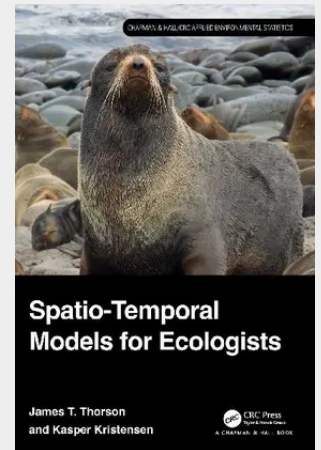


Spatio-Temporal Models for Ecologists

Ecological dynamics are tremendously complicated and are studied at a variety of spatial and temporal scales. Ecologists often simplify analysis by describing changes in density of individuals across a landscape, and statistical methods are advancing rapidly for studying spatio-temporal dynamics. However, spatio-temporal statistics is often presented using a set of principles that may seem very distant from ecological theory or practice. This book seeks to introduce a minimal set of principles and numerical techniques for spatio-temporal statistics that can be used to implement a wide range of real-world ecological analyses regarding animal movement, population dynamics, community composition, causal attribution, and spatial dynamics. We provide a step-by-step illustration of techniques that combine core spatial-analysis packages in R with low-level computation using Template Model Builder. Techniques are showcased using real-world data from varied ecological systems, providing a toolset for hierarchical modelling of spatio-temporal processes. Spatio-Temporal Models for Ecologists is meant for graduate level students, alongside applied and academic ecologists. Key Features: - Foundational ecological principles and analyses - Thoughtful and thorough ecological examples - Analyses conducted using a minimal toolbox and fast computation - Code using R and TMB included in the book and available online

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