1135-39-631 **Jim M Cushing*** (cushing@math.arizona.edu), Department of Mathematics, 617 N Santa Rita, University of Arizona, Tucson, AZ 85719, and **Shandelle Henson** and **James Hayward**.
Periodic matrix models for seasonal dynamics of stage structured populations I: A general class of models.

We formulate and analyze a general class of discrete-time matrix models (systems of difference equations) which arise in the study of stage structured population dynamics. Specifically, the models are designed to account for changes in behavioral tactics within a breeding season and for their dynamic consequences at the population level across breeding seasons. Using bifurcation theoretic techniques, we study the nature of non-extinction, seasonal cycles as a function of model parameters as they are created upon destabilization of the extinction state. Of particular interest are backward bifurcations in that they typically create strong Allee effects in population models which, in turn, lead to the benefit of possible (initial condition dependent) survival in adverse environments when a forward bifurcation would lead to extinction. The models and their analysis are motivated by recent field observations of changed behavioral and life history strategies in seabird populations (of glaucous winged gulls) that are correlated with climate change (mean sea surface temperature rise). (Received September 11, 2017)