A SUCCESSFUL BREEDING OF *NAJA NAJA SPUTATRIX ATRA*

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INTRODUCTION

Species: *Naja naja sputatrix atra* is a subspecies of the nominate form *Naja naja sputatrix* which occurs in Java. This *sputatrix* form differs from *Naja naja* in its habit of spitting venom at its adversary when threatened. This habit however seems to be not as well developed as in their African relatives which are capable of hitting their adversary from a distance of several metres. Another striking difference is that the threshold to spit in *sputatrix* is very high, whereas their African relatives such as *Naja mossambica*, *Naja nigricollis* and *Hemachatus haemachatus* assume their defensive posture at the slightest disturbance and often spit repeatedly (personal observations).

Naja naja sputatrix atra lives in the northern part of the range of the *sputatrix* complex. It occurs in two different varieties. One is the Chinese or North Vietnamese form; it's most important feature is a broad white, black-edged band that runs across the throat and neck (in the middle of the hood). The other form is from Thailand; its distinguishing feature is the very dark, to pitch-black back sometimes interrupted by white spots and stripes. The ventral side varies from bright white to yellow, either uniform or with dark spots. The Thai form also often shows a monocle-like form on the hood, which is rarely if ever seen in the Chinese/Northern Vietnamese form. Length 80-100 cm however, under optimal conditions terrarium animals can reach a length of 120-150 cm.

IDENTIFICATION TABLE:

Supralabials: 7 of which the 3rd and 4th touch the eye; preoculars: 1; postoculars: 2 to 3; the anterior temporals number 2; the posterior temporals 2 to 4; the number of scale rows in the neck is about 25, arranged in diagonal rows; at midbody the number of scales is 19-21, also placed in diagonal rows; ventrals: 164 to 178; subcaudals: 43 to 50.

DISTRIBUTION AND HABITS

Naja naja sputatrix occurs from southern China, including Taiwan, up to Hainon, Vietnam. In Thailand it is found mainly in the central western and eastern parts. *Naja naja sputatrix* occurs in various biotopes. It seems however, to have a preference for watery areas. It is a so-called synanthrope. The rice-field and settlements with their rodents seem to have

a great attraction to them. This becomes particularly clear after heavy rains or flooding when the animals enter the peoples houses with all it's consequences.

The venom of these proteroglyphic snakes is neurotoxic. It especially affects the nervous system and often leads to heavy necrosis. This primarily nocturnal species is also quite often found during the day, basking or crossing a road. It is also found in garbage heaps and in sewers. In the wild the food of these animals consists of rats, mice, all kinds of small mammals, birds and their eggs, snakes, lizards, amphibians and even fish. Given this varied menu they are certainly no specialized feeders, which makes them rewarding vivarium subjects.

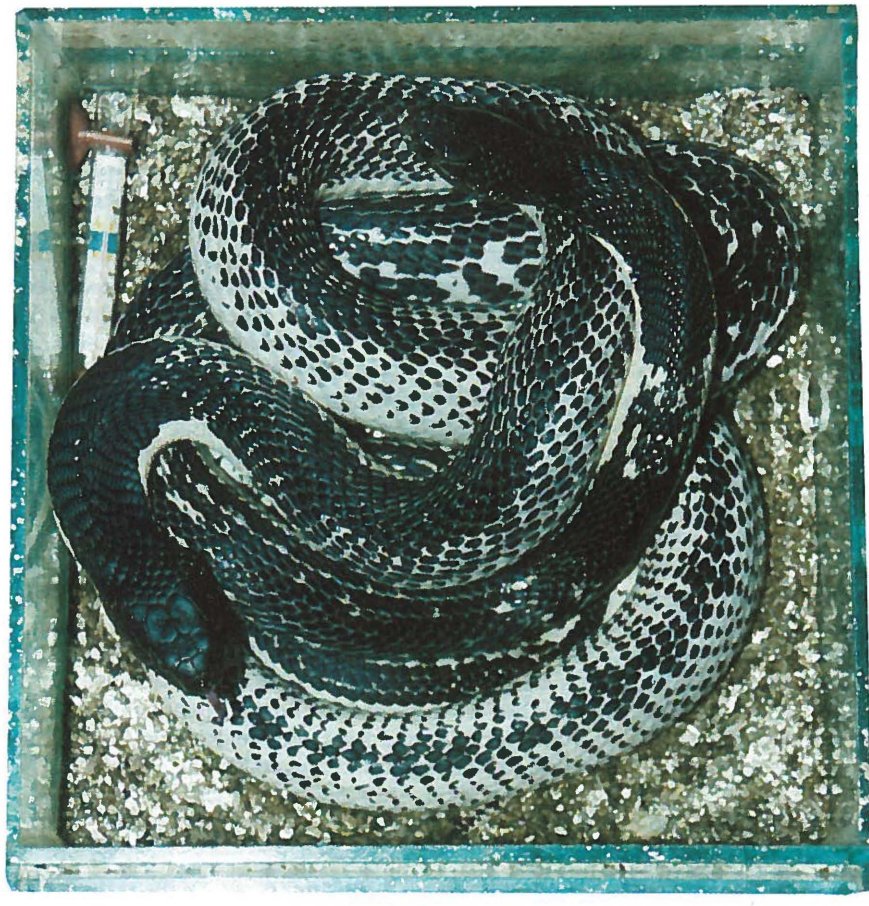

Foto 1: *Naja naja sputatrix atra*. Ouderdieren. Parents.
Foto: Marcel van der Voort.

OUR ANIMALS, THE TERRARIUM, MATING

In the middle of December 1993 we obtained an adult male specimen of the Thai form of *Naja naja sputatrix atra*. The length of this animal was about 120 cm, its diameter 4.5 to 5 cm. It was a robust snake in excellent condition. The dealer was not sure about its origin; whether it was wild-caught or not. However, this animal was known to have lived in captivity for the last year with another dealer, and it ate well. And indeed, it proved to be a regular feeder; every ten days it consumed a big rat.

The animal turned out to be very active as well as very inquisitive during the day. It never showed the slightest sign of aggression, nor any tendency of spitting. We found it remarkable that the dealer mentioned this fact at the moment of acquisition: 'be careful, this species can spit, though this didn't happen during the catching operation, which took about 1.5 hour (personal communication). Nevertheless, we always wear glasses for safety when dealing with this species, even though spitting has never occurred.

The male is housed in a terrarium measuring 120x60x60 cm. This cage is provided with a sash-window as described in *Litteratura serpentium* vol.14, no 2. This is a very practical safety system for spitting snakes! The photoperiod varies from 12-16 hours. During the day the temperature varies from 26-30°C at one side of the cage; at the other side there is no lighting or heating and it is therefore always cooler. At the illuminated side of the cage the animals have the opportunity to sunbathe, something they do frequently. At the cooler side there is a water bowl of 35x35x10 cm. This large water bowl plus frequent spraying help to raise the humidity, which is highly appreciated by this species. At night the temperature drops to 18°C. The snake shows little nocturnal activity; when we inspected it during the night it was always laying in its hiding place.

In January 1994 we purchased two captive-bred females born in 1993 in Germany. Since they were too young and too small for any breeding attempt, they were housed separately under similar conditions as the male, but in smaller cages, more suited for their size. These specimens also turned out to be trouble-free terrarium animals and never showed any spitting behaviour.

In March 1994 we purchased an adult, captive-bred female of about 3 or 4 years old. This animal was known to have been housed singly for about three years. Its length was 1 metre and its girth 3 to 3.5 cm. At the moment of purchase, the snake was in excellent condition and we decided to house it together with the male.

At the moment the male saw and smelt the female (11 March 1994), he got in a state of great excitement. His body shaked, and his tail wriggled. The female was startled by this attention and responded with raising her head and spreading her hood. The male continued flicking its tongue over the female's body. Thereupon the female moved back, raising her head and adopting a threatening posture; now the male adopted the same posture, and they remained face to face in the same position for 15 minutes, only flicking their tongues. After 15 minutes all this started again.

We left the animals alone. When we inspected the animals that night, they were lying together in the hiding box. During the following days these rituals continued according to an established pattern of shaking, raising heads and tongue-flicking.

On March 15 we saw the first copulation. After the above described ritual the male tried to introduce his hemipenis, under wild wriggling. They remained united for about 25 minutes. During the night new attempts were observed.

On March 16, I tried to feed the animals a rat, separately. To my surprise even the male immediately accepted its prey. In other species we never observed this during the breeding period, as most males don't show any appetite.

From March 15 to May 24 several copulations were observed. In some cases other snake keepers were present, but this never disturbed the animals, which unperturbably continued their rituals. Both animals continued feeding during the breeding period.

On May 30 we decided to fill the water bowl measuring 35x35x10 cm with vermiculite; on top we placed a cachepot with a hole in it. We put another smaller waterbowl in the cage and we sprayed more often to increase the air humidity. The snakes immediately started to use this hiding place instead of the wooden hiding box. During the next month the female grew thicker.

From June 30 the female used to cruise the terrarium restlessly for hours. On the evening of the 3rd of July, we noticed that the male was lying passively in a corner of the cage. This was the first time they were not lying together in the hiding place. When we inspected the animals during the night, he was still lying alone in the same place. The next morning the female was in the process of laying eggs. The male was still lying passively in the same corner. That night both animals were lying on top of the eggs, and they stayed there during inspection. We really had to move them from the eggs, which numbered 13 and were bright white.

INCUBATION PERIOD AND YOUNG

We decided to divide the eggs into two incubation boxes, each filled with vermiculite, which were incubated at different temperatures in an incubator of the au-bain-marie type. In the first box, containing 7 eggs, the temperature varied from 29-31°C. In the second box, containing 6 eggs, the temperature varied from 26-29°C. The air humidity was between 80-100%. Every second day the eggs were sprinkled with tepid water (to prevent a temperature shock). The eggs were about the same size as pigeon's eggs. Under these conditions the eggs did well.

On August 27, 55 days after they had been laid, the 7 eggs in the first box began to show slits. On August 29, after 57 days, the 6 eggs in the second box began to show slits. The hatching of each young took about 24-48 hours on average. In the first box 6 healthy young were born; one egg contained a full-grown dead young. The second box gave also 6 healthy neonates.

The colour of the animals varied from very light to very dark. The length of the 12 young snakes is 25-30 cm on average. The box with the higher incubation temperature contained more females than males. Whether this is caused by the difference in temperature, we don't know, since this was the first time we had eggs. It is an interesting fact, that should be investigated in the future.

Ten days after hatching the first young snakes moulted. They all accepted fuzzy mice after their first moult. The young snakes never used their spitting capacities, which is remarkable for this type of cobra.

CONCLUSION

As far as we know *Naja naja sputatrix* hasn't been bred before in The Netherlands. In our opinion this species is not difficult to keep and breed under the right conditions. Furthermore, we never saw any spitting behaviour in our animals, which number 16 now and are of various ages; not even in the ones which are a few weeks old now. This confirms our earlier opinion in this paper that this species has a very high threshold to spit. It is very likely, however,

that in a very threatening situation this species will spit venom. For that reason we keep wearing safety-glasses when dealing with these animals.

LITERATURE

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