Supplementary Materials:

1. Informal comparison of JAGS and Stan

The presented Bayesian model averaging model can easily be fit using both JAGS and Stan software, the former relies on Gibbs sampling and the latter uses Hamiltonian Markov Chain Monte Carlo to draw random values from the posterior. The relative computational requirements are gauged by fitting 16 models - one for each of the Baileys ecoregions considered in this study - using both software, and comparing the minimum effective sample size, time needed to complete fitting the models, sampling efficiency, and the maximum potential scale reduction factor. Effective sampling size was calculated using effectiveSize command in the coda package in R, and efficiency was calculated as the effective sample size divided by the run time. The maximum potential scale reduction factor was calculated using identical methods to those described in the original article. Each comparison was based on a three samples of 2000 iterations, a warmup period of 1000 iterations, and no thinning. The fits using JAGS included an adaptive period of 10,000 iterations, used the parallel method, and the same hardware described in the original article. The fits using Stan used the default setting, and were run sequentially on the Rstudio Cloud [1].

Table S1. Comparison of effective sample size, computational requirements, Markov Chain Monte Carlo efficiency, and maximum potential scale reduction factor in JAGS and Stan

Domain	Division	Effective sample size (n_{eff})		Computer time (seconds)		Efficiency (n_{eff}/second)		Maximum PSRF	
		JAGS	Stan	JAGS	Stan	JAGS	Stan	JAGS	Stan
Dry	Temperate Desert (TD)	195.4	6052.8	427.4	2450.6	0.5	2.5	1.85	1.02
	Temperate Desert Regime Mountains (TDRM)	177	6200.7	519.7	2449.7	0.3	2.5	2.03	1.02
	Temperate Steppe (TS)	197.2	4614	531.2	2474.1	0.4	1.9	2.05	1.03
	Temperate Steppe Regime Mountains (TSRM)	158.3	6987.5	452.8	2489.6	0.3	2.8	1.7	1.02
	Tropical/Subtropical Desert (TSTD)	182.9	5681.6	431.8	2486.4	0.4	2.3	2.12	1.02
	Tropical/Subtropical Regime Mountains (TSTRM)	160.5	6861.6	405.9	2465.1	0.4	2.8	1.94	1.02
	Tropical/Subtropical Steppe (TSTS)	212	6051.5	414.8	2637.3	0.5	2.3	1.71	1.03
Temperate	Hot Continental (HC)	143.8	6097.7	410.6	2453.7	0.4	2.5	2.31	1.02
	Hot Continental Regime Mountains (HCRM)	180.4	7395.9	466.2	2515.7	0.4	2.9	1.98	1.03
	Marine Regime Mountains Redwood Forest Province (MaRM)	180.2	6193.9	412	2515.4	0.4	2.5	1.93	1.03
	Mediterranean (Me)	162.2	5703.1	484.4	2481.5	0.3	2.3	1.64	1.03
	Mediterranean Regime Mountains (MeRM)	175.3	5479.9	481.5	2535.4	0.4	2.2	1.87	1.03
	Prairie (P)	143.6	5753.3	418.9	2474.4	0.3	2.3	1.78	1.03
	Subtropical (ST)	185.6	5645.8	410.2	2641.2	0.5	2.1	2.06	1.03
	Warm Continental (WC)	205.7	5550.9	442.7	2438.9	0.5	2.3	1.89	1.02
Humid	Savanna (S)	203	5854	492.3	2511.1	0.4	2.3	1.77	1.03

[1] RStudio Team (2018). RStudio: Integrated Development for R. RStudio, Inc., Boston, MA URL http://www.rstudio.com/.