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**J M Cushing\*** ([cushing@math.arizona.edu](mailto:cushing@math.arizona.edu)), Department of Mathematics, 617 N Santa Rita, University of Arizona, Tucson, AZ 85721. *Matrix Population Models and Semelparity*. Preliminary report.

Matrix maps describing the discrete time dynamics of (demographically) structured populations have a long tradition in population dynamics. I will summarize a general theory of nonlinear matrix models from a bifurcation theoretic point-of-view that focuses on the inherent net reproductive number  $R_0$  and its survival threshold value of 1. I will then present new results concerning a special class of matrix models that fails to fall under the purview of the general theory. These models are biologically relevant in that they describe the dynamics of semelparous populations (i.e., in which individuals reproduce only once). The mathematically degenerate bifurcation at  $R_0 = 1$  that occurs for these models can lead to unusual types of oscillations and to attractors with temporally separated generations. (Received February 24, 2007)