2011-2012 FACULTY RESEARCH INTERESTS

The first telephone number listed is the office number; the second (if listed) is the laboratory number. The mailing address for all listed faculty is:

UCLA Department of Ecology and Evolutionary Biology
Box 951606
Los Angeles, CA 90095-1606

MICHAEL ALFARO. My lab studies biodiversity of vertebrates, especially coral reef fishes. We are interested in the tempo and mode of lineage diversification and how morphological evolution relates to functional and ecological diversity. Projects include testing the influence of coral reefs on morphological evolution in fishes, investigation of the role of genome duplications on speciation rate, and studies of morphological evolution in pufferfishes and boxfishes. (michaelalfaro@ucla.edu) (Availability: Unknown)

PRIYANGA AMARASEKARE. My research focuses on mechanisms that maintain biological diversity in variable environments. I approach this issue from both an ecological and an evolutionary perspective, and explore it using a combination of observation, experimentation and mathematical modeling. Through investigations of host-parasitoid and other multi-trophic interactions in variable environments, my research encompasses both basic and applied issues in Ecology. Web site: http://www.eeb.ucla.edu/Faculty/amarasekare/. (Botany 320, 310/206-1366, amarasek@eeb.ucla.edu) (Availability: Unknown)

PAUL BARBER. Research in the Barber lab focuses on the evolution and conservation of marine biodiversity. Current work focuses on elucidating biodiversity patterns in the coral reefs of the Coral Triangle, the world's most biologically diverse marine ecosystem, using cutting edge molecular genetic techniques. (Botany 414B, paulbarber@ucla.edu) (Availability: F, W, S; looking for qualified students interested in a full year)

DANIEL T. BLUMSTEIN. Behavioral ecology and conservation biology. Information on undergraduate research opportunities in our lab is posted at http://www.eeb.ucla.edu/Faculty/Blumstein/. (Life Sciences 4808, 310/267-4746, marmots@ucla.edu) (Availability: F, W, S, Sum)

CLIFFORD F. BRUNK. Molecular biological approaches to the evolution of genes in genomes. Isolation and characterization of environmental ciliate samples. Species distribution and biography of ciliates. Analysis of the evolutionary processes leading to genome organization with an emphasis on the evolution of ciliates. (Life Sciences Building 3365A, 310/825-3114, cbrunk@ucla.edu) (Availability: By
DONALD G. BUTH. Ichthyology; phylogenetic systematics; parasitology. Studies of population structure, hybridization, and phylogeny of North American fishes (especially catostomids, cyprinids, and gasterosteids) using morphometrics and allozymes. Secondary interest in parasites of fishes. (Life Sciences Building 1335, 310/206-6084, dbuth@ucla.edu)

PEGGY FONG. The research in my lab centers around the marine ecology of coastal ecosystems. Projects include nutrient dynamics and algal blooms, invasions of algae into temperate and tropical coasts, the effects of natural and anthropogenic disturbances on coral reefs, modeling seagrass communities in response to human disturbance, and developing bioassays to detect coastal eutrophication. (Botany 419A, 310-825-5444/310-206-6560, pfong@biology.ucla.edu)

PATRICIA ADAIR GOWATY. We study the evolution and ecology of social behavior in field and laboratory populations using naturalistic observations, experiments, analytical mathematical models and numerical experiments (simulations). Our focus is on behavior, particularly mating behavior - who mates with whom, how often, when, and, most important, why. Our focus is on MATING BEHAVIOR, but our dependent variables are always about fitness, i.e., relative reproductive success and survival of individuals; our studies are about individuals in demographic context. We are now concentrating on long-term multi-generation PEDIGREES. We use DNA markers to infer kinship, genetic parentage, and population structure of birds and Drosophila. (Botany 114, gowaty@eeb.ucla.edu) (Availability: Unknown)

GREGORY F. GREther. Behavioral and ecological mechanisms of selection, with an emphasis on understanding how secondary sexual characteristics evolve; geographic variation in coloration, behavior, and life history along environmental gradients; speciation; phenotypic plasticity; animal contests and territoriality; colonial roosting. Current study systems include insects, birds and fish. (Life Sciences Building 4325, 310/794-9769, ggrether@ucla.edu) (Availability: F, W, S, Sum)

STEPHEN HUBBELL. My collaborators and I study the ecology of tropical tree communities in large plots in the Neotropics and in Southeast Asia. From time to time, there are opportunities for undergraduates to work in the field at one of these plots during the summer term. During the winter term on campus, there is an opportunity to learn to work with large datasets on the population and community ecology of tropical trees. There may also be opportunities to do lab work using molecular techniques to study seed dispersal in tropical teees and identify genetic individuals in large clonal lianas. (Botany 114, shubbell@eeb.ucla.edu) (Availability: W, Sum)

DAVID K. JACOBS. My lab is devoted to the study of evolution of marine animals. There are currently two areas of research in the lab. One involves the use of molecular techniques to address questions of population divergence and speciation along the coast, especially in estuarine taxa. This work involves aspects of conservation genetics and the history of environmental change. One of our favorite research areas is the Gulf of California. The second area of research involves the use of developmental genes and gene expression to understand the evolution of animal form. We are particularly interested in the way in which different animal phyla evolved around the time of the Cambrian Radiation approximately 600 million years ago. This research involves the study of the evolution of development (EvoDevo). We are currently examining the evolution of eyes in jellyfish in this context. In the lab we also explore other aspects of invertebrate paleontology and evolution including the functional biology of invertebrates and how physical factors, such as climate, have influenced animal diversity through time. We prefer to take appointment)}}
students in the lab that can make more than 1 quarter commitment (Life Sciences Building 5127B, 310/206-7885, djacobs@ucla.edu) (Availability: inquire)

JAMES LLOYD-SMITH. Research in my group centers on the ecology and evolution of infectious diseases, with particular emphasis on emerging pathogens. We apply mathematical and computational methods to understand the dynamics of disease spread in human and wildlife populations, so potential students should have strong quantitative skills and programming ability. Projects include the dynamics of leptospirosis in California sea lions, spillover of monkeypox from wildlife reservoirs into humans, and theoretical studies of evolutionary emergence of novel human pathogens such as SARS or avian influenza. (Terasaki Life Sciences Building 4135, jllloydsmith@ucla.edu) (Availability: S, Sum)

GLEN M. MacDONALD. Our research group consists of climate change scientists working on questions of long-term climate dynamics and the impacts of future climate warming. In our work we reconstruct past climates and the response of vegetation, rivers and lake ecosystems to climate change. We are particularly interested in Arctic climate change. We also work on the impacts of prolonged droughts on water resources and fire regimes. We are also working questions of carbon and methane stored or released from organic-rich soils. To produce long records of climatic and ecosystem change we analyze tree-rings which can extend back over hundreds to thousands of years. We also analyze lake sediment chemistry and fossil content. The lake sediment records can go back tens of thousands of years. Finally, we also obtain cores from peatlands and other wetlands. Our samples come from the western U.S., Hawaii, Canada and Russia. In the lab students learn how to prepare wood, lake sediment samples and organic soils for analysis and how to use software to analyze and graph the results of their work. Opportunities also exist to work on library research and occasional field trips. (LaKretz Hall, Suite 300, macdonald@ioe.ucla.edu or macdonal@geog.ucla.edu, www.biogeographer.com)

PETER NARINS. Evolution of acoustic communication: physiology, mechanics and behavior. (Life Sciences 4835, 310/825-0265/310-206-8407, pnarins@ucla.edu) (Availability: Professor Narins is UNABLE to take on anymore undergraduates during the 2011-2012 academic year).

PETER NONACCS. Research in behavioral ecology and social evolution, using both theoretical and experimental approaches. Areas include: foraging behavior and life history trade-offs in ants, bees and wasps; social behavior in colonies; and the evolution of parental care strategies. (Life Sciences Building 3125, 310/206-7332, pnonacs@biology.ucla.edu) (Availability: F, W, S, Sum).

JOHN NOVEMBRE. My research group works on developing and applying computational methods for analyzing population genomic data, especially from human populations. Central topics of interest are methods for studying population structure, detecting signatures of recent or on-going natural selection in patterns of genomic variation, and genome-wide association mapping. (Terasaki Life Sciences Building 4129, 310-825-4065, jnovembre@ucla.edu). (Availability: F, W, Sum)

PHILIP W. RUNDEL. Adaptations of plants to environmental stress, with a focus on mediterranean, desert, and tropical forest ecosystems; development of sensor array technologies for ecological research; conservation biology of California and other mediterranean-climate ecosystems. (Life Sciences Building 3219, 310/825-4072, 310/825-8777, rundel@biology.ucla.edu)

LAWREN SACK. Our lab focuses on plant structure and function, and how these contribute to ecology. We are also interested in the evolution and functional consequences of plant diversity, especially the
evolution of diversity in leaf design, as well as in tolerance of environmental challenges and stress. Approaches include measurements of structure, physiological processes and performance in the lab and field (e.g., photosynthesis, hydraulics, anatomy, growth), as well as microclimate in the field. We also emphasize lab analyses and computer modeling. We are also very interested in applications of research toward forest and plant species conservation (Life Sciences Building 3218, 310/825-6525, lawrensack@ucla.edu). (Availability: F, W, S, Sum)

BARNEY SCHLINGER. My laboratory explores the neural and hormonal control of brain and behavior in both wild and captive songbirds. Specific projects include examining steroid synthesis and metabolism in brain, hormonal effects on neurogenesis and other forms of neural plasticity, hormonal control of learning and memory and hormonal control of song and song learning. Field studies in Panama examine neuroendocrine and muscular control of a physically complex courtship behavior of a small rainforest bird. (Terasaki Life Sciences Building 2135, 310/825-5716, schlinge@lifesci.ucla.edu). (Availability: F, W, S, Sum)

THOMAS B. SMITH. Evolutionary ecology, speciation, conservation of vertebrates, and ecology of disease, especially in the tropics. (La Kretz Hall, Suite 300, 310/206-4712, tbsmith@ucla.edu, http://www.environment.ucla.edu/CTR/)

VICTORIA L. SORK. Landscape genomics, population genetics, and molecular ecology of tree populations. One current area of research uses genomic tools to study adaptive variation in tree populations to understand the evolutionary potential of tree populations to respond to climate change. A second area of interest is the study of gene flow through pollen movement and seed dispersal on plant populations and impact of landscape change. Research projects in our lab utilize a broad range of research approaches, including ecological field work, laboratory genetic analyses, and bioinformatics, or a combination of these. My primary study species is California valley oak but other projects include pollination of desert shrubs of California, pollination by bats in Mexico, seed dispersal by birds in Ecuador, and extinction through hybridization in oaks.

CHARLES E. TAYLOR. Population genetics and adaptive sensor arrays. There are two main projects in my laboratory. The first is concerned with developing better ways to control malaria in West Africa. Aspects of our research include population genomics, remote sensing and computer simulation. The second project is directed at providing sensor arrays the ability to localize and identify bird calls, and to arrive at a collective understanding of their behavior. Our efforts are conducted primarily with thrashers and grosbeaks in Northern California and with antbirds and wood wrens in Chiapas, Mexico. (Life Sciences Building 3109, 310/825-6850, taylor@biology.ucla.edu) [Some opportunities exist for undergraduate involvement. Experience in computer programming is required.] (Availability: Unknown)

BLAIRE VAN VALKENBURGH. Paleobiology, ecology, and functional morphology of vertebrates. Emphasis is on biomechanical approaches to the study of vertebrate skeletal and dental adaptation. (Terasaki Life Sciences Building 2163, 310/794-9398, 310/825-4669, bvanval@ucla) (Availability: F, W, S, Sum)
ROBERT K. WAYNE. Application of molecular genetic techniques to questions in systematics, population genetics, sociobiology and conservation biology. Past research involved mammalian carnivores, especially canids, but current program includes a variety of vertebrate and invertebrate taxa. (Terasaki Life Sciences Building 4149, 310/206-0334, 310-825-5014, rwayne@biology.ucla.edu)

CHERYL ANN ZIMMER. Studies of physical processes that affect biological processes, particularly the larval stages of invertebrates; various aspects of larval ecology; processes that control the feeding ecology of invertebrates living on the sea floor; physical/biological interactions, in general. (Botany 220A, 310/825-8561, cazimmer@obee.ucla.edu) (Availability: W, S, Sum)

RICHARD K. ZIMMER. Behavioral ecology and sensory biology of aquatic organisms: the roles played by chemical cues and hydrodynamics in mediating behavioral interactions that structure populations and communities. Current projects are aimed at elucidating basic mechanisms that control predator-prey dynamics, recruitment of marine larvae and plant propagules, sperm-egg interactions, parasite-host relationships, and the feeding behavior of freshwater insect larvae and amphibians within the laboratory and natural habitats. (Botany 212A, 310/206-4981, z@biology.ucla.edu) (Availability: W, S, Sum)