

Geography 323: Biogeography, Summer 2016 (CRN 40893)

Class meets:

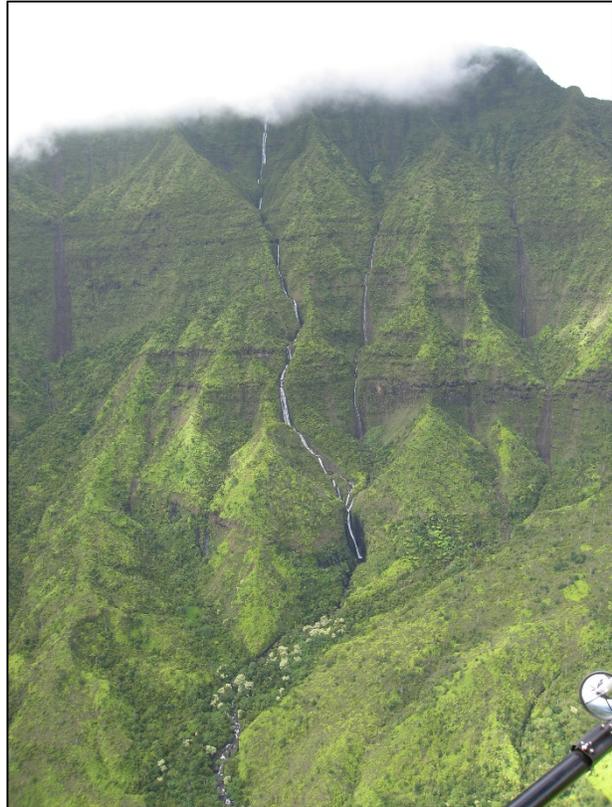
10:00 – 12:50 pm Monday-Thursday in
106 Condon Hall from June 20 to July 14

Instructor: Erin Herring (eherring@uoregon.edu)

Office Hours: Tuesdays from 9-9:50 am in 217 Pacific,
or by appointment

Biogeography, once a secret delicacy enjoyed only by geniuses, must now be elevated from its current obscurity and placed alongside literature and history as an indispensable component of a truly enlightened education. —Dennis McCarthy, Here Be Dragons.

Course Overview: The spatial patterns of species distributions are widely recognized, but few appreciate the complex causes of these patterns. Biogeography is the study of the spatial patterns of biological diversity, and its causes, both in the present and in the past. Biogeographers synthesize information from a very broad range of fields, including ecology, evolution, paleontology, and climatology. This course will provide the ecological and historical foundations for understanding the distribution and abundance of species, and the changes in distribution and abundance over time. We will also explore the relevance of biogeography during a time of increasing human impact and climate change.



Prerequisite: GEOG 141, GEOL 103, GEOL 203 or BI 370.

The course begins with an overview of important concepts, including evolutionary mechanisms, earth history, and plate tectonics, as well as concepts of the ecological niche and patterns of distribution at various taxonomic levels. We also study basic ecological concepts, how species are patterned and disperse on the landscape, and how these patterns have changed over the relatively recent ice ages. In the second part of the course, we delve into historical biogeography and study why continents and islands have unique assemblages of species, and the effects of megaextinctions and biotic interchanges between continents. We also return to ecological concepts in a detailed examination of the equilibrium theory of island biogeography. The following diagram illustrates the organization of topics to be covered, with the emphasis on how this information is used to understand current biodiversity and what threatens it.

Goals of the course:

- To develop an appreciation for the historical and ecological factors that influence the pattern of life on earth.
- To survey the scientific revolutions of evolution, plate tectonics, and molecular ecology that shaped the path to modern biogeography.
- Using the lab assignments, to apply the information covered in lecture to a real world scenario.
- To understand the processes that affect how biotas respond to a changing climate, and the challenges we face today and in years to come.

Course format: This is an intensive four-week course. Our class time will be at least 60% lecture, with the remainder spent on in-class activities and labs. Labs will require additional time outside of class to complete. Course readings should be completed before the class for which they are assigned.

Reading materials:

- **Required:** Here Be Dragons, by Dennis McCarthy. Oxford University Press. This book is no longer in print, but I suggest finding a used copy via Amazon or some other source. There is a kindle edition available from Amazon for \$9.99.
- All other required readings are taken from books and journal articles will be posted on Canvas (canvas.uoregon.edu).
- All labs and any additional materials will be posted on Canvas.

Evaluation: Final grades will be assessed as:

- **Three take home exams - 10% each (30% of total grade):**
 - All of these exams will be taken on Canvas and under the “quizzes” tab. The goal of these exams is not to test if you can memorize facts, but to see how well you can take the concepts discussed in class and apply them to the real world.
 - A discussion board will be set up on Canvas before the start of each exam. You can post questions on this board and other students and I will respond.
 - Questions will be a combination of short answer (a sentence or two) and essay (paragraph, ≥5 sentences). If you feel that a picture/drawing should be included in the answer, you will have the option to upload a picture or two to answer a question.
 - All exams will be made available on Thursday, after class, and you will have until 11:59 pm on Saturday to complete it.
- **Three lab assignments - 10% each (30% of total grade):**
 - All these labs will be have two parts (data collection and data analysis).
 - We will discuss and start the labs in class, and then you will need to complete the labs on your own time.
 - All labs should be typed and submitted on Canvas before class on the day that they are due.
- **Homework assignments - 10%**
 - There several homework assignments that are due throughout the term. Most will be directly related to your Research Project and may be discussed in class the following class meeting. All homework should be submitted on Canvas before class on the day that they are due.
- **Participation - 5%:**
 - Contributing to discussions during class.
 - Participating in lab activities.
 - Evaluation of other student presentations.
- **Research Project - 25%:**
 - Each student will provide a detailed discussion on a topic relating to biogeography. See separate handout for more details on this project.
 - The paper will be no more than 10 pages of text – 15% of total grade
 - The presentation of the paper will take place the last two days of class and should be 10-15 minutes in length. – 10% of total grade.

*******No makeup exams will be offered unless you arrange this with me in advance. No makeups will be offered for in-class activities or labs. Homework and labs will be assessed a 10% per day penalty if they are late.*******

Attendance is mandatory for both lecture and labs. You are responsible for all material covered in lab and lecture. Because of the intensive nature of summer classes, missing even one day of class will put you behind. I will only describe the lab assignments once. If you do have to miss a day for a legitimate reason, talk to me in advance. You will not pass this class if you skip lectures and lab.

Academic honesty: Academic dishonesty policies regarding both cheating and plagiarism will be strictly enforced (see: <http://uodos.uoregon.edu/StudentConductandCommunityStandards/AcademicMisconduct/tabid/248/Default.aspx>). Cheating: I encourage you to work with other students in the class, but all work that you turn in for a grade must be your own.

Plagiarism: Quotations, paraphrases, and ideas based on published or on-line sources must be properly cited. Please consult the university policy (available on Blackboard) or ask me if you have any questions.

Disability Services Notice: I work hard to ensure a quality learning experience for all students. If you need specific accommodations to get the most out of this class, please let me know by (1) informing me of your particular needs, and (2) providing the appropriate documentation from the campus learning services office. I will make every effort to accommodate your needs, but you must notify me by the first week of class if you need special arrangements.

Note: I consider this syllabus a contract between myself and the students in this course. In writing this syllabus, I have obligated myself to follow the policies and procedures contained herein. You are responsible for understanding and following these policies as well. I reserve the right to make changes to this syllabus. You will receive verbal and written notification of major changes to course policies, procedures and content.

Tentative Class Schedule

Date	Class	Topic	Readings	Assignments
June 20	1	Introduction and the History of Biogeography	MacDonald 1-5 Blumer et al. Chapter 2 McCarthy Chapter 1	
June 21	2	Evolution and Plate Tectonics	Scotese Chapter 1 Harshman et al. , 2008 McCarthy Chapter 2	<i>HW 2 due,</i> Start Lab 1
June 22	3	Dispersal, Immigration, and Speciation	Darwin Ch. 12 ("means of dispersal") Gould 179-193 Lomolino 167-191; 200-204 Online only Evolution 101 Wilson 94-112	<i>HW 2 due</i>
June 23	4	Ecological Niche and Limits to Distributions	Lomolino 47-57; 69-81; 84-113 Wien , 2011	<i>HW 3 due, Exam 1</i>
June 27	5	Communities, Ecosystems, and Patterns of Biodiversity	Mutke Chapter 9 Roy et al. Chapter 8	<i>Lab 1 due,</i> Start Lab 2
June 28	6	From Evolution to Patterns of Life	Wiens and Donoghue , 2004 Lomolino 362-376 McCarthy Chapter 4	
June 29	7	Pleistocene Biogeography	Jackson Chapter 3 Post Chapter 2	<i>HW 4 due</i>
June 30	8	Life and Death on Islands	Cox and Moore 223-238 McCarthy Chapter 3	<i>Exam 2</i>
July 4		*****No Class*****		
July 5	9	Island Biogeography	MacDonald 428-444 Olivia Judson (NY Times) Wilson 215-228	<i>Lab 2 due,</i> Start Lab 3
July 6	10	Living in the Past	Cox and Moore Chapter 10	<i>HW 5 due</i>
July 7	11	Geography of Life Today	Cox and Moore Chapter 11 Marshall 1988 McCarthy Chapter 5	<i>Exam 3</i>
July 11	12	Advent of Humanity and Pleistocene Megafauna Extinctions	Flannery 186-217 McCarthy Chapter 7	
July 12	13	Conservation Biogeography, Mega-extinctions and Climate Change	Sprugel , 1991 Online only: Jablonski Fuller Chapter 7	<i>Lab 3 due</i>
July 13	14	Presentations Part 1		
July 14	15	Presentations Part 2		<i>Paper due at 5 pm</i>