

A method to compare abiotic structures in habitats of recent and extinct populations of *Vipera aspis aspis* (L., 1758)

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The snake *Vipera aspis aspis* used to be quite common in the Swiss Jura mountains in the beginning of this century. However, during the last 50 - 60 years many populations became extinct. Different factors might be responsible for the decline of this species (e.g. the loss of small structures such as hedges and stonewalls in the landscape due to intensive agriculture, the active killing by human beings, the collecting of specimen for museums or pet holders, an increasing isolation of the populations by road or railway constructions and the loss of connecting populations).

Another important factor may be changes in forestry management. Five to six decades ago, forests had a lower tree density and covered smaller areas than today. As a consequence, the viper's favourable habitats (rocky cliffs) are now often isolated by dense forest and the rocks become slowly overgrown by bushes and trees. In general this results to a colder and more humid microclimate, which is disadvantageous for viviparous reptiles like *V. a. aspis*.

In order to quantify changes in vegetation structure that may have caused local extinction of viper populations in the past 30 years.

I measured vegetation cover and various variables of habitat structure in places where the snakes became extinct and where they still occur. One of the difficulties is to define the habitat size of a population and to choose appropriate points to record environmental variables. The most suitable points are probably the spots where a snake has been observed to stay. In recent populations, I used the exact site in which a viper was observed to determine the environmental variables. At places where a population went extinct I used the help of older herpetologists who show me the spots where they have seen vipers.

A plot of 2m x 2m is defined around each observed viper. Following Reinert (1984a, b) different environmental variables like rock cover, vegetation cover at different levels (ground, bushes, trees), leaf litter cover are recorded in this plot. In addition, in all four main direction the distance to the nearest bush and tree are measured and their height and morphology described. The whole site is classified as forest, rocky area or open land.

References

- Reinert, H.K. 1984a: Habitat separation between sympatric snake populations. *Ecology*, **65**:478-486
Reinert, H.K. 1984b: Habitat variation within sympatric snake populations. *Ecology*, **65**:1673-1682

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