

Introduction to Ecology Research at UW-Madison

(Agr/AtmOc/Bot/Ent/EnSt/FWE/Geo/Zoo 953)

Fall Semester 2020

Instructor: Prof. Monica G. Turner, Department of Integrative Biology (turnermg@wisc.edu)
Credits: 1 credit
Time & place: Wednesdays, 9:30 – 10:45 am, 228 Educational Sciences
Requisites: Graduate student status, aimed at new graduate students
Instruction mode: Face-to-face though 11/18/2020, then online
Canvas link: <https://canvas.wisc.edu/courses/219814>

COURSE DESCRIPTION: Designed for new graduate students in ecology, primarily 1st or 2nd year students working toward an ecology-focused PhD in any department, this seminar complements the professional development seminar designed for mid-stage (e.g., third and fourth year) ecology graduate students and taught by Tony Ives. Goals for this seminar are (1) to introduce students to the rich history and tradition of ecology at UW-Madison; (2) to familiarize students with the depth, breadth, diversity, and strength of expertise among current faculty; and (3) to develop skills needed for success in a PhD program, emphasizing skills that are important during the early years of graduate school. Varied format will include faculty presentations, graduate student panels, discussion of assigned readings, and in-class activities.

COURSE LEARNING OUTCOMES: Early career graduate students in ecological fields of study will:

- Appreciate the foundations and legacy of ecology research, conservation science at UW-Madison
- Meet faculty and graduate students and gain knowledge of the diversity and strength of current research in ecology
- Compare and contrast expectations in undergraduate education to those of graduate school and research
- Develop appropriate expectations for advisors and advisees
- Solve hypothetical scenarios based on professional codes of ethics
- Actively promote diversity, equity, and inclusion of all at UW-Madison
- Identify common challenges faced by most (all?) graduate students
- Grasp the suite of skills associated with success in graduate school and in science
- Develop a sense of community amongst graduate students and in Wisconsin Ecology

OFFICE HOURS: Office hours will be virtual and by appointment. Please email me to schedule a time.

HOW ARE CREDIT HOURS MET BY THE COURSE? Learning will take place in at least 45 hours of learning activities, including time spent in class meetings, both in person or online; tutorials; reading; writing; preparing for class; and any other activities as described in the syllabus or assigned during the semester.

Important information about classes during COVID-19

UW-Madison [Badger Pledge](#)

UW-Madison [Face Covering Guidelines](#)

While on campus all employees and students are required to [wear appropriate and properly fitting](#) face coverings while present in any campus building unless working alone in a laboratory or office space.

Face Coverings During In-person Instruction Statement (COVID-19)

Individuals are expected to wear a face covering while inside any university building. Face coverings must be [worn correctly](#) (i.e., covering both your mouth and nose) in the building if you are attending class in person. If any student is unable to wear a face-covering, an accommodation may be provided due to disability, medical condition, or other legitimate reason.

Students with disabilities or medical conditions who are unable to wear a face covering should contact the [McBurney Disability Resource Center](#) or their Access Consultant if they are already affiliated. Students

requesting an accommodation unrelated to disability or medical condition, should contact the Dean of Students Office.

Students who choose not to wear a face covering may not attend in-person classes, unless they are approved for an accommodation or exemption. All other students not wearing a face covering will be asked to put one on or leave the classroom. Students who refuse to wear face coverings appropriately or adhere to other stated requirements will be reported to the [Office of Student Conduct and Community Standards](#) and will not be allowed to return to the classroom until they agree to comply with the face covering policy. An instructor may cancel or suspend a course in-person meeting if a person is in the classroom without an approved face covering in position over their nose and mouth and refuses to immediately comply.

In-person instructional requirements

- **Practice physical distancing** (staying at least six feet apart from others), in both indoor and outdoor spaces, including when entering and exiting building and instructional spaces
- Monitor symptoms using the [COVID-19 Symptom Tracker](#) daily and, if symptoms exist, stay home and immediately get tested. Free testing is available to the entire campus community including students. Find more [information on testing](#) including on-campus testing locations, getting test results and what to do if you test positive for COVID-19.
- **Follow specific guidance on classroom seating and furniture use.** “Sit Here Signs” will be placed in classrooms to indicate where students should sit, as well as floor decals to indicate where furniture should be placed and remain.
- Limit the sharing of materials (papers, books, writing utensils, etc.) with others in class. Any materials brought to class must be taken with you when leaving the classroom
- **Food and beverages are not allowed in instructional spaces.**
- Carefully observe and follow health and safety signs posted inside and outside the classroom
- Course start and stop times are not staggered. At their discretion, instructors may start or end class a few minutes off schedule to avoid congestion in the halls.

Additionally, students should:

- **Clean desks and seats before and after class with the provided classroom supplies and wipe off hands with disinfectant wipes.** The provided cleaning supplies will be safe for skin contact; gloves are not needed.
- Exit the classroom as quickly as possible to allow the next section to transition in safely
- Be aware of and sensitive to others around you, particularly those who may be struggling or having difficulties

Quarantine or Isolation Due to COVID-19

Student should continually monitor themselves for COVID-19 [symptoms](#) and get [tested](#) for the virus if they have symptoms or have been in close contact with someone with COVID-19. Student should reach out to instructors as soon as possible if they become ill or need to isolate or quarantine, in order to make alternate plans for how to proceed with the course. Students are strongly encouraged to communicate with their instructor concerning their illness and the anticipated extent of their absence from the course (either in-person or remote). The instructor will work with the student to provide alternative ways to complete the course work.

READING ASSIGNMENTS AND ONLINE DISCUSSION BOARD

Readings are a mixture of scientific papers and articles and essays related to professional development. PDFs or links for reading assignments will be posted in Canvas. ***Everyone is expected to have read the assignments before class and be prepared to discuss the papers. Posting comments regarding the readings or topic to the online discussion board in Canvas by 5:00 pm on the Tuesday evenings before class will be required;*** weekly instructions will be provided.

Course Details

CLASS PARTICIPATION

Graduate seminars are best when all participants are engaged with the material. Discussions are only effective when everyone is prepared and has perspectives to contribute. ***Everyone is expected to have read the assigned articles before class and given thought to the content and context, and be***

prepared with questions about the topic or for the speaker. The class benefits from the diverse interests and backgrounds of the students, and we learn a lot by listening to one another.

ASSIGNMENTS

All assignments will be submitted online via Canvas.

ABSENCE POLICY

Attendance expected and is recorded at each class meeting. If you have an *anticipated* absence, please let me know before the class that you will miss. If you are *unexpectedly* absent (e.g., illness), please inform me by email at your earliest convenience.

For classes that are missed, students are responsible for the material that was covered in class and must complete the readings. Assuming video capture works successfully, students who were absent should watch the class presentation. **Reactions to the assigned readings should generally be submitted within one week after the missed class, but this is flexible for any classes missed to illness. Please communicate with me about timing.** The summary should include a brief statement of what was covered in the readings, but what I really want are your thoughts and reactions, any insights that were new for you, and questions that arise in your mind.

DIVERSITY & INCLUSION STATEMENT

Diversity is a source of strength, creativity, and innovation for UW-Madison. In this course and across the campus, we value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

GRADING

Grades will be based on class participation, including online discussions or commentary (33%), in-class engagement in discussions or Q&A sessions (33%), and short writing assignments (33%). Numerical grades are assigned as follows: 93-100 (A), 88-92 (AB), 82-87 (B), 78-81 (BC). Attendance is required, and attendance having read the assignments and being prepared to discuss is expected.

COURSE EVALUATIONS

Students will be provided with an opportunity to evaluate this graduate seminar and your learning experience. There will be two: (1) the university's general course evaluation, used by the university to assess courses and posted online; (2) a anonymous but course-specific set of questions from me, which will be used to enhance the class for the next cohort of students.

PRIVACY OF STUDENT RECORDS and the USAGE OF RECORDED LECTURES

Because of the unusual circumstances we face due to COVID-19, ***I plan to record our classes so that students who are unable to attend class can watch the presentations and hear the discussions. It is critical that we all respect the privacy of all students, faculty, and guests by following the guidelines listed below.*** See information about [privacy of student records and the usage of audio-recorded lectures](#).

Usage of Audio Recorded Lectures Statement. Lecture materials and recordings for ***Introduction to Ecology Research at UW-Madison*** are protected intellectual property at UW Madison. 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. If a lecture is not already recorded, 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 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.

Additional Information and UW-Madison Policies

STUDENTS' RULES, [RIGHTS & RESPONSIBILITIES](#)

During the global COVID-10 pandemic, we must prioritize our collective health and safety to keep ourselves, our campus, and our community safe. As a university community, we must work together to prevent the spread of the virus and to promote the collective health and welfare of our campus and surrounding community.

ACADEMIC CALENDAR & RELIGIOUS OBSERVANCES

See: <https://secfac.wisc.edu/academic-calendar/#religious-observances>

ACADEMIC INTEGRITY STATEMENT

By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES STATEMENT

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: [McBurney Disability Resource Center](#))

SYLLABUS

Class	Date	Topic	Leader & Readings
1	Sept 2	Welcome to ecology at UW-Madison	Turner Overview of course, intros, etc.
2	Sept 9	Evolution of Wisconsin Ecology and history of aquatic ecology at Wisconsin	Dr. John Magnuson , Professor Emeritus (iBio), Director Emeritus, Center for Limnology <i>Magnuson (2002)</i>
3	Sept 16	Ecosystems, landscapes and the history of Wisconsin conservation science	Dr. Curt Meine , Senior Fellow, Aldo Leopold Foundation <i>Meine (2008)</i> <i>Meine (in press)</i>
4	Sept 23	My unusual academic path to agroecology and addressing agriculture's grand challenges	Dr. Chris Kucharik , Professor, Agronomy <i>Tomich et al. (2011)</i>
5	Sept 30	On becoming a scientist (e.g., generating new knowledge, learning from your system, collaboration, diversity in science, importance of questions, etc.)	Turner <i>Wilson (2013) Ch. 6</i> <i>Hansen et al. (2018)</i> <i>Dutt (2020)</i> <i>Kimmerer (2013), Three Sisters</i>
6	Oct 7	Finding your research niche and how bark beetle ecology made chemistry cool again	Dr. Amy Trowbridge , Assistant Professor, Entomology <i>Huang et al. 2020</i>
7	Oct 14	Effective advisor-advisee relationships (e.g., advising vs. mentoring, roles and responsibilities of mentors and mentees, relationship building, trust, advising styles, lab cultures, value of IDPs, etc.)	Turner , Current Grad Students: Tyler Hoecker (iBio) Stephanie McFarlane (iBio) <i>Christopher (2011) Ch. 3 & 4</i> <i>Allis (2017)</i> <i>NextGen Voices (2018)</i>
8	Oct 21	Finding your path toward a career in ecology	Dr. Dan Preston , Assistant Professor, Forest & Wildlife Ecol. <i>Preston et al. (2016)</i> <i>Klein (2016)</i>
9	Oct 28	Skills for success (e.g., time management, balancing demands, teaching, accountability, long-term goals, working remotely, giving/receiving constructive feedback, etc.)	Turner , Current Grad Students: Nathan Kiel (iBio) Patricia Tran (FMS) <i>Gray and Drew (2012) Ch. 1, 2 & 5</i> <i>Christopher (2011) Ch. 5</i>
10	Nov 4	Using a long-term experiment to evaluate the impacts of connectivity on plant community diversity	Dr. Ellen Damschen , Professor (iBio) <i>Damschen et al. (2005)</i> <i>Damschen et al. (2019)</i>
11	Nov 11	Scientific ethics (e.g., research ethics, academic integrity, professional courtesy & equity, honesty, addressing bias, duty to report, etc.)	Turner <i>ESA, AGU, WEF Codes of Ethics</i>
12	Nov 18	Effective communication (e.g., internal and external, scientists as professional writers, honing SciComm during grad school, etc.)	Turner <i>Christopher (2011) Ch. 8</i> <i>Schimmel (2012) Ch. 1-3</i> <i>Baron (2010) Ch. 1-2</i>
--	Nov 25	No class	Happy Thanksgiving!
13	Dec 2	History and prognosis for the snowshoe hare in Wisconsin	Dr. Jon Pauli , Associate Professor, Forest & Wildlife Ecology <i>Wilson et al. (2019)</i>

14	Dec 9	Riding the roller coaster – the fun and the fear (e.g., maintaining health and wellbeing, countering perfectionism, fear of failure, importance of resilience, time management)	Turner , Current Grad Students: Kristin Braziunas (iBio) Neil Gilbert (FWE) <i>Schwarz (2008)</i> <i>DePauw (2016)</i> <i>Powell (2017)</i> <i>Wilson (2013), Ch. 19</i>
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READINGS

Recommended (specific chapters assigned, but there's more good content! Links are also in Canvas)

Gray, P. and D. E. Drew. 2012. What they didn't teach you in graduate school: 299 helpful hints for success in your academic career. Stylus Publishing LLC, Sterling, Virginia.

<https://search.library.wisc.edu/catalog/9912862652902121>

Christopher, S. A. 2011. Navigating graduate school and beyond. A career guide for graduate students and a must read for every advisor. American Geophysical Union, Washington, DC.

<https://search.library.wisc.edu/catalog/9910120827802121>

(1) September 2 – Welcome to ecology at UW-Madison

Background – who is your instructor anyway?

Zagorski, N. 2007. Profile of Monica G. Turner. Proceedings of the National Academy of Science 104:4779-4791.

(2) September 9 - Evolution of Wisconsin Ecology and history of aquatic ecology at Wisconsin

Magnuson, J. J. 2002. Three generations of limnology at the University of Wisconsin-Madison. Verh. Internat. Verein. Limnol. 28:856-860

(3) September 16 - Ecosystems, landscapes and the history of Wisconsin conservation science

Meine, C. In press. The crucible of conservation: Land, science, community, and the Wisconsin Idea. (Book chapter manuscript).

Mein, C. 2008. The view from Man Mound. Pp. 17-20 In: D. M. Waller and T. P. Rooney, editors. The vanishing present. Wisconsin's changing lands, waters and wildlife. University of Chicago Press.

(4) September 23 - My unusual academic path to agroecology and addressing agriculture's grand challenges

Tomich, T. P., S. Brodt, H. Ferris, R. Galt, W. R. Horwath, E. Kebreab, J. H. J. Leveau, D. Liptzin, M. Lubell, P. Merel, R. Michelmore, T. Rosenstock, K. Scow, J. Six, N. Williams, and L. Yang. 2011. Agroecology: A review from a global-change perspective. Annual Review of Environment and Resources 36:193-222.

(5) September 30 – On Becoming a Scientist

Dutt, K. 2020. Race and racism in the geosciences. Nature Geoscience 12:2-3.

Hansen, W. D., J. Scholl, A. E. Sorensen, K. E. Fisher, J. A. Klassen, L. Calle, G. S. Kandlikar, N. Kortessis, D. C. Kucera, D. E. Marias, D. L. Narango, K. O'Keeffe, W. Recart, E. Ridolfi, and M. E. Shea. 2018. How do we ensure the future of our discipline is vibrant? Student reflections on careers and culture of ecology. Ecosphere 9(2), e02099.

Kimmerer, R. W. 2013. The three sisters. From her best-selling book, Braiding Sweetgrass.

Wilson, E. O. 2013. What it takes (Chapter 6). In: Letters to a Young Scientist. Liveright Publishing Corporation, NY.

Recommended re: women in science/ecology:

Wasserman, E. 2000. The door in the dream. Conversations with eminent women in science. Joseph Henry Press (imprint of the National Academy Press), Washington, DC.

Langenheim, J. H. 2010. The odyssey of a woman field scientist. Xlibris Corporation.

(6) October 7 – Finding your research niche and how bark beetle ecology made chemistry cool again

Huang, J., M. Kautz, A.M. Trowbridge, A. Hammerbacher, K.F. Raffa, H.D. Adams, D.W. Goodsman, C. Xu, A.J.H. Meddens, D. Kandasamy, J. Gershenson, R. Seidl, H. Hartmann. 2020. Tree defence

and bark beetles in a drying world: carbon partitioning, function and modelling. *New Phytologist* 225: 26-36.

(7) October 14 - Effective advisor-advisee relationships

Allis, C. D. 2017. On being an advisor to today's junior scientists. *PNAS* 114:5321-5323.

Christopher, S.A. 2011. Your advisor and you (Ch. 3) and Skills (Ch. 4) In: *Navigating graduate school and beyond*. AGU Press.

NextGen Voices: Quality mentoring. 2018. *Science* 362:22-24. (collection of short letters from young scientists about mentoring that mattered to them).

Excellent reference/background:

National Academies of Sciences, Engineering, and Medicine. 2019. *The science of effective mentorship in STEM*. The National Academies Press, Washington, DC.

(8) October 21 – Finding your path toward a career in ecology

Preston, D. L., J. A. Mischler, A. R. Townsend, and P. T. J. Johnson. 2016. Disease ecology meets ecosystem science. *Ecosystems*

Klein, J. 2016. In Narcisse, Around 75,000 snakes are waking up from a nap. *New York Times*, May 6, 2016.

(9) October 28 - Skills for success

Gray, P. and D. E. Drew. 2012. Basic concepts (Ch1), and The PhD (Ch 2). In: *What they didn't teach you in graduate school: 299 helpful hints for success in your academic career*. Stylus Publishing LLC, Sterling, Virginia.

Christopher, S.A. 2011. Organize (Ch. 5). In: *Navigating graduate school and beyond*. American Geophysical Union, Washington, DC.

(10) November 4 - Using a long-term experiment to evaluate the impacts of connectivity on plant community diversity

Damschen, E. I., K. M. Rosenfeld, M. Wyer, D. Murphy-Medley, T. R. Wentworth, and N. M. Haddad. 2005. Visibility matters: increasing knowledge of women's contributions to ecology. *Frontiers in Ecology and the Environment* 3:212-219.

Damschen, E. I., L. A. Brudvig, M. A. Burt, R. J. Fletcher, Jr., N. M. Haddad, D. J. Levey, John L. Orrock, J. Resasco, and J. J. Tewksbury. 2019. Ongoing accumulation of plant diversity through habitat connectivity in an 18-year experiment. *Science* 365:1478-1480.

(11) November 11 – Scientific ethics

Ecological Society of America. 2020. Code of ethics. Available online and as PDF.

American Geophysical Union. 2017. AGU Scientific integrity and professional ethics. Available online and as a PDF.

World Economic Forum. 2018. Young scientists code of ethics. Available online and as a PDF.

(12) November 18 – Effective communication

Christopher, S.A. 2011. Communicating (Ch. 8). In: *Navigating graduate school and beyond*. American Geophysical Union, Washington, DC.

Schimmel, J. P. 2012. Chapters 1 to 3 In: *Writing science. How to write papers that get cited and proposals that get funded*. Oxford University Press, New York, NY. (*This is a terrific resource, I recommend you keep it and read the rest this year. My own copy stays handy!*)

Baron, N.. 2010. Chapters 1 and 2 In: *Escape from the ivory tower: a guide to making your science matter*. Island Press, Washington DC.

<https://search.library.wisc.edu/catalog/9911070642202121>

(13) December 2 – History and prognosis for the snowshoe hare in Wisconsin

Wilson, E.C., A. A. Shipley, B. Zuckerman, M. Z. Peery, J. N Pauli. 2019. An experimental translocation identifies habitat features that buffer camouflage mismatch in snowshoe hares. *Conservation Letters* 12:312614.

(14) December 9 - Riding the roller coaster – the fun and the fear

Schwartz, M. A. 2008. The importance of stupidity in scientific research. *Journal of Cell Science* x:1771.

Wilson, E. O. 2013. Theory in the real world (Chapter 19). In: *Letters to a Young Scientist*. Liveright Publishing Corporation, NY.

Powell, K. 2017. Break or burnout. *Nature* 545:375-377. (+ bonus short feature on mentors!).

DePauw, K. P. 2016. Tips for thriving in graduate school.

<https://graduateschool.vt.edu/about/deanscorner/tips-for-thriving.html>