1145-92-1273 **William F. Fagan*** (bfagan@umd.edu), **Tyler Hoffman**, **Daisy Dahiya**, **Robert Stephen Cantrell** and **Chris Cosner**. *How switching between movement modes improves foraging success in fragmented landscapes: exploring the benefits of context-dependent diffusion and advection.*

Animals use different dispersal modes at different times and scales. For example, animals may use relatively large scale non-oriented (e.g., diffusive) movements to search for resources but use smaller scale, directed movements to exploit them. Incorporating such context-dependence in models represents a substantial increase in mathematical complexity, but creates an opportunity to more fully integrate real biology. Using a partial integro-differential equation framework, we consider the spatial dynamics of a population of foragers with two subunits. In one subunit, foragers move via diffusion (random search) whereas in the other, foragers move via advection (gradient-following search). Foragers switch back and forth between the subunits as functions of their spatial context. We consider a one dimensional binary landscape of resource patches and non-habitat and assume that different movement modes predominate inside patches versus outside. We find that actively switching between dispersal modes offers a substantial increase in the spatial overlap between foragers and their resources relative to a dispersal model in which foragers merely blend advection and diffusion modes at all times. (Received September 20, 2018)