Limiting profiles of semilinear elliptic equations with large advection in population dynamics. (English summary)


In this paper the authors study a competition-diffusion-advection system. They are interested in the limiting profiles of the solutions of the system. Precisely, in the main result of this work they show that any positive steady states of the problem must concentrate at all local maximum points of \( m \) in \( \Omega \), where \( m = m(x) \) is the local intrinsic growth rate at \( x \in \Omega \), while the habitat \( \Omega \) is a bounded smooth domain of \( \mathbb{R}^n \). This result was conjectured in [R. S. Cantrell, C. Cosner and Y. Lou, Proc. Roy. Soc. Edinburgh Sect. A 137 (2007), no. 3, 497–518; MR2332679; X. Chen and Y. Lou, Indiana Univ. Math. J. 57 (2008), no. 2, 627–658; MR2414330] and in the present paper the authors prove it in the one-dimensional case.

Moreover, in this paper the authors also consider a model for the population dynamics of a single species and, in this framework, they analyze the profile of the positive steady state solutions again in the one-dimensional case.

References


Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.

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