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Wencel W Valega-Mackenzie* (wvalegam@vols.utk.edu) and **Suzanne Lenhart**. *Resource Allocation in a PDE Ecosystem model*. Preliminary report.

The effect of heterogeneous habitat on a diffusing population is crucial to understand population dynamics. We formulate a reaction-diffusion population model to study the effect of resource allocation in an ecosystem with resources having their own dynamics in space and time. This is more realistic than only assuming the resource level is not changing as the population changes. Moreover, we solve an optimal control problem of our ecosystem model to maximize the abundance of a single species while minimizing the cost of inflow resource allocation. (Received September 13, 2020)