

SUCCESSFUL BREEDING OF AN ASIAN RATSNAKE (*ELAPHE RUFODORSATA*)

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DISTRIBUTION

The distribution area of *Elaphe rufodorsata* is situated east of the Yangtskiang River through the north-east of China and Korea, through Mantsjuri to the eastern part of the Amur River area. In China this snake is found in the surroundings of Sjanghai, in Hangzhou, Wuhu, Wuhan, Jinan, Tsingtan, Peking and in Mantsjuri. It is also found on the Zhou-Shan Islands, and it is common in Korea, for instance in the surroundings of Seoul, Busan and Weosai. The northern border of the distribution area reaches to the Usuri and Amur area near Charabowsk in the former USSR. According to Boulenger (1894) this species would also be found on Hainan and Taiwan, but this can be considered doubtful.

These snakes are considered to be tasteful food, and are thus transported throughout the country, which makes it difficult to determine the exact distributional area (Schulz, 1985), though at any rate this can be situated between 30° and 22°NB.

HABITAT AND FOOD

As mentioned, *Elaphe rufodorsata* mainly inhabits moist areas. For instance, it is found in Korea in the vicinity of swamps and creeks with heavy grass borderings. In China the animals are abundant around lakes, creeks, rice fields and submerged grass lands. Especially in the beginning of May they are frequently found (Schulz, 1985).

APPEARANCE AND BEHAVIOUR

This species is somewhat similar to water snakes, as the eyes are positioned higher than in other *Elaphe*. As a matter of fact, this is a rat snake which in the course of its evolution greatly adapted to life in water and its vicinity. This is not the only characteristic which makes it special within the *Elaphe* group: it also is the only representative of this genus that bears fully developed young!

Somebody gave this snake the name 'red bellied snake', but it doesn't really have a red belly: the bellies of adult snakes are checkered black and white. A better name seems to be the scientific name, which means 'red backed', which is better suited as - though there is much colour variation throughout its distribution area - green and red shades dominate the pattern

of the back. My newborn *Elaphe rufodorsata*, though, appeared to have an orange-red belly, which makes me assume the mentioned observer has seen young specimens.

The pattern consists of four longitudinal stripings, of which the two dorsal stripes are formed by an interlinked series of blotches. There are however many variations possible, so that the species is best recognized from the head pattern. This consists in a V-form starting at the nose, in the neck merging into the two dorsal stripes. From the eye there is a dark band over the neck to the lateral stripes.

The length of the adult animals varies from 60 to 80 cm, which makes them relatively small snakes that are very suitable for snake keepers who want to keep this type of snake (like Garter Snakes) but dislike feeding (and smelling) fish.

In general, these snakes are rather shy, inclined to spray the contents of their intestines over your clothes when handled. In this respect, their behaviour bears a likeness to that of *Natrix* or *Nerodia* species.

THE CAPTIVE ANIMALS OF KUBLENZ

Mr. Kublenz from Bremen, who had bred this snake twice when Schulz wrote his article, gave Schulz data about the way he kept them. He owned three specimens: a 50 cm long male weighing 50 grams, and two females (both about 80 cm long, weighing 100 grams). The animals were kept at temperatures of 24-30°C with 12 hours light each day. Though there was a large water bowl, the animals never used it. Most often they were quietly lying in their hiding place. They were only active by day. Every third or fourth week the snakes were offered a half grown mouse. Fishes were not accepted.

Kublenz' experiences are more or less the same as mine. The animals I kept, are also rather quiet, and tending to hide high in their cage between fine leaved plastic plants, or on the floor between or behind some materials. In the water tray the adult animals were hardly ever found, contrary to their young which are often lying in the water bowl for days.

MY ANIMALS

My snakes (they have died in the meantime, probably of old age) were about the same length: a 70 cm. I fed them with large nestling mice (slightly furred), sometimes with small mice from the freezer.

My impression is that these snakes are quite hardy. The female that beared young, came in March 1989 from a Rotterdam importing firm where it had been for some months. It was very skinny, very wrinkled and loaded with parasites, worms as well as unicellulars. After the usual treatment with ronidazole (Ridzol-S) for the unicellulars and fenbendazole (Panacur) for the worms, the animal started to feed heavily and became strong and healthy.

The male and another female were bought in December 1988 and were from the same imported bulk as the above mentioned female.

AUTUMN MATINGS

On 10 September 1989 in the afternoon I observed a copulation which lasted at least for some hours. During the month thereafter other copulations occurred, all during the afternoons and the nights.

HIBERNATION

In the beginning of November I turned off the lights in the vivarium in order to start hibernation. I expected the weather to remain cold, which would lower the vivarium temperature at least to about 16°C. Instead, the weather improved and the temperature rose again. Thus, the hibernation temperature remained too high: during the day mostly even above 20°C, during the night lowering to a minimum of 17°C. The cage was rather dark though, and the snakes had the opportunity to hide under hay and leaves.

21 December I noticed female 1 to be in a pre-sloughing state (with blue eyes), and I decided to switch on the lights again.

BREEDING

At 23 December female 1 sloughed (sooner than I had expected). Another female took food at 24 December and that afternoon I saw female 1 copulating with the only male I got. This copulation lasted until at least 24.00 h. I don't know how long they went on mating after that time, as I went to bed.

During the Christmas holidays I moved my whole collection of snakes to another room, which is kept permanently at a temperature of 25°C. During the day the temperature in the cage of the rufo's rose to a maximum of 28°C.

From this day on all three snakes accepted food readily again. I did not observe any copulations anymore, which does not mean there were not any. Female 1 (who had been copulating in September) grew very heavy, though she kept taking food. Around 20 April she took the last prey, which she gave back after some days. It is not clear whether fertilization took place in autumn (with a delayed development of the young) or in the (imitated) spring.

THE YOUNG

On 6 April from 14.00 h on, female 1 gave birth to ten healthy young. All the little snakes immediately broke through the pellicles. Each had a small yolk-bag on an umbilical cord, which was torn loose while crawling around. All young were in a pre-sloughing state. They were about as small as an average young garter snake or a small corn snake: about 3-4 grams and rather thin, at a length of 12-15 cm.

I put them all separate in small plastic boxes in a warm cupboard, at an average temperature of 29°C. The bottom of each box was covered with moist sand (most) or silver-sand (some). The silver-sand proved to be a bad choice, being too fine. It tended to stick to the food items, and I noticed that the young snakes on silver-sand sloughed their skins badly.

KUBLENZ' BREEDING

In order to make a comparison possible, I here add the data Kublenz gave to Schulz. Hibernation took place from 15 July to 9 October in moist peat in a cellar at a temperature of 15°C. The first mating took place on 10 October, during which the animals were lying still and entangled. They couldn't be disturbed, not even when they were handled after some hours. After the mating the female took prey (a mouse each week) until 2 January 1984.

After a gestation period of 109 days 16 young snakes were born on 27 January. Their average length was 10-17 cm, their average weight 2.4 grams. Before the young were born, the female weighed 195 grams, afterwards she weighed 110 grams.

In a second breeding in 1984 the gestation lasted for 100 days. Twelve young were then born.

All young sloughed directly after their birth and took small fish after a week. They were kept at a temperature of 30°C in moist circumstances and sloughed after four weeks for a second time. Kublenz offered them small newborn mice after they had been growing a little on fish.

RAISING THE YOUNG

In contrast to the young snakes of Kublenz, mine did not slough directly after their birth but only after four to six days. One of the young accepted a dead day-old pinky of which the head and belly were slightly cut (a well known technique in the raising of young snakes) directly after its first sloughing, this being a rather large prey for such a small animal: about two thirds of its own body weight!

Of the ten young, seven started to feed on their own quite rapidly. Some ate nestling mice or parts of it, most accepted pieces of cod-fish though they didn't really like this. Only three had to be force-fed for a short period. The intervals at which they took prey were rather long in the beginning, and the temperature in the snake room was relatively high (30°C). Therefore I started to add something to their food intake by force-feeding them with pieces of cow heart. As soon as the young snakes started to feed on nestling mice, they start to grow very fast.

AGAIN (AUTUMN?) MATINGS

In the beginning of June 1990 the snakes started to mate again. This could be a coincidence, where it not that my *Elaphe bimaculata* started to mate in the same period too. I relate these matings to the autumn matings I observed in September 1989 with both species: it would not be improbable that the animals (which had already been taken out of their hibernation in December 1989) 'had the opinion' that it was autumn again, and started to perform their autumn matings. In a region with short hot summers and long cold winters such a system of autumn matings would be a survival advantage. The development of the young would then start as long as the temperature would be favourable, and would be able to continue as soon as temperature would rise again in spring.

In captivity, the problem is whether you should enable the animals to hibernate or not after such autumn matings. I chose to hibernate them anyhow, as this seems the most natural choice to me, and any other decision would ruin my annual planning.

REFERENCES

Schulz, Klaus-Dieter, 1989. Een Aziatische ratslang: *Elaphe rufodorsata*. Vertaald en bewerkt door Hans van der Rijst. *Het Terrarium* 6(7), februari 1989.