# CONTRIBUTION TO THE KNOWLEDGE OF *ELAPHE SCHRENCKI* (STRAUCH, 1873).

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## INTRODUCTION

When, about fifteen years ago, the first large imports of the "Amour rat snake" came to western Europe, this beautiful animal quickly became one of the most wanted Asiatic snakes. The fact that it is relatively easy to keep and breed made it a favourite terrarium snake. Unfortunately, up to now there have not been many reports in West European professional literature about its origin, distribution and taxonomy. In older, predominantly non-European literature *Elaphe schrencki* is regularly discussed. A study of this literature and that of more recent times makes it obvious that this Colubrid not only has a limited distribution in the southeastern part of the USSR and in northern China, but that the distribution area is considerably larger than was previously assumed.

## DESCRIPTION

There are two subspecies described:
1. *Elaphe schrencki schrencki*
2. *Elaphe schrencki anomala* (Boulenger, 1916).
The descriotions in the table below are a somewhat modified version of those given by Ji Daming et al., 1985.

Foto 1. *Elaphe schrencki schrencki*, U.S.S.R. Foto: Klaus-Dieter Schulz.

Foto 2. *Elaphe schrencki schrencki*, yellow phase. Foto: Klaus-Dieter Schulz.

Table 1. Marking- and colour-characteristics of adult *Elaphe schrencki* subspecies.

| | *Elaphe schrencki anomala* | *Elaphe schrencki schrencki* |
|---|---|---|
| dorsal colour | yellowish brown or greyish | dark brown to black |
| transverse bands | irregular; yellow or light-grey; 2-4 scales broad | regular; yellowish white or bright yellow; 1-3 scales broad |
| number of transverse bands | 21-25 on the abdomen and the tail | 22-28 from neck to tail |
| interspace between bands | about 4-5 scales broad | clearly 8-12 scales broad |
| colour of the labials | yellow-white to yellow with a vague black border | yellow-white to yellow with aclear black border |
| colour of the ventral surface | head yellow; belly cream coloured; tail yellow (but variable) | head yellow; belly and tail yellow-white to yellow |
| ventral spots | indistinct or completely absent | distinct black spots present |

Due to the large area of distribution for this species, there are frequently differences in marking and colour. According to the description given by Ji Daming et al., 1985, the North Chinese specimens of *Elaphe schrencki schrencki* have a dark brown ground colour and the specimens from the area north of the Amoer-river have a black ground colour. Unfortunately, because I have not had the opportunity to study animals from North-China, I cannot pass more comment about this. Amongst Russian specimens however, varieties also appear, including uniform black (melanistic) animals, and also animals with clear yellow transverse bands as well as with dirty grey transverse bands.

The same also occurs in *Elaphe schrencki anomala*. This subspecies also turns out to be very variable. There are specimens with distinct transverse bands over the complete body as well as specimens with only indistinct transverse bands on the latter part of the body. The ground colour is just as variable as in *Elaphe schrencki schrencki*. Maki (1931) even distinguishes two colour varieties of *Elaphe schrencki anomala*:

1. The normal variety: the upper side olive-coloured ("isabelline") with dark bands on the hind half of the body, which get paler towards the neck; labials "pale" with grey borders; underside pale yellow with indistinct dark spots.
2. The light variety: pale yellow or olive-coloured on the upper side, with indistinct transverse bands over the back on the hind half of the body; ventral surface whitish; labials "pale".

The colour pattern of the young, recently sloughed animals is nearly the same in both species. Close comparison of the young snakes reveals small differences in colour and pattern, but they are too small to bring up as mutual differences between the subspecies. Only after further growth

Foto 3. *Elaphe schrencki anomala*, N. China. Foto: C.A.P. van Riel.

Foto 4. *Elaphe schrencki anomala*, Jiangsu-Province China. Foto: Klaus-Dieter Schulz.

and associated colour changes can the subspecies be clearly distinguished.
In summary you can state that the subspecies strongly differ from each other in terms of adult colouration, in terms of their scalation, there are no distinct differences.
*Elaphe schrencki schrencki* is considered to be adult at a length of about 150 cm and stays relatively slender. *Elaphe schrencki anomala* on the other hand reaches a length of 200 cm or more and gets distinctly more robust. Even here however you cannot give a firm directive, because there are record lengths of 200 cm reported for *Elaphe schrencki schrencki* (Entzeroth, pers. comm.). The longest specimen of *Elaphe schrencki anomala* so far recorded is 250 cm (O. Shiu, written announcement).

Table 2. Scalation characteristics of the subspecies.

| | *Elaphe schrencki anomala* | *Elaphe schrencki schrencki* |
|---|---|---|
| dorsals | 23-23-19 (sometimes 22-22-19) | 23-23-19 (sometimes 22-22-19) |
| ventrals | 207-225 | 209-223 |
| subcaudals | 64-72 | 55-71 |
| upper labials | 7-8 normally 8 | 7-8, normally 8 |
| lower labials | 9-11 | 9-11 |

DISTRIBUTION

1. *Elaphe schrencki schrencki*: According to Nikolski (1916), this form appears in the USSR East of the Amoer-territory at Chabarowsk, and

Foto 5. *Elaphe schrencki anomala*, yellow phase, Jiangsu-Province, China. Foto: Klaus-Dieter Schulz.

Foto 6. *Elaphe schrencki anomala*, juv., Jiangsu-Province, China. Foto: Klaus-Dieter Schulz.

also to the West up to the Chingang mountains. From the distribution area stretches away up to Manchuria (Northeastern China). Specimens were also found in the following Chinese provinces: Jilin, Heilongjian, and also the Quinguan-area of Liaoning (Ji Daming et al., 1985)

2. *Elaphe schrencki anomala*: the subspecies "anomala" appears in southern Manchuria, southeastwards up to the Korean peninsula and in China southwards to the Jangtsekiang-river. Ji Daming et al. (1985) offered as the distribution area the Chinese Provinces of Liaoning, Inner Mongolia, Hebei, Shangdong, Shanxi and Jiangsu. According to a more recent publication, Tian Wanshu et al. (1986), two other Provinces can be added, namely Anhui and Hunan. Ma Jifan/Zong Yu (1984), describe three specimens of *Elaphe schrencki anomala* (*Elaphe maculata*) from the province Dinghai-Zhejiang (South-China). Based on these new discoveries it is to be expected that *Elaphe schrencki anomala* may also appear in other South Chinese provinces, for example Hubei and Jiangxi.

## WAY OF LIFE

To date, little is known about the behaviour of either subspecies in the wild. Petzold (1976), records that *Elaphe schrencki schrencki* appears in forest- and undergrowth-landscapes up to a height of 2000 m. According to the same author the animals prefer to stay amongst tree roots. *Elaphe schrencki schrencki* when it is in danger, will also climb high into the trees.
Trutnau (1979), records in his biotope description heights of 3000 m as the most extreme distribution area; personally I think this is somewhat exaggerated. Dixon (1956), found *Elaphe schrencki anomala* in western Central-Korea often in the neigh-

bourhood of water, while Shannon (1956), states this snake is only found in dry areas.
As principal food small rodents, birds and their eggs are considered. *Elaphe schrencki schrencki* seems, if you may conclude something about their natural behaviour from terrarium experiences, to be an avowed nest-robber: its predeliction for nestling birds, eggs and young mice undoubtedly points to this. Pope (1935), found a rat in the stomach of an *Elaphe schrencki anomala*.

## TAXONOMIC STATUS

When I compared the publication by Ma Jifan and Zong Yu about a new species of *Elaphe* (*Elaphe maculata*), with the descriptions of *Elaphe schrencki anomala* that were at my disposal, it attracted my attention that they appeared to be describing *Elaphe schrencki anomala*. Perhaps the authors did not know that there was a second subspecies of *Elaphe schrencki*.
The description of *Elaphe maculata* was based on two adult animals from the province Dafeng-Jiangsu, as well as on three juvenile animals from the province Dinghai-Zhejiang. The total data was:
dorsal scales: 23-23-19;
ventral scales: 212-224;
subcaudals: 64-71;
colour and markings: 30-36+10-12 brown-black, oblique standing spots on the body and the tail.
The five specimens can be found in the Shanghai Museum of Natural History, under the numbers SMNH 831X901, 831X902 and SMNH 83V1601.
We have compared the scalation parameters of both species. Also we have compared two printed pictures of an adult and a juvenile specimen of *Elaphe maculata* with several living specimens of *Elaphe schrencki anomala* (2 juveniles and 4 adults) from the same territory (the province Jiangsu).

We could not see any differences between these snakes. In the mentioned publication of Ma Jifan and Zong Yu it is not indicated how these species should be separated taxonomically. The conclusion is that the classification of *Elaphe schrencki anomala* as a new species cannot be justified.

## REMARKS ABOUT CAPTIVE CARE

Both subspecies are easy to keep when the terrarium is big enough. Wild caught animals always must be treated against worms, because they are usually infected with nematodes and cestodes. The furnishing of the terrarium can consist of some climbing branches and a piece of cork bark as a hidingplace. A large watertank from which the animals can drink and also use to take a bath is important. Especially when it is hot during the summer or after they have eaten, my snakes lie willingly in the water.
The temperatures at which the animals should be kept has to be between 20-28$^0$C during the day. At night the temperature may drop below 20$^0$C. It is recommended that one sprays water regularly in the terrarium (daily), but it is not absolutely necessary.
*Elaphe schrencki schrencki* accustoms quickly to life in the terrarium in comparison with other snakes, and after some time it becomes quite tame. Defence-bites are only known from recently caught specimens, as is vibrating the tail tip upon being disturbed. In comparison with other *Elaphe*-species, some of which are more or less inactive, *Elaphe schrencki schrencki* is often very lively and crawls for hours through the terrarium.
As prey laboratory-mice, dead or alive, are accepted. This snake is partial to small (nestling) mice, and also to birdseggs (Schulz, 1985).
*Elaphe schrencki schrencki* has a very fast meta-

bolism, thus, depending on the temperature, the first faeces may be excreted as soon as 24 hours after feeding. In this connection you should not offer too little food. An adult snake, on average, eats six to eight mice per month.
This snake has been bred successfully in captivity several times. After the winter rest of three months (at $10^0$C) the animals copulate mostly in March or April and lay 6 to 12 eggs after a short pregnancy. At an incubation temperature of between 25-$30^0$C the young hatch after 35-55 days. The young can be raised without problems on a diet of "pinkie" mice. After about three years (but in captivity also often sooner), the animals are mature.
*Elaphe schrencki anomala* is, in contrast to *Elaphe schrencki schrencki*, not yet often kept in the terrarium and is, up to now, regarded as very rare. Compared with *Elaphe schrencki schrencki*, *Elaphe schrencki anomala* is in my experience rather shy. When you get close to them, they often react with violent bites. In all it is as relatively easy to keep as *Elaphe schrencki schrencki* and has the same captive requirements.
Data about a captive breeding of *Elaphe schrencki anomala* are not known to me. In the wild however, both subspecies show the same reproductive biology and they lay 6-17 eggs in July or August (Ji Daming et al., 1985).

REFERENCES

Dixon, J.R., 1956. A Collection of Amphibians and Reptiles from West Central Korea. Herpetologica 12 (1): 50-56.

Ji Daming, Chang Wanxia, Wen Shisheng, Liu Mingyu, Qin Yoating, Zhou Yufeng, 1985. Studies on *Elaphe schrencki* of China. Acta Herpetl. Sinica 4 (3): 239-246.

Maki, M., 1931. Monograph of the Snakes in Japan. Dai-Ichi Shobo, Tokio.

Ma Jifan & Zong Yu, 1984. A New Species of the Genus *Elaphe* - *Elaphe maculata*. Acta Herpetl. Sinica 3 (3): 59-60.

Nikolski, A.M., 1916. Fauna of Russia and Adjacent Countries. Reptiles, Vol. II. Ophidia. Israel Progr. for Sc. Translations. Jerusalem.

Petzold, H.G., 1976. *Elaphe schrencki* (Strauch, 1873), Amurnatter. AT-Terrarienlex. 23 (2): 7.

Pope, C.H., 1935. The Reptiles of China. Nat. Hist. Cent. Asia, 10: 1-604.

Schulz, K.D., 1985. Die hinterasiatischen Kletternatern der Gattung *Elaphe*. Teil III. *Elaphe schrencki* (Strauch, 1873). Sauria 7 (4): 3-6. Berlin/W.

Shannon, F.A., 1956. The Reptiles and Amphibians of Korea. Herpetologica 12: 22-49.

Tian Wanshu, Jiang Yoaming - Wu Guanfu, Hu Qixiong, Zhao Ermi, Huang Qingyun, 1986. Feldführer der chinesischen Amphibien und Reptilien (in chinesisch), 1-164.

Trutnau, L., 1979. Schlangen im Terrarium. Band 1, Ungiftige Schlangen. Verlag Eugen Ulmer, Stuttgart.