1035-92-204 **Edward Allen*** (edward.allen@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042. *Derivation of Stochastic Partial Differential Equations for Size-Structured and Age-Structured Populations.* Preliminary report.

Discrete stochastic models of size-structured and age-structured populations are constructed, carefully taking into account the inherent randomness in births, deaths, and size changes. As the time interval decreases, the discrete stochastic models lead to systems of Itô stochastic differential equations. As the size and age intervals decrease, stochastic partial differential equations (SPDEs) are derived for size-structured and age-structured populations. Comparisons between computational solutions of the SPDEs and Monte Carlo calculations indicate that the stochastic partial differential equations are accurate. (Received August 17, 2007)