
A review paper that looks at past studies and tries to unify the metacommunity theory and find linkages between scales in community ecology. Puts forward that the metacommunity concept is useful in modifying existing ecological thinking.  It helps to understand increasingly complex mechanisms across multiple scales of space and time. Furthermore, it claims that the theory should benefit ecological thinking as most formal community theory is focused on a single scale and thus assumes they are closed and isolated systems.


Tries to show how plankton communities act as metacommunities through dispersal connectivity of local communities that are embedded in larger metacommunities which combined show dynamic responses to deal with environmental change.  This paper has a great summary of the metacommunity concept.  Attempts to show how different types of aquatic communities act as metacommunities.  They argue that this is important in that it shows how through connectivity of local communities, the larger metacommunity can adapt to various conditions.


Doesn’t look at metacommunities per se but relevant in that it points out how different things can be going on from different perspectives.  Specifically looks at productivity-biodiversity relationships and shows that it can be dependent on different spatial scales. Suggests that results have implications for conservation and restoration ecology in that it will help to more accurately predict effects of anthropogenic influences (nitrogen and phosphorous inputs) on eutrophication.

Looks at fresh water pond meta-communities. Suggests that their results an integration of two of the four paradigms pointed out in Leibold et. al. (2004). In this case it integrates the species-sorting and mass-effect paradigms. While the paper totally buys into the metacommunity concept, it does have some nice comparison of different models and how past studies have failed to truly unite the theory. Still, a good attempt to invoke an experiment to push the metacommunity theory.

**Wilson, David Sloan. 1992. Complex Interactions in Metacommunities, with implications for biodiversity and higher levels of selection. Ecology. 73(6).**

One of the earlier papers on Metacommunities. This is a study that creates a model to test complex community interactions at local and regional levels. Basically it is just a model for metacommunities. Attempts to show how natural selection can act on the patch level and its effect on evolution for a larger metacommunity.

**Heino, Jani. 2005. Metacommunity patterns of highly diverse stream midges: gradients, chequerboards, and nestedness, or is there only randomness? Ecological Entomology. 30, pp590-599.**

Looks at distribution of midges (freshwater insects in streams) and attempts to see if it follows a pattern of gradients, chequerboards, and nestedness. It seems like this paper was just really testing if their midges are distributed randomly. Its like they are trying to fit their biological organism to any current ecological model they can find. This study just assumes that midges live in a metacommunity and they don’t go into detail about what assumptions they meet nor do they specify any particular paradigm that most fits this situation. It does point out a few shortcomings of the metacommunity model when looking at midges. However, it seems that these same shortcomings could be used as examples of why this system does not fit existing metacommunity models. This paper ultimately finds that midges are not randomly distributed, show a somewhat nested pattern, show a week relationship to environmental gradients, and are unlikely to be structured by competition.


This paper primarily focuses on the effects of dispersal at the local and regional levels. It is a nice overview of dispersal in a metacommunity in that it shows some basic aspects of the usefulness of metacommunities in that looks for interactions and effects at different scales. In this case it looks at how species interactions at the local level can effect dispersal which, in turn, can effect colonization and extinction patterns at larger scales. This paper adds support for the “mass effect” paradigm and shows that mechanisms of maintenance of local diversity is likened to source-sink dynamics at the regional scale. Also points to how coexistence in a metacommunity is obtained through a regional compensation of local competitive abilities and as a result, species are locally different but regionally similar.

This paper predates the whole metacommunity phenomenon. However, I find it interesting in that it addresses some of the same issues including looking at processes and effects at different scales but refrains from using the current buzzwords. It comes up with novel ideas rather than trying to force a biological system into a pre-determined model. This is the first paper that defines “mass effects”. To summarize the paper, it looks at four biological mechanisms (two of which are original to the paper) to explain species diversity. Each mechanism is measured using community, differentiation, and regional diversities.


A really neat study that looked at communities inside the pitcher plant S. purpurea. With dispersal between different plants (patches), these plants act as metacommunities. The results show that local diversity did have a relationship with dispersal frequency. Increased dispersal frequencies significantly increased regional species richness while decreasing the variance among local communities. This system seems to nicely demonstrate a metacommunity system where local community composition and the degree of connectivity between communities are both important for understanding species diversity patterns at local and regional scales.


This is a practical study that attempts to utilize some aspects of metacommunity theory in a conservation context. This is a good example of how the metacommunity concept can influence new work. Field experiments were performed to examine the impact of resource manipulations and seed additions on the invisibility and diversity of a low-productivity grassland. Diversity in the grassland was found to be controlled by a combination of local and regional processes. Communities that were unmanipulated showed a high degree of uninvasability. Showed that in the absence of disturbance, their community was controlled by local process. Overall, it still showed insight into its attempt to find an interplay of local community interactions with dispersal between communities.