Exercise 4: Condition, mortality, and stock-recruitment

Packages used in this exercise:  
library(FSA)  
library(dplyr)  
library(ggplot2)  
library(nlstools)

1. Calculate standard weight and relative weight of Cisco using the “CiscoTL” data set in the FSAdata package. Add these two columns to the CiscoTL data frame.

Load the “CiscoTL” data set using:

CiscoTL <- FSAdata::CiscoTL

1. Use the following data to create a scatterplot of count (y-axis) vs age (x-axis) and determine instantaneous total mortality (Z)

|  |  |
| --- | --- |
| age | ct |
| 1 | 74 |
| 2 | 210 |
| 3 | 165 |
| 4 | 92 |
| 5 | 82 |
| 6 | 50 |
| 7 | 25 |
| 8 | 10 |

1. Create a scatterplot and determine parameters of the von Bertalanffy growth model with 95% confidence intervals using “Bonito” data set in the FSAdata package. Bonito length is recorded as “fl”.  
   Load the “Bonito” data set using:  
   Bonito <- FSAdata::Bonito
2. Estimate parameters of the Ricker stock-recruitment model using the HerringBWE data set from the FSAdata package.  
   Load the “HerringBWE” data set using:  
   HerringSR <- FSAdata::HerringBWE
3. Create a scatterplot with predictions of the Ricker model fit in 4 above. Note, select an appropriate break in the range of spawning stock biomass for predictions.