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Aesculapian snake *Photo Archive of the Veronica Ekological Institute*

Aesculapian Snake in the Czech Republic (1)

The Aesculapian snake, formerly called "Aesculap's" in Czech, is probably the snake which winds around the rod of the ancient Greek god of medicine, Aesculap. This has been the symbol of physicians and pharmacists from antiquity until the present. (Some scientists believe the symbol is derived from the parasitic Medina worm.) It lives in the hotter southern part of Europe and it spreads through Asia Minor up to the Caspian Sea. In contradiction with the Czech name ("Tree snake") it lives mainly on the ground in humid rugged biotopes with shrubbery. However, it can climb high into the trees. It may grow up to the length of two meters; i.e., it is the biggest Central European snake. It has the status of a critically endangered species in the Czech Republic, where we can see it only in Poohří, Podyjí, and the Moravian-Slovak border. The following text relates to the White Carpathians, where it was first noticed in the 1980s. We would like to write about the populations in Podyjí and Poohří in the next issues of Zooreport. (red)

Aesculapian snake *Photo by Mojmír Vlašín*

Species Distribution

A continuous area of the Aesculapian snake [Zamenis longissimus] (Laurenti, 1768), spans from northern Spain through southern and central France, southern and southwestern Switzerland, the northern part of Italy, and Austria, Slovakia, Croatia, Serbia, Montenegro, Albania, Romania, Bulgaria and Greece to northwestern Turkey, Moldavia and the western Ukraine. This area reaches the Czech Republic from two neighbouring states: Austria in the region of the Podyjí National Park (only slightly there) and Slovakia in the White Carpathians and other Carpathian mountain ranges. Five isolated populations are known at present on the northern border of the area, three of which are situated in Germany, one in Poland, and one in the Czech Republic (the Poohří).

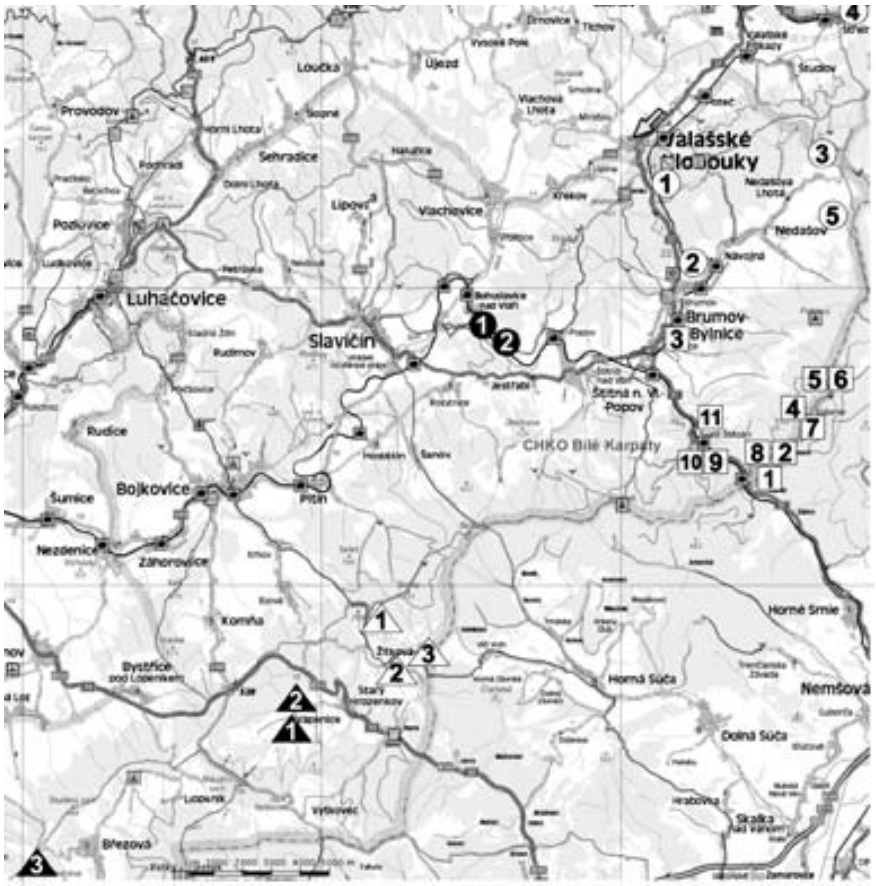
Occurrence in the White Carpathians

The hypsometric distribution in the Czech Republic ranges from 300 to 700 m above sea level (Mikátová et al. 2001). It rarely exceeds 900 m above sea level in Slovakia (Lác, 1970). The hypsometric range of the known locations in Austria fluctuates between 140 and 1400 m above sea level. The Aesculapian snake is found as high as 1,800 – 2,000 m in southern parts of the area (Baruš et al. 1992).

Many Aesculapian snakes are on our side of the White Carpathians in Sidonia, where they are found near human residences. Their distribution continues from there through Svatý Štěpán to Bylnice, through Brumov to Valašské Klobouky, and further through Nedašova Lhota to Střelná. It continues westwards from Bylnice to Bohuslavice nad Vláří. The distribution from Slovakia also reaches to Lopeník, Bošačky, and Žítková, where there are regularly cut meadows with spring wetlands and mineral springs. The Aesculapian snake was confirmed there in 1984 for the first time in the White Carpathians (Vlašín 1984). Lopeník, Vyškovec, and Bošačky are characteristic of a typical dispersed development, with occupied houses and farmsteads on the slopes of an only slightly changed landscape of pastures, small fields, and meadows. At these locations the Aesculapian snake is present actually in farm buildings. A place suitable for reproduction is very important for the existence of the population. The Aesculapian snake uses a decaying substrate for laying eggs, originally mainly tree cavities filled in with rotten wood. At present it often uses piles of decomposing leaves, compost heaps, or dung pits as a breeding place. An important part of the biotope is a suitable winter habitat. It may be the place where they lay eggs in summer, or it could be in old cellars, rock rifts, etc., where they spend the winter.

Behaviour and Migration

The Aesculapian snake is active during the day and in the evening. We noticed a rare night activity in the Podyjí (Mikátová, Vlašín, non-published). We have not observed the night activity in the White Carpathians. It usually hides in the morning, then basks in the sun near its hiding place in the afternoon until the evening, when it starts seeking food. Its movement significantly increases – especially of males – at the time of copulation. On hot days, the Aesculapian snakes gather at water or at wet places. It is a skilful climber and, thanks to abdominal edges, it can make use of even a small unevenness of stems



Occurrence of the Aesculapian snake in the White Carpathians PLA

and rocks. It can swim well and is able to cross river courses.

Contrary to the locations in the Podyjí, where the Aesculapian snake is rarely in contact with people, in the White Carpathians it dwells almost exclusively near human residences. The only important exception is its occurrence in forest complexes above Sidonia, but even there it stays near the edges of roads and quarries. Everywhere that these snakes use the areas of continuing development (or live in places directly connected with it), they behave cautiously with people, and their escape distance is very short. This can be observed in the surroundings of Sidonia and Svatý Štěpán. There is clearly a high migration between the places of these occurrences and the Vlára River. In the spring, this is proved by the number of snakes killed on the road connecting Sidonia with Svatý Štěpán. Compared to unsettled Podyjí, where economic activities are minimized, this is a partly occupied and farmed area. There, there are whole villages, farm buildings, lonely places, abandoned buildings, those used only for recreation, and other premises of anthropogenic origin.

Previously Found Places of Occurrence

In the following overview, I specify the previously found locations in the Moravian part of the White Carpathians PLA where the Aesculapian snake occurs. Every figure starts with a number which relates to the number on the map, and continues by a cadastre of the municipality, a district abbreviation, the date (at least a year) of finding, the founder's surname, and other information. The data are ordered according to the quadrate of the unified zoological mapping network. The network mapping of the occurrence of original reptile species in the Czech Republic started in 1995. The gained data are entered in standard network maps introduced for mapping the fauna and flora of the Czech Republic (Buchar, 1982). This network determines spherical trapeziums, called network mapping fields or quadrates. Every field has a dimension of 10 minutes of longitude and 6 minutes of latitude, which in central Europe is approximately 11.2 x 12.0 km. The Czech Republic consists of 677 quadrates fully or partly covering its territory. The occurrence of the Aesculapian snake in the Czech Republic is currently known on a basis of reliable data from 18 quadrates (five of which can be found in the White Carpathians PLA).

Note: The author considers the data originating or published by the author reliable; the others are discussed in the respective comments.

Quadrate 6874 (white rounds ○): **1** – Valašské Klobouky (ZL), 29 June 1985, Žilák, 1 specimen, (Mikátová, Pellantová, Vlašín 1989) **2** – Brumov (ZL), 1996, Kerouš, 2 specimens, approximately 300m from the crossroad to Valašské Klobouky in a meadow on the right (reliable data of a professional zoologist) **3** – Nedašova Lhota (ZL), 1999, Šapovaliv, 1 specimen, around the road to Zápechová, the data of a professional zoologist. They were taken from a diploma thesis and are conditionally reliable (Onderka 2007) **4** – Střelná (VS), 1999, Šapovaliv, 1 specimen, Lyský mountain-pass above the Korytná stream (Mikátová, Vlašín, Zavadil 2001) – note: the location is not situated in BK **5** – Nedašova Lhota (ZL), 15 June 2008, Mikátová + Vlašín, findings of slough in a bush, PP Kaňoury (Vlašín, the author's own database)

Quadrate 6973 (black rounds ●): **1** – Bohuslavice nad Vláří (ZL), 1996, Kerouš, 1 specimen, a debris location at a railway line approximately 200m from the railway station in the direction of Štítná (reliable data of a professional zoologist) **2** – Bohuslavice nad Vláří (ZL), 1999, Mikátová, 1 specimen, near the railway station in the direction of Štítná (Mikátová, Vlašín, Zavadil 2001)

Quadrate 6974 (white squares □): **1** – Sidonie (ZL), 15 September 1984, Žilák, 1 specimen (Mikátová, Pellantová, Vlašín 1989), **2** – Sidonie (ZL), 14 June 2005, Baroň, 1 specimen, an Aesculapian snake run over on the road near a mill, the body length of 110cm, substantiated by a photograph (Vlašín 2006) **3** – Bylnice (ZL), 2006, Konvička, 1 specimen, the railway line embankment Vlárský pass – Bylnice, along stone walls bordering the slope at the line. The data of a professional zoologist are taken from a diploma thesis and are conditionally reliable (an oral announcement at Onderka 2007) **4** – Sidonie (ZL), 6 August 2008, Vlašín, a finding of eggs at a compost heap in the land of Mrs. Jurová-Šrenková (Vlašín, non-published, the animal directory, his own database) **5** – Sidonie (ZL), May 2008, the forest Mašláň, a finding of slough in a barn of a gamekeeper's house at the upper end of Sidonia, photographic documentation 6 August 2008 (Vlašín, his own database) **6** – Sidonie (ZL), July 2006, the forest Mašláň, a finding of slough in a gamekeeper's house at the upper end of Sidonia, reliable data of a diploma thesis author, substantiated by the slough (Onderka 2007) **7** – Sidonie (ZL), 1999, Šapovaliv, 1 specimen (Mikátová, Vlašín, Zavadil 2001) **8** – Sidonie (ZL), July 2006, Onderka, a finding of two sloughs in the quarry above Vlárský pass railway station, under Okrouhlá Hill (655m above sea level), reliable data of a diploma thesis author, substantiated by the sloughs (Onderka 2007) **8** – Sidonie (ZL), 12 July 2008, Strnad, 1 specimen, under a fallen stem of a crumbled tree, PP Okrouhlá (Strnad 2009 in lit) **8** – Sidonie (ZL), 25–28 June 1998, Bezděčka, an Aesculapian snake repeatedly observed at a pile of waste wood, reliable data of a professional zoologist **9** – Svatý Štěpán (ZL), 10 July 2001, Vlašín, 2 specimens, one released immediately, the other released after taking photographs at the same place (Vlašín 2002) **9** – Svatý Štěpán (ZL), 2007, Strnad, a finding of the Aesculapian snake run over on the road at the edge of the village (Strnad 2009 in lit) **10** – Svatý Štěpán (ZL), 5 June 2002, Kuča, 1 specimen, a yard of the house next to a pub, reliable data of the former head of the Protected Landscape Area, the photo by Pavel Kuča (the evidence by Vlašín, his own database) **11** – Svatý Štěpán (ZL), 30 June 2006, Vlašín, a finding of slough in vegetation next to the Vlára River (non-published, the slough deposited at the author's animal directory) **11** – Svatý Štěpán (ZL), 24 May 1998, Jongepierová, a finding of an adult specimen in the meadow vegetation, a provable photographic documentation (Bezděčka 1998)

Quadrate 7072 (black triangles ▲) **1** – Vápenice (UH), 10 August 1989, Kostkan, 1 specimen, PP Rubaniska, a band of meadows and bushes on the right valley slope of the Krátkovský Stream, 2 km westwards of Starý Hrozenkov,

reliable data of a professional zoologist **2** – Vápenice (UH), 13 August 1993, Mikátová, 3 specimens, PP Rubaniska, a band of meadows and bushes on the right valley slope of the Krátkovský Stream, 2 km westwards of Starý Hrozenkov, reliable data of a professional zoologist **3** – Strání (UH), the summer of 1994, Šnajdara, 1 specimen, the road from Strání to Březová, reliable data of a professional zoologist (Šnajdara 2008 in lit)

Quadrate 7073 (white triangles △): **1** – Žítková (UH), 30 July 1984, coll. of the Moravian Regional Museum Brno, 1 specimen, the Aesculapian snake found dead at the swimming pool, the body length of 126cm, the first evidence for BK (Vlašín 1984)! **2** – Žítková (UH), 28 June 1987, Svoboda, 1 specimen, near mineral springs (Mikátová, Pellantová, Vlašín 1989) **3** – Žítková (UH), 1997, Mikátová, 1 specimen, near mineral springs (Mikátová, Vlašín, Zavadil 2001)

Notes and legend: VS – the district of Vsetín; UH – the district of Uherský Brod; ZL – the district of Zlín; BK – the White Carpathians; CHKO – the Protected Landscape Area; PP – natural monument; coll. – in collections; in lit – unpublished written data. The animal directory contains three-dimensional evidence of occurrence, particularly sloughs.

It is possible that there are more verified and reliable observations in the White Carpathians. If this overview lacks data known to you, please contact me. Thank you.

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Geoffrey's bat in the Moravian Part of the Bohemian--Moravian Highlands

Geoffrey's bat [Myotis emarginatus] (Geoffroy, 1806), is a Western Palearctic species of the bat typical for the Mediterranean (Horáček et al., 2000). Locations of its most northern occurrence are situated in the territory of the Czech Republic (Topál, 2001). The area of distribution in Europe is similar to the areas of other species of Mediterranean origin – greater horseshoe bat [Rhinolophus ferrumequinum] and lesser horseshoe bat [R. hipposideros] (Horáček, 1984). According to Hutson et al. (2008), the world population of this species showed a significant drop in 1960–1990. Now, the Geoffrey's bat seems to be expanding in central Europe and its numbers have not been falling anywhere. It remains to be entered in the Red Book of Endangered Species but it was transferred from the category of vulnerable species (VU) to the category of the least concern (LC). It is further covered by the all-European protection based on the Directive on EU biotopes, where the species is entered in Annex II.

In our country, the Geoffrey's bat lives especially in western, southern and central Moravia. Many findings come from the vicinity of Svitavy and Žďár nad Sázavou (Benda et al. l997; Eleder, 1986, 2001; Lemberk, 2001; Urbánek, 2002, 1996) but also from eastern Bohemia (the Náchod, Rychnov and Chrudim regions). The so-called Bohemian-Moravian Gate is usually mentioned as a "bio-geographic corridor" of possible distribution of sub-Mediterranean elements in the territory of Bohemia which is situated northwards of Svitavy, in the Svitavské Hills (Benda, Hanák, 2003). This is proven among others by the first finding of this species in the Svitavy region in a Pseudokarst region in 1956 (Gaisler and Hanák, 1972) and the finding of a dead individual in Hradec nad Svitavou in 1997 (Urbánek, 2000). According to Benda and Hanák (2003), the highest parts of the Bohemian-Moravian Highlands (the Hornosvratecká Upland, the Křižanovská Upland and the Javořická Upland) form a certain barrier to the direct distribution of thermophilic species from Moravia to Bohemia.

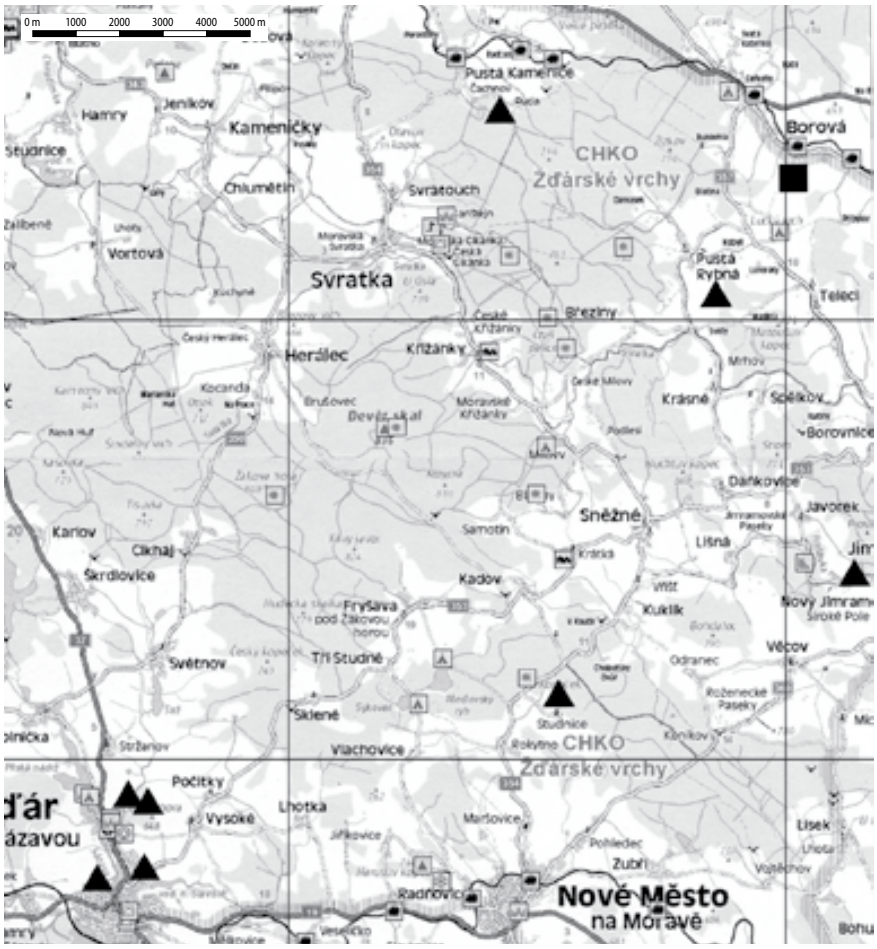
It seems the Geoffrey's bat, like the lesser horseshoe bat, has managed to overcome this barrier in previous years by a so-called "middle path" through the Svratecká Mountain Country (through the valley of the Svratka River via Tišnov and Jimramov) to the valley of the Sázava River. ¬The Geoffrey's bat has expanded to the area of the upper course of the Sázava River at 580 m above sea level. It is probable that the movement of the species is associated with the global warming. This trend, however, needs to be substantiated by more data on the summer occurrence of the species.

Geoffrey's bat *Photo Archive of the Veronica*

Present-Known Occurrences

The following summary specifies the present-known occurrences of the Geoffrey's bat (for short M.ema) in the Moravian part of the Bohemian-Moravian Highlands with notes on the occurrence of lesser horseshoe bats (for short R.hip). The four digits at the beginning of the fauna data are the quadrate number of the unified fauna mapping. The name of the cadastral area is followed by a district abbreviation in brackets. Males are marked M, females F; and if sex is unknown, the individual is marked ex.

Svratecká Uplands. ▲– Occurrence of the Geoffrey's bat ■ – Occurrence of the Lesser horseshoe bat



Žďárské Hills. ▲– Occurrence of the Geoffrey's bat ■ – Occurrence of the Lesser horseshoe bat

The Svratecká Uplands

Quadrate 6464 – the cadastral district of Švařec (ZR), an attic of a small chapel near the road to Brťoví, 23 June 1981: a colony of 10 F M.ema (Eleder 1986, 1994); the cadastral district of Štěpánov nad Svratkou (ZR), a boiler station of MEZ, 23 June 1981: a colony of approx. 30 R.hip (Eleder 1986, 1994), 12 June 1997: 11 ex. R.hip (Vlašín, Málková, their own observations).

Quadrate 6564 – the cadastral district of Doubravník (ZR), an attic of a paper mill in Prudká, 10 July 1992: 50–100 ex. R.hip. (F with young), 100–200 ex. M.ema (F with young) (Eleder 1994), 20 May 1993: 200–300 ex. R.hip., 100–150 ex. M.ema (Eleder 1994), 10 June 1997: approx. 170 ex. R.hip., approx.230 ex. M.ema (Vlašín, Málková, their own observation), June 2000: more than 100 ex. R.hip., more than 200 ex. M.ema (Eleder, Zeman, their own observation), June 2001: more than 100 ex. R.hip., more than 200 ex. M.ema (Eleder, Zeman, their own observation), June 2002: more than 50 ex. R.hip., more than 150 ex. M.ema (Eleder, Zeman, their own observation).

The Žďárské Hills

Quadrate 6363 – the cadastral district of Jimramov (ZR), Nový Jimramov, the Fryšávka River, 23 August 1994: 1 M M.ema, caught in webs (Eleder, Čejka, their own observations).

Quadrate 6461 – the cadastral district of Žďár nad Sázavou (580 above sea level) (ZR), castle courtyard, behind a notice at the entrance gate, 25 September 1986: 3 ex. M.ema (Eleder 1994); an attic above the castle garages, 12 July 2003: colony of approx. 100 ex. M.ema (F with young); an attic of the fire-brigade building, 12 July 2003: colony of approx. 100 ex. M.ema (Čejka, Dajč in lit), 18 May 2004: 15 ex. M.ema, 26 May 2004: 23 ex. M.ema, 25 May 2004: 70 ex. M.ema (F with young), 10 June 2006: 123 ex. M.ema (F with young) (Čejka, Dajč in lit); on ground in front of the school, 2 September 2003: 1 ex. M.ema (Čejka, Dajč in lit).

Quadrate 6262 – the cadastral district of Čachnov (SY), Ruda, behind a window-shutter of the house no. 8, 20 May 2005: 1 M M.ema (Lemberk 2004); the cadastral district of Pustá Rybná (SY), behind the peeling bark of a stump on the forest edge, 26 August 2004: 1 M M.ema (Lemberk 2004).

Quadrate 6362 – the cadastral district of Studnice u Rokytna (ZR), cave in a quarry (790 above sea level), 2. 3. and 16 March 1996: 1 ex. M.ema (Eleder 2001, Lemberk 2004); 9 May 2006: 1 ex. M.ema (Anděra et Zbytovský in lit).

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