DESERT INSTITUTE
at Joshua Tree National Park
74485 National Park Dr. Twentynine Palms, CA 92277
Phone: 760-367-5535; e-mail: desertinstitute@joshuatree.org

Fall Session
2019

Desert Invertebrates, A Microscopy Primer

Information

Date/ Time: Saturday, December 7, 9 am – 5 pm
Sunday, December 8, 9 am – 4 pm
Meet at: **Oasis Visitor Center** (click on link for a map of the meeting site)
74485 National Park Dr., Twentynine Palms, CA 92277
Instructor: Paul DeLey, Ph.D., Zoology, UC Riverside

Overview

Participants will be introduced to the diversity of the microscopic fauna of California's deserts, including an overview of their various roles in food webs, life cycles, physiological adaptations enabling them to survive extreme temperatures and prolonged desiccation, as well as other surprising ecological and biological aspects. Two half-day lab sessions will provide hands-on opportunities for learning how to use simple tools and techniques for isolating microscopic invertebrates from different materials, transferring them to microscope slides with the aid of a dissecting microscope, and operating a compound microscope for observing them at high magnification with advanced optics.

Itinerary

Saturday, December 7, 9 am – 5 pm
Oasis Visitor Center

- Lecture: Introduction and Overview
- Lunch Break, **bring your own food**
- Collecting samples and setting up extractions of microscopic organisms
- Lab Session with microscopes: Operating Dissection and Compound Microscopes

Sunday, December 8, 9 am – 4 pm
Oasis Visitor Center

- Lecture: Diversity and Ecology
- Snack break, **bring your own food**
- Lab Session continued: Making Fresh Mounts and taking microphotographs

What to Bring to the Course

Optional Equipment

The 10 Essentials: *Every day in the Desert*

- Day pack
- 4 quarts of water
- Hiking boots with traction soles
- Lunch and snacks
- Clothing layers
- Hat
- Sun glasses
- Sunscreen
- Notebook and pencil/pen
- Whistle

Fitness Requirements

Participants must be in good physical condition for courses/activities in a desert that may be hot, dry, windy, and sometimes surprisingly cold.

Hike Level

Easy to Moderate

Guidelines

- You are responsible for your safety.
- Park your car in designated areas only. Parking along the side of the road is dangerous to you and the environment.
- Rattlesnakes are present in the park. Avoid contact with wildlife. Put your hands and feet only where you can see.
- Stay with the group. If you get lost, stay put.
- Drink plenty of water. If you run out, notify the instructor or the Desert Institute Representative.
- Before leaving the class, check out with the Desert Institute Representative.

Instructor Biography

PAUL DELEY obtained his Ph.D. in Invertebrate Zoology at Ghent University, Belgium in 1994 and moved to Riverside in 2000 to joined the Department of Nematology at UCR as a faculty member. His research focuses on ecology, diversity and systematics of nematodes in arid ecosystems, using methods that combine light microscopy observations with DNA sequence analyses. His current teaching duties include annual upper division undergraduate courses at UCR on the subjects of Invertebrate Zoology and Biology of Nematodes, and his past teaching also included subjects such as Soil Ecology, Arthropod Diversity, and Theoretical Systematics. He is an avid nature photographer with particular interest in macro photography as a tool for exploring biodiversity of Southern Californian deserts and ranges.

Suggested Readings

http://openlearning.une.edu.au/LivingSoils/index.php?u=module01/index.htm
http://www.eyeofscience.de/en/zoology/
https://serc.carleton.edu/microbelife/extreme/withoutwater/index.html

More detailed or technical:

http://www.nps.gov/moja/learn/science-newsletter.htm
https://www.cell.com/current-biology/comments/S0960-9822(15)01158-6
http://extension.illinois.edu/soil/SoilBiology/soil_biology_primer.htm

* The Desert Institute staff/instructors will attempt to accommodate participant's needs; however we reserve the right to deny a student participation in the course due to concerns regarding health and safety issues.

Rattlesnake Room Directions

Coming from the west on Hwy 62, turn right(south) on Utah Trail Rd, drive past the JTNP Oasis Visitor Center and immediately after the brown "Pay Entrance Fee 3 miles ahead" sign turn right into the south side parking lot. Look for the “Service road Employees only” sign, and park in the dirt lot. The classroom is to the left of the “Resources/Conference Room Building 103” sign.