

We study a $N \times N$ dimensional Lotka-Volterra system which describes competition among N species and includes behavioral adaptation, i. e. a learning mechanism. The existence of reduced models, where N appears as a parameter, is discussed, depending on the level of symmetry of the system. Such models give full account of equilibria and their stability in the complete system and are effective also in describing the time dependent regimes, even chaotic ones, for a large range of parameter values. Relevant questions, as species survival/exclusion and different kind of coexistence (stable equilibria, periodic oscillations, strange attractors, sincronization) are addressed focusing on the role of adaptation