ENY 4905/, section 1H60 - Insect Biogeography
Advanced undergraduate-level
1 credit hour, Thursday periods 2-3, 09:00-10:25, Room EYN 3118 Entomology & Nematology Building

Instructor
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Office hours
Please make an appointment, or drop by office any time.

Prerequisites
Biogeography is a broad field and a multi-disciplinary approach is essential. There are thus no prerequisites other than a keen interest in and at least some background knowledge of ecology, evolution and biodiversity, and willingness to participate actively in classes.

Course description
Insects dominate biological diversity, yet large-scale patterns in their distribution, diversity and abundance, and the processes responsible for such patterns, remain poorly understood. Biogeography is the study of such patterns and processes and is an exciting and rapidly evolving field, integrating systematics, ecology and evolution with geography, geology and climatology. This seminar course will provide an overview of major themes in biogeography, including historical biogeography and evolution, latitudinal and elevational gradients in species richness, patterns of abundance and range-size (macroecology), island biogeography and species-area relationships, and applications of biogeography to conservation. We will address a range of questions, such as: is dispersal or range fragmentation (vicariance) more important in explaining insect distribution and speciation? What factors underlie regional variation in insect species diversity? Why are some species widespread or common, while others are narrowly endemic or rare? What controls which species colonize and persist on islands? How should protected areas be sited and designed to most efficiently conserve insect faunas? Classes will consist of a combination of lectures, discussions of primary scientific literature and student seminars, during which we will explore how studies of insects have improved or could inform our understanding of biogeography in general.
Objectives

Lectures

Introductory lectures in the first five classes will focus in particular on methodological issues to provide a background for discussion of papers during the course. Topics will include how to define areas of endemism, methods for assessing historical area relationships, molecular clocks and spatial autocorrelation.

Discussion sessions

Each week we will read and discuss several papers from the primary scientific literature, depending on the scheduling of lectures and student seminars. A student will be chosen at random to lead the discussion on each paper. Students will be encouraged to read papers critically, thinking about the study group and/or region and resultant implications, considering whether the methods used are the most appropriate and adequate, asking whether the results fully support conclusions, and discussing how the study could have been improved. While prior knowledge of specific methods and systems is not expected, students should be prepared to think about broader aspects and introduce topics for discussion in class.

Student seminars

All students are expected to research and present one Powerpoint seminar on a chosen topic. Students will select a week to give their seminar and must read and synthesize papers relevant to that week’s theme, different to those designated for class reading. These papers could offer contrasting opinions on a particular topic, or address a similar topic using different study groups or methods, or provide complementary information to one another. Selection of topics will take place in the first class and the first student seminar will take place from week 6 (14 February) onwards. Students in the audience will also be expected to participate in class discussion following the seminar.

Undergraduate students should show evidence in their seminars that they have read at least 2 papers while researching their topic and the seminar should last approximately 15-20 minutes.

Grading

<table>
<thead>
<tr>
<th>% by activity</th>
<th>% of grade</th>
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<tbody>
<tr>
<td>Seminar</td>
<td>50</td>
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<tr>
<td>Participation in class</td>
<td>50</td>
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</tbody>
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A  = 95-100%
A- = 90-94%
B  = 85-89%
B- = 80-84%
C  = 75-79%
C- = 70-74%
D  = 65-69%
D- = 60-64%
E  = <60%
Assignments and attendance policy

Attendance at class (except when the student is presenting a seminar…) is not mandatory. However, part of the grading reflects student involvement in class and attending the seminars of other students is not only courteous but also an excellent way to improve one’s own seminar style and thus grades.

Course outline

Subject to change. The general outline for each week will ideally apply to both lectures and student seminars.

Introduction and background
Week 1. Lecture 1: Historical overview of biogeography and macroecology. What is biogeography? Development of biogeographical thought, from a static to a dynamic Earth. Role of biogeography in studies of evolution. Landmark developments in the field.

Area, distribution and speciation

Macroecology: patterns of diversity and other ecological attributes
Week 9. Discussion/student seminar: the relationships among abundance, range size and range position.
Week 11. Discussion/student seminar: the relationship between area and species diversity.

Applications to conservation
Week 12. Discussion/student seminar: predicting extinction from ecological traits and habitat loss.
Week 13. Discussion/student seminar: prioritization of areas for conservation using species richness, endemism, threat and complementarity.

Class Demeanor Expected by Instructor: Students should be considerate, polite, open-minded, objective and show interest in the work of others. UF rules prohibit having food or drinks in classrooms. Use of tobacco products (in any form) in the classroom is prohibited.
**Additional General Information:** The following information applies to all courses at the University of Florida.

**We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standard of honesty and integrity.**

**Academic Honesty:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

**Copyrighted Materials and Software Use:** All students are required and expected to obey the laws and legal agreements governing copyrighted material and software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Accommodations for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

**University Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling; and
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.