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EDITORIAL

The 1st Polish-Czech-German Conference „Bats of Sudety Mountains” was organised by Wrocław Chiropterological Group (Wrocławska Grupa Chiropterologiczna) and Museum of Natural History in Jelenia Góra (Muzeum Przyrodnicze w Jeleniej Górze). The main goal of the meeting was to exchange information and develop co-operation between chiropterologists working in Sudetes. Parallel to conference the educational photographic exhibition devoted to bats occurring in Sudety was opened. The Conference and the exhibition were organised in co-operation with Czech and German chiropterologists (Landesfachausschuss Fledermausschutz, NABU Landesverband Sachsen e.V., Český Svaz Ochránců Přírody při SCHKO Jizerské hory and Česká Speleologická společnost).

We hope to continue and develop co-operation between chiropterologists from each side of border.

Wrocław Chiropterological Group

HABITAT USE OF FOUR BAT SPECIES IN JABLONEC N. N. REVEALED BY BAT DETECTOR

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The distribution of four bat species (*M. daubentonii*, *P. pipistrellus*, *N. noctula*, and *E. serotinus*) was studied in the submountain town of Jablonec n.N. in different habitats during the seasons 1998-2000 using a bat-detector. *M. daubentonii* was closely related to water habitats (mainly smooth water) surrounded by closed bankside vegetation; its flying activity (FA) increased towards waterside. High FA was also recorded in suburbs with gardens. *P. pipistrellus* preferred water bodies, the surface of which was covered by bankside vegetation. High FA was further recorded along closed linear growths. No correlation was found between FA and type of buildings. Compared to other species, *N. noctula* more often foraged in urban habitats (old buildings in downtown). These habitats were represented by open spaces, contrast to habitats with gardens. *N. noctula*, however, forages high over studied habitats therefore its affiliation to a particular habitat is not explicit. FA of *E. serotinus* was higher away from water bodies, especially near semi-closed linear vegetation and tree patches. High activity was recorded in the vicinity of new buildings and around streetlamps.

Similar level of FA was found in *P. pipistrellus* and *M. daubentonii* in gardens with small water bodies. FA in a garden with a lot of streetlamps was different compared to the gardens mentioned above. Very low FA was recorded in downtown with new buildings and without vegetation). High level of FA was observed over pools, whereas FA was low at the canalised stream.

**AUTUMN-SPRING ACTIVITY OF BROWN LONG-EARED
BAT *PLECOTUS AURITUS* NEAR THE HIBERNACULA IN
STOLEC AND SOKOLEC (SUDETY MTS.).**

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In 2000-2002 autumn – spring activity of brown long-eared bat (*Plecotus auritus*) was studied in two abandoned mine shafts in Sudety Mts.: in nature reserve near Stolec and in Gontowa Mt. near Sokolec. Bats were netted, sexed, weighed and banded using aluminium rings. Their social calls were recorded with the DAT recorder connected to the bat detector. Additionally, the changes in number of hibernating bats were investigated during winter season in order to correlate their activity with the beginning and the end of the hibernation.

In early spring (March, April) and autumn (September-October) bats were swarming and emitting species-specific social calls near their hibernacula. The vocal activity in early spring was ten times higher than in autumn, but near Gontowa began three weeks later. The number of netted individuals was higher in autumn and significantly much more males than females were noted during spring and autumn too. The vocalization of bats (Wilcoxon test, $Z=-2.19$, $p<0.05$) and number of observed individuals ($\chi^2=17.37$, $p<0.001$) were lower in Gontowa than in Stolec. The first hibernating bats were noted in November, when swarming was no longer observed. The number of bats reached the maximum in January. At the end of February and beginning of March the bats disappeared from the hibernacula. After this time they began their spring swarming. In winter only 5.4% banded bats were found. However the recapture rate was relatively high: 24.4% (N=164 banded individuals) in Stolec and 39.4% (N=33 banded individuals) in Gontowa. These results demonstrated the importance of swarming sites in the studied species in spring and autumn; seasons that are considered as the mating period of brown

long-eared bat. Such places allow many individuals to meet together in one place during this time.

**THE BATS IN THE NATURAL CAVES IN THE POLISH
PART OF THE SUDETY MOUNTAINS**

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In three winter seasons (1999/2000, 2000/2001, 2001/2002), 26 caves in the Polish part of Sudety Mountains were investigated. 13 bat species were found: *Myotis myotis*, *M. bechsteinii*, *M. nattereri*, *M. emarginatus*, *M. mystacinus*, *M. brandtii*, *M. dasycneme*, *M. daubentonii*, *Eptesicus nilssonii*, *E. serotinus*, *Plecotus auritus*, *Barbastella barbastellus* and *Rhinolophus hipposideros*. *M. myotis* and *M. mystacinus* / *brandtii* were dominant species (D = 27.3 % and D = 24.4 %, respectively). *M. daubentonii* (D = 18.9 %) and *M. nattereri* (D = 10.7 %) were relatively abundant. *B. barbastellus* and *P. auritus* represented 8.6 % and 8.3 % of all bats.

The largest hibernacula were Niedźwiedzia Cave (near Kletno) with max 251 individuals in winter 2002. This hibernaculum seemed to be the most important winter locality in Polish part of Sudety Mts. and in Lower Silesia for *M. mystacinus* / *brandtii* (max 132 individuals), *Plecotus auritus* (max 33 individuals) and *Myotis emarginatus* (max 7 individuals). The second hibernaculum was Szczelina Wojcieszowska Cave in Połom near Wojcieszów (194 individuals in winter 2001). This hibernaculum seemed to be the most important winter localities for *Myotis myotis* (102 individuals) and *Myotis daubentonii* (59 individuals). A few individuals of *M. dasycneme* were found in caves in

Połom whereas in the Niedźwiedzia Cave. In „Na Ścianie” and „Nad Łądkiem” cave *Rhinolophus hipposideros* were recorded first time in winter 2002. Hibernacula in caves are very important, but more hibernacula in Sudety Mts. are in old adit. The hibernacula in the Polish part of mountains are smaller than hibernacula in Czech one, where there are several hibernacula with more than 300-1000 individuals and a greater number of rare species.

SEASONAL CHANGES IN NUMBER AND DIVERSITY OF BAT SPECIES (*CHIROPTERA*) IN „SKAŁKI STOLECKIE” RESERVE.

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Winter community structure and autumn-spring activity of bats visiting an old mine shaft in limestone rocks in „Skałki Stoleckie” reserve (Ząbkowice Śląskie district) were studied in years 2000-2002. It is one of the biggest hibernaculum in the Polish side of Sudety Mts.

In two winter seasons, 9-10 hibernating bat species were recorded: *Barbastella barbastellus*, *Myotis nattereri*, *M. daubentonii*, *M. myotis*, *M. bechsteinii*, *M. mystacinus/brandtii*, *Plecotus auritus*, *P. astriacus* and *Eptesicus serotinus*. Dominants were *M. nattereri* (39.2%, max 81 ind.) and *B. barbastellus* (44.4%, max 87 ind.).

During non-winter months 1314 bats from 12 species were netted. Two additional species *Pipistrellus pipistrellus* and *E. nilssonii* were recorded. The dominants were *B. barbastellus* (42.2%), *P. auritus* (19.2%), *M. daubentonii*, (12%) and *M. nattereri* (12.9%). The observation indicated that the reserve is an important hibernacula and autumn - spring swarming site for several bat species.

WINTER COLONIES OF BATS IN OLD FORTIFICATIONS IN NYSA (SW POLAND)

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Old forts in Nysa, located on the edge of Sudety Mountains, are the largest bat hibernacula in Opolskie province. Winter bat censuses undertaken in the years 1998-2002 evidenced the occurrence of the following species: *Rh. hipposideros*, *M. myotis*, *M. nattereri*, *M. emarginatus*, *M. mystacinus*, *M. daubentonii*, *E. nilssonii*, *E. serotinus*, *P. auritus*, *P. austriacus*, *B. barbastellus*. The number of hibernating animals varied from 89 to 138 individuals. The most numerous were "cold-loving", oligothermic species. The co-dominant species i.e. species with average dominance larger than 10%, were barbastelle (51-68% of dominance) and brown long-eared bat (13-18%). Greater mouse-eared bat (7.7-13.5%) and Daubenton's bat (5-12.4%) could be included into that category only during some years, while in other winter seasons their dominance was from 5.1 to 10%.

The paper presents the role of forts in Nysa as hibernation sites of particular bat species on a regional scale and also reveals the occurrence of bats in the forts.

**HABITAT SELECTION AND MASS DYNAMICS OF
DAUBENTON'S BATS HIBERNATING IN NATURAL
CONDITIONS IN W. POLAND.**

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Observations have been carried out in an abandoned mine shaft in Sowią Dolina Valley (50°50'N, 15°50'E, UTM WS 52), situated near the town of Karpacz (50°46'N, 15°46'E) in the Karkonosze Mountains (SW Poland). Due to the localization of the winter colony at an elevation of 800 m a.s.l., in severe mountain climate, the winter feeding and winter migrations could be excluded in the population under study. The black chin spot, a unique age criterion, allowed the distinguishing of individuals in their first year of life from bats older than one year. This made it possible to study the age related hibernation strategies during hibernation in natural conditions. Restriction of disturbance to two inspections per season and individual marking allowed the investigation of the relationship between the body mass at the beginning and at the end of hibernation (November and March) and also the difference in overwintering mass loss between adult and sub-adult Daubenton's bats.

**POLISH-CZECH PROJECT ON CHIROPTEROFAUNA OF
ŚNIEŻNIK MASSIVE AND NEAREST AREAS.
WINTER SEASON 2001/2002**

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This Polish – Czech project is being carried out in cooperation with the non-governmental organisations, Wrocław Chiropterological Group, Czech Speleological Society – section „Barbastellus” and Speleological Section in Stronie Śląskie. The project is coordinated by Joanna Furmankiewicz M.Sc. (Institute of Zoology, University of Wrocław) and Tomasz Kokurewicz PhD (Department of Zoology and Ecology, Agricultural University of Wrocław).

The main goals of this study are to monitor bat population size, long-term population trends and current changes in distribution of species. The winter and summer roosts and important feeding sites are investigated. The migration of mouse-eared bats *Myotis myotis* between summer and winter roosts will be studied using bat rings.

During the first phase of the project the census of hibernating bats was conducted. 27 underground objects (caves and old mine shafts) were checked (20 in Polish part and 7 in Czech part of Śnieżnik Massive). 12 bat species were found: *Rhinolophus hipposideros*, *Myotis myotis*, *M. bechsteinii*, *M. nattereri*, *M. emarginatus*, *M. mystacinus*, *M. brandtii*, *M. daubentonii*, *Eptesicus serotinus*, *E. nilssonii*, *Plecotus auritus*, *Barbastella barbastellus*.

THE OCCURRENCE OF BATS IN THE TOWN OF HOYERSWERDA

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The occurrence of bats in the town of Hoyerswerda was investigated for the first time in 2001. The chief aim was to find roosts of house-dwelling species. Ultrasonic-detectors and mist-nets were used to locate and catch bats in their foraging areas. Ten species of bats, 12 nursery colonies, 40 summer roosts in buildings and 3 hibernacula were found. The most common species in the town is *Pipistrellus pipistrellus*.

BAT LOCALITIES IN ZŁOTORYJA FORESTRY MANAGEMENT ADJACENT TO SUDETY MTS. (SW POLAND)

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The paper presents the comparative analysis of bat hibernacula in the study area including the type of shelters, their size, species composition and abundance of bat communities. In winter seasons 1997/8 and 1998/9, 122 individuals were found in 8 hibernation sites. The following bat species were recorded: *Myotis myotis*, *M. daubentonii*, *M. nattereri*, *M. mystacinus/brandtii*, *Plecotus auritus* and *Barbastella barbastellus*.