Structural equation models (SEMs) are a powerful tool for analyzing complex ecological systems, as they can account for direct and indirect relationships. However, with great statistical power comes great statistical responsibility, and so SEMs must be carefully designed and implemented.

This workshop will provide a conceptual and practical introduction to SEMs. It will emphasize 1) using prior knowledge to create meaningful causal diagrams, 2) translating hypothesized relationships to appropriate model designs, and 3) interpreting statistical output to make valid inferences about ecological relationships. We will go through examples of piecewise SEMs describing ecological systems, and cover additional topics such as latent and composite variables, model validation, and model selection.