Modeling spatial distribution and trends in birds

Sweden has a long history of collecting bird observations. Data for many species are available since the mid 90’s and are collected on a grid net throughout Sweden (fixed rutes, standardrutter, http://www.fageltaxering.lu.se/english). Typically these data are analysed using the TRIM index computing an index for each species (or groups of species) combined for all sites in Sweden.

This project is to examine if other methods could be used to analyse or visualize bird data in new ways, e.g. smoothing methods like generalized additive (mixed) methods using a Poisson distribution.

Relevant questions could be:

* How does the spatial distribution look like for different (selected) species?
* Does the spatial distribution change over time?
* How can data be modelled if there are interactions in both spatial dimensions and in time?
* Is there serial or spatial correlation in the data that cannot be ignored?
* How does missing values and outliers influence modelling results?
* How well does modelling represent conditions on the border of the spatial distribution, e.g. in northern Sweden where observations are not made during all years?