

Possibilities to Facilitate the Recolonization of the European Roller to its Historical Breeding Range in Hungary [†]

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[†] Presented at the 1st International Electronic Conference on Biological Diversity, Ecology and Evolution, 15–31 March 2021; Available online: <https://bdee2021.sciforum.net/>.

Abstract: Decline of farmlands and grasslands' biodiversity is one the major conservation concerns nowadays. The European roller (*Coracias garrulus*) has suffered large declines both in size and range of the population, but due to direct conservation actions, this negative trend has been reversed in several countries. Here, we aimed to evaluate the current habitat suitability of the historical breeding area of the species in Hungary to promote the recolonization and the enlargement of the breeding range in the Carpathian basin and evaluate potential significance of the Natura 2000 network in this process. We applied species distribution modelling (MaxEnt) to map potential areas for nest-box supplementation. The most important predictors were the grasslands, broad-lived forests, agriculture sites with significant areas of natural. We found that the majority of the predicted area was without current nest-box occupancy data. Significantly larger proportion of grid cells with archive data still preserve suitable land cover composition for rollers than cells where the former breeding wasn't confirmed, and only small proportion of former breeding area has become completely unsuitable for the species. Our results highlights the importance to promote the recolonization of the European roller in the western region of Hungary and suggest that coordinated network of protected areas such as Natura 2000 can potentially serve as core areas in the recolonization processes. Our study also showed that species distribution modelling could be a useful tool for direct conservation planning.

Keywords: farmland birds; MaxEnt; Natura 2000; recolonization; species distribution modelling

Citation: Orsolya Kiss ^{*}, Béla Tokody, Károly Nagy and Zsolt Végvári. Possibilities to Facilitate the Recolonization of the European Roller to its Historical Breeding Range in Hungary. *Proceedings* **2021**, *68*, x. <https://doi.org/10.3390/xxxxx>

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