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ECO 602
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1. This seems to be a positive linear relationship.
2. The histogram for body mass resembles a normal distribution but the length histogram appears to be non-normal and right skewed.
3. Both sets of data fail the tests for normality. Despite appearing normal, they are both non-normal distributions.
4. The boxplots suggest that *D. sublineatus* tends to have lower average body mass when compared to the other species.
5. Of the five models, fits 2-5 appear normal but fit 1 does not (it has significant right-skew)
6. Fit 2 is the least non-normal but it still fails the test for normality.
7. For every gram increase in body weight, body length would increase by ~0.875mm.
8. ~163.7 mm
9. ~76.1 mm
10. Female is the base case.
11. *D. dorsalis* is the base case.
12. Males tend to be heavier than females.
13. *D. dorsalis* tends to be the heavier species.
14. Yes with p-values of <2.2e-16 and 1.942e-7 respectively, both species and sex are significant predictors of body mass.
15. There is not a significant interaction between the predictors. The p-value of their interaction was 0.9504.
16. All tests other than the species:sex interactive predictor are below the level of significance. The p-values in the single predictor models of sex and species are low (1.951e-4 and <2.2e-16). In the additive models, body mass predicted by sex is more significant compared to the single-predictor model (1.942e-7), while body mass by species is similar. In the interactive model, sex and species alone are increasingly significant compared to the previous models. The interactive component of this model has a p-value of 0.9504 suggesting that as a collective predictor of body mass, it is very poor.
17. The models with the lowest AIC scores are the additive and interactive models using species and sex as predictors.
18. I would select the additive model. It is both easier to explain and has a slightly lower score than the interactive model.