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Wave train selection behind predator invasions in a population model with nonlocal prey competition

Periodic wave trains can form behind invasion fronts in predator-prey reaction-diffusion models. Typically there exists an infinite family of such wave trains, arising through Hopf bifurcations and characterized by their wavelengths, but only one selected wave train is observed behind an invasion front in numerical simulations. We develop a criterion that predicts the wavelength of the selected wave train behind invasions, and apply it to a population model with a nonlocal term. Comparing our predictions with the results of numerical simulations, we find the wavelengths predicted are accurate for a range of parameter values. We also study the spectral stability of the wave trains.