Traveling waves in the Holling–Tanner model with weak diffusion

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Abstract

For a wide range of parameters, we study traveling waves in a diffusive version of the Holling–Tanner predator-prey model from population dynamics. Fronts are constructed using geometric singular perturbation theory and the theory of rotated vector fields. We focus on the appearance of the fronts in various singular limits. In addition, periodic traveling waves of relaxation oscillation type are constructed.