

# Model Comparisons: B2b vs B0.2016

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## Contents

<b>List of Tables in Model Comparisons</b>	<b>1</b>
<b>List of Figures in Model Comparisons</b>	<b>2</b>
<b>Population processes</b>	<b>5</b>
Natural mortality . . . . .	5
Probability of terminal molt . . . . .	6
Mean growth . . . . .	7
Growth matrices . . . . .	8
Size distribution for recruits . . . . .	16
<b>Model fits</b>	<b>17</b>
Growth data . . . . .	17
Survey biomass . . . . .	23
Fishery retained catch biomass . . . . .	26
Fishery total catch biomass . . . . .	29
Mean survey size compositions . . . . .	41
Fishery retained catch mean size compositions . . . . .	42
Fishery total catch mean size compositions . . . . .	43
Survey size composition residuals . . . . .	48
Effective Ns for survey size compositions . . . . .	56
Fishery retained catch size composition residuals . . . . .	57
Effective Ns for retained catch size compositions . . . . .	59
Fishery total catch size composition residuals . . . . .	60
Effective Ns for total catch size compositions . . . . .	68
<b>Survey characteristics</b>	<b>72</b>
Survey catchability . . . . .	72
Survey selectivity functions . . . . .	73
<b>Fisheries</b>	<b>74</b>
Fishery catchability . . . . .	74
Total selectivity functions . . . . .	78
Retention functions . . . . .	100
<b>Population quantities</b>	<b>104</b>
Recruitment . . . . .	104
Mature biomass . . . . .	108
Population abundance . . . . .	112
Population biomass . . . . .	116

## List of Tables

## List of Figures

1	Estimated natural mortality rates, by year. . . . .	5
2	Probability of terminal molt. . . . .	6
3	Mean growth. . . . .	7
4	Estimated growth matrices, as bubble plots, for scenario B2b. . . . .	8
5	Estimated growth matrices, as bubble plots, for scenario B0.2016. . . . .	9
6	Growth matrices for males during 1948-2016, 1948-2015, page 1. . . . .	10
7	Growth matrices for males during 1948-2016, 1948-2015, page 2. . . . .	11
8	Growth matrices for males during 1948-2016, 1948-2015, page 3. . . . .	12
9	Growth matrices for females during 1948-2016, 1948-2015, page 1. . . . .	13
10	Growth matrices for females during 1948-2016, 1948-2015, page 2. . . . .	14
11	Growth matrices for females during 1948-2016, 1948-2015, page 3. . . . .	15
12	Size distribution for recruits. . . . .	16
13	Model fits to EBS. . . . .	17
14	Negative log-likelihood values for fits to EBS. . . . .	18
15	Z-scores for fits to EBS. . . . .	19
16	Model fits to Kodiak. . . . .	20
17	Negative log-likelihood values for fits to Kodiak. . . . .	21
18	Z-scores for fits to Kodiak. . . . .	22
19	Comparison of observed and predicted survey biomass for NMFS trawl survey. . . .	23
20	Comparison of observed and predicted survey biomass for NMFS trawl survey. Recent time period. . . . .	24
21	Z-scores for index catch biomass in NMFS trawl survey. . . . .	25
22	Comparison of observed and predicted retained catch mortality for TCF. . . . .	26
23	Comparison of observed and predicted retained catch mortality for TCF. Recent time period. . . . .	27
24	Z-scores for retained catch biomass in TCF. . . . .	28
25	Comparison of observed and predicted total catch for TCF. . . . .	29
26	Comparison of observed and predicted total catch for TCF. Recent time period. . . .	30
27	Comparison of observed and predicted total catch for SCF. . . . .	31
28	Comparison of observed and predicted total catch for SCF. Recent time period. . . .	32
29	Comparison of observed and predicted total catch for GTF. . . . .	33
30	Comparison of observed and predicted total catch for GTF. Recent time period. . . .	34
31	Comparison of observed and predicted total catch for RKF. . . . .	35
32	Comparison of observed and predicted total catch for RKF. Recent time period. . . .	36
33	Z-scores for total catch biomass in TCF. . . . .	37
34	Z-scores for total catch biomass in SCF. . . . .	38
35	Z-scores for total catch biomass in GTF. . . . .	39
36	Z-scores for total catch biomass in RKF. . . . .	40
37	Comparison of observed and predicted mean survey size comps for NMFS trawl survey. .	41
38	Comparison of observed and predicted mean retained catch size comps for TCF. . . .	42
39	Comparison of observed and predicted mean total catch size comps for GTF. . . . .	43
40	Comparison of observed and predicted mean total catch size comps for RKF. . . . .	44

41	Comparison of observed and predicted mean total catch size comps for SCF. . . . .	45
42	Comparison of observed and predicted mean total catch size comps for TCF. . . . .	46
43	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B2b. . . . .	48
44	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016. . . . .	49
45	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B2b. . . . .	50
46	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016. . . . .	51
47	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B2b. . . . .	52
48	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016. . . . .	53
49	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B2b. . . . .	54
50	Pearson’s residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016. . . . .	55
51	Input and effective sample sizes from retained catch size compositions from the NMFS trawl survey. . . . .	56
52	Pearson’s residuals for proportions-at-size from the TCF for scenario B2b. . . . .	57
53	Pearson’s residuals for proportions-at-size from the TCF for scenario B0.2016. . . . .	58
54	Input and effective sample sizes from retained catch size compositions from the TCF fishery. . . . .	59
55	Pearson’s residuals for proportions-at-size from the TCF for scenario B2b. . . . .	60
56	Pearson’s residuals for proportions-at-size from the TCF for scenario B0.2016. . . . .	61
57	Pearson’s residuals for proportions-at-size from the SCF for scenario B2b. . . . .	62
58	Pearson’s residuals for proportions-at-size from the SCF for scenario B0.2016. . . . .	63
59	Pearson’s residuals for proportions-at-size from the GTF for scenario B2b. . . . .	64
60	Pearson’s residuals for proportions-at-size from the GTF for scenario B0.2016. . . . .	65
61	Pearson’s residuals for proportions-at-size from the RKF for scenario B2b. . . . .	66
62	Pearson’s residuals for proportions-at-size from the RKF for scenario B0.2016. . . . .	67
63	Input and effective sample sizes from total catch size compositions from the TCF fishery. . . . .	68
64	Input and effective sample sizes from total catch size compositions from the SCF fishery. . . . .	69
65	Input and effective sample sizes from total catch size compositions from the GTF fishery. . . . .	70
66	Input and effective sample sizes from total catch size compositions from the RKF fishery. . . . .	71
67	Survey catchabilities for NMFS trawl survey. . . . .	72
68	NMFS trawl survey.1 . . . . .	73
69	Fishery catchabilities for GTF. . . . .	74
70	Fishery catchabilities for RKF. . . . .	75
71	Fishery catchabilities for SCF. . . . .	76
72	Fishery catchabilities for TCF. . . . .	77
73	Selectivity functions for GTF(1 of 6). . . . .	78
74	Selectivity functions for GTF(2 of 6). . . . .	79

75	Selectivity functions for GTF(3 of 6).	80
76	Selectivity functions for GTF(4 of 6).	81
77	Selectivity functions for GTF(5 of 6).	82
78	Selectivity functions for GTF(6 of 6).	83
79	Selectivity functions for RKF(1 of 6).	84
80	Selectivity functions for RKF(2 of 6).	85
81	Selectivity functions for RKF(3 of 6).	86
82	Selectivity functions for RKF(4 of 6).	87
83	Selectivity functions for RKF(5 of 6).	88
84	Selectivity functions for RKF(6 of 6).	89
85	Selectivity functions for SCF(1 of 6).	90
86	Selectivity functions for SCF(2 of 6).	91
87	Selectivity functions for SCF(3 of 6).	92
88	Selectivity functions for SCF(4 of 6).	93
89	Selectivity functions for SCF(5 of 6).	94
90	Selectivity functions for SCF(6 of 6).	95
91	Selectivity functions for TCF(1 of 4).	96
92	Selectivity functions for TCF(2 of 4).	97
93	Selectivity functions for TCF(3 of 4).	98
94	Selectivity functions for TCF(4 of 4).	99
95	Retention functions for TCF(1 of 4).	100
96	Retention functions for TCF(2 of 4).	101
97	Retention functions for TCF(3 of 4).	102
98	Retention functions for TCF(4 of 4).	103
99	Estimated annual recruitment.	104
100	Estimated recent recruitment.	105
101	Estimated annual recruitment, on ln-scale.	106
102	Estimated recent recruitment, on ln-scale.	107
103	Estimated annual mature biomass.	108
104	Estimated recent mature biomass.	109
105	Estimated annual mature biomass, on ln-scale.	110
106	Estimated recent mature biomass, on ln-scale.	111
107	Population abundance trends.	112
108	Recent population abundance trends.	113
109	Ln-scale population abundance trends.	114
110	Recent ln-scale population abundance trends.	115
111	Population biomass trends.	116
112	Recent population biomass trends.	117
113	Ln-scale population biomass trends.	118
114	Recent ln-scale population biomass trends.	119

# Population processes

Figures and tables in this section present comparisons between alternative model scenarios for estimated rates (e.g., natural mortality) or other attributes (e.g., molt increments) describing inferred Tanner crab population processes.

## Natural mortality

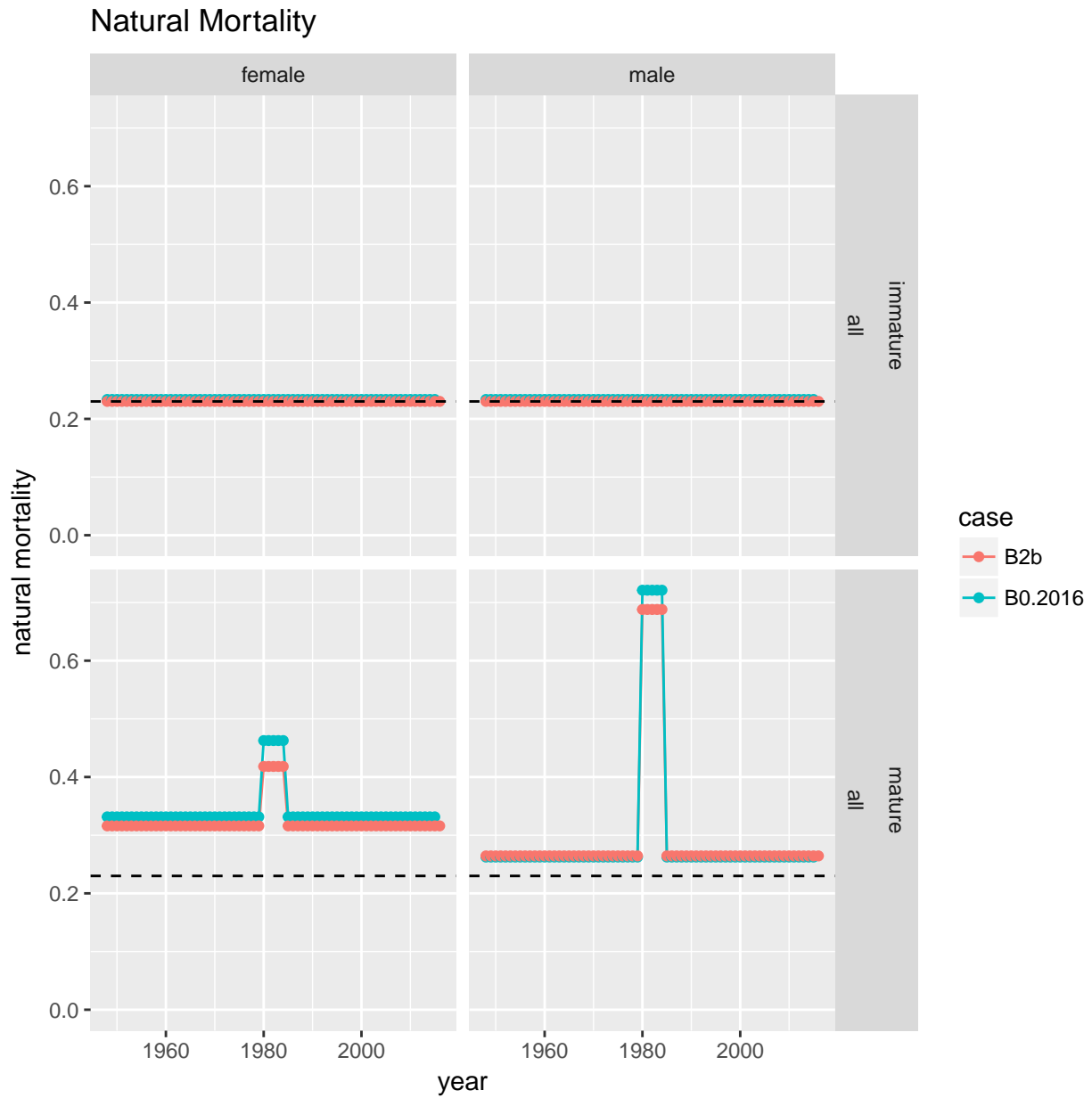


Figure 1: Estimated natural mortality rates, by year.

## Probability of terminal molt

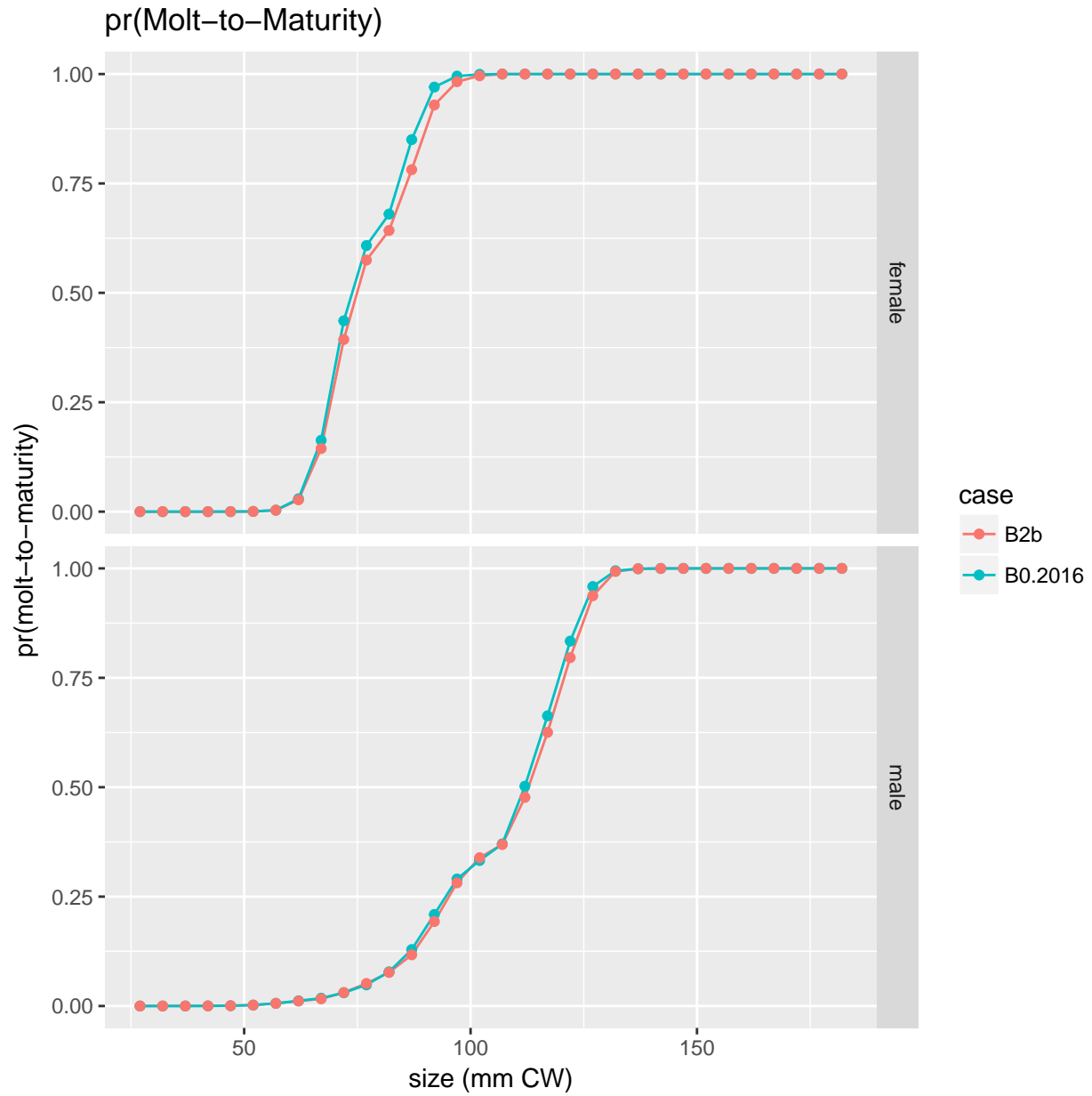


Figure 2: Probability of terminal molt.

# Mean growth

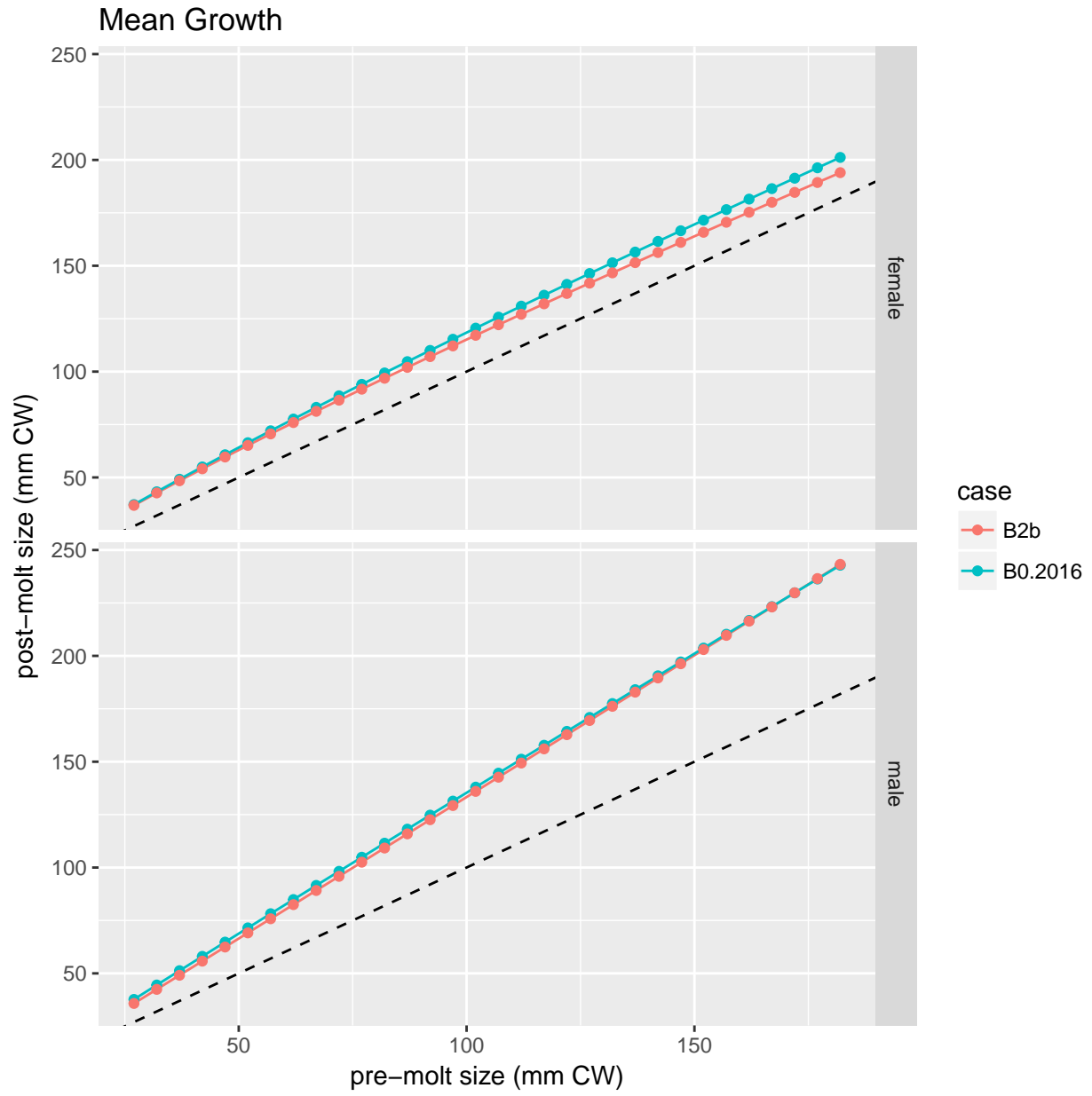


Figure 3: Mean growth.

## Growth matrices

Growth matrices for each model case are compared as bubble plots in the following figure.

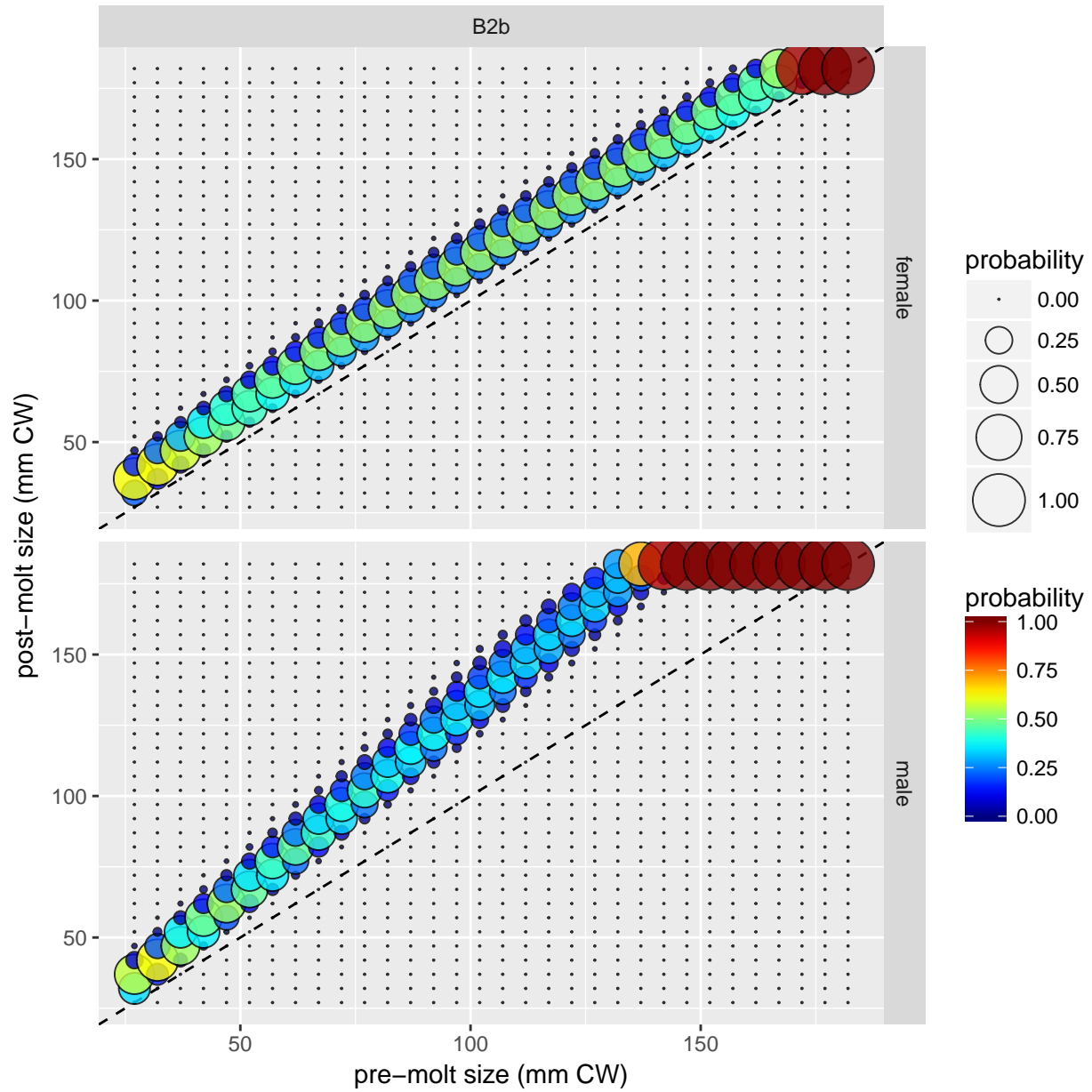


Figure 4: Estimated growth matrices, as bubble plots, for scenario B2b.



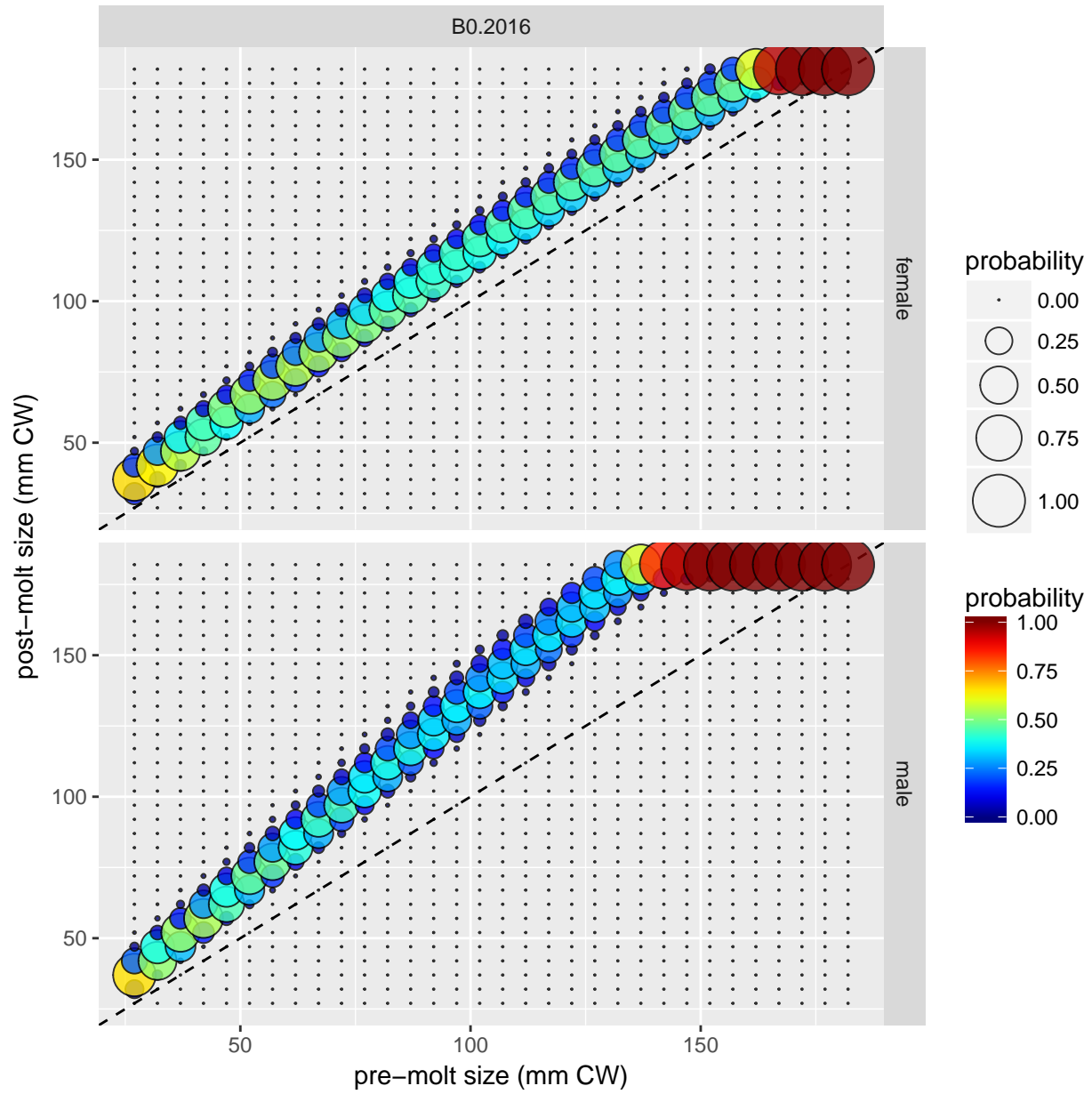


Figure 5: Estimated growth matrices, as bubble plots, for scenario B0.2016.

The same growth matrices are compared in the following figure(s) as line plots for each pre-molt size bin, by sex.

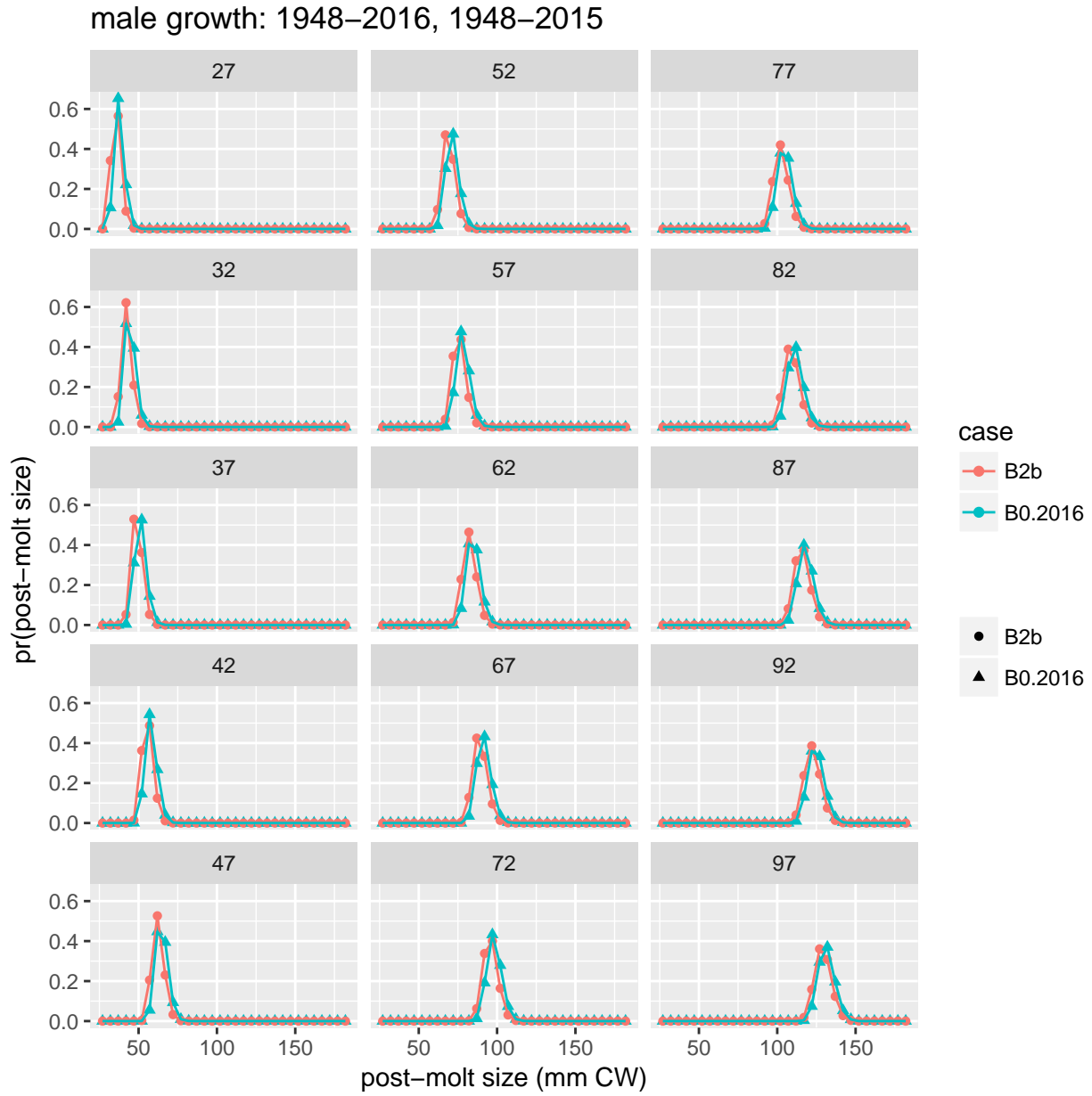


Figure 6: Growth matrices for males during 1948-2016, 1948-2015, page 1.

male growth: 1948–2016, 1948–2015

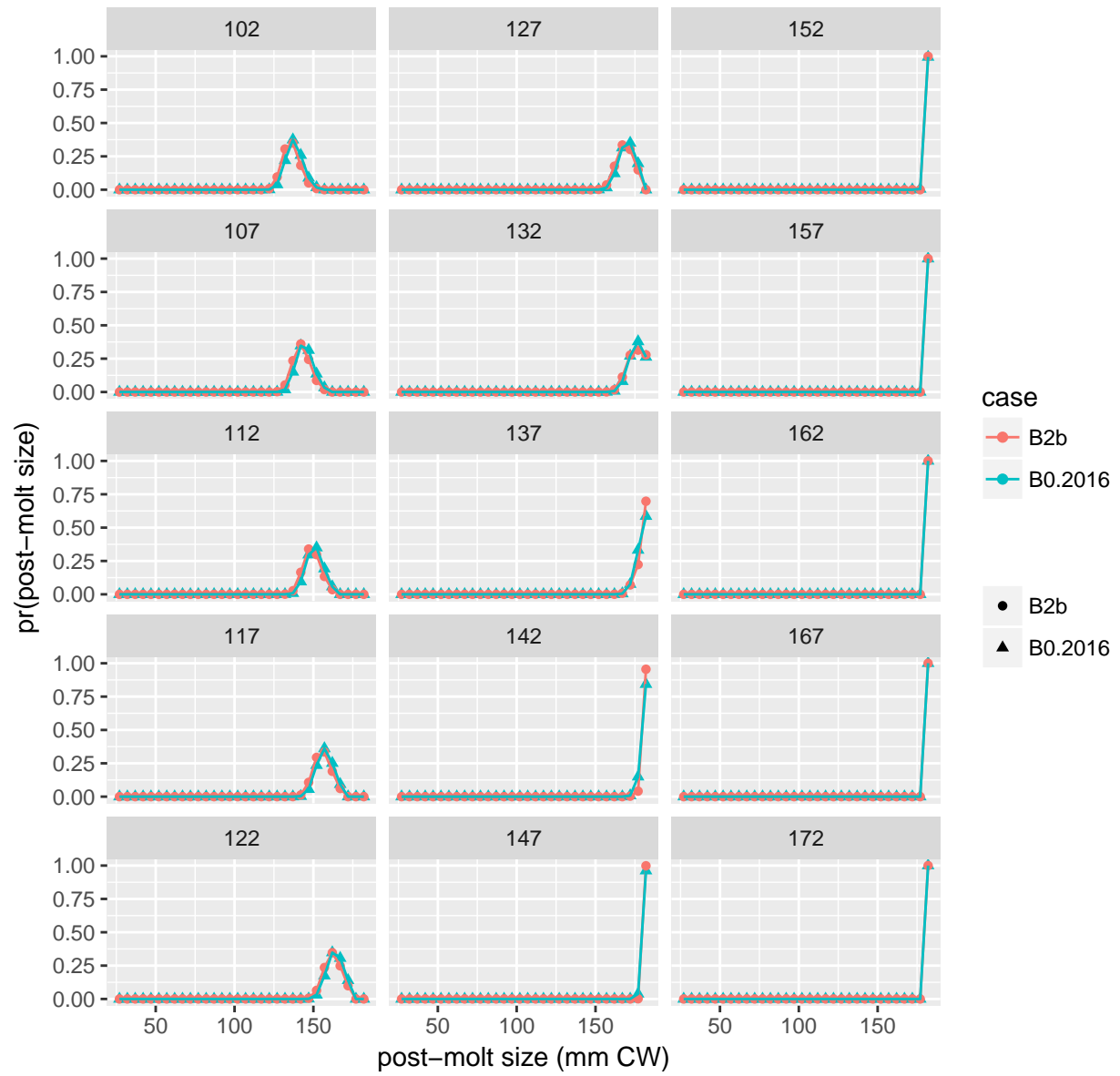


Figure 7: Growth matrices for males during 1948-2016, 1948-2015, page 2.

male growth: 1948–2016, 1948–2015

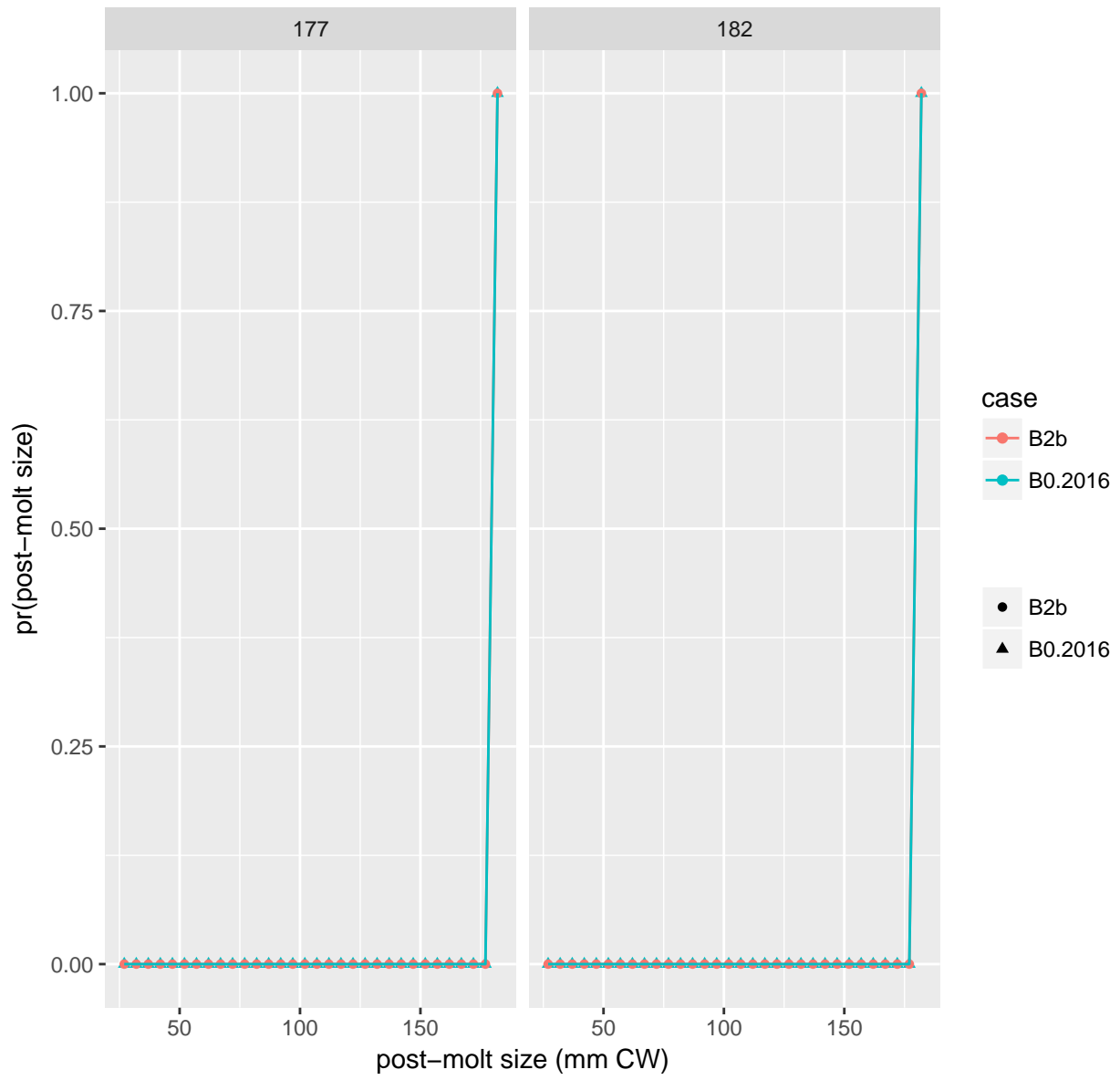


Figure 8: Growth matrices for males during 1948-2016, 1948-2015, page 3.

female growth: 1948–2016, 1948–2015

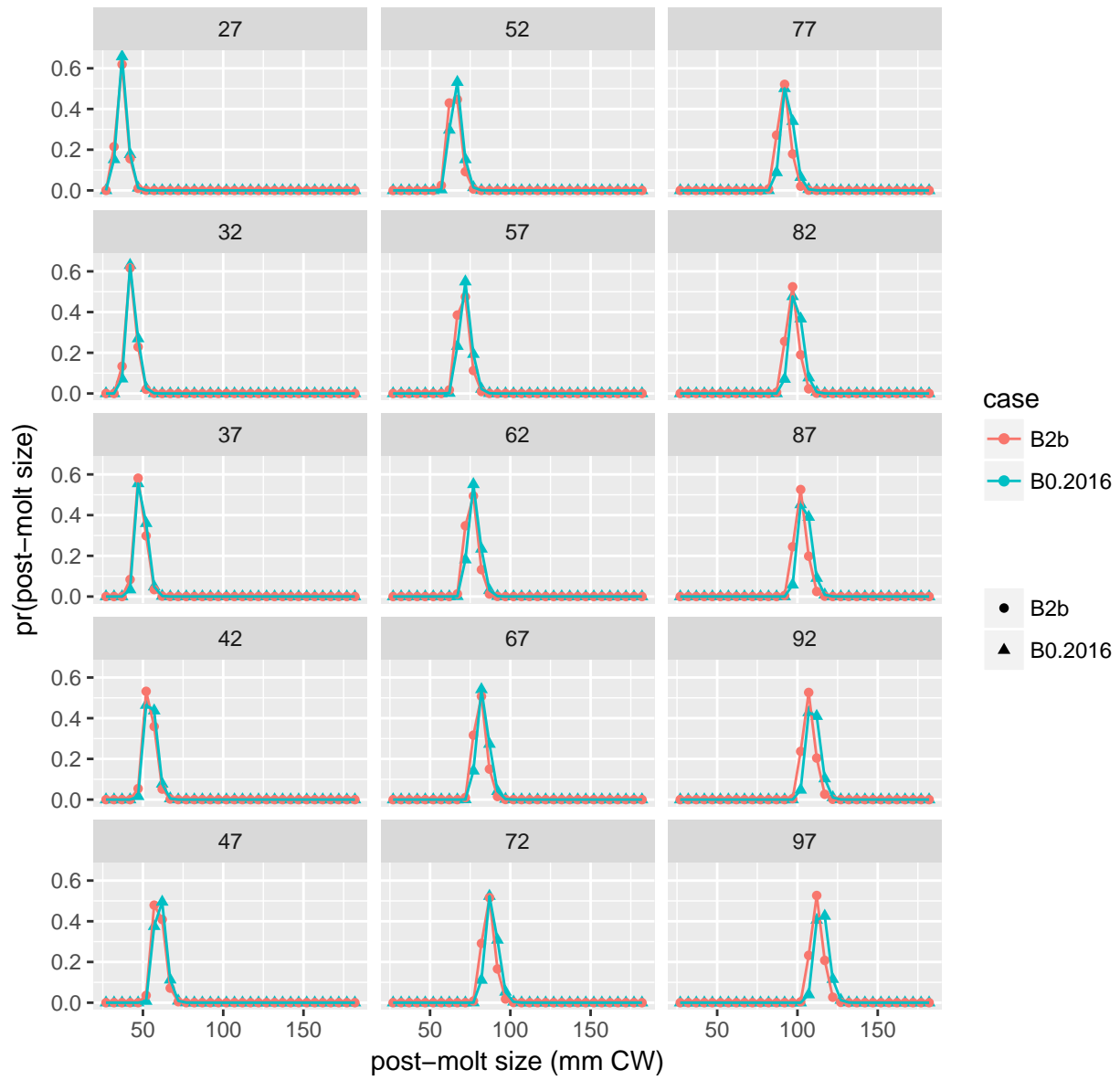


Figure 9: Growth matrices for females during 1948-2016, 1948-2015, page 1.

female growth: 1948–2016, 1948–2015

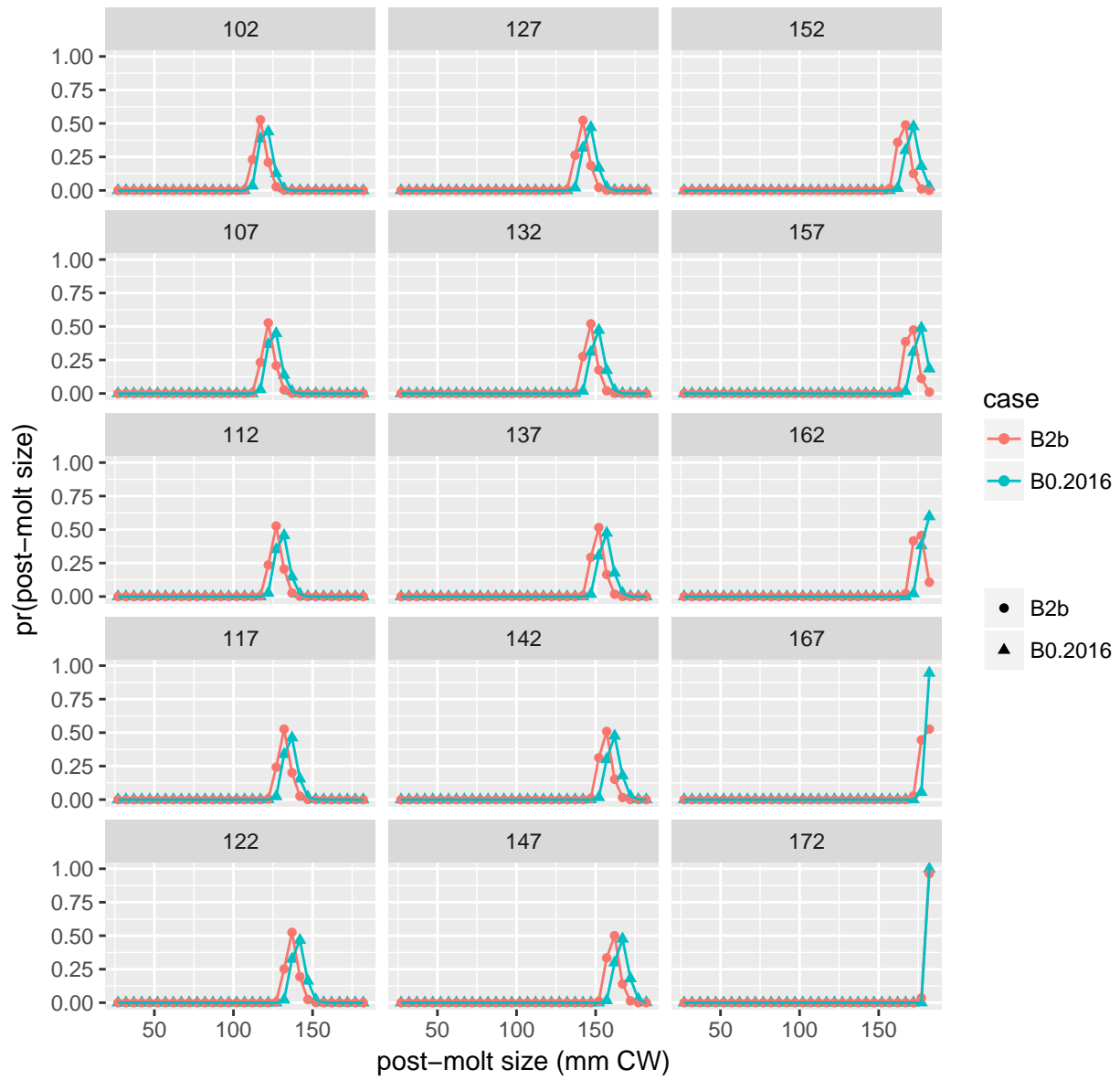


Figure 10: Growth matrices for females during 1948-2016, 1948-2015, page 2.

female growth: 1948–2016, 1948–2015

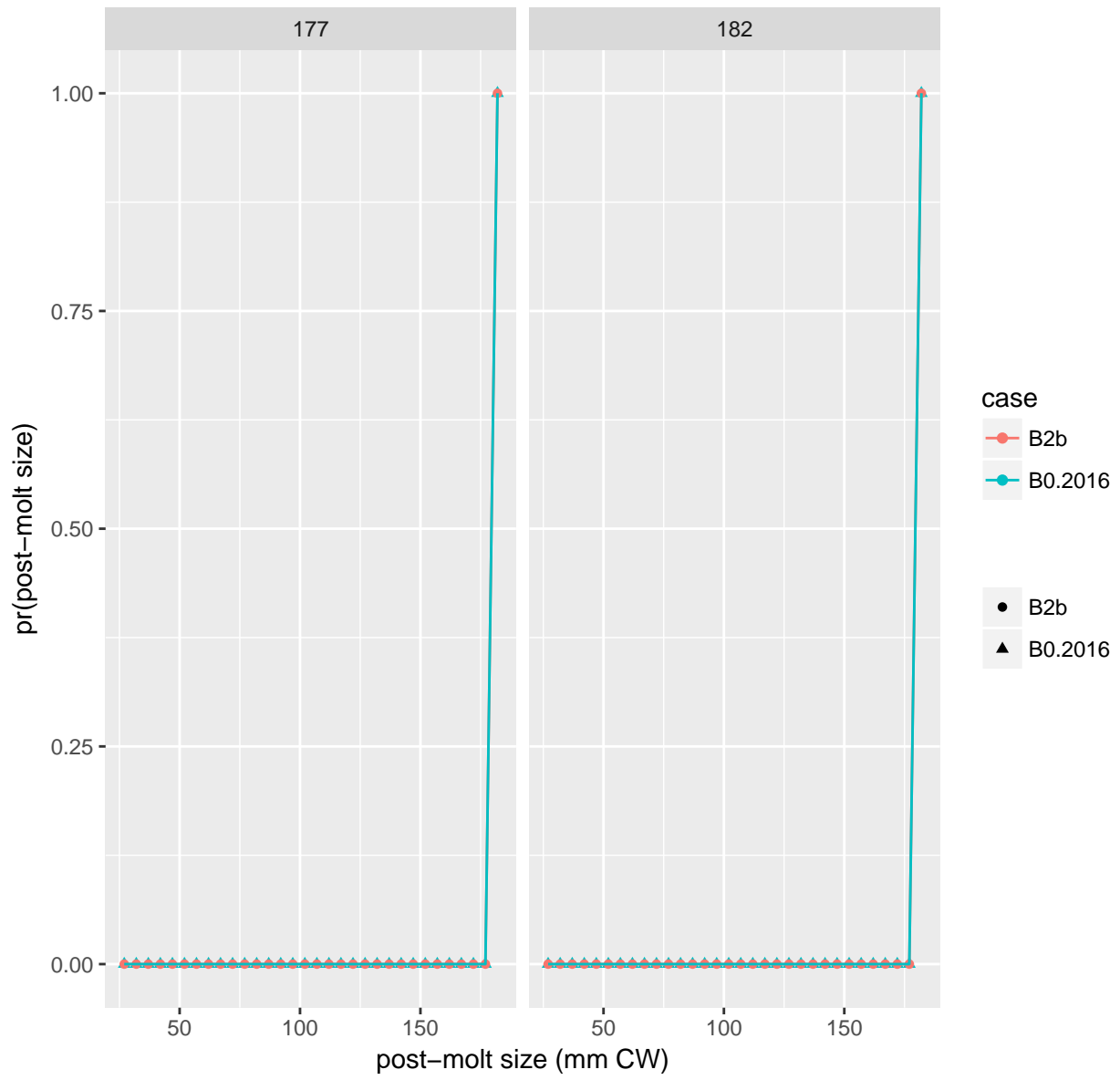


Figure 11: Growth matrices for females during 1948-2016, 1948-2015, page 3.

Size distribution for recruits

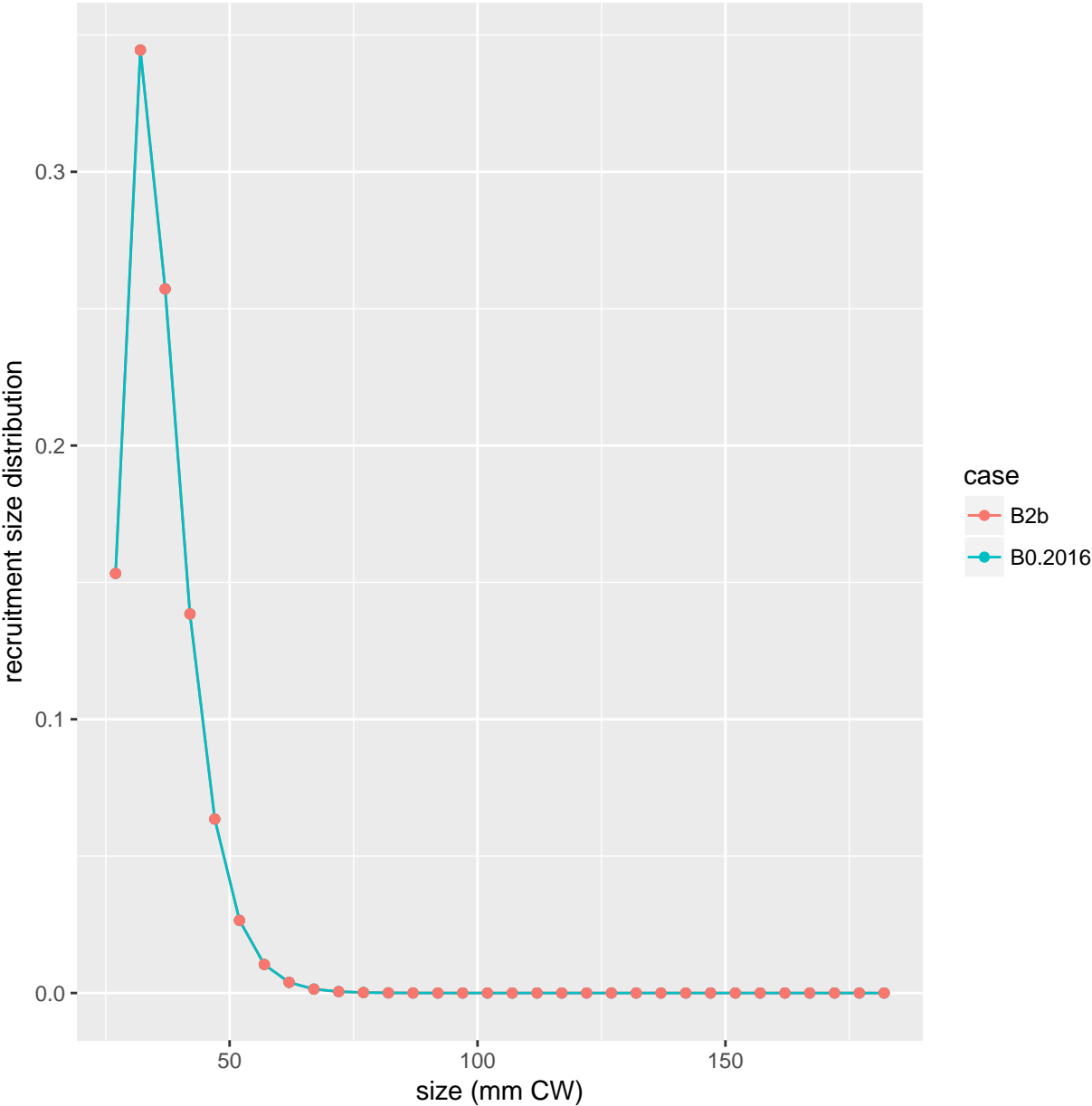


Figure 12: Size distribution for recruits.



# Model fits

## Growth data

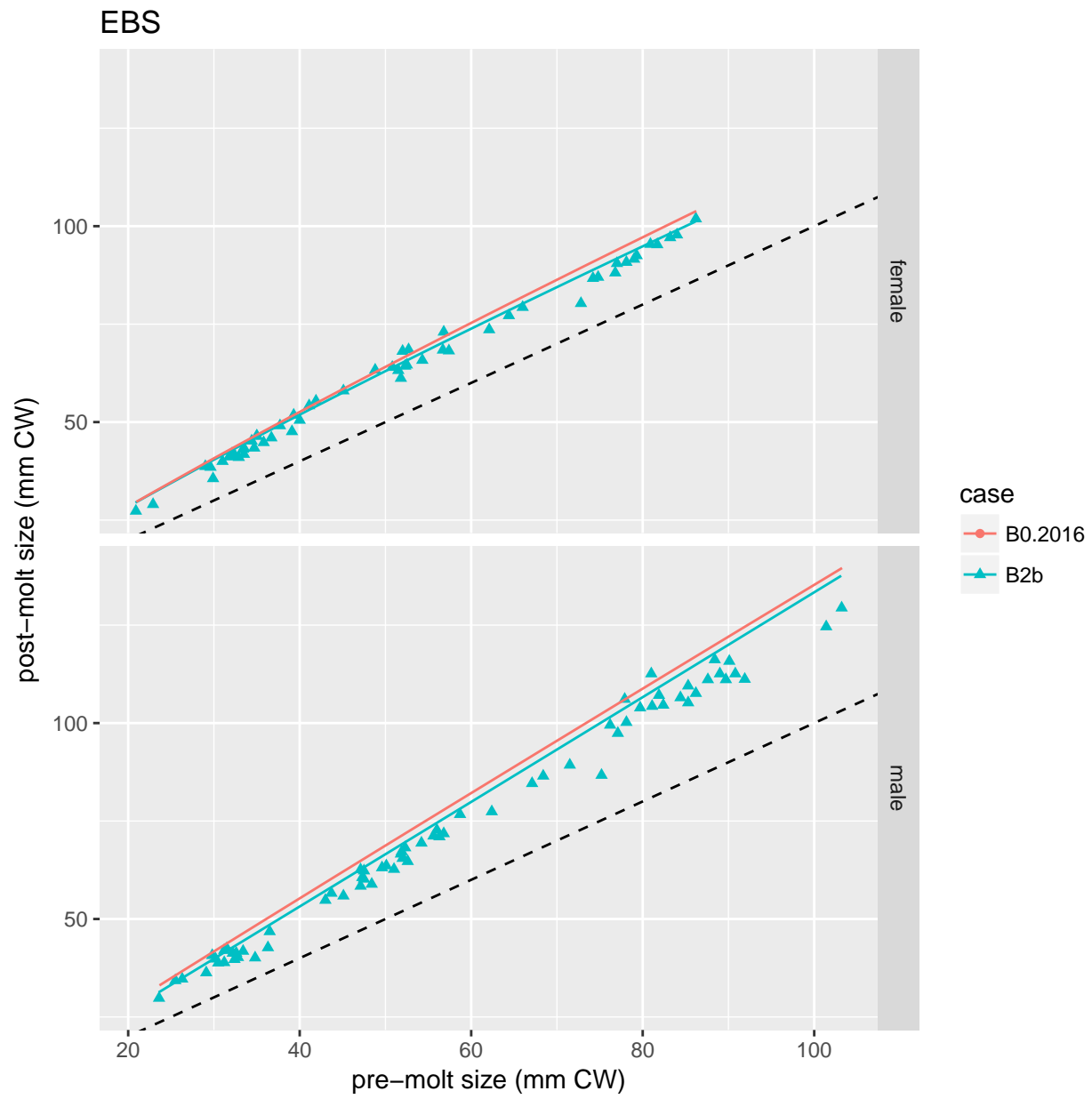


Figure 13: Model fits to EBS.

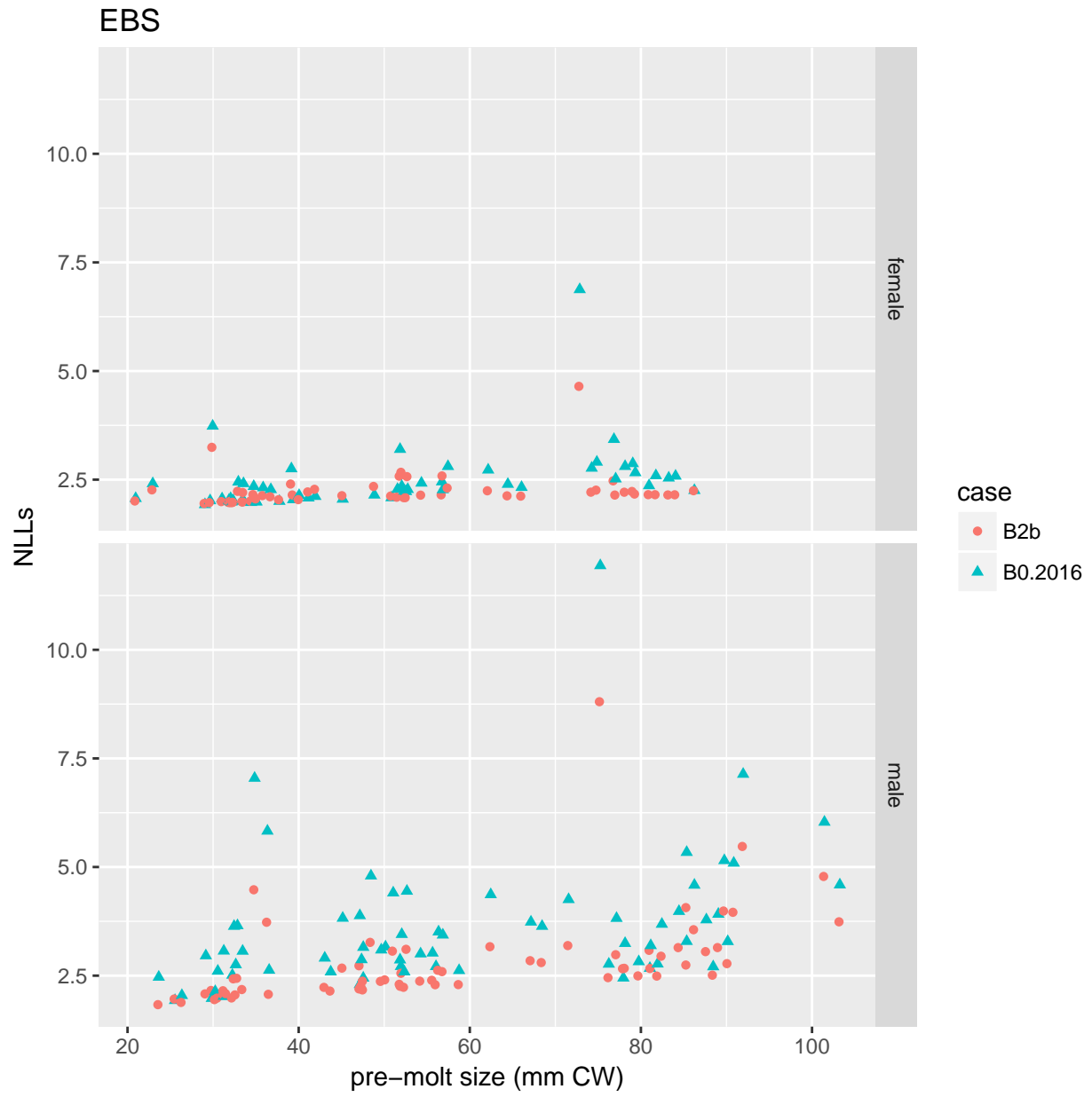


Figure 14: Negative log-likelihood values for fits to EBS.

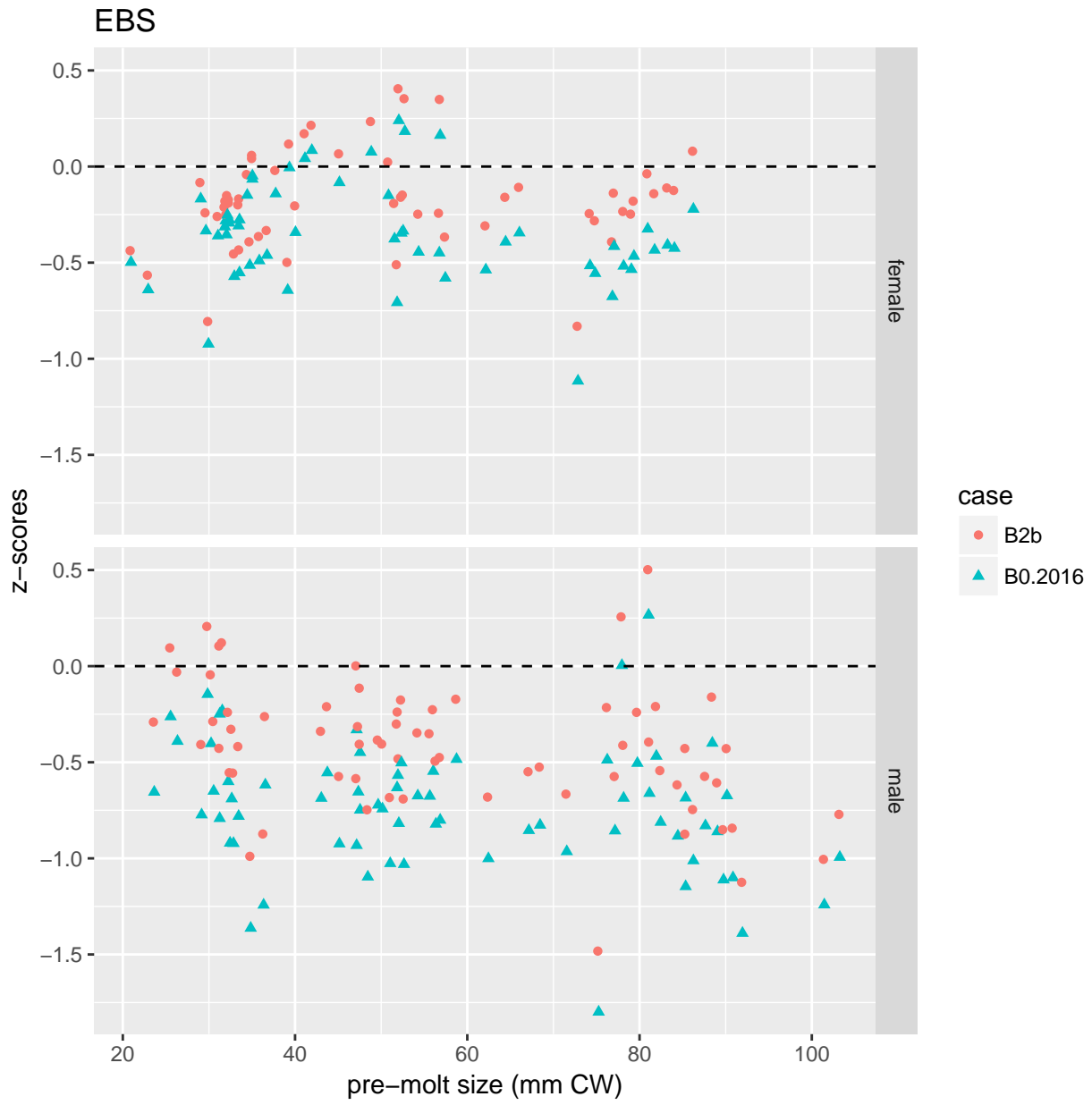


Figure 15: Z-scores for fits to EBS.

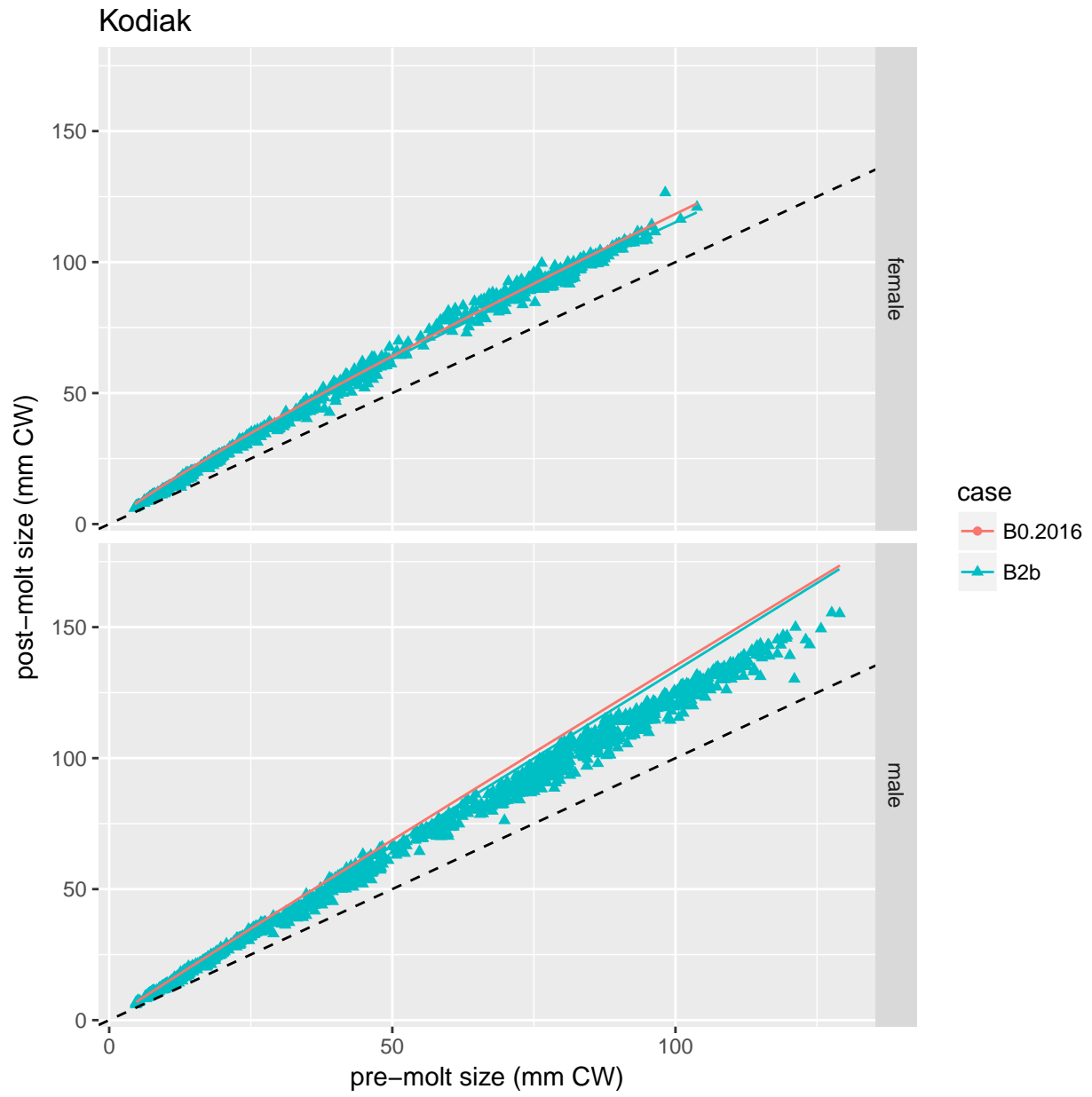


Figure 16: Model fits to Kodiak.

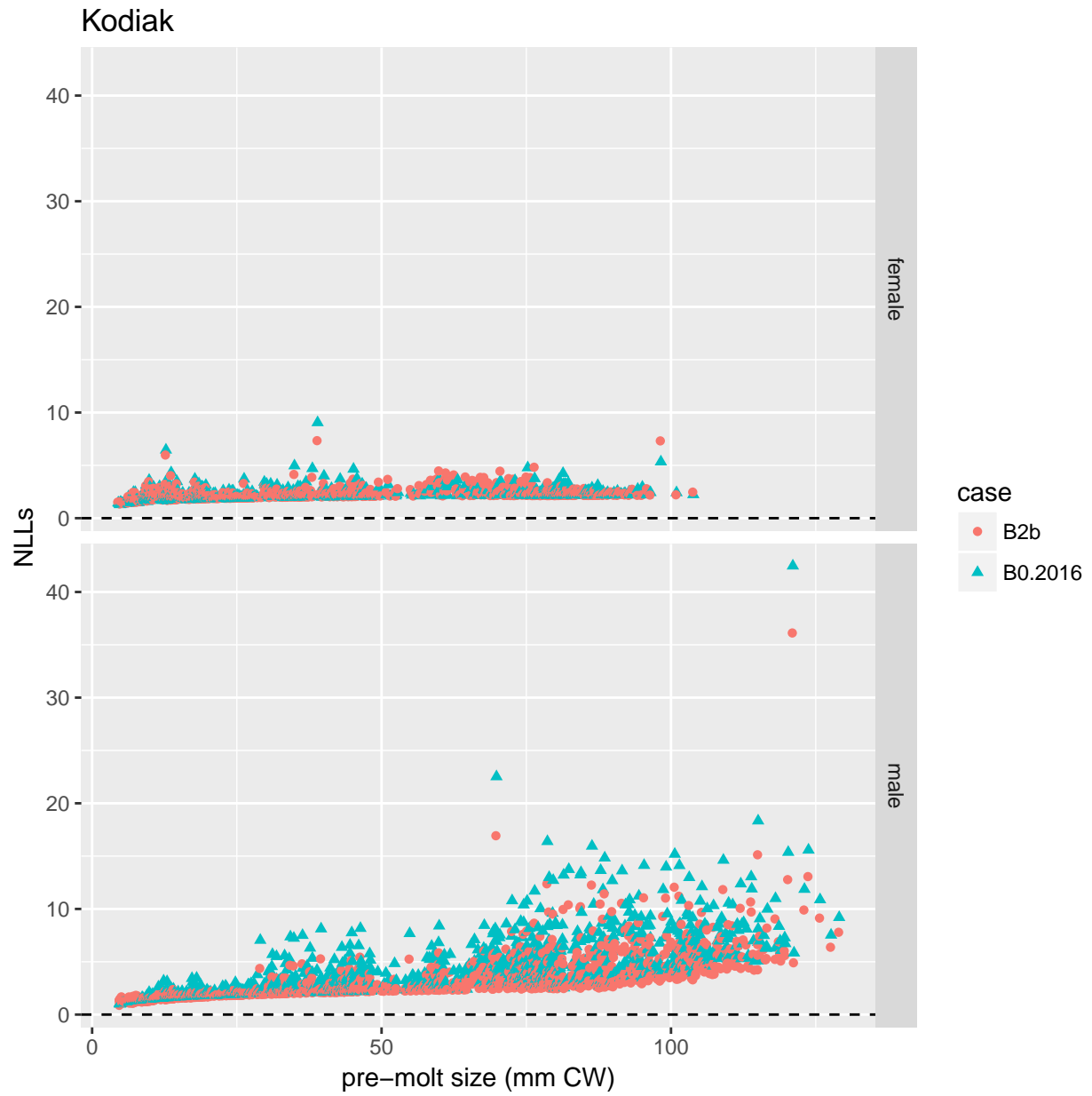


Figure 17: Negative log-likelihood values for fits to Kodiak.

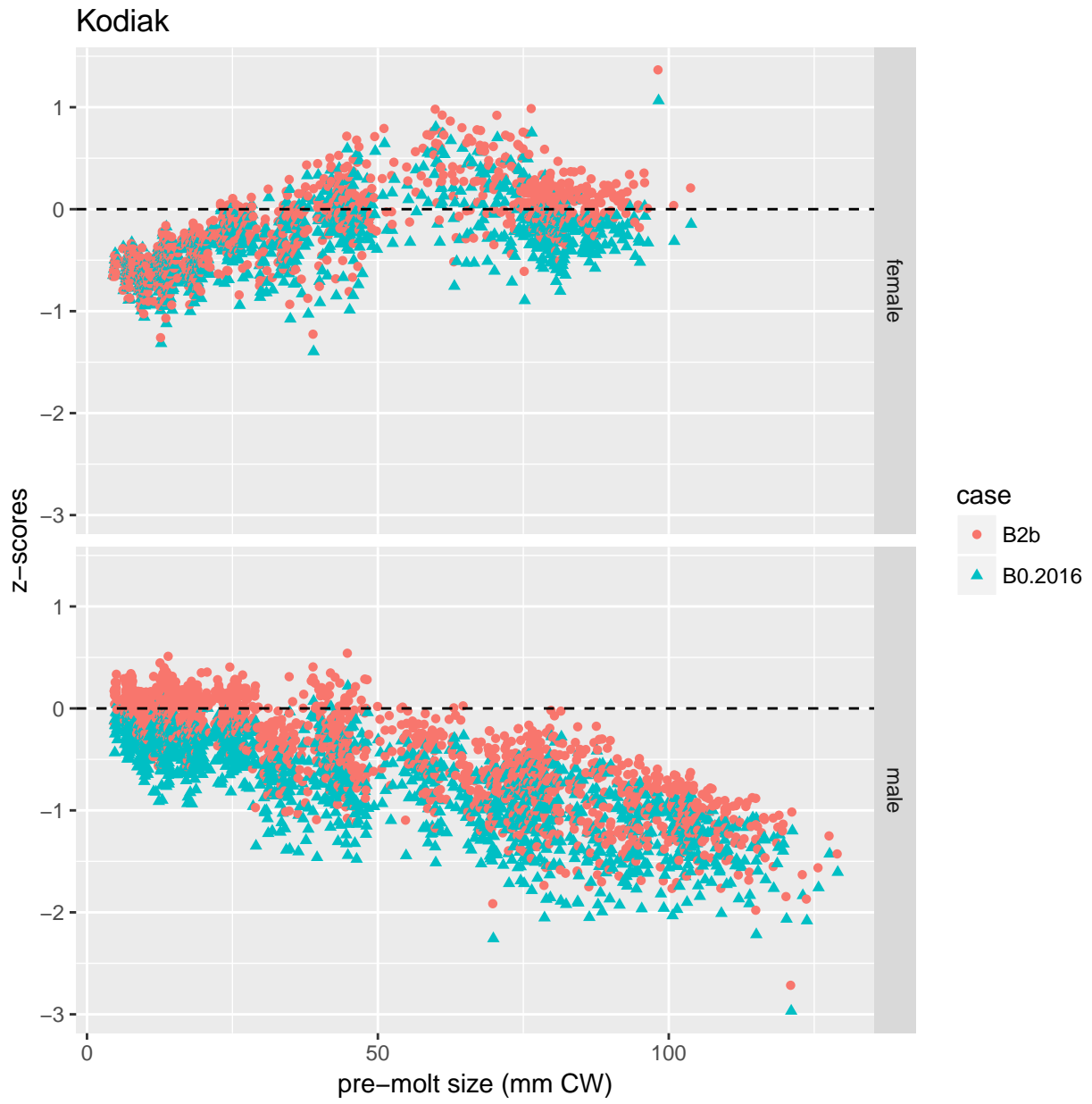


Figure 18: Z-scores for fits to Kodiak.

# Survey biomass

## NMFS trawl survey

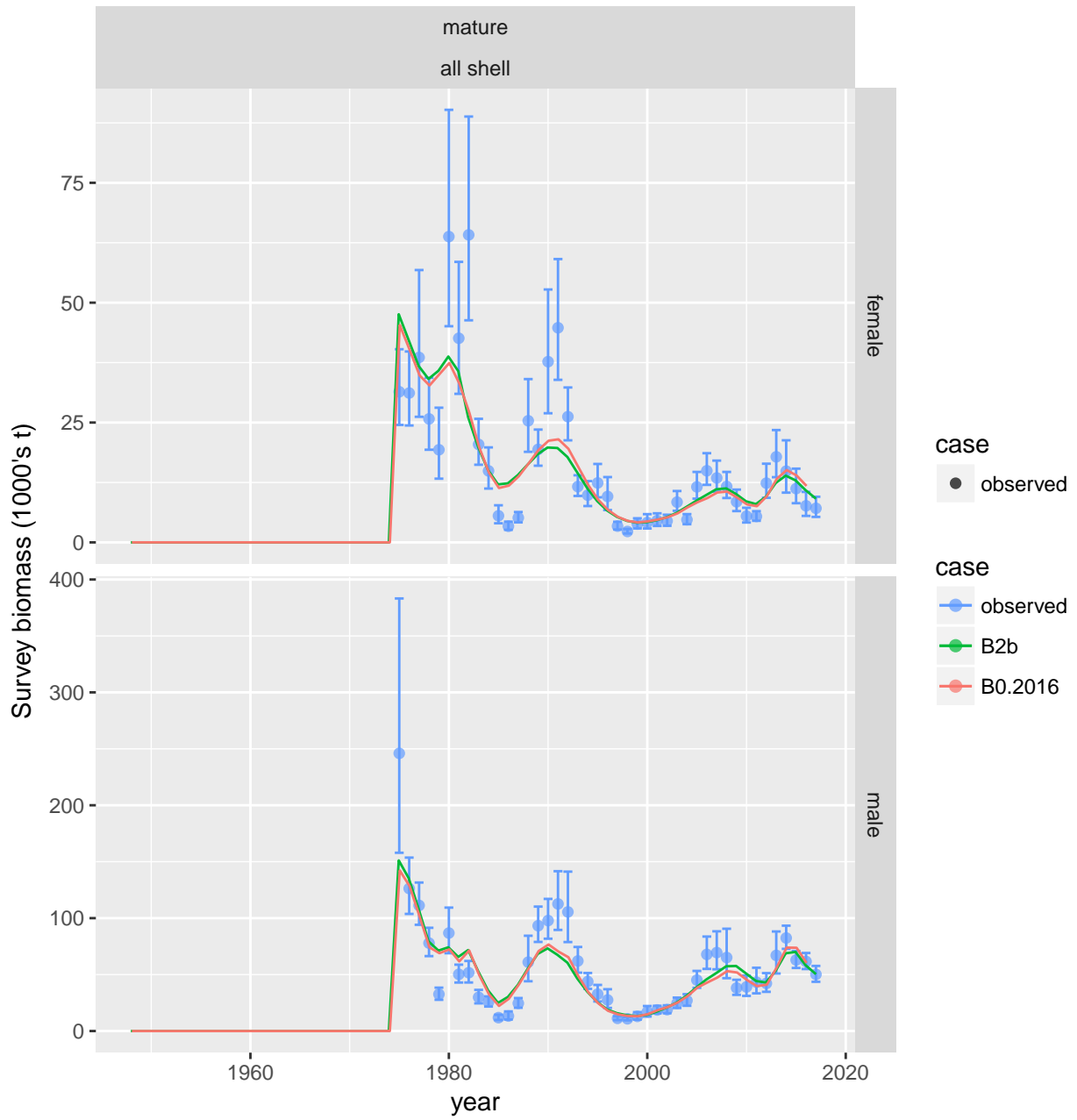


Figure 19: Comparison of observed and predicted survey biomass for NMFS trawl survey.

# NMFS trawl survey

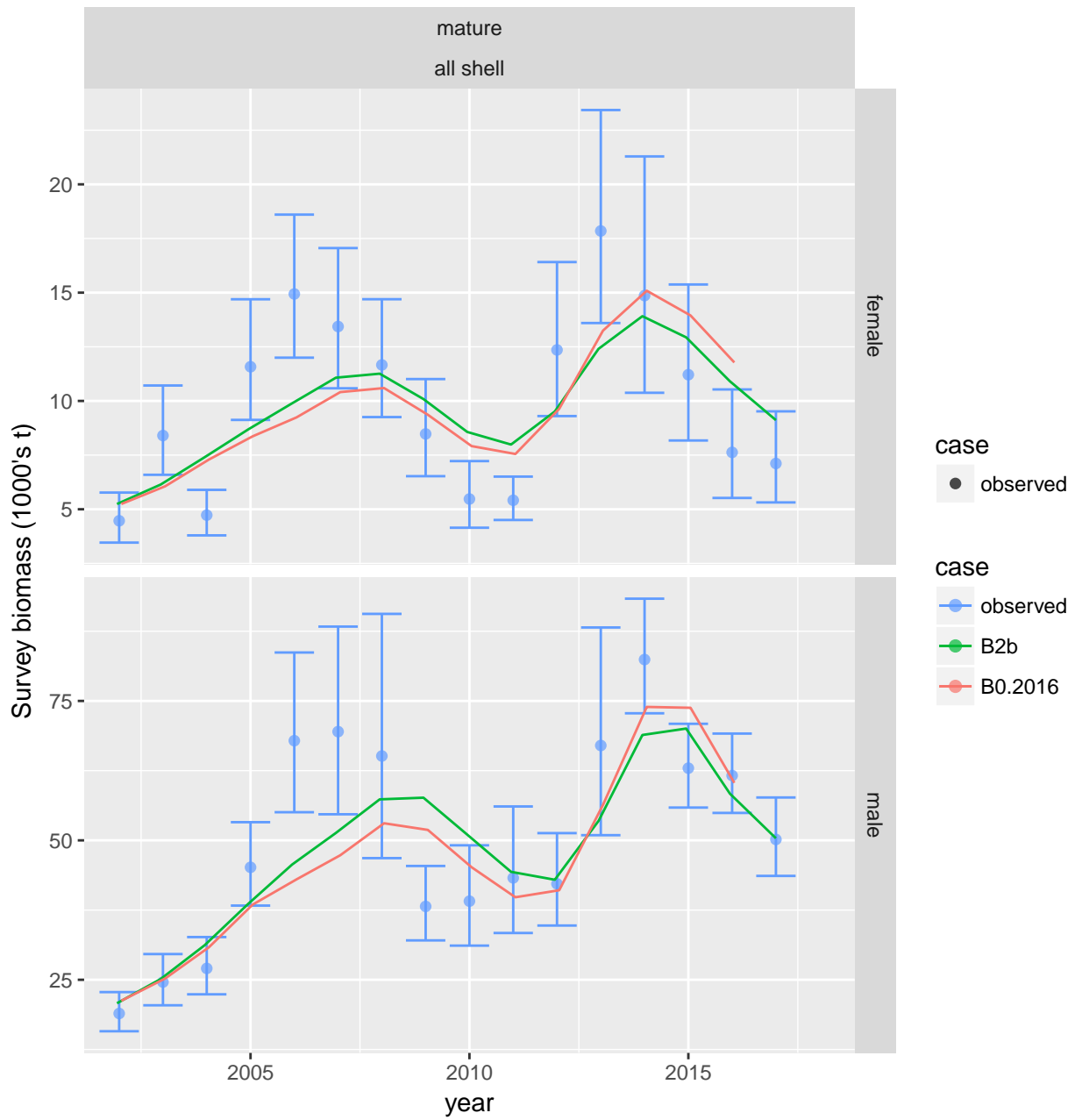


Figure 20: Comparison of observed and predicted survey biomass for NMFS trawl survey. Recent time period.

[1] "NMFS trawl survey"



# NMFS trawl survey

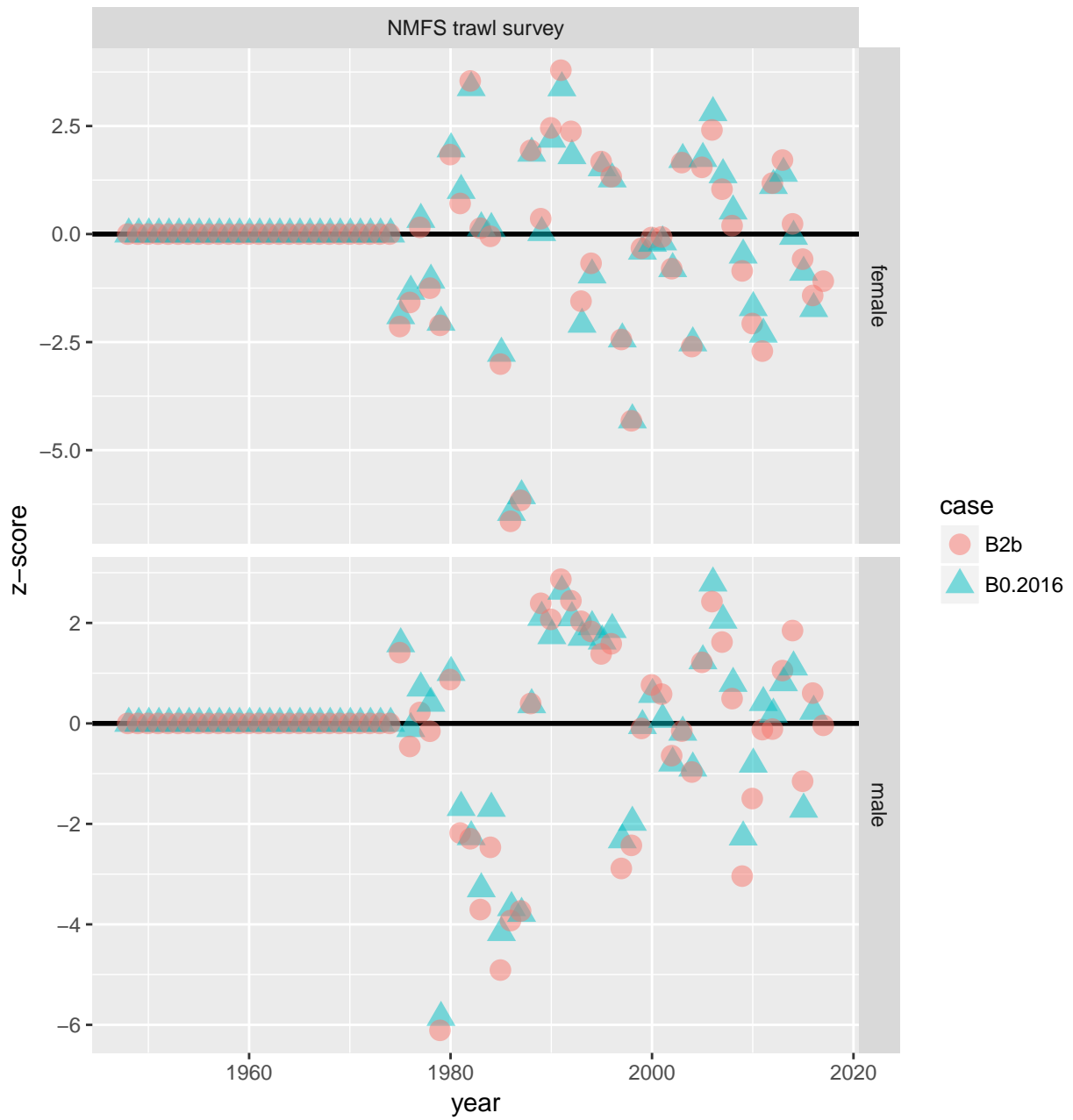


Figure 21: Z-scores for index catch biomass in NMFS trawl survey.

# Fishery retained catch biomass

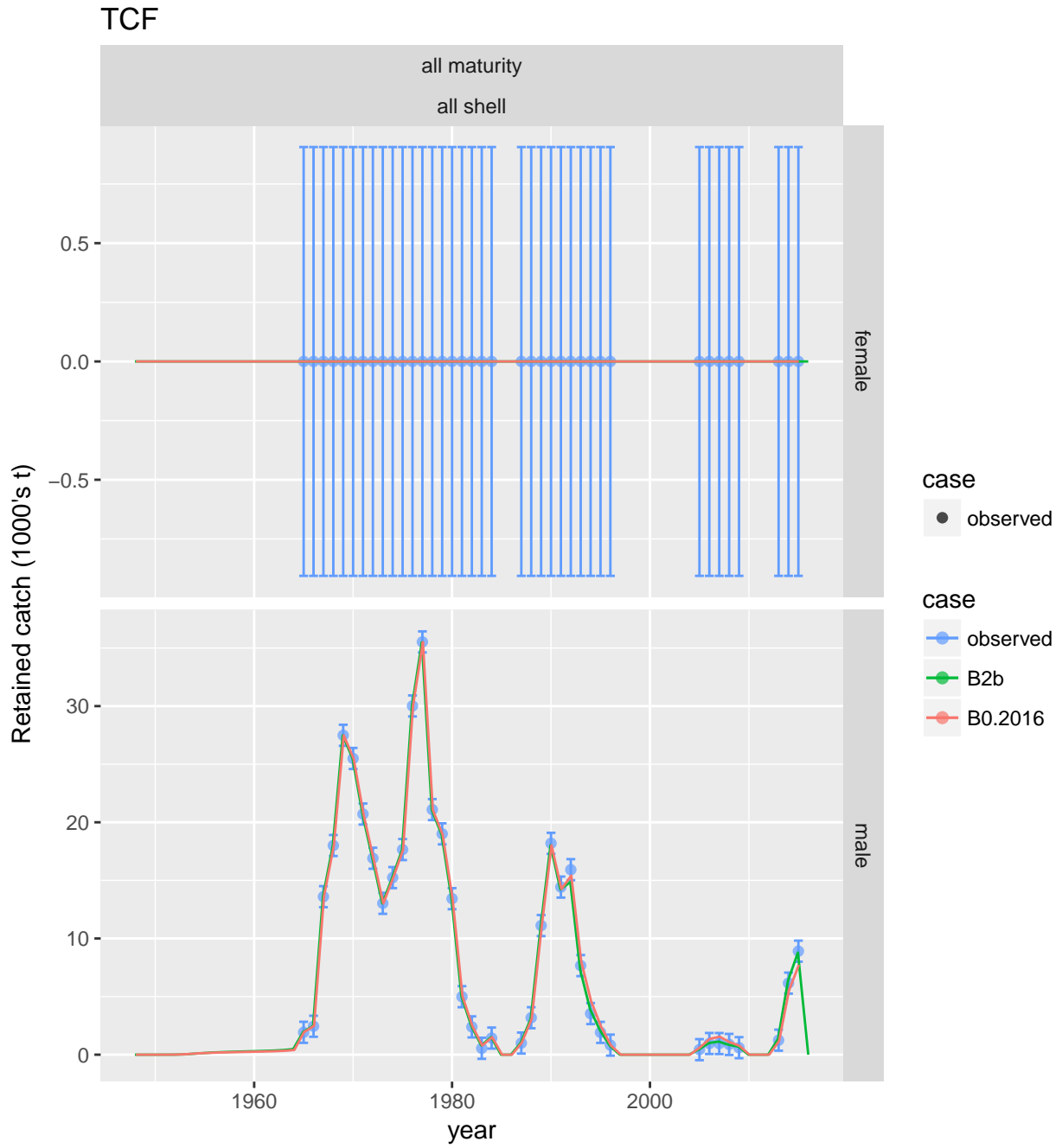


Figure 22: Comparison of observed and predicted retained catch mortality for TCF.

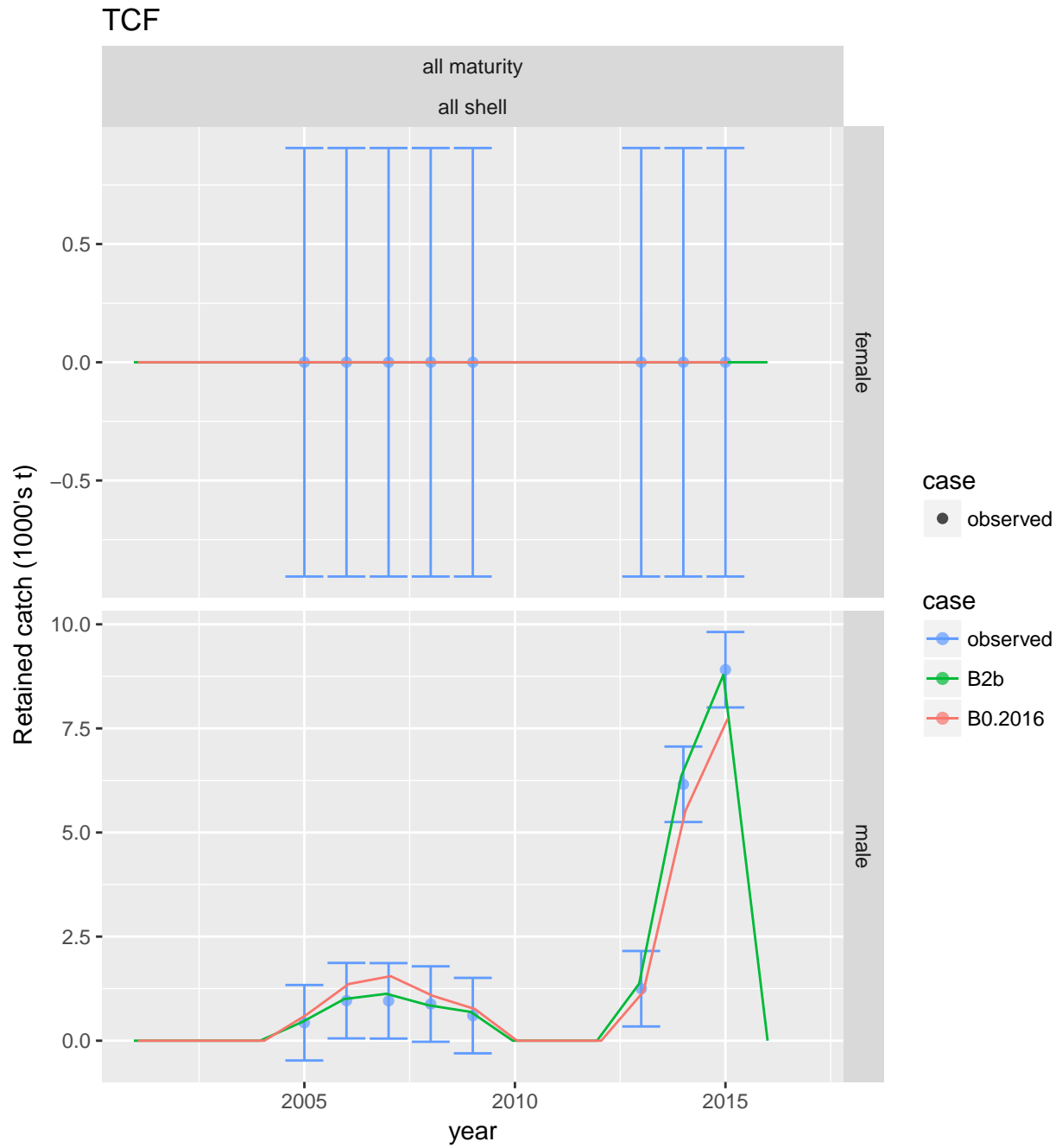


Figure 23: Comparison of observed and predicted retained catch mortality for TCF. Recent time period.

[1] "TCF"

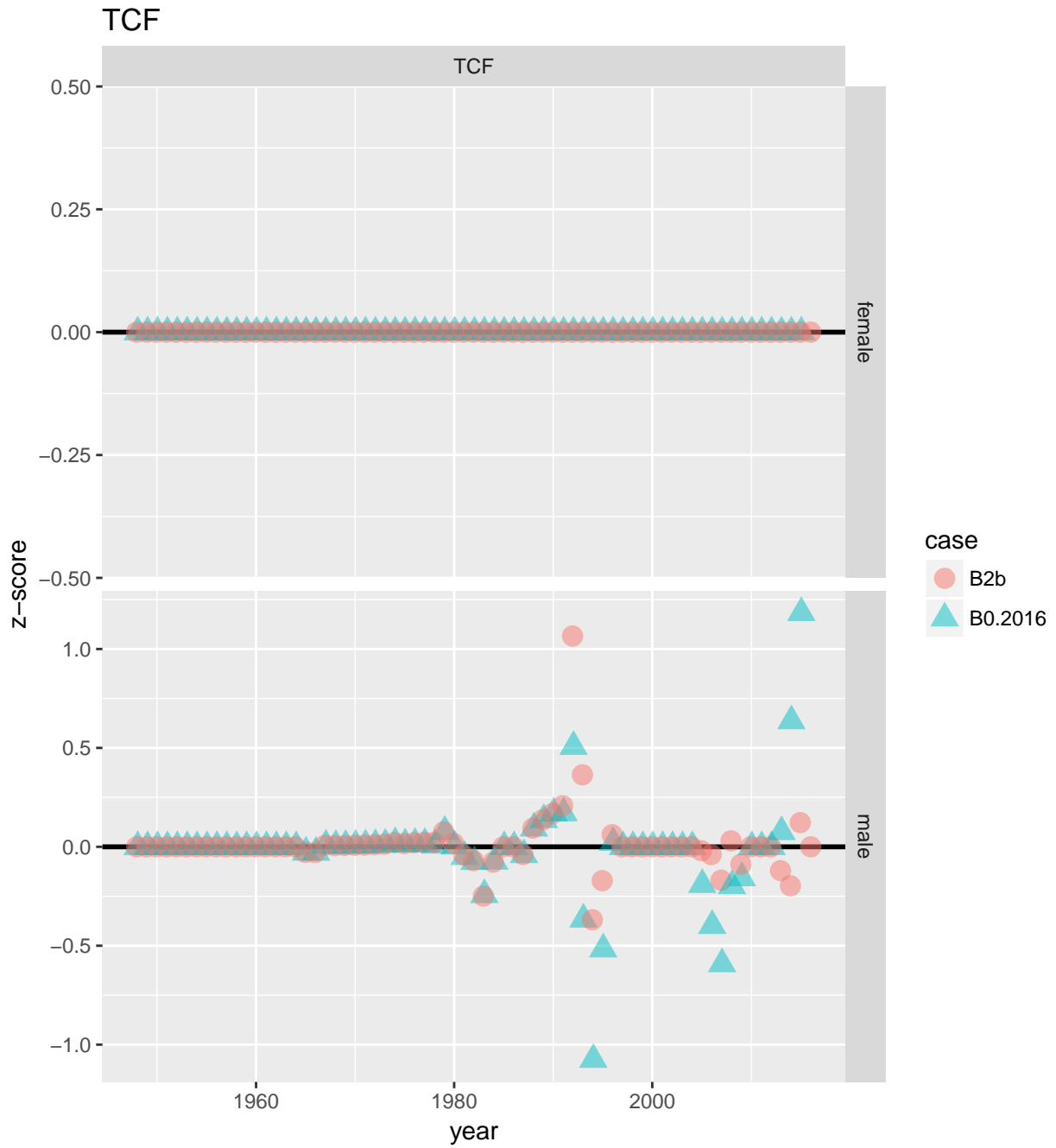


Figure 24: Z-scores for retained catch biomass in TCF.

# Fishery total catch biomass

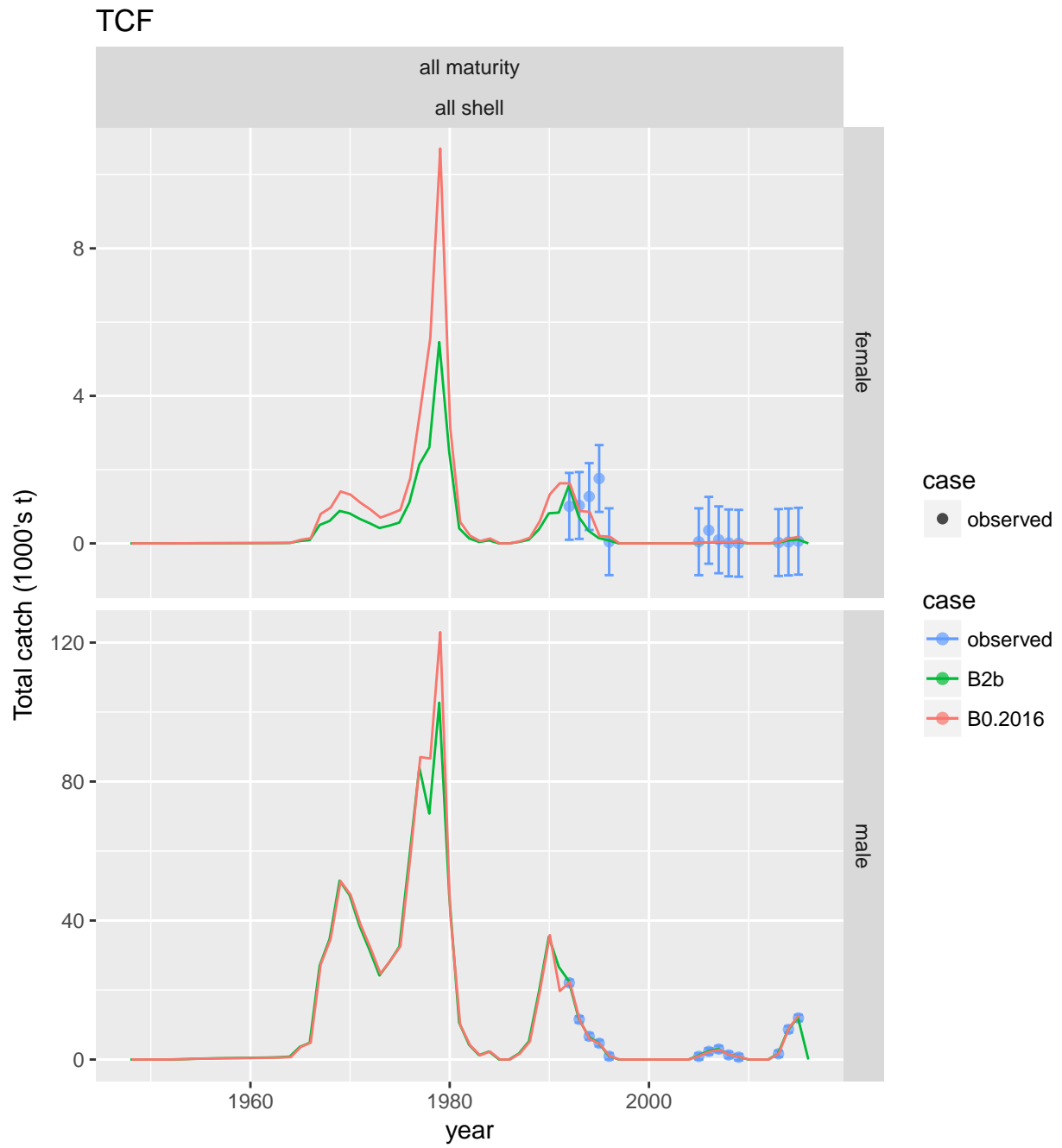


Figure 25: Comparison of observed and predicted total catch for TCF.

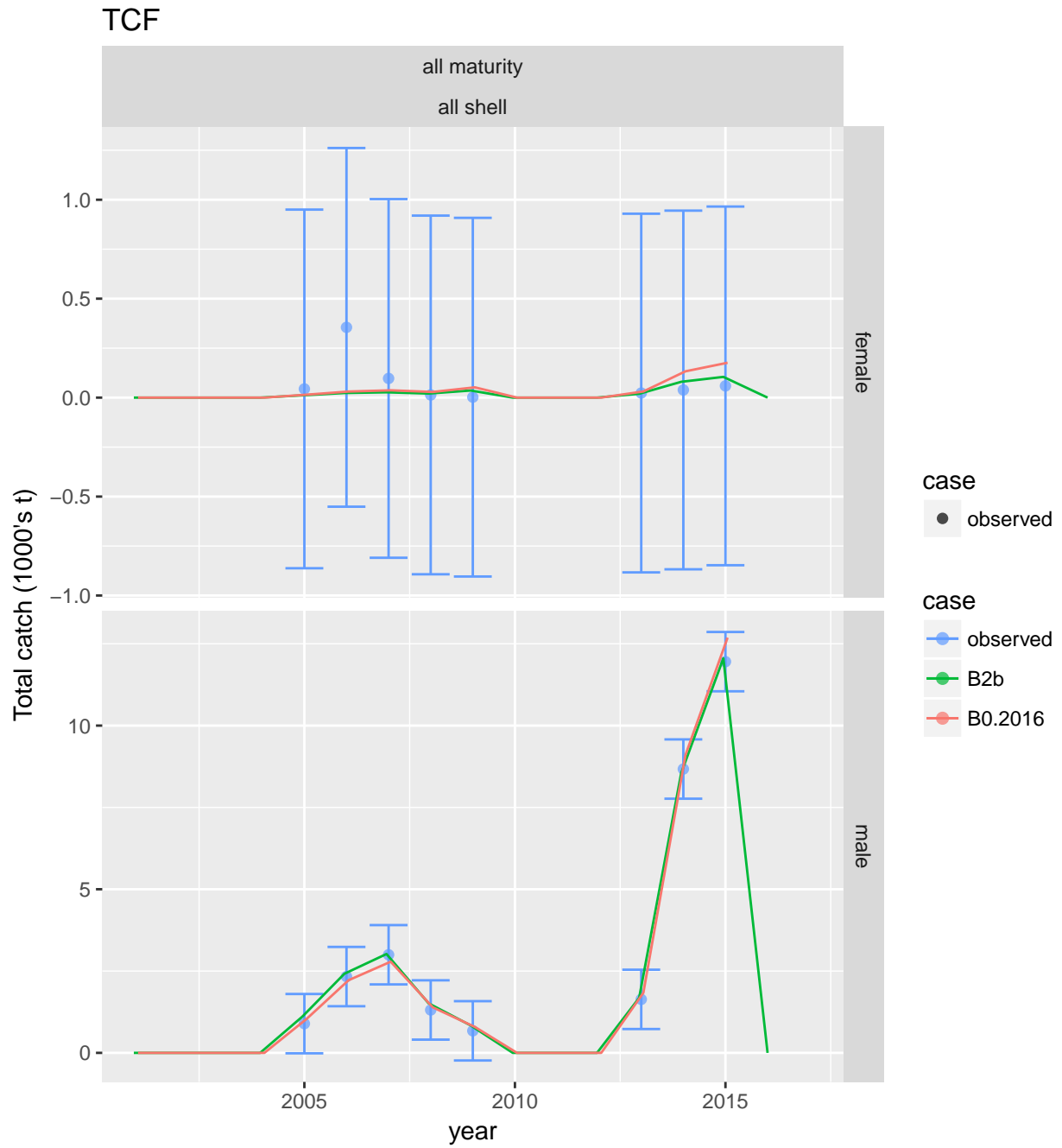


Figure 26: Comparison of observed and predicted total catch for TCF. Recent time period.

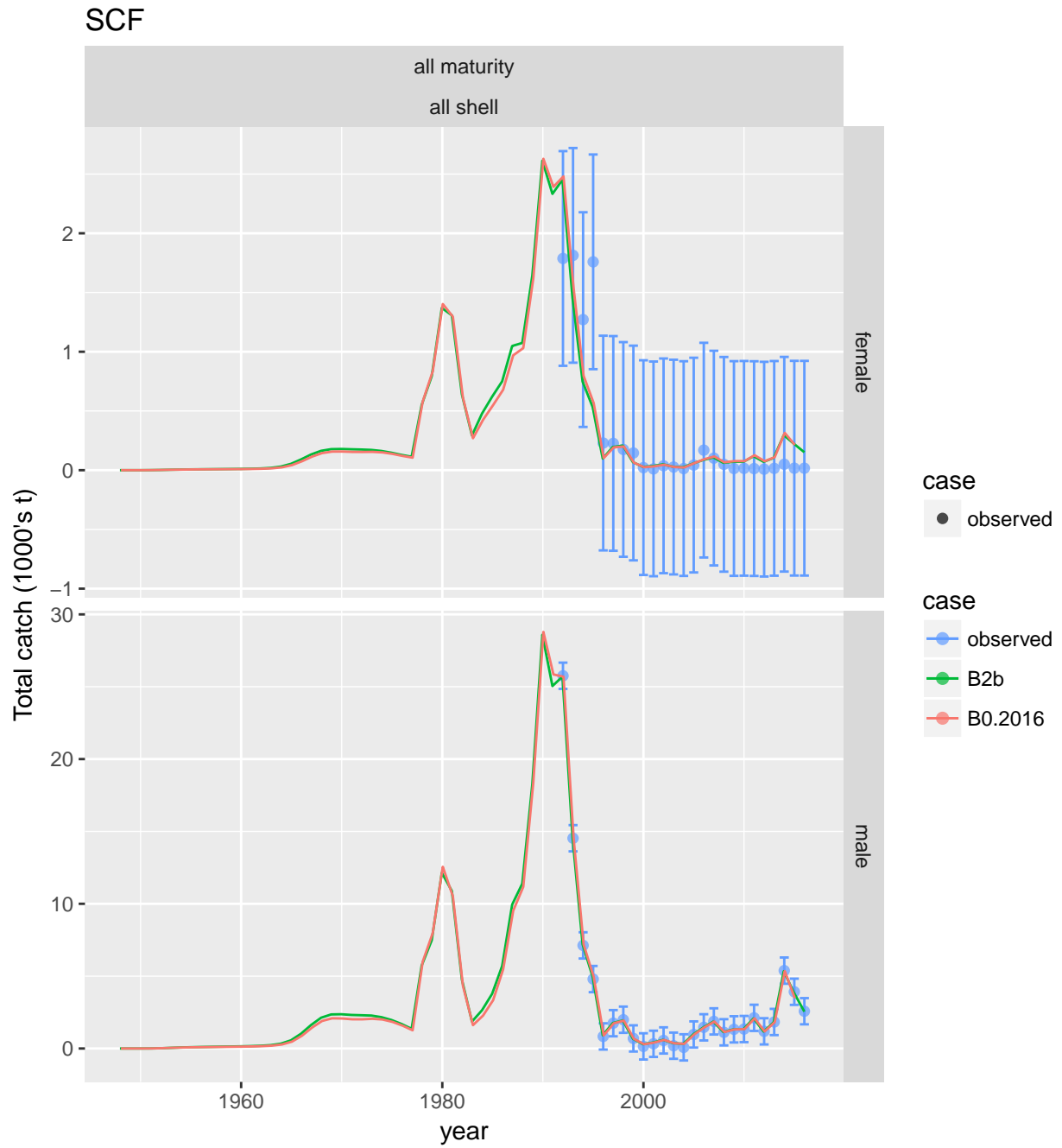


Figure 27: Comparison of observed and predicted total catch for SCF.

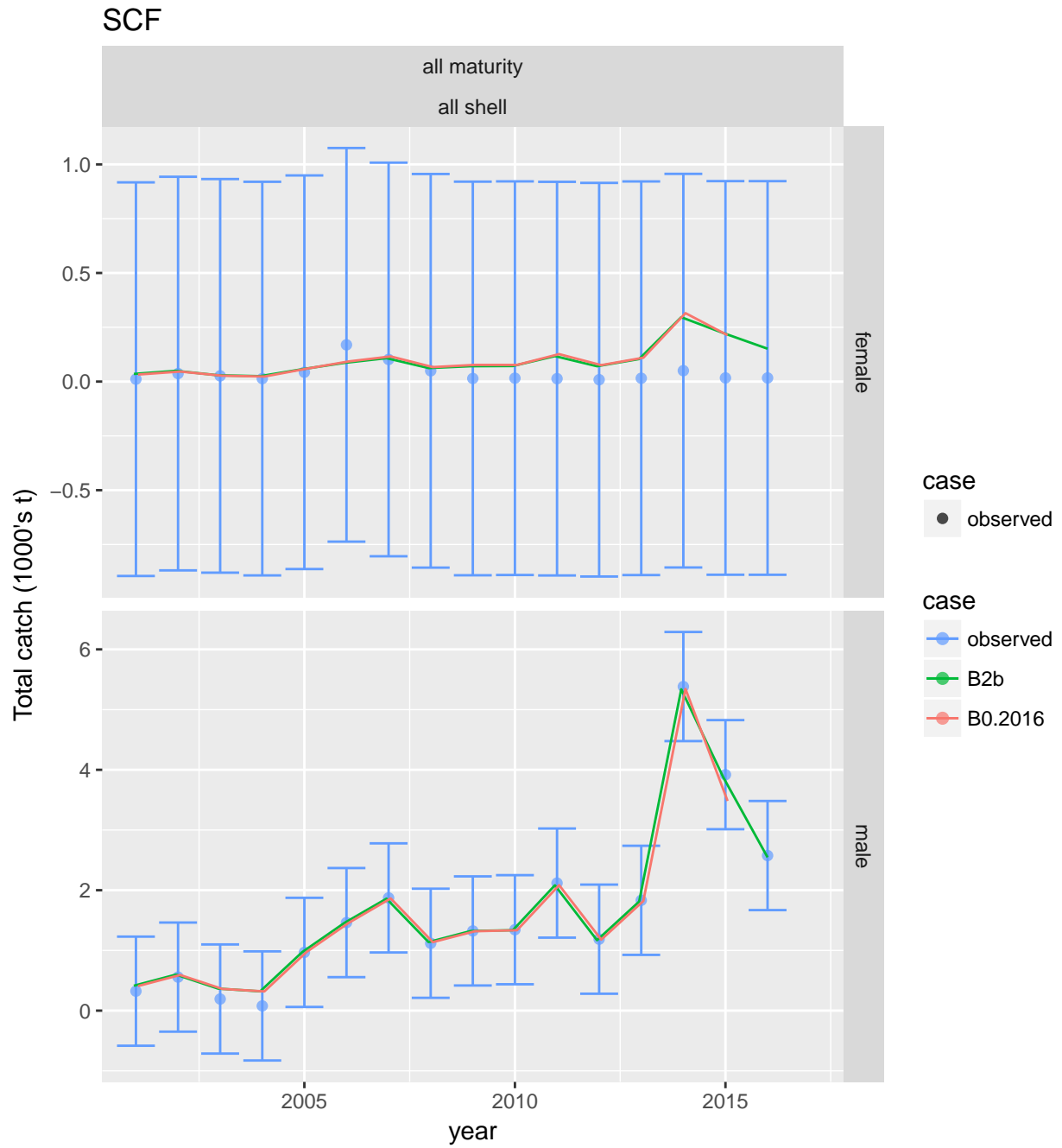


Figure 28: Comparison of observed and predicted total catch for SCF. Recent time period.



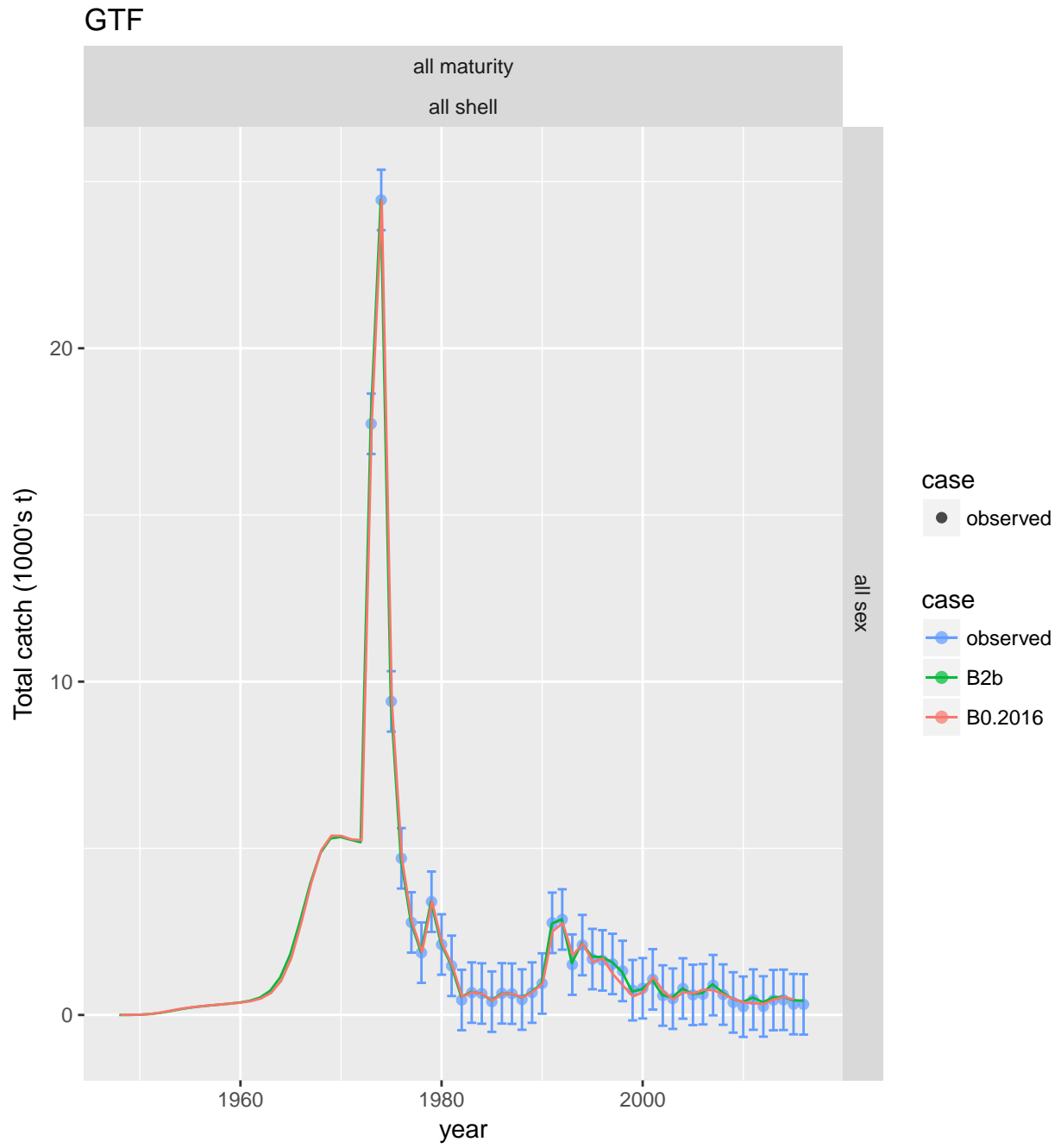


Figure 29: Comparison of observed and predicted total catch for GTF.

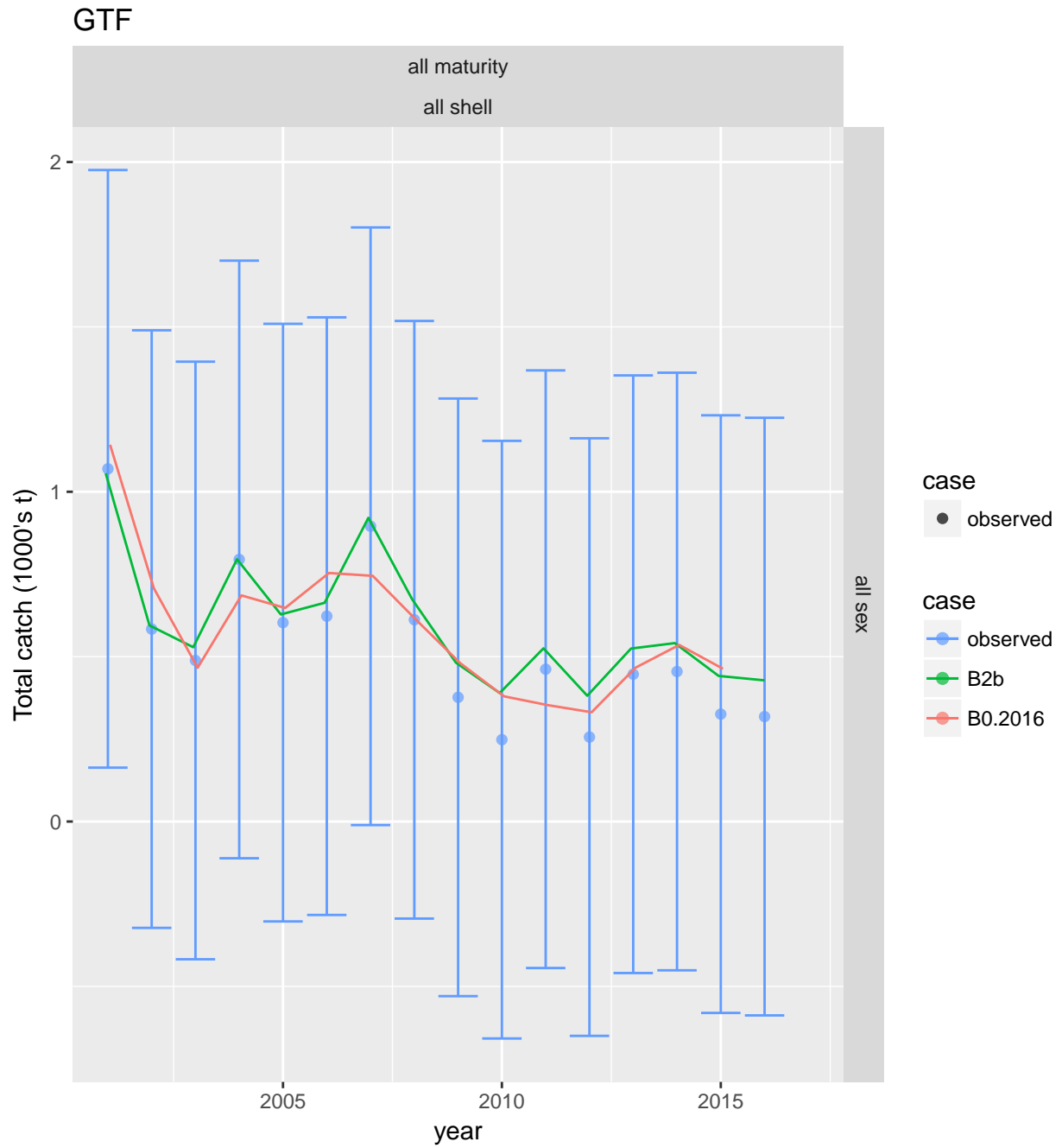


Figure 30: Comparison of observed and predicted total catch for GTF. Recent time period.

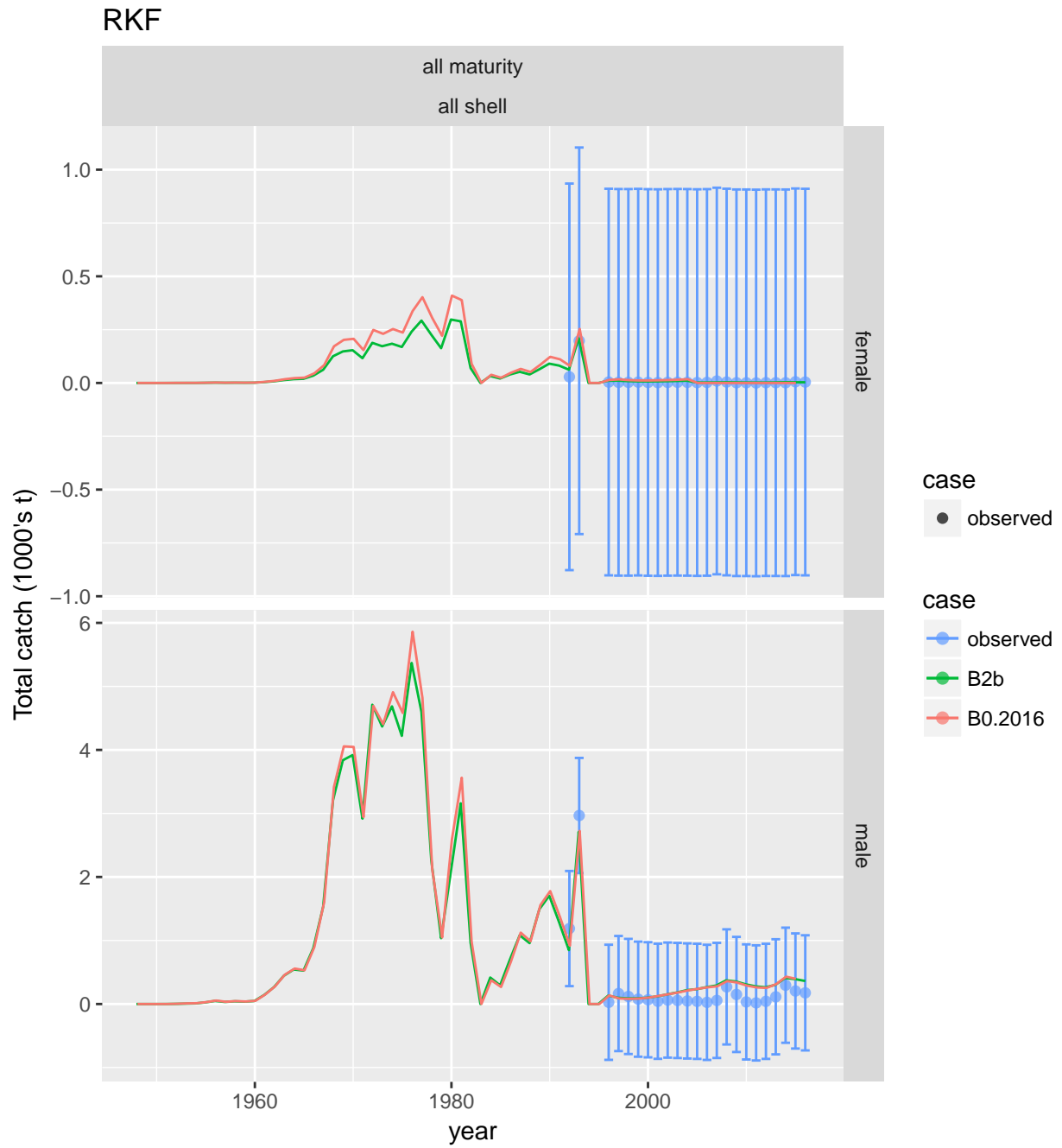


Figure 31: Comparison of observed and predicted total catch for RKF.

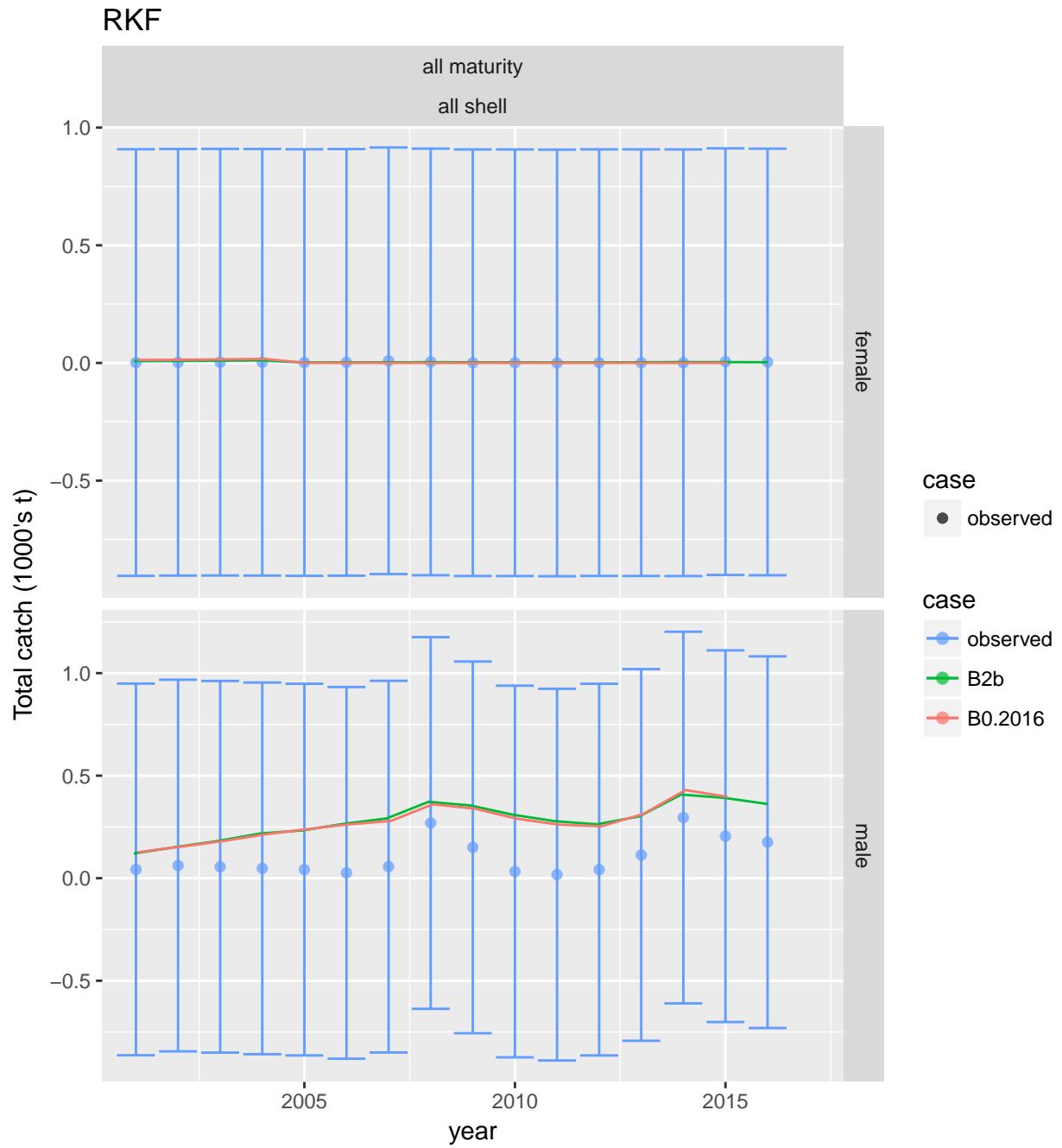


Figure 32: Comparison of observed and predicted total catch for RKF. Recent time period.

[1] "TCF" "SCF" "GTF" "RKF"

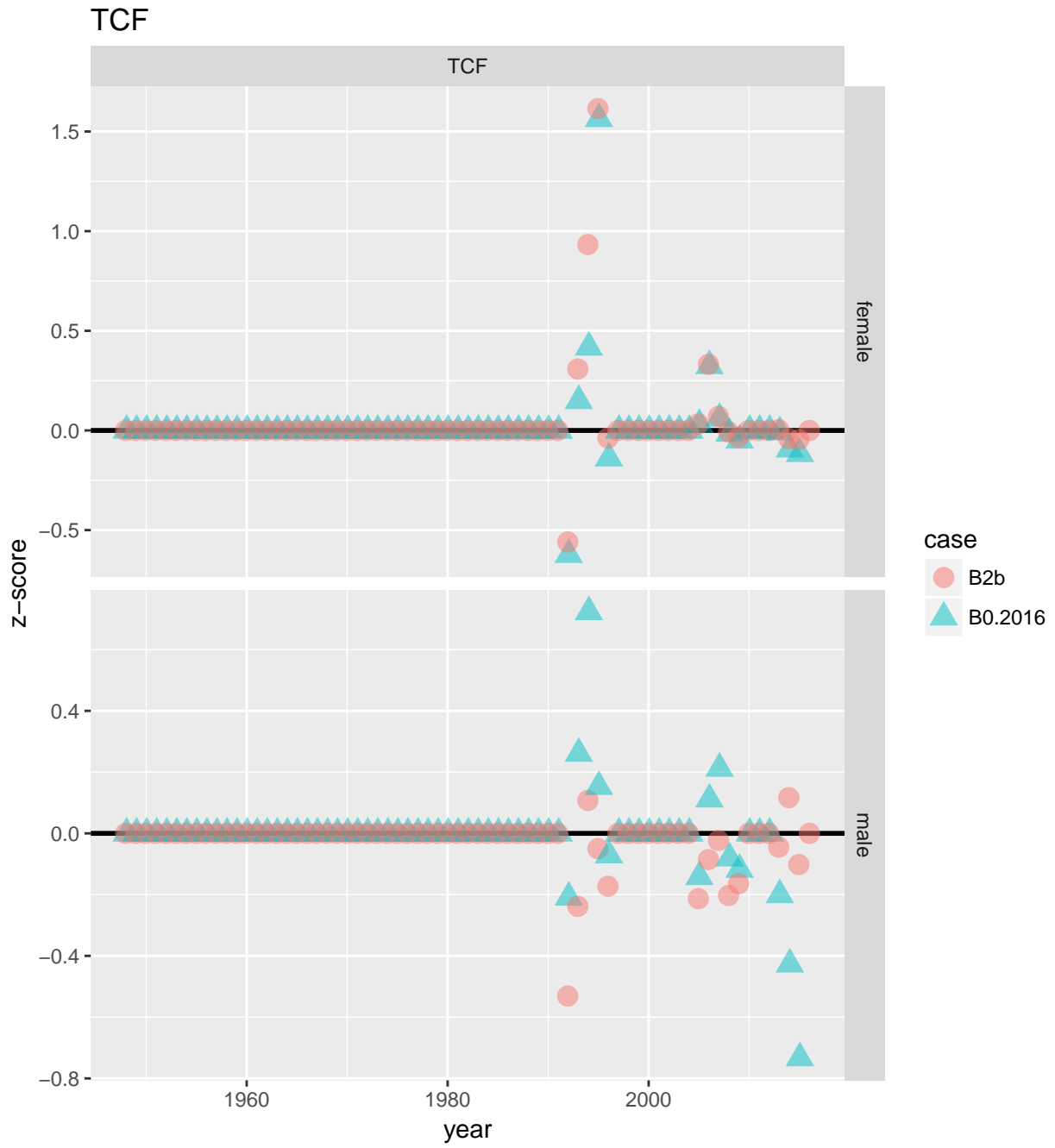


Figure 33: Z-scores for total catch biomass in TCF.

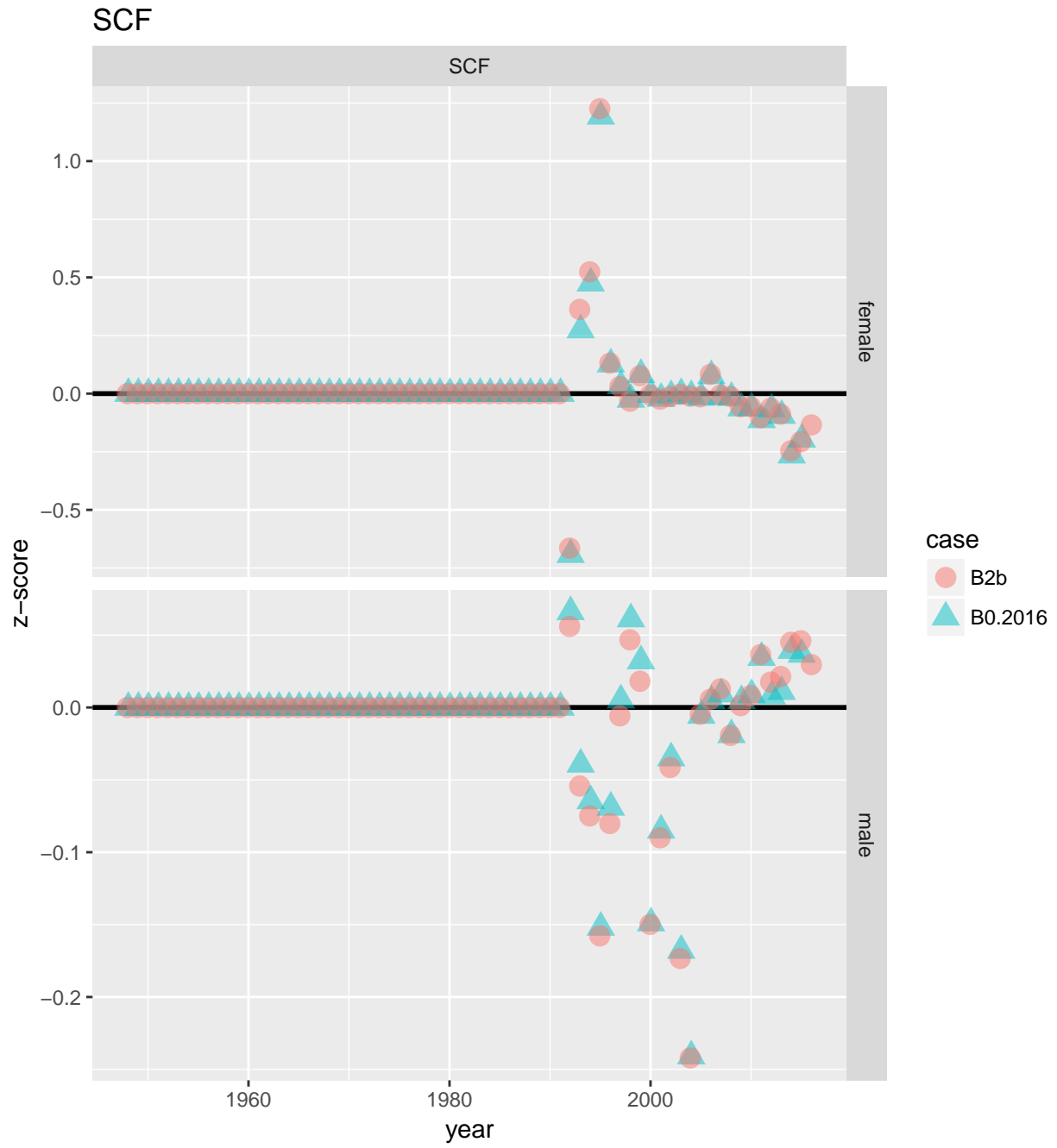


Figure 34: Z-scores for total catch biomass in SCF.

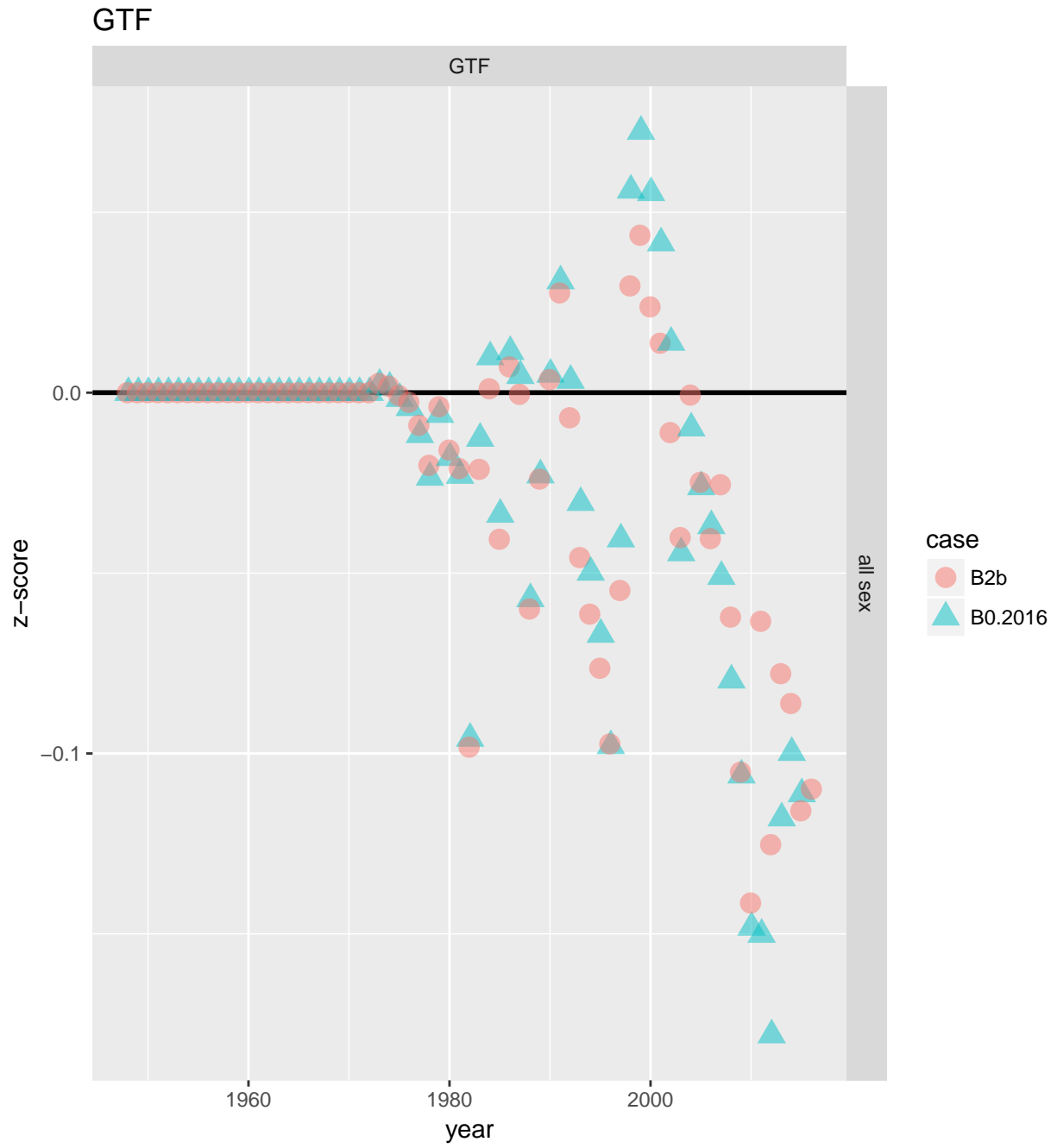


Figure 35: Z-scores for total catch biomass in GTF.

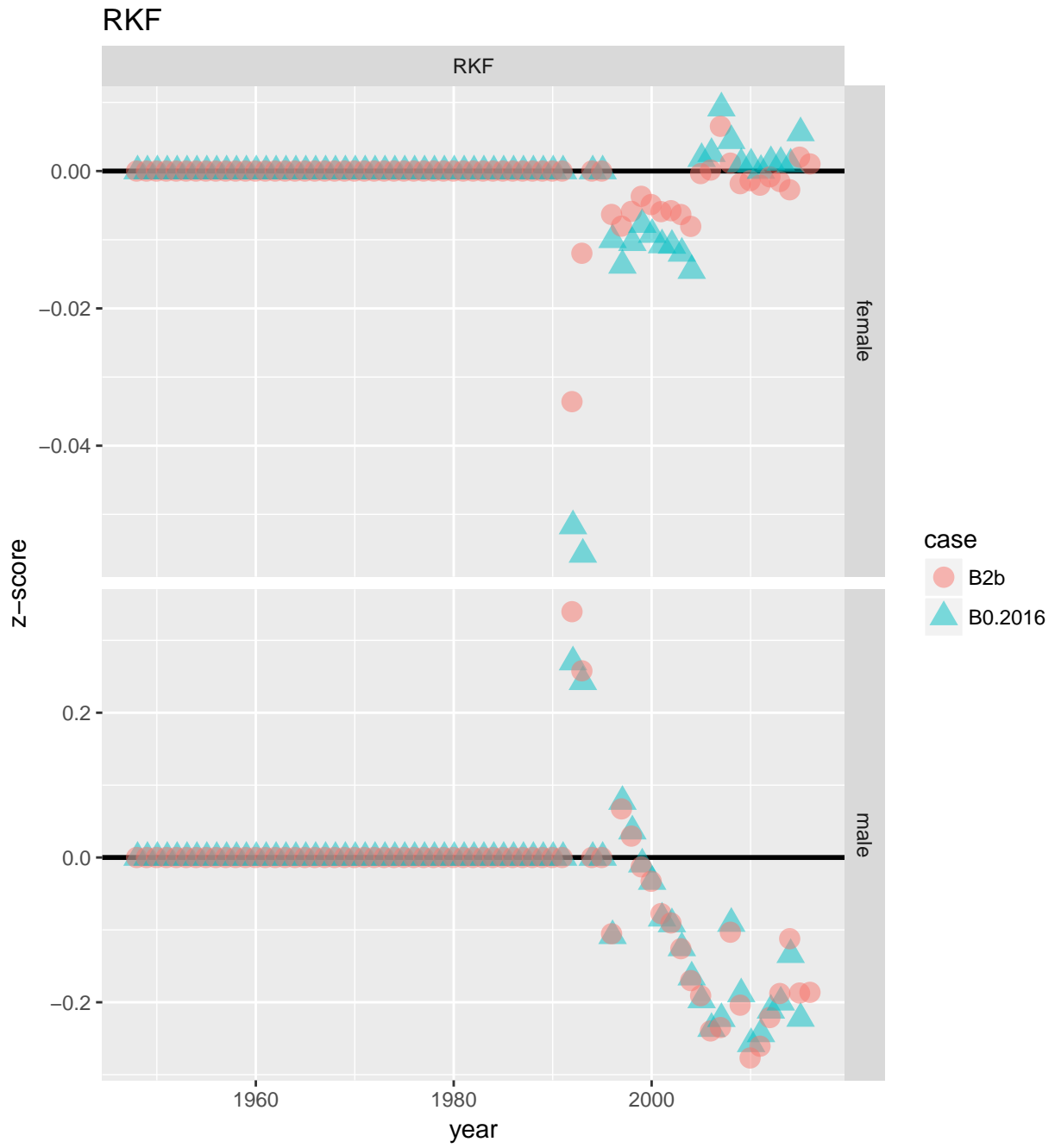


Figure 36: Z-scores for total catch biomass in RKF.



# Mean survey size compositions

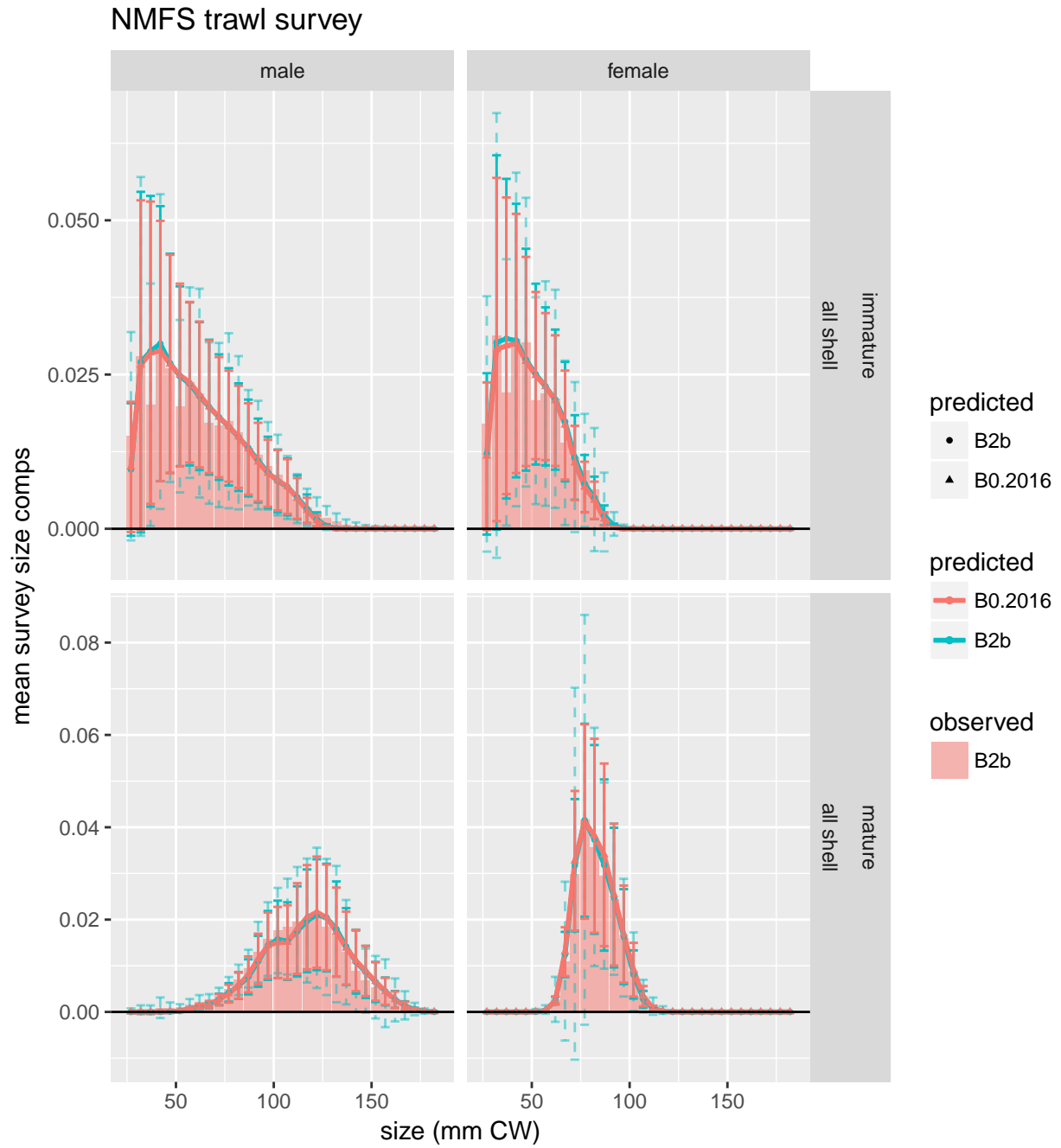


Figure 37: Comparison of observed and predicted mean survey size comps for NMFS trawl survey.

# Fishery retained catch mean size compositions

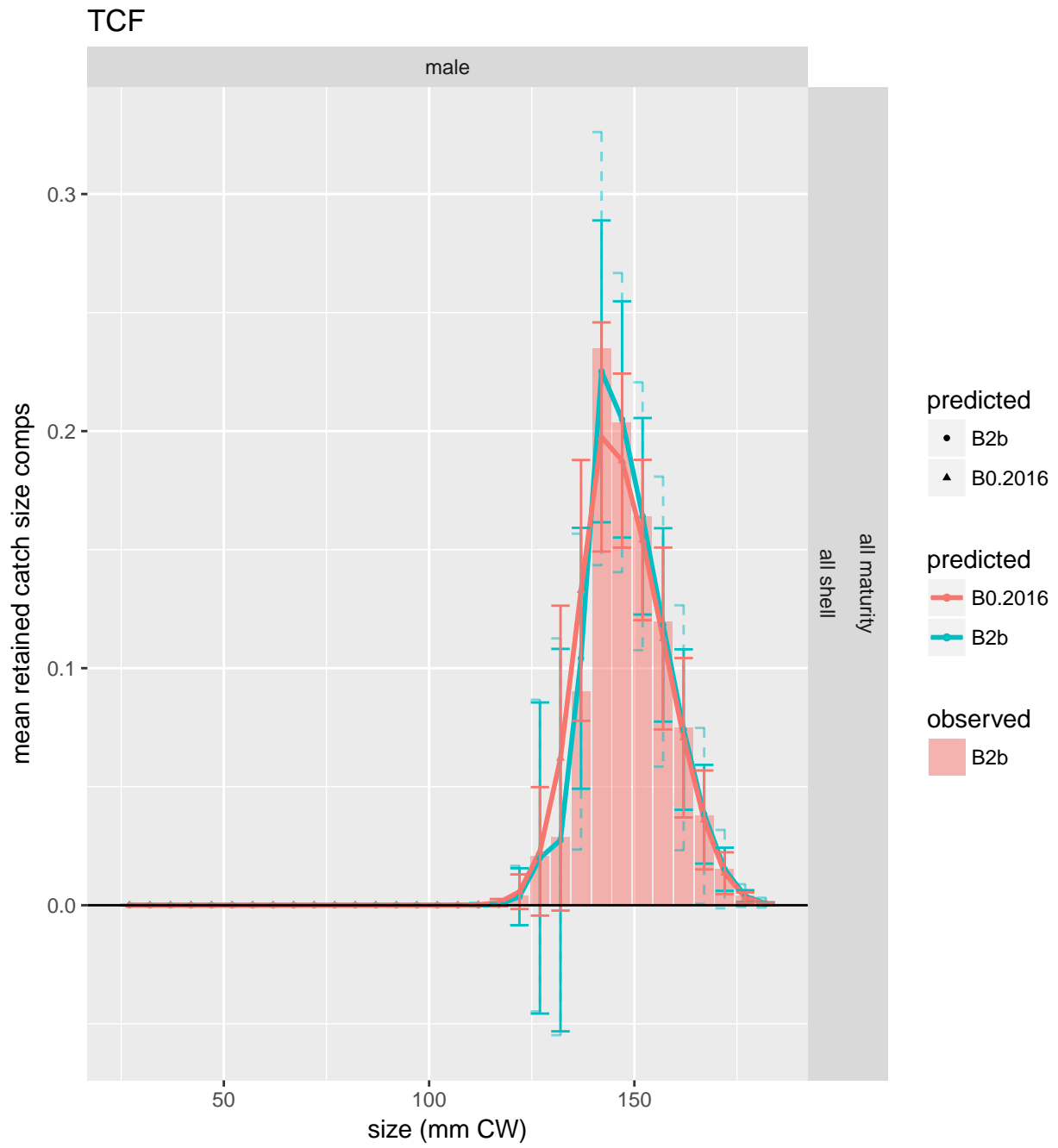


Figure 38: Comparison of observed and predicted mean retained catch size comps for TCF.

# Fishery total catch mean size compositions

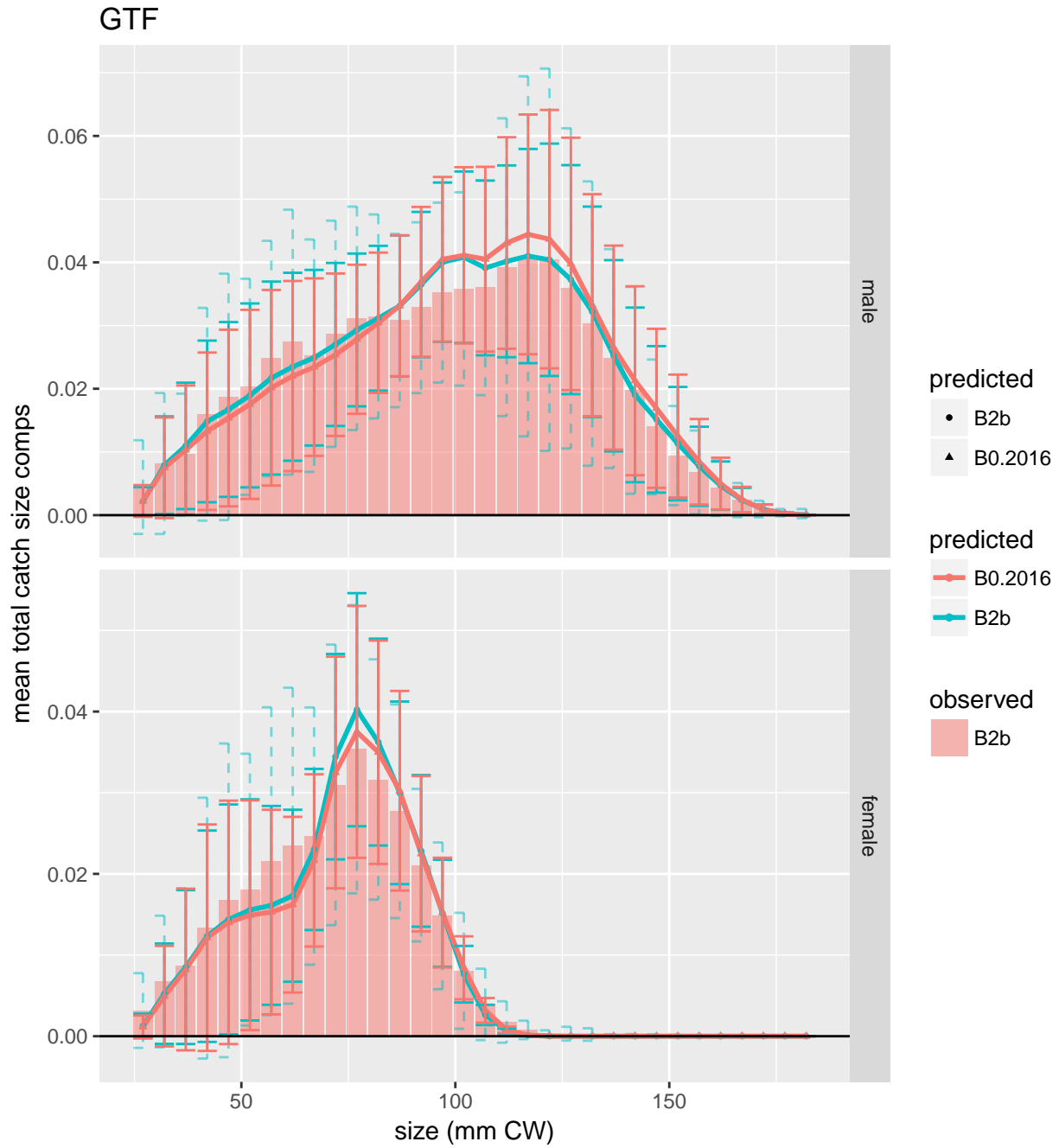


Figure 39: Comparison of observed and predicted mean total catch size comps for GTF.

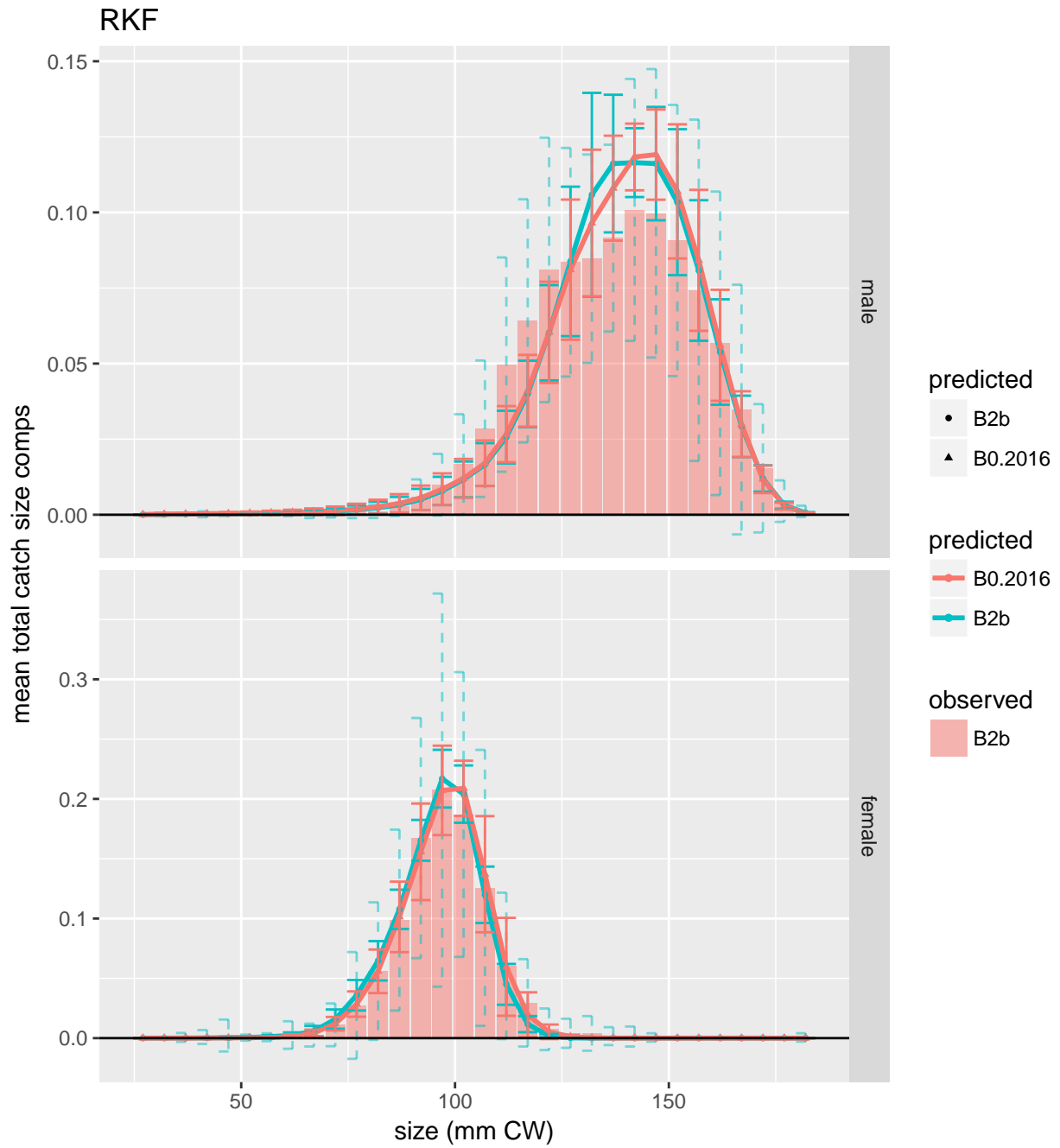


Figure 40: Comparison of observed and predicted mean total catch size comps for RKF.

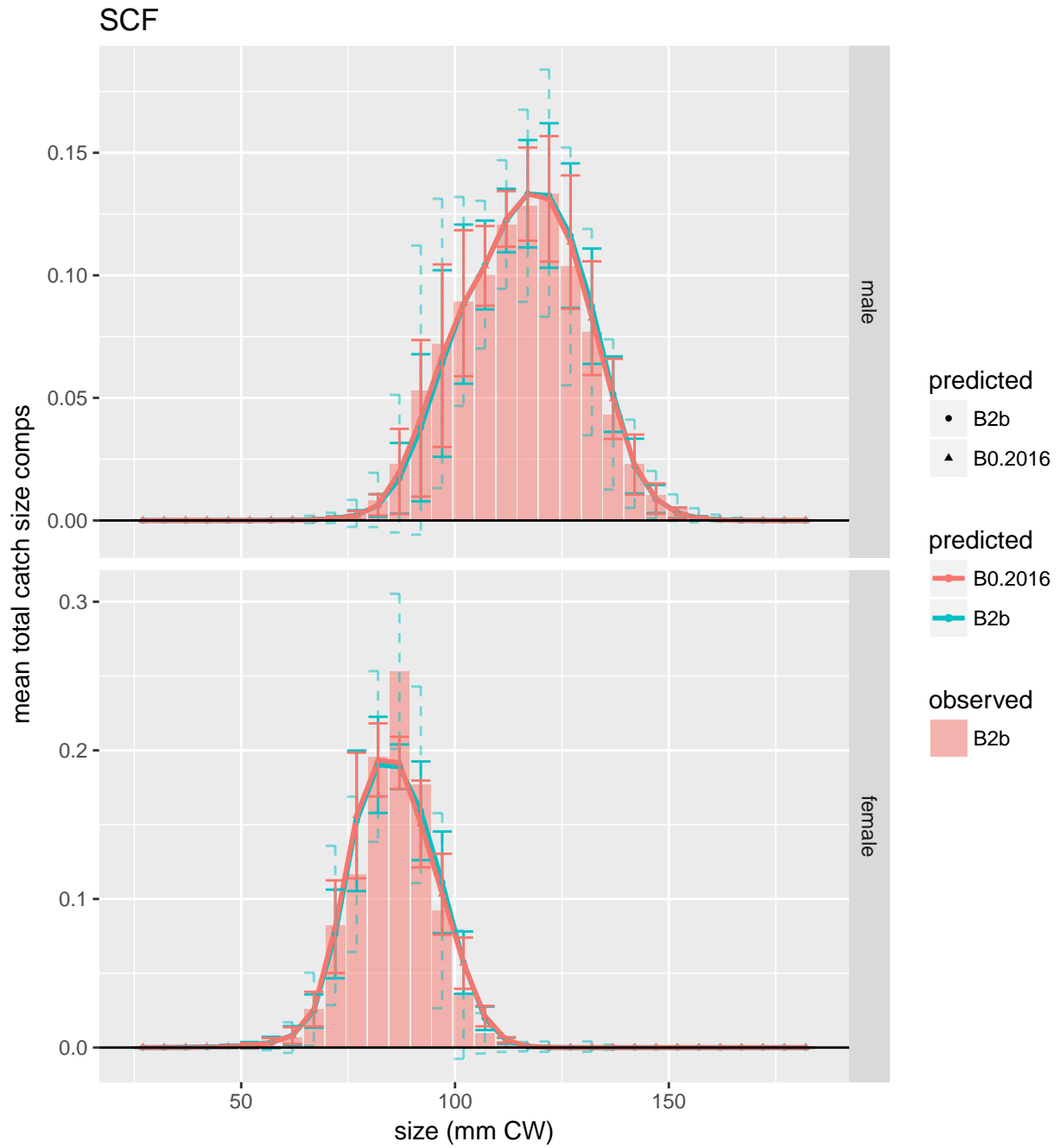


Figure 41: Comparison of observed and predicted mean total catch size comps for SCF.

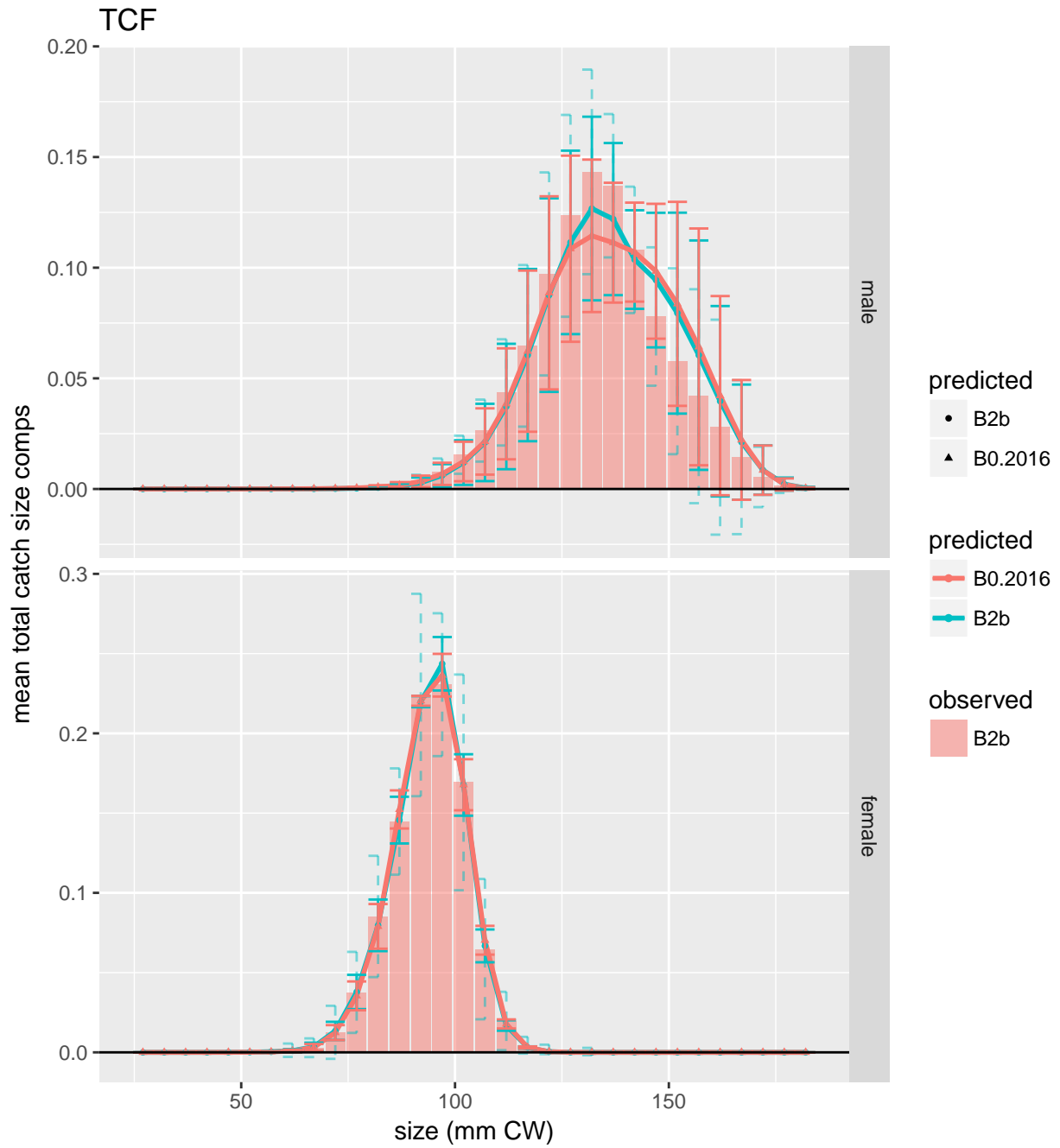


Figure 42: Comparison of observed and predicted mean total catch size comps for TCF.



# Survey size composition residuals

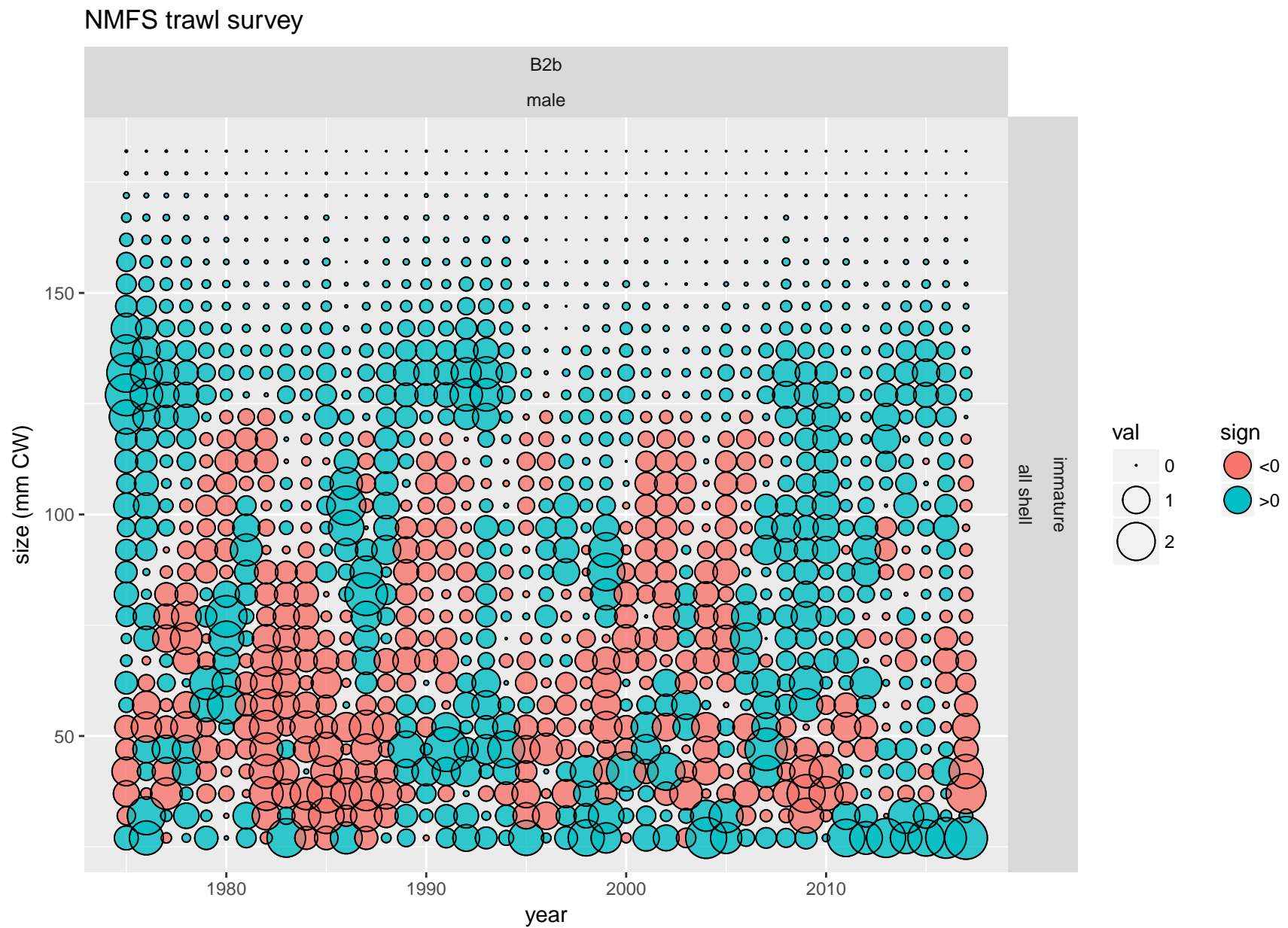


Figure 43: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B2b.



# NMFS trawl survey

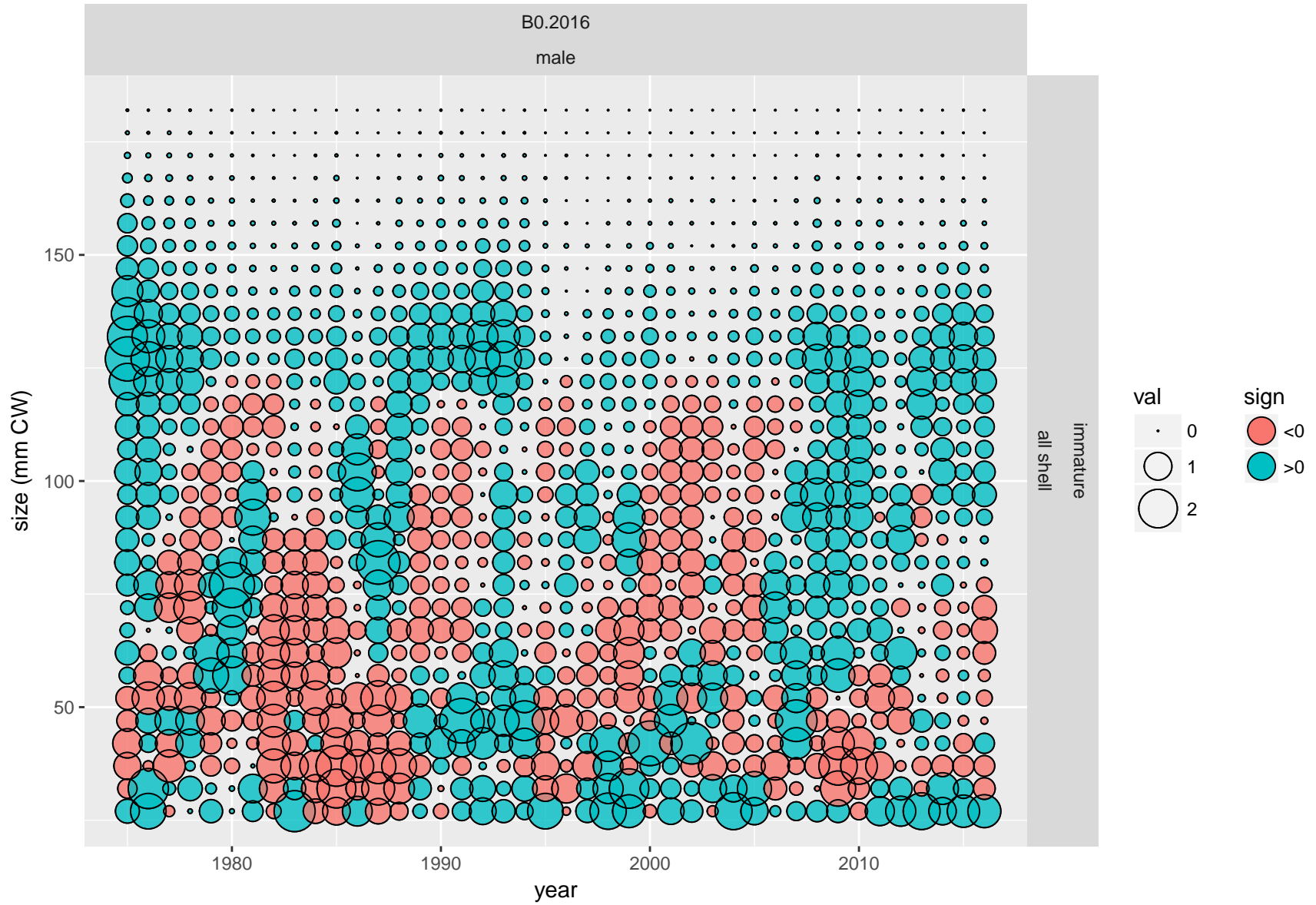


Figure 44: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016.

# NMFS trawl survey

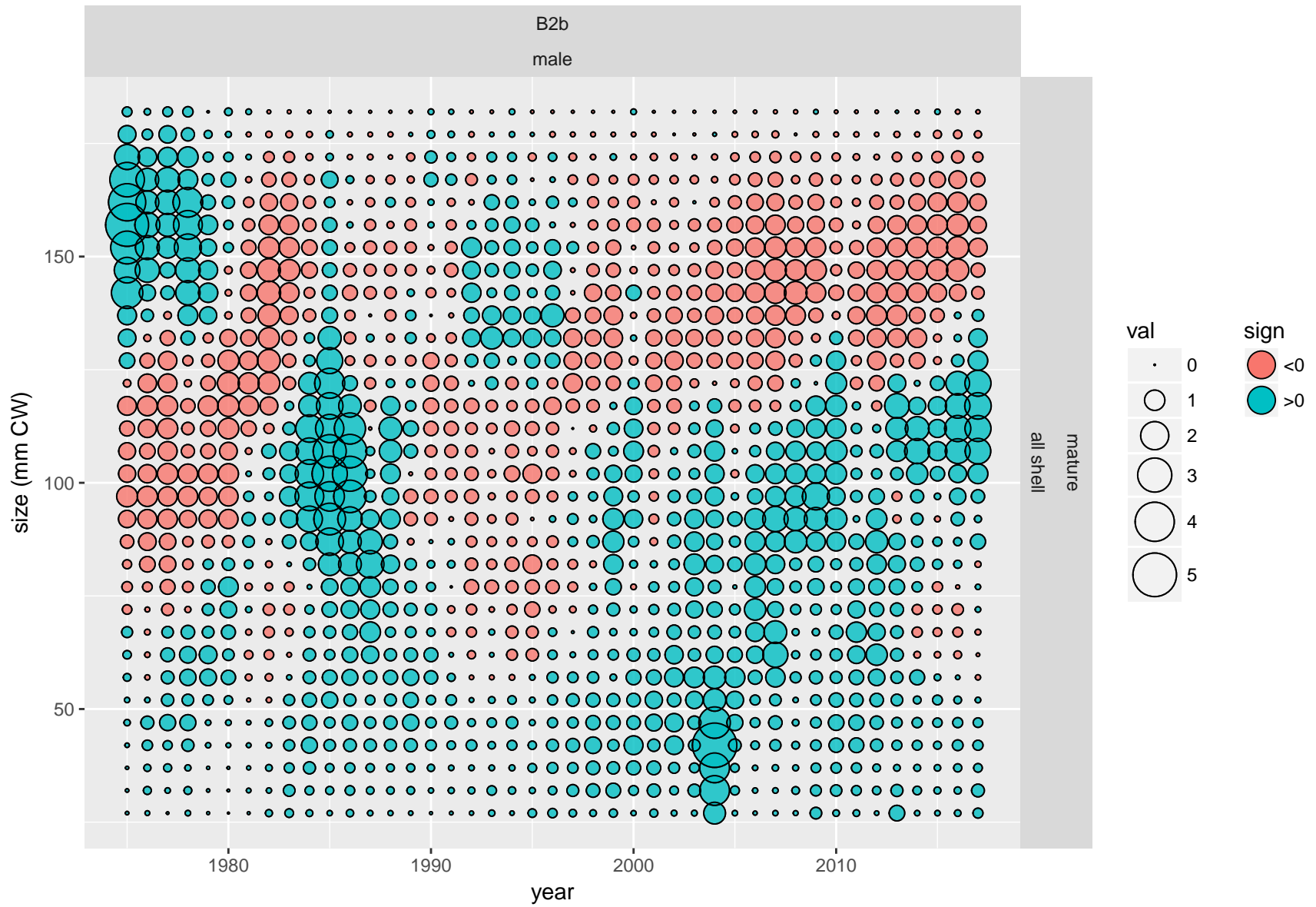


Figure 45: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B2b.

# NMFS trawl survey

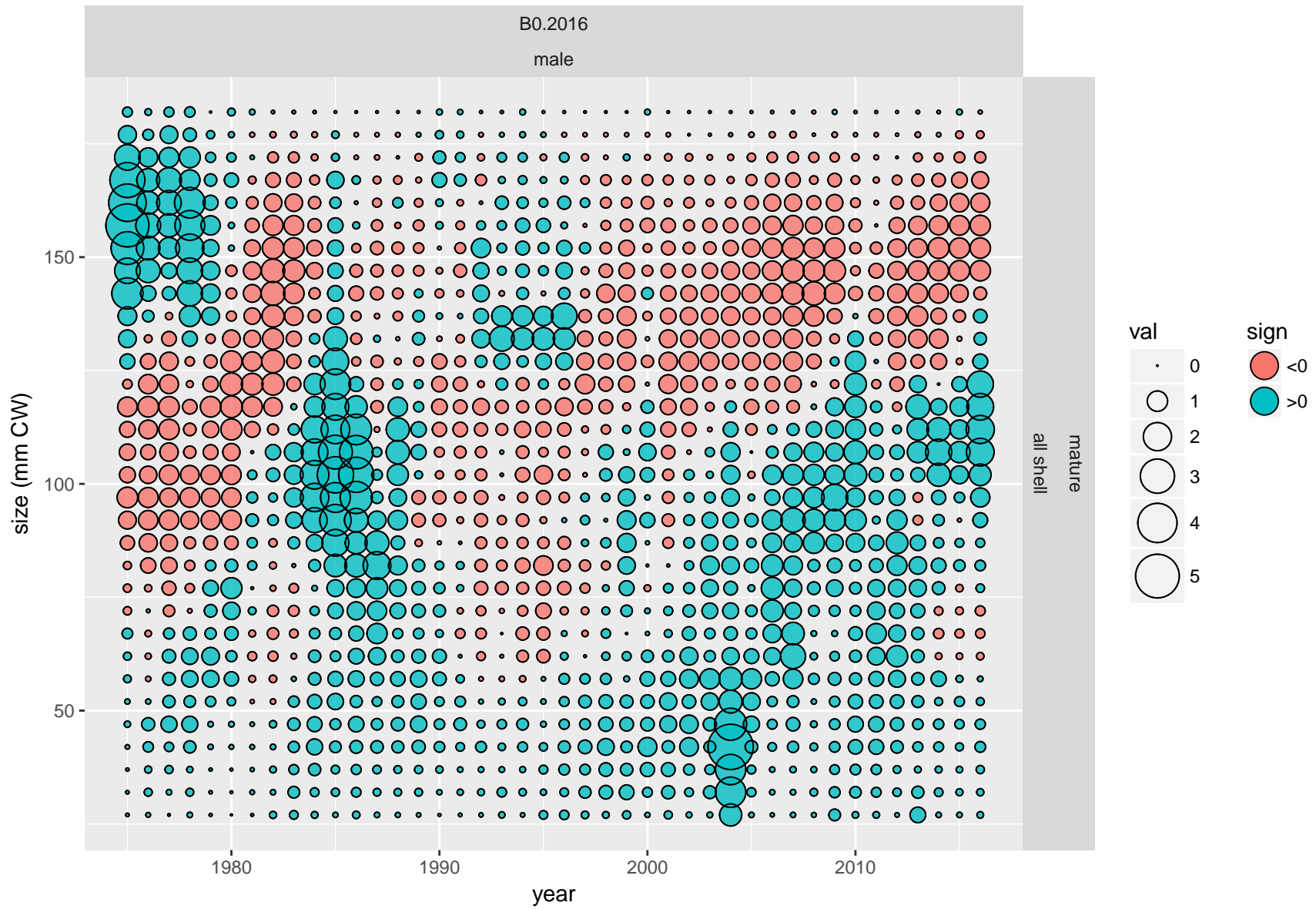


Figure 46: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016.

# NMFS trawl survey

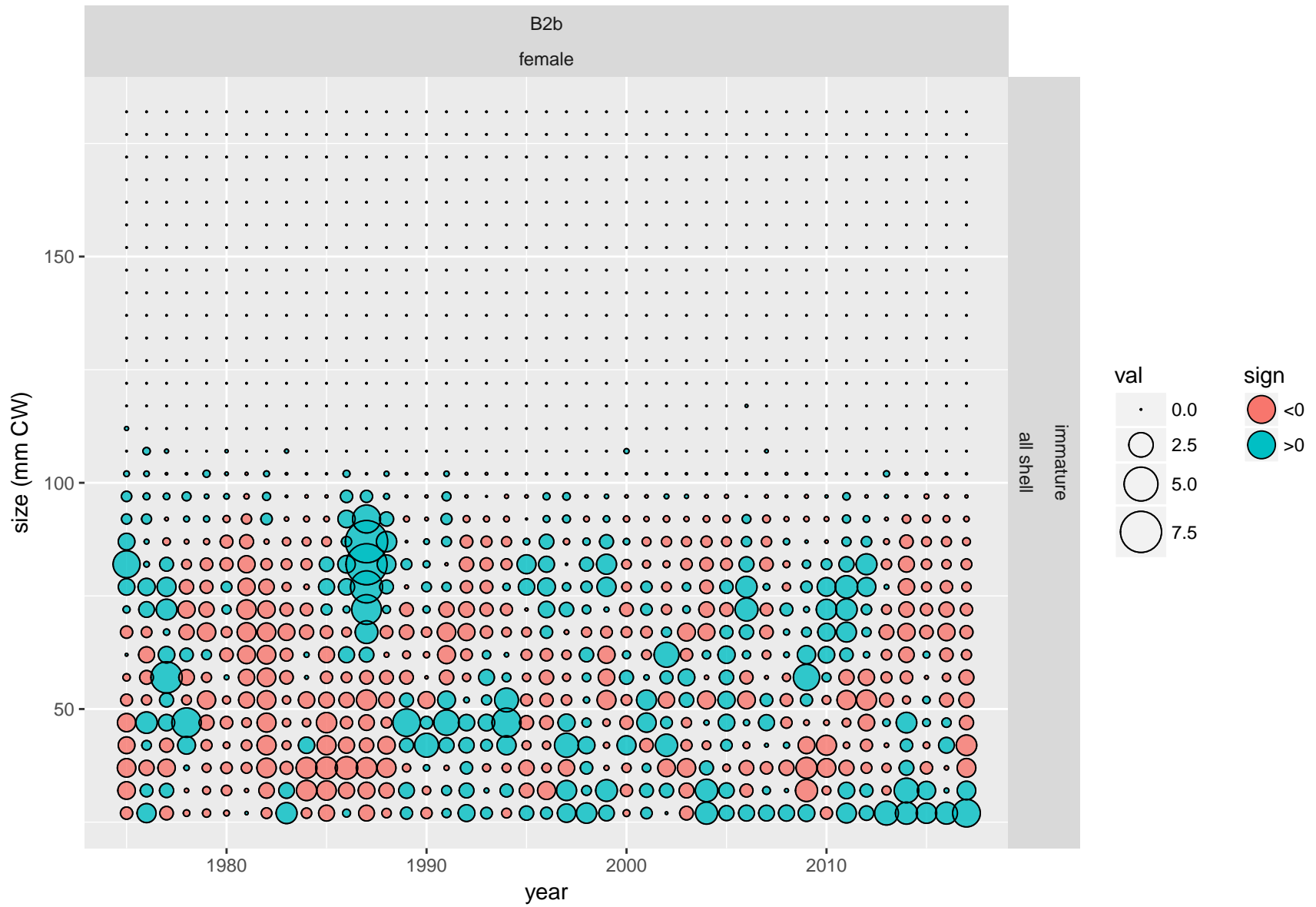


Figure 47: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B2b.

# NMFS trawl survey

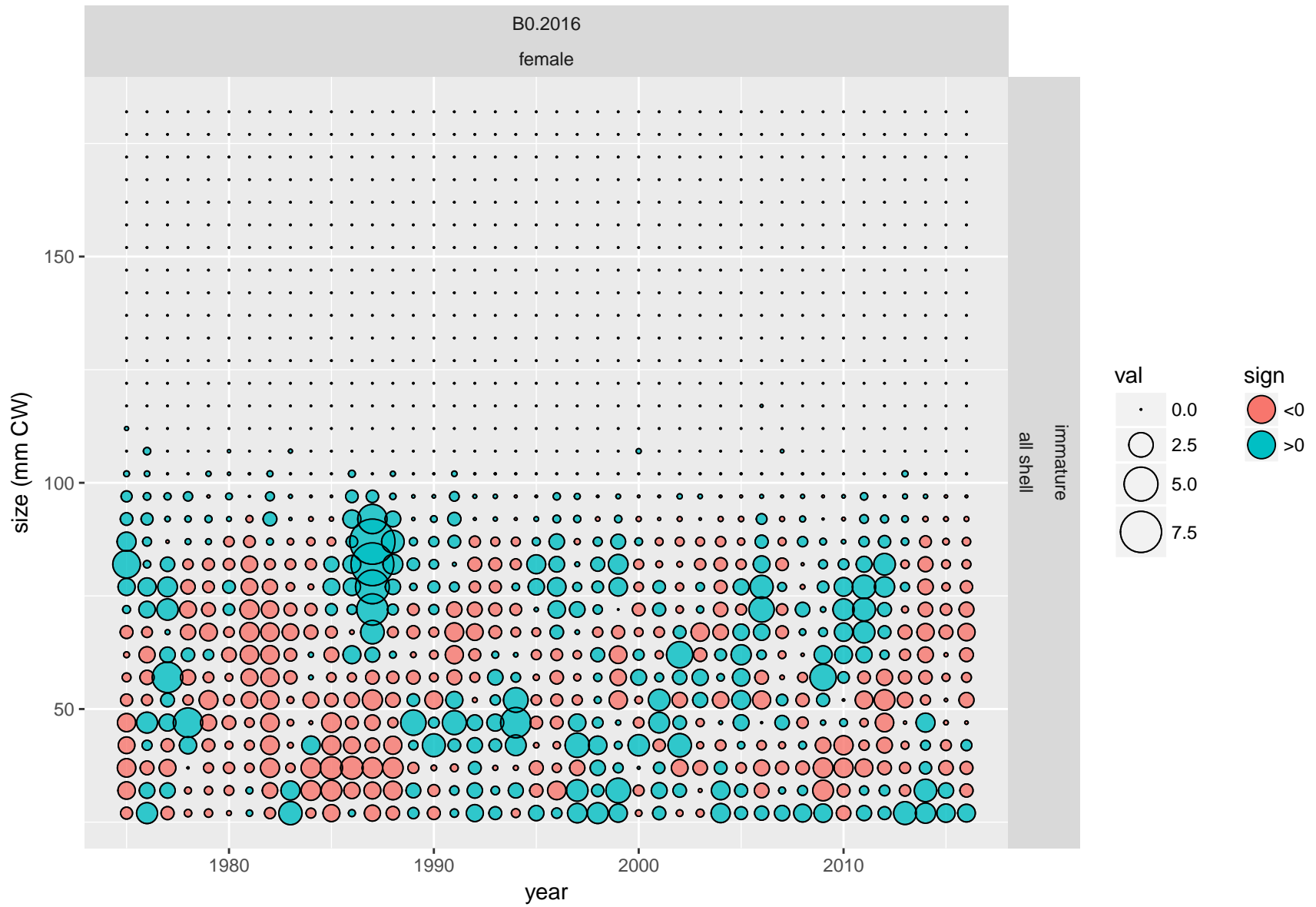


Figure 48: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016.

# NMFS trawl survey

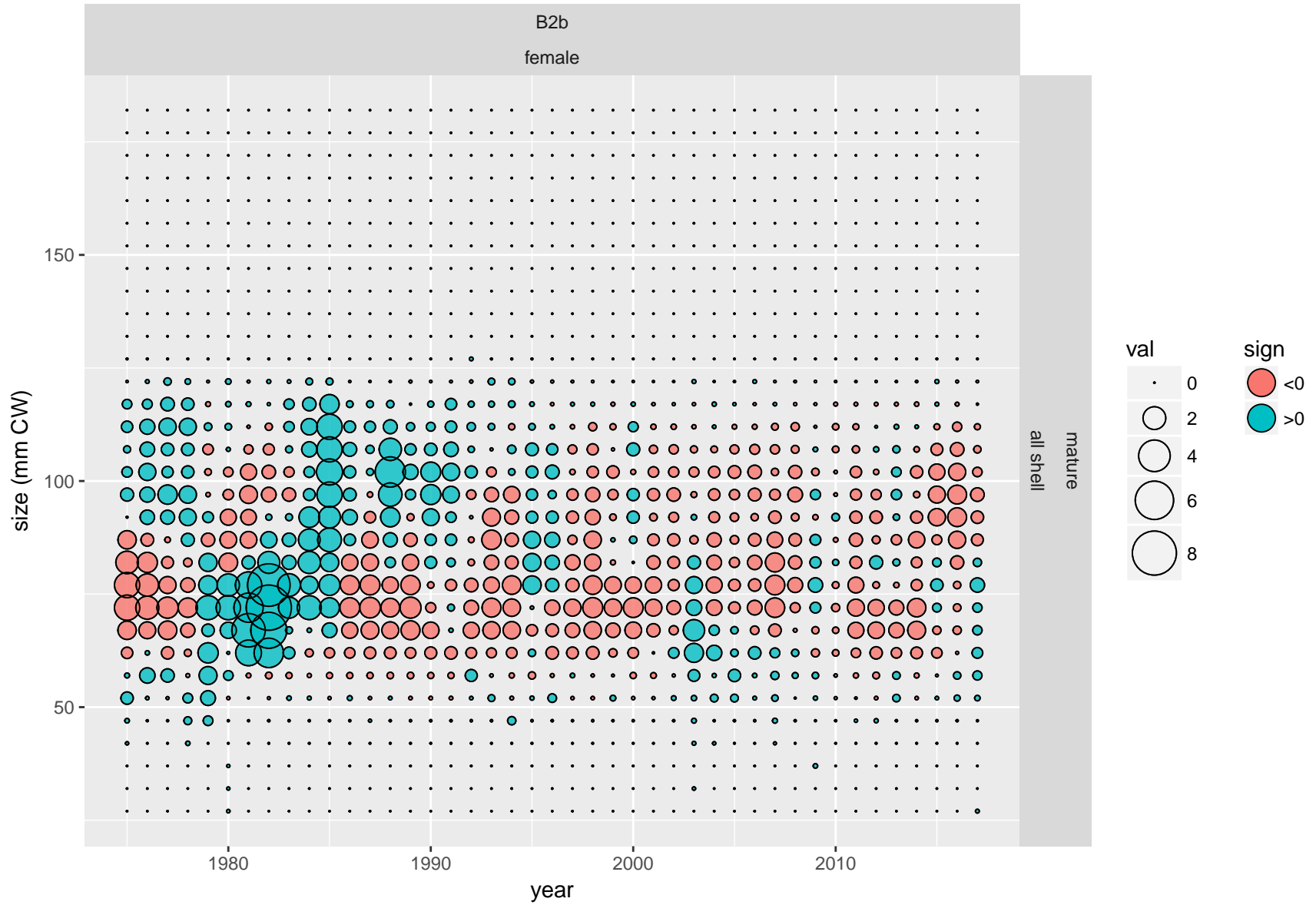


Figure 49: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B2b.

# NMFS trawl survey

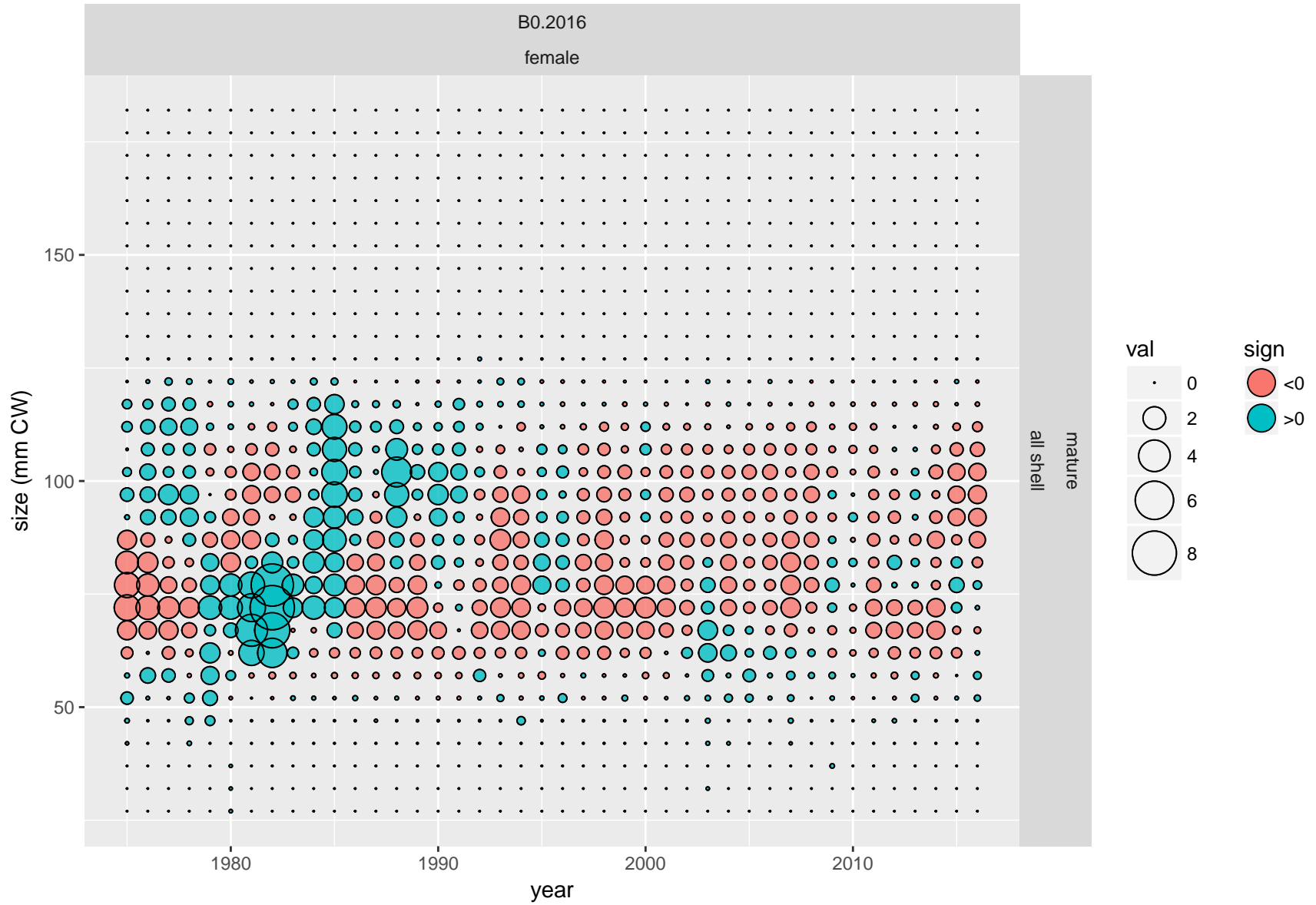


Figure 50: Pearson's residuals for proportions-at-size from the NMFS trawl survey for scenario B0.2016.

# Effective Ns for survey size compositions

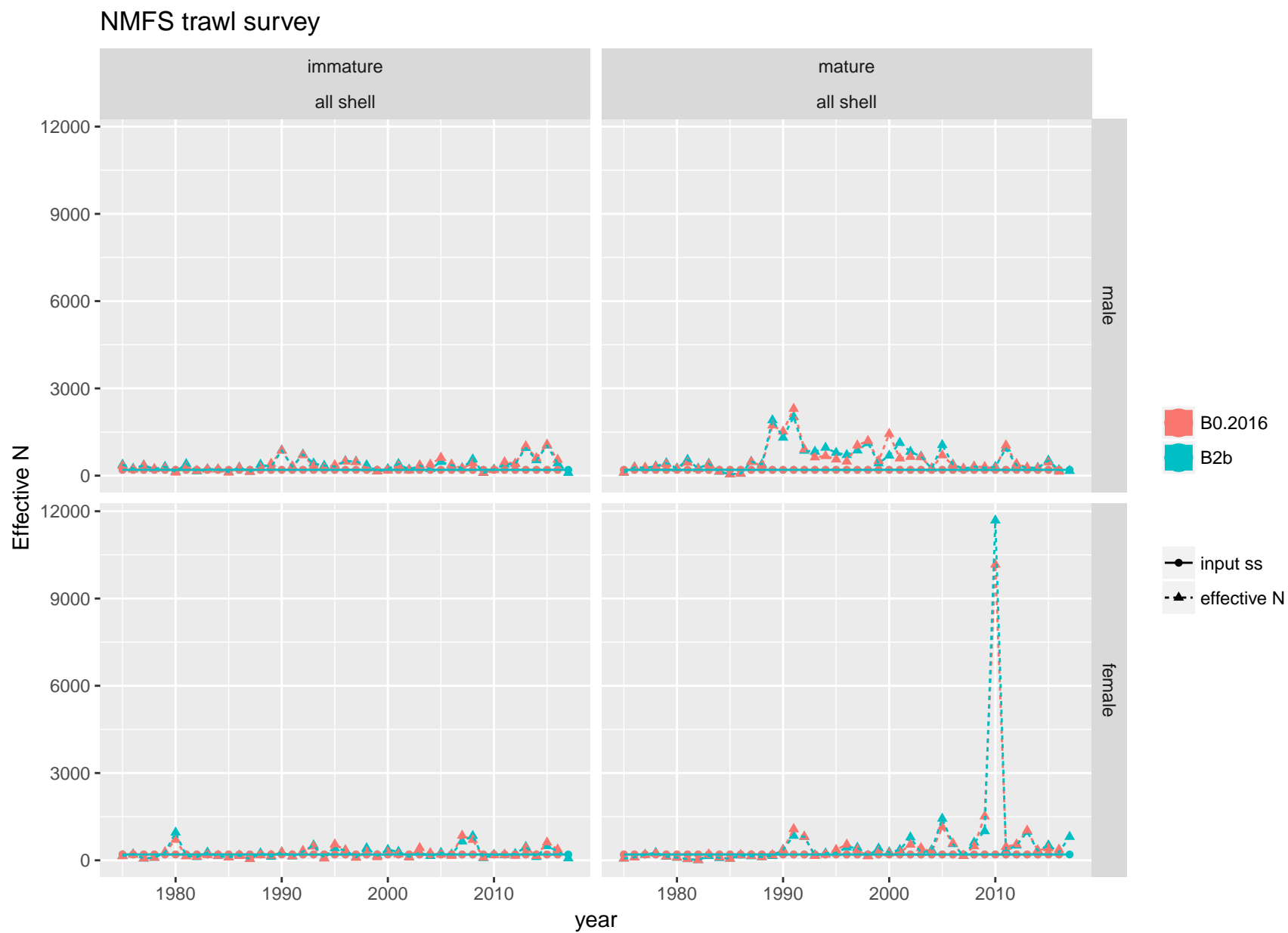


Figure 51: Input and effective sample sizes from retained catch size compositions from the NMFS trawl survey.



# Fishery retained catch size composition residuals

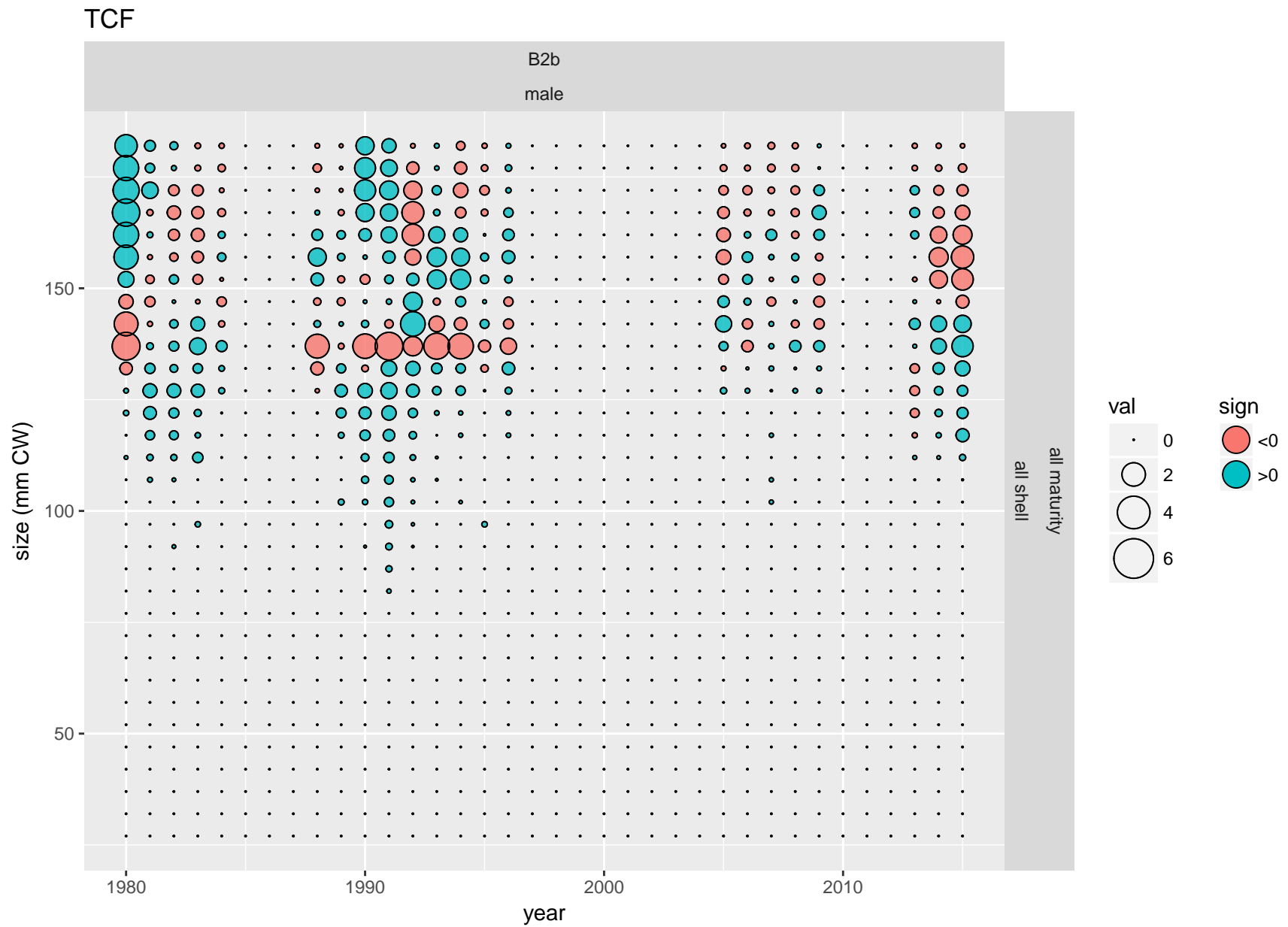


Figure 52: Pearson's residuals for proportions-at-size from the TCF for scenario B2b.

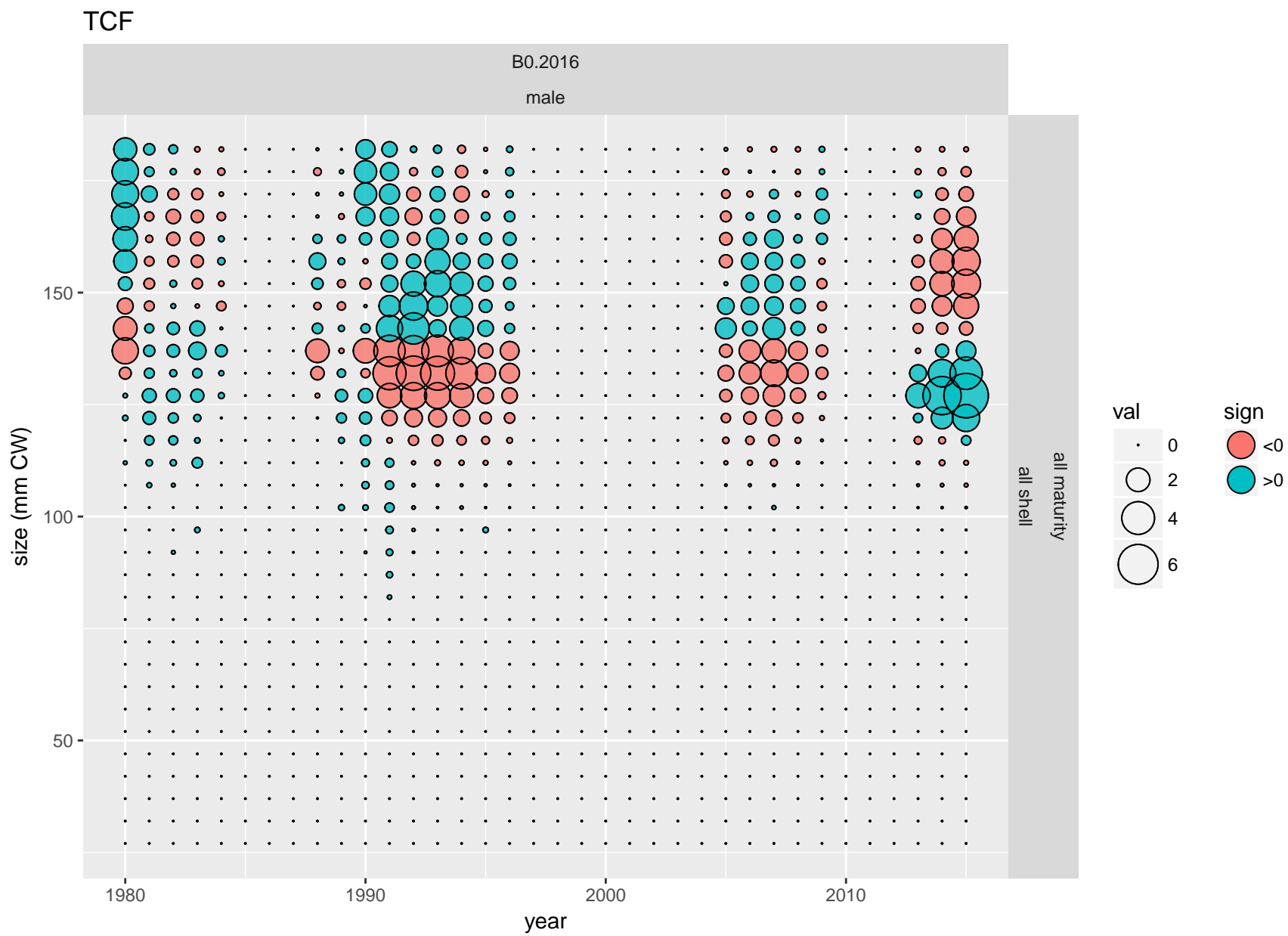


Figure 53: Pearson's residuals for proportions-at-size from the TCF for scenario B0.2016.

# Effective Ns for retained catch size compositions

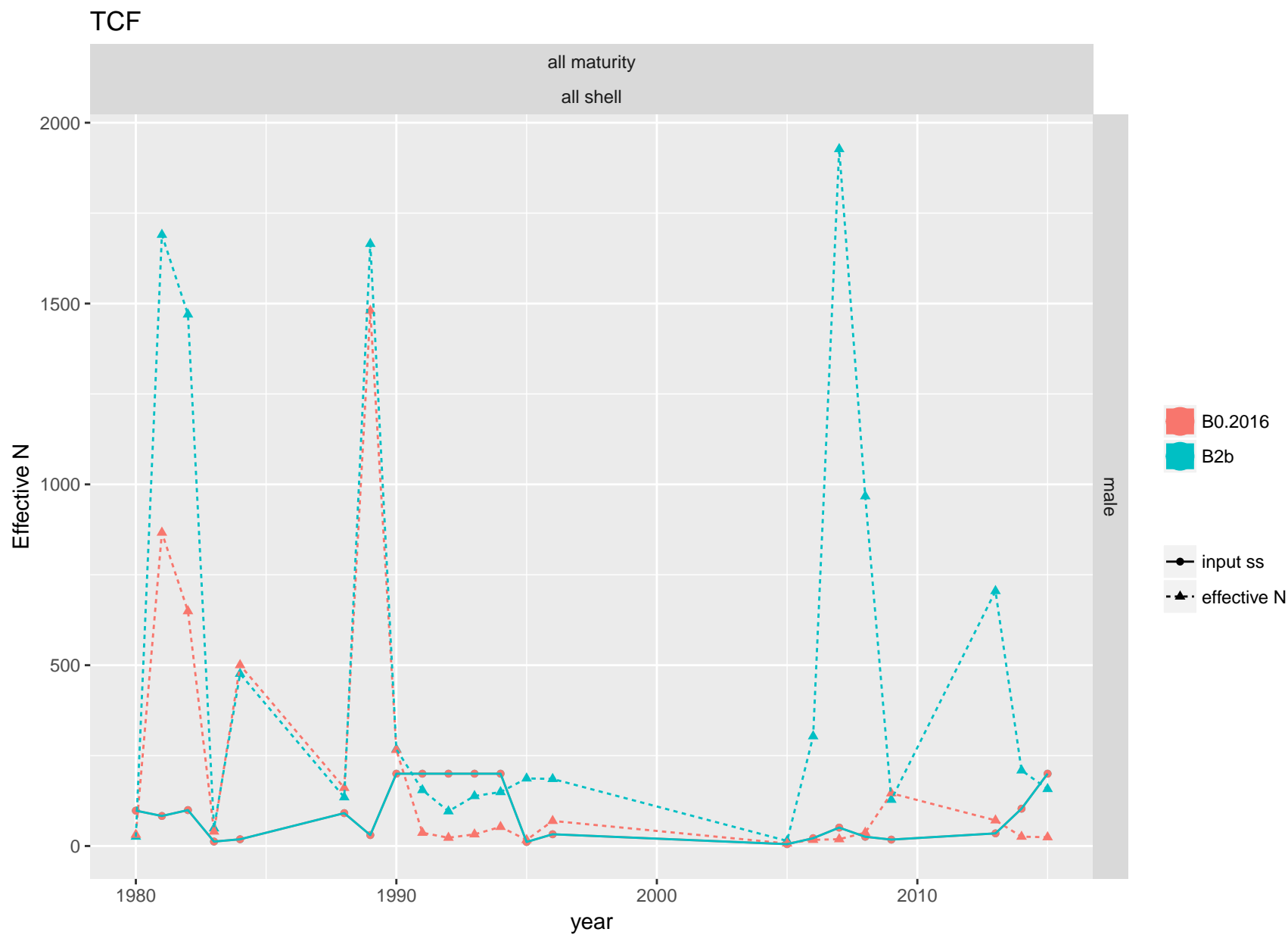


Figure 54: Input and effective sample sizes from retained catch size compositions from the TCF fishery.

# Fishery total catch size composition residuals

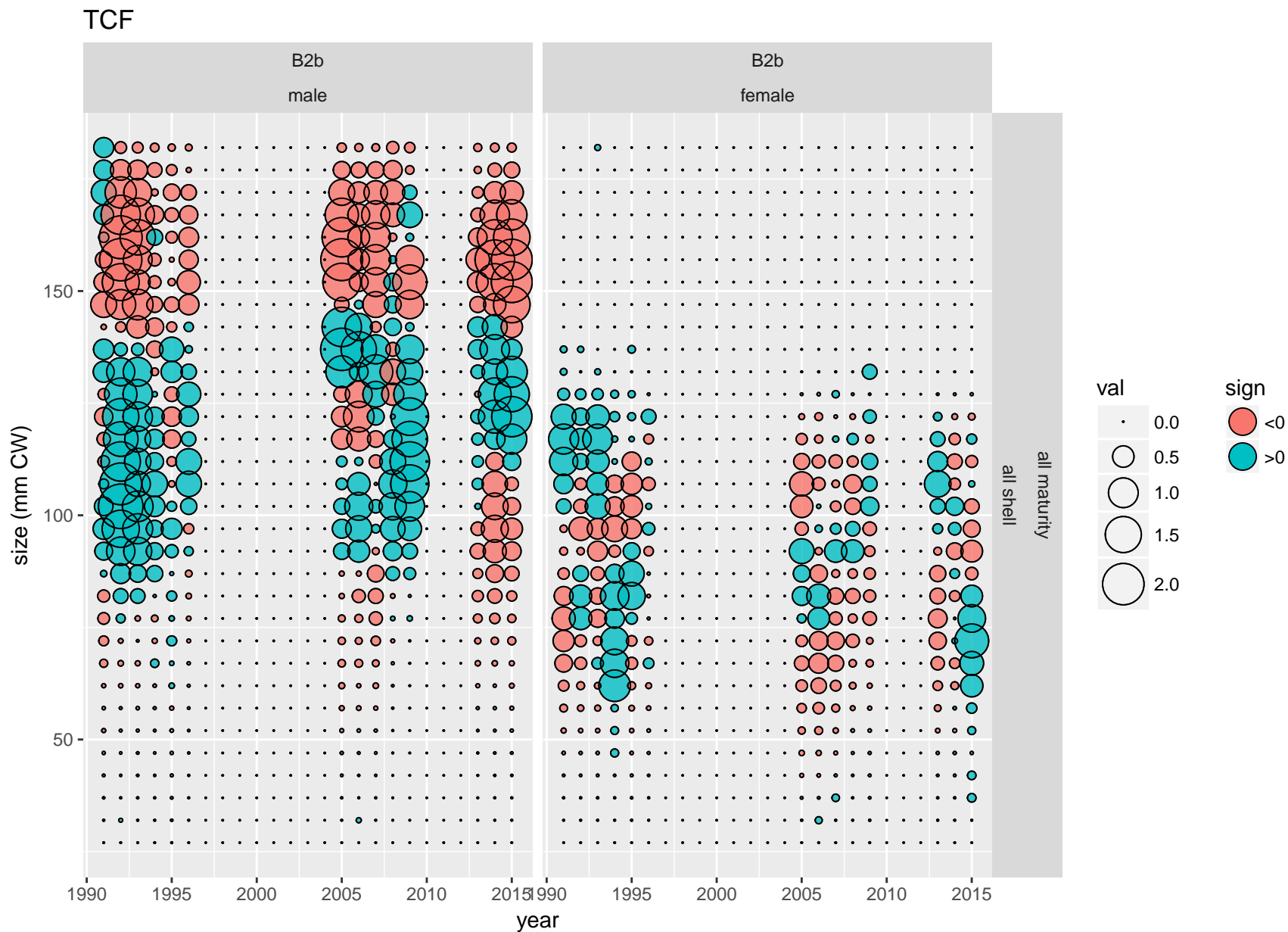


Figure 55: Pearson's residuals for proportions-at-size from the TCF for scenario B2b.

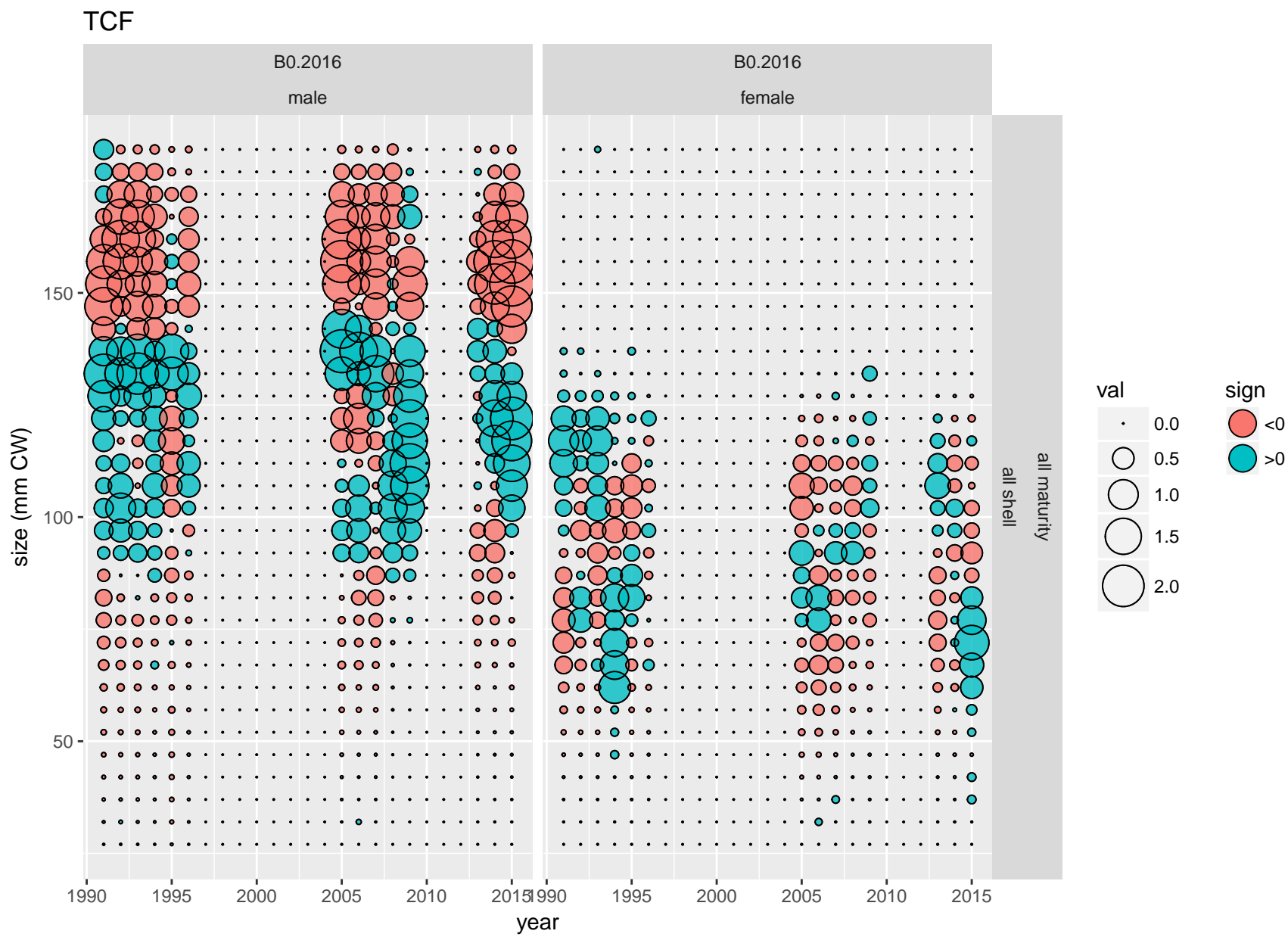


Figure 56: Pearson's residuals for proportions-at-size from the TCF for scenario B0.2016.



Figure 57: Pearson's residuals for proportions-at-size from the SCF for scenario B2b.

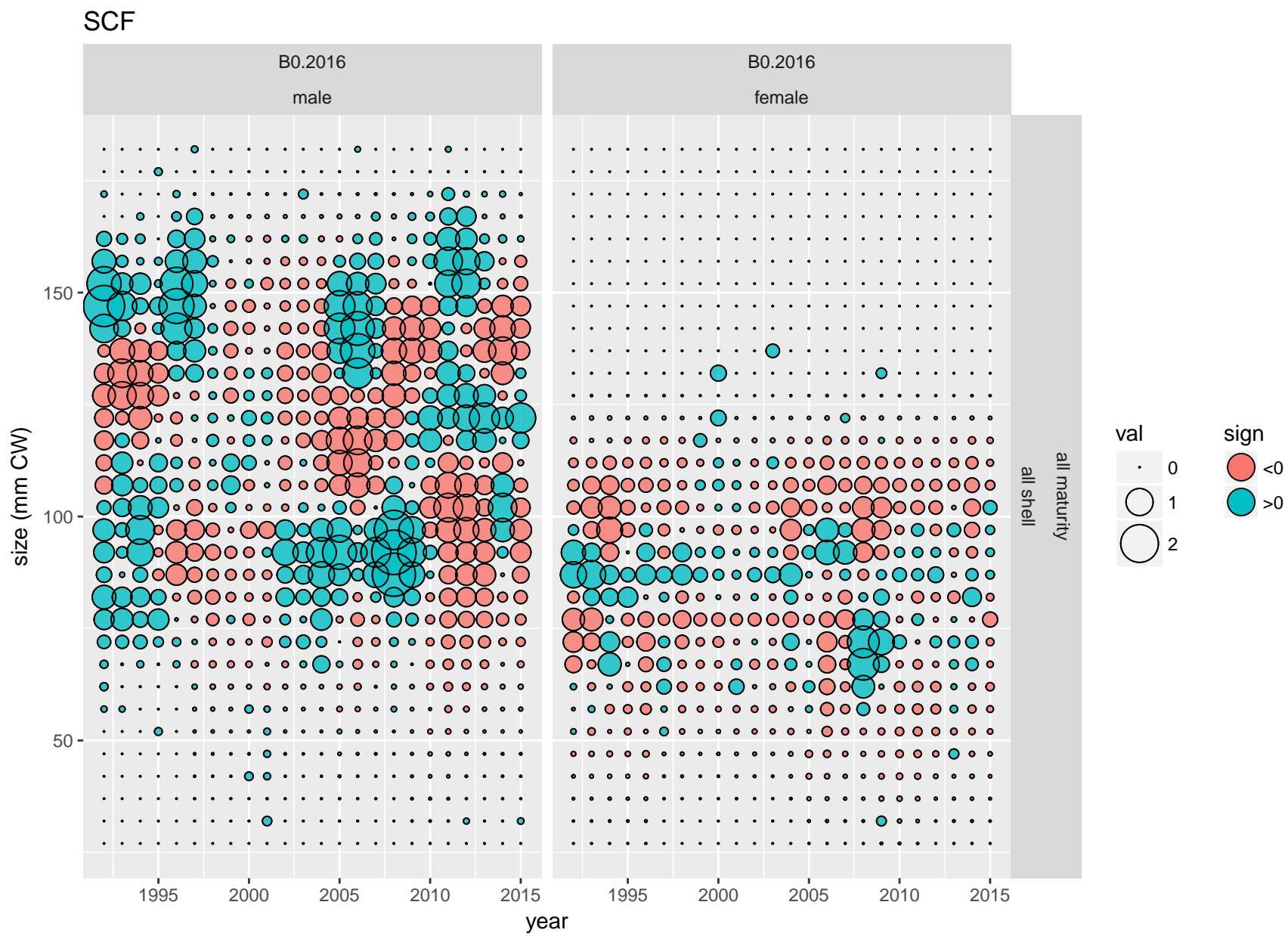


Figure 58: Pearson's residuals for proportions-at-size from the SCF for scenario B0.2016.

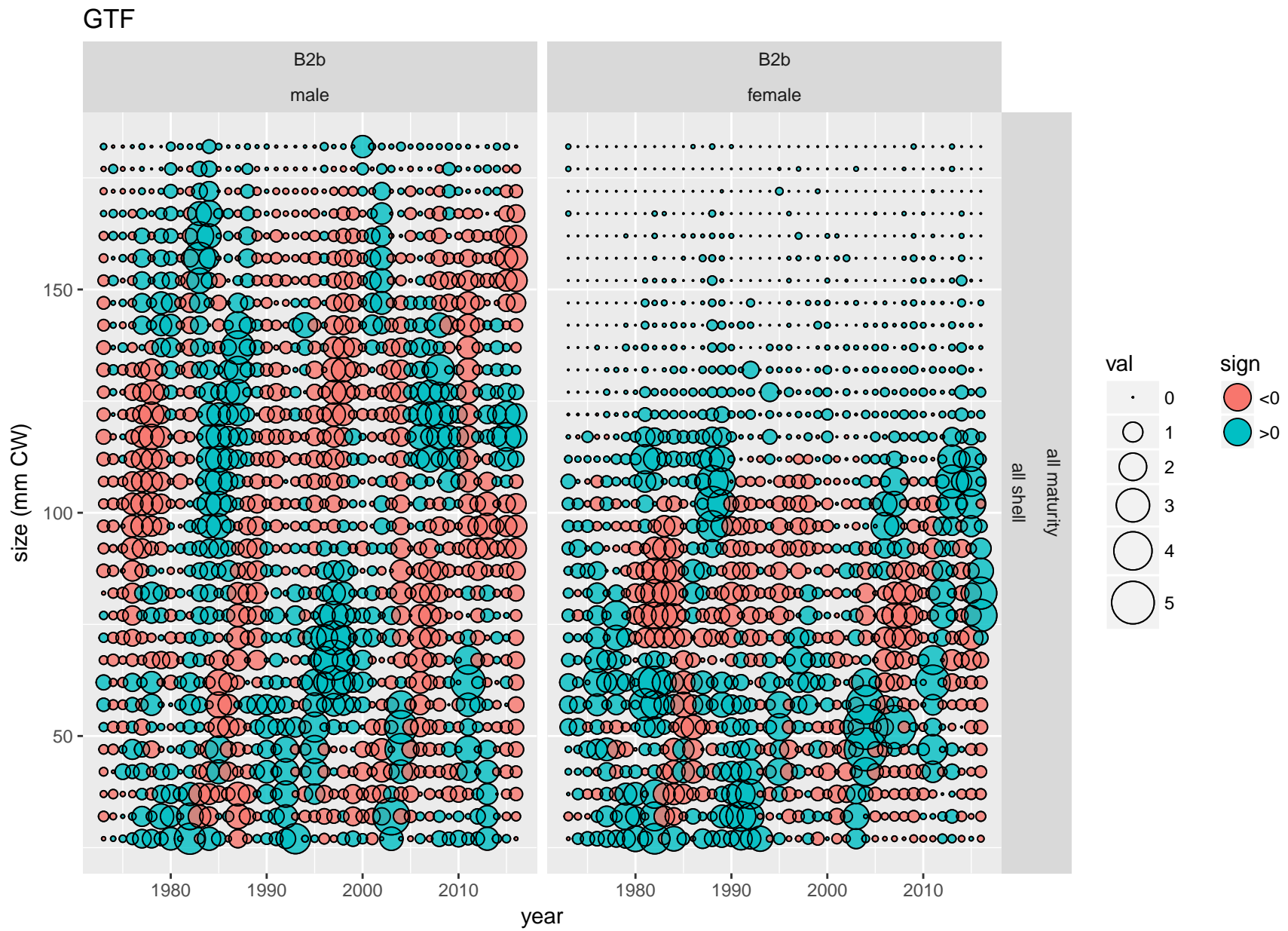


Figure 59: Pearson's residuals for proportions-at-size from the GTF for scenario B2b.



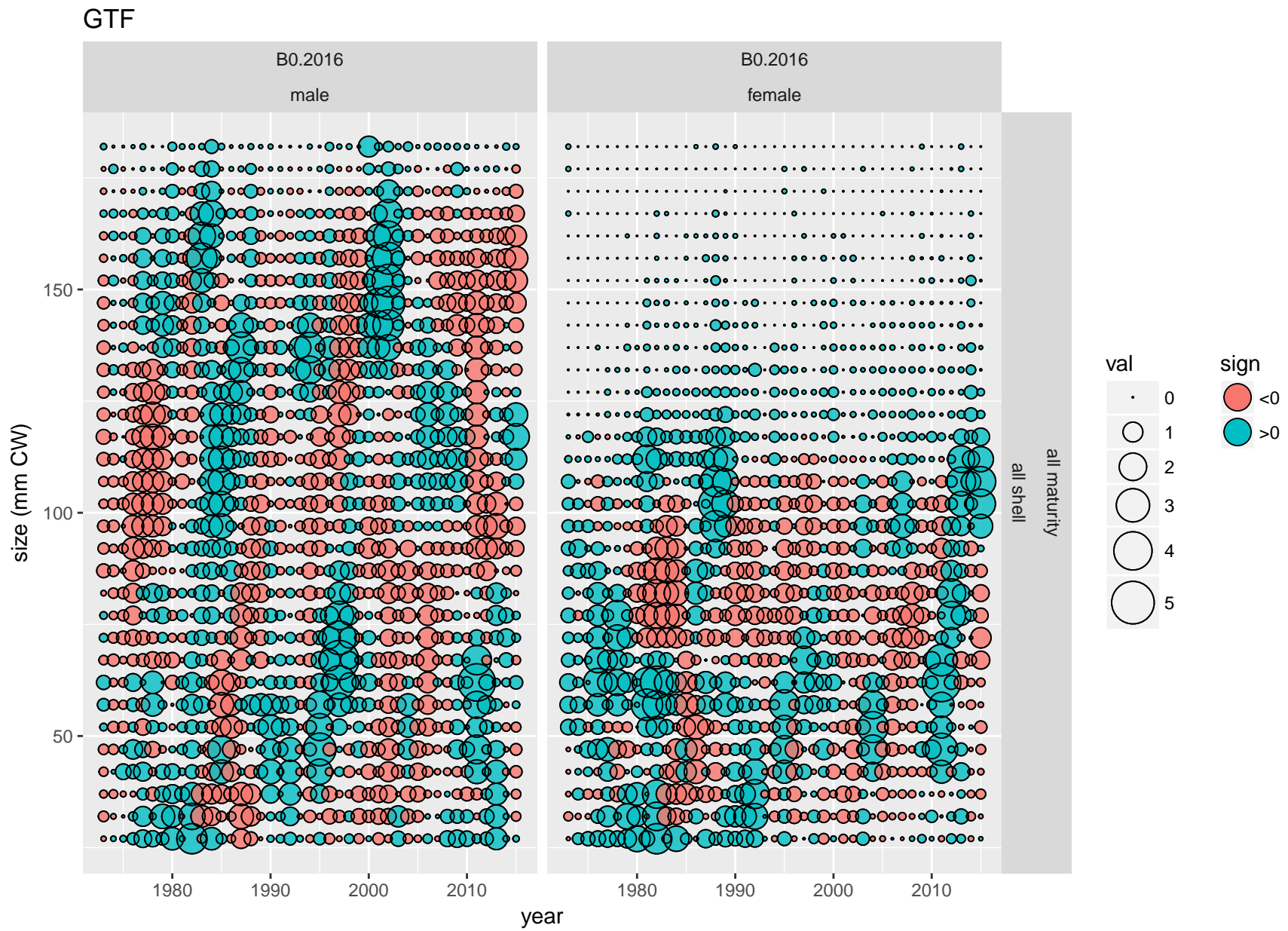


Figure 60: Pearson's residuals for proportions-at-size from the GTF for scenario B0.2016.

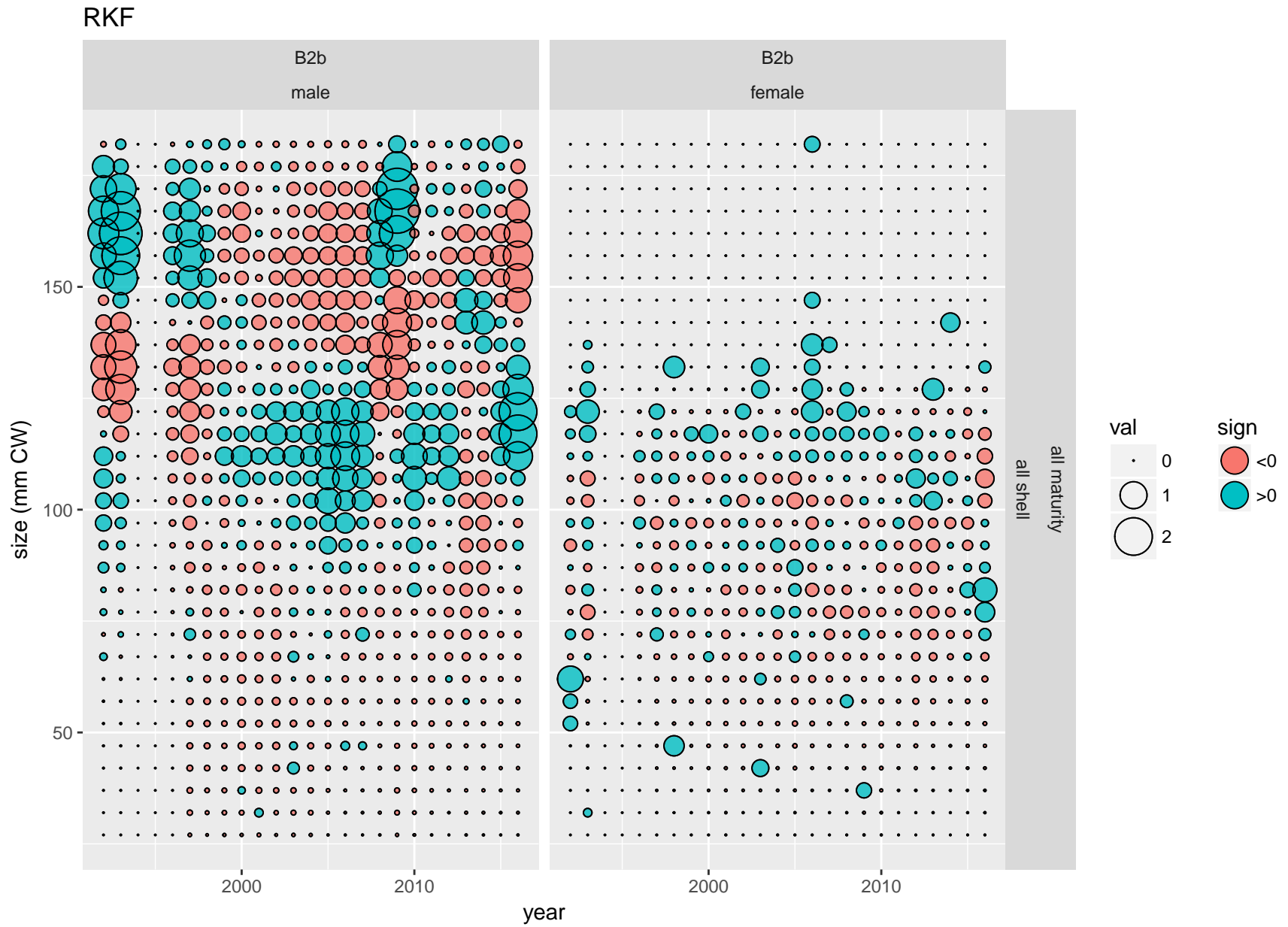


Figure 61: Pearson's residuals for proportions-at-size from the RKF for scenario B2b.



Figure 62: Pearson's residuals for proportions-at-size from the RKF for scenario B0.2016.

### Effective Ns for total catch size compositions

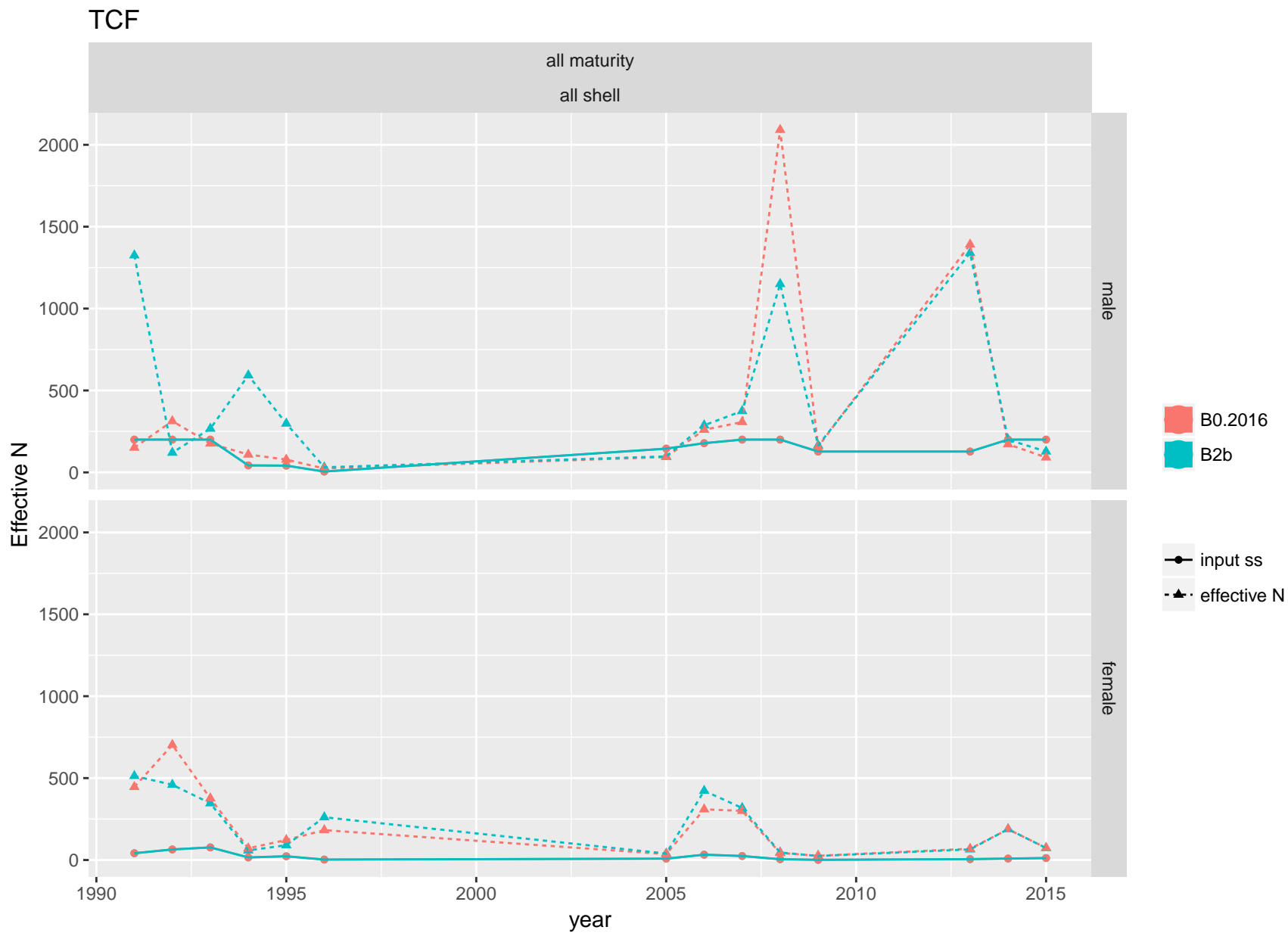


Figure 63: Input and effective sample sizes from total catch size compositions from the TCF fishery.

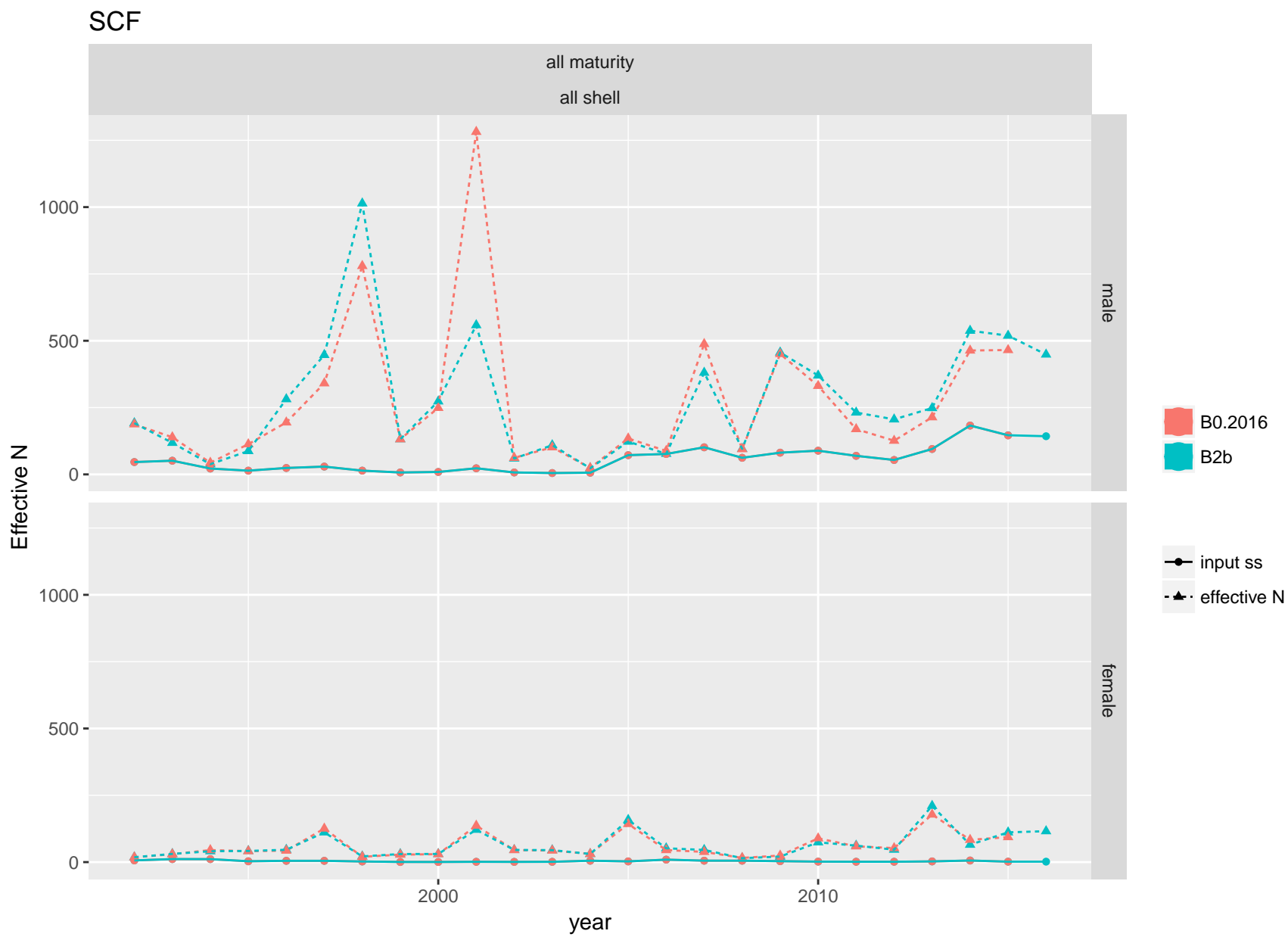


Figure 64: Input and effective sample sizes from total catch size compositions from the SCF fishery.

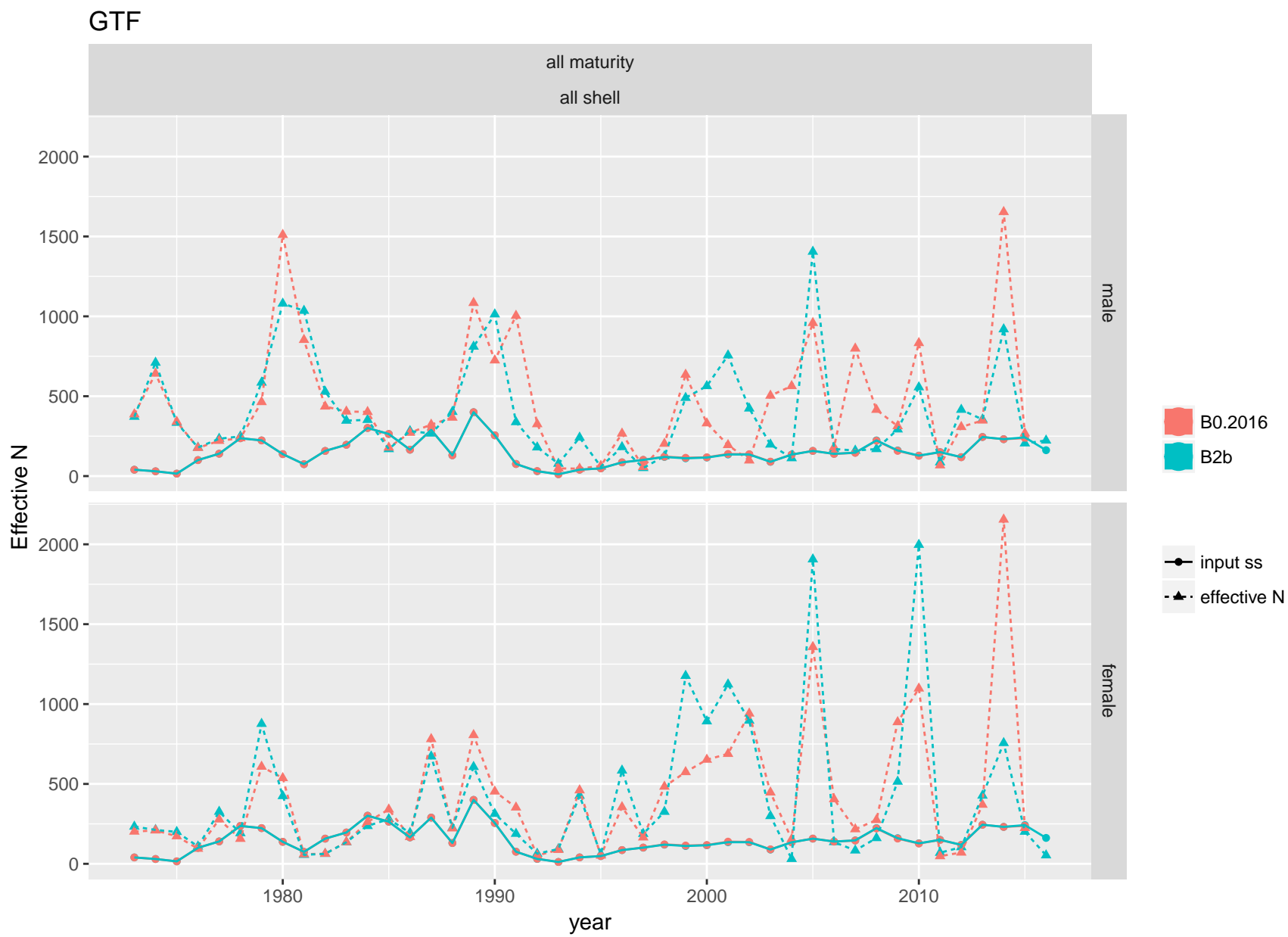


Figure 65: Input and effective sample sizes from total catch size compositions from the GTF fishery.

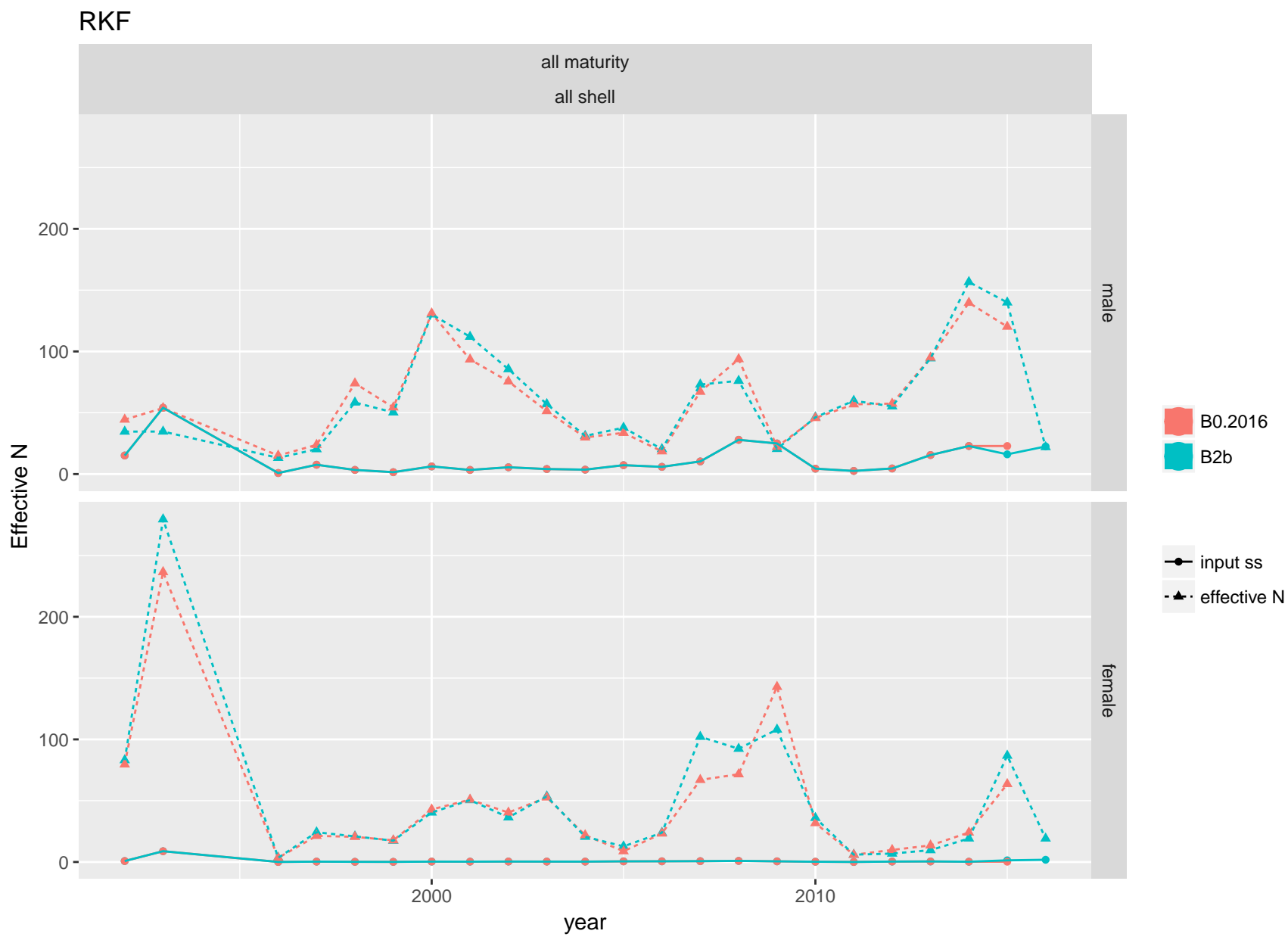


Figure 66: Input and effective sample sizes from total catch size compositions from the RKF fishery.

# Survey characteristics

## Survey catchability

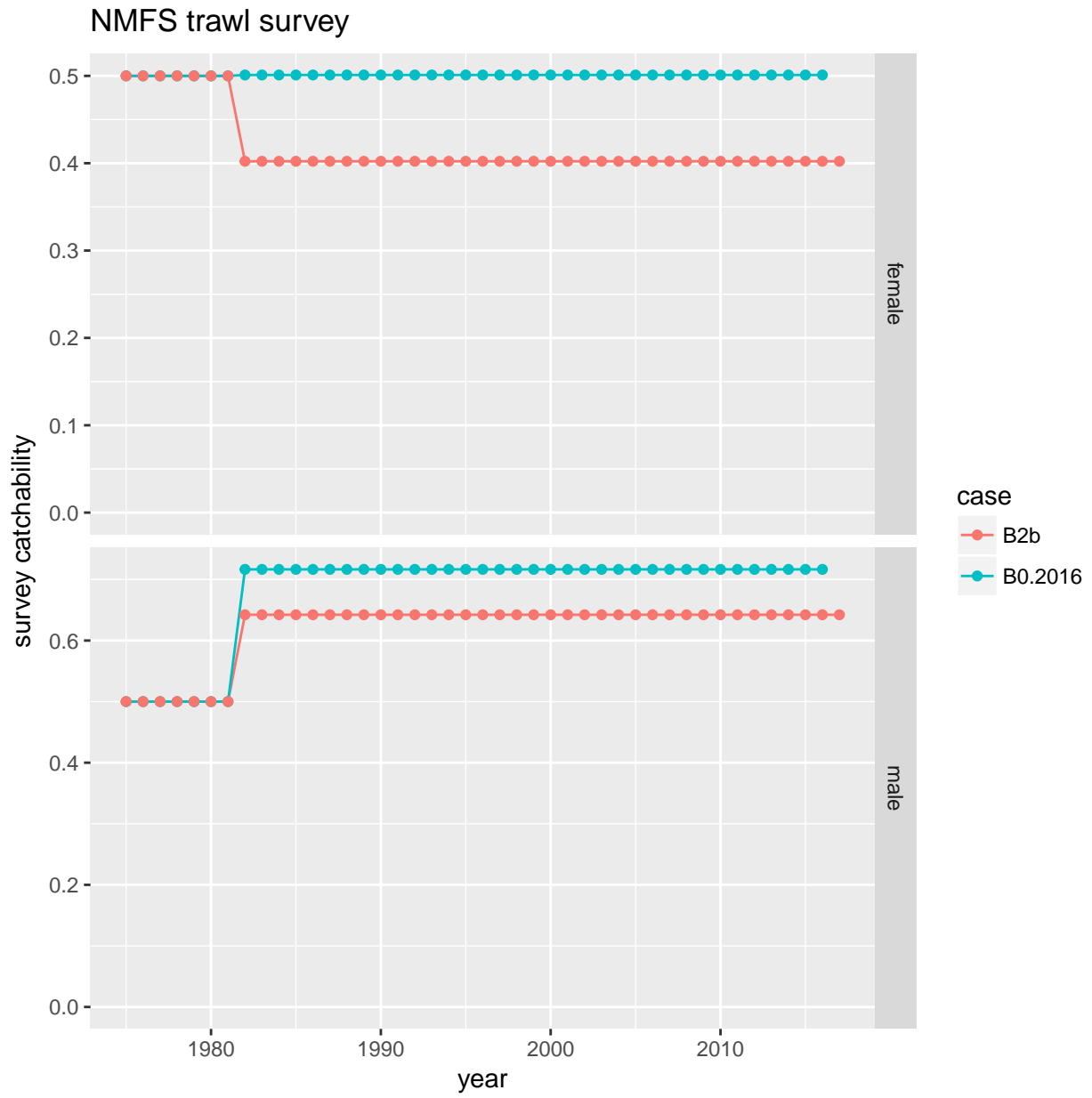


Figure 67: Survey catchabilities for NMFS trawl survey.



# Survey selectivity functions

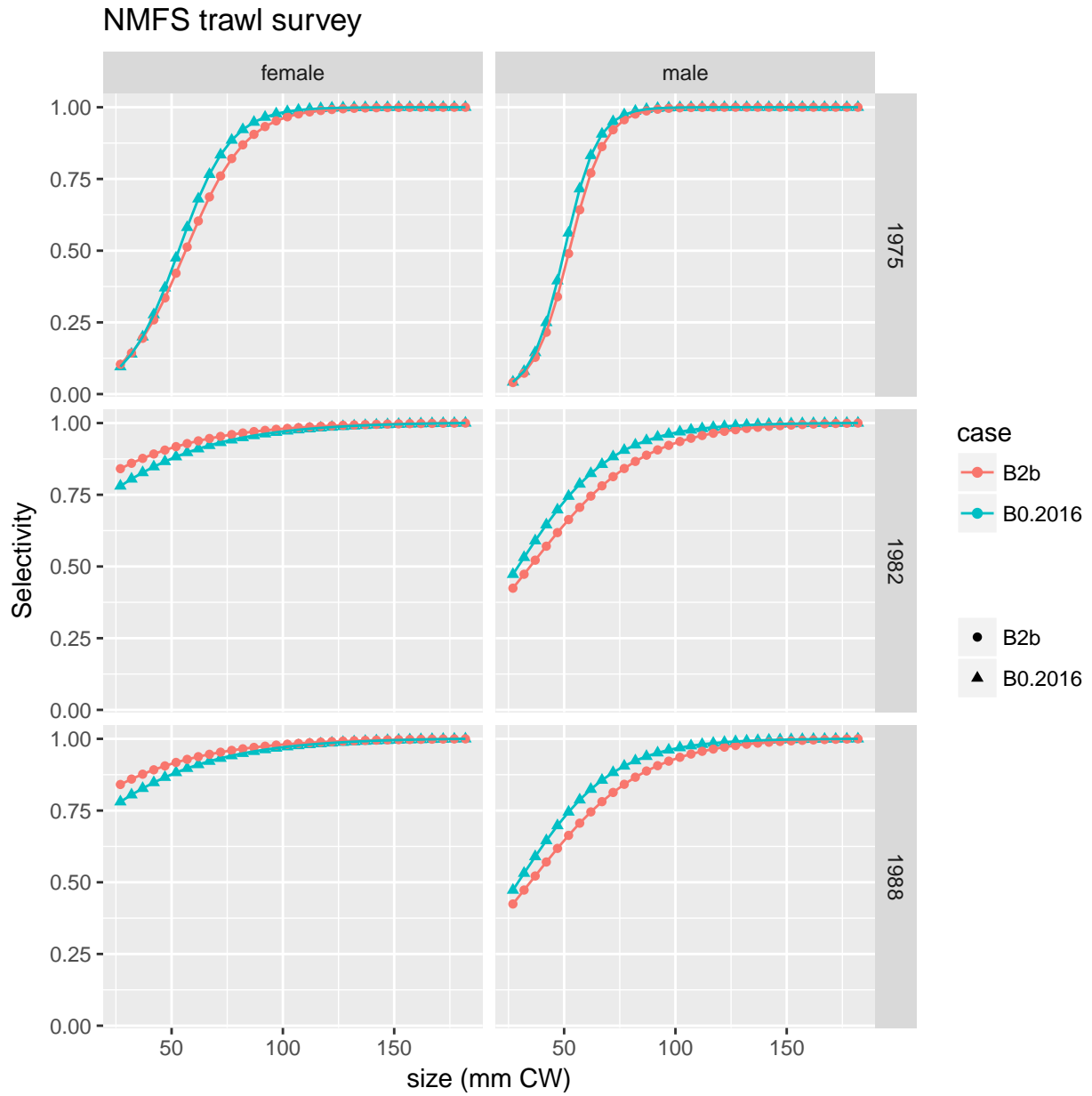


Figure 68: NMFS trawl survey.1

# Fisheries

## Fishery catchability

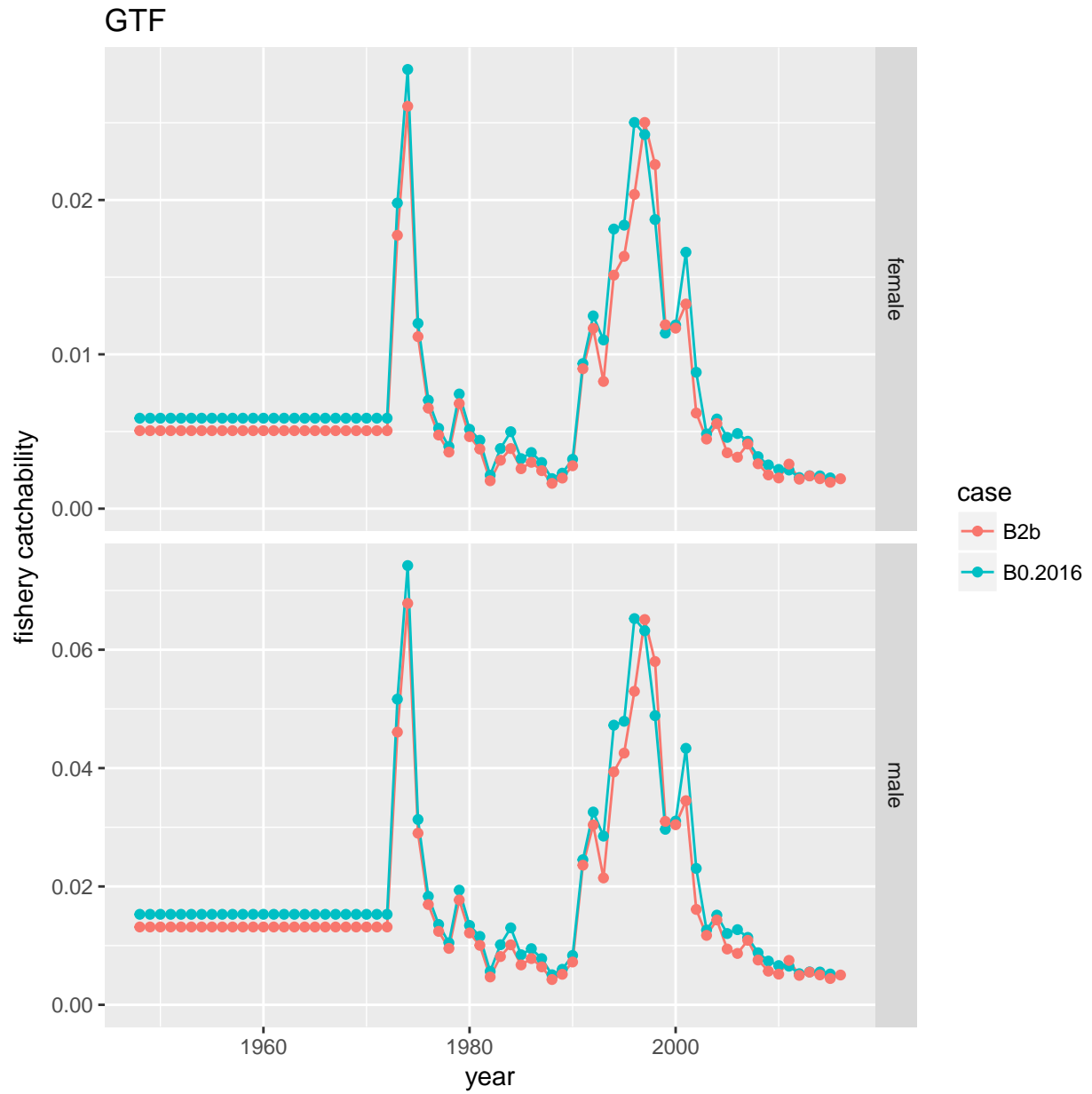


Figure 69: Fishery catchabilities for GTF.

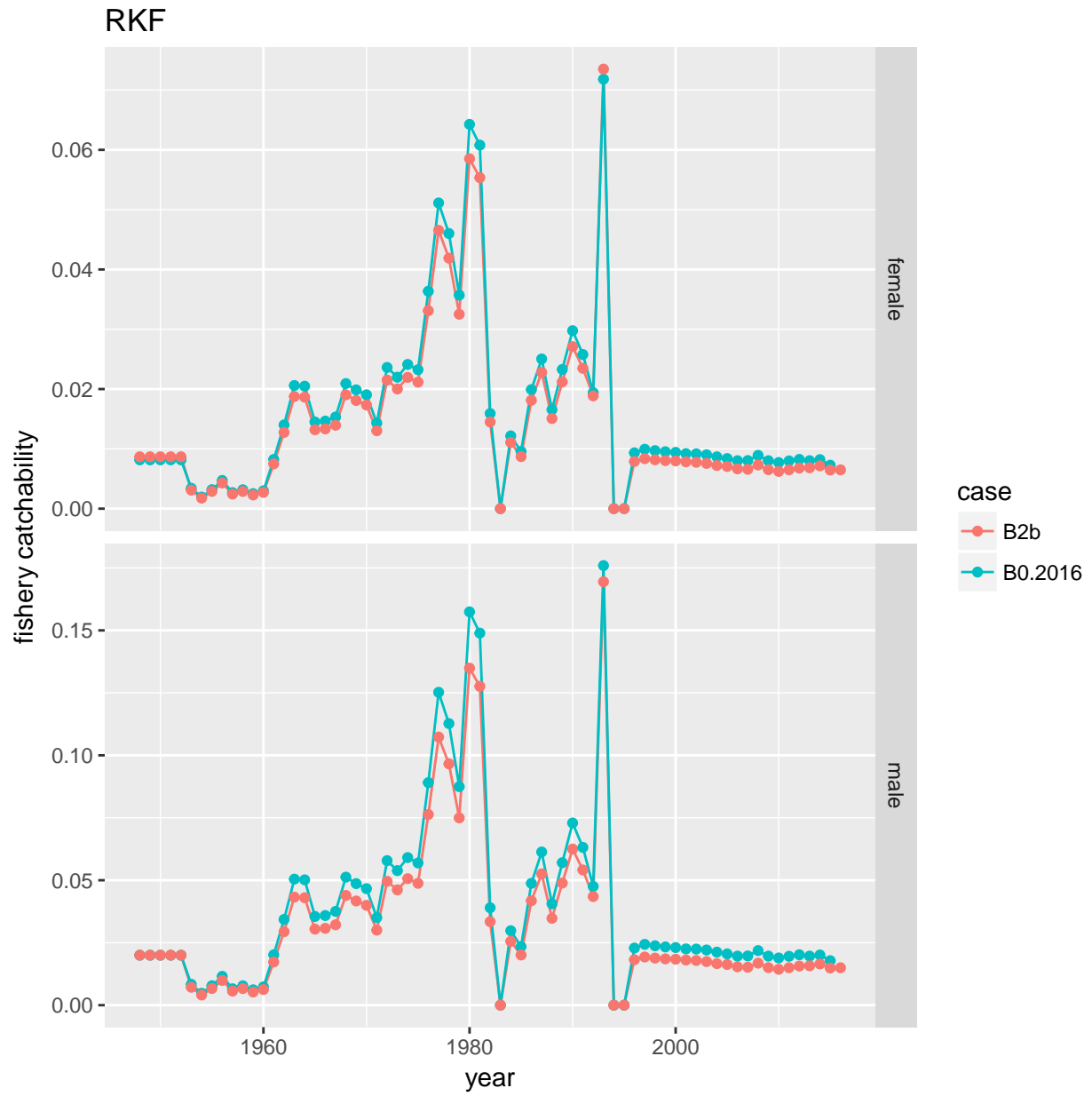


Figure 70: Fishery catchabilities for RKF.

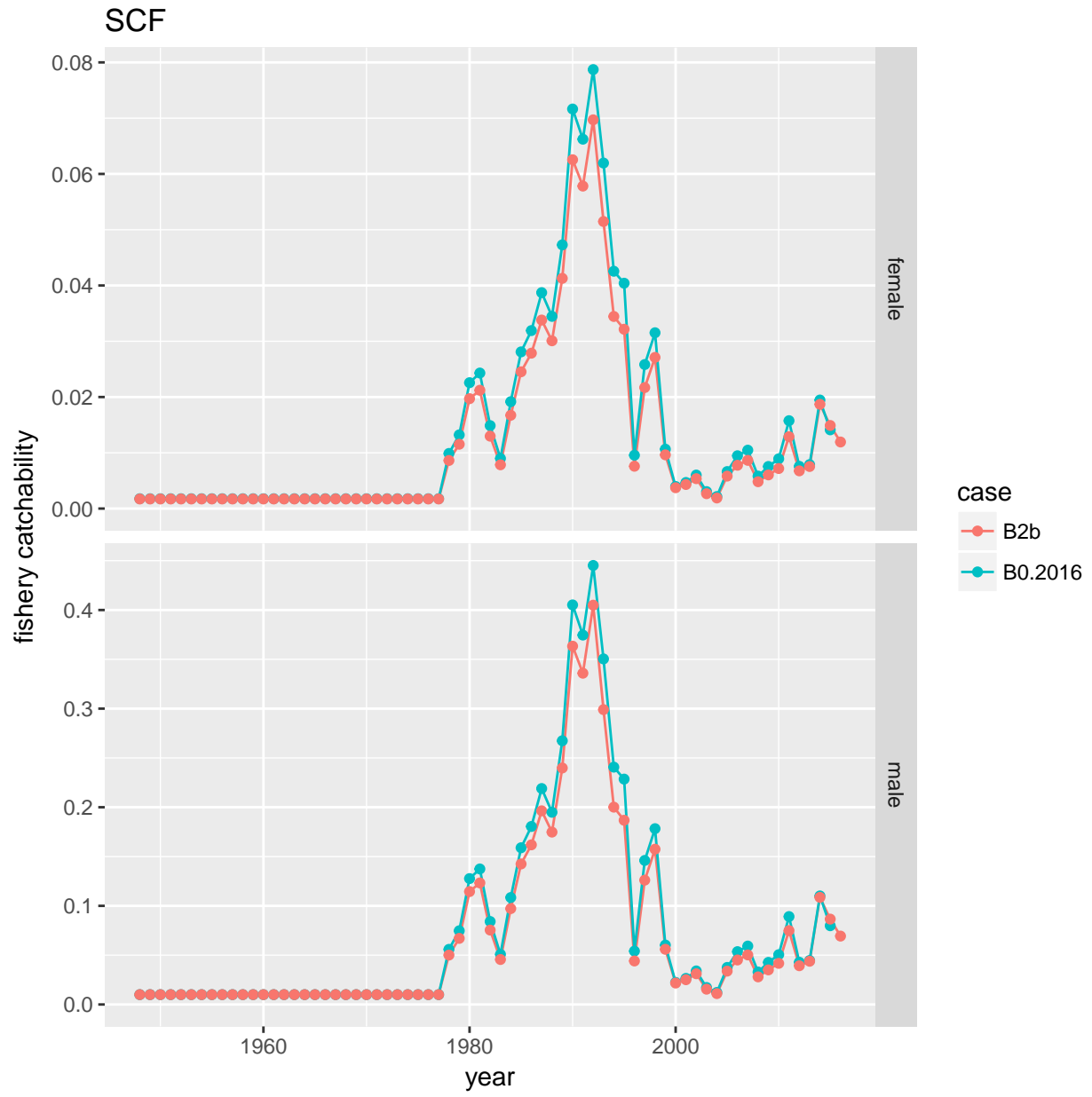


Figure 71: Fishery catchabilities for SCF.

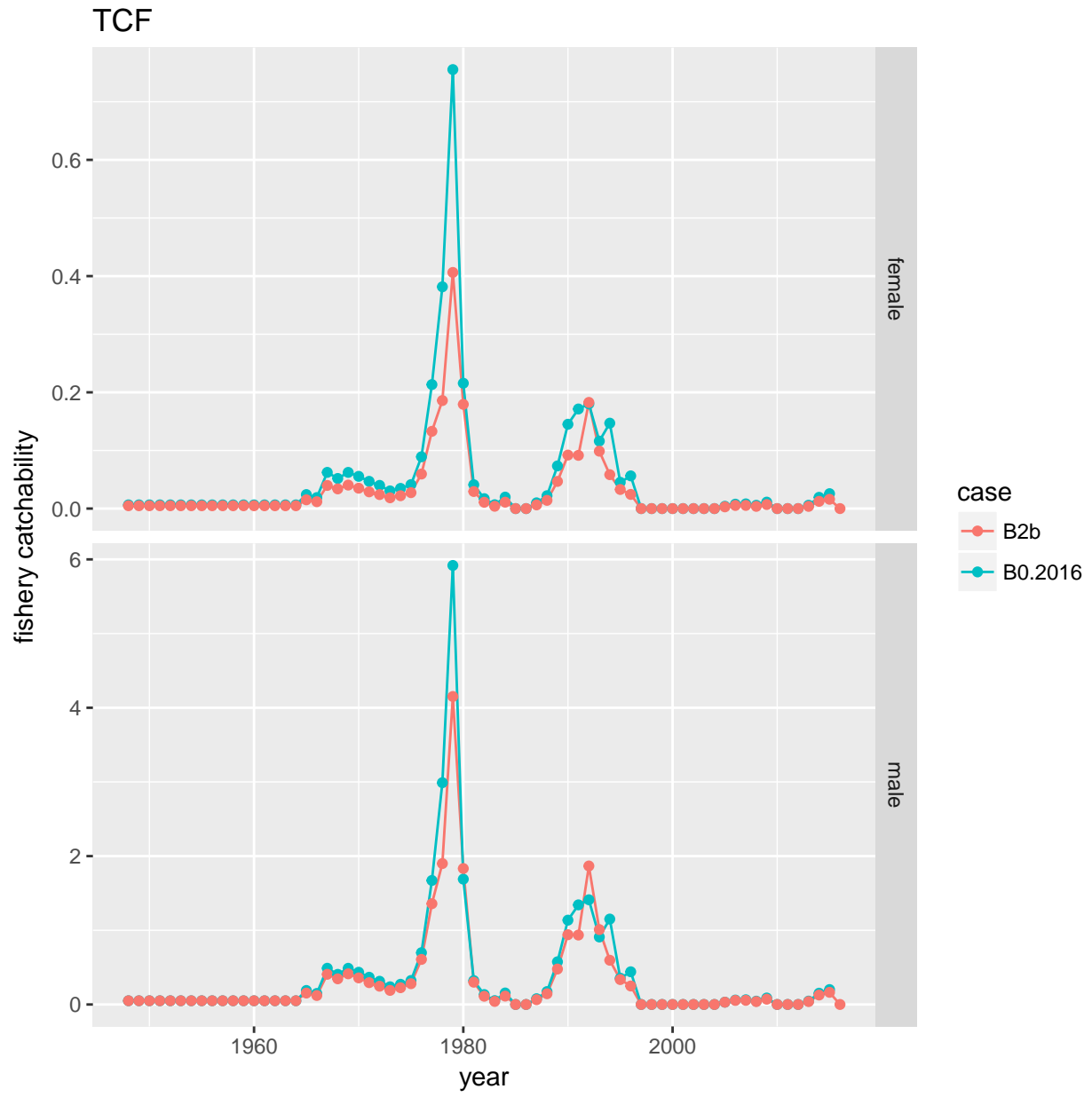


Figure 72: Fishery catchabilities for TCF.

# Total selectivity functions

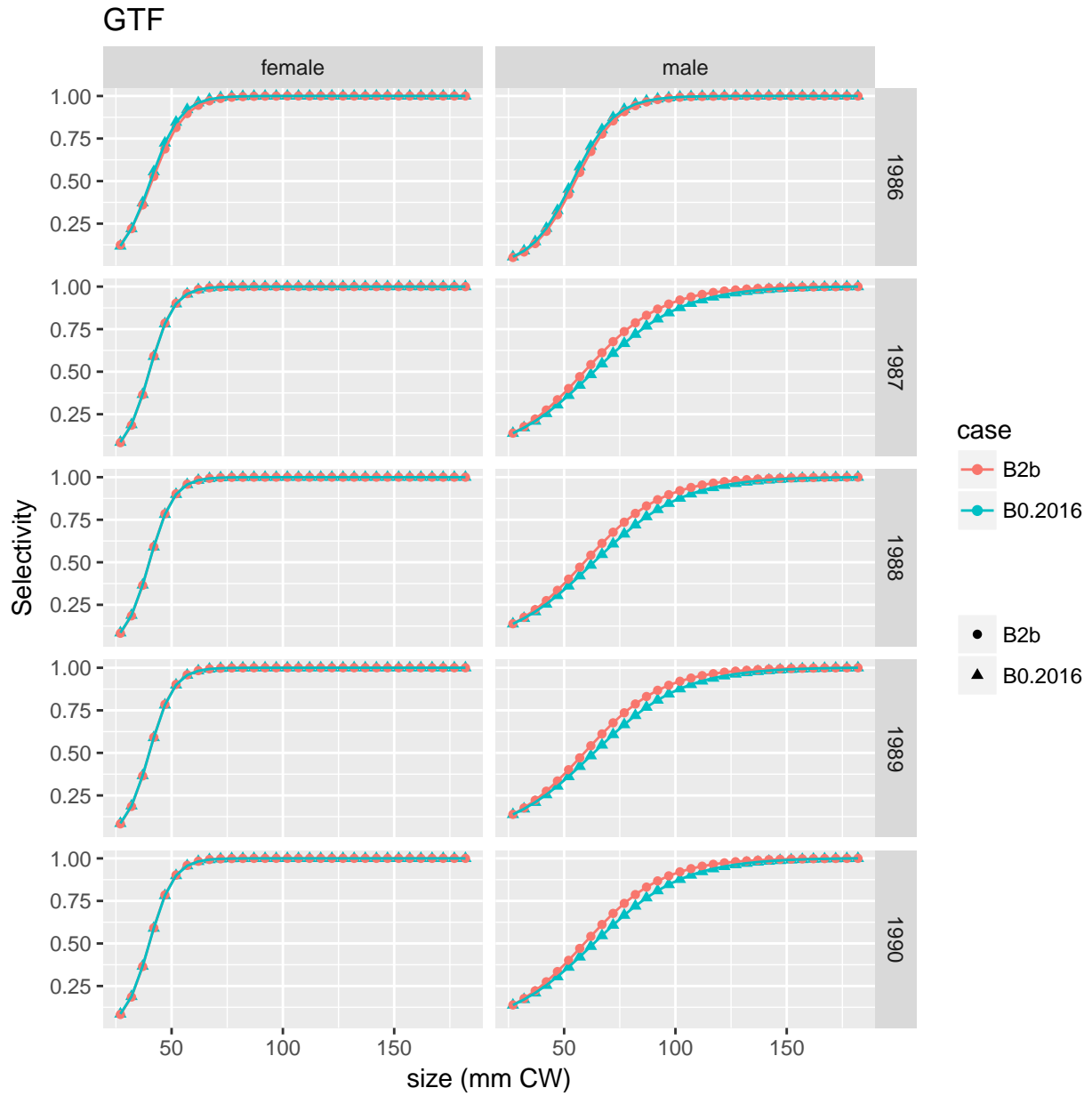


Figure 73: Selectivity functions for GTF(1 of 6).

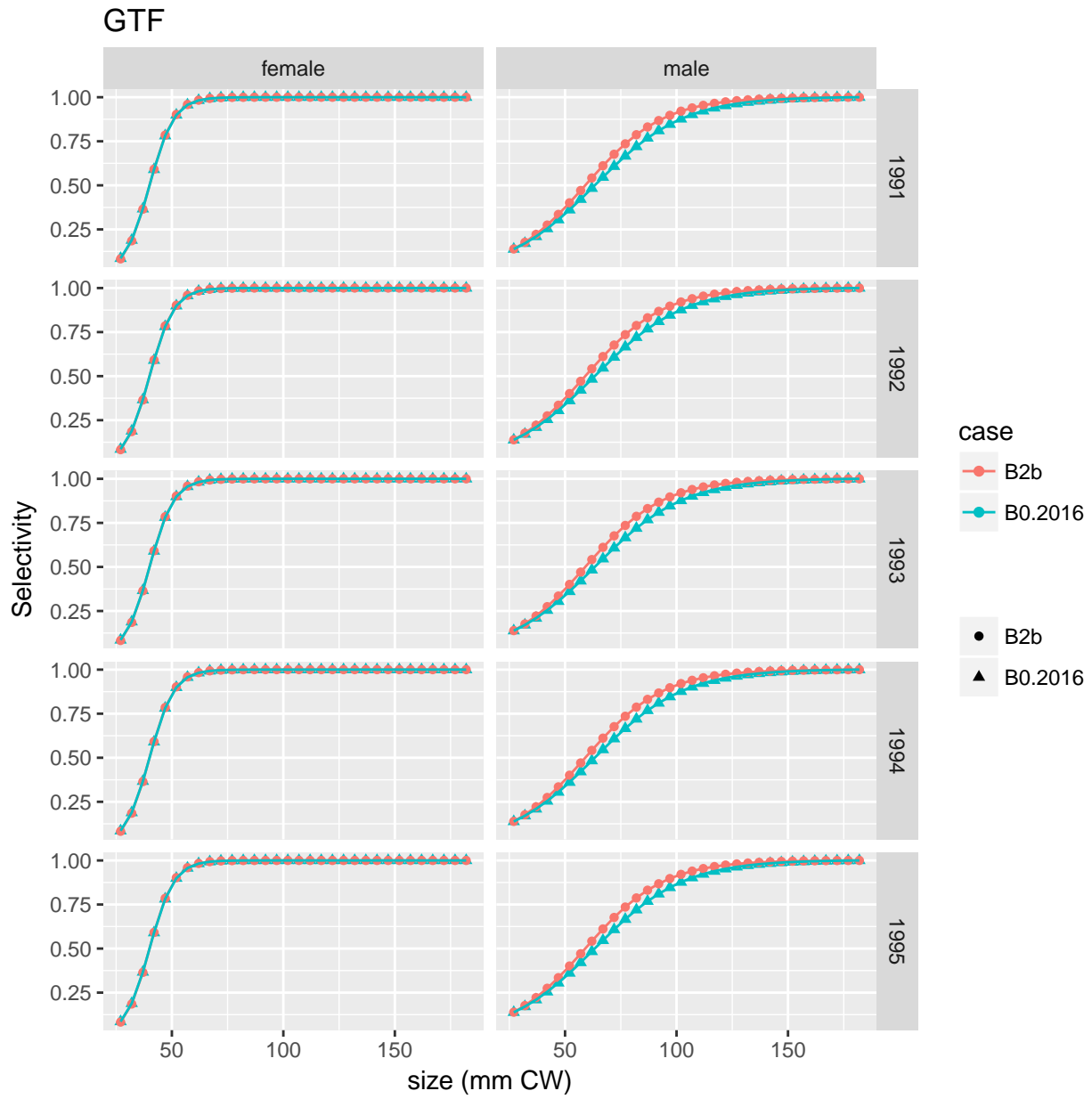


Figure 74: Selectivity functions for GTF(2 of 6).

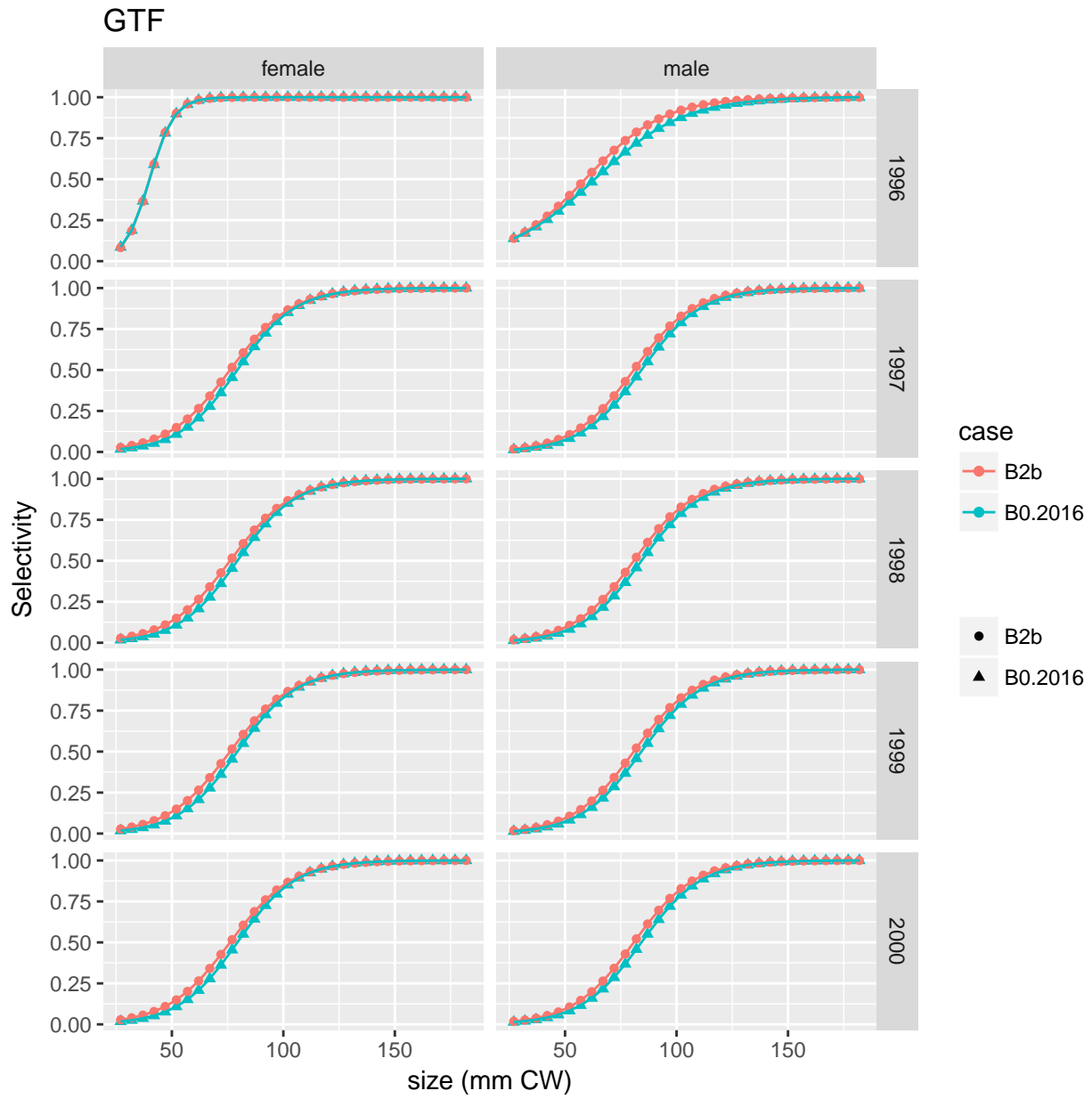


Figure 75: Selectivity functions for GTF(3 of 6).



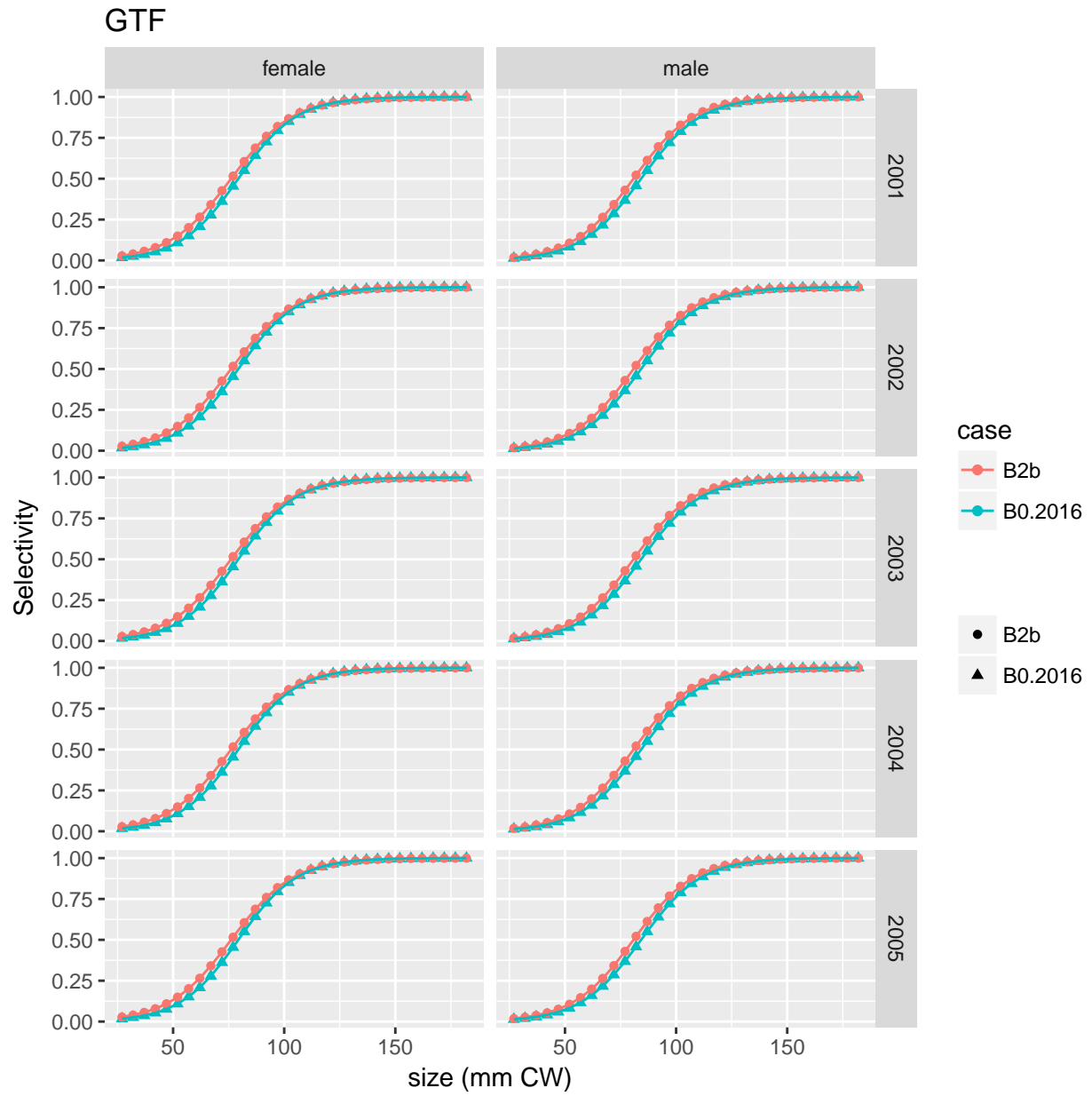


Figure 76: Selectivity functions for GTF(4 of 6).

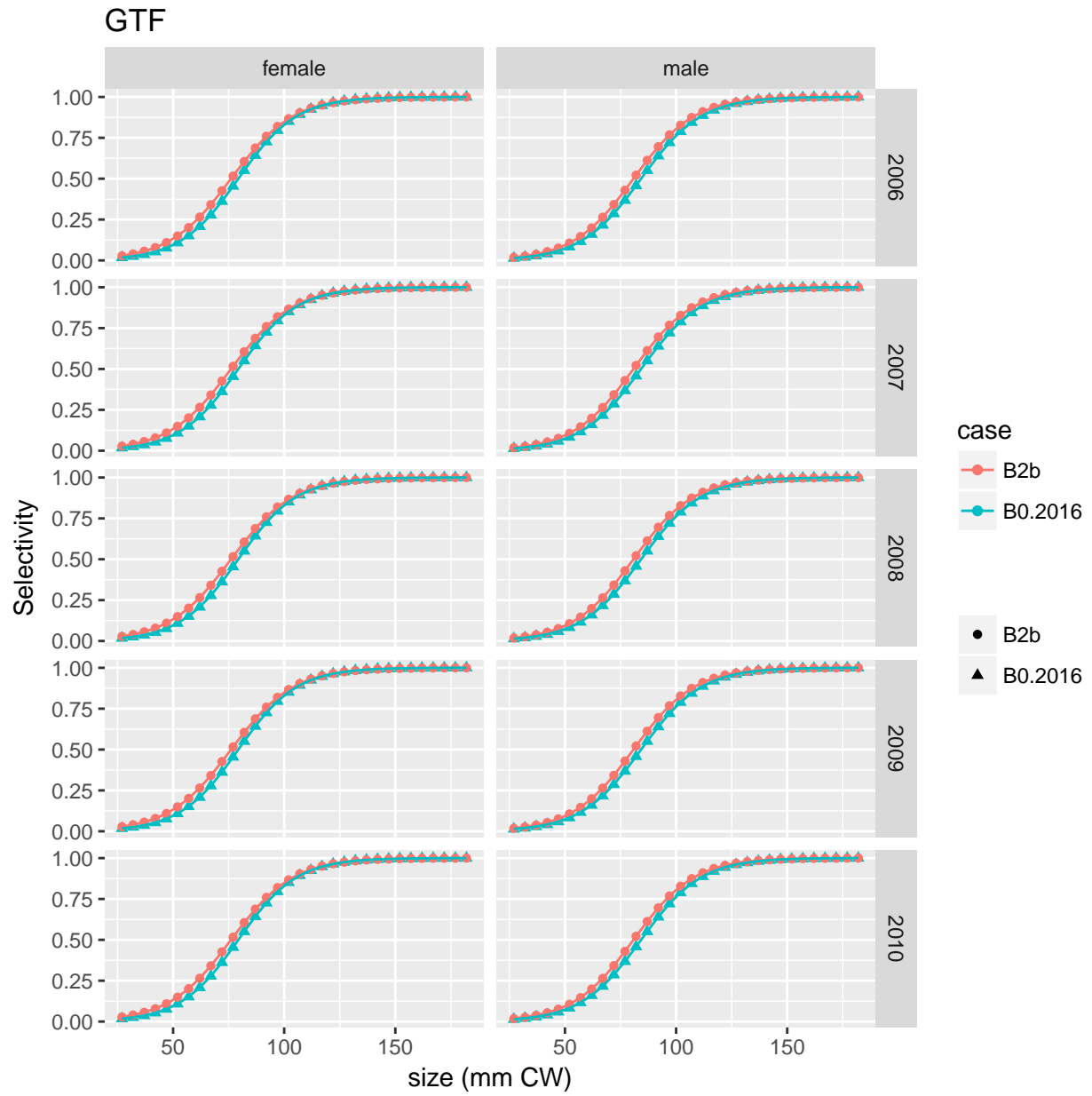


Figure 77: Selectivity functions for GTF(5 of 6).

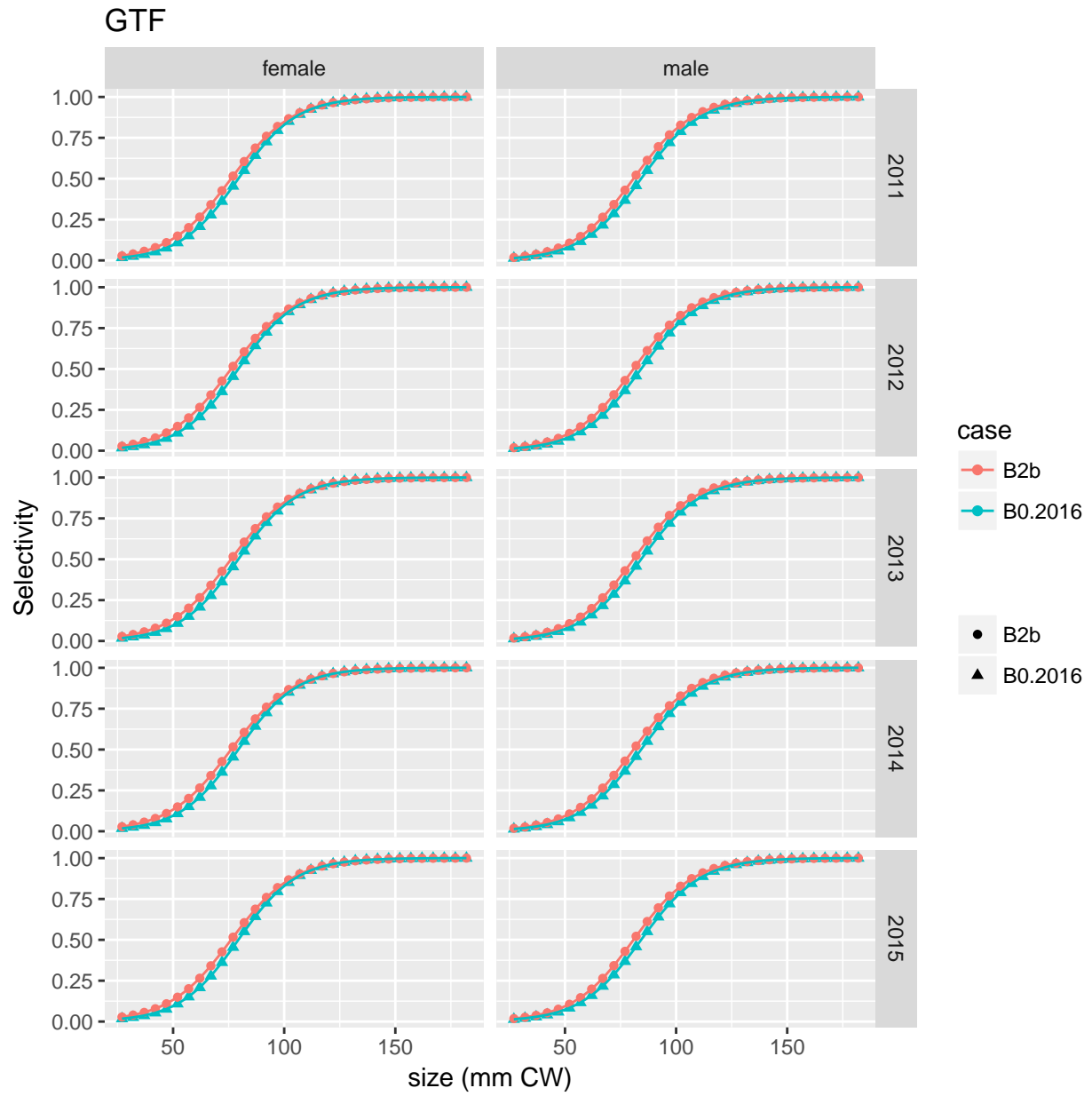


Figure 78: Selectivity functions for GTF(6 of 6).

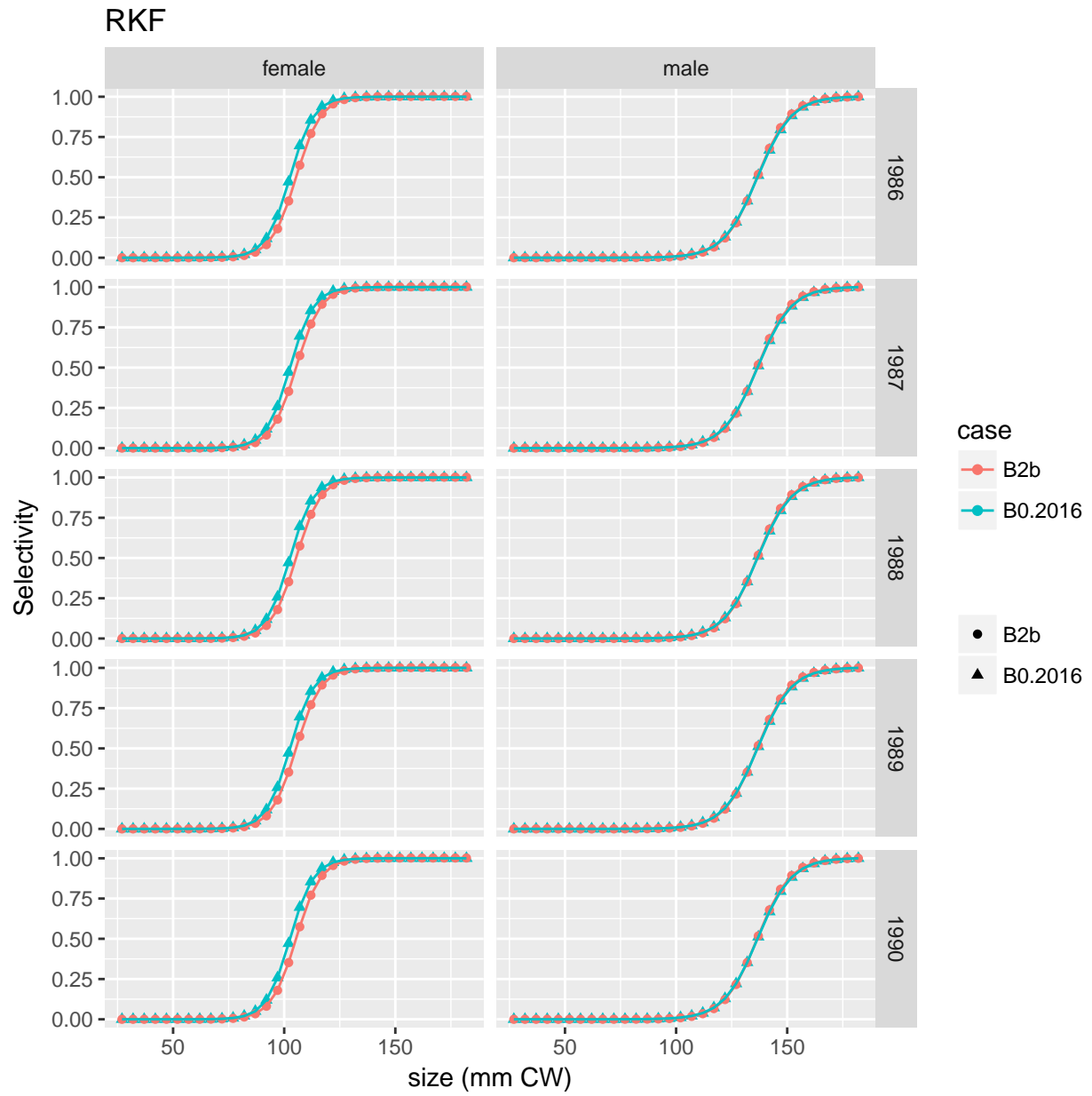


Figure 79: Selectivity functions for RKF(1 of 6).

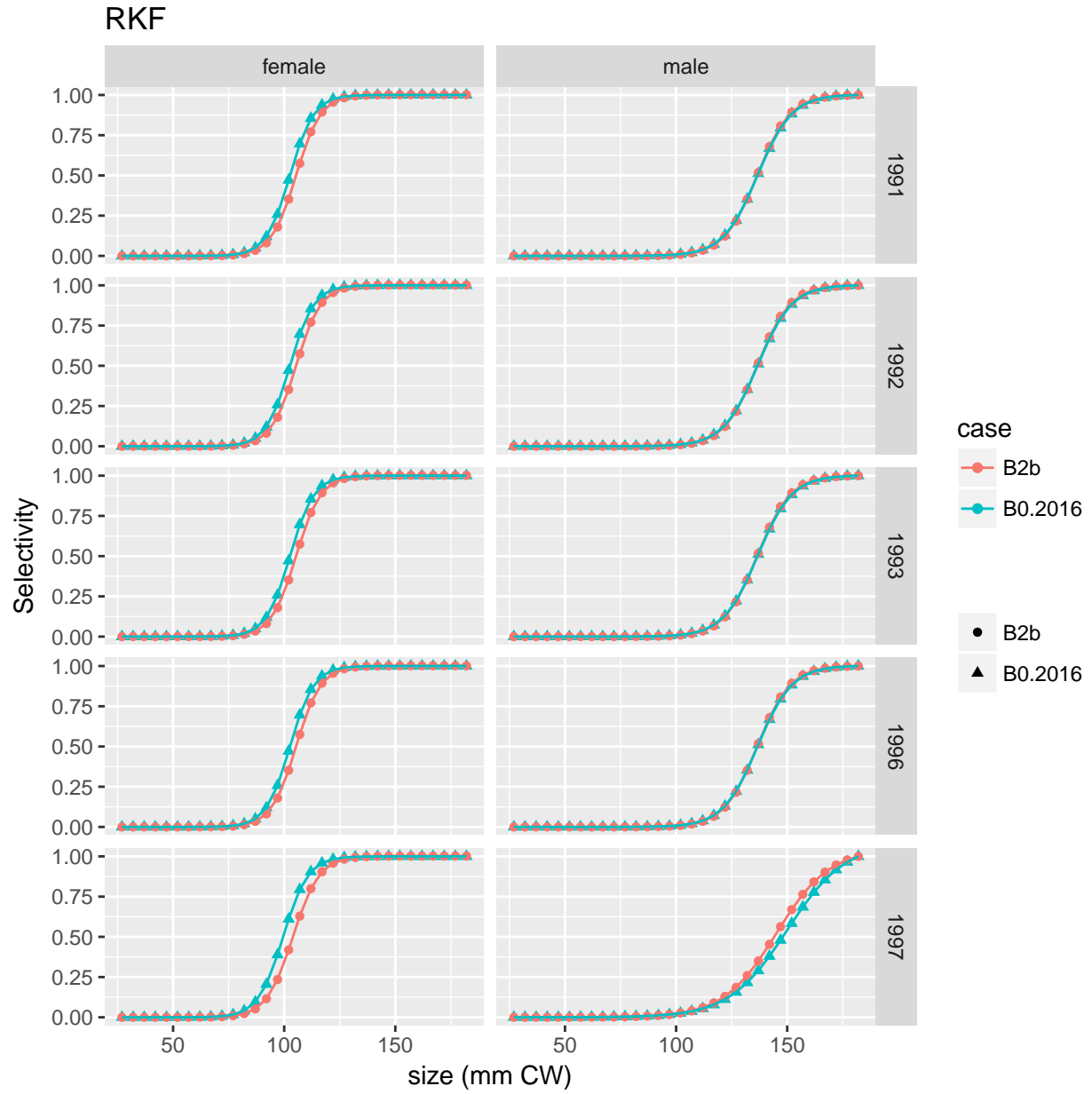


Figure 80: Selectivity functions for RKF(2 of 6).

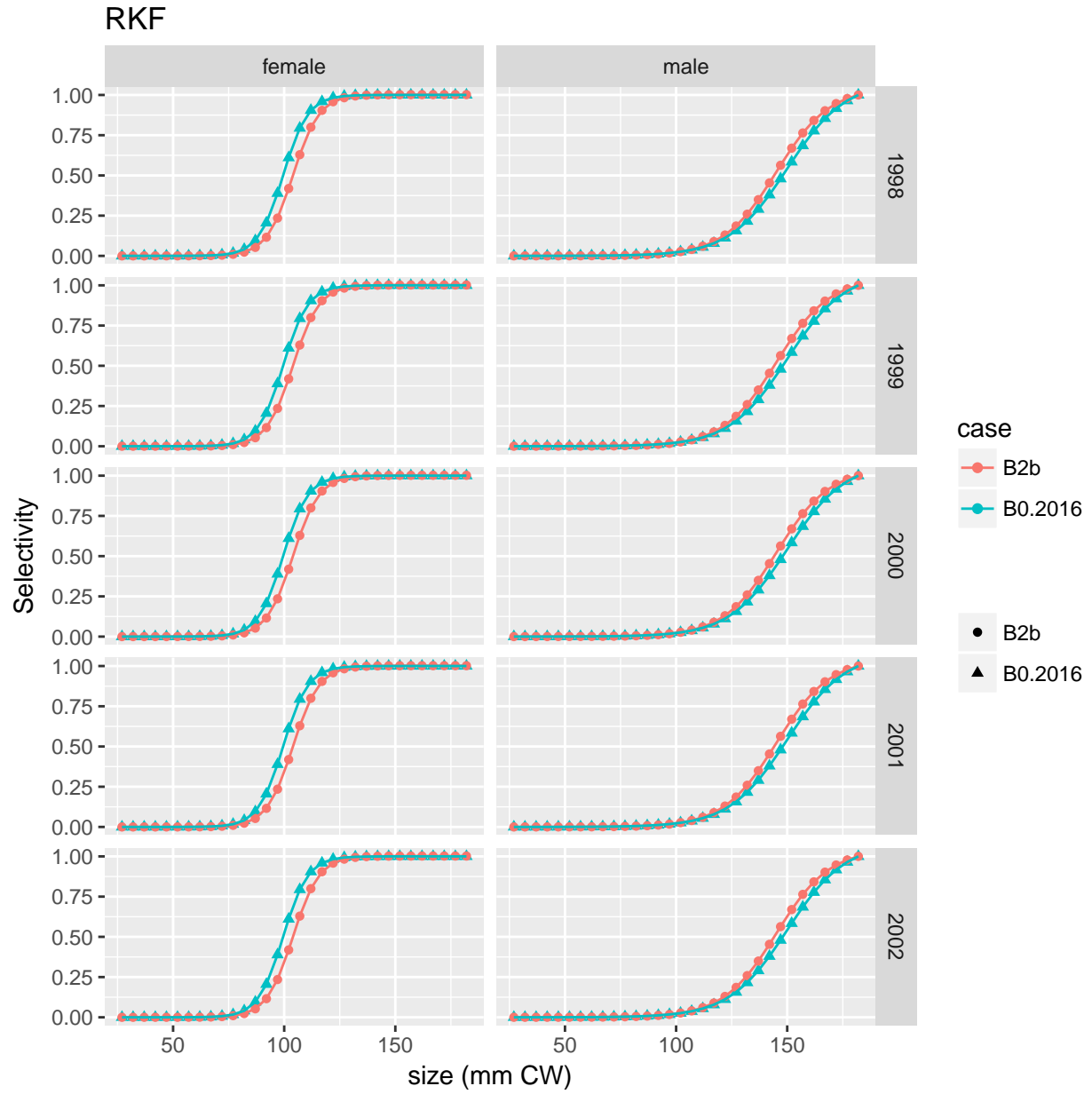


Figure 81: Selectivity functions for RKF(3 of 6).

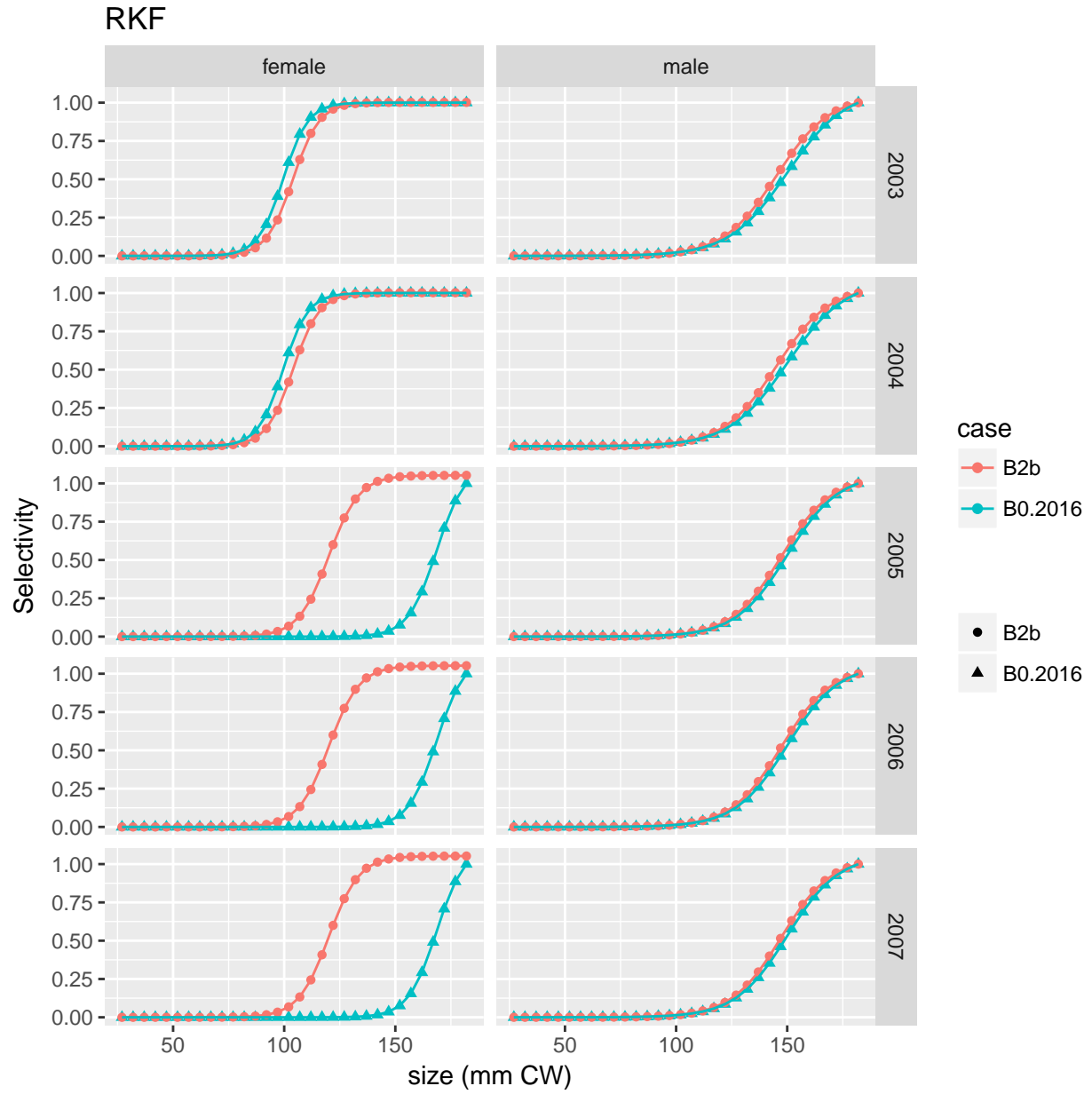


Figure 82: Selectivity functions for RKF(4 of 6).

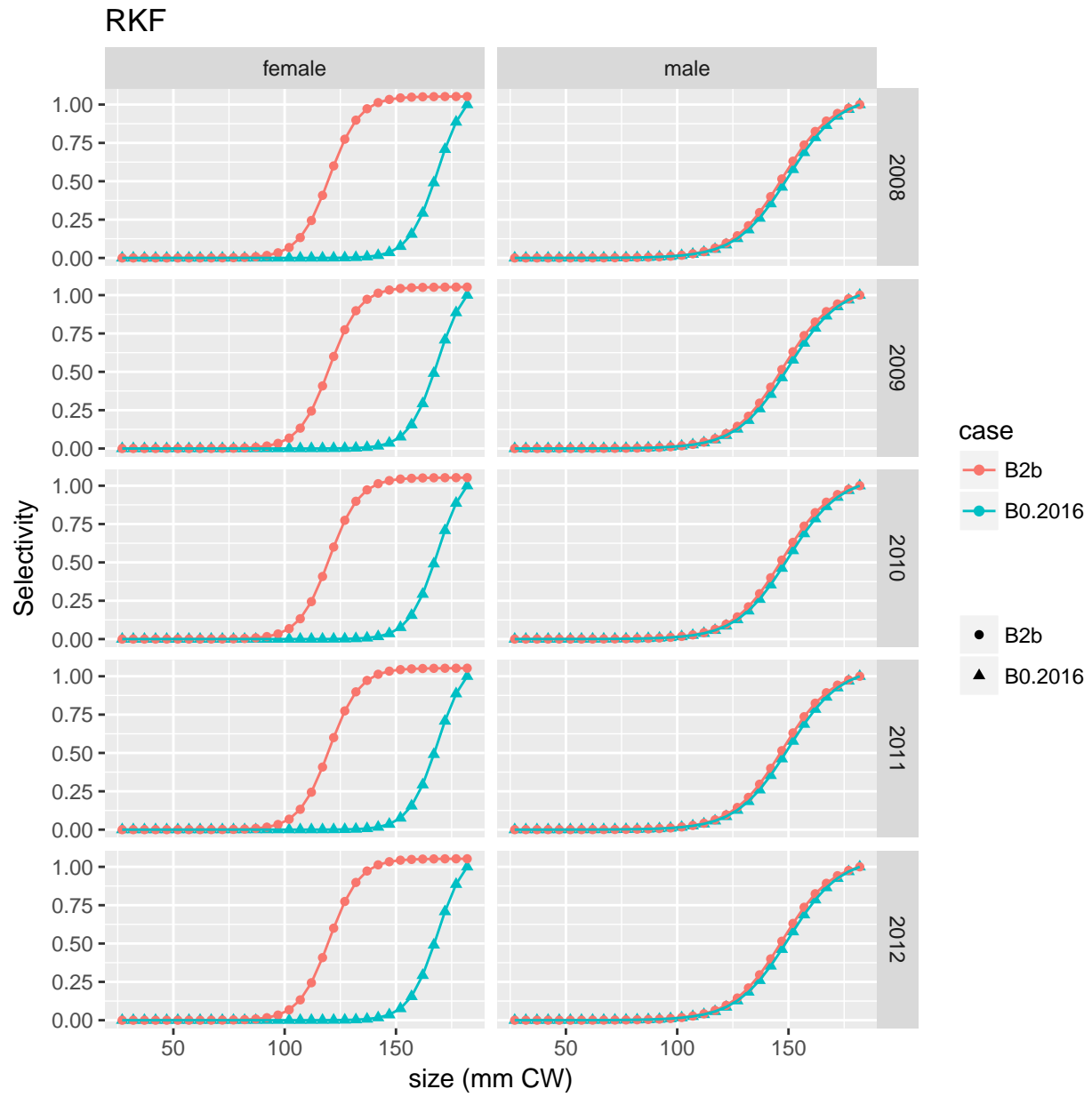


Figure 83: Selectivity functions for RKF(5 of 6).



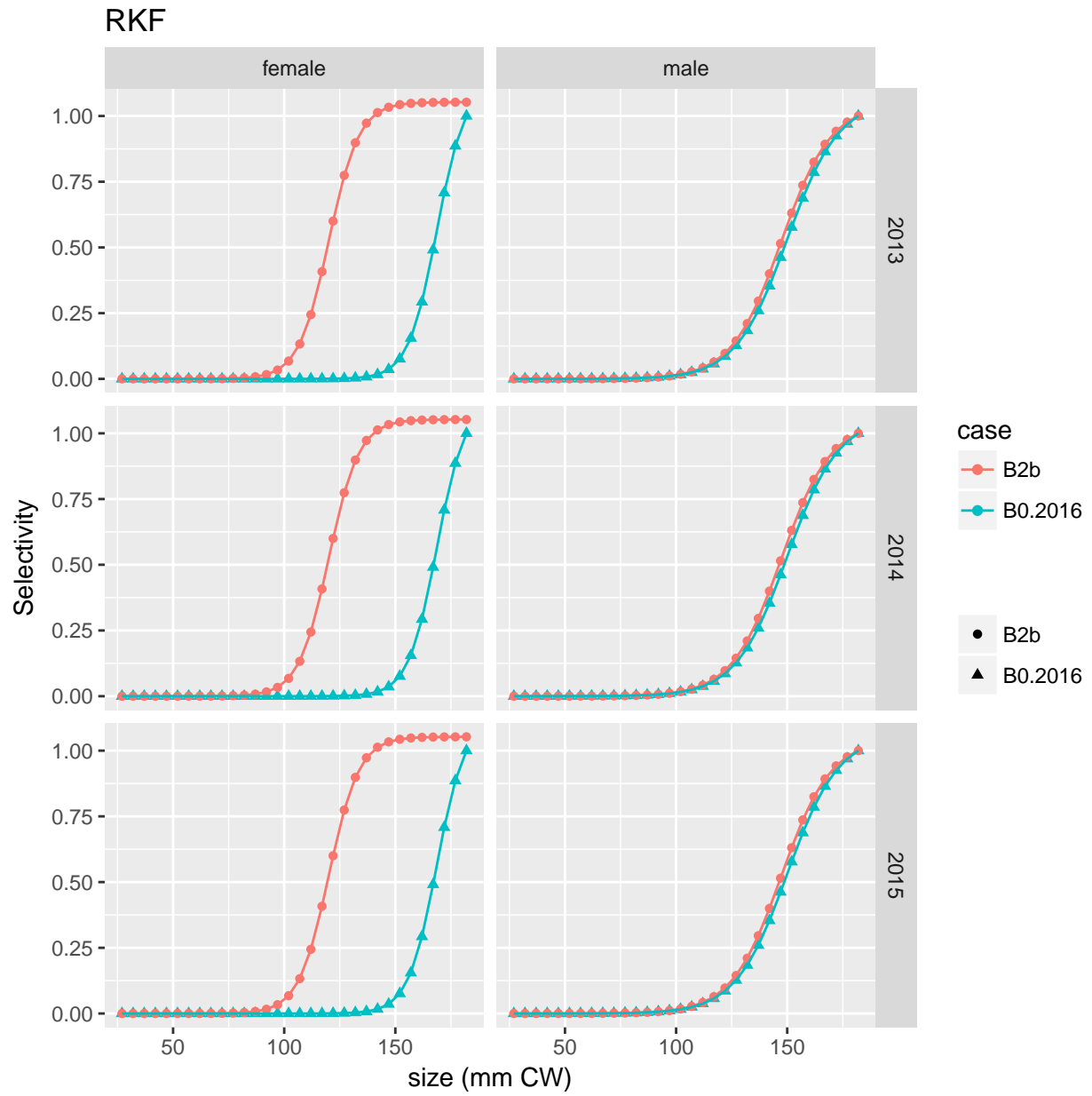


Figure 84: Selectivity functions for RKF(6 of 6).

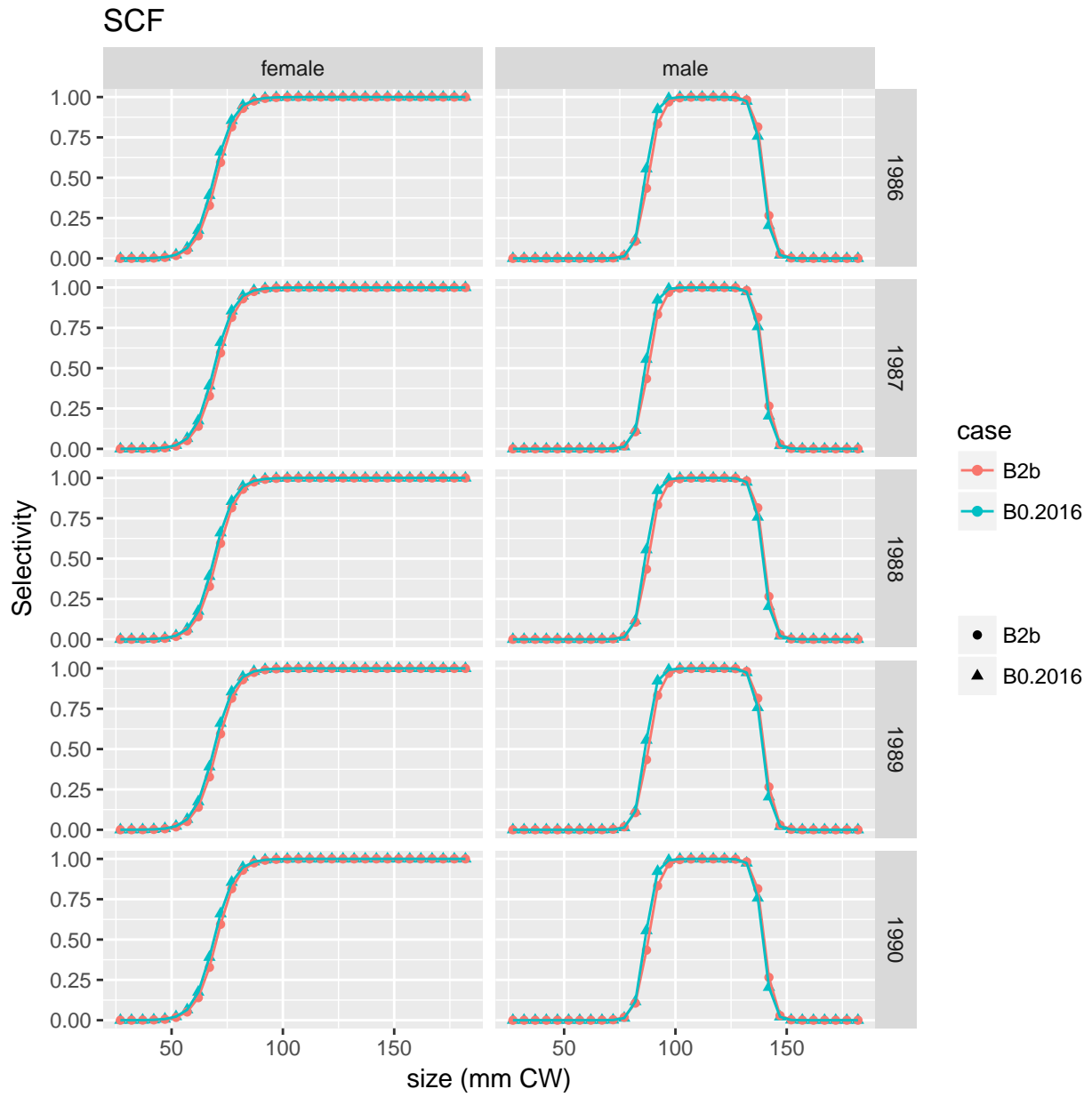


Figure 85: Selectivity functions for SCF(1 of 6).

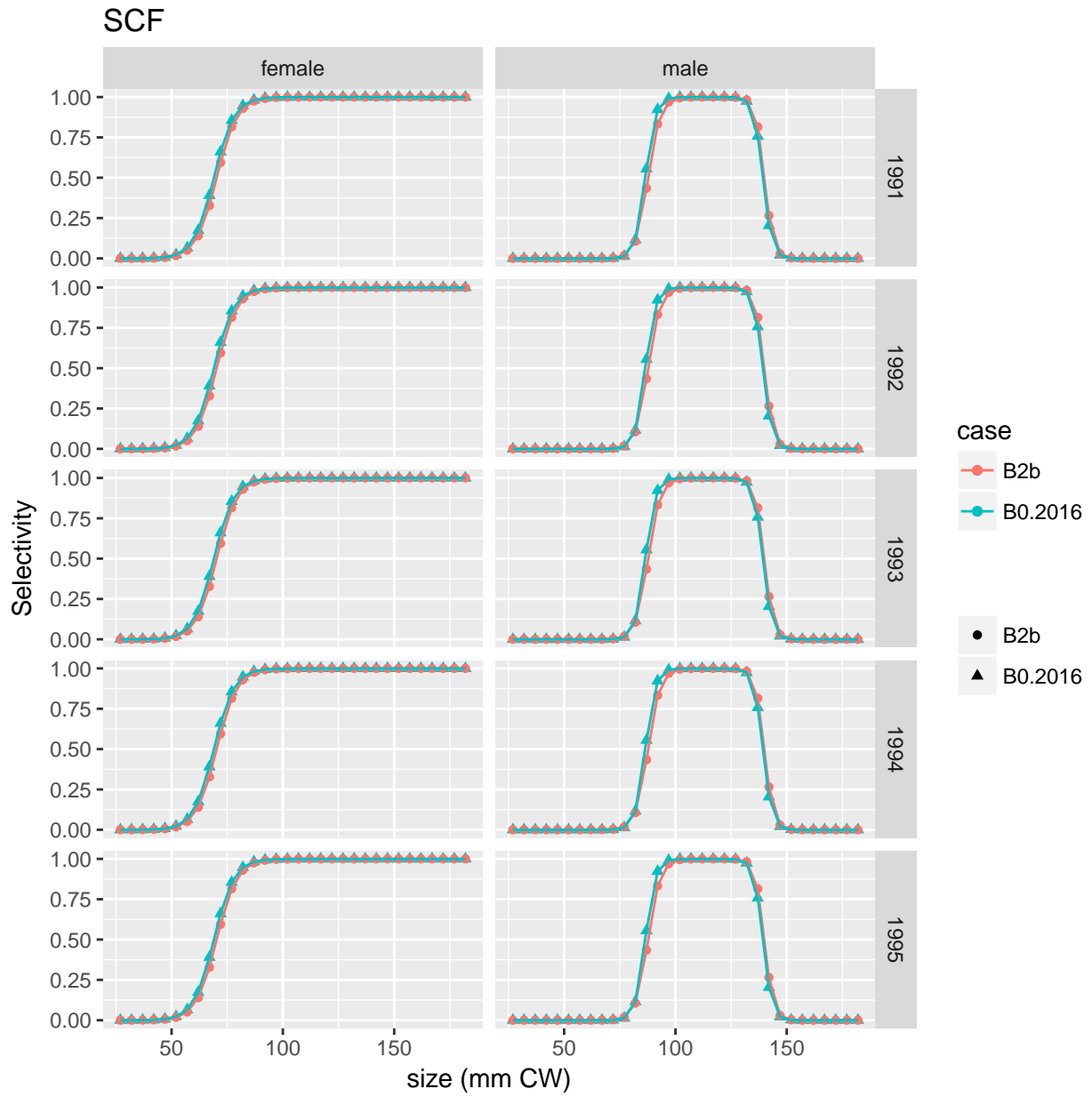


Figure 86: Selectivity functions for SCF(2 of 6).

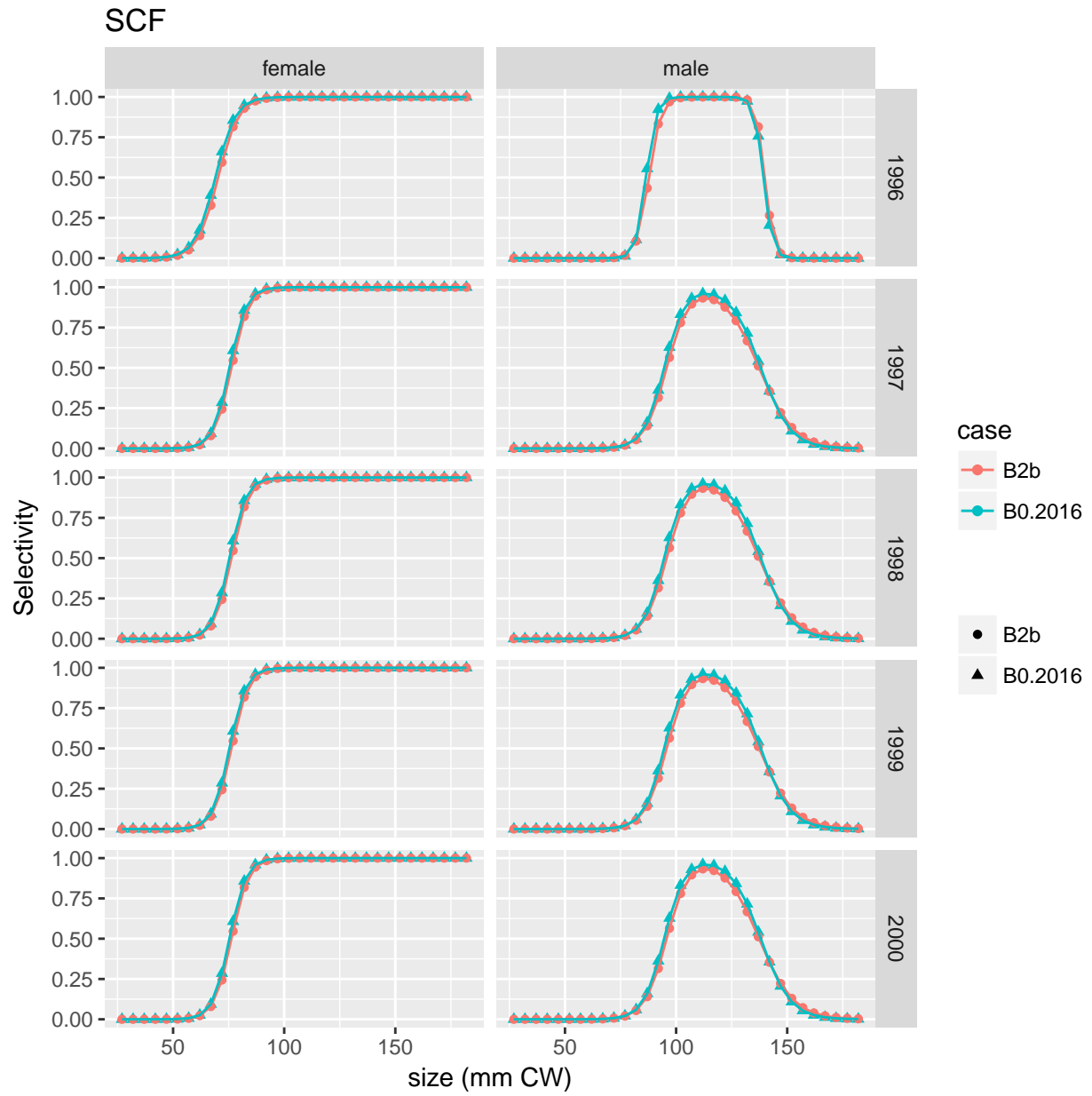


Figure 87: Selectivity functions for SCF(3 of 6).

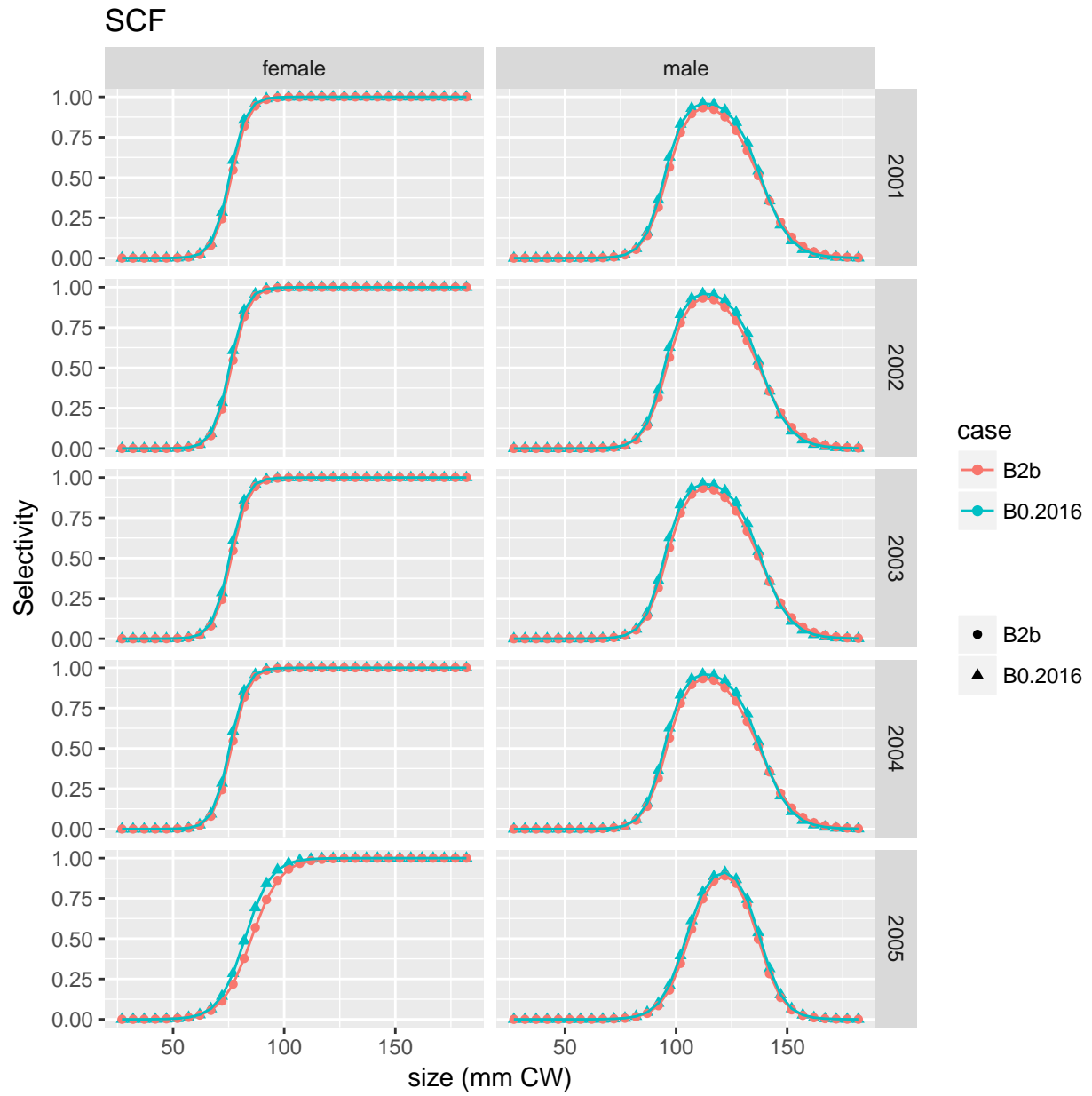


Figure 88: Selectivity functions for SCF(4 of 6).

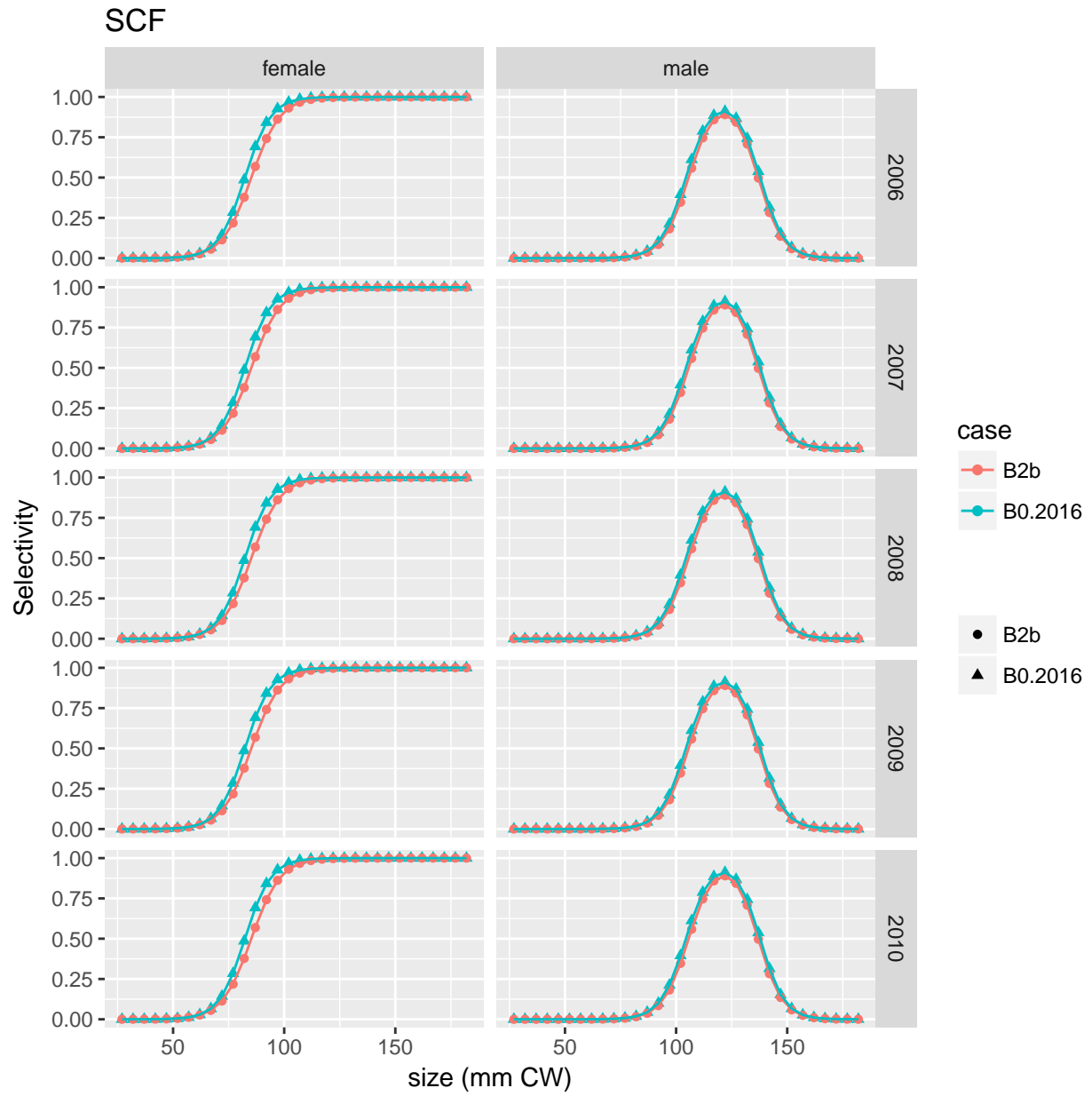


Figure 89: Selectivity functions for SCF(5 of 6).

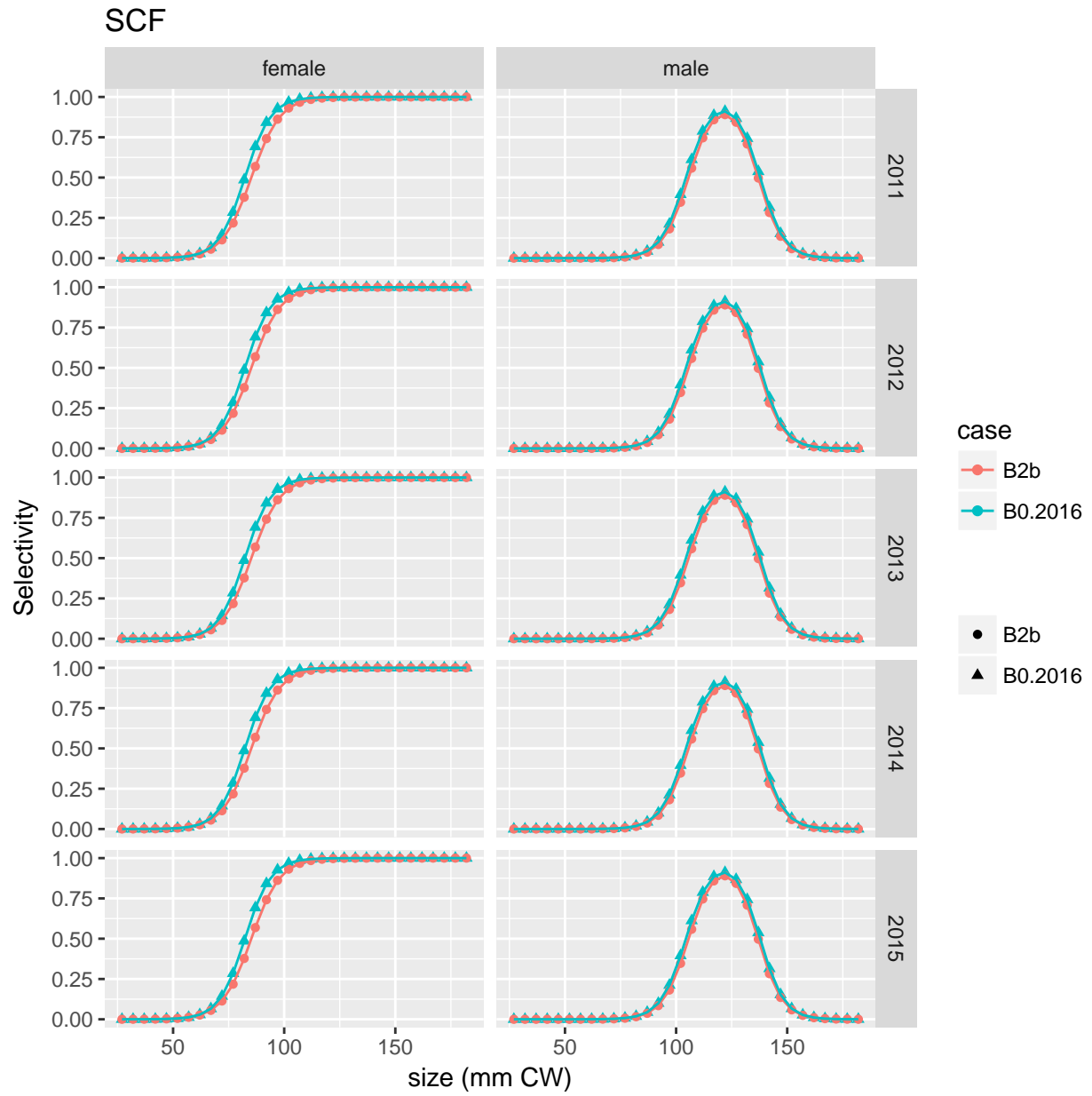


Figure 90: Selectivity functions for SCF(6 of 6).

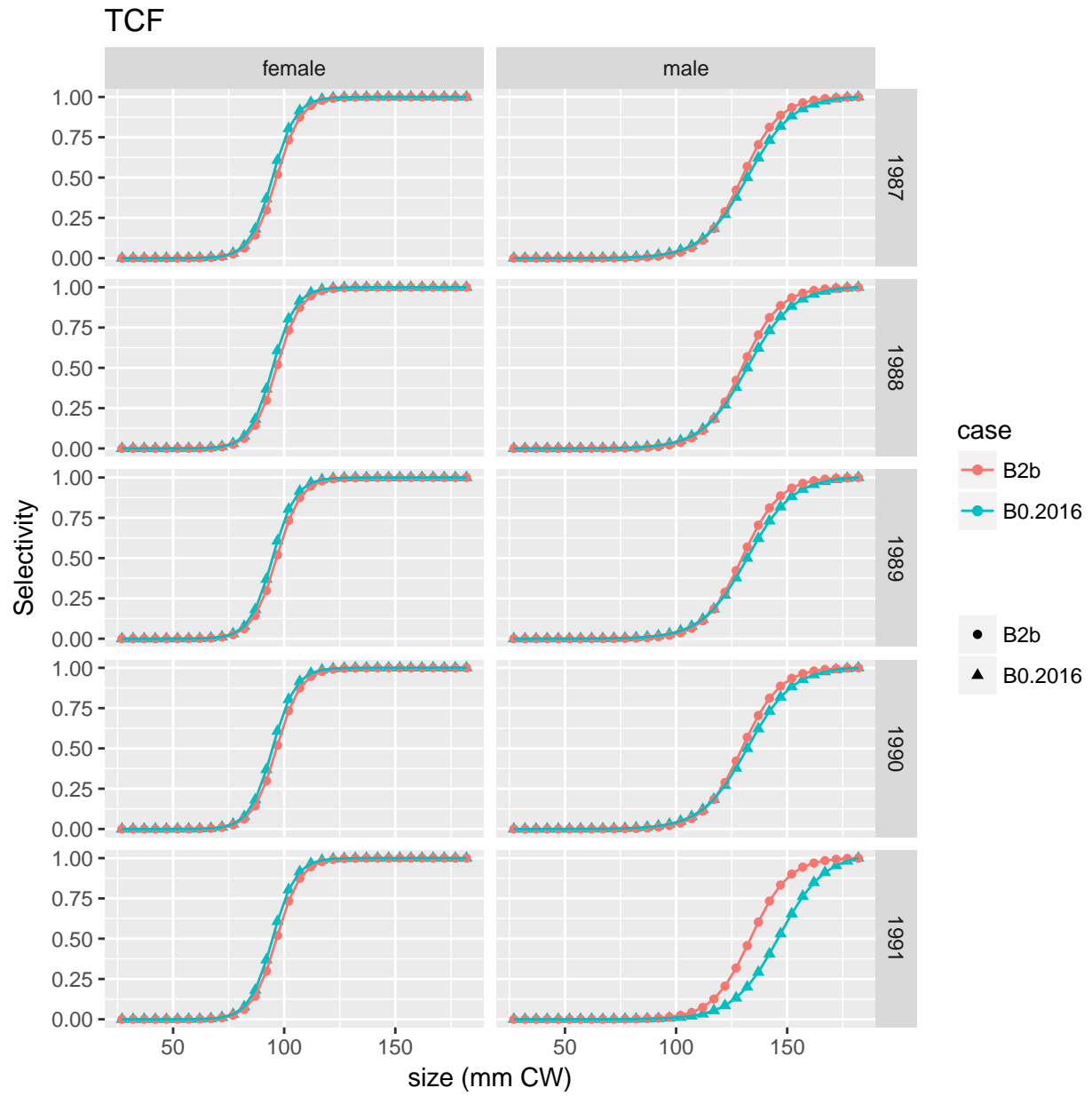


Figure 91: Selectivity functions for TCF(1 of 4).



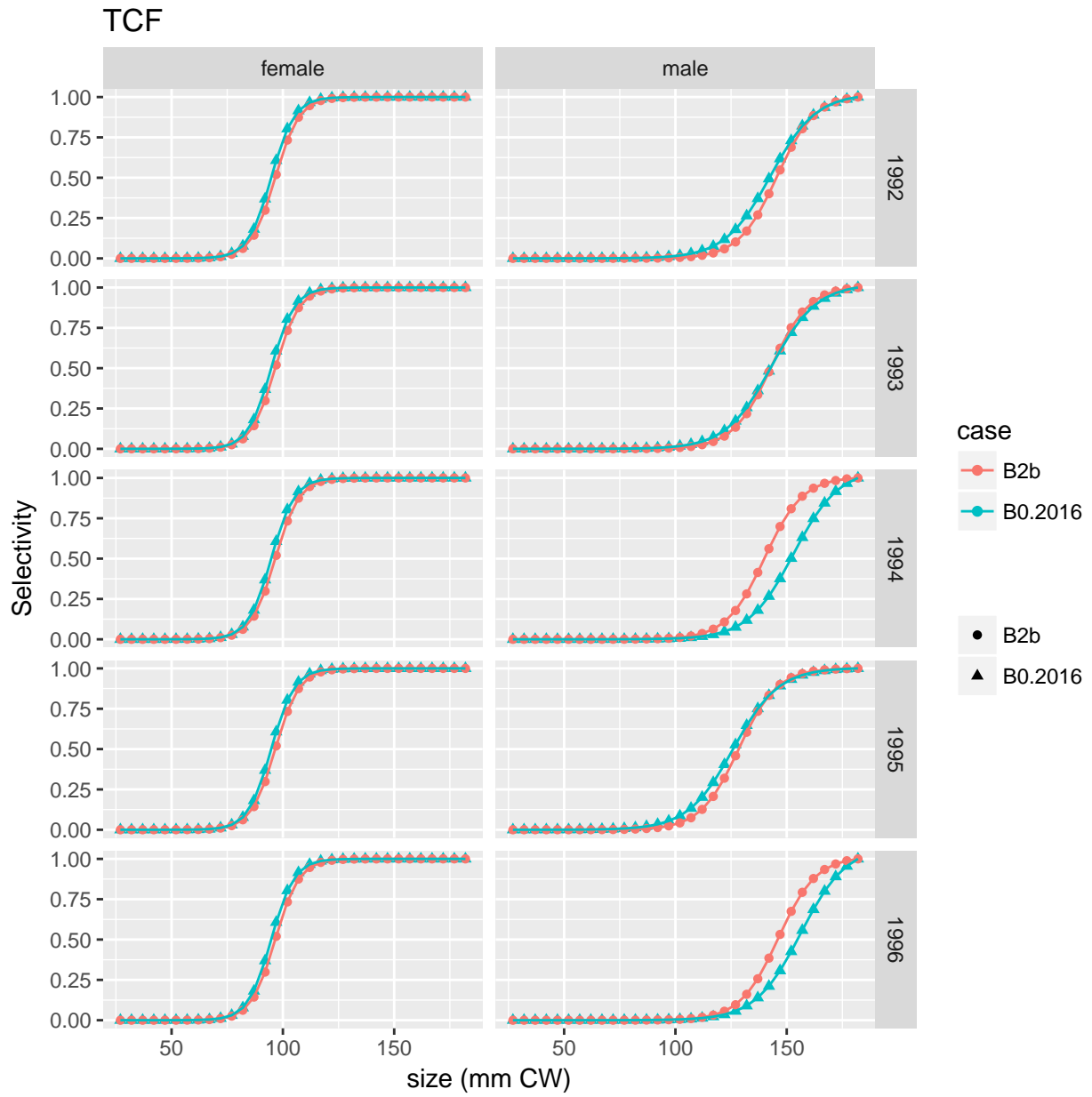


Figure 92: Selectivity functions for TCF(2 of 4).

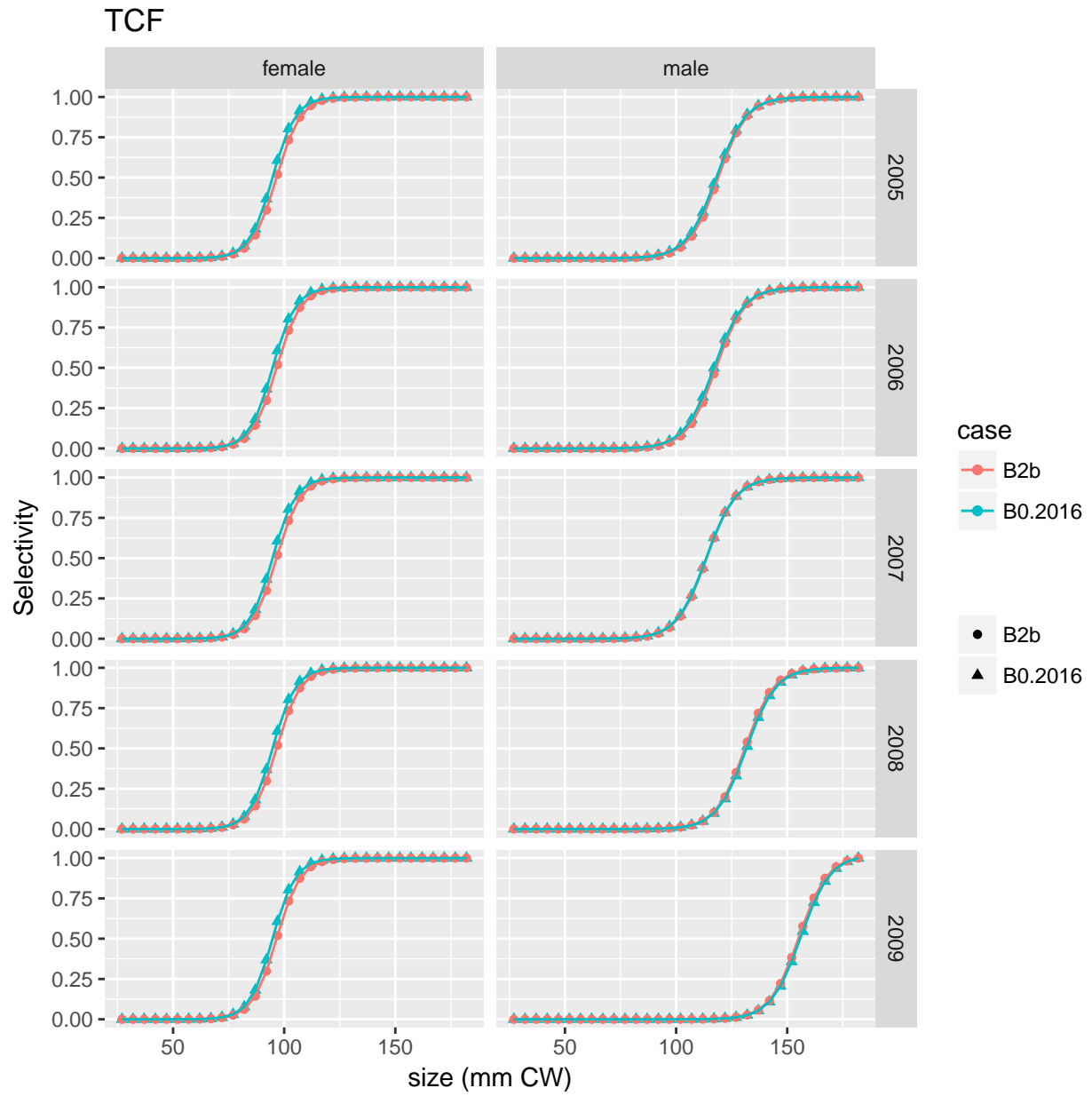


Figure 93: Selectivity functions for TCF(3 of 4).

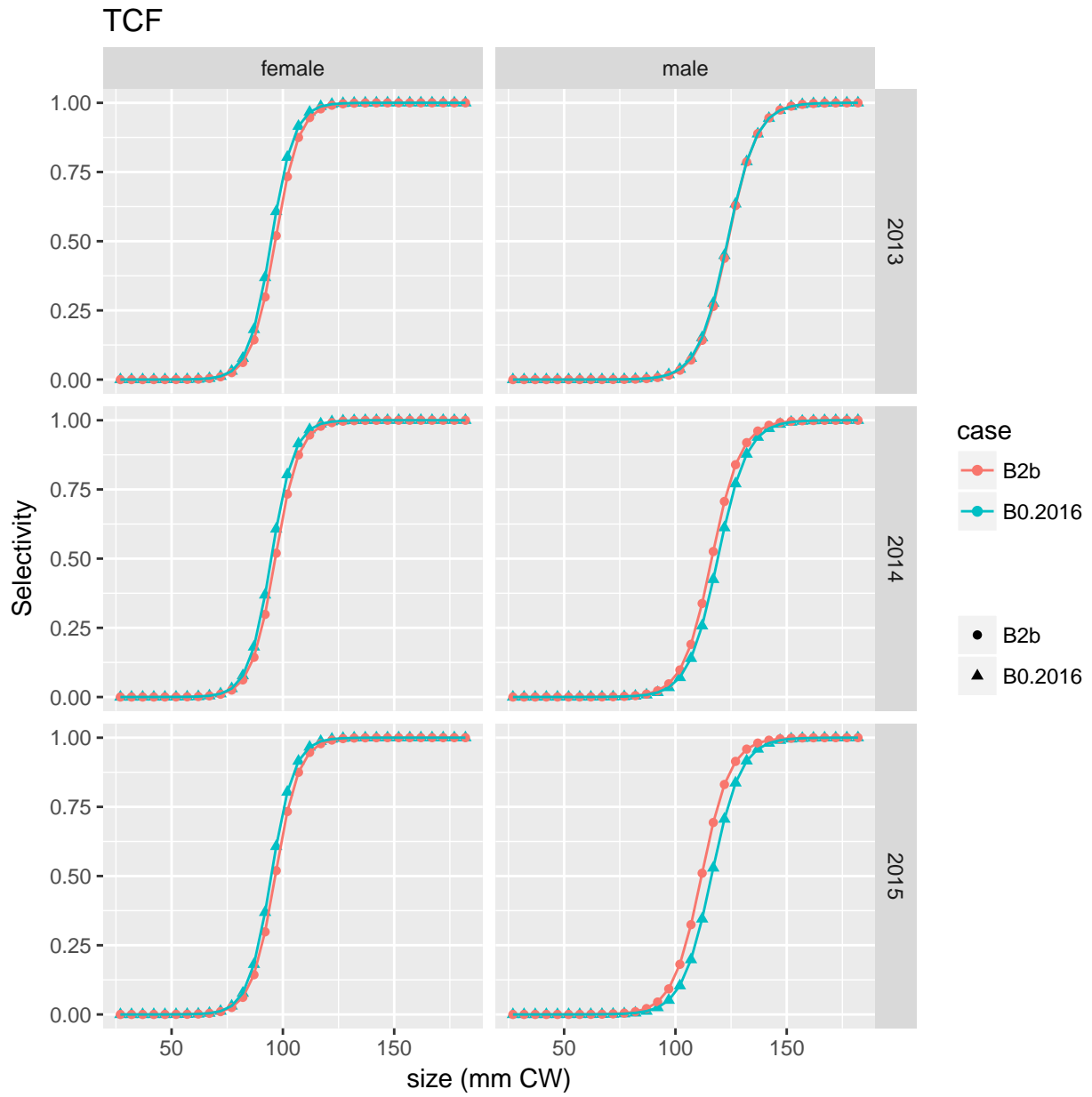


Figure 94: Selectivity functions for TCF(4 of 4).

# Retention functions

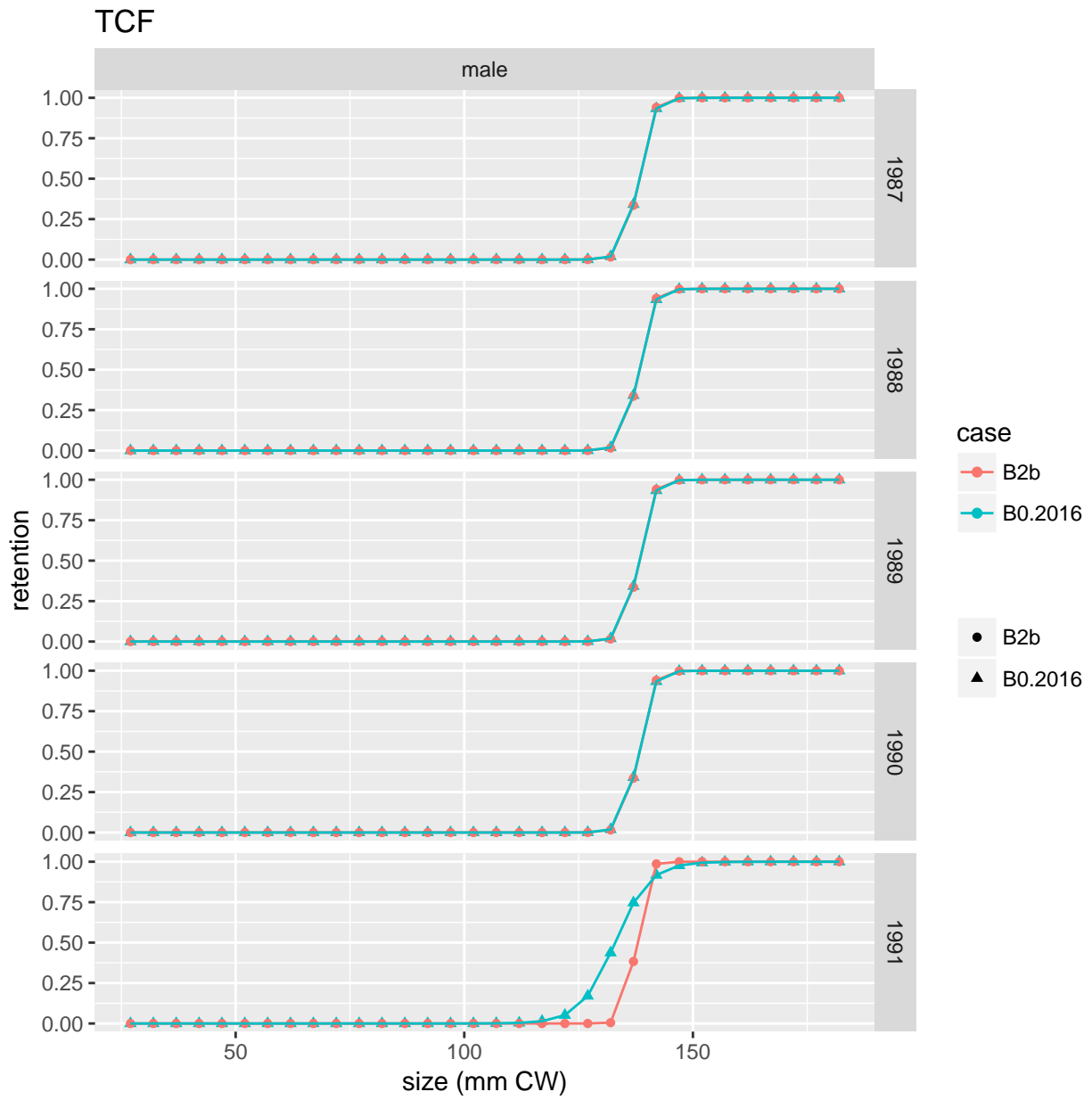


Figure 95: Retention functions for TCF(1 of 4).

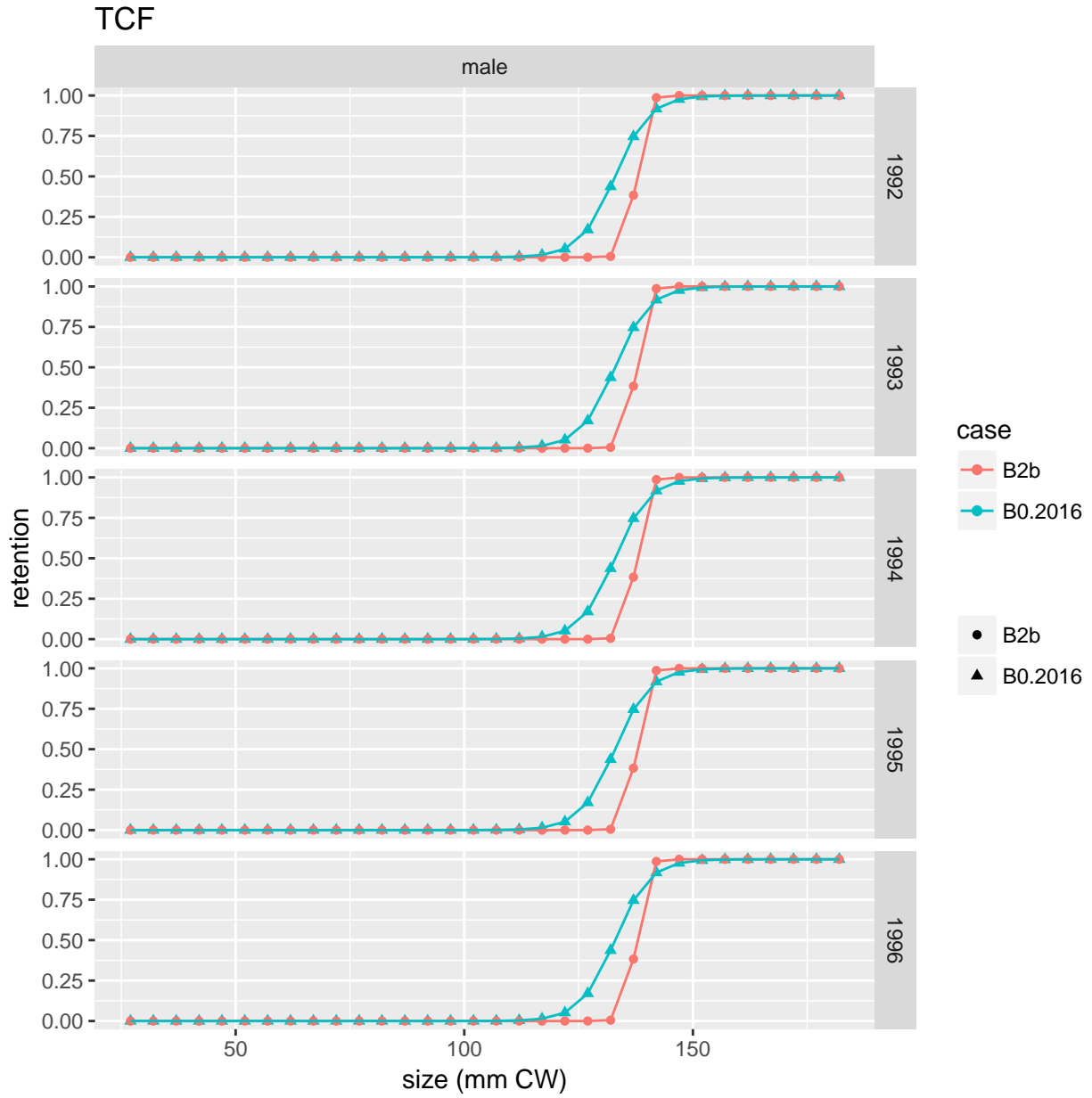


Figure 96: Retention functions for TCF(2 of 4).

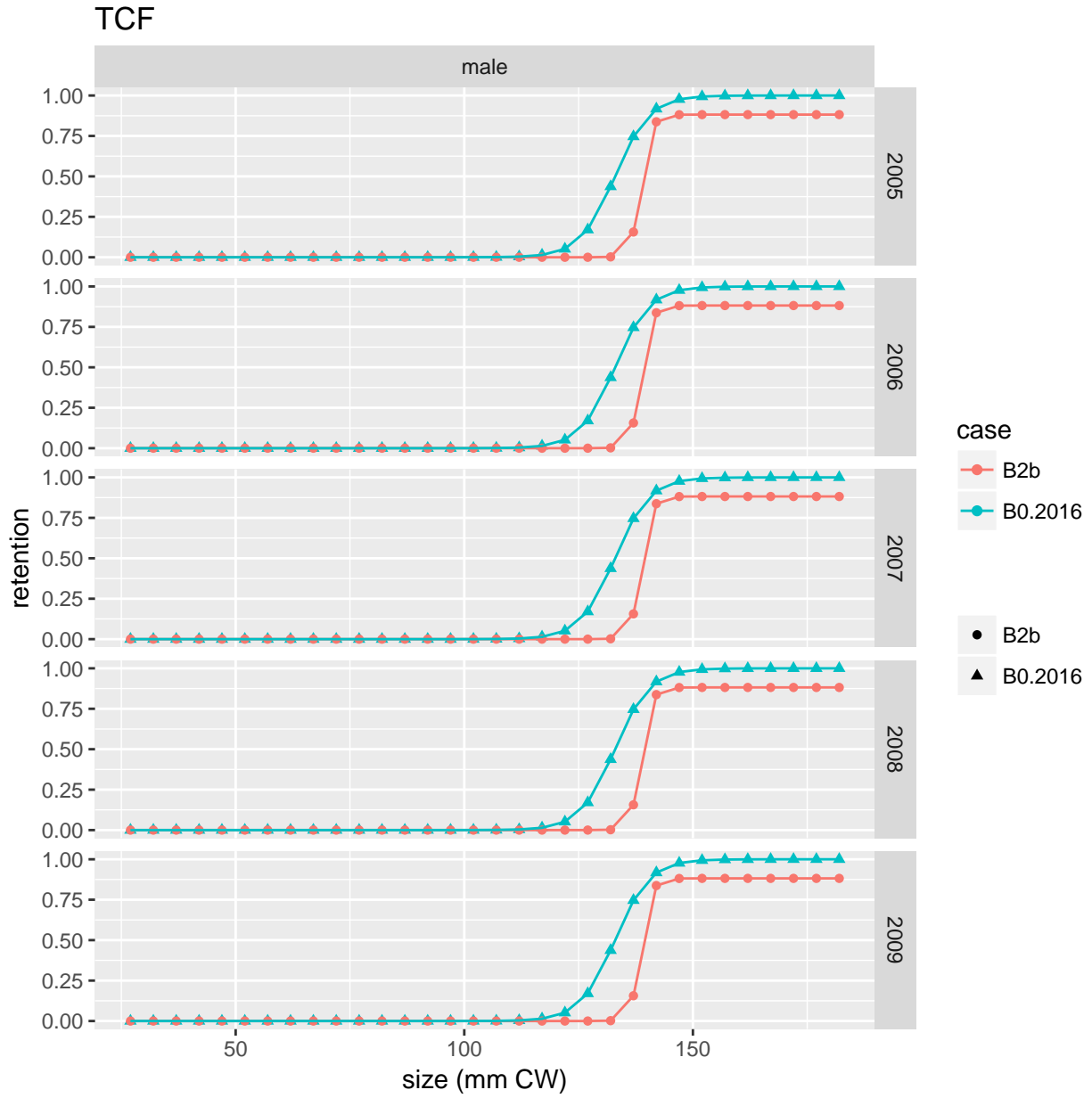


Figure 97: Retention functions for TCF(3 of 4).

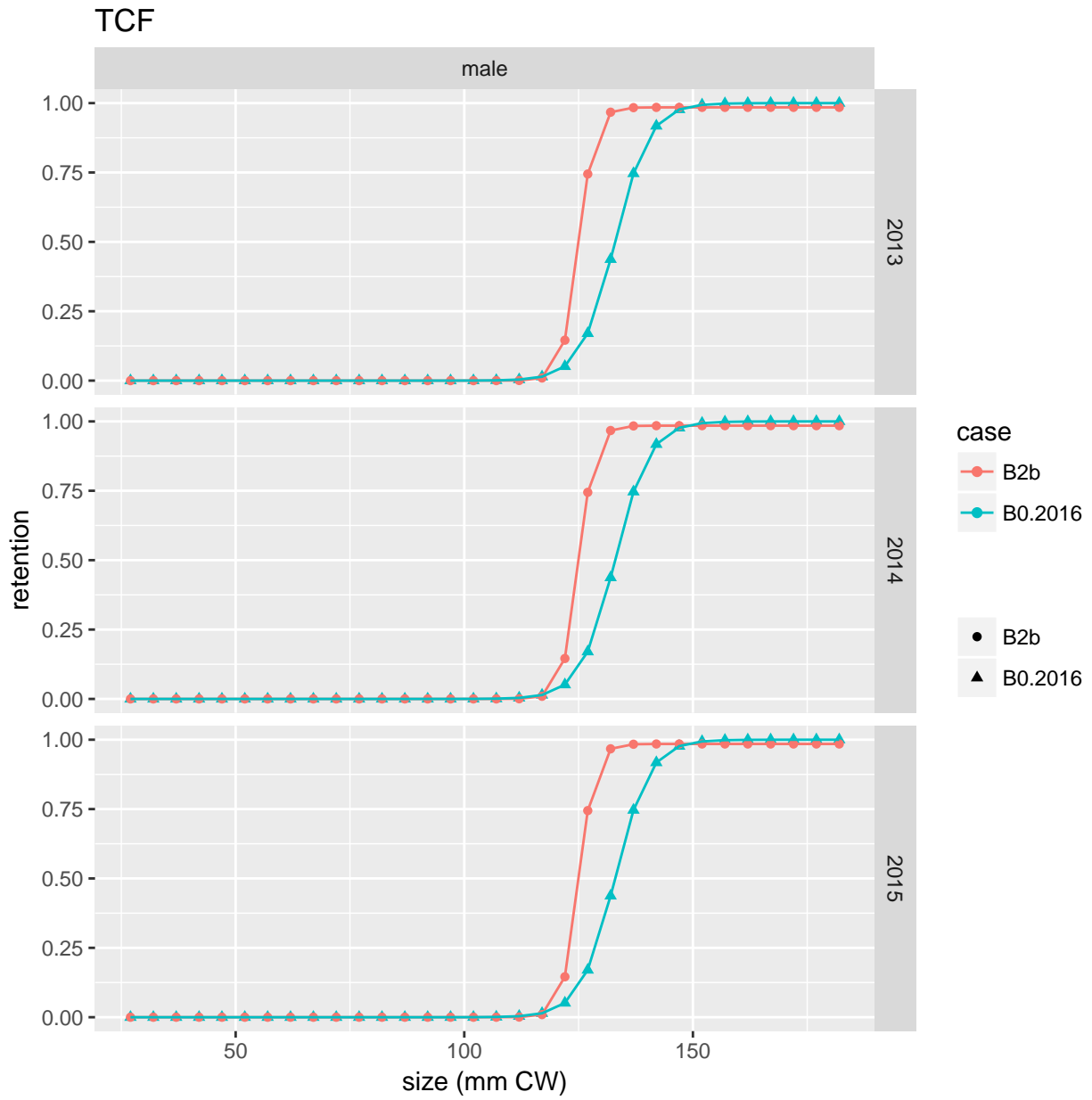


Figure 98: Retention functions for TCF(4 of 4).

## Population quantities

Figures and tables in this section present comparisons between alternative model scenarios for estimated quantities (e.g., recruitment, abundance time series) describing the inferred Tanner crab population.

### Recruitment

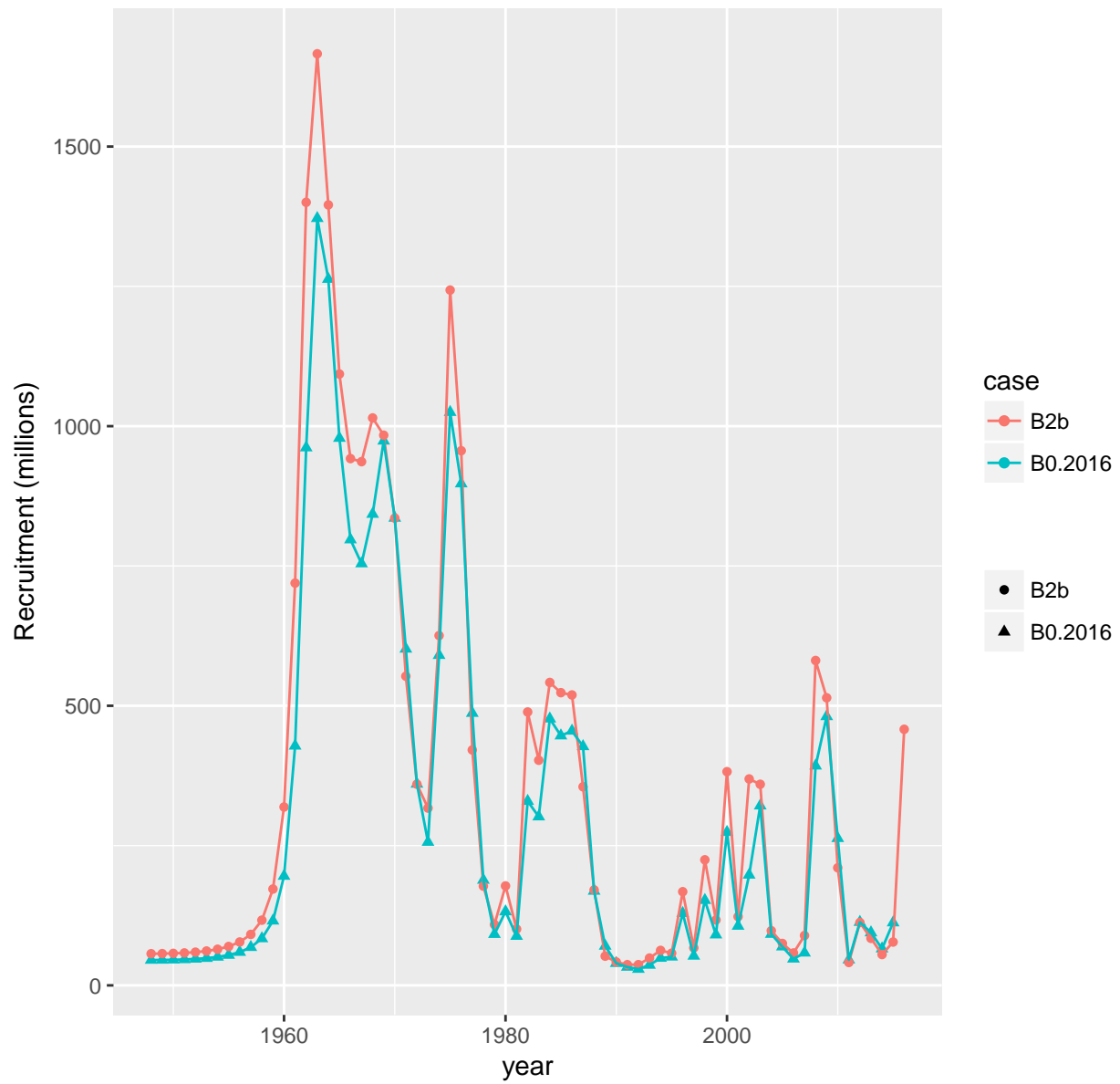


Figure 99: Estimated annual recruitment.



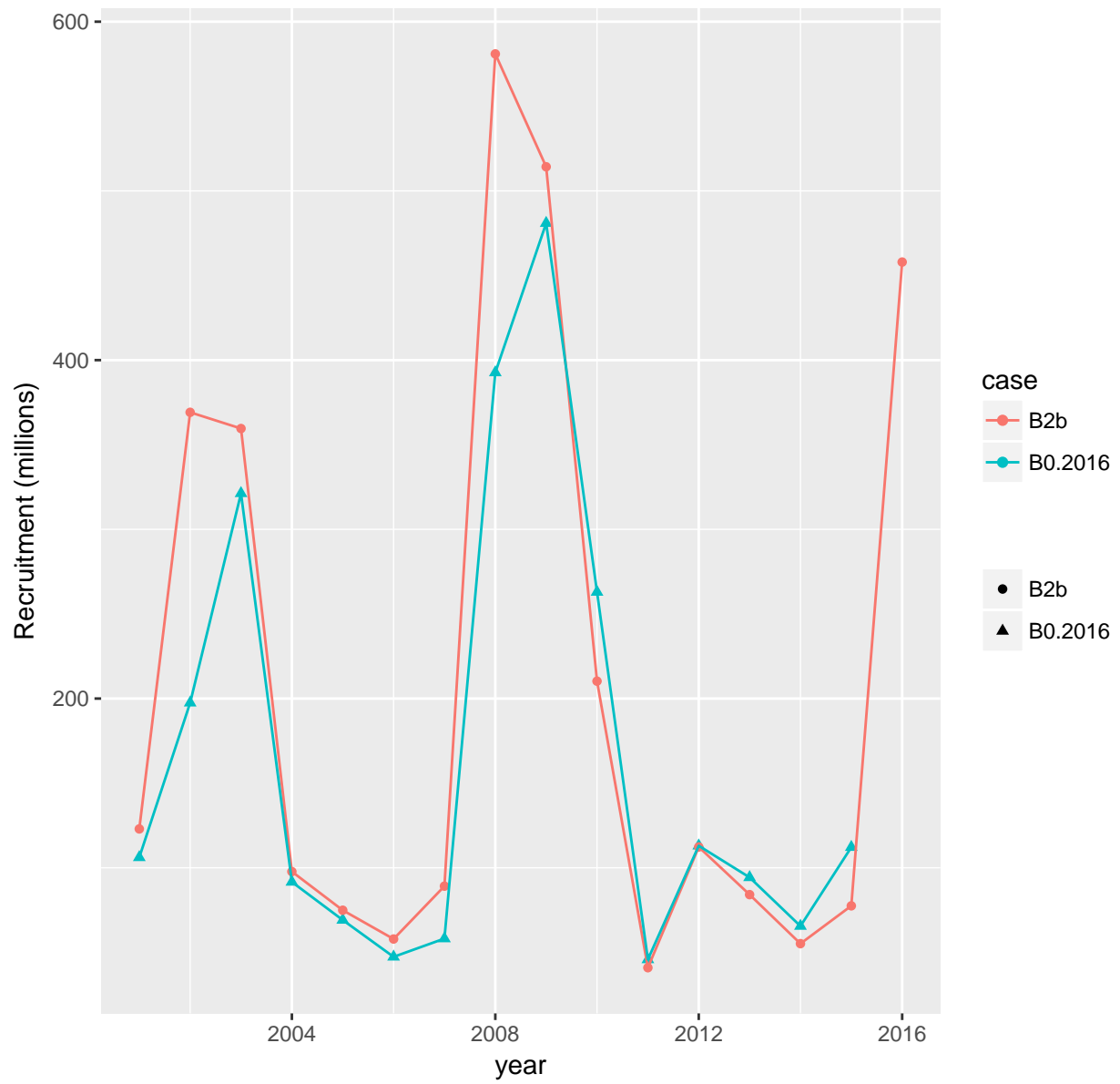


Figure 100: Estimated recent recruitment.

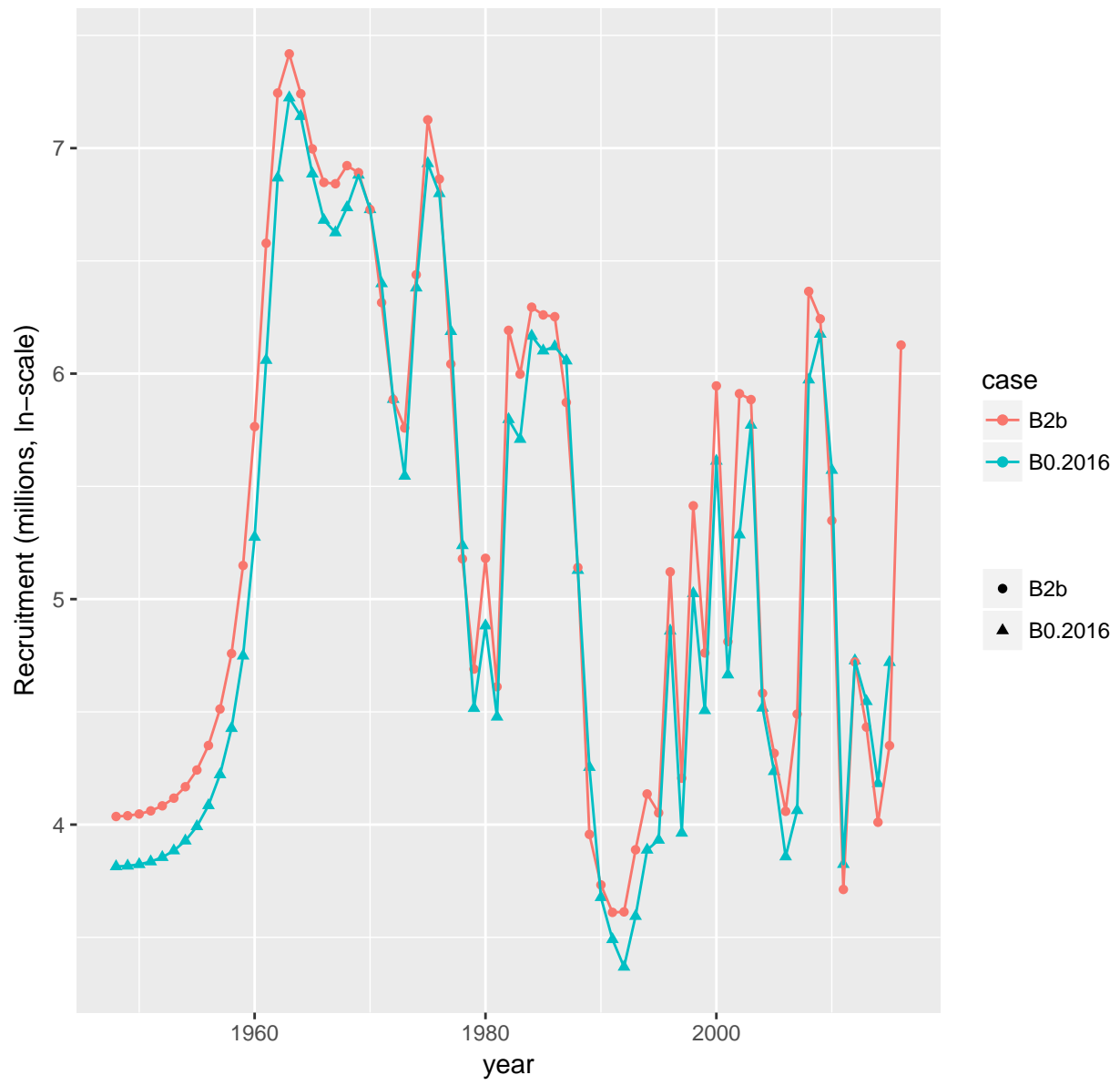


Figure 101: Estimated annual recruitment, on ln-scale.

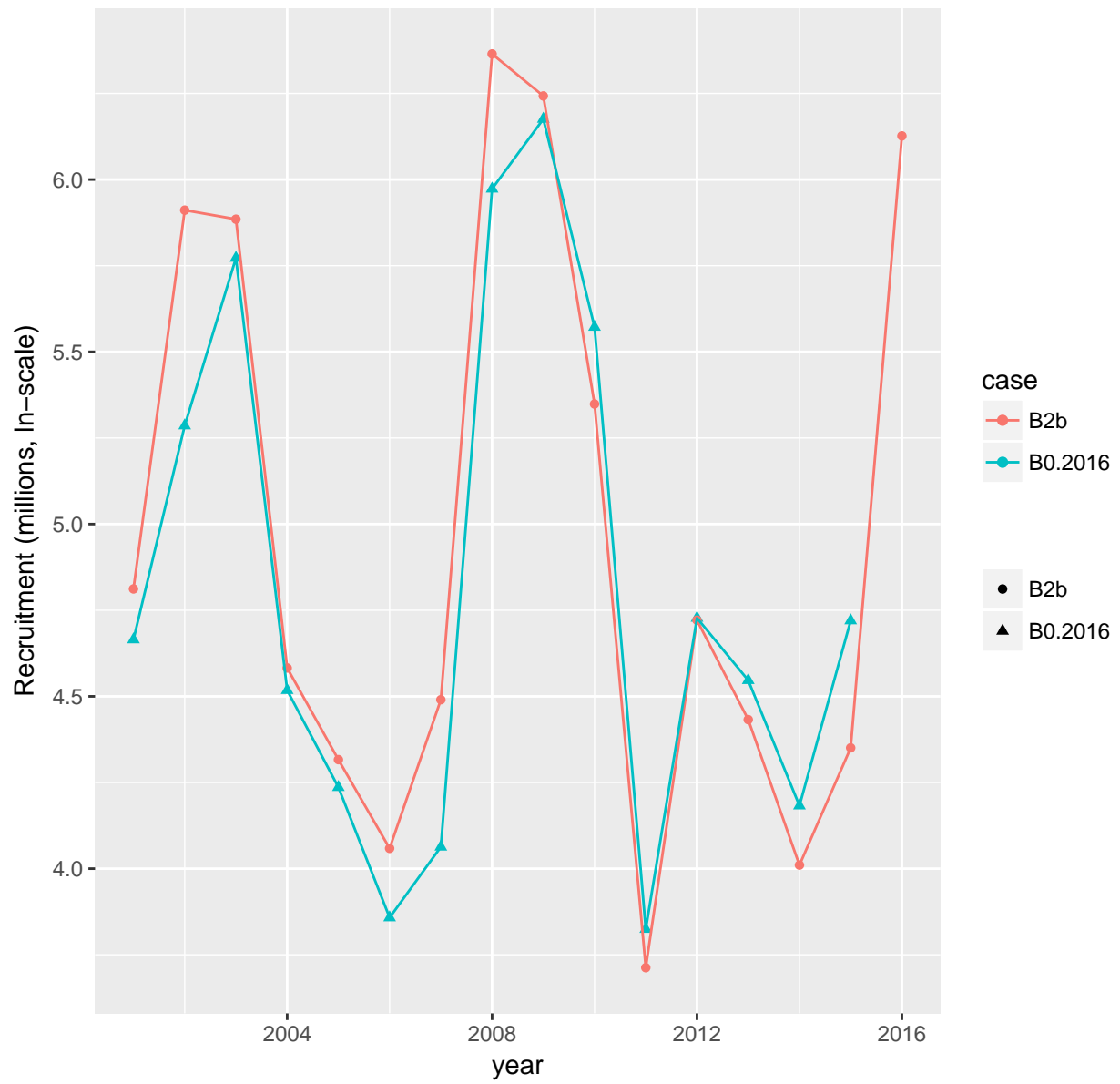


Figure 102: Estimated recent recruitment, on ln-scale.

# Mature biomass

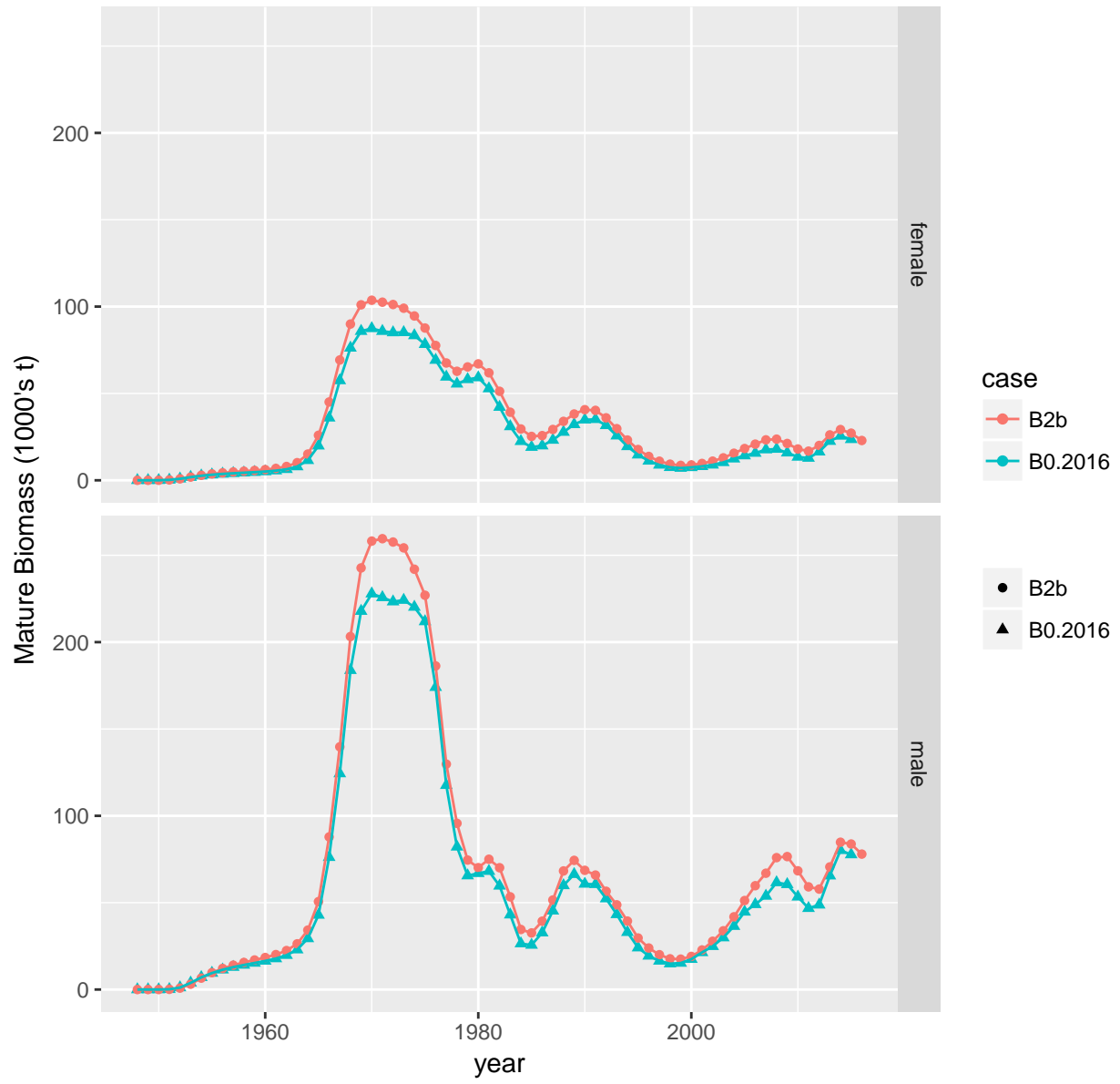


Figure 103: Estimated annual mature biomass.

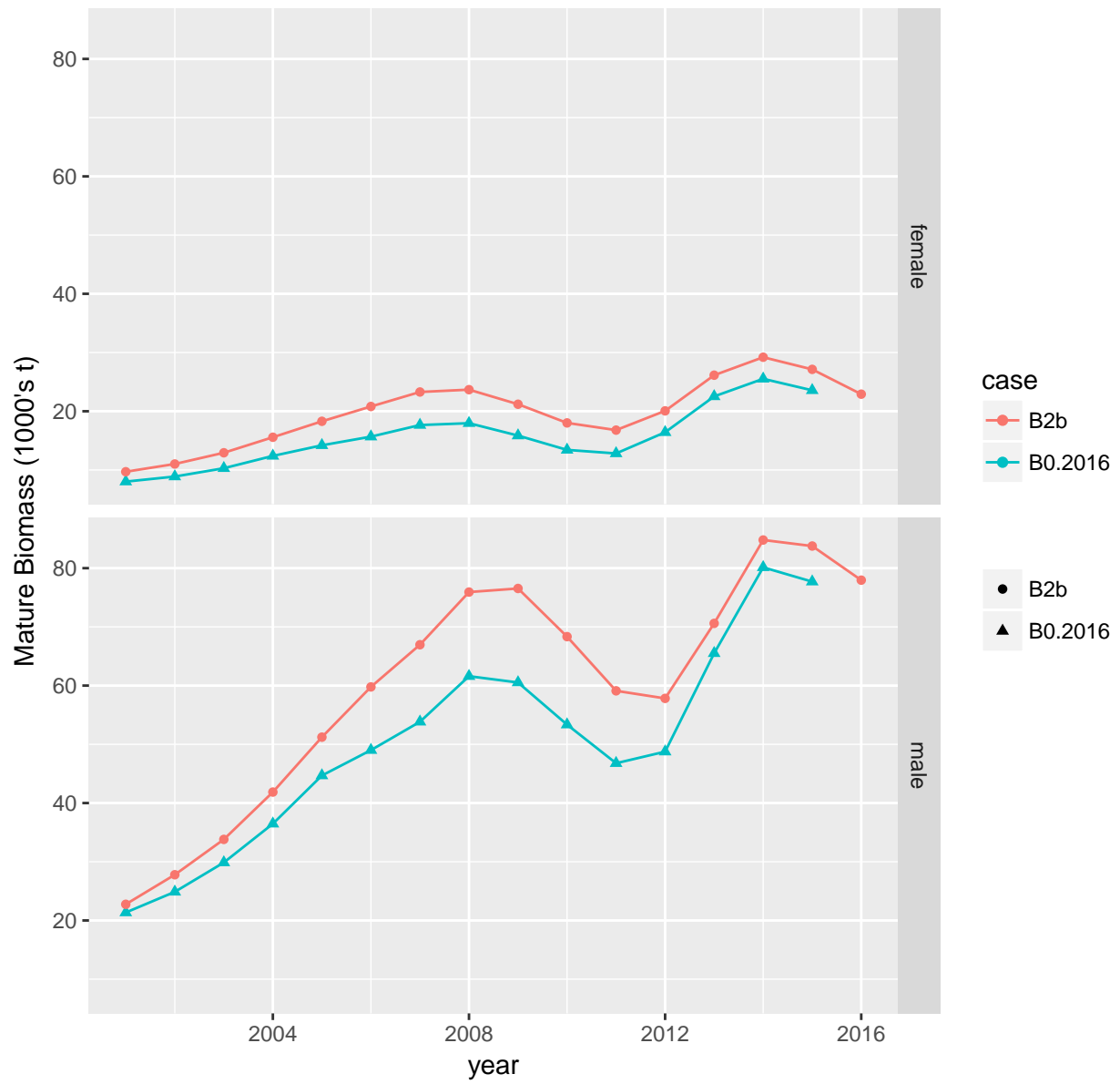


Figure 104: Estimated recent mature biomass.

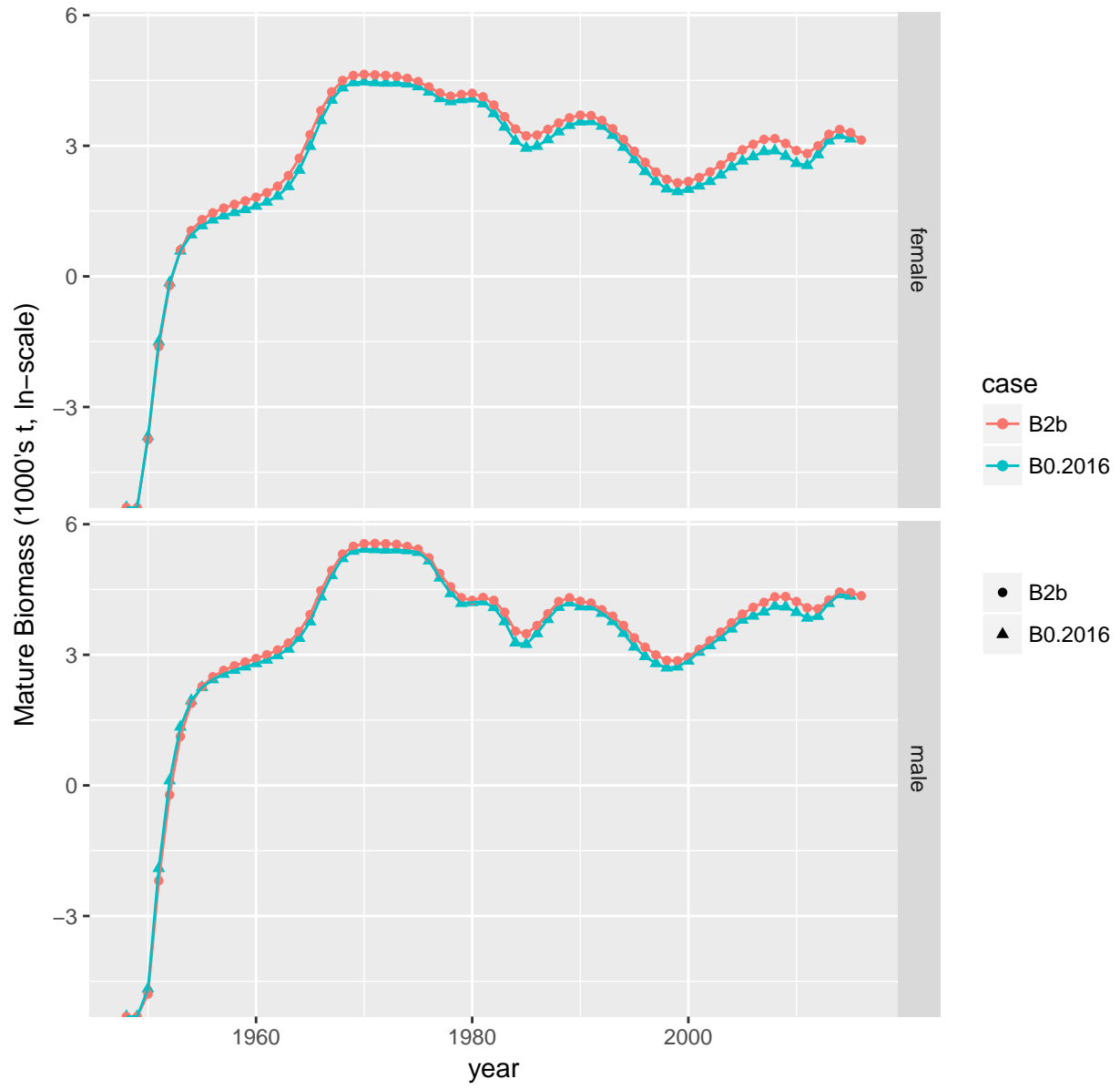


Figure 105: Estimated annual mature biomass, on ln-scale.

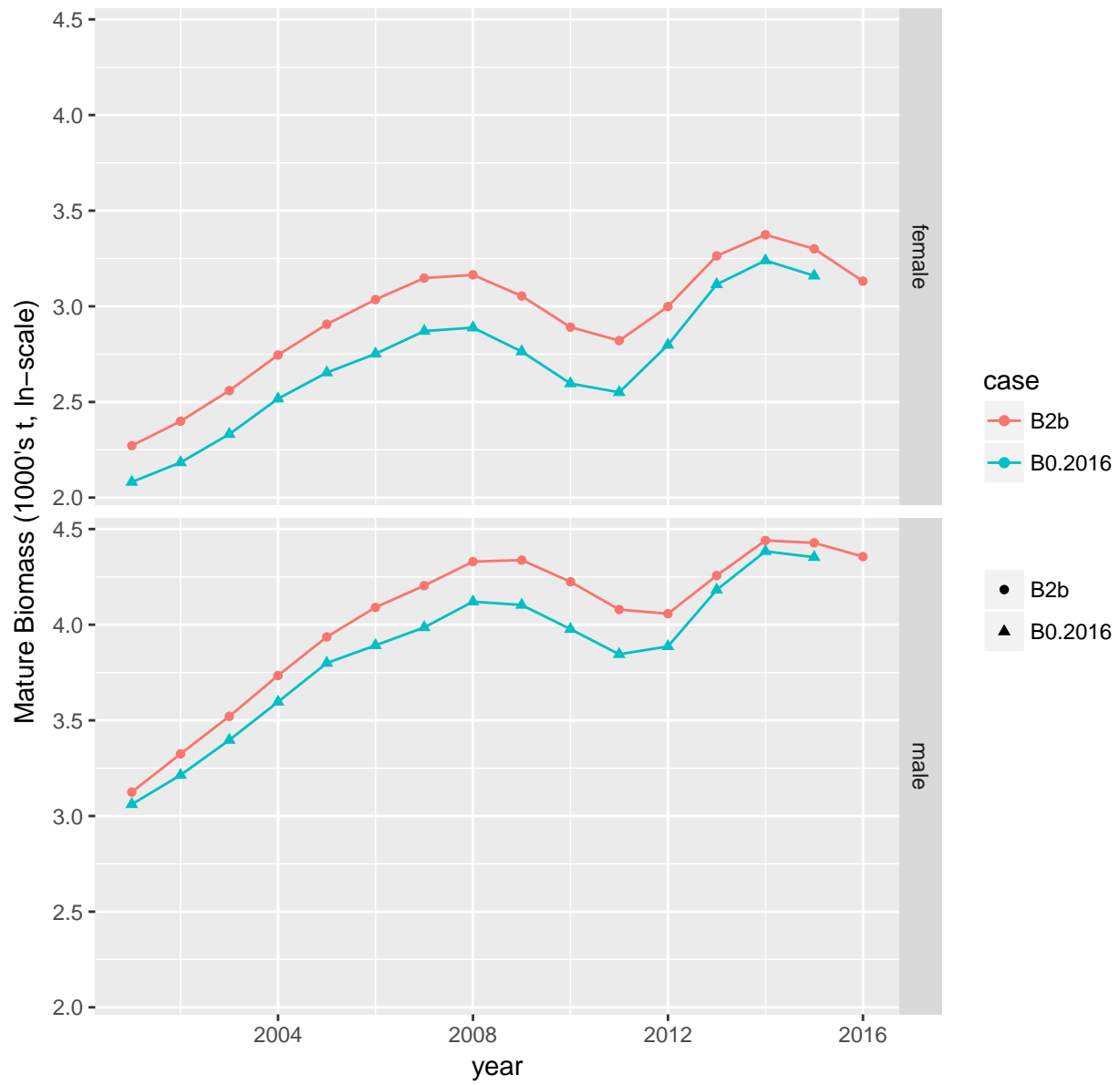


Figure 106: Estimated recent mature biomass, on ln-scale.

# Population abundance

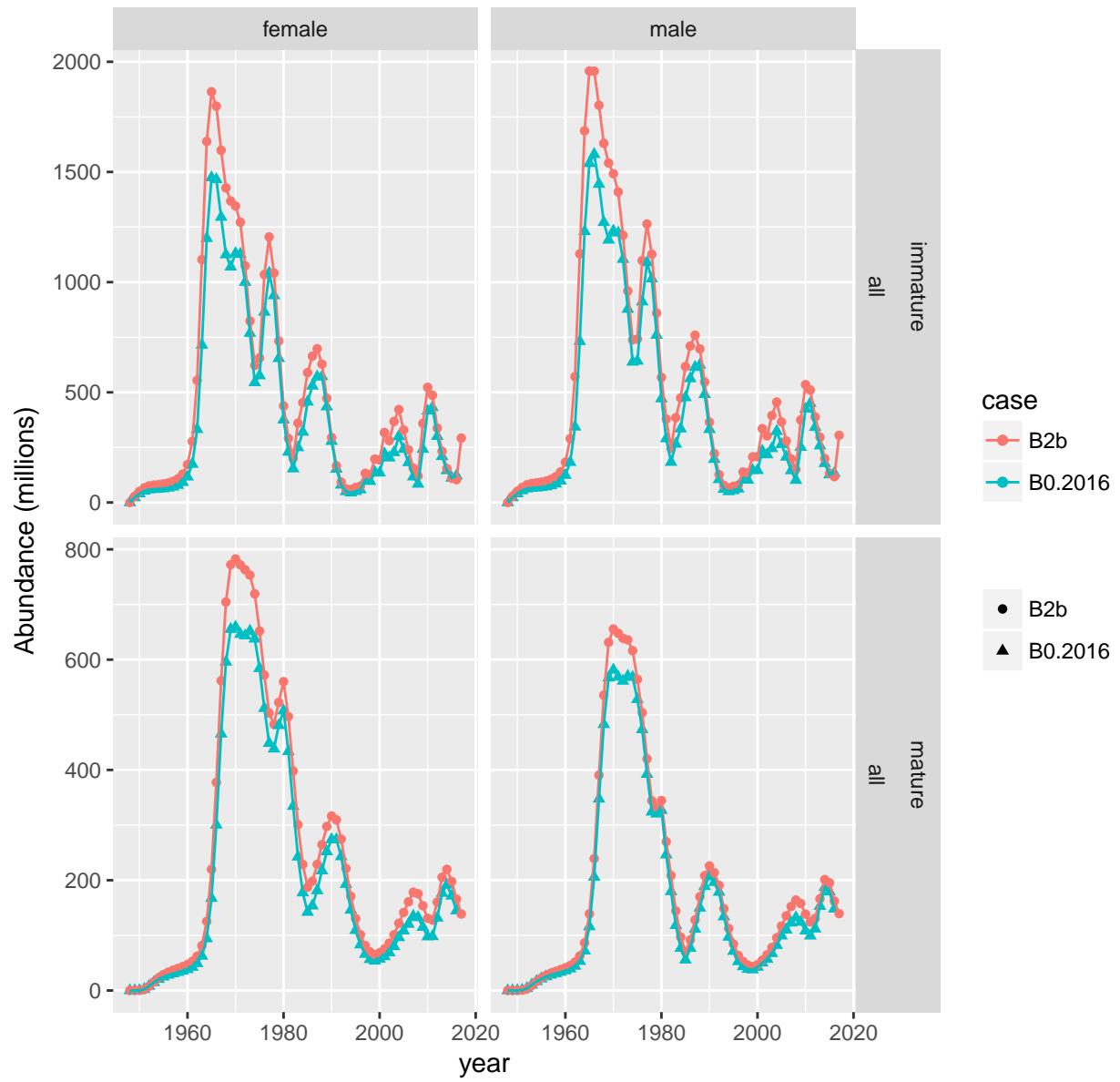


Figure 107: Population abundance trends.



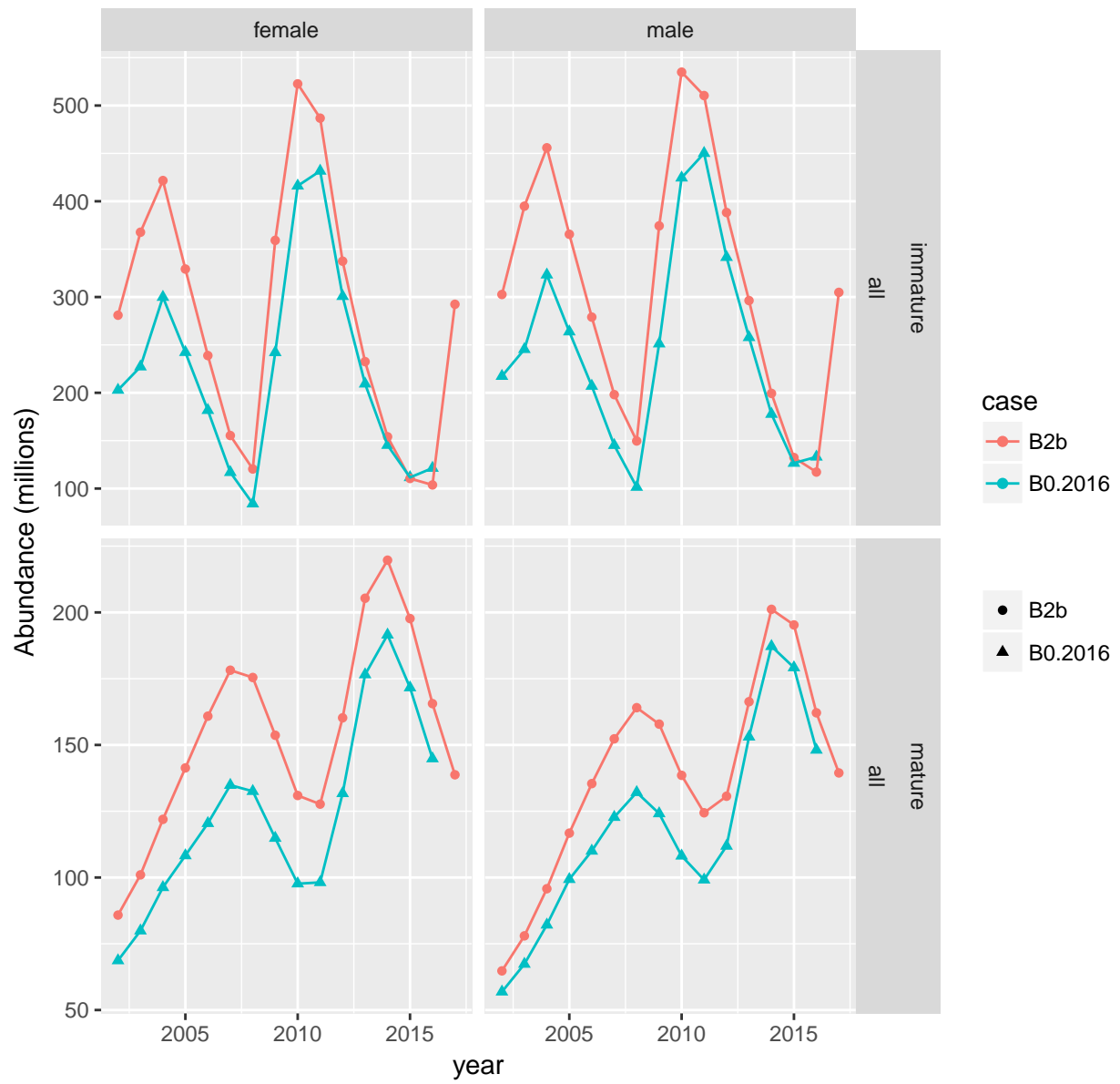


Figure 108: Recent population abundance trends.

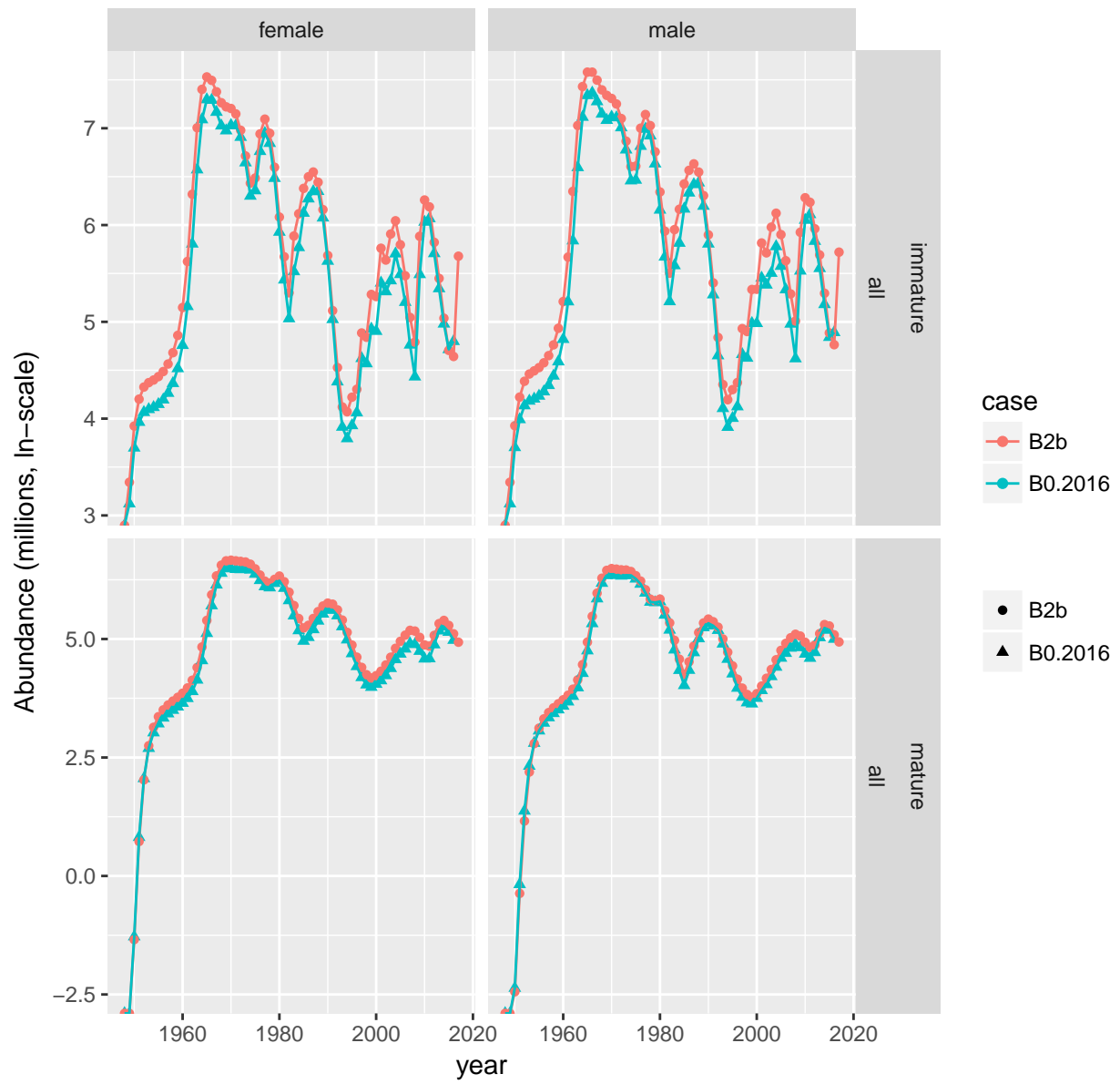


Figure 109: Ln-scale population abundance trends.

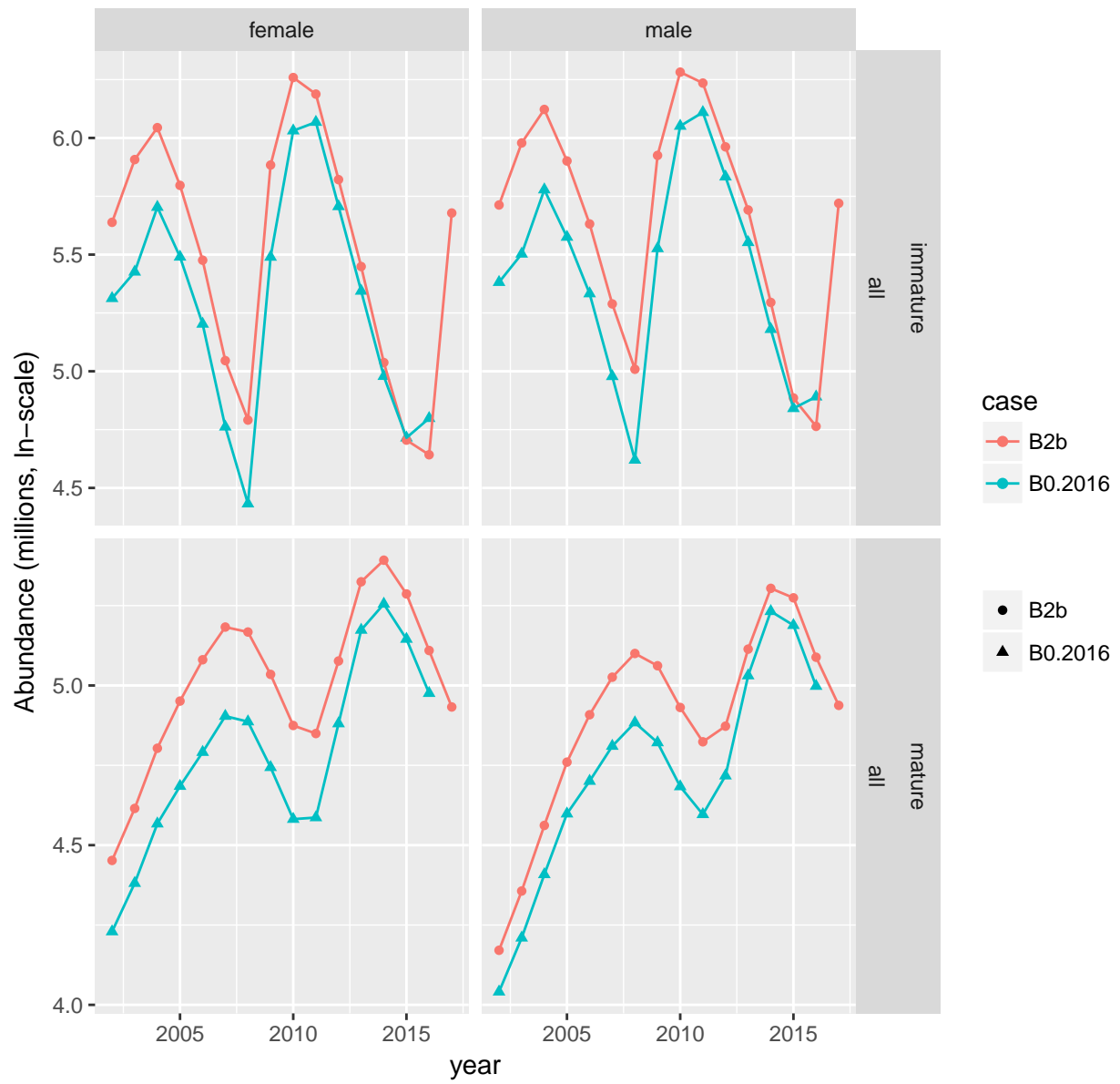


Figure 110: Recent ln-scale population abundance trends.

# Population biomass

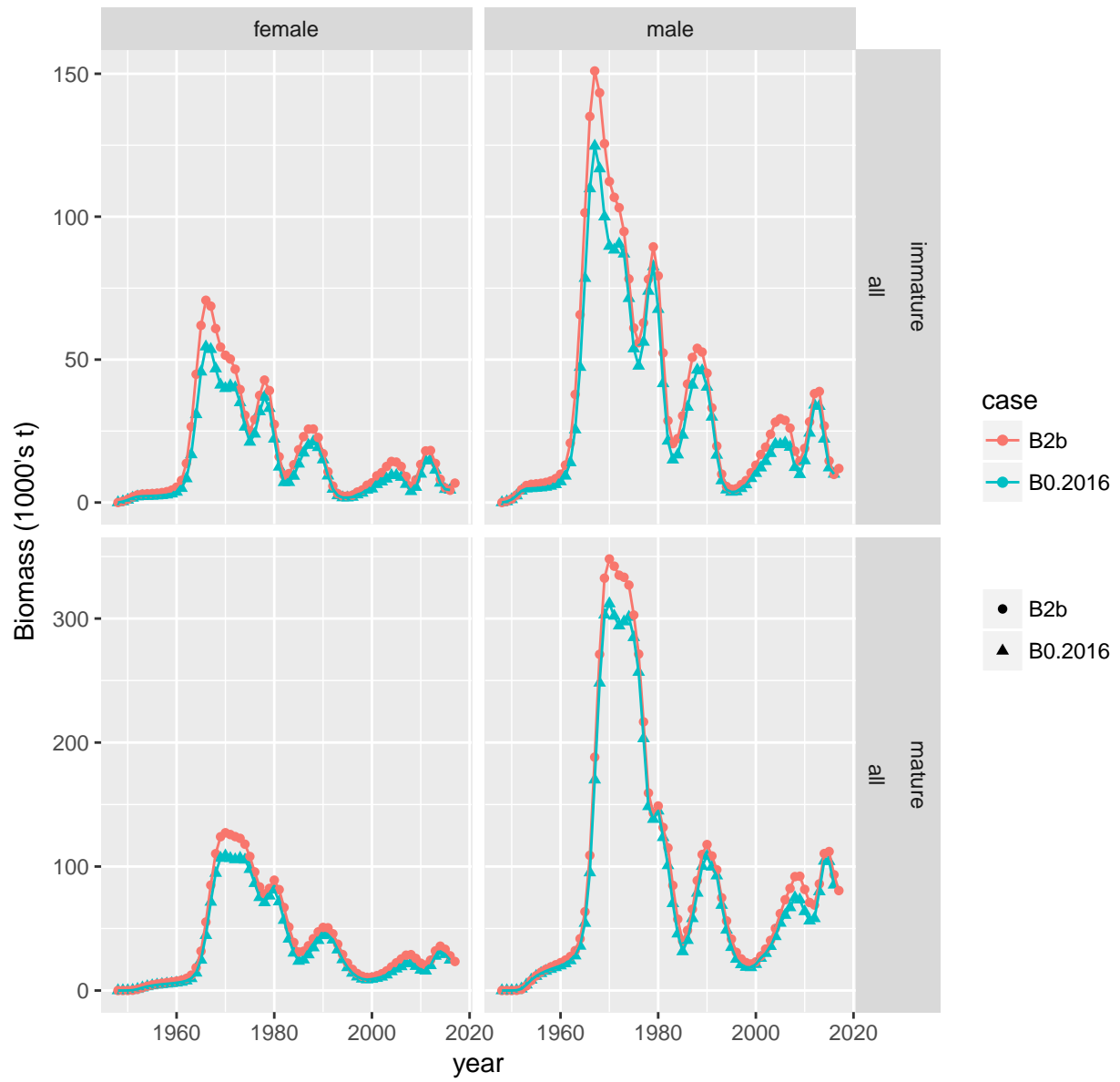


Figure 111: Population biomass trends.

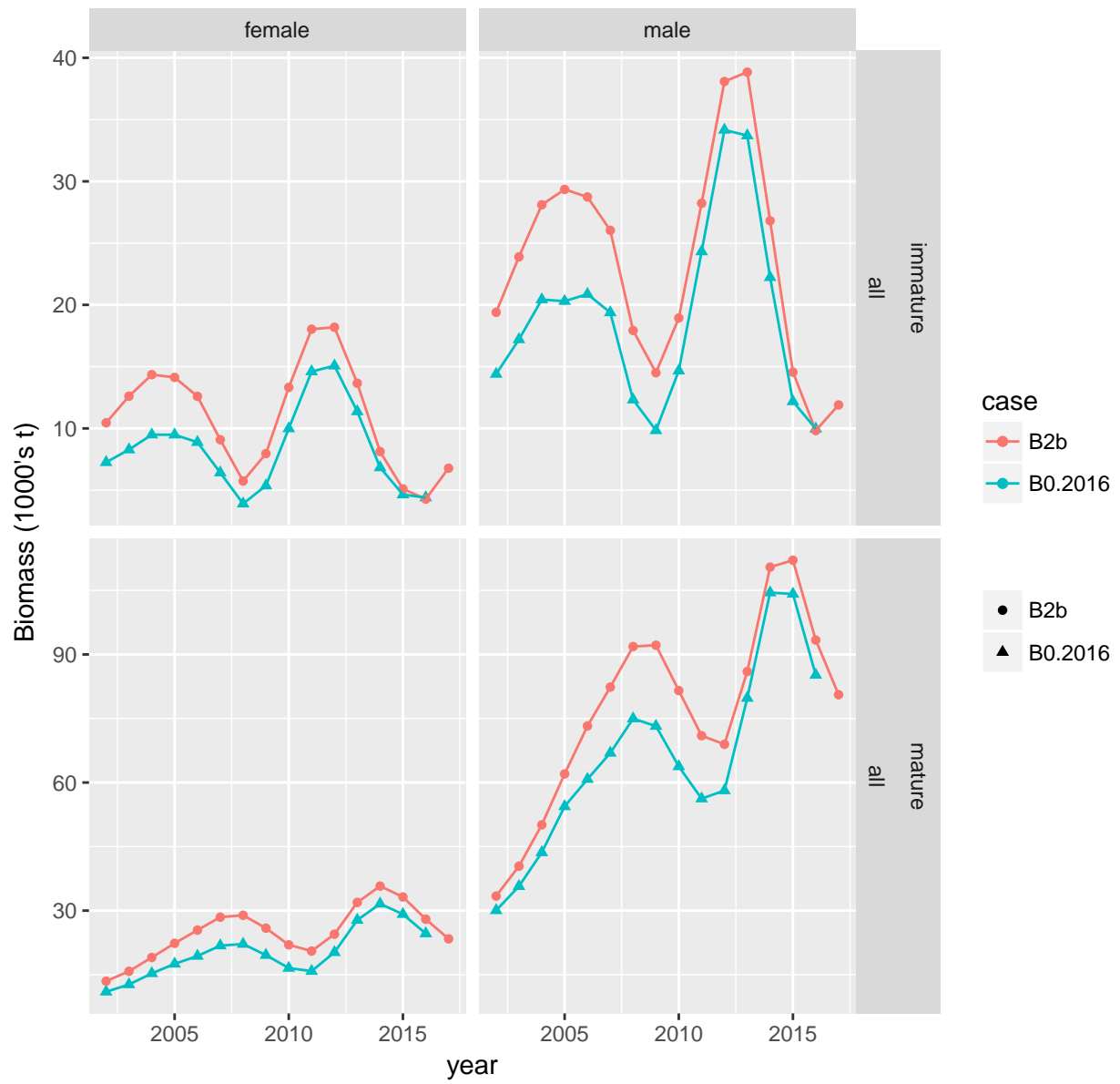


Figure 112: Recent population biomass trends.

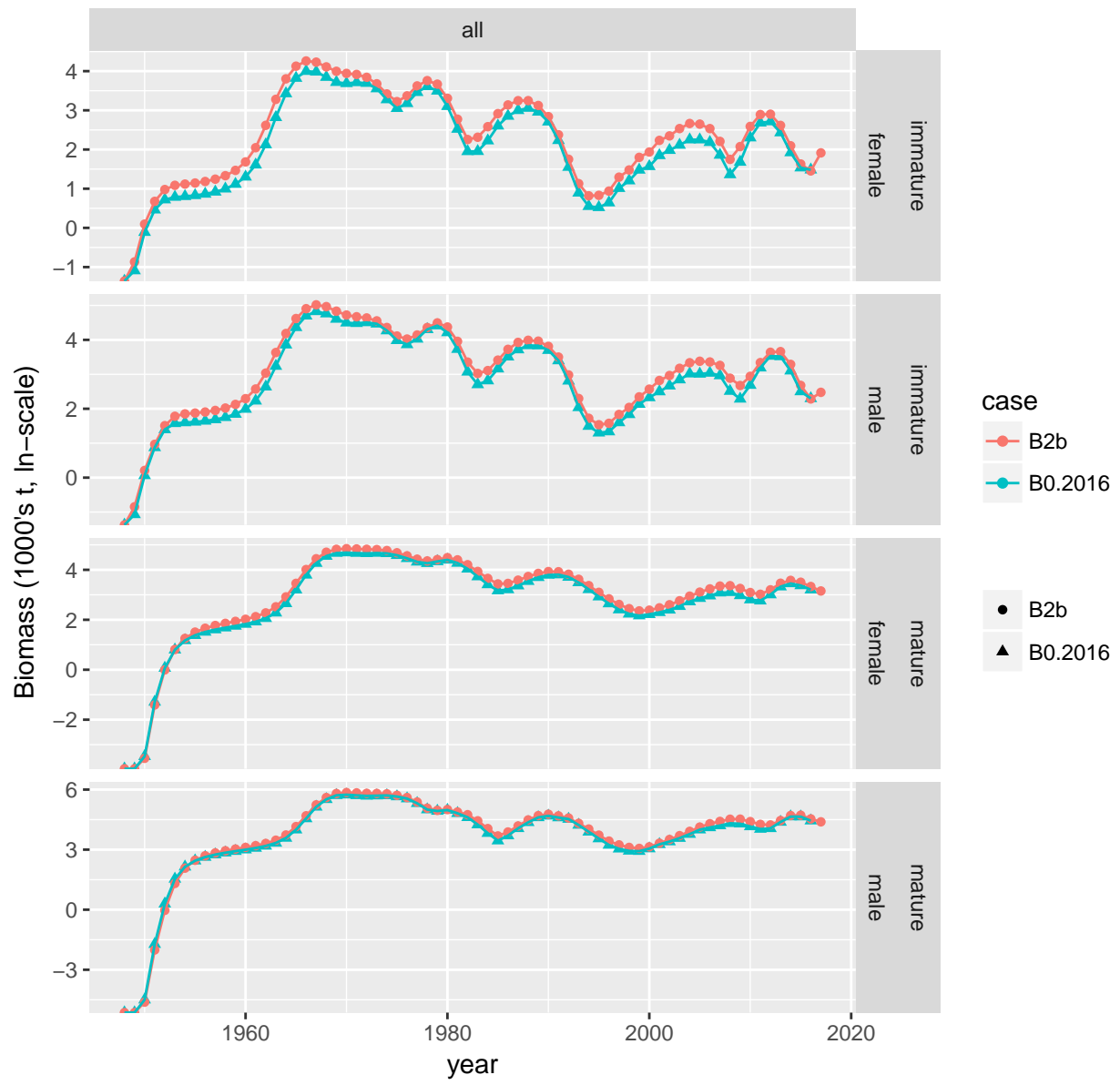


Figure 113: Ln-scale population biomass trends.

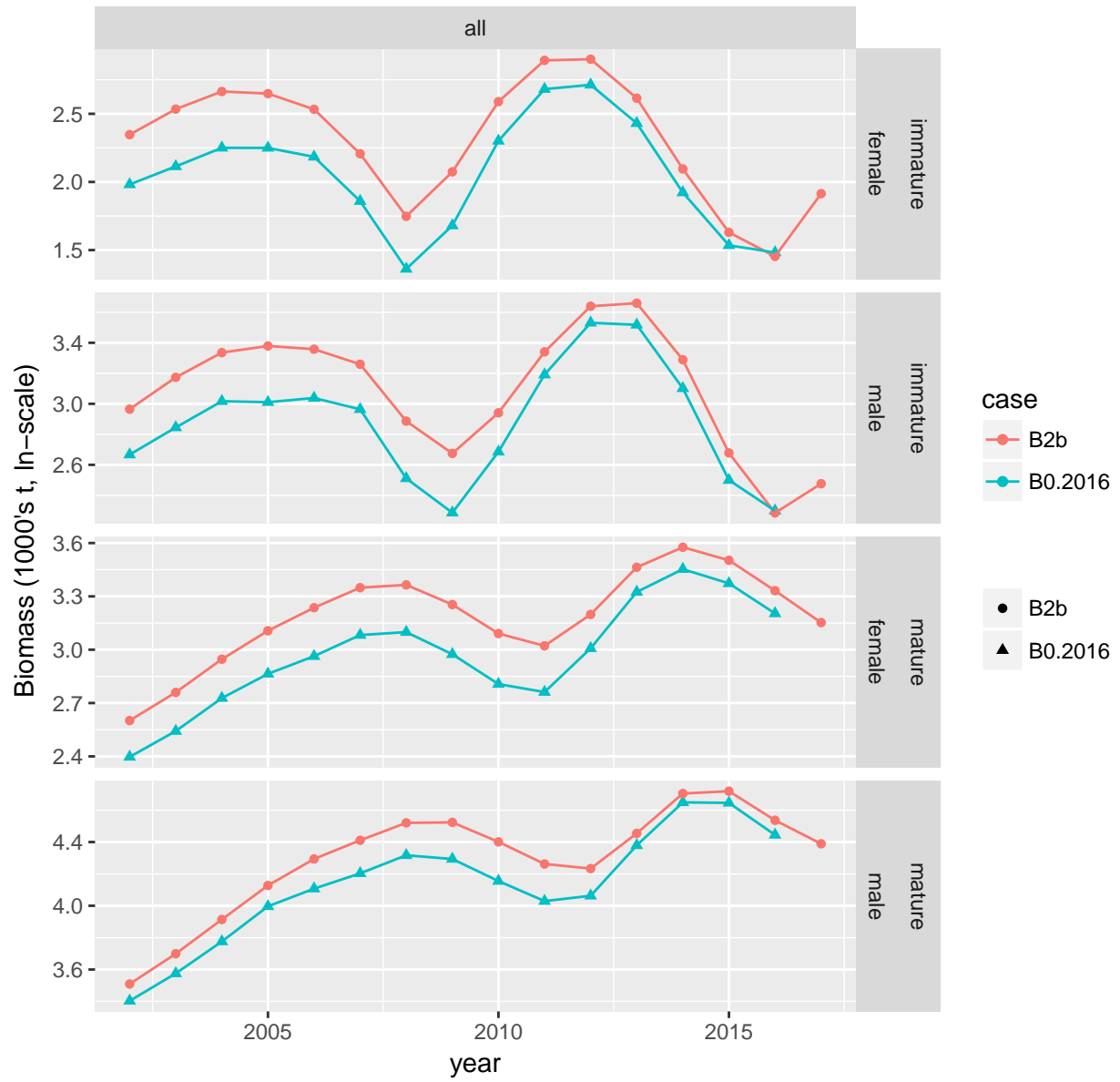


Figure 114: Recent ln-scale population biomass trends.