

ADVANTAGES AND DISADVANTAGES OF THE HABITAT SUITABILITY MODEL BASED ON EXPERT KNOWLEDGE. AN EXAMPLE OF HABITAT MODELLING FOR CORNCRAKE (*CREX CREX* L.) IN DVIETE FLOODPLAIN.

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The corncrake (*Crex crex* L.) is a protected bird species in Latvia and Europe because its original habitat – floodplains has suffered from considerable human caused changes. Nowadays functioning floodplains are so infrequent habitats that the main part of corncrake population is forced to inhabit other grassland habitats in which, in its turn, corncrakes are more endangered by too intensive agriculture or overgrowing of bushes and trees because of a long lasting lack of agricultural activities. Modelling of suitable habitat for corncrakes is necessary to establish the current situation in several scales – local, national and European, and to improve the species protection in future.

Up till now, habitat suitability models in Latvia have been developed only for two or three bird species, but none of the models has been based on high resolution airborne LIDAR data. The research aim is to create the model of suitable habitats for corncrakes using airborne remote sensing – a novel technology of data collection for suitable habitat modelling.

Several methods exist to model habitat suitability in a landscape. The choice of the method depends on several criteria such as the present knowledge of species ecological demands, possibilities to describe these demands in space, and on the precision of a model. One of the modelling methods is based on the formation of decision support system. This method was used to identify suitable habitat locations and assess their conditions for corncrakes in the landscape of Nature Park the Dviete floodplain.

In the modelling, the spatially described data from year 2011 was used accordingly to the current knowledge of the demands of corncrake habitat published in scientific researches and given by a corncrake expert. The model was created in the ArcMap and ArcCatalog software, mainly using the Spatial Analyst and Spatial Data Modeller tools. Completely unsuitable landscape elements and those elements that affect habitat requirements of corncrake positively or negatively were modelled separately. The model result was displayed visually in the landscape of Dviete floodplain by summarising weighted positive and negative impact of the landscape elements and by subtracting the unsuitable elements.

One of the research conclusions is that the visually displayed model was precise enough when compared with the data of corncrake census. Usually habitat suitability models are based on satellite data, but in this case the corncrake habitat model was developed using the high precision airborne LIDAR data which is regarded as one of the main advantages of the model.

The modelling method included cases when numerical values that describe landscape elements important for corncrakes were not extractable from the scientific literature. In such situations the values were selected by the modeller and the corncrake expert thus making the model quite subjective. Besides, there was no available data about livestock pastures which are a relevant landscape element for corncrakes and for that reason includable in the model. To improve the model and to decrease the impact of expert assumptions, further corncrake researches of numerically described spatial demands of the bird are required ultimately.