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**Sharon Bewick\*** (sharon\_bewick@hotmail.com), **Guoqing Wang**, **Hannah Younes**, **Bingtuan Li** and **William F. Fagan**. *Invasion dynamics of competing species: revisiting the red/grey squirrel system with a spatial, stage-structured model.*

The spread of an invasive species often results in decline and disappearance of native competitors. Several models, primarily based on spatially explicit Lotka-Volterra competition dynamics, have been developed to understand this phenomenon. In general, the goal of these models is to relate fundamental life history traits, for example dispersal ability and competition strength, to the rate of spread of the invasive species, which is also the rate at which the invasive species displaces its native competitor. Stage-structure is often an important determinant of population dynamics, but it has received little attention in the context of Lotka-Volterra invasion models. We develop a spatially explicit, stage-structured Lotka-Volterra competition model. We then apply our model to the classic invasion problem of grey squirrels advancing into red squirrel habitat in Britain. Previously, this system was modeled using single-stage Lotka-Volterra competition equations. By comparing spread speed predictions from our stage-structured model to analogous spread speed predictions from the single-stage model, we are able to determine when stage-structure is important and how stage-dependent behavior can alter the characteristics of an invasion. (Received January 19, 2015)