

# *Palythoa tuberculosa - Hawaii*

POPULATION SIZE, MIGRATION, DIVERGENCE, ASSIGNMENT, HISTORY

Bayesian inference using the structured coalescent

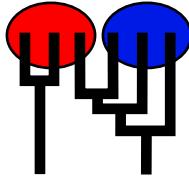
Migrate-n version 4.4.4(git:) [June-1-2019]

Compiled for PARALLEL computer architectures

One master and 31 compute nodes are available.

Program started at Tue Jan 25 13:54:50 2022

Program finished at Tue Jan 25 15:33:41 2022 [Runtime:0000:01:38:51]



## *Options*

Datatype:

DNA sequence data

Inheritance scalers in use for Thetas:

All loci use an inheritance scaler of 1.0

[The locus with a scaler of 1.0 used as reference]

Random number seed:

(with internal timer) 599164209

Start parameters:

Theta values were generated

Using a percent value of the prior

M values were generated

Using a percent value of the prior

Connection matrix:

m = average (average over a group of Thetas or M,

s = symmetric migration M, S = symmetric 4Nm,

0 = zero, and not estimated,

\* = migration free to vary, Thetas are on diagonal

d = row population split off column population, D = split and then migration

Population	1	2	3	4	5	6	7	8	9	10
1 Pop_Kure	*	*	0	0	0	0	0	0	0	0
2 Pop_P&H	*	*	*	0	0	0	0	0	0	0
3 Pop_Pbanks	0	*	*	*	0	0	0	0	0	0
4 Pop_MaroReef	0	0	*	*	*	0	0	0	0	0
5 Pop_FFS	0	0	0	*	*	*	0	0	0	0
6 Pop_Kauai	0	0	0	0	*	*	*	0	0	0
7 Pop_Oahu	0	0	0	0	0	*	*	*	0	0

8 Pop_Molokai	0	0	0	0	0	0	*	*	*	0
9 Pop_Maui	0	0	0	0	0	0	*	*	*	*
10 Pop_BigIsland	0	0	0	0	0	0	0	*	*	*

Order of parameters:

1	$\Theta_1$	<displayed>
2	$\Theta_2$	<displayed>
3	$\Theta_3$	<displayed>
4	$\Theta_4$	<displayed>
5	$\Theta_5$	<displayed>
6	$\Theta_6$	<displayed>
7	$\Theta_7$	<displayed>
8	$\Theta_8$	<displayed>
9	$\Theta_9$	<displayed>
10	$\Theta_{10}$	<displayed>
11	$M_{2 \rightarrow 1}$	<displayed>
12	$M_{1 \rightarrow 2}$	<displayed>
13	$M_{3 \rightarrow 2}$	<displayed>
14	$M_{2 \rightarrow 3}$	<displayed>
15	$M_{4 \rightarrow 3}$	<displayed>
16	$M_{3 \rightarrow 4}$	<displayed>
17	$M_{5 \rightarrow 4}$	<displayed>
18	$M_{4 \rightarrow 5}$	<displayed>
19	$M_{6 \rightarrow 5}$	<displayed>
20	$M_{5 \rightarrow 6}$	<displayed>
21	$M_{7 \rightarrow 6}$	<displayed>
22	$M_{6 \rightarrow 7}$	<displayed>
23	$M_{8 \rightarrow 7}$	<displayed>
24	$M_{7 \rightarrow 8}$	<displayed>
25	$M_{9 \rightarrow 8}$	<displayed>
26	$M_{8 \rightarrow 9}$	<displayed>
27	$M_{10 \rightarrow 9}$	<displayed>
28	$M_{9 \rightarrow 10}$	<displayed>

Mutation rate among loci:

Mutation rate is constant for all loci

Analysis strategy:

Bayesian inference

-Population size estimation:

Exponential Distribution

-Geneflow estimation:

Exponential Distribution

Proposal distributions for parameter

Parameter	Proposal
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Theta	Metropolis sampling
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M	Slice sampling							
Divergence	Metropolis sampling							
Divergence Spread	Metropolis sampling							
Genealogy	Metropolis-Hastings							
Prior distribution for parameter								
Parameter		Prior	Minimum	Mean	Maximum	Delta	Bins	UpdateFreq
1	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
2	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
3	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
4	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
5	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
6	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
7	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
8	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
9	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
10	Theta	*Exp window	0.000000	0.001	0.100	0.010	500	0.01190
11	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
12	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
13	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
14	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
15	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
16	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
17	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
18	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
19	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
20	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
21	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
22	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
23	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
24	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
25	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
26	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
27	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
28	M	*Exp window	0.000100	1000.	10000	100.0	500	0.01190
[* * means priors were set globally]								
Markov chain settings:								
Number of chains								
Recorded steps [a]								
Increment (record every x step [b])								
Number of concurrent chains (replicates) [c]								
Visited (sampled) parameter values [a*b*c]								
Number of discard trees per chain (burn-in)								
	Long chain							
	1							
	10000							
	100							
	1							
	1000000							
	2000							

Multiple Markov chains:

Static heating scheme

4 chains with temperatures  
1000000.00      3.00      1.50      1.00  
Swapping interval is 1

Print options:

Data file:

.../..ptuberculosis.mig

Haplotyping is turned on:

YES: NO report of haplotype probabilities

Output file:

outfile.txt

Log file:

logfile.txt

Posterior distribution raw histogram file:

bayesfile

Raw data from the MCMC run:

bayesallfile

Print data:

No

Print genealogies [only some for some data type]:

None

## Data summary

Data file: ../../ptuberculosa.mig  
 Datatype: Sequence data  
 Number of loci: 109

Mutationmodel:

Locus	Sublocus	Mutationmodel	Mutationmodel parameters
1	1	HKY	[Bf:0.31 0.21 0.18 0.29, kappa=1.000]
2	1	HKY	[Bf:0.29 0.20 0.23 0.28, kappa=1.000]
3	1	HKY	[Bf:0.26 0.29 0.23 0.22, kappa=1.000]
4	1	HKY	[Bf:0.32 0.22 0.21 0.25, kappa=1.000]
5	1	HKY	[Bf:0.33 0.19 0.23 0.24, kappa=1.000]
6	1	HKY	[Bf:0.26 0.20 0.19 0.35, kappa=1.000]
7	1	HKY	[Bf:0.25 0.18 0.22 0.35, kappa=1.000]
8	1	HKY	[Bf:0.27 0.19 0.18 0.36, kappa=1.000]
9	1	HKY	[Bf:0.30 0.24 0.24 0.22, kappa=1.000]
10	1	HKY	[Bf:0.31 0.23 0.23 0.24, kappa=1.000]
11	1	HKY	[Bf:0.33 0.20 0.23 0.24, kappa=1.000]
12	1	HKY	[Bf:0.21 0.24 0.22 0.32, kappa=1.000]
13	1	HKY	[Bf:0.28 0.17 0.21 0.35, kappa=1.000]
14	1	HKY	[Bf:0.22 0.23 0.27 0.29, kappa=1.000]
15	1	HKY	[Bf:0.29 0.23 0.28 0.21, kappa=1.000]
16	1	HKY	[Bf:0.32 0.14 0.27 0.27, kappa=1.000]
17	1	HKY	[Bf:0.35 0.21 0.13 0.31, kappa=1.000]
18	1	HKY	[Bf:0.27 0.25 0.25 0.23, kappa=1.000]
19	1	HKY	[Bf:0.32 0.19 0.27 0.22, kappa=1.000]
20	1	HKY	[Bf:0.25 0.21 0.21 0.33, kappa=1.000]
21	1	HKY	[Bf:0.20 0.31 0.23 0.26, kappa=1.000]
22	1	HKY	[Bf:0.32 0.18 0.18 0.31, kappa=1.000]
23	1	HKY	[Bf:0.28 0.16 0.14 0.42, kappa=1.000]
24	1	HKY	[Bf:0.28 0.26 0.24 0.23, kappa=1.000]
25	1	HKY	[Bf:0.32 0.21 0.24 0.23, kappa=1.000]
26	1	HKY	[Bf:0.35 0.22 0.27 0.16, kappa=1.000]
27	1	HKY	[Bf:0.26 0.27 0.16 0.31, kappa=1.000]
28	1	HKY	[Bf:0.33 0.26 0.21 0.19, kappa=1.000]
29	1	HKY	[Bf:0.36 0.23 0.19 0.22, kappa=1.000]
30	1	HKY	[Bf:0.32 0.14 0.25 0.28, kappa=1.000]
31	1	HKY	[Bf:0.29 0.27 0.23 0.22, kappa=1.000]
32	1	HKY	[Bf:0.28 0.22 0.17 0.33, kappa=1.000]
33	1	HKY	[Bf:0.35 0.15 0.20 0.30, kappa=1.000]
34	1	HKY	[Bf:0.22 0.22 0.22 0.34, kappa=1.000]

35	1	HKY	[Bf:0.35 0.14 0.17 0.33, kappa=1.000]
36	1	HKY	[Bf:0.31 0.19 0.28 0.23, kappa=1.000]
37	1	HKY	[Bf:0.27 0.18 0.27 0.28, kappa=1.000]
38	1	HKY	[Bf:0.40 0.21 0.24 0.14, kappa=1.000]
39	1	HKY	[Bf:0.37 0.22 0.20 0.21, kappa=1.000]
40	1	HKY	[Bf:0.30 0.19 0.18 0.32, kappa=1.000]
41	1	HKY	[Bf:0.27 0.24 0.20 0.29, kappa=1.000]
42	1	HKY	[Bf:0.34 0.19 0.15 0.32, kappa=1.000]
43	1	HKY	[Bf:0.29 0.15 0.25 0.31, kappa=1.000]
44	1	HKY	[Bf:0.27 0.18 0.18 0.37, kappa=1.000]
45	1	HKY	[Bf:0.30 0.19 0.22 0.28, kappa=1.000]
46	1	HKY	[Bf:0.38 0.19 0.30 0.13, kappa=1.000]
47	1	HKY	[Bf:0.18 0.28 0.21 0.32, kappa=1.000]
48	1	HKY	[Bf:0.24 0.28 0.33 0.15, kappa=1.000]
49	1	HKY	[Bf:0.27 0.21 0.21 0.31, kappa=1.000]
50	1	HKY	[Bf:0.27 0.20 0.21 0.32, kappa=1.000]
51	1	HKY	[Bf:0.29 0.16 0.25 0.29, kappa=1.000]
52	1	HKY	[Bf:0.32 0.12 0.24 0.32, kappa=1.000]
53	1	HKY	[Bf:0.19 0.27 0.21 0.33, kappa=1.000]
54	1	HKY	[Bf:0.28 0.21 0.21 0.30, kappa=1.000]
55	1	HKY	[Bf:0.36 0.18 0.27 0.19, kappa=1.000]
56	1	HKY	[Bf:0.31 0.23 0.25 0.21, kappa=1.000]
57	1	HKY	[Bf:0.20 0.23 0.18 0.39, kappa=1.000]
58	1	HKY	[Bf:0.28 0.23 0.26 0.24, kappa=1.000]
59	1	HKY	[Bf:0.28 0.20 0.17 0.36, kappa=1.000]
60	1	HKY	[Bf:0.36 0.21 0.16 0.28, kappa=1.000]
61	1	HKY	[Bf:0.35 0.22 0.18 0.25, kappa=1.000]
62	1	HKY	[Bf:0.27 0.24 0.20 0.29, kappa=1.000]
63	1	HKY	[Bf:0.28 0.23 0.24 0.25, kappa=1.000]
64	1	HKY	[Bf:0.29 0.25 0.22 0.23, kappa=1.000]
65	1	HKY	[Bf:0.28 0.22 0.22 0.28, kappa=1.000]
66	1	HKY	[Bf:0.24 0.26 0.21 0.30, kappa=1.000]
67	1	HKY	[Bf:0.24 0.25 0.24 0.28, kappa=1.000]
68	1	HKY	[Bf:0.21 0.21 0.25 0.33, kappa=1.000]
69	1	HKY	[Bf:0.20 0.22 0.21 0.37, kappa=1.000]
70	1	HKY	[Bf:0.21 0.19 0.22 0.38, kappa=1.000]
71	1	HKY	[Bf:0.30 0.23 0.14 0.33, kappa=1.000]
72	1	HKY	[Bf:0.30 0.24 0.23 0.24, kappa=1.000]
73	1	HKY	[Bf:0.31 0.23 0.22 0.25, kappa=1.000]
74	1	HKY	[Bf:0.31 0.18 0.25 0.25, kappa=1.000]
75	1	HKY	[Bf:0.25 0.27 0.22 0.26, kappa=1.000]
76	1	HKY	[Bf:0.32 0.22 0.25 0.20, kappa=1.000]
77	1	HKY	[Bf:0.30 0.19 0.23 0.28, kappa=1.000]
78	1	HKY	[Bf:0.25 0.20 0.24 0.30, kappa=1.000]
79	1	HKY	[Bf:0.30 0.20 0.21 0.29, kappa=1.000]

80	1	HKY	[Bf:0.32 0.20 0.22 0.27, kappa=1.000]
81	1	HKY	[Bf:0.20 0.23 0.33 0.24, kappa=1.000]
82	1	HKY	[Bf:0.29 0.22 0.26 0.23, kappa=1.000]
83	1	HKY	[Bf:0.27 0.27 0.21 0.25, kappa=1.000]
84	1	HKY	[Bf:0.34 0.19 0.16 0.31, kappa=1.000]
85	1	HKY	[Bf:0.28 0.24 0.18 0.30, kappa=1.000]
86	1	HKY	[Bf:0.22 0.33 0.25 0.20, kappa=1.000]
87	1	HKY	[Bf:0.30 0.18 0.19 0.32, kappa=1.000]
88	1	HKY	[Bf:0.33 0.22 0.24 0.21, kappa=1.000]
89	1	HKY	[Bf:0.35 0.18 0.13 0.34, kappa=1.000]
90	1	HKY	[Bf:0.31 0.21 0.23 0.26, kappa=1.000]
91	1	HKY	[Bf:0.21 0.22 0.25 0.32, kappa=1.000]
92	1	HKY	[Bf:0.22 0.20 0.22 0.36, kappa=1.000]
93	1	HKY	[Bf:0.32 0.27 0.20 0.21, kappa=1.000]
94	1	HKY	[Bf:0.22 0.27 0.25 0.25, kappa=1.000]
95	1	HKY	[Bf:0.25 0.21 0.20 0.35, kappa=1.000]
96	1	HKY	[Bf:0.28 0.22 0.19 0.32, kappa=1.000]
97	1	HKY	[Bf:0.23 0.23 0.23 0.30, kappa=1.000]
98	1	HKY	[Bf:0.20 0.23 0.22 0.34, kappa=1.000]
99	1	HKY	[Bf:0.25 0.20 0.24 0.31, kappa=1.000]
100	1	HKY	[Bf:0.33 0.22 0.26 0.19, kappa=1.000]
101	1	HKY	[Bf:0.30 0.18 0.20 0.32, kappa=1.000]
102	1	HKY	[Bf:0.32 0.15 0.24 0.29, kappa=1.000]
103	1	HKY	[Bf:0.29 0.25 0.17 0.29, kappa=1.000]
104	1	HKY	[Bf:0.29 0.17 0.24 0.30, kappa=1.000]
105	1	HKY	[Bf:0.27 0.23 0.26 0.25, kappa=1.000]
106	1	HKY	[Bf:0.32 0.21 0.28 0.19, kappa=1.000]
107	1	HKY	[Bf:0.26 0.24 0.20 0.30, kappa=1.000]
108	1	HKY	[Bf:0.39 0.19 0.12 0.30, kappa=1.000]
109	1	HKY	[Bf:0.33 0.22 0.22 0.23, kappa=1.000]

## Sites per locus

Locus	Sites
1	411
2	388
3	472
4	468
5	499
6	516
7	496
8	337
9	512
10	618
11	387

12	394
13	500
14	726
15	479
16	338
17	382
18	316
19	659
20	478
21	446
22	353
23	397
24	729
25	269
26	413
27	463
28	741
29	701
30	370
31	725
32	470
33	335
34	261
35	433
36	328
37	313
38	314
39	678
40	455
41	338
42	462
43	784
44	325
45	489
46	370
47	316
48	505
49	437
50	264
51	340
52	345
53	369
54	433
55	273
56	469

57	275
58	409
59	471
60	379
61	621
62	473
63	579
64	302
65	634
66	782
67	454
68	541
69	411
70	534
71	349
72	399
73	242
74	505
75	398
76	308
77	469
78	338
79	429
80	433
81	395
82	376
83	473
84	524
85	427
86	650
87	428
88	419
89	194
90	699
91	621
92	515
93	494
94	502
95	305
96	382
97	338
98	572
99	324
100	439
101	596

102	337
103	374
104	487
105	366
106	317
107	399
108	333
109	347

## Site rate variation and probabilities:

Locus	Sublocus	Region type	Rate of change	Probability	Patch size
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1	1	1	1.000	1.000	1.000
2	1	1	1.000	1.000	1.000
3	1	1	1.000	1.000	1.000
4	1	1	1.000	1.000	1.000
5	1	1	1.000	1.000	1.000
6	1	1	1.000	1.000	1.000
7	1	1	1.000	1.000	1.000
8	1	1	1.000	1.000	1.000
9	1	1	1.000	1.000	1.000
10	1	1	1.000	1.000	1.000
11	1	1	1.000	1.000	1.000
12	1	1	1.000	1.000	1.000
13	1	1	1.000	1.000	1.000
14	1	1	1.000	1.000	1.000
15	1	1	1.000	1.000	1.000
16	1	1	1.000	1.000	1.000
17	1	1	1.000	1.000	1.000
18	1	1	1.000	1.000	1.000
19	1	1	1.000	1.000	1.000
20	1	1	1.000	1.000	1.000
21	1	1	1.000	1.000	1.000
22	1	1	1.000	1.000	1.000
23	1	1	1.000	1.000	1.000
24	1	1	1.000	1.000	1.000
25	1	1	1.000	1.000	1.000
26	1	1	1.000	1.000	1.000
27	1	1	1.000	1.000	1.000
28	1	1	1.000	1.000	1.000
29	1	1	1.000	1.000	1.000
30	1	1	1.000	1.000	1.000
31	1	1	1.000	1.000	1.000
32	1	1	1.000	1.000	1.000
33	1	1	1.000	1.000	1.000

34	1	1	1.000	1.000	1.000
35	1	1	1.000	1.000	1.000
36	1	1	1.000	1.000	1.000
37	1	1	1.000	1.000	1.000
38	1	1	1.000	1.000	1.000
39	1	1	1.000	1.000	1.000
40	1	1	1.000	1.000	1.000
41	1	1	1.000	1.000	1.000
42	1	1	1.000	1.000	1.000
43	1	1	1.000	1.000	1.000
44	1	1	1.000	1.000	1.000
45	1	1	1.000	1.000	1.000
46	1	1	1.000	1.000	1.000
47	1	1	1.000	1.000	1.000
48	1	1	1.000	1.000	1.000
49	1	1	1.000	1.000	1.000
50	1	1	1.000	1.000	1.000
51	1	1	1.000	1.000	1.000
52	1	1	1.000	1.000	1.000
53	1	1	1.000	1.000	1.000
54	1	1	1.000	1.000	1.000
55	1	1	1.000	1.000	1.000
56	1	1	1.000	1.000	1.000
57	1	1	1.000	1.000	1.000
58	1	1	1.000	1.000	1.000
59	1	1	1.000	1.000	1.000
60	1	1	1.000	1.000	1.000
61	1	1	1.000	1.000	1.000
62	1	1	1.000	1.000	1.000
63	1	1	1.000	1.000	1.000
64	1	1	1.000	1.000	1.000
65	1	1	1.000	1.000	1.000
66	1	1	1.000	1.000	1.000
67	1	1	1.000	1.000	1.000
68	1	1	1.000	1.000	1.000
69	1	1	1.000	1.000	1.000
70	1	1	1.000	1.000	1.000
71	1	1	1.000	1.000	1.000
72	1	1	1.000	1.000	1.000
73	1	1	1.000	1.000	1.000
74	1	1	1.000	1.000	1.000
75	1	1	1.000	1.000	1.000
76	1	1	1.000	1.000	1.000
77	1	1	1.000	1.000	1.000
78	1	1	1.000	1.000	1.000

79	1	1	1.000	1.000	1.000
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83	1	1	1.000	1.000	1.000
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85	1	1	1.000	1.000	1.000
86	1	1	1.000	1.000	1.000
87	1	1	1.000	1.000	1.000
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103	1	1	1.000	1.000	1.000
104	1	1	1.000	1.000	1.000
105	1	1	1.000	1.000	1.000
106	1	1	1.000	1.000	1.000
107	1	1	1.000	1.000	1.000
108	1	1	1.000	1.000	1.000
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Population			Locus		Gene copies
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4 Pop\_MaroReef

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9 Pop_Maui	1	20
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10 Pop_BigIsland	1	34
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Total of all populations	1	186
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## Bayesian Analysis: Posterior distribution table

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
All	$\Theta_1$	0.00500	0.00500	0.00530	0.00540	0.00560	0.00550	0.00537
All	$\Theta_2$	0.00420	0.00440	0.00470	0.00480	0.00480	0.00490	0.00465
All	$\Theta_3$	0.00400	0.00400	0.00430	0.00440	0.00460	0.00450	0.00438
All	$\Theta_4$	0.00440	0.00440	0.00470	0.00480	0.00500	0.00490	0.00474
All	$\Theta_5$	0.00500	0.00520	0.00550	0.00560	0.00580	0.00570	0.00546
All	$\Theta_6$	0.00540	0.00560	0.00590	0.00600	0.00620	0.00610	0.00588
All	$\Theta_7$	0.00500	0.00520	0.00550	0.00560	0.00560	0.00570	0.00546
All	$\Theta_8$	0.00500	0.00520	0.00550	0.00560	0.00580	0.00570	0.00551
All	$\Theta_9$	0.00500	0.00520	0.00550	0.00560	0.00560	0.00570	0.00541
All	$\Theta_{10}$	0.00580	0.00600	0.00630	0.00640	0.00660	0.00650	0.00634
All	$M_{2>1}$	4580.0	4640.0	4690.0	4720.0	4760.0	4710.0	4682.6
All	$M_{1>2}$	4480.0	4560.0	4610.0	4640.0	4700.0	4630.0	4604.0
All	$M_{3>2}$	4600.0	4640.0	4690.0	4720.0	4780.0	4710.0	4694.7
All	$M_{2>3}$	4560.0	4600.0	4650.0	4680.0	4740.0	4670.0	4654.6
All	$M_{4>3}$	4580.0	4640.0	4690.0	4720.0	4760.0	4710.0	4685.1
All	$M_{3>4}$	4560.0	4600.0	4650.0	4680.0	4740.0	4670.0	4653.6
All	$M_{5>4}$	4580.0	4640.0	4690.0	4720.0	4760.0	4710.0	4685.1
All	$M_{4>5}$	4500.0	4560.0	4610.0	4640.0	4700.0	4630.0	4611.3
All	$M_{6>5}$	4580.0	4620.0	4670.0	4700.0	4760.0	4690.0	4676.7
All	$M_{5>6}$	240.0	300.0	350.0	400.0	460.0	370.0	358.2
All	$M_{7>6}$	4440.0	4440.0	4510.0	4520.0	4560.0	4530.0	4511.5
All	$M_{6>7}$	4540.0	4600.0	4650.0	4680.0	4720.0	4670.0	4662.8
All	$M_{8>7}$	340.0	420.0	490.0	540.0	640.0	510.0	495.6
All	$M_{7>8}$	4560.0	4620.0	4670.0	4700.0	4740.0	4690.0	4661.3
All	$M_{9>8}$	4460.0	4540.0	4610.0	4640.0	4700.0	4630.0	4596.4
All	$M_{8>9}$	4560.0	4600.0	4650.0	4680.0	4740.0	4670.0	4654.7
All	$M_{10>9}$	120.0	200.0	250.0	300.0	380.0	270.0	256.9
All	$M_{9>10}$	4540.0	4600.0	4650.0	4680.0	4720.0	4670.0	4649.1

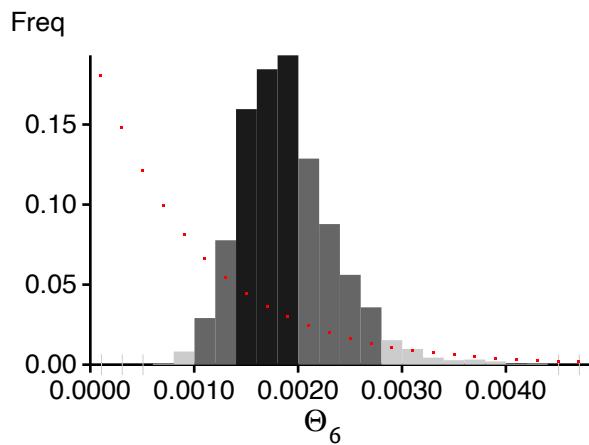
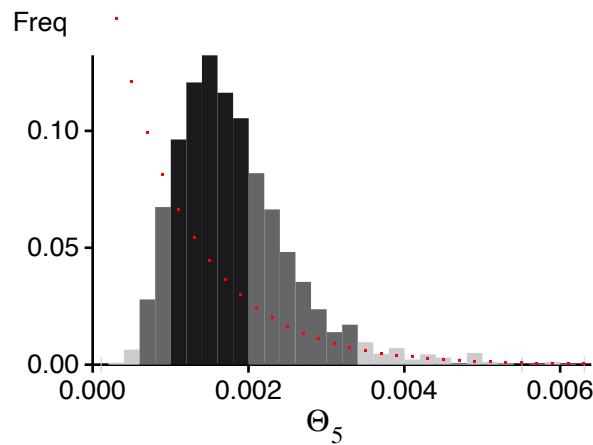
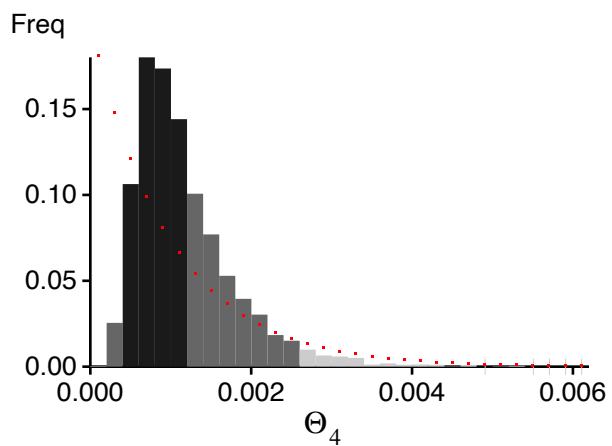
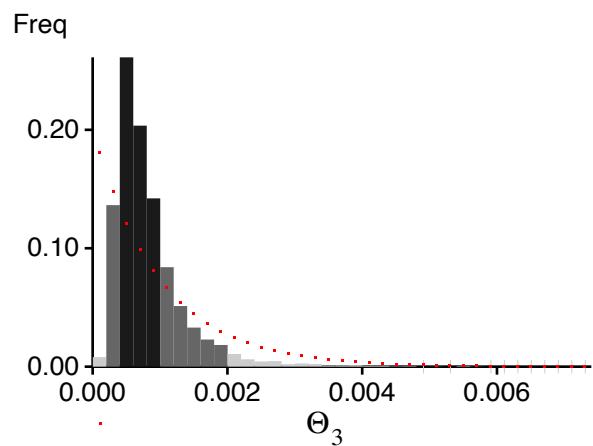
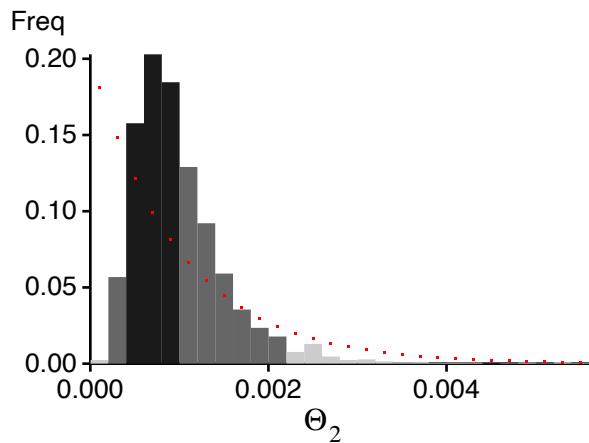
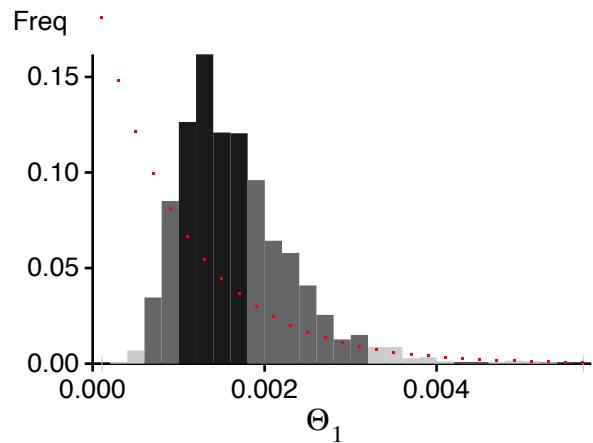
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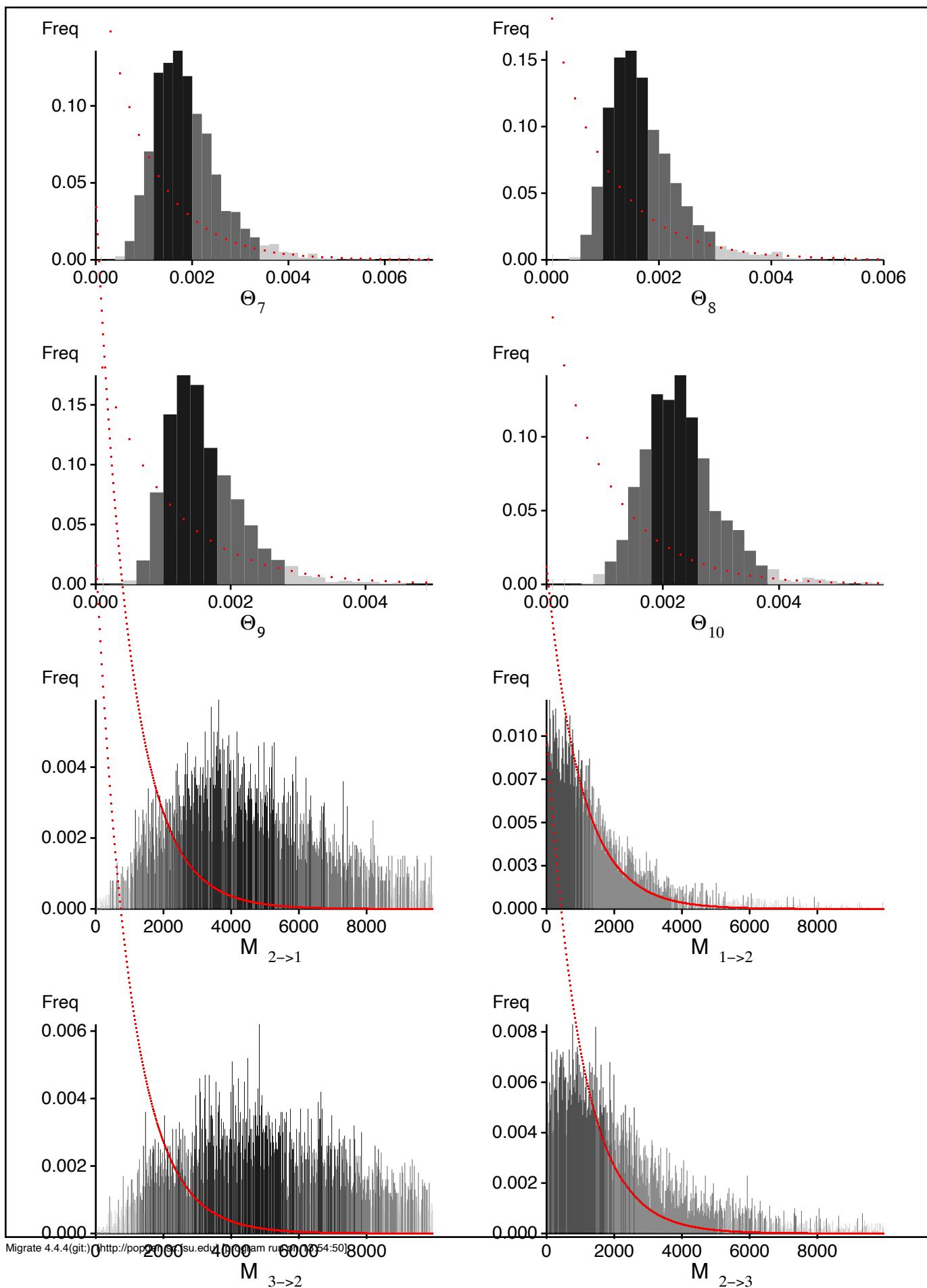
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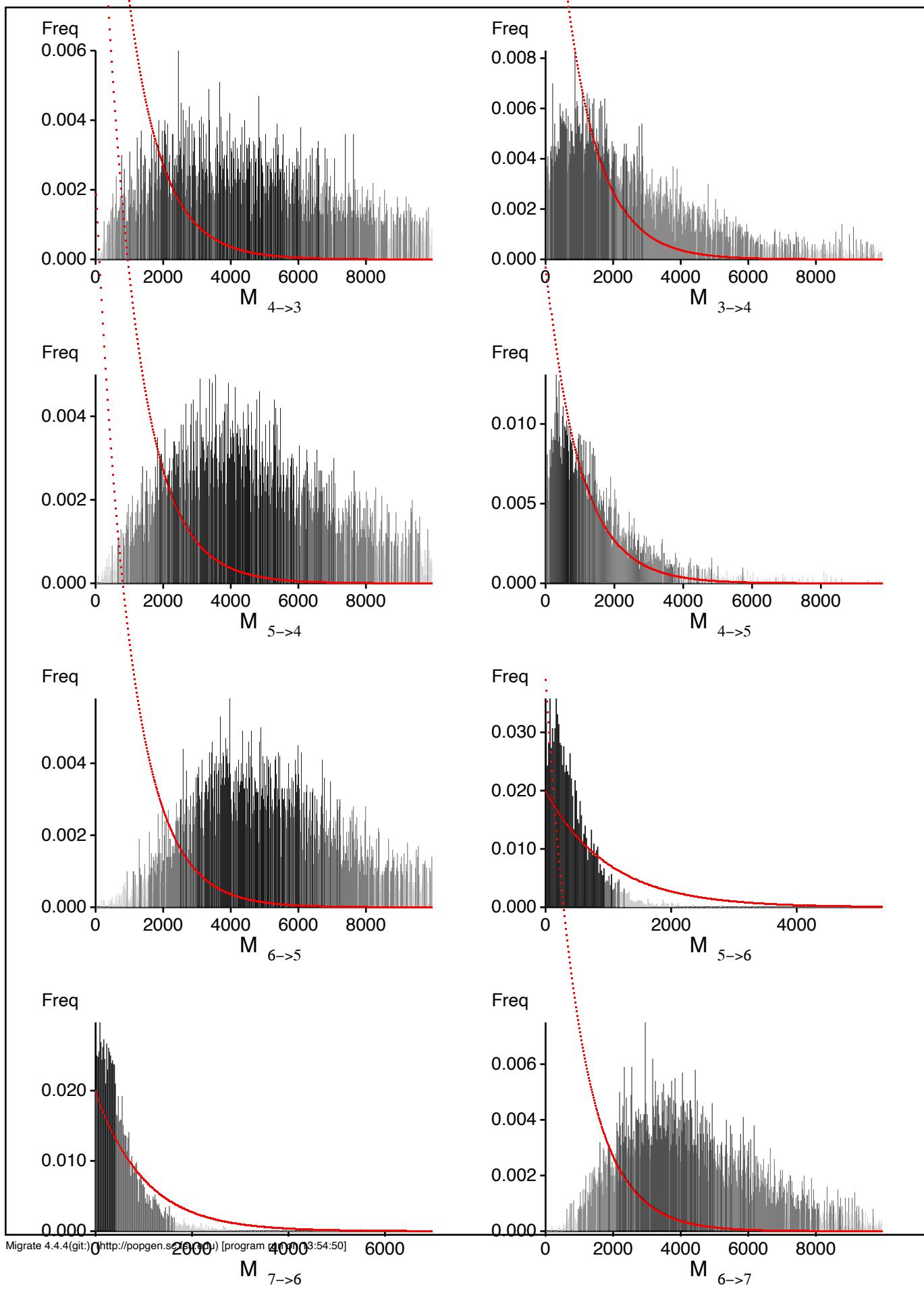
Beerli P., 2007. Estimation of the population scaled mutation rate from microsatellite data, *Genetics*, 177:1967-1968.

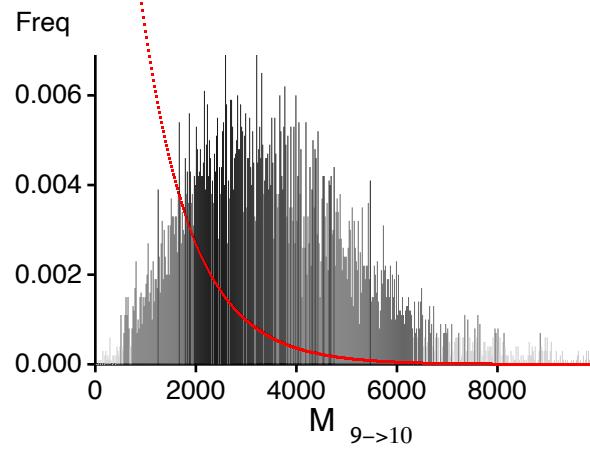
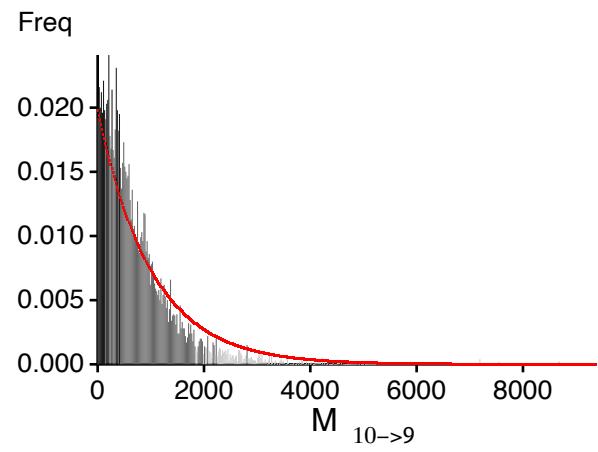
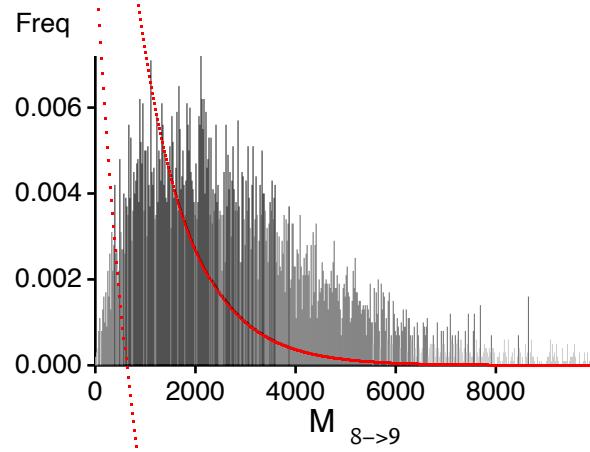
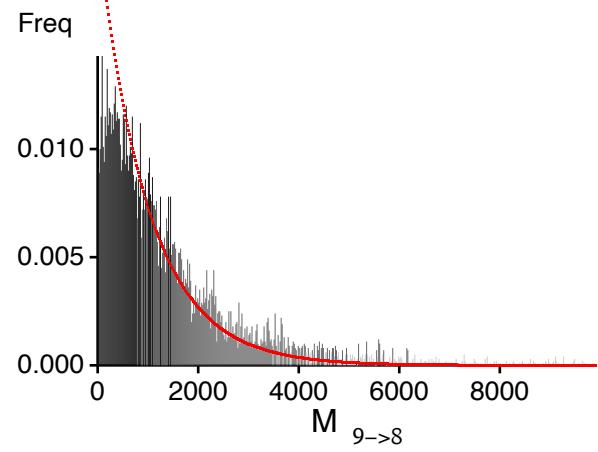
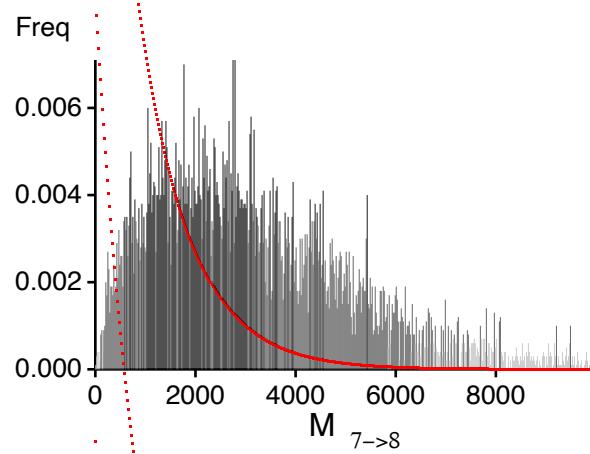
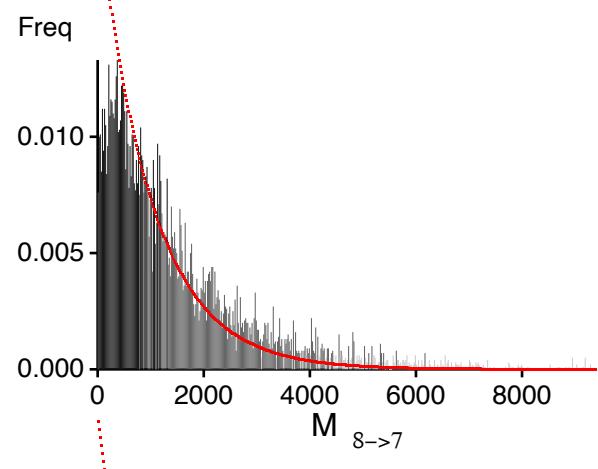
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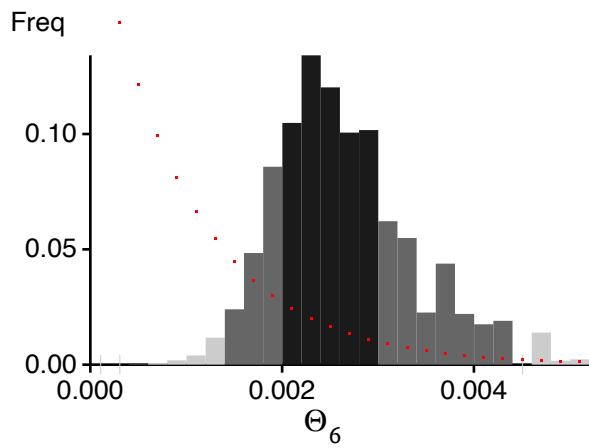
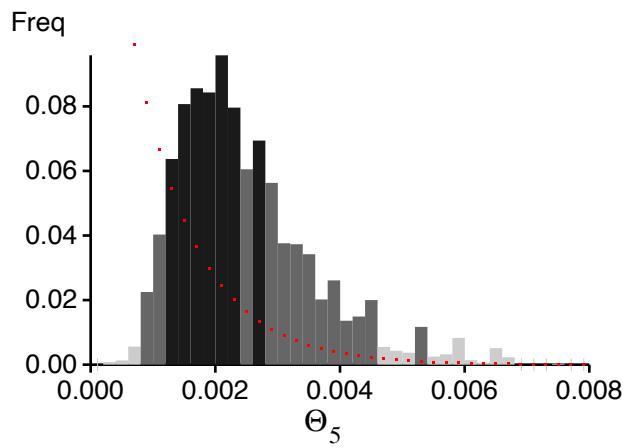
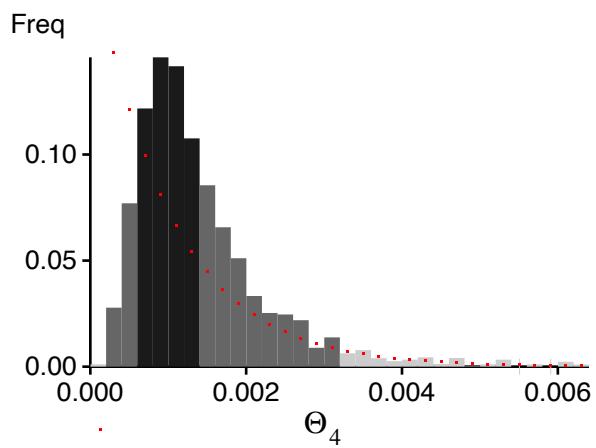
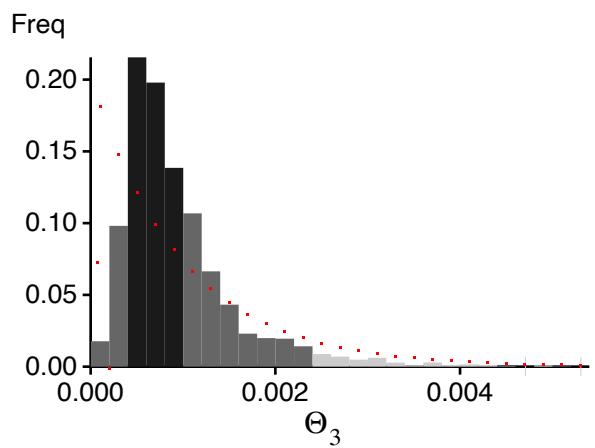
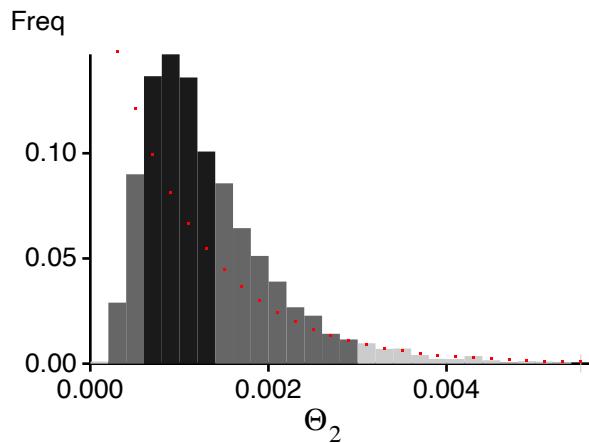
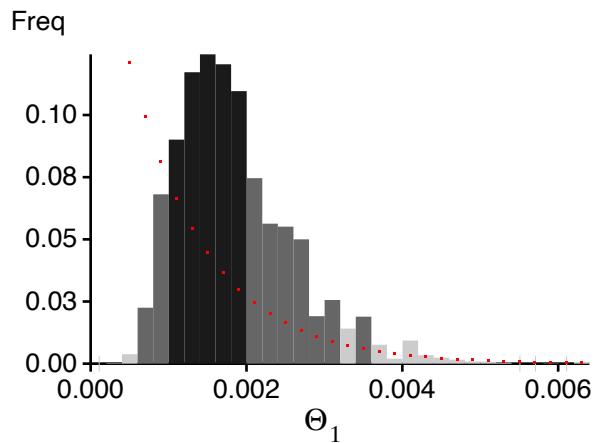
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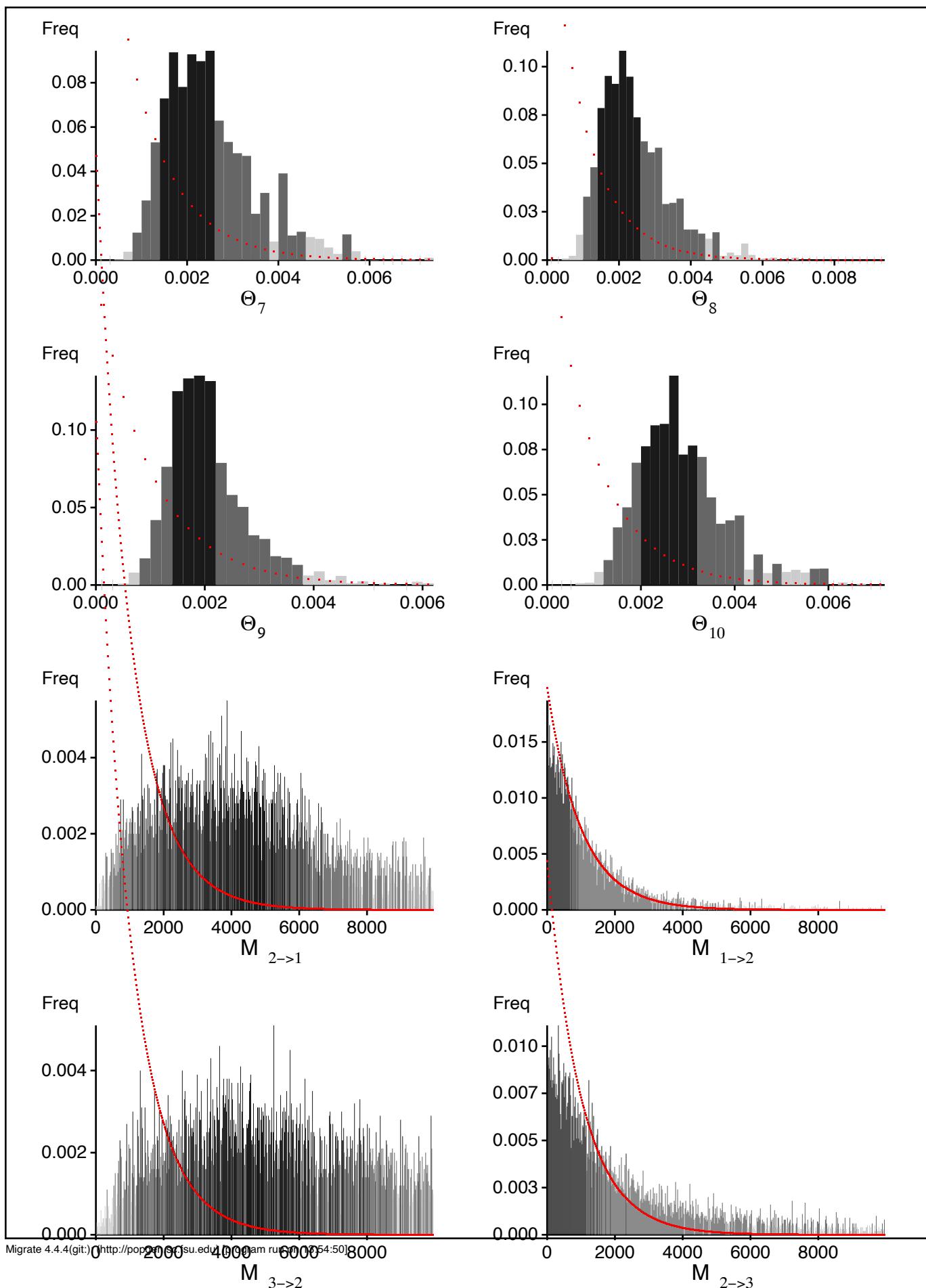
*Bayesian Analysis: Posterior distribution for locus 1*

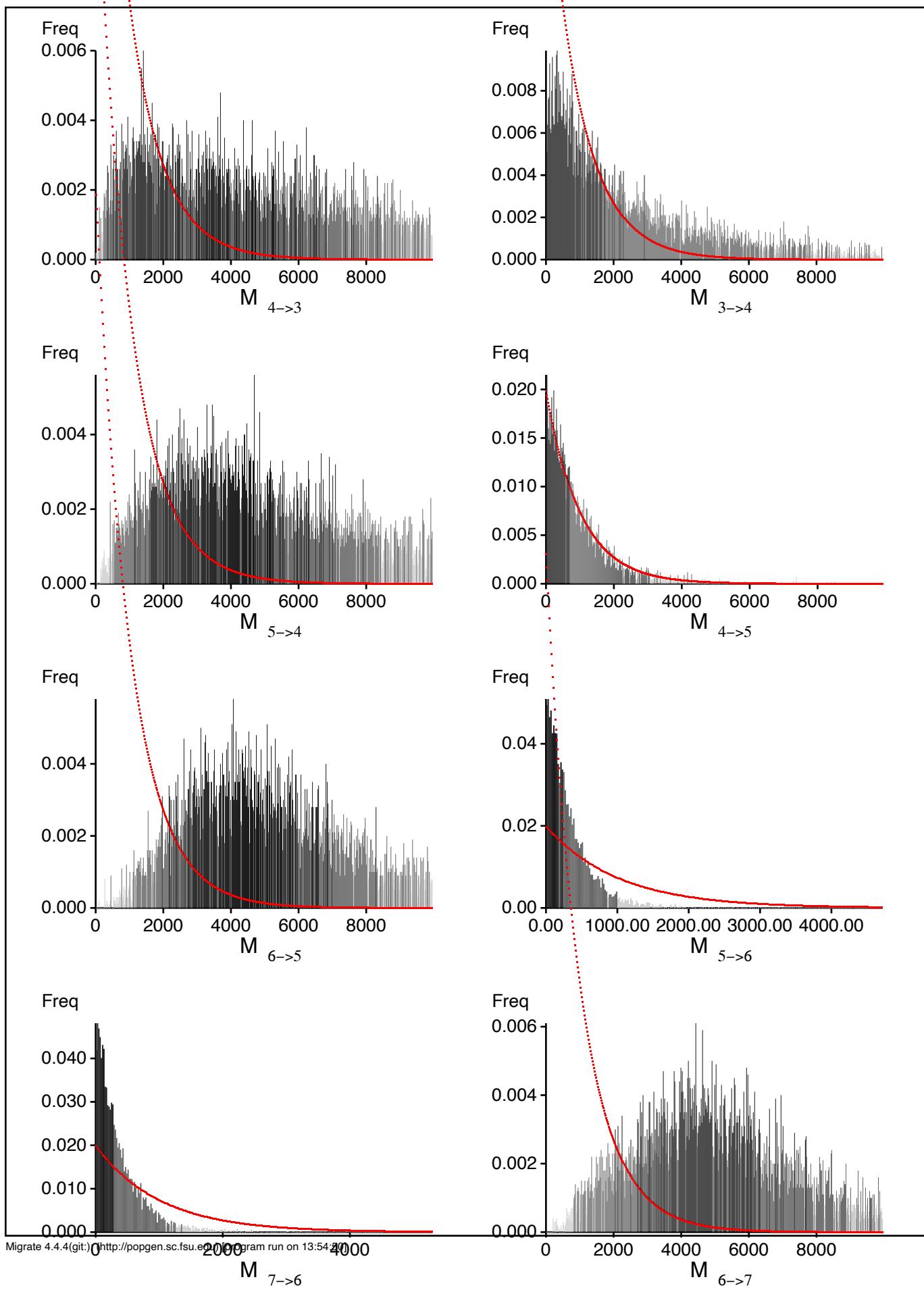


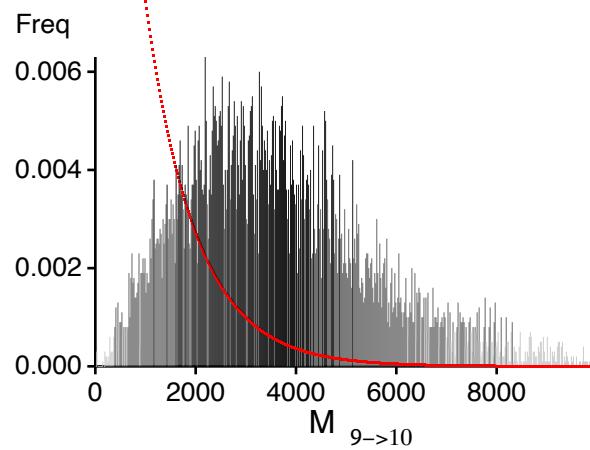
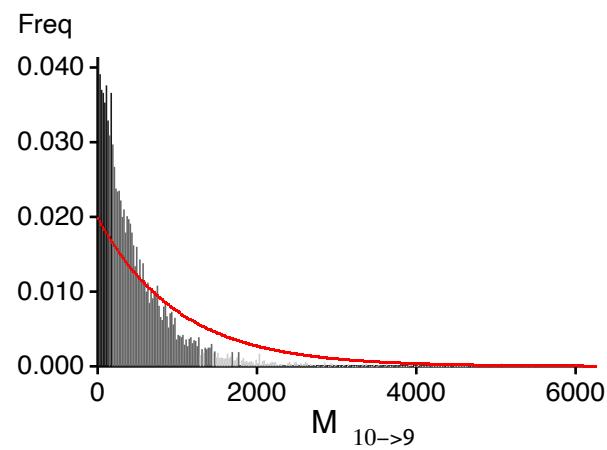
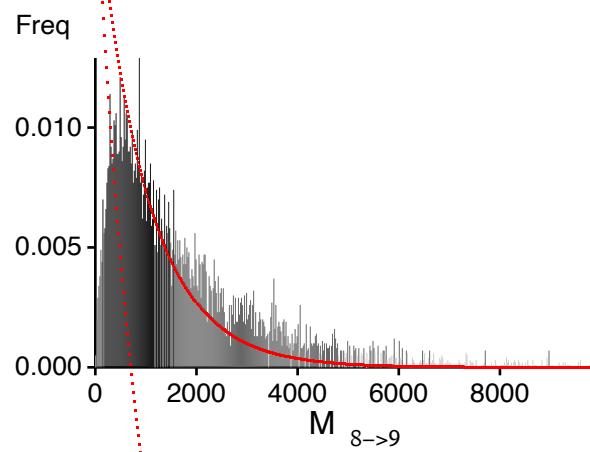
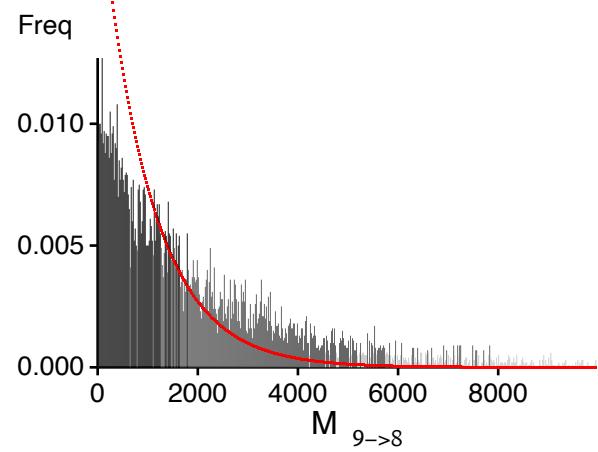
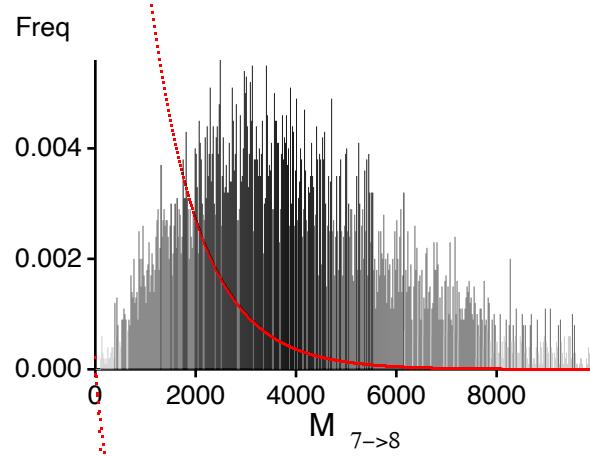
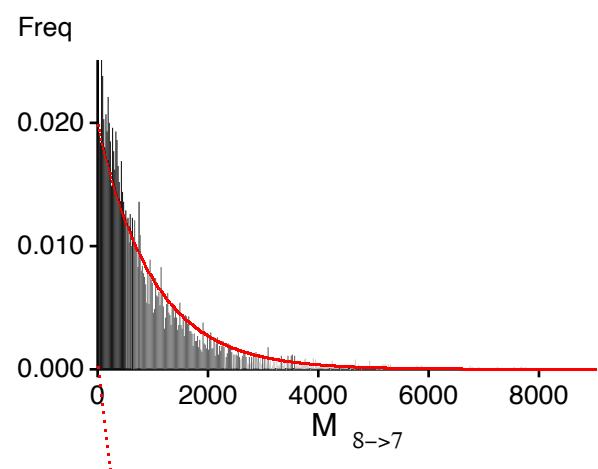


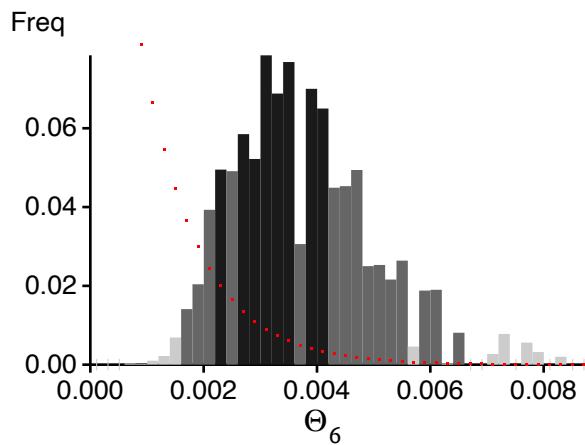
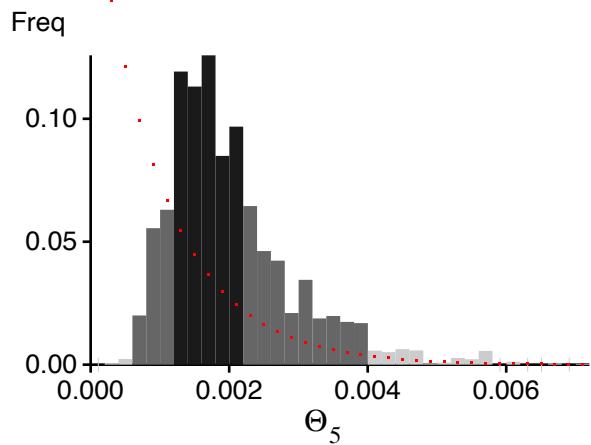
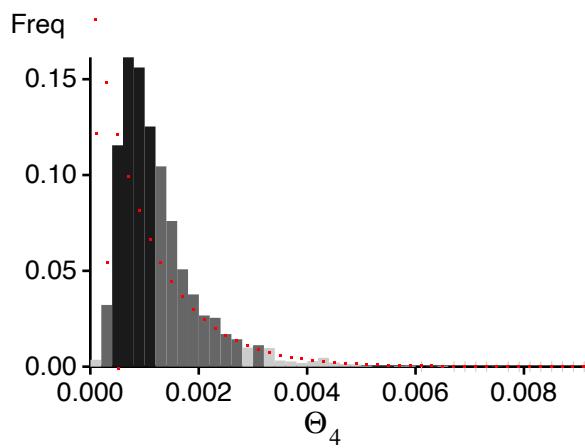
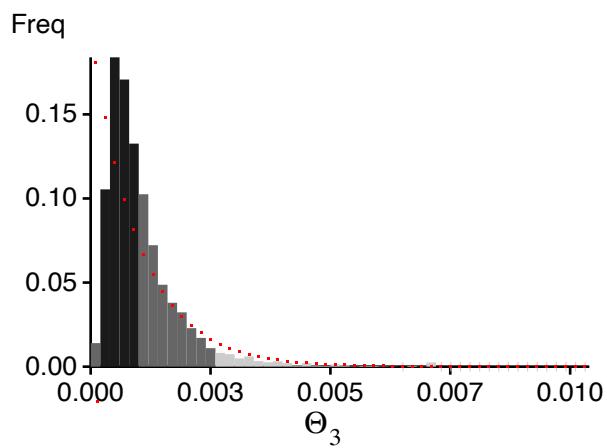
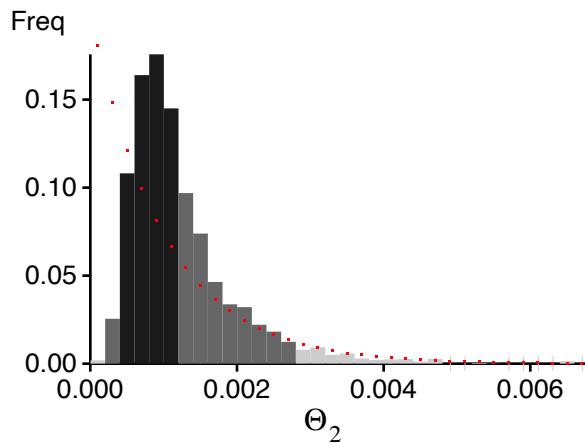
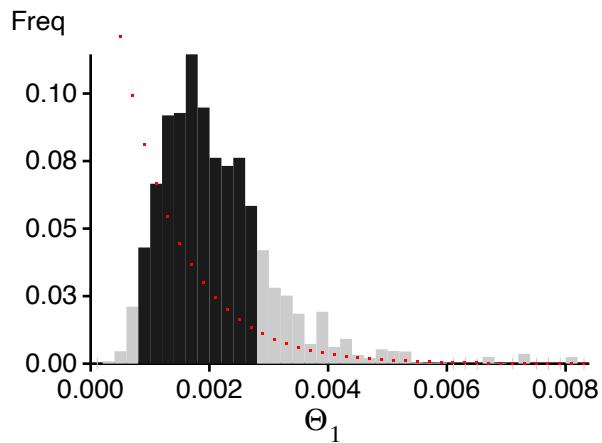


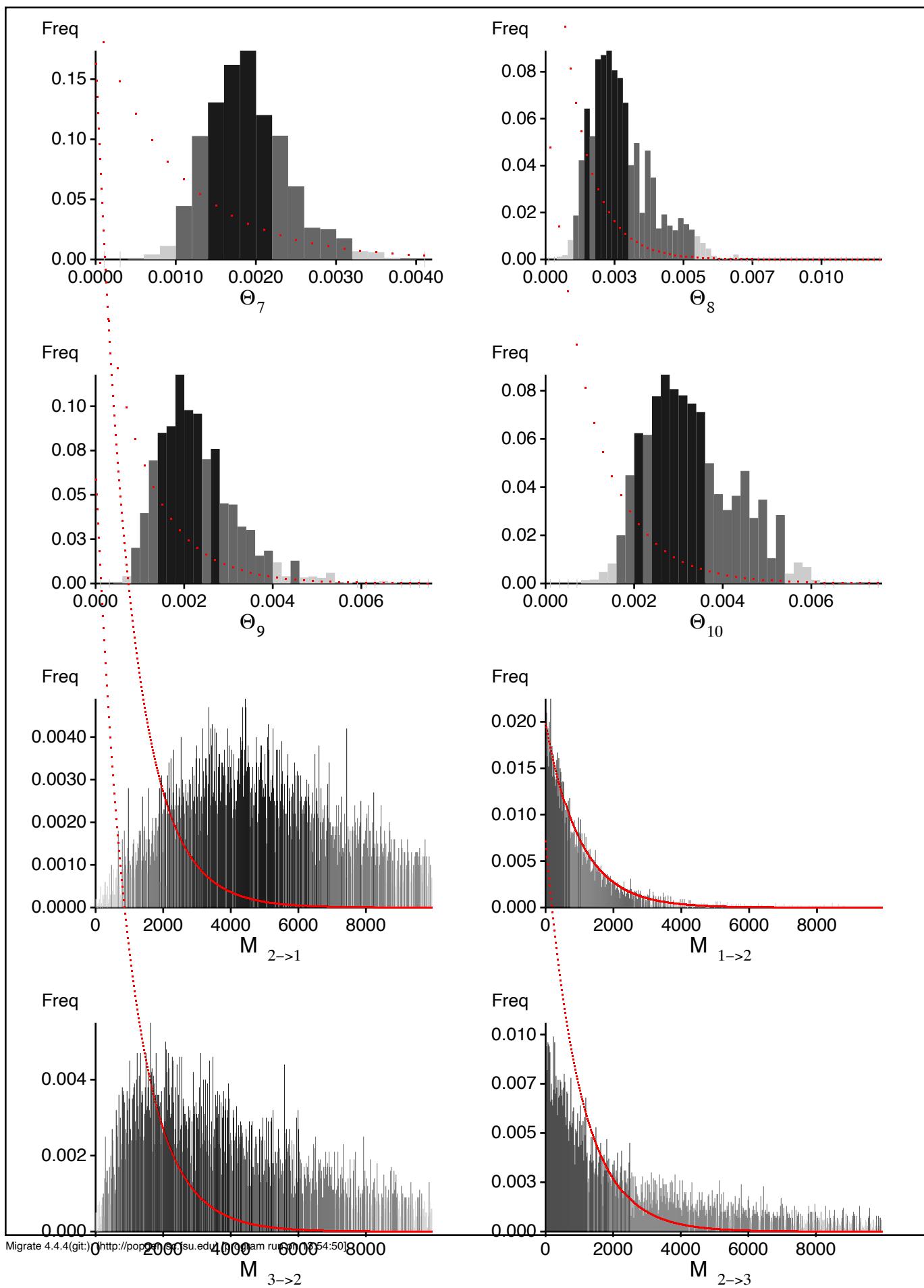
*Bayesian Analysis: Posterior distribution for locus 2*

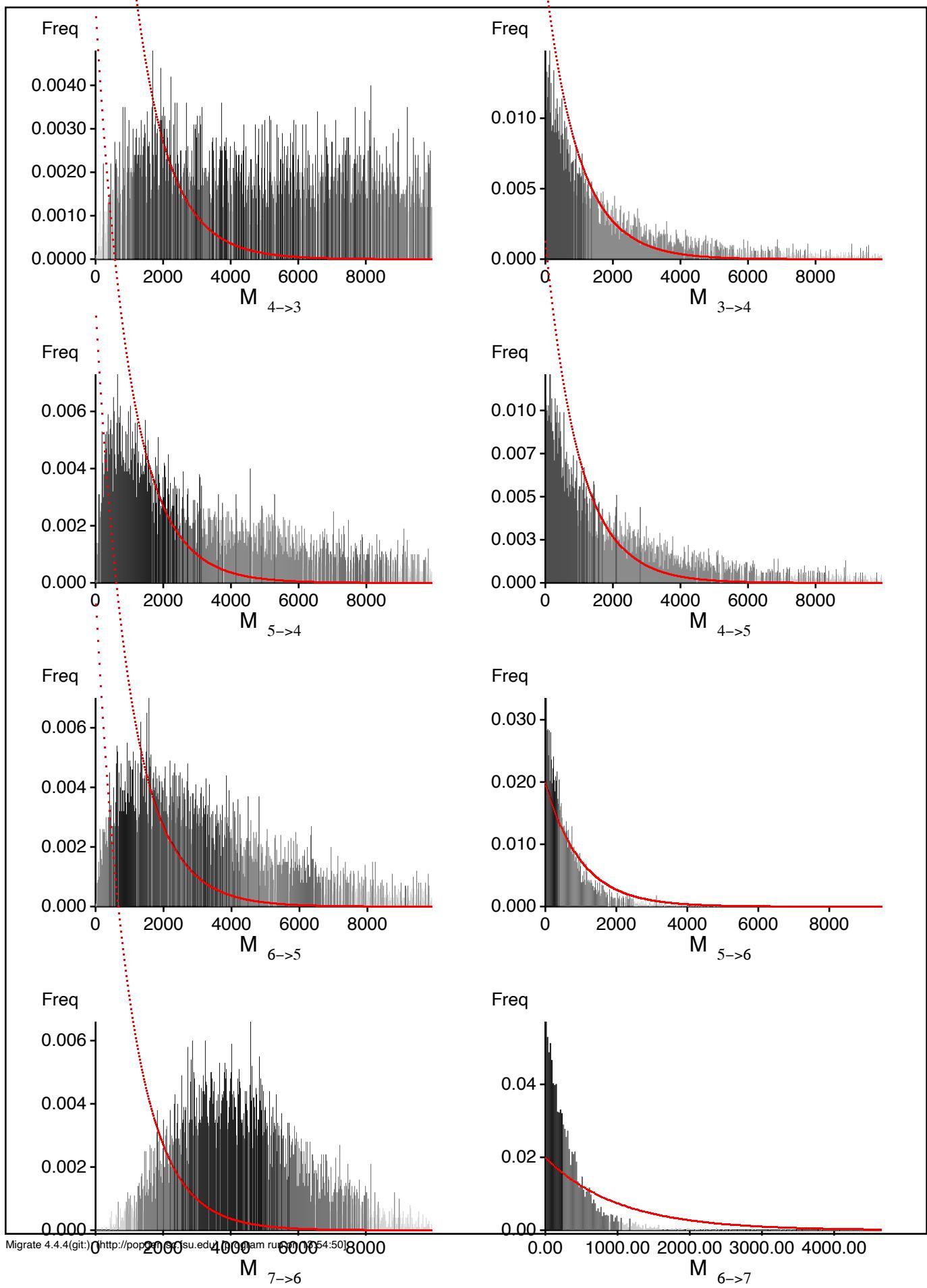


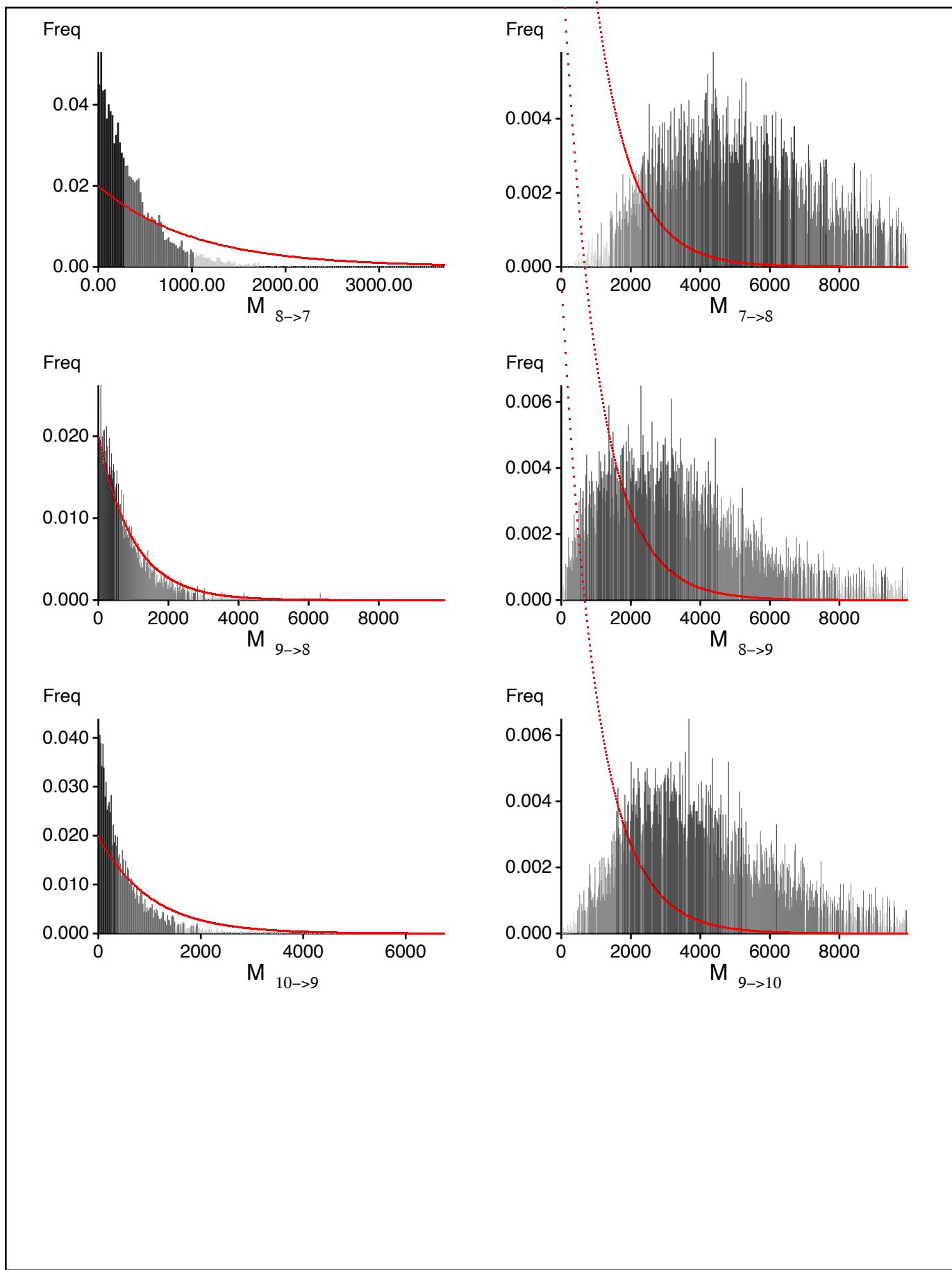


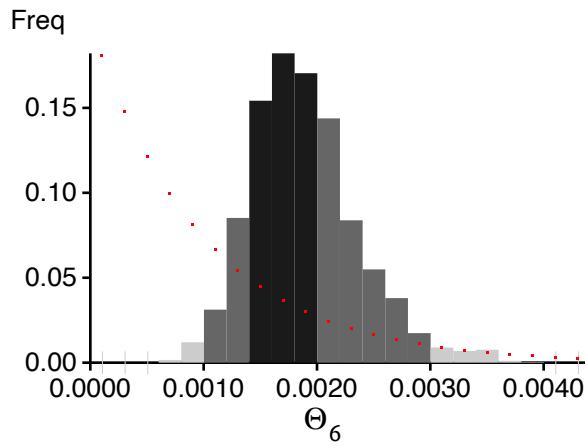
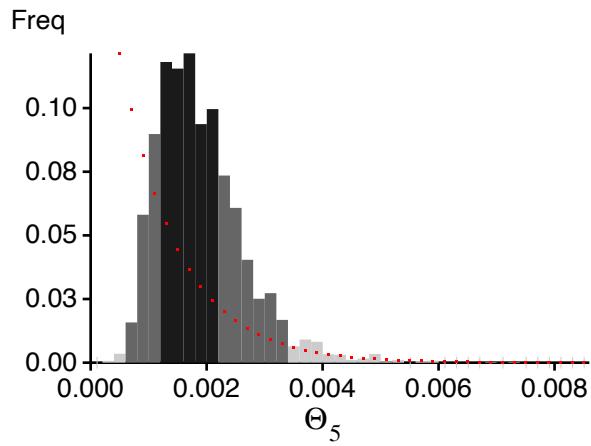
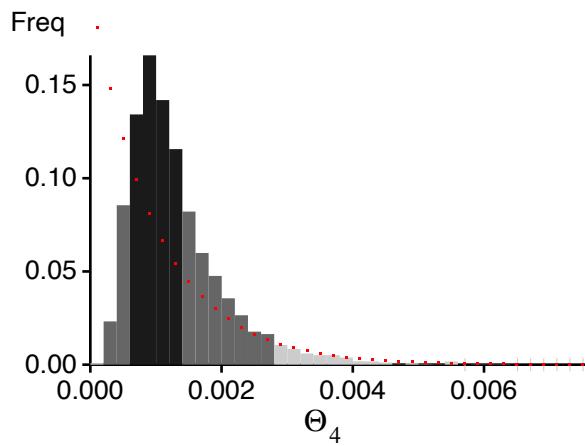
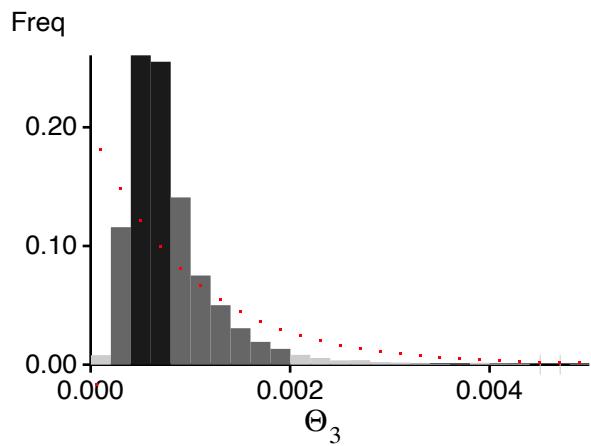
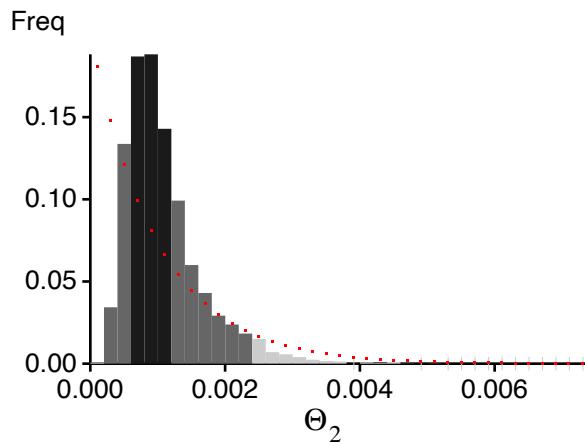
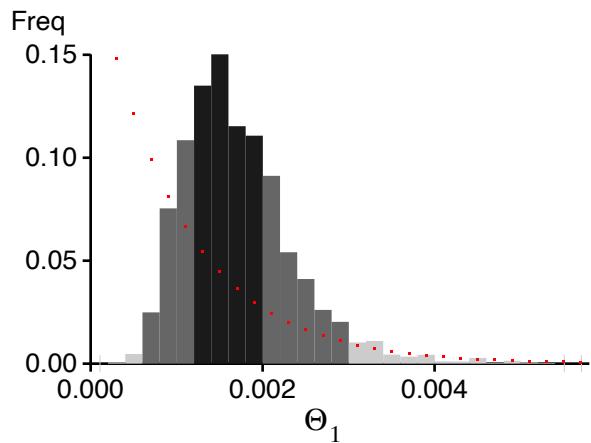


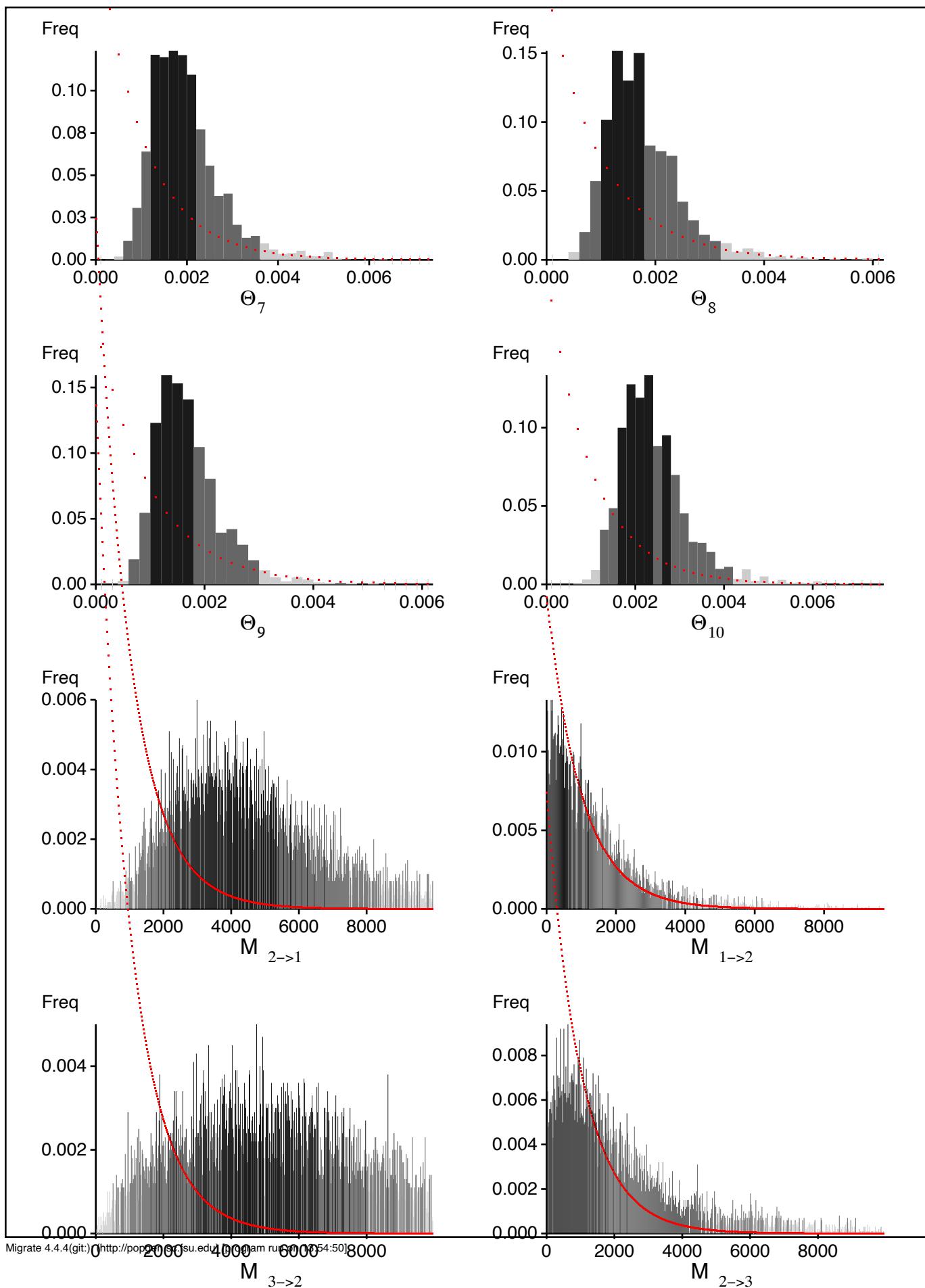
*Bayesian Analysis: Posterior distribution for locus 3*

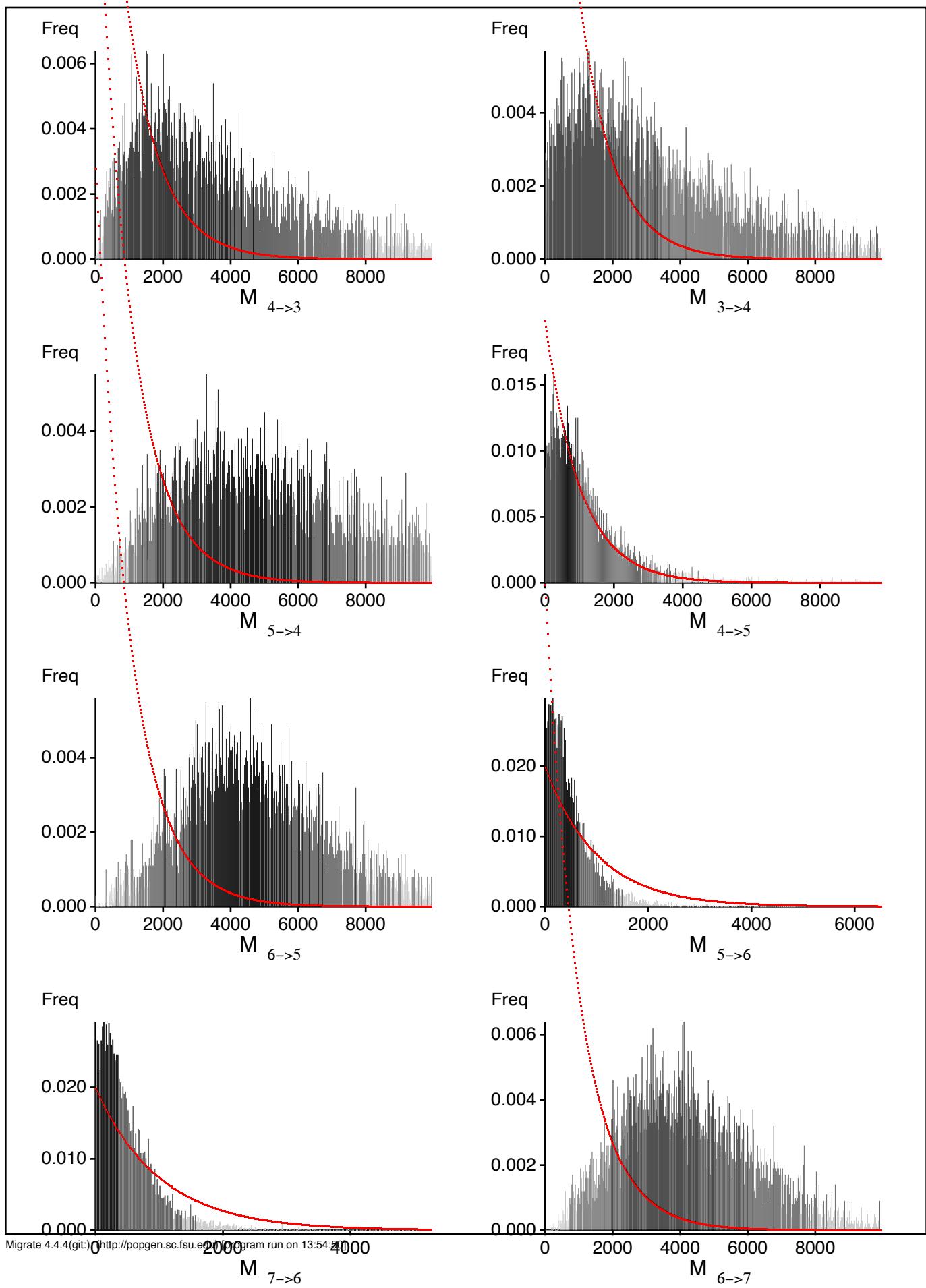


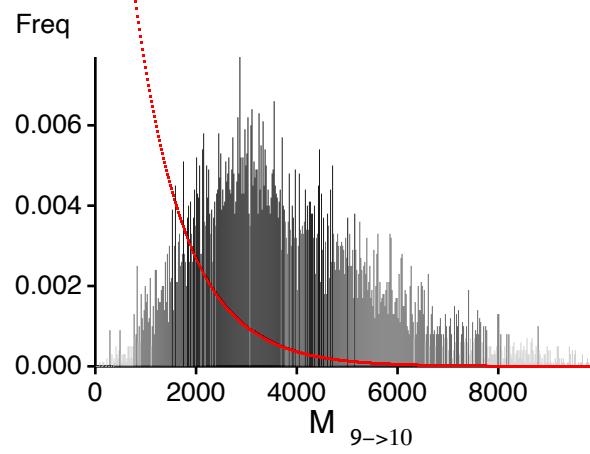
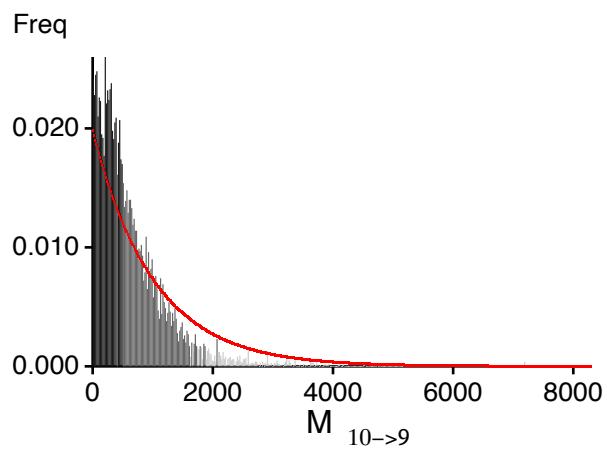
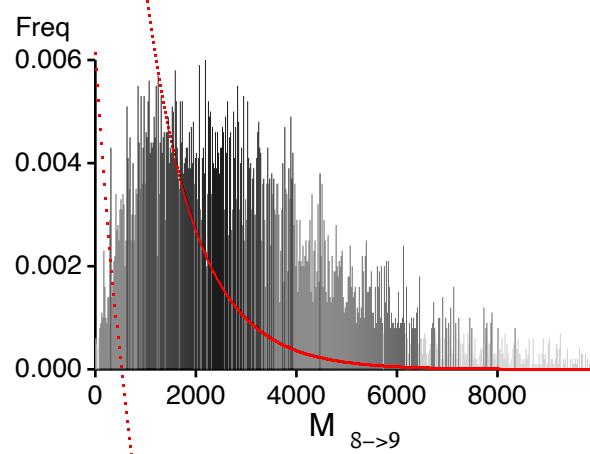
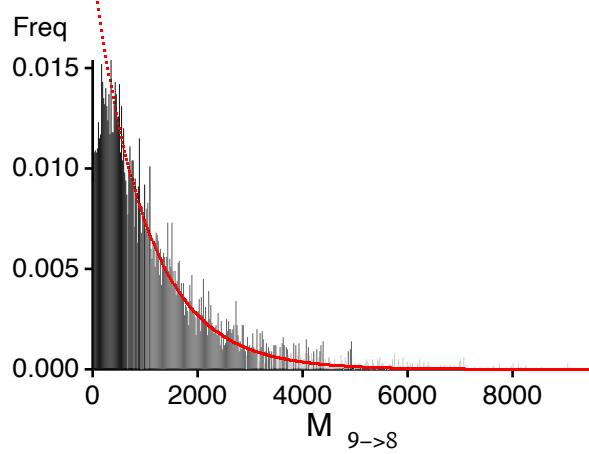
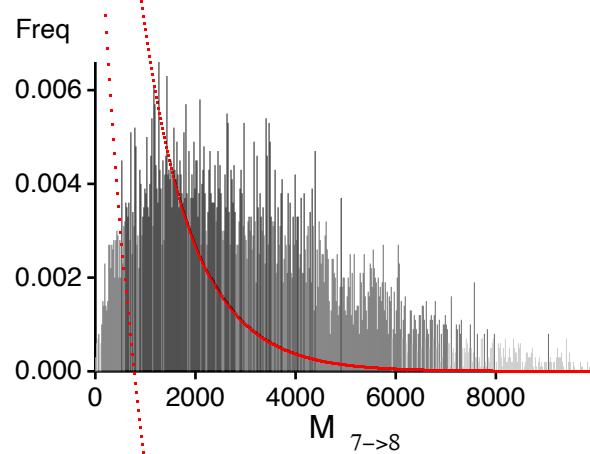
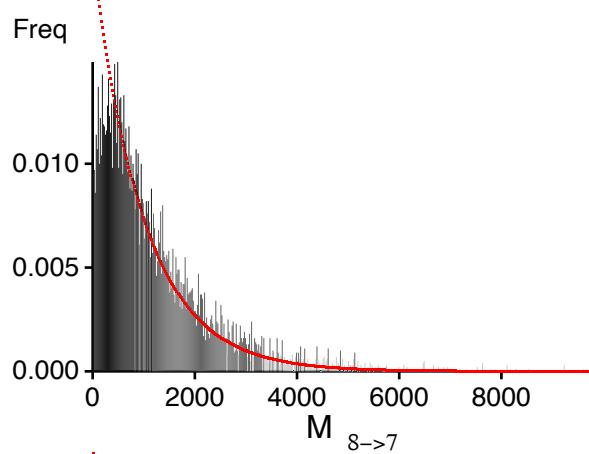


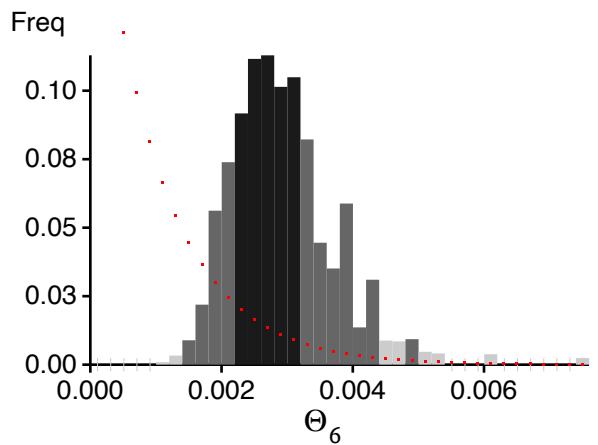
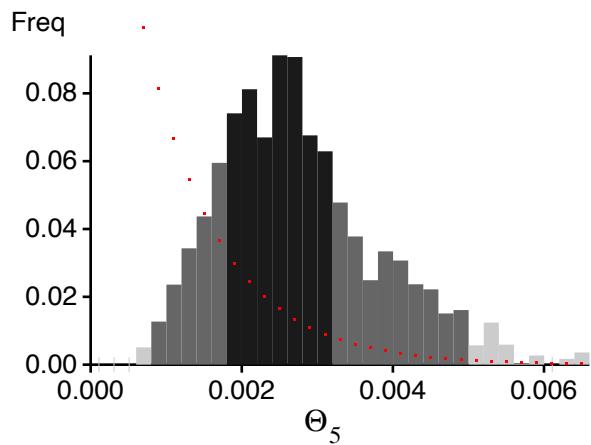
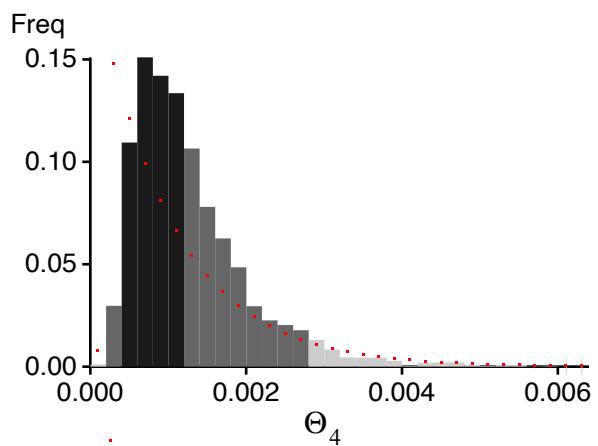
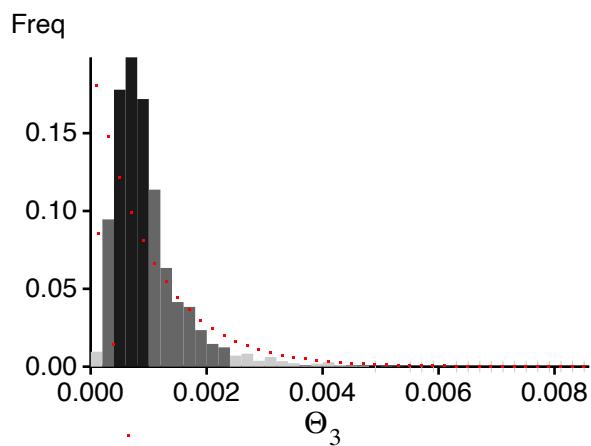
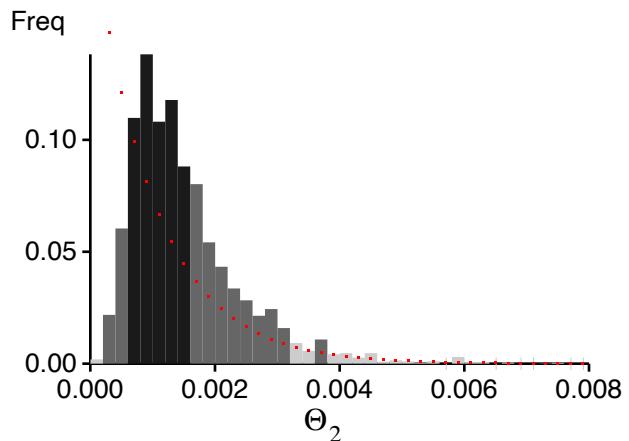
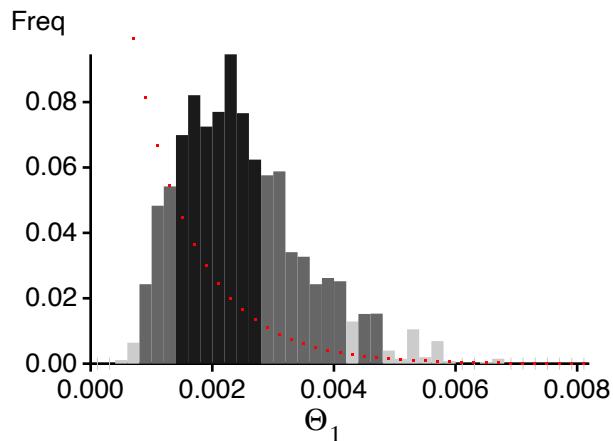


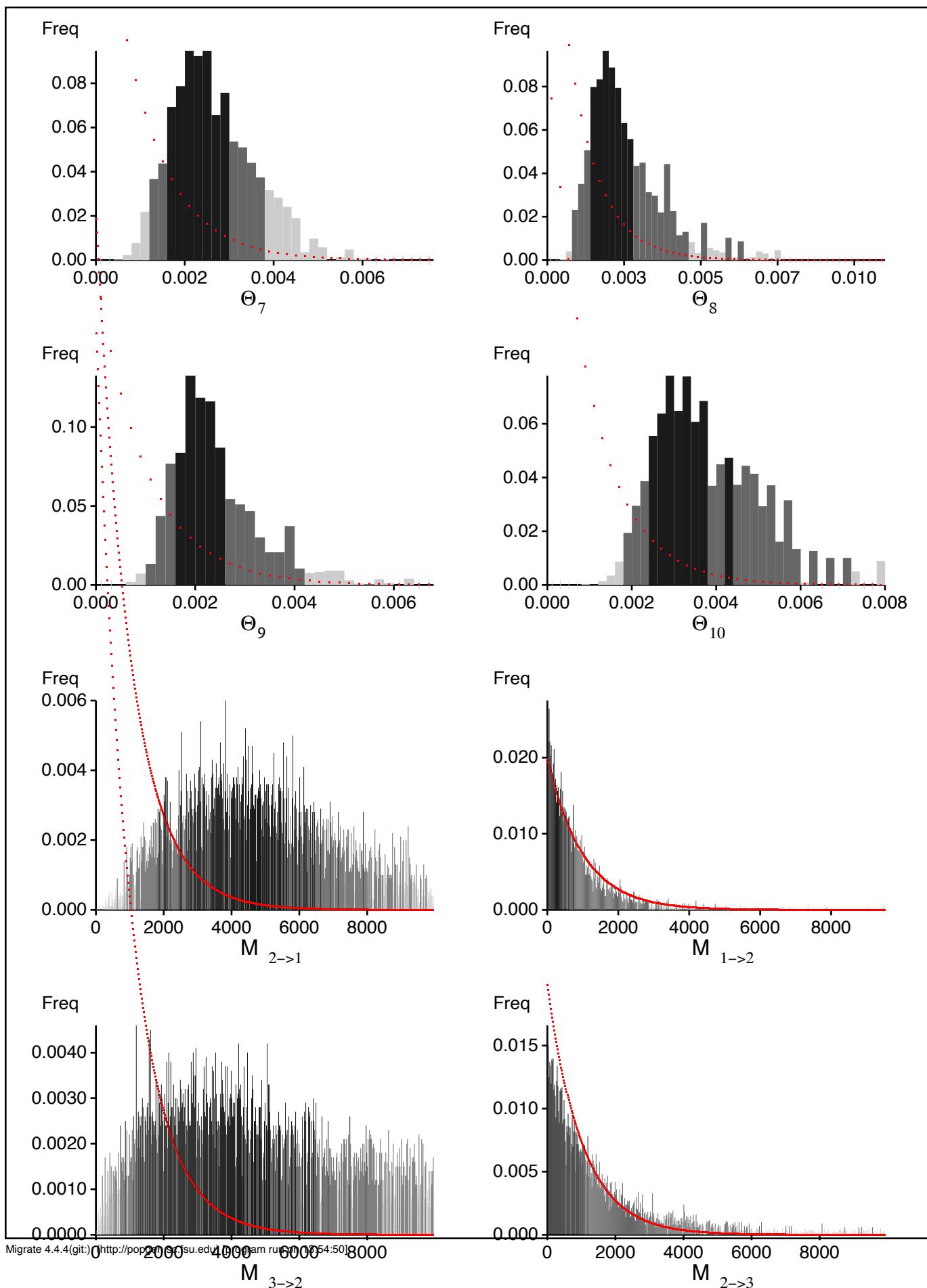
*Bayesian Analysis: Posterior distribution for locus 4*

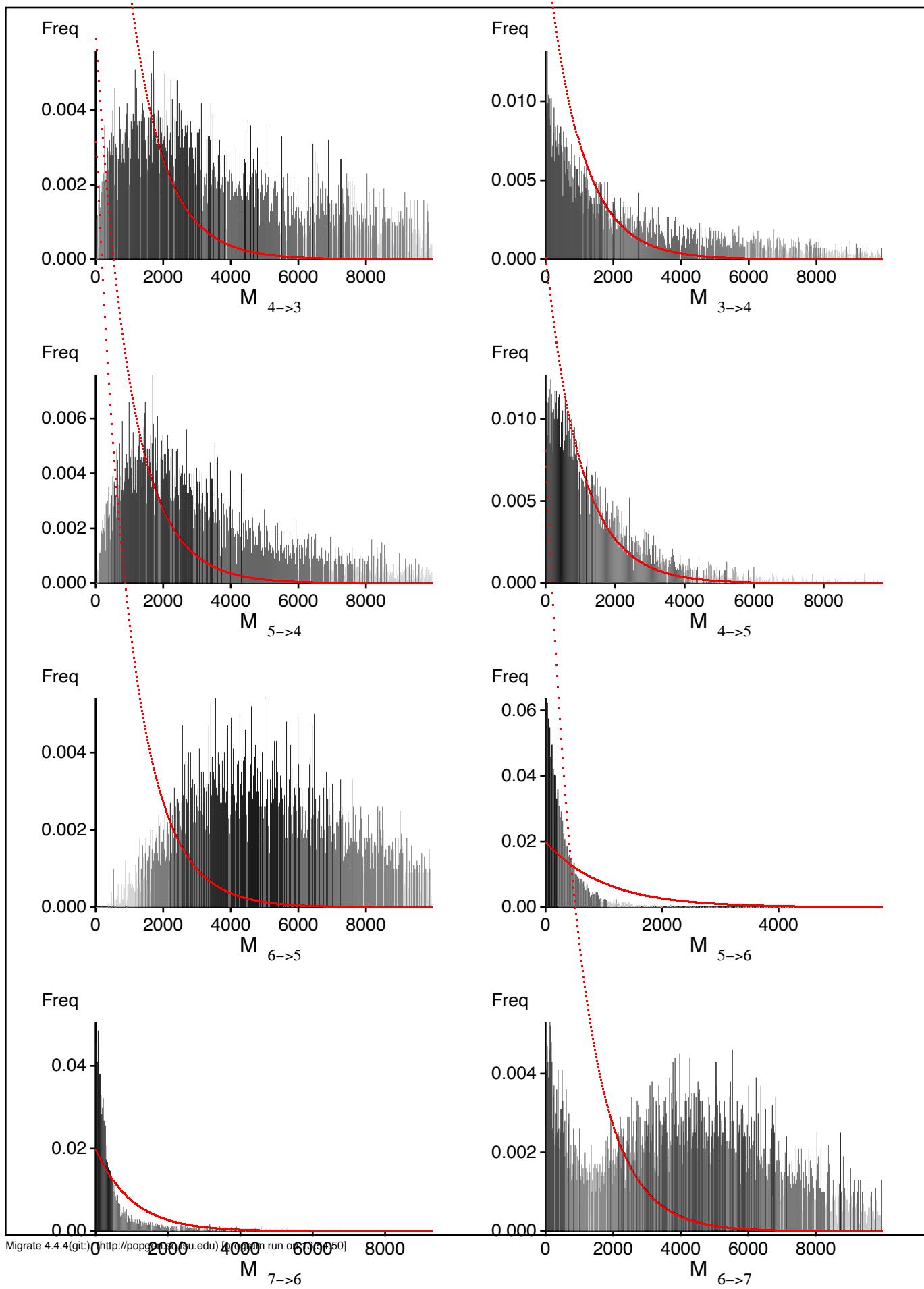


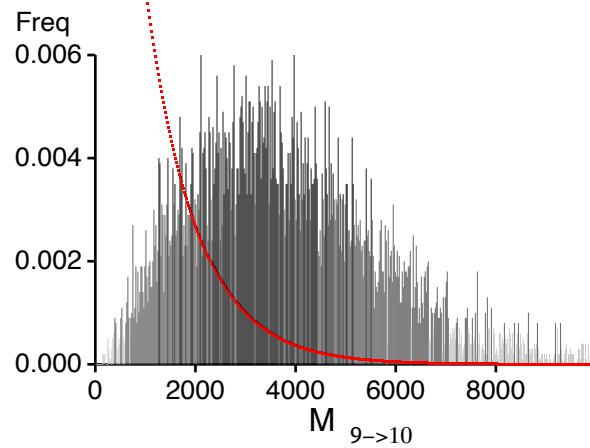
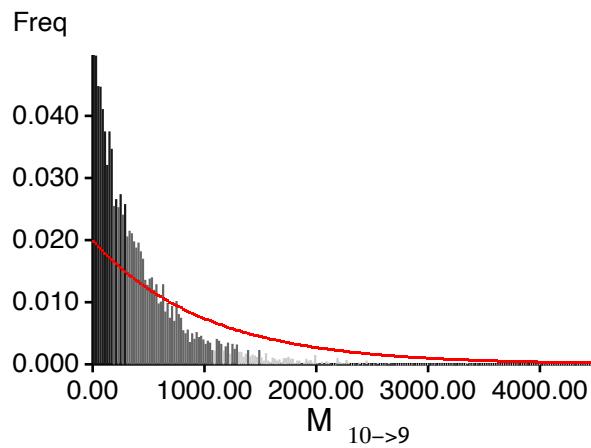
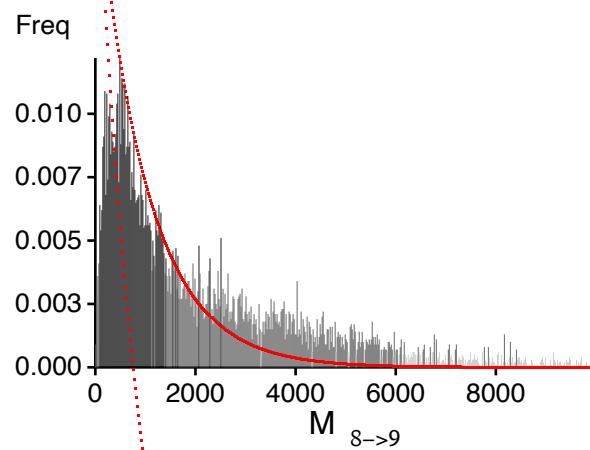
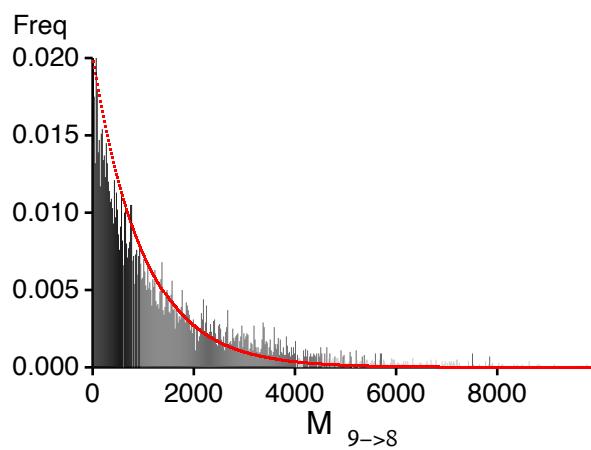
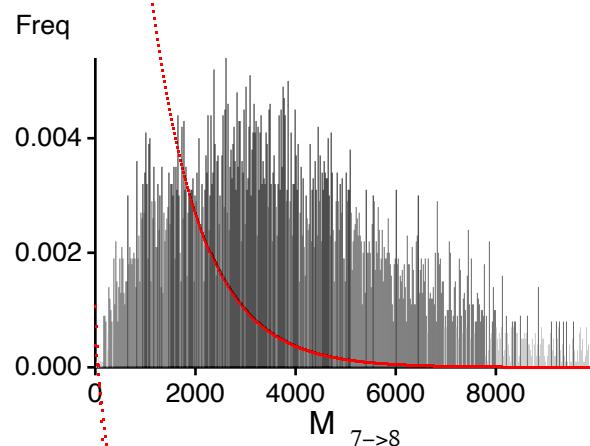
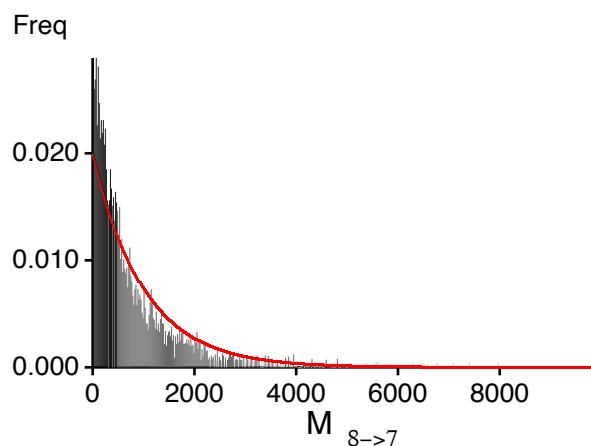


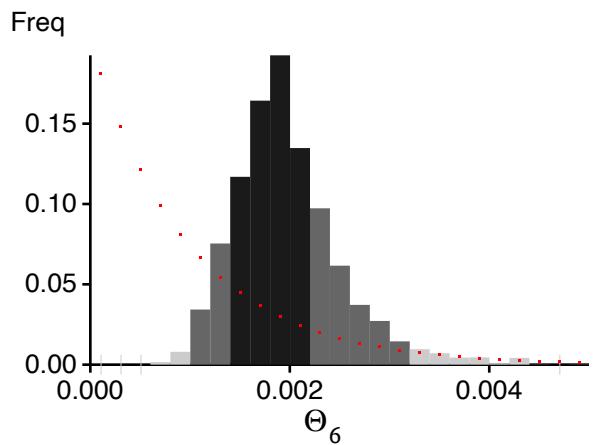
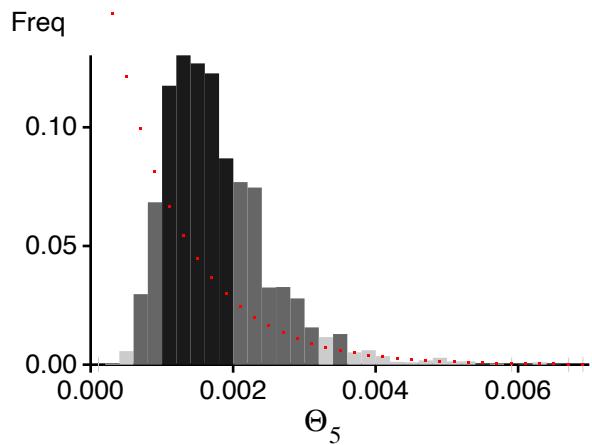
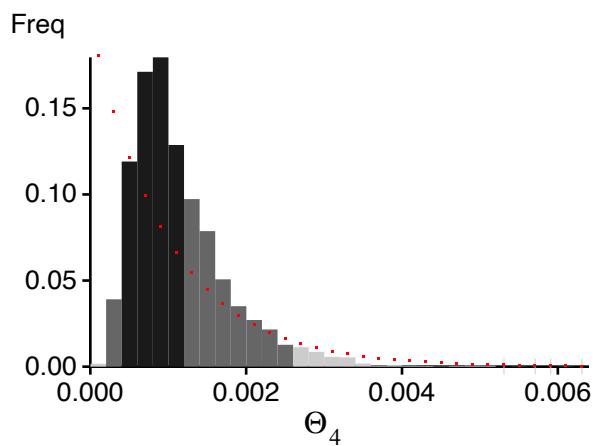
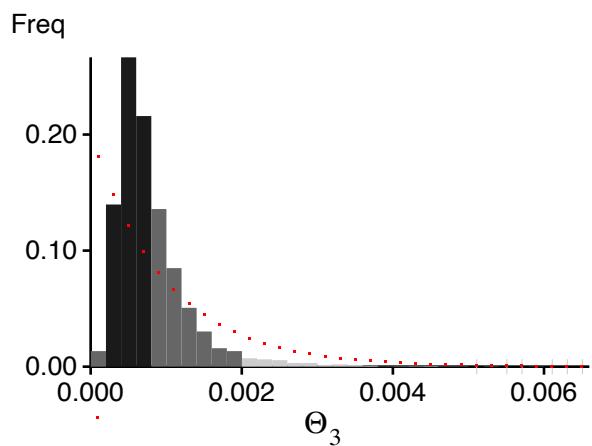
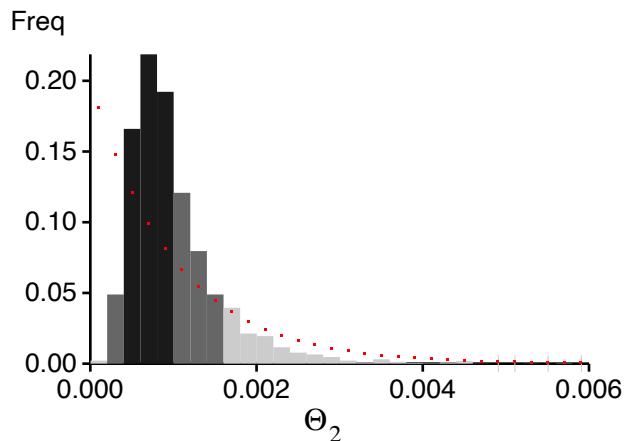
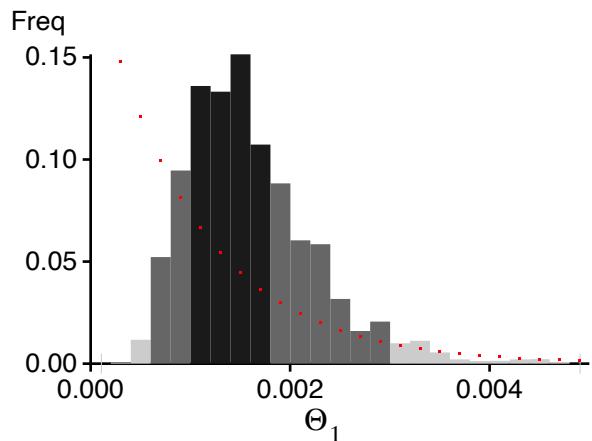


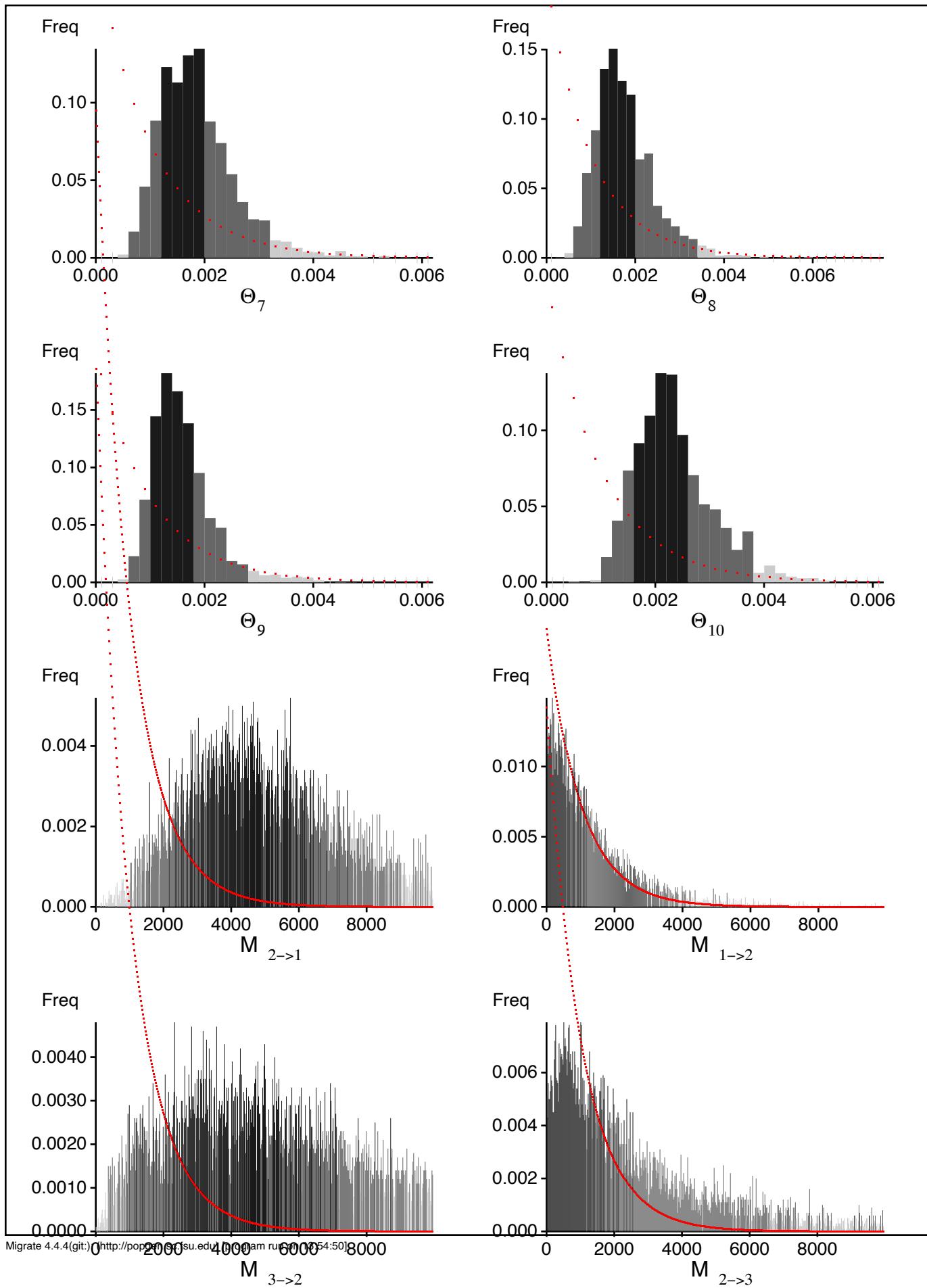
*Bayesian Analysis: Posterior distribution for locus 5*

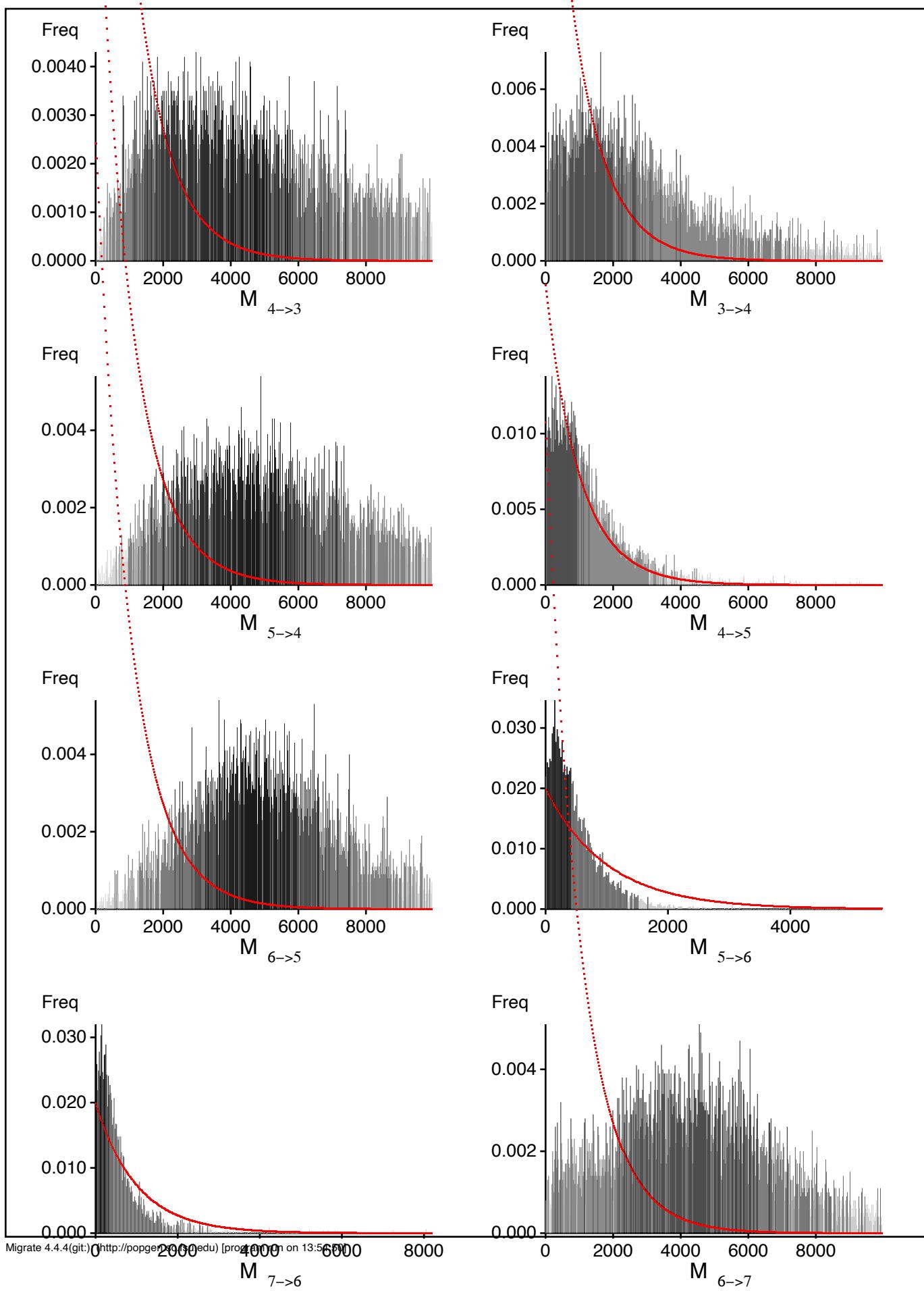


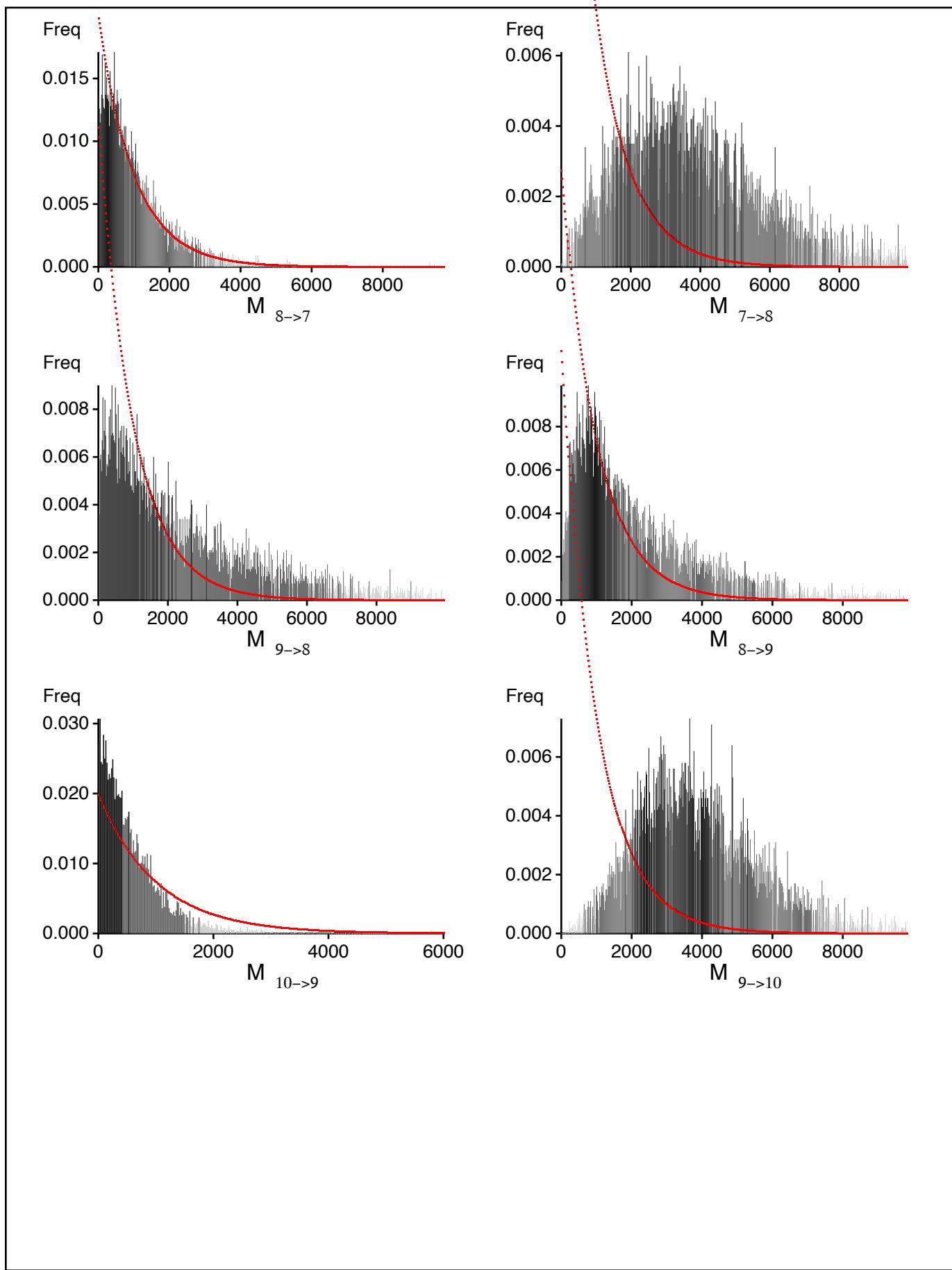


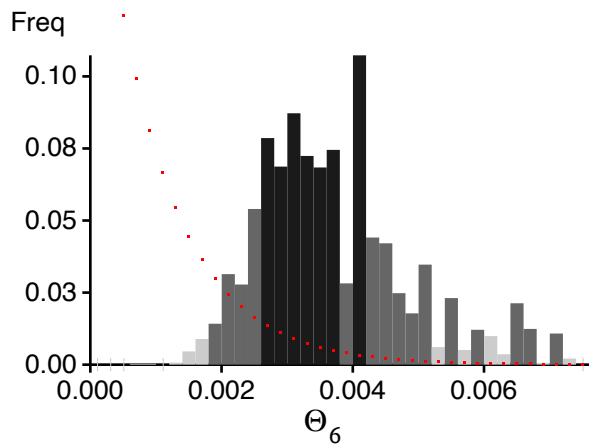
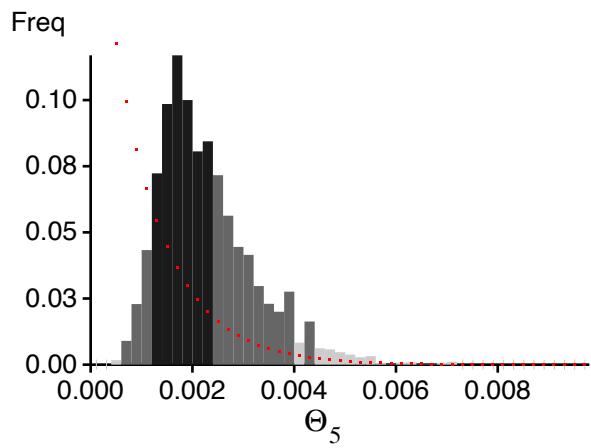
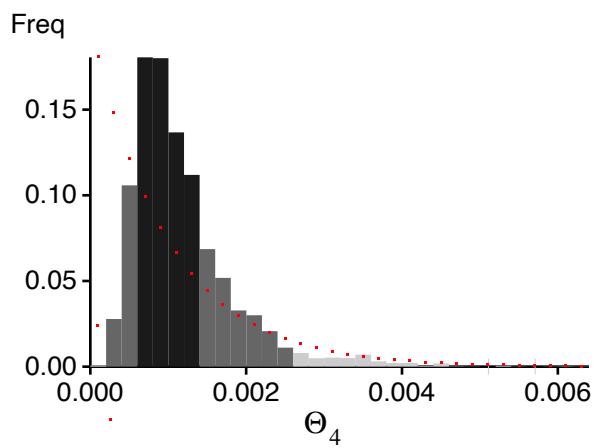
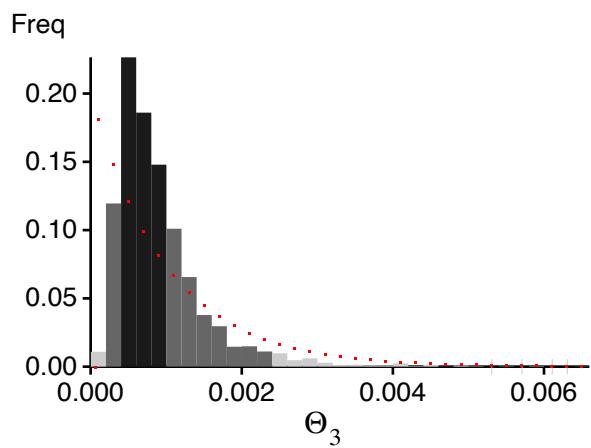
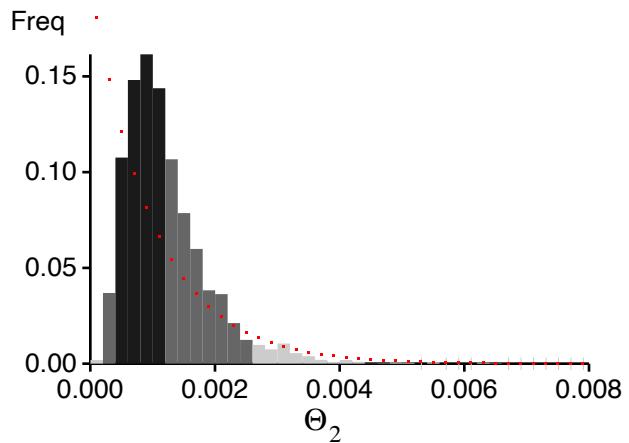
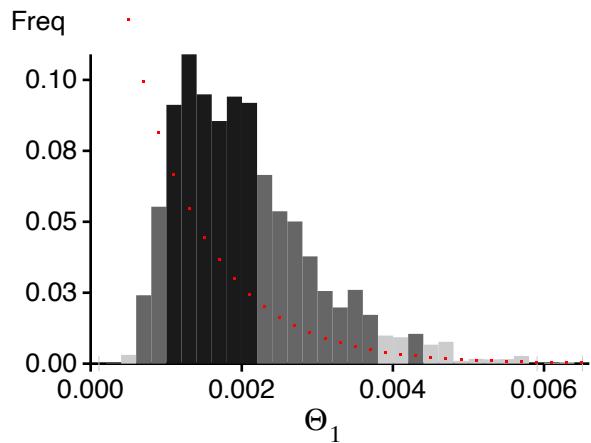


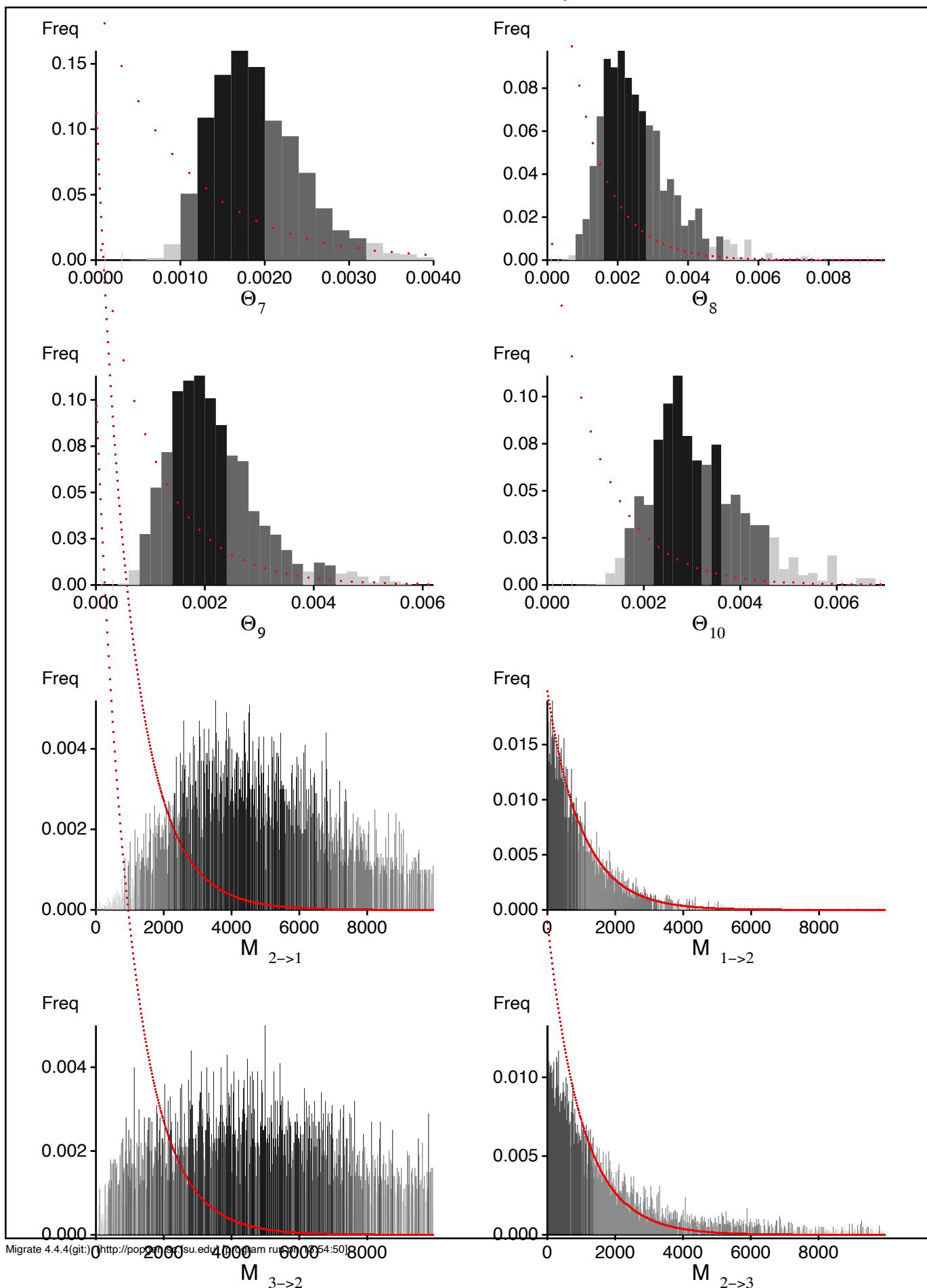
*Bayesian Analysis: Posterior distribution for locus 6*

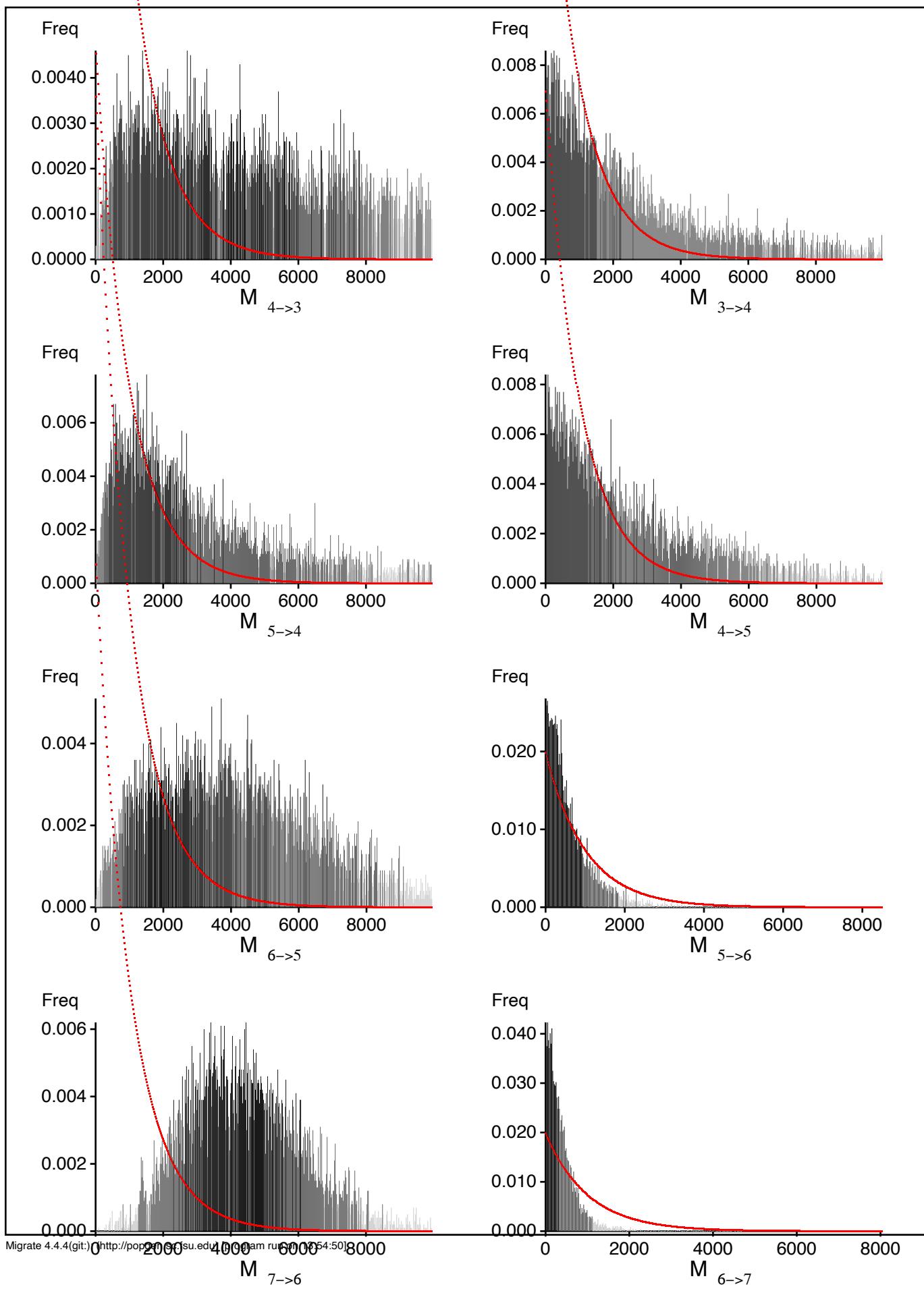


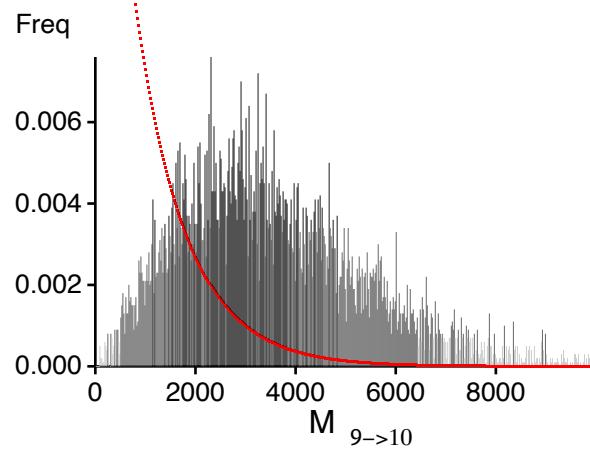
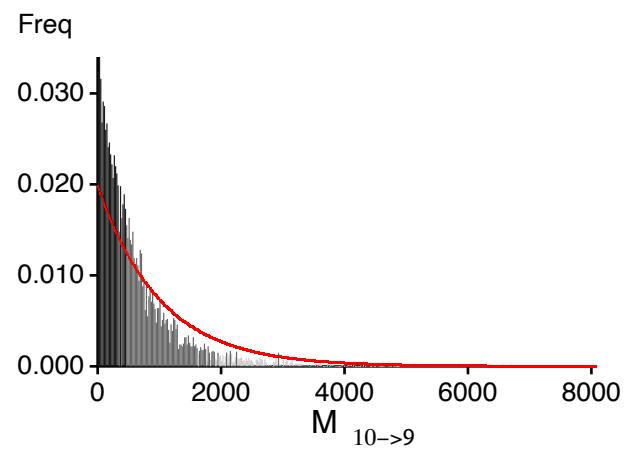
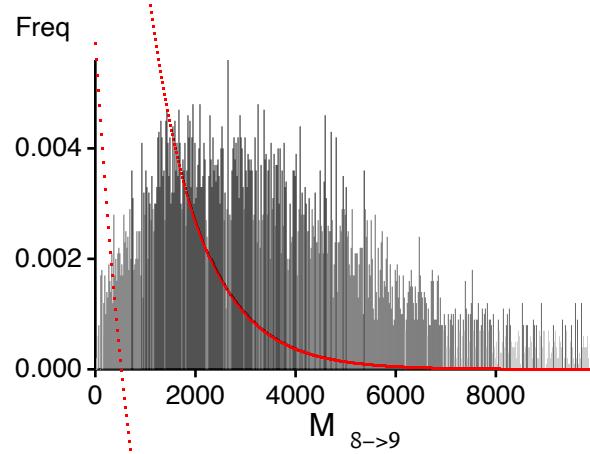
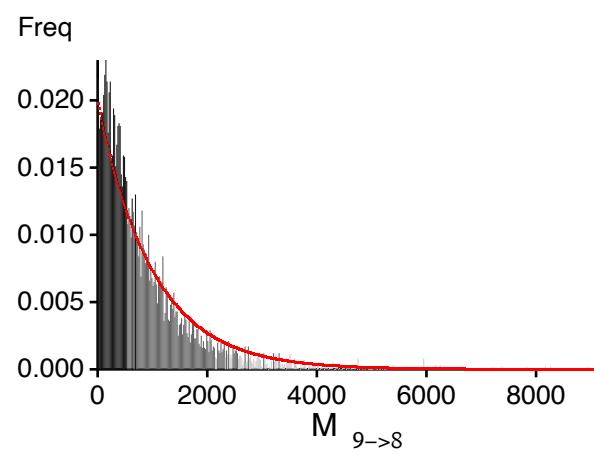
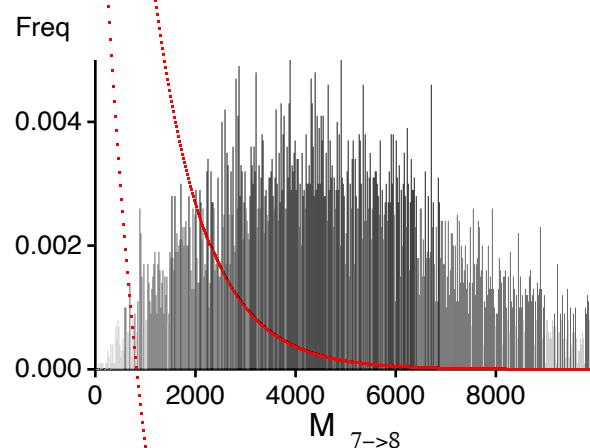
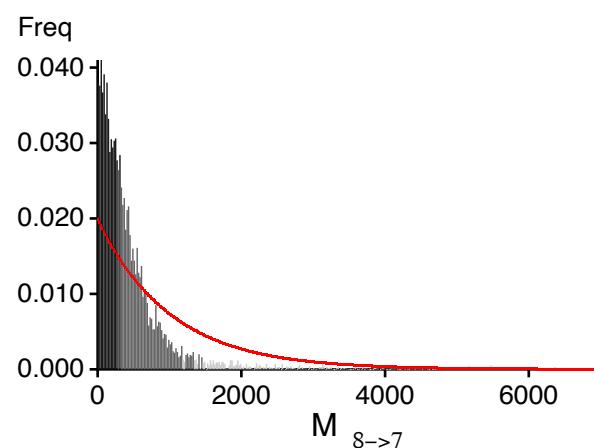


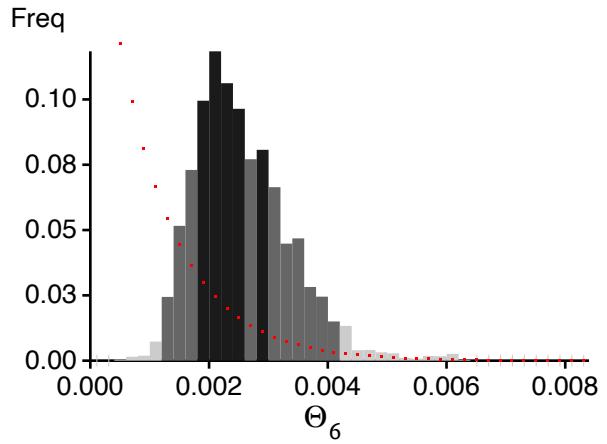
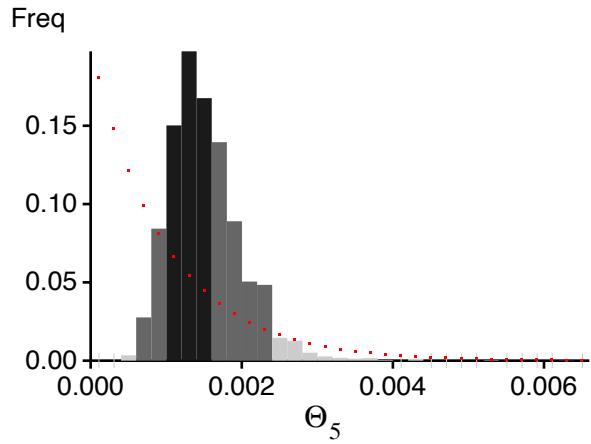
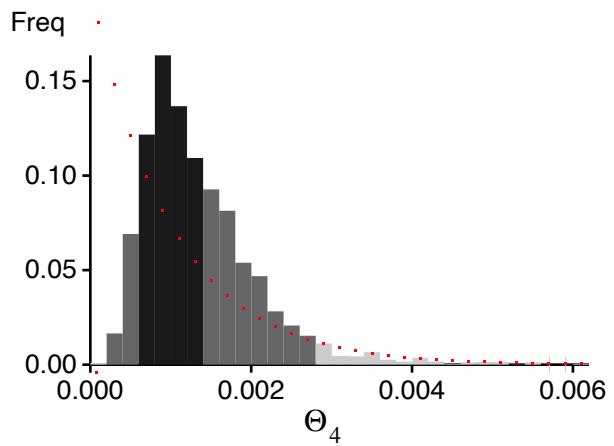
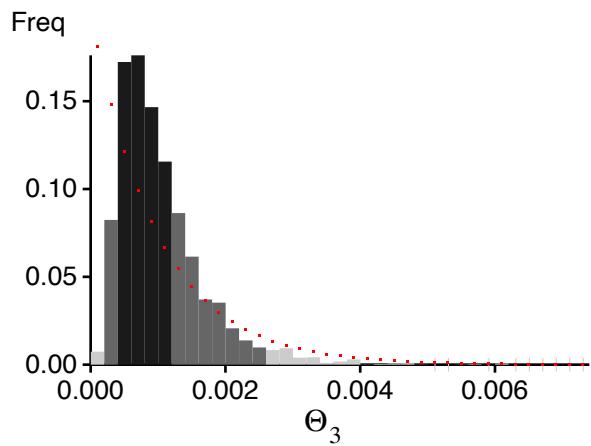
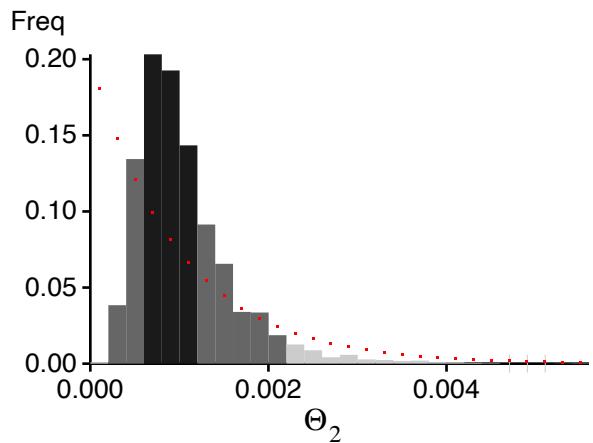
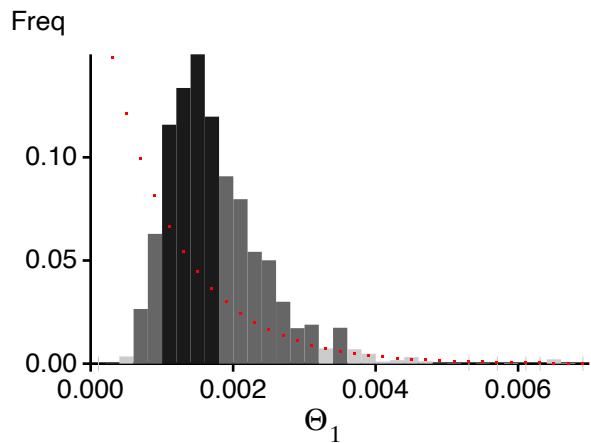


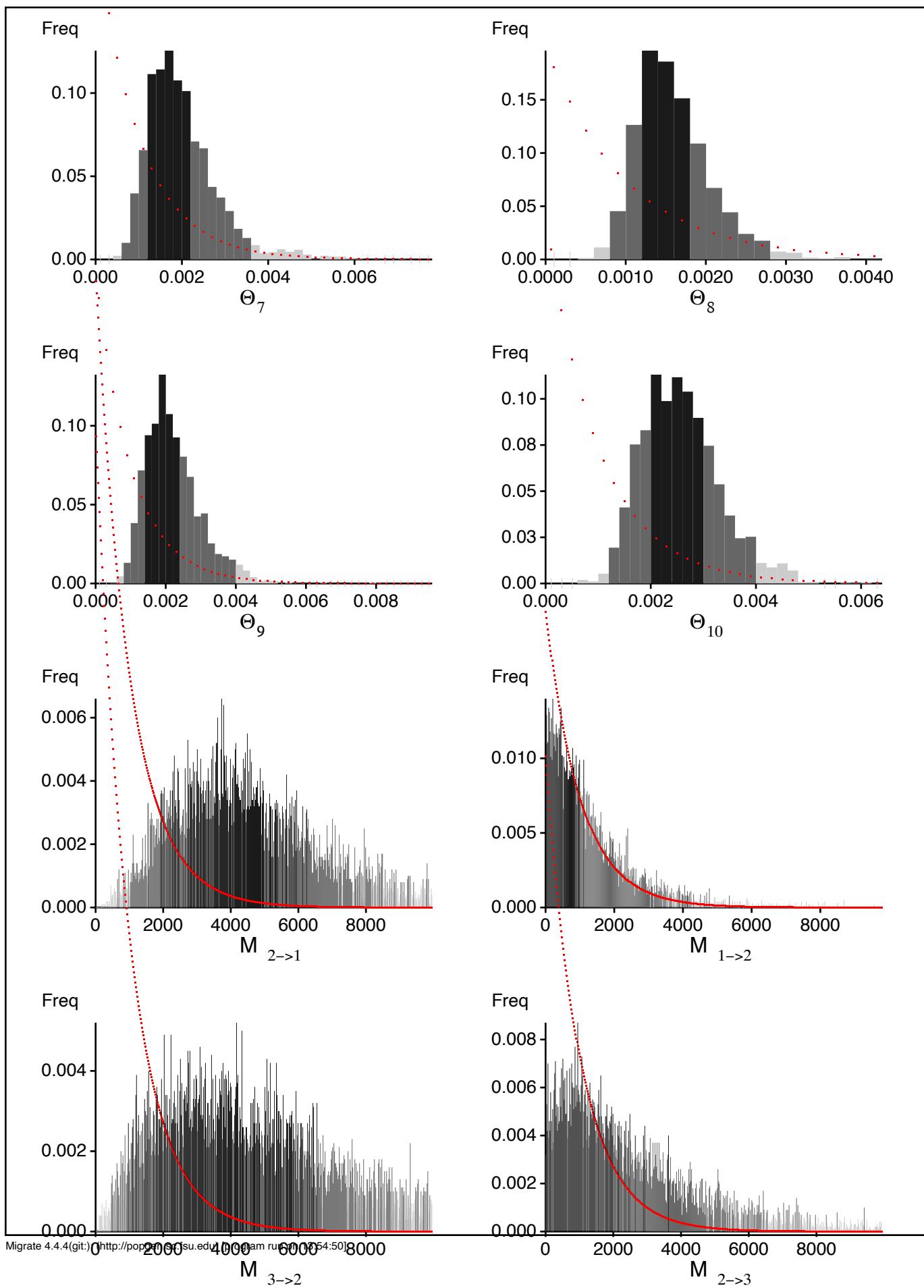
*Bayesian Analysis: Posterior distribution for locus 7*

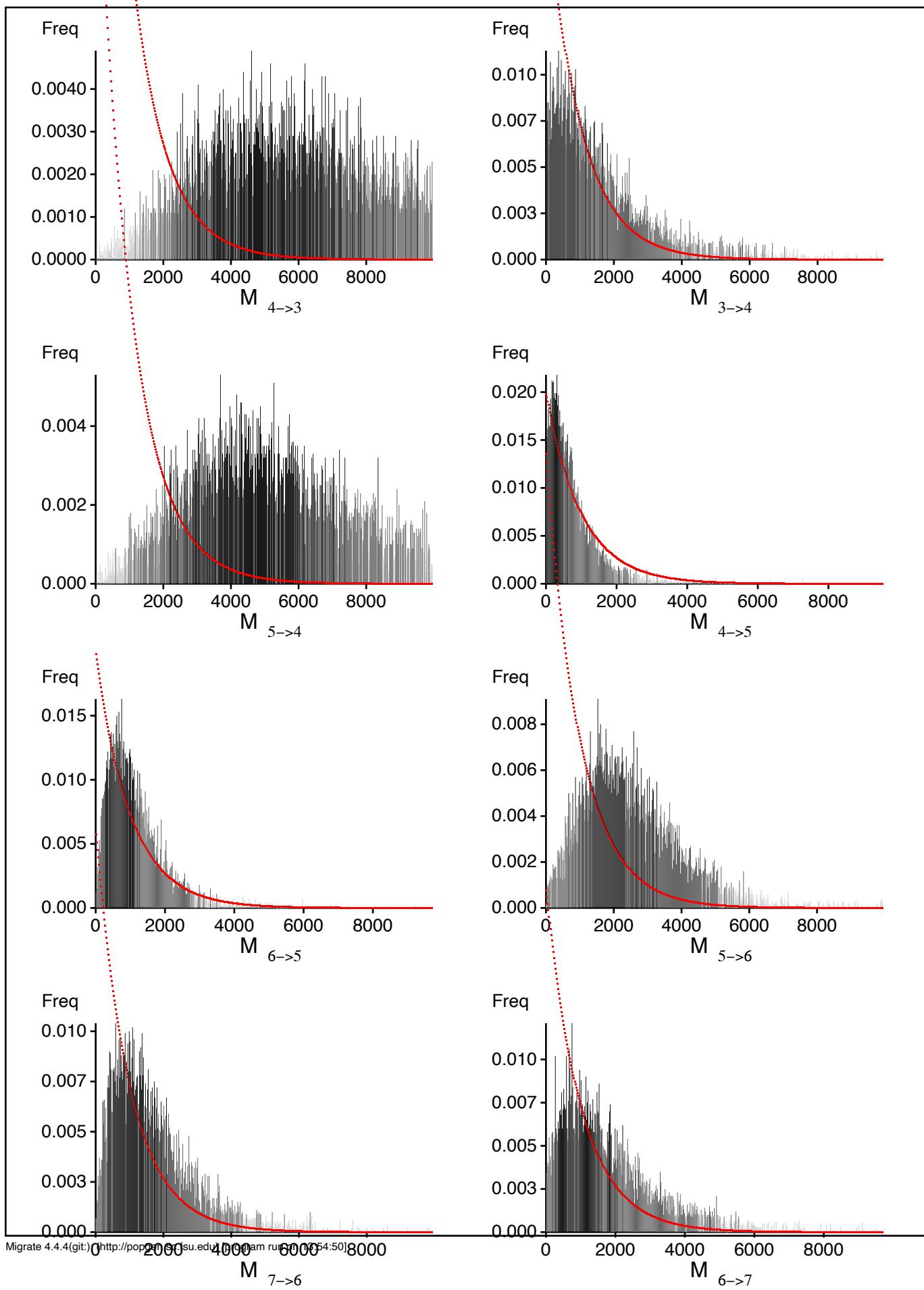


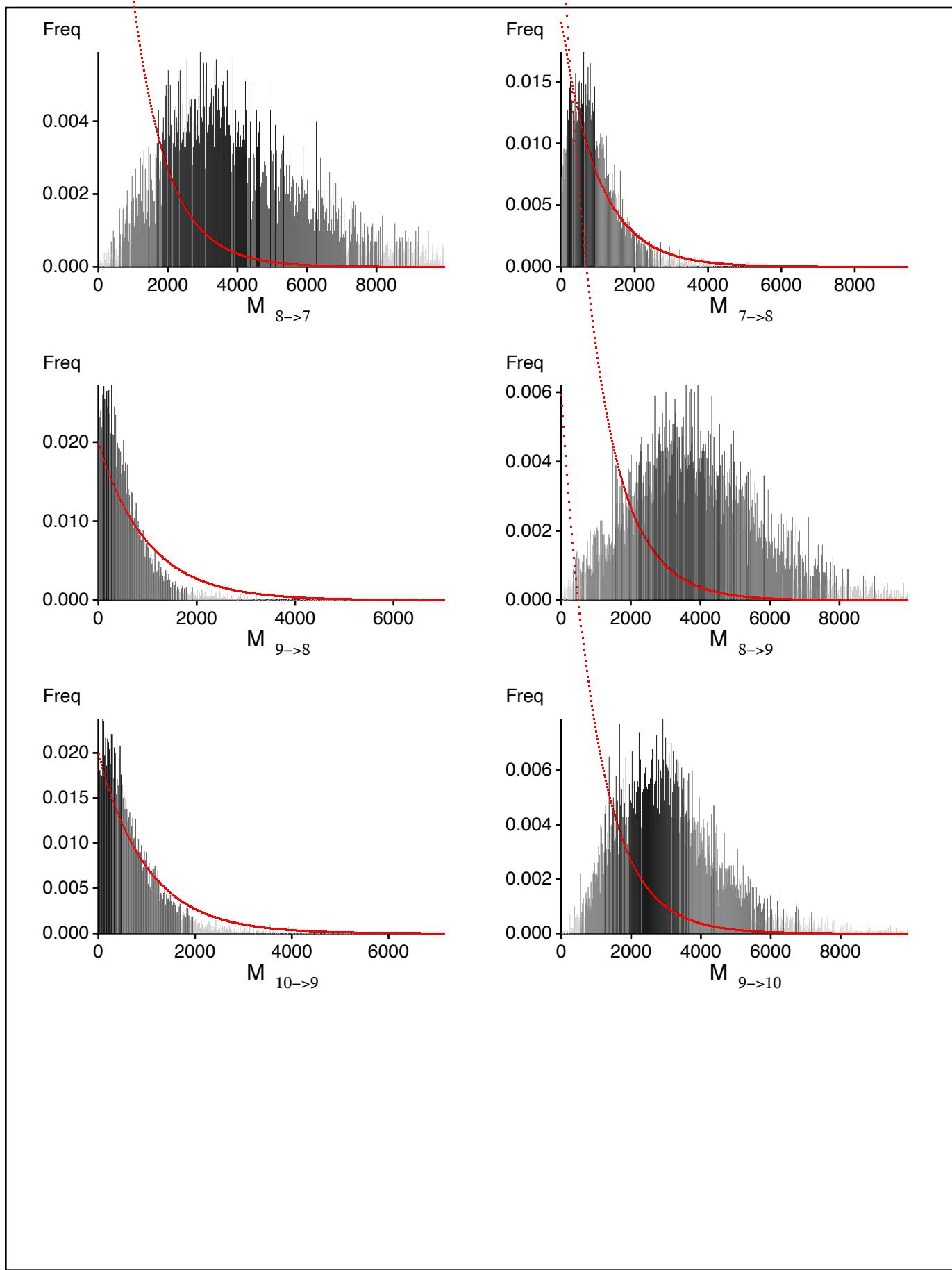




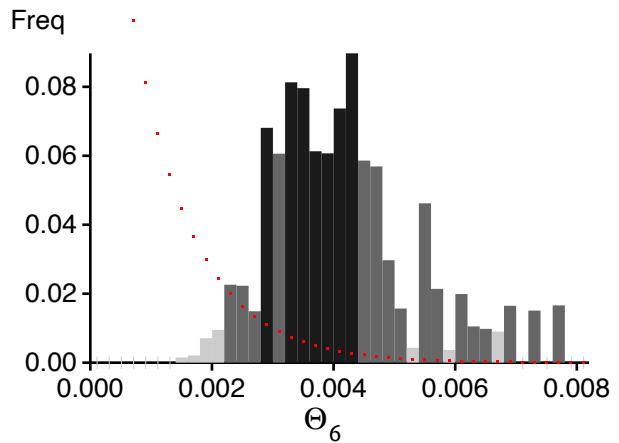
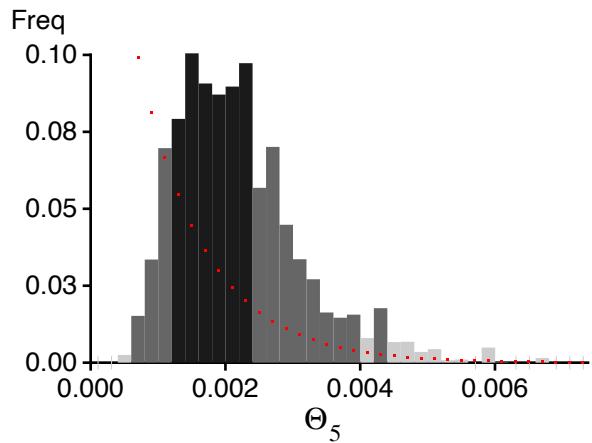
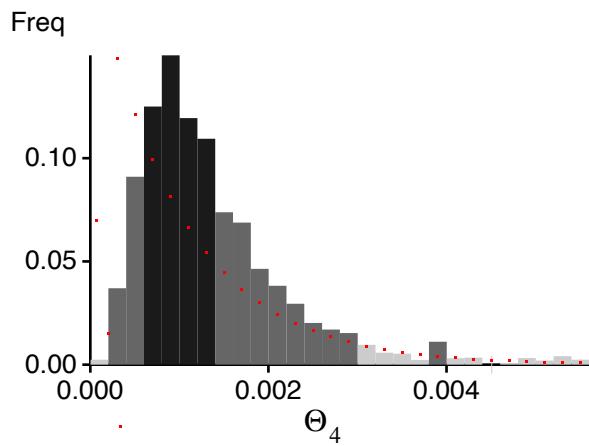
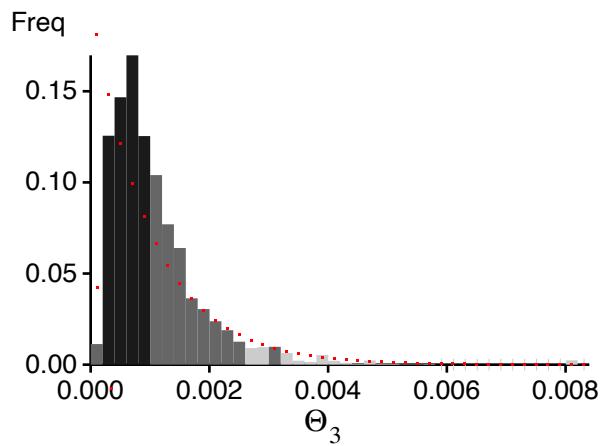
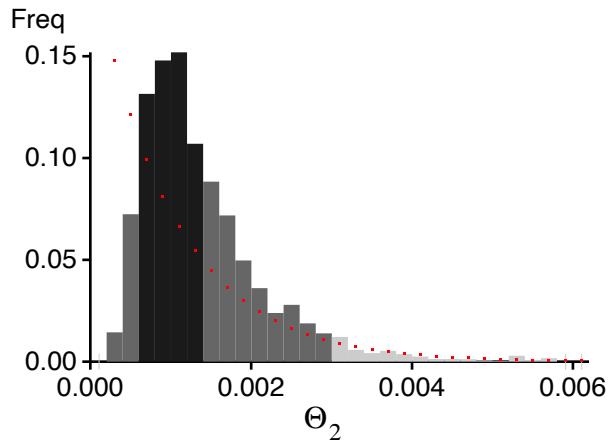
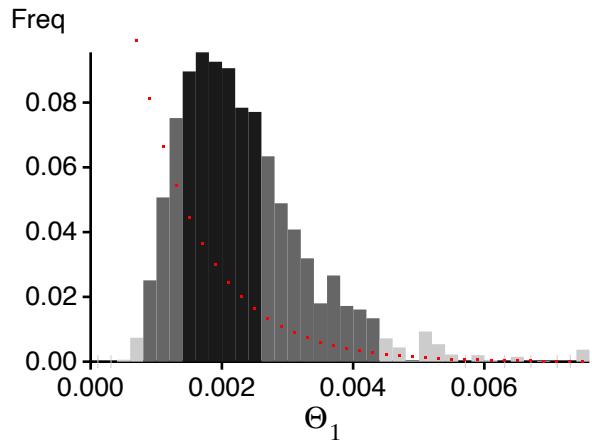
*Bayesian Analysis: Posterior distribution for locus 8*

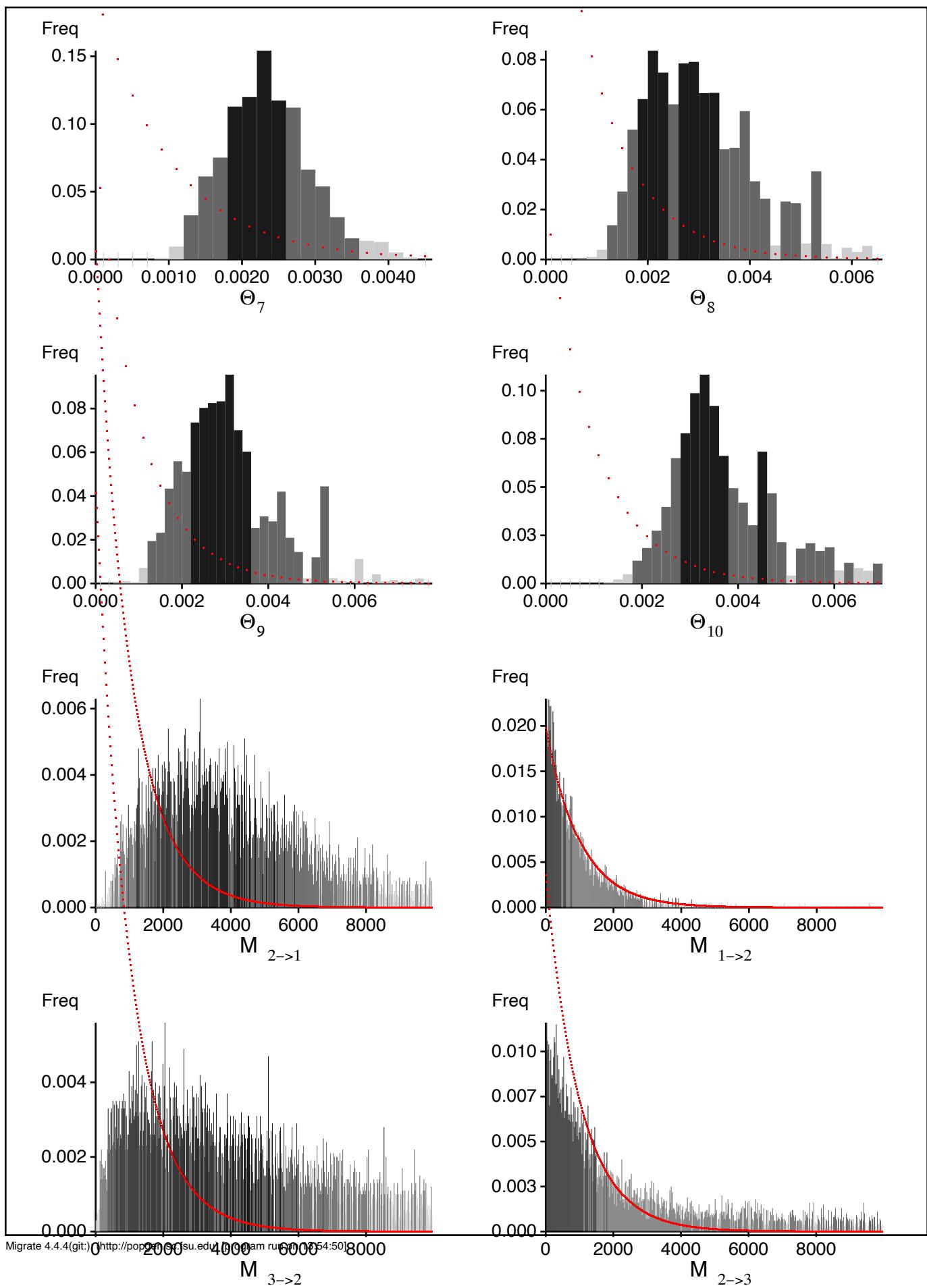


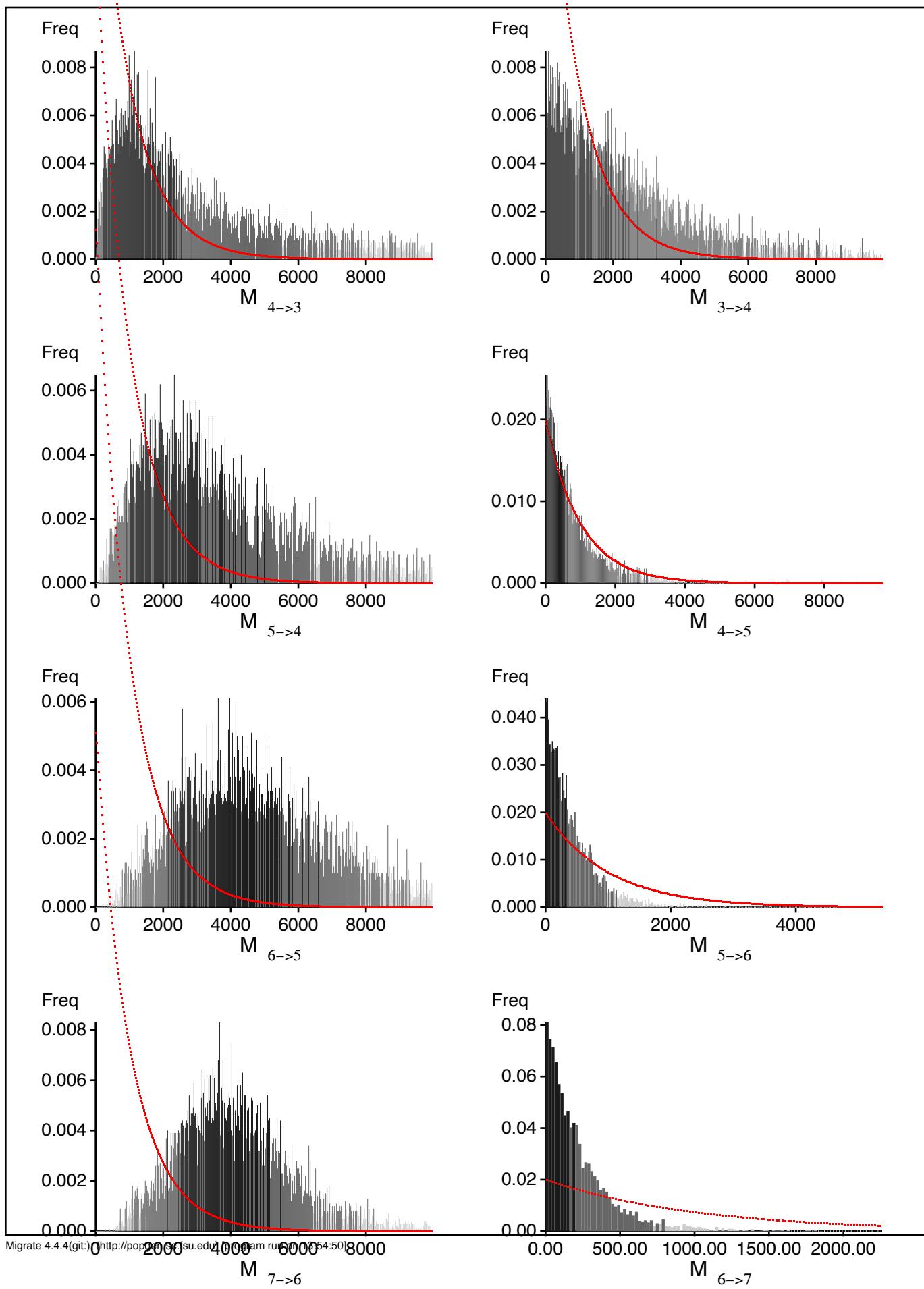


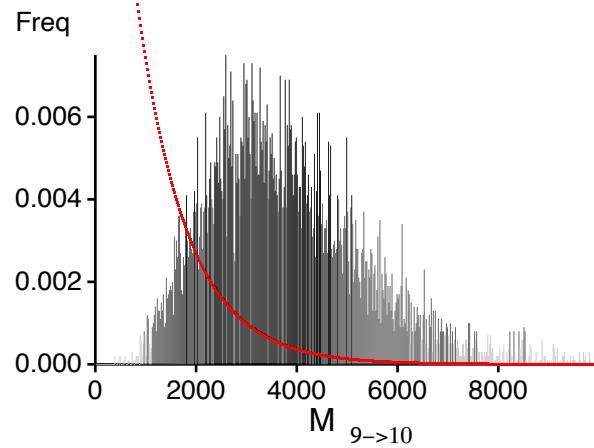
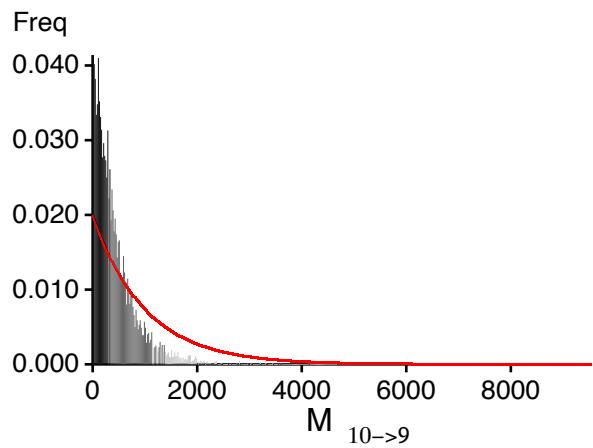
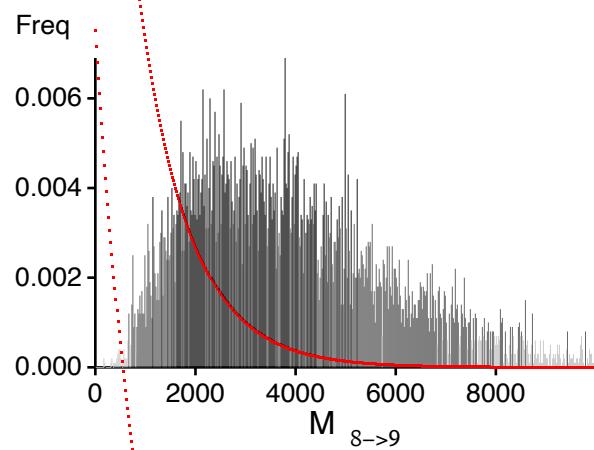
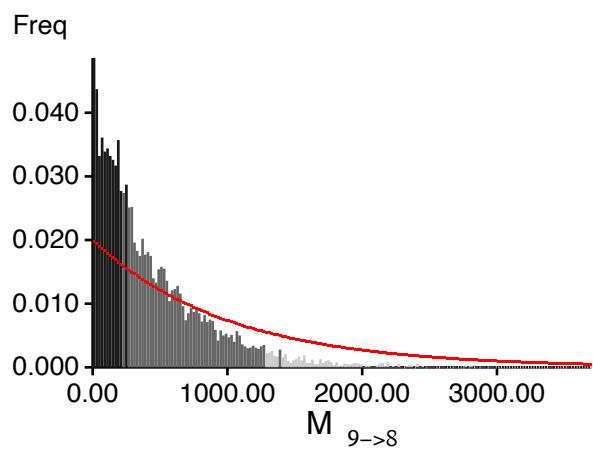
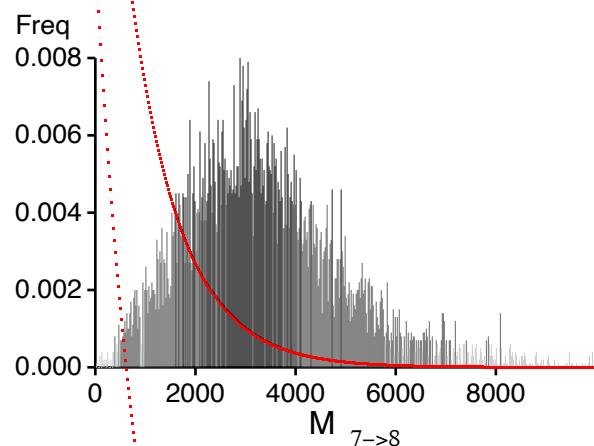
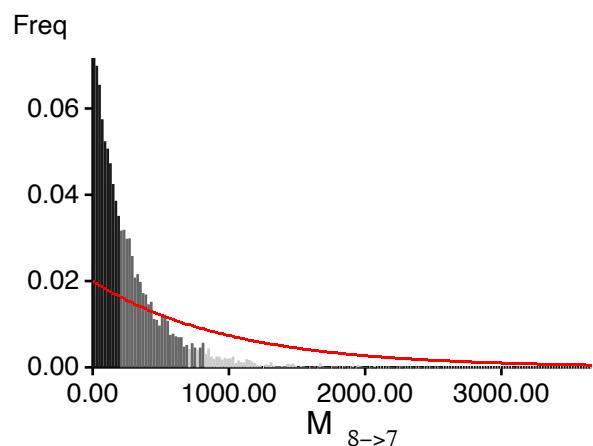


*Bayesian Analysis: Posterior distribution for locus 9*

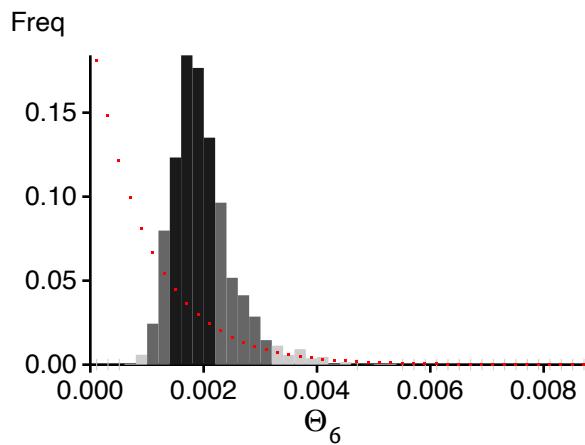
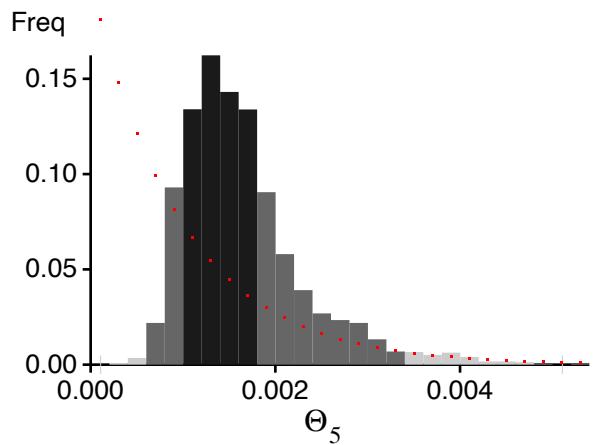
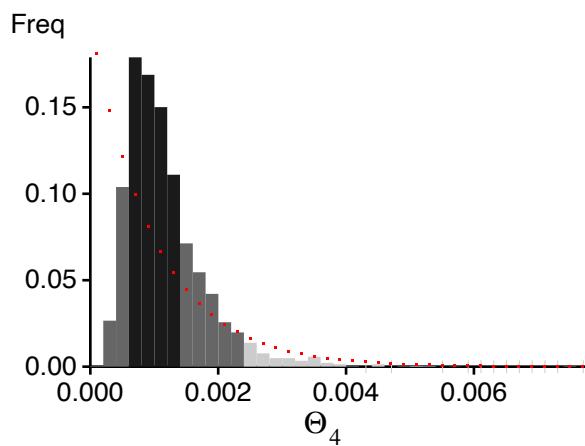
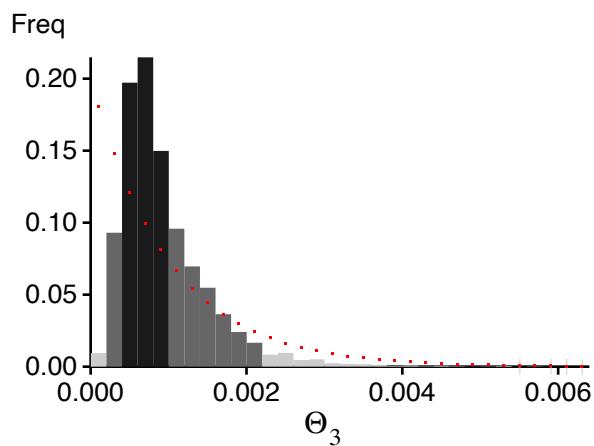
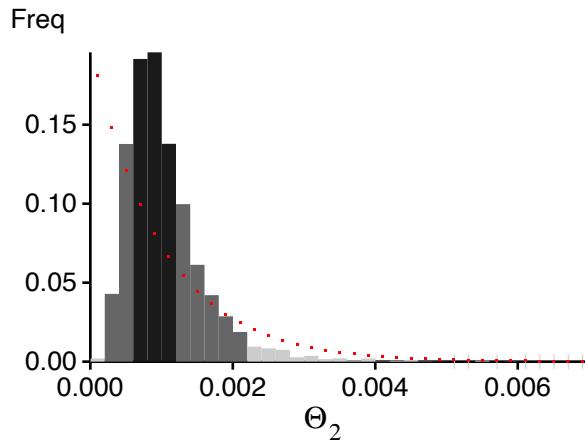
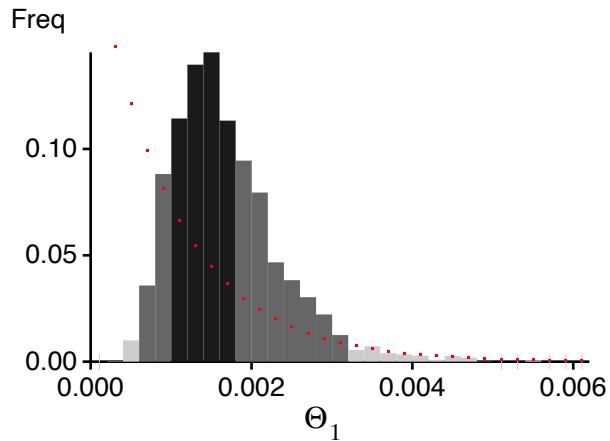


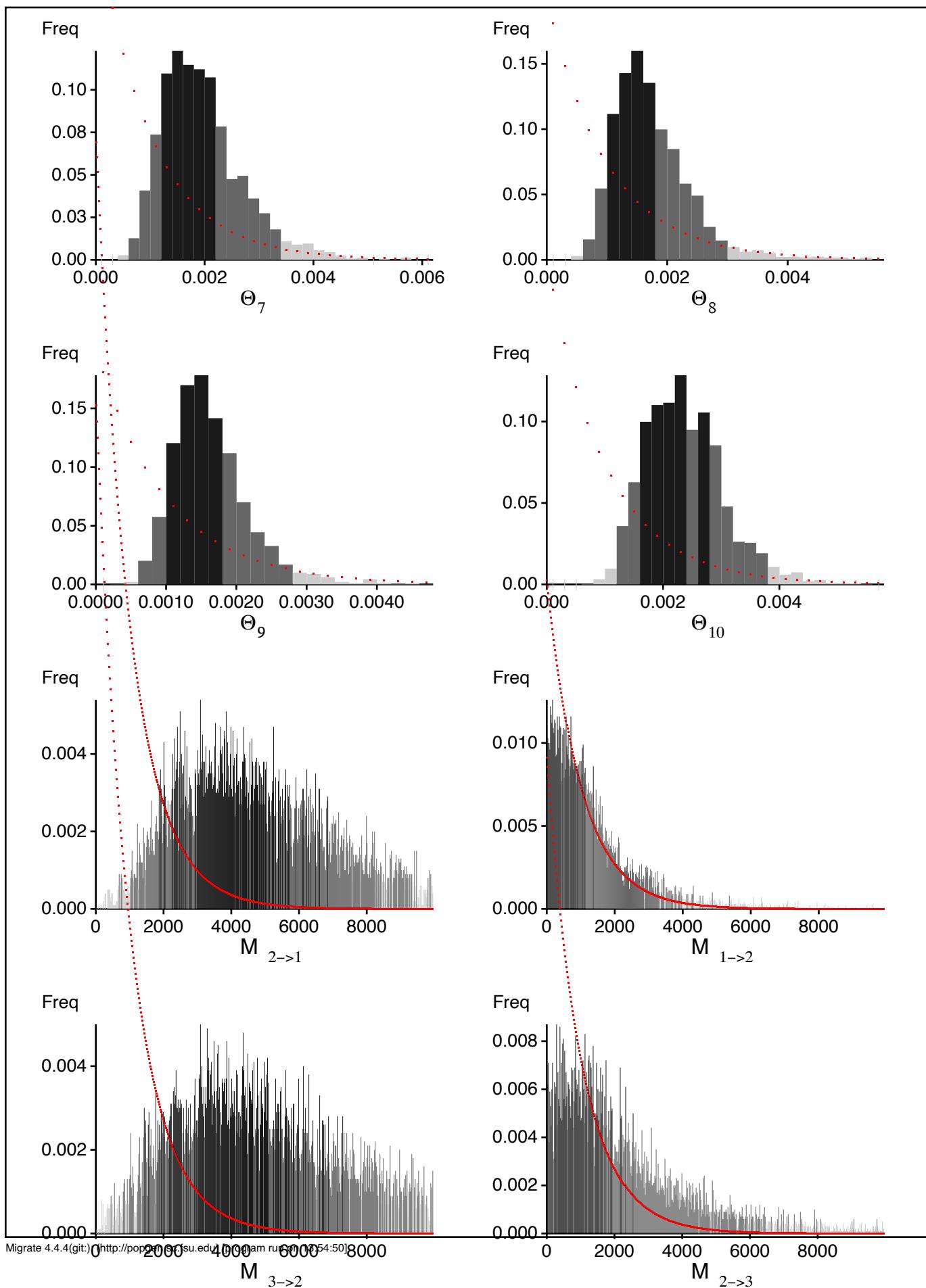


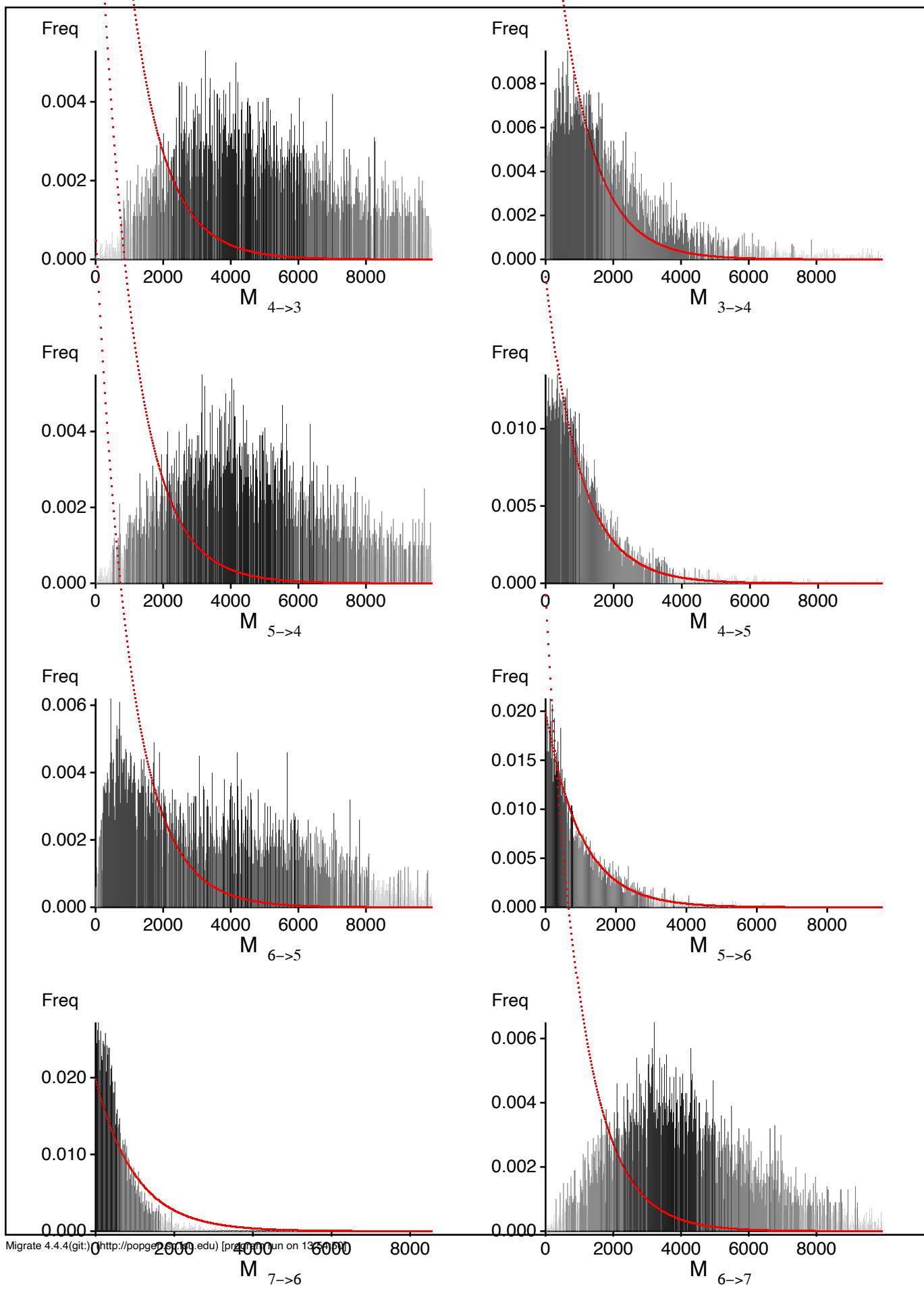


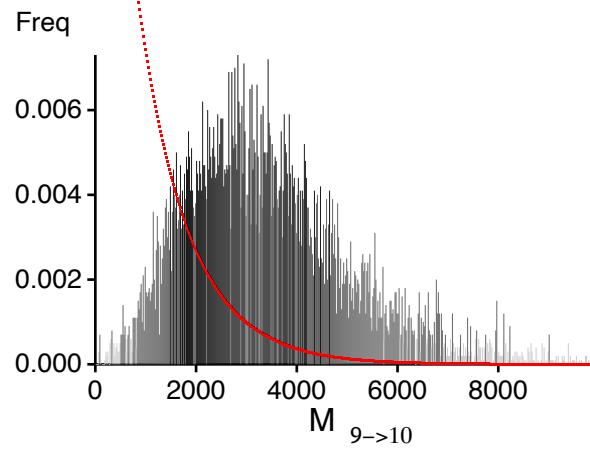
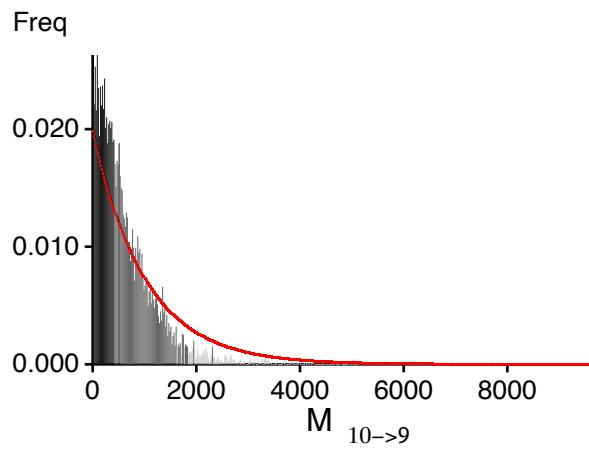
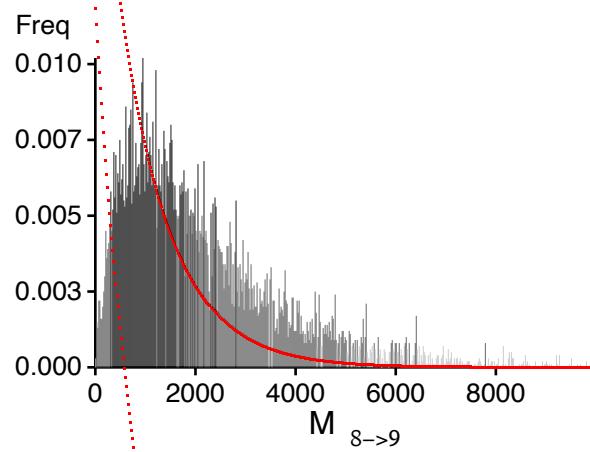
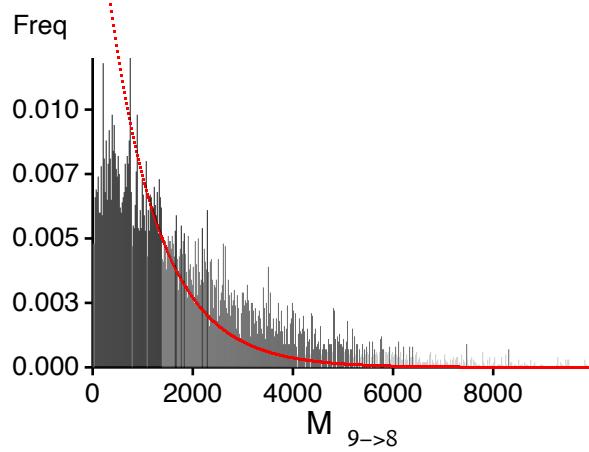
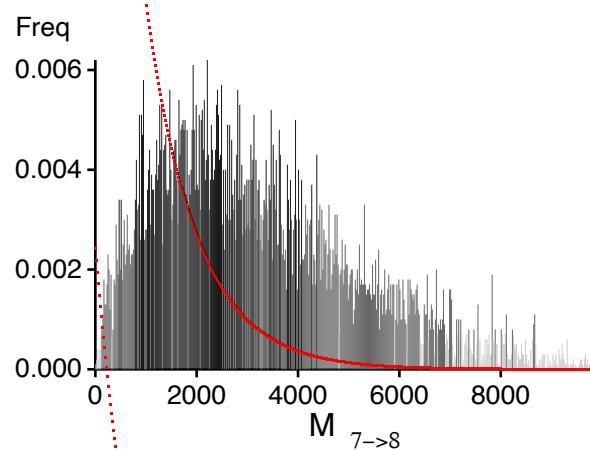
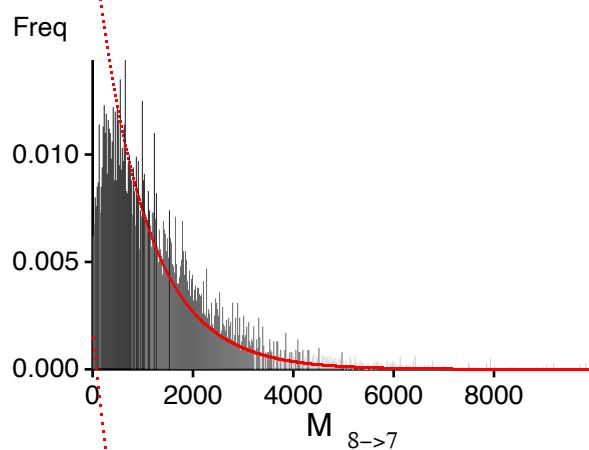


### Bayesian Analysis: Posterior distribution for locus 10

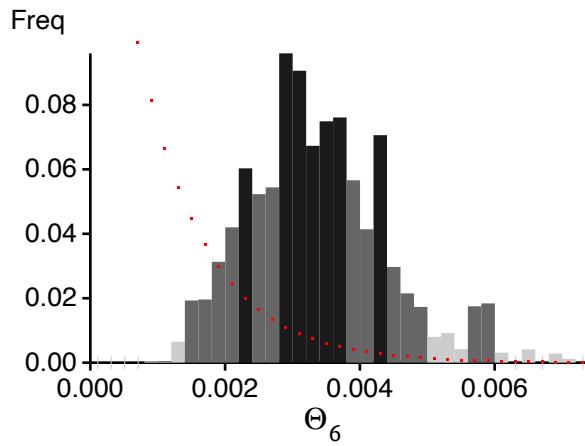
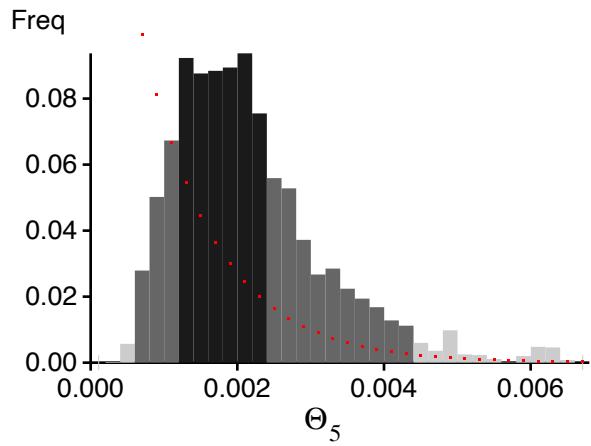
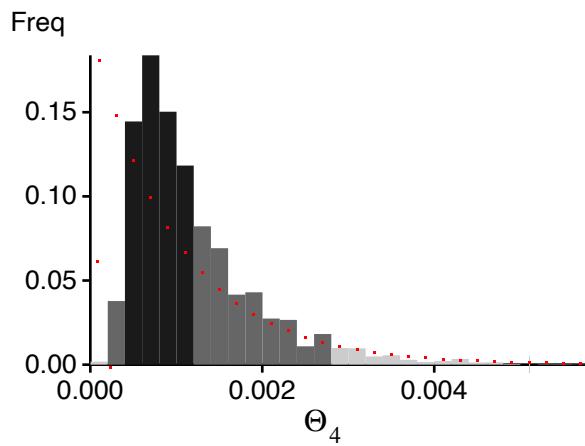
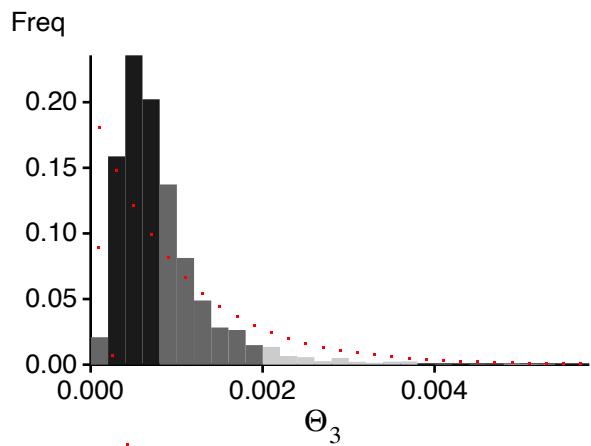
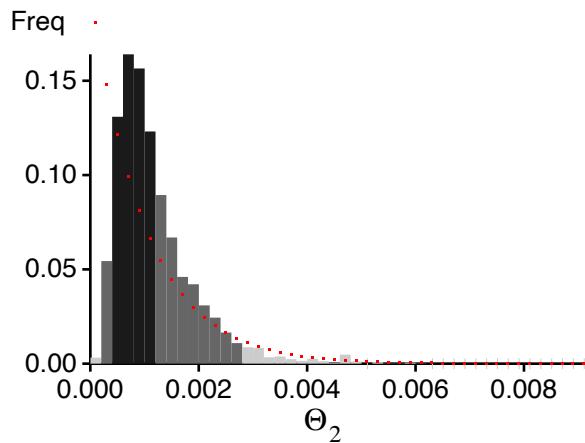
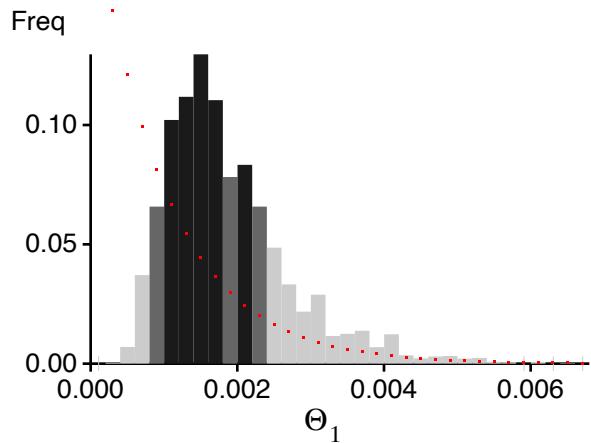


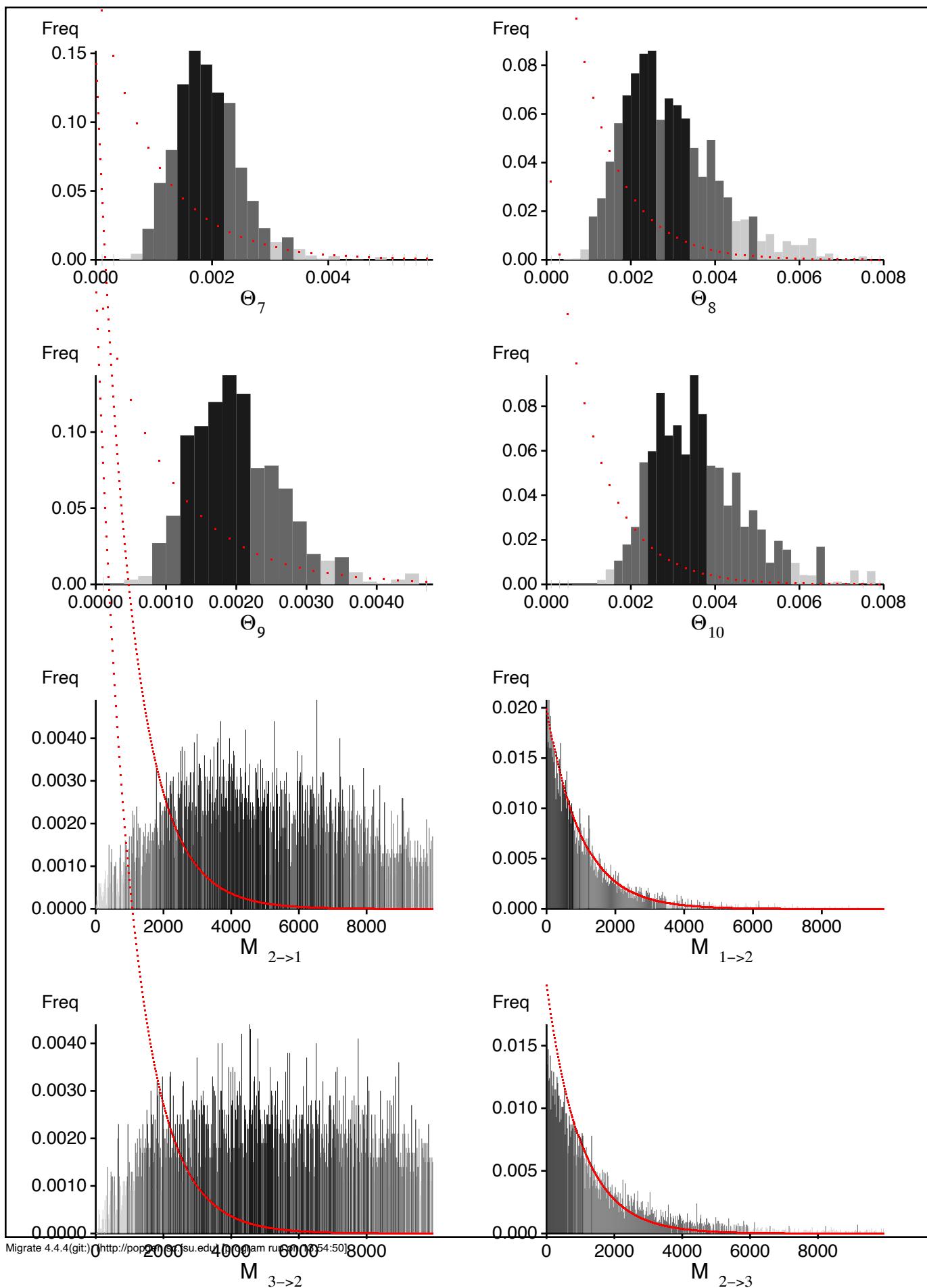


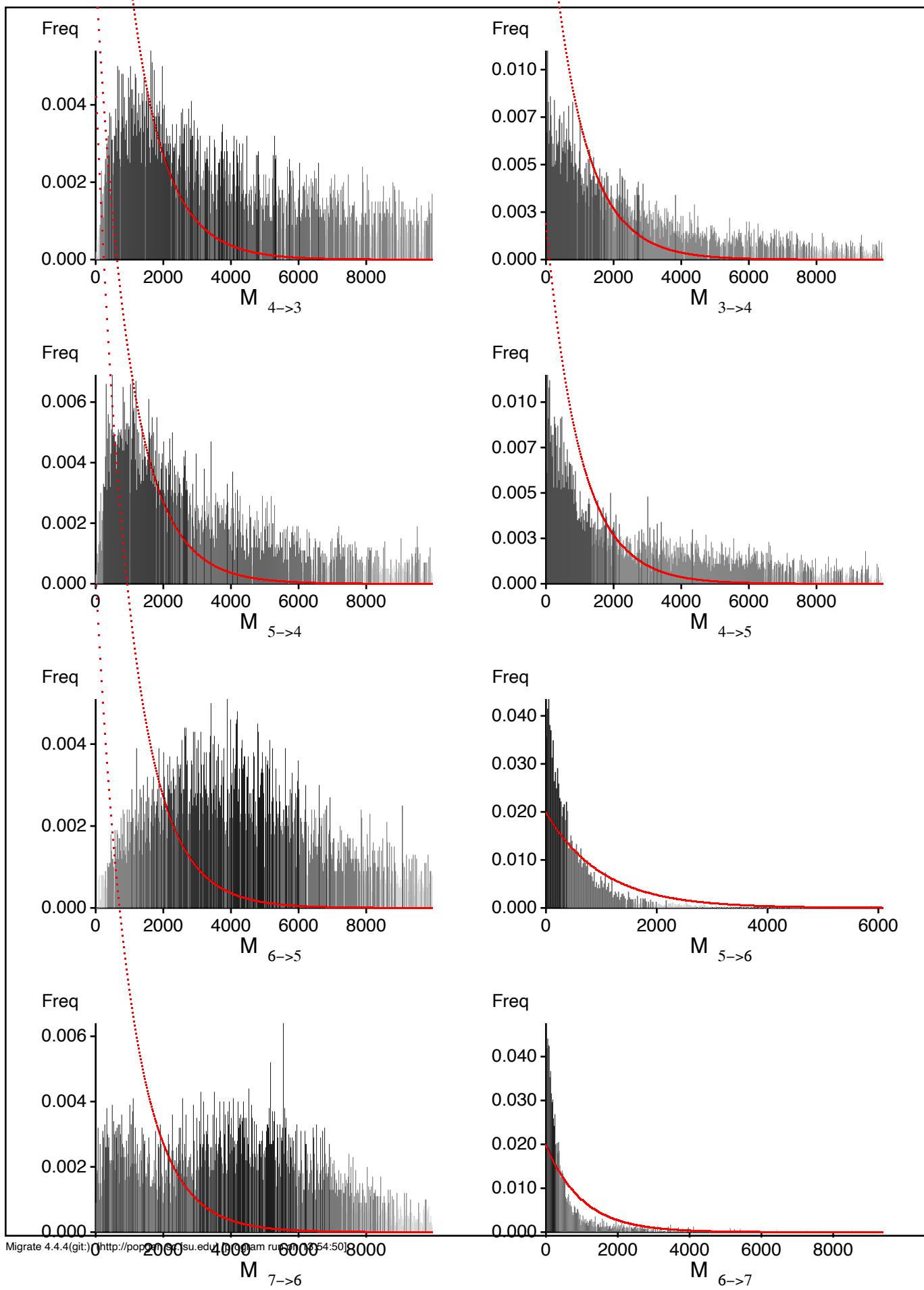


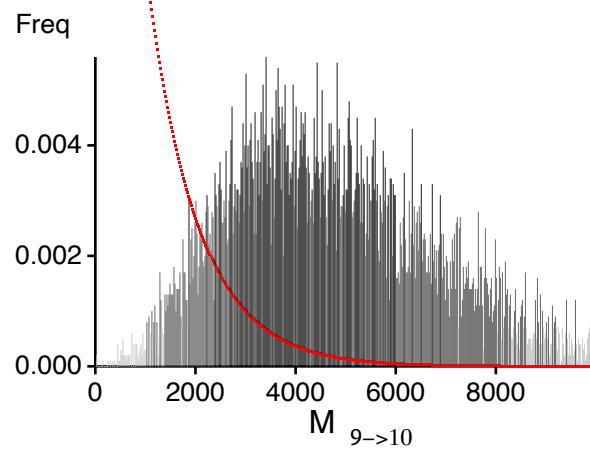
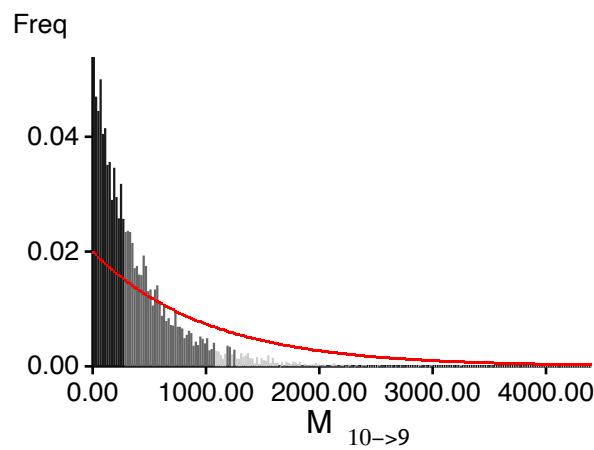
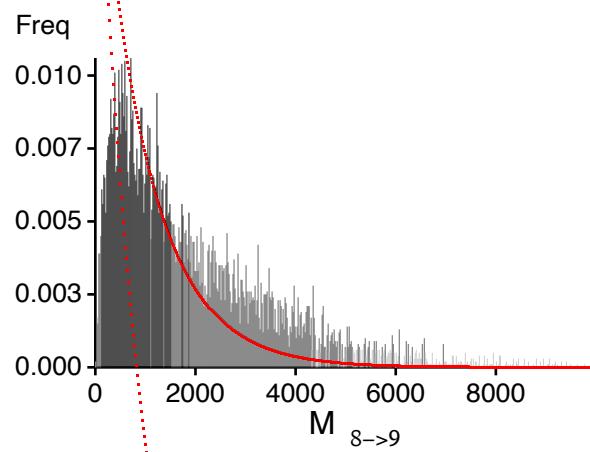
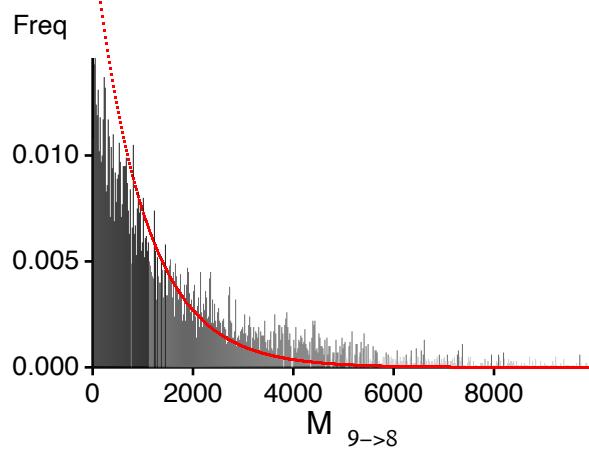
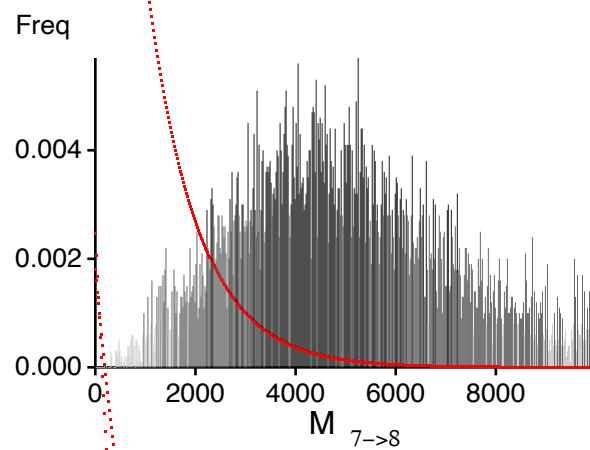
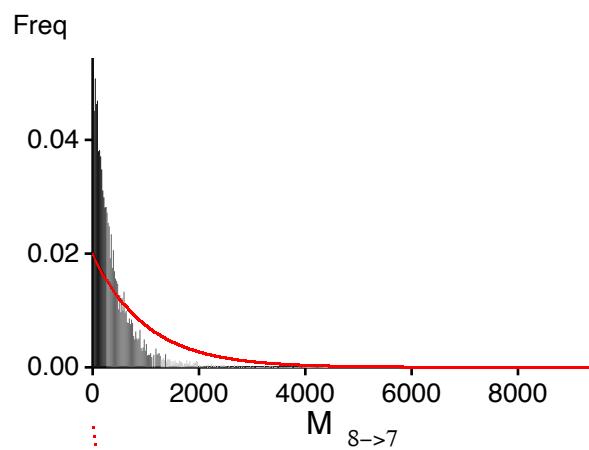


### Bayesian Analysis: Posterior distribution for locus 11

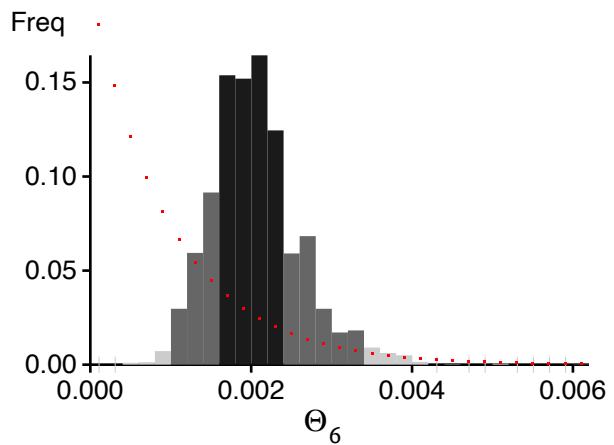
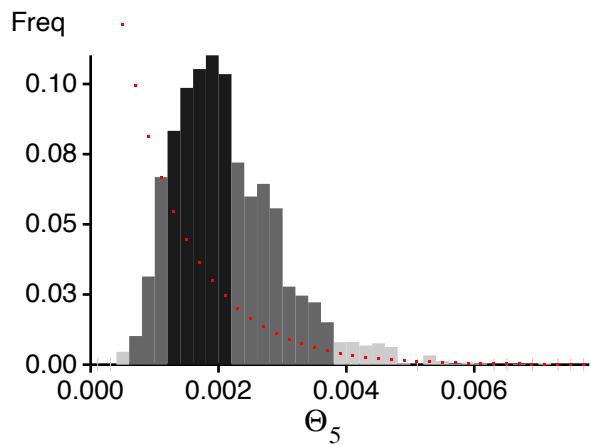
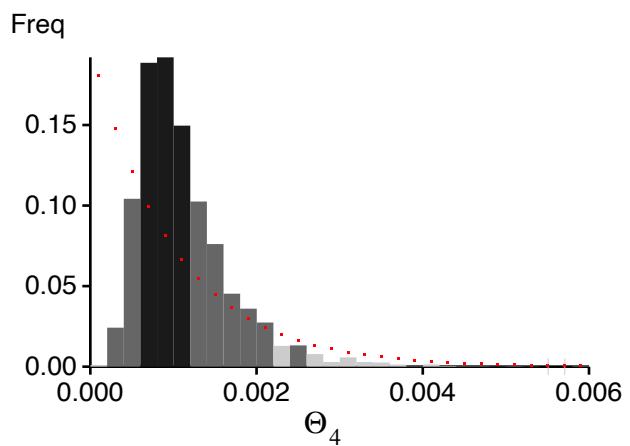
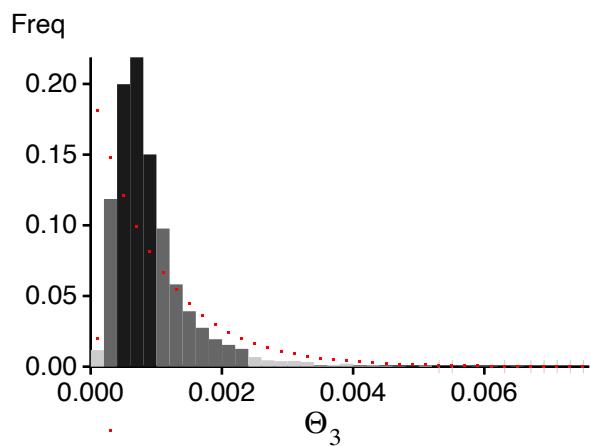
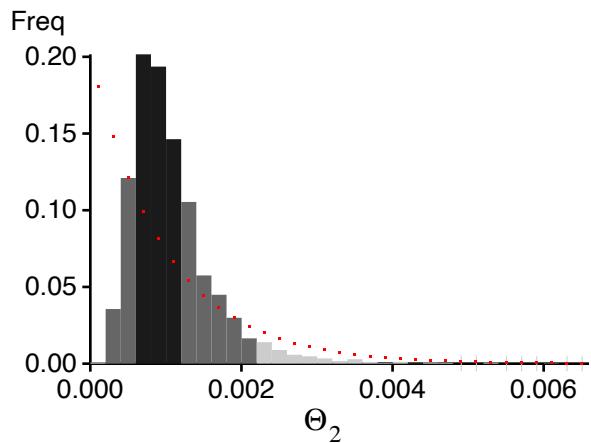
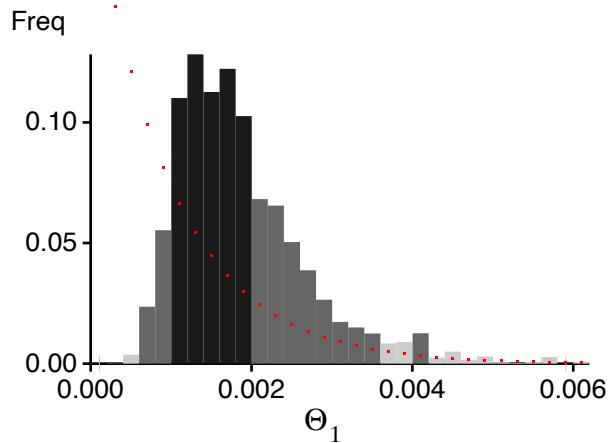


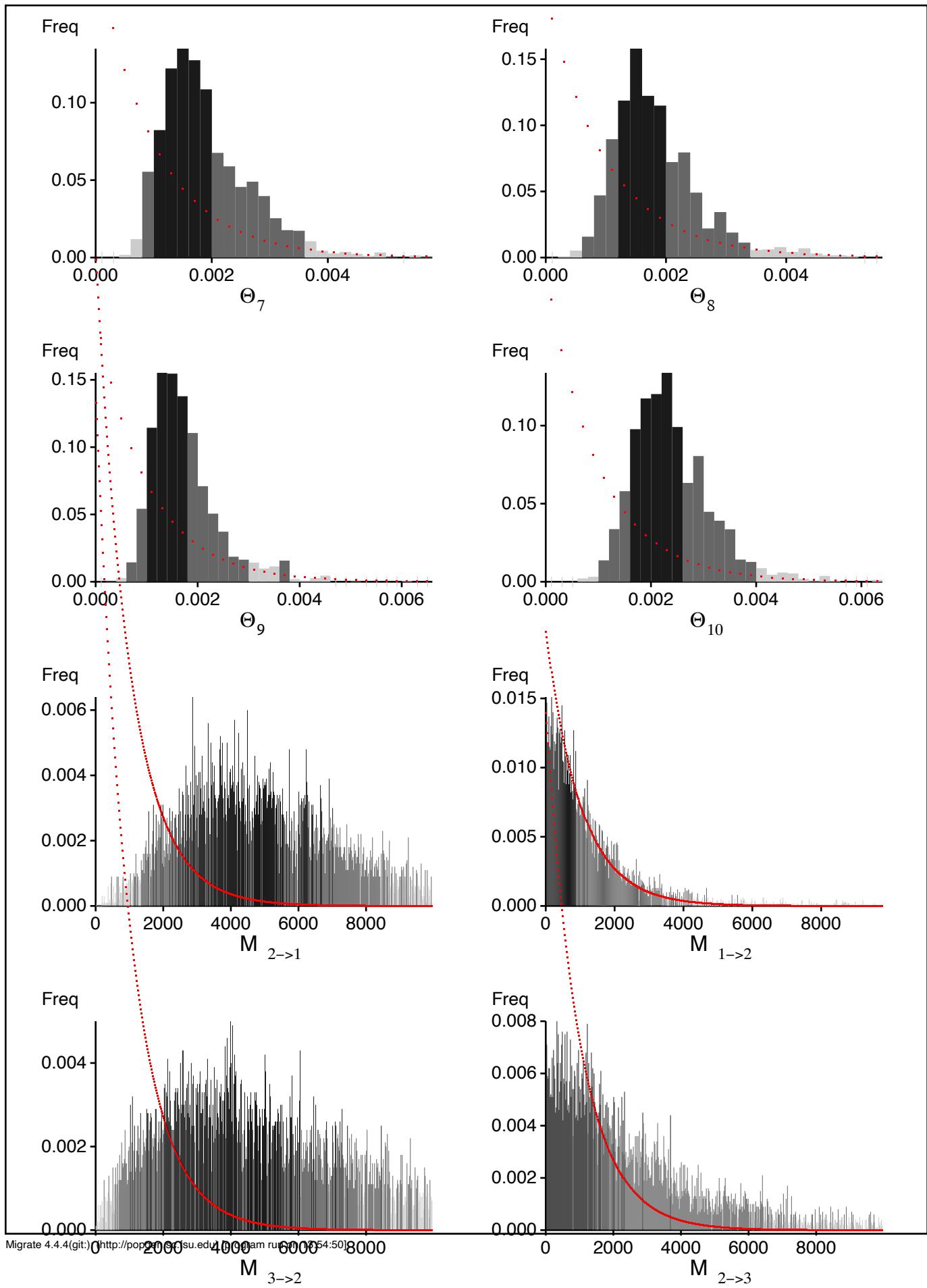


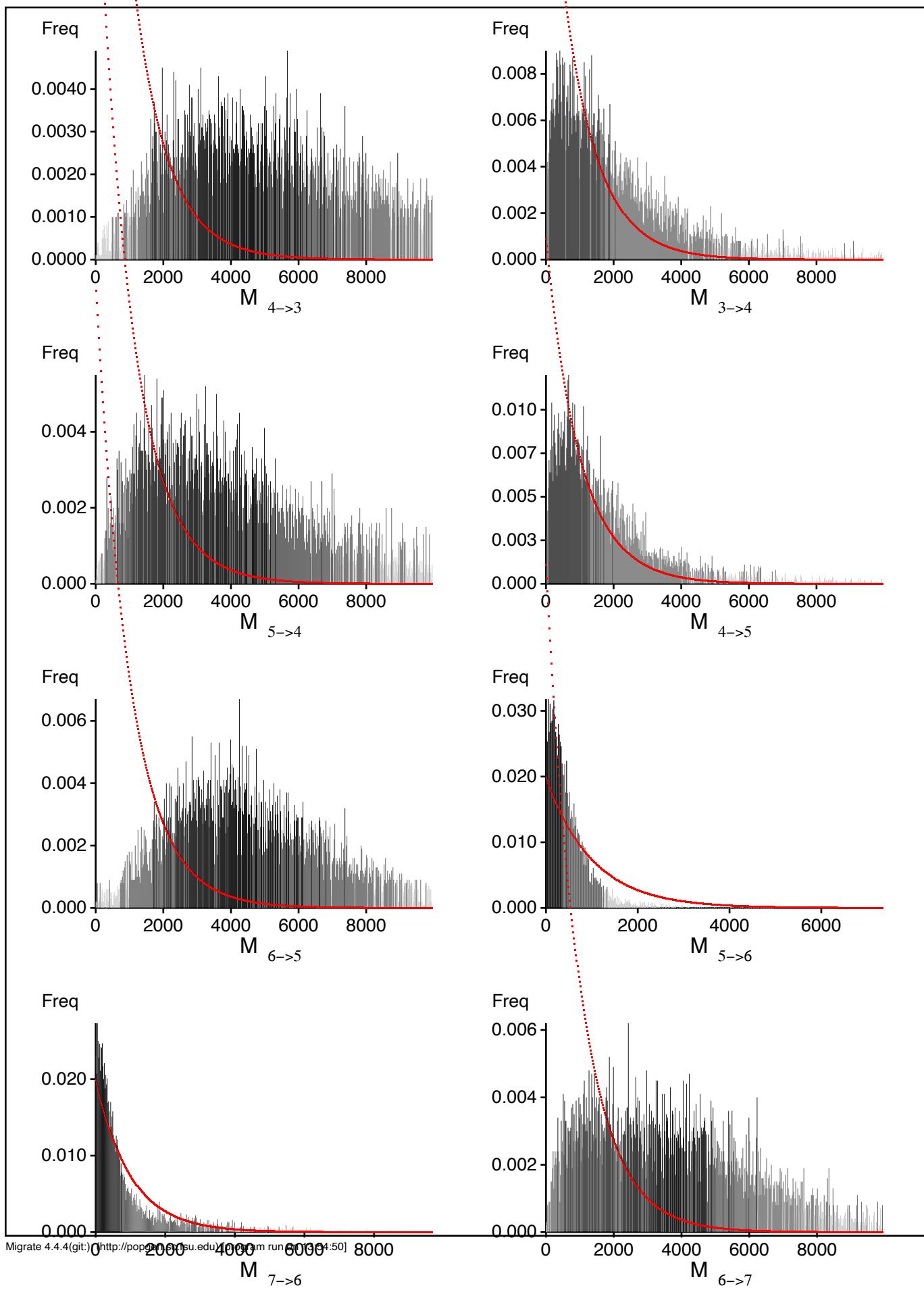


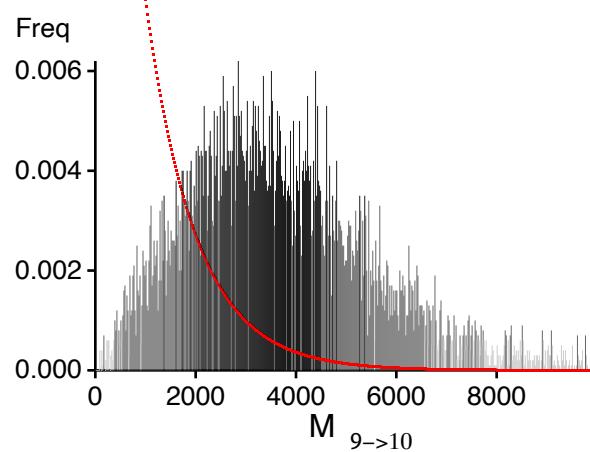
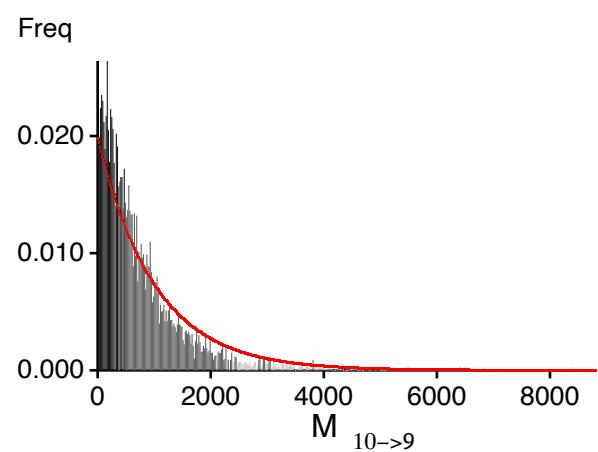
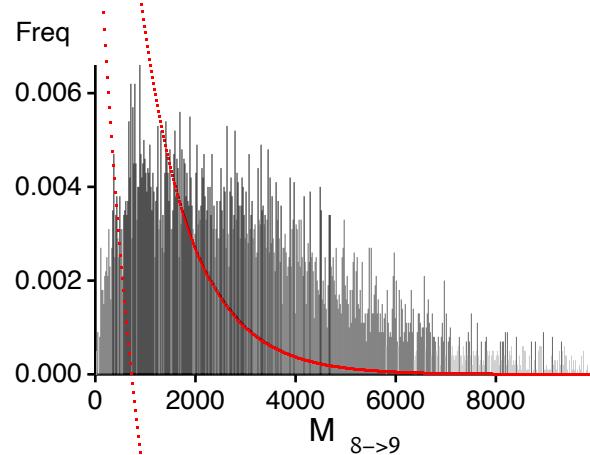
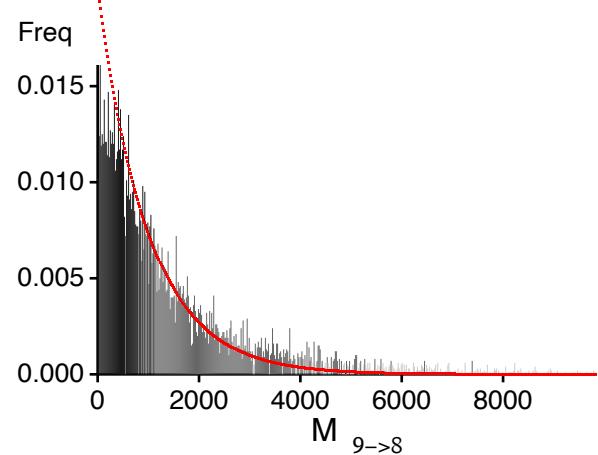
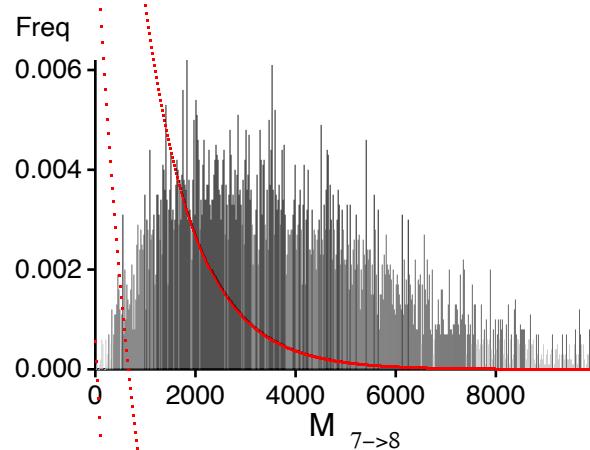
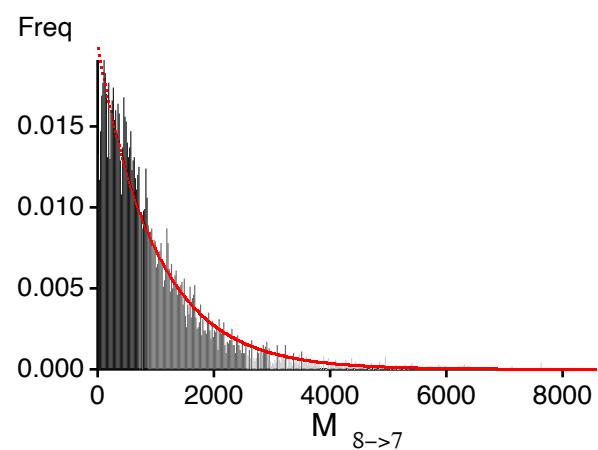


### Bayesian Analysis: Posterior distribution for locus 12

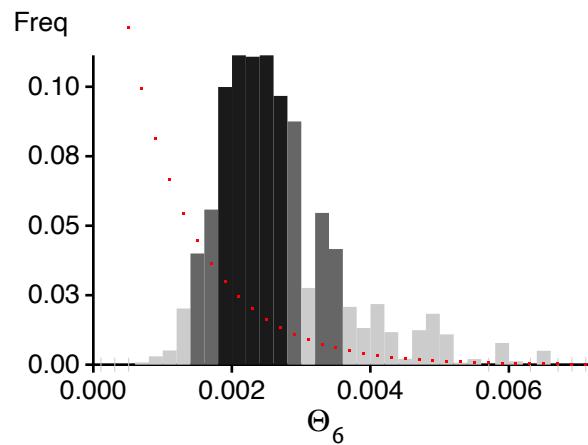
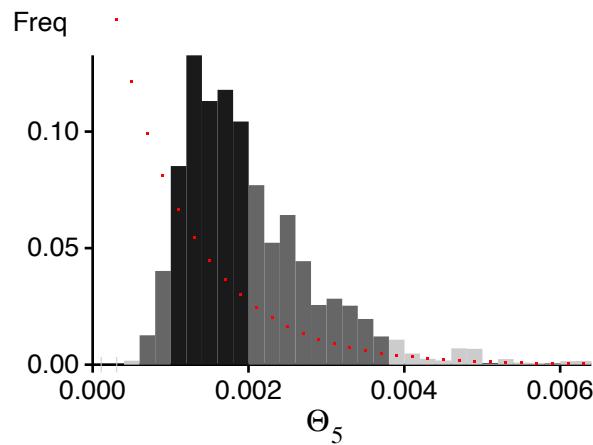
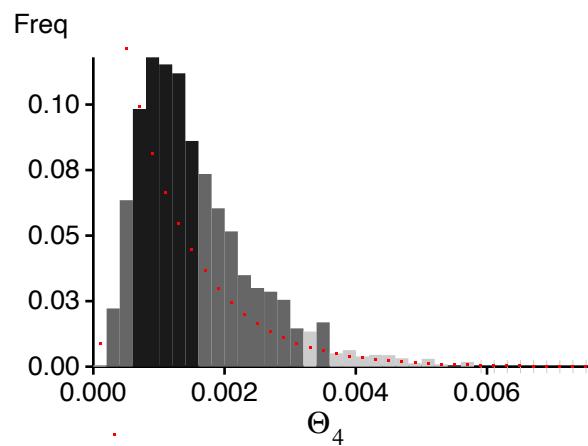
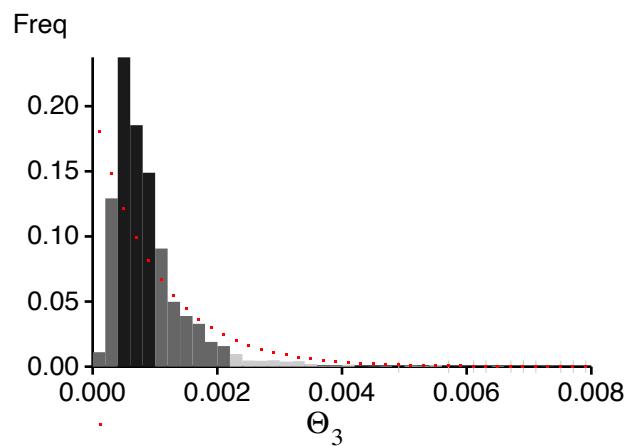
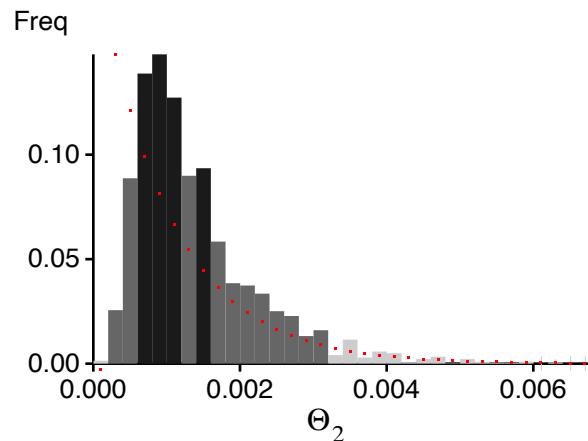
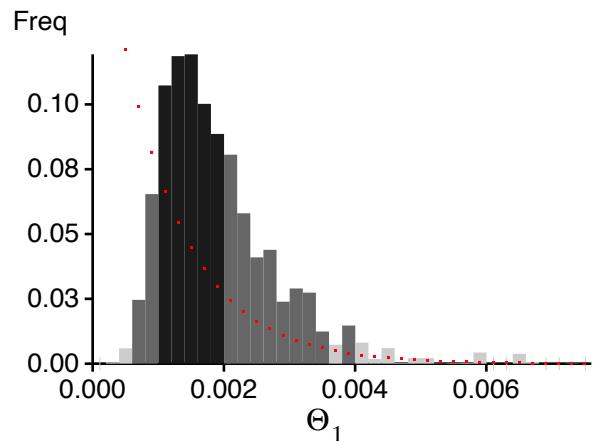


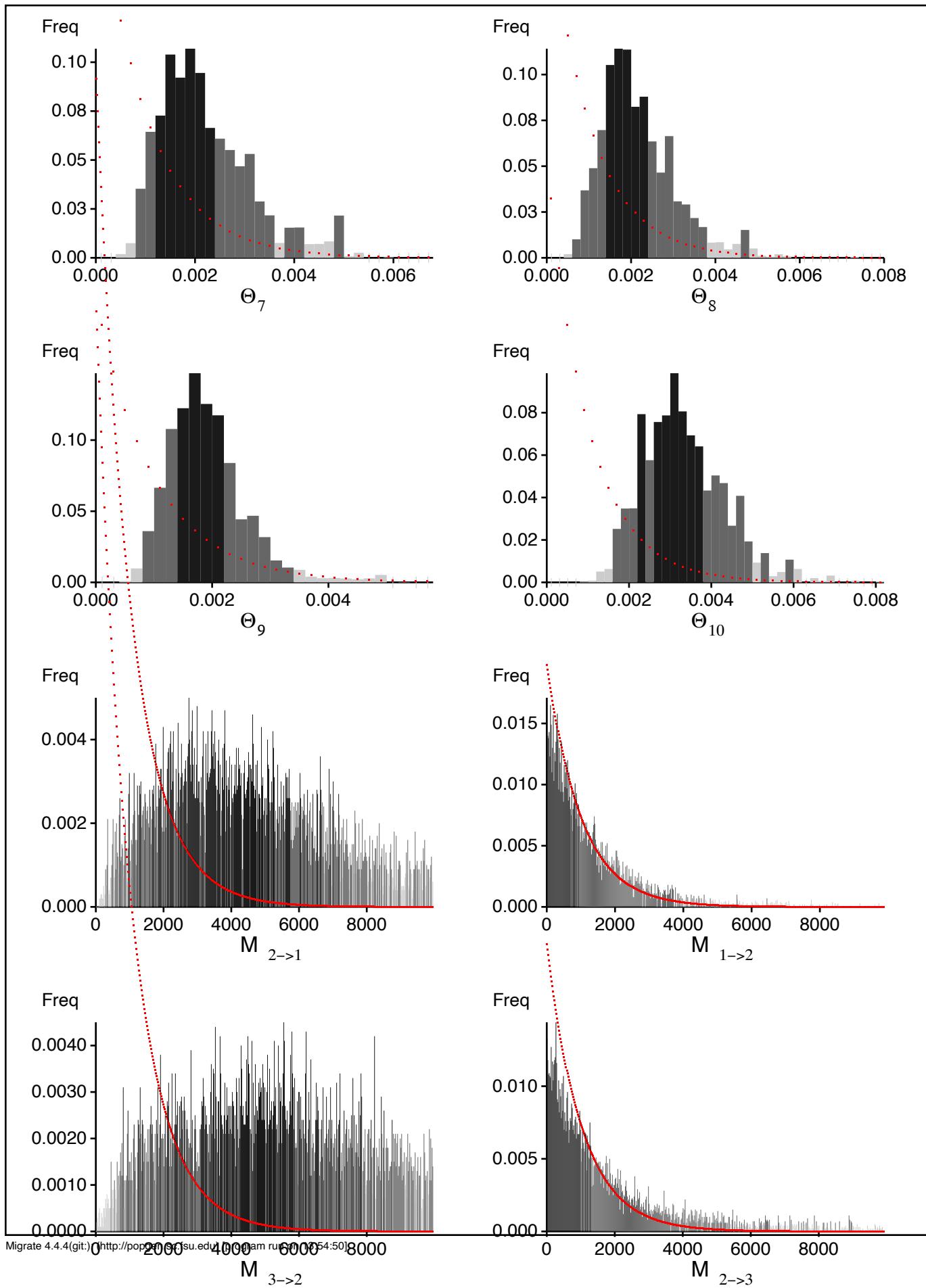


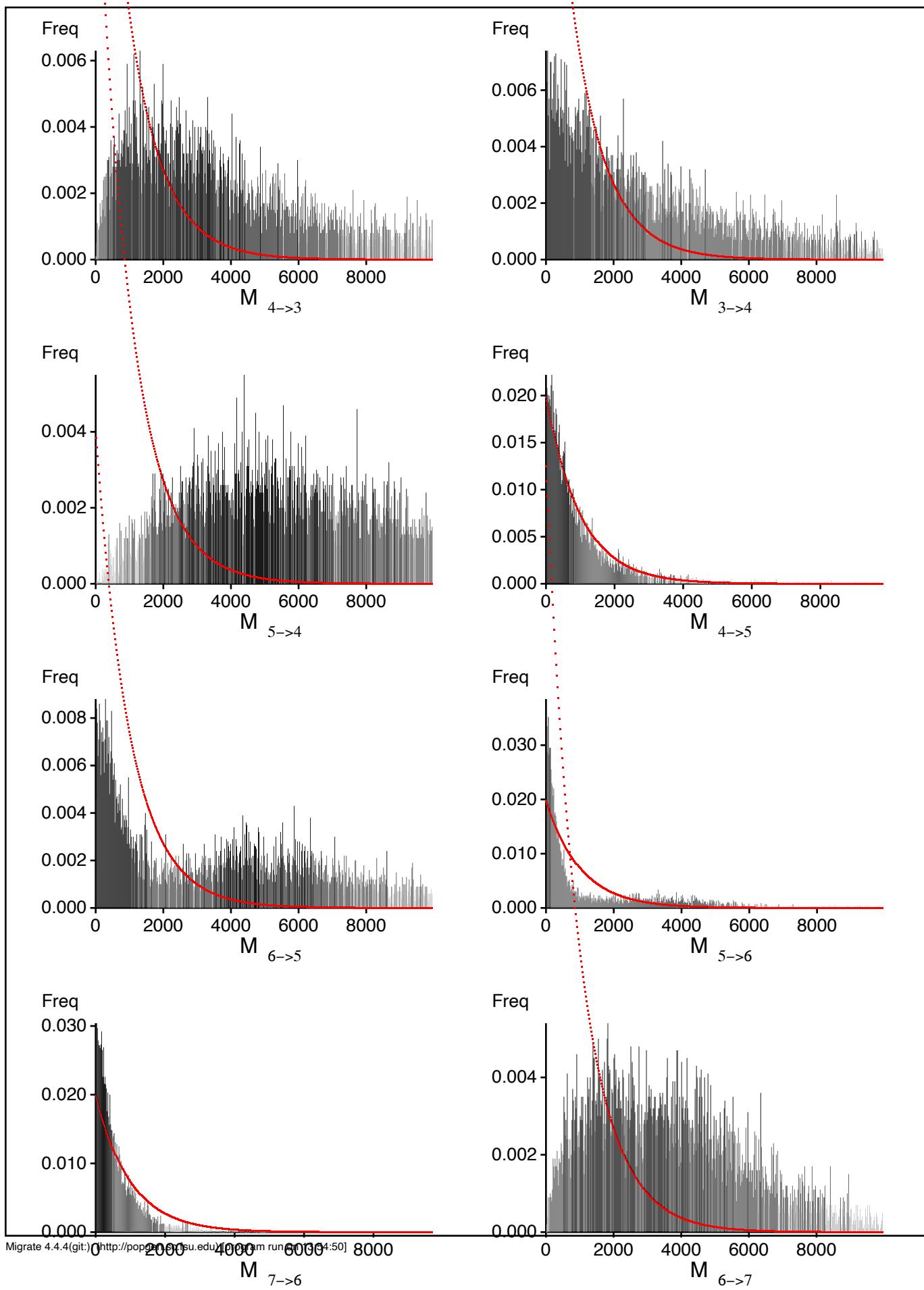


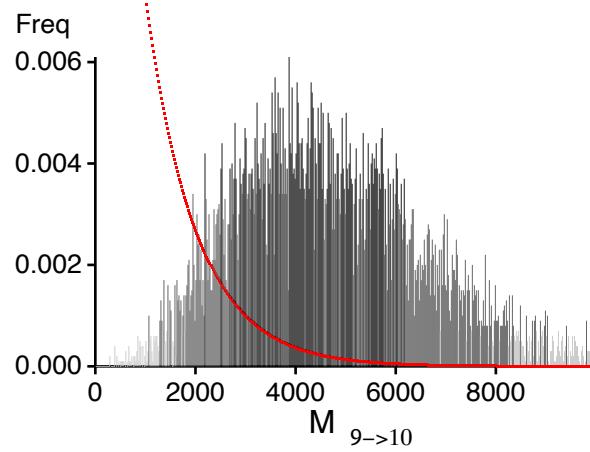
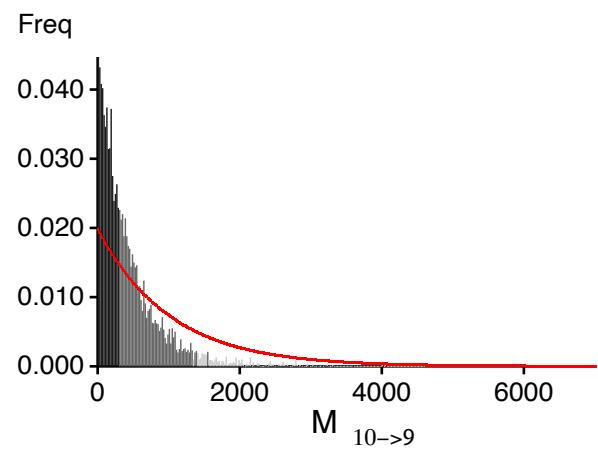
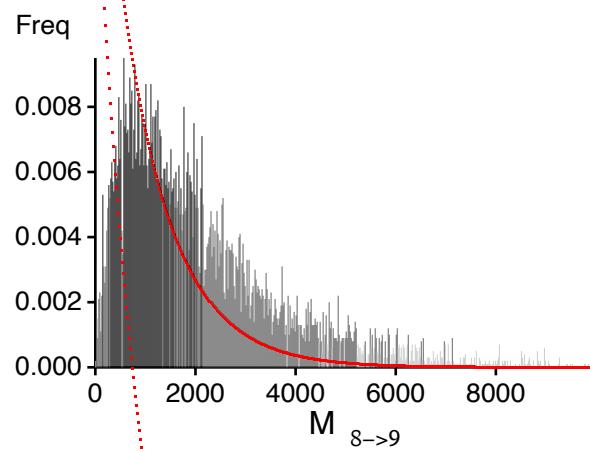
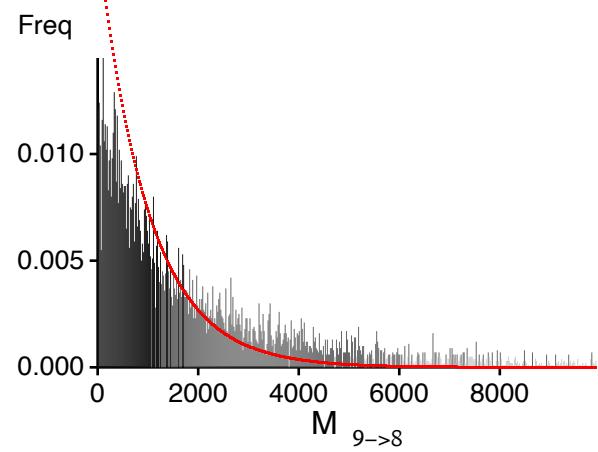
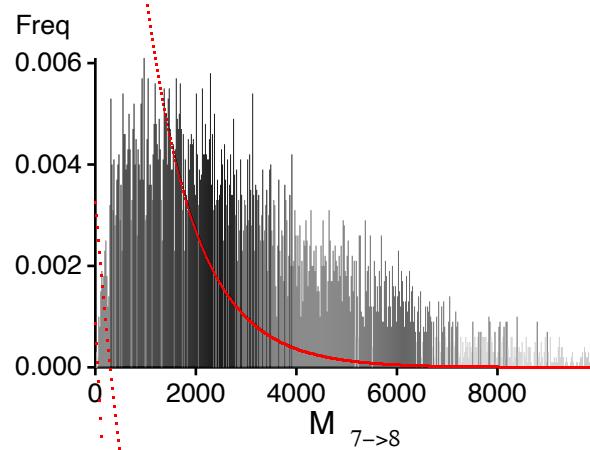
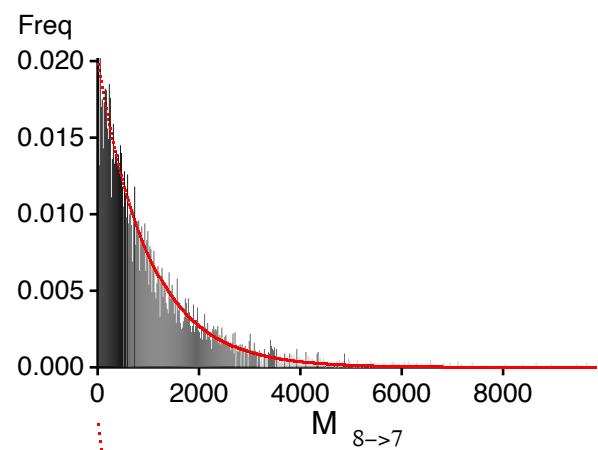


### Bayesian Analysis: Posterior distribution for locus 13

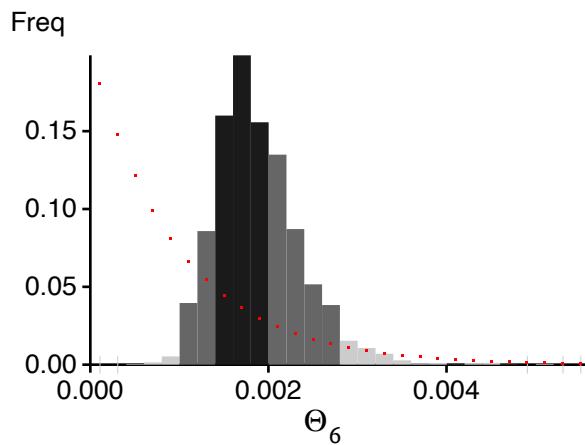
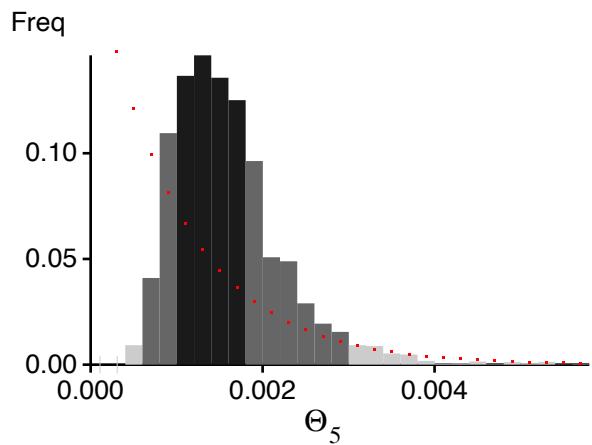
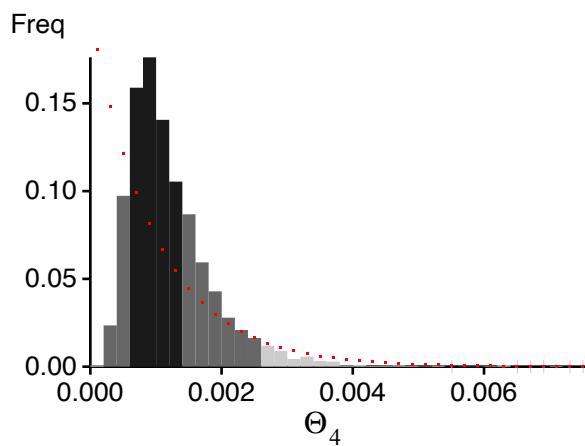
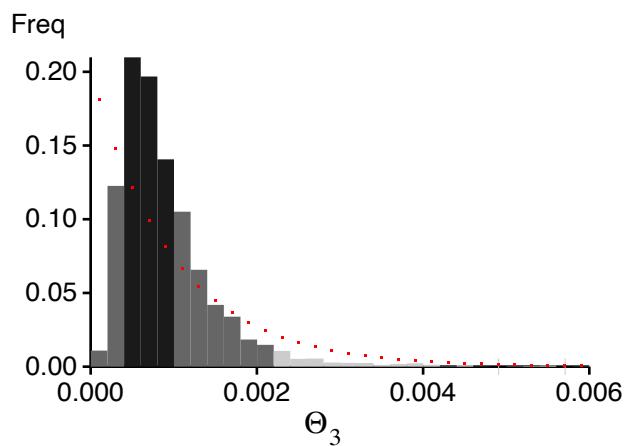
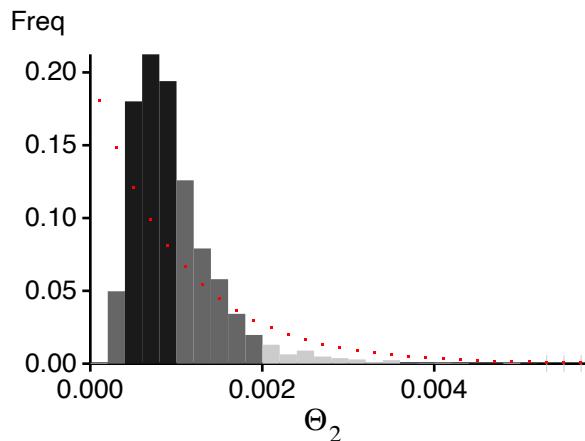
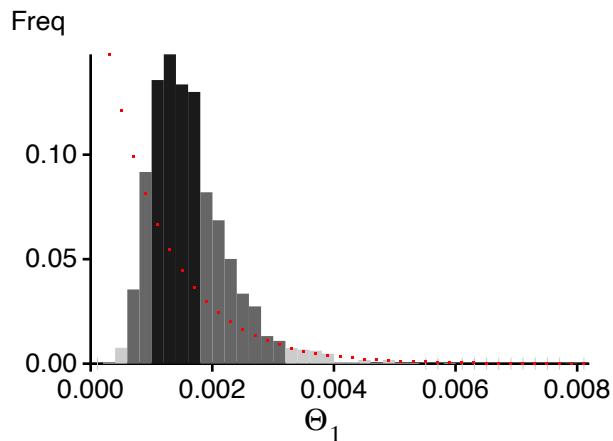


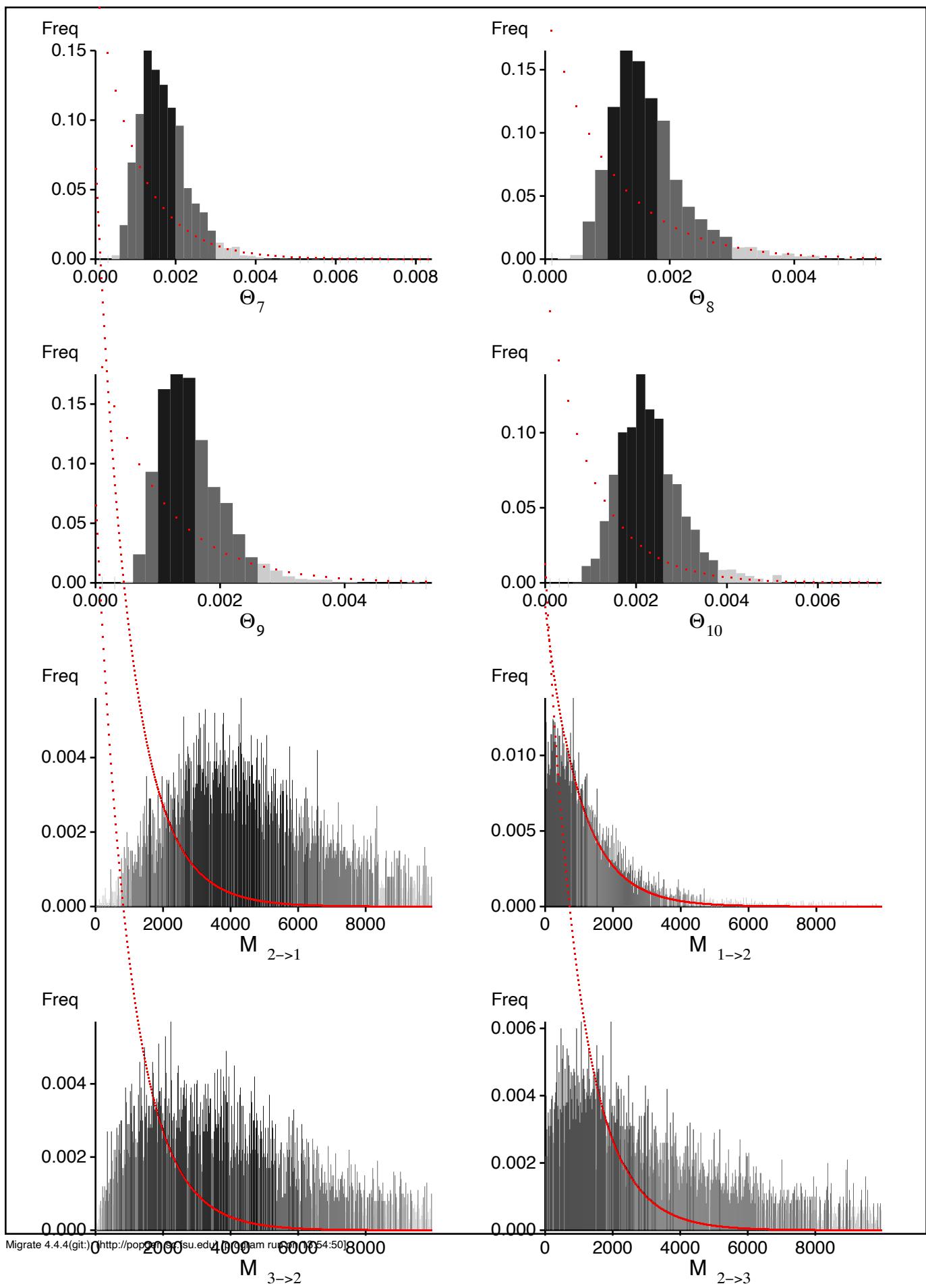


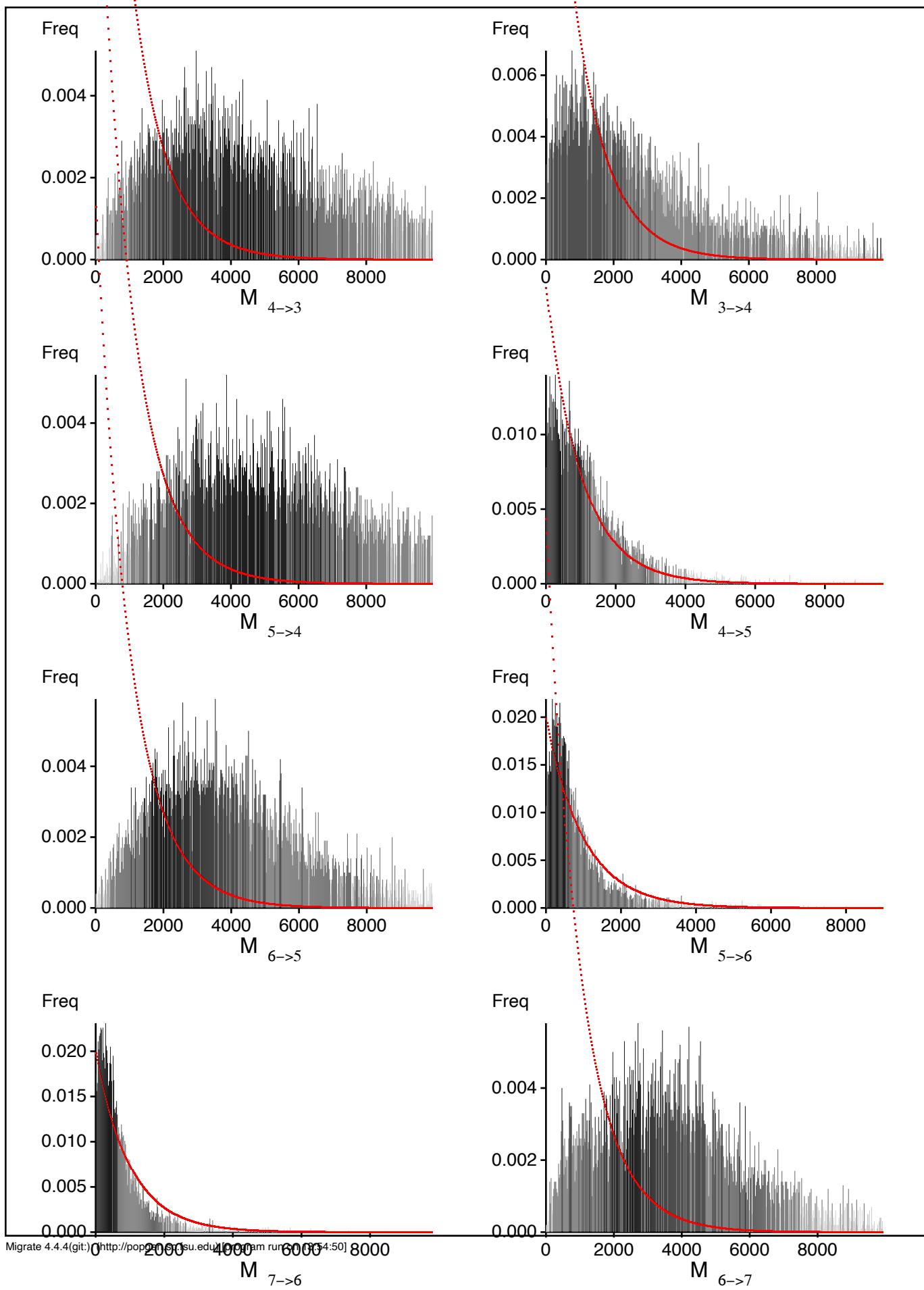


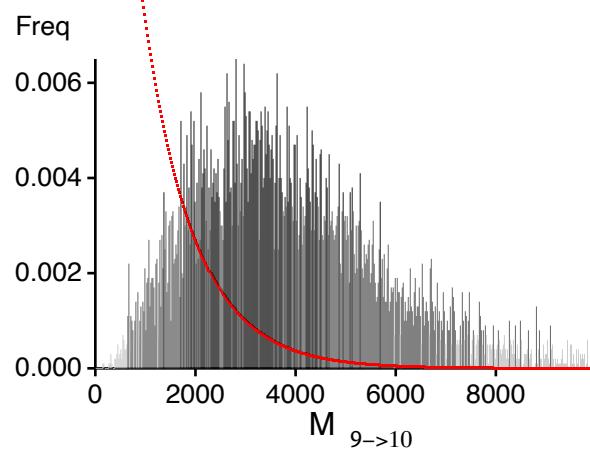
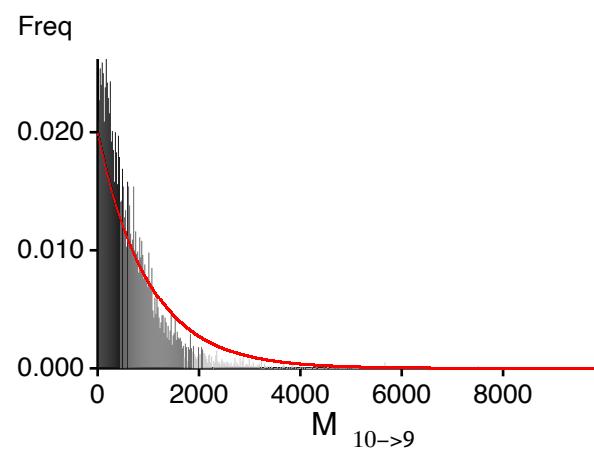
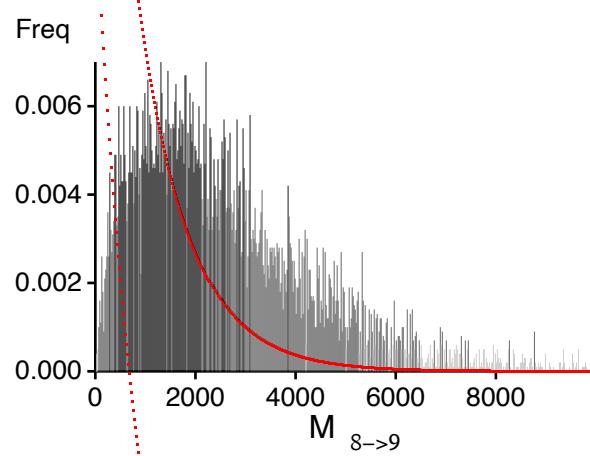
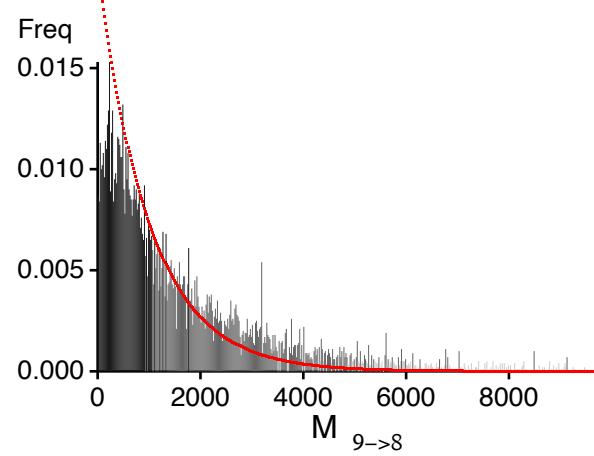
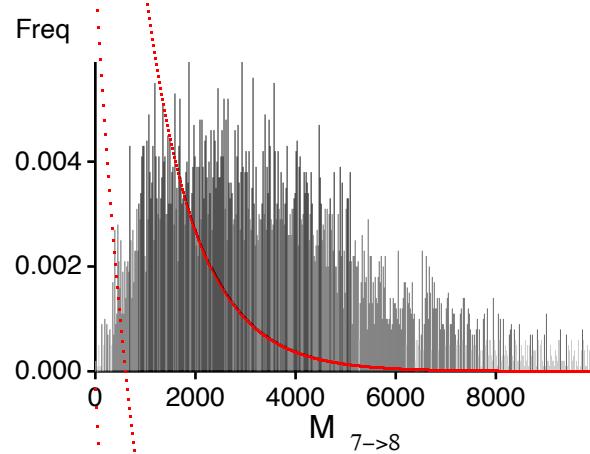
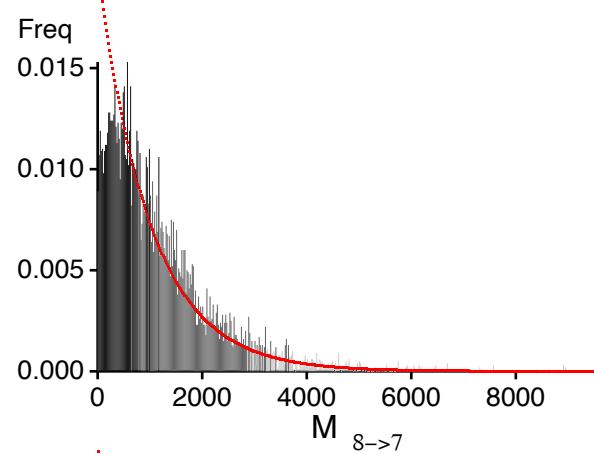


### Bayesian Analysis: Posterior distribution for locus 14

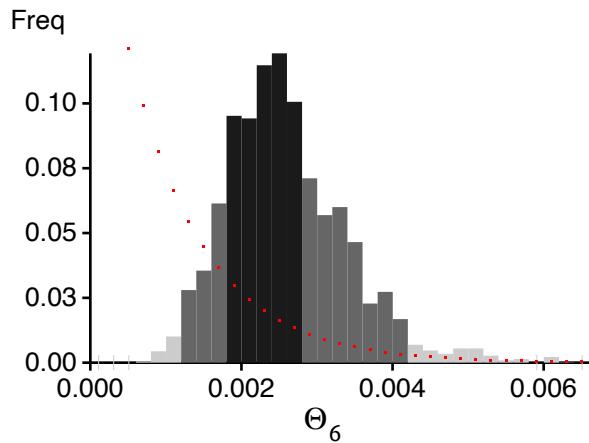
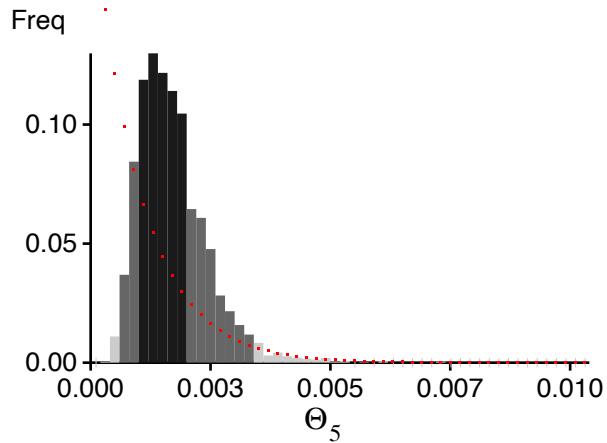
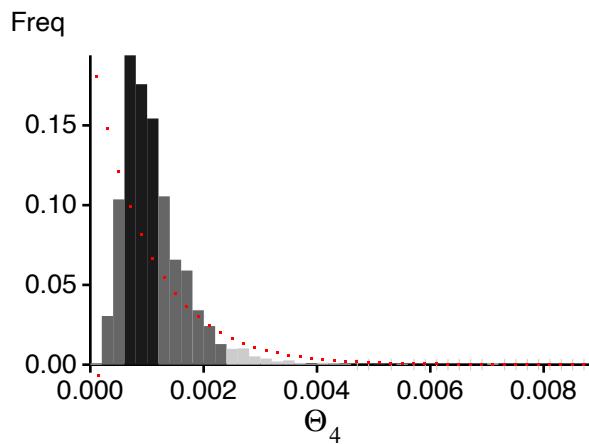
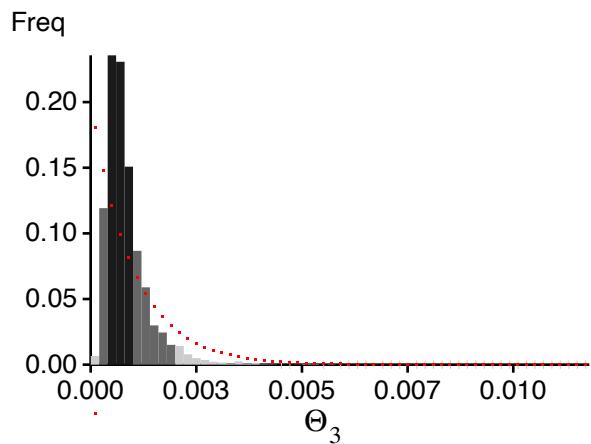
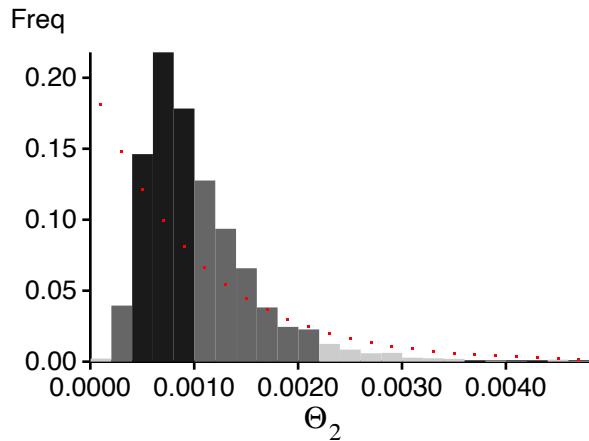
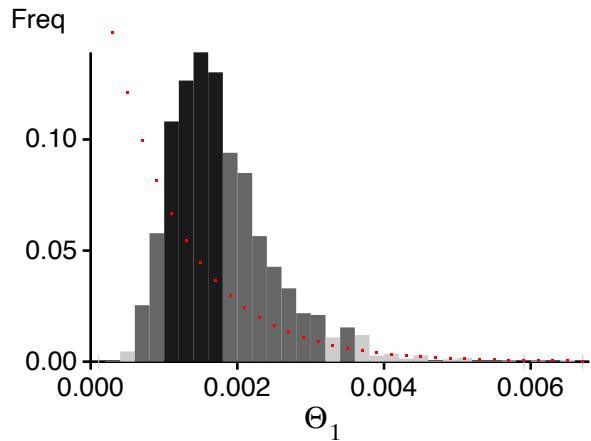


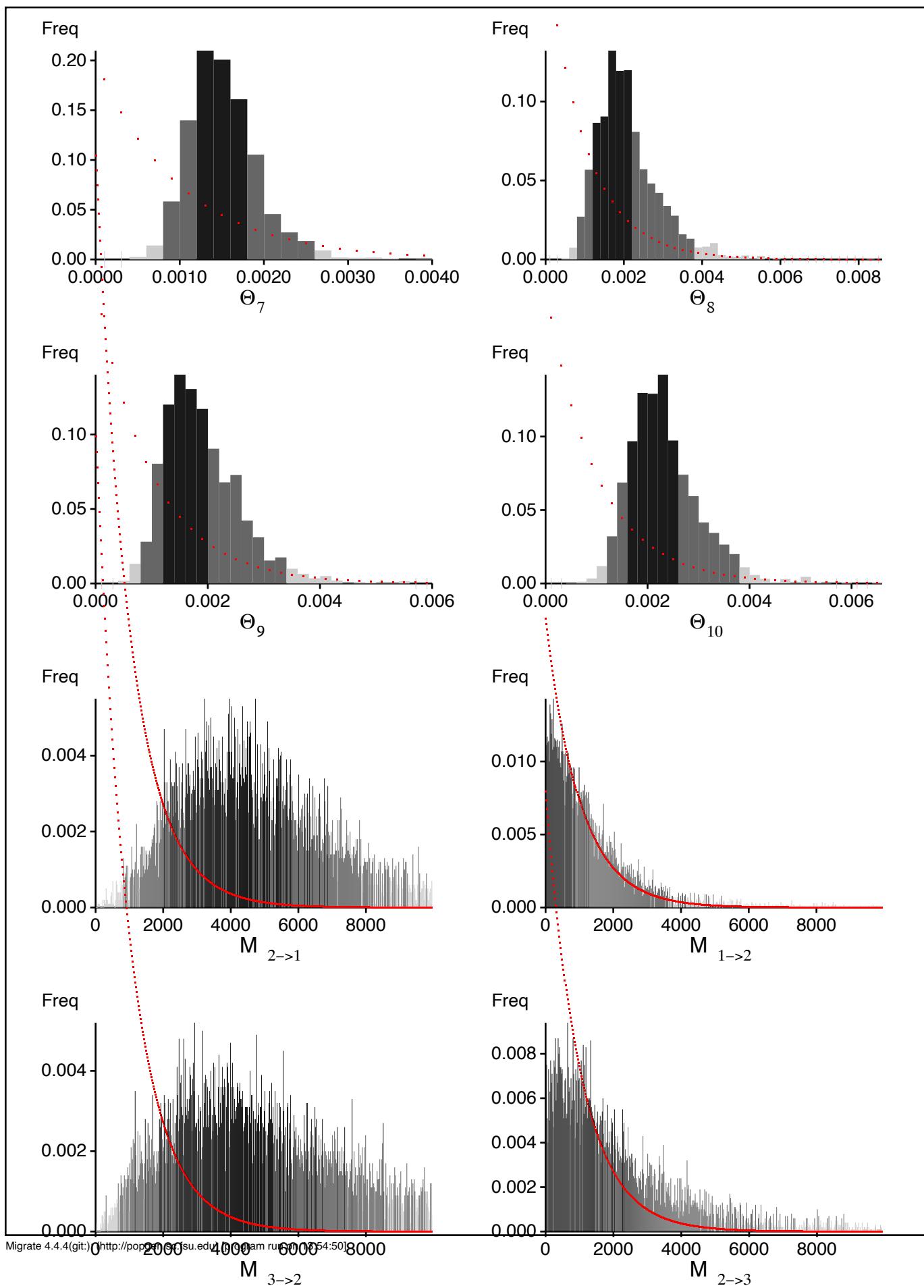


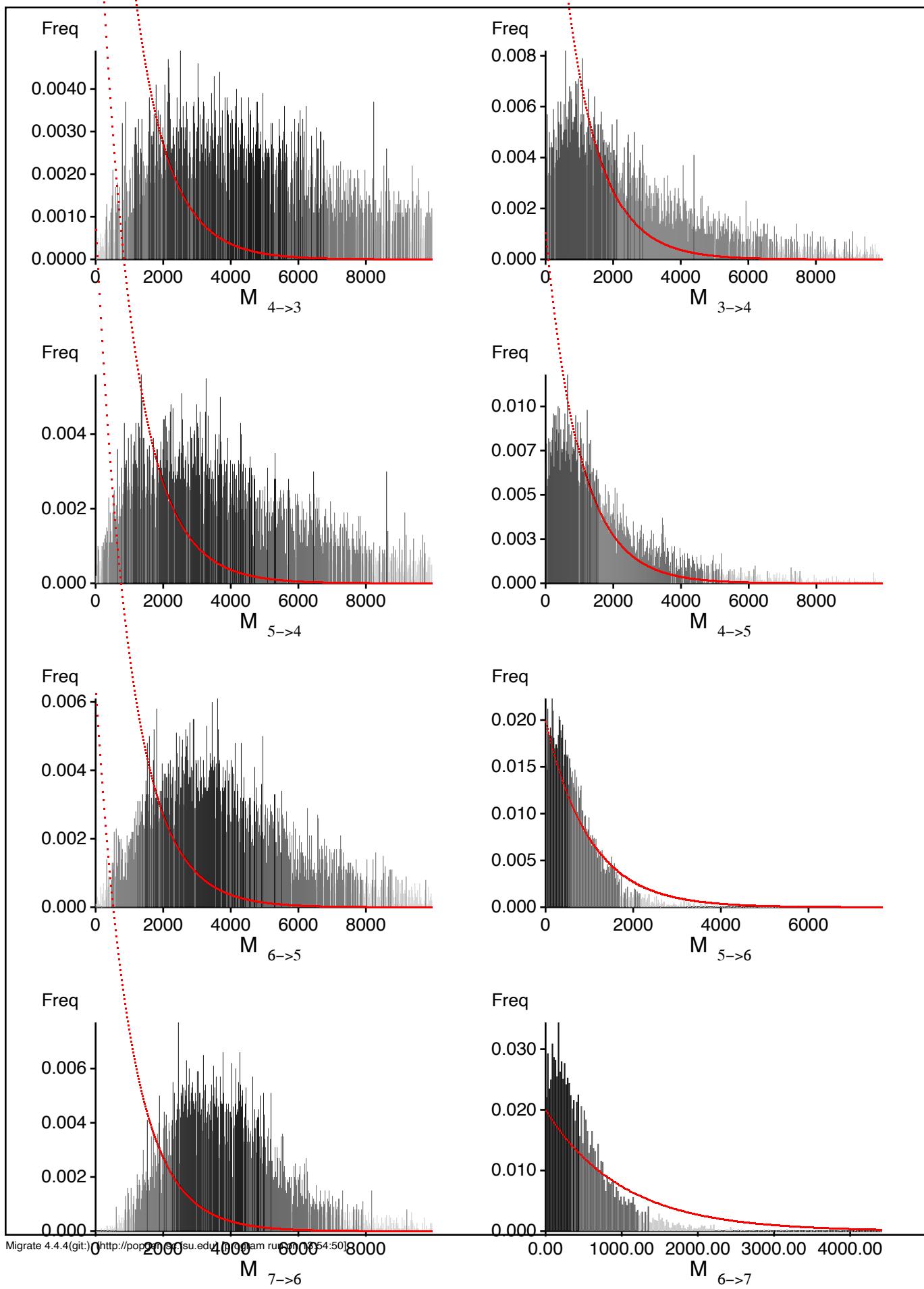


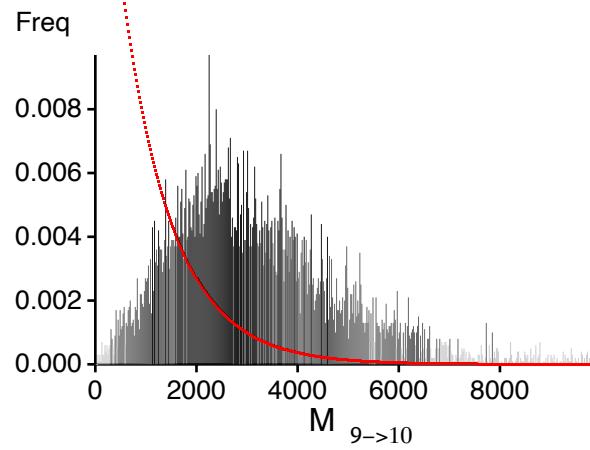
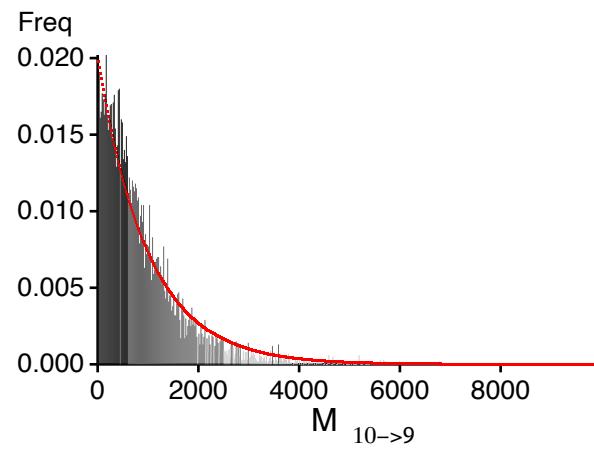
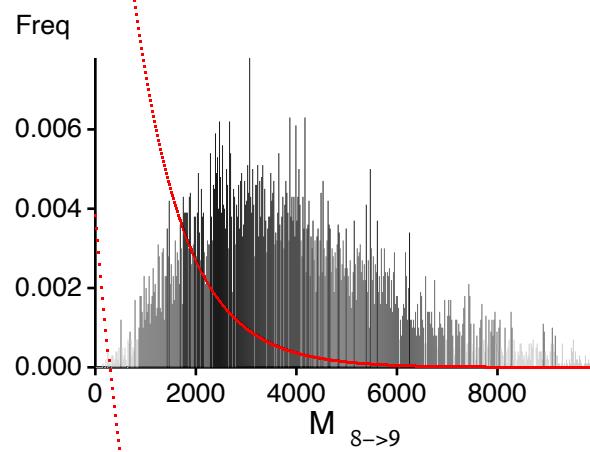
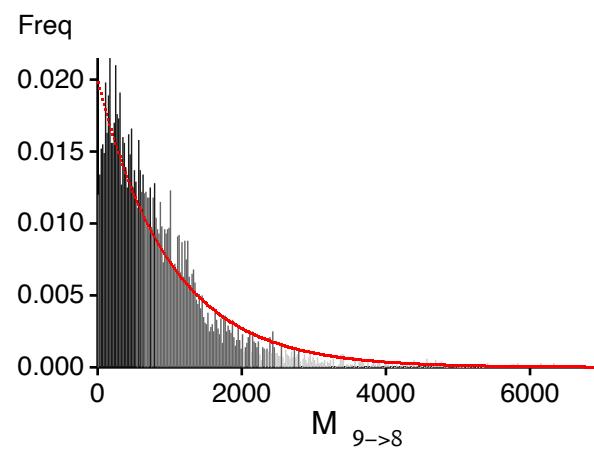
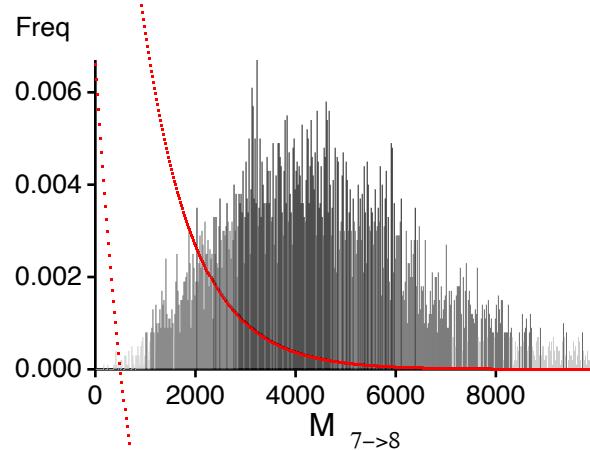
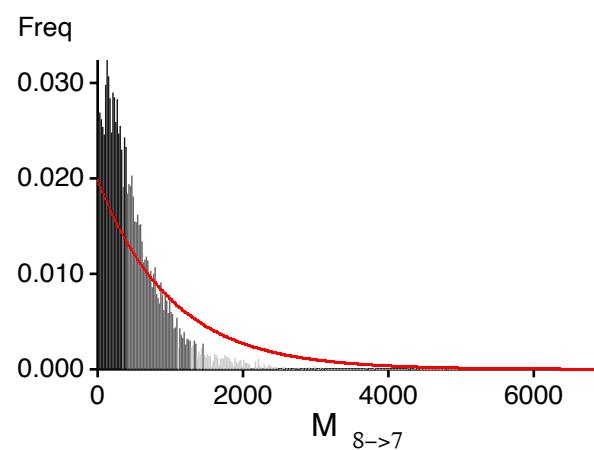


### Bayesian Analysis: Posterior distribution for locus 15

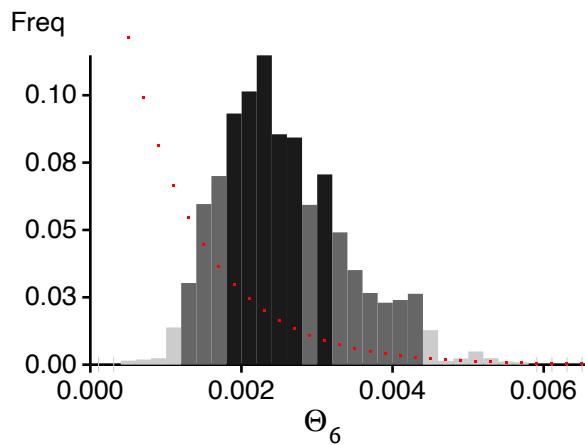
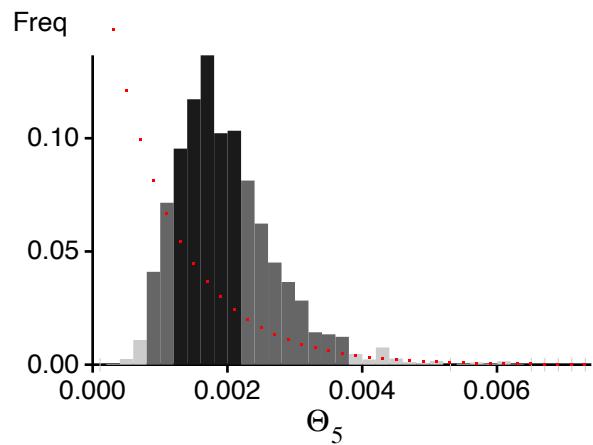
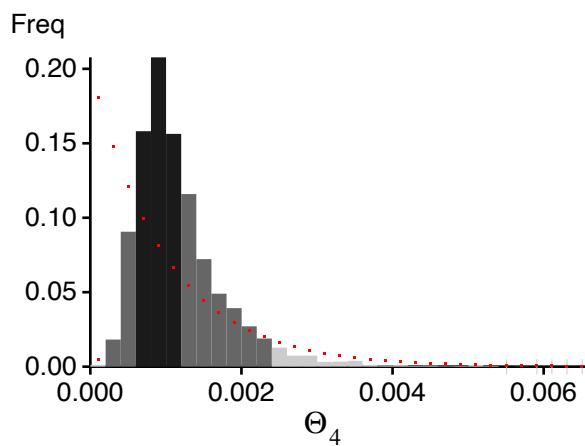
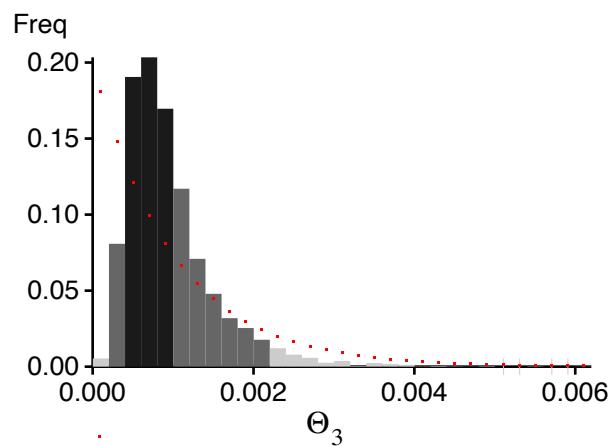
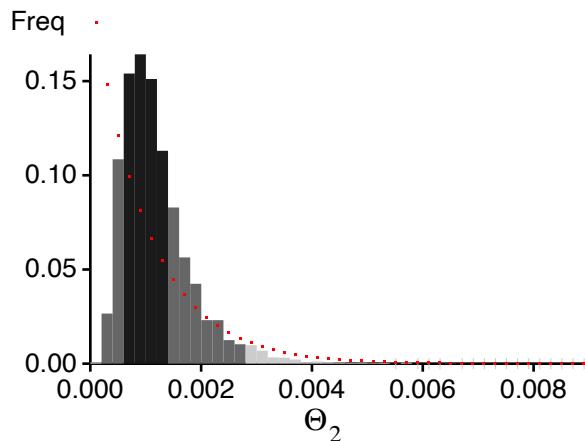
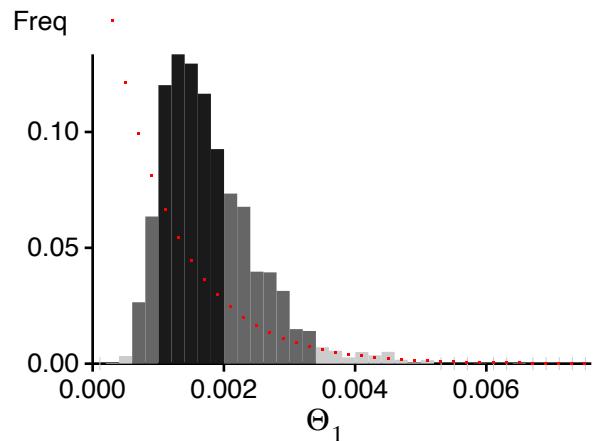


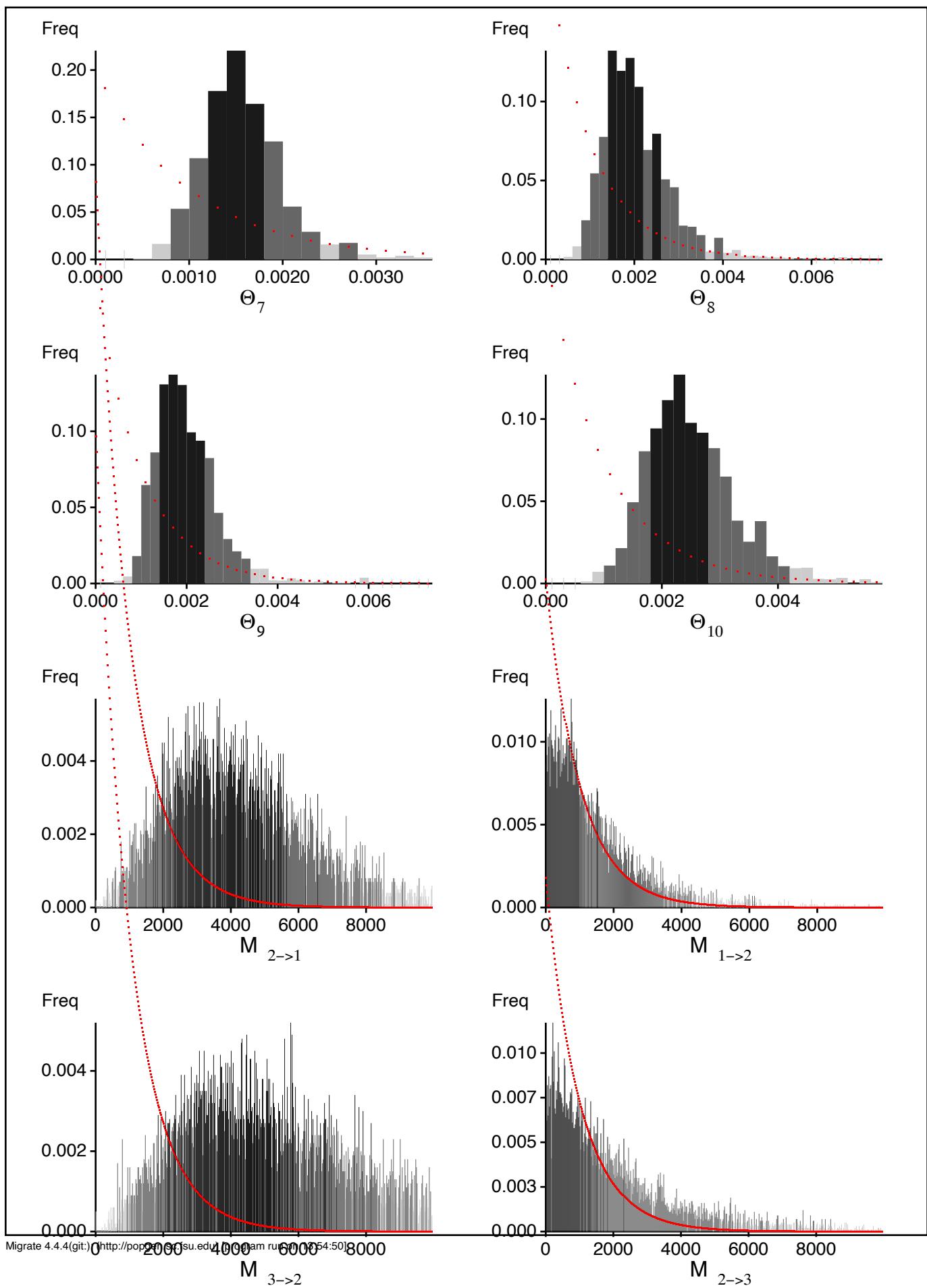


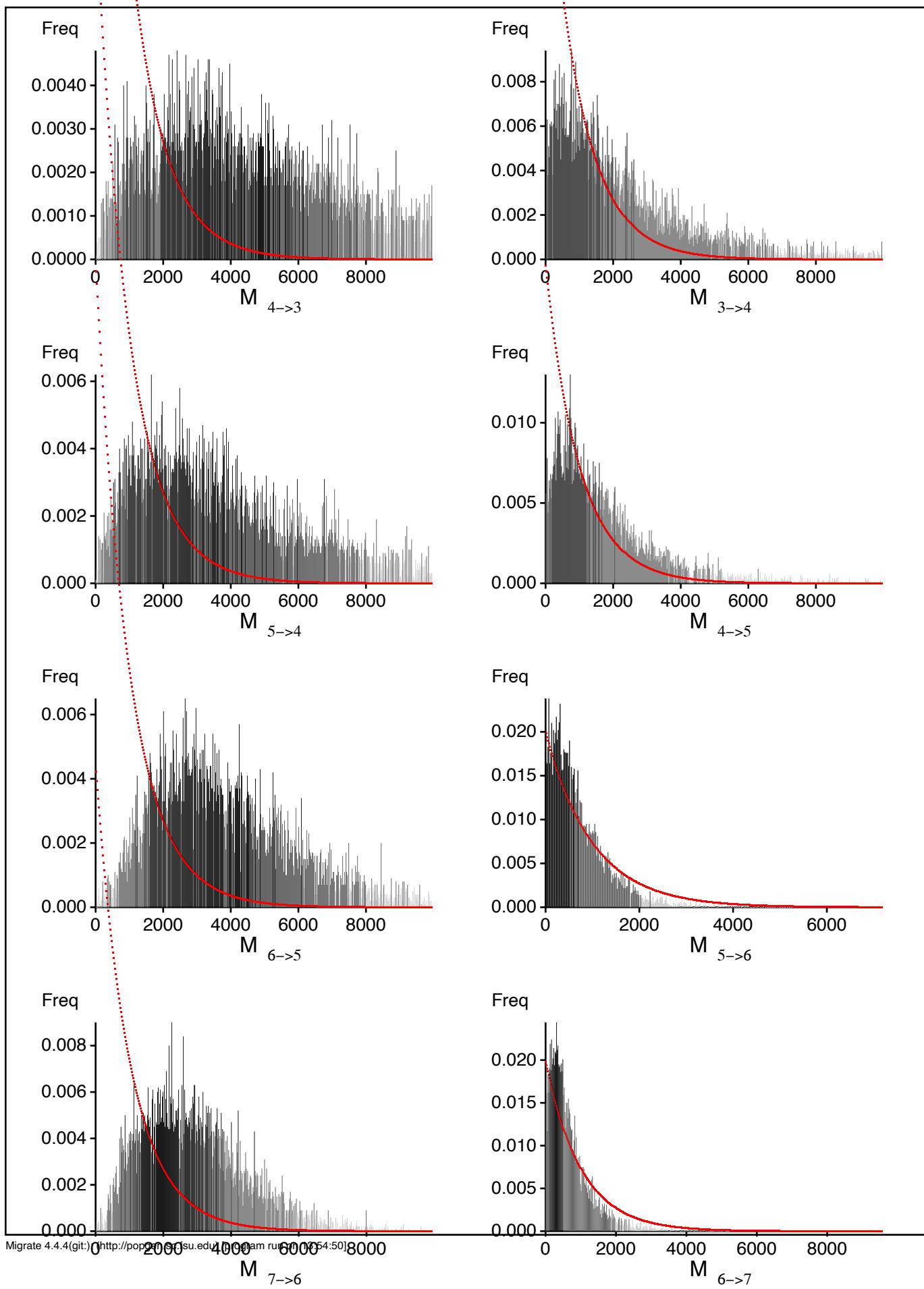


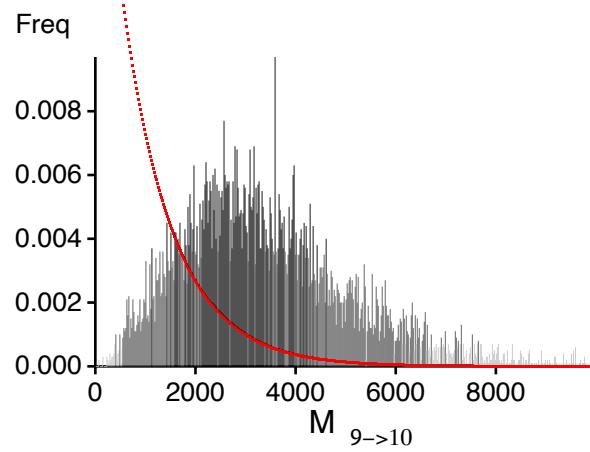
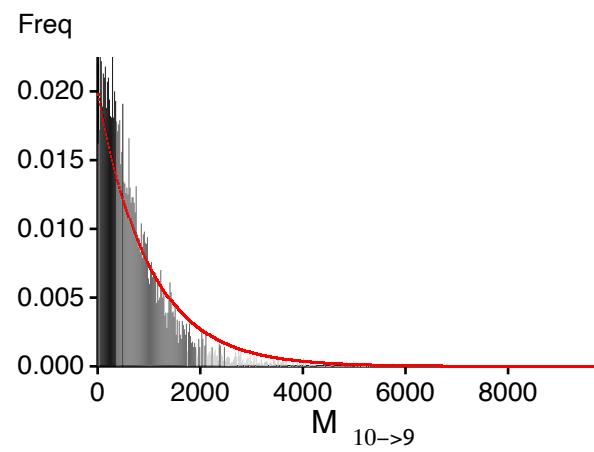
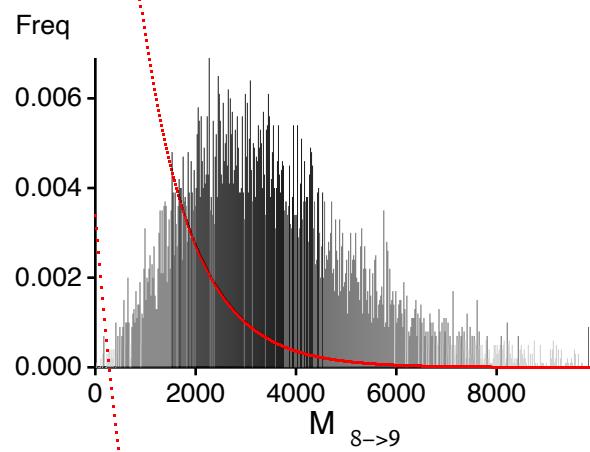
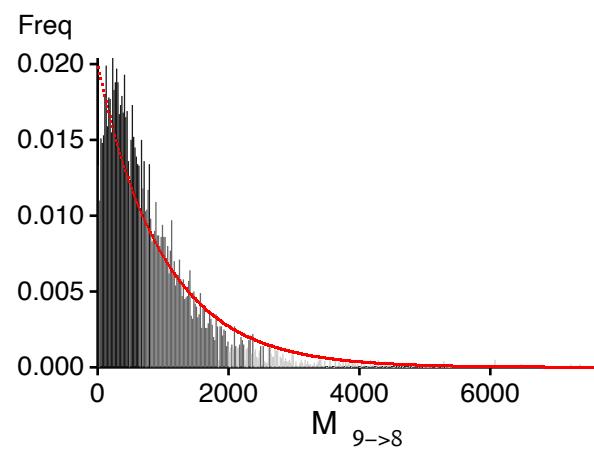
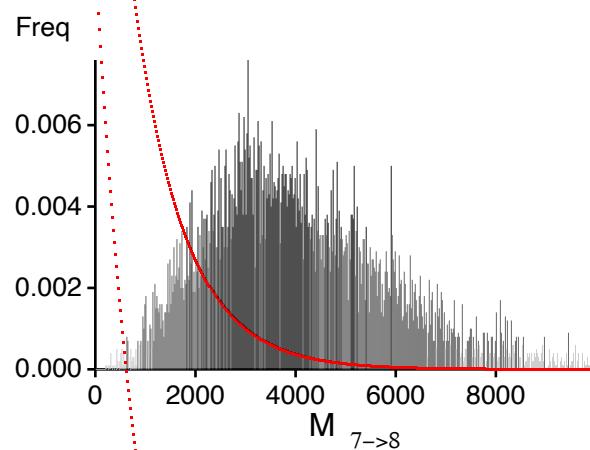
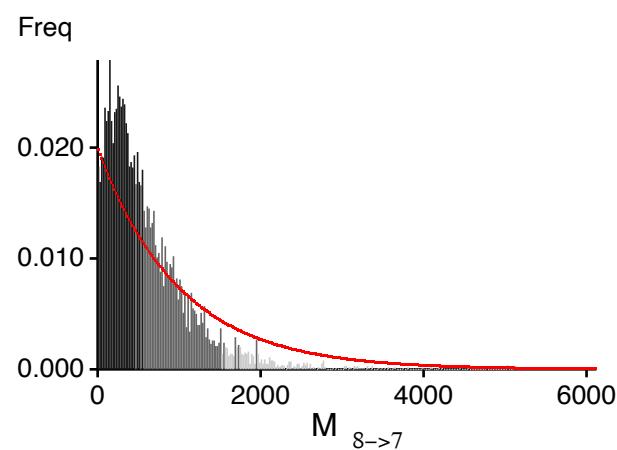


### Bayesian Analysis: Posterior distribution for locus 16

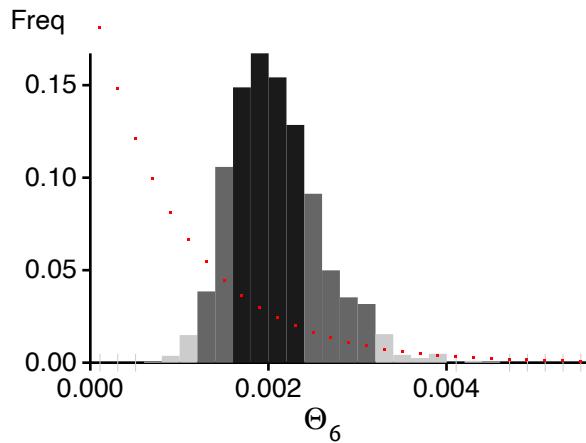
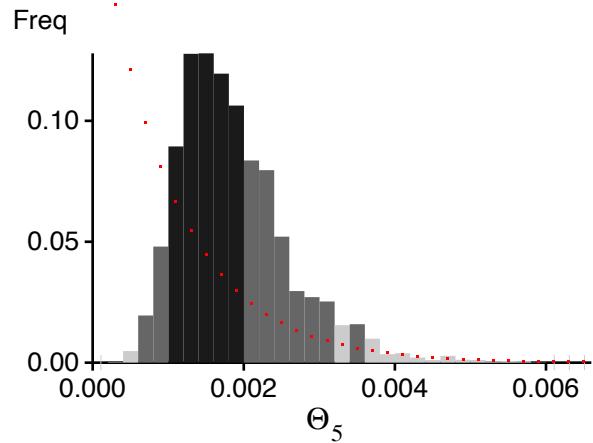
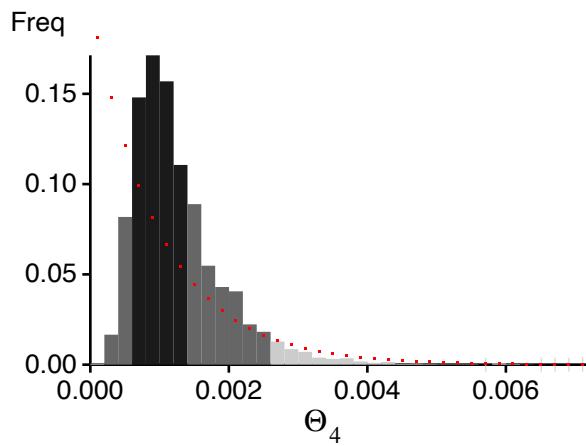
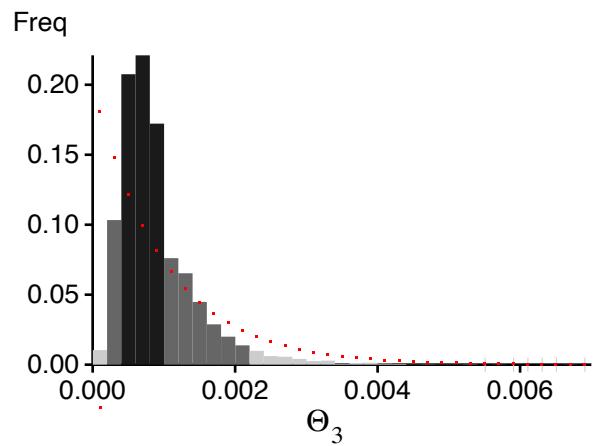
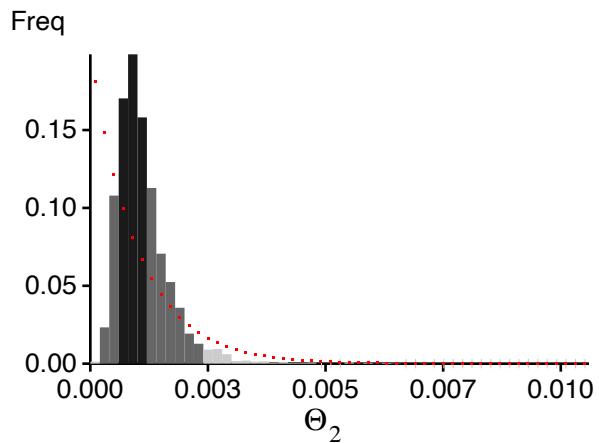
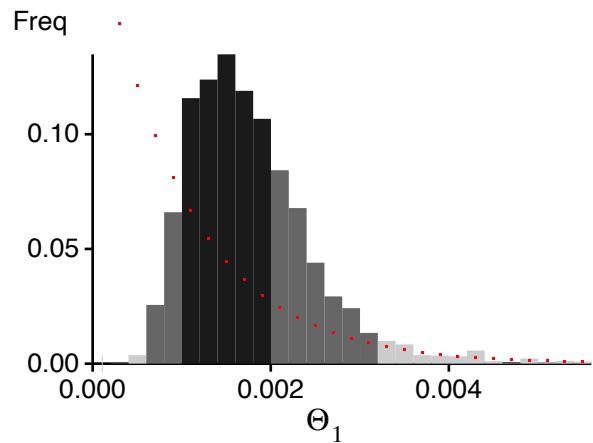


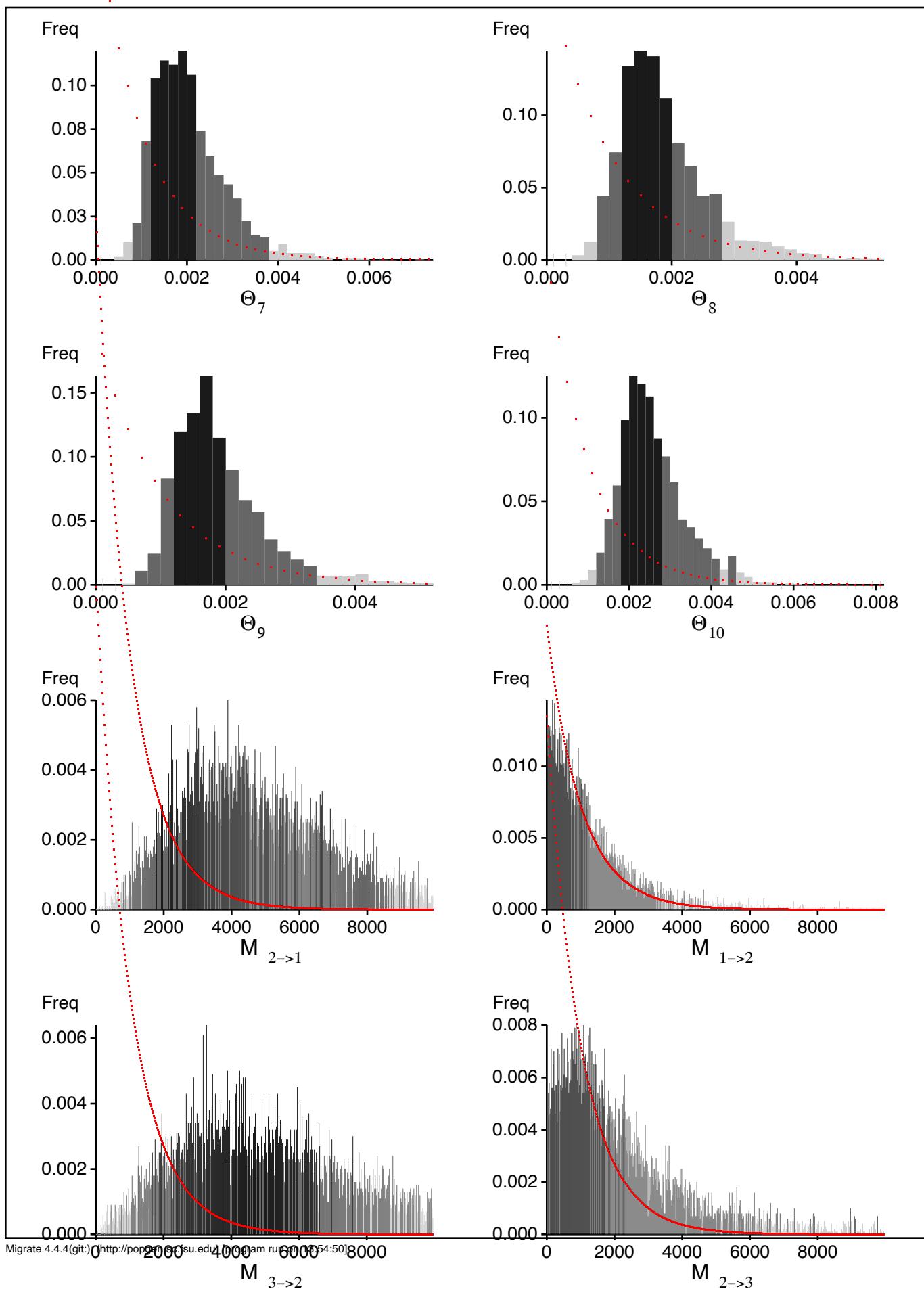


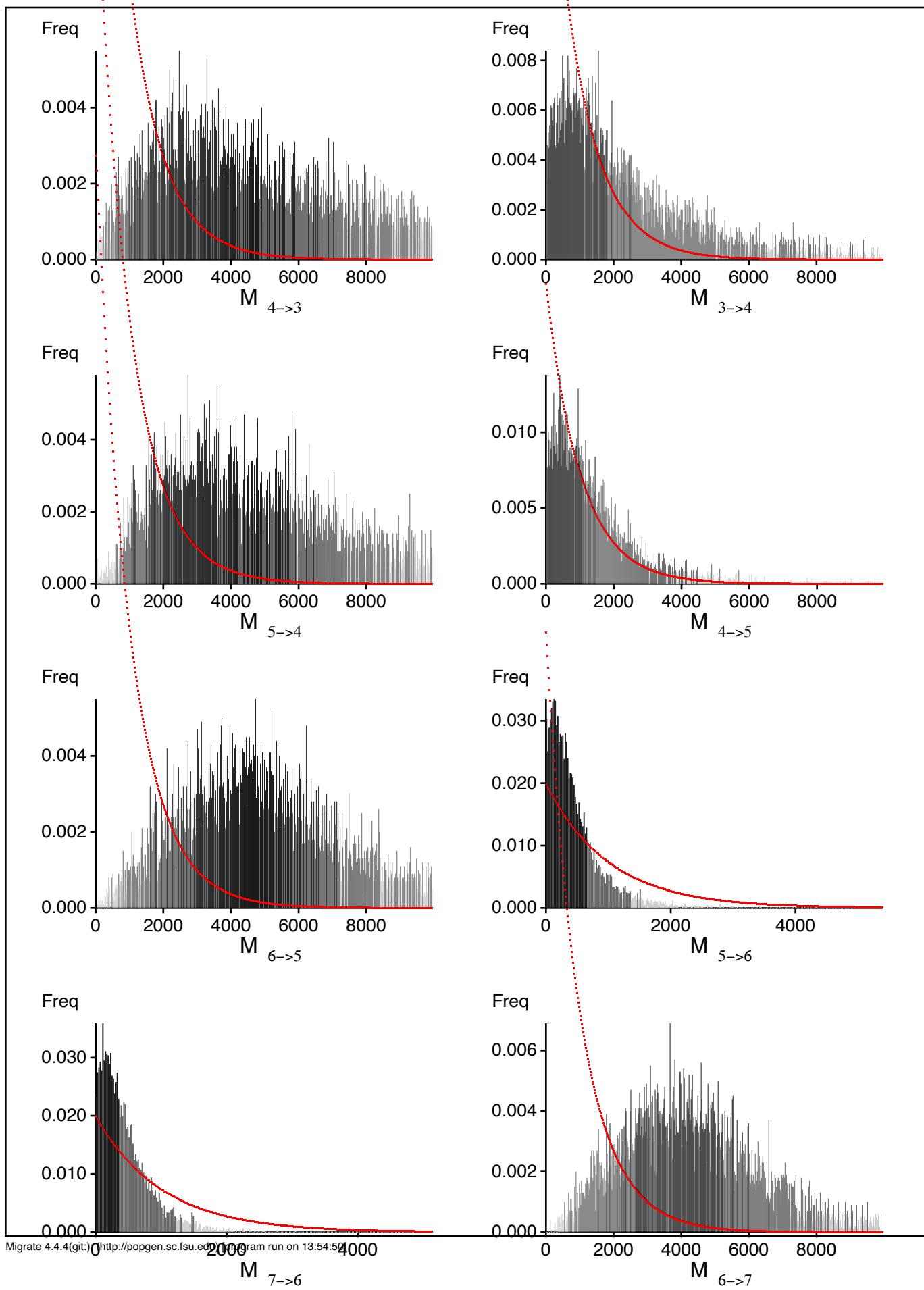


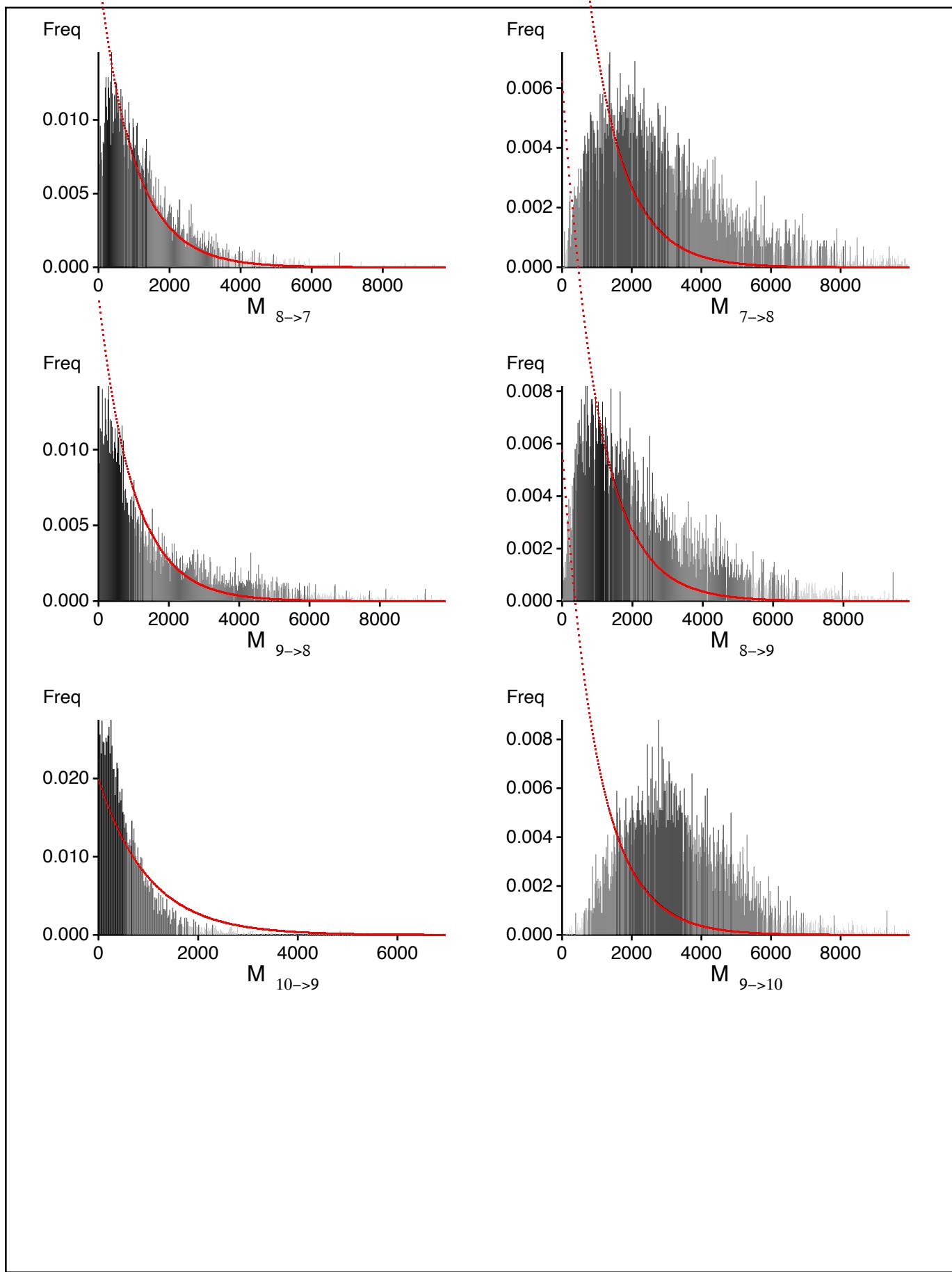


### Bayesian Analysis: Posterior distribution for locus 17

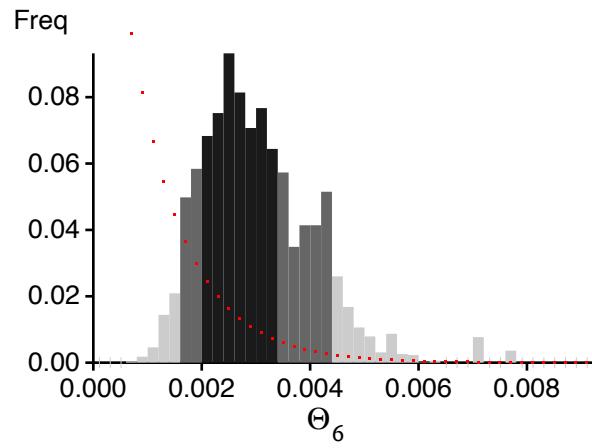
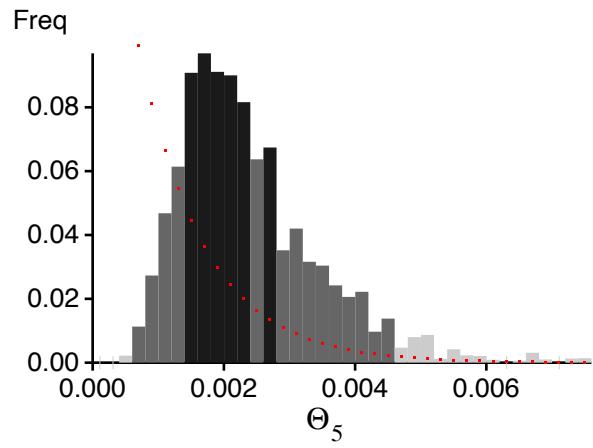
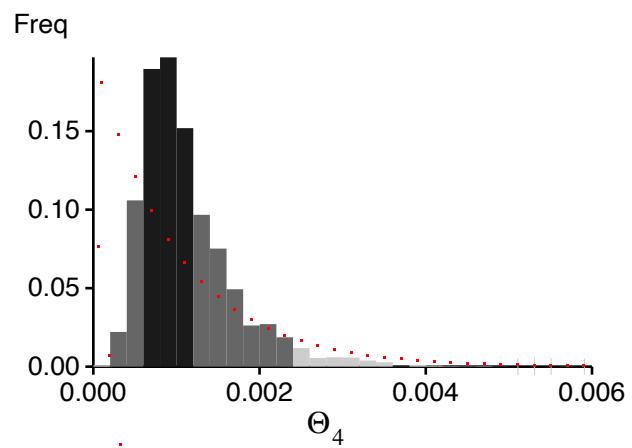
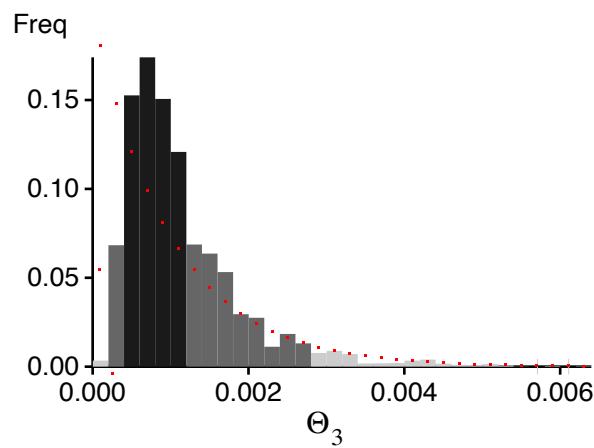
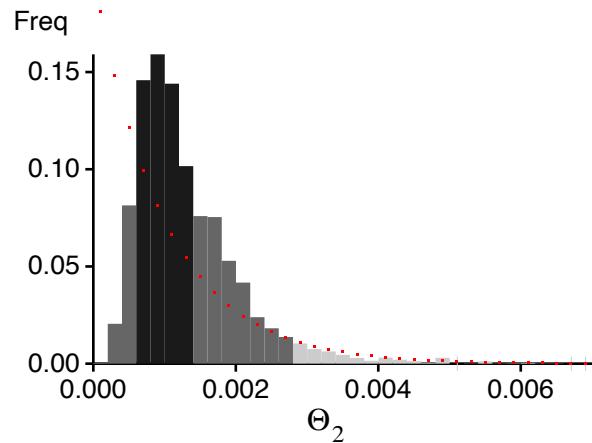
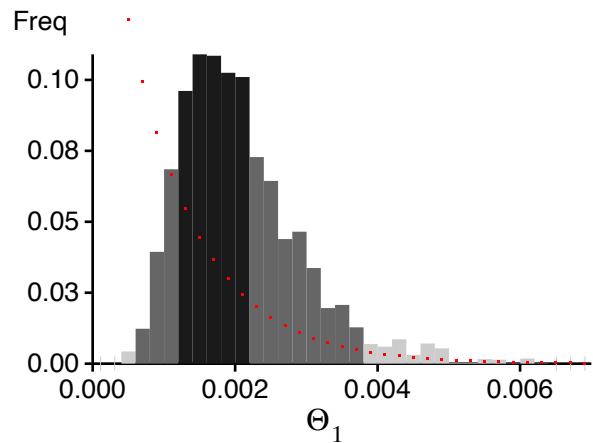


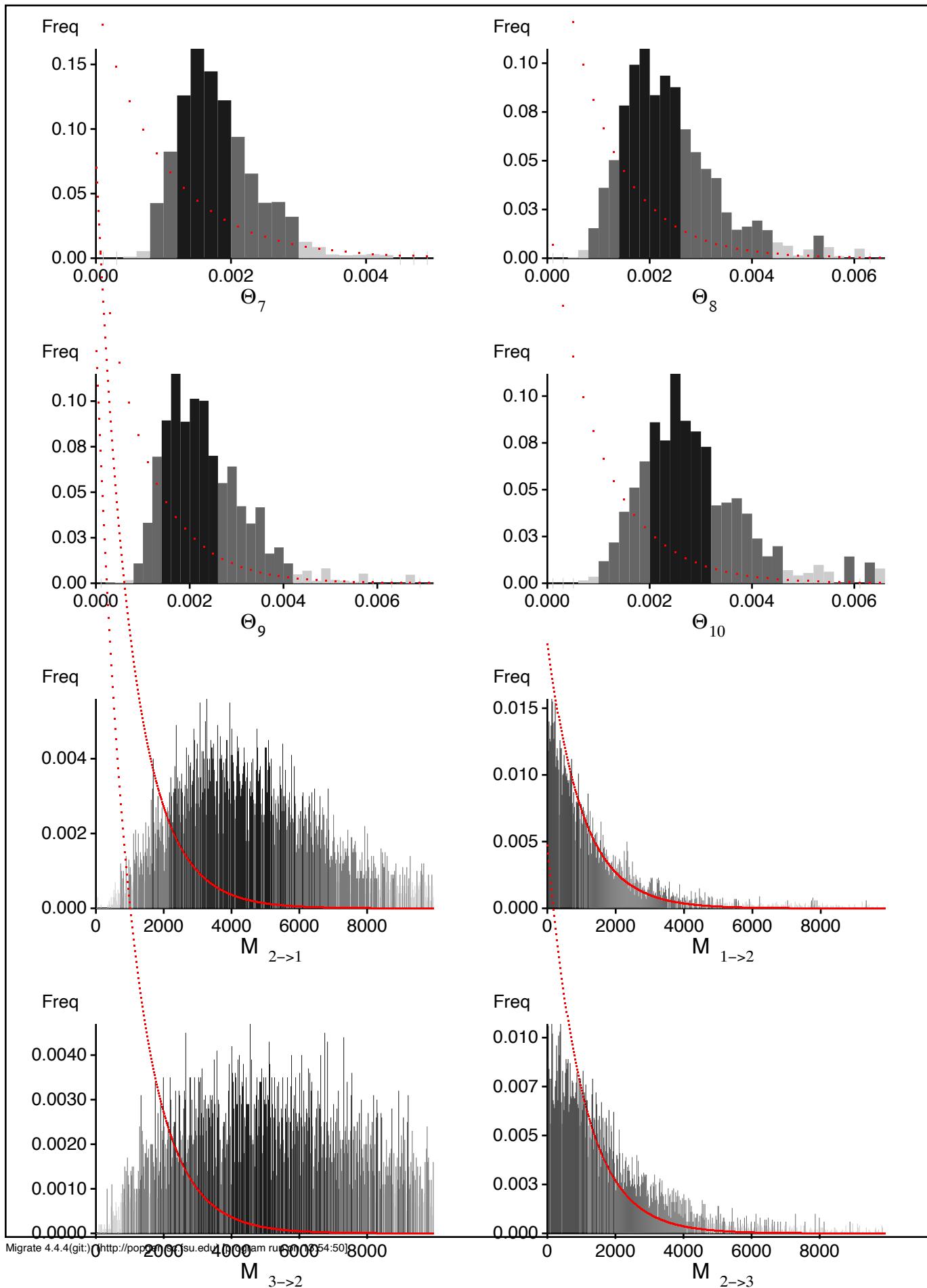


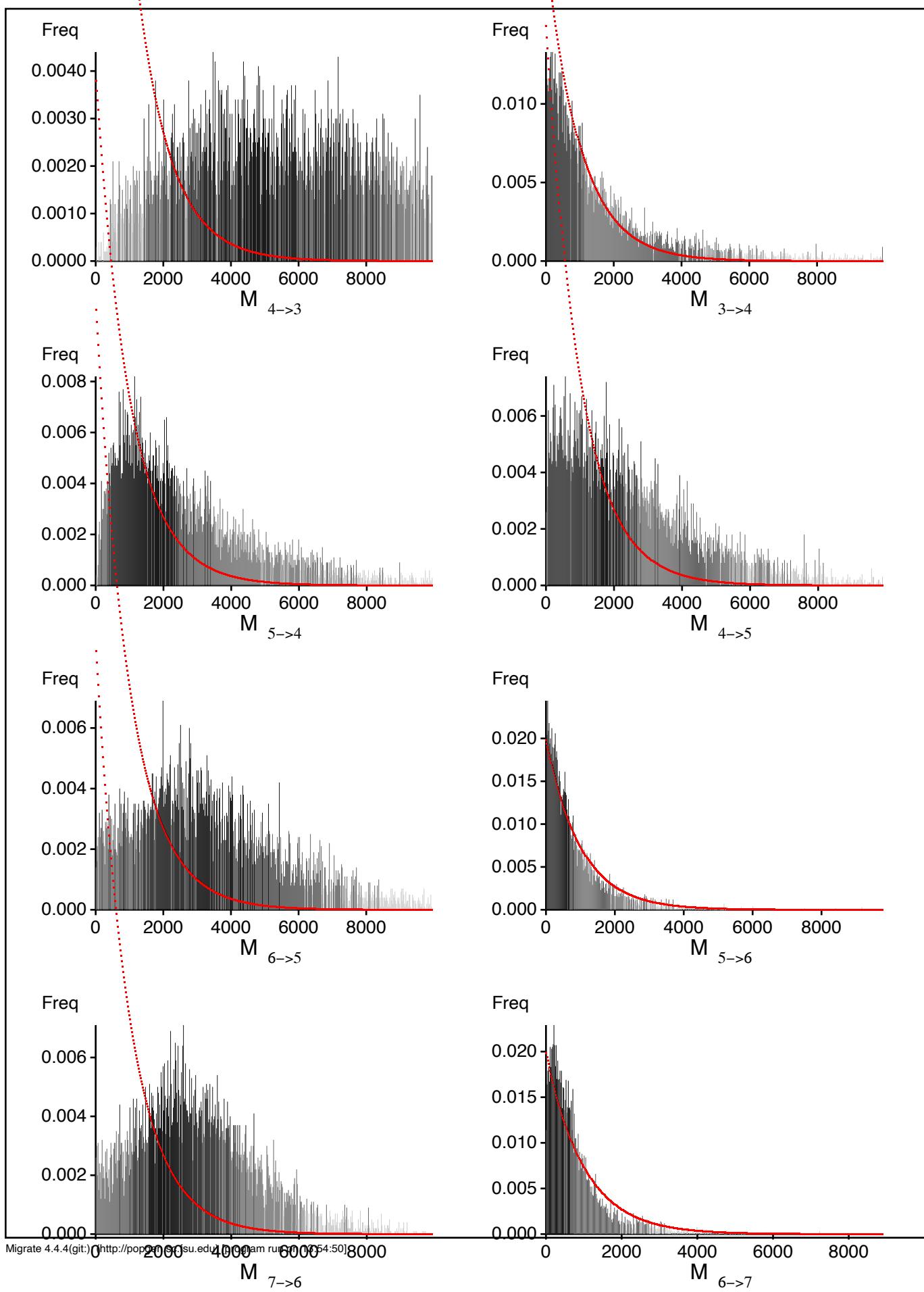


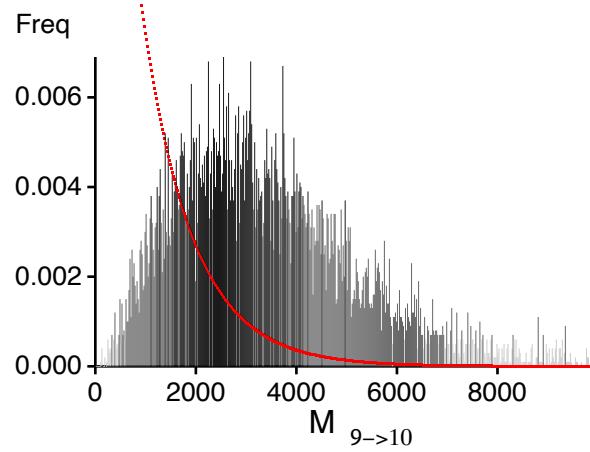
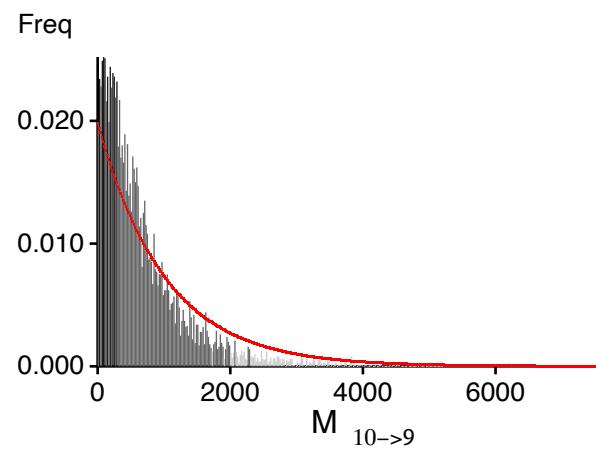
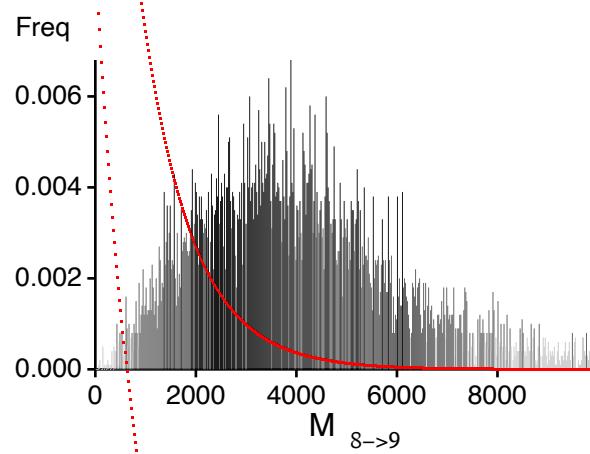
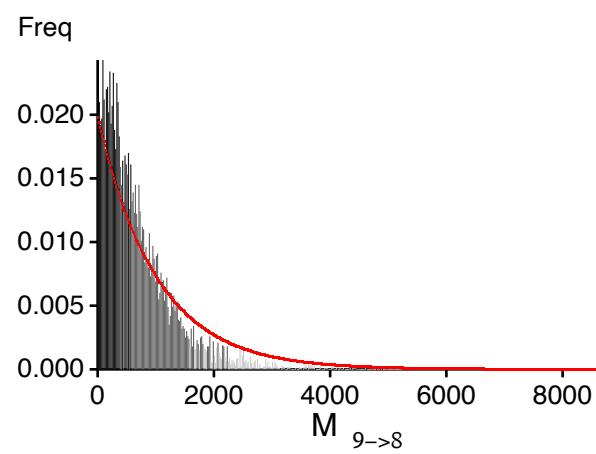
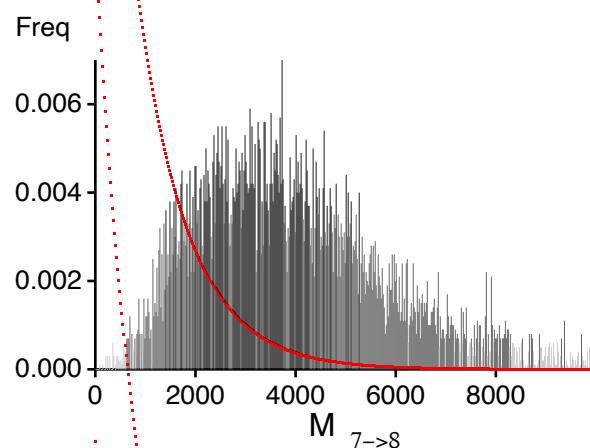
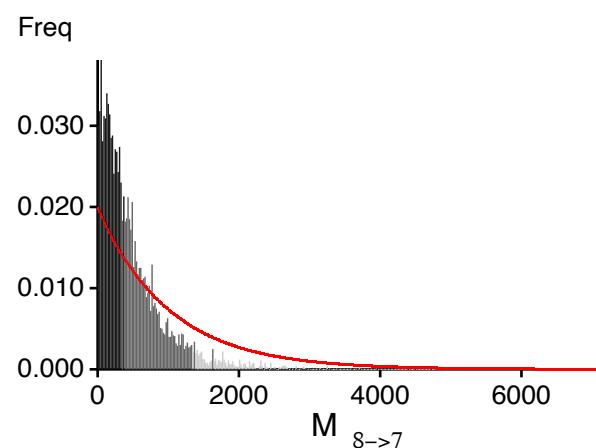


### Bayesian Analysis: Posterior distribution for locus 18

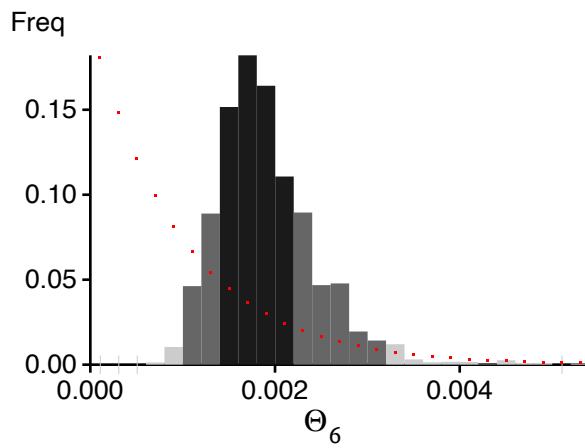
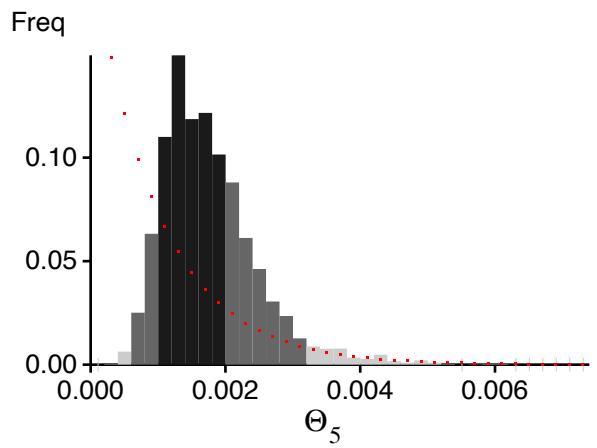
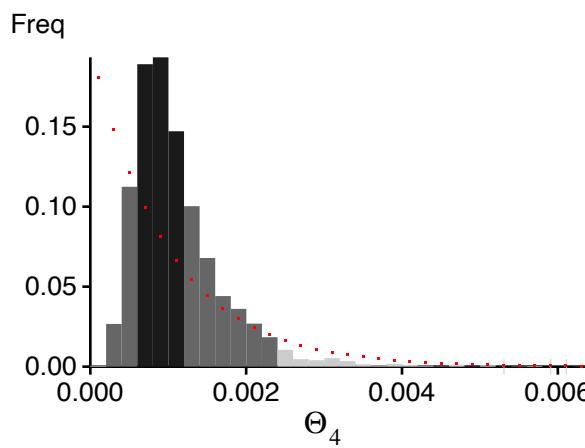
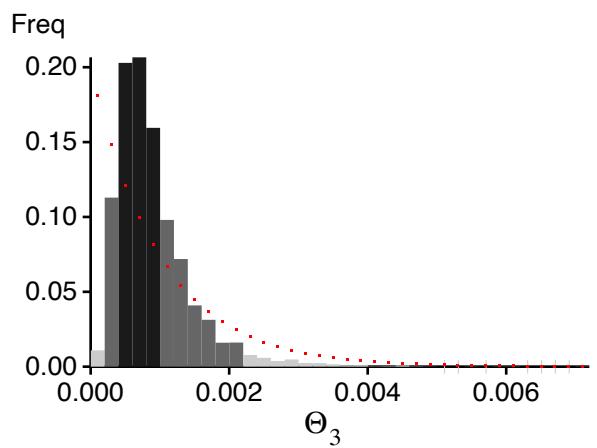
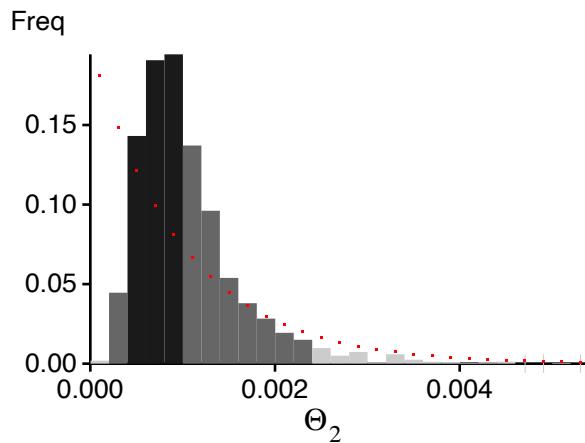
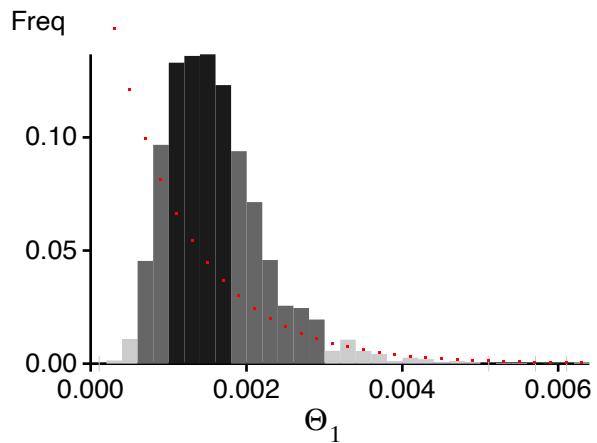


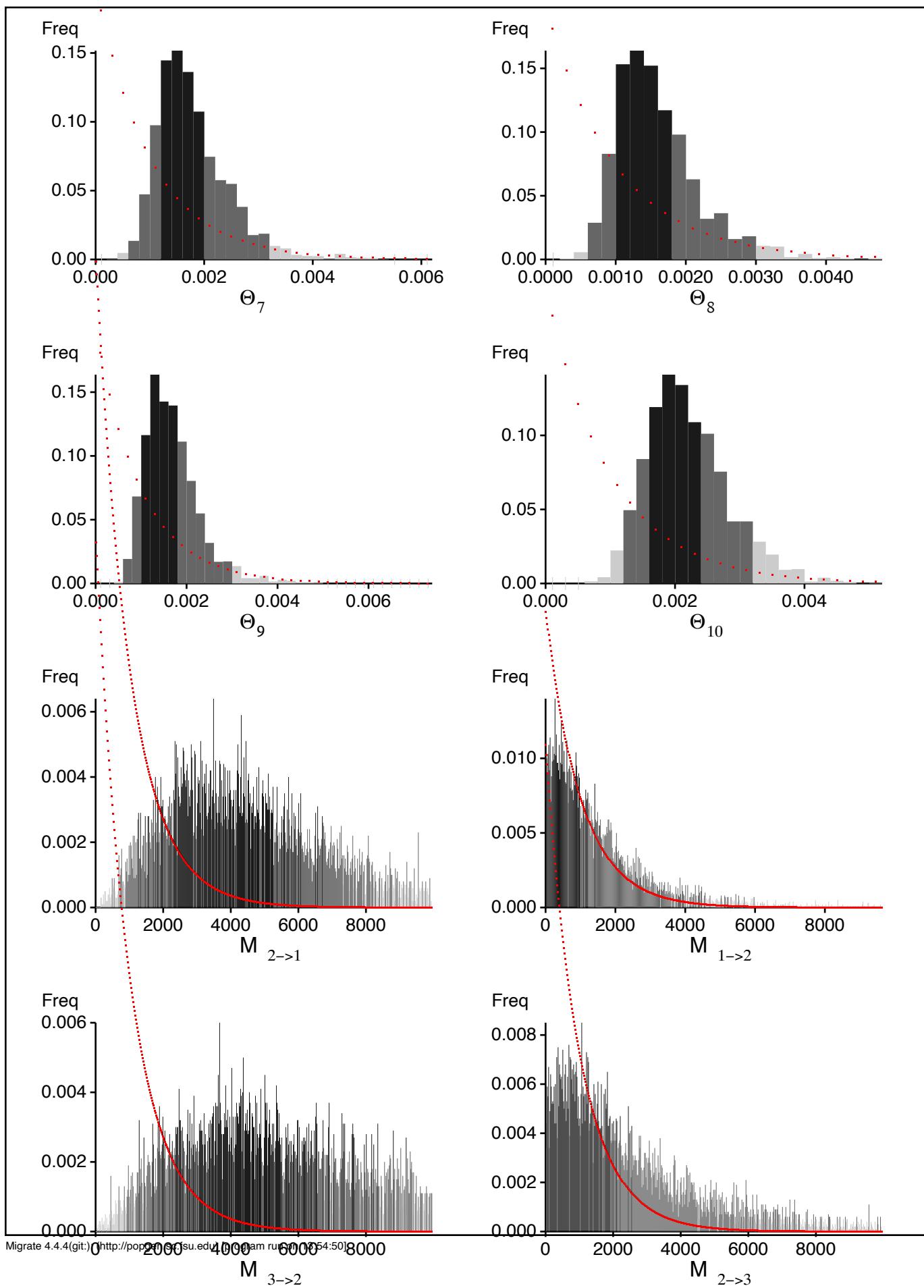


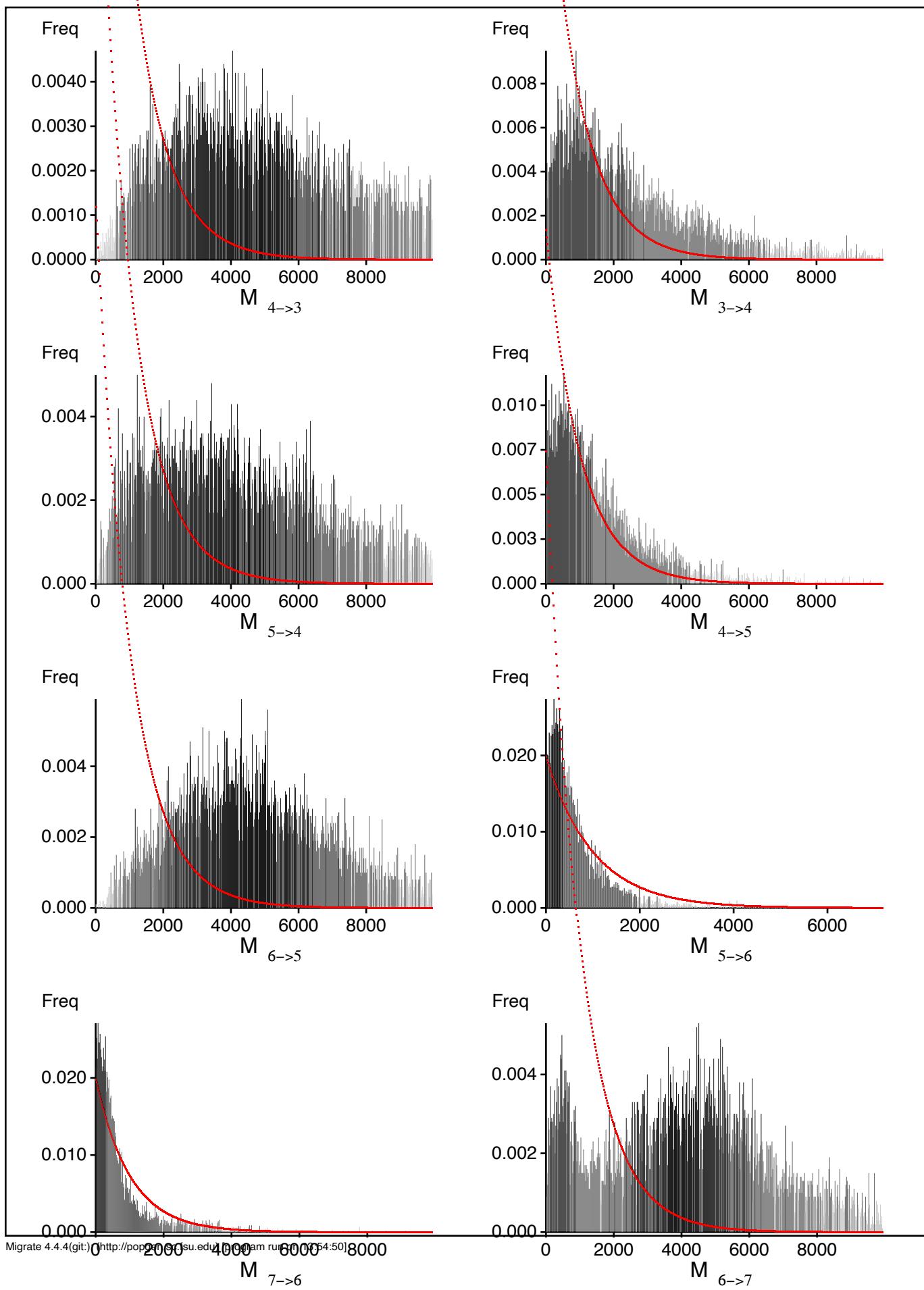


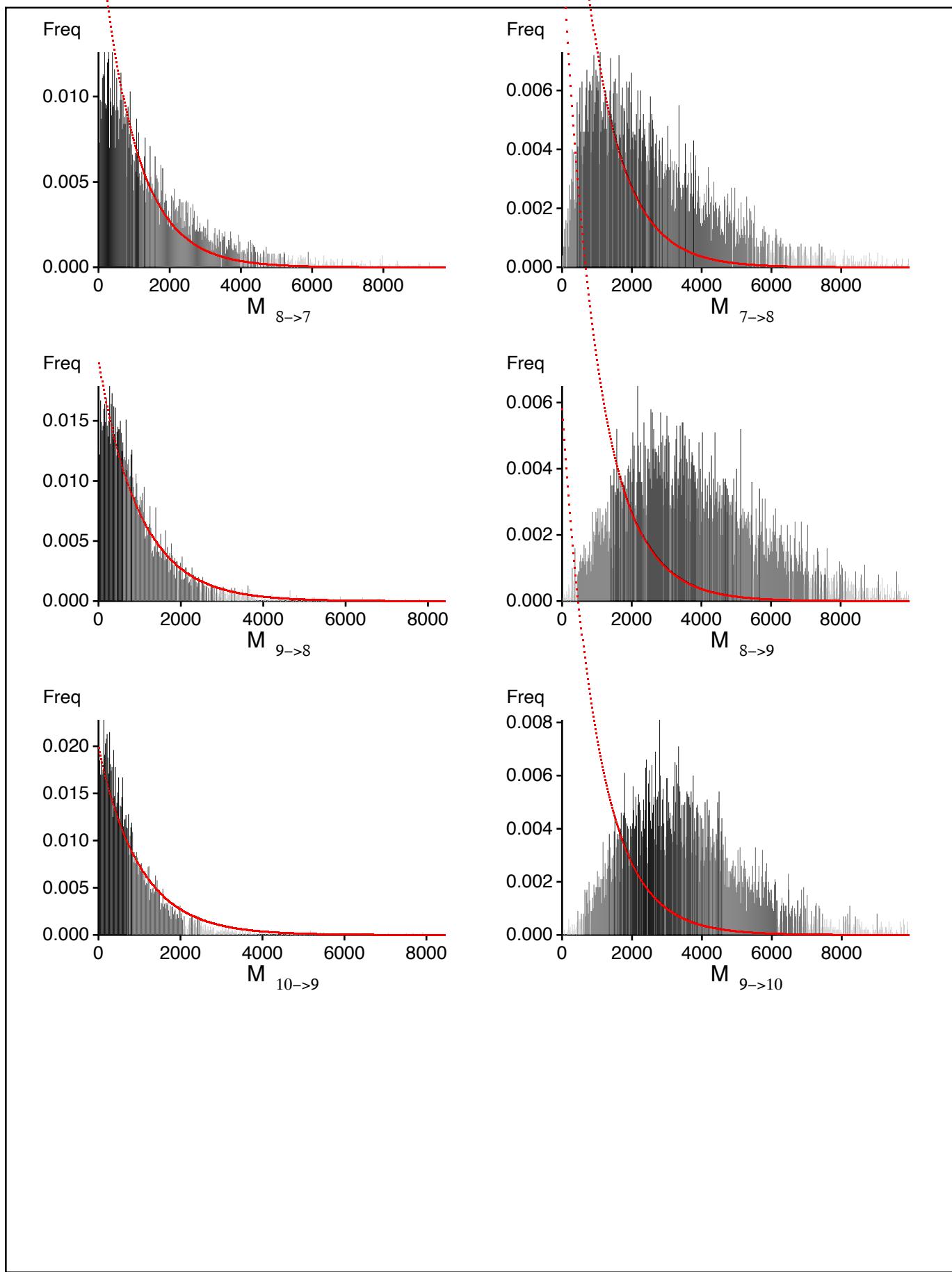


### Bayesian Analysis: Posterior distribution for locus 19

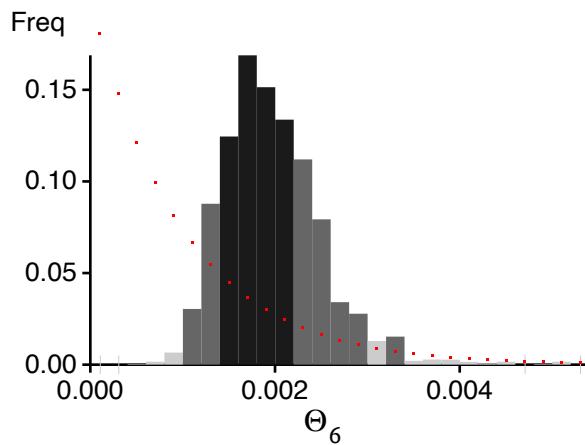
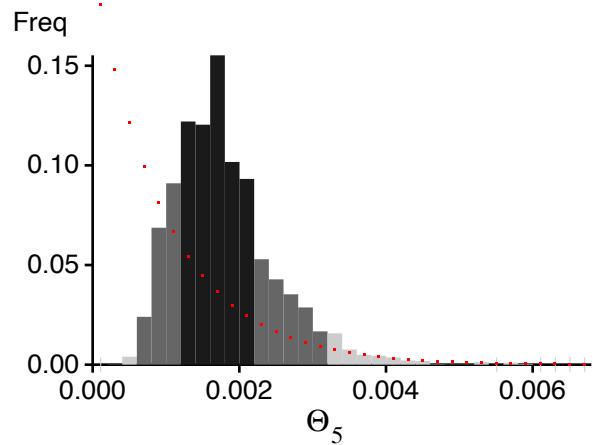
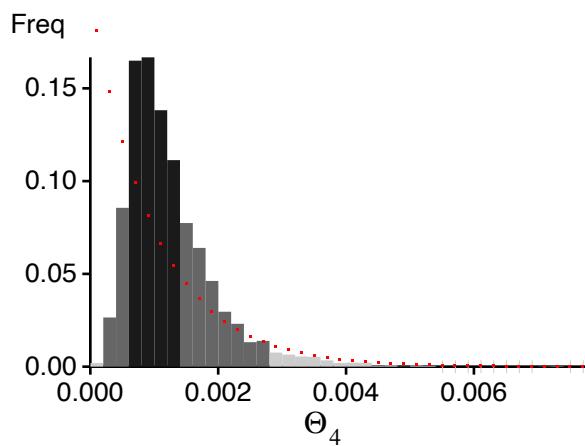
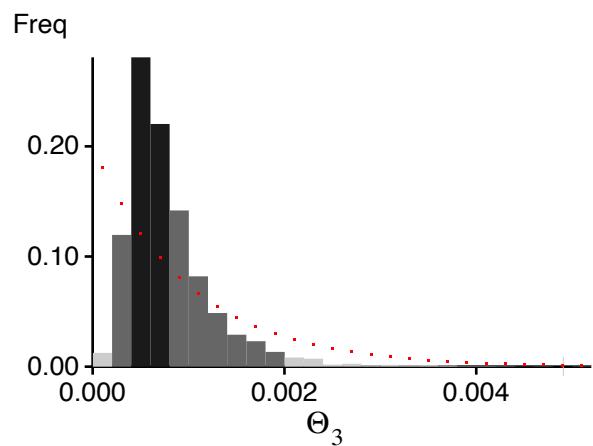
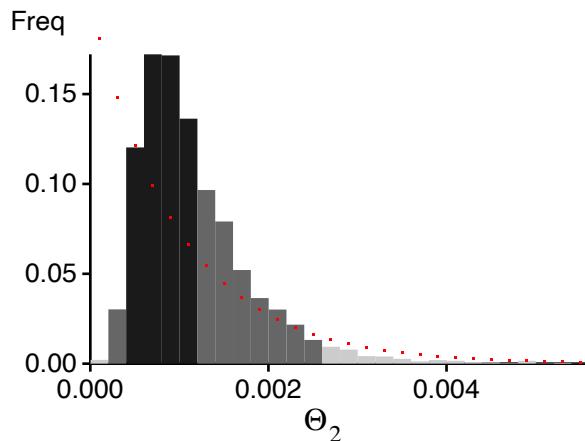
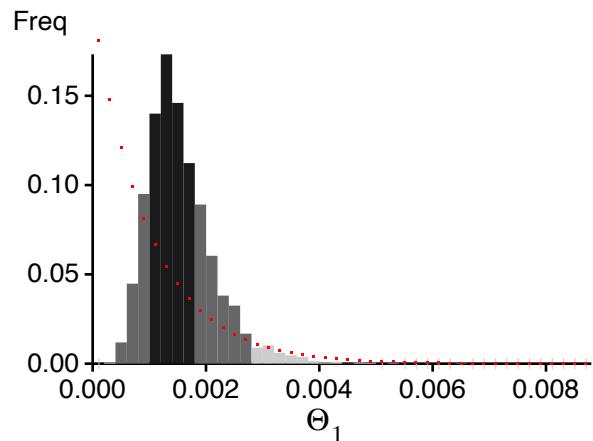


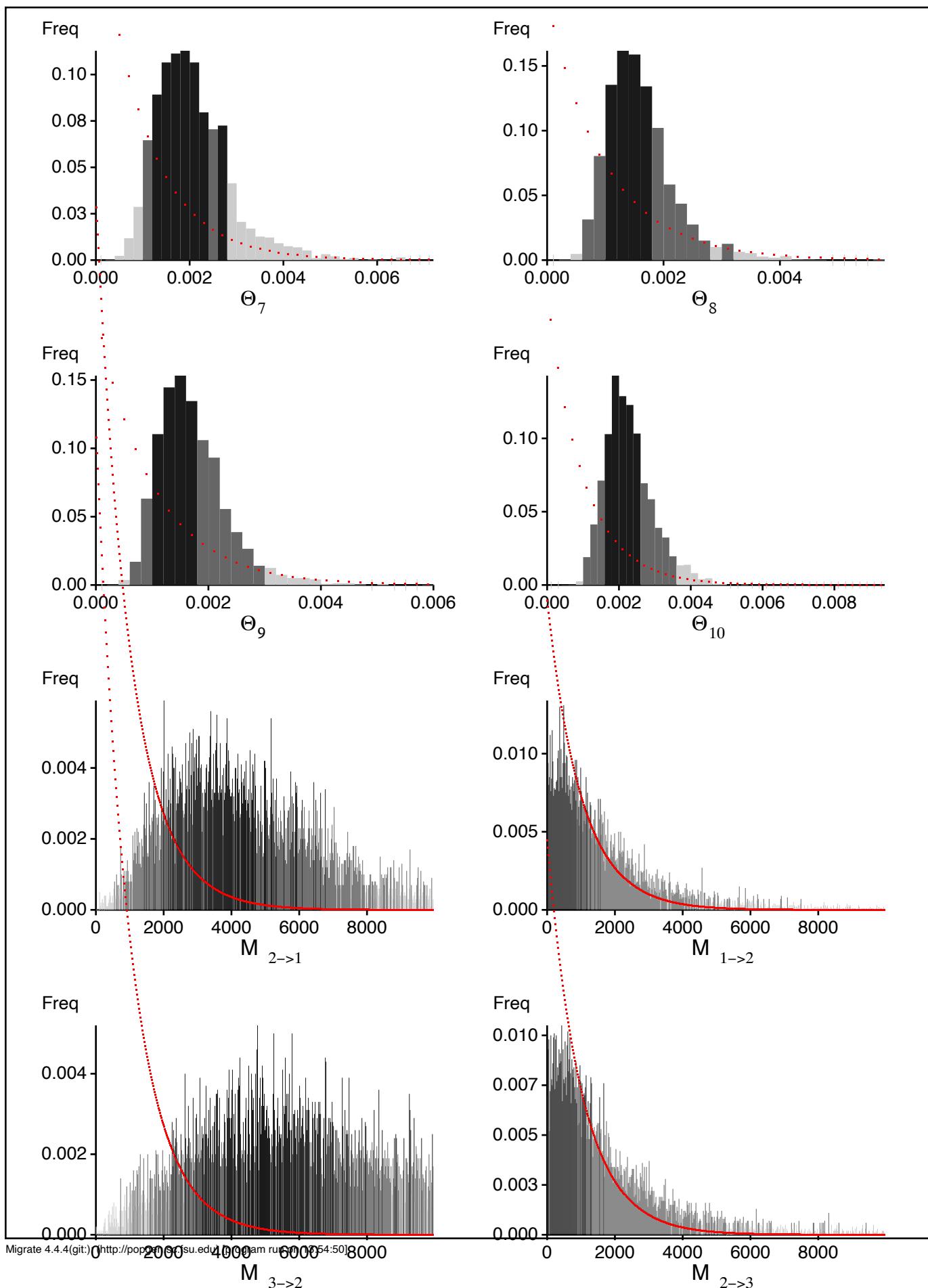


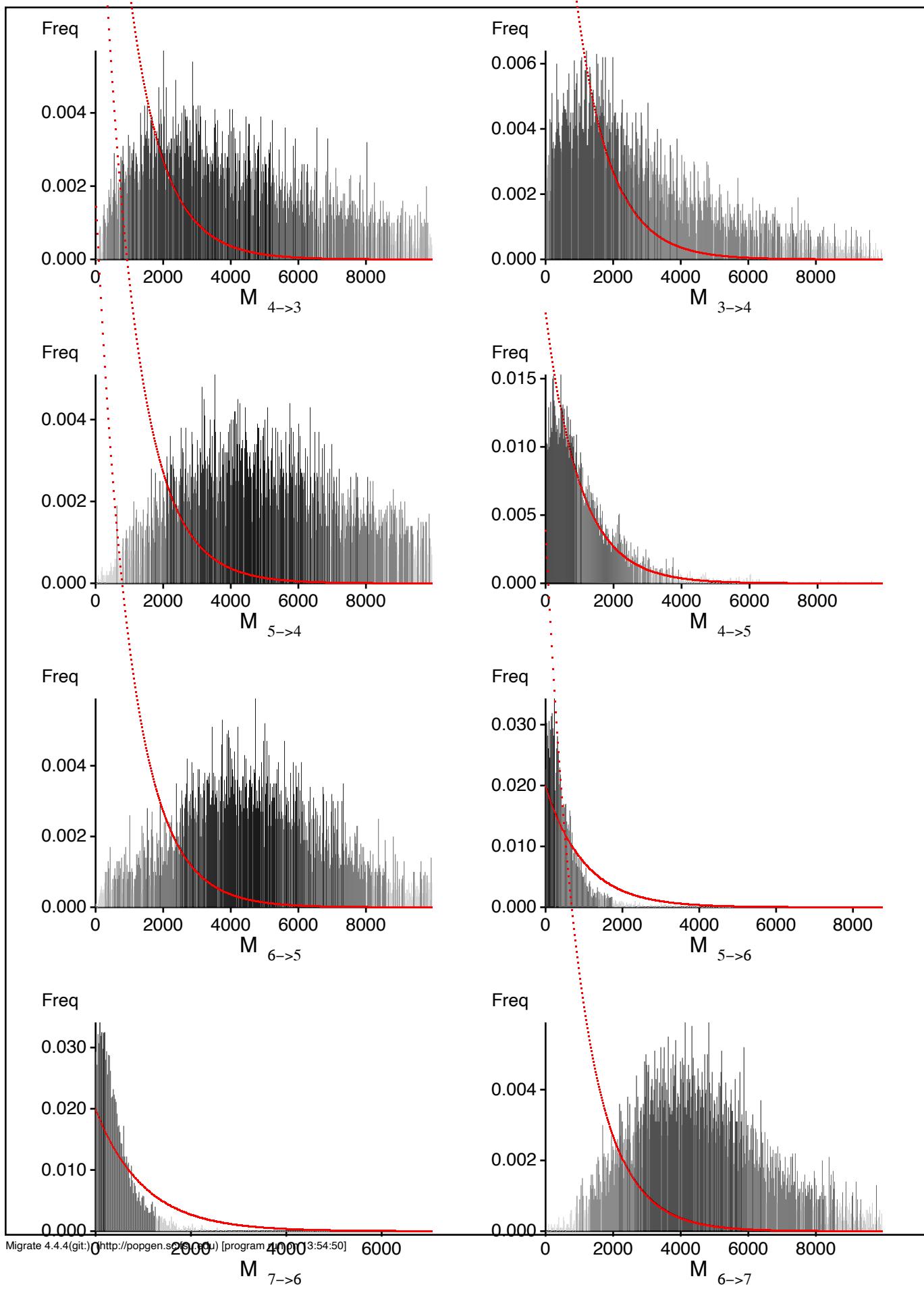


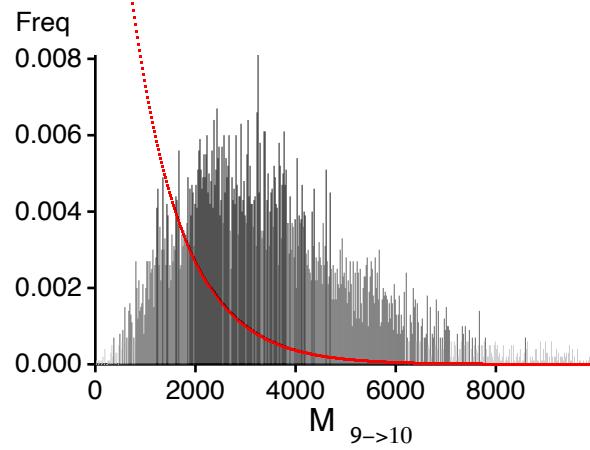
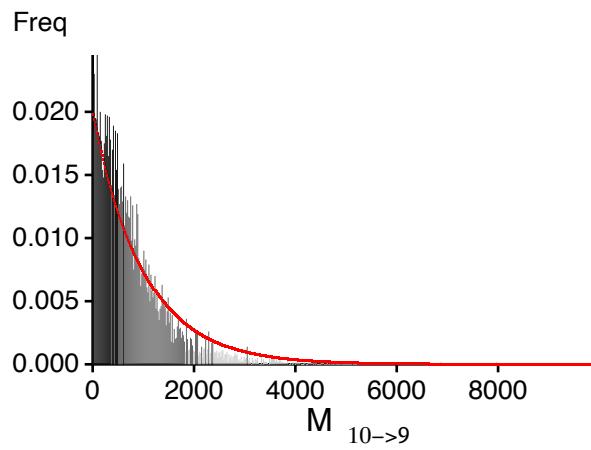
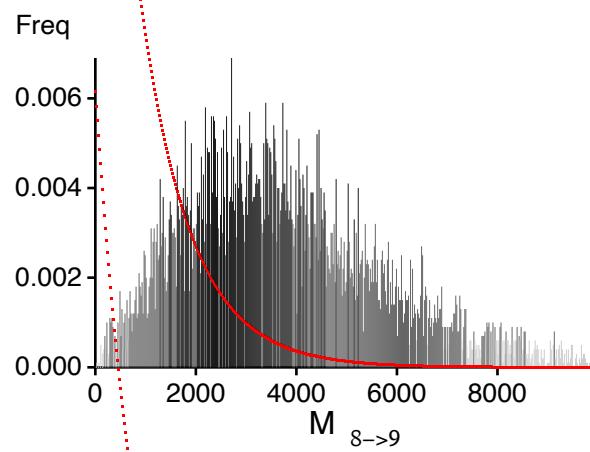
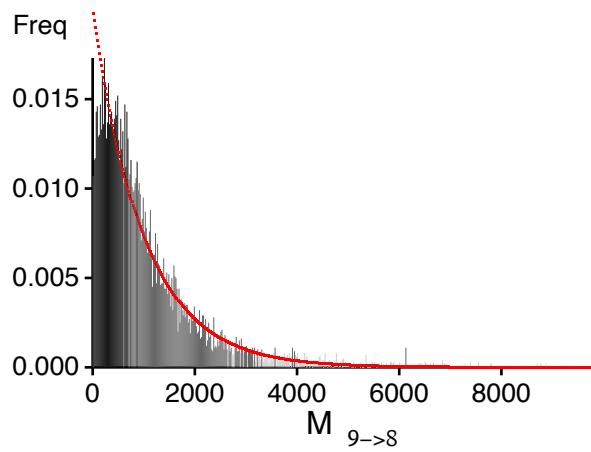
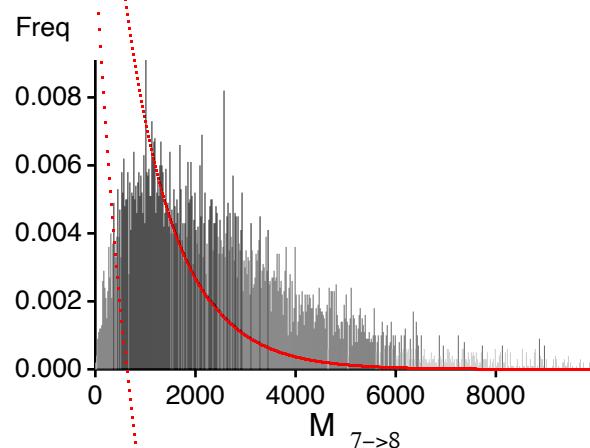
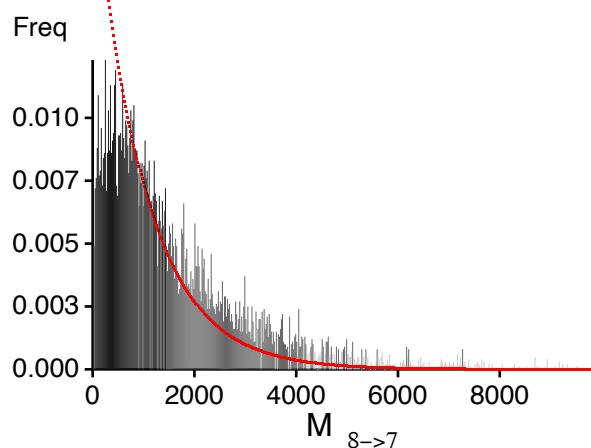


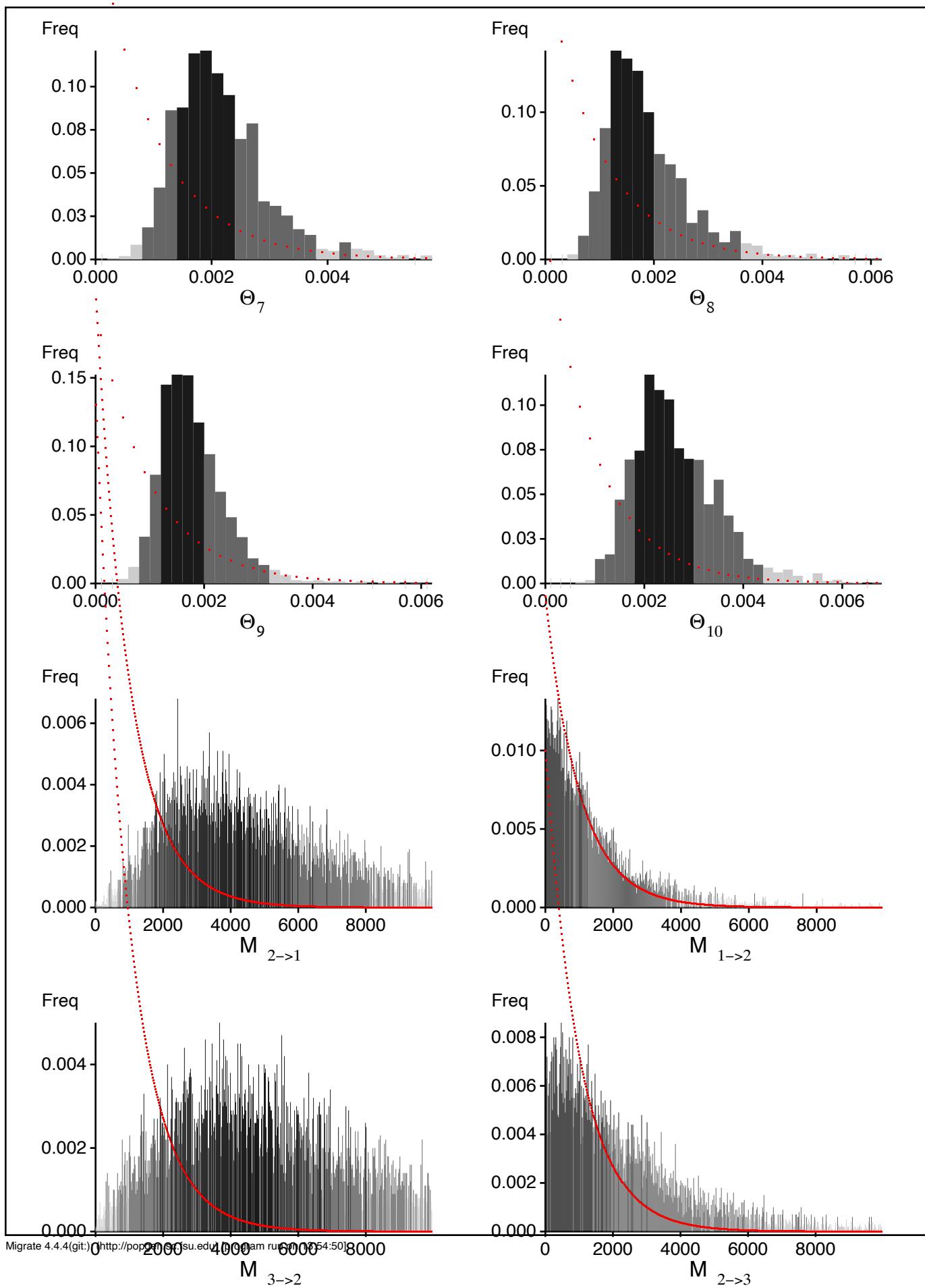
### Bayesian Analysis: Posterior distribution for locus 20

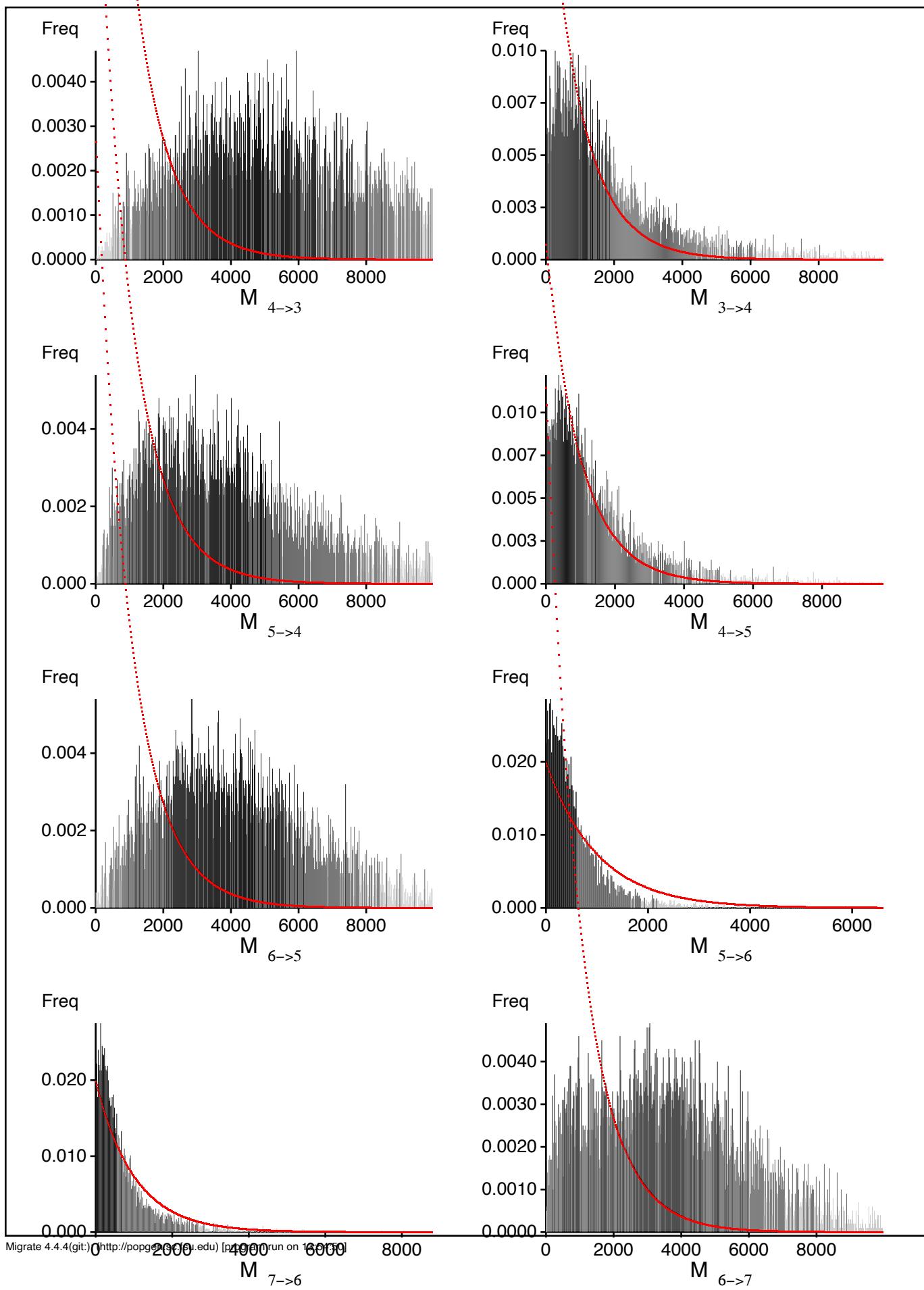


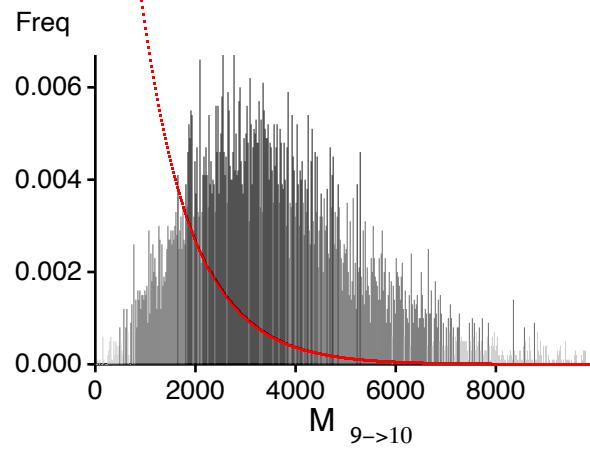
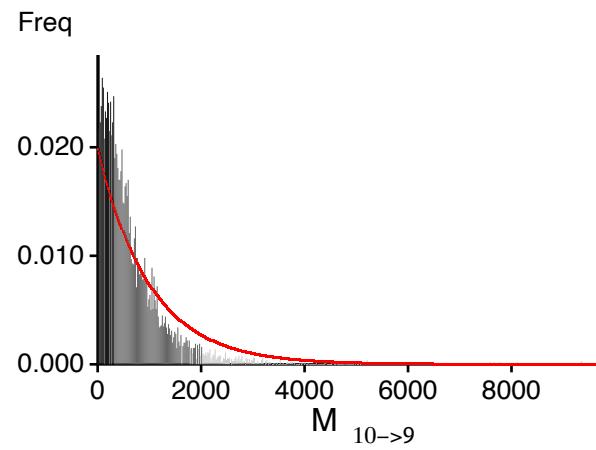
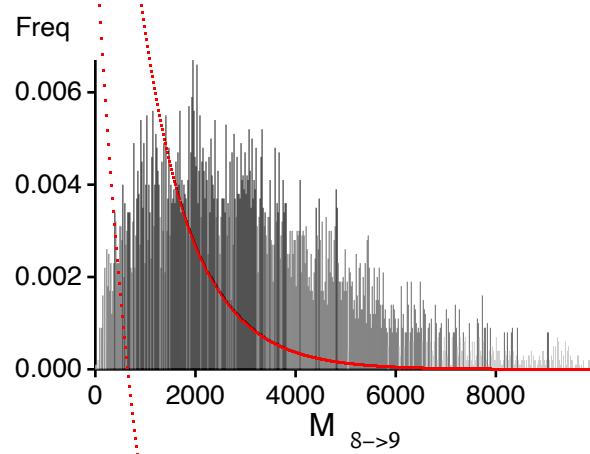
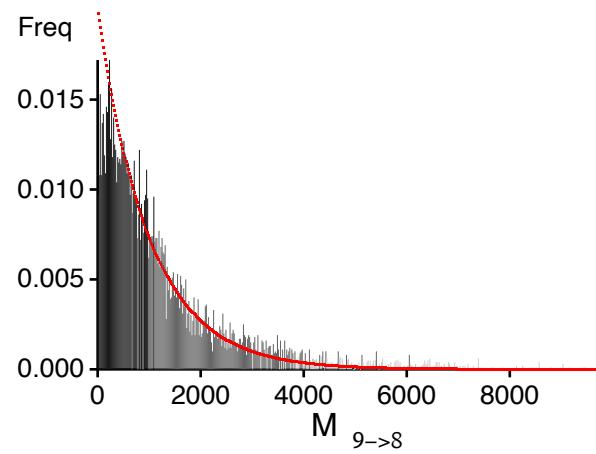
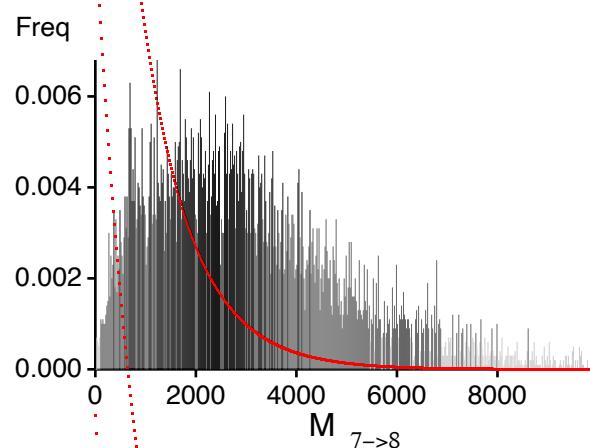
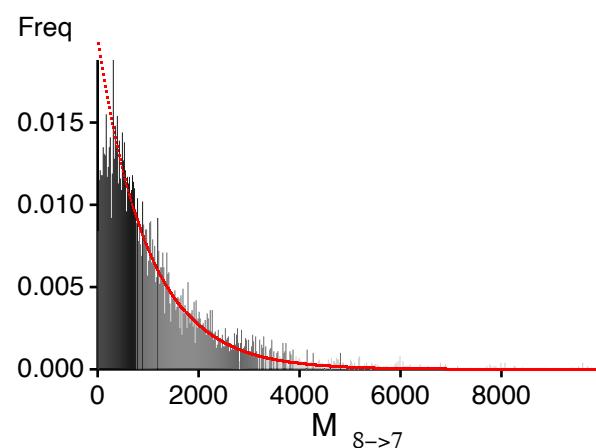




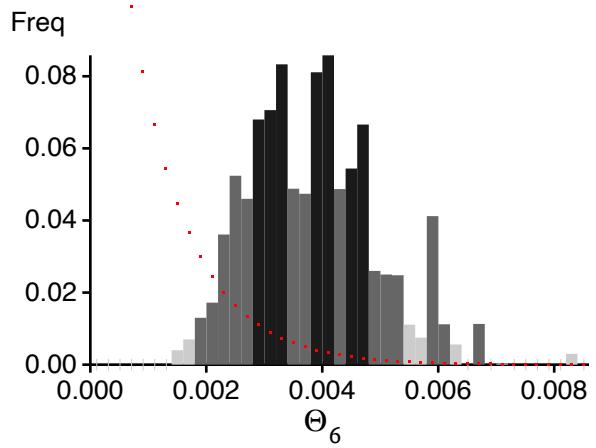
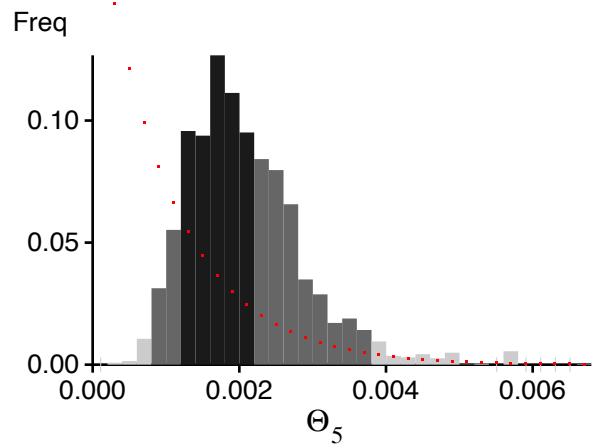
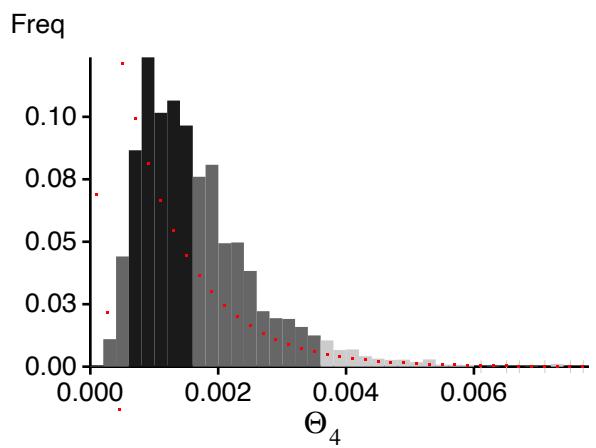
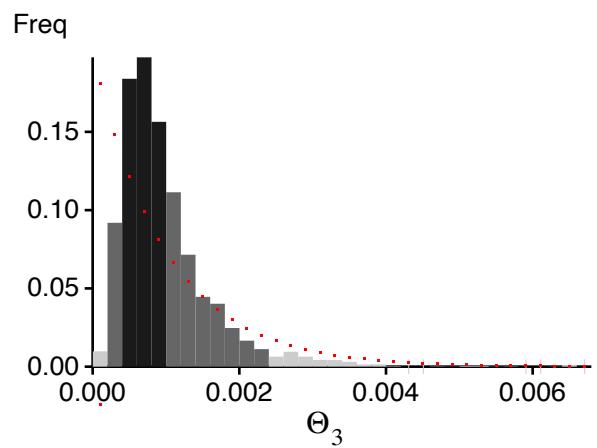
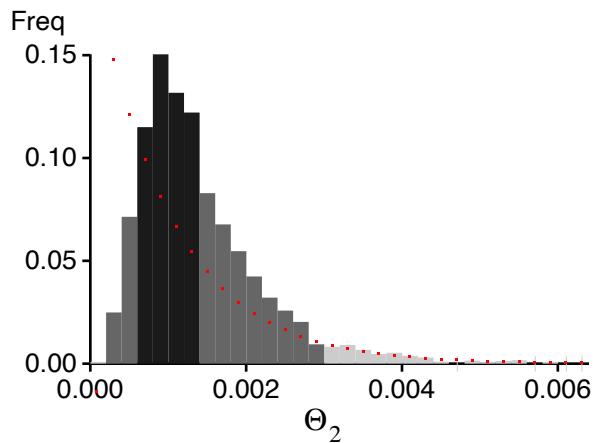
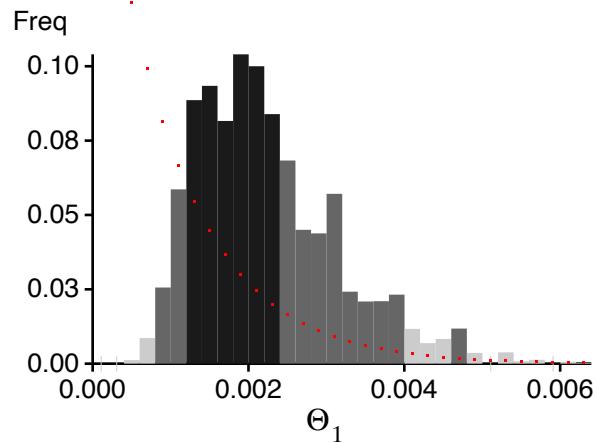


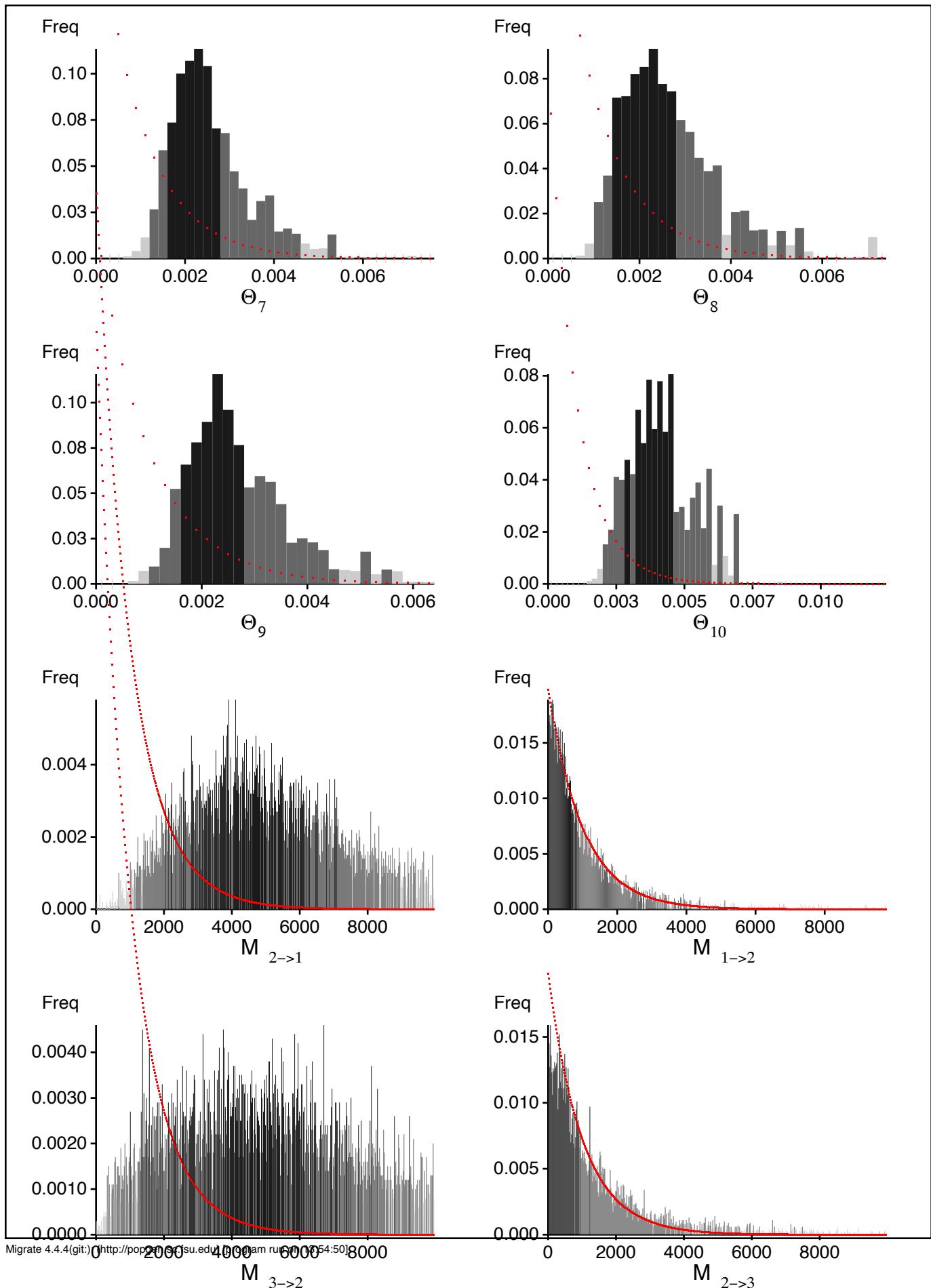


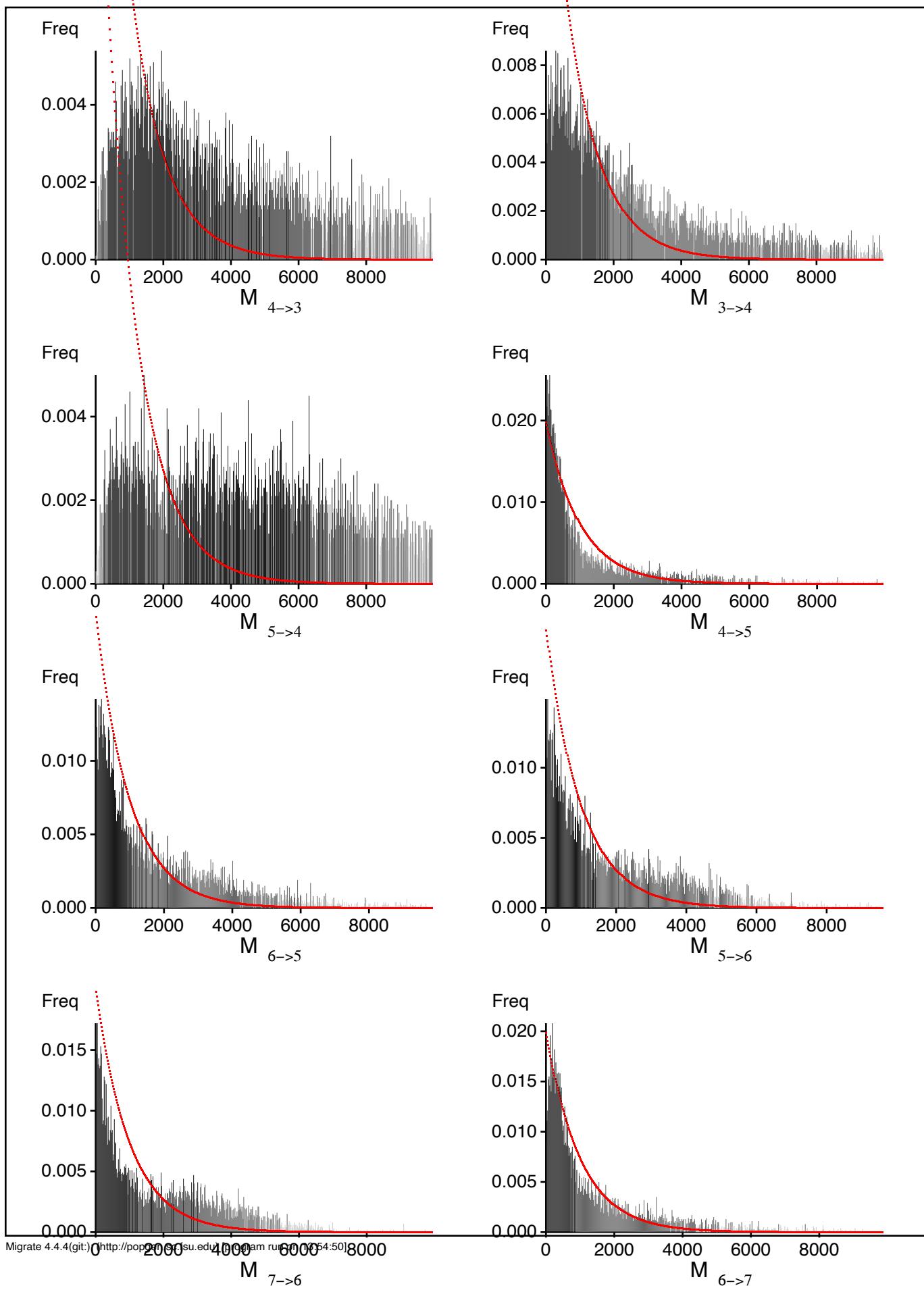


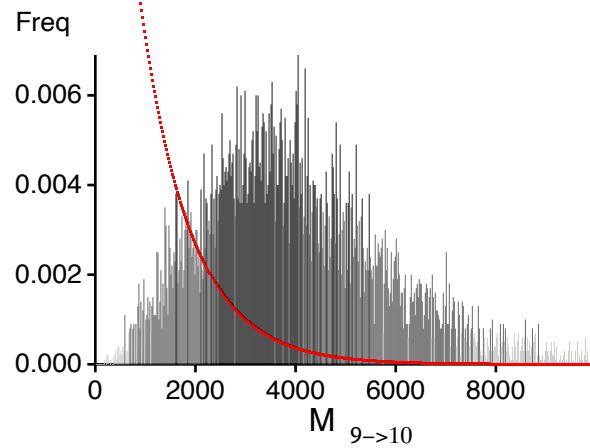
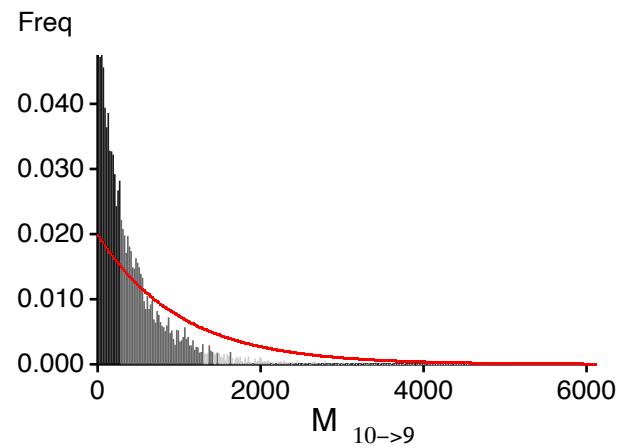
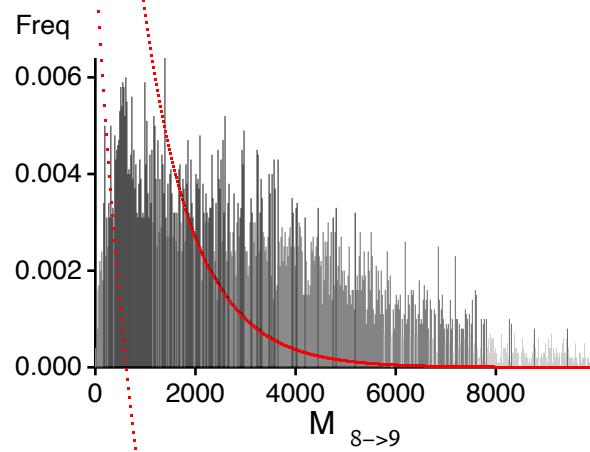
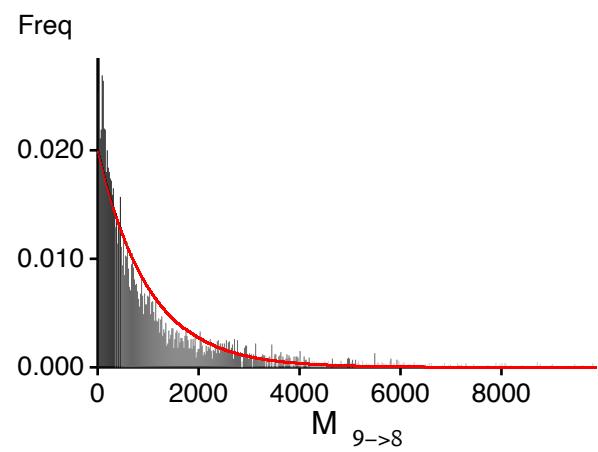
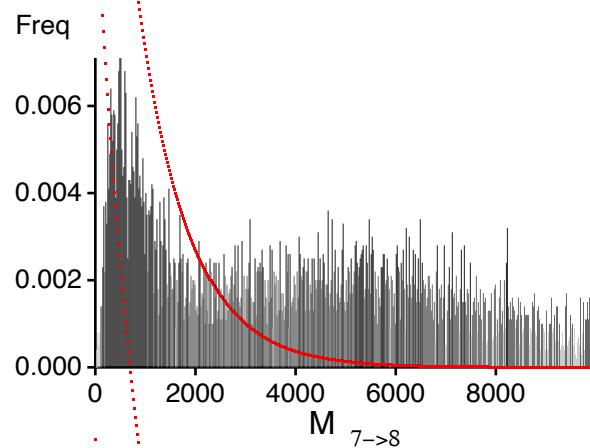
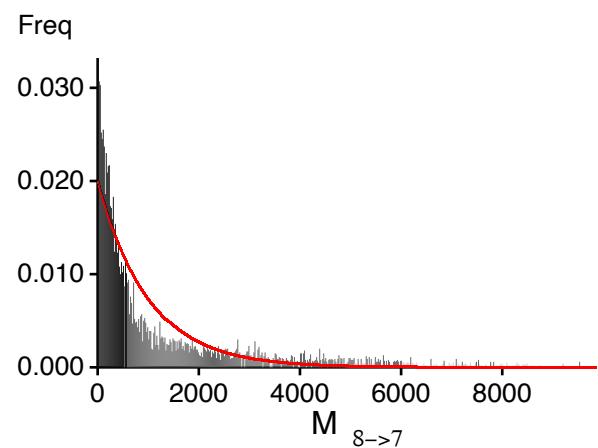


### Bayesian Analysis: Posterior distribution for locus 22

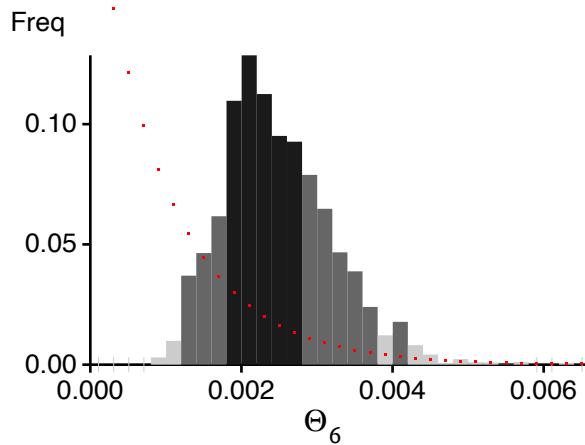
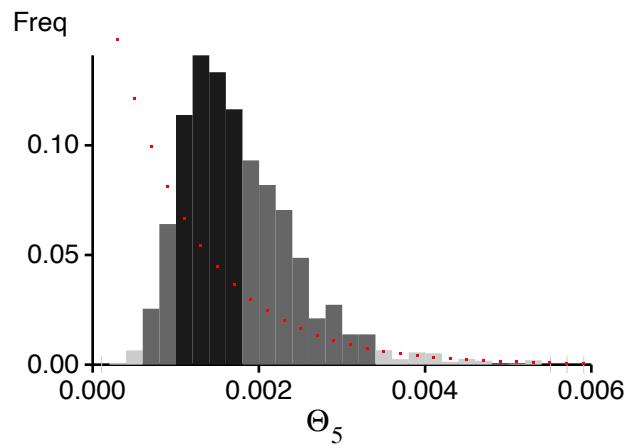
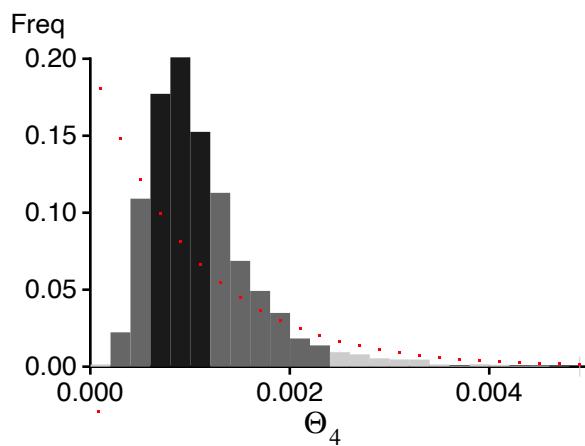
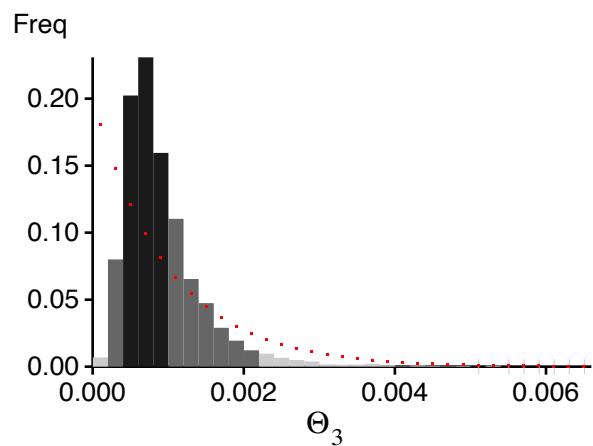
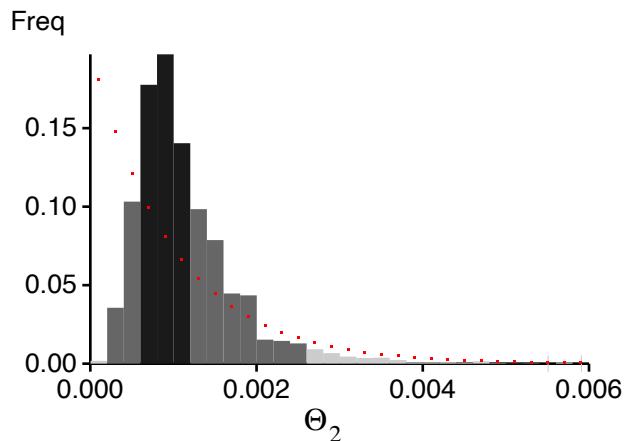
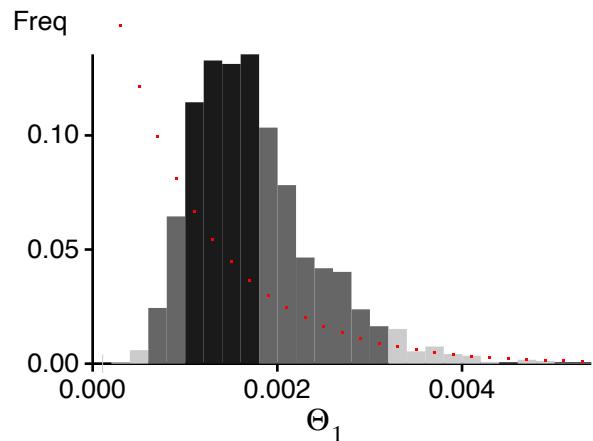


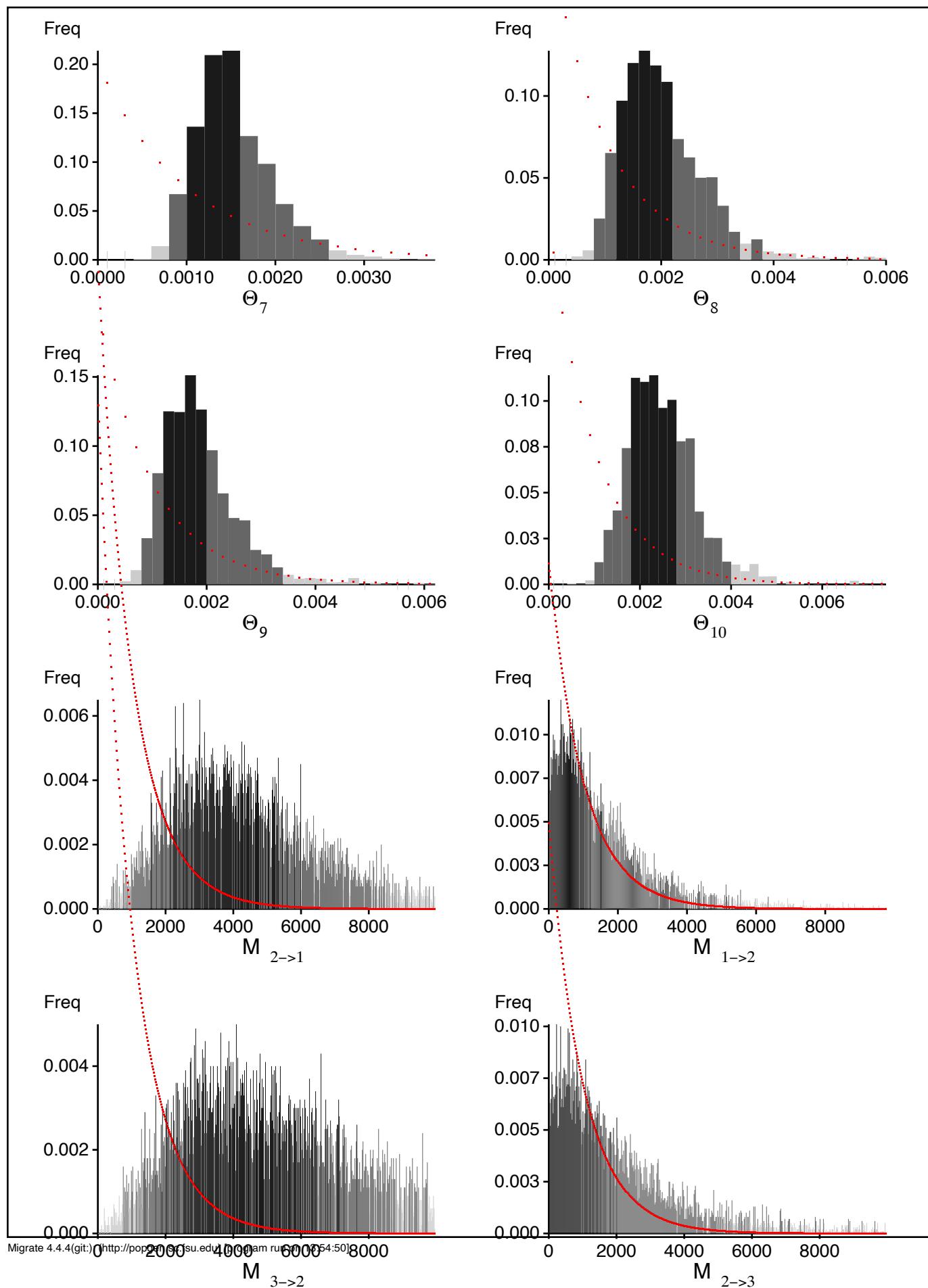


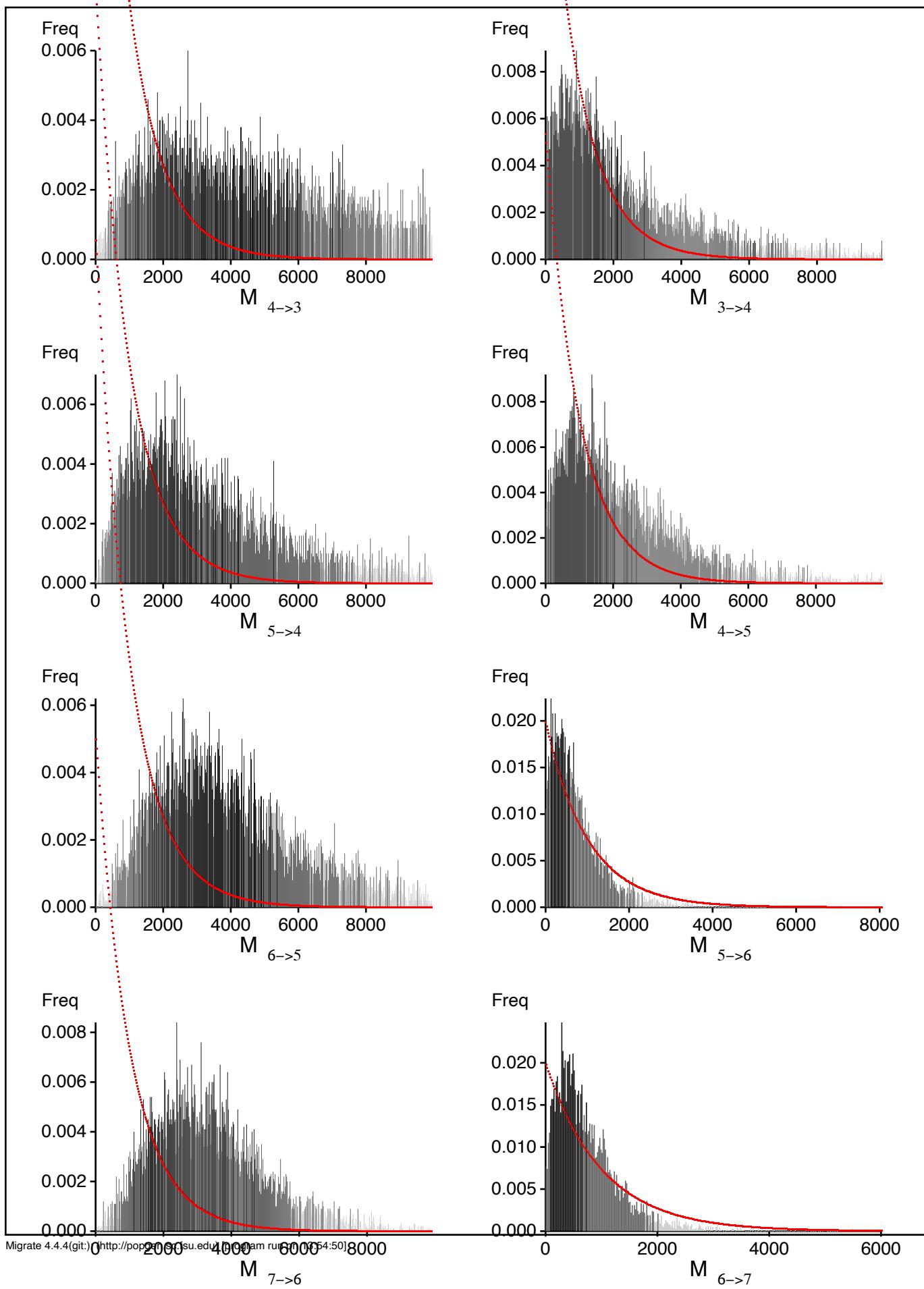


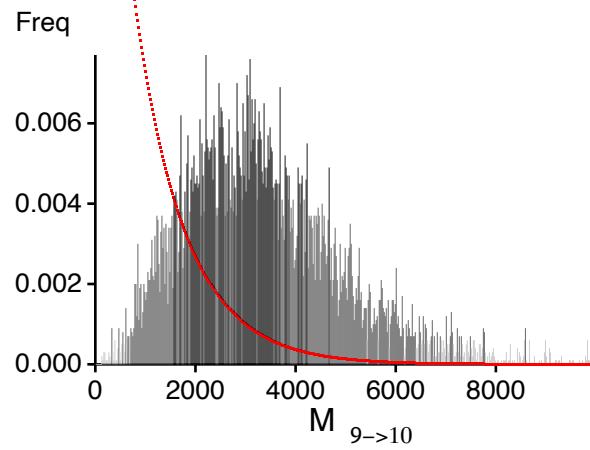
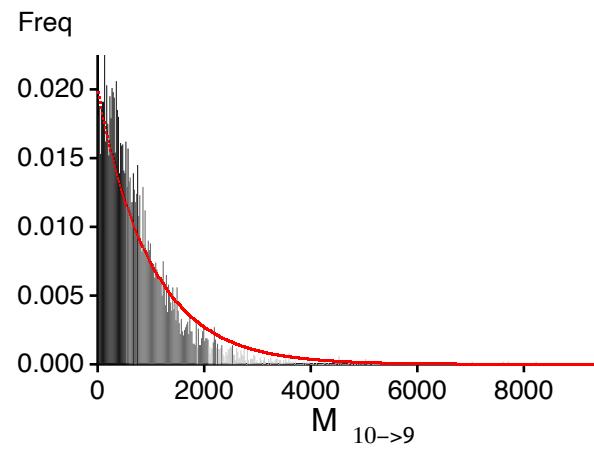
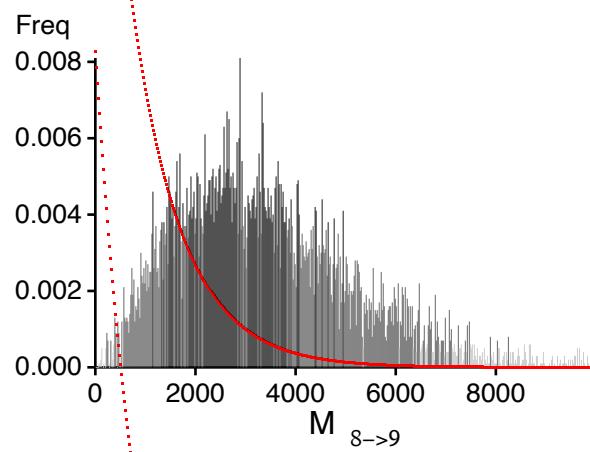
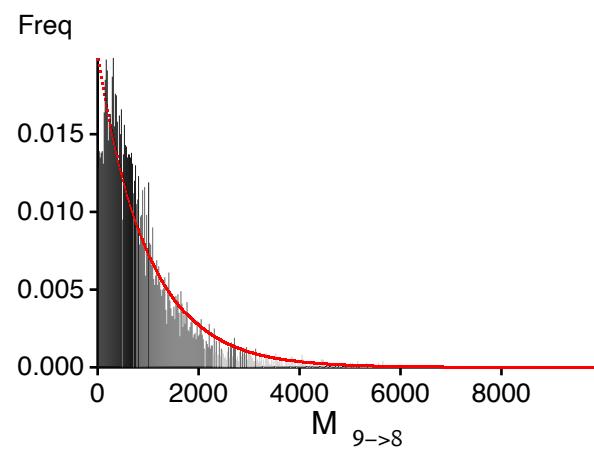
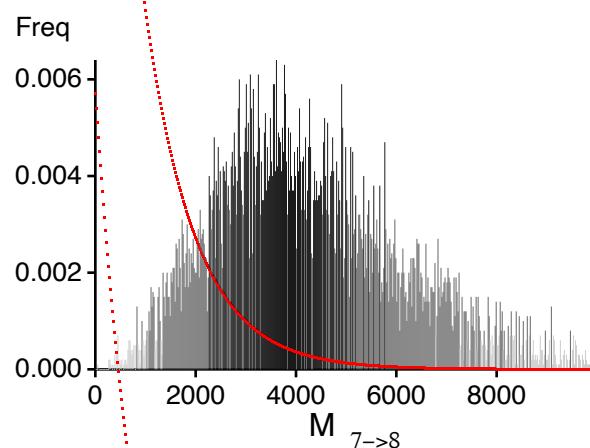
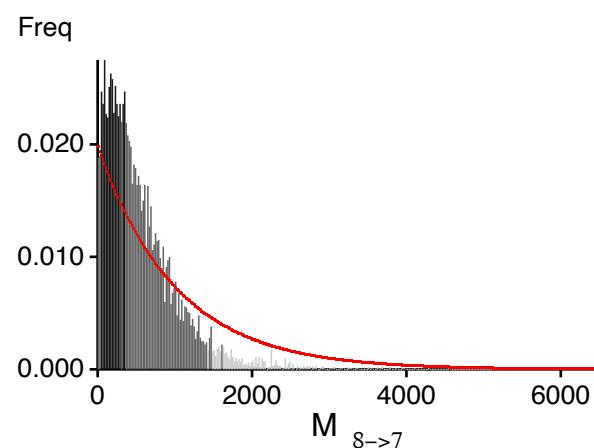


### Bayesian Analysis: Posterior distribution for locus 23

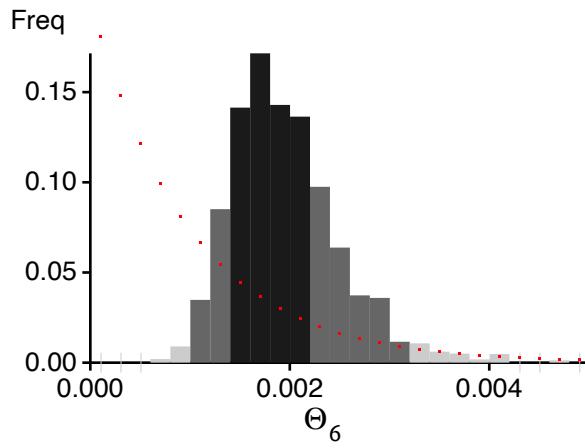
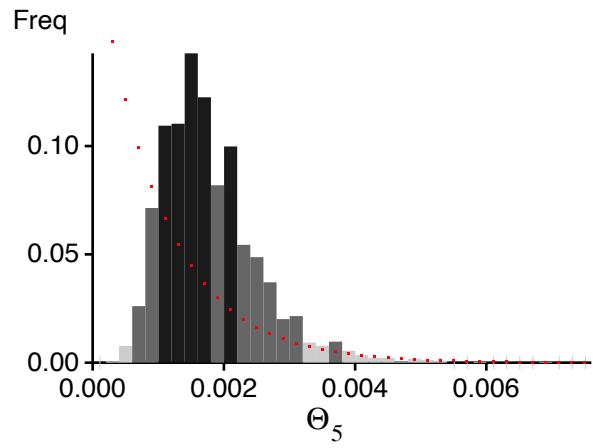
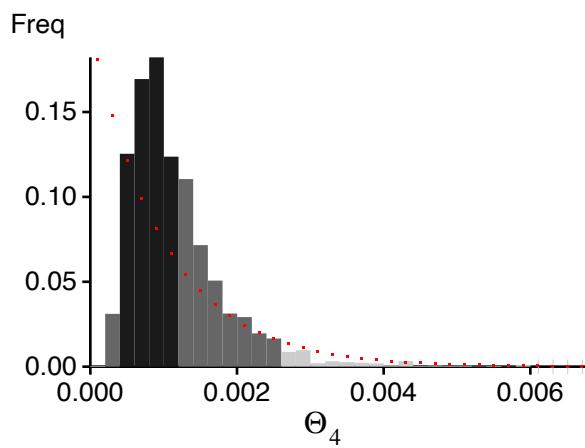
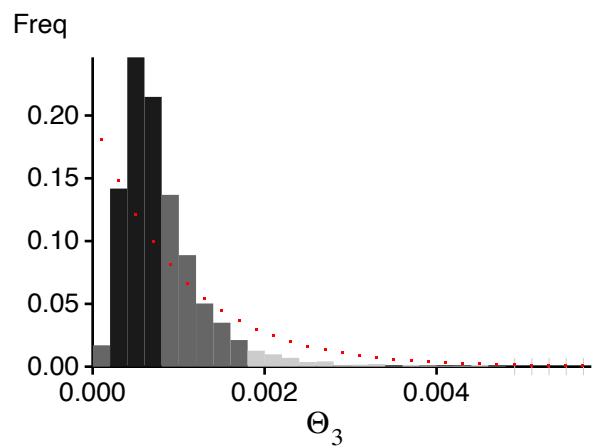
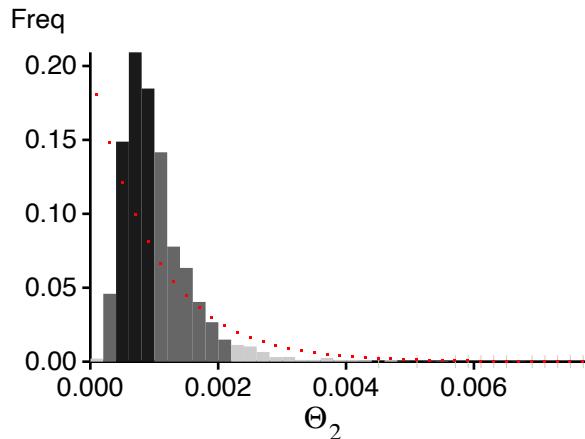
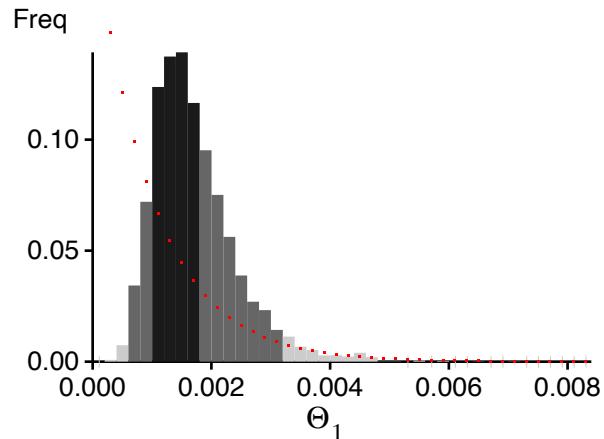


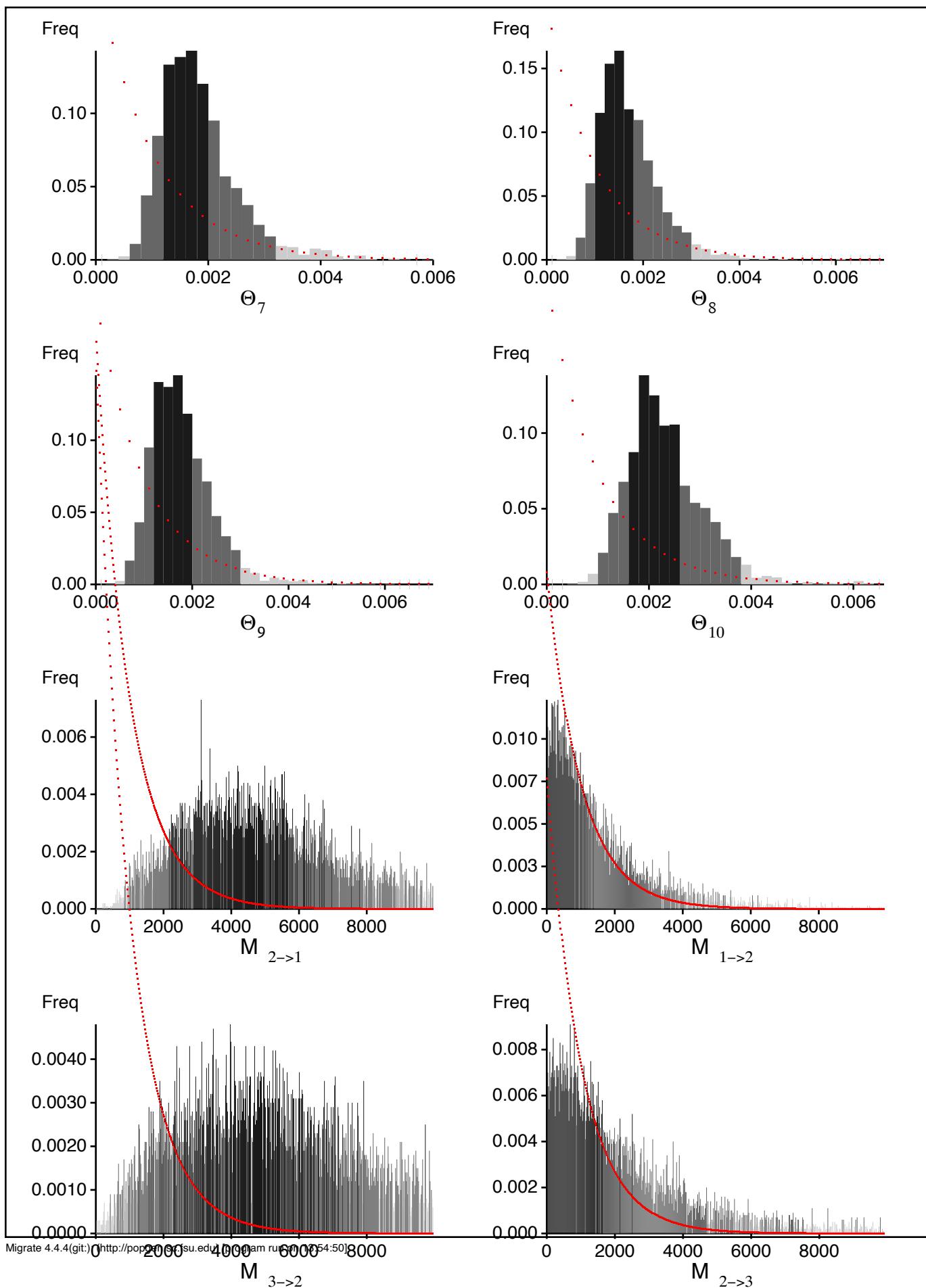


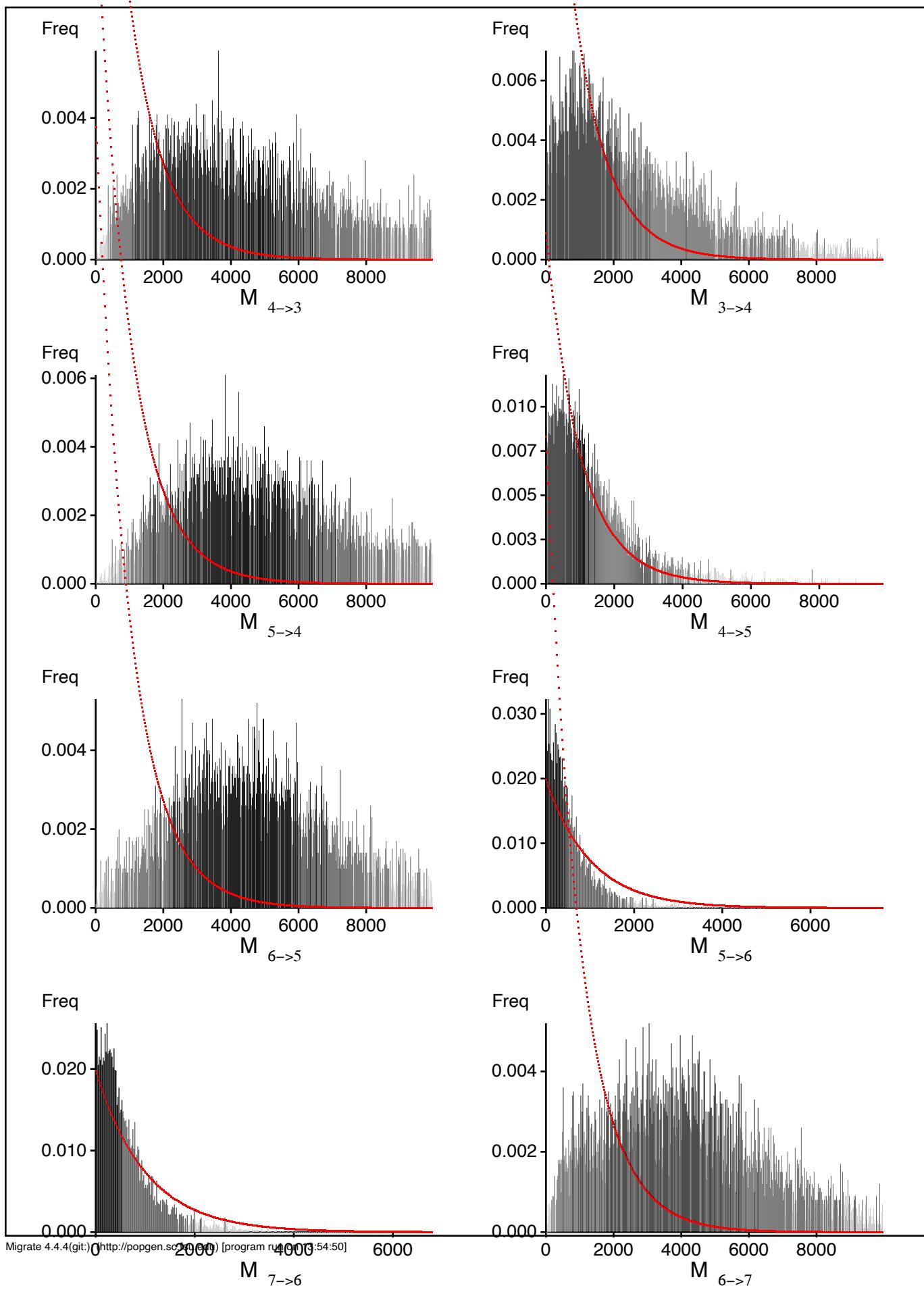


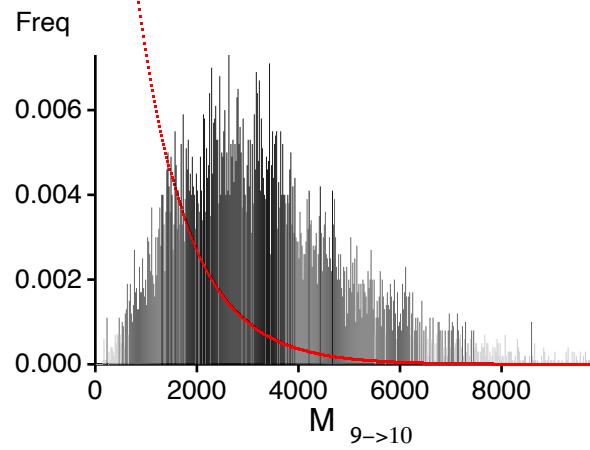
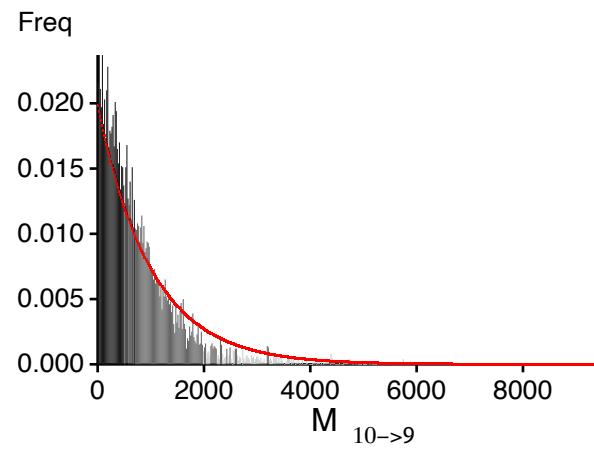
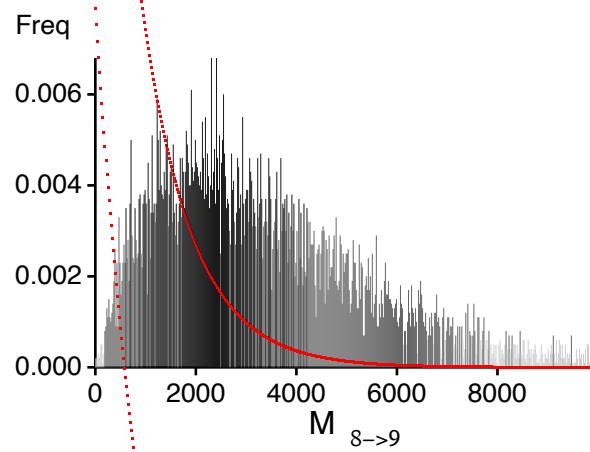
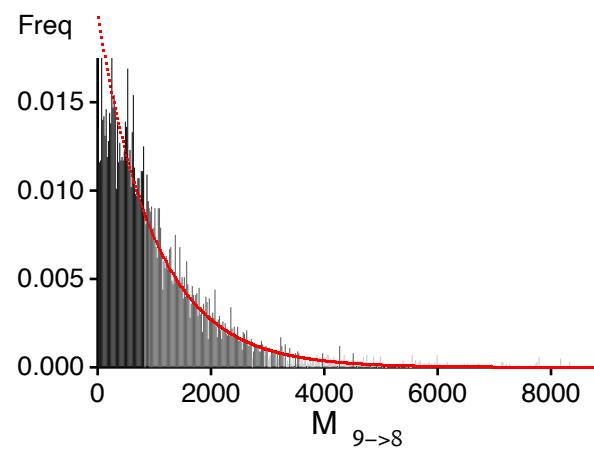
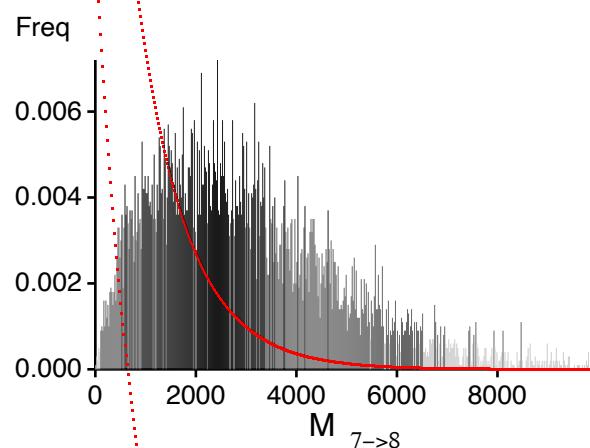
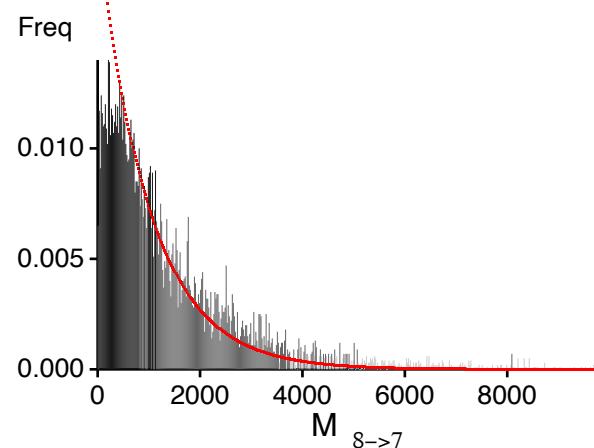


### Bayesian Analysis: Posterior distribution for locus 24

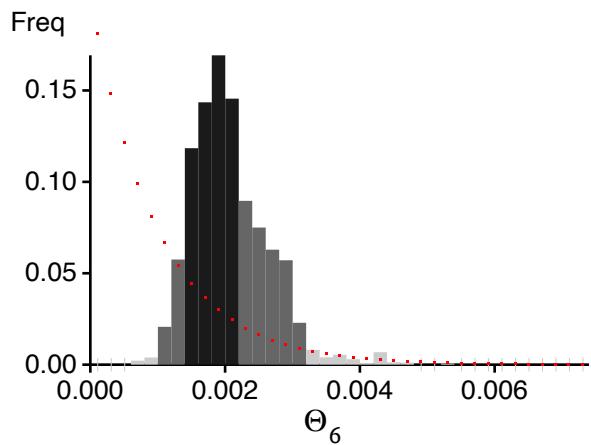
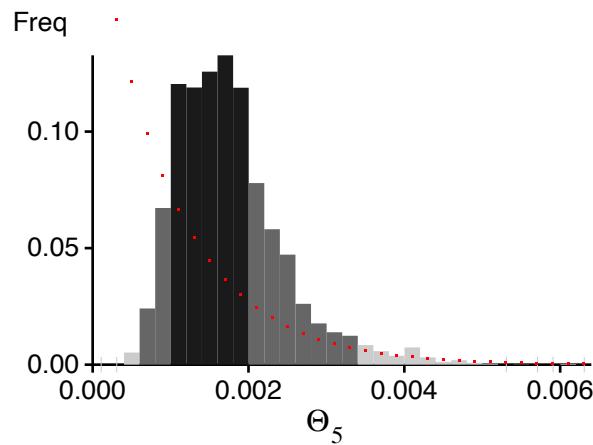
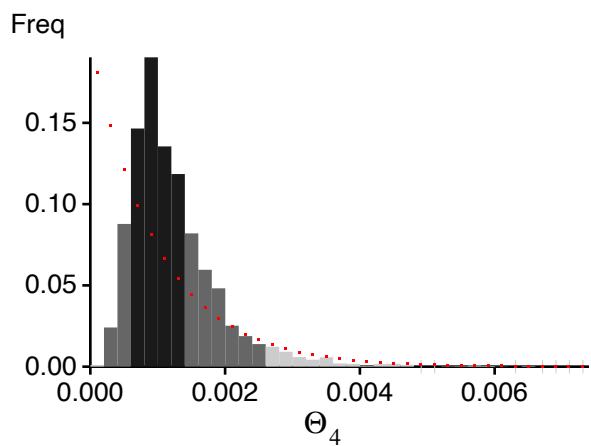
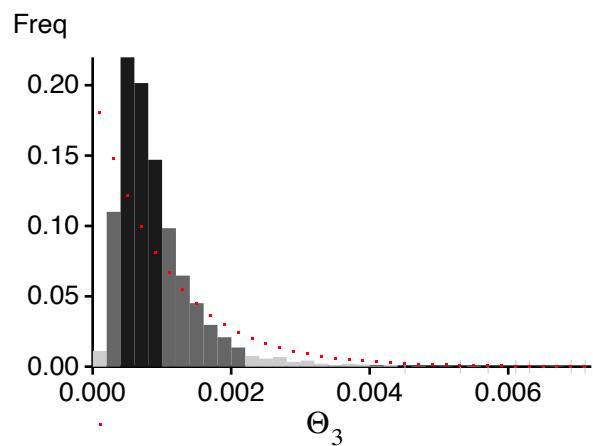
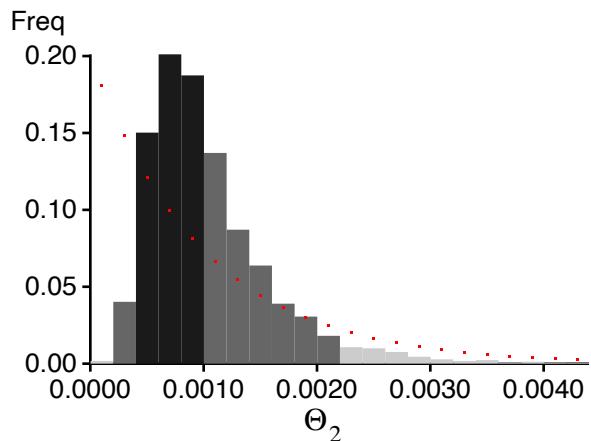
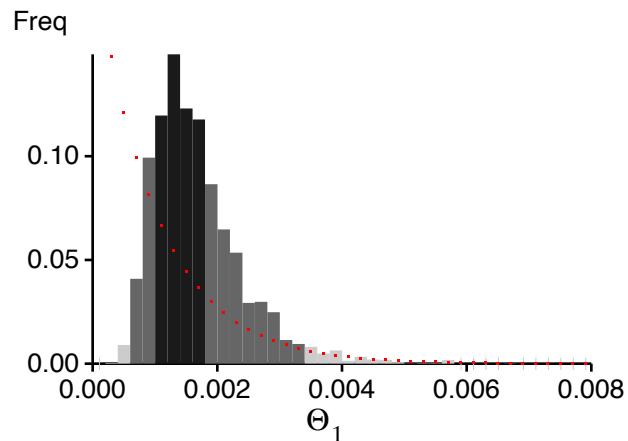


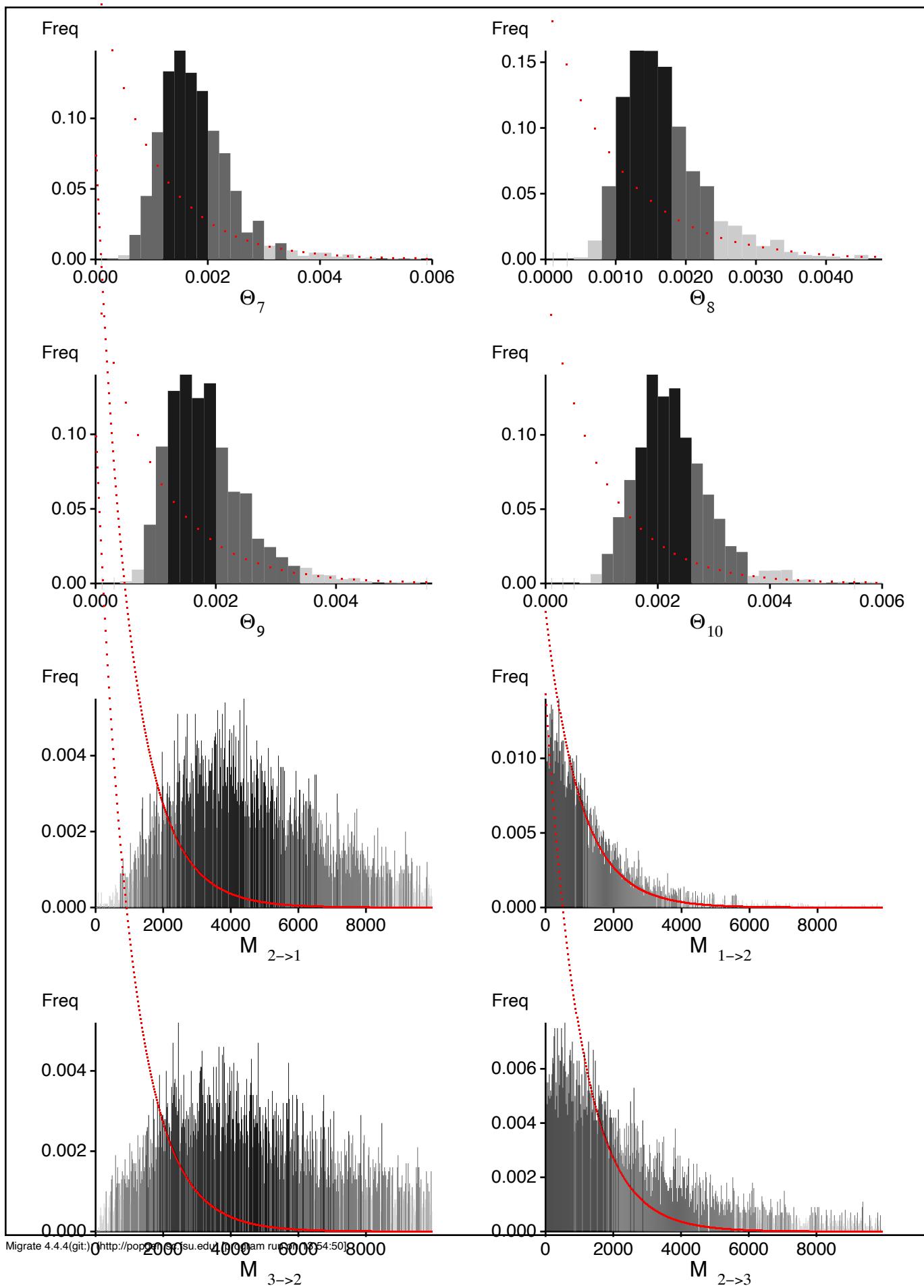


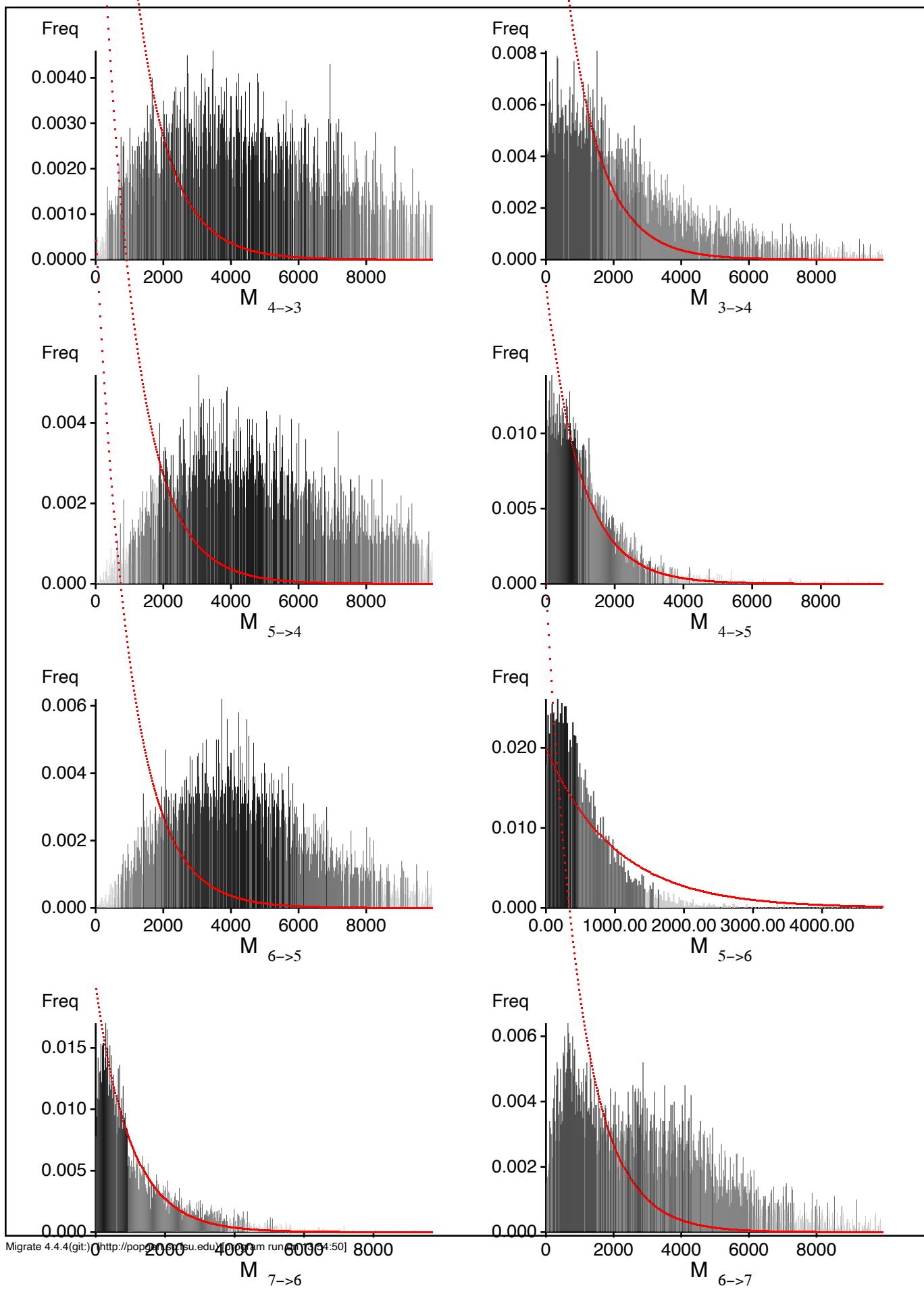


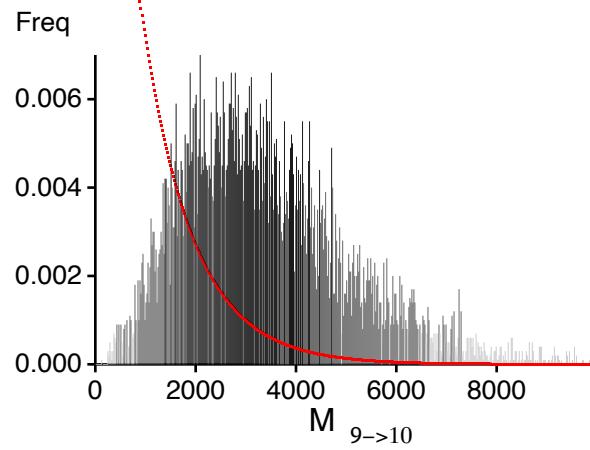
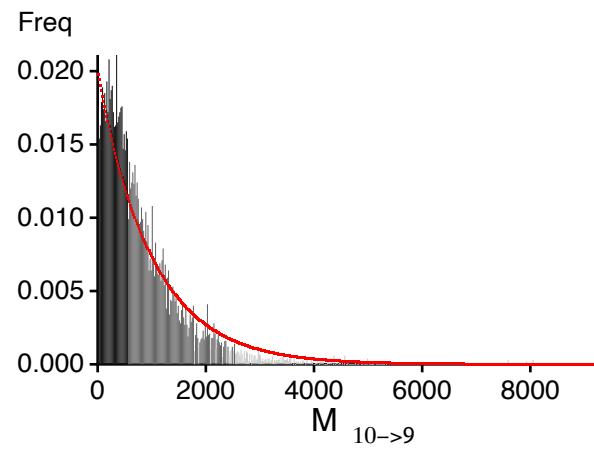
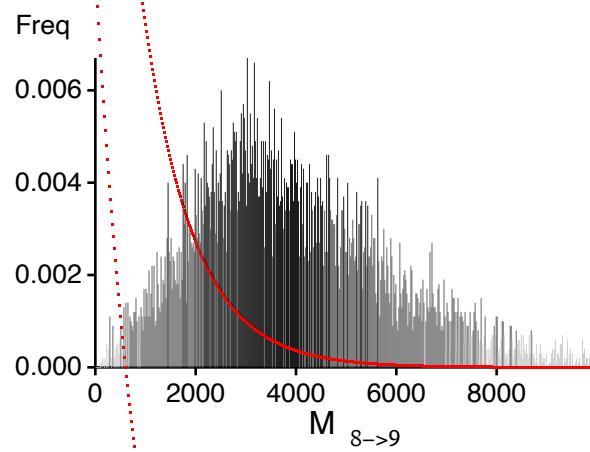
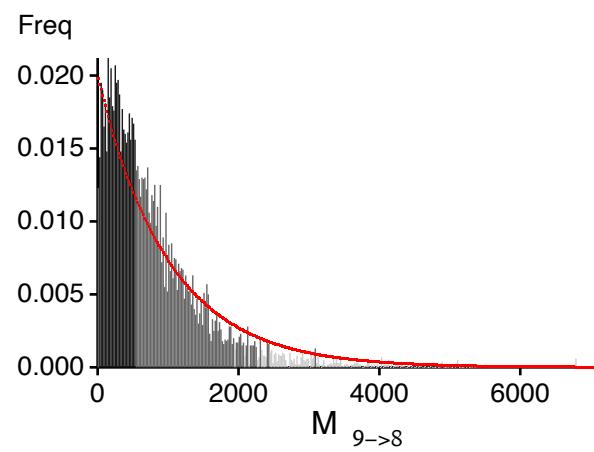
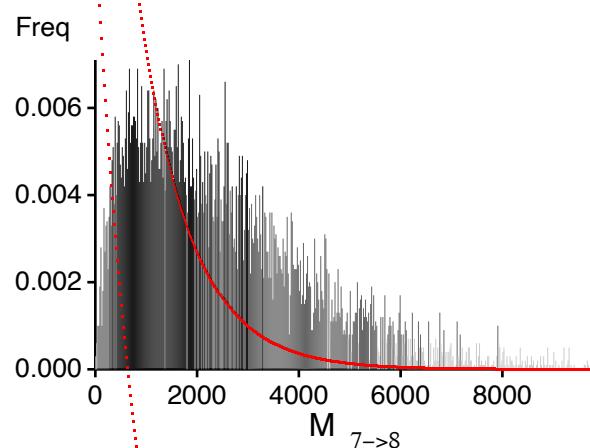
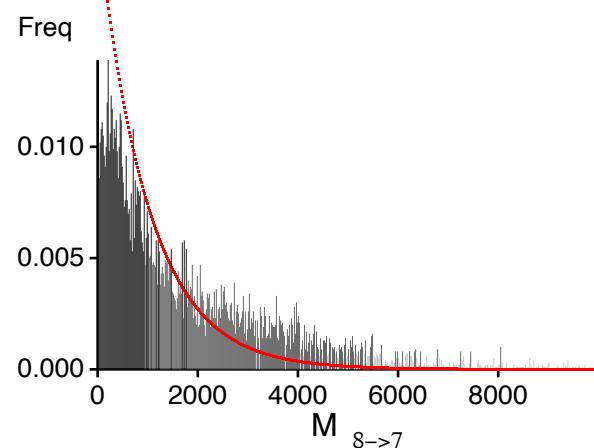


### Bayesian Analysis: Posterior distribution for locus 25

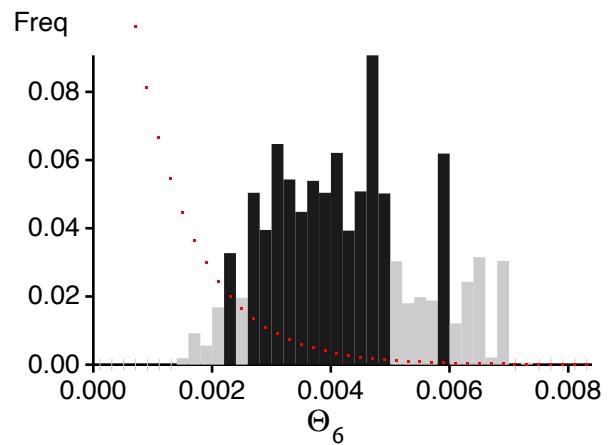
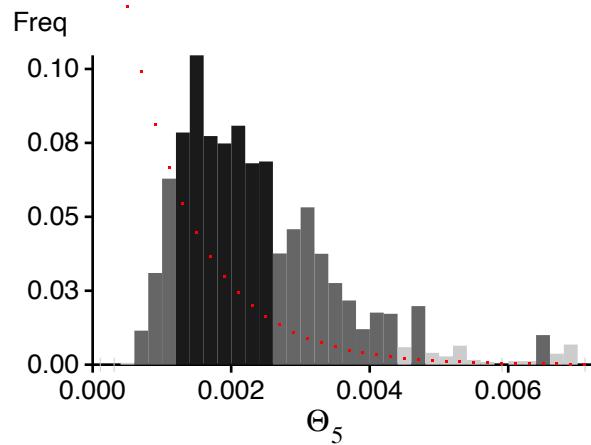
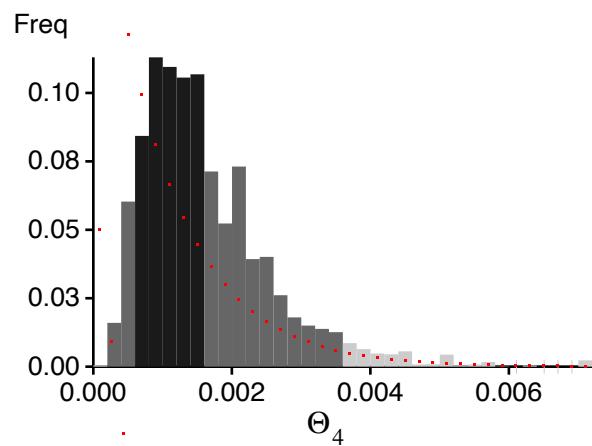
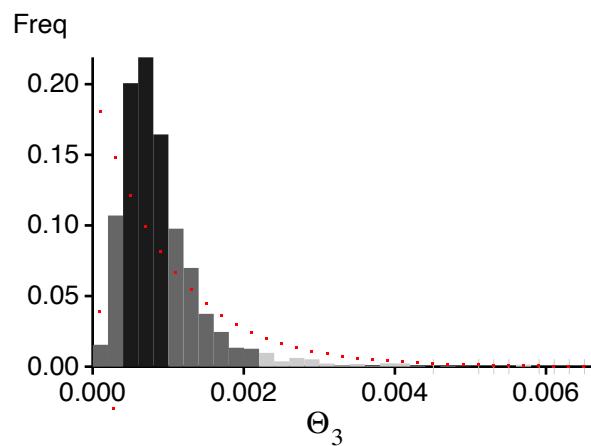
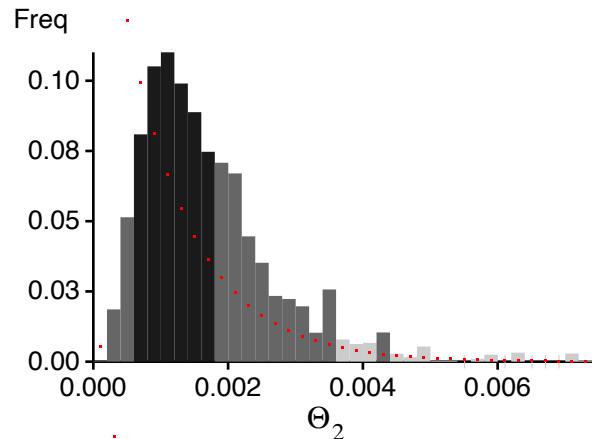
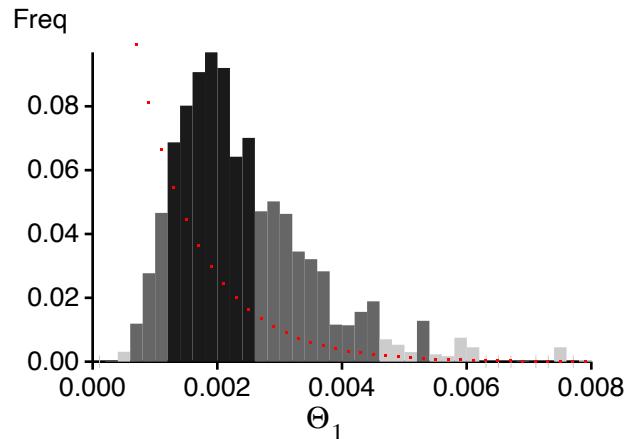


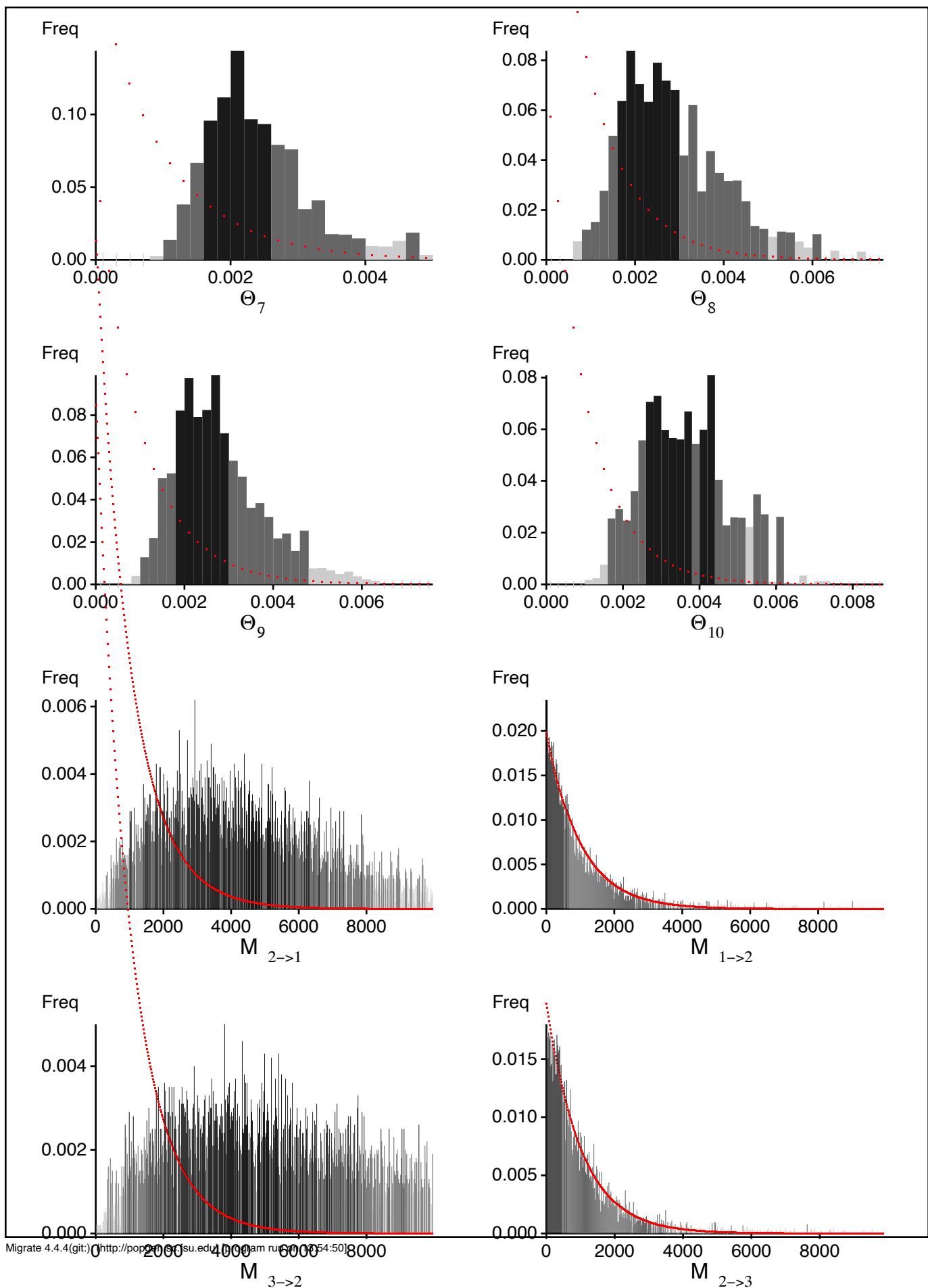


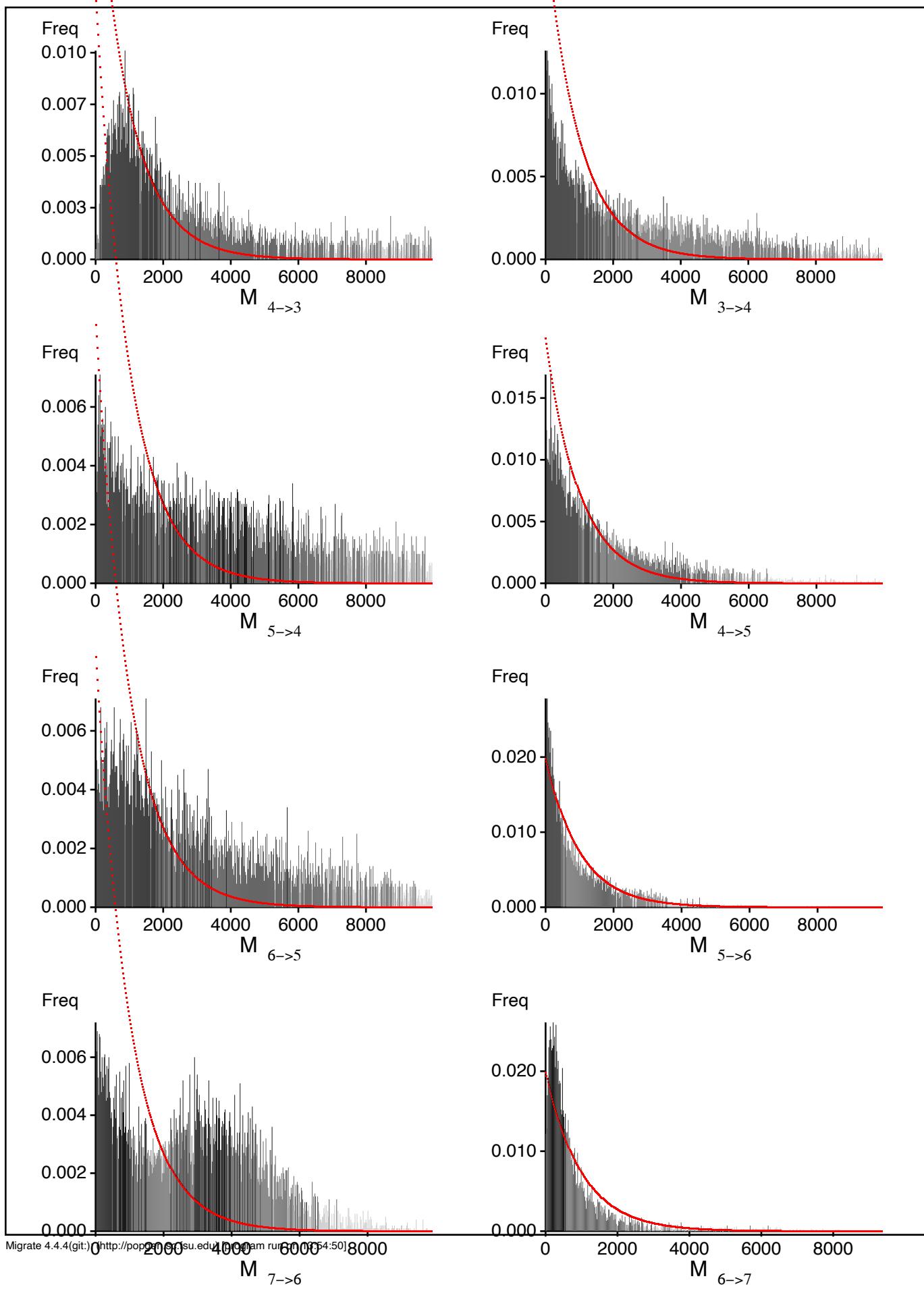


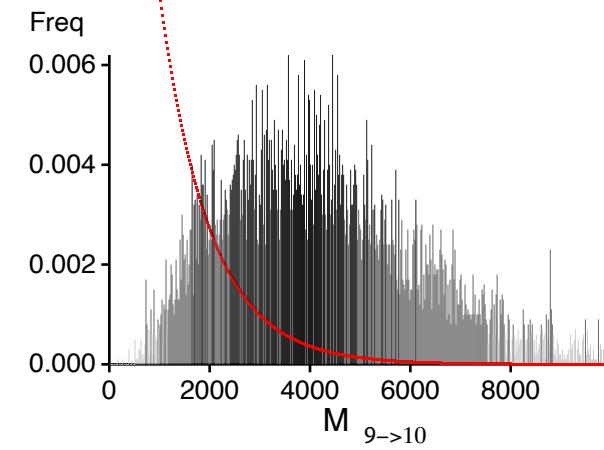
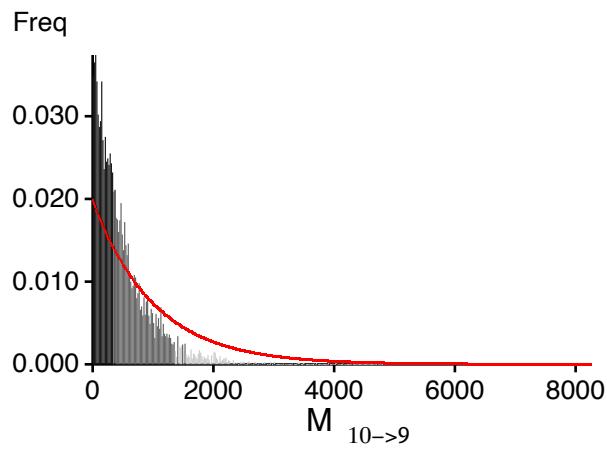
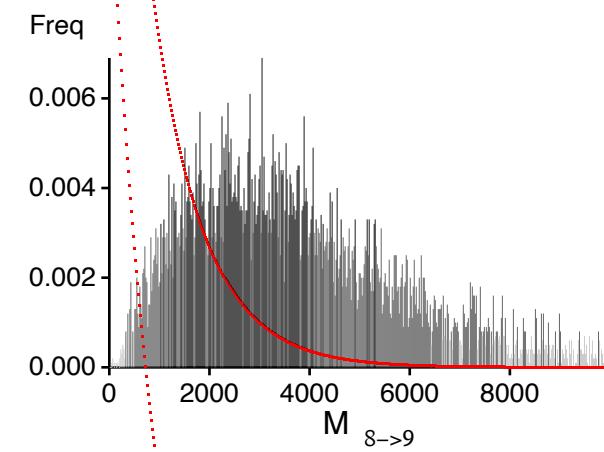
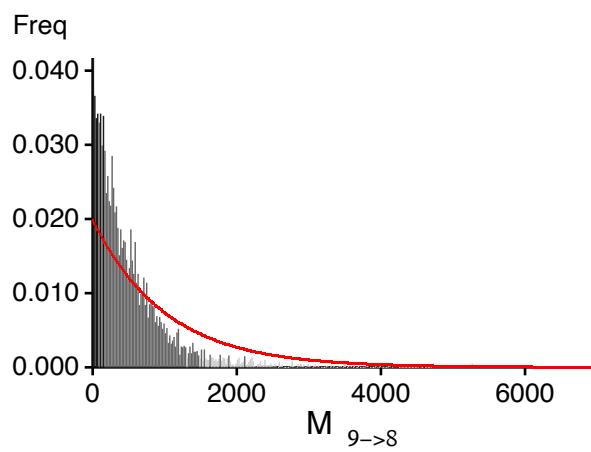
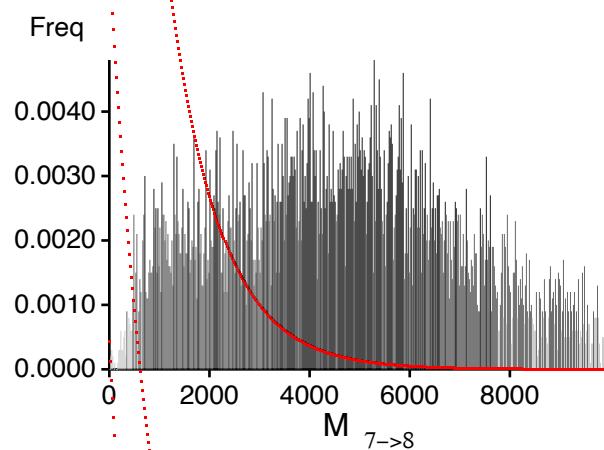
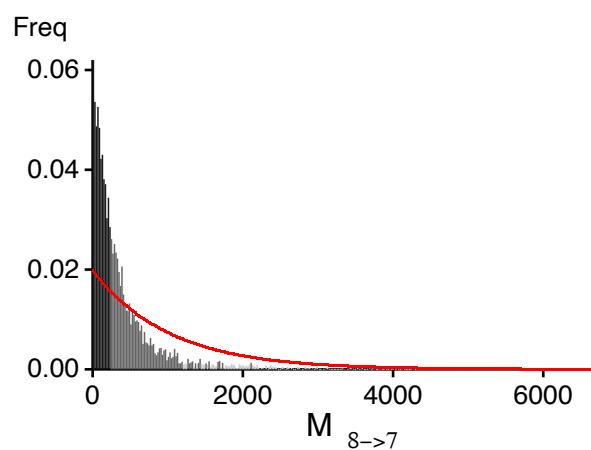


### Bayesian Analysis: Posterior distribution for locus 26

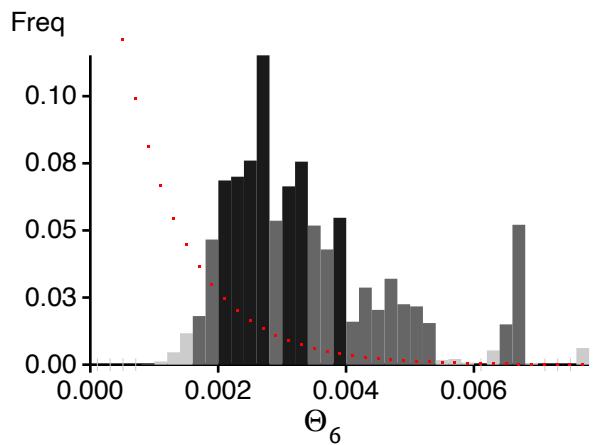
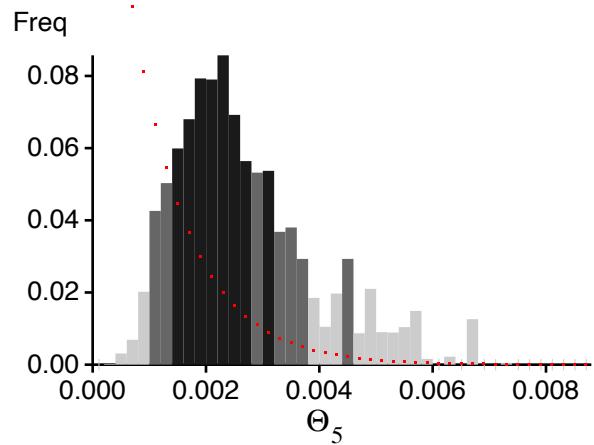
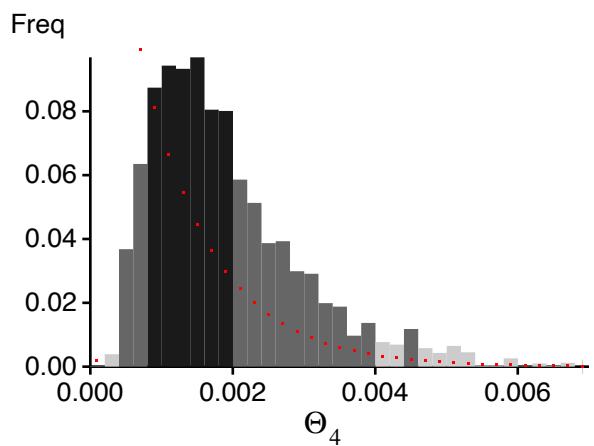
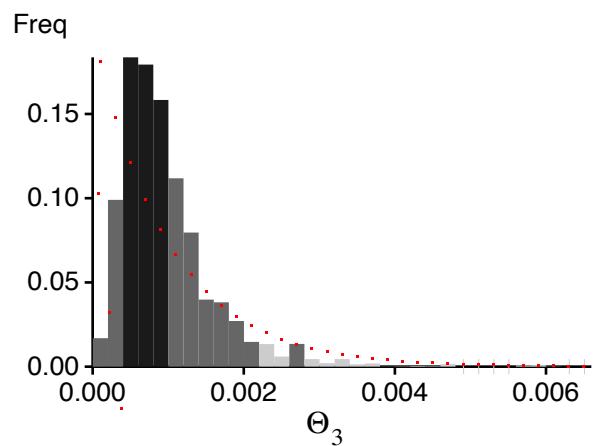
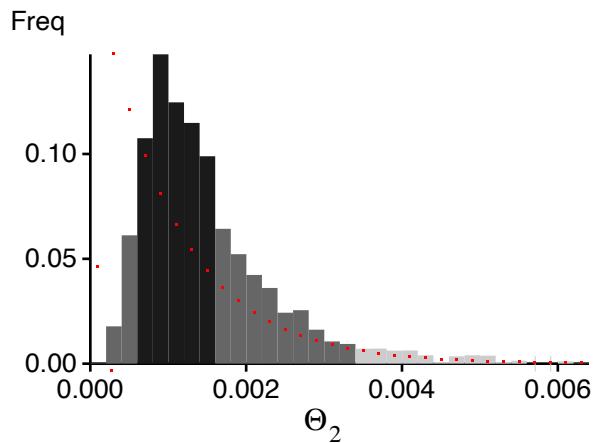
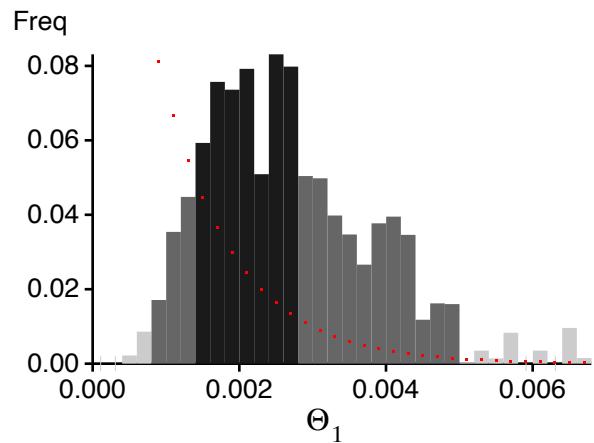


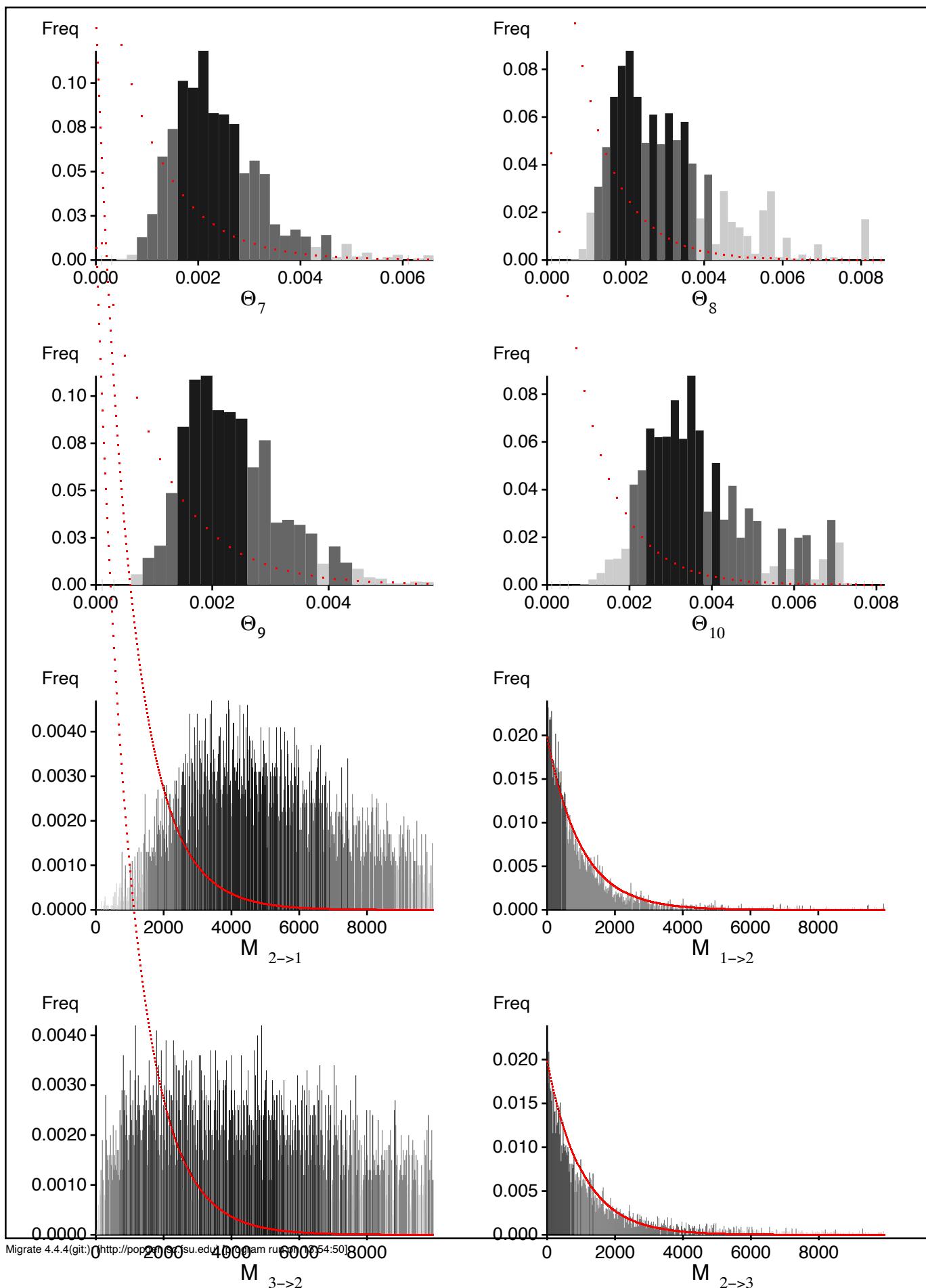


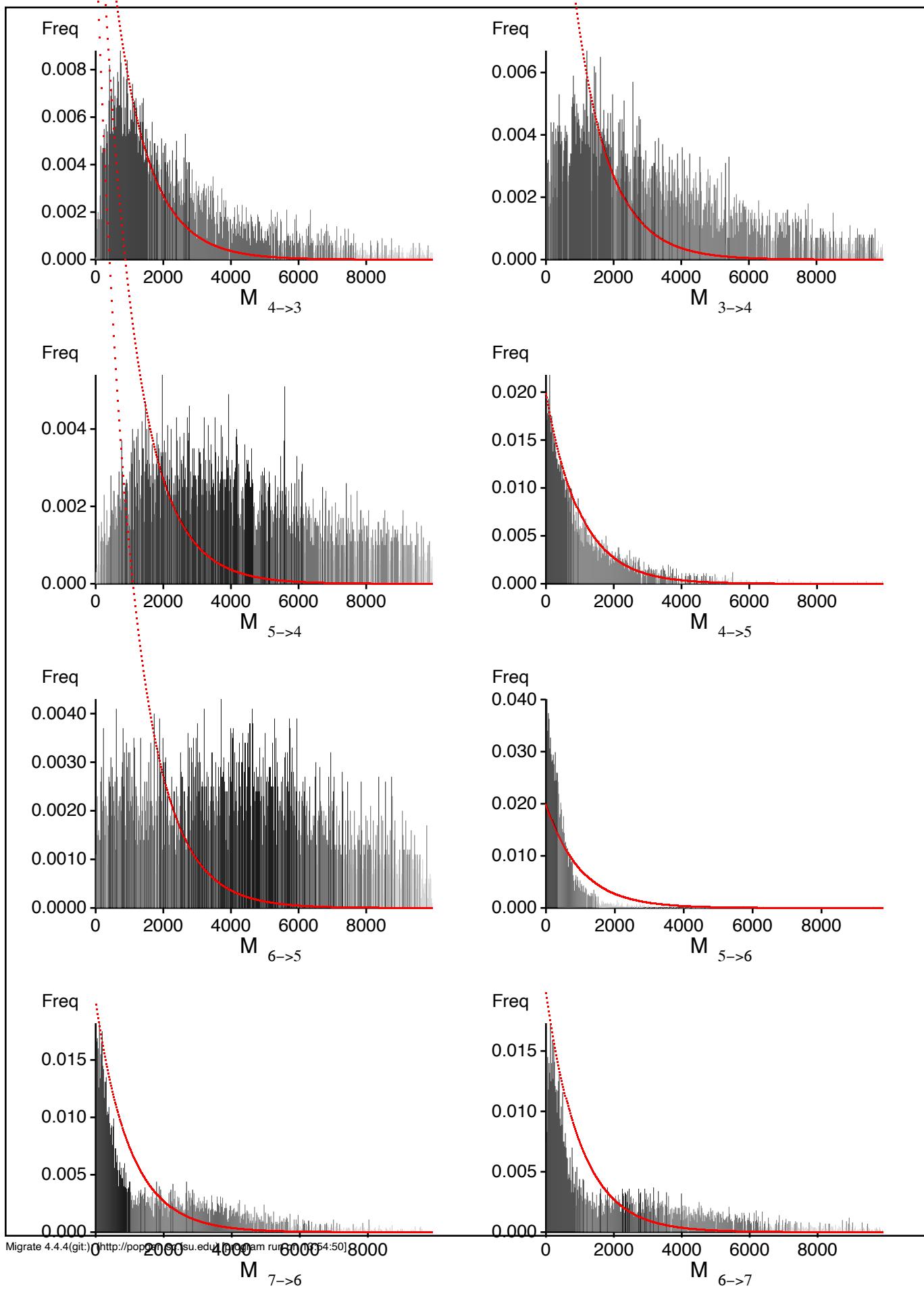


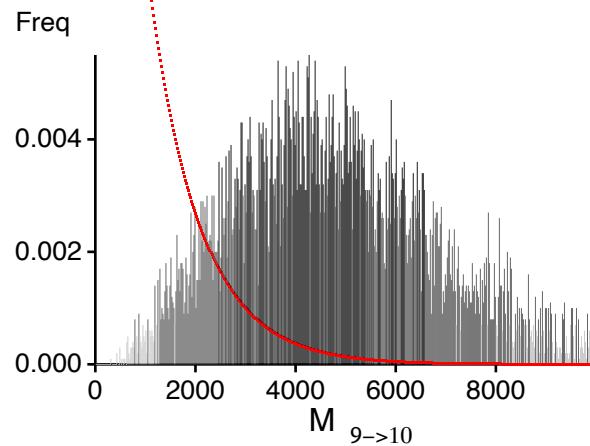
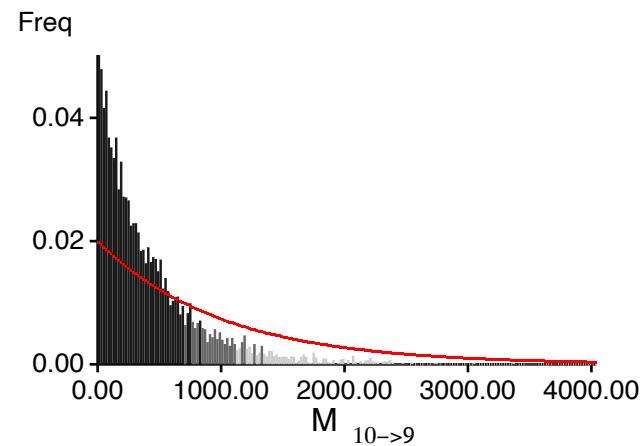
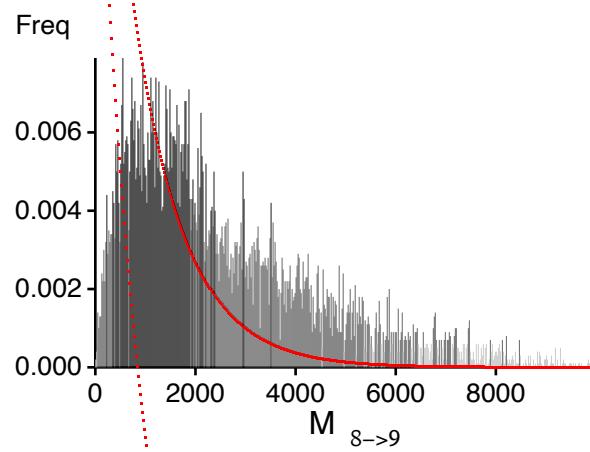
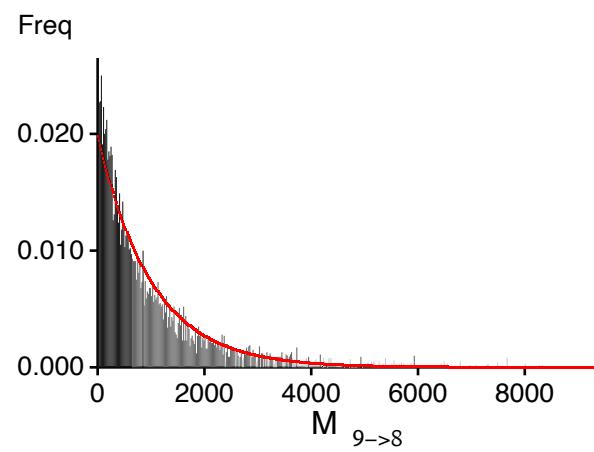
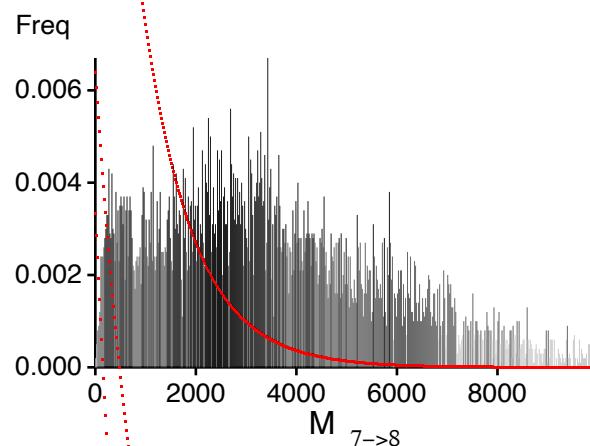
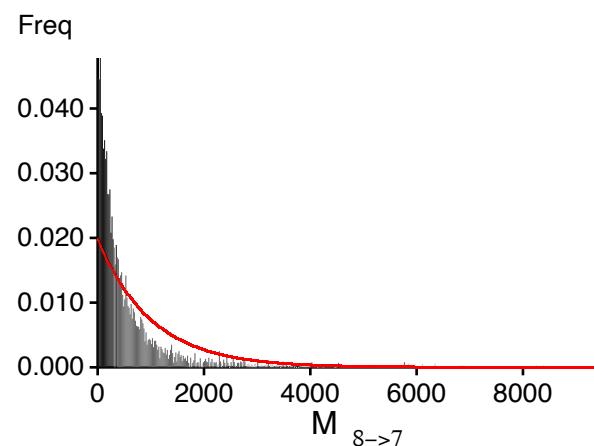


### Bayesian Analysis: Posterior distribution for locus 27

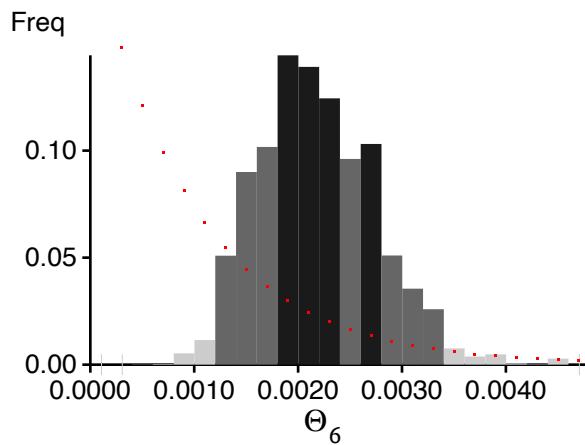
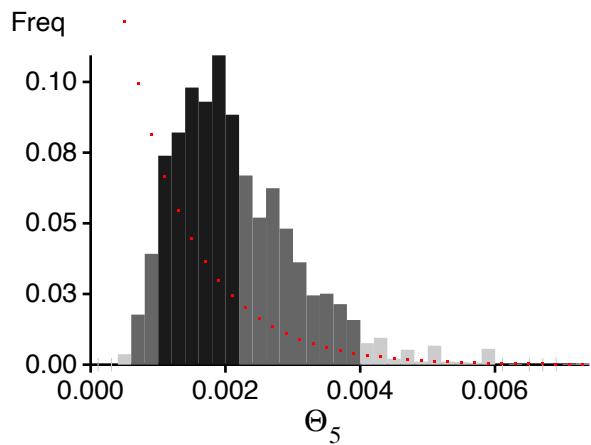
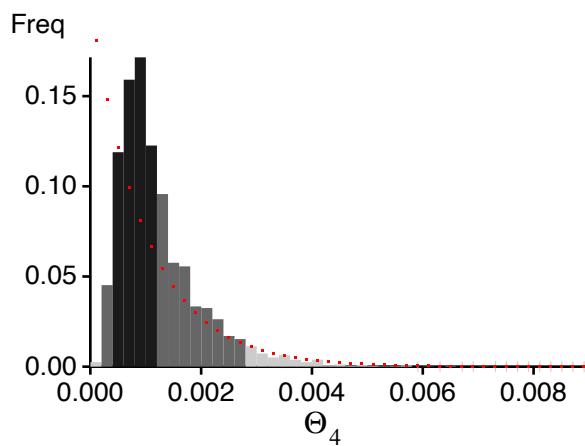
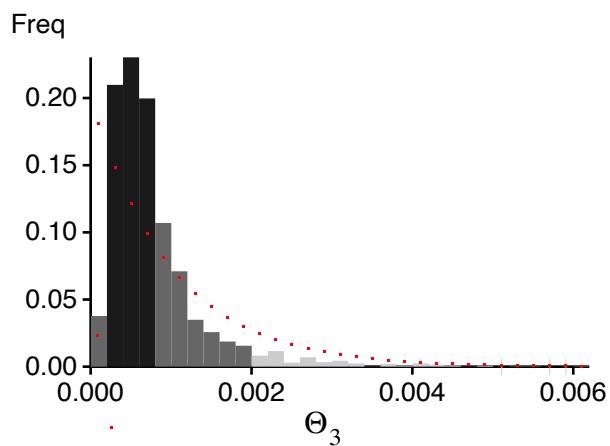
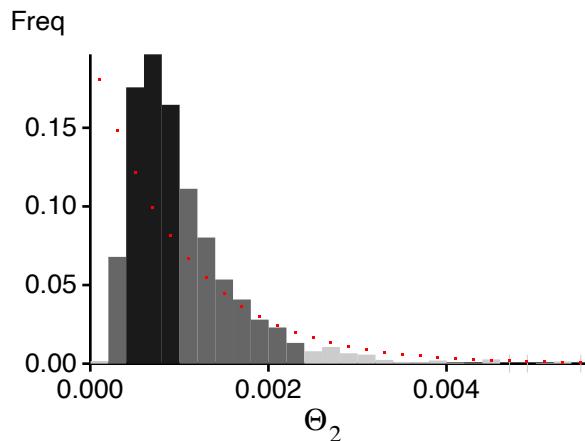
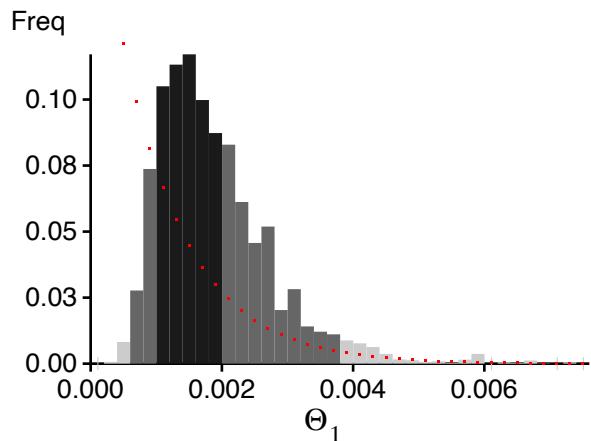


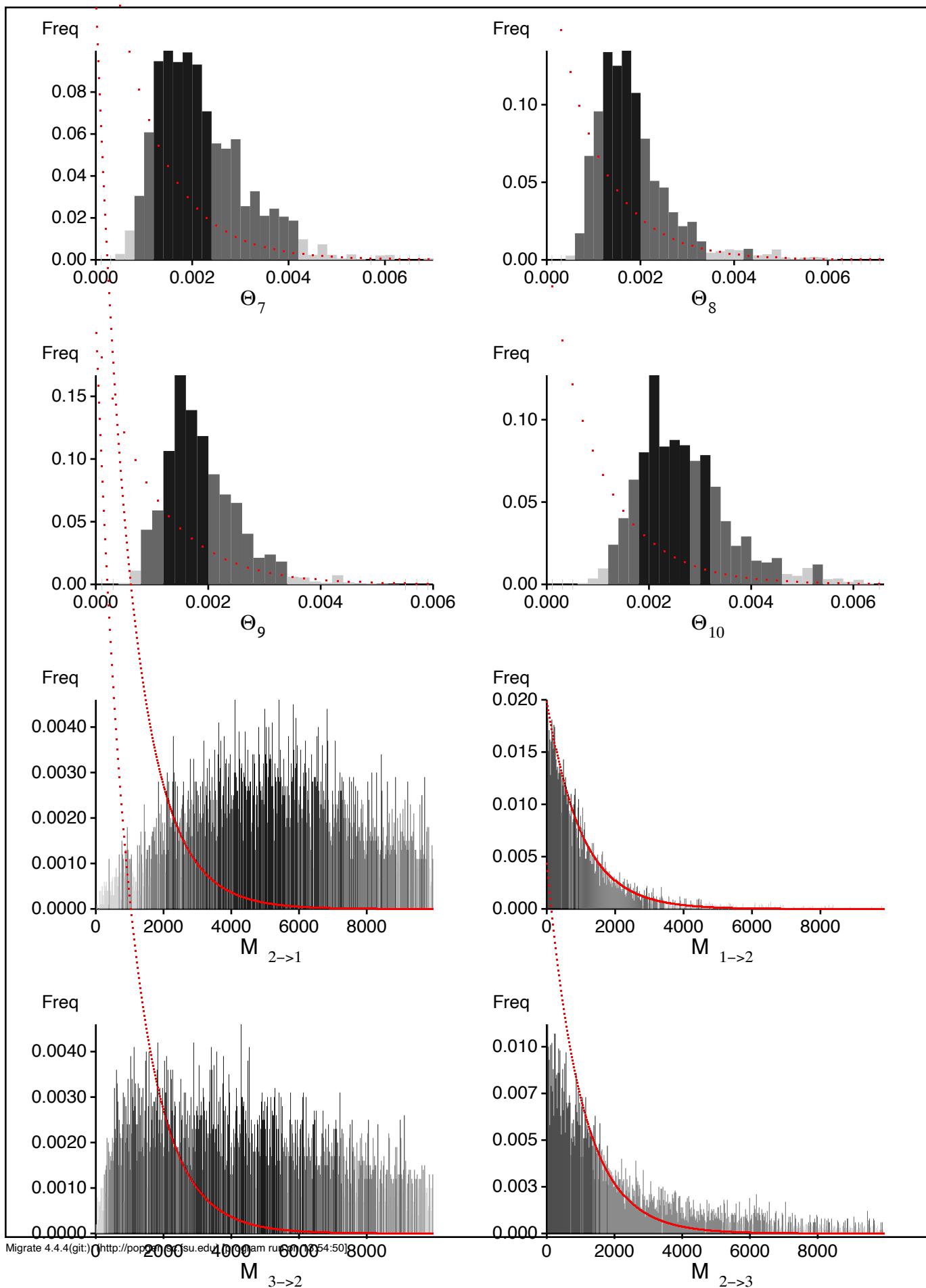


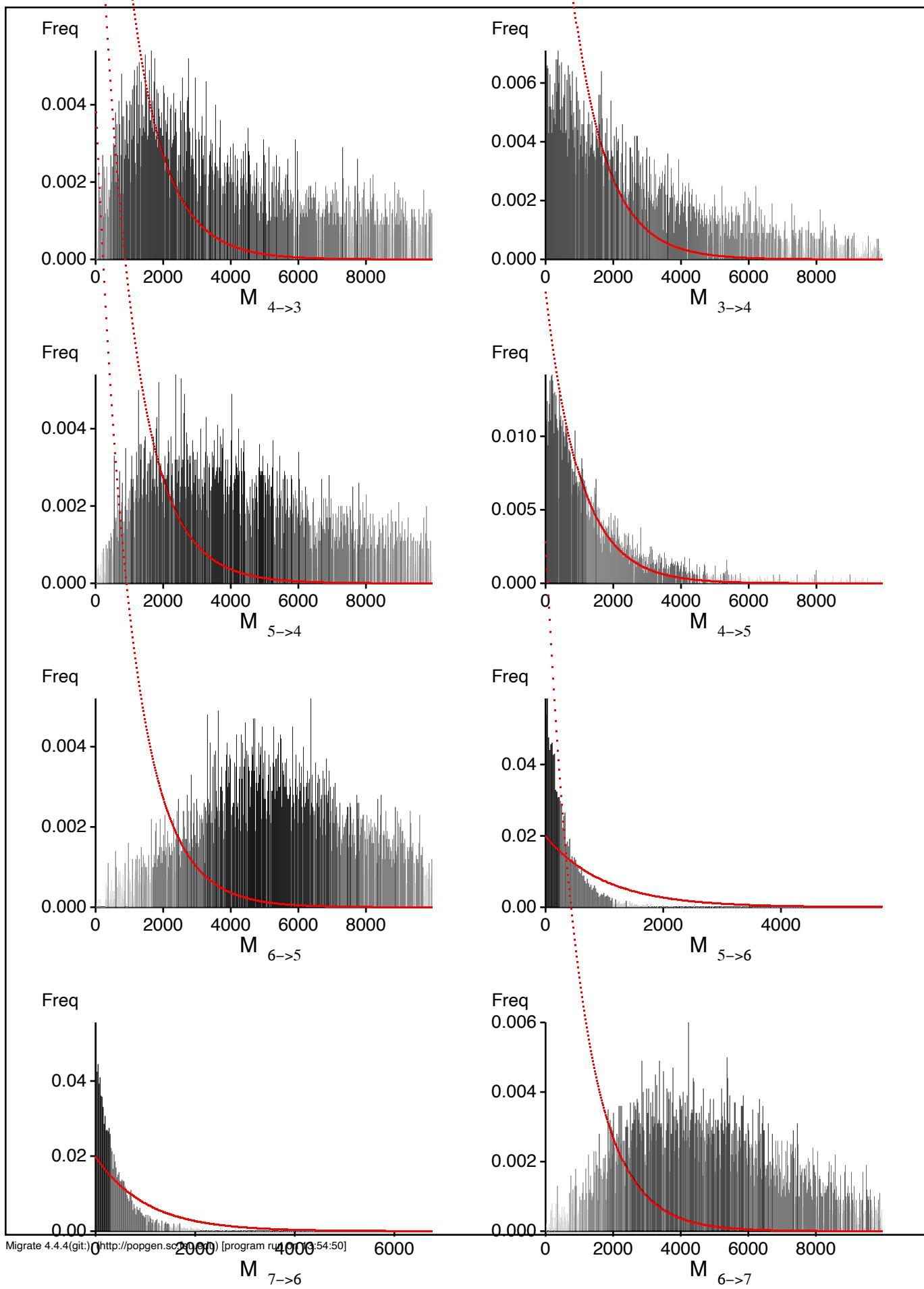


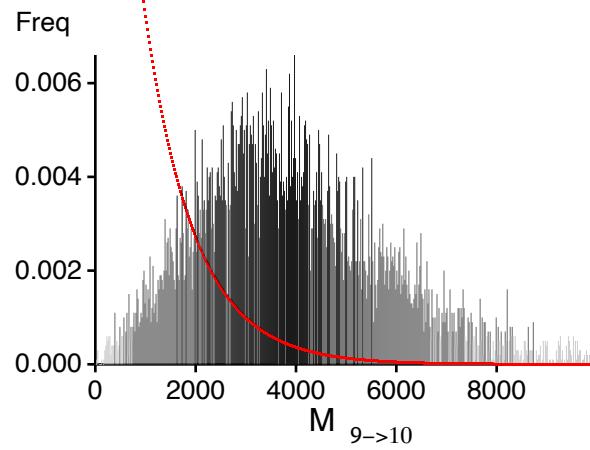
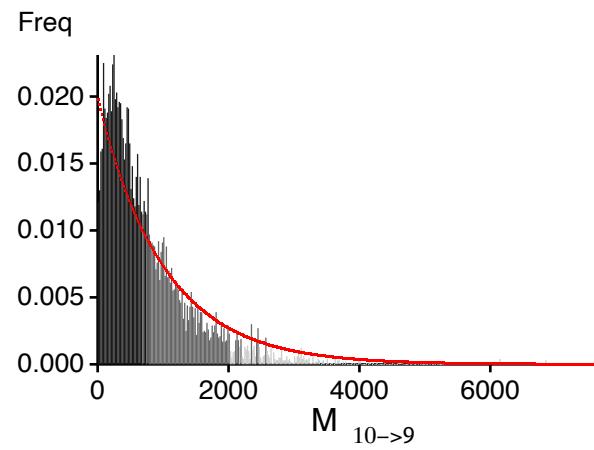
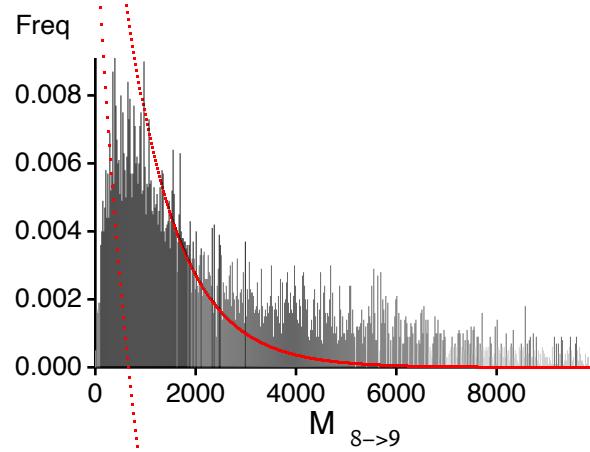
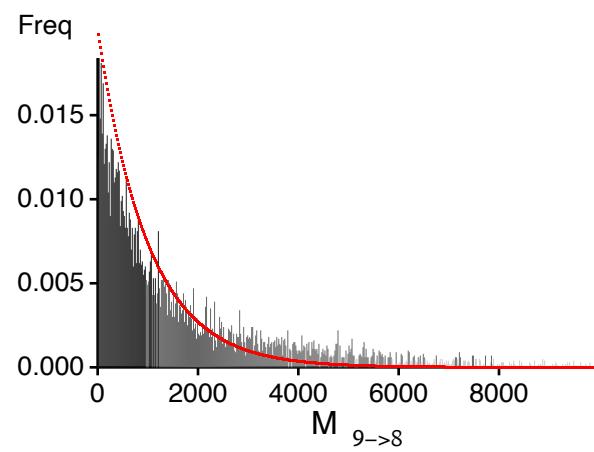
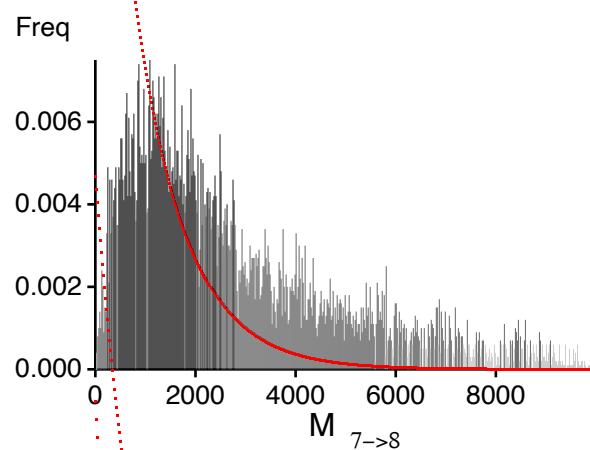
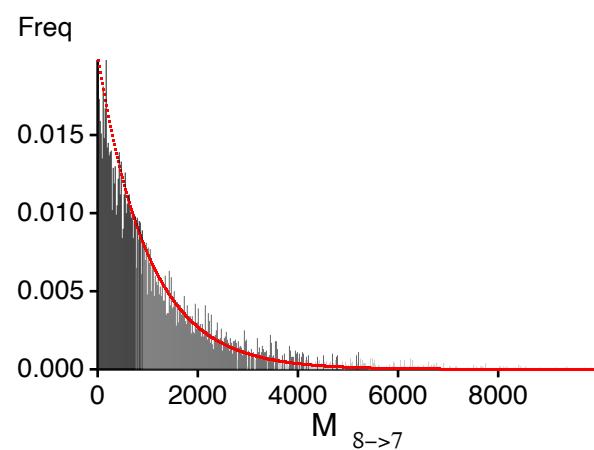


### Bayesian Analysis: Posterior distribution for locus 28

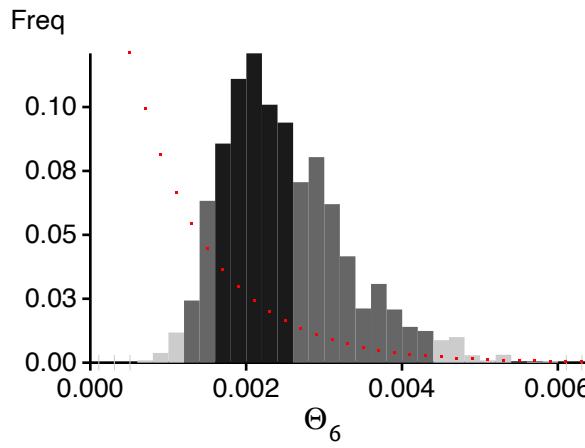
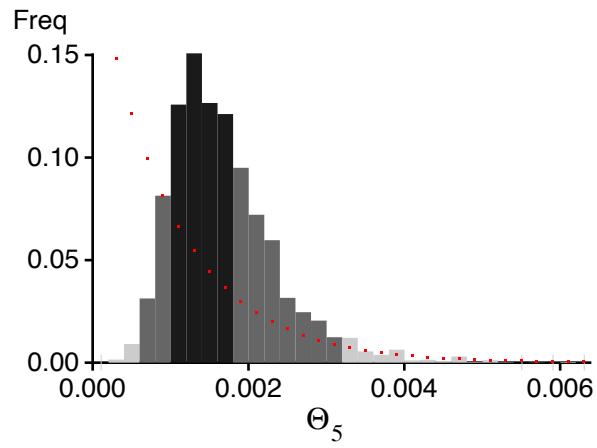
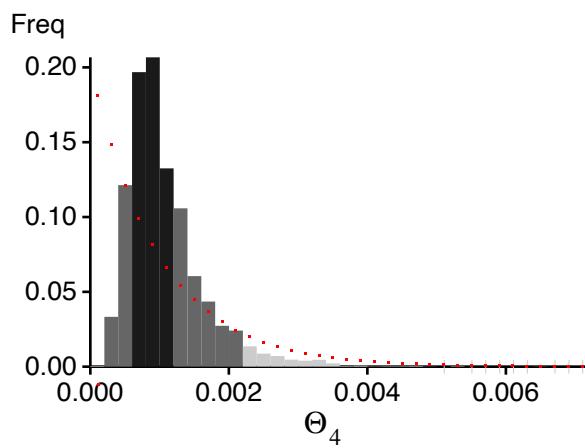
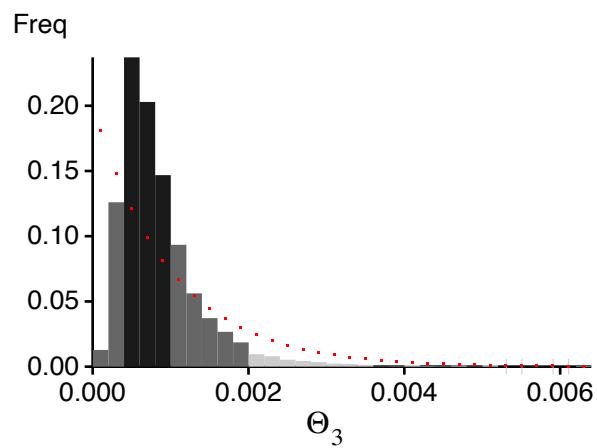
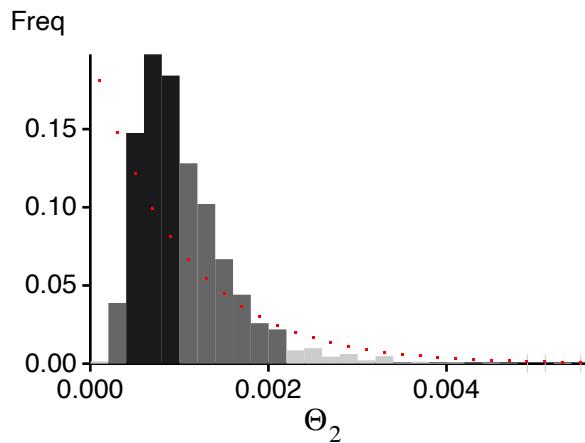
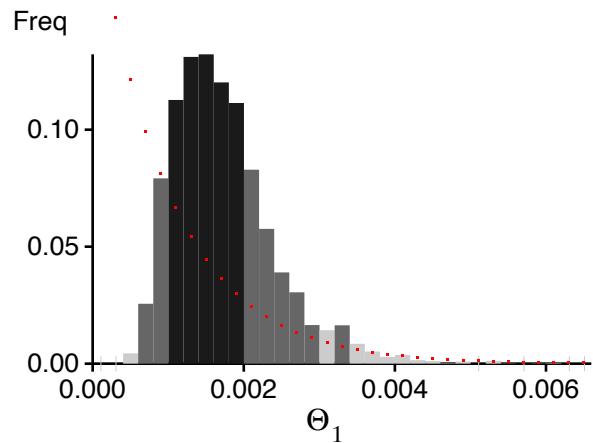


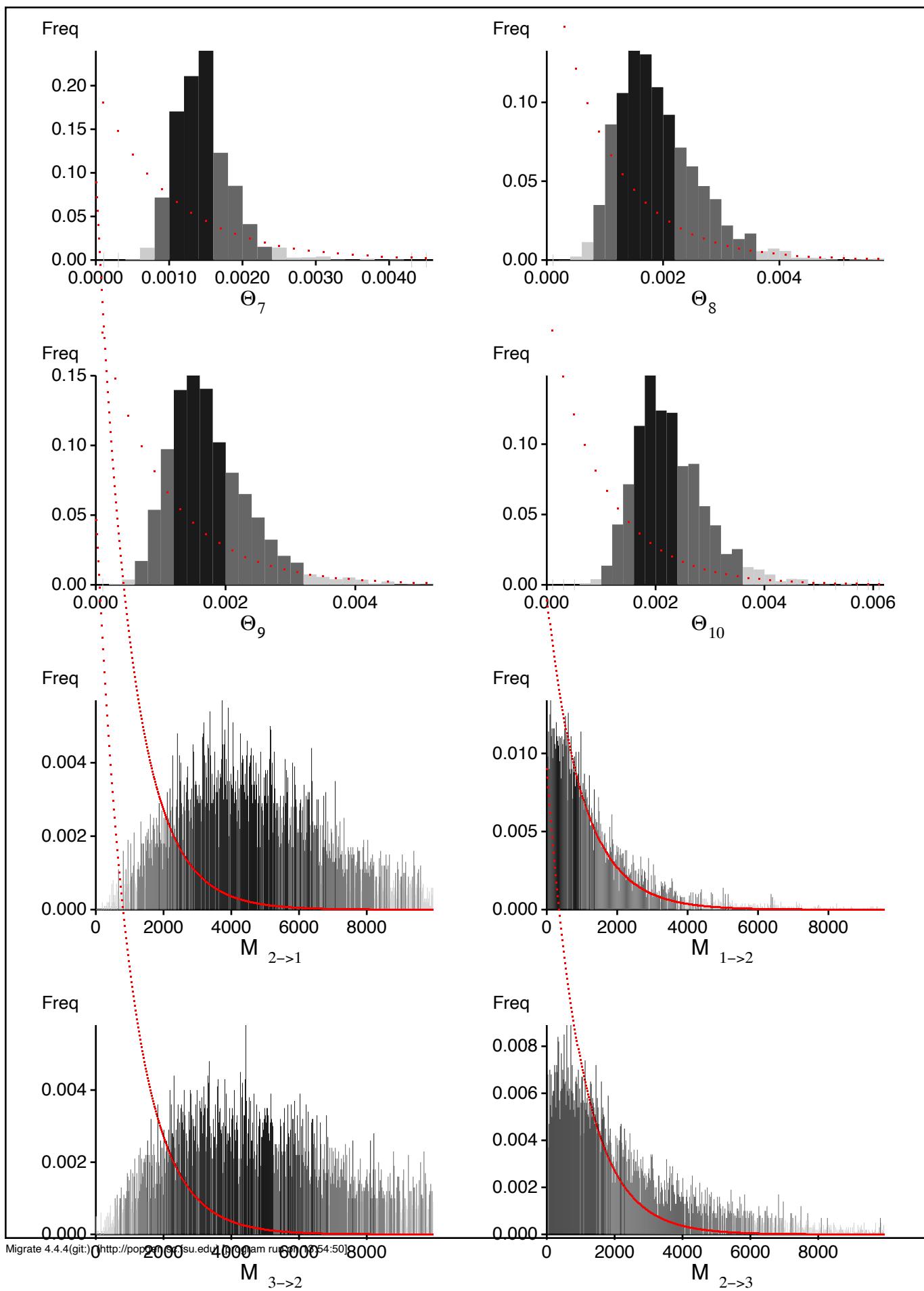


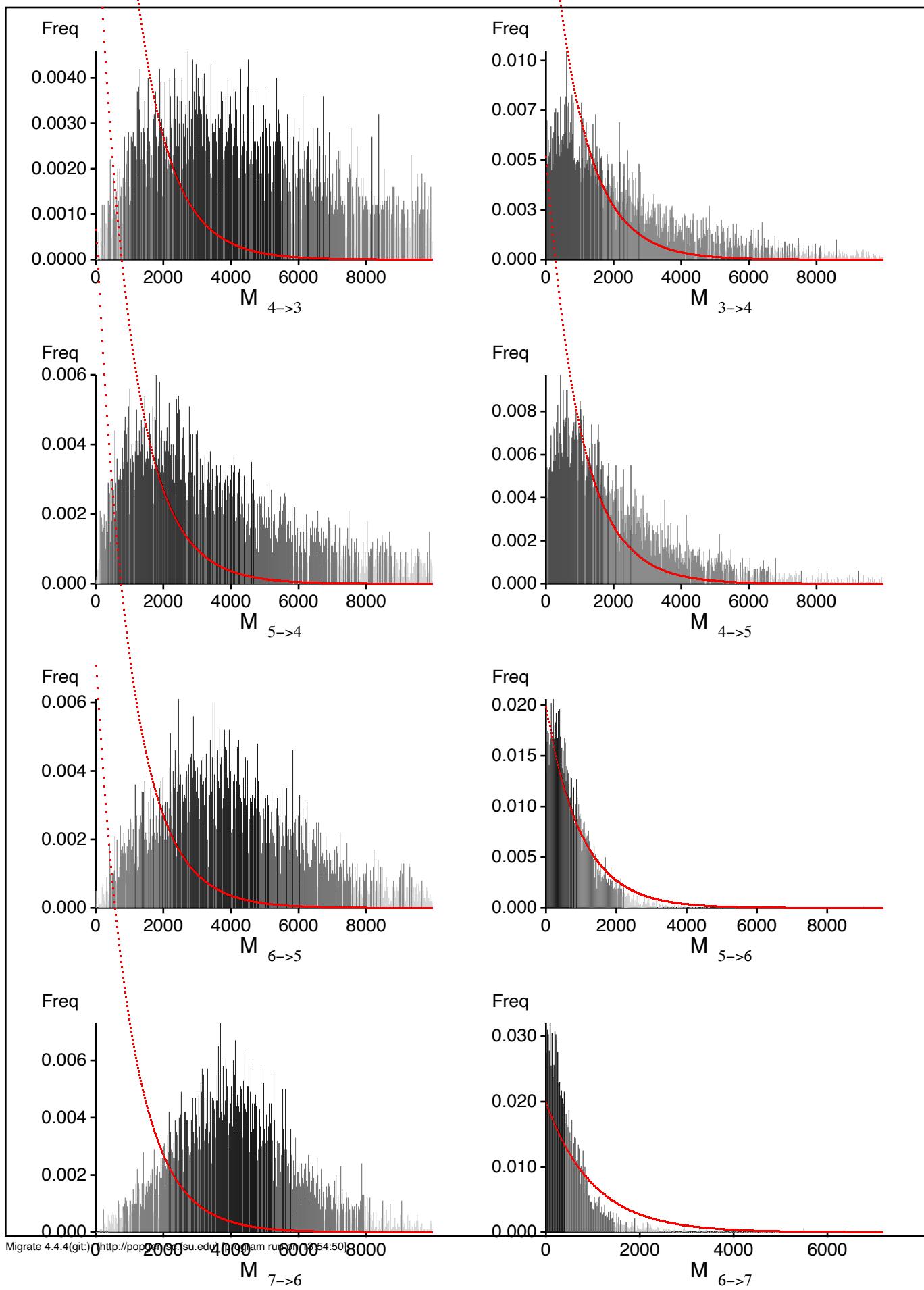


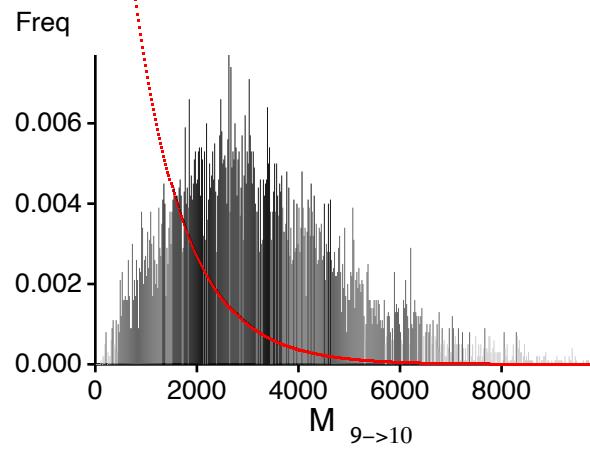
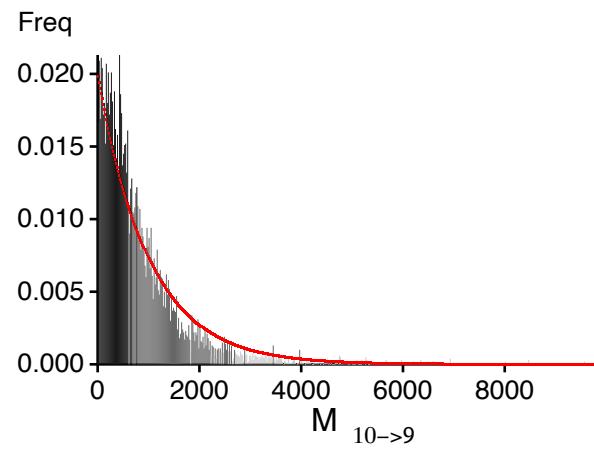
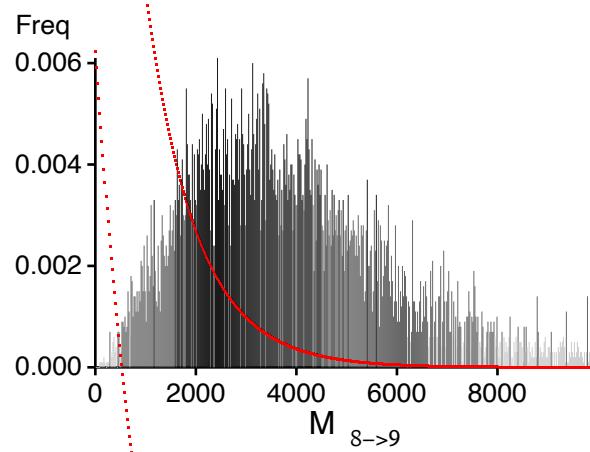
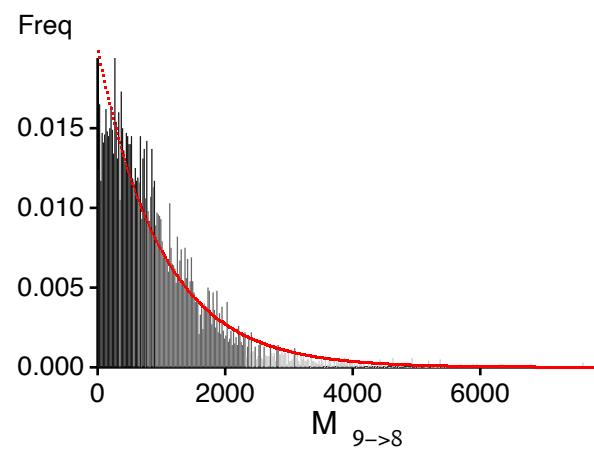
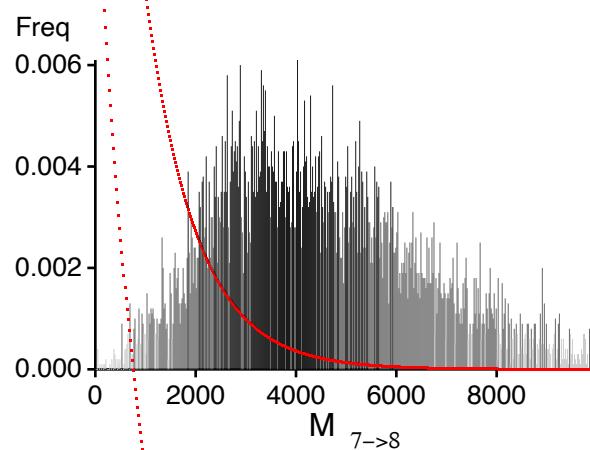
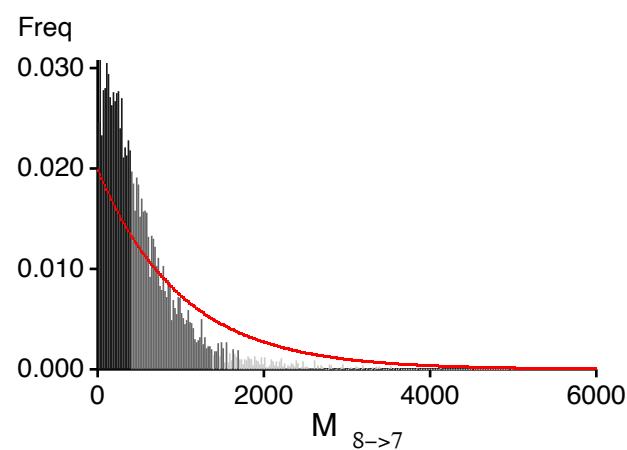


### Bayesian Analysis: Posterior distribution for locus 29

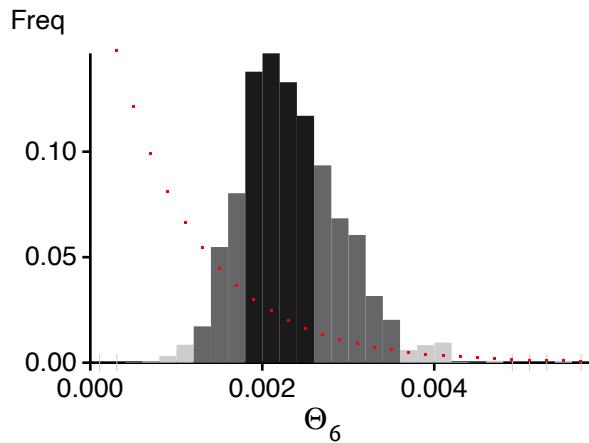
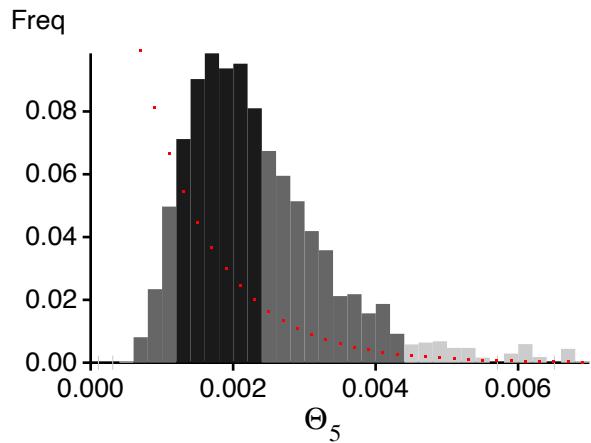
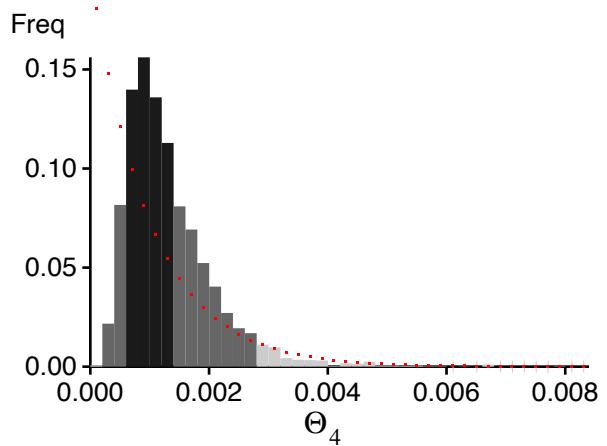
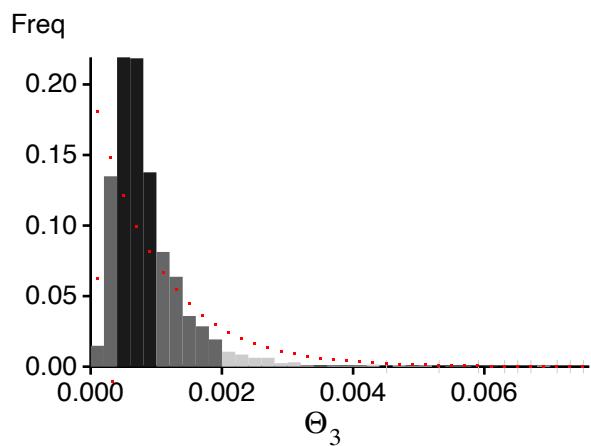
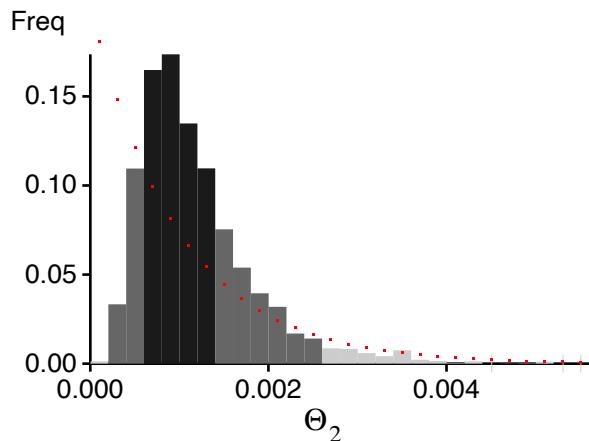
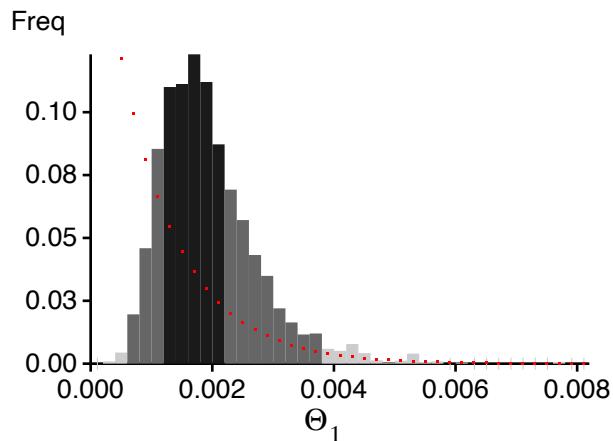


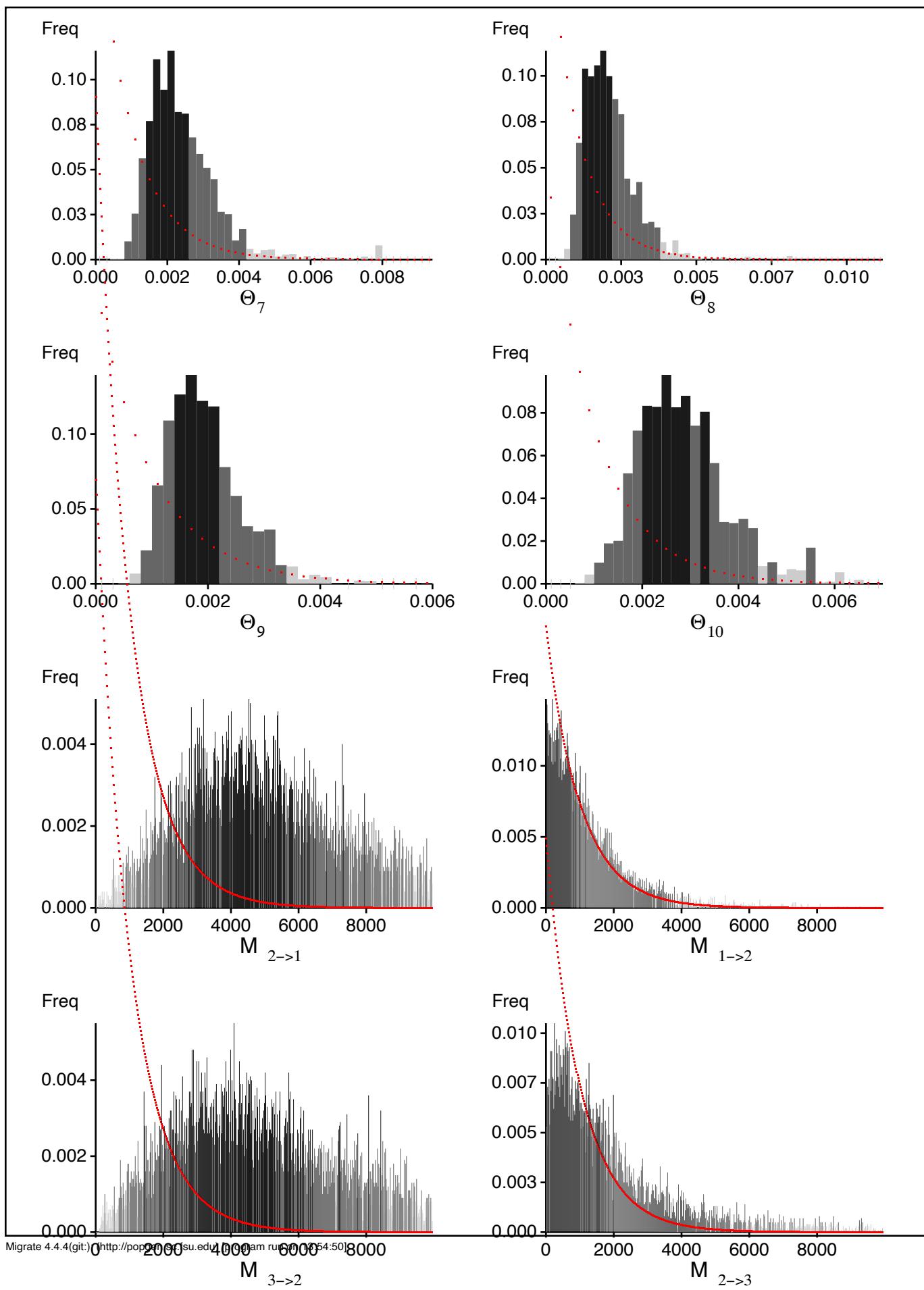


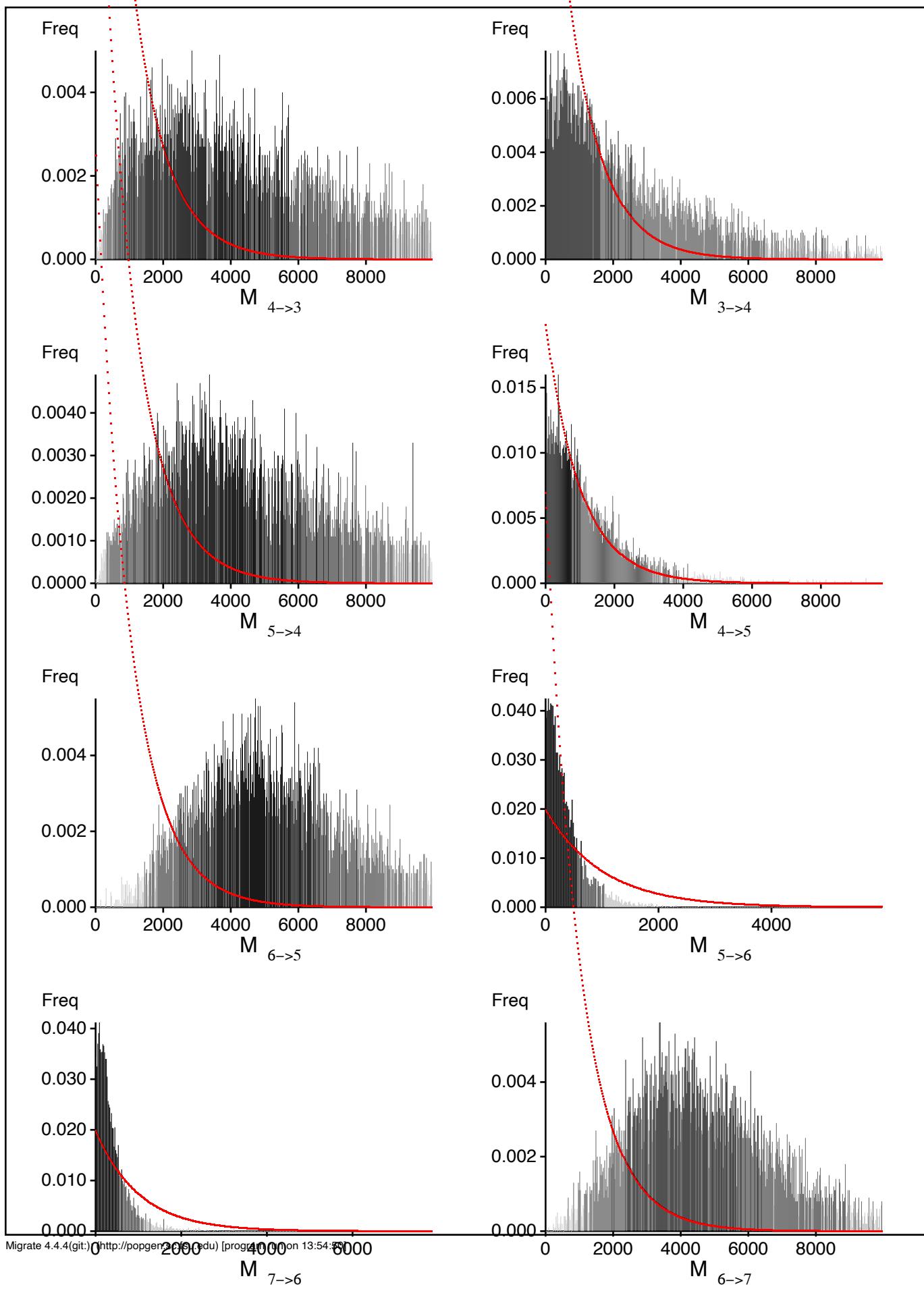


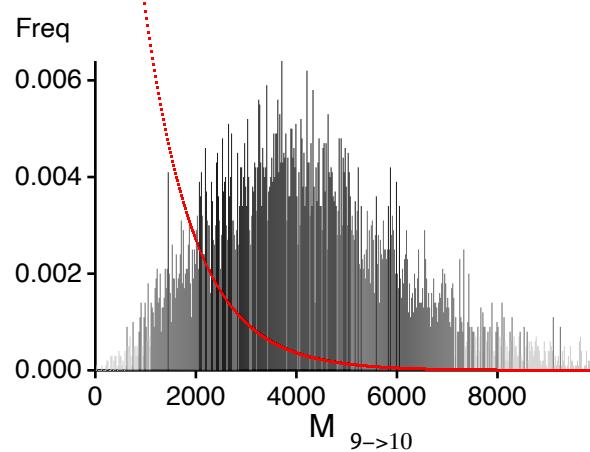
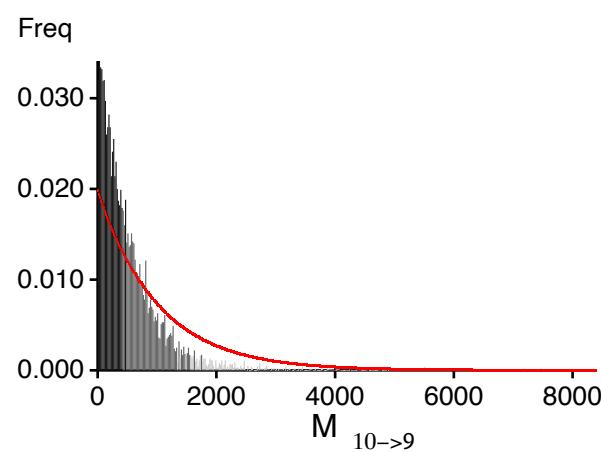
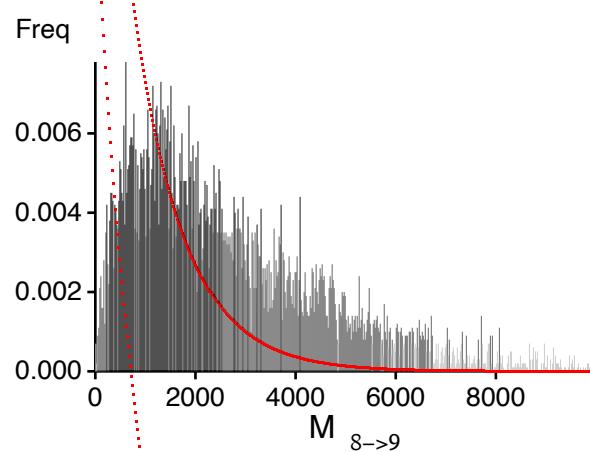
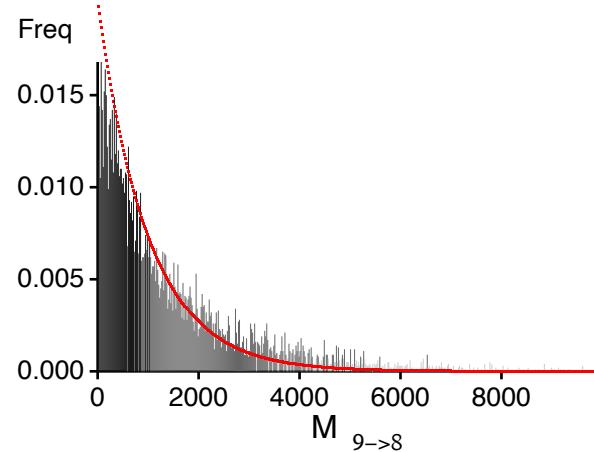
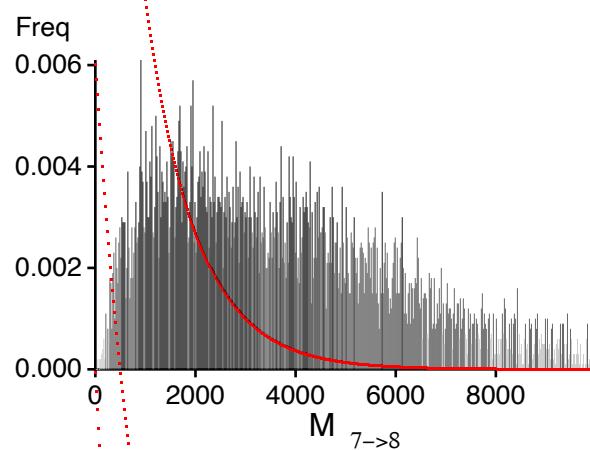
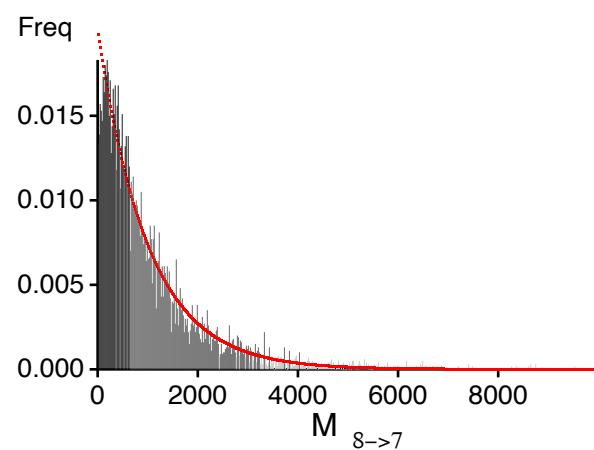


### Bayesian Analysis: Posterior distribution for locus 30

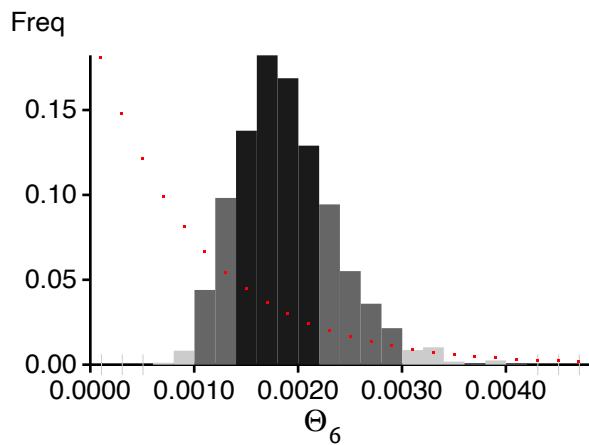
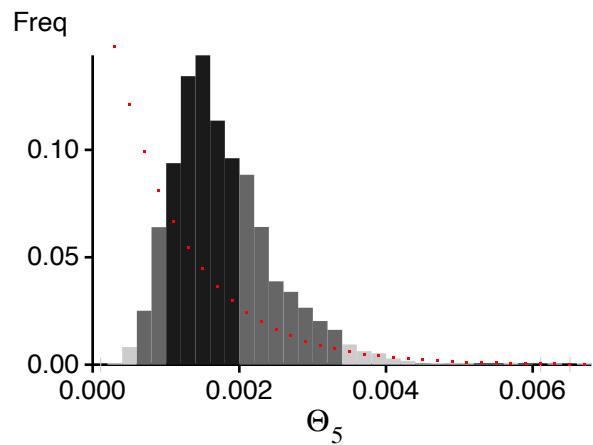
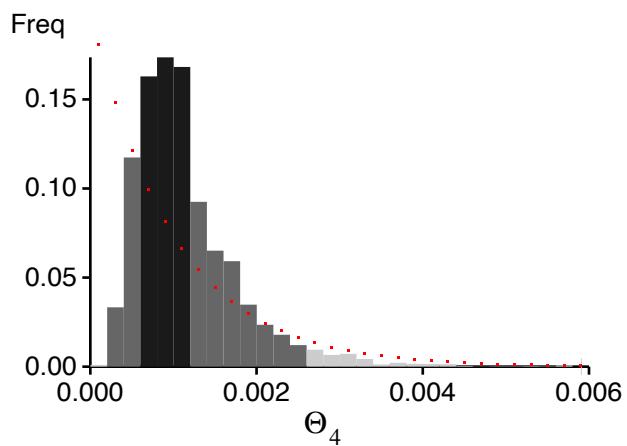
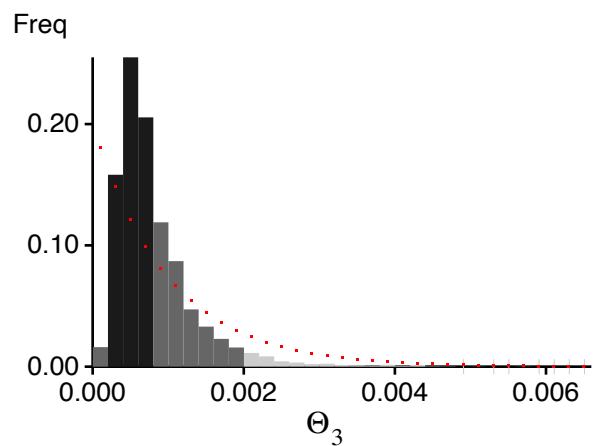
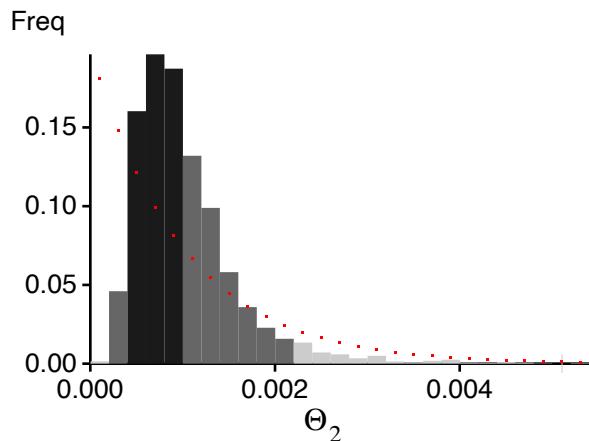
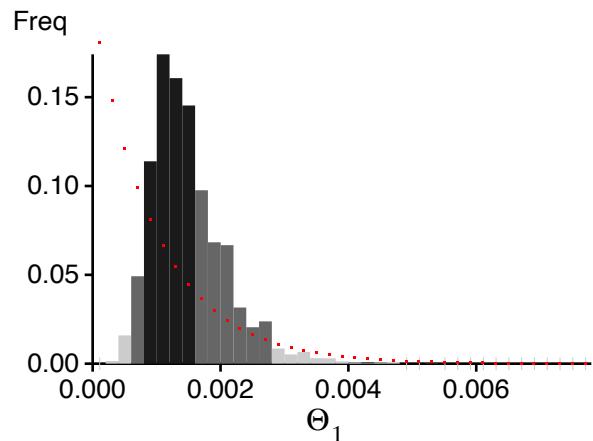


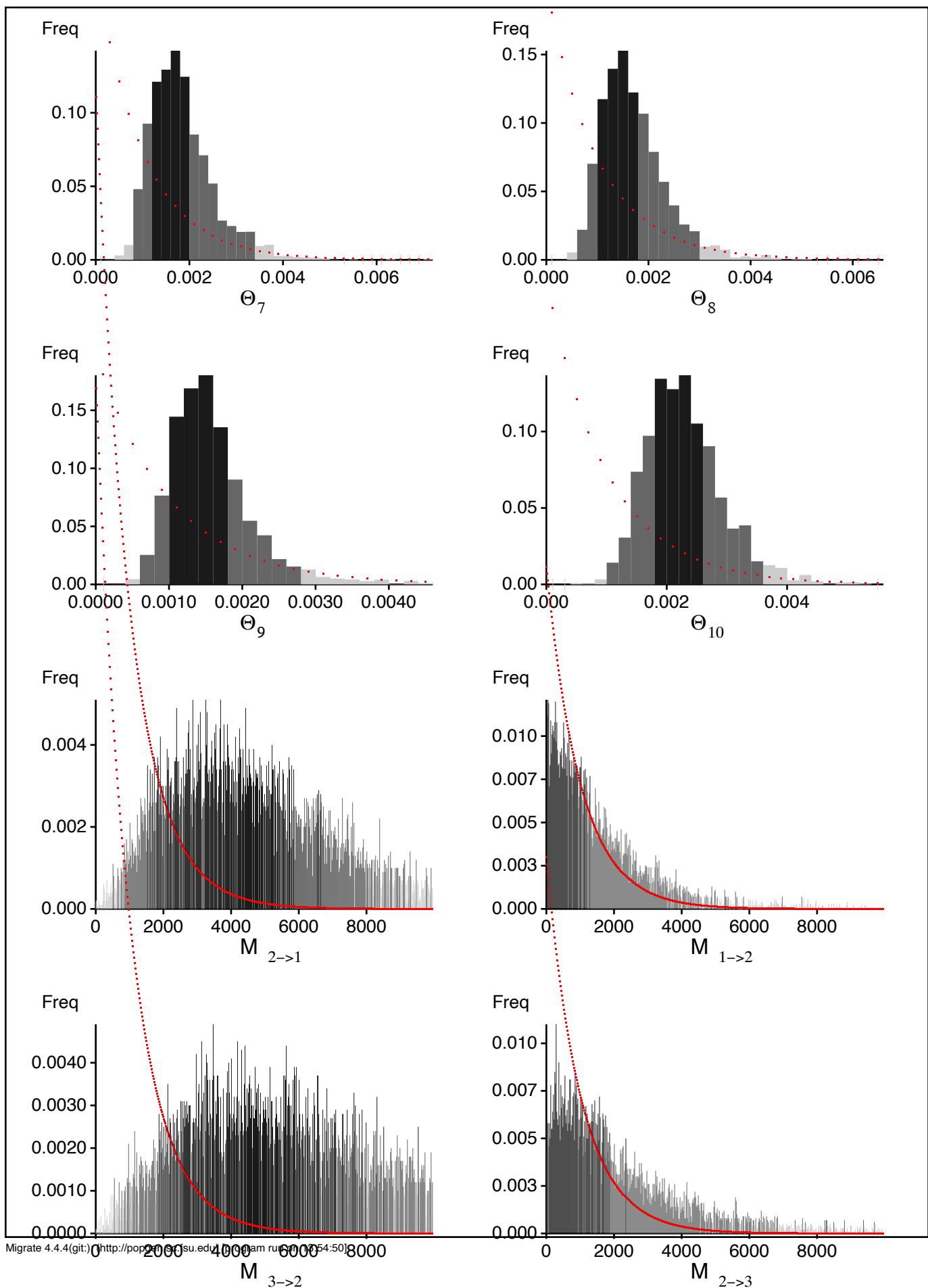


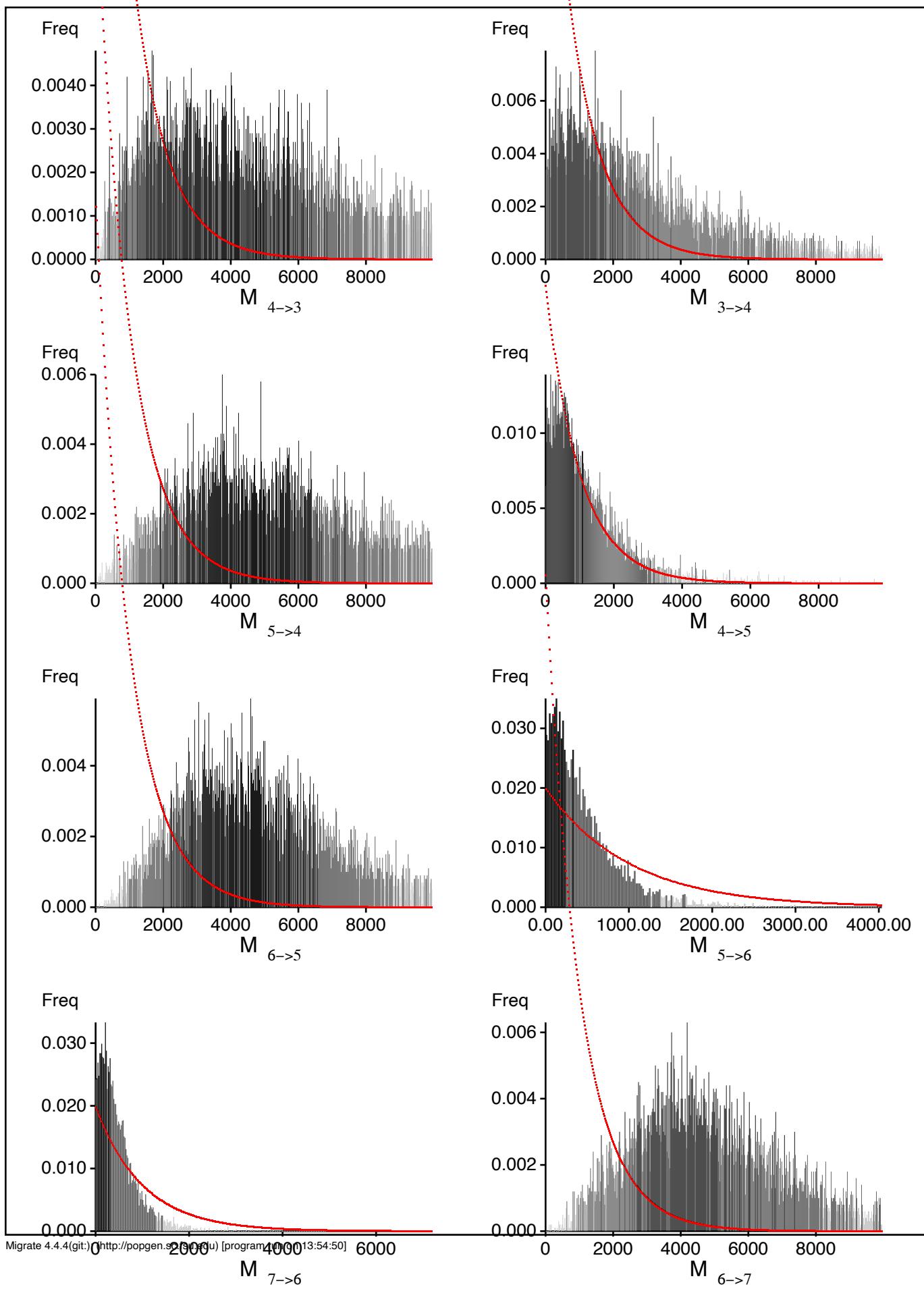


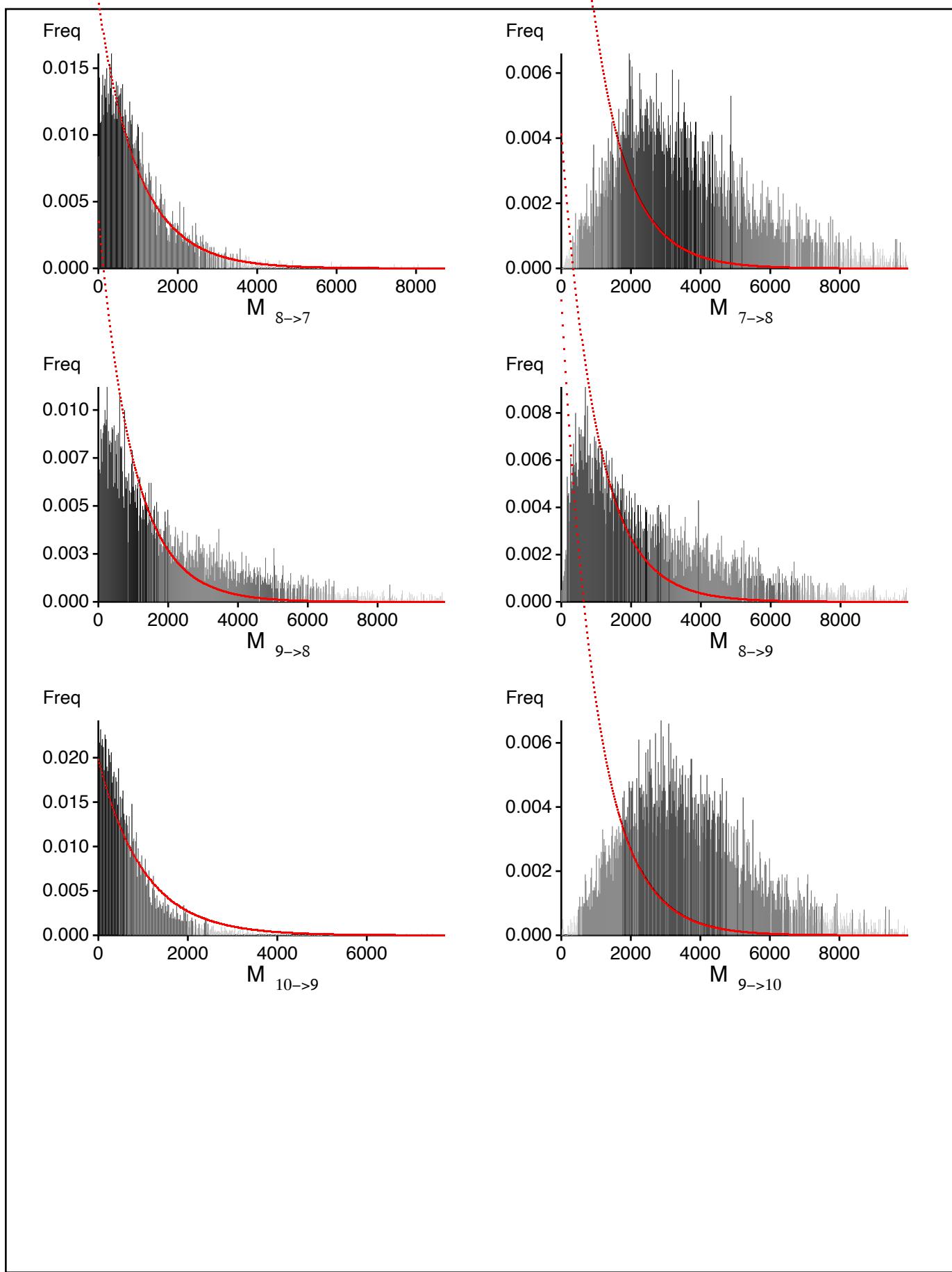


### Bayesian Analysis: Posterior distribution for locus 31

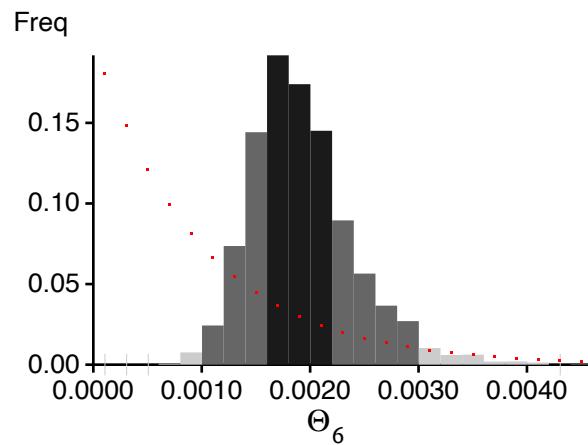
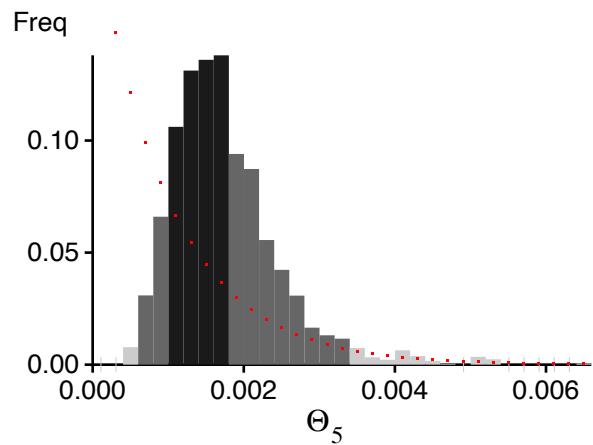
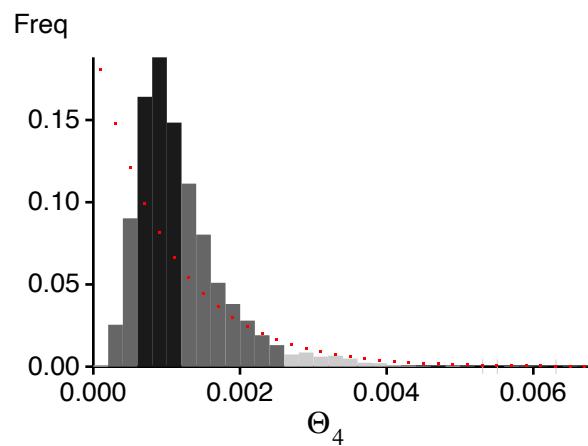
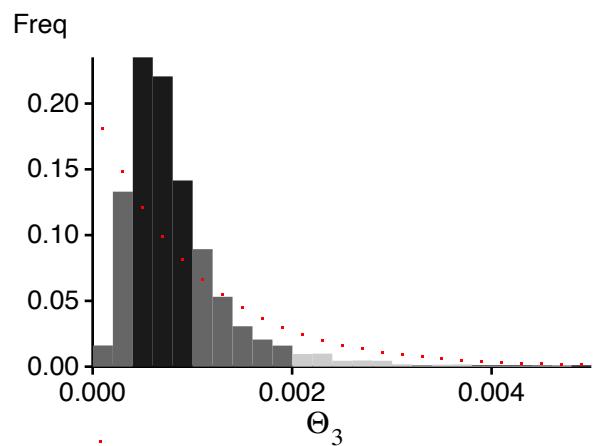
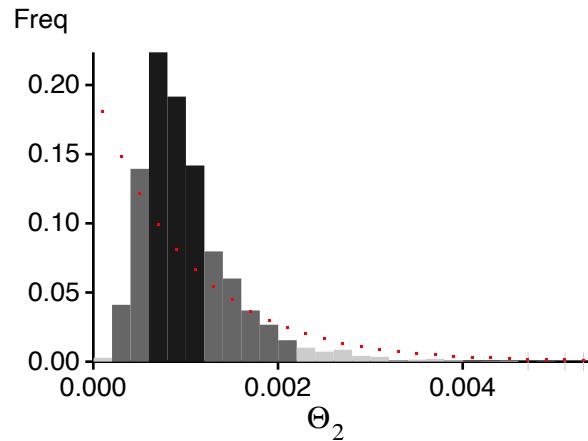
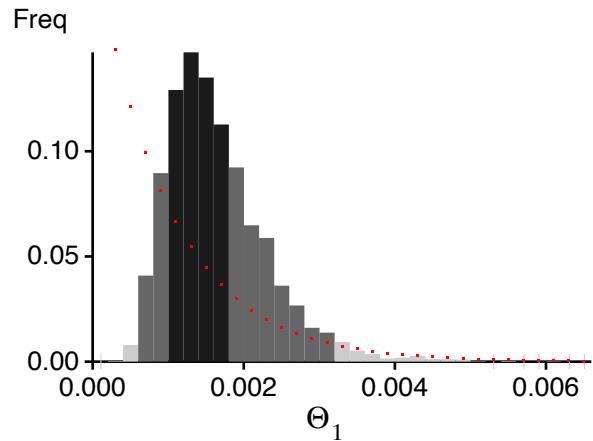


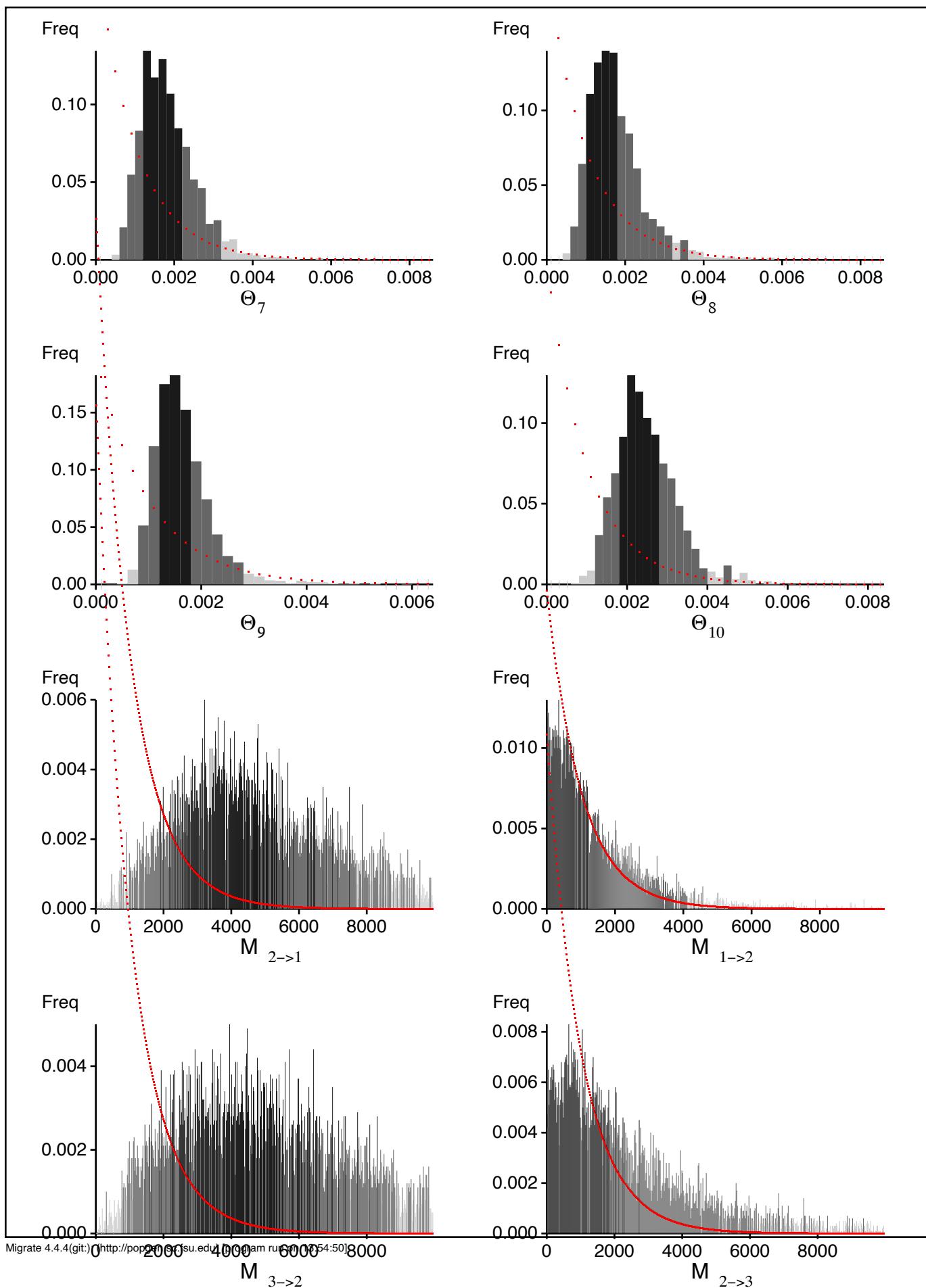


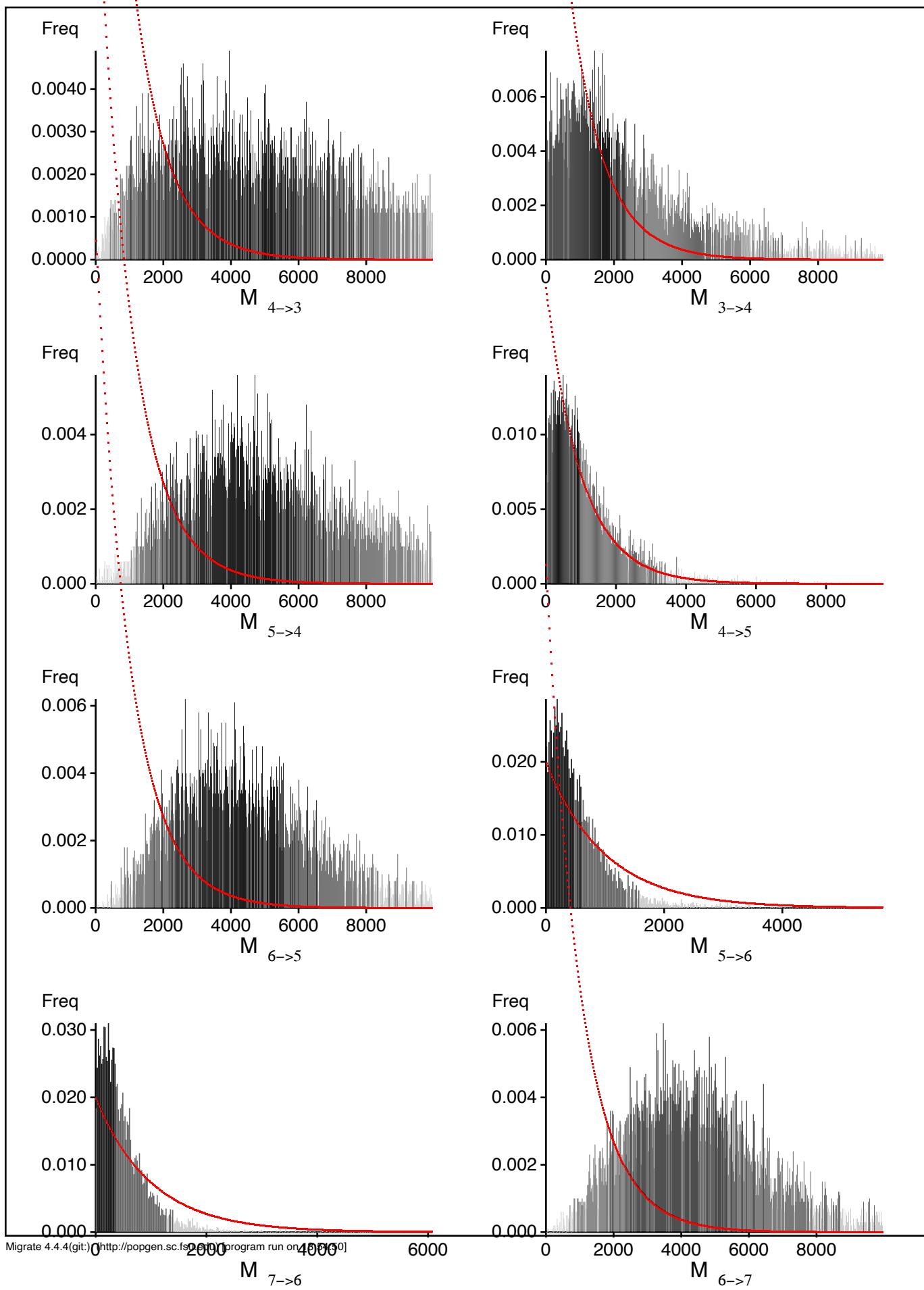


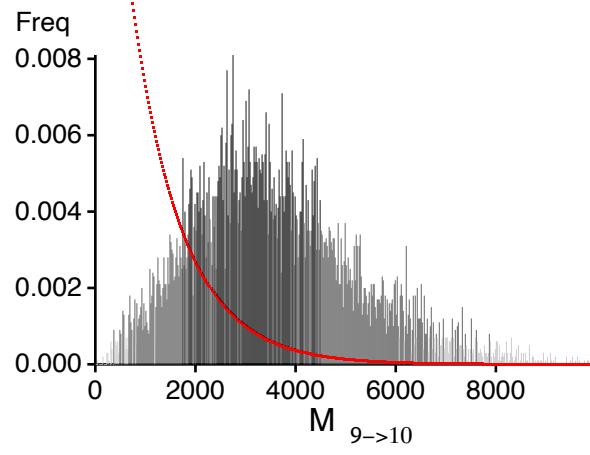
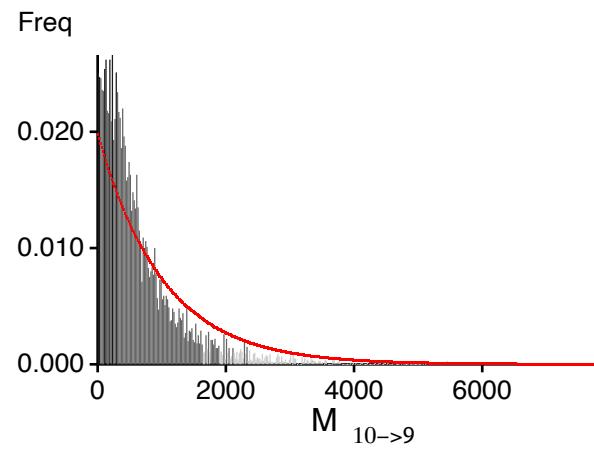
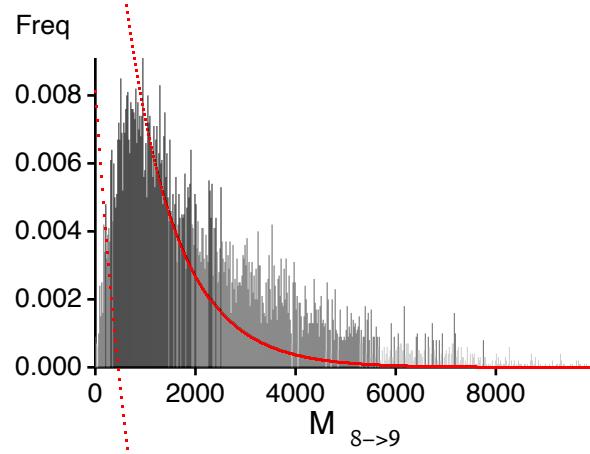
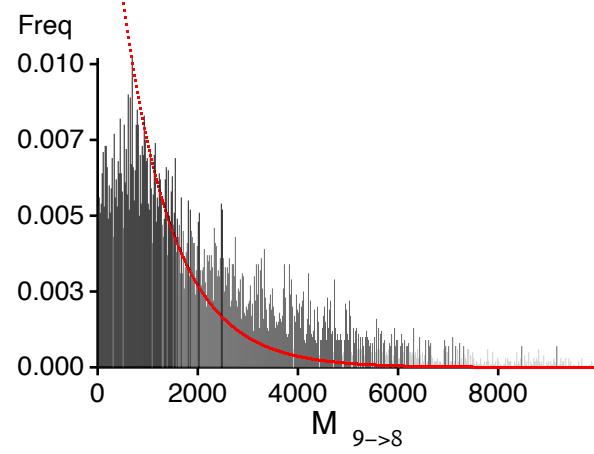
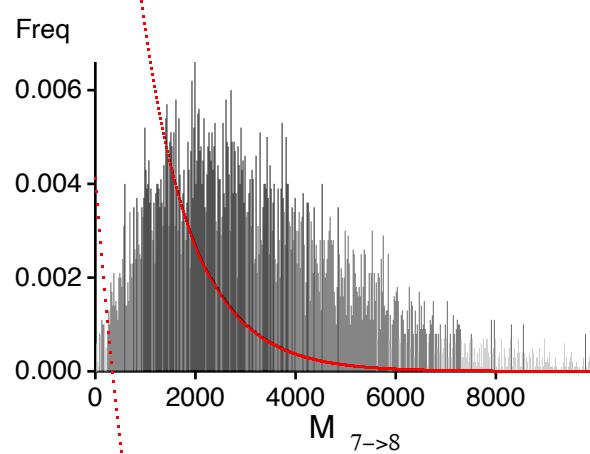
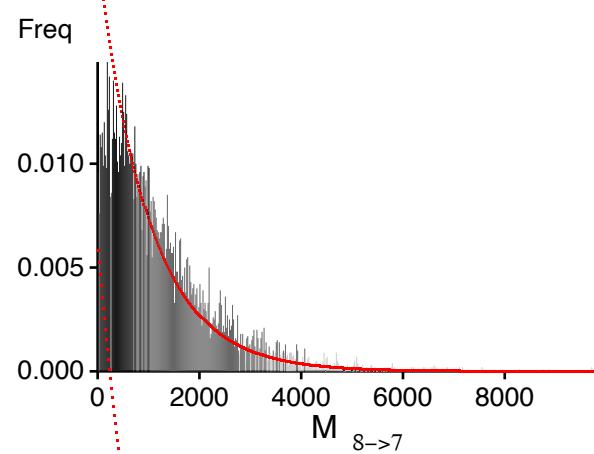


### Bayesian Analysis: Posterior distribution for locus 32

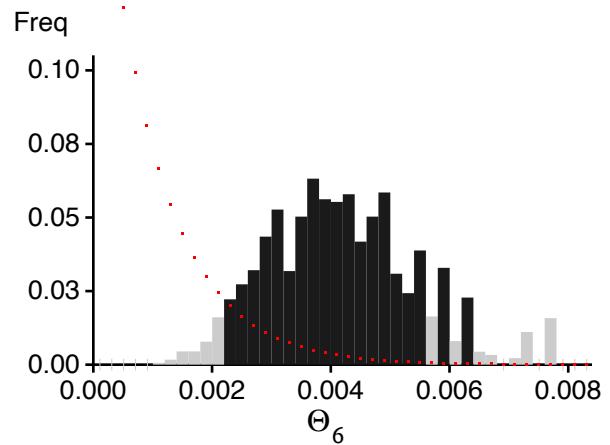
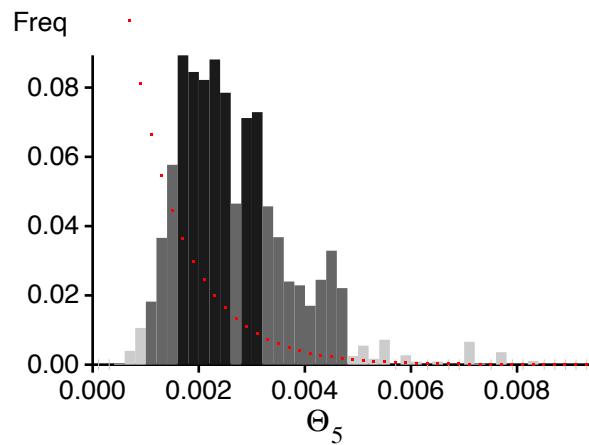
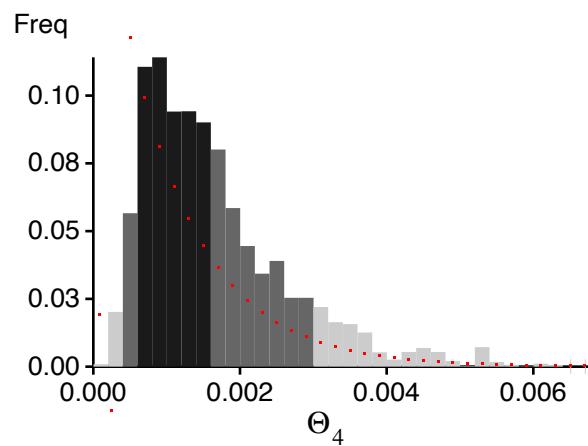
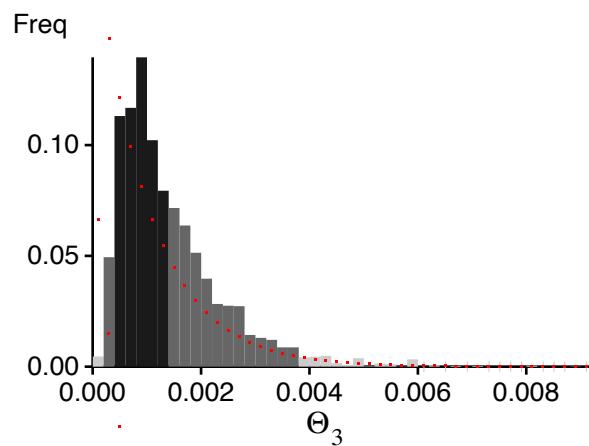
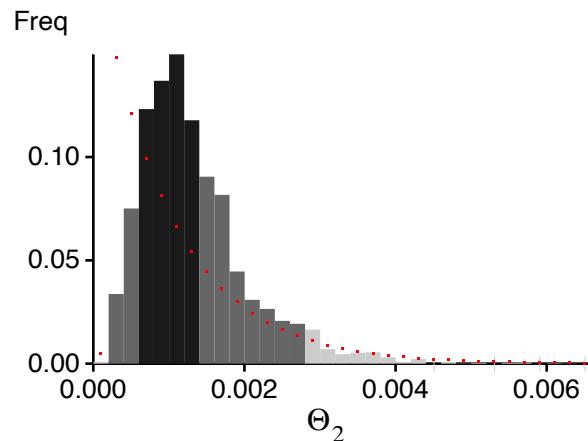
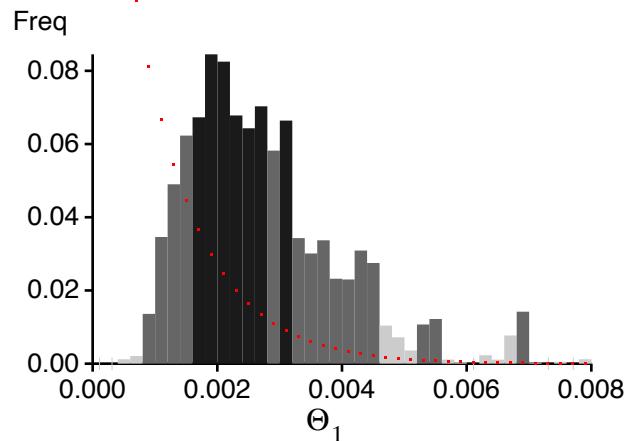


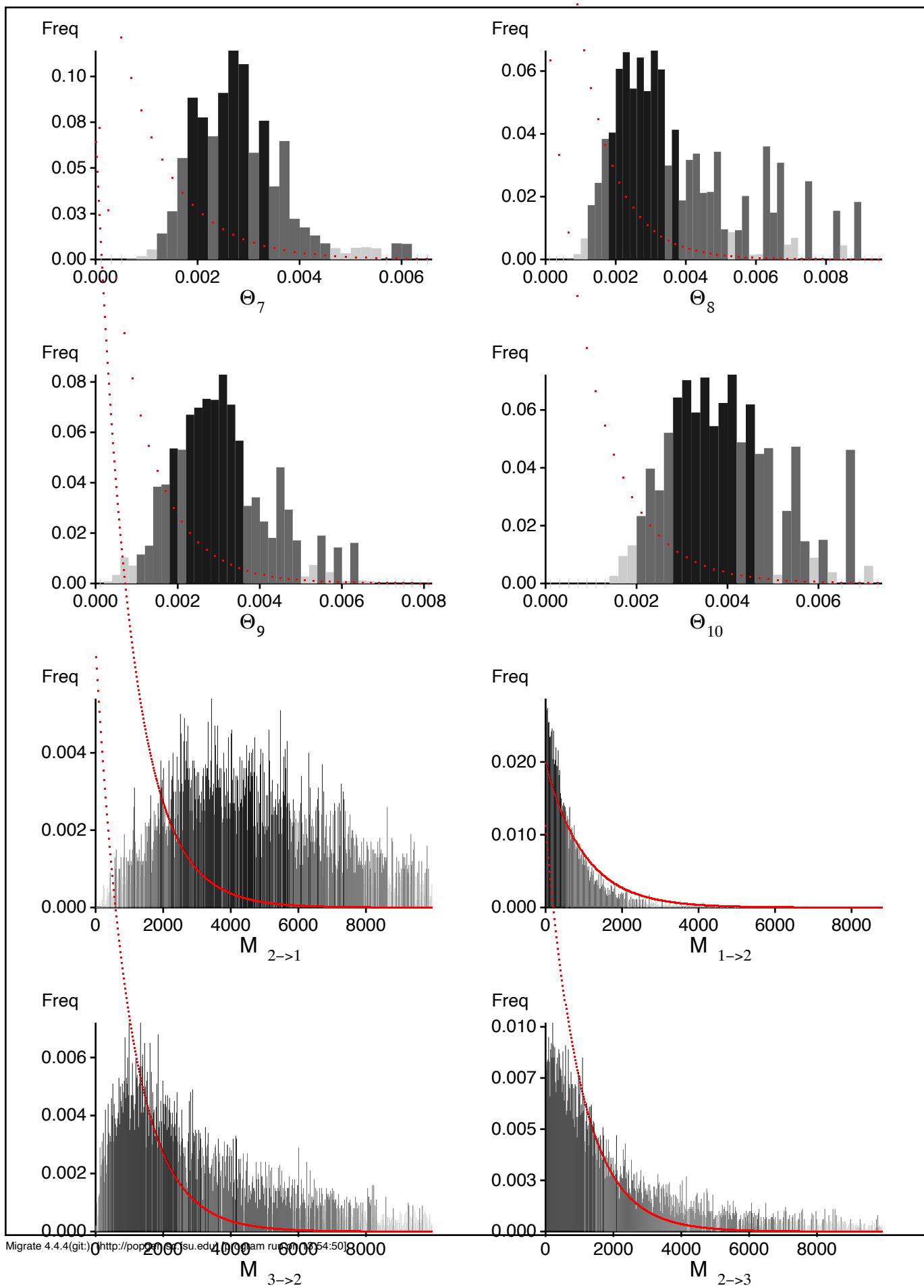


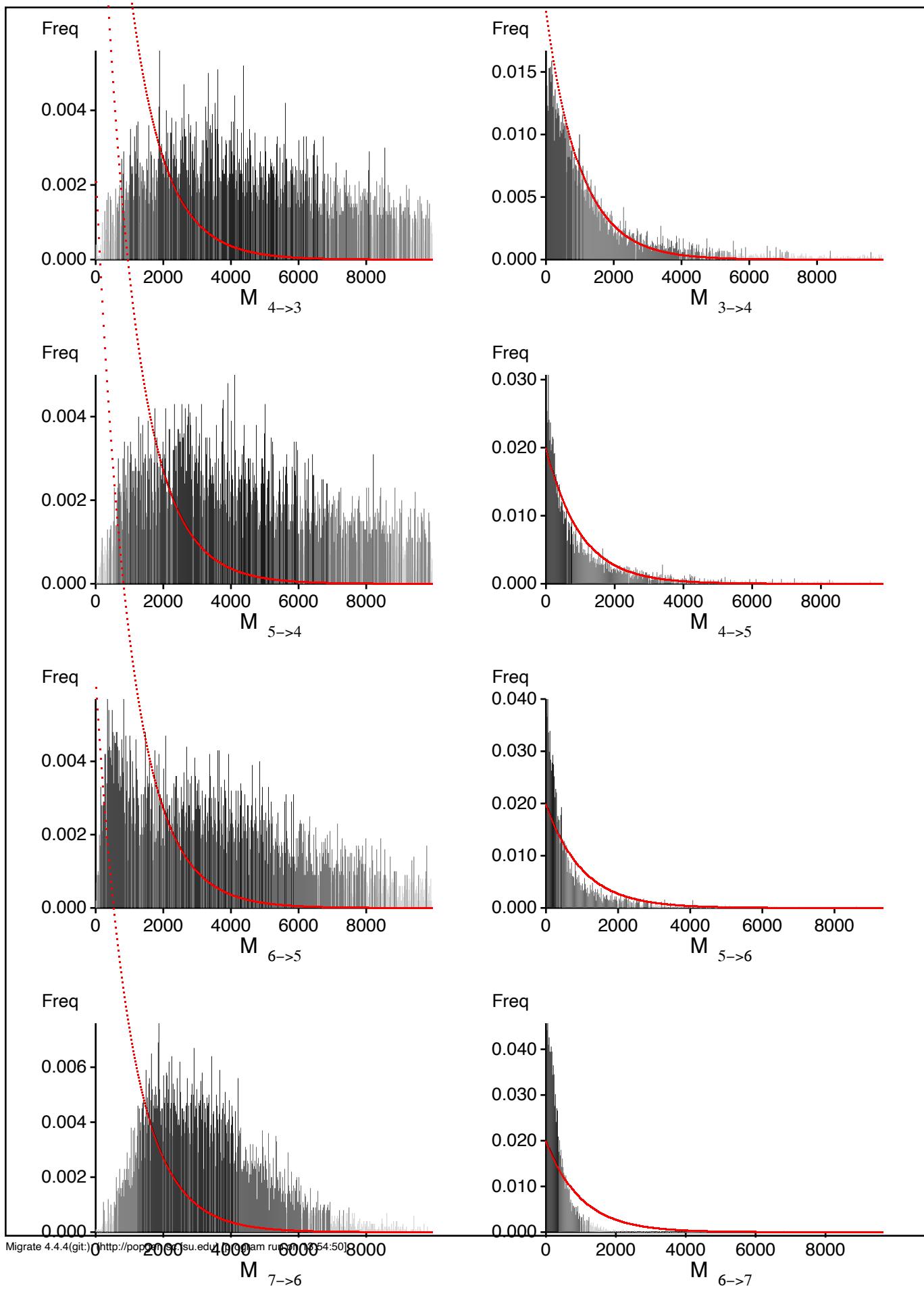


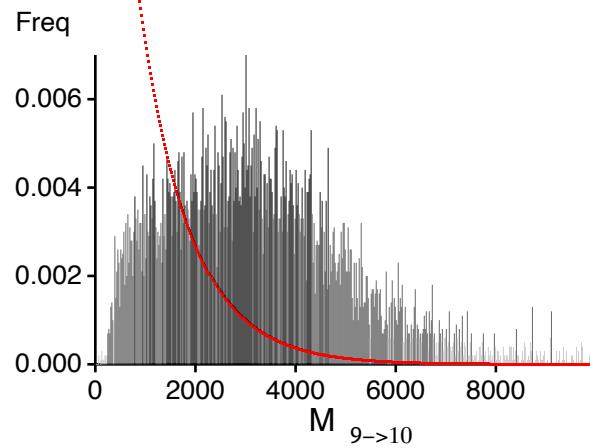
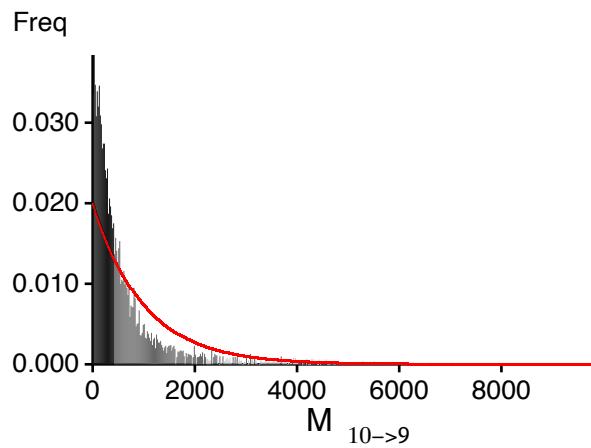
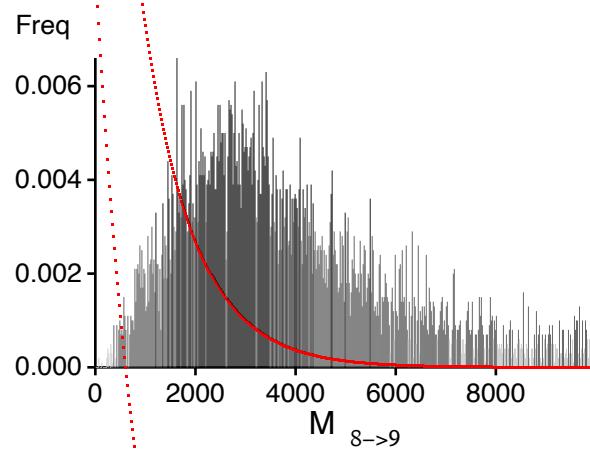
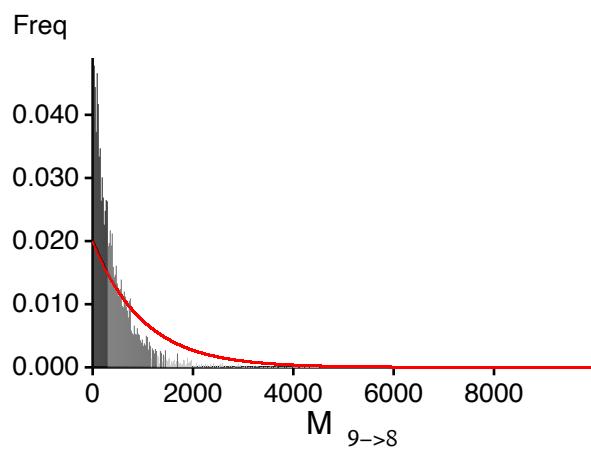
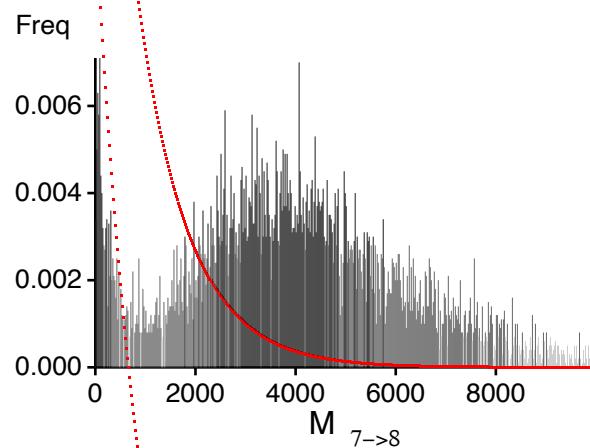
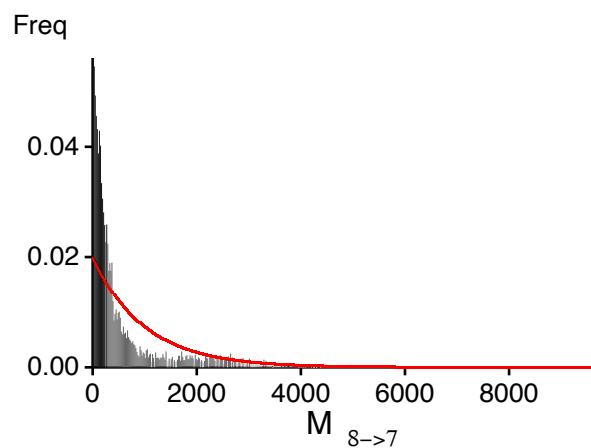


### Bayesian Analysis: Posterior distribution for locus 33

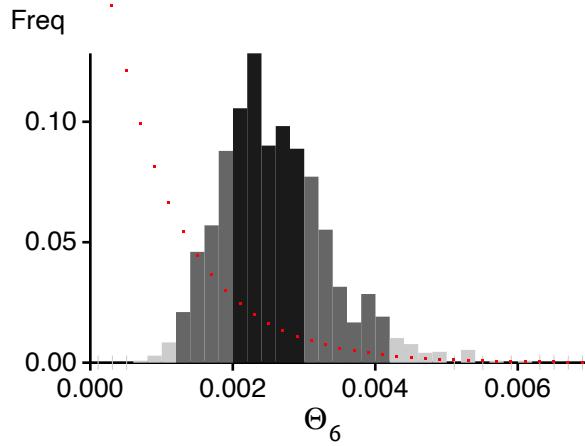
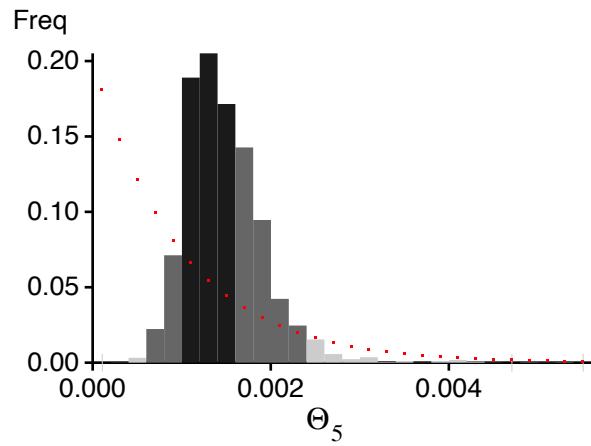
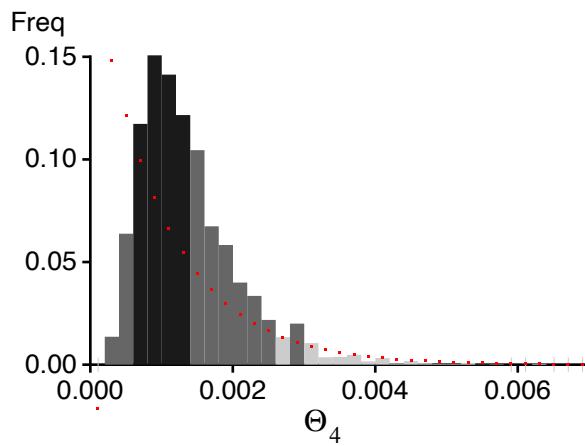
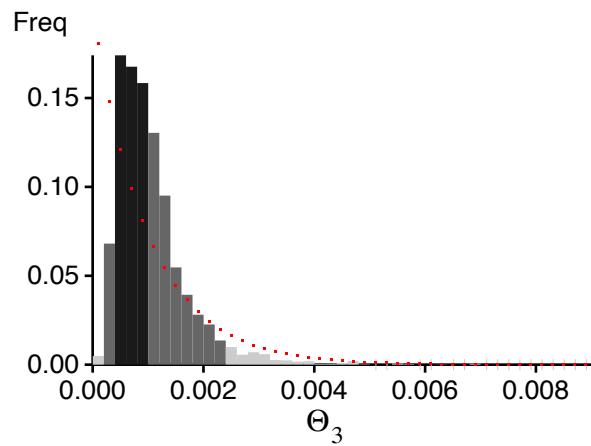
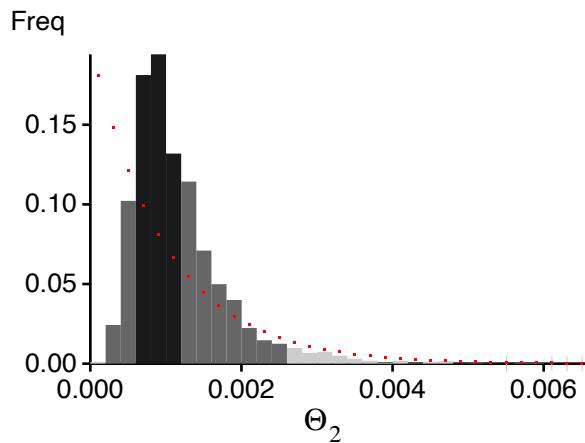
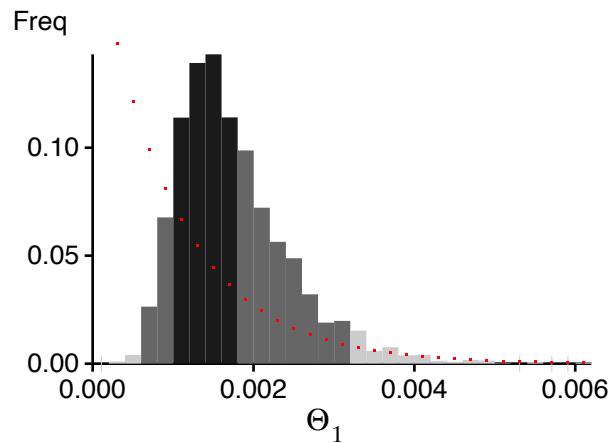


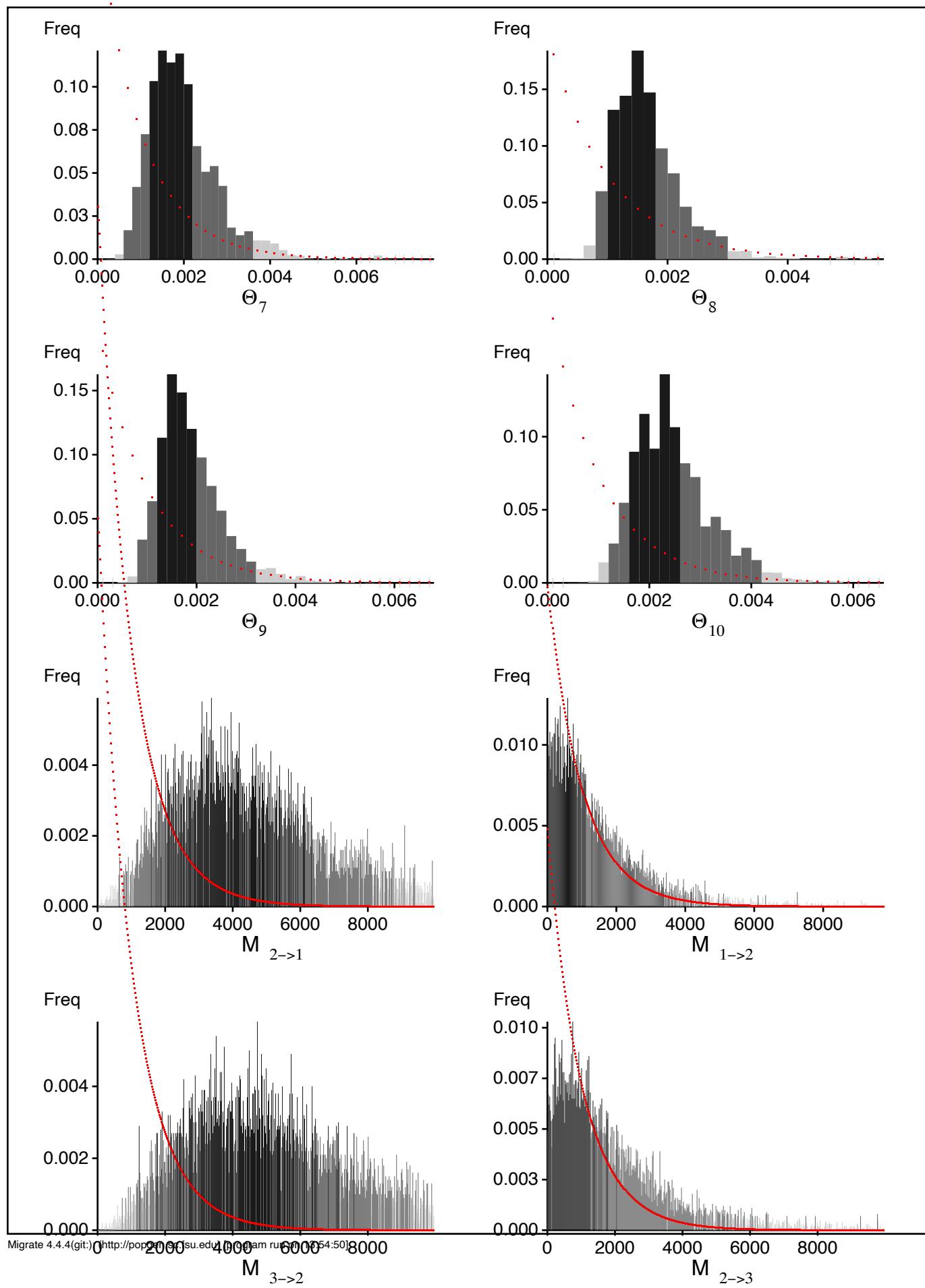


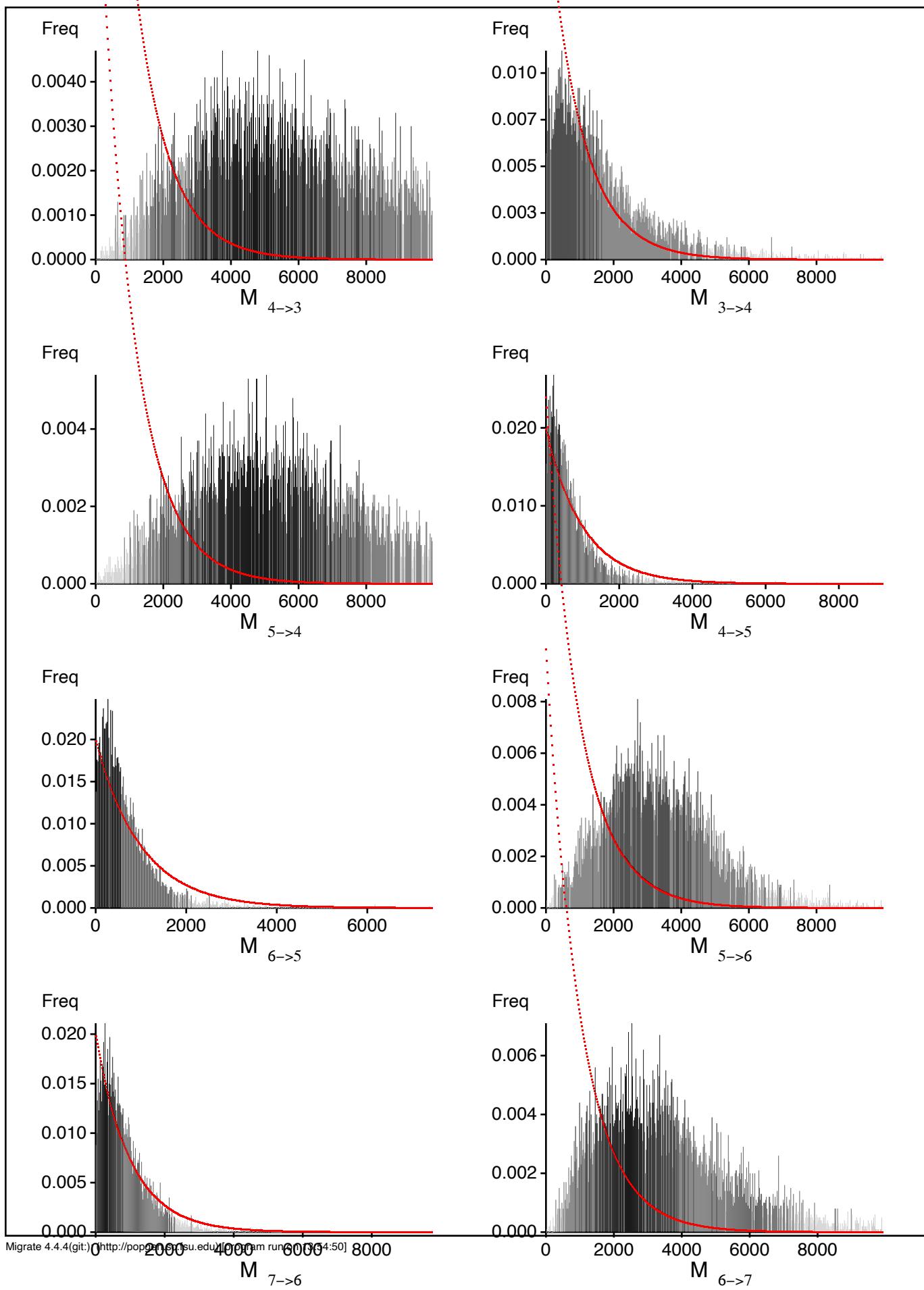


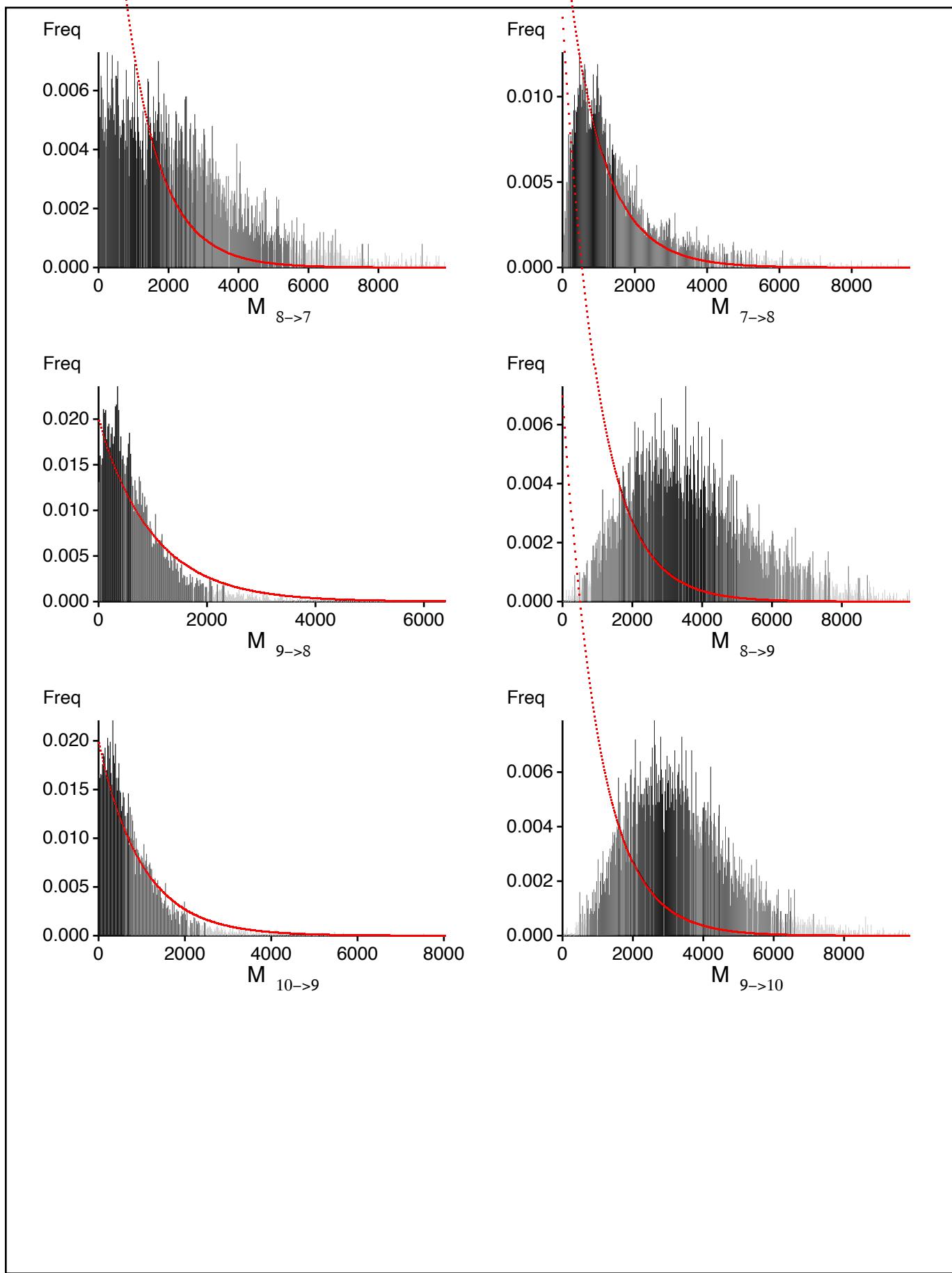


### Bayesian Analysis: Posterior distribution for locus 34

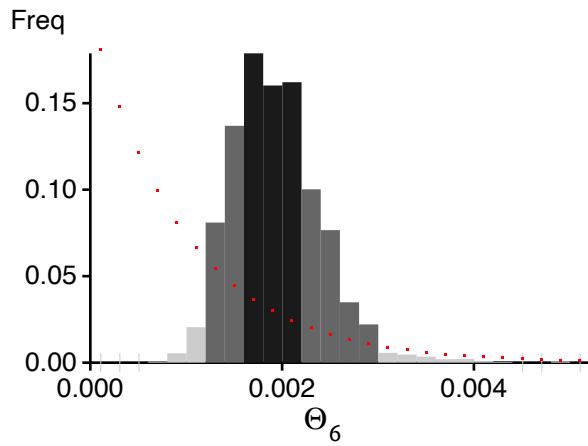
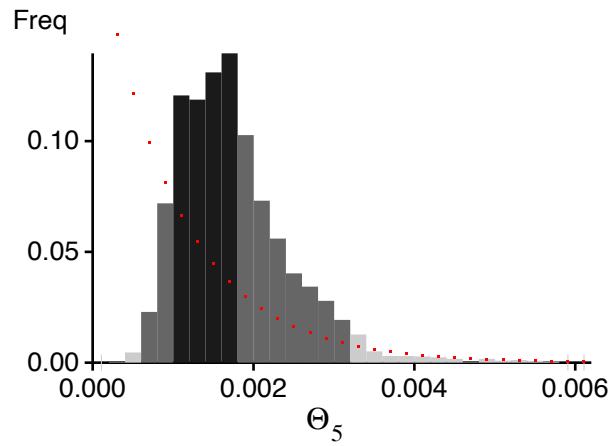
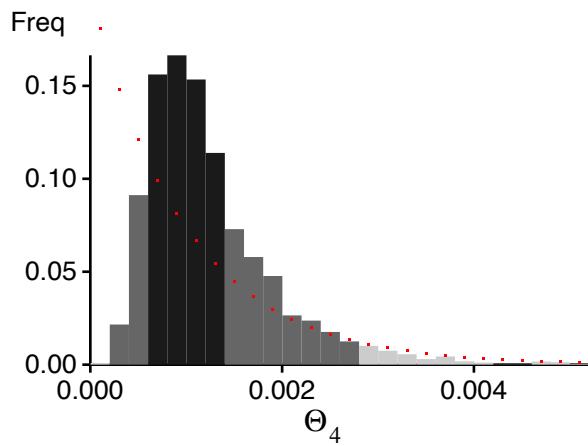
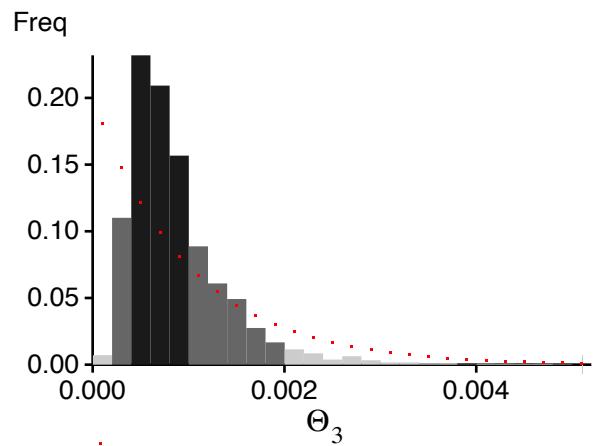
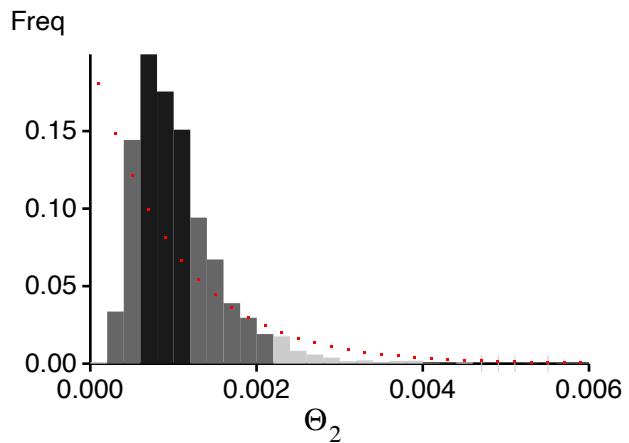
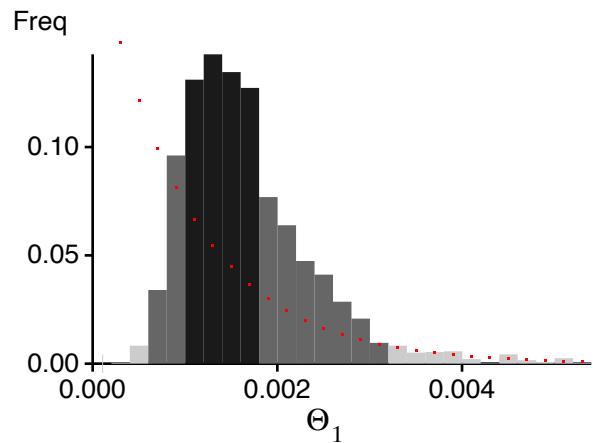


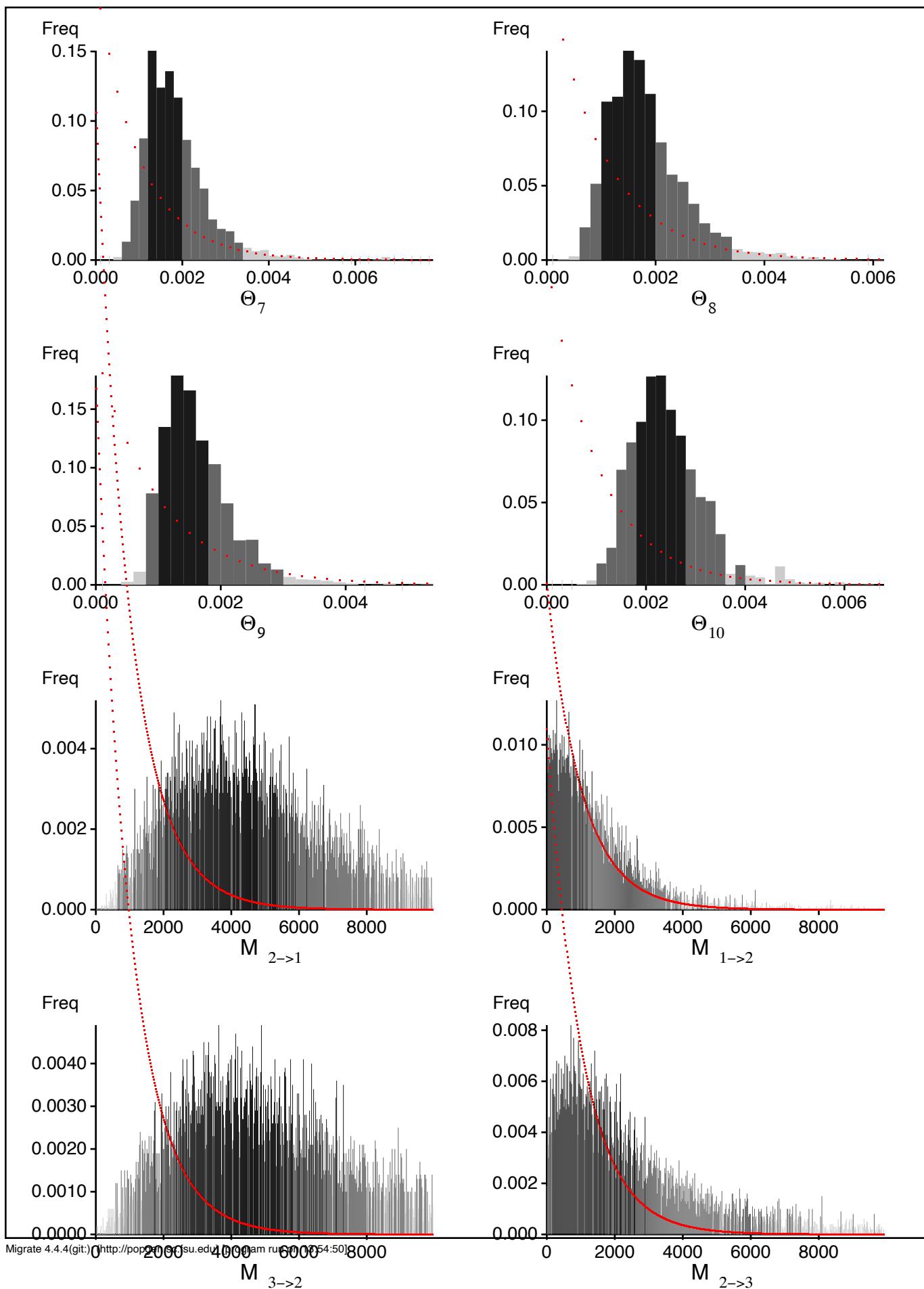


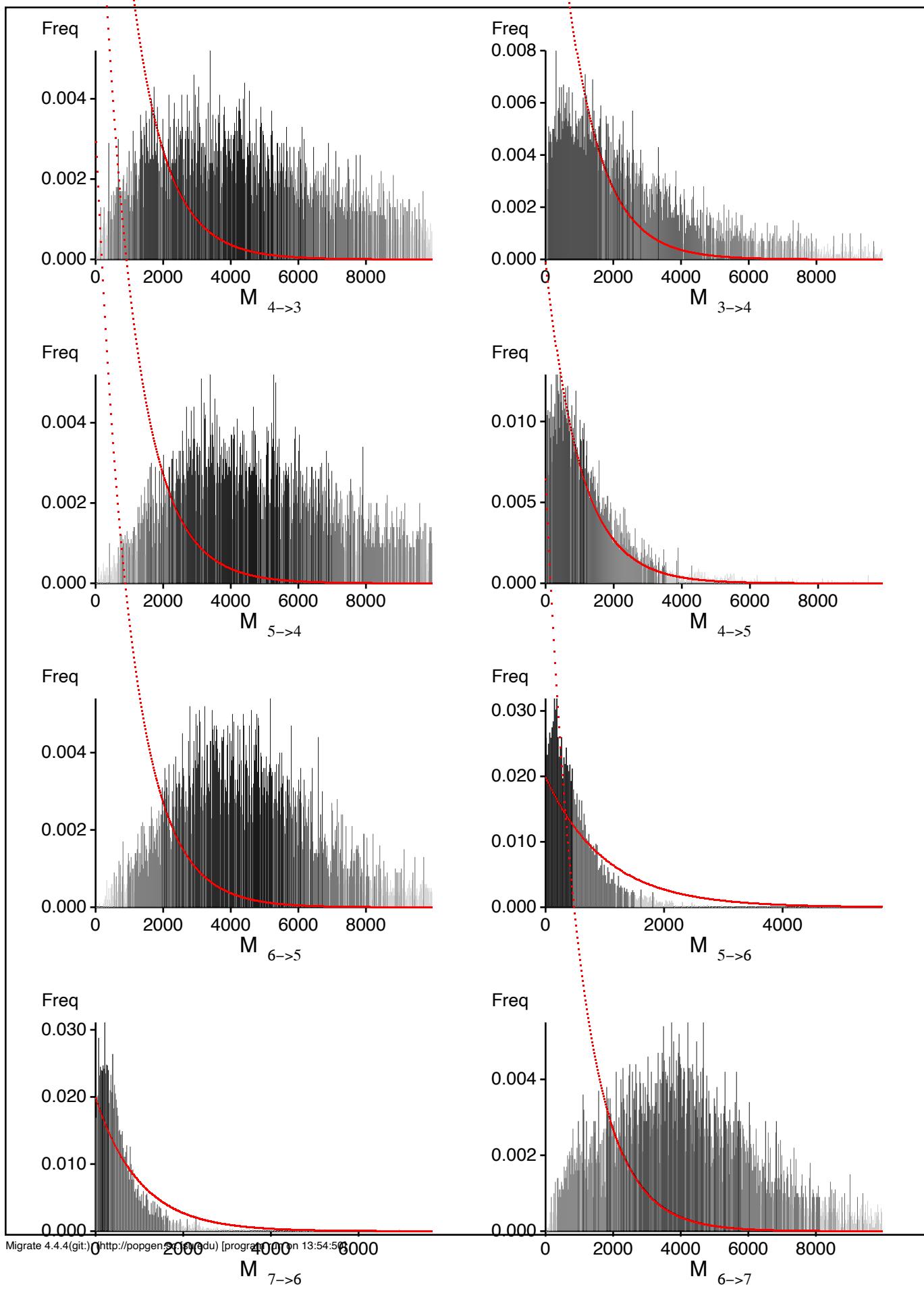


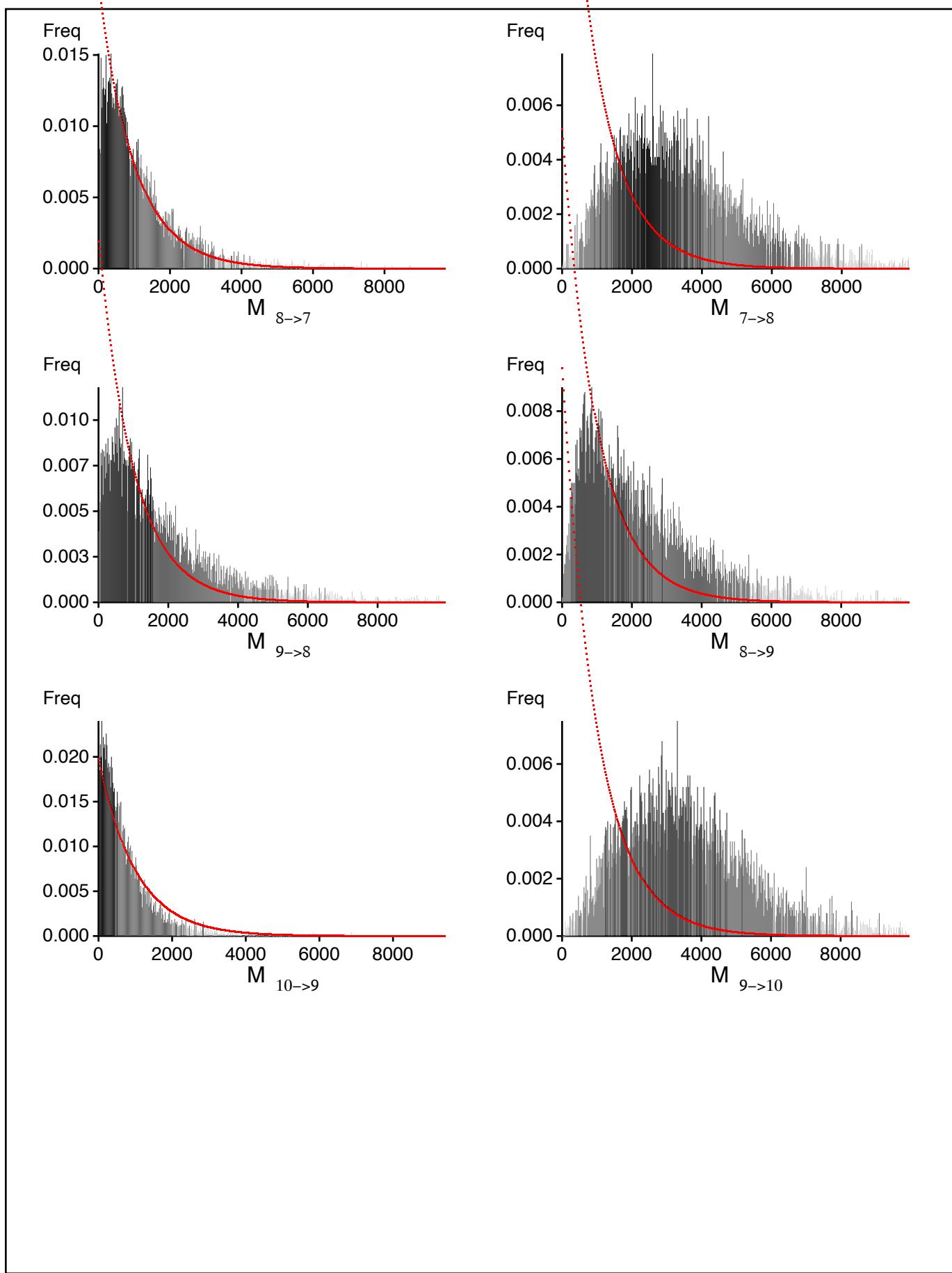


### Bayesian Analysis: Posterior distribution for locus 35

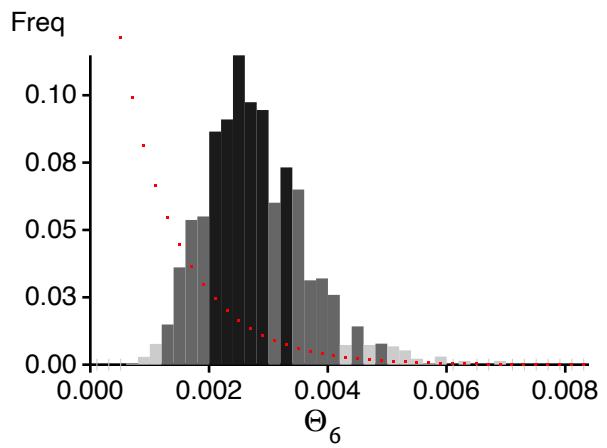
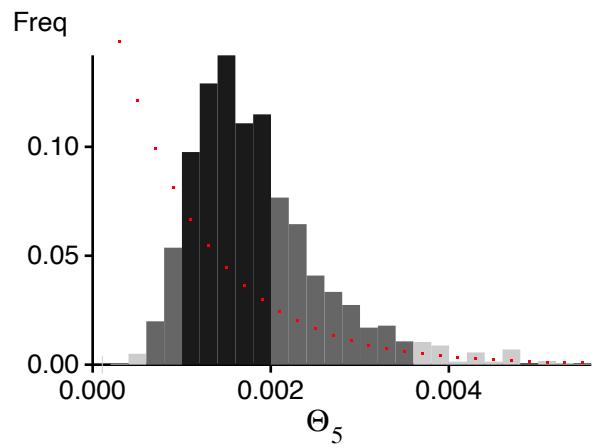
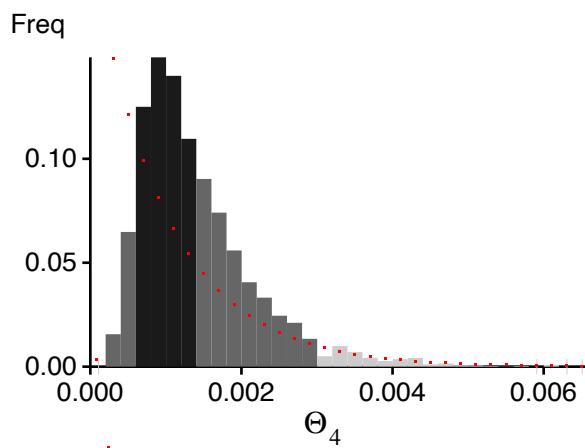
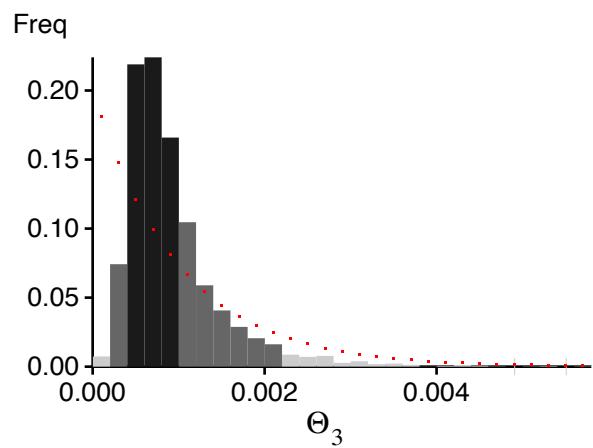
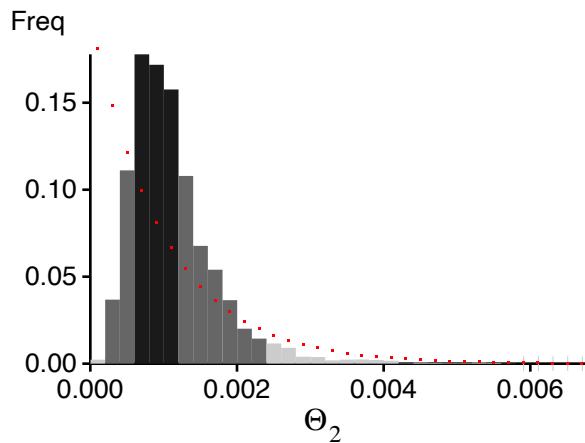
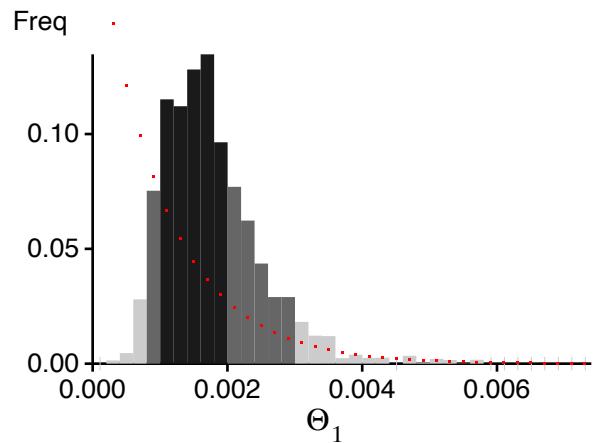


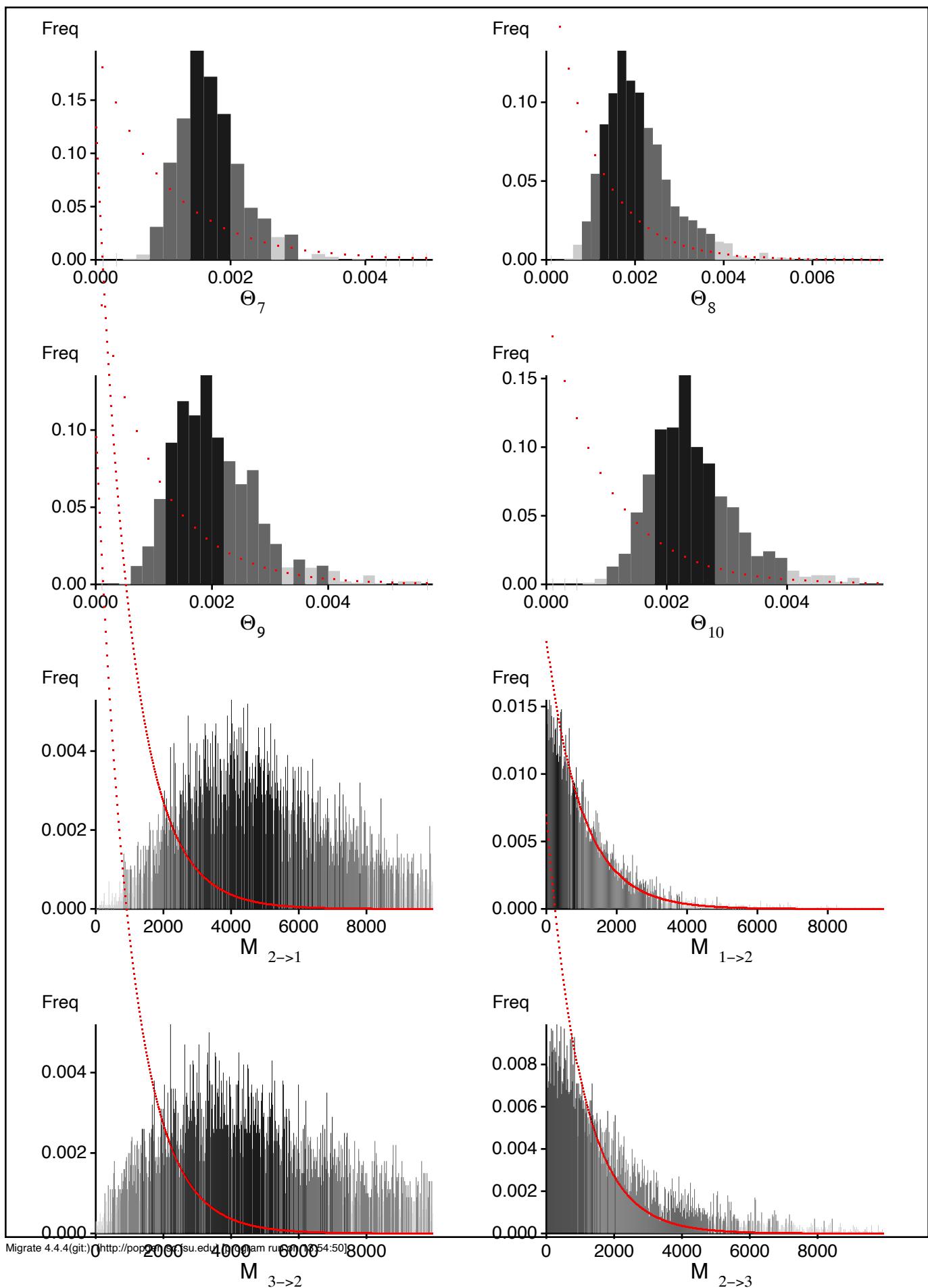


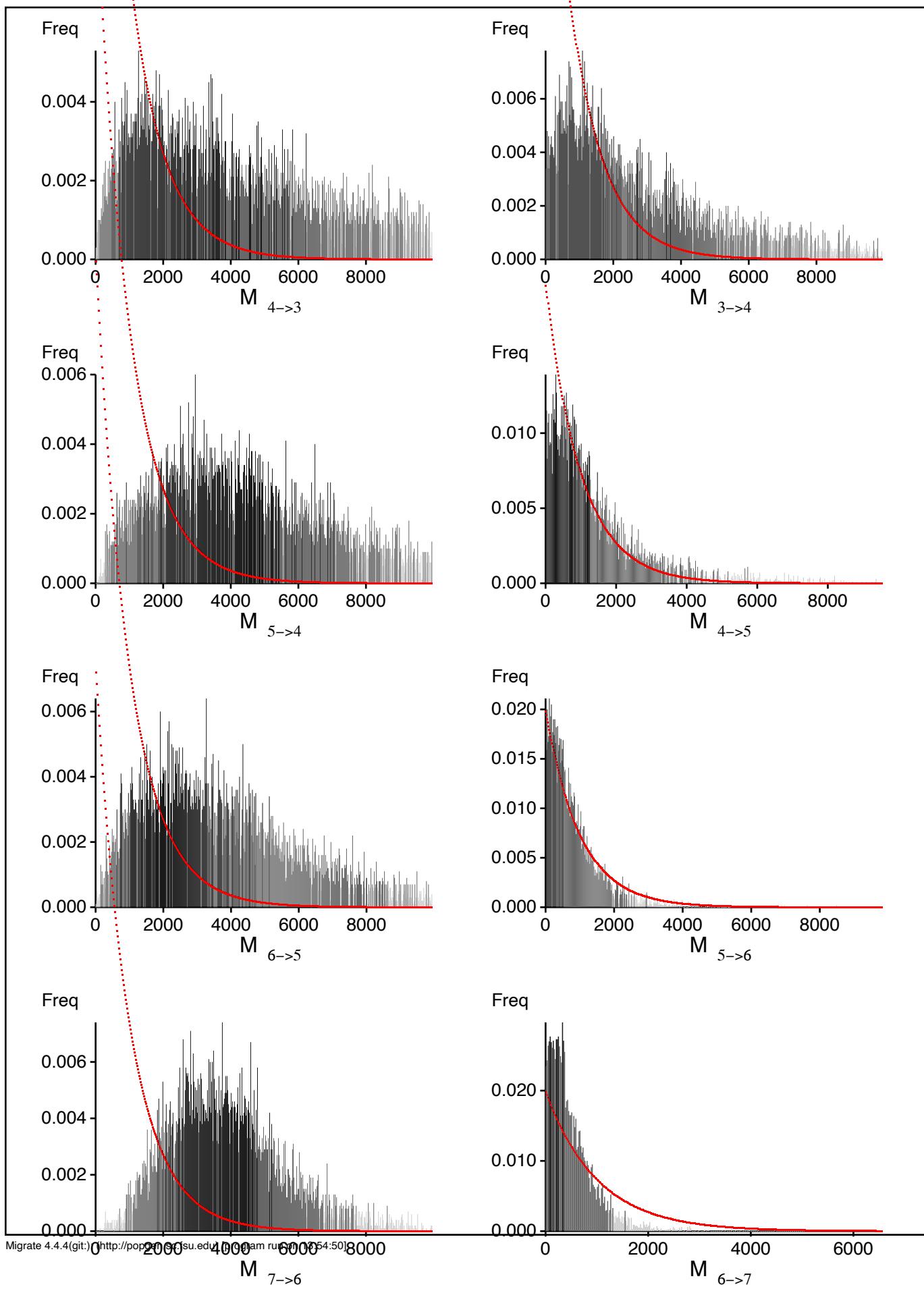


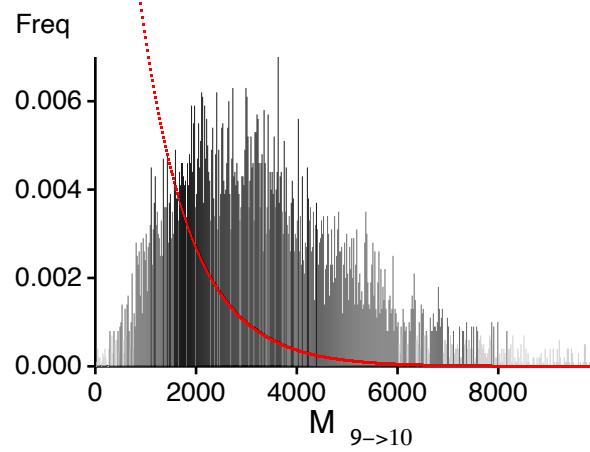
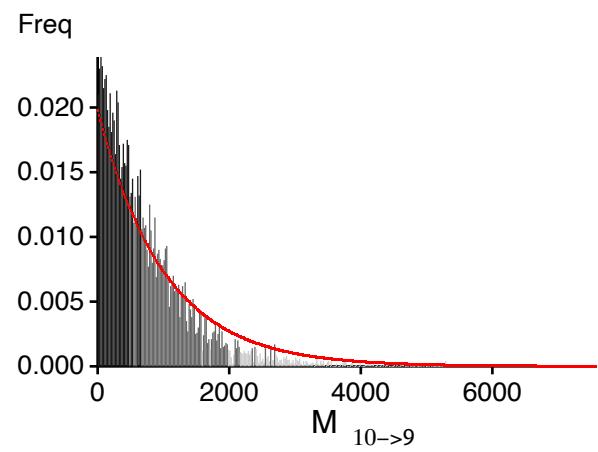
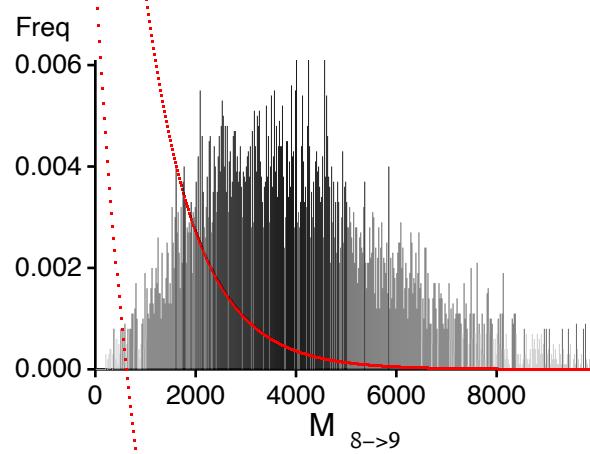
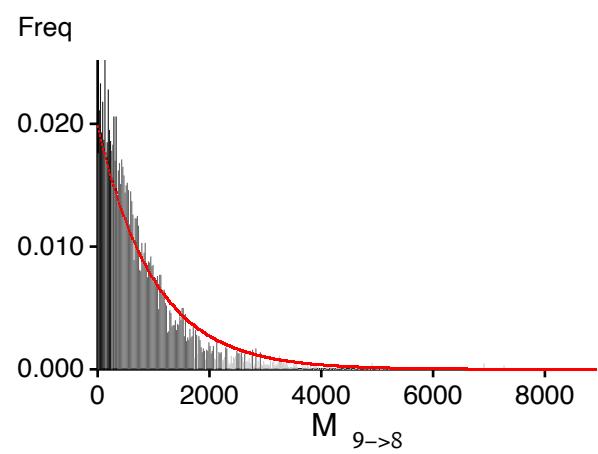
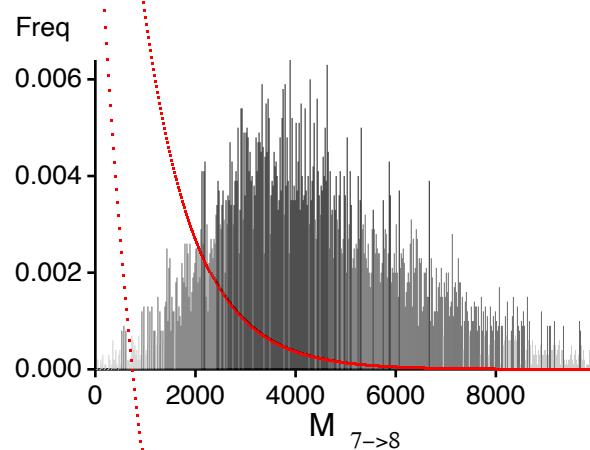
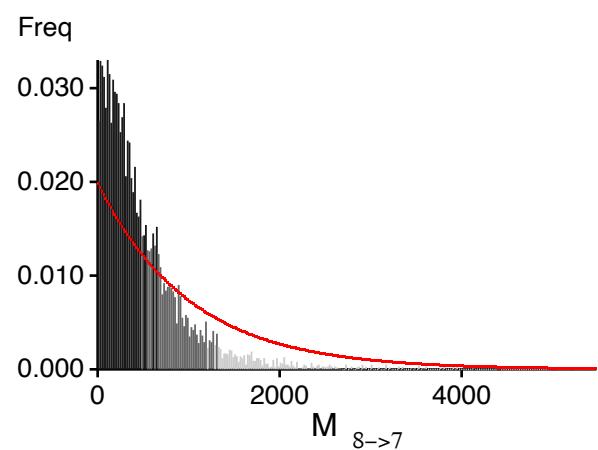


### Bayesian Analysis: Posterior distribution for locus 36

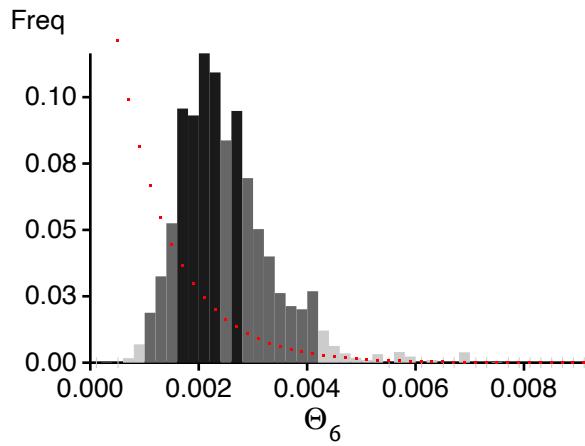
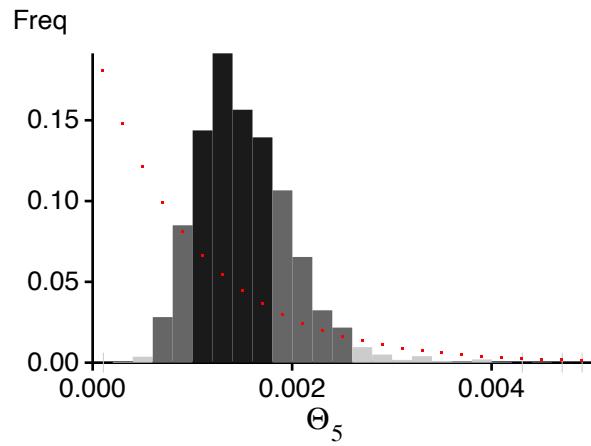
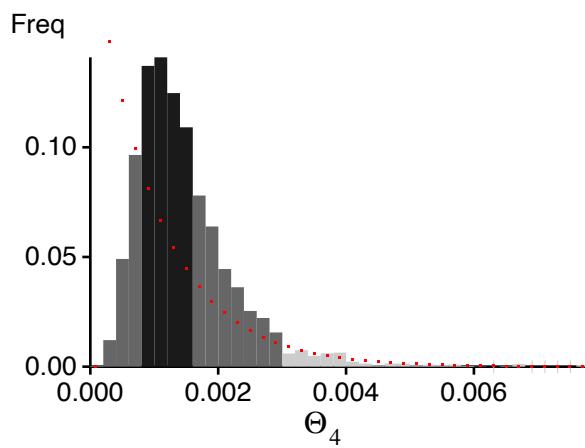
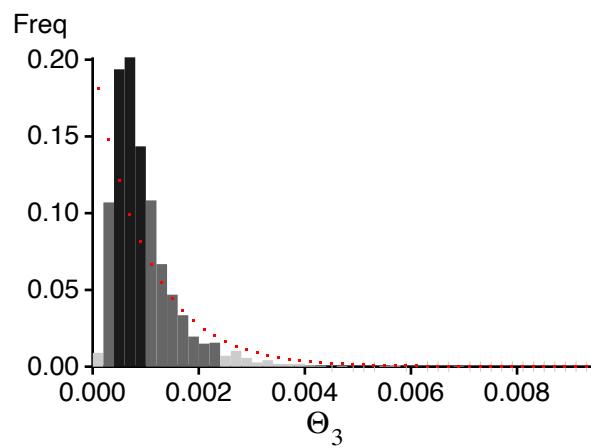
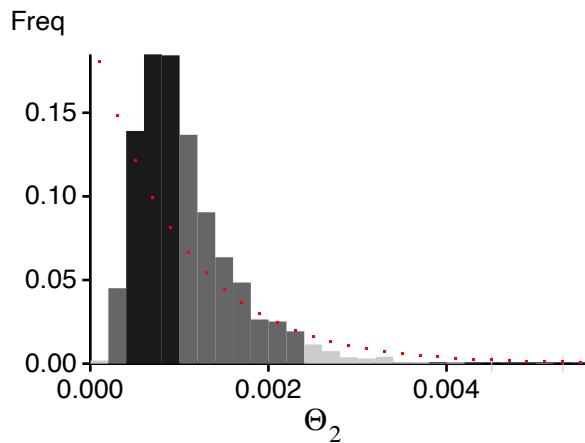
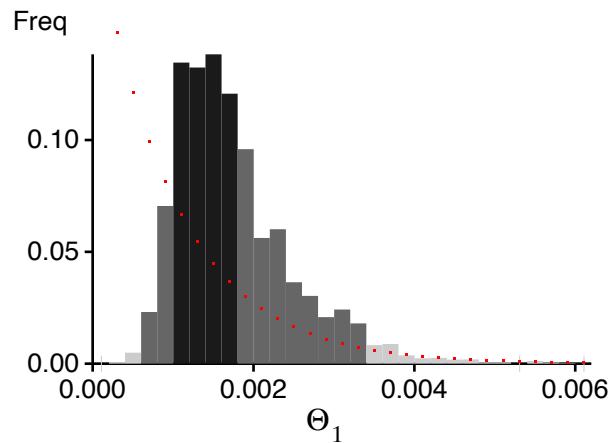


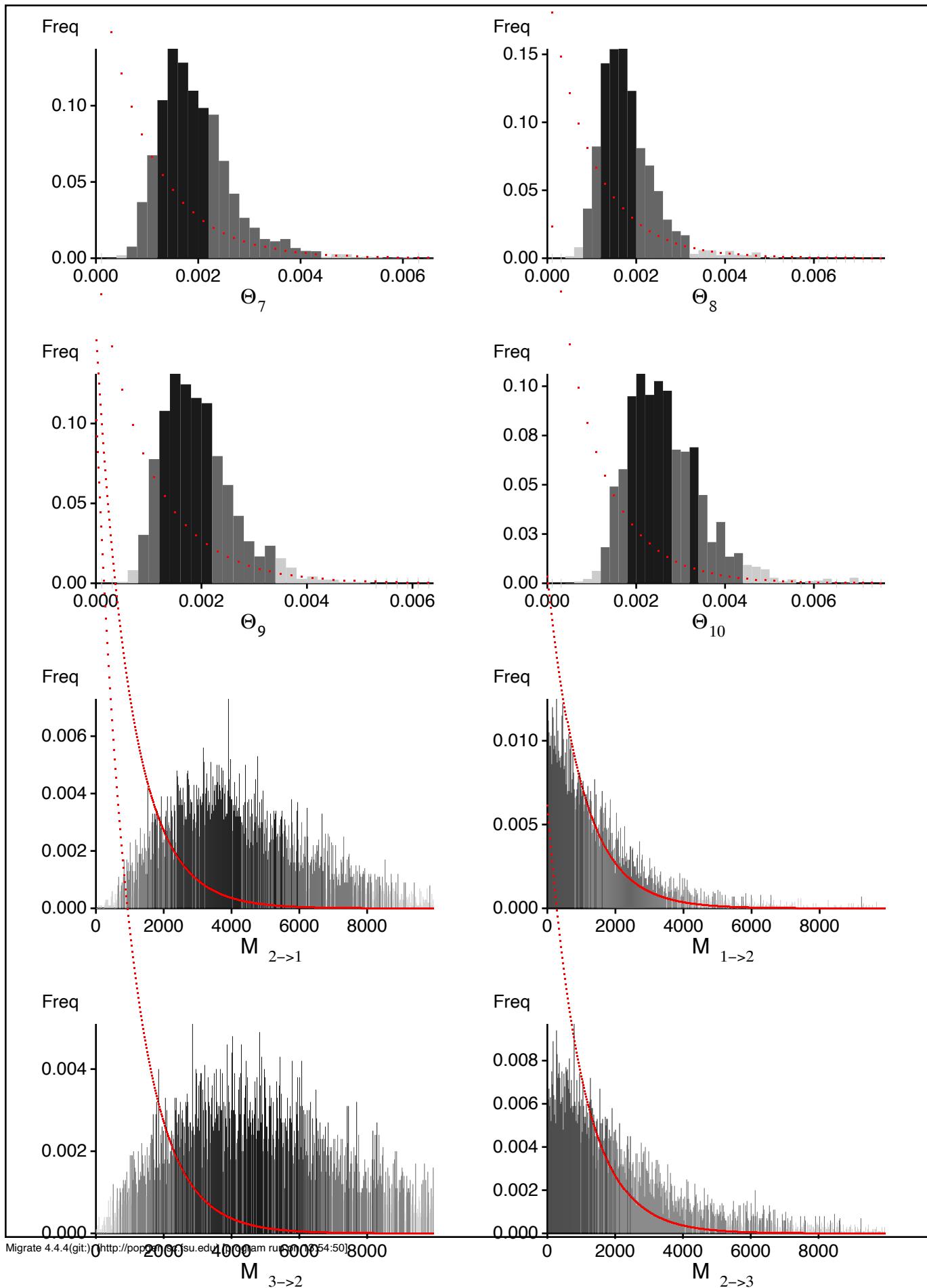


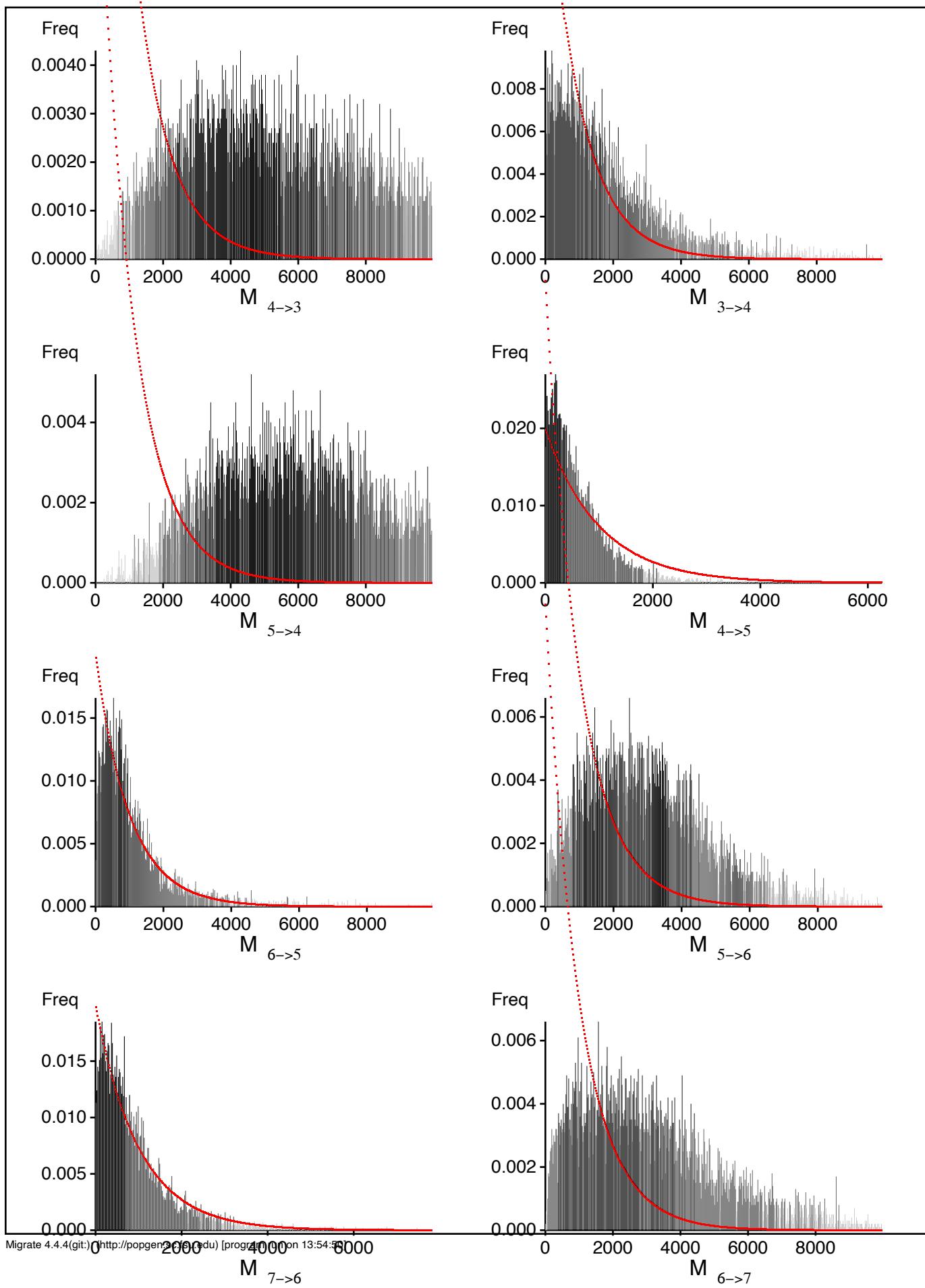


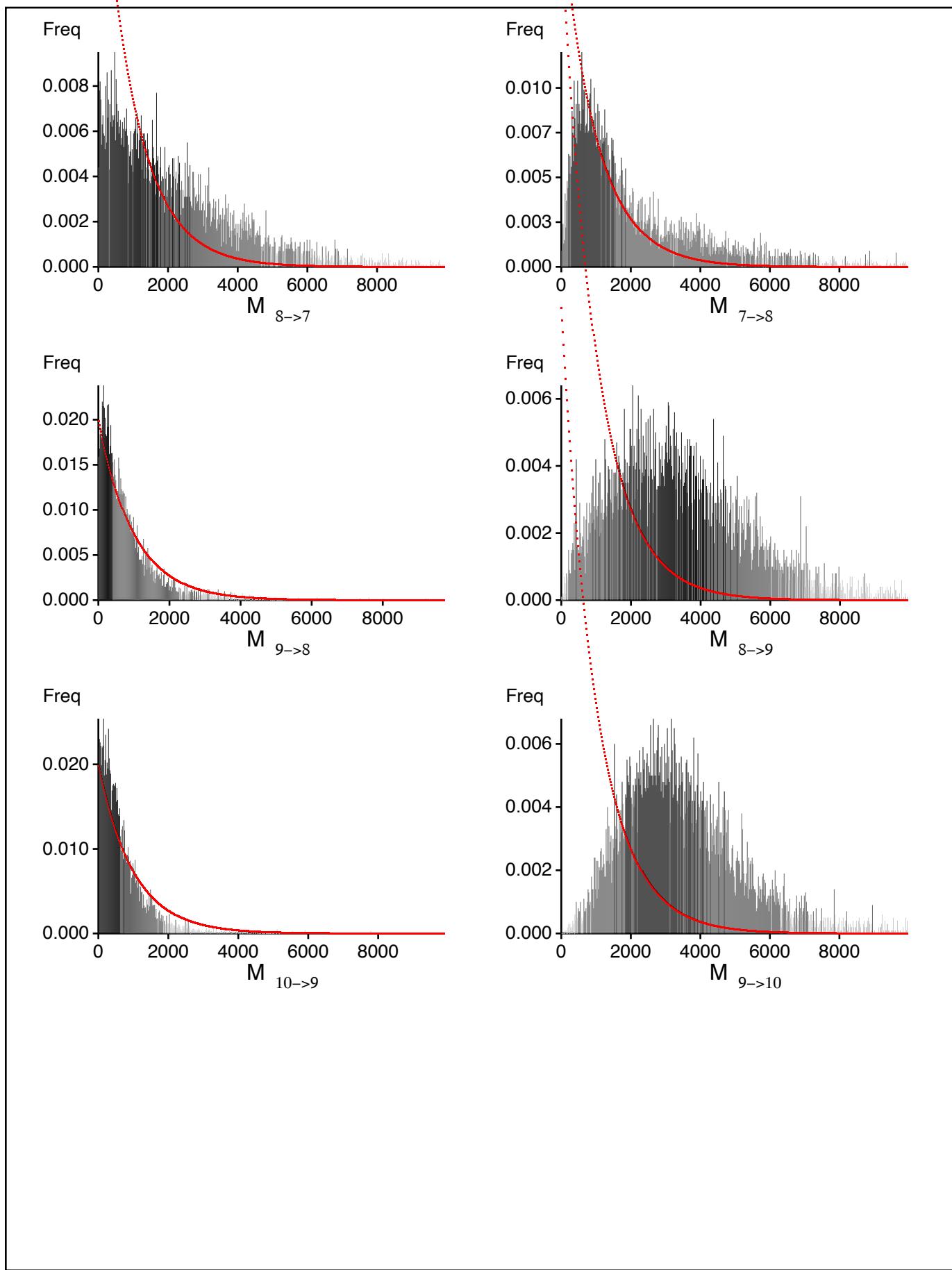


### Bayesian Analysis: Posterior distribution for locus 37

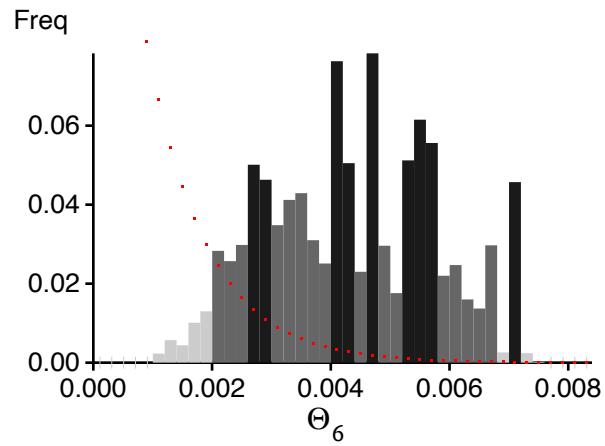
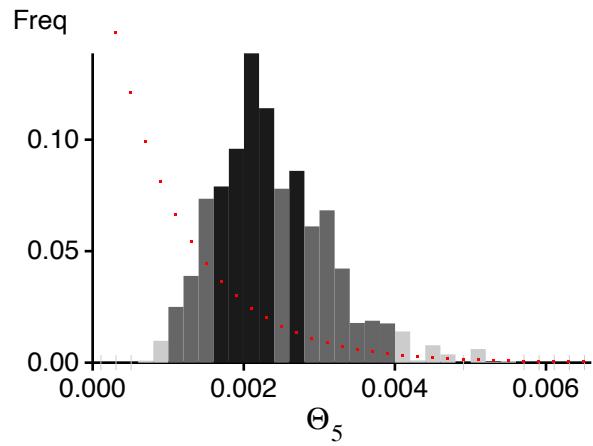
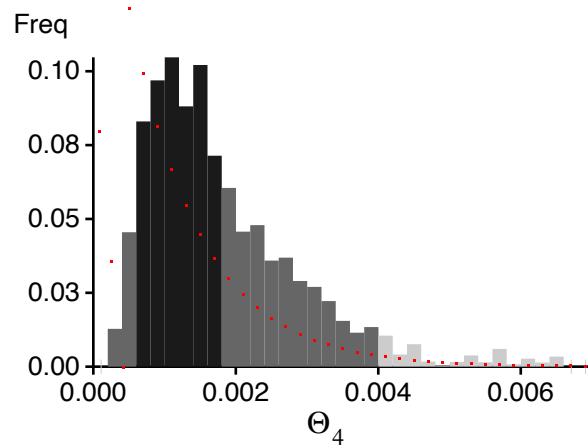
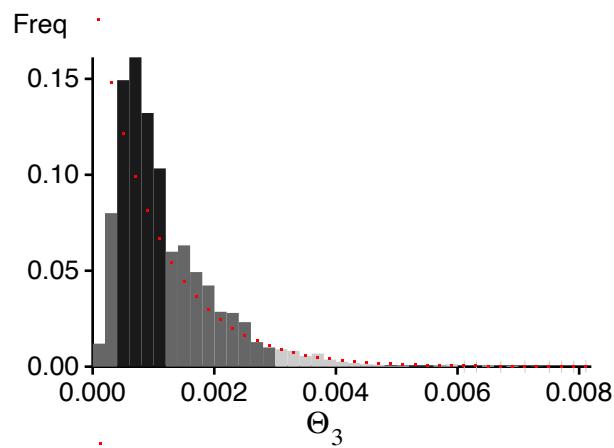
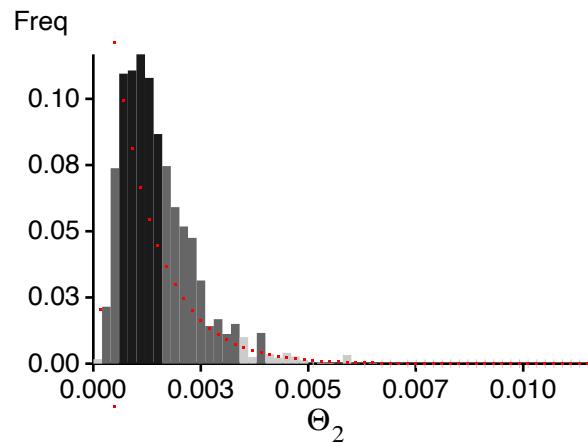
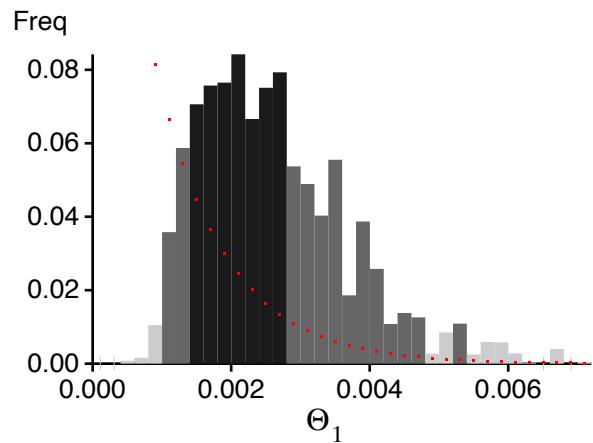


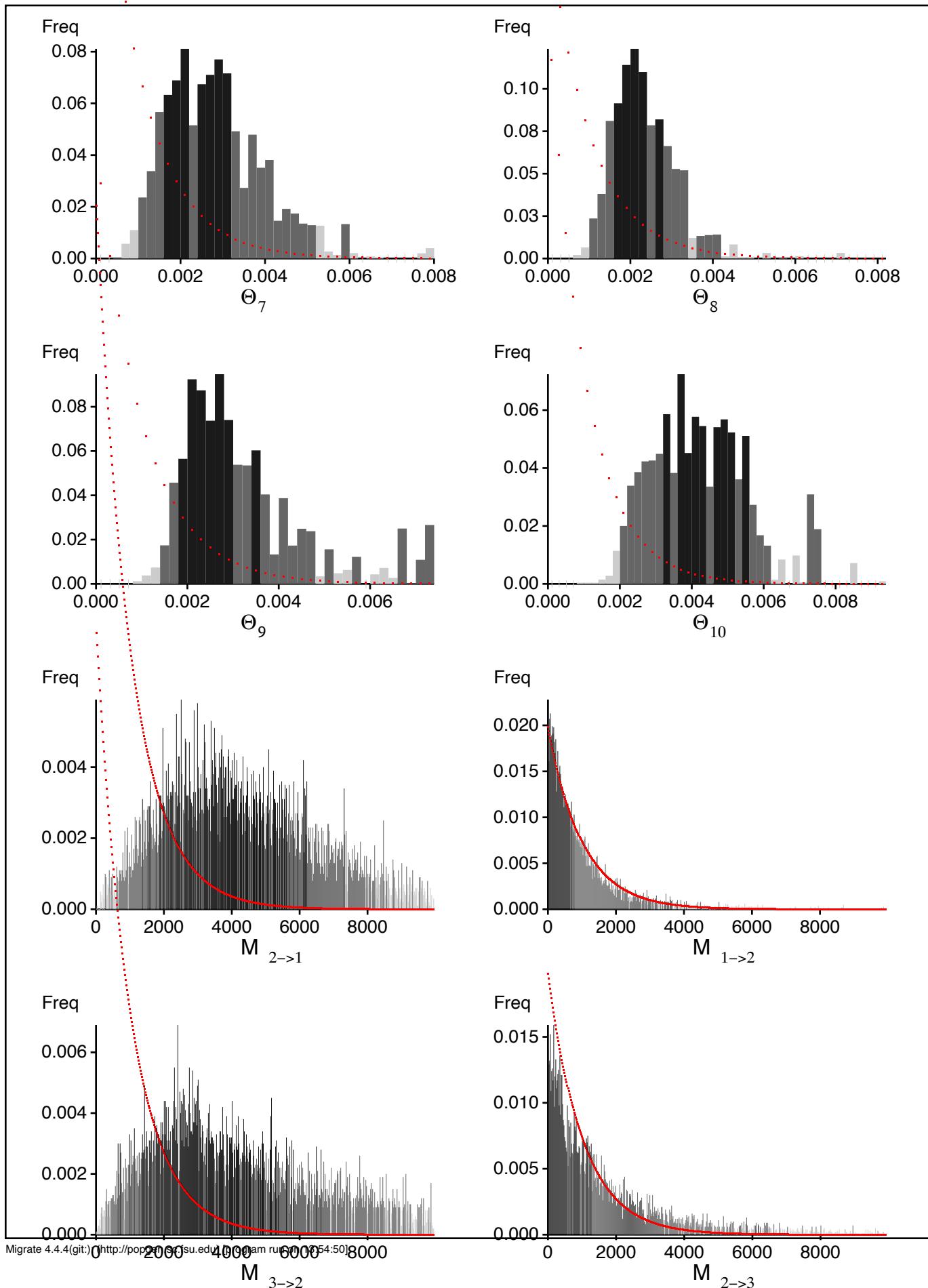


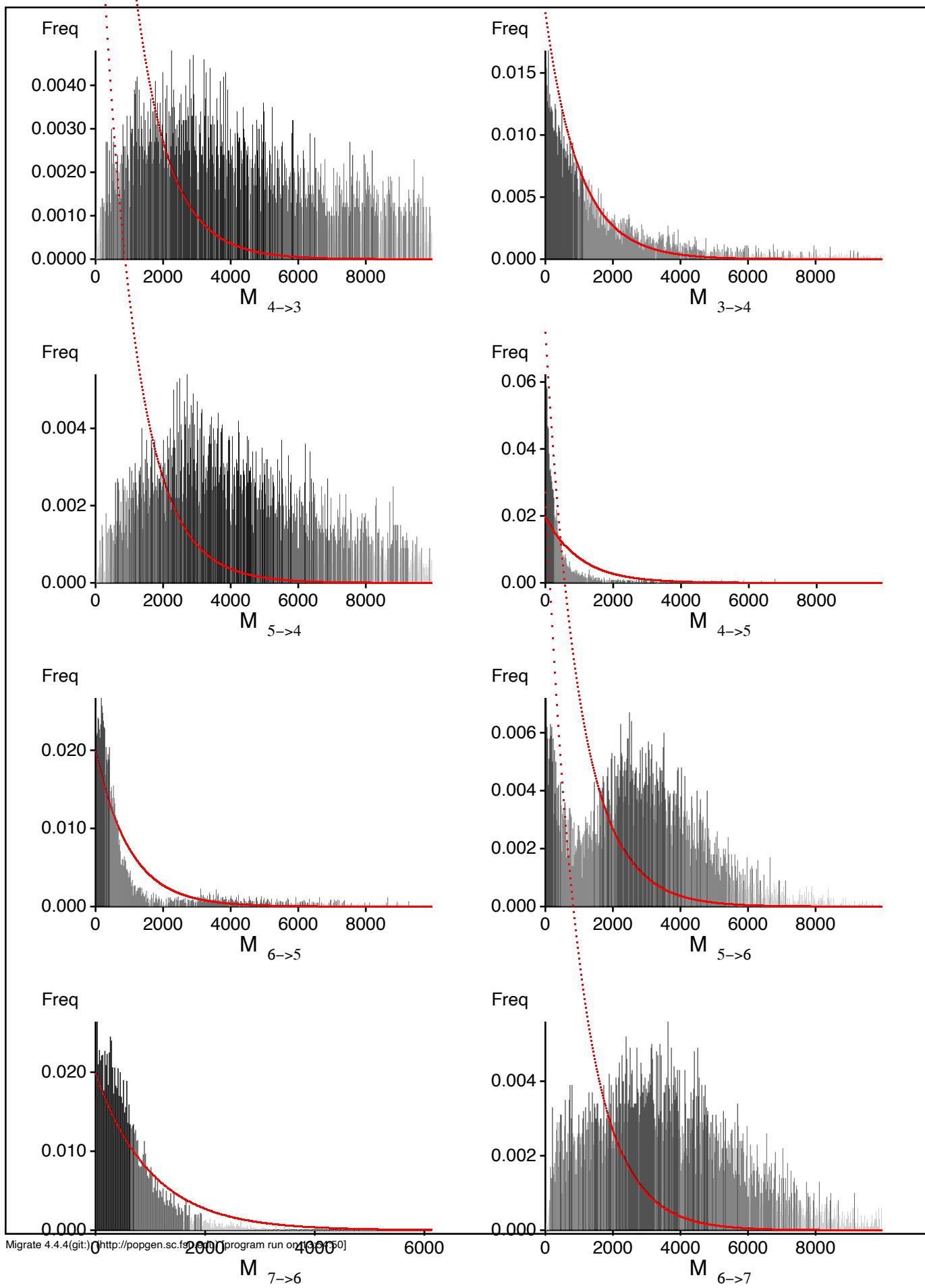


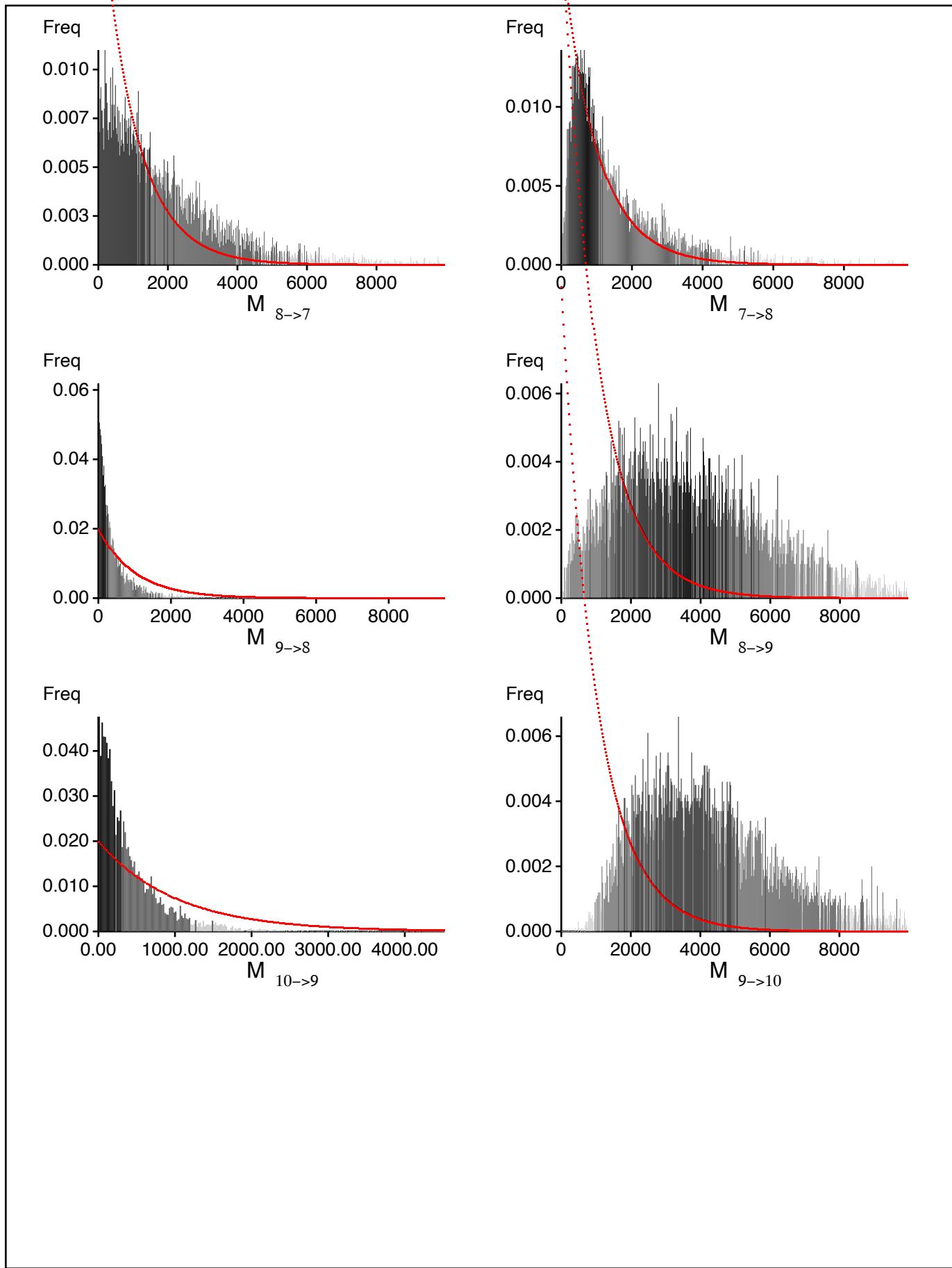


### Bayesian Analysis: Posterior distribution for locus 38

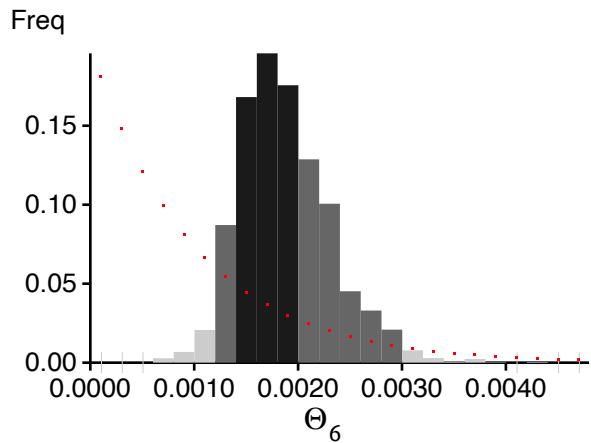
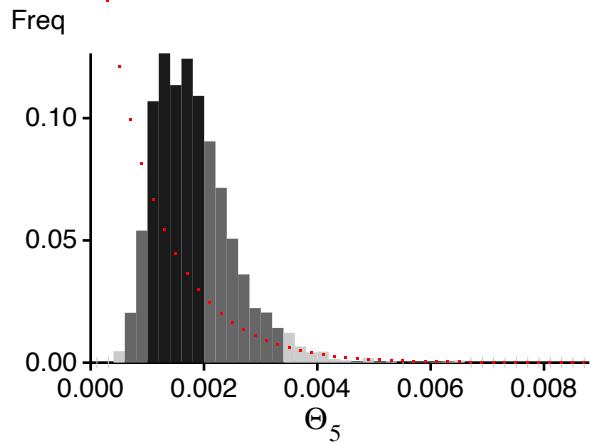
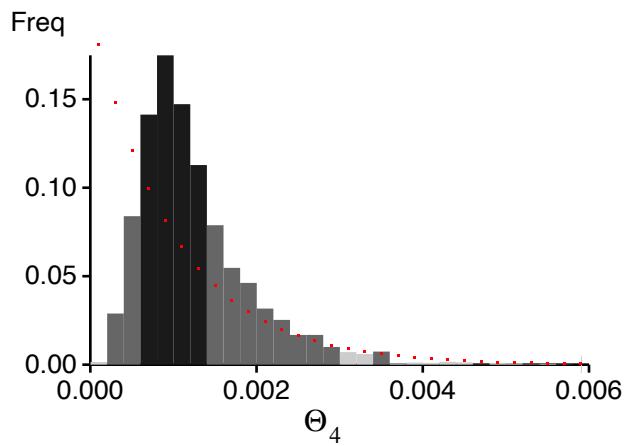
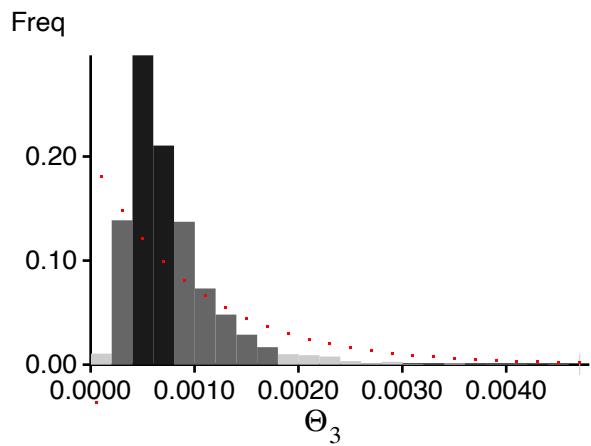
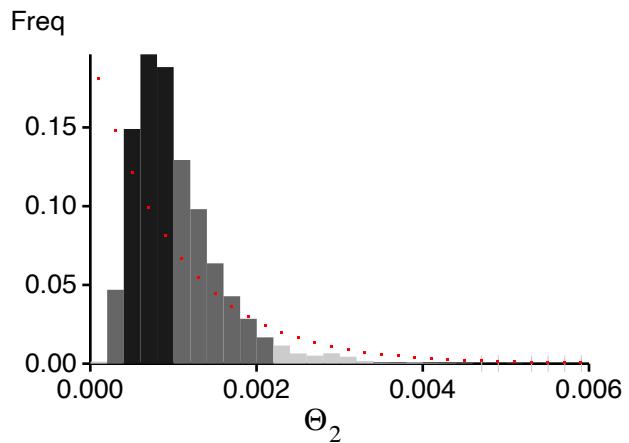
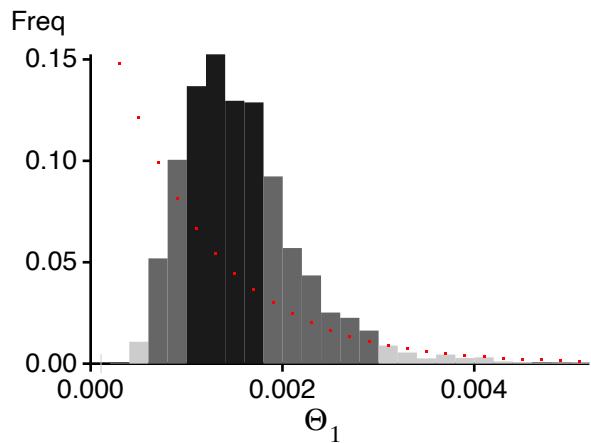


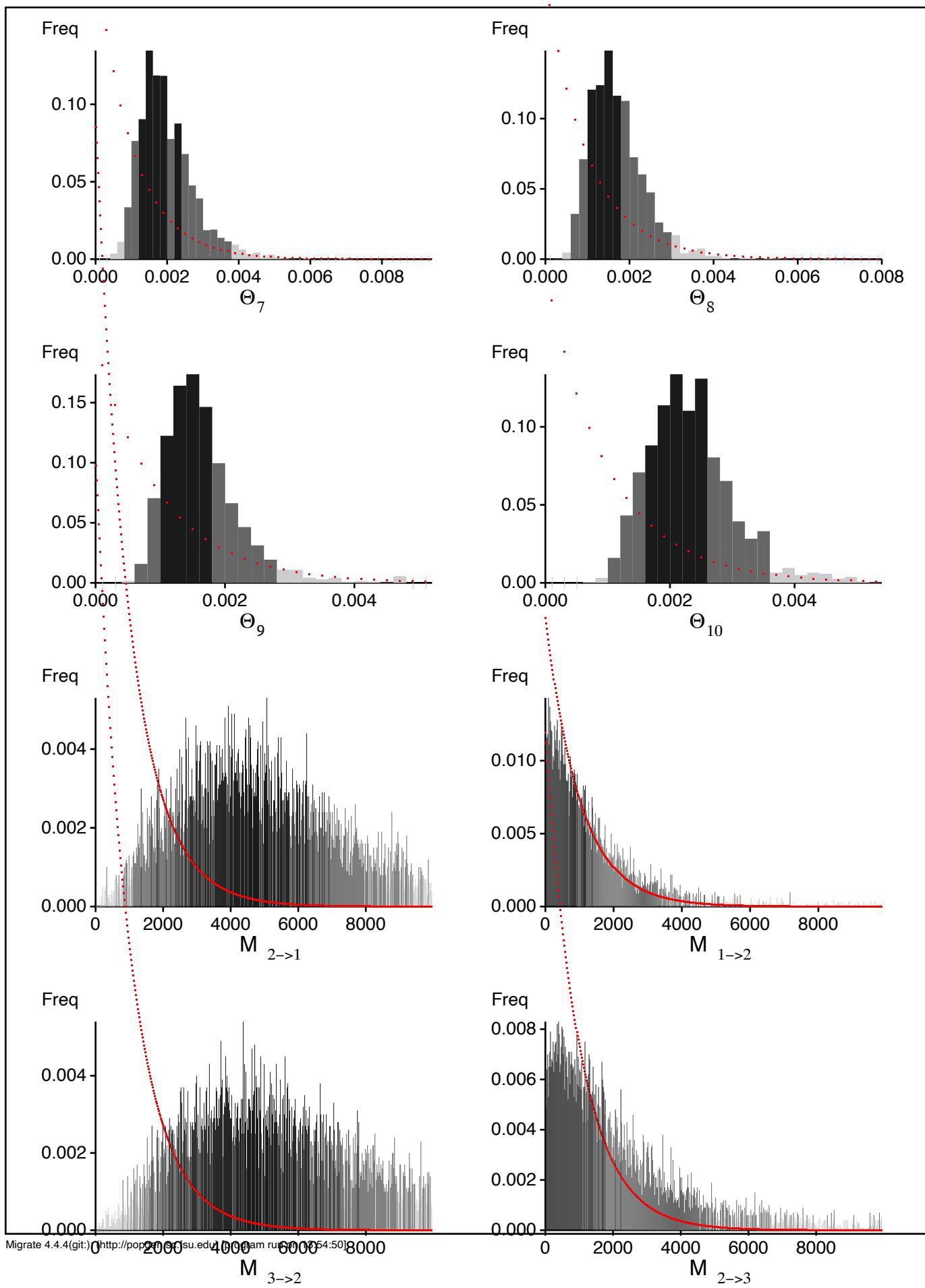


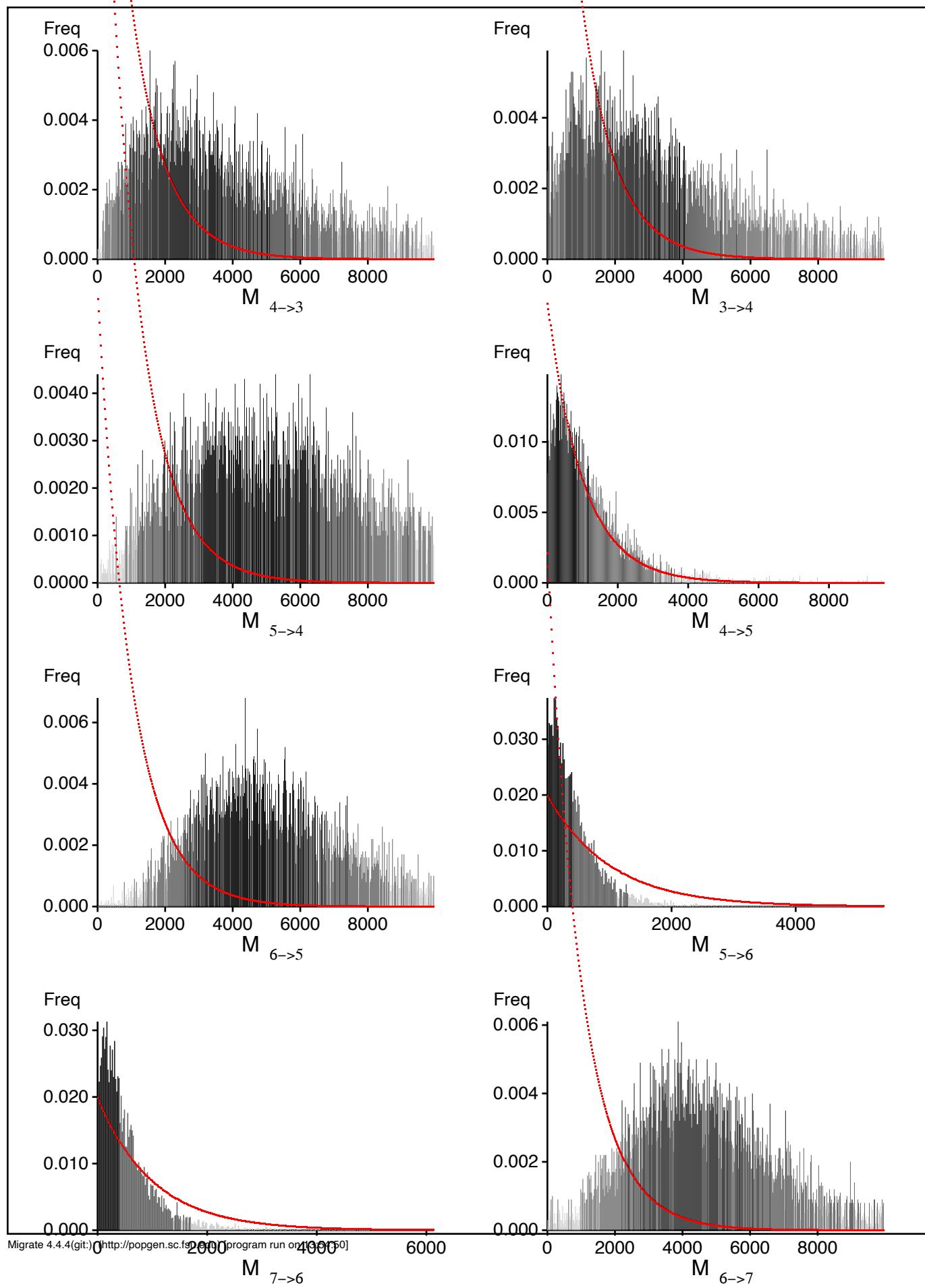


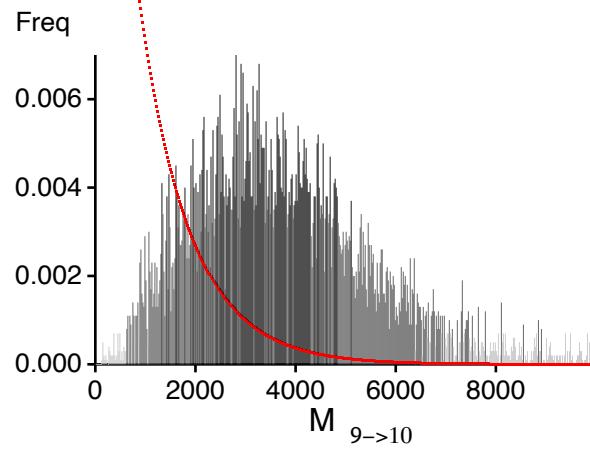
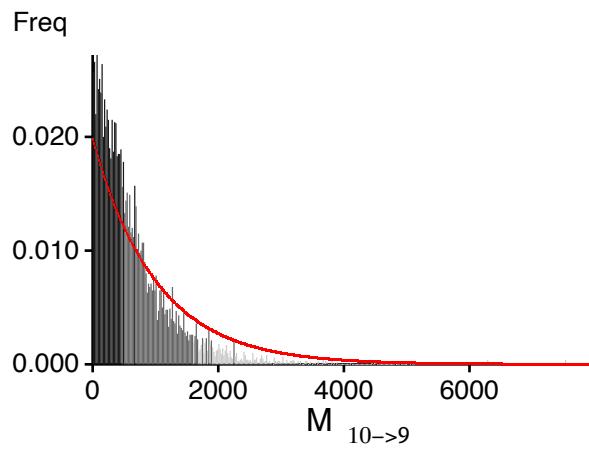
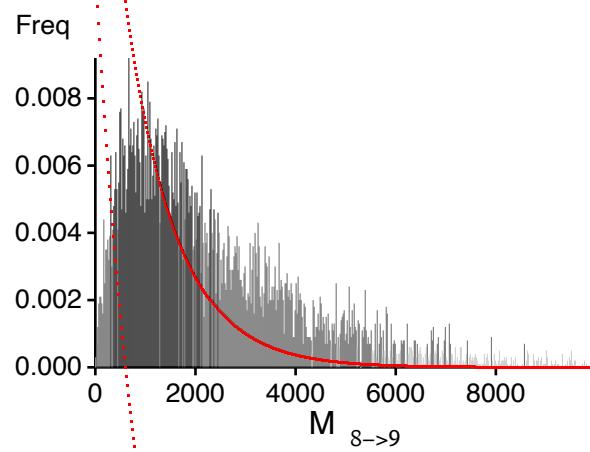
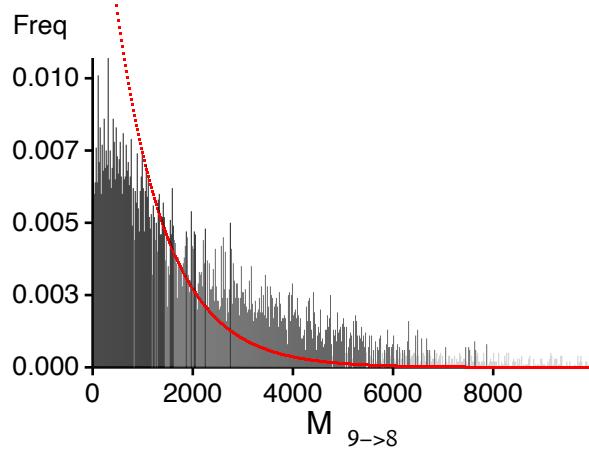
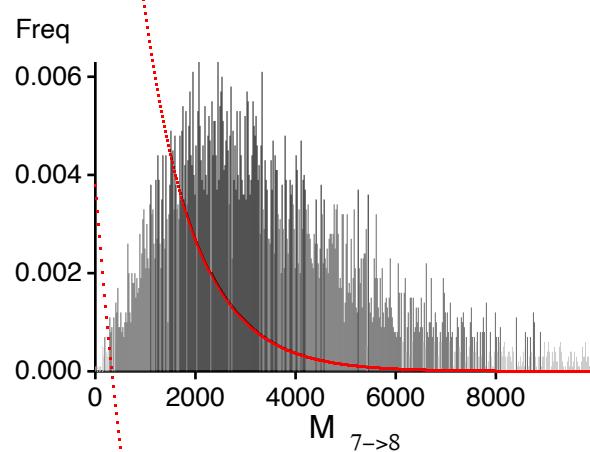
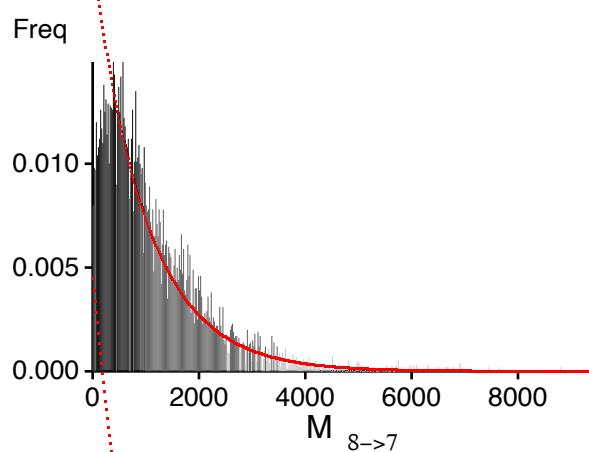


### Bayesian Analysis: Posterior distribution for locus 39

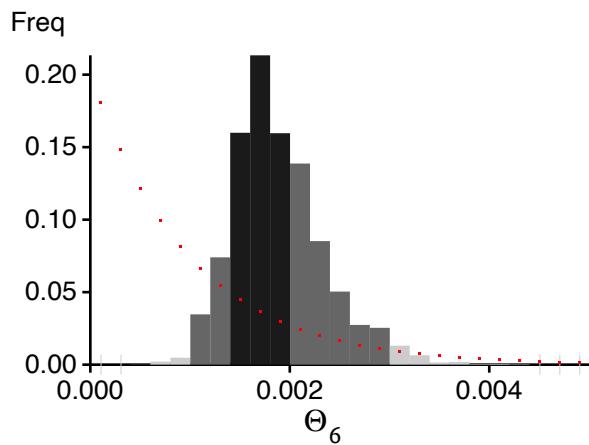
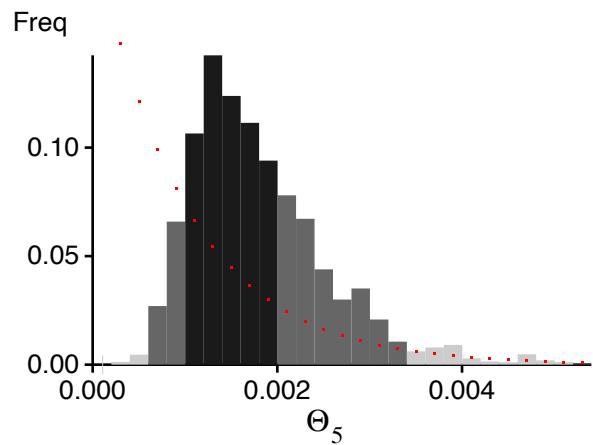
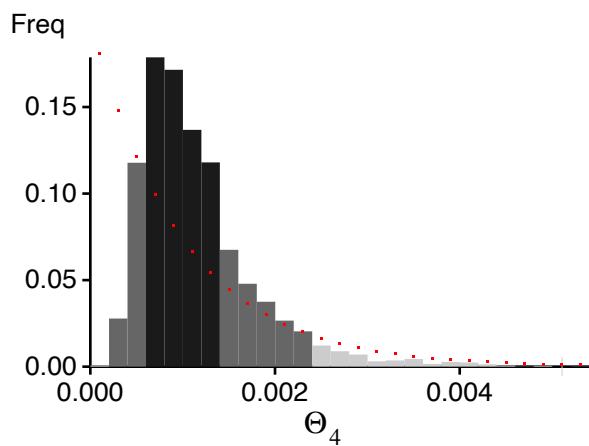
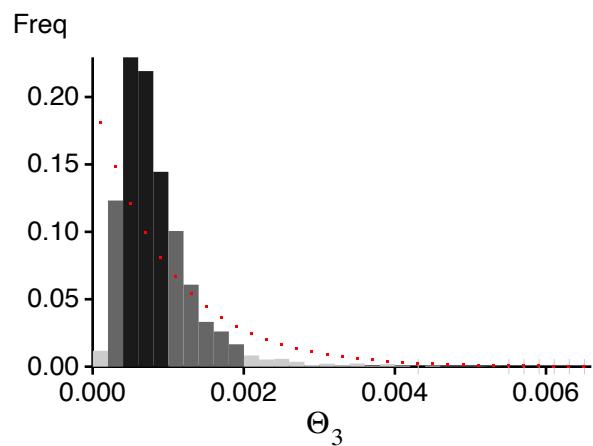
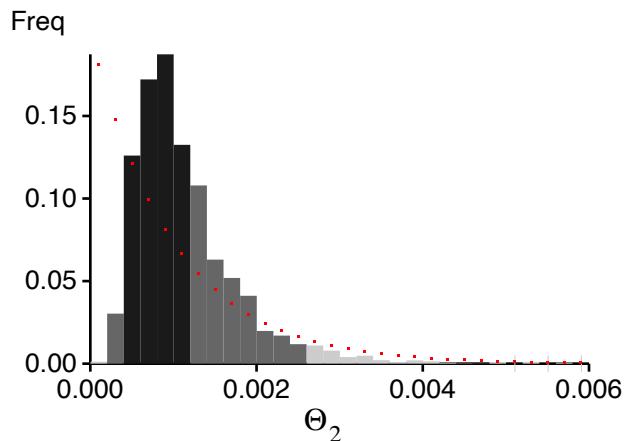
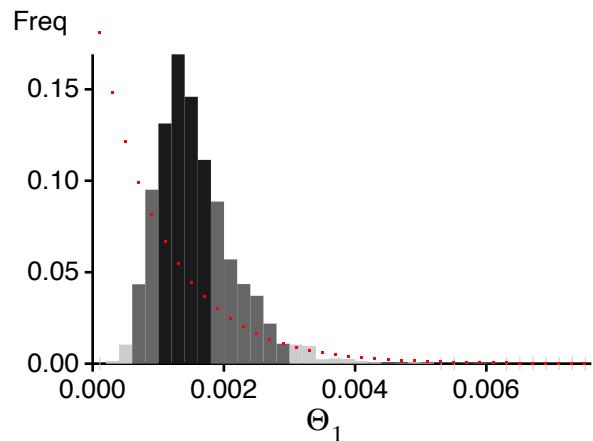


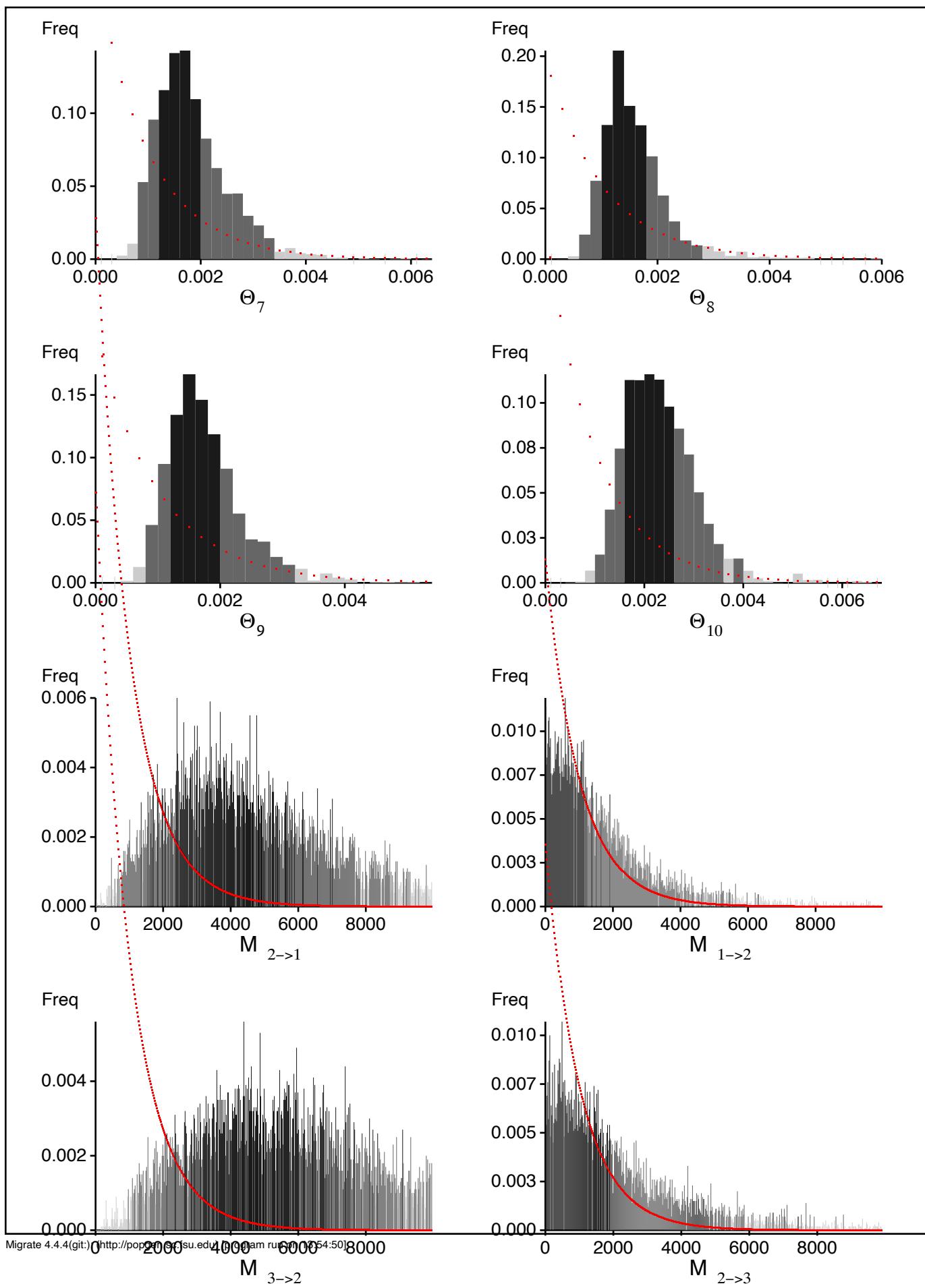


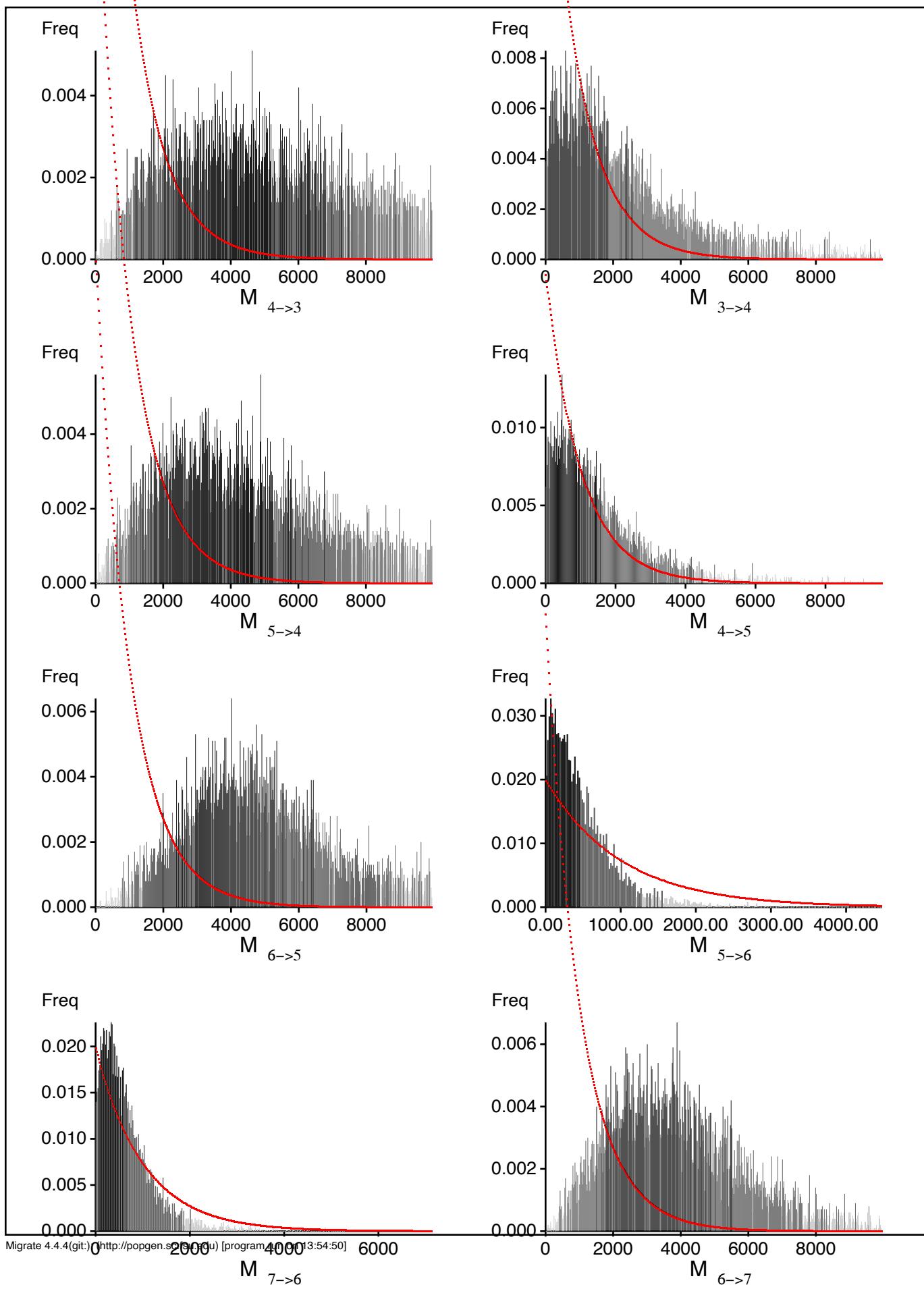


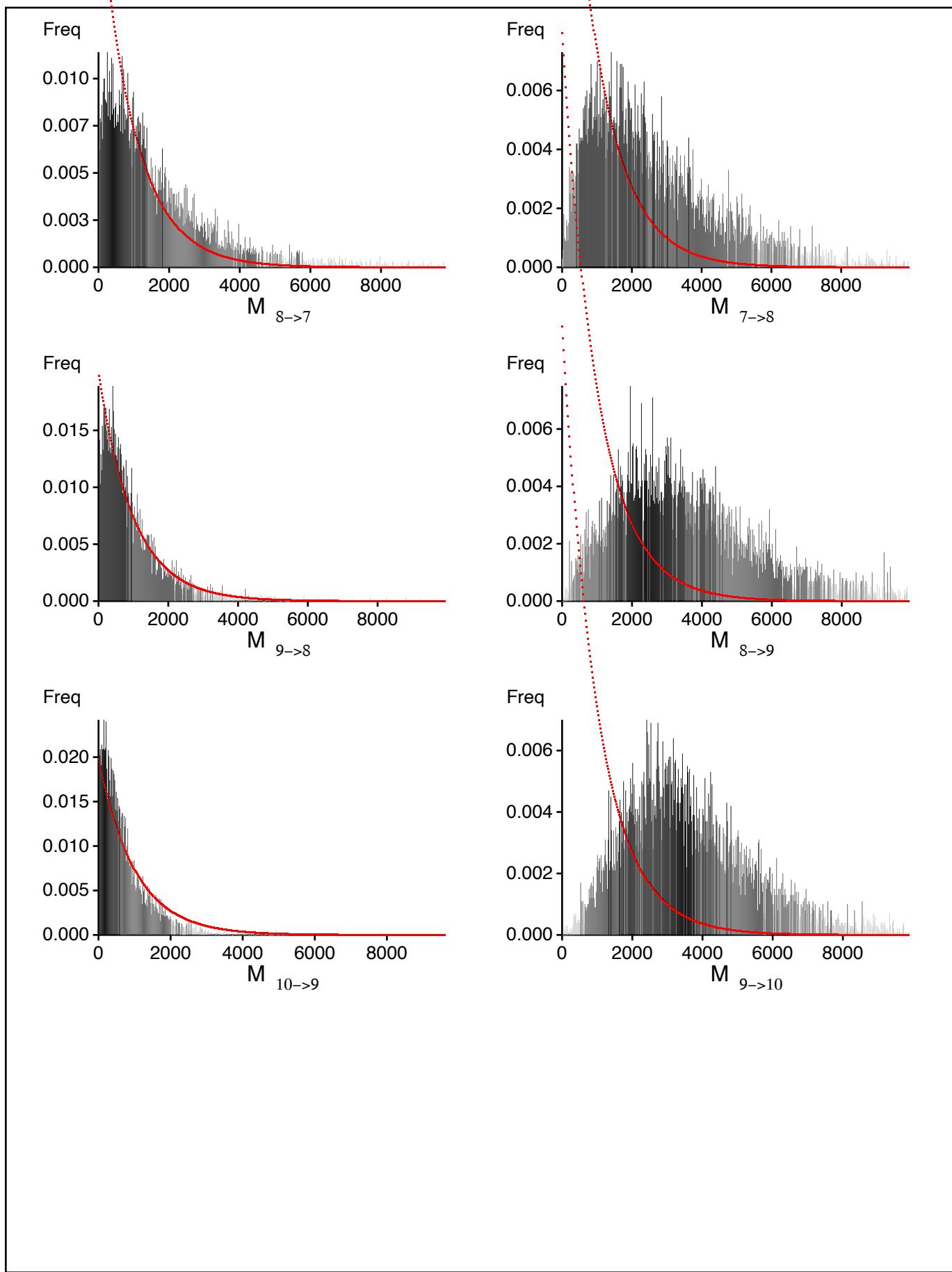


### Bayesian Analysis: Posterior distribution for locus 40

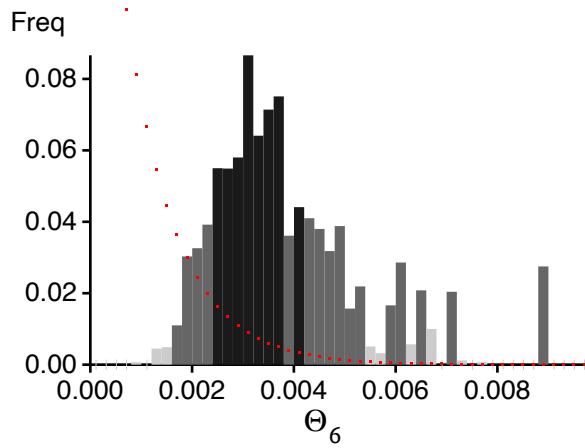
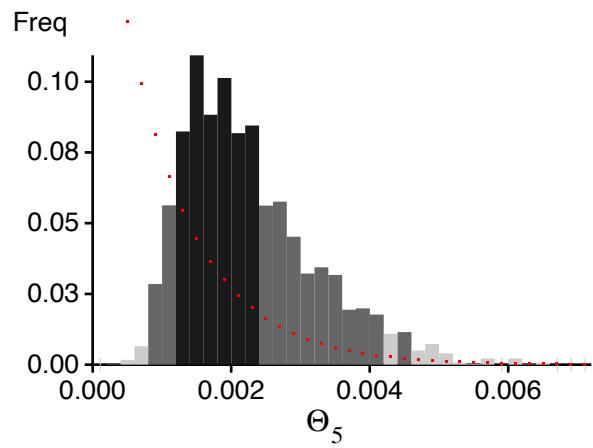
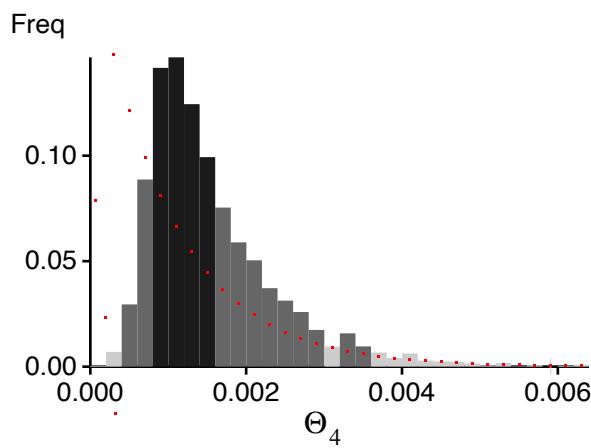
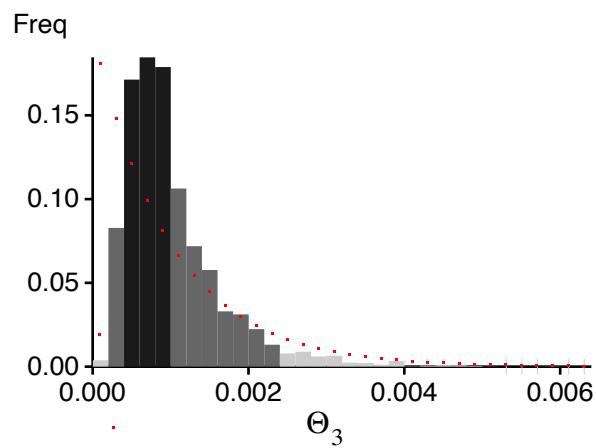
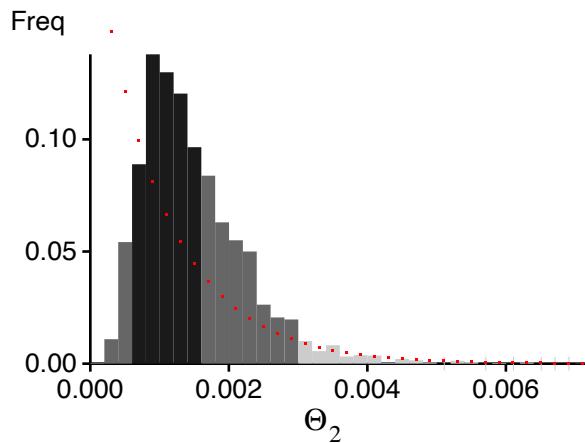
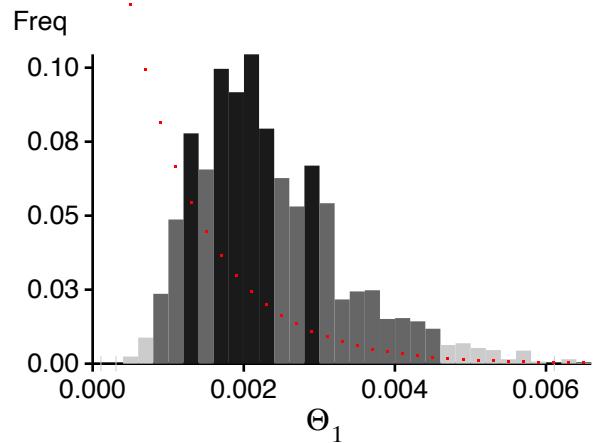


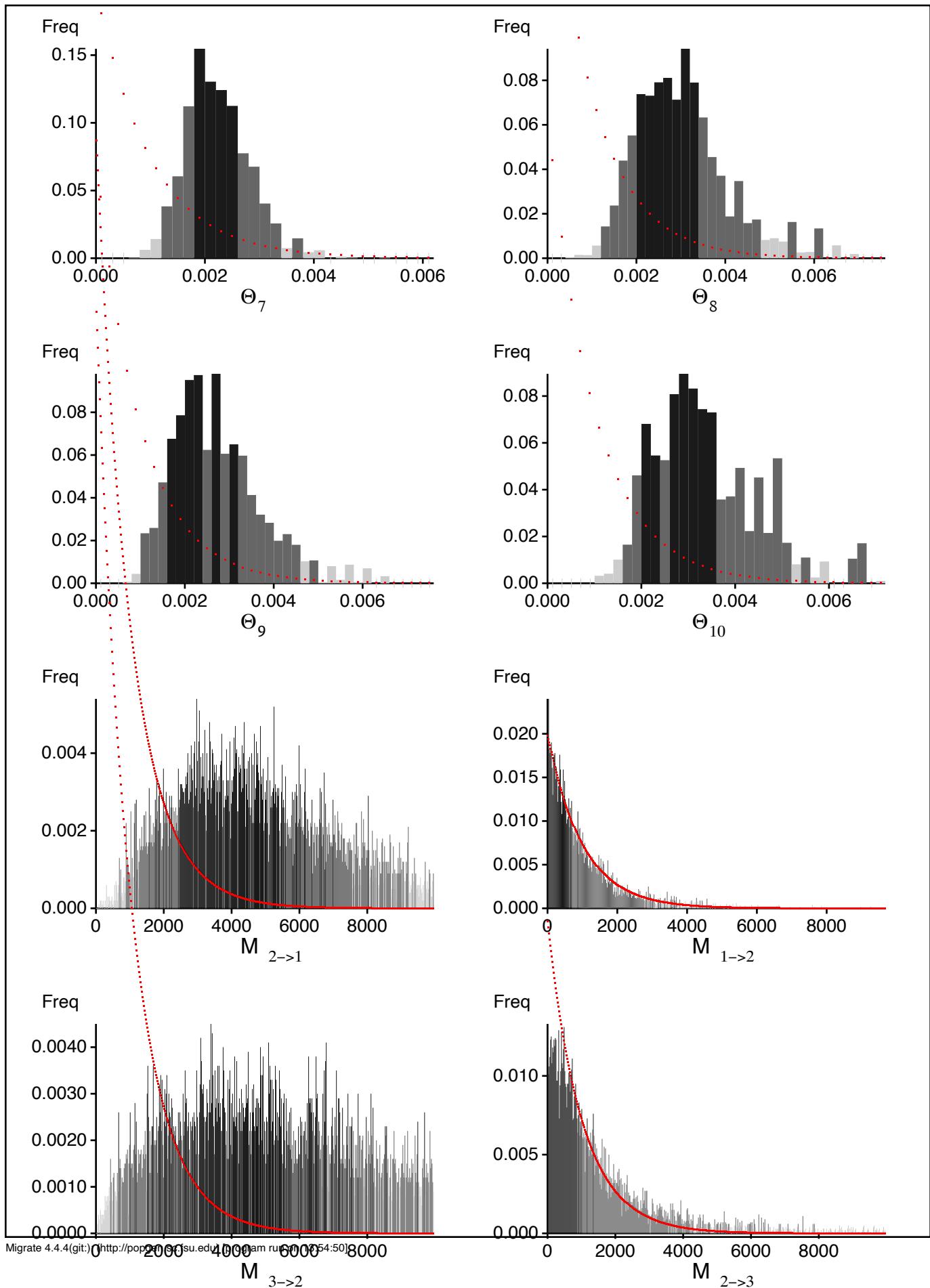


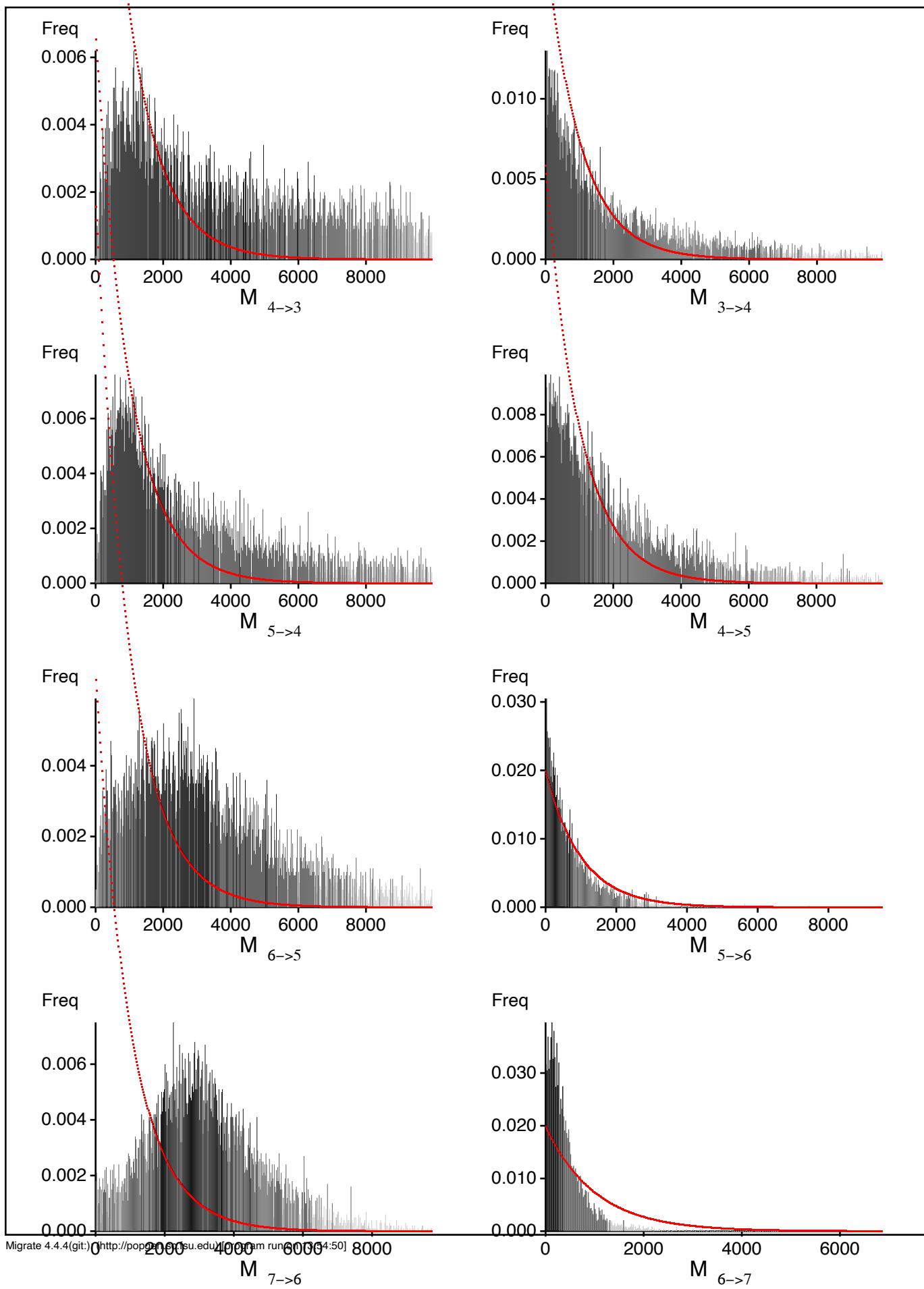


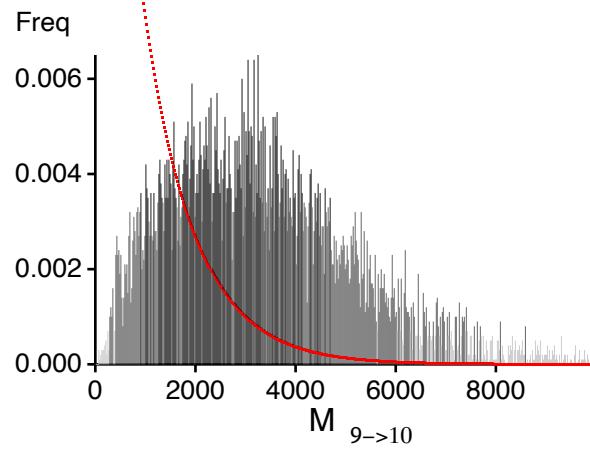
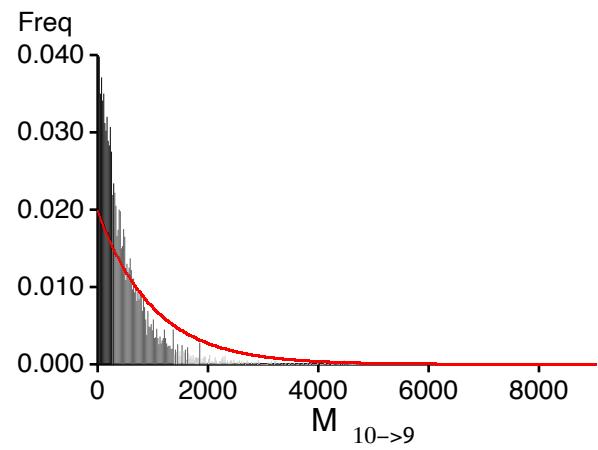
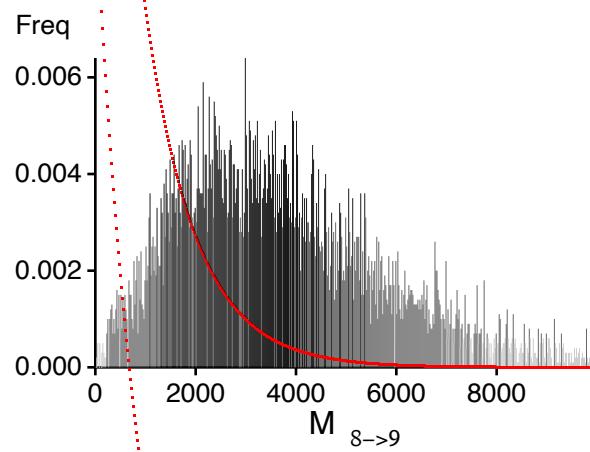
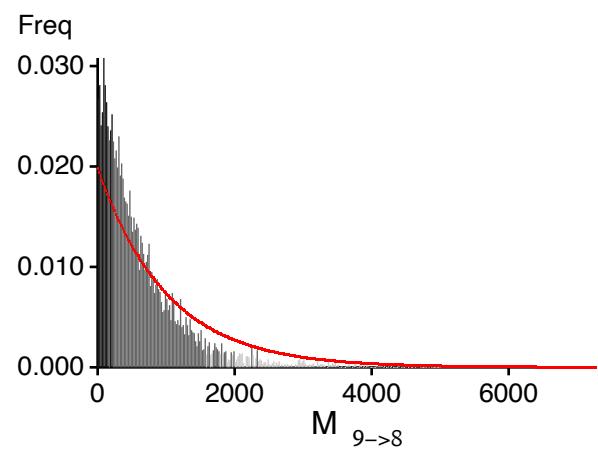
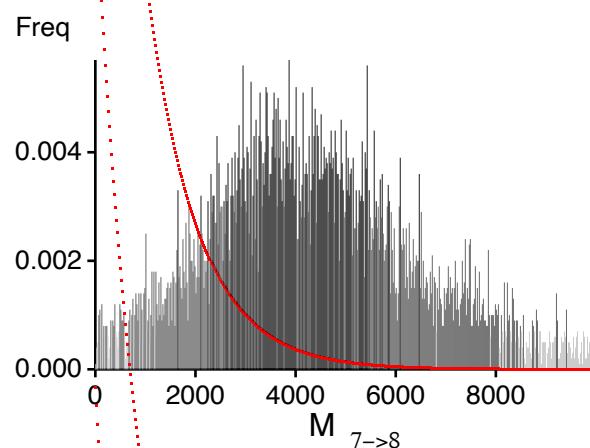
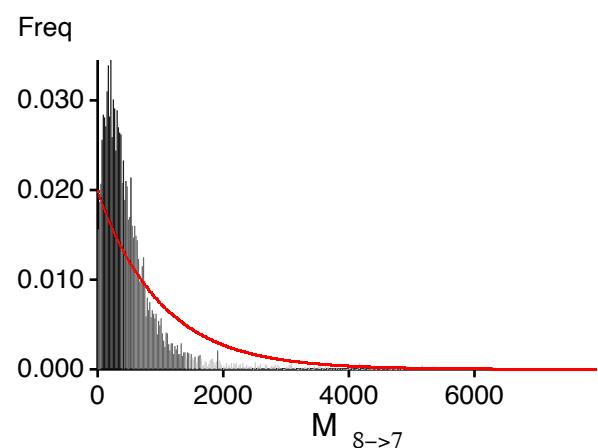


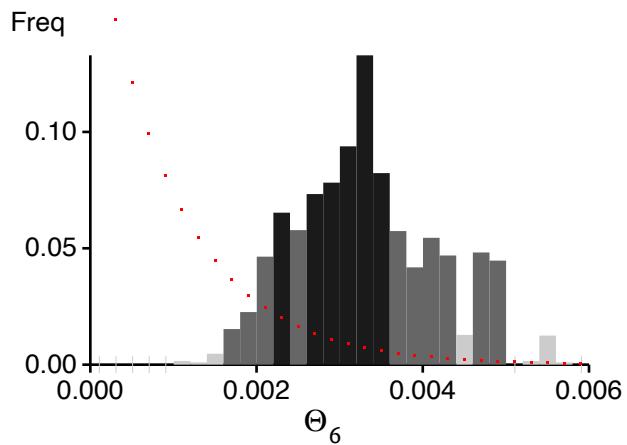
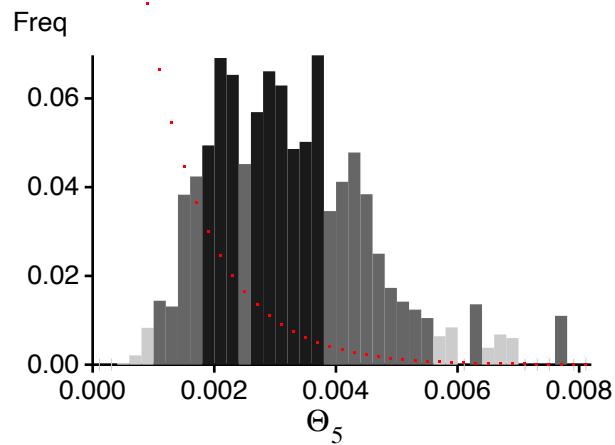
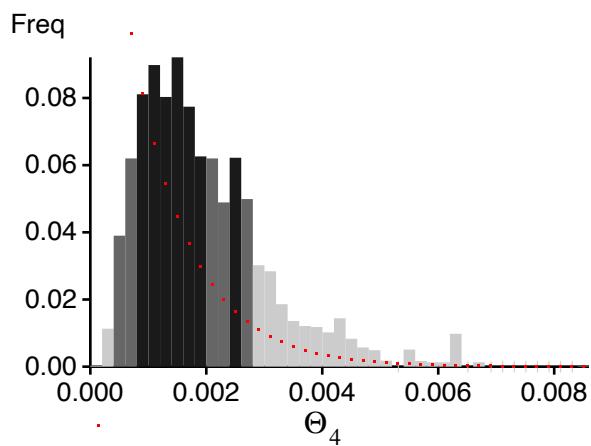
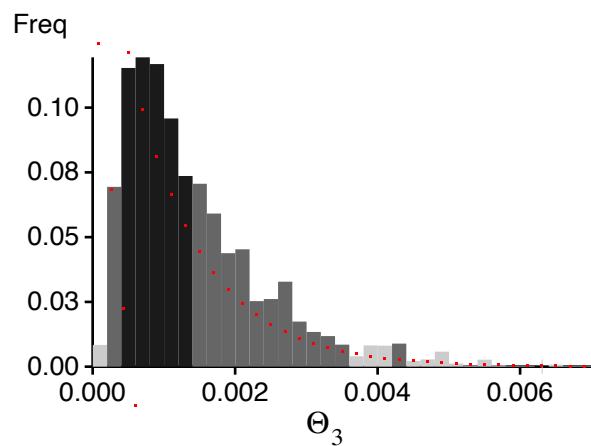
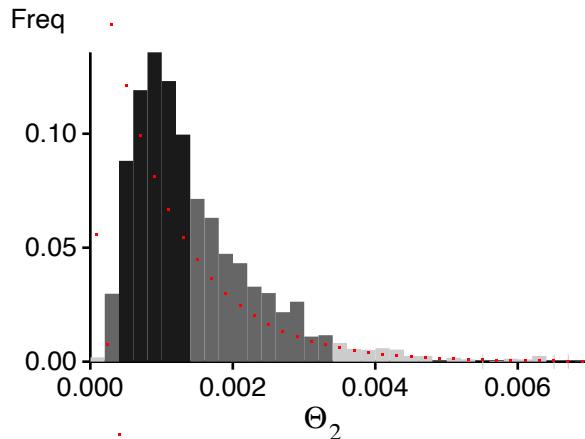
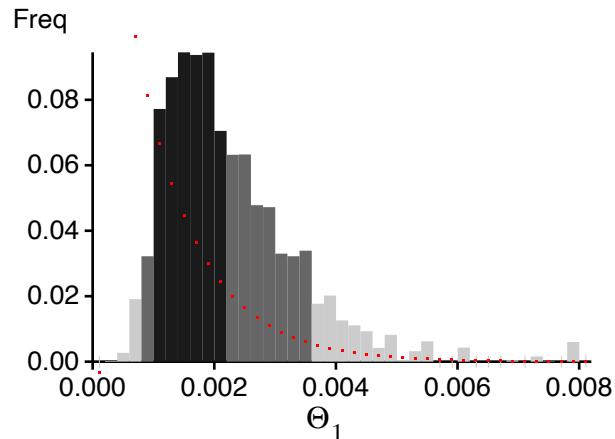
### Bayesian Analysis: Posterior distribution for locus 41

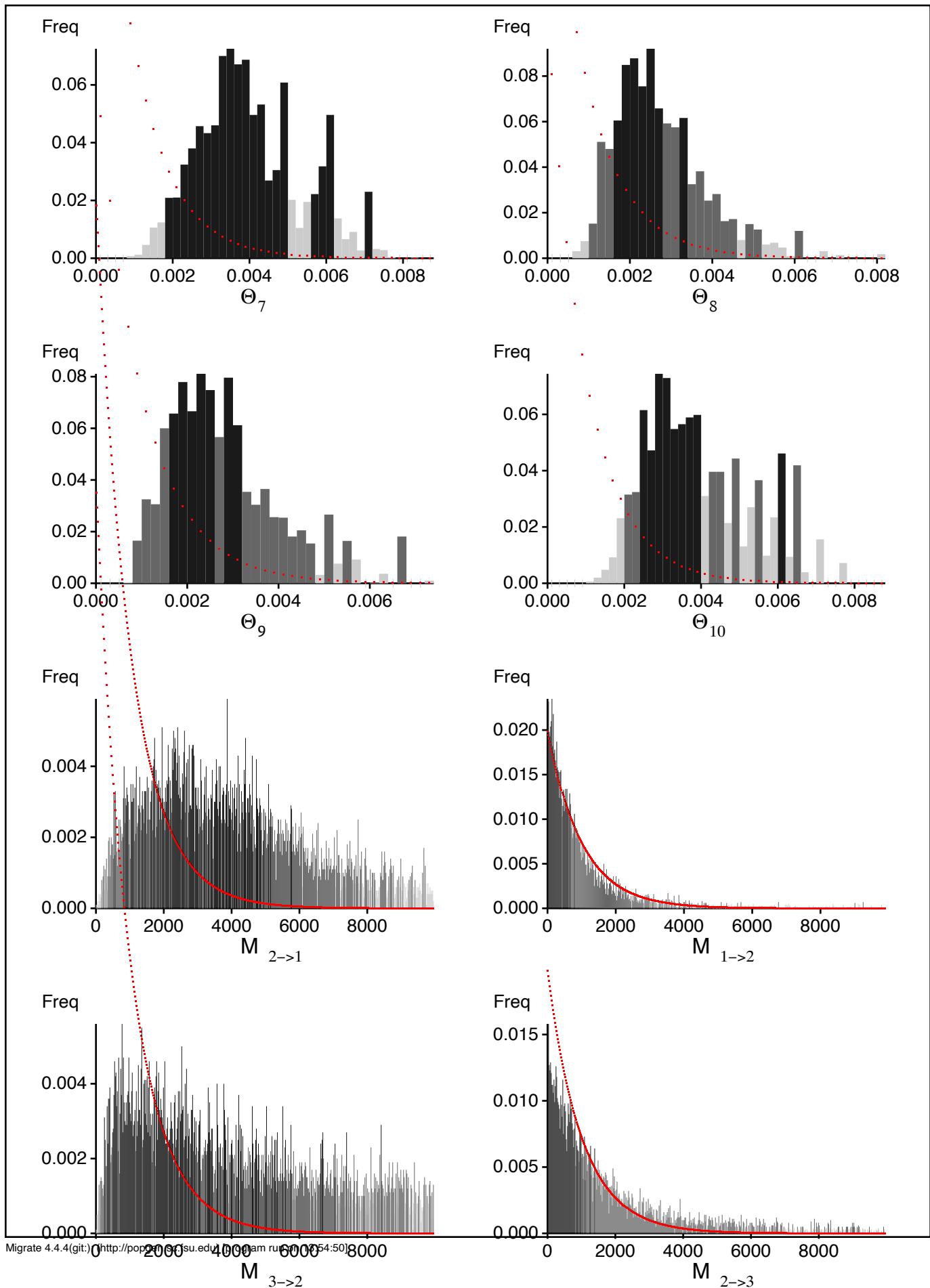


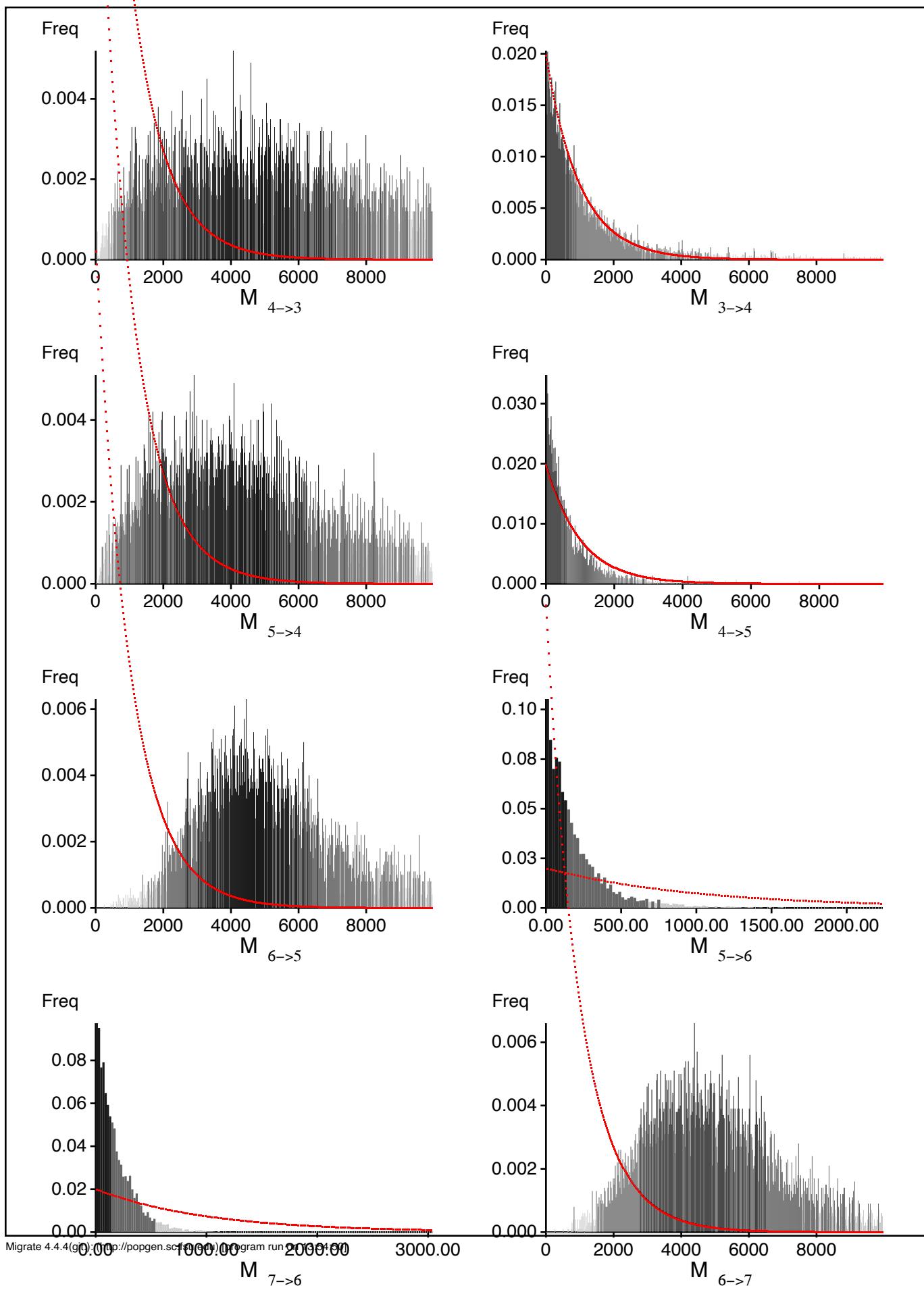


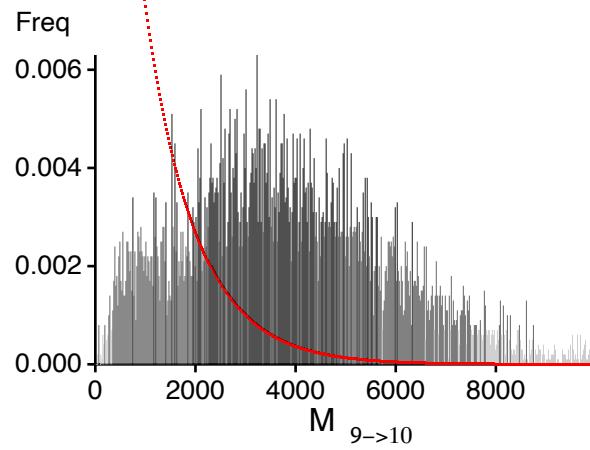
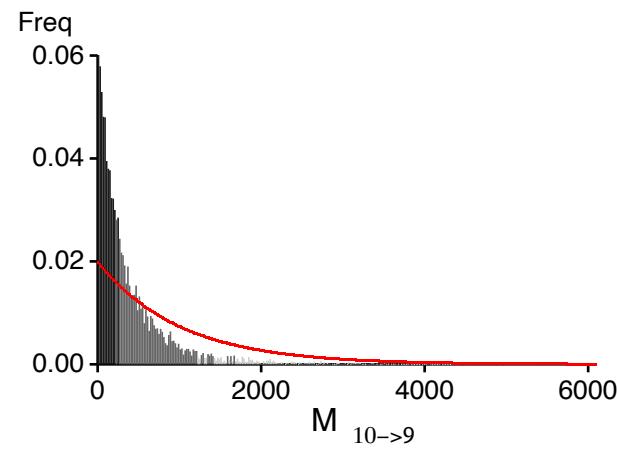
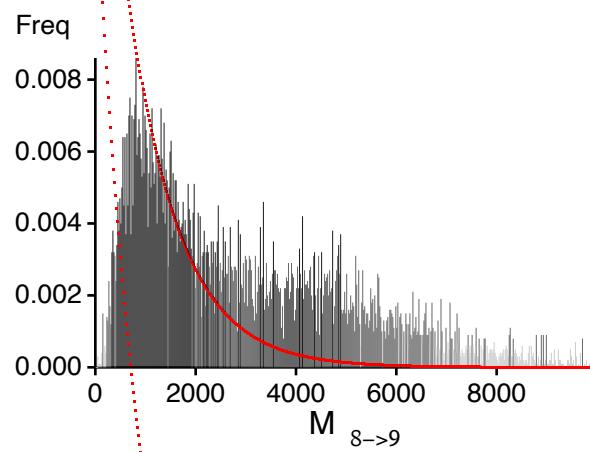
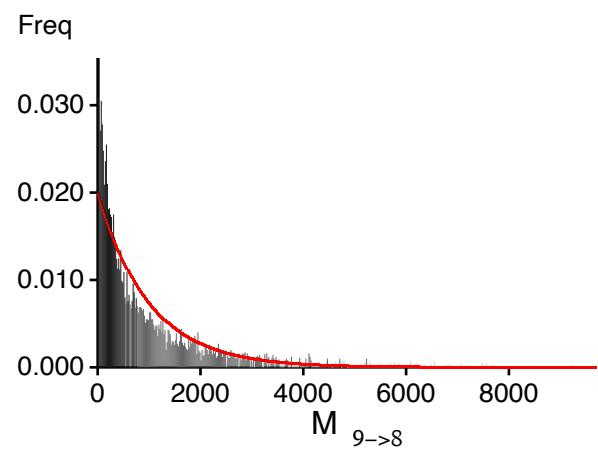
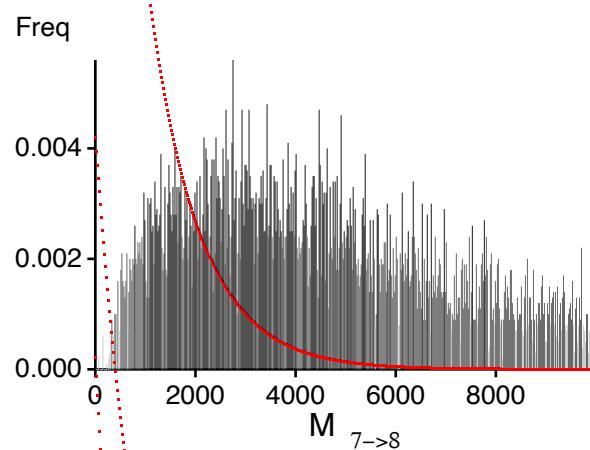
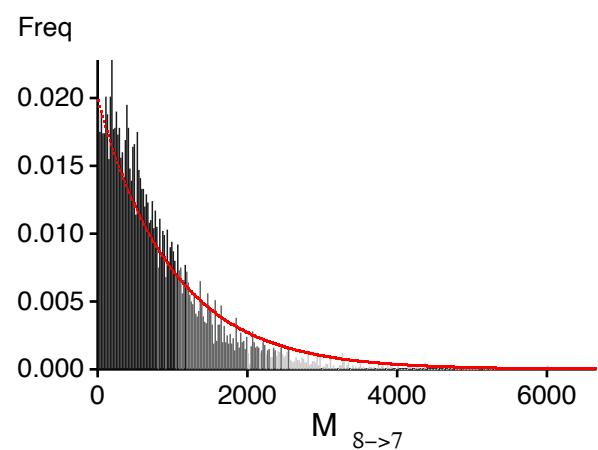




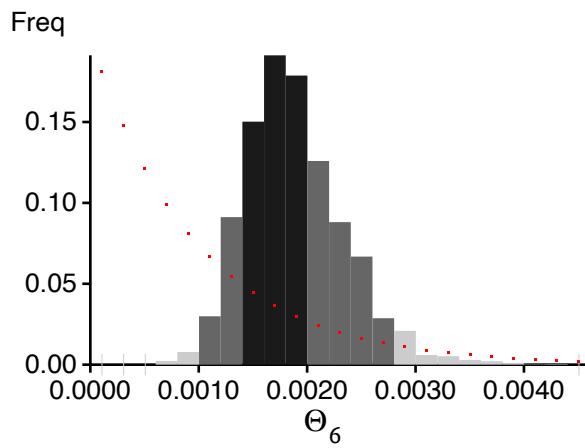
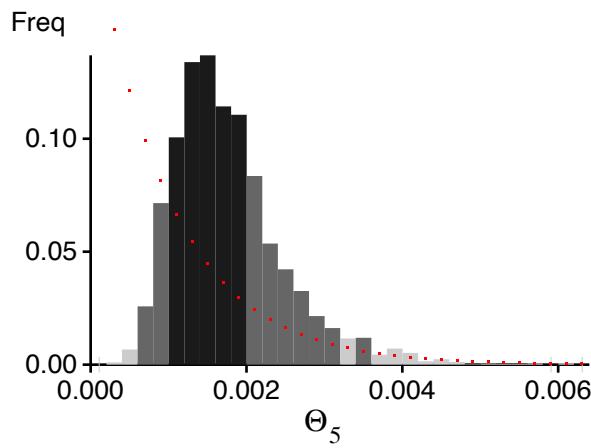
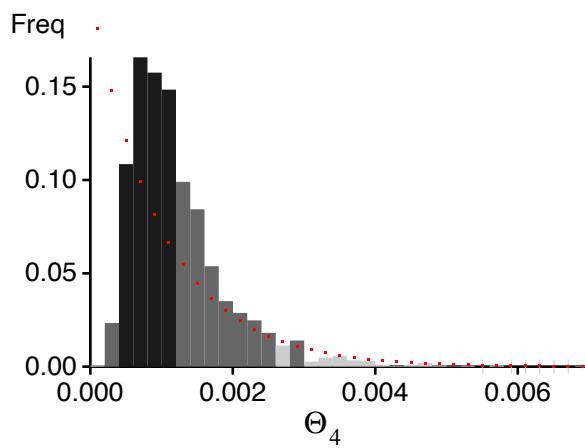
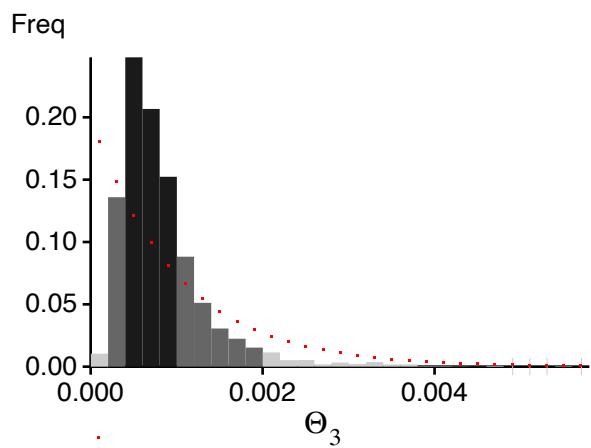
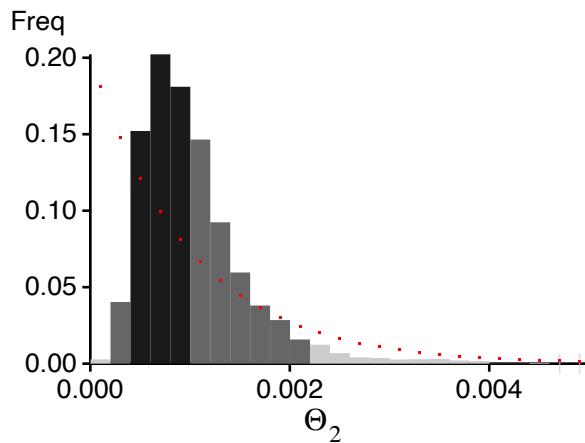
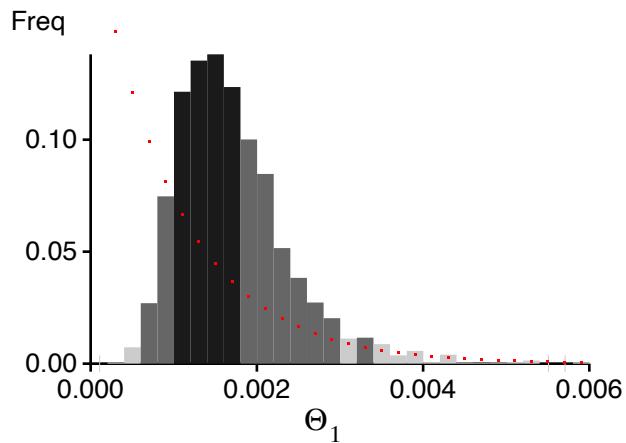
*Bayesian Analysis: Posterior distribution for locus 42*

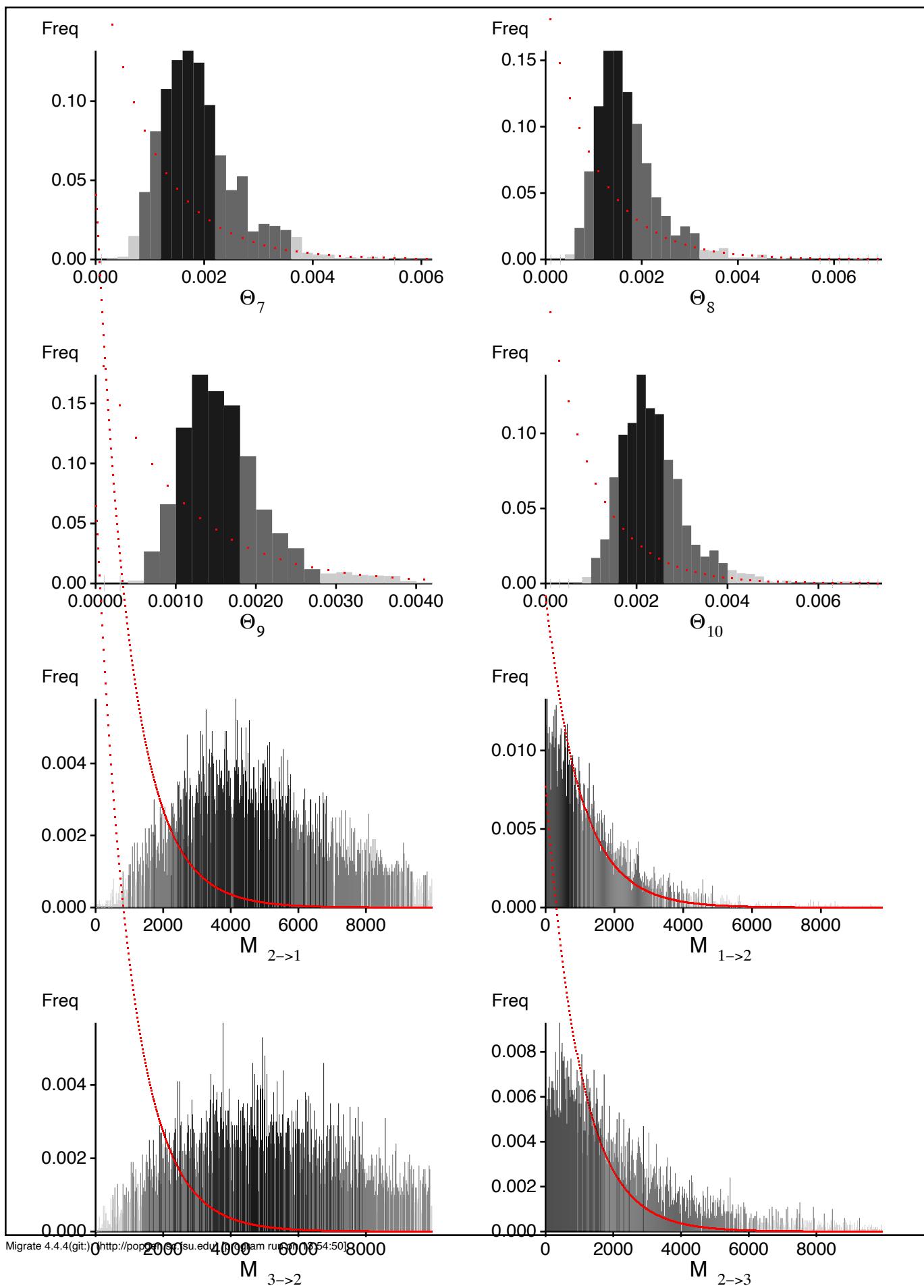


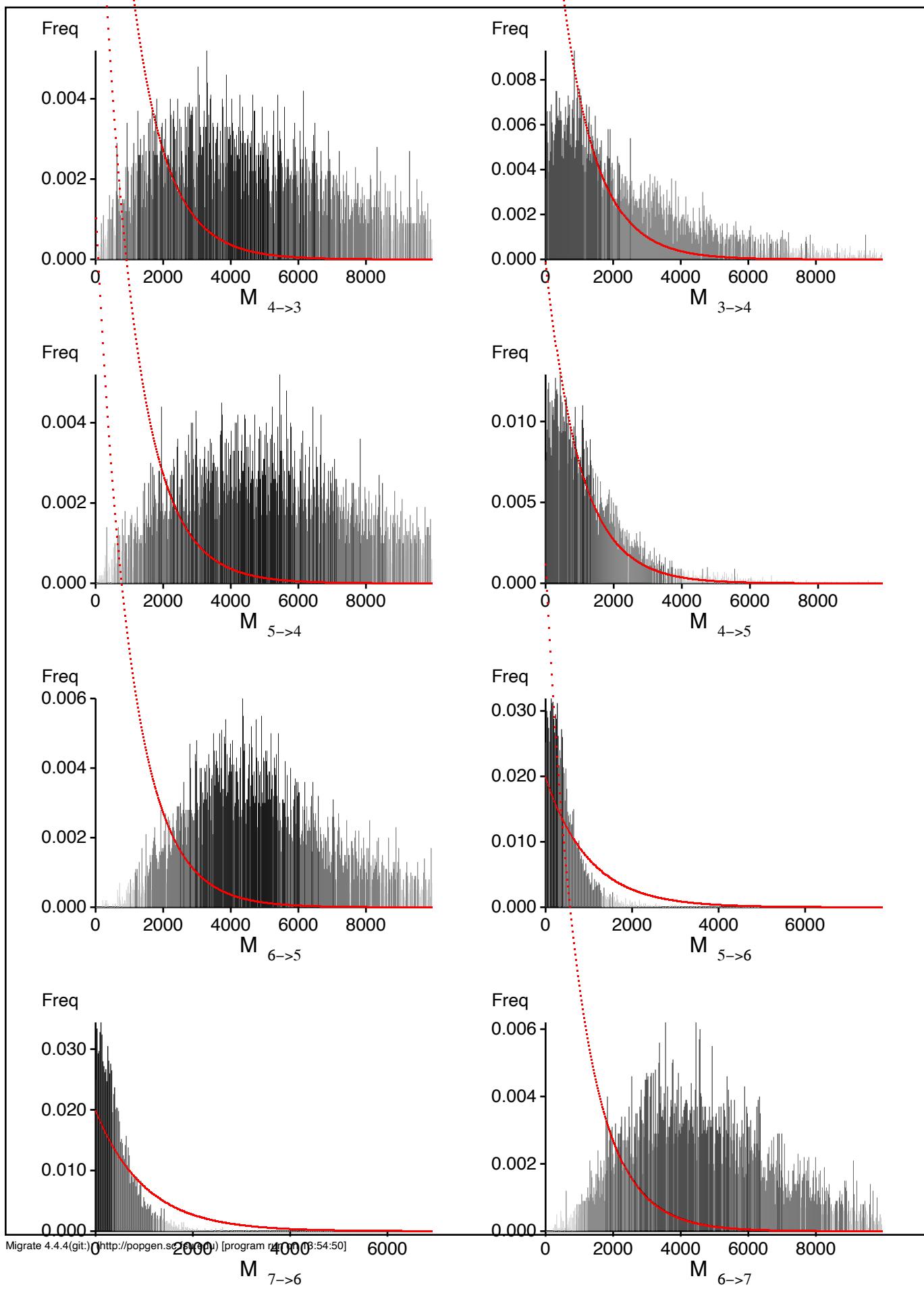


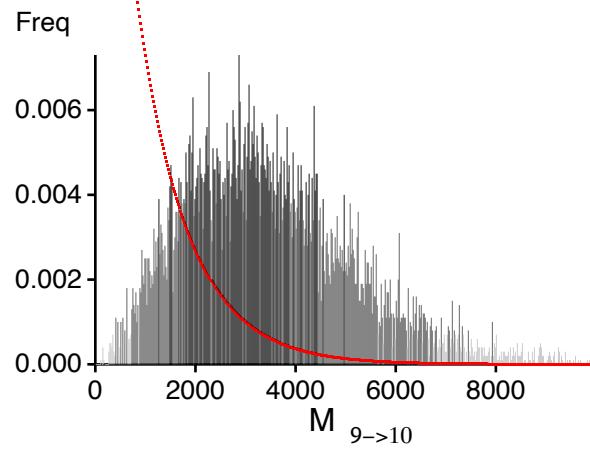
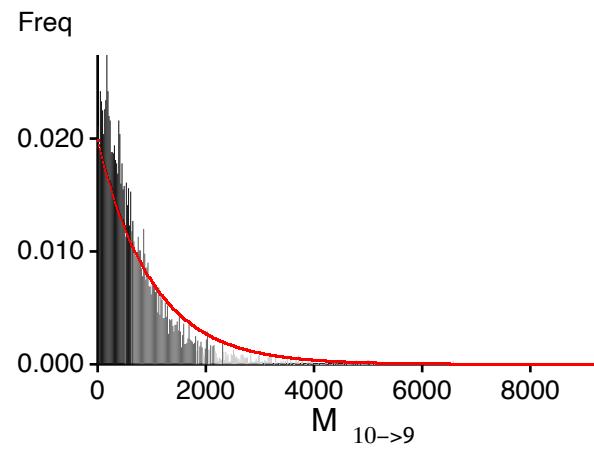
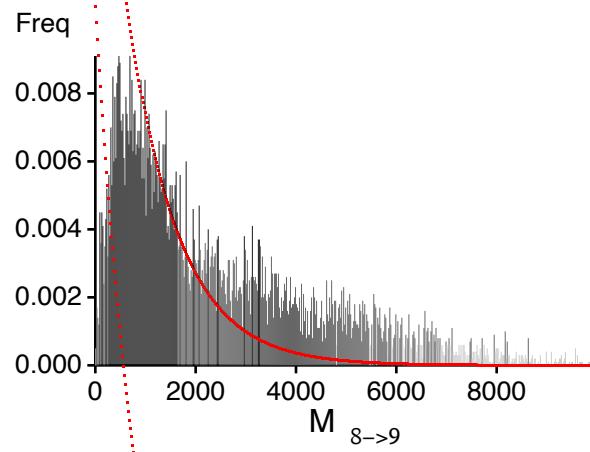
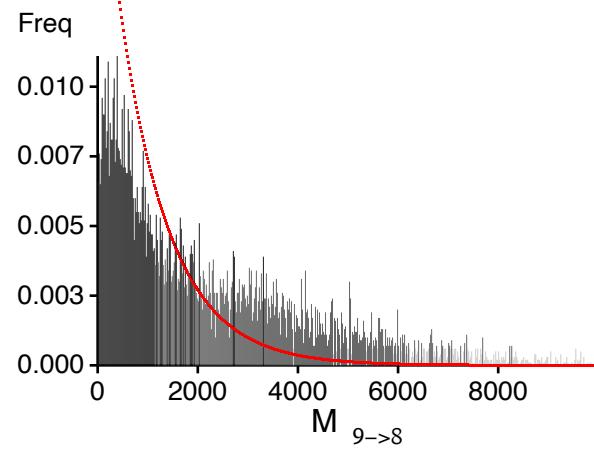
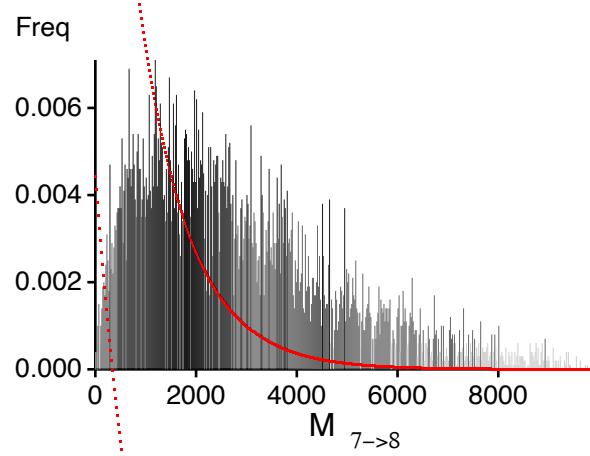
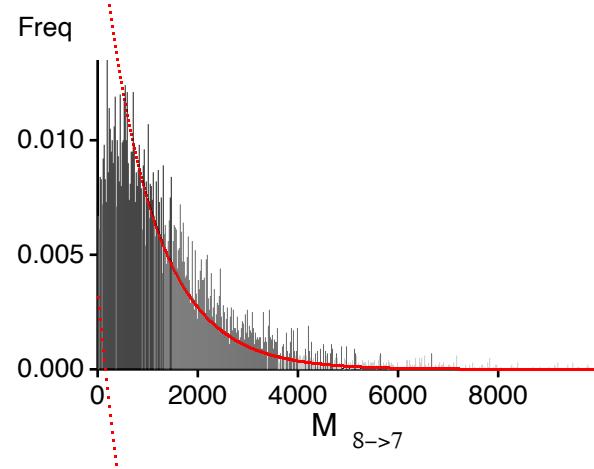


### Bayesian Analysis: Posterior distribution for locus 43

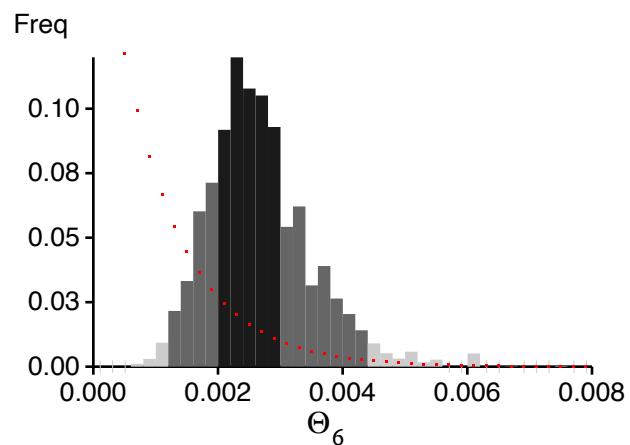
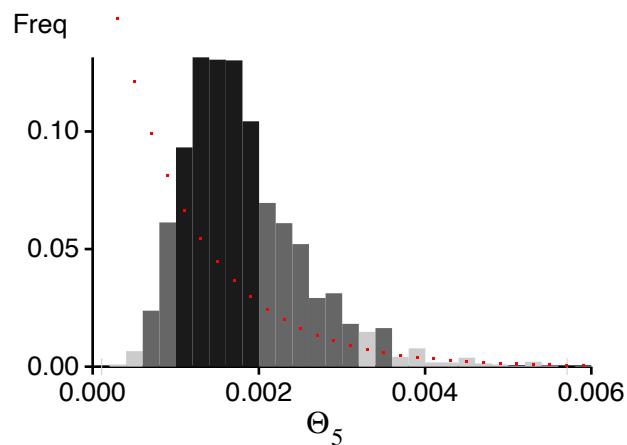
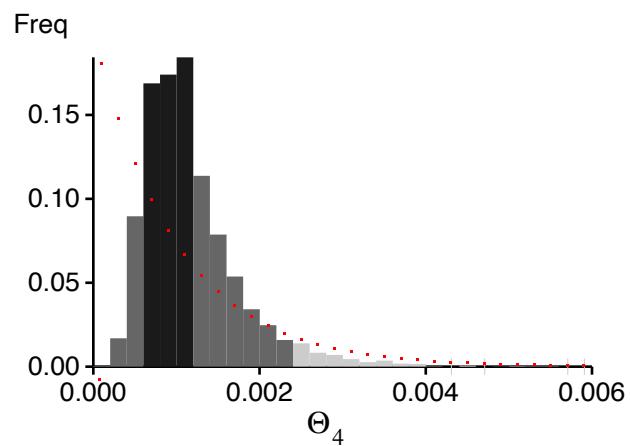
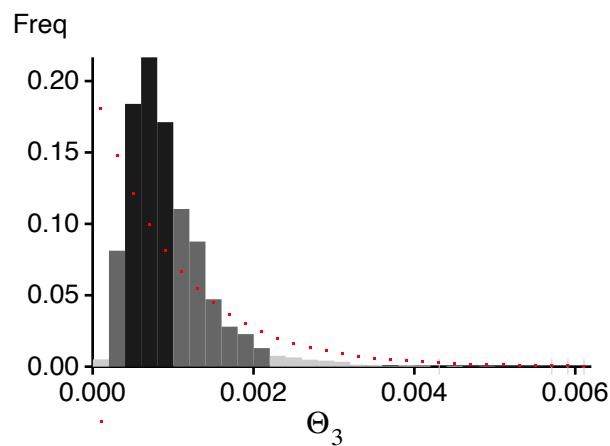
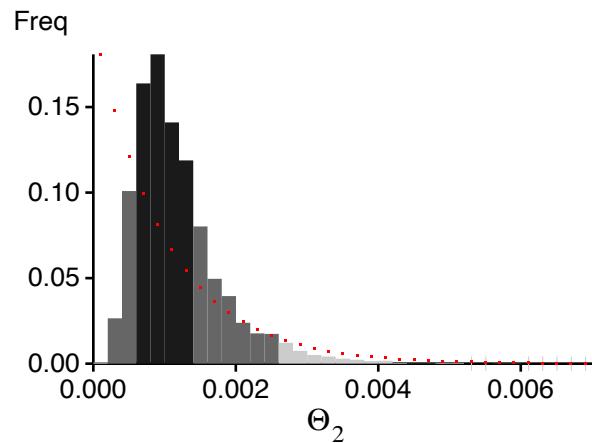
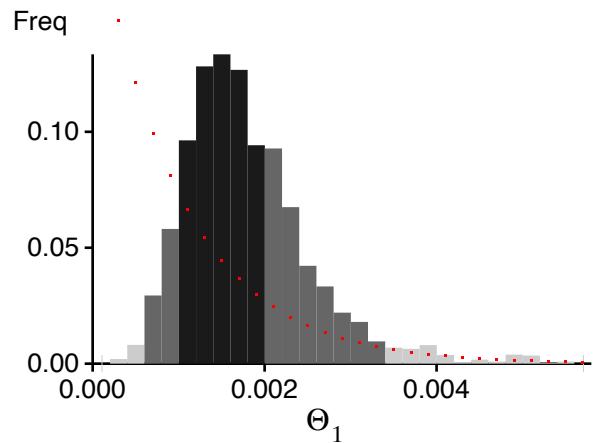


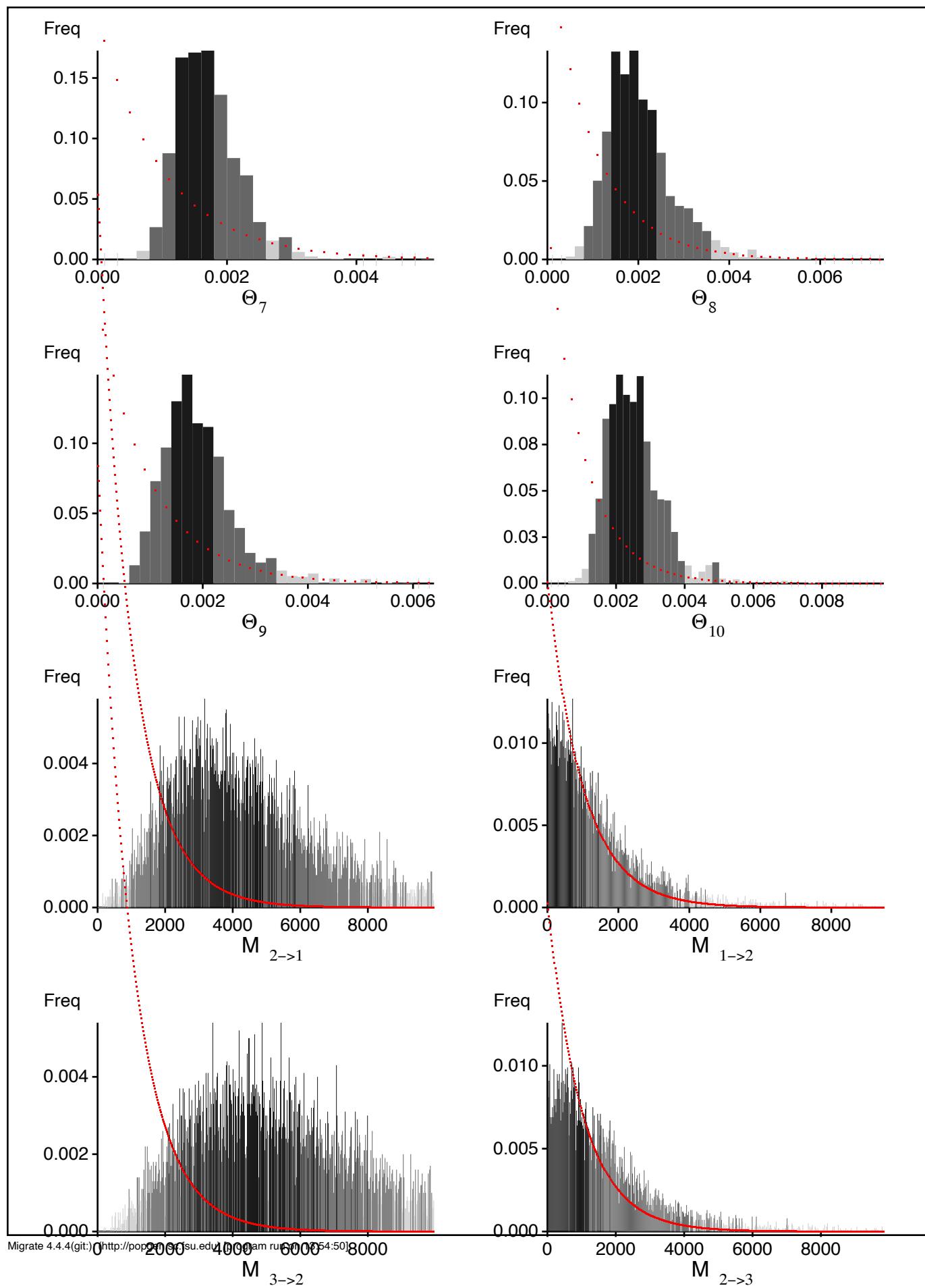


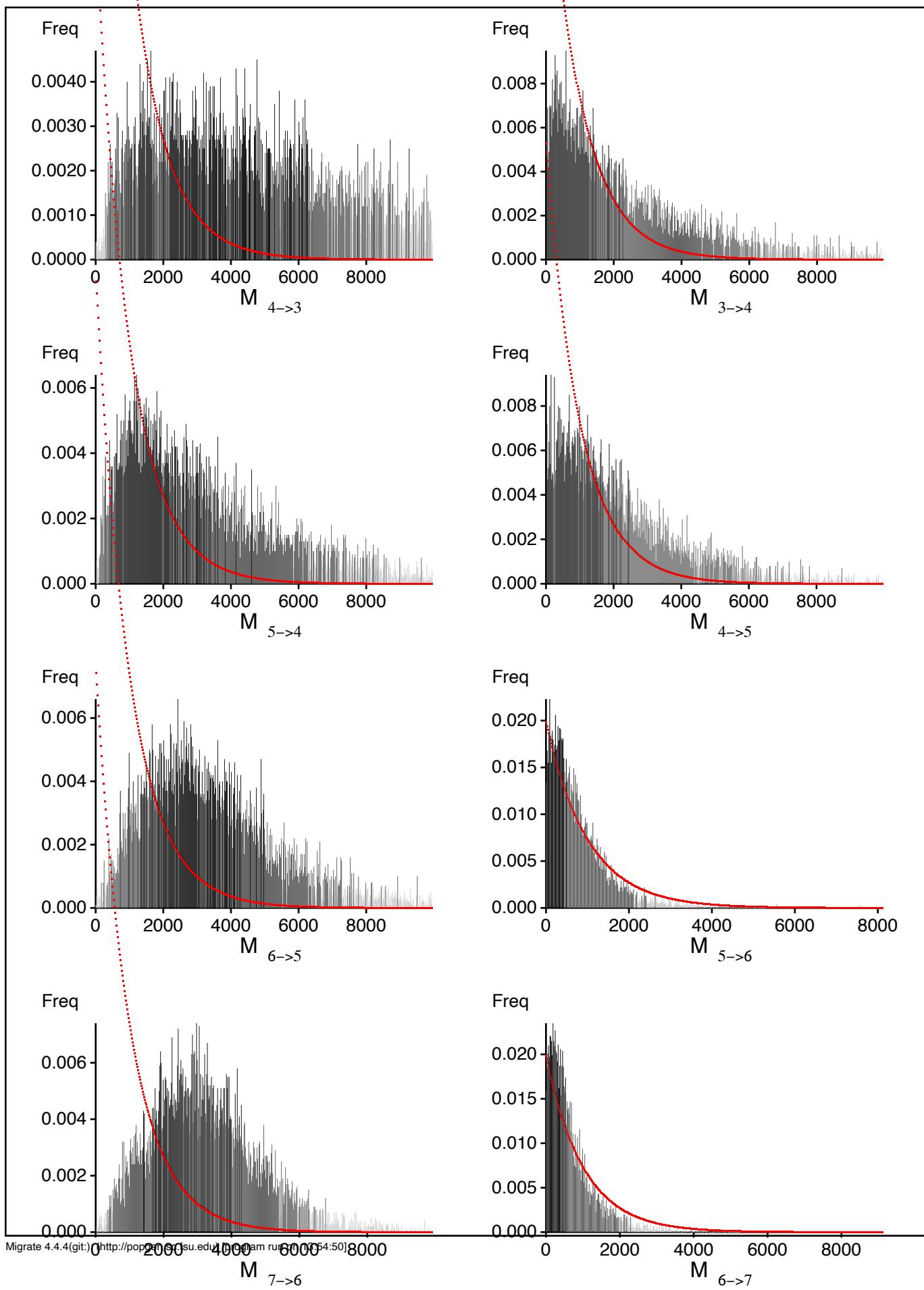


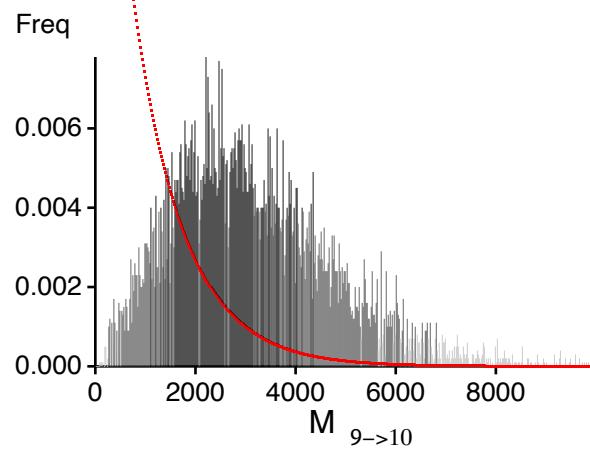
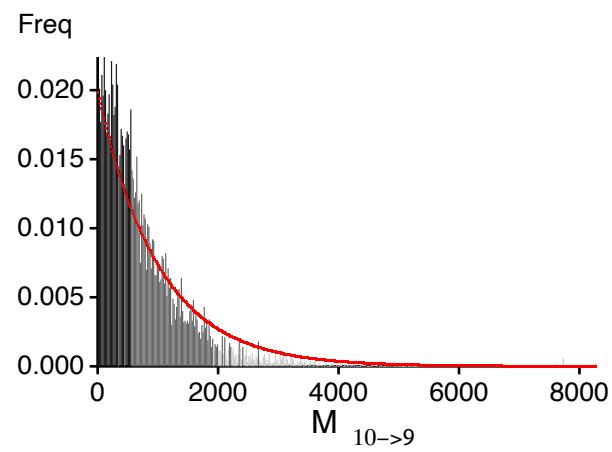
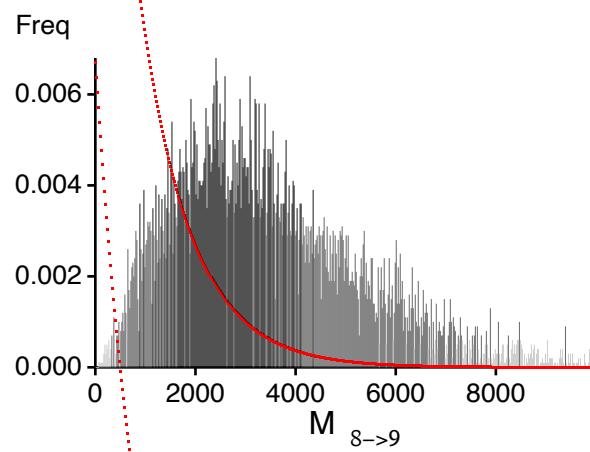
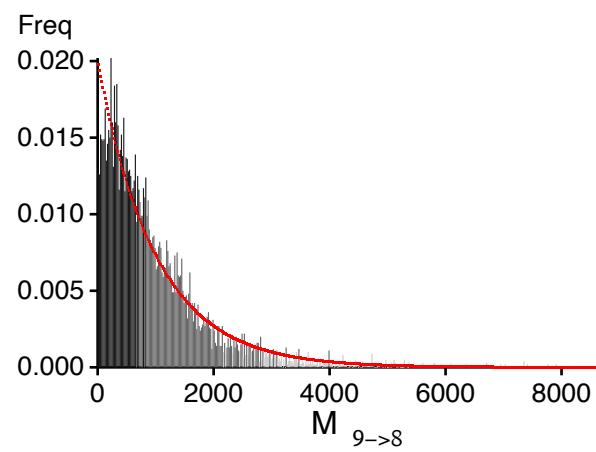
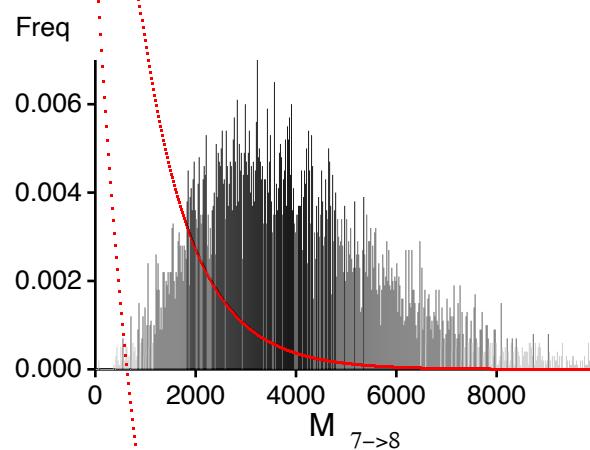
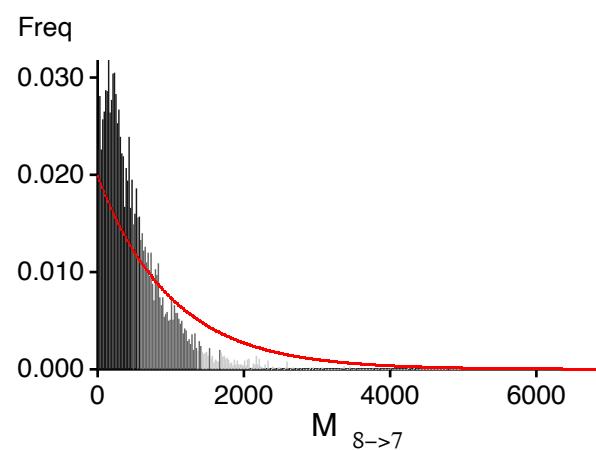


### Bayesian Analysis: Posterior distribution for locus 44

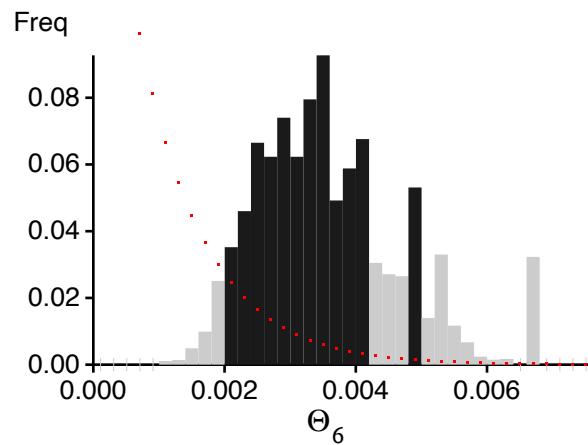
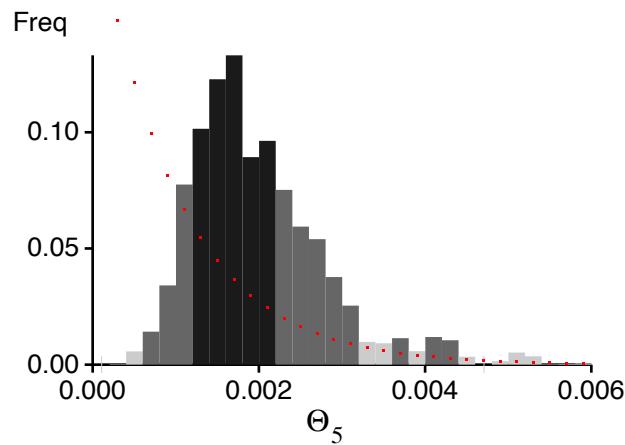
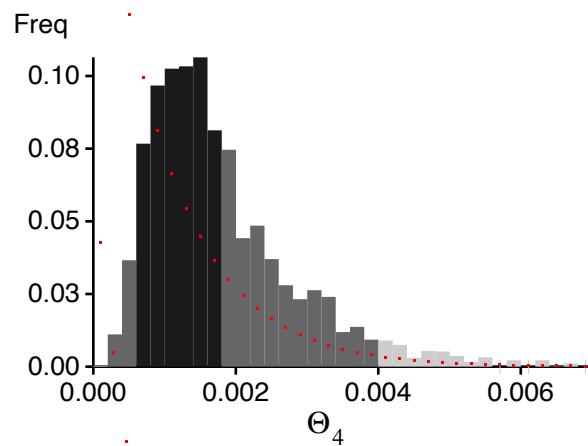
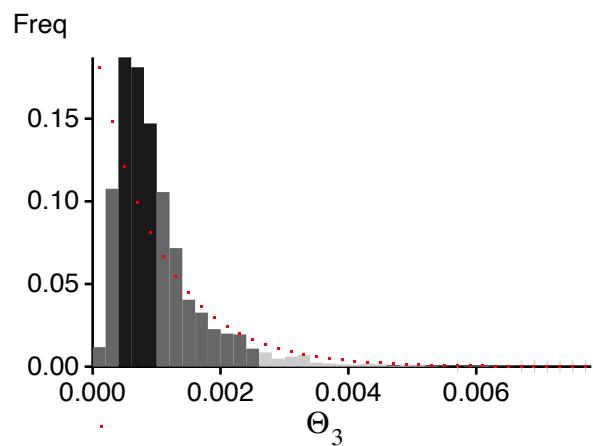
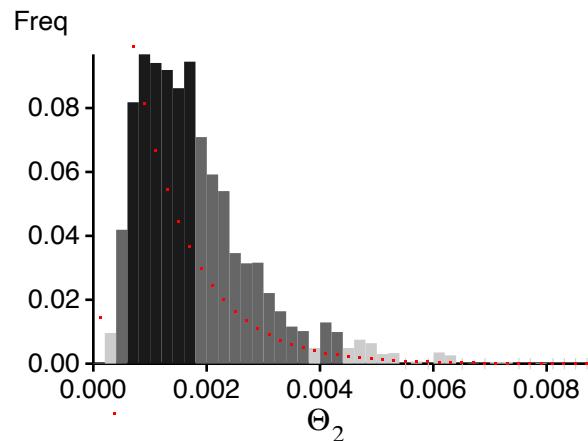
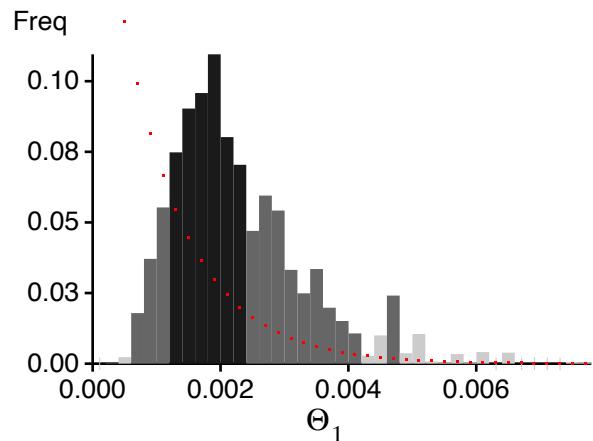


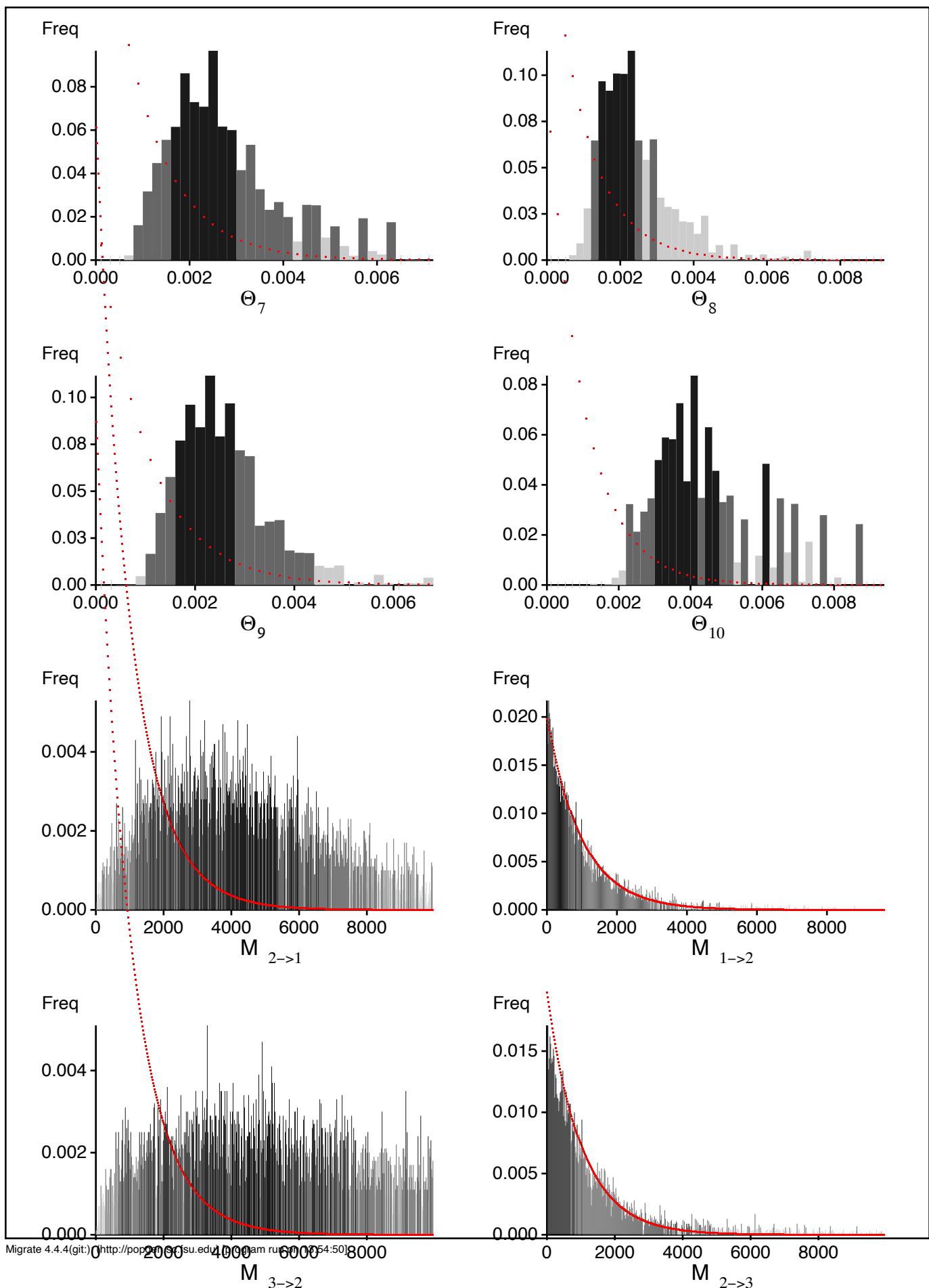


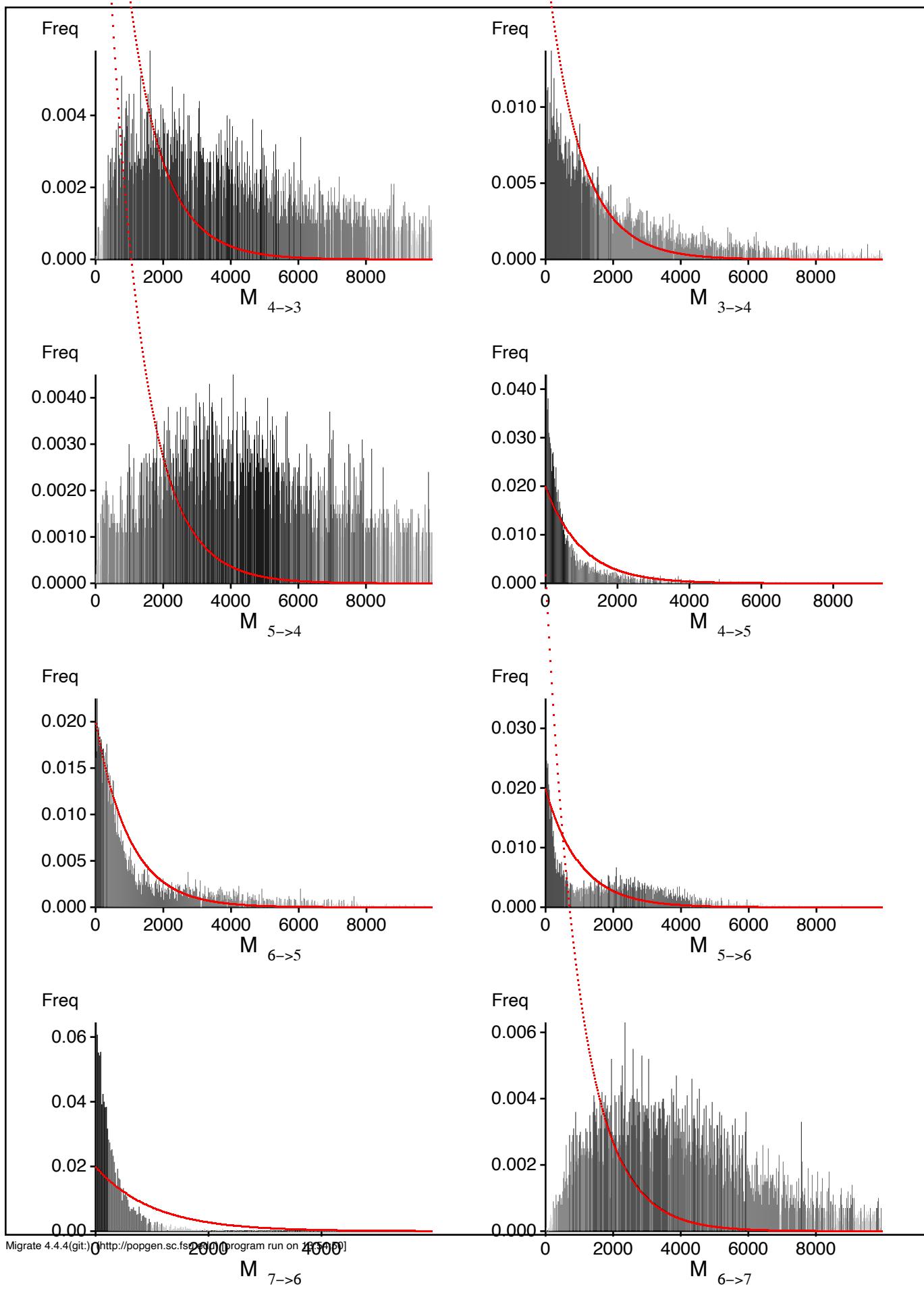


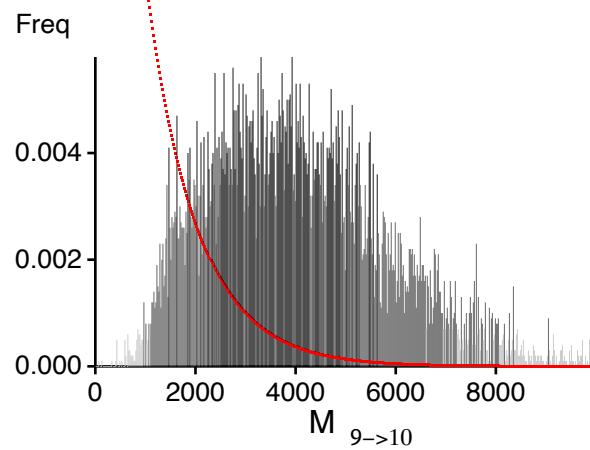
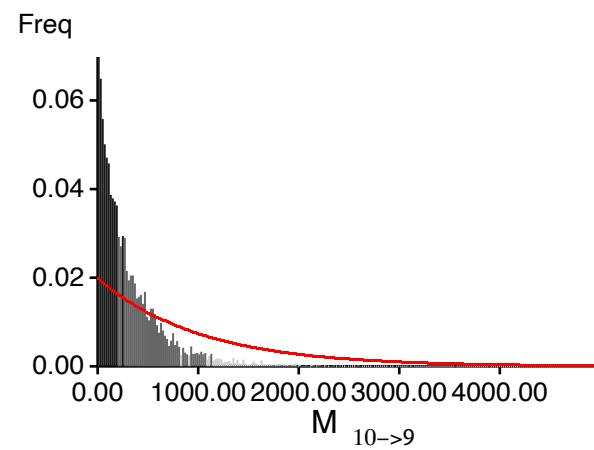
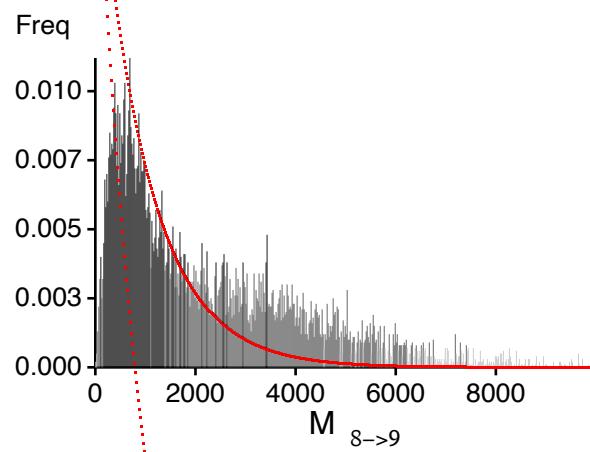
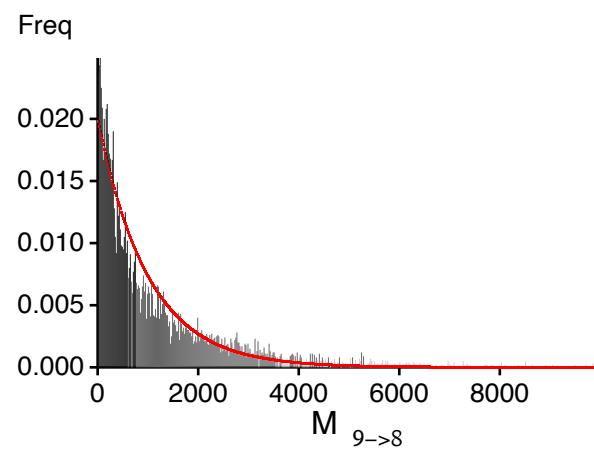
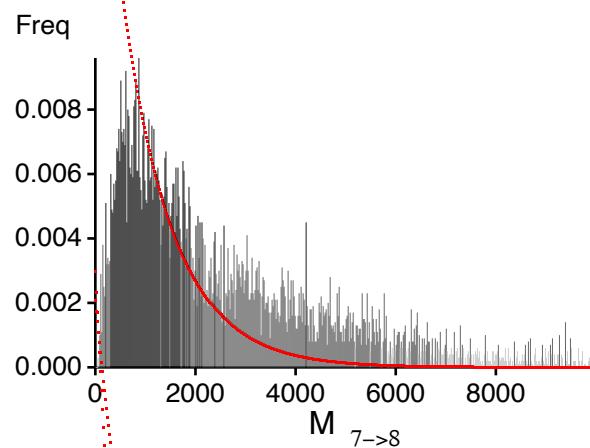
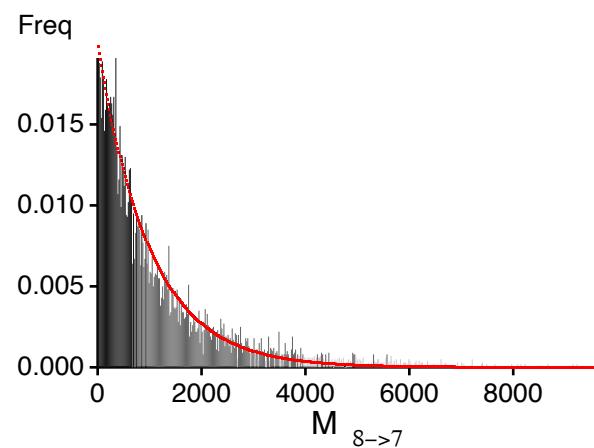


### Bayesian Analysis: Posterior distribution for locus 45

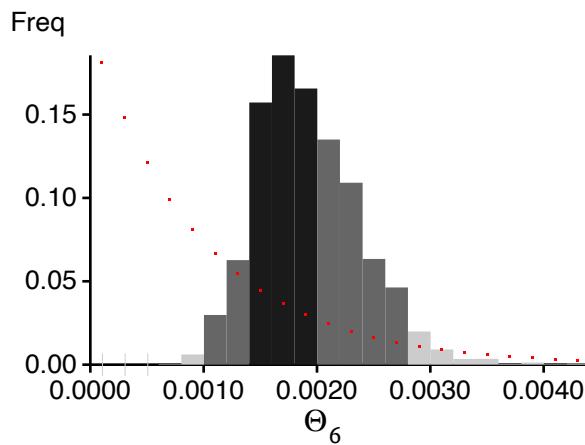
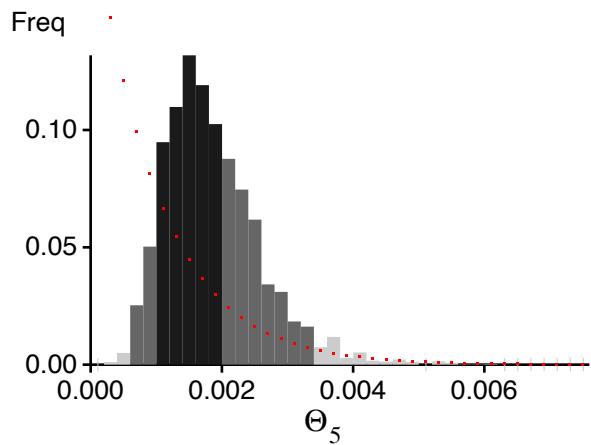
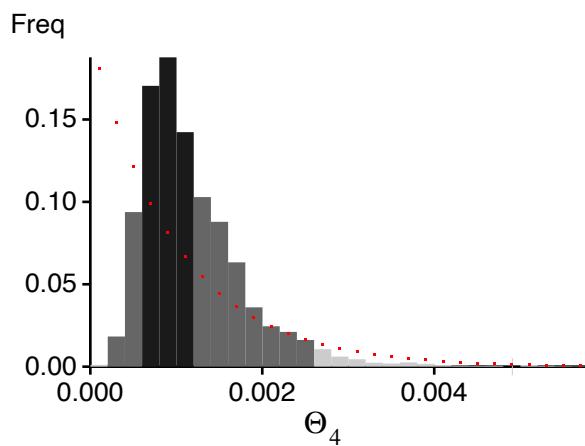
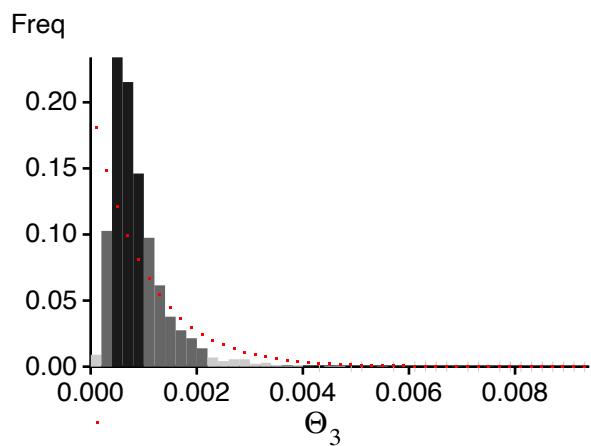
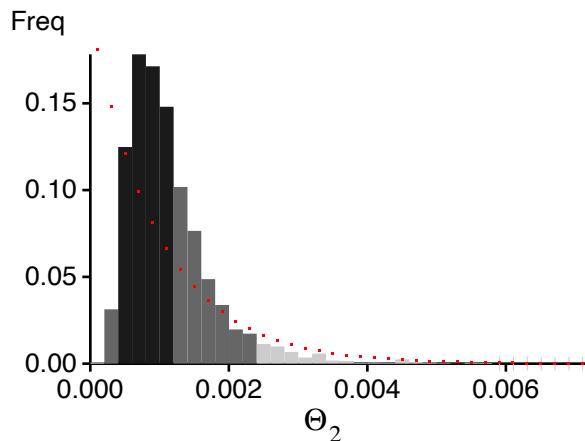
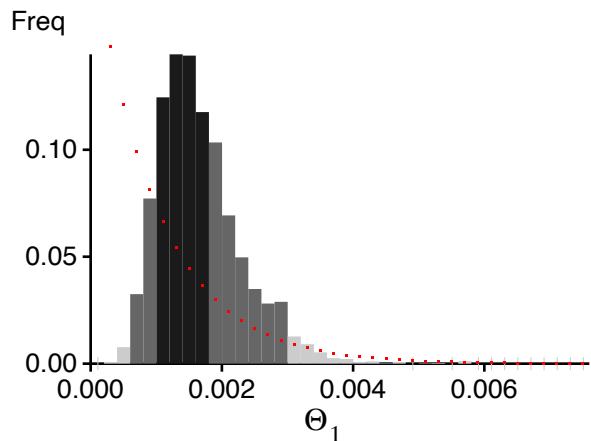


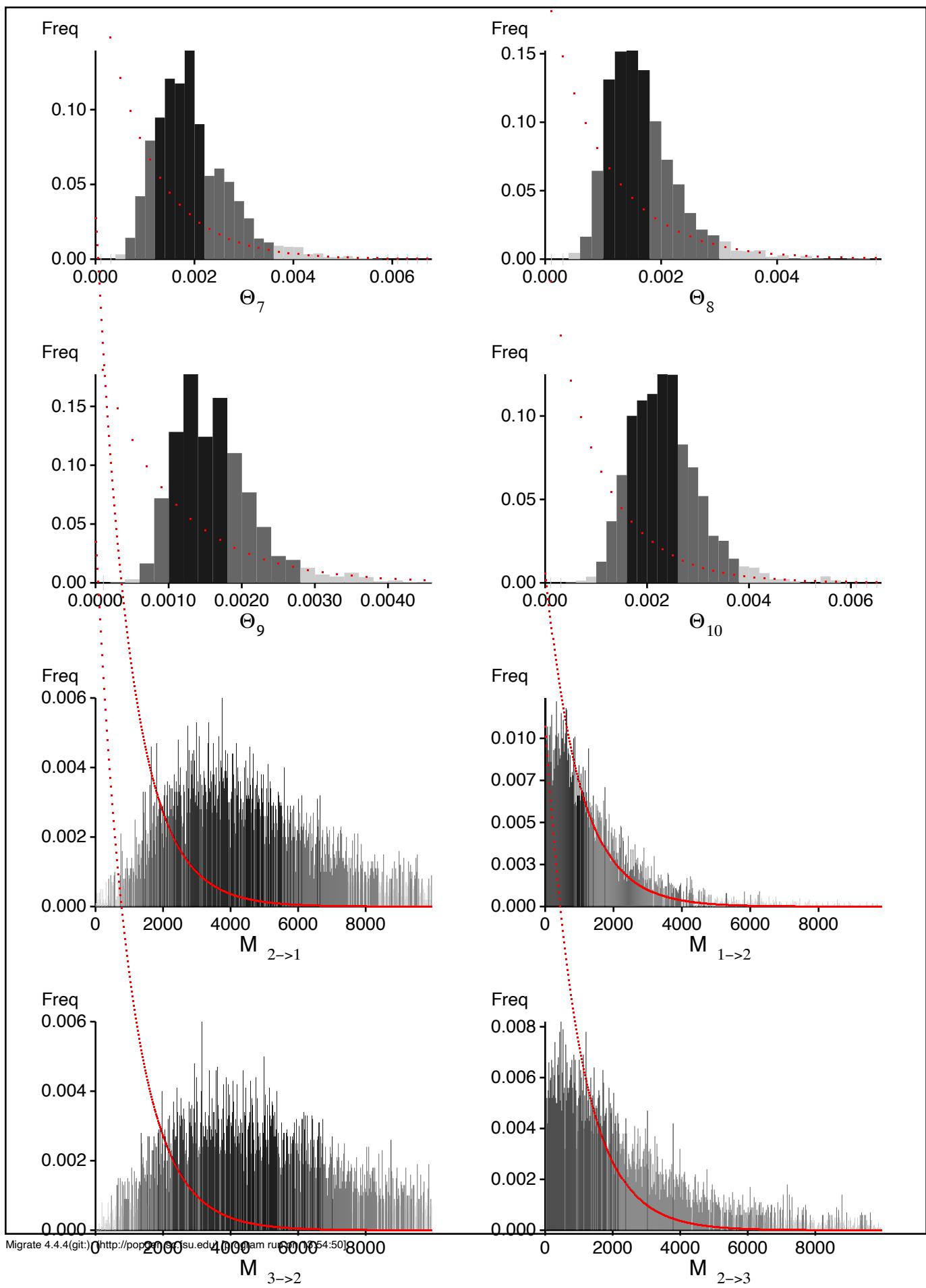


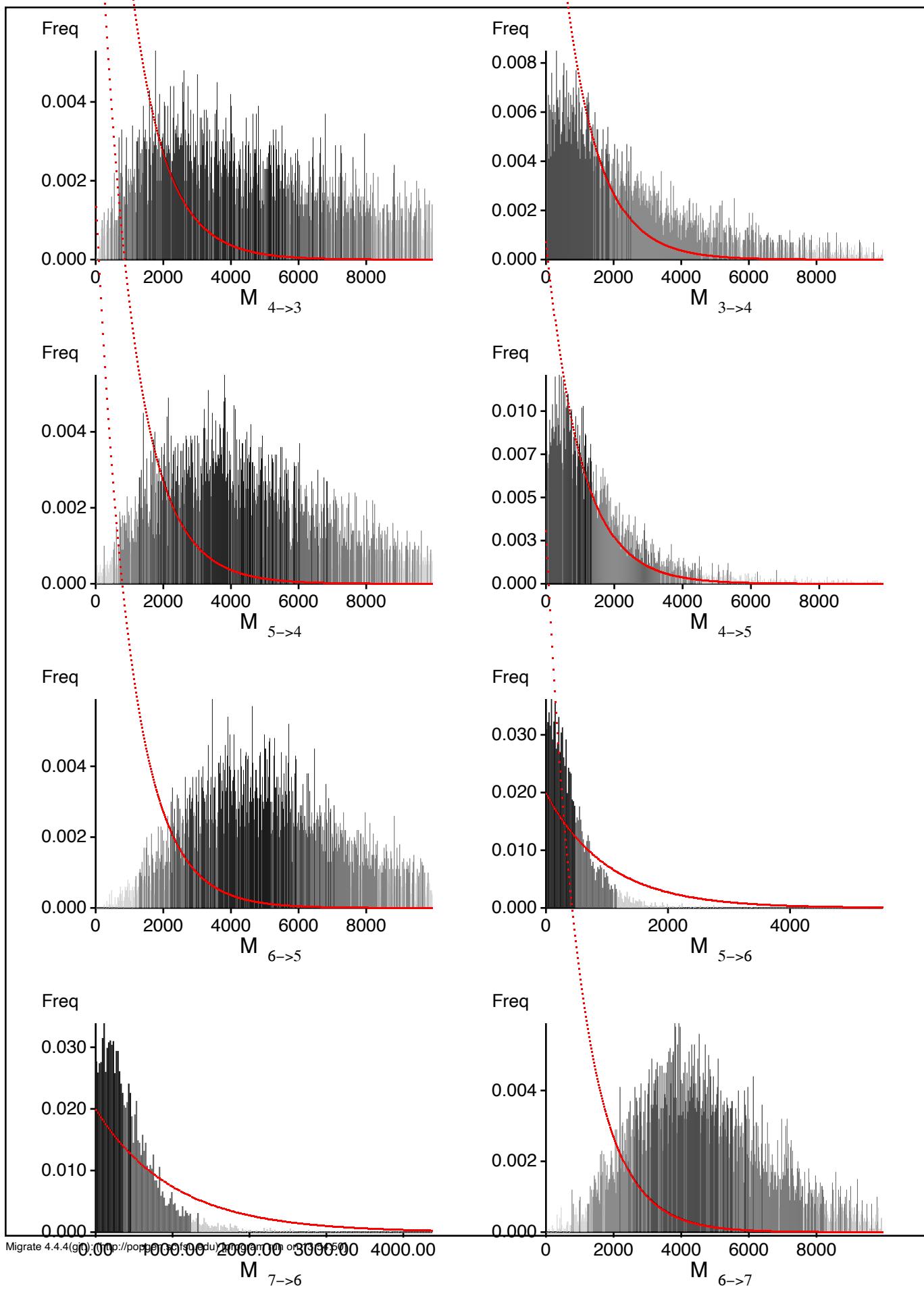


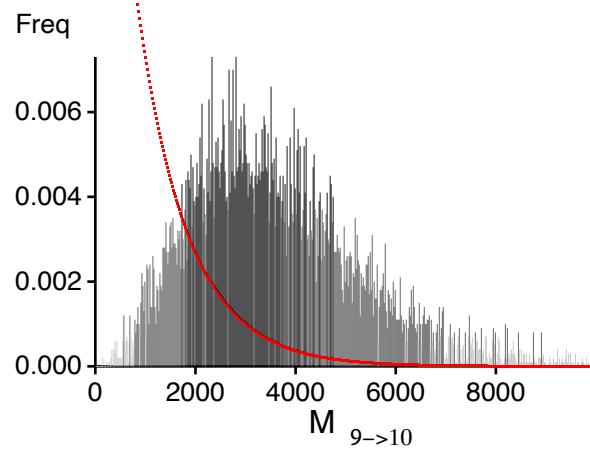
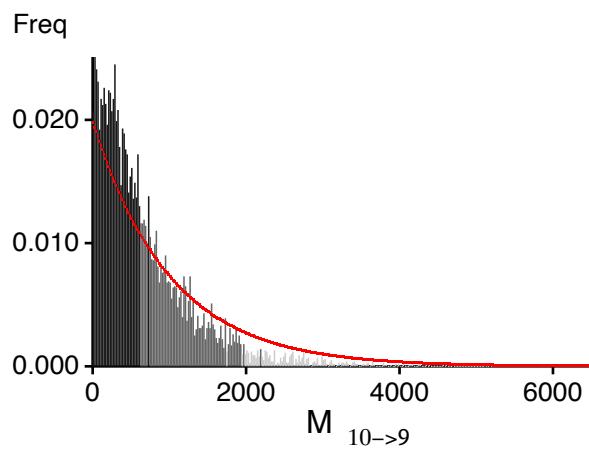
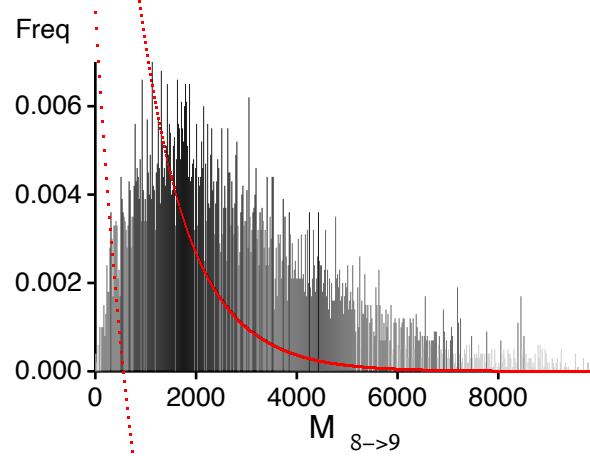
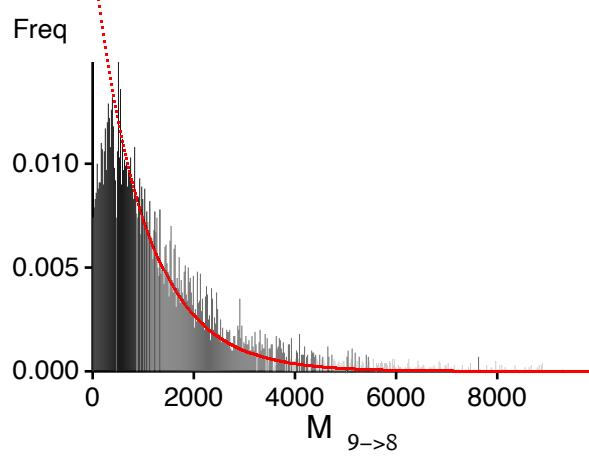
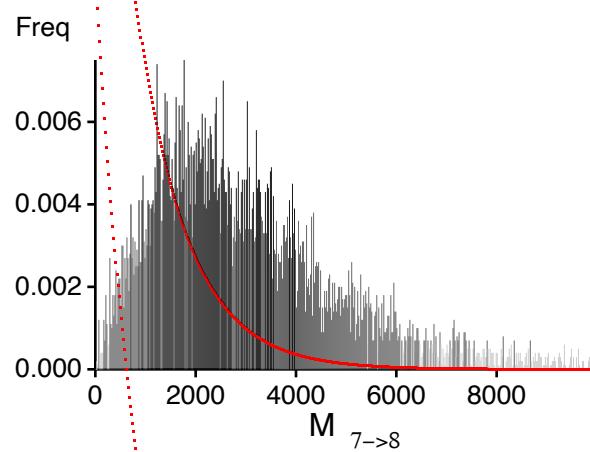
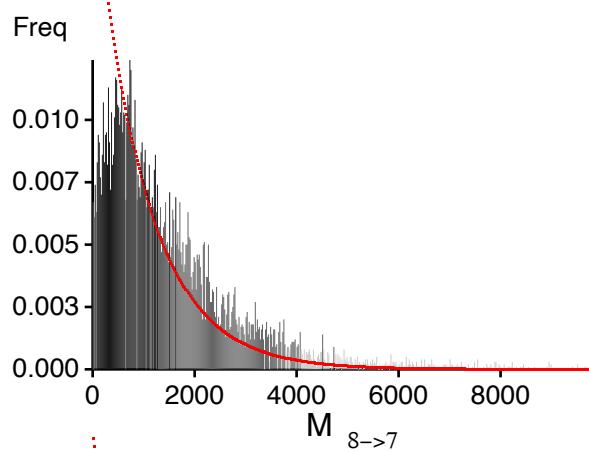


### Bayesian Analysis: Posterior distribution for locus 46

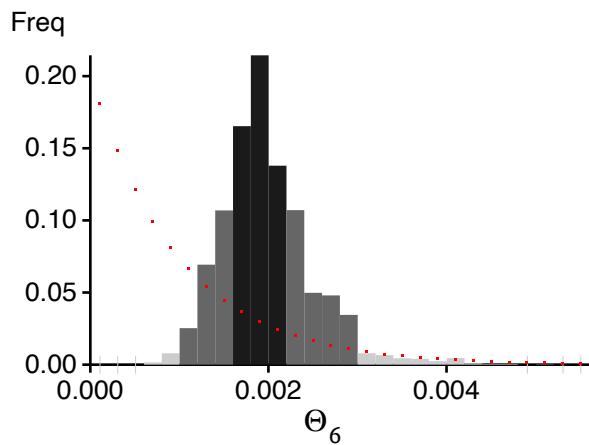
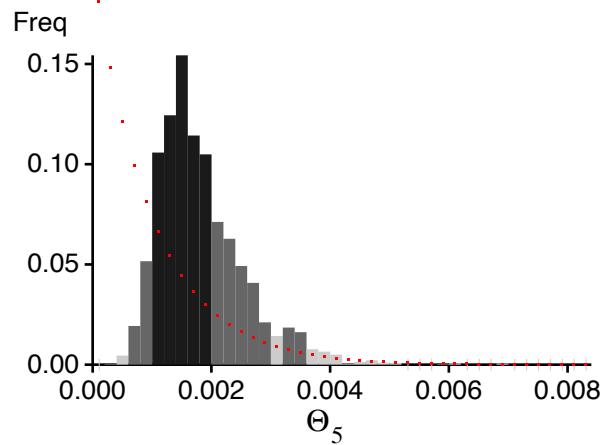
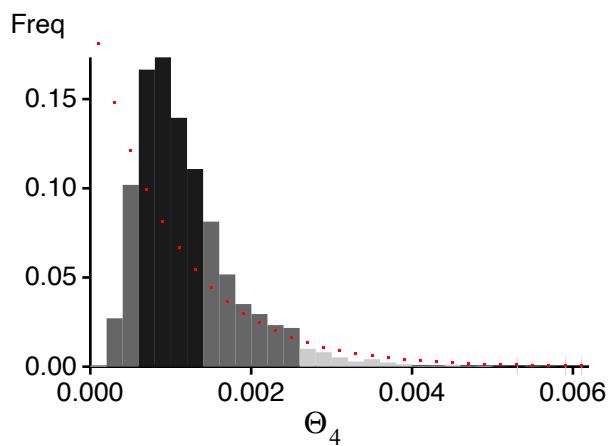
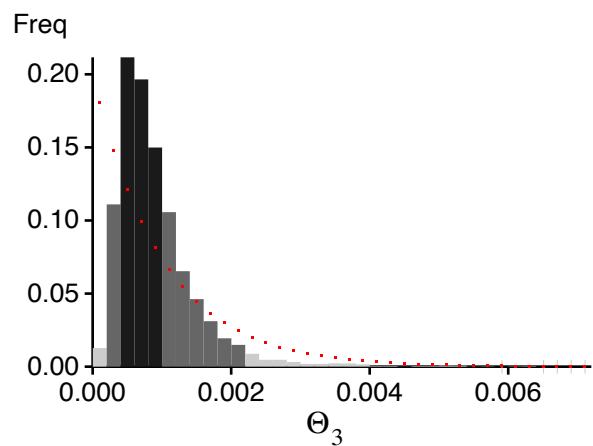
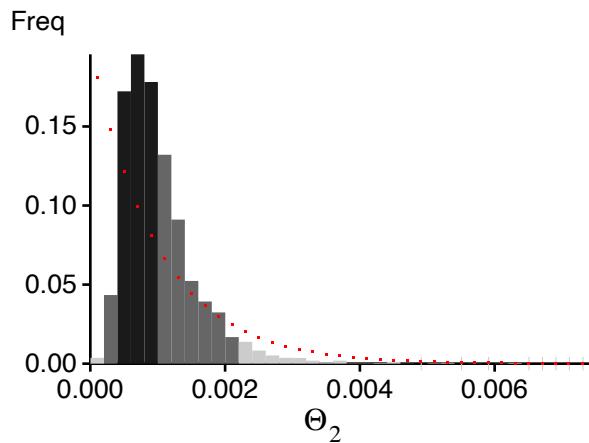
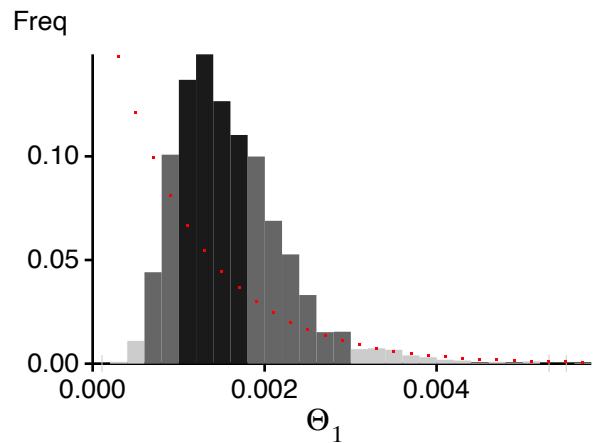


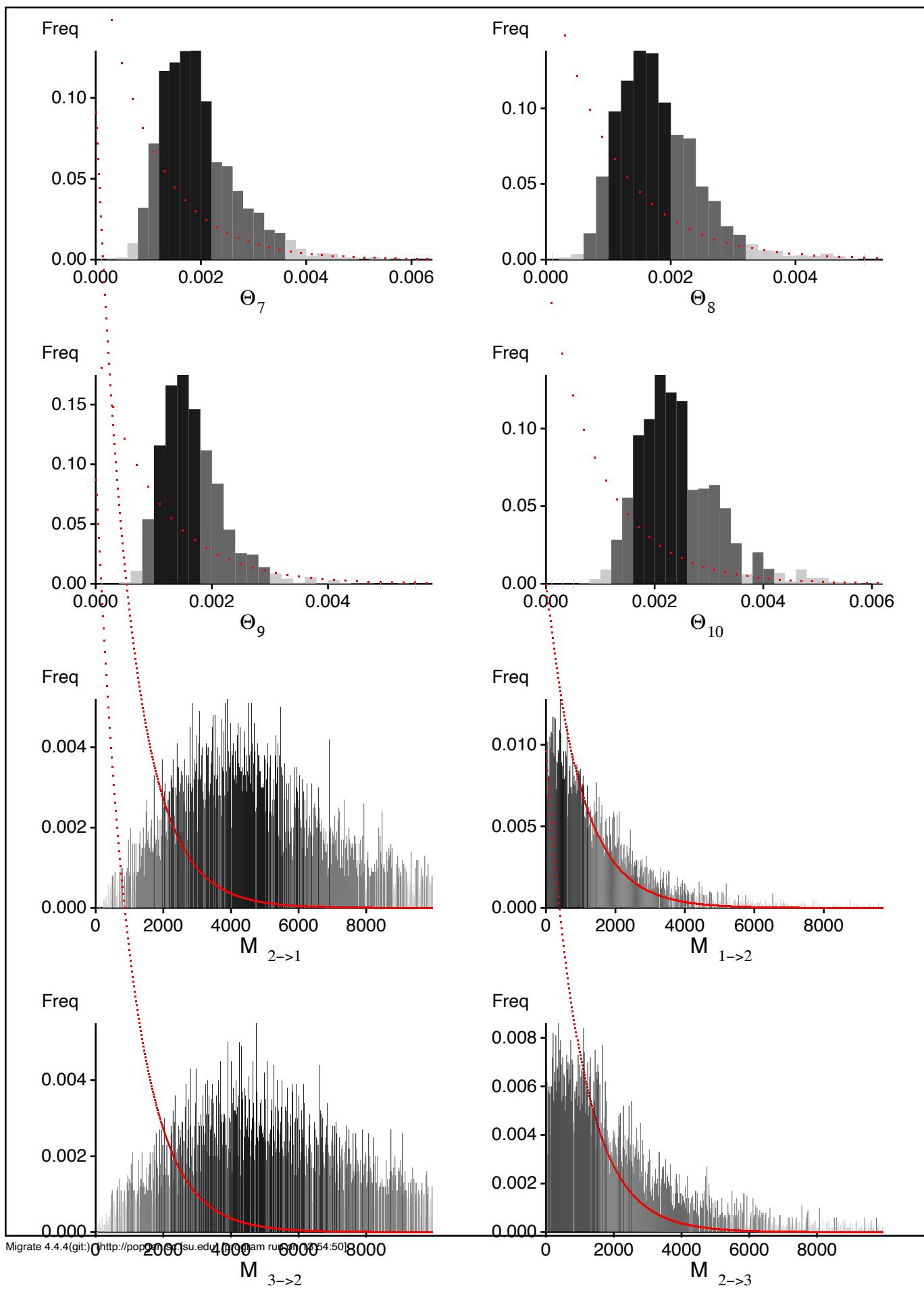


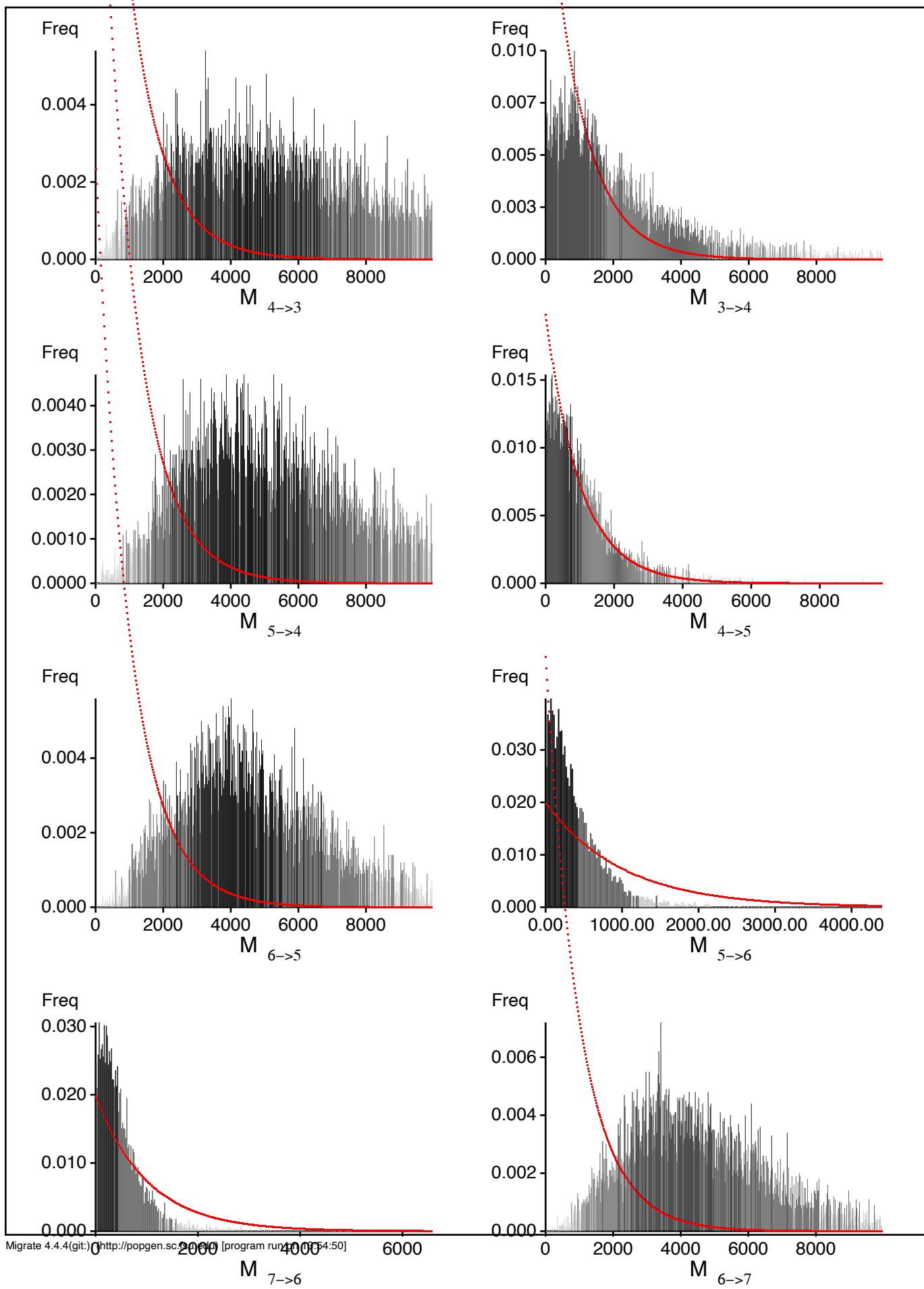


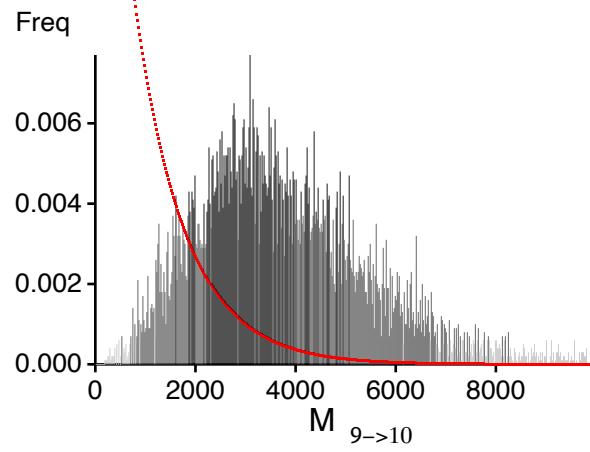
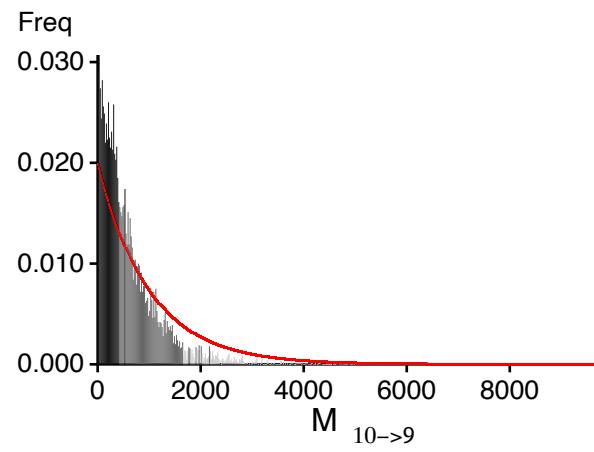
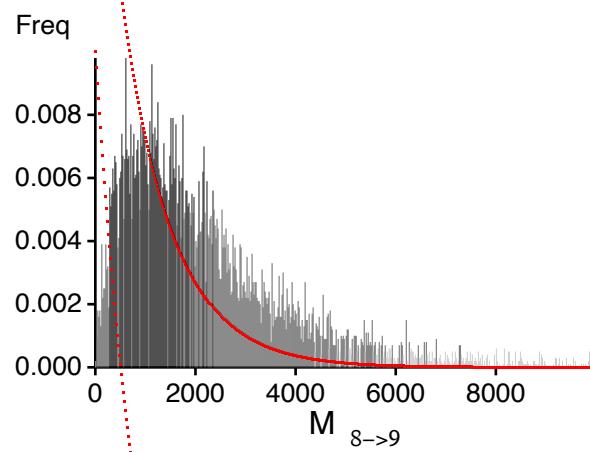
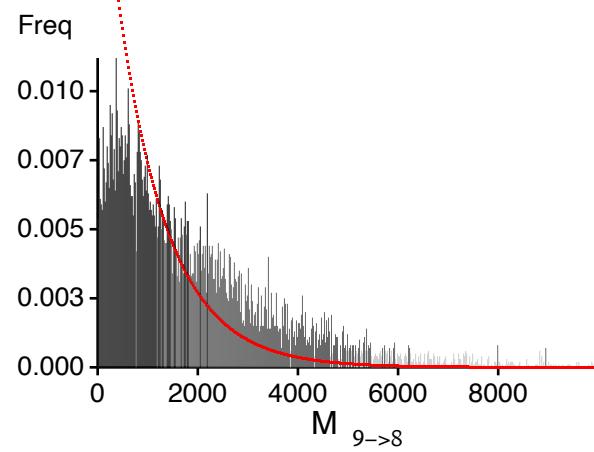
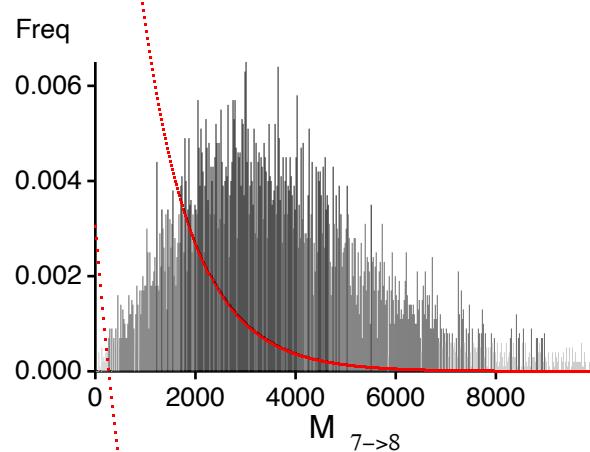
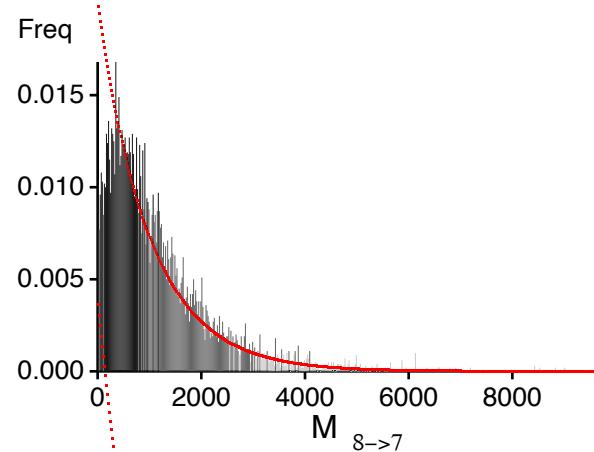


### Bayesian Analysis: Posterior distribution for locus 47

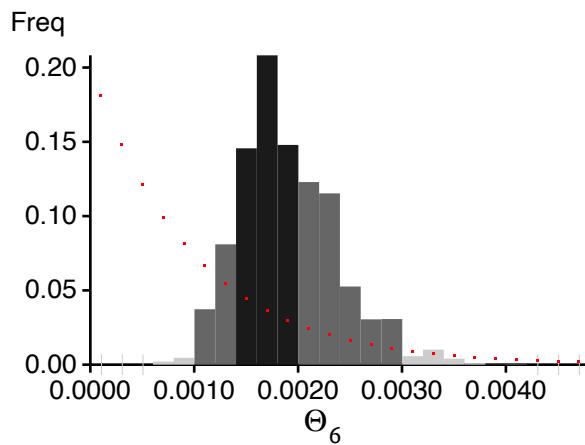
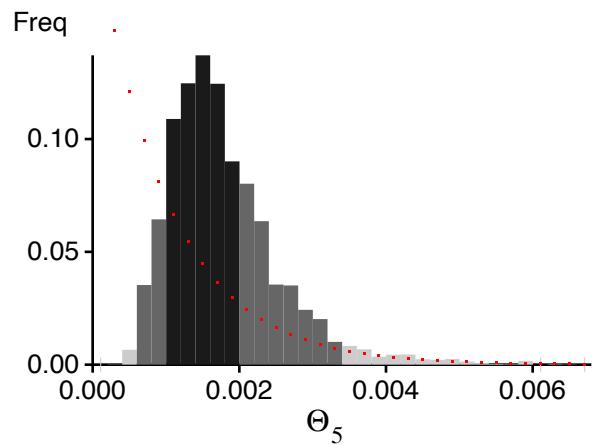
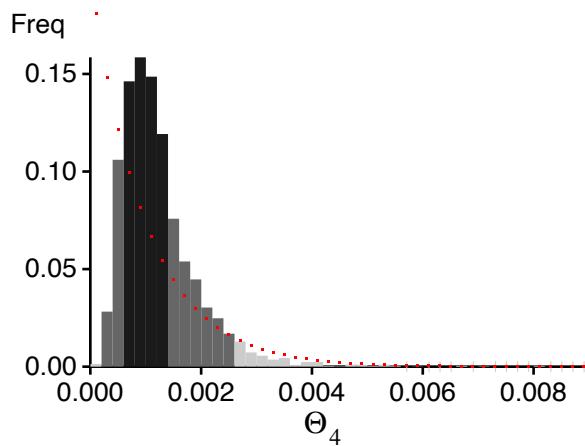
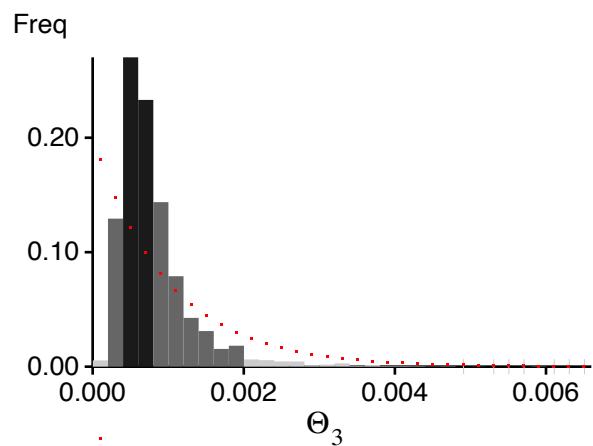
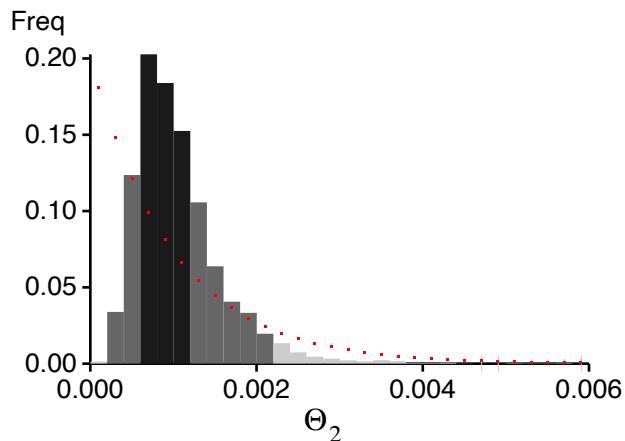
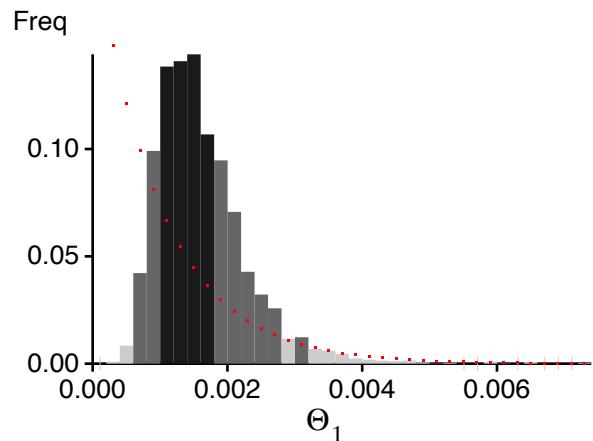


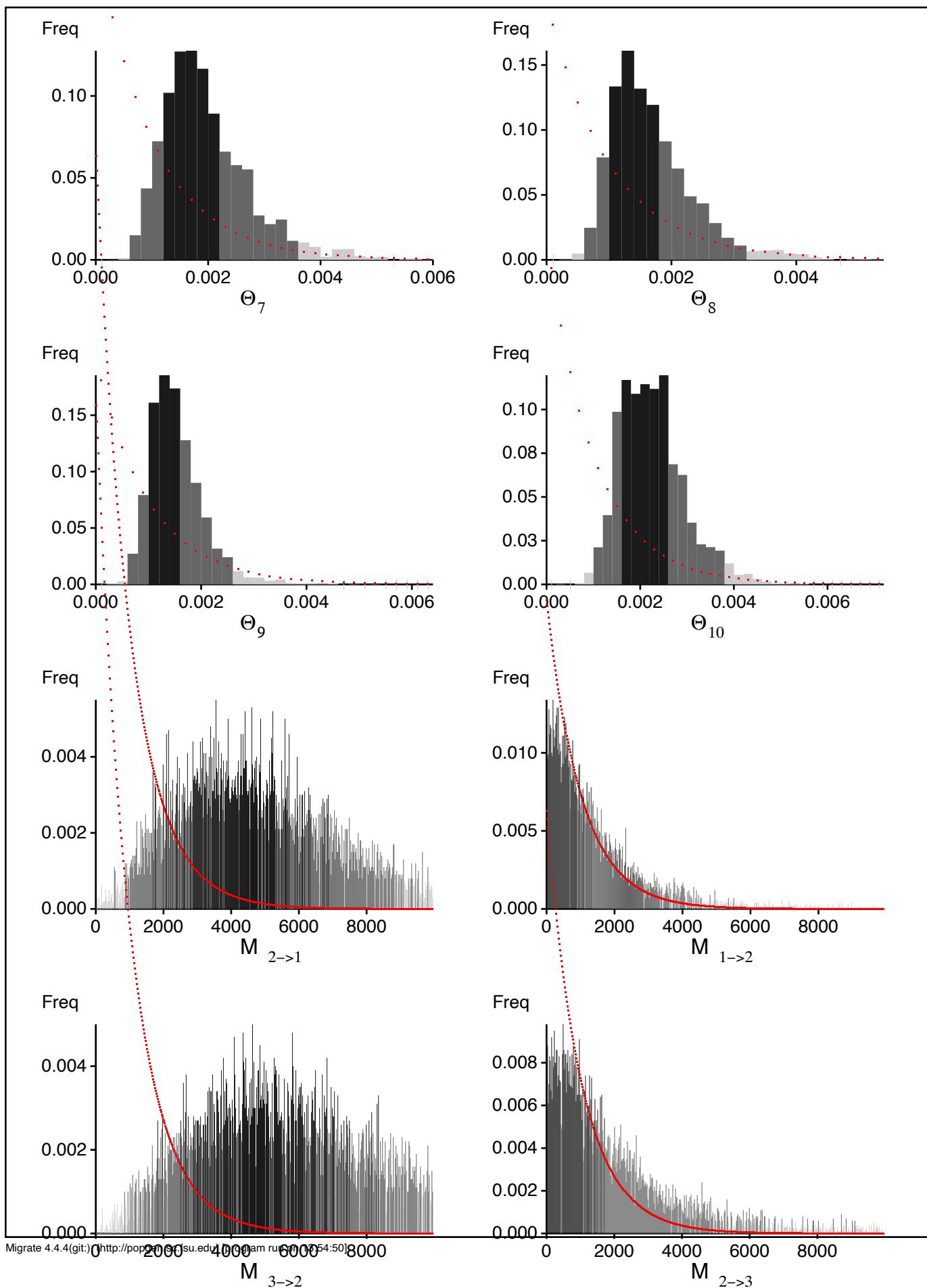


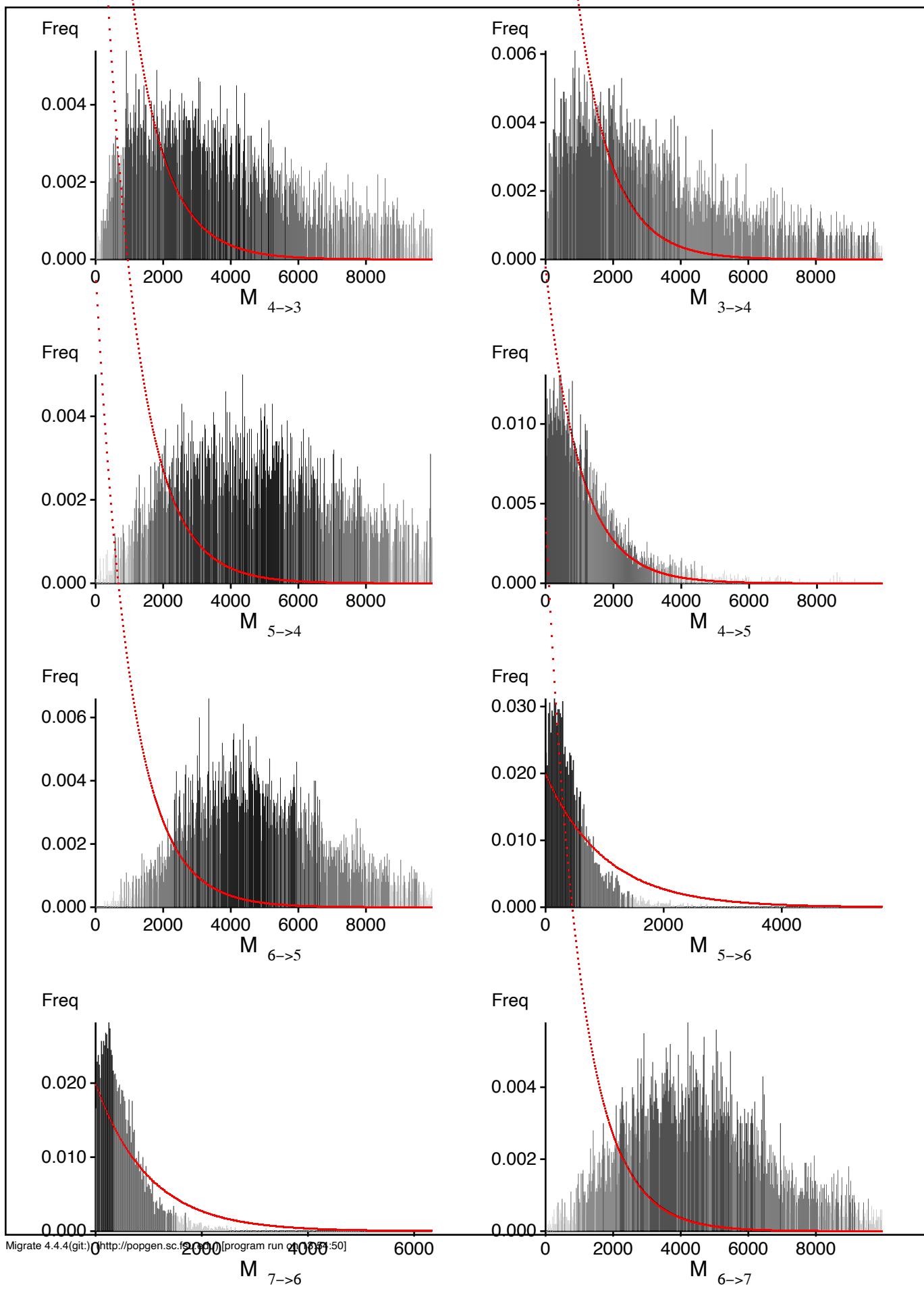


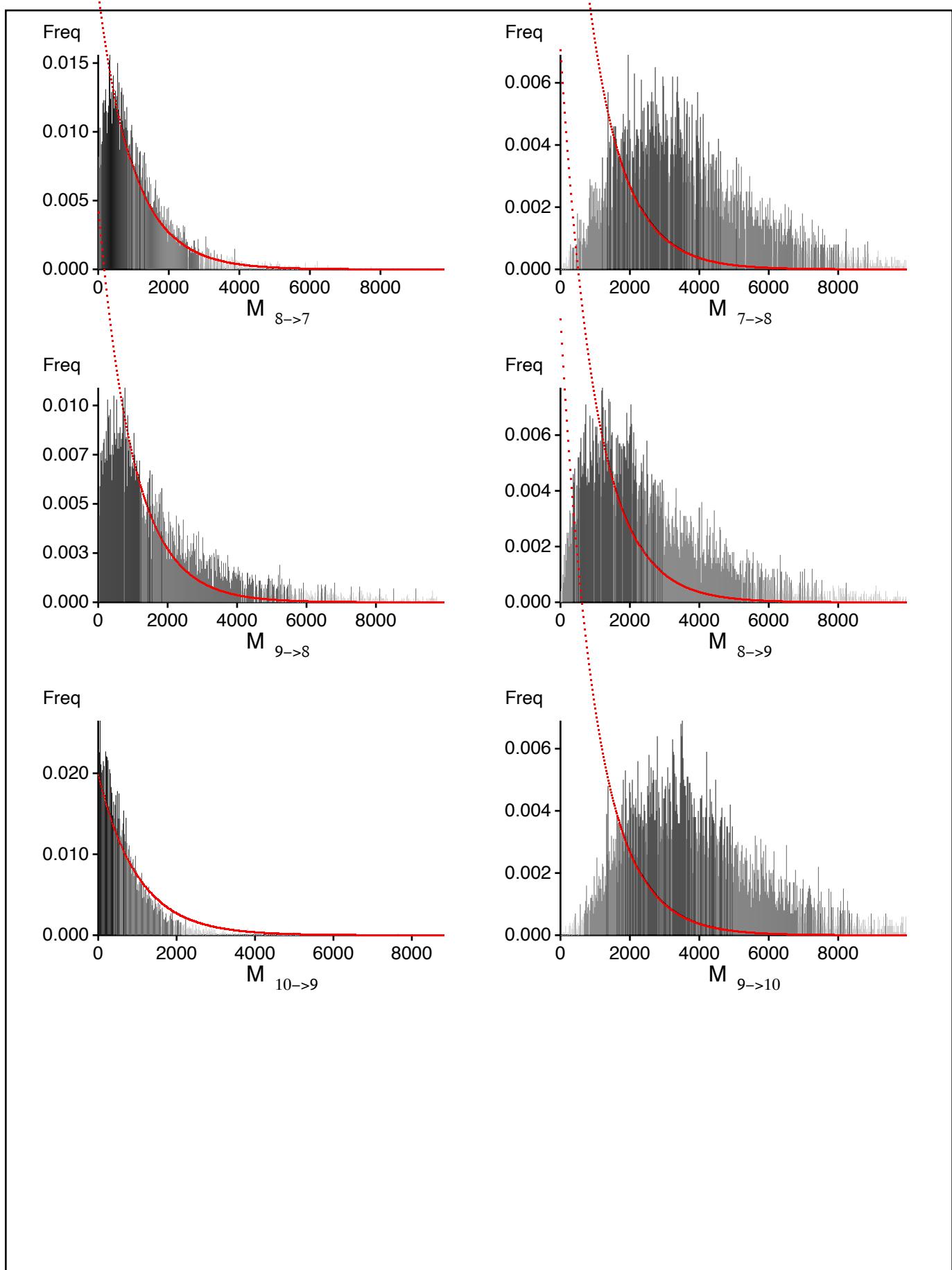


### Bayesian Analysis: Posterior distribution for locus 48

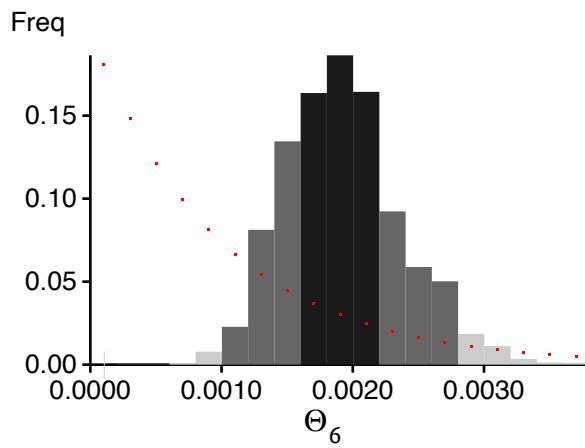
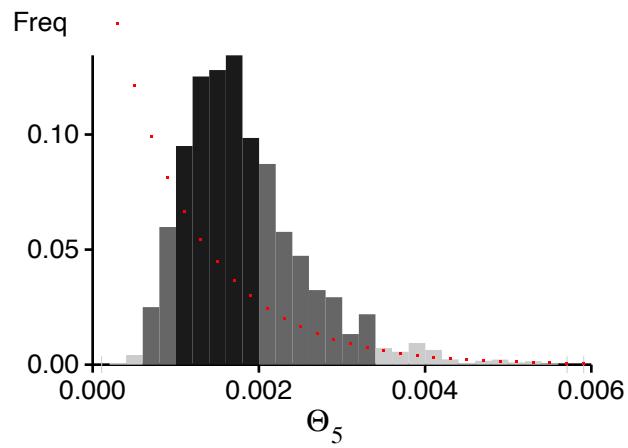
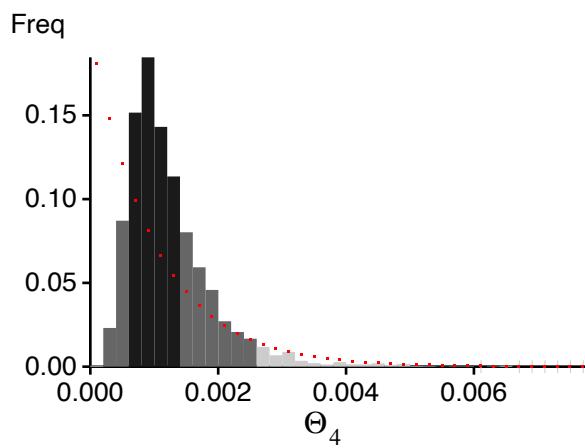
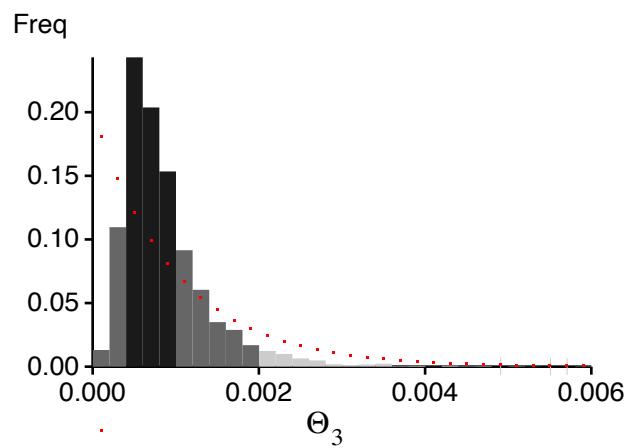
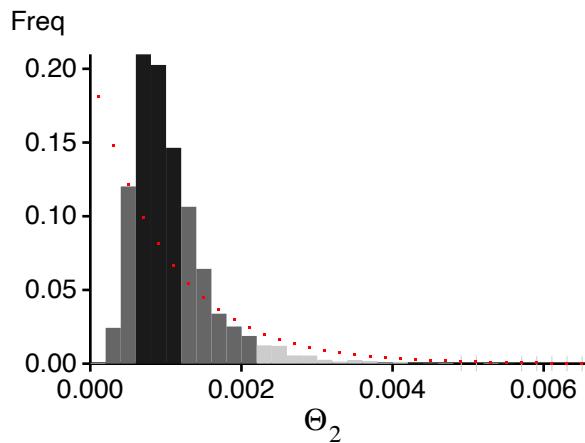
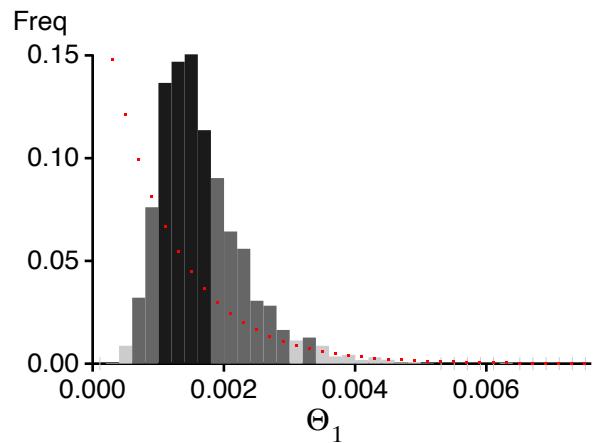


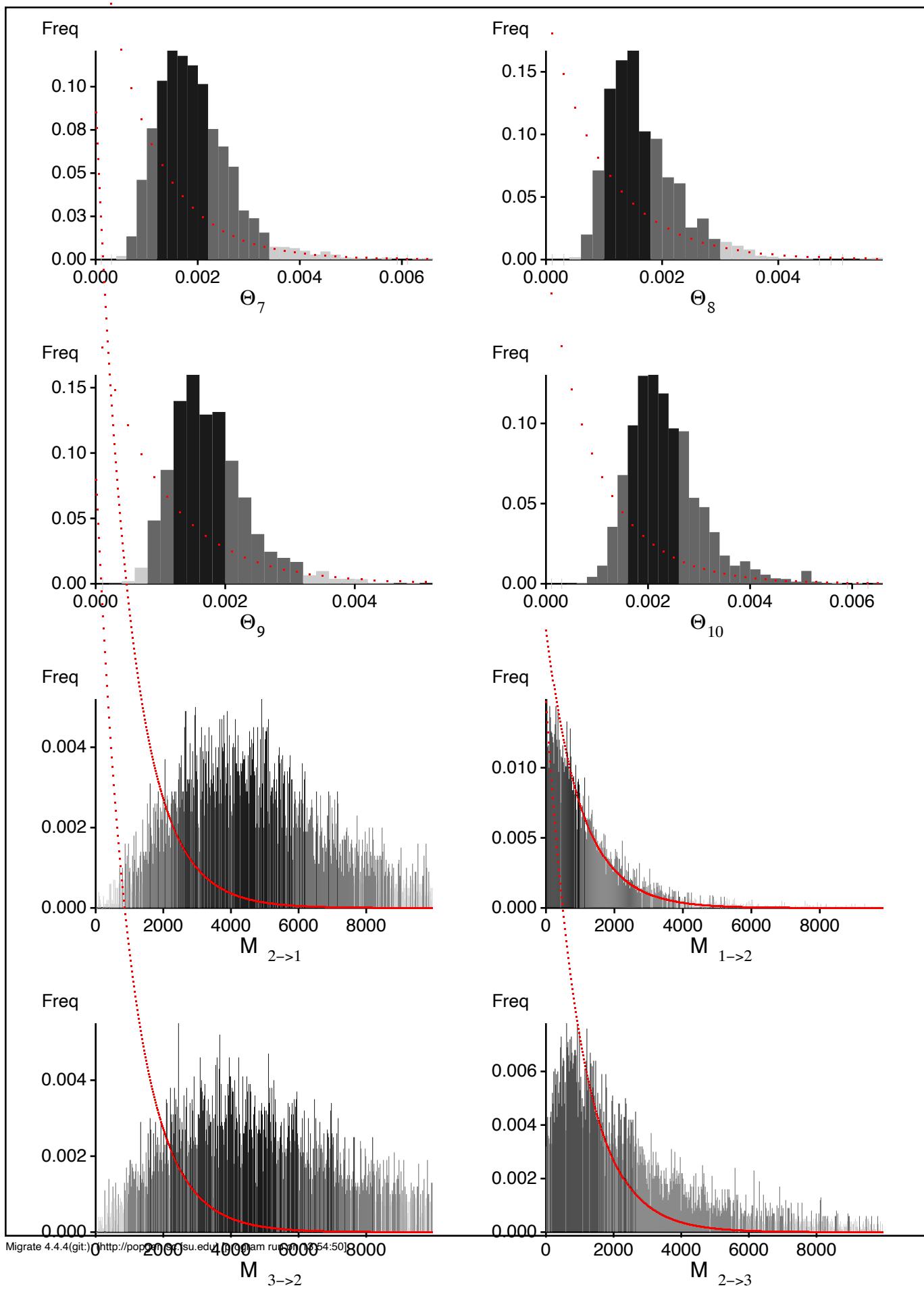


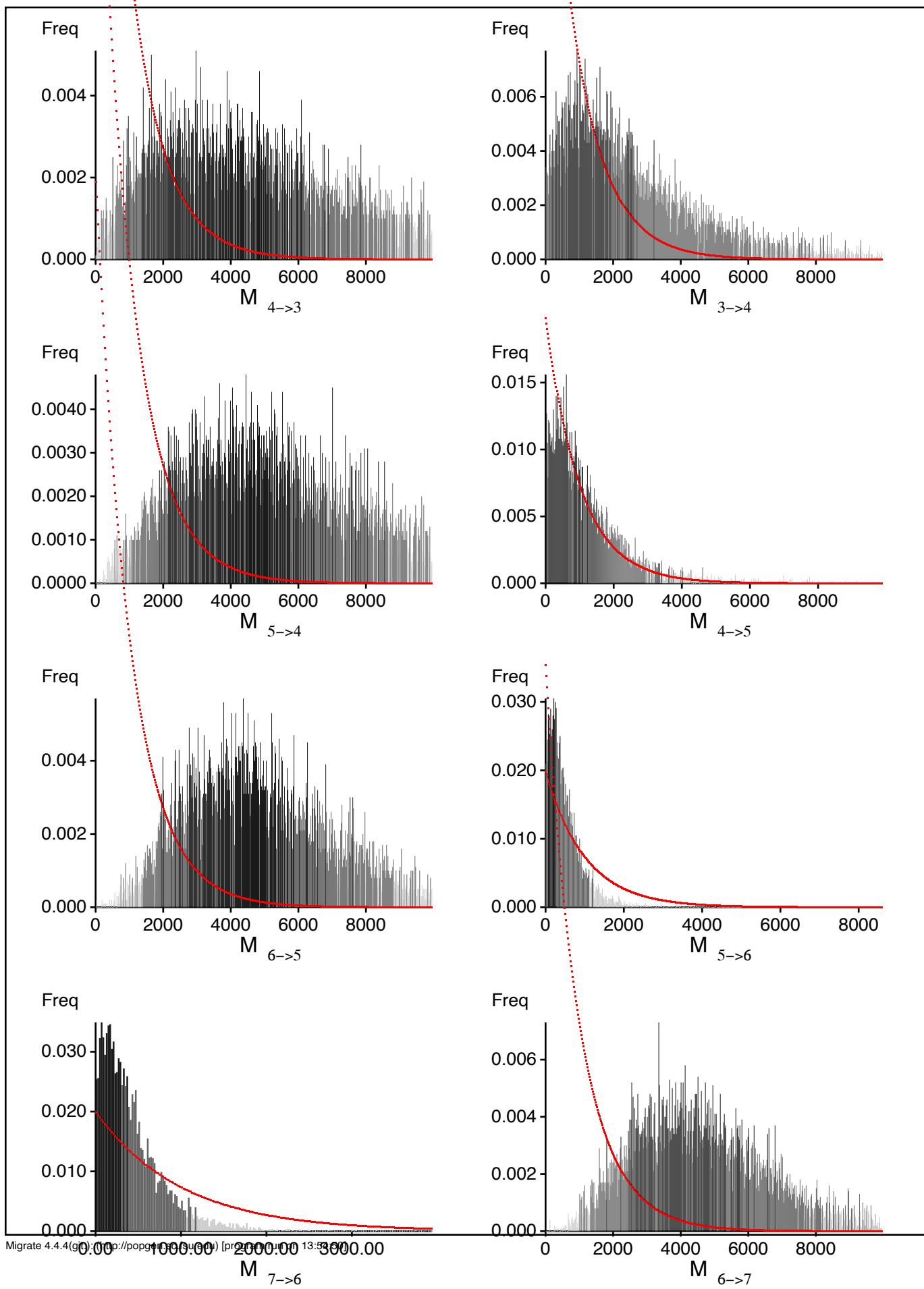


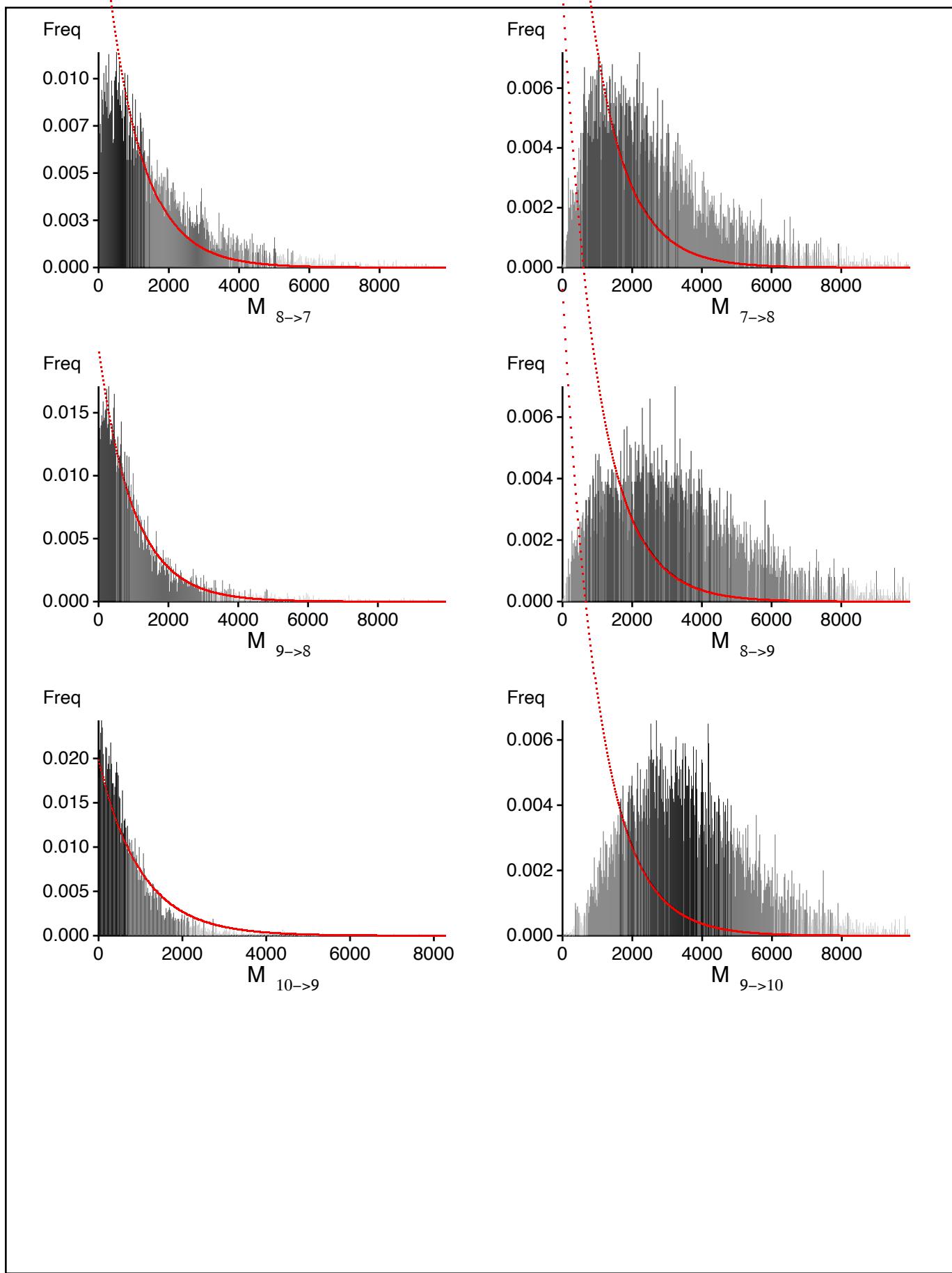


### Bayesian Analysis: Posterior distribution for locus 49

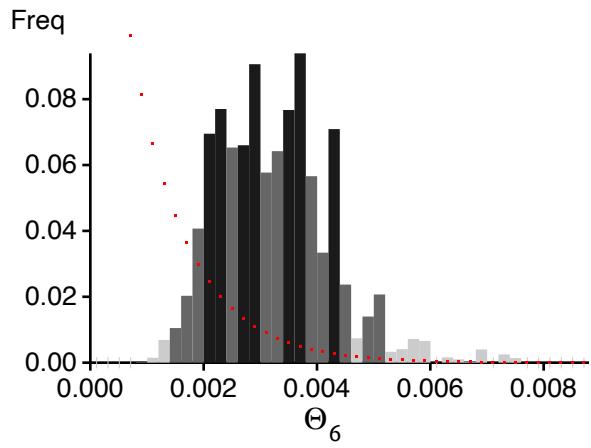
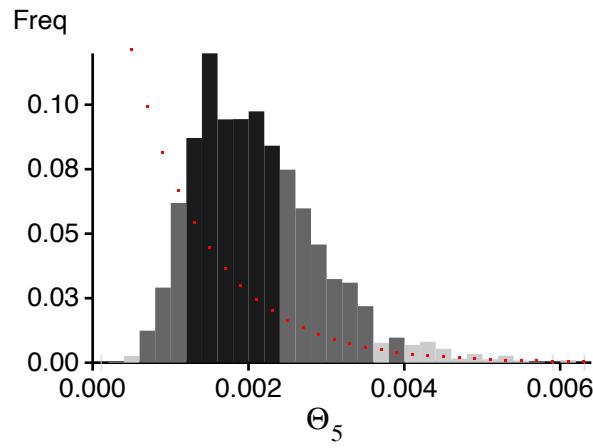
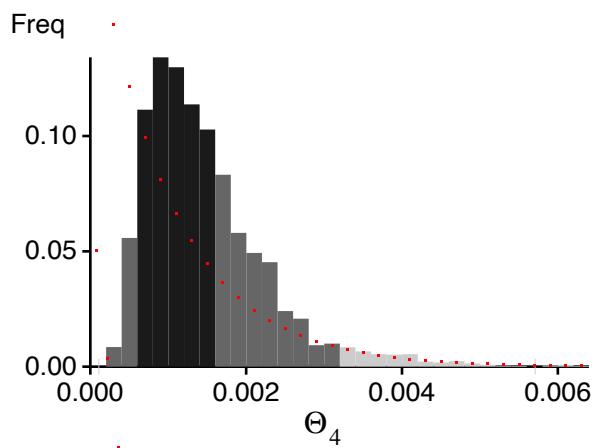
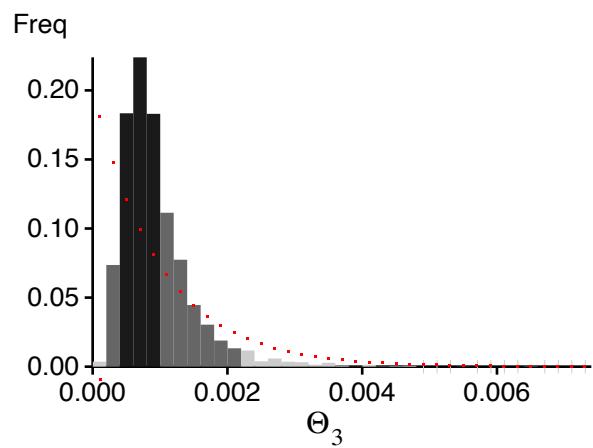
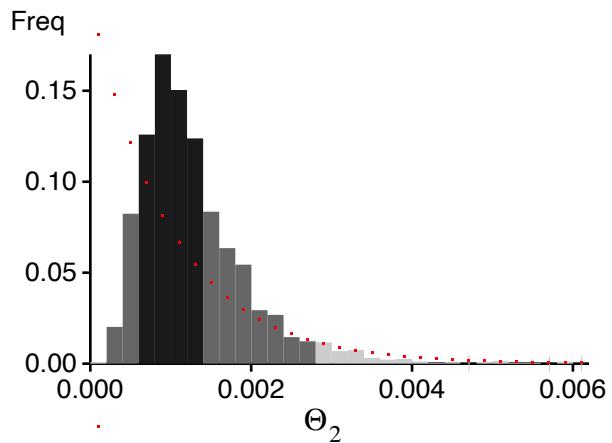
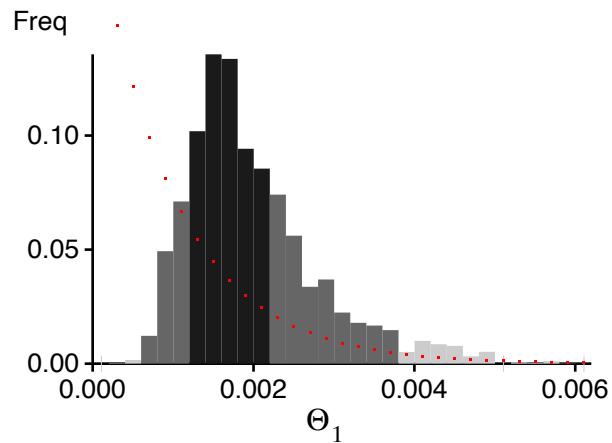


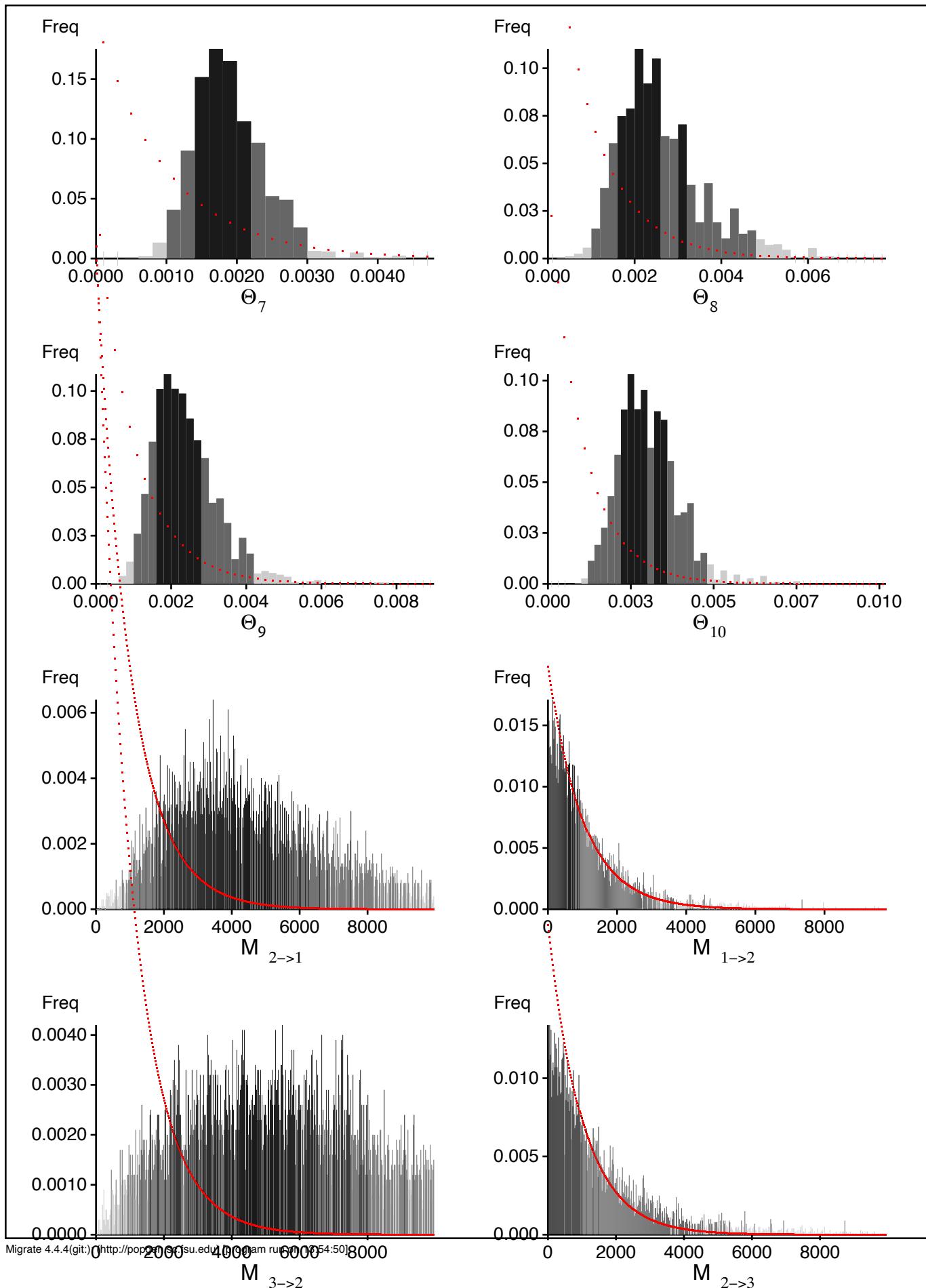


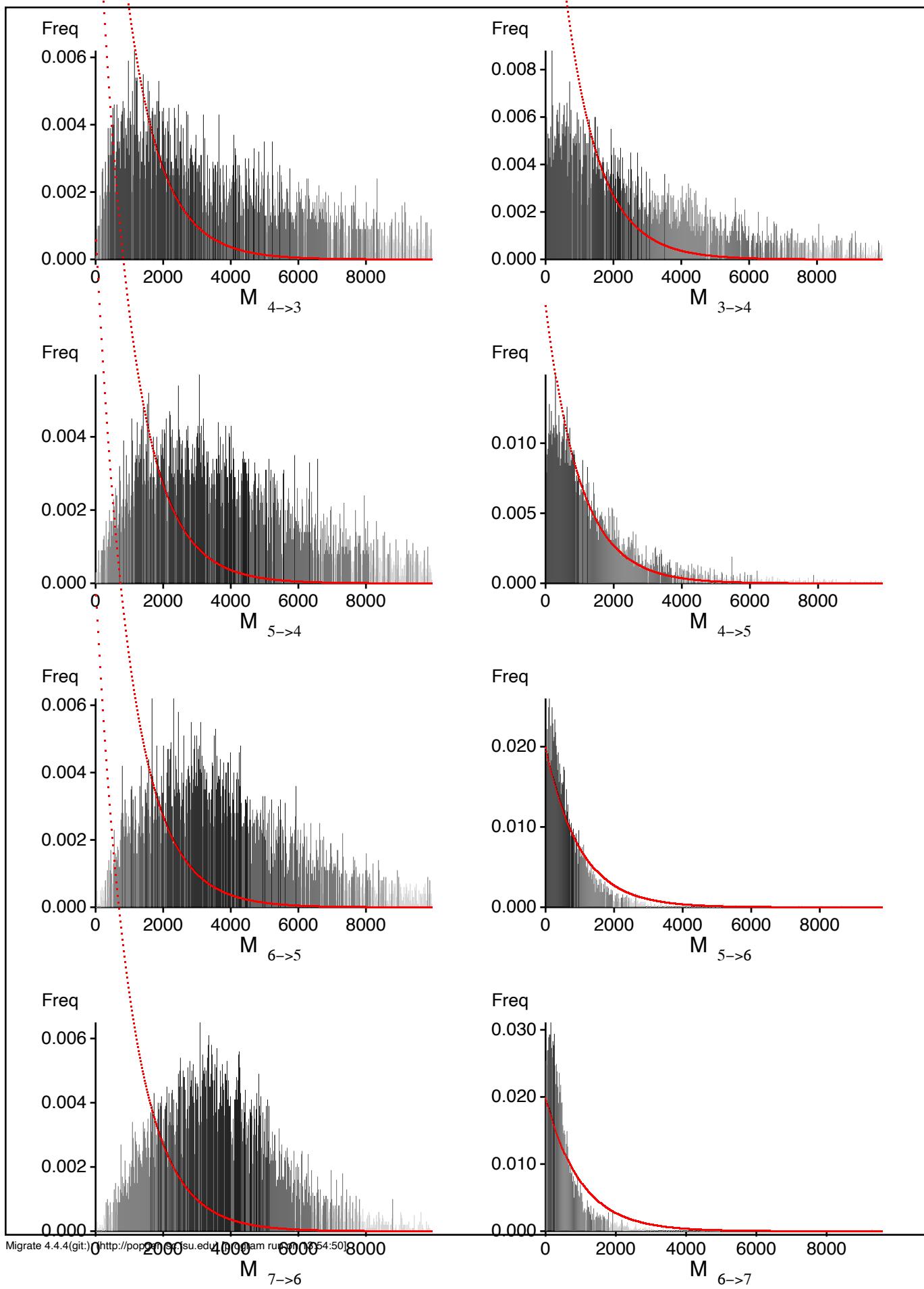


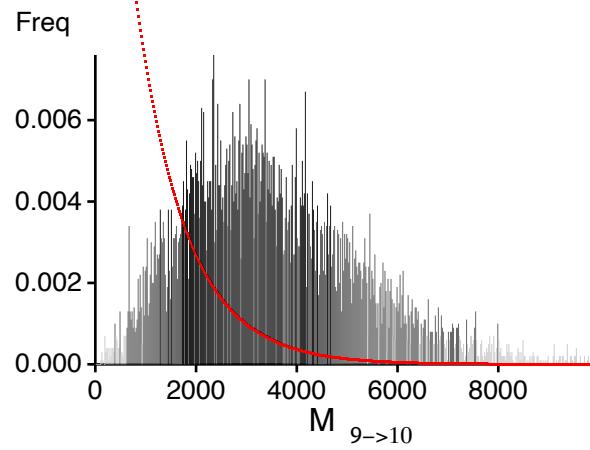
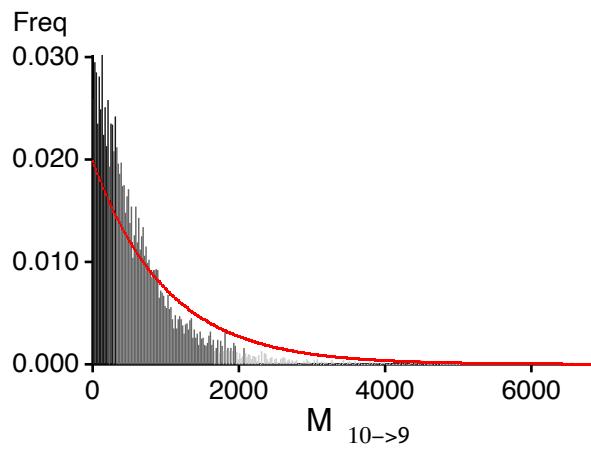
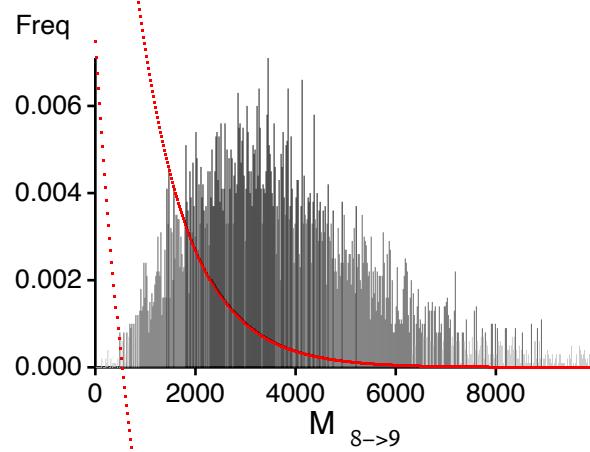
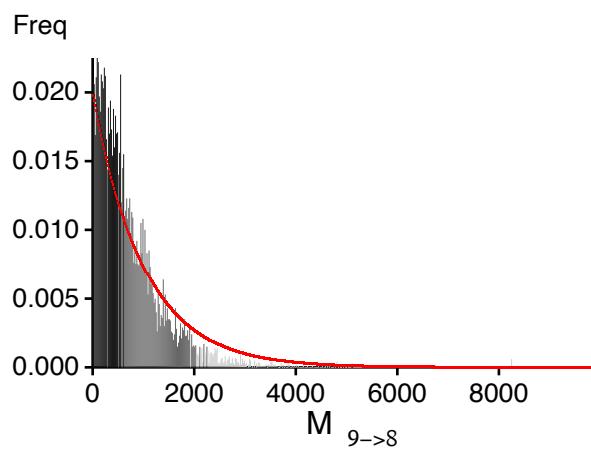
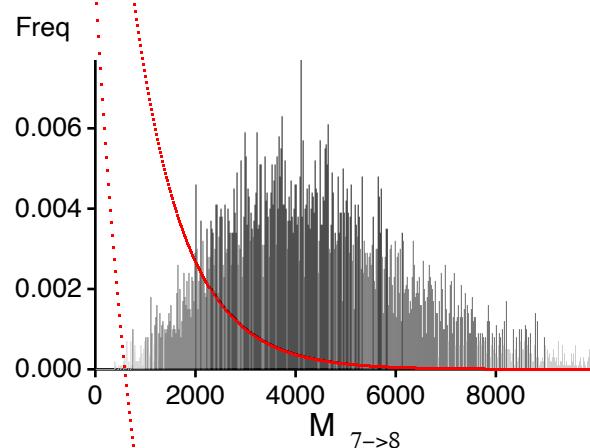
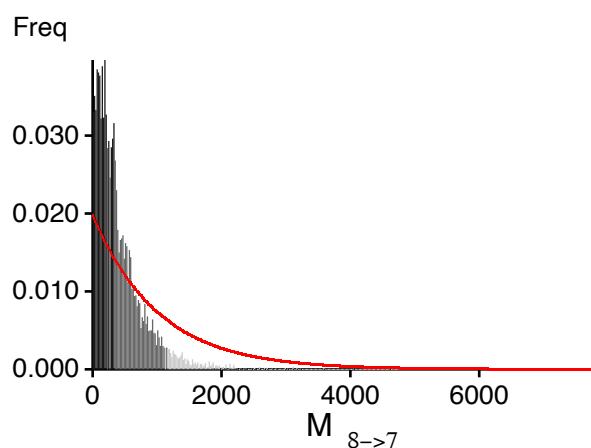


### Bayesian Analysis: Posterior distribution for locus 50

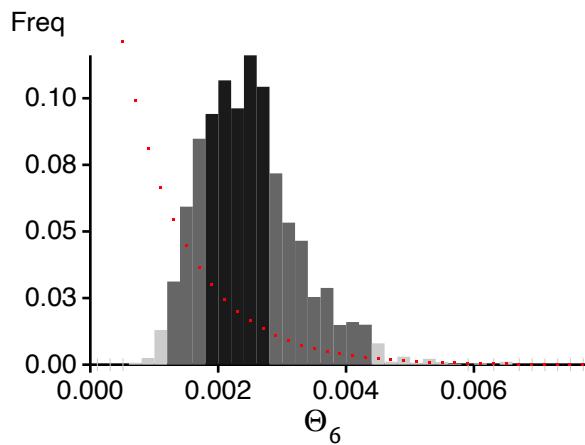
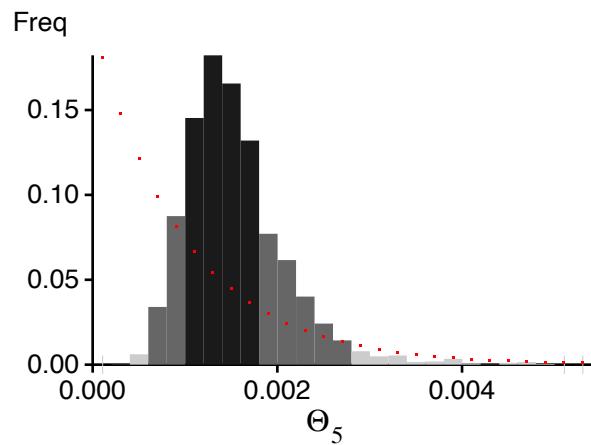
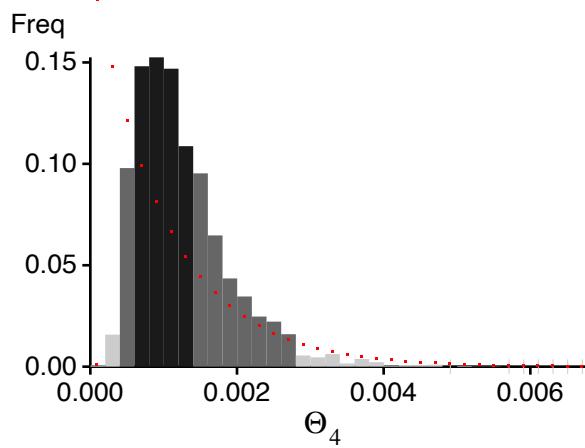
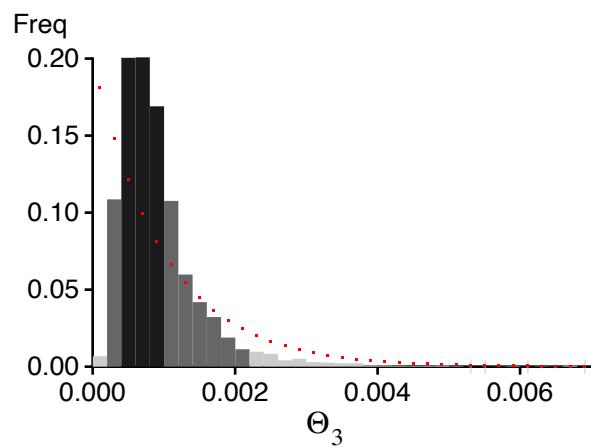
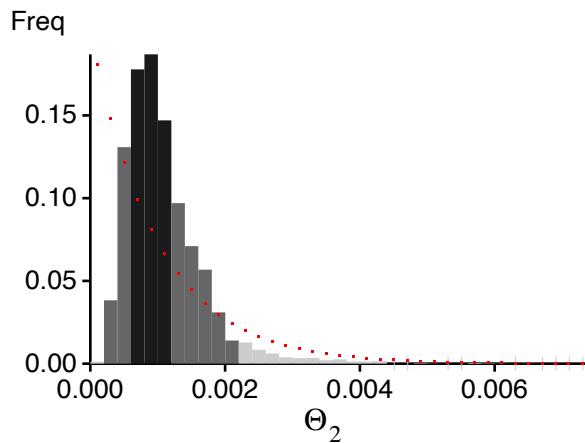
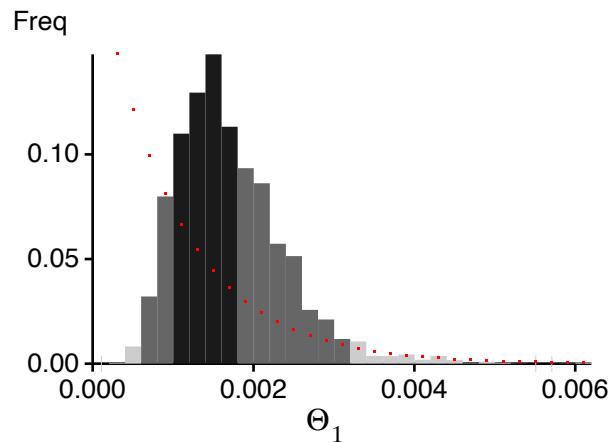


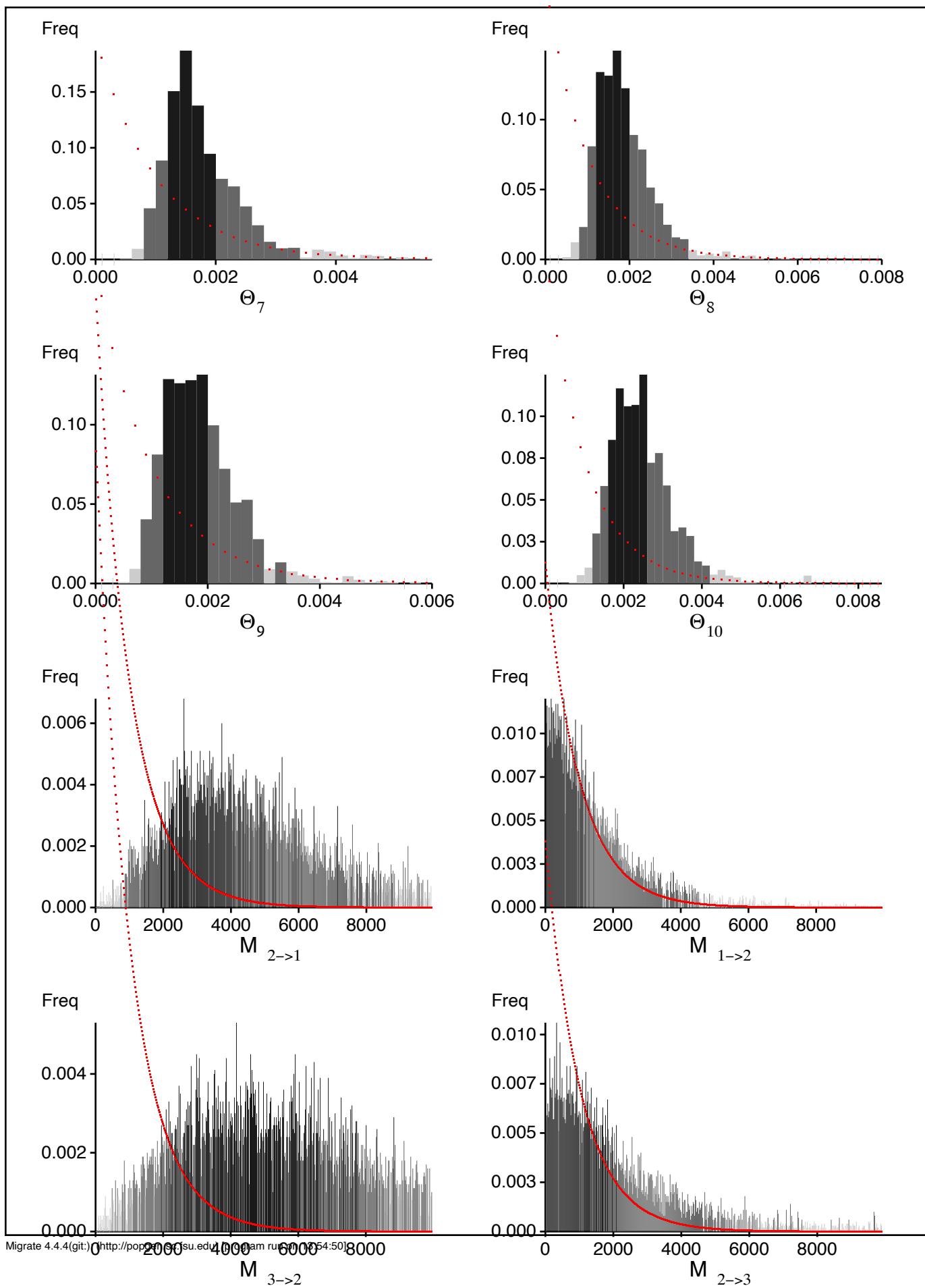


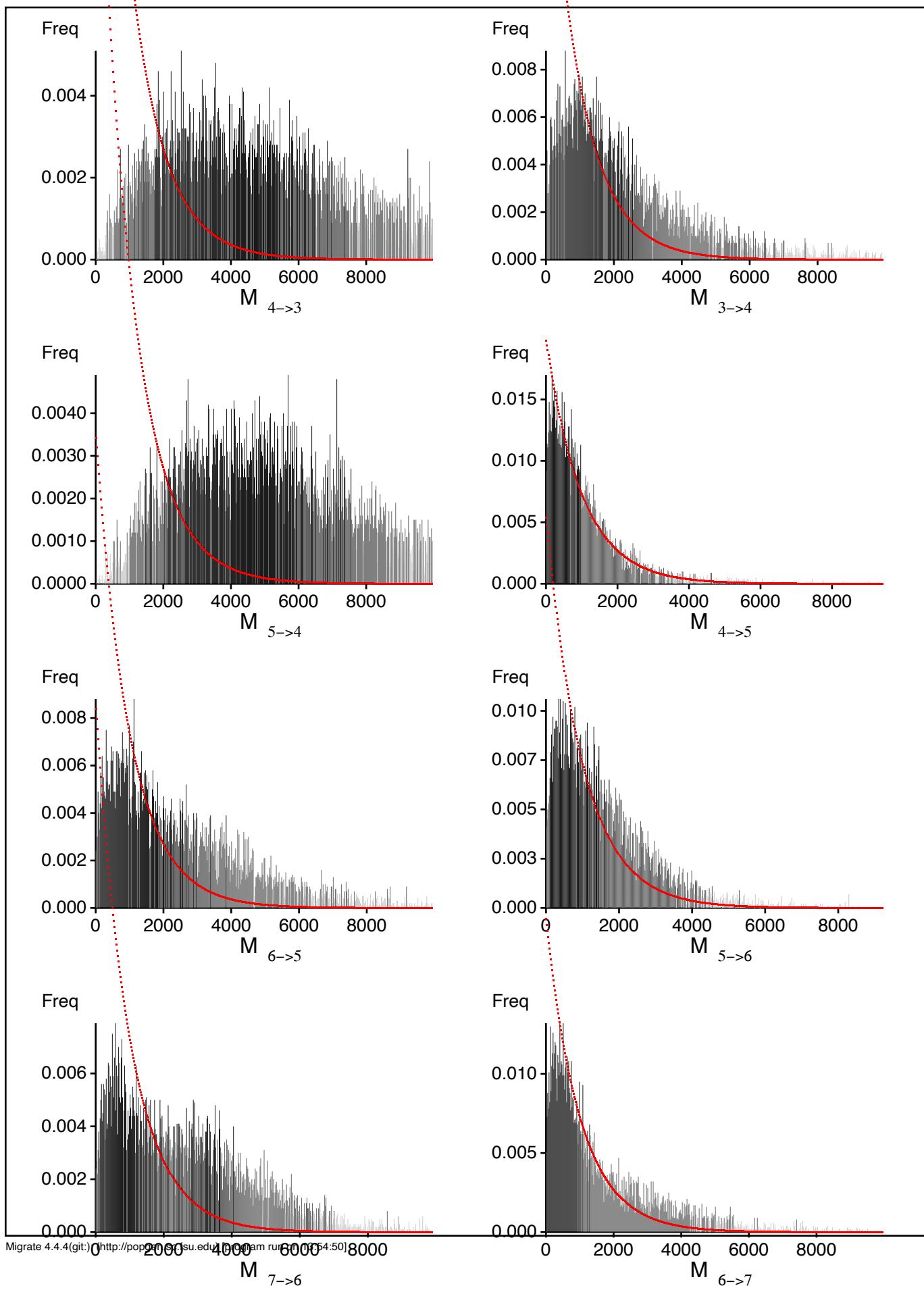


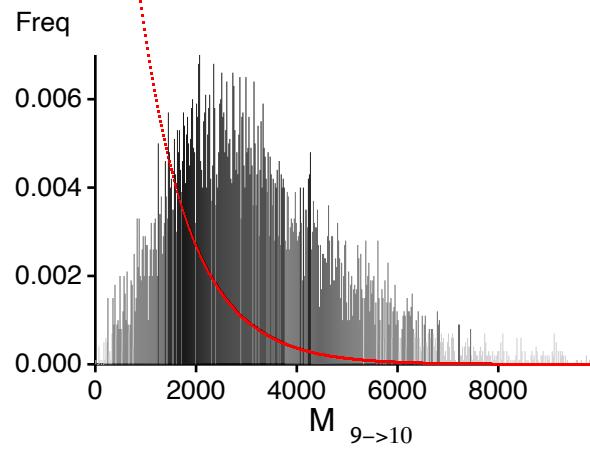
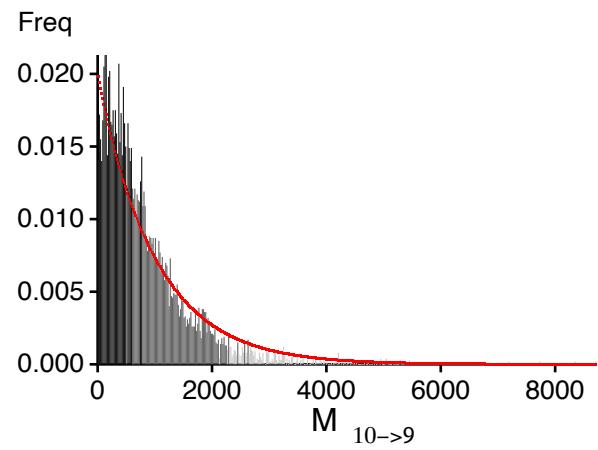
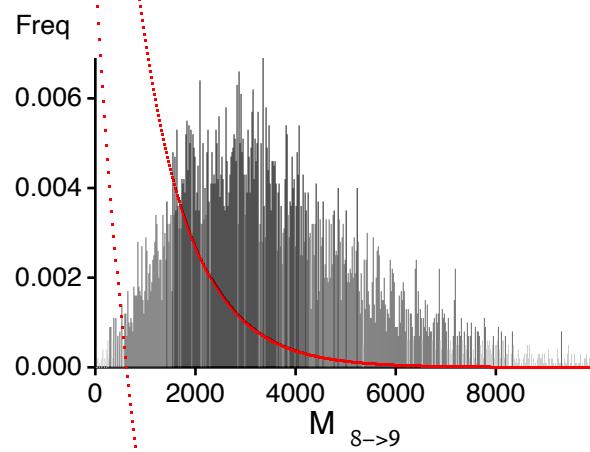
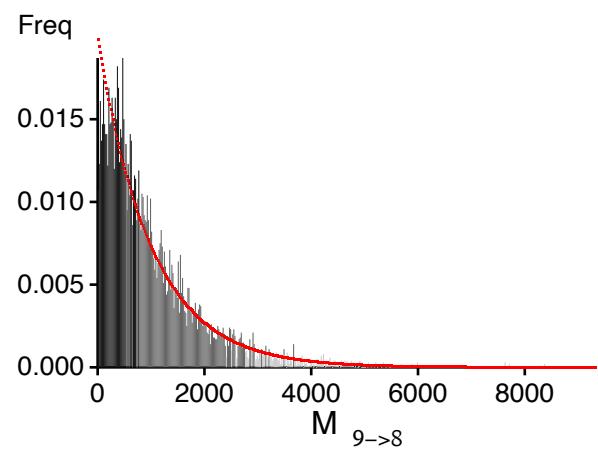
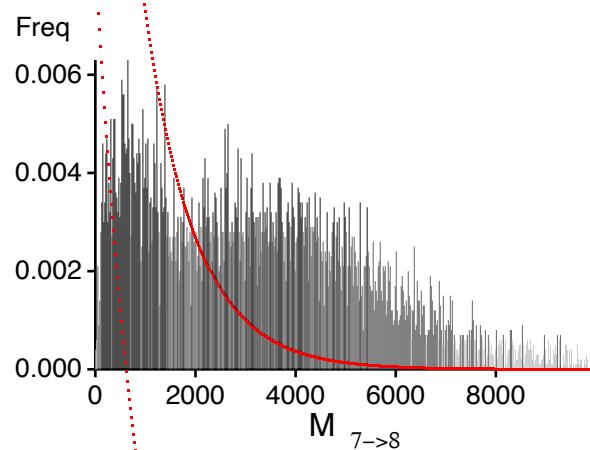
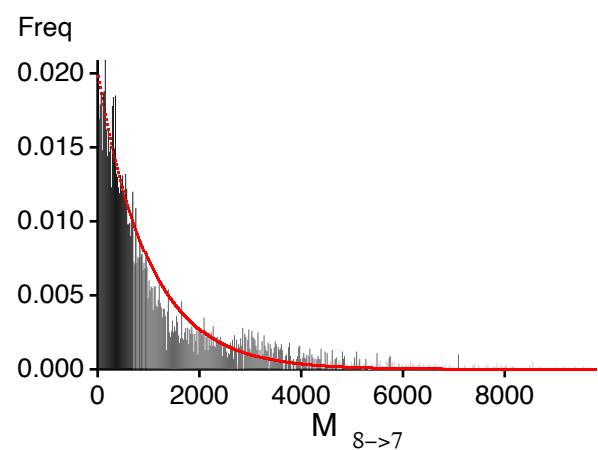


### Bayesian Analysis: Posterior distribution for locus 51

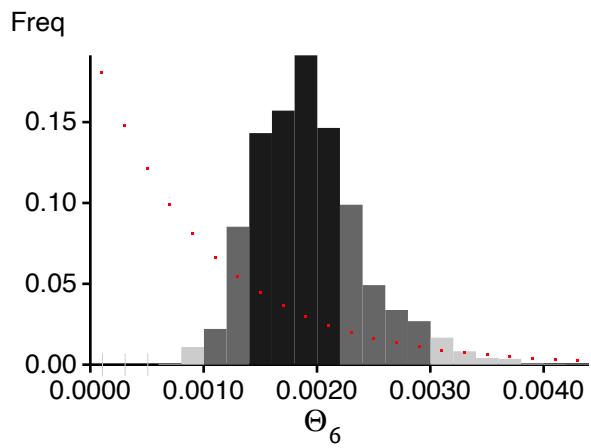
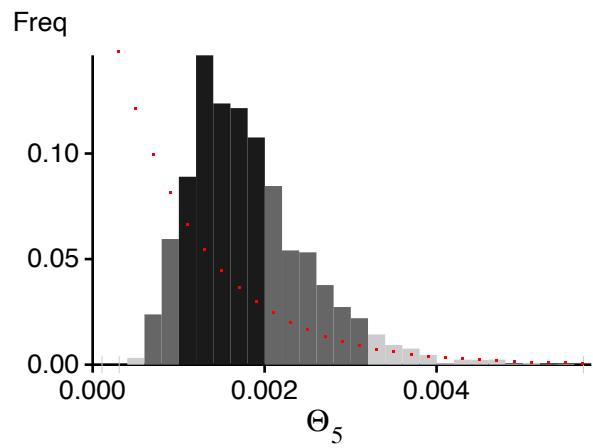
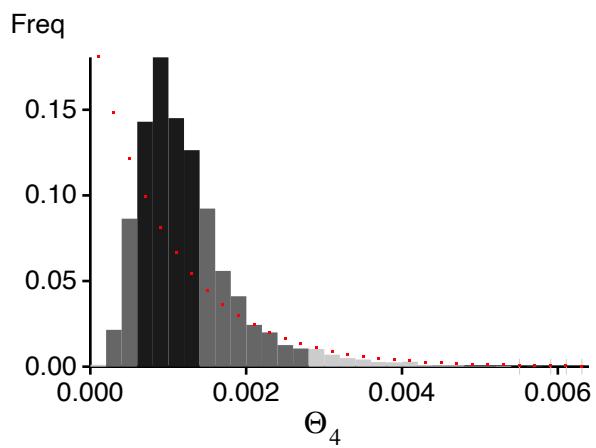
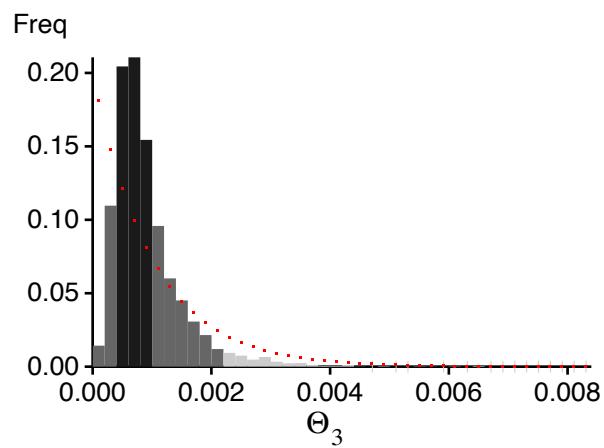
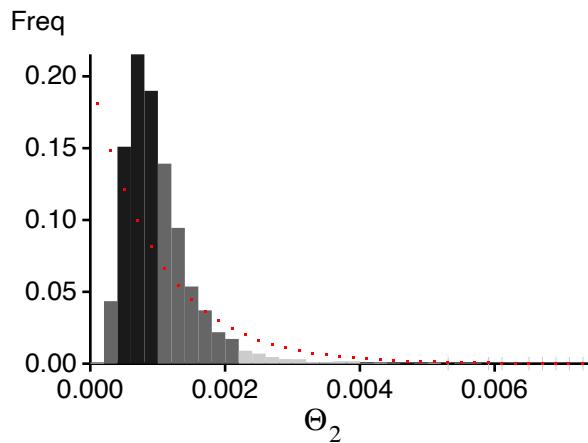
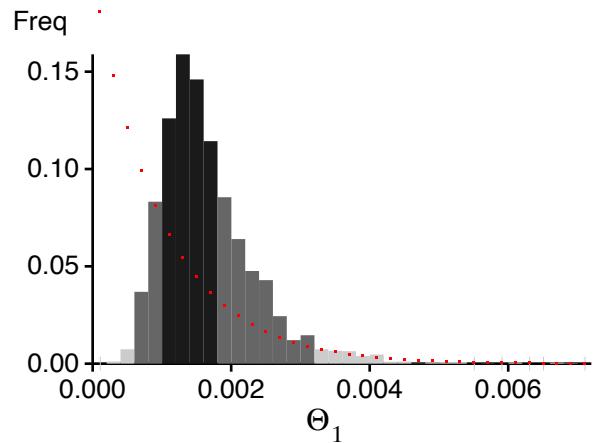


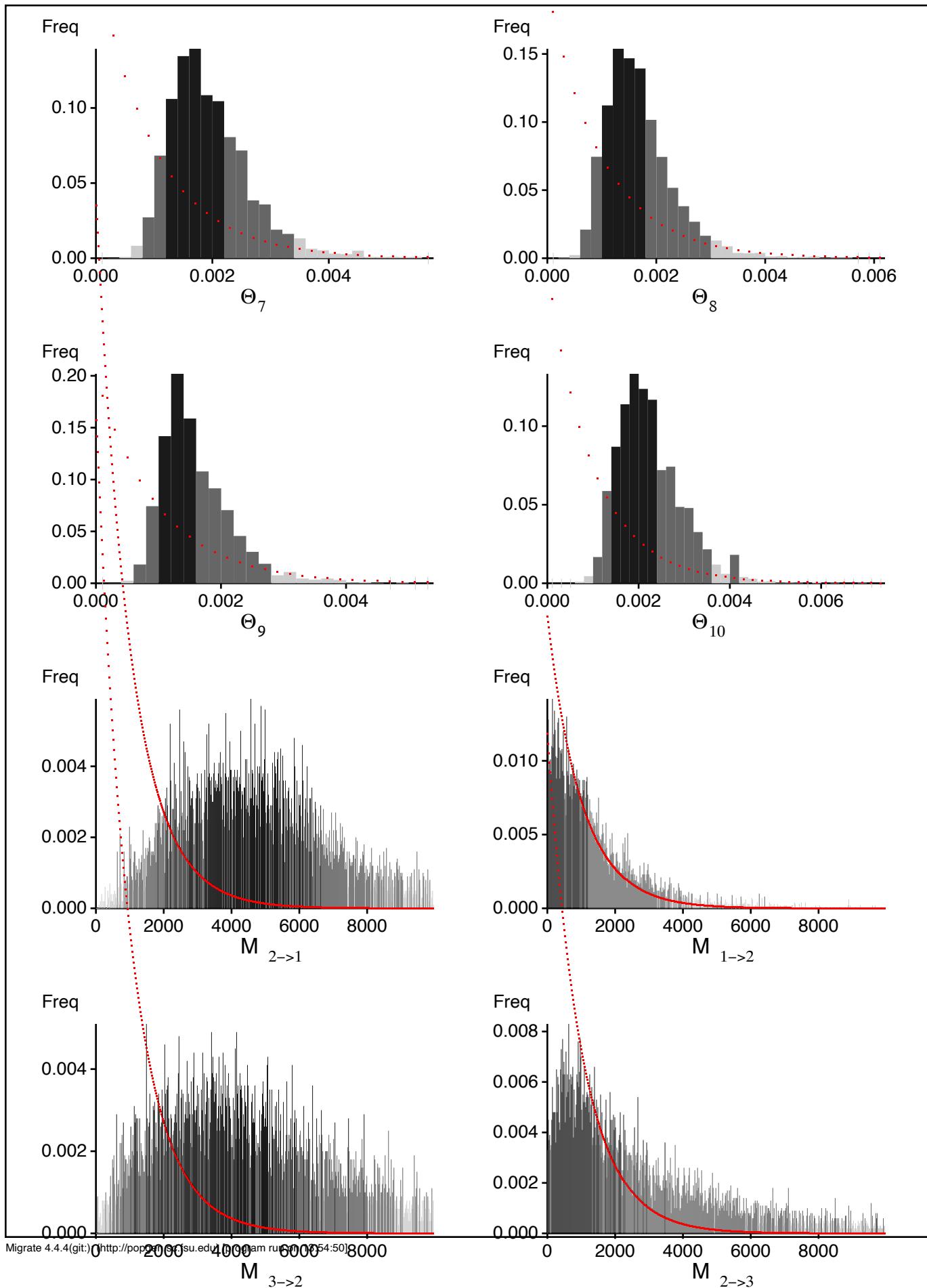


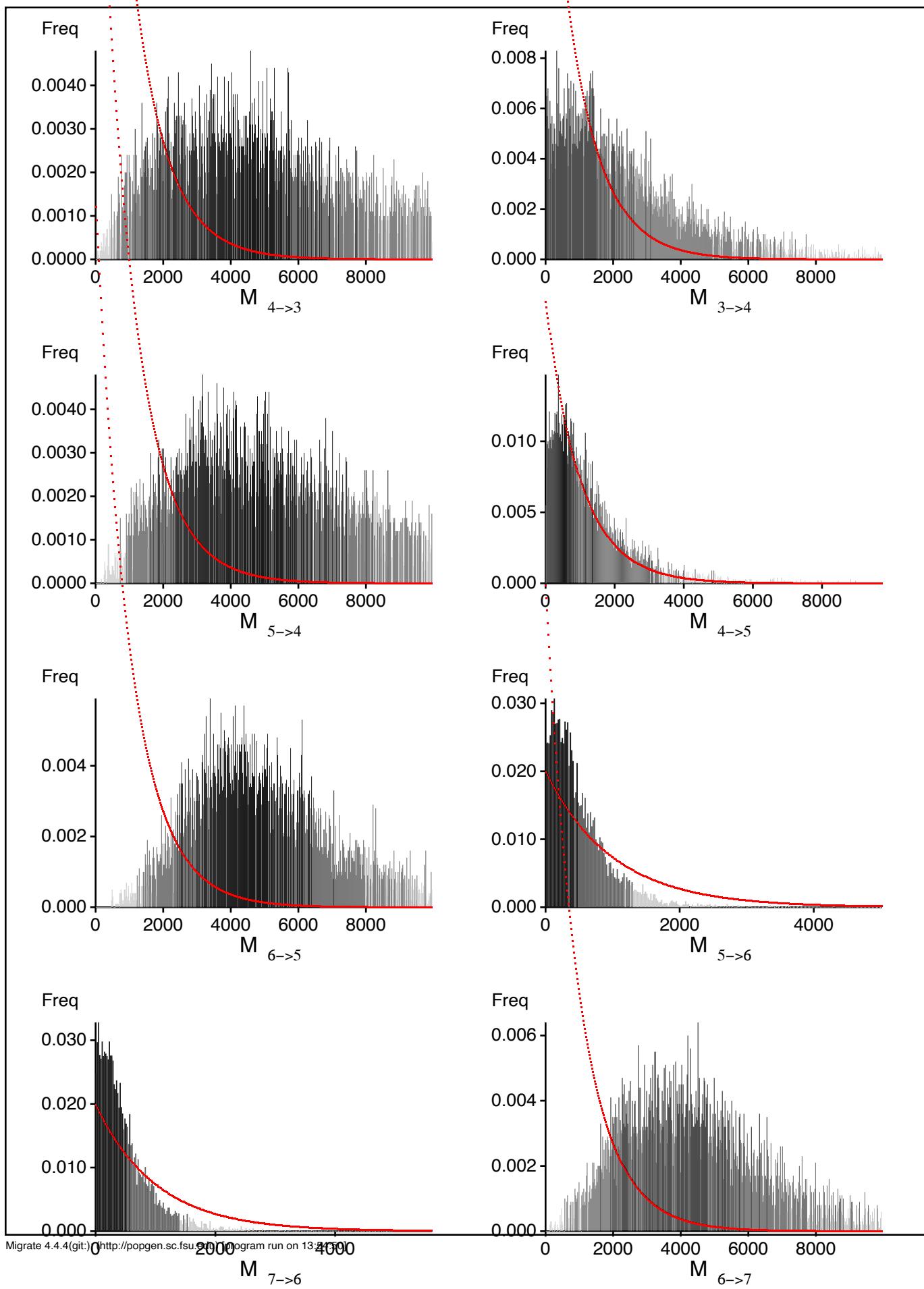


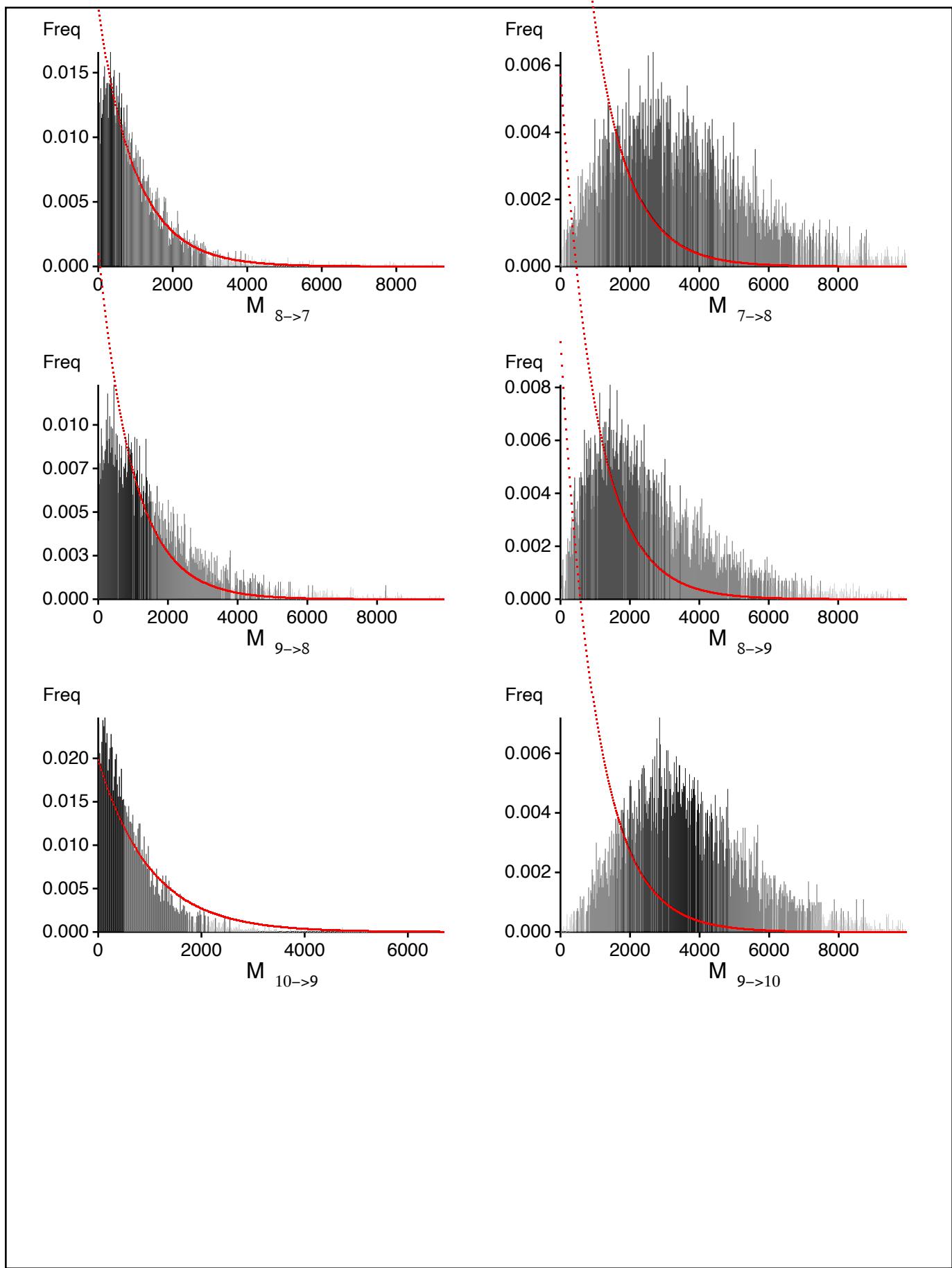


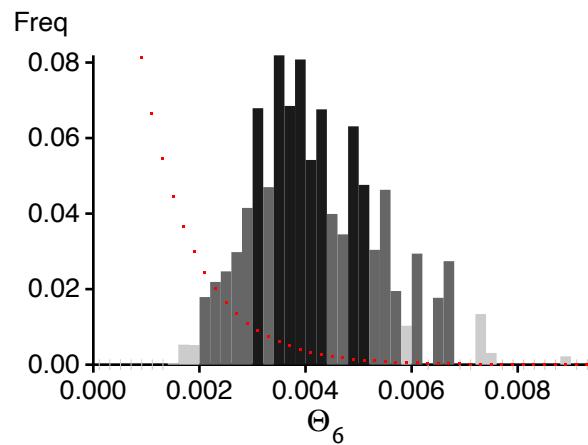
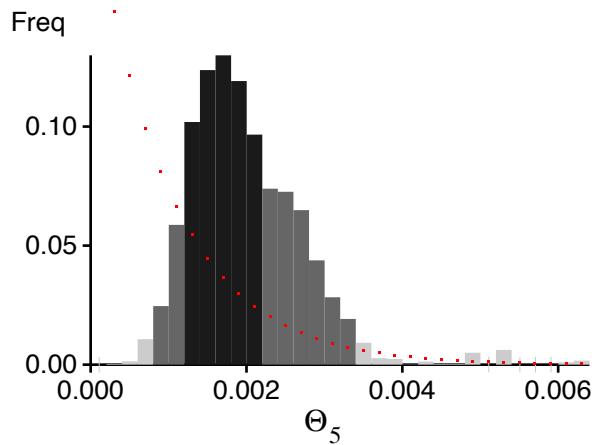
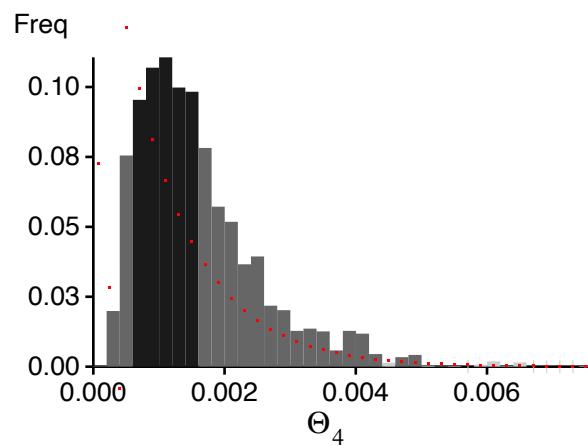
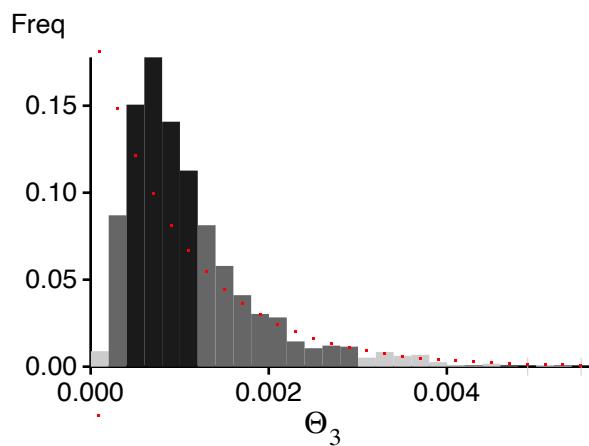
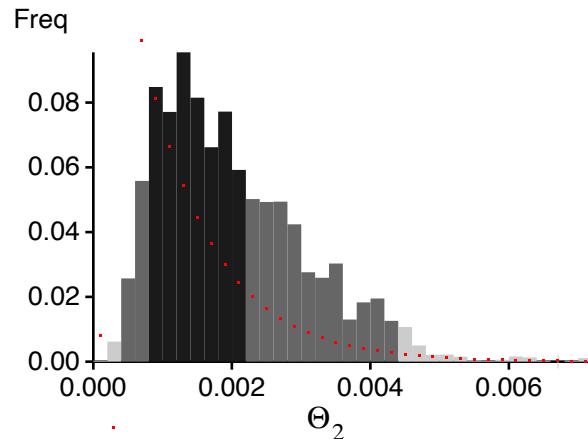
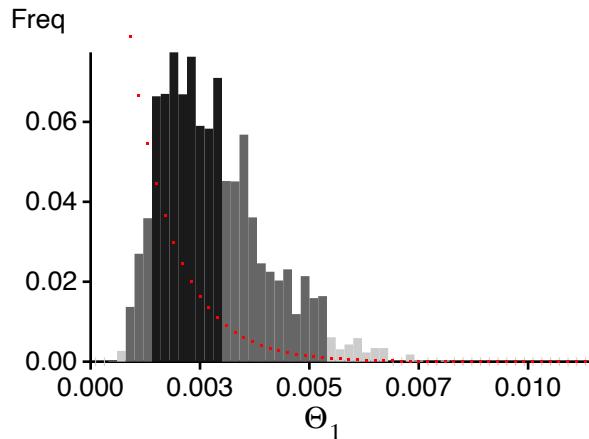
### Bayesian Analysis: Posterior distribution for locus 52

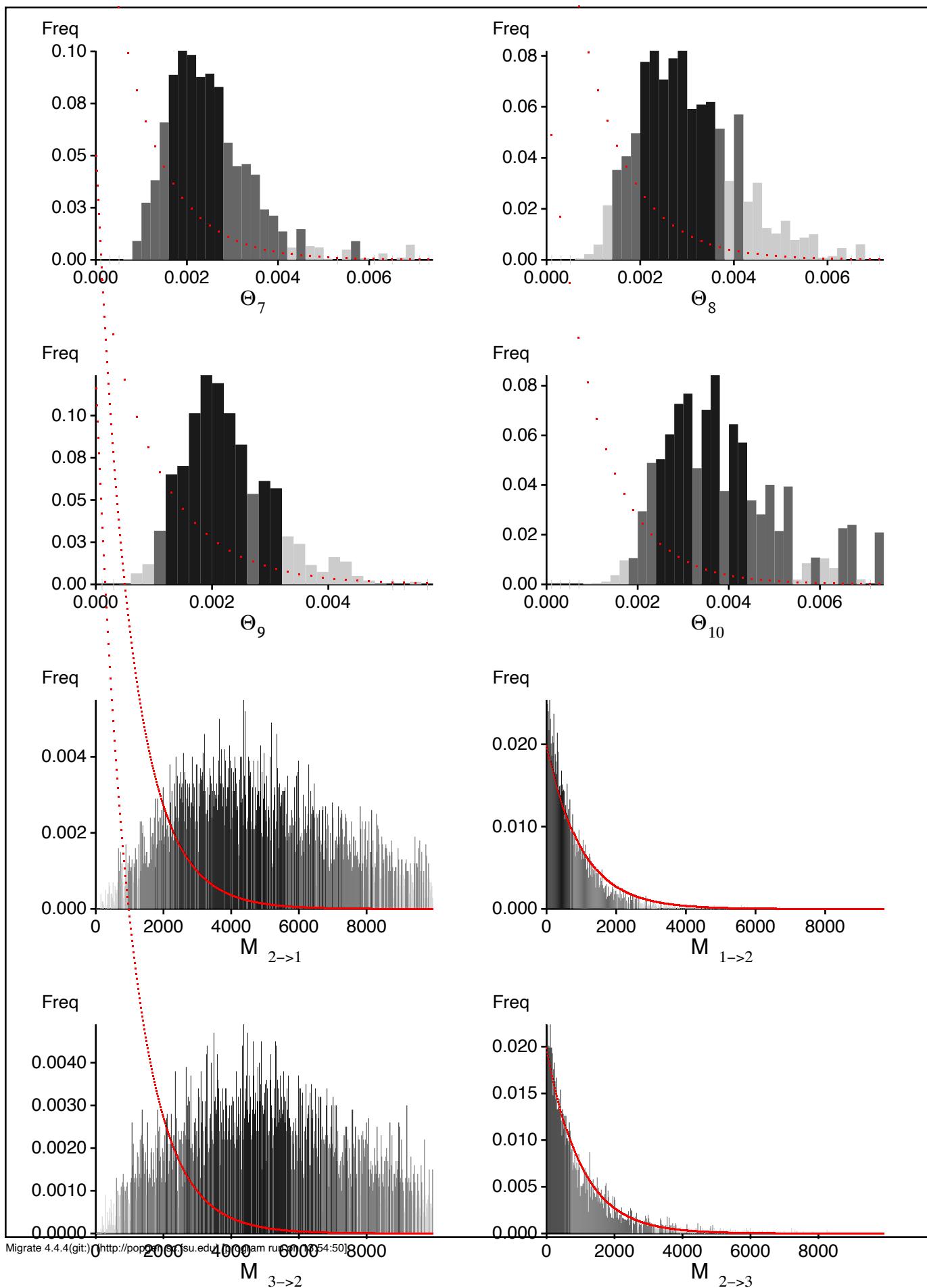


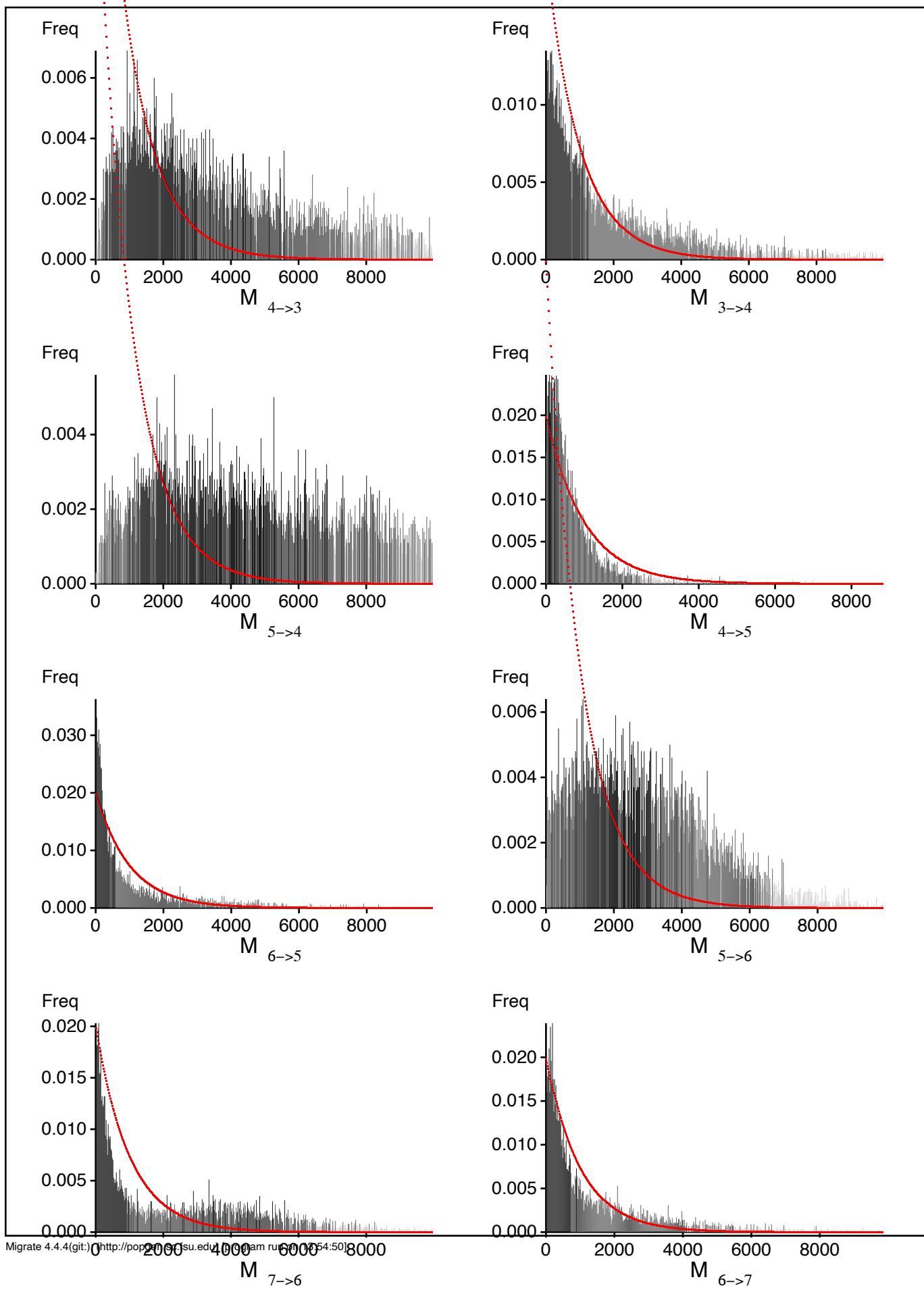


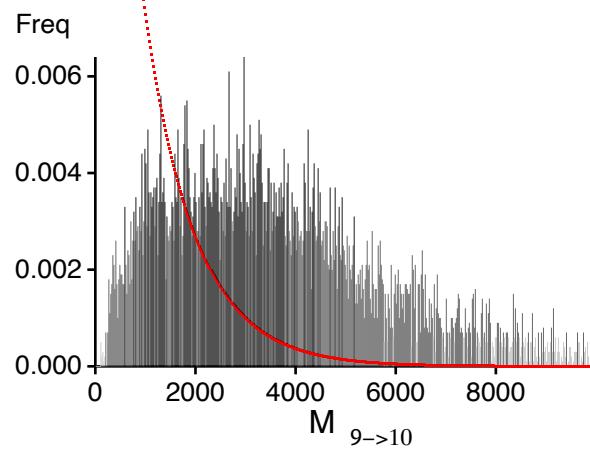
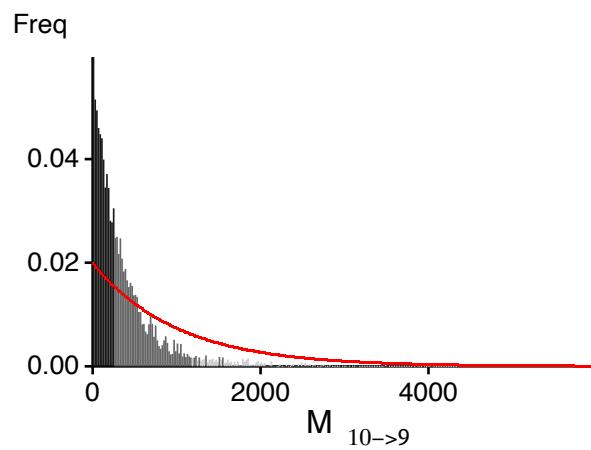
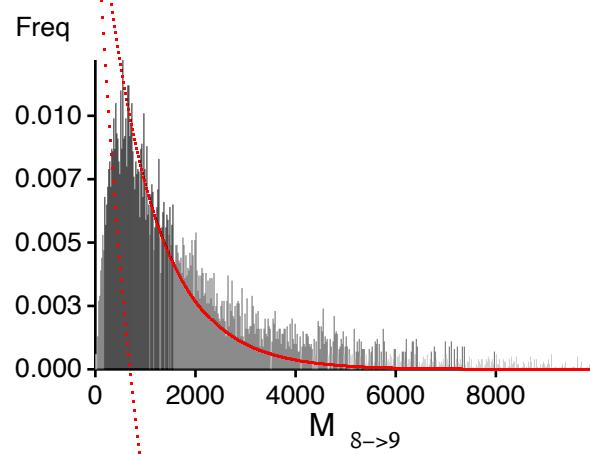
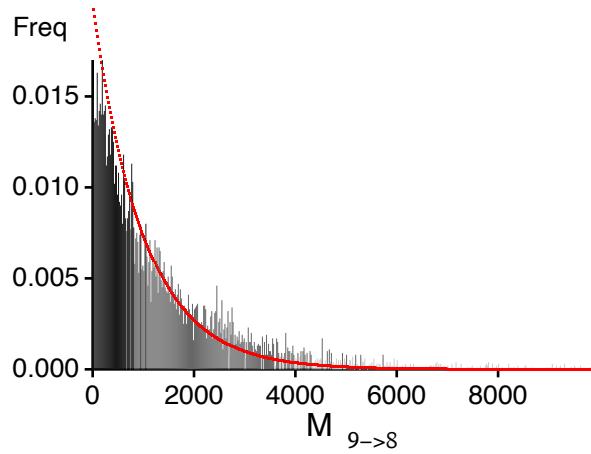
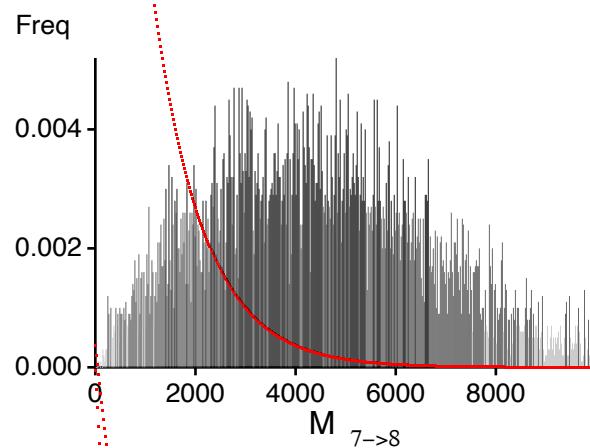
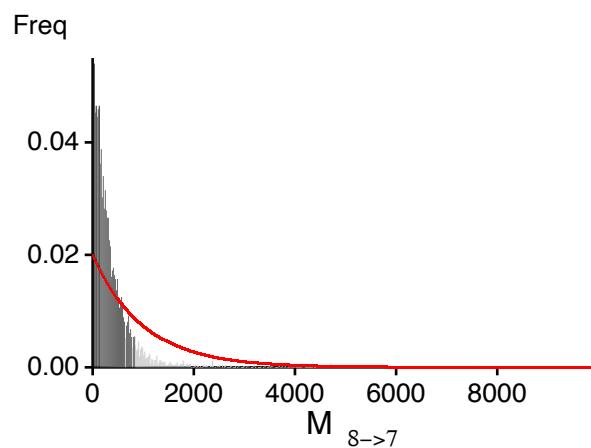




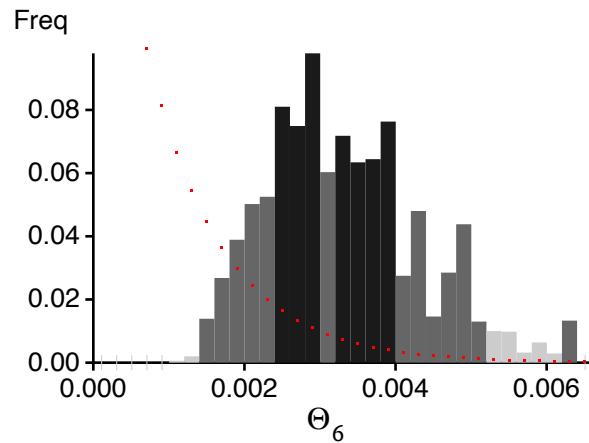
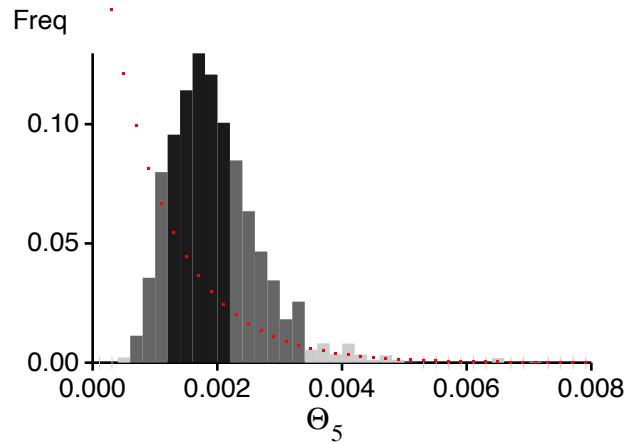
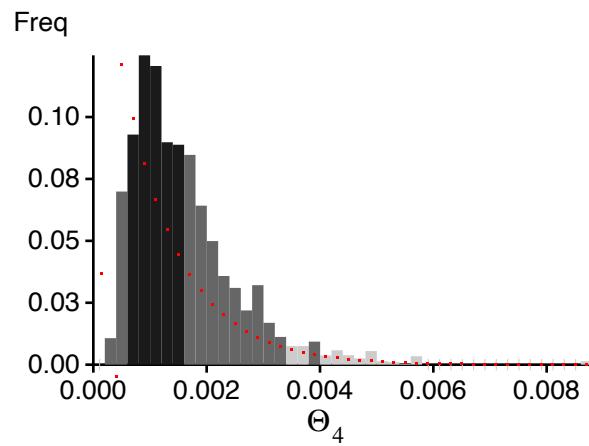
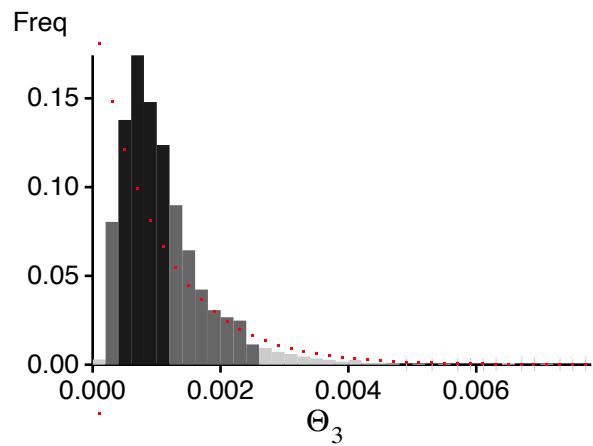
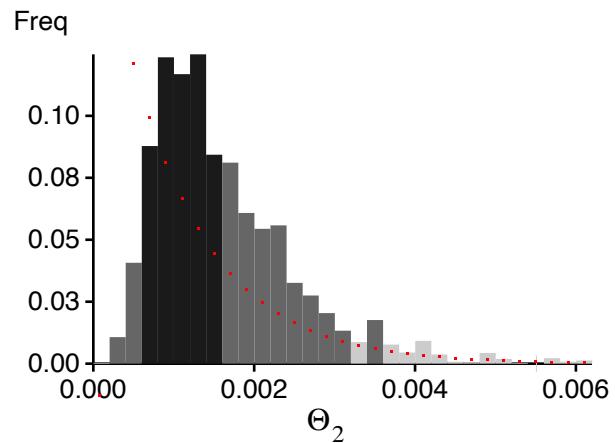
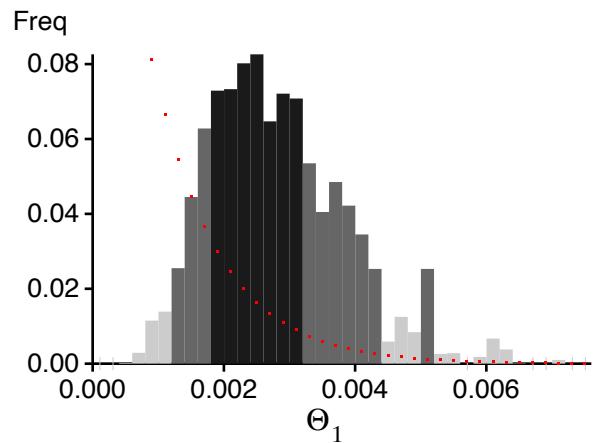
*Bayesian Analysis: Posterior distribution for locus 53*

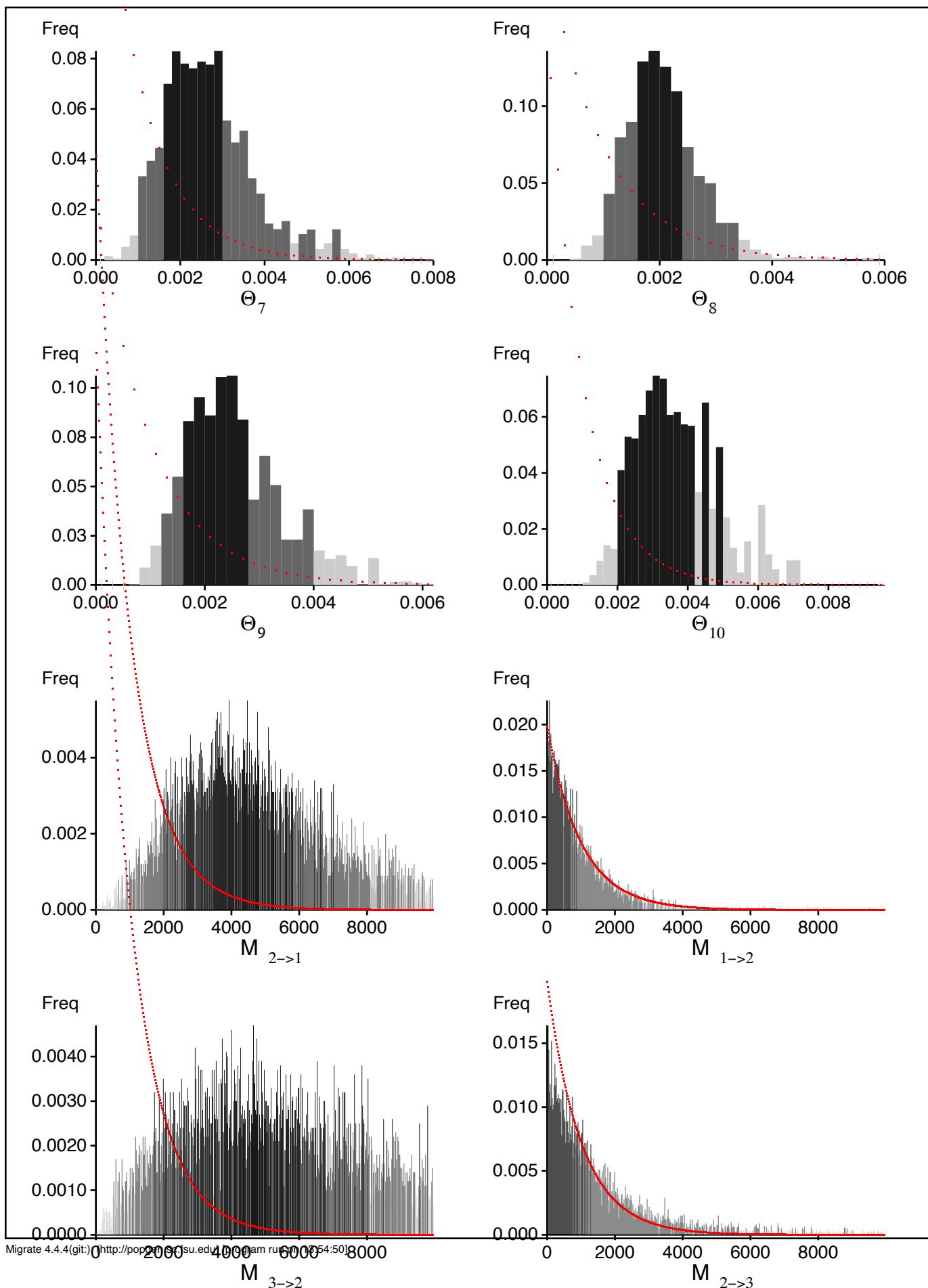


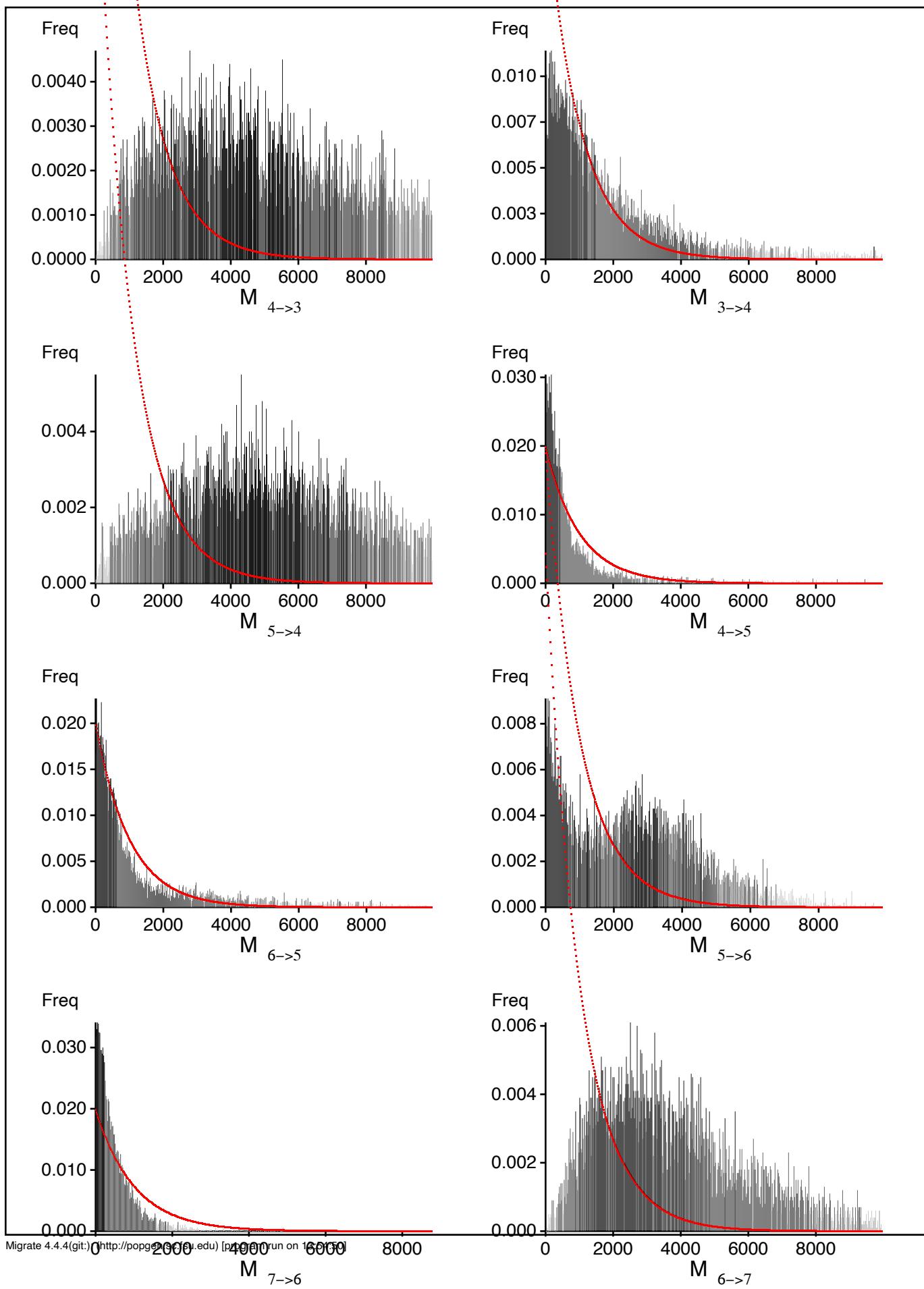


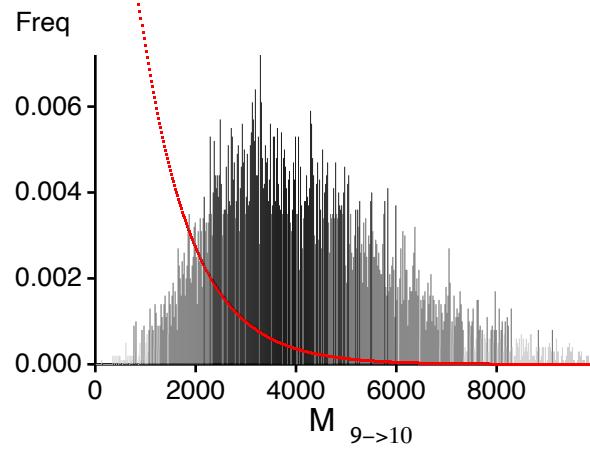
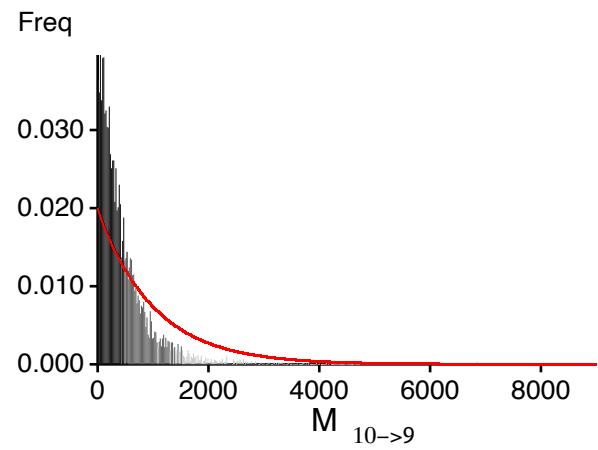
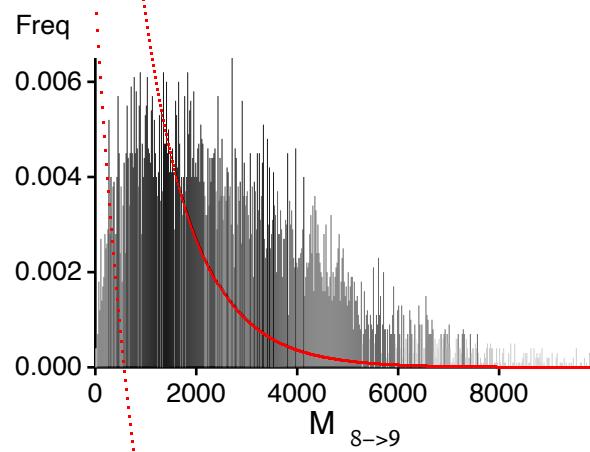
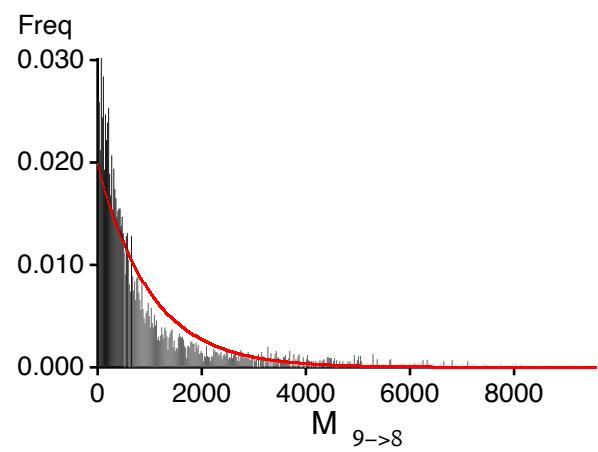
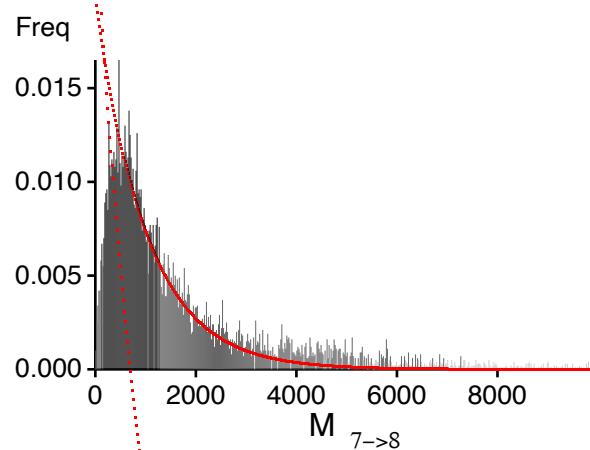
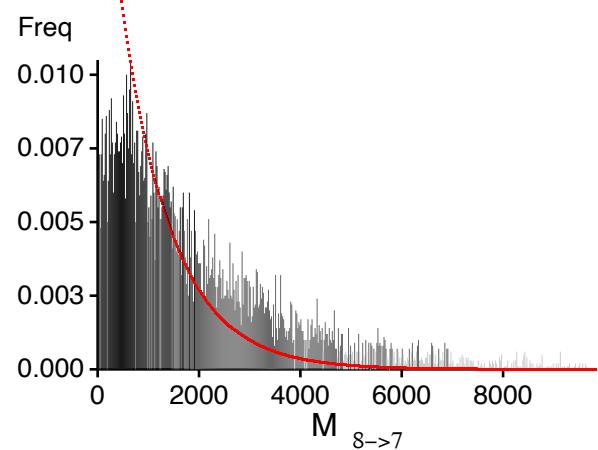


### Bayesian Analysis: Posterior distribution for locus 54

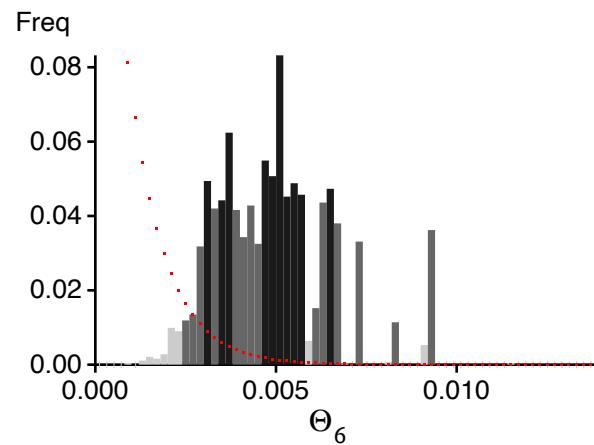
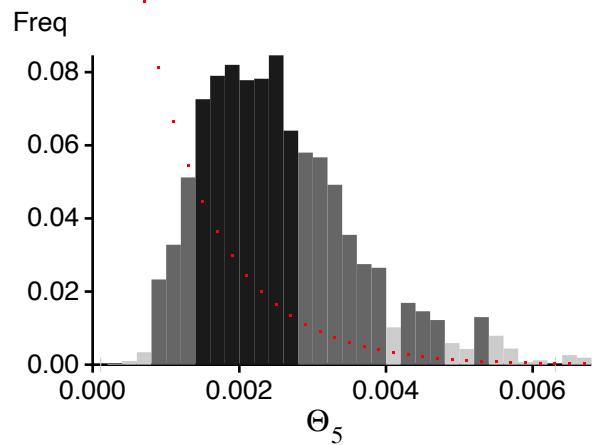
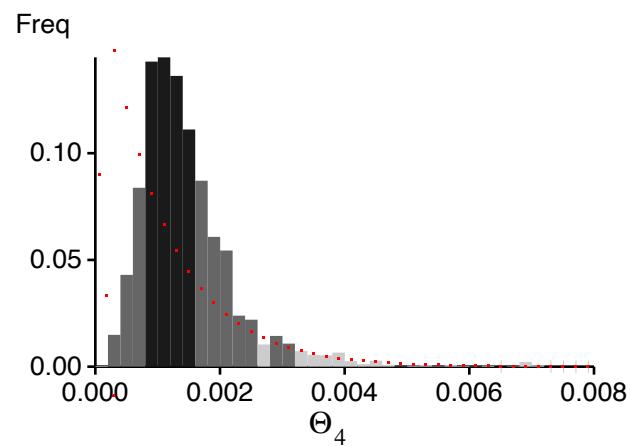
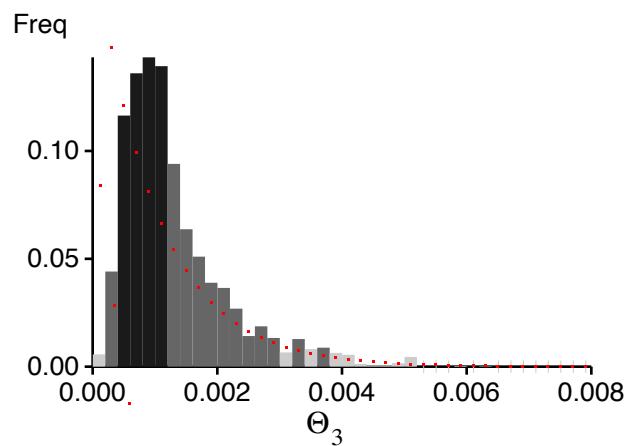
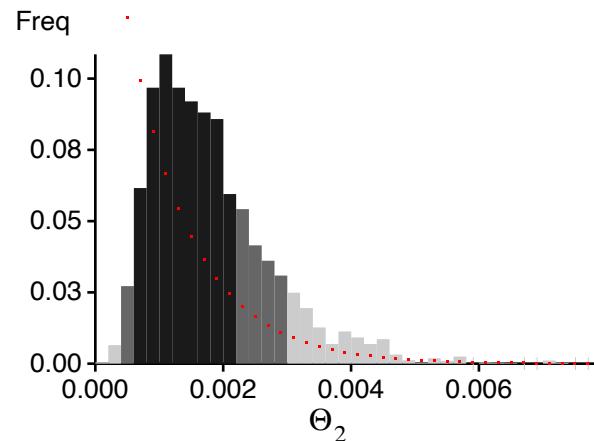
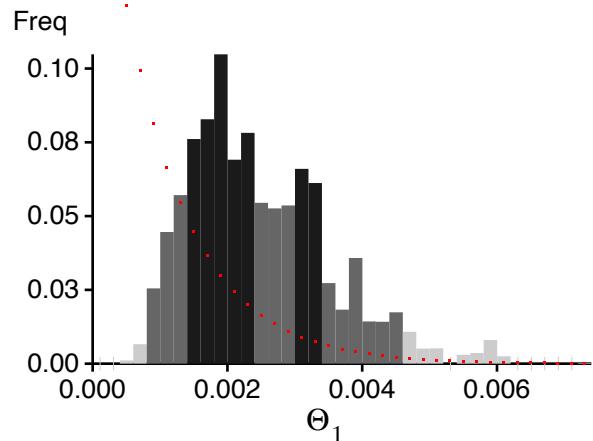


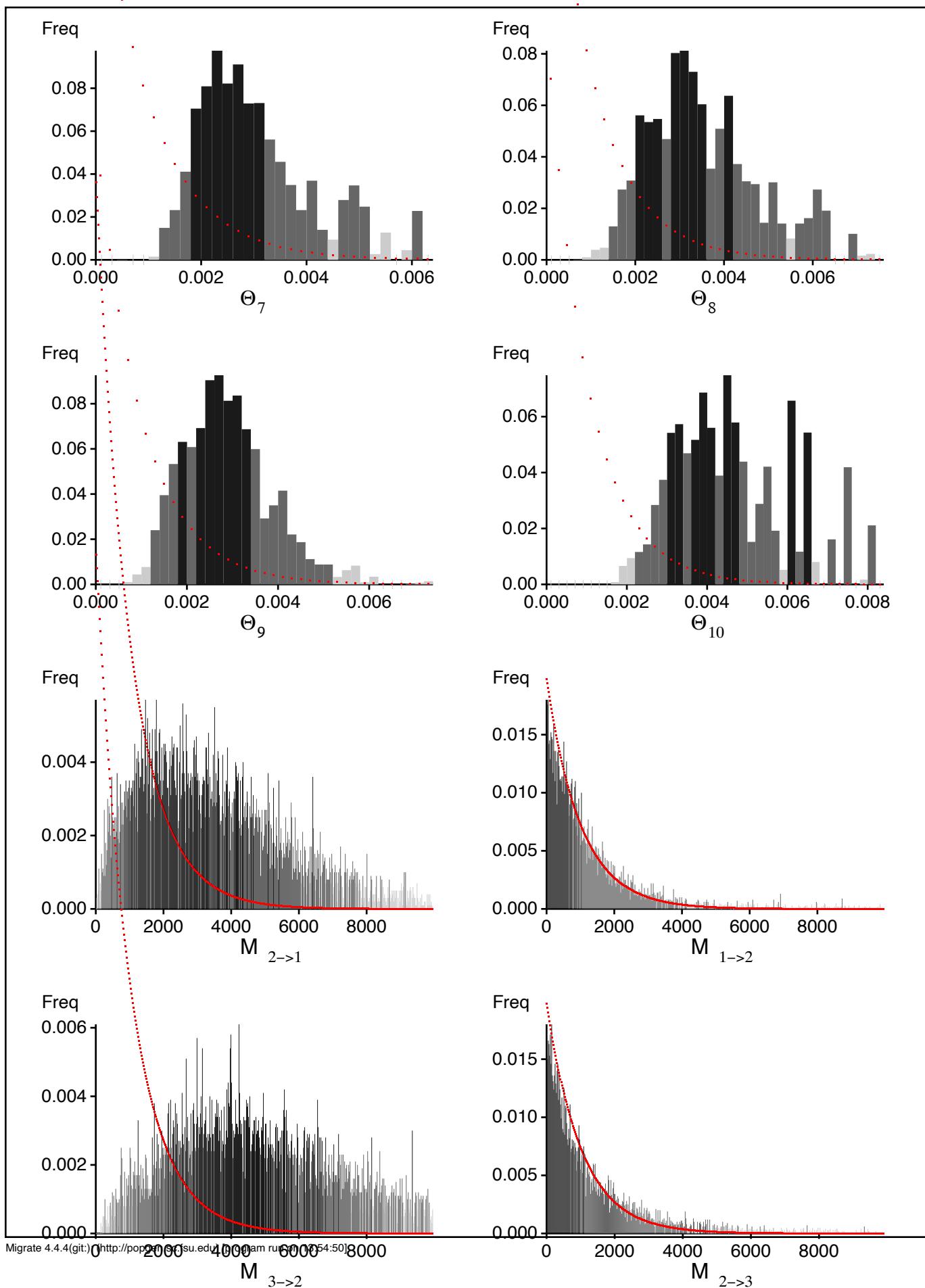


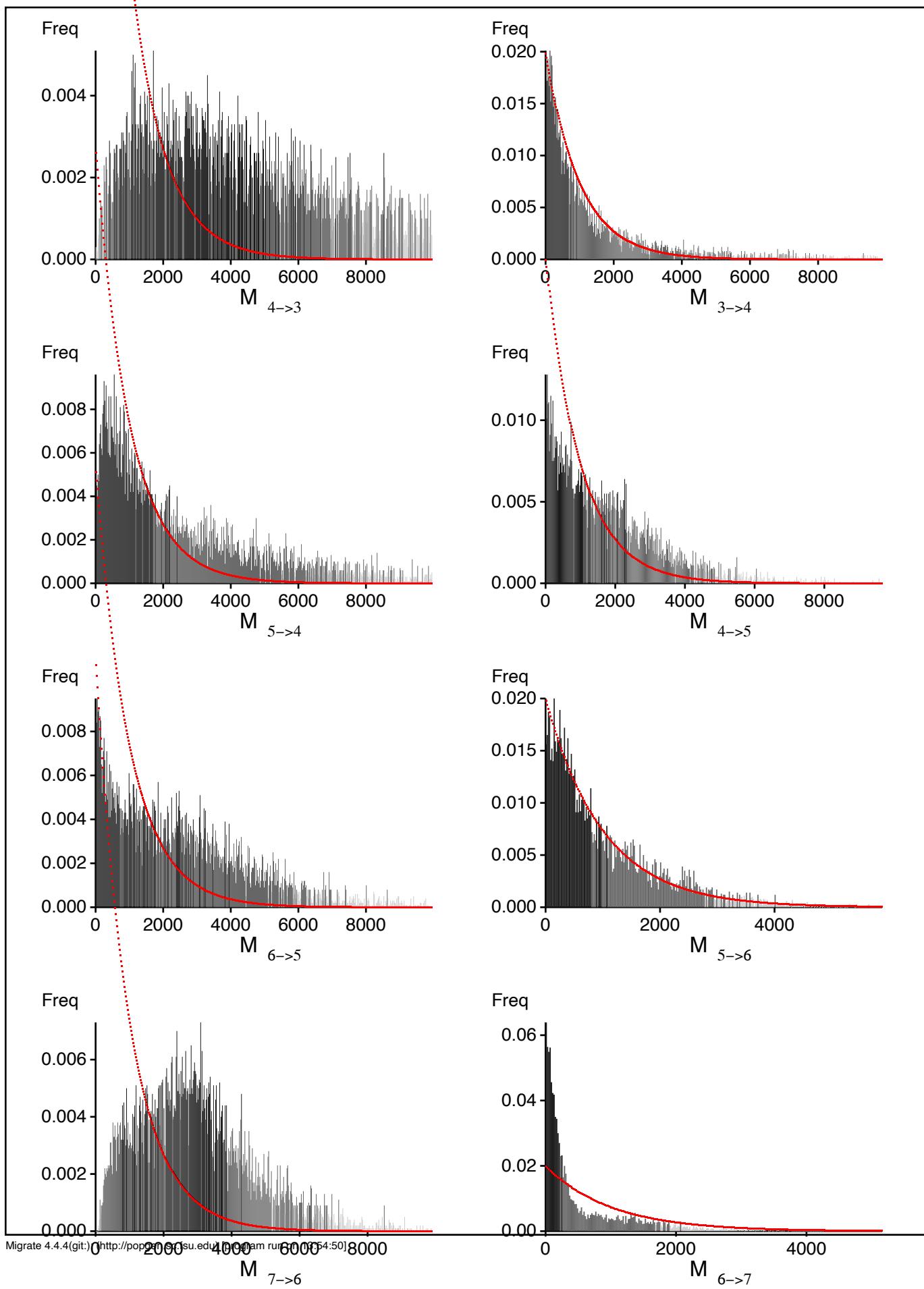


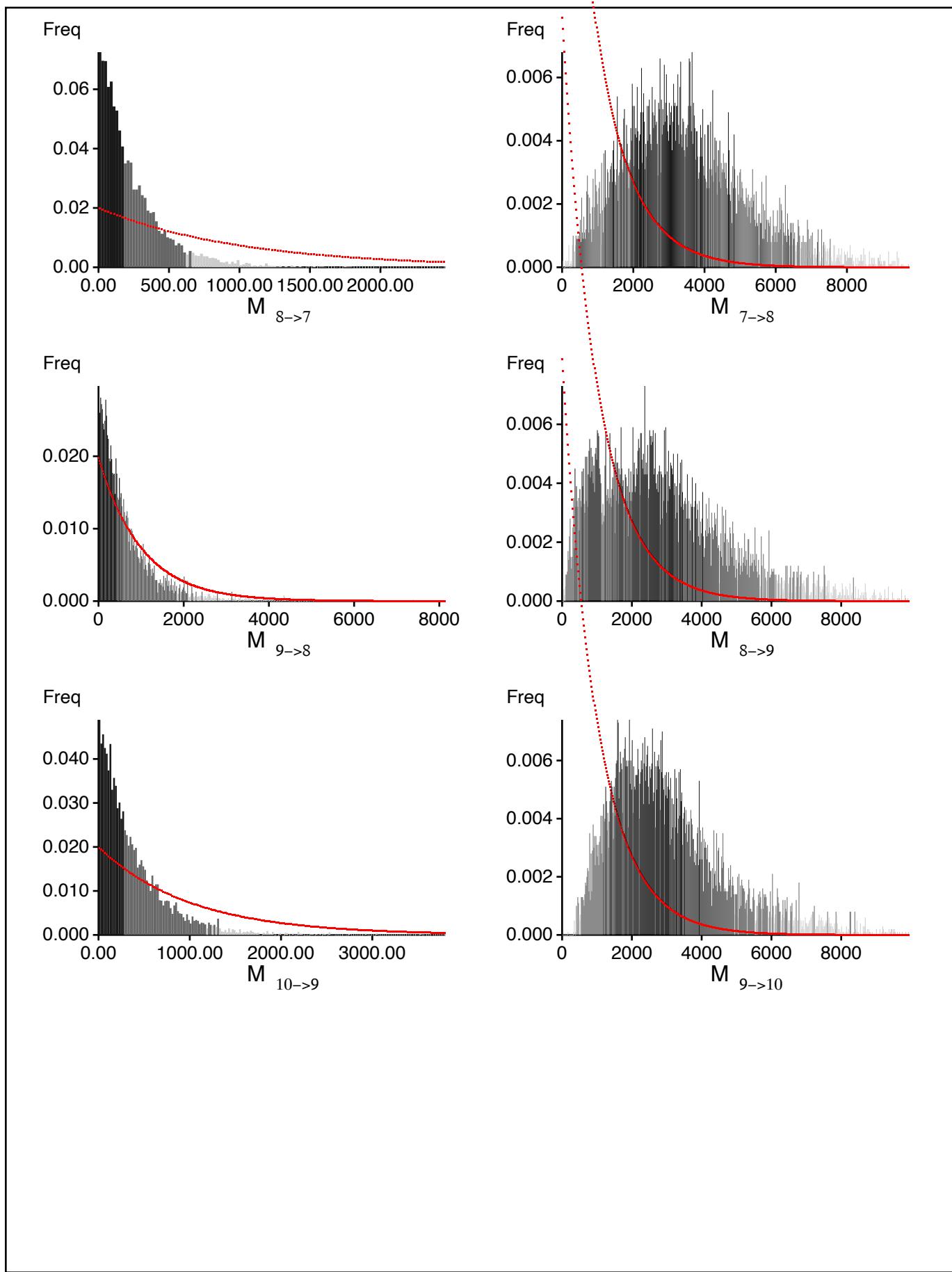


### Bayesian Analysis: Posterior distribution for locus 55

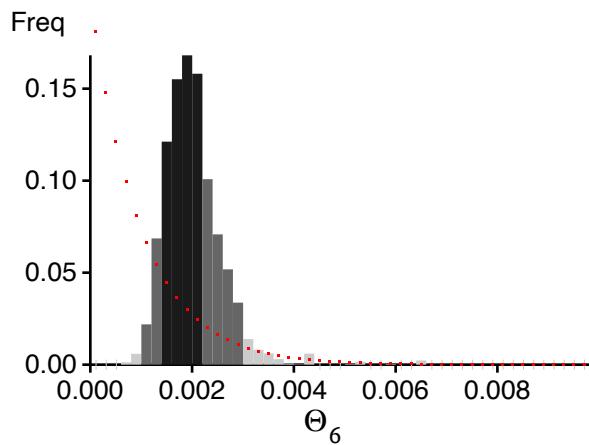
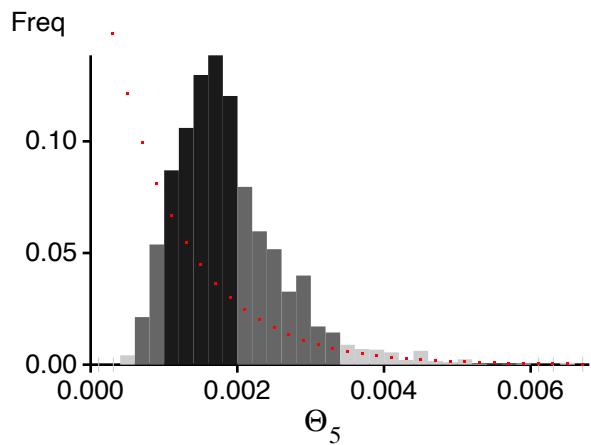
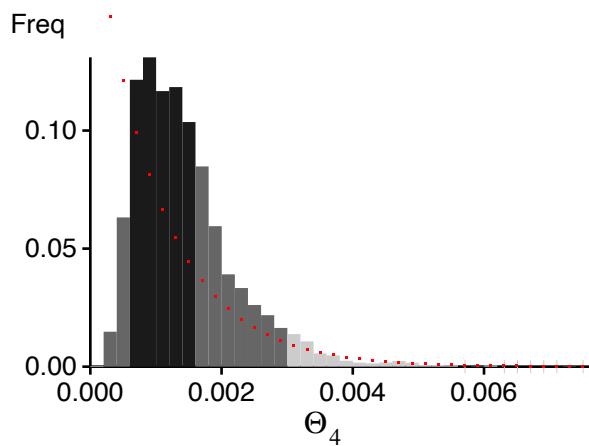
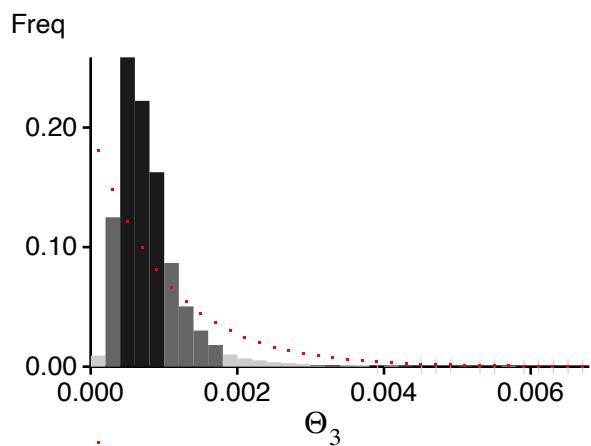
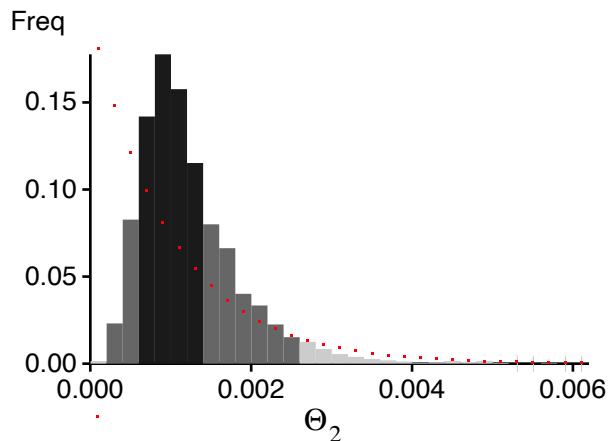
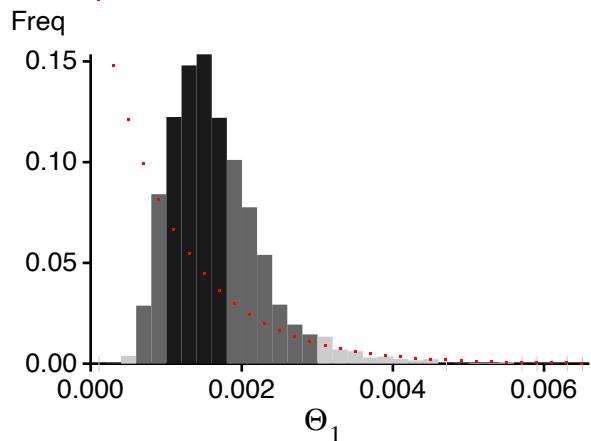


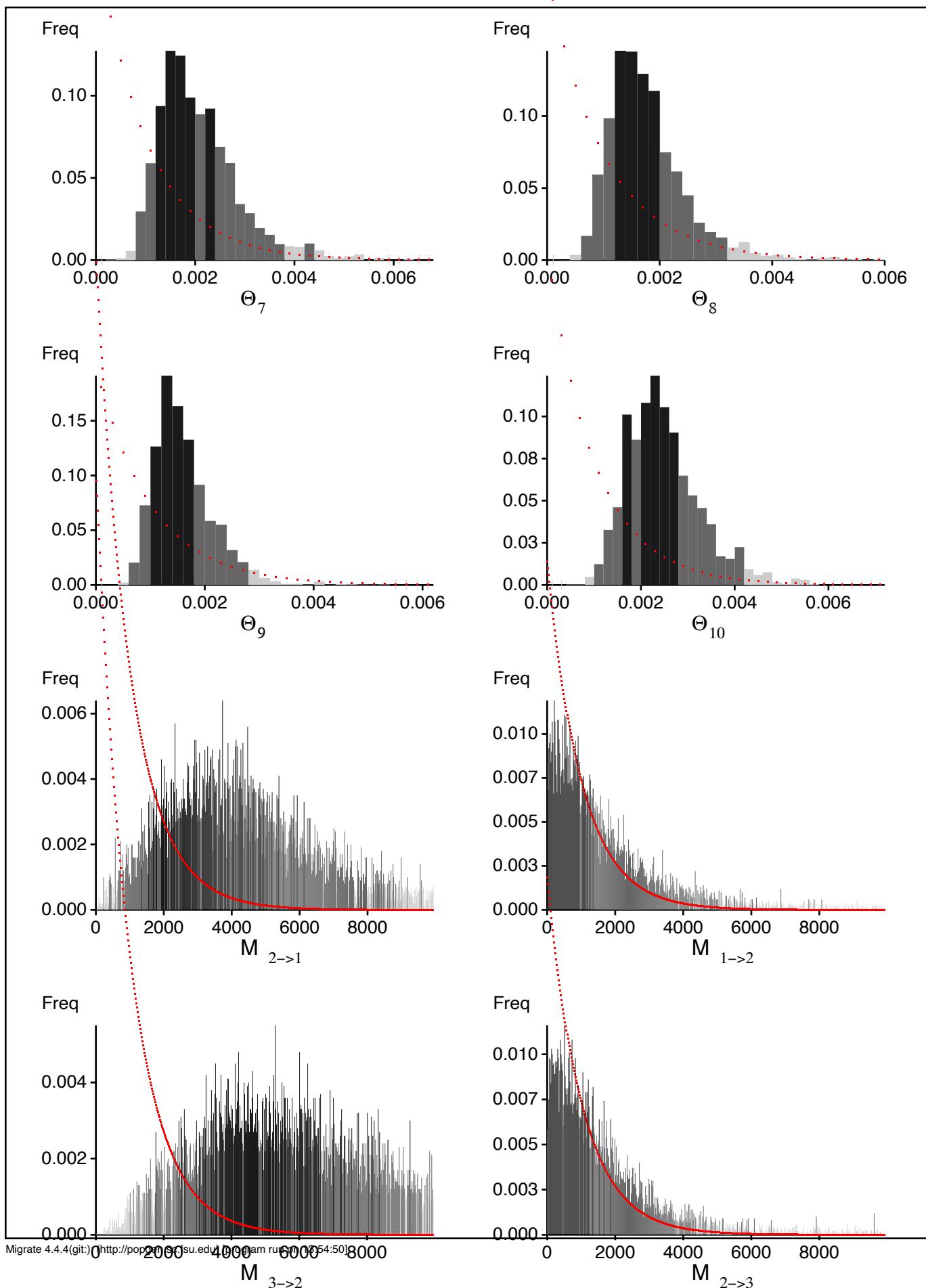


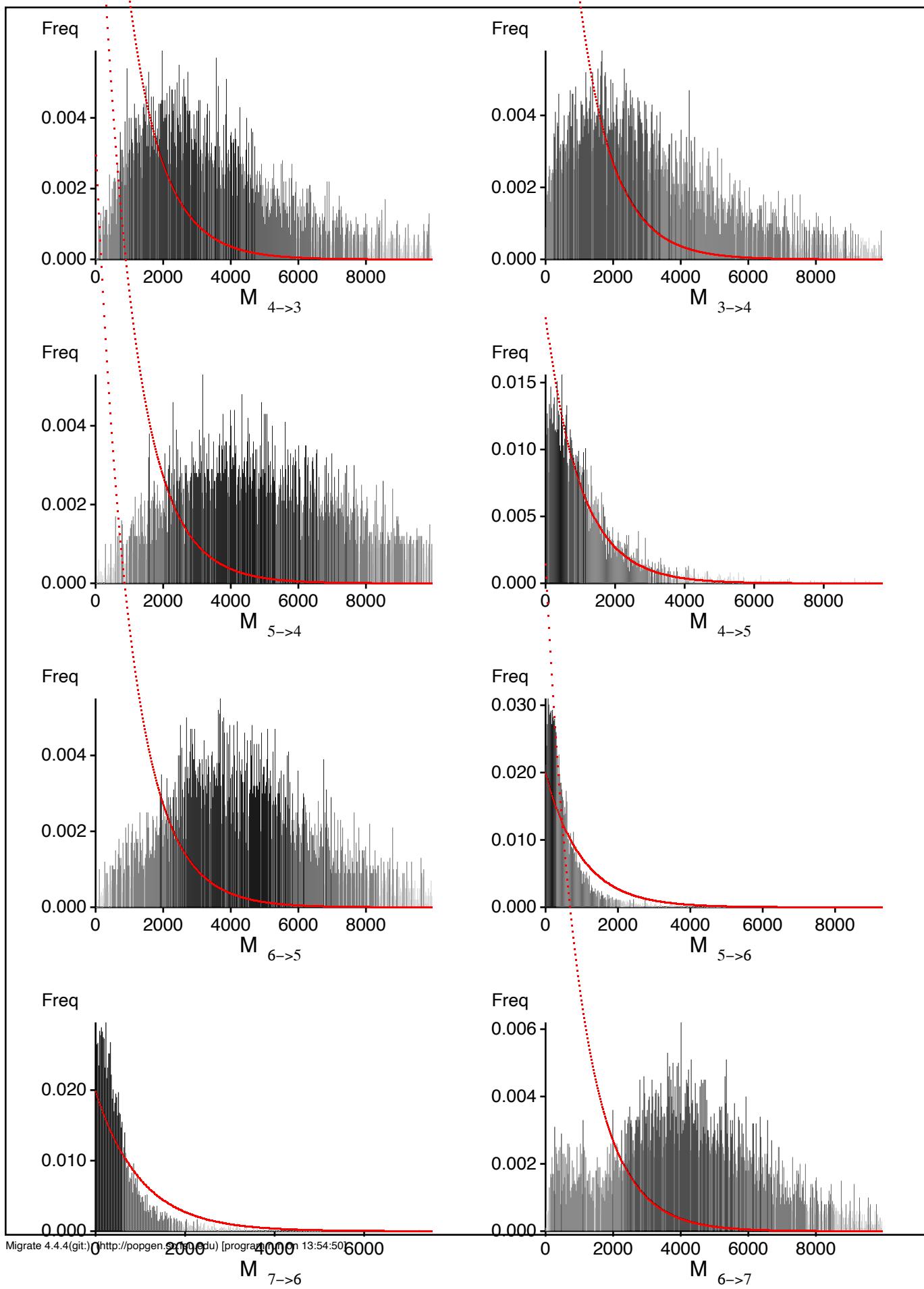


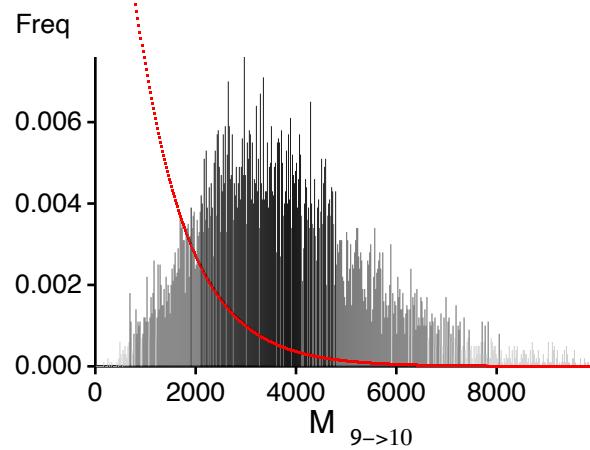
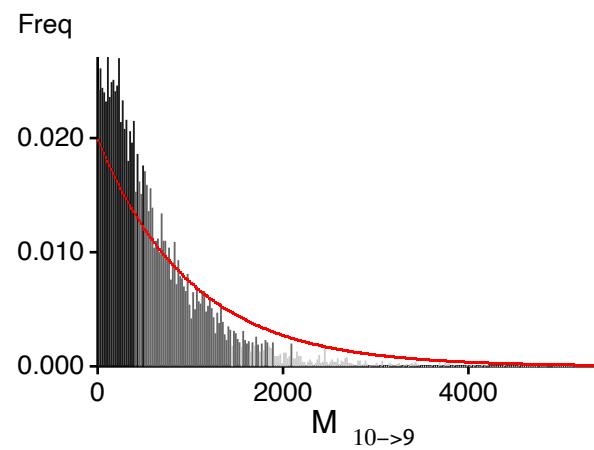
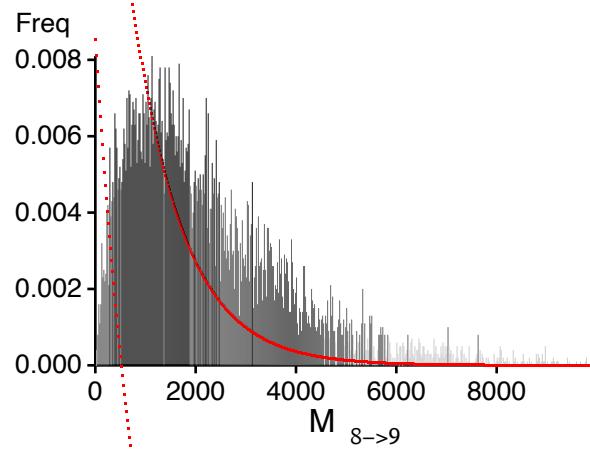
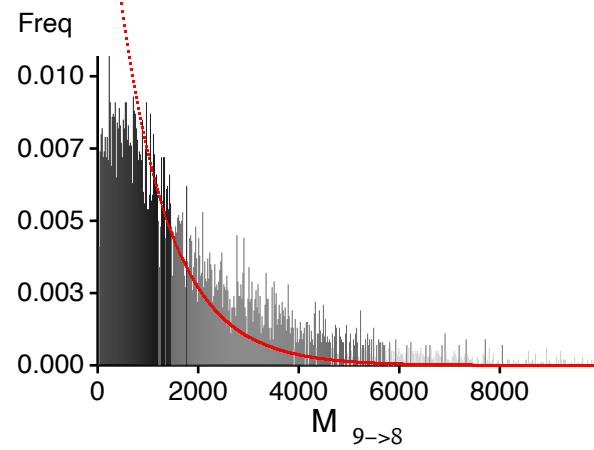
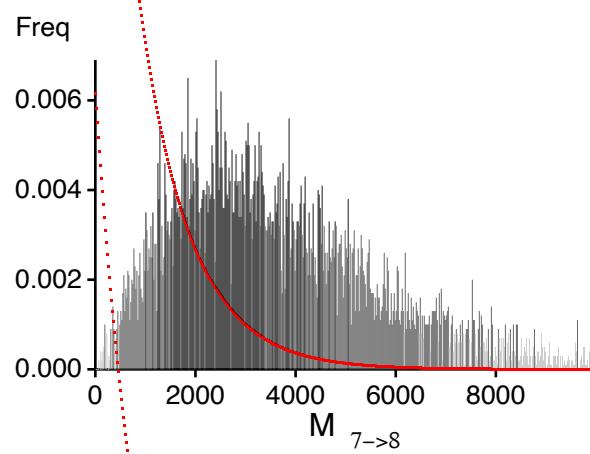
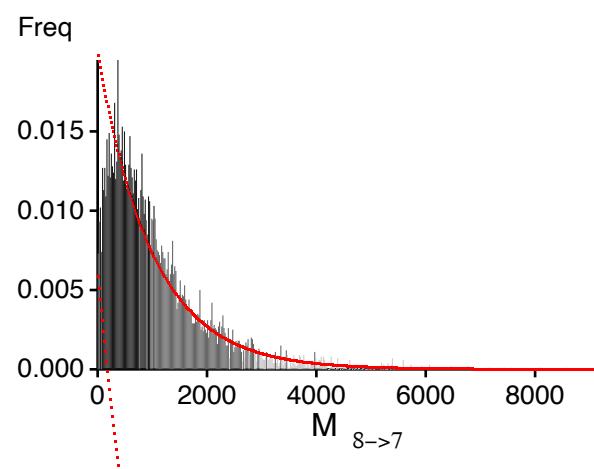


### Bayesian Analysis: Posterior distribution for locus 56

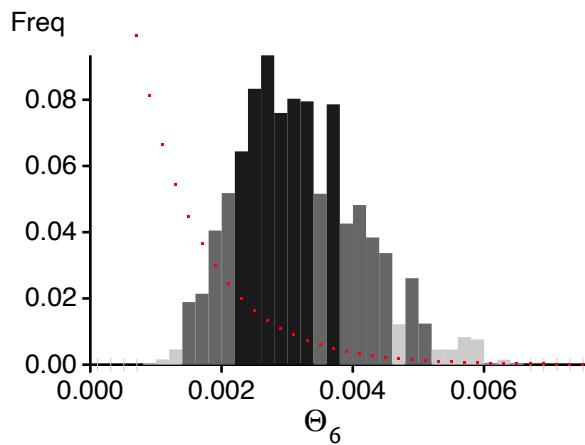
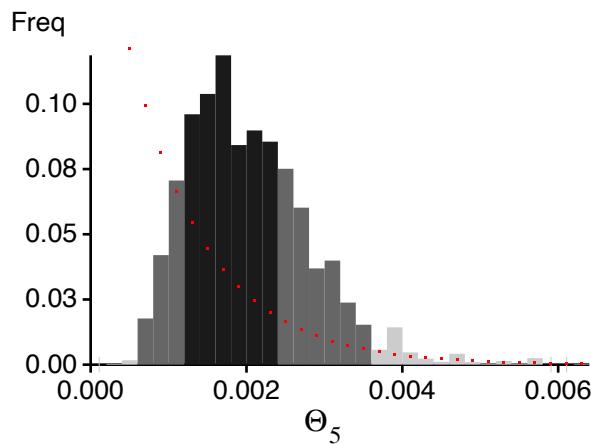
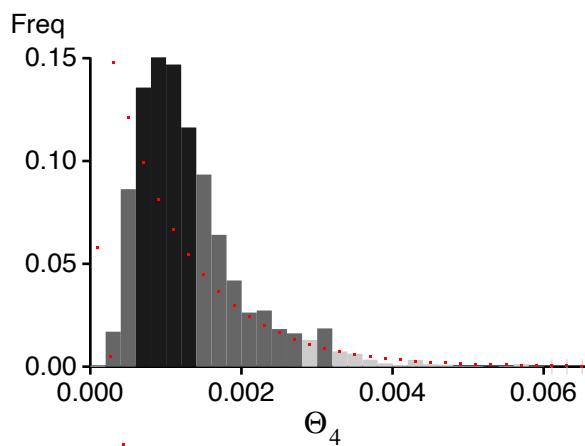
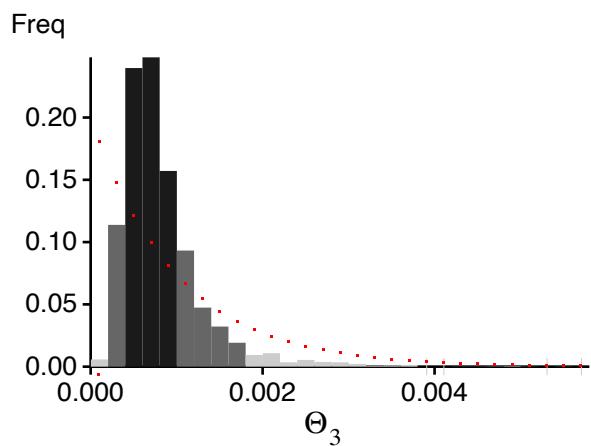
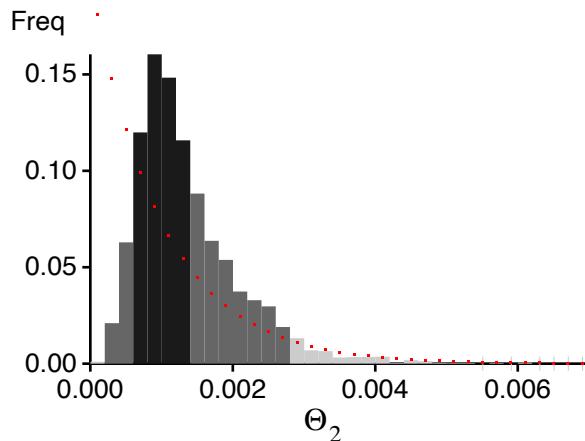
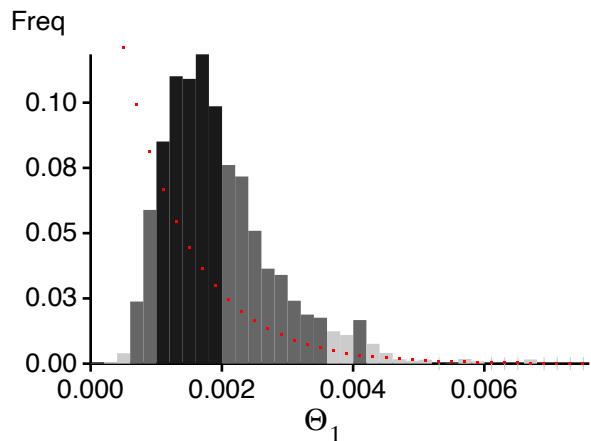


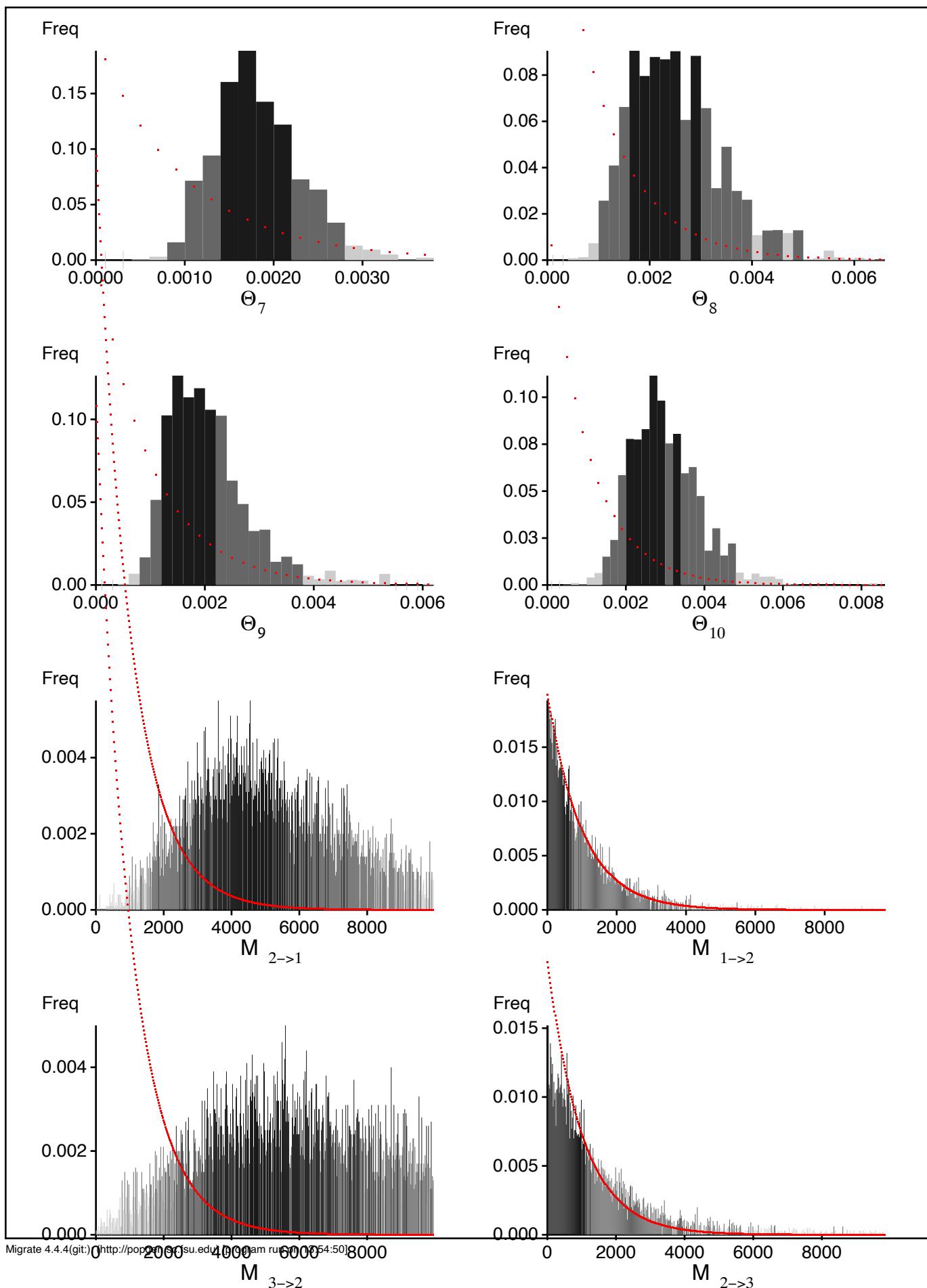


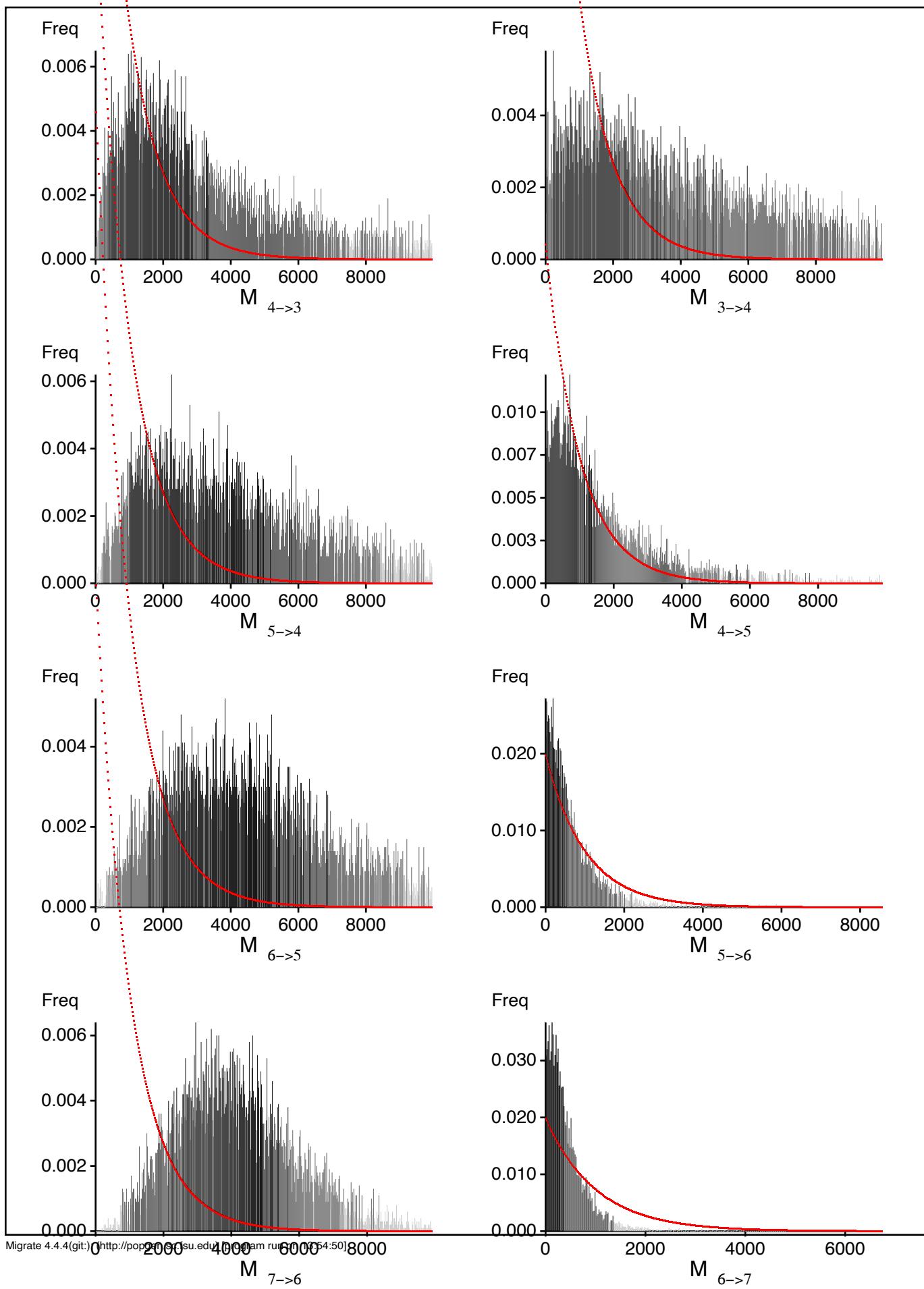


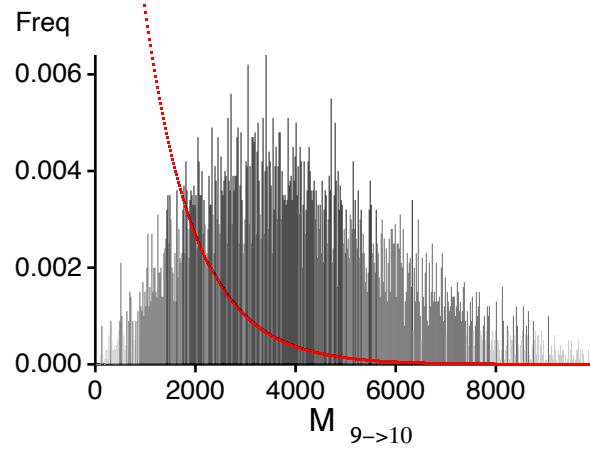
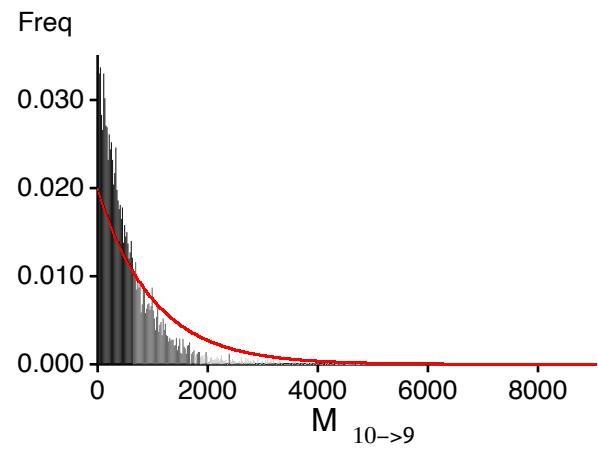
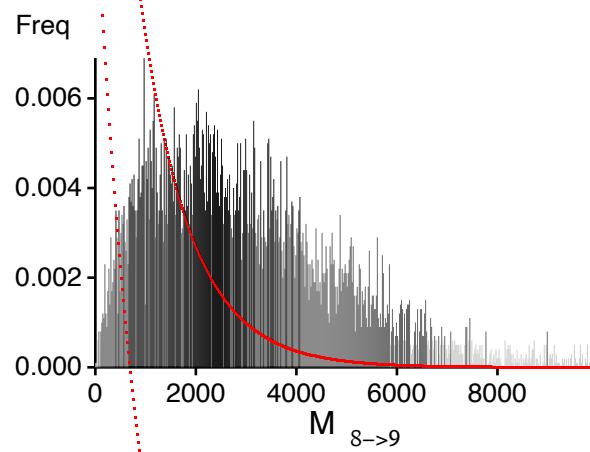
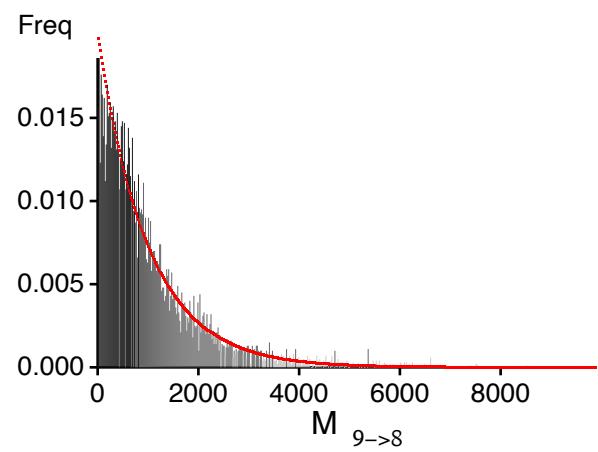
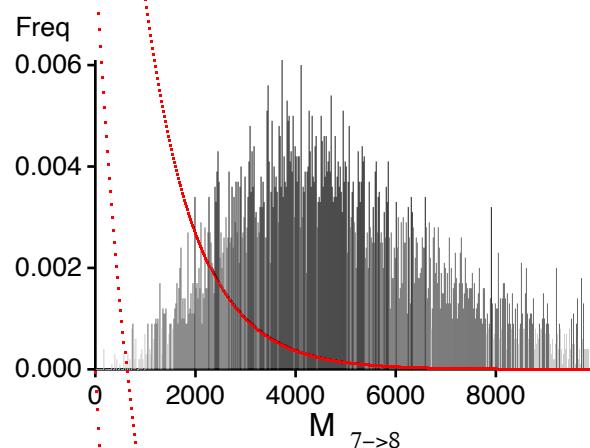
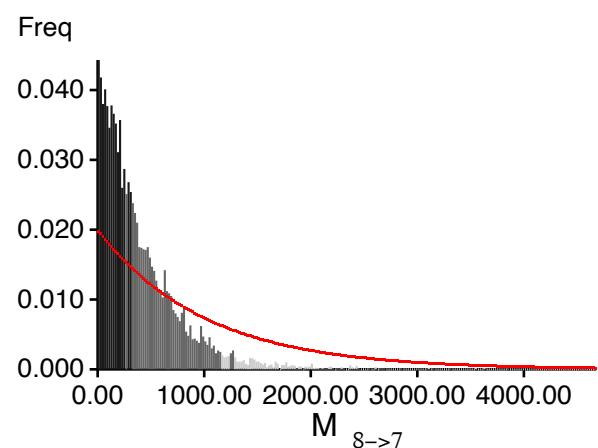


### Bayesian Analysis: Posterior distribution for locus 57

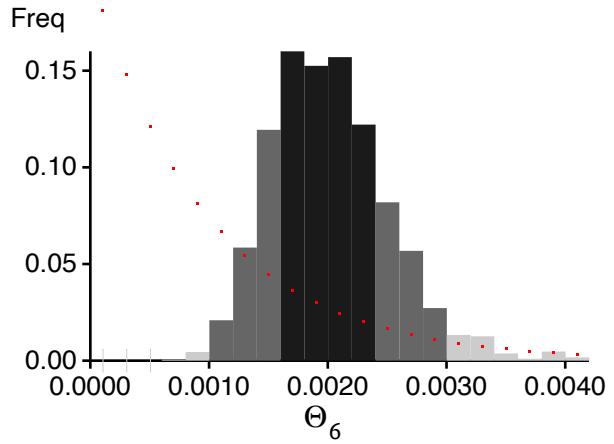
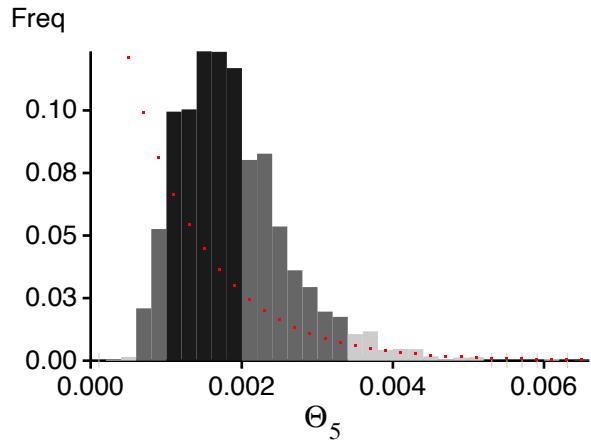
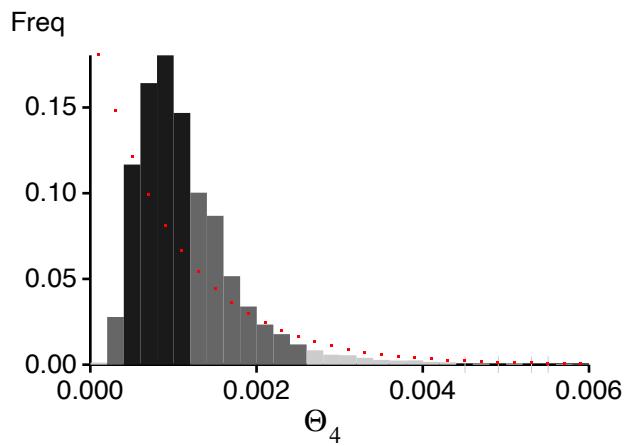
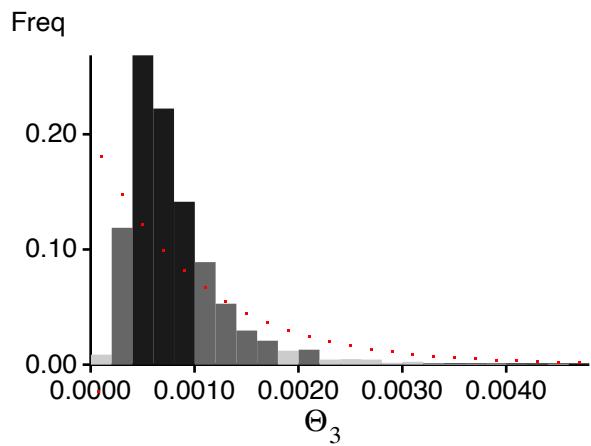
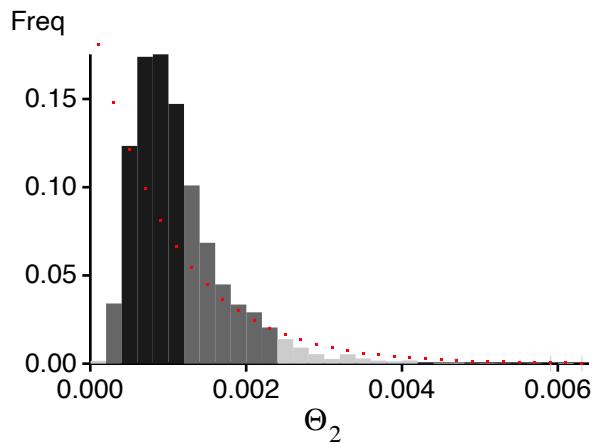
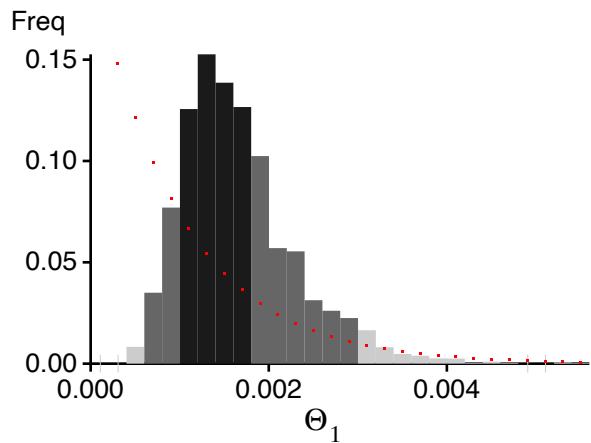


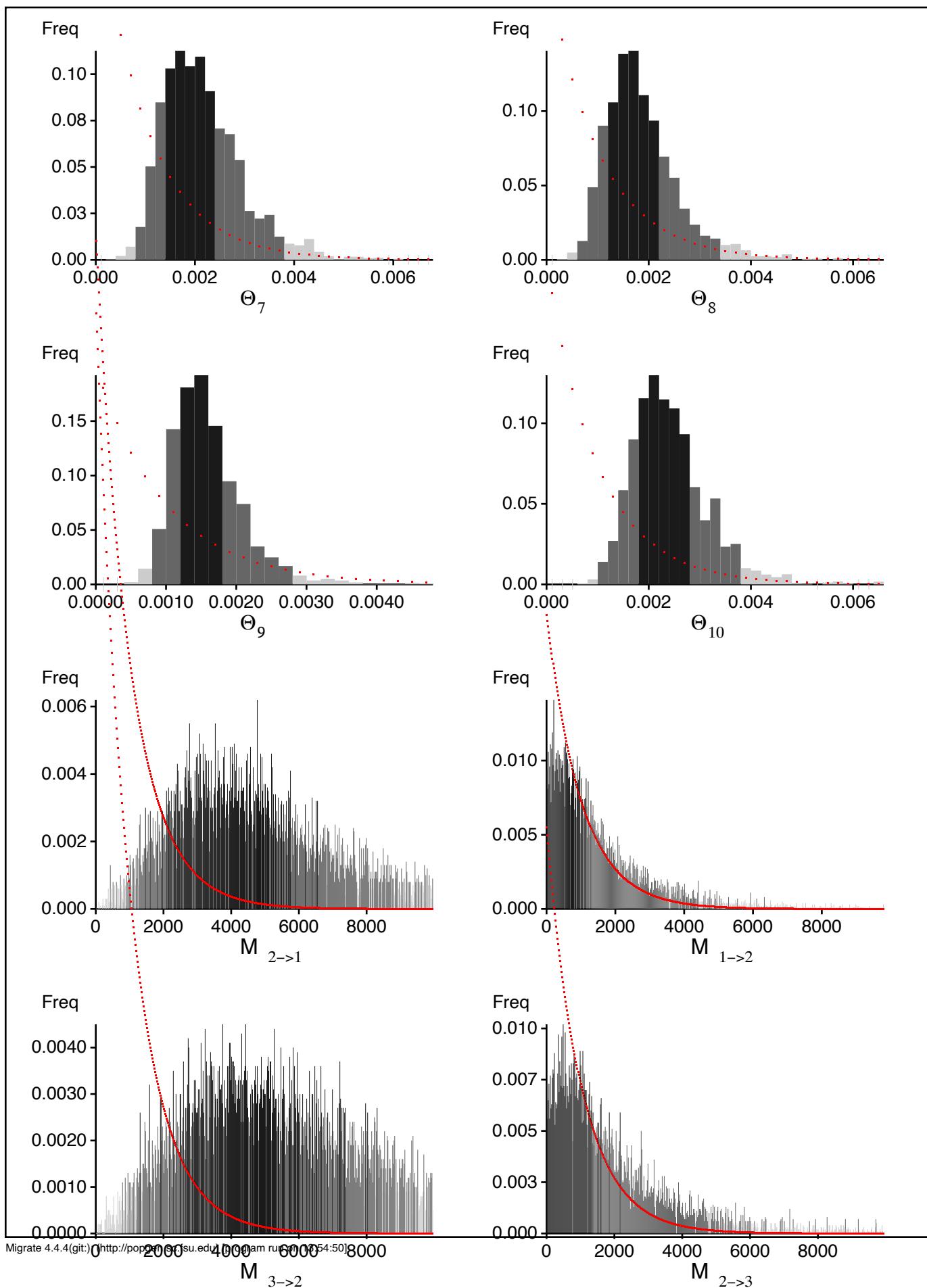


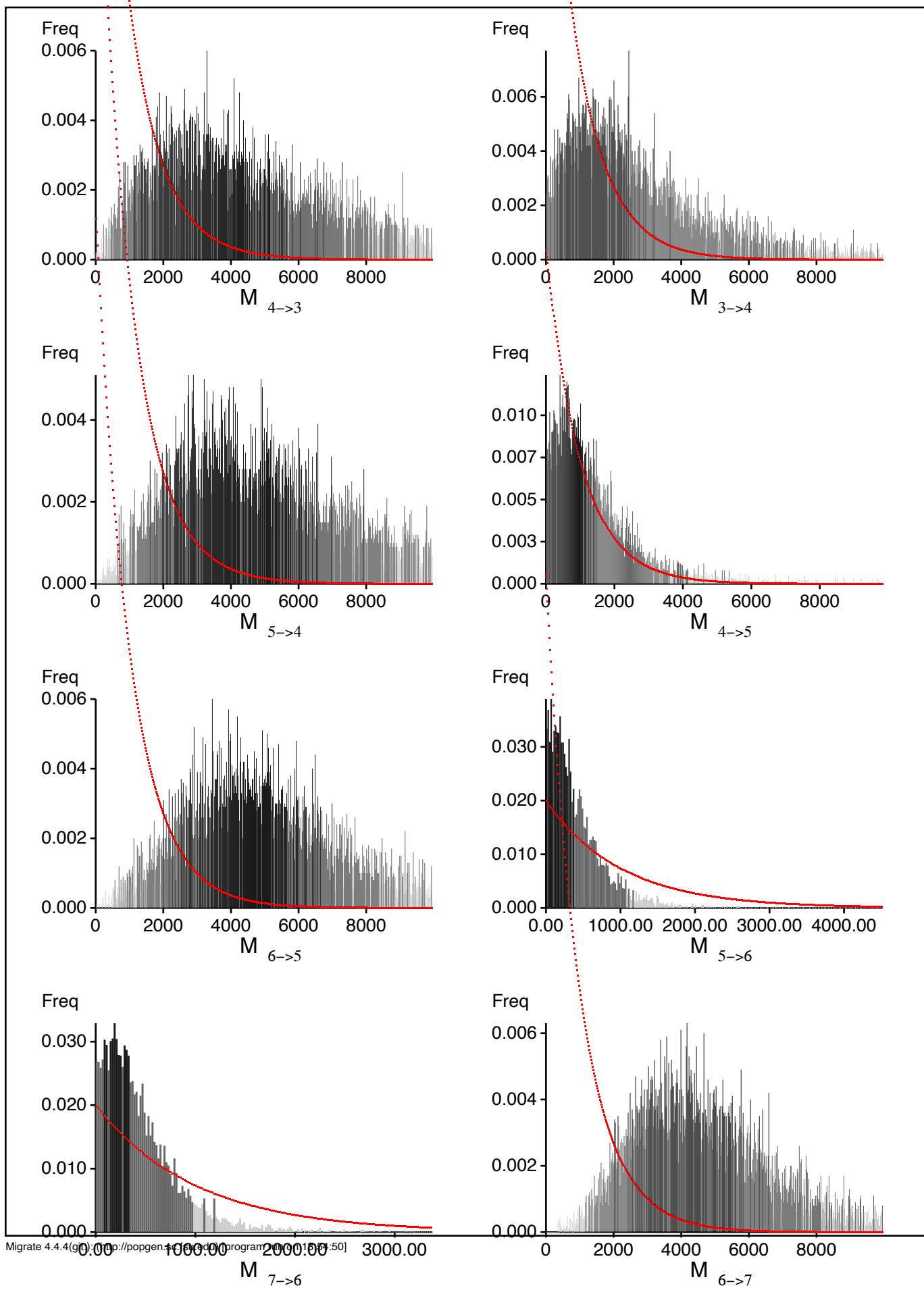


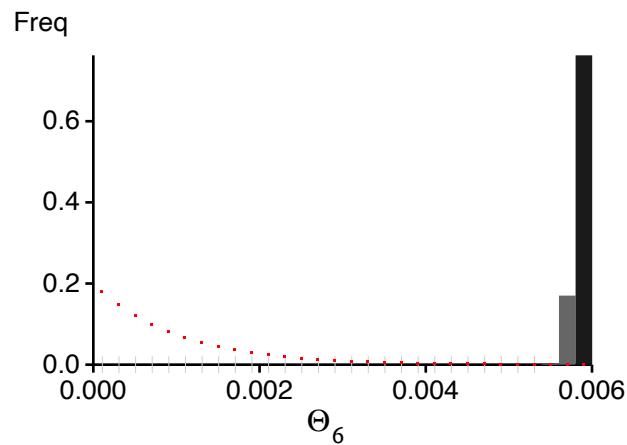
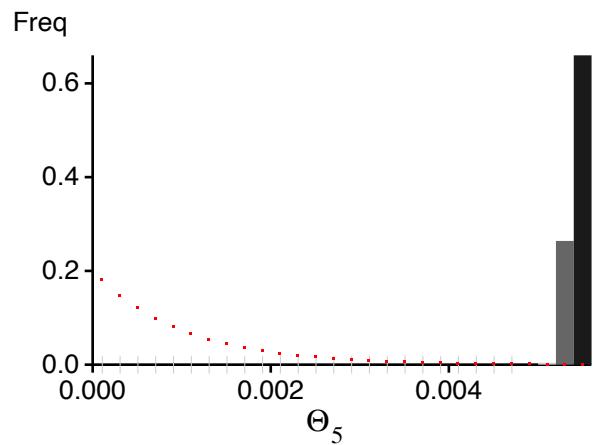
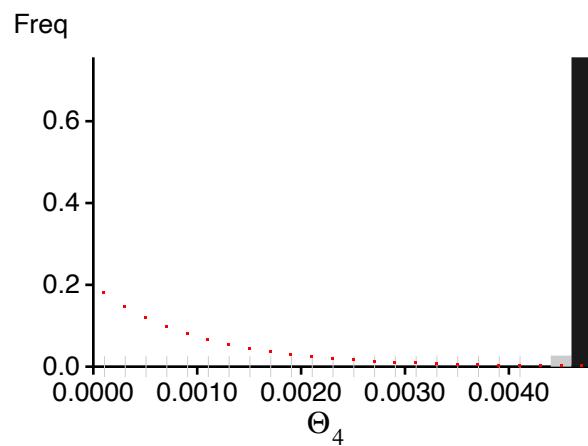
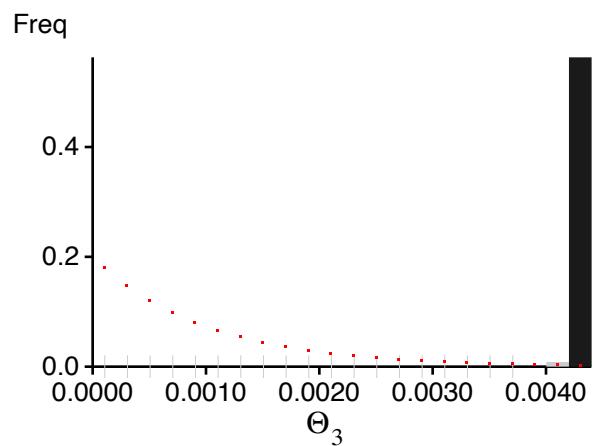
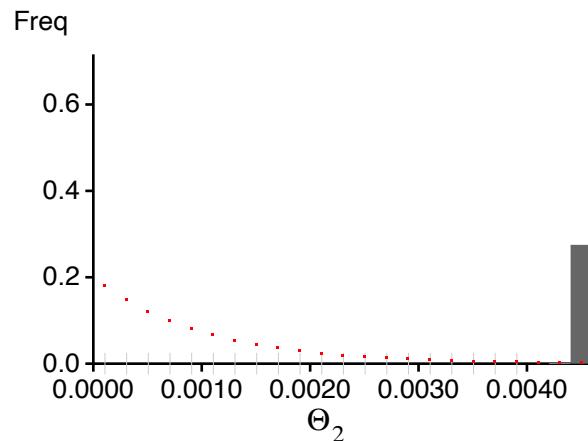
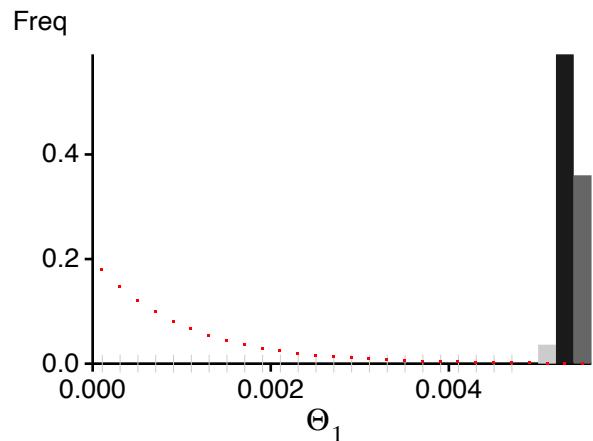


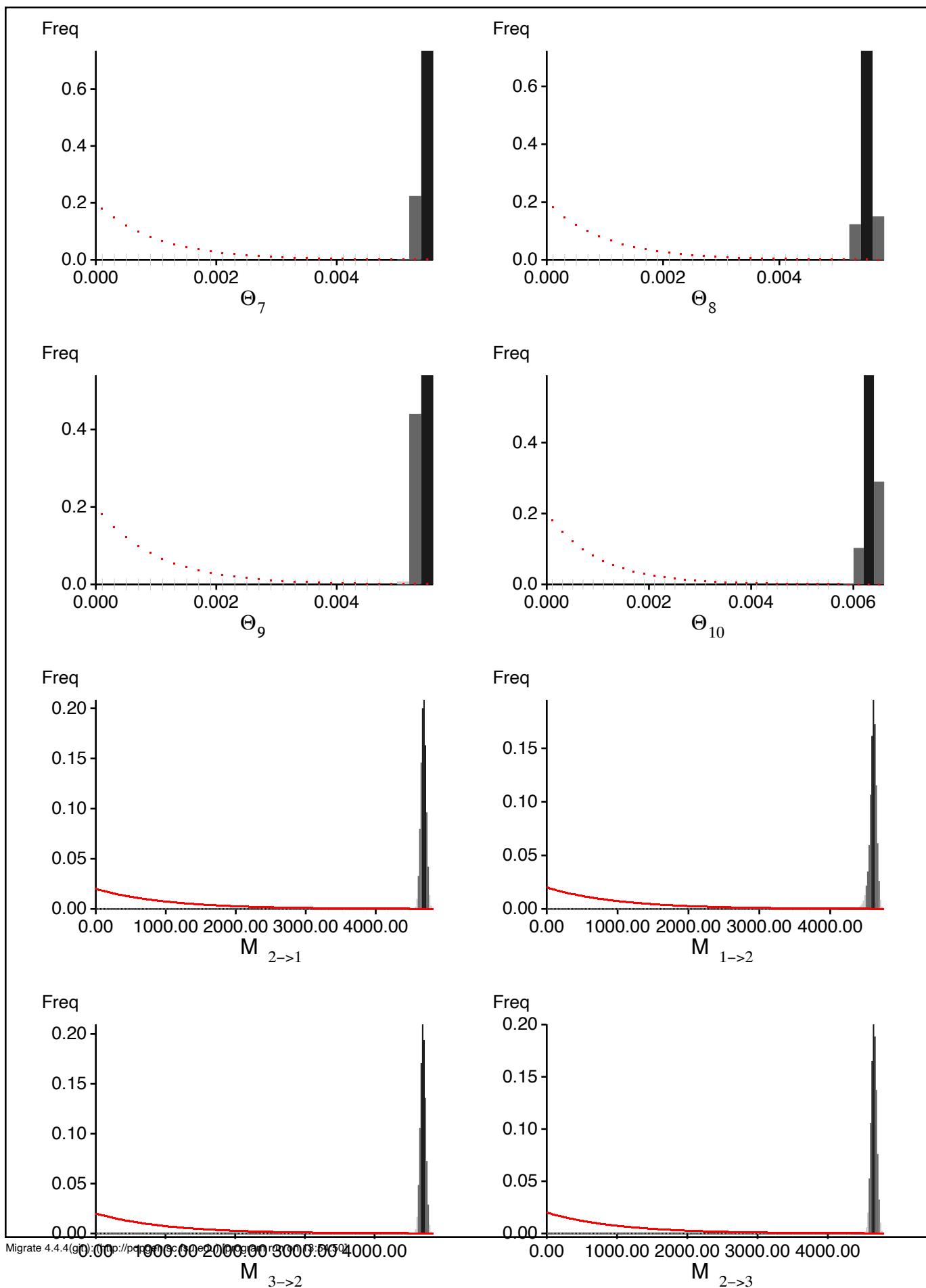
### Bayesian Analysis: Posterior distribution for locus 58

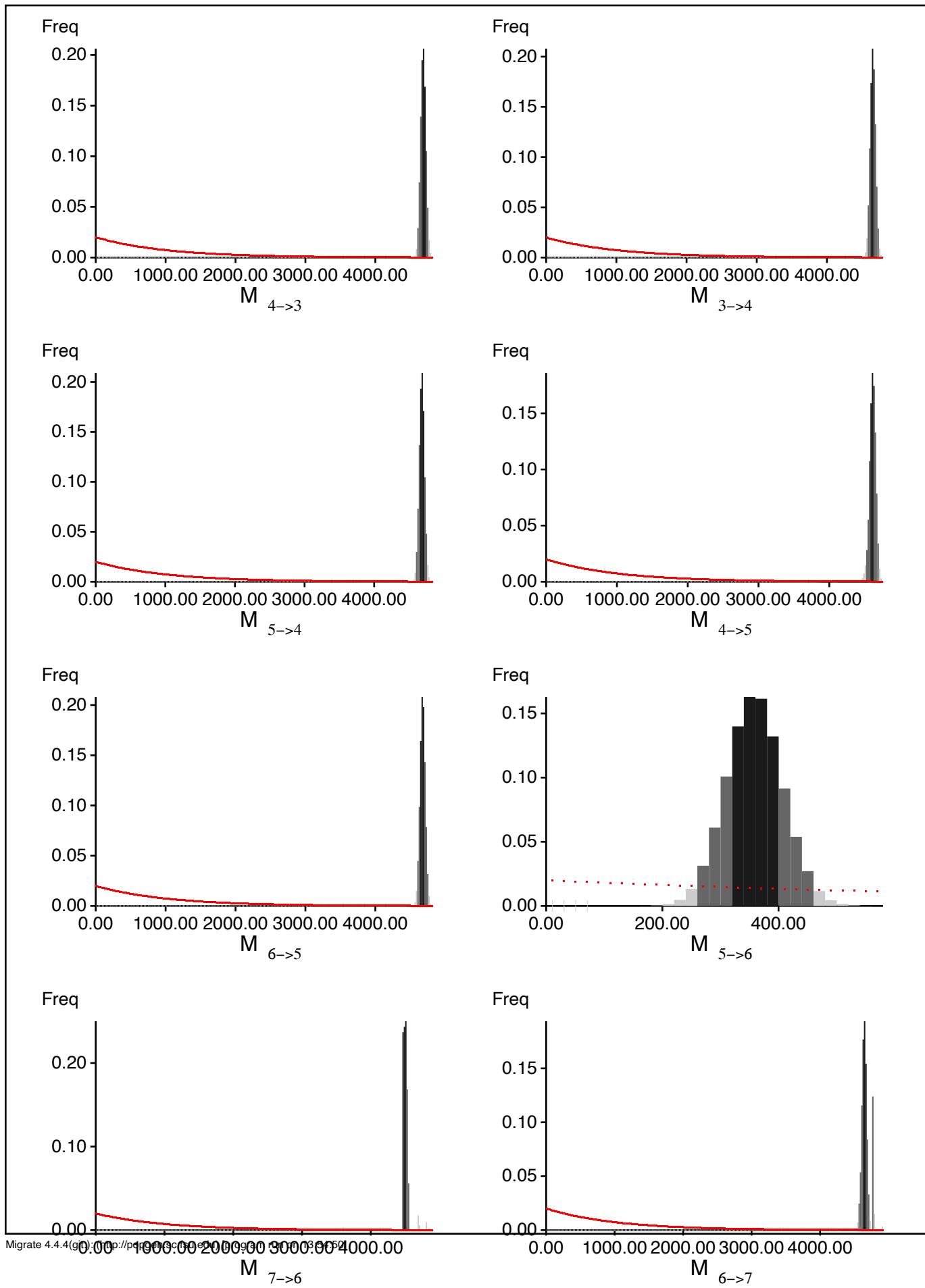


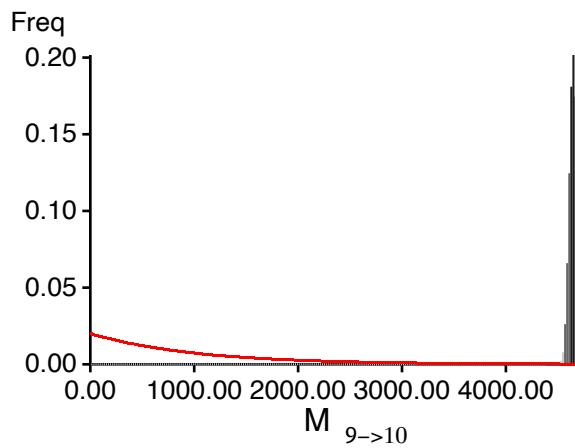
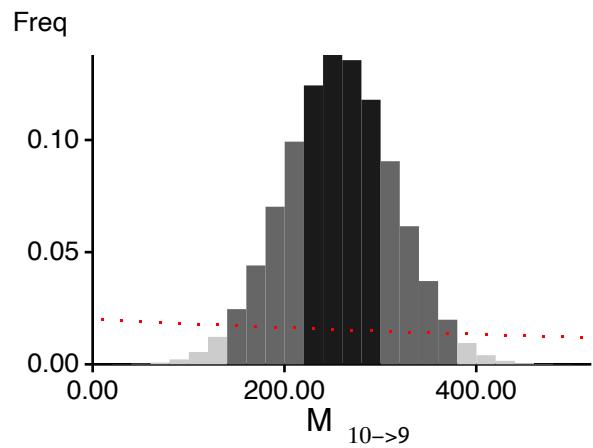
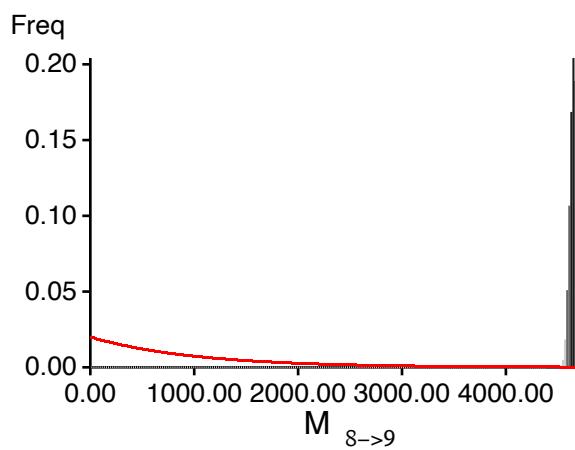
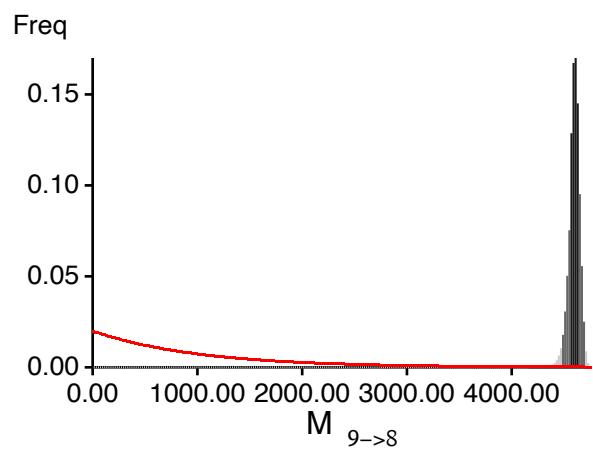
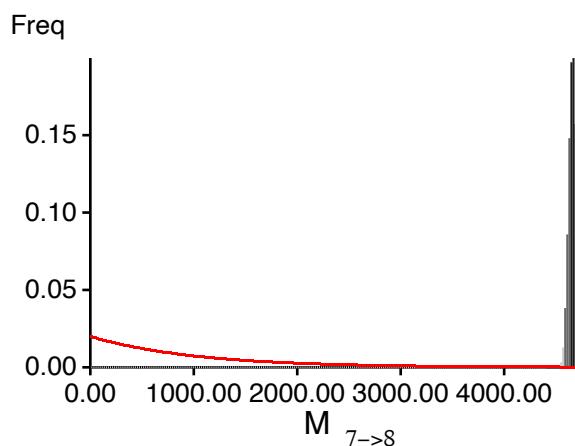
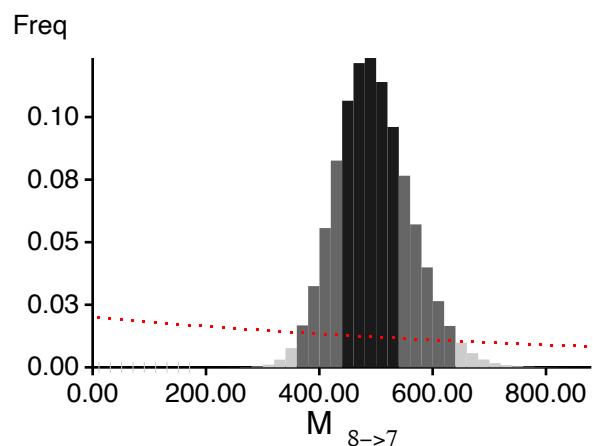




*Bayesian Analysis: Posterior distribution over all loci*







## *Log-Probability of the data given the model (marginal likelihood)*

Use this value for Bayes factor calculations:

$BF = \text{Exp}[\ln(\text{Prob}(D | \text{thisModel})) - \ln(\text{Prob}(D | \text{otherModel}))]$

or as  $LBF = 2(\ln(\text{Prob}(D | \text{thisModel})) - \ln(\text{Prob}(D | \text{otherModel})))$

shows the support for thisModel]

Locus	Raw thermodynamic score(1a)	Bezier approximation score(1b)	Harmonic mean(2)
1	-585.30	-579.46	-589.13
2	-626.90	-620.15	-630.90
3	-706.44	-699.33	-707.72
4	-681.66	-674.82	-684.94
5	-766.13	-758.39	-767.16
6	-725.70	-718.47	-730.84
7	-756.92	-748.71	-759.18
8	-486.88	-481.95	-487.19
9	-901.72	-830.33	-780.17
10	-887.17	-878.34	-894.84
11	-591.55	-584.94	-592.11
12	-586.12	-580.17	-588.60
13	-742.83	-735.17	-746.26
14	-1028.84	-1018.64	-1037.92
15	-699.20	-692.18	-703.09
16	-489.69	-484.65	-490.83
17	-541.55	-536.09	-544.56
18	-499.30	-494.03	-499.51
19	-927.04	-917.84	-932.16
20	-691.62	-684.69	-695.34
21	-679.05	-671.81	-681.02
22	-620.95	-612.37	-614.53
23	-538.14	-532.76	-539.63
24	-1067.82	-1057.12	-1073.97
25	-379.55	-375.78	-381.94
26	-633.07	-622.46	-618.30
27	-745.13	-733.36	-723.80
28	-1054.29	-1043.81	-1061.43
29	-986.36	-976.53	-993.37

30	-537.28	-531.41	-538.65
31	-1026.48	-1016.29	-1033.29
32	-664.53	-657.90	-667.09
33	-558.38	-551.24	-548.68
34	-377.93	-374.13	-378.64
35	-585.40	-579.59	-589.04
36	-509.81	-504.51	-510.62
37	-462.84	-458.15	-463.34
38	-511.19	-500.87	-485.87
39	-961.35	-951.74	-966.74
40	-653.86	-647.30	-656.45
41	-535.02	-527.93	-528.89
42	-745.47	-735.93	-720.26
43	-1106.06	-1094.96	-1113.45
44	-469.58	-464.83	-470.56
45	-775.17	-764.93	-760.54
46	-507.06	-501.99	-509.42
47	-463.20	-458.52	-464.74
48	-707.27	-700.22	-712.60
49	-626.62	-620.36	-629.98
50	-395.97	-391.78	-396.17
51	-487.53	-482.65	-488.59
52	-470.40	-465.73	-472.73
53	-599.05	-592.04	-585.94
54	-702.77	-695.42	-702.40
55	-475.27	-469.62	-471.80
56	-693.34	-686.35	-696.11
57	-402.83	-398.59	-403.09
58	-602.45	-596.37	-605.48
59	-695.04	-687.82	-696.15
60	-533.84	-528.50	-535.64
61	-897.94	-888.92	-901.85
62	-710.67	-703.46	-713.86
63	-1062.38	-1029.85	-962.04
64	-476.01	-470.96	-475.87
65	-959.38	-949.53	-962.44
66	-1105.44	-1094.47	-1112.77
67	-656.32	-649.77	-660.29
68	-757.99	-750.46	-762.27
69	-568.83	-563.19	-576.33
70	-767.63	-758.88	-767.78
71	-538.38	-531.96	-536.60
72	-767.65	-756.30	-733.20
73	-400.30	-392.93	-380.15
74	-735.50	-727.94	-741.42

75	-576.32	-570.56	-578.86
76	-483.61	-478.55	-484.43
77	-660.56	-654.00	-664.00
78	-488.36	-483.48	-492.18
79	-613.98	-607.86	-618.55
80	-651.33	-644.64	-653.56
81	-656.10	-648.35	-634.86
82	-611.36	-604.86	-613.37
83	-690.71	-683.78	-694.98
84	-764.38	-756.49	-770.26
85	-734.43	-725.48	-732.70
86	-914.44	-905.36	-918.12
87	-605.41	-599.36	-609.72
88	-682.31	-674.48	-678.14
89	-282.31	-279.40	-282.83
90	-1029.02	-1018.68	-1034.80
91	-897.14	-888.17	-903.60
92	-730.78	-723.49	-733.69
93	-694.77	-687.87	-697.76
94	-723.94	-716.71	-727.34
95	-426.44	-422.20	-427.58
96	-596.35	-590.03	-597.12
97	-519.81	-514.35	-520.73
98	-834.18	-825.80	-835.44
99	-518.60	-508.40	-493.16
100	-685.08	-678.04	-685.11
101	-831.09	-822.85	-835.43
102	-476.85	-472.07	-479.63
103	-534.98	-529.62	-537.31
104	-829.18	-819.05	-826.10
105	-520.88	-515.71	-524.69
106	-480.94	-475.89	-482.48
107	-563.26	-557.68	-565.70
108	-453.68	-449.14	-455.85
109	-519.77	-514.48	-520.46
All	-65995.43	-65136.28	-65789.54
(1a, 1b and 2) are approximations to the marginal likelihood, make sure that the program run long enough!			
(1a, 1b) and (2) should give similar results, in principle.			
But (2) is overestimating the likelihood, it is presented for historical reasons and should not be used			
(1a, 1b) needs heating with chains that span a temperature range of 1.0 to at least 100,000.			
(1b) is using a Bezier-curve to get better approximations for runs with low number of heated chains			
[Scaling factor = 6161.274038]			
Citation suggestions:			

Beerli P. and M. Palczewski, 2010. Unified framework to evaluate panmixia and migration direction among multiple sampling locations, *Genetics*, 185: 313-326.

## *Acceptance ratios for all parameters and the genealogies*

Parameter	Accepted changes	Ratio
$\Theta_1$	324311/1300270	0.24942
$\Theta_2$	468158/1298364	0.36058
$\Theta_3$	508553/1297224	0.39203
$\Theta_4$	472145/1299005	0.36347
$\Theta_5$	291131/1296798	0.22450
$\Theta_6$	152432/1296832	0.11754
$\Theta_7$	240934/1297256	0.18573
$\Theta_8$	256123/1298520	0.19724
$\Theta_9$	247344/1296851	0.19073
$\Theta_{10}$	157688/1297092	0.12157
$M_{2 \rightarrow 1}$	1299940/1299940	1.00000
$M_{1 \rightarrow 2}$	1298223/1298223	1.00000
$M_{3 \rightarrow 2}$	1296181/1296181	1.00000
$M_{2 \rightarrow 3}$	1296505/1296505	1.00000
$M_{4 \rightarrow 3}$	1296211/1296211	1.00000
$M_{3 \rightarrow 4}$	1300363/1300363	1.00000
$M_{5 \rightarrow 4}$	1297682/1297682	1.00000
$M_{4 \rightarrow 5}$	1296923/1296923	1.00000
$M_{6 \rightarrow 5}$	1296378/1296378	1.00000
$M_{5 \rightarrow 6}$	1298161/1298161	1.00000
$M_{7 \rightarrow 6}$	1299324/1299324	1.00000
$M_{6 \rightarrow 7}$	1297299/1297299	1.00000
$M_{8 \rightarrow 7}$	1297127/1297127	1.00000
$M_{7 \rightarrow 8}$	1297952/1297952	1.00000
$M_{9 \rightarrow 8}$	1296407/1296407	1.00000
$M_{8 \rightarrow 9}$	1297549/1297549	1.00000
$M_{10 \rightarrow 9}$	1298962/1298962	1.00000
$M_{9 \rightarrow 10}$	1297014/1297014	1.00000
Genealogies	28838842/36329765	0.79381

## *MCMC-Autocorrelation and Effective MCMC Sample Size*

Parameter	Autocorrelation	Effective Sample Size
$\Theta_1$	0.80037	448463.00
$\Theta_2$	0.72355	647131.14
$\Theta_3$	0.68675	747644.87
$\Theta_4$	0.72316	647033.73
$\Theta_5$	0.82308	390384.46
$\Theta_6$	0.89822	217092.98
$\Theta_7$	0.84946	329599.38
$\Theta_8$	0.84379	343620.23
$\Theta_9$	0.84907	330797.46
$\Theta_{10}$	0.89445	225464.12
$M_{2 \rightarrow 1}$	0.60268	994046.60
$M_{1 \rightarrow 2}$	0.63260	895209.55
$M_{3 \rightarrow 2}$	0.63733	889690.04
$M_{2 \rightarrow 3}$	0.66945	790192.25
$M_{4 \rightarrow 3}$	0.66098	819229.06
$M_{3 \rightarrow 4}$	0.69136	730776.69
$M_{5 \rightarrow 4}$	0.64325	872116.50
$M_{4 \rightarrow 5}$	0.68264	757425.51
$M_{6 \rightarrow 5}$	0.67361	790168.64
$M_{5 \rightarrow 6}$	0.68106	764019.35
$M_{7 \rightarrow 6}$	0.69522	726442.25
$M_{6 \rightarrow 7}$	0.68621	747962.40
$M_{8 \rightarrow 7}$	0.68175	757773.82
$M_{7 \rightarrow 8}$	0.70049	706635.94
$M_{9 \rightarrow 8}$	0.70918	679981.35
$M_{8 \rightarrow 9}$	0.73410	616065.18
$M_{10 \rightarrow 9}$	0.62605	910114.72
$M_{9 \rightarrow 10}$	0.64283	872610.70
Genealogies	0.78138	502634.04

## Potential Problems

This section reports potential problems with your run, but such reporting is often not very accurate. With many parameters in a multilocus analysis, it is very common that some parameters for some loci will not be very informative, triggering suggestions (for example to increase the prior range) that are not sensible. This suggestion tool will improve with time, therefore do not blindly follow its suggestions. If some parameters are flagged, inspect the tables carefully and judge whether an action is required. For example, if you run a Bayesian inference with sequence data, for macroscopic species there is rarely the need to increase the prior for Theta beyond 0.1; but if you use microsatellites it is rather common that your prior distribution for Theta should have a range from 0.0 to 100 or more. With many populations (>3) it is also very common that some migration routes are estimated poorly because the data contains little or no information for that route. Increasing the range will not help in such situations, reducing number of parameters may help in such situations.

No warning was recorded during the run