1125-92-1104 **Alex Farrell**, **James P. Collins** and **Horst R. Thieme*** (hthieme@asu.edu).

Prey-predator-parasite: an ecosystem model with fragile persistence. Preliminary report.

A prey-predator-parasite model is considered where a species serves as prey to a predator and as host to a microparasite.

We choose asymmetric frequency-dependent incidence for disease transmission, $\sigma SI/(pS + qI)$ with $0 < p < q < 1$ and $p + q = 1$. This choice is motivated by infection experiments involving tiger salamanders and ranavirus in which such an incidence is a better fit than density- or frequency-dependent incidence.

Among others, the following phenomena are observed in various parameter regions of the model.

(i) Predator-mediated survival of all three species at high initial predator levels and parasite-mediated extinction of all three species at low initial predator levels

(ii) Survival of the prey and predator at high initial predator levels and parasite-mediated extinction of all three species at low initial predator levels

(iii) Parasite-mediated extinction of all three species at all initial predator levels

(iv) Persistence of all three species.

Reference

[GBC] Greer, A.L., C.J. Briggs, J.P. Collins, Testing a key assumption of host-pathogen theory: density and disease transmission, Oikos 117 (2008), 1667-1673 (Received September 14, 2016)