



RIVERSIDE

DEPARTMENT OF ENTOMOLOGY
Entomology Seminar Series



Speaker:

Zachary G. MacDonald, Ph.D.

Date: Thursday, March 20th, 2025

Time: 4:00 pm - 5:00 pm

Format: In-Person Seminar & Virtual Access

Location: Genomics Auditorium, Room 1102A

Zoom: 952 1906 3064

Passcode: 505445

Title:

"Integrating Genomics and Ecology for Insect Conservation on a Changing Planet"

Abstract:

From local to global scales, we are documenting unprecedented declines in insect diversity and abundance due to land use and climate change. Conservation genomics presents an emerging toolkit that can be used to slow and even reverse these declines. Despite this, insects remain underrepresented in conservation genomic research programs. My research aims to integrate genomics with landscape ecology and forward-in-time climate modeling to inform conservation strategies, focusing on topics such as population structure, inbreeding and outbreeding depression, climate adaptation, and habitat connectivity. Through projects like the California Conservation Genomics Project and other collaborations across North America, I employ novel high-resolution species distribution models and whole-genome sequencing for endangered insects, creating some of the most comprehensive multi-species conservation genomic datasets yet assembled for insects. A significant portion of my work focuses on critically endangered—and even locally extinct—insects across California, where genomics provides vital insights into the causes of declines and strategies to optimize recovery efforts. In many cases, genetic rescue is one of our most powerful conservation tools, offering a means to restore genetic diversity and population viability. However, contrasting case studies, such as my research on a critically endangered butterfly in Canada, reveal scenarios where genetic rescue may be counterproductive. Conservation genomics, combined with deep ecological and natural history knowledge, provides the framework needed to determine when and how to intervene. This seminar will explore how advances in conservation genomics can revolutionize insect conservation on a changing planet.

<https://ucr.zoom.us/j/95219063064?pwd=QN4ZjAagOar0nDRNt6Fn8iELW0UPFK.1>

Refreshments will be served in the Entomology Building at 3:00 pm