

WLDL 353 / 553
ANALYSIS OF WIDLIFE POPULATIONS
2023 FALL SEMESTER, 4 CREDITS

Instructor: Dr. Benjamin Sedinger
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Classroom: Lecture: Tuesday & Thursday 9:30-10:45pm CCC 101
Lab 1: Tuesday 12:00-1:50pm CCC 307 (Sedinger)
Lab 2 Tuesday 2:00-3:50pm CCC 307 (Sedinger)
Lab 3 Wednesday 12:00-1:50pm TNR 356 (Sedinger)
Lab 4 Wednesday 2:00-3:50pm TNR 322 (Murphy)

Communication

I communicate primarily through announcements during lecture that are usually subsequently posted to Canvas. If you are someone who doesn't tune into lecture or check Canvas regularly you will miss important information that will likely affect your grade (and surprise quizzes).

Learning Outcomes

Goal: This course will introduce students to the fundamental principles of population ecology, how such principles are described by basic mathematical models, how these models are related to management and conservation applications, and how to use modeling approaches to estimate parameters relevant to wildlife population dynamics.

Students satisfactorily completing this course should be able to:

- 1) Thoroughly understand the theoretical foundations of wildlife population dynamics.
- 2) Understand the basic principles of estimating animal abundance and vital rates.
- 3) Construct and interpret mathematical models of population growth.
- 4) Construct and interpret models of wildlife vital rates.
- 5) Understand and interpret the results of conservation planning tools such as population viability analysis.

Textbook:

1. B.D. Leopold. Theory of Wildlife Population Ecology. Waveland

- Press. 2019. [UWSP library text rental]
2. L.A. Powell and G.A. Gale. Estimation of Parameters of Animal Populations: A primer for the rest of us. Caught Napping Publications. 2015. [PDF]

Other Course Materials: Lecture and lab recordings, copies of PowerPoints, lecture handouts, practice problems, lab materials, and supplemental reading materials will be posted to Canvas.

Exams: We will have three exams during the semester, two midterms and a final exam, each exam is worth 100 points, and the final exam is comprehensive (with a heavy focus on last third of the semester). Exams will be a combination of conceptual and applied content. I will provide all the equations you could possibly need. They are closed- book and closed-note, all you have access to is your glorious and wonderful mind. Illness or a family emergency may be cause for re-scheduling an exam, but only if you notify me at least 24 hours *prior to* the exam period.

In class assignments: I will give in-lecture assignments, unannounced, throughout the semester. As with the exams, these surprise assignments cannot be made up unless you notify me about missing class ahead of time.

Discussions: We will periodically have discussions during the semester about selected reading from peer-reviewed literature. Please keep up on the reading and come to class prepared for discussion.

Labs: Most weeks we will meet for lab to go over practical examples of the topics we discuss in lecture. In other words, we'll go over how we actually build some basic versions of the types of models we talk about in class. There will be six lab assignments throughout the semester, each worth 25 points (denoted in schedule with ***). You'll typically have one week to complete each lab assignment and some weeks I have scheduled time on your own in the computer lab to complete assignments. You are welcome to work on the labs with other people but you must turn in your own lab write-up. Your assignments will be docked five points for every day they are late.

Attendance: University policy dictates that I take attendance during the first eight days of the semester. I will also periodically use lecture assignments throughout the semester to take attendance. Performance on exams is enhanced by regular class attendance and there is a very direct correlation between attendance and final grades. Simply put, if you do not regularly attend lectures then you will do poorly in the class. Similarly, the quality of your educational experience in this course will be directly related to the amount of time you invest in classroom preparation and the extent to which you become involved in classroom discussions.

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.

Also, the SSC in TNR122 is staffed with great folks who are there to help!

COVID-19 and other precautions: We will follow university guidance (which includes CDC guidance) regarding COVID-19, monkeypox, and other health-related issues. Please reference the [UWSP's website related to COVID](#). The [CDC website](#) provides guidance on isolation and precautions related to COVID. As needed, we will announce policy changes that affect you in this class. It is expected that everyone will respect the needs and preferences of classmates and instructors.

Grading: The final class grade will be based on the percentage of total points earned, out of the total points possible.

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%

Tentative Lecture Schedule

This is a tentative schedule for lectures, labs, and exams. This may be changed at any time at my discretion (Another reason to attend lectures!).

DATE	LECTURE	LAB
<u>Section 1 - Course Introduction and Statistics</u>		
9/5	Course Introduction & History	Lab Introduction and R
9/7	Mathematical and Statistical Models	
9/12	Maximum Likelihood and AIC	Regression***
9/14	Relevance. Read: 1. <i>Zink</i> and 2. <i>McCullough</i>	
<u>Section 2 – Population Growth</u>		
9/19	Exponential Growth	Exponential Growth***
9/21	Matrix Models	
9/26	TBD	Open lab to finish assignment
9/28	Density Dependence	
10/3	Logistic Growth	Logistic Growth***
10/5	Lotka Volterra Models	
10/10	Review for exam #1	No Lab
10/12	Exam #1	
<u>Section 3 – Estimating “Abundance”</u>		
10/17	Population Indices	Distance Sampling (outside)***
10/19	Ratio Estimators	
10/24	Distance Sampling	Distance Sampling (inside)
10/26	Occupancy Modeling	
10/31	Intro to Capture-Mark-Recapture	Occupancy Models***
11/2	Closed Population Models	
11/7	TBD	Open lab to finish assignment
11/9	TBD	
11/14	Review for exam #2	Closed Captures
11/16	Exam #2 (Focus on abundance estimation and review stats and population growth)	
<u>Section 4 – Estimating Vital Rates</u>		
11/21	Open Population Models	No Lab
11/23	THANKSGIVING — No Class	
11/28	Band Recovery	Band Recovery***
11/30	Known-Fate	
12/5	Nest Survival	Nest Survival
12/7	Robust Design	
12/12	Population Viability Analysis	Matrix Models
12/14	Semester Review	
12/19	FINAL EXAM 2:45 PM-4:45 PM (Focus on vital rates and review everything else)	

*** lab assignment

University Policies (my interpretations)

Academic Dishonesty: All work you submit must be original and completed individually unless collaboration is explicitly allowed. Plagiarism, fabrication, cheating, helping others commit these acts, and any form of dishonesty compromise the educational process and devalue the achievements of all students so don't do it—aside from the fact that cheating is cause for dismissal from the university, you are just short-changing yourself when you stoop to that. You're better than that, and UWSP is better than that. If you wanted an “education” where your grades, rather than your learning, was the most important thing then you should have gone somewhere else.

Always acknowledge your sources, cite appropriately, and give credit where it's due. If instances of alleged academic dishonesty are identified, appropriate actions will be taken in accordance with UWSP policies ([UWSP Chapter 14](#)). These actions could include revising the assignment, receiving a lower grade or no credit for the assignment, receiving a lower grade for the entire course, or facing more serious academic consequences.

If you are unsure if something might be considered academic misconduct, you are struggling to understand the content or an assignment, or you have fallen behind for whatever reason, please contact me as soon as possible. By nurturing a community of support, honesty, and respect, we ensure that academic pursuits and your experiences at UW-Stevens Point are both meaningful and genuine.

Harassment: Be cool. Nobody likes a bully or a jerk. If I see any form of harassment, whether in my classroom or anywhere else on campus, I'll report it to the Dean of Students, I've got no patience for that kind of behavior. Everybody is different, and we all deserve to be treated with respect.

Recording: Lecture materials and recordings for WLDL353 are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. You are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

Semester Drop Dates: <https://www3.uwsp.edu/regrec/Pages/calendars.aspx>