



An egg-laying of the Aesculapian snake in a compost hill



Newly born young one and rests of the egg shell

Aesculapian snake in the Czech Republic (3)

We have informed about the Aesculapian snake in the White Carpathians and Podyjí in the last and one before last issue of Zooreport. Now we are bringing the final part of our series which deals with the third occurrence in the Czech Republic – Poochří. The population there is different from the two previous ones in many ways. Above all,

it is not a marginal offset of a continuous area, but an isolated population hundreds of kilometres distant from the said area. The loss of natural environment and reducing territory has made Aesculapian snakes in Poochří adopt exclusively synanthropic way of life. (They usually live in natural biotopes in the White Carpathians; they live equally in wild nature as in close vicinity to human residences, however, often abandoned in Podyjí). Another specific feature of Aesculapian snakes in Poochří is the local traditional awareness of the rare snake existence and positive relationship to it which has not disappear even after the resettlement of the original Poochří inhabitants after WWII.

The oldest document on the Aesculapian snake occurrence in the territory of the

Czech Republic dates back to the middle of the 19th century and was published by Albin Heinrich in a monograph issued in Brno under the name "Mährens und k. k. Schlesiens Fische, Reptilien und Vögel" in 1856. The document describes a rat snake found at the foot of the Pavlovské Hills whose body was then deposited in a Vienna museum. This and other South Moravian findings represented isolated individuals. Paradoxically, the first evidence of more numerous occurrences in the Czech Republic relates to the isolated population in Poochří. This population was discovered by approximately forty years earlier than the population in Podyjí, where the first record on their occurrence dates back to 1922; the occurrence in the White Carpathians was documented only in 1984 for the first time. (red)



Adult Aesculapian snake

Occurrence in Poochří

The oldest specimen of the Aesculapian snake from the Ohře River valley was found in Krondorf, today's Korunní in 1880 (Bayer 1894). Dürigen (1897) says about this finding: "If these 3–4 rat snakes, as I had been informed by Dr. Ant. Frič (the author of *Wirbeltiere Böhmens*), were run down near Karlovy Vary in 1880, then they were natural, not captivity-escaped specimen, and their occurrence was also confirmed in Bohemia". Scientists have disputed whether it was a natural occurrence or an intentional introduction for a long time. An insular occurrence in Poochří is more than 200 km (by an air line) far from the continuous territory of the species, whose border crosses Austria and south-eastern part of the Czech Republic. No wonder that such rare occurrence has been a mystery for many scientists and has



Building a breeding place for the Aesculapian snake

induced more theories about an intentional introduction of rat snakes. The theory most spread among local inhabitants presumes that Aesculapian snakes were introduced there by the Count Buquoy for the purpose of killing mice. A supposed written mention of this event in the family chronicle by the librarian Döbler of 1843 has not been verified until the present. Some inhabitants also believe that the Aesculapian snake was introduced in Poohří by the family of Mattony around 1880. The territory around a small spa Korunní reminded them of the native Italia, only Aesculapian snakes were missing so they are said to have them imported. Nonetheless, any evidence supporting this theory is also missing (Mikátová et Zavadil 2001). The last passed on theory is their introduction by a Greek merchant Avramid, an operations manager of a mineral water filling plant in Korunní Kyselka in the first half of the 20th century. However, as mentioned before, the first documented specimen comes from 1880, i.e. several decades before the assumed introduction. John Bey Avramides also notified specialists several times of the occurrence of this rare snake in the surrounding (e.g. Reinhardt 1938) and it is highly unlikely that he would forget to disclose the fact that he had introduced them there.

The fact that there really were attempts for introduction at many places also contributed to the support of introduction theories. The oldest known case is the Aesculapian snake introduction in the vicinity of Schlitz in Upper Hessen by the Count of Görtz in 1853–1854. The population gradually weakened, even if capable of reproduction for several decades, and finally ceased to exist. In 1980s there also was an unsuccessful attempt to introduce several individuals in Czech Republic in Vráž u Berouna and the vicinity of the Slapy Dam (Mikátová et Zavadil 2001).

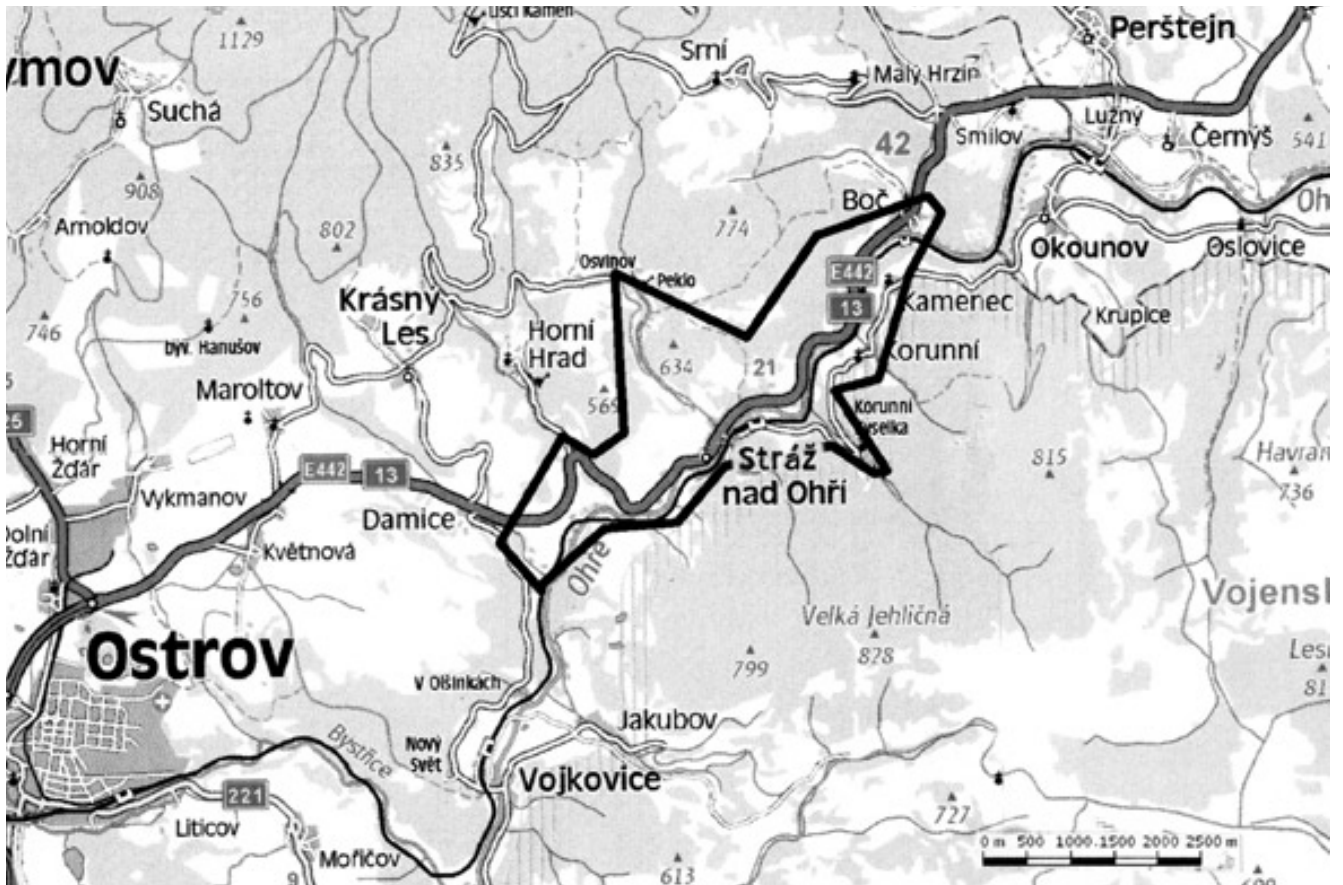
Thanks to the paleozoogeography of fossil findings and particularly genetic methods the present situation is much clearer. In the hottest period of the latest Ice Age, the Atlantic (5500–2500 years B.C.), the Aesculapian snake and other thermophilic species were spread to much more northern regions. This is proven by fossil remains from Poland, Germany and even from England or Denmark. During the following climatic cooling down the Aesculapian snake retreated to the south and the territory gradually became smaller. The Aesculapian snake has been able to survive in the valley of the Ohře River probably due to a special micro-climate. Similarly isolated insular occurrences, i.e. relict remains of the former distribution can also be found in Germany and Poland (Gomille 2002).



Fenced breeding place for the Aesculapian snake with various substrates

If we pass over the hypotheses on origin, a fundamental question of these days is how the Aesculapian snake is doing in the Ohře River valley. The population in Poohří has been monitored by environmentalists since 1970s (Haleš 1975, 1984, 1987, Janoušek 1979, Zavadil et Šapovaliv 1990) and all the above-mentioned authors describe a significant drop in the number of individuals. It does not only relate to a decreasing size of the population; in the previous decade the area substantially shrunk and broke into micro-populations, many of which have not communicated with each other anymore. The habitat of the Aesculapian snake is a territory having 8 square kilometres, but ten or fifteen years ago the species was present in the area of approximately eight times bigger, i.e. 65 km² (Zavadil et al. 2008).

The Aesculapian snake prefers diverse landscape structure with a wide offer of various biotopes. The Aesculapian snake in Poohří was most affected by economic changes after 1948 which resulted in a change of the landscape mosaic. Fortunately, another mosaic was created by the development of weekend cottage activities in this landscape and the Aesculapian snake has adopted it. After 1989 the situation has been further changing. Non-stocked forest land which serves for agricultural production experience high management intensity and unmanaged areas have been growing over more and more. Two extreme biotopes are thus formed in the majority of wild landscape unsuitable for the monitored species: either intensively managed landscape, or completely neglected landscape. The Aesculapian snake only survives in Poohří in municipalities and cottage settlements. It especially dwells on road and railway banks, low walls composed of boulders, barns, cattle sheds, wood sheds,



The area of the Aesculapian snake in Poohří is about one to three km wide and eight km long on both banks of the river in the northwest part of the Doupov Hills nowadays. There is a village called Stráž nad Ohří approximately in the middle of the area.

compost heaps, dung hills, dumps, etc. As a migration corridor it has to use side ditches along roads or roads, where it is endangered by traffic. Another important danger is non-original predators, e.g. American mink [*Mustela vison*], Raccoon dog [*Nyctereutes procyonoides*] and Northern raccoon [*Procyon lotor*]. The latest named species is very often observed in Poohří. Three overrun raccoons were found in one of the key Aesculapian snake locations during the previous two years.

The continuously worsening situation of the Aesculapian snake not only in Poohří, but also in other places of occurrence in our territory resulted in elaborating a rescue plan approved by the Ministry of the Environment in the autumn of 2008 (Zavadil et al. 2008). The goal of the rescue plan in Poohří is to keep micro-populations in the current locations, increase their strength and mutually connect them by connecting places, create and maintain snake habitats and their breeding places. The second stage will include an attempt for returning snakes to the places, where they have been extinct; this will include extending the area at least at the selected places.

The rescue plan has come in the right time. There are relatively enough snakes in the landscape, which means all activities can primarily focus on the care for the biotope, not for the species. Results of the population

status monitoring, the research of genetics, reproduction, parasitisation and diseases should govern the following stages of the rescue plan. Education also forms its integral part because Aesculapian snakes live in synanthropy in Poohří. Snakes occur there in immediate vicinity of houses, in gardens or attics and this is no surprise for local inhabitants when they find a snake in their bed, a flush tank or electric fuses (Musilová et al. 2008). People from Poohří know the Aesculapian snake as "Aesculap" and are proud of its rare occurrence. They are often willing to promptly announce any illegal catching or other handling with snakes to the respective authorities. This positive attitude is, however, a privilege of old residents or long-term cottage owners. At present Poohří experiences an exchange of inhabitants; village houses are bought by cottagers with various attitudes to the local fauna, not excepting snakes. Education will have to focus on this newly coming group.

The main implementer of the rescue plan in Poohří is Zamenis, a civic association, founded for the purpose of Aesculapian snake conservation in 2006. One of the possibilities how to substitute the lack of suitable natural breeding places is their purposeful building. The selection of a location which must be exposed to sun and near suitable winter habitats (small walls, piles of rock, etc.)

is very important. The young are often born in Poohří in October and they do not have much time to look for winter grounds. The breeding place must be fenced as a protection against predators. A fence made of round timber covered with a wire mesh has proven most practical. To prevent its drying and maintain its suitable micro-climate, the breeding place must have the minimum dimensions of 3×3 m with the height of approximately 1 m. A fence built in this way is then filled in with a substrate producing heat, such as dung, bark, saw dust, hay, straw or a mixture of the above-mentioned materials. The substrate should be lightened by branches and regularly supplemented or renewed to maintain its heat insulation. During two years Zamenis built ten breeding places according to this model and plans to build others. Judging according to the findings of individuals and sloughs snakes have occupied all the breeding places unbelievably quickly, even those situated in the outer parts of the area. That the measures are effective has been proven by this year's young found in the breeding places.

Besides building breeding places Zamenis deals with clearing manually stocked walls from self-seeded wooden species. During the previous fifty years of non-management small walls have completely got into shadow. It is insufficient to cut away



A volunteer releases a rescued Aesculapian snake in place of its catching in a road ditch. Catching a snake before a heavy technology comes (right).



the self-seeded wooden species once; in a year's time small walls would be overgrown with young trees again. The cut must be repeated every year. The association takes care of tens of valuable Aesculapian snake locations in this way.

Another local phenomenon is also worth mentioning: protecting snakes during road ditch maintenance practiced for years. The Aesculapian snake in Poohří often resides in close vicinity to roads and it has got used to the everyday traffic at many places and it does not respond too much to external stimuli. Very dangerous interventions include cutting grass or bushes along roads, machine ditch cleaning, etc. Individuals basking in the sun on or under a small wall within the reach of a machine are most endangered. In such case using mechanical machinery can result in a destruction of all snakes living at the given place. Zamenis is always informed in advance about the operation of heavy machinery. Volunteers, usually local inhabitants, walk along the road section in front of a slowly going machine and catch snakes. After cleaning the ditch they release them where they were caught. Citizens rescue tens of snakes in this way every year. The rate of success of their help is high, but not

hundred per cent. They can overlook a smaller individual in a high growth. Therefore, as many volunteers as possible are needed.

The association does not forget of education. Its members distribute flyers and other informative documents and come for lectures for children to schools. The biggest success is that local inhabitants have become involved in the rare snake protection. With regard to synanthropy of the given species the attitude of the locals is decisive. Without their assistance the protection of the Aesculapian snake would be impossible. We would like to express our warm thanks to all the people from Poohří protecting the Aesculapian snake.

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All photos in this supplement have been taken by Karel Janoušek



The pile of rock, the favourite biotope of the Aesculapian snake. Underlying the fenced breeding place

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