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*Do fatal infectious diseases eradicate host species? Epidemic perspective.* Preliminary report.

In deterministic epidemic models, density-dependent incidence  $f(S, I) = SI$  does not lead to host extinction unless the population is subject to an Allee effect or there is a reservoir for the disease. For frequency dependent incidence  $f(S, I) = \frac{SI}{S+I}$ , it depends on the parameters whether the host just declines or goes extinct.

Infection experiments involving tiger salamanders and ranavirus indicate that other forms of incidence may be more appropriate to model this particular host-parasite system (Greer et al., 2008). We show that incidence functions satisfying  $f(S, I) \leq cSI$ , never lead to host extinction, while incidence functions  $S^q I^p$  with  $0 < p < 1$ ,  $q \geq 0$ , always do.

As for the tiger salamander/ranavirus system, the case remains undecided: The incidences that fit best have the form  $SI^p$  with  $0 < p < 1$  which always leads to extinction and  $Sk \ln(1 + I/k)$  which never leads to extinction.

#### Reference

A.L. Greer, 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)