1106-92-1695 **Kurt E. Anderson**, **Scott Manifold** and **Jonathan Sarhad*** (jonathan.sarhad@gmail.com).
Population persistence in stochastic river networks. Preliminary report.

Freshwater scientists are increasingly demonstrating that the branching structure of river networks has substantial ecological consequences. We study population persistence using a reaction-diffusion-advection equation on a metric graph which provides a continuous, spatially explicit model of the river network habitat. Within this framework, we stochastically generate hypothetical river networks with a variety of geometric features and explore the effects of network structure and the distribution of habitat within the network on the persistence of a hypothetical, highly mobile population. We identify an index, CM, related to the distribution of habitable volume in the network as a promising indicator of population persistence potential. The index CM is the distance from the river outflow point at which half of the habitable volume of the river network lies upstream of that distance. This index outperforms other metrics such as the maximum and minimum distance from the river outflow to an upstream boundary and the total habitable volume of the network. In doing so, it provides a better generalization of habitat length in the classical linear space models of a river segment than these other metrics, when considered in the context of persistence in river networks. (Received September 15, 2014)