1073-35-124 **Ronald E. Mickens*** (rohrs@math.gatech.edu), Clark Atlanta University, Atlanta, GA 30314.

Influence of Birth/Death Rate Functional Forms on Predator-Prey Dynamics.

Many of the standard models in predator-prey population dynamics assume a (positive) linear term for the prey (x) net birth rate, and a corresponding (negative) net death rate of the predator (y). By themselves, these terms give, respectively, exponentially growth and death of the prey and predator populations. We investigate the mathematical consequences of using two other functional forms for the net prey birth/death rate, i.e., $(k - \mu x)$ and $Bx(1 - Dx)$, where (k, μ, B, D) are constant parameters. In particular, the following issues are considered: (i) For each model, how many fixed-points (FP) or equilibrium states exist? (ii) For each FP, what is its linear stability properties? (iii) What is the general nature of the trajectories in the $(x - y)$ phase-plane? (iv) Are there features of the dynamics that are independent of the functional form selected for the net birth/death of the prey population? The relevance of these results within the restriction of dynamic consistency will be discussed. (Received July 29, 2011)