

Spatial Classification of Berlins land cover for urban biodiversity assessment – the case of the wild boar

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Abstract

Urbanization is a major challenge for humans and wild life. In Berlin the wild boar (*Sus scrofa*) is one of several free ranging large mammals. To know which landscape characteristics wild boars prefer in urban environments and what their potential habitat could be a Geo-database in R was produced and linked to wild boar hunting locations. Resulting from that data a generalized linear model (GLM) with logit link function and binomial error structure was fitted. The Geo-database extracted the environmental information from a reclassified land-use vector layer of Berlin and Brandenburg to a fishnet like vector layer from which focal mean, i.e. connectivity indices, and distance calculations were derived. The resulting data was transformed into raster layers for each land-use class and landscape index and was used in the GLM as dependent variables. For the GLM locations from hunted wild boars were used as presence data and within the borders of Berlin pseudo-absence points were set, these were used as response variable. Following an information theoretic approach, we set up nine candidate models split up into three hypotheses depending on food and hiding and human disturbance variables. The nine candidate models showed that deciduous and coniferous forests as well as public green areas are associated with the occurrence of wild boar hunting locations whereas streets and both public and private buildings have a negative influence. The model evaluation showed that the overall food and hiding models have the best fit. All food and hiding models have an AUC from 0.85 to 0.91 and an accuracy of 0.77 to 0.84. However, the best fitting model was the model describing connectivity of forested areas across the scale of a home range. The resulting prediction raster layers showed where the potential habitat of wild boars in Berlin is located. Tiergarten and Tempelhofer Feld were found as suitable areas additionally to the areas where the presence points are located. At last the gains and shortcomings of the input data, the spatial 3 layers and the method in respect to their usefulness in predicting urban wildlife habitat, will be discussed.

Study area, Berlin and parts of Brandenburg

