

Estimating the species richness by a Poisson-compound Gamma model –Online Supplementary

1 Confidence interval

For \hat{N}_{PCG} , we adopt a standard bootstrap approach for confidence interval estimation. Given data n_1, \dots, n_t and $\sum n_j = D$, let $g[j; \hat{G}_{\hat{\alpha}}(\lambda)]$, $j = 1, 2, \dots$ be the fitted zero-truncated Poisson mixture probabilities. For each bootstrap sample, we generated D observations from $g[j; \hat{G}_{\hat{\alpha}}(\lambda)]$. The cross-validation procedure is applied to each bootstrap sample and \hat{N}_{PCG} is calculated. The interval spanned by the 2.5th and 97.5th percentiles of N estimates is regarded as the bootstrap confidence interval.

For the other four mixture-based estimators including \hat{N}_{WL} , \hat{N}_{PCG_2} , \hat{N}_{PCG_3} and \hat{N}_{FM} , the same bootstrap procedure was followed.