Differences in European Bison habitat use during different behavioral states

Ole Anton Schmiedl, Bachelor Thesis

Abstract

The European Bison is Europe's last surviving megaherbivore but only narrowly escaped extinction. Now that the number of individuals is rising again, there is a need to better understand their behavior and habitat needs to find large and connected suitable habitats. Their rise also gives hope for the conservation of biodiverse grasslands, due to their unique feeding habits. In my bachelor thesis, I used GPS data from a reintroduction project in the Tarcu mountains (Southwestern Romanian Carpathians) and analyzed it by using a hidden Markov model to differentiate between the behavioral states of resting, foraging, and moving. Afterward, I included a variety of landcover data and added the information to the corresponding GPS locations. Furthermore, I included data about the sex of the Bison, the month of the year, and the time of day. The results showed that the European Bison used grasslands mainly during foraging, they always stayed close to the forest edge and had a seasonal preference for it during summer and a daytime preference during the night, while they avoided it during winter and the day. However, this avoidance was stronger for females, while males used grasslands more constantly. Forests were used more during foraging when the grassland was avoided but were generally used constantly throughout the year during every behavioral state. Noticeable was their preference for a closer distance to the forest edge during resting, which has to do with their avoidance of resting in grassland, therefore, they move into the cover of the forest to rest after foraging in grassland. Furthermore, a preference for lower elevations during winter and higher during summer, an increase in resting during winter, movement during spring, and foraging during summer and autumn was found. Their movement behavior was the least influenced by the land cover. Regarding built-up areas, there was a strong avoidance, constant for males and females during every behavioral state throughout the day and the year. Additionally, although there was cropland close to their home range, there was not a single observation of them on the cropland. Generally, these findings support the theory that European Bison prefer a mosaic-like mixture of forests and grasslands and show their potential to suppress tree succession in small grasslands. Their avoidance of human disturbances and the growth of the

population give hope for a conflict-free coexistence of humans and European Bison in this region.

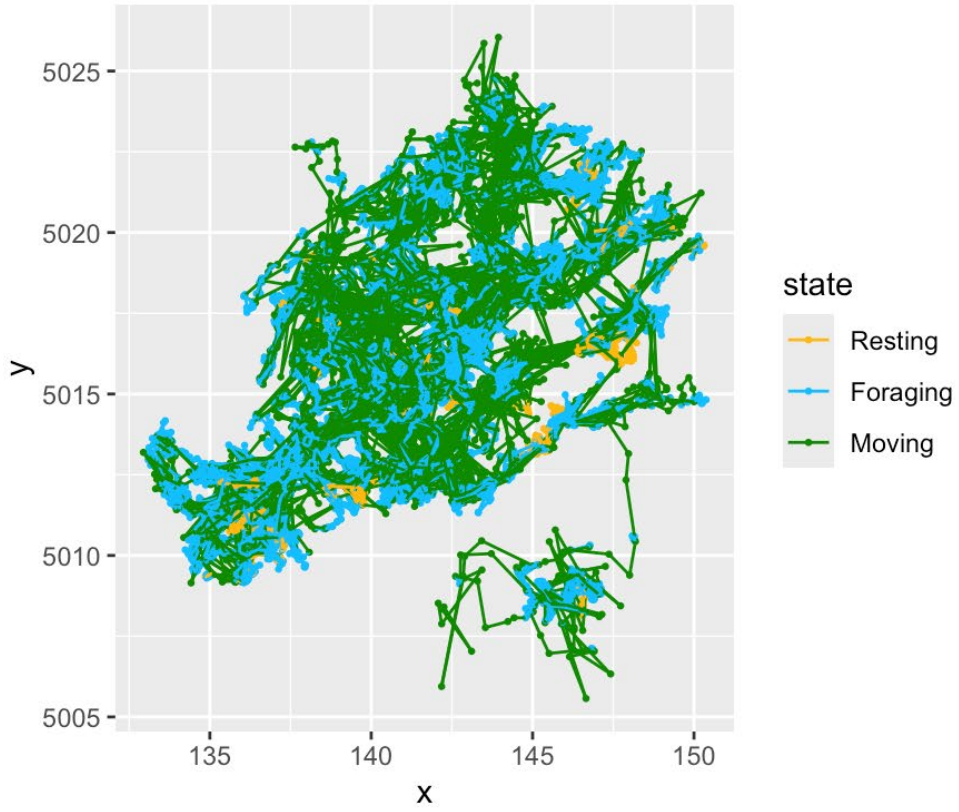

Figure 1: Movement in the study area throughout the three behavioral states.

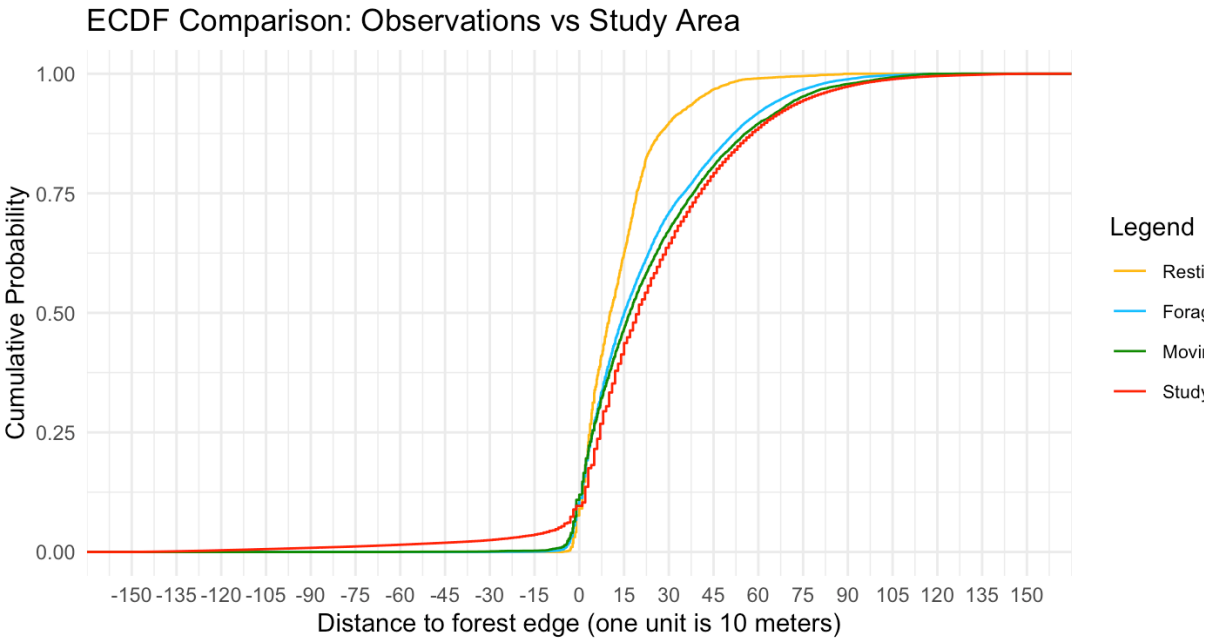

Figure 2: ECDF Plot of the preferred distance to the forest edge during different behavioral states and the distance to the forest edge in the study area.