

# ECOLOGY AND EVOLUTION 2009-10



## UNIVERSITY OF CALIFORNIA, SANTA CRUZ

### THE ECOLOGY AND EVOLUTION MAJOR

The ecology and evolution major provides students with interdisciplinary skills necessary for understanding and solving complex problems in behavior, ecology, evolution, and physiology, and includes a focus on both basic concepts and aspects that can be applied to important environmental problems, including genetic and ecological aspects for conservation biology and biodiversity. Ecology and evolution addresses questions on a wide variety of scales, from molecular or chemical mechanisms up to issues that apply to large spatial and temporal scales.

### STUDY AND RESEARCH OPPORTUNITIES

- ◆ Undergraduate degree available: Bachelor of Science (B.S.); graduate degrees available: M.A., Ph.D.
- ◆ A broad array of lecture courses that cover the essentials of behavior, ecology, evolution, and physiology, coupled with capstone courses that emphasize theory and natural history applied to more focused topics
- ◆ A suite of field and lab courses providing unique opportunities to learn cutting-edge methods and concepts in behavior, ecology, evolution, and physiology
- ◆ Participation in research projects with faculty sponsors that often lead to opportunities for senior thesis research
- ◆ Intensive Education Abroad programs in Costa Rica (tropical biology) and Australia (marine sciences)

### HIGH SCHOOL PREPARATION

In addition to the courses required for UC admission, high school students who intend to major in ecology and evolution should take high school courses in biology, chemistry, advanced mathematics (precalculus), and physics.

### TRANSFER PREPARATION

The faculty encourage applications from transfer students in the biological sciences. Students and their college advisers are strongly recommended to examine the degree requirements for the student's intended major: [undergrad.pbsci.ucsc.edu/programs/eeb](http://undergrad.pbsci.ucsc.edu/programs/eeb). Students should satisfy as many introductory requirements as possible prior to transfer. Courses offered at the student's institution should be compared to the UC Santa Cruz transfer agreements (found at [www.assist.org](http://www.assist.org)) and/or course descriptions to ensure that they will qualify for transfer. It is very important for transfer students to complete science prerequisite courses before transfer, especially calculus, general chemistry with labs, and an introductory biology sequence. Students should also take physics, if possible. Prospective transfer students should visit the Physical and Biological Sciences Undergraduate Affairs web site at [undergrad.pbsci.ucsc.edu](http://undergrad.pbsci.ucsc.edu) for further information (see the *For More Information* section). In addition, please see the *Course Substitution/Transfer Credit* section.

Introductory requirements for the ecology and evolution major are:

- Biology 20A, *Cell and Molecular Biology*; Biology 20B, *Development and Physiology*; Biology 20C, *Ecology and Evolution*
- Chemistry 1A, 1B/M, 1C/N, *General Chemistry with Laboratory* (three quarters)
- Applied Mathematics and Statistics 7/L, *Biostatistics with Laboratory*
- Mathematics 11A-B, *Calculus with Applications* (two quarters)
- Physics 6A/L, 6B/M, *Introductory Physics with Laboratory* (two quarters)

### COURSE SUBSTITUTION/TRANSFER CREDIT

At least half of the upper-division courses (Biol/Bioe 100–190) required for each biological sciences major must be taken through the MCDB and EEB programs at UC Santa Cruz, not as transfer credits from another department or institution. Transfer students are advised to review the Transferring Credit section on the Physical and Biological Sciences Undergraduate Affairs web site at [undergrad.pbsci.ucsc.edu/advising](http://undergrad.pbsci.ucsc.edu/advising) and/or speak with an adviser before enrolling in numerous upper-division courses at other institutions.

## CAREERS

Students with bachelor's degrees in ecology and evolutionary biology find employment opportunities in a variety of fields. In conjunction with a graduate degree in teaching, students often use their biology background to teach science at the K–12 level, and there are increasing opportunities for a career in science writing.

Positions for both research biologists and technicians with local, state, and federal governmental agencies are also commonly pursued. Examples of employment opportunities for biologists with California's state agencies include: the Environmental Protection Agency; Departments of Conservation, Fish and Game; and the California Coastal Commission (these and other applicable state agencies are listed at [resources.ca.gov](http://resources.ca.gov).) Examples of federal agencies include: National Marine Fisheries Service; U.S. Forest Service; U.S. Fish and Wildlife Service; United States Geological Service's Biological Resources Division; Environmental Protection Agency, National Marine Sanctuaries, National Park Service, and others. Museums and zoos (conservation research centers) are increasingly hiring biologists to study and conserve biodiversity. The number of local, regional, national, and international non-governmental organizations (NGOs), especially those oriented toward restoration and conservation of biodiversity, continues to grow rapidly. These organizations, including the Nature Conservancy, hire students as interns and permanent technical staff.

Elsewhere in the private sector, students find employment with environmental consulting and biotechnology firms. Academic research institutions also hire students for technical research positions. All of the above provide students opportunities to explore career trajectories as they consider continuing their education in graduate programs. A degree in ecology and evolutionary biology also serves as an excellent stepping-stone to further training in professional schools, including veterinary science, medicine, and dentistry. The strong reputation of the ecology and evolutionary biology program at UC Santa Cruz underpins the strong record of successful placement of its graduates in employment and graduate programs.

## EDUCATION ABROAD OPPORTUNITIES

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. Ecology and Evolutionary Biology encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes and extensive laboratory and/or field research experience.

There are excellent programs for biological science students in Costa Rica, Australia, and New Zealand, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde Research Station, this program gives students experience with hands-on field research, offers a homestay program, and carries credit for two upper-division biology courses. The University of Queensland (Australia) offers an intensive, full-semester Marine Science Program, which includes a stay at a research station on the Great Barrier Reef, near sheltered mangrove and seagrass habitats.

Students interested in study abroad need to get an early start on their basic science requirements, including general and organic chemistry, math, and introductory biology. Visit the EAP office as soon as possible to begin planning, and seek advice about your academic plan from the Physical and Biological Sciences Undergraduate Affairs adviser and/or faculty adviser.

## ACADEMIC ADVISING

Academic advising is available from Physical and Biological Sciences Undergraduate Affairs. Undergraduate Affairs publishes the web site at [undergrad.pbsci.ucsc.edu](http://undergrad.pbsci.ucsc.edu), which contains detailed information about the degree programs, sample schedules, transferring credit, placement exams, faculty research, and opportunities in the Physical and Biological Sciences majors.

## FOR MORE INFORMATION

For further information about the ecology and evolution major and upper-division course requirements, see:

[reg.ucsc.edu/catalog/html/programs\\_courses/biolPS.html#EEB](http://reg.ucsc.edu/catalog/html/programs_courses/biolPS.html#EEB)

Information about the ecology and evolution major can be found at: [undergrad.pbsci.ucsc.edu/programs/eeb](http://undergrad.pbsci.ucsc.edu/programs/eeb) or by e-mailing [biologyadvising@ucsc.edu](mailto:biologyadvising@ucsc.edu).

For specific information regarding the Ecology and Evolutionary Biology faculty and research, please visit the department web site at: [www.eeb.ucsc.edu](http://www.eeb.ucsc.edu).

If you have other questions, contact:

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