WILDLIFE 742
ECOLOGICAL DATA ANALYSIS
SPRING SEMESTER 2021, 3 CREDITS

Contact Info

Instructors: Jason Riddle and Benjamin Sedinger
Office Hours: Riddle (Wednesdays 1-3:50pm via Zoom); Sedinger (Thursdays 2-3pm)
Emails: jason.riddle@uwsp.edu
                 ben.sedinger@uwsp.edu
Classroom: TNR 356, Wednesday 9:00-11:50AM

Communication

We communicate primarily through email and announcements in lecture which are usually subsequently posted to Canvas.

Learning Outcomes

This course will cover the principles of ecological data analysis using frequentist and Bayesian methodology. We will discuss experimental design and the foundations of statistics, and how these principles can be applied to the analysis of data commonly used to advance our understanding about wildlife ecology and management. There will also be opportunities for students to examine topics of their choosing.

Students satisfactorily completing this course should be able to:

1) Compare and contrast traditional hypothesis testing with model selection approaches
2) Compare and contrast frequentist and Bayesian statistical paradigms
3) Apply classic experimental designs to research questions/management challenges
4) Explore introductory multivariate data and statistical approaches.

Textbook

1. L.A. Powell and G.A. Gale. Estimation of Parameters of Animal Populations: A primer for the rest of us. 2015. [free pdf or purchase online]
2. Kéry, M., Beissinger, Steven R, & Schaub, Michael. Bayesian population analysis using WinBUGS a hierarchical perspective. Academic Press. 2012. [UWSP library or purchase online]

Other Course Materials

We will periodically read from the peer reviewed literature. Announcements about reading and discussion will be made in class.

Assignments and grading

Participation	150 pts
Data analysis assignments	100 pts
Undergraduate consulting and final presentation	150pts

Letter Grade	Percentage
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	60-66%
F	0-59%

Discussions

We will periodically have student-led discussions during the semester about selected reading from peer-reviewed literature. Please keep up on the reading and come to class prepared for discussion (e.g. having already read and thought about the papers).

Consulting project

We will pair you up with undergraduate led research projects to provide consulting on study design and statistical analysis. On May 12th graduate students will present on these projects to the class.

Getting Help

Please do not be shy about asking for help! If you are having any trouble understanding something in class, then do not hesitate to schedule a time to meet outside of class or ask questions in class, as those problems will likely only get worse as the material becomes more complex and builds on itself.

Tentative Schedule

Date	Topic	Reading
1/27/2021	Introductions. What are statistics?	
2/3/2021	How do we make decisions about data/experiments?	Hurlbert 1984, Zuur et al. 2010
2/10/2021	Hypotheses vs. Models	Romesburg 1981
2/17/2021	Frequentist vs. Bayesian Methodology	Ellison 2004
2/24/2021	Classic Experimental Design Approaches	
3/3/2021	Basic Multivariate Statistics	
3/10/2021	Closed Populations	Powell and Gale 2015 – chapter 8
3/17/2021	Closed Populations with multiple variables	
3/24/2021	**SPRING BREAK**	
3/31/2021	Open Populations	Powell and Gale 2015 – chapter10
4/7/2021	Open Populations	
4/14/2021	Robust Design	Powell and Gale 2015 – chapter13
4/21/2021	TBD by students	
4/28/2021	TBD by students	
5/5/2021	TBD by students	
5/12/2021	Final presentations	
5/17/2021	**FINAL EXAM 12:30-2:30PM**	

This is a tentative schedule and may be changed at any time at our discretion.