Model for probability of attack, n=301

Population as fixed + significant interactions

> summary(model2b)

Call:

glm(formula = attack ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv +

z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + population + population:z.veg\_h\_mean, family = "binomial",

na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-3.4382 -0.8435 0.3233 0.7354 2.4517

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 1.92993 0.38240 5.047 4.49e-07 \*\*\*

z.shoot\_h 0.52302 0.21583 2.423 0.015383 \*

z.veg\_h\_mean -1.32461 0.35815 -3.699 0.000217 \*\*\*

z.most\_adv 0.78968 0.24594 3.211 0.001323 \*\*

z.n\_fl\_corrected 0.77004 0.32156 2.395 0.016636 \*

z.n\_redants 0.22235 0.17308 1.285 0.198919

z.dist\_closest\_redants -0.18789 0.23647 -0.795 0.426875

z.avg\_d\_min\_ja -1.29655 0.26578 -4.878 1.07e-06 \*\*\*

populationRemmene -1.83746 0.57728 -3.183 0.001458 \*\*

populationTånga Hed -1.73369 0.65358 -2.653 0.007988 \*\*

z.veg\_h\_mean:populationRemmene 0.03655 0.45254 0.081 0.935635

z.veg\_h\_mean:populationTånga Hed 0.96357 0.51819 1.860 0.062954 .

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 405.63 on 300 degrees of freedom

Residual deviance: 289.36 on 289 degrees of freedom

AIC: 313.36

Number of Fisher Scoring iterations: 5

> r.squaredLR(model2b)

[1] 0.3204305

attr(,"adj.r.squared")

[1] 0.4329307

Model for n\_eggs\_max n=301

Population as fixed + significant interactions

> summary(model2eg\_b)

Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) ['glmerMod']

Family: poisson ( log )

Formula: n\_eggs\_max ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv + z.n\_fl\_corrected +

z.n\_redants + z.dist\_closest\_redants + z.avg\_d\_min\_ja + population +

population:z.veg\_h\_mean + population:z.n\_redants + population:z.dist\_closest\_redants + (1 | id)

Control: glmerControl(optimizer = "bobyqa")

AIC BIC logLik deviance df.resid

1402.3 1465.3 -684.2 1368.3 284

Scaled residuals:

Min 1Q Median 3Q Max

-1.5166 -0.5907 -0.1161 0.2519 1.7741

Random effects:

Groups Name Variance Std.Dev.

id (Intercept) 1.283 1.133

Number of obs: 301, groups: id, 301

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 1.3166 0.2032 6.481 9.14e-11 \*\*\*

z.shoot\_h 0.3951 0.1212 3.261 0.001111 \*\*

z.veg\_h\_mean -0.8798 0.2306 -3.815 0.000136 \*\*\*

z.most\_adv 0.6597 0.1303 5.062 4.15e-07 \*\*\*

z.n\_fl\_corrected 0.4067 0.1380 2.947 0.003204 \*\*

z.n\_redants 0.4928 0.1825 2.700 0.006939 \*\*

z.dist\_closest\_redants -0.3971 0.4265 -0.931 0.351827

z.avg\_d\_min\_ja -0.7454 0.1309 -5.693 1.25e-08 \*\*\*

populationRemmene -0.4030 0.3758 -1.072 0.283518

populationTånga Hed -1.1449 0.3514 -3.258 0.001121 \*\*

z.veg\_h\_mean:populationRemmene 0.1862 0.2806 0.663 0.507045

z.veg\_h\_mean:populationTånga Hed 0.7157 0.2948 2.428 0.015182 \*

z.n\_redants:populationRemmene 0.0300 0.4212 0.071 0.943220

z.n\_redants:populationTånga Hed -0.3864 0.2084 -1.854 0.063799 .

z.dist\_closest\_redants:populationRemmene 2.4743 0.8000 3.093 0.001983 \*\*

z.dist\_closest\_redants:populationTånga Hed 0.3166 0.4467 0.709 0.478531

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> r.squaredLR(model2eg\_b,null.RE=T)

[1] 0.4252675

attr(,"adj.r.squared")

[1] 0.4278767

Model for n\_predated

Population as fixed (no significant interactions)

> summary(model2pred\_b)

Call:

glm(formula = n\_predated ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv +

z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + population, family = "poisson", na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-4.1391 -0.9407 -0.2434 0.5302 3.1648

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 0.370641 0.128965 2.874 0.00405 \*\*

z.shoot\_h 0.364534 0.070527 5.169 2.36e-07 \*\*\*

z.veg\_h\_mean -0.222697 0.080377 -2.771 0.00559 \*\*

z.most\_adv 0.529513 0.080155 6.606 3.94e-11 \*\*\*

z.n\_fl\_corrected 0.243213 0.068579 3.546 0.00039 \*\*\*

z.n\_redants 0.071737 0.051796 1.385 0.16605

z.dist\_closest\_redants -0.007254 0.066988 -0.108 0.91376

z.avg\_d\_min\_ja -0.363267 0.084525 -4.298 1.73e-05 \*\*\*

populationRemmene -0.597116 0.208562 -2.863 0.00420 \*\*

populationTånga Hed -0.886088 0.224278 -3.951 7.79e-05 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 588.03 on 300 degrees of freedom

Residual deviance: 305.76 on 291 degrees of freedom

AIC: 774.44

Number of Fisher Scoring iterations: 5

> r.squaredLR(model2pred\_b)

[1] 0.6084944

attr(,"adj.r.squared")

[1] 0.6285649

Model for prop\_predated

> summary(model2pred\_prop\_b)

Call:

glm(formula = prop\_pred ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv +

z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + population, family = "binomial", na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-3.1171 -0.8744 -0.3754 0.4988 2.4671

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.78271 0.15082 -5.190 2.11e-07 \*\*\*

z.shoot\_h 0.27793 0.08257 3.366 0.000762 \*\*\*

z.veg\_h\_mean -0.20900 0.09538 -2.191 0.028434 \*

z.most\_adv 0.43763 0.09330 4.691 2.72e-06 \*\*\*

z.n\_fl\_corrected -0.14498 0.08320 -1.743 0.081406 .

z.n\_redants 0.05102 0.05954 0.857 0.391460

z.dist\_closest\_redants 0.03483 0.07432 0.469 0.639270

z.avg\_d\_min\_ja -0.34105 0.10230 -3.334 0.000857 \*\*\*

populationRemmene -0.58733 0.23998 -2.447 0.014390 \*

populationTånga Hed -1.00897 0.25663 -3.932 8.44e-05 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 304.04 on 300 degrees of freedom

Residual deviance: 251.04 on 291 degrees of freedom

AIC: 649.3

Number of Fisher Scoring iterations: 4

> r.squaredLR(model2pred\_prop\_b)

[1] 0.1614555

attr(,"adj.r.squared")

[1] 0.1801248

Model for n\_intact\_fruits

With attack

> summary(model1fr\_b)

Call:

glm(formula = n\_intact\_fruits\_max ~ z.shoot\_h + z.veg\_h\_mean +

z.most\_adv + z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + attack + population, family = "poisson",

na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-2.8106 -0.7258 -0.5642 0.4214 2.9451

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.10210 0.23734 -4.643 3.43e-06 \*\*\*

z.shoot\_h 0.20411 0.08033 2.541 0.01106 \*

z.veg\_h\_mean -0.04960 0.08473 -0.585 0.55826

z.most\_adv 0.07066 0.08592 0.822 0.41081

z.n\_fl\_corrected 0.28497 0.06664 4.276 1.90e-05 \*\*\*

z.n\_redants -0.05123 0.04999 -1.025 0.30544

z.dist\_closest\_redants -0.02352 0.05539 -0.425 0.67116

z.avg\_d\_min\_ja 0.25526 0.12254 2.083 0.03724 \*

attack1 -0.50101 0.12951 -3.869 0.00011 \*\*\*

populationRemmene 0.25551 0.35287 0.724 0.46900

populationTånga Hed 1.91747 0.27289 7.027 2.12e-12 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 761.61 on 300 degrees of freedom

Residual deviance: 268.03 on 290 degrees of freedom

AIC: 635.95

Number of Fisher Scoring iterations: 5

> r.squaredLR(model1fr\_b)

[1] 0.805982

attr(,"adj.r.squared")

[1] 0.8268477

Model for n\_intact\_fruits

With n\_eggs

> summary(model1fr\_b)

Call:

glm(formula = n\_intact\_fruits\_max ~ z.shoot\_h + z.veg\_h\_mean +

z.most\_adv + z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + z.n\_eggs\_max + population, family = "poisson",

na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-1.9205 -0.6851 -0.5502 0.2965 2.3565

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.25869 0.22687 -5.548 2.89e-08 \*\*\*

z.shoot\_h 0.33100 0.08104 4.084 4.42e-05 \*\*\*

z.veg\_h\_mean -0.13523 0.09233 -1.465 0.1430

z.most\_adv 0.21296 0.08974 2.373 0.0176 \*

z.n\_fl\_corrected 0.33022 0.06543 5.047 4.49e-07 \*\*\*

z.n\_redants -0.05268 0.05354 -0.984 0.3251

z.dist\_closest\_redants 0.01550 0.05726 0.271 0.7866

z.avg\_d\_min\_ja 0.20052 0.12214 1.642 0.1007

z.n\_eggs\_max -0.43691 0.06022 -7.255 4.01e-13 \*\*\*

populationRemmene 0.08443 0.35662 0.237 0.8129

populationTånga Hed 1.53716 0.28575 5.379 7.47e-08 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 761.61 on 300 degrees of freedom

Residual deviance: 218.71 on 290 degrees of freedom

AIC: 586.63

Number of Fisher Scoring iterations: 5

> r.squaredLR(model1fr\_b)

[1] 0.8353047

attr(,"adj.r.squared")

[1] 0.8569296

Model for fruit\_set

With attack

> summary(model1frs\_b)

Call:

glm(formula = fruit\_set1 ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv +

z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + attack + population, family = "binomial",

na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-2.2314 -0.7420 -0.4974 0.4101 2.8603

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.90699 0.24095 -7.914 2.48e-15 \*\*\*

z.shoot\_h 0.22498 0.08364 2.690 0.007152 \*\*

z.veg\_h\_mean -0.07037 0.09273 -0.759 0.447947

z.most\_adv 0.19862 0.09234 2.151 0.031478 \*

z.n\_fl\_corrected -0.12629 0.07397 -1.707 0.087772 .

z.n\_redants -0.08465 0.05489 -1.542 0.123039

z.dist\_closest\_redants -0.04570 0.06112 -0.748 0.454628

z.avg\_d\_min\_ja 0.26562 0.12798 2.076 0.037937 \*

attack1 -0.50857 0.14786 -3.439 0.000583 \*\*\*

populationRemmene 0.42747 0.33828 1.264 0.206353

populationTånga Hed 1.41739 0.28549 4.965 6.88e-07 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 367.74 on 300 degrees of freedom

Residual deviance: 214.62 on 290 degrees of freedom

AIC: 574.42

Number of Fisher Scoring iterations: 4

> r.squaredLR(model1frs\_b)

[1] 0.3987262

attr(,"adj.r.squared")

[1] 0.4410412

Model for fruit\_set

With n\_eggs

> summary(model1frs\_b)

Call:

glm(formula = fruit\_set1 ~ z.shoot\_h + z.veg\_h\_mean + z.most\_adv +

z.n\_fl\_corrected + z.n\_redants + z.dist\_closest\_redants +

z.avg\_d\_min\_ja + population + z.n\_eggs\_max, family = "binomial",

na.action = "na.fail")

Deviance Residuals:

Min 1Q Median 3Q Max

-2.1038 -0.7135 -0.4450 0.3880 2.2630

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -2.113946 0.223572 -9.455 < 2e-16 \*\*\*

z.shoot\_h 0.292119 0.085570 3.414 0.000641 \*\*\*

z.veg\_h\_mean -0.100846 0.095787 -1.053 0.292423

z.most\_adv 0.272485 0.094918 2.871 0.004095 \*\*

z.n\_fl\_corrected -0.070325 0.075347 -0.933 0.350644

z.n\_redants -0.079699 0.056154 -1.419 0.155813

z.dist\_closest\_redants -0.004494 0.060887 -0.074 0.941160

z.avg\_d\_min\_ja 0.252486 0.126792 1.991 0.046444 \*

populationRemmene 0.299119 0.341012 0.877 0.380403

populationTånga Hed 1.131833 0.294052 3.849 0.000119 \*\*\*

z.n\_eggs\_max -0.269234 0.055856 -4.820 1.43e-06 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 367.74 on 300 degrees of freedom

Residual deviance: 201.94 on 290 degrees of freedom

AIC: 561.74

Number of Fisher Scoring iterations: 5

> r.squaredLR(model1frs\_b)

[1] 0.4235317

attr(,"adj.r.squared")

[1] 0.4684791