

| | |
|-------------------------|---|
| 1. Record Nr. | UNINA9910456857303321 |
| Autore | Ritchie Mark E. <1960-> |
| Titolo | Scale, heterogeneity, and the structure and diversity of ecological communities [[electronic resource] /] / Mark E. Ritchie |
| Pubbl/distr/stampa | Princeton, : Princeton University Press, c2010 |
| ISBN | 0-691-09069-6 1-282-47311-5 1-282-93590-9 9786612473111 9786612935909 1-4008-3168-7 0-691-09070-X |
| Edizione | [Course Book] |
| Descrizione fisica | 1 online resource (243 p.) |
| Collana | Monographs in population biology |
| Classificazione | WI 2100 |
| Disciplina | 577 |
| Soggetti | Ecological heterogeneity Biodiversity Biotic communities Animal population density Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Frontmatter -- Contents -- Acknowledgments -- Chapter One. Community Ecology Lives -- Chapter Two. The Geometry of Heterogeneity -- Chapter Three. Scaling Relationships for the Consumption of Resources -- Chapter Four. Food, Resources, and Scale-Dependent Niches -- Chapter Five. Size Structure in Ecological Guilds -- Chapter Six. Heterogeneity and Patterns of Species Diversity -- Chapter Seven. Biodiversity Conservation in Fractal Landscapes -- Chapter Eight. Testing the Model -- Chapter Nine. Perspectives, Caveats, and Conclusions -- Appendix: Summary of Model Parameters -- References -- Index |
| Sommario/riassunto | Understanding and predicting species diversity in ecological communities is one of the great challenges in community ecology. |

Popular recent theory contends that the traits of species are "neutral" or unimportant to coexistence, yet abundant experimental evidence suggests that multiple species are able to coexist on the same limiting resource precisely because they differ in key traits, such as body size, diet, and resource demand. This book presents a new theory of coexistence that incorporates two important aspects of biodiversity in nature--scale and spatial variation in the supply of limiting resources. Introducing an innovative model that uses fractal geometry to describe the complex physical structure of nature, Mark Ritchie shows how species traits, particularly body size, lead to spatial patterns of resource use that allow species to coexist. He explains how this criterion for coexistence can be converted into a "rule" for how many species can be "packed" into an environment given the supply of resources and their spatial variability. He then demonstrates how this rule can be used to predict a range of patterns in ecological communities, such as body-size distributions, species-abundance distributions, and species-area relations. Ritchie illustrates how the predictions closely match data from many real communities, including those of mammalian herbivores, grasshoppers, dung beetles, and birds. This book offers a compelling alternative to "neutral" theory in community ecology, one that helps us better understand patterns of biodiversity across the Earth.
