

Chapter 4 Computer Exercise

1. We will be working with the Horseshoe crab data. You may want to skim the article on horseshoe crabs from the course website to get an idea about life history, and the significance of horseshoe crab spawning.
2. Copy the data from the SAS code for this data set into a Minitab worksheet (Click in the first cell in the Minitab worksheet, paste, and then Minitab will prompt you to treat blanks as delimiters). Assign names to the columns. Generate a scatterplot matrix of Satellite, Weight and Width (Choose Graph then Matrix Plot then Matrix of Plots then Simple). Comment on the scatterplots.
3. Copy the SAS code for this data set and run it as a Poisson GLIM model with log link. Interpret the slope parameter estimate.
4. Create a smoothed plot of Satellite against Weight and then Satellite against Width in Minitab (Choose Graph then Matrix Plot then Each Y versus Each X then With Smoother). Comment.
5. There seem to be alot of sampling zeroes for the response variable. We will look at zero-inflated Poisson models later; for now, create an indicator variable in Minitab by entering the following command in the Command Line Editor (The Command Line Editor can be found under the Edit menu): LET C6= ('Satellite' > 0). Label column C6 (I call it BiSat). Some students prefer to use the Calculator (under the Calc menu) to create the binary variable.
6. Now create a smoothed plot of BiSat against Weight and then BiSat against Width. Does a logistic model seem appropriate?
7. Create an indicator variable in SAS for presence/absence of eggs using the following code: IF SATELL > 0 THEN BISAT=1; ELSE BISAT=0;
8. Run a binary GLIM model with logit link in SAS using the following code:

```
PROC GENMOD DESCENDING;  
MODEL BISAT=WEIGHT/DIST=BIN LINK=LOGIT;
```
9. Interpret the slope parameter.
10. Run the above model with the additional term WIDTH added as a second covariate. Interpret your results.