

PST16 - Role of the heterogeneity of ponds in maintaining the regional pool of odonate species

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Ecological communities are governed by processes that occur at both regional and local scales. At the landscape scale, heterogeneity of habitats is a determinant factor to maintain the regional species pool within different patches. This heterogeneity allows the availability of resources and provides specific requirements for all species. At the local scale, community assemblages are shaped by biotic and abiotic habitat characteristics, but also by biotic interactions.

Different environments generate different constraints and species with adapted traits will have more chances of maintaining. Nevertheless, trait approach has rarely been considered to understand how species communities are shaped according to local characteristics of habitats.

We studied odonate communities of 31 ponds located in three different landscape contexts (i.e. forest, field and urban contexts) in Normandy (France). We selected 7 characteristics of ponds reflecting their ecological states and their habitat heterogeneity. Concerning odonates, we selected 4 specific traits linked to reproduction, growth and survival. First, we compared gamma diversity and beta diversity of damselflies and dragonflies separately according to the landscape context. Then, we studied the relationship between pond characteristics and species traits.

For damselflies, the highest gamma diversity was in field context and the lowest was in forest context. For dragonflies, the gamma diversity was higher in both forest and field contexts than in urban context. Considering damselflies, the beta diversity was the result of a spatial turnover in urban and field contexts, and the result of a nestedness effect in forest context. Considering dragonflies, the beta diversity was the result of a spatial turnover in forest context, the result of a nestedness effect in urban context and the result of a combined effect of the two in field context. Finally, this study showed a relationship between specific traits of species and pond characteristics.

Damselflies and dragonflies have different diversity patterns in the different studied contexts and especially, in field ponds and forest ponds. Moreover, specific traits seem reflect the ability of species to colonize some ponds. This study emphasizes that habitat heterogeneity of ponds is a determinant factor to maintain their odonate species pool.