

# Conservation of Wildlife Populations – WILD 470

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**INSTRUCTOR:**

Dr. Angie Luis, Office: Forestry 207A, Email: [Angela.Luis@umontana.edu](mailto:Angela.Luis@umontana.edu)  
Office Hours: Mondays and Wednesdays 1-1:50 or by appointment

**TA:**

Forest Hayes, [forest.hayes@umontana.edu](mailto:forest.hayes@umontana.edu)  
Office Hours: To be determined

**REQUIRED READINGS:** (read before class each day; may have quizzes)

- Conservation of Wildlife Populations, 2<sup>nd</sup> edition, by L. Scott Mills
- Chapter assignments for each class shown in brackets
- Additional readings to be assigned

<b>CLASS MEETING TIMES:</b>	MWF	12:00-12:50	TBD	(Lecture)
	R	1:00-2:50	STONE 106&107	(Computer Lab)

**COURSE OBJECTIVES:** By the end of the course students should understand how we measure populations (abundance/density) and demographic rates (birth, death, immigration, emigration), what affects populations, and how we manage/conserves populations. Students will gain proficiency with quantitative methods in population ecology including various types of population models and several ways to estimate population processes.

**Tentative Schedule**

August	Mon	26	Course introduction and context
	Wed	28	The Big Picture & Reliable Knowledge [Ch. 1, 2]
	Thurs	29	<i>Lab 1: Intro to R</i>
	Fri	30	Study design and Hypothesis testing [Ch. 2]
September	Mon	2	<b>Labor Day – no class</b>
	Wed	4	Gaining Reliable Knowledge cont. [Ch. 2]
	Thurs	5	<i>Lab 2: Standard Error and Deviation</i>
	Fri	6	Likelihood & AIC [Ch. 2]

	Mon	9	Estimating abundance (mark-recapture) [Ch. 4]
	Wed	11	Capture Mark Recapture [Ch. 4]
	Thurs	12	<i>Lab 3: Population Estimation (Lincoln-Peterson)</i>
	Fri	13	CMR Survival [Ch. 4]
	Mon	16	Survival & Reproduction [Ch.4]
	Wed	18	Review for Exam
	Thurs	19	<i>Lab 4: Hypotheses &amp; Predictions</i>
	Fri	20	<b>EXAM I</b>
	Mon	23	Exponential Population Growth [Ch. 5]
	Wed	25	Variability in Growth [Ch. 5]
			<b>Annotated Bibliography Due</b>
	Thurs	26	<i>Lab 5: Exponential Growth</i>
	Fri	27	Age-Structured Population models [Ch. 6]
	Mon	30	Matrix population models 1 [Ch. 6]
	October	Wed 2	Matrix population models 2 [Ch. 6]
	Thurs	3	<i>Lab 6: Matrix Models I</i>
	Fri	4	Sensitivity Analysis [Ch. 6]
	Mon	7	Sensitivity Analysis & Variation [Ch. 6]
			<b>Hypotheses and Predictions for Research Proposal Due</b>
	Wed	9	Matrix Exercises
	Thurs	10	<i>Lab 7: Matrix Models II</i>
	Fri	11	Review for Exam
	Mon	14	<b>EXAM II</b>
	Wed	16	Density Dependence 1 [Ch. 7]
	Thurs	17	<i>Lab 8: Stochasticity</i>
	Fri	18	Density Dependence 2 [Ch. 7]
	Mon	21	Density Dependence & Predation [Ch. 7,8]
	Wed	23	Predation 1 [Ch. 8]
	Thurs	24	<i>Lab 9: Density Dependence</i>
	Fri	25	Predation 2 [Ch. 8]
			<b>Draft of Hypotheses &amp; Methods Sections</b>
	Mon	28	Disease
	Wed	30	Review for Exam
	Thurs	31	<i>Lab 10: Peer Review</i>
November	Fri	1	<b>EXAM III</b>

	Mon	4	Genetic variation & fitness [Ch. 9]
	Wed	6	Connectivity [Ch. 10]
	Thurs	7	<i>Lab 11: Writing Lab</i>
	Fri	8	Metapopulations & Ecological Traps [Ch. 10]
	Mon	11	<b>Veteran's Day – no class</b>
	Wed	13	Human perturbations on populations [Ch. 11]
			<b>Draft Research Proposal Due</b>
	Thurs	14	<i>Lab 12: Small Population Conservation</i>
	Fri	15	Overexploitation [Ch. 11]
	Mon	18	Harvest Management 1 [Ch. 14]
	Wed	20	Harvest Management 2 [Ch. 14]
	Thurs	21	<i>Lab 13: Harvest</i>
	Fri	22	Extinction Vortex [Ch. 12]
			<b>Proposal Reviews Due</b>
	Mon	25	Population Viability [Ch. 12]
	Wed	27	<b>Thanksgiving – no class</b>
	Thurs	28	<b>Thanksgiving – no class</b>
	Fri	29	<b>Thanksgiving – no class</b>
December	Mon	2	Focal species management [Ch. 13]
			<b>Final Research Proposal Due</b>
	Wed	4	Adaptive Management
	Thurs	5	<i>Final Exam Review</i>
	Fri	6	Wrap-Up

**FINAL EXAM Monday December 9, 2019 at 8:00-10:00am**

**GRADING:** Grades will be based on 3 mid-term exams, a final, lab exercises, and a written research proposal (with multiple parts). Late lab assignments will be penalized 10% for each day late.

	percentage		pts
Exams	50%	Exam 1	100
		Exam 2	100
		Exam 3	100
		Final	140
		subtotal	<b>440</b>
Labs	27.3%	12 labs @ 20 pts each	<b>240</b>
Proposal	22.7%	Annotated Bibliography	20
		Hypotheses/Predictions	20
		Draft Sections	30
		Full Draft	10
		Reviews	20
		Final Proposal	100
		subtotal	<b>200</b>
total points	100.0%		<b>880</b>

**RESEARCH PROPOSAL:** Each student is required to prepare a research proposal on a topic of their choice related to wildlife population ecology. The proposal should include an introduction to the topic, hypotheses and predictions, research methods, expected results, implications, and literature cited. The proposal must also include a budget. The length of the proposal including all sections is 8 pages, double-spaced with 12-point font (5-6 pages text + cover letter, references, and budget). The full proposal assignment will be broken down into a few sub-assignments, including an annotated bibliography (due Sep 25), Hypotheses and Predictions (as bullet points, due Oct 7), a draft of the Hypothesis Section and the Methods Section (due Oct 25), a full draft (due Nov 13), anonymous peer-reviews (due Nov 22), and the final proposal (due Dec 2). See above for grade break-down. See Moodle for documents with more details.

**When draft proposals are due Wednesday, November 13, bring 2 paper copies to class. Failure to turn in a draft proposal on time will result in failing the entire assignment.**

**UPPER DIVISION WRITING REQUIREMENTS:** WILD 470 in conjunction with two additional upper division writing courses meets the university upper division writing requirement. WILD 470 specifically meets the following outcomes:

- Identify and pursue more sophisticated questions for academic inquiry
- Find, evaluate, analyze, and synthesize information effectively from diverse sources
- Manage multiple perspectives as appropriate
- Recognize the purposes and needs of discipline-specific audiences and adopt the academic voice necessary for the chosen discipline
- Use multiple drafts, revision, and editing in conducting inquiry and preparing written work
- Follow the conventions of citation, documentation, and formal presentation appropriate to that discipline
- Develop competence in information technology and digital literacy

**PLAGARISM:** Plagiarism will not be tolerated and will result in failing the course.

**STUDENT CONDUCT CODE:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

**STUDENTS WITH DISABILITIES:** The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommason 154 or 406.243.2243. I will work with you and DSS to provide an appropriate modification.

**GRADING OPTION:** Please note, this class is offered for traditional letter grade only, it is not offered under the credit/no credit option.

**DROP DATES:** After registering and through the **first seven (7) instructional days of the semester**, students may use [Cyberbear](#) add courses or change sections and credits; through the **first fifteen (15) instructional days of the semester**, students may use [Cyberbear](#) to drop courses. Fees are reassessed on the sixteenth day of the term. Added courses and credits may result in additional fees. For courses dropped by the fifteenth instructional day, no fees are charged and courses are not recorded. (For deadlines and refund policy for withdrawal from all courses, see the Withdrawal sections of this catalog.)

An instructor may specify that drop/add is not allowed on the internet. A drop/add form is used to make changes in these courses, if approved by the instructor.

After adding a course, the credit/no credit grading option or auditor status may be elected on the internet or on a form available at the Registration Counter in Griz Central in the Lommasson Center. These options are not allowed for some courses as identified in the Class Schedule. Change of grading option to audit is not allowed after the 15 instructional day.

**Beginning the sixteenth (16) instructional day of the semester through the forty-fifth (45) instructional day**, students use paper forms to drop, add and make changes of section, grading option, or credit. The drop/add form must be signed by the instructor of the course and the student's advisor. The signed drop/add form must be returned to the Registration Counter (or the Registrar's Office at Missoula College) no later than the **forty-fifth** instructional day. A \$10.00 processing fee is charged for each drop/add form. Added courses and credits may result in additional fees. There are no refunds or reductions of fees for courses dropped and grades of W (withdrew) are recorded.

**Beginning the forty-sixth (46) instructional day of the semester through the last day of instruction before scheduled final examinations, students must petition to drop.** The petition form must be signed by the instructor of the course and the student's advisor and, the dean of the student's major. A \$10.00 processing fee is charged for each petition. There are no refunds or reductions of fees for courses dropped, and the instructor assigns a grade of WP (withdrew/passing) if the student's course work has been passing or a WF (withdrew/failing) if the course work has been failing. These grades do not affect grade averages but they are recorded on students' transcripts.

Documented justification is required for dropping courses by petition. Some examples of documented circumstances that may merit approval are: accident or illness, family emergency, or other circumstances beyond the student's control.

The opportunity to drop a course for the current term for such a course ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended).