

Estimation of Shannon's diversity index in a finite population

Tsung-Jen Shen (沈宗荏)

Department of Applied Mathematics and Institute of Statistics,
National Chung Hsing University

Abstract

Shannon's (entropy) index is widely employed in practical applications 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 not be suitable for sedentary species (e.g. plants) where data are usually sampled without replacement from an assemblage. In this talk, we develop a promising estimator of Shannon's index based on data sampled without replacement being more efficient than with replacement in a finite population. Furthermore, being tested with a simulation study, the proposed estimator is superior to some traditional estimators in terms of bias and RMSE.