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Md Rafiul Islam* (rafiul.islam@ttu.edu), 1612 avenue Y 205A, Lubbock, TX 79401, and **Patrick J. Cusaac, Matthew J. Gray** and **Angela Peace**. *Mathematical modeling of Batrachochytrium salamandrivorans on the Eastern Newt with environmental transmission*. Preliminary report.

The recently discovered fungal pathogen, *Batrachochytrium salamandrivorans* (Bsal) is believed to be from Asia and was likely introduced into Europe through international trade that caused rapid die-offs of naïve salamanders in Europe and Gray et al. (2015) predicts North America will soon experience similar devastation if no policy actions are taken and the pathogen emerges. In order to better understand Bsal pathogen dynamics, we develop nonlinear Susceptible-Infected-Recovered-Susceptible (SIRS) model for this emerging fungal pathogen. Our models included two routes of pathogen transmission: direct transmission via contact between infected and susceptible individuals and environmental transmission via shed zoospores in the water. Unlike previous models, we categorized individuals into multiple stages of infection. We found the invasion probability for Bsal into a population of the Eastern Newt adults. We performed numerical simulations and parameter sensitivity analysis using latin hypercube sampling with PRCC. We identified the dominant transmission pathway and suggested control strategies.

References

Gray, Matthew J., et al. "Batrachochytrium salamandrivorans: the North American response and a call for action." *PLoS pathogens* (Received September 02, 2018)