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J M Cushing* (cushing@math.arizona.edu), Department of Mathematics, 617 N Santa Rita, University of Arizona, Tucson, AZ 84721, and **Rosalyn Rael, Thomas L Vincent** and **Robert F Costantino**. *A Model for the Evolution of Competitive Coexistence*. Preliminary report.

Using evolutionary game theory (EGT) methods, I will describe a discrete time model for the evolution of two competing species based on the Leslie-Gower model for two competing species. We want to know under what circumstances this dynamical system is able to predict the evolution from phenotypic traits that result in competitive exclusion to traits that yield competitive coexistence. As Darwin pointed out, increased competition intensity occurs as species become more similar. However, we introduce the notion of the "boxer effect". This effect assumes maximal inter-species competition intensity does not occur when the species' traits are identical, but instead when their traits differ by a positive amount. The rationale is that as two species become too similar they lose the ability to distinguish competitors from conspecifics and therefore competition is decreased. We prove that in the absence of a boxer effect the EGT Leslie-Gower model does not allow the evolution of competitive coexistence that results in an ESS (evolutionarily stable strategy). Simulations show, however, that this can occur when the boxer effect is present. This problem was suggested by a result from Thomas Park's famous competition experiments using flour beetles. (Received January 29, 2008)