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

Ruth Sharpe

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Contents

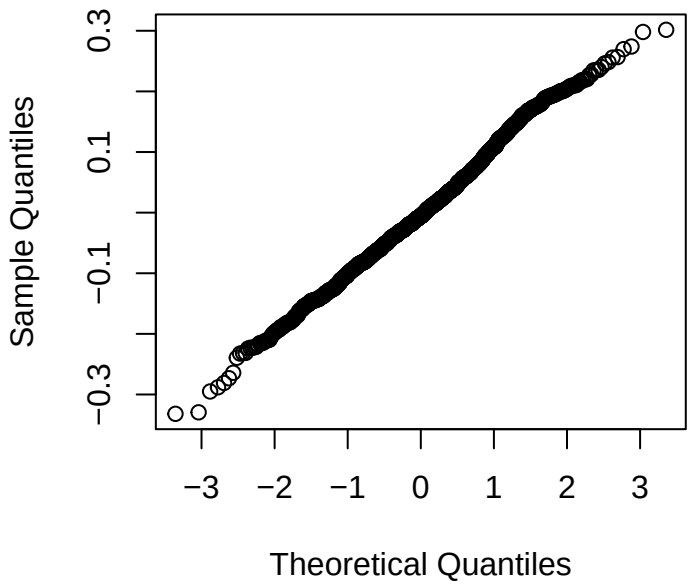
AIC Values of all possible models with instar always included

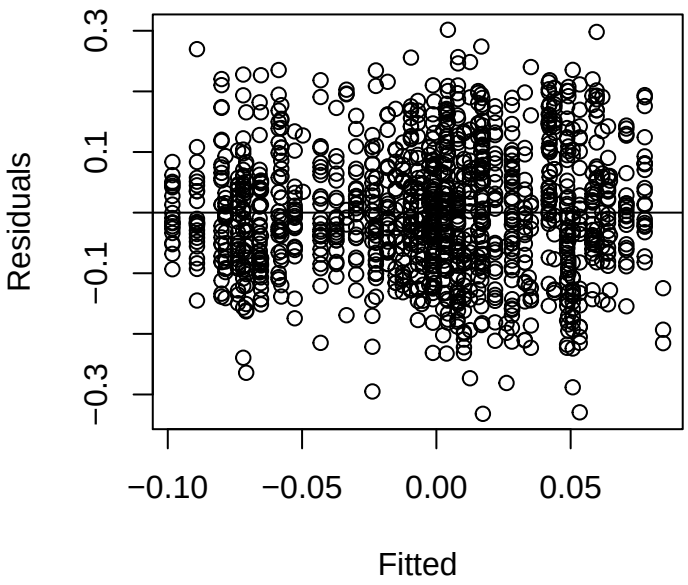
note: InstarNumber is numeric

AIC_Diff	AIC	model	num.predictors
0	-2087	condResiduals ~ logCtFm + logCtFm:InstarNumber + (1|NestID)	5
0.96	-2086	condResiduals ~ logCtFm + InstarNumber + (1|NestID)	5
1.53	-2085	condResiduals ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1|NestID)	6
1.76	-2085	condResiduals ~ logCtFm + InstarNumber + logCtFm:InstarNumber + (1|NestID)	6
2.84	-2084	condResiduals ~ logCtFm + InstarNumber + InstarNumber:InstarSex + (1|NestID)	6
3.28	-2083	condResiduals ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1|NestID)	7
3.3	-2083	condResiduals ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1|NestID)	8
3.63	-2083	condResiduals ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + (1|NestID)	7

Checking full model fit

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

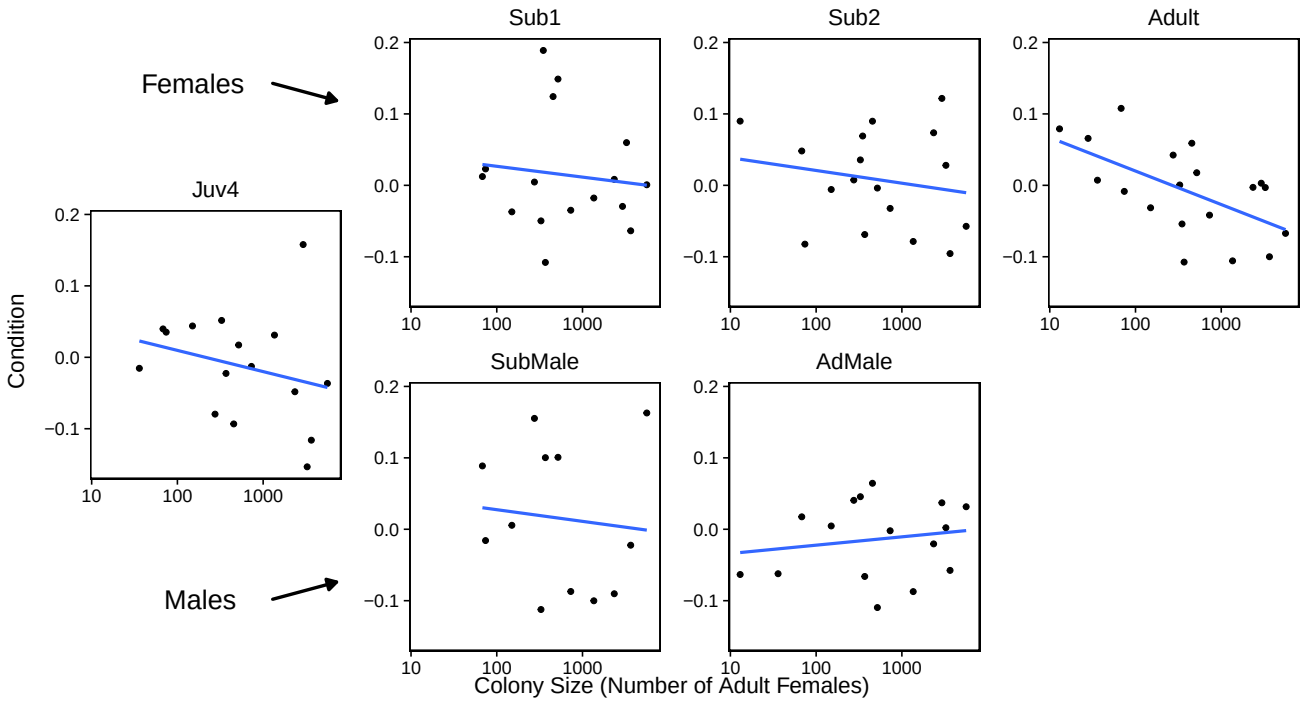




Graph with lowest AIC model superimposed

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

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


Females
Males
Juv4
Sub1
Sub2
Adult
SubMale
AdMale
Condition
Colony Size (Number of Adult Females)
0.2
0.1
0.0
−0.1
10
100
1000

Statistics using model with lowest AIC

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

Anova of full model alone

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)
logCtFm	0.013	0.013	1	28.436	1.165	0.289
logCtFm:InstarNumber	0.073	0.073	1	1,259.713	6.789	0.009

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

Testing Interaction Term nest size * instar against full model. - p < 0.01 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	5	-2,086.689	-2,060.967	1,048.345	-2,096.689	6.764	1	0.009

Reduced Model: condResiduals = logCtFm + (1 | NestID)

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	5	-2,086.689	-2,060.967	1,048.345	-2,096.689	11.123	2	0.004

Reduced Model: condResiduals = (1 | NestID)

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 - significat!

	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

	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

	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)
..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