1125-34-1656 **Susmita Sadhu*** (susmita.sadhu@gcsu.edu). *Noise induced mixed-mode oscillations and distribution of outbreaks in a bi-trophic ecosystem.*

We study the effect of stochasticity, in the form of Gaussian white noise, in a predator-prey model with two distinct time-scales. The random perturbations, measuring environmental variations, are introduced in the birth rate of the prey and in the death rate of the predator, leading to a system of stochastic slow-fast equations. We explore the effect of noise near the onset of the singular Hopf bifurcation. The stochastic model admits several kinds of noise driven mixed-mode oscillations that capture the intermediate dynamics between two cycles of population outbreaks of the prey. We study the distribution of the random variable N, representing the random number of small oscillations between two large oscillations, which can be related to the return time between the outbreaks. Finally, we estimate the probability of repeated outbreaks as a function of the noise intensity and distance to the Hopf bifurcation by transforming the model into a suitable form. (Received September 18, 2016)