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Book reviews

Metacommunities – Spatial Dynamics and Ecological Communities, Marcel Holyoak, Mathew Leibold, Robert Holt, University of Chicago Press, 2006, 520 pages, Price \$38.00/£24.00 (paperback), ISBN: 0226350630.

'Metacommunity'! What an exciting and promising emerging topic, or possibly simply a good keyword to be dropped into the ecological terminology? Considering the popularity and great career of the metapopulation concept, the new metacommunity term is also a good candidate for successful introduction into ecology. What is a metacommunity, how can we define it, and is it really useful to build new theory for ecology? These are puzzling points before one starts to read the book.

Definition is not an easy task. I found papers which have "metacommunity" in the title, but then almost nowhere in the paper – thus, metacommunity was used simply to attract interest, with no ecological discussion. I am somehow sceptical with "novel" ideas, terms and books, since in our "publish or perish" world many of these "novelties" are not really well established. Therefore, I am very happy with the start of this metacommunity book. The extensive first chapter is devoted to definitions, and highlights the problems with the definitions. There are many problems, not easy to solve. For example, just as in metapopulation theory, local communities in a metacommunity are linked by dispersal. The immediate question is thus how much dispersal is needed for a metacommunity? And the next part of the first chapter is just asking this question (although a real answer is missing).

The chapters of the book follow this well structured approach. The 2nd and 3rd chapters build on simple population interaction models for 2 species with spatial processes added, and on food webs with 2 and more species. Therefore, models of both horizontal and vertical interactions are involved. I feel, however, that there is still a big gap between these few species models and the multilevel interactions of species in real metacommunities. Thus, it is not easy to link the 2nd and 3rd chapters with the next four with empirical examples. The 4th chapter is essentially the extension of the classical "Hanski type" butterfly example from the Åland archipelago. Many papers present the metapopulation of the fritillary butterfly. This chapter, however, adds host plants and parasitoids to the picture. The system, altogether with 7 species, is a relatively independent module, thus providing a wonderful metacommunity case study. So do the water-filled leaves of the pitcher plant, studied in the next chapter, or the experimentally fragmented moss-based microcosms in chapter 6. The last terrestrial field study reports on beetles in eucalypt forest fragments. Chapters 8 and 9 present aquatic metacommunities of small ponds. These studies highlight the multiple

spatial scale character of metacommunities, the role of dispersal, and the species-specific responses according to life history strategy (e.g. trophic level, habitat specificity). We should not forget, however, that these are nice examples of metacommunities, and usually on rather small spatial scales. Thus, it is still an open question whether metacommunity theory will be applicable for a wide range of natural systems, not only for those well delineated and strongly insular habitat patches as e.g. ponds.

The next section of the book deals with the theoretical perspectives of including spatial aspects into community dynamics. These four chapters present a historical overview of spatial modelling, competitive metacommunity models, the combination of metapopulation dynamics and community assembly to understand metacommunity dynamics, and scale transition theory with field examples.

The last section of the book has 7 chapters, which address perspectives and future development of the metacommunity theory. It is usual to end a book with such an outlook; however, it is somehow exceptional that this part is so long. However in this case, the length is appropriate since metacommunity theory is relatively new, and there are many ways to further develop it, or to clarify its relation with other ideas. A really nice list of other ideas are examined in these chapters, such as niche theory, neutral theory, habitat selection, community saturation and ecosystem functioning. Several testable hypotheses are presented. Finally, as expected the very last two chapters are summarising what is in the book and describes future directions in metacommunity ecology. Lastly, and unexpectedly, there is a useful coda at the end, where the editors list the major findings and conclusions of the book on 2 pages.

I especially recommend this book to those who are ready to change their interest, and join the exploding new research area of metacommunity ecology. It is worth getting on the track right now.

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