

Biology 305 – General Ecology

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Office: CBB 302A (inside Biology Dept main office on 3rd floor of CBB)
Office Hours: Wed 12:00-1:00, Thur 9:00-10:00, or by appt (let me know if you'd rather meet via zoom)

Meeting Location and Time: CBB 101, Tue/Thur 12:30-1:45

Text: *Ecology: Evolution, Application, Integration* (Krohne) 2nd edition.
I do not assign reading from the textbook, though I might refer to it on occasion. Think of it as a useful reference guide. Other (required) reading material can be found on Canvas.

Course description: Ecology is an extremely broad scientific discipline; arguably the broadest in all of the life sciences. This course will provide students with a solid introduction to the science of ecology, with emphasis on 1) the interactions of organisms within and among populations of the same species, 2) the interactions among organisms of different species within communities, 3) the distributional patterns of living organisms on earth, and 4) the relevance of ecological theory to human health and happiness.

Course modality and covid-related policies: This course is taught entirely in-person and I expect you to be in class on time every time we meet. That said, I do understand the complex realities of the covid pandemic, and I'm willing to work with you if illness or a mandatory quarantine prevents you from attending class. If that's the case, timely communication is key, particularly if it means that you will miss a quiz or exam (more on those things below). Please contact me right away and let me know what your situation is. I will work with you to find a solution that works for both of us.

I have created zoom meetings to accompany our in-person meetings. Zoom links can be found on Canvas. I want to be clear that this is an in-person course and there is not an official "online" option. The zoom meetings are only there so that I can record my lectures, and so that students who must miss class for extraordinary reasons can attend virtually and/or watch the associated videos at a later date. They are not meant as a regular substitute for attending class in person.

Given the current rate of covid spread, [the UWSP Chancellor's Mask Mandate](#) is still in effect. With that in mind, you must wear a tight-fitting mask at all times while inside UWSP buildings, and the mask must be worn properly (i.e., over your nose, etc.). Students in violation of this policy will be asked to conform or leave the building.

Communication: In addition to our interactions on Canvas I will frequently use email as a means for sharing information. While taking this course I expect that you will check your email on a regular basis and respond accordingly in a timely manner. If you need to reach me, email is probably your best bet, though you are welcome to stop by or try calling my office as well (I will always be in my office during my regular office hours, but I am often there at other times as well).

Lectures: We will meet for lecture twice per week for 75 minutes. I will make my lecture slides available after (not before) a given lecture. However, I urge you to get yourself in the habit of taking notes while in class. Taking notes helps you stay actively engaged with the material as we're discussing it. Also, my slides do not contain all of the information we cover in this class. We will often spend quite a bit of time just talking through an idea together as a class, and I often write things on the board. You are responsible for everything we cover during our meetings, whether it appears on my slides, is part of a class discussion, or is written on the board.

Non-textbook reading assignments: I will ask that you complete a number of non-textbook reading assignments this semester. All of these materials can be found on Canvas. We'll discuss this material in class, and questions inspired by this material will probably appear on quizzes and/or exams.

Quizzes: A number (4-8) of short, unannounced (i.e., “pop”) quizzes will be given to you during lecture at various times throughout the semester. Quizzes are not meant to be particularly difficult. If you attend and participate in lecture and study your notes on a regular basis, you should find them to be relatively easy. Quizzes will always be administered promptly at the start of our meeting and collected after just a few minutes. Note that I will automatically drop your lowest quiz score so if you miss or perform badly on one quiz it will not impact your final grade.

Exams: This course includes three exams total: two midterms and a final. Because this is a relatively large class, exams will be entirely multiple-choice. Midterm exams will be given at the same time and place as our regular lecture (see schedule, below, for dates). The final exam occurs in the same place as our lecture on May 17th starting at 8:00 AM. Bring a #2 pencil and a simple calculator to all exams (absolutely no cell phones or other devices that can communicate with the outside world or store/display information). You will also need to know your student ID number (needed for the scantron). Midterm exams will focus on the subset of content leading up to a specific exam. In other words, the first exam will focus on content we cover from the first day of the semester up to the time of the first exam while the second exam will focus on content covered after the first exam up to the time of the second exam. In contrast, the final exam is cumulative and is worth a bit more than the midterms.

Attendance and participation policy: Although I do not formally take attendance during lecture you are expected to be there on time and to remain there until our meeting has concluded. You are also expected to be an active participant in our meetings (i.e., taking notes, asking questions, sharing opinions, etc.). Do not fool yourself into thinking that having access to my lecture slides, zoom recordings, etc. is a substitute for attending lecture; they are not. If you regularly miss class, I can virtually guarantee that your performance on exams will suffer. In addition, missing/being late to a lecture carries with it a finite chance of missing a quiz.

Extra credit: On occasion I might offer a small amount of extra credit (usually for attending relevant seminars held on campus or in the community, or for working through and turning in supplementary problem sets, etc.). If/when these opportunities occur, I will announce them in class and via email. Please note: I do not offer extra credit in response to student requests, and do not offer extra credit specifically to help a student improve their grade.

Grading: The total number of points possible in this course is 338-362, depending on how many quizzes I give and taking into account that I will drop the lowest quiz score. These points are distributed as follows:

Activity	# Points possible
Midterm exams (2)	100 each
Final exam	120
Quizzes (4-8)	6 each

Your final grade in this course will be based on the percentage of all possible points that you earn throughout the semester via a combination of quizzes and exams. To determine your final grade the following metric will be used:

≥ 94%	90-93%	87-89%	84-86%	80-83%	77-79%	74-76%	70-73%	67-69%	60-66%	≤ 59%
A	A-	B+	B	B-	C+	C	C-	D+	D	F

Make-up policy: Make-ups for missed exams and quizzes are given only in truly extraordinary situations. However, if you have a university-sanctioned event or an emergent medical situation, death in the family, etc., you can take a make-up. In order to qualify for a make-up, you must communicate with me and explain your situation as soon as possible (preferably at least a week before the missed event). I will then work with you to find a solution that works for both of us.

Students with disabilities: I will be happy to help you if you need special accommodations to succeed in this course. Please contact the Disability and Assistive Technology Center to complete the paperwork required to document your needs and then contact me so that appropriate arrangements can be made. More information can be found here: <http://www.uwsp.edu/disability/Pages/default.aspx>

Academic integrity: It is your responsibility to be aware of your rights and responsibilities as a UWSP student. In particular, you must work on all quizzes and exams on your own, without help or guidance from anyone or anything else. Students found in violation of this policy will, at a minimum, receive a zero for the associated quiz or exam and will be reported for academic misconduct to the Dean of Students. Repeat offenders will be reported and given a failing grade for the course. Please take the time to read this document and let me know of any questions: <https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf>

Lecture, supplemental readings, and exams schedule: What follows is a rough schedule of topics we will cover, associated non-textbook reading assignments, and dates for exams. I retain the right to revise this schedule, with due notice, as we move through the semester.

Date	Topic	Non-textbook reading
1/25	Course introduction	
1/27	The science of ecology	
2/1	Pattern and process in nature	Kunin 1997 (focus on section 1.1)
2/3	Adaptation and evolutionary ecology	
2/8	Adaptation and evolutionary ecology	Grant and Grant 2002
2/10	Species distributions and the ecological niche	
2/15	Species distributions and the ecological niche	Hutchinson 1957 (focus on first 3 paragraphs in the right column on page 416)
2/17	Introduction to population ecology	
2/22	Introduction to population ecology	Crisci and Stuessy 2020 Byers 2020
2/24	Population dynamics	
3/1	Population dynamics	
3/3	Population dynamics	
3/8	Population dynamics	
3/10	Midterm Exam I	
3/15	Life-history ecology	
3/17	Life-history ecology	Mace 2000
3/22	Spring Break	
3/24	Spring Break	
3/29	Behavioral ecology	
3/31	Behavioral ecology	Dawkins video Griffin and West 2003
4/5	Interspecific competition	
4/7	Interspecific competition	Connell 1961
4/12	Exploitative interactions	
4/14	Exploitative interactions	Hoy et al. 2019
4/19	Mutualism	
4/21	Mutualism	Wilkinson 1999
4/26	Commensalism/amensalism/neutralism	
4/28	Midterm Exam II	
5/3	Species diversity	
5/5	Species diversity	Paine 1966
5/10	Island biogeography	
5/12	Large-scale ecology	Botero et al. 2013
5/17	Final Exam (starts at 8:00 AM)	

From: Leopold, Aldo: *A Sand County Almanac, and Sketches Here and There*, 1948, Oxford Univ. Press, NY.

[...] Only the mountain has lived long enough to listen objectively to the howl of a wolf. Those unable to decipher the hidden meaning know nevertheless that it is there, for it is felt in all wolf country, and distinguishes that country from all other land. It tingles in the spine of all who hear wolves by night, or who scan their tracks by day. Even without sight or sound of wolf, it is implicit in a hundred small events: the midnight whinny of a pack horse, the rattle of rolling rocks, the bound of a fleeing deer, the way shadows lie under the spruces. Only the ineducable tyro can fail to sense the presence or absence of wolves, or the fact that mountains have a secret opinion about them.

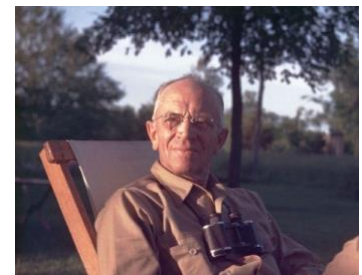
My own conviction on this score dates from the day I saw a wolf die. We were eating lunch on a high rimrock, at the foot of which a turbulent river elbowed its way. We saw what we thought was a doe fording the torrent, her breast awash in white water. When she climbed the bank toward us and shook out her tail, we realized our error: it was a wolf. A half-dozen others, evidently grown pups, sprang from the willows and all joined in a welcoming melee of wagging tails and playful maulings. What was literally a pile of wolves writhed and tumbled in the center of an open flat at the foot of our rimrock.

In those days we had never heard of passing up a chance to kill a wolf. In a second we were pumping lead into the pack, but with more excitement than accuracy; how to aim a steep downhill shot is always confusing. When our rifles were empty, the old wolf was down, and a pup was dragging a leg into impassable side-rocks.

We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes – something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

Since then I have lived to see state after state extirpate its wolves. I have watched the face of many a newly wolfless mountain, and seen the south-facing slopes wrinkle with a maze of new deer trails. I have seen every edible bush and seedling browsed, first to anaemic desuetude, and then to death. I have seen every edible tree defoliated to the height of a saddlehorn. Such a mountain looks as if someone had given God a new pruning shears, and forbidden Him all other exercise. In the end the starved bones of the hoped-for deer herd, dead of its own too-much, bleach with the bones of the dead sage, or molder under the high-lined junipers.

Aldo Leopold was born in Burlington, Iowa, on January 11, 1887. As a boy he developed a lively interest in field ornithology and natural history, and after schooling in Burlington, at Lawrenceville Prep in New Jersey, and the Sheffield Scientific School at Yale, he enrolled in the Yale forestry school, the first graduate school of forestry in the United States. Graduating with a masters in 1909, he joined the U.S. Forest Service, by 1912 was supervisor of the million-acre Carson National Forest, and in 1924 accepted the position of Associate Director of the U.S. Forest Products Laboratory in Madison, Wisconsin, the principal research institution of the Forest Service at that time. In 1933 he was appointed to the newly created chair in Game Management at the University of Wisconsin, a position he held until his death.



Leopold was throughout his life at the forefront of the conservation movement – indeed, he is widely acknowledged as the father of wildlife conservation in America. Though perhaps best known for *A Sand County Almanac*, he was also an internationally respected scientist, authored the classic text *Game Management*, which is still in use today, wrote over 350 articles, most on scientific and policy matters, and was an advisor on conservation to the United Nations. He died of a heart attack on April 21, 1948 while helping his neighbors fight a grass fire. He has subsequently been named to the National Wildlife Federation's Conservation Hall of Fame, and in 1978, the John Burroughs Memorial Association awarded him the John Burroughs Medal for his lifework and, in particular, for *A Sand County Almanac*.