EXAMPLE ABSTRACT

A FRAMEWORK FOR THE STUDY OF STREAM-FISH POPULATION DYNAMICS

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Quantitative study of stream-fish population dynamics has received relatively little attention, especially when compared to reservoir and marine populations. Although it is unclear exactly why population dynamics of stream fishes has been understudied, it may be due to the difficulty associated with accurately quantifying the complex and dynamic nature of abiotic and biotic conditions in streams. As a result, no foundational framework exists to guide studies in this area. Using maximum likelihood, we developed a parsimonious age-structured population model that can be parameterized to accommodate stochastic variables such as stream discharge, therefore making it possible to simulate responses of population abundance to changes in influential variables. Our modeling approach also allows us to identify and quantify other functional variables such as early survival rates and relative influence of age-specific survival and fecundity on population growth. We have applied the model to a number of stream-fish species with outstanding results. In cases where population data are available for comparison, the model accurately predicts temporal abundance, providing strong evidence that the parameters modeled capture much of the variation associated with population fluctuations in these systems. Our results are the first to provide a framework for the quantitative study of stream-fish population dynamics.

NOTE: First author indicates presenter and should have appropriate superscript following first authors name.

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