

## ECOLOGY, EVOLUTION AND CONSERVATION BIOLOGY

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### Faculty

- \*R. A. Kinzie, PhD (Chair)– aquatic ecology, coral reefs and tropical streams
- \*L. Arita-Tsutsumi, PhD – behavioral ecology of insects
- \*C. Birkeland, PhD – coral reef ecology and management, marine community ecology
- \*B. Bowen, PhD – phylogeography, evolution and conservation genetics of marine vertebrates
- \*R. L. Cann, PhD – conservation genetics and molecular evolution
- \*D. Carlon, PhD – population regulation, life-history evolution and speciation
- \*K. S. Cole, PhD – Evolution of sexual patterns; behavioral ecology.
- \*S. Conant, PhD – conservation biology, life history and ecology of Hawaiian birds
- \*R. H. Cowie, PhD – evolutionary biology and conservation of land and freshwater snails
- \*C.C. Daehler, PhD – invasive plants, plant-insect interactions
- \*J. Davidson, PhD – ecology of plant diseases in natural ecosystems
- \*H. G. De Couet, PhD – developmental and molecular evolution
- \*M. J. deMaintenon, PhD – evolution of gastropod organogenetic patterns
- \*D. Drake, PhD – plant ecology, conservation biology, plant-animal interactions
- \*D. C. Duffy, PhD – conservation biology (basic and applied)
- \*N.L. Etkin, PhD – medicines of the “informal sector” in contemporary Hawaii
- \*L. A. Freed, PhD – evolutionary ecology, behavioral ecology and conservation biology
- \* T. Fukami, PhD – Species diversity, ecosystem functioning, biological invasions and ecological restoration
- \*E. Gaidos, PhD – microbial ecology, modeling of ecological and molecular evolution
- \*M. G. Hadfield, PhD – larval biology of marine invertebrates, conservation and demography of Hawaiian tree snails
- \*D Haymer, PhD – molecular evolution
- \*B. S. Holland, PhD – Molecular phylogeography of Pacific Island radiations, conservation genetics, systematics, and invasion biology.
- \*T. Hunt, PhD – evolution theory, including ecology and biogeography
- \*T. Idol, PhD – forest soils and nutrient cycling
- \*K. Y. Kaneshiro, PhD – sexual selection and biology of small populations
- \*D. D. Kapan, PhD – Evolution and genetics of warning color & mimicry in Lepidoptera and applied evolutionary ecology and molecular population genetics
- \*\*E. A. Kay, PhD – systematics and biogeography of marine mollusks
- \*S. C. Keeley, PhD – plant molecular systematics and evolution
- \*T. W. Lyttle, PhD – population genetics and chromosome evolution
- \*M. Q. Martindale, PhD – evolution of development of metazoan animals
- \*W. J. Mautz, PhD – environmental physiology, environmental toxicology, ecological energetics, respiration physiology, and herpetology
- \*W. C. McClatchey, PhD – the flora, ethnobotany and prehistory of the Solomon Islands and the Rotuma Islands
- \*M. D. Merlin, PhD – biogeography, ethnobotany, Pacific natural history
- \*R. H. Messing, PhD – behavioral ecology of insect parasitoids and biological control
- \*C. W. Morden, PhD – molecular systematics and evolution of plants and algae
- \*\*D. Mueller-Dombois, PhD – vegetation ecology
- \*R. Ostertag, PhD – community structure and nutrient dynamics of tropical forests
- \*J. D. Parrish, PhD – ecology of aquatic (marine) communities, fishery biology

- \*D. K. Price, PhD – evolutionary genetics of behaviors
- \*M.A. Ridgley, PhD – human-environment systems analysis: modeling and evaluation of society-environment interactions
- \*D. Rubinoff, PhD – insect systematics, conservation biology, and the evolution of ecological traits
- \*L. Sack, PhD – whole-plant physiology and ecology
- \*C. M. Smith, PhD – physiological ecology of marine macrophytes, marine ecology
- \*L. E. Sponsel, PhD – human ecology in tropical forests and deforestation
- \*J. S. Stimson, PhD – population ecology
- \*K. Suryanata, PhD – political economy of natural resources
- \*A. D. Taylor, PhD – population ecology
- \*A. H. Teramura, PhD – environmental stress physiology, global climate change, ecosystem analysis and biodiversity
- \*T. Ticktin, PhD – ethnoecology and conservation
- \*R. Toonen, PhD – population biology and larval ecology of marine invertebrates
- \*T. Tricas, PhD – sensory neurobiology of fishes
- \*L. Wester, PhD – plant geography, biogeography of islands, human-plant relationships
- \*A. Wikramanayake, PhD – evolution of pattern formation in metazoan embryos
- \*B. A. Wilcox, PhD – ecosystem and human health
- \*C. Womersley, PhD – environmental physiology, biochemical adaptation, parasitology

#### **Affiliate Graduate Faculty**

- \*A. Allison, PhD – systematics and population biology
- \*A. Asquith, PhD – insect systematics and conservation
- \*W.W. Au, PhD – sensory biology of cetaceans
- \*L.V. Basch, PhD – ecology, evolution and conservation of marine life histories and benthic communities
- \*E. W. Campbell III, PhD – applied and basic herpetology, invasive species management, conservation biology, predator ecology.
- \*J. E. Canfield, PhD – conservation biology of silverswords and vegetation restoration
- \*J. Denslow, PhD – ecology of invasive exotic species in tropical forests
- \*N. L. Evenhuis, PhD – systematics and evolution of *Diptera*
- \*D. Foote, PhD – ecology and conservation of native Hawaiian insects
- \*A.M. Friedlander, PhD – nearshore fisheries
- \*F. G. Howarth, PhD – evolutionary biology of cave ecosystems and insect conservation
- \*F. Kraus, PhD – evolution and conservation of insular faunas, reptiles, amphibians and land snails
- \*L. L. Loope, PhD – conservation biology, plant ecology
- \*J. E. Maragos, PhD – human impact on marine ecosystems and coral reefs
- \*W. C. Pitt, PhD – Invasive vertebrate issues
- \*D. Ragone, PhD – pacific island ethnobotany, especially conservation and use of traditional crops, focusing on breadfruit.

\*Graduate Faculty

\*\*Professor Emeritus

#### **The Academic Program**

The objectives of the interdisciplinary graduate specialization in ecology, evolution, and conservation biology (EECB) are to do the following:

- Use the unique opportunities that Hawai'i offers to integrate tropical population biology and natural history studies with modern laboratory techniques.
- Provide the interdisciplinary, conceptual, and technical training that will allow our graduates to participate in academic and research programs in ecology, evolution, and conservation biology.

- Foster scholarly training in research programs involving expertise in ecology, evolution, and conservation biology.

**Modern theories of ecology, evolution, and conservation biology share a core of concepts and techniques that span classical academic disciplines.** This common core, coupled with the emergence of powerful new technologies, invites cross-disciplinary approaches, which generate many of today's most exciting scientific knowledge.

The EECB program provides opportunities for students in all of the traditional subdisciplines represented at UH. This intercollegiate, interdisciplinary graduate program brings together faculty members from:

- natural resources and environmental management
- anthropology
- biomedical sciences – cell and molecular biology
- botany
- plant and environmental protection sciences
- geography
- tropical plant and soil sciences
- oceanography
- zoology

Their skills and technologies provide the training students need to contribute effectively to their research area.

#### **Admission Requirements**

All applicants will be required to submit:

1. Copy of UH graduate application
2. Results of the Graduate Record Examination\*
3. Copy of official transcripts (UH to be included if applicant is an existing student)
4. Three letters of recommendation
5. Statement of career goals
6. Statement from sponsor

If any of the above information is missing, your file may be delayed or not reviewed. Please send the information to the following address below.

**Before he/she can be admitted, an applicant must have a faculty sponsor who is also a member of the EECB graduate faculty.**

Ordinarily, though not necessarily, the sponsor would become the student's graduate advisor/committee chair.

\*Although a GRE advanced test score is not required for admission, applicants are advised to submit the results of an appropriate advanced test.

#### **Applying to the EECB Program**

**Only students who have been accepted to a graduate program in one of the academic departments at UHM can be accepted to the EECB program.**

Regardless of department admission deadlines, the EECB program deadline is February 1 for the fall semester. **New students are not accepted in the spring.** The application, GRE's, transcripts and letters of recommendation must be submitted to the department to which you are applying. EECB applicants must write "EECB" in box 6 of the application where it specifies "area of specialization" and proceed to follow the directions for submitting the application to the UH Graduate Division.

**The EECB application consists of a letter expressing your interest in EECB and a copy of your complete Graduate School application.** The letter should be sent to the EECB program office at the address below. Recommendation letters, copies of transcripts and copies of GRE scores should also be sent to the EECB office. Failure to send the appropriate copies may cause delays in processing your EECB application.

**Applicants to the EECB program must have a faculty sponsor to be considered for admission to the EECB program.** Begin by reviewing the Faculty section of this web site and contacting faculty members whose interests are similar to yours.

The EECB admissions committee uses the following criteria when evaluating applications:

1. GRE scores: The minimum that will be considered is the average of the three standard tests (verbal, quantitative and analytical) exceeding the 75<sup>th</sup> percentile. A student will not be considered if scores for any one of the three tests falls below 50% (unless overriding considerations from below prevail).
2. GPA: 3.0 or higher, OR 3.5 during senior year.
3. Written statement from applicant: Statements will be reviewed for content and writing style.
4. Letters of recommendation.

If you are not accepted based upon the above criteria when first admitted to another graduate program at UH, we encourage you to apply during your second year of school after demonstrating your ability to excel within your graduate program. In this case, you will want to show the admissions committee your progress during your first year by submitting a new letter of interest, UH transcripts and a strong letter of support from your sponsor. Deadlines for application to EECB by existing students are as follows:

February 1 for fall semester, October 15 for spring semester.

If you are an existing UH student applying for the first time to EECB, you will still need to follow the admission guidelines and deadlines established above.

### **Course Requirements for Specialization in Ecology, Evolution and Conservation Biology**

Course requirements for ALL EECB graduate students:

- Complete all degree requirements of the home academic department
- Participate in EECB activities, particularly the "Evolunch" seminar series
- One course in **ecology** at the 600 or 700 level (at least 2 credits)
- One course in **evolution** at the 600 or 700 level (at least 2 credits)
- One course in **conservation biology** at the 600 or 700 level (at least 2 credits)

## **COURSES**

(Updated 10/06)

*NOTE: Courses highlighted below have been approved by the EECB curriculum committee since the UH catalog was printed. All courses listed here have been approved by the EECB Graduate Education Committee.*

### **Ecology**

#### **ANTH 606**

Anthropology of Infectious Disease

#### **BOT 644**

Ethnoecological Methods (3)

#### **BOT 650**

Ecology Seminar (2)

#### **BOT 651**

Invasion Biology (3)

#### **BOT/ZOOL 652**

Population Biology

#### **PEPS 671**

Insect Ecology (3)

#### **MICR 680**

Advanced in Microbial Ecology (3)

#### **OCN 626**

Marine Microplankton Ecology

#### **OCN 627**

Ecology of Pelagic Marine Animals (3)

#### **OCN 628**

Benthic Ecology

#### **ZOOL 606**

Principles of Animal Behavior (2)

#### **ZOOL 606L**

Principles of Animal Behavior Lab (1)

#### **ZOOL 620**

Marine Ecology (3)

#### **ZOOL 621**

Evolutionary Ecology (4)

#### **ZOOL 623**

Quantitative Field Ecology (3)

### **Evolution**

#### **ANTH 604**

Seminar in Biological Anthropology (Physical Anthropology)

#### **BOT 662**

Advanced Systematics (4)

#### **BOT 675**

Molecular Systematics and Evolution (3)

#### **PEPS 633**

Insect Genetics (3)

#### **PEPS 662**

Systematics and Phylogenetics (3)

#### **CMB 604**

Evolutionary Genetics (2)

**CMB 625**

Advanced Topics in Genetics (2)

**CMB 650**

Population Genetics (3)

**CMB 680**

Molecular Genetics (3)

**TPSS 615**

Quantitative Genetics (3)

**MICR 671**

Advanced Microbial Genetics (3)

**ZOOL 606**

Principles of Animal Behavior (2)

**ZOOL 606L**

Principles of Animal Behavior Lab (1)

**ZOOL 621**

Evolutionary Ecology (4)

**ZOOL 719**

Topics in Systematics & Evolution (V)

**Conservation Biology**

**ANTH 620H**

Human Ecology (3)

**BOT 651**

Invasion Biology (3)

**BOT/ZOOL 690**

Conservation Biology (3)

**PEPS 675/675L**

Biological Control

**GEOG 752**

Research Sem.: Resource Management (3)

**GEOG 758**

Research Sem.: Conservation (3)

**OCN 621**

Biological Oceanography (3)

**UH Hilo TCBES 600**

“Principles of tropical conservation biology and environmental science”

**ZOOL 750**

Topics in Conservation Biology (3)

**Content Varies** (but may be count towards a specific area, depending the topic)

**GEOG 750** Research Sem.: Biogeography

**BOT 612** “Restoration of Manoa Valley” counts as CB

**BOT 612** “Seed Ecology” counts as E or E

**BOT 612** “Plants, Animals and Islands” counts as E or E

**BOT 612** Fragoso counts as E or CB

**BOT 654** Pollination Ecology (3)

**BOT 654** Drake counts as E or E

**ZOOL 714** Topics in Animal Behavior

**ZOOL 719** Carlon counts as Evolution

**ZOOL 719** Cowie – Counts as Evolution

**ZOOL 719 Butler** – Counts as Evolution

**ZOOL 750** Kinzie & Wilcox counts as CB

**ZOOL 750** Conant counts as Evolution

Request complete details on the EECB program from the chair of the program at the listed address below:

EECB Program Office:  
University of Hawaii at Manoa  
2538 McCarthy Mall, Snyder 407  
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Tel: (808) 956-4602

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