1107-92-123 **Frithjof Lutscher***, flutsche@uottawa.ca, Ottawa, Canada, **Gabriel A Maciel**, Sao Paulo, Brazil, and **Jeffrey A Musgrave**, Ottawa, Canada. *Biological Invasions, Random Walks, and Interfaces.*

The spatial spread of non-native biological populations (e.g. Emerald Ash borer) is one of the greatest risks to biodiversity worldwide. Mathematical models are indispensable to understand these processes of invasion that occur on large temporal and spatial scales. Commonly used reaction-diffusion equations result as scaling limits from random walks. A particular challenge is to include landscape heterogeneity and individual response to landscape features into these models of movement and growth.

I will present random-walk based derivations of interface conditions to motivate the study of coupled systems of reaction-diffusion equations for population dynamics in patchy landscapes. These conditions represent movement behavior in response to landscape features. I will show that the population spread rate depends critically on the assumptions of how individuals behave at patch interfaces.

One option for managing invasive species is to partially remove their main resources, for example Ash trees for the Emerald Ash borer. As a somewhat surprising application of the theory presented, I will outline three mechanisms by which such a patchy removal of resources could lead to an increase in spread rate rather than the intended decrease. (Received January 09, 2015)