

**BI399: Tropical Ecology**  
**Tue & Thu 12:00 – 1:20; McKenzie Hall 125**



***Instructors:***

Dr. Krista McGuire  
302 Pacific Hall  
Office hours: Tue 2-3; by appointment  
[kmcguire@uoregon.edu](mailto:kmcguire@uoregon.edu)  
<https://mcguiremicrobialeecology.com/>

Max Spencer (Ph.D. student)  
Office hours: Wed 12-1; Klamath 32  
[mws@uoregon.edu](mailto:mws@uoregon.edu)

---

***Required Materials:***

Textbook: Corlett & Primack. 2011. *Tropical Rain Forests: An Ecological and Biogeographical Comparison* (2<sup>nd</sup> ed.)

\*readings from this book are abbreviated as CP in the schedule below

\*note: the U of O library has full access to the electronic version of this book

Clickers: You are required to purchase a clicker for this course, which will be used for every lecture

---

***Learning Objectives:***

Students who complete this course will be able to:

1. Apply general ecological principles to tropical ecosystems
2. Articulate the ecological and evolutionary mechanisms that shape tropical diversity patterns
3. Identify the biogeographical patterns of plants, mammals, and insects across the tropics
4. Read, synthesize, and analyze primary scientific literature
5. Understand the major threats to tropical ecosystems and how the application of ecological principles can facilitate conservation efforts

---

***Grading:*** Total of 490 points for course

⇒ 3 in-class exams

- Exam 1 (100 pts; 20.5% of grade)
- Exam 2 (100 pts; 20.5% of grade)
- Final Exam (150 pts; 31% of grade)

⇒ 9 homework assignments (10 pts each; 90 pts total; 18% of grade)

⇒ Participation in discussion section and class; assessed with clickers in lecture (50 pts; 10% of grade)

Week	Date	Topic	Reading	Assignment due in Discussion
1	2-Apr	Ecology as a discipline; Tropical climate and soils	Mittelbach et al. 2007; CP1 (pg 9-17)	
	4-Apr	Tropical ecosystem types and distribution	Bond & Parr 2010; CP1 (pg 1-9)	HW1
2	9-Apr	Studying tropical diversity	Anderson-Teixeira et al. 2015;	
	11-Apr	Why are tropical forests so diverse? Part I: Deterministic theories	Wright 2002	HW2
3	16-Apr	Why are tropical forests so diverse? Part 2: Neutral theory	Rosindell et al. 2011	
	18-Apr	Tropical insects	Becerra 2015; CP7	HW3
4	23-Apr	Exam 1		
	25-Apr	Mutualisms	Arnold et al. 2003	HW4
5	30-Apr	Tropical floristics	Pitman et al. 2001; CP2	
	2-May	Trait-based ecology	Kraft et al. 2008; Esquivel-Muelbert et al. 2019	HW5
6	7-May	Tropical mammals	Kurten et al. 2015; CP3 (pg 76-93; 97-101); CP4 (pg 102-112; 120-122)	
	9-May	Tropical primates: lemurs (movie)	CP3 (pg 93-97)	HW6
7	14-May	Amazonia & the Guiana Shield	McMichael et al. 2017	
	16-May	Exam 2		
8	21-May	Central America & the Caribbean	Uriarte et al. 2019	
	23-May	African tropics	Blake et al. 2009	HW7
9	28-May	Southeast Asia & Australia	Wilcove et al. 2013	
	30-May	Madagascar and New Guinea	Shearman & Bryan 2011; CP5 (pg 156-159)	HW8
10	4-Jun	Tropical agroecosystems & ethnobotany	Perfecto et al. 2014	
	6-Jun	The future of tropical forests	CP9; Fayle et al. 2015	HW9

## Reading list bibliography

\*You are responsible for finding these articles on ISI Web of Science, downloading them, and reading them prior to each class

1. K. J. Anderson-Teixeira *et al.*, CTFS-ForestGEO: a worldwide network monitoring forests in an era of global change. *Global Change Biology* **21**, 528-549 (2015).
2. A. E. Arnold *et al.*, Fungal endophytes limit pathogen damage in a tropical tree. *Proceedings of the National Academy of Sciences of the United States of America* **100**, 15649-15654 (2003).
3. J. X. Becerra, On the factors that promote the diversity of herbivorous insects and plants in tropical forests. *Proceedings of the National Academy of Sciences of the United States of America* **112**, 6098-6103 (2015).
4. S. Blake, S. L. Deem, E. Mossimbo, F. Maisels, P. Walsh, Forest Elephants: Tree Planters of the Congo. *Biotropica* **41**, 459-468 (2009).
5. W. J. Bond, C. L. Parr, Beyond the forest edge: Ecology, diversity and conservation of the grassy biomes. *Biological Conservation* **143**, 2395-2404 (2010).
6. A. Esquivel-Muelbert *et al.*, Compositional response of Amazon forests to climate change. *Global Change Biology* **25**, 39-56 (2019).
7. T. M. Fayle *et al.*, Whole-ecosystem experimental manipulations of tropical forests. *Trends in Ecology & Evolution* **30**, 334-346 (2015).
8. N. J. B. Kraft, R. Valencia, D. D. Ackerly, Functional traits and niche-based tree community assembly in an amazonian forest. *Science* **322**, 580-582 (2008).
9. E. L. Kurten, S. J. Wright, W. P. Carson, Hunting alters seedling functional trait composition in a Neotropical forest. *Ecology* **96**, 1923-1932 (2015).
10. C. N. H. McMichael, F. Matthews-Bird, W. Farfan-Rios, K. J. Feeley, Ancient human disturbances may be skewing our understanding of Amazonian forests. *Proceedings of the National Academy of Sciences of the United States of America* **114**, 522-527 (2017).
11. G. G. Mittelbach *et al.*, Evolution and the latitudinal diversity gradient: speciation, extinction and biogeography. *Ecology Letters* **10**, 315-331 (2007).
12. I. Perfecto, J. Vandermeer, S. M. Philpott, in *Annual Review of Ecology, Evolution, and Systematics*, Vol 45, D. J. Futuyama, Ed. (Annual Reviews, Palo Alto, 2014), vol. 45, pp. 137-158.
13. N. C. A. Pitman *et al.*, Dominance and distribution of tree species in upper Amazonian terra firme forests. *Ecology* **82**, 2101-2117 (2001).
14. J. Rosindell, S. P. Hubbell, R. S. Etienne, The Unified Neutral Theory of Biodiversity and Biogeography at Age Ten. *Trends in Ecology & Evolution* **26**, 340-348 (2011).
15. P. Shearman, J. Bryan, A bioregional analysis of the distribution of rainforest cover, deforestation and degradation in Papua New Guinea. *Austral Ecology* **36**, 9-24 (2011).
16. M. Uriarte, J. Thompson, J. K. Zimmerman, Hurricane María tripled stem breaks and doubled tree mortality relative to other major storms. *Nature Communications* **10**, 1362 (2019).
17. D. S. Wilcove, X. Giam, D. P. Edwards, B. Fisher, L. P. Koh, Navjot's nightmare revisited: logging, agriculture, and biodiversity in Southeast Asia. *Trends in Ecology & Evolution* **28**, 531-540 (2013).
18. S. J. Wright, Plant diversity in tropical forests: a review of mechanisms of species coexistence. *Oecologia* **130**, 1-14 (2002).

## **Campus resources to support your learning**

*Tutoring and Academic Engagement Center* (<https://engage.uoregon.edu/services/>) Drop-in math and writing support in addition to tutoring, study skills support, and Class Encore. Located in the 4<sup>th</sup> Floor Knight Library (541) 346-3226, [engage@uoregon.edu](mailto:engage@uoregon.edu).

*Counseling Center* Call anytime to speak with a therapist who can provide support and connect you with resources. Located on the 2<sup>nd</sup> Floor of the Health Center(541)346-3227

*Accessible Education Center* The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-1155, [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu)

*Center for Multicultural Academic Excellence (CMAE)* mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-3479, [cmae@uoregon.edu](mailto:cmae@uoregon.edu)

The *UO Access Shuttle* is an on-campus ride service provided at no cost to students with conditions that limit mobility. More information and a sign-up form can be found on the parking & transportation department website: <https://parking.uoregon.edu/content/access-shuttle>.

### **Class Courtesy**

Please arrive in class on time. Late arrivals distract the instructor and the other students. Please turn off cell phones during the class meeting times. Use your laptop only for class activities. Do not leave class early unless you have cleared it with the instructor in advance. Ask questions if you did not hear or understand something.

Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter (or before) so that I may address you properly.

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities. Classroom courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Our classroom is a learning environment, and as such should be a safe, inclusive and respectful place. Being respectful also includes using preferred pronouns for your classmates. Disrespecting fellow students as well as combative approaches, tones and/or actions are not acceptable. Please make me aware if there are classroom dynamics that impede your (or someone else's) full engagement.

### **Academic integrity**

All students will be expected to adhere to the University's guidelines on academic integrity as outlined in the Student Conduct Code: <https://policies.uoregon.edu/vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code>. As detailed in the policy, academic misconduct means the violation of university policy involving academic integrity. This includes cheating ("any act of deception by which a student misrepresents or misleadingly demonstrates that the student has mastered information on an academic exercise that the student has not mastered"), and plagiarism ("using the ideas or writings of another as one's own.") The instructor has a zero tolerance policy for academic dishonesty. All persons

involved in academic dishonesty will be disciplined in accordance with University regulations and procedures.

## **Discrimination and Harassment**

### *Prohibited Discrimination and Harassment*

Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at [safe.uoregon.edu](https://safe.uoregon.edu). To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at [respect.uoregon.edu](https://respect.uoregon.edu) or [aaeo.uoregon.edu](https://aaeo.uoregon.edu) or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at [Discrimination & Harassment](#).

### *Reporting*

The instructor of this class is a Student-Directed Employee. As such, **if you disclose to me, I will respond to you with respect and kindness. I will listen to you, and will be sensitive to your needs and desires. I will not judge you. I will support you.** As part of that support, I will direct students who disclose sexual harassment or sexual violence to resources that can help. **I will only report the information shared to the university administration when you as the student requests that the information be reported** (unless someone is in imminent risk of serious harm or is a minor). Please note the difference between 'privacy' and 'confidentiality.' As a Student-Directed Employee I can offer privacy because I am not required to report certain information to the university. However, I cannot be bound by confidentiality in the same way that a counselor or attorney is. Confidential resources such as these means that information shared is protected by federal and state laws. Any information that I as a student-directed employee receive may still be accessed by university or court proceedings. This means, for example, that I could still be called as a witness or required to turn over any related documents or notes that I keep.

Please note also that I am required to report all other forms of prohibited discrimination or harassment to the university administration. Specific details about confidentiality of information and reporting obligations of employees can be found at [titleix.uoregon.edu](https://titleix.uoregon.edu).

### *Mandatory Reporting of Child Abuse*

UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. Child abuse pertains to individuals who are under the age of 18. This statement is to advise you that your disclosure of information about child abuse to the instructor may trigger my duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: [Mandatory Reporting of Child Abuse and Neglect](#).

## **Safe Ride**

**541-346-7433 ext 2**

[pages.uoregon.edu/saferide](https://pages.uoregon.edu/saferide)

Safe Ride is an **assault prevention shuttle** that works to provide free, inclusive, and accessible alternatives to traveling alone at night for **UO students, faculty, and staff**.

We are a schedule-ahead service and riders can (1) call once we open to schedule a ride with a dispatcher or (2) leave a voicemail on the day of their ride request. We do not call riders ahead of time to confirm due to capacity constraints, but riders are always welcome to call us to double-check that their

ride was scheduled. We are a feminist, 'for-the-students/by-the-students' organization and operate out of the Women's Center in EMU 12F.

Operating hours:

**Spring term** Sunday - Thursday | 7p - midnight

Friday + Saturday | 7p - 2a

**Summer term** Sunday - Thursday | 9p - midnight

Friday + Saturday | 9p - 2a

**Fall/Winter term** Sunday - Thursday | 6p - midnight

Friday + Saturday | 6p - 2a

Policy and rules:

1. We are a **schedule-ahead service**, we **do not call ahead**, and we can only wait for riders for 5 minutes at their pick-up time and location.
2. We only give rides to groups of **3 or fewer** to prioritize groups that are at higher risk.
3. We are a **free service** and do not accept tips.