

Instructions for Authors (Journal of the Silesian Regional Museum, Series A – Natural Sciences)

The Journal of the Silesian Regional Museum, Series A – Natural Sciences (hereinafter referred to as JSM(A)), Acta Musei Silesiae, Scientiae Naturales publishes original (previously unpublished elsewhere) studies and research reports in the fields of natural sciences (geology, paleontology, botany, zoology, etc.) with a maximum length of 30 pages of the manuscript (unless otherwise agreed with the editor), written in, English, or Czech (for the short news section with English abstract and summary) language. Preference is given to studies of regional nature and works based on the processing of collections from the Silesian Regional Museum in Opava. All papers are subject to peer review, and the editorial board decides on their publication and order of printing. JSM(A) also accepts reports on professional events, personal news, and book reviews.

Contributions must be submitted by email to the editor's address cihal@szm.cz.

Part I: general instructions:

Illustrations and tables should be numbered consecutively and indicated in the manuscript text. Draw pictures in ink on white or tracing paper; photographs, computer-generated images, or graphs can be submitted in digital form in formats such as .bmp, .jpg, and .tif, with drawings and graphs having a minimum resolution of 600 dpi and photographs (black and white or color) having a resolution of 300 dpi. Original photographs should be high-quality. Images should have headings (text) positioned above the actual table. Tables should have headings (text) positioned above the actual table. **Please send each figure (.jpg, .png), table (.docx) and graph (.jpg, .png) separately in the specified formats.**

The coordinates must be written in the WGS-84 coordinate system in the following format: **49°50'39,4"N 18°23'16,7"E.**

When submitting your manuscript, please provide the names of three experts in the field who could potentially review your work. These reviewers should have the appropriate knowledge and expertise. However, note that the editors may not necessarily approach these suggested referees. It is important to include comprehensive contact information for each suggested reviewer (email address). Additionally, the proposed reviewers should not have collaborated with any of the co-authors within the past three years, nor should they have published any papers with the co-authors. Furthermore, it is preferable that the proposed reviewers come from institutions different from those of the authors. You can consider suggesting reviewers who are members of the journal's Editorial Board, as well as authors whose work you have frequently cited in your paper.

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Process: After you submit your manuscript, it will go through a peer-review process. Please be prepared for potential revisions and make sure to carefully and thoroughly address the comments and suggestions provided by the reviewers. Your revised manuscript should address each raised comment or concern.

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Changes or additions to the original manuscript should only be made in exceptional cases and only in the first proofreading. To create a formally perfect manuscript, it is recommended to use some of the works published in ČSMO(A) since 2020 as templates. Upon request, a PDF file of some of these works can be obtained at the address cihal@szm.cz.

Part II: The examples of published articles at the end of the instructions.

Use this part for formatting study manuscripts and research reports, **check also separate .docx examples for letter sizes and others.**

Bats of the Ostrava city and their synantropization

Martin Gajdošík

Bats of the Ostrava city and their synantropization. – Acta Mus. Siles. Sci. Natur. 72: xx–xx, 2023.

Abstract: Based on the published findings (Koštejnová 2013, Slezáková 2014, Gajdošík 2020), unpublished data from museum specimens (2005 – 2013), and data from field surveys (2005 – 2023), a total of 13 bat species were recorded in the urban area of Ostrava in North Moravia. Common species in the area included *Pipistrellus pipistrellus*, *Nyctalus noctula*, *Eptesicus serotinus*, *Myotis daubentonii*, and *Vespertilio murinus*. *P. pipistrellus* was eudominant species ($D = 74.41$), followed by *N. noctula* ($D = 11.41$). *E. serotinus* was a subdominant species ($D = 4.59$), followed by *M. daubentonii* ($D = 3.77$) and *V. murinus* ($D = 2.45$). The occurrence of *M. mystacinus/brandtii* was recedent ($D = 1.33$), and the occurrence of *M. nattereri* ($D = 0.51$), *E. nilssonii* ($D = 0.51$), *P. pygmaeus* ($D = 0.31$), *Plecotus auritus/austriacus* ($D = 0.31$), *Pipistrellus nathusii* ($D = 0.20$), *N. leisleri* ($D = 0.10$), *M. myotis* ($D = 0.10$) and *M. brandtii* ($D = 0.10$) were subrecedent. In the summer season, eudominant species were *P. pipistrellus* ($D = 76.84$), followed by the *N. noctula* ($D = 10.63$), subdominant *E. serotinus* ($D = 4.74$), and *M. daubentonii* ($D = 3.89$), with *M. mystacinus/brandtii* being recedent ($D = 1.37$). In the winter season, eudominant species were *V. murinus* ($D = 62.50$), followed by the *N. noctula* ($D = 34.38$) and subdominant *P. nathusii* ($D = 3.13$). However, the species composition inside and outside buildings differed significantly. In the summer season, eudominant species inside buildings was *P. pipistrellus* ($D = 99.57$), followed by the subrecedent species *V. murinus* ($D = 0.29$) and *M. daubentonii* ($D = 0.14$). Outside buildings, *N. noctula* ($D = 40.16$) were eudominant, followed by *E. serotinus* ($D = 17.72$), *P. pipistrellus* ($D = 14.17$), and *M. daubentonii* ($D = 14.17$), with *M. mystacinus/brandtii* ($D = 5.12$) was dominant, and *M. nattereri* ($D = 1.97$), *E. nilssonii* ($D = 1.97$), *P. pygmaeus* ($D = 1.18$), and *P. auritus/austriacus* ($D = 1.18$) were recedent species. In the winter season, eudominant species inside buildings were *V. murinus* ($D = 68.75$), followed by *N. noctula* ($D = 25.00$), and the situation was very similar outside the buildings during this period, with eudominant *V. murinus* ($D = 56.25$) and *N. noctula* ($D = 43.75$). Two roosts of the maternity colonies *P. pipistrellus* were recorded in city buildings: in Výškovice, Lumírova 10, in an expansion joint near the balcony on the top floor of a panel residential building; and in Zábřeh, Plzeňská 2617/4 and Plzeňská 2617/6, in expansion joints on the top floors of an old panel building used as a hostel and apartment building.

Key words: Bats, synantrophy, distribution, urban area, North Moravia

Introduction

Ostrava is the largest agglomeration in northern Moravia and the third largest in the Czech Republic. Due to its specific settlement structure with several distinctly separated development centers, numerous prefabricated housing estates, and older types of settlements of various ages, as well as a significant amount of industrial infrastructure and brownfields, many water bodies, islands of greenery, and various site-specific landscape features such as heaps and tailings ponds, the synanthropization of various groups of animals is well observable here. Bats are a suitable model group of mammals for studying this phenomenon, both due to their ability for rapid dispersal over long distances and their social lifestyle. Since the second half of the 20th century, some bat species have occupied very specific new types of shelters, such as prefabricated buildings and highway bridges. However, the urban environment still offers more traditional shelters like attics, hollow trees, and cellars, as well as hunting opportunities in urban parks, suburban forests, water areas, around watercourses, and ruderal vegetation. At the beginning and end of the season, when food is scarce, hunting near street lamps is attractive for some species. On the other hand, urban bat populations are negatively affected by insensitive reconstructions or even the demolition of old buildings, modern insulation of buildings, increasing levels of light pollution, and, last but not least, the emergence of many potentially dangerous places that can easily become traps for a large number of individuals. Nevertheless, the urban environment is currently one of the most important habitats for bats. The thesis summarizes largely unpublished data on their distribution in the urban area of Ostrava over 13 administrative city parts (Poruba, Mariánské Hory, Moravská Ostrava, Nová Ves, Petřkovice, Slezská Ostrava, Svinov, Radvanice, Bělský les, Dubina, Hrabůvka, Výškovice, Zábřeh) in 9 city districts (Poruba, Mariánské Hory a Hulváky, Moravská Ostrava a Přívoz, Nová Ves, Petřkovice, Slezská Ostrava, Svinov, Radvanice a Bartovice, Ostrava – Jih) spanning 19 years (2005 – 2023).

Study area

The city of Ostrava is located in the northeastern part of the Czech Republic, about 15 km from the border with Poland, at the confluence of the Odra, Opava, Ostravice, and Lučina rivers. With approximately 280,000 inhabitants, it is the third-largest city in the Czech Republic. The wider Ostrava agglomeration also includes the cities of Bohumín, Havířov, Karviná, Orlová, Petřvald, and Rychvald, making it the second-largest agglomeration in the Czech Republic after Prague, with 500,000 inhabitants. Ostrava lies on the border of the historical provinces of Silesia and Moravia and is the capital of the Moravian-Silesian Region. Administratively, it is currently divided into 23 city districts, further divided into 37 administrative parts. These districts include: Hošťálkovice, Hrabová, Krásné Pole, Lhotka, Mariánské Hory and Hulváky (administrative parts: Mariánské Hory, Hulváky), Martinov, Michálkovice, Moravská Ostrava and Přívoz (administrative parts: Moravská Ostrava, Přívoz), Nová Bělá, Nová Ves, Ostrava – Jih (administrative parts: Bělský les, Dubina, Hrabůvka, Výškovice, Zábřeh), Petřkovice, Plesná, Polanka nad Odrou, Poruba, Proskovice, Pustkovec, Radvanice and Bartovice (administrative parts: Radvanice, Bartovice), Slezská Ostrava (administrative parts: Slezská Ostrava, Antošovice, Heřmanice, Hrušov, Koblou, Kunčice, Kunčičky, Muglinov), Stará Bělá, Svinov, Třebovice, and Vítkovice.

Geomorphologically, the territory of Ostrava belongs to the subsystem of the Western Outer Carpathian Depressions, the Ostrava Basin unit, the vast majority of the Ostrava Plateau subunit, and the western part partially to the Ostrava Plateau subunit (Bína & Demek 2012). The town is located in the quadrants of network mapping of fauna 6174, 6175, 6176, and 6275 (Pruner & Míka 1996). Climatically, it belongs to a moderately warm region, with an average June temperature of 17 – 18°C, experiencing 100 – 120 days with precipitation of 1 mm or more and 140 – 160 days with temperatures above 10°C (Quitt 1971). Biogeographically, this territory is classified as a geobiome of deciduous forest, a province of Central European deciduous forests, and a subprovince of Pannonia.

The geological bedrock of Ostrava is the system of the Bohemian Massif of the Quaternary formation from the Holocene period. From the turn of the 19th and 20th centuries, mining and industry had a significant influence on the local landscape. Mining and metallurgical activities resulted in the creation of many dumps (Havrlant 2003) and often devastation of the landscape (Culek, 1996).

In addition to many areas that have been frequently reclaimed (Kostruch 1998), there are also many original, now protected areas in the city district, such as the Poodří Protected Landscape Area, as well as smaller protected areas, such as the Rezávka Nature Reserve, the Lanek National Nature Monument, the Turkov Nature Monument, and the Přemyšov Nature Reserve. There are also numerous bodies of water, many of which are biologically very valuable, such as the Site of Community Importance (SCI) Heřmanický rybník Nature Monument, protected by the Ramsar Convention, and the Štěpán Nature Reserve. Currently, Ostrava boasts 5,397.31 hectares of forests, representing an average forest cover of 16.28%. These include economic forests, special-purpose forests, and protective forests. Within the category of special-purpose forests, suburban forests with an increased recreational function are the most common. Protective forests are located in extremely unfavorable habitats, such as dumps and reclaimed areas. The town is covered by the natural forest areas of the Low Jeseník Mountains, the Silesian Lowland, and the Podbeskydská Uplands. The 3rd forest vegetation zone (oak-beech) predominates here, with the most common sets of forest types being loamy oak beech forest, rich oak beech forest, and fir-oak beech forest. Of the numerous forest complexes, the largest is the Bělský Les in the south of the city.

Material and Methods

The data were obtained through a combination of several methods. Published data from city parks and dumps were collected between 2011 and 2013 using ultrasound detection with the line transect method. Monitoring of the Ema and Hrabůvka dumps took place in 2011 and 2012, while monitoring of the Komenského sady Park and the Benátky Forest Park occurred in 2013. In total, 600 minutes of monitoring (equivalent to 10 hours) were accumulated over a 3-year period across 14 line transects. These data were evaluated using the positive minute method (McAney & Fairley, 1988; Bartonička & Zukal, 2003).

The unpublished data are based on 14 documented specimens of bats in the zoological collection of the Silesian Museum (sub-collection 08 – zoology) deposited between 2007 and 2014. Additionally, data on bat activity in the Ostrava-Zábřeh housing estate were collected using ultrasound detection in 2011. During five visits within one season, a total of 34 hunting grounds and 76 hunting individuals were surveyed. The incomplete data from the research on the chiropteroфаuna in the Ostrava Zoo and BP area, conducted between 2011 and 2012, were also utilized.

The main part of the thesis consists of the author's original findings of bats in the city of Ostrava from 2005 to 2023. These findings were often a result of encounters with bats, particularly in residential houses, or the discovery of bats inside and outside buildings. In all of these cases, the author personally identified the individuals. Netting conducted in 2021 within the Ostrava Zoo and BP area, as well as ultrasound detection performed from 2018 to 2023 at the same location, served as additional methods. All detections were carried out using the Pettersson D240x ultrasonic detector, capable of operating in both HET (heterodyne) and TE (time expansion) modes. The identification of all encountered and captured individuals followed recognized guidelines (Dungel & Gaisler, 2002; Dietz, Von Helversen & Nill, 2009; Anděra & Gaisler, 2019). Ultrasonic signals were also identified using several guides designed for this purpose (www.ceson.org; Ahlén, 2002; Obrist, Boesch & Flückiger, 2004).

The faunistic record of findings below follows the following structure:

Format of record: number of the map square, administrative part of the city, district of the city, locality name (address), approximate altitude (m above the mean sea level), place of occurrence or type of roost and circumstances of the finding, date of finding, number of individuals, sex, method of finding, finder, method of documentation

Abbreviations used for the method of detection, documentation, and gender: **V** – visual observation during the emerging from the maternity colony roost, **kad** – cadaver, **bal** – dry skin, **leb** – skull, **N** – direct finding, **S** – netting, **D** – detectoring, **m** – male, **f** – female, **a** – adult, **j** – juvenile, **SZM** – Silesian Museum

Results

Myotis myotis (Borkhausen, 1797)

6174; 6175: Poruba, Poruba, –, 230 m ASML, –, 4. 10. 2013, 1 a, N, Jan Kašínský (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6875, incremental no. Z 114/2014, preparation no. 6/14); **6175: Slezská Ostrava, Slezská Ostrava, Ostrava Zoo and BP area**, Michálkoviccká 2081/197, forest east of pond No. 4 (at the Elephant Pavilion) on the Path of the Forest, 230 m ASML, flights and hunting, 2011, ? a, D; *ibid.*, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.).

Myotis nattereri (Kuhl, 1817)

6175: Slezská Ostrava, Slezská Ostrava, Ema dump, 324 m AMSL, hunting, 28. 7. 2011, 1 a, D; *ibid.*, flight, 6. 8. 2011, 1 a, D; *ibid.*, flight, 21. 9. 2011, 1 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D; *ibid.*, hunting, 28. 9. 2012, 1 a, D, all Jolana Koštejnová (2013).

Myotis brandtii (Eversmann, 1845)

6175: Slezská Ostrava, Slezská Ostrava, Ostrava Zoo and BP area, Michálkoviccká 2081/197, pond number 2, 230 m AMSL, –, 28. 7. 2021, 1 ma, S, Martin Gajdošík (unpubl.).

Myotis mystacinus (Kuhl, 1817) / *Myotis brandtii* (Eversmann, 1845)

6175: Slezská Ostrava, Slezská Ostrava, Ema dump, 324 m AMSL, hunting, 28. 7. 2011, 1 a, D; *ibid.*, flight, 6. 8. 2011, 1 a, D; *ibid.*, flight, 28. 9. 2012, 1 a, D, all Jolana Koštejnová (2013); **Ostrava Zoo and BP area**, Michálkoviccká 2081/197, pond number 3, 230 m AMSL, flight and hunting, 2012, ? a, D, Monika Kulagová (unpubl.); **6275: Hrabůvka, Ostrava – South, Hrabůvka dump**, 262 m AMSL, hunting, 13. 7. 2011, 1 a, D; *ibid.*, flight (1) and hunting (1), 23. 8. 2011, 1 a, D; *ibid.*, flight (1) and hunting (1), 23. 8. 2011, 1 a, D; *ibid.*, hunting, 30. 9. 2011, 1 a, D; *ibid.*, flight (1) and hunting (1), 15. 7. 2012, 1 a, D; *ibid.*, flight (1) and hunting (2), 25. 8. 2012, 3 a, D; *ibid.*, hunting, 17. 9. 2012, 2 a, D, all Jolana Koštejnová (2013).

Myotis daubentonii (Kuhl, 1817)

6175: Moravská Ostrava, Moravská Ostrava a Přívoz, Police of the Czech Republic, District Department Ostrava – střed, Masná 1352/3, 3rd floor, 212 m AMSL, summer 2008, 1 ma, N, Richard Kristýnek (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6776, incremental no. Z 49/2008, preparation no. 43/08); **Komenského sady Park**, 212 m AMSL, flight, 19. 6. 2013, 2 a, D; *ibid.*, hunting, 18. 7. 2013, 2 a, D; *ibid.*, flight (1) and hunting (2), 5. 9. 2013, 3 a, D, all Ilona Slezáková (2014); **Nová Ves, Nová Ves, Benátky Forest Park**, 220 m AMSL, flight, 18. 7. 2013, 2 a, D; *ibid.*, flight, 5. 9. 2013, 2 a, D, all Ilona Slezáková (2014); **Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area**, Michálkoviccká 2081/197, pond number 3, 230 m above sea level, hunting, 6. 9. 2023, 4 a, D; *ibid.*, hunting, 07/09/2022, 5 a, D; *ibid.*, hunting, 05/09/2018, 4 a, D, all Martin Gajdošík (unpubl.); **Ostrava Zoo and BP area**, Michálkoviccká 2081/197, pond number 1 (Mainland Islands), 230 m AMSL, hunting, 7. 9. 2022, 1 a, D, Martin Gajdošík (unpubl.); *ibid.*, pond number 2, 230 m AMSL, hunting, 07/09/2022, 2 a, D, Martin Gajdošík (unpubl.); *ibid.*, pond number 2, 230 m AMSL, 28. 7. 2021, 1 ma, S; *ibid.*, pond number 2, 230 m AMSL, 28. 7. 2021, 1 fa (gravid), S, Martin Gajdošík (unpubl.); *ibid.*, pond number 3 and forest south of pond No. 4 (near the Elephant Pavilion) on the Path of Water, 230 m AMSL, flights and hunting, 2011, ? a, D; *ibid.*, pond number 3 and forest south of pond number 4 (at the Elephant Pavilion) on the Path of Water, 230 m AMSL, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); **6275: Hrabůvka, Ostrava – Jih, Hrabůvka dump**, 262 m AMSL, flight (1) and hunting (2), 13. 7. 2011, 3 a, D; *ibid.*, hunting, 23. 8. 2011, 2 a, D; *ibid.*, hunting, 25. 8. 2012, 1 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D, all Jolana Koštejnová (2013).

Eptesicus serotinus (Schreber, 1774)

6175: Moravská Ostrava, Moravská Ostrava a Přívoz, Komenského sady Park, 212 m AMSL, flight (1) and hunting (2), 19. 6. 2013, 3 a, D; *ibid.*, flight (1) and hunting (2), 18. 7. 2013, 3 a, D; *ibid.*, flight (2) and hunting (1), 5. 9. 2013, 3 a, D, all Ilona Slezáková (2014); **Nová**

Ves, Nová Ves, Forest Park Benátky, 220 m AMSL, hunting, 19. 6. 2013, 1 a, D; *ibid.*, flight, 5. 9. 2013, 2 a, D, all Ilona Slezáková (2014); **Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area**, Michálkoviccká 2081/197, lamps at the Tanganyika pavilion, 230 m AMSL, hunting, 6. 9. 2023, 1 a, D; *ibid.*, hunting, 07/09/2022, 1 a, D; *ibid.*, hunting, 5. 9. 2018, 1 a, D; Martin Gajdošík (unpubl.); **Ěma dump**, 324 m AMSL, hunting, 28. 7. 2011, 2 a, D; *ibid.*, hunting, 06. 08. 2011, 2 a, D; *ibid.*, hunting, 20. 07. 2012, 1 a, D; *ibid.*, hunting, 28. 9. 2012, 1 a, D, all Jolana Koštejnová (2013); **Zoo and BP Ostrava area**, Michálkoviccká 2081/197, the whole area of the Zoo except for the surroundings of the ponds and forest vegetation east of the ponds (Path of Water and Path of Shadow), 230 m AMSL, flights and hunting, 2011, ? a, D; *ibid.*, the whole area of the Zoo except for the surroundings of the ponds and the forest vegetation east of the ponds (Path of Water and Path of Shadow), 230 m AMSL, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); **Zábřeh, Ostrava – Jih, Zábřeh housing estate**, orange-lit lamps in the park at the intersection of Plzeňská and Horní streets, 235 m AMSL, 13. 8. 2011, hunting, 5 a, D; *ibid.*, unlit stand of trees on Plzeňská Street near the bus stop, 235 m AMSL, 13. 8. 2011, hunting, 6 a, D; *ibid.*, by the trees behind the U Helbicha pub, Plzeňská Street, 235 m AMSL, 13. 8. 2011, hunting, 5 a, D; *ibid.*, an orange-lit lamp in Volgogradská Street, at the crossroads just behind the supermarket, opposite the house Volgogradská 149, 235 m AMSL, 25. 6. 2011, hunting, 1 a, D; *ibid.*, at the intersection of Jugoslávská and Tylova Streets, 235 m AMSL, 25. 6. 2011, hunting, 1 a, D, all Martin Gajdošík (unpubl.); **6275: Hrabůvka, Ostrava – Jih, Hrabůvka dump**, 262 m AMSL, hunting, 13. 7. 2011, 1 a, D; *ibid.*, flight (1) and hunting (1), 23. 8. 2011, 1 a, D; *ibid.*, flight (1) and hunting (1), 15. 7. 2012, 2 a, D; *ibid.*, hunting, 25. 8. 2012, 1 a, D, all Jolana Koštejnová (2013); **Výškovice, Ostrava – Jih, panel residential building**, Lumírova 10, 7th floor, found in the corner of the balcony behind a flower pot with a tree, 230 m AMSL, June or July 2021, 1 a, N, Ryznerová (leg).

Eptesicus nilssonii (Keyserling & Blasius, 1839)

6175: Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area, Michálkoviccká 2081/197, forest stand in the western part of the Zoo (Path of Shadow) and forest stand east of the ponds (Path of the Forest), 230 m AMSL, flights and hunting, 2011, ? a, D; *ibid.*, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); **6275: Hrabůvka, Ostrava – Jih, Hrabůvka dump**, 262 m AMSL, hunting, 23. 8. 2011, 1 a, D; *ibid.*, hunting, 30. 9. 2011, 1 a, D; *ibid.*, hunting, 15. 7. 2012, 1 a, D; *ibid.*, hunting, 25. 8. 2012, 1 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D, all Jolana Koštejnová (2013).

Fig. 1: Netting in the Ostrava Zoo and BP area, pond number 2, July 28, 2021. Photo by M. Kulagová.

Fig. 2: *Vespertilio murinus*, an specimen from Opava, released in the Ostrava Zoo and BP area on May 12, 2022. Photo by E. Gombala.

Fig. 3: *Nyctalus noctula*, an specimen from Opava, released in the Ostrava Zoo and BP area on May 12, 2022. Photo by E. Gombala.

Fig. 4: *Pipistrellus pipistrellus*, a group of thirteen females found on the 11th floor of a panel residential building in an unused room with an open ventilator behind a large painting (leg. Hana Horehajová). Hrabůvka, Ostrava – Jih, Josefa Kotase 15, August 23, 2021. Photo by M. Gajdošík.

Vespertilio murinus Linnaeus, 1758

6174; 6175; 6176; 6275: Ostrava, Ostrava, –, 9. 1. 2008. 1 ma, N, ? (leg), Martin Gajdošík (col); **6174; 6175: Poruba, Poruba, University Hospital Ostrava, Department of Urology**, 17. listopadu 1790/5, 2nd floor, one in the room, one in the window, 230 m AMSL, 23. 11. 2018, 1 ma 1 fa, N, Tomáš Nohel (leg), Martin Gajdošík (col); **VSĚ – Technical University of Ostrava, Rector's Office**, 17. listopadu 2172/15, 1st floor, in a windowless corridor hidden in the cover of the notice board lighting, 230 m AMSL, 12. 11. 2012, 1 ma, N, Kateřina Vrbašová (leg), Martin Gajdošík (col); **death on the road**, 230 m a.s.l., VII. (July) 2005, 1 ma, cad, Lumír Poledník (leg), bal + leb (SZM, inventory no. M 6723, incremental no. Z 51/2006); **auditorium of VSĚ – Technical University of Ostrava**, 17. listopadu 2172/15, 230 m AMSL, 9. 9. 2006, 1 ma, N, – (leg), Martin Gajdošík (leg), bal + leb (SZM, inventory no. M 6738, incremental no. Z 18/2007); –, **found on the street**, 230 m AMSL, XI. (November) 2006, 1 ma, N, Matusík (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6755, incremental no. Z 54/2007); **6175: Mariánské Hory, Mariánské Hory and Hulváky, residential house**, Korunní 1195/36, 6th floor, in the lower frame of the tilted window, 227 m AMSL, 7. 2. 2014, 1 ma, N, Alena Zmydlená (leg), Martin Gajdošík (col); **residential house**, Přemyslovců 3, 3rd (highest) floor, behind a window flower-box located on the outside, 227 m AMSL, 22. 11. 2020, 1 ma, N, Hana Svobodová (leg), Martin Gajdošík (col); **Moravská Ostrava, Moravská Ostrava a Přívoz, Forum Nová Karolína**, Jantarová 3344/4, found lying on the pavement in front of the entrance, 212 m AMSL, 24. 10. 2015, 1 fa, N, ? (leg), Martin Gajdošík (col); *ibid.*, 3rd floor, children's corner Chachárek, flying here in the morning, 212 m AMSL, 23. 1. 2015, 1 ma, N, security guard of the center (leg), Martin Gajdošík (col); **Primary School and Kindergarten Ostrčilova**, Ostrčilova 2557/10, found on the wall of the grandstand at the school playground, 212 m AMSL, 13. 1. 2014, 1 ma, N, Matěj Zvolánek (leg), Martin Gajdošík (col); **Forum Nová Karolína**, Jantarová 3344/4, on the 1st floor in the corridor crawling on the ground incapable of flight, probably got through the garage in the building or through the ventilation shaft, 212 m AMSL, 23. 12. 2012, 1 fa, N, Iveta Čigašová (leg), Martin Gajdošík (col); **Svinov, Svinov, residential house**, E. Rošického 1077/12, 6th floor of a 7-storey house, behind a wardrobe in an unheated room, observed flying around as early as 27. 11. in the morning, also on 29. 11. in the morning, ventilated through a glass loggia, where he probably flew in, 220 m AMSL, 30. 11. 2020, 1 ma, N, Simona Trčková (leg), Martin Gajdošík (col); **Zábřeh, Ostrava – Jih, residential house**, Jiskříček 4, on the ground floor on the balcony, in an open wooden box, hidden in a blanket for a dog folded here, found by the owner as early as 23. 12. 2012 evening, 235 m AMSL, 24. 12. 2012, 1 ma, N, Durák Pavel (leg), Martin Gajdošík (col); **Zábřeh housing estate**, by the orange-lit lamps in front of the house Jugoslávská 39, 235 m AMSL, 13. 11. 2011, hunting, 3 a, D, Martin Gajdošík (unpubl.); **6275: Dubina, Ostrava – Jih, residential house**, Antonína Gavlase 57, –, 3. 10. 2014, 1 ma, N, handed over to Zoo and BP Ostrava, – (leg), Martin Gajdošík (col); **Hrabůvka, Ostrava – Jih, panel residential house**, Majora Nováka 10, 6th floor, toilet, where he apparently got through a ventilation shaft that leads here, 237 m AMSL, 14. 1. 2009, 1 ma, N, František Skopal (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6802, incremental no. Z 43/2009); **residential house**, Oráčova 3, in the cellar, 237 m AMSL, 11. 1. 2008, 1 ma, N, Eduard Pud (leg), Martin Gajdošík (col); **panel residential building**, Stadická 8, 6th floor in the bedroom on the curtain (damaged right plagiopatagium), 237 m AMSL, 17. 12. 2008, 1 ma, N, Iva Chodurová (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6791, incremental no. Z 25/2009); **panel residential building**, Klegova 21, 8th floor, in an apartment on the window, 237 m AMSL, 7. 12. 2012, 1 ma, N, Ivo David (leg), Martin Gajdošík (col); **Výškovice, Ostrava – Jih**, –, 230 m AMSL, 27. 5. 2011, 1 ma, N, T. Fibich (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6832, incremental no. Z 18/2013, preparation no. 76/2011).

Fig. 5: *Pipistrellus pipistrellus*, part of a group of five males and eleven females found on a plastic cable cover running along the corridor walls under the ceiling on the 8th, 6th and 5th floors on the Hotel House Areál – apartment building (leg. Roman Herák). Zábřeh, Ostrava – Jih, Plzeňská 2617/6, August 18, 2023. Photo by M. Gajdošík.

Fig. 6: Hotel House Areál, Zábřeh, Ostrava – Jih, Plzeňská 2617/4 and 6, hostel building (entrance on the left) and apartment building (entrance on the right). Photo by M. Gajdošík.

Fig. 7: Hotel Areál – apartment building, corridor on the 8th floor. Expansion joint closer to the elevator (on the left) and plastic cable covers running along the corridor walls on both sides under the ceiling are visible. Photo by M. Gajdošík.

Fig. 8: Hotel Areál – residential building, corridor on the 8th floor. Sheet metal cover of the expansion joint further from the elevator. Photo by M. Gajdošík.

Pipistrellus pipistrellus (Schreber, 1774)

6174; 6175: Poruba, Poruba, residential building, Porubská 709/14, 3rd floor of an old brick house, unused apartment with an open window, 230 m AMSL, 23. 8. 2021, 4 fj (of which 3 fj died), N kad; *ibid.*, 24. 8. 2021, 1 fj, kad, all Darja Sajdoková (leg), Martin Gajdošík (col); **6175: Moravská Ostrava, Moravská Ostrava a Přívoz, Komenského sady Park,** 212 m AMSL, hunting, 18. 7. 2013, 1 a, D; *ibid.*, flight, 5. 9. 2013, 2 a, D, all Ilona Slezáková (2014); **Nová Ves, Nová Ves, Benátky Forest Park,** 220 m AMSL, flight (2) and hunting (2), 19. 6. 2013, 4 a, D; *ibid.*, flight, 5. 9. 2013, 3 a, D, all Ilona Slezáková (2014); **Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area,** Michálkovicová 2081/197, edge of the vegetation at pond number 2, 230 m AMSL, hunting, 7. 9. 2022, 1 a, D; *ibid.*, edge of vegetation at pond number 2, 230 m AMSL, hunting, 5. 9. 2013, 1 a, D, Martin Gajdošík (unpubl.); *ibid.*, pond number 2, 230 m AMSL, 28. 7. 2021, 1 ma, S, Martin Gajdošík (unpubl.); *ibid.*, the whole area of the Zoo except for the surroundings of the ponds and the forest to the east of the ponds (Path of Water and Path of Shadow), 230 m AMSL, flights and hunting, 2011, ? a, d; *ibid.*, the whole area of the Zoo except for the surroundings of the ponds and the forest vegetation east of the ponds (Path of Water and Path of Shadow), 230 m AMSL, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); *ibid.*, –, 230 m AMSL, 24. 5. 2008, 1 fa, N, S. Cihlářová (leg) Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6787, incremental no. Z 12/2009); **Ěma dump,** 324 m AMSL, flight (1) and hunting (1), 28. 7. 2011, 2 a, D; *ibid.*, hunting, 6. 8. 2011, 1 a, D; *ibid.*, hunting, 21. 9. 2011, 1 a, D; *ibid.*, hunting, 20. 7. 2012, 1 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D; *ibid.*, hunting, 28. 9. 2012, 1 a, D, all Jolana Košteinová (2013); **Zábřeh, Ostrava – Jih, Hotel House Areál – apartment building,** Plzeňská 2617/6, 235 m AMSL, 1. 9. 2022, 52 a (of which 7 died, namely 1 ma 6 fa), N kad, Tomáš Husák (leg), Martin Gajdošík (col); *ibid.*, 10. 9. 2022, 24 a, N; *ibid.*, on a plastic cable cover running along the corridor walls under the ceiling on the 8th, 6th and 5th floors, in the corridor of the 8th floor, a trip from a tin-covered expansion joint closer to the elevator, which is probably connected with the building roof, was observed for the first time on the evening of 14. 8., 235 m AMSL, 18. 8. 2023, 16 a (5 ma and 11 fa), N; *ibid.*, 19. 08. 2023, on a plastic cable cover running along the walls of the corridors under the ceiling on the 8th and 6th floors, further floating freely in the corridor on the 6th floor, 7 a (1 ma 6 fa), N; *ibid.*, 25. 08. 2023, on the plastic cable cover running along the walls of the corridors under the ceiling on the 8th and 6th floors, then in the staircase, under the sheet metal cover of the ceiling lintel near the elevator, under the sheet metal cover and mineral wool in the expansion joint further away from the elevator and freely flying in the corridor, all on the 8th floor, and also under the sheet metal cover in the expansion joint closer to the elevator, 26 a, (of which 18 died, namely a), N kad; all Roman Herák (leg), Martin Gajdošík (col); **Hotel house Areál – hostel,** Plzeňská 2617/4, 235 m AMSL, 24. 8. 2023, on a plastic cable cover running along the walls of the corridors under the ceiling on the 8th and 7th floors, then on a distribution box on the corridor wall under the ceiling, under the sheet metal cover of the ceiling lintel near the elevator and under the sheet metal covers and mineral wool in both expansion joints, all on the 8th floor, 66 a (of which 14 died, namely a), N kad, Roman Herák (leg), Martin Gajdošík (col); **Zábřeh housing estate,** by the orange-lit lamps in front of the house Volgogradská 47, 235 m AMSL, 13. 8. 2011, hunting, 2 a, D; *ibid.*, by the stand of trees at the intersection of Výškovická and Volgogradská streets, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D; *ibid.*, garden at Karpatská Street opposite the house Karpatská 29, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D, Martin Gajdošík (unpubl.); *ibid.*, a stand of trees near the bend of Čujkovova Street, between the houses of Čujkovova 13 and Čujkovova 23, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D; *ibid.*, by the orange-lit lamp in Krasnoarmejců Street, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D; *ibid.*, intersection of Krasnoarmejců and Svazácká streets, 235 m AMSL, 13. 8. 2011, hunting, 2 a, D; *ibid.*, by the orange-lit lamp right in front of the house Svazácká 50, 235 m AMSL, 13. 8. 2011, hunting, 2 a, D, all Martin Gajdošík (unpubl.); **6176: Radvanice, Radvanice and Bartovice,** –, 235 m AMSL, 20. 6. 2008, 1 fa, N, Zuzana Jankovičová (leg) Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6786, incremental no. Z 11/2009); **6275: Bělský les, Ostrava – Jih, panel residential building,** Dr. Šavrdy 3, top floor, hydrants, spaces behind the slats covering the risers and other spaces in the corridor, –, 10. 8. 2018, 104 a (of which 22 died, all a), N kad, – (leg), Martin Gajdošík (col); *ibid.*, top floor, hydrants, spaces behind the slats covering the risers and other areas in the corridor, –, 7. 8. 2018, 107, of which 25 died, all a), N kad, – (leg), Martin Gajdošík (col); **Dubina, Ostrava – Jih, residential building,** Jana Škody 7, top floor of a 4-storey house in the corridor in the mouldings, –, 10. 8. 2018, 27 j (of which 1 died fa), N kad, Radan Marek (leg), Martin Gajdošík (col); *ibid.*, the top floor of a 4-storey house in the corridor in the mouldings, –, 17. 8. 2018, 16 a (of which 1 died fa), N kad, Radan Marek (leg), Martin Gajdošík (col); **panel residential building,** Jana Škody 27, top floor, cable strips and distribution boxes in the corridor, –, 7. 8. 2018, 42 of them, of which 16 died, all a), N kad, Radan Marek (leg), Martin Gajdošík (col); *ibid.*, top floor, in the hallway, –, 9. 8. 2018, 2 fa, kad, Radan Marek (leg), Martin Gajdošík (col); **panel residential building,** Norberta Frýda 14, top floor, pieces of polystyrene filled filling of the opening leading to the roof water drain in the corridor and the space above the ceiling panel of this floor, –, 10. 8. 2018, 12 j (of which 2 died fj), N kad, – (leg), Martin Gajdošík (col); *ibid.*, top floor, pieces of polystyrene filled filling the opening leading to the roof water drain in the corridor and the space above the ceiling panel of this floor, –, 10. 8. 2018, 22 a (of which 10 died f a), N kad, – (leg), Martin Gajdošík (col); **Hrabůvka, Ostrava – Jih, panel residential building,** Josefa Kotase 15, 11th floor, in an unused room with an open ventilator behind a large painting, 237 m AMSL, 23. 8. 2021, 20 fa (of which 7 died, all fa), N kad; *ibid.*, 24. 8. 2021, 14 fa, N; all Hana Horehajová (leg), Martin Gajdošík (col); **residential house,** Horní 16, top floor of a 4-storey house, found dead, 237 m AMSL, 27. 8. 2020, 2 ma 1 fa, kad, David Mácha (leg), Martin Gajdošík (col); **Hrabůvka dump,** 262 m AMSL, hunting, 13. 7. 2011, 1 a, D; *ibid.*, hunting, 30. 9. 2011, 2 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D, all Jolana Košteinová (2013); **Výškovice, Ostrava – Jih, panel residential building,** Lumírova 10, 7th (highest) floor, expansion joint at the balcony, 230 m AMSL, summer colony, V to VI (June to July) 2020, approx. 30 a, V; *ibid.*, summer colony, V to VI (June to July) 2021, approx. 60 a, V; *ibid.*, summer colony, mid V (May) 2022, approx. 30 a, V; *ibid.*, summer colony, mid VIII (August) 2022, cca 9 a, V, all Evžen Tošenovský (unpubl.).

Fig. 9: Hotel Areál – residential building, corridor on the 8th floor. Roost emerging entrance of the maternity colony in the sheet metal cover of the expansion joint further from the elevator. Photo by M. Gajdošík.

Fig. 10: Hotel Areál – hostel, corridor on the 8th floor. Sheet metal cover of one of the expansion joints (on the left). Plastic cable covers running along both sides of the corridor walls under the ceiling and an electrical distribution box on the corridor wall under the ceiling (on the right) are also visible. Photo by M. Gajdošík.

Fig. 11: Hotel Areál – hostel, corridor on the 8th floor. The sheet metal cover of the same expansion joint has already been removed. Both the structure made of wooden slats to which this cover was attached and the layer of mineral wool beneath it are visible. In the upper part of

the expansion joint, a completely exposed gap is visible, leading between the panels of the building and serving as a roost for the maternity colony. Photo by M. Gajdošík.

Fig. 12: *Pipistrellus pipistrellus*, female from the summer colony of 66 individuals found under the metal cover of the ceiling lintel near the elevator and under the sheet metal covers and mineral wool in expansion joints on the 8th floor of the Hotel House Areál – hostel. Some individuals were also resting on the plastic cable cover running along the corridor walls under the ceiling and on the distribution box on the corridor wall under the ceiling (leg. Roman Herák). Zábřeh, Ostrava – Jih, Plzeňská 2617/4, August 24, 2023. Photo by Z. Otrisalová.

Pipistrellus pygmaeus (Leach, 1825)

6175: *Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area*, Michálkoviccká 2081/197, ?, 230 m AMSL., VII. (July) 2008, 1 fa, kad, Zuzana Jankovičová (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6788, incremental no. Z 13/2009); *ibid.*, all the forest stands in the Zoo, i.e. the Path of the Shadow, the Path of Water and the Path of the Forest, 230 m AMSL, flights and hunting, 2011, ? a, D; *ibid.*, all the forest stands in the Zoo, i.e. the Path of the Shadow, the Path of Water and the Path of the Forest, 230 m AMSL, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); Ema heap, 324 m AMSL, hunting, 6. 8. 2011, 1 a, D; *ibid.*, hunting, 17. 9. 2011, 1 a, D, all Jolana Koštejnová (2013).

Pipistrellus nathusii (Keyserling & Blasius, 1839)

6175: *Moravská Ostrava, Moravská Ostrava and Přívoz, Komenského sady Park*, 212 m AMSL, hunting, 18. 7. 2013, 1 a, D, Ilona Slezáková (2014); *Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area*, Michálkoviccká 2081/197, aviary of the Papua exposition, cage of Sclater's Crowned Pigeon, 230 m AMSL, 2. 1. 2023, 1 fa, N, Sabina Sikorová (leg), Martin Gajdošík (col).

Nyctalus noctula (Schreber, 1774)

6174; 6175: *Poruba, Poruba, VSB – Technical University of Ostrava*, 17. listopadu 2172/15, 230 m AMSL, 26. 3. 2013, 1 fa, N, Jan Platoš (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6874, incremental no. Z 113/2014, preparation no. 5/14); **6175:** *Moravská Ostrava, Moravská Ostrava a Přívoz, TJ Mittal Ostrava*, Varenská 3098/40a, found in the washroom in the shower, 212 m AMSL, 7. 2. 2018, 1 fa, N, Třaskošová (leg), Kateřina Nováčková (col); *Komenského sady Park*, 212 m AMSL, flight, 19. 6. 2013, 3 a, D; *ibid.*, flight (6) and hunting (5), 18. 7. 2013, 11 a, D; *ibid.*, flight, 5. 9. 2013, 1 a, D, all Ilona Slezáková (2014); *Nová Ves, Nová Ves, Benátky Forest Park*, 220 m AMSL, 19. 6. 2013, 1 a, D; *ibid.*, flight, 18. 7. 2013, 2 a, D; *ibid.*, flight, 5. 9. 2013, 2 a, D, all Ilona Slezáková (2014); *Petřkovice, Petřkovice, Šilheřovická Street*, found at about noon lying on the road, 217 m AMSL, 16. 3. 2016, 1 ma, N, Josef Vidura (leg); *Slezská Ostrava, Slezská Ostrava, Zoo and BP Ostrava area*, Michálkoviccká 2081/197, pond number 2, 230 m AMSL, hunting, 6. 9. 2023, 2 a, D; *ibid.*, pond number 4 (near the Elephant Pavilion) (1) and pond number 2 (1), 230 m AMSL, hunting, 7. 9. 2022, 2 a, D; *ibid.*, pond number 4 (near the Elephant Pavilion), 230 m AMSL, hunting, 5. 9. 2018, 1 a, D; all Martin Gajdošík (unpubl.); *ibid.*, pond number 3, The Path of the Shadow, The Path of Water, lamps at the Tanganyika pavilion and lamps in the agricultural part, 230 m AMSL, flights and hunting, 2011, ? a, D; *ibid.*, pond number 3, The Path of the Shadow, The Path of Water, lamps at the Tanganyika pavilion and lamps in the economic part, 230 m AMSL, flights and hunting, 2012, ? a, D, all Monika Kulagová (unpubl.); *Ema dump*, 324 m AMSL, flight (2) and hunting (1), 6. 8. 2011, 3 a, D; *ibid.*, flyover, 21. 9. 2011, 1 a, D; *ibid.*, hunting, 20. 7. 2012, 2 a, D; *ibid.*, hunting, 28. 9. 2012, 1 a, D, all Jolana Koštejnová (2013); *Zábřeh, Ostrava – Jih, Home for the Elderly Korýtko*, Petruškova 6, morning on the 4th floor of block B4 in the corridor near the window, 235 m AMSL, 23. 1. 2008, 1 fa, N, Radim Kolář (leg), Martin Gajdošík (col), bal + leb (SZM, inventory no. M 6769, incremental no. Z 24/2008, preparation no. 16/08); *Zábřeh housing estate*, above a grassy area with trees in front of the house Výškovická 78, 235 m AMSL, 13. 11. 2011, hunting, 2 a, D; *ibid.*, by the orange-lit lamps in Jugoslávská Street, in front of the houses Jugoslávská 61 to Jugoslávská 53, 235 m AMSL, 13. 11. 2011, hunting, 4 a, D; *ibid.*, intersection of Výškovická and Patrice Lumumba streets at the tree stand on the right, 235 m AMSL, 13/08/2011, hunting, 1 a, D; *ibid.*, the surroundings of the orange-lit lamps at the intersection of Volgogradská and Mezírka streets, in front of the house Volgogradská 61, 235 m AMSL, 13. 8. 2011, hunting, 2 a, D; *ibid.*, at the orange-lit lamp at the intersection of Krasnoarmejců and Gerasimova streets, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D; *ibid.*, at the orange-lit lamp in Krasnoarmejců Street, in front of the house of Krasnoarmejců 3, 235 m AMSL, 13. 8. 2011, hunting, 1 a, D; *ibid.*, at the orange-lit lamps at the next intersection just after the intersection of Volgogradská and Kotlářova streets, in front of the house Volgogradská 52, 235 m AMSL, 17. 4. 2011, hunting, 2 a, D; *ibid.*, at the orange-lit lamps at the next intersection just after the intersection of Volgogradská and Mezírka streets, in front of the house Volgogradská 59, 235 m AMSL, 17. 4. 2011, hunting, 3 a, D; *ibid.*, Svornosti Street, small park near the tram stop, 235 m AMSL, 4. 9. 2011, hunting, 3 a, D; *ibid.*, above the playground in Svazácká Street, at the intersection of Svazácká and Jižní streets, 235 m AMSL, 4. 9. 2011, hunting, 1 a, D; *ibid.*, at the orange-lit lamp at the car park entry, Svazácká Street, at the house Svazácká 5, 235 m AMSL, 4. 9. 2011, hunting, 1 a, D; *ibid.*, by the orange-lit lamp by the plane tree by the car park, Svazácká Street, 235 m AMSL, 04. 09. 2011, hunting, 1 a, D; *ibid.*, by the orange-lit lamp directly in front of the house Svazácká 50, 235 m AMSL, 4. 9. 2011, hunting, 1 a, D; *ibid.*, above the area between the houses Svazácká 54 and Svazácká 23, 235 m AMSL, 13. 6. 2011, hunting, 3 a, D; *ibid.*, by the orange-lit lamp at the intersection of Svornosti and Jiskřičky streets, in front of the house Svornosti 25, 235 m AMSL, 13. 6. 2011, hunting, 2 a, D; *ibid.*, by the orange-lit lamp in Svornosti Street, in front of the house Svornosti 23, 235 m AMSL, 13. 6. 2011, hunting, 1 a, D; *ibid.*, by the orange-lit lamp by the park on Svornosti Street, 235 m AMSL, 13. 6. 2011, hunting, 2 a, D; *ibid.*, Výškovická Street, above the vegetation at the tram stop between the houses Výškovická 64 and Výškovická 66, 235 m AMSL, 13. 6. 2011, hunting, 4 a, D; *ibid.*, Karpatská Street, by the orange-lit lamp by the garden at the end of the street at the house Karpatská 29., 235 m AMSL, 13. 6. 2011, hunting, 2 a, D, all by Martin Gajdošík (unpubl.); **6275:** *Hrabůvka, Ostrava – Jih, Hrabůvka dump*, 262 m AMSL, hunting, 13. 7. 2011, 8 a, D; *ibid.*, flight (1) and hunting (6), 23. 8. 2011, 7 a, D; *ibid.*, hunting, 30. 9. 2011, 6 a, D; *ibid.*, hunting, 15. 7. 2012, 3 a, D; *ibid.*, flight (1) and hunting (2), 25. 8. 2012, 3 a, D; *ibid.*, hunting, 17. 9. 2012, 3 a, D, all Jolana Koštejnová (2013); *Výškovice, Ostrava – Jih, panel residential building*, Lumírova 62 (at the Poliklinika public transport stop), L-shaped building with 7 floors, found inside the front door in the morning, 230 m AMSL, 20. 12. 2016, 1 fa, N, Petra Benková (leg), Martin Gajdošík (col).

Nyctalus leisleri (Kuhl, 1817)

6174; 6175; 6176; 6275: Ostrava, Ostrava, –, –, 19. 7. 2005, 1 fa, N, Jiří Stolarczyk (leg), bal + leb (SZM, inventory no. M 6729, incremental no. Z 116/2006).

Plecotus auritus (Linnaeus, 1758) / *Plecotus austriacus* (J. Fischer, 1829)

6175: *Slezská Ostrava, Slezská Ostrava, Ema dump*, 324 m AMSL, hunting, 21. 9. 2011, 1 a, D; *ibid.*, hunting, 20. 7. 2012, 1 a, D; *ibid.*, hunting, 17. 9. 2012, 1 a, D, all Jolana Koštejnová (2013); *Zoo and BP Ostrava area*, Michálkoviccká 2081/197, pond number 3, Path of the Shadow, 230 m AMSL, flights and hunting, 2011, ? a, D, all Monika Kulagová (unpubl.).

Overview of symbols and abbreviations used:

<i>Mmyo</i>	Greater Mouse-eared Bat <i>Myotis myotis</i> (Borkhausen, 1797)
<i>Mnat</i>	Natterer's Bat <i>Myotis nattereri</i> (Kuhl, 1817)
<i>Mbra</i>	Brandt's Bat <i>Myotis brandtii</i> (Eversmann, 1845)
<i>Mmys/bra</i>	Whiskered Bat <i>Myotis mystacinus</i> (Kuhl, 1817) or Brandt's Bat <i>Myotis brandtii</i> (Eversmann, 1845)
<i>Mdau</i>	Daubenton's Bat <i>Myotis daubentonii</i> (Kuhl, 1817)
<i>Eser</i>	Serotine Bat <i>Eptesicus serotinus</i> (Schreber, 1774)
<i>Enil</i>	Northern Bat <i>Eptesicus nilssonii</i> (Keyserling & Blasius, 1839)
<i>Vmur</i>	Parti-coloured Bat <i>Vespertilio murinus</i> Linnaeus, 1758
<i>Ppip</i>	Common Pipistrelle <i>Pipistrellus pipistrellus</i> (Schreber, 1774)
<i>Ppyg</i>	Soprano Pipistrelle <i>Pipistrellus pygmaeus</i> (Leach, 1825)
<i>Pnat</i>	Nathusius' Pipistrelle <i>Pipistrellus nathusii</i> (Keyserling & Blasius, 1839)
<i>Nnoc</i>	Noctule <i>Nyctalus noctula</i> (Schreber, 1774)
<i>Nlei</i>	Leisler's Bat <i>Nyctalus leisleri</i> (Kuhl, 1817)
<i>Paur/aus</i>	Brown Big-eared Bat <i>Plecotus auritus</i> (Linnaeus, 1758) or Grey Big-eared Bat <i>Plecotus austriacus</i> (J. Fischer, 1829)
+	presence
-	absence
??	uncertain occurrence
H	historical occurrence
čmp	map square number
?	the exact number unknown
a	adult
j	juvenile
ma	adult male
fa	adult female
mj	juvenile male
fj	juvenile female
D	detecting
N	direct finding
V	visual observation during the flight from the maternity colony roost
S	netting
kad	cadaver
bal	dry skin
leb	skull

A slash distinguishes between summer (from 16. 04. to 15. 10.) and winter (from 16. 10. to 15. 4.) records.

Tab. 1: Specimens in the Silesian Museum Collection.

Tab. 2: Temporal distribution of records.

Tab. 3: Records in districts of Ostrava.

Tab. 4: Number of records in years.

Tab. 5: Total number of records.

Tab. 6: Total number of specimens.

Tab. 7: Number of records in districts of Ostrava.

Tab. 8: Number of specimens in districts of Ostrava.

Tab. 9: Number of records inside and outside buildings in districts of Ostrava.

Tab. 10: Number of specimens inside and outside buildings in districts of Ostrava.

Tab. 11: A comparison of bat communities in selected cities in Central Europe.

Discussion

Between 2005 and 2003, a total of 13 species of bats were documented in the city of Ostrava: *Myotis myotis*, *M. nattereri*, *M. mystacinus/brandtii*, *M. daubentonii*, *Eptesicus serotinus*, *E. nilssonii*, *Vespertilio murinus*, *Pipistrellus pipistrellus*, *P. pygmaeus*, *P. nathusii*, *Nyctalus noctula*, *N. leisleri*, and *Plecotus auritus/austriacus*. This represents a total of 48.14% of the bat fauna of the Czech Republic. Data were collected from a total of 13 administrative districts in this city, including Poruby, Mariánské Hory, Moravské Ostravy, Nové Vsi, Petřkovice, Slezské Ostravy, Svinov, Zábřeh, Radvanice, Bělský les, Dubiny, Hrabůvky, and Výškovice.

The eudominant species were the synanthropic common pipistrelle bat, *Pipistrellus pipistrellus* (D = 74.41), followed by the noctule, *Nyctalus noctula* (D = 11.41). Subdominant species included the serotine bat, *Eptesicus serotinus* (D = 4.59), followed by Daubenton's bat, *Myotis daubentonii* (D = 3.77), and the parti-coloured bat,

Vespertilio murinus (D = 2.45). The occurrence of whiskered/Brandt's bat *Myotis mystacinus/brandtii* (D = 1.33) was recedent, and the occurrence of Natterer's bat, *Myotis nattereri* (D = 0.51), northern bat, *Eptesicus nilssonii* (D = 0.51), common pipistrelle, *Pipistrellus pygmaeus* (D = 0.31), brown big-eared bat/ grey big-eared bat, *Plecotus auritus/austriacus* (D = 0.31), Nathusius' pipistrelle, *Pipistrellus nathusii* (D = 0.20), Leisler's bat, *Nyctalus leisleri* (D = 0.10), greater mouse-eared bat, *Myotis myotis* (D = 0.10), and Brandt's bat, *M. brandtii* (D = 0.10) were subrecedent.

In the summer season, eudominant species were *P. pipistrellus* (D = 76.84), followed by *N. noctula* (D = 10.63), subdominant *E. serotinus* (D = 4.74) and *M. daubentonii* (D = 3.89), with *M. mystacinus/brandtii* (D = 1.37) being recedent.

Subrecedent species during this period included *M. nattereri* (D = 0.53), *E. nilssonii* (D = 0.53), *V. murinus* (D = 0.42), *P. pygmaeus* (D = 0.32), *M. myotis* (D = 0.11), *M. brandtii* (D = 0.11), *P. nathusii* (D = 0.11), *N. leisleri* (D = 0.11), and *P. auritus/austriacus* (D = 0.32).

In the winter season, eudominant species were *V. murinus* (D = 62.50), followed by *N. noctula* (D = 34.38) and subdominant *P. nathusii* (D = 3.13). However, the species composition inside and outside buildings differed significantly. In the summer season, eudominant species inside buildings was *P. pipistrellus* (D = 99.57), followed by the subrecedent species *V. murinus* (D = 0.29) and *M. daubentonii* (D = 0.14). Outside buildings, *N. noctula* (D = 40.16) were eudominant, followed by *E. serotinus* (D = 17.72), *P. pipistrellus* (D = 14.17), and *M. daubentonii* (D = 14.17), with *M. mystacinus/brandtii* (D = 5.12) was dominant, and *M. nattereri* (D = 1.97), *E. nilssonii* (D = 1.97), *P. pygmaeus* (D = 1.18) and *P. auritus/austriacus* (D = 1.18) were recedent species. Subrecedent species during this period were *V. murinus* (D = 0.79), *M. myotis* (D = 0.39), *M. brandtii* (D = 0.39), *P. nathusii* (D = 0.39), and *N. leisleri* (D = 0.39). In the winter season, eudominant species inside buildings were *V. murinus* (D = 68.75), followed by *N. noctula* (D = 25.00), with *P. nathusii* was dominant (D = 6.25), and the situation was very similar outside the buildings during this period, with eudominant *V. murinus* (D = 56.25) and *N. noctula* (D = 43.75).

The total number of specimens found is provided in Table No. 6, a detailed overview of the specimens found in various districts of Ostrava in Table No. 8, and the same overview with a distinction between specimens inside and outside buildings in Table No. 10.

Overall, it can be said that *P. pipistrellus* was the most frequently found species (a total of 50 records), followed by *N. noctula* (48), *E. serotinus* (24), *V. murinus* (21), and *M. daubentonii* (19). Less frequently found were *M. mystacinus/brandtii* (11), *E. nilssonii* (7), *M. nattereri* (5), and *P. pygmaeus* (5). Only sporadic records included *P. auritus/austriacus* (4), *M. myotis* (3), and *P. nathusii* (2), with occasional records of *M. brandtii* and *N. leisleri* (both with 1 record). In the summer, *P. pipistrellus* was the most commonly found species (50), followed by *N. noctula* (41), *E. serotinus* (24), and *M. daubentonii* (19). In the winter, it was *V. murinus* (17), followed by *N. noctula* (7).

Inside buildings, in the summer, *P. pipistrellus* was most commonly found (23), followed by *V. murinus* (2) and *M. daubentonii* (1). In the winter, it was *V. murinus* (10), followed by *N. noctula* (4) and *P. nathusii* (1). Outside buildings, the most common records in the summer were *N. noctula* (41), followed by *P. pipistrellus* (27), *E. serotinus* (24), and *M. daubentonii* (18). Less frequently found were *M. mystacinus/brandtii* (11), and sporadically *E. nilssonii* (7), *M. nattereri* (5), *P. pygmaeus* (5), *P. auritus/austriacus* (4), *M. myotis* (3), and *V. murinus* (2), with occasional records of *M. brandtii*, *P. nathusii*, and *N. leisleri* (all with 1 record). In the winter, outside buildings, *V. murinus* was the most frequently encountered (7), followed by *N. noctula* (3). A detailed overview of the total number of records is provided in Table No. 5.

Regarding the individual administrative districts of the city of Ostrava, the highest number of records came from Slezská Ostrava (63), followed by Zábřeh (43), Hrabůvky (36), and Moravská Ostrava (18). A smaller number of records came from Nová Ves and Poruba (9 each), Dubiny and Výškovice (7 each), with sporadic records from Mariánské Hory and Bělský les (2 each), and occasional records from Petřkovice, Svinov, and Radvanice (1 each). In the summer, the highest number of records also came from Slezská Ostrava (61), followed by Zábřeh (38), Hrabůvky (32), and Moravská Ostrava (13). Fewer records were made in Nová Ves (9), Dubiny (7), Výškovice (6), and Poruba (5). In the winter, the highest number of records came from Moravská Ostrava and Zábřeh (both with 5 records), followed by Poruba and Hrabůvky (both with 4 records). There were sporadic records from Mariánské Hory (2), and occasional records from Petřkovice, Slezská Ostrava, Svinov, and Výškovice (all with 1 record). A detailed overview of the records in the individual districts of Ostrava is provided in Table No. 7, and the same overview with a distinction between records inside and outside buildings is in Table No. 9.

The common pipistrelle bat *Pipistrellus pipistrellus* was found in both discovered colonies. In the first colony, located in the Výškovice district on Lumírova Street 10, these bats were discovered in 2022. The bats had occupied an expansion joint on the 7th floor of a panel residential building near a balcony. The colony has been present there annually since 2022, with an estimated peak population of around 60 individuals during their excursion. After their nightly outings, the bats foraged near the street lamps in front of the building before flying into the wooded ravine area immediately adjacent to the east of the building. There, they continued foraging throughout the ravine area, extending in a northwestern direction.

Fig. 13: Panel residential building, Výškovice, Ostrava – Jih, Lumírova 10. The location of the maternity colony roost of ca. 60 individuals of *Pipistrellus pipistrellus* is indicated by an arrow. Photo by M. Gajdošík.

Fig. 14: Panel residential building, Výškovice, Ostrava – Jih, Lumírova 10. The exact location of the maternity colony roost of *Pipistrellus pipistrellus* in the expansion joint near the balcony on the 7th (top) floor is indicated by an arrow. Photo by M. Gajdošík.

Fig. 15: Panel residential building, Výškovice, Ostrava – Jih, Lumírova 10. The location of the emerging entrance of maternity colony roost of *Pipistrellus pipistrellus* is indicated by an arrow. Photo by M. Gajdošík.

Fig. 16: Výškovice, Ostrava – Jih. Hunting ground of the maternity colony of *Pipistrellus pipistrellus* in a wooded ravine, directly adjacent to the panel residential building Lumírova 10 from the east. Photo by M. Gajdošík.

An even larger colony of this species was discovered in 2022 in the Zábřeh district, on Plzeňská Street 2617/6, within the premises of the Areál Hotel, in expansion joints of an old panel building used as an apartment building. The colony has been present here annually, with the highest count of 52 individuals recorded the same year. In the neighboring entrance of the same building, Plzeňská 2617/4, which houses a hostel, a colony was discovered in 2023, with a peak population of 88 captured specimens. In contrast to the previous roost in an panel residential building, the bats in this case occupied several vertical expansion joints that run throughout the building and used additional longitudinal fissures to move between floors and between both entrances of the building. These fissures communicate with the interstitial space, and from inside the building, they are only covered by bolted-on metal covers, under which the bats freely moved and accessed the hallways. The bats were often found resting on plastic cable covers mounted on the hallway walls below the ceiling and on distribution boxes on the hallway walls below the ceiling. The metal joint covers are bolted onto a structure made of wooden laths, under which there is a thick layer of mineral wool. Many of the bats were found resting on this wool, and additional individuals were located underneath it along the entire expansion joint or in the cavities within the interstitial space. The colony primarily occupied the 8th (highest) floor of the building and partially above it in the mentioned interstitial cavities. Groups of bats often infiltrated the lower floors of the building, where they moved through hallways and in the spaces of both stairwells.

In the Zábřeh district, the common pipistrelle bat was also frequently observed foraging within the settlement's built-up area. In the Hrabůvka district, they were observed hunting on the flat, densely vegetated, and currently reclaimed dump. In addition, sightings were made in the Bělský les, Dubina, and Hrabůvka districts, with smaller-scale observations in Poruba, mainly representing invasions or the presence of residual colonies, consisting of juveniles in late August to early September in buildings. The bat was also relatively common in the Slezská Ostrava district, both in the Ostrava Zoo and BP area and on the Ema dump. Smaller observations were made in the Moravská Ostrava and Nová Ves districts, with documented foraging in urban parks, such as Komenského Sady Park and Benátky Forest Park. An isolated finding from the summer season outside buildings was recorded in Radvanice. The occurrence of this species in the winter period was not documented as part of this study.

Unlike the previous species, the noctule *Nyctalus noctula* was found in both the summer and winter periods, both inside and outside buildings. During the summer, it was frequently observed in the Zábřeh and Hrabůvka districts, where it foraged within the housing estate and on the local dump. It was less common in the Moravská Ostrava district, where it was found in Komenského Sady Park, and in the Slezská Ostrava district, where it foraged both in the Ostrava Zoo and BP area and on the Ema dump. Occasional sightings were made in the Nová Ves district, where it was found in Benátky Forest Park. During the winter, it was primarily found in the Zábřeh district, both outside buildings while foraging within the housing estate and inside buildings. Occasional winter sightings were also recorded inside buildings in the Poruba, Moravská Ostrava, and Výškovice districts, as well as outside buildings in the Petřkovice district.

The parti-coloured bat *Vespertilio murinus* displayed a different pattern compared to the two previous species. It was primarily found in buildings during the winter period. In the summer, it was encountered less frequently, mainly both inside buildings and outside buildings in the Poruba district, occasionally inside buildings in the Dubina district, and outside buildings in the Výškovice district. In the winter, there were more records of this species compared to the summer period, even in districts where it was not present during the summer. The highest number records findings occurred inside buildings in the Hrabůvka district, and outside buildings in the Zábřeh district, where both foraging in the housing estate and hibernation attempts on balconies were recorded. It was also occasionally found inside and outside buildings in the Poruba district, as well as inside buildings and outside buildings in the Moravská Ostrava district. Isolated records were inside and outside buildings in the Mariánské Hory district and inside buildings in the Svinov district.

As for the Daubenton's bat *Myotis daubentonii*, all records were only from the summer period, and except for one isolated indoor finding in the Moravská Ostrava district, all were outside buildings. It was most frequently encountered in the Slezská Ostrava district, where it foraged in various locations within the Ostrava Zoo and BP area. It was relatively common in the Moravská Ostrava district, where it foraged in Komenského Sady Park, and

in the Hrabůvka district, where it foraged on the local dump along the banks of the Ostravice River. It was less common in the Nová Ves district, where it foraged in Benátky Forest Park.

Another of the more common species, the serotine bat *Eptesicus serotinus*, was only found during the summer period, exclusively outside buildings. It was most commonly found in the Zábřeh district, where it had numerous foraging sites within the housing estate. It was less common in the Moravská Ostrava district, where it foraged in the Komenského Sady Park, and in the Slezská Ostrava district, where it foraged in the Ostrava Zoo and BP area and on the Ema dump. To a lesser extent, it was also observed in the Hrabůvka district, where the local dump was its foraging site. It was sporadically found in the Nová Ves district, where it foraged in the Benátky forest park, and isolated records were from the balcony of a panel building in the Výškovice district.

Lastly, for the whiskered bat/Brandt's bat *Myotis mystacinus/brandtii*, these two closely related species could not be distinguished using the ultrasound detection, and only one netted individual, specifically *M. brandtii*, was clearly identified and separated into a special category. The most common occurrence of these two species, which could not be differentiated, was observed during the summer period in the Hrabůvka district on the Hrabůvka dump. A slightly less frequent occurrence was recorded in the Slezská Ostrava district on the Ema dump and in the Ostrava Zoo and BP area. The noctule and serotine bats often utilized street lamps for foraging within the Zábřeh housing estate.

The following species of bats have been found less frequently, sporadically, or even rarely in the city of Ostrava. With one exception, the Nathusius' pipistrelle *Pipistrellus nathusii*, all of these bats were observed only during the summer period, and they were exclusively found outside buildings. Here are the details of these less common bat species: Natterer's bat *Myotis nattereri* was recorded only in the Slezská Ostrava district, primarily in the Ema dump. It was observed during the summer period. Northern bat *Eptesicus nilssonii* was found in the Hrabůvka district, where its hunting grounds were the local dump. It was encountered during the summer period. There is some uncertainty regarding its presence in the Slezská Ostrava district, specifically in the Ostrava Zoo and BP area. Soprano pipistrelle *Pipistrellus pygmaeus* was present only in the Slezská Ostrava district, including the Ostrava Zoo and BP area and the Ema dump. Its occurrence was during the summer period, and it was found outside buildings. A pair of bat species, the brown big-eared bat and the grey big-eared bat *Plecotus auritus/austriacus*, were identified primarily through ultrasound detection, which does not allow for precise differentiation. Their occurrence was recorded in the Slezská Ostrava district on the Ema dump, but it was not entirely reliable in the Ostrava Zoo and BP area. Nathusius' pipistrelle *Pipistrellus nathusii* was found during the summer outside buildings in the Moravská Ostrava district's Komenského sady Park, and during the winter, it was observed inside buildings in the Slezská Ostrava district, particularly in the Ostrava Zoo and BP area. There is limited data available about Leisler's bat *Nyctalus leisleri*, and it was placed in a separate, unspecified category for Ostrava due to a lack of precise information. A single occurrence of greater mouse-eared bat *Myotis myotis* was recorded in the Poruba district at the end of the summer period, and it was found outside buildings. An unconfirmed presence of this bat in the Slezská Ostrava district, particularly in the Ostrava Zoo and BP area, was also noted.

Regarding individual administrative districts within the city of Ostrava, the highest total number of bat species was recorded in the Slezská Ostrava district (12 species), followed by Hrabůvka (7 species), Moravská Ostrava (6 species), Poruba, Nová Ves, Zábřeh, and Výškovice (4 species each), Dubina (2 species), and one species each in Mariánské Hory, Petřkovice, Svinov, Radvanice, and Bělský Les. During the summer period, the greatest number of species (11) was observed in Slezská Ostrava, followed by fewer species in Hrabůvka (6), Moravská Ostrava (5), Nová Ves (4), Poruba, Zábřeh, and Výškovice (3 each), and even fewer in Dubina (2), with one species each in Radvanice and Bělský Les. In the winter period, the highest number of species was found in Poruba, Moravská Ostrava, and Zábřeh (2 species each), with one species in Mariánské Hory, Petřkovice, Slezská Ostrava, Svinov, Hrabůvka, and Výškovice.

Concerning the number of species found in individual districts within buildings and outside them, the highest total number of species outside buildings was recorded in Slezská Ostrava (9 species), followed by Moravská Ostrava and Hrabůvka (6 species each), Nová Ves and Zábřeh (4 species each), Poruba and Výškovice (2 species each), and one species each in Mariánské Hory, Petřkovice, and Radvanice. The highest total number of species inside buildings was found in Poruba and Moravská Ostrava (3 species each), followed by Zábřeh, Dubina, Hrabůvka, and Výškovice (2 species each), with one species found in Moravská Ostrava, Zábřeh, Bělský Les, Hrabůvka, and Výškovice. During the summer period, the highest number of species outside buildings was observed in Slezská Ostrava (9 species), followed by Hrabůvka (6), Moravská Ostrava (5), Nová Ves (4), Zábřeh (3), Poruba and Výškovice (2 species each), and one species each in Mariánské Hory and Radvanice. The highest number of species inside buildings during the same period was found in Poruba and Dubina (2 species each), with one species each in Moravská Ostrava, Zábřeh, Bělský Les, Hrabůvka, and Výškovice. In the winter period, one species outside buildings was documented in Poruba, Moravská Ostrava, Petřkovice, and Zábřeh, and no multiple species were found outside buildings anywhere. During the same period, the highest number of species inside buildings was recorded in Poruba and Moravská Ostrava (2 species each), with one species each found in Mariánské Hory, Slezská Ostrava, Svinov, Zábřeh, Hrabůvka, and Výškovice.

The data on the occurrence of bats in the urban area of Ostrava correspond to the results of similar studies conducted in other urban areas in the Czech Republic.

In geographically close Olomouc, 11 species were documented (Bartonička & Kutal 2011, Lučan & al. 2020), 10 species were recorded in Nitra (Celuch & Ševčík 2006, Ševčík & Celuch 2006), and 13 species were found in the built-up area of Banská Bystrica (Bačkor, 2016). In Prague, 17 species were documented (Hanák & al. 2009, Zieglerová & al. 2016), 18 species were found in the urban area of Bratislava (Lehotská 2006, Lehotská 2006b, Celuch & al. 2012), and even 19 species were identified in the urban area of Brno (Gaisler 1979, Gaisler 1997, Gaisler 1999, Gaisler 2000, Gaisler & Bauerová 1986, Janečková & Gaisler 2002). In geographically close Opava, 6 species have been reliably recorded (Ratajová 2012). The urban area of Ostrava, with its 13 documented species, appears to be richer in species than the built-up areas of Olomouc and Nitra.

Interesting is the comparison of Ostrava with other cities in Central Europe. Data is available, for example, from Vienna (Spitzenberger 1990), Warsaw (Fuszara & Kowalski 1995, Fuszara & al. 1996, Lesiński & al. 2001), Berlin (Teubner & al. 2008), Hamburg (Wiermann & Reimers 1995), and Budapest (Molnár & al. 1999). The species richness of Ostrava's urban area most closely resembles the situation in Warsaw (13 species) or Hamburg (12 species), even though, considering the city's geography with numerous water bodies, forest complexes, urban greenery, and post-war development, one might have expected a similarity to Berlin (17 species). In more southerly urban areas, the species richness of bat communities is evidently higher, as evidenced by Vienna (18 species) and Budapest (21 species).

The collected data confirm the gradual synantropization of bats in the urban environment of Ostrava due to suitable food and shelter conditions (Celuch & Kaňuch 2005). In the local urban environment, many bat species find refuge not only during migrations but also for extended periods. Panel buildings provide suitable shelters, especially with crevice-like characteristics, and the abundance of water and forest areas, urban green spaces, dumps, areas around water bodies, and streetlights provide numerous foraging sites. Resident species in Ostrava with partial or complete synantropization include common pipistrelle *Pipistrellus pipistrellus*, noctule *Nyctalus noctula*, serotine bat *Eptesicus serotinus*, Daubenton's bat *Myotis daubentonii*, and parti-coloured bat *Vespertilio murinus*. In the future, the Nathusius' pipistrelle *Pipistrellus nathusii* might also be considered for more frequent synantropic occurrence.

As evident from comparisons with bat communities in many cities in Central Europe (Hanák & al. 2009), all studied cities tend to host very similar communities with approximately 10 to 16 species. Common European species (*Eptesicus serotinus*, *Myotis daubentonii*, *M. nattereri*, *M. mystacinus*, *M. brandtii*, *Nyctalus noctula*, *Pipistrellus pipistrellus*, and *Plecotus auritus*) are present in these communities, and they are usually accompanied by widespread, albeit rarer species (*Vespertilio murinus*, *Myotis bechsteinii*, *Pipistrellus nathusii*, *Eptesicus nilssonii*, *Nyctalus leisleri*, and *Barbastella barbastellus*). Notable differences are observed in species with restricted European ranges, such as the greater mouse-eared bat *Myotis myotis* and the lesser horseshoe bat *Rhinolophus hipposideros*. *M. myotis* has long been present in Budapest, Vienna, Prague, and Berlin, but it only recently appeared in Warsaw (Lesiński & al. 2001), and it has not reached Hamburg. *R. hipposideros* is common in Budapest, Vienna, and Brno, although it was part of Prague's fauna until 1970, it never occurred in Warsaw or Hamburg. In addition, genuinely southern species like Savi's pipistrelle *Hypsugo savii* and Kuhl's pipistrelle *Pipistrellus kuhlii* are gradually appearing. Both are documented in Budapest and Vienna, and *H. savii* is currently found in Bratislava (Lehotská 2006, Lehotská & Lehotský 2006) and Brno (Gaisler & Vlašín 2003, Bartonička & Kaňuch 2006). *P. kuhlii* is found not only in Bratislava but also in Znojmo, Břeclav, Brno, České Budějovice, Olomouc, Hradec Králové, and even Děčín (Lučan & al., 2020).

As mentioned by the author above, one of the classic synantropic species is *E. serotinus*, which is common in all cities. However, this is no longer true for another synantropic species, *P. pipistrellus*, which is dominant not only in Brno but also in various smaller cities like Plzeň and Klatovy, and according to the findings of this work, it is also dominant in Ostrava. However, it is no longer dominant in Prague. The urban bat communities in Central European cities can exhibit local peculiarities, such as the frequent occurrence of *M. nattereri* in artificial underground hibernation sites in Warsaw and Berlin, even though this species is only occasionally found elsewhere. This author also includes three previously mentioned migrating species, *N. noctula*, *V. murinus*, and *P. nathusii*, which have now established migratory and hibernation traditions in most Central European cities (Vienna, Prague, Brno, Berlin). This is seen as a relatively recent synurbization adaptation.

Conclusion

The records regarding synantropization and the occurrence of bats in the city of Ostrava, primarily highlight the significant importance of larger, relatively undisturbed natural areas with water bodies and stands of old trees near the city center. Locations like the Zoo and BP Ostrava area play a crucial role as foraging and sheltering grounds for the bat community within the city.

Furthermore, the importance of dumps is evident, both those that have been reclaimed, as is the case with Hrabůvka dump, and those left to undergo natural succession, as is the case with Ema dump. These sites often

connect to additional foraging grounds for bats, such as the aforementioned Zoo and BP area, as well as city parks, residential areas with scattered greenery and streetlights, and watercourses.

These water bodies not only serve as foraging areas but also as migration routes for bats, playing a vital role in their movement between foraging grounds. In the case of Ostrava's city center, the Odra and Ostravice rivers are especially important for this purpose.

In the southeast part of Ostrava, the area seamlessly connects to the Poodří Protected Landscape Area (CHKO Poodří), which is of great significance for the local bat populations. Bats in this region can easily travel to districts like Zábřeh and Výškovice, using the Bělský Les complex and extending further to the east in areas like Hrabůvka, Bělský Les, and Dubina. They can also utilize additional nearby natural landscapes like the Rezávka Natural Reserve (PR Rezávka) and the Přemyšov Natural Reserve (PR Přemyšov) in the north to reach districts like Poruba and Svinov.

In conclusion, Ostrava currently serves as a migration and hibernation center for several bat species, some of which have even settled in significant numbers within the crevices of panel buildings. Given the widespread practice of insulating and reconstructing these buildings, there's a real risk of destroying entire populations of these endangered animals. Even seemingly minor disturbances in their roosts can have fatal consequences for bats. The most critical periods for our bat species, including synanthropic ones, are during reproduction and, particularly, hibernation. It is essential to protect individual bats and their transit roosts.

The primary focus should be on safeguarding the hibernation sites within panel buildings. Future research within the Ostrava city limits should prioritize the discovery of these hibernation sites. Equally important is the identification and protection of roosts for summer colonies of tree-dwelling bat species in forest complexes and city parks. Safeguarding foraging areas, including the previously mentioned parks and slag heaps, should involve considering longer periods of natural succession rather than rapid but insensitive reclamation.

The care of injured or exhausted individuals is also a crucial activity in Ostrava, conducted in collaboration with the Bartošovice Rescue Station, with ongoing efforts to engage the general public through popular events like the International Bat Night. Establishing a specialized bat rescue station within Ostrava in the future would undoubtedly be a significant step forward for the local bat populations.

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 NDOP Database: <https://portal.nature.cz/nd/>

Letouni města Ostravy a jejich synantropizace

Na základě publikovaných zjištění (Koštejnová 2013, Slezáková 2014, Gajdošík 2020), nepublikovaných dat z muzejních exemplářů (2005 – 2013) a dat z terénního průzkumu (2005 – 2023) bylo v oblasti města Ostravy na severní Moravě zaznamenáno celkem 13 druhů netopýrů.

Běžnými druhy zde byly *Pipistrellus pipistrellus*, *Nyctalus noctula*, *Eptesicus serotinus*, *Myotis daubentonii* a *Vespertilio murinus*. Eudominantními druhy zde byly *P. pipistrellus* (D = 74,41), následovaný *N. noctula* (D = 11,41). Subdominantními druhy byly *E. serotinus* (D = 4,59), následovaný *M. daubentonii* (D = 3,77) a *V. murinus* (D = 2,45). Recedentním druhem byl *M. mystacinus/brandtii* (D = 1,33), subrecedentními pak *M. nattereri* (D = 0,51), *E. nilssonii* (D = 0,51), *P. pygmaeus* (D = 0,31), *Plecotus auritus/austriacus* (D = 0,31), *Pipistrellus nathusii* (D = 0,20), *N. leisleri* (D = 0,10), *M. myotis* (D = 0,10) a *M. brandtii* (D = 0,10). V letním období byly eudominantními druhy *P. pipistrellus* (D = 76,84), následovaný *N. noctula* (D = 10,63), subdominantními *E. serotinus* (D = 4,74) a *M. daubentonii* (D = 3,89), přičemž recedentním byl *M. mystacinus/brandtii* (D = 1,37). V zimním období byly eudominantními druhy *V. murinus* (D = 62,50), následovaný *N. noctula* (D = 34,38) a subdominantním *P. nathusii* (D = 3,13). Druhové spektrum uvnitř a vně budov se výrazně lišilo. V letním období byl uvnitř budov eudominantním druhem *P. pipistrellus* (D = 99,57), následovaný subrecedentními *V. murinus* (D = 0,29) a *M. daubentonii* (D = 0,14). Vně budov byly však eudominantními druhy *N. noctula* (D = 40,16), následovaný *E. serotinus* (D = 17,72), *P. pipistrellus* (D = 14,17) a *M. daubentonii* (D = 14,17), přičemž dominantním byl *M. mystacinus/brandtii* (D = 5,12), recedentními *M. nattereri* (D = 1,97), *E. nilssonii* (D = 1,97), *P. pygmaeus* (D = 1,18) a *P. auritus/austriacus* (D = 1,18). V zimním období byly uvnitř budov eudominantními druhy *V. murinus* (D = 68,75), následovaný *N. noctula* (D = 25,00) a dominantním *P. nathusii* (D = 6,25). Během tohoto období byla situace velmi podobná i mimo budovy, s eudominantními *V. murinus* (D = 56,25) a *N. noctula* (D = 43,75). V městské zástavbě Ostravy byly zaznamenány dvě letní kolonie *P. pipistrellus*: ve Výškovicích, Lumírova 10, v dilatační štěrbině poblíž balkonu na vrchním patře panelového obytného domu; a v Zábřehu, Plzeňská 2617/4 a Plzeňská 2617/6, v dilatačních štěrbinách ve vrchních patrech starého panelového domu, který v současnosti slouží jako ubytovna a bytový dům.

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