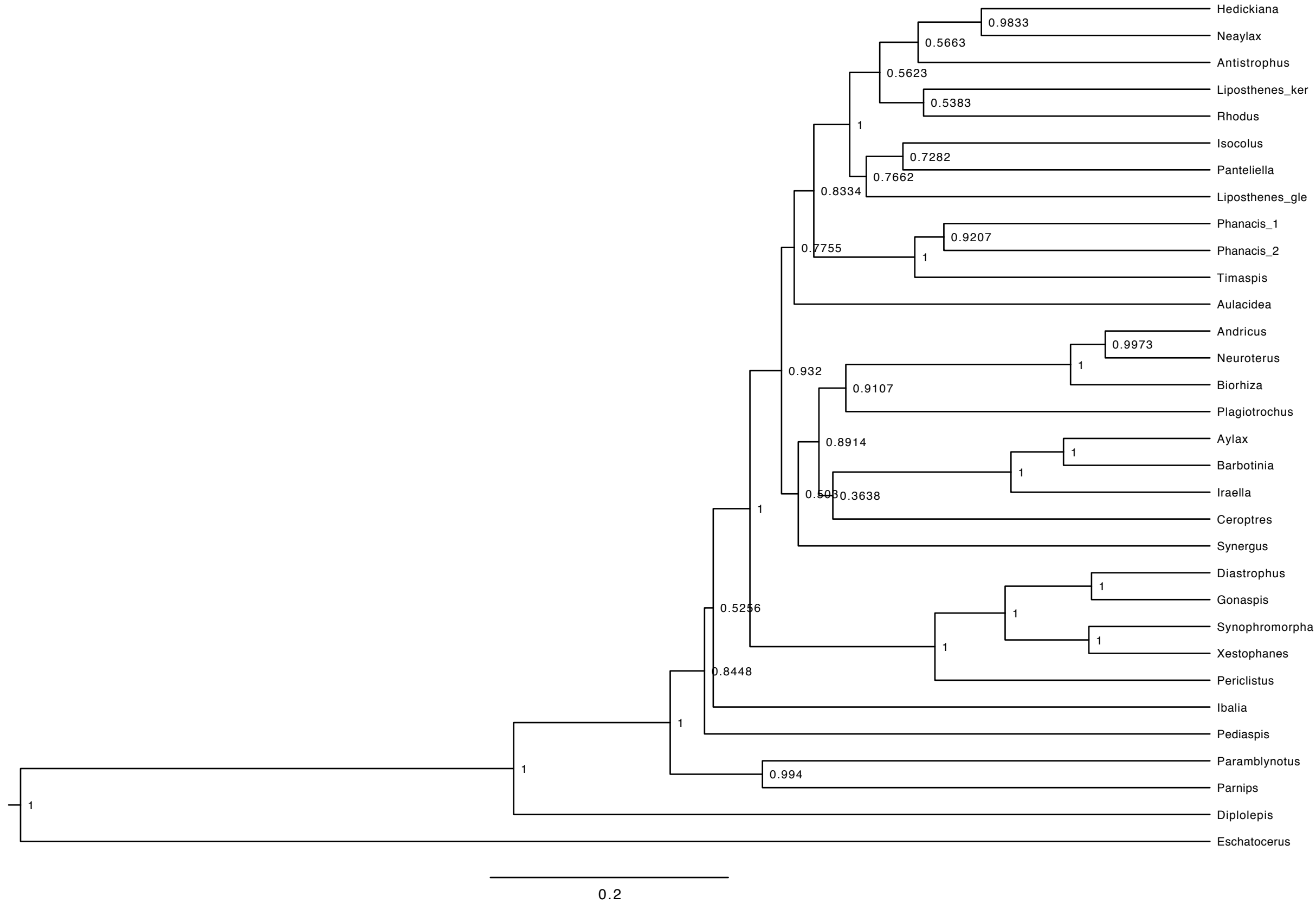
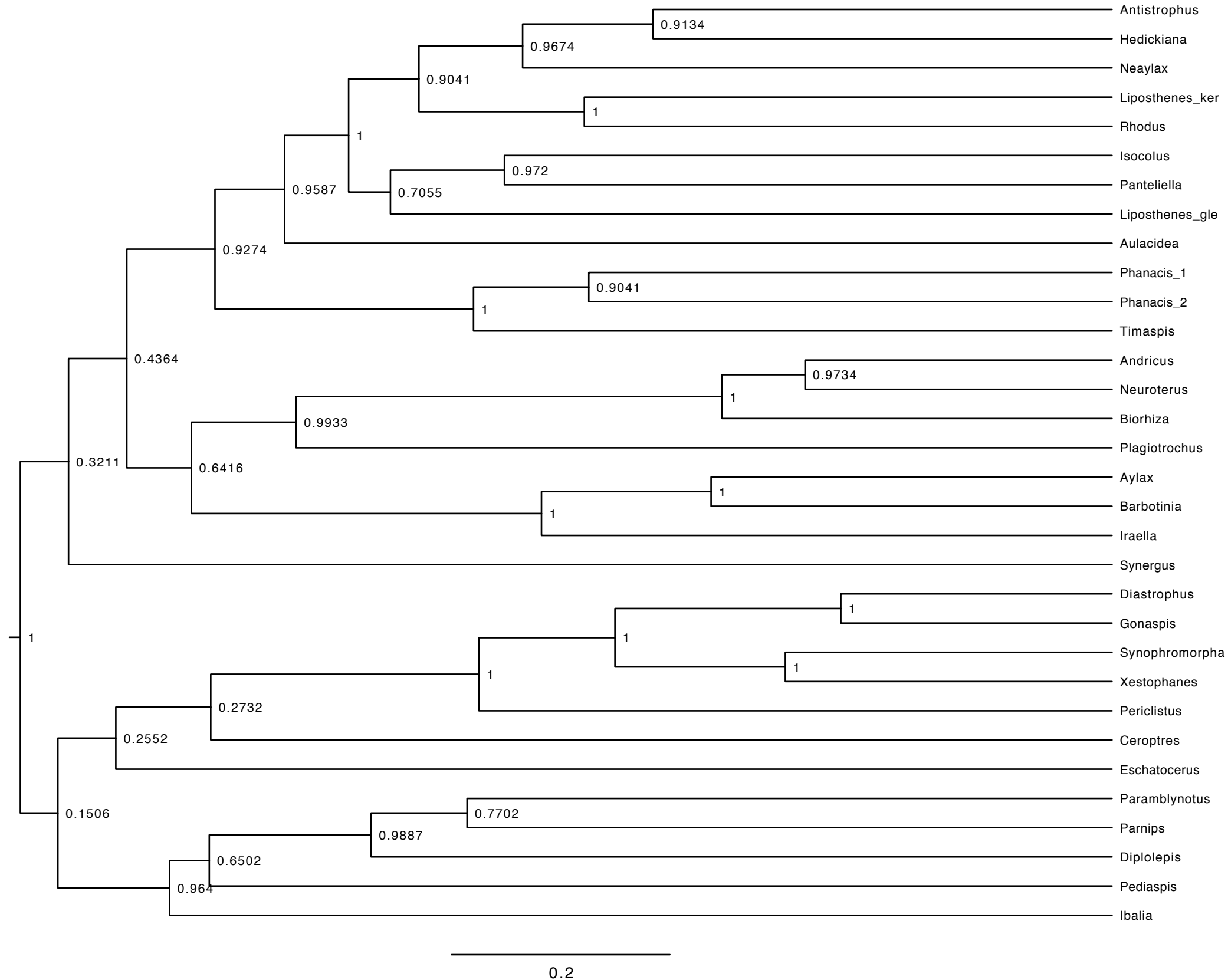


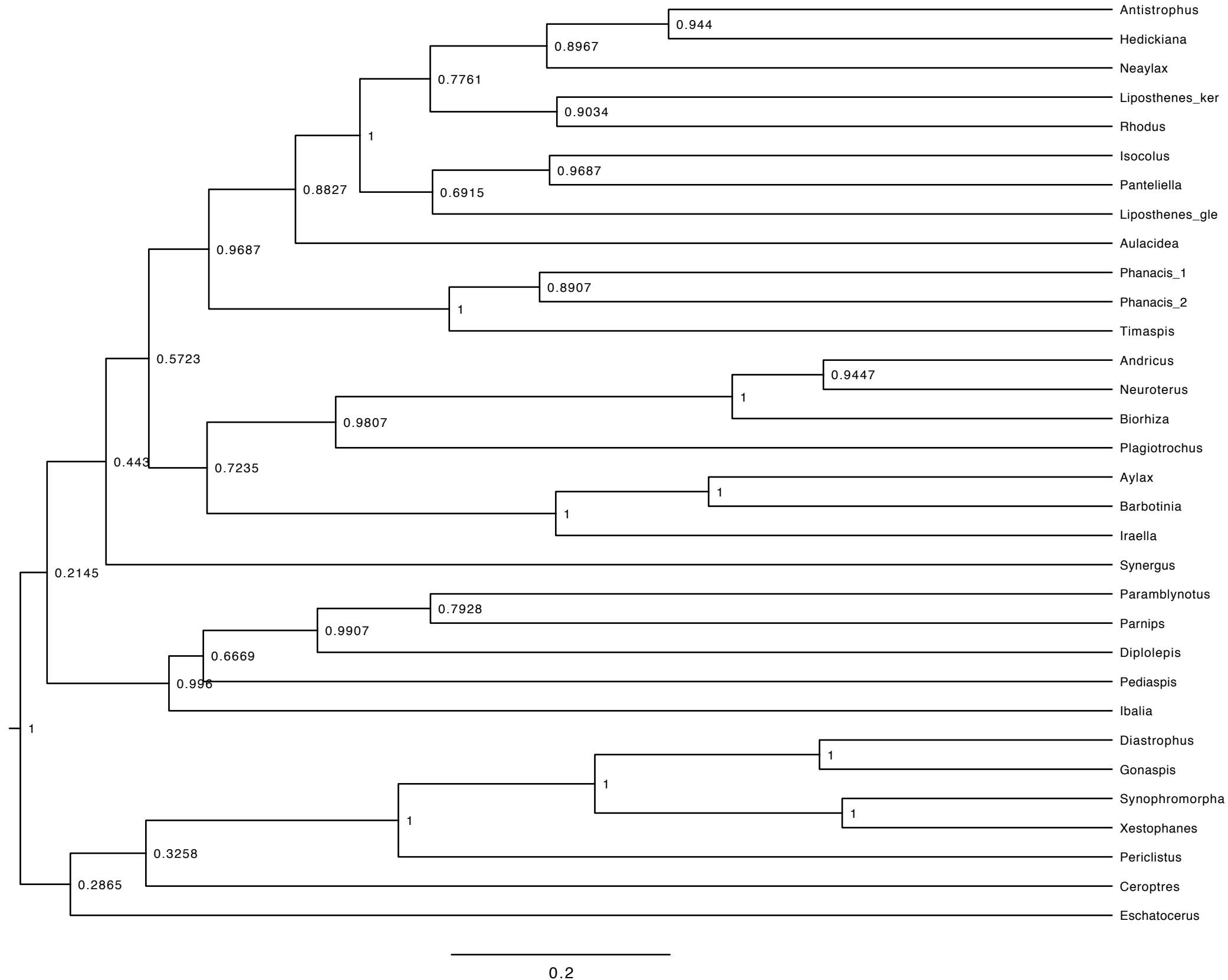
# #13 Cynipidae Dataset

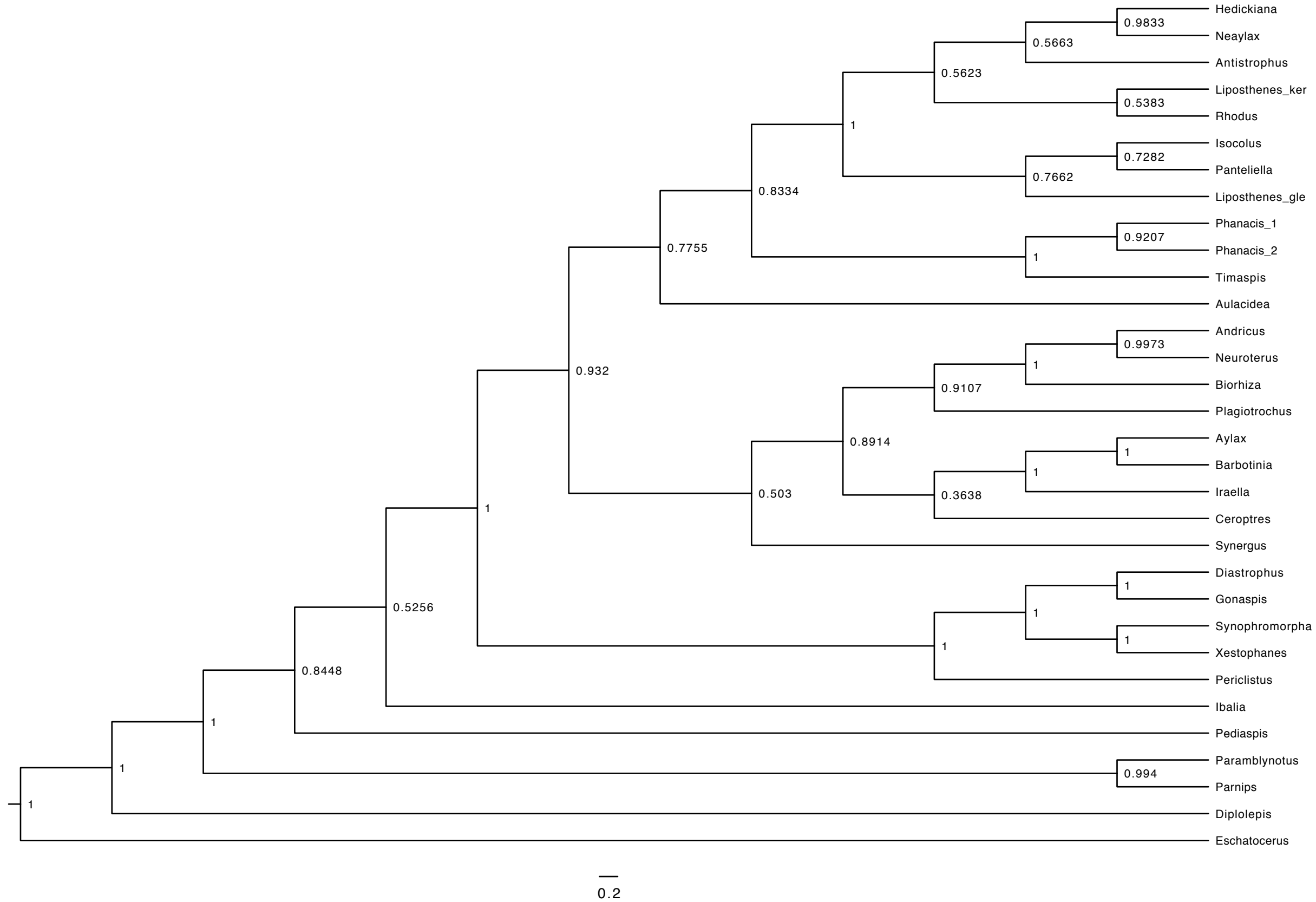
## Strict vs. Relaxed Clock

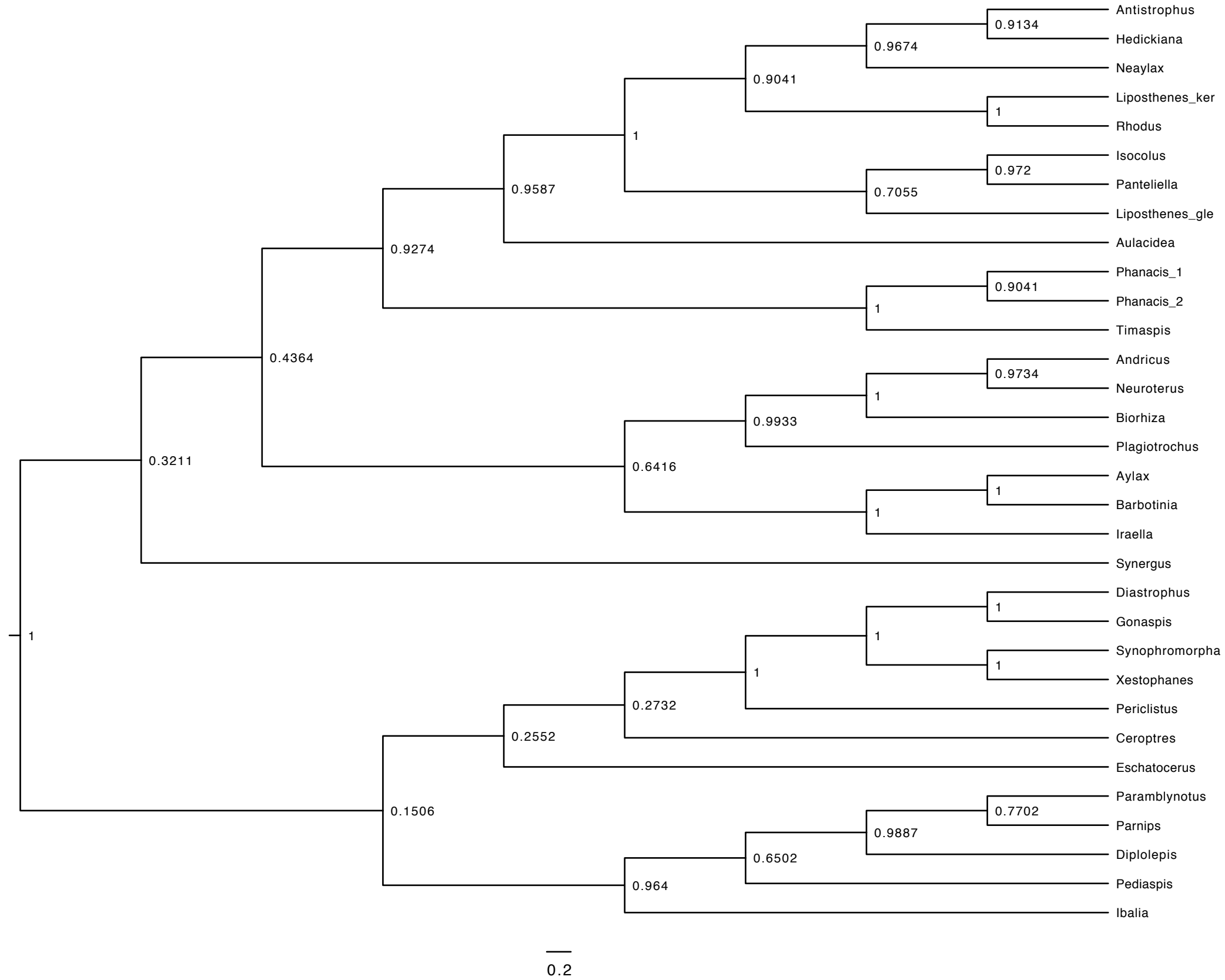
Megan Crawford

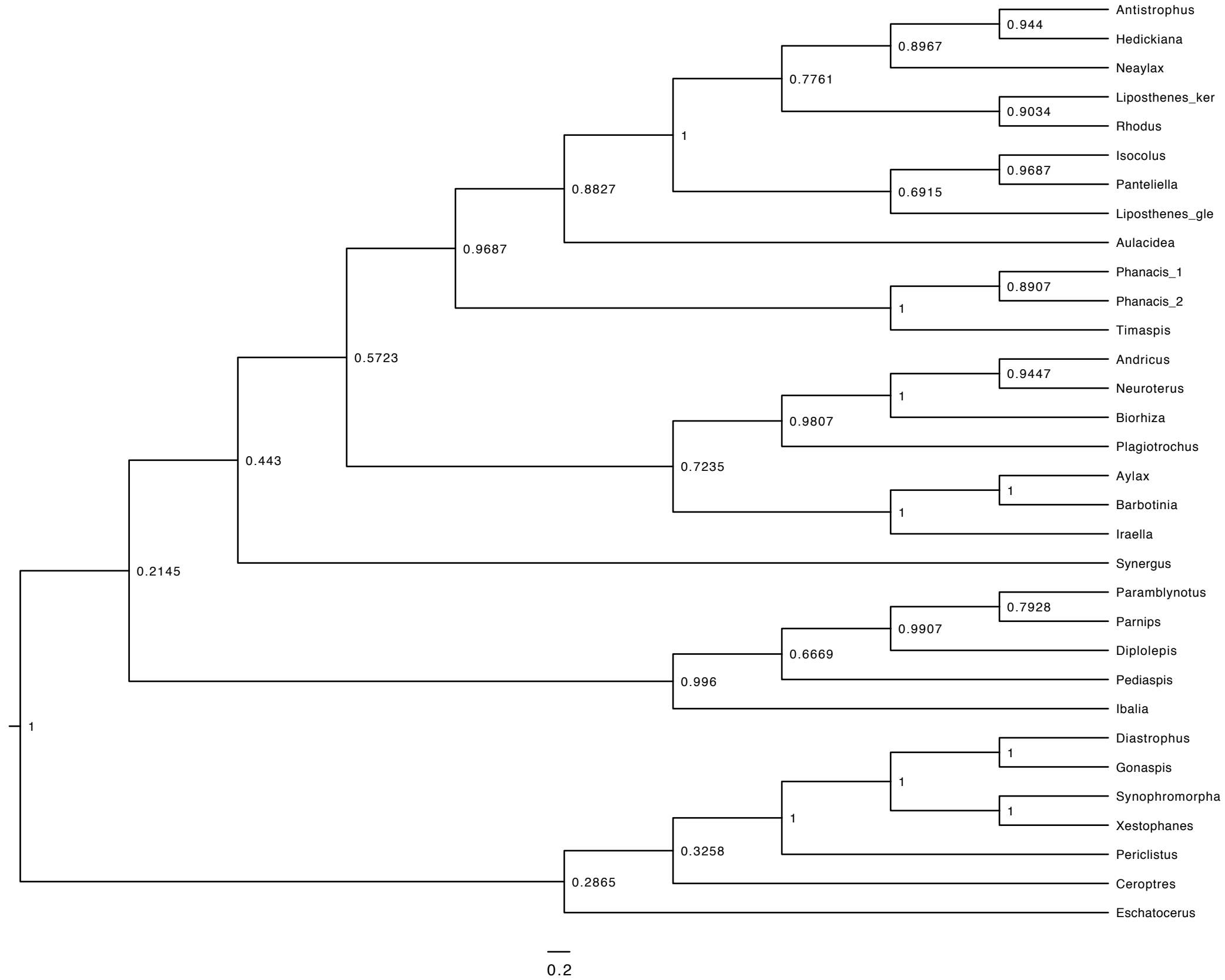












Marginal Likelihoods	Strict Clock	Relaxed Clock Run 1	Relaxed Clock Run 2
Size of Outgroup Clade	1	12	7
Stepping Stone Sampling	-30712.8	-30560.8	-30558.0
Path Sampling	-30713	-30561.8	-30559.7
Ranking	3	2	1



TABLE 1. Interpretation of the Bayes factor ( $B_{10}$ ) (taken from Kass and Raftery, 1995).

$2 \log_e(B_{10})$	$B_{10}$	Evidence against $M_0$
0 to 2	1 to 3	not worth more than a bare mention
2 to 6	3 to 20	positive
6 to 10	20 to 150	strong
>10	>150	very strong

How much do  
we trust that?  
Check Tracer

Strict-clock values ->

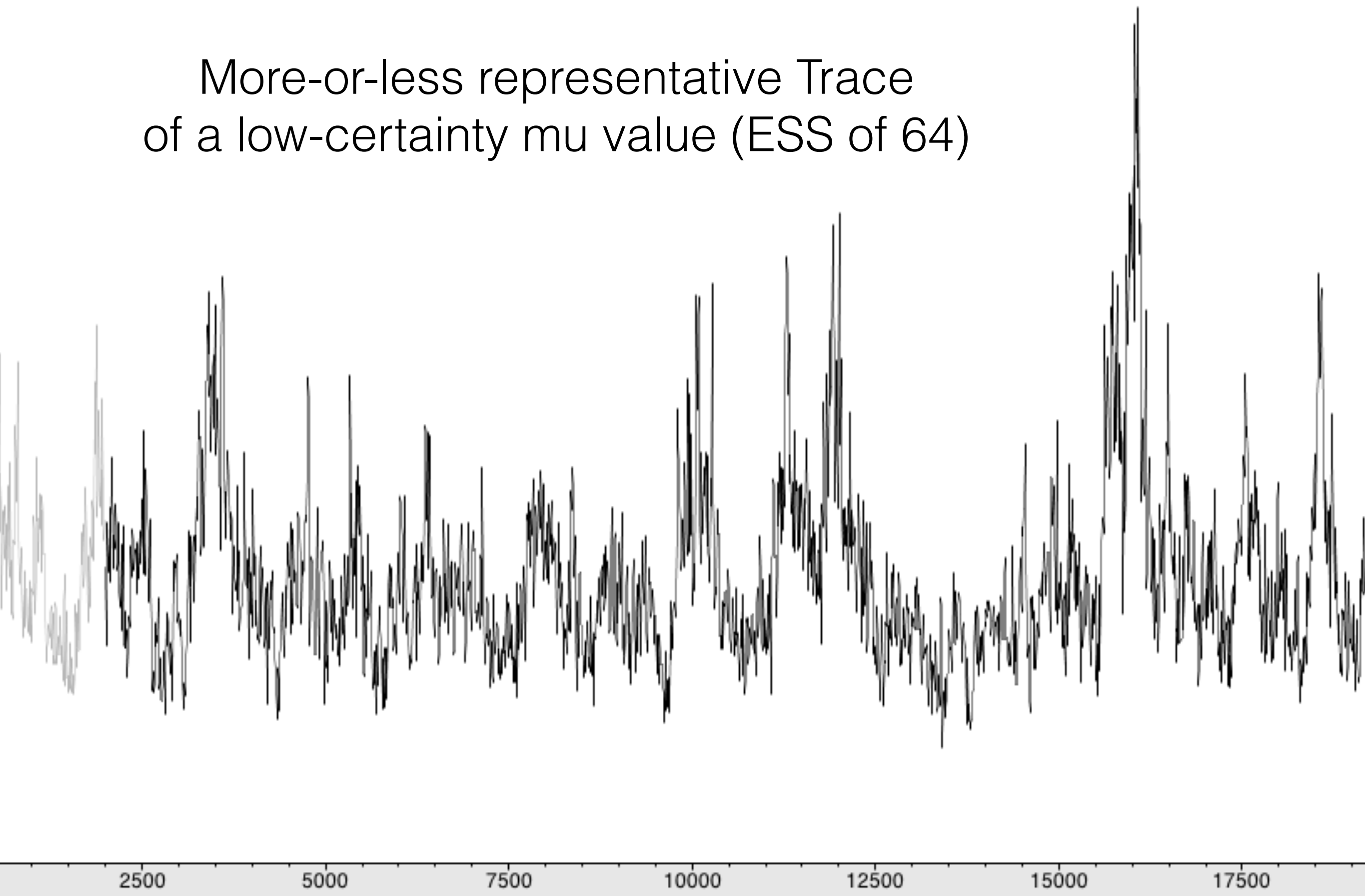
Statistic	Mean	ESS
Posterior	-30530...	212
Likelihood	-30467...	195
Prior	-62.65	409
alpha_g	0.21	1096
epsilon	0.124	1029
extinction	1.616	972
gamma_cats[1]	7.529E-4	1089
gamma_cats[2]	3.997E-2	1094
gamma_cats[3]	0.41	1097
gamma_cats[4]	3.549	1097
mu	0.22	70
pi[1]	0.248	267
pi[2]	0.19	201
pi[3]	0.249	355
pi[4]	0.314	164
r[1]	3.158E-2	479
r[2]	0.245	156
r[3]	0.346	137
r[4]	1.677E-2	532
r[5]	0.326	137
r[6]	3.458E-2	311
speciation	12.22	584

Statistic	Mean	ESS	T...
Posterior	-30353...	398	R
Likelihood	-30393...	978	R
Prior	40.313	194	R
alpha_g	0.208	716	R
epsilon	0.12	479	R
extinction	0.837	399	R
gamma_cats[1]	6.986E-4	715	R
gamma_cats[2]	3.852E-2	715	R
gamma_cats[3]	0.404	716	R
gamma_cats[4]	3.557	716	R
mu[1]	9.971E-2	63	R
mu[2]	5.421E-2	82	R
mu[3]	0.125	60	R
mu[4]	8.966E-2	76	R
mu[5]	0.148	154	R
mu[6]	7.107E-2	54	R
mu[7]	8.762E-2	66	R
mu[8]	7.72E-2	72	R
mu[9]	9.907E-2	186	R
mu[10]	6.873E-2	70	R
mu[11]	7.347E-2	64	R
mu[12]	8.891E-2	203	R
mu[13]	0.102	80	R
mu[14]	9.455E-2	86	R
mu[15]	0.143	76	R
mu[16]	8.379E-2	113	R
mu[17]	0.102	60	R
mu[18]	0.235	198	R
mu[19]	0.119	33	R
mu[20]	0.147	140	R

Statistic	Mean	ESS	T...
mu[44]	9.829E-2	439	R
mu[45]	0.115	170	R
mu[46]	8.906E-2	467	R
mu[47]	9.835E-2	415	R
mu[48]	0.114	333	R
mu[49]	0.105	373	R
mu[50]	0.115	174	R
mu[51]	0.106	286	R
mu[52]	7.288E-2	74	R
mu[53]	8.44E-2	113	R
mu[54]	9.605E-2	55	R
mu[55]	9.257E-2	779	R
mu[56]	7.908E-2	83	R
mu[57]	9.095E-2	54	R
mu[58]	8.032E-2	308	R
mu[59]	8.404E-2	700	R
mu[60]	9.328E-2	61	R
mu[61]	0.113	455	R
mu[62]	7.354E-2	425	R
pi[1]	0.25	365	R
pi[2]	0.19	238	R
pi[3]	0.248	171	R
pi[4]	0.312	262	R
r[1]	2.961E-2	496	R
r[2]	0.245	149	R
r[3]	0.348	194	R
r[4]	1.633E-2	438	R
r[5]	0.327	174	R
r[6]	3.463E-2	457	R
speciation	6.4	218	R

Relaxed Clock #1 (Lap2)

More-or-less representative Trace  
of a low-certainty  $\mu$  value (ESS of 64)



Posterior	-30354...	220
Likelihood	-30394...	346
Prior	40.052	125
alpha_g	0.208	185
epsilon	0.12	478
extinction	0.84	422
gamma_cats[1]	6.94E-4	201
gamma_cats[2]	3.839E-2	186
gamma_cats[3]	0.403	184
gamma_cats[4]	3.558	184
mu[1]	7.246E-2	186
mu[2]	0.13	71
mu[3]	0.101	145
mu[4]	0.147	131
mu[5]	5.719E-2	30
mu[6]	8.899E-2	85
mu[7]	6.692E-2	42
mu[8]	0.153	124
mu[9]	0.107	133
mu[10]	8.146E-2	68
mu[11]	0.104	66
mu[12]	9.644E-2	68
mu[13]	9.519E-2	82
mu[14]	0.105	86
mu[15]	0.116	136

mu[48]	0.109	111
mu[49]	0.107	287
mu[50]	8.983E-2	1064
mu[51]	8.563E-2	98
mu[52]	0.112	94
mu[53]	9.701E-2	239
mu[54]	0.1	84
mu[55]	9.528E-2	421
mu[56]	7.331E-2	343
mu[57]	7.313E-2	266
mu[58]	0.109	501
mu[59]	9.095E-2	367
mu[60]	9.981E-2	821
mu[61]	0.113	624
mu[62]	9.459E-2	826
pi[1]	0.25	359
pi[2]	0.191	201
pi[3]	0.247	219
pi[4]	0.312	288
r[1]	2.964E-2	382
r[2]	0.246	109
r[3]	0.349	155
r[4]	1.647E-2	375
r[5]	0.324	126
r[6]	3.487E-2	248

Relaxed Clock #2 (Lap3)

