

Spatial and temporal distribution of Eurasian Lynx (*Lynx lynx* L. 1758) in north-western Turkey

Burak AKBABA¹, Zafer AYAŞ¹

¹Department of Biology, Hacettepe University, Turkey
akbabab@hacettepe.edu.tr

Aim of the study: *Lynx* plays key roles in the ecosystems like other predator species by controlling the fluctuations of prey populations and it helps to preserve the ecological balance. Therefore, it is certain that decrease in the number or complete extinction of the species will lead to irreversible problems. It is very important to understand ecological characteristics of lynx for assessing the status of the species in a region and to make effective conservation plans. In this study, carried out in rural parts of Çamlıdere, Kızılcahamam (Ankara) and Gerede (Bolu) in north-western Anatolia, which habitat(s) among the major vegetation structures in the area were preferred by lynxes and seasonal movement patterns, daily activity patterns and seasonal activity variations of lynxes were aimed to determine.

Material and Methods: This study was carried out between July 2013 and June 2015 continuously for 2 years. A total of 10,102 camera trap day observations with 24 passive infrared camera traps (Bushnell Trophy Cam), in an area of approximately 650 km² were made throughout the study period. Brown bear, grey wolf, red fox, badger, otter, red deer, roe deer, wild boar and European hare were determined to occur in the area in addition to lynx. Carnivore-carnivore competitions and carnivore-herbivore relations between lynx and these species were revealed and the effects of topographic, hydrologic and anthropogenic characteristics of the area on the distribution pattern of the species were evaluated. It was assessed whether spatial and temporal distribution of lynx correlated positively or negatively with other target species and abiotic factors. Regression models and other statistical analysis were made by using Statistica software.

Results: 147 independent camera trap records of lynx were obtained from 19 camera trap stations. These records were used for further analysis. As a result, lynx was found to be occur in the region every season and there were positive correlations between spatial distributions of lynx, brown bear and wolf. Although crepuscular and nocturnal activity preference of lynx was similar to those of wolf, red fox and European hare, its daily activity pattern, that peaks between 20:00-21:59 and 04:00-05:59 hours had positive correlations between daily activity patterns of brown bear, wolf and wild boar. Spatial distribution and daily activity pattern of lynx did not differ between seasons. During the study, lynx was determined to stay away from residential areas and roads or water supplies did not affect the distribution of the species in the region. No significant relationships were found between spatial distributions of lynx and domestic animals or human activities. The results obtained were also used for the assessment of the current protection areas (Soğuksu National Park and Eurasian Black Vulture Wildlife Reserve) with regard to mammal species and for suggesting alternative areas for more efficient conservation schemes.

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Keywords: Eurasian lynx, *Lynx lynx*, camera trap, spatial and temporal distribution.