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A class of dynamically consistent numerical methods are analyzed for general productive-destructive systems (PDS). Based on this approach, a nonstandard finite difference method for solving autonomous dynamical systems is constructed. It is designed so that it preserves the positivity of solutions and the local behavior of the dynamical system near equilibria. The proposed numerical method is computationally efficient and easy to implement. Applications to several specific biological systems are also presented. (Received September 12, 2016)