Leg Length vs Nest Size with sex and instar as factor

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Contents

AIC Values of all possible models with instar always included

AIC_Diff	AIC	model	num.predictors
0	-5252	logLeg ~ logCtFm + logCtFm:InstarNumber + InstarSex:logCtFm + InstarNumber + InstarSex + (1|NestID)	12
3.58	-5248	logLeg ~ logCtFm + logCtFm:InstarNumber + InstarNumber + InstarSex + (1|NestID)	11
16.95	-5235	logLeg ~ logCtFm + InstarSex:logCtFm + InstarNumber + InstarSex + (1|NestID)	9
19.54	-5233	logLeg ~ logCtFm + InstarNumber + InstarSex + (1|NestID)	8

Graph with lowest AIC model superimposed

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

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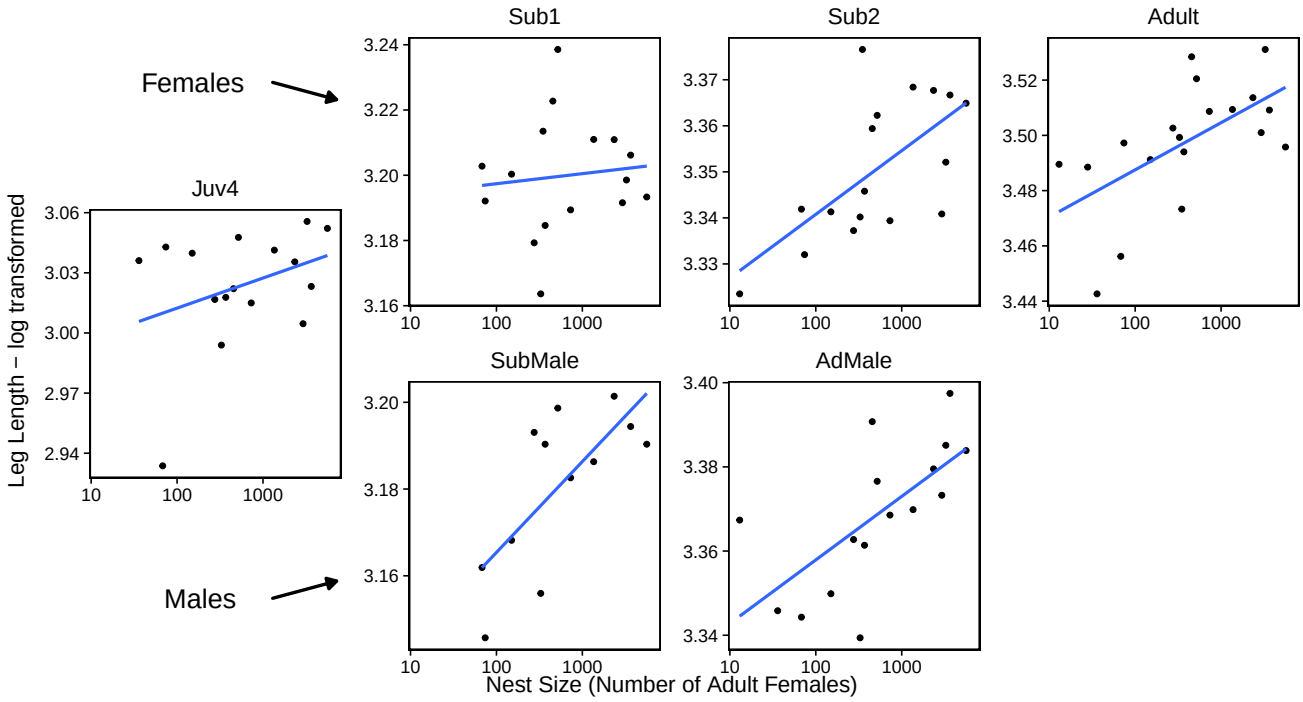

Statistics

Note: There is no point testing instar number against leg length as it will vary of course, same with instar size

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

Anova of full model alone

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)
logCtFm	0.036	0.036	1	265.353	39.028	0
InstarNumber	1.561	1.561	1	1,227.234	1,708.836	0
InstarSex	0.001	0.001	1	1,259.187	0.775	0.379
logCtFm:InstarNumber	0.021	0.021	1	1,245.413	22.836	0.00000
logCtFm:InstarSex	0.004	0.004	1	1,258.000	4.072	0.044

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

Testing Sex and NS Interaction Term against full model

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	7	-5,224.411	-5,188.384	2,619.205	-5,238.411			
object	8	-5,226.475	-5,185.301	2,621.237	-5,242.475	4.064	1	0.044

Reduced Model: logLeg = logCtFm + logCtFm:InstarNumber + InstarNumber + InstarSex + (1 | NestID)

Testing Instar Number and NS interaction against full model

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	7	-5,205.873	-5,169.846	2,609.936	-5,219.873			
object	8	-5,226.475	-5,185.301	2,621.237	-5,242.475	22.602	1	0.00000

Reduced Model: logLeg = logCtFm + InstarSex:logCtFm + InstarNumber + InstarSex + (1 | NestID)

Testing Nest Size against full model

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	5	-5,195.748	-5,170.014	2,602.874	-5,205.748			
object	8	-5,226.475	-5,185.301	2,621.237	-5,242.475	36.727	3	0.00000

Reduced Model: logLeg = InstarNumber + InstarSex + (1 | NestID)

Testing Individual Instars

As the interaction is significant testing instar individually

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

Adult

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-1496.660	-1484.952	751.3299	-1502.660	NA	NA	NA
object	4	-1503.201	-1487.591	755.6007	-1511.201	8.541558	1	0.0034713

Sub2

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-1228.262	-1217.709	617.1308	-1234.262	NA	NA	NA
object	4	-1236.919	-1222.849	622.4595	-1244.919	10.65751	1	0.0010962

Sub1

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-1112.989	-1102.042	559.4943	-1118.989	NA	NA	NA
object	4	-1111.281	-1096.685	559.6407	-1119.281	0.2927162	1	0.5884852

Juv4

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-922.1183	-911.7652	464.0592	-928.1183	NA	NA	NA
object	4	-921.5977	-907.7935	464.7988	-929.5977	1.47934	1	0.2238779

AdMale

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-547.1792	-539.1889	276.5896	-553.1792	NA	NA	NA
object	4	-556.9807	-546.3269	282.4903	-564.9807	11.80143	1	0.0005919

SubMale

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	3	-125.0124	-120.6152	65.50620	-131.0124	NA	NA	NA
object	4	-129.7154	-123.8524	68.85769	-137.7154	6.702965	1	0.0096253