1145-92-312 **Huseyin Coskun*** (hcoskun@uga.edu), Department of Mathematics, University of Georgia, Athens, GA 30602. *Dynamic Ecological System Analysis.*

In this article, a new mathematical method for dynamic analysis of nonlinear compartmental systems is developed in the context of ecology. It is based on novel dynamic system and subsystem partitioning methodologies through which compartmental systems are completely decomposed to the utmost level, meaning that dynamic distribution and organization of all environmental and intercompartmental system flows and storages are determined individually and separately. The system flows and storages transmitted directly or indirectly between any two compartments or along a given flow path are analytically characterized, systematically classified, and mathematically formulated. The proposed methodology is a comprehensive approach in the sense that the proposed measures and major flow- and stock-related results of ecological mathematics are combined and integrated coherently in a novel and unifying mathematical framework and corresponding concepts and quantities are further extended from static to nonlinear dynamic settings. This unifying framework enables a holistic view and analysis of ecological systems. (Received August 30, 2018)