

## HERPETOLOGIA

*A column for short herpetological contributions*

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### ***FUSARIUM SOLANI, LOVER OF THE EGGS OF ELAPHE GUTTATA***

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In the journal *Mycopathologia* dealing with diseases caused by moulds, I read a paper on the infection of *Elaphe guttata* eggs by the fungus *Fusarium solani*. This fungus is well known as a serious problem in agriculture and therefore I was surprised that this causal agent of plant diseases also liked snake eggs. I read the paper with interest.

The authors remark first that it might often happen with reproduction in captivity that eggs are infected by several moulds or bacteria, however in these cases the eggs are damaged or show weak spots in the shell. They did not mention which moulds and bacteria are responsible for these infections or whether they are also known in plant pathology.

The eggs on which the fungus was found were incubated at 28°C on a layer of moist sphagnum that had been sterilised by boiling. During incubation mouldy spots appeared on four of the 18 eggs. No snakes hatched from three of the mouldy eggs, although they did not addle even after 59 days of incubation. From the fourth egg an abnormally small hatchling emerged. Further investigation showed that inside the egg, below the area attacked by the fungus, the yolk was coagulated. The loss of available nutrients to the snake embryo and the reduced space inside the egg caused by the coagulated yolk could account for the stunted size of the hatchling.

Using mycological techniques the fungus on these infected eggs was identified as *Fusarium solani*. This species is mostly found in plant residues and in the soil. It was therefore most probable that the eggs were contaminated in the terrarium of the adult snake. In addition, the researchers showed that the fungus has been capable of penetrating the eggshell and thus could have reached the yolk.

To understand the infection process an attempt was made to experimentally infect healthy eggs of *Elaphe guttata* with this fungus. Under sterile conditions small pieces of mould were transferred to various sites on the surface of the eggs. When 8 eggs were inoculated 3 days after oviposition, the fungus did not penetrate the eggs despite the nearly 100% aerial humidity that prevailed in the incubator. Similarly, an application of a larger piece of mould was negative. That means negative regarding fungal invasion, but of course a positive outcome for the herpetologist and even more so for the snake embryo.

In another experiment the eggs used had only been laid 6 hours beforehand. In this case the fungus invaded all three eggs as it did in the original clutch of 18, of which four were infected.

It would appear from these results that *Fusarium solani* can only invade newly laid eggs whose surface is still moist when they emerge from the cloaca of oviparous snakes. Since the contamination must occur at an early stage, it is very likely that the terrarium of the adult snake is the scene of the accident. It is very important therefore to disinfect both the terrarium and the incubator regularly.

According to the authors several *Fusarium* species cause diseases to vertebrates and in some invertebrates too. However, it was not yet known that they can also use snake eggs as a substrate and cause damage therein to the nutrition of the embryo.

#### REFERENCES

- Kunert, J., P. Chmelik & V. Bic., 1993. *Fusarium solani*: invader of the ophidian eggs of *Elaphe guttata* in captivity. *Mycopathologia* 122: 65-68.