Using Maxent for mapping red deer habitat across the Caucasus and the northern Iran

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Abstract

Anthropogenic transformation of their original habitat has limited seasonal migration of many large mammal species. This leaves many populations vulnerable to the effects of poaching, illegal logging, pollution and armed conflicts. These threats led to a considerable population decline for Caucasian red deer and its populations remain small and isolated. Species distribution modeling (SDM) is a reliable way to identify suitable habitat for reintroduction of rare species and can play a critical role in supporting spatial conservation planning. This study aimed at locating and assessing potential red deer habitat and at identifying sites that can contribute to establish a viable meta-population. I used SDM with presence data from northern Iran and the Caucasus and a set of 14 predictor variables to 1.) identify suitable habitat for Cervus elaphus maral in the Caucasus Ecoregion and northern Iran, 2.) assess, how much of the suitable habitat is already under protection and 3.) find areas that have potential for reintroduction. The results underline the importance of forested areas for red deer, and show that Georgia has the potential to play a key role in protecting its habitat. Protected areas on both sides of the Russian-Georgian border as well as the Georgian-Turkish border can play important roles in connecting remote red deer populations and enabling the colonialization of suitable habitat.

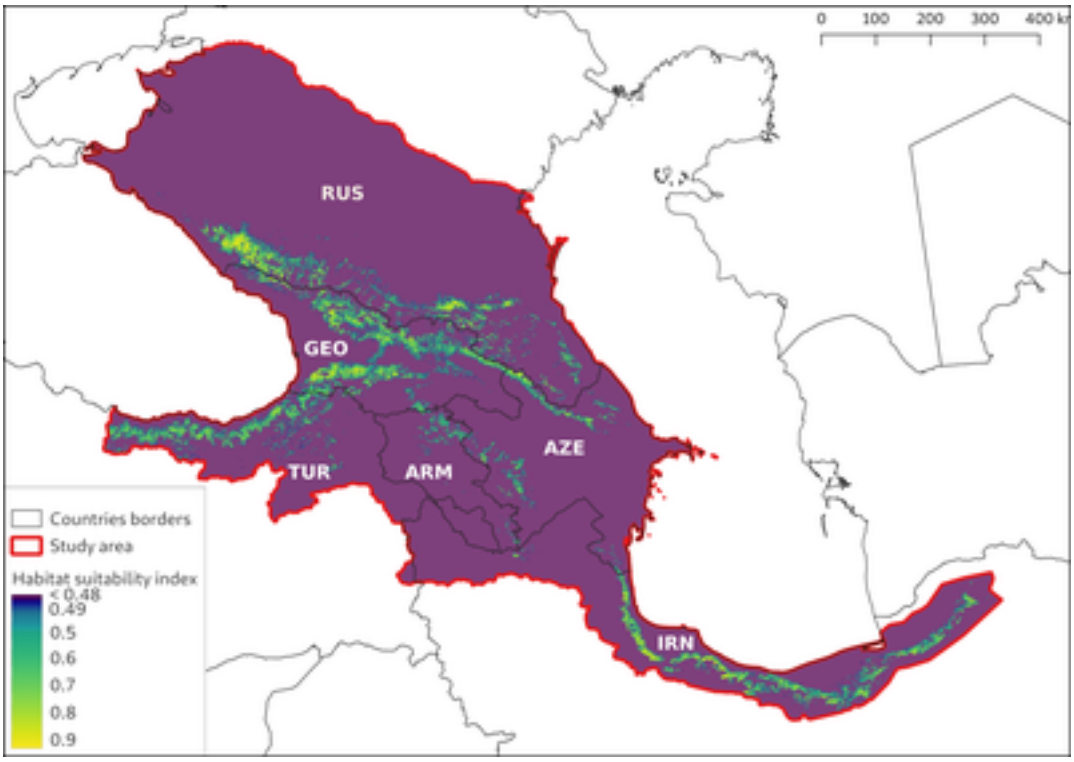

Chart: Benjamin Labohm