The Biogeography and Systematics of Xylariaceous Fungi on Polynesian Islands

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Xylariaceous fungi are important wood decomposers, but also endophytes in plants, lichens, or algae. These fungi are among many groups with poor documentation on Polynesian Islands. Nearly no knowledge exists of the evolutionary origins of xylariaceous fungi in remote areas of the world like Polynesia. Dried specimens of xylariaceous fungi from Mo'orea (n=35), Kaua'i (n=25), Oahu (n=13), and Hawai'i (n=9) were obtained from cooperating with herbaria or directly through fellow researchers. The ITS and alpha-actin loci were PCR-amplified with Illumina tagged primers, and the final PCR products were purified through bead-cleaning. All libraries were pooled and then sequenced by the University of Wisconsin-Madison using the 2 X 300 bp Illumina MiSeq platform. OTUs were assigned to each sample, the same OTUs were aligned in MAAFT and run through a rapid bootstrapping analysis in RAxML. The resulting phylogenetic tree will include fungi within the same species from the other seven biogeographic regions. This cladogram will provide insight into the evolutionary relatedness of Polynesian xylariaceous fungi compared to conspecific fungi from elsewhere in the world. Additionally, means of dispersal will be hypothesized based on the ecology of the Mo'orea fungi by referencing eDNA datasets.