

From Plant Traits to Vegetation Structure

Plant community ecology has traditionally taken a taxonomical approach based on population dynamics. This book contrasts such an approach with a trait-based approach. After reviewing these two approaches, it then explains how models based on the Maximum Entropy Formalism can be used to predict the relative abundance of different species from a potential species pool. Following this, it shows how the trait constraints, upon which the model is based, are necessary consequences of natural selection and population dynamics. The final sections of the book extend the discussion to macroecological patterns of species abundance and conclude with some outstanding unresolved questions. Written for advanced undergraduates, graduates, and researchers in plant ecology, Bill Shipley demonstrates how a trait-based approach can explain how the principle of natural selection and quantitative genetics can be combined with maximum entropy methods to explain and predict the structure of plant communities.



BILL SHIPLEY obtained his Ph.D. in plant ecology from the University of Ottawa in 1987 and now teaches plant ecology and statistics at the Université de Sherbrooke (Qc) Canada. He is author of over 70 peer-reviewed papers in ecology and statistics and *Cause and Correlation in Biology: A User's Guide to Path Analysis, Structural Equations, and Causal Inference* (Cambridge University Press, 2000).

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