Discover

Bio-Geography

The unique biogeography of the Galapagos Islands - Land Iguana

Humans are the most influential biotic agent on the Earth's biogeography. This is not arrogance - it is fact with little wisdom or boundary.

Geography 304 Fall 2008
MWF 2:00-2:50 am, SCHU 310

Instructor:	Dr. Tracy H. Allen, Department of Geography Chair and Associate Professor
Office:	317B Milne Library, Department of Geography
Office Hours:	M 3:00-4:00pm & T 10:00-11:00am or by appointment, or if my door is open, please come in. If you need to see me I will be available. Office hours are set aside for you!
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***Course Description*:** Biogeography is the study of the distribution patterns and relationships of living organisms (plants and animals) and their environment. The field of biogeography borrows and extends principles from physical geography, ecology, biology, climatology, and geology. Basic knowledge in one or more of these disciplines will be helpful. This course is designed as a lecture/seminar, hands-on lab/fieldwork, and discussion class. There will be three mandatory fieldtrips.

There are many millions of species on Earth, and each of theses species occupies a specific habitat or home in which it can live and reproduce. With the possible exception of humans, no species is globally distributed. Each species' distribution is controlled by a unique set of factors, including temporal, ecological, geomorphic, edaphic, and climatic processes. Today natural species patterning is radically altered by human activities; thus, the role of humans on the ecology and distribution of plants and animals will be a fundamental theme examined by the course. Specifically, the course will cover: why biogeography is important; patterns and controls of species distribution (both biotic and physical); natural and human disturbances; biodiversity; biomes and species adaptation; island biogeography (with examples from the Galapagos Islands); and, three hands-on application studies on the northeastern forest biome, northern wetland ranges and delineation, and tornado disturbance and community succession in northern forests.

***Grading Criteria**:*

Work Completed	Possible Points	Grading Scale
Class and Fieldtrip Participation - (grades are based upon: class discussions on assigned readings and topics, completion of assigned recitations and/or field labs, attendance, preparation, fieldtrip participation, and chapter review discussions) There are four mandatory fieldtrips: 1) Northern Hardwood Forest Biome , Species Identification, and Ecosystem Comparison Fieldtrip (Collage Camp);2) Northern Hardwood Forest - Belt Transect Fieldtrip (campus); 3) New Island Disturbances Ecology and Wetland Delineation Fieldtrip (New Island); 4) Patterns of Wind Disturbance and Ecological Successional in an Eastern Deciduous Biome (Milford).	45	200 - 185 points = A 184 - 180 points = A- 179 - 175 points = B+ 174 - 165 points = B 164 - 160 points = B- 159 - 155 points = C+ 154 - 145 points = C 144 - 140 points = C- 139 - 135 points = D+ 134 - 125 points = D 124 - 120 points = D- 119 - 0 points = F
Biogeography Research Paper and Presentation (Paper - 35 points and Presentation – 10 points)	45	
First Exam	35	
Second Exam	35	
Third Exam (if you so wish, the final may be oral)	40	
200 Total Possible Points		
Extra Credit: Biogeography Article Review	Maximum 5 points	

Text and Other Required Readings:

Kricher, J., Morrison, G. 1998. *Eastern Forests: A Field Guide to Birds, Mammals, Trees, Flowers, and More.* Boston, MA: Houghton Mifflin Company.

National Audubon Society. 2000. National Audubon Society Field Guide to Trees: Eastern Region. New York, NY:Alfred A. Knopf, Inc.

There is no traditional biogeography text for this class. Many additional readings and lab assignments will be copied and distributed or posted to my internet site when additional clarification and information are needed.

Fieldtrips:

There are four mandatory fieldtrip in this course: Northern hardwood forest fieldtrip at College Camp, Northern hardwood forest transect on campus (during class), Northern disturbance ecology and wetland delineation on New Island, and patterns of tornado disturbance and ecological succession in an eastern deciduous biome, Milford State Forest. You must attend the fieldtrips to get full points. If you have to miss a trip and you have cleared missing it with me beforehand, it is possible for you to complete the exercise on your own; however, I will deduct 50% off the final grade. Be prepared to go outside even if it is cold and rainy. The fieldtrips are fun and provide a great learning experience. Several classes will be held outdoors.

Class Participation:

The single greatest point accumulation toward your final grade in this class is in the area of participation. Because the class format is largely seminar style, your contribution is critical. You will be expected to participate in class discussions and recitations on a regular basis. The discussions will be in both small group and class-wide formats and designed to put you in touch or give you a hands-on application of materials covered in class. Often we will hold class as a round-table discussion in the coffee shop or outside. I believe the best way to learn is by doing. The discussions will allow you to deeper explore lecture topics. You will be expected to prepare in advance for

some debates and class note discussions. I will let you know which discussions require preparation. The debates should be fun and lively. Points awarded for the discussion will be based upon completion of assigned work, attendance, preparation, and participation. It is in your interest to come to class. If you miss a debate or recitation you cannot make up the points allotted to the in-class portion of the exercise. There will be several class periods where you will be expected to participate in recitation/lab work. Labs may entail fieldwork. **If you miss more than 2 class periods, points will be deducted from the participation grade.** Of course there are some mitigating circumstances. If you need to miss class and are worried about the participation grade, talk with me.

Research Paper:

Write a research paper on any topic in Biogeography. Select your topic according to your interest. Here is a preliminary list of a few potential topics to get you thinking: Island biogeography in the Galapagos Islands, the role of disturbance in shaping the biogeography of a particular region, the implications of genetically modified foods on biogeography, Beringia (the name of the former North American/Asian land bridge) and species dispersal to the Americas, limiting factors for the dispersal of a particular species, biodiversity in a specific location... I am open to many topics. Be certain to clear your topic with me before you begin.

The paper should be at least 8 pages in length, excluding references, maps, and photos. Include, at a minimum, two illustrations and one map in your paper. Be sure to reference the illustration and map in the body of the paper. It does not make any sense to include an illustration and not ever mention it. For example, refer to it in your paper as "see Figure One", having the illustration labeled as "Figure One". Be certain to include the source of the illustration. The illustration must be neat and clearly readable.

General Paper Rules: Your paper must have a **purpose statement, introduction, and conclusion**. Use biogeography terminology from the text and lectures when writing the paper. This paper should be 8 typewritten, double-spaced pages in length and very concise. Do not use a bizarre font or a point size greater than 12. Your margins must be set to 1" on all four sides. The paper must have, at a minimum, **ten** bibliographic entries in a correct format. Complete citations for Internet sources must be included. Use at least 3 references taken from a primary source - i.e., original research reported in a journal or periodical. Do not use encyclopedias, sensational magazines, or reviews. No more than one reference can be from a newspaper. Once you have found one good article on your topic, use the article's reference page in order to help find source material. Four of the references must be from a non-Internet source. Visit the library. Please staple papers in the upper left-hand corner. No Folders! Make sure that you make a **copy** of your paper. In the event that your paper is misplaced (which should never happen), you will have a back-up copy. It will be very difficult for you to prove to me that your paper was lost. Without a back-up paper, I will doubt that you did the paper.

You must make a presentation from your paper to the class. The topic will be communicated to the class via a computer presentation program. Your presentation will last for a total of 15 minutes – 13 minutes of talk and 2-minute question and answer session. Your talk should be informative and precise. I expect you to use numerous graphics to help you illustrate your points. Do not write out long sentences on your computer-generated overheads. You may not read your paper. Be concise - do not rattle on and on. The presentation will be graded on: content, layout and organization, preparedness, response to questions, and class feedback.

Be certain to include two multiple-choice questions regarding your paper and presentation. Writing a test question is not easy. Think about the presentation's main point and write a multiple-choice question that addresses that theme.

Exams:

There are three exams in this course. Exams will cover information discussed in class and text material. If you do not come to class, you will not do well on the exams. If you wish you can take an oral final exam.

Extra Credit – Biogeography Article Reviews:

Find two journal, magazine, or newspaper articles about biogeography and write a review of those articles. Write

two article reviews for full credit. Include the source at the top of your review. Use a standard reference format. Look in the syllabus to see how I referenced your textbook if you are uncertain of the format. The review should consist of a short summary of the central theme and a critique (strengths and weaknesses of the work). Each article review must be a minimum of one to two pages in length, typed, and double spaced. The articles on which you report cannot be older than **6 months**.

Two well-written reviews may receive the maximum of five points added to the final grade for the course; for example, a final grade consisting of 174 points may become 180, which would equate to an "A" grade in the class. If you choose to review a newspaper article or sensational newsstand article (i.e., *Time* or *Newsweek*), the maximum score you may receive is two points per review. I encourage you to **use a primary source (a journal)** and maximize your potential to receive the full six points. Turn the essay in no later than the last day of class. Failure to follow these instructions will result in no points awarded.

Policies:

Exams: If you miss an exam, I will not allow you to make up the work unless you have **written proof that adequately validates your absence**. Only under "dire" circumstances (as to what "dire" constitutes, this will be decided by the instructor on an individual basis) will exams be accepted after the assigned date. If you do not **call, leave a voice mail, or e-mail me prior to missing an exam**, I will not allow you, under any circumstance, to make up the work. Call ahead and be responsible.

Plagiarism and Cheating Policy: Know the college policies regarding plagiarism and cheating. With the Internet it is so easy to simply copy and past other peoples work into your own assignment. Refrain from doing this. It is stealing and is unethical. When I read something that appears out of sink with your writing style I do check for plagiarism. By simply typing the phrase in question into Google or other search engines, it is very easy to find the source. I detest cheating of any kind. Students that feel they must stoop to this level of misrepresentation will earn a failing grade in the class.

Lab Exercises: All assignments must be **completed**. If you hand in an assignment late and after the said assignment has already been graded and passed back to the class, **I will not accept it.** If you miss a lab/recitation that requires in-class group discussion, the best grade that you can receive on the assignment is 80%. Make arrangements with me **early** if you anticipate missing an important class activity. **All assignments that need to be picked up late will require you to come to my office**. I will not bring extra copies to class the following class period. Generally, extra copies can be found in a box attached to my office door.

Return Policy: Because I expect you to take exams, quizzes, and assignments on time, I hold myself to the same standards. I will always try to return your work promptly.

Classroom Policy: I expect general rules of etiquette and respectful behavior to be followed. Be respectful to me and your fellow students. If you plan to talk during lecture, mumble so that no one can hear you. If I can hear your conversation, I will stop class and ask you to speak such that the entire class can hear - after all the conversation “must be” important. No full course meals or smoking in the classroom.

E-mail Policy: There are days when I receive as many as 15 e-mails from students. I simply cannot respond to them all right away. Therefore, if you have an issue that you need to discuss, make the effort to meet with me in person either before or after class, during office hours, or anytime that the door to my office is open. **I will only discuss grades in person,** NOT via e-mail or phone. This is college policy. I will not give you your final grade - the college will notify you.

Cell Phone Policy: I am sorry that I have to make this policy, but there are too many phones in the classroom creating many interruptions and distractions. You may carry your phone into the class; however keep it out of sight or permanently fixed to your person or bag while in class. Do not talk, play video games, check your email, take pictures, play music, electrify your professor, or otherwise use your phone in any manner while in class. In the event that you should receive a call in class, be certain to have the ringer set to off and do not answer the call.

Feel free to call your friend back later and tell him/her how great class was today. While these rules are hard and fast, they are doubly hard and fast during exam periods.

Headphone Policy: Do not wear headphones in my class. Disconnect the headphones and put them in your bag.

Laptop Computer Policy: Use your laptop only to take notes. Do not use it to play games or travel the World Wide Web while in class. If you violate this policy, I will ask you to leave class and not to bring the laptop again.

Attendance, Participation and Tardiness:
Regular attendance is expected and necessary. This class is largely a seminar style class where your contribution is critical. Because the class in small your input or lack thereof will be noticed. My lectures come from a variety of sources. If you do not come to class, it will be impossible to do well on the exams. Do not catch up on your sleep in my class. I work hard to bring you the best lecture possible. Sleeping during lecture is extremely rude and results in deducted participation points. You should keep up with the lectures and the reading, as the materials will be strongly cumulative. To make this a better class, your individual insight, feedback, and participation are necessary. Throughout the term, I reward students who come to class with bonus points or hints on potential exam questions. Please let me know if you are having any problems with the material. **Always arrive on time** or let me know if you plan to make class late. Late arrivals disrupt class. Being tardy multiple times will result in expulsion from the class. Do not leave class in mid-lecture unless you really have to. It is very bad-mannered and disruptive to walk out of class. Never put your notebook and books away before you are dismissed. I always end class on time. I look forward to meeting with you and having an enjoyable term.

Course Outline and Schedule Note: EF is reference to the Eastern Forests text. Other than the Eastern Forest text, all readings are on Electronic Reserve. Additional reading not listed below will be assigned based upon specific class needs and direction. While exam dates will not change, course content may vary from this outline to meet the needs of this class. Students will be notified when adjustments to the syllabus are made.

Week	Topic	Text Readings
Week 1 8/27	Introduction: Course syllabus and requirements. Defining biogeography. Basic concepts in biogeography and ecology. The ecosystem. Biological interactions and the distribution of life. **Case Study**: Biogeographical regions and Wallace's Line.	MacDonald: 1-Biogeography Basics
Week 2 9/1	Biological interactions and the distribution of life continued. Time and space constraints on the living (species range). Factors in biotic distribution – time, isolation, barriers, corridors, drift… **Case Study:** Speciation of Nestor parrots on the island of New Zealand.	MacDonald: 2-Biological Interactions
Week 3 9/8	The physical setting and patterns of life. The physical environment - patterns of climate. Poikilotherms and Homeotherms. We will spend the entire week understanding climatic classification. Climate is the main physical factor that controls the distribution of species. Introduction to biomes as a means to organize large ecosystems. Adaptation and natural selection. **Case Study:** Tamarisk (identified as one of the ten most noxious weed species) and the transformation of the Colorado riparian zone.	MacDonald. 3-Physical Environment
Week 4 9/15	Microclimatic patterns & life -altitudinal zones. Applying Humboldt's Law. **Case Study:** Merriam's Life Zones. **Fieldtrip on Saturday 9-20-08** – We will meet behind the library at 10:30 am. Don't be late. You will be back on campus by 4:00pm. Northern hardwood (mix) forest biome (species identification and ecosystem comparisons between uplands and lowlands). The information covered on this fieldtrip will not be on the first exam. We will finish the fieldtrip exercise on Monday after the first exam.	Biological Interactions MacDonald 4
Week 5 9/22	Pedogenic soil regimes & the distribution of plants. Laterization, salinization, calcification, gleization.	EF: 8-57

	Case Study: Soil formation and white pine distribution at College Camp, Oneonta **First EXAM on Friday, 9-26-08!** **Fieldtrip backup date - Saturday 9-27-08** if the first fieldtrip is rained out	
Week 6 9/29	**In class fieldtrip to the campus woods on Monday 9-29-08** Podzolization Biomes: Temperate: northern forests. Class will be held outdoors. We will run transects. Identify the primary species that inhabit a northern forest biome. Alpha and beta diversity. **Fieldtrip on Saturday 10-4-08 -** We will meet behind the library at 10:30 am. Don't be late. New Island disturbance ecology, succession, and wetland delineation	EF: 58-153
Week 7 10/6	Introduction to - Wetlands: Community distribution, adaptation & change What physical factors constrain the distribution of wetlands? Wetlands for every biome – wetland types **Case Study:** Hydroseral succession in a boreal wetland environment, Alaska	Mitsch and Gosselink - Wetlands
Week 8 10/13	Wetland identification. Redoximorphic features in mineral wetland soils. Organic wetland soils. Community distribution & hydrophytic vegetation **Fieldtrip on Friday10-17-08 -leave at 1:00??** for a short excursion to Milford State forest. Patterns of tornado disturbance and ecological succession in an eastern deciduous biome.	EF:154-249
Week 9 10/20	Disturbance and species adaptation. Disturbances as necessity to healthy ecosystems. Ecosystem disturbances to the pattern: fire, wind and water.	EF:154-249
Week 10 10/27	Biodiversity introduction. Video - America's Endangered Species: Don't say Good-bye. Article discussion on species extinction **Second EXAM on Wednesday, 10-29-08!**	EF: 250-268
Week 11 11/3	Biodiversity: How many species are there? Gradients of diversity and diversity in time. Case studies in extinction by humans - hunting, habitat destruction and over harvesting. Biodiversity Case Study: Passenger Pigeons & Cichlids	Gibbs: On the Termination of Species
Week 12 11/10	Characteristics of endangered species. Evolution speciation and extinction. Invasion by exotic species. Major biomes of the world. Life forms and biomes. Biomes: Distribution and characteristics of biomes. Comparative proportion of plant life-forms in major ecozones.	Madagascar: Emerald Isle or Paradise Lost?
Week 13 11/17	**Case Study:** The disappearing Atlantic Rainforest. In-depth coverage of tropical biomes Earth's major biomes: Desert and dry lands, grasslands, maquis Earth's major biomes Boreal and tundra.	MacDonald. 4-Biomes
Week 14 11/24	**No classes – Thanksgiving Break!!!** Go explore exotic places. Have fun - I am.	Break
Week 15 12/1	No classes for this week. This is your reward for going on all the fieldtrips. The numerous fieldtrips throughout the course more than compensate for the break. Get your paper and presentation prepared during this time. Come see me in my office if you need help.	MacDonald. 4-Biomes
Week 16 12/8	**Case Study:** Island Biogeography and the Galapagos Islands - Time providing after the presentations. Student Presentations Monday (12-8-08), Wednesday (12-10-08) and Friday (12-12-08). The order of presentations will be random. Turn in your paper questions for the exam. **Paper Due on Wednesday (12-10-08)**	Jackson
Final Exam -- Date: Wednesday, 12-17-2008 **Time**: 11:00am - 1:30pm		