DVR Weight-Length Relation

Exercise - Nunavut

Answer the following questions by creating an R script and iteratively running the code in RStudio.

1. Load the `PG008_original.xlsx` file into a data.frame object and restrict the data to only those fish captured in **freshwater** in **2010** for which a sex was determined. Use these data for the following questions.

   a. Plot the weight-length data separated by sex. Does there appear to be a difference in the weight-length relationship between the sexes?

   b. Fit an appropriate model for testing whether the weight-length relationship differs between female and male Arctic Charr. Assess the assumptions of this model.

   c. Determine if the weight-length relationship differs between the sexes.

   d. *IF appropriate*, fit a reduced model.

   e. Provide a table of parameter estimates (and 95% confidence intervals) for the final weight-length relationship regression. Interpret each parameter estimate.

   f. Predict (with 95% prediction interval) the **weight** of fish from both sexes with a given length (i.e., choose a reasonable length)?

   g. Provide summary graphics of the weight-length relationship regression, separated by sex if appropriate, on two scales (i.e., two graphics).

2. [*Time Permitting*] Perform a similar analysis to above but for testing whether the weight-length relationship differs between 2013 and 2014 for all Arctic Charr captured in **freshwater**.