

Aktionsraumgrößen, Wanderdistanzen, Thermoregulation und Biometrie von Schlingnattern in einer Weinbergsbrache

Ulrich Schulte¹ & Michael Kolling²

¹Alkuinstr. 13, D-54292 Trier, ulr.schulte@web.de,

²Züscherwaldstr. 4, D-66687 Lockweiler, kolling.michael@web.de

Home range size, thermoregulation and biometry of smooth snakes in an abandoned vine-yard

In the context of a mark-recapture study in an abandoned vine-yard crossed by old dry-stone walls in Trier-Filsch 121 smooth snakes (*Coronella austriaca*) were individually recorded in 2012/2013. With a constant recapture rate of 47/48% it was possible to estimate the home-range size and the annual movement of some adult individuals. To gain information about the species thermoregulation, dorsal temperatures and corresponding substrate temperature were measured (with an infrared-thermometer) and compared with temperatures of syntopic wall lizards (*Podarcis muralis*) and slow worms (*Anguis fragilis*). In order to document individual development smooth snakes were measured and weighed. Mean home-range size (and standard deviation) was estimated to 1386 m² (size-range 81–7,198 m²) for seven females and five males as the minimum convex polygon based on 5 to 12 recapture events for each individual between 2012 and 2013. In 2013 males moved with a mean cumulative distance of 175 m (size-range: 16–1,187 m) further than females with 90 m (size-range: 9–325 m). Moved distances were not correlated with time, pronouncing the species site fidelity. The low potential for dispersion makes the species vulnerable for land consolidation in vineyards as the major threat in SW-Germany. Smooth snakes, wall lizards and slow worms reached significantly higher dorsal temperatures than substrate temperatures. Mean dorsal temperatures of smooth snakes (25,9 ± 4,1 °C) were in line with mean dorsal temperatures of slow worms (24,4 ± 4,1 °C), whereas wall lizards reached significantly higher dorsal temperatures (30,2 ± 4,9 °C) using higher environmental temperatures and sunny weather conditions. Juvenile smooth snakes reached significantly higher mean dorsal temperatures (28,2 ± 3,2 °C) than adult snakes (25,4 ± 4 °C), most probably due to higher metabolism rates of this cohort. The thermoregulatory behavior of all three species might cause a simultaneous activity of smooth snakes and slow worms and a shifted activity of wall lizards in the light of their complex predator-prey relationship.

Key words: Reptilia, *Coronella austriaca*, *Anguis fragilis*, *Podarcis muralis*, recapture, movement pattern, dorsal temperatures, individual development, predator-prey relationship.

Zusammenfassung

In einer von Trockenmauern durchzogenen Weinbergsbrache in Trier-Filsch wurden in einer Fang-Wiederfangstudie 2012/2013 insgesamt 121 Schlingnatter (*Coronella austriaca*) individuell erfasst. Eine konstante Wiederfangrate adulter Individuen von 47/48 % ermöglichte die Schätzung von Aktionsräumen und jährlichen Wanderdis-