Population Persistence in River Networks

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ABSTRACT:

Organisms inhabiting river systems contend with downstream biased flow in a complex tree-like network. When the flow terminates in a lethal environment like the ocean, population survival depends on variables such a drift speed, diffusion rate, reproductive rate, and river geometry. Previous models have had trouble with the river geometry. A PDE model on a tree graph will be developed and studied, both analytically and numerically, to shed light on these dependencies.