

Fungi of the Sky Islands

August 29th (morning) – September 7th (morning) 2019
Southwestern Research Station, Portal, Arizona

Instructors

Christian Schwarz

Co-author of Mushrooms of the Redwood Coast, mushroom taxonomist and field biologist, co-founder of the North American Mycoflora Project, biodiversity zealot and citizen science advocate.

Damon Tighe

Fungal identification, molecular techniques and DNA barcoding of fungi

Bob Chapman

Chiricahua Mycoflora Project, fungal identification and ecology, expertise in boletes, desert-adapted gasteromycetes, and puffballs

Terri Clements

AZ mycofloristic investigator extraordinaire

Michelle Torres-Grant

Useful photography techniques for mushroom identification using mobile devices and DSLR cameras

Mary Jane Epps

Fungal ecology, insect-fungal interactions

And an exciting lineup of guest lecturers TBA!



About the Course

Join us for a 9-day course on Fungi of the Sky Islands! Led by a group of instructors with backgrounds ranging from field identification of mushrooms to DNA sequencing to insect-fungus interactions, we will spend our days in the field visiting a diversity of habitats, collecting macrofungi. In the afternoons and evenings we'll return to the Southwestern Research Station for lectures, tutorials on microscopy techniques, vouchering protocols, and molecular techniques for DNA barcoding of macrofungi. The Sky Islands of southern Arizona are a biodiversity hotspot hosting a tremendous diversity of unique and fascinating habitats. The mushrooms of this region are very understudied, and include a number of endemic species. We'll be doing groundbreaking work to paint a more complete picture of the North American Mycoflora, and are likely to encounter rare and potentially undescribed species during the course.

Our lecture and workshop topics (exact schedule and topics t.b.d.) will include:

Mushroom identification for beginners

We'll start the week with an introduction/review of basic methods and tools to get a footing in the sometimes overwhelming-seeming world of fungi. We will focus on getting a working understanding of morphology and terminology, use of field guides and web resources, and an introduction to the major groups of macrofungi.

Microscopy

Being able to observe and record microscopic features is the single best way for an intermediate-level identifier

to become an advanced identifier, and also an excellent way for beginners to quickly gain expertise. You might be surprised how straightforward the process of mushroom microscopy can be. We'll cover techniques for preparation of slides, how to interpret what you're seeing, how to record, report, and use that information, as well as a few basic stains (Melzer's, Congo, KOH). We will also learn about techniques for scanning electron microscopy (SEM) preparation of fungi for imaging of spores, hyphae, and bacterial cells in situ.

Collecting and curation

Preserving well-documented collections (vouchering) for future research is without a doubt one of the most valuable things that citizen scientists can do to contribute to our understanding of the biodiversity of fungi. We'll cover a simple, practical protocol for vouchering mushrooms that is suitable for home- and club-scale operations.

Molecular methods for fungal identification

Damon Tighe will show us how to do basic extraction and PCR to amplify DNA from the mushroom samples that we collect. These will then be sent off for sequencing to give us deeper insight into the identity and relationships of our collections. We will cover the collection, extraction, and data analysis tools needed for molecular identification techniques.

Insect-fungal interactions

Fungi participate in a wealth of interactions with diverse assemblages of insects and other arthropods. Ecologist Mary Jane Epps will go over the basics of collecting and identifying fungal insect associates, methods for studying behavior on fungi, and the ecology of these important interaction networks.

iNaturalist diversity project

We will rely heavily on the iNaturalist platform for documenting all of our finds, whether fungal or otherwise. We'll cover the basics of the platform and use of the smartphone app on the first day, and will cover more in-depth uses of the website for both uploading as well as exploring data over the duration of the course. We'll summarize our efforts in a iNaturalist project complete with our photos, DNA barcodes, specimen records, and ongoing discussion as our identifications become more refined, even after the course ends. We'll have a few prizes for specific challenges that we'll reveal at the start of the course.

Last but not least – the various habitats of the Sky Islands are home to a variety of delicious edible wild mushrooms. We'll be sure to sample them as we find them, with an emphasis on highlighting the distinct textures and flavors of the different species.

Cost for the 9 day course, including meals and housing at the Southwestern Research Station: \$1206.

To apply for this exciting new course, visit <https://www.amnh.org/research/southwestern-research-station/education> or email adowner@amnh.org and request an application.

