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Wei Feng* (fengw@uncw.edu), Department of Mathematics and Statistics, 601 South College Road, Wilmington, NC 28409, and **Weihua Ruan** and **Xin Lu**. *Traveling Wave Solutions in Mixed Monotone Models of Population Biology, with Time Delays and Density-Dependent Diffusions.*

We study the existence of traveling wave solutions in a general class of mixed quasi-monotone reaction-diffusion systems (of quasi-linear type and with time delays). First, by applying the Schauder Fixed Point Theorem, we prove the existence of a traveling wave solution between classically defined upper and lower solutions. For better applications of the upper-lower solutions method on various real-life models, the existence result is further extended under weak form or piecewise smooth upper-lower solutions. In several population biology models with time delays or density-dependent diffusions (single-species logistic growth, N-species competition, food chain, and ratio-dependent predator-prey with Gompertz growth), we apply our main result to establish the existence of traveling wave solutions flowing towards the positive or coexistent states under reasonable conditions on ecological parameters. (Received September 21, 2017)