Leg Length vs Nest Size Stepwise model regression

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Model Reduction

[1] "number of terms" [1] 5 [1] "pvalue" [1] 1

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	p_value
logCtFm	0.02	0.02	1	372.40	25.41	0.000***
InstarNumber	0.03	0.03	1	1219.39	31.40	0.000***
I(logCtFm^2)	0.02	0.02	1	327.57	22.31	0.000***
InstarNumber:InstarSex	0.00	0.00	1	1257.01	0.40	0.528
logCtFm:InstarNumber	0.02	0.02	1	1235.49	28.06	0.000***
InstarNumber:I(logCtFm^2)	0.02	0.02	1	1247.15	22.33	0.000***
logCtFm:InstarNumber:InstarSex	0.00	0.00	1	1256.34	0.38	0.538 RMVD
InstarNumber:InstarSex:I(logCtFm^2)	0.00	0.00	1	1255.73	0.75	0.386

[1] "term with highest p value is: logCtFm:InstarNumber:InstarSex" [1] "number of terms" [1] 8 [1] "pvalue" [1] 0.5376304

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	p_value
logCtFm	0.02	0.02	1	371.47	25.73	0.000***
InstarNumber	0.03	0.03	1	1188.17	32.25	0.000***
I(logCtFm^2)	0.02	0.02	1	327.23	22.59	0.000***
InstarNumber:InstarSex	0.00	0.00	1	1256.04	0.02	0.882 RMVD
logCtFm:InstarNumber	0.03	0.03	1	1211.75	32.80	0.000***
InstarNumber:I(logCtFm^2)	0.02	0.02	1	1229.63	26.19	0.000***
InstarNumber:InstarSex:I(logCtFm^2)	0.00	0.00	1	1254.44	4.42	0.036*

[1] "term with highest p value is: InstarNumber:InstarSex" [1] "number of terms" [1] 7 [1] "pvalue" [1] 0.8823176

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	p_value
logCtFm	0.02	0.02	1	371.26	25.77	0.000***
InstarNumber	0.03	0.03	1	1184.99	32.30	0.000***
I(logCtFm^2)	0.02	0.02	1	327.19	22.61	0.000***
logCtFm:InstarNumber	0.03	0.03	1	1210.87	32.88	0.000***
InstarNumber:I(logCtFm^2)	0.02	0.02	1	1229.57	26.18	0.000***
InstarNumber:InstarSex:I(logCtFm^2)	0.03	0.03	1	1252.57	32.12	0.000***

[1] "term with highest p value is: I(logCtFm^2)"

Final Model is: logLeg ~ 1 | NestID + logCtFm * InstarNumber + InstarNumber:I(logCtFm^2) + InstarNumber:InstarSex:I(logCtFm^2)

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)
logCtFm	0.01	0.01	1.00	126.97	8.61	0.0040
InstarNumber	0.42	0.42	1.00	31.09	459.34	0.0000
logCtFm:InstarNumber	0.01	0.01	1.00	21.28	10.84	0.0034
InstarNumber:I(logCtFm^2)	0.00	0.00	1.00	20.92	3.42	0.0786
InstarNumber:InstarSex:I(logCtFm^2)	0.03	0.03	1.00	1244.24	31.65	0.0000

1

Checking full model fit

`log(LegLength)=log(ColonySize) + InstarAge + InstarAge:InstarSex + log(ColonySize):InstarAge + log(ColonySize):I`
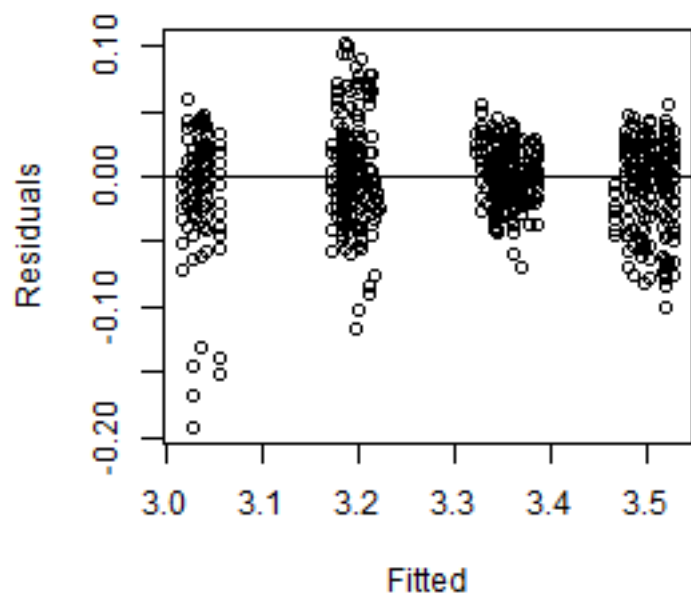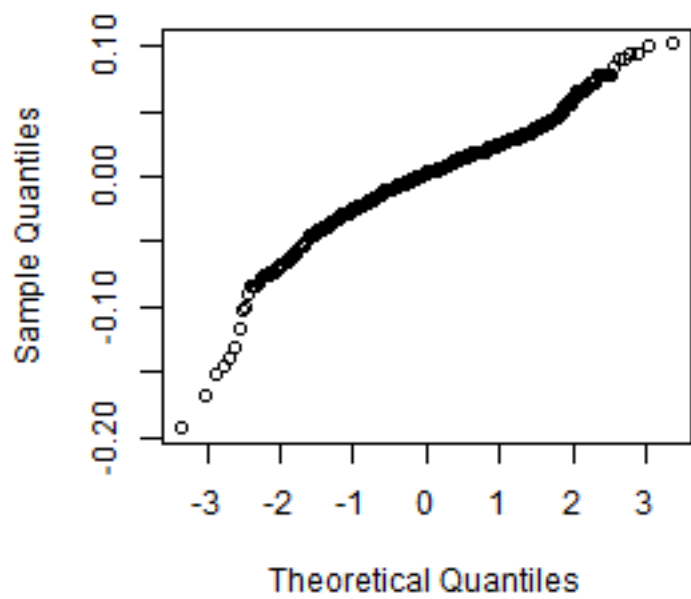
Graph with full model superimposed

Model:
```
logLeg ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex
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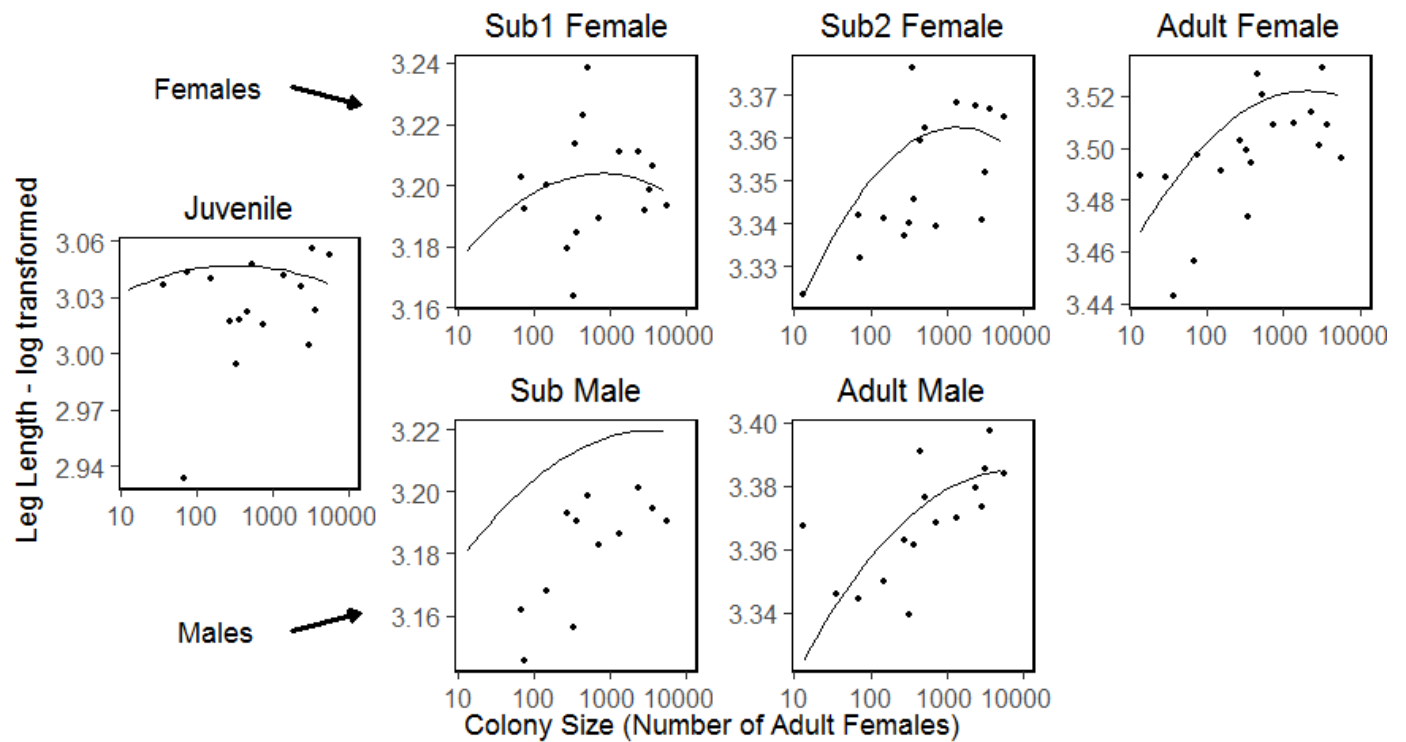Note: If line on graph is blue R could not plot the lmer, plotting a simple lm instead[1] "lmer"

Figure 1: plot of chunk Graph