Individual Condition vs Nest Size with sex and instar as numeric value

Ruth Sharpe

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Contents

AIC Values of all possible models with instar always included

note: InstarNumber is numeric

Analysis of Deviance Table (Type II Wald chisquare tests)

Response: condResiduals Chisq Df Pr(>Chisq)
logCtFm 5.2460 1 0.02200 *InstarNumber 5.8338 1 0.01572* InstarNumber:InstarSex 0.1306 1 0.71780
logCtFm:InstarNumber 1.2205 1 0.26926
logCtFm:InstarNumber:InstarSex 2.3307 1 0.12685
— Signif. codes: 0 ‘*’* ***0.001*** *’’ 0.01 ”* 0.05 ‘.’ 0.1 ‘ ’ 1 Analysis of Deviance Table (Type II Wald chisquare tests)

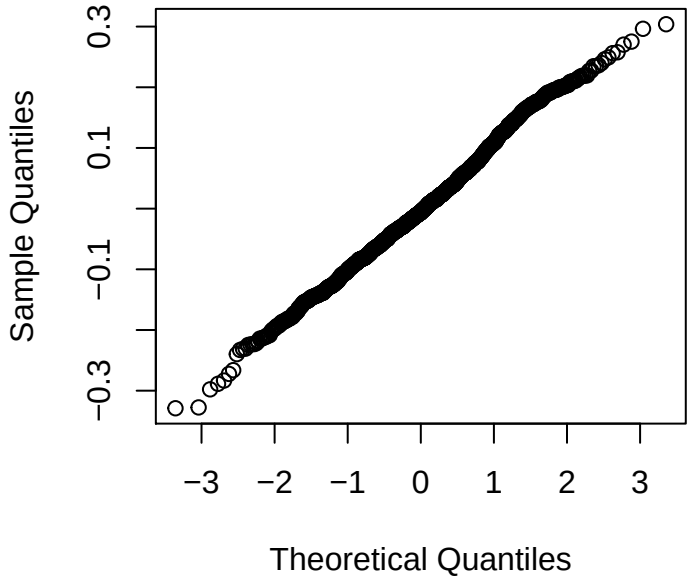
Response: condResiduals Chisq Df Pr(>Chisq)
logCtFm 5.2244 1 0.02227 *InstarNumber 5.8247 1 0.01580* logCtFm:InstarNumber 1.2059 1 0.27214
logCtFm:InstarNumber:InstarSex 0.4806 1 0.48815
— Signif. codes: 0 ‘*’* ***0.001*** *’’ 0.01 ”* 0.05 ‘.’ 0.1 ‘ ’ 1 Analysis of Deviance Table (Type II Wald chisquare tests)

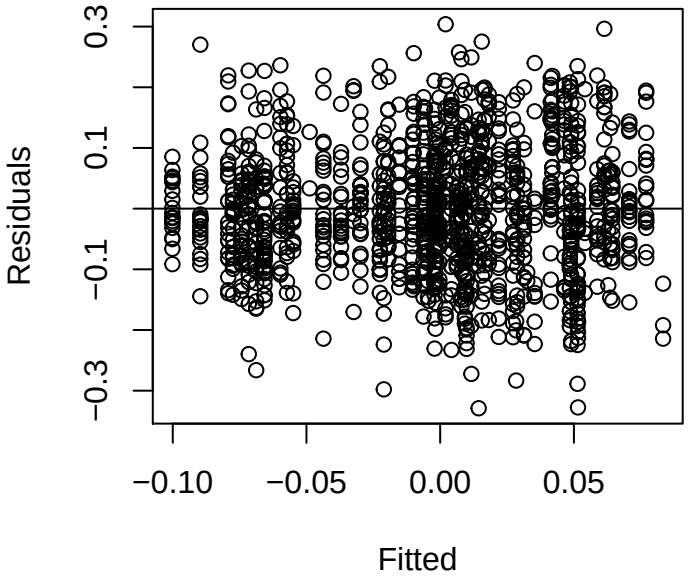
Response: condResiduals Chisq Df Pr(>Chisq)
logCtFm 5.2220 1 0.02230 *InstarNumber 5.8225 1 0.01582* logCtFm:InstarNumber 1.2054 1 0.27224
— Signif. codes: 0 ‘*’* ***0.001*** *’’ 0.01 ”* 0.05 ‘.’ 0.1 ‘ ’ 1 Analysis of Deviance Table (Type II Wald chisquare tests)

Response: condResiduals Chisq Df Pr(>Chisq)
logCtFm 5.2220 1 0.02230 *InstarNumber 5.8225 1 0.01582* logCtFm:InstarNumber 1.2054 1 0.27224
— Signif. codes: 0 ‘*’* ***0.001*** *’’ 0.01 ”* 0.05 ‘.’ 0.1 ‘ ’ 1

Checking full model fit

```
Condition=log(ColonySize) + InstarAge + log(ColonySize):InstarAge + (1|Colony)
```



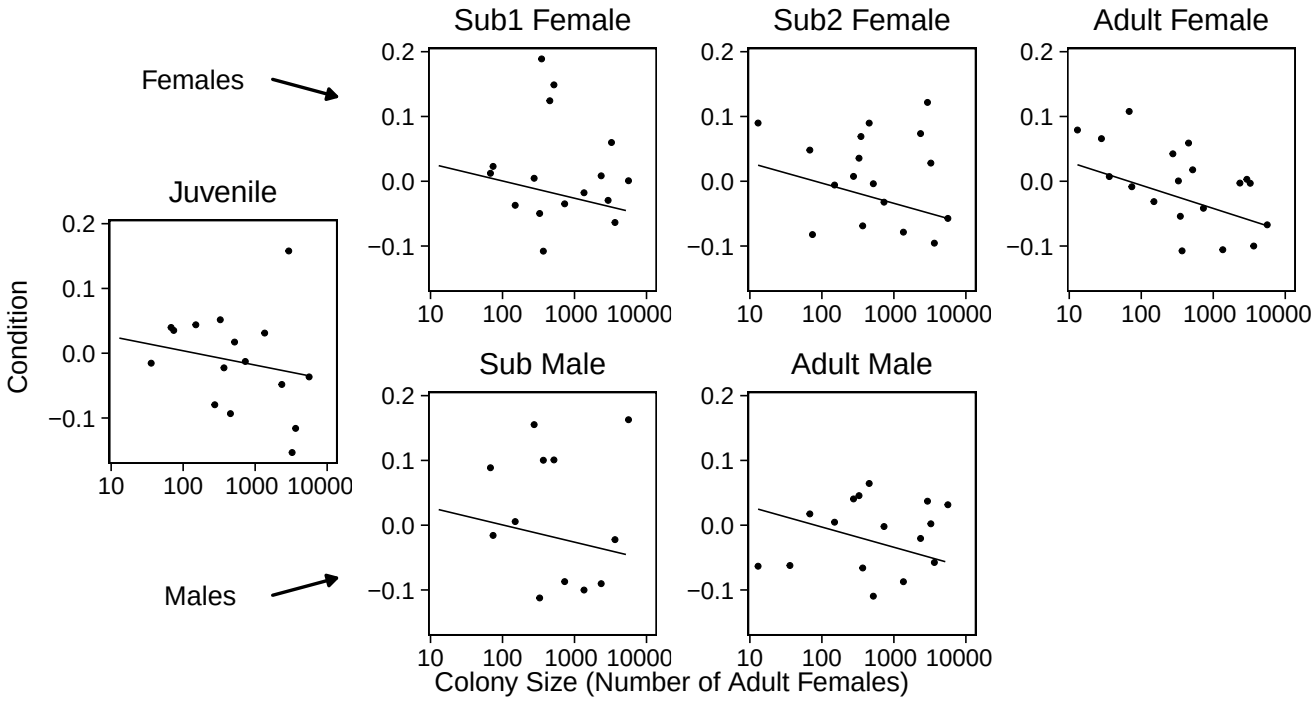


Graphs

By AIC with linear model superimposed

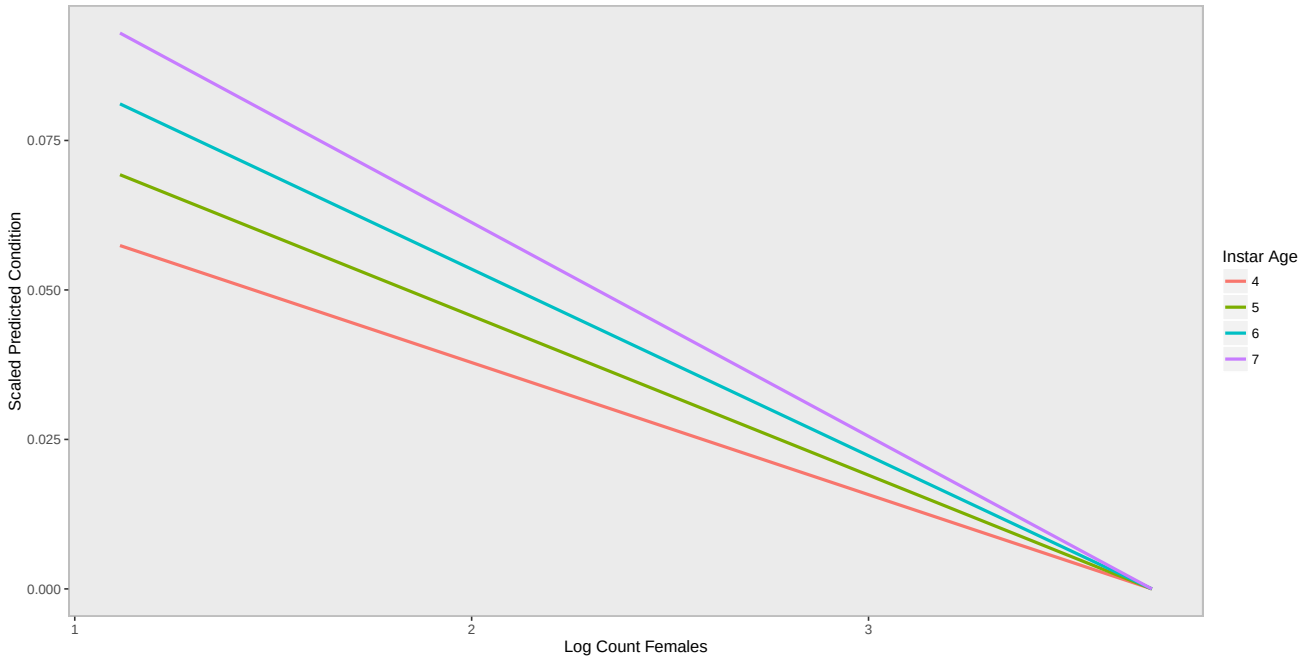
```
Model:
condResiduals ~ logCtFm + InstarNumber + logCtFm:InstarNumber + (1 | NestID)
```

```
Note: If line on graph is blue R could not plot the lmer, plotting a simple lm instead[1] "lmer"
```



Instar Age x nest size Interaction Graph

```
Model:
condResiduals ~ logCtFm + InstarNumber + logCtFm:InstarNumber + (1 | NestID)
```



Statistics using model with lowest AIC

Full Model: condResiduals ~ logCtFm + InstarNumber + logCtFm:InstarNumber + (1 | NestID)

Anova of full model alone

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)
logCtFm	0.0002	0.0002	1	262.602	0.019	0.892
InstarNumber	0.003	0.003	1	1,238.858	0.243	0.622
logCtFm:InstarNumber	0.013	0.013	1	1,251.747	1.205	0.272

Testing Individual Variables by preforming an Anova of full vs reduced model

Testing Interaction Term nest size * instar against full model. - $p < 0.05$ SIGNIFICANT *

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	4	-2,081.925	-2,061.348	1,044.963	-2,089.925			
object	6	-2,084.931	-2,054.065	1,048.466	-2,096.931	7.006	2	0.030

Reduced Model: Condition=log(ColonySize) + (1|Colony)

Testing Nest Size plus nest size interactions against full model. - $p < 0.01$ SIGNIFICANT **

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-2,079.566	-2,064.133	1,042.783	-2,085.566			
object	6	-2,084.931	-2,054.065	1,048.466	-2,096.931	11.365	3	0.010

Reduced Model: Condition=(1|Colony)

Testing individual instar numbers

note: pops up saying 'refitting model(s) with ML (instead of REML)' but if make anova refit = FALSE results don't make sense

Adult - age 7 * SIGNIFICANT *

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-764.8555	-753.1558	385.4278	-770.8555	NA	NA	NA
object	4	-770.4985	-754.8989	389.2492	-778.4985	7.642948	1	0.0056995

Sub2 and Adult Males - age 6 not significant

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-587.4919	-575.8840	296.746	-593.4919	NA	NA	NA
object	4	-585.5920	-570.1148	296.796	-593.5920	0.1001211	1	0.7516844

Sub1 and sub males- age 5 not significant

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-464.8106	-453.5529	235.4053	-470.8106	NA	NA	NA
object	4	-462.9705	-447.9602	235.4853	-470.9705	0.1599328	1	0.6892184

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)

Juv4 - age 4 not significant

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-338.6935	-328.3403	172.3467	-344.6935	NA	NA	NA
object	4	-337.8281	-324.0239	172.9140	-345.8281	1.134603	1	0.2867956

Graph of condition variance against instar

```
Warning: Removed 3 rows containing non-finite values (stat_boxplot).
```