5007-92-365 **Mark A Lewis*** (mark.lewis@ualberta.ca), Dept Mathematical and Statistical Sciences, CAB 632, University of Alberta, Edmonton, Alberta T6G 2G1, Canada. *The mathematics behind biological invasion processes.*

Models for invasions track the front of an expanding wave of population density. They take the form of parabolic partial differential equations and related integral formulations. These models can be used to address questions ranging from the rate of spread of introduced invaders and diseases to the ability of vegetation to shift in response to climate change. In this talk I will focus on scientific questions that have led to new mathematics and on mathematics that have led to new biological insights. I will investigate the mathematical and empirical basis for multispecies invasions, for accelerating invasion waves, and for nonlinear stochastic interactions that can determine spread rates. (Received May 13, 2013)