

EAS 507: Interpreting Research in Ecosystem Science and Management (2 Credit Hours)

Instructor- Dr. Karen Alofs (she/her)

kmalofs@umich.edu, Office Hours (Dana G128): Tuesday 10 – 11 am, Wednesday 11 am -12 pm

GSI- Analise Sala (she/her)

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(<https://umich.zoom.us/j/95317639432>)

Course Description

This course serves as a core course for Masters students in the Ecosystem Science and Management field of study. The course builds broad knowledge on a range of current topics in ecology, earth sciences and conservation. Topics range from citizen science to data integration, from forests to fishes, from genetics to populations, communities and ecosystems. Students will have the opportunity to interact with top scientists in their field and evaluate research at the frontiers of conservation ecology. Students in this course will examine how science is communicated in the literature and in public seminars. The course explores how research is shared, collaborations are developed and how the cross-pollination of ideas between labs, universities and practitioners improves conservation. This course will prepare students to assess the state of knowledge on applied topics, to identify gaps and evaluate recent developments and to translate science to audiences. These practices are continually refined in both academic and non-academic careers in our field.

Course Objectives

1. Evaluate the current state of knowledge on a broad range of topics within ecology and conservation.
2. Compare research approaches including theoretical and empirical investigations and varied study designs and analytical approaches.
3. Develop approaches for evaluating and sharing scientific methods and findings through written and oral communication.
4. Assess methods for interacting with research within and across disciplines, for both academia and practice.
5. Engage with a research community, developing networks and collaborations, integrating perspectives, and developing future research directions.

Core Competencies

- Acquiring disciplinary knowledge (conservation ecology, earth sciences, emerging research)
- Understanding historical antecedents of current & future situations (recognizing foundations and evolution of topical knowledge)
- Asking relevant questions & defining problems (e.g., research design, scoping)
- Evaluating scientific, policy, & other arguments/literature based on evidence and validity
- Communicating and translating (e.g., written, verbal, visual, useable science)

COVID-19 and EAS 507

The COVID-19 Pandemic has presented us with strange circumstances and some difficult challenges. We will try to address these in EAS 507 with a combination of flexibility and compassion. We have adjusted course assignments and grading so that you can be successful can choose the assignments which best fit your circumstances.

If you are finding it difficult to complete assignments or meet deadlines, please reach out to your instructors (before assignment deadlines). We will do our best to make appropriate accommodations. We have created an anonymous feedback form in Canvas and encourage you to submit questions or concerns through this form if you would rather not communicate directly.

We plan to meet in person as possible because in-person knowledge exchange enriches learning. However, *if you're sick, have been exposed to covid, or are uncomfortable being exposed to the classroom we are providing a virtual alternative.* The course includes seminars by invited researchers who are at the cutting-edge of their fields. Some of the seminar speakers will join us virtually. Virtual seminars allow us to reduce our carbon footprint while inviting speakers from around the globe. There is an extended Q & A period after each seminar which allows you to interact with these researchers.

Meeting times

Class Section – Friday 2:30-4:30pm

Conversation with Seminar Speaker (once per semester)- Friday 12-1pm

Course Schedule

Date	Topic	Speaker
COURSE INTRO		
Friday, Jan 7 th	Introduction and Course Logistics <i>Sign up for conversation period dates</i>	
BIODIVERSITY		
Friday, Jan 14 th	SEAS Faculty Lightning Talks	
SKILLS WORKSHOP		
Friday, Jan 21 st	Literature Assessment, Writing, and Presentations	Karen
WILDLIFE STRESSORS		
Friday, Jan 28 th	Seminar: Effects of Lake Erie harmful algal blooms on wildlife health Reading: Refsnider et al. (2021) Effects of harmful algal blooms on stress levels and immune functioning in wetland-associated songbirds and reptiles. <i>Science of the Total Environment</i> . 147790	Jeanine Refsnider, University of Toledo
TERRESTRIAL LANDSCAPES		
Friday, Feb 4 th	Virtual Seminar: Linking ecosystem and geomorphic processes to understand the large-scale dynamics of tropical mountains mediated by landsliding Reading: Sutton and Restrepo (2013) Natural hazards, diverse economy and livelihoods in the Sierra de las Minas, Guatemala. <i>Journal of Latin American Geography</i> 12 (3) <u>OR</u> Ramos Scharron et al. (2012) The transfer of modern organic carbon by landslide activity in tropical montane	Carla Restrepo, University of Puerto Rico- Rio Piedras

	systems. <i>Journal of Geophysical Research</i> 117. <i>OR</i> Restrepo et al. (2009) Landsliding and its multiscale influence on mountainscapes. <i>Bioscience</i> 59: 685-698.	
WATER QUALITY		
Friday, Feb 11 th	Virtual Seminar: Connecting Watershed Modeling and Management Decisions Reading: Maguire et al. (in review) Spatially referenced Bayesian state-space model of total phosphorus in western Lake Erie	Tim Maguire, UM-CIGLR Postdoctoral Fellow
ENDANGERED SPECIES		
Friday, Feb 18 th	Seminar: Endangered Species Act decision-making: where science meets policy Reading: Smith DR et al. (2018) Development of a species status assessment process for decisions under the U.S. Endangered Species Act. <i>Journal of Fish and Wildlife Management</i> . 9:302-320.	Bridget Fahey, Division Chief for Conservation and Classification, US Fish and Wildlife Service
COURSE CHECK-IN		
Friday, Feb 25 th	No Seminar Drop-in discussion	Karen and Analise
TERRESTRIAL RESTORATION		
Friday, Mar 11 th	Seminar: Restoration and Conservation to Combat the Biodiversity Crisis Reading: Guiden et al. (2020) Effects of management outweigh effects of plant diversity on restored animal communities in tallgrass prairies. <i>PNAS</i> 118:1-8	Holly Jones, Northern Illinois University
FRESHWATER RESTORATION		
Friday, Mar 18 th	Seminar: Pluralistic approaches advance farming and freshwater sustainability research and practice in the Great Lakes basin Reading: Jacobs et al. (2021) Weaving Indigenous and Western Science Knowledges Through a Land-Based Field Course at Bkejwanong Territory (Laurentian Great Lakes) <i>Case Studies in the Environment</i> 2021:1-11. <i>OR</i> Febria et al. (2020) Partnerships Generate Co-Benefits in Agricultural Stream Restoration (Canterbury, New Zealand) <i>Case Studies in the Environment</i> 2020:1-11.	Catherine Febria, University of Windsor
PANEL WITH PRACTITIONERS		
Friday, Mar 25 th	Panel on research applications in practice	Submit questions by March 18th
CONSERVATION GENETICS		
Friday, Apr 1 st	Seminar: Using genomics to inform the conservation and restoration of native prey fishes in the Great Lakes Reading: TBD	Amanda Ackiss, USGS- Great Lakes Science Center
CLIMATE CHANGE		
Friday, Apr 8 th	Seminar: Lags and legacies: Temporal features of climatic influences on tree growth Reading: Ogle K & Barber J (2016) Plant and Ecosystem Memory. <i>CHANCE</i> 29:2 <i>OR</i> Peltier DMP & Ogle K (2019) Legacies of more frequent drought in ponderosa pine	Kiona Ogle, Northern Arizona University

	across the western United States. <i>Global Change Biology</i> 25: 3803-3816.	
COURSE WRAP-UP		
Friday, Apr 15 th	No Class SEAS Capstone Presentations	

Grading

Grading will be '*gameful*' in that there are multiple paths to achievement. Gameful approaches allow students increased control over their own learning enabling them to develop mastery. In this approach there is some amount of assignment choice, as well as an additive point system in which students build their grade up from zero. That is, your final grade is a sum of all your assignment grades rather than an average of those grades. The course will be most rewarding if you start by assessing what skills you would like to refine and continue to reflect on your learning and progress throughout the semester. Engagement with weekly seminars is a core part of the course. Thus, *seminar insights are required and contribute 40 points of your overall possible grade, the remainder of assignments are your choice. But you are limited to submitting a combination of assignments worth 110 points maximum.* Be considerate of yourself and your instructors and try to make regular progress on assignments throughout the semester rather than waiting until mid-April.

Course Objectives	Due Date- <i>all assignments are due by 11:59 on due date</i>	Activity	Points	Total Points Available
1, 2	Tuesday following seminar	Seminar Insights (Core - Required)	5	40
1, 5	<i>Synchronous activity</i>	Seminar Attendance & Participation	1	10
5	Thursday, Jan 13th	Profile Video	5	5
1, 2, 4	Thursday, Jan 13th	Initial Literature Assessment	10	10
1, 2, 3	Within 2 weeks of seminar, First by Feb 25 th , Second by April 15 th	Topic Essay	15	30
1, 2, 3	Within 2 weeks of seminar, First by Feb 25 th , Second by April 15 th	Topic Presentation (Video)	15	30
3	By April 1 st	Revision of Essay or Presentation (earn missing points from 1 st submission up to 10 points)	--	--
5	<i>Synchronous activity</i>	Conversation Period Participation	10	10
1, 5	By April 1 st	Nomination of a speaker	10	10
4, 5	<i>Submit by March 18th</i>	Questions for Practitioners	5	5
3, 4	Within a week of event, before April 8 th	Perspective on Outside Seminar/Webinar	10	10
		Total Points Available		160
		Maximum value of submissions		110

Grade Assignment: 93 and above A, 90-92 A-, 87-89 B+, 83-86 B, 80-82 B-, 77-79 C+, 73-76 C, 70-74 C-, 67-69 D+, 63-66 D, 60-62 D-, below 60 pts F

There are many different *strategies* (combinations of assignments) to earn a grade in the 'A' range. Choose what works best for you based on your desire or availability for synchronous participation or the skills you would like to master. For example:

Interaction-heavy strategy: Write Seminar Insights (40 pts) + attend all live seminars and ask questions (10 pts) + Profile Video (5 pts) + Conversation Period Participation (10 pts) + Questions for Practitioners (5 pts) + Presentation (15 pts) + Perspective on Outside Seminar (10 pts) + Nomination of a Speaker (10 pts) = 105 points

-Evaluating and communicating-heavy strategy: Write Seminar Insights (40 pts) + Profile Video (5 pts) + Initial Literature Assessment (10 pts) + 2 Topic Essays (30 pts) + Presentation (15 pts) = 100 points

-Choose your own adventure strategy: Write Seminar Insights (40 pts) + mix and match assignments as you like...

How to get an A+: The grade of A+ is reserved for exceptional performance and only a few students will receive A+ grades. A+ grades will not be earned on points alone. The instructional team will meet at the end of the term to consider student who have earned A grades, by points, and identify those who have excelled in participation and individual work.

Communication

Course business including announcements, assignments, videos, discussions, and grading will be done through *Canvas*. ***Please ensure that you will receive announcements sent through Canvas in a timely manner.***

Readings

For each of the seminars, we have listed a related paper (or two) from the primary literature. These are suggested background material that will help you delve further into the weekly themes. They are not required reading, unless you choose to do a presentation or essay on the third prompt (below). We encourage you to look at these papers and guidance for approaches to reading scientific literature is available in Canvas.

ASSIGNMENTS- all assignments will be submitted through Canvas, where assignment details are posted.

Seminar insights

There are nine invited seminars throughout the semester (excluding lightning talks by faculty). Through a Canvas discussion board, for each of these seminars students will submit a question related to the research seminar and two responses to questions from other students or prompts from the course instructors. Questions and responses should be thoughtful reflections that also demonstrate engagement with the seminar. They may include insights related to presentation style, study design, or topical knowledge, context, etc. Questions can be concept or methods based, they may be clarifying or inquisitive. They should prompt further understanding or broader discussion. These are due by **11:59pm on the Tuesday following each seminar.**

Profile video

We would like to get to know you. Make a short video (<1 minute) to share with your instructors and peers. Introduce yourself (name and pronouns), what your interests are within ecosystem science and

management, and (if you know) what you hope to do after you complete your Masters degree. This can be a video made on your phone, a voice-over recording on a power-point slide, your choice of format.

Initial Literature Assessment

This assignment is more about examining the process of and various tools for reviewing research literature than it is about researching a particular topic. The prompt will be posted to Canvas and presented on the first day of class. You should spend *less than 1 hour* searching for and reviewing the literature which addresses this prompt. You will submit bullet points summarizing findings, a list of most-relevant literature and summary of your process through Canvas.

Topic Essay or Presentation

Twice during the semester, students can choose to write an essay or give a presentation (submitted by video) on the topic of the weekly seminar. Rubrics in Canvas detail expectations for these assignments. Essays will be 2 pages and should be thoughtfully organized and clearly written. Presentations will be 5-7 minutes in length. Each essay or presentation should address one of the following prompts within the weekly topic:

- Discuss the implications for management of a recent (published within the last 18 months) primary research study.
- Outline the current state of knowledge and outstanding research needed to address a specific conservation issue
- Compare how the seminar speaker presented research findings within the seminar and how research is presented within one of the associated peer-reviewed publications listed in the syllabus.

After receiving comments on your essay or presentation it can be revised and resubmitted. Revisions can earn missing points from 1st submission up to 10 points. Each can only be resubmitted once.

Questions for Practitioners

In one meeting, we will have a practitioner panel focused on the applications of research to practice in conservation and management. Submit your questions to Canvas before this meeting. Questions can be related to research needs and applications, practice, career paths, etc.

Written perspective on outside seminar, lecture or webinar

Once during the semester, students can attend an outside seminar or lecture (a virtual webinar also works), either from another unit on campus or an agency. ***Within a week of that event*** students will submit a two-page perspective. This essay should summarize the research presented and the context of this research in a wider field. It should also comment on differences in seminar format or approaches to communicating with the target audience. There is a discussion board in Canvas with suggestions.

Here are a few seminar series that should be considered, additional suggestions are welcome:

EEB Thursday Seminar – 4-5pm Thursday

<https://lsa.umich.edu/eeb/news-events/all-events/thursday-seminars.html#view=month>

EES Smith Lecture 3:30-4:30 Friday Room 1528 1100 North University Building

<https://lsa.umich.edu/earth/news-events/all-events.html#view=month>

CIGLR- Varied times, web registration and attendance possible <https://ciglr.seas.umich.edu/events/>

Food Literacy for all 6:30pm Tuesday Register Here:

<https://sites.lsa.umich.edu/sustainablefoodsystems/foodliteracyforall/>

Cary Institute of Ecosystem Studies

<https://www.caryinstitute.org/science/scientific-seminars>

Conversation Period Participation

We will host an informal discussion in Dana 1024 with each of the invited seminar speakers and up to 6 students. Student can sign up to attend one of these conversation periods during the semester, additional spots will be held for students in the faculty host's lab or working on related topics (but not in the course). These are opportunities to talk with the speaker informally about their published or ongoing research, ways in which they apply their research and collaborate with practitioners, and their career-paths.

Nomination of a seminar speaker for next year

Each student can nominate a researcher from outside of the University of Michigan for next year's Ecosystem Science and Management seminar. Nominations should include a one-page summary of the researcher's current position and research interests, a one paragraph description of a recent research publication, and a justification of how the speaker's seminar would be valuable to ESM students. Also, submit one google slide to present your nominee to the class. These nominations will be evaluated and compiled by the course instructor and GSI and *students will vote to select the top 5 candidates*.

Suggested texts as resources (posted in Canvas files)

Sodhi N.S. and PR. Ehrlich. Conservation Biology for All. Oxford University Press, Oxford UK. 2009. pp. 344. <https://conbio.org/publications/free-textbook/>

Sutherland, W.J., Dicks, L.V., Ockendon, N., Petrovan, S.O., and Smith, R.K. What Works in Conservation 2019. Cambridge, UK: Open Book Publishers, 2019. <https://www.conservationevidence.com/>

Statement about recording

Course lectures may be audio/video recorded and made available to other students in this course. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact the instructors the first week of class (or as soon as you enroll in the course, whichever is latest) to discuss alternative arrangements.

Additional information regarding course recordings and privacy concerns can be found on the [UM ITS Recording and Privacy Concerns webpage](#).

Mental Health and Student Well-Being During their academic careers, students experience stressors and issues ranging from academic concerns to personal crises (including, but not limited to: alcohol/drug use, anxiety, depression, difficulty eating/sleeping, family worries, loss/grief, sexual assault, or strained relationships). These mental health concerns and/or personal events may affect your well-being and lead to diminished academic performance and ability to fully engage with those around you. If the source of your stressors is academic, please approach us so that we can find solutions together. In order to support you with personal struggles, the University of Michigan offers a number of resources to all enrolled students, including:

- [Counseling and Psychological Services \(CAPS\)](#) – 734-764-8312

- CAPS offers [After-Hours Urgent Support](#) – 734-764-8312 (press “0” to speak to a licensed mental health professional)
- [Dean of Students Office](#) – 734-764-7420, deanofstudents@umich.edu
- [Services for Students with Disabilities \(SSD\)](#) – 734-763-3000, ssdoffice@umich.edu
- [Sexual Assault Prevention and Awareness Center \(SAPAC\)](#) – 734-764-7771
 - 24 hour crisis line – 734-936-3333
- [University Health Service \(UHS\)](#) – 734-764-8320, contactuhs@umich.edu
 - UHS provides [nurse advice](#) by phone, day or night – 734-764-8320
- [Well-being Canvas site](#)
 - [Houses comprehensive list of campus resources for well-being](#)
- [Wolverine Wellness](#) – 734-763-1320, contactuhs@umich.edu

A more comprehensive list of resources can be found here: tiny.cc/distresssignals

Seeking help is a courageous thing to do for yourself and those who care about you.

Accommodations for Students with Disabilities Please contact us if you require accommodation to support your learning in this course due to the impact of a disability, visible or non-visible. Solutions that benefit one student can sometimes benefit the class as a whole. If you have already established accommodations with Services for Students with Disabilities (SSD) regarding your needs, please let us know what your required accommodations are at your earliest convenience so we can work together to meet your needs in this course. If you have not yet established accommodations through SSD and you have a temporary or permanent condition that requires accommodation, please contact SSD as soon as possible. Accommodations can vary to meet students’ needs, including – but not limited to – those related to attention, hearing, learning, medical, mental health, mobility, or vision.

Religious or Cultural Observances and Other Needs This class observes university-defined holidays. However, there may be other days of more significance to you than those designated by the university. Please inform us as soon as possible via email if a class day or assignment due date conflicts with your observance of a holiday so that we can work with you to accommodate your needs. If there are any other needs that you have to support your learning in this course, please also bring these to our attention as soon as possible so that we can work together to ensure your success in the course.