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**Lale Asik\*** (lale.asik@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Broadway and Boston, Lubbock, TX 79409, and **Angela Peace**. *Dynamics of a Producer-Grazer Model Incorporating the Effects of Phosphorus Loading on Grazer's Growth*.

Recent work in ecological stoichiometry has indicated that consumer dynamics are not only affected by insufficient food nutrient content (low phosphorus (P): carbon (C) ratio) but also by excess food nutrient content (extremely high P: C ratio). This phenomenon is known as the “stoichiometric knife edge”. While the Peace et al. (2014) model has captured this phenomenon, it does not explicitly track P loading of the aquatic environment. Here, we extend the Peace et al. (2014) model by mechanistically deriving and tracking P loading in order to investigate the growth response of the grazer to the producer of varying P:C ratios. We analyze the dynamics of the system such as boundedness and positivity of the solutions, existence and stability conditions of boundary equilibria. Bifurcation diagram and simulations show that our model behaves qualitatively similar but quantitatively different to the Peace et al. (2014) model. Furthermore, the structure of our model can easily be extended to incorporate seasonal phosphorus loading. (Received September 13, 2018)