1116-92-761 **Xiuquan Wang*** (xiuquan0418@gmail.com), **John D. Reeve**, **Mingqing Xiao**, **Dashun Xu** and **James T. Cronin**. .

A fundamental goal of insect ecology is to examine how dispersal affects the distribution and dynamics of insects across natural landscapes. Insect dispersal is typically a combination of random movements and biased ones, in response to cues in the surrounding environment. Although it is straightforward to extend diffusion models to represent these more complicated patterns of movement, much less is known about how to estimate the key parameters or rate constants in these models. In this paper we present some important characteristics of insect biased movement in a rectangular domain of two-dimensional space, and show that if insects are released at the center of a rectangle, then the ratios of the mean accumulated density, the flux density, and the mean first passage time of opposite boundaries are constants, which are determined by the ratios of actual drift coefficients in horizontal and vertical directions, respectively. Different from existing approaches, these characteristics greatly simplify the estimation of the parameters (diffusion rate, advection coefficients, and death rate) and make quantification of dispersal more approachable. (Received September 11, 2015)