UC RIVERSIDE

DEPARTMENT OF ENTOMOLOGY

ENTM250 Seminar Series

Speaker:

Rudolf Meier, Ph. D.
Museum für Naturkunde, Berlin

Date: Monday September 29, 2025
Time: 4:00 pm - 4:50 pm
Format: In-Person Seminar & Virtual Access
Location: Genomics Auditorium 1102A

Zoom: 943 6687 2379
Passcode: 453393

Title:

"Digitally Native Species Discovery: Tackling Insect Diversity with Robots, Megabarcoding, and Artificial Intelligence"

Abstract:

Most of Earth's biodiversity remains unknown. Only about 20% of species are formally described, while the remaining 80% are undescribed. Over the last 250 years, biodiversity science has produced an "analog backlog," and generating more of it in an era of machine learning and digital infrastructures would be counterproductive. Therefore, this talk presents a vision for digitally native species discovery that unites high-throughput DNA barcoding with nanopore sequencers, robotic imaging, and artificial intelligence. Preliminary species hypotheses generated with cost-effective barcoding are validated with targeted morphological research, before leading to species descriptions generated with AI-assisted tools. Specimens serve as anchors for structured digital records that include sequences, images, metadata, and traits. These records are stored in open repositories, where they are interlinked, transparent, reproducible, and reusable for conservation and ecological monitoring. By prioritizing scalability and interoperability, biodiversity discovery can be accelerated while generating species descriptions that are both human- and machine-readable. In doing so, the "dark taxa" that dominate global insect diversity can finally become visible and tractable, supporting biodiversity discovery, monitoring, and conservation in a digital age.

Refreshments will be served in the Entomology Building Courtyard at 3:30pm