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Fungi and Restoration Initiatives

Fungi play critical roles in the environment as decomposers, mutualists, and pathogens. A diverse suite of saprobic fungi is needed for effective decomposition and nutrient cycling. Appropriate mycorrhizal fungi benefit their associated plants with improved uptake of nutrients and water, pathogen protection, and increased tolerance to non-optimal soil conditions and climatic extremes. Pathogens decrease the fitness of impacted plants and modify plant community composition. Some species are also important non-timber products, thereby enhancing benefits to local communities. Different suites of fungi are required for successful restoration of grasslands versus forests. The benefits of incorporating fungi into restoration actions and subsequent monitoring of restoration success in both systems have been documented. Yet, fungi have rarely been considered in restoration initiatives. This is in part due to challenges in detecting and identifying fungi, especially by the restoration community. Increased knowledge of fungal diversity coupled with new established techniques for environmental sampling has greatly enhanced our ability to incorporate fungi in restoration efforts.

Greg Mueller's research focuses on the biology and ecology of fungi, especially mushrooms. His work provides information for the management and conservation of temperate and tropical forests, particularly in the Chicago region, Latin America, and China. Several projects focus on mycorrhizas, an essential symbiotic relationship between certain of these fungi and the roots of trees such as oaks and pines. In other conservation related research, Greg is looking at how fungi respond to restoration efforts in the Chicago area and conservation practices in Costa Rica and China. Greg, his postdocs, and graduate students also undertake research documenting the worldwide diversity and distribution of fungi (i.e., how many fungi are there and where do they occur) and the factors influencing these patterns. He is author of seven books/book length volumes and over 100 journal articles. Besides training graduate students through his adjunct appointments at Chicago area universities, Greg has trained graduate students at the University of Costa Rica and the National University in Mexico City. He was the International Coordinator for Fungal programs at the Costa Rican National Biodiversity Institute (INBio). Greg is Chair of the IUCN SSC Mushrooms, Brackets, and Puffballs Specialist Group and a member of the SSC



Mark Stanley Price

Steering Committee. He is also a member of IUCN WCPA and the Science Advisory Council for the Illinois chapter of The Nature Conservancy. He is past President of the Mycological Society of America.