

## The Aesculapian Snake in the Czech Republic (2)

As mentioned in the last issue of Zooreport (No. 2/June 2009), the Aesculapian snake is rare in the Czech Republic and lives in only three habitats – in North-West Bohemia (along the Ohře river), in the Podyjí National Park in Moravia, and in the White Carpathians on the border between Moravia and Slovakia. The natural range of the Moravian population is in the periphery of a much larger area. However, the Czech population along the Ohře river is isolated, not being a part of such continuous area.

Pursuant to our legislation, the Aesculapian snake belongs to a category of strictly protected endangered species (Act No. 114/1992 Coll., Regulation No. 395/1992 Coll.). The situation in Poland and Germany is similar, as the populations of the Aesculapian snake are isolated there too. The border of the continuous area goes through Austria and Slovakia so that the animals there are threatened to a lesser degree. However, the species is strictly protected in these countries too. The Aesculapian snake is protected internationally as well. It is listed in Annex IV to Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. It belongs to the species of Community interest, requiring strict protection.

This species is also listed in Appendix II to the Bern Convention on the conservation of European wildlife and natural habitats, and an Action Plan concerning this species has been drawn up (Edgar et Bird 2005). It is important to increase efforts to protect this species in accordance with our broadening knowledge of its natural ranges and biology.

The Aesculapian snake can be found especially in sunny, forest-steppe habitats in



Young Aesculapian snake Photo by Blanka Mikátová



Hiding place of the Aesculapian snake

Photo by Blanka Mikátová

the Czech Republic. The species prefers varied countryside rich in various biotopes associated with traditional farming. Such sites host natural habitats where grassland is interspersed with areas of woodland making up a wonderful mosaic of trees and bushes, hedges, dry-stone walls and heaps of stones, deciduous groves, clearings, and a network of dirt roads and paths. The deterioration or, more specifically, homogenisation of the countryside in consequence of intensive farming, for which it is characteristic to remove barks, field copses, etc. or, on the other hand, the absence of farming in consequence of which pastures are overgrown with coppice, causes the disappearance of this varied countryside together with the biotopes suitable for the Aesculapian snake. It is an excellent tree-climber, able to use the surface roughness and unevenness of tree trunks, stones, rocks and even walls of buildings; it is also a good swimmer, capable of crossing streams and rivers.

### The natural range in Podyjí

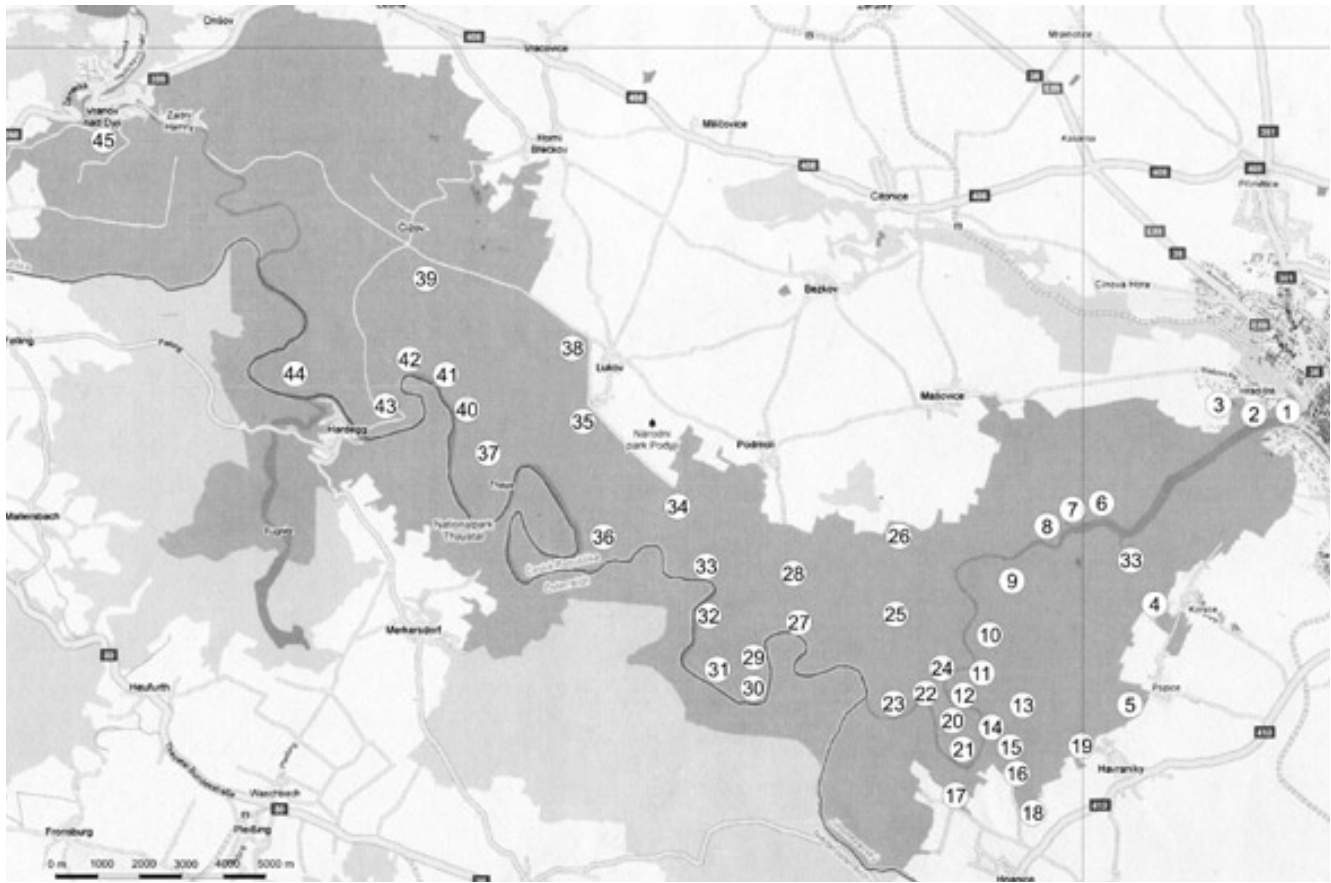
A limiting factor in the marginal area of the natural range, including the habitats in the environs of the Dyje river, is the lack of suitable breeding grounds. The female usually lays eggs in dead leaves, in rotting wood in hollow old trees, or in rock crevices and stone walls. In the marginal area the female sometimes lays eggs even in substrate giving out heat, e.g., heaps of compost, dung, or leaves. These suitable locations are frequently used by several females at a time. Successful reproduction of the Aesculapian snake thus depends to a considerable degree on human activity. Only individual lays of eggs have been detected in heaps of leaves, rotting tree trunks, or crevices between stones in Podyjí. Young animals can be seen towards the end of August or at the beginning of September.

Historical sources of information about the occurrence of the Aesculapian snake in Podyjí

include both published data about fauna as well as unpublished results of observations obtained from the observers concerned, or possibly oral information from local residents. The residents were aware of the range of the Aesculapian snake along Dyje river as early as the 1930s. The first published information on the range of this snake in the Znojmo area concerned Chvalatice by Vranov nad Dyjí, which was recorded by Radkofsky (in Adolf 1922, 1929). The finding from the environs of Mašovice was published by Ambrož (1931).

Even though the occurrence of the Aesculapian snake in Podyjí has been known since the first half of the 20th century and local residents were aware of the snake at that time, no detailed information from that time concerning the habitats is available. After the Second World War, the major part of the area along the Dyje river was closed to the public due to its becoming a closely watched and patrolled border area. Knowledge of the habitats of the Aesculapian snake in this area therefore faded into oblivion for several decades. There are only two instances confirming permanent habitats of the Aesculapian snake in the 1950s. The first of them is a find in the quadrat 7162 (Konice 20th June 1952, 1 ex., coll. the Faculty of Natural Sciences of Charles University Prague, No. 206, leg. Hanák, in Reitter 2002). The second one has not been confirmed; however, it seems to be quite credible. It concerns a find from the quadrat 7262 (Šatov, 1958, leg. Šťastný). It was not before 1983 (Vlašín 1984a, b) that the habitat of the Aesculapian snake in Podyjí was confirmed again. In the latter half of the 1980s the snake was detected several times in the quadrat 7161. Since 1989, when the area on both banks of the river was open to the public again, the Aesculapian snake has been watched repeatedly, especially in the ruins of Nový hrádek and in the Šobes vineyard. The snakes can be seen at some places of the Nový hrádek ruin so regularly that they have become a new tourist attraction and the guided tours include information about them.

We know today that both banks, i.e., both sides of the border, are the habitat of the Aesculapian snake. Several finds were made in the immediate



*Habitats of the Aesculapian snake in Podyjí:* 1 Obří hlava 2 Hradiště 3 Hradiště, edge of the built-up area 4 Konice 5 PP Horáčkův kopeček (Horáček's Knoll) 6 Králův stolec (King's Throne) 7 opposite Býčí skála (Bull Rock) 8 Býčí skála 9 over Nová cesta (New Road) 10 between the Dyje river and the road to Havraníky 11 Kamenné moře (Stone Sea) 12 Lazárkova louka (Lazárek's meadow) 13 over the Paper Mill 14 Paper Mill 15 near Zmola 16 Baštův mlýn (Bašta's Mill) 17 Fládnitzské vřesoviště (Fládnitz moor) 18 PP Skalky 19 Havranické vřesoviště (Havranice moor) 20 the Šobes vineyard 21 the environs of the Šobes vineyard 22 Devět mlýnů (Nine Mills) 23 Lipinská louka meadow 24 over Šobes 25 road Podmolí–Šobes 26 near Králův stolec 27 Liščí skála rock 28 road under Lipina hill 29 meadow under Barák 30 Hluboká cesta (Deep Road) 31 Barák 32 near the Dyje under Barák 33 Kozi hřbet ridge 34 Vlčice 35 Faltýskova cesta (Faltýsek's Road) 36 Ostroh and Nový hrádek 37 Vrani skála rock and Gališská louka meadow 38 Urbanova cesta (Urban's Road) 39 between Urbanova and Hardecká Roads 40 Klaperův potok (Klaper's stream) 41 300 m from the confluence of Klaperův potok 42 Kozi stezky paths 43 Hardecká stráž slope 44 Široké pole (Broad Field) 45 Vranov nad Dyjí

vicinity of the border in Austria. A find confirming unambiguously that the populations are connected was made on the Austrian border of the Dyje river (Umlauf crag) when an animal marked in the Czech territory was captured there. Also other finds of the Aesculapian snake, both in the river and on the banks on both sides of the border (e.g. lipinská lávka footbridge, in the river as well as on the bank of the Dyje under Vrani skála, in the river near Hardeg) confirm that the Podyjí National Park and the Thayatal National Park in Austria are parts of one habitat of the Aesculapian snake.

Besides certain characteristics of the biotope, it is equally important for the Aesculapian snake to have a certain microclimate in the habitat. The site having the greatest abundance of this snake in the Dyje area is the Šobes vineyard, the microclimate of which seems to be unique. It stretches on the sunny southern slope of a rocky hill overlooking a meander of the Dyje protected from the northwest and northeast winds. The river that flows around the vineyard is of vital importance: The Aesculapian snake prefers warm days but cool nights and fogs.

The average temperature in the western part of the national park, depending on the altitude, is about 7 °C. However, in the eastern part (around the town of Znojmo) it is 8.8 °C. The permanent

habitat of the Aesculapian snake is mainly in the central part of Podyjí.

Since 1983, the Aesculapian snake has been repeatedly detected in more places in quadrat 7161. This quadrat is the main habitat of the Aesculapian snake in the Dyje area. A total of eleven sites where the snake can be seen regularly have been detected in the cadastral territories of the municipalities of Čížov, Lukov, Hnanice, Havraníky, and Podmolí. The Aesculapian snake in the Dyje area is connected with biotopes created by man (historic buildings and other structures) and areas regularly farmed and cultivated (vineyards, terraces, edges of gardens, etc.) as well as natural biotopes (e.g. Hardecká stráž, major part of Ostroh and Vrani skála).

However, the most important sites are Šobes and Nový hrádek. Several hundred animals can be found in the Šobes vineyard and dozens in the Nový hrádek ruin. The Aesculapian snake can be seen in other micro sites as well. They partly include ruins of older buildings such as e.g. Gruber's Mill, Judex's (Bašta's) Mill, Faltýsek's Mill or the former paper mill. These dilapidated buildings present an environment offering everything essential to the life of the Aesculapian snake. The finds in the mill near lipinská lávka, in the river and on the bank under Vrani skála and on Ostroh confirm that the Podyjí

National Park and the Thayatal National Park are parts of one habitat of the Aesculapian snake.

There are many other similar sites in the national park which could be the habitats of the Aesculapian snake. (Access for the public is limited or even restricted there). However, the probability that the abundance of these populations would be as great as that in the Šobes vineyard is very low. In spite of this fact, these sites could be significant from the point of view of the overall stability of the population along the Dyje River, as it could enable individual animals from various sites to be in contact.

We perceive the Aesculapian snake as a species living in a comparatively small area and using the same hiding place for many years. Locomotive activity increases during reproduction (Rehák 1989, 1992). Telemetrical observations of several Aesculapian snakes in the Taunus Mountains in Germany (Heimes, 1994) showed increased locomotive activity especially during the time connected with reproduction. The longest recorded distance covered in one day was 610 m and one male was able to cover the distance of 2 km in a fortnight.

It is quite frequent in Podyjí that the animals migrate from one site to another. The snakes can usually move as far as 500–1000 m. Migration



*Dry-stone walls are a suitable biotope for the Aesculapian snake* Photo by Blanka Mikátová

exceeding 1000 m has been recorded in 11% of males and 0.8% of females only. It is necessary to take into consideration that it is the direct distance between two places of capture. The real distance due to the elevation difference and rough terrain was probably at least double. In spite of the remarkable ability of these snakes to migrate, no connections between individual animals found in the vicinity of Vranov nad Dyjí, i.e., the western part of the park, and animals from the population in the central part of the park have been discovered. Equally, no communication has been revealed between the population from the vicinity of Znojmo (i.e., the eastern part of the area) and that in the central part of the park.

The largest migration distance in Podyjí was recorded between the sites of Šobes and Konice (3750 m), and Šobes and the Skalky natural monument (2700 m). The most risky period for male snakes is spring when they look for females;



*We are fitting better hideouts for Aesculapian snakes by purification of dwarf walls* Photo by Blanka Mikátová

for females it is the period of egg-laying, when they move to breeding grounds. The most dangerous period for the young animals is the time immediately after hatching (Bonnet et al. 1999). The increased activity and migration in the above periods pose the greatest risk of death under car wheels when the snakes try to cross roads.

The majority of migrations in Podyjí were recorded within the territory of the national park; therefore the Aesculapian snakes luckily do not have to cross wide and busy roads. Only the above mentioned migration route Šobes–Skalky passes through the village of Havraníky, where there is a comparatively busy road.

It is important to know the migration distances

to make the protection possible and to take effective measures for the benefit of the species. For example, a network of suitable breeding grounds that could assist successful reproduction of the population depends on the ability of females to migrate. Currently we record regular reproduction (finds of this year's juvenile animals) in the quadrates 7161 only. However, sub-adult and adult animals as well as sloughed skin samples were found in other quadrates too (7162, 7262, 7160). According to existing results the population in quadrate 7161 seems to be stabilized. There is probably no other stable place of reproduction besides the Šobes site. In this site, it is the stone walls that are used for incubation. In other parts of the quadrate the snakes have to use random heaps of leaves, hollow trees, or rotting wood. Such lays of eggs are exposed to the danger of liquidation by predators, the inclemency of the weather, etc. The probability of successful reproduction in other quadrates is very low, as sloughed skin samples and adult animals have been found there but finds of young animals and eggs are completely missing. Suitably placed and distributed man-made breeding grounds can assist stable reproduction of the Aesculapian snake in Podyjí.

It is vital for us to have necessary information about the way of life of animals to be able to protect them. Otherwise our conservation efforts may fail.

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*The Aesculapian snake likes deserted buildings*

*Photo by Blanka Mikátová*

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*Young Siberian red deer (also called Siberian maral or Siberian roe deer) with its mother*

## Siberian Red Deer at the Brno Zoo

The breeding of Siberian red deer [*Cervus elaphus sibiricus*] has a long tradition in the Brno Zoo but we have not succeeded in regular reproduction of this species. Including this year's happy event, there are only two young in our records: We bred a small male in 2001 and, after long eight years, a female was born.

We keep Siberian red deer in two grassy run-outs with a paddock where animals can be kept separated. The run-outs can be isolated from each other or the connection can be narrowed so that, unlike does, a rutting stag cannot go through the connecting path. Females thus have an opportunity to rest in peace even during the rutting of the stag and they can also find refuge in the second run-out in case of aggressive attacks of the stag.

Unfortunately, when compiling the group, we were sometimes bedevilled by bad luck. In 1993, a 15-year-old female lived in the run-out, to which we brought a one-year-old male from the Prague Zoo. Shortly after it achieved sexual precocity, in 1996, the female died. Two years later we managed to get a replacement but, in October 1999, another unhappy event occurred: The stag pushed the doe against a fence and gored it. It died the next day. In December of that year, we brought a two-and-a-half-year-old female from the Ostrava Zoo and, the following year, a one-year-old female from the Olomouc Zoo.

In 2001 we had, after a long time, a three-head herd and, in June, the female from Ostrava gave birth. The small fawn often hid in the run-out and it was sometimes difficult to find it because the young of Cervidae are of the so-called "put aside" type. This means that a fawn will lie in a refuge for hours with no movement, and the mother only comes to nurse

it. She stays close to the hiding place and guards and protects her young.

The young of Cervidae, unlike Bovidae, are born with quite a weak skeleton. Therefore, the coordination of legs, which enables continuous movement, comes little bit later. They are only able to follow their mother several days after delivery. On the first days of life, they also keep away from intensive light and would rather stay in shade.

It sometimes happened that our fawn came into the high grass outside the run-out. We had to make the fencing thicker. The young male stayed with the herd for one and a half years and then it was transported to a private breeder.

Because in the autumn of 2001 there was a rutting of stags, we hoped for the birth of another young. The Ostrava female started delivery on 3 July 2002 but it did not deliver until the next day. It was exhausted and the vet who was called in could only give a bad prediction for the young. Unfortunately, the female died on the same day. That meant that,



*A family of Siberian deer...*

in 2002, we only had a couple of deer and we had to find more. We managed to supplement the herd only in December 2004, when two does – a thirteen year-old mother with an eighteen-month-old daughter – came to Brno from Riga. The new and the old group were separated by a fence for several days in order for the animals to get used to one another by means of sight and smell perceptions. We cut off the antlers by which the stag could harm the females.

At the beginning of 2005 the group consisted of four animals: three females (two from Riga and one from Olomouc) and a 12-year-old male, which unfortunately had some health complications and, despite all efforts of the breeders and a vet, it died in August of the same year. Another strenuous search began, this time for a male; but we should note that it is easier to find a male than a female. A free male appeared in the Olomouc Zoo at that time. It was slightly more than one year old. The small stag wanted to join the herd immediately after its arrival in August 2005, but older and more experienced females did not consider it sufficiently capable and did not meet its wishes, but rather drove it off. With regard to the fact that these stags achieve sexual maturity only after the second year of life, we could expect a young one not before 2007. The prediction was fulfilled, and the female from Olomouc delivered a fawn at the estimated time. Unfortunately, it was too weak, did not suck from its mother, and died after one day of life. It was the first delivery for that female. In such cases it often happens that a baby is born weak and not viable. In November the older female from Riga died at the age of sixteen years.

Luckily, this year has shown us a much more pleasant face. After eight years, on 19 June 2009, a healthy and strong fawn was finally born. Its mother was the female from Olomouc, and the delivery and further breeding were with no complications. In July the young female ate green fodder, hay and leaves, which form the summer fodder of deer, together with granules. We believe that the female from Riga will soon be able to reproduce, and that the breed of Siberian red deer will bring us only happy events in the future.

*Lubomír Gala,*  
Gamekeeper at the Antlered Animals



*...and their young one*