Species Pools Estimation

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Abstract

The species pool concept was formulated over the past several decades and has since played an important role in explaining multi-scale ecological patterns. No statistical method is available for estimating species pools for a single local community (sampling area size may be very small as ≤ 1 km^2). In this study, based on limited local abundance information, we developed a simple method to estimate the area size and richness of a species pool for a local ecological community. For a 50 ha (0.5 km^2) forest plot in the Barro Colorado Island of central Panama, our model predicted that the local, if not regional, species pool for the 0.5 km^2 forest plot was nearly the entire island. Accordingly, tree species richness in this pool was estimated as around 360. Conclusively, our method fills the knowledge gap on estimating species pools for a single local ecological assemblage with little information. The method is statistically robust and independent of sampling size, as proved by both empirical and numerical tests.