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HOW HIGH IS THE BODY TEMPERATURE OF *THAMNOPHIS SIRTALIS PARIETALIS* DURING THE COPULATION PERIOD?

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FOREWORD

The article below is a free interpretation of the article by Tom Vincent, "Body Temperatures of *Thamnophis sirtalis parietalis* at a Den Site", published in the magazine "Journal of Herpetology" g(2), p. 252-254, 1975.

INTRODUCTION

Garter snakes, just as all other snake species, have a preferred temperature. Garter snakes reproduce during the spring, at a time when the air temperature can be rather low. In Canada (Manitoba), Vincent has researched the effects of these circumstances on the body temperature and activity patterns of these snakes.

RESEARCH

The temperatures were measured between April 22 and May 13 on a total of 237 snakes of the male sex. In the absence of sufficient females, no temperature measurements on them were carried out. The temperatures were measured mainly by inserting a temperature-meter probe 1.5 cm into the cloaca. Less often the temperature was

measured orally. Both methods of measuring gave the same result. Only on one occasion was the temperature in the cloaca 10°C and orally 26°C. This related to a 90 cm female, the greater part of which was hidden in a hole. There appeared to be a remarkable temperature difference of 16°C between the anterior and posterior parts of the snake which was only 90 cm long!

date	wh	n	temperature	aver	air	grnd
22-4	s	27	27.5-33.5	30.97	20.9	
26-4	s&cl	33	19.0-29.0	25.19	12.0	13.5
29-4	cl	25	14.0-19.0	16.29	11.5	10.5
30-4	s	27	17.1-32.8	25.31	12.1	17.0
02-5	s	25	29.0-33.0	31.04	18.0	37.4
06-5	s	25	26.0-35.0	32.16	23.8	45.5
10-5	r	25	7.5-11.0	9.51	8.0	10.0
13-5	s	24	25.0-33.0	30.53	23.0	41.0

wh = wheater; aver = average; grnd = ground  
s = sun; cl = clouded; r = rain

Table 1.

No difference in temperature was measured in snakes that were copulating as compared to those that were not. On warm days the snakes copulated, or moved actively in the vicinity of the hibernation site. On such days copulation always took place in shady places, for example under overhanging rocks.

When it was cloudy and/or the weather was cooler, a drop in body temperature of 5-7°C resulted. During cold an cloudy weather this temperature lay another 14-16°C lower. The body temperature then fluctuates between 7.5 and 11°C. On such days the snakes are to be found outside the hibernation holes, but they do not copulate.

Except on May 10, the temperatures of the snakes was always higher than that of the air (2-20°C higher). May 10 was a rainy day and the snakes lay then under the rocks. On sunny days the body temperature of the snakes lies a little over 30°C. This is

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higher than the 29-30°C that Fitch (1965) mentions. Vincent presumes that the body temperature of the snake is influenced by the temperature of the substrate on which they lie.

#### REFERENCES

- Brattstrom, B.H. 1965. Body Temperature of Reptiles.  
Amer. Midl. Nat. 73 (2): 376-422.
- Carpenter, C.C. 1956. Body Temperature of Three Species of *Thamnophis*.  
Ecology 37:732-735.
- Fitch, H.S. 1965. Temperature Responses in Free-living Amphibians and Reptiles of Northeastern Kansas.  
Univ. Kansas Publ. Mus. Nat. Hist. 8: 417-476.
- Schierack P. 1989. Thermoregulation in snakes.  
Litt. Serp. 9: 165-176.