

## **Ph.D. in Ecology & Evolutionary Biology**

The Ecology and Evolutionary Biology (EEB) Ph.D. program is designed to provide the broad education needed to understand and conserve Earth's biological diversity in all its forms. Matriculating students will gain the skills to conduct ecological, behavioral, systematic, molecular, and other evolutionary biological research, as well as to formulate and implement environmental policy. Graduates may pursue academic careers as researchers and professors, or professional positions in national or international conservation, environmental and multilateral aid organizations.

Please note: The Ph.D. application deadline is December 1st; early applications are strongly encouraged, preferably by mid-November.

The most up-to-date information will be in the E3B Graduate Student Handbook. Please see the ADMISSIONS page of the E3B website.

### **Requirements**

E3B's Ph.D. program in EEB trains student through a mix of course, teaching, and research requirements. All students are mentored by an advisor and a series of graduate committees during their time at Columbia. Six units of full-time residency units (RUs) are required by the Graduate School of Arts and Sciences. (Four RUs are required for students with advanced standing.)

### **Thesis Development Seminar**

The Thesis Development Seminar will help guide E3B Ph.D. students towards candidacy by teaching them the skills necessary to be effective and independent scientists.

Students will conduct an extensive literature review, write a preliminary dissertation proposal, and present their research ideas to the group on multiple occasions.

Additionally, students will learn how to give and receive constructive written and oral feedback on their work. The course will be designed specifically to engage students in research early in their academic careers and teach them the necessary skills to be effective and independent researchers.

### **Graduate Committees**

Students will complete the Ph.D. program under the guidance of a series of committees whose membership usually overlaps substantially, if not completely.

**Three-Member Advisory Committee.** All entering Ph.D. students will, in consultation with their mentor/advisor, develop a 3-member advisory committee by DECEMBER of the first year of study. The advisory committee gives advice related to course and internship selection, the scheduling of early degree requirements, and early research plans. Typically members of this committee then become part of the dissertation committee.

**Three-Member Orals Committee** (plus advisor). An orals committee consists of 3 members, plus the student's advisor. The advisor can participate in the oral examination, but must leave the room while the other three committee members assess the student's performance. The members of the orals committee should broadly represent at least two of the three pillars of the Department: (1) ecology; (2) evolution and behavior; and (3) environmental and conservation biology. The orals committee need not consist of the

same members as the dissertation committee, but in most instances, there will be substantial overlap between the two committees.

**Five-Member Dissertation Committee.** The dissertation committee consists of exactly 5 members, and must be constituted before the student begins serious research, ideally by early in the fall semester of the second year (spring of first year for students with advanced standing). The committee's role is to guide the student in developing a research project, to evaluate the research proposal collectively during the oral exam and the oral proposal defense, and to evaluate the finished dissertation collectively during an oral dissertation defense.

### **Other Requirements**

**Preliminary Research Experience.** In their first year, students are expected to develop a preliminary project, from the general concept/design through implementation, the latter scheduled generally for the summer of their first year. Students can apply for competitive funding from the department as well as the funds they apply for from outside the university.

**Internships.** While there are no formal required internships, students will be encouraged where appropriate to work on internships or lab rotations with experts other than their advisors.

If resources are available, the department will continue to provide a small amount of funding to offset lab costs for the mentor.

**Teaching Assistantship.** All Ph.D. students will serve as teaching assistants, usually for undergraduate courses, for 3 semesters. This experience provides students an opportunity to develop skills related to many professional directions they may eventually follow. Service as a TA is a component of all fellowships.

**Examinations.** All Ph.D. students will complete a series of examinations before reaching candidacy (Oral General Knowledge Exam) and receiving their degrees (Dissertation Defense), as well as give a public presentation of their research.

**Oral General Knowledge Exam.** The Oral Exam is designed to broadly test students' knowledge in ecology, evolution, and environmental biology. The exam will consist of a 2-3 hour oral examination by an "orals committee." Students will be judged in their abilities to think critically and demonstrate a broad base in biological knowledge. Although the timing of the exam will vary, most students will be expected to take the exam by the end of their fourth semester.

**Proposal Defense.** Upon successful completion of core courses, oral review and exams, Ph.D. students will prepare a research proposal. One month prior to the proposal defense, students will submit their written research proposal to their committees, in the form that would be submitted to a major funding source (e.g. NSF, EPA, USDA). Before of meeting of their advisors, students will present this proposal orally and receive feedback from their committee. After successful completion of their proposal defense, Ph.D. students are eligible for the M. Phil degree.

**Dissertation Defense.** The dissertation defense is held by the Chairperson of the committee and usually lasts at least 2 hours. Normally, students present a brief overview of their thesis research, which is typically brief (10-15 minutes), and serves mainly to focus everyone's attention and to relax the student. The rest of the defense generally involves the committee members asking questions about the research, the thesis and its

contribution to the field in general. Public Presentation of Dissertation Research. All students are required to prepare and present a full length seminar to the department.

### **Admission Requirements**

For the EEB Ph.D. program, an undergraduate major in one of the natural sciences is required. It is also desirable that students have had course work in calculus, physics, chemistry, statistics, genetics, ecology, and organismal biology. Prior field biology experience is strongly recommended.

Students are only admitted to begin in the Fall semester. The GRE general test is required and the biology subject test is strongly recommended. Applicants must also contact a full-time or adjunct faculty member with whom the applicant is interested in working and who may act as the applicant's dissertation sponsor. The application deadline is December 1.

### **Application**

For further information on how to apply, please follow the link below, which will lead you to the 'Prospective Students' page of the Graduate School of Arts and Sciences. You will be able to fill out an online application by following the link to the Ph.D. programs.

Prospective Students

If you want to go straight to the application, follow this link instead:

[APPLY ONLINE NOW!](#)

**Fellowship Information** is included in the Grad Handbook.

### **Frequently Asked Questions**

1. What is the application deadline?

The Ph.D. application deadline is December 1. NO exceptions.

2. Can I apply for Spring Admission?

There is no Spring Admission for the Ph.D. program.

3. Is there a part-time option?

There is no part-time option for the Ph.D. program.

4. What are the admission requirements? Those who have been accepted have diverse backgrounds and qualifications. Please see the GSAS Bulletin for some information about admission requirements. The general GRE is required. The Biology Subject test is strongly recommended.

5. How competitive is the admissions process? Admission is extremely competitive. In the past few years, less than 1 in 20 applicants were admitted. Of vital importance is contacting a potential dissertation advisor willing to mentor you through this program.

6. Should I visit? Visiting Columbia is an excellent idea. It will give you a chance to see if you would like to come to school here, if you could thrive in a city like New York, and to meet faculty and other students to get their perspective. Before coming to visit, contact a potential advisor who can arrange to show you around. The Academic Department Administrator will also be able to help you contact students currently in the program and answer other questions you may have.

7. What type of fellowships or financial aid are available? Ph.D. students are offered fellowships which cover five years (or four years with advanced standing) of tuition, Columbia Health Insurance and Health Fees, and a stipend.

8. Is there housing? As part of the fellowship offer, Ph.D. students are guaranteed housing as long as they apply on time.

9. What are Residence Units? RUs are equivalent to full-time registration for a semester. Six RUs are required for the Ph.D. A student registered for RU is charged the full-time rate of tuition. Students on fellowship have their tuition paid through their award.

10. Can affiliate faculty be my advisor? PhD students are sometimes advised by affiliate faculty that appear on the GSAS list of sponsors. However, student support may present extra challenges in such situations, and it is advisable to contact faculty members of interest to see whether they are able to take students in a given admission cycle.

11. How many students are in the program? Currently we have 25 students total over the two Ph.D. programs.

12. Do students have a teaching commitment?  
All Ph.D. students are required to serve as teaching assistants for two to four semesters. This is a stipulation of the fellowship.

13. How long does it take to finish a graduate degree?  
Ours is a full-time Ph.D. program. Students take about 5-6 years to complete their doctorates depending on whether they are admitted with advanced standing.