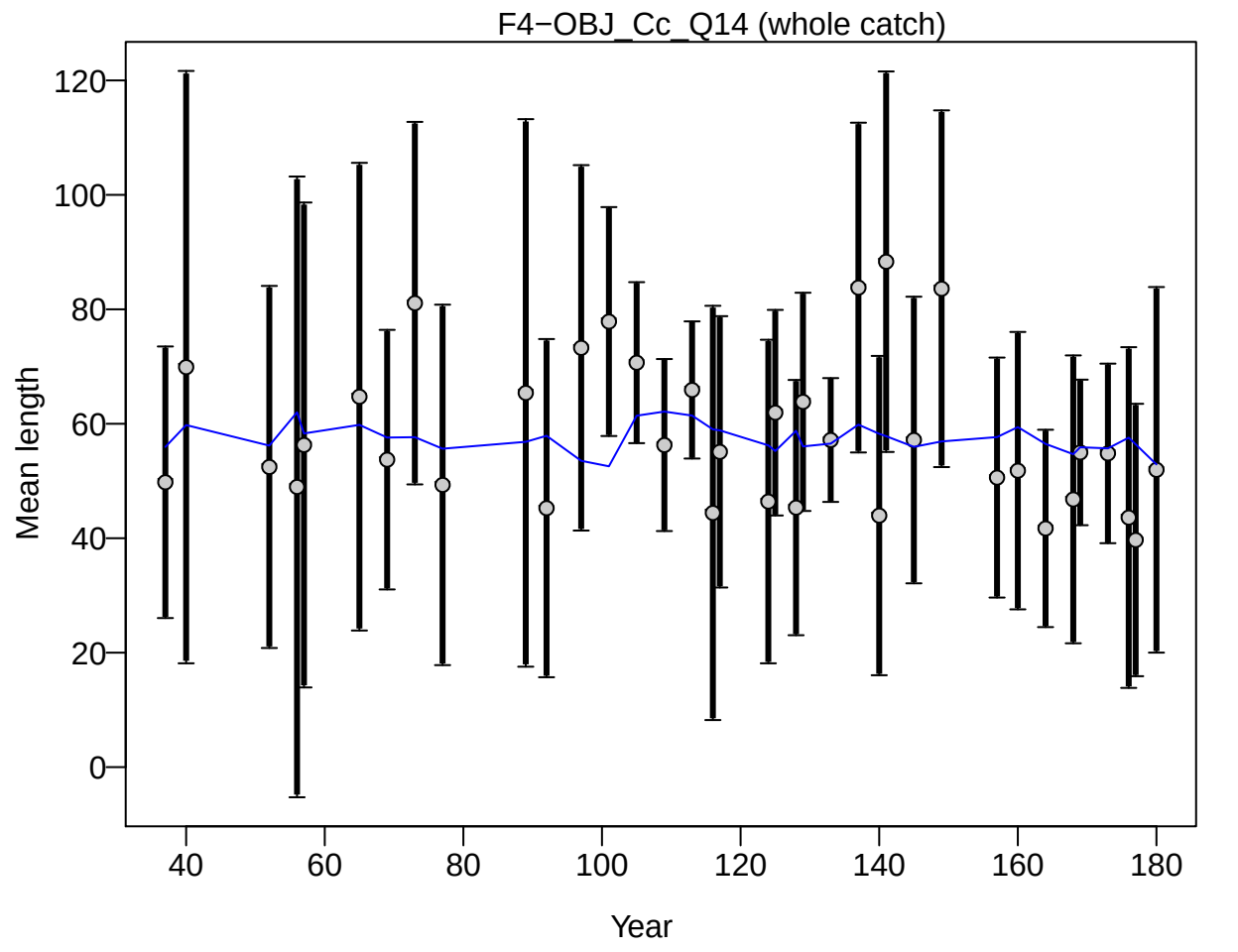

37
N adj.=3
N eff.=45.7
57
N adj.=1.3
N eff.=6.9
77
N adj.=1.7
N eff.=29.4
101
N adj.=3.4
N eff.=18.6
40
N adj.=0.8
N eff.=6.7
65
N adj.=1.3
N eff.=7.9
89
N adj.=0.8
N eff.=27.8
105
N adj.=10.1
N eff.=23.3
52
N adj.=1.7
N eff.=44.1
69
N adj.=3.4
N eff.=107.7
92
N adj.=2.1
N eff.=9.3
109
N adj.=11.8
N eff.=21.1
56
N adj.=0.8
N eff.=5.3
73
N adj.=2.1
N eff.=12.6
97
N adj.=1.3
N eff.=7.8
113
N adj.=16.5
N eff.=52.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

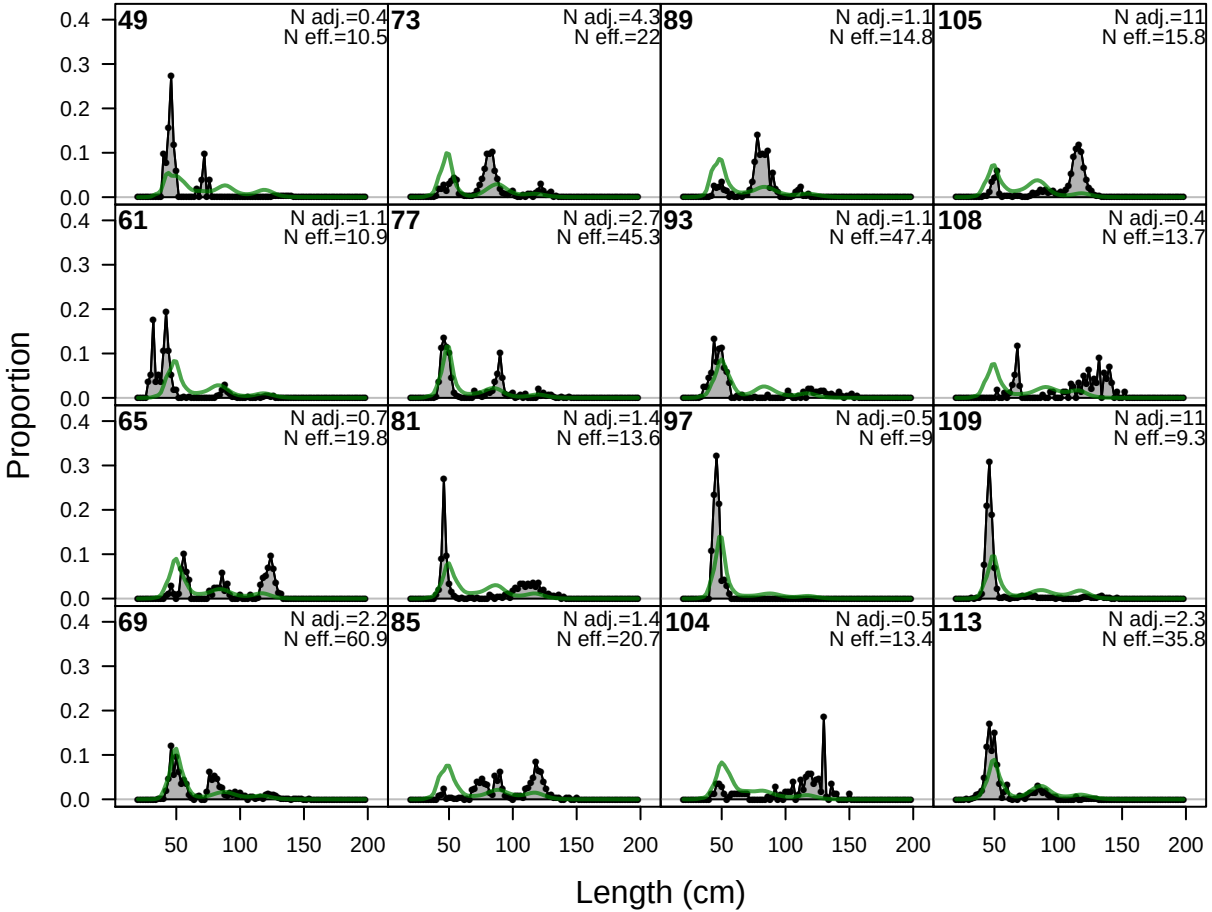

116
N adj.=1.7
N eff.=10.2
128
N adj.=4.2
N eff.=5.8
140
N adj.=2.5
N eff.=13
157
N adj.=4.2
N eff.=52.4
117
N adj.=3.8
N eff.=46.9
129
N adj.=5.1
N eff.=71.3
141
N adj.=1.7
N eff.=22.9
160
N adj.=3.4
N eff.=38.8
124
N adj.=2.5
N eff.=10.2
133
N adj.=13.1
N eff.=37.1
145
N adj.=2.5
N eff.=48.5
164
N adj.=6.3
N eff.=23.5
125
N adj.=5.1
N eff.=170.5
137
N adj.=3
N eff.=17.4
149
N adj.=2.1
N eff.=11.9
168
N adj.=2.1
N eff.=44.8
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

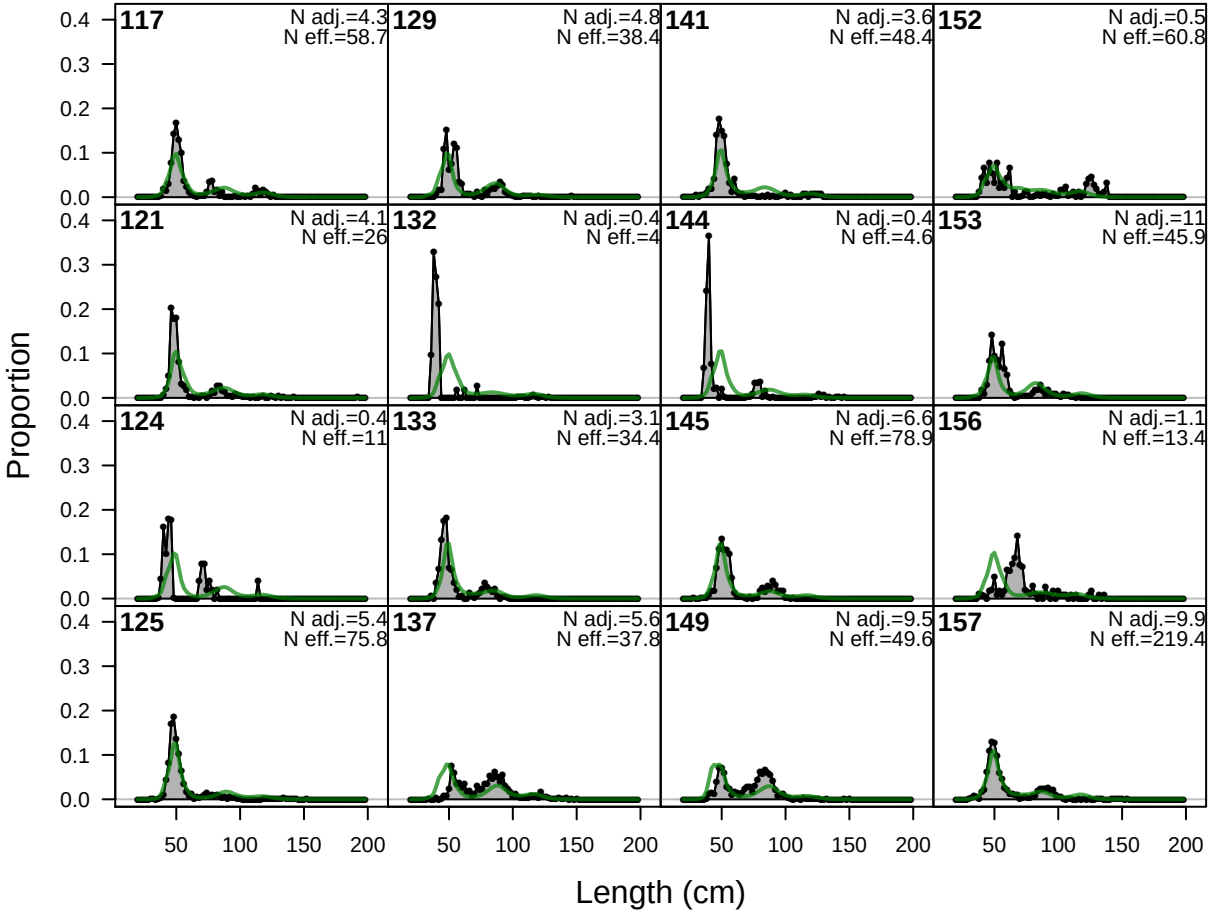

169
N adj.=9.3
N eff.=35.3
180
N adj.=1.3
N eff.=27.3
173
N adj.=6.3
N eff.=88.3
176
N adj.=2.1
N eff.=12.2
177
N adj.=3.4
N eff.=9.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

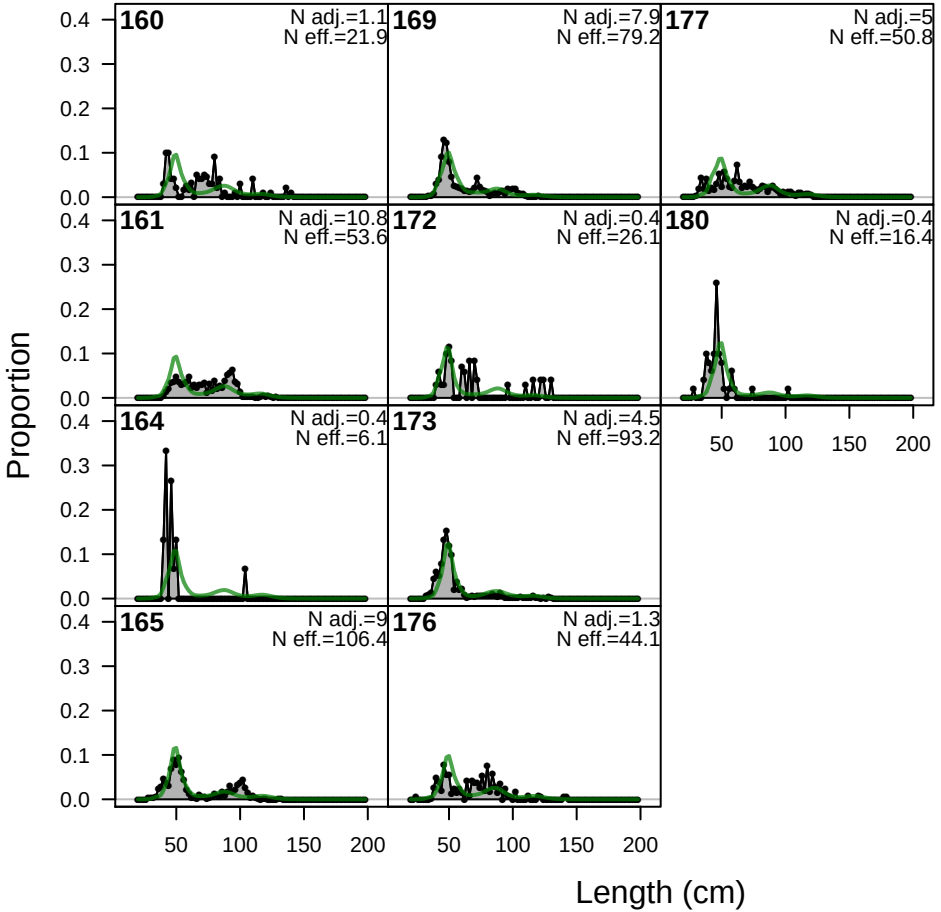

−2
0.1
2
200
150
100
50
Length (cm)
37
52
65
77
89
101
116
129
145
160
173
Year

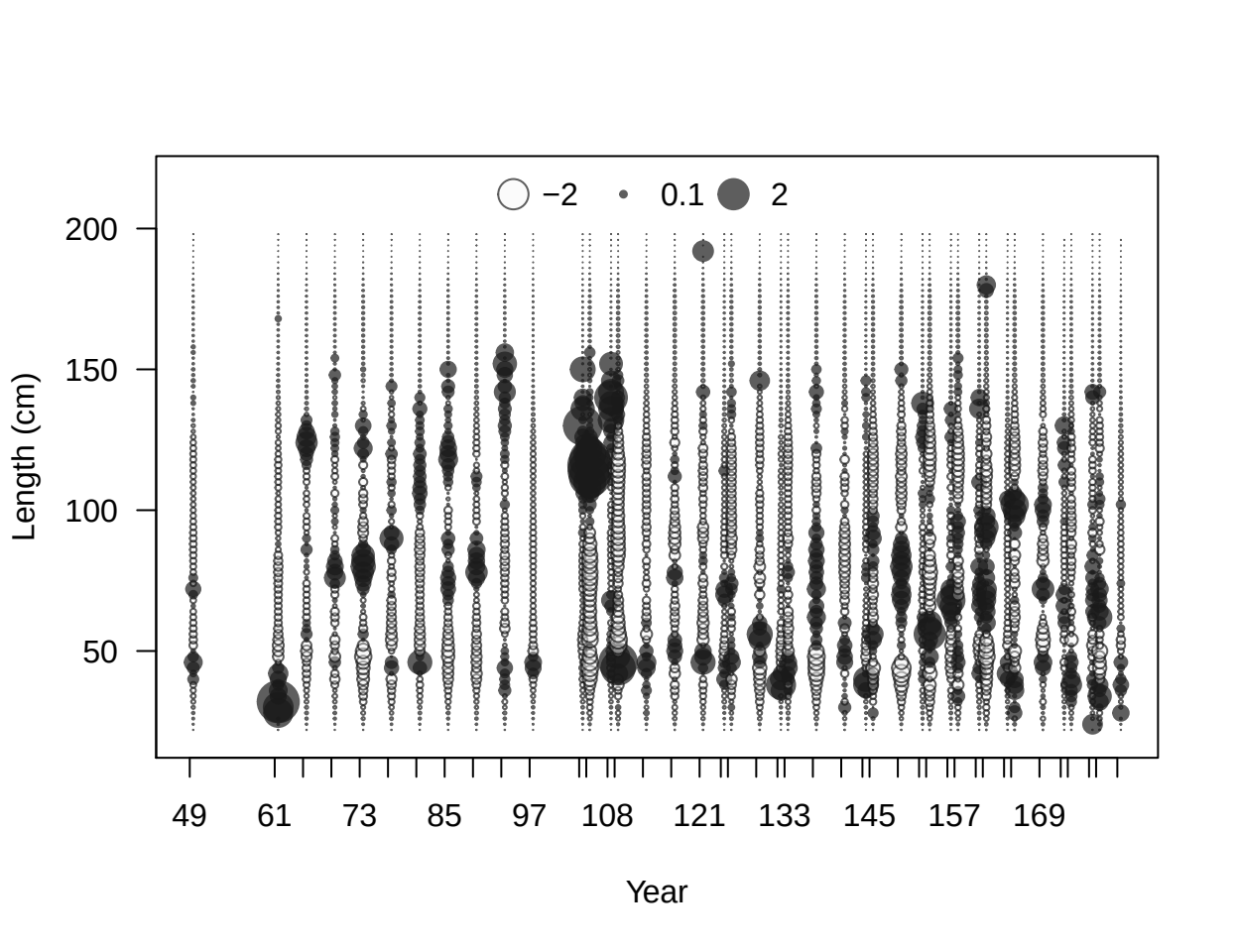

Effective sample size
Observed sample size
0
50
100
150
0
5
10
15
125
69
173
129
157
113
117
160
169
133
164
105
109
128
harmonic mean
arithmetic mean

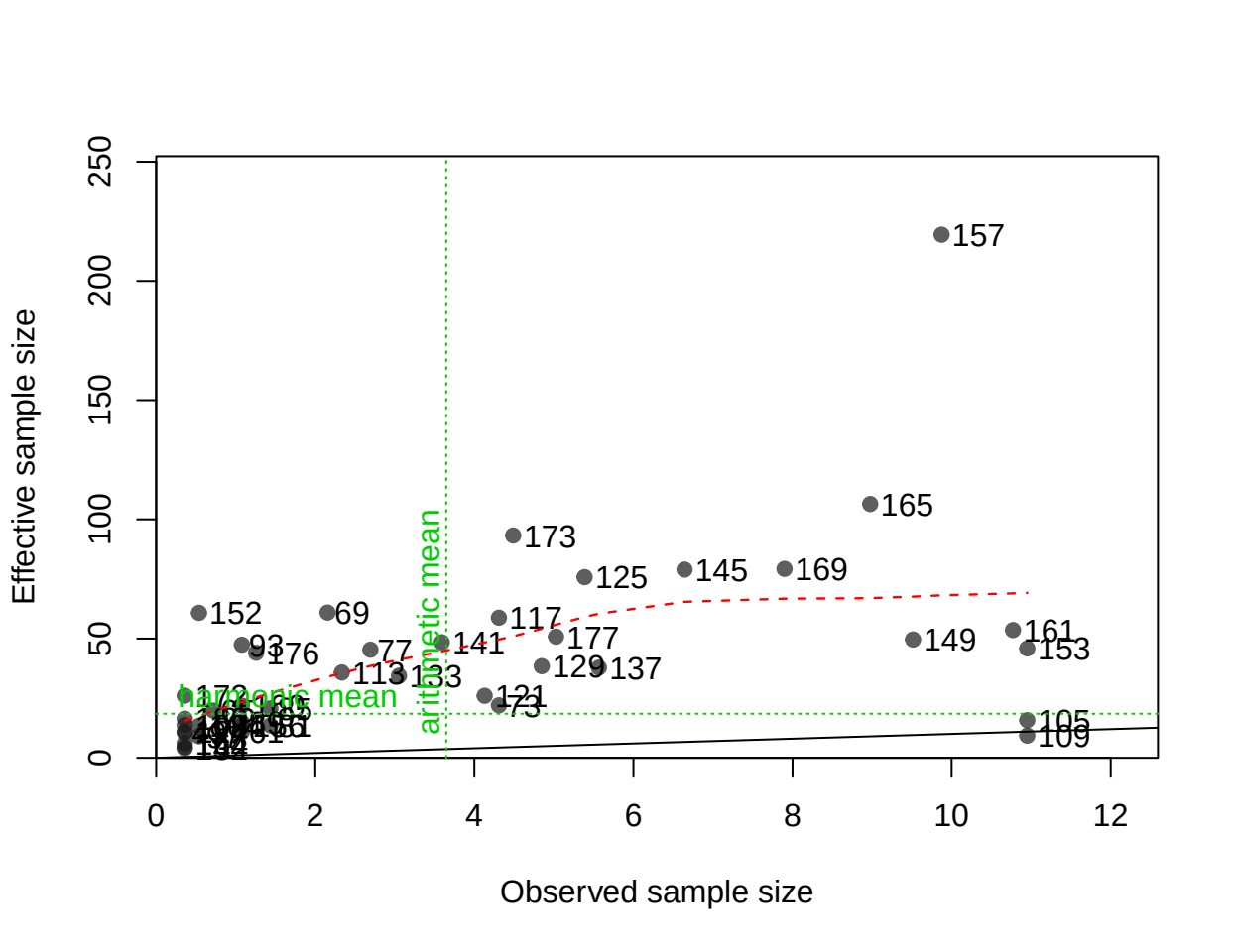

F4−OBJ_Cc_Q14 (whole catch)
Mean length
120
100
80
60
40
20
0
40
60
80
100
120
140
160
180
Year

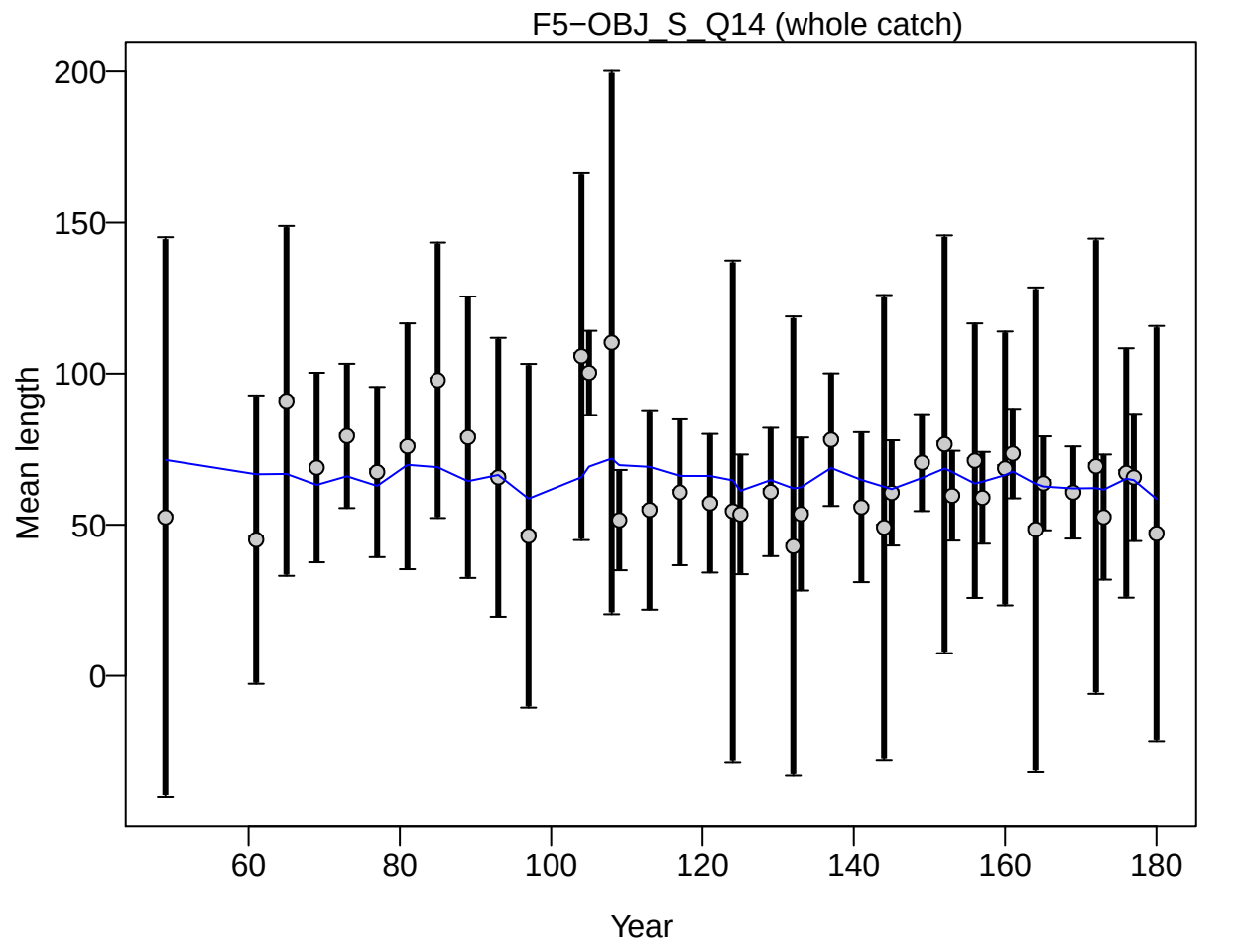

49
N adj.=0.4
N eff.=10.5
73
N adj.=4.3
N eff.=22
89
N adj.=1.1
N eff.=14.8
105
N adj.=11
N eff.=15.8
61
N adj.=1.1
N eff.=10.9
77
N adj.=2.7
N eff.=45.3
93
N adj.=1.1
N eff.=47.4
108
N adj.=0.4
N eff.=13.7
65
N adj.=0.7
N eff.=19.8
81
N adj.=1.4
N eff.=13.6
97
N adj.=0.5
N eff.=9
109
N adj.=11
N eff.=9.3
69
N adj.=2.2
N eff.=60.9
85
N adj.=1.4
N eff.=20.7
104
N adj.=0.5
N eff.=13.4
113
N adj.=2.3
N eff.=35.8
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

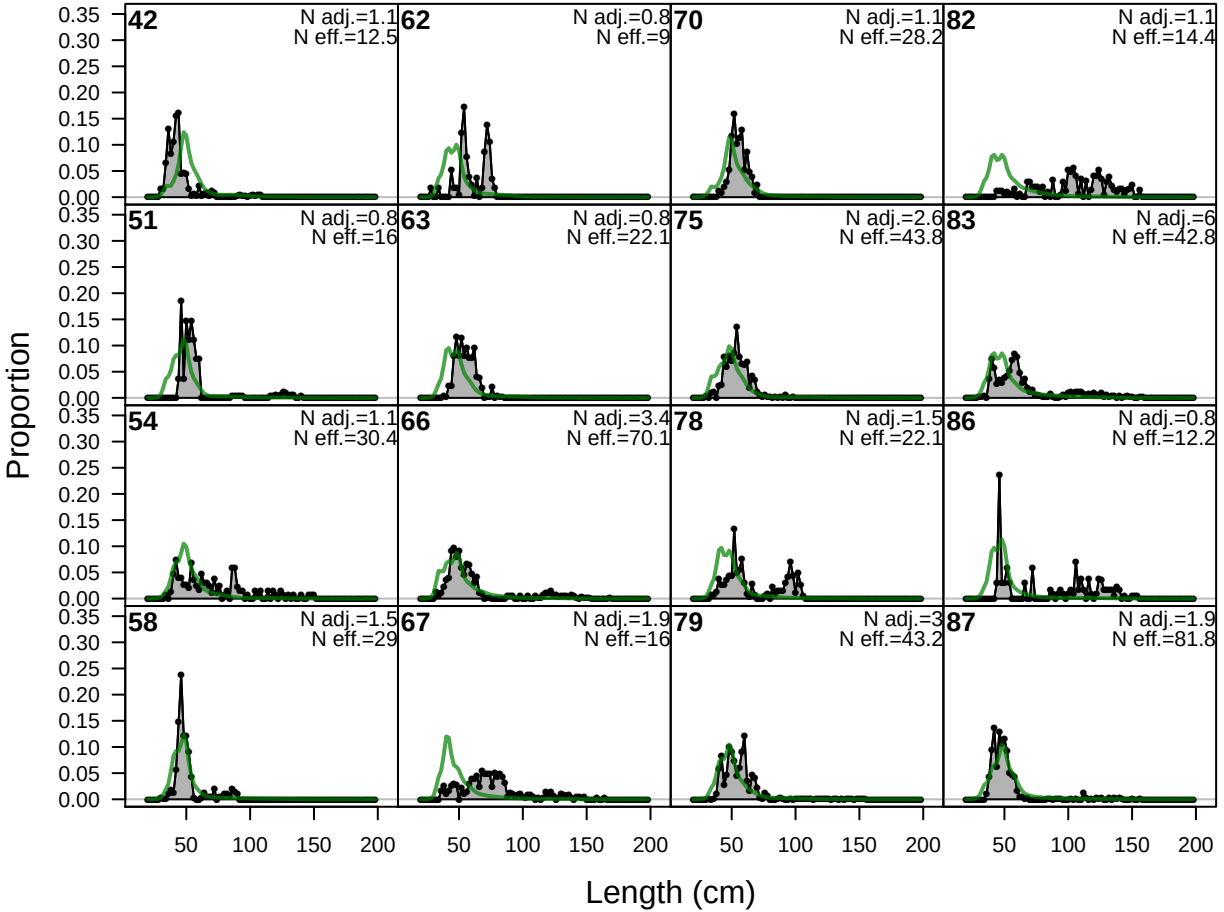

117
N adj.=4.3
N eff.=58.7
129
N adj.=4.8
N eff.=38.4
141
N adj.=3.6
N eff.=48.4
152
N adj.=0.5
N eff.=60.8
121
N adj.=4.1
N eff.=26
132
N adj.=0.4
N eff.=4
144
N adj.=0.4
N eff.=4.6
153
N adj.=11
N eff.=45.9
124
N adj.=0.4
N eff.=11
133
N adj.=3.1
N eff.=34.4
145
N adj.=6.6
N eff.=78.9
156
N adj.=1.1
N eff.=13.4
125
N adj.=5.4
N eff.=75.8
137
N adj.=5.6
N eff.=37.8
149
N adj.=9.5
N eff.=49.6
157
N adj.=9.9
N eff.=219.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

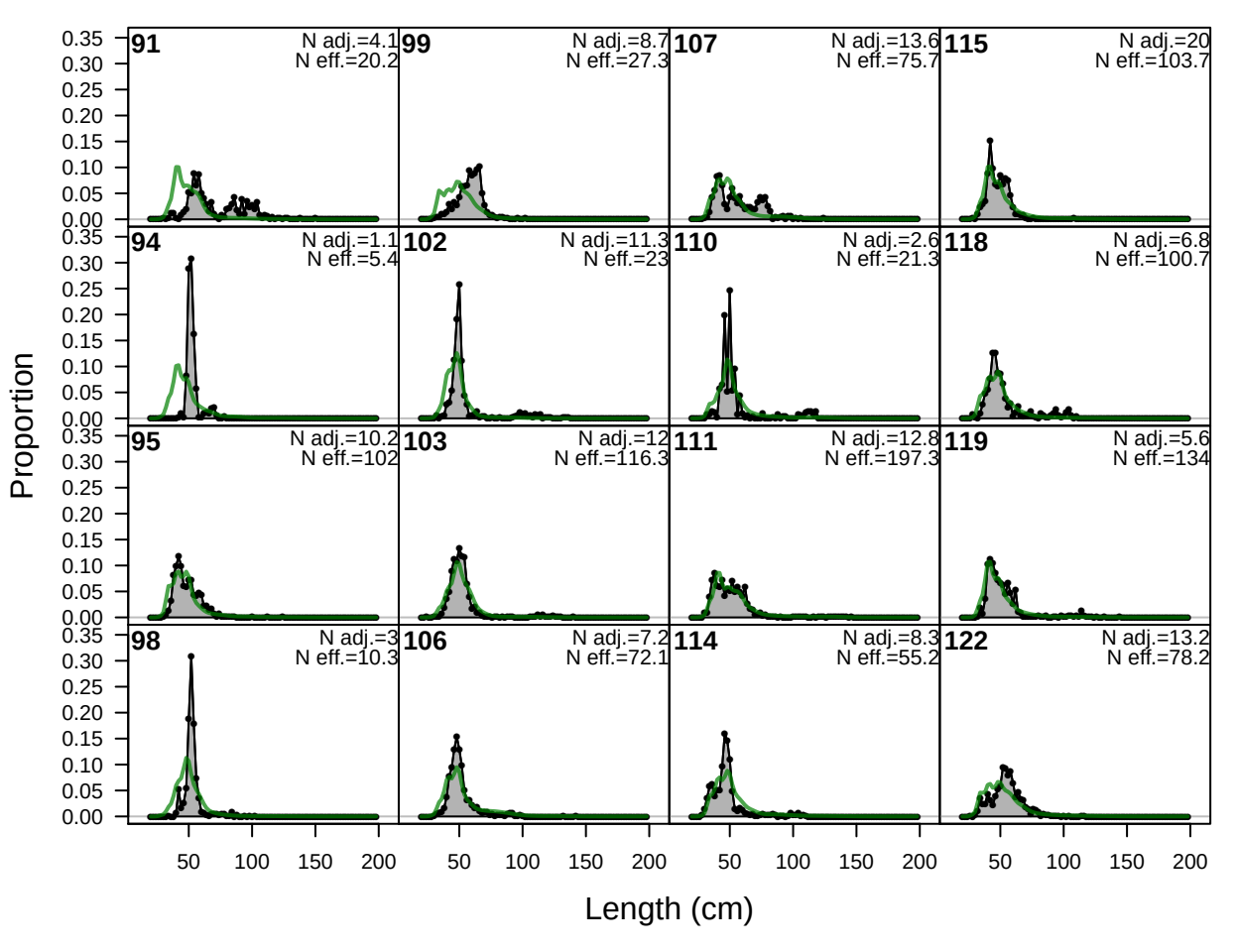

160
N adj.=1.1
N eff.=21.9
169
N adj.=7.9
N eff.=79.2
177
N adj.=5
N eff.=50.8
161
N adj.=10.8
N eff.=53.6
172
N adj.=0.4
N eff.=26.1
180
N adj.=0.4
N eff.=16.4
164
N adj.=0.4
N eff.=6.1
173
N adj.=4.5
N eff.=93.2
165
N adj.=9
N eff.=106.4
176
N adj.=1.3
N eff.=44.1
Proportion
Length (cm)
0.0
0.1
0.2
0.3
0.4
50
100
150
200


−2
0.1
2
200
150
100
50
Length (cm)
49
61
73
85
97
108
121
133
145
157
169
Year


Effective sample size
Observed sample size
0
50
100
150
200
250
0
2
4
6
8
10
12
arithmetic mean
harmonic mean
157
165
173
125
145
169
152
69
117
177
149
161
153
93
176
77
141
129
137
113
133
121
105
109


F5−OBJ_S_Q14 (whole catch)
Mean length
200
150
100
50
0
60
80
100
120
140
160
180
Year


42
N adj.=1.1
N eff.=12.5
62
N adj.=0.8
N eff.=9
70
N adj.=1.1
N eff.=28.2
82
N adj.=1.1
N eff.=14.4
51
N adj.=0.8
N eff.=16
63
N adj.=0.8
N eff.=22.1
75
N adj.=2.6
N eff.=43.8
83
N adj.=6
N eff.=42.8
54
N adj.=1.1
N eff.=30.4
66
N adj.=3.4
N eff.=70.1
78
N adj.=1.5
N eff.=22.1
86
N adj.=0.8
N eff.=12.2
58
N adj.=1.5
N eff.=29
67
N adj.=1.9
N eff.=16
79
N adj.=3
N eff.=43.2
87
N adj.=1.9
N eff.=81.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)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N eff.=27.3
107
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N eff.=75.7
115
N adj.=20
N eff.=103.7
94
N adj.=1.1
N eff.=5.4
102
N adj.=11.3
N eff.=23
110
N adj.=2.6
N eff.=21.3
118
N adj.=6.8
N eff.=100.7
95
N adj.=10.2
N eff.=102
103
N adj.=12
N eff.=116.3
111
N adj.=12.8
N eff.=197.3
119
N adj.=5.6
N eff.=134
98
N adj.=3
N eff.=10.3
106
N adj.=7.2
N eff.=72.1
114
N adj.=8.3
N eff.=55.2
122
N adj.=13.2
N eff.=78.2
Proportion
0.00
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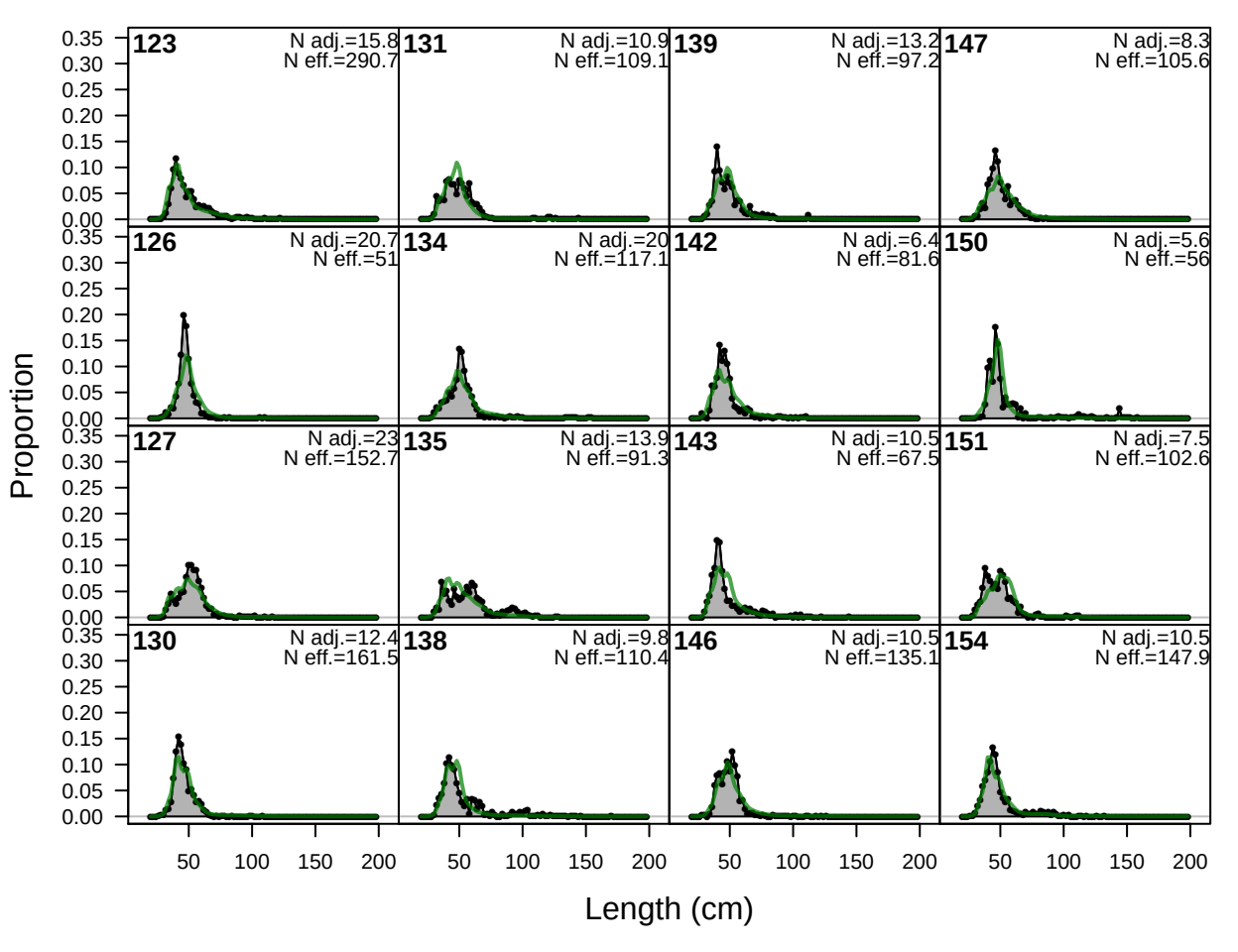
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)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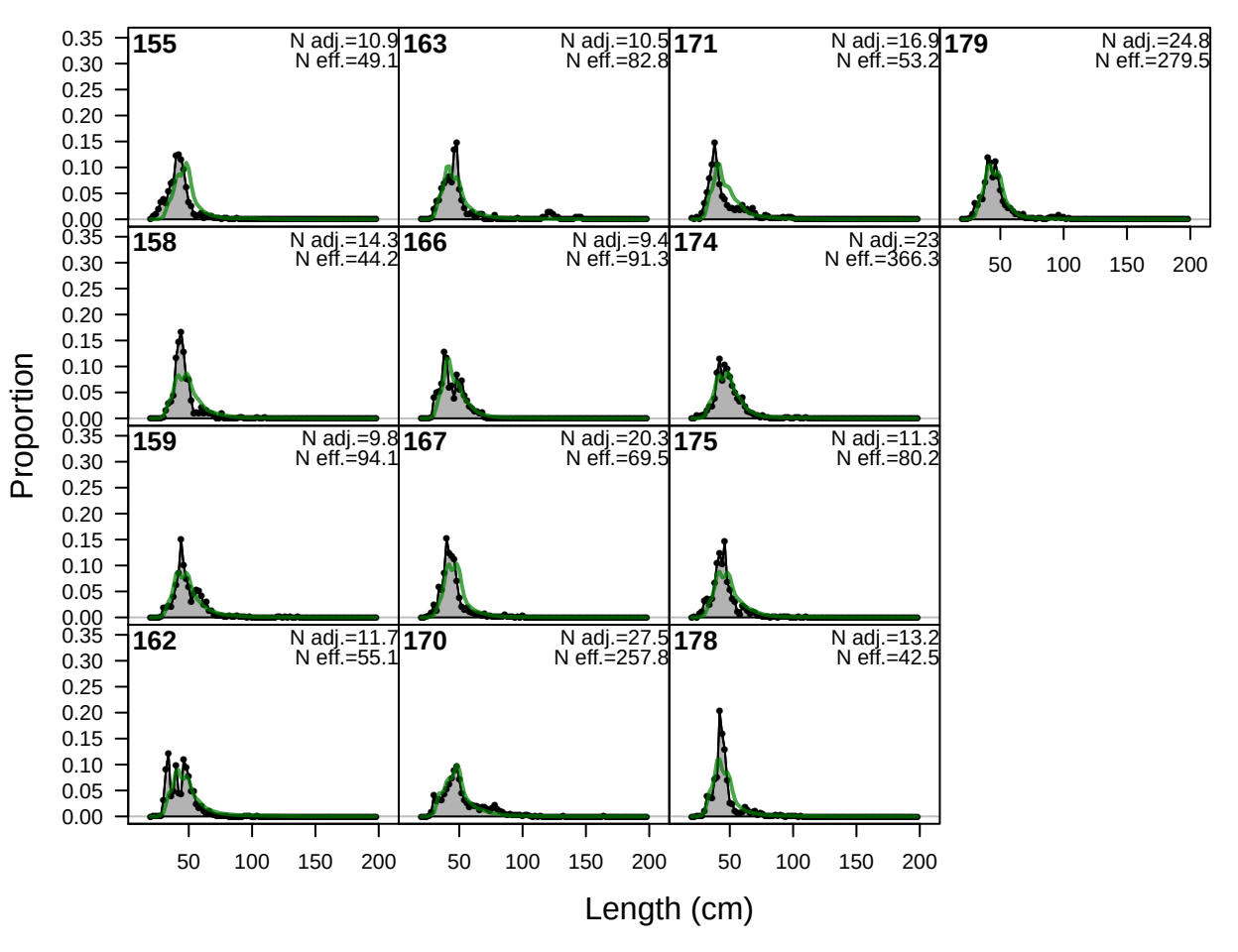
147
N adj.=8.3
N eff.=105.6
126
N adj.=20.7
N eff.=51
134
N adj.=20
N eff.=117.1
142
N adj.=6.4
N eff.=81.6
150
N adj.=5.6
N eff.=56
127
N adj.=23
N eff.=152.7
135
N adj.=13.9
N eff.=91.3
143
N adj.=10.5
N eff.=67.5
151
N adj.=7.5
N eff.=102.6
130
N adj.=12.4
N eff.=161.5
138
N adj.=9.8
N eff.=110.4
146
N adj.=10.5
N eff.=135.1
154
N adj.=10.5
N eff.=147.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)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N eff.=49.1
163
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N eff.=82.8
171
N adj.=16.9
N eff.=53.2
179
N adj.=24.8
N eff.=279.5
158
N adj.=14.3
N eff.=44.2
166
N adj.=9.4
N eff.=91.3
174
N adj.=23
N eff.=366.3
159
N adj.=9.8
N eff.=94.1
167
N adj.=20.3
N eff.=69.5
175
N adj.=11.3
N eff.=80.2
162
N adj.=11.7
N eff.=55.1
170
N adj.=27.5
N eff.=257.8
178
N adj.=13.2
N eff.=42.5
Proportion
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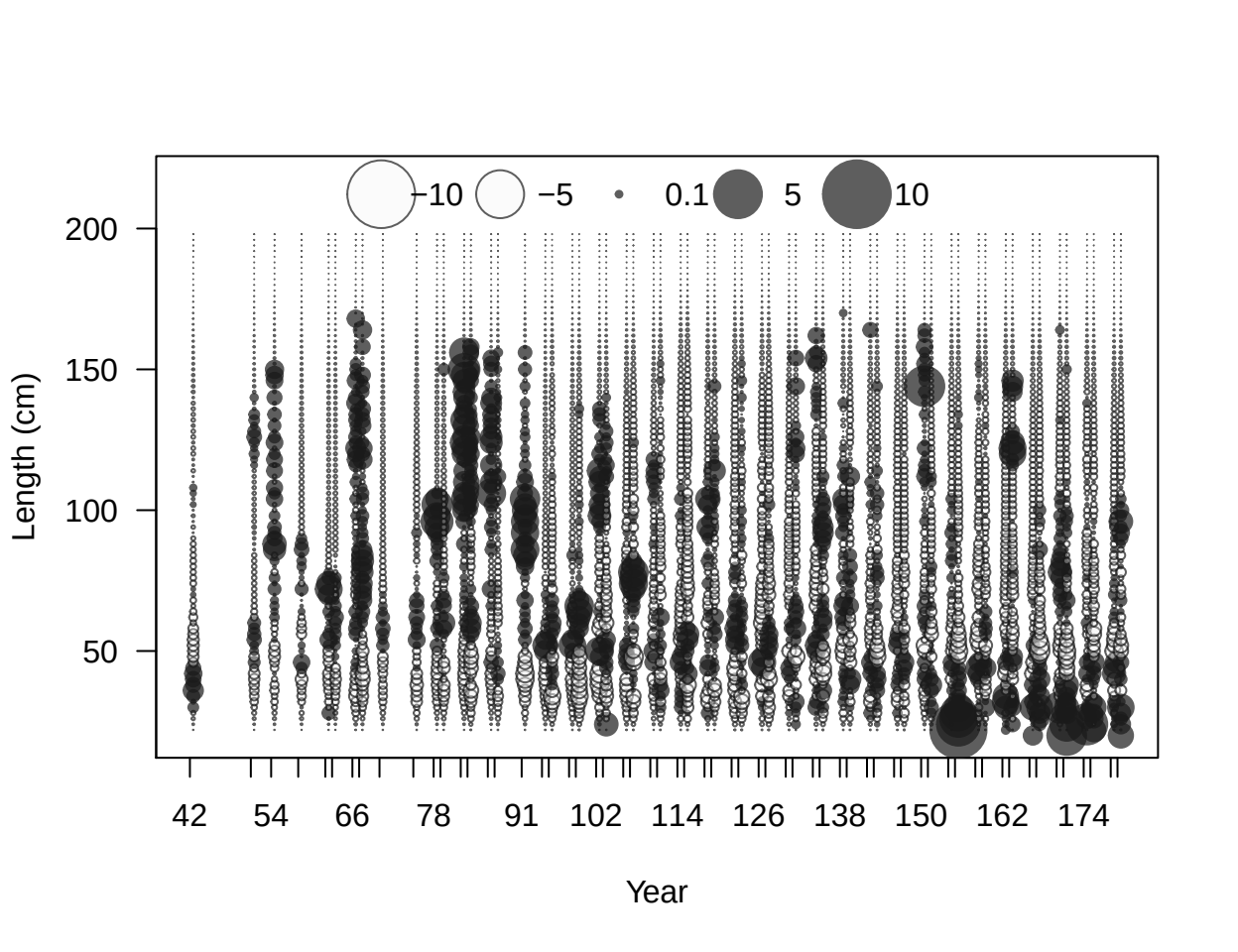
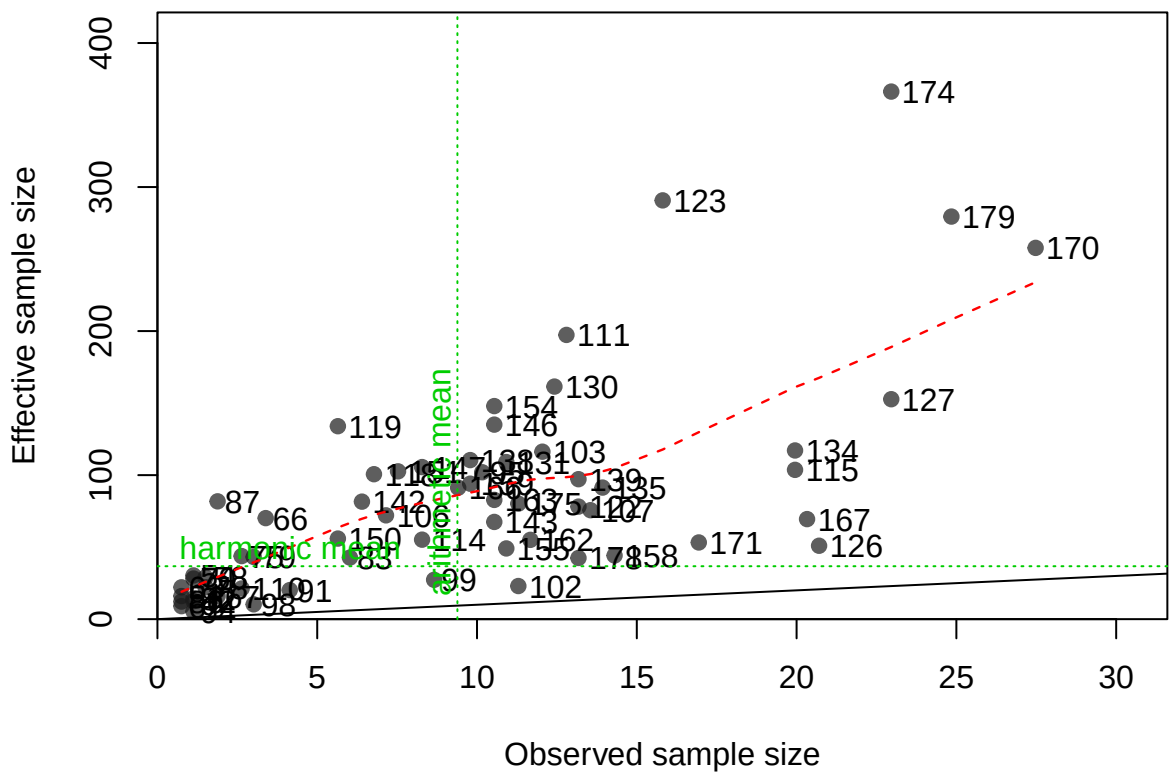
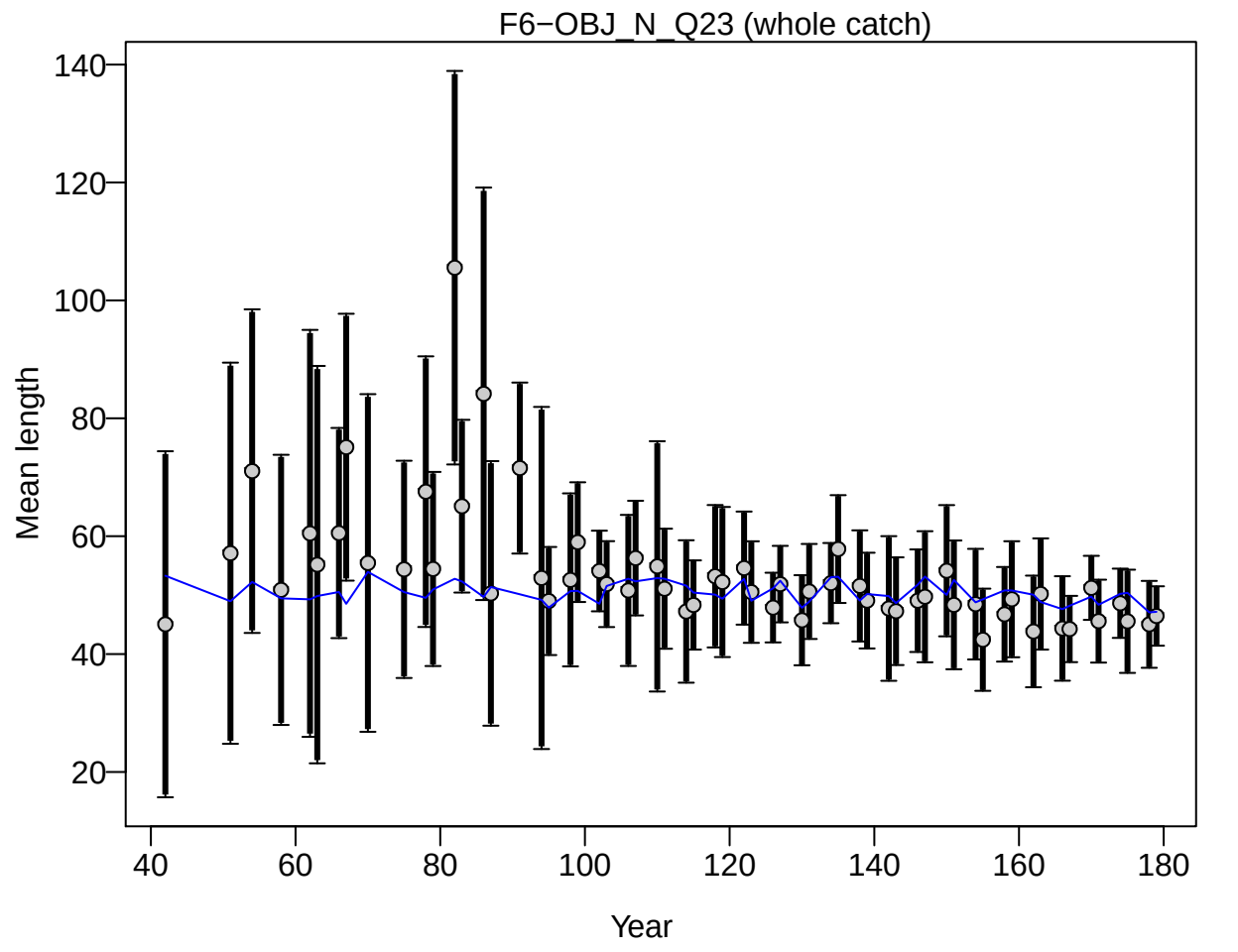
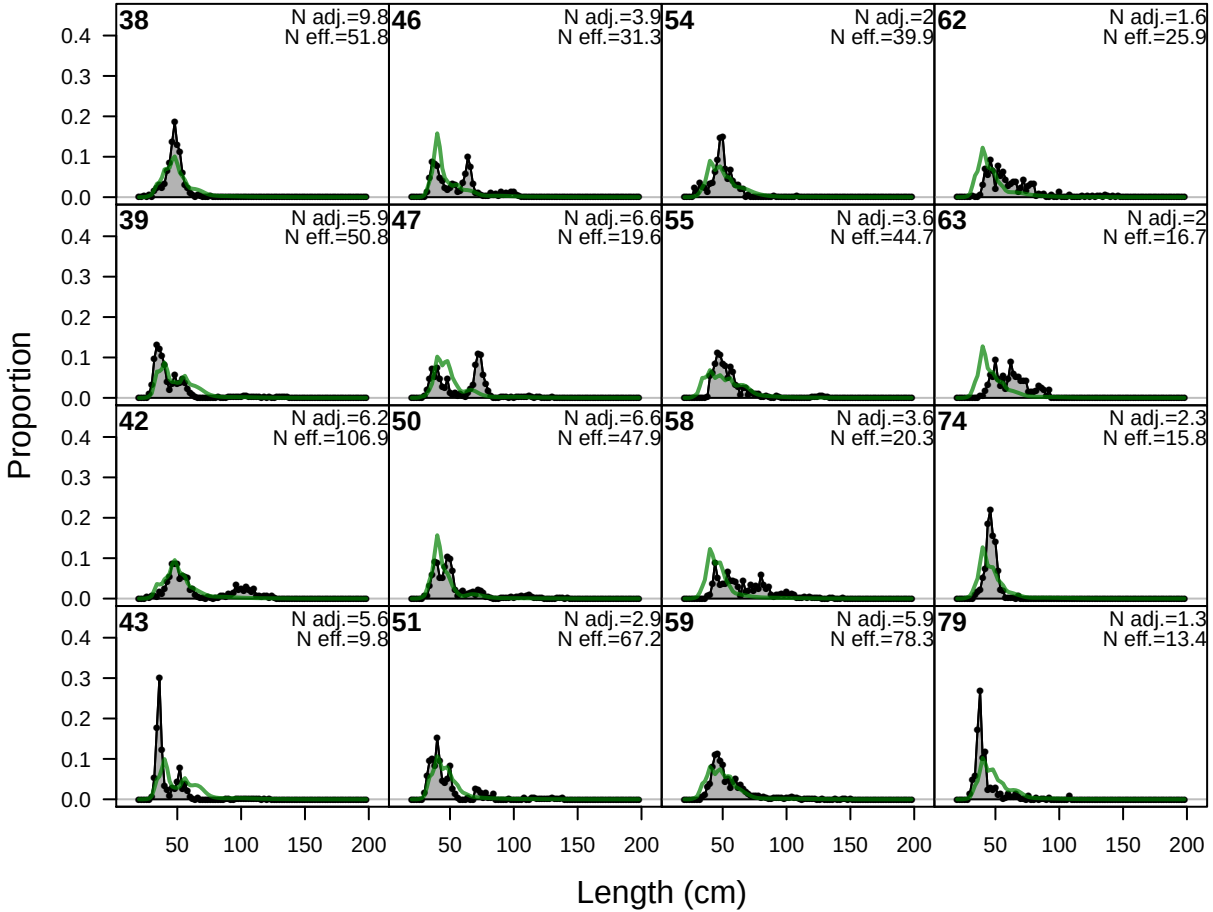
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)


−10
−5
0.1
5
10
200
150
100
50
Length (cm)
42
54
66
78
91
102
114
126
138
150
162
174
Year



Effective sample size
Observed sample size
0
100
200
300
400
0
5
10
15
20
25
30
harmonic mean
arithmetic mean
174
123
179
170
111
130
127
154
146
119
103
134
115
87
66
142
106
150
114
143
162
155
171
167
126
83
99
102
98


F6−OBJ_N_Q23 (whole catch)
Mean length
Year
140
120
100
80
60
40
20
40
60
80
100
120
140
160
180


38
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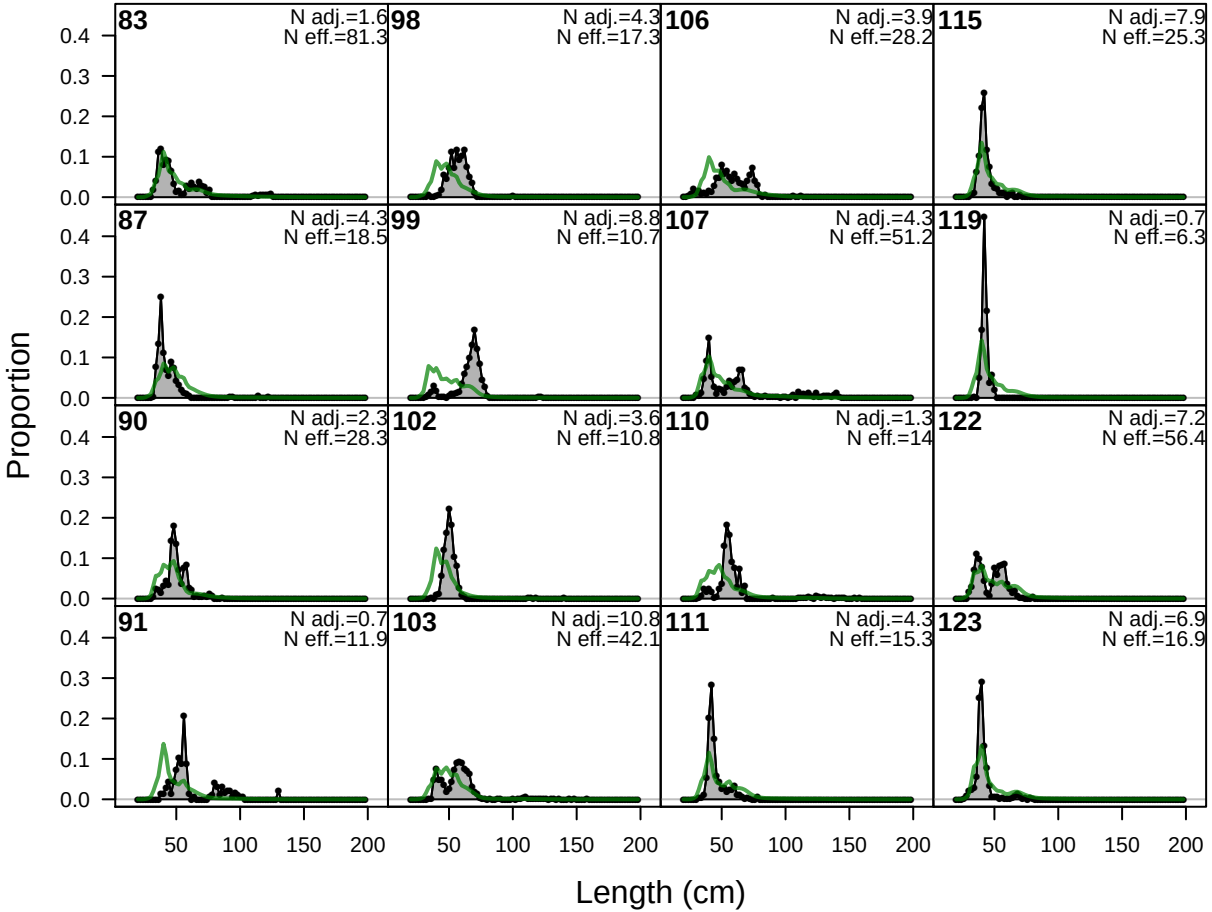
N eff.=51.8
46
N adj.=3.9
N eff.=31.3
54
N adj.=2
N eff.=39.9
62
N adj.=1.6
N eff.=25.9
39
N adj.=5.9
N eff.=50.8
47
N adj.=6.6
N eff.=19.6
55
N adj.=3.6
N eff.=44.7
63
N adj.=2
N eff.=16.7
42
N adj.=6.2
N eff.=106.9
50
N adj.=6.6
N eff.=47.9
58
N adj.=3.6
N eff.=20.3
74
N adj.=2.3
N eff.=15.8
43
N adj.=5.6
N eff.=9.8
51
N adj.=2.9
N eff.=67.2
59
N adj.=5.9
N eff.=78.3
79
N adj.=1.3
N eff.=13.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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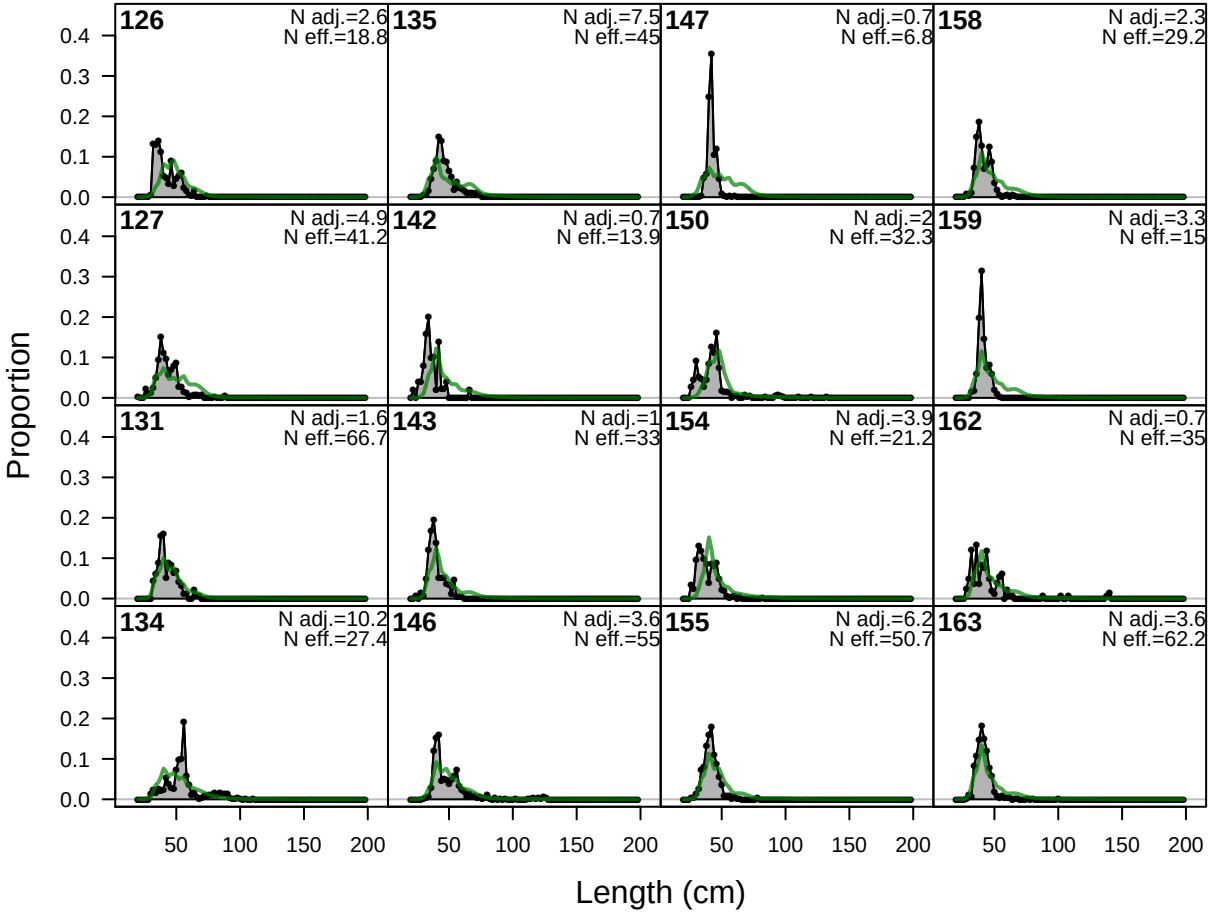
N eff.=81.3
98
N adj.=4.3
N eff.=17.3
106
N adj.=3.9
N eff.=28.2
115
N adj.=7.9
N eff.=25.3
87
N adj.=4.3
N eff.=18.5
99
N adj.=8.8
N eff.=10.7
107
N adj.=4.3
N eff.=51.2
119
N adj.=0.7
N eff.=6.3
90
N adj.=2.3
N eff.=28.3
102
N adj.=3.6
N eff.=10.8
110
N adj.=1.3
N eff.=14
122
N adj.=7.2
N eff.=56.4
91
N adj.=0.7
N eff.=11.9
103
N adj.=10.8
N eff.=42.1
111
N adj.=4.3
N eff.=15.3
123
N adj.=6.9
N eff.=16.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


126
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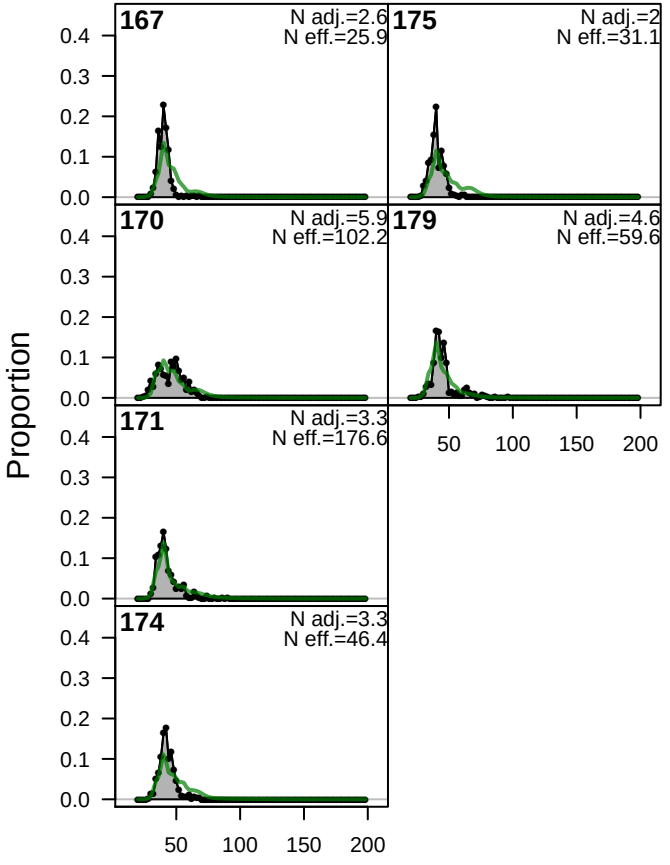
N eff.=18.8
135
N adj.=7.5
N eff.=45
147
N adj.=0.7
N eff.=6.8
158
N adj.=2.3
N eff.=29.2
127
N adj.=4.9
N eff.=41.2
142
N adj.=0.7
N eff.=13.9
150
N adj.=2
N eff.=32.3
159
N adj.=3.3
N eff.=15
131
N adj.=1.6
N eff.=66.7
143
N adj.=1
N eff.=33
154
N adj.=3.9
N eff.=21.2
162
N adj.=0.7
N eff.=35
134
N adj.=10.2
N eff.=27.4
146
N adj.=3.6
N eff.=55
155
N adj.=6.2
N eff.=50.7
163
N adj.=3.6
N eff.=62.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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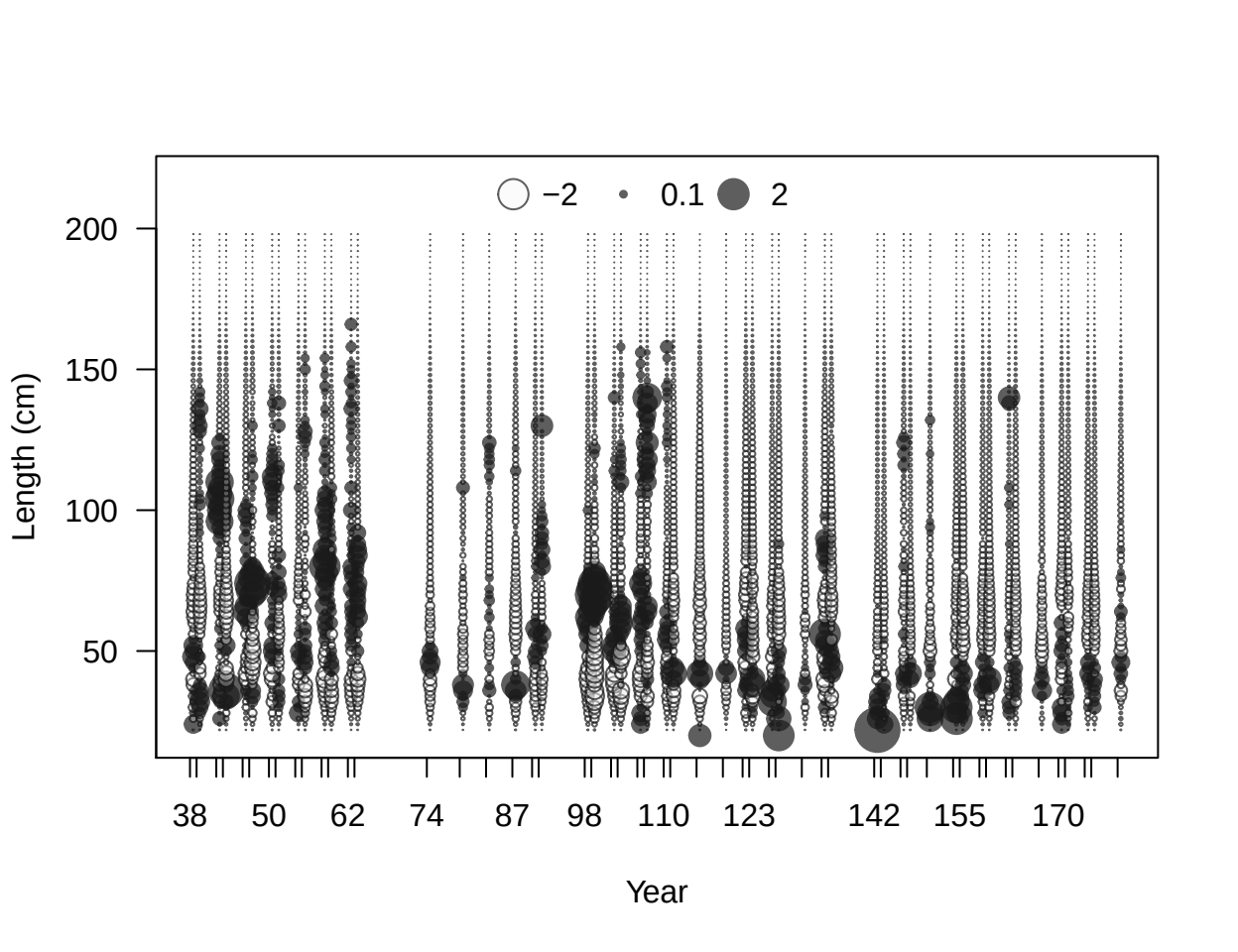
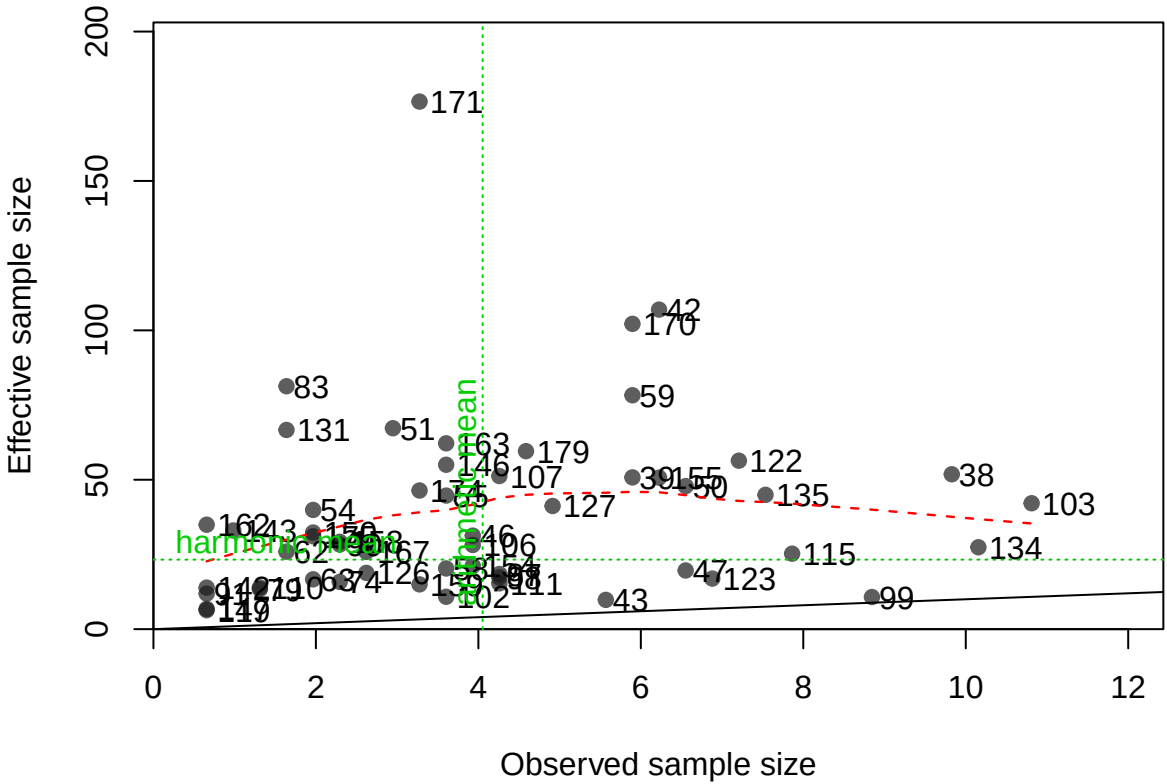
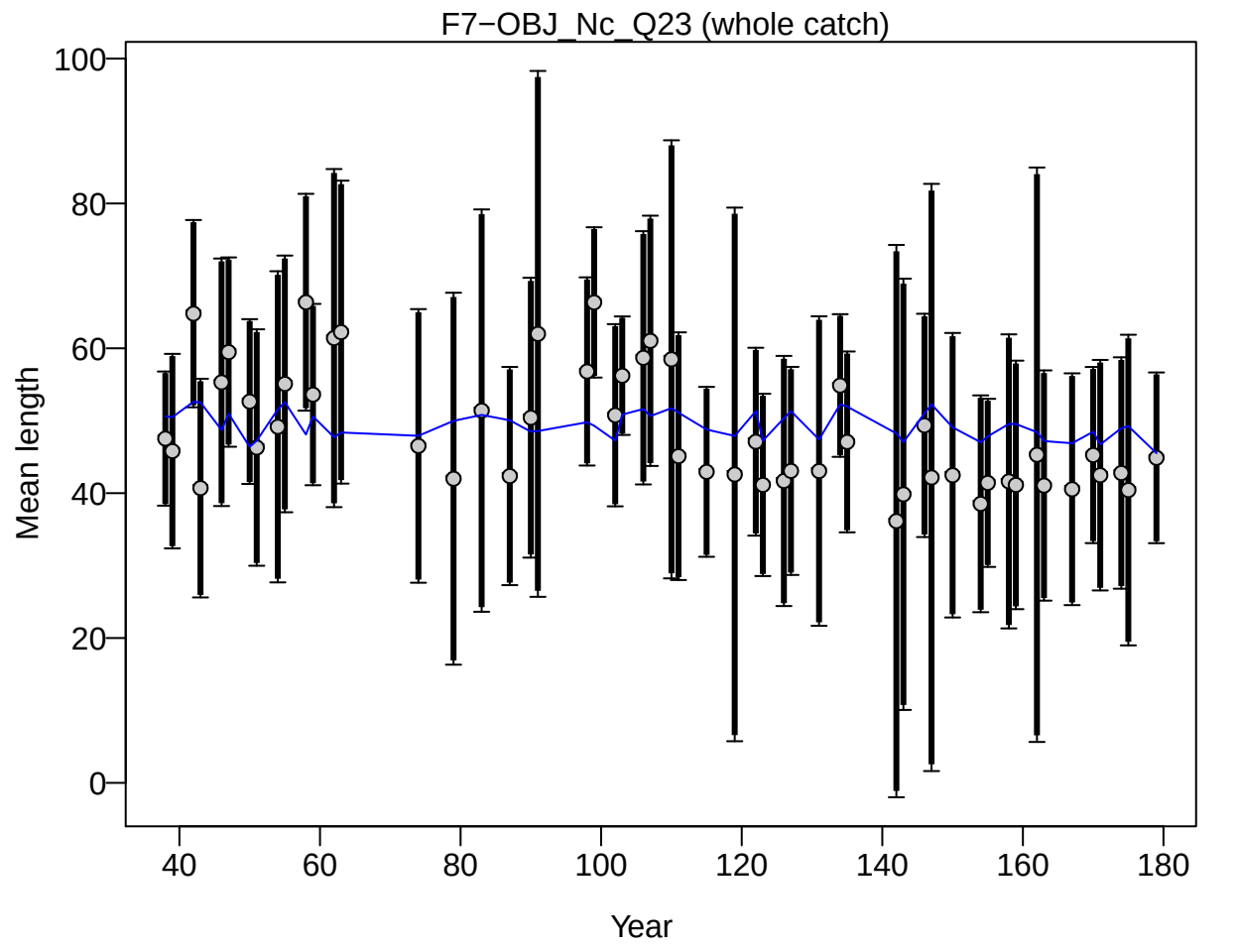
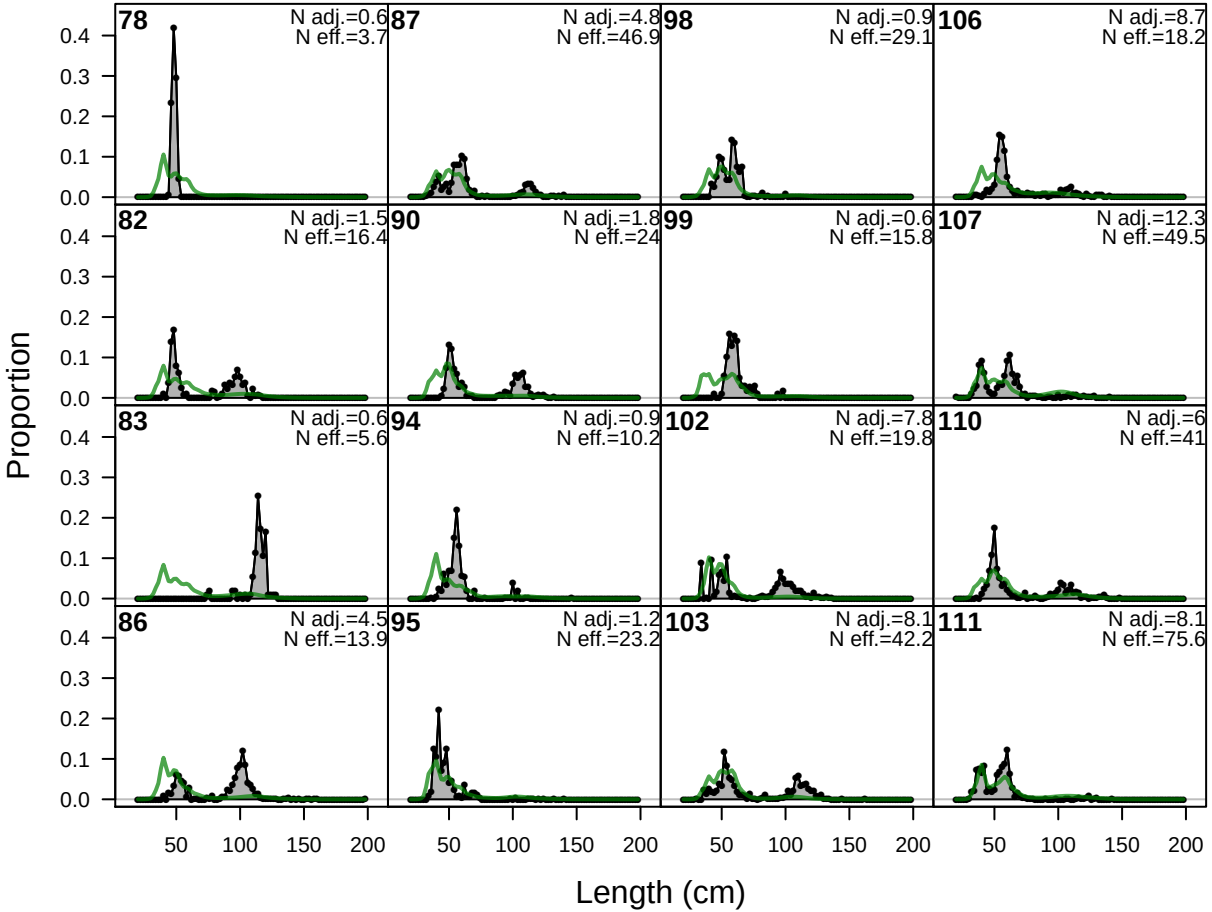
N eff.=25.9
175
N adj.=2
N eff.=31.1
170
N adj.=5.9
N eff.=102.2
179
N adj.=4.6
N eff.=59.6
171
N adj.=3.3
N eff.=176.6
174
N adj.=3.3
N eff.=46.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
38
50
62
74
87
98
110
123
142
155
170
Year



Effective sample size
Observed sample size
0
50
100
150
200
0
2
4
6
8
10
12
harmonic mean


F7−OBJ_Nc_Q23 (whole catch)
Mean length
Year
100
80
60
40
20
0
40
60
80
100
120
140
160
180


78
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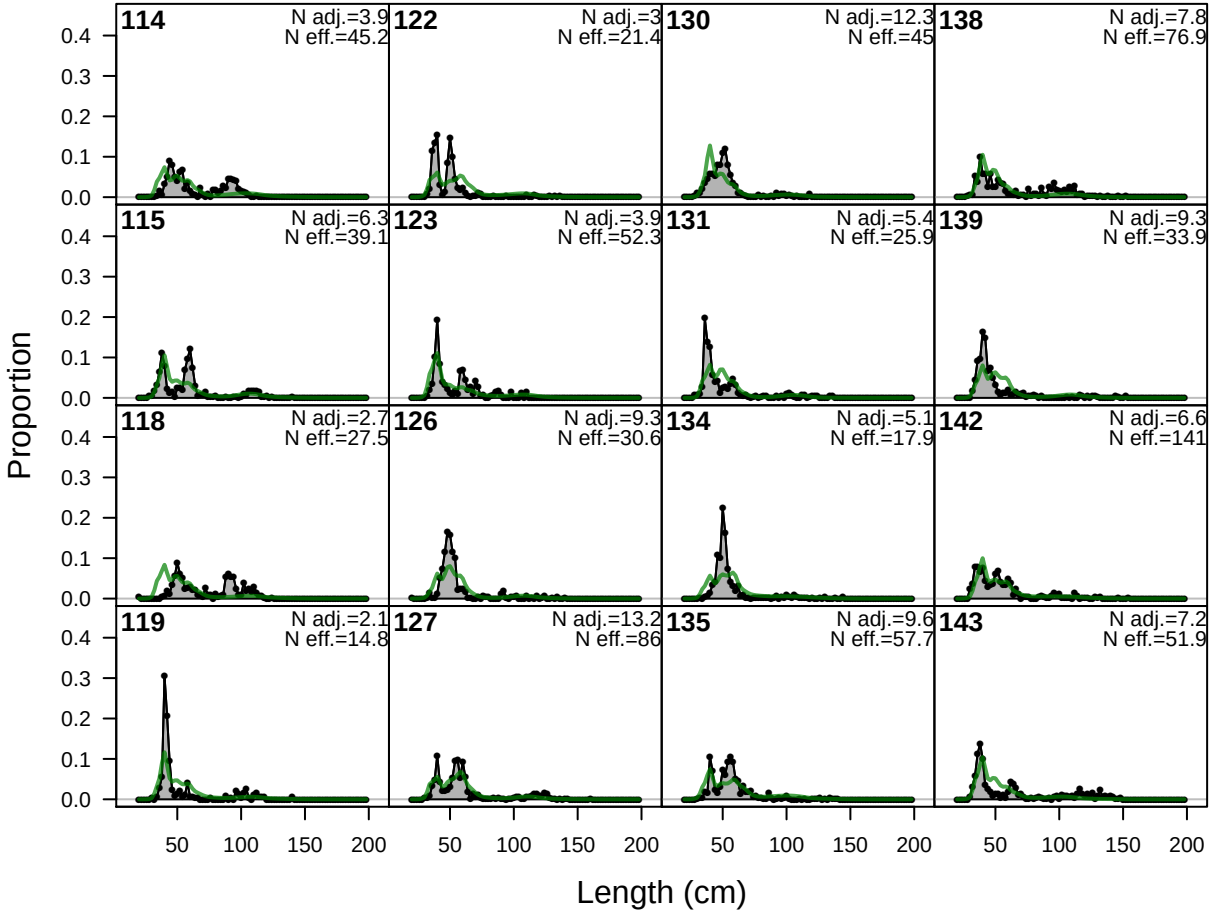
N eff.=3.7
87
N adj.=4.8
N eff.=46.9
98
N adj.=0.9
N eff.=29.1
106
N adj.=8.7
N eff.=18.2
82
N adj.=1.5
N eff.=16.4
90
N adj.=1.8
N eff.=24
99
N adj.=0.6
N eff.=15.8
107
N adj.=12.3
N eff.=49.5
83
N adj.=0.6
N eff.=5.6
94
N adj.=0.9
N eff.=10.2
102
N adj.=7.8
N eff.=19.8
110
N adj.=6
N eff.=41
86
N adj.=4.5
N eff.=13.9
95
N adj.=1.2
N eff.=23.2
103
N adj.=8.1
N eff.=42.2
111
N adj.=8.1
N eff.=75.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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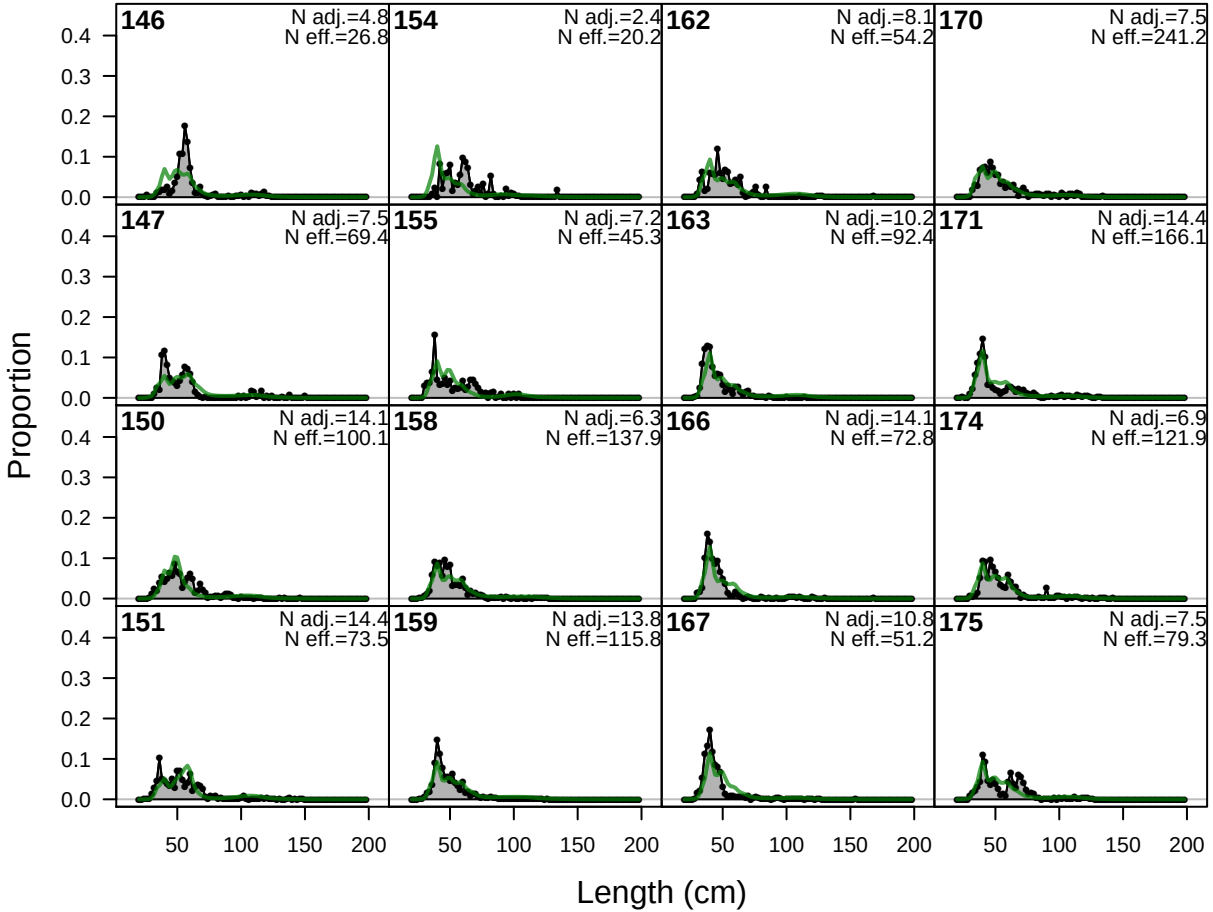
N adj.=3.9
N eff.=45.2
122
N adj.=3
N eff.=21.4
130
N adj.=12.3
N eff.=45
138
N adj.=7.8
N eff.=76.9
115
N adj.=6.3
N eff.=39.1
123
N adj.=3.9
N eff.=52.3
131
N adj.=5.4
N eff.=25.9
139
N adj.=9.3
N eff.=33.9
118
N adj.=2.7
N eff.=27.5
126
N adj.=9.3
N eff.=30.6
134
N adj.=5.1
N eff.=17.9
142
N adj.=6.6
N eff.=141
119
N adj.=2.1
N eff.=14.8
127
N adj.=13.2
N eff.=86
135
N adj.=9.6
N eff.=57.7
143
N adj.=7.2
N eff.=51.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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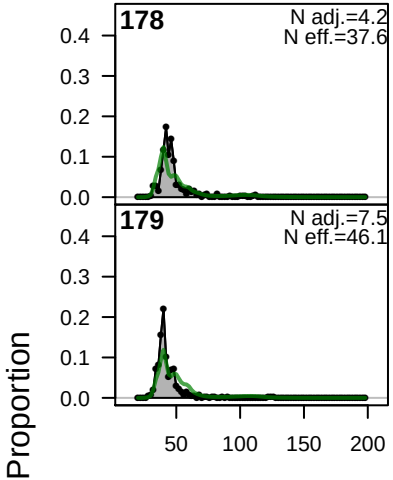
N eff.=26.8
154
N adj.=2.4
N eff.=20.2
162
N adj.=8.1
N eff.=54.2
170
N adj.=7.5
N eff.=241.2
147
N adj.=7.5
N eff.=69.4
155
N adj.=7.2
N eff.=45.3
163
N adj.=10.2
N eff.=92.4
171
N adj.=14.4
N eff.=166.1
150
N adj.=14.1
N eff.=100.1
158
N adj.=6.3
N eff.=137.9
166
N adj.=14.1
N eff.=72.8
174
N adj.=6.9
N eff.=121.9
151
N adj.=14.4
N eff.=73.5
159
N adj.=13.8
N eff.=115.8
167
N adj.=10.8
N eff.=51.2
175
N adj.=7.5
N eff.=79.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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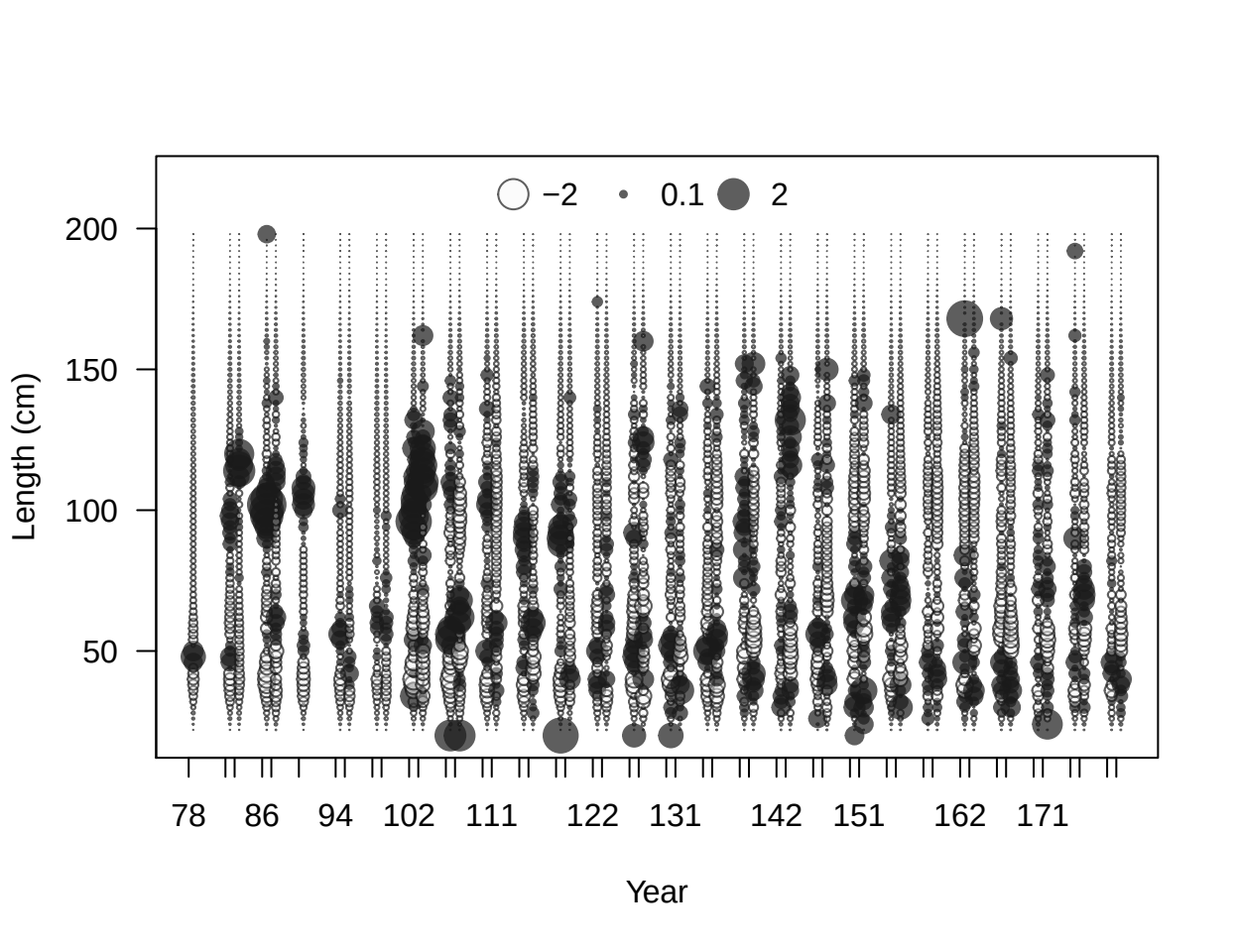
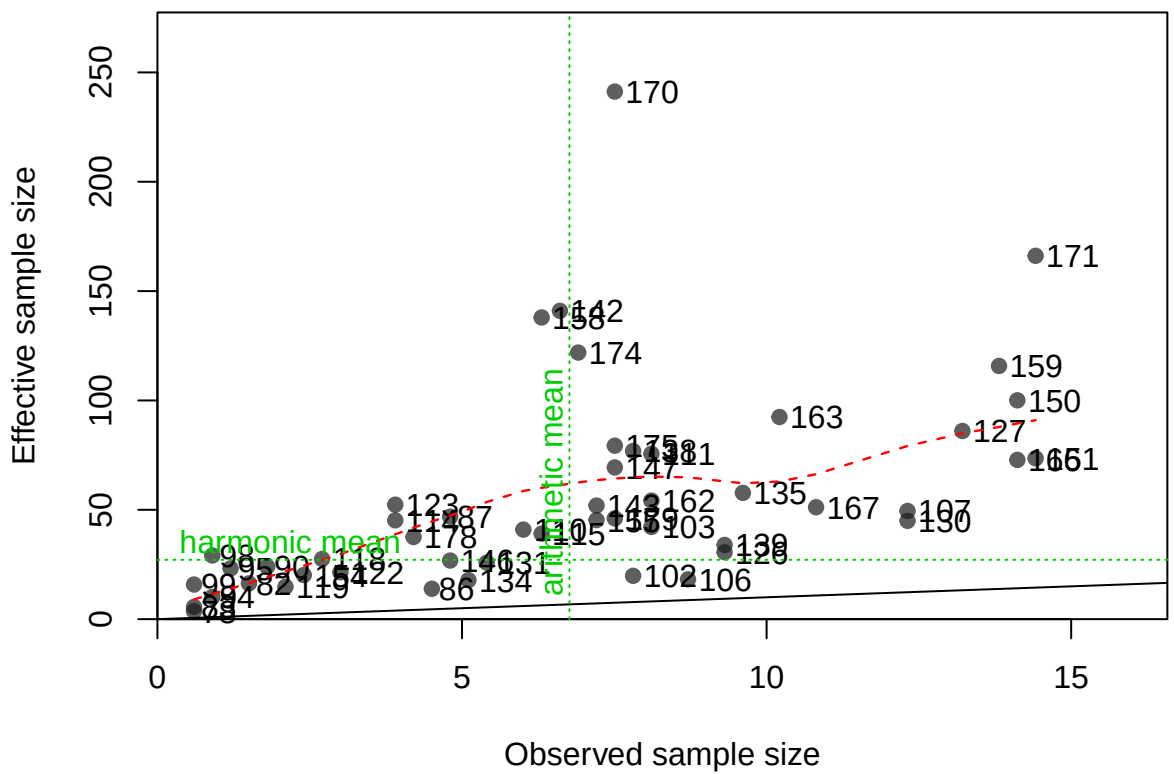
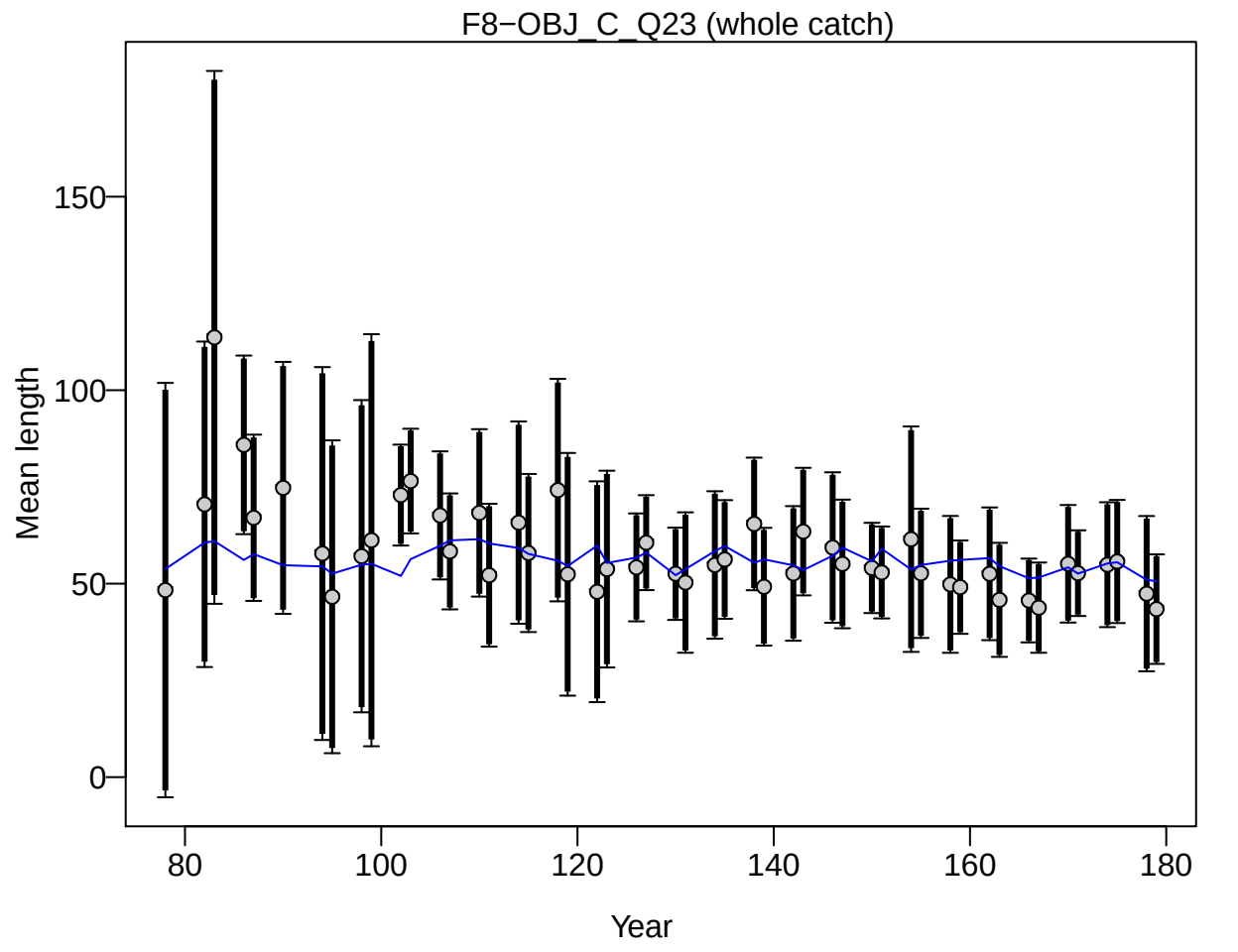
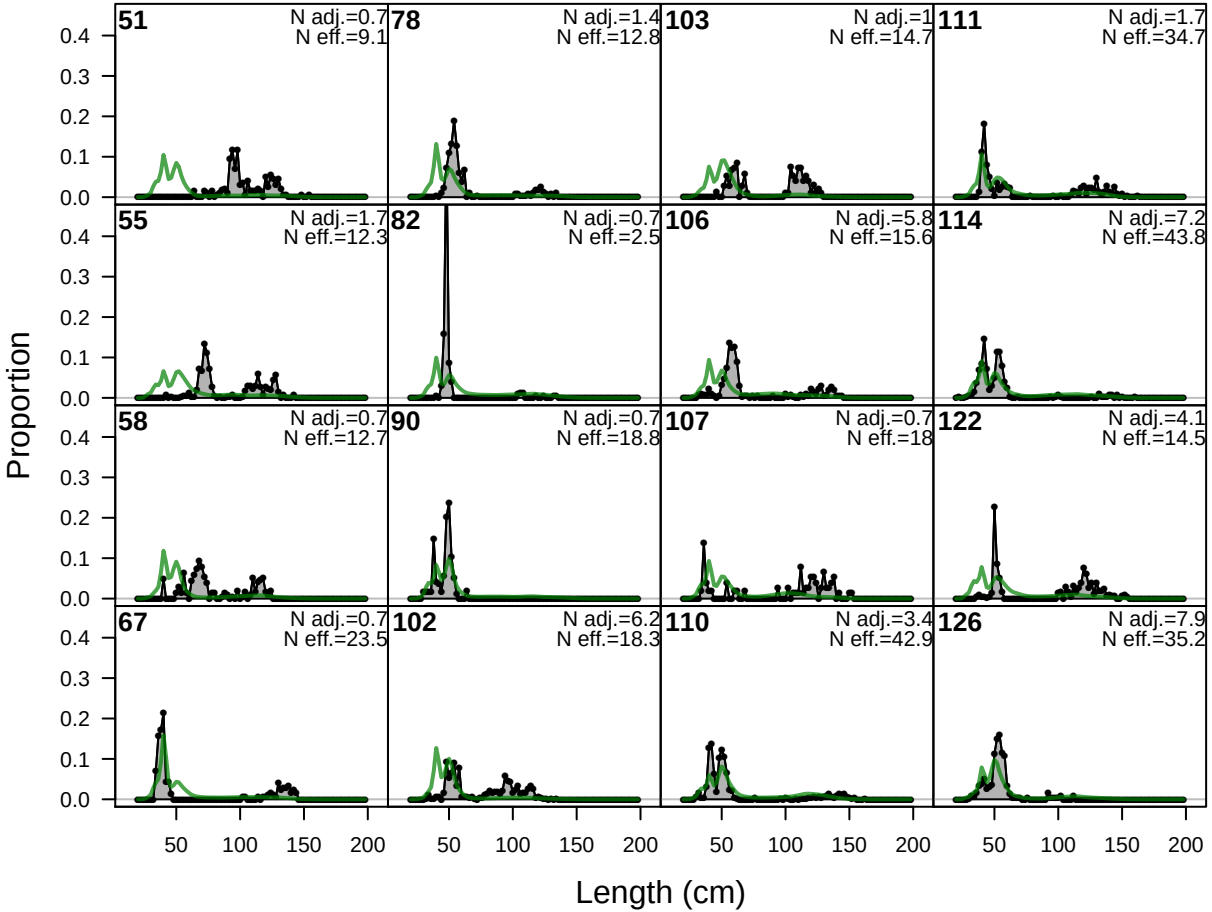
N eff.=37.6
179
N adj.=7.5
N eff.=46.1
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Proportion
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
78
86
94
102
111
122
131
142
151
162
171
Year



Effective sample size
Observed sample size
harmonic mean
arithmetic mean
0
50
100
150
200
250
0
5
10
15
170
171
174
159
150
163
127
135
167
107
130
123
162
103
178
102
106
134
86
119


F8−OBJ_C_Q23 (whole catch)
Mean length
150
100
50
0
80
100
120
140
160
180
Year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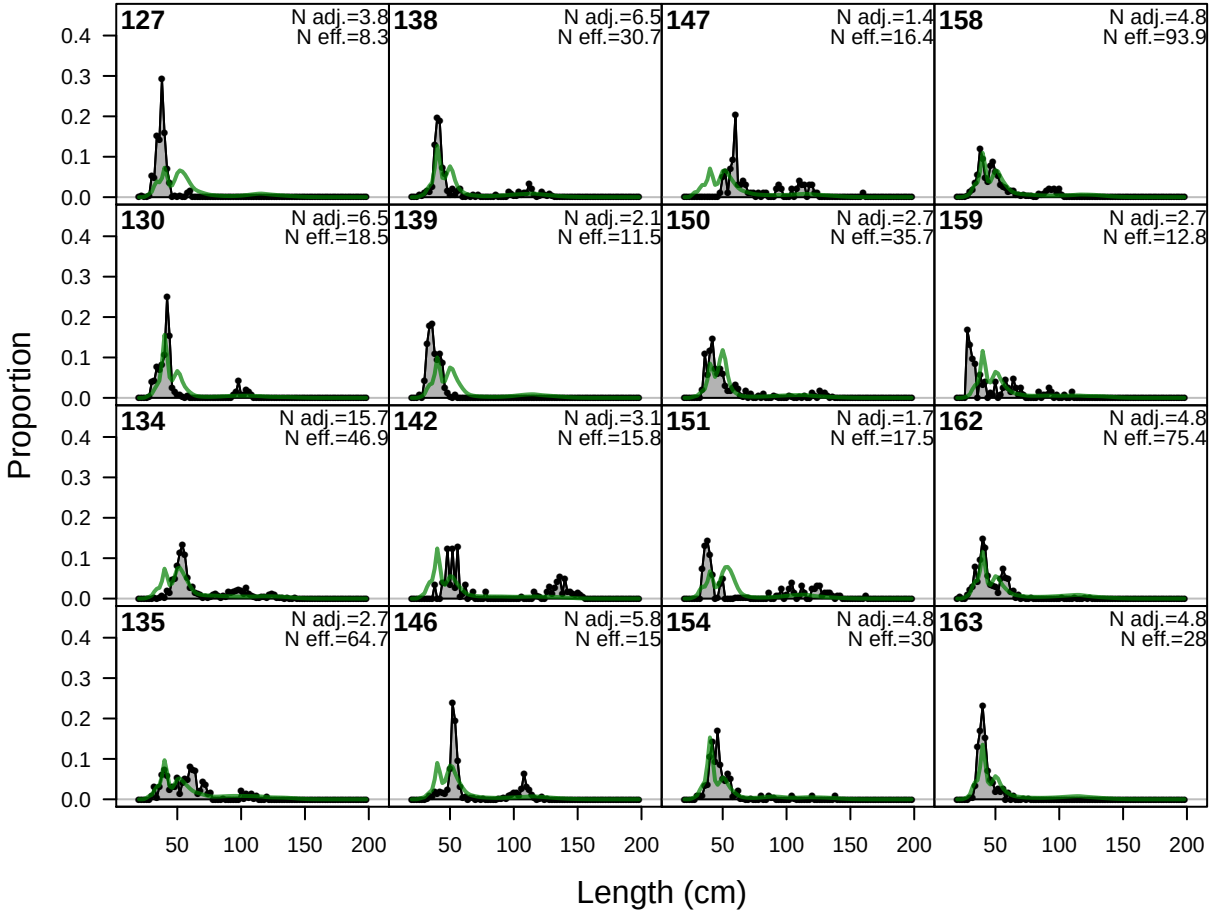
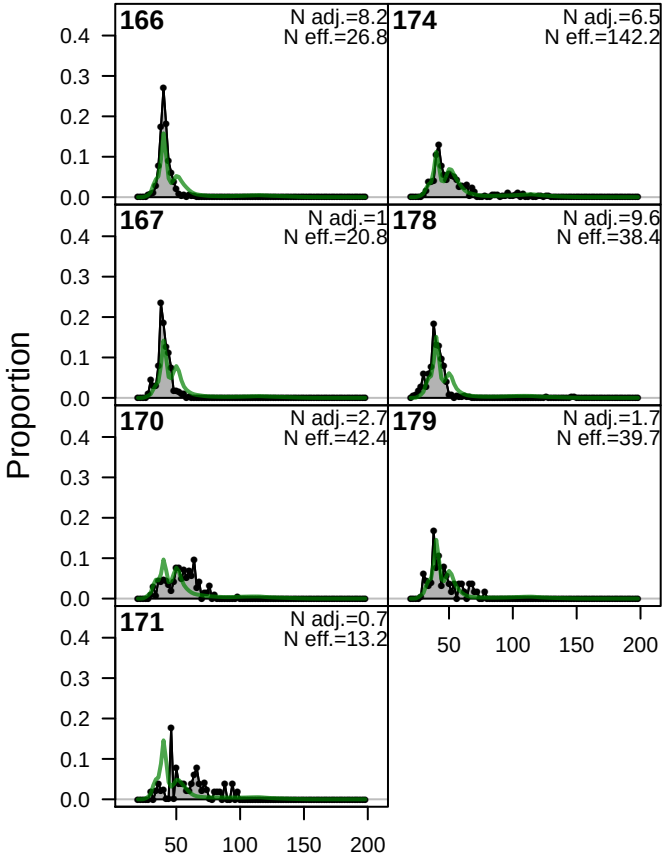
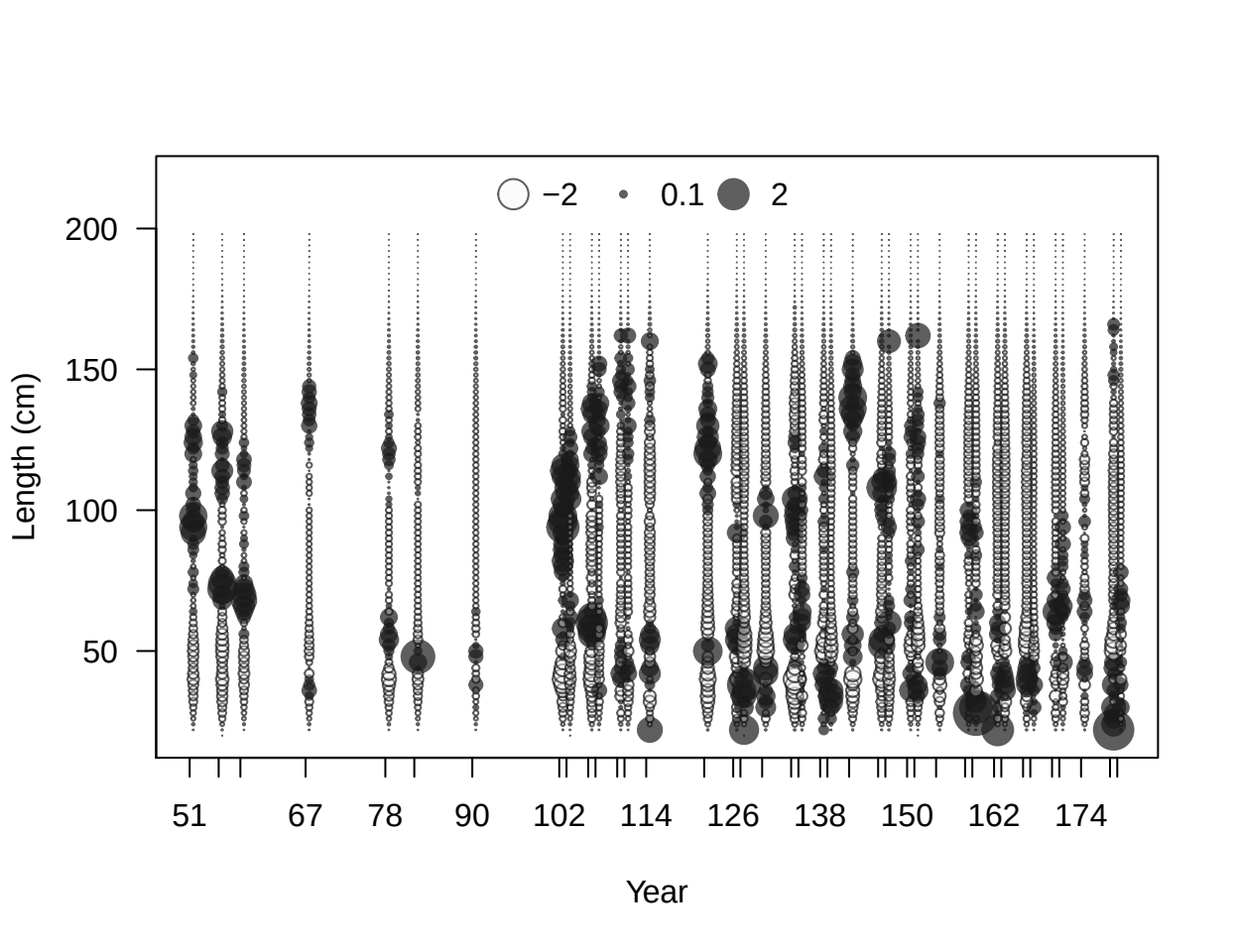
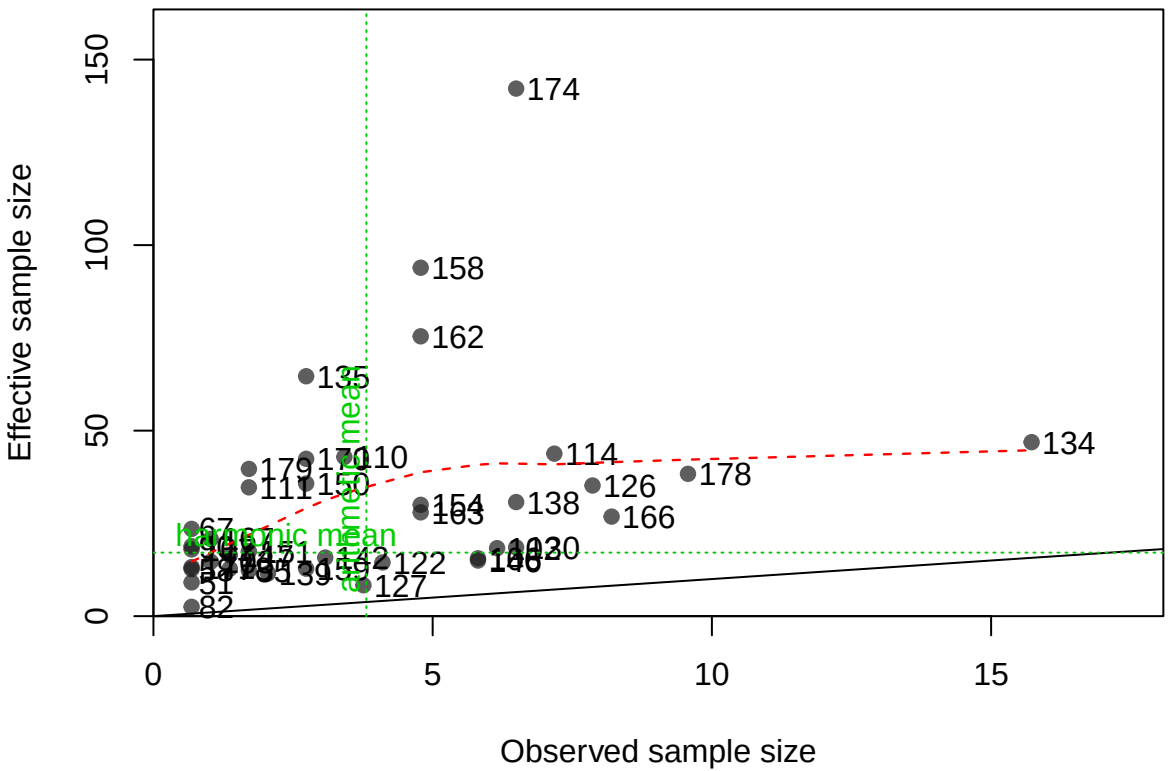
N eff.=9.1
78
N adj.=1.4
N eff.=12.8
103
N adj.=1
N eff.=14.7
111
N adj.=1.7
N eff.=34.7
55
N adj.=1.7
N eff.=12.3
82
N adj.=0.7
N eff.=2.5
106
N adj.=5.8
N eff.=15.6
114
N adj.=7.2
N eff.=43.8
58
N adj.=0.7
N eff.=12.7
90
N adj.=0.7
N eff.=18.8
107
N adj.=0.7
N eff.=18
122
N adj.=4.1
N eff.=14.5
67
N adj.=0.7
N eff.=23.5
102
N adj.=6.2
N eff.=18.3
110
N adj.=3.4
N eff.=42.9
126
N adj.=7.9
N eff.=35.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

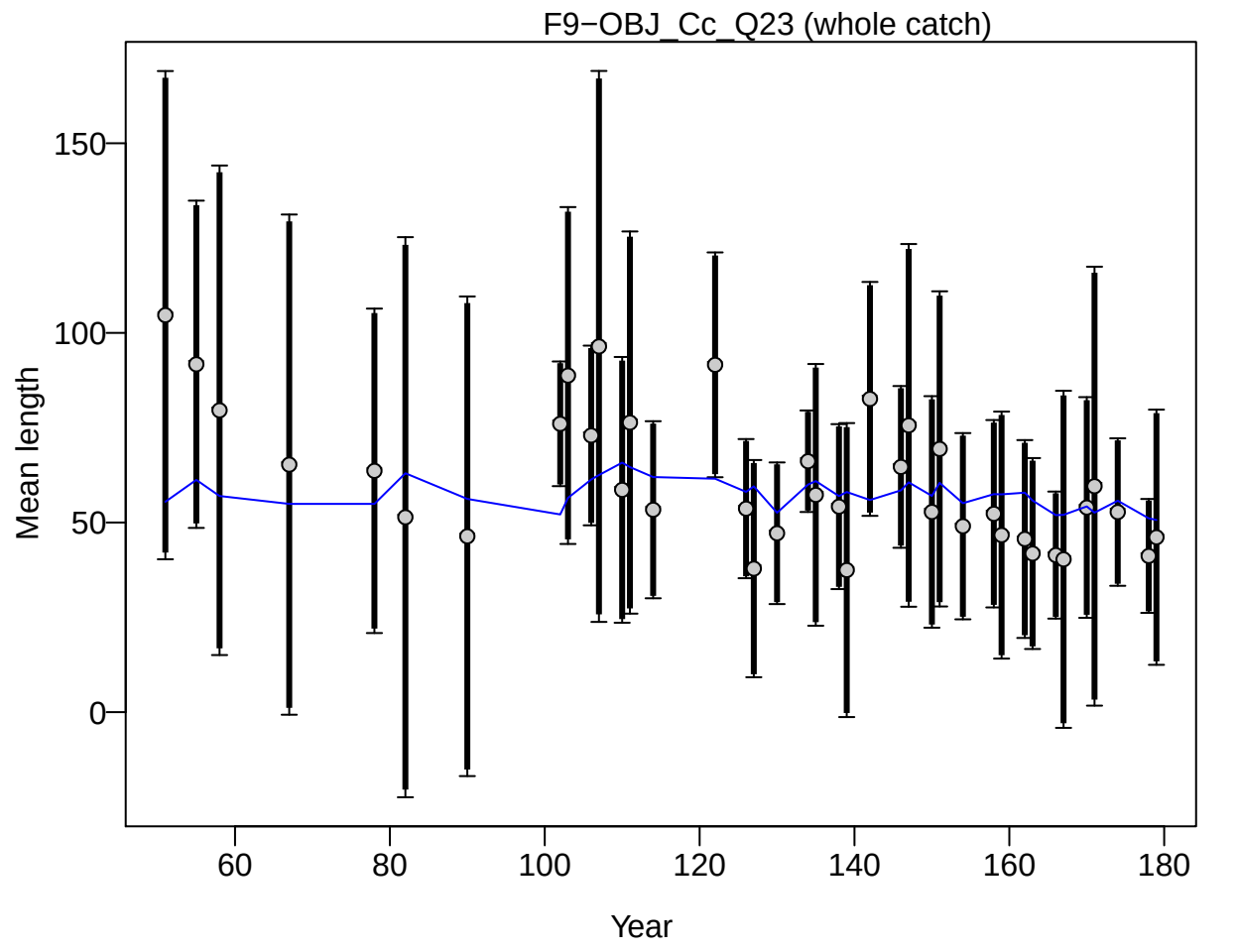

127
N adj.=3.8
N eff.=8.3
138
N adj.=6.5
N eff.=30.7
147
N adj.=1.4
N eff.=16.4
158
N adj.=4.8
N eff.=93.9
130
N adj.=6.5
N eff.=18.5
139
N adj.=2.1
N eff.=11.5
150
N adj.=2.7
N eff.=35.7
159
N adj.=2.7
N eff.=12.8
134
N adj.=15.7
N eff.=46.9
142
N adj.=3.1
N eff.=15.8
151
N adj.=1.7
N eff.=17.5
162
N adj.=4.8
N eff.=75.4
135
N adj.=2.7
N eff.=64.7
146
N adj.=5.8
N eff.=15
154
N adj.=4.8
N eff.=30
163
N adj.=4.8
N eff.=28
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

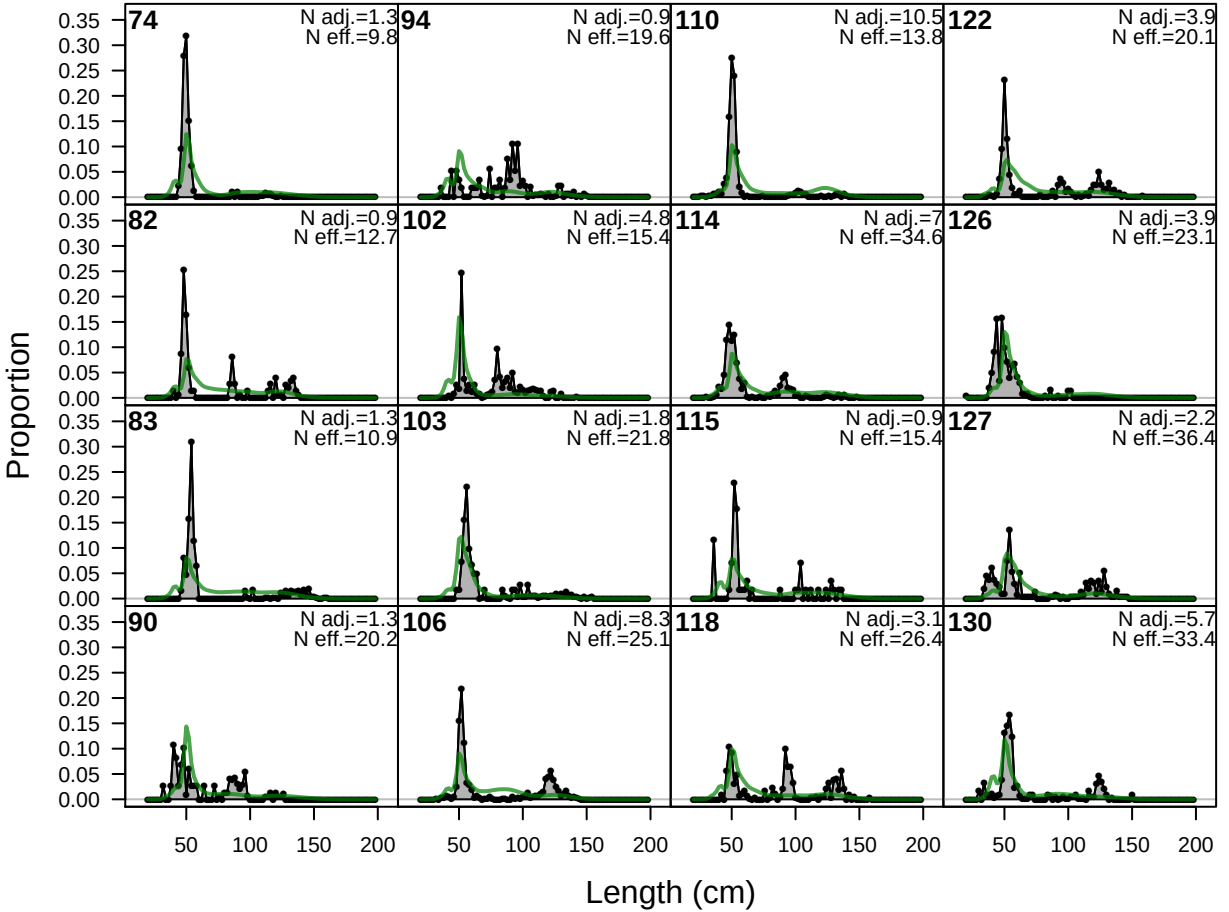

166
N adj.=8.2
N eff.=26.8
174
N adj.=6.5
N eff.=142.2
167
N adj.=1
N eff.=20.8
178
N adj.=9.6
N eff.=38.4
170
N adj.=2.7
N eff.=42.4
179
N adj.=1.7
N eff.=39.7
171
N adj.=0.7
N eff.=13.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

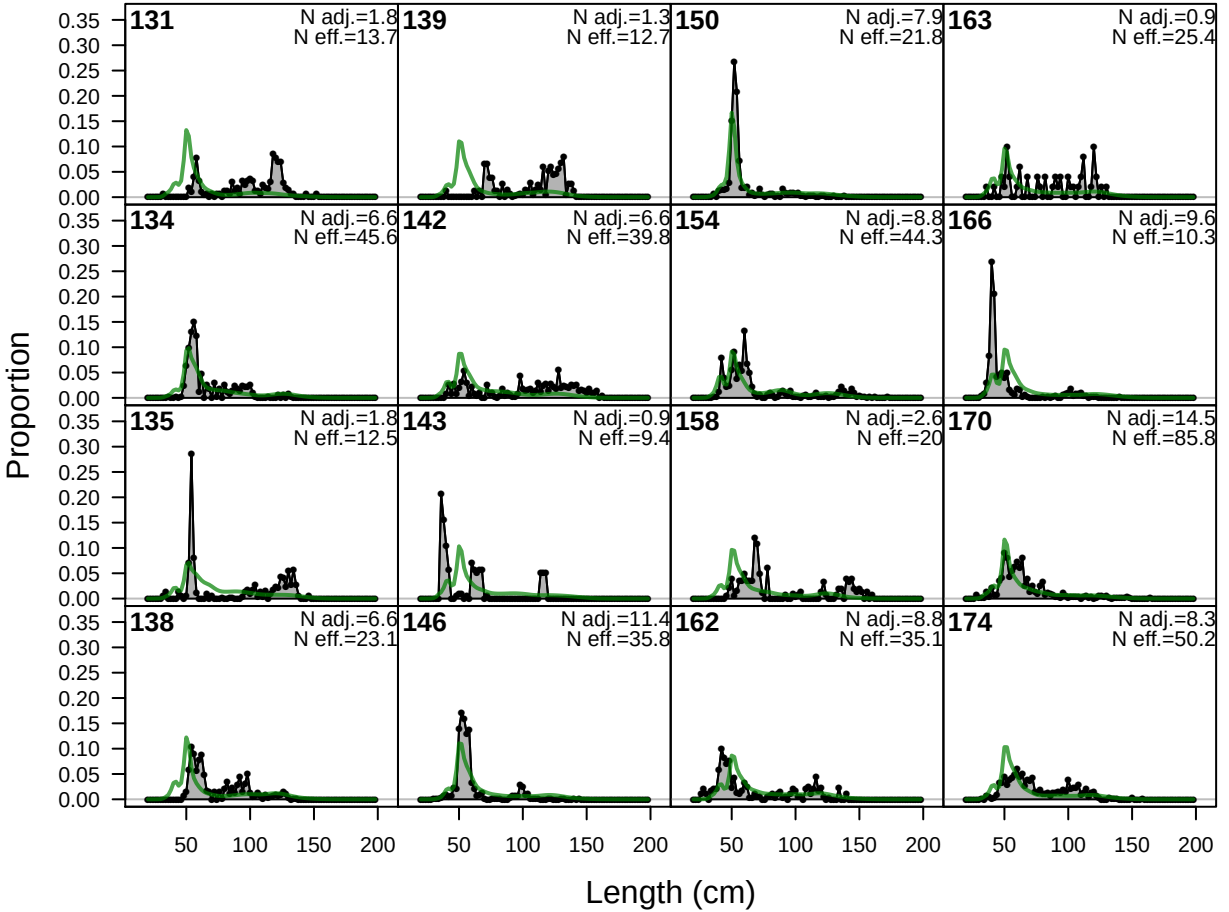

−2
0.1
2
200
150
100
50
Length (cm)
51
67
78
90
102
114
126
138
150
162
174
Year



Effective sample size
Observed sample size
0
50
100
150
0
5
10
15
174
158
162
135
134
114
178
126
166
138
154
163
179
171
110
111
150
67
51
82
122
127
146
130
142
139
Harmonic mean


F9−OBJ_Cc_Q23 (whole catch)
Mean length
150
100
50
0
60
80
100
120
140
160
180
Year


74
N adj.=1.3
N eff.=9.8
94
N adj.=0.9
N eff.=19.6
110
N adj.=10.5
N eff.=13.8
122
N adj.=3.9
N eff.=20.1
82
N adj.=0.9
N eff.=12.7
102
N adj.=4.8
N eff.=15.4
114
N adj.=7
N eff.=34.6
126
N adj.=3.9
N eff.=23.1
83
N adj.=1.3
N eff.=10.9
103
N adj.=1.8
N eff.=21.8
115
N adj.=0.9
N eff.=15.4
127
N adj.=2.2
N eff.=36.4
90
N adj.=1.3
N eff.=20.2
106
N adj.=8.3
N eff.=25.1
118
N adj.=3.1
N eff.=26.4
130
N adj.=5.7
N eff.=33.4
Proportion
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Length (cm)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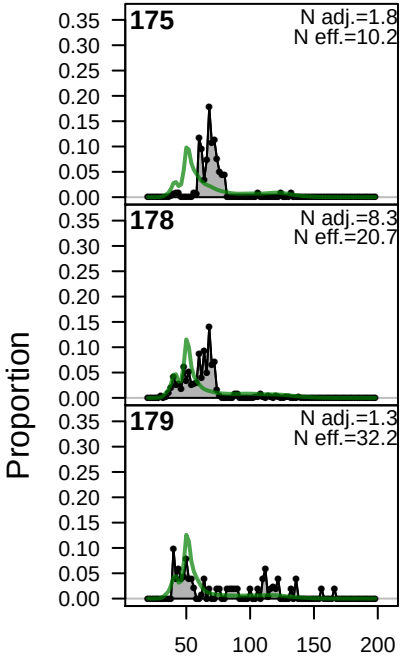
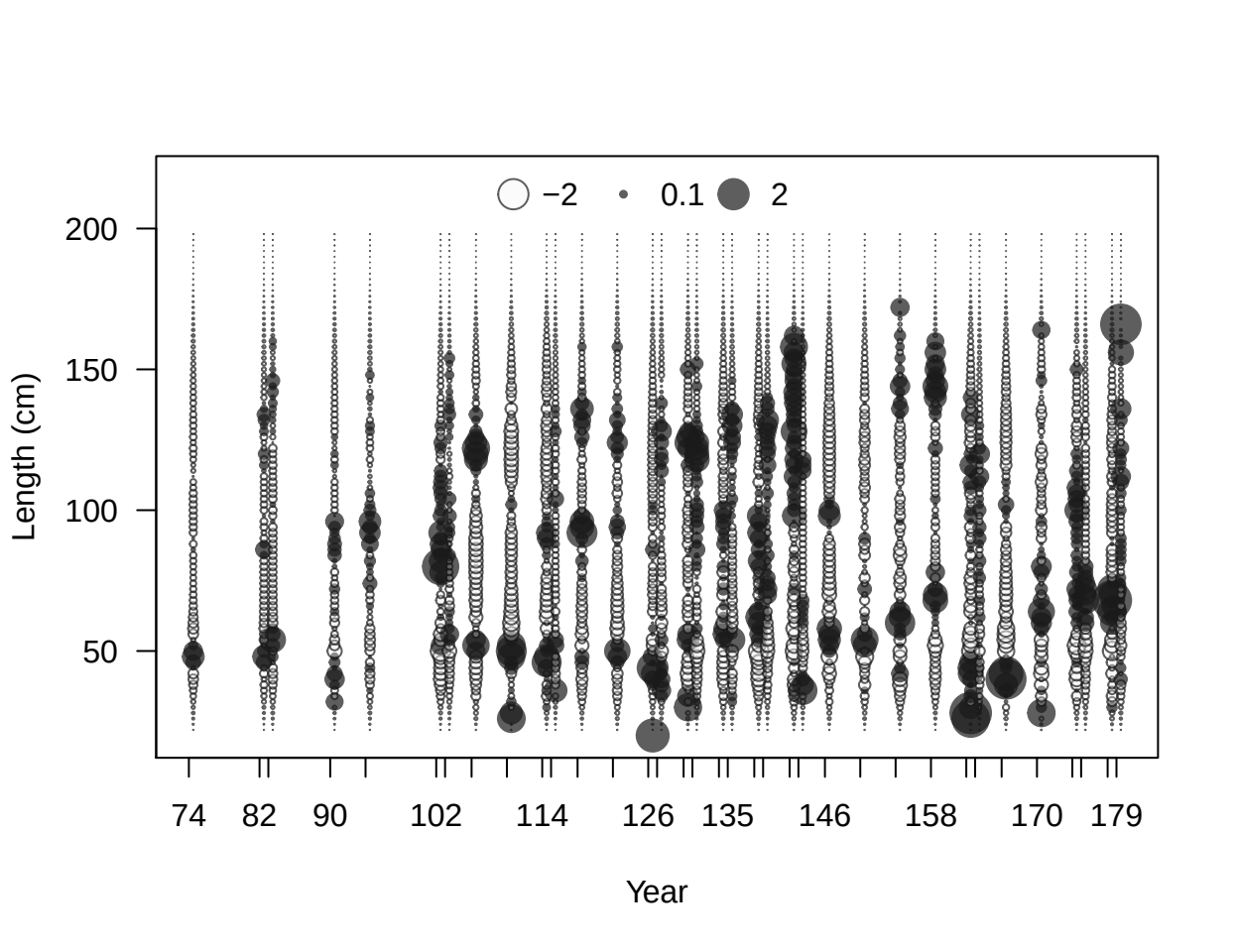
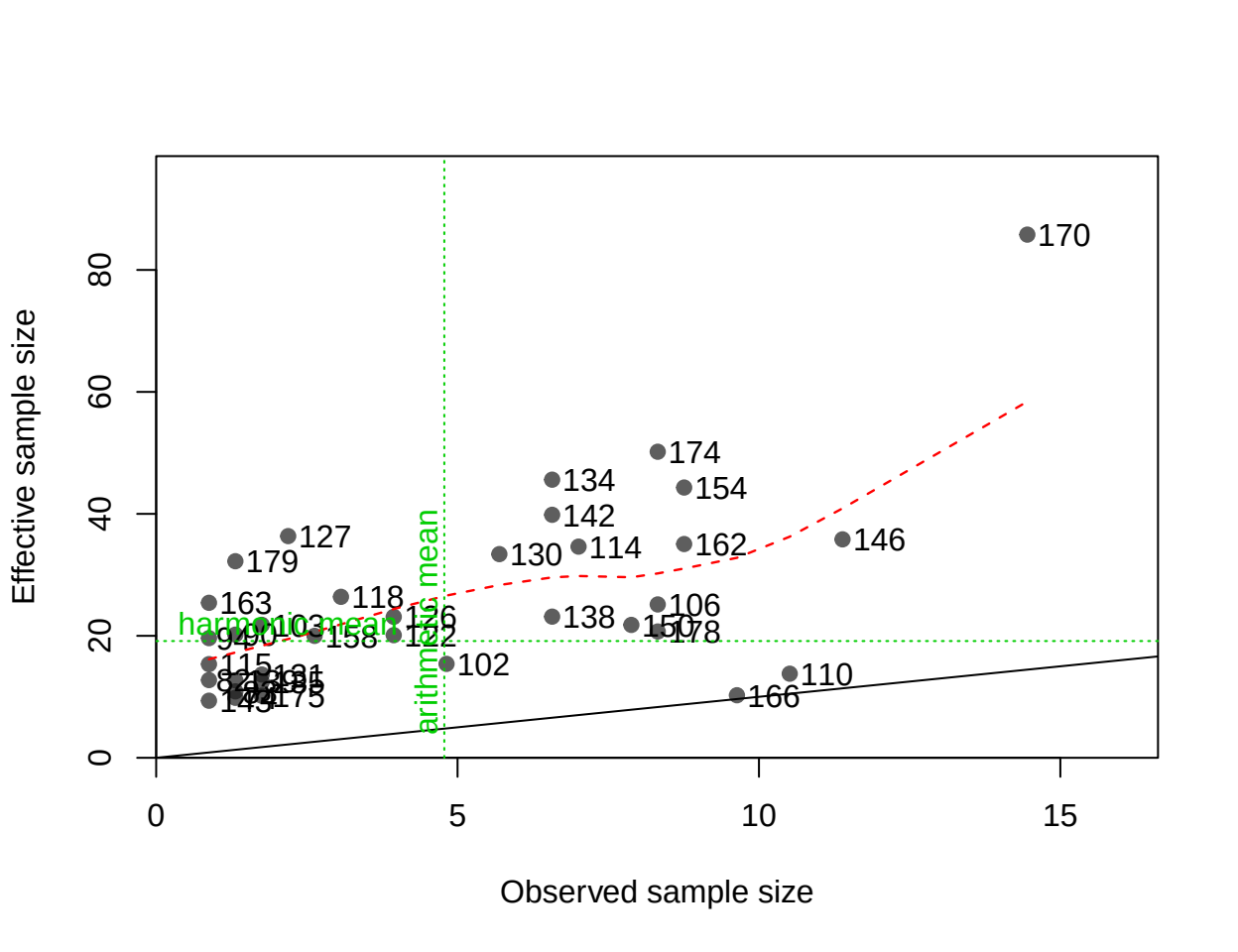
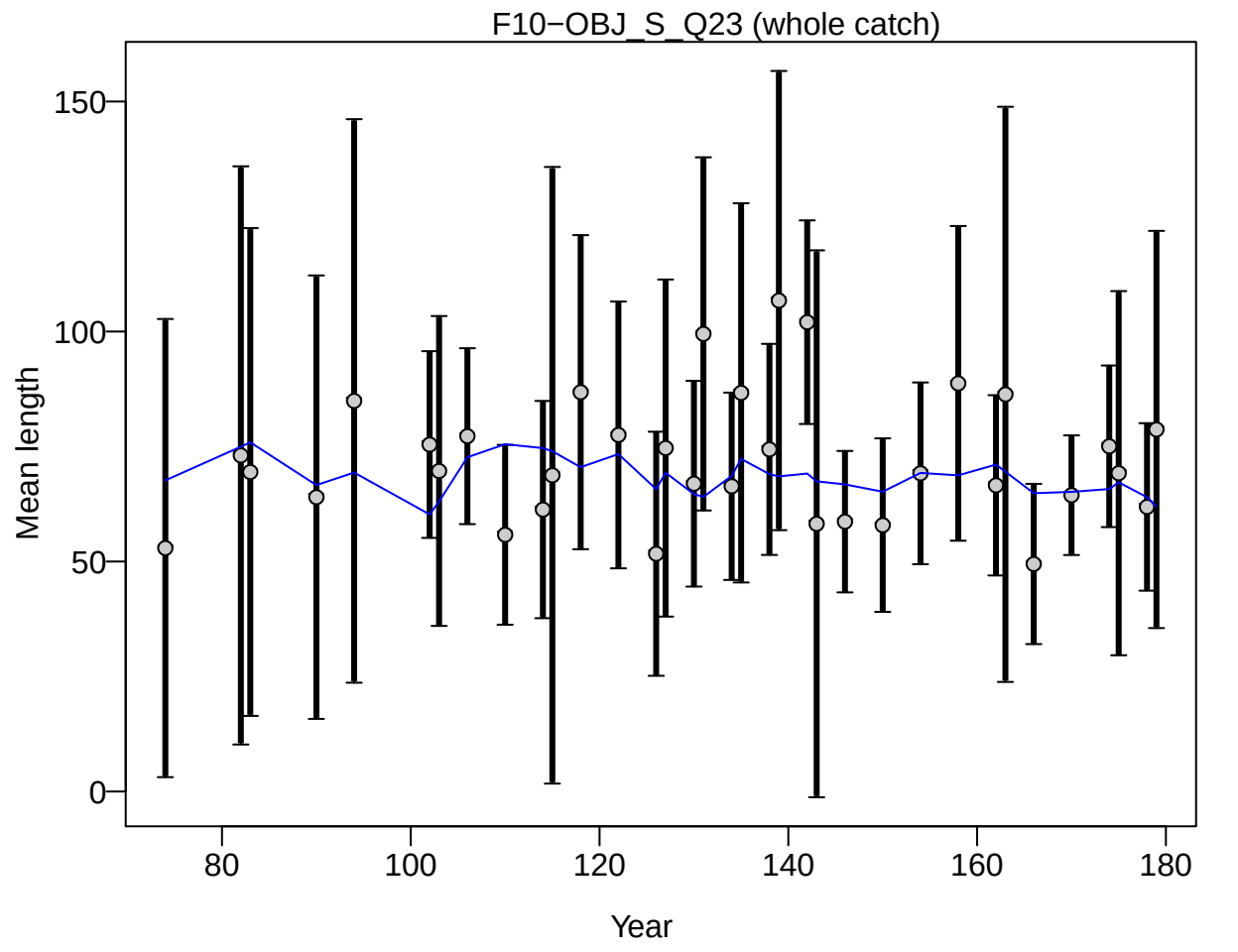
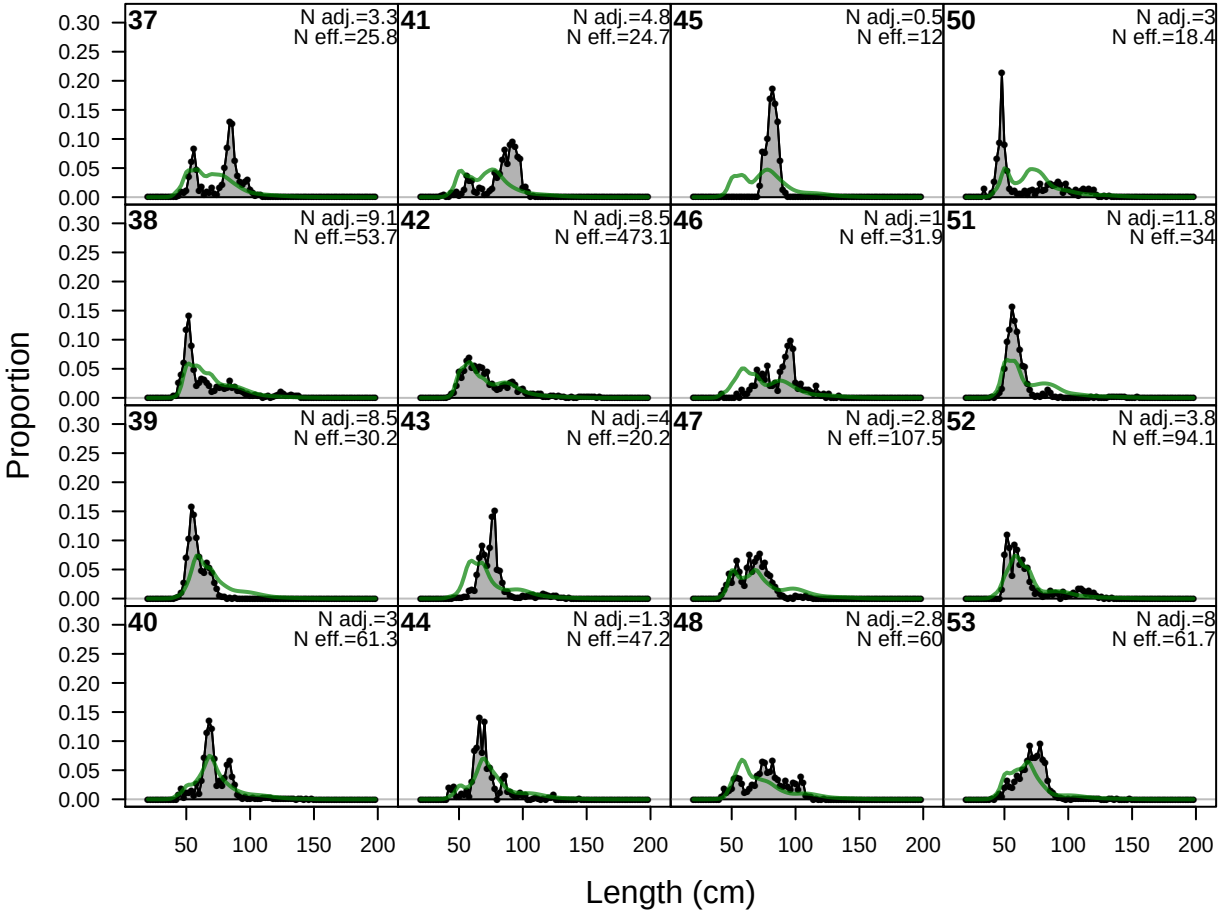
N adj.=1.8
N eff.=13.7
139
N adj.=1.3
N eff.=12.7
150
N adj.=7.9
N eff.=21.8
163
N adj.=0.9
N eff.=25.4
134
N adj.=6.6
N eff.=45.6
142
N adj.=6.6
N eff.=39.8
154
N adj.=8.8
N eff.=44.3
166
N adj.=9.6
N eff.=10.3
135
N adj.=1.8
N eff.=12.5
143
N adj.=0.9
N eff.=9.4
158
N adj.=2.6
N eff.=20
170
N adj.=14.5
N eff.=85.8
138
N adj.=6.6
N eff.=23.1
146
N adj.=11.4
N eff.=35.8
162
N adj.=8.8
N eff.=35.1
174
N adj.=8.3
N eff.=50.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)


175
N adj.=1.8
N eff.=10.2
178
N adj.=8.3
N eff.=20.7
179
N adj.=1.3
N eff.=32.2
Proportion
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
74
82
90
102
114
126
135
146
158
170
179
Year


Effective sample size
Observed sample size
0
20
40
60
80
0
5
10
15
harmonic mean
arithmetic mean
170
174
134
154
142
127
179
130
114
162
146
163
118
106
138
150
178
102
110
166


F10−OBJ_S_Q23 (whole catch)
Mean length
150
100
50
0
80
100
120
140
160
180
Year


37
N adj.=3.3
N eff.=25.8
41
N adj.=4.8
N eff.=24.7
45
N adj.=0.5
N eff.=12
50
N adj.=3
N eff.=18.4
38
N adj.=9.1
N eff.=53.7
42
N adj.=8.5
N eff.=473.1
46
N adj.=1
N eff.=31.9
51
N adj.=11.8
N eff.=34
39
N adj.=8.5
N eff.=30.2
43
N adj.=4
N eff.=20.2
47
N adj.=2.8
N eff.=107.5
52
N adj.=3.8
N eff.=94.1
40
N adj.=3
N eff.=61.3
44
N adj.=1.3
N eff.=47.2
48
N adj.=2.8
N eff.=60
53
N adj.=8
N eff.=61.7
Proportion
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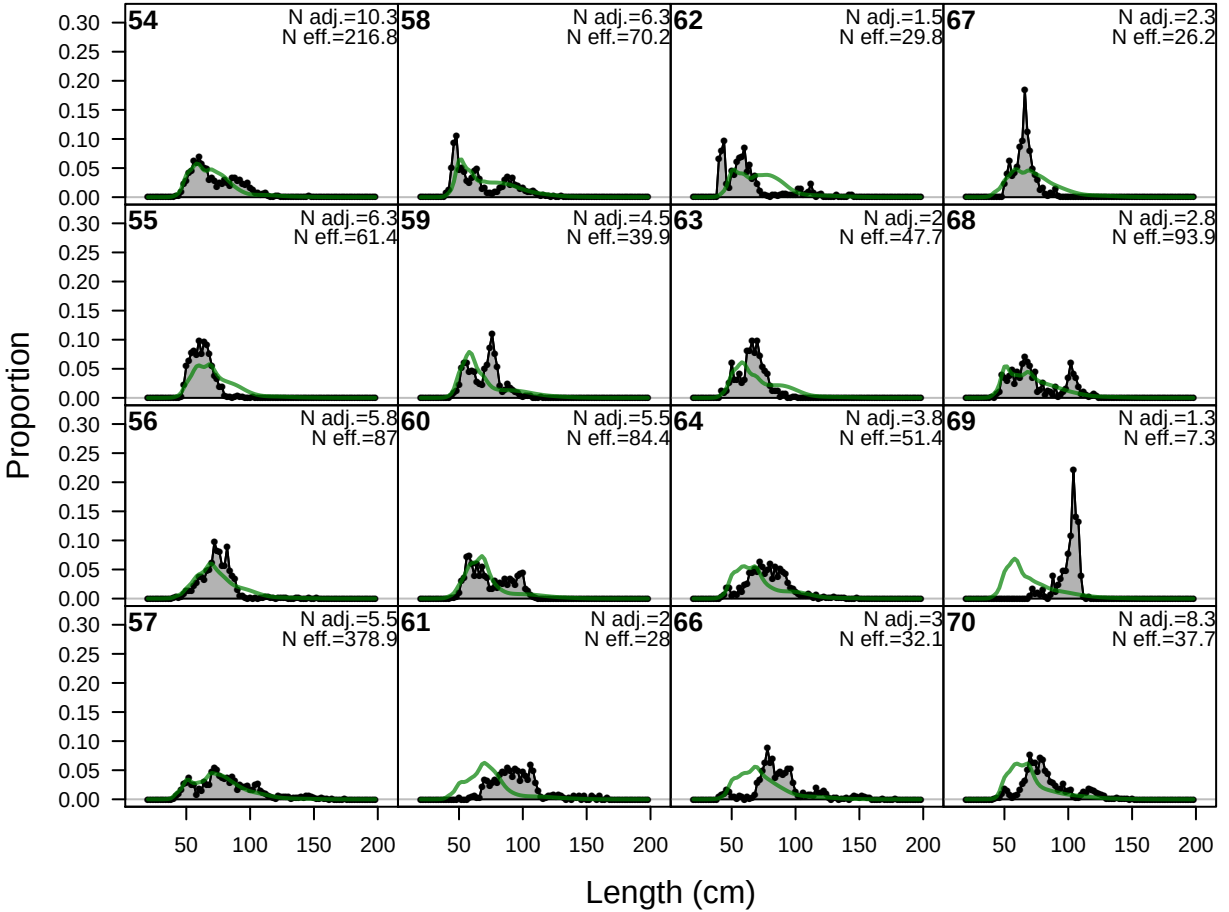
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


54
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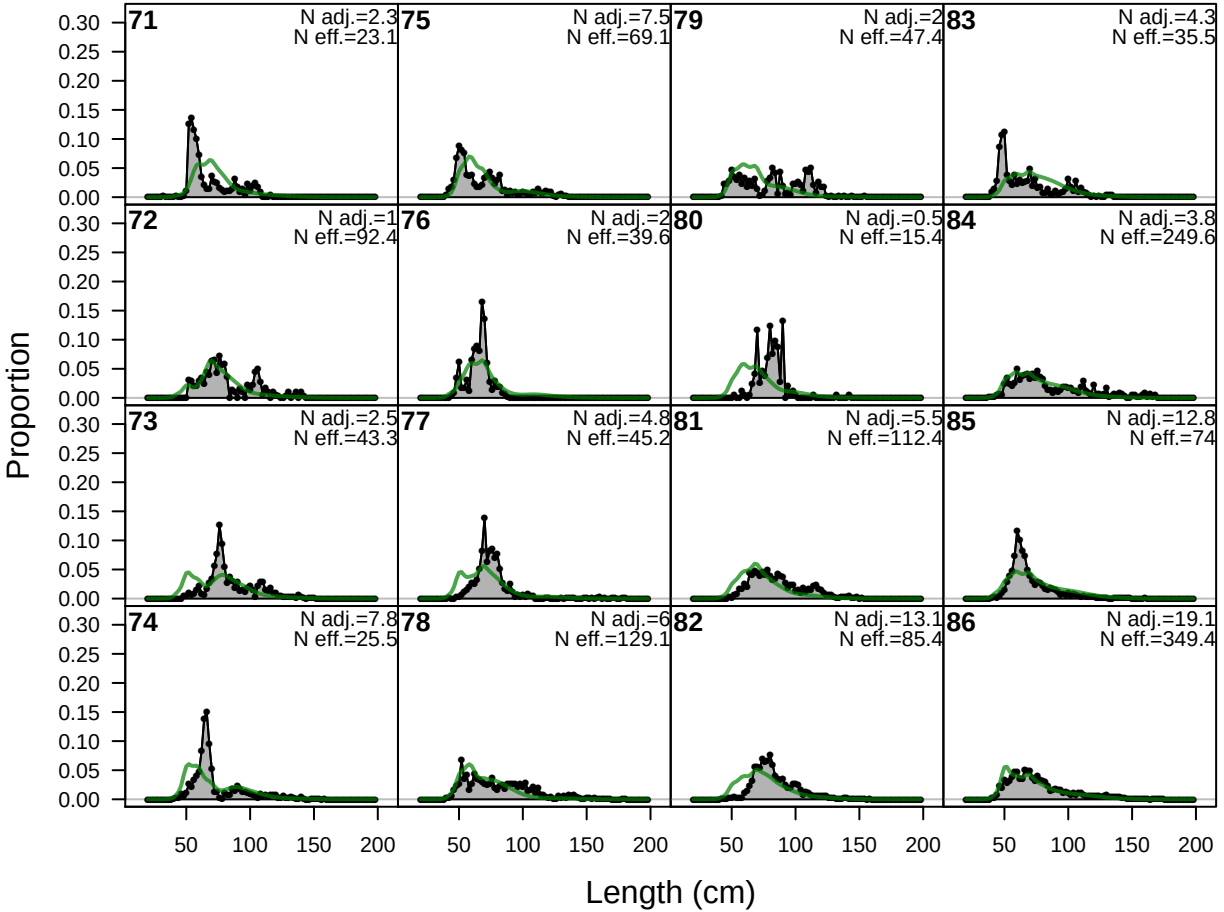
N eff.=216.8
58
N adj.=6.3
N eff.=70.2
62
N adj.=1.5
N eff.=29.8
67
N adj.=2.3
N eff.=26.2
55
N adj.=6.3
N eff.=61.4
59
N adj.=4.5
N eff.=39.9
63
N adj.=2
N eff.=47.7
68
N adj.=2.8
N eff.=93.9
56
N adj.=5.8
N eff.=87
60
N adj.=5.5
N eff.=84.4
64
N adj.=3.8
N eff.=51.4
69
N adj.=1.3
N eff.=7.3
57
N adj.=5.5
N eff.=378.9
61
N adj.=2
N eff.=28
66
N adj.=3
N eff.=32.1
70
N adj.=8.3
N eff.=37.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


71
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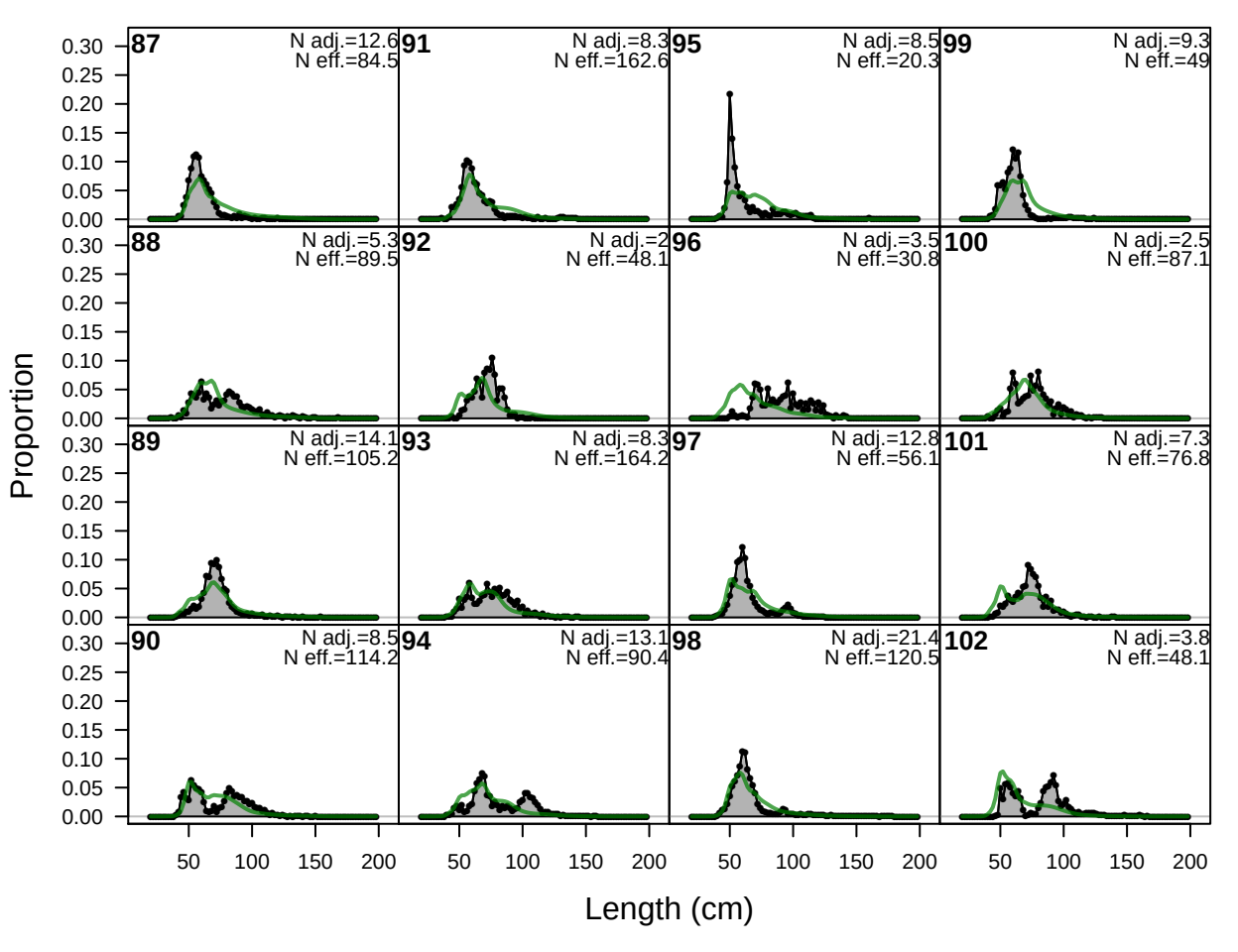
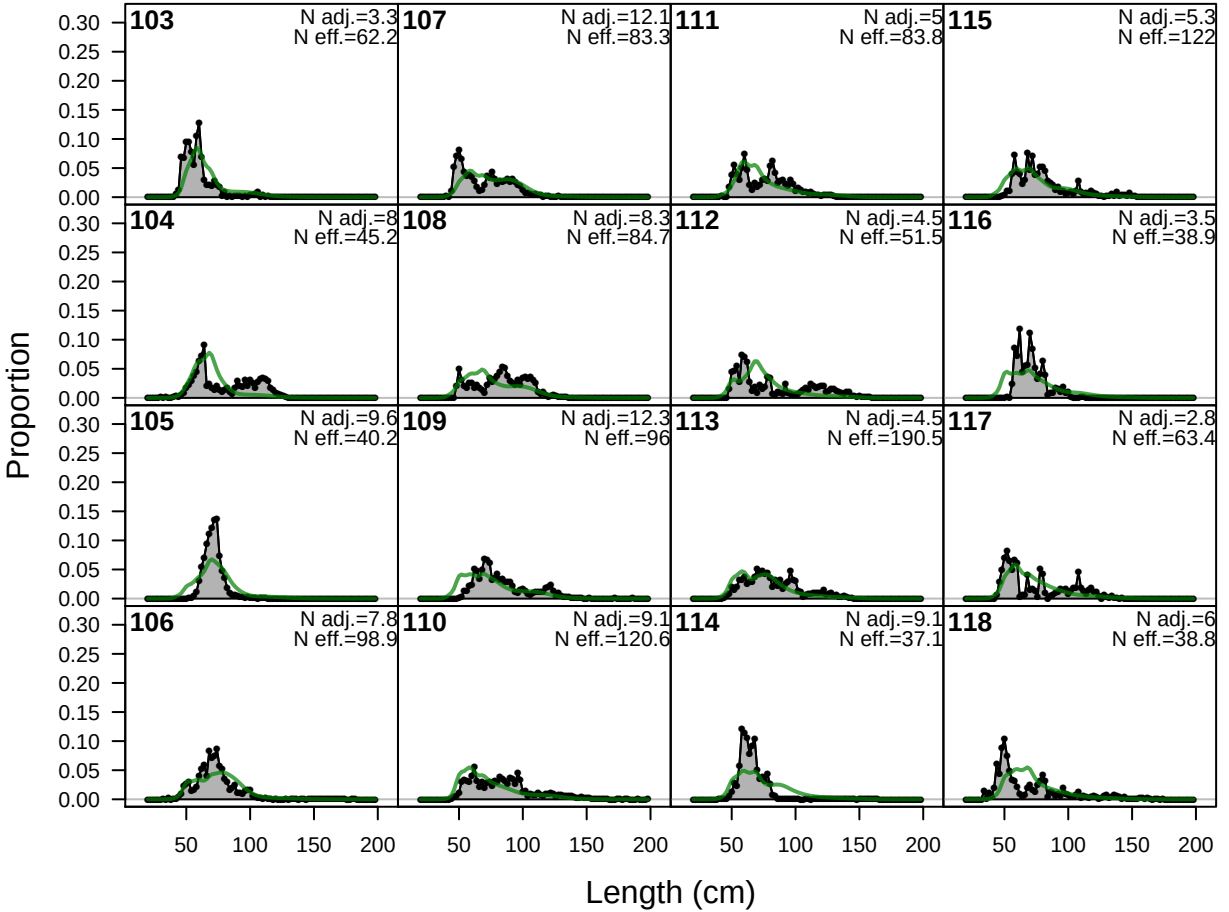
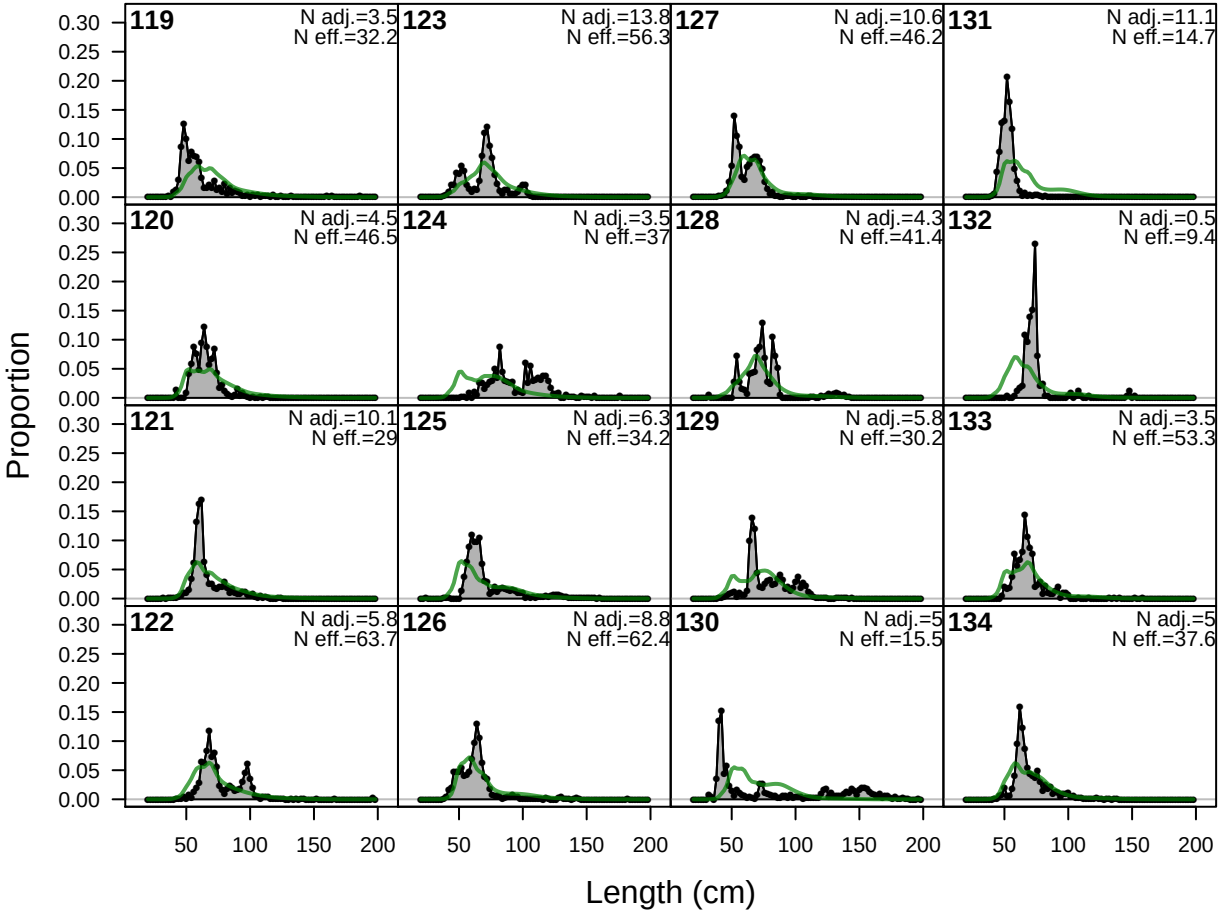
N eff.=23.1
75
N adj.=7.5
N eff.=69.1
79
N adj.=2
N eff.=47.4
83
N adj.=4.3
N eff.=35.5
72
N adj.=1
N eff.=92.4
76
N adj.=2
N eff.=39.6
80
N adj.=0.5
N eff.=15.4
84
N adj.=3.8
N eff.=249.6
73
N adj.=2.5
N eff.=43.3
77
N adj.=4.8
N eff.=45.2
81
N adj.=5.5
N eff.=112.4
85
N adj.=12.8
N eff.=74
74
N adj.=7.8
N eff.=25.5
78
N adj.=6
N eff.=129.1
82
N adj.=13.1
N eff.=85.4
86
N adj.=19.1
N eff.=349.4
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


87
N adj.=12.6
N eff.=84.5
91
N adj.=8.3
N eff.=162.6
95
N adj.=8.5
N eff.=20.3
99
N adj.=9.3
N eff.=49
88
N adj.=5.3
N eff.=89.5
92
N adj.=2
N eff.=48.1
96
N adj.=3.5
N eff.=30.8
100
N adj.=2.5
N eff.=87.1
89
N adj.=14.1
N eff.=105.2
93
N adj.=8.3
N eff.=164.2
97
N adj.=12.8
N eff.=56.1
101
N adj.=7.3
N eff.=76.8
90
N adj.=8.5
N eff.=114.2
94
N adj.=13.1
N eff.=90.4
98
N adj.=21.4
N eff.=120.5
102
N adj.=3.8
N eff.=48.1
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


103
N adj.=3.3
N eff.=62.2
107
N adj.=12.1
N eff.=83.3
111
N adj.=5
N eff.=83.8
115
N adj.=5.3
N eff.=122
104
N adj.=8
N eff.=45.2
108
N adj.=8.3
N eff.=84.7
112
N adj.=4.5
N eff.=51.5
116
N adj.=3.5
N eff.=38.9
105
N adj.=9.6
N eff.=40.2
109
N adj.=12.3
N eff.=96
113
N adj.=4.5
N eff.=190.5
117
N adj.=2.8
N eff.=63.4
106
N adj.=7.8
N eff.=98.9
110
N adj.=9.1
N eff.=120.6
114
N adj.=9.1
N eff.=37.1
118
N adj.=6
N eff.=38.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)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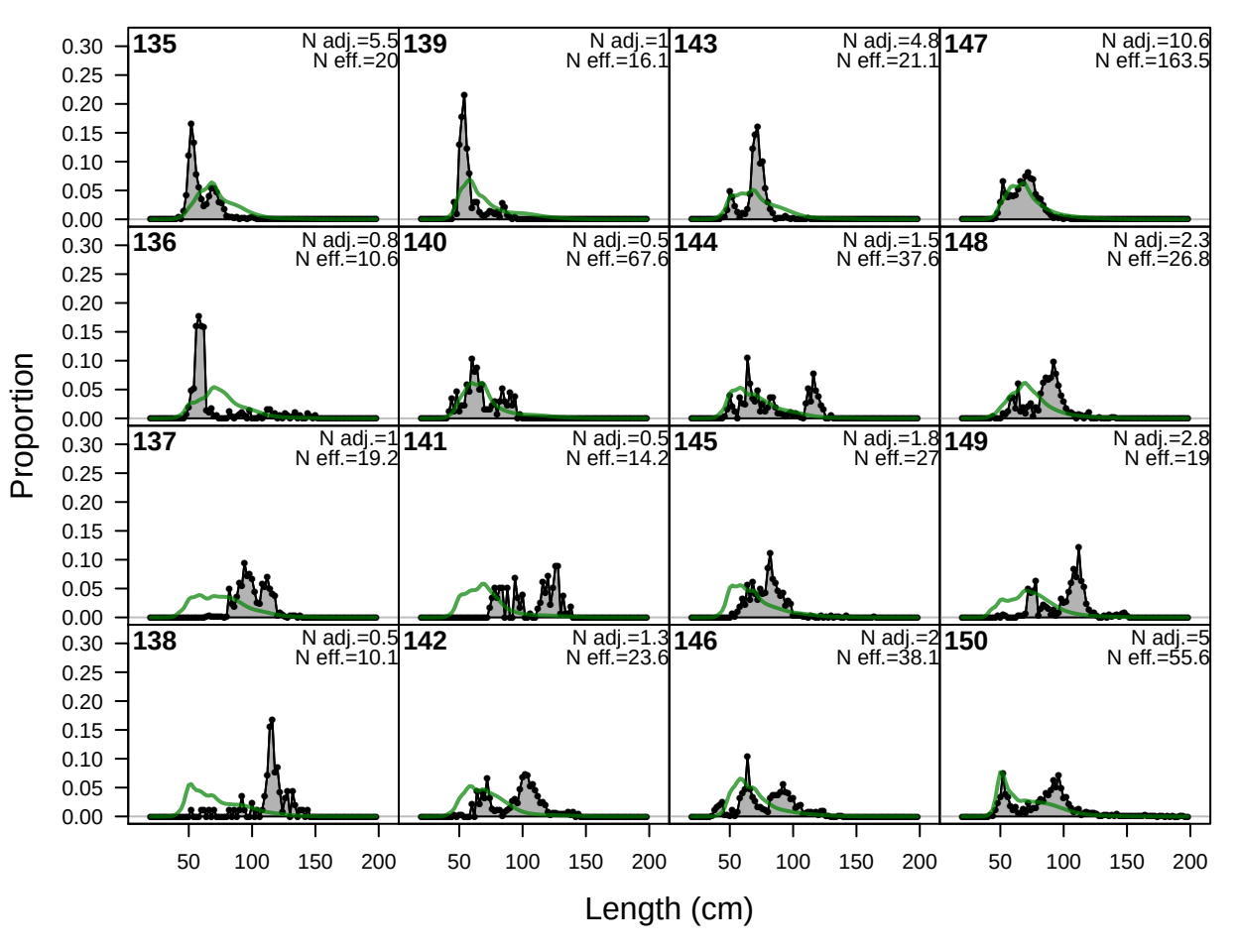
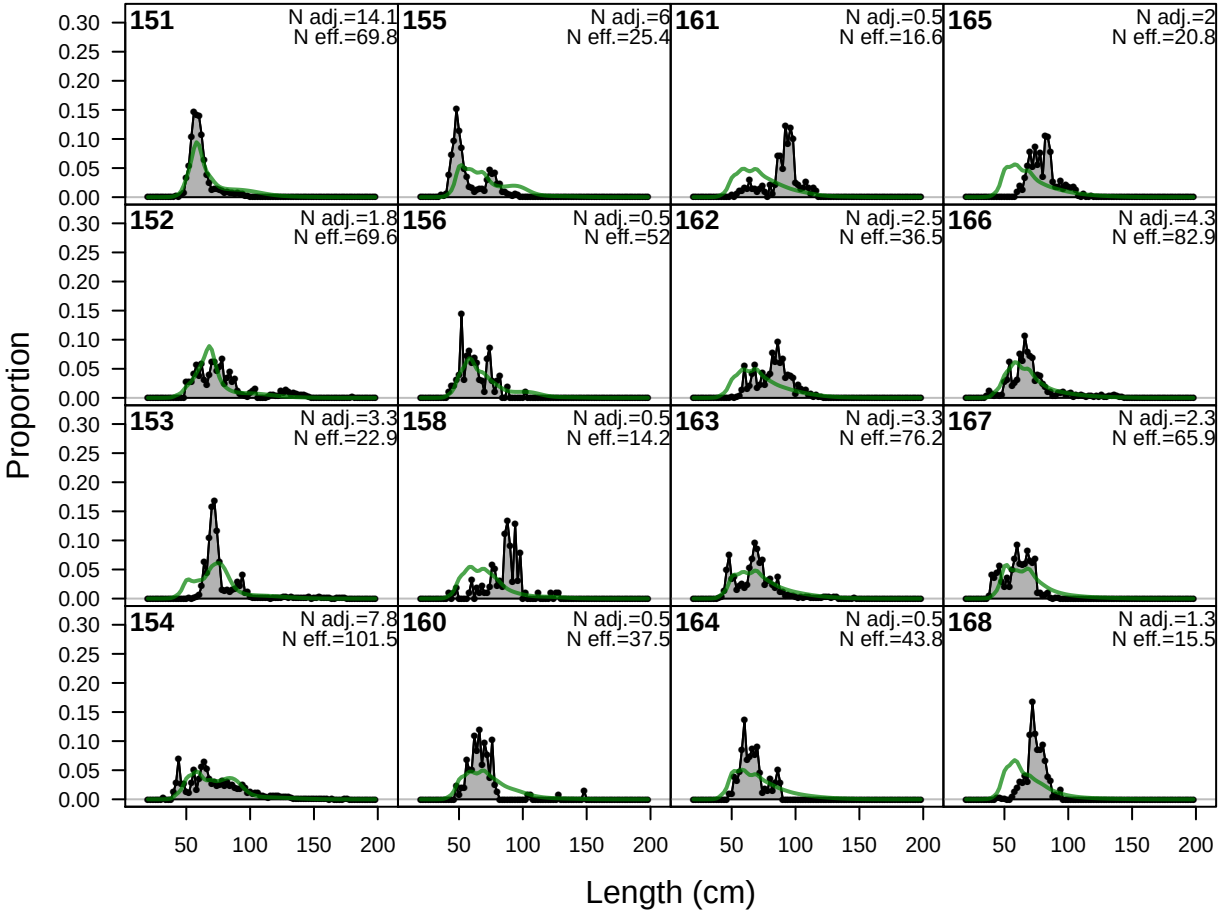
N eff.=32.2
123
N adj.=13.8
N eff.=56.3
127
N adj.=10.6
N eff.=46.2
131
N adj.=11.1
N eff.=14.7
120
N adj.=4.5
N eff.=46.5
124
N adj.=3.5
N eff.=37
128
N adj.=4.3
N eff.=41.4
132
N adj.=0.5
N eff.=9.4
121
N adj.=10.1
N eff.=29
125
N adj.=6.3
N eff.=34.2
129
N adj.=5.8
N eff.=30.2
133
N adj.=3.5
N eff.=53.3
122
N adj.=5.8
N eff.=63.7
126
N adj.=8.8
N eff.=62.4
130
N adj.=5
N eff.=15.5
134
N adj.=5
N eff.=37.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


135
N adj.=5.5
N eff.=20
139
N adj.=1
N eff.=16.1
143
N adj.=4.8
N eff.=21.1
147
N adj.=10.6
N eff.=163.5
136
N adj.=0.8
N eff.=10.6
140
N adj.=0.5
N eff.=67.6
144
N adj.=1.5
N eff.=37.6
148
N adj.=2.3
N eff.=26.8
137
N adj.=1
N eff.=19.2
141
N adj.=0.5
N eff.=14.2
145
N adj.=1.8
N eff.=27
149
N adj.=2.8
N eff.=19
138
N adj.=0.5
N eff.=10.1
142
N adj.=1.3
N eff.=23.6
146
N adj.=2
N eff.=38.1
150
N adj.=5
N eff.=55.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)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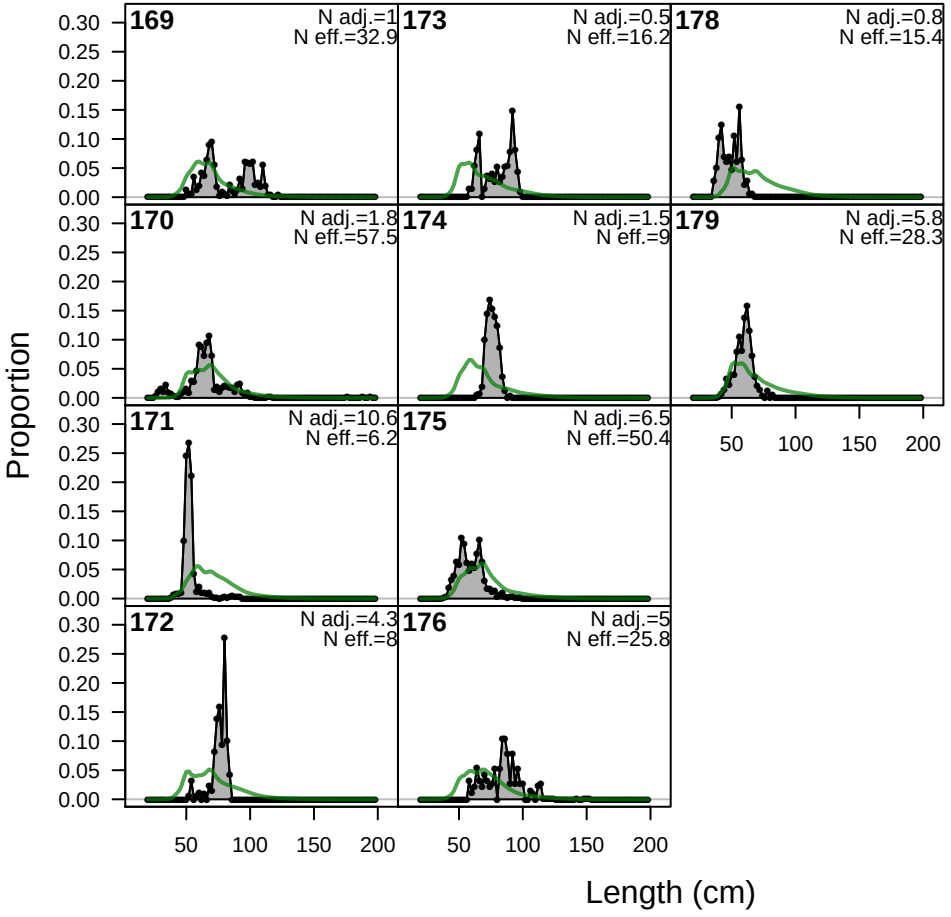
N adj.=14.1
N eff.=69.8
155
N adj.=6
N eff.=25.4
161
N adj.=0.5
N eff.=16.6
165
N adj.=2
N eff.=20.8
152
N adj.=1.8
N eff.=69.6
156
N adj.=0.5
N eff.=52
162
N adj.=2.5
N eff.=36.5
166
N adj.=4.3
N eff.=82.9
153
N adj.=3.3
N eff.=22.9
158
N adj.=0.5
N eff.=14.2
163
N adj.=3.3
N eff.=76.2
167
N adj.=2.3
N eff.=65.9
154
N adj.=7.8
N eff.=101.5
160
N adj.=0.5
N eff.=37.5
164
N adj.=0.5
N eff.=43.8
168
N adj.=1.3
N eff.=15.5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)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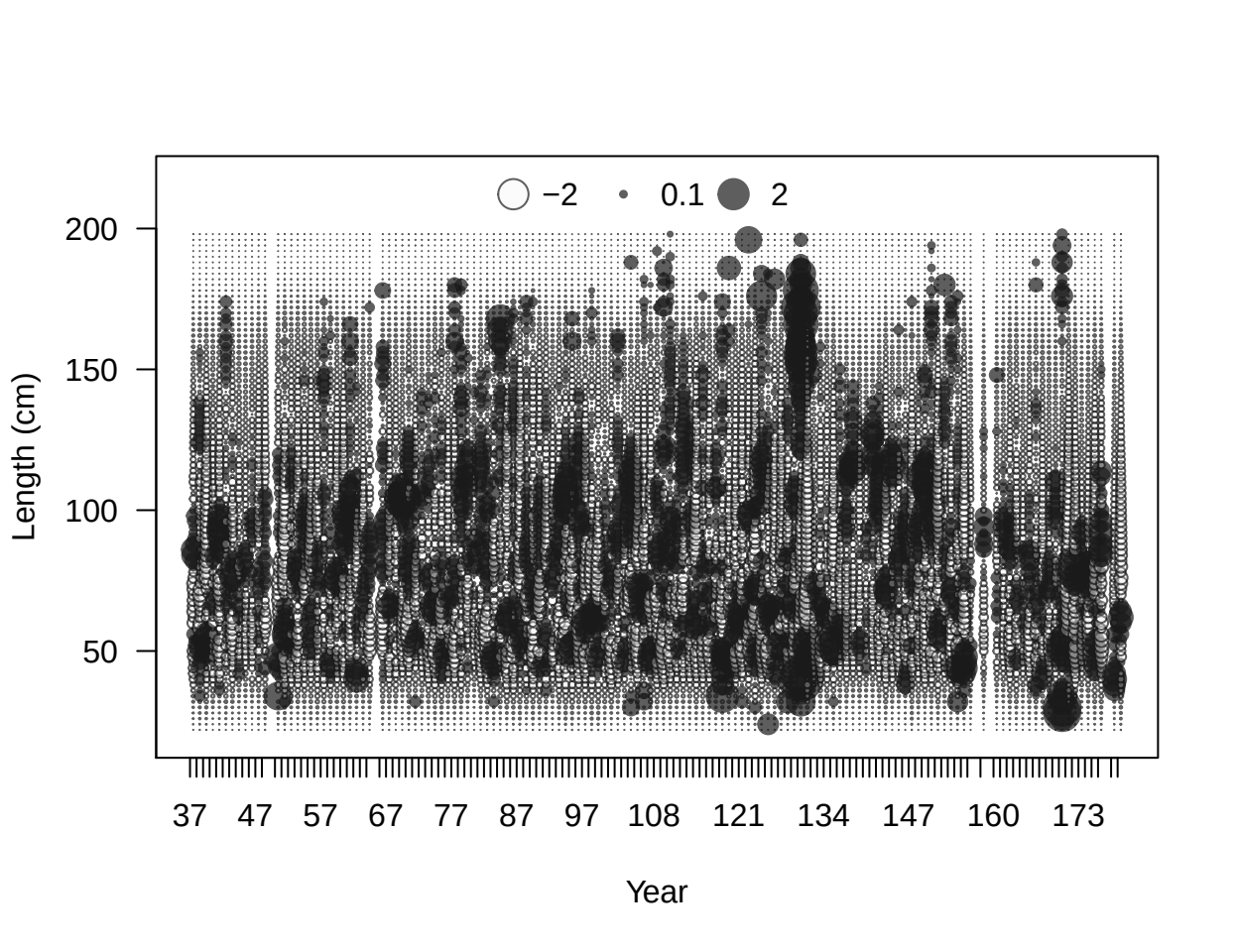
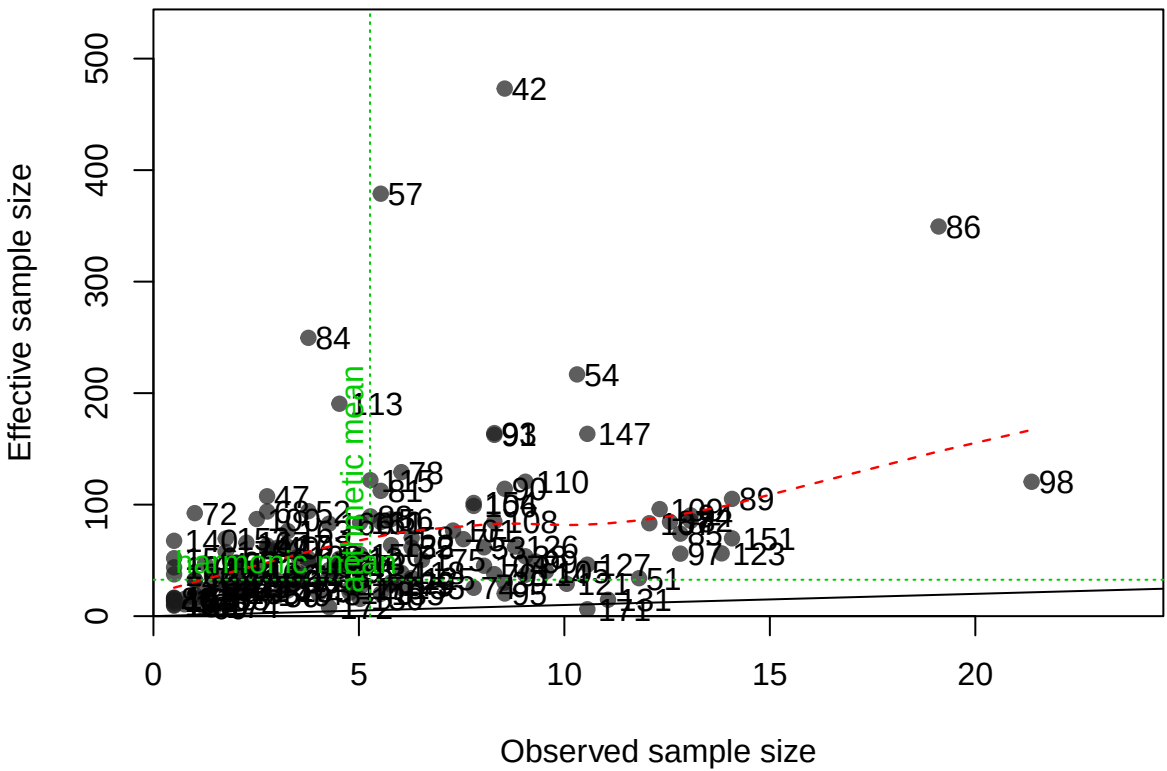
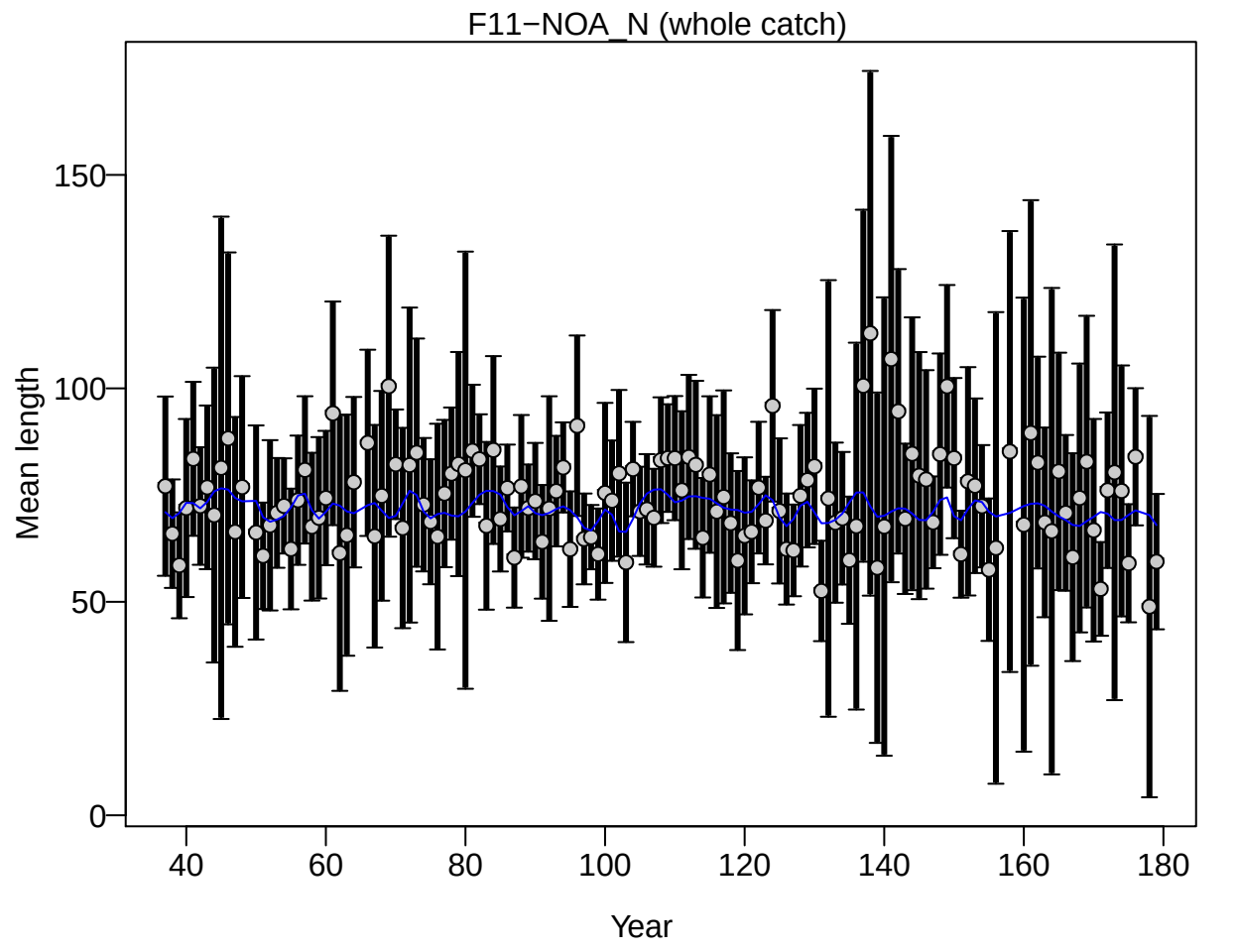
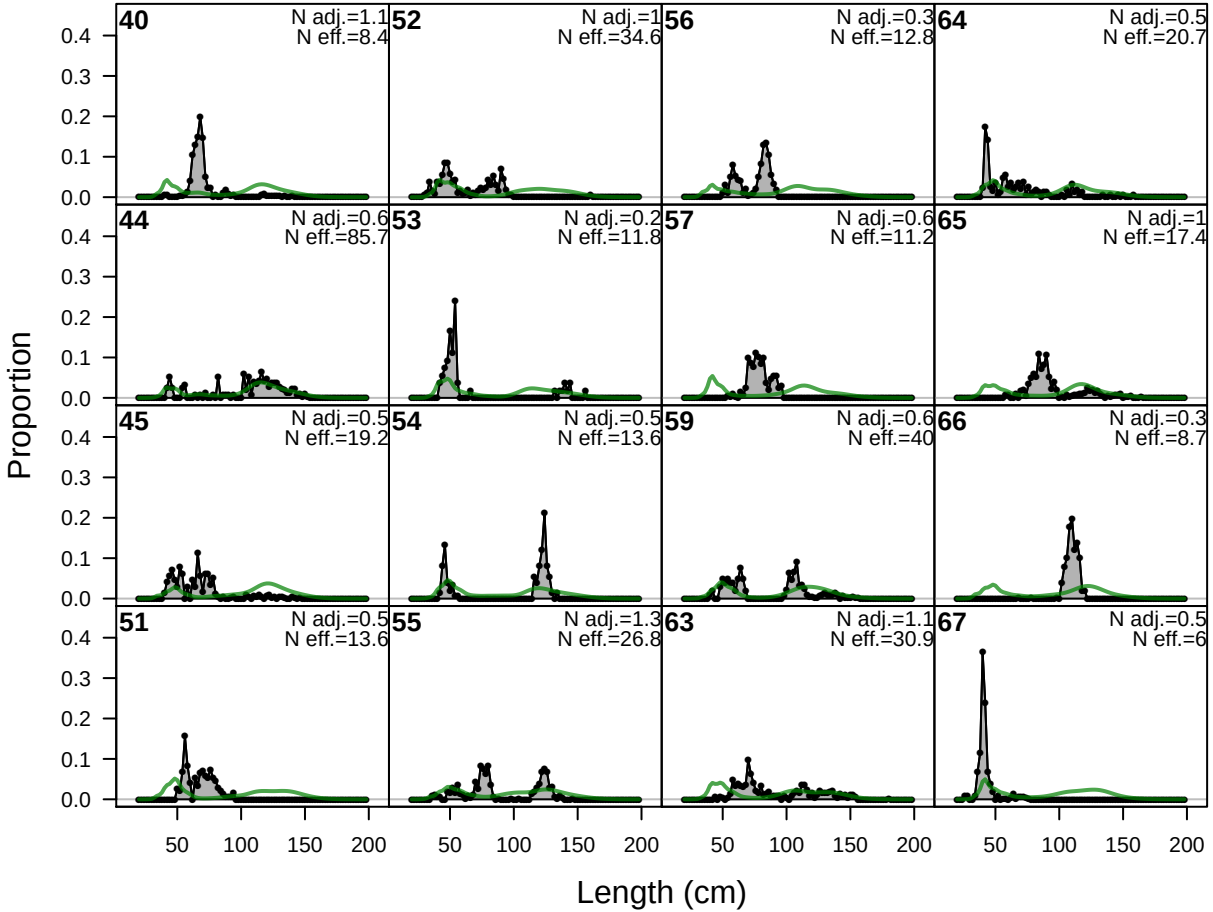
N adj.=1
N eff.=32.9
173
N adj.=0.5
N eff.=16.2
178
N adj.=0.8
N eff.=15.4
170
N adj.=1.8
N eff.=57.5
174
N adj.=1.5
N eff.=9
179
N adj.=5.8
N eff.=28.3
171
N adj.=10.6
N eff.=6.2
175
N adj.=6.5
N eff.=50.4
172
N adj.=4.3
N eff.=8
176
N adj.=5
N eff.=25.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

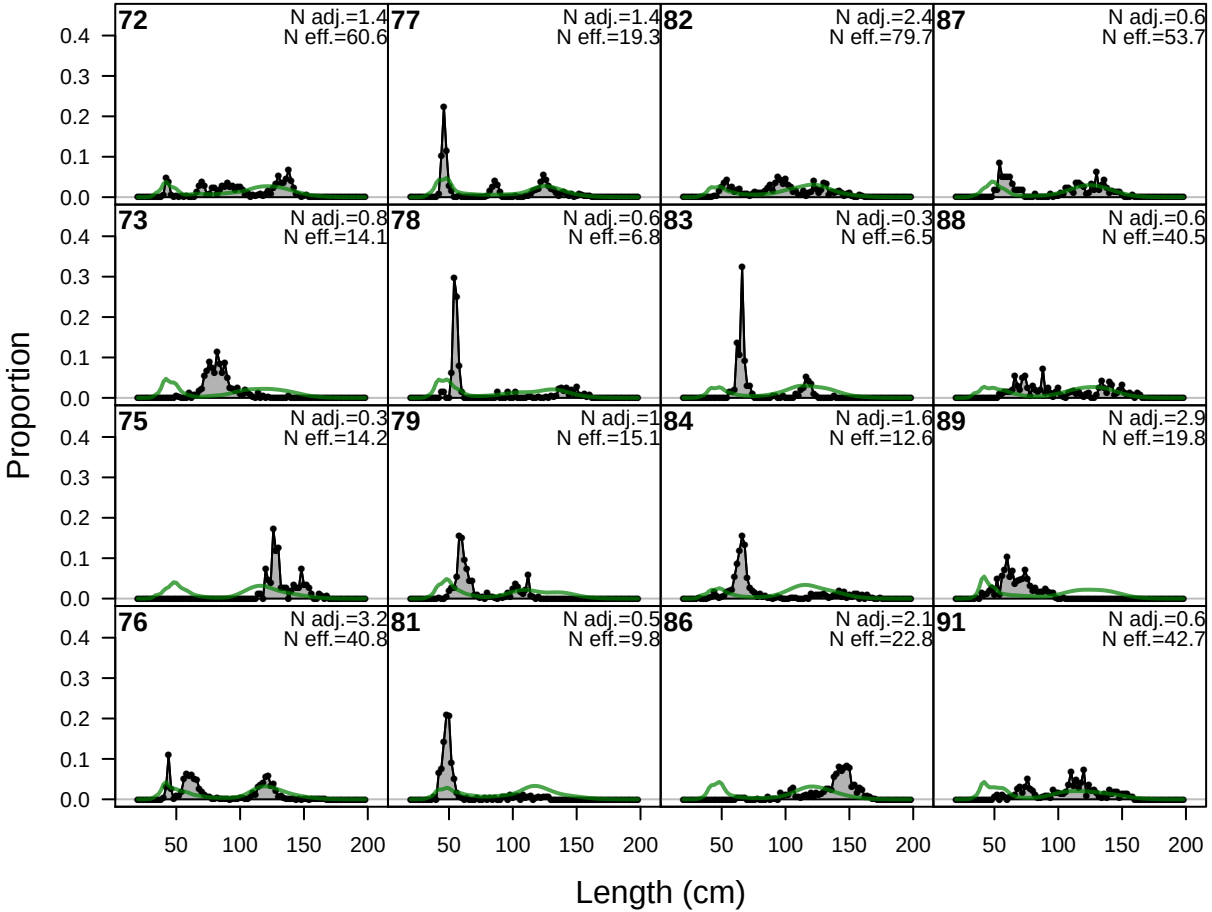

−2
0.1
2
200
150
100
50
Length (cm)
37
47
57
67
77
87
97
108
121
134
147
160
173
Year

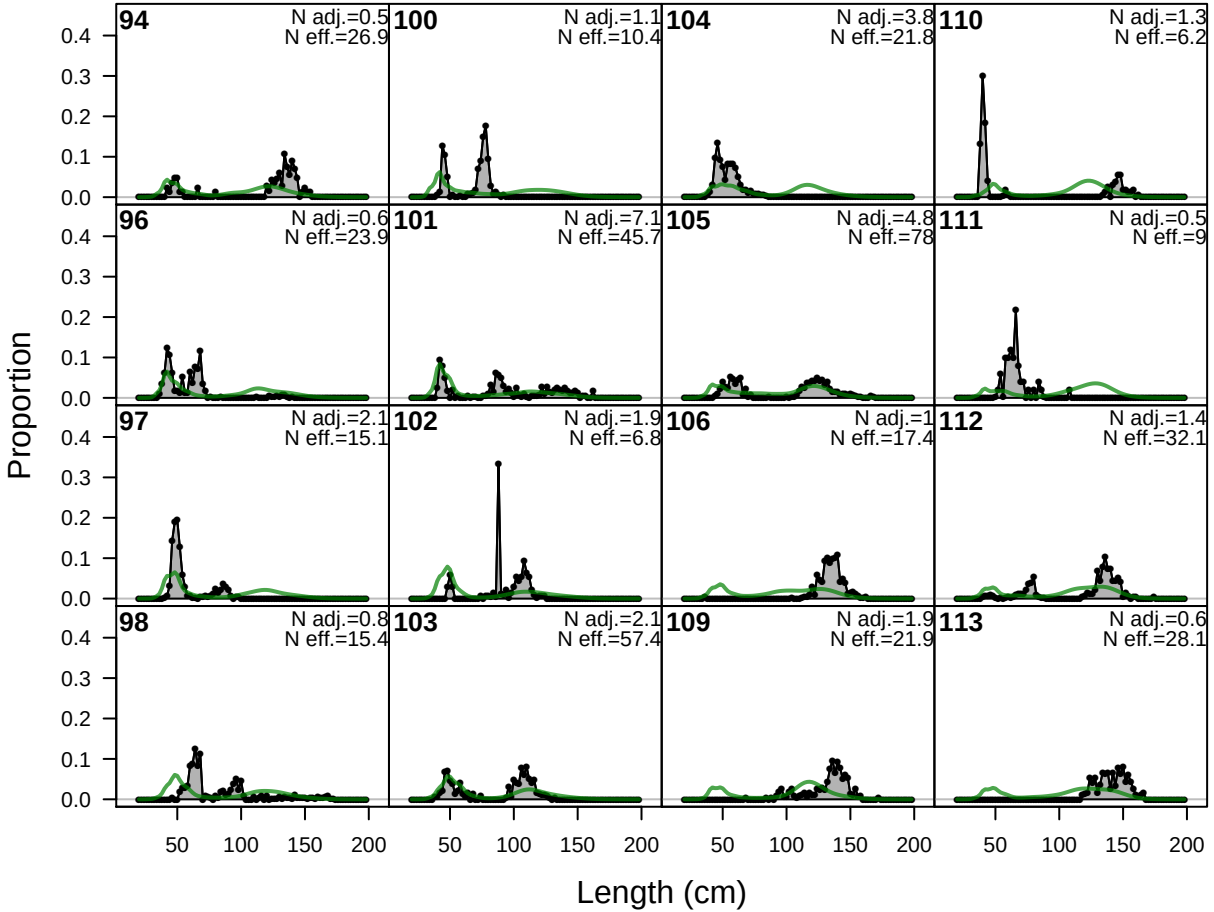


Effective sample size
Observed sample size
0
100
200
300
400
500
0
5
10
15
20
42
57
86
84
54
113
147
98
110
89
72
47
151
123
97
51
127
121
131
171
95
108
126


F11−NOA_N (whole catch)
Mean length
Year
0
50
100
150
40
60
80
100
120
140
160
180


40
N adj.=1.1
N eff.=8.4
52
N adj.=1
N eff.=34.6
56
N adj.=0.3
N eff.=12.8
64
N adj.=0.5
N eff.=20.7
44
N adj.=0.6
N eff.=85.7
53
N adj.=0.2
N eff.=11.8
57
N adj.=0.6
N eff.=11.2
65
N adj.=1
N eff.=17.4
45
N adj.=0.5
N eff.=19.2
54
N adj.=0.5
N eff.=13.6
59
N adj.=0.6
N eff.=40
66
N adj.=0.3
N eff.=8.7
51
N adj.=0.5
N eff.=13.6
55
N adj.=1.3
N eff.=26.8
63
N adj.=1.1
N eff.=30.9
67
N adj.=0.5
N eff.=6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


72
N adj.=1.4
N eff.=60.6
77
N adj.=1.4
N eff.=19.3
82
N adj.=2.4
N eff.=79.7
87
N adj.=0.6
N eff.=53.7
73
N adj.=0.8
N eff.=14.1
78
N adj.=0.6
N eff.=6.8
83
N adj.=0.3
N eff.=6.5
88
N adj.=0.6
N eff.=40.5
75
N adj.=0.3
N eff.=14.2
79
N adj.=1
N eff.=15.1
84
N adj.=1.6
N eff.=12.6
89
N adj.=2.9
N eff.=19.8
76
N adj.=3.2
N eff.=40.8
81
N adj.=0.5
N eff.=9.8
86
N adj.=2.1
N eff.=22.8
91
N adj.=0.6
N eff.=42.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


94
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104
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N eff.=21.8
110
N adj.=1.3
N eff.=6.2
96
N adj.=0.6
N eff.=23.9
101
N adj.=7.1
N eff.=45.7
105
N adj.=4.8
N eff.=78
111
N adj.=0.5
N eff.=9
97
N adj.=2.1
N eff.=15.1
102
N adj.=1.9
N eff.=6.8
106
N adj.=1
N eff.=17.4
112
N adj.=1.4
N eff.=32.1
98
N adj.=0.8
N eff.=15.4
103
N adj.=2.1
N eff.=57.4
109
N adj.=1.9
N eff.=21.9
113
N adj.=0.6
N eff.=28.1
Proportion
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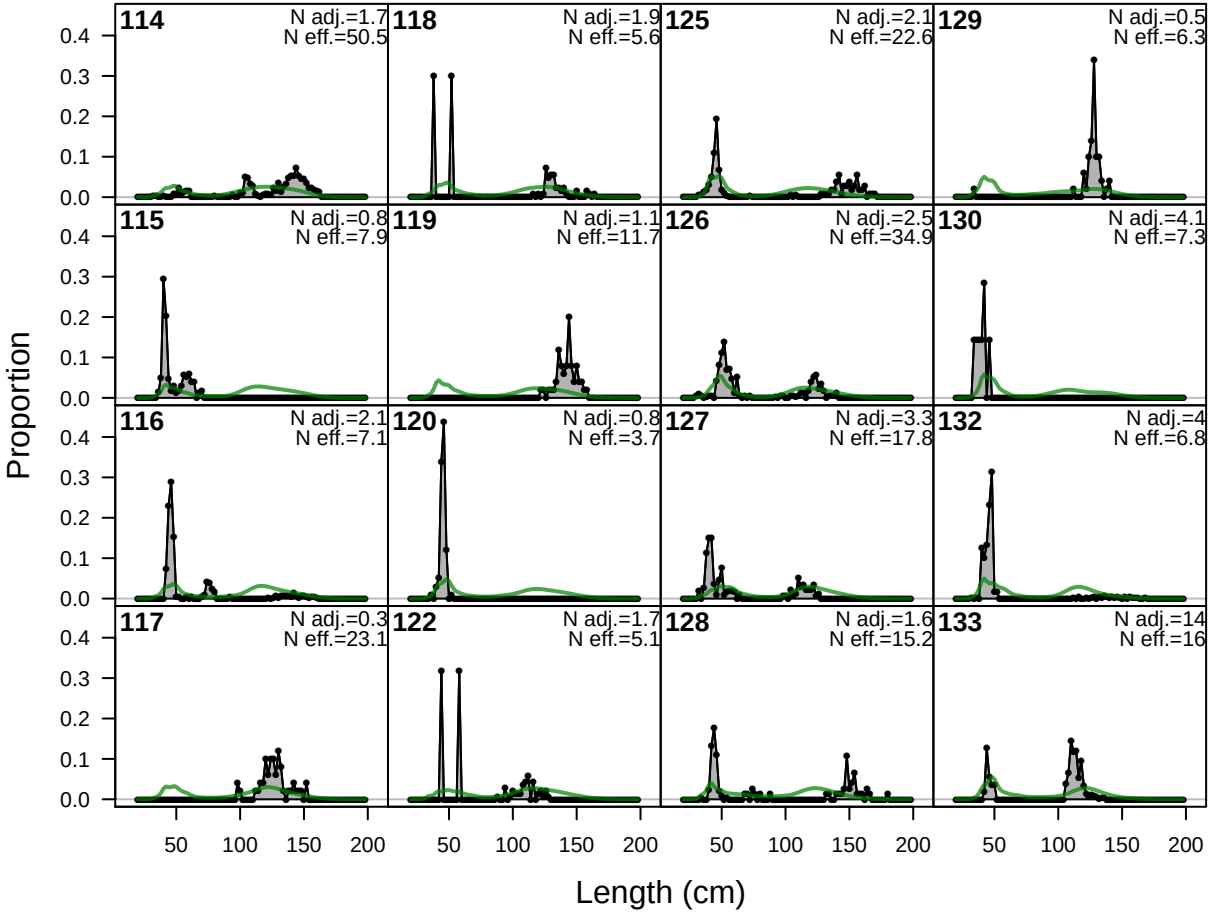
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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N eff.=22.6
129
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N eff.=6.3
115
N adj.=0.8
N eff.=7.9
119
N adj.=1.1
N eff.=11.7
126
N adj.=2.5
N eff.=34.9
130
N adj.=4.1
N eff.=7.3
116
N adj.=2.1
N eff.=7.1
120
N adj.=0.8
N eff.=3.7
127
N adj.=3.3
N eff.=17.8
132
N adj.=4
N eff.=6.8
117
N adj.=0.3
N eff.=23.1
122
N adj.=1.7
N eff.=5.1
128
N adj.=1.6
N eff.=15.2
133
N adj.=14
N eff.=16
Proportion
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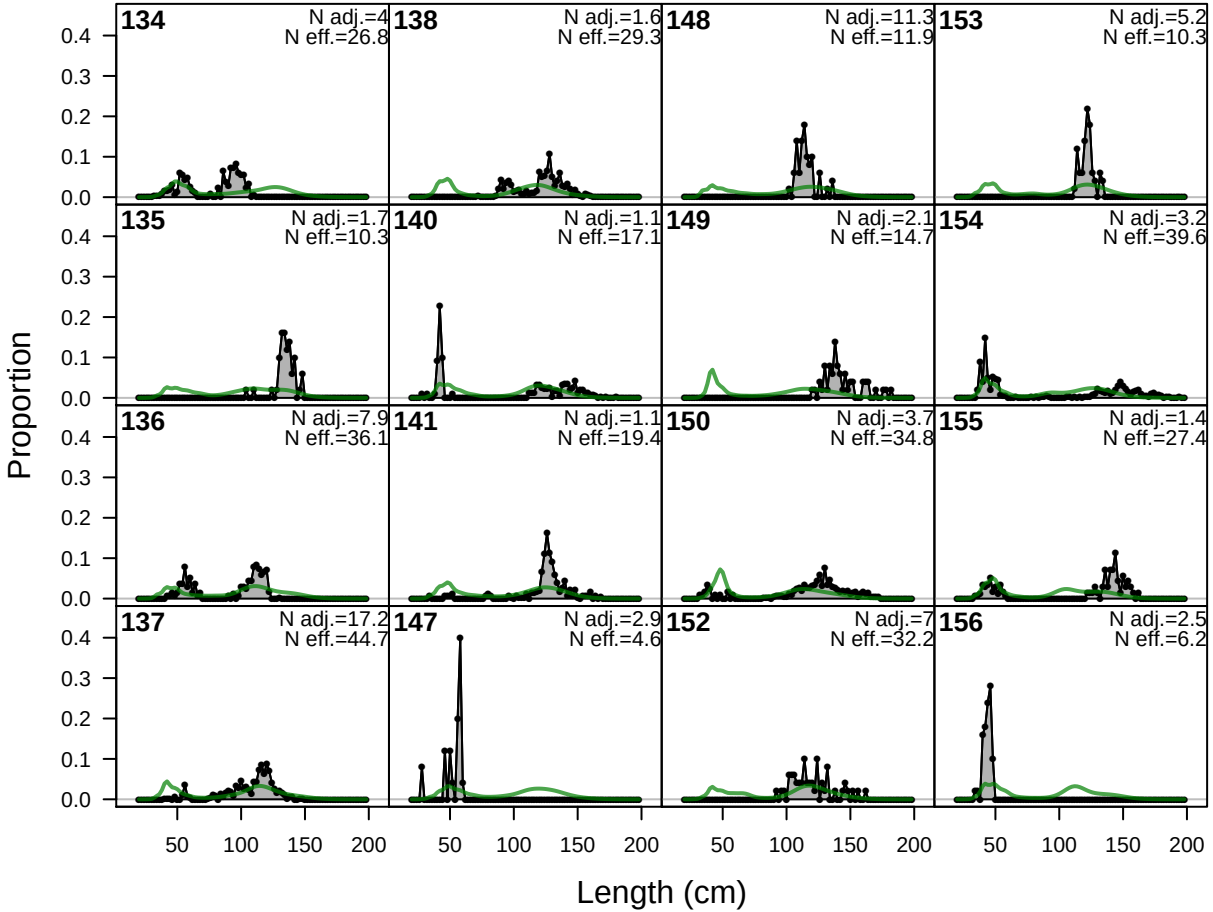
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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N eff.=29.3
148
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N eff.=11.9
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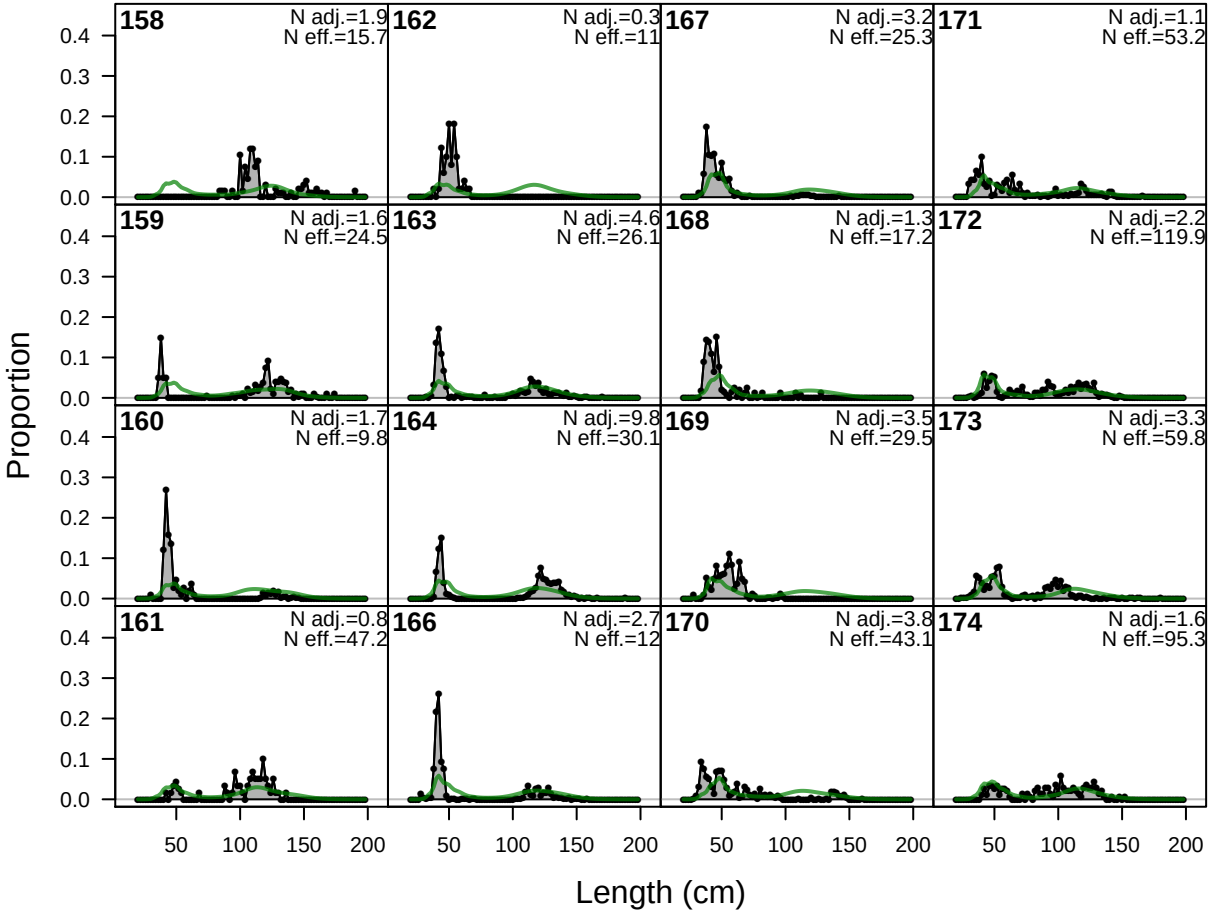
N eff.=10.3
135
N adj.=1.7
N eff.=10.3
140
N adj.=1.1
N eff.=17.1
149
N adj.=2.1
N eff.=14.7
154
N adj.=3.2
N eff.=39.6
136
N adj.=7.9
N eff.=36.1
141
N adj.=1.1
N eff.=19.4
150
N adj.=3.7
N eff.=34.8
155
N adj.=1.4
N eff.=27.4
137
N adj.=17.2
N eff.=44.7
147
N adj.=2.9
N eff.=4.6
152
N adj.=7
N eff.=32.2
156
N adj.=2.5
N eff.=6.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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N eff.=15.7
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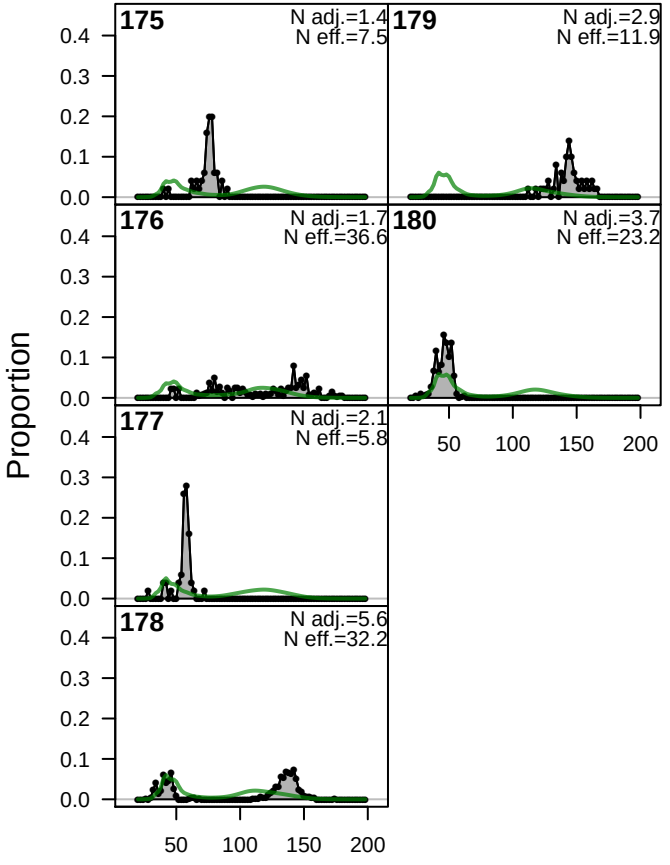
N eff.=11
167
N adj.=3.2
N eff.=25.3
171
N adj.=1.1
N eff.=53.2
159
N adj.=1.6
N eff.=24.5
163
N adj.=4.6
N eff.=26.1
168
N adj.=1.3
N eff.=17.2
172
N adj.=2.2
N eff.=119.9
160
N adj.=1.7
N eff.=9.8
164
N adj.=9.8
N eff.=30.1
169
N adj.=3.5
N eff.=29.5
173
N adj.=3.3
N eff.=59.8
161
N adj.=0.8
N eff.=47.2
166
N adj.=2.7
N eff.=12
170
N adj.=3.8
N eff.=43.1
174
N adj.=1.6
N eff.=95.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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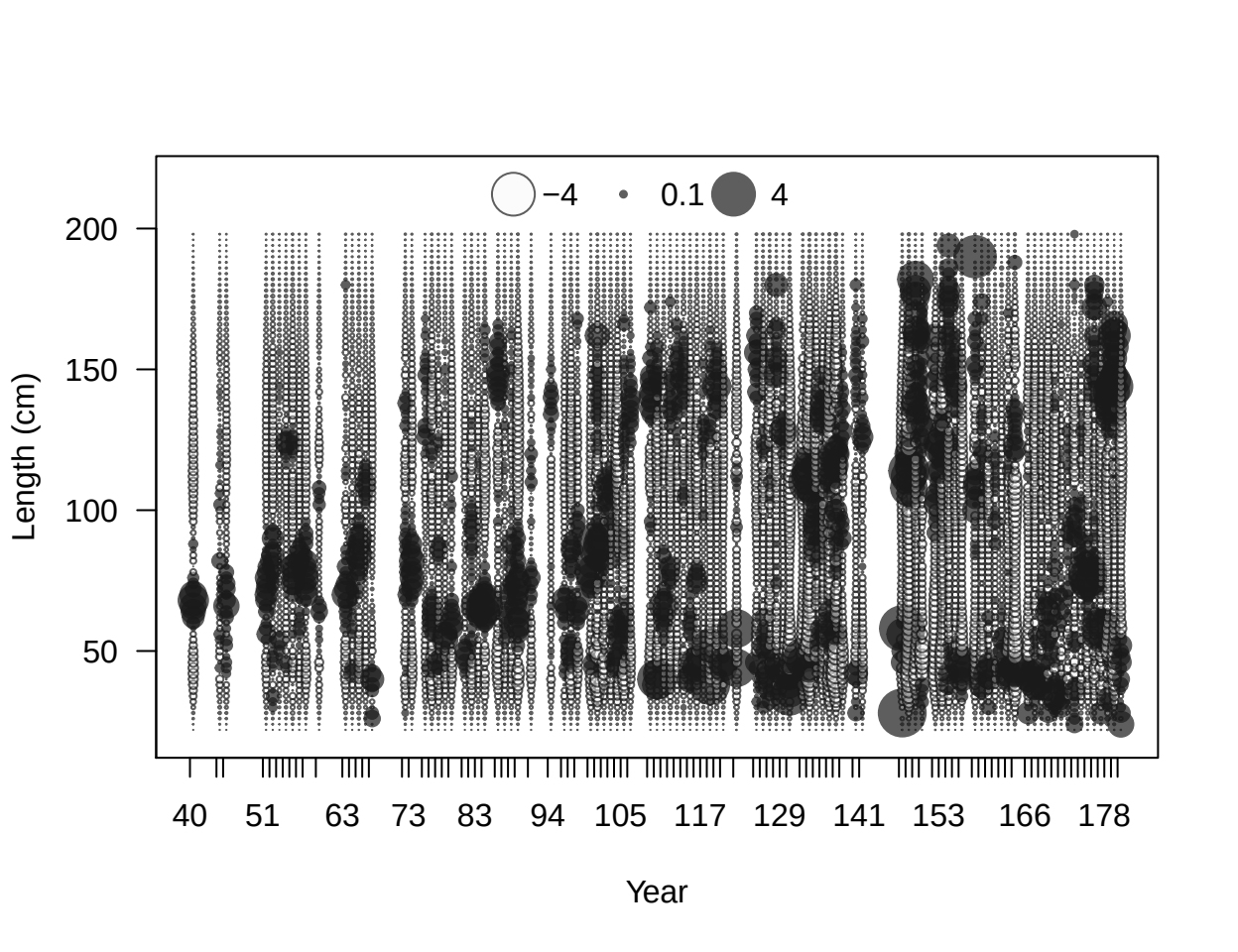
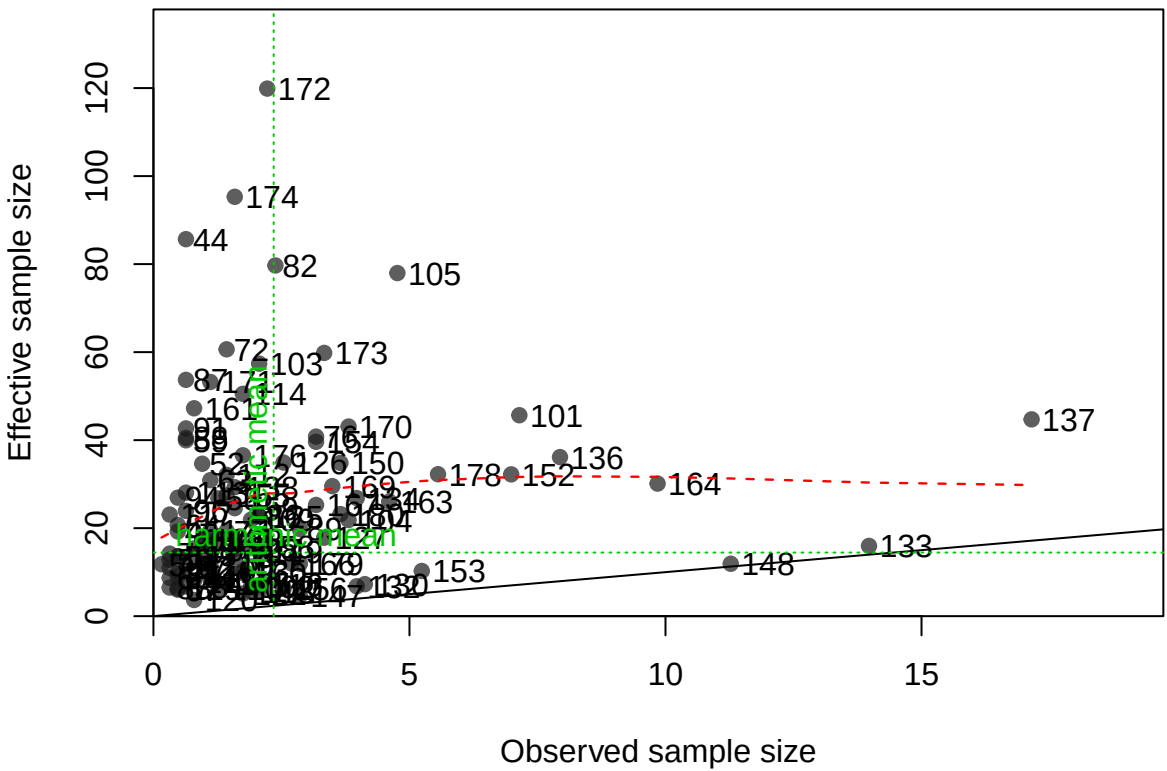
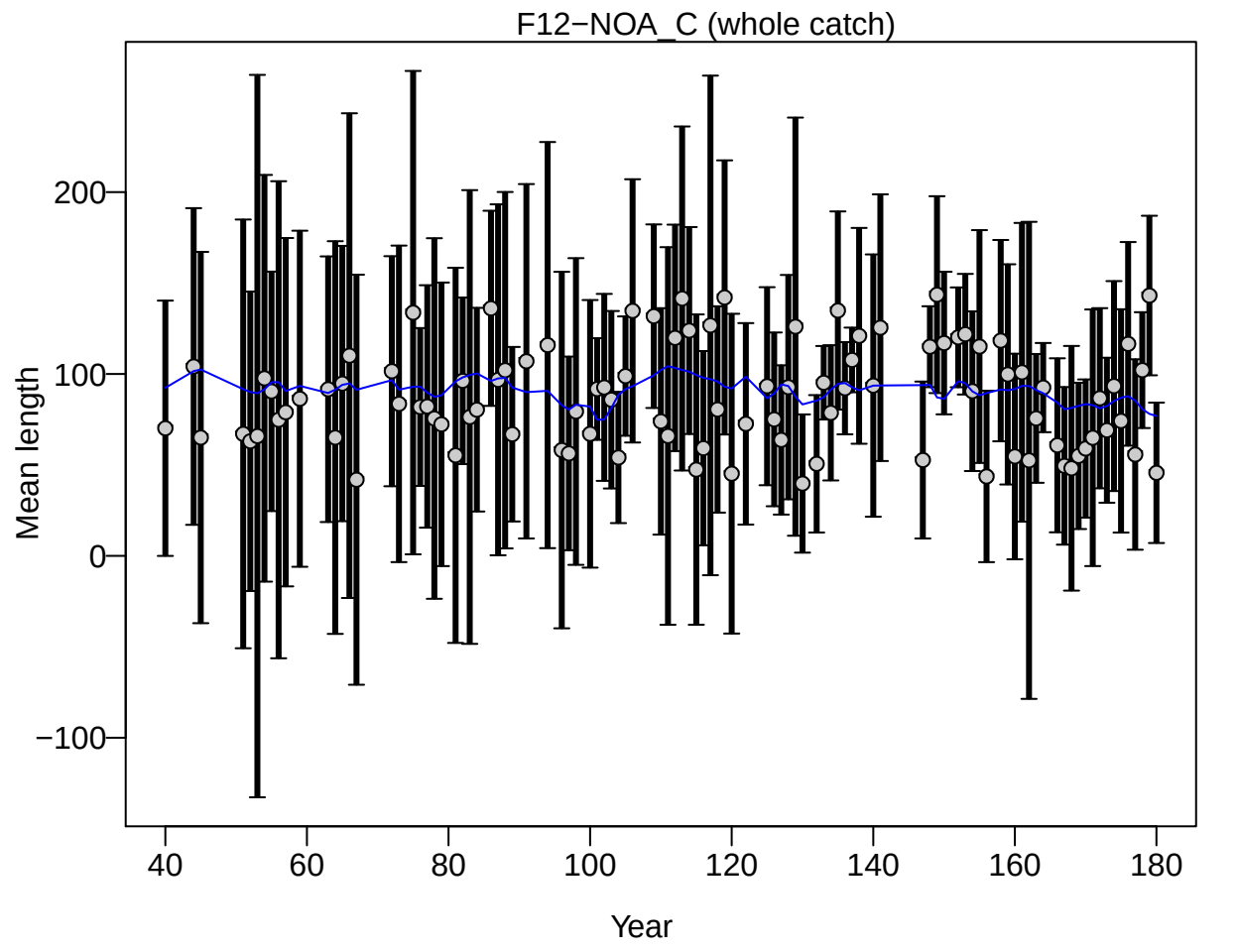
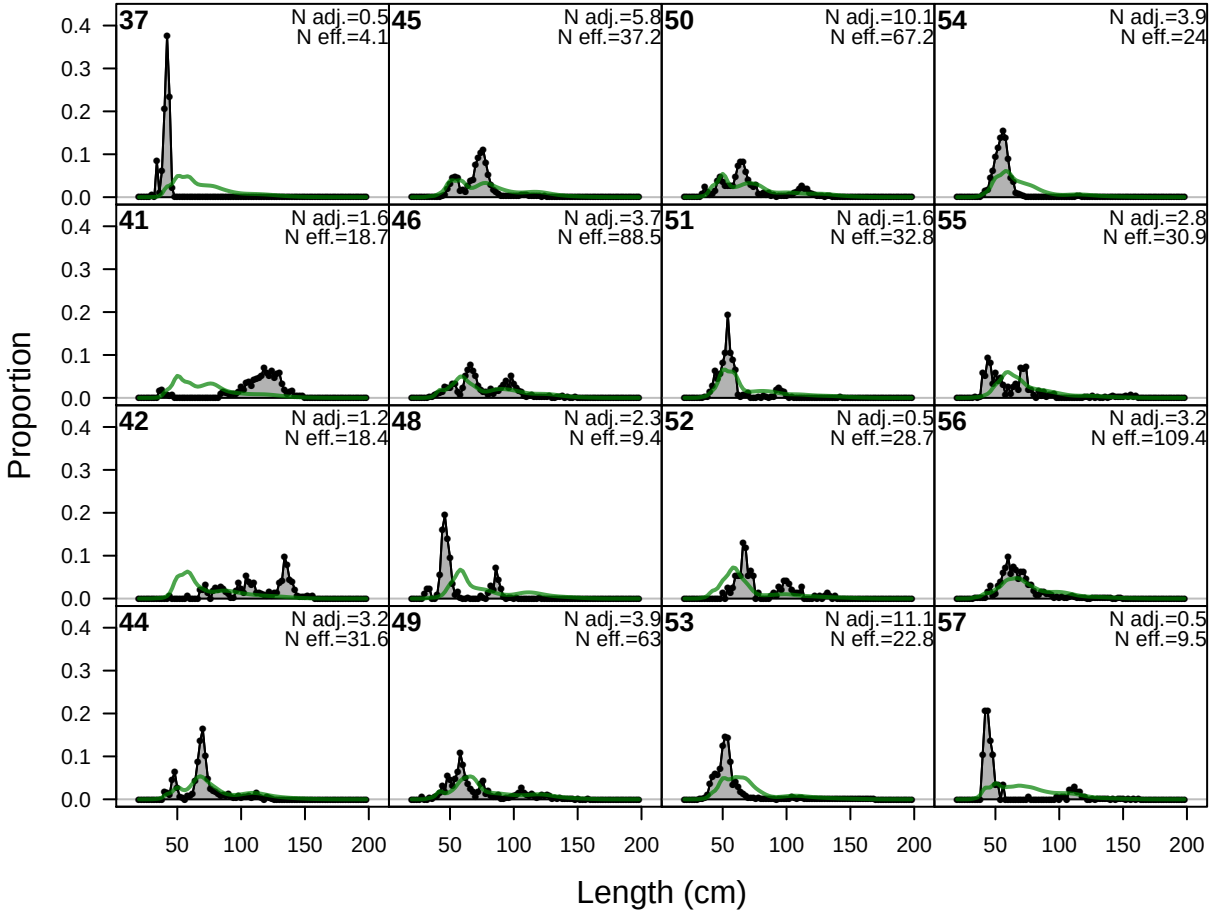
N eff.=11.9
176
N adj.=1.7
N eff.=36.6
180
N adj.=3.7
N eff.=23.2
177
N adj.=2.1
N eff.=5.8
178
N adj.=5.6
N eff.=32.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


−4
0.1
4
200
150
100
50
Length (cm)
40
51
63
73
83
94
105
117
129
141
153
166
178
Year



Effective sample size
Observed sample size
0
20
40
60
80
100
120
0
5
10
15
172
174
44
82
105
72
103
173
87
114
161
101
137
170
136
178
152
164
150
169
163
133
148
153
Carmen's Mean


F12−NOA_C (whole catch)
Mean length
200
100
0
−100
40
60
80
100
120
140
160
180
Year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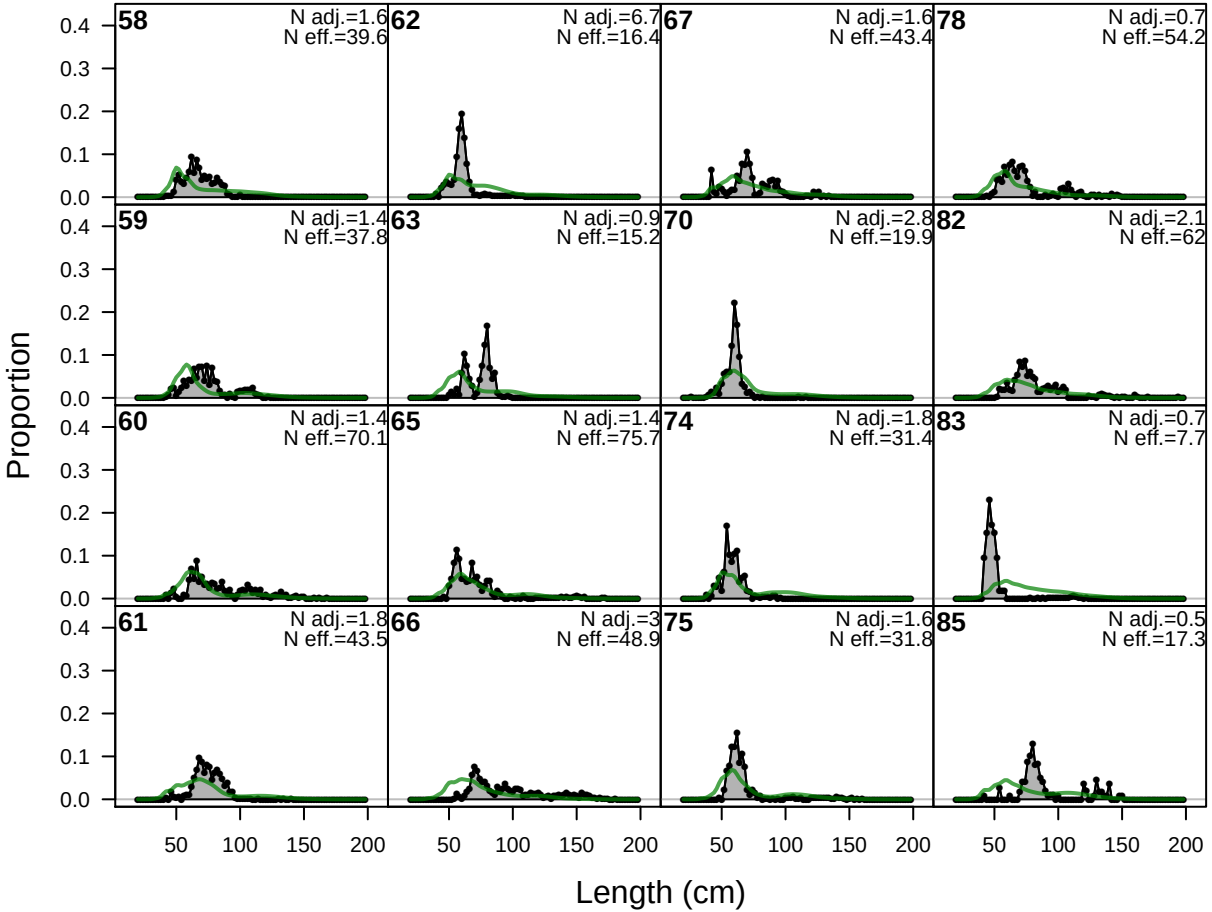
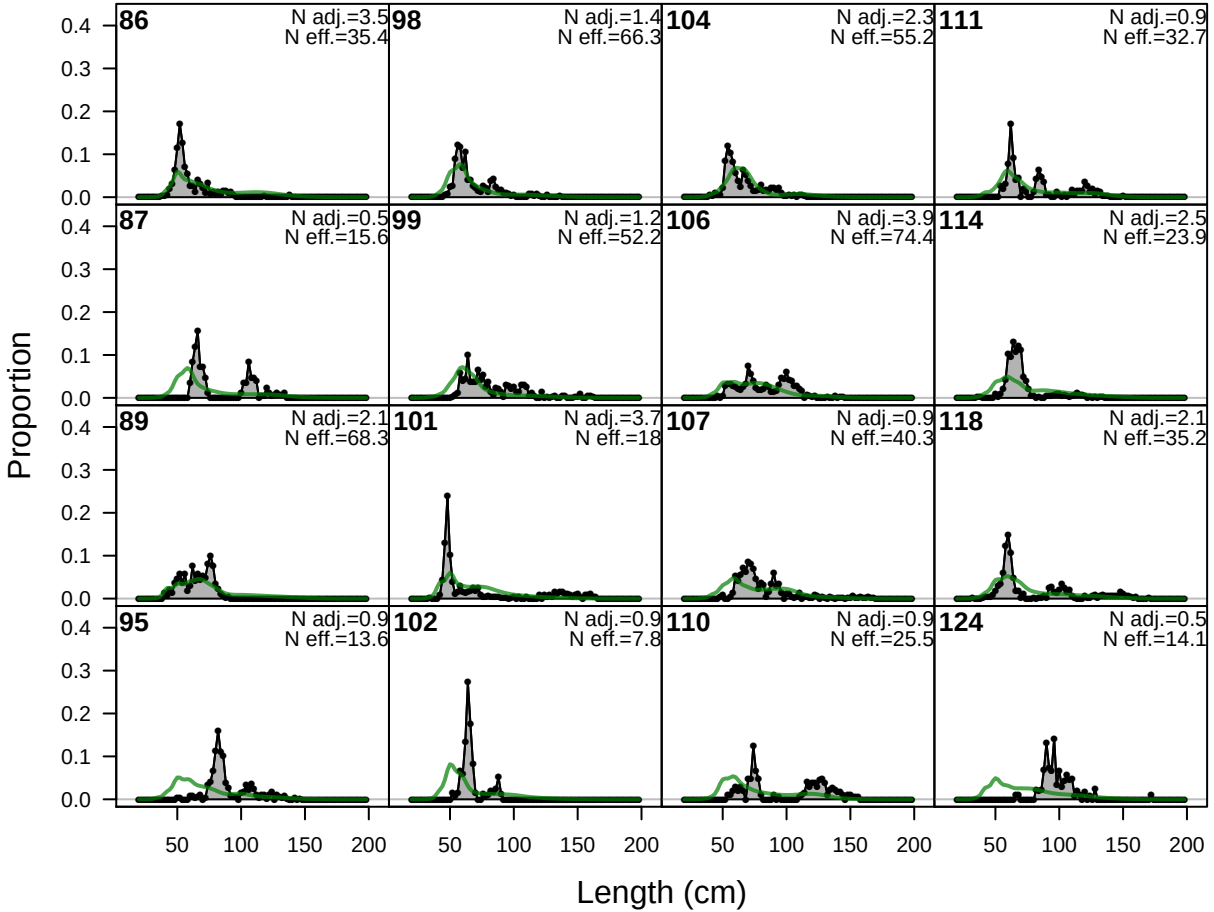
N adj.=0.5
N eff.=4.1
45
N adj.=5.8
N eff.=37.2
50
N adj.=10.1
N eff.=67.2
54
N adj.=3.9
N eff.=24
41
N adj.=1.6
N eff.=18.7
46
N adj.=3.7
N eff.=88.5
51
N adj.=1.6
N eff.=32.8
55
N adj.=2.8
N eff.=30.9
42
N adj.=1.2
N eff.=18.4
48
N adj.=2.3
N eff.=9.4
52
N adj.=0.5
N eff.=28.7
56
N adj.=3.2
N eff.=109.4
44
N adj.=3.2
N eff.=31.6
49
N adj.=3.9
N eff.=63
53
N adj.=11.1
N eff.=22.8
57
N adj.=0.5
N eff.=9.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


58
N adj.=1.6
N eff.=39.6
62
N adj.=6.7
N eff.=16.4
67
N adj.=1.6
N eff.=43.4
78
N adj.=0.7
N eff.=54.2
59
N adj.=1.4
N eff.=37.8
63
N adj.=0.9
N eff.=15.2
70
N adj.=2.8
N eff.=19.9
82
N adj.=2.1
N eff.=62
60
N adj.=1.4
N eff.=70.1
65
N adj.=1.4
N eff.=75.7
74
N adj.=1.8
N eff.=31.4
83
N adj.=0.7
N eff.=7.7
61
N adj.=1.8
N eff.=43.5
66
N adj.=3
N eff.=48.9
75
N adj.=1.6
N eff.=31.8
85
N adj.=0.5
N eff.=17.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


86
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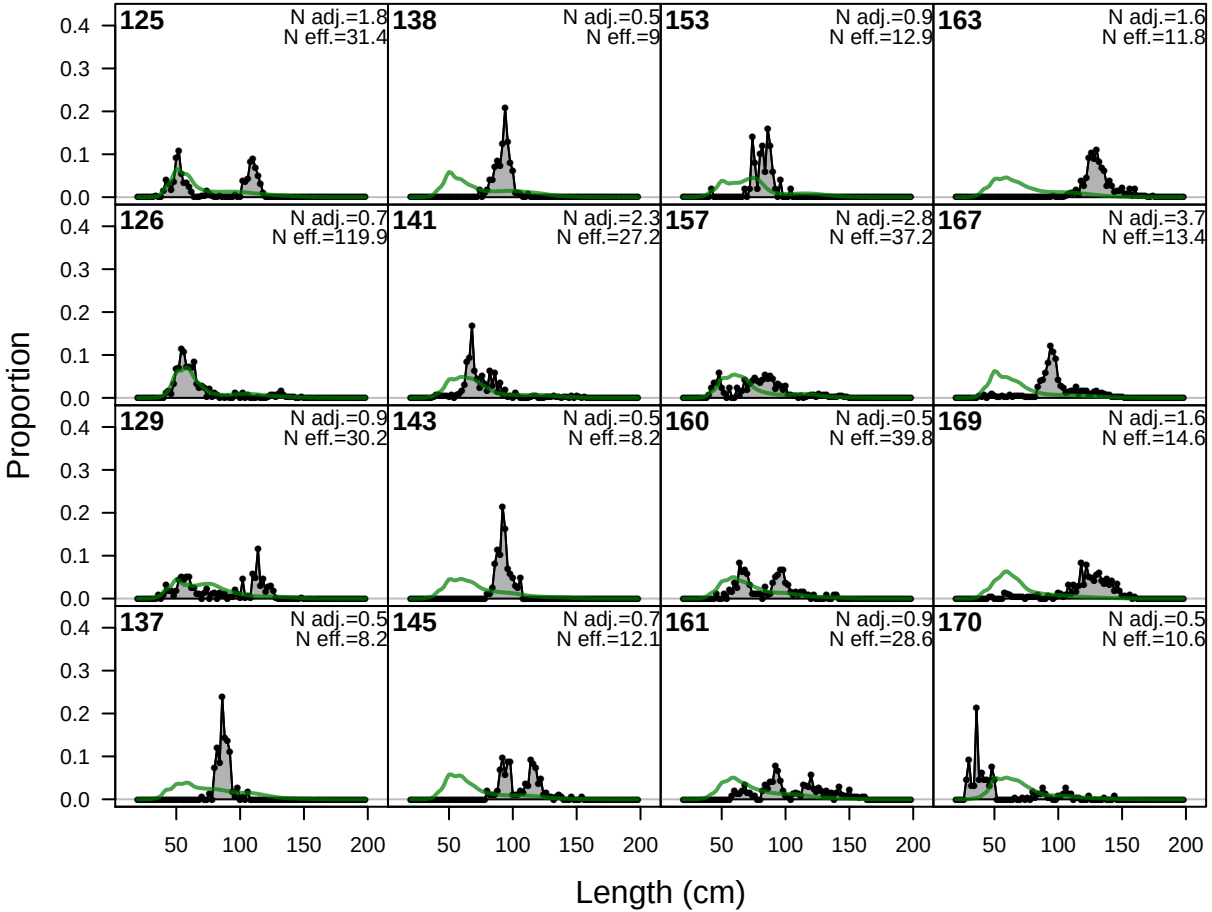
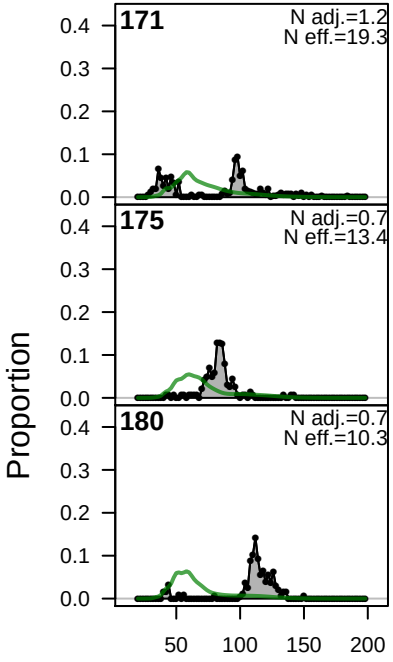
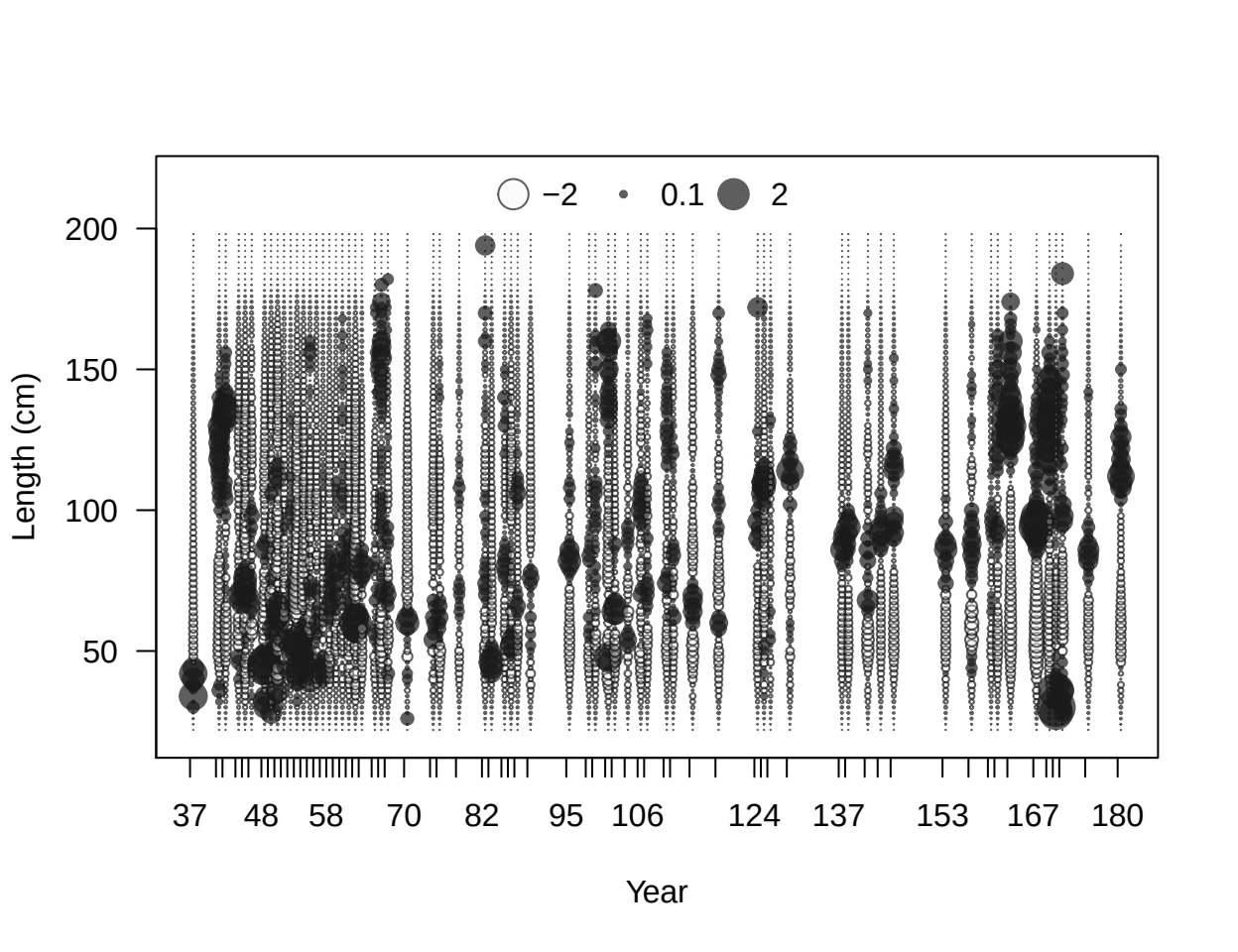
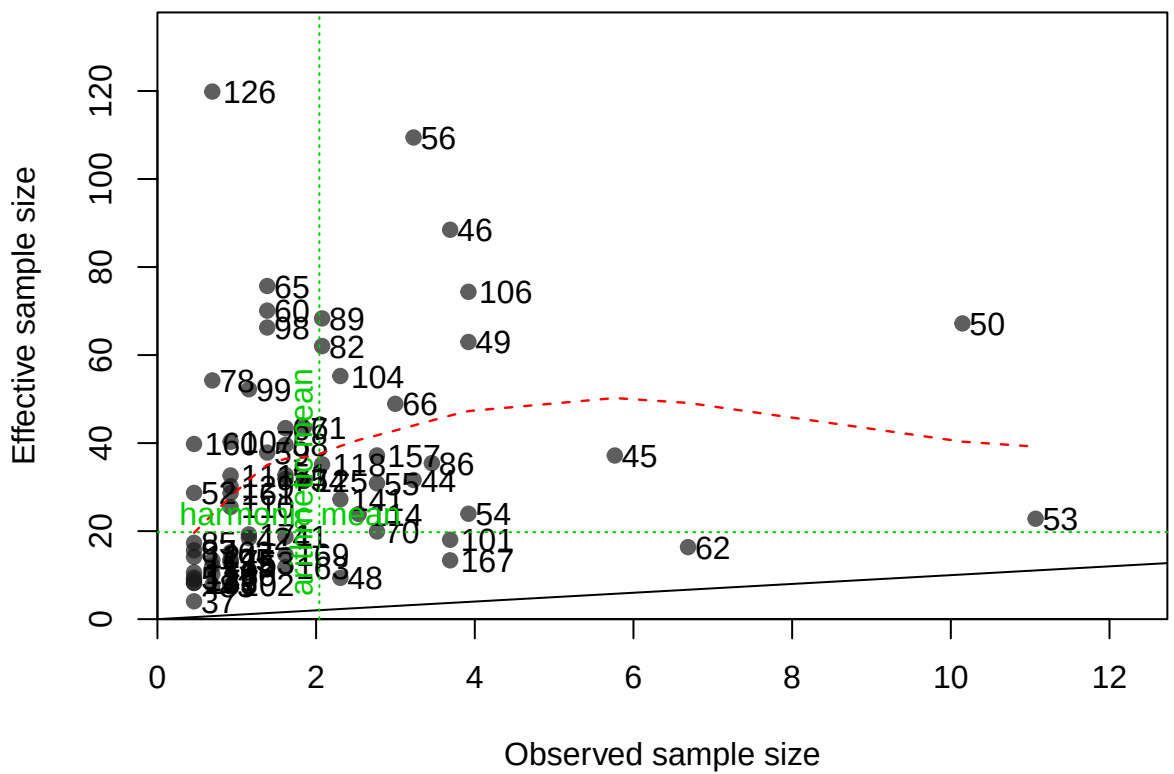
N eff.=35.4
98
N adj.=1.4
N eff.=66.3
104
N adj.=2.3
N eff.=55.2
111
N adj.=0.9
N eff.=32.7
87
N adj.=0.5
N eff.=15.6
99
N adj.=1.2
N eff.=52.2
106
N adj.=3.9
N eff.=74.4
114
N adj.=2.5
N eff.=23.9
89
N adj.=2.1
N eff.=68.3
101
N adj.=3.7
N eff.=18
107
N adj.=0.9
N eff.=40.3
118
N adj.=2.1
N eff.=35.2
95
N adj.=0.9
N eff.=13.6
102
N adj.=0.9
N eff.=7.8
110
N adj.=0.9
N eff.=25.5
124
N adj.=0.5
N eff.=14.1
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


125
N adj.=1.8
N eff.=31.4
138
N adj.=0.5
N eff.=9
153
N adj.=0.9
N eff.=12.9
163
N adj.=1.6
N eff.=11.8
126
N adj.=0.7
N eff.=119.9
141
N adj.=2.3
N eff.=27.2
157
N adj.=2.8
N eff.=37.2
167
N adj.=3.7
N eff.=13.4
129
N adj.=0.9
N eff.=30.2
143
N adj.=0.5
N eff.=8.2
160
N adj.=0.5
N eff.=39.8
169
N adj.=1.6
N eff.=14.6
137
N adj.=0.5
N eff.=8.2
145
N adj.=0.7
N eff.=12.1
161
N adj.=0.9
N eff.=28.6
170
N adj.=0.5
N eff.=10.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

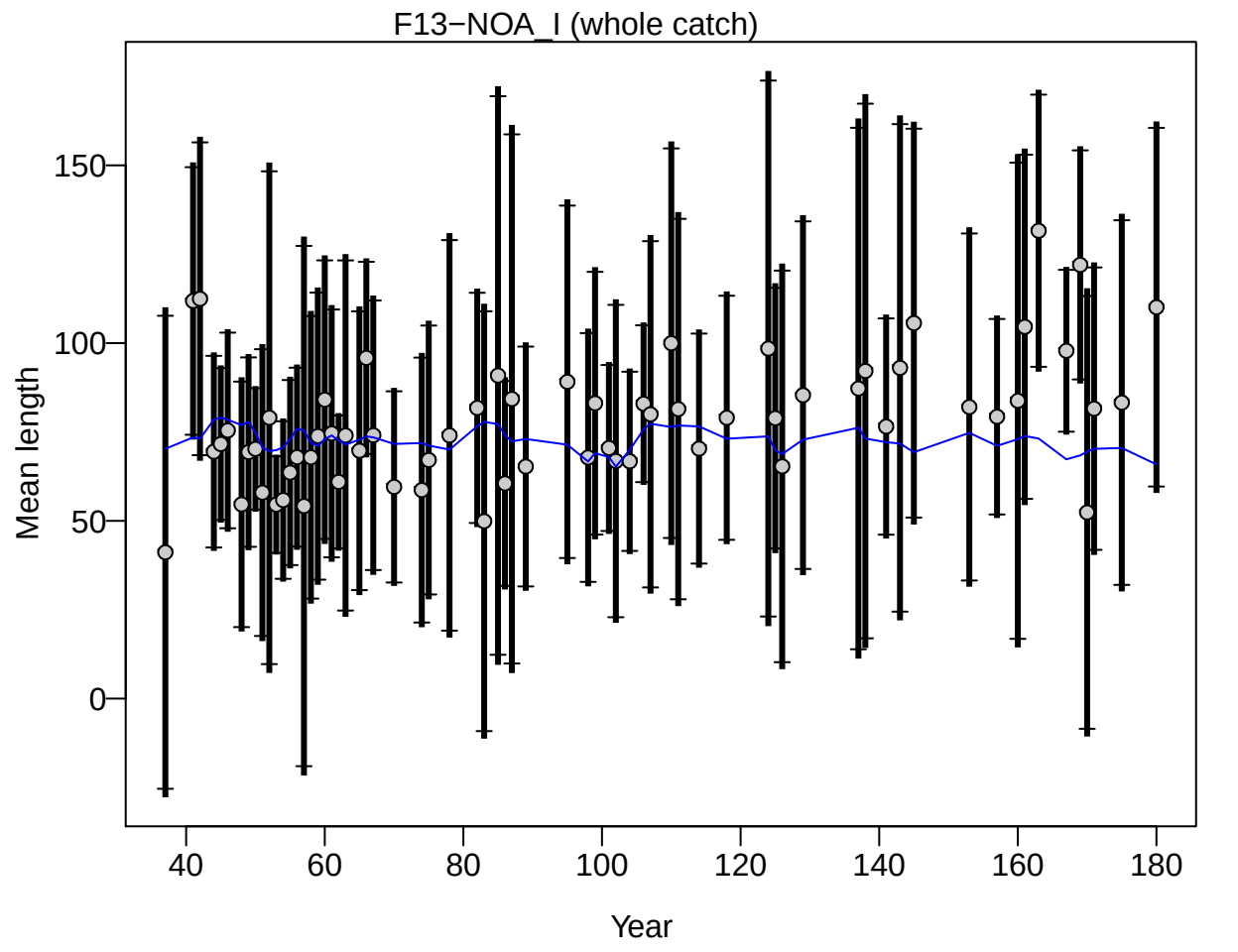

171
N adj.=1.2
N eff.=19.3
175
N adj.=0.7
N eff.=13.4
180
N adj.=0.7
N eff.=10.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200

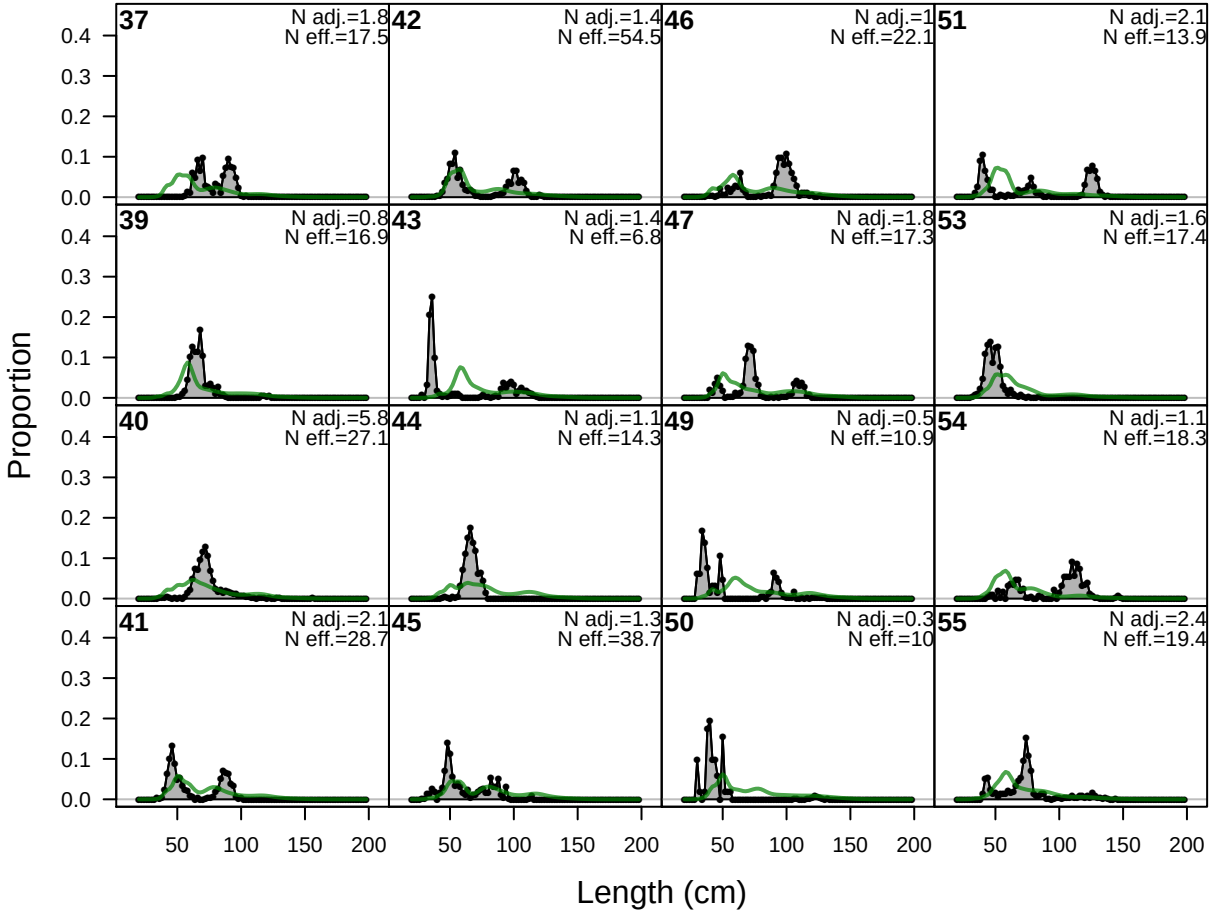
Length (cm)

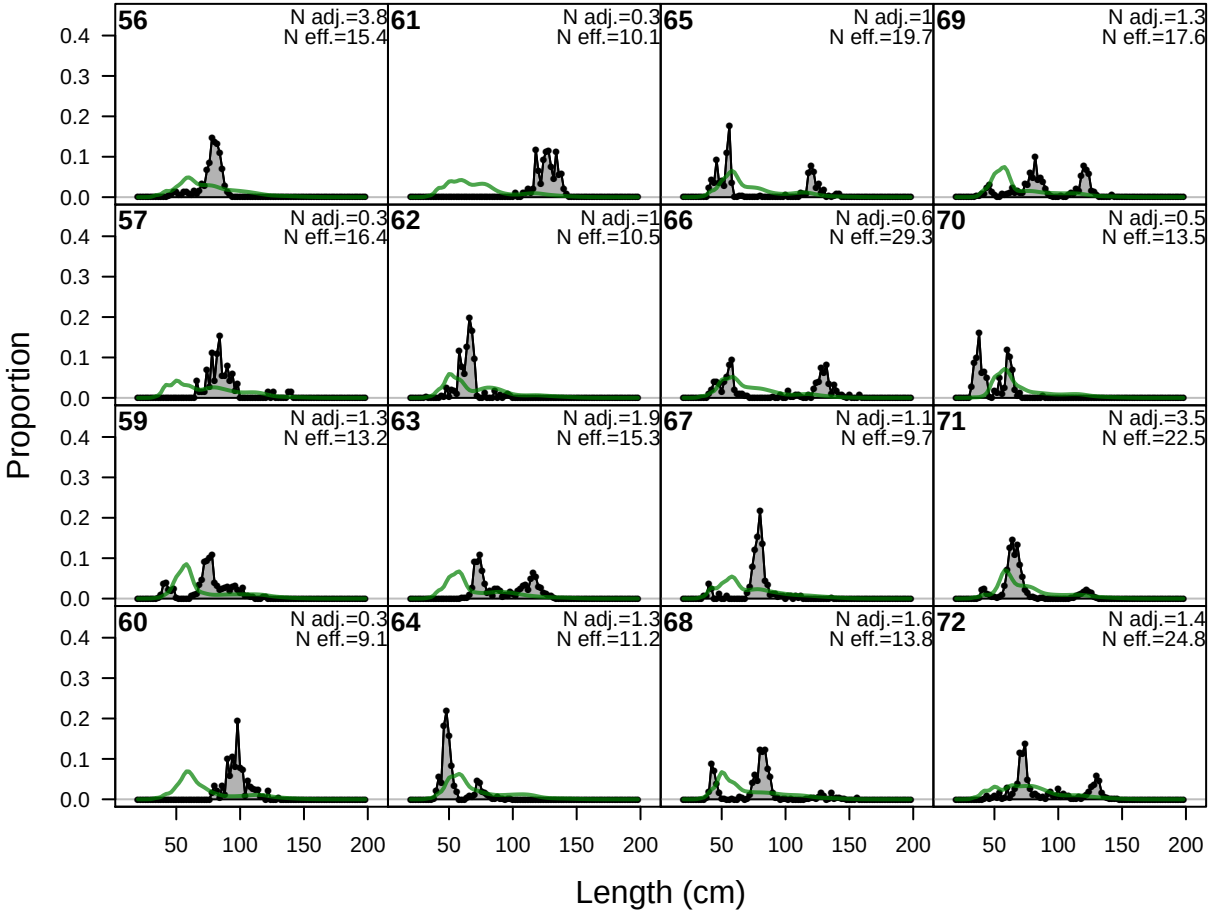

−2
0.1
2
200
150
100
50
Length (cm)
37
48
58
70
82
95
106
124
137
153
167
180
Year



Effective sample size
Observed sample size
0
20
40
60
80
100
120
0
2
4
6
8
10
12
126
56
46
106
65
60
89
98
82
49
50
78
99
104
66
45
157
86
118
55
44
141
54
53
70
101
62
167
48
37
harmonic mean
arithmetic mean


F13−NOA_I (whole catch)
Mean length
150
100
50
0
40
60
80
100
120
140
160
180
Year


37
N adj.=1.8
N eff.=17.5
42
N adj.=1.4
N eff.=54.5
46
N adj.=1
N eff.=22.1
51
N adj.=2.1
N eff.=13.9
39
N adj.=0.8
N eff.=16.9
43
N adj.=1.4
N eff.=6.8
47
N adj.=1.8
N eff.=17.3
53
N adj.=1.6
N eff.=17.4
40
N adj.=5.8
N eff.=27.1
44
N adj.=1.1
N eff.=14.3
49
N adj.=0.5
N eff.=10.9
54
N adj.=1.1
N eff.=18.3
41
N adj.=2.1
N eff.=28.7
45
N adj.=1.3
N eff.=38.7
50
N adj.=0.3
N eff.=10
55
N adj.=2.4
N eff.=19.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


56
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N eff.=19.7
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N adj.=1.3
N eff.=17.6
57
N adj.=0.3
N eff.=16.4
62
N adj.=1
N eff.=10.5
66
N adj.=0.6
N eff.=29.3
70
N adj.=0.5
N eff.=13.5
59
N adj.=1.3
N eff.=13.2
63
N adj.=1.9
N eff.=15.3
67
N adj.=1.1
N eff.=9.7
71
N adj.=3.5
N eff.=22.5
60
N adj.=0.3
N eff.=9.1
64
N adj.=1.3
N eff.=11.2
68
N adj.=1.6
N eff.=13.8
72
N adj.=1.4
N eff.=24.8
Proportion
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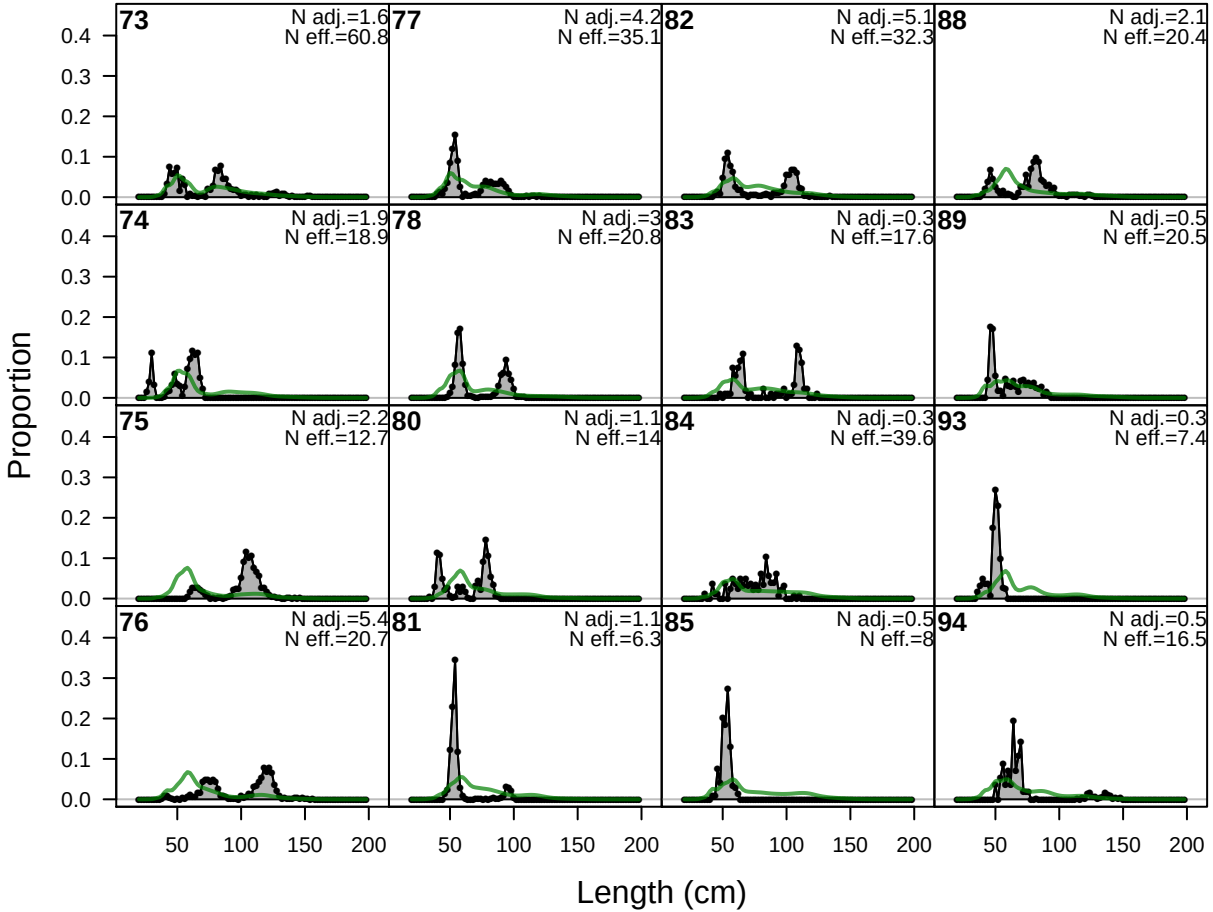
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


73
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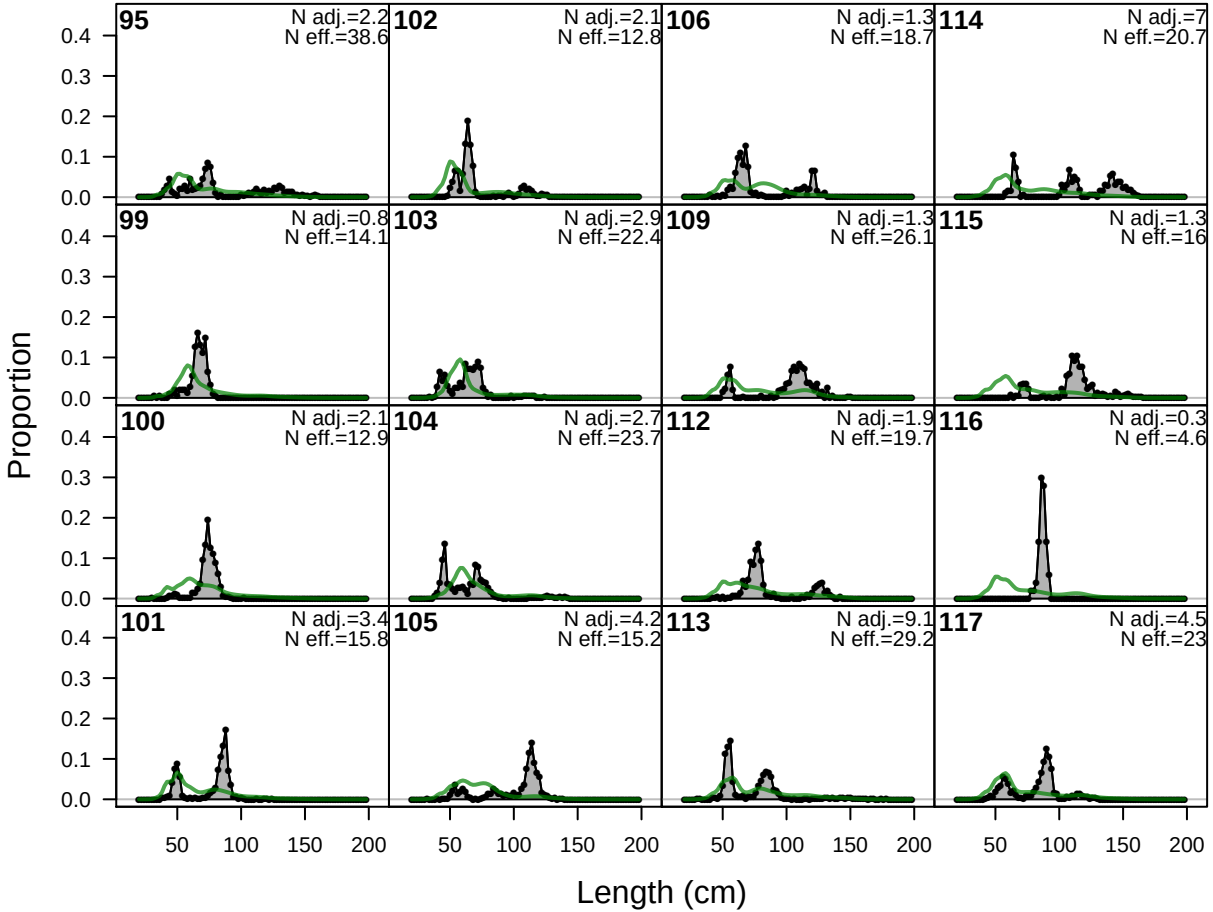
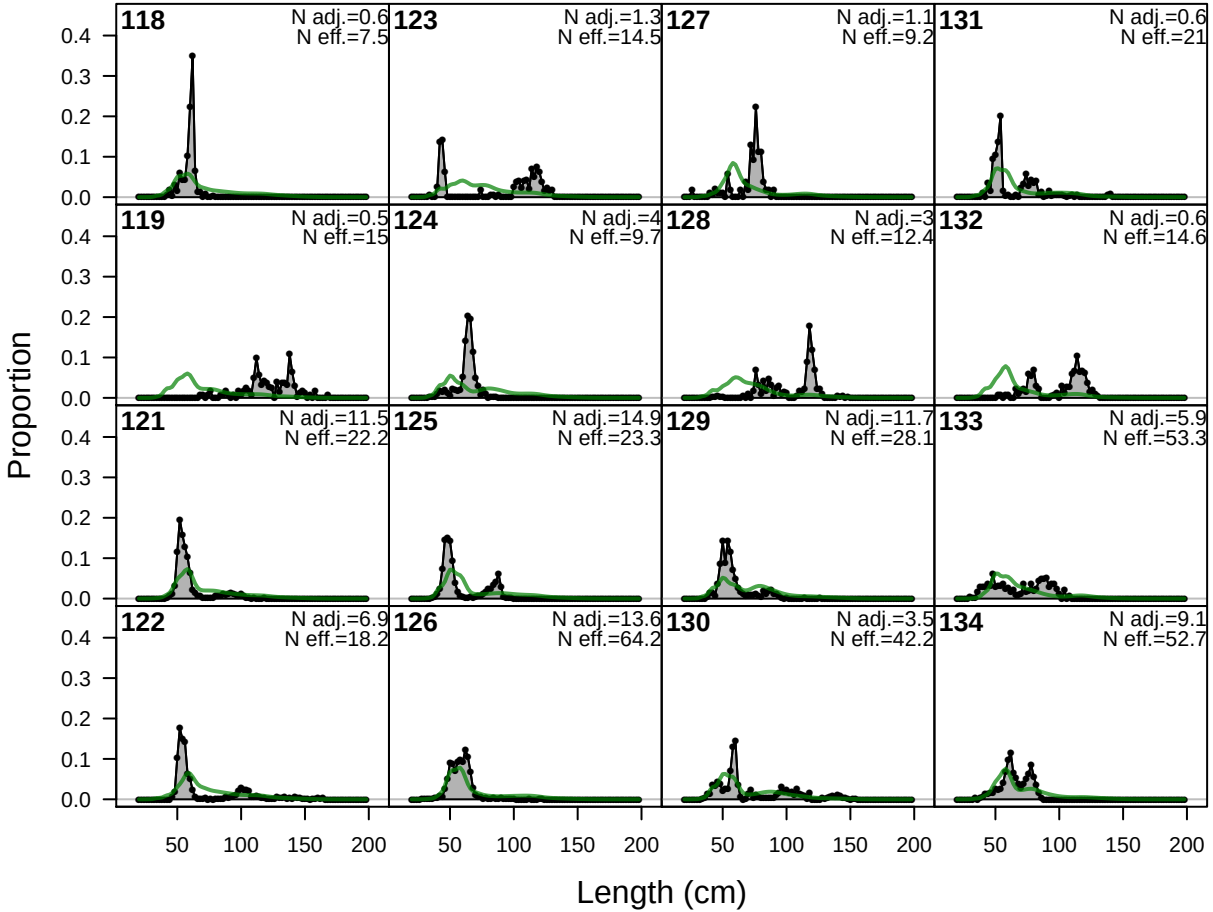
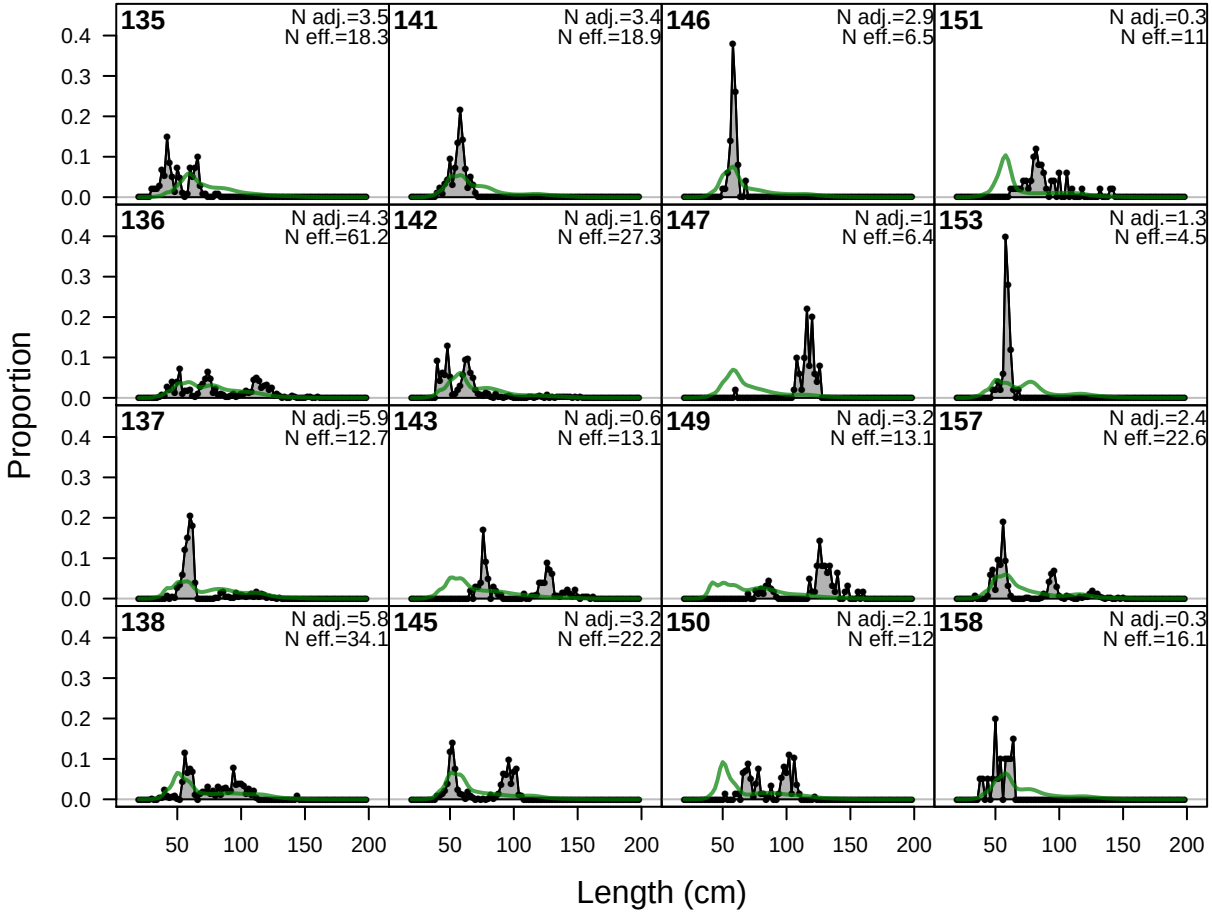
N eff.=60.8
77
N adj.=4.2
N eff.=35.1
82
N adj.=5.1
N eff.=32.3
88
N adj.=2.1
N eff.=20.4
74
N adj.=1.9
N eff.=18.9
78
N adj.=3
N eff.=20.8
83
N adj.=0.3
N eff.=17.6
89
N adj.=0.5
N eff.=20.5
75
N adj.=2.2
N eff.=12.7
80
N adj.=1.1
N eff.=14
84
N adj.=0.3
N eff.=39.6
93
N adj.=0.3
N eff.=7.4
76
N adj.=5.4
N eff.=20.7
81
N adj.=1.1
N eff.=6.3
85
N adj.=0.5
N eff.=8
94
N adj.=0.5
N eff.=16.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


95
N adj.=2.2
N eff.=38.6
102
N adj.=2.1
N eff.=12.8
106
N adj.=1.3
N eff.=18.7
114
N adj.=7
N eff.=20.7
99
N adj.=0.8
N eff.=14.1
103
N adj.=2.9
N eff.=22.4
109
N adj.=1.3
N eff.=26.1
115
N adj.=1.3
N eff.=16
100
N adj.=2.1
N eff.=12.9
104
N adj.=2.7
N eff.=23.7
112
N adj.=1.9
N eff.=19.7
116
N adj.=0.3
N eff.=4.6
101
N adj.=3.4
N eff.=15.8
105
N adj.=4.2
N eff.=15.2
113
N adj.=9.1
N eff.=29.2
117
N adj.=4.5
N eff.=23
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


118
N adj.=0.6
N eff.=7.5
123
N adj.=1.3
N eff.=14.5
127
N adj.=1.1
N eff.=9.2
131
N adj.=0.6
N eff.=21
119
N adj.=0.5
N eff.=15
124
N adj.=4
N eff.=9.7
128
N adj.=3
N eff.=12.4
132
N adj.=0.6
N eff.=14.6
121
N adj.=11.5
N eff.=22.2
125
N adj.=14.9
N eff.=23.3
129
N adj.=11.7
N eff.=28.1
133
N adj.=5.9
N eff.=53.3
122
N adj.=6.9
N eff.=18.2
126
N adj.=13.6
N eff.=64.2
130
N adj.=3.5
N eff.=42.2
134
N adj.=9.1
N eff.=52.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


135
N adj.=3.5
N eff.=18.3
141
N adj.=3.4
N eff.=18.9
146
N adj.=2.9
N eff.=6.5
151
N adj.=0.3
N eff.=11
136
N adj.=4.3
N eff.=61.2
142
N adj.=1.6
N eff.=27.3
147
N adj.=1
N eff.=6.4
153
N adj.=1.3
N eff.=4.5
137
N adj.=5.9
N eff.=12.7
143
N adj.=0.6
N eff.=13.1
149
N adj.=3.2
N eff.=13.1
157
N adj.=2.4
N eff.=22.6
138
N adj.=5.8
N eff.=34.1
145
N adj.=3.2
N eff.=22.2
150
N adj.=2.1
N eff.=12
158
N adj.=0.3
N eff.=16.1
Proportion
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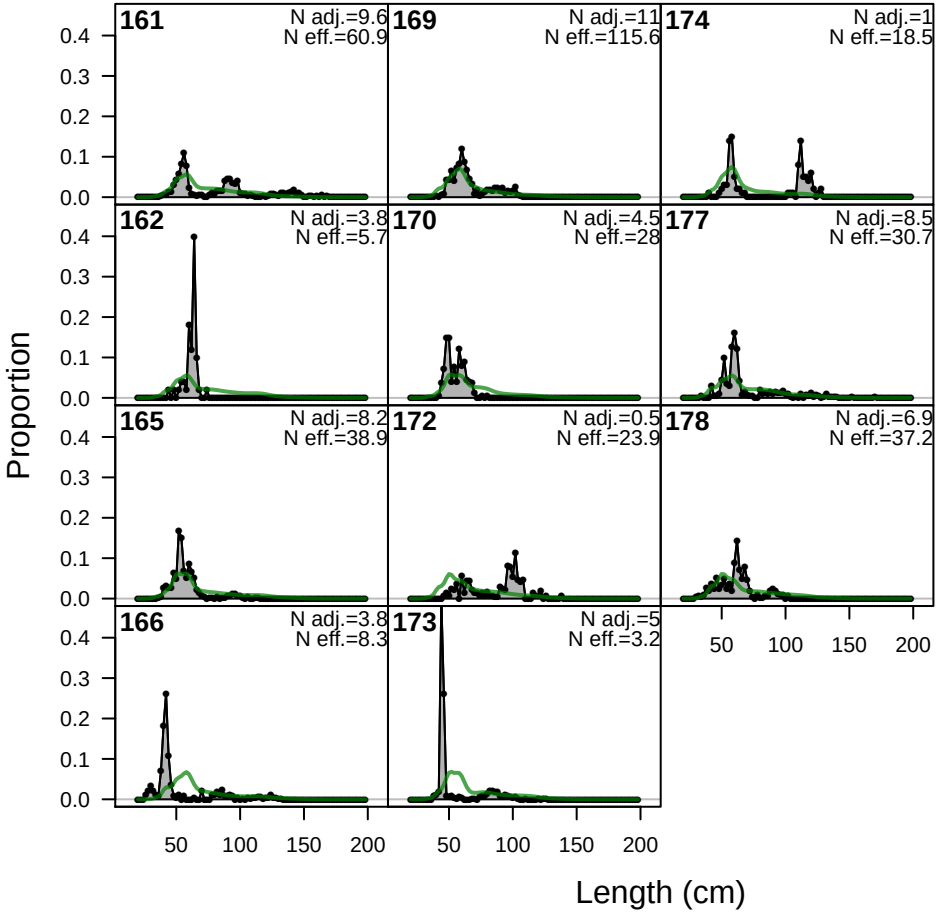
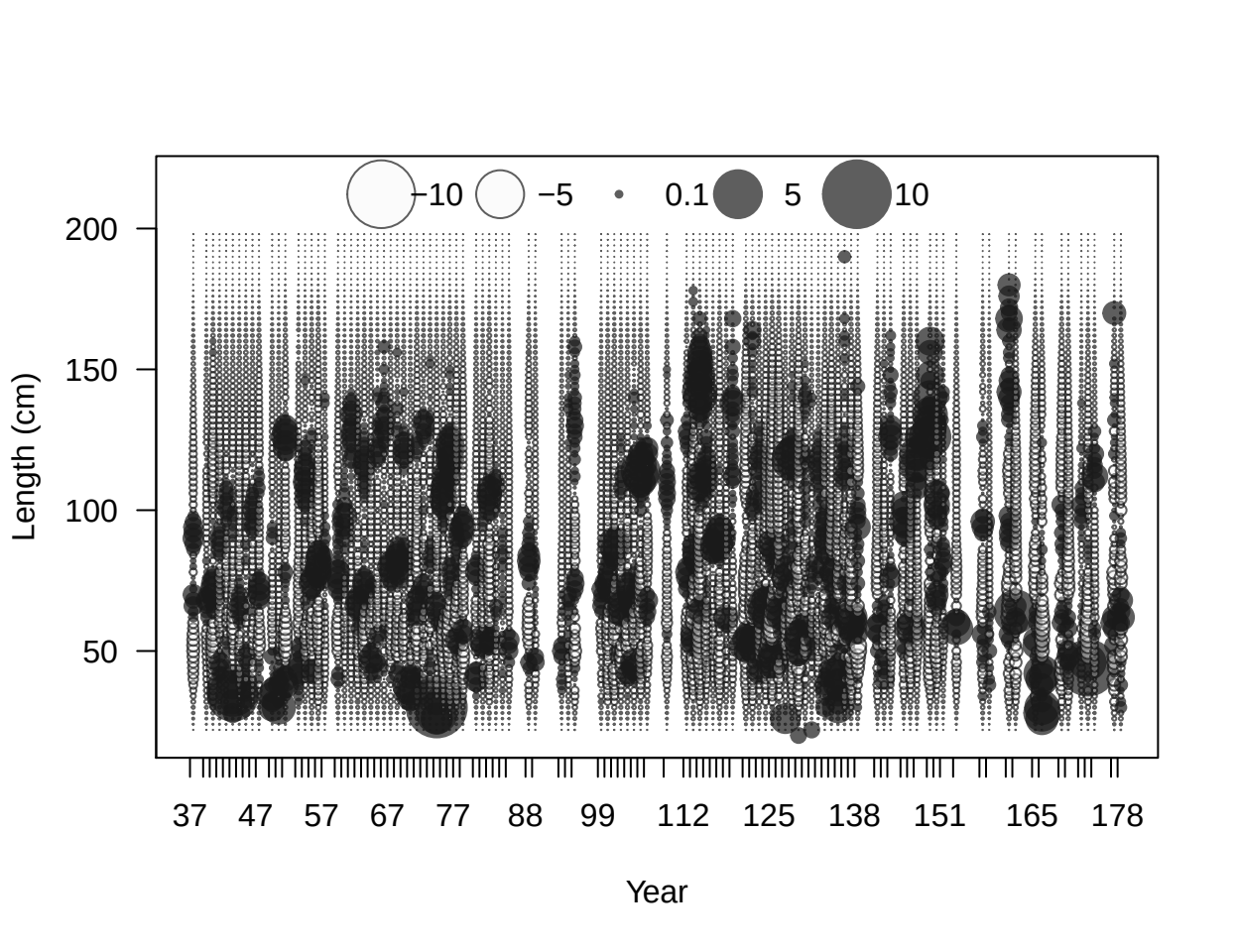
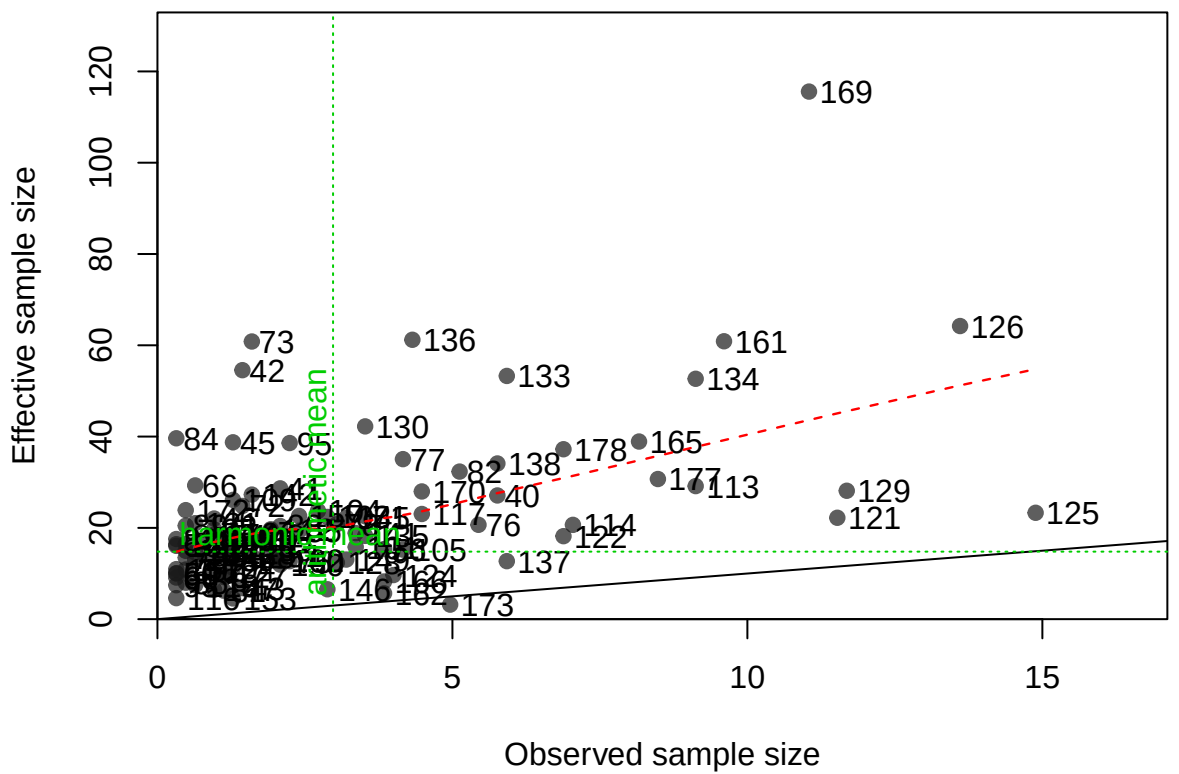
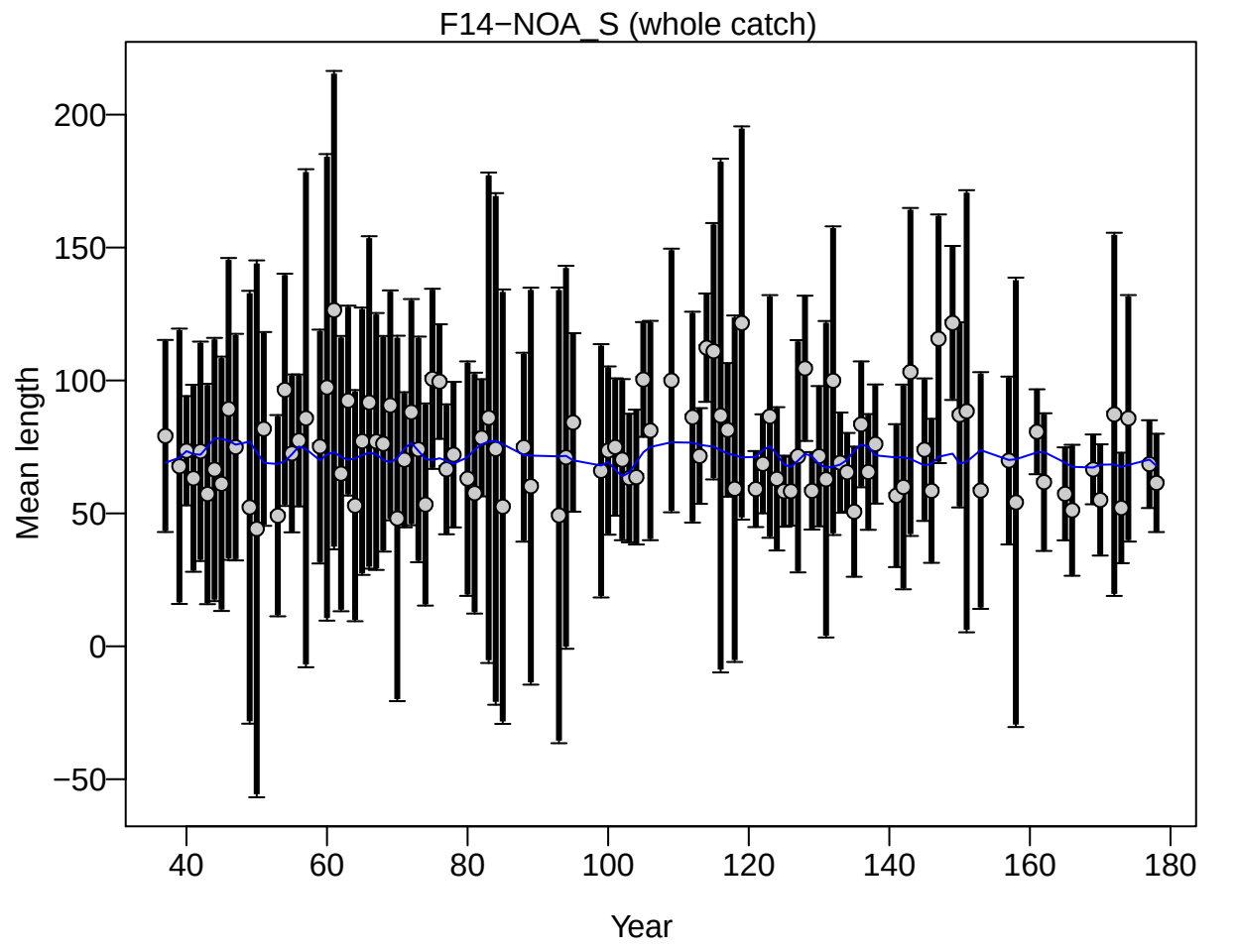
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

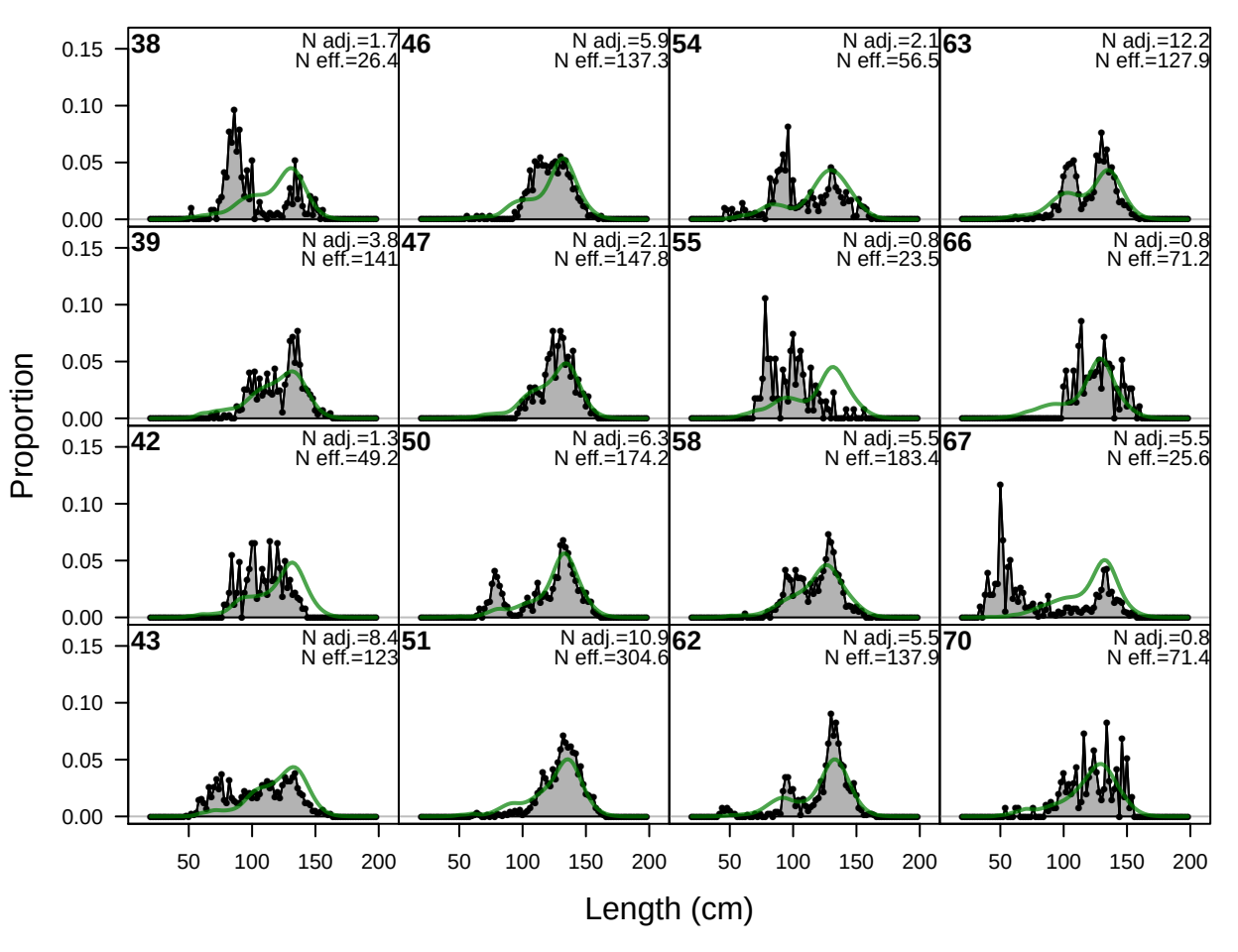

161
N adj.=9.6
N eff.=60.9
169
N adj.=11
N eff.=115.6
174
N adj.=1
N eff.=18.5
162
N adj.=3.8
N eff.=5.7
170
N adj.=4.5
N eff.=28
177
N adj.=8.5
N eff.=30.7
165
N adj.=8.2
N eff.=38.9
172
N adj.=0.5
N eff.=23.9
178
N adj.=6.9
N eff.=37.2
166
N adj.=3.8
N eff.=8.3
173
N adj.=5
N eff.=3.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


−10
−5
0.1
5
10
200
150
100
50
Length (cm)
37
47
57
67
77
88
99
112
125
138
151
165
178
Year



Effective sample size
Observed sample size
0
20
40
60
80
100
120
0
5
10
15
169
126
73
136
161
42
133
134
130
84
45
95
77
178
165
138
82
177
113
66
170
40
129
117
76
121
125
114
122
105
137
146
173


F14−NOA_S (whole catch)
Mean length
200
150
100
50
0
−50
40
60
80
100
120
140
160
180
Year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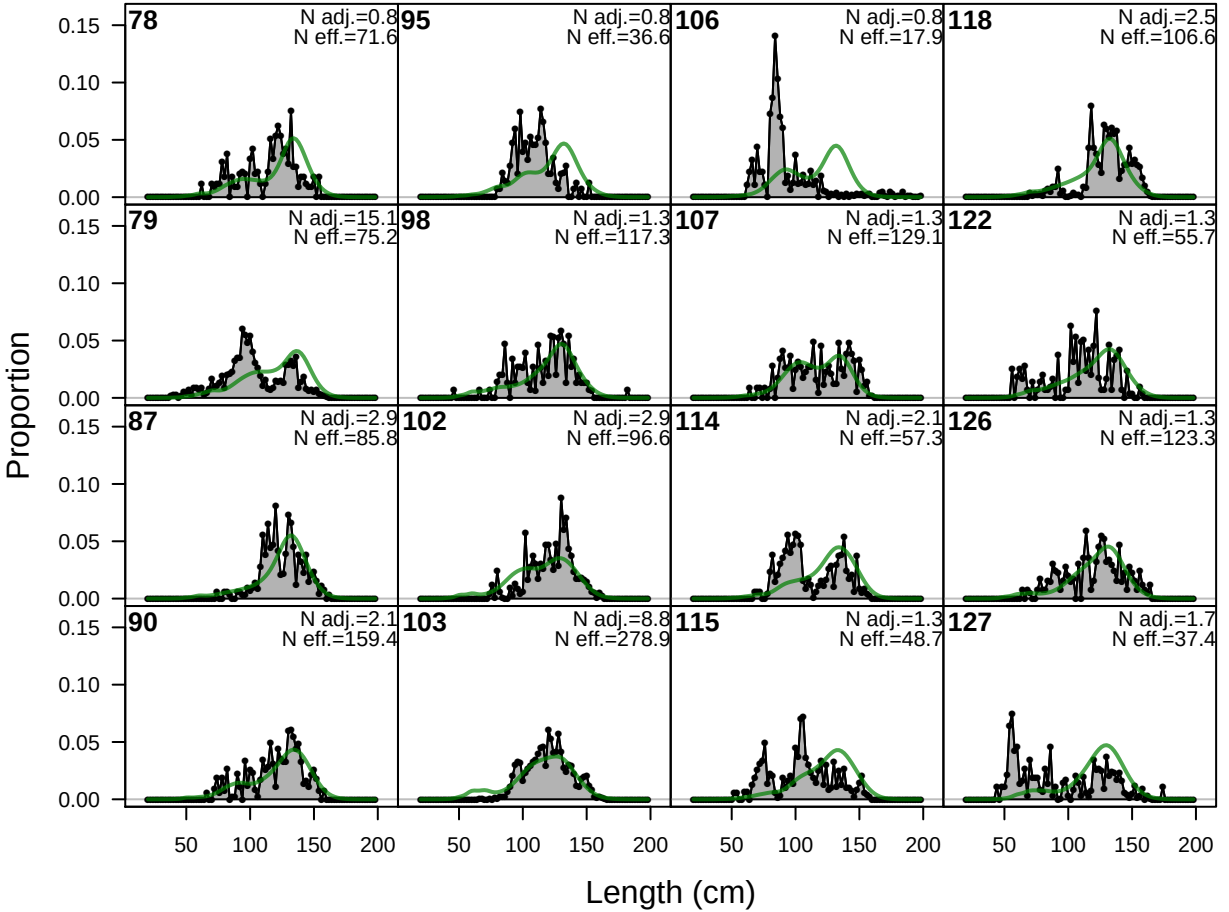
N eff.=26.4
46
N adj.=5.9
N eff.=137.3
54
N adj.=2.1
N eff.=56.5
63
N adj.=12.2
N eff.=127.9
39
N adj.=3.8
N eff.=141
47
N adj.=2.1
N eff.=147.8
55
N adj.=0.8
N eff.=23.5
66
N adj.=0.8
N eff.=71.2
42
N adj.=1.3
N eff.=49.2
50
N adj.=6.3
N eff.=174.2
58
N adj.=5.5
N eff.=183.4
67
N adj.=5.5
N eff.=25.6
43
N adj.=8.4
N eff.=123
51
N adj.=10.9
N eff.=304.6
62
N adj.=5.5
N eff.=137.9
70
N adj.=0.8
N eff.=71.4
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


78
N adj.=0.8
N eff.=71.6
95
N adj.=0.8
N eff.=36.6
106
N adj.=0.8
N eff.=17.9
118
N adj.=2.5
N eff.=106.6
79
N adj.=15.1
N eff.=75.2
98
N adj.=1.3
N eff.=117.3
107
N adj.=1.3
N eff.=129.1
122
N adj.=1.3
N eff.=55.7
87
N adj.=2.9
N eff.=85.8
102
N adj.=2.9
N eff.=96.6
114
N adj.=2.1
N eff.=57.3
126
N adj.=1.3
N eff.=123.3
90
N adj.=2.1
N eff.=159.4
103
N adj.=8.8
N eff.=278.9
115
N adj.=1.3
N eff.=48.7
127
N adj.=1.7
N eff.=37.4
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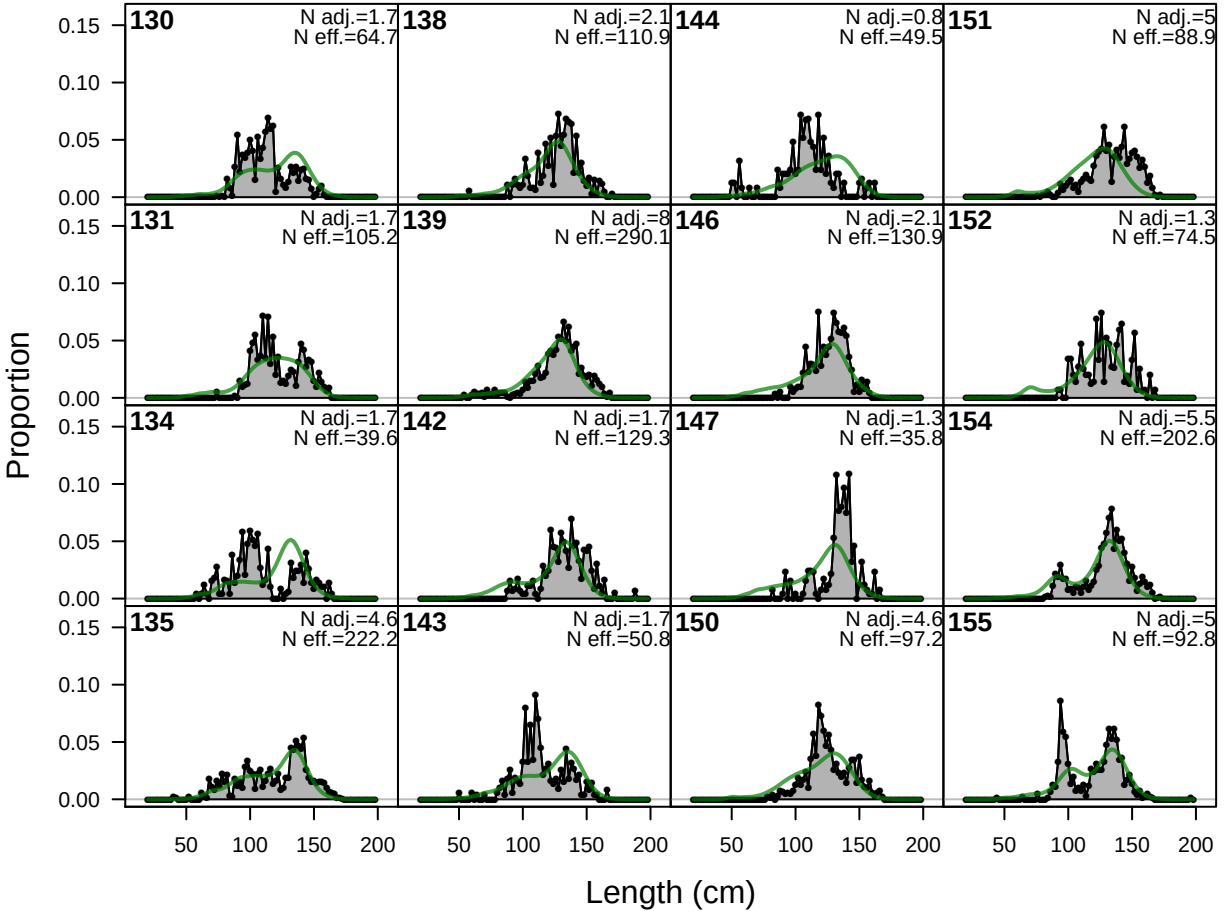
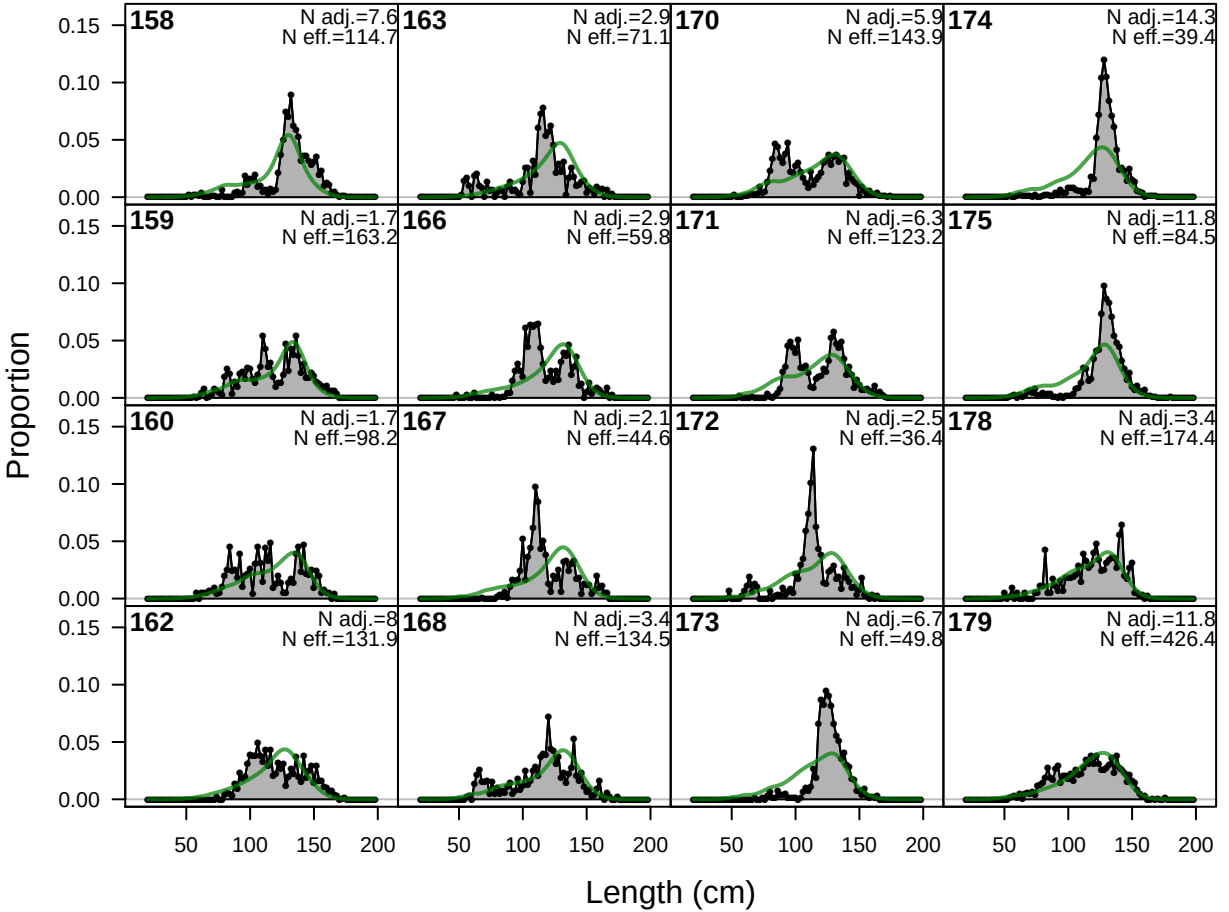
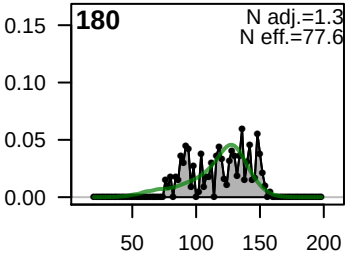
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

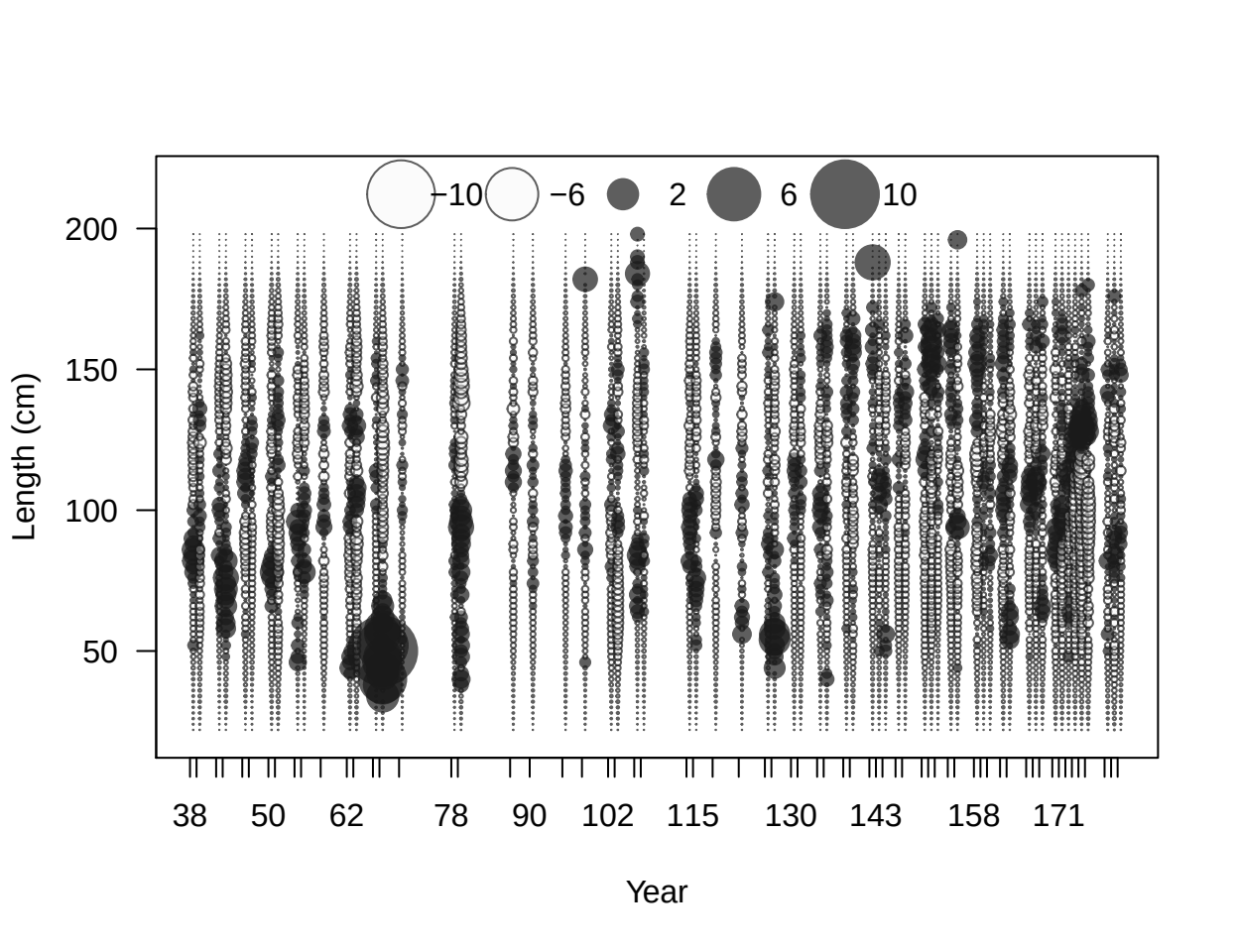

130
N adj.=1.7
N eff.=64.7
138
N adj.=2.1
N eff.=110.9
144
N adj.=0.8
N eff.=49.5
151
N adj.=5
N eff.=88.9
131
N adj.=1.7
N eff.=105.2
139
N adj.=8
N eff.=290.1
146
N adj.=2.1
N eff.=130.9
152
N adj.=1.3
N eff.=74.5
134
N adj.=1.7
N eff.=39.6
142
N adj.=1.7
N eff.=129.3
147
N adj.=1.3
N eff.=35.8
154
N adj.=5.5
N eff.=202.6
135
N adj.=4.6
N eff.=222.2
143
N adj.=1.7
N eff.=50.8
150
N adj.=4.6
N eff.=97.2
155
N adj.=5
N eff.=92.8
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

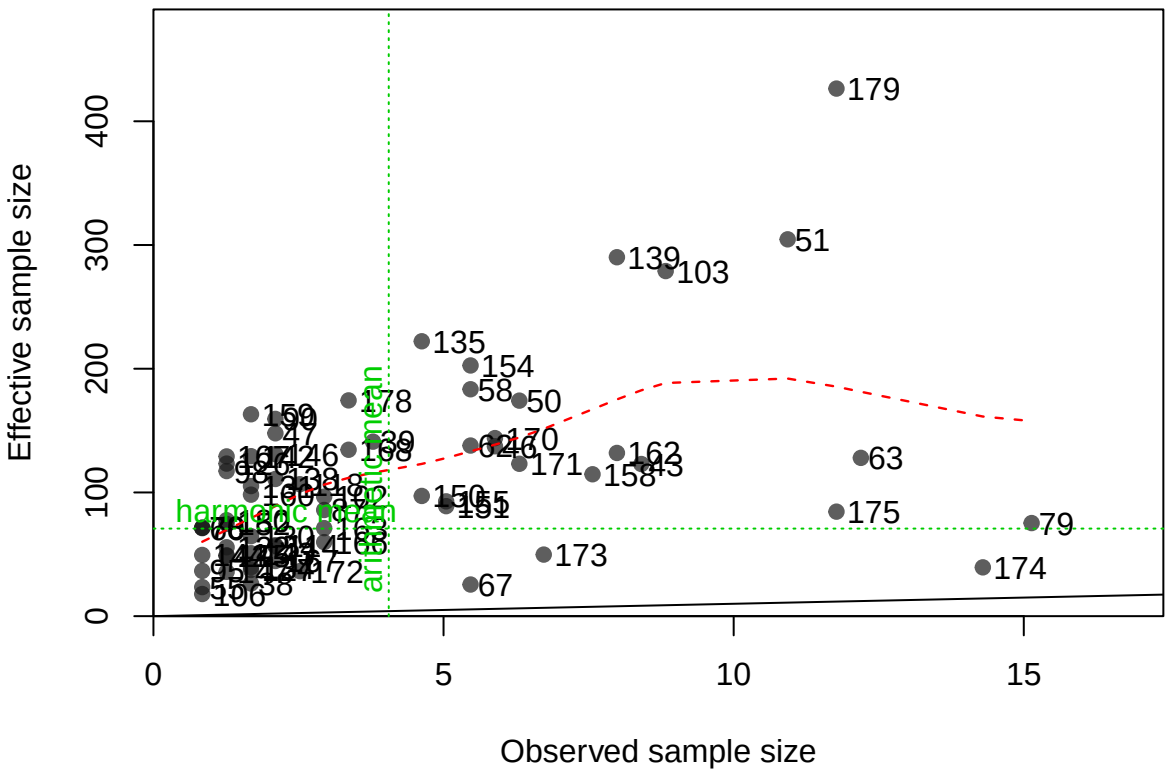

158
N adj.=7.6
N eff.=114.7
163
N adj.=2.9
N eff.=71.1
170
N adj.=5.9
N eff.=143.9
174
N adj.=14.3
N eff.=39.4
159
N adj.=1.7
N eff.=163.2
166
N adj.=2.9
N eff.=59.8
171
N adj.=6.3
N eff.=123.2
175
N adj.=11.8
N eff.=84.5
160
N adj.=1.7
N eff.=98.2
167
N adj.=2.1
N eff.=44.6
172
N adj.=2.5
N eff.=36.4
178
N adj.=3.4
N eff.=174.4
162
N adj.=8
N eff.=131.9
168
N adj.=3.4
N eff.=134.5
173
N adj.=6.7
N eff.=49.8
179
N adj.=11.8
N eff.=426.4
0.00
0.05
0.10
0.15
50
100
150
200
Proportion
Length (cm)



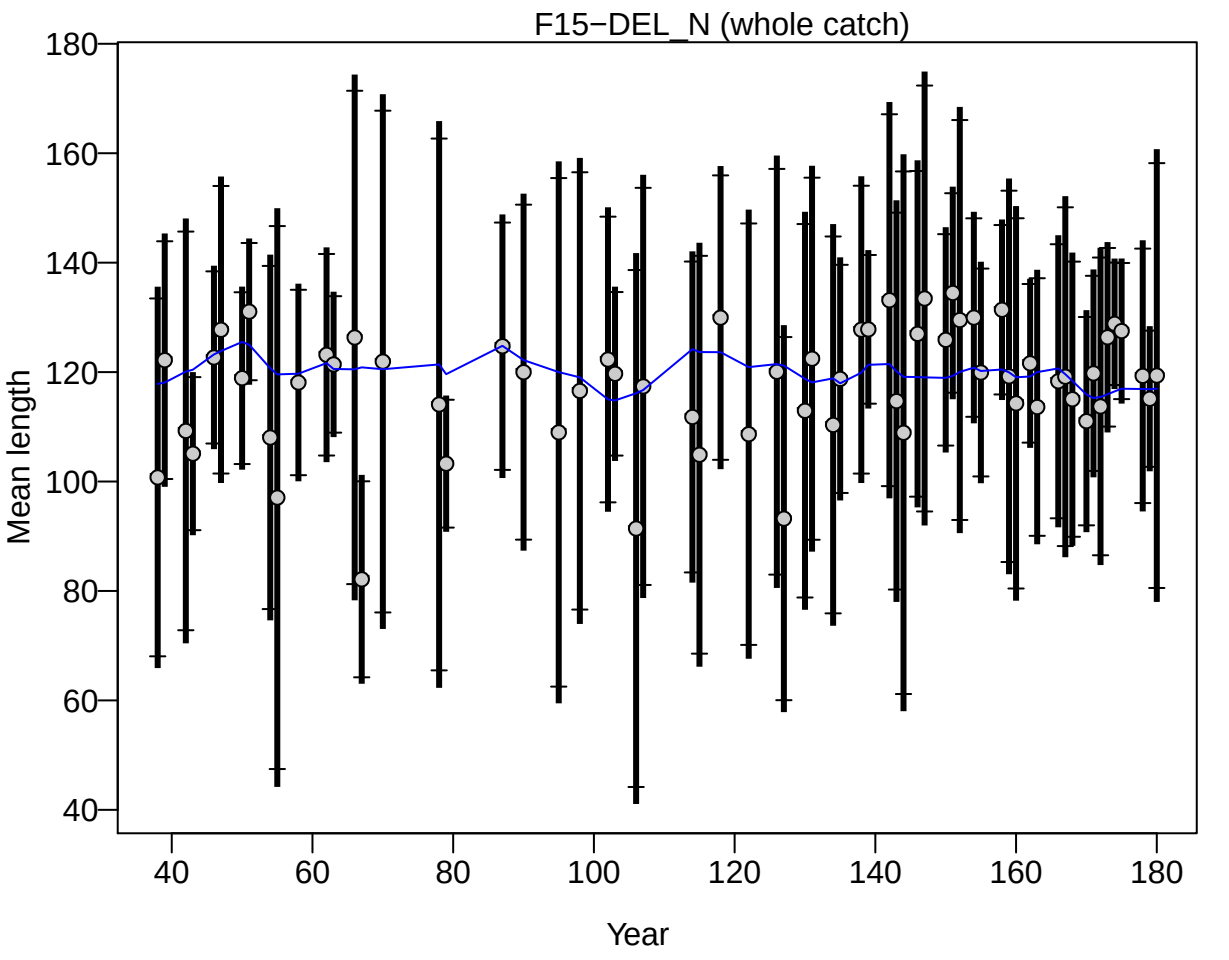
Proportion

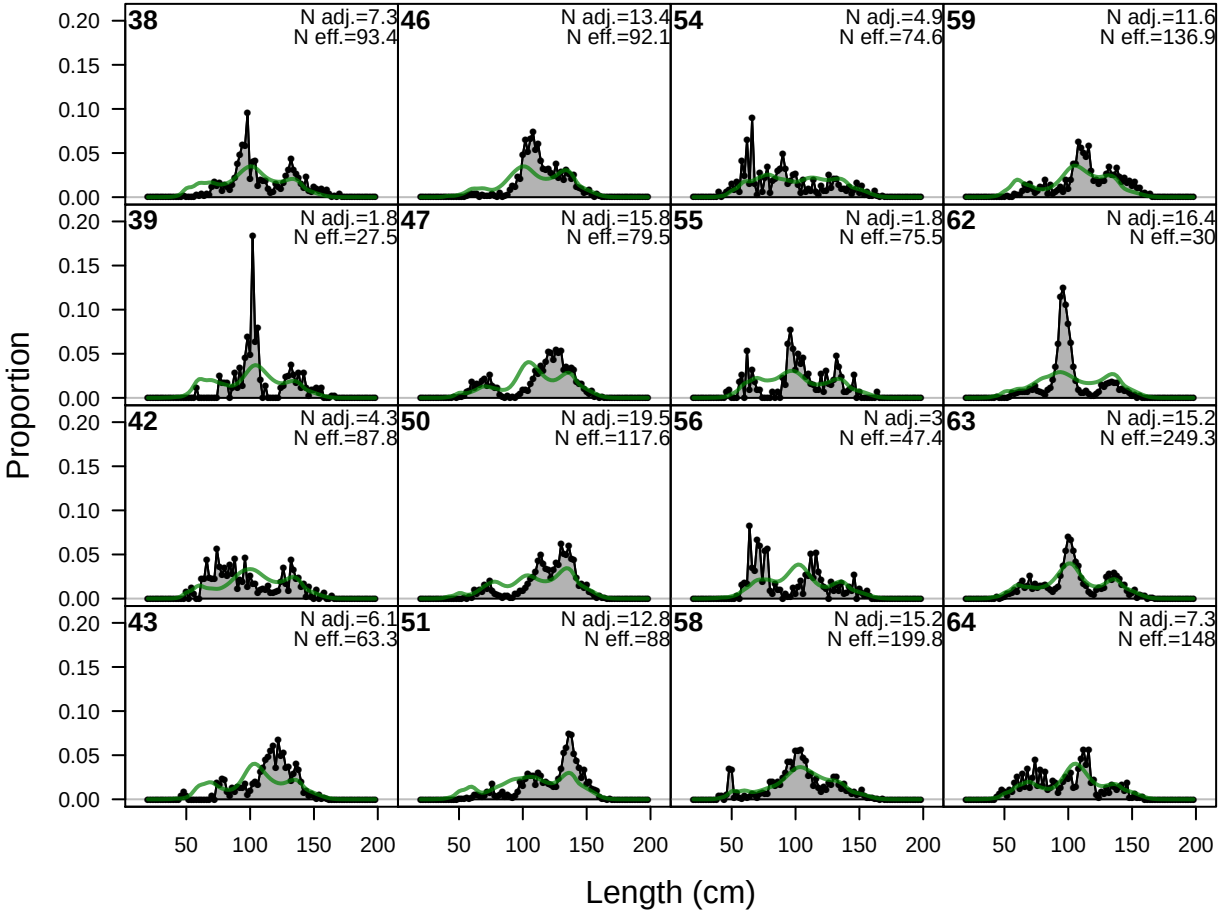
Length (cm)

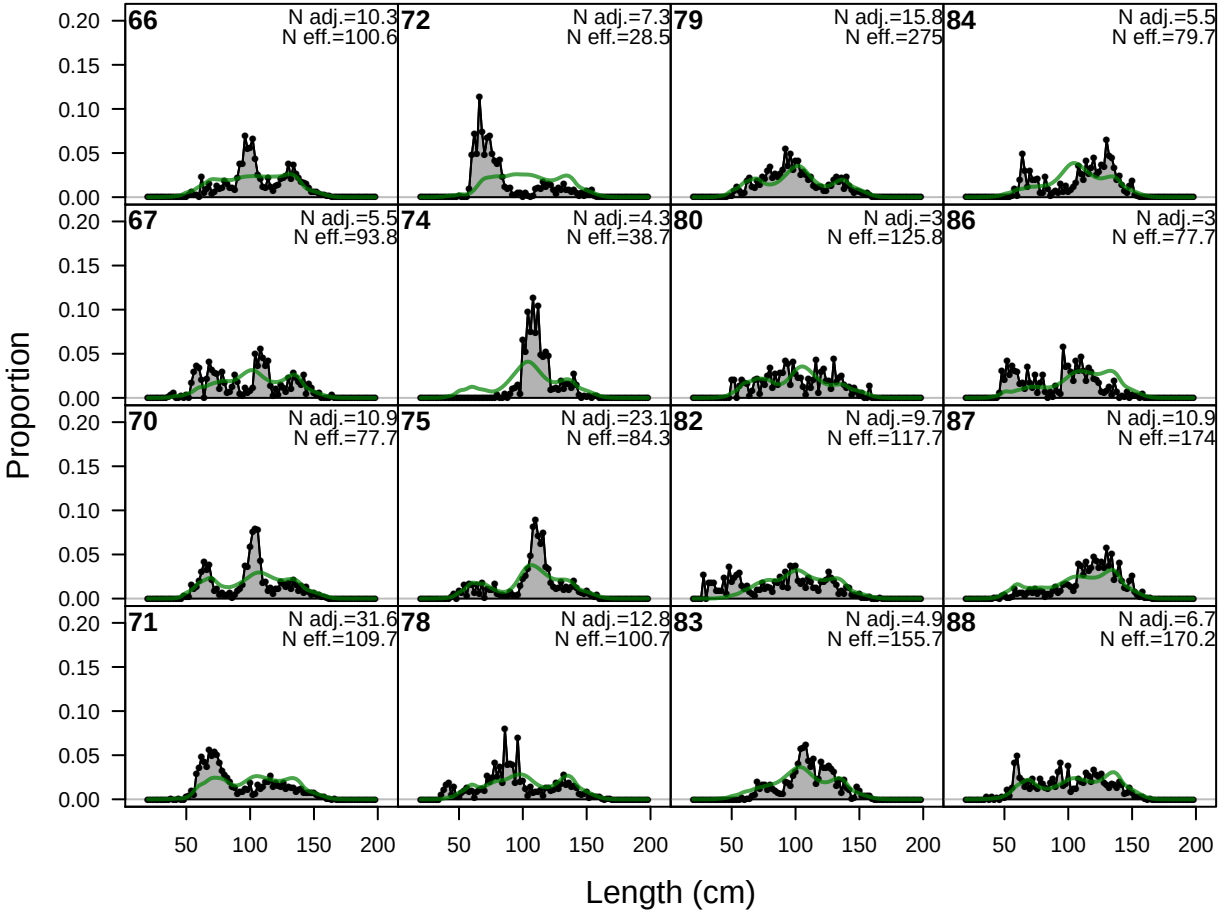

−10
−6
2
6
10
200
150
100
50
Length (cm)
38
50
62
78
90
102
115
130
143
158
171
Year



Effective sample size
Observed sample size
0
100
200
300
400
0
5
10
15
179
51
139
103
135
154
58
50
178
170
171
162
158
63
175
79
173
174
67
harmonic mean
arithmetic mean


F15−DEL_N (whole catch)
Mean length
Year
180
160
140
120
100
80
60
40
40
60
80
100
120
140
160
180


38
N adj.=7.3
N eff.=93.4
46
N adj.=13.4
N eff.=92.1
54
N adj.=4.9
N eff.=74.6
59
N adj.=11.6
N eff.=136.9
39
N adj.=1.8
N eff.=27.5
47
N adj.=15.8
N eff.=79.5
55
N adj.=1.8
N eff.=75.5
62
N adj.=16.4
N eff.=30
42
N adj.=4.3
N eff.=87.8
50
N adj.=19.5
N eff.=117.6
56
N adj.=3
N eff.=47.4
63
N adj.=15.2
N eff.=249.3
43
N adj.=6.1
N eff.=63.3
51
N adj.=12.8
N eff.=88
58
N adj.=15.2
N eff.=199.8
64
N adj.=7.3
N eff.=148
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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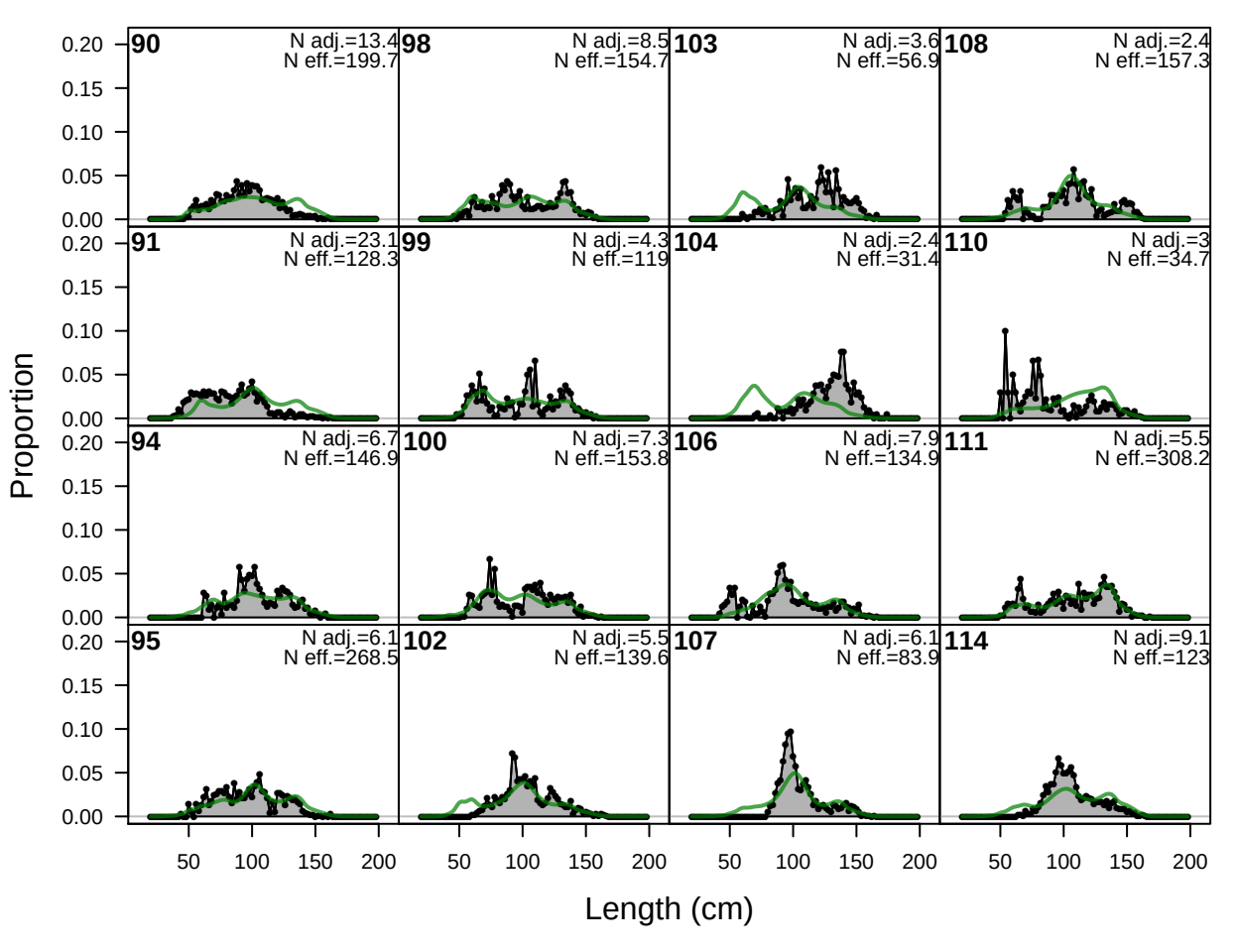
N adj.=10.3
N eff.=100.6
72
N adj.=7.3
N eff.=28.5
79
N adj.=15.8
N eff.=275
84
N adj.=5.5
N eff.=79.7
67
N adj.=5.5
N eff.=93.8
74
N adj.=4.3
N eff.=38.7
80
N adj.=3
N eff.=125.8
86
N adj.=3
N eff.=77.7
70
N adj.=10.9
N eff.=77.7
75
N adj.=23.1
N eff.=84.3
82
N adj.=9.7
N eff.=117.7
87
N adj.=10.9
N eff.=174
71
N adj.=31.6
N eff.=109.7
78
N adj.=12.8
N eff.=100.7
83
N adj.=4.9
N eff.=155.7
88
N adj.=6.7
N eff.=170.2
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)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N adj.=13.4
N eff.=199.7
98
N adj.=8.5
N eff.=154.7
103
N adj.=3.6
N eff.=56.9
108
N adj.=2.4
N eff.=157.3
91
N adj.=23.1
N eff.=128.3
99
N adj.=4.3
N eff.=119
104
N adj.=2.4
N eff.=31.4
110
N adj.=3
N eff.=34.7
94
N adj.=6.7
N eff.=146.9
100
N adj.=7.3
N eff.=153.8
106
N adj.=7.9
N eff.=134.9
111
N adj.=5.5
N eff.=308.2
95
N adj.=6.1
N eff.=268.5
102
N adj.=5.5
N eff.=139.6
107
N adj.=6.1
N eff.=83.9
114
N adj.=9.1
N eff.=123
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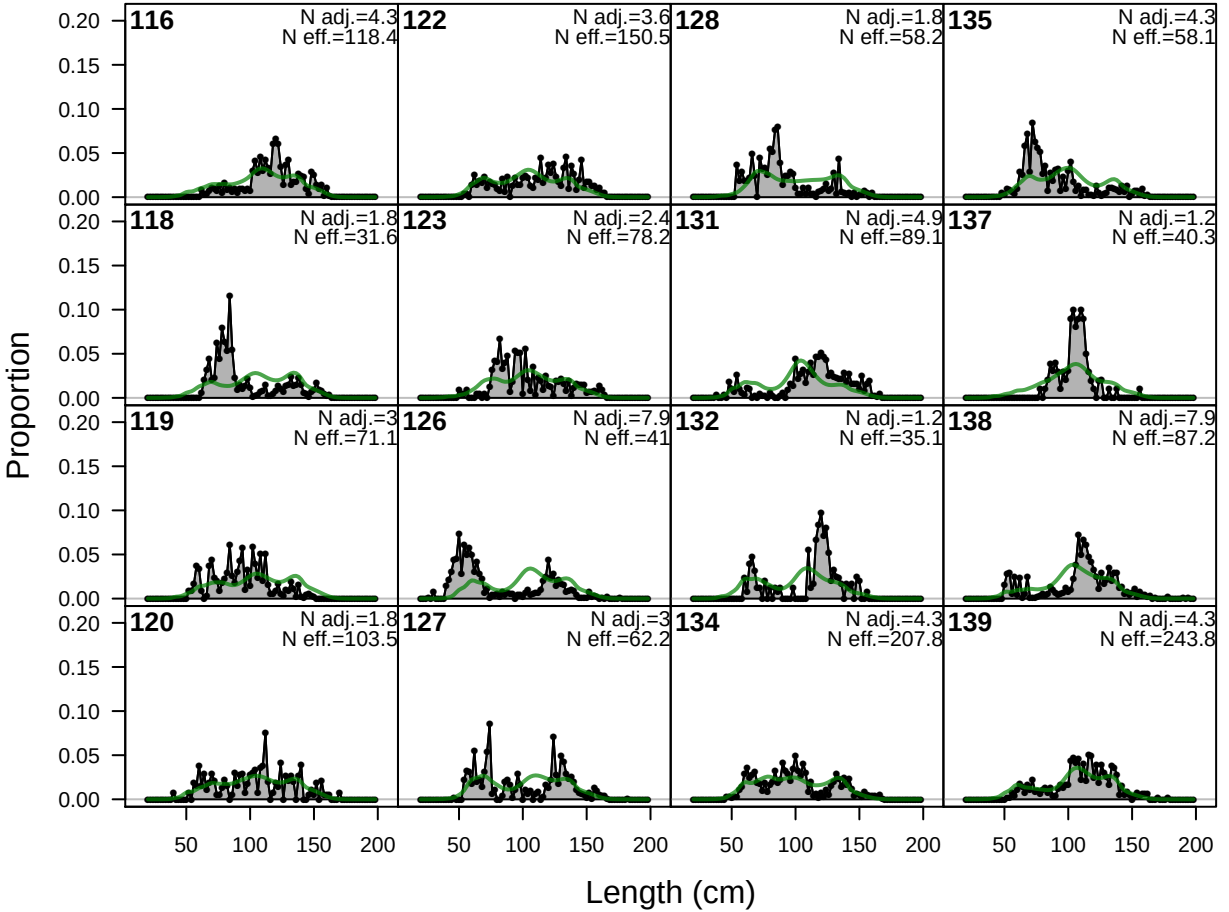
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)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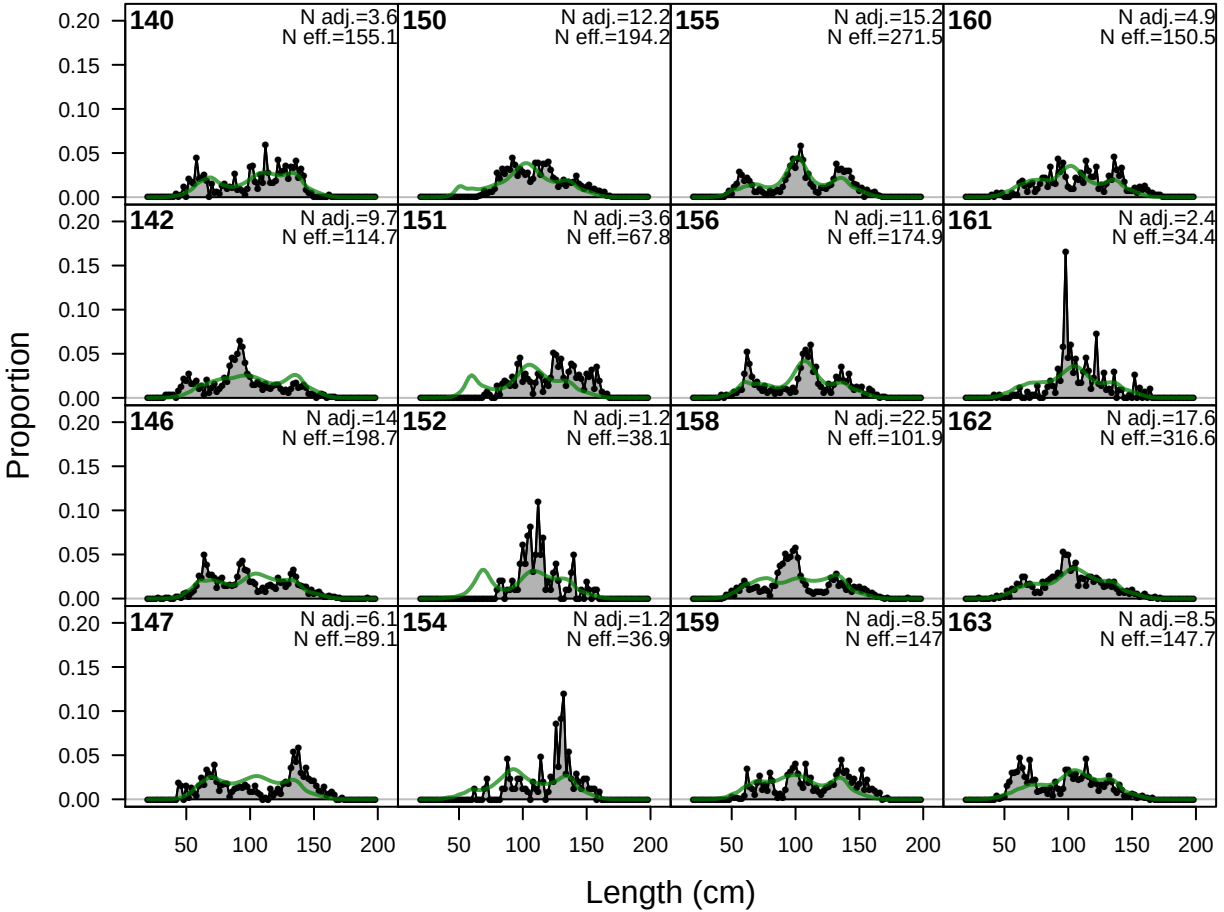
N eff.=118.4
122
N adj.=3.6
N eff.=150.5
128
N adj.=1.8
N eff.=58.2
135
N adj.=4.3
N eff.=58.1
118
N adj.=1.8
N eff.=31.6
123
N adj.=2.4
N eff.=78.2
131
N adj.=4.9
N eff.=89.1
137
N adj.=1.2
N eff.=40.3
119
N adj.=3
N eff.=71.1
126
N adj.=7.9
N eff.=41
132
N adj.=1.2
N eff.=35.1
138
N adj.=7.9
N eff.=87.2
120
N adj.=1.8
N eff.=103.5
127
N adj.=3
N eff.=62.2
134
N adj.=4.3
N eff.=207.8
139
N adj.=4.3
N eff.=243.8
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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N eff.=155.1
150
N adj.=12.2
N eff.=194.2
155
N adj.=15.2
N eff.=271.5
160
N adj.=4.9
N eff.=150.5
142
N adj.=9.7
N eff.=114.7
151
N adj.=3.6
N eff.=67.8
156
N adj.=11.6
N eff.=174.9
161
N adj.=2.4
N eff.=34.4
146
N adj.=14
N eff.=198.7
152
N adj.=1.2
N eff.=38.1
158
N adj.=22.5
N eff.=101.9
162
N adj.=17.6
N eff.=316.6
147
N adj.=6.1
N eff.=89.1
154
N adj.=1.2
N eff.=36.9
159
N adj.=8.5
N eff.=147
163
N adj.=8.5
N eff.=147.7
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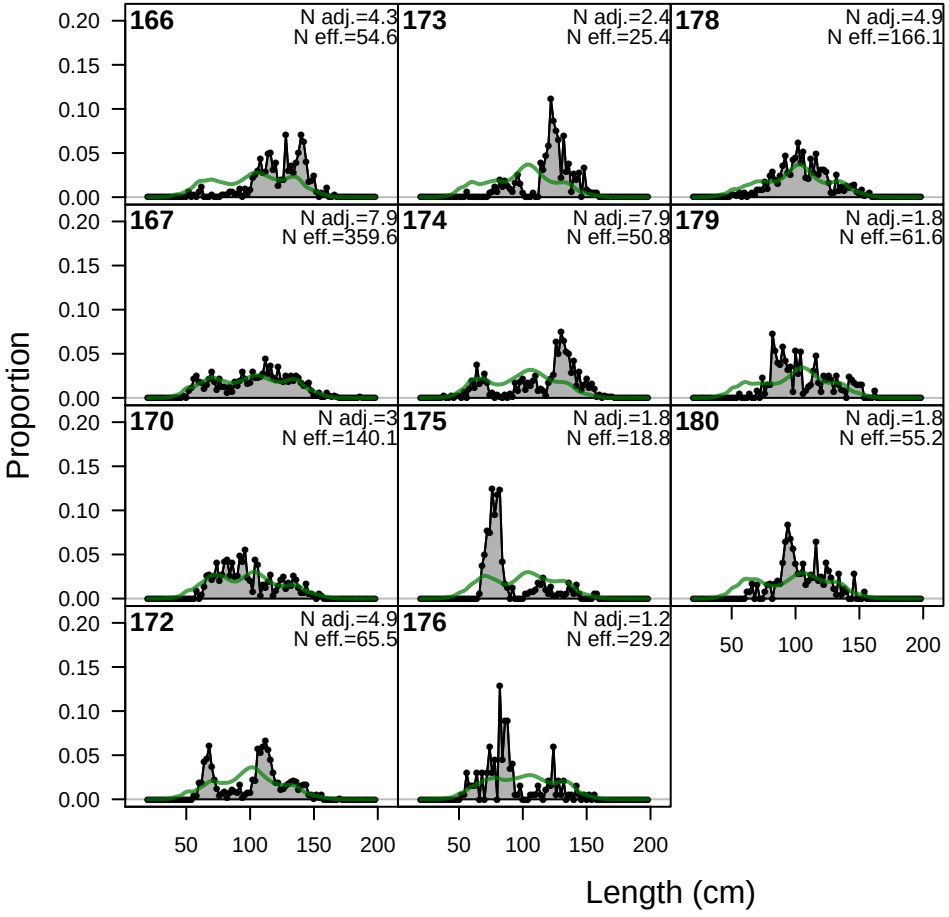
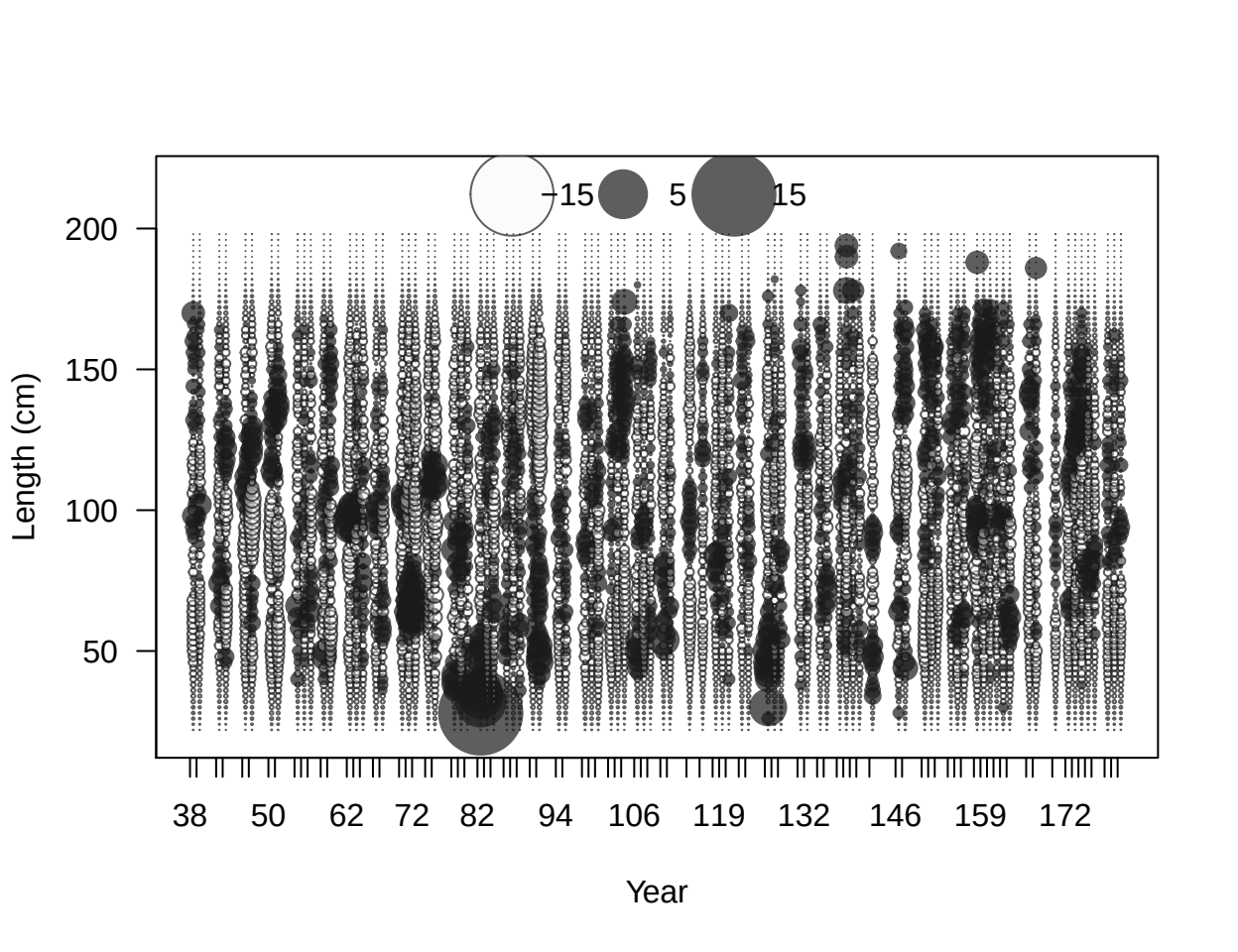
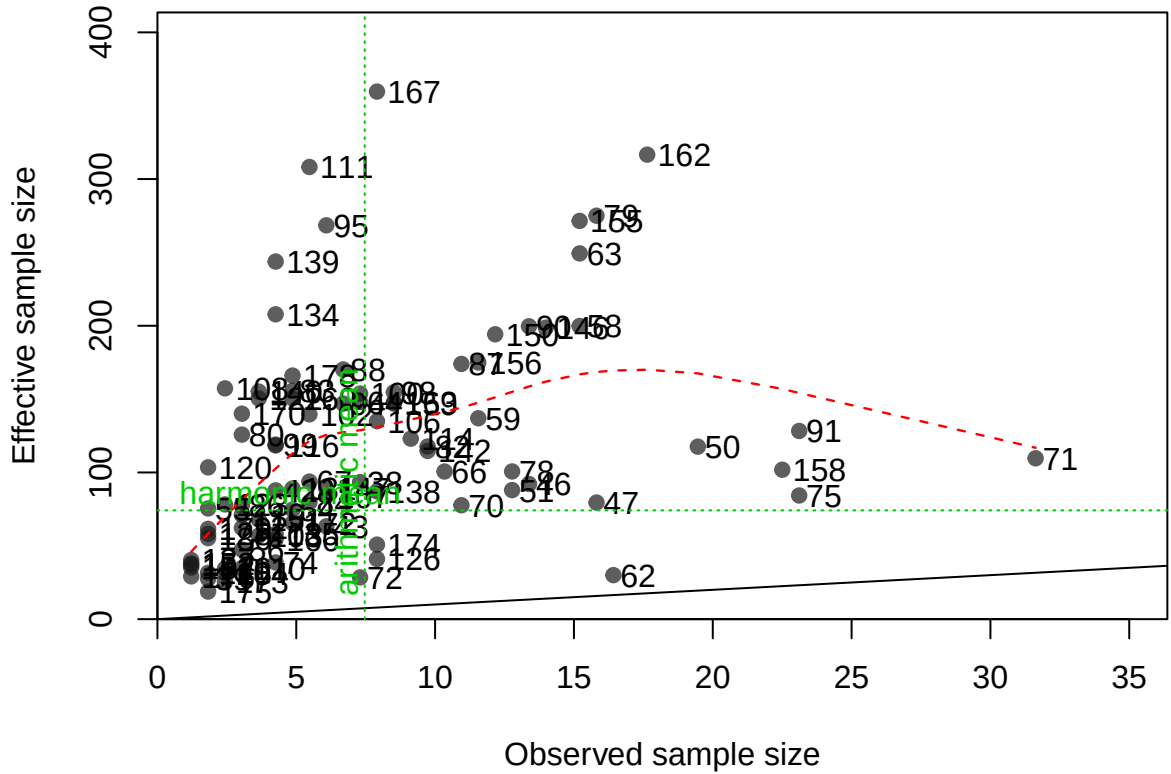
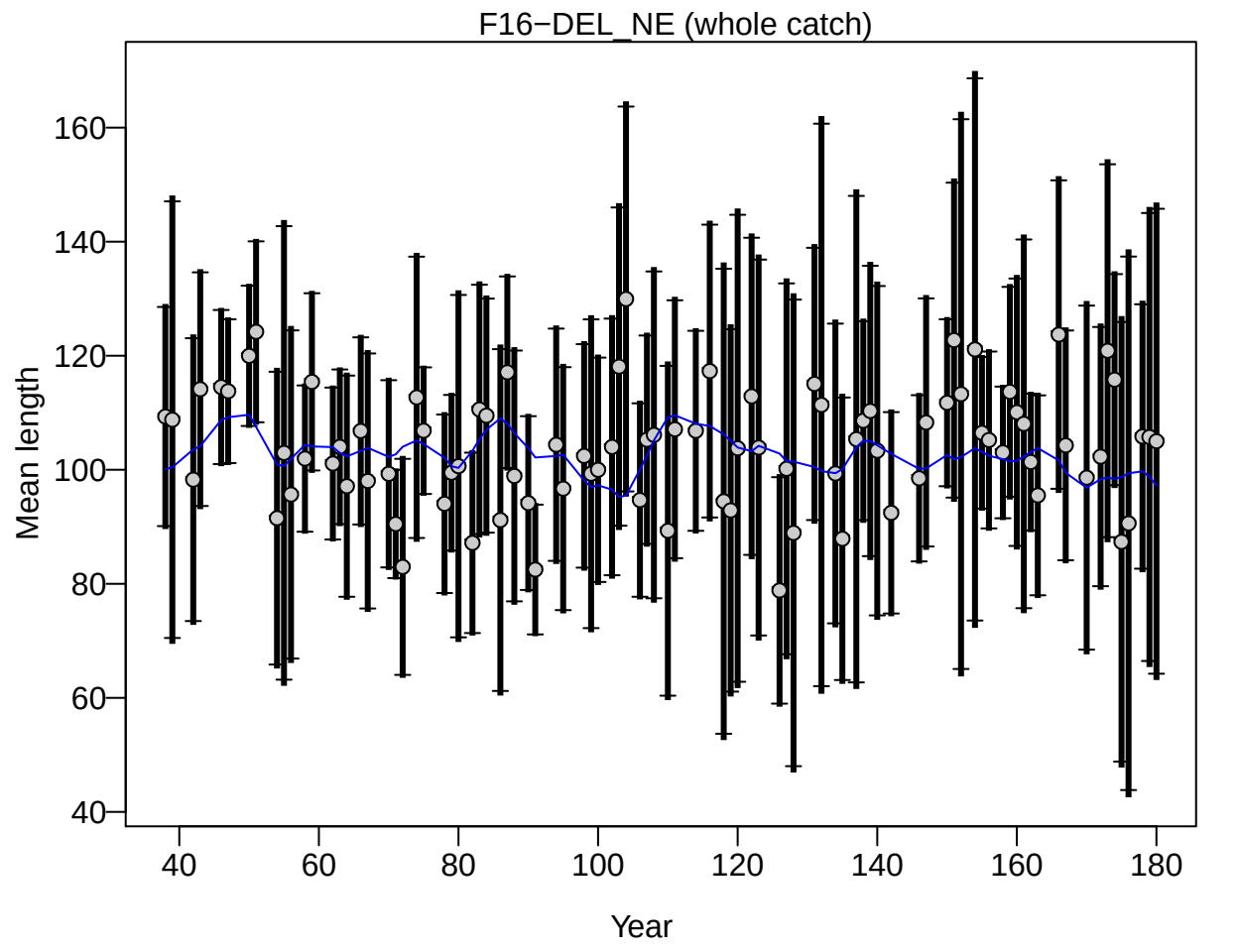
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)

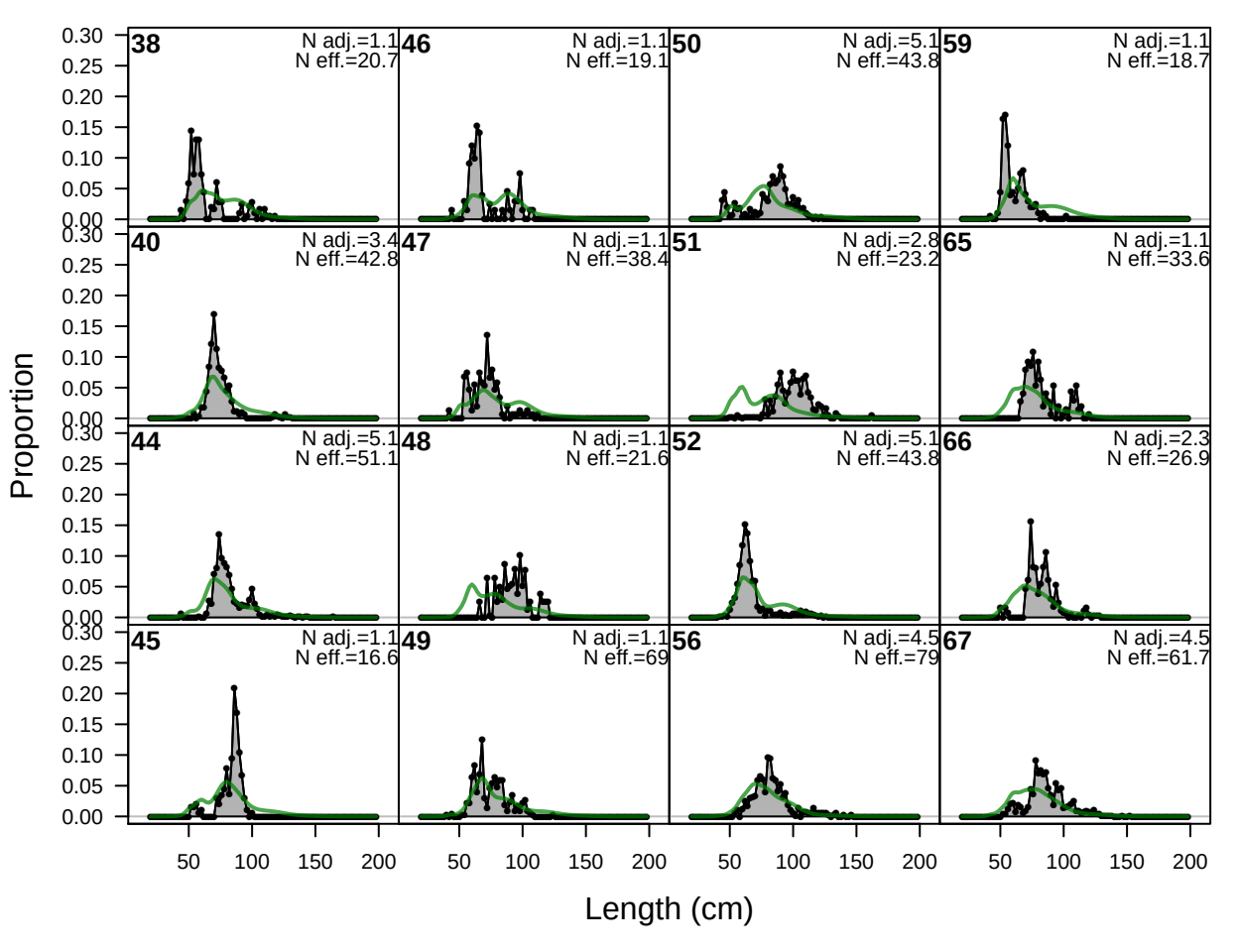

166
N adj.=4.3
N eff.=54.6
173
N adj.=2.4
N eff.=25.4
178
N adj.=4.9
N eff.=166.1
167
N adj.=7.9
N eff.=359.6
174
N adj.=7.9
N eff.=50.8
179
N adj.=1.8
N eff.=61.6
170
N adj.=3
N eff.=140.1
175
N adj.=1.8
N eff.=18.8
180
N adj.=1.8
N eff.=55.2
172
N adj.=4.9
N eff.=65.5
176
N adj.=1.2
N eff.=29.2
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


15
5
15
200
150
100
50
Length (cm)
38
50
62
72
82
94
106
119
132
146
159
172
Year



Effective sample size
Observed sample size
0
100
200
300
400
0
5
10
15
20
25
30
35
167
162
111
95
139
134
63
150
156
59
91
50
71
158
75
120
66
70
47
62
174
126
72
175


F16−DEL_NE (whole catch)
Mean length
Year
160
140
120
100
80
60
40
40
60
80
100
120
140
160
180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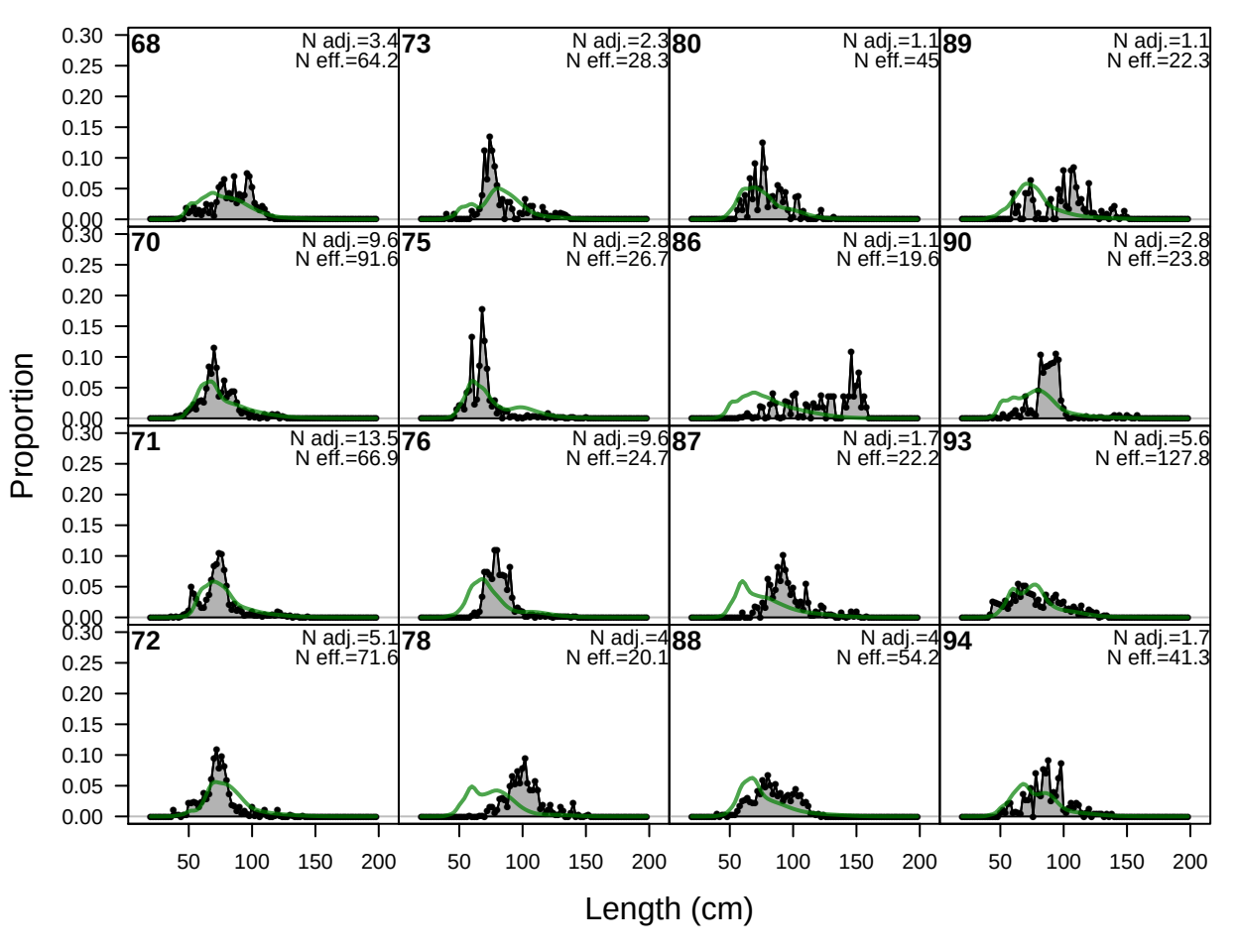
Length (cm)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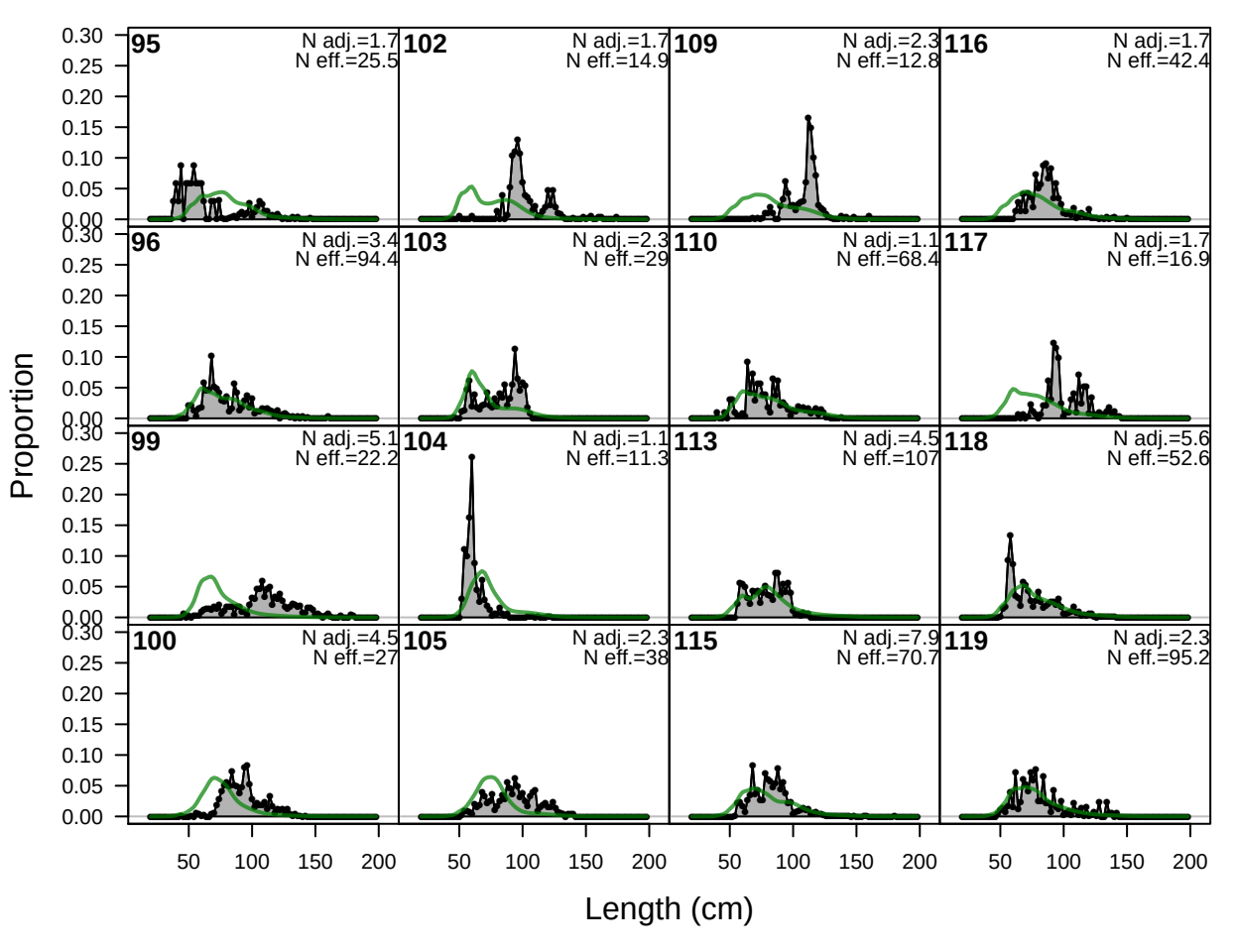
Length (cm)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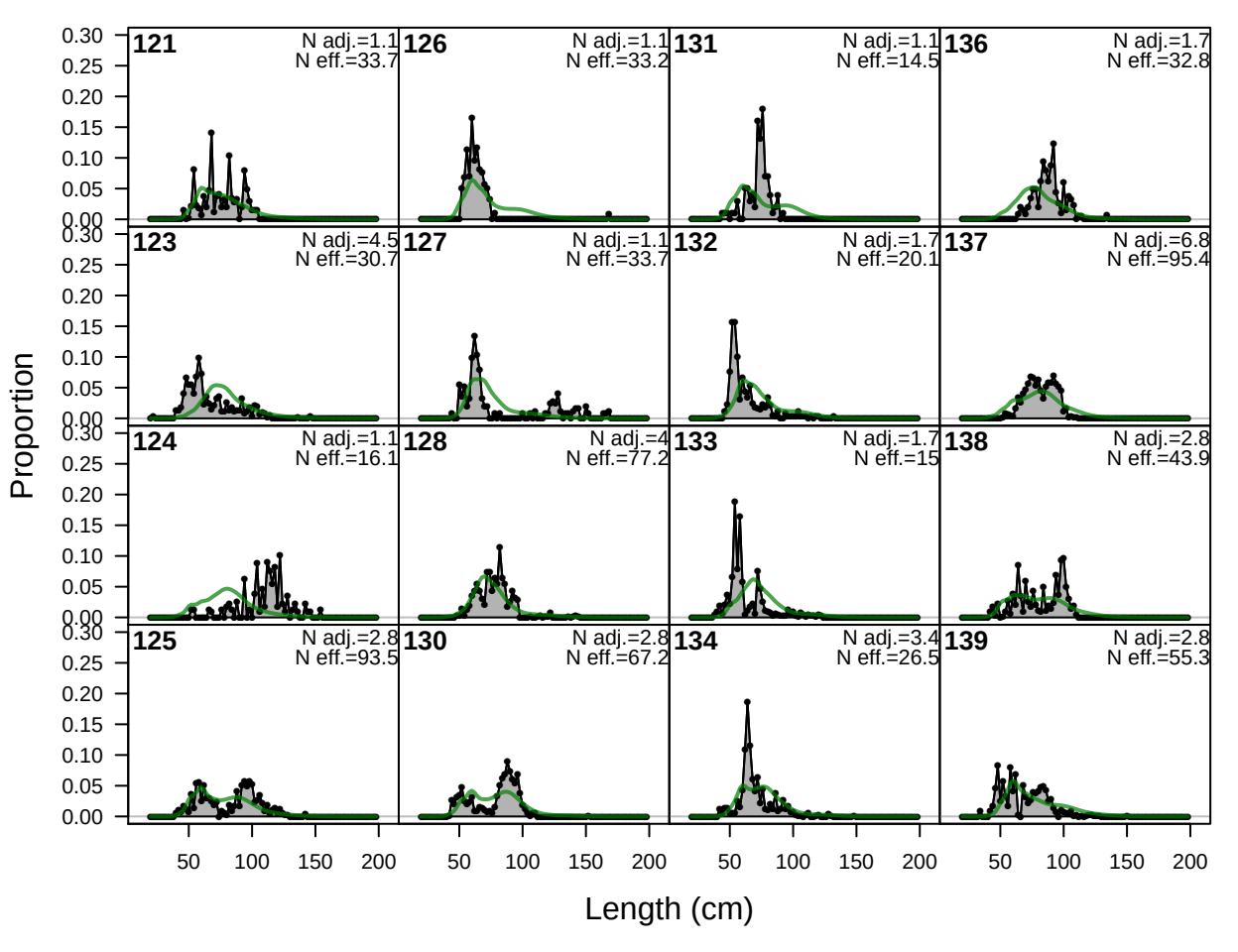
Length (cm)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N eff.=20.1
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N eff.=26.5
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N adj.=2.8
N eff.=55.3
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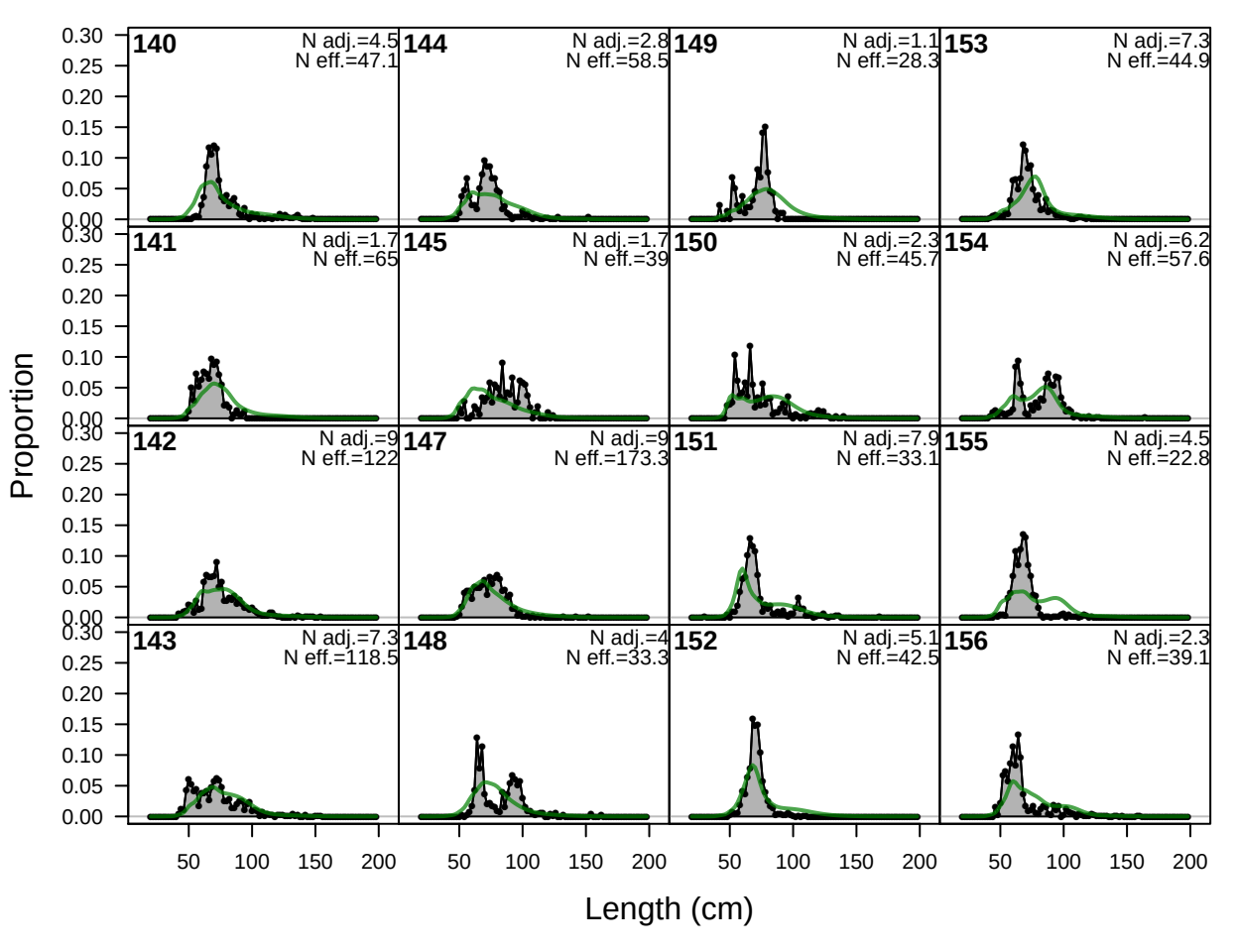
Length (cm)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N adj.=1.7
N eff.=39
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N adj.=2.3
N eff.=45.7
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N adj.=6.2
N eff.=57.6
142
N adj.=9
N eff.=122
147
N adj.=9
N eff.=173.3
151
N adj.=7.9
N eff.=33.1
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N adj.=4.5
N eff.=22.8
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N adj.=7.3
N eff.=118.5
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N adj.=4
N eff.=33.3
152
N adj.=5.1
N eff.=42.5
156
N adj.=2.3
N eff.=39.1
Proportion
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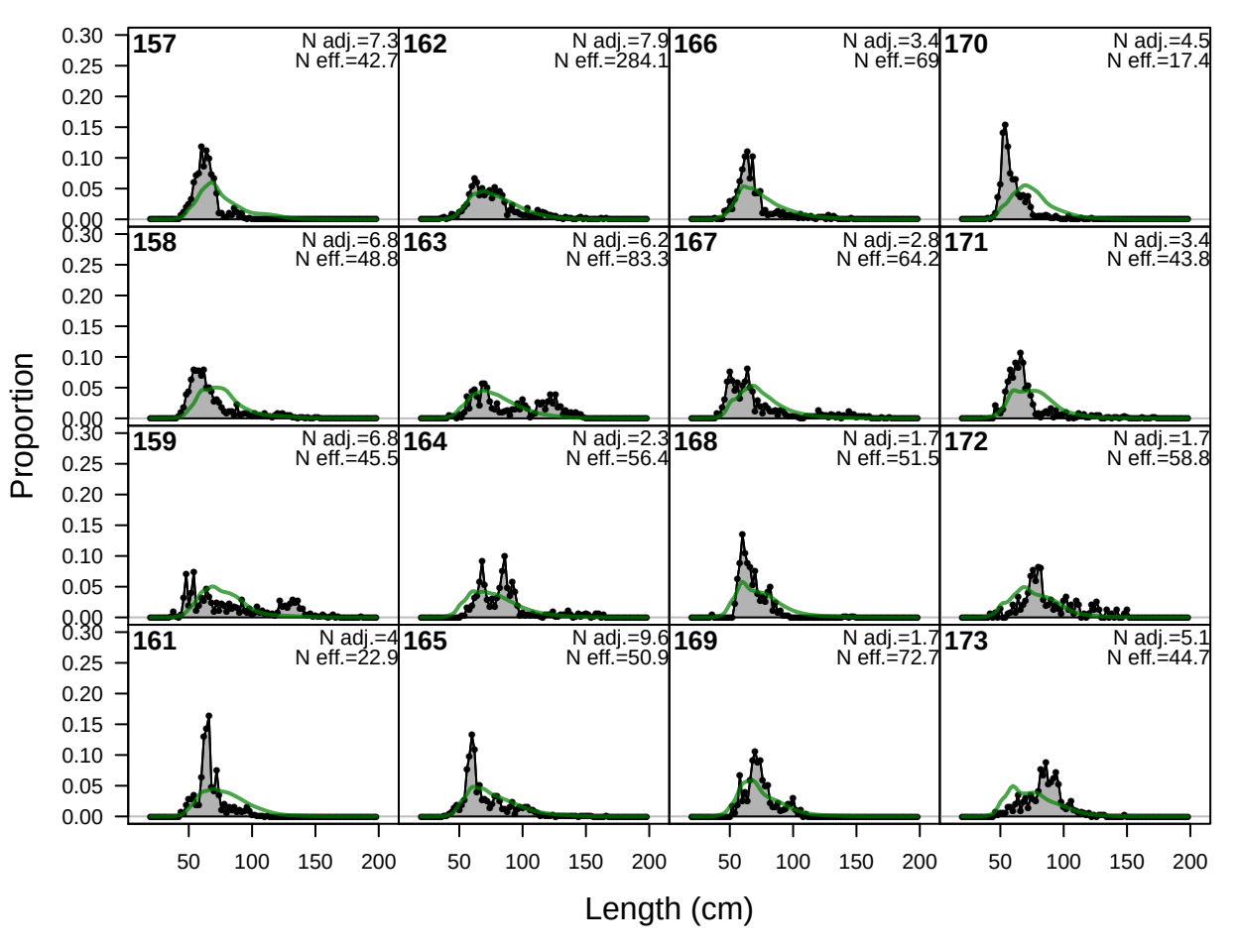
Length (cm)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N eff.=17.4
158
N adj.=6.8
N eff.=48.8
163
N adj.=6.2
N eff.=83.3
167
N adj.=2.8
N eff.=64.2
171
N adj.=3.4
N eff.=43.8
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N adj.=6.8
N eff.=45.5
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N adj.=2.3
N eff.=56.4
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N adj.=1.7
N eff.=51.5
172
N adj.=1.7
N eff.=58.8
161
N adj.=4
N eff.=22.9
165
N adj.=9.6
N eff.=50.9
169
N adj.=1.7
N eff.=72.7
173
N adj.=5.1
N eff.=44.7
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0.30
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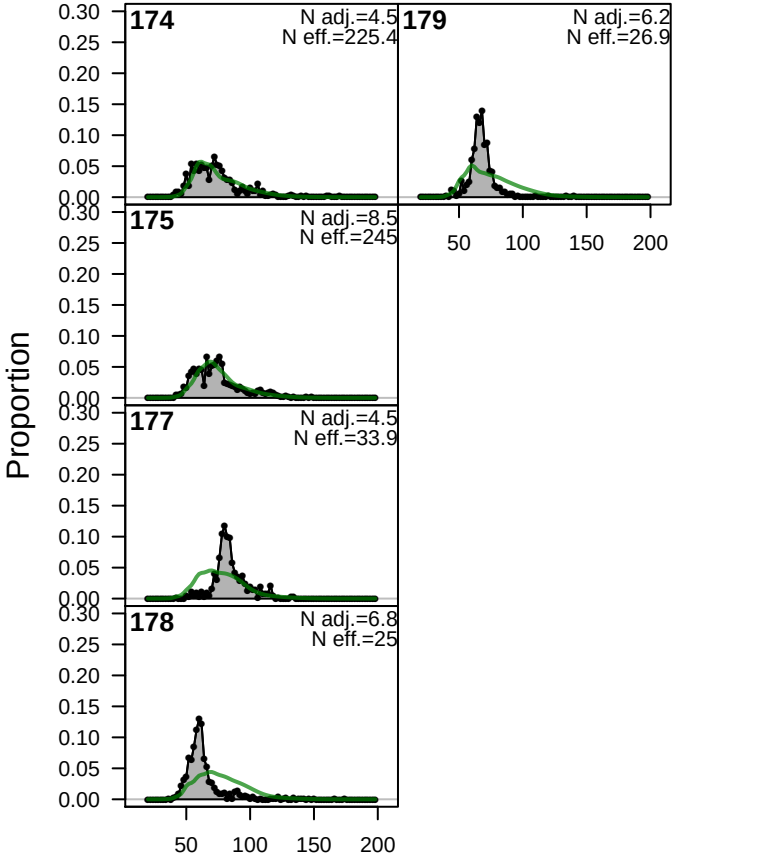
100
150
200
Length (cm)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N eff.=26.9
175
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177
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N eff.=33.9
178
N adj.=6.8
N eff.=25
Proportion
Length (cm)
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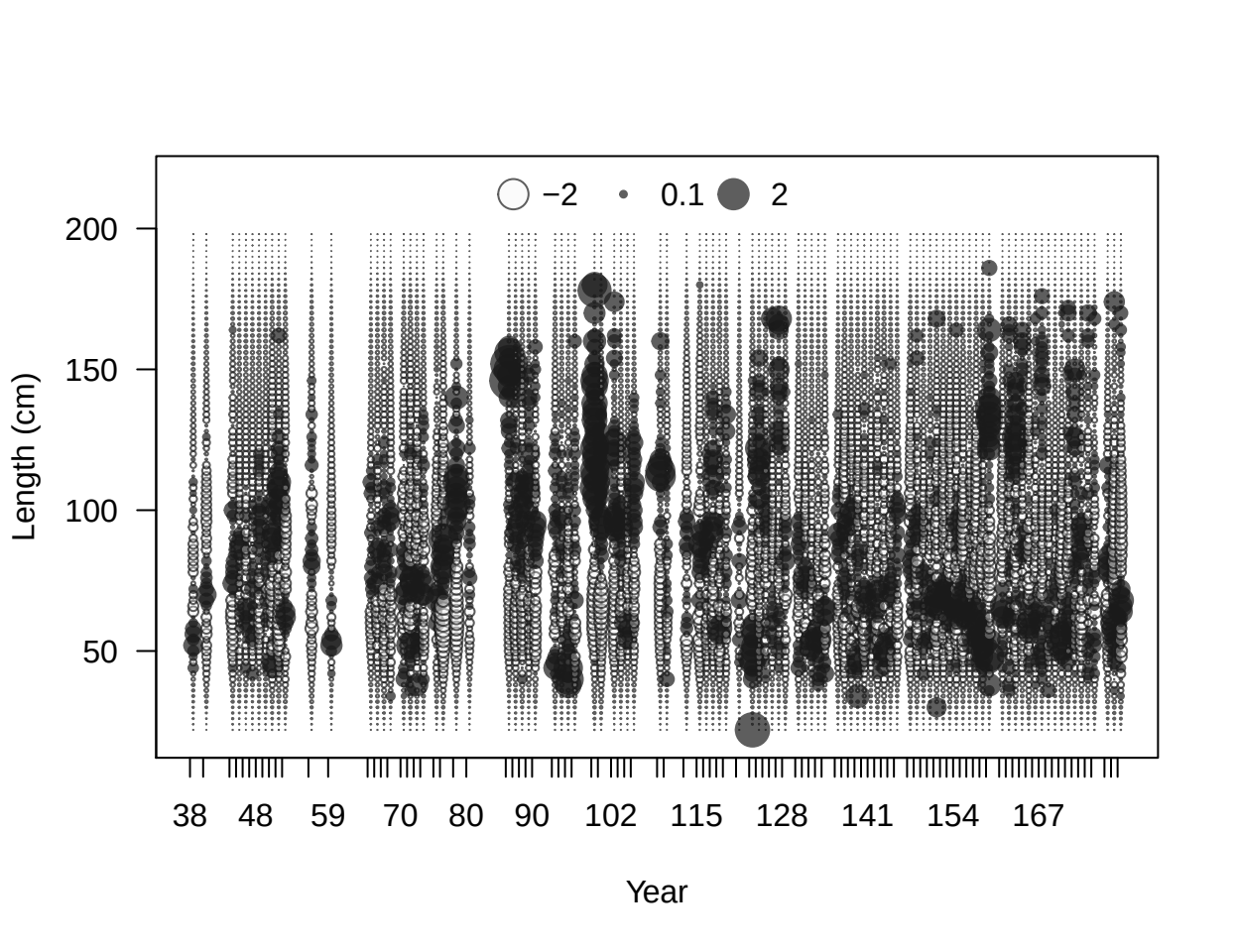
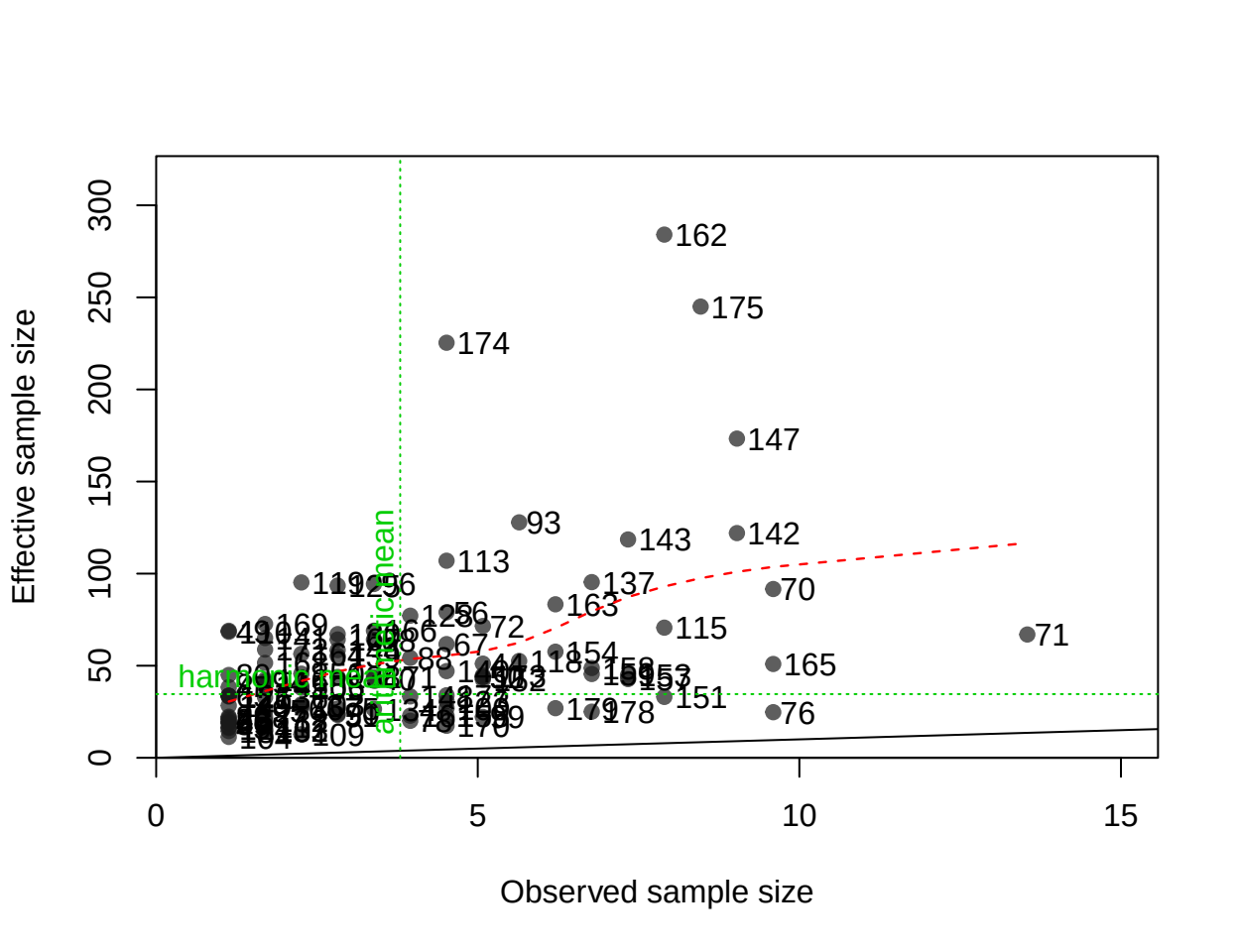
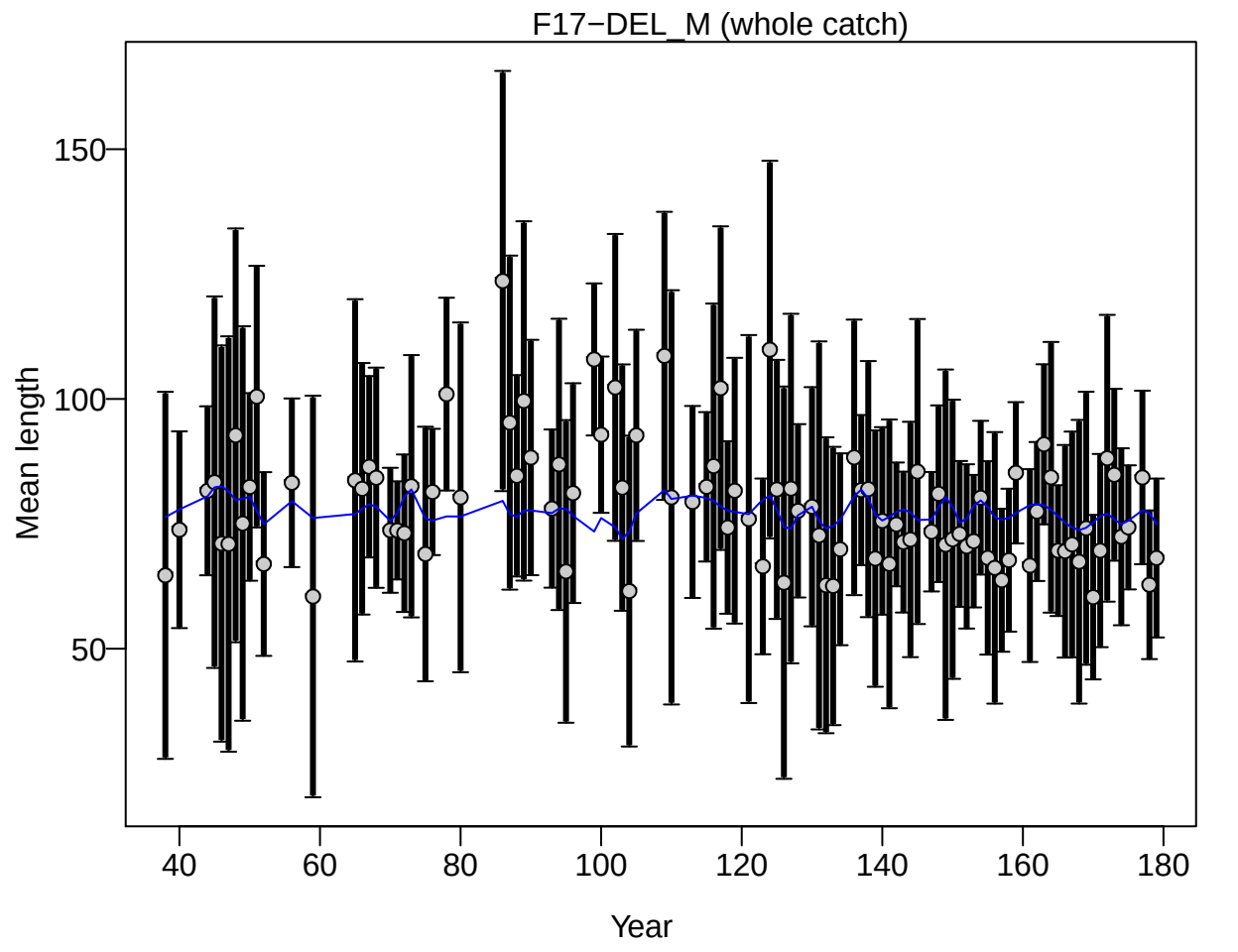
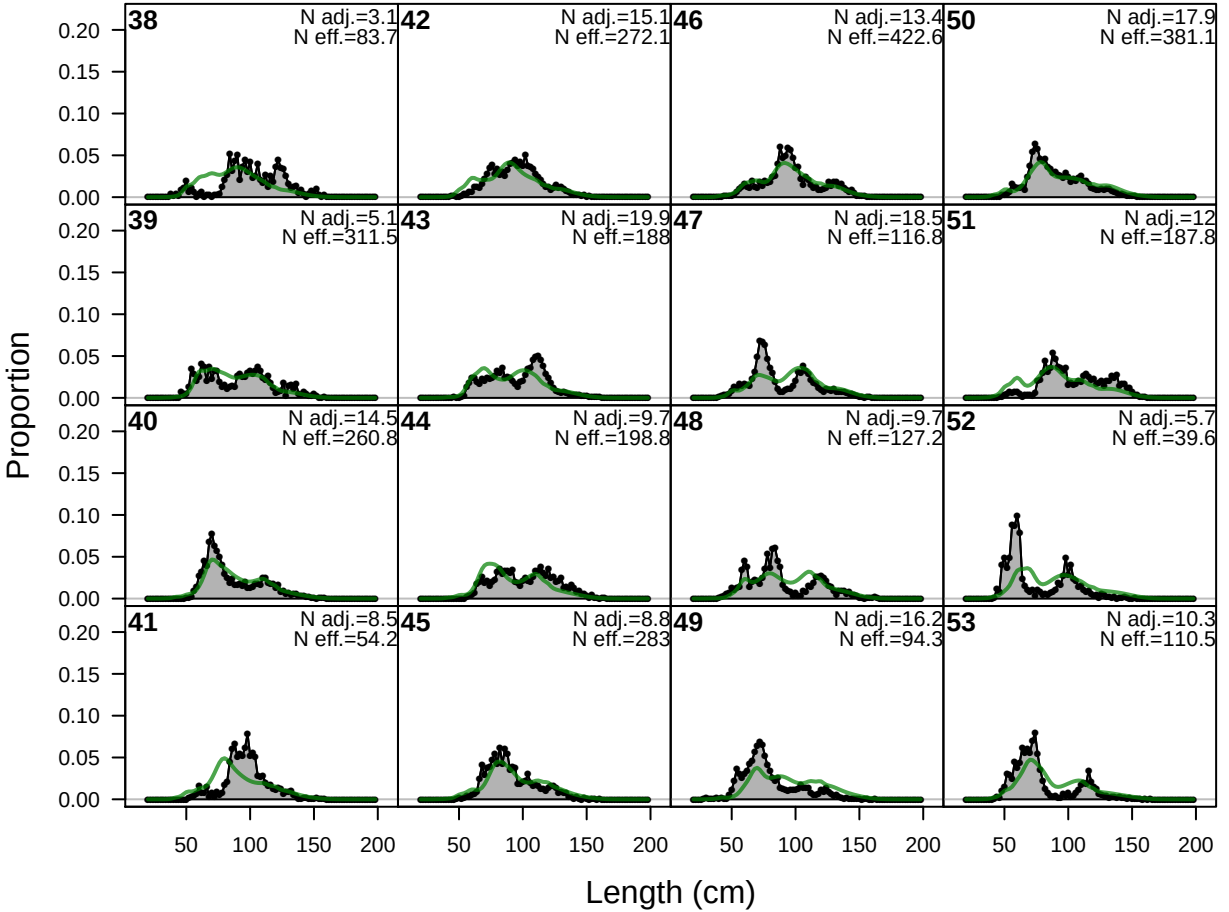
0.20
0.25
0.30
50
100
150
200


−2
0.1
2
200
150
100
50
Length (cm)
38
48
59
70
80
90
102
115
128
141
154
167
Year


Effective sample size
Observed sample size
0
50
100
150
200
250
300
0
5
10
15
harmonic mean
arithmetic mean
162
175
174
147
93
143
142
113
137
70
163
115
71
165
151
76
178
179


F17−DEL_M (whole catch)
Mean length
150
100
50
40
60
80
100
120
140
160
180
Year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N eff.=381.1
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N adj.=5.1
N eff.=311.5
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N adj.=19.9
N eff.=188
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N adj.=18.5
N eff.=116.8
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N adj.=12
N eff.=187.8
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N adj.=14.5
N eff.=260.8
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N eff.=127.2
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N eff.=39.6
41
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45
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N adj.=16.2
N eff.=94.3
53
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Proportion
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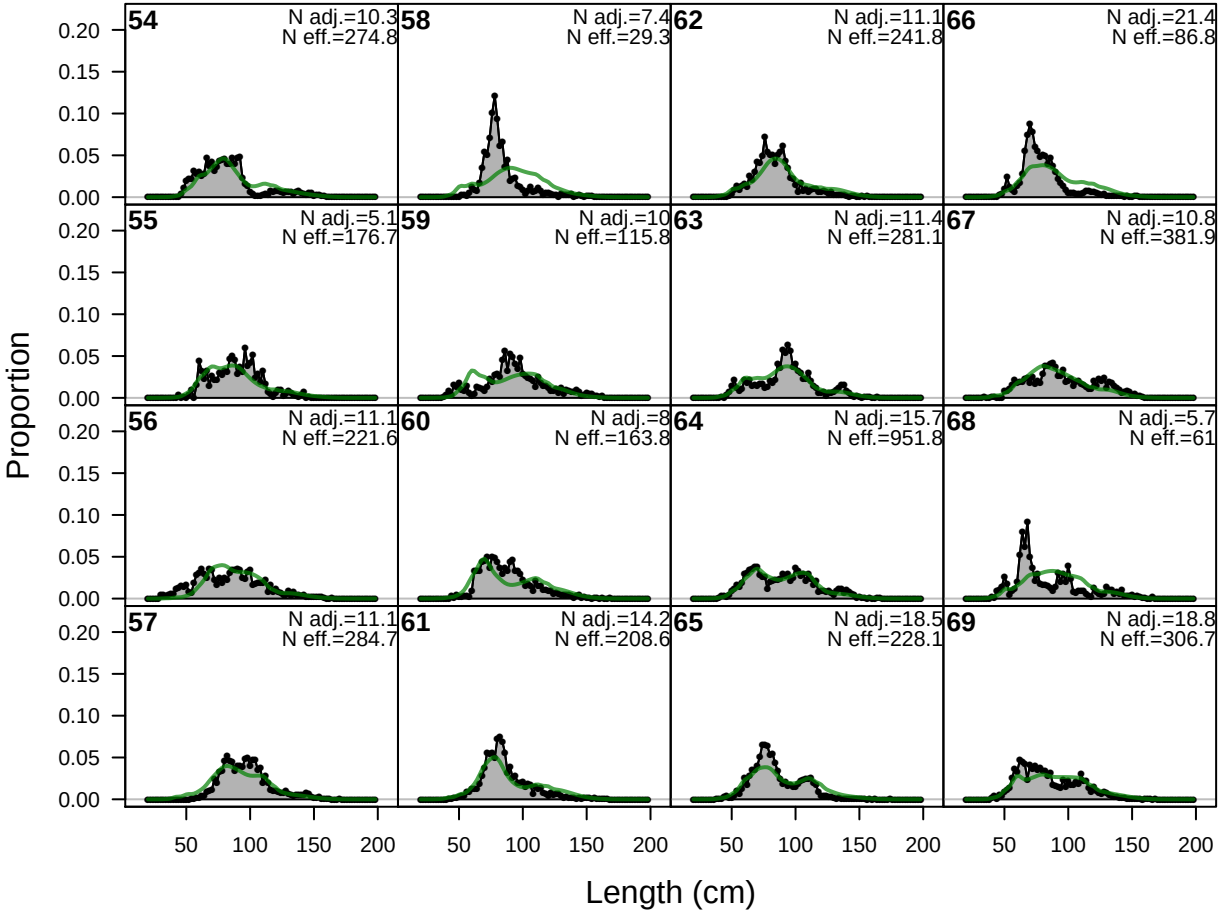
0.10
0.15
0.20
50
100
150
200
Length (cm)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N eff.=176.7
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N eff.=115.8
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N adj.=11.4
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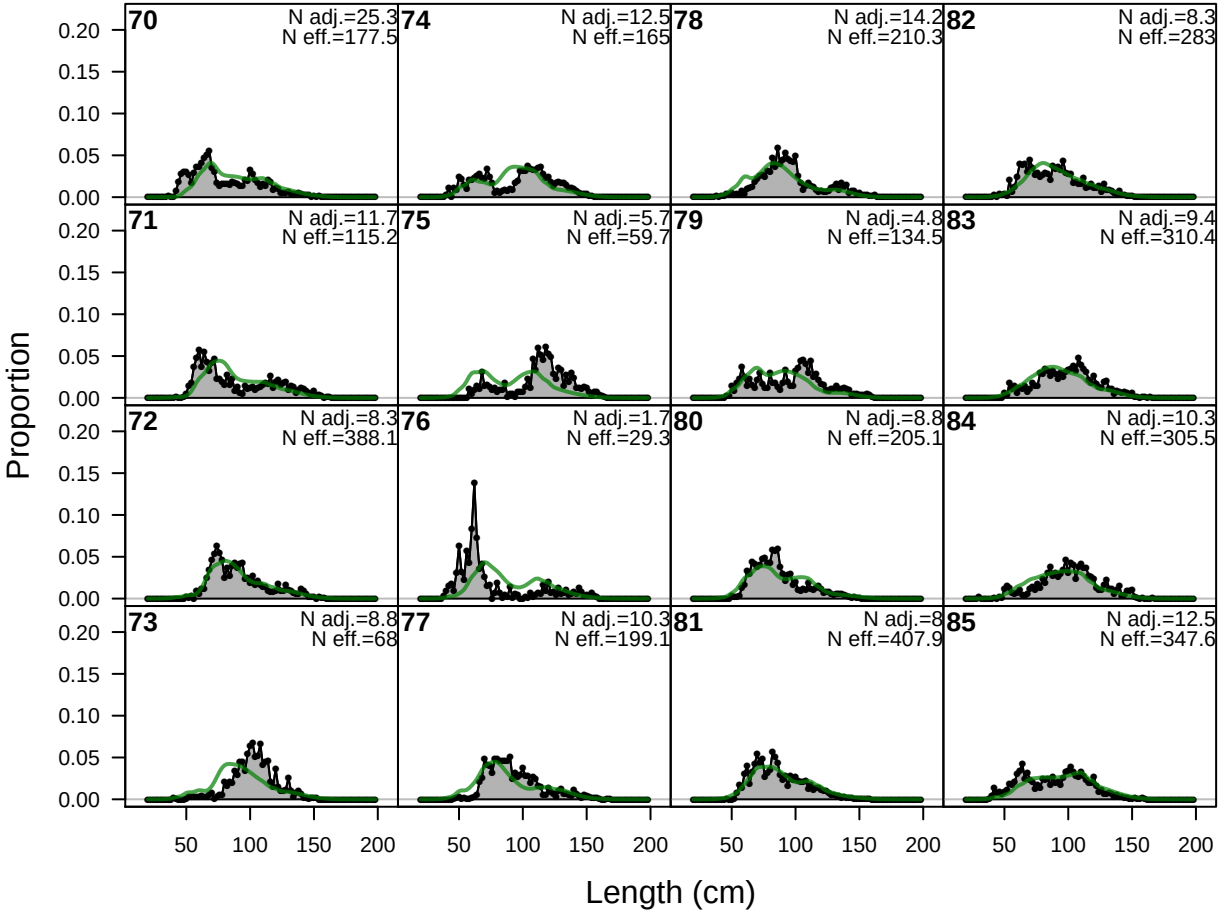
0.10
0.15
0.20
50
100
150
200
Length (cm)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N adj.=11.7
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N adj.=5.7
N eff.=59.7
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N adj.=4.8
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N adj.=9.4
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N adj.=1.7
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N adj.=8.8
N eff.=205.1
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N adj.=10.3
N eff.=305.5
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N adj.=8.8
N eff.=68
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N adj.=10.3
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N adj.=8
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0.20
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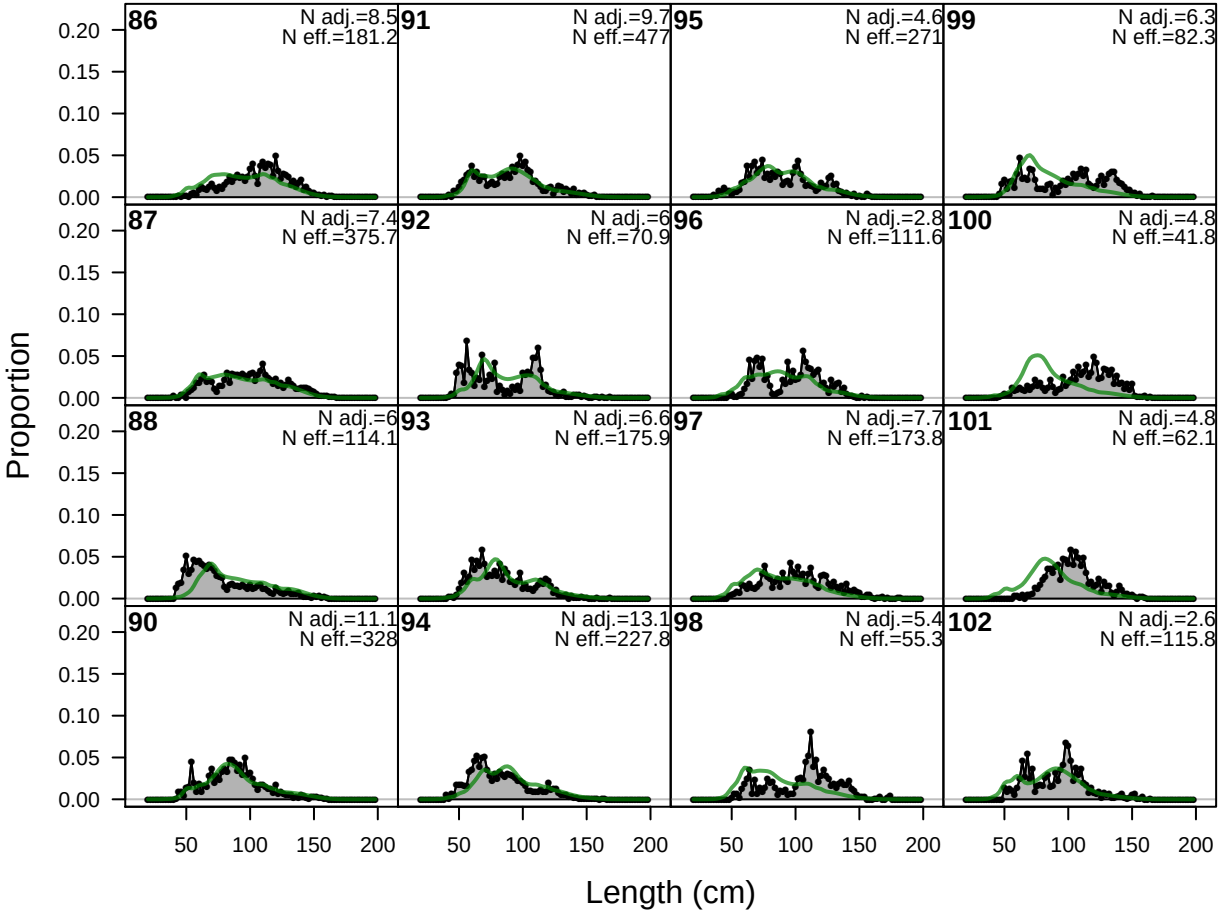
100
150
200
Length (cm)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N adj.=6
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N adj.=7.7
N eff.=173.8
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N adj.=4.8
N eff.=62.1
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N adj.=11.1
N eff.=328
94
N adj.=13.1
N eff.=227.8
98
N adj.=5.4
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102
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0.10
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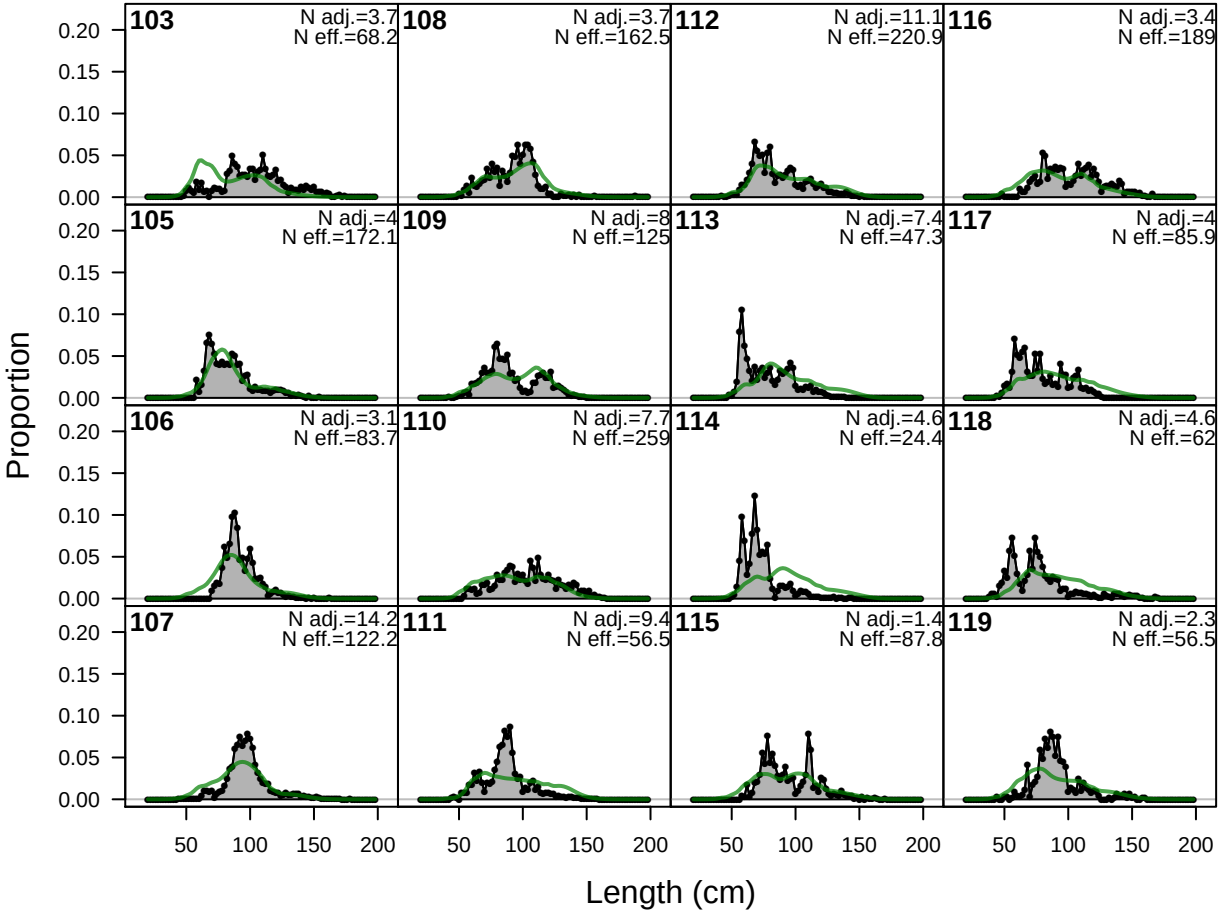
0.20
50
100
150
200
Length (cm)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N adj.=14.2
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N eff.=87.8
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50
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150
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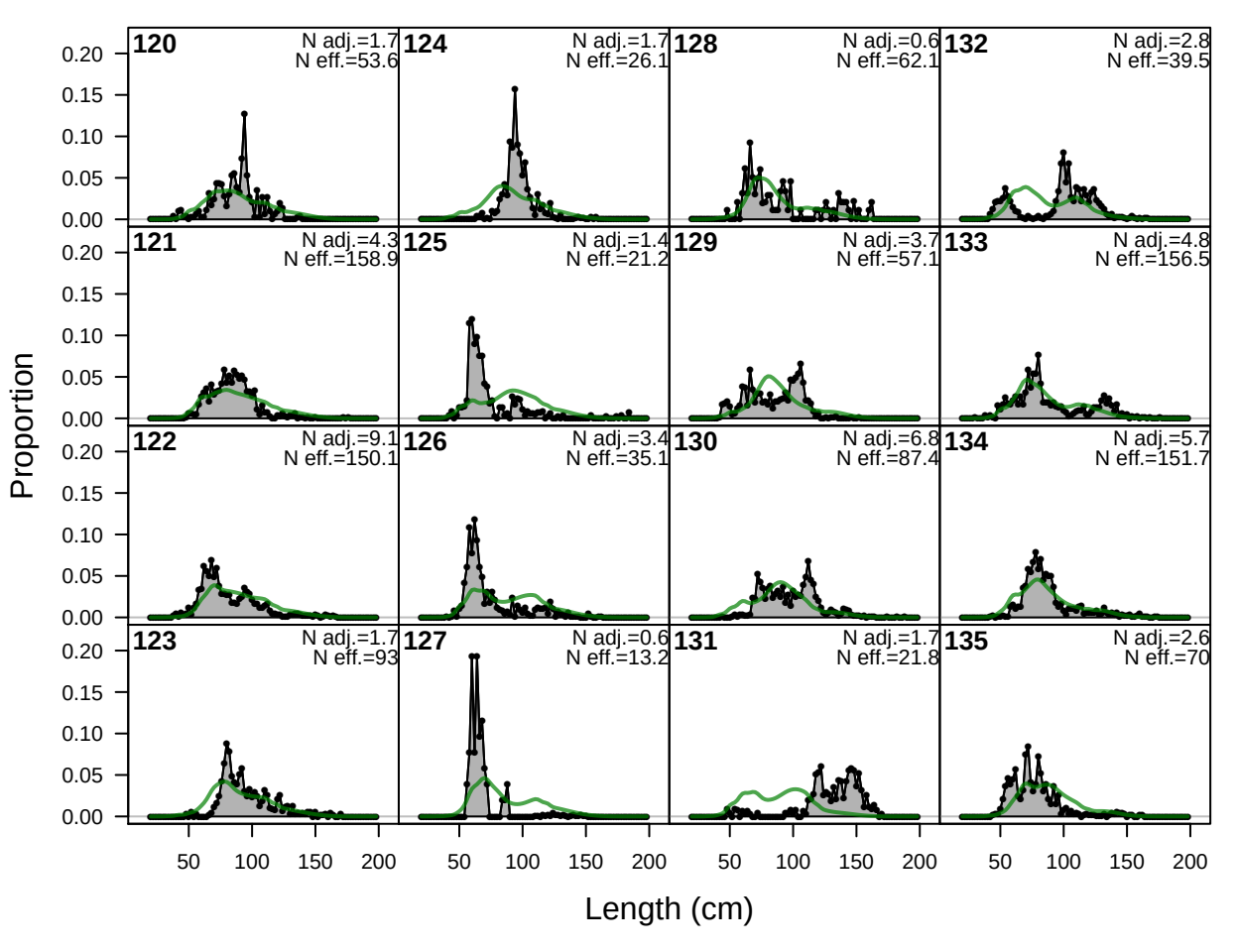
Proportion
Length (cm)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N eff.=158.9
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N eff.=87.4
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N eff.=151.7
123
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N eff.=93
127
N adj.=0.6
N eff.=13.2
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N eff.=21.8
135
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Proportion
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0.15
0.20
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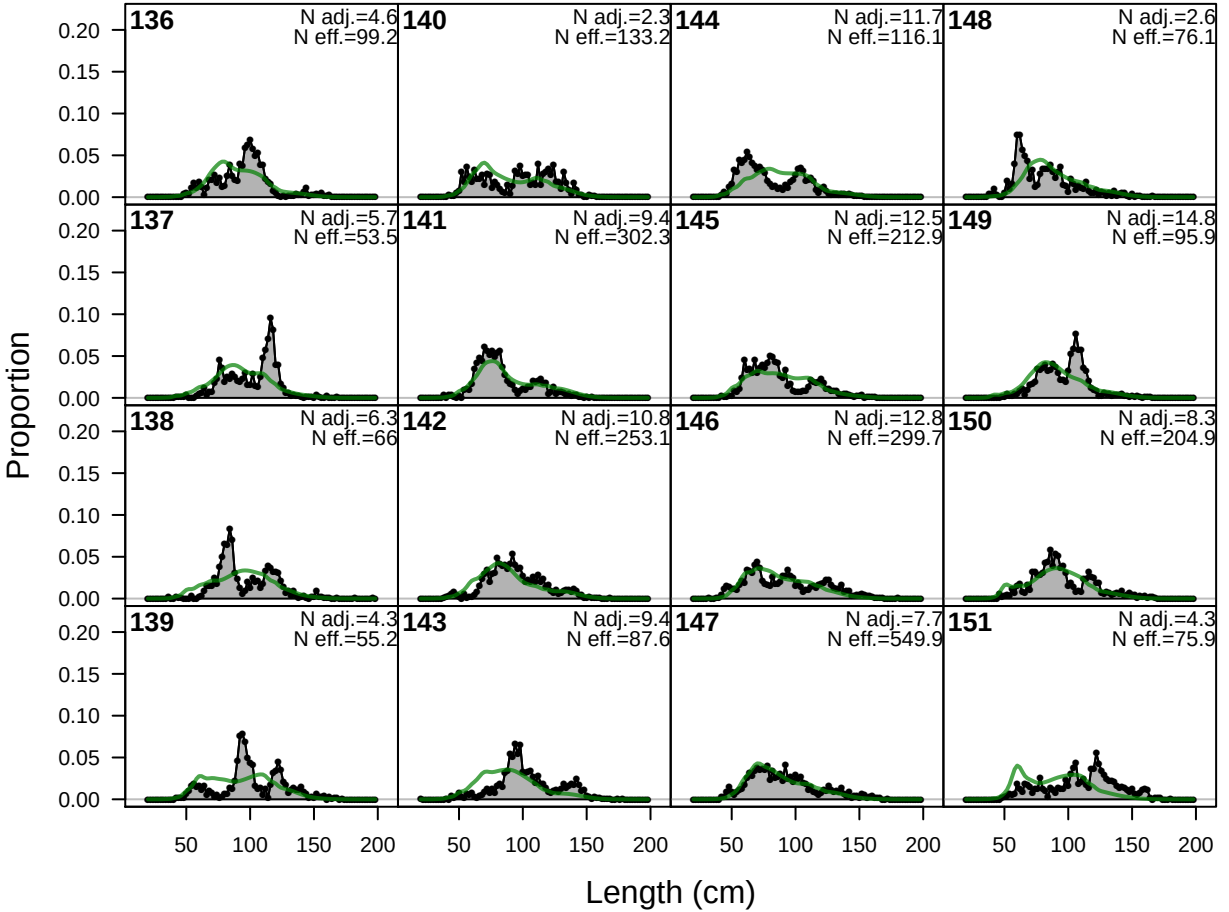
100
150
200
Length (cm)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N adj.=6.3
N eff.=66
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N adj.=12.8
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N eff.=204.9
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N adj.=4.3
N eff.=55.2
143
N adj.=9.4
N eff.=87.6
147
N adj.=7.7
N eff.=549.9
151
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N eff.=75.9
Proportion
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0.20
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150
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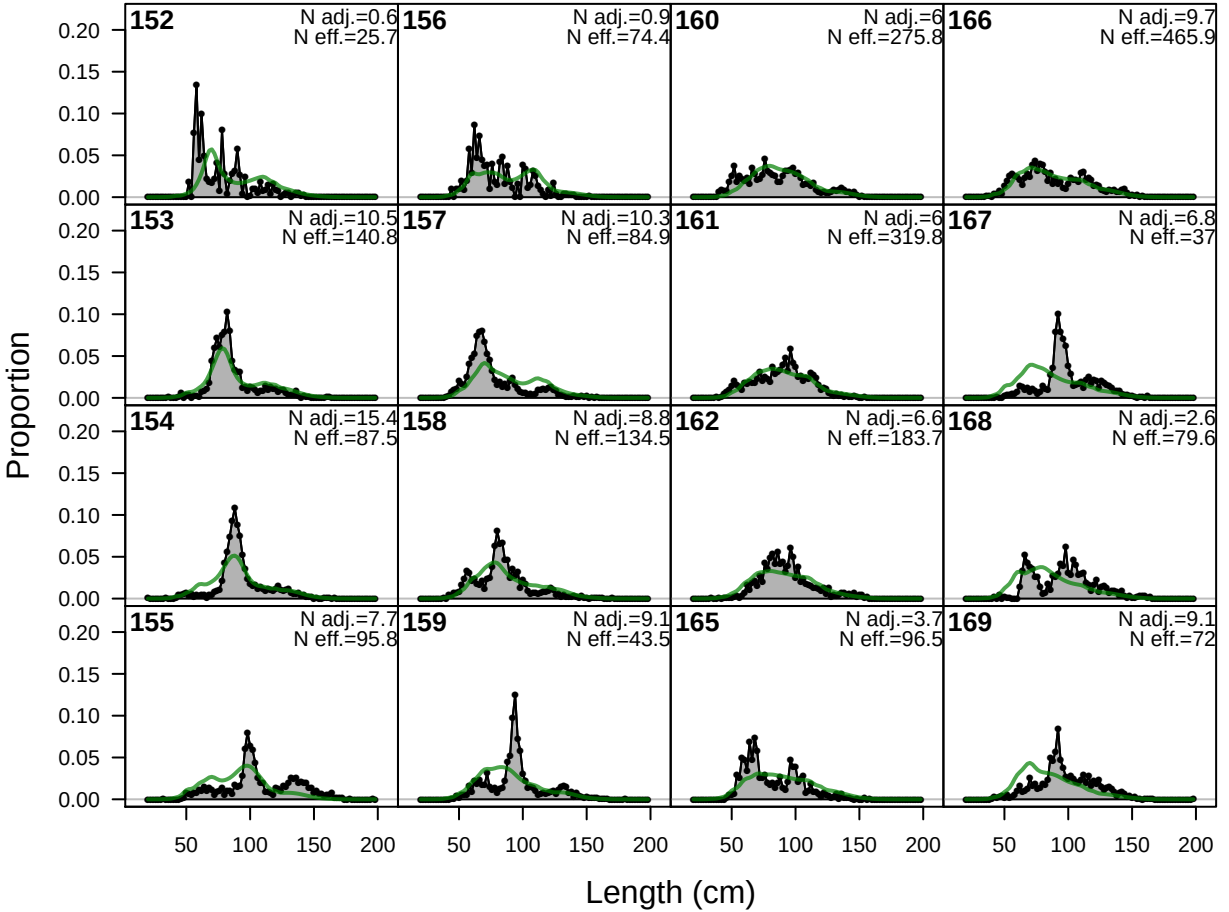
Length (cm)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N adj.=10.5
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N adj.=6
N eff.=319.8
167
N adj.=6.8
N eff.=37
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N adj.=15.4
N eff.=87.5
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N adj.=8.8
N eff.=134.5
162
N adj.=6.6
N eff.=183.7
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N adj.=2.6
N eff.=79.6
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N adj.=7.7
N eff.=95.8
159
N adj.=9.1
N eff.=43.5
165
N adj.=3.7
N eff.=96.5
169
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0.20
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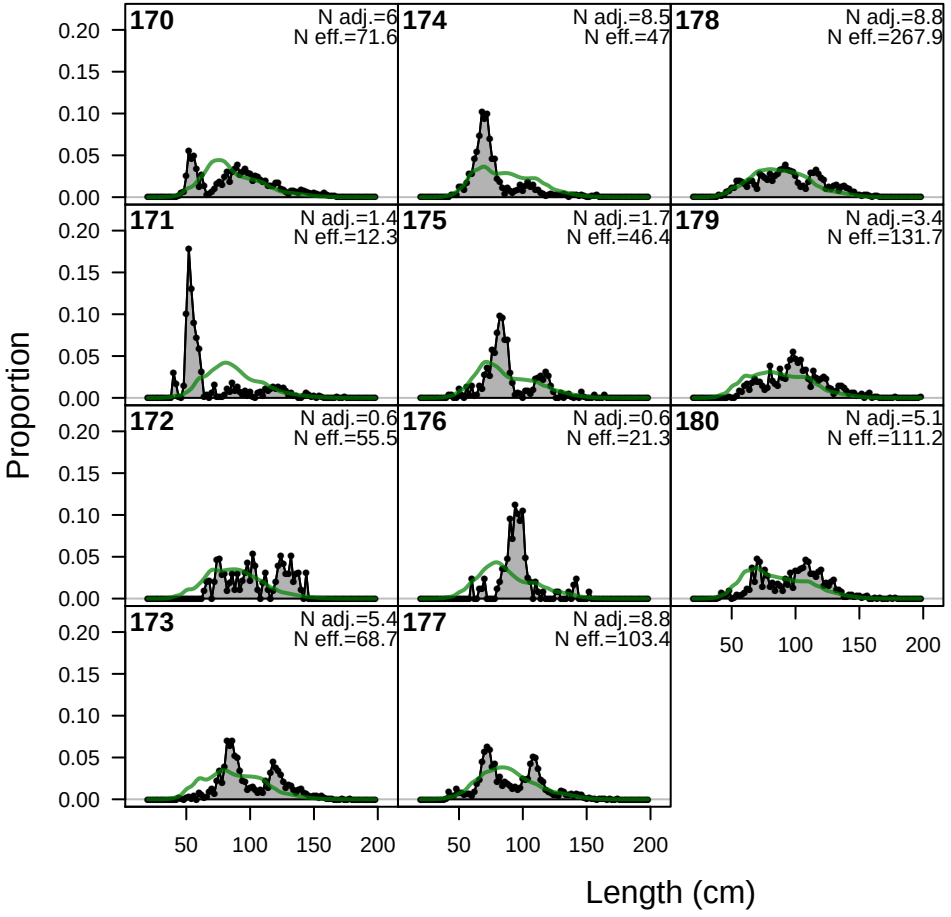
100
150
200
Length (cm)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N adj.=5.4
N eff.=68.7
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N adj.=8.8
N eff.=103.4
Proportion
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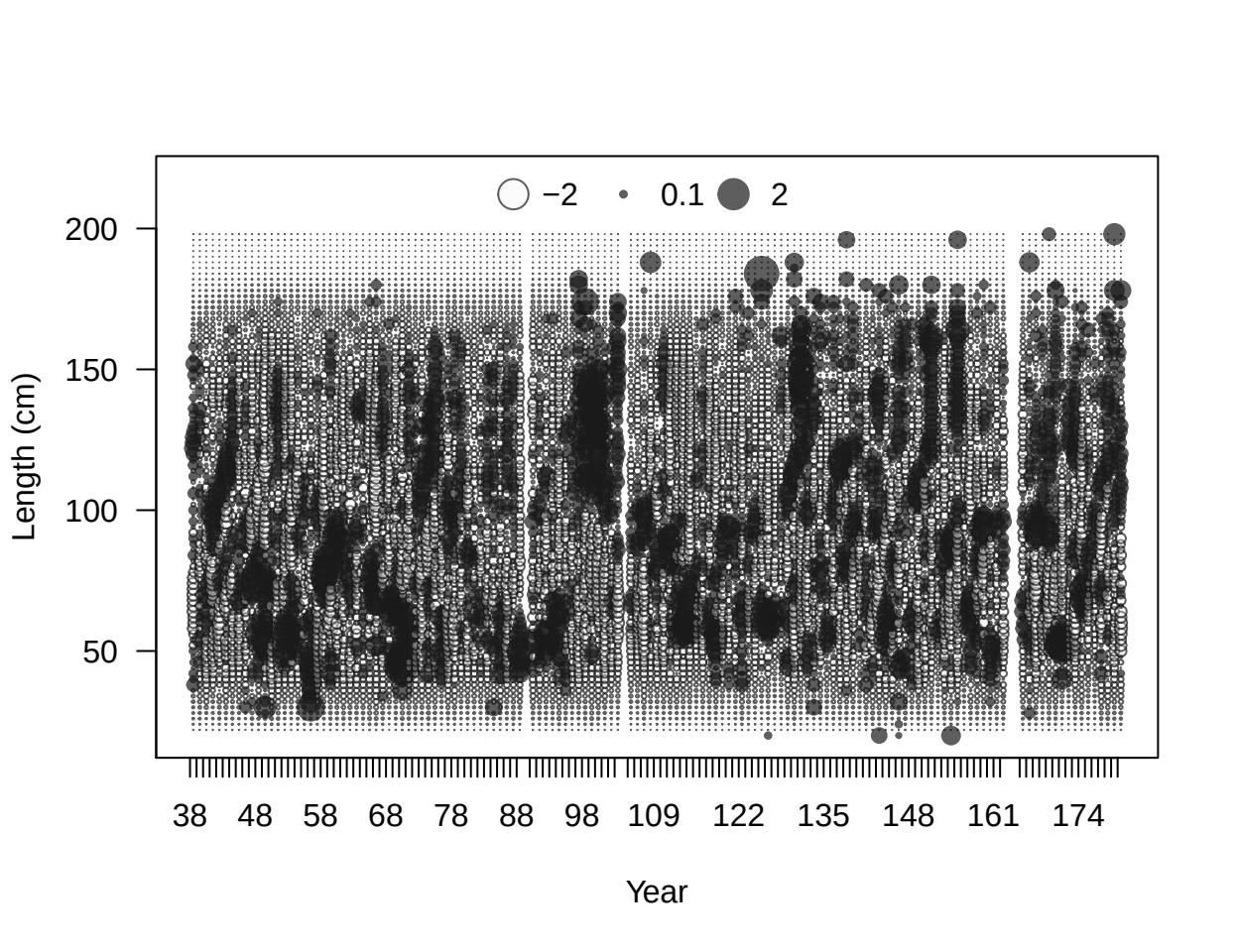
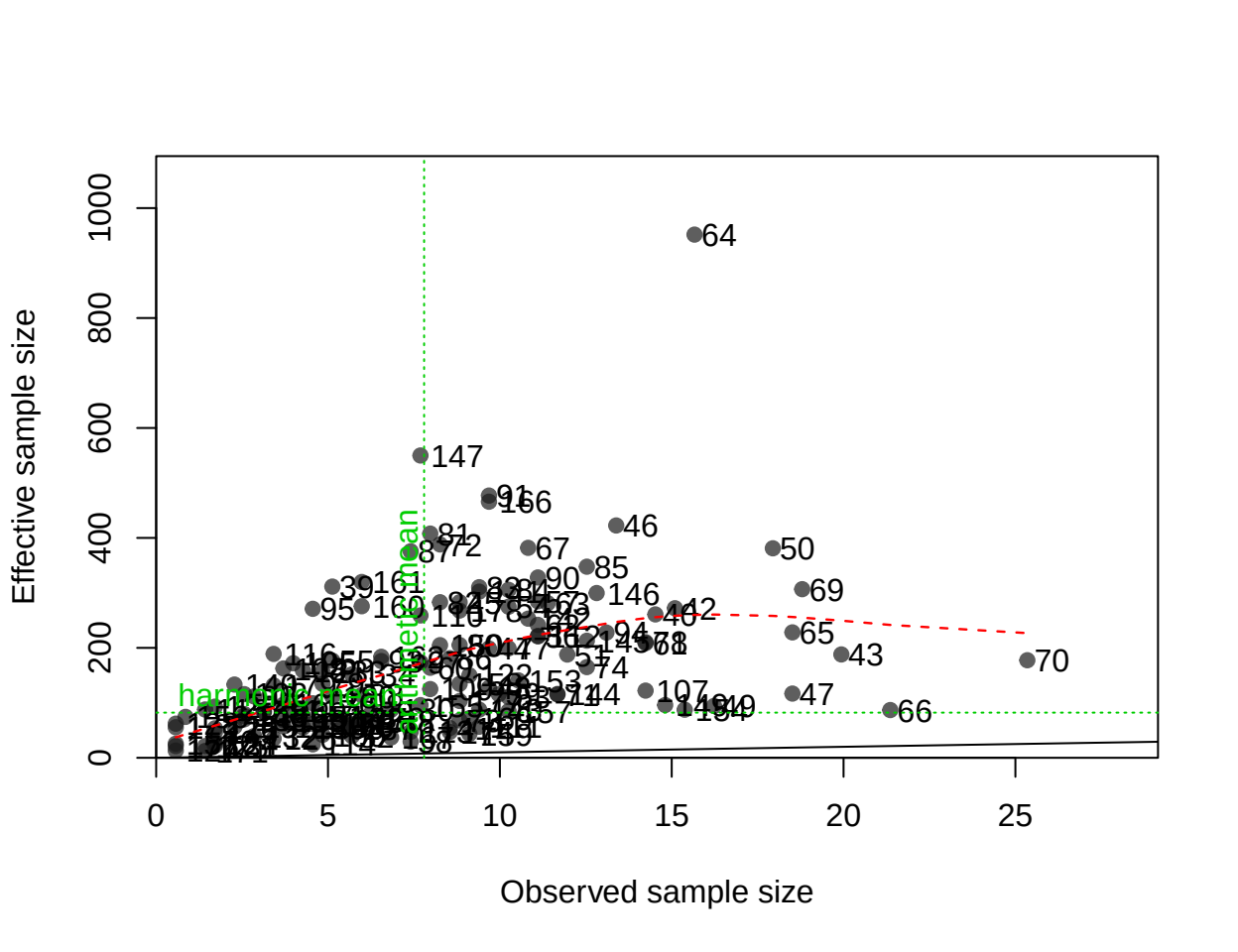
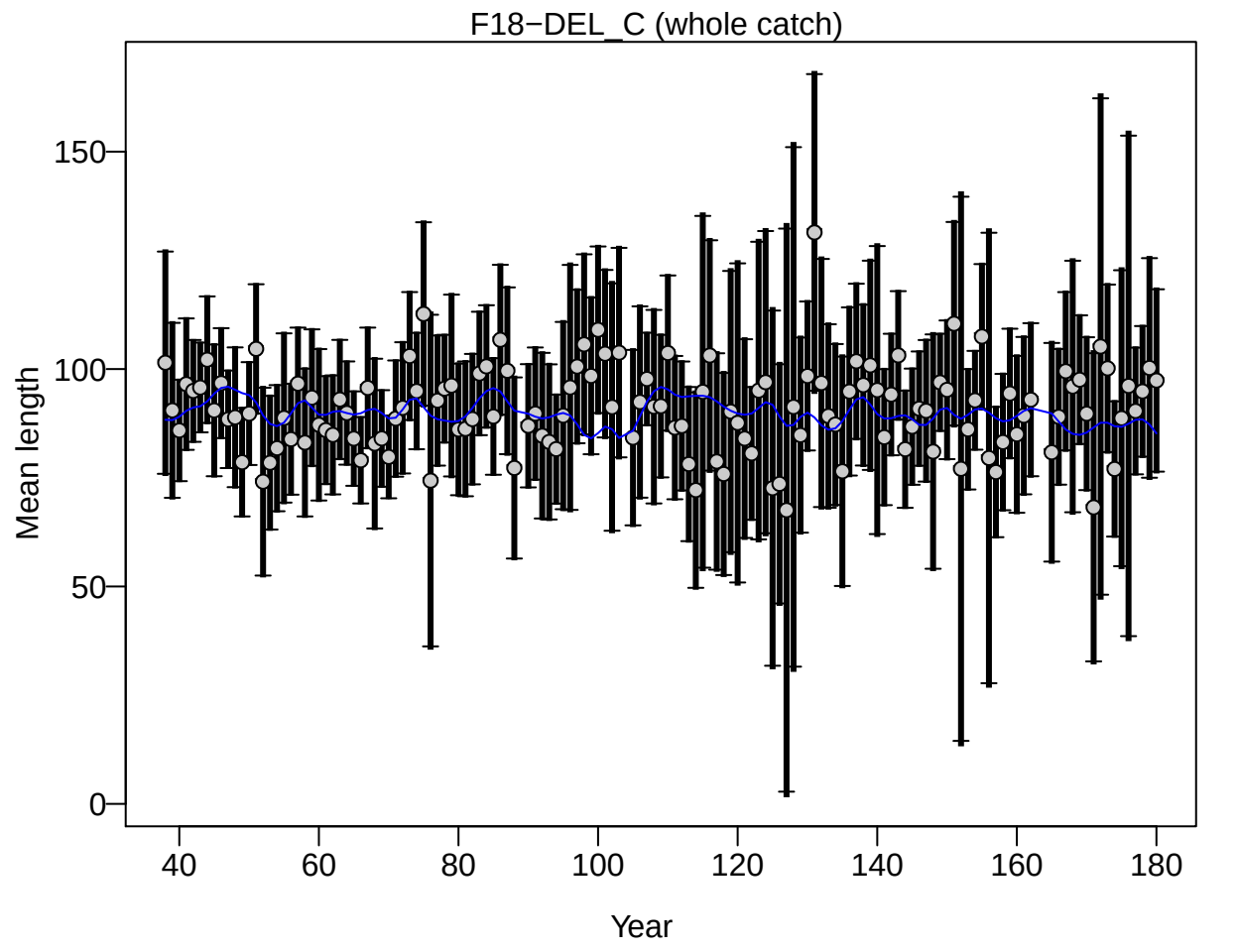
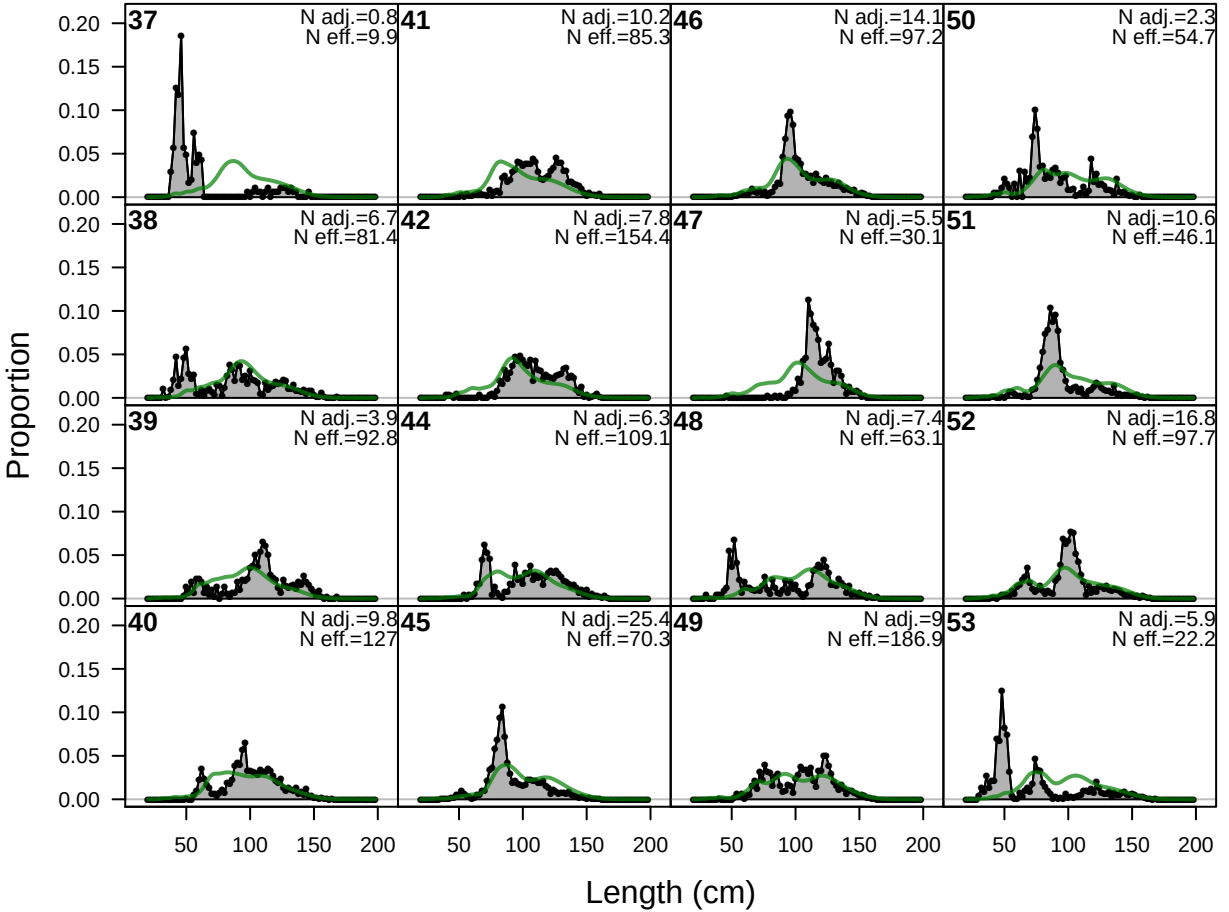
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
38
48
58
68
78
88
98
109
122
135
148
161
174
Year


Effective sample size
Observed sample size
0
200
400
600
800
1000
0
5
10
15
20
25
harmonic mean
arithmetic mean
64
147
91
166
46
81
87
72
67
50
85
90
39
161
146
69
95
160
42
65
43
70
74
107
47
66


F18−DEL_C (whole catch)
Mean length
150
100
50
0
40
60
80
100
120
140
160
180
Year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41
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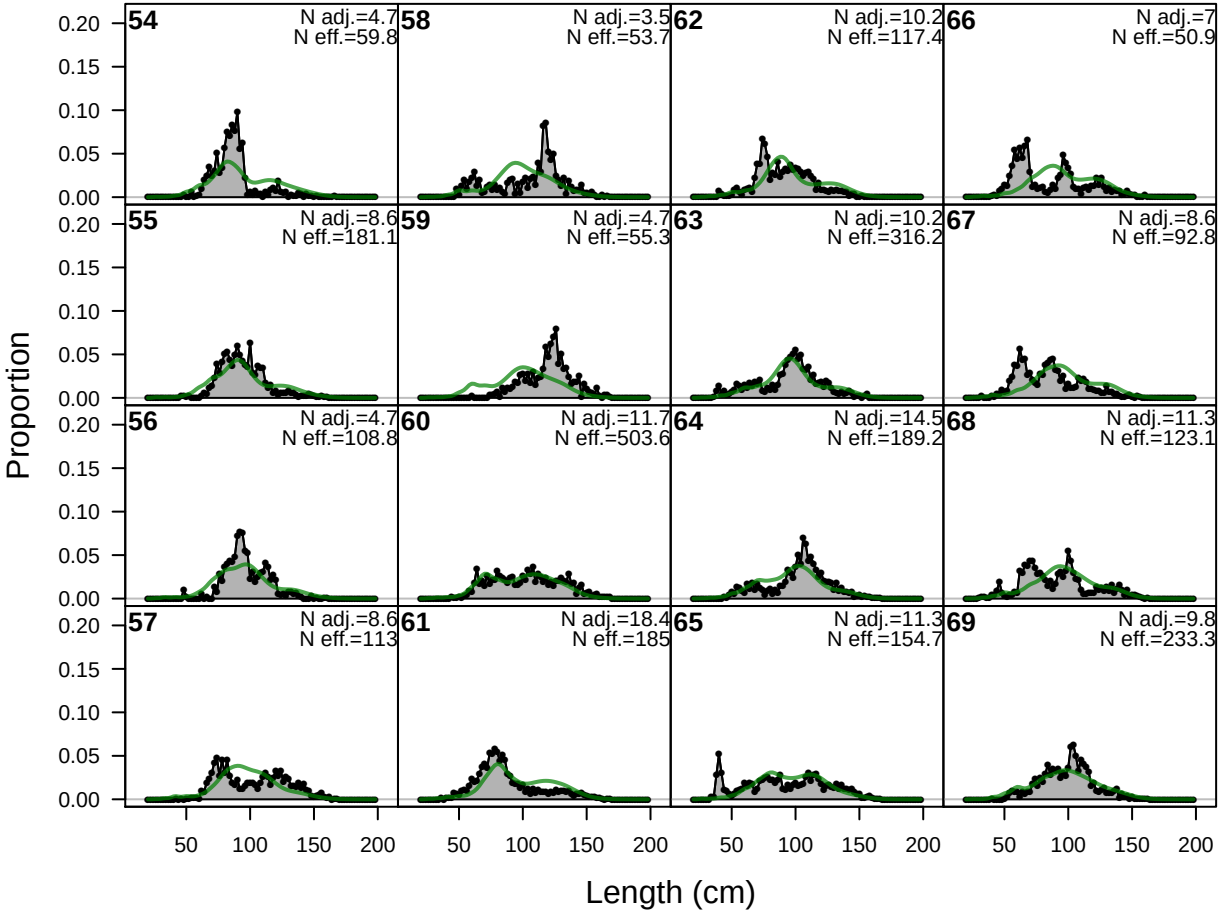
N adj.=2.3
N eff.=54.7
38
N adj.=6.7
N eff.=81.4
42
N adj.=7.8
N eff.=154.4
47
N adj.=5.5
N eff.=30.1
51
N adj.=10.6
N eff.=46.1
39
N adj.=3.9
N eff.=92.8
44
N adj.=6.3
N eff.=109.1
48
N adj.=7.4
N eff.=63.1
52
N adj.=16.8
N eff.=97.7
40
N adj.=9.8
N eff.=127
45
N adj.=25.4
N eff.=70.3
49
N adj.=9
N eff.=186.9
53
N adj.=5.9
N eff.=22.2
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


54
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N eff.=59.8
58
N adj.=3.5
N eff.=53.7
62
N adj.=10.2
N eff.=117.4
66
N adj.=7
N eff.=50.9
55
N adj.=8.6
N eff.=181.1
59
N adj.=4.7
N eff.=55.3
63
N adj.=10.2
N eff.=316.2
67
N adj.=8.6
N eff.=92.8
56
N adj.=4.7
N eff.=108.8
60
N adj.=11.7
N eff.=503.6
64
N adj.=14.5
N eff.=189.2
68
N adj.=11.3
N eff.=123.1
57
N adj.=8.6
N eff.=113
61
N adj.=18.4
N eff.=185
65
N adj.=11.3
N eff.=154.7
69
N adj.=9.8
N eff.=233.3
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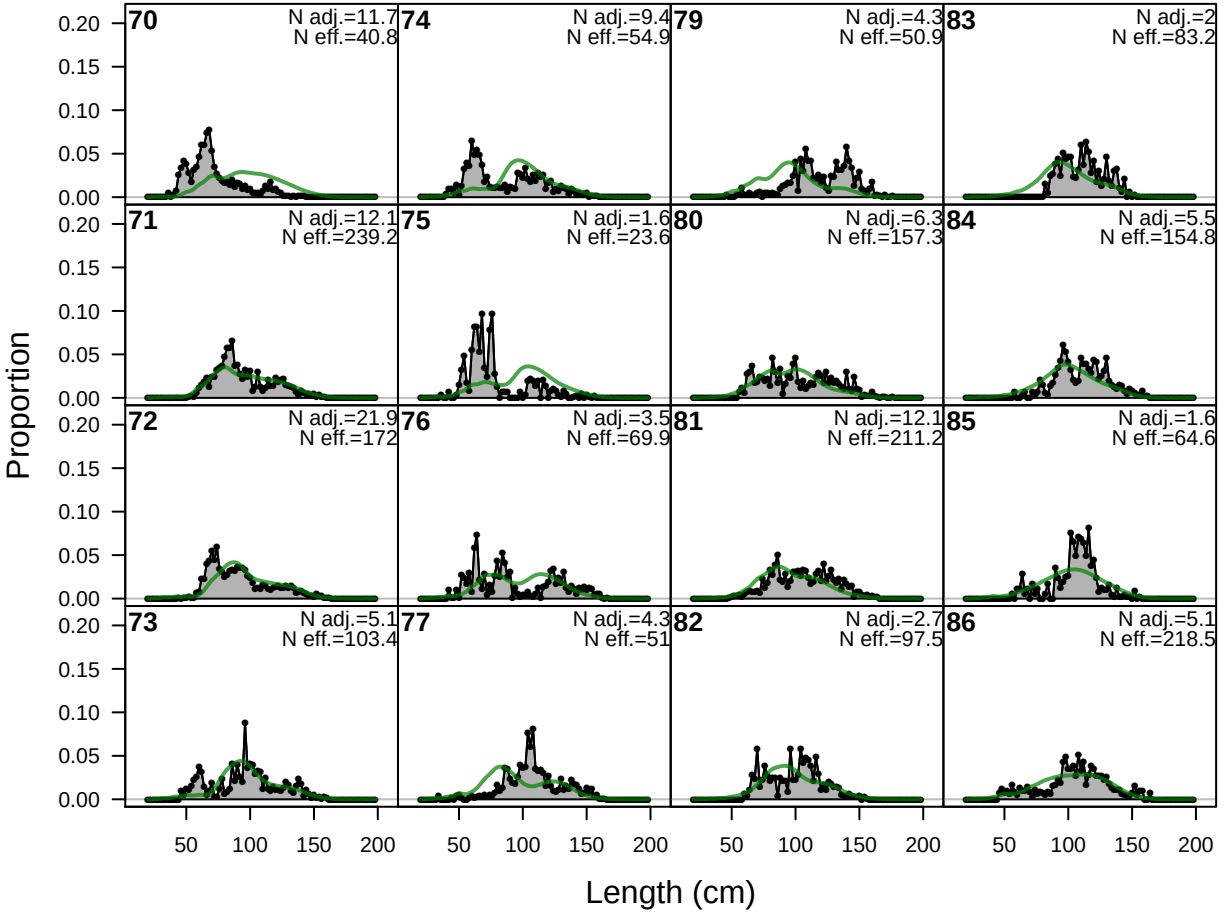
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


70
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N eff.=40.8
74
N adj.=9.4
N eff.=54.9
79
N adj.=4.3
N eff.=50.9
83
N adj.=2
N eff.=83.2
71
N adj.=12.1
N eff.=239.2
75
N adj.=1.6
N eff.=23.6
80
N adj.=6.3
N eff.=157.3
84
N adj.=5.5
N eff.=154.8
72
N adj.=21.9
N eff.=172
76
N adj.=3.5
N eff.=69.9
81
N adj.=12.1
N eff.=211.2
85
N adj.=1.6
N eff.=64.6
73
N adj.=5.1
N eff.=103.4
77
N adj.=4.3
N eff.=51
82
N adj.=2.7
N eff.=97.5
86
N adj.=5.1
N eff.=218.5
Proportion
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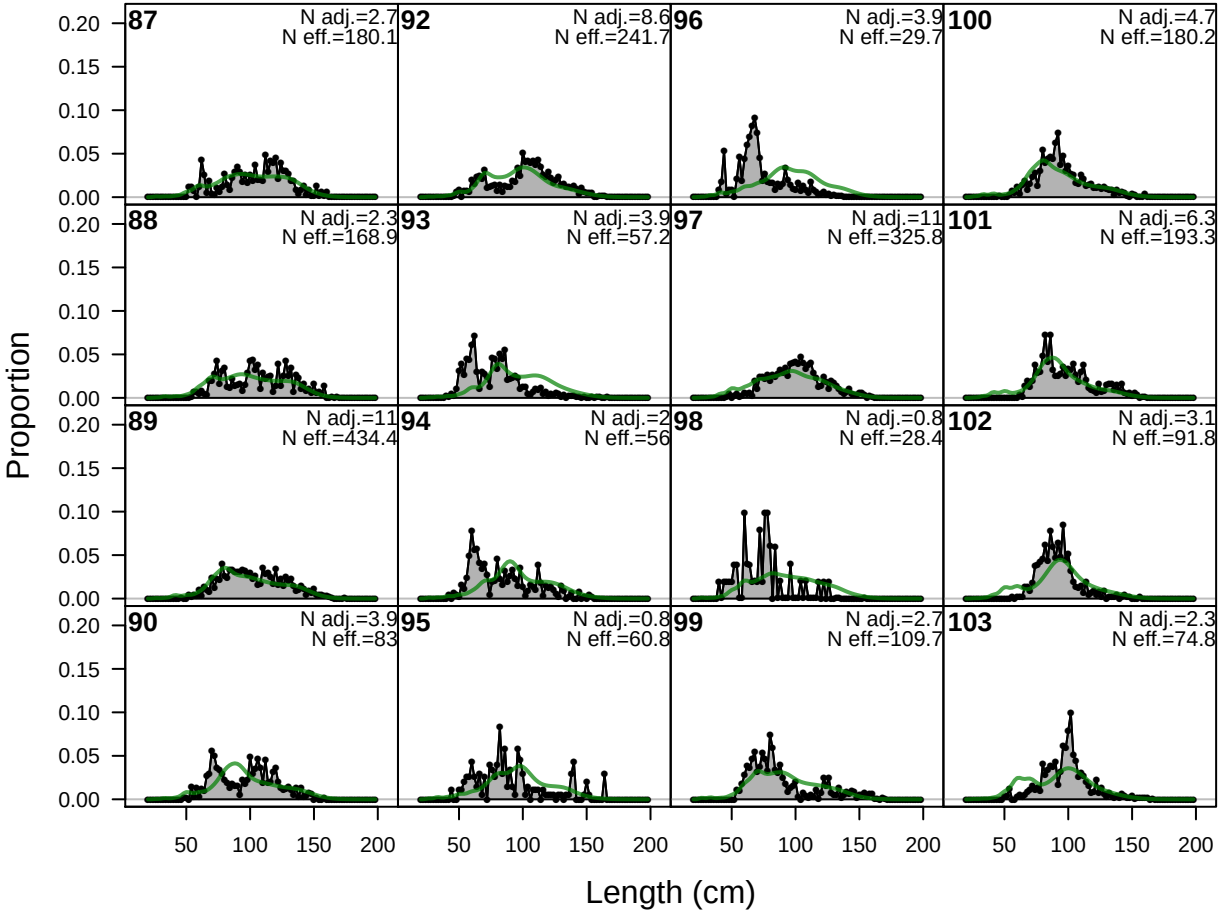
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


87
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N eff.=180.1
92
N adj.=8.6
N eff.=241.7
96
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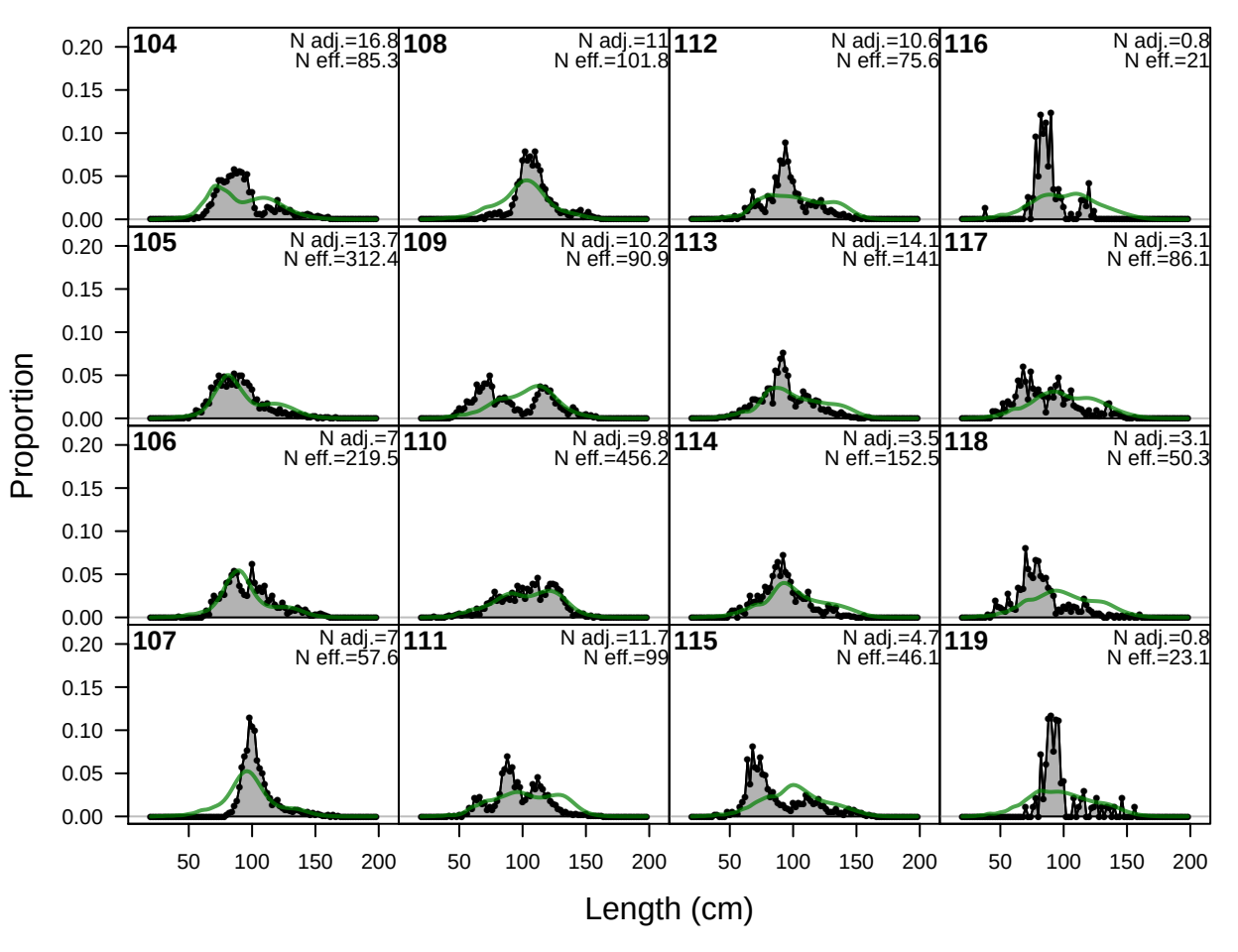
N eff.=29.7
100
N adj.=4.7
N eff.=180.2
88
N adj.=2.3
N eff.=168.9
93
N adj.=3.9
N eff.=57.2
97
N adj.=11
N eff.=325.8
101
N adj.=6.3
N eff.=193.3
89
N adj.=11
N eff.=434.4
94
N adj.=2
N eff.=56
98
N adj.=0.8
N eff.=28.4
102
N adj.=3.1
N eff.=91.8
90
N adj.=3.9
N eff.=83
95
N adj.=0.8
N eff.=60.8
99
N adj.=2.7
N eff.=109.7
103
N adj.=2.3
N eff.=74.8
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


104
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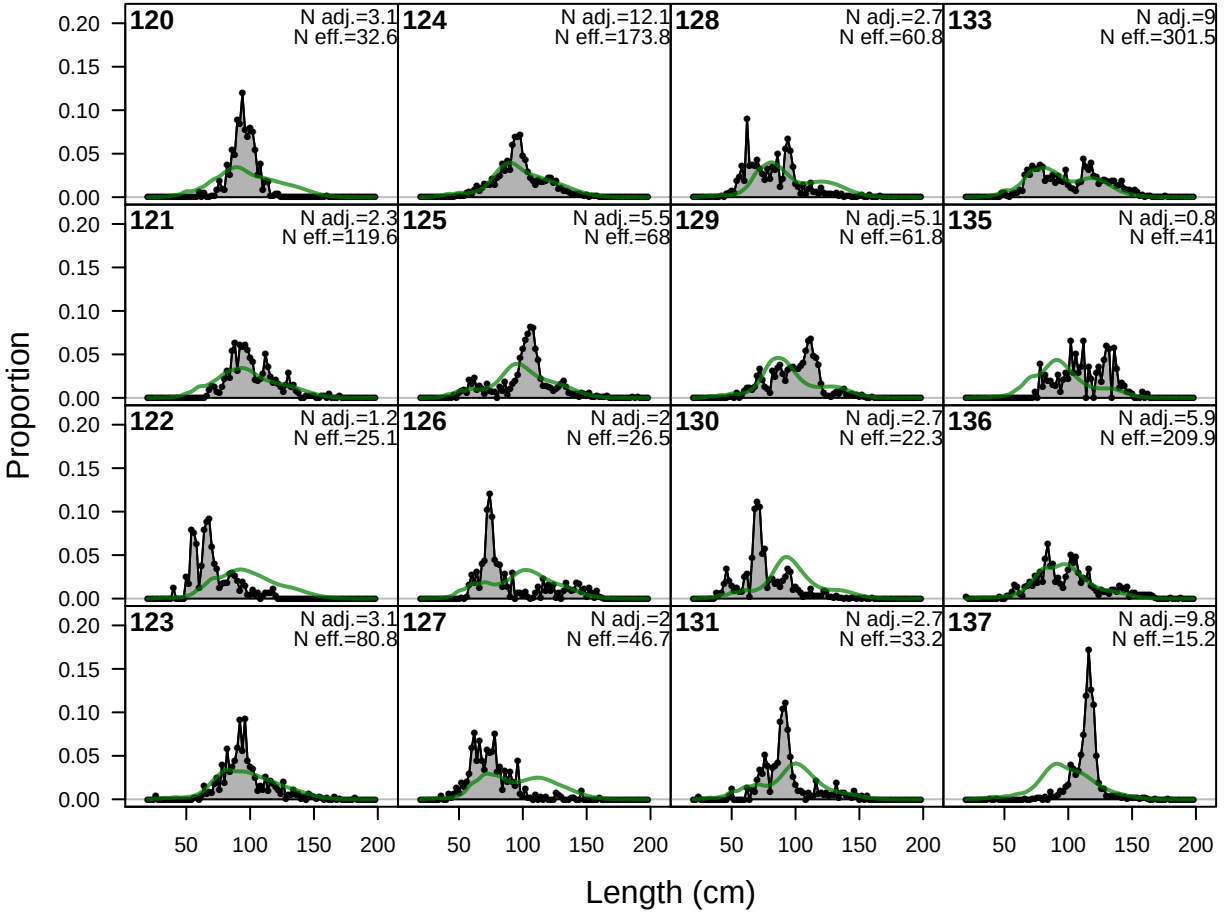
N eff.=85.3
108
N adj.=11
N eff.=101.8
112
N adj.=10.6
N eff.=75.6
116
N adj.=0.8
N eff.=21
105
N adj.=13.7
N eff.=312.4
109
N adj.=10.2
N eff.=90.9
113
N adj.=14.1
N eff.=141
117
N adj.=3.1
N eff.=86.1
106
N adj.=7
N eff.=219.5
110
N adj.=9.8
N eff.=456.2
114
N adj.=3.5
N eff.=152.5
118
N adj.=3.1
N eff.=50.3
107
N adj.=7
N eff.=57.6
111
N adj.=11.7
N eff.=99
115
N adj.=4.7
N eff.=46.1
119
N adj.=0.8
N eff.=23.1
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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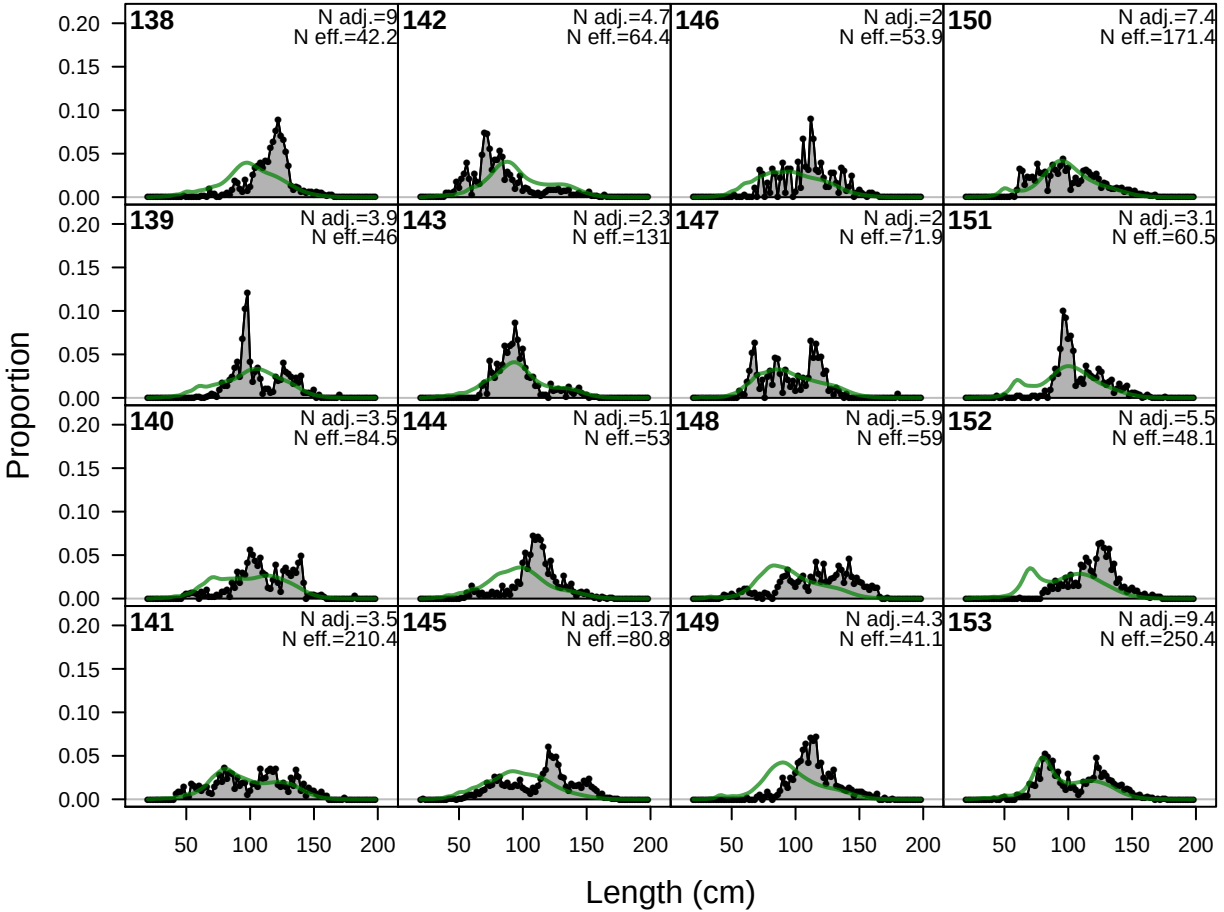
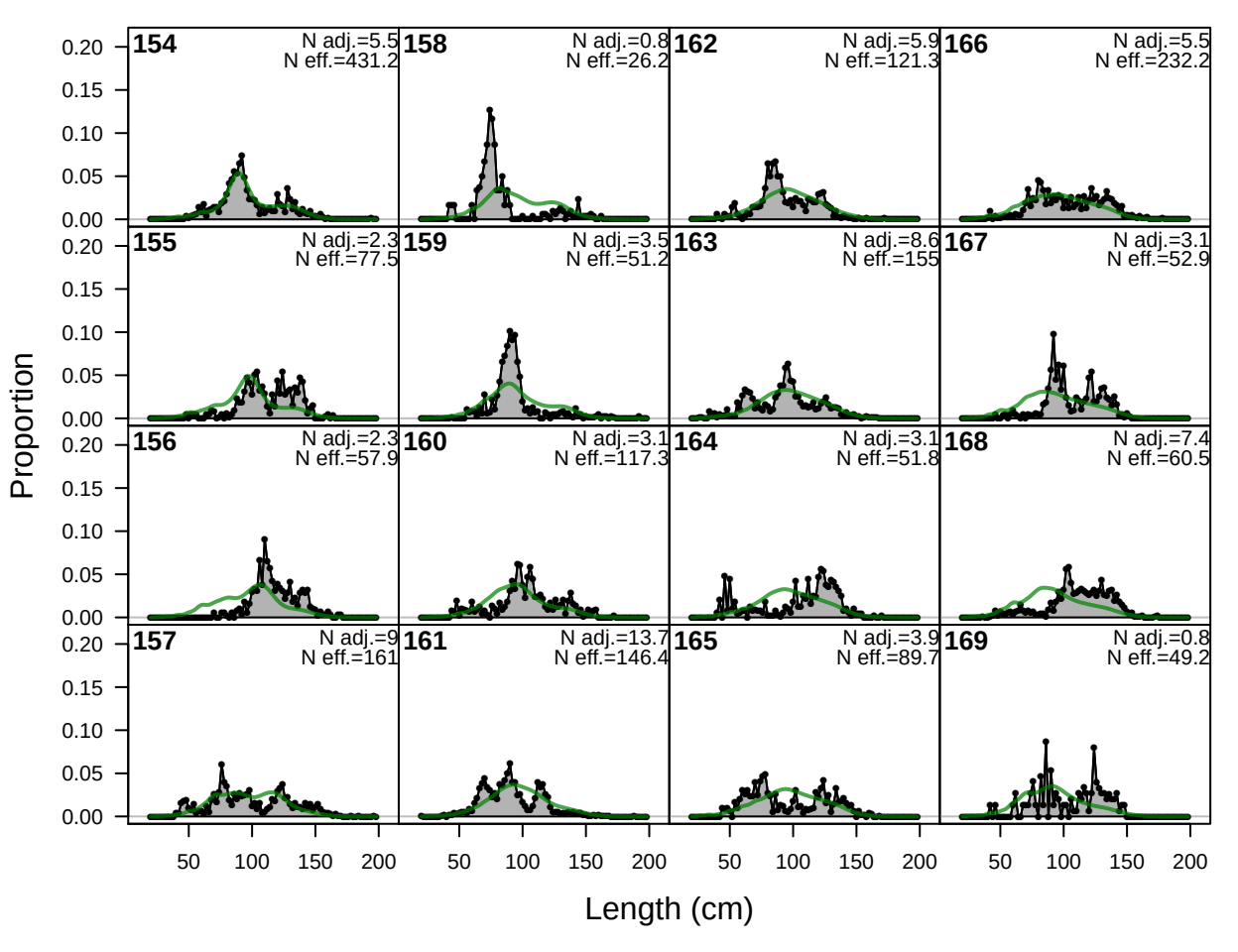
N eff.=32.6
124
N adj.=12.1
N eff.=173.8
128
N adj.=2.7
N eff.=60.8
133
N adj.=9
N eff.=301.5
121
N adj.=2.3
N eff.=119.6
125
N adj.=5.5
N eff.=68
129
N adj.=5.1
N eff.=61.8
135
N adj.=0.8
N eff.=41
122
N adj.=1.2
N eff.=25.1
126
N adj.=2
N eff.=26.5
130
N adj.=2.7
N eff.=22.3
136
N adj.=5.9
N eff.=209.9
123
N adj.=3.1
N eff.=80.8
127
N adj.=2
N eff.=46.7
131
N adj.=2.7
N eff.=33.2
137
N adj.=9.8
N eff.=15.2
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


138
N adj.=9
N eff.=42.2
142
N adj.=4.7
N eff.=64.4
146
N adj.=2
N eff.=53.9
150
N adj.=7.4
N eff.=171.4
139
N adj.=3.9
N eff.=46
143
N adj.=2.3
N eff.=131
147
N adj.=2
N eff.=71.9
151
N adj.=3.1
N eff.=60.5
140
N adj.=3.5
N eff.=84.5
144
N adj.=5.1
N eff.=53
148
N adj.=5.9
N eff.=59
152
N adj.=5.5
N eff.=48.1
141
N adj.=3.5
N eff.=210.4
145
N adj.=13.7
N eff.=80.8
149
N adj.=4.3
N eff.=41.1
153
N adj.=9.4
N eff.=250.4
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Proportion
Length (cm)


154
N adj.=5.5
N eff.=431.2
158
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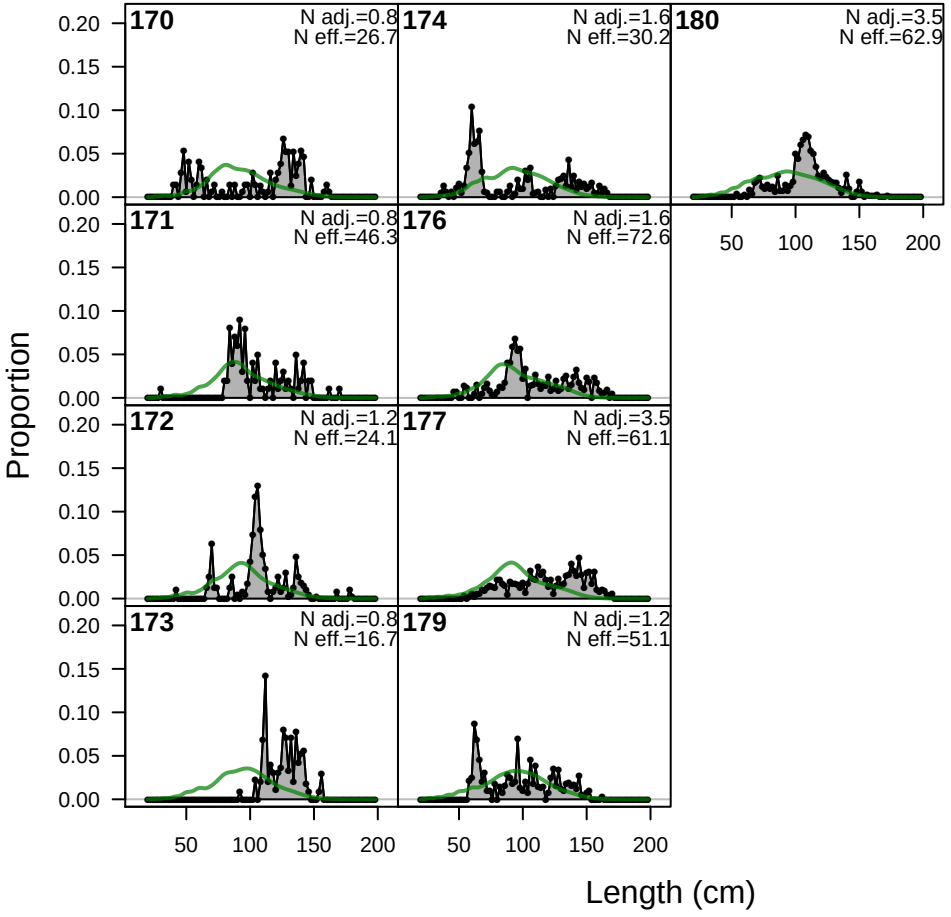
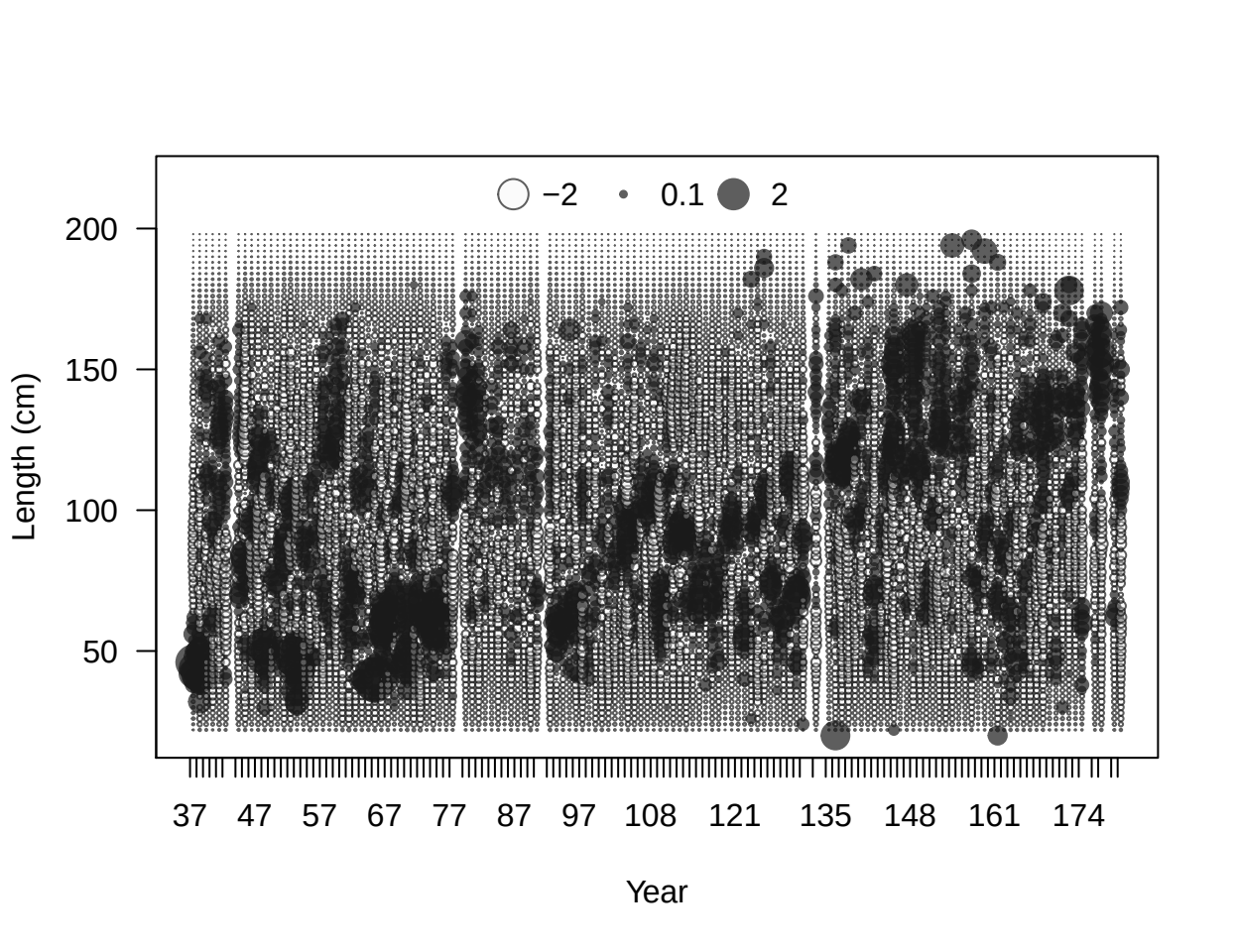
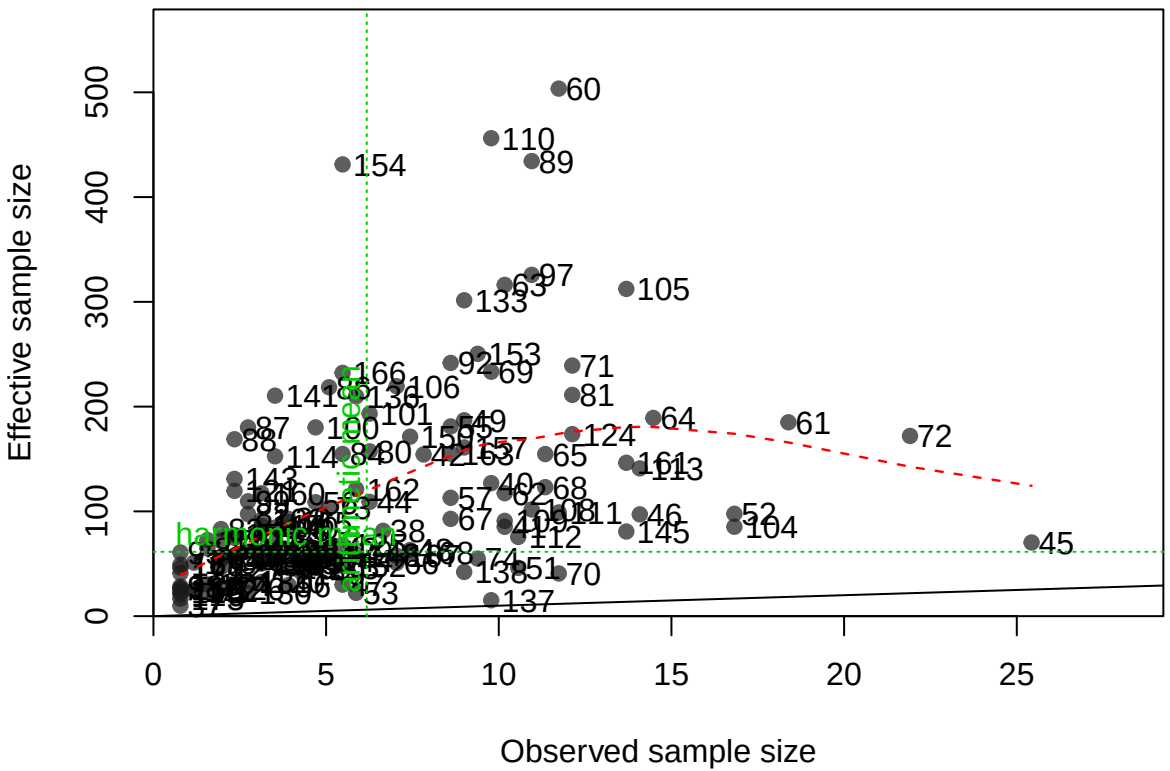
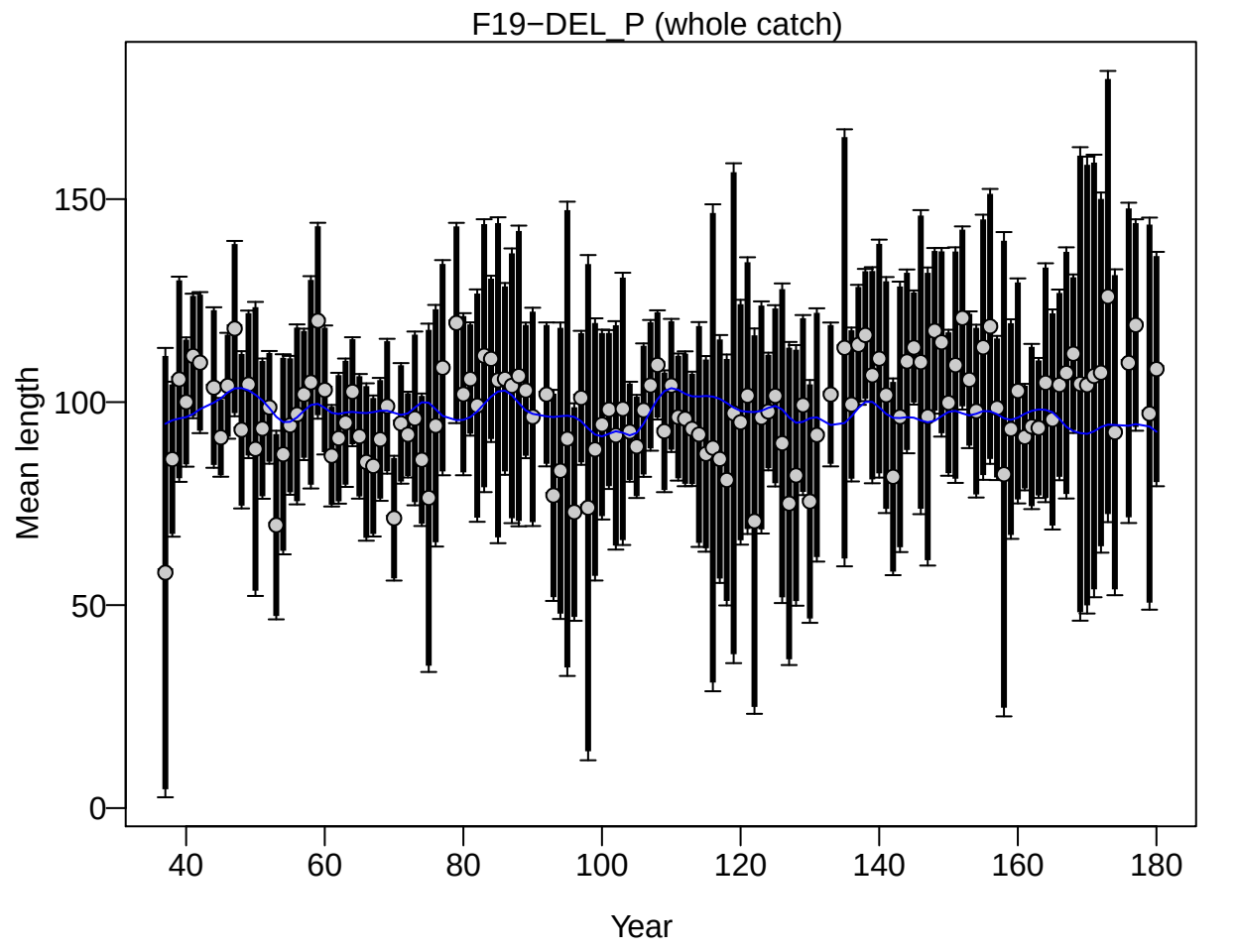
N eff.=26.2
162
N adj.=5.9
N eff.=121.3
166
N adj.=5.5
N eff.=232.2
155
N adj.=2.3
N eff.=77.5
159
N adj.=3.5
N eff.=51.2
163
N adj.=8.6
N eff.=155
167
N adj.=3.1
N eff.=52.9
156
N adj.=2.3
N eff.=57.9
160
N adj.=3.1
N eff.=117.3
164
N adj.=3.1
N eff.=51.8
168
N adj.=7.4
N eff.=60.5
157
N adj.=9
N eff.=161
161
N adj.=13.7
N eff.=146.4
165
N adj.=3.9
N eff.=89.7
169
N adj.=0.8
N eff.=49.2
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)

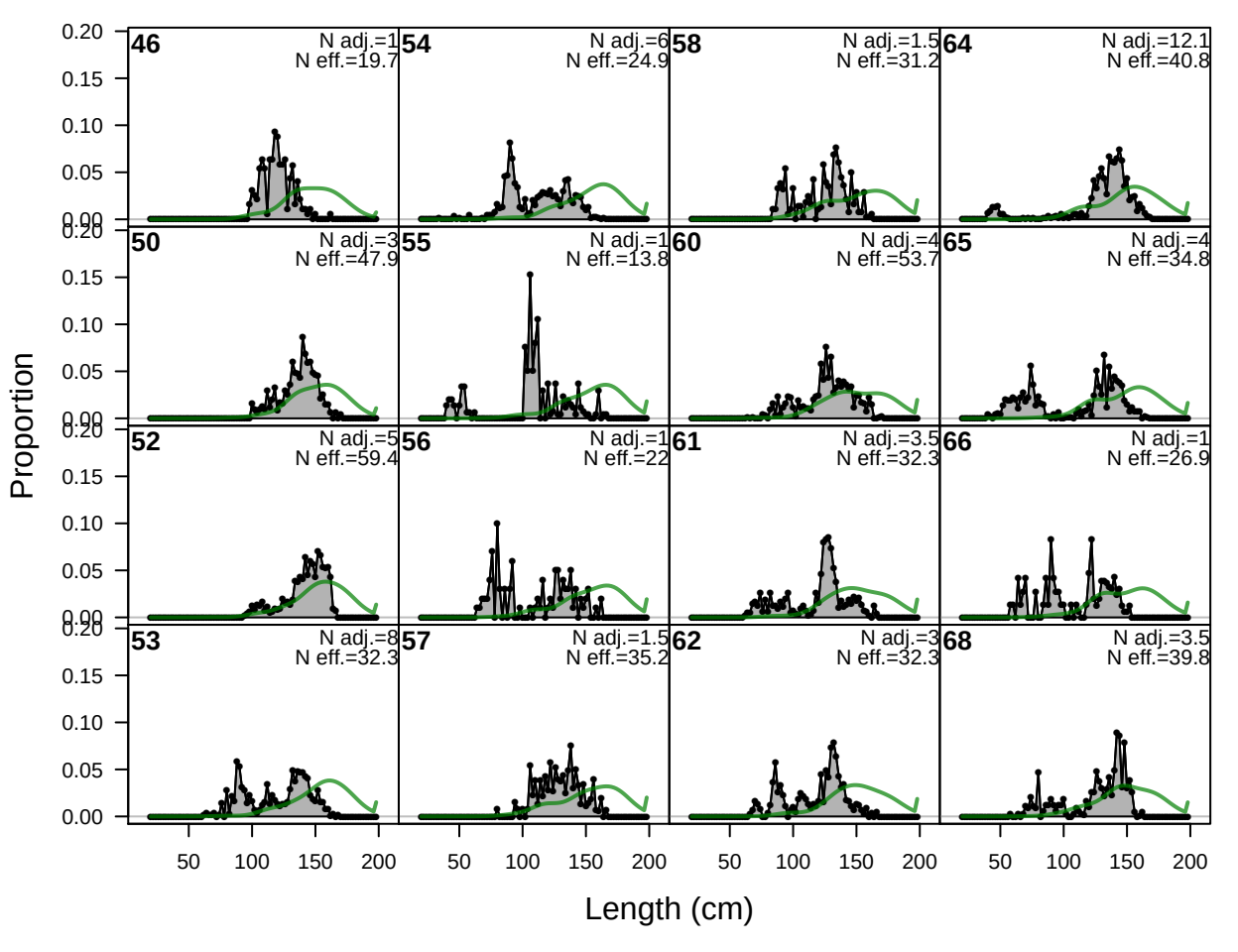

170
N adj.=0.8
N eff.=26.7
174
N adj.=1.6
N eff.=30.2
180
N adj.=3.5
N eff.=62.9
171
N adj.=0.8
N eff.=46.3
176
N adj.=1.6
N eff.=72.6
172
N adj.=1.2
N eff.=24.1
177
N adj.=3.5
N eff.=61.1
173
N adj.=0.8
N eff.=16.7
179
N adj.=1.2
N eff.=51.1
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Proportion
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
37
47
57
67
77
87
97
108
121
135
148
161
174
Year



Effective sample size
Observed sample size
0
100
200
300
400
500
0
5
10
15
20
25
harmonic mean


F19−DEL_P (whole catch)
Mean length
150
100
50
0
40
60
80
100
120
140
160
180
Year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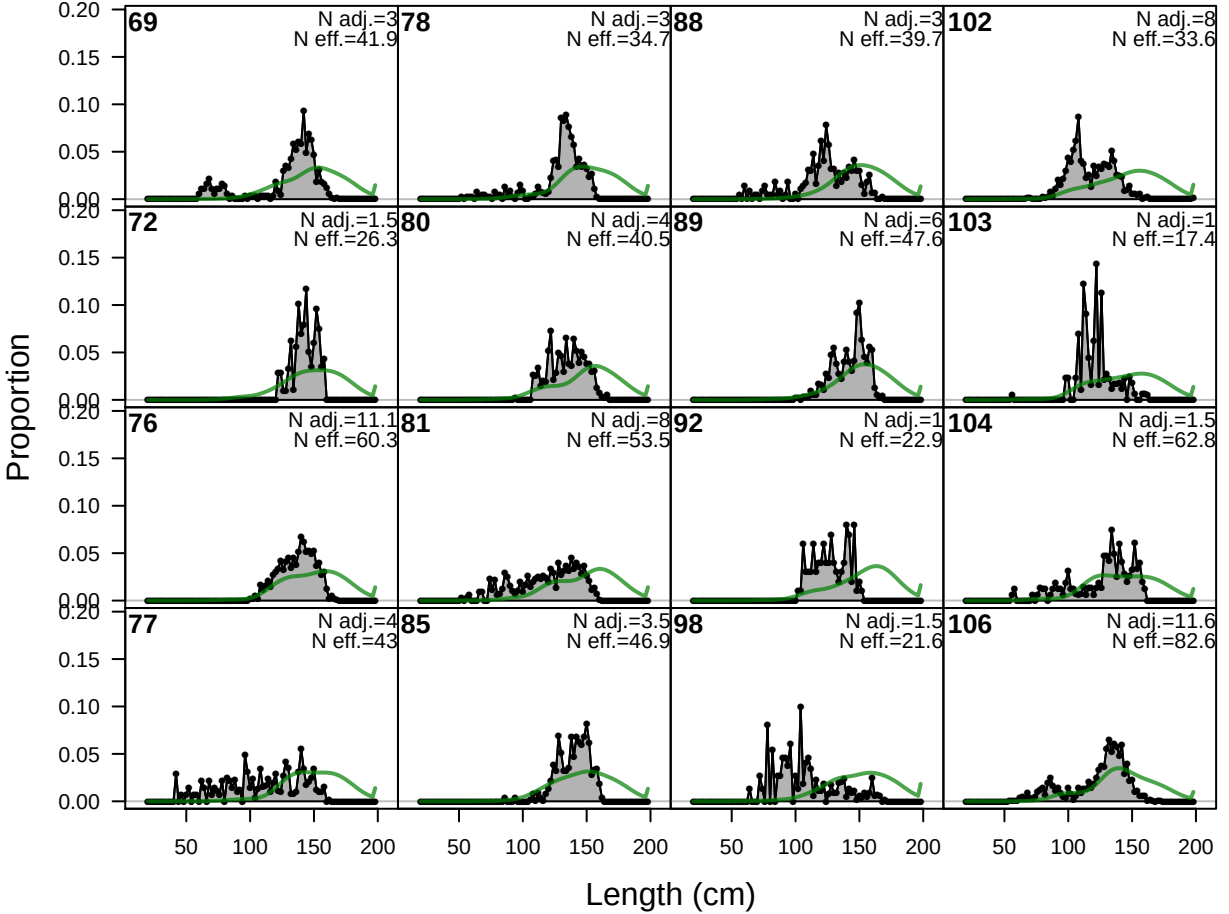
N eff.=19.7
54
N adj.=6
N eff.=24.9
58
N adj.=1.5
N eff.=31.2
64
N adj.=12.1
N eff.=40.8
50
N adj.=3
N eff.=47.9
55
N adj.=1
N eff.=13.8
60
N adj.=4
N eff.=53.7
65
N adj.=4
N eff.=34.8
52
N adj.=5
N eff.=59.4
56
N adj.=1
N eff.=22
61
N adj.=3.5
N eff.=32.3
66
N adj.=1
N eff.=26.9
53
N adj.=8
N eff.=32.3
57
N adj.=1.5
N eff.=35.2
62
N adj.=3
N eff.=32.3
68
N adj.=3.5
N eff.=39.8
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


69
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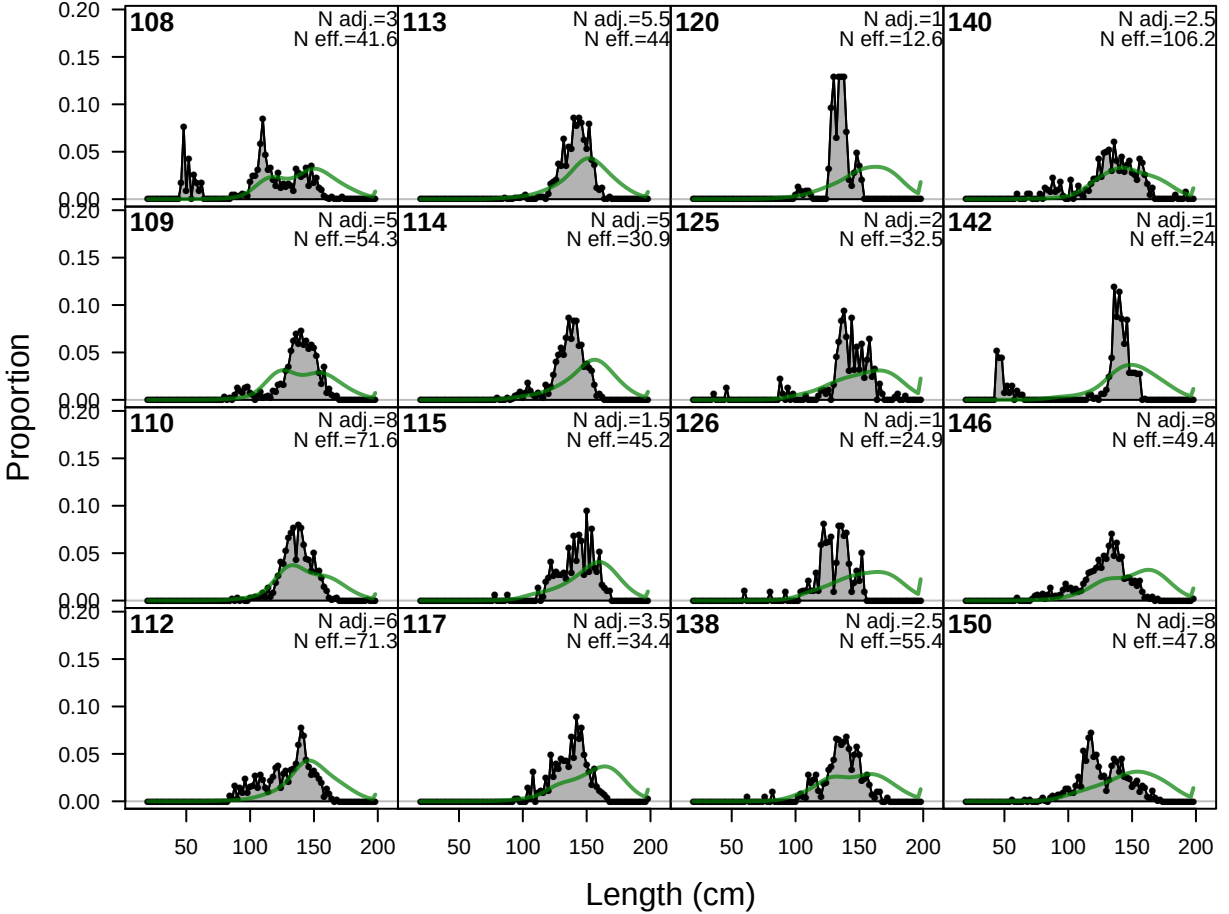
N eff.=41.9
78
N adj.=3
N eff.=34.7
88
N adj.=3
N eff.=39.7
102
N adj.=8
N eff.=33.6
72
N adj.=1.5
N eff.=26.3
80
N adj.=4
N eff.=40.5
89
N adj.=6
N eff.=47.6
103
N adj.=1
N eff.=17.4
76
N adj.=11.1
N eff.=60.3
81
N adj.=8
N eff.=53.5
92
N adj.=1
N eff.=22.9
104
N adj.=1.5
N eff.=62.8
77
N adj.=4
N eff.=43
85
N adj.=3.5
N eff.=46.9
98
N adj.=1.5
N eff.=21.6
106
N adj.=11.6
N eff.=82.6
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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N eff.=41.6
113
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N eff.=44
120
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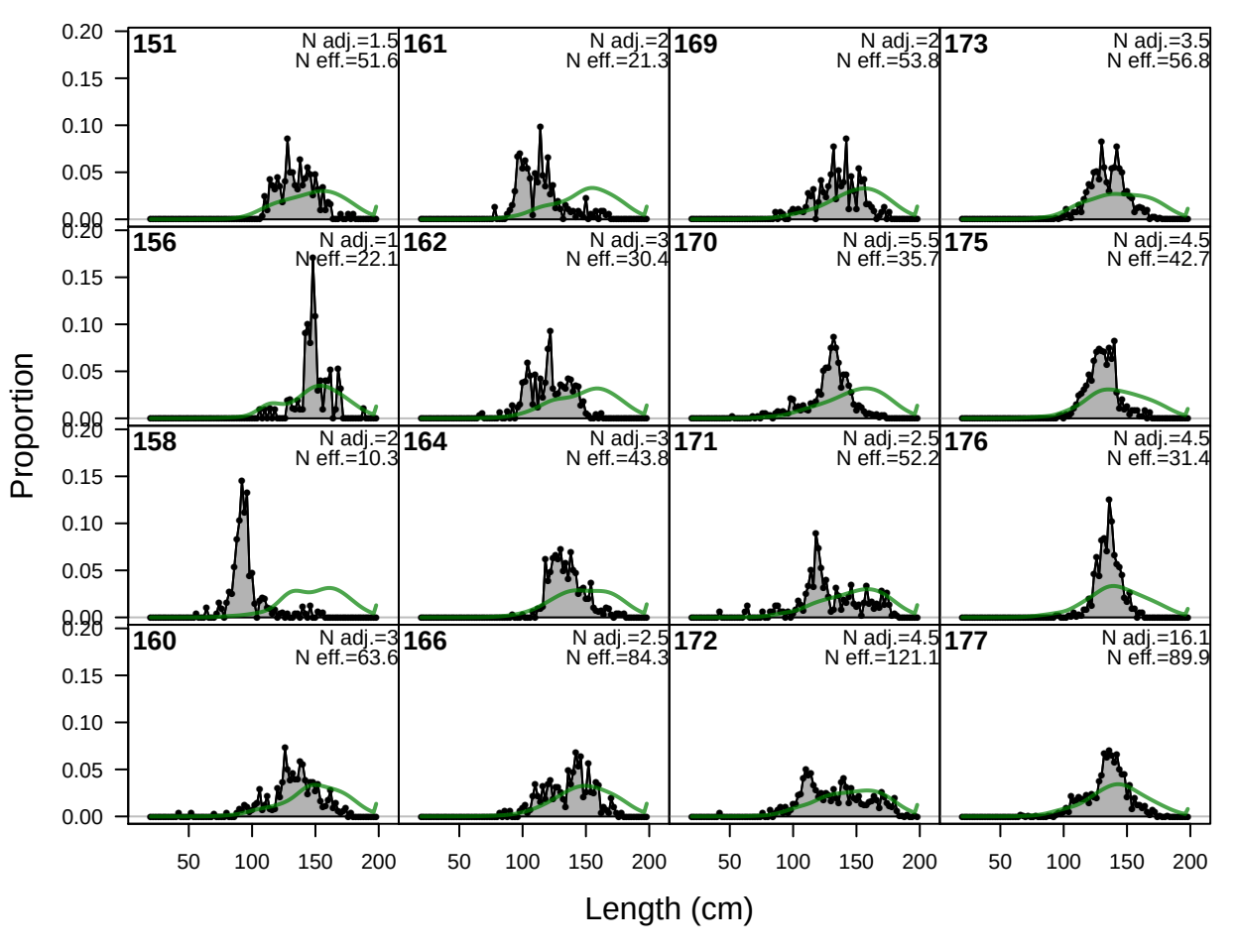
140
N adj.=2.5
N eff.=106.2
109
N adj.=5
N eff.=54.3
114
N adj.=5
N eff.=30.9
125
N adj.=2
N eff.=32.5
142
N adj.=1
N eff.=24
110
N adj.=8
N eff.=71.6
115
N adj.=1.5
N eff.=45.2
126
N adj.=1
N eff.=24.9
146
N adj.=8
N eff.=49.4
112
N adj.=6
N eff.=71.3
117
N adj.=3.5
N eff.=34.4
138
N adj.=2.5
N eff.=55.4
150
N adj.=8
N eff.=47.8
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)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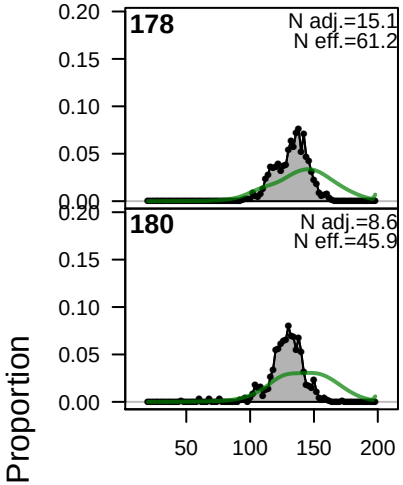
N eff.=51.6
161
N adj.=2
N eff.=21.3
169
N adj.=2
N eff.=53.8
173
N adj.=3.5
N eff.=56.8
156
N adj.=1
N eff.=22.1
162
N adj.=3
N eff.=30.4
170
N adj.=5.5
N eff.=35.7
175
N adj.=4.5
N eff.=42.7
158
N adj.=2
N eff.=10.3
164
N adj.=3
N eff.=43.8
171
N adj.=2.5
N eff.=52.2
176
N adj.=4.5
N eff.=31.4
160
N adj.=3
N eff.=63.6
166
N adj.=2.5
N eff.=84.3
172
N adj.=4.5
N eff.=121.1
177
N adj.=16.1
N eff.=89.9
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)


178
N adj.=15.1
N eff.=61.2
180
N adj.=8.6
N eff.=45.9
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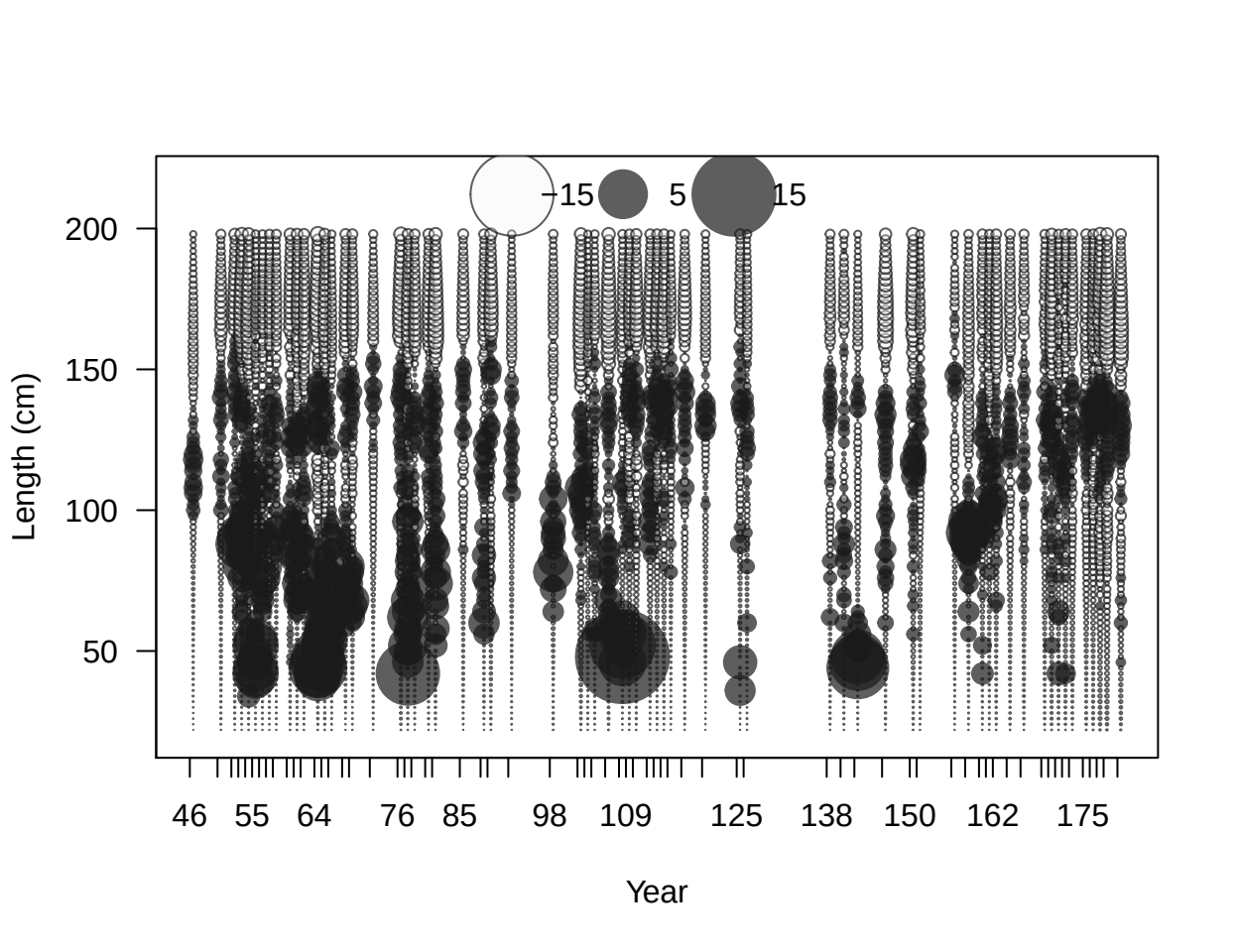
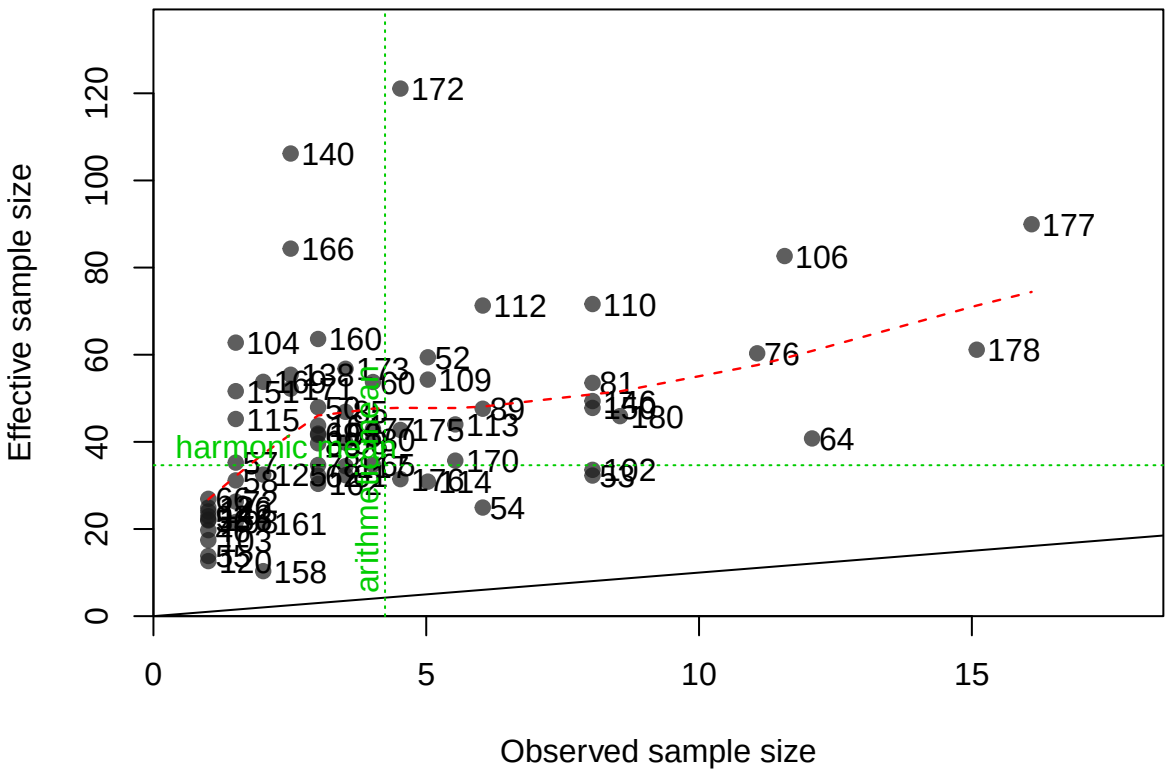
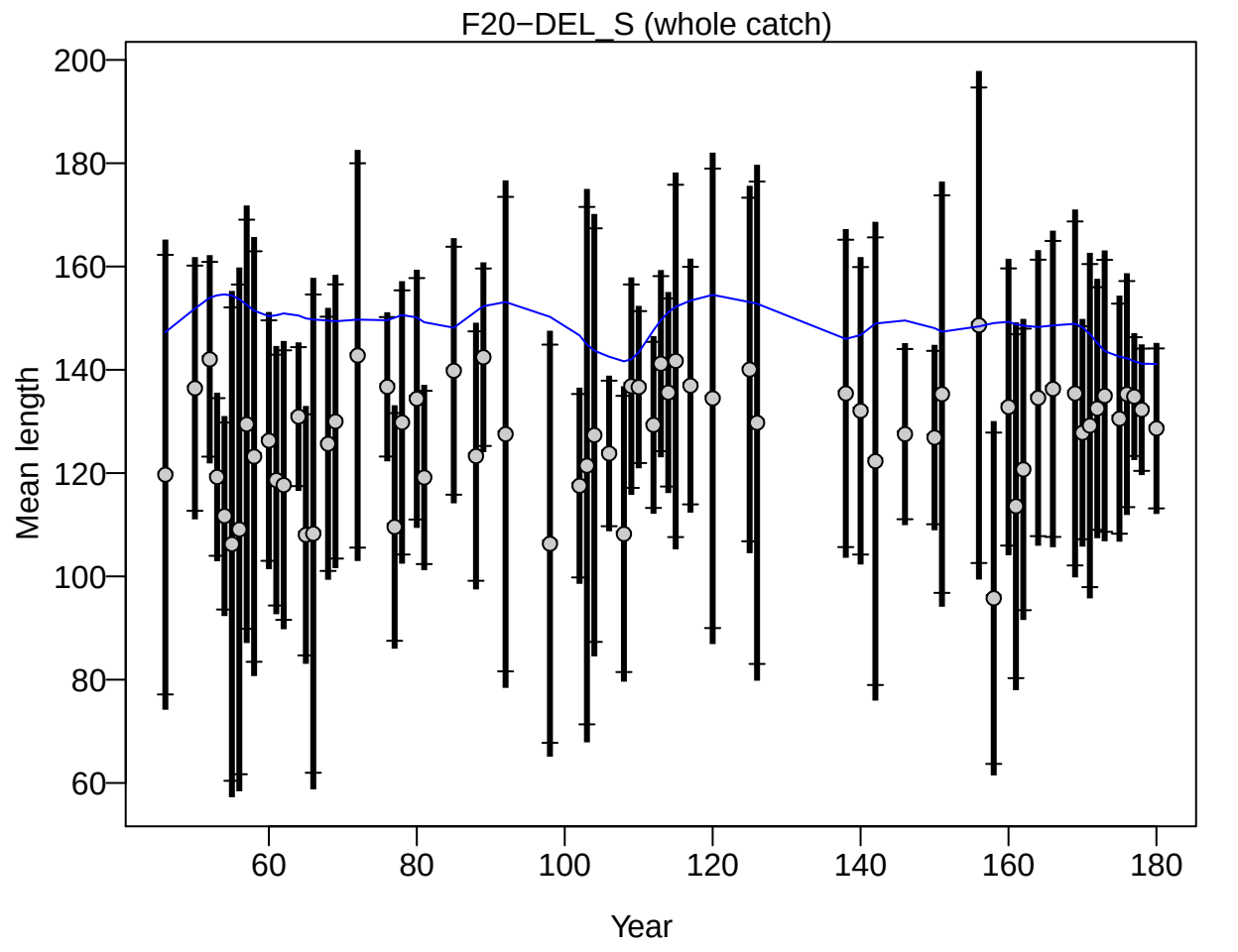
0.15
0.10
0.05
0.00
50
100
150
200
Proportion

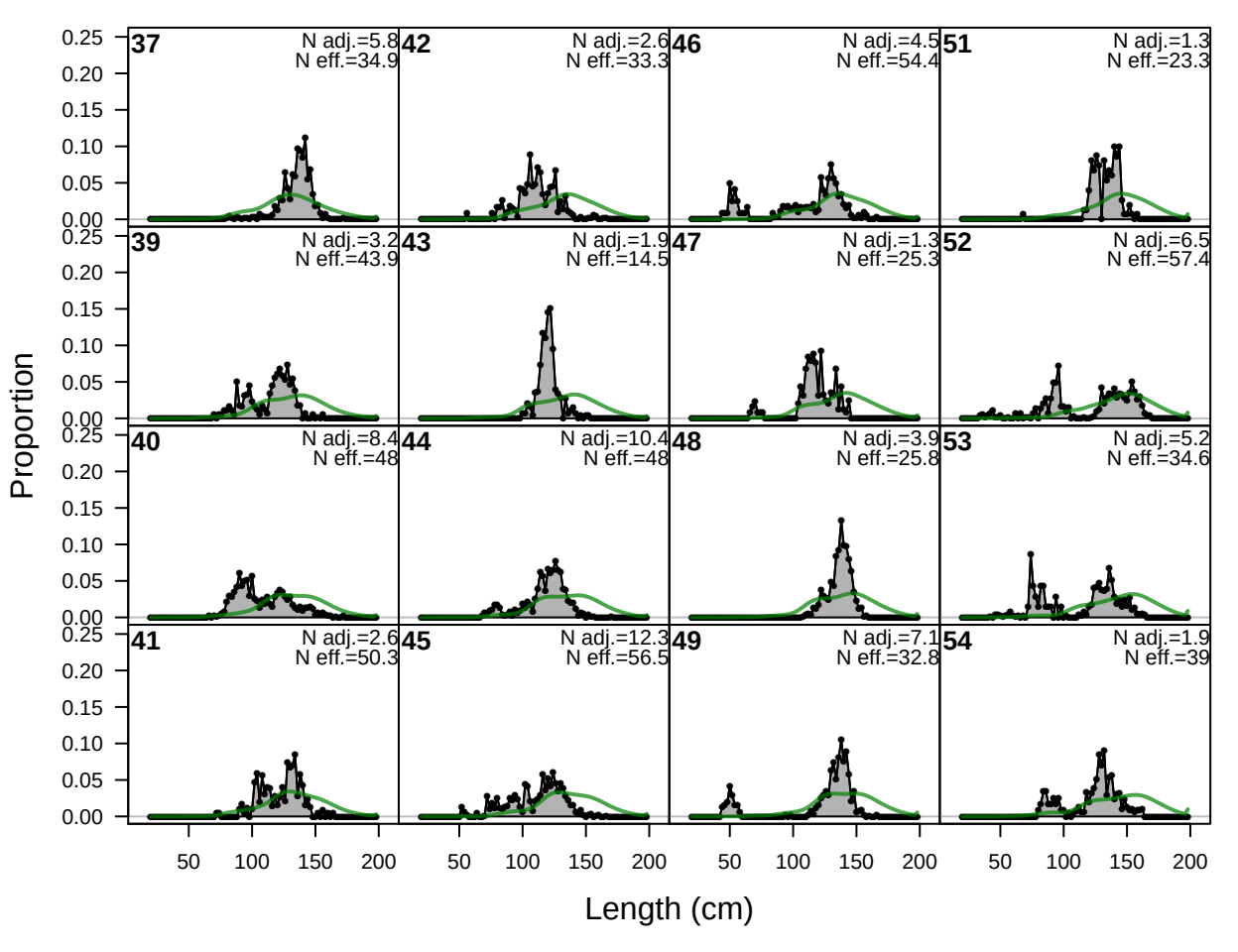
Length (cm)


15
5
15
200
150
100
50
Length (cm)
46
55
64
76
85
98
109
125
138
150
162
175
Year



Effective sample size
Observed sample size
0
20
40
60
80
100
120
0
5
10
15
172
140
166
177
106
112
110
104
160
52
76
178
109
81
115
89
113
180
64
170
102
54
161
158


F20−DEL_S (whole catch)
Mean length
Year
200
180
160
140
120
100
80
60
60
80
100
120
140
160
180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N adj.=5.8
N eff.=34.9
42
N adj.=2.6
N eff.=33.3
46
N adj.=4.5
N eff.=54.4
51
N adj.=1.3
N eff.=23.3
39
N adj.=3.2
N eff.=43.9
43
N adj.=1.9
N eff.=14.5
47
N adj.=1.3
N eff.=25.3
52
N adj.=6.5
N eff.=57.4
40
N adj.=8.4
N eff.=48
44
N adj.=10.4
N eff.=48
48
N adj.=3.9
N eff.=25.8
53
N adj.=5.2
N eff.=34.6
41
N adj.=2.6
N eff.=50.3
45
N adj.=12.3
N eff.=56.5
49
N adj.=7.1
N eff.=32.8
54
N adj.=1.9
N eff.=39
Proportion
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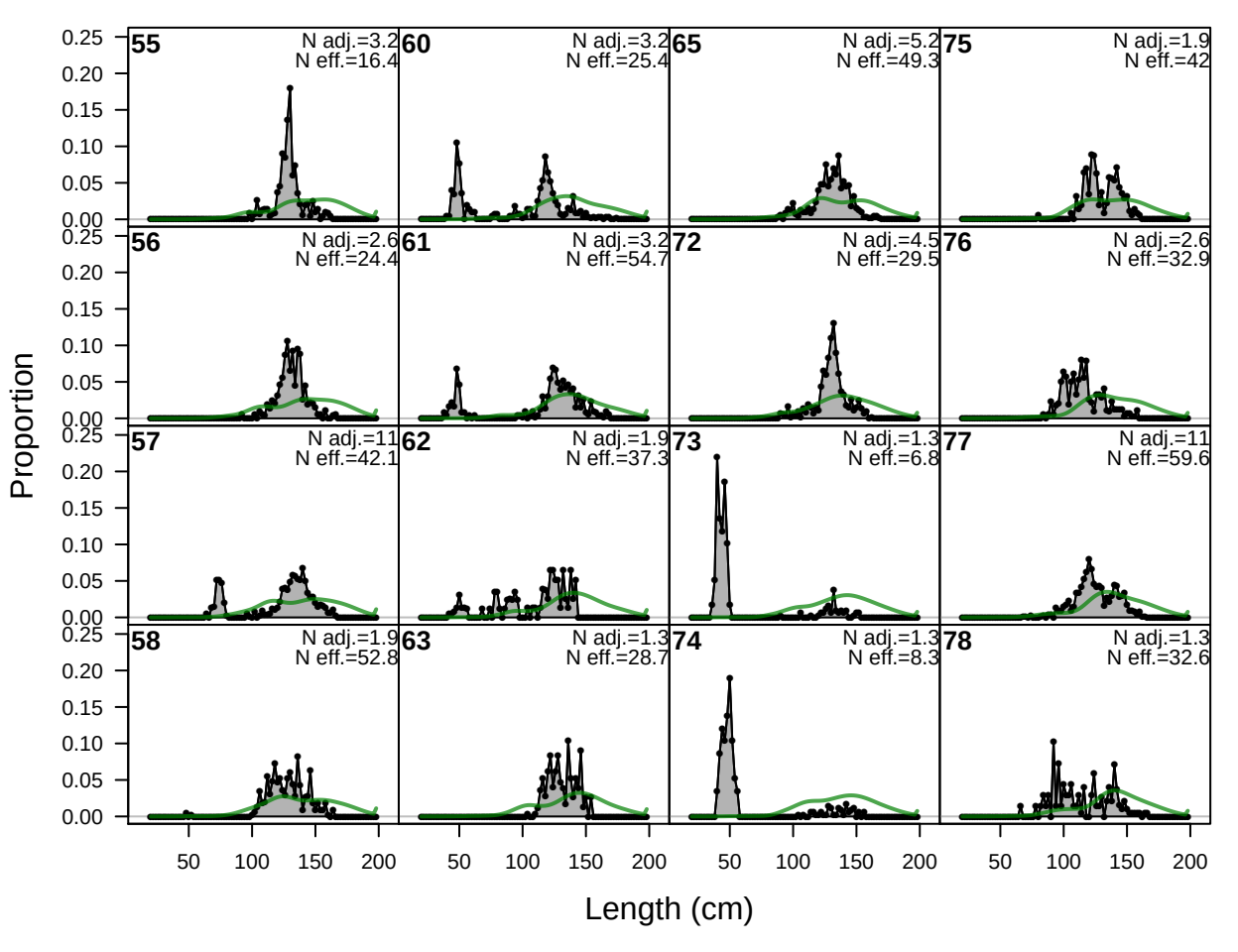
0.20
0.15
0.10
0.05
0.00
50
100
150
200
Length (cm)


55
N adj.=3.2
N eff.=16.4
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N eff.=25.4
65
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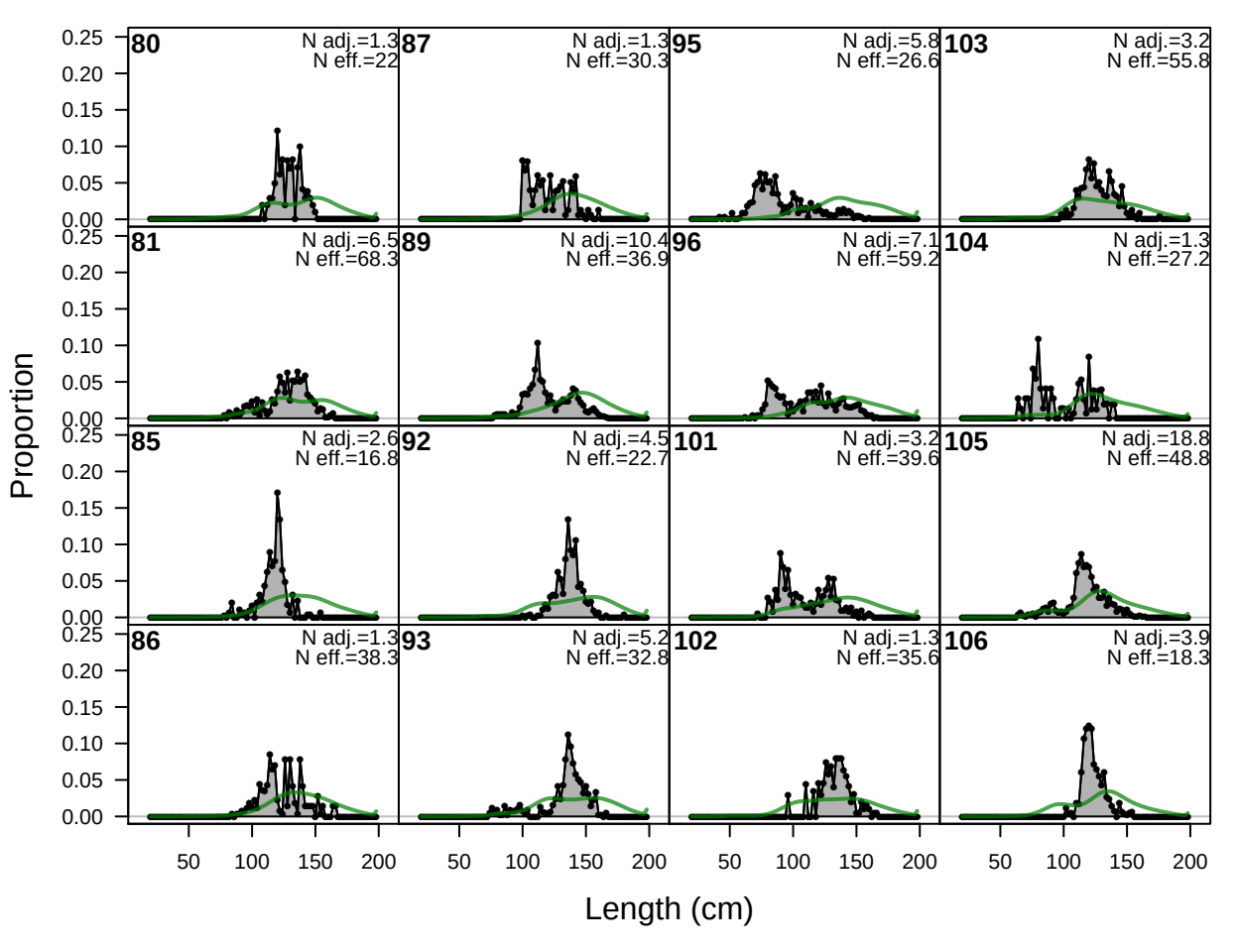
N eff.=49.3
75
N adj.=1.9
N eff.=42
56
N adj.=2.6
N eff.=24.4
61
N adj.=3.2
N eff.=54.7
72
N adj.=4.5
N eff.=29.5
76
N adj.=2.6
N eff.=32.9
57
N adj.=11
N eff.=42.1
62
N adj.=1.9
N eff.=37.3
73
N adj.=1.3
N eff.=6.8
77
N adj.=11
N eff.=59.6
58
N adj.=1.9
N eff.=52.8
63
N adj.=1.3
N eff.=28.7
74
N adj.=1.3
N eff.=8.3
78
N adj.=1.3
N eff.=32.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)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N eff.=22
87
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N eff.=30.3
95
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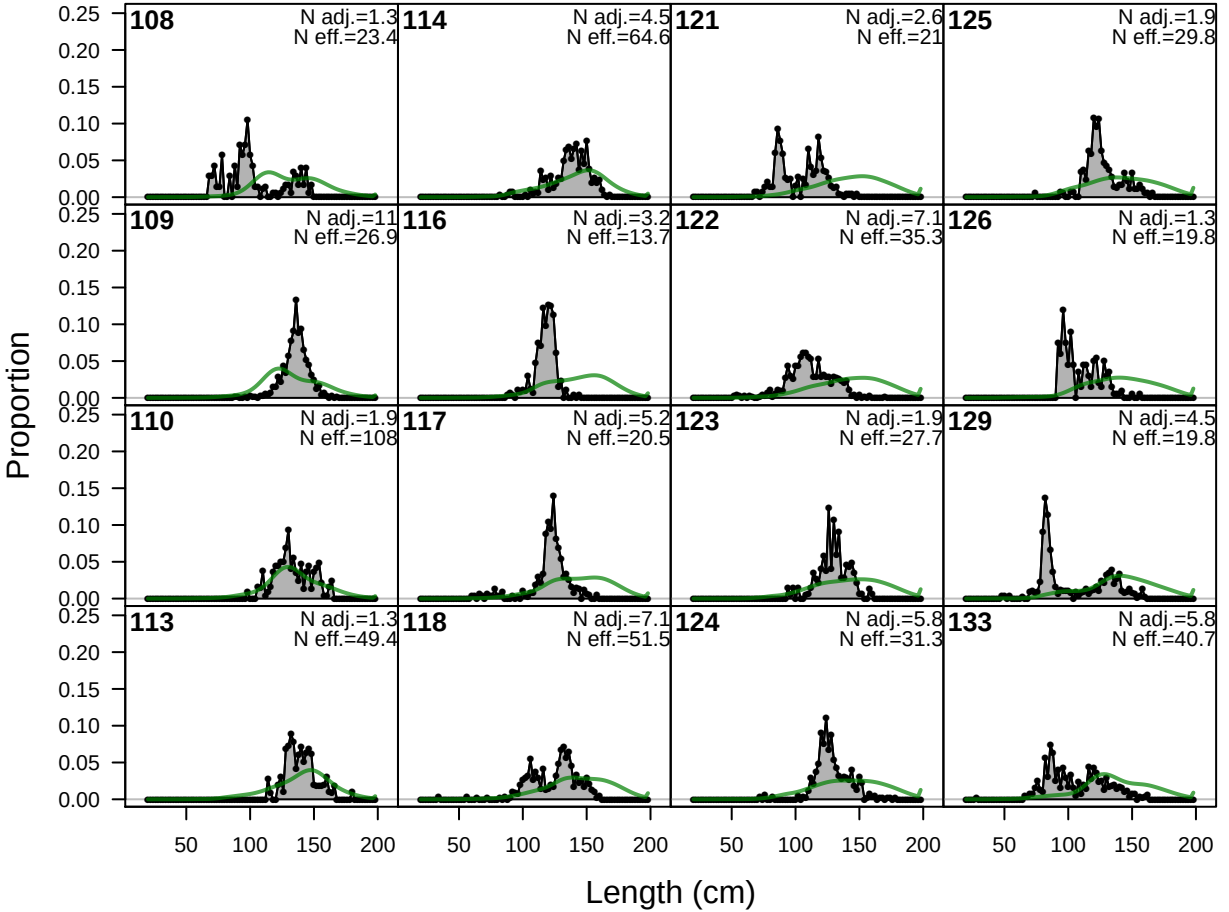
N eff.=26.6
103
N adj.=3.2
N eff.=55.8
81
N adj.=6.5
N eff.=68.3
89
N adj.=10.4
N eff.=36.9
96
N adj.=7.1
N eff.=59.2
104
N adj.=1.3
N eff.=27.2
85
N adj.=2.6
N eff.=16.8
92
N adj.=4.5
N eff.=22.7
101
N adj.=3.2
N eff.=39.6
105
N adj.=18.8
N eff.=48.8
86
N adj.=1.3
N eff.=38.3
93
N adj.=5.2
N eff.=32.8
102
N adj.=1.3
N eff.=35.6
106
N adj.=3.9
N eff.=18.3
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)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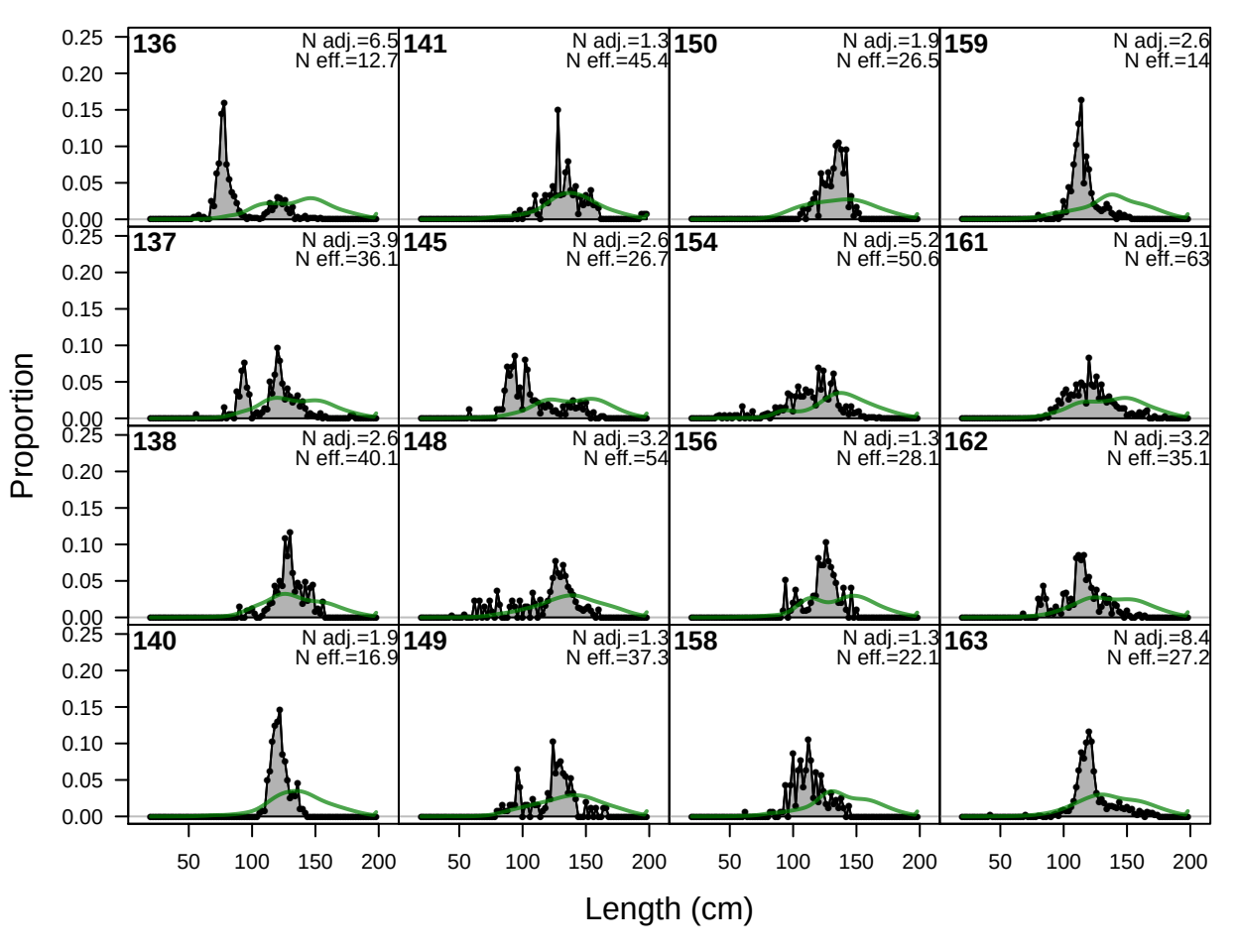
N eff.=23.4
114
N adj.=4.5
N eff.=64.6
121
N adj.=2.6
N eff.=21
125
N adj.=1.9
N eff.=29.8
109
N adj.=11
N eff.=26.9
116
N adj.=3.2
N eff.=13.7
122
N adj.=7.1
N eff.=35.3
126
N adj.=1.3
N eff.=19.8
110
N adj.=1.9
N eff.=108
117
N adj.=5.2
N eff.=20.5
123
N adj.=1.9
N eff.=27.7
129
N adj.=4.5
N eff.=19.8
113
N adj.=1.3
N eff.=49.4
118
N adj.=7.1
N eff.=51.5
124
N adj.=5.8
N eff.=31.3
133
N adj.=5.8
N eff.=40.7
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)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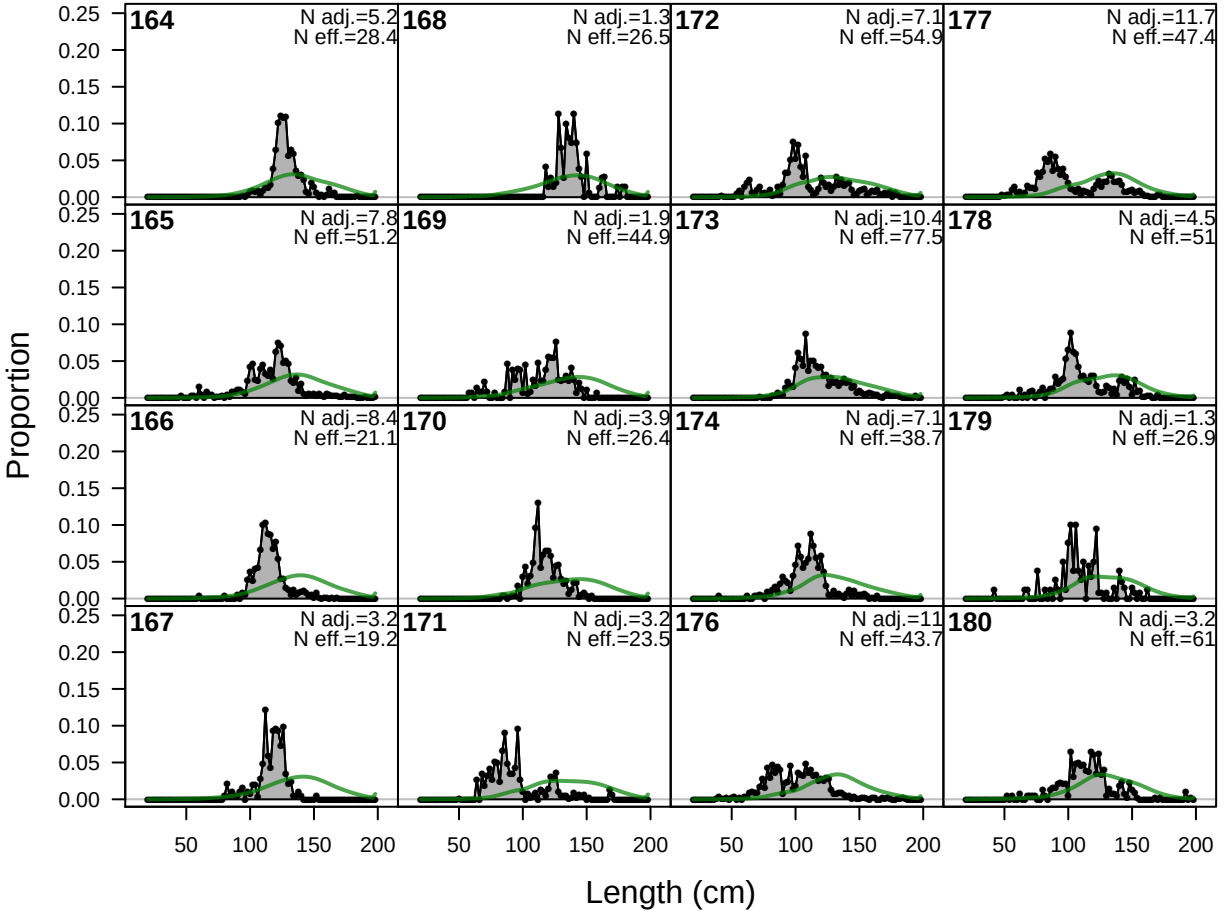
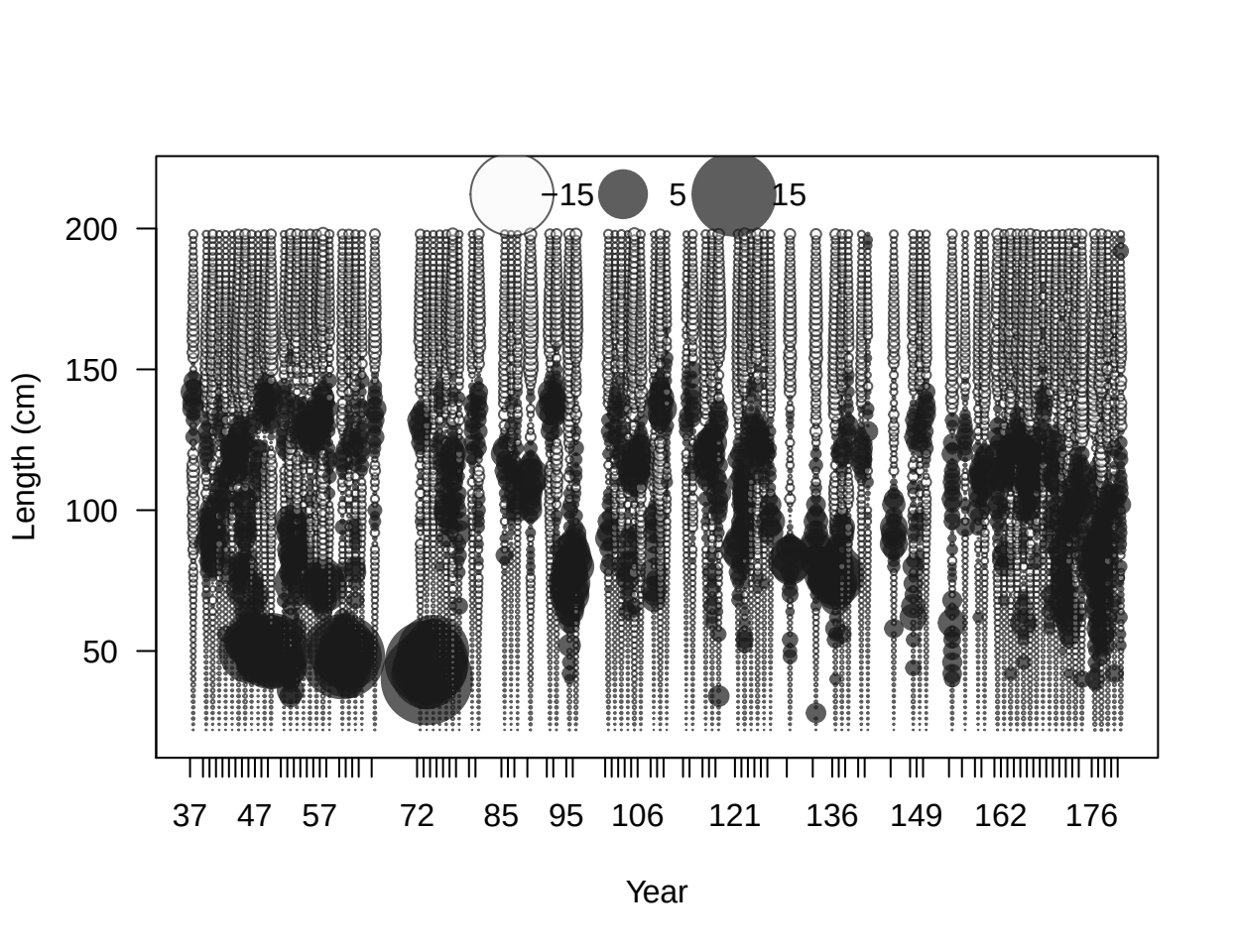
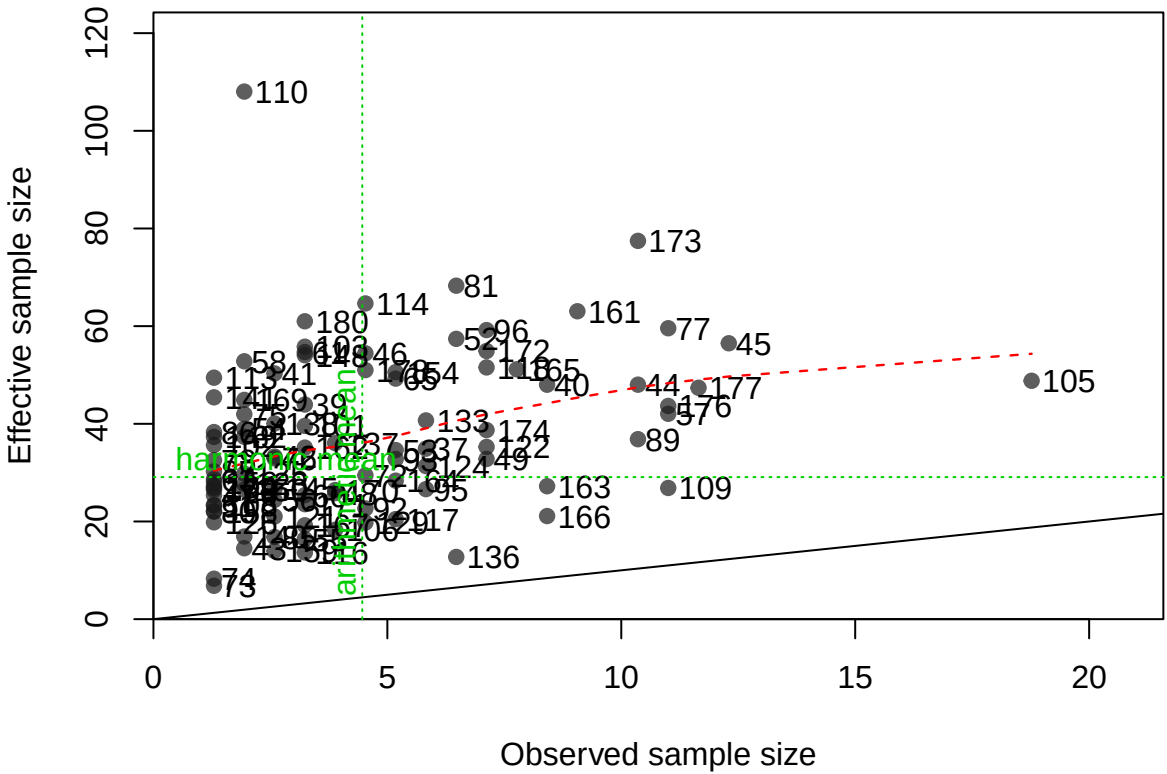
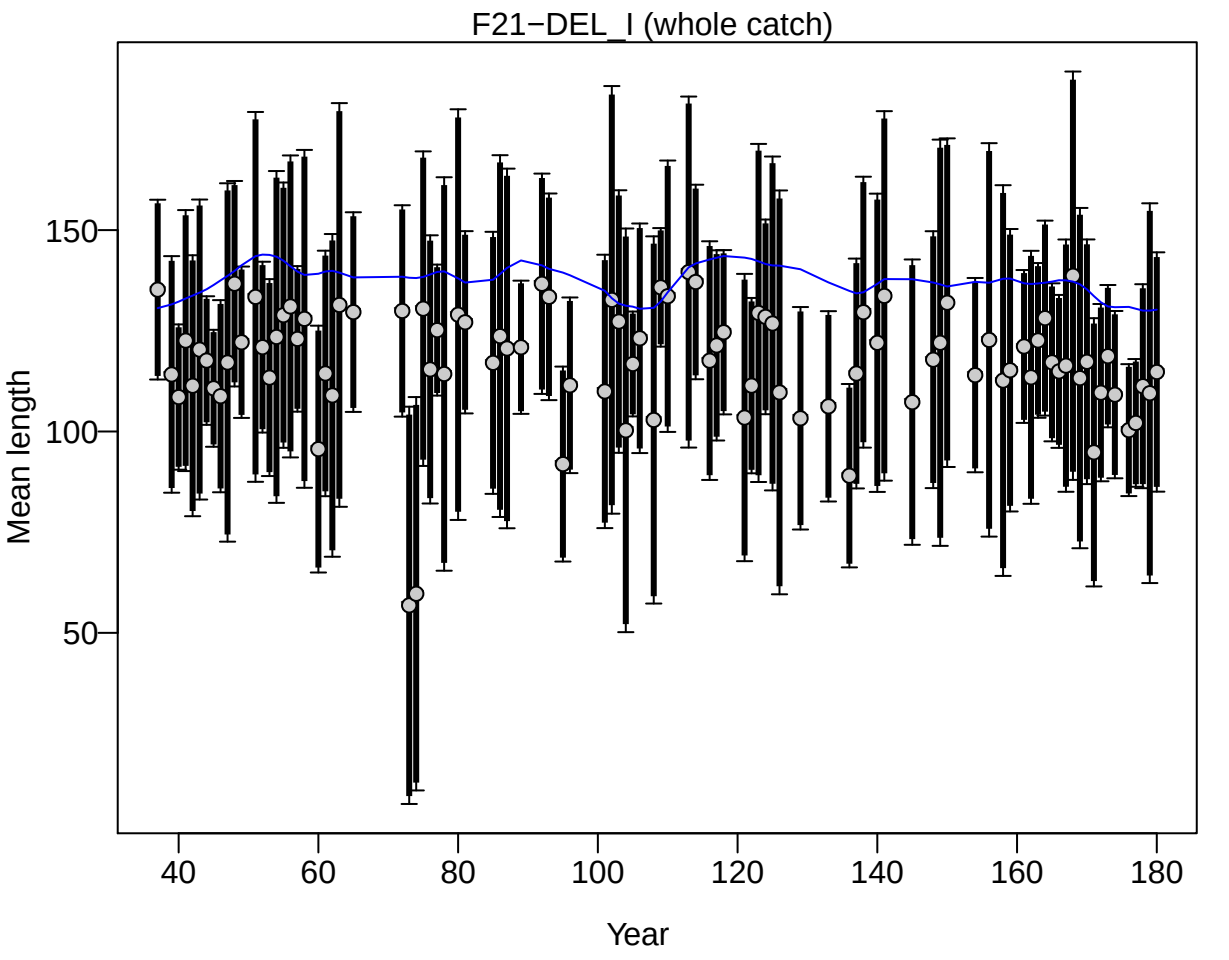
N eff.=12.7
141
N adj.=1.3
N eff.=45.4
150
N adj.=1.9
N eff.=26.5
159
N adj.=2.6
N eff.=14
137
N adj.=3.9
N eff.=36.1
145
N adj.=2.6
N eff.=26.7
154
N adj.=5.2
N eff.=50.6
161
N adj.=9.1
N eff.=63
138
N adj.=2.6
N eff.=40.1
148
N adj.=3.2
N eff.=54
156
N adj.=1.3
N eff.=28.1
162
N adj.=3.2
N eff.=35.1
140
N adj.=1.9
N eff.=16.9
149
N adj.=1.3
N eff.=37.3
158
N adj.=1.3
N eff.=22.1
163
N adj.=8.4
N eff.=27.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)

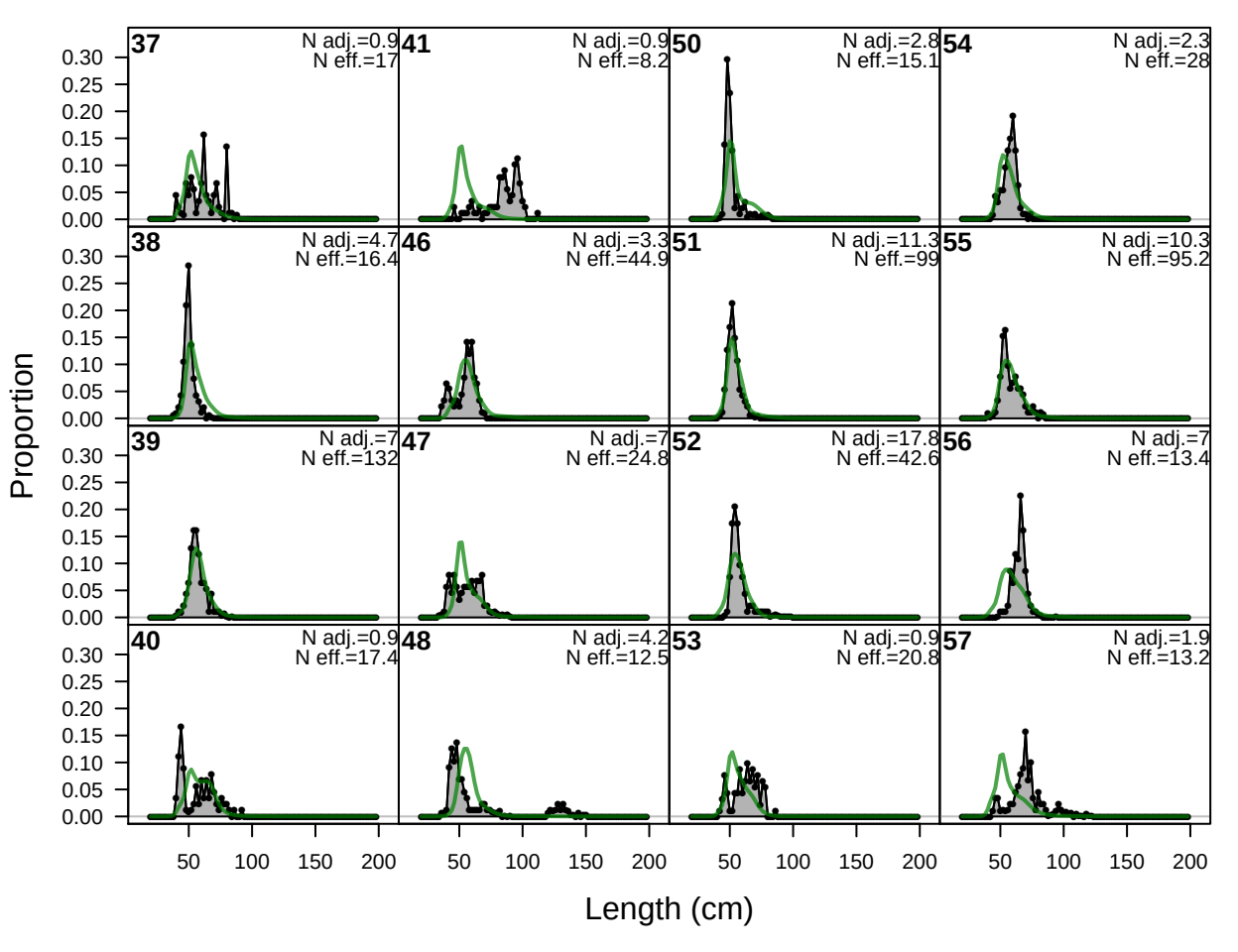

164
N adj.=5.2
N eff.=28.4
168
N adj.=1.3
N eff.=26.5
172
N adj.=7.1
N eff.=54.9
177
N adj.=11.7
N eff.=47.4
165
N adj.=7.8
N eff.=51.2
169
N adj.=1.9
N eff.=44.9
173
N adj.=10.4
N eff.=77.5
178
N adj.=4.5
N eff.=51
166
N adj.=8.4
N eff.=21.1
170
N adj.=3.9
N eff.=26.4
174
N adj.=7.1
N eff.=38.7
179
N adj.=1.3
N eff.=26.9
167
N adj.=3.2
N eff.=19.2
171
N adj.=3.2
N eff.=23.5
176
N adj.=11
N eff.=43.7
180
N adj.=3.2
N eff.=61
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
50
100
150
200
Length (cm)


15
5
15
200
150
100
50
Length (cm)
37
47
57
72
85
95
106
121
136
149
162
176
Year



Effective sample size
Observed sample size
0
20
40
60
80
100
120
0
5
10
15
20
110
173
81
114
161
180
77
45
105
44
177
176
133
174
89
163
109
166
136
73


F21−DEL_I (whole catch)
Mean length
150
100
50
40
60
80
100
120
140
160
180
Year


37
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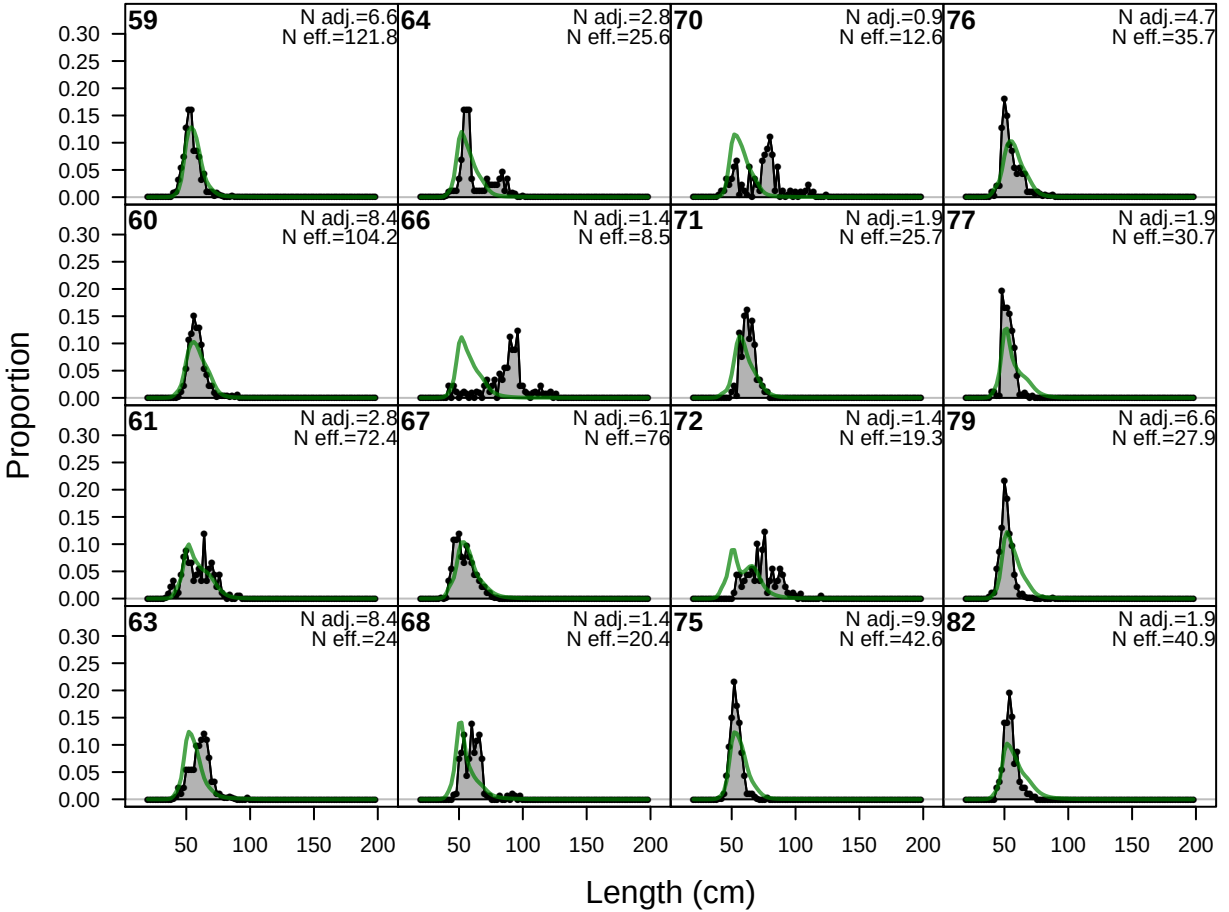
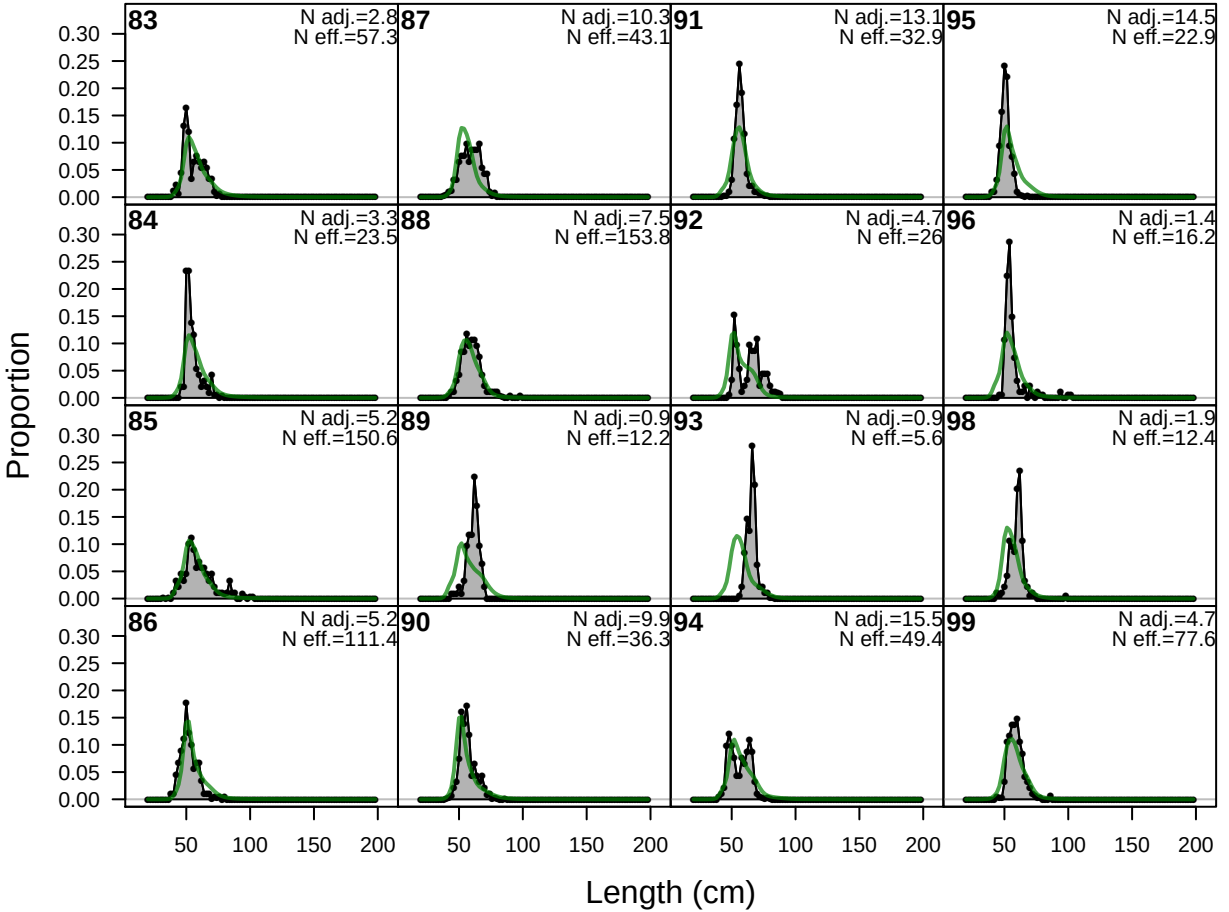
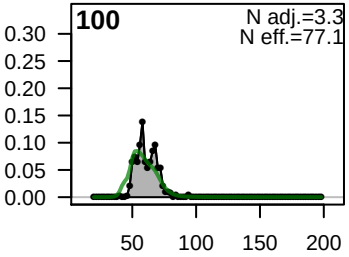
N eff.=17
41
N adj.=0.9
N eff.=8.2
50
N adj.=2.8
N eff.=15.1
54
N adj.=2.3
N eff.=28
38
N adj.=4.7
N eff.=16.4
46
N adj.=3.3
N eff.=44.9
51
N adj.=11.3
N eff.=99
55
N adj.=10.3
N eff.=95.2
39
N adj.=7
N eff.=132
47
N adj.=7
N eff.=24.8
52
N adj.=17.8
N eff.=42.6
56
N adj.=7
N eff.=13.4
40
N adj.=0.9
N eff.=17.4
48
N adj.=4.2
N eff.=12.5
53
N adj.=0.9
N eff.=20.8
57
N adj.=1.9
N eff.=13.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

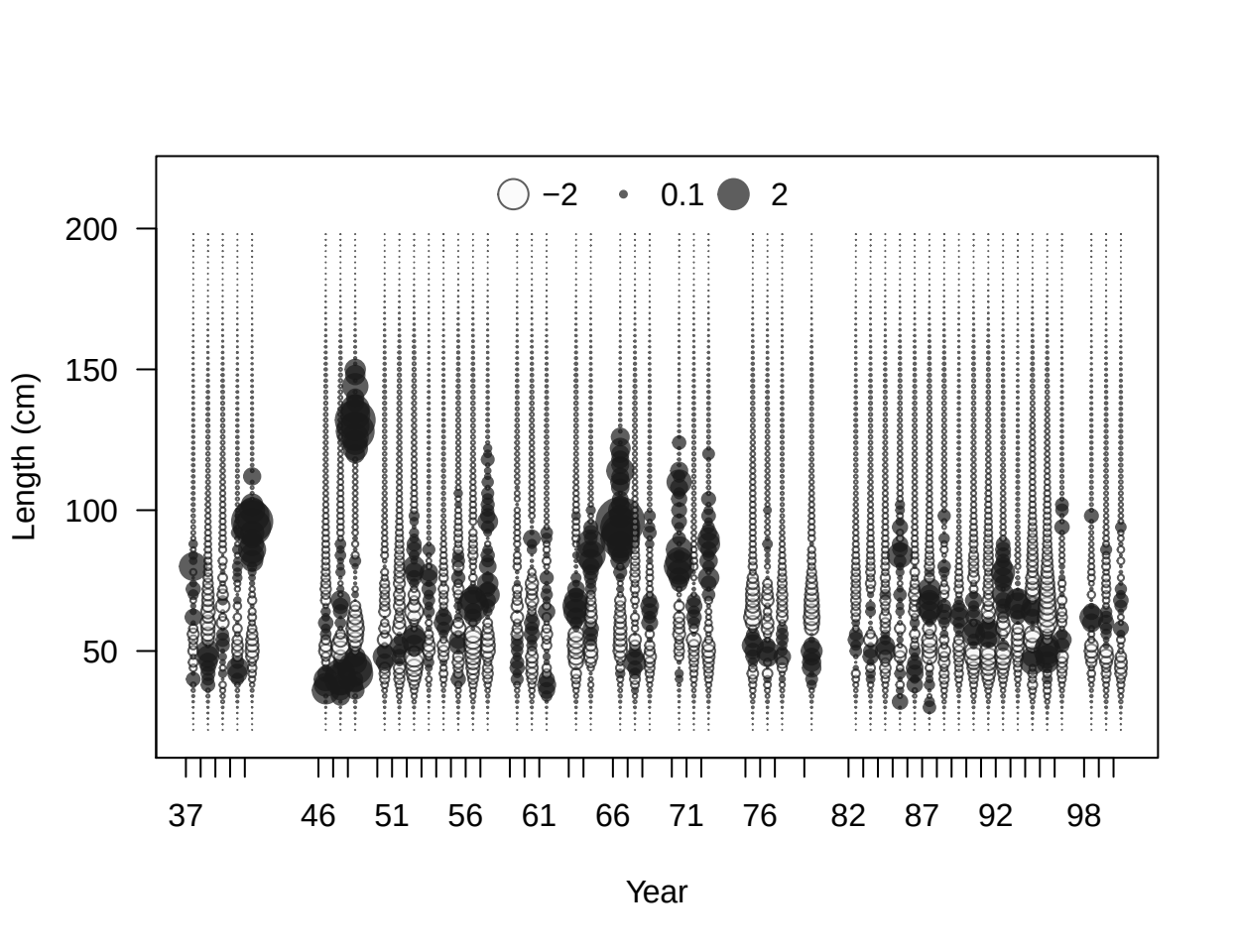

59
N adj.=6.6
N eff.=121.8
64
N adj.=2.8
N eff.=25.6
70
N adj.=0.9
N eff.=12.6
76
N adj.=4.7
N eff.=35.7
60
N adj.=8.4
N eff.=104.2
66
N adj.=1.4
N eff.=8.5
71
N adj.=1.9
N eff.=25.7
77
N adj.=1.9
N eff.=30.7
61
N adj.=2.8
N eff.=72.4
67
N adj.=6.1
N eff.=76
72
N adj.=1.4
N eff.=19.3
79
N adj.=6.6
N eff.=27.9
63
N adj.=8.4
N eff.=24
68
N adj.=1.4
N eff.=20.4
75
N adj.=9.9
N eff.=42.6
82
N adj.=1.9
N eff.=40.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

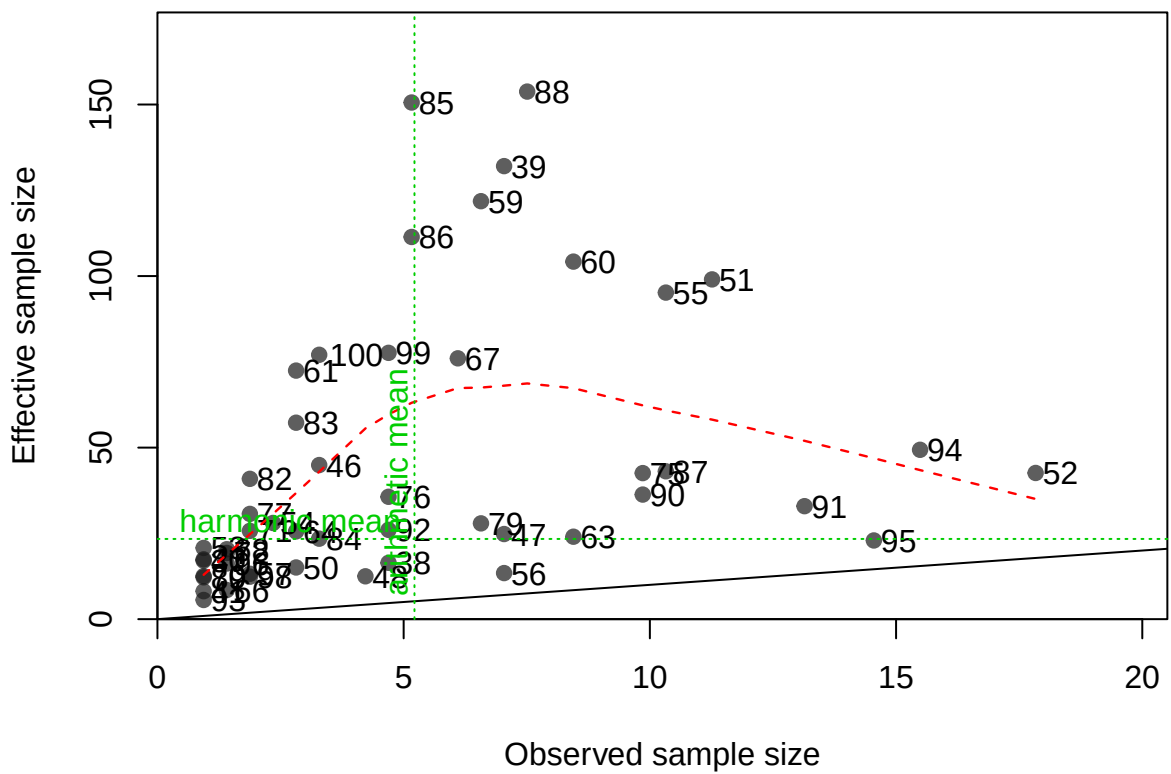

83
N adj.=2.8
N eff.=57.3
87
N adj.=10.3
N eff.=43.1
91
N adj.=13.1
N eff.=32.9
95
N adj.=14.5
N eff.=22.9
84
N adj.=3.3
N eff.=23.5
88
N adj.=7.5
N eff.=153.8
92
N adj.=4.7
N eff.=26
96
N adj.=1.4
N eff.=16.2
85
N adj.=5.2
N eff.=150.6
89
N adj.=0.9
N eff.=12.2
93
N adj.=0.9
N eff.=5.6
98
N adj.=1.9
N eff.=12.4
86
N adj.=5.2
N eff.=111.4
90
N adj.=9.9
N eff.=36.3
94
N adj.=15.5
N eff.=49.4
99
N adj.=4.7
N eff.=77.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)



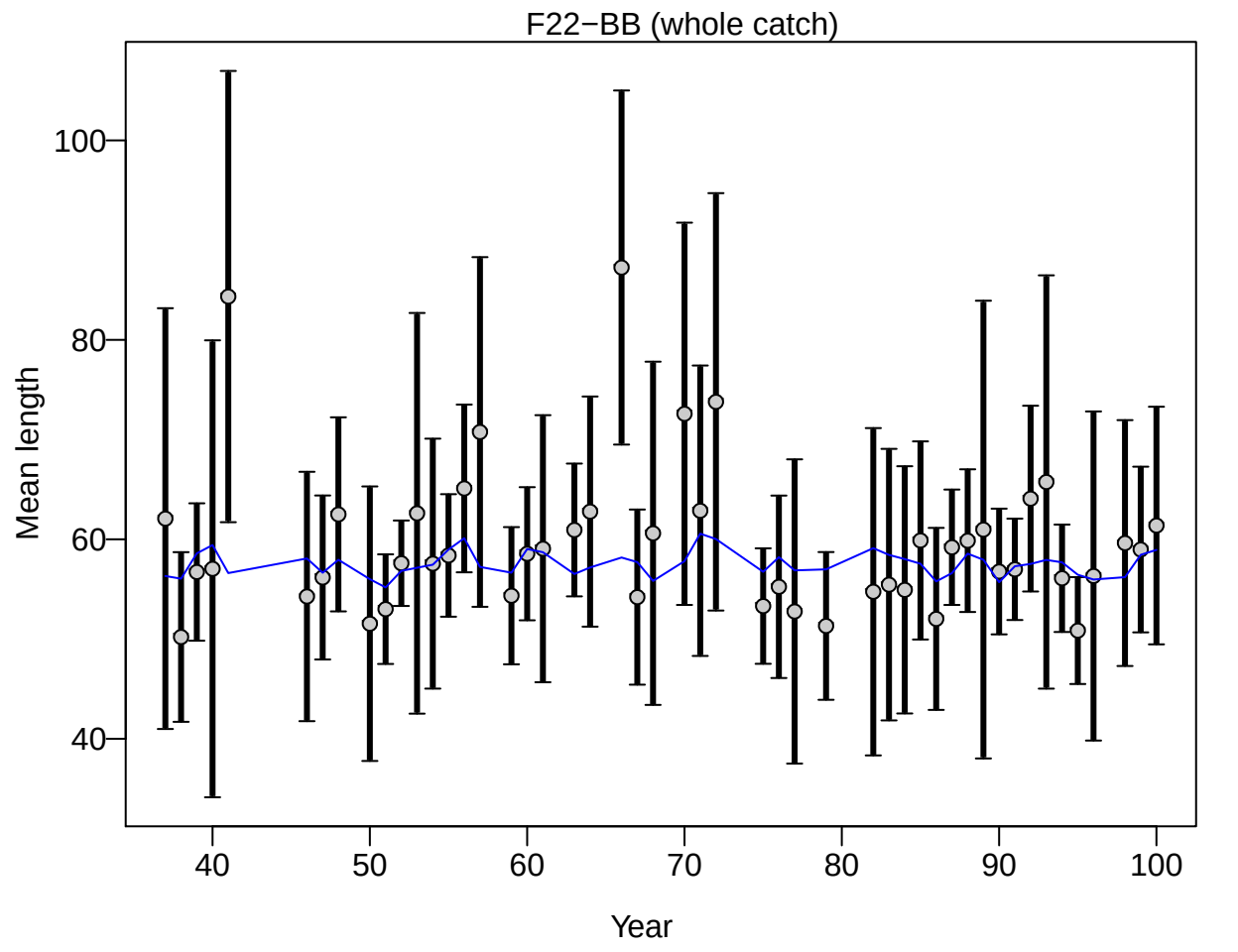
Proportion

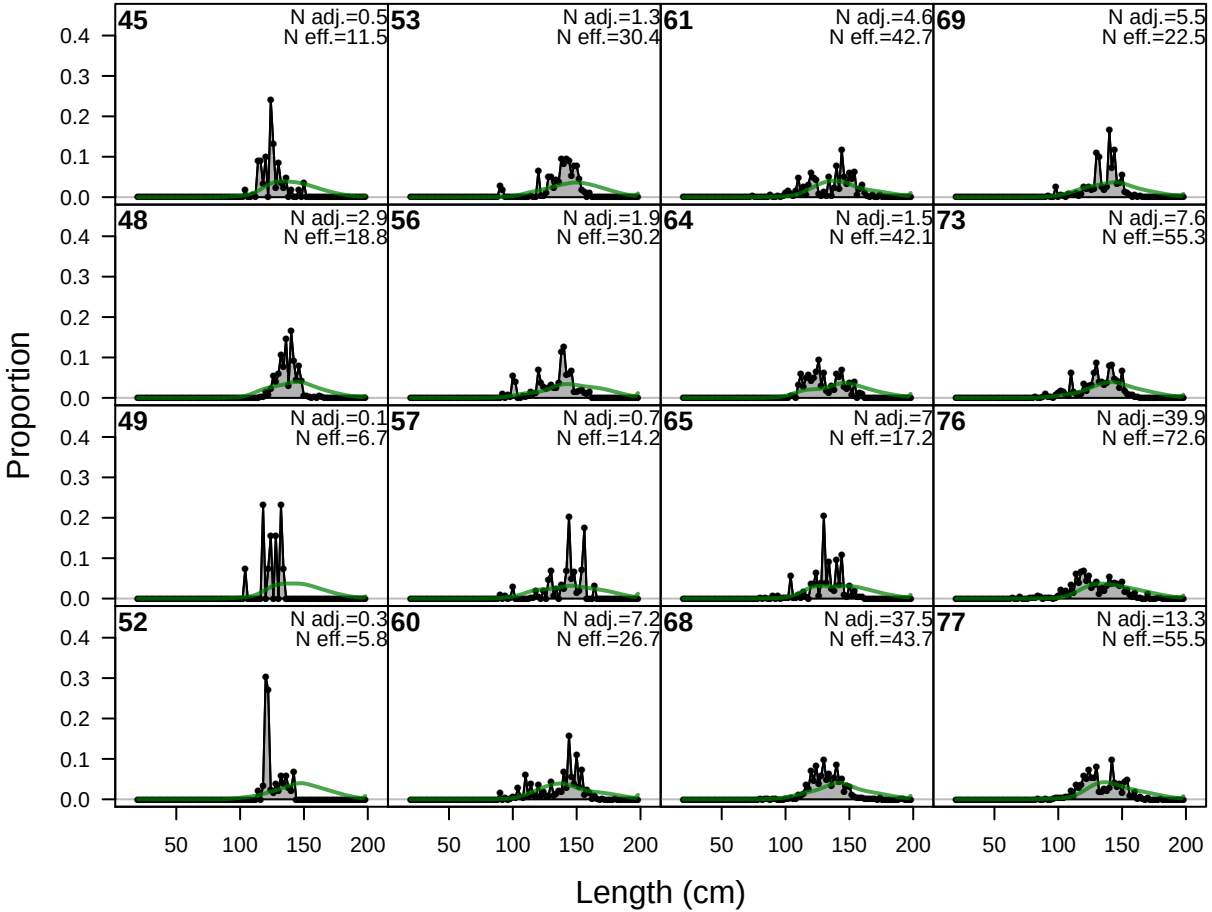
Length (cm)


−2
0.1
2
200
150
100
50
Length (cm)
37
46
51
56
61
66
71
76
82
87
92
98
Year



Effective sample size
Observed sample size
0
50
100
150
0
5
10
15
20
harmonic mean
arithmetic mean
85
88
39
59
86
60
51
55
100
99
67
61
83
94
52
82
46
76
90
91
79
47
63
95
84
92
50
38
56


F22−BB (whole catch)
Mean length
100
80
60
40
40
50
60
70
80
90
100
Year


45
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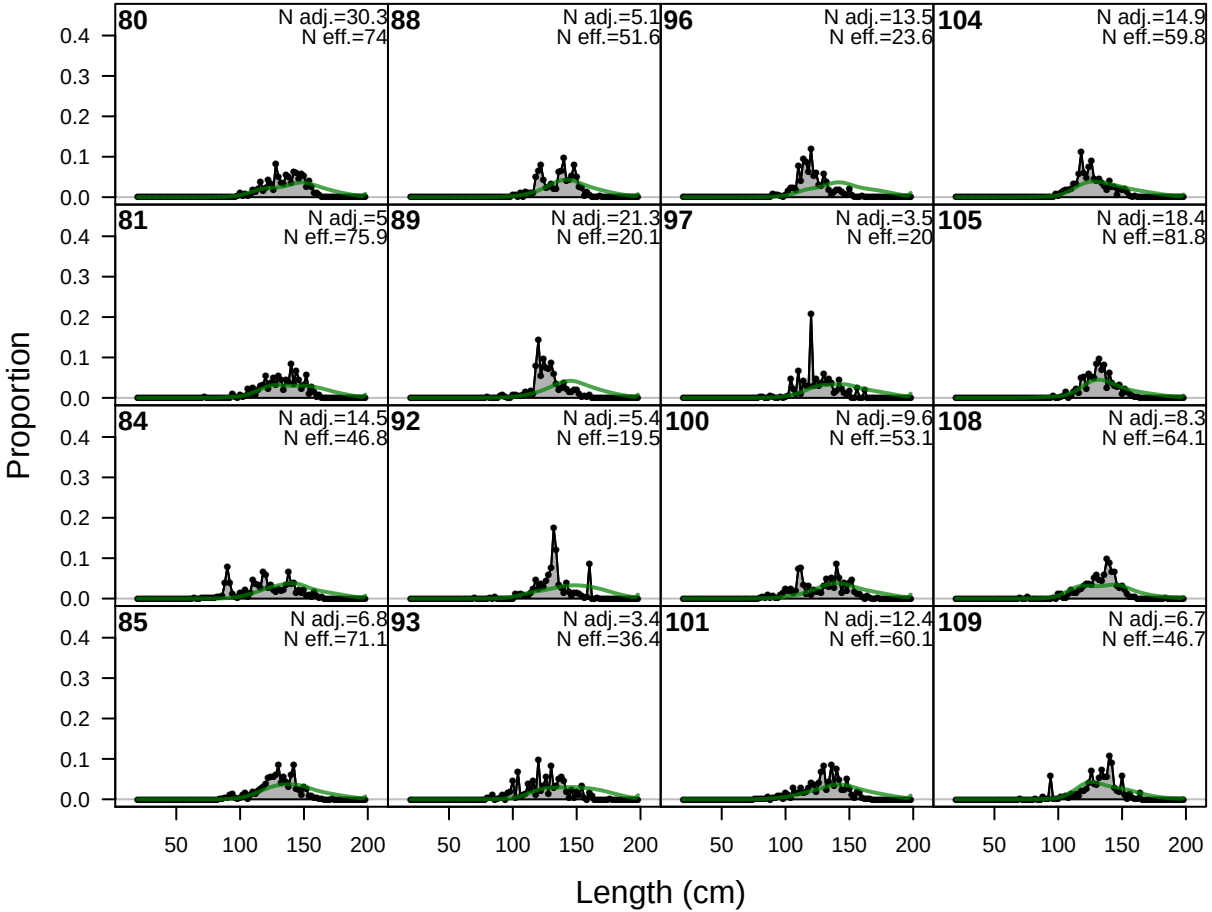
N eff.=11.5
53
N adj.=1.3
N eff.=30.4
61
N adj.=4.6
N eff.=42.7
69
N adj.=5.5
N eff.=22.5
48
N adj.=2.9
N eff.=18.8
56
N adj.=1.9
N eff.=30.2
64
N adj.=1.5
N eff.=42.1
73
N adj.=7.6
N eff.=55.3
49
N adj.=0.1
N eff.=6.7
57
N adj.=0.7
N eff.=14.2
65
N adj.=7
N eff.=17.2
76
N adj.=39.9
N eff.=72.6
52
N adj.=0.3
N eff.=5.8
60
N adj.=7.2
N eff.=26.7
68
N adj.=37.5
N eff.=43.7
77
N adj.=13.3
N eff.=55.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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N eff.=74
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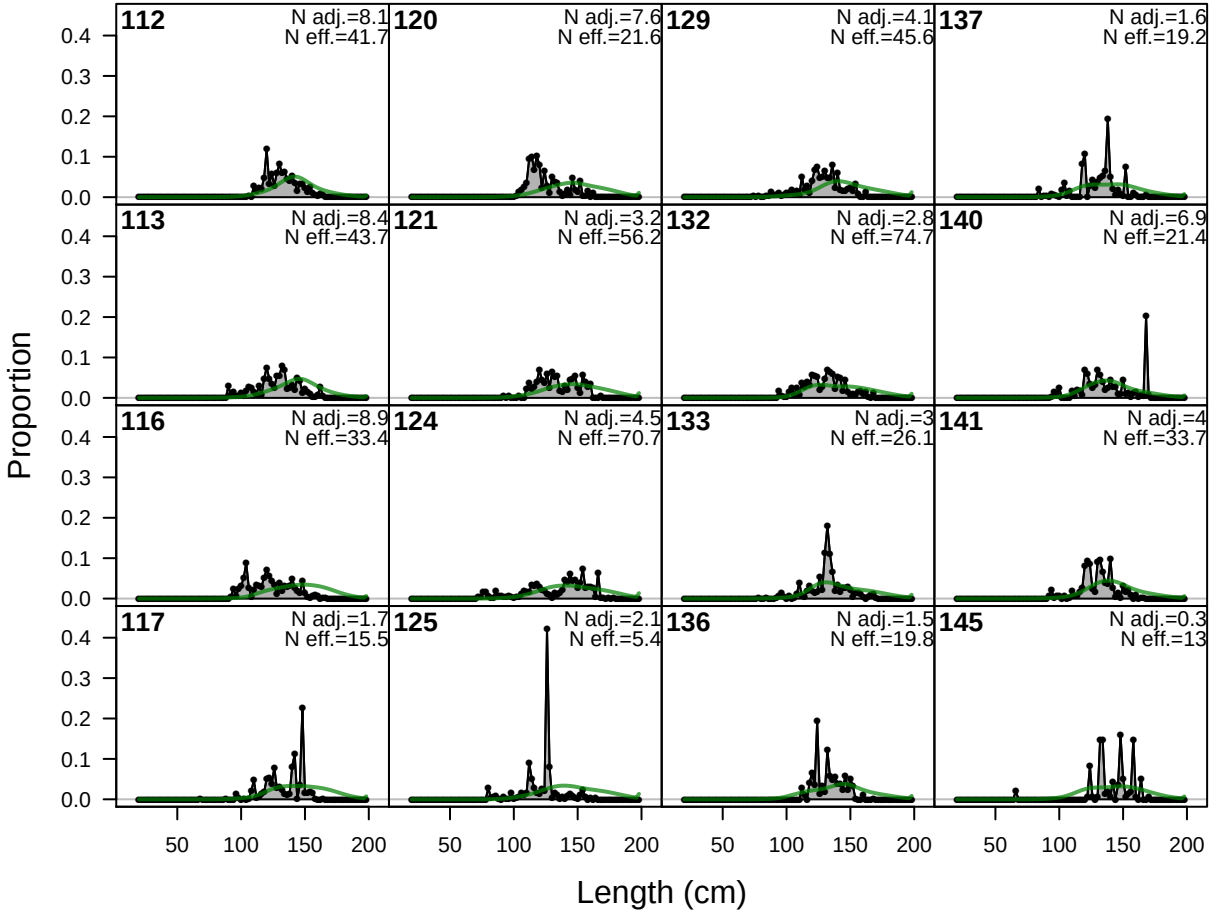
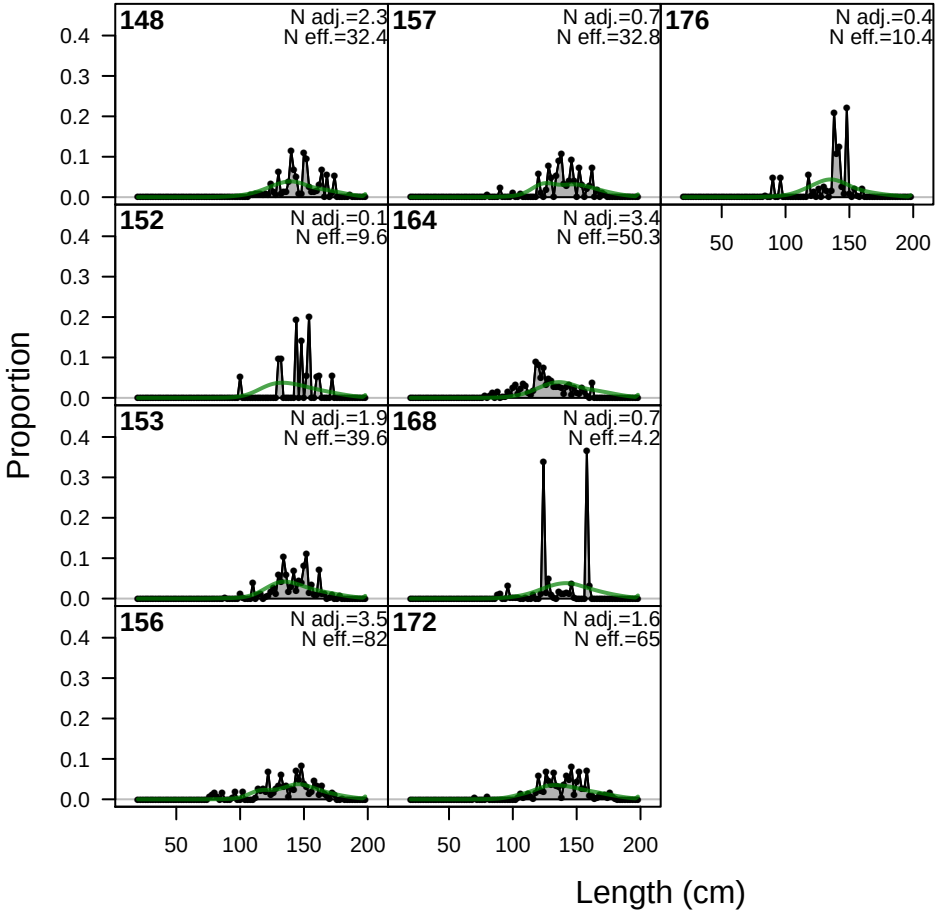
N adj.=5.1
N eff.=51.6
96
N adj.=13.5
N eff.=23.6
104
N adj.=14.9
N eff.=59.8
81
N adj.=5
N eff.=75.9
89
N adj.=21.3
N eff.=20.1
97
N adj.=3.5
N eff.=20
105
N adj.=18.4
N eff.=81.8
84
N adj.=14.5
N eff.=46.8
92
N adj.=5.4
N eff.=19.5
100
N adj.=9.6
N eff.=53.1
108
N adj.=8.3
N eff.=64.1
85
N adj.=6.8
N eff.=71.1
93
N adj.=3.4
N eff.=36.4
101
N adj.=12.4
N eff.=60.1
109
N adj.=6.7
N eff.=46.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


112
N adj.=8.1
N eff.=41.7
120
N adj.=7.6
N eff.=21.6
129
N adj.=4.1
N eff.=45.6
137
N adj.=1.6
N eff.=19.2
113
N adj.=8.4
N eff.=43.7
121
N adj.=3.2
N eff.=56.2
132
N adj.=2.8
N eff.=74.7
140
N adj.=6.9
N eff.=21.4
116
N adj.=8.9
N eff.=33.4
124
N adj.=4.5
N eff.=70.7
133
N adj.=3
N eff.=26.1
141
N adj.=4
N eff.=33.7
117
N adj.=1.7
N eff.=15.5
125
N adj.=2.1
N eff.=5.4
136
N adj.=1.5
N eff.=19.8
145
N adj.=0.3
N eff.=13
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)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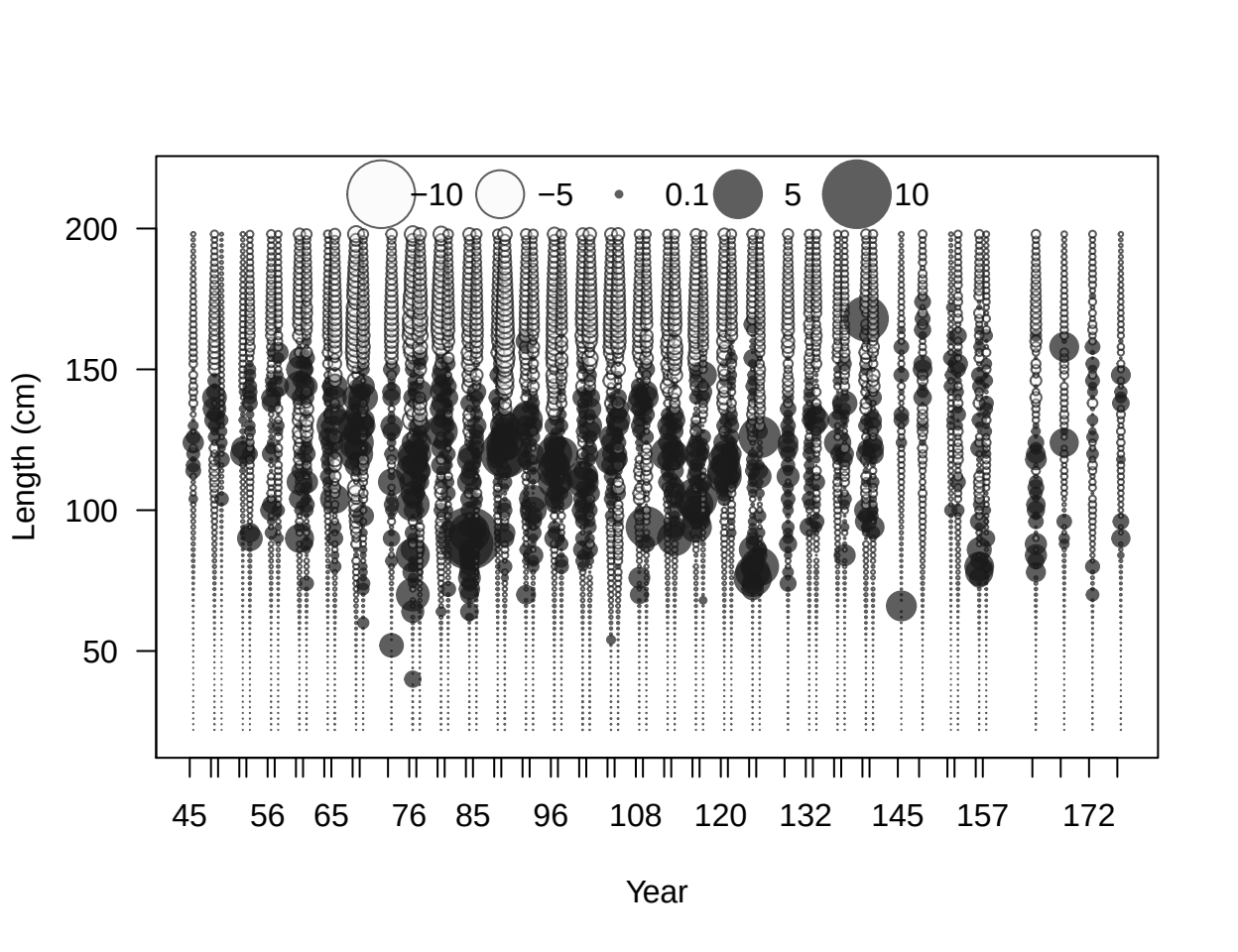
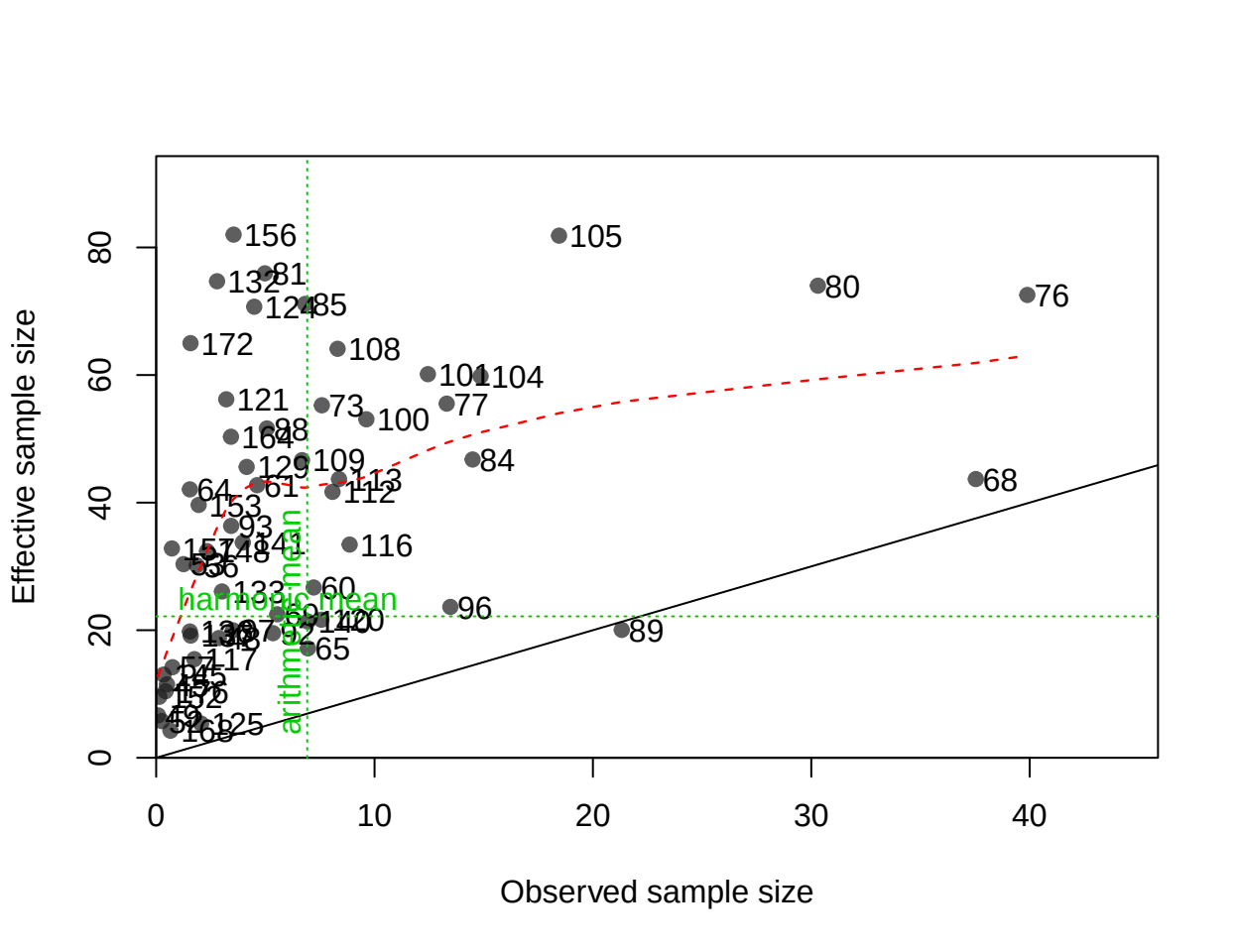
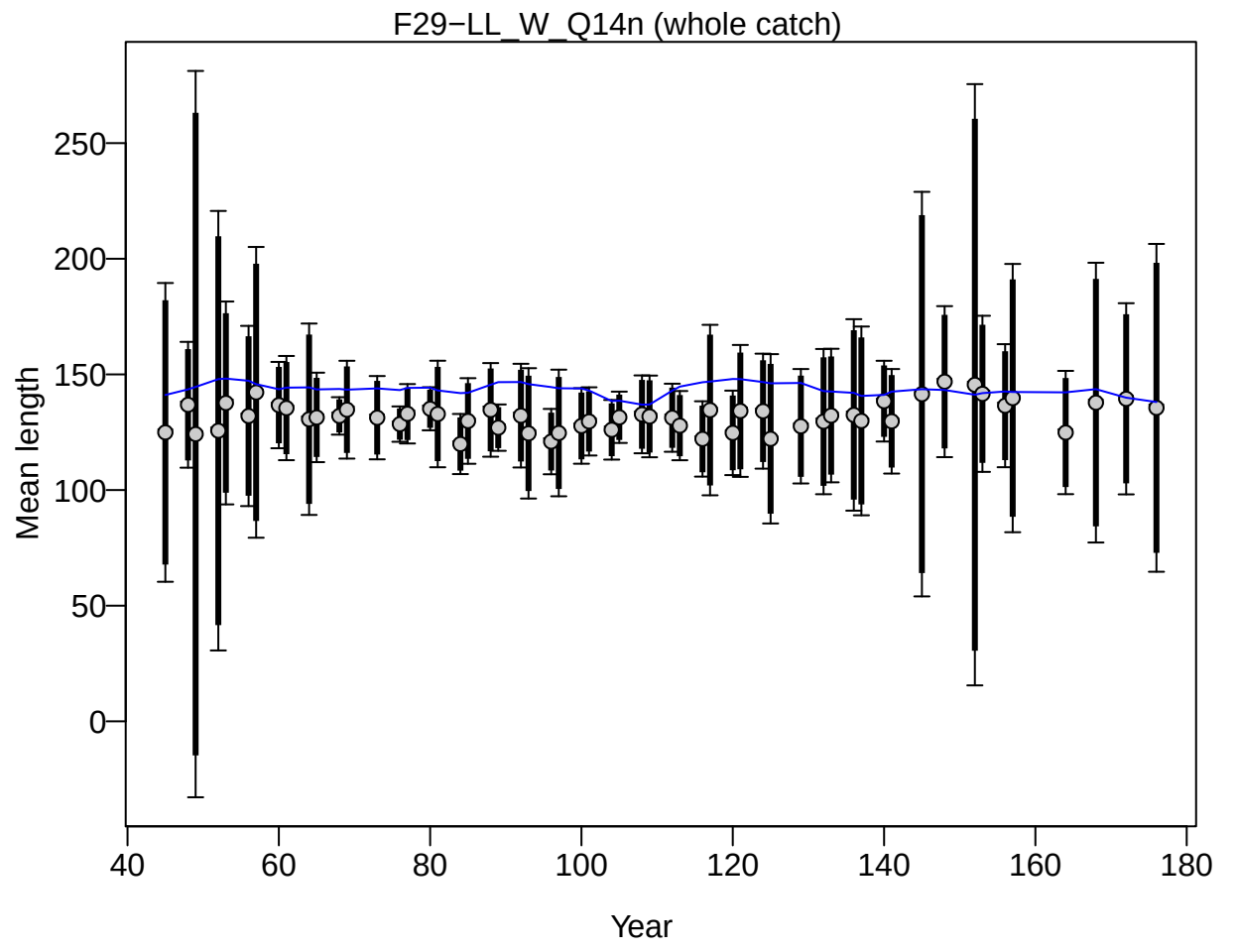
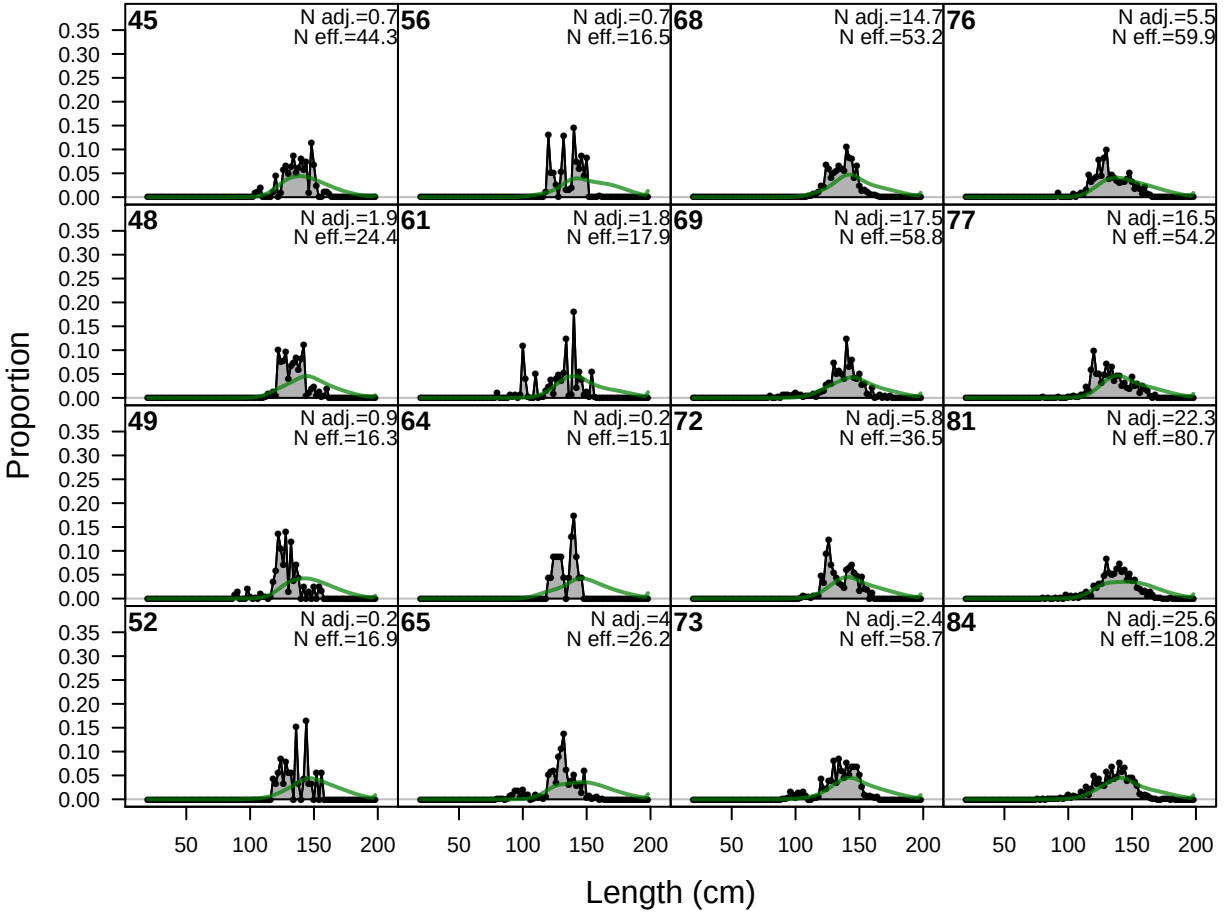
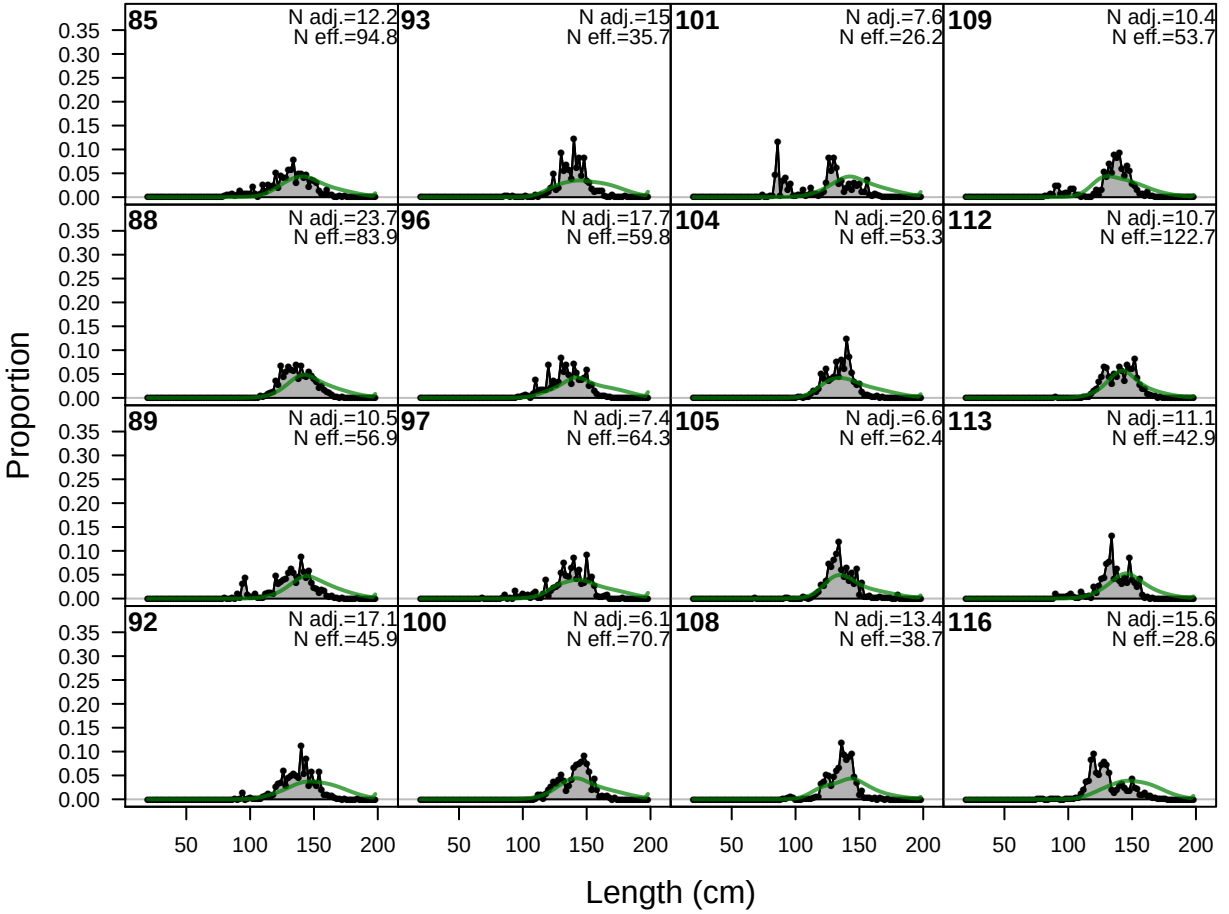
N adj.=2.3
N eff.=32.4
157
N adj.=0.7
N eff.=32.8
176
N adj.=0.4
N eff.=10.4
152
N adj.=0.1
N eff.=9.6
164
N adj.=3.4
N eff.=50.3
153
N adj.=1.9
N eff.=39.6
168
N adj.=0.7
N eff.=4.2
156
N adj.=3.5
N eff.=82
172
N adj.=1.6
N eff.=65
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


−10
−5
0.1
5
10
200
150
100
50
Length (cm)
45
56
65
76
85
96
108
120
132
145
157
172
Year


Effective sample size
Observed sample size
0
20
40
60
80
0
10
20
30
40
harmonic mean
arithmetic mean
156
105
132
81
80
76
124
85
172
108
101
104
121
73
77
100
164
88
84
129
109
68
64
61
112
153
93
116
133
60
96
89
117
65
125


F29−LL_W_Q14n (whole catch)
Mean length
250
200
150
100
50
0
40
60
80
100
120
140
160
180
Year


45
N adj.=0.7
N eff.=44.3
56
N adj.=0.7
N eff.=16.5
68
N adj.=14.7
N eff.=53.2
76
N adj.=5.5
N eff.=59.9
48
N adj.=1.9
N eff.=24.4
61
N adj.=1.8
N eff.=17.9
69
N adj.=17.5
N eff.=58.8
77
N adj.=16.5
N eff.=54.2
49
N adj.=0.9
N eff.=16.3
64
N adj.=0.2
N eff.=15.1
72
N adj.=5.8
N eff.=36.5
81
N adj.=22.3
N eff.=80.7
52
N adj.=0.2
N eff.=16.9
65
N adj.=4
N eff.=26.2
73
N adj.=2.4
N eff.=58.7
84
N adj.=25.6
N eff.=108.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)


85
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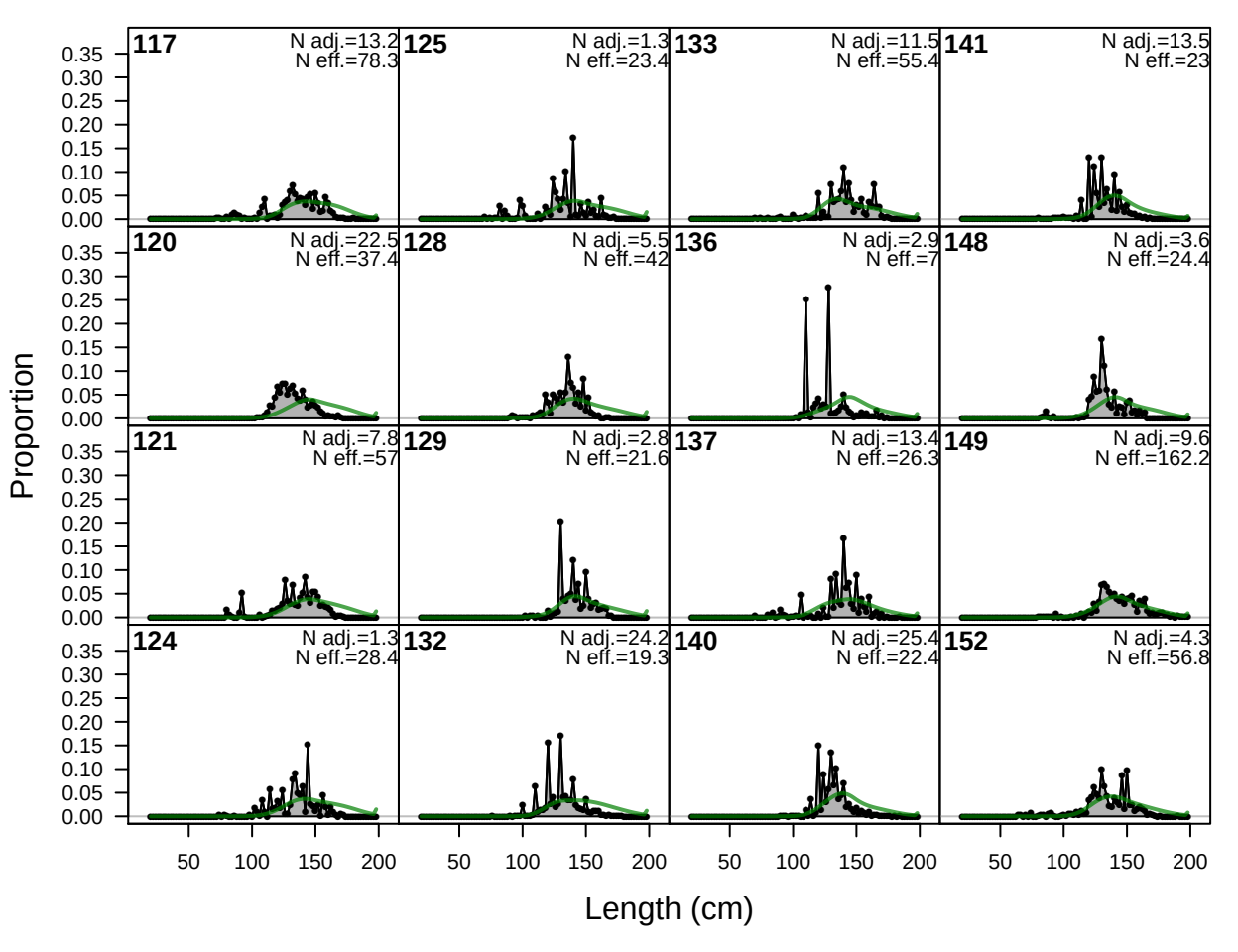
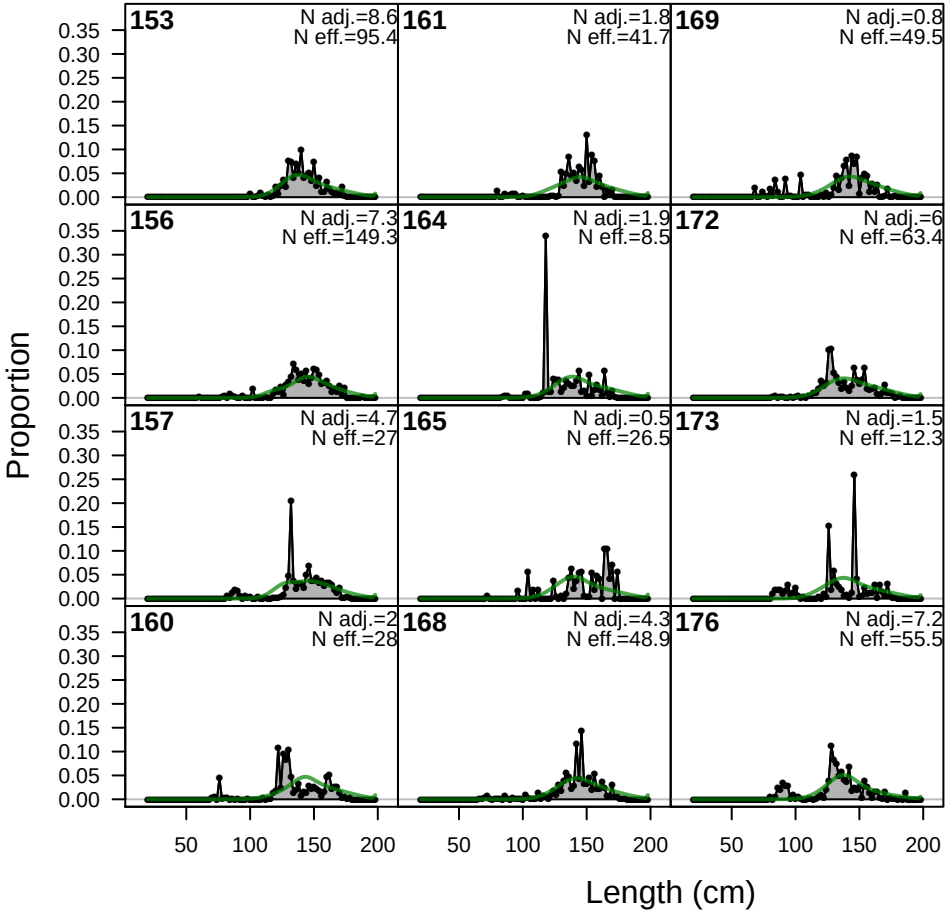
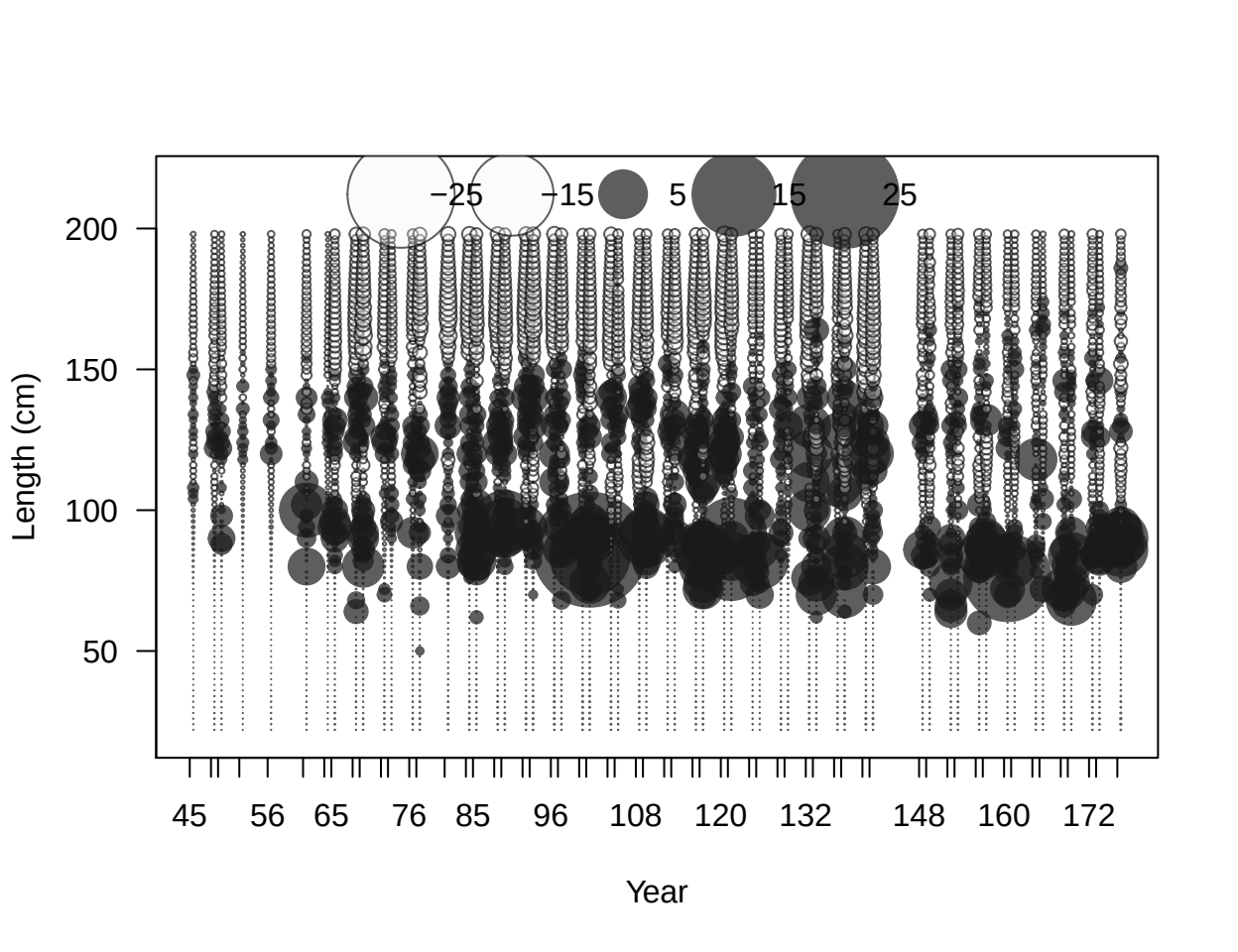
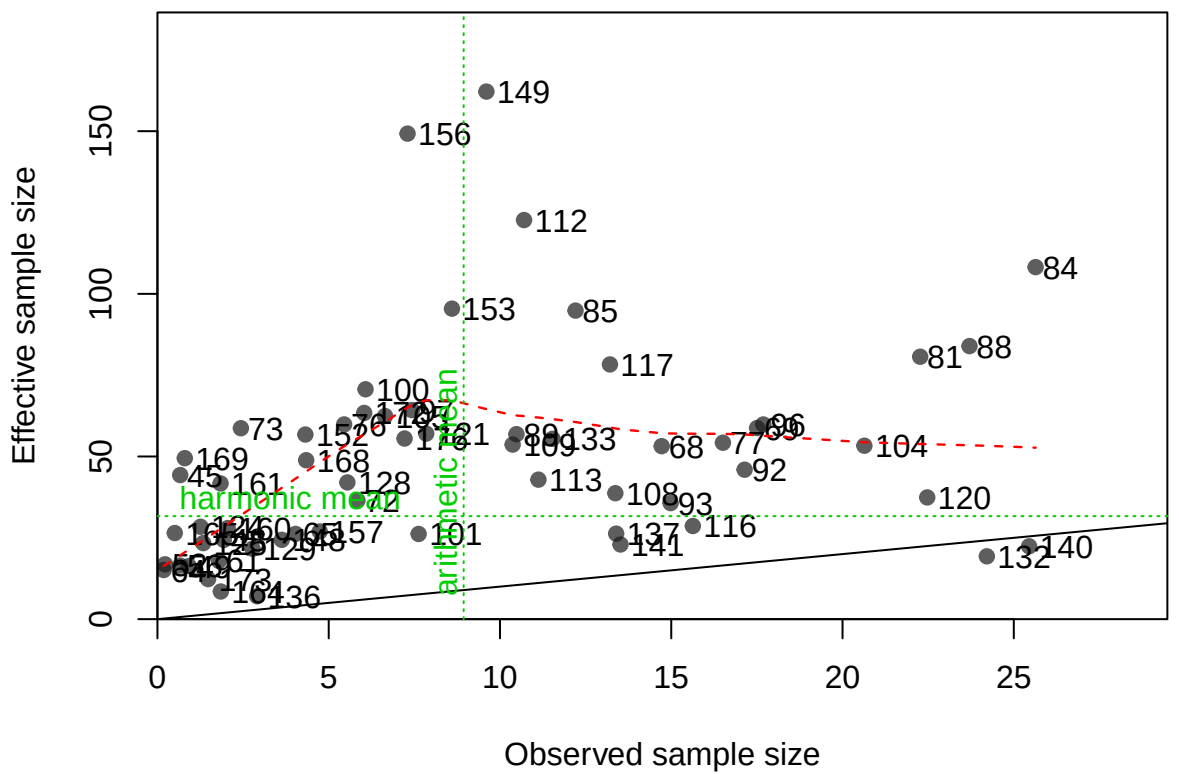
N eff.=94.8
93
N adj.=15
N eff.=35.7
101
N adj.=7.6
N eff.=26.2
109
N adj.=10.4
N eff.=53.7
88
N adj.=23.7
N eff.=83.9
96
N adj.=17.7
N eff.=59.8
104
N adj.=20.6
N eff.=53.3
112
N adj.=10.7
N eff.=122.7
89
N adj.=10.5
N eff.=56.9
97
N adj.=7.4
N eff.=64.3
105
N adj.=6.6
N eff.=62.4
113
N adj.=11.1
N eff.=42.9
92
N adj.=17.1
N eff.=45.9
100
N adj.=6.1
N eff.=70.7
108
N adj.=13.4
N eff.=38.7
116
N adj.=15.6
N eff.=28.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

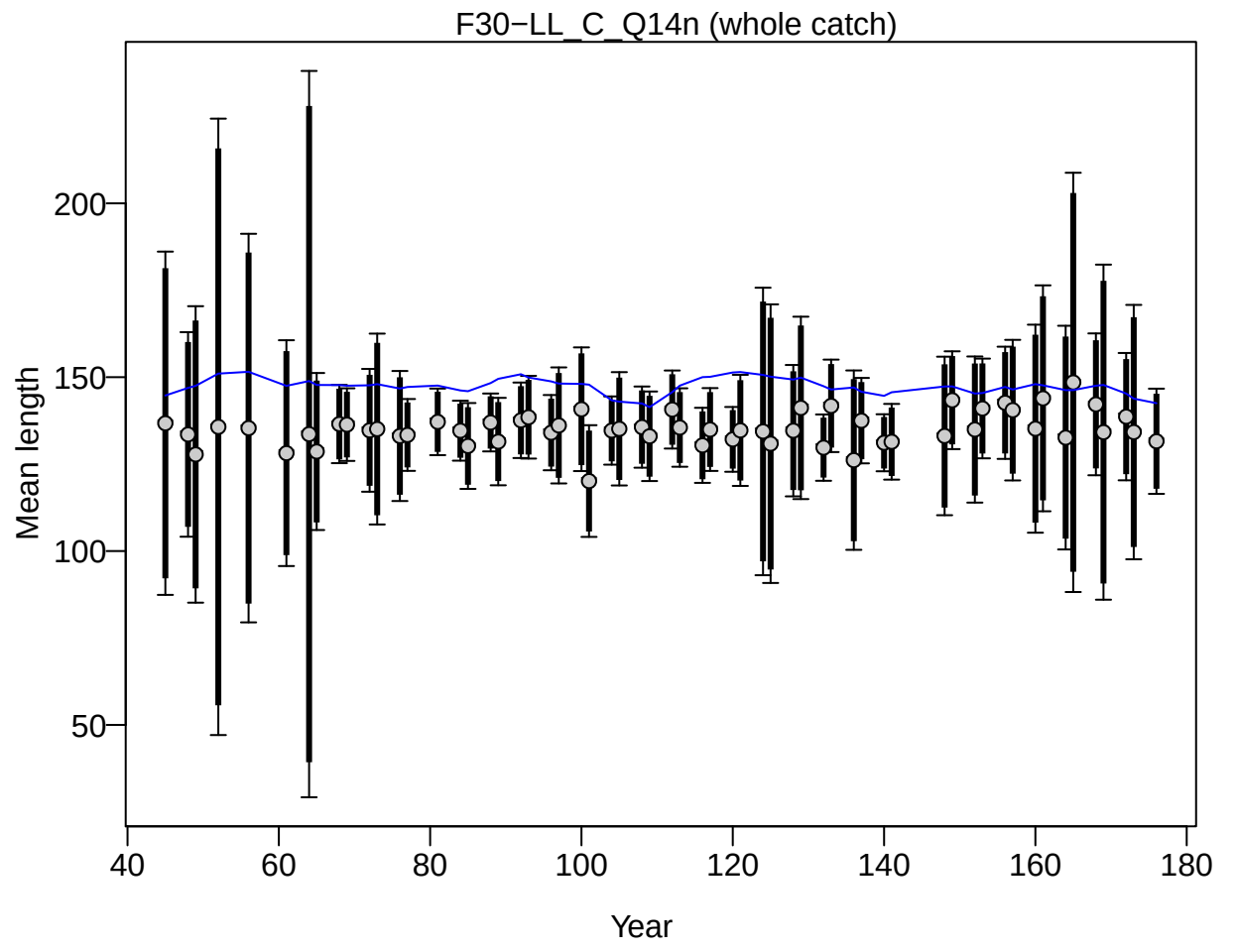

117
N adj.=13.2
N eff.=78.3
125
N adj.=1.3
N eff.=23.4
133
N adj.=11.5
N eff.=55.4
141
N adj.=13.5
N eff.=23
120
N adj.=22.5
N eff.=37.4
128
N adj.=5.5
N eff.=42
136
N adj.=2.9
N eff.=7
148
N adj.=3.6
N eff.=24.4
121
N adj.=7.8
N eff.=57
129
N adj.=2.8
N eff.=21.6
137
N adj.=13.4
N eff.=26.3
149
N adj.=9.6
N eff.=162.2
124
N adj.=1.3
N eff.=28.4
132
N adj.=24.2
N eff.=19.3
140
N adj.=25.4
N eff.=22.4
152
N adj.=4.3
N eff.=56.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

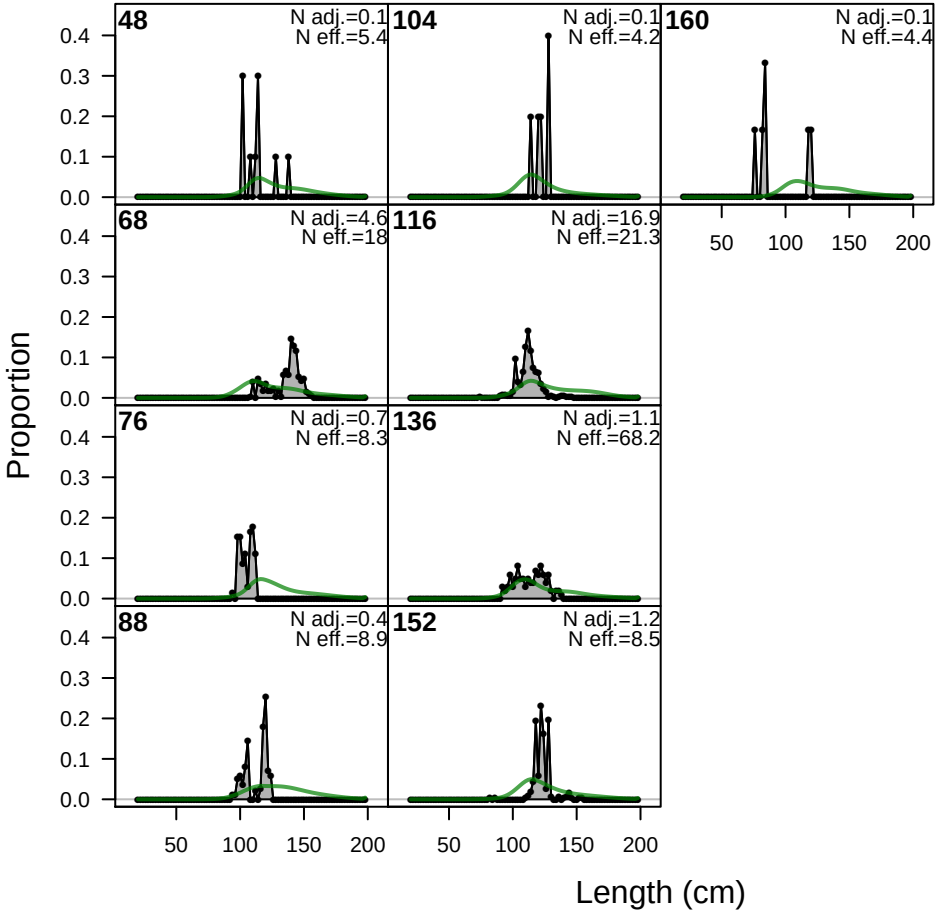

153
N adj.=8.6
N eff.=95.4
161
N adj.=1.8
N eff.=41.7
169
N adj.=0.8
N eff.=49.5
156
N adj.=7.3
N eff.=149.3
164
N adj.=1.9
N eff.=8.5
172
N adj.=6
N eff.=63.4
157
N adj.=4.7
N eff.=27
165
N adj.=0.5
N eff.=26.5
173
N adj.=1.5
N eff.=12.3
160
N adj.=2
N eff.=28
168
N adj.=4.3
N eff.=48.9
176
N adj.=7.2
N eff.=55.5
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
50
100
150
200
Length (cm)

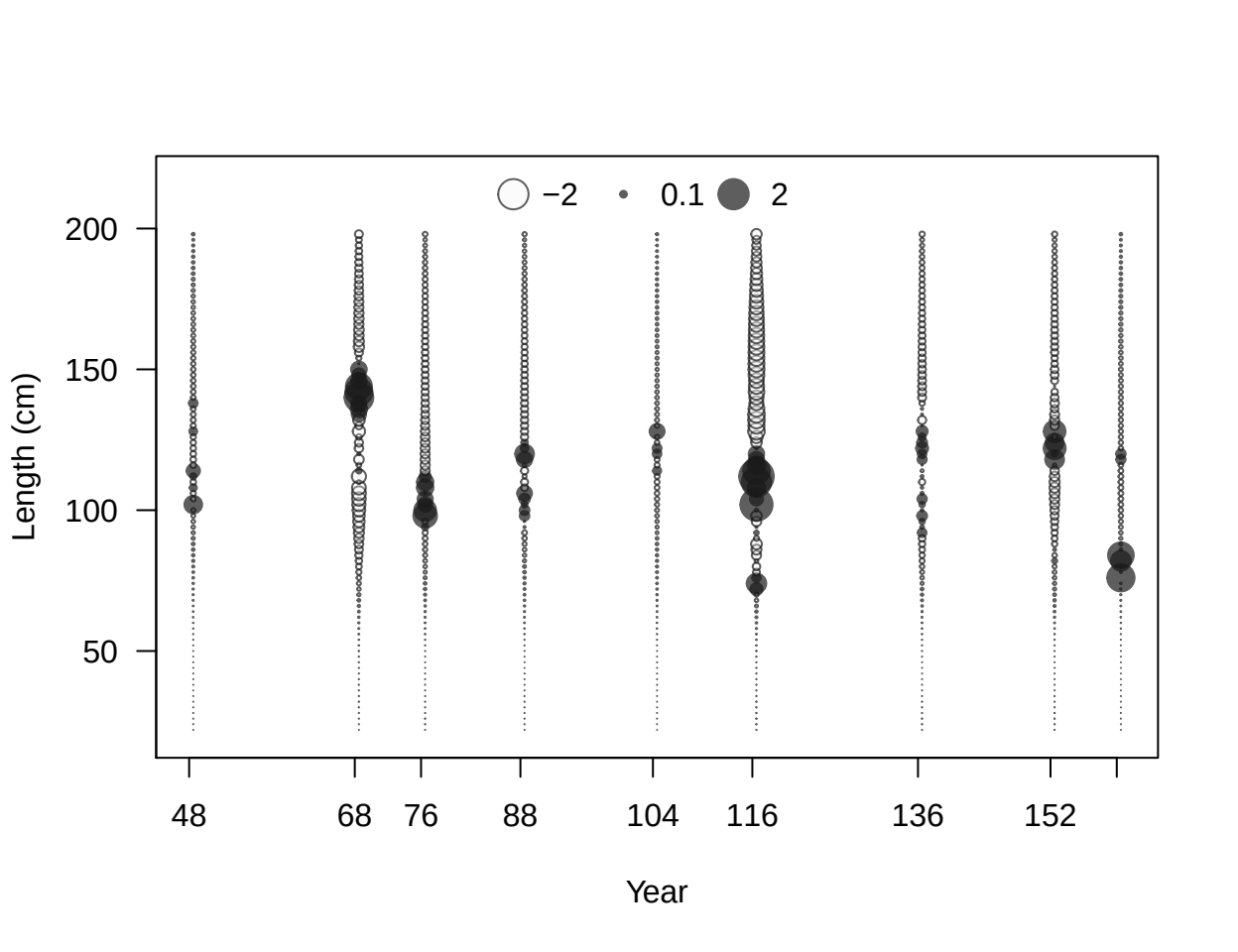

−25
−15
5
15
25
200
150
100
50
Length (cm)
45
56
65
76
85
96
108
120
132
148
160
172
Year

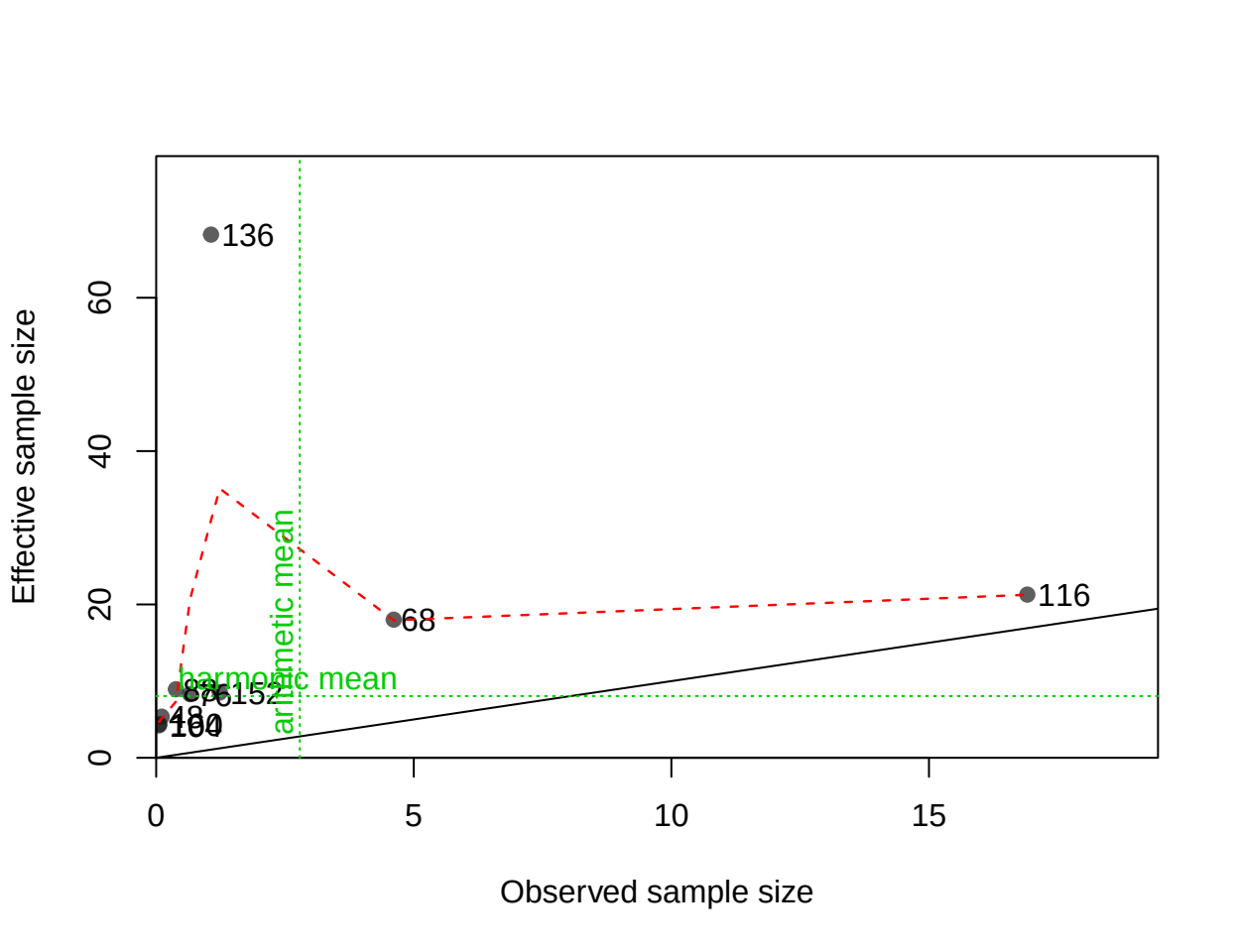


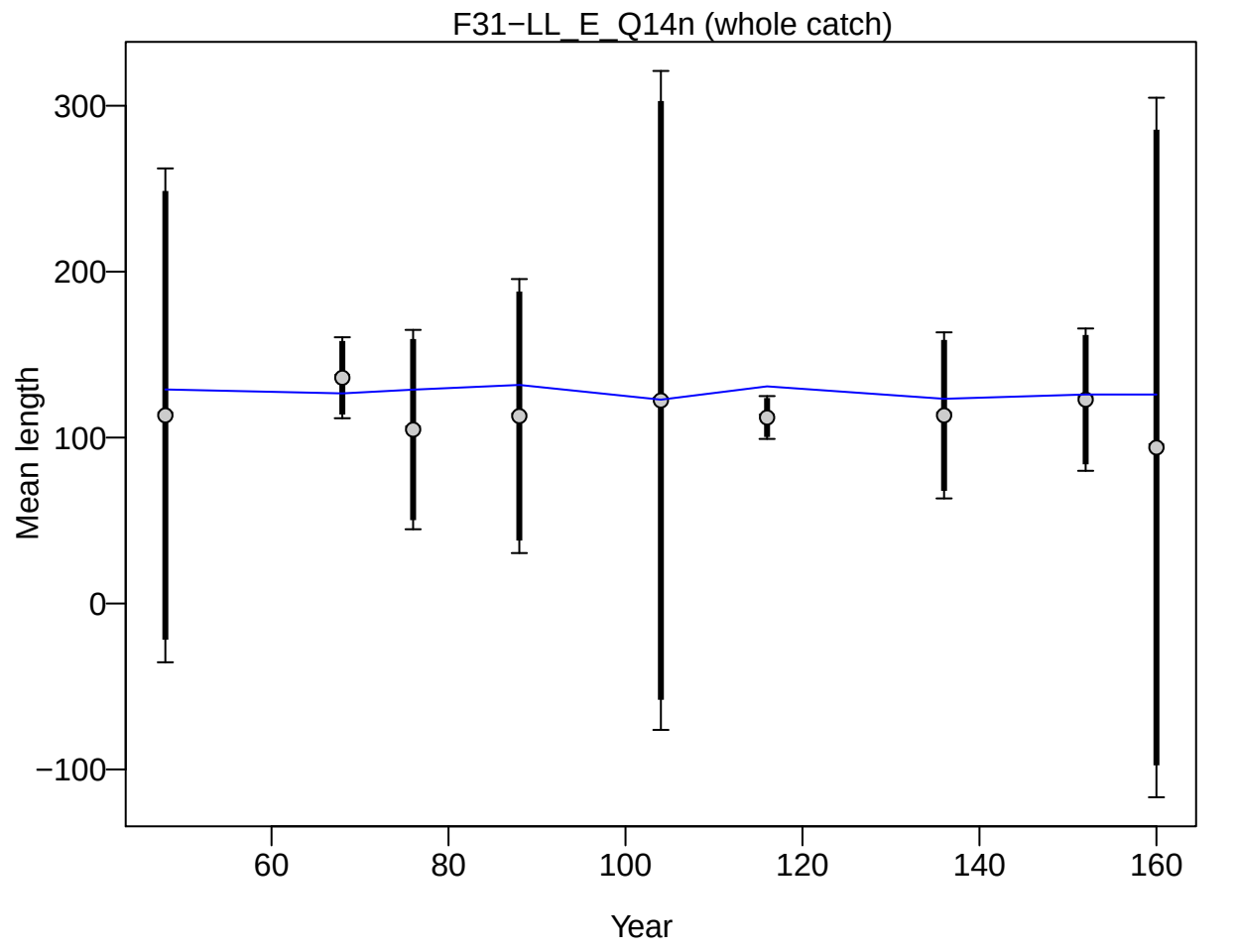
Effective sample size
Observed sample size
0
50
100
150
0
5
10
15
20
25
harmonic mean
arithmetic mean
149
156
112
84
153
85
117
81
88
100
73
152
168
169
45
161
128
113
108
93
116
137
141
104
120
132
140
101
157
129
173
136
68
77
92

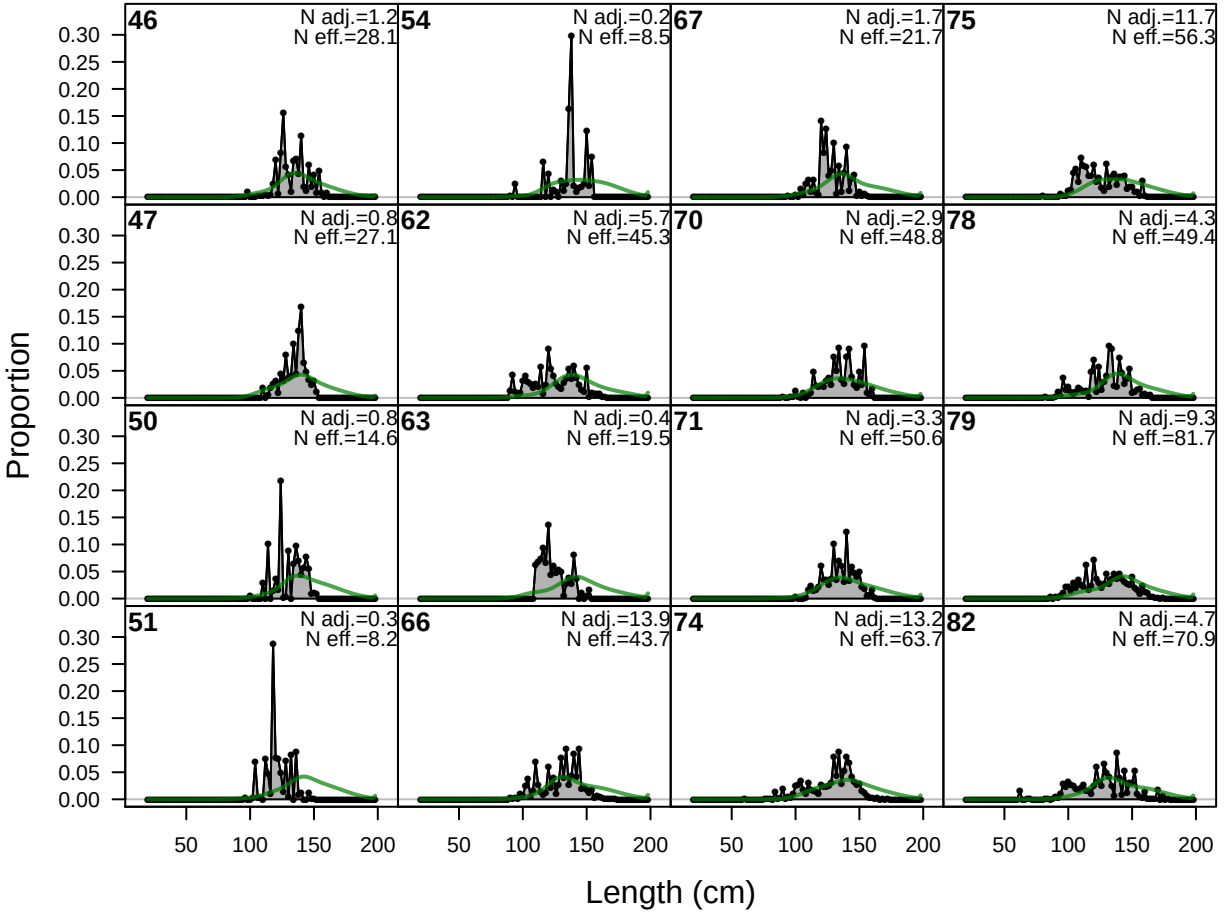

F30−LL_C_Q14n (whole catch)
Mean length
200
150
100
50
40
60
80
100
120
140
160
180
Year

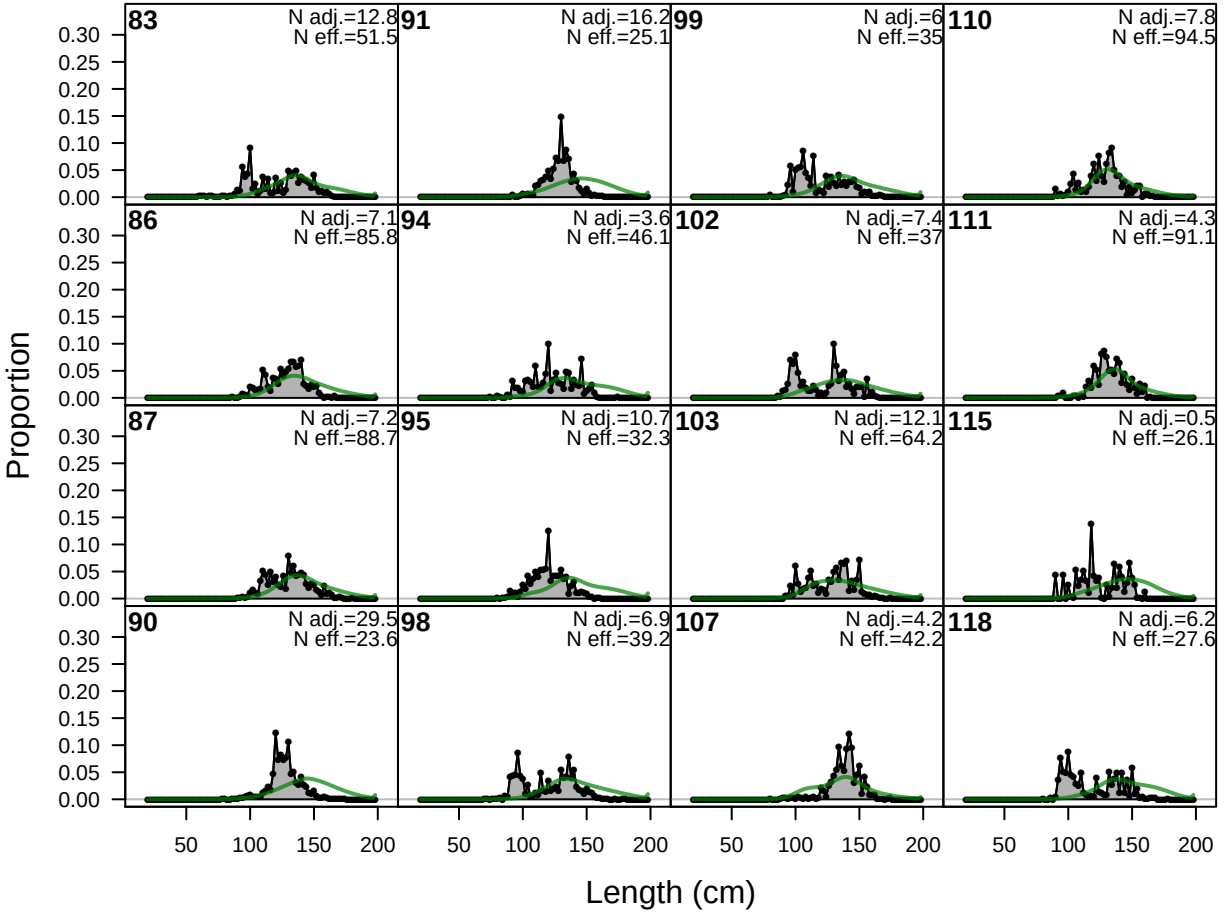

48
N adj.=0.1
N eff.=5.4
104
N adj.=0.1
N eff.=4.2
160
N adj.=0.1
N eff.=4.4
68
N adj.=4.6
N eff.=18
116
N adj.=16.9
N eff.=21.3
76
N adj.=0.7
N eff.=8.3
136
N adj.=1.1
N eff.=68.2
88
N adj.=0.4
N eff.=8.9
152
N adj.=1.2
N eff.=8.5
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

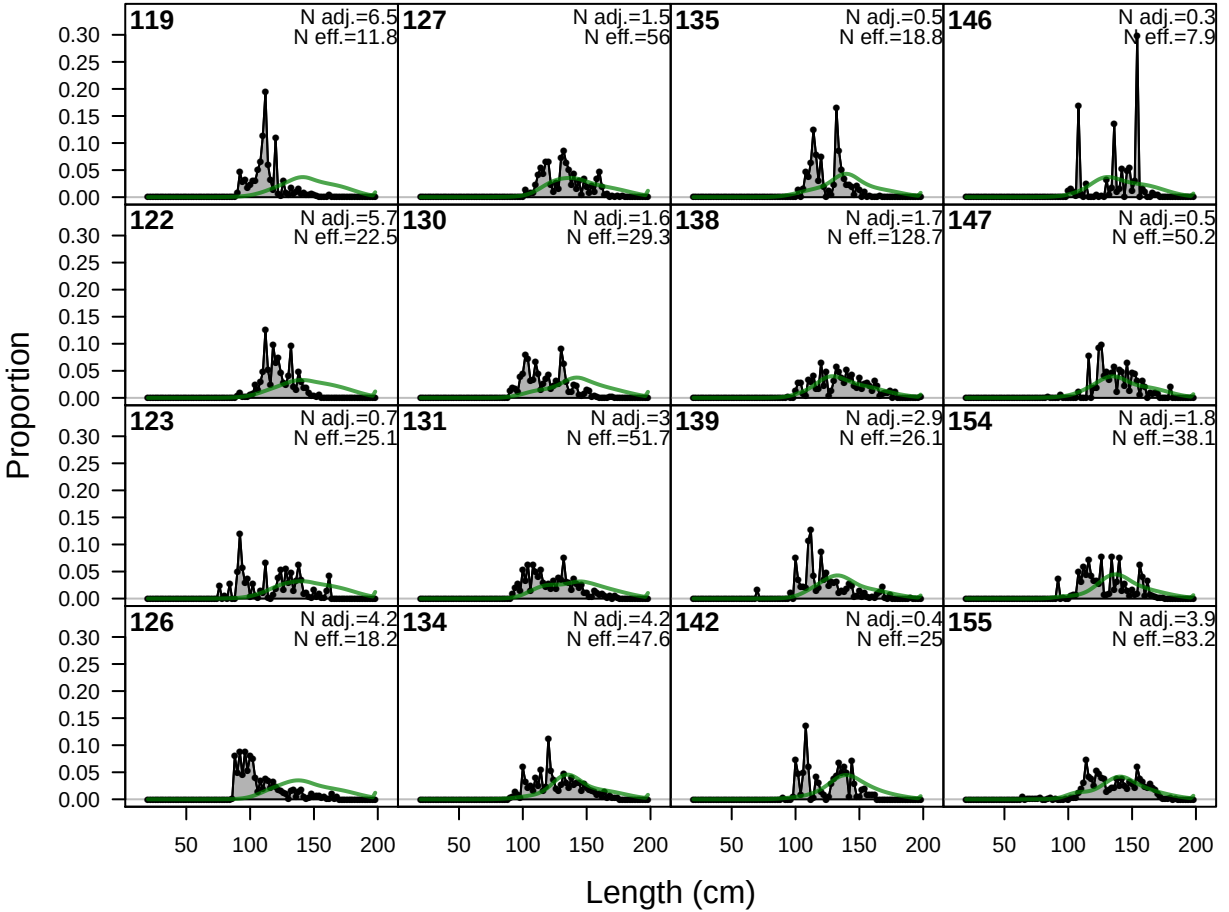

−2
0.1
2
200
150
100
50
Length (cm)
48
68
76
88
104
116
136
152
Year

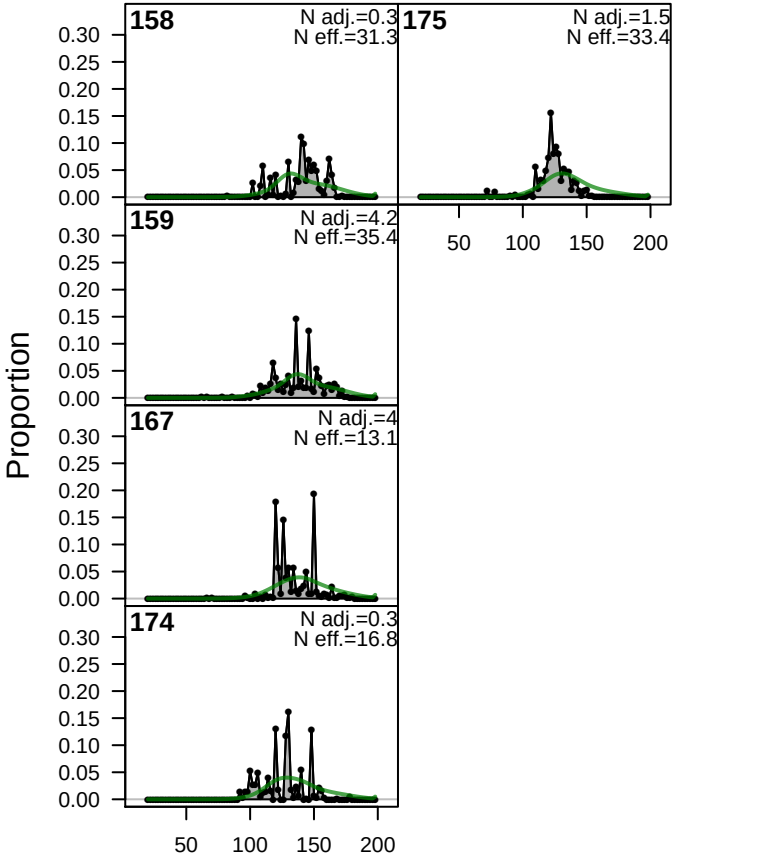

Effective sample size
Observed sample size
0
20
40
60
0
5
10
15
136
68
116
harmonic mean
arithmetic mean

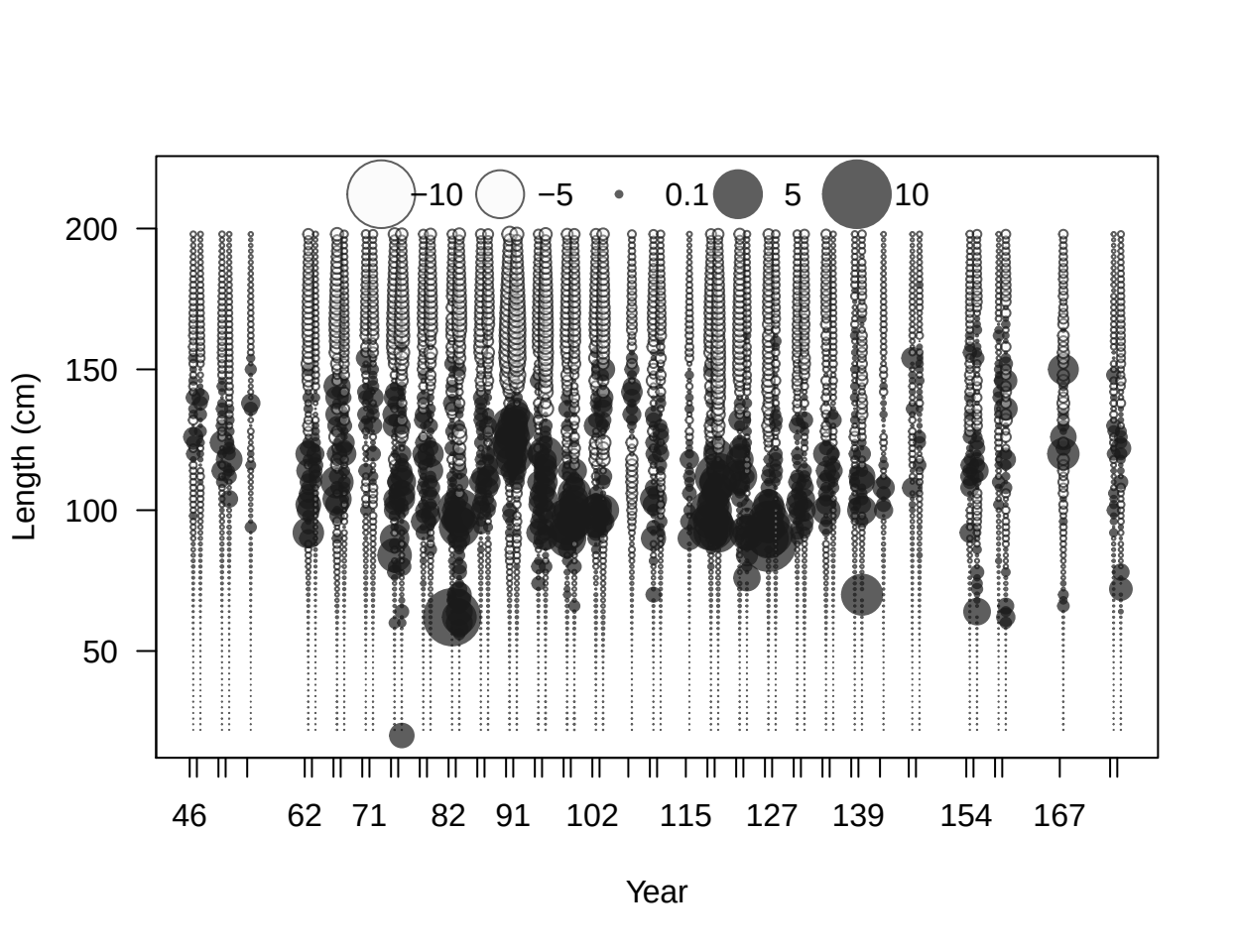

F31−LL_E_Q14n (whole catch)
300
200
100
0
−100
Mean length
60
80
100
120
140
160
Year

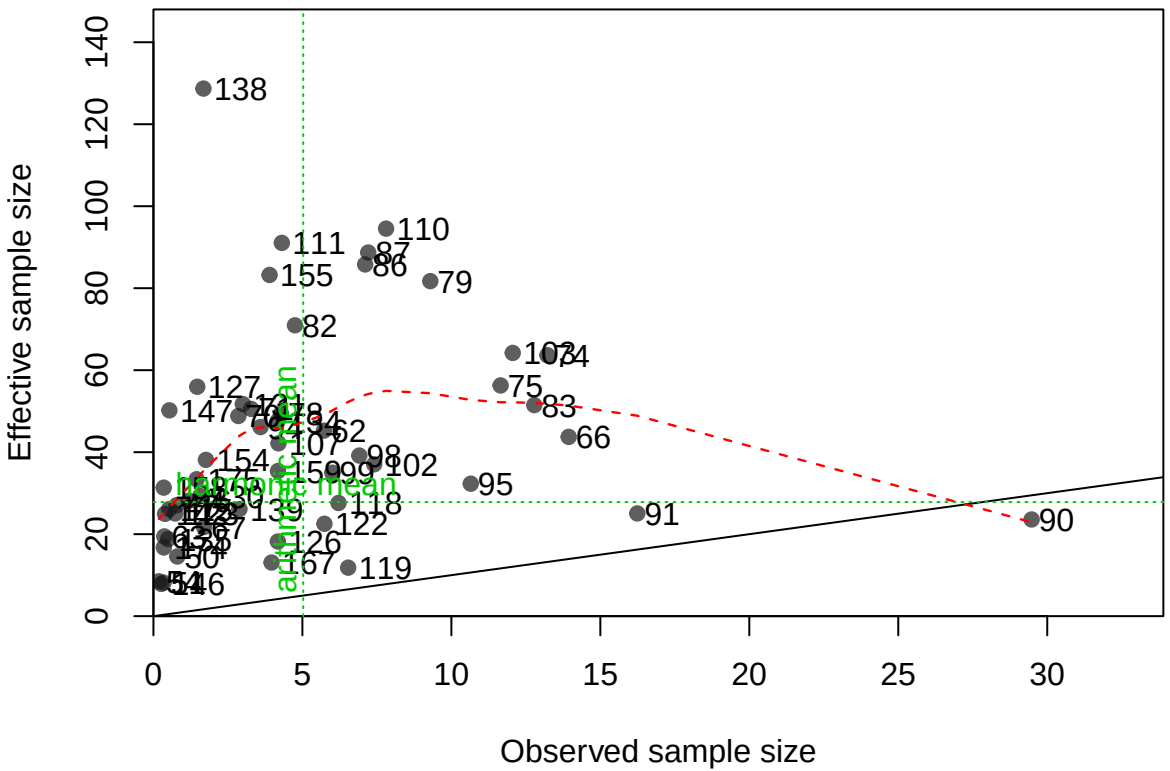

46
N adj.=1.2
N eff.=28.1
54
N adj.=0.2
N eff.=8.5
67
N adj.=1.7
N eff.=21.7
75
N adj.=11.7
N eff.=56.3
47
N adj.=0.8
N eff.=27.1
62
N adj.=5.7
N eff.=45.3
70
N adj.=2.9
N eff.=48.8
78
N adj.=4.3
N eff.=49.4
50
N adj.=0.8
N eff.=14.6
63
N adj.=0.4
N eff.=19.5
71
N adj.=3.3
N eff.=50.6
79
N adj.=9.3
N eff.=81.7
51
N adj.=0.3
N eff.=8.2
66
N adj.=13.9
N eff.=43.7
74
N adj.=13.2
N eff.=63.7
82
N adj.=4.7
N eff.=70.9
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)


83
N adj.=12.8
N eff.=51.5
91
N adj.=16.2
N eff.=25.1
99
N adj.=6
N eff.=35
110
N adj.=7.8
N eff.=94.5
86
N adj.=7.1
N eff.=85.8
94
N adj.=3.6
N eff.=46.1
102
N adj.=7.4
N eff.=37
111
N adj.=4.3
N eff.=91.1
87
N adj.=7.2
N eff.=88.7
95
N adj.=10.7
N eff.=32.3
103
N adj.=12.1
N eff.=64.2
115
N adj.=0.5
N eff.=26.1
90
N adj.=29.5
N eff.=23.6
98
N adj.=6.9
N eff.=39.2
107
N adj.=4.2
N eff.=42.2
118
N adj.=6.2
N eff.=27.6
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

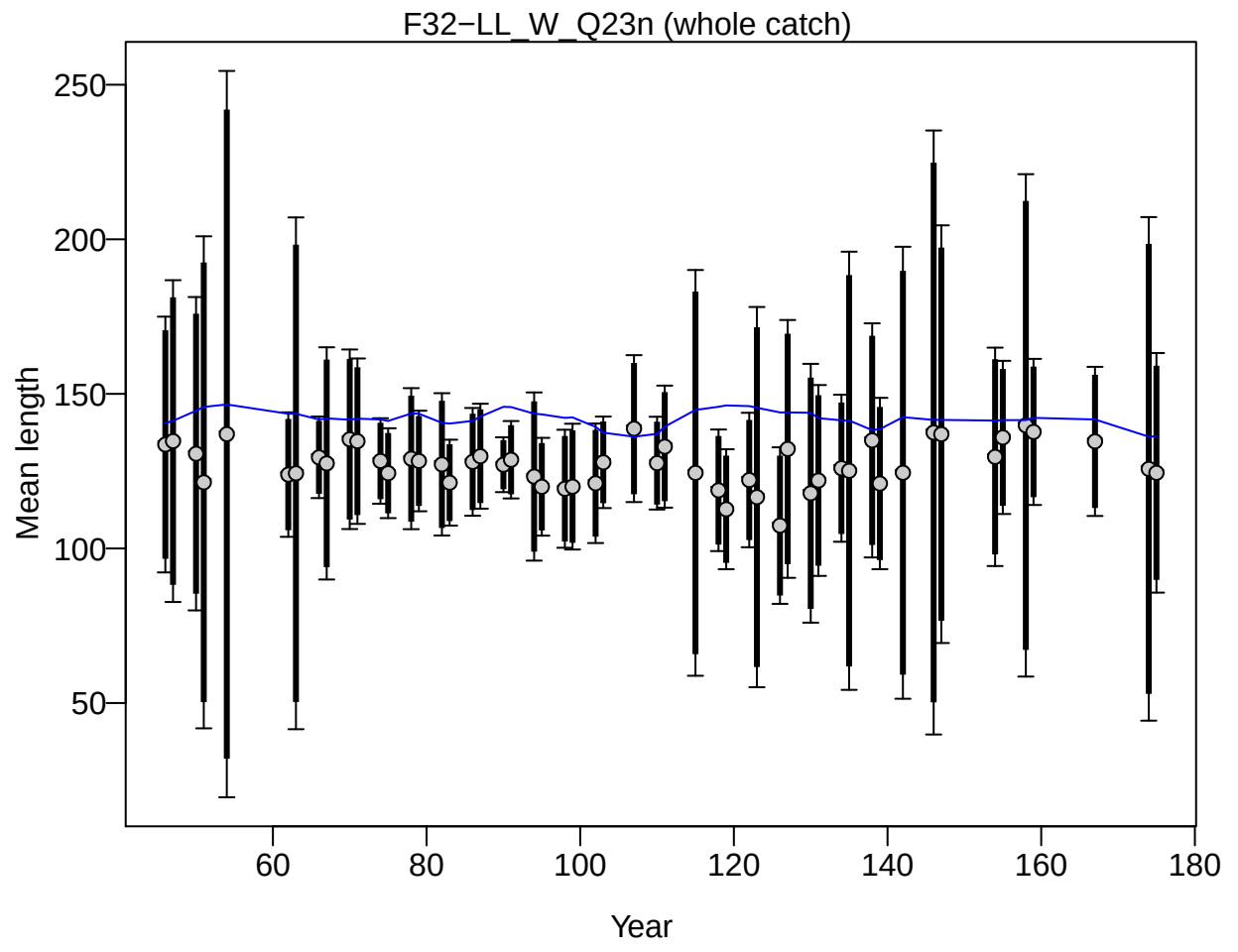

119
N adj.=6.5
N eff.=11.8
127
N adj.=1.5
N eff.=56
135
N adj.=0.5
N eff.=18.8
146
N adj.=0.3
N eff.=7.9
122
N adj.=5.7
N eff.=22.5
130
N adj.=1.6
N eff.=29.3
138
N adj.=1.7
N eff.=128.7
147
N adj.=0.5
N eff.=50.2
123
N adj.=0.7
N eff.=25.1
131
N adj.=3
N eff.=51.7
139
N adj.=2.9
N eff.=26.1
154
N adj.=1.8
N eff.=38.1
126
N adj.=4.2
N eff.=18.2
134
N adj.=4.2
N eff.=47.6
142
N adj.=0.4
N eff.=25
155
N adj.=3.9
N eff.=83.2
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

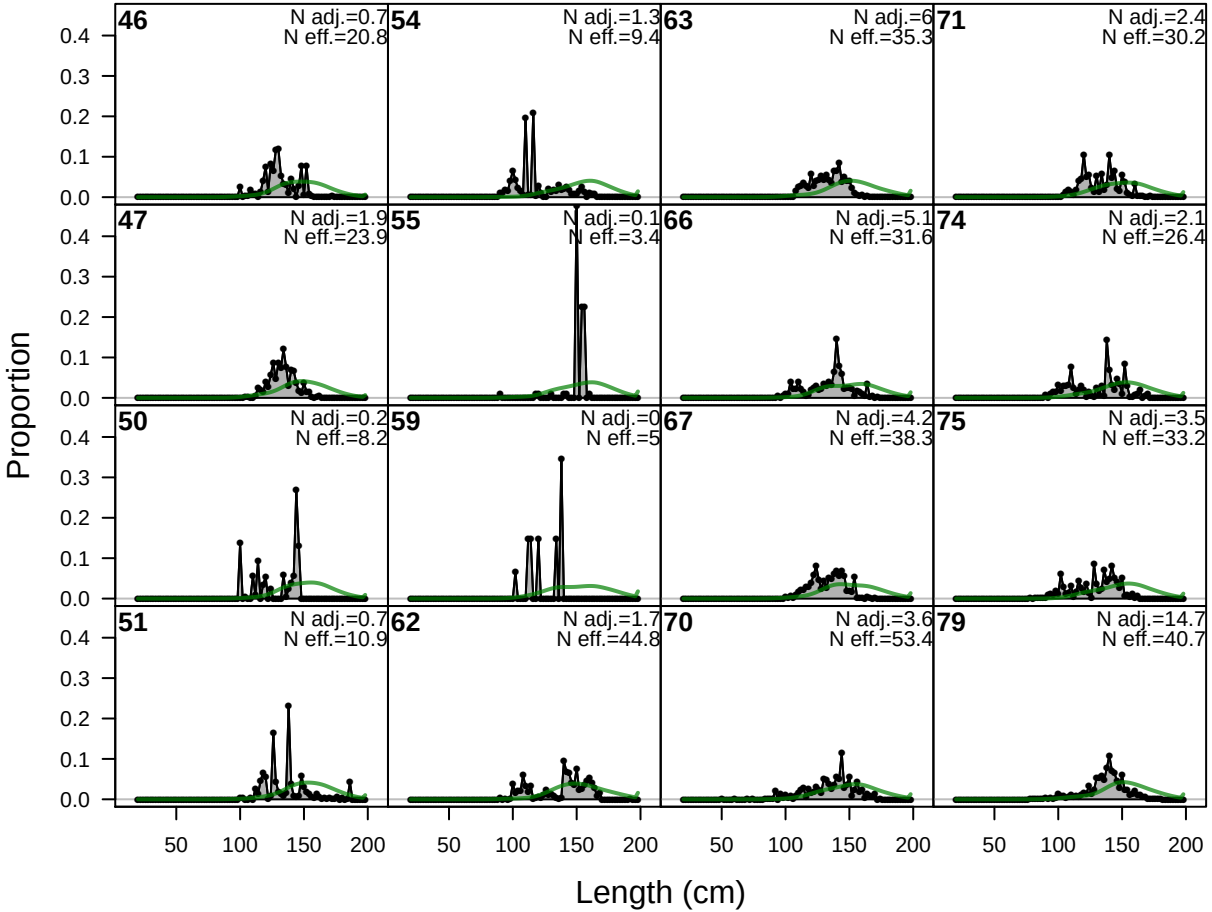

158
N adj.=0.3
N eff.=31.3
175
N adj.=1.5
N eff.=33.4
159
N adj.=4.2
N eff.=35.4
167
N adj.=4
N eff.=13.1
174
N adj.=0.3
N eff.=16.8
Proportion
0.00
0.05
0.10
0.15
0.20
0.25
0.30
50
100
150
200
Length (cm)

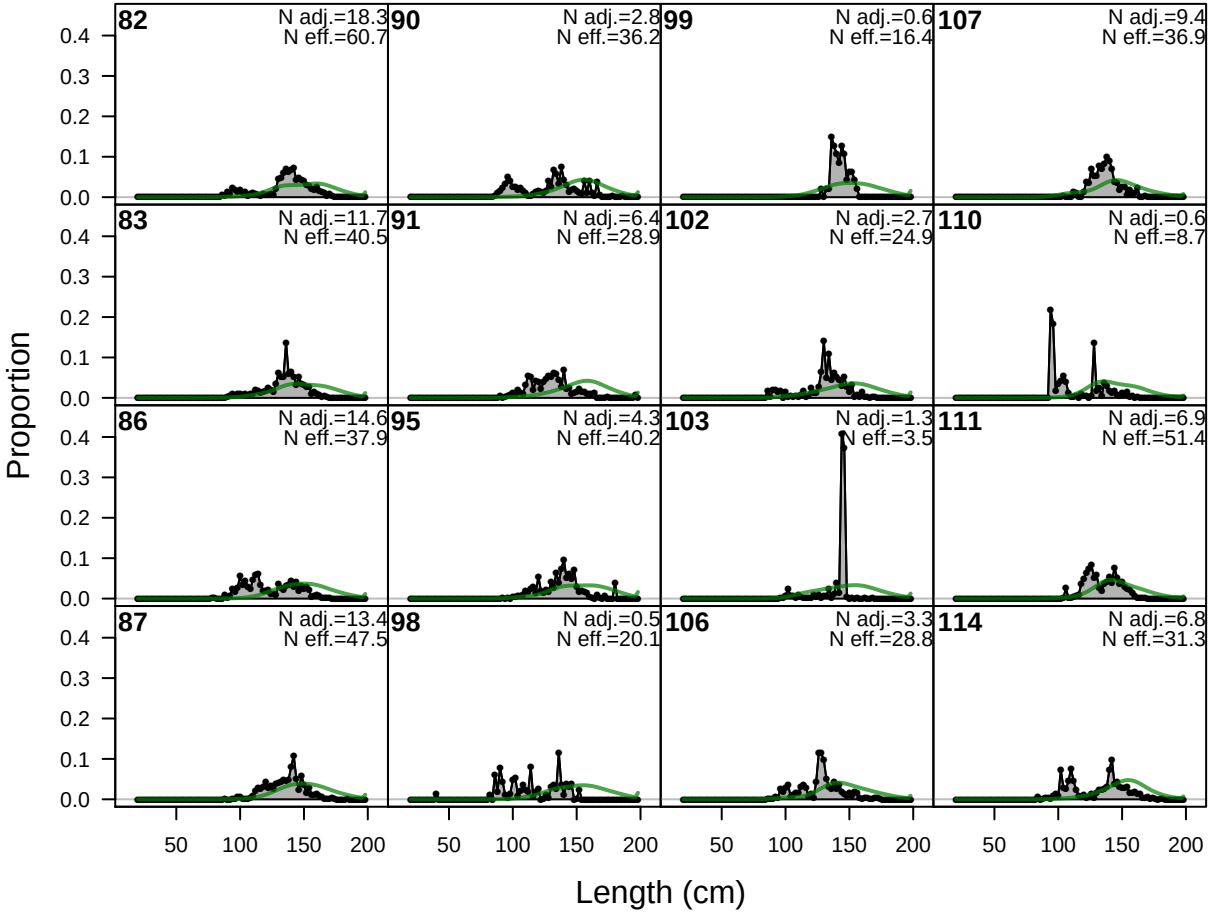

−10
−5
0.1
5
10
200
150
100
50
Length (cm)
46
62
71
82
91
102
115
127
139
154
167
Year

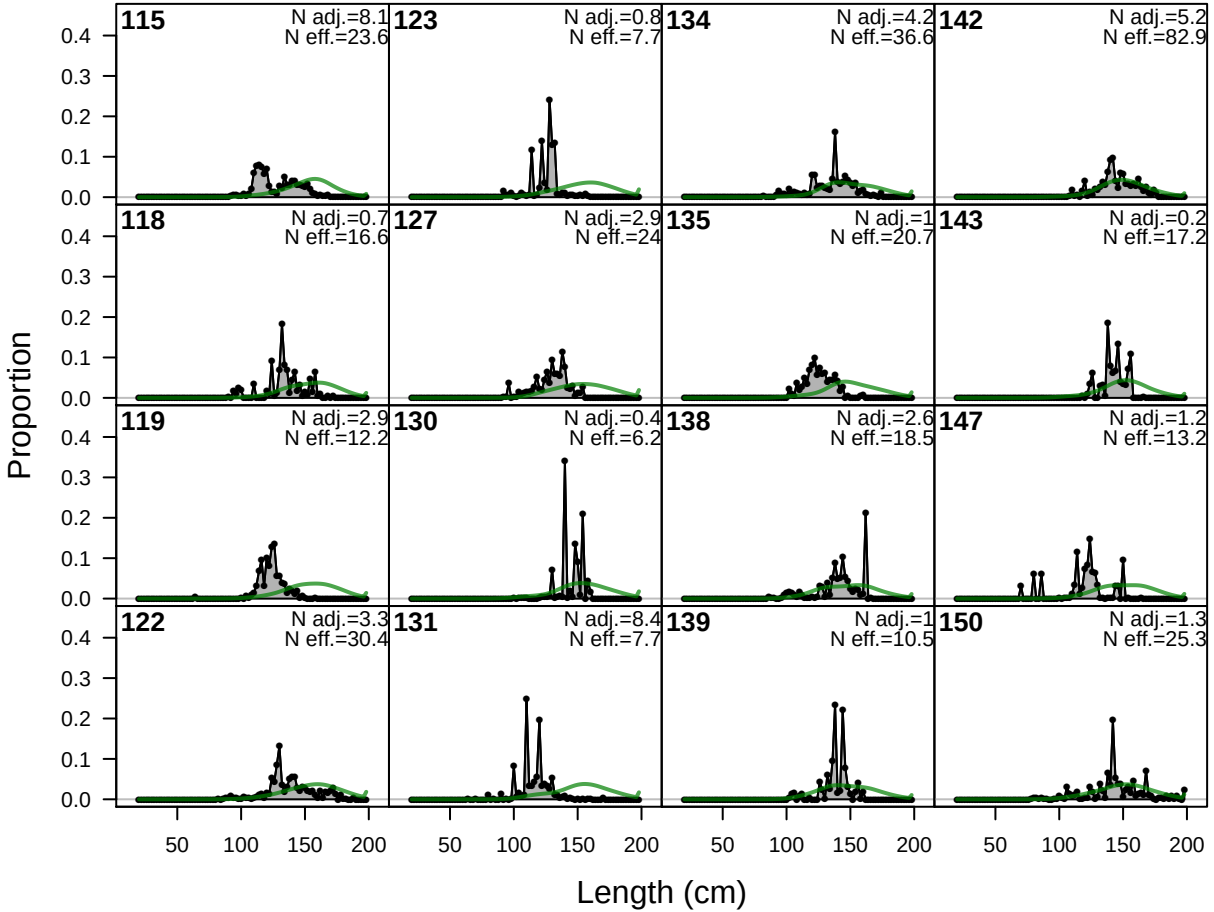


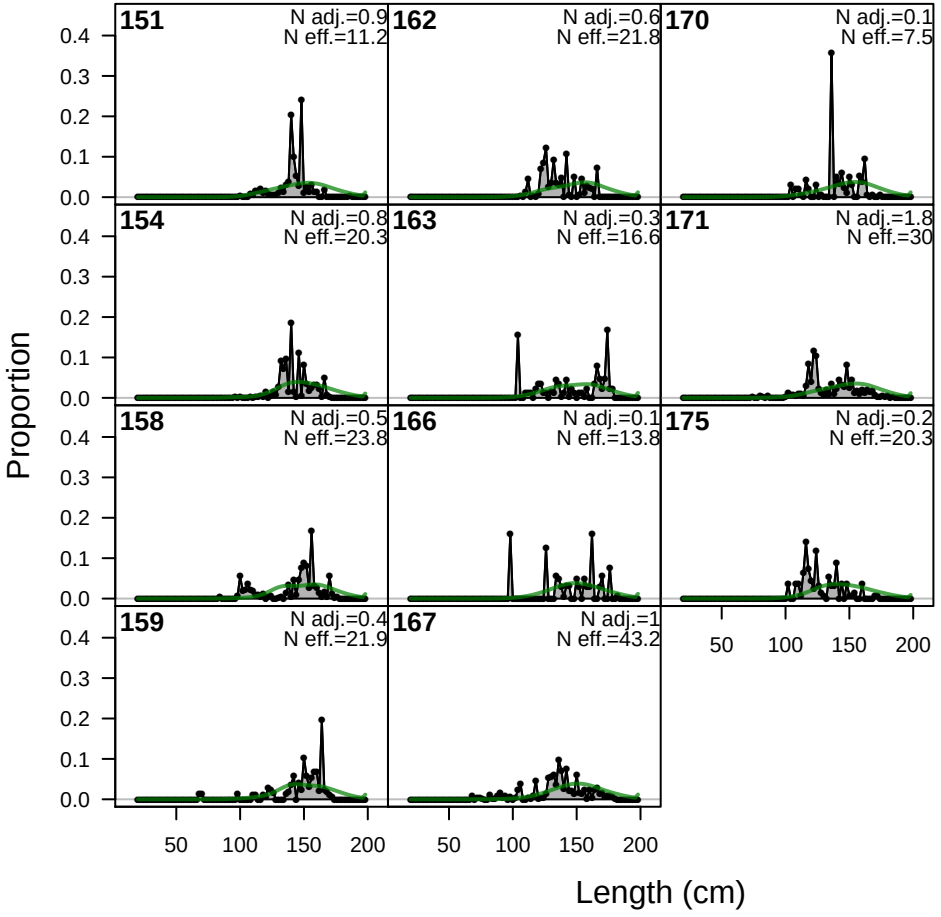
Effective sample size
Observed sample size
0
20
40
60
80
100
120
140
0
5
10
15
20
25
30
138
111
110
87
86
155
79
82
127
147
75
83
66
154
107
98
102
95
118
122
126
167
119
91
90
50
146
arithmetic mean
harmonic mean

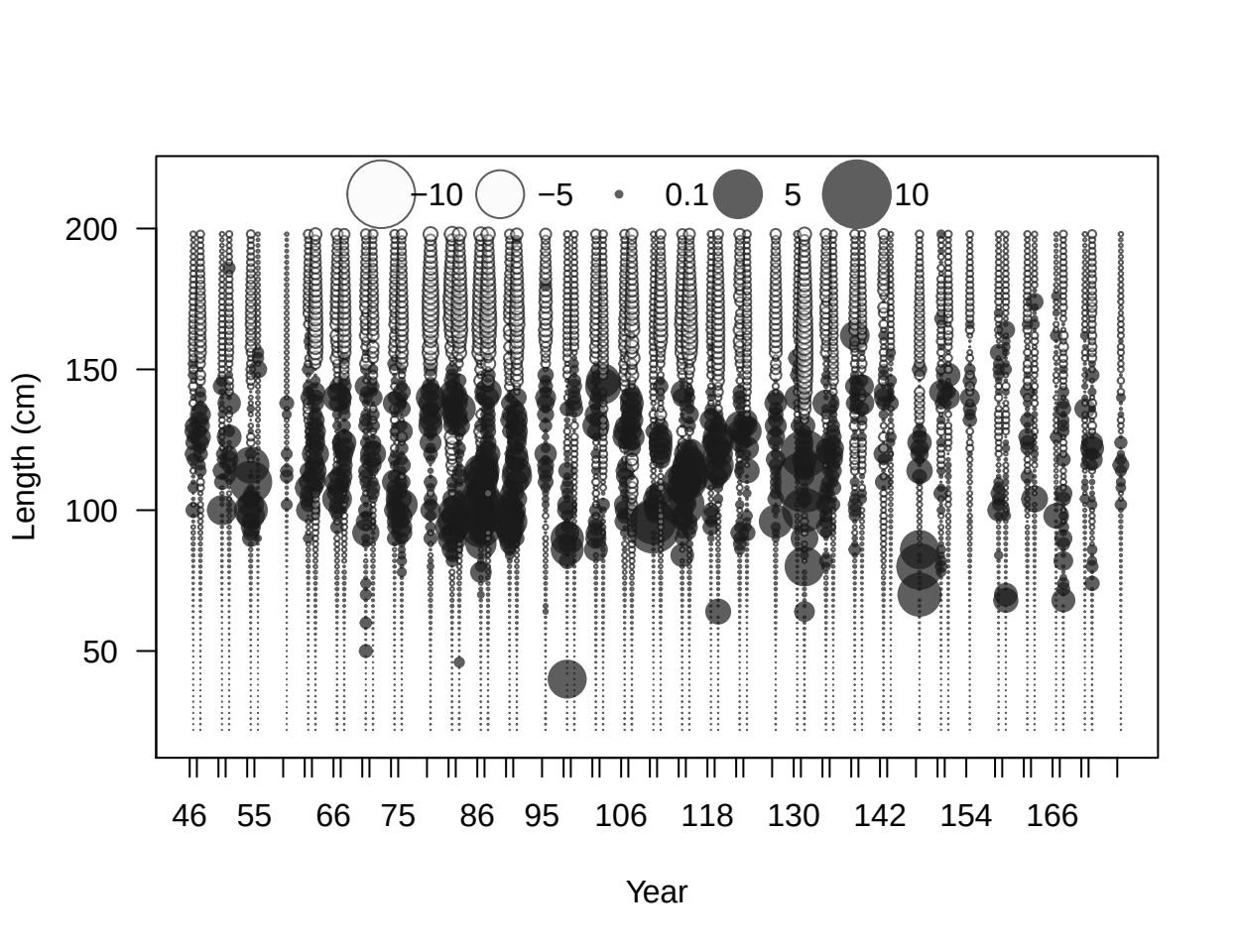

F32−LL_W_Q23n (whole catch)
Mean length
250
200
150
100
50
60
80
100
120
140
160
180
Year

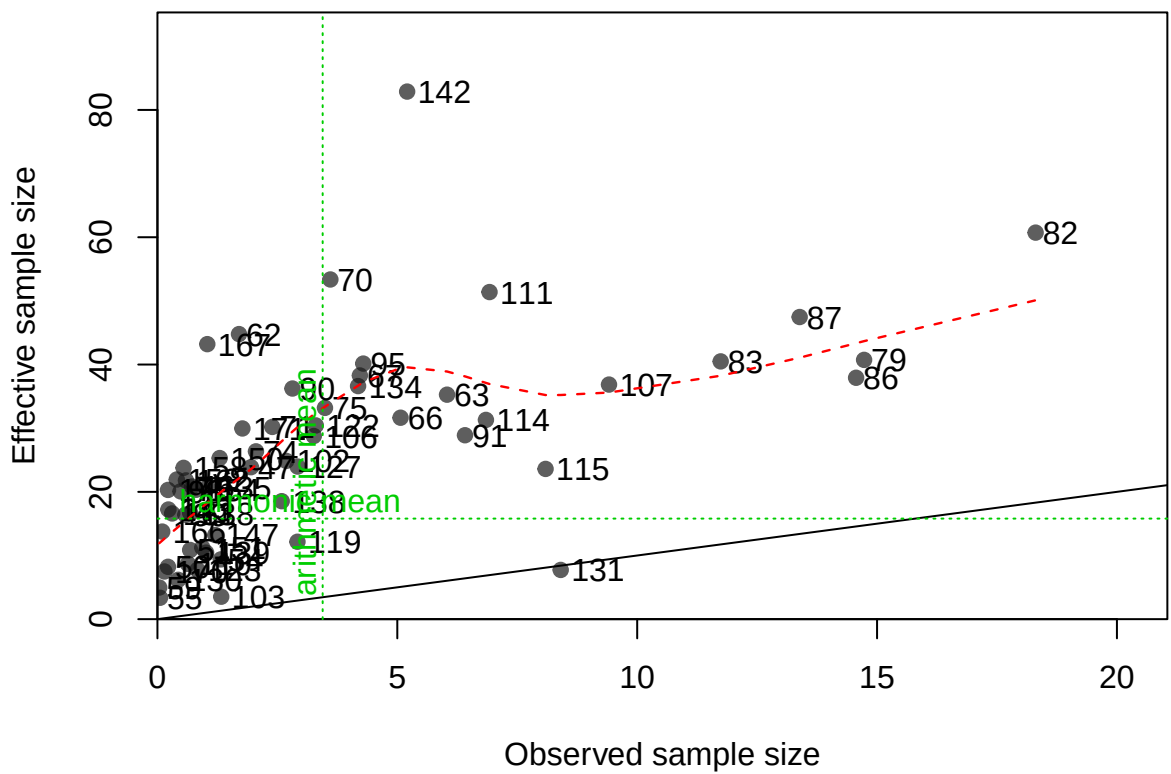

46
N adj.=0.7
N eff.=20.8
54
N adj.=1.3
N eff.=9.4
63
N adj.=6
N eff.=35.3
71
N adj.=2.4
N eff.=30.2
47
N adj.=1.9
N eff.=23.9
55
N adj.=0.1
N eff.=3.4
66
N adj.=5.1
N eff.=31.6
74
N adj.=2.1
N eff.=26.4
50
N adj.=0.2
N eff.=8.2
59
N adj.=0
N eff.=5
67
N adj.=4.2
N eff.=38.3
75
N adj.=3.5
N eff.=33.2
51
N adj.=0.7
N eff.=10.9
62
N adj.=1.7
N eff.=44.8
70
N adj.=3.6
N eff.=53.4
79
N adj.=14.7
N eff.=40.7
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


82
N adj.=18.3
N eff.=60.7
90
N adj.=2.8
N eff.=36.2
99
N adj.=0.6
N eff.=16.4
107
N adj.=9.4
N eff.=36.9
83
N adj.=11.7
N eff.=40.5
91
N adj.=6.4
N eff.=28.9
102
N adj.=2.7
N eff.=24.9
110
N adj.=0.6
N eff.=8.7
86
N adj.=14.6
N eff.=37.9
95
N adj.=4.3
N eff.=40.2
103
N adj.=1.3
N eff.=3.5
111
N adj.=6.9
N eff.=51.4
87
N adj.=13.4
N eff.=47.5
98
N adj.=0.5
N eff.=20.1
106
N adj.=3.3
N eff.=28.8
114
N adj.=6.8
N eff.=31.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

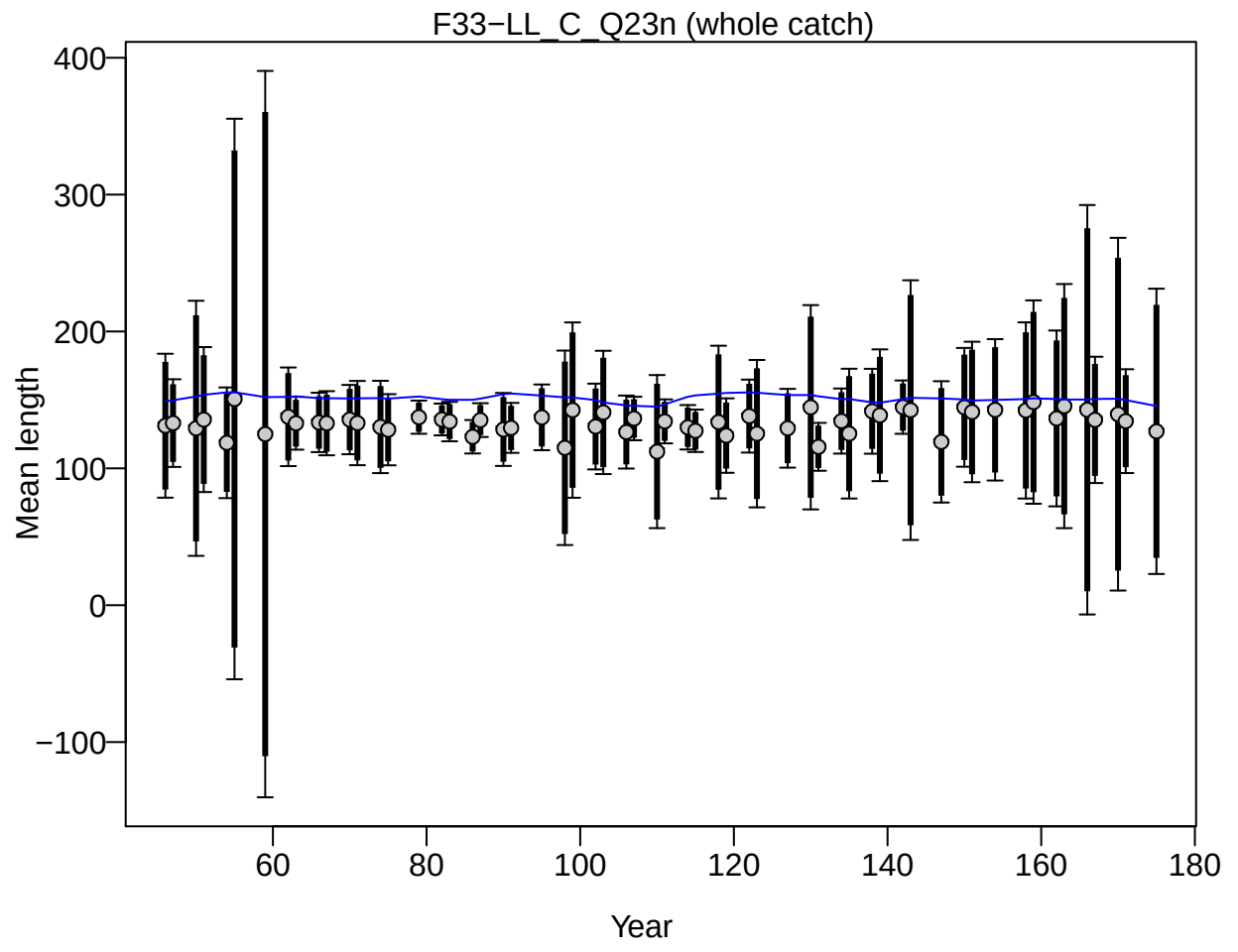

115
N adj.=8.1
N eff.=23.6
123
N adj.=0.8
N eff.=7.7
134
N adj.=4.2
N eff.=36.6
142
N adj.=5.2
N eff.=82.9
118
N adj.=0.7
N eff.=16.6
127
N adj.=2.9
N eff.=24
135
N adj.=1
N eff.=20.7
143
N adj.=0.2
N eff.=17.2
119
N adj.=2.9
N eff.=12.2
130
N adj.=0.4
N eff.=6.2
138
N adj.=2.6
N eff.=18.5
147
N adj.=1.2
N eff.=13.2
122
N adj.=3.3
N eff.=30.4
131
N adj.=8.4
N eff.=7.7
139
N adj.=1
N eff.=10.5
150
N adj.=1.3
N eff.=25.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

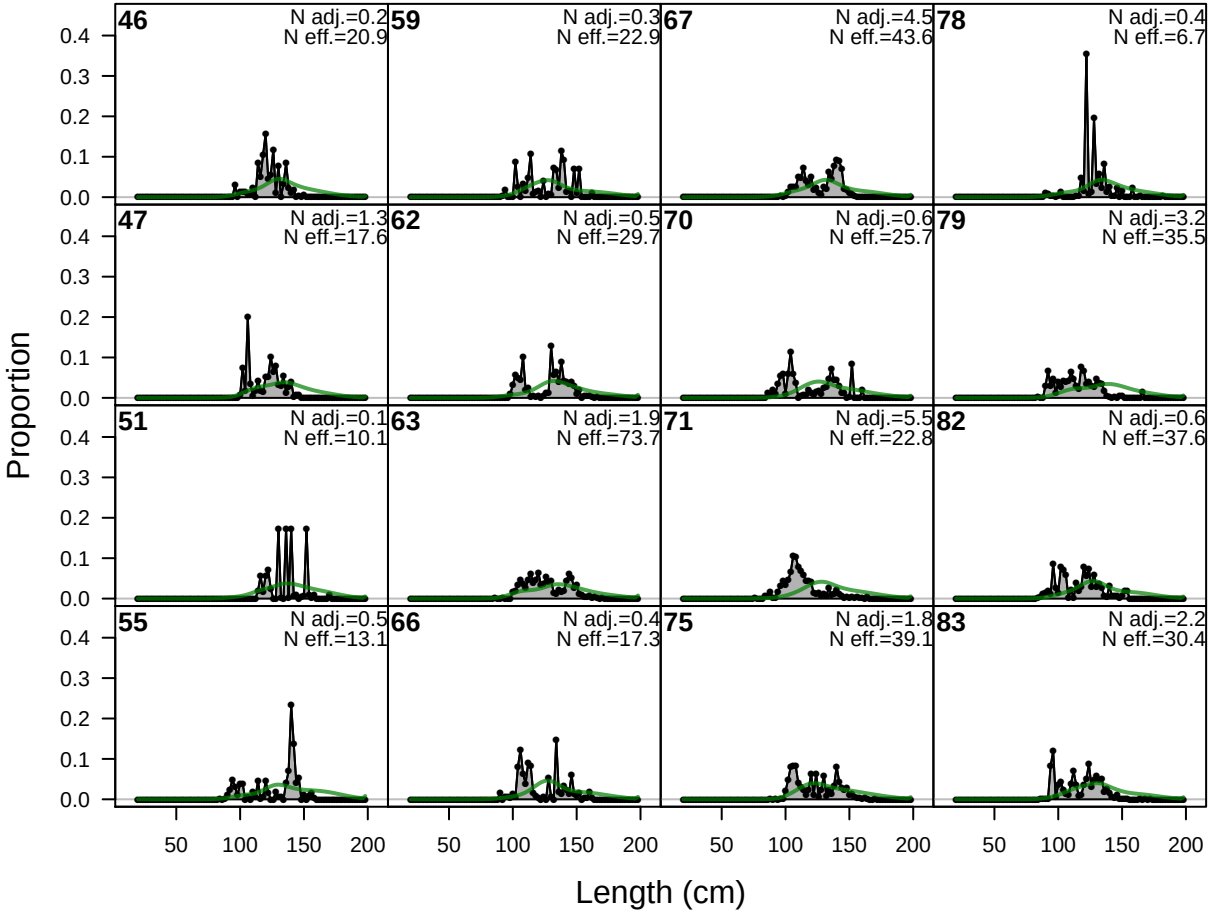

151
N adj.=0.9
N eff.=11.2
162
N adj.=0.6
N eff.=21.8
170
N adj.=0.1
N eff.=7.5
154
N adj.=0.8
N eff.=20.3
163
N adj.=0.3
N eff.=16.6
171
N adj.=1.8
N eff.=30
158
N adj.=0.5
N eff.=23.8
166
N adj.=0.1
N eff.=13.8
175
N adj.=0.2
N eff.=20.3
159
N adj.=0.4
N eff.=21.9
167
N adj.=1
N eff.=43.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

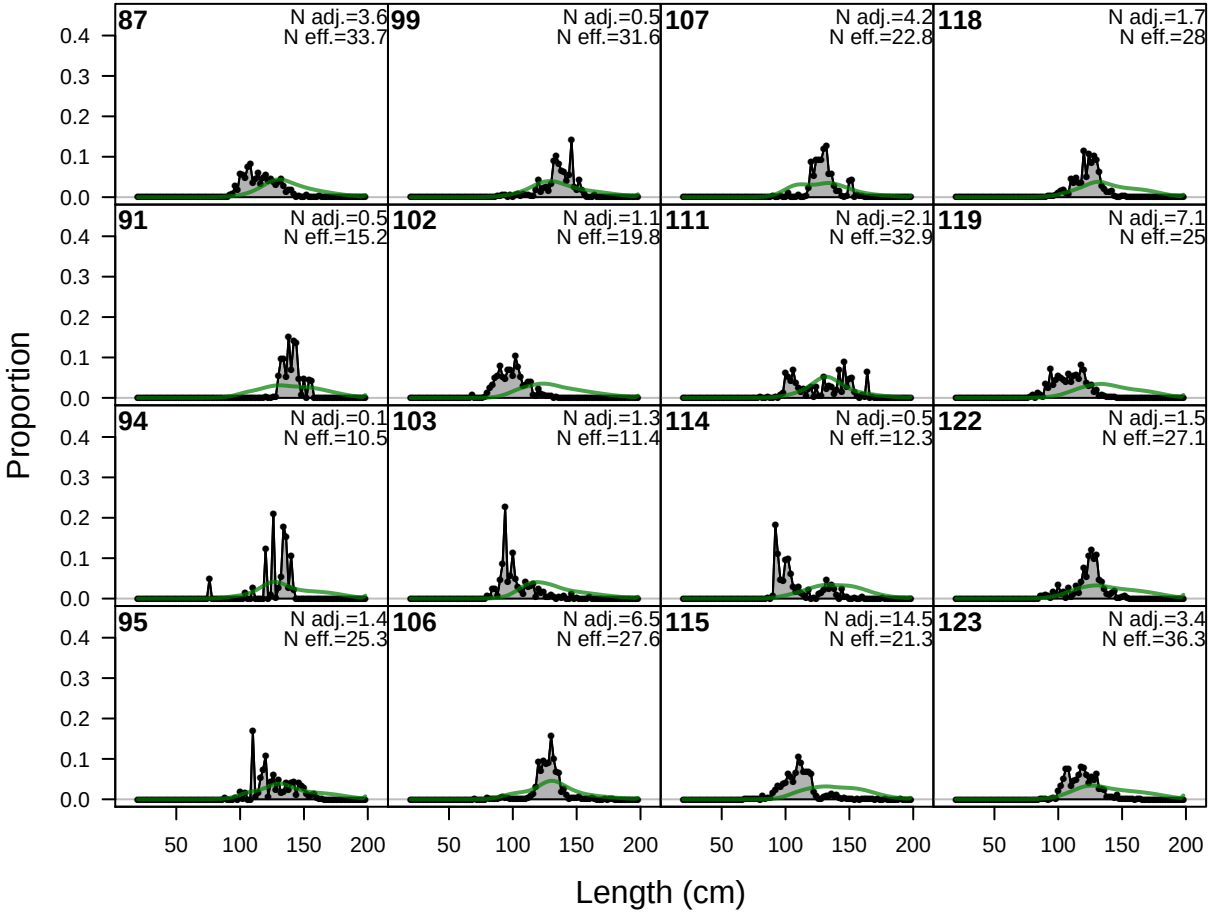

−10
−5
0.1
5
10
200
150
100
50
Length (cm)
46
55
66
75
86
95
106
118
130
142
154
166
Year

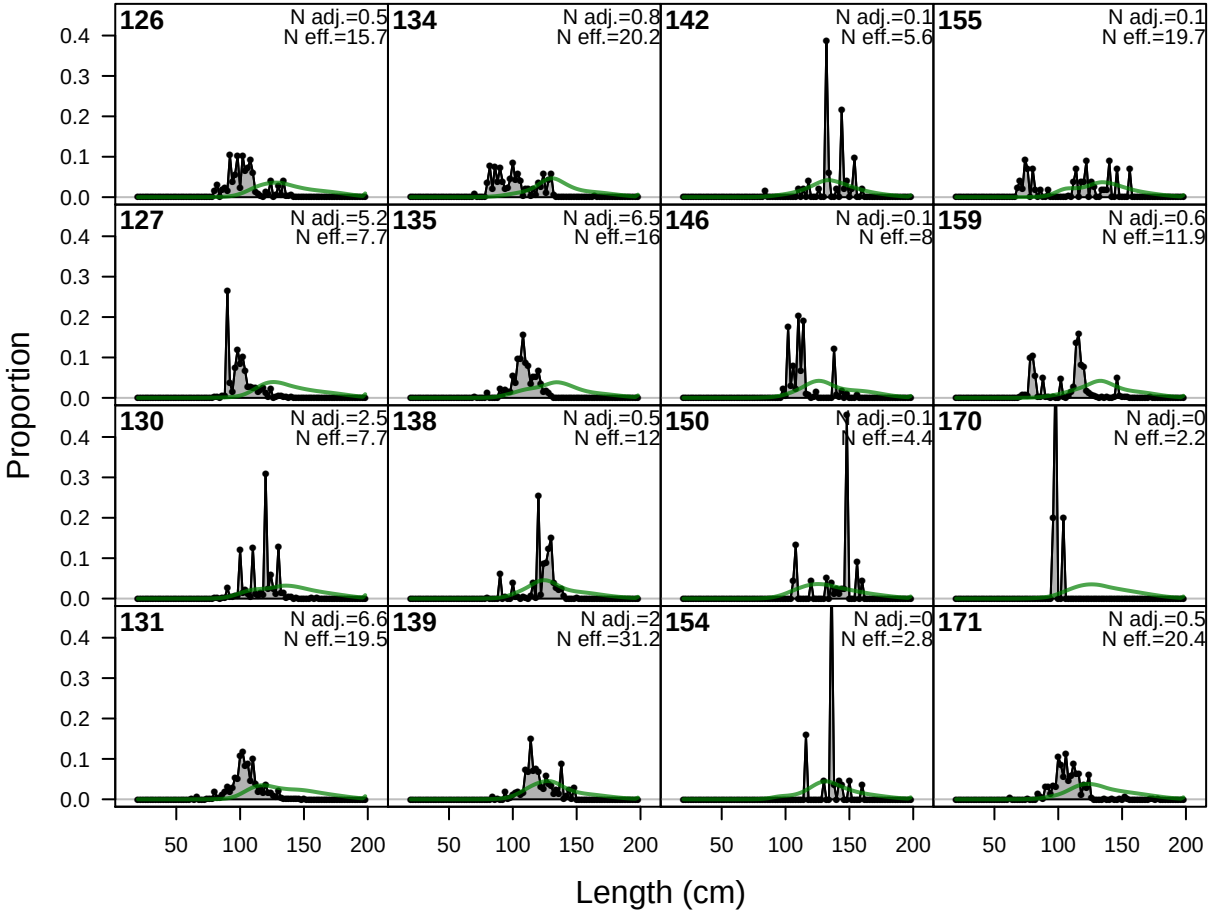


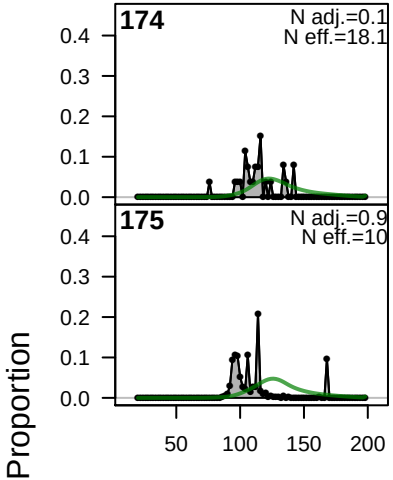
Effective sample size
Observed sample size
0
20
40
60
80
0
5
10
15
20
142
82
70
111
87
62
167
95
83
79
86
134
63
107
75
66
114
91
115
119
131
103

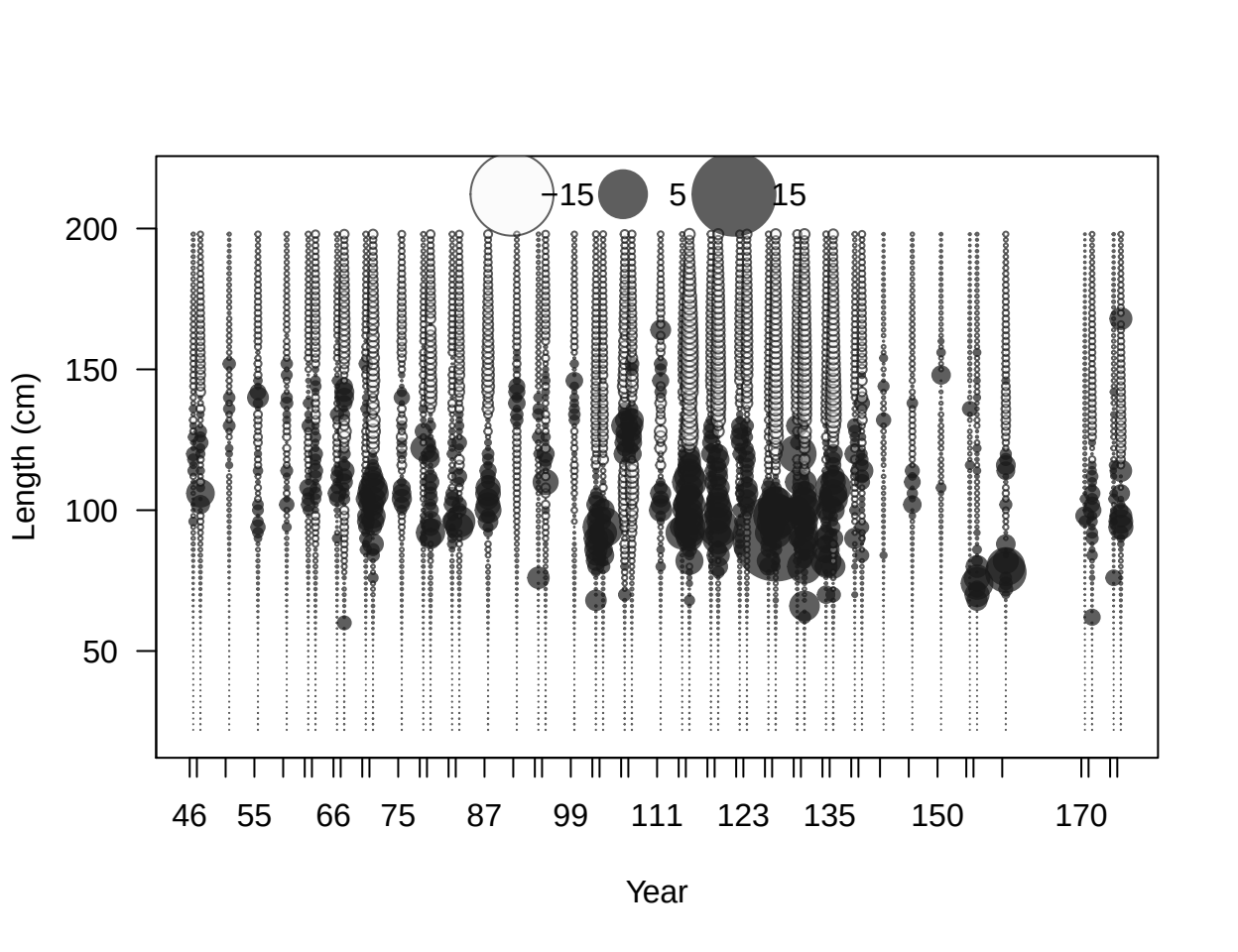

F33−LL_C_Q23n (whole catch)
Mean length
Year
400
300
200
100
0
−100
60
80
100
120
140
160
180

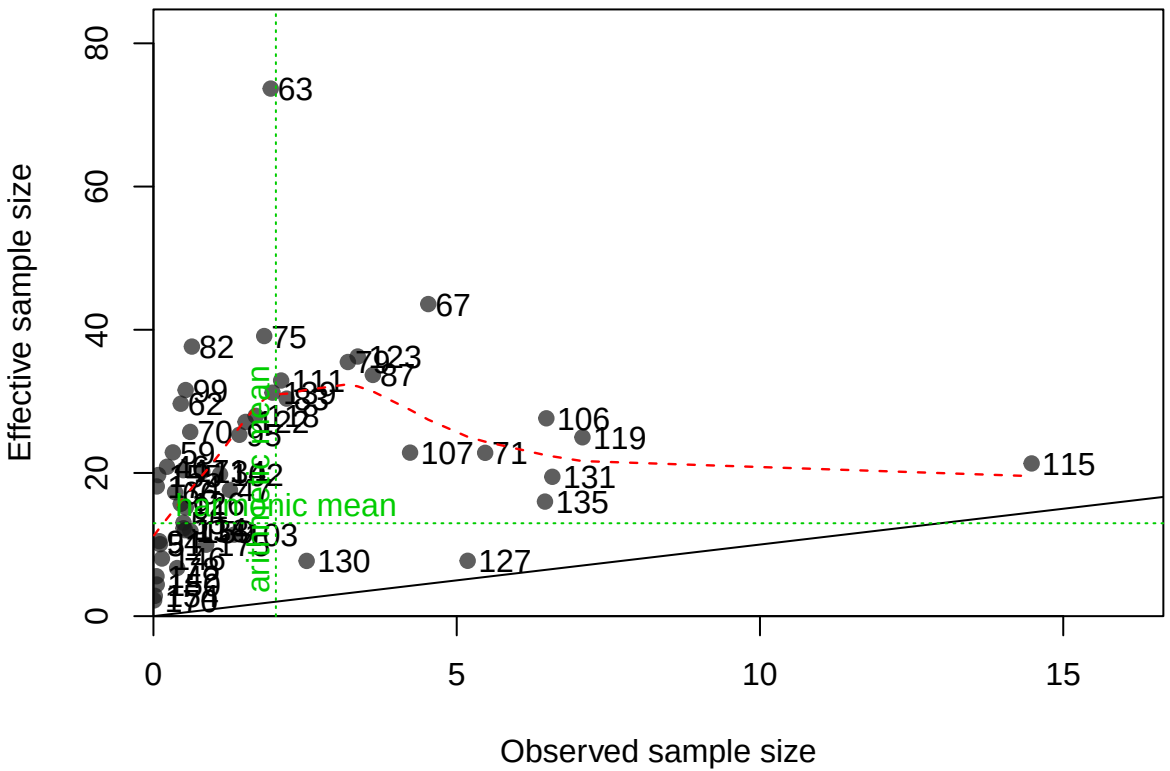

46
N adj.=0.2
N eff.=20.9
59
N adj.=0.3
N eff.=22.9
67
N adj.=4.5
N eff.=43.6
78
N adj.=0.4
N eff.=6.7
47
N adj.=1.3
N eff.=17.6
62
N adj.=0.5
N eff.=29.7
70
N adj.=0.6
N eff.=25.7
79
N adj.=3.2
N eff.=35.5
51
N adj.=0.1
N eff.=10.1
63
N adj.=1.9
N eff.=73.7
71
N adj.=5.5
N eff.=22.8
82
N adj.=0.6
N eff.=37.6
55
N adj.=0.5
N eff.=13.1
66
N adj.=0.4
N eff.=17.3
75
N adj.=1.8
N eff.=39.1
83
N adj.=2.2
N eff.=30.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


87
N adj.=3.6
N eff.=33.7
99
N adj.=0.5
N eff.=31.6
107
N adj.=4.2
N eff.=22.8
118
N adj.=1.7
N eff.=28
91
N adj.=0.5
N eff.=15.2
102
N adj.=1.1
N eff.=19.8
111
N adj.=2.1
N eff.=32.9
119
N adj.=7.1
N eff.=25
94
N adj.=0.1
N eff.=10.5
103
N adj.=1.3
N eff.=11.4
114
N adj.=0.5
N eff.=12.3
122
N adj.=1.5
N eff.=27.1
95
N adj.=1.4
N eff.=25.3
106
N adj.=6.5
N eff.=27.6
115
N adj.=14.5
N eff.=21.3
123
N adj.=3.4
N eff.=36.3
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

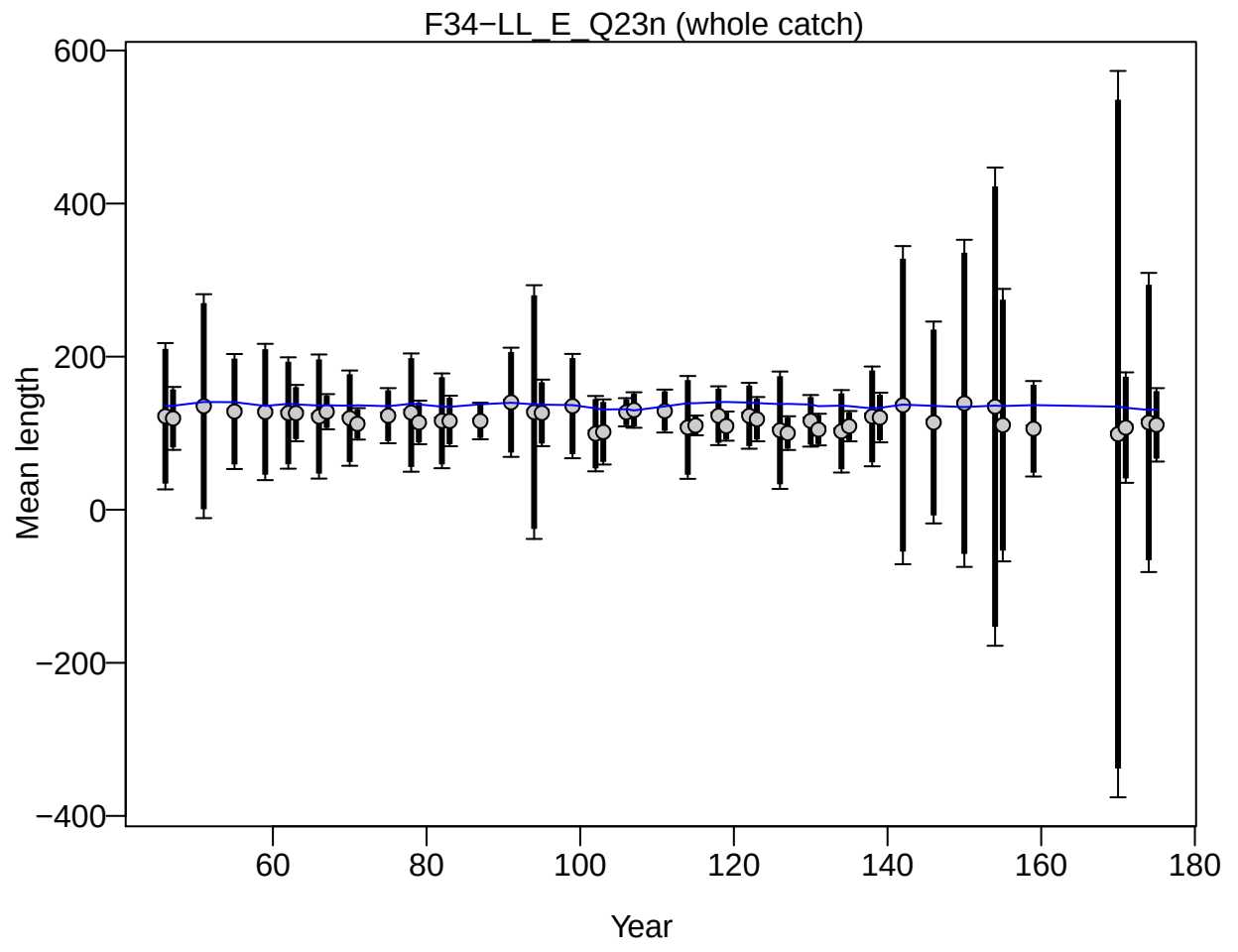

126
N adj.=0.5
N eff.=15.7
134
N adj.=0.8
N eff.=20.2
142
N adj.=0.1
N eff.=5.6
155
N adj.=0.1
N eff.=19.7
127
N adj.=5.2
N eff.=7.7
135
N adj.=6.5
N eff.=16
146
N adj.=0.1
N eff.=8
159
N adj.=0.6
N eff.=11.9
130
N adj.=2.5
N eff.=7.7
138
N adj.=0.5
N eff.=12
150
N adj.=0.1
N eff.=4.4
170
N adj.=0
N eff.=2.2
131
N adj.=6.6
N eff.=19.5
139
N adj.=2
N eff.=31.2
154
N adj.=0
N eff.=2.8
171
N adj.=0.5
N eff.=20.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

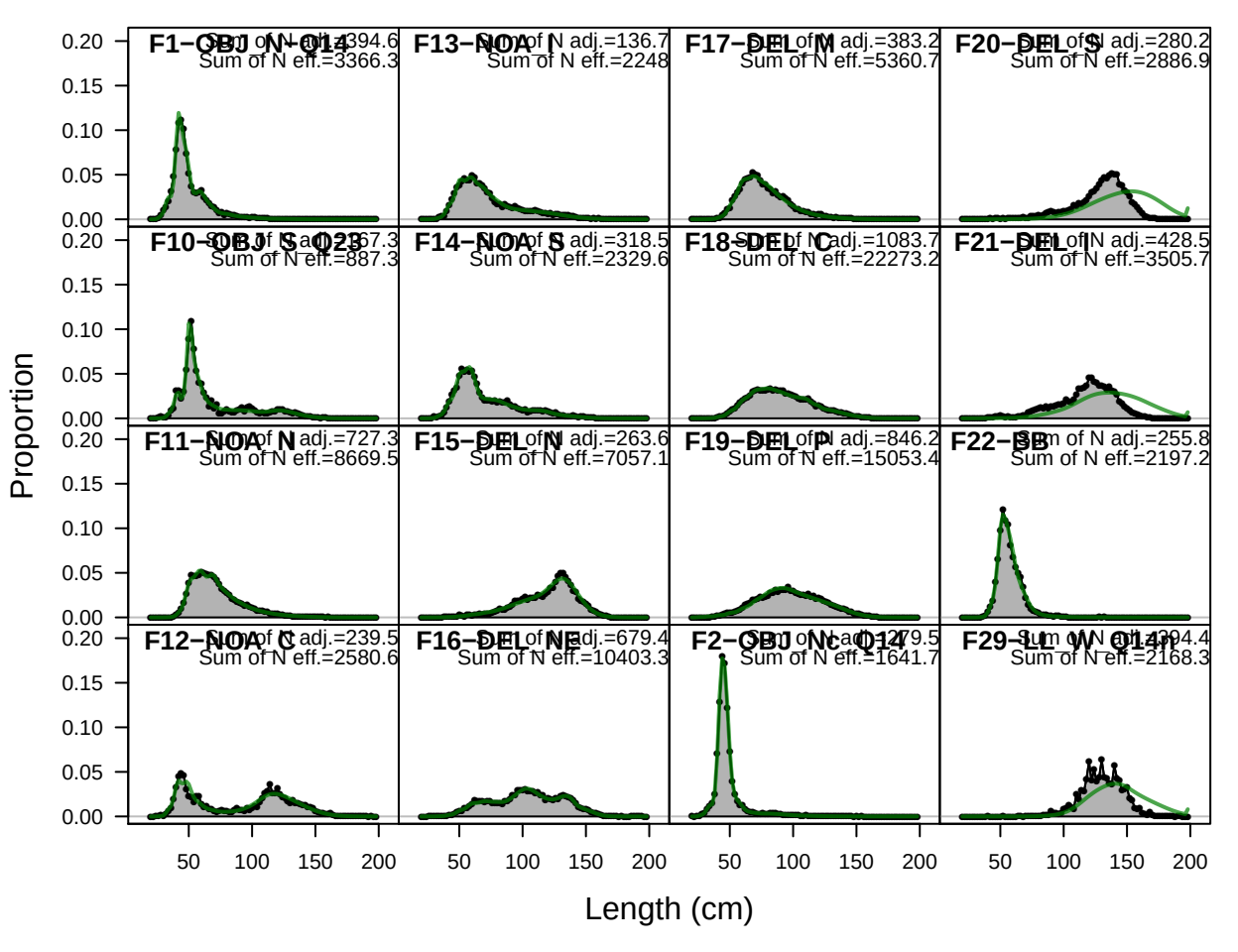

174
N adj.=0.1
N eff.=18.1
175
N adj.=0.9
N eff.=10
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Proportion
Length (cm)

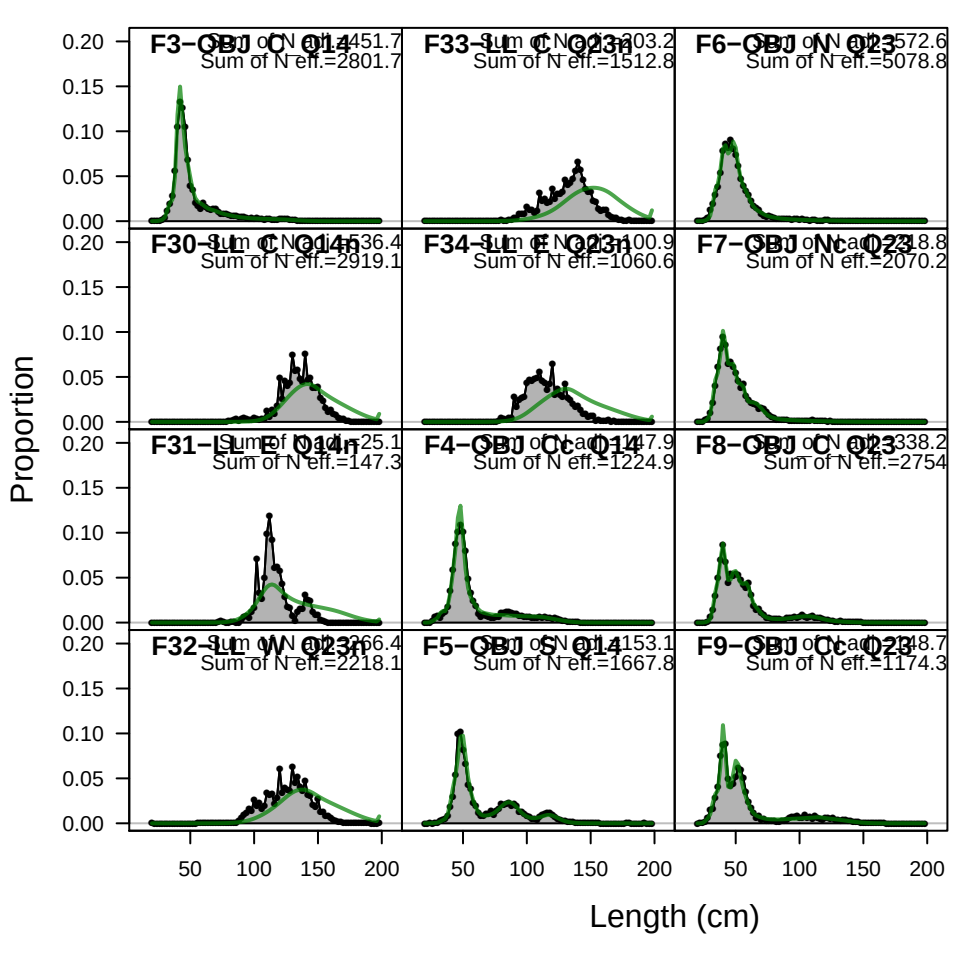

15
5
15
200
150
100
50
Length (cm)
46
55
66
75
87
99
111
123
135
150
170
Year

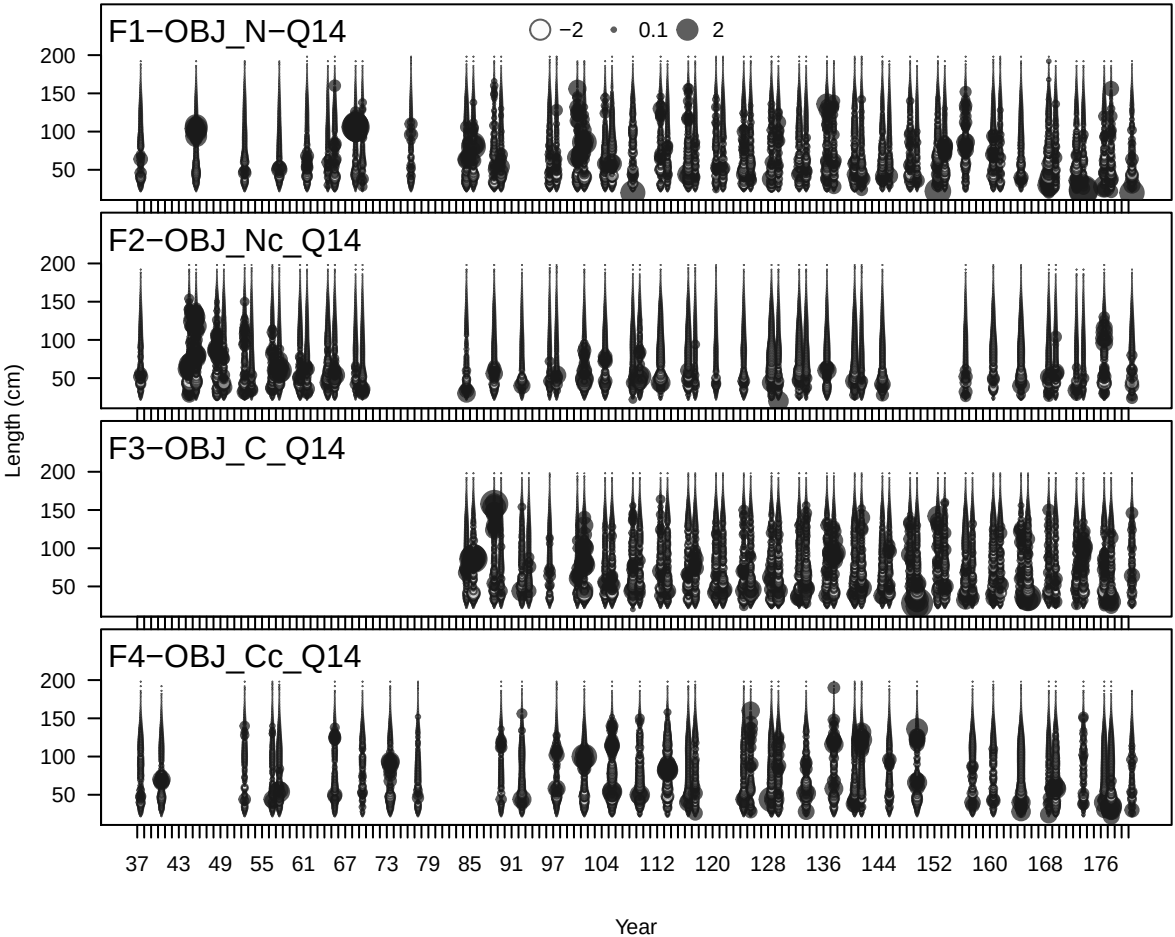


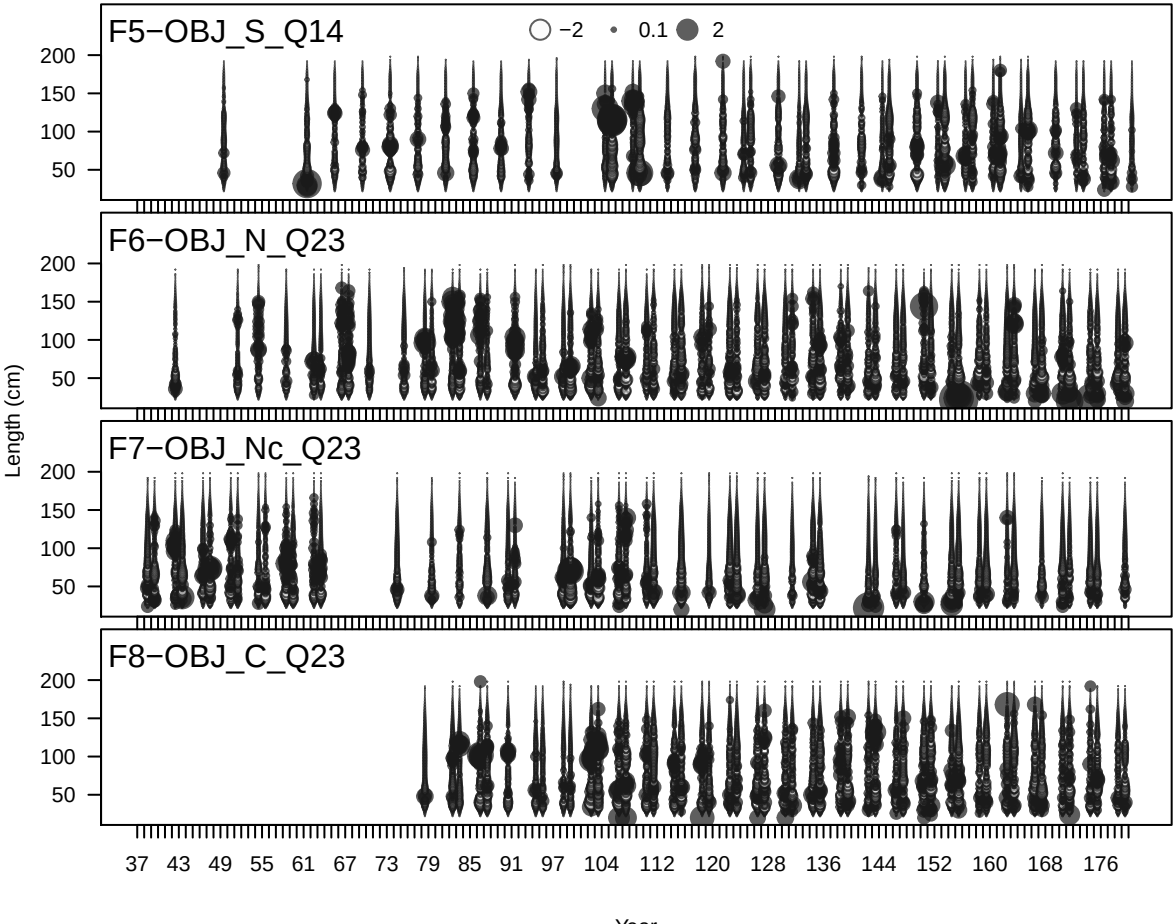
Effective sample size
Observed sample size
0
20
40
60
80
0
5
10
15
63
67
75
82
99
62
70
59
106
119
107
71
115
131
135
130
127
111
123
87
arithmetic mean
geometric mean

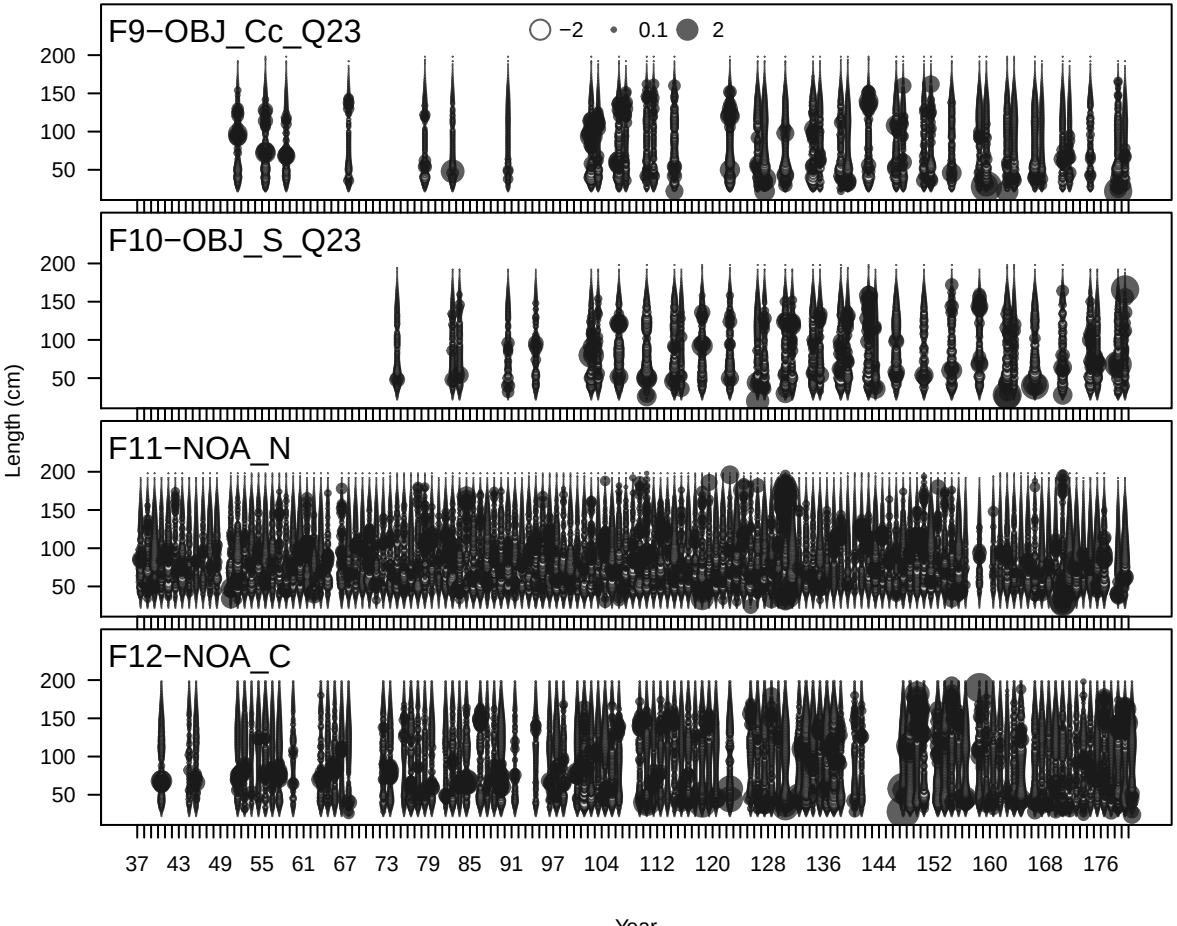

F34−LL_E_Q23n (whole catch)
600
400
200
0
−200
−400
Mean length
60
80
100
120
140
160
180
Year

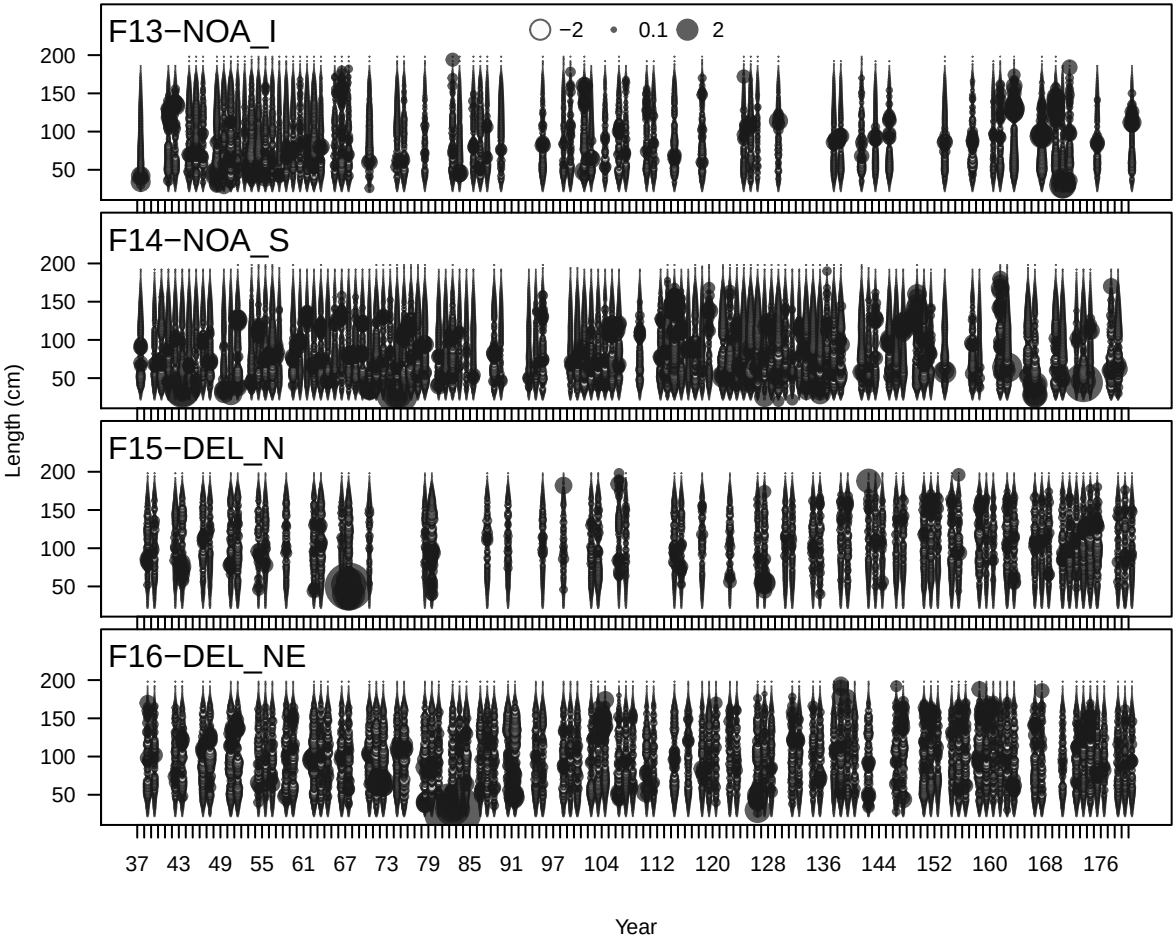

F1−OBJ N−Q14
Sum of N adj.=4394.6
Sum of N eff.=3366.3
F13−NOA I
Sum of N adj.=136.7
Sum of N eff.=2248
F17−DEL M
Sum of N adj.=383.2
Sum of N eff.=5360.7
F20−DEL S
Sum of N adj.=280.2
Sum of N eff.=2886.9
F10−OBJ S−Q23
Sum of N adj.=1367.3
Sum of N eff.=887.3
F14−NOA S
Sum of N adj.=318.5
Sum of N eff.=2329.6
F18−DEL C
Sum of N adj.=1083.7
Sum of N eff.=22273.2
F21−DEL I
Sum of N adj.=428.5
Sum of N eff.=3505.7
F11−NOA N
Sum of N adj.=727.3
Sum of N eff.=8669.5
F15−DEL N
Sum of N adj.=263.6
Sum of N eff.=7057.1
F19−DEL P
Sum of N adj.=846.2
Sum of N eff.=15053.4
F22−SB
Sum of N adj.=255.8
Sum of N eff.=2197.2
F12−NOA C
Sum of N adj.=239.5
Sum of N eff.=2580.6
F16−DEL NE
Sum of N adj.=679.4
Sum of N eff.=10403.3
F2−OBJ Nc−Q14
Sum of N adj.=1279.5
Sum of N eff.=1641.7
F29−LL W−Q14
Sum of N adj.=1394.4
Sum of N eff.=2168.3
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

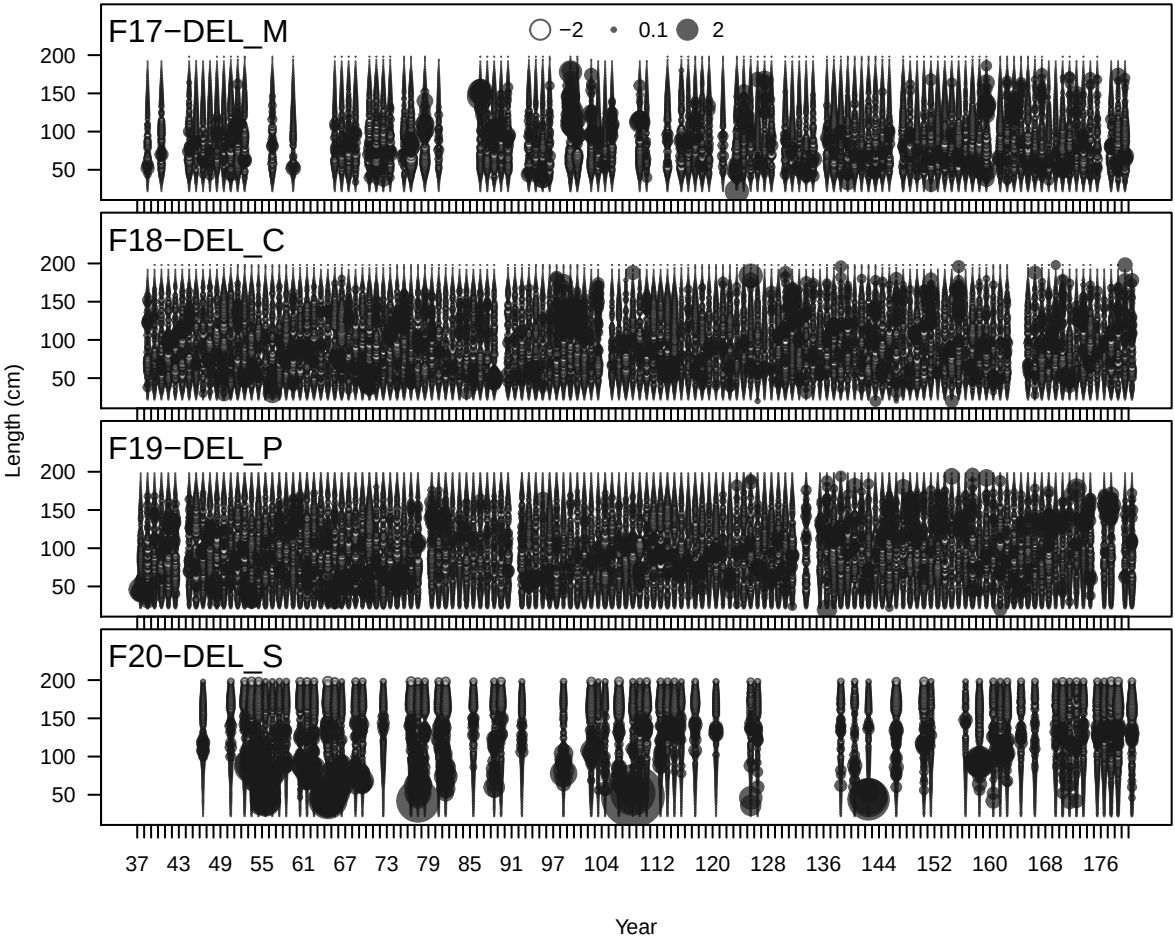

F3−QBJ C Q14
Sum of N adj.=1451.7
Sum of N eff.=2801.7
F33−LL C Q23n
Sum of N adj.=1203.2
Sum of N eff.=1512.8
F6−QBJ N Q23
Sum of N adj.=2572.6
Sum of N eff.=5078.8
F30−LL C Q14n
Sum of N adj.=1536.4
Sum of N eff.=2919.1
F34−LL E Q23n
Sum of N adj.=1100.9
Sum of N eff.=1060.6
F7−QBJ Nc Q23
Sum of N adj.=1218.8
Sum of N eff.=2070.2
F31−LL E Q14n
Sum of N adj.=125.1
Sum of N eff.=147.3
F4−QBJ Cc Q14
Sum of N adj.=1047.9
Sum of N eff.=1224.9
F8−QBJ C Q23
Sum of N adj.=2338.2
Sum of N eff.=2754
F32−LL W Q23n
Sum of N adj.=1266.4
Sum of N eff.=2218.1
F5−QBJ S Q14
Sum of N adj.=1153.1
Sum of N eff.=1667.8
F9−QBJ Cc Q23
Sum of N adj.=1248.7
Sum of N eff.=1174.3
Proportion
0.00
0.05
0.10
0.15
0.20
50
100
150
200
Length (cm)

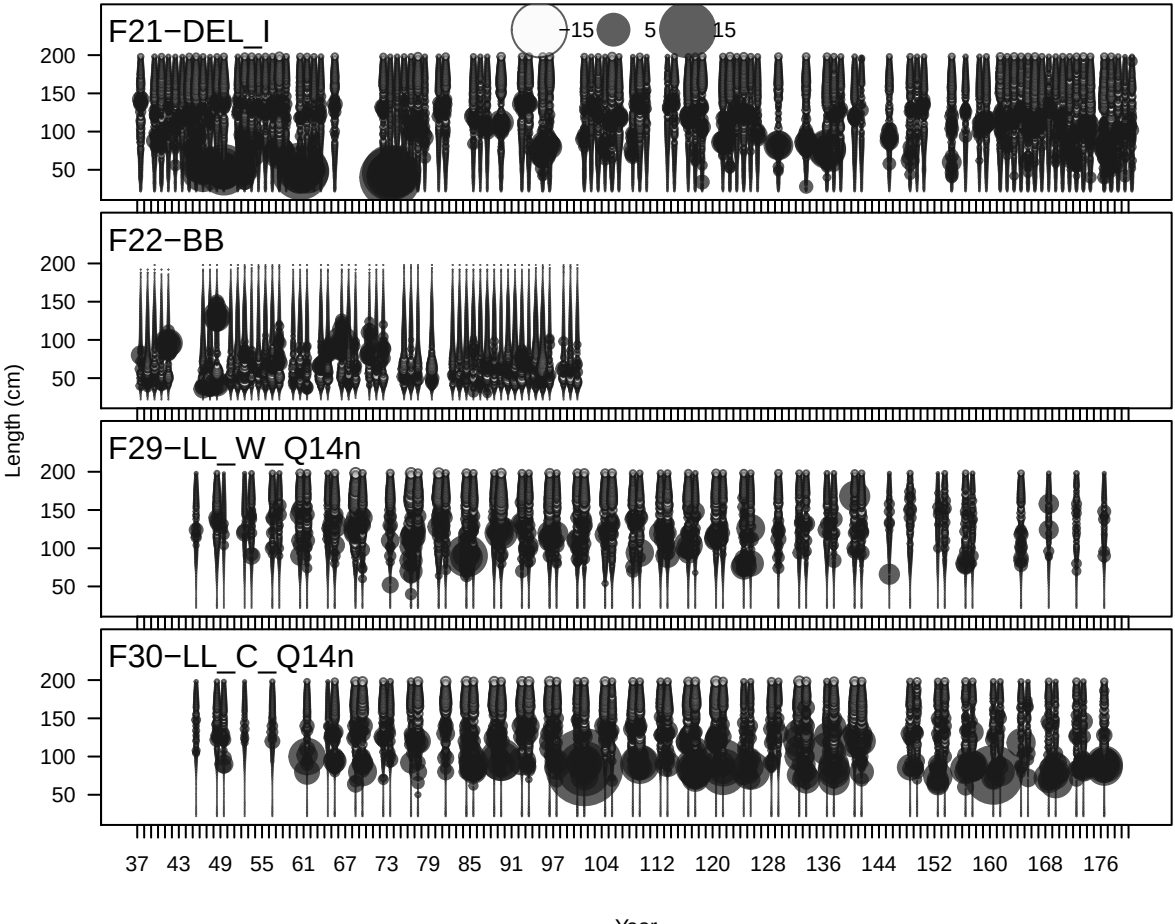

F1−OBJ_N−Q14
−2
0.1
2
F2−OBJ_Nc_Q14
F3−OBJ_C_Q14
F4−OBJ_Cc_Q14
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

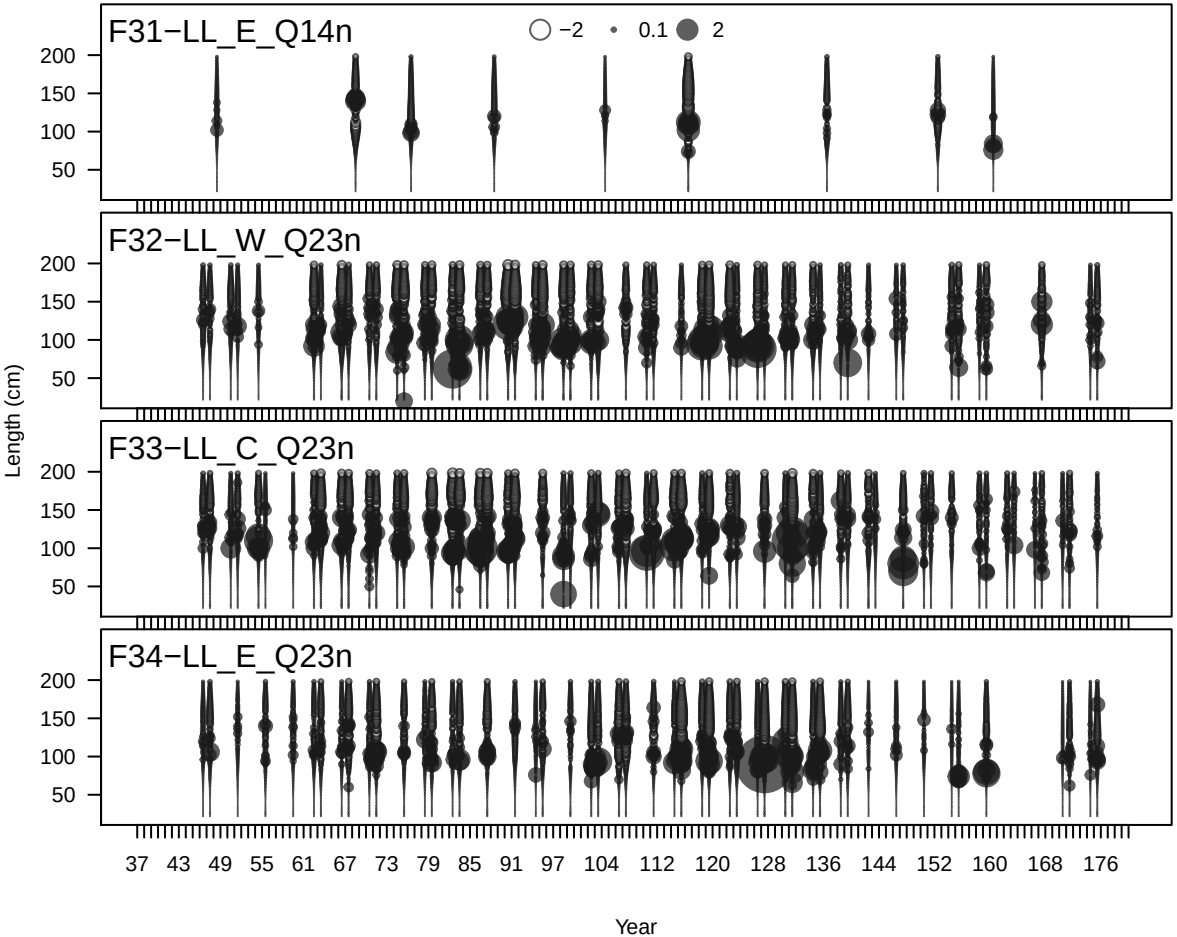

F5−OBJ_S_Q14
−2
0.1
2
F6−OBJ_N_Q23
F7−OBJ_Nc_Q23
F8−OBJ_C_Q23
Length (cm)
50
100
150
200
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

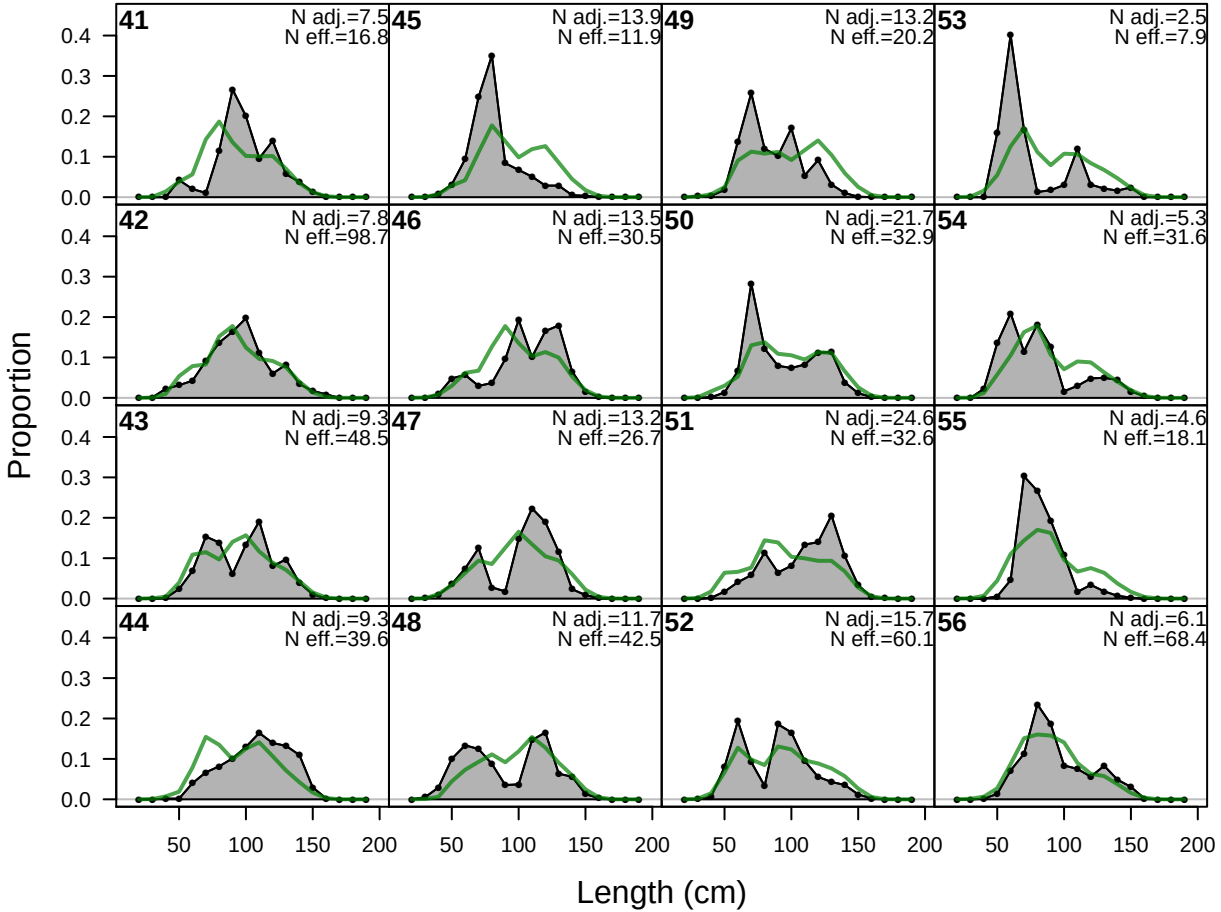

F9−OBJ_Cc_Q23
−2
0.1
2
F10−OBJ_S_Q23
F11−NOA_N
F12−NOA_C
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

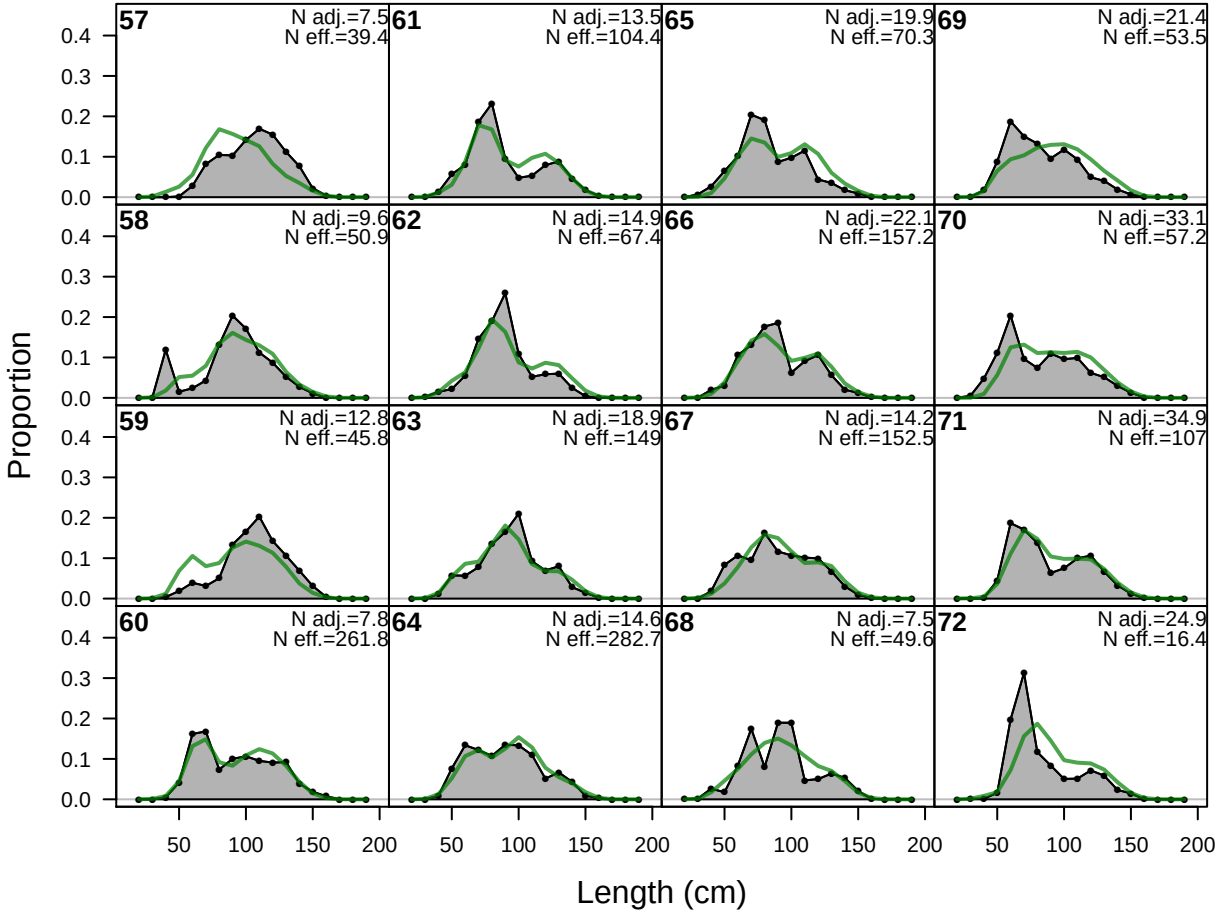

F13−NOA_I
−2
0.1
2
F14−NOA_S
F15−DEL_N
F16−DEL_NE
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

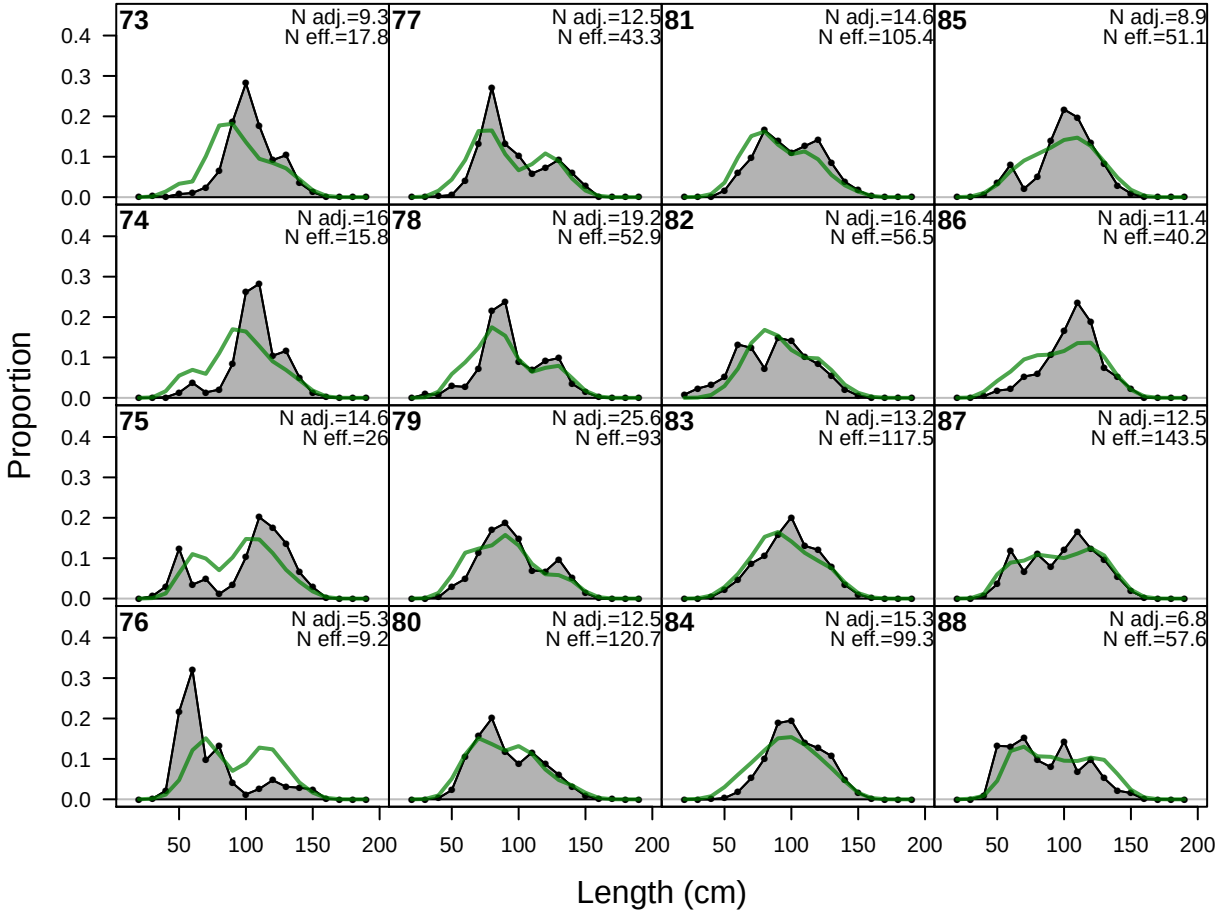

F17−DEL_M
F18−DEL_C
F19−DEL_P
F20−DEL_S
−2
0.1
2
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

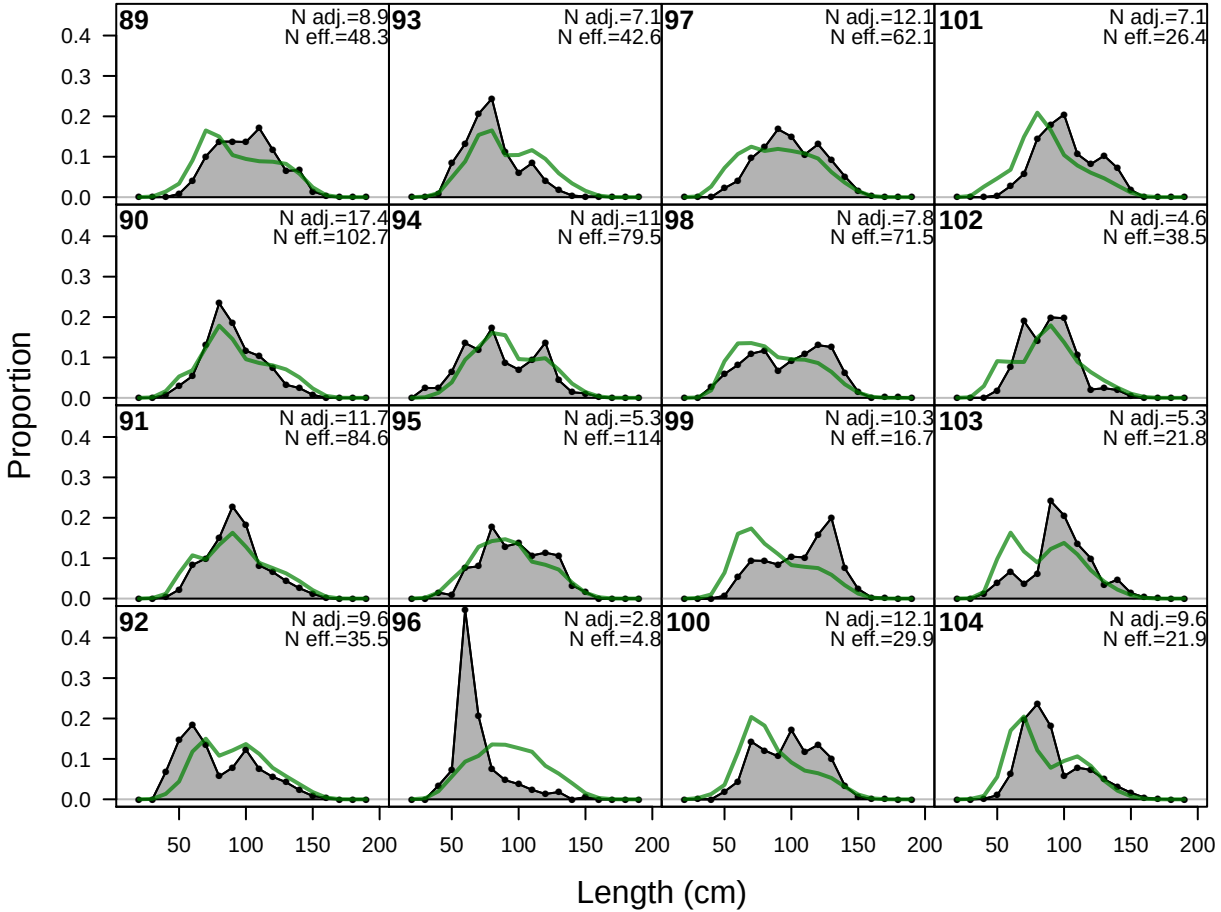

F21−DEL_I
F22−BB
F29−LL_W_Q14n
F30−LL_C_Q14n
15
5
15
Length (cm)
200
150
100
50
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

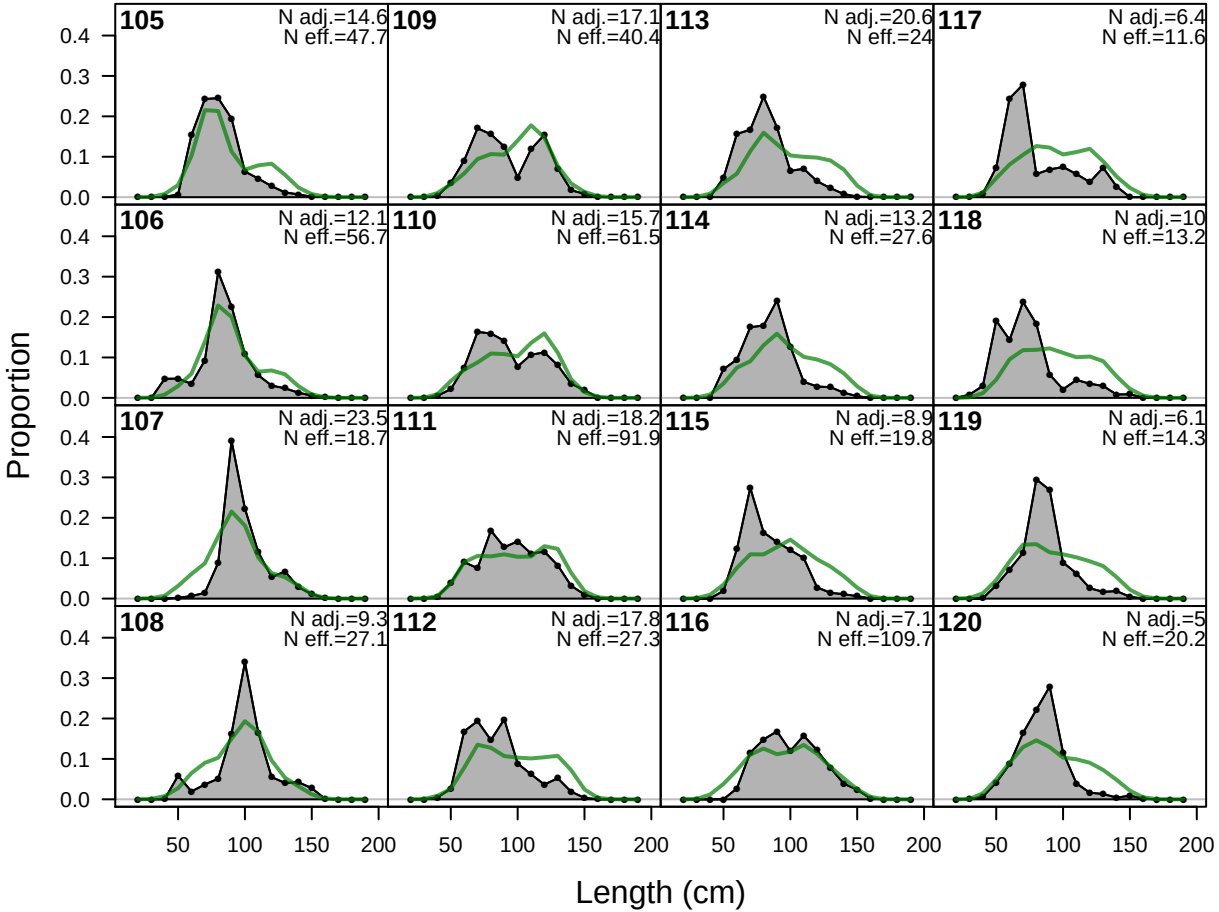

F31−LL_E_Q14n
−2
0.1
2
F32−LL_W_Q23n
F33−LL_C_Q23n
F34−LL_E_Q23n
Length (cm)
50
100
150
200
37
43
49
55
61
67
73
79
85
91
97
104
112
120
128
136
144
152
160
168
176
Year

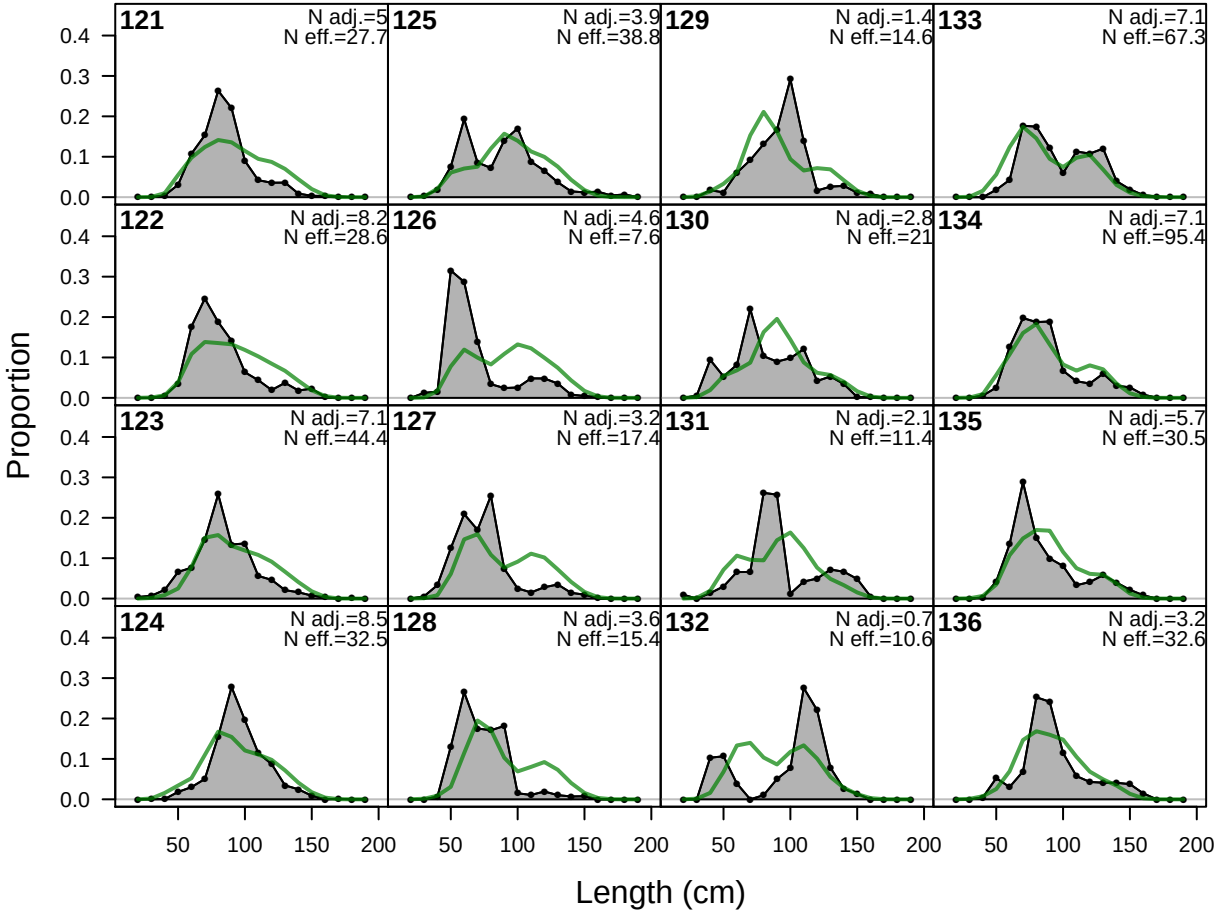

41
N adj.=7.5
N eff.=16.8
45
N adj.=13.9
N eff.=11.9
49
N adj.=13.2
N eff.=20.2
53
N adj.=2.5
N eff.=7.9
42
N adj.=7.8
N eff.=98.7
46
N adj.=13.5
N eff.=30.5
50
N adj.=21.7
N eff.=32.9
54
N adj.=5.3
N eff.=31.6
43
N adj.=9.3
N eff.=48.5
47
N adj.=13.2
N eff.=26.7
51
N adj.=24.6
N eff.=32.6
55
N adj.=4.6
N eff.=18.1
44
N adj.=9.3
N eff.=39.6
48
N adj.=11.7
N eff.=42.5
52
N adj.=15.7
N eff.=60.1
56
N adj.=6.1
N eff.=68.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

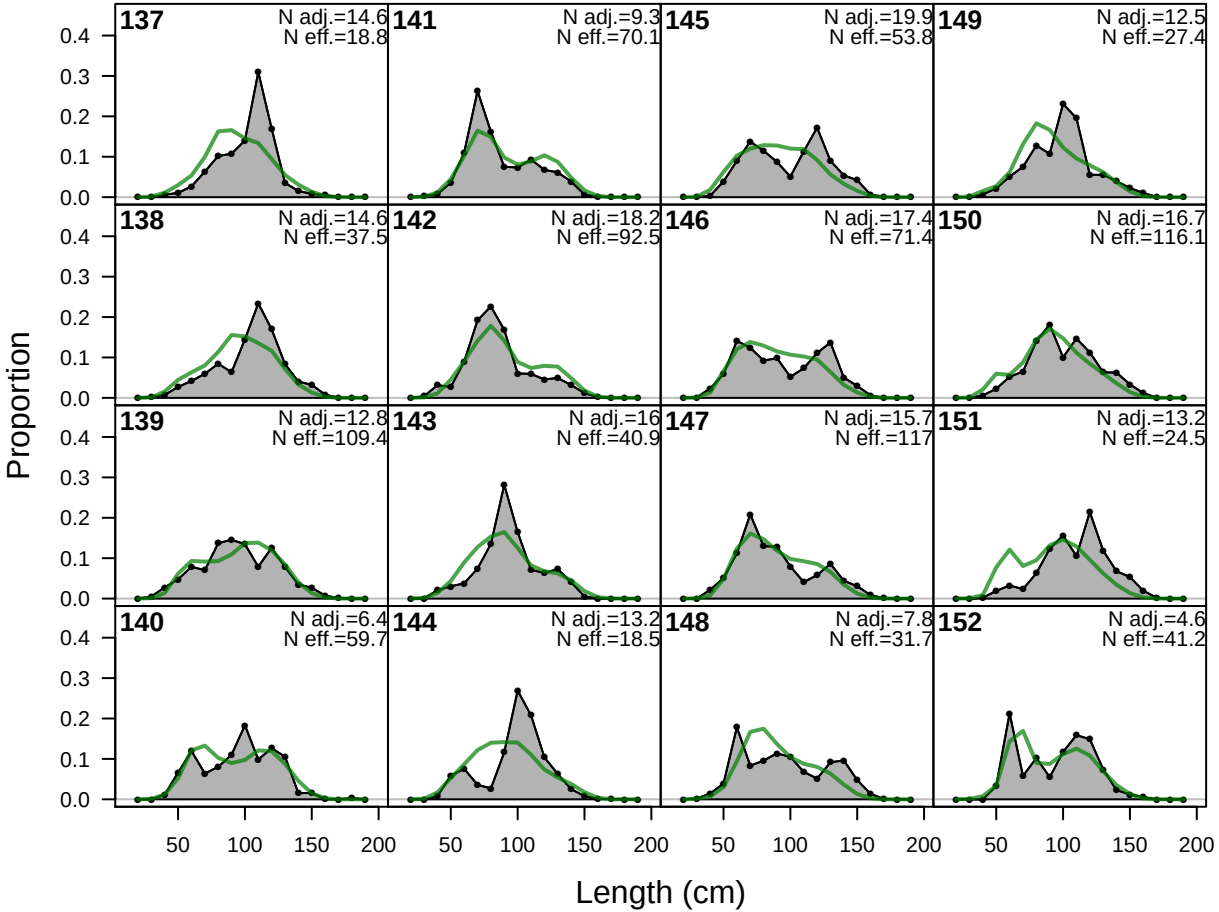

57
N adj.=7.5
N eff.=39.4
61
N adj.=13.5
N eff.=104.4
65
N adj.=19.9
N eff.=70.3
69
N adj.=21.4
N eff.=53.5
58
N adj.=9.6
N eff.=50.9
62
N adj.=14.9
N eff.=67.4
66
N adj.=22.1
N eff.=157.2
70
N adj.=33.1
N eff.=57.2
59
N adj.=12.8
N eff.=45.8
63
N adj.=18.9
N eff.=149
67
N adj.=14.2
N eff.=152.5
71
N adj.=34.9
N eff.=107
60
N adj.=7.8
N eff.=261.8
64
N adj.=14.6
N eff.=282.7
68
N adj.=7.5
N eff.=49.6
72
N adj.=24.9
N eff.=16.4
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

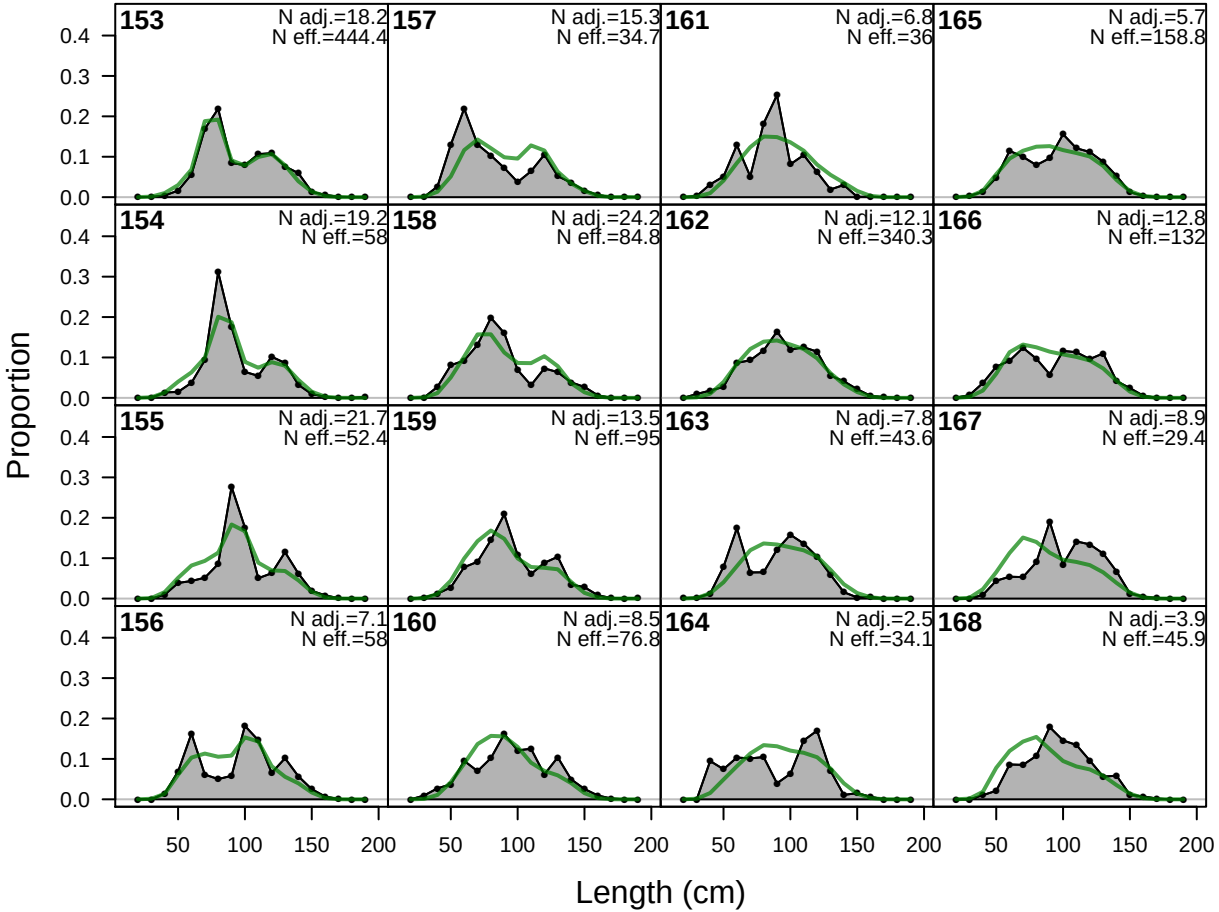

73
N adj.=9.3
N eff.=17.8
77
N adj.=12.5
N eff.=43.3
81
N adj.=14.6
N eff.=105.4
85
N adj.=8.9
N eff.=51.1
74
N adj.=16
N eff.=15.8
78
N adj.=19.2
N eff.=52.9
82
N adj.=16.4
N eff.=56.5
86
N adj.=11.4
N eff.=40.2
75
N adj.=14.6
N eff.=26
79
N adj.=25.6
N eff.=93
83
N adj.=13.2
N eff.=117.5
87
N adj.=12.5
N eff.=143.5
76
N adj.=5.3
N eff.=9.2
80
N adj.=12.5
N eff.=120.7
84
N adj.=15.3
N eff.=99.3
88
N adj.=6.8
N eff.=57.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

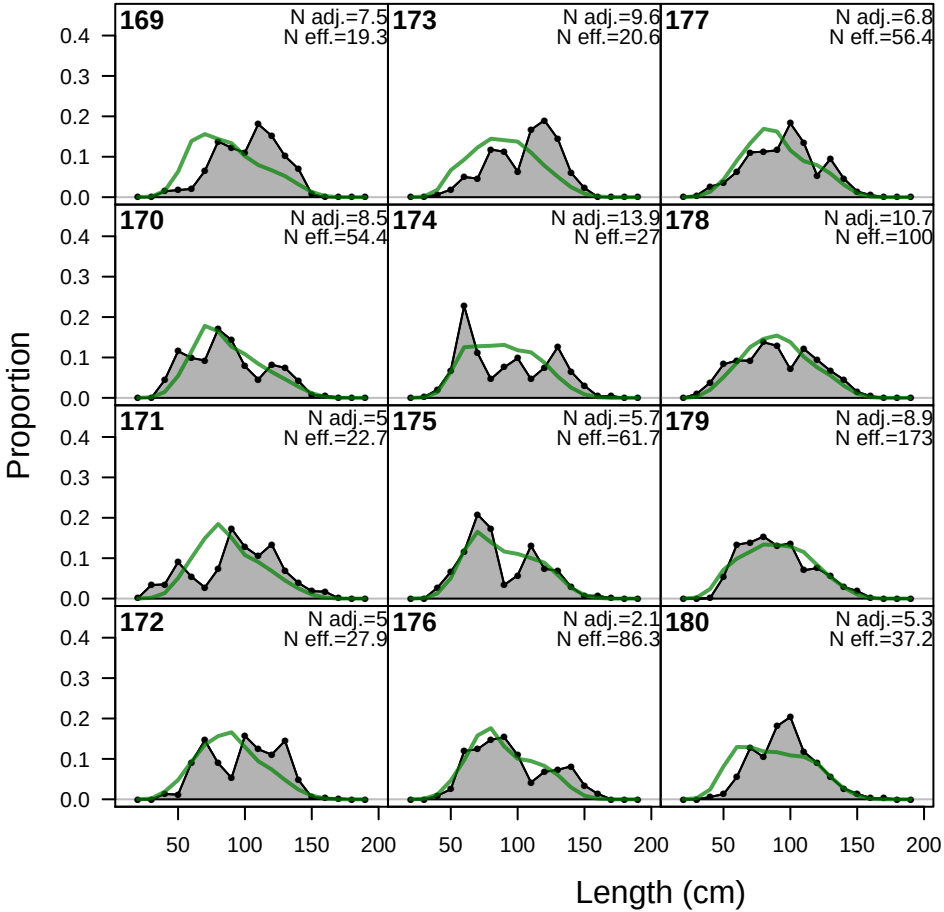

89
N adj.=8.9
N eff.=48.3
93
N adj.=7.1
N eff.=42.6
97
N adj.=12.1
N eff.=62.1
101
N adj.=7.1
N eff.=26.4
90
N adj.=17.4
N eff.=102.7
94
N adj.=11
N eff.=79.5
98
N adj.=7.8
N eff.=71.5
102
N adj.=4.6
N eff.=38.5
91
N adj.=11.7
N eff.=84.6
95
N adj.=5.3
N eff.=114
99
N adj.=10.3
N eff.=16.7
103
N adj.=5.3
N eff.=21.8
92
N adj.=9.6
N eff.=35.5
96
N adj.=2.8
N eff.=4.8
100
N adj.=12.1
N eff.=29.9
104
N adj.=9.6
N eff.=21.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

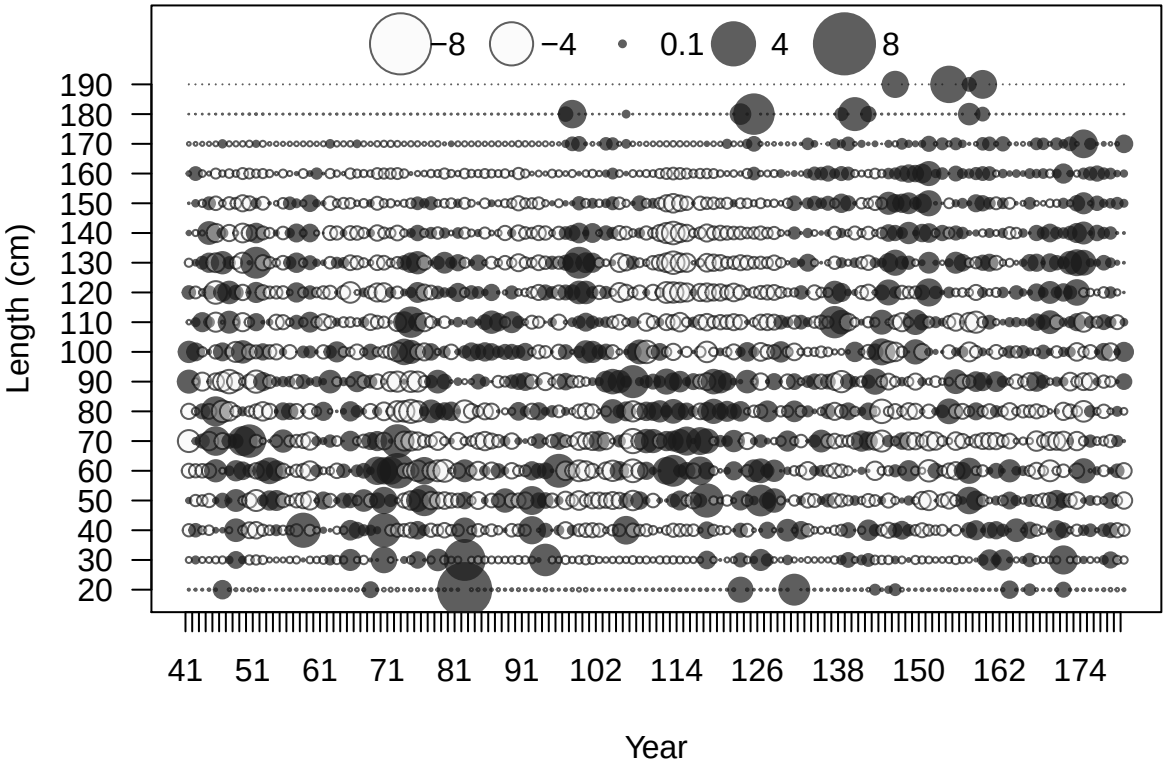

105
N adj.=14.6
N eff.=47.7
109
N adj.=17.1
N eff.=40.4
113
N adj.=20.6
N eff.=24
117
N adj.=6.4
N eff.=11.6
106
N adj.=12.1
N eff.=56.7
110
N adj.=15.7
N eff.=61.5
114
N adj.=13.2
N eff.=27.6
118
N adj.=10
N eff.=13.2
107
N adj.=23.5
N eff.=18.7
111
N adj.=18.2
N eff.=91.9
115
N adj.=8.9
N eff.=19.8
119
N adj.=6.1
N eff.=14.3
108
N adj.=9.3
N eff.=27.1
112
N adj.=17.8
N eff.=27.3
116
N adj.=7.1
N eff.=109.7
120
N adj.=5
N eff.=20.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

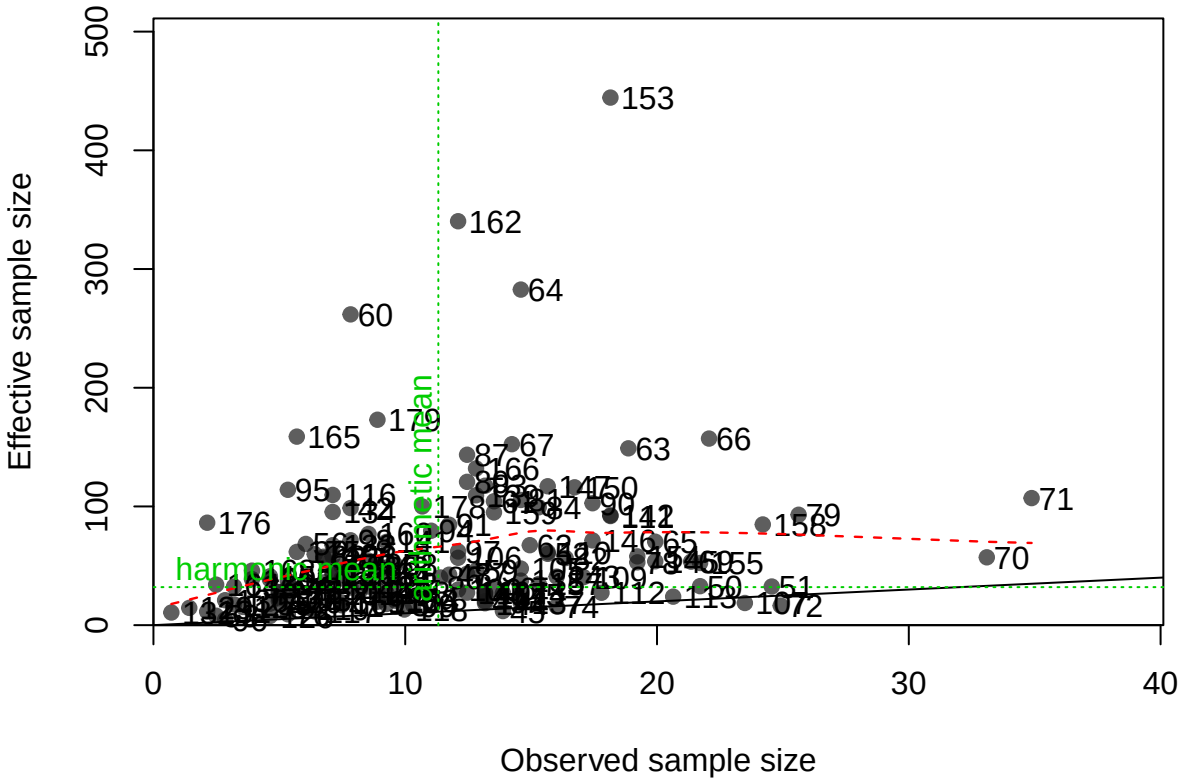

121
N adj.=5
N eff.=27.7
125
N adj.=3.9
N eff.=38.8
129
N adj.=1.4
N eff.=14.6
133
N adj.=7.1
N eff.=67.3
122
N adj.=8.2
N eff.=28.6
126
N adj.=4.6
N eff.=7.6
130
N adj.=2.8
N eff.=21
134
N adj.=7.1
N eff.=95.4
123
N adj.=7.1
N eff.=44.4
127
N adj.=3.2
N eff.=17.4
131
N adj.=2.1
N eff.=11.4
135
N adj.=5.7
N eff.=30.5
124
N adj.=8.5
N eff.=32.5
128
N adj.=3.6
N eff.=15.4
132
N adj.=0.7
N eff.=10.6
136
N adj.=3.2
N eff.=32.6
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)


137
N adj.=14.6
N eff.=18.8
141
N adj.=9.3
N eff.=70.1
145
N adj.=19.9
N eff.=53.8
149
N adj.=12.5
N eff.=27.4
138
N adj.=14.6
N eff.=37.5
142
N adj.=18.2
N eff.=92.5
146
N adj.=17.4
N eff.=71.4
150
N adj.=16.7
N eff.=116.1
139
N adj.=12.8
N eff.=109.4
143
N adj.=16
N eff.=40.9
147
N adj.=15.7
N eff.=117
151
N adj.=13.2
N eff.=24.5
140
N adj.=6.4
N eff.=59.7
144
N adj.=13.2
N eff.=18.5
148
N adj.=7.8
N eff.=31.7
152
N adj.=4.6
N eff.=41.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

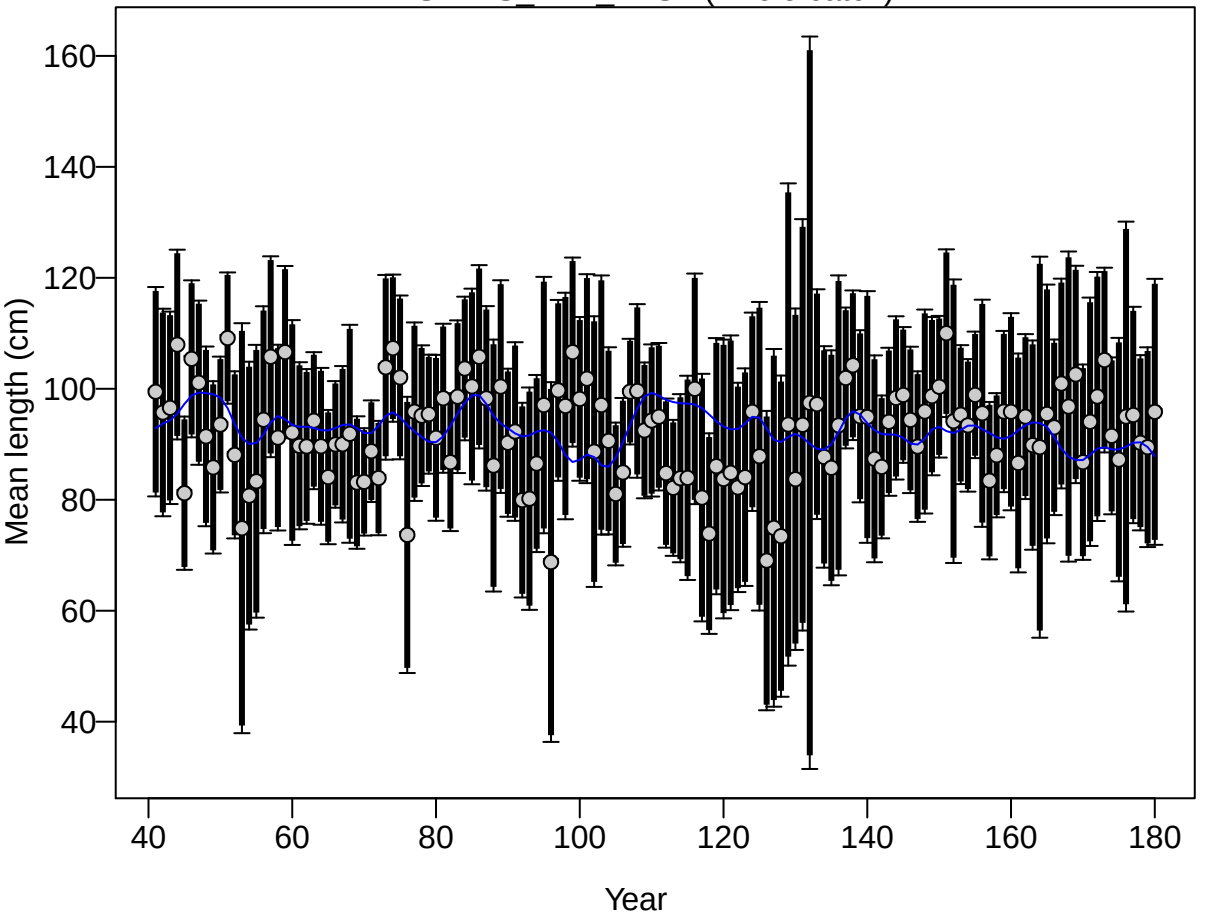

153
N adj.=18.2
N eff.=444.4
157
N adj.=15.3
N eff.=34.7
161
N adj.=6.8
N eff.=36
165
N adj.=5.7
N eff.=158.8
154
N adj.=19.2
N eff.=58
158
N adj.=24.2
N eff.=84.8
162
N adj.=12.1
N eff.=340.3
166
N adj.=12.8
N eff.=132
155
N adj.=21.7
N eff.=52.4
159
N adj.=13.5
N eff.=95
163
N adj.=7.8
N eff.=43.6
167
N adj.=8.9
N eff.=29.4
156
N adj.=7.1
N eff.=58
160
N adj.=8.5
N eff.=76.8
164
N adj.=2.5
N eff.=34.1
168
N adj.=3.9
N eff.=45.9
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

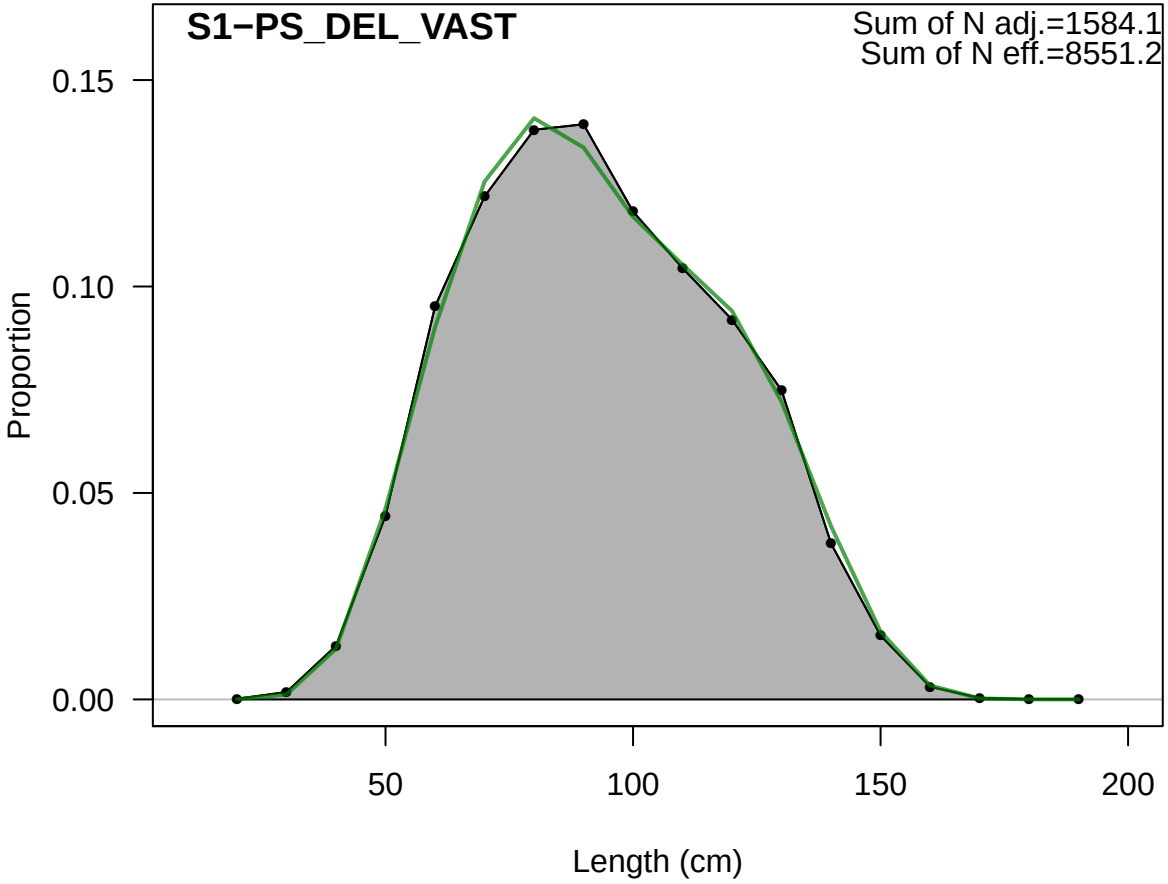

169
N adj.=7.5
N eff.=19.3
173
N adj.=9.6
N eff.=20.6
177
N adj.=6.8
N eff.=56.4
170
N adj.=8.5
N eff.=54.4
174
N adj.=13.9
N eff.=27
178
N adj.=10.7
N eff.=100
171
N adj.=5
N eff.=22.7
175
N adj.=5.7
N eff.=61.7
179
N adj.=8.9
N eff.=173
172
N adj.=5
N eff.=27.9
176
N adj.=2.1
N eff.=86.3
180
N adj.=5.3
N eff.=37.2
Proportion
0.0
0.1
0.2
0.3
0.4
50
100
150
200
Length (cm)

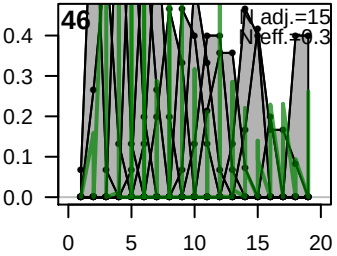

−8
−4
0.1
4
8
Length (cm)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
41
51
61
71
81
91
102
114
126
138
150
162
174
Year



Effective sample size
Observed sample size
0
100
200
300
400
500
0
10
20
30
40
153
162
64
60
165
179
67
63
66
95
116
176
71
79
158
70
51
50
112
113
107
72
harmonic mean
arithmetic mean

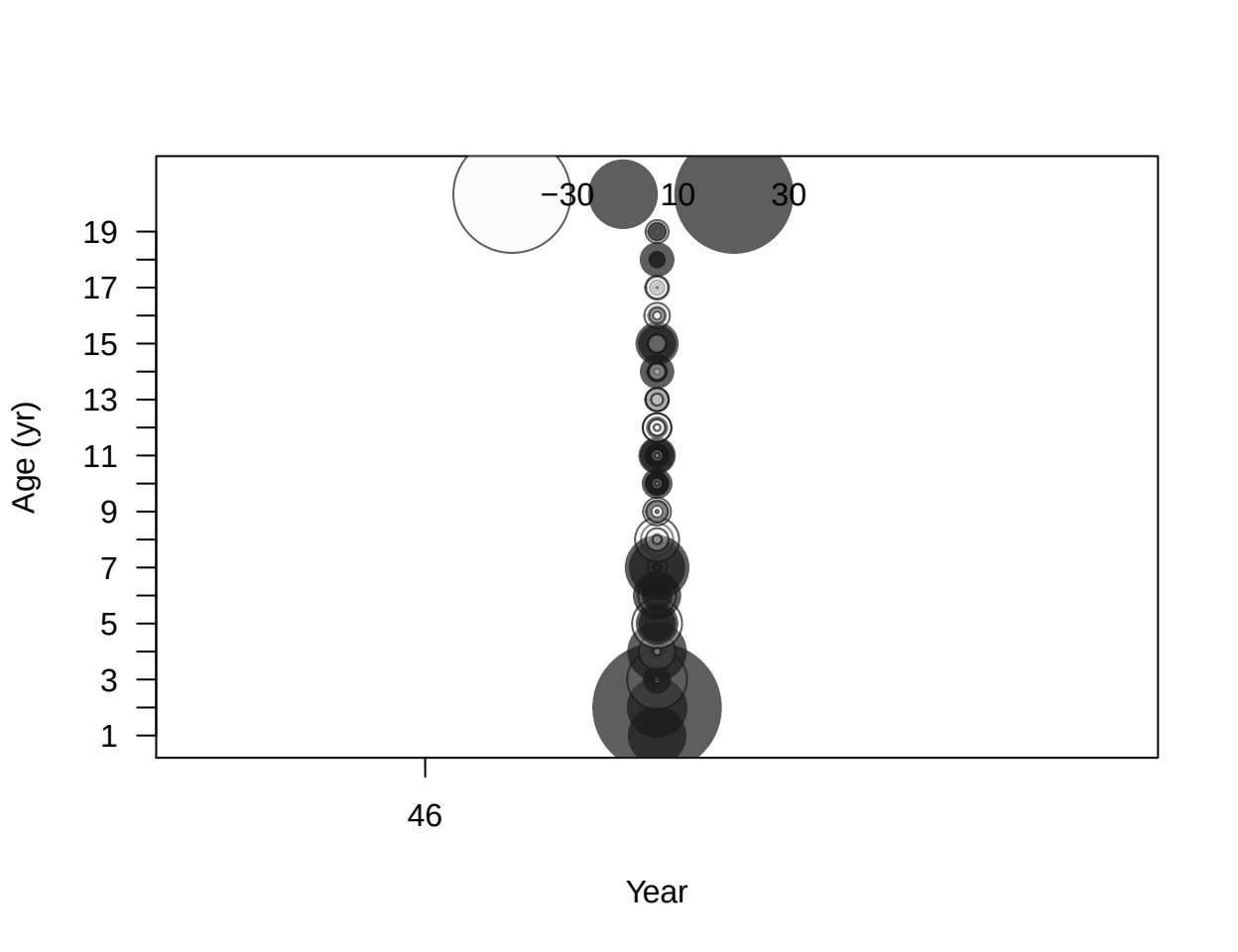

S1−PS_DEL_VAST (whole catch)
Mean length (cm)
160
140
120
100
80
60
40
40
60
80
100
120
140
160
180
Year

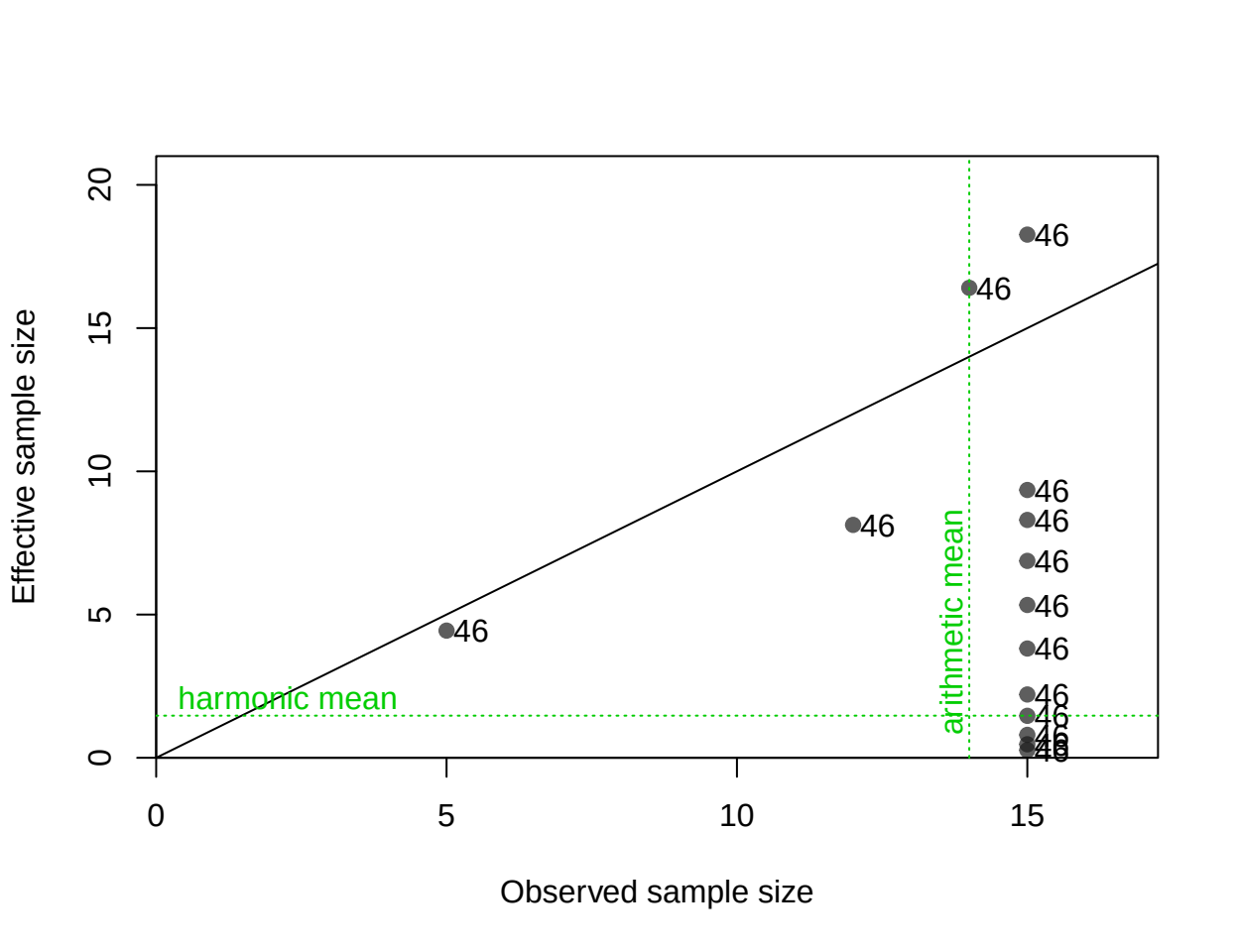

S1−PS_DEL_VAST
Sum of N adj.=1584.1
Sum of N eff.=8551.2
0.15
0.10
0.05
0.00
Proportion
50
100
150
200
Length (cm)

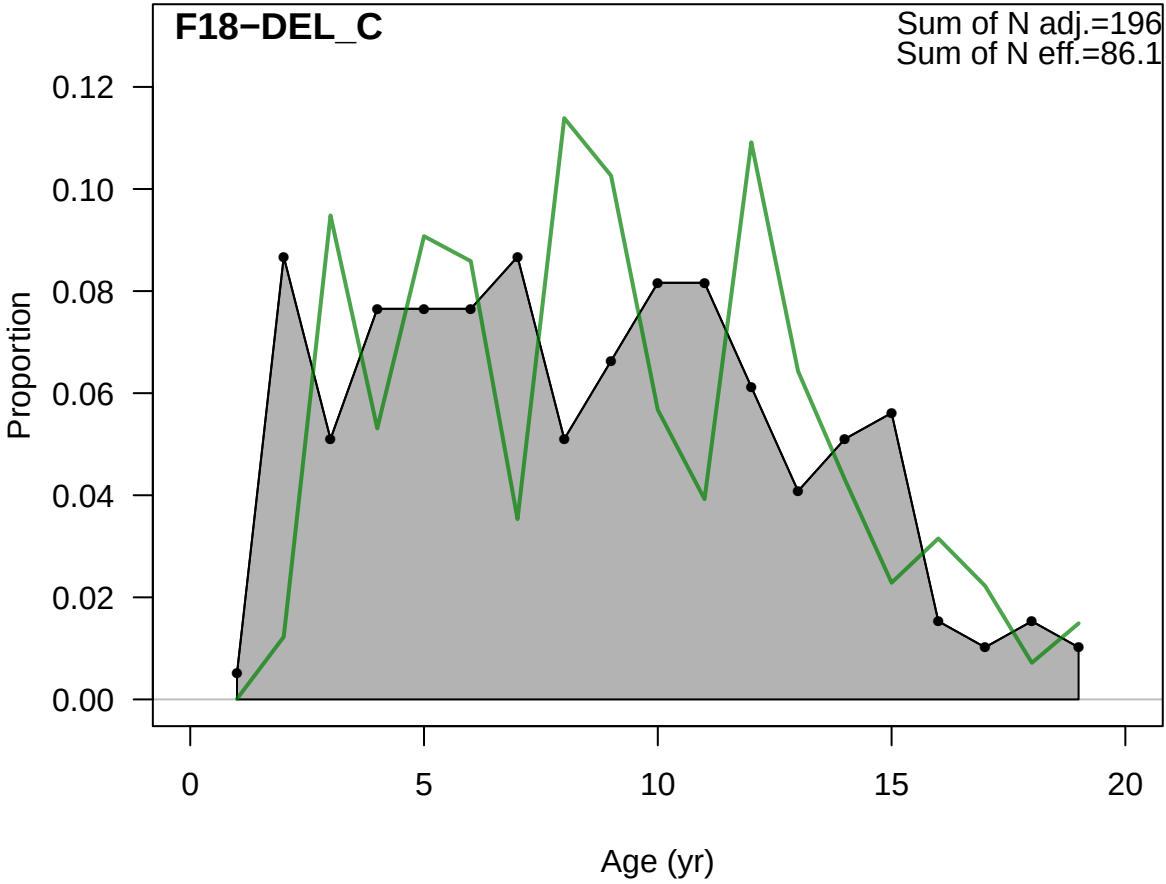


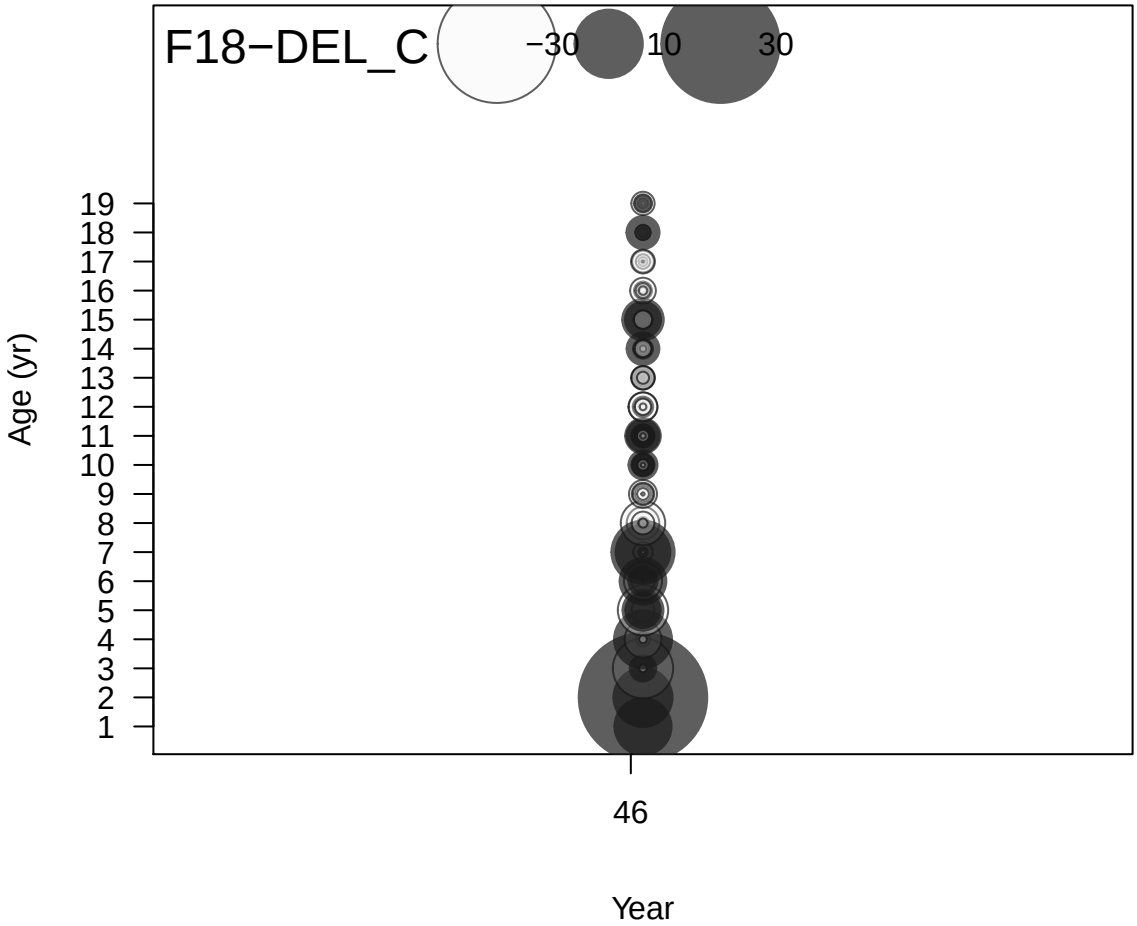
Proportion

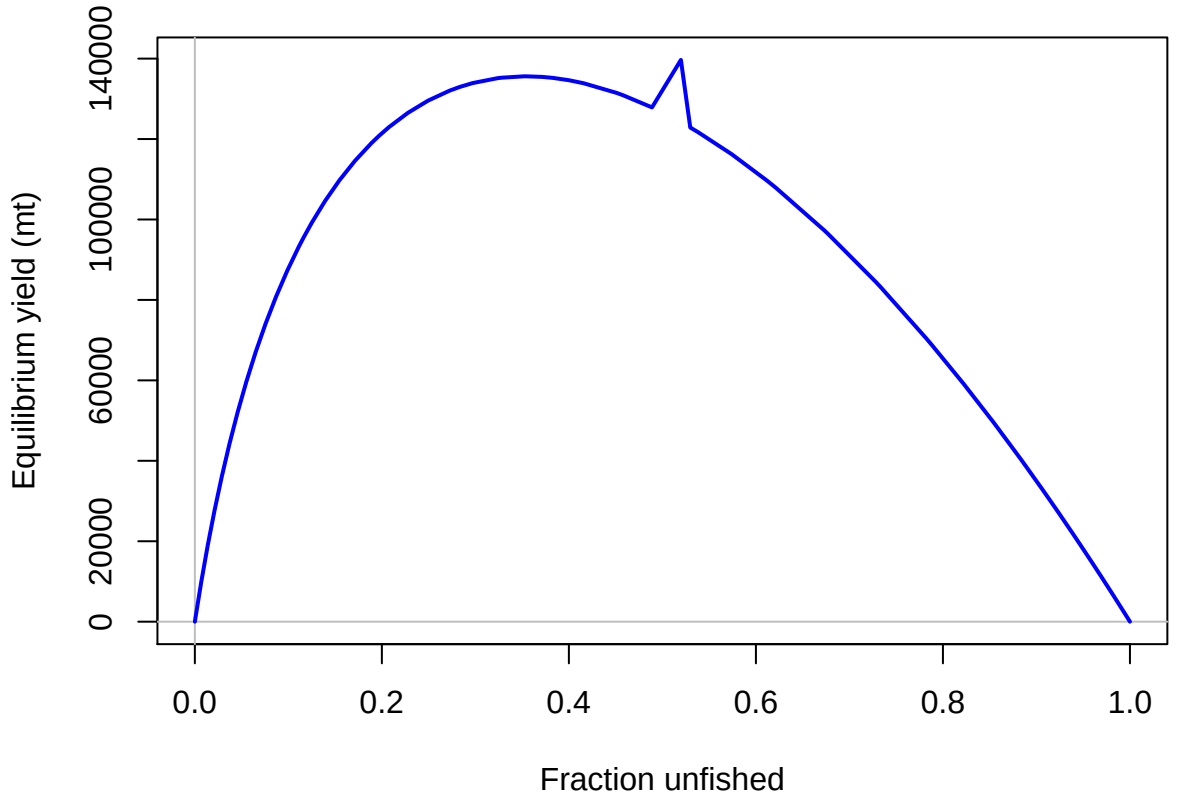
Age (yr)

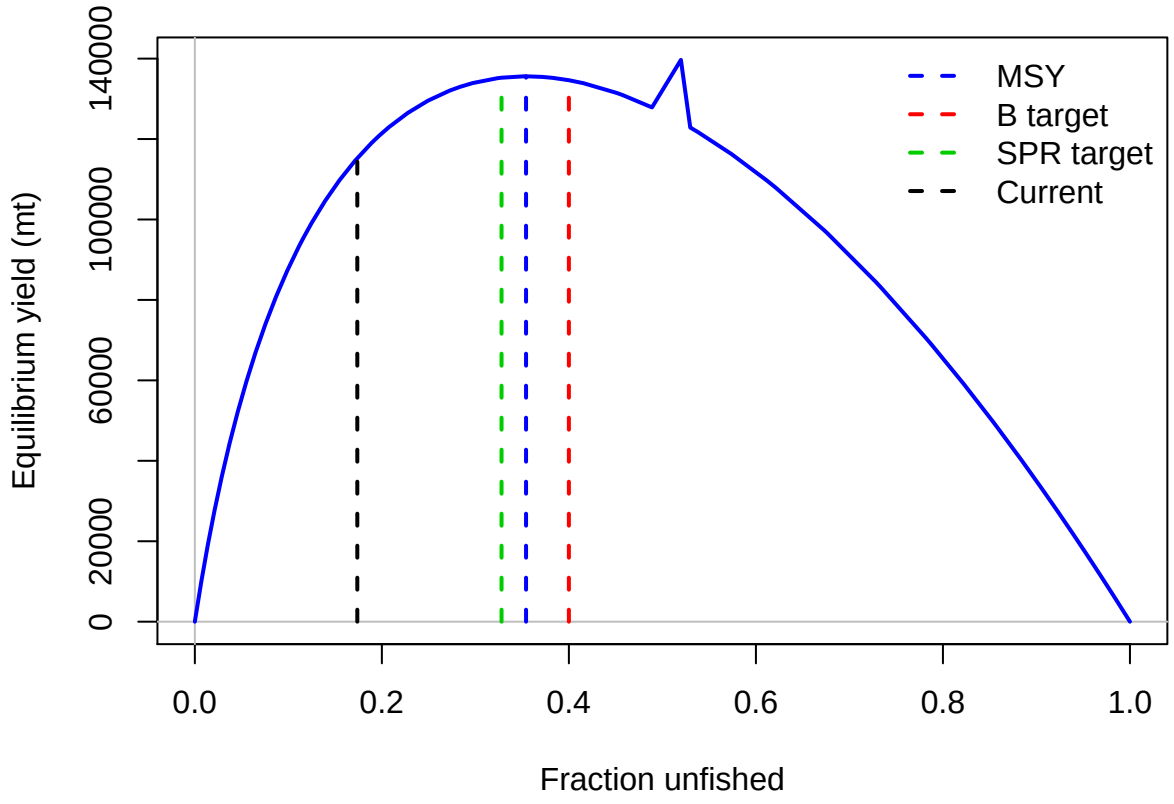

−30
10
30
19
17
15
13
11
9
7
5
3
1
Age (yr)
46
Year

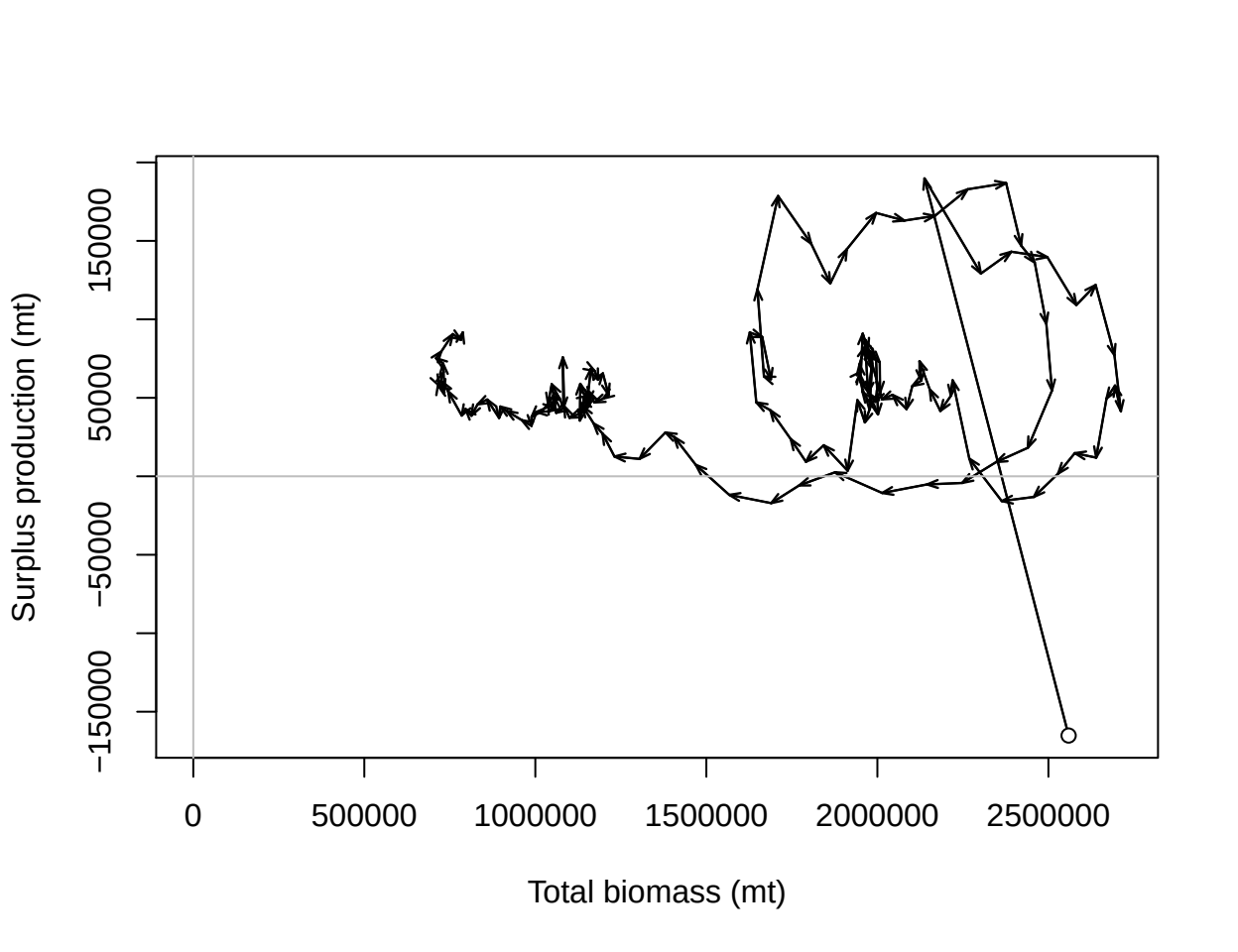

Effective sample size
Observed sample size
0
5
10
15
20
46
harmonic mean
arithmetic mean

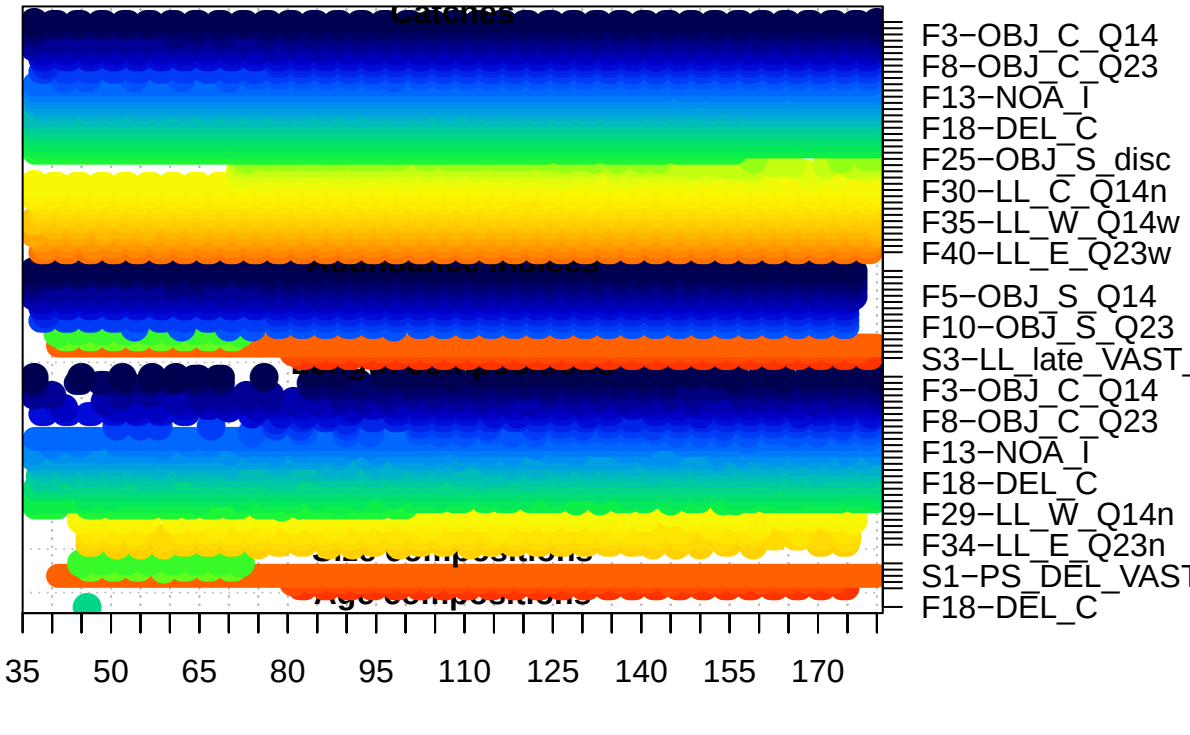

F18−DEL_C
Sum of N adj.=196
Sum of N eff.=86.1
Proportion
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
5
10
15
20
Age (yr)

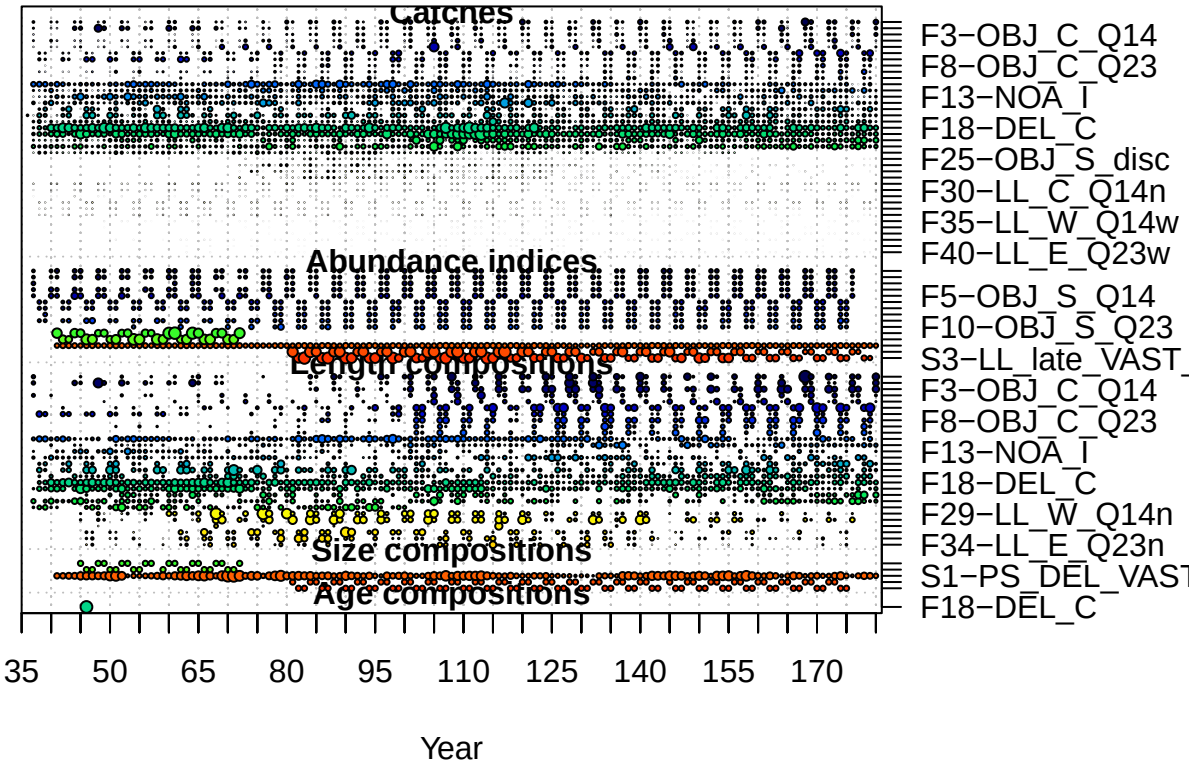

F18−DEL_C
−30
10
30
Age (yr)
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
46
Year

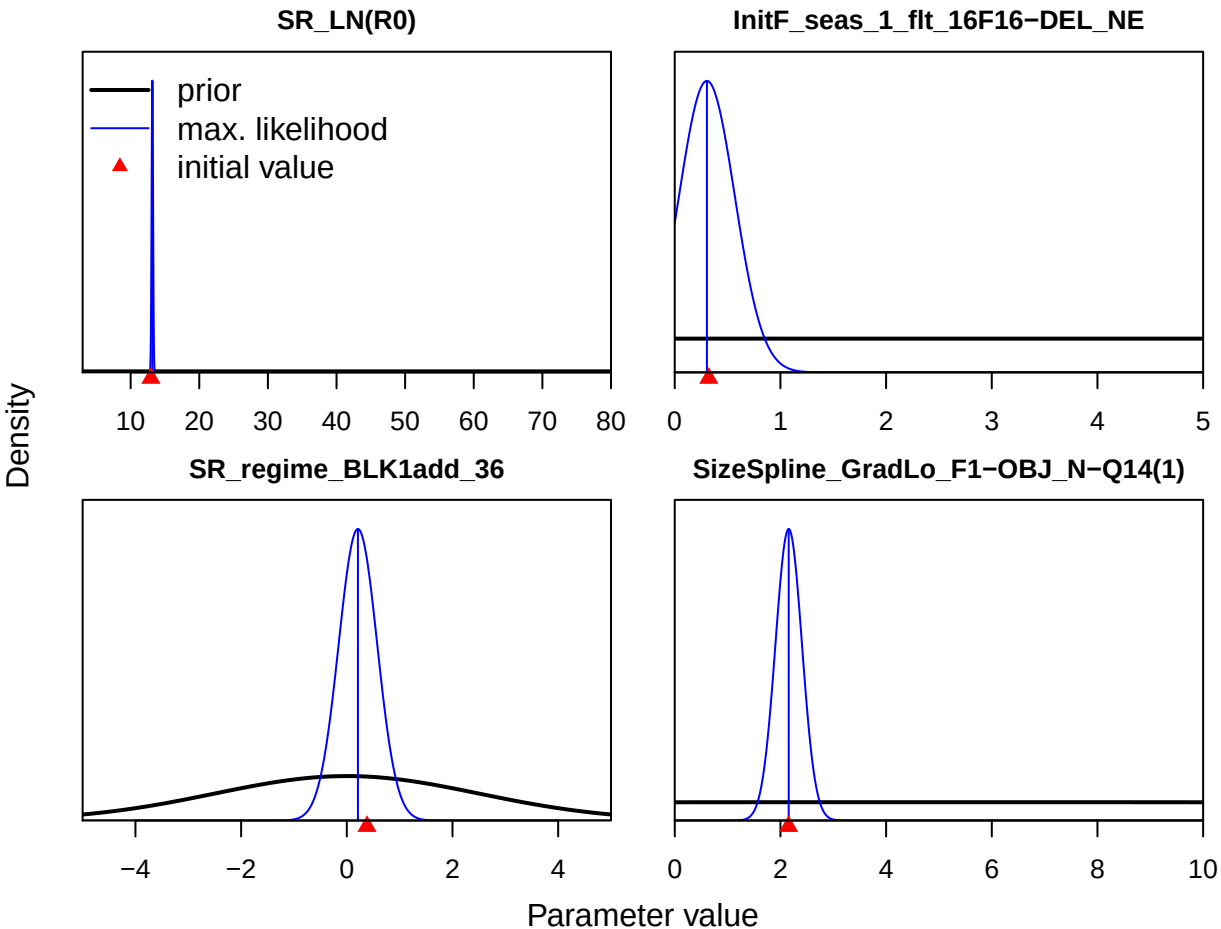

Equilibrium yield (mt)
0
20000
60000
100000
140000
0.0
0.2
0.4
0.6
0.8
1.0
Fraction unfished

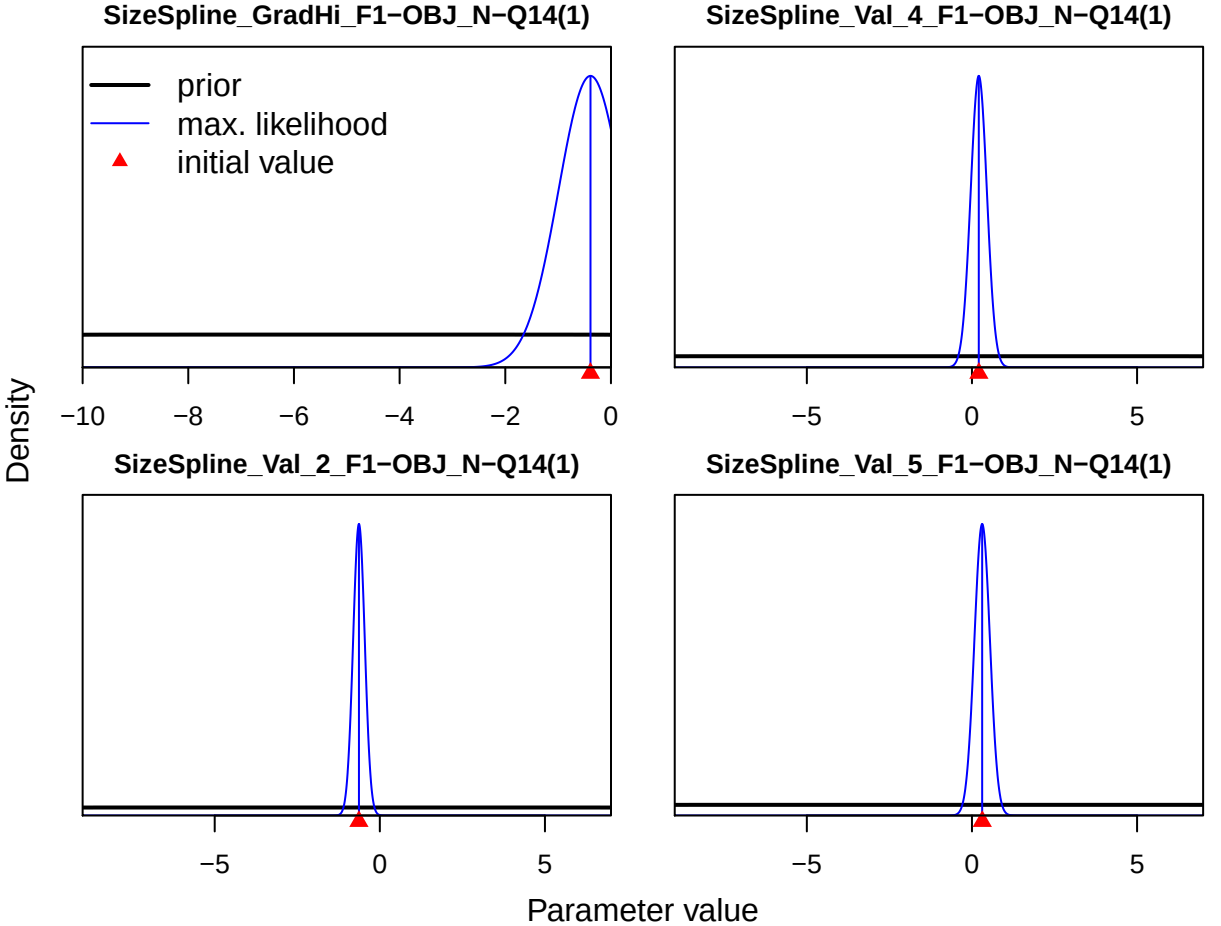

Equilibrium yield (mt)
0
20000
60000
100000
140000
0.0
0.2
0.4
0.6
0.8
1.0
Fraction unfished
MSY
B target
SPR target
Current

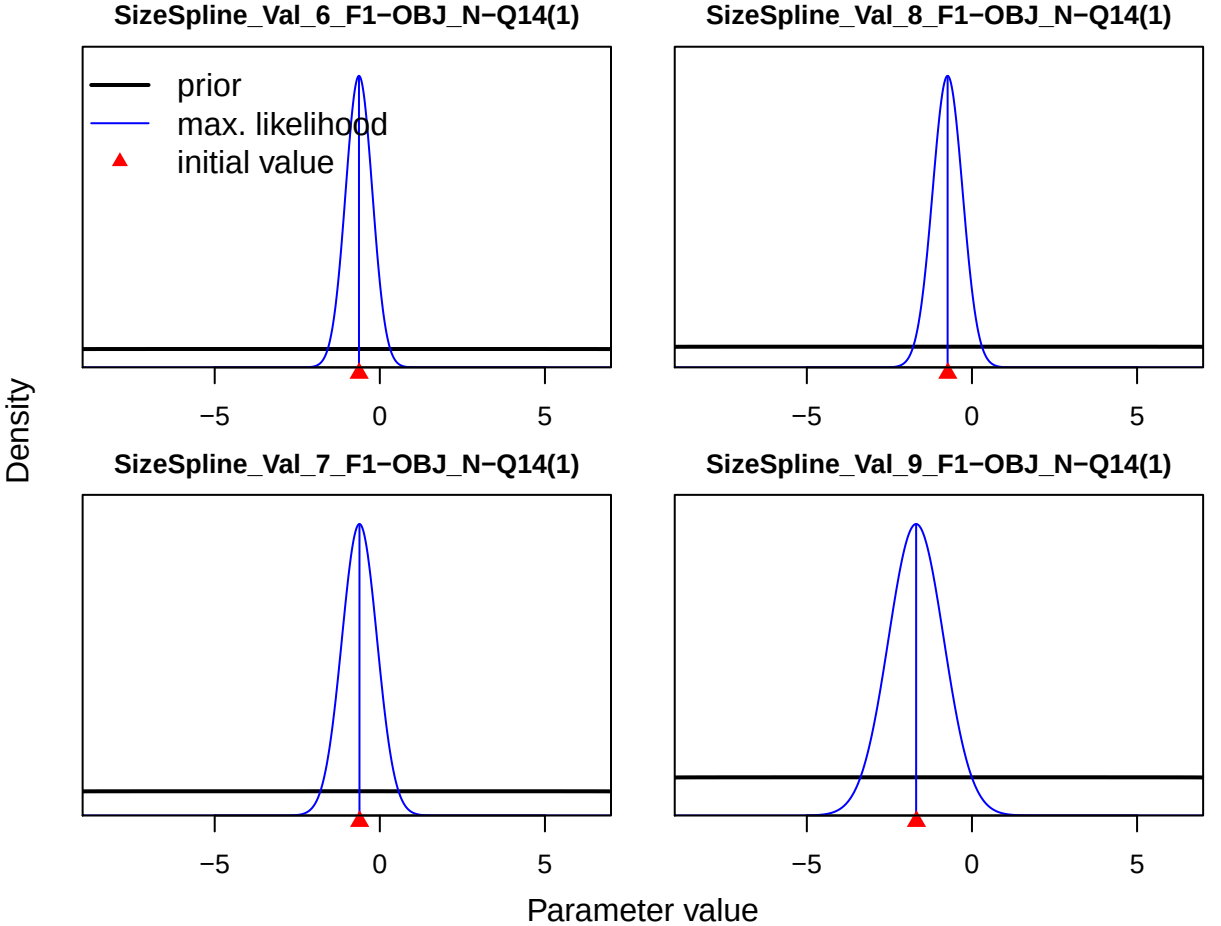

Surplus production (mt)
150000
50000
−50000
−150000
0
500000
1000000
1500000
2000000
2500000
Total biomass (mt)

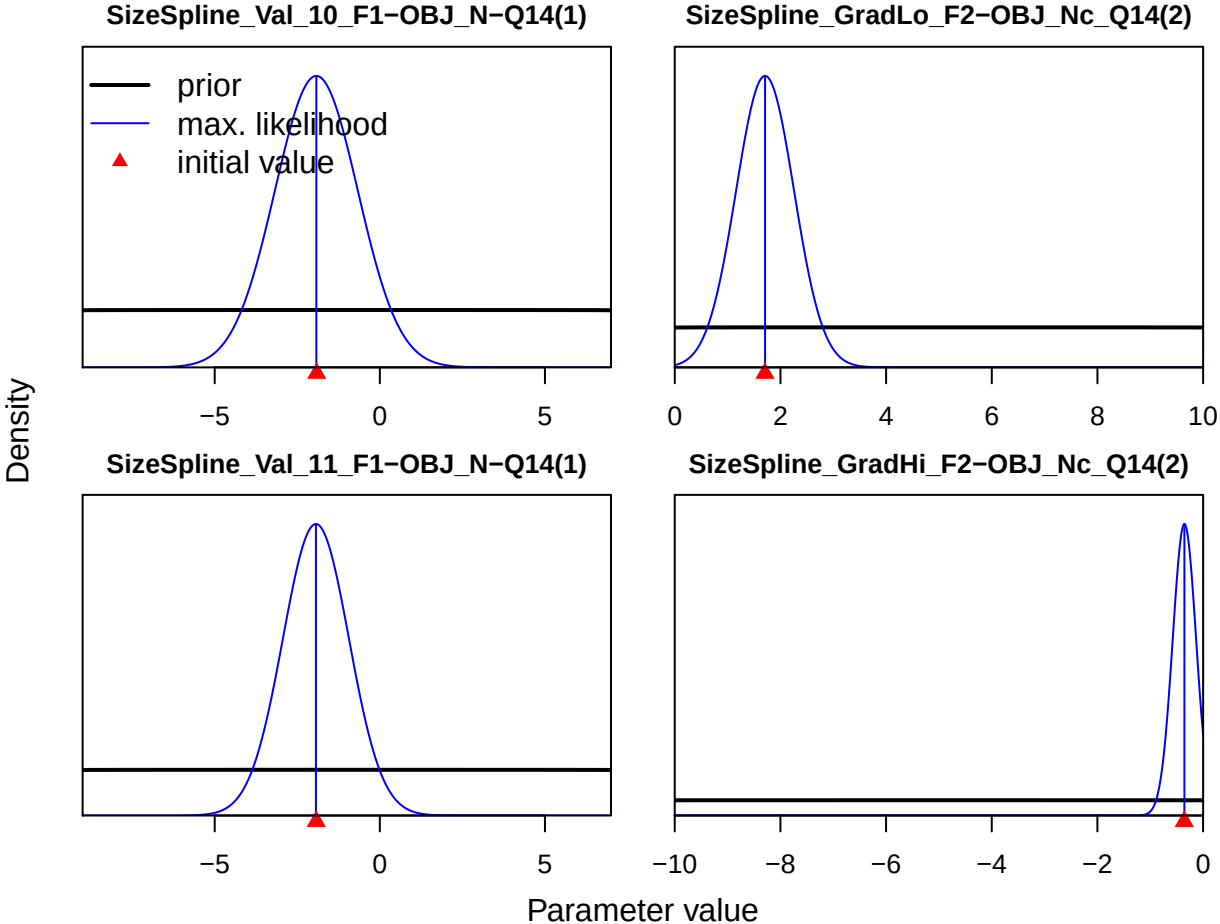

Catches
F3−OBJ_C_Q14
F8−OBJ_C_Q23
F13−NOA_I
F18−DEL_C
F25−OBJ_S_disc
F30−LL_C_Q14n
F35−LL_W_Q14w
F40−LL_E_Q23w
F5−OBJ_S_Q14
F10−OBJ_S_Q23
S3−LL_late_VAST_
F3−OBJ_C_Q14
F8−OBJ_C_Q23
F13−NOA_I
F18−DEL_C
F29−LL_W_Q14n
F34−LL_E_Q23n
S1−PS_DEL_VAST
F18−DEL_C
35
50
65
80
95
110
125
140
155
170
Year

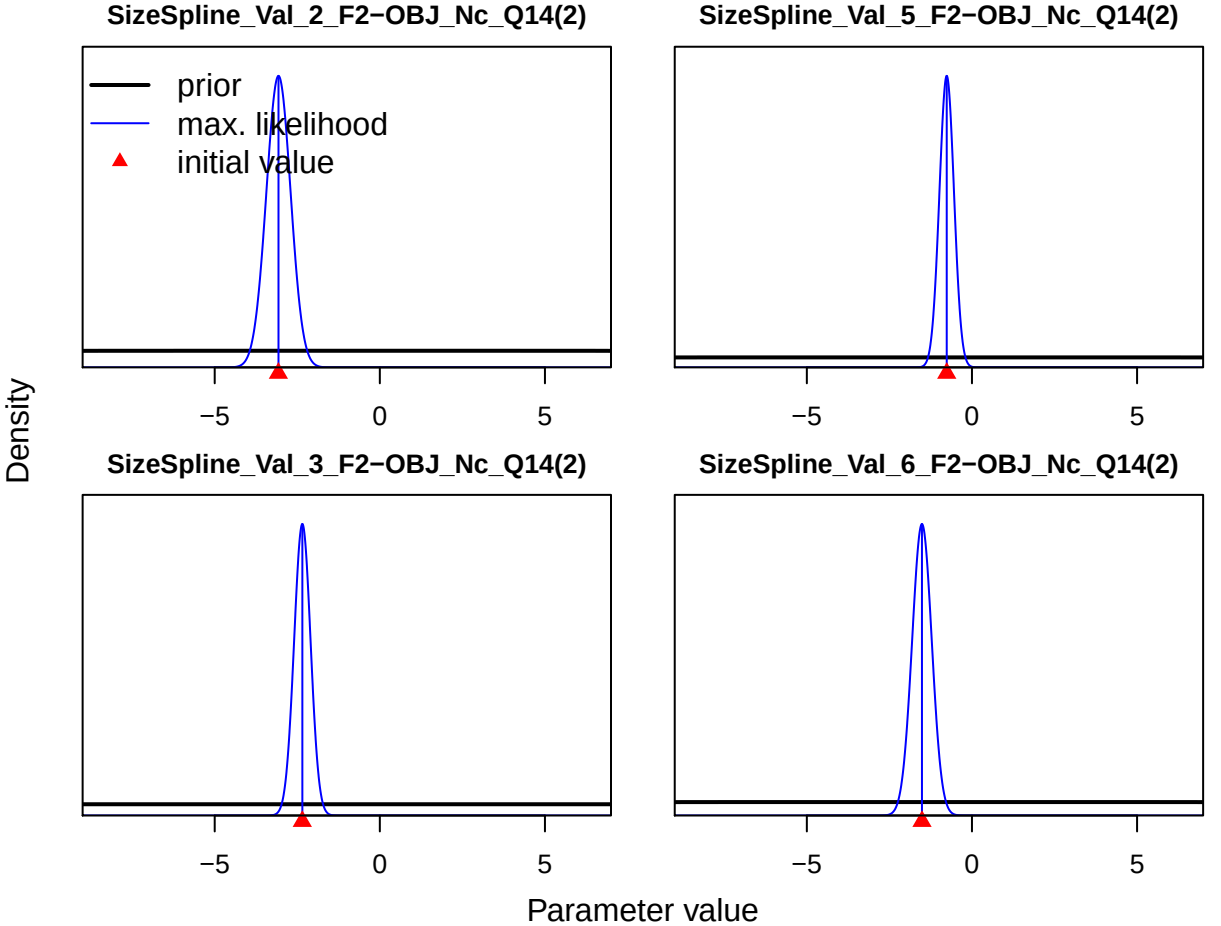

Catches
Abundance indices
Length compositions
Size compositions
Age compositions
F3−OBJ_C_Q14
F8−OBJ_C_Q23
F13−NOA_I
F18−DEL_C
F25−OBJ_S_disc
F30−LL_C_Q14n
F35−LL_W_Q14w
F40−LL_E_Q23w
F5−OBJ_S_Q14
F10−OBJ_S_Q23
S3−LL_late_VAST_
F3−OBJ_C_Q14
F8−OBJ_C_Q23
F13−NOA_I
F18−DEL_C
F29−LL_W_Q14n
F34−LL_E_Q23n
S1−PS_DEL_VAST
F18−DEL_C
35
50
65
80
95
110
125
140
155
170
Year

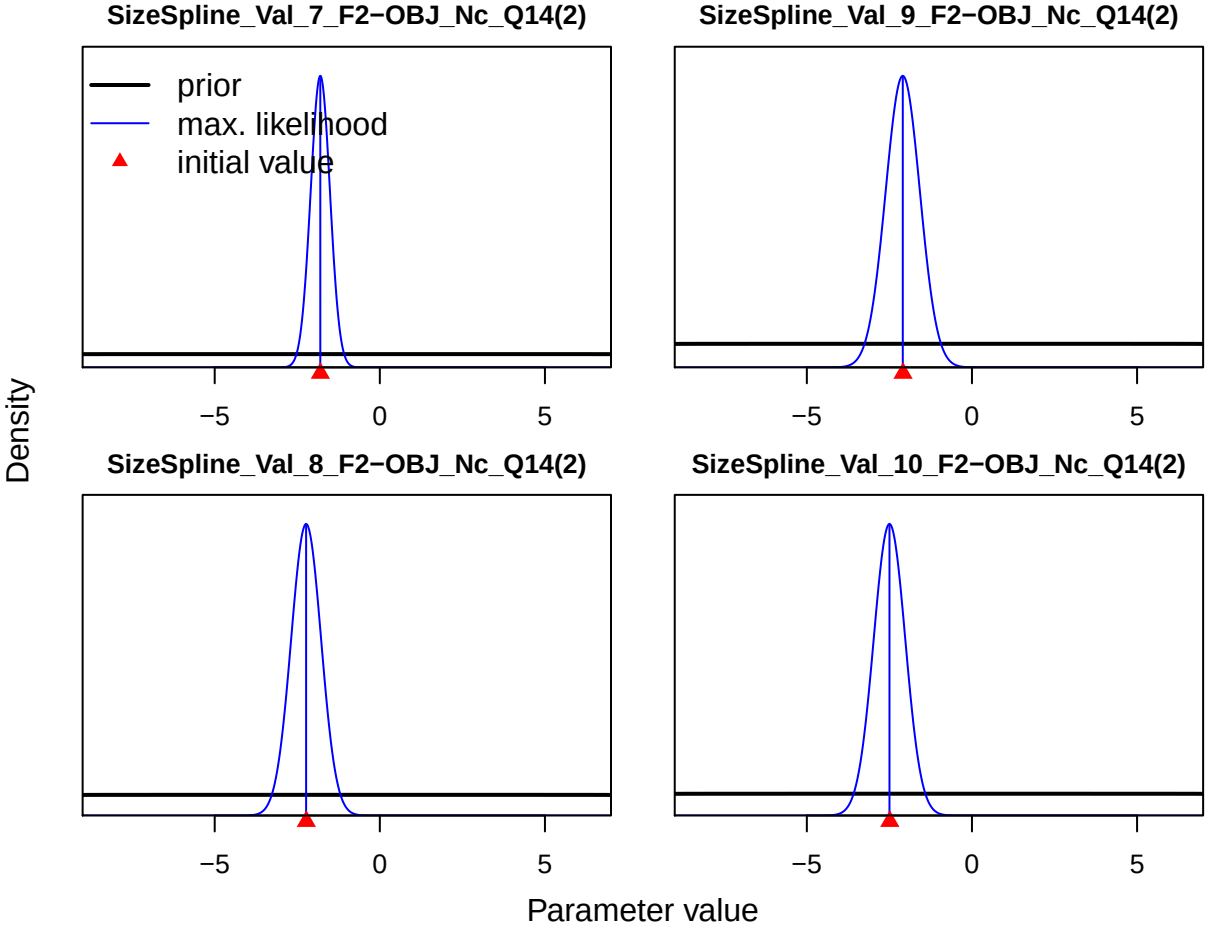

SR_LN(R0)
InitF_seas_1_flt_16F16−DEL_NE
prior
max. likelihood
initial value
Density
10
20
30
40
50
60
70
80
0
1
2
3
4
5
SR_regime_BLK1add_36
SizeSpline_GradLo_F1−OBJ_N−Q14(1)
−4
−2
0
2
4
0
2
4
6
8
10
Parameter value

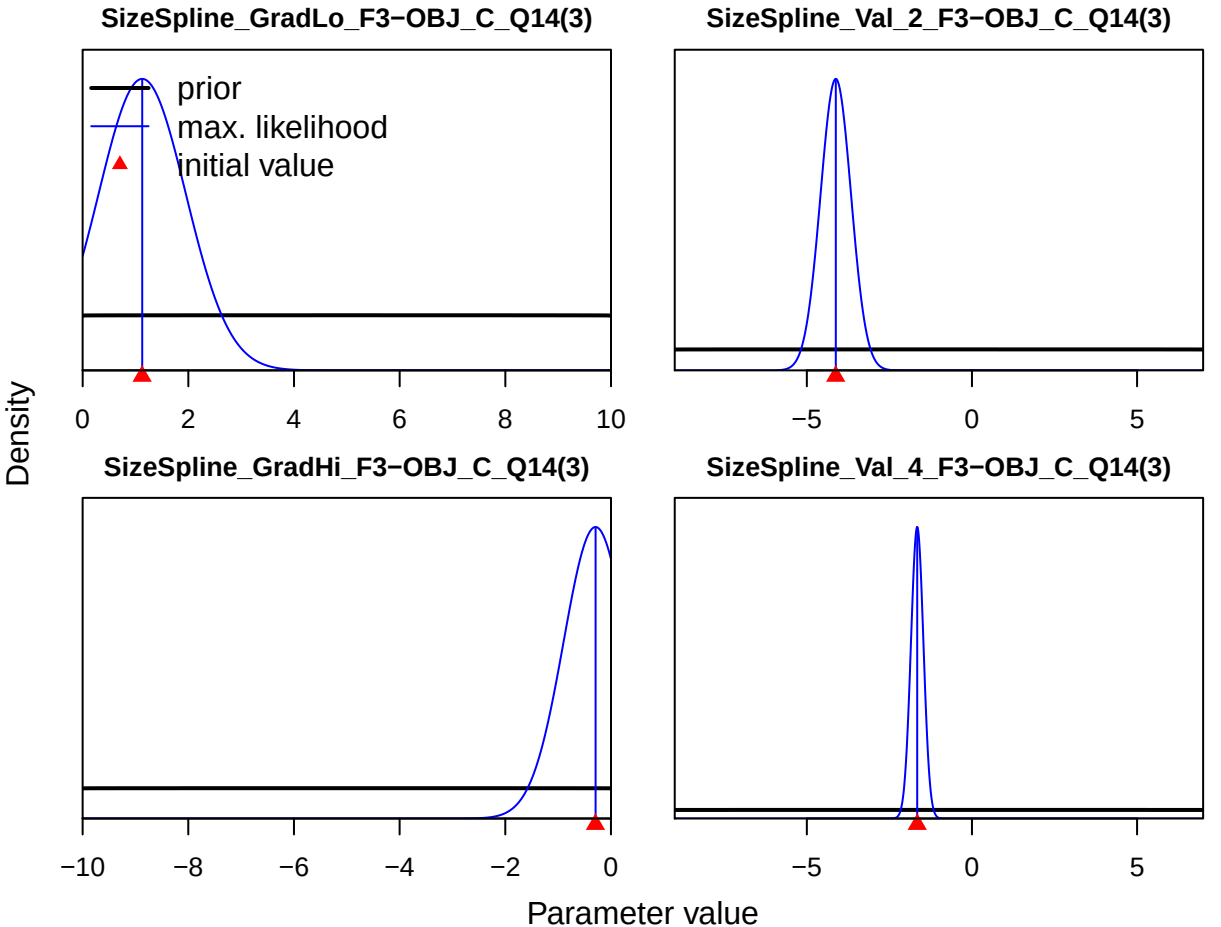

SizeSpline_GradHi_F1−OBJ_N−Q14(1)
SizeSpline_Val_4_F1−OBJ_N−Q14(1)
SizeSpline_Val_2_F1−OBJ_N−Q14(1)
SizeSpline_Val_5_F1−OBJ_N−Q14(1)
prior
max. likelihood
initial value
Density
Parameter value
−10
−8
−6
−4
−2
0
−5
0
5

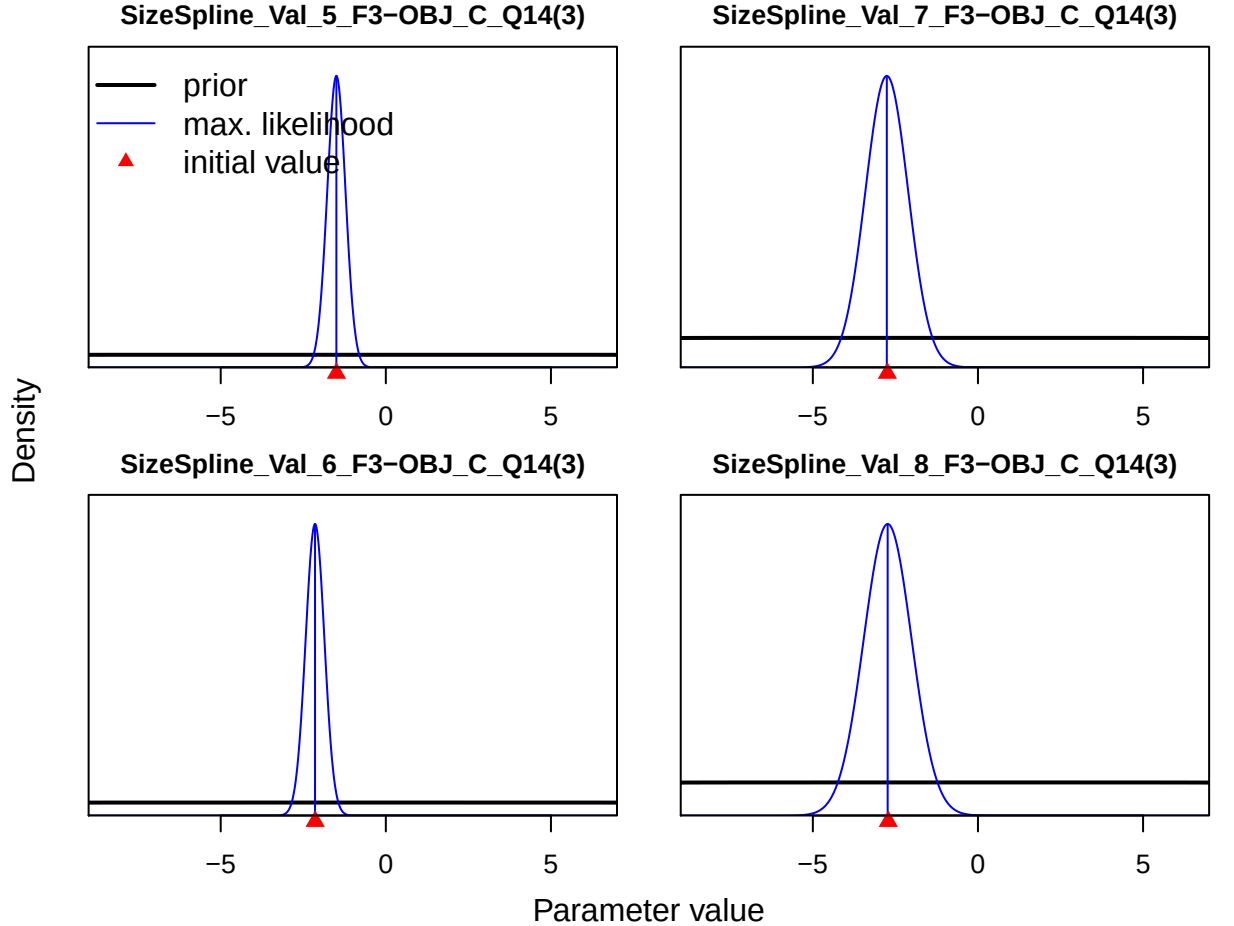

SizeSpline_Val_6_F1−OBJ_N−Q14(1)
SizeSpline_Val_8_F1−OBJ_N−Q14(1)
SizeSpline_Val_7_F1−OBJ_N−Q14(1)
SizeSpline_Val_9_F1−OBJ_N−Q14(1)
prior
max. likelihood
initial value
Density
−5
0
5
Parameter value

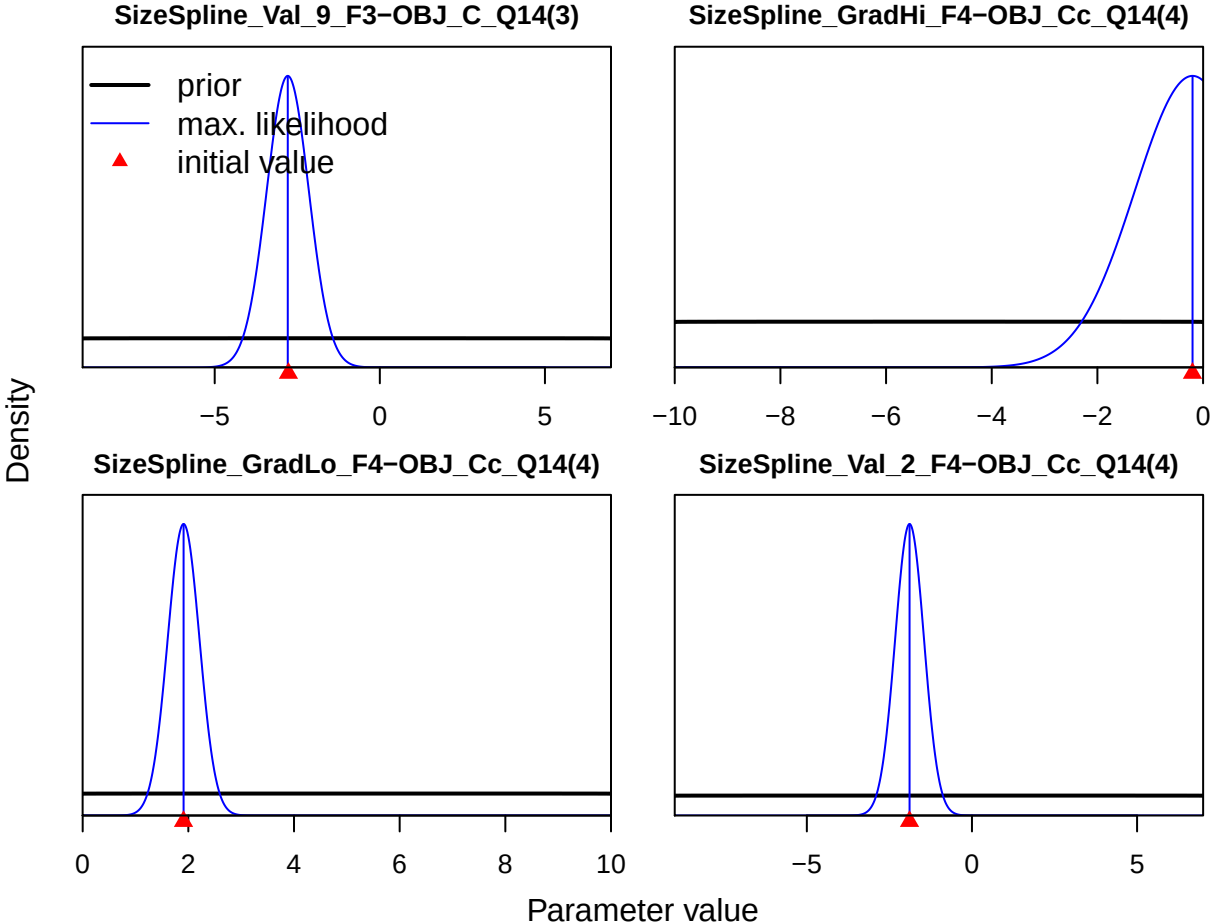

SizeSpline_Val_10_F1−OBJ_N−Q14(1)
SizeSpline_GradLo_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_11_F1−OBJ_N−Q14(1)
SizeSpline_GradHi_F2−OBJ_Nc_Q14(2)
prior
max. likelihood
initial value
Density
Parameter value
−5
0
5
0
2
4
6
8
10
−10
−8
−6
−4
−2
0


SizeSpline_Val_2_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_5_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_3_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_6_F2−OBJ_Nc_Q14(2)
prior
max. likelihood
initial value
Density
−5
0
5
Parameter value


SizeSpline_Val_7_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_9_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_8_F2−OBJ_Nc_Q14(2)
SizeSpline_Val_10_F2−OBJ_Nc_Q14(2)
prior
max. likelihood
initial value
Density
Parameter value
−5
0
5


SizeSpline_GradLo_F3−OBJ_C_Q14(3)
SizeSpline_Val_2_F3−OBJ_C_Q14(3)
SizeSpline_GradHi_F3−OBJ_C_Q14(3)
SizeSpline_Val_4_F3−OBJ_C_Q14(3)
prior
max. likelihood
initial value
Density
Parameter value
0
2
4
6
8
10
−5
0
5
−10
−8
−6
−4
−2
0
−5
0
5


SizeSpline_Val_5_F3−OBJ_C_Q14(3)
SizeSpline_Val_7_F3−OBJ_C_Q14(3)
SizeSpline_Val_6_F3−OBJ_C_Q14(3)
SizeSpline_Val_8_F3−OBJ_C_Q14(3)
prior
max. likelihood
initial value
Density
Parameter value
−5
0
5


SizeSpline_Val_9_F3−OBJ_C_Q14(3)
SizeSpline_GradHi_F4−OBJ_Cc_Q14(4)
SizeSpline_GradLo_F4−OBJ_Cc_Q14(4)
SizeSpline_Val_2_F4−OBJ_Cc_Q14(4)
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max. likelihood
initial value
Density
Parameter value
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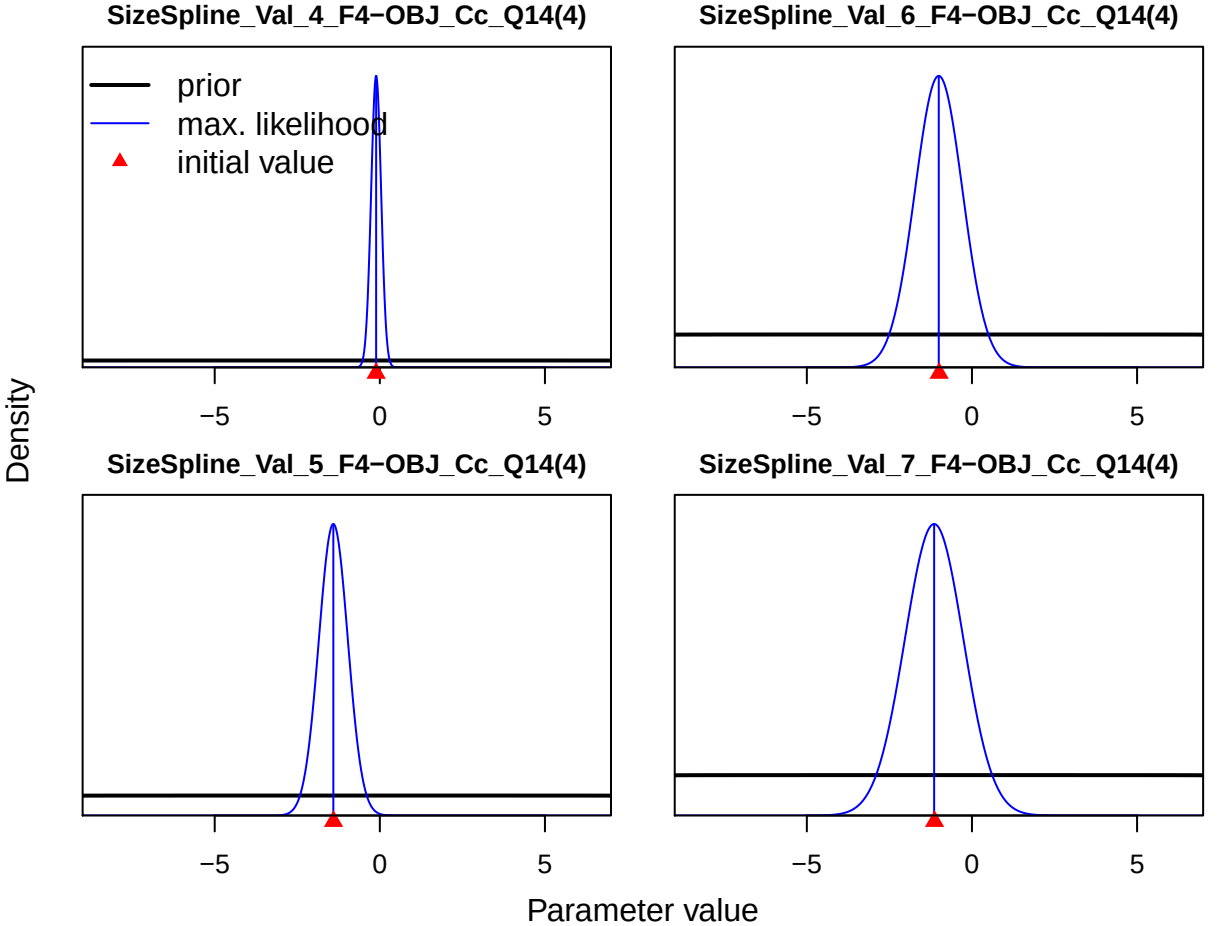
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SizeSpline_Val_5_F4−OBJ_Cc_Q14(4)
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prior
max. likelihood
initial value
Density
Parameter value
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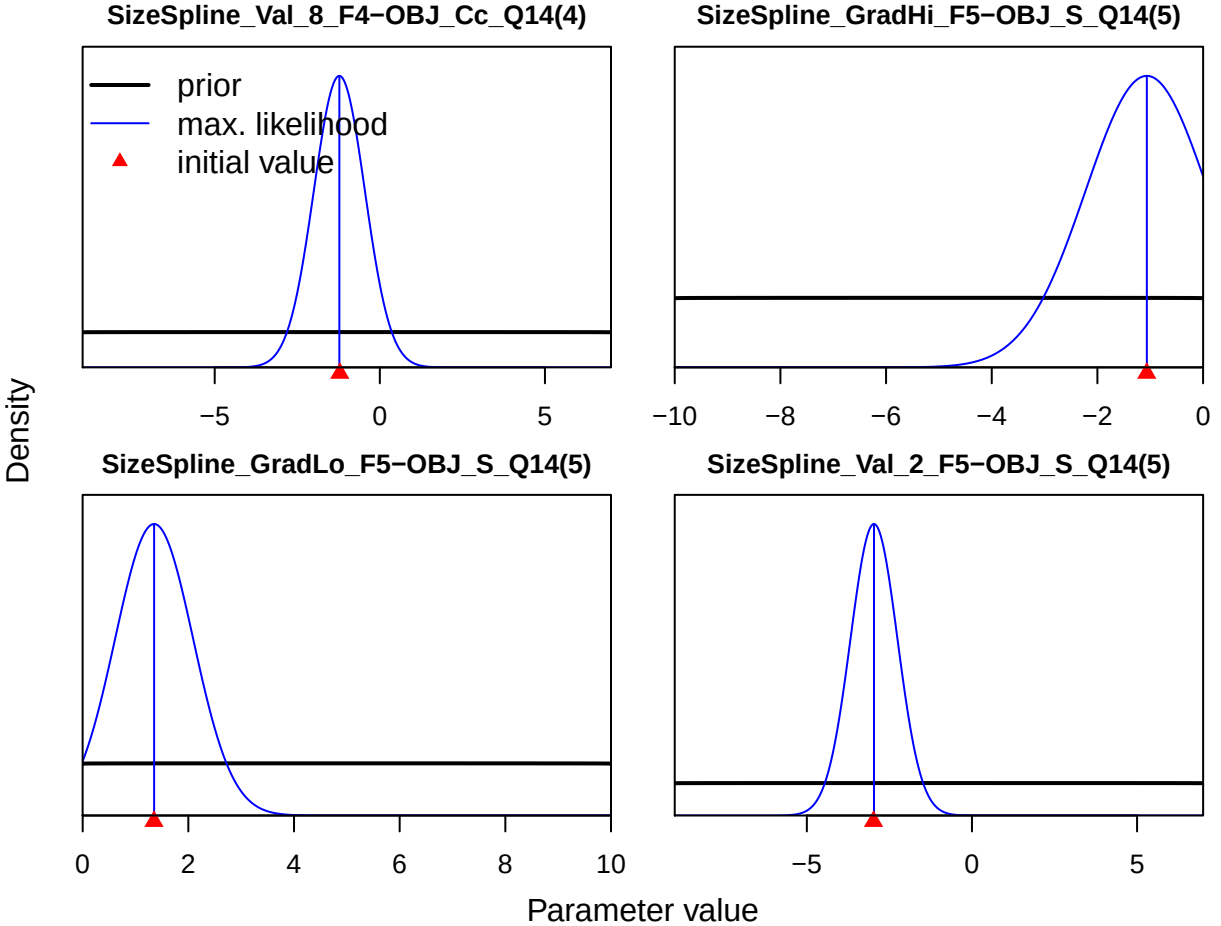
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SizeSpline_GradLo_F5−OBJ_S_Q14(5)
SizeSpline_Val_2_F5−OBJ_S_Q14(5)
prior
max. likelihood
initial value
Density
Parameter value
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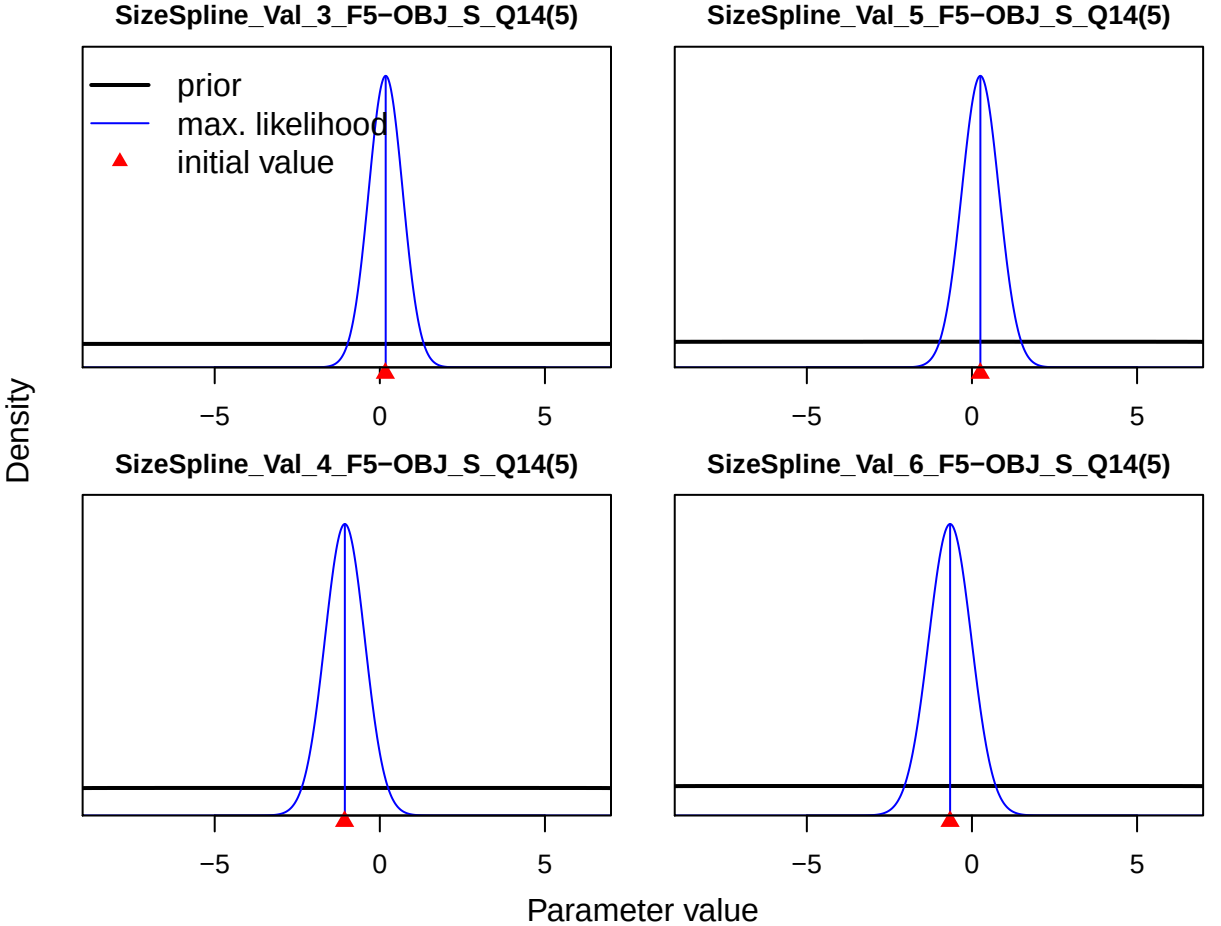
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SizeSpline_Val_4_F5−OBJ_S_Q14(5)
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prior
max. likelihood
initial value
Density
Parameter value
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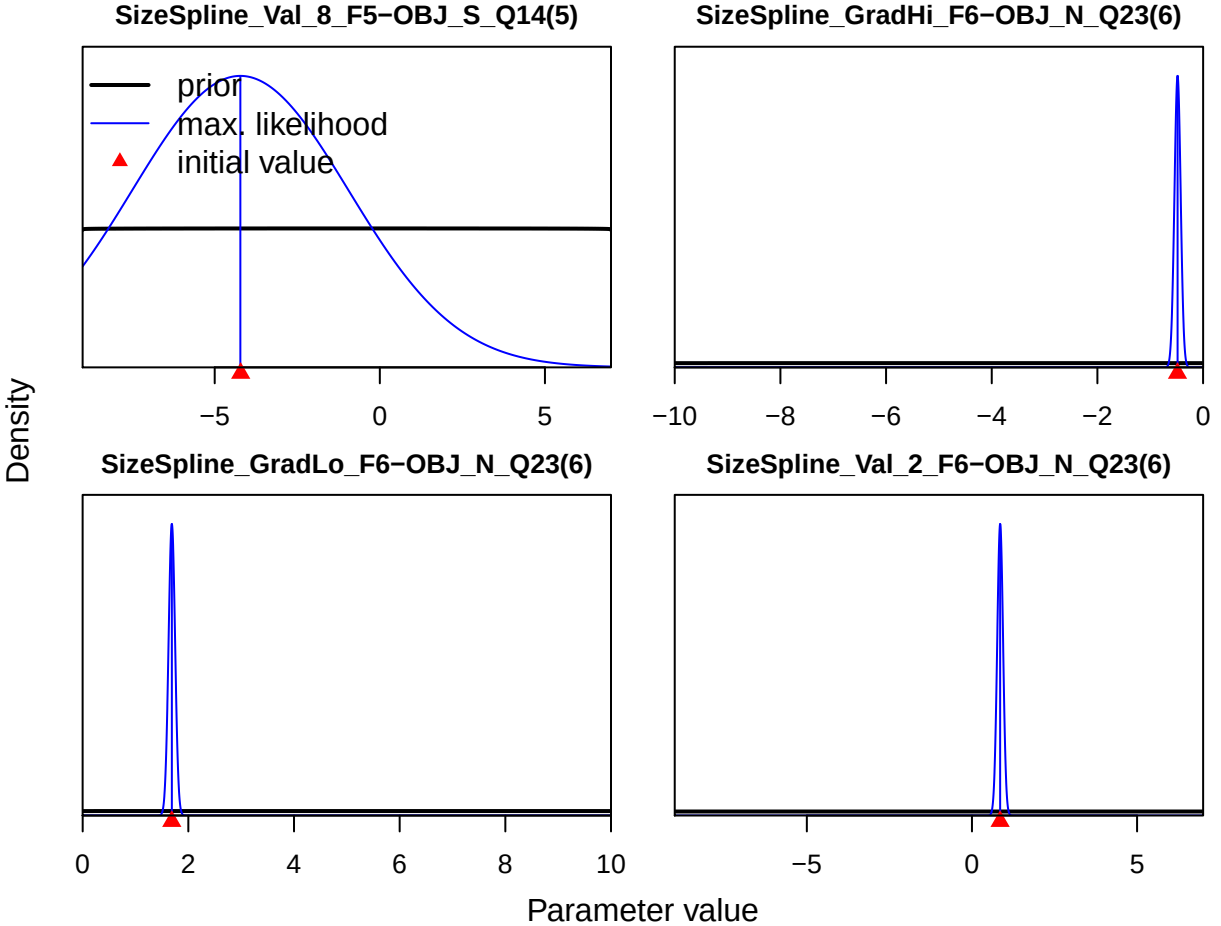
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max. likelihood
initial value
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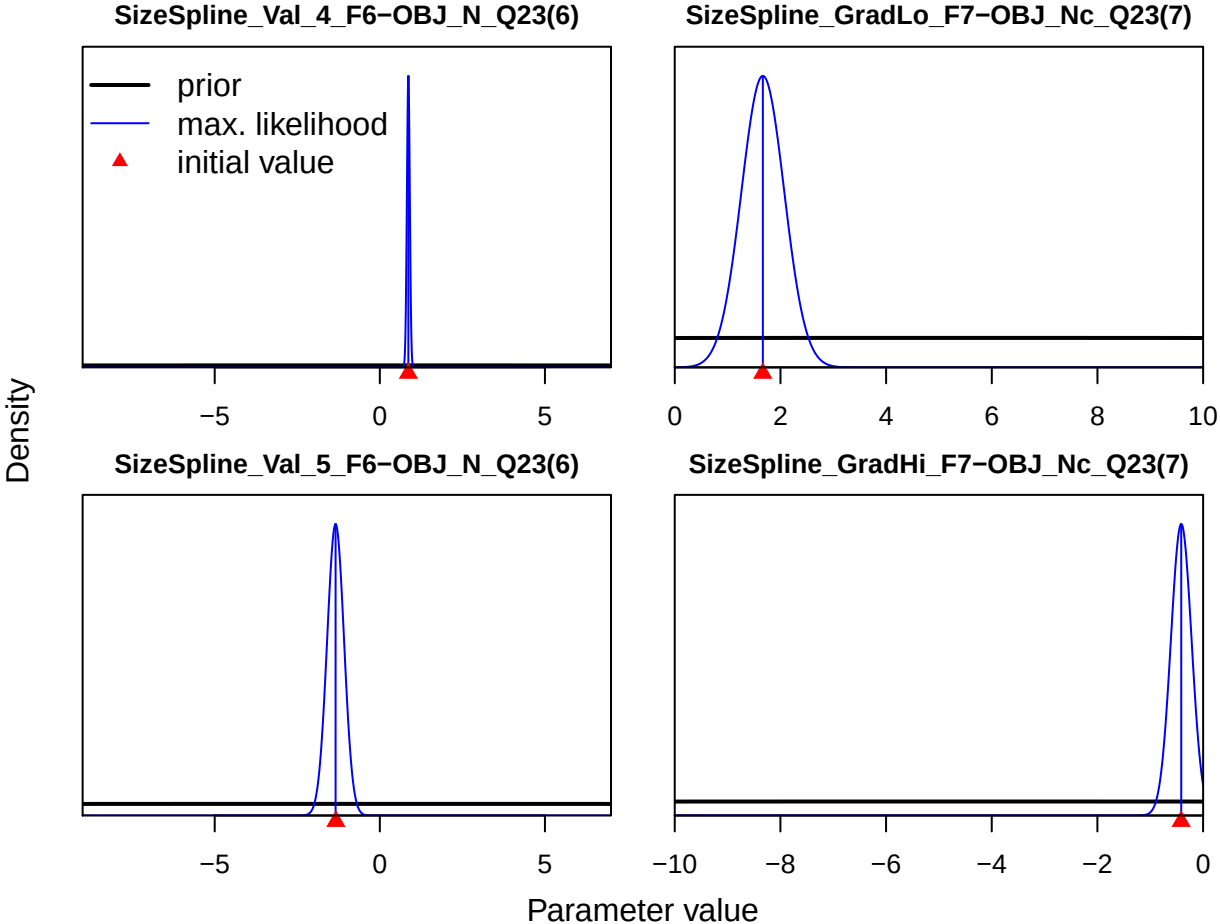
Density
Parameter value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SizeSpline_Val_5_F6−OBJ_N_Q23(6)
SizeSpline_GradHi_F7−OBJ_Nc_Q23(7)
prior
max. likelihood
initial value
Density
Parameter value
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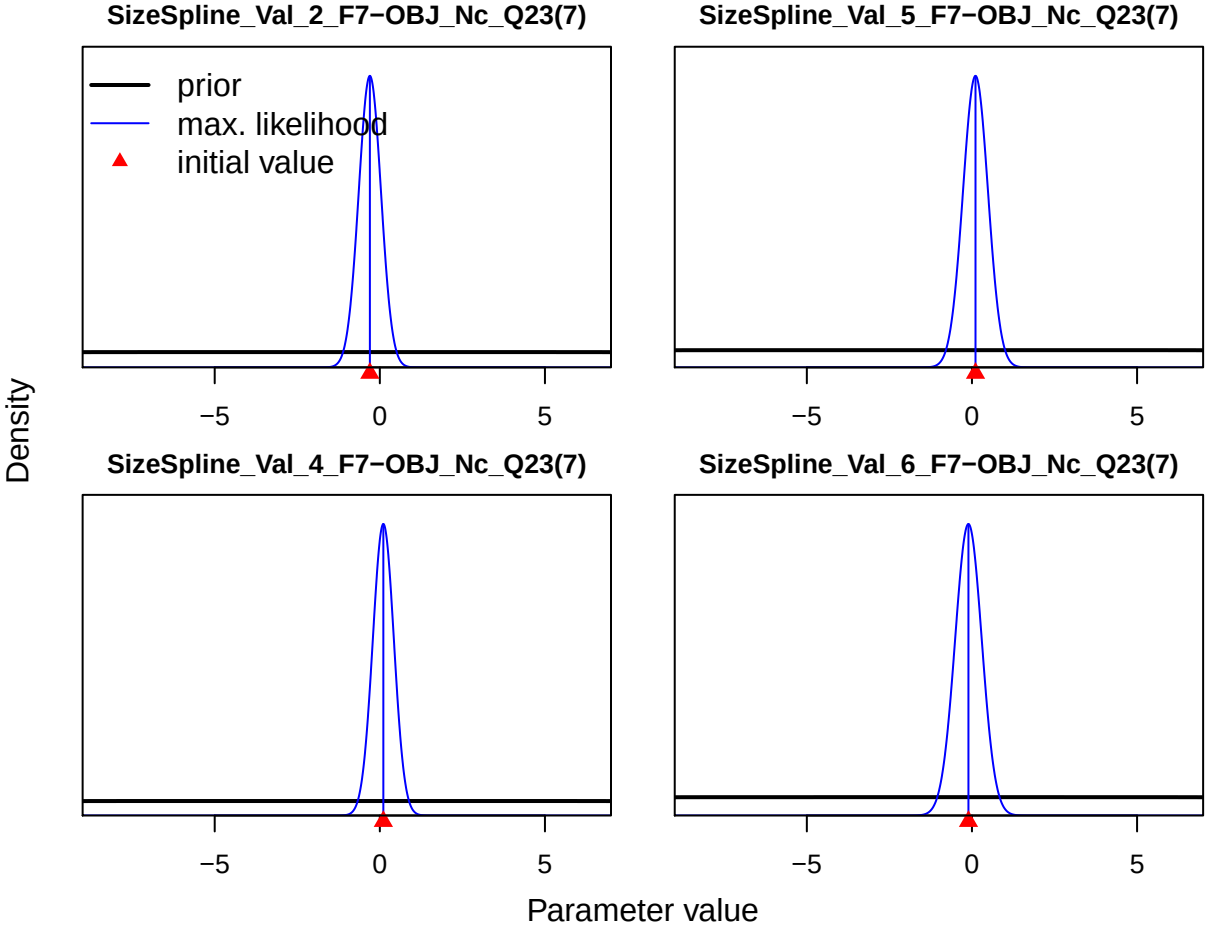
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SizeSpline_Val_5_F7−OBJ_Nc_Q23(7)
SizeSpline_Val_4_F7−OBJ_Nc_Q23(7)
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prior
max. likelihood
initial value
Density
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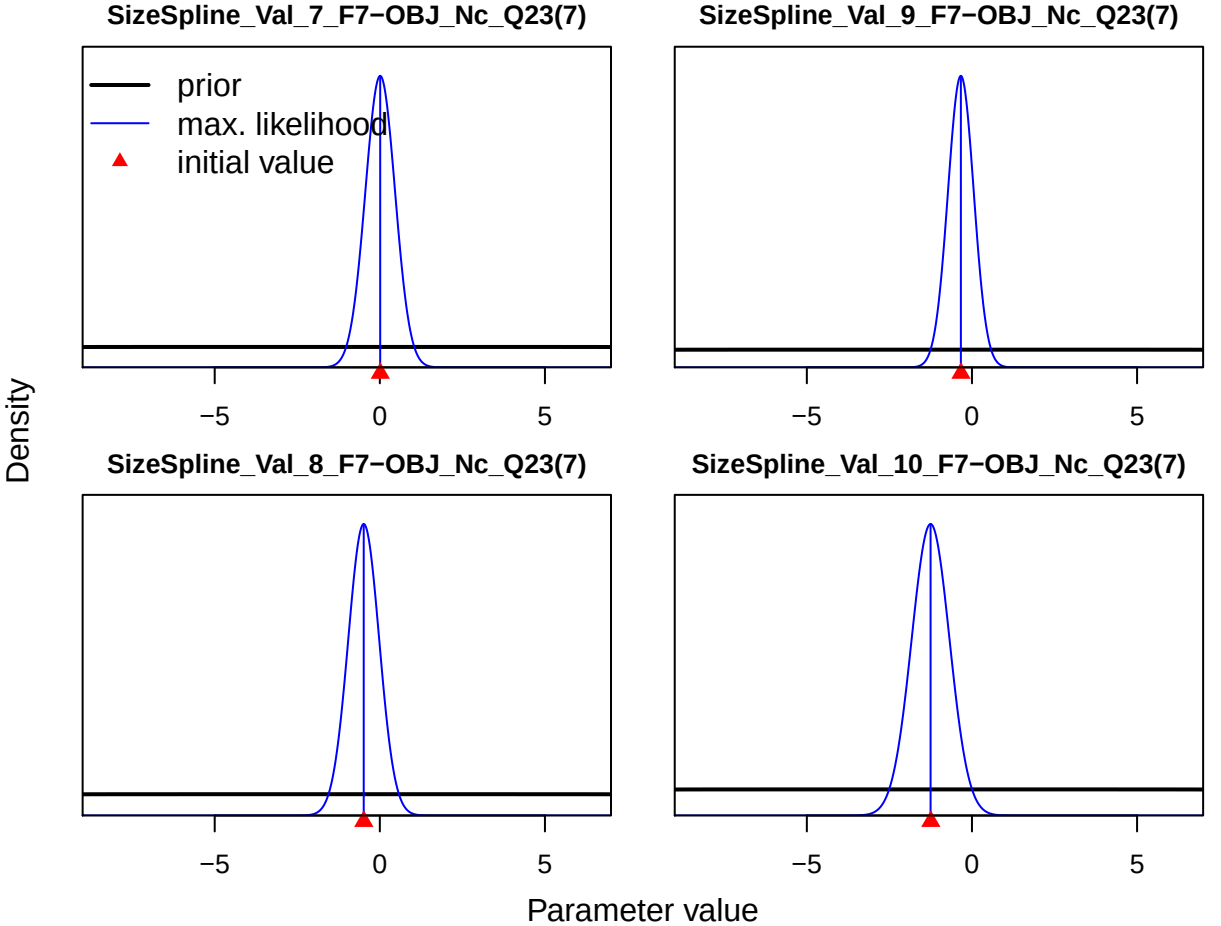
Parameter value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SizeSpline_Val_8_F7−OBJ_Nc_Q23(7)
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prior
max. likelihood
initial value
Density
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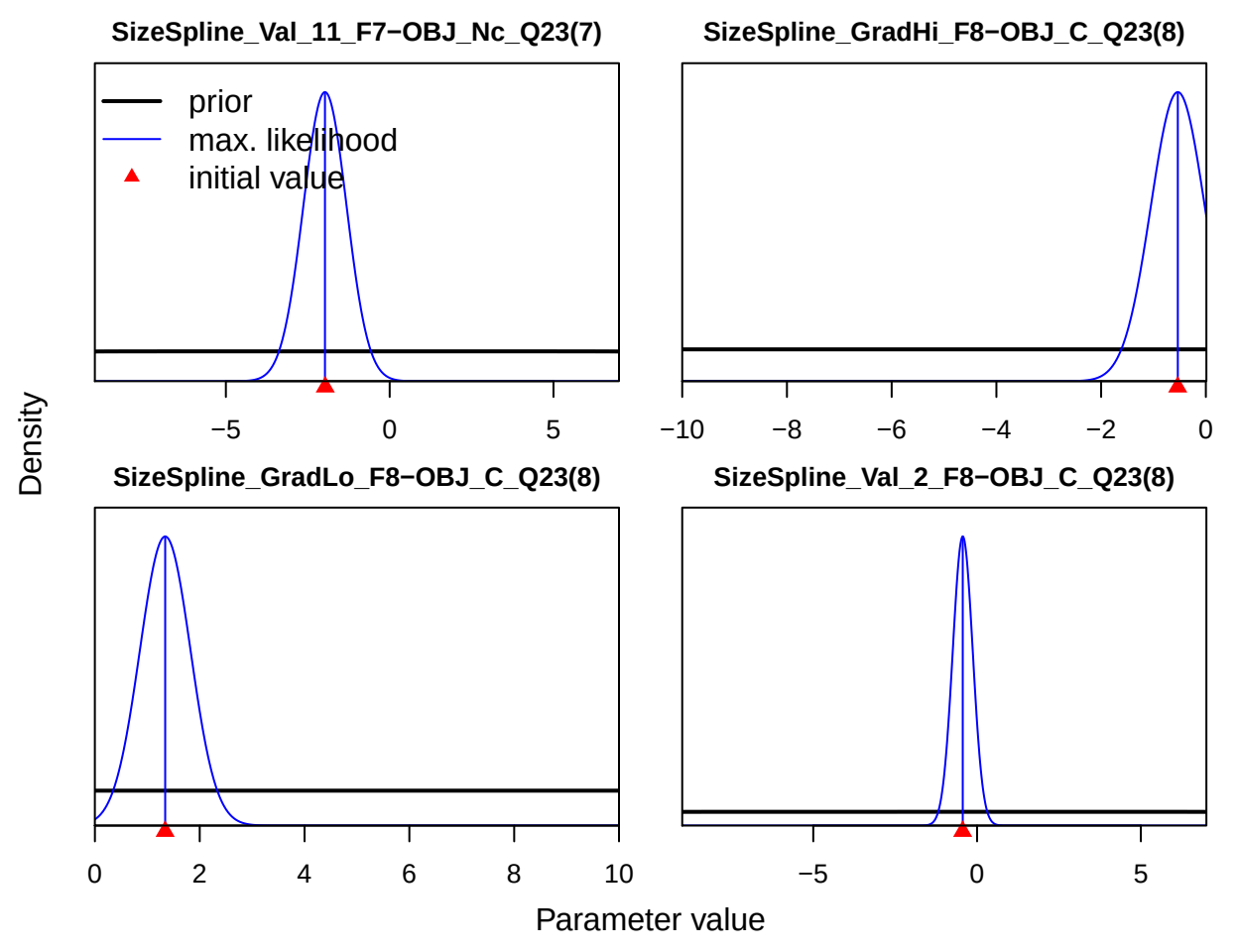
Parameter value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SizeSpline_GradLo_F8−OBJ_C_Q23(8)
SizeSpline_Val_2_F8−OBJ_C_Q23(8)
prior
max. likelihood
initial value
Density
Parameter value
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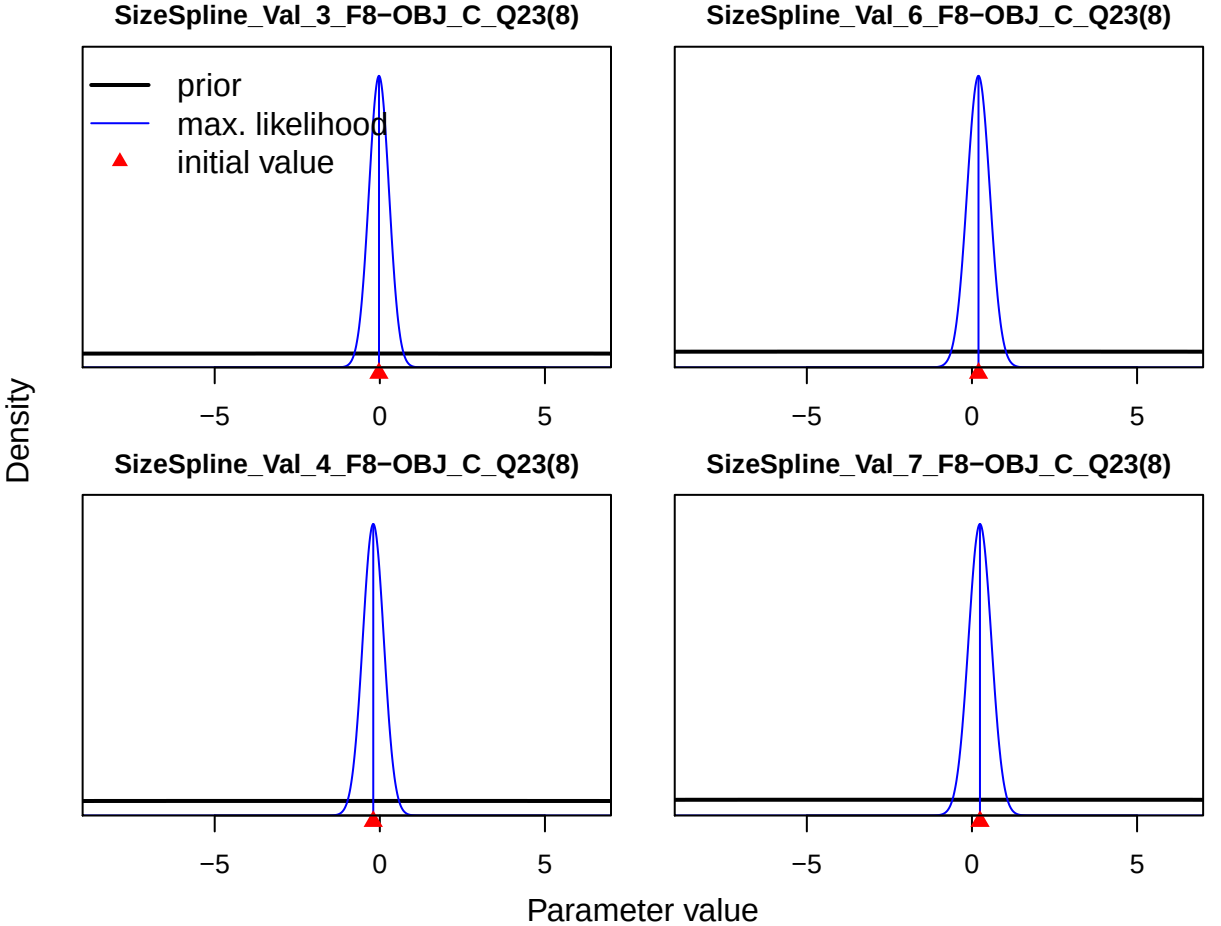
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SizeSpline_Val_6_F8−OBJ_C_Q23(8)
SizeSpline_Val_4_F8−OBJ_C_Q23(8)
SizeSpline_Val_7_F8−OBJ_C_Q23(8)
prior
max. likelihood
initial value
Density
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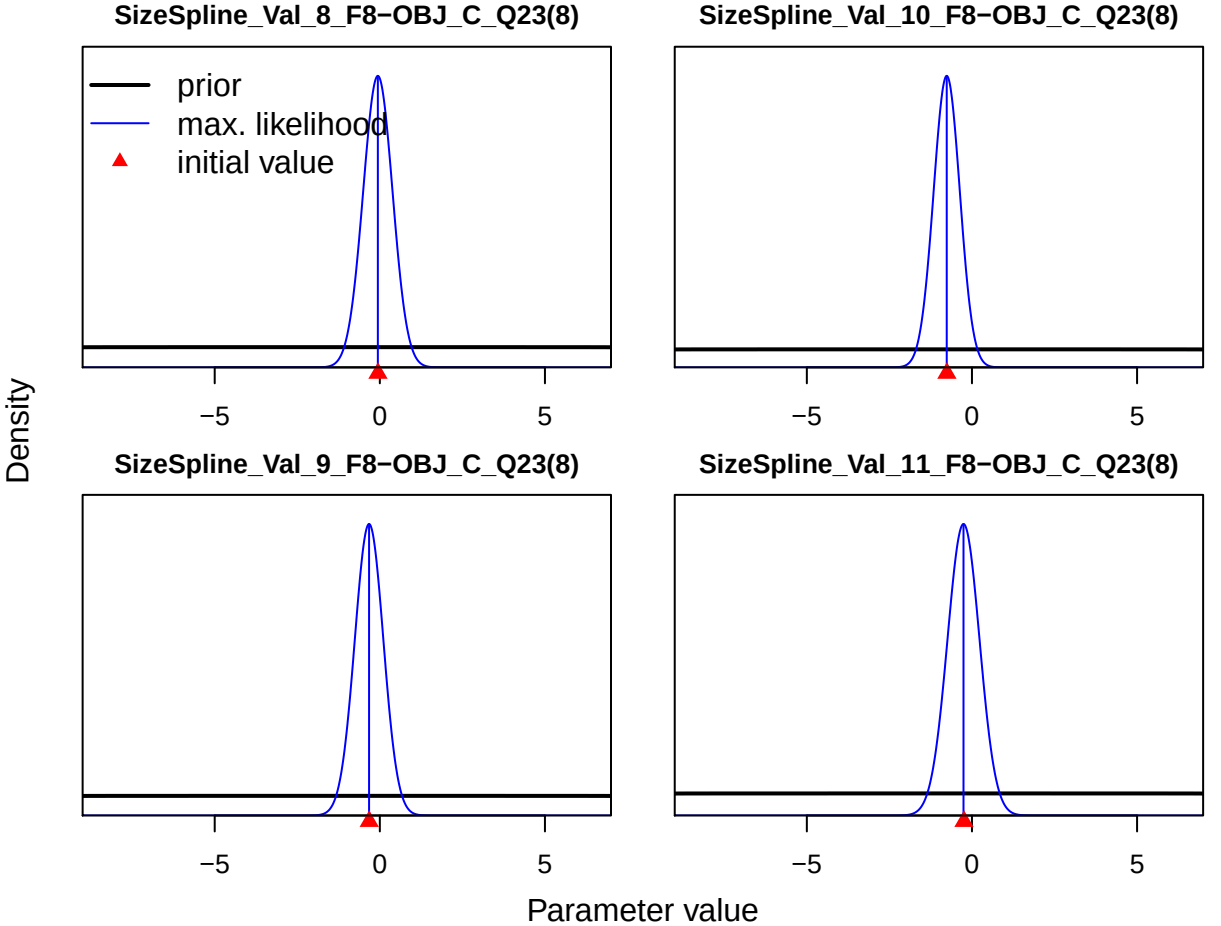
Parameter value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SizeSpline_Val_10_F8−OBJ_C_Q23(8)
SizeSpline_Val_9_F8−OBJ_C_Q23(8)
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prior
max. likelihood
initial value
Density
−5
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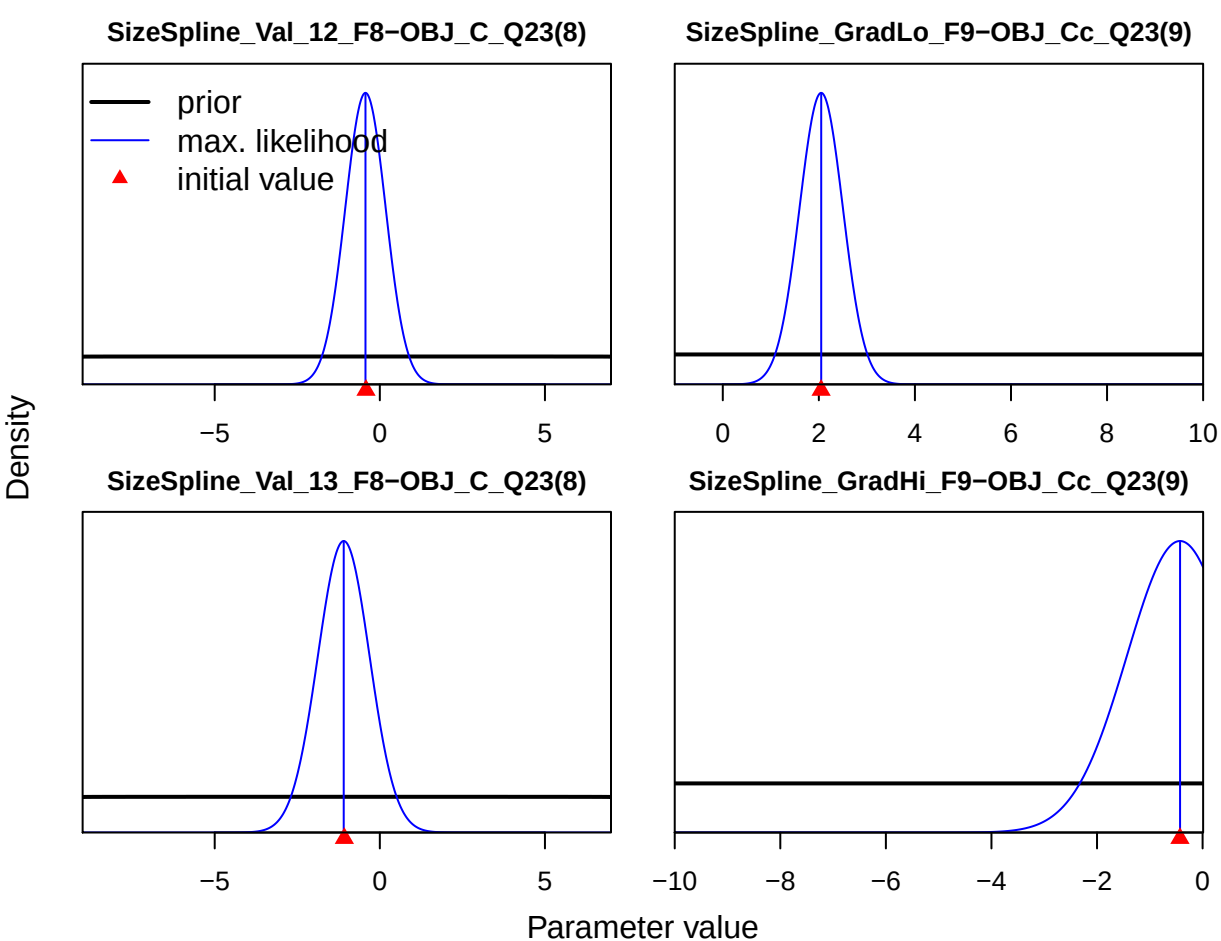
Parameter value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SizeSpline_GradLo_F9−OBJ_Cc_Q23(9)
SizeSpline_Val_13_F8−OBJ_C_Q23(8)
SizeSpline_GradHi_F9−OBJ_Cc_Q23(9)
prior
max. likelihood
initial value
Density
Parameter value
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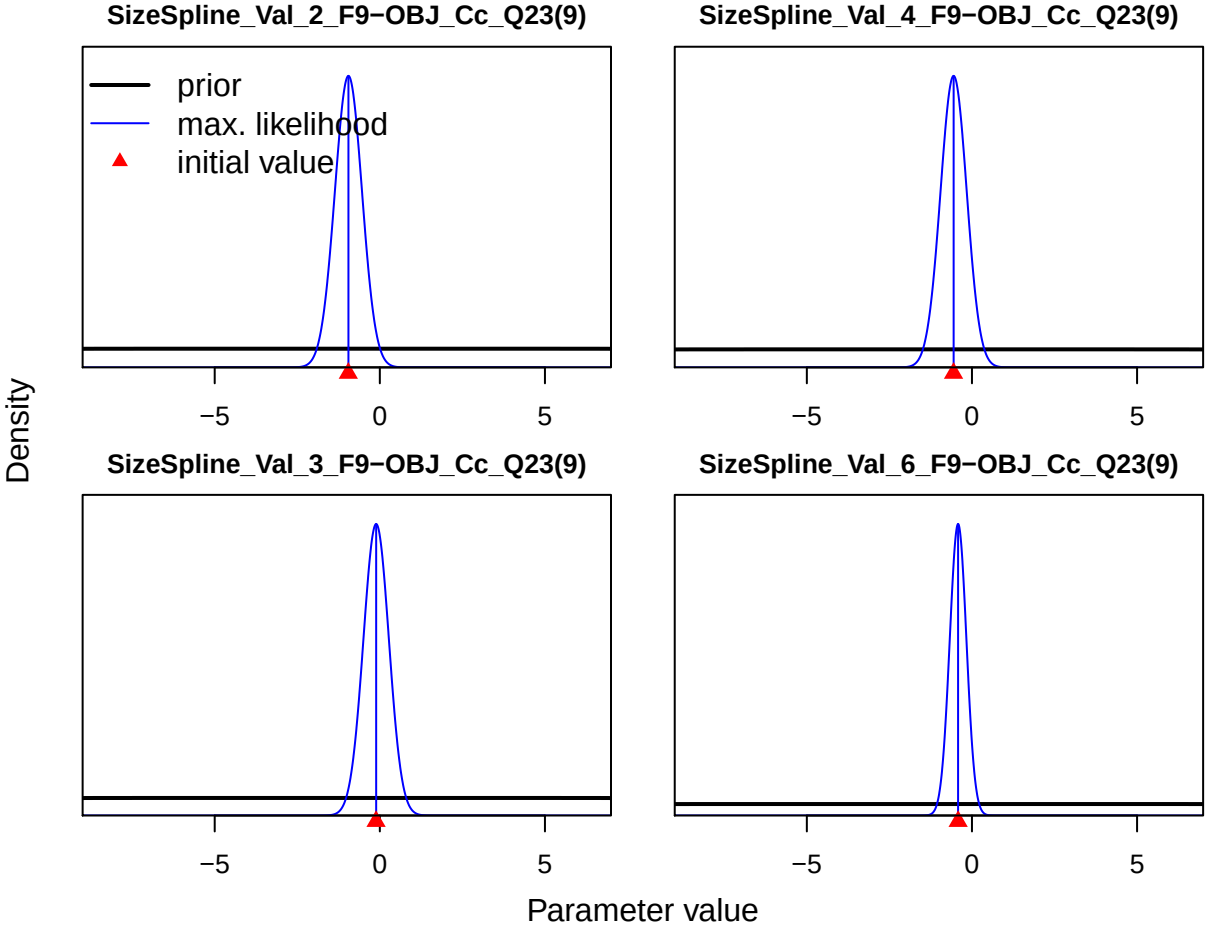
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SizeSpline_Val_4_F9−OBJ_Cc_Q23(9)
SizeSpline_Val_3_F9−OBJ_Cc_Q23(9)
SizeSpline_Val_6_F9−OBJ_Cc_Q23(9)
prior
max. likelihood
initial value
Density
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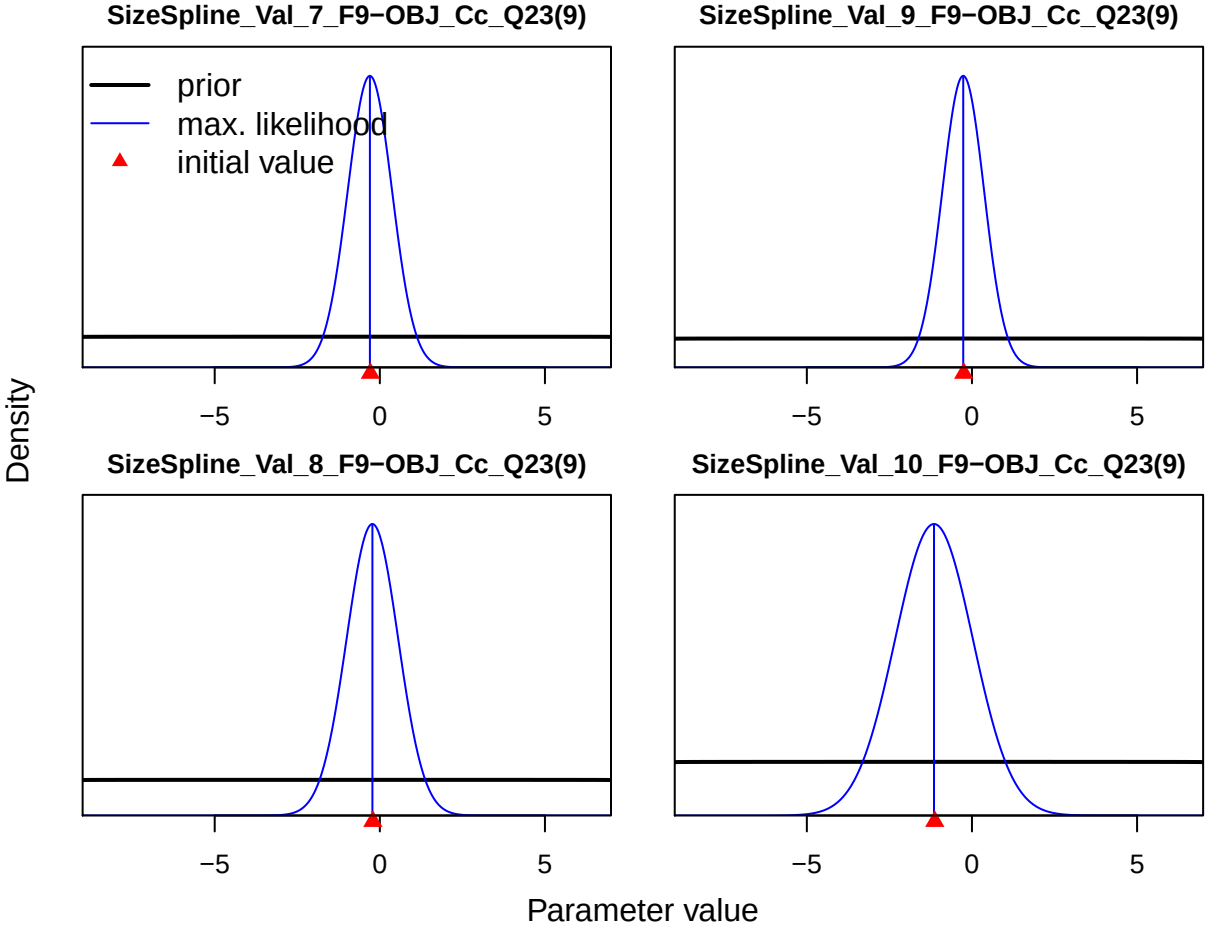
Parameter value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SizeSpline_Val_9_F9−OBJ_Cc_Q23(9)
SizeSpline_Val_8_F9−OBJ_Cc_Q23(9)
SizeSpline_Val_10_F9−OBJ_Cc_Q23(9)
prior
max. likelihood
initial value
Density
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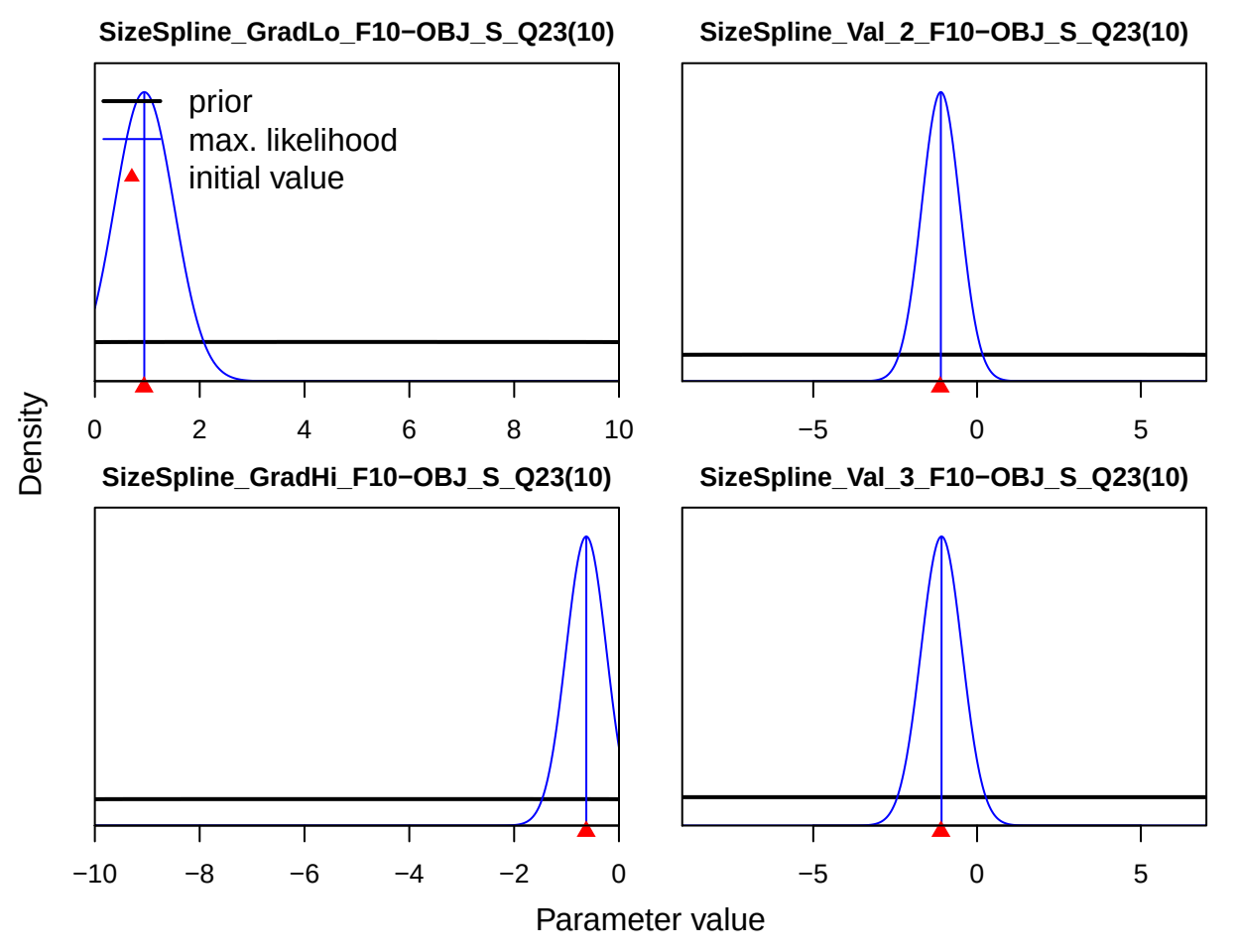
Parameter value


SizeSpline_GradLo_F10−OBJ_S_Q23(10)
SizeSpline_Val_2_F10−OBJ_S_Q23(10)
SizeSpline_GradHi_F10−OBJ_S_Q23(10)
SizeSpline_Val_3_F10−OBJ_S_Q23(10)
prior
max. likelihood
initial value
Density
Parameter value
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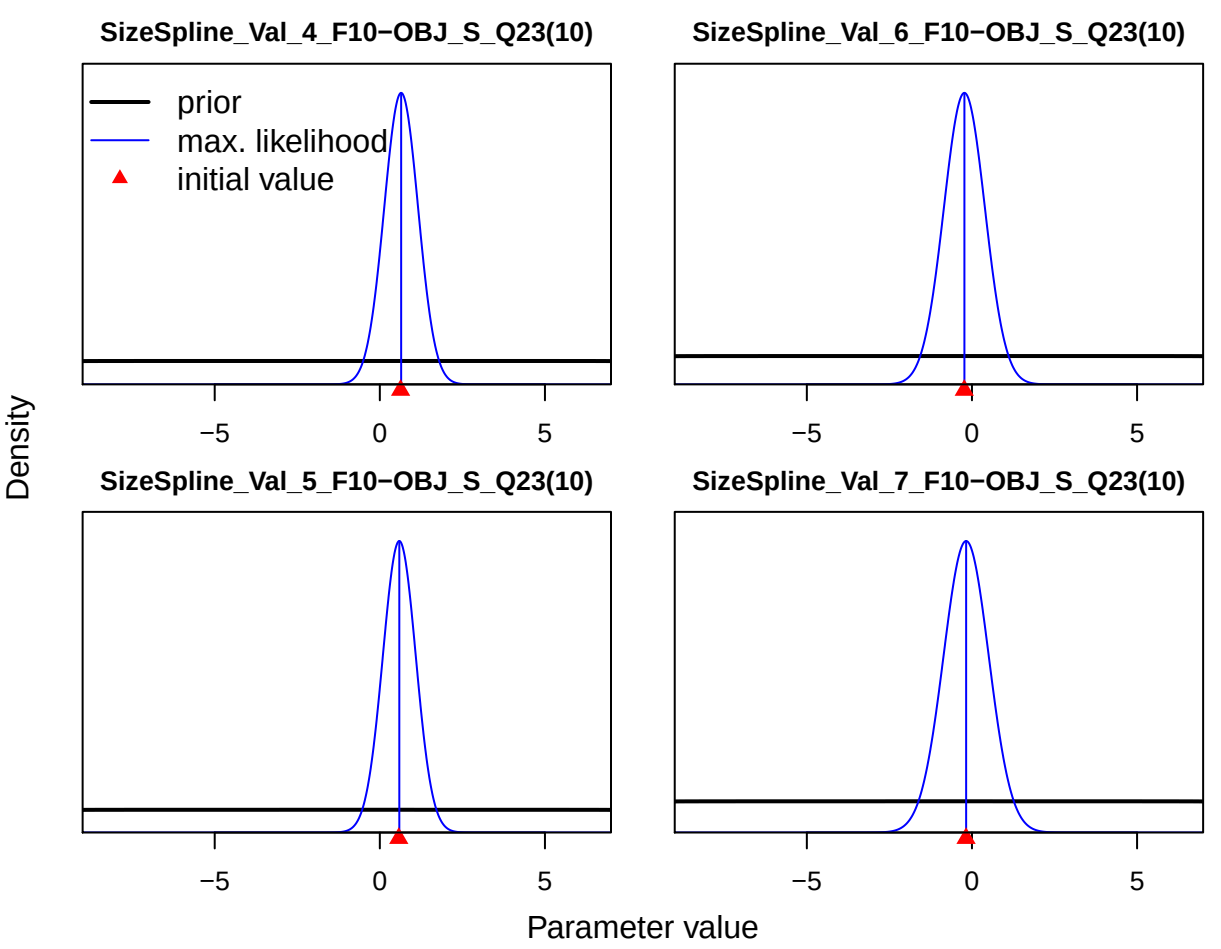
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SizeSpline_Val_5_F10−OBJ_S_Q23(10)
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initial value
Density
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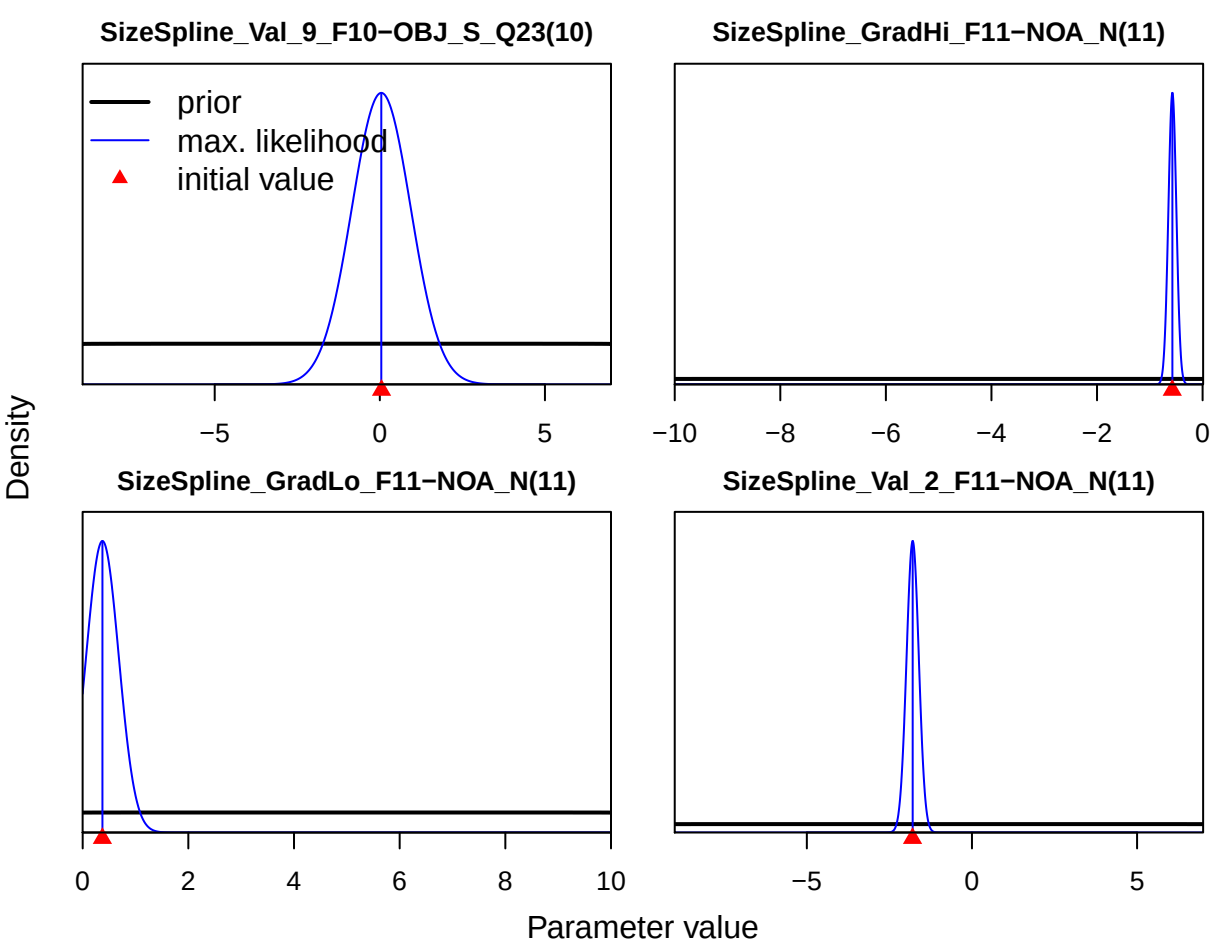
Parameter value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SizeSpline_GradLo_F11−NOA_N(11)
SizeSpline_Val_2_F11−NOA_N(11)
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max. likelihood
initial value
Density
Parameter value
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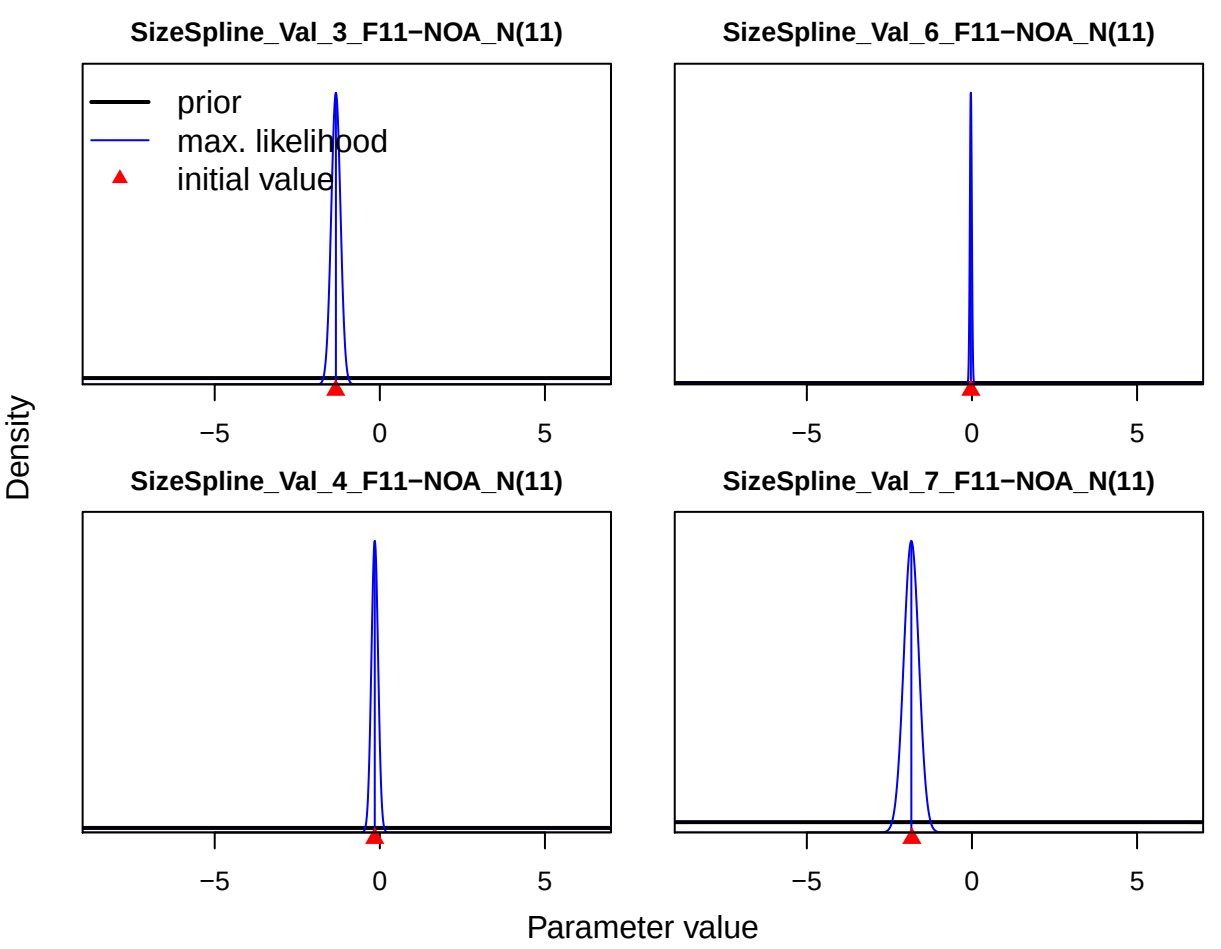
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SizeSpline_Val_6_F11−NOA_N(11)
SizeSpline_Val_4_F11−NOA_N(11)
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initial value
Density
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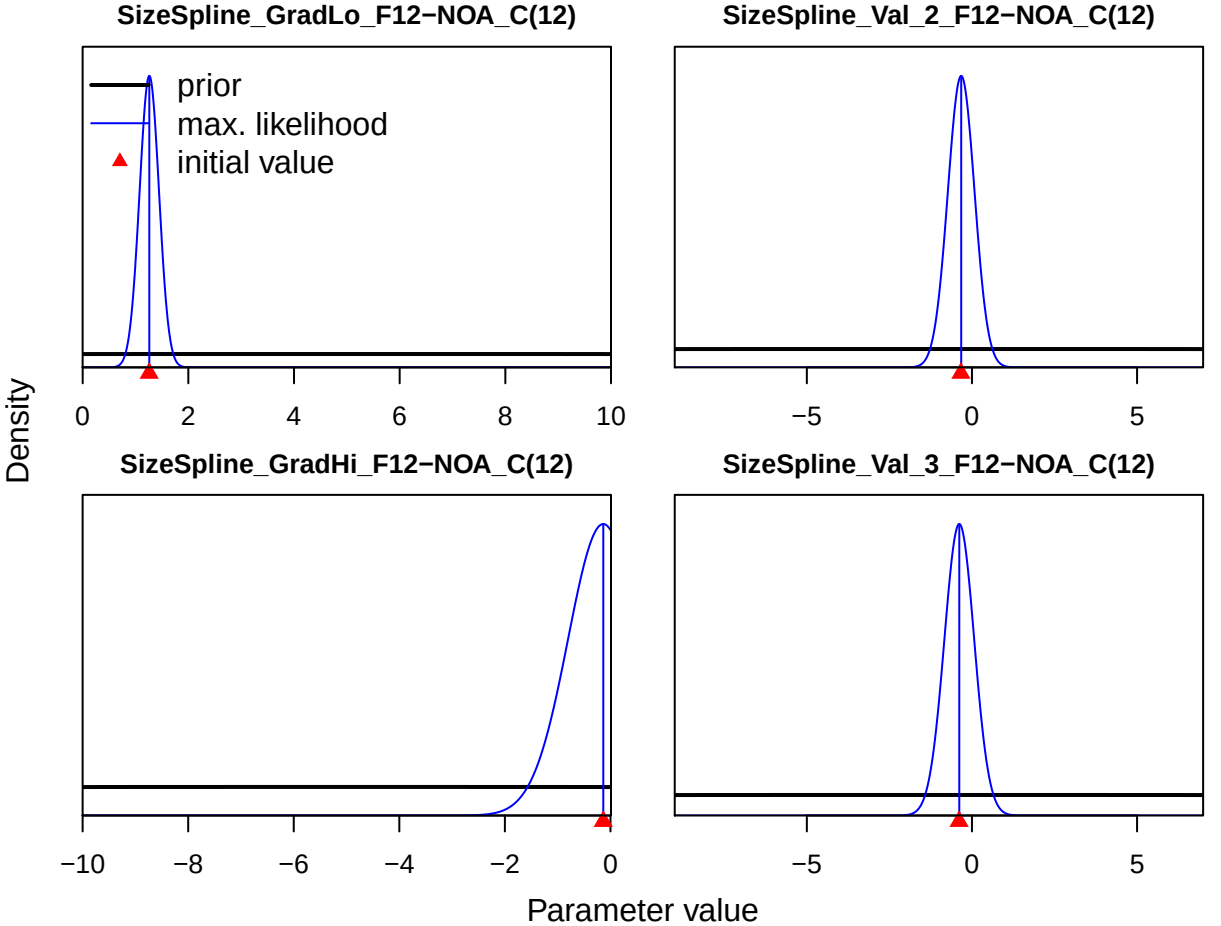
Parameter value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SizeSpline_GradHi_F12−NOA_C(12)
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max. likelihood
initial value
Density
Parameter value
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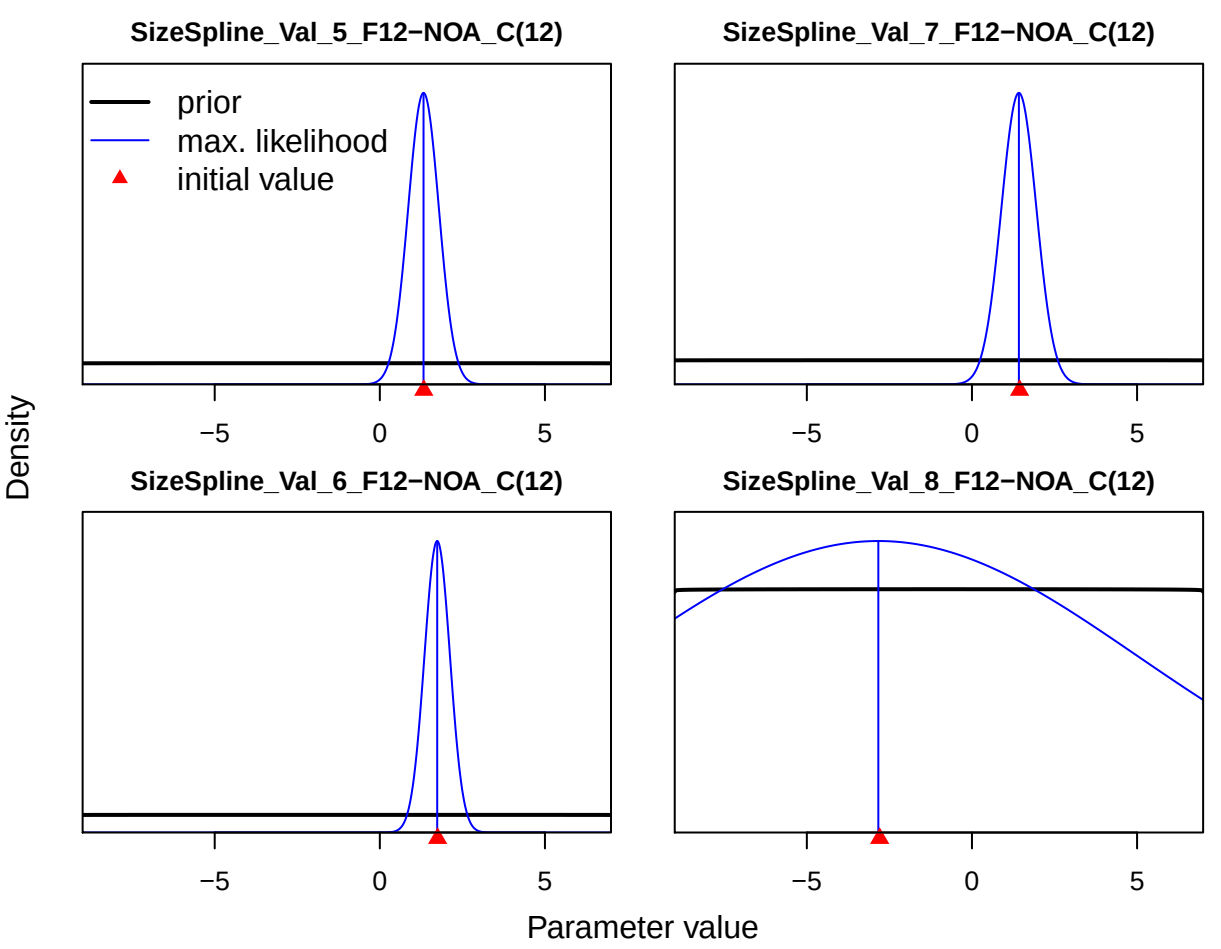
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initial value
Density
Parameter value
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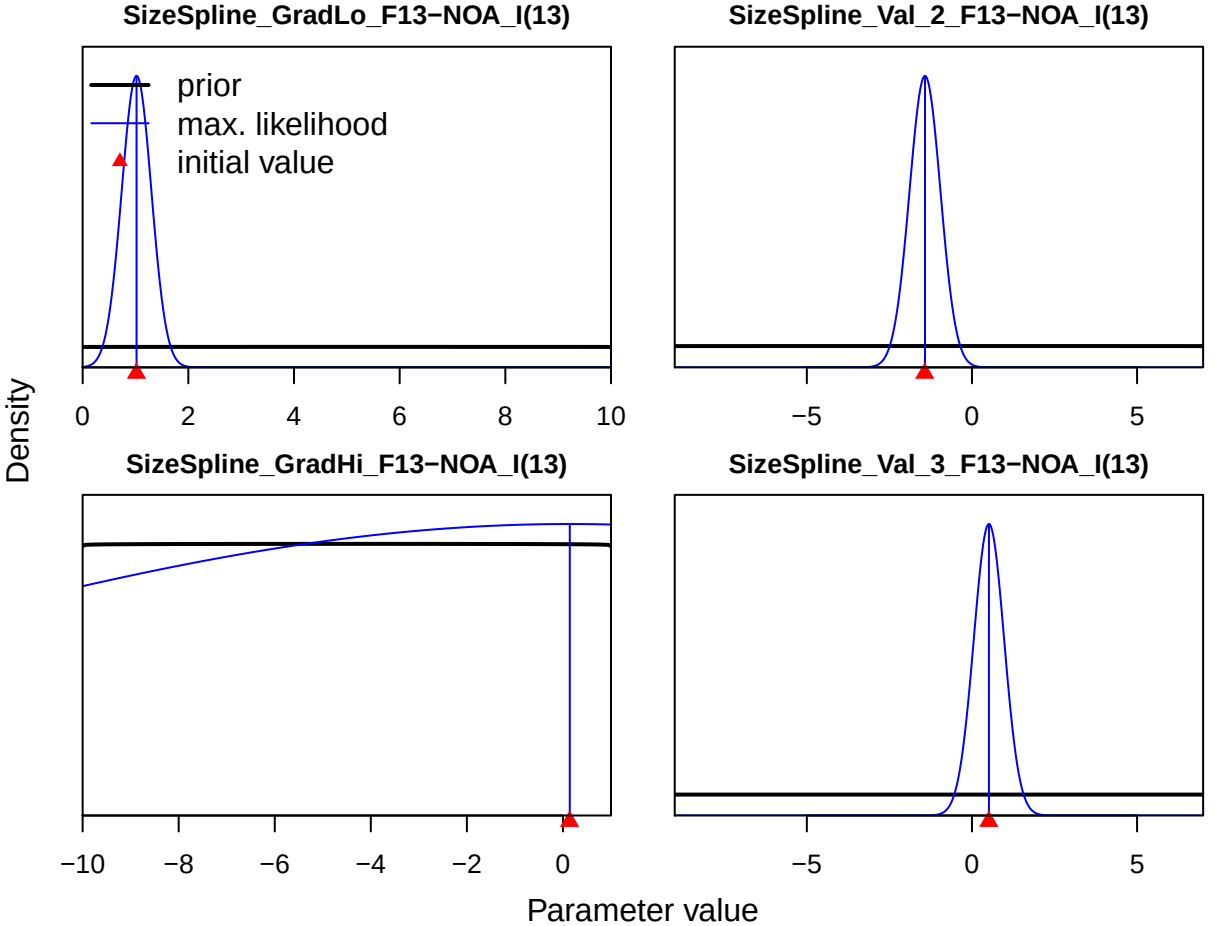
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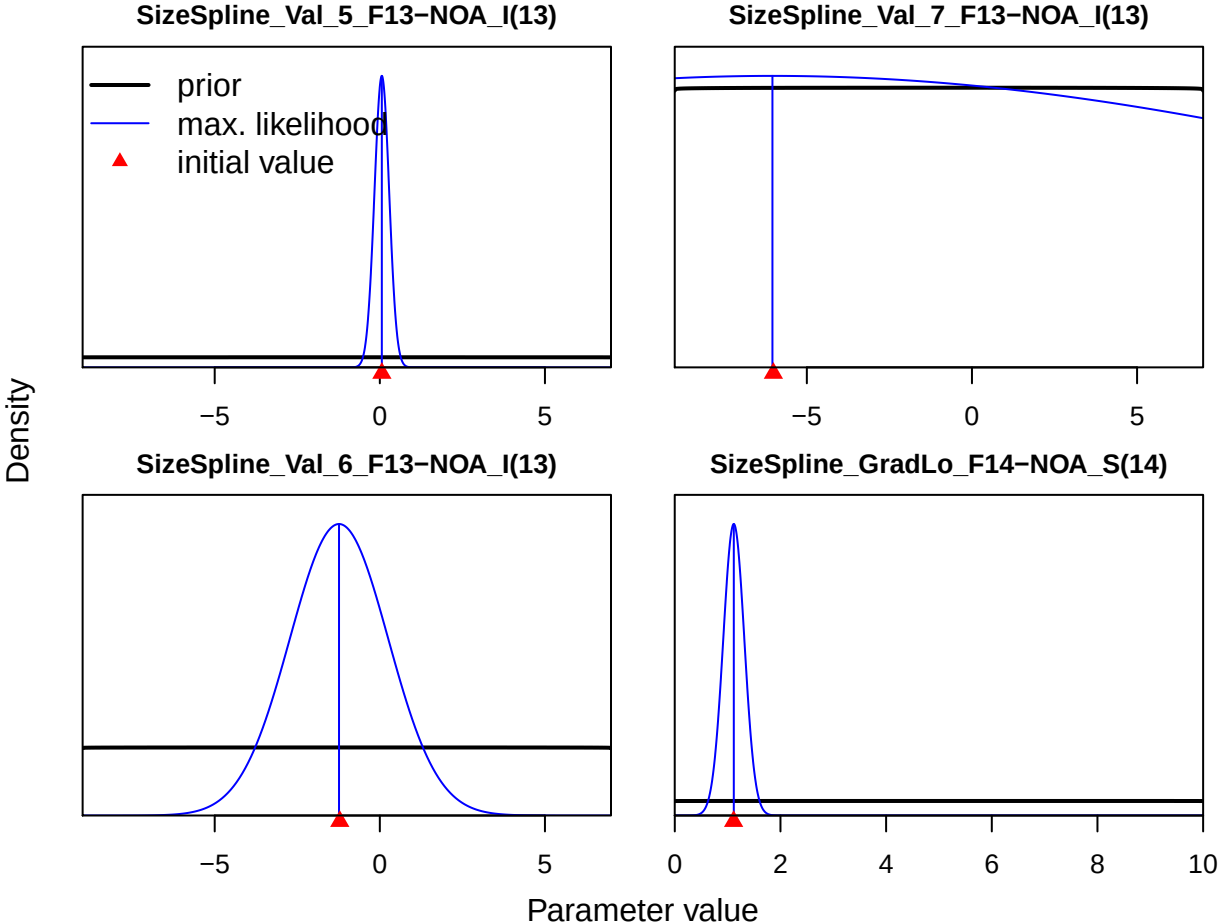
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SizeSpline_Val_6_F13−NOA_I(13)
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max. likelihood
initial value
Density
Parameter value
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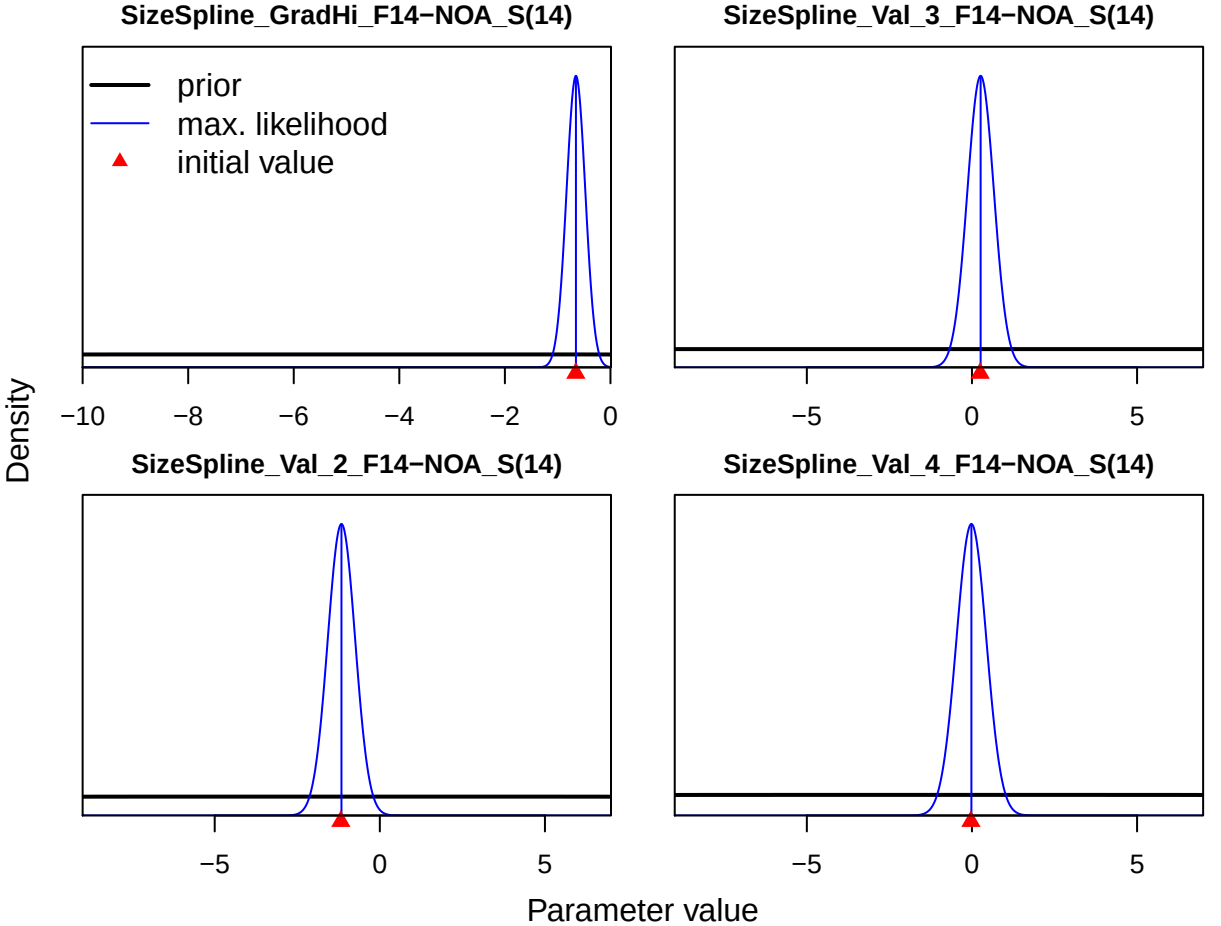
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initial value
Density
Parameter value
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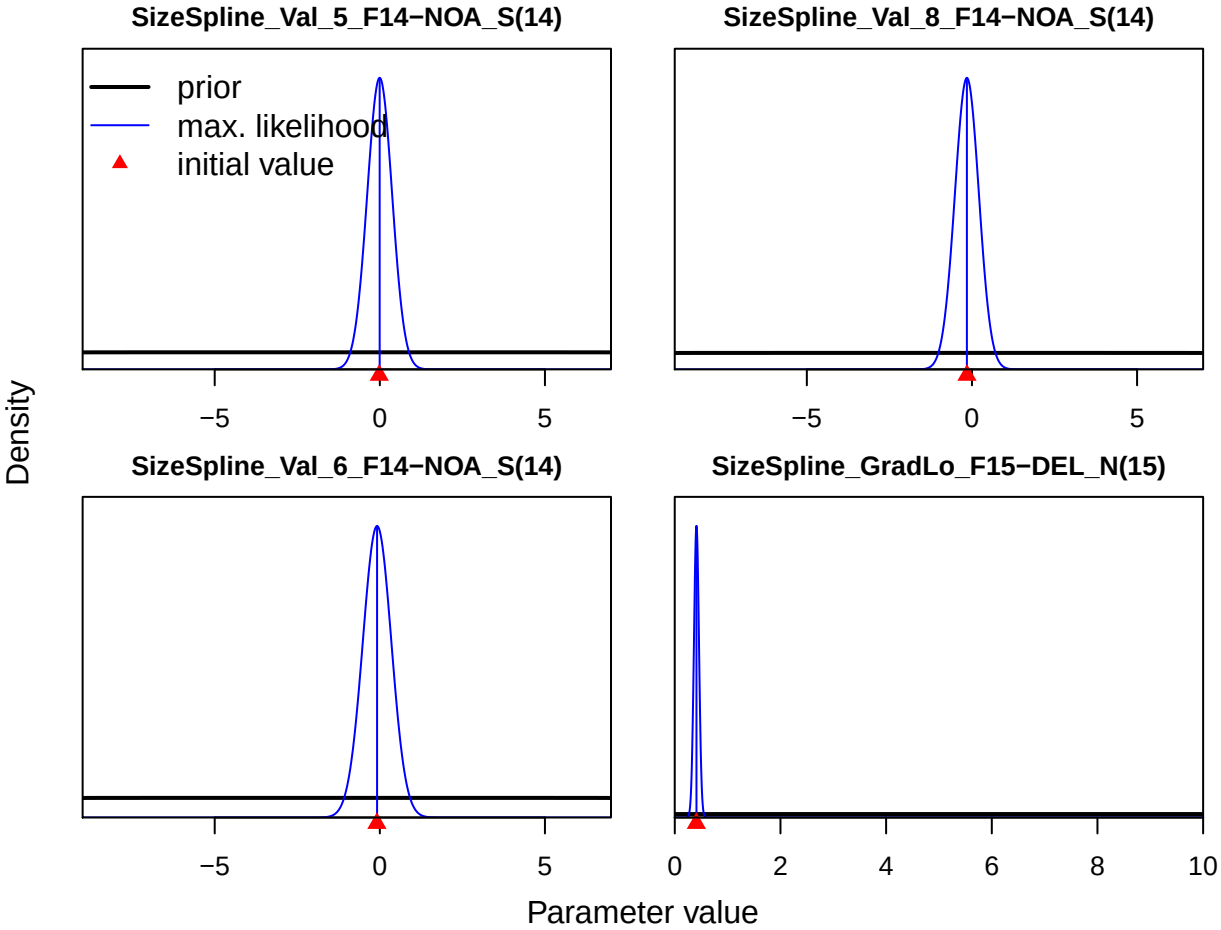
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initial value
Density
Parameter value
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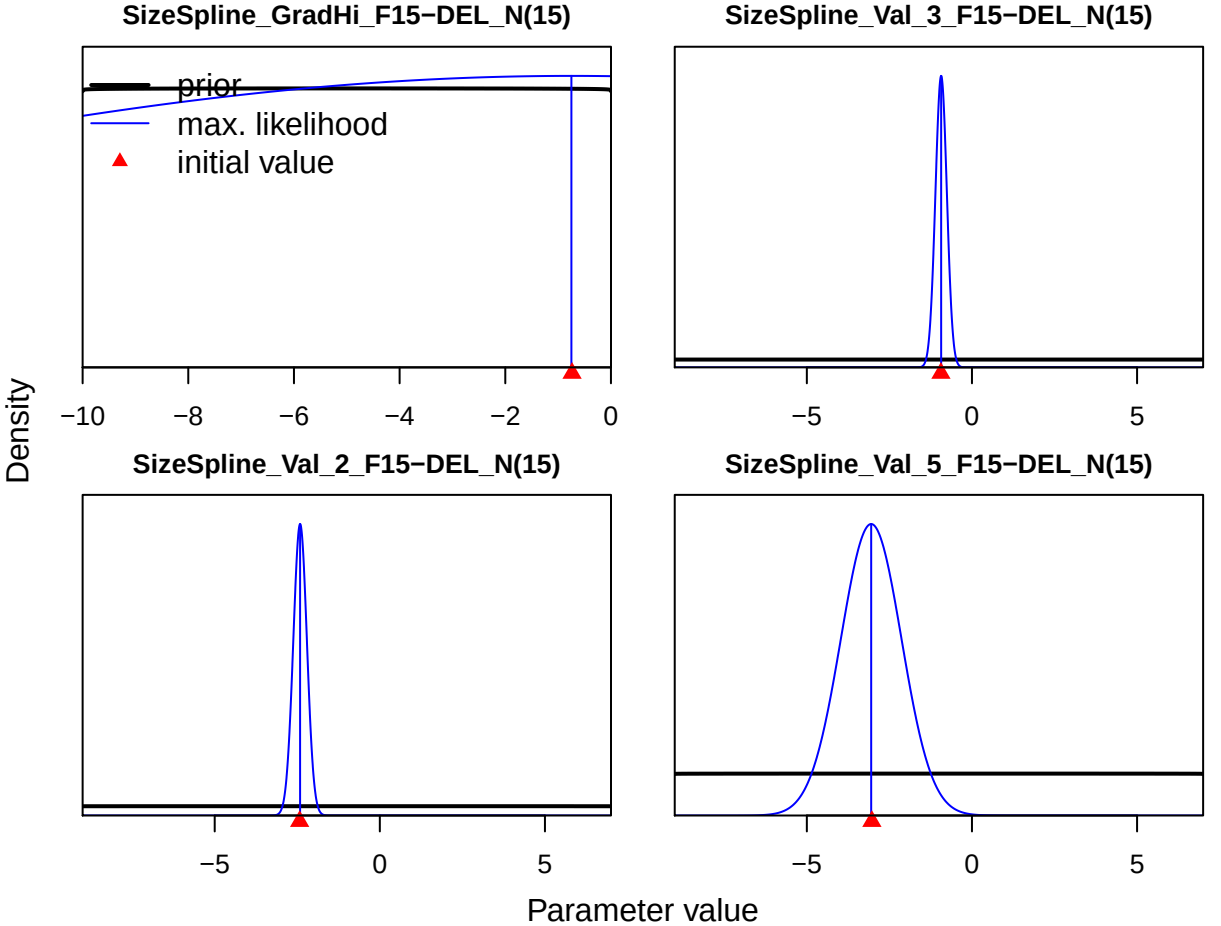
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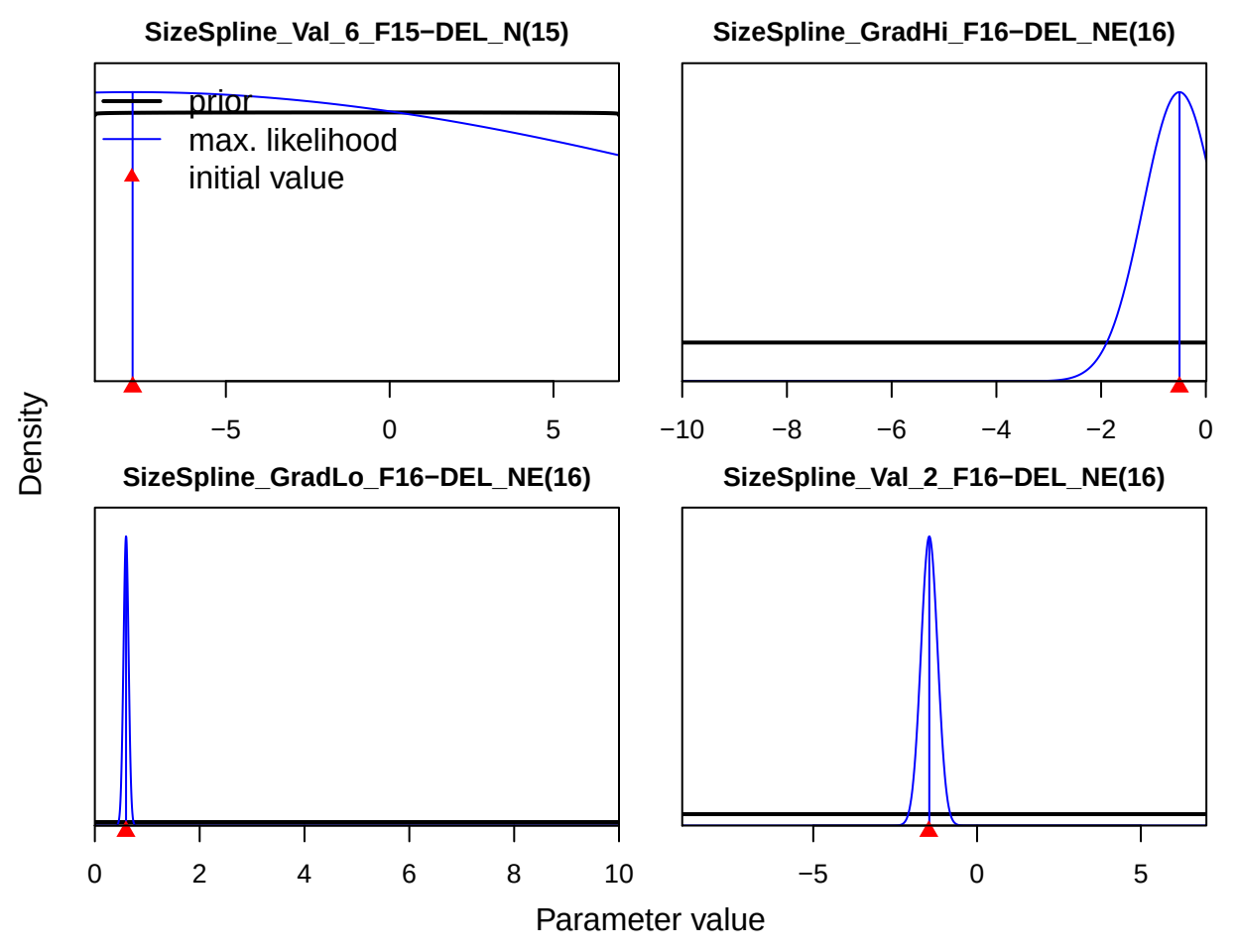
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max. likelihood
initial value
Density
Parameter value
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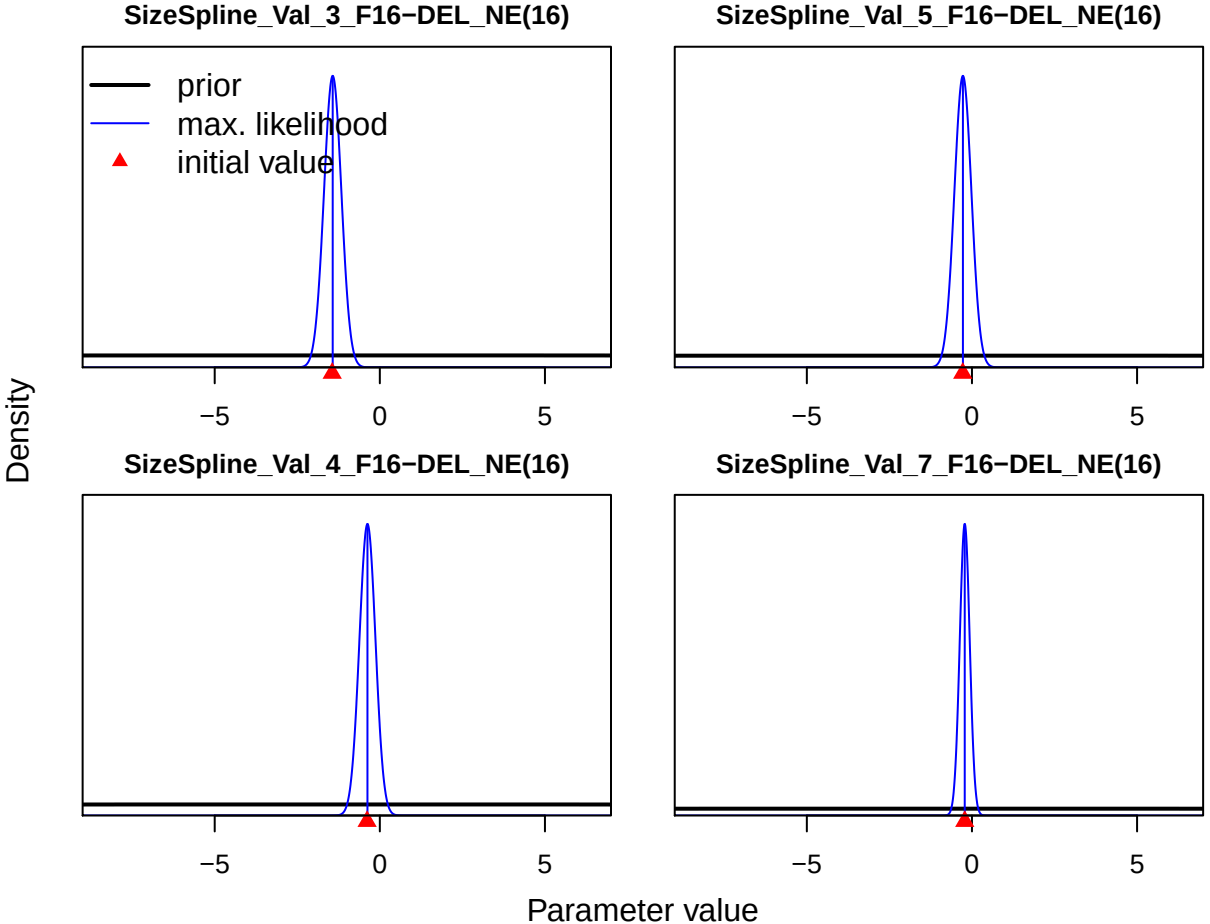
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SizeSpline_Val_4_F16−DEL_NE(16)
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max. likelihood
initial value
Density
Parameter value
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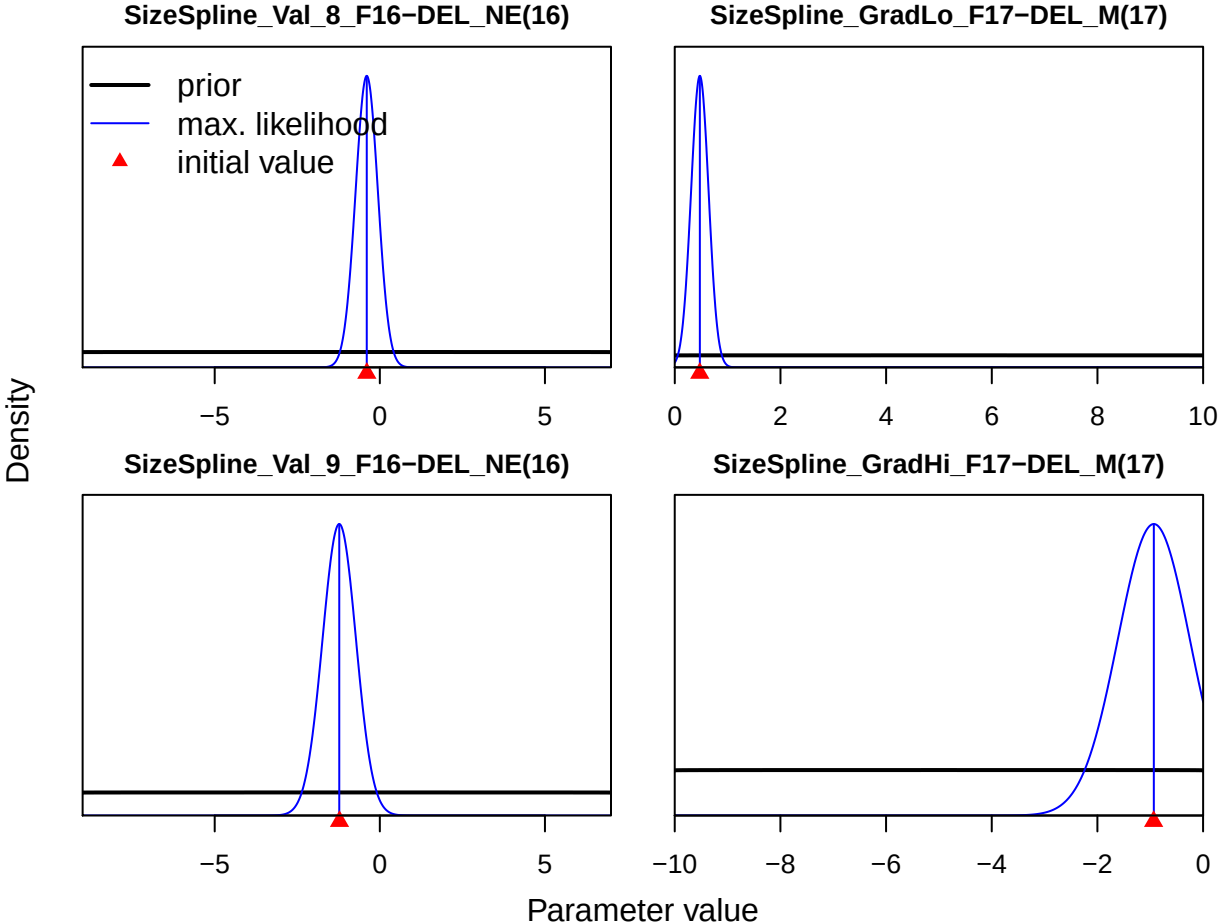
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SizeSpline_GradHi_F17−DEL_M(17)
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max. likelihood
initial value
Density
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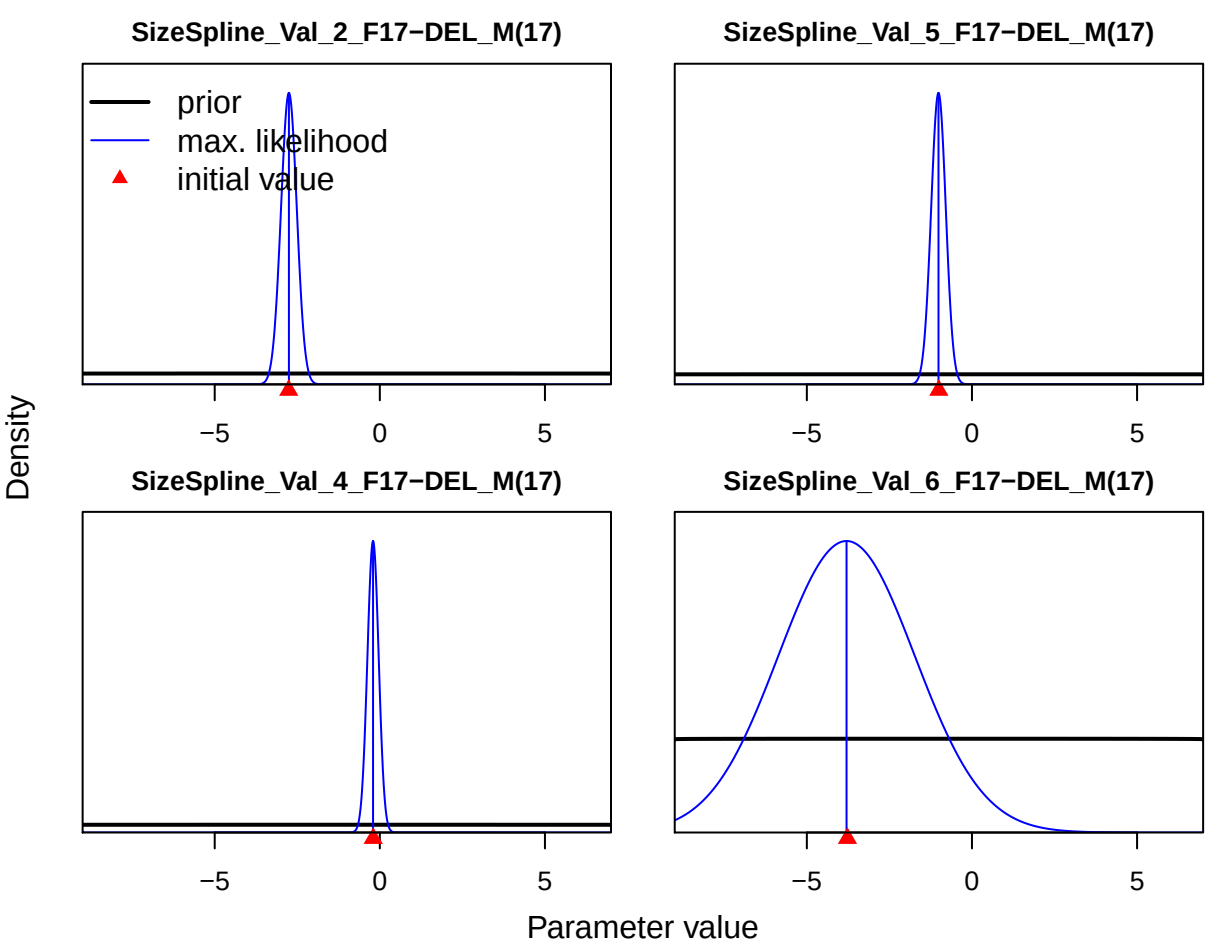
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initial value
Density
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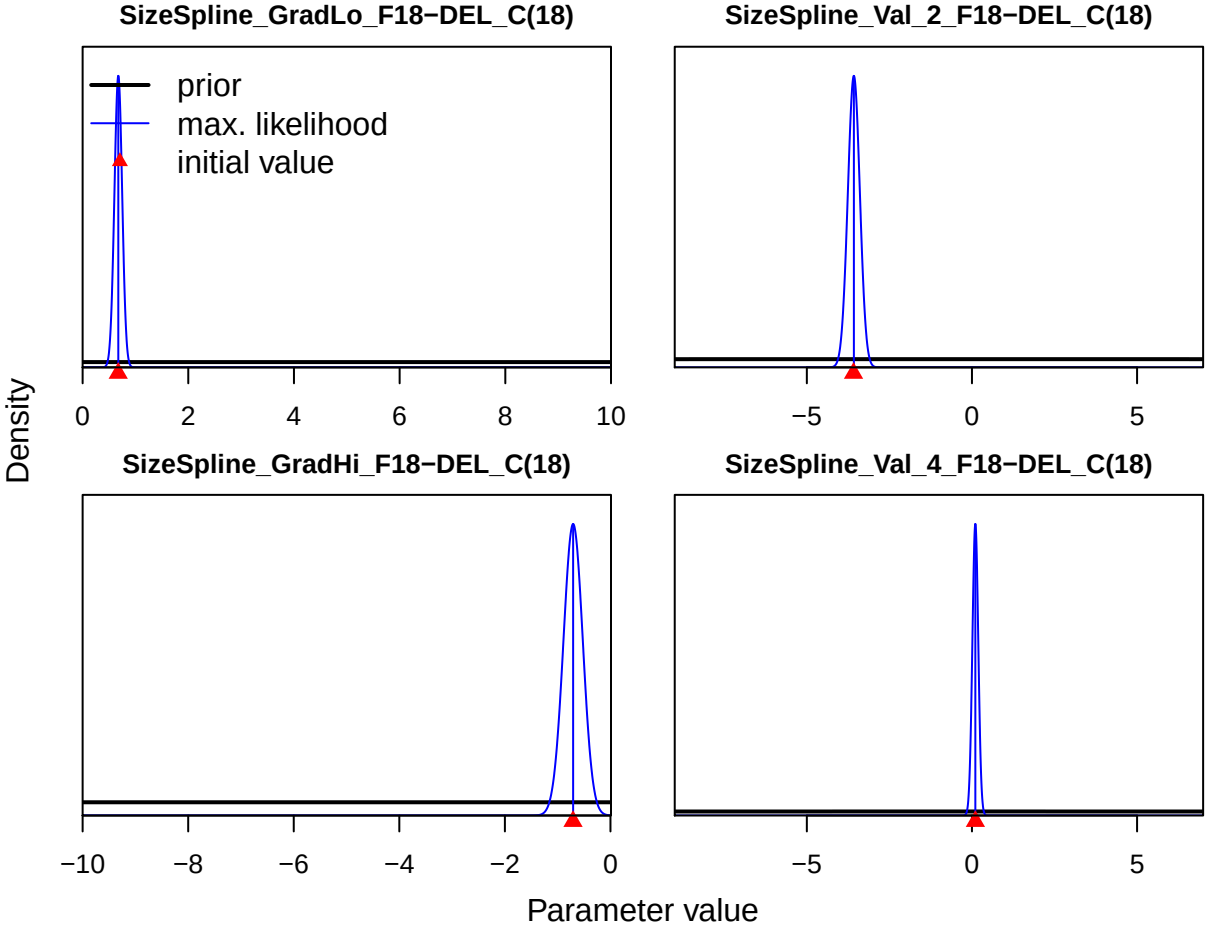
Parameter value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max. likelihood
initial value
Density
Parameter value
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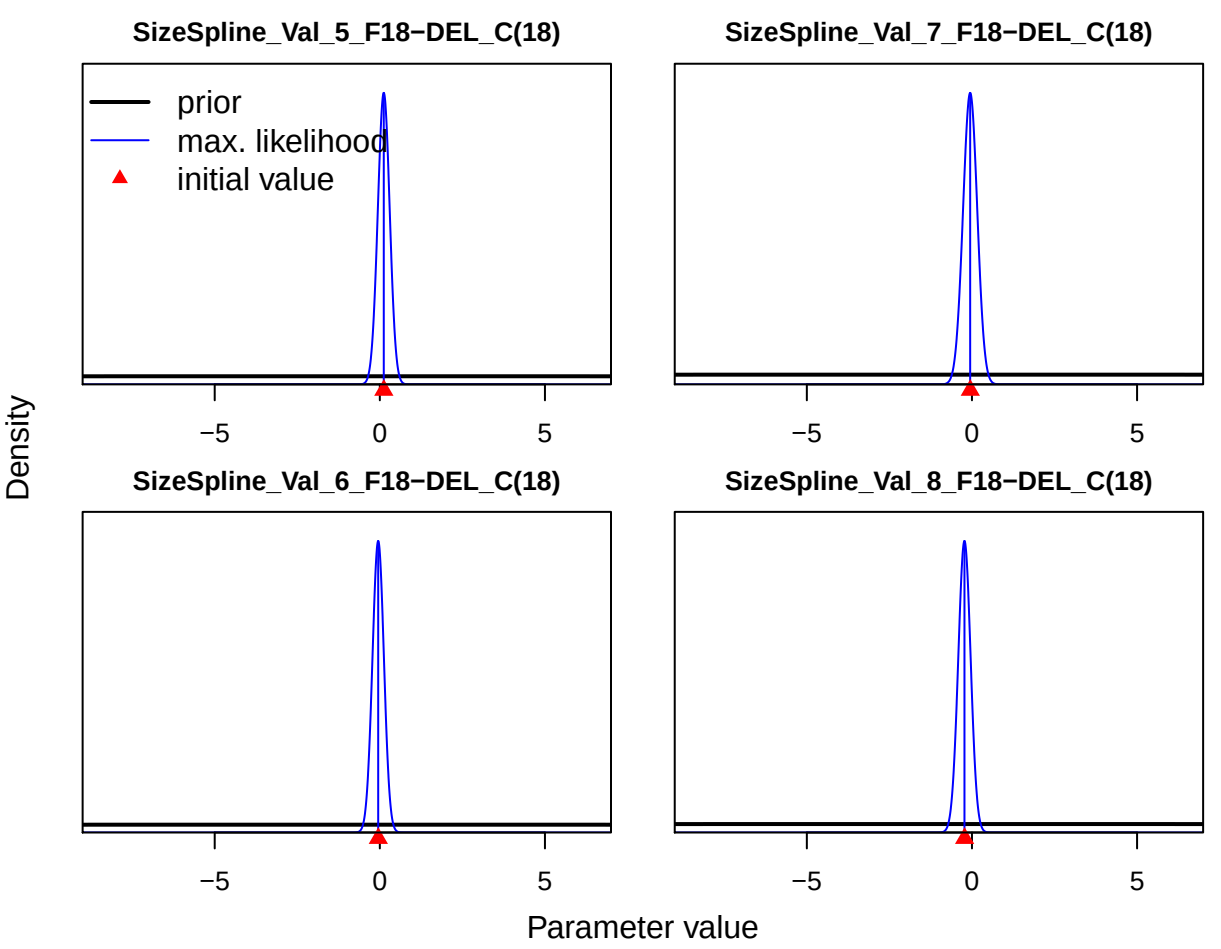
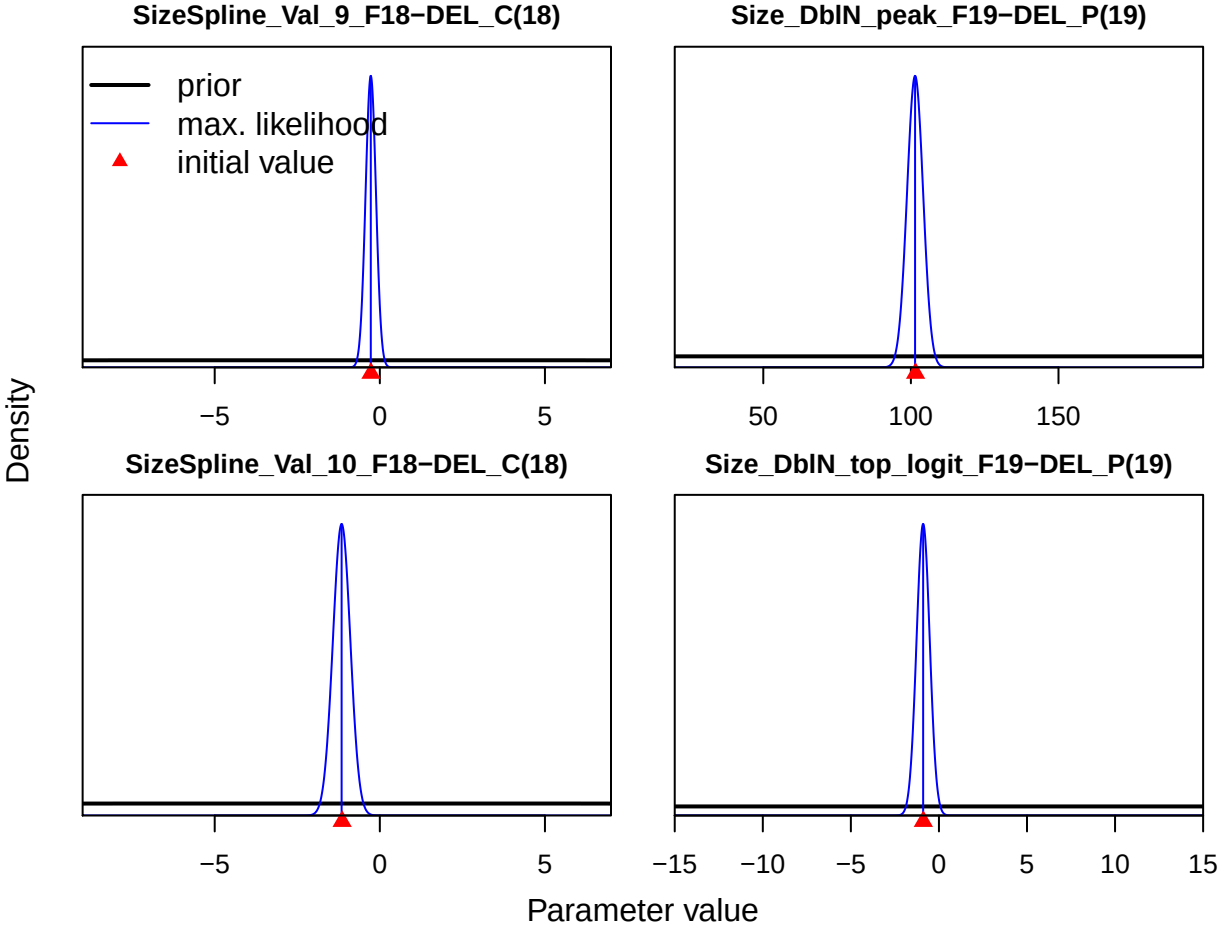
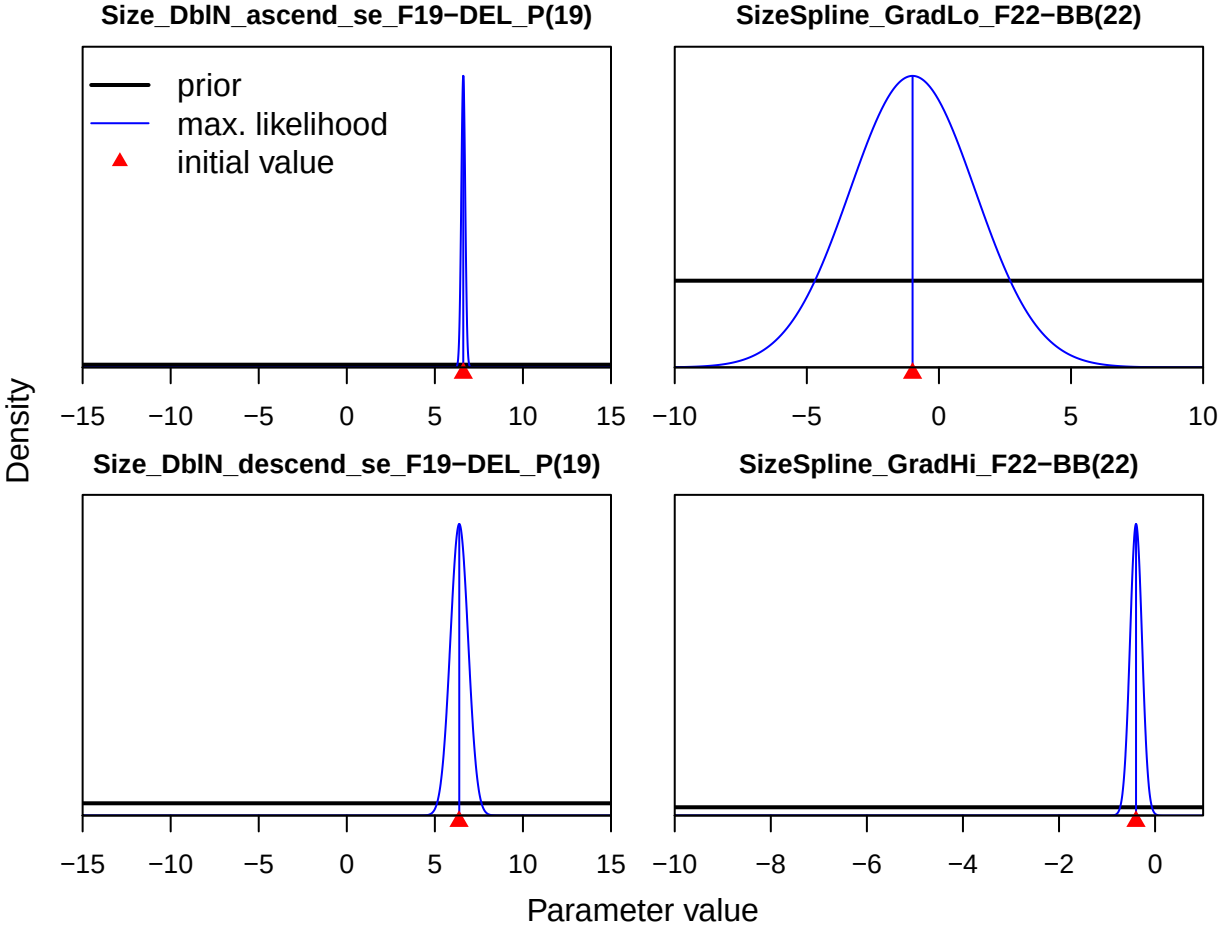
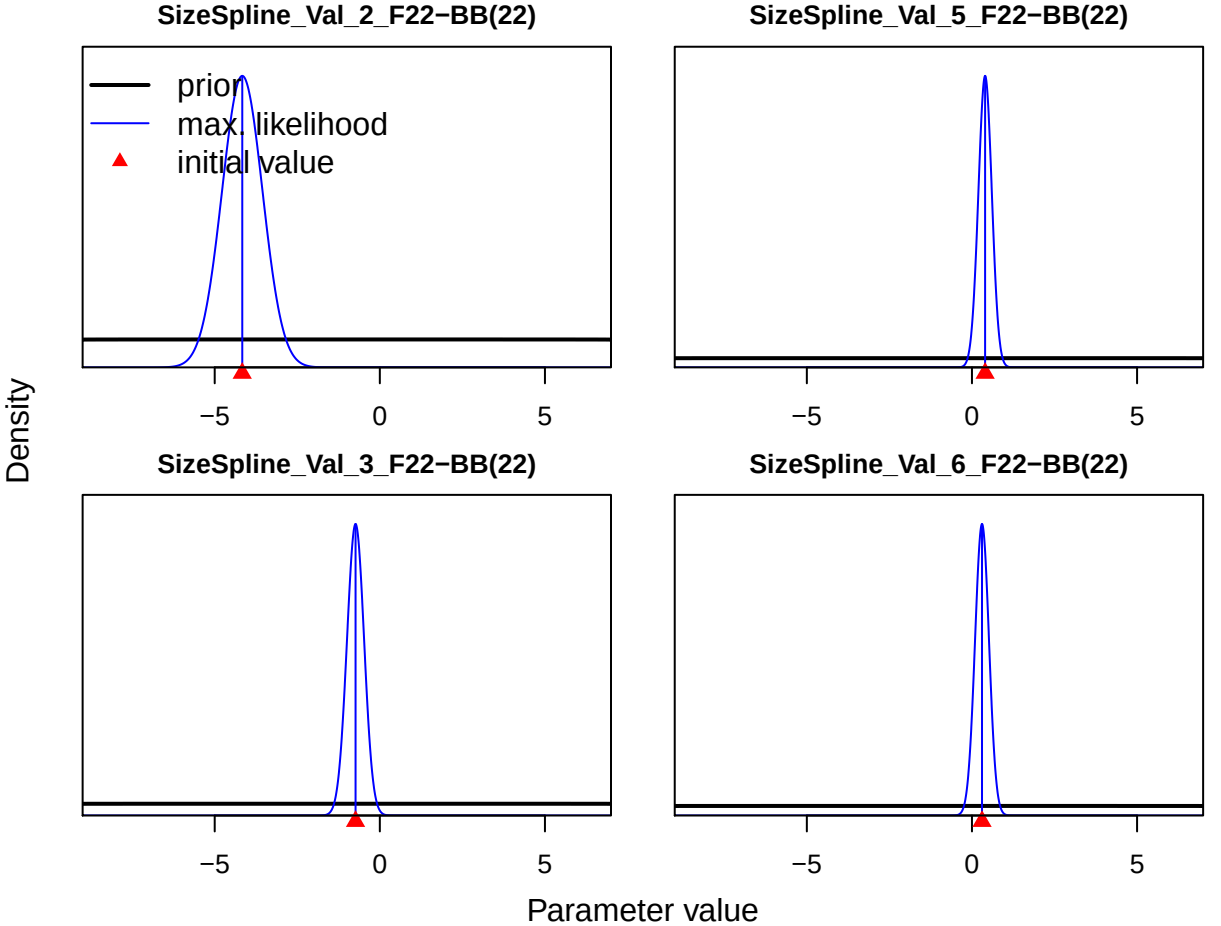
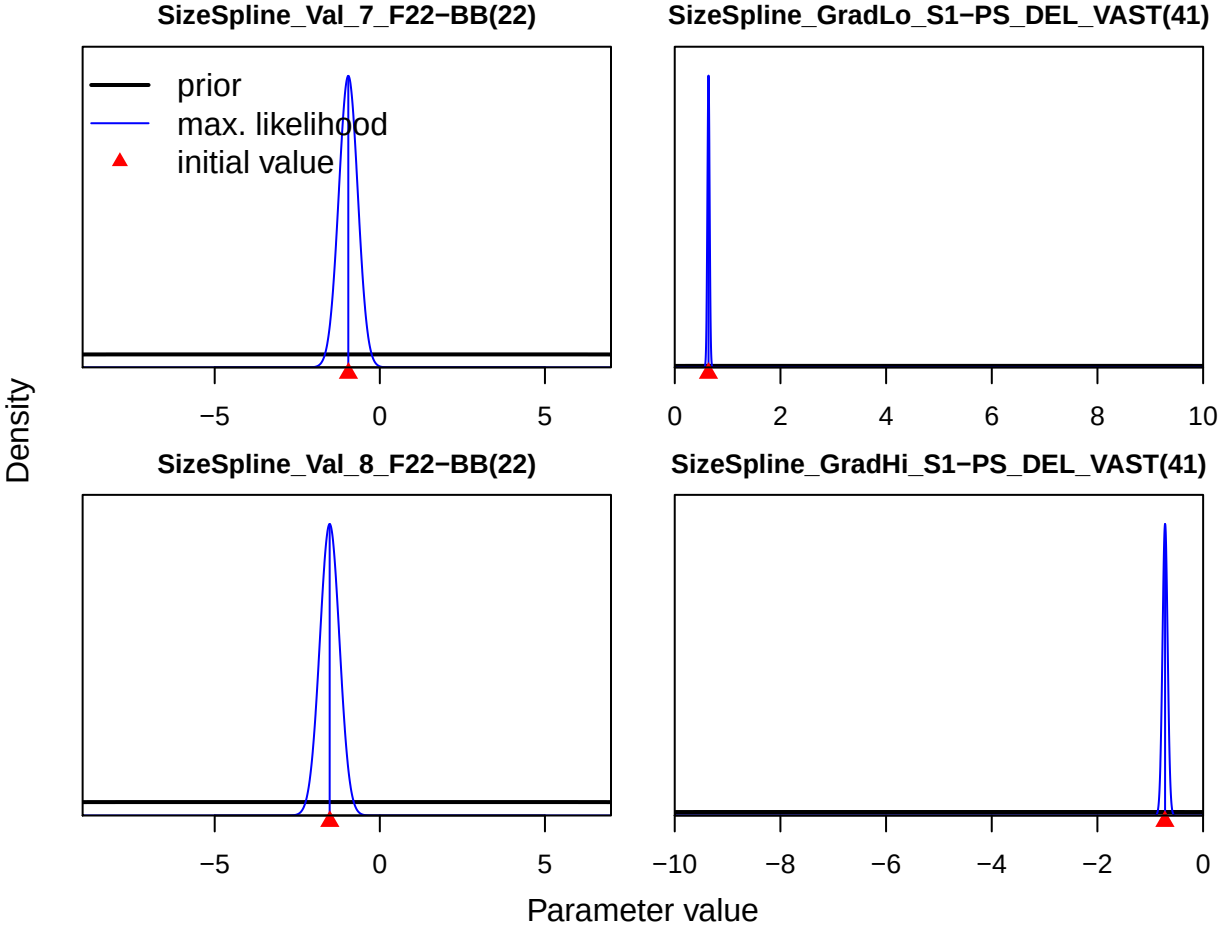
5

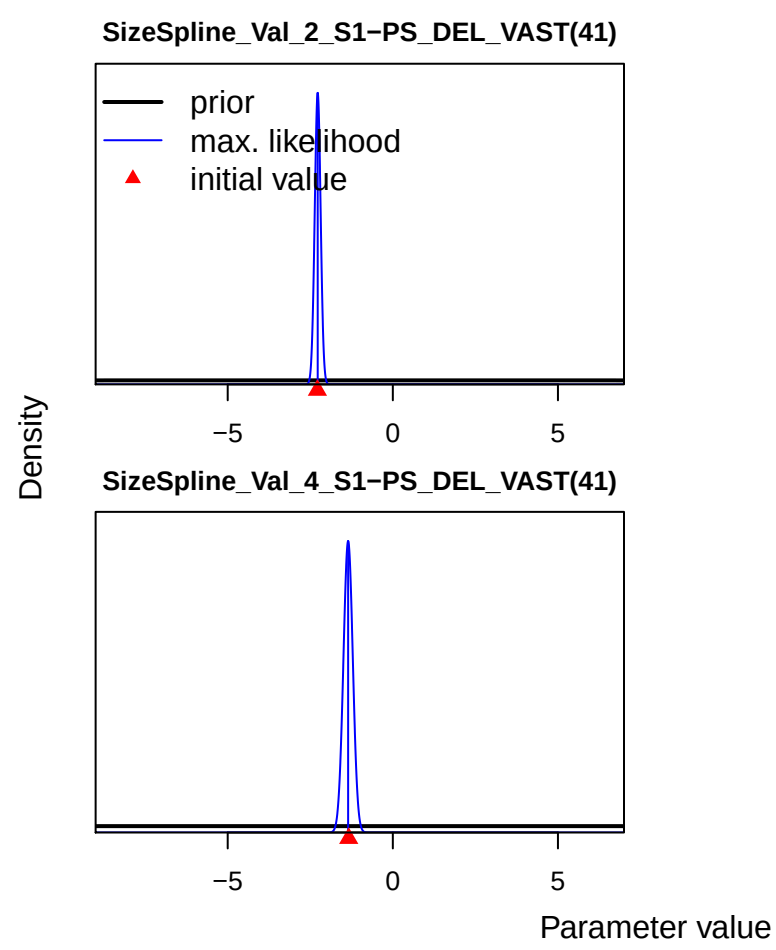

SizeSpline_Val_5_F18−DEL_C(18)
SizeSpline_Val_7_F18−DEL_C(18)
SizeSpline_Val_6_F18−DEL_C(18)
SizeSpline_Val_8_F18−DEL_C(18)
prior
max. likelihood
initial value
Density
−5
0
5
Parameter value


SizeSpline_Val_9_F18−DEL_C(18)
Size_DblN_peak_F19−DEL_P(19)
prior
max. likelihood
initial value
SizeSpline_Val_10_F18−DEL_C(18)
Size_DblN_top_logit_F19−DEL_P(19)
Density
Parameter value
−5
0
5
50
100
150
−15
−10
10
15


Size_DblN_ascend_se_F19−DEL_P(19)
SizeSpline_GradLo_F22−BB(22)
Size_DblN_descend_se_F19−DEL_P(19)
SizeSpline_GradHi_F22−BB(22)
prior
max. likelihood
initial value
Density
Parameter value
−15
−10
−5
0
5
10
15
−8
−6
−4
−2


SizeSpline_Val_2_F22−BB(22)
SizeSpline_Val_5_F22−BB(22)
SizeSpline_Val_3_F22−BB(22)
SizeSpline_Val_6_F22−BB(22)
prior
max. likelihood
initial value
Density
Parameter value
−5
0
5


SizeSpline_Val_7_F22−BB(22)
SizeSpline_GradLo_S1−PS_DEL_VAST(41)
SizeSpline_Val_8_F22−BB(22)
SizeSpline_GradHi_S1−PS_DEL_VAST(41)
prior
max. likelihood
initial value
Density
Parameter value
−5
0
5
0
2
4
6
8
10
−10
−8
−6
−4
−2


SizeSpline_Val_2_S1−PS_DEL_VAST(41)
prior
max. likelihood
initial value
−5
0
5
Density
SizeSpline_Val_4_S1−PS_DEL_VAST(41)
−5
0
5
Parameter value