

Bayesian Estimation for the Number of Species using Non-Informative Prior from Poisson-xgamma Distribution: Their Applications

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Abstract

The main goal of this article is to describe the Bayesian inference based on a sample of single-abundance species. Our focus is on the estimation of the number of species, which is dependent on natural food chain supply and has a finite population. In this study, we use non-informative priors, which keep the effect of subjective beliefs out of the study and assure objectivity and robustness. We also show examples and analyses based on a real dataset of microbiological species. The effect of priors on posteriors justifies the asymptotic estimate of maximum likelihood estimates of species number.

Keywords: Non-informative prior; MCMC, Poisson-xgamma mixture distribution.