

Grid-spacing and the quality of abundance maps for species that show spatial autocorrelation and zero-inflation

Spatial Statics Volume ..., August 2016, Pages .. - .. [In Press]

<http://dx.doi.org/10.1016/j.spasta.2016.08.001>



The effect of grid-spacing on the quality of species abundance maps is explored for species that show zero-inflation and spatial autocorrelation. Using a zero-inflated Poisson mixture model multiple fields of the prevalence parameter π and the intensity parameter μ were simulated. A selected field was sampled by grid-sampling with 200, 400, 800, 1600, and 3200 m grid-spacing and used to predict at a fixed set of validation locations by simple kriging with an external drift. The external drift variables were silt, silt squared and altitude. The estimated sampling distribution of MSE against grid-spacing shows that beyond a spacing of 1600 m the mean of MSE increases at a much faster rate. Based on these findings the 1600 m grid which consists of 446 locations for our study area of 2400 km² gives a compromise between sampling costs and prediction accuracy.