A Periodic Reaction-Advection-Diffusion Model for A Stream Population

Abstract:
This paper is devoted to the study of spatial dynamics of a periodic reaction-advection-diffusion model for a stream population. In the case of an unbounded domain, we establish the existence of the leftward and rightward spreading speeds and their coincidence with the minimal wave speeds for monotone periodic traveling waves, respectively. In the case of a bounded domain, we obtain a threshold result on the global stability of either zero or the positive periodic solution.