

Biology of Wildlife Populations

Time & Location: Lecture MWF 0900-0950 HH 163
Lab F 10-12:30 or 1400-1630 HH 124

Prerequisites: NRES/BIOS 220 or permission of the instructor

Instructor: Dr. Drew Tyre, Associate Professor
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Office Hours: Monday 10-12pm or by appointment

Course Description

Principles of population dynamics as they relate to the management of wildlife populations including game and non-game fish and wildlife species. Development of age- or stage-structured population models and their use in evaluating management strategies for wildlife. Understanding sources of stochasticity in population dynamics and their consequences for management.

Welcome to Biology of Wildlife Populations! I am pleased to have you as a student this semester and look forward to helping you develop as a wildlife biologist. I want to share my teaching philosophy with you in hopes that you will be more successful by knowing what is important to me.

- Learning is an enduring change in behavior – thus you are responsible for your learning, because only you can change your behavior. My responsibility is to create an environment in which you can learn.
- Teamwork is essential to a professional wildlife biologist – therefore you will practice working in teams.
- Critical thinking is essential to successful decision making – therefore you will practice using critical thinking skills.

Textbook

Sinclair A.R.E. et al Wildlife Ecology, Conservation, and Management, 2nd Edition, Blackwell Publishing.

Recommended books (one copy each on reserve at CYT)

Biostatistical analysis / Jerrold H. Zar, N.J. : Prentice Hall, 1999 4th ed

Monitoring vertebrate populations / William L. Thompson, Gary C. White, Charles Gowan; Academic Press 1998

You will also need scientific calculator capable of calculating e^x and logarithms.

Course Objectives

Critical thinking skills practiced in each objective are given in parentheses. See the rubric for critical thinking skills under course documents on Blackboard.

By the end of this course, students should be able to:

- 1) Choose a management action from a set of alternatives using a relevant population model and explain why it is preferred (Analysis, Inference, Explanation)
- 2) Design a monitoring plan to support decision making (Analysis, Evaluation, Self Regulation)
- 3) Identify plausible population growth models given population data (Interpretation, Analysis, Evaluation)

This course provides:

- 1) an opportunity to discuss current issues and research in wildlife and fisheries management;
- 2) experience working in teams to solve reality-based problems using critical thinking;
- 3) each student with the knowledge base needed to effectively use or evaluate population models in wildlife management.
- 4) each student with the opportunity to manage a “wildlife” population.

Grading

Grades will be determined by scores in three major performance areas: **Individual Performance, Team Performance, and Team Contribution.**

Individual Performance (minimum 10%)	_____ %*
Online Quantitative Pretest (5%)	5%
Final Exam (50 – 95%)	_____ %*
6 Individual Readiness Assessment Tests (0-45%)	_____ %*
	100%
Team Performance (minimum 10%)	_____ %*
Population Management Reports	50%**
Stakeholder Critiques.....	20%
6 Team Readiness Assessment Tests	<u>30%</u>
	100%
Team Contribution (Evaluated by peers – minimum 10%)	_____ %*
Primary Team	80%
Stakeholder Team	20%

*The relative weight of the three main areas in the final grade will be determined by representatives of student work teams during the first class period. These representatives will also decide on the relative weight of the Readiness Assessment tests vs. the final exam **within** the individual performance area. Grade weights for the class will be set as follows:

- 1) Teams set preliminary weights in each area and select a member to meet with other team representatives.
- 2) Team representatives will meet in the center of the room and develop a **consensus** (i.e., each representative has to be in agreement) about the grade weights for the class as a whole.)

- 3) The only limitations are your grade weight decisions will be that:
- a) a minimum of 10% of the total grade must be assigned to each major performance area.
 - b) within the individual performance area, at least 50% of the grade must be based on the final exam.

** This is not divided evenly among the 5 population management reports. The first 2 are worth 5% each, the next 2 are 10% each, and the final report is worth 20%.

Exams

The online quantitative pretest is available under Blackboard, in the Content area of the course. The test is available until the end of the first week. It is open book, and you can make as many attempts as you like.

Readiness Assessment Tests (RATS) on reading assignments will take place at the beginning of each class with an assigned reading. The same RAT will be given to individuals and teams. RATS may consist of a mix of multiple-choice, fill in the blanks, numerical questions and short answer.

Scores on the iRATs are final. Scores for tRATS can be appealed *in writing* (hardcopy only) up to 1 week following the test. Appeals will be granted for clear, logical cases involving references to the textbook demonstrating that the question was ambiguous or the answer incorrect. I reserve the right to grant appeals for any other reason deemed acceptable. Appeals provide maximum points for the question involved, and only for the primary team writing the appeal.

Final Exam will be short answer; please provide your own scientific calculators (capable of calculating e^x and logarithms).

Team work

Each student is on two teams, a primary team and a stakeholder team. These teams are established by the instructor during the 1st week of class and will remain the same for the rest of the semester. Every member of a team will receive the same grade on team exams (tRATS) and projects (population management reports and stakeholder critiques).

Evaluating Team Contribution

Each individual will rate the helpfulness of all the **other** members of their teams during the final exam. Individual team contribution scores will be the average of the points they receive from the members of their team. Assuming arbitrarily that: (1) team contribution is worth 10 points, and (2) that there are six members in a team, this procedure means each individual must assign a total of 50 points to the *other* five members in their team. Raters must differentiate some in their ratings; at least one score must be 11 or greater, and one score must be 9 or lower. You can also be more extreme, and give one person 0 points and another 20 points. In a five member team, members would assign 40 points, in a 7 member team, members would assign 60 points, etc. As a result, Team Contribution scores will produce differences in grades only **within** teams. Consequently, team members can't help everyone in their team get an A by giving them a high peer evaluation score. The only way for everyone in the team to earn an A is by doing an outstanding job on the individual and team exams and projects.

Grading procedure

Numerical scores from each individual item (exam, iRAT, tRAT, management reports etc) will be summed, then multiplied by the relative weight **within** a performance area. The sum of the weighted scores within each area are then multiplied by the relative weight of the performance area (determined by student consensus), and the total number of points summed over the three performance areas. The final score will be a number between 0 and 100; A is > 90, B is >80 up to 90, C is > 65 up to 80, D is > 50 up to 65, and F is anything less than 50. I reserve the right to modify these cutoffs depending on the range of student performance in any particular year.

Fisheries and Wildlife majors, per requirements of their major, may not take this course as P/NP.

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

Course Schedule

Lecture Date	Lecture Topic Blank is either case work or team work as needed	Lab Topic	Readings / Assignments "*" means all sections
10-Jan	Intro to Course; Setup teams		
12	Critical Thinking		
14	Risk and uncertainty	Intro to Pop. Management Project Develop expectations for Teamwork;	Last day to complete online quantitative pretest
17-Jan	MLK HOLIDAY		
19	RAT #1 Abundance estimation and design		7.1, 7.3; SFC 13.*, SFC 15.1 and 15.5
21	Exercise #1 Monitoring duck abundance in the Sandhills	Estimating population size	
24-Jan			
26			
28	Case #1 Wrap up	Group Work	
31-Jan	RAT #2 Population growth and regulation		SFC 6.*, SFC 8.*,
2-Feb	Case #2 Everybody loves a pheasant		
4		Group work	1 st Management Report due 5pm
7-Feb	Population dynamics revue		
9	Case #2 wrap up		
11	Case #3 Terns and Plovers		Stakeholder Critiques due 5pm
14-Feb	Simple Tern and Plover Model Population dynamics revue		
16	Case #3 Wrap up		
18	RAT #3 Population harvesting and control	Harvest Models	SFC 19.*; SFC 20.*
21-Feb	Case #4 Feral Cats		
23			
25	Case #4 wrap up	Group work	2 nd Management Report due 5pm
28-Feb	Case #5 Marten Harvest in Oregon		
2-Mar	Dr. Tyre away		
4	Case #5 wrap up		Stakeholder Critiques due 5pm
7-Mar	RAT #4 Age Structure Models		SFC 14.*
9	Problem Case #6: Cormorant Control		
11	Uncertainty and Elasticity	Cormorant models	
14-Mar	Case #6 Resolution		
16	Case #7 Harvesting Peregrine Falcons		
18	Group work	Group work	3 rd Management Report
21-25	SPRING BREAK		
28-Mar	Case #7 wrap up		
30	RAT #5 Conservation		SFC 7.2 and 7.7; SFC 17.*; SFC 18.*; SFC 16.1-16.5

1-Apr	Case #8 Nest Marking MOUP	MOUP models	Stakeholder Critiques due 5pm
4-Apr	Case #8 wrap up		
6	Case #9 TBA conservation		
8		Group Work	4 th Management Report
11-Apr	Case #9 wrap up		
13	RAT #6 Multispecies Management		SFC 21.*, SFC 10.*
15	Case #10 White Perch control	Group Work	Stakeholder Critiques due 5pm
18-Apr			
20	Case #10 Wrap up		
22	Group work	Group work	
25-Apr	Case #11 Catalina Island Pigs		
27	Case #11 Wrap up		
29	Review Q & A	Group work	5 th Population Management report due 5pm

I reserve the right to modify the schedule as the semester progresses. No assignment will ever be due EARLIER than assigned here; I may postpone or cancel assignments or quizzes.