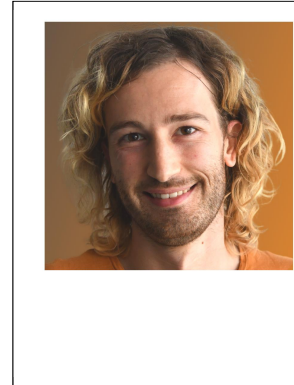# Effect of the habitat fragmentation on the persistence of native species against an alien invasion

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Habitat fragmentation could be a threat to biodiversity. Understanding the ecological dynamics in a fragmented habitat is crucial, for example for the conservation of a species inhabiting there. The influence of habitat fragmentation on ecosystem stability is still debated among ecologists. In this work, we consider a mathematical model with a system of ordinary differential equations to discuss the influence of habitat fragmentation on a competition dynamics between native and alien species. Our modeling focuses on how habitat fragmentation affects the resource availability and consequently the native species persistence. Through a stability analysis of the native species extinction equilibrium, we can obtain the persistence condition, taking account of the mobility between the patches of the fragmented habitat. For the specific case where the habitat is fragmented into a number of equivalent patches, we expose a possibility for habitat fragmentation to give a supportive effect on the persistence of a native species threatened with its extinction by an alien invasion.