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**Matthew V. Cattivera\*** (mcattivera@sandiego.edu), **Seth D. Haney** and **Adam Siepielski**. *A perturbation approach to approximate extinction time in ecological systems due to harsh conditions*. Preliminary report.

Changes in the environment can have an effect on the stability of ecological communities. Further, harsh environmental conditions can prompt the extinction of vulnerable species. How can we determine how long it takes for a species to go extinct given harsh environmental conditions? Here, we use the classic Lotka-Volterra competition model to study this problem. The Lotka-Volterra model is an unsolvable ODE system; however, in the particular case of ecological equivalence (where competing species have equal competition coefficients and growth rates) it is only the sum of the species that is regulated and the system can be solved exactly when no environmental fluctuations are present. Under the assumption that the environment has a small effect on the dynamics of the species, we use a perturbation method to approximate analytical solutions to extinction time given harsh or favorable environmental conditions. (Received September 17, 2013)