Investigating demogenetic consequences of spatial dispersal on Atlantic salmon populations using an Individual-based metapopulation model

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Organism stability and resilience is driven by the diversity of responses of populations to the environment and the connectivity between these populations. Indeed, populations are spatially structured, connected by the movement of individuals between patches via spatial dispersal. Dispersal influences dynamic systems (from genes to community) so that local population dynamic can be strongly influenced by local conditions (environment, adaptation, selection, ...) but also by metapopulation dynamic. Thus, local population can not be treated as isolated system and management and conservation strategies should consider connectivity between populations, i.e. the role of metapopulation. Using an Individual-based metapopulation model, we investigate the demogenetic consequences of environmental and anthropogenic perturbations (e.g. fisheries, connectivity) on an exploited metapopulation of Atlantic salmon (*Salmo salar)*. Our approach allows to integrate ecology, evolution and demography at once to better understand the demo-genetic responses of A. salmon populations to perturbations. First, we explore the demogenetic consequences of connectivity on A. salmon populations. Second, we investigate how environ- mental (climate change) and anthropogenic perturbations (e.g. selective fisheries, alteration of connectivity) affect local population dynamic and the whole metapopulation functioning. By doing so, we aim to define management/conservation strategies in a metapopulation framework which mitigate the effect of perturbations by protecting diversity.

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