Table 1: Combined Snapper parameter summary after
1,000,000 MCMC iterations for soybean dataset

Snapper	mean	variance	HPD	ACT	ESS
posterior	-6688959.4011	14.7676	[-6688967.1249, -6688952.7394]	8907.766	266.7335
θ_0	0.0103	6.9701E-09	[0.0101, 0.0104]	44789.7957	53.0478
θ_1	0.0171	2.143E-08	[0.0169, 0.0174]	78994.8943	30.0779
θ_2	0.0095108	5.5572E-09	[9.37E-3, 9.6477E-3]	11003.7147	215.9271
θ_3	0.0096895	5.3618E-09	[9.5476E-3, 9.8351E-3]	8753.8683	271.4229
θ_4	0.0293	3.434E-08	[0.0289, 0.0297]	1104.855	2150.5085
θ_5	0.0167	1.2541E-08	[0.0165, 0.0169]	25804.9788	92.0753
θ_6	0.0501	1.5005E-07	[0.0494, 0.0508]	55201.1873	43.0426
θ_7	0.0301	3.4758E-08	[0.0298, 0.0305]	1099.2779	2161.4188
θ_8	0.0194	2.071E-08	[0.0191, 0.0197]	1000	2376
θ_9	0.0115	6.1131E-09	[0.0113, 0.0116]	29679.2095	80.056
θ_{10}	0.0748	3.0959E-06	[0.0713, 0.078]	23976.3835	99.0975
θ_{11}	0.0991	3.2988E-06	[0.0957, 0.1024]	59333.0205	40.0452
θ_{12}	0.0799	2.1569E-06	[0.0771, 0.0827]	38860.524	61.1417
θ_{13}	0.1924	6.2945E-06	[0.1877, 0.1977]	70510.2825	33.6972
θ_{14}	0.2544	1.668E-05	[0.2457, 0.2619]	19664.1926	120.8288
θ_{15}	0.5017	3.7525E-06	[0.4981, 0.5053]	33043.8999	71.9043
θ_{16}	0.0091159	3.2102E-06	[6.0399E-3, 0.0128]	20602.006	115.3286
θ_{17}	0.0107013	1.7778E-06	[5.1511E-3, 0.0102]	12049.29	197.19
θ_{18}	0.0123	1.6687E-05	[5.5037E-3, 0.0205]	22763.4335	104.3779
tree.height	0.3902	1.8269E-05	[0.3873, 0. 3961]	24967.0853	95.1653
Likelihood	-6686132.7939	244.8637	[-6686160.9574, -6686102.3121]	86900.8557	27.3415
prior	-2826.6072	249.9542	[-2855.1268, -2794.5583]	93838.3491	25.3201

Table 2: Combined Snapp parameter summary after
1,000,000 MCMC iterations for soybean dataset

Snapp	mean	variance	HPD	ACT	ESS
posterior	-6691316.6806	15.911	[-6691324.4259, -6691309.5191]	8233.9744	287.8607
θ_0	0.0111	5.9541E-09	[0.0109, 0.0112]	19051.0563	119.5265
θ_1	0.0191	1.4173E-08	[0.0189, 0.0193]	44905.8468	58.284
θ_2	0.0099244	6.8368E-09	[9.7664E-3, 0.0101]	2445.2984	305.45
θ_3	0.0101	5.8762E-09	[0.01, 0.0103]	2398.1736	216.6085
θ_4	0.0293	3.9721E-08	[0.029, 0.0297]	1826.4339	2233.3791

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Table 2 – *Continued from previous page*

Snapp	mean	variance	HPD	ACT	ESS
θ_5	0.0178	1.0608E-08	[0.0176, 0.018]	2768.2884	500.3791
θ_6	0.0562	7.4177E-08	[0.0556, 0.0566]	11585.9093	132.108
θ_7	0.0301	2.691E-08	[0.0298, 0.0305]	1497.2333	2248.45832
θ_8	0.0194	2.1582E-08	[0.0191, 0.0197]	1608.6939	2231.2435
θ_9	0.0122	6.7513E-09	[0.012, 0.0123]	11598.0129	232.0745
θ_{10}	0.0791	1.705E-06	[0.0766, 0.0815]	3476.1242	207.0157
θ_{11}	0.1031	1.2658E-06	[0.1012, 0.1053]	14850.7685	125.0492
θ_{12}	0.0867	1.4519E-06	[0.0846, 0.0891]	12046.2026	330.8811
θ_{13}	0.194	3.8296E-06	[0.1906, 0.1979]	37167.9581	110.0086
θ_{14}	0.2456	9.2542E-06	[0.2404, 0.2518]	4309.2232	186.3265
θ_{15}	0.464	2.7819E-06	[0.4613, 0.4678]	15690.0573	223.7093
θ_{16}	0.0184	7.8788E-06	[0.0127, 0.0233]	18680.3197	119.914
θ_{17}	0.0145	3.9414E-06	[0.0105, 0.0178]	19410.3875	119.165
θ_{18}	0.0176	1.4512E-05	[0.0101, 0.0245]	14593.2873	25.4912
tree.height	0.3912	4.0822E-06	[0.3878, 0.3951]	16143.5651	223.0432
Likelihood	-6686791.8301	594.6324	[-6686834.0596, -6686741.7131]	59846.9891	56.2159
prior	-4524.8505	612.8955	[-4578.2693, -4484.1926]	63835.4742	55.8275

Table 3: SNAPPER parameter summary after 2,000,000 MCMC iterations for freshwater turtle dataset

Snapper	mean	variance	HPD	ACT	ESS
posterior	-32288	58.555	[-32289,-32286]	6921.9588	237.4934
θ_0	0.0892	1.09E-05	[0.0829,0.0956]	4559.0819	360.5814
θ_1	0.0326	2.03E-06	[0.0299,0.0354]	3334.7123	492.972
θ_2	0.0326	2.31E-06	[0.0297,0.0355]	4882.2185	336.7158
θ_3	0.0315	2.28E-06	[0.0288,0.0347]	4594.6906	357.7868
θ_4	0.089	1.16E-05	[0.0823,0.0955]	5834.7779	281.745
θ_5	0.0209	7.38E-07	[0.0195,0.0228]	5032.2875	326.6746
θ_6	0.0209	7.52E-07	[0.0193,0.0227]	5336.7619	308.037
θ_7	0.0211	7.42E-07	[0.0195,0.0227]	5739.448	286.4248
θ_8	0.0568	5.41E-06	[0.0525,0.0613]	7592.2756	216.5254
θ_9	0.0576	5.36E-06	[0.0533,0.0622]	5374.5587	305.8706
θ_{10}	0.0576	5.40E-06	[0.0535,0.0621]	5700.7353	288.3698
θ_{11}	0.0398	3.51E-06	[0.0362,0.0437]	4824.2314	340.763
θ_{12}	0.0475	2.82E-06	[0.0439,0.0506]	5591.2287	294.0176
θ_{13}	0.0474	3.08E-06	[0.0441,0.0508]	7868.6887	208.9192
θ_{14}	0.0473	3.13E-06	[0.0441,0.0509]	6942.6134	236.787

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Table 3 – *Continued from previous page*

Snapper	mean	variance	HPD	ACT	ESS
θ_{15}	0.0474	2.99E-06	[0.0441,0.0507]	7085.1136	232.0246
θ_{16}	0.0473	2.84E-06	[0.0442,0.0503]	4927.4417	333.6254
θ_{17}	0.0563	5.91E-06	[0.0512,0.0608]	6188.3147	265.649
θ_{18}	0.0254	1.90E-06	[0.0229,0.0283]	4461.407	368.4756
θ_{19}	0.021	1.58E-06	[0.0186,0.0233]	3920.8397	419.2776
θ_{20}	0.0351	2.47E-06	[0.032,0.0381]	5149.6604	319.2288
θ_{21}	0.035	2.45E-06	[0.032,0.0382]	5103.4682	322.1182
θ_{22}	0.0312	1.98E-06	[0.0286, 0.034]	5843.4713	281.326
θ_{23}	0.0275	1.68E-06	[0.0249,0.0298]	4633.1697	354.8154
θ_{24}	0.0137	5.95E-07	[0.0121,0.0151]	6877.4641	239.03
θ_{25}	0.0137	6.94E-07	[0.0121,0.0152]	7605.5597	216.1472
θ_{26}	0.0105	3.66E-07	[9.3707E-3,0.0116]	5984.3981	274.701
θ_{27}	0.035	1.34E-06	[0.0328,0.0371]	4350.192	377.896
θ_{28}	0.0324	1.52E-06	[0.0301,0.0349]	6937.3698	236.9658
θ_{29}	0.0324	1.51E-06	[0.03,0.0347]	6434.1179	255.5004
θ_{30}	0.033	1.42E-06	[0.0305,0.0352]	5917.0715	277.8266
θ_{31}	0.033	1.34E-06	[0.0304,0.035]	5047.0492	325.719
θ_{32}	0.0346	1.40E-06	[0.0325,0.0371]	5272.0715	311.8168
θ_{33}	0.0345	1.55E-06	[0.0321,0.0367]	4934.2925	333.1622
θ_{34}	0.0346	1.52E-06	[0.0322,0.037]	5797.7463	283.5446
θ_{35}	0.0345	1.39E-06	[0.0319,0.0366]	5713.2156	287.7398
θ_{36}	0.0343	1.49E-06	[0.0321,0.0367]	5738.9424	286.45
θ_{37}	0.032	1.73E-06	[0.0296,0.0346]	5566.4597	295.326
θ_{38}	8.24E-03	1.83E-07	[7.3532E-3,9.0356E-3]	4660.0198	352.771
θ_{39}	0.0285	2.06E-06	[0.0254,0.031]	2754.3786	596.8388
θ_{40}	0.045	3.94E-06	[0.0416,0.0493]	2735.1968	601.0244
θ_{41}	0.0891	1.03E-05	[0.0823,0.0946]	4363.7001	376.7262
θ_{42}	0.0328	1.74E-06	[0.0302,0.0352]	4046.0439	406.303
θ_{43}	0.0344	1.63E-06	[0.0321,0.037]	4026.7212	408.2528
θ_{44}	0.0553	2.70E-06	[0.0522,0.0585]	7152.4991	229.8386
θ_{45}	0.0209	7.09E-07	[0.0196,0.023]	4865.2479	337.8902
θ_{46}	0.021	6.24E-07	[0.0195,0.0226]	4733.2039	347.3166
θ_{47}	0.0518	4.84E-06	[0.0481,0.0555]	26723.5617	61.5158
θ_{48}	0.0575	4.88E-06	[0.0538,0.0621]	5530.8802	297.2258
θ_{49}	0.0573	4.28E-06	[0.0535,0.0612]	6291.947	261.2736
θ_{50}	0.0567	3.64E-06	[0.0531,0.0607]	7435.9237	221.0782
θ_{51}	0.0475	2.81E-06	[0.0441,0.0506]	7190.8831	228.6116
θ_{52}	0.0474	2.92E-06	[0.0442,0.0506]	6880.0099	238.9416
θ_{53}	0.0473	2.65E-06	[0.0444,0.0507]	5266.9057	312.1226
θ_{54}	0.0473	2.64E-06	[0.044,0.0502]	5930.9334	277.1772

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Table 3 – *Continued from previous page*

Snapper	mean	variance	HPD	ACT	ESS
θ_{55}	0.0452	2.35E-06	[0.0423,0.0481]	6519.7251	252.1456
θ_{56}	0.0531	2.40E-06	[0.0502,0.0562]	10545.795	155.884
θ_{57}	0.0246	1.12E-06	[0.0225,0.0265]	6463.5958	254.3352
θ_{58}	0.0351	2.26E-06	[0.0324,0.0382]	4395.8089	373.9744
θ_{59}	0.0348	1.46E-06	[0.0326,0.0372]	12531.3457	131.1846
θ_{60}	0.0387	1.12E-06	[0.0366,0.0405]	16803.2068	97.8338
θ_{61}	0.0276	1.16E-06	[0.0254,0.0294]	11382.032	144.4312
θ_{62}	0.0136	5.75E-07	[0.0122,0.015]	7378.0828	222.8112
θ_{63}	0.0132	3.93E-07	[0.012,0.0144]	9066.0779	181.3264
θ_{64}	0.025	7.92E-07	[0.0232,0.0266]	13972.7813	117.6516
θ_{65}	0.0492	2.12E-06	[0.0465,0.052]	24561.4047	66.931
θ_{66}	0.0345	1.30E-06	[0.0324,0.0367]	4752.1445	345.9322
θ_{67}	0.0344	1.22E-06	[0.0323,0.0366]	4528.4154	363.0232
θ_{68}	0.0345	1.28E-06	[0.0324,0.0368]	5549.8598	296.2092
θ_{69}	0.0344	1.21E-06	[0.0323,0.0364]	4893.2052	335.9598
θ_{70}	0.0343	1.13E-06	[0.0323,0.0363]	4619.4067	355.8726
θ_{71}	0.0324	1.44E-06	[0.0301,0.0346]	6038.6503	272.233
θ_{72}	0.033	1.33E-06	[0.0304,0.035]	5481.3538	299.9114
θ_{73}	0.0329	1.25E-06	[0.0305,0.0349]	5176.6725	117.563
θ_{74}	0.0336	1.09E-06	[0.0317,0.0357]	4940.5417	332.7408
θ_{75}	0.0334	1.06E-06	[0.0314,0.0354]	5603.2564	293.3866
θ_{76}	0.037	3.01E-06	[0.0336,0.0401]	22711.2203	72.3836
θ_{77}	0.0492	4.41E-06	[0.0456,0.0533]	33200.5358	49.5148
θ_{78}	0.06	5.72E-06	[0.0558,0.064]	34594.3404	47.52
θ_{79}	0.0383	9.33E-06	[0.0328,0.0438]	25502.3797	64.4614
θ_{80}	0.0531	3.43E-06	[0.0495,0.0565]	33045.9805	49.7464
tree.height	0.1982	3.96E-05	[0.1863,0.2107]	1811.7552	907.3632
tree.length	0.754	2.41E-04	[0.7242,0.7845]	2135.0573	769.9652