1137-92-89 **Jim M Cushing***, Department of Mathematics, 617 N Santa Rita, University of Arizona, Tucson, AZ 85721. *Periodic matrix models for seasonal dynamics of structured populations with application to a seabird population faced with climate change.*

For structured populations with an annual breeding season, life-stage interactions & behavioral tactics may occur on a faster time scale than that of population dynamics. Motivated by recent field studies of the effect of rising sea surface temperature (SST) on within-breeding-season behaviors in colonial seabirds, we formulate and analyze a general class of discrete-time matrix models designed to account for changes in behavioral tactics within the breeding season and their dynamic consequences at the population level across breeding seasons. As a specific example, we focus on egg cannibalism and the daily reproductive synchrony observed in seabirds. Using the model, we investigate circumstances under which these life history tactics can be beneficial or non-beneficial at the population level in light of the expected continued rise in SST. Using bifurcation theoretic techniques, we study the nature of non-extinction, seasonal cycles as a function of environmental resource availability 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. (Received January 28, 2018)