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**A density-dependent diffusion model for a two-phase invasion**

A break of the slope between the range expansion in the initial years of invasion and the later years has been observed for different species. We present an approach to explain this two-phase invasion using a model with non-linear density-dependent diffusion. We establish the condition for the existence of a travelling wave solution of the model. We investigate also the effects of the density-dependent diffusion on the speed of species expansion during the two phases of the invasion, and study the duration of each phase.