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Metacommunities: Spatial Dynamics and Ecological Communities

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The prefix 'meta-' has been used in a variety of senses, including to refer to something at a higher level (providing a bigger picture), something that refers to itself (metadata is data about data), something that is subsequent or more developed, and something that is behind (for example a metathorax). This book is about metacommunities, each of which is a set of local communities (a collection of species in a particular locality or habitat) linked by dispersal. It thus plainly concerns something at a higher level than the historically prevailing focus on individual local populations and communities, or that of the more recent focus on metapopulations (a set of local populations of an individual species linked by dispersal). It is also in some sense about something that is self-referential, in that the very notion of metacommunities is recognition that local communities do not exist independently of one another, but constitute some larger entity. It is arguably about a more developed notion than that of the metapopulation, in that it recognizes that species do not exist in isolation from one another. However, it also reflects something that, at least in any explicit sense, has been surprisingly behind in ecological thinking.

The stated objective of this volume is 'to provide for a broad community of basic and applied ecologists the essential conceptual building blocks for further exploration of metacommunities' (p. 7). This is attempted in 20 chapters, divided amongst five sections addressing, respectively, an introduction (one chapter), core concepts (two chapters), empirical perspectives (six chapters), theoretical perspectives (four chapters), and emerging areas and perspectives (seven chapters). The last four sections are each prefaced by a short introduction, reinforcing an evident drive towards maintaining a broad overview throughout much of the volume.

The chapters in the introductory section and that on core concepts provide a valuable review of why it is important to have a metacommunity perspective, rooted in spatial processes and species interactions, and the main issues that it concerns. They provide a convincing argument for why a metacommunity approach can fundamentally alter interpretation of ecological patterns and processes, and it would not be a surprise if some of these chapters become highly cited. The empirical perspectives section documents an array of real-world examples of different facets of metacommunities (including assemblages variously centred on mosses, pitcher plants, zooplankton, rock pool invertebrates, butterflies and beetles).

These chapters perhaps serve as much to highlight that which is not known as that which is about the full diversity of metacommunities that must exist. Regardless, some of the study systems are undoubtedly fascinating. Law and Amarasekare (p. 235) observe that 'At the roots of metacommunity dynamics lie stochastic, multispecies, birth-death-movement processes that occur in heterogeneous environments'. The section on theoretical perspectives instructively brings together a variety of modelling approaches to explore these processes. The section on emerging areas and perspectives comprises seven chapters tackling a heterogeneous set of topics, including the future directions for metacommunity ecology. There is ample material here to inspire numerous novel and valuable empirical and theoretical studies. Finally, the book concludes with a two-page coda, listing the major findings of the book, an inclusion that could usefully be employed in many other edited volumes.

Used as a noun, a 'meta' was one of the conical columns that marked the turning point in a race in a Roman circus, although it came more generally to mean a turning point. Whether this volume will fulfil such a pivotal role, in the way that key edited volumes on metapopulations arguably did, remains to be seen. It would not be a huge surprise if it did.

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