NCEAS benchmark results

Benchmark from NCEAS nonlinear modelling project (Bolker et al. 2013), showing model run time in seconds.

Name	Application	Type of model	ADMB	R	BUGS	Notes
orange	Orange tree growth	Logistic NLME	0.34	0.05	1.83	
min	Mineralization of terbuthylazine	NLM with ODE	0.6	12	51	R optimizer 'nlminb' performed best
nmix	N-mixture models with random effects	Binomial mixture model	240	-	720	
owls	Owl nestling negotiation	Zero-inflated GLMM	4.5	15.5	725.9	R optimized with hand-coded EM algorithm
skate	Skate length-based stock assessment	State-space population model	13.0	-	174.2	
tadpole	Tadpole mortality as a function of size	Binomial MLE	0.031	0.066	0.194	
theta	Population growth	State-space theta-logistic	28	597	180	R solution used specialized code adapted from Matlab
weeds	Weed density over time	Logistic NLM	0.096	0.008	1.018	
wildflower	Flowering, stage and seed production	Binomial GLMM	21	56	525	

In summary, ADMB performs several times faster than R and BUGS, except for trivial models that take <0.5 sec to run.