PREDICTING BIRD DISTRIBUTIONS IN FLANDERS, BELGIUM: THE USE OF GEOSTATISTICAL ANALYSIS TECHNIQUES AND GIS

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Usually, predicting bird distributions creates a logistical regression model that includes different habitat and other environmental characteristics as predictor variables. Other methods include the use of artificial neural networks, Bayesian rules and so on. In our study the 'weights of evidence' method was used to predict successfully the distribution of breeding birds in Flanders, Belgium. This method is usually applied in a geological context in that it has been used frequently to predict the occurrence of mineral layers around the world. Other applications include predicting locations of sites with high archaeological interests. With the development and growing use of geographical information systems, this method was built-in in an Arcview extension facilitating processing of large amounts of data and visualising the results of the analysis. Based on a 'training set', a collection of points where a certain species is known to occur, and a collection of evidential themes (data layers like climate, habitat and soil structure), a probability of occurrence model is created which can easily be translated into a detailed prediction map. The training set data are derived from the Flanders Bird Atlas Project that yields very detailed (exact locations) data on the occurrence of 120 breeding bird species. The evidential themes were created by different governmental organisations during the last few years. An example of the method is shown here, applied to the Curlew *Numenius arquata* and the Bluethroat *Luscinia svecica*. After omitting the training set, additional point data were used to test the different models. Overall, 75% of the point data fell within areas with the highest probability of occurrence level. 15% were also predicted with a lower level of probability. About 10% of the point data were not correctly predicted. We believe that the 'weights of evidence method' can be a useful tool in assessing the impact of habitat (and other environmental) changes (*eg* due to nature conservation measures) on bird distributions within a certain study area.