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Nota di contenuto	Cover; Contents; Chapter 1 Approaches to studying food webs; 1.1 Introduction; 1.2 Traditions in ecology; 1.2.1 The community perspective; 1.2.2 The ecosystem perspective; 1.3 Food webs and traditions in ecology; 1.3.1 Theoretically based food webs; 1.3.2 Empirically based food webs: architecture; 1.3.3 Empirically based food webs: information; 1.3.4 How useful are these descriptions?; 1.4 Bridging perspectives through energetics; 1.4.1 Core concepts and elements; 1.4.2 Comments on our approach to studying food webs; 1.5 An overview of the parts and chapters; 1.6 Summary Part I: Modeling simple and multispecies communities Chapter 2 Models of simple and complex systems; 2.1 Introduction; 2.2 Model structure and assumptions; 2.3 Stability; 2.4 Simple food chains; 2.5 The dynamics of primary-producer-based and detritus-based models; 2.6 Summary and conclusions; Chapter 3 Connectedness food webs; 3.1 Introduction; 3.2 Soil food webs; 3.3 The CPER soil food web; 3.4 Summary and conclusions; Chapter 4 Energy flux food webs; 4.1

Introduction; 4.2 Biomass and physiological parameters; 4.3 Feeding rates and mineralization rates; 4.4 Energy flux descriptions
4.5 Summary and conclusions

Chapter 5 Functional webs; 5.1 Introduction; 5.2 Interaction strengths; 5.3 A functional food web for the CPER; 5.4 Summary and conclusions; Part II: The dynamics and stability of simple and complex communities; Chapter 6 Energetic organization and food web stability; 6.1 Introduction; 6.2 Energetic organization and stability; 6.3 Distribution of interaction strengths: trophic-level-dependent interaction strengths; 6.4 Summary and conclusions; Chapter 7 Enrichment, trophic structure, and stability; 7.1 Introduction
7.2 Simple primary-producer-based and detritus-based models
7.3 Trophic structure and dynamics along a productivity gradient; 7.4 More complex models; 7.5 Connections to real-world productivity; 7.6 Summary and conclusions; Chapter 8 Modeling compartments; 8.1 Introduction; 8.2 Complexity, diversity, compartments, and stability; 8.3 Defining compartments; 8.4 Approaches to studying compartments; 8.5 The energy channel; 8.6 Energy channels-structure and stability; 8.7 Summary and conclusions; Chapter 9 Productivity, dynamic stability, and species richness; 9.1 Introduction
9.2 Trophic structure, dynamics, and productivity
9.3 Feasibility revisited; 9.4 Feasibility and the hump-shaped curve; 9.5 Trophic structure and the diversity of production; 9.6 A review of hypotheses; 9.7 Summary and conclusions; Part III: Dynamic food web architectures; Chapter 10 Species-based versus biomass-based food web descriptions; 10.1 Introduction; 10.2 Dynamic food webs-playing Jenga; 10.3 Two case studies; 10.4 Stability, disturbance, and transition; 10.5 Summary and conclusions; Chapter 11 Dynamic architectures and stability of complex systems along productivity gradients
11.1 Introduction

Sommario/riassunto

This novel book bridges the gap between the energetic and species approaches to studying food webs, addressing many important topics in ecology. Species, matter, and energy are common features of all ecological systems. Through the lens of complex adaptive systems thinking, the authors explore how the inextricable relationship between species, matter, and energy can explain how systems are structured and how they persist in real and model systems. Food webs are viewed as open and dynamic systems. The central theme of the book is that the basis of ecosystem persistence and stability rests on the