1116-34-622 **T.Mihiri M. De silva*** (mihiri.de-silva@ttu.edu), Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409-1042, and **Sophia R.J. Jang** (sophia.jang@ttu.edu), Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409-1042. ***Dynamics of phytoplankton-zooplankton interactions with toxin producing phytoplankton and mutual interference of zooplankton***.

We propose a system of the interacting populations with non-toxic phytoplankton (NTP), toxin producing phytoplankton (TPP) and zooplankton in which mutual interference between zooplankton and avoidance of toxin producing phytoplankton by zooplankton is considered. It is assumed that NTP and TPP populations follow the Lotka-Vollterra competition interaction. We investigate the global stability of the positive equilibrium of NTP and zooplankton predator-prey subsystem and derive conditions of Hopf bifurcations. It is proved that the uniform persistence of NTP and zooplankton system holds. Moreover, using the concept of uniform persistence, we establish coexistence of NTP, TPP and zooplankton under certain parameter restrictions. Numerical simulations are performed to illustrate the complexity of the population interactions. (Received September 09, 2015)