

DESERT INSTITUTE
at Joshua Tree National Park Association
74485 National Park Dr. Twentynine Palms, CA 92277
Phone: 760-819-4714; e-mail: desertinstitute@joshuatree.org

Spring Session
2023

Moss Ecology and Diversity

Information

Dates/Time:

Saturday, February 18, 9 am – 5 pm

Sunday, February 19, 9 am – 4 pm

Meeting location:

[Oasis Visitor Center](#) (click on link for a map of the meeting site)

74485 National Park Dr., Twentynine Palms, CA 92277

Instructor: Theresa Clark, PhD, Biological Sciences

Overview

Moss in the desert? Why yes! Come learn the many important roles mosses play in desert ecosystems! This mysterious and beautiful group of tiny, overlooked plants comprise over 200 species in the Mojave Desert and many survive by spending much of the year dry and dormant while continuing to stabilize soils and provide habitat to invertebrates. Students will learn about mosses' adaptation for "drying without dying" in desert ecosystems and how microhabitats help protect mosses from the extreme desert climate. Students will use specimens and microscopes to identify 10 common Mojave Desert mosses (Genus or species) while learning through observation what features define mosses and how to distinguish them from similar-looking species of lichens, algae, ferns, and herbs. A mist hydration activity will teach students the unique "spongey" relationship between mosses and water, and how this compares to survival strategies in other desert plants. In the field, students will become keen "moss hunters" gaining first-hand experience with finding and identifying common mosses on rock, soil, biocrust, and riparian areas in the Mojave Desert while learning to differentiate mosses from the other "look-alikes" encountered. Lastly, students will learn to characterize protective features of moss microhabitats and quantify how such habitats may help shelter mosses from the brunt of future climate change.

Itinerary

Saturday, Feb 18, 9 am – 5 pm

Meet at Oasis Visitor Center

- Lecture
- Lunch Break, **bring your own lunch and water!**
- Lab Session with microscopes

Sunday, Feb 19, 9 am – 4 pm

Meet at Oasis Visitor Center

- Field session – exploring moss habitats in JTNP
- Lunch in the field, **bring your own bag lunch & water!**
- Field session continued – field collecting tips & tricks

What to pack

Essential

- 4 quarts of water
- Lunch and snacks
- Hiking boots or other appropriate closed-toe footwear (no sandals!)
- Clothing layers
- Sun protection: Hat or visor, sunglasses, sunscreen
- Small field notebook and pencil/pen
- Whistle

Optional Equipment

- Hiking Poles, knee pads, hand lens (but we will provide LED magnifying glasses)

Fitness Requirements

ACTIVITY LEVEL: Easy (flat terrain on marked trails with the option to explore boulder fields), but endurance is required as this is a full day of activity.

Instructor Biography

THERESA CLARK is a bryophyte ecologist from Maine, but much of her research has been in the American Southwest studying tiny dryland mosses (which are often a quarter of the size of their mesic Maine relatives). She earned a M.S. at Northern Arizona University researching the diversity and community ecology of mosses in Grand Canyon National Park. During her PhD at the University of Nevada, Las Vegas, she studied dryland moss survival and the potential for these small mosses to “hide” from climate change in protected microhabitats. After finishing her degree, she has continued in research and science education. At the University of Minnesota, she has been teaching biology and studying long-term desiccation tolerance and functional trait ecology of dryland mosses including characterizing their unique “spongy adaptations” for holding and moving water. In progress is her moss flora of Grand Staircase Escalante National Monument (Utah) and she has helped develop a photographic moss guide for using California mosses as bioindicators for riparian health. She offers regular moss outreach events, teaching children and adults alike how to “moss hunt” without disturbing these important and sometimes delicate plant communities.

Learn more here (before or after the course)

- Bryophytes of the Gila Wilderness, New Mexico (species list & images)
<https://wnmu.edu/academic/nspages/gilaflora/bryophytes.html>
- Theresa’s Mosses of Grand Canyon (PDF at the bottom of the page):
<https://www.researchgate.net/profile/Theresa-Clark-3/publications>
- Common Mosses of Western Oregon and Washington
- <https://www.wildblueberrymedia.net/store/common-mosses-of-western-oregon-and-washington>
- Janice Glime’s Moss Ecology Online Book
- <https://digitalcommons.mtu.edu/bryophyte-ecology1/>
- Magical World of Moss Gardening (Annie Martin)
- https://www.amazon.com/Magical-World-Moss-Gardening/dp/1604695609/ref=sr_1_1?

* 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.