1163-92-1305 **Sebastian J Schreiber*** (sschreiber@ucdavis.edu), Department of Evolution and Ecology, One Shields Avenue, University of California, Davis, Davis, CA 95616. *Species coexistence in a temporally autocorrelated world.*

All species experience temporal fluctuations in environmental conditions e.g. temperature or mortality risk. These fluctuations often are autocorrelated e.g. warmer years tending to be followed by warmer years. How these autocorrelations influence species coexistence is, largely, an open problem. Recently, Benaim and Schreiber (J. Math. Bio. (2019) 79:393) developed new mathematical results to characterize coexistence and extinction for stochastic, multispecies models with temporal autocorrelations. These characterizations rely on Lyapunov exponents at stationary distributions supporting a subset of species. Applying these methods to classical ecological modules of exploitative competition and apparent competition, I determine how autocorrelated temporal fluctuations alter ecological outcomes. For example, if survivorship of competing species fluctuate, then negative autocorrelations promote coexistence while positive autocorrelations lead to stochastic priority effects. In contrast, positively autocorrelated fluctuations in attack rates of a shared predator can mediate coexistence, while negatively autocorrelated fluctuations generate stochastic priority effects. These results highlight the importance of temporal autocorrelations in structuring ecological communities. (Received September 15, 2020)