Estimation in Projection Matrices for Describing the Evolution of an Age-Structured Population

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Keywords: Population Projection Matrices, Data Cloning, Age-Structured Population, Leslie Matrix, Bayesian MCMC Algorithm.

Discrete time models are used in Ecology for describing the evolution of an age-structured population. Usually, they are considered from a deterministic viewpoint but, in practice, this is not very realistic. The statistical model we propose in this article is a reasonable model for the case in which the evolution of the population is described by means of a projection matrix. In this statistical model, fertility rates and survival rates are unknown parameters and they are estimated by using a Bayesian approach. Usual Bayesian and data cloning methods (based on Bayesian methodology) are applied to real data from the population of the Steller sea lions located in the Alaska coast since 1978 to 2004. The estimates obtained from these methods show a good behavior.