

Barcoding Mushrooms in a Biodiversity Hotspot:

Citizen science in action

California has more species, more endemic species, and more rare and endangered species than any other state in the United States, and San Diego County in particular is an internationally recognized biodiversity hotspot. Due to varied topography and a Mediterranean climate, it represents the taxa-rich boundary between the southern range limit of many northern species and the northern limit of some southern species. But human development has created tremendous habitat loss, so local citizen scientists are working to scientifically document this diversity before it is lost.

Volunteers from the San Diego Mycological Society (SDMS) for example, began vouchering mushroom specimens gathered during their forays in the SD Herbarium at the San Diego Natural History Museum, with the goal of eventually creating a synoptic collection of mushrooms for the county. Inspired by participation in a recent workshop on barcoding held at the University of California San Diego, some SDMS members quickly realized that they could take what they were already doing to the next level, by also taking fresh tissue samples from the specimens that could be subsequently used for DNA barcoding.

This was seen as a win-win for the SDMS, because it provided the opportunity to have fun while generating some useful scientific data. The best part is that everyone who wants to participate can contribute to the project in their own way. Members who are most interested in mushroom hunting can use their skills to find and bring in the specimens, those who enjoy identification can key them out, photographers can document the specimens, while others with a more scientific bent can take charge of recording the field data, taking the tissue samples, and vouchering the specimens at the museum. Afterward, everyone can divide up whatever is left over and still enjoy their favorite aspect of mushrooming - cooking, eating, or expressing their creativity by using them for arts and crafts!



Each February, SDMS holds a popular, free public education event called the Fungus Fair in beautiful Balboa Park, to educate people and share their enthusiasm for mycology. Members participate in a foray to collect specimens for display, and this year they worked with iBOL so that they could take tissue samples from the mushrooms and save them for future barcoding before the specimens were deposited in the permanent collection in the museum's herbarium.

Going forward, SDMS will be promoting their new mushroom barcoding project to help increase public awareness about barcoding, local conservation issues, and the world-wide significance of San Diego's biodiversity. In addition, this interesting pilot project will strengthen the efforts of the San Diego Citizen Science Network to encourage and inspire citizen science projects locally. Most importantly, the barcoding data that are generated will be added to BOLD so that it can be shared with, and used by the scientific community.



Written by and images by: Mary Ann Hawke