





How is dispersal integrated in life histories: A quantitative analysis using butterflies

Stevens, V.M.*, Trochet, A.*, Van Dyck, H., Clobert, J.*, Baguette, M.*

*** : CNRS-SEEM USR 2936, Station d'Ecologie Expérimentale du CNRS à Moulis**

As dispersal plays a key role in gene flow among populations, its evolutionary dynamics under environmental changes is particularly important. The inter-dependency of dispersal with other life history traits may constraindispersal evolution, and lead to the indirect selection of other traits as a by-product of this inter-dependency.

Identifying the dispersal's relationships to other life-history traits will help to better understand the evolutionary dynamics of dispersal, and the consequences for species persistence and ecosystem functioning under global changes. Dispersal may be linked to other life-history traits as their respective evolutionary dynamics may beinter-dependent, or, because they are mechanistically related to each other.

We identify traits that are predicted to co-vary with dispersal, and investigated the correlations that may constrain dispersal using publishedinformation on butterflies. Our quantitative analysis revealed that :

1/ Dispersal directly correlated with demographic traits, mostly fecundity, whereas phylogenetic relationships among species had a negligible influence on this pattern,

2/ gene flow and individual movements are correlated with ecological specialisationand body size, respectively and

3/ routine movements only affected short-distance dispersal.

Together, these results provide important insights into evolutionary dynamics under global environmental changes, and are directly applicable to biodiversity conservation.

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