Meeting: 1006, Lubbock, Texas, SS 14A, Special Session on Undergraduate and Graduate Student Research (and Related Poster Session organized by Ali Khoujmane and Mara D. Neusal, Texas Tech)

1006-92-97 **Amy Riordan*** (amallen76@hotmail.com), Department of Mathematics, Physics, and Engin, Tarleton State University, Box T-0470, Stephenville, TX 76402, and **Keith E Emmert** (emmert@tarleton.edu), Department of Mathematics, Physics, and Engin, Tarleton State University, Box T-0470, Stephenville, TX 76402. *Discrete-Time, Stage Structured Model for Equine Protozoal Myloencephalitus.* Preliminary report.

A discrete-time model for Equine Protozoal Myloencephalitis (EPM) is formulated to track the spread of this neurological disease in equine populations. The protozoan parasite, Sarcocystis Nuerona, can be transmitted through horses from the fecal matter of carnivores. The equine population is subdivided into three developmental stages, youth, young adult, and adult. We assume the young adults are not bred, so reproduction occurs only in the adult stage. The youth stage is sub-divided into four categories, one for each year. Similarly, the young adult stage is sub-divided into two categories. Each stage can be infected by the parasite and is classified into susceptible, exposed, or infected. Recovery, from the disease, is possible. Conditions are derived for population extinction and local stability of the disease-free equilibrium. Dynamics of the model are illustrated via numerical simulations. (Received February 09, 2005)