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Abstract: Spatiotemporal pattern formation in integro-differential equation models of interacting populations is an active area of research, which has emerged through the introduction of nonlocal intra- and inter-specific interactions. Stationary patterns are reported for nonlocal interactions in prey and predator populations for models with prey-dependent functional response, specialist predator and linear intrinsic death rate for predator species. The primary goal of our present work is to consider nonlocal consumption of resources in a spatiotemporal prey-predator model with bistable reaction kinetics for prey growth in the absence of predators. We derive the conditions of the Turing and of the spatial Hopf bifurcation around the coexisting homogeneous steady-state and verify the analytical results through extensive numerical simulations. Bifurcations of spatial patterns are also explored numerically.

Keywords: prey-predator; nonlocal consumption; Turing bifurcation; spatial Hopf bifurcation; spatio-temporal pattern