

1109-92-11

Yu Jin* (yjin6@unl.edu), Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE 68588. *Population persistence in temporally varying river environments.*

We consider integrodifference models in temporally (periodically/randomly) varying river environments. Growth and dispersal functions are subjected to temporal variations. For the model with periodic (alternating) parameters, we obtain the principal eigenvalue of the linearization operator to determine population persistence and derive a boundary value problem to calculate persistence conditions. For the model with randomly varying parameters, we establish two persistence metrics: a generalized spectral radius and the asymptotic growth rate, which are mathematically equivalent but can be understood differently, to determine population persistence or extinction. The theoretical framework and methods for calculations are provided, and the framework is applied to calculating persistence in highly variable river environments. (Received December 07, 2014)