

**Mendel University in Brno
Czech Society of Landscape Engineers – ČSSI, z.s.**

**Public recreation and landscape protection
– with environment hand in hand!**



Proceedings of the 15th Conference

Editor: Jitka Fialová

13th–15th May 2024, Křtiny

**2024
MENDEL UNIVERSITY IN BRNO**

Czech Society of Landscape Engineers – ČSSI, z. s.,



and

**Department of Landscape Management
Faculty of Forestry and Wood Technology
Mendel University in Brno**



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Editor: associate Professor Ing. Jitka Fialová, MSc., Ph.D.

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Under the auspices
of prof. Dr. Ing. Jan Mareš, the Rector of Mendel University in Brno,
of prof. Dr. Ing. Libor Jankovský, the Dean of the Faculty of Forestry and Wood Technology,
Mendel University in Brno,
of doc. Ing. Tomáš Vrška, Dr., the Director of Training Forest Enterprise Masaryk Forest
Křtiny, Mendel University in Brno,
of Ing. Dalibor Šafařík, Ph.D., the Chief Executive Office, Forests of the Czech Republic,



of Mgr. Jan Grolich, the Governor of South Moravia,

south moravian region

of PhDr. Ivan Bartoš, Ph.D., Minister of Regional Development of the Czech Republic,



and of Mgr. Marek Výborný, Minister of Agriculture of the Czech Republic,



in cooperation with Czech Bioclimatological Society, Nature Conservation Agency of the
Czech Republic) and Partnerství, o.p.s., with the financial support of



The authors are responsible for the content of the article, publication ethics and the citation form. All the articles were peer-reviewed.

© Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czechia

ISBN 978-80-7509-962-4 (print)

ISBN 978-80-7509-963-1 (online ; pdf)

ISSN 2336-6311 (print)

ISSN 2336-632X (online)

<https://doi.org/10.11118/978-80-7509-963-1>

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THE URBAN GREENERY OF THE BRNO CITY AS AN ENVIRONMENT FOR PEOPLE'S RECREATION AS WELL AS THE LIFE OF LARGE WILD MAMMALS

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<https://doi.org/10.11118/978-80-7509-963-1-0343>

Abstract

In the model area of the Brno city, research focused on monitoring the occurrence of wild medium-sized and large mammals is underway. The task of the project is to find out the species spectrum of mammals occurring in the landscape structure of the city, to estimate their density, risk situations and to provide guidance to the state administration and self-government for their management and solving situations. After the first year of the solution, it is possible to present the results from the part of the research dealing with the regular monitoring of urban greenery. Paired areas of large urban parks, forest parks, areas after mining, horticultural colonies and suburban forests were selected. These were inspected regularly, once a month, 2 hours after sunset with a thermal imaging device. The following species were recorded: domestic cat, red squirrel, marten, red fox, wild boar, roe deer, badger and raccoon dog. Free-living mammals thus adapt to life in an urban environment, get used to the presence of humans, and become part of the urban landscape. This brings with it many negative consequences that will have to be actively addressed sooner or later.

Keywords: Urban environment, human-wildlife conflicts, wild boar, roe deer, wildlife management

Introduction

In recent decades, the problem of the occurrence of animals in urban areas has come to the forefront of the research interest of many scientific teams all over the world. In particular, the consequences of this state are addressed, which can more or less threaten the safety, but also the health and life of residents, their pets, etc. (e.g. Perry et al. 2020; Franklin et al. 2021). The causes of synanthropic behaviour of animals, which can and will vary across countries, municipalities, animal species and individuals, are less investigated (McForlane et al. 2012). For some species, the urban environment will serve as a new alternative source of food, a refugee from predators or hunting, but also as an involuntary corner into which the individual got during a long-distance migration or as a result of a disturbing influence.

In the Czech environment, however, research on wild animals in cities is only at the beginning and there is a lack of basic information about the species spectrum of animals in cities, their way of life and possible threats. However, the media often draw attention to extreme situations in the form of the appearance of groups of wild boars in cities, rooted parks or golf courses by wild boars, attacks of dogs by wild boars, damage to vehicles by martens, damage to fences by badgers, the appearance of bears on the streets, etc. There is also no clear record of the species occurring, based on in which it would be possible to identify problems and solve them effectively, or looking for ways to successfully co-exist (where possible).

Using the example of the city of Brno, we decided to map selected types of environments with urban greenery, taking into account the possible occurrence of large and medium-sized wild mammals. Monitoring was carried out at night using thermal imaging devices. The aim of this research was to determine the species spectrum of mammals inhabiting the urban development of the South Moravian metropolis.

Materials and methods

The research was carried out within the model area of the city of Brno. This city is inhabited by around 700 thousand inhabitants (including students) and has an area of 230 km². It consists of several dozen city districts, which are very rich in forest and urban greenery. The city is also home to many brownfields, horticultural colonies and areas created by the extraction of mineral resources. Paired areas were selected within this territory: parks (Lužánky, Špilberk), forest parks (Willsonův les, Bílá hora), areas after mining (Černovice, Borky), horticultural colonies (Přehrada, Palackého vrch) and suburban forests (Hády, Mariánské valleys), where monitoring took place using a thermal imaging device (TETRAO Aquila H-35). Monitoring took place from June 2023 to February 2024. Areas were monitored once a month, always 2 hours after sunset, so that at least 90% of the area of each area was inspected. The geographical coordinates of each medium-sized and large mammal, zoological

species, sex and age class were recorded. As the research is still ongoing, we will limit the results presented here to the species spectrum of large mammals found in urban greenery.

Results

The study found that medium and large mammals frequently utilise urban greenery. The domestic cat was present in all surveyed areas, along with the red squirrel, red fox, and brown hare. The forest badger was also commonly found, with the exception of Lužánky Park. The red deer was not observed in Špilberk Park, and wild boar were present in all areas except parks. Repeated observations indicate that all species were present in the areas throughout the months, suggesting a long-term relationship with the environment. The number of individuals in certain environments could also be determined. For instance, in Lužánky Park, there were five brown hares and a female red deer with a fawn. Two badgers also inhabited the park around Špilberk Castle consistently. The Willson Forest Park was consistently inhabited by three badgers, and once, a wild boar wandered in exceptionally. The areas outside the city intravilanes were relatively open, resulting in greater fluctuation in the number of species present. The numbers of cats and squirrels also varied greatly across all areas. It was surprising to find an isolated record of an invasive species, the raccoon dog, at the Bílá Hora and Černovice sites.

Discussion

The results indicate that medium and large mammal species are relatively stable inhabitants of urban greenery. The occurrence of domestic cats as synanthropic species associated with human landscape structures is a common phenomenon, as is the presence of squirrels in public green spaces. The presence of brown hare, which has relatively small home ranges and can find sufficient food and cover in greenery, is also not surprising.

Nevertheless, cities can offer these animals benefits such as food, shelter, and absence of predators, which in combination with ecological plasticity and adaptability of species may be the reason why they return to or permanently settle in urban greenery. However, larger mammal species that do not seek human presence are bound to natural habitats. The red fox and the European badger are species that can benefit from alternative food sources and move around the city when public spaces are empty, particularly at night. Nocturnal activity is also typical of other large mammals, such as roe deer or wild boar, which hide during the day in dense vegetation, unused areas, or inaccessible gardens. From there, they venture out into the streets, where they cause damage with their feeding behaviour. Citizens of the city are generally unaware of these animals because they are active at night, live a generally hidden lifestyle, and their life manifestations are quite inconspicuous. Direct contact can occur in the event of a traffic accident or chance encounter during movements between shelters or food sources. There have also been cases where a wild boar has attacked a person while walking a dog, when the dog encountered the boar in its shelter, and it tried to defend itself or its piglets.

Currently, the most well-known cases of wild boar appearing in the outskirts of Brno are in areas adjacent to forests or near allotment gardens. In this environment and its immediate surroundings, wild boar enter inadequately secured land and dig up lawns and flower beds. Understandably, people are afraid of them and are putting pressure on public authorities to address this problem. According to the law no. 449/2001 Sb. concerns land where hunting is not possible, and exceptions to hunting are granted by public administration. However, hunters are significantly limited in this environment as the use of firearms is either dangerous or against the will of local citizens. Public administration also lacks the means to compel or motivate hunters to effectively regulate animals in this environment.

The risk associated with the presence of mammals in cities is primarily linked to the health risk of possible transmission of infectious diseases to humans or their domestic animals. Based on the ongoing research, we will also evaluate the health status of these animals, which will complement the knowledge of their occurrence in urban areas.

Conclusion

Wild mammals are adapting to life in Brno, getting used to the presence of humans and becoming part of the urban landscape. This brings with it a number of negative consequences that will need to be actively addressed sooner or later.

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Acknowledgement

This project (Veterinární a sociologické aspekty výskytu volně žijících zvířat v urbánním prostředí jako podklad pro jejich efektivní management a rozhodování státní správy) has been financed with the state support of the Technology Agency of the Czech Republic and the Ministry of the Environment of the Czech Republic within the Environment for Life Programme.

Souhrn

V modelovém území města Brna probíhá výzkum zaměřený na sledování výskytu volně žijících středně velkých a velkých savců. Úkolem projektu je zjistit jaké druhové spektrum savců se vyskytuje v krajinné struktuře města, odhadnout jejich hustotu, rizikové situace a poskytnout státní správě a samosprávě návod pro jejich management a řešení situací. Po prvním roce řešení je možné prezentovat výsledky z části výzkumu zabývající se pravidelným monitoringem městské zeleně. Byly vybrány párové plochy velkých městských parků, lesoparků, ploch po těžbě, zahrádkářských kolonií a příměstských lesů. Tyto byly pravidelně kontrolovány jednou měsíčně dvě hodiny po západu slunce termovizním přístrojem. Byly zaznamenány následující druhy: kočka domácí, veverka obecná, zajíc polní, kuna, liška obecná, prase divoké, srnec obecný, jezevec lesní a psík mývalovitý. Volně žijící savci se tak přizpůsobují životu v městském prostředí, zvykají si na přítomnost člověka a stávají se součástí městské krajiny. To s sebou přináší řadu negativních důsledků, které bude potřeba začít dříve či později řešit.

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Title: Proceedings of the 15th Conference Public recreation and landscape protection – with environment hand in hand!

Editor of the proceeding: associate Professor Ing. Jitka Fialová, MSc., Ph.D.

Publisher: Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czechia

Print: Mendel University Press, Zemědělská 1, 613 00 Brno, Czechia

Edition: 1st Edition, 2024

No. of pages: 412

No. of copies: 60

ISBN 978-80-7509-962-4 (print)

ISBN 978-80-7509-963-1 (online ; pdf)

ISSN 2336-6311 (print)

ISSN 2336-632X (online)

<https://doi.org/10.11118/978-80-7509-963-1>