1039-37-63 **Robert J. Sacker*** (rsacker@usc.edu), Mathematics Department, 3620 S. Vermont Ave. KAP 108, Los Angeles, CA 90089-2532. *Dynamic Reduction with Applications to Discrete Systems.*

In a difference or differential equation one is usually interested in finding solutions having certain properties, either intrinsic properties (e.g. bounded, periodic, almost periodic) or extrinsic properties (e.g. stable, asymptotically stable, globally asymptotically stable(GAS)). In certain instances the dependence of these equations on the state variable may be altered by (1) replacing part of the state variable by a function from a class having some of the above properties and (2) solving the "reduced" equation for a solution having the remaining properties and lying in the same class. This gives a mapping $\mathcal{T}$ of the class into itself thus reducing the original problem to finding a fixed point of the mapping. It is applied to obtain a GAS periodic solution for a system of difference equations modeling the interaction of wild and genetically altered mosquitoes in a periodic environment. It is also shown that certain coupled periodic systems of difference equations may be completely decoupled so that the mapping $\mathcal{T}$ is established by solving a set of scalar equations. Rational difference equations with a finite number of delays can be reduced to equations without delays but with a larger period. Existence and GAS of periodic solutions is established. (Received March 04, 2008)