1003-92-1007 **Peter Chesson*** (`plchesson@ucdavis.edu`), Section of Evolution and Ecology, The University of California, Davis, CA 95616. *The role of interactions between nonlinearities and fluctuations in population and commmunity dynamics.*

Persistence, coexistence and stability of species in model communities is greatly affected by nonlinearities in system equations, which can generate fluctuations, but more importantly interact with fluctuations, be they endogenous or exogenous, in time or in space. There are now well-developed mathematical theories of how these interactions affect gross features of an ecological community such as coexistence of species, individual species persistence and community stability. These effects can be understood in terms of Jensen's inequality and its extensions, which produce expressions quantifying their strength and direction. These theories will be reviewed with particular emphasis on species coexistence in variable environments where these ideas are most highly developed and have led to a classification of coexistence mechanisms due to various kinds of fluctuations in time and space and their interactions with nonlinear dynamics. In particular, these theories lead to some analytical techniques for analyzing model communities, but also facilitate understanding of simulation models and natural systems in common terms. (Received October 01, 2004)

1