



QUANTITATIVE & SYSTEMS BIOLOGY SEMINAR: It's About Time: How Will a Changing Climate Influence Natural Selection and Demography in Plant-Pollinator Systems?

Diane Campbell

Professor, Ecology & Evolutionary Biology
University of California, Irvine

About The Speaker:

Diane Campbell is an evolutionary ecologist and faculty member at UC Irvine since 1989. She has a long-term research program on evolutionary and demographic responses of plant populations to a changing climate. Another project focuses on floral volatiles and responses of pollinators and herbivores. Much of her field research is based at the Rocky Mountain Biological Laboratory.



Abstract:

Most efforts to measure responses of populations to recent climate change have focused on ecological responses without considering the potential for adaptive evolution. More than three decades of research on *Ipomopsis* plants is allowing tests of whether plant populations can adapt quickly enough to outpace demographic extinction due to earlier snowmelt in mountainous regions. These data include 18 years of measurements of selection intensities on the same traits at the same sites, as well as estimates of genetic variances and of mean absolute fitness. Selection mediated by animal pollinators has favored longer flowers, and the trait appears to have evolved in response. However, the intensity of this selection is weakening as earlier snowmelt subjects plants to longer droughts, and higher pollen receipt no longer translates to higher fitness. Earlier snowmelt also correlates with drop in seedling establishment and seed production, such that populations are more likely to fall below replacement. Some vegetative traits are favored under dry conditions, but sufficiently rapid evolution to counter the impact on absolute fitness would require high heritabilities of these traits. Phenotypic plasticity of some traits (including water-use efficiency, nectar, and floral volatiles) could contribute to persistence of the populations. We are now building models to predict the overall evolutionary impact on demography in a way that takes into account responses of both vegetative and floral traits.

Date:

10/22/2021

Time:

2:30 PM-3:45 PM

Location:

Please contact
snsgradstaff@ucmerced.edu
for the Zoom information.

For more information, contact : Emily Moran
Emoran5@ucmerced.edu