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The bat fauna of the Aggtelek National Park and its surroundings (Hungary)

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Abstract. The bat fauna of the Gömör-Torna Karst region has been studied for several decades, in particular that of the Aggtelek Karst (Hungary). The earliest research was mainly conducted in the well-known Baradla cave system, whilst other sites in the region were somewhat neglected. At the end of the 1980s a new research programme started, when studies on house-dwelling bat species and a comparative analysis of results was systematically carried out. These results played an important role in the conservation strategies for the protection of roosts (e.g. in churches). Some of these roosts were of international importance. During the third period of research, a survey of man-made caverns and of forest-dwelling bat populations began. This research revealed that 26 bat species inhabited the administrative area of the Aggtelek National Park (24 species in the proper area of the national park). These figures prove that there is a very rich bat fauna in terms of both species and their populations. The latest faunistical studies and the protection of these populations have both significantly improved our knowledge on the distribution and occurrence of several species. At the same time, it became necessary to reassess all previous data.

Bats, faunistics, nature conservation, monitoring, Hungary

Introduction

A drastic decline in bat populations was observed in the second half of the twentieth century in several European countries (Stebbings 1988). Considerable negative changes in bat populations might also occur in Hungary, but except for a known and striking reduction in cave-dwelling colonies, there is no concrete data on this phenomenon. As regards bat protection, an important first step is to complete basic research. There are approximately 300 caves in the administrative area of the Aggtelek National Park; the largest are impacted heavily by tourism. Since every cave is protected in Hungary, management plans for them will also have to be completed in the near future, a fact which has a central importance for bat protection in the area.

There is little data from the 18th and 19th centuries. The reports consider, almost without exception, the bat fauna of the Baradla cave (Grossinger 1793, Frivaldszky 1844, Petényi 1844, Hanák 1848, Kolenati 1860, Jeitteles 1862, Frivaldszky 1865). A very informative and valuable discussion of the early articles can be found in Méhely (1900). The data of earlier literature give several interesting pieces of information besides their limited usefulness. All of them mention the significantly great number of bats in the Baradla cave.

A series of bio-speleological research projects initiated by E. Dudich in the 1930s was a landmark in the collection data on bats in the area. As a result of this research, carried out in 1928–29, the number of animal species reported from the Baradla cave increased from 48 to 262. The research concentrated mainly on invertebrates, so little data on bats were there (Dudich 1930, Topál 1954). Bio-speleological research became more popular after the 2nd World War (Zicsi 1972). During these years, Topál began his internationally acknowledged work, reporting several data from the

Aggtelek area (Topál 1954, 1956, 1962, 1966). The surveys of I. Vásárhelyi (Vásárhelyi 1931) should also be mentioned, especially a still unpublished manuscript, entitled The Vertebrate Fauna of Borsod-Abaúj-Zemplén County (Vásárhelyi 1964). The research of sub-fossil fauna also provided several new data on the Holocene bat fauna of the caves in the Aggtelek Karst (Topál 1964, Kordos 1978), especially on former bat colonies in the Baradla cave (Rácz 1978).

After Topál's research work, very little was done until the middle of the 1980s (Topál 1989a, b). Nevertheless, at the end of the 1980s a survey of house-dwelling species began and the owl pellets that were collected during field work were examined. Bat research in the studied area generally takes the form of organised programmes, such as the survey of house-dwelling bat species initiated by the Gömör-Torna Working Group of BirdLife Hungary (Boldogh & Gombkötő 1997). A series of surveys also began in the Putnok Hills in 1986, and in 1988 in the Cserehát and the Aggtelek Karst. During this work, surveys centred on churches, but several other buildings (e.g. castles, cellars) were also examined. Several papers were published at this time (Szentgyörgyi et al. 1994a, b, Gombkötő & Boldogh 1996). Since some papers (Vizslán & Szentgyörgyi 1992, Fügedi & Szentgyörgyi 1992, Dobrosi 1993, 1995) do not contain all of the three most important items of information (exact time and place of collection/observation, observer), these data can only partially be treated as faunistical data.

The purpose of this paper is to: (i) summarize bat protection and research in the Aggtelek National Park; (ii) discuss the unpublished data collected from the second half of the 1980s up to 2004.

Study Area

The administrative area of the Aggtelek National Park is approximately 2200 km^2, an area which includes a great diversity of habitats (Fig. 1). Geographically and biogeographically, the northern hilly or low montane region displays a mosaic-like transition between the higher mountains of the Carpathians Mts. and the lowland and hilly regions of the Pannonian Basin (Varga 1999). Due to the geography of the region, the most important characteristics of its flora and fauna are transitional in feature and marginality. The northern part of the study area is mostly covered by large forests. In areas with beech, in northern exposures and with cool valleys and gorges, many Carpathian, Dacian and Boreal-mountainous elements are found. The most frequent forest-type is a *Querco-Carpinetum* association. Southern slopes are covered by shrub-woods and steppe grassland mosaics (e.g. *Ceraso-Quercetum*). The mountainous climate of the Carpathians has an impact on the subcontinental climate of the northern territories, so these are in fact the coldest parts of Hungary. The mean annual temperature is 9.1 °C, and the annual precipitation some 620–650 mm. The climate of southern areas is significantly warmer and drier with a mean annual temperature of around 9.7–9.9 °C and an annual precipitation of 560–600 mm (Ujvárosy 1998).

The area which includes Aggtelek Karst, Cserehat Hills and the Putnok Hills is mainly covered by natural and semi-natural habitats. In present, extensive agricultural and industrial land-use with industrial centres (Kazincbarcika, Miskolc) mainly accours only in the wide river valleys (e.g. Sajó, Hernád). The Aggtelek Karst, Rudabánya Hills and the northern and western part of the Cserehát Hills are all rich in caves. The number of known caves is approximately 270, but only half of these are suitable for bats.

Methods

The study of bats requires special methods because of the very specialised biology of these animals. Some effective observation can be carried out at their nursery and winter roosts or by using specialised equipment such as mist nets and ultrasound bat-detectors.

The survey of house-dwelling colonies lasted from the end of May until September every year. During the thorough examination of buildings, each trace referring to the presence of bats was recorded, so in this way, former occurrence could also be appraised. This survey of house-dwelling species is on-going and has a nationwide importance when one considers the size of the study area and the survey duration. This work also involved the study of barn owl (*Tyto alba*) populations living in the same buildings with pellets being collected. Due to the large number of pellets collected, only

a small proportion have been analyzed so far, though this work is of significance to bat studies in view of the bat remains found in such pellets.

A significant amount of data was also collected during field work at winter roosts. Generally, these surveys were carried out between December and March (incl.) without any schedule, but were done every month at some sites (e.g. Baradla cave, Béke cave). Mist nets and ultrasound detector (Minibat-3, Petterson D200) were used during surveys in forests. Ponds, streams and cave entrances were frequent places where bats were mist-netted.

The submitted data of species distribution are divided into three parts. In the first part, the new data of the surveys are reported. The second part contains the published data. In the last, a short evaluation is found. The explanations of the abbreviations at the localities are the following: r. = reformed church, c. = Roman catholic church, gc. = Greek catholic church, e. = evangelical church. The observed (estimated) number of individuals are put into square bracket and the abbreviations of researchers' names are in round brackets (BCs – Csaba Bartha, BL – Levente Barti, BA – Attila Bereczky, BZ – Zoltán Bihari, BS – Sándor Boldogh, BT – Tamás Burinda, DE – Edit Domán, DL – Laura Dittel, GP – Péter Gombkötő, GrP – Péter Gruber, KL – Lajos Kozák, KC – Cecília Krajnyák, MI – Štefan Matis, Imre MiI – Mihalik, PP – Péter Paulovics, PPj – Peter Pjenčák, SJ – József Serfőző, SO – Orsolya Somogyvári, SzP – Péter Szentgyörgyi, SzI – István Szenthe). The identification from pellets (pt = pellet of the tawny owl *Strix aluco*, pb = pellet of the barn owl *Tyto alba*) is written after the number of individuals; pm = carcasses and mummified specimens; * = location omitted in the interests of nature protection.

The number of bat individuals cannot be exactly counted in each case. Numbers were estimated for large colonies, sometimes with the help of photographs. In several cases, exact numbers are given by virtue of photographs taken during winter counts. The composition of species in the population of large *Myotis* species (*Myotis blythii* and *Myotis myotis*) cannot always be defined with total certainty. In the light of the results of earlier studies, the two species often form one mixed colony, thus only those individuals definitely identified as concrete species are referred to Topál (1954) and Boldogh & Gombkötő (1997). The data of large and presumably mixed colonies are reported as *Myotis* sp. The use of scientific names follows Mitchell-Jones et al. (1999). The archive (it contains published data older than 20 years), published and new data of occurrence are shown in a 2.5×2.5 km UTM grid. If archive, published and new data form the same square, only the latest one is included. The faunal data of the study were closed on 31 December 2004.

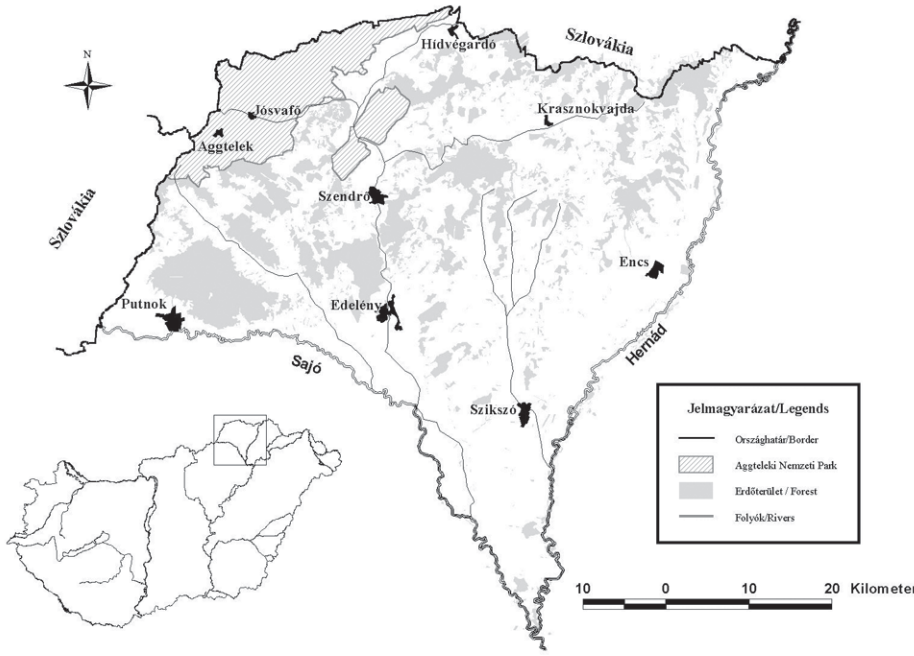

Fig. 1. Map of the research area of the Aggtelek National Park and its surroundings.
Obr. 1. Mapa skúmaného územia Národného parku Aggtelek a jeho okolia.

Results

Rhinolophus euryale Blasius, 1853

New data: **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [2] (BS), 5. 9. 2004 [4] (BS); **Aggtelek** (Baradla cave): 26. 10. 1997 [14] (BS), 9. 12. 1997 [914] (BS), 3. 1. 1998 [1316] (BS, SzI), 11. 2. 2000 [13+1 pm] (BS), 19. 1. 2003 [ca. 1500] (BS, BZ, SO), 16. 1. 2004 [ca. 1200] (BS, BL, PP), 10. 11. 2004 [ca. 70] (BS), 31. 12. 2004 [1384] (BS); **Aggtelek** (Béke cave: near entry): 27. 8. 2002 [7] (BS), 27. 4. 2003 [14] (BS), 6. 9. 2003 [9] (BS, BZ, SO), 23. 6. 2004 [6] (BS); **Jósvafő** (Kossuth cave: near entry): 13. 9. 2004 [5] (BS); **Rudabánya** (Andrássy mine: tunnel): 18. 12. 2001 [91 pm] (BS, SO), 28. 8. 2002 [1000–1200] (BS, SzP), 18. 1. 2003 [1 pm], 17. 1. 2004 [8 pm] (BS, BL, PP), 14. 9. 2004 [min. 1657] (BS); **Szögliget** (Magastető cave: near entry): 16. 8. 2004 [10] (BS).

Published data: Dudich (1930), Topál (1954, 1962, 1966, 1989 a, b).

A strictly protected species which has decreased significantly in number (Fig. 2). The caves that provided shelter for the biggest colonies are currently under threat from tourism. Only one large summer colony is known at present. The occurrence of the species in the study area is threatened because of the decreasing number of roosts. The biggest known winter colony in Hungary is in the Baradla cave. In order to preserve this roost, the Aggtelek National Park Directorate banned visits to that part of the cave where the roost is situated. On the other side of the border in Slovakia there are a few known summer colonies (Horáček et al. 1995, Matis et al. 2002). In certain years, there are 1000–1500 hibernating individuals in the Domica cave, which is connected to Baradla cave (Baradla-Domica cave system) (Uhrin et al. 2002). It is expected that a few new localities will be found in the future.

Rhinolophus ferrumequinum (Schreber, 1774)

New data: **Abaújlak** (gc.): 23. 7. 1996 [1] (BS, GP), 3. 8. 1997 [1] (BS); **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [6] (BS), 2. 9. 2004 [4] (BS); **Aggtelek** (Baradla cave: main entrance): 5. 9. 2004 [2] (BS); **Aggtelek** (Baradla cave: Róka, ág): 5. 12. 1997 [8] (BS); **Aggtelek** (Baradla cave: short tour): 9. 12. 1997 [24] (BS), 3. 1. 1998 [54] (BS), 14. 4. 1998 [14] (BS), 10. 2. 1999 [95] (BS), 19. 1. 2003 [35] (BS, BZ, SO), 16. 1. 2004 [17] (BS, BL, PP), 31. 12. 2004 [16] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 22. 10. 1998 [22] (BS), 2. 12. 1997 [68] (BS), 2. 1. 1998 [101] (BS, SzI), 2. 2. 1998 [107] (BS), 6. 3. 1998 [64] (BS), 6. 4. 1998 [15] (BS), 4. 2. 1999 [69] (BS), 19. 12. 2001 [48] (BS), 16. 11. 2002 [50] (BS, SzI), 18. 1. 2003[56+1pm] (BS, BZ, SO), 15. 1. 2004 [91] (BS, BL, PP), 30. 12. 2004 [123] (BS); **Aggtelek** (Béke cave: main entrance): 27. 8. 2002 [3] (BS); 27. 4. 2003 [3] (BS); 6. 9. 2003 [3] (BS), 4. 9. 2004 [5] (BS); **Aggtelek** (Béke cave: pit): 3. 12. 1997 [3] (BS), 16. 11. 2002 [2] (BS), 18. 1. 2003 [4] (BS, BZ, SO), 30. 12. 2004 [1] (BS); **Aggtelek** (Béke cave: Száraz-ág): 18. 1. 2003 [23] (BS, BZ, SO); 15. 1. 2004 [8] (BS, BL, PP); **Aggtelek** (r.): 1. 7. 1998 [1] (BS);**Alsószuha** (r.): 4. 8. 1999 [1] (BS), 10. 7. 2002 [2] (BS), 14. 8. 2003 [1] (BS);**Balajt** (r.): 18. 7. 1996 [1] (BS, GP), 2. 8. 1997 [1] (BS), 6. 8. 1998 [1] (BS), 19. 7. 1999 [1] (BS), 14. 8. 2004 [1] (BS); **Balajt** (vineyard: cellars): 18. 7. 1996 [1] (BS, GP); **Bánréve** (c.): 7. 7. 2001 [1] (BS); **Bódvarákó** (Esztramos: small adits): 19. 12. 2001 [6] (BS, SO), 25. 7. 2002 [12–15] (BS, BCs), 7. 7. 2004 [4] (BS); **Bódvarákó** (Esztramos: maintenance depot): 25. 7. 2002 [1] (BS, BCs), 7. 7. 2004 [4] (BS); **Bódvarákó** (Földvári cave: near entry): 7. 9. 2002 [1] (BS); **Bódvarákó** (Rákóczi cave: adit): 17. 1. 2003 [1] (BS, MI, BZ, MF), 17. 1. 2004 [1] (BS, PP, BL); **Bódvaszilas** (c.): 13. 7. 1996 [1] (BS, GP), 23. 7. 2003 [1] (BS), 10. 7. 2004 [1] (BS); **Bódvaszilas** (r.): 12. 7. 2002 [1] (BS); **Bódvaszilas** (404 cave): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (Frank cave): 14. 2. 2004 [10] (BS, MI, PPj); **Bódvaszilas** (Baglyok-szakadéka): 19. 8. 2004 [1] (BS); **Bódvaszilas** (Serház-kút): 7. 7. 2004 [1] (BS); **Bódvaszilas** (Széki shaft: near entry): 6. 9. 2004 [1] (BS); **Dobódél** (c.): 13. 7. 1996 [1] (BS, GP); **Edelény** (Nagy-völgy): 9. 8. 1999 [1] (BS, MI), 3. 9. 1999 [1] (MI); **Edelény** (Mogyorós-tető: tunnel): 28. 11. 2001 [9] (BS, GrP), 18. 12. 2001 [8] (BS, SO), 18. 1. 2003 [4] (BS, BZ, SO), 12. 2. 2004 [10] (BS, BT); **Égerszög** (r.): 21. 7. 2001 [1] (BS); **Égerszög** (Danca cave: near entry): 9. 9. 2004 [3] (BS); **Égerszög** (Szabadság cave): 2. 13. 2004 [1] (BS, MI, PPj), 15. 9. 2004 [1] (BS); **Fáj** (c.): 5. 8. 1997 [2] (BS); **Felsőnyárád** (r.): 10. 8. 1999 [1pb] (SzP), 19. 8. 2004 [1] (BS); **Gadna** (gc.): 3. 8. 1997 [2] (BS), 27. 7. 1998 [2] (BS), 24. 7. 1999 [1] (BS); **Hernádvécse** (e.): 25. 7. 1996 [1] (BS, GP); **Hidvégardó** (Komi-lyuk): 29. 9. 2000 [1] (GrP); **Irota** (gc.): 2. 8. 1997 [4] (BS), 17. 8. 2000 [8–10] (BS), 9. 8. 2001 [5] (BS); **Imola** (r.): 7. 7. 2004 [1] (BS); **Jósvafő** (Baradla cave: Meseország): 29. 12. 1997 [4] (BS); **Jósvafő** (belfry): 13. 7. 1996 [2] (BS, GP), 25. 7. 2000 [4] (BS); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS); **Jósvafő** (Alsó-Baradla: entry): 1. 9. 2004 [2] (BS); **Jósvafő** (Vass cave): 16. 1. 2004 [1] (BS, PP, BL),30. 12. 2004 [1] (BS); **Kelemér** (r.): 10. 7. 2002 [1] (BS), 14. 8. 2003 [1] (BS); **Perkupa** (c.): 13. 7. 1996 [1] (BS, GP); **Perkupa** (ref): 24. 6. 1997 [6] (BS), 4. 8. 2000 [1] (BS), 14. 7. 2001 [80–120] (BS), 12. 7. 2002 [180–200] (BS),

9. 7. 2003 [100–120] (BS), 7. 7. 2004 [130–140] (BS); **Ragály** (Balassa castle): 16. 7. 1998 [1] (BS); **Ragály** (r.): 12. 7. 1996 [1] (BS, GP), 10. 7. 2002 [2] (BS), 11. 7. 2003 [1] (BS); **Ragály** (mortuary): 7. 7. 2004 [1pm] (BS); **Rudabánya** (Andrássy adit: near entry): 28. 8. 2002 [2] (BS, SzP), 18. 12. 2001 [1] (BS, SO), 14. 9. 2004 [14] (BS); **Rudabánya** (Andrássy adit): 17. 1. 2004 [2] (BS, BL, PP); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2001 [min. 1] (BS, MI); **Szakácsi** (r.): 19. 7. 1996 [1] (BS, GP), 9. 8. 2001 [1] (BS); **Szászfa** (r.): 14. 7. 2003 [1] (BS); **Szendrőlád** (r.): 16. 7. 1997 [1] (BS), 8. 7. 2004 [1] (BS); **Szin** (r.): 24. 6. 1997 [4] (BS), 4. 8. 2000 [1] (BS); **Szinpetri** (r.): 13. 7. 1996 [38–40] (BS, GP), 24. 6. 1997 [80–100] (BS), 4. 7. 1998 [350–400] (BS), 16. 7. 1999 [350–400+2pm] (BS), 4. 8. 2000 [6 pt+2pm] (BS), 17. 9. 2000 [1pt] (BS), 14. 7. 2001 [2] (BS), 9. 7. 2003 [100–110] (BS), 7. 7. 2004 [150–170] (BS); **Szögliget** (Csempész cave): 3. 1. 1998 [1] (BS, SzI), 17. 1. 2003 [1] (BS, BZ, MiI); **Szögliget** (Magastetői cave): 2. 13. 2004 [4] (BS, MI, PPj, BT); **Szögliget** (Magastetői cave: near entry): 16. 8. 2004 [6] (BS); **Szögliget** (Rejtek shaft): 14. 2. 2004 [3] (BS, MI, PPj, BT); **Szuhafő** (r.): 11. 7. 2003 [1] (BS), 8. 7. 2004 [1] (BS); **Teresztenye** (r.): 13. 7. 1996 [1] (BS, GP), 5. 8. 2000 [1] (BS), 23. 7. 2003 [1] (BS), 7. 7. 2004 [1] (BS); **Tornabarakony** (gc.): 29. 7. 1997 [1] (BS); **Tornakápolna** (r.): 24. 6. 1997 [5] (BS), 23. 7. 1998 [1] (BS), 5. 8. 2000 [3–5] (BS), 23. 8. 2001 [1] (BS), 12. 7. 2002 [2] (BS), 9. 7. 2003 [1] (BS), 7. 7. 2004 [4] (BS); **Tornaszentjakab** (c.): 21. 7. 1999 [1] (BS); **Trizs** (r.): 10. 8. 1999 [1] (BS); **Viszló** (gc.): 5. 9. 2000 [10–15] (BS); **Zádorfalva** (r.): 26. 7. 1998 [1] (BS), 8. 8. 2001 [1] (BS), 8. 7. 2004 [4] (BS).

Published data: Topál (1956, 1966), Mészáros (1971), Szentgyörgyi et al. (1994a, b), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997), Gombkötő (1997), Matis (1997).

A strictly protected, rare species (Fig. 3). House-dwelling nursery colonies are very vulnerable in spite of the continuous efforts by nature conservationists. The Aggtelek National Park Directorate introduced special restrictions in space and time for preserving the largest known hibernating colonies in the Béke and Baradla caves. The largest known population changed its roost because of the arrival of a pair of barn owls in 2000.

Rhinolophus hipposideros (Bechstein, 1800)

New data: **Abaújlak** (gc.): 3. 8. 1997 [1] (BS); **Abod** (gc.): 18. 7. 1996 [12–15] (BS), 2. 8. 1997 [25–30] (BS), 21. 7. 2001 [15–20] (BS), 17. 7. 2002 [20–25] (BS), 16. 8. 2003 [20] (BS), 23. 7. 2004 [70] (BS); **Aggtelek** (Baradla cave: short tour): 10. 2. 1999 [106] (BS), 3. 1. 1998 [158] (BS, SzI), 14. 4. 1998 [31] (BS), 19. 1. 2003 [58] (BS, BZ, SO), 31. 12. 2004 [20] (BS); **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [9] (BS), 2. 9. 2004 [1] (BS); **Aggtelek** (Baradla cave): 5. 12. 1997 [18] (BS), 9. 12. 1997 [94] (BS), 16. 1. 2004 [12] (BS, BL, PP), 4. 11. 2004 [1] (BS); **Aggtelek** (Baradla cave: Morea): 4. 11. 2004 [1] (BS), 11. 11. 2004 [1] (BS), **Aggtelek** (Béke cave: near entry): 27. 8. 2002 [12] (BS), 27. 4. 2003 [4] (BS), 6. 9. 2003 [5] (BS, BZ, SO), 23. 6. 2004 [1] (BS), 4. 9. 2004 [7] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 2. 12. 1997 [54] (BS), 2. 1. 1998 [133] (BS), 2. 2. 1998 [128] (BS), 6. 3. 1998 [63] (BS), 6. 4. 1998 [17] (BS), 22. 10. 1998 [12] (BS), 4. 2. 1999 [110] (BS), 19. 12. 2001 [84] (BS, SO), 16. 11. 2002 [18] (BS, SzI), 18. 1. 2003 [83] (BS, BZ, SO), 15. 1. 2004 [102] (BS, BL, PP), 30. 12. 2004 [147] (BS); **Aggtelek** (Béke cave: pit): 3. 12. 1997 [6] (BS), 16. 11. 2002 [6] (BS, SZI), 18. 1. 2003 [5] (BS, BZ, SO), 30. 12. 2004 [1] (BS); **Aggtelek** (Béke cave: Száraz-ág): 18. 1. 2003 [24] (BS, BZ, SO), 15. 1. 2004 [18] (BS); **Alsószuha** (r.): 8. 8. 1997 [5] (BS), 4. 8. 1999 [25–30] (BS), 10. 7. 2002 [12–15] (BS), 14. 8. 2003 [15] (BS); **Bódvarákó** (Esztramos: small adits): 19. 12. 2001 [7] (BS, SO), 17. 1. 2004 [2] (BS, BL, PP); **Bódvarákó** (Esztramos: maintenance depot): 25. 7. 2002 [14] (BS, BCs), 7. 7. 2004 [6] (BS); **Bódvarákó** (Esztramos-alj: hunting rest): 13. 7. 1996 [30] (BS, GP); **Bódvarákó** (Földvári cave): 17. 1. 2003 [4] (BS, BZ, MI, MF), 17. 1. 2004 [8] (BS, BL, PP); **Bódvarákó** (c.): 14. 7. 2003 [1] (BS), 7. 7. 2004 [1] (BS); **Bódvaszilas** (c.): 13. 7. 1996 [2] (BS, GP), 29. 7. 1997 [1] (BS), 25. 7. 1998 [10, 12] (BS), 12. 7. 2002 [1] (BS), 23. 7. 2003 [3] (BS), 10. 7. 2004 [6] (BS); **Bódvaszilas** (r.): 13. 7. 1996 [4] (BS, GP), 29. 7. 1997 [3] (BS), 25. 7. 1998 [min. 2] (BS), 12. 7. 2002 [6] (BS); **Bódvaszilas** (Vecsem-Bükk shaft): 10. 9. 2002 [1] (BS, MI); **Bódvaszilas** (Őz shaft): 14. 2. 2004 [2] (BS, MI, PPj); **Bódvaszilas** (404 cave): 14. 2. 2004 [29] (BS, MI, PPj); **Bódvaszilas** (Széki shaft: near entry): 6. 9. 2004 [1] (BS); **Damak** (vineyard: cellars): 19. 7. 1996 [10–12] (BS, GP); **Debréte** (gc.): 12. 7. 2002 [10–15] (BS), 21. 7. 1999 [3] (BS), 14. 7. 2003 [18] (BS), 10. 7. 2004 [8] (BS); **Debréte** (village): 12. 7. 2002 [1] (BS); **Edelény** (Mogyorós-tető: tunnel): 28. 11. 2001 [12] (BS, GrP), 18. 12. 2001 [12] (BS, SO), 18. 1. 2003 [11] (BS, BZ, SO), 12. 2. 2004 [8] (BS, BT); **Égerszög** (Szabadság cave): 2. 13. 2004 [9] (BS, MI, PP), 15. 9. 2004 [3] (BS); **Fáj** (c.): 23. 7. 1996 [2] (BS, GP); **Gadna** (gc.): 23. 7. 1996 [7] (BS, GP), 27. 7. 1998 [1] (BS), 24. 7. 1999 [1] (BS), 16. 8. 2004 [6–8] (BS); **Imola** (r.): 7. 7. 2004 [1] (BS); **Irota** (gc.): 23. 7. 1996 [35–40] (BS, GP), 2. 8. 1997 [20–22] (BS), 6. 8. 1998 [40–45] (BS), 21. 7. 1999 [40–50] (BS), 17. 8. 2000 [15–20] (BS), 9. 8. 2001 [15–20] (BS), 17. 7. 2002 [8–10] (BS), 23. 7. 2003 [40–50] (BS), 14. 8. 2004 [30–35] (BS); **Jósvafő** (Baradla cave: Kaffka hall): 9. 12. 1997 [1] (BS); **Hidvégardó** (Komi-lyuk): 12. 2. 2000 [1] (GrP), 29. 9. 2000 [1] (GrP); **Jósvafő** (Tengerszem restaurant: store): 30. 8. 1997 [120] (BS); **Jósvafő** (Vass cave: near entry): 9. 9. 2002 [1] (BS); **Jósvafő** (Vass cave): 17. 1. 2003 [21] (BS, BZ, SO), 16. 1. 2004 [13] (BS, BL, PP), 30. 12. 2004 [27+3pm]

(BS); **Jósvafő** (Baradla cave: Rövid-Alsó): 15. 1. 2004 [2] (BS, BL); **Jósvafő** (Kossuth cave): 16. 1. 2004 [1] (BS, BL, PP); **Jósvafő** (Kuriszláni víznyelő cave): 2. 13. 2004 [1] (BS, MI, PPj); **Jósvafő** (Porlyuk cave): 2. 13. 2004 [3] (BS, MI, PPj); **Jósvafő** (VITUKI): 14. 2. 2004 [1 pm] (BS); **Litka** (r.): 23. 7. 1996 [2] (BS, GP); **Krasznokvajda** (manse): 14. 7. 2003 [2+2pm] (BS); **Pamlény** (r.): 7. 8. 2001 [6] (BS); **Perkupa** (c.): 23. 7. 1998 [4] (BS); **Perkupa** (r.): 12. 7. 2002 [3] (BS); **Ragály** (Balassa castle): 16. 7. 1998 [11] (BS), 7. 7. 2004 [11] (BS); **Ragály** (r.): 16. 7. 1998 [1] (BS), 17. 8. 2000 [2] (BS), 10. 7. 2002 [1] (BS), 7. 7. 2004 [1] (BS); **Rakacaszend** (r.): 17. 7. 1996 [1] (BS, GP); **Rudabánya** (Andrássy adit: near entry): 28. 8. 2002 [1] (BS); **Szendrőlád** (c.): 17. 7. 1996 [1] (BS, GP), 16. 7. 1997 [10–12] (BS), 6. 8. 1998 [15] (BS), 16. 8. 2003 [15] (BS), 14. 8. 2004 [30–35] (BS); **Szendrőlád** (r.): 16. 7. 1997 [2] (BS), 15. 7. 1998 [6–8] (BS), 15. 8. 2002 [20] (BS), 15. 8. 2003 [30] (BS), 8. 7. 2004 [32] (BS); **Szin** (r.): 4. 7. 1998 [6] (BS); **Szinpetri** (preaching-house): 13. 7. 1996 [2] (BS, GP); **Szinpetri** (r.): 12. 7. 2002 [2] (BS); **Szögliget** (Csempész cave): 3. 1. 1998 [4] (BS, SzI); **Szögliget** (Magastetői cave): 2. 13. 2004 [7] (BS, MI, PPj); **Szögliget** (Rejtek shaft): 14. 2. 2004 [25] (BS, MI, PPj); **Szuhafő** (ref): 8. 7. 1997 [6] (BS), 1. 7. 1998 [12–14] (BS), 4. 8. 1999 [12–15] (BS), 28. 7. 2000 [10–12] (BS), 11. 7. 2003 [1] (BS), 8. 7. 2004 [1] (BS); **Szuhogy** (c.): 21. 7. 2001 [1] (BS); **Teresztenye** (r.): 16. 7. 2002 [2–3] (BS), 23. 7. 2003 [1] (BS), 7. 7. 2004 [6] (BS); **Tornabarakony** (gc.): 16. 7. 2002 [1] (BS); **Tornakápolna** (r.): 13. 7. 1996 [4] (BS, GP), 24. 6. 1997 [2] (BS), 23. 7. 1998 [2] (BS), 16. 7. 1999 [3] (BS), 5. 8. 2000 [3–5] (BS), 12. 7. 2002 [1] (BS); **Tornaszentjakab** (c.): 29. 7. 1997 [22–25] (BS), 27. 7. 1998 [30–35] (BS), 21. 7. 1999 [25] (BS), 10. 8. 2001 [25–30] (BS), 12. 7. 2002 [40] (BS), 14. 7. 2003 [47] (BS), 10. 7. 2004 [60] (BS); **Vadna** (village): 16. 7. 1996 [10–12] (BS, GP); **Varbóc** (castle): 12. 7. 2002 [20] (BS); **Viszló** (gc.): 15. 7. 1996 [70–75] (BS, GP), 29. 7. 1997 [30] (BS), 5. 9. 2000 [25–30] (BS), 10. 8. 2001 [40–50] (BS), 12. 7. 2002 [10–12] (BS), 14. 7. 2003 [50], 10. 7. 2004 [50–60] (BS); **Zádorfalva** (r.): 8. 8. 1996 [1] (BS, GP), 17. 7. 1997 [1] (BS).

Published data: Dudich (1930, 1932), Topál (1954, 1956, 1962, 1966), Bajomi (1964), Mészáros (1971), Fügedi & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994b), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997), Gombkötő (1997).

A fairly common, protected species. Nursery colonies can be found in both natural and artificial roosts (Fig 4). The Aggtelek National Park Directorate introduced special rules and regulations for preserving the hibernating colonies in the Béke cave and in the bigger caves of Alsó-hegy. Future observations are expected from several new locations.

Myotis bechsteinii (Kuhl, 1817)

New data: **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [4] (BS), 2. 9. 2004 [2] (BS); **Aggtelek** (Béke cave: near entry): 27. 8. 2002 [6] (BS), 6. 9. 2003 [5] (BS, BZ, SO), 4. 9. 2004 [6] (BS); **Aggtelek** (Vörös lake): 7. 7. 2002 [2] (BS, MI); **Aggtelek** (Musztáng cave: near entry): 25. 8. 2004 [2] (BS); **Bódvaszilas** (Vecsem-Bükk shaft: near entry): 10. 9. 2002 [1] (BS), 12. 9. 2004 [6] (BS); **Bódvaszilas** (Széki shaft: near entry: near entry): 6. 9. 2004 [10] (BS); **Égerszög** (Danca cave): 9. 9. 2004 [1] (BS); **Fáj** (castle: lake): 24. 7. 2004 [1] (BS, MI, DL); **Jósvafő** (Kecső valley: Babot-kút): 25. 8. 2002 [1] (BS) **Jósvafő** (Vass cave): 17. 1. 2003 [3pm] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2002 [2] (BS, MI); **Szögliget** (Magastető cave): 16. 8. 2004 [1] (BS).

Published data: Bihari & Gombkötő (1993), Bankovics (1997).

A strictly protected, fairly common species (Fig. 5). Future occurrences can be expected from various woodlands in the area.

Myotis blythii (Tomes, 1857)

New data: **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [1] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 16. 11. 2002 [2] (BS, SzI), 18. 1. 2003 [2] (BS, BZ, SO), 15. 1. 2004 [3] (BS, BL, PP), 30. 12. 2004 [2] (BS); **Aggtelek**

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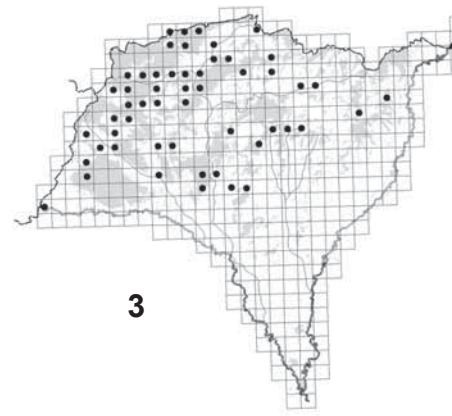
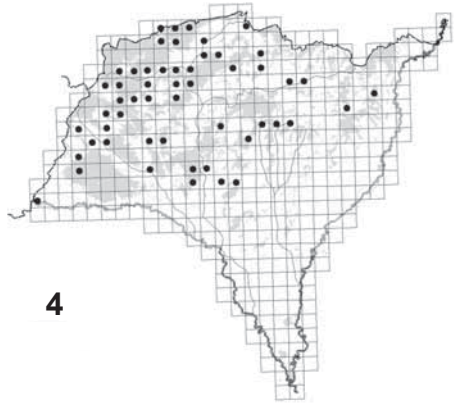
Figs. 2–7. Distribution of bats in the Aggtelek National Park and its surroundings. 2 – Mediterranean horseshoe bat (*Rhinolophus euryale*); 3 – Greater horseshoe bat (*Rhinolophus ferrumequinum*); 4 – Lesser horseshoe bat (*Rhinolophus hipposideros*); 5 – Bechstein's bat (*Myotis bechsteinii*); 6 – Lesser mouse-eared bat (*Myotis blythii*); 7 – Greater mouse-eared bat (*Myotis myotis*).

Obr. 2–7. Rozšírenie netopierov v Národnom parku Aggtelek a jeho okolí. 2 – podkovár južný (*Rhinolophus euryale*); 3 – podkovár veľký (*Rhinolophus ferrumequinum*); 4 – podkovár malý (*Rhinolophus hipposideros*); 5 – netopier Bechsteinov (*Myotis bechsteinii*); 6 – netopier ostrouchý (*Myotis blythii*); 7 – netopier obyčajný (*Myotis myotis*).

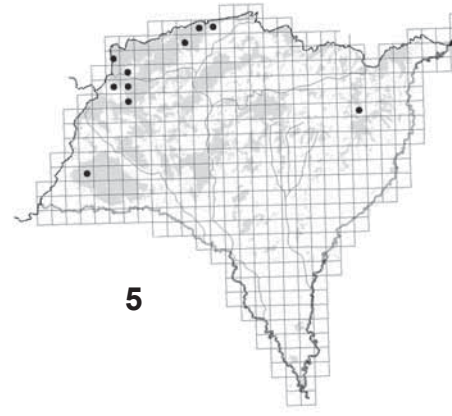
2



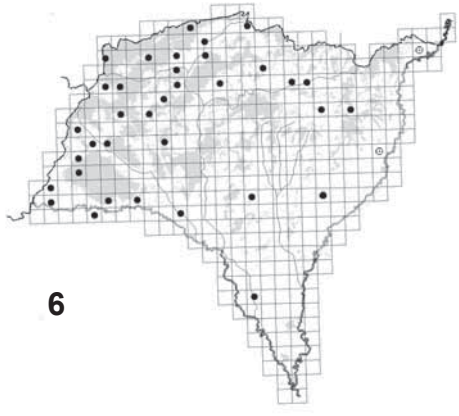
3



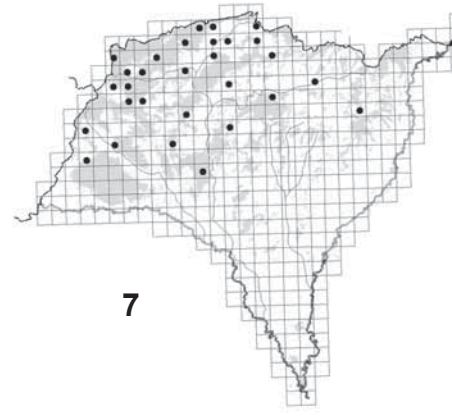
4



5



6



7

(Musztáng cave: near entrance): 15. 8. 2004 [1] (BS); **Alsószuha** (r.): 8. 8. 2001 [1pb] (BS); **Bódvarákó** (Földvári cave): 17. 1. 2004 [1] (BS, BL, PP); **Bódvarákó** (Földvári cave: near entrance): 7. 9. 2002 [1] (BS); **Bódvaszilas** (Őz shaft): 14. 2. 2004 [2] (BS, MI, PPj); **Bódvaszilas** (Vecsem-Bükk shaft: near entrance): 12. 9. 2004 [4] (BS); **Bódvaszilas** (Vecsem spring): 21. 7. 2004 [1] (BS, MI, DL); **Csobád** (gc.): 8. 10. 1994. [1] (FL, GI, SzP); **Fáj** (castle: lake): 24. 7. 2004 [1] (BS, MI, DL); **Hét** (r.): 7. 1995. [1pb] (BS, GP, SzP); **Imola** (r.): 9. 7. 1995. [1pb] (BS, GP, SzP); **Kánó** (r.): 25. 6. 1997 [3pb] (BS); **Kelemér** (r.): 21. 7. 1997 [2pm] (BS); **Krasznokvajda (**c.): 3. 9. 2004 [2+1pb] (BS); **Perkupa** (r.): 8. 7. 1997 [1pb] (BS); **Rudabánya** (Andrássy tunnel): 18. 12. 2001 [2pm] (BS), 17. 1. 2004 [2pm] (BS, BL, PP); **Sajóvelezd** (r.): 4. 7. 1998 [1pb] (BS); **Szin** (Szelce valley: watering-place): 9. 7. 2004 [1] (BS); **Szögliget** (Szalamandra guest-house): 15. 8. 2004 [1pt] (BS); **Szőlősardó** (r.): 13. 7. 1996 [2pb] (BS, GP),21. 10. 2004 [30+1pb] (BS).

Published data: Topál (1956, 1966), Mészáros (1971), Schmidt & Sipos (1971), Schmidt & Topál (1971), Ujhelyi (1991), Vizslán & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997), Gubányi et al. (1999).

Widely spread, common species (Fig. 6). The most of his data are reported as *Myotis* sp. because of the mixed colonies with *Myotis myotis*. According to the records, it is less common than the greater mouse-eared bat.

Myotis myotis (Borkhausen, 1797)

New data: **Abod** (gc.): 2. 8. 1997 [1pb] (BS, SzP); **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [2] (BS), 21. 6. 2004 [1] (BS); **Aggtelek** (Béke cave: near entry): 27. 8. 2002 [2] (BS), 6. 9. 2003 [1] (BS), 4. 9. 2004 [1] (BS); **Aggtelek** (Béke cave: Száraz-ág): 17. 1. 2003 [3] (BS, BZ, SO), 15. 1. 2004 [1] (BS, BL, PP); **Aggtelek** (Béke cave: Felfedező-ág): 18. 1. 2003 [5] (BS, BZ, SO), 15. 1. 2004 [2] (BS, BL, PP), 30. 12. 2004 [2] (BS); **Aggtelek** (belfry): 1. 7. 1998 [1pm] (BS); **Aggtelek** (Vörös lake): 7. 7. 2002 [2] (BS, MI); **Aggtelek** (Musztáng cave: near entry): 25. 8. 2004 [3] (BS); **Alsószuha** (r.): 8. 7. 2004 [22] (BS); **Becskeháza** (gc.): 14. 7. 2003 [80] (BS); **Bódvarákó** (Esztramos: small adits): 17. 1. 2003 [1] (BS, BZ, MI, MF), 7. 7. 2004 [1] (BS); **Bódvarákó** (c.): 14. 7. 2003 [1] (BS); **Bódvaszilas** (Vecsem-Bükk shaft): 10. 9. 2002 [3] (BS), 12. 9. 2004 [3] (BS); **Bódvaszilas** (Őz shaft): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (404 cave): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (Frank cave): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (Baglyok-szakadéka): 19. 8. 2004 [2] (BS); **Bódvaszilas** (Széki shaft: near entry): 6. 9. 2004 [1] (BS); **Bódvaszilas** (Vecsem spring): 21. 7. 2004 [9] (BS), 23. 7. 2004 [1] (BS, MI); **Edelény** (Nagy valley): 9. 8. 1999 [1] (BS, MI), 3. 9. 1999 [1] (MI); **Edelény** (Mogyorós-tető: tunnel): 18. 1. 2003 [1] (BS, BZ, SO);12. 2. 2004 [3] (BS); **Égerszög** (Danca cave: near entry): 9. 9. 2004 [1] (BS); **Égerszög** (Szabadság cave): 2. 13. 2004 [4] (BS, MI, PPj); **Fáj** (castle: lake): 24. 7. 2004 [1] (BS, MI, DL); **Hidvégardó** (c.): 27. 7. 1998 [2pm] (BS), 23. 7. 2003 [1pm] (BS); **Jósvafő** (Kecső valley: Babot-kút): 25. 8. 2002 [2] (BS); **Jósvafő** (Kossuth cave: near entry): 21. 8. 2001 [1] (BS); **Jósvafő** (Vass cave: near emtry): 9. 9. 2002 [3] (BS); **Jósvafő** (Vass cave): 17. 1. 2003 [2+2pm] (BS), 30. 12. 2004 [4pm] (BS); **Jósvafő** (Kuriszláni víznyelő cave): 2. 13. 2004 [1] (BS, MI, PPj); **Kelemér** (r.): 8. 7. 2004 [cc. 400] (BS); **Komjáti** (c.): 8. 7. 1995. [1pb] (BS, GP, SzP); **Krasznokvajda** (c.): 3. 9. 2004 [2pb] (BS); **Martonyi** (r.): 9. 7. 2003 [20–25] (BS), 7. 7. 2004 [1pb] (BS); **Rakaca** (tower): 1. 7. 1994. [5 pb] (BS, GP, SzP); **Rudabánya** (Andrássy tunnel): 17. 1. 2004 [2pm] (BS, BL, PP); **Szin** (r.): 24. 6. 1997 [6 pm] (BS); **Szin** (Szelce valley: watering-place): 9. 7. 2004 [25] (BS), 20. 7. 2004 [1] (BS); **Szögliget** (Magastető cave): 2. 13. 2004 [1] (BS, MI, PPj); **Szögliget** (Tilalmas): 21. 7. 2004 [1] (BS, BT); **Szuhafő** (r.): 2. 7. 2000 [1 pb] (BS); **Tornaszentjakab** (c.): 10. 7. 2004 [1] (BS); **Varbóc** (Ördög-gát): 12. 2. 2004 [2] (BS, BT).

Published data: Vásárhelyi (1931, 1939), Topál (1954, 1956, 1966), Mészáros (1971), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a, b), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997).

A widespread, common species. Significant populations are found in buildings and one also in a mine (Fig. 7). Most of this data are reported as *Myotis* sp. since this species forms mixed colonies with *M. blythii*. House-dwelling colonies are very vulnerable in spite of constant efforts by the nature protection authority to preserve them. Many important colonies have left their roosts because of the arrival of barn owls. Bones of this species are the most common ones found in the Baradla cave. However, population strongly decreased in this cave at the present, due to disturbance.

Myotis myotis / *Myotis blythii* (Fig. 8)

New data: **Abaújlak** (gc.): 17. 7. 2002 [1] (BS); **Abaújszolnok** (gc.): 24. 7. 1996 [8–10] (BS, GP); **Abod** (gc.): 18. 7. 1996 [1] (BS, GP), 2. 8. 1997 [10–15] (BS), 21. 7. 2001 [40–50] (BS), 16. 8. 2003 [1] (BS); **Aggtelek** (Baradla cave:

short tour): 9. 12. 1997 [1] (BS), 19. 1. 2003 [1] (BS, BZ, SO), 19. 1. 2003 [1] (BS, BZ, SO); **Aggtelek** (Béke cave: Felfedező-ág): 2. 12. 1997 [5] (BS), 2. 1. 1998 [20] (BS, SzI), 6. 3. 1998 [35] (BS), 6. 4. 1998 [46] (BS), 4. 2. 1999 [20] (BS), 19. 12. 2001 [8] (BS, SO), 16. 11. 2002 [1] (BS, SzI); **Aggtelek** (Béke cave: pit): 3. 12. 1997 [1] (BS), 2. 1. 1998 [13] (BS, SzI), 22. 10. 1998 [5] (BS); **Aggtelek** (Béke cave: Száraz-ág): 3. 12. 1997 [1] (BS), 18. 1. 2003 [2] (BS, BZ, SO); **Alsószuha** (r.): 16. 7. 1996 [30] (BS, GP), 26. 7. 1998 [30] (BS), 4. 8. 1999 [45–50] (BS), 10. 7. 2001 [70–80] (BS), 8. 8. 2002 [50] (BS), 14. 8. 2003 [50] (BS); **Baktakék** (gc.): 24. 7. 1996 [1] (BS, GP); **Bánréve** (c.): 12. 7. 1996 [1] (BS, GP); **Becskeháza** (gc.): 12. 7. 2002 [100–120] (BS), 29. 7. 1997 [60–70] (BS), 27. 7. 1998 [45–50] (BS), 21. 7. 1999 [100–120] (BS), 10. 7. 2004 [50] (BS); **Bódvarákó** (Esztramos: small adits): 19. 12. 2001 [4] (BS, SO); **Bódvarákó** (c.): 12. 7. 2002 [2] (BS); **Csenyéte** (r.): 5. 8. 1997 [1] (BS); **Edelény** (Mogyorós-tető: tunnel): 28. 11. 2001 [1] (BS, GrP), 18. 12. 2002 [2] (BS, SO), 18. 1. 2003 [1] (BS, BZ, SO); **Fancsal** (e.): 24. 7. 1996 [1] (BS, GP); **Felsővadász** (c.): 16. 8. 2003 [1] (BS); **Hangács** (r.): 14. 7. 2003 [1] (BS); **Hidvégardó** (c.): 15. 7. 1996 [280–300] (BS, GP), 29. 7. 1997 [200–220] (BS), 27. 7. 1998 [250–300] (BS), 23. 8. 2001 [300–350] (BS), 23. 7. 2003 [ca. 220] (BS), 10. 7. 2004 [20] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2001 [1] (BS, MI), 7. 7. 2002 [1] (BS, MI); **Kelemér** (r.): 4. 7. 1997 [30–50] (BS), 1. 7. 1998 [350–400] (BS), 4. 8. 1999[300–350] (BS), 7. 7. 2001 [300–350] (BS), 10. 7. 2002 [120–130] (BS), 14. 8. 2003 [350–400] (BS); **Krasznokvajda** (c.): 29. 7. 1997 [2] (BS), 24. 7. 1998 [4] (BS), 10. 8. 2001 [10–15] (BS); **Léh** (c.): 24. 7. 1996 [min. 3] (BS, GP), 27. 7. 1998 [10–12] (BS), 14. 8. 1999 [6–8] (BS); **Martonyi** (r.): 17. 7. 1996 [100] (BS, GP), 16. 7. 1997 [50–60] (BS), 27. 7. 1998 [100–120] (BS), 10. 8. 2001 [200–250] (BS), 15. 7. 2002 [min. 1] (BS), 8. 7. 2004 [50] (BS); **Perkupa** (r.): 9. 7. 2003 [1] (BS); **Pusztaradvány** (gc.): 14. 8. 1999 [1] (BS); **Ragály** (r.): 10. 7. 2002 [1] (BS); **Rakacaszend** (r.): 17. 7. 1996 [1] (BS, GP), 24. 7. 1998 [1] (BS); **Sajókaza** (r.): 8. 8. 1996 [3] (BS, GP); **Serényfalva** (c.): 1. 7. 1998 [3] (BS); **Szendrőlád** (c.): 16. 8. 2003 [1] (BS);**Szin** (r.): 13. 7. 1996 [350–370] (BS, GP); 24. 6. 1997 [300] (BS),04. 7. 1998 [600] (BS), 4. 8. 1999 [300–350] (BS), 4. 8. 2000 [400–450] (BS); **Szögliget** (kat): 12. 7. 1996 [30] (BS, GP), 25. 7. 1998 [1] (BS), 12. 7. 2002 [40–45] (BS), 23. 7. 2003 [30] (BS); **Szőlősardó** (r.): 13. 7. 1996 [80] (BS, GP), 1. 7. 1998 [120–150] (BS), 16. 7. 1999 [100–120] (BS), 5. 8. 2000 [200–250] (BS), 21. 7. 2001 [350–400] (BS), 16. 7. 2002 [180–200] (BS), 9. 7. 2003 [200–250] (BS), 7. 7. 2004 [130–150] (BS); **Tomor** (r.): 13. 7. 1996 [1] (BS, GP); **Tornabarakony** (gc.): 16. 7. 2002 [1] (BS); **Viszló** (gc.): 5. 9. 2000 [5–6] (BS), 14. 7. 2003 [80] (BS), 10. 7. 2004 [300–320] (BS).

Published data: Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997).

Myotis brandtii (Eversmann, 1845)

New data: **Aggtelek** (Vörös lake): 7. 7. 2002 [2] (BS, MI, PP); **Aggtelek** (Káposztáskerti lake): 12. 8. 2004 [1] (BS, MI); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS); **Jósvafő** (Tengerszem lake): 23. 8. 2002 [1] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2001 [1] (BS, MI, PP), 7. 7. 2002 [1] (BS, MI, PP); **Rudabánya** (Andrássy mine: adit): 17. 1. 2004 [1pm] (BS).

A species new to the study area (Fig. 9). Further records are to be expected.

Myotis alcathoe von Helversen et Heller, 2001 (Fig. 10)

New data: **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [1] (BS).

The species-specific distinction of this bat was only recently verified (von Helversen et al. 2001) and identification is difficult (Dietz & von Helversen 2004). The morphological distinguishing characters are being intensively studied in the Hungarian Natural History Museum (Budapest). Its overall European distribution has not yet been clarified.

Myotis mystacinus (Kuhl, 1817)

New data: **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [3] (BS); **Aggtelek** (Baradla cave: short tour): 19. 1. 2003 [1] (BS, BZ, SO); **Aggtelek** (Vörös lake): 7. 7. 2002 [3] (BS, MI, PP), **Aggtelek** (Musztáng cave): 25. 8. 2004 [4] (BS); **Bódvaszilas** (Baglyok-szakadéka): 19. 8. 2004 [1] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [2] (BS); **Égerszög** (Szabadság cave): 15. 9. 2004 [1] (BS); **Fáj (**castle: lake): 24. 7. 2004 [4] (BS); **Jósvafő** (Kecső valley: Babot-kút): 9. 9. 2002 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 21. 8. 2002 [1] (BS), 18. 6. 2004 [1] (BS); **Jósvafő** (Vass cave): 17. 1. 2003 [4 pm] (BS), 30. 12. 2004 [2pm] (BS).

Published data: Vásárhelyi (1964), Bankovics (1997).

Very rare in the study area (Fig. 11). Future occurrences can, however, be expected as surveys are planned in the many suitable habitats that exist.

Myotis brandtii / Myotis mystacinus

New data: **Aggtelek** (Béke cave: Felfedező-ág): 16. 11. 2002 [1] (BS, SzI); **Edelény** (Nagy valley): 9. 8. 1999 [1] (BS, MI); **Jósvafő** (Kecső valley: Babot-kút): 25. 8. 2002 [1] (BS); **Jósvafő** (Vass cave: near entrance): 9. 9. 2002 [1] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2001 [min. 1] (BS, MI, PP); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2002 [1] (BS, MI, PP)

Published data: Matis (1997).

Myotis daubentonii (Kuhl, 1817)

New data: **Aggtelek** (Baradla cave: short tour): 19. 1. 2003 [1] (BS, SO); **Aggtelek** (Béke cave: near entrance): 27. 8. 2002 [3] (BS), 6. 9. 2003 [3] (BS, BZ, SO), 4. 9. 2004 [3] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 6. 3. 1998 [1] (BS); **Aggtelek** (Béke cave: pit): 3. 12. 1997 [2] (BS), 4. 2. 1999 [1] (BS); **Aggtelek** (Káposztáskerti lake): 12. 8. 2004 [2] (BS, BZ); **Aggtelek** (Musztáng cave): 25. 8. 2004 [1] (BS); **Bódvaszilas** (Vecsem-Bükk shaft: near entrance): 10. 9. 2002 [1] (BS), 12. 9. 2004 [1] (BS); **Bódvaszilas** (Frank cave): 14. 2. 2004 [3] (BS, MI, PPj); **Bódvaszilas** (Baglyok-szakadéka): 19. 8. 2004 [1] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [4] (BS); **Égerszög** (Szabadság cave): 15. 9. 2004 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS); **Jósvafő** (Tengerszem lake): 23. 8. 2002 [min. 3] (BS), 22. 6. 2004 [1] (BS); **Jósvafő** (Alsó-Baradla cave): 1. 9. 2004 [1] (BS); **Jósvafő** (village): 25. 6. 2004 [1] (BS), 13. 8. 2003 [5] (BS); **Jósvafő** (Vass cave): 30. 12. 2004 [1+1 pm] (BS); **Pere** (Hernád-part): 30. 8. 2001 [min. 1] (BS); **Rudabánya** (Andrássy adit): 18. 12. 2001 [1 pm] (BS); **Rudabánya** (mine: lake): 14. 9. 2004 [2] (BS); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2001 [min. 1] (BS, MI, PPj); **Szögliget** (Magastető cave): 16. 8. 2004 [2] (BS)

Published data: Bihari & Gombkötő (1993), Matis (1997), Matis et al. (2003).

An uncommon species, according to existing records (Fig. 13). Future occurrence, in several places, is likely.

Myotis emarginatus (E. Geoffroy, 1806)

New data: **Aggtelek** (Baradla cave): 16. 1. 2004 [1] (BS, BL, PP); **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [3] (BS), 2. 9. 2004 [5] (BS); **Aggtelek** (Béke cave: Száraz-ág): 18. 1. 2003 [7] (BS, BZ, SO); 15. 1. 2004 [13] (BS, BL, PP);**Aggtelek** (Béke cave: near entry): 27. 8. 2002 [18] (BS), 6. 9. 2003 [8] (BS, BZ, SO), 4. 9. 2004 [14] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 30. 12. 2004 [1+1 pm] (BS); **Bódvaszilas** (Baglyok-szakadéka): 19. 8. 2004 [2] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [11] (BS); **Bódvaszilas** (Vecsembükki shaft: near entry): 12. 9. 2004 [2] (BS); **Cserehát***: 15. 7. 1996 [1800–2000] (BS, GP), 29. 7. 1997 [650–700] (BS), 27. 7. 1998 [1000–1200] (BS), 10. 8. 2001 [70–100] (BS), 12. 7. 2002 [1800–2000] (BS), 14. 7. 2003 [ca. 2000] (BS), 10. 7. 2004 [1200–1500] (BS); **Jósvafő** (village): 25. 6. 2004 [1] (BS); **Jósvafő** (Szelce valley): 13. 7. 2000 [1 pm] (BS); **Putnoki-dombság-1***: 16. 7. 1996 [80–100] (BS, GP), 8. 9. 1997 [10–12] (BS), 16. 7. 1998 [250–270] (BS), 25. 7. 2000 [220–250] (BS), 8. 8. 2001 [70–100] (BS), 10. 7. 2002 [350–400] (BS), 11. 7. 2003 [300–350] (BS), 7. 7. 2004 [2+20 pm] (BS); **Putnoki--dombság-2*: 7.** 7. 2004 [1800–2000] (BS); **Szinpetri** (r.): 13. 7. 1996 [20–22] (BS, GP), 24. 6. 1997 [70] (BS), 16. 7. 1999 [90–110] (BS), 4. 8. 2000 [23 pb] (BS); **Szögliget** (Magastető cave): 16. 8. 2004 [3] (BS); **Tornakápolna** (r.): 5. 8. 2000 [25] (BS), 12. 7. 2002 [3] (BS), 9. 7. 2003 [13–15] (BS), 7. 7. 2004 [6–8] (BS).

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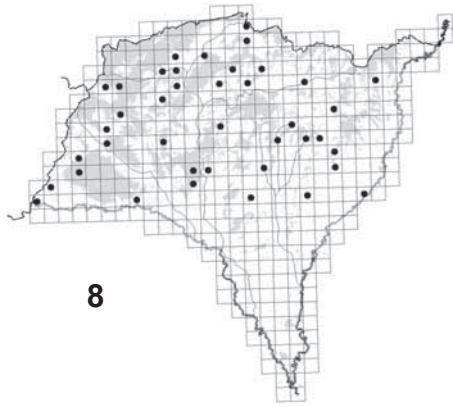
Figs. 8–13. Distribution of bats in the Aggtelek National Park and its surroundings. 8 – large *Myotis* species (*Myotis myotis* / *Myotis blythii*); 9 – Brandt's bat (*Myotis brandtii*); 10 – Nymph bat (*Myotis alcathoe*); 11 – Whiskered bat (*Myotis mystacinus*); 12 – Brandt's or Whiskered bats (*Myotis brandtii* / *Myotis mystacinus*); 13 – Daubenton's bat (*Myotis daubentonii*).

Obr. 8. Rozšírenie netopierov v Národnom parku Aggtelek a jeho okolí. 8 – veľké druhy rodu *Myotis* (*Myotis myotis* / *Myotis blythii*); 9 – netopier Brandtov (*Myotis brandtii*); 10 – netopier nymfin (*Myotis alcathoe*); 11 – netopier fúzatý (*Myotis mystacinus*); 12 – netopier Brandtov alebo n. fúzatý (*Myotis brandtii* / *Myotis mystacinus*); 13 – netopier vodný (*Myotis daubentonii*).



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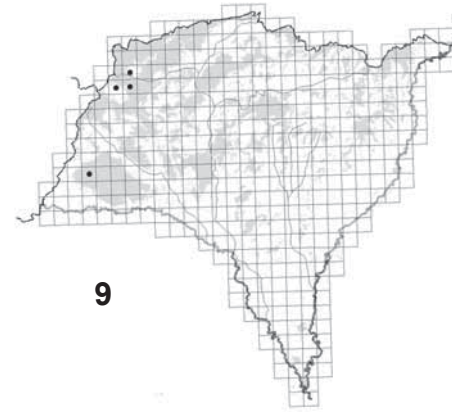

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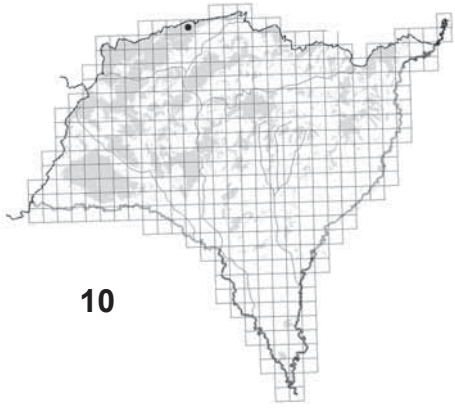

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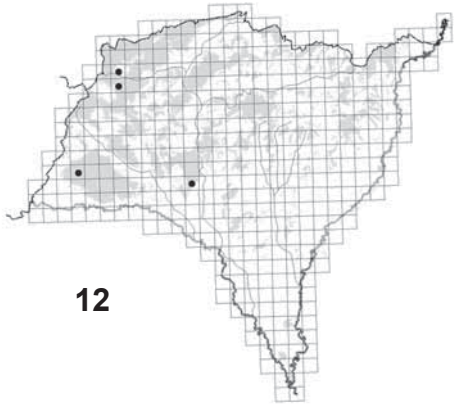

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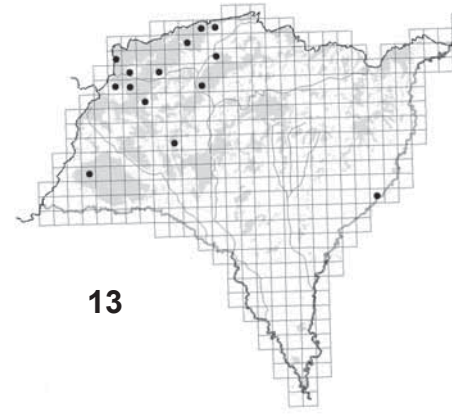

13

Published data: Schmidt & Sipos (1964), Topál (1966), Schmidt & Topál (1971), Fügedi & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a, b), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997).

A very vulnerable, strictly protected species (Fig. 14). House-dwelling nursery colonies are in danger despite the continuous efforts of nature conservationists. The size of the various populations fluctuates. The largest colony relocated to an unknown site at the end of the 1990s, but returned within two years. The largest colony in the Slovak Karst consisted of around 800 specimens in 1999 (Matis et al. 2002). Since there is a significantly smaller population at this roost at other times, it is thought that a part of the Cserehát (Hungary) population may have moved there.

Myotis dasycneme (Boie, 1825)

New data: **Bódvaszilas** (Fenyves shaft): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (Vecsem-Bükk shaft: near entry): 12. 9. 2004 [4] (BS); **Jósvafő** (village): 13. 8. 2003 [1] (BS, MI); **Szalonna** (Köszvényes spring): ??. 8. 1992. [1] (BZ, KL).

Published data: Szentgyörgyi (1993), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997), Matis (1997), Matis et al. (2003).

A very rare, strictly protected species (Fig. 15). Future occurrences are expected in several places. Only three house-dwelling populations were known, but all three subsequently disappeared. One due to the arrival of a pair of barn owls, the second because of building reconstruction and the third for an unknown reason.

Myotis nattereri (Kuhl, 1817)

New data: **Aggtelek** (Béke cave: Felfedező-ág): 6. 4. 1998 [1] (BS), 18. 1. 2003 [1] (BS, BZ, SO), 15. 1. 2004 [1] (BS, BL, PP); **Aggtelek** (Béke cave: Száraz-ág): 18. 1. 2003 [1] (BS, BZ, SO), 15. 1. 2004 [2] (BS, BL, PP); **Aggtelek** (Vörös lake): 7. 7. 2002 [1] (BS, MI); **Bódvarákó** (Földvári cave): 7. 9. 2002 [1] (BS); **Bódvaszilas** (Vecsem-Bükk shaft: near entrance): 10. 9. 2002 [1] (BS), 12. 9. 2004 [7] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [7] (BS); **Bódvaszilas** (Vecsem spring): 21. 7. 2004 [2] (BS, BT, KC), 23. 7. 2004 [1] (BS, MI, DL); **Debréte** (village): 21. 10. 2004 [1 pt] (BS); **Jósvafő** (Vass cave): 30. 12. 2004 [2 pm] (BS); **Szögliget** (Magastető cave): 16. 8. 2004 [1] (BS); **Szögliget** (Tilalmas): 21. 7. 2004 [1] (BS, BT, KC).

Published data: Jeitteles (1862), Paszlavszky (1918), Bankovics (1987).

A rare species. Yet, according to the author's observations, may be more widespread than previously thought (Fig. 16). Future occurrences can be expected when the study area is widened.

Pipistrellus pipistrellus (Schreber, 1774)

New data: **Aggtelek** (Baradla cave: main entrance): 5. 9. 2004 [6] (BS); **Bódvaszilas** (Vecsem-Bükk shaft: near entrance): 10. 9. 2002 [1] (BS); **Bódvaszilas** (Serház-kút): 7. 7. 2004 [7] (BS), 14. 8. 2004 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 21. 8. 2001 [2] (BS), 17. 8. 2002 [5] (BS), 20. 8. 2002 [1] (BS), 11. 9. 2004 [1] (BS); **Jósvafő** (village): 13. 8. 2003 [1] (BS, MI); **Krasznokvajda** (c.): 24. 7. 1998 [min. 1] (BS); **Pere** (Hernád river): 30. 8. 2001 [min. 1]; **Putnok** (Sajó river): 30. 3. 2002 [min. 1] (BS); **Tornanádaska** (village): 12. 7. 2002 [1] (BS).

Published data: Vásárhelyi (1931, 1939), Topál (1954), Szentgyörgyi et al. (1994a, b), Matis (1997).

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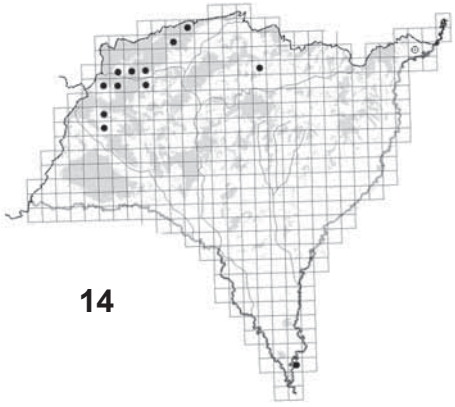
Figs. 14–19. Distribution of bats in the Aggtelek National Park and its surroundings. 14 – Geoffroy's bat (*Myotis emarginatus*); 15 – Pond bat (*Myotis dasycneme*); 16 – Natterer's bat (*Myotis nattereri*); 17 – Common pipistrelle (*Pipistrellus pipistrellus*); 18 – Mediterranean pipistrelle (*Pipistrellus pygmaeus*); 19 – Nathusius' pipistrelle (*Pipistrellus nathusii*).

Obr. 14–19. Rozšírenie netopierov v Národnom parku Aggtelek a jeho okolí. 14 – netopier brvitý (*Myotis emarginatus*); 15 – netopier pobrežný (*Myotis dasycneme*); 16 – netopier riasnatý (*Myotis nattereri*); 17 – večernica malá (*Pipistrellus pipistrellus*); 18 – večernica najmenšia (*Pipistrellus pygmaeus*); 19 – večernica parková (*Pipistrellus nathusii*).



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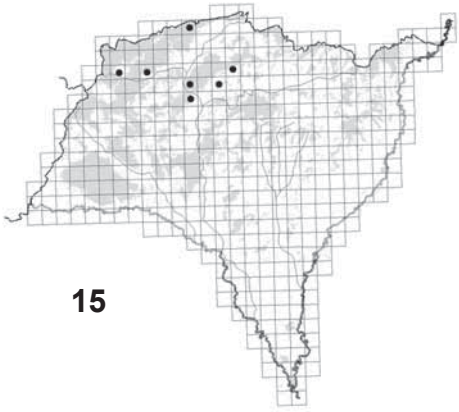

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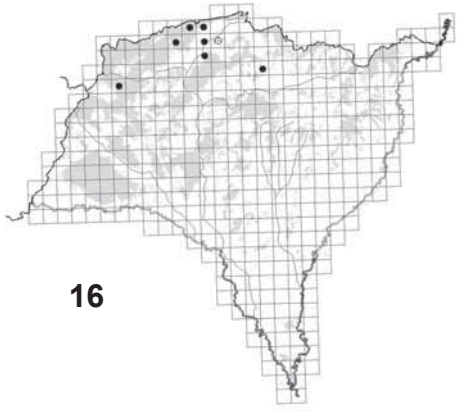

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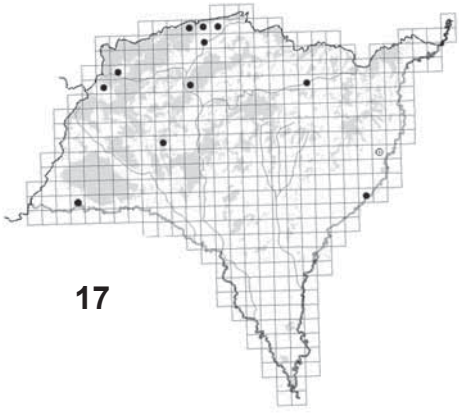

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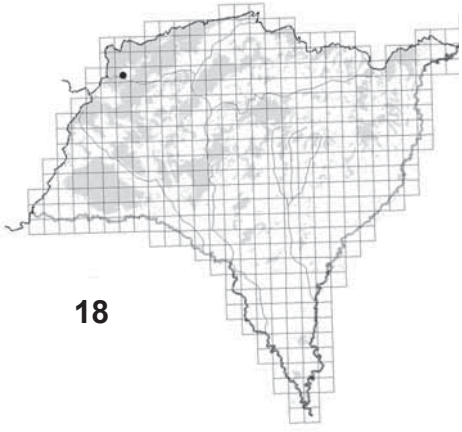

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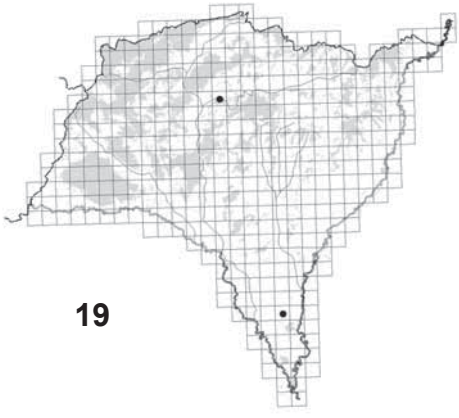


19

Observations from relatively few sites (Fig. 17). However, experience suggests that future occurrences and more occupied sites can be expected.

Pipistrellus pygmaeus (Leach, 1825)

New data: **Jósvafő** (Tengerszem lake): 7. 7. 2002 [1] (MI, DL, BS); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS).

The species-specific distinction of this bat was only recently verified. Its morphologically distinguishing features were described with the aid of specimens collected in south-western Germany (Haussler et al. 2000). No Hungarian studies have yet been carried out. Its European distribution also remains to be clarified, but previous studies suggest that it may well occur sympatrically with *Pipistrellus pipistrellus*. A significant difference in their respective wave-lengths means that they can be easily distinguished in the field (Jones & Parijs 1993). One specimen has been located by detector (55 kHz) in the study area (Fig. 18). The occurrence of this species can only be verified by captured specimens as the reliability of the morphological characters described needs further confirmation (Haussler et al. 2000).

Pipistrellus nathusii (Keyserling et Blasius, 1839)

New data: **Meszes** (Rakaca reservoir): 29. 8. 1996 [3] (GP), 1. 9. 1996 [3] (GP); **Onga** (r.): 200106.05. [1 pb] (BA, SzP).

A very rare species (Fig. 19). Future occurrences expected from a few, limited localities.

Nyctalus lasiopterus (Schreber, 1780)

Published data: Matis (1997), Matis et al. (2003).

A very rare, strictly protected species (Fig. 20). According to recent studies (Topál 1976, Gombkötő et al. 1996, Szatyor 2000), less than ten localities are known in Hungary. The majority of these localities are in the northern hill ranges: Bükk, Mátra, Aggtelek Karst and Zemplén (Topál 1959, 1996, Dobrosi 1993, Matis 1997, Bihari et al. 2000, Matis et al. 2003). An unknown, remarkable nursing colony seems to exist in the Gömör-Torna Karst area. Future occurrences are expected only from some specific sites.

Nyctalus leisleri (Kuhl, 1817)

New data: **Aggtelek** (Káposztáskerti lake): 12. 8. 2004 [3] (BS, MI); **Bódvaszilas** (Serház-kút): 7. 7. 2004 [1] (BS); **Bódvaszilas** (Vecsem spring): 21. 7. 2004 [1] (BS); **Fáj** (castle: lake): 24. 7. 2004 [3] (BS, MI, DL); **Jósvafő** (Nagy-Tohonya spring): 21. 8. 2001 [1] (BS), 17. 8. 2002 [2] (BS); **Jósvafő** (village): 13. 8. 2003 [4] (BS, MI); **Onga** (r.): 6. 7. 1996 [1 pb] (BA, SzP); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2001 [min. 1] (BS, MI, PP); **Szin** (Szelce valley: watering-place): 9. 7. 2004 [1] (BS); **Tornaszentjakab** (Antal-major): 31. 8. 2002 [1] (BS).

Published data: Szentgyörgyi et al. (1994a), Matis (1997), Matis et al. (2003).

Earlier studies suggested that is it a rare species (Fig. 21). Future occurrences expected from some specific sites.

Nyctalus noctula (Schreber, 1774)

New data: **Aggtelek** (Baradla cave: near main entrance): 5. 9. 2004 [1] (BS); **Aggtelek** (Béke cave: near entrance): 4. 9. 2004 [1] (BS); **Aggtelek** (Káposztáskerti lake): 12. 8. 2004 [7] (BS); **Aggtelek** (Musztáng cave: near entry): 25. 8. 2004 [1] (BS); **Alsószuha** (r.): 8. 8. 2001 [1 pb] (BS); **Arnót** (village): 30. 9. 2002 [min. 40] (BS); **Bódvaszilas** (Serház-kút):

7. 7. 2004 [4] (BS), 14. 8. 2004 [1] (BS); **Fáj** (castle: lake): 24. 7. 2004 [48] (BS, MI, DL); **Debréte** (village): 17. 11. 2004 [1 pt] (BS); **Ináncs** (Csíkos-ér): 13. 7. 2003 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 21. 8. 2001 [1] (BS), 17. 8. 2002 [2] (BS), 5. 9. 2002 [1] (BS), 13. 9. 2004 [1] (BS); **Jósvafő** (village): 13. 8. 2003 [17] (BS, MI); **Kánó** (r.): 13. 7. 1996 [1 pb] (BS, GP, SzP); **Kelemér** (Mohos-tavak): 7. 7. 2001 [min. 1] (BS, MI); **Kupa** (r.): 17. 7. 2002 [1 pm] (BS); **Lak** (r.): 9. 8. 2001 [1 pb] (BS); **Pere** (Hernád river): 30. 8. 2001 [min. 1] (BS); **Putnok** (Sajó river): 30. 3. 2002 [min. 20] (BS); **Putnok** (blocks): 20. 6. 2002 [min. 20] (BS); **Rudabánya** (Andrássy adit: near entrance): 14. 9. 2004 [1] (BS); **Sajószentpéter** (blocks): 14. 4. 2003 [2] (BS); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2001 [min. 1] (BS, MI); **Szalonna** (Köszvényes spring): 10. 10. 1992. [3] (BZ); **Szin** (Szelce valley: watering-place): 9. 7. 2004 [4] (BS), 20. 7. 2004 [2] (BS); **Tornanádaska** (village: lake): 12. 7. 2002 [1] (BS); **Tornaszentjakab** (Antal-major): 31. 8. 2002 [14] (BS); **Viszló** (gc.): 10. 8. 2001 [1 pm] (BS); **Ziliz** (r.): 19. 9. 2002 [1 pm] (BS).

Published data: Schmidt & Sipos (1971), Ujhelyi (1991), Fügedi & Szentgyörgyi (1992), Vizslán & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a), Matis (1997), Matis et al. (2003).

Common species (Fig. 22). The occurrence of its house-dwelling populations has been recorded in many settlements (e.g. Putnok, Sajószentpéter).

Eptesicus nilssonii (Keyserling et Blasius 1839)

Published data: Szentgyörgyi (1993), Szentgyörgyi et al. (1994b).

This species was described from Rudabánya on the basis of a fragment of mandibulle found in a barn owl pellet (Fig. 23). This specimen subsequently perished, so it has been impossible to compare it with museum specimens. Hungarian chiropterologists do not accept this unconfirmed data (Csanádi 2005). Future occurrence is expectable because this species is regularly observed in Slovakia some 30–40 kilometres from the Hungarian border. The most southern records (though infrequent) in Slovakia are from just a few kilometres in the northern part of the Zadiel valley (Horáček et al. 1995, Matis et al. 2002) and in the Kečovo-valley (Matis pers. comm.).

Eptesicus serotinus (Schreber, 1774)

New data: **Abaújlak** (gc.): 23. 7. 1996 [50] (BS, GP), 3. 8. 1997 [10–15] (BS), 27. 7. 1998 [30] (BS), 24. 7. 1999 [30–35] (BS), 17. 7. 2001 [45–50] (BS); **Abod** (gc.): 17. 7. 2002 [10–15] (BS); **Aggtelek** (Vörös lake): 7. 7. 2002 [1] (BS); **Aggtelek** (r.): 25. 7. 2000 [1 pm] (BS); **Alsótelekes** (c.): 15. 7. 1998 [20] (BS), 16. 7. 1999 [5] (BS), 15. 7. 2002 [8–10] (BS), 23. 7. 2003 [5] (BS); **Becskeháza** (gc.): 15. 7. 1996 [1] (BS, GP); **Beret** (village): 24. 7. 1996 [30] (BS, GP); **Bódvalenke** (r.): 13. 7. 1996 [50–60] (BS, GP), 29. 7. 1997 [50–100] (BS), 27. 7. 1998 [50] (BS), 16. 7. 2002 [min. 1] (BS), 23. 7. 2003 [50] (BS), 10. 7. 2004 [50] (BS); **Bódvarákó** (Esztramos: small adits): 3. 1. 1998 [1] (BS, SzI); **Bódvarákó** (Rákóczi cave: pit): 17. 1. 2003 [1] (BS, BZ, MI, MF); **Bódvarákó** (c.): 7. 7. 2004 [10] (BS); **Bódvaszilas** (r.): 13. 7. 1996 [25–30] (BS, GP), 29. 7. 1997 [25–30] (BS), 25. 7. 1998 [30] (BS), 12. 7. 2002 [30] (BS); **Bódvaszilas** (c.): 23. 7. 2003 [20] (BS), 10. 7. 2004 [1 pm] (BS); **Bódvaszilas** (Vecsem-Bükk shaft): 10. 9. 2002 [2] (BS); **Bódvaszilas** (Serház-kút): 7. 7. 2004 [4] (BS); **Bódvaszilas** (Vecsem spring): 21. 7. 2004 [9] (BS), 23. 7. 2004 [2] (BS, MI); **Borsodszirák** (c.): 16. 7. 1997 [10] (BS), 14. 7. 1998 [30] (BS), 14. 7. 2003 [30] (BS), 8. 7. 2004 [1] (BS); **Bőcs** (r.): 9. 6. 1998 [8] (BA), 9. 15. 1999 [15] (BA); **Csobád** (gc.): 13. 7. 2003 [3+ 1 pm)] (BS); **Dubicsány** (r.): 8. 8. 1996 [5] (BS, GP); **Edelény** (Nagy valley): 9. 8. 1999 [1] (BS, MI), 3. 9. 1999 [1] (MI); **Edelény** (Mogyorós-tető: tunnel): 18. 1. 2003 [1] (BS, BZ, SO); **Égerszög** (r.): 23. 7. 1998 [2] (BS); **Fáj** (c.): 23. 7. 1996 [15–20] (BS, GP); **Fáj** (castle: lake): 24. 7. 2004 [9] (BS, MI, DL);**Felsőgagy** (c.): 14. 7. 2003 [2] (BS); **Felsőkelecsény** (r.): 8. 9. 1997 [1] (BS); **Felsővadász** (c.): 23. 7. 1996 [1] (BS, GP); **Forró** (c.): 13. 7. 2003 [1] (BS); **Gagybátor** (r.): 3. 8. 1997 [1] (BS), 3. 9. 2004 [1] (BS); **Gagyvendégi** (c.): 23. 7. 1996 [20] (BS, GP); **Garadna** (gc.): 6. 7. 2002 [1 pb] (BS); **Hangács** (r.): 18. 7. 1996 [1 pb] (BS), 21. 7. 1997 [50] (BS); **Hernádvécse** (c.): 25. 7. 1996 [20] (BS, GP); **Hét** (r.): ??. 7. 1995. [1 pb] (BS, GP, SzP); **Hidvégardó** (c.): 29. 7. 1997 [5–6] (BS), 27. 7. 1998 [5] (BS); **Imola** (r.): 9. 7. 1995.09. 7. 1995. [1 pb] (BS, GP, SzP), 25. 6. 1997 [1] (BS); **Ináncs** (c.): 8. 10. 1994. [1pb] (FL, GI, SzP); **Jósvafő** (Nagy-Tohonya spring): 21. 8. 2001 [1] (BS), 24. 8. 2001 [1] (BS), 17. 8. 2002 [1] (BS), 20. 8. 2002 [1] (BS), 18. 6. 2004 [1] (BS); **Jósvafő** (Kossuth cave): 16. 1. 2004 [1] (BS, BL, PP); **Jósvafő** (Vass cave: near entry): 3. 9. 2004 [1] (BS); **Jósvafő** (village): 13. 8. 2003 [9] (BS, MI); **Kánó** (r.): 13. 7. 1996 [1 pb] (BS, GP, SzP), 25. 6. 1997 [1] (BS), 4. 8. 1999[1] (BS), 21. 7. 2001 [min. 1] (BS), 7. 7. 2004 [40] (BS); **Kány** (gc.): 14. 7. 2003 [30] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2001 [min. 1] (BS, MI); **Komjáti** (r.): 13. 7. 1996 [5–10] (BS, GP); **Léh** (c.): 5. 8. 1997 [10–30] (BS); **Méra** (village): 23. 7. 2004 [25] (BS); **Martonyi** (r.): 1. 7. 1994. [1 pb] (BS, GP, SzP); **Monaj** (r.):

3. 8. 1997 [2–3] (BS); **Novajidrány** (r.): 13. 7. 2003 [20] (BS); **Pamlény** (r.): 1. 7. 1995. [2 pb] (BS, GP, SzP), 24. 7. 1998 [15–20] (BS); **Pere** (Hernád): 30. 8. 2001 [min. 1]; **Perecse** (c.): 29. 7. 1997 [15–20] (BS), 15. 7. 1996 [30] (BS, GP), 7. 8. 2001 [8–10] (BS); **Perkupa** (r.): 7. 7. 1995. [1 pb] (BS, GP, SzP); 13. 7. 1996 [60–70] (BS, GP), 8. 7. 1997 [30] (BS), 24. 5. 1998 [25] (BS), 16. 7. 1999 [30–35] (BS), 4. 8. 2000 [30–35] (BS), 14. 7. 2001 [50] (BS), 12. 7. 2002 [40] (BS), 9. 7. 2003 [30] (BS), 7. 7. 2004 [40] (BS); **Pusztaradvány** (gc.): 25. 7. 1996 [20–25] (BS, GP); **Putnok** (r.): 8. 8. 1996 [10–15] (BS), 4. 8. 2000 [1 pb] (BS); **Rakaca** (tower): 1. 7. 1994. [1 pb] (BS, GP, SzP); **Rakacaszend** (gc.): 17. 7. 1996 [10–15] (BS, GP); **Rakacaszend** (r.): 24. 7. 1998 [25–30] (BS), 21. 7. 1999 [5–7] (BS); **Rásonysápberencs** (r.): 24. 7. 1996 [min. 1] (BS, GP); **Sajógalgóc** (c.): 3. 7. 1997 [10–15] (BS); **Sajókaza** (r.): 21. 7. 1997 [1] (BS), 13. 7. 2000 [30] (BS); **Sajólád** (c.): 25. 8. 1996 [4] (BA), 27. 8. 1997 [8] (BA), 5. 8. 1998 [14] (BA), 18. 9. 1999 [30] (BS); **Sajópálfala** (r.), 21. 7. 1997 [2] (BS), 8. 7. 2004 [15] (BS); **Sajóvelezd** (r.): 16. 7. 1996 [15–20] (BS, GP),; 3. 7. 1997 [30–40] (BS), 1. 7. 1998 [15] (BS), 4. 7. 1998 [1 pb] (BS), 4. 8. 1999 [35–40] (BS), 28. 7. 2000 [15–20] (BS), 7. 7. 2001 [40–50] (BS); **Serényfalva** (c.): 8. 8. 1996 [10–15] (BS), 8. 7. 1997 [5] (BS), 1. 7. 1998 [20–25] (BS); **Serényfalva** (Szörnyű valley: fishpond): 7. 7. 2001 [min. 1] (BS, MI); **Szakácsi** (r.): 9. 8. 2001 [1 pt] (BS); **Szalonna** (gc.): 17. 7. 1996 [70–80] (BS, GP), 16. 7. 1997 [50–60] (BS), 19. 7. 1999 [30–35] (BS), 14. 8. 2004 [1+ 1 pm] (BS); **Szemere** (c.): 23. 7. 1996 [20] (BS, GP); **Szendrő** (c.): 17. 7. 1996 [40] (BS, GP), 16. 7. 1997 [150–200] (BS), 6. 8. 1998 [15–20] (BS), 16. 7. 1999 [120–150] (BS), 4. 8. 2000 [10–15] (BS), 27. 8. 2001 [20–25] (BS), 15. 7. 2002 [40–50] (BS), 23. 7. 2003 [40] (BS), 4. 7. 2004 [40–50] (BS); **Szendrő** (r.): 17. 7. 1996 [40–50] (BS, GP); **Szendrőlád** (r.): 16. 7. 1997 [10–15] (BS), 15. 7. 1998 [60] (BS), 15. 8. 2002 [20] (BS), 15. 8. 2003 [10–15] (BS), 8. 7. 2004 [40] (BS); **Szinpetri** (r.): 4. 8. 2000 [2 pt] (BS); **Szögliget** (r.): 13. 7. 1996 [100–120] (BS, GP), 25. 7. 1998 [20–25] (BS), 12. 7. 2002 [10–12] (BS), 23. 7. 2003 [25–30] (BS), **Szögliget** (Magastető cave): 16. 8. 2004 [2] (BS); **Szuhogy** (r.): 16. 7. 1999 [40] (BS), 15. 7. 1998 [30–35] (BS), 21. 7. 2001 [60–80] (BS), 15. 7. 2002 [45–50] (BS), 15. 8. 2003 [30–40] (BS); **Szuhogy** (c.): 15. 7. 1998 [80] (BS), 16. 7. 1999 [30–40] (BS), 21. 7. 2001 [min. 1] (BS), 15. 7. 2002 [40] (BS), 15. 8. 2003 [30] (BS); **Teresztenye** (r.): 13. 7. 1996 [1] (BS, GP);**Tomor** (r.): 19. 7. 1996 [1] (BS, GP); **Tornabarakony** (gc.): 19. 7. 1997 [min. 1] (BS); 27. 7. 1998 [20] (BS), 16. 7. 2002 [40] (BS), 14. 7. 2003 [10–12] (BS); **Tornakápolna** (r.): 7. 7. 2004 [1] (BS); **Tornaszentjakab** (kat): 15. 7. 1996 [15–20+ 1 pb] (BS, GP), 29. 7. 1997 [10] (BS), 12. 7. 2002 [30–40] (BS), 14. 7. 2003 [1+ 1 pm] (BS); **Vadna** (r.): 3. 7. 1997 [10–15] (BS), 28. 7. 2000 [4–5] (BS), 19. 6. 2002 [min. 1] (BS); **Varbóc** (r.): 12. 7. 2002 [min. 1] (BS); **Vizsoly** (c.): 13. 7. 2003 [30–50] (BS).

Published data: Vásárhelyi (1931, 1939), Topál (1954), Köves & Schmidt (1964), Schmidt & Sipos (1971), Schmidt & Topál (1971), Ujhelyi (1991), Fügedi & Szentgyörgyi (1992), Vizslán & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994b), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997), Matis (1997), Matis et al. (2003).

A widely distributed and very common species (Fig. 24).

Vespertilio murinus Linnaeus, 1758

New data: **Aggtelek** (Baradla Szálló: hostel): 25. 11. 2004 [1] (BS, DE); **Jósvafő** (village): 26. 7. 2002 [1] (BS), 13. 8. 2003 [1] (BS, MI); **Szögliget** (Szalamandra guest-house): 15. 8. 2004 [1 pt] (BS).

Published data: Paszlavszky (1918), Topál (1954, 1959), Vizslán & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a).

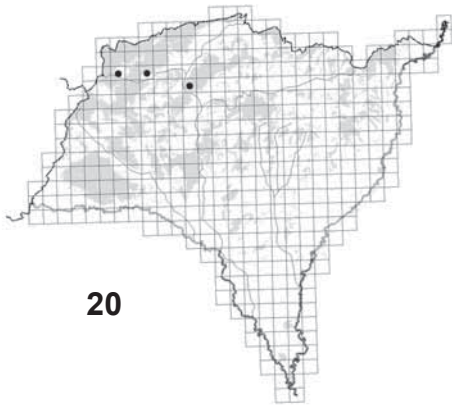
A rare species with only a few records (Fig. 25). Most records are from the border area (Matis et al. 2002, Matis & Lesinsky 2002), so future occurrences are to be expected.

Barbastella barbastellus (Schreber, 1774)

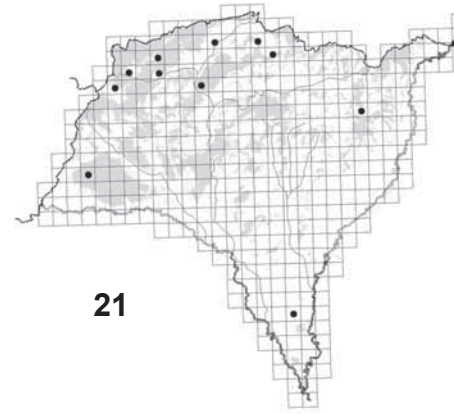
New data: **Aggtelek** (Musztáng cave): 25. 8. 2004 [13] (BS); **Aggtelek** (Baradla cave: near Kis-Baradla adit): 3. 9. 2002 [1] (BS); **Bódvarákó** (Esztramos: small adits): 3. 1. 1998 [1] (BS, SzI), 19. 12. 2001 [1] (BS, SO); **Bódvarákó** (Esztramos):

>>

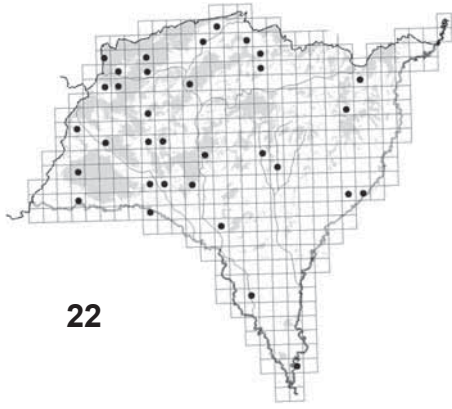
Figs. 20–25. Distribution of bats in the Aggtelek National Park and its surroundings. 20 – Greater noctule (*Nyctalus lasiopterus*); 21 – Leisler's bat (*Nyctalus leisleri*); 22 – Common noctule (*Nyctalus noctula*); 23 – Northern bat (*Eptesicus nillsonii*); 24 – Serotine (*Eptesicus serotinus*); 25 – Parti-coloured bat (*Vespertilio murinus*).
Obr. 20. Rozšírenie netopierov v Národnom parku Aggtelek a jeho okolí. 20 – raniak obrovský (*Nyctalus lasiopterus*); 21 – raniak malý (*Nyctalus leisleri*); 22 – raniak hrdzavý (*Nyctalus noctula*); 23 – večernica severská (*Eptesicus nilssonii*); 24 – večernica pozdná (*Eptesicus serotinus*); 25 – večernica pestrá (*Vespertilio murinus*).



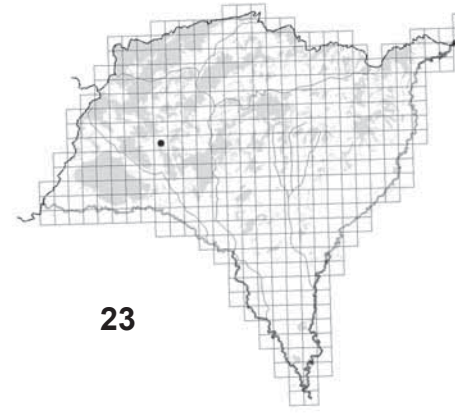
20



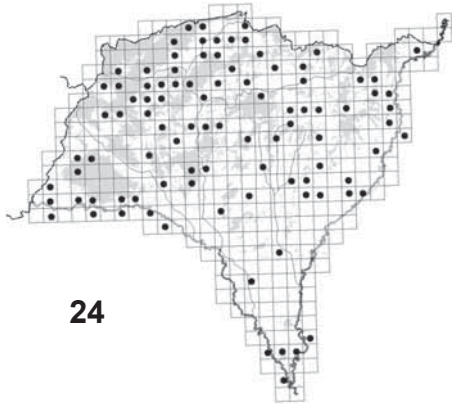
21



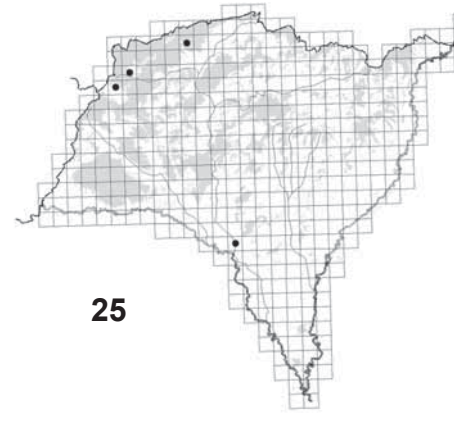
22



23



24



25

30. 8. 2002 [1] (BS); **Bódvaszilas** (Vecsem-Bükk shaft): 10. 9. 2002 [2] (BS), 12. 9. 2004 [8] (BS); **Bódvaszilas** (Körte shaft): 14. 2. 2004 [3] (BS, MI, PPj); **Bódvaszilas** (Fenyves shaft): 14. 2. 2004 [1] (BS, MI, PPj); **Bódvaszilas** (Baglyok--szakadéka): 19. 8. 2004 [2] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [7] (BS); **Edelény** (Nagy valley): 9. 8. 1999 [3] (BS, MI, DL), 3. 9. 1999 [1] (MI); **Égerszög** (Danca cave): 9. 9. 2004 [2] (BS); **Égerszög** (Szabadság cave): 15. 9. 2004 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS); **Jósvafő** (VITUKI): 19. 11. 2002 [1] (BS); **Jósvafő** (Vass cave): 3. 9. 2004 [1] (BS); **Kelemér** (Mohos-tavak): 7. 7. 2001 [1] (BS, MI, DL); **Szögliget** (Magastető cave): 2. 13. 2004 [2] (BS, MI, PPj), 16. 8. 2004 [6] (BS).

A fairly rare, strictly protected species (Fig. 26).

Plecotus auritus (Linnaeus, 1758)

New data: **Aggtelek** (Béke cave: near entrance): 27. 8. 2002 [2] (BS), 6. 9. 2003 [1] (BS, BZ, SO), 4. 9. 2004 [1] (BS); **Aggtelek** (Vörös lake): 7. 7. 2002 [2] (BS, MI, PP); **Aggtelek** (Musztáng cave): 25. 8. 2004 [2] (BS); **Bódvarákó** (Esztramos: small adits): 3. 1. 1998 (BS, SzI), 17. 1. 2004 [1] (BS, BL, PP); **Bódvaszilas** (Vecsem-Bükk shaft): 10. 9. 2002 [2] (BS), 12. 9. 2004 [4] (BS); **Bódvaszilas** (Serház-kút): 7. 7. 2004 [1] (BS); **Bódvaszilas** (Széki shaft: near entrance): 6. 9. 2004 [1] (BS); **Edelény** (Mogyorós-tető: tunnel): 28. 11. 2001 [1] (BS, GrP), 18. 12. 2001 [1] (BS, SO); **Égerszög** (Danca cave): 9. 9. 2004 [1] (BS); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS); **Jósvafő** (Kossuth cave): 16. 1. 2004 [1] (BS, BL, PP); **Szögliget** (Magastető cave): 16. 8. 2004 [2] (BS).

Published data: Bankovics (1997).

A common species (Fig. 27). According to a earlier study, may well be more common in the area than supposed. Future occurrences can be expected with the widening of the study area.

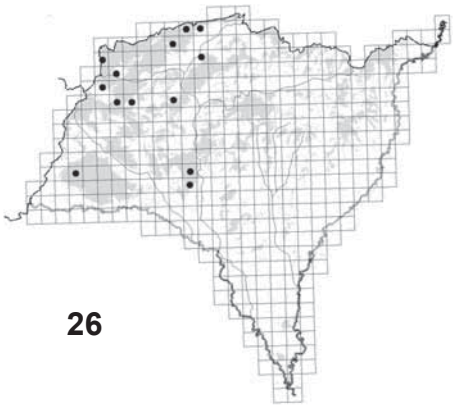
Plecotus austriacus (Fischer, 1829)

New data: **Abod** (gc.): 16. 8. 2003 [10] (BS); **Aggtelek** (Vörös lake): 7. 7. 2001 [2] (BS, MI, PP); **Aggtelek** (Béke cave: near entrance): 6. 9. 2003 [1] (BS, BZ, SO); **Baktakék** (gc.): 3. 9. 2004 [2] (BS); **Baktakék** (r.): 3. 9. 2004 [1] (BS); **Bódvarákó** (Esztramos: small adits): 19. 12. 2001 [1] (BS, SO), 17. 1. 2003 [5] (BS, BZ, MI, MF), 17. 1. 2004 [3] (BS, PP, BL); **Bódvarákó** (Rákóczi cave: pit): 17. 1. 2003 [1] (BS, BZ, MI, MF), 17. 1. 2004 [2] (BS, BL, PP); **Boldva** (r.): 14. 7. 2003 [2] (BS); **Borsodszirák** (c.): 16. 7. 1997 [2] (BS); **Bőcs** (r.): 15. 8. 1995. [1] (BA), 15. 8. 1996 [15] (BA), 5. 8. 1997 [8] (BA), 9. 15. 1999 [10] (BA); **Debréte** (village): 12. 7. 2002 [1] (BS); **Edelény** (Mogyorós-tető: tunnel): 18. 12. 2001 [1] (BS, BZ, SO), 18. 1. 2003 [1] (BS); **Felsőgagy** (c.): 14. 7. 2003 [1] (BS); **Felsővadász** (gc.): 10. 8. 2001 [1] (BS), 16. 8. 2003 [3] (BS); **Felsővadász** (c.): 16. 8. 2003 [2] (BS);**Forró** (c.): 13. 7. 2003 [1] (BS); **Hangács** (c.): 18. 7. 1996 [3] (BS, GP), 9. 8. 2001 [13] (BS), 14. 7. 2003 [2] (BS); **Hernádvécse** (e.): 15. 7. 1996 [50–60] (BS, GP), 14. 8. 1998 [25–30] (BS), 31. 8. 2002 [40] (BS); **Hernádvécse** (c.): 25. 7. 1996 [1] (BS, GP); **Homrogd** (gc.): 2. 8. 1997 [1] (BS); **Jósvafő** (Hosszú-Alsó-Baradla): 15. 1. 2004 [2] (BS, BL); **Jósvafő** (village): 13. 8. 2003 [2] (BS, MI); **Kánó** (r.): 15. 7. 2002 [2] (BS), 23. 7. 2003 [3+ 1 pm] (BS), 7. 7. 2004 [1+ 1 pm] (BS); **Kelemér** (r.): 4. 7. 1997 [6] (BS), 10. 7. 2002 [4] (BS); **Krasznokvajda** (c.): 15. 7. 1996 [4–5] (BS), 29. 7. 1997 [3] (BS), 24. 7. 1998 [1] (BS), 21. 7. 1999 [30–35] (BS), 14. 7. 2003 [4] (BS), 3. 9. 2004 [1+ 5 pm + 1 pb] (BS); **Kupa** (r.): 24. 7. 1996 [30–35] (BS), 3. 8. 1997 [20] (BS), 24. 7. 1999 [40–50] (BS), 10. 8. 2001 [2] (BS), 17. 7. 2002 [10–15] (BS), 16. 8. 2003 [25–30] (BS); **Novajidrány** (r.): 13. 7. 2003 [12–15] (BS); **Onga** (r.): 6. 7. 1996 [3] (BA), 6. 7. 1996 [1 pb] (BA, SJ, SzP), 8. 8. 1997 [10] (BA), 9. 6. 1998 [2] (BA), 9. 15. 1999 [24] (BA); **Perkupa** (c.): 13. 7. 1996 [8–10] (BS, GP); **Perkupa** (r.): 7. 7. 1995. [1] (BS, GP, SzP); **Putnok** (r.): 4. 8. 2000 [1 pb] (BS); **Rakacaszend** (r.): 17. 7. 1996 [1] (BS, GP), 24. 7. 1998 [7] (BS), 21. 7. 1999 [1] (BS); **Rudabánya** (r.): 15. 7. 1998 [6–8] (BS); **Sajópálfala** (r.): 8. 7. 2004 [1 pm] (BS); **Serényfalva** (c.): 8. 8. 1996 [25–30] (BS), 8. 7. 1997 [1] (BS), 1. 7. 1998 [2] (BS); **Szalaszend** (r.): 25. 7. 1996 [1] (BS, GP); **Szögliget** (r.): 1. 7. 1995. [1 pb] (BS, GP, SzP); **Szuhafő** (r.): 11. 7. 2003 [1 pm] (BS); **Szuhogy** (c.): 15. 8. 2003 [2 pm] (BS); **Teresztenye** (r.): 16. 7. 2002 [2] (BS); **Tornaszentandrás** (c.): 15. 7. 1996 [6–8] (BS).

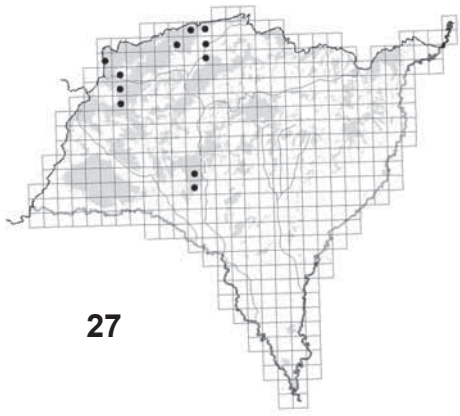
>>

Figs. 26–30. Distribution of bats in the Aggtelek National Park and its surroundings. 26 – Barbastelle (*Barbastella barbastellus*); 27 – Brown long-eared bat (*Plecotus auritus*); 28 – Grey long-eared bat (*Plecotus austriacus*); 29 – long-eared bats *Plecotus* sp.; 30 – Schreibers' bat (*Miniopterus schreibersii*).

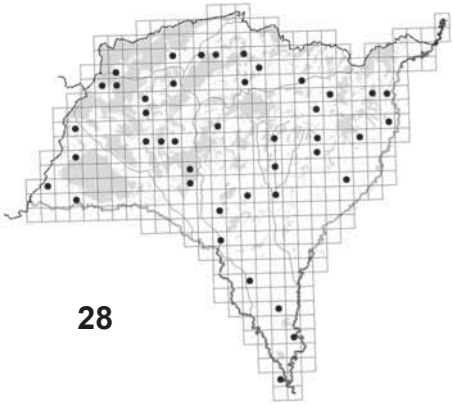
Obr. 26–30. Rozšírenie netopierov v Národnom parku Aggtelek a jeho okolí. 26 – uchaňa čierna (*Barbastella barbastellus*); 27 – ucháč svetlý (*Plecotus auritus*); 28 – ucháč sivý (*Plecotus austriacus*); 29 – ucháče *Plecotus* sp.; 30 – lietavec sťahovavý (*Miniopterus schreibersii*).



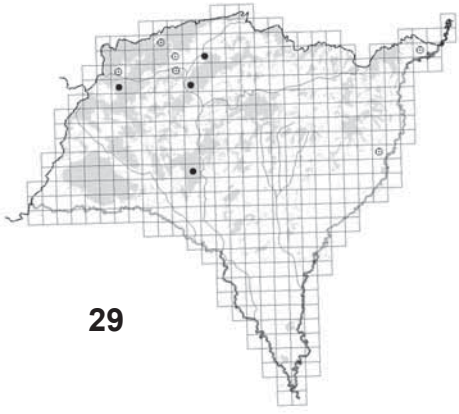
26



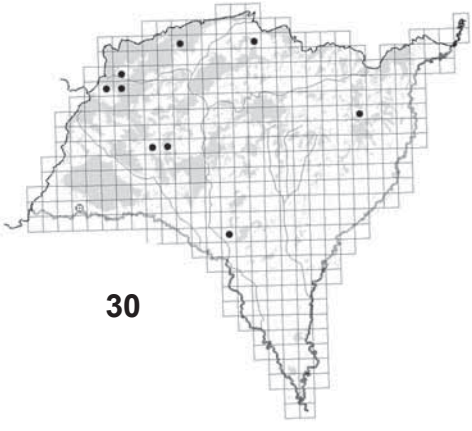
27



28



29



30

Published data: Köves & Schmidt (1964), Mészáros (1971), Schmidt & Sipos (1971), Schmidt & Topál (1971), Fügedi & Szentgyörgyi (1992), Vizslán & Szentgyörgyi (1992), Szentgyörgyi (1993), Szentgyörgyi et al. (1994a), Gombkötő & Boldogh (1996), Boldogh & Gombkötő (1997).

A widespread and common species, although the study suggests that the population has decreased (Fig. 28). Future occurrences can be expected because of its widespread distribution.

Plecotus sp. (Fig. 29)

New data: **Aggtelek** (Béke-bg.): 22. 10. 1998 [1] (BS); **Edelény** (Mogyorós-tető: tunnel): 18. 1. 2003 [1] (BS, BZ, SO).

Published data: Vásárhelyi (1939), Matis (1997).

Miniopterus schreibersii (Kuhl, 1817)

New data: **Aggtelek** (Baradla cave: near Kis-Baradla adit): 2. 9. 2004 [1] (BS); **Aggtelek** (Béke cave: Felfedező-ág): 2. 1. 1998 [1] (BS, SzI); **Aggtelek** (Béke cave: Száraz-ág): 15. 1. 2004 [1] (BS, BL, PP); **Fáj** (castle: lake): 24. 7. 2004 [1] (BS, MI, DL); **Jósvafő** (Nagy-Tohonya spring): 17. 8. 2002 [1] (BS), 20. 8. 2002 [1] (BS), 21. 8. 2002 [1] (BS); **Jósvafő** (village): 13. 8. 2003 [4] (BS, MI); **Rudabánya** (Andrássy adit): 18. 12. 2001 [1 pm] (BS, SO); **Szögliget** (Magastető cave): 16. 8. 2004 [3] (BS); **Tornaszentjakab** (Antal-major): 31. 8. 2002 [1] (BS).

Published data: Paszlavszky (1918), Topál (1956), Szentgyörgyi (1993), Szentgyörgyi et al. (1994 b).

A strictly protected and very rare species which is close to the extinction in the region (Fig. 30). Caves that once provided roosts for large colonies are now the focus of intensive tourism. Indeed, there are no known nursery cave colonies in the study area. The situation for this species in the study area is critical because of the disappearance of roosts. A presumed nursery colony requires prompt action in order to preserve it (Program for Preserving Artificial Roosts).Only one summer roost is known and is located nearby in Slovakia (Matis 2000, Matis et al. 2002). Hibernating colonies are in a similar critical position as many animals have disappeared from the majority of such roosts (Uhrin et al. 1997, 2002, Fulín & Matis 2002, Matis 2002a, b).

Discussion

The results of the study illustrate that the bat fauna of the Gömör-Torna Karst region is extremely rich. However, continuous monitoring and management is essential for its survival. Any conservation management has to be carefully considered, placed within the overall management plan of protected areas and focused on the most important roosts. Previously gathered data forms the basis of this working plan and thus the on-going effectiveness of the plan can in this way be more precisely monitored and summarised. As a result of the study the occurrence of 10 species which roosted in buildings (*Rhinolophus ferrumequinum*, *R. hipposideros*, *Myotis blythii*, *M. myotis*, *M. emarginatus*, *M. dasycneme*, *Pipistrellus pipistrellus*, *Nyctalus noctula*, *Eptesicus serotinus*, and *Plecotus austriacus*) was confirmed. The most important findings included the Greater horseshoe bat (*R. ferrumequinum*) colony of several hundreds of individuals and two Geoffroy's bat (*M. emarginatus*) colonies which consist of nearly 2000 individuals each. These colonies are now the subject of long-term scientific research and thus their preservation is hopefully assured. During cave and forest surveys, data were collected on 16 species. As far as is known, caves in the area are not used as nursery sites but rather only as winter roosts. Traditional large cave roosts of Mediterranean horseshoe bat (*R. euryale*) and Schreibers' bat (*Miniopterus schreibersii*) are today rather depleted due to disturbance by tourists and speleologists. The only known summer roosts for Mediterranean horseshoe bat exist in endangered circumstances in a man-made, arti-

ficial, mine system. Among the known winter roosts the most significant are those in the largest caves, such as Baradla and Béke, and several conservation activities are to be implemented here. Measures will include opening and adapting cave entrances so that they become "bat-friendly", and also a more effective regulation of "cave-tourism".

The protection and surveying of bat populations in the Gömör-Torna Karst region (which includes areas either side of the Hungarian-Slovakian border) can only be effectively carried out with the continued co-operation of persons and organisations on both sides on that border. It is clear that some wintering and nursery colonies move continuously between sites in both countries. Hence, international co-operation in nature protection is essential as the bats of the region not recognise the established political boundaries!

Súhrn

Fauna netopierov Národného parku Aggtelek a okolia (Maďarsko). V priebehu niekoľkých dekád bola s dôrazom na Aggtelekský kras študovaná fauna netopierov Gemersko-Turnianskej krasovej oblasti v Maďarsku. Staršie práce sa venovali dobre známemu jaskynnému systému Baradla, ostatným častiam regiónu sa venovala len malá pozornosť. Koncom 80. rokov minulého storočia sa začal nový prieskumný program, zahŕňajúci štúdium netopierov v stavbách a systematické porovnávanie údajov. Získané výsledky hrajú dôležitú úlohu pre tvorbu stratégií ochrany úkrytov netopierov (napr. v kostoloch). Niektoré z týchto úkrytov majú medzinárodný význam. V období tretej periódy sledovania oblasti začal aj prieskum umelo vytvorených podzemných priestorov a prieskum netopierov, obývajúcich lesy. Výskum potvrdil výskyt 26 druhov netopierov v územnej pôsobnosti Správy NP Aggtelek (24 druhov priamo v území národného parku). Územie má veľmi bohatú faunu netopierov z hľadiska druhovej pestrosti ako aj populácií. Najnovšie faunistické prieskumy a ochrana týchto populácií prispeli k významnému zvýšeniu našich poznatkov o rozšírení niektorých druhov. Niektoré staršie údaje vyžadujú nové zhodnotenie.

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