

***Ecological Archives* A018-056-A1**

Inés Ibáñez, James S. Clark, and Michael C. Dietze. 2008. Evaluating the sources of potential migrant species: Implications under climate change. *Ecological Applications* 18:1664–1678.

APPENDIX A1. Selection of some of the sub-models tested.

Sub-Model	Model description
Sub-Model A (whole array of covariates)	$\log it(s_{pit}) = \beta_1 SA_p + \beta_2 P_p + \beta_3 x1_t Soilm_{pt} + \beta_4 Herb_{pt} P_p + \beta_5 Light_{pt}$ $+ \beta_6 x2_t Wintertemp_t SA_p(orP_p) + \beta_7 origin_{ipt} SA_p(orP_p) + \beta_8 Age_{ipt}$ $+ \beta_9 Cover_{pt} + \beta_{10} InitialSize_{ip}$
Sub-Model B (only fixed effects, selected covariates)	$\log it(s_{pit}) = \beta_1 SA_p + \beta_2 P_p + \beta_3 x1_t Soilm_{pt} + \beta_4 Herb_{pt} P_p + \beta_5 Light_{pt}$ $+ \beta_6 x2_t + \beta_7 origin_{ipt} SA_p(orP_p)$
Sub-Model C (plot random effects, selected covariates)	$\log it(s_{pit}) = \beta_1 SA_p + \beta_2 P_p + \beta_3 x1_t Soilm_{pt} + \beta_4 Herb_{pt} P_p + \beta_5 Light_{pt}$ $+ \beta_6 x2_t + \beta_7 origin_{ipt} SA_p(orP_p) + \gamma_p$
Sub-Model D (census fixed effects, selected covariates)	$\log it(s_{pit}) = \beta_1 SA_p + \beta_2 P_p + \beta_3 x1_t Soilm_{pt} + \beta_4 Herb_{pt} P_p + \beta_5 Light_{pt}$ $+ \beta_6 x2_t + \beta_7 origin_{ipt} SA_p(orP_p) + \lambda_t$
Sub-Model E (error term, selected covariates)	$\log it(s_{pit}) = \beta_1 SA_p + \beta_2 P_p + \beta_3 x1_t Soilm_{pt} + \beta_4 Herb_{pt} P_p + \beta_5 Light_{pt}$ $+ \beta_6 x2_t + \beta_7 origin_{ipt} SA_p(orP_p) + \varepsilon_{pit}$

SA: Southern Appalachians, = 1 if the seedling was planted in this location, = 0 otherwise

P: Piedmont, = 1 if the seedling was planted in this location, = 0 otherwise

x1: summer census, = 1 if summer census, = 0 otherwise

x2: winter census, = 1 if winter census, = 0 other wise

Soilm: mean summer soil moisture (%)

Wintertemp: mean January minimum temperature (°C)

Herb: Herbivory protected, = 1 if the seedling was planted inside an enclosure, = 0 otherwise

Light: full sunlight (%). For some submodels light was also included into the model as % light reaching the ground, this parameter was then calculated as: %ground.light = %Light * exp(-k * %cover), being *k* a dissipation constant that was also estimated.

origin: seed origin, = 1 if the seedling from a local seed, = 0 otherwise

Age: seedling age (years)

InitialSize: seedling size at the time of planting

Cover: percentage of ground vegetation cover

λ_t : fixed effects for census, $\lambda_t \sim Normal(0, 10000)$

γ_p : random effects for plot, $\gamma_p \sim Normal(0, \tau_\gamma^{-1})$ $\tau_\gamma \sim Gamma(0.01, 0.01)$

ε_{pit} : error term, $\varepsilon_{pit} \sim Normal(0, \tau_\varepsilon^{-1})$ $\tau_\varepsilon \sim Gamma(0.01, 0.01)$