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**Md Masud Rana\*** (md-masud.rana@ttu.edu), Lubbock, TX 79409, and **K. R. Long** and **Angela Peace**. *Reduced Order Modeling in Analyzing the Dynamics of a Spatio-Temporal Stoichiometric Producer-Grazer System.*

Simulations of spatiotemporal behavior of biological systems produce large data sets that can be difficult to analyze. We use reduced-order modeling to interpret simulations of a stoichiometric producer-grazer system in terms of an underlying low-dimensional dynamical system. A well-known property of the singular-value decomposition (SVD) is that it can produce optimal low-rank approximations to a matrix. This idea can be generalized to find low-dimensional models that approximate the behavior of a dynamical system with many (perhaps infinitely many) degrees of freedom. This technique is known as reduced-order modeling. The purpose of this approach is not to reduce the computational complexity of the system, rather gain some biological insight of a large number of variables in space. We obtain and record a set of 'snapshot' results from the numerical simulations of our model to produce a reduced-order basis. Then we project our current simulation into this basis and use phase plane and bifurcation analysis to analyze the dynamics of the system. (Received September 17, 2019)