

Spatial smoothing of zero-inflated abundance data

Wesley Brooks

1. Introduction

Our objective is a model of the biomass of each species in each grid cell, where the only parameters used to calibrate the models are location and species composition. It is important to come up with an estimated probability that a given cell will have no biomass of a given species, and also to model the variance of the biomass estimate.

2. Models

There are two possible directions here: a two-stage hierarchical model, where in stage one we randomly decide whether a given cell has nonzero biomass, and then if so stage two randomly sets the biomass; alternatively, a single-stage model with zero-inflation, maybe one that could be tuned like a `glm` (e.g. a Tweedie model).