

Reptilien als Indikatoren in der Landschaftspflege: Erfassungsmethoden und Erkenntnisse aus Niedersachsen

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Reptiles as indicator species in landscape management: survey methods and findings from Lower Saxony

In Lower Saxony reptiles were used as indicator species in investigations into the implementation of agricultural environmental policies (a programme of habitat management based on grazing). The sand lizard (*Lacerta agilis*), smooth snake (*Coronella austriaca*) and adder (*Vipera berus*) serve as target species. The results presented here date from 20 test areas during the period 2002–2007, which were located on five Sites of Community Importance (SCI, as defined by the Habitats Directive) and were examined for several years. Depending on target species and biotope (chalk grassland, dry and wet lowland heath) different survey approaches were chosen on different SCI: number and length of the survey per annum, survey on transects or particularly suitable »reptile routes«, sightings, complementary use of artificial refuges. Population size was assessed in two ways: for the sand lizard, the maximum activity density recorded (individuals/hour); for the smooth snake, the total number of individuals recorded (by photo identification) per annum. Results varied considerably, depending on the method of grazing (fencing for short periods or shepherding), stock density, timing and duration, livestock types, the different biotopes in test areas, as well as the weather conditions in different years. So, the maximum activity density of the sand lizard on a temporarily overgrazed chalk grassland was 7 individuals per hour. On an undergrazed grassland an annual maximum between 22 and 41 individuals per hour was recorded. In the sandy heaths a maximum 4.5 sand lizards per hour and 3 individuals of the smooth snake could be recorded on one test area in one year. In wet heaths the sand lizard does not occur at our study sites. Here maximum values of 17 smooth snakes (including 12 newborn juveniles) and 4 adders per test area per year were recorded. On chalk grassland and on dry and wet heaths the study found a significant relationship between grazing (intensity and method) and population sizes of the respective target species. Moderately extensive grazing seems to be tolerated by reptiles when tall sward areas (i. e. areas providing vertical structure in the vegetation) remain by selective browsing. To allow reptile populations to persist in intensively grazed landscapes, there should always be ungrazed refuges or wide margins available to the reptiles. Where reptiles are the characteristic species of areas and biotopes, they seem suitable both as indicators for quality and changes of habitat, and as target species for nature conservation.

Key words: Reptilia, *Lacerta agilis*, *Coronella austriaca*, *Vipera berus*, chalk grassland, lowland heathland, indicator species, management, grazing, impact assessment, survey method, artificial refuges, Lower Saxony, Germany.