

Anzeichen für einen bundesweiten Bestandseinbruch der Kreuzotter (*Vipera berus*) infolge ungünstiger Witterungsabläufe im Herbst und Winter 2002/2003 – Versuch einer Analyse

RICHARD PODLOUCKY¹, HANS-JOACHIM CLAUSNITZER², HUBERT LAUFER³,
STEFFEN TEUFERT⁴ & WOLFGANG VÖLKL⁵

¹Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz, Geschäftsbereich Naturschutz, Am Flugplatz 14, D-31137 Hildesheim, richard.podloucky@nlwkn-h.niedersachsen.de;

²Eichenstraße 11, D-29348 Eschede, h.-j.clausnitzer@t-online.de; ³Büro für Landschaftsökologie, Friedenstr. 28, D-77654 Offenburg, bfl.lauffer@t-online.de; ⁴H.-Mann-Str. 21, D-01877 Bischofswerda, steffen.teufert@web.de; ⁵Hohe Eiche 6, D-95517 Seybothenreuth, wolfgang.voelkl@t-online.de

Was there a sharp population decline of the adder (*Vipera berus*) following unfavourable weather conditions during autumn and winter 2002/2003 – an analysis of available data

The continuous decline of the adder in Germany is documented since many years by monitoring programmes and by specific mapping efforts in selected populations. In 2003, there were much less observations than expected from previous long-term studies and monitoring programmes throughout various regions in Germany (Lower Saxony, Saxony, Bavaria, Baden-Württemberg). Thus, we assumed an unusual sharp population decline during winter 2002/2003 in comparison to previous years. This phenomenon might be explained by the extremely unfavourable weather conditions between late summer 2002 and spring 2003. Here, we propose four hypothesis, which are not mutually exclusive: (1) An extremely wet late summer and autumn, in connection with low sunshine and low temperatures, lead to an increased consumption of fat reserves, which are necessary to survive hibernation and the basking phases in spring. Furthermore, potentially weakened adders were prone to diseases and to infection by parasites. (2) The traditional hibernation sites were too wet due to high groundwater and surface water levels. Therefore, adders may have been forced to hibernate in unsuitable sites or too close to the surface. (3) A number of individuals may have died of supercooling during extreme frost periods (with a frozen soil up to 50 cm depth). (4) Warm and sunny days accompanied by frost during the nights characterized the spring 2003. The weakened adders left the hibernation sites very early, but consumed much more energy than normally due to a prolonged activity period and due to the low night temperatures. There are even examples of adders which froze to death in spring 2003. Additionally, adders were difficult to observe during the dry and hot summer months 2003 (mid June to early September). Thus, adder numbers might have been underestimated during surveys in summer, but not during surveys in spring. Large adder populations in extended intact habitats will be certainly capable to compensate for an increased mortality due to unfavourable weather conditions. However, most German populations are small now, mainly due to a decreased habitat quality. There is currently no information how such small populations will respond to a dramatic decline. Our results again elucidate the urgent need for long-termed monitoring programmes in all native reptile species.

Key words: Reptilia, Serpentes, Viperidae, *Vipera berus*, Germany, population decline, causes of mortality, unfavourable weather conditions.