

# **LEAF DESIGN: ITS EVOLUTION AND IMPACTS ON ECOSYSTEMS PAST, PRESENT AND FUTURE**

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Leaves are tremendously diverse in structure and physiology. Innovations in theory and measurements have increasingly clarified the major significance of leaf diversity for the function and evolution of whole plants and ecosystems. I will provide an update on new mechanistic and phylogenetic approaches into leaf design with implications at a wide range of scales, including determining the ecological consequences of the enormous diversity in leaf structure and hydraulic physiology; clarifying the evolutionary diversification of leaf physiology in adaptive radiations; estimating the ecology of ancient forests from fossil leaves; and applying physiology toward predicting the dynamics, productivity and ecohydrology of forests subject to global change.