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Brief history of bat-research in the Czech part of the Sudetes

Krótką historia badań nietoperzy w czeskiej części Sudetów

Abstract

The Sudetes (Sudety, Sudeten) form the northern part of the Czech Republic and they reach as far as the state border with present Poland. In this mountain and submontane area there are plenty of natural and man-made underground spaces (caves and galleries of former mines, respectively) used as hibernacula of bats. A brief review of the development of bat-research is presented. First information about the occurrence of bats appeared at the end of 18th century. The period of bat-research (from the beginning to the present) is divided into three parts, i. e. up to 1900, 1900-1950, and since 1950. The bat-research in the third period mentioned above is described according to the main orographical units situated in the Czech territory. Some important researchers and their contribution to the knowledge of the Sudetic bat fauna are mentioned. Important localities and bat records are also noted. The list of literature including firstly fundamental papers quoted in the text is attached.

Key words: historical review, bat-research, Sudetes, hibernacula, researchers, present knowledge

The Sudetic System represents one of the geomorphologic regions forming the northern area of the Czech Republic and comprises three basic parts, i. e. Western (A), Middle (B) and Eastern (C) Sudetes (DEMEK, STŘÍDA et al. 1971). The whole system consists of several orographic units (order given from the west to the east), i. e. Jizerské hory Mts., Ještědský hřbet Ridge, and Krkonoše Mts. (group A); Broumovská vrchovina Highland and Orlické hory Mts. (group B); Králický Sněžník Mts. and Jeseníky Mts. (consisting of Hrubý and Nížký Jeseník Mts.) (group C). Some units were not included due to the lack of chiropterological data (cf. DEMEK, STŘÍDA et al. 1971, Fig. 1).

1. Beginning of bat research (the end of 18th and the 19th century)

The first data on the occurrence of bats in the Sudetes come from von ANTON (1799) and GLOGER (1828, 1833), but the former presented data from the Lužické hory Mts. which are not included in this paper. BLASIUS (1857) summarized data about vertebrates of Germany and the adjacent parts of Central Europe including bats in the Czech Sudetes. Similarly, JEITTELES (1867) characterized mammal fauna of south-eastern Germany including the Sudetic region. However, the most important scientist in this period was Friedrich Anton Kolenati (1812 Prague – 1864 Praděd Mt.) who studied bats in the Jeseníky Mts. in 1852-1864 (i. e. KOLENATI



Fig. 1. Map of the Czech Republic showing the Sudetic System with the major orographic units (1 - Jizerské hory Mts., 2 - Ještědský hřbet Ridge, 3 - Krkonose Mts., 4. Broumovská vrchovina Highland, 5 - Orlické hory Mts., 6 - Králický Sněžník Mts., 7 - Hrubý Jeseník Mts., 8 - Nízký Jeseník Mts. incl. Oderské vrchy Hills, 7+8 - Jeseníky Mts.).

Ryc. 1. Mapa Republiky Czeskiej z zaznaczeniem Sudetów i ich głównych jednostek orograficznych.

1856a, b). Although he was a doctor of medicine, he was also interested in entomology, mineralogy, geology, bee-keeping, travelling and especially chiropterology including bat parasites. He is the author of the first monograph of European bats (KOLENATI 1860). He perished in July of 1864 in the massif of Praděd Mt. and was buried at the cemetery in Malá Morávka near Bruntál (Jeseníky Mts.). His biography and bibliography were published in detail by FLASAR (1997).

At the end of the 19th century RZEHAK (1898) published results of bat investigation from the area of Eastern Silesia, especially Jeseníky Mts., and PRAŽÁK (1896) characterized the vertebrate fauna of Bohemia, especially its northern part including the Sudetes. However, the data of the latter are not considered reliable.

2. Bat research in the 1st half of the 20th century (1901-1950)

Most papers from this period summarized data from large regions including the area outside the present territory of the Czech Republic. The monograph of PAX (1925) concerns Silesian vertebrate fauna. Similarly, the papers of SEIDEL (1927) and SCHLOTT (1928, 1942) referred to the bat fauna of Silesia. Both authors concentrated on the hibernating bat fauna of the Krkonose Mts. and the Jeseníky Mts. However, both carried out most of their work within the area being then part of Germany (today Poland). As regards the Czech territory, PAX (1937) presented bat records from the Králický Sněžník Mts. and SEIDEL (1928) worked in the Jizerské hory Mts. where he studied bat hibernacula in the galleries near Nové Město pod Smrkem. Furthermore, SEIDEL (1928) marked bats for the first time in Europe (except Spallanzani)

by perforating a bat wing membrane. The paper of ARNDT (1923) included results of speleobiological research in underground spaces of Silesia. Some fragmentary notes about bats from the area of Czech Silesia were also presented by HYKEŠ (1925).

Relatively abundant data are available for the Jeseníky Mts. Besides the authors mentioned above, REMEŠ (1927) summarized vertebrate records from Moravia and Silesia situated within the territory of then Czechoslovakia. He presented not only data from the mountain area of the Hrubý Jeseník Mts. but also from the lower altitudes of the Nížký Jeseník Mts.). These included data on the summer occurrence of bats as well. First factual information about bats of the environs of Šternberk (Nížký Jeseník Mts.) was reported by HEPNER (1954).

All faunistic bat records from the territory of former Czechoslovakia up to 1955 were summarized by GAISLER (1956).

3. Bat research in the 2nd half of the 20th and at the beginning of the 21st century (since 1951)

The onset of systematic bat research can be assigned to the 1950s, when Gaisler and Hanák took up work in this field. They summarized own and published records of bats hibernating in underground spaces in former Czechoslovakia from the period 1954-1970 (GAISLER and HANÁK 1972a, b, HANÁK and GAISLER 1972) and organized a nation-wide investigation of hibernacula in Czechoslovakia (GAISLER, HANÁK, HORÁČEK et al. 1981). They also started to register shelters of summer reproductive colonies of females and their sucklings and to collect various summer records (i. e. GAISLER and KLÍMA 1965). Furthermore, they studied movements and age of bats using bat banding (HANÁK et al. 1962, GAISLER and HANÁK 1969a, b). GAISLER (1973) also used bat-netting for the first time in Czechoslovakia. The bat research co-ordinated by

them also included the Czech Sudetes. Many bat-researchers have appeared and many papers about bats in the Czech part of the Sudetes have been published since the mid 20th century (see References). A brief review of bat research according to the particular orographic units is given below.

JIZERSKÉ HORY MTS. AND JEŠTĚDSKÝ HŘBET RIDGE

Nevrlý has studied bats in this area since 1958. He has concentrated on the hibernation of bats in the overflow canal of the Protržená Dam on the Bílá Desná river (1958-1982) and in the galleries near Nové Město pod Smrkem (1958-1973) (NEVRLÝ 1963, 1972, 1987). In the former locality he and Gaisler used colour plastic rings to mark bats for the first time to study movements of bats inside the hibernaculum during their wintering (GAISLER and NEVRLÝ 1961). The latter locality was also checked by Žalman in 1966-1979 (ŽALMAN 1971, 1988). The records from both important hibernacula are also included in the papers of GAISLER and HANÁK (1972a) and HANÁK and GAISLER (1972) mentioned above. Since 1984 censuses of the bats wintering in both hibernacula have been taken by Józsa and his collaborators Kareš and at present also D. Horáček (JÓZSA 1999, JÓZSA and KAREŠ 1986, 2001). Now this team is also checking further localities in the Jizerské hory Mts. during winter and they also net bats in front of the entrances of some of them during the non-hibernation period.

Some caves and galleries in the massif of the Ještědský hřbet Ridge near Liberec were visited for the first time by Nevrlý. Since 1989 mainly D. Horáček and his collaborators (Józsa, Bartonička) have paid heed to bats in this area (HORÁČEK 2000, 2001).

KRKONOŠE MTS.

Hibernating bats have been checked rather irregularly in the Krkonoše Mts. Long-term censuses were carried out only in some galleries or caves. Due to the regular occurrence of the rare species *Myotis dasycneme*, the most important hibernaculum seems to be the galleries near Herlíkovice. This is also the locality for which we have the earliest data (1953) from this area in this period (GAISLER 1956, FLOUSEK 1989). Numerous old records from the Krkonoše Mts. were also reported in the papers of MILES (1968, 1970, 1971), SKLENÁŘ (1969), GAISLER and HANÁK (1972a), HANÁK and GAISLER (1972), RYBÁŘ (1972), RYBÁŘ et al. (1973), and ANDĚRA et al. (1974). Miles and Flousek are to be mentioned as the bat researchers that have focused most on this particular area. Miles visited some hibernacula in 1967-1982 and since 1983 bat research in the whole area has been co-ordinated by Flousek. The results obtained by Flousek and his collaborators (Dvořák and others) were presented in a detailed faunistic review (FLOUSEK 2001).

BROUMOVSKÁ VRCHOVINA HIGHLAND AND THE SURROUNDINGS OF NÁCHOD

Bat research in this region focused on bats hibernating in galleries, the military fortresses, and cellars. The first bat records come from the Dobrošov fortress, castle and monastery cellars (1965) and from the gallery in the Teplicko-Adršpašské skály (rock town) near Dolní Adršpach (1971) (all in the Náchod District). The Dobrošov fortress was checked by Rybář and Sklenář (1965-1972) (SKLENÁŘ 1969, RYBÁŘ 1970), and later by Flousek (since 1981) and his co-workers (Vrána, Barva, Rejl etc.) (FLOUSEK and VRÁNA 1985, FLOUSEK 1995, 2001) whereas cellars were visited in 1965-1969 by GAISLER and HANÁK (1972a). The gallery near Dolní Adršpach was regularly visited by Anděra and Vohralík (1971-1978) and since 1980 by Flousek and his

co-workers (Barva, Ježek etc.), who have taken censuses of bats hibernating here (FLOUSEK 2001).

ANDĚRA and VOHRALÍK (1982) published an overview of the mammal fauna of the Broumov region including own results of bat monitoring, and JEŽEK (1997) summarized all available winter and summer bat-records, including his own ones, from the Broumovsko Protected Landscape Area (including records of summer reproductive colonies of bats especially in church lofts). In the Teplicko-Adršpašské skály (rock town) the same author also conducted research of flight activity using bat-netting and bat-detecting (ibid.). The latest information has been presented by FLOUSEK (2001), who conducted a detailed faunistic review of winter bat records from this area.

ORLICKÉ HORY MTS.

Besides numerous galleries and small bunkers, three large military fortresses – Skutina, Hanička and Bouda – were also built in this area. These are considered very important bat hibernacula. Since 1981 the Skutina fortress has been checked by Flousek, who has also visited further hibernacula, especially galleries (FLOUSEK 1995, 2001). Censuses of bats hibernating in the Hanička fortress have been taken by Sklenář since 1965 (SKLENÁŘ 1969, 1981) but from 1975 the locality has not been accessible, unfortunately. The Bouda fortress was regularly visited by RYBÁŘ (1975a, b) and since the 1990s bat censuses have been performed by Buřič and his co-workers (BUŘIČ, unpubl.). Small bunkers were checked by Gaisler and Hanák in 1965-1969 (GAISLER and HANÁK 1972a, HANÁK and GAISLER 1972).

On the other hand, Gaisler also studied bats at the ridge of the Orlické hory Mts. during summer especially their flight activity using mist nets and bat-detectors (GAISLER 2002). Faunistic records of bats occurring in the Orlické hory Mts. were summarized by ROČEK (1974) and FLOUSEK (1995, 2001). Some records have also

been included in numerous papers (GAISLER 1956, GAISLER and HANÁK 1972a, HANÁK and GAISLER 1972, SKLENÁŘ 1969, RYBÁŘ et al. 1973).

KRÁLICKÝ SNĚŽNÍK MTS. AND JESENÍKY MTS.

These mountain ranges include areas situated both in higher altitudes (Králický Sněžník Mts., Hrubý Jeseník Mts.) and in lower ones (Nížký Jeseník Mts. including Oderské vrchy Hills). Systematic bat research in the Jeseníky Mts. started at the 2nd half of the 20th century and it has been connected with Gaisler and Hanák (1956-1970) (GAISLER and HANÁK 1972 a, b) as well as Souček (1966-1971). The latter discovered the largest man-made hibernaculum with high abundance and species diversity of bats in the Czech Republic, i. e. the "Šimon a Juda" galleries near Malá Morávka (Bruntál District), in 1970 (SOUČEK and GAISLER 1971). But it might be the same locality known as Urlich mentioned by KOLENATI (1860) or RZEHAK (1898) many years ago. Furthermore, Souček also found the highest hibernaculum above sea level known in the Czech Republic (SOUČEK 1969). The same investigator also studied the occurrence of bats in summer shelters (SOUČEK 1968, 1970).

Since 1981 Wagner has also visited some galleries in the Hrubý Jeseník Mts. Nevertheless, he has focused especially on the Oderské vrchy Hills, where he has carried out long-term censuses of bats in galleries since 1976, in the first years in co-operation with Rumler. In the Czech Republic, the highest total numbers of hibernating bats (predominantly *Barbastella barbastellus*) in man-made underground spaces are known to occur in two of these galleries (RUMLER 1985, WAGNER 2001). At present further hibernacula (especially galleries) have been checked by Šafář and his collaborators in the Oderské vrchy Hills (ŠAFÁŘ and RUMLER 2001).

RUMLER (2001) has studied a winter colony of *Pipistrellus pipistrellus* in the church of Šternberk since 1966 while the first information about the numerous

colony hidden behind a large picture on the wall comes from the beginning of the 1950s (HEPNER 1954) and then it was quoted by GAISLER and HANÁK (1972a, b), who also reported data from the period 1956-1972. This winter colony exists hitherto.

Since 1983 bats in the Králický Sněžník Mts. and Jeseníky Mts. have been studied by Buřič and his co-workers (Kašpar, Kubelka, Šefrová etc.), who have conducted winter checks at many localities, both galleries and caves (BUŘIČ and ŠEFROVÁ 2001). Buřič's team has also been checking summer colonies in this region and netting bats in front of the entrances to underground spaces, especially in the western part of this area (Šumperk District). Since 1990 they have cooperated with Polish researchers in the Polish side of the Králický Sněžník Mts. and give information about migration of bats from the Czech to the Polish part of mountains (BUŘIČ et al. 2001a, 2001b).

Censuses of hibernating bats at the galleries near Malá Morávka (Hrubý Jeseník Mts.) have been regularly taken since 1970 and this locality is probably one of those man-made localities in the Jeseníky Mts. studied for the longest time. In the period 1970-1992 these galleries were visited by Gaisler (in the first winter together with Souček) and his co-workers (GAISLER et al. 1993), whereas in the period 1994-2001 the bat censuses were conducted by Řehák and many of his collaborators (ŘEHÁK and GAISLER 1999, 2001). In 2002 Bartonička has taken over the coordination of winter checks in this important hibernaculum. Řehák also studied the flight activity of bats at entrances to galleries near Malá Morávka and Dolní Moravice, respectively (ŘEHÁK, unpubl.) using bat-netting. He has also been investigating the flight activity of bats (especially of *Eptesicus nilssonii*) foraging along the street lamps in the villages of Malá Morávka and Karlov, using bat-detectors (ŘEHÁK, unpubl.).

At present, many further researchers are interested in bats hibernating in par-

ticular parts of the Sudetic territory, for instance Šafář, Bartonička, Koutný, and Málková. Their interest also covers further areas, which were omitted in the past. A review of important hibernacula situated in the Czech Republic, including localities in the Sudetic range and the results of winter censuses, has been published as a separate volume of the journal *Vespertilio* (Vol. 5/2001) whereas data on summer occurrence of bats are dispersed in numerous short papers. Summaries of the bat fauna occurring close to the Czech border on Polish territory (formerly German)

were published for example by WOŁOSZYŃ (1968, 1971) and HAITLINGER (1976).

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References

- ANDĚRA M., VOHRALÍK V. 1982. Savci Broumovska. *Lynx* (Praha), n. s. 21: 15-39.
- ANDĚRA M., HANÁK V., VOHRALÍK V. 1974. Savci Krkonoš. *Opera Corcontica*, 11: 131-134.
- ANTON K. G. v. 1799. Verzeichniss der Säugetiere in der Oberlausitz. *Lausitz. Monatsschr.*: 389-395, 732-733.
- ARNDT W. 1923. Speläobiologische Untersuchungen in Schlesien. *Speläologisches Jahrbuch*, 4: 95-114.
- BLASIUS J. H. 1857. Naturgeschichte der Säugetiere Deutschlands und der angrenzenden Länder von Mitteleuropa. In: *Fauna der Wirbeltiere Deutschlands und der angrenzenden Länder von Mitteleuropa I*. Druck und Verlag von Friedrich Vieweg und Sohn, Braunschweig, 549 pp.
- BUŘIČ Z., FURMANKIEWICZ J., FURMANKIEWICZ M., KLODEK R., KOKUREWICZ T., TELATYŃSKI S. 2001a. Zimowe stanowiska nietoperzy na ziemi kłodzkiej. *Szczeliniac*, 5: 149-168.
- BUŘIČ Z., FURMANKIEWICZ J., TELATYŃSKI S. 2001b. Jaskinia Niedźwiedzia jako jedno z najcenniejszych stanowisk nietoperzy na Dolnym Śląsku. *Przegląd Przyrodniczy*, 12 (1-2): 109-114.
- BUŘIČ Z., ŠEFROVÁ D. 2001. Zimoviště netopýrů v Jeseníkách a v Králickém Sněžníku a jeho okolí. *Vespertilio*, 5: 19-34.
- DEMĚK J., STRÍDA M. et al. 1971. *The Geography of Czechoslovakia*. Academia, Prague, 330 pp.
- FLASAR I. 1997. Prof. Dr. Friedrich Anton Kolenati. *Vespertilio*, 2: 149-171.
- FLOUSEK J. 1989. Chráněné naleziště Herlíkovicé štolý: významné zimoviště netopýrů (*Chiroptera*) v Krkonoších. *Opera Corcontica*, 26: 91-115.
- FLOUSEK J. 1995. Jsou v Orlických horách netopýři? *Panorama*, 3: 37-40.
- FLOUSEK J. 2001. Zimoviště netopýrů v Krkonoších, Orlických horách a na Broumovsku. *Vespertilio*, 5: 93-110.
- FLOUSEK J., VRÁNA J. 1985. Dobrošovské zimoviště netopýrů. *Vlastivědný sborník náchodského okresu Náchodsko od minulosti k dnešku*, 1: 197-210.
- GAISLER J. 1956. Faunistický přehled československých netopýrů. *Ochrana přírody*, 11 (6): 161-169.
- GAISLER J. 1973. Netting as a possible approach to study bat activity. *Period. biol. Zagreb*, 75: 129-134.
- GAISLER J. 2002. Aktivita netopýrů na hřebeni Orlických hor. In: BRYJA J., ZUKAL J. (Eds.): *Zoologické dny Brno, Abstraktní referátů z konference 14. a 15. února 2002*. ÚBO AV ČR, Brno: 161-162.
- GAISLER J., DUNGL J., ŠEBELA M. 1993. Změny početnosti netopýrů přezimujících v opuštěných štolách u Malé Morávky (Československo). *Acta Musei Moraviae, Scientiae Naturales*, 77 (1992): 255-264.
- GAISLER J., HANÁK V. 1969a. Ergebnisse der zwanzigjährigen Beringung von Fledermäusen (*Chiroptera*) in der Tschechoslowakei: 1948-1967. *Acta scientiarum naturalium Academiae scientiarum Bohemoslovacae Brno*, 3 (5): 1-33.
- GAISLER J., HANÁK V. 1969b. Summary of the results of bat-banding in Czechoslovakia, 1948-1967. *Lynx* (Praha), n. s. 10: 25-34.
- GAISLER J., HANÁK V. 1972a. Netopýři podzemních prostorů v Československu. *Sborník Západočeského Muzea Plzeň, Příroda*, 7: 1-46.
- GAISLER J., HANÁK V. 1972b. Přehled netopýrů moravských jeskyň. *Československý kras*, 24: 53-60.
- GAISLER J., HANÁK V., HORÁČEK I. (Eds.) et al. 1981. Výsledky zimního sčítání netopýrů v Československu: 1969-1979. *Sborník Okresního Muzea v Mostě, Řada Přírodovědná*, 3: 71-116.

- GAISLER J., KLÍMA M. 1965. Letní nálezy některých méně známých netopýrů na Moravě a Slovensku v období 1961-1964. *Lynx* (Praha), n. s. 5: 19-29.
- GAISLER J., NEVRLÝ M., 1961. The use of coloured bands in investigating bats. *Věstník Československé zoologické společnosti*, 25 (2): 135-141.
- GLOGER C. L. 1828. Beobachtungen über die einheimischen Fledermäuse. *Okens Isis*.
- GLOGER C. L. 1833. Schlesiens Wirbeltierfauna. Breslau.
- HAILINGER R. 1976. Nietoperze Dolnego Śląska. *Przegląd Zoologiczny*, 20 (1): 124-134.
- HANÁK V., GAISLER J. 1972. Přehled netopýrů podzemních prostorů Čech. *Práce a studie – Příroda, Pardubice*, 4: 141-156.
- HANÁK V., GAISLER J., FIGALA J. 1962. Results of bat-banding in Czechoslovakia, 1948-1960. *Acta Universitatis Carolinae, Biologica*, Praha, (1): 9-87.
- HEPNER E. 1954. Několik poznámek o netopýrech Šternberska. *Sborník SLUKO*, odd. A-1/1951-53: 171-175.
- HORÁČEK D. 2000. Výsledky výzkumu netopýrů Ještědského hřbetu a okolí prováděného v letech 1989-1999. *Vespertilio*, 4: 67-95.
- HORÁČEK D. 2001. Zimoviště netopýrů v okrese Liberec. *Vespertilio*, 5: 115-120.
- HYKŠ O. V. 1925. Zvířena našeho Slezska. *Vlastivědný sborník slezský, část I*, p. 53.
- JETTLES L. H. 1867. Über einige seltene und wenig bekannte Säugetiere des südöstlichen Deutschlands. 4. *Progr. niederösterreichischen Landes-Oberrealschule, St. Pölten*.
- JEŽEK J. 1997. Netopýři CHKO Broumovsko. *Diplomová práce. Katedra zoologie a ekologie, Přírodovědecká fakulta Masarykovy univerzity v Brně*, 66 pp.
- JÓZA M. 1999. Výzkum netopýrů na zimovišti u Nového Města pod Smrkem v Jizerských horách v období 1981/82 – 1997/98: faunistika a výsledky kroužkování. *Sborník Severočeského Muzea, Přírodní Vědy, Liberec*, 21: 229-240.
- JÓZA M., KAREŠ M. 1986. Zimoviště netopýrů v komplexu starých štol u Nového Města pod Smrkem v Jizerských horách. *Sborník Severočeského Muzea, Přírodní Vědy, Liberec*, 15: 139-163.
- JÓZA M., KAREŠ M. 2001. Zimoviště netopýrů v Jizerských horách. *Vespertilio*, 5: 149-154.
- KOLENATI F. A. 1856a. Ueber der Nulsen der Fledermäuse. *Mittheilungen der k. k. mährisch-schlesischen Gesellschaft zur Beförderung des Ackerbaues, der Natur- und Landeskunde, Brünn*, 5: 33.
- KOLENATI F. A. 1856b. Bestimmungs-Tabelle für die in Mähren und Schlesien heimischen Fledermäuse. *Mittheilungen der k. k. mährisch-schlesischen Gesellschaft zur Beförderung des Ackerbaues, der Natur- und Landeskunde, Brünn*, 5: 34.
- KOLENATI F. A. 1860. *Monographie der europäischen Chiroptern. Jahreshft der naturwissenschaftlichen Section der k. k. mährisch-schlesischen Gesellschaft zur Beförderung des Ackerbaues, der Natur- und Landeskunde für das Jahr 1859, Brünn*, 156 pp.
- MILES P. 1968. Výskyt méně obvyklých druhů ptáků a savců na území Krkonošského národního parku a ve Vrchlabí. *Opera Corcontica*, 5: 251-256.
- MILES P. 1970. Netopýři Krkonoš. *Krkonoše*, 3 (1): 8-10.
- MILES P. 1971. Nové poznatky o rozšíření některých obratlovců (Vertebrata) v Krkonoších. *Opera Corcontica*, 7-8: 179-196.
- NEVRLÝ M. 1963. Zimoviště netopýrů v Jizerských horách. *Severočeské museum, Přírodovědecké oddělení, Liberec*, 7: 1-46.
- NEVRLÝ M. 1972. Dvanáct let výzkumu netopýrů na Bílé Desné v Jizerských horách. *Sborník Severočeského musea, Seria Naturalis, Liberec*, 4: 3-40.
- NEVRLÝ M. 1987. Dvacet pět let výzkumu netopýrů na Bílé Desné v Jizerských horách. *Sborník Severočeského Muzea, Přírodní Vědy, Liberec*, 16: 231-272.
- PAX F. 1925. *Wirbeltierfauna von Schlesien. Gebirder Bomtraeger, Berlin*, 557 pp.
- PAX F. 1937. *Die Säugetierfauna des Glatzer Schneeberges – Die rezenten Säugetiere. Beitrag zur Biologie des Glatzer Schneeberges*, 3. Breslau.
- PRAŽÁK K. P. 1896. *Beitrag zur Kenntnis der Säugetierfauna Böhmens, besonders der nordöstlichen Gebiete des Landes. Mittheilungen des Naturwissenschaftlichen Vereines an der k. k. Universität in Wien*: 1-20.
- REMŠ M. 1927. *Ssavci Moravy a Slezska. Časopis Vlastivědného Spolku Museijního v Olomouci*, 38 (1-4): 33-52.
- ROČEK Z. 1974. Netopýři Orlických hor a Podorlicka. *Orlické hory a Podorlicko*, 6: 53-68.
- RUMLER Z. 1985. Výsledky chiropterologických průzkumů některých podzemních prostorů Beskyd a Oderských vrchů v letech 1976-1982. *Časopis Slezského Muzea Opava (A)*, 34: 75-89.
- RUMLER Z. 2001. Šternberk – unikátní zimoviště netopýrů v nadzemních úkrytech. *Vespertilio*, 5: 253-255.
- RYBÁŘ P. 1970. Faunistické materiály z východních Čech I. *Práce a studie – Příroda, Pardubice*, 2: 223.
- RYBÁŘ P. 1972. Předběžná zpráva o rozšíření některých obratlovců ve východních Čechách. *Práce a studie – Příroda, Pardubice*, 4: 101-140.

- RYBÁŘ P. 1975a. Hibernation of the Barbastelle, *Barbastella barbastellus* (Schreber, 1774) in a man-made hibernation quarter. Zoologické listy, 24: 113-124.
- RYBÁŘ P. 1975b. Pevnost Bouda – návrh chráněného zimoviště netopýřů. Práce a studie – Příroda, Pardubice, 6-7: 175-199.
- RYBÁŘ P., SKLENÁŘ J., MILES P. 1973. Přehled netopýřů východních Čech. Práce a studie – Příroda, Pardubice, 5: 203-238.
- RZEHAČ E., 1898. Die Chiropteren Österreichisch-Schlesiens. Mittheilungen des Naturwissenschaftlichen Vereines in Troppau, 4 (8).
- ŘEHÁK Z., GAISLER J. 1999. Long-term changes in the number of bats in the largest man-made hibernaculum of the Czech Republic. Acta Chiropterologica, 1: 113-123.
- ŘEHÁK Z., GAISLER J. 2001. Netopýři zimující ve štolách pod Jelení cestou u Malé Morávky v Jeseníkách. Vespertilio, 5: 265-270.
- SEIDEL J. 1927. Zur Kenntnis schlesischer Fledermäuse. Abhandlungen der Naturforschenden Gesellschaft zu Görlitz, 30 (1): 1-39.
- SEIDEL J. 1928. Zur Kenntnis der im Bezirk Friedland in Böhmen lebenden Fledermäuse. Mitteilungen Ver. Heimat. des Jeschken-Isergaues, 22: 41-50, 122-129.
- SCHLOTT M. 1928. Zur Fledermausforschung in Schlesien. Aus der Heimat 41 (7): 193-201.
- SCHLOTT M. 1942. Zur Kenntnis heimischer Fledermäuse. Der Zoologische Garten (NF), 14 (1/2): 35-48.
- SKLENÁŘ J. 1969. Poznámky k rozšíření netopýřů ve východních Čechách. Acta Musei Reginalhradecensis, Scientiae Naturales, 10: 79-87.
- SKLENÁŘ J. 1981. Deset let výzkumu zimoviště netopýřů (Chiroptera) v Orlických horách. Acta Musei Reginalhradecensis, Scientiae Naturales, 16: 273-288.
- SOUČEK J., GAISLER J. 1971. Největší umělé zimoviště netopýřů na Moravě s výskytem druhu *Myotis brandti*. Campanula, Ostrava, 2: 159-167.
- SOUČEK J. 1968. Poznámky k výskytu netopýřů na Šumpersku. Lynx (Praha), n. s. 9: 90-97.
- SOUČEK J. 1969. Nejvýše položené zimoviště netopýřů v Hrubém Jeseníku. Vertebrato-logické zprávy, 1969 (3): 117-118.
- SOUČEK J. 1970. Netopýři chráněné krajinné oblasti Jeseníky. Campanula, Ostrava, 1: 29-47.
- ŠAFÁŘ J., RUMLER Z. 2001. Netopýři zimující na vybraných zimovištích severní Moravy. Vespertilio, 5: 271-278.
- WAGNER J. 2001. Zimoviště netopýřů v Nížkém a Hrubém Jeseníku, Oderských vrších a Moravskoslezských Beskydách. Vespertilio, 5: 287-302.
- WOŁOŻYŃ B.W. 1968. Badania nietoperzy Dolnego Śląska. Przegląd Zoologiczny, 12 (2): 208-220.
- WOŁOŻYŃ B.W. 1971. Nietoperze jaskiń Sudetów. Materiały z III i IV Sympozjum Speleologicznego, Częstochowa: 129-136.
- ŽALMAN J. 1971. Příspěvek k poznání fauny netopýřů Jizerských hor. Vertebratologické zprávy, 1971 (1): 38-39.
- ŽALMAN J. 1988. Sčítání netopýřů na zimovišti v Jizerských horách a v letní kolonii v Brandýse nad Labem. Studie a zprávy 1986 (Brandýs nad Labem – Stará Boleslav): 4-16.

Krótka historia badań nietoperzy w czeskiej części Sudetów

Sudety położone są w północnej części Republiki Czeskiej, przy granicy z Polską. W tym górskim i podgórskim obszarze znajduje się dużo naturalnych i będących dziełem człowieka podziemnych obiektów (jaskinie, stare kopalnie), wykorzystywanych jako schronienia zimowe przez nietoperze. Niniejszy artykuł prezentuje krótką historię badań tej grupy zwierząt w czeskiej części Sudetów. Pierwsze informacje o występowaniu nietoperzy w Sudetach pochodzą z końca XVIII wieku. Omawiany przedział czasowy badań podzielono więc na trzy okresy: do 1900 roku, od 1900 do 1950 i po 1950 roku. Badania w trzecim okresie opisano według głównych jednostek orograficznych. Wymieniono najważniejsze prace i ich wkład do wiedzy o nietoperzach Sudetów. Przedstawiono także główne stanowiska i stwierdzenia nietoperzy oraz dołączono spis cytowanej w tekście literatury, zawierający przede wszystkim prace o fundamentalnym charakterze.

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