

Domestic Cat Chronobiology: Diurnal, Lunar and Seasonal Rhythms

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Abstract

Among domestic animals, the domestic cat (*Felis silvestris catus*) probably has the highest proportion of free-ranging individuals in the population and as such represents an important part (i.e. predator) in ecosystems. Due to their potential impact on wildlife, the management of domestic cats is a hot topic today. However, studies on domestic cat chronobiology and activity in relation to natural cycles are scarce. Therefore, the aim of our research was to investigate their diurnal, lunar and seasonal rhythms. We monitored the activity of stray cats in a selected corridor within a ~800m² patch of shrubs and trees in an agricultural landscape regularly used by wildlife in the area. Monitoring was conducted for two consecutive years using a Bushnell E3 trail camera. Data collection was based on video analysis of all recorded video clips (n= 2081). We recorded the following data: identification of the individual cat, date, and time of occurrence (cat sighted), light conditions, occurrence singly or in a group/pair, occurrence with or without prey, notes on observed behaviours. A total of 15 individuals were recorded in the area. The preliminary results on the basic chronobiology of the occurrence of cats in the area are presented here. Regarding seasonal changes, cats were most frequently observed in summer and spring (together about 70 % of all observations). The highest activity of domestic cats was observed at night (Rayleigh Z = 90.114; p < 0.0001) with two peaks of activity, one in the late evening (~21.00 h) and another in the early morning (~5.30 h). Slight shifts in activity depending on day length (sunset/sunrise) were observed when comparing diurnal rhythms in relation to seasons, with an earlier activity peak in winter. When analysing cat activity in relation to lunar phase, we found no significant activity peaks overall, either in general or in relation to seasons; thus, occurrence was evenly distributed over the lunar cycle (Rayleigh Z = 1.176; p > 0.05). Understanding the diurnal, lunar and seasonal activity rhythms of domestic cats is an important prerequisite for developing an optimal cat management strategy that takes into account both welfare aspects and minimising the impact of domestic cats on wildlife.