

Predicting the number of new species in a subsequent sample for a finite population

T.-J. Shen^a

^aInstitute of Statistics
National Chung Hsing University
Taichung, Taiwan
tjshen@nchu.edu.tw

Keywords: Frequency estimation; Finite population; Good–Turing; Sample coverage

Abstract: Given a sample of abundances (observed data), ecologists or biologists are often interested in the number of species which are undetected in the sample but that would be discovered in a subsequent sample. This quantity is helpful for assessing the value of taking another sample. There are some estimators for such issue in the literature. Nevertheless, existing studies assume sampling with replacement or sampling from an infinite population, which might be inappropriate for many practical applications. In light of this limitation, we present a method to account for finite population sampling.