UCLA/La Kretz Workshop in Conservation Genomics, 23 - 27 March, 2019

Conservation biology, genetics, and evolutionary biology have had a long and intimate relationship, and conservation constitutes one of the key applications of evolutionary analysis to real-world biological problems. The impacts of population and landscape genetics and gene expression studies have been particularly striking, and are helping to solve some of the most pressing problems in biological conservation.

As the field of conservation genetics continues to grow and mature, the availability of genome-scale data stand to make profound new contributions to our ability to identify and protect at-risk populations and recover those that are most endangered. However, genomic analyses also carry a computational burden—data sets are enormous, often require diverse skills and approaches for assembly, quality control and analysis.

The La Kretz annual workshop provides a comfortable, rigorous, and informal training environment for a small group of motivated graduate students to explore how conservation problems can best be addressed with genomic-level data. Our goal is to provide hands-on experience in the efficient collection, troubleshooting, and analysis of large data sets for conservation-relevant problems. One of the highlights of our workshop is active participation from members of several governmental agencies who are at the forefront of endangered species protection and management, providing a forum for exploring the most relevant aspects of conservation genomics to managers.

This year, the Woolsey fire destroyed most of our beloved UCLA/La Kretz Field Station (https://www.ioes.ucla.edu/santa-monica-mountains-research/) where we normally house the workshop. However, through an incredibly generous subsidy, we will house participants this year at the Calamigos Ranch next door (https://www.calamigos.com), with classes at the UCLA Stunt Ranch Reserve (http://stuntranch.ucnrs.org/), both in the heart of the Santa Monica Mountains. Only 30 miles from UCLA and the LAX airport, but nestled in the relatively undeveloped 160,000 acre Santa Monica Mountains National Recreation Area, Calamigos is a gorgeous setting, and Stunt Reserve provides an ideal location to explore new developments in genomic science and pressing needs in conservation and management together in a single setting.

Our current instructor list, drawn from UCLA faculty and several other partner institutions, includes:

Gideon Bradburd (Michigan State University)
Ben Fitzpatrick (U. Tennessee Knoxville)
Zach Gold/ Emily Curd
Ryan Harrigan
Kirk Lohmueller
Evan McCartney-Melstad
Alice Mouton
Brad Shaffer
Victoria Sork
Erin Toffelmier
Ian Wang (UC Berkeley, tentative)
Bob Wayne

Agency partners represented:
US Geological Survey, Bureau of Land Management, US Fish and Wildlife Service, California Department of Fish and Wildlife, The Nature Conservancy.

Topics covered:

Overview of traditional conservation genetics
Next generation platforms: the best tool for the job
Data management pipelines:
- Quality Control
- Data storage
- Data organization

Data types and analyses:
- SNPs
- Sequences
- Exploring very large data sets
- Functional genomic data
- RNA-seq

RADseq pipelines, from raw reads to analyzing data
Genomic data and GIS
Visualizing geographic structure and demographic history
Admixture, clines, and hybridization
Detecting adaptive variation
RNAseq in a conservation context
eDNA: promise and reality

Prerequisites

Available housing limits course enrollment to ~20 students. Preference will be given to masters and doctoral candidates who are in the early to middle stages of their thesis research, and who have some familiarity with using a command line interface or programming languages (i.e. Perl, python etc.). We also welcome applications from postdocs, faculty, and government researchers. We encourage applications from women, minorities, and individuals from under-represented demographics in the sciences.

ADMISSION AND FEES

Applicants will be admitted based on academic qualifications and appropriateness of research interests. The course fee is $475. This includes food and lodging at Calamigos, as well as all incidental fees, for the duration of the course (arriving Saturday March 23, departing Thursday March 28).

UCLA students are encouraged to take the La Kretz Workshop for graduate credit. Other UC students may also be able to take the course for credit. We will provide documentation of the course if needed at your home institution.

Application Forms and Information

Visit the UCLA/La Kretz Center for California Conservation Science website for

additional information and to download an application form:

https://www.ioes.ucla.edu/wp-content/uploads/2019-La-Kretz-Conservation-Genomics-Application.docx

Application Deadline (sorry it's short notice!):

Applications are due by February 18, 2019. Please send a completed application form and a short letter of recommendation from your major advisor. Students will be notified via e-mail by February 22, 2019 of acceptance.

Applications should be emailed as a single PDF (including the letter of recommendation) to: lakretz@ioes.ucla.edu

Any question, contact Brad Shaffer at: brad.shaffer@ucla.edu

See you in the mountains!