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Stephen E Tennenbaum* (set1@fiu.edu), **John Gatto** and **Joel Trexler**. *Thinking Inside the Box: An advection-diffusion model of animal movement in an enclosed region*. Preliminary report.

We develop simple diffusion-advection models to estimate the average time it takes fish to reach one of the boundaries of an enclosure and the population distribution over time moving in the enclosure (such as a lake or slough). We start with a combination of random walks and directed movement and then, from these, proceeding to the associated Partial Differential Equations and their solution. We also find the evolution of the population distribution and communities composition over time moving in the enclosure. Although this model was developed with fish movements in mind it has wide-ranging applicability scaling from the molecular to human and action from inert to deliberate. (Received September 06, 2019)