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Birds in a changing world



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Cover

The Firecrest (*Regulus ignicapilla*) is almost endemic to Europe. Only small isolated populations occur outside of Europe. Germany is located in the center of its distributional range and supports 1.25 – 1.85 million territories representing about 30% of the European population. After the Red Kite the Firecrest is the breeding bird species with the biggest proportion of its world population occurring in Germany. (Photo: T. Hinsche)

Planning for the future: Using predictions of steppe bird abundance and distribution to inform conservation prioritization in Kazakhstan

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The Eurasian steppes stretch from Ukraine to the Altai Mountains. Despite widespread conversion to cropland, very large areas of grassland in a near-natural state remain, especially in Kazakhstan. The Kazakh steppes harbor important populations of endemic and globally threatened steppe birds, such as the Pallid Harrier, the Steppe Eagle, the Sociable Lapwing and the Black Lark.

The Kazakh steppes have been the scene of massive land-use changes, e.g. the abandonment of millions of hectares of cropland, and the collapse in grazing livestock numbers due to the break-up of the Soviet Union in 1991. This decline in anthropogenic activities led to the recovery of many steppe bird populations. However, both recent and further proposed expansion and intensification of agriculture in the region indicate that the development of strategies that reconcile food production and biodiversity conservation are urgently needed.

Here, we used species distribution models to produce maps of modelled abundance and distribution for steppe birds. Based on these, we: i) evaluated if

existing protected areas capture hotspots of predicted bird species richness and abundance, ii) identified suitable areas for new reserves, and iii) identified areas of potential conflict between conservation and expanding agriculture.

Data for the species distribution models were compiled from standardized bird counts on ca. 2,000 line transects in Central and Northern Kazakhstan. We modelled the abundance of species of conservation concern in relation to environmental and land-use variables using hierarchical distance sampling. We also compiled a database with presence-only bird records, including targeted species surveys and citizen science databases. We predicted the distribution of ca. 70 bird species for the entire land area of Kazakhstan using a machine learning approach.

We will discuss our findings in the light of potential future land-use changes, and evaluate the potential for more structured bird monitoring and atlas schemes in Kazakhstan.