**Introduction to R Using the FM Database**

**Wisconsin DNR State-wide Meeting; Wisconsin Dells, WI; 2-Mar-2015**

8:45 Get Situated (set-up computer, etc.)

9:00 Introduction

*Discuss –* Instructors

*Discuss –* Workshop Assumptions and Outcomes

*Discuss –* What is R?

9:15 Loading Data (with some Basic R Terminology)

Demo – Load data from CSV (incl., setwd(), read.csv(), setDBClasses())

*Demo –* Examine data structure (str(), head(), levels())

*Demo –* Expand counts to individual lengths (expandCounts())

*Discuss –* Assignments, objects, functions, arguments, df$var

*Application –* load and examine your FM data

10:15 Filtering Data by Variables and by Individuals

*Demo –* select() and filter()

*Demo* – xtabs() and Summarize()

*Application –* various filterings and selections of your FM data

11:15 Adding and Renaming Variables

*Demo –* mutate()and rename()

*Demo* – capFirst(), month(), and lencat()

*Application –* various mutations of your FM data

12:00 Lunch

13:00 Size Structure Analysis I

*Demo* – hist()and Summarize()

*Demo* – group\_by() and summarize()

*Application –* construct length frequency histograms and mean lengths from your FM data

14:00 Size Structure Analysis II

*Demo* – lencat() and psdVals()

*Demo* – rcumsum() and prop.table()

*Application –* construct PSD summaries from your FM data

15:00 Putting It All Together (Preparing a Report)

*Demo* – chaining with %>%

*Demo* – recycling code

*Discuss* – Report preparation, including RMarkdown

*Application –* generate a script to construct length frequency histograms and PSDs for your FM data

16:30 Wrap-Up

*Discuss* – Preview breakout sessions in following days

*Discuss* – Garner feedback and suggestions for future directions