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**Tingting Tang\*** (tang@louisiana.edu), 104 E. University Circle, Lafayette, LA 70503. *A high resolution finite difference method for a model of structured Susceptible-Infected populations coupled with the environment.*

We develop a general model describing a structured Susceptible-Infected (SI) population coupled with the environment. This model applies to problems arising in ecology, epidemiology and cell biology. The model consists of a system of quasilinear hyperbolic partial differential equations coupled with a system of non-linear ordinary differential equations that represents the environment. We develop a second order high resolution finite difference scheme to approximate the solution of the model. Convergence of this scheme to a weak solution with bounded total variation is proved. Numerical simulations are provided to demonstrate the high resolution property of the scheme and an application to a multi-host wildlife disease model is explored. (Received September 16, 2016)