Estimating abundance from presence-absence maps using kernel density estimation

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Abstract

This research is intended to apply spatial statistical approaches to estimate species abundance from presence-absence maps. Several methods have been developed to solve this problem, but most of them do not take account of spatial dependence. A new semi-parametric method is developed based on kernel density estimation. It can describe the spatial variation of species distribution. The estimation performance of the proposed method is compared with previous methods through simulation. An application to tree data set in Barro Colorado Island is demonstrated.

Keywords: presence-absence map, spatial statistics, Poisson process, kernel density estimation