

Appendix 4: Model Selection

Main Model

Generalized linear mixed model fit by the Laplace approximation
Formula: Success ~ m.g + habitat + cover + (1 | period) + (1 | year)
Data: model1
AIC BIC logLik deviance
4081 4118 -2034 4069
Random effects:
Groups Name Variance Std.Dev.
year (Intercept) 0.58014 0.76167
period (Intercept) 0.39419 0.62784
Number of obs: 3665, groups: year, 13; period, 2

Fixed effects:
Estimate Std. Error z value Pr(>|z|)
(Intercept) -1.75246 0.49858 -3.515 0.00044 ***
m.gnon invasive-guano 0.69524 0.12715 5.468 4.55E-08 ***
habitatcliff top 0.07379 0.10784 0.684 0.49381
coveruncovered -0.26844 0.09805 -2.738 0.00618 **

Signif. codes: 0 '***' 0.001 '**' 0.01 ' ' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
(Intr) m.inv- hbtct
m.gnninvsv -0.021
hbtctclfft -0.062 -0.556
coveruncvrd -0.009 -0.463 -0.009

Single term deletions Using AIC values

Model:
Success ~ m.g + habitat + cover + (1 | period) + (1 | year)
Df AIC LRT Pr(Chi)
<none> 4080.8
m.g 1 4108.8 29.9473 4.439e-08 ***
habitat 1 4079.3 0.4657 0.494992
cover 1 4086.3 7.4886 0.006209 **

Signif. codes: 0 '***' 0.001 '**' 0.01 ' ' 0.05 '.' 0.1 ' ' 1

> Variable Habitat is dropped from the analysis

Updated Model without habitat

Generalized linear mixed model fit by the Laplace approximation	
Formula: Success ~ m.g + cover + (1 per	iod) + (1 year)
Data: model1	
AIC BIC logLik deviance	
4079 4110 -2035 4069	
Random effects:	
Groups Name Variance Std.Dev.	
year (Intercept) 0.57462 0.75804	
period (Intercept) 0.39463 0.62819	
Number of obs: 3665, groups: year, 13; pe	riod, 2
Fixed effects:	
Estimate Std. Error	z value Pr(> z)
(Intercept) -1.73130 0.49742	-3.481 0.0005 ***
m.gnon invasive-guano 0.74404 0.10565	7.042 1.89E-12 ***
coveruncovered -0.26785 0.09801	-2.733 0.00628 **

Signif. codes: 0 '***' 0.001 '**' 0.01 ' '	*' 0.05 '.' 0.1 ' ' 1
Correlation of Fixed Effects:	
(Intr) m.inv-	
m.gnninvs- -0.067	
coveruncvrd -0.010 -0.562	
Single term deletions Using AIC values	
Model:	
Success ~ m.g + cover + (1 period) + (1	year)
Df AIC LRT Pr(Chi)	
<none> 4079.3	
m.g 1 4126.9 49.602 1.883e-12 ***	
cover 1 4084.8 7.460 0.006307 **	

Signif. codes: 0 '***' 0.001 '**' 0.01 ' '	*' 0.05 '.' 0.1 ' ' 1
> Likelihood ratio test between starting	model (w ith habit at) and updated model (without habitat)
Data: model1	
Models:	
m2: Success ~ m.g + cover + (1 period)	+ (1 y ear)
m1: Success ~ m.g + habitat + cover + (1	period) + (1 year)
Df AIC BIC logLik Chisq Chi Df	Pr(>Chi sq)
m2 5 4079.3 4110.3 -2034.7	
m1 6 4080.8 4118.1 -2034.4 0.4657 1	0 495
>Most complex model does not significantl	y explai n more th an the less complex one

Final model:
m2: Success ~ m.g + cover + (1 | period) + (1 | year)

Artificial Nest Model

Generalized linear mixed model fit by the Laplace approximation
Formula: Success ~ 0 + cover + substrate + (1 | period)

Data: modelart

AIC BIC logLik deviance

767.7 789.3 -378.8 757.7

Random effects:

Groups Name Variance Std.Dev.

period (Intercept) 0.12224 0.34962

Number of obs: 563, groups: period, 2

Fixed effects:

Estimate	Std. Error	z value	Pr(> z)	
coverartificial	0.10918	0.33667	0.324	0.74571
covercovered	0.08080	0.31294	0.258	0.79626
coveruncovered	0.02633	0.27361	0.096	0.92334
substrateother	-1.00276	0.36085	-2.779	0.00545 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:

cvrrtf cvrcvr cvrncv
covercoverd 0.581
coveruncvrd 0.664 0.719
substratthr -0.429 0.004 0.004