A Shannon’s Index Estimator (Using Modified Good Turing Frequency Formula) with Sampling Data without Replacement

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Abstract

In practical applications, Shannon’s diversity index is a widely employed measure for the ecological monitoring and management. Most typical estimators of Shannon's index in the literature have been derived from the context of sampling with replacement. However, such sampling devices may be unsuitable for sedentary species (e.g. plants) where data are usually sampled without replacement. In this talk, we proposed an estimator of Shannon's index based on data sampled without replacement being more efficient than with replacement in a finite population. Furthermore, our simulation study has turned out that the proposed estimator is superior to some traditional estimators in terms of bias and RMSE.