

EGU21-15436

<https://doi.org/10.5194/egusphere-egu21-15436>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## **Analysis of red deer *Cervus elaphus* behaviour and habitat modelling using data from GPS collars and available geospatial data products**

**Dainis Jakovels**<sup>1</sup>, Jevgenijs Filipovs<sup>1</sup>, Agris Brauns<sup>1</sup>, Alekss Vecvanags<sup>1</sup>, Iveta Kocina<sup>2</sup>, and Janis Ozolins<sup>3</sup>

<sup>1</sup>Institute for Environmental Solutions, Priekule County, Latvia ([dainis.jakovels@videsinstituts.lv](mailto:dainis.jakovels@videsinstituts.lv))

<sup>2</sup>Scientific Institute BIOR, Riga, Latvia ([iveta.kocina@bior.lv](mailto:iveta.kocina@bior.lv))

<sup>3</sup>State Forest Research Institute SILAVA, Salaspils, Latvia ([janis.ozolins@silava.lv](mailto:janis.ozolins@silava.lv))

Understanding of wild animal behaviour and habitat preference are important factors for further assessment of their living space capacity. Red deer *Cervus elaphus* is an important game species which population has increased from 54 thousand in 2016 to 66 thousand in 2020 (22% increase in last four years) in Latvia. Meanwhile, the number of hunted animals has increased from 12 thousand in 2016 to 20 thousand in 2020 (a 67% increase in the last four years). The increasing number of red deer and other ungulate species results in increased damage to new forest stands and crops. Traditional methods for population abundance estimation and monitoring, such as grazing damage observation, pellet or snow track counts are time and resource consuming and require trained experts. Technological approaches (trail cameras, microphones and drones) have the potential to support and improve the monitoring of wildlife.

In this study, we present results based on the location data of four red deer individuals. Red deers were cached and collared in Mar-Apr 2020, their location has been recorded every 30 minutes since then. The data is used for mapping of red deer migration routes, analysis of living and feeding places as well as movement behaviour. Available geospatial data products are terrain and canopy cover information obtained from LiDAR data, land cover and vegetation density information obtained from Sentinel-2 satellite data as well as proximity to feeding places, natural resources and human settlements. Hedonic regression approach is used for preference evaluation of different factors.

Detection of wild animals is also performed using a drone equipped with thermal and RGB cameras, networks of camera traps and microphones. The data from GPS collars allow validating the detection accuracy of other technological approaches.